HONDA

SERVICE MANUAL

88-89

VTR

VTR250

IMPORTANT SAFETY NOTICE

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

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

NOTE: Gives helpful information.

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

HOW TO USE THIS MANUAL

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

Sections 1 through 3 apply to the whole motorcycle, while sections 4 through 20 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 page 1 of that section.

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

If you don't know the source of the trouble, go to section 21, Troubleshooting.

HONDA MOTOR CO., LTD.
SERVICE PUBLICATIONS OFFICE

CONTENTS

Date of Issue: September, 1988

1. GENERAL INFORMATION

GENERAL SAFETY

⚠ WARNING

If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.

⚠ WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in your working area or where gasoline is stored.

⚠ WARNING

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

Do not remove the radiator cap when the engine is hot. The coolant is under pressure and severe scalding could result. The engine must be cool before servicing the cooling system.

⚠ WARNING

The rear shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the shock absorber.

⚠ 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.*
- *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.*

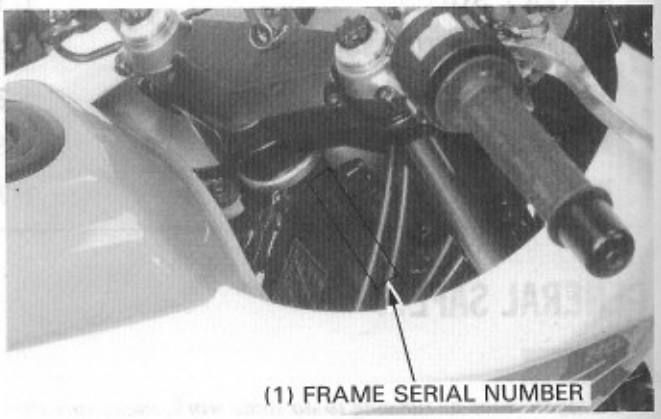
CAUTION

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.

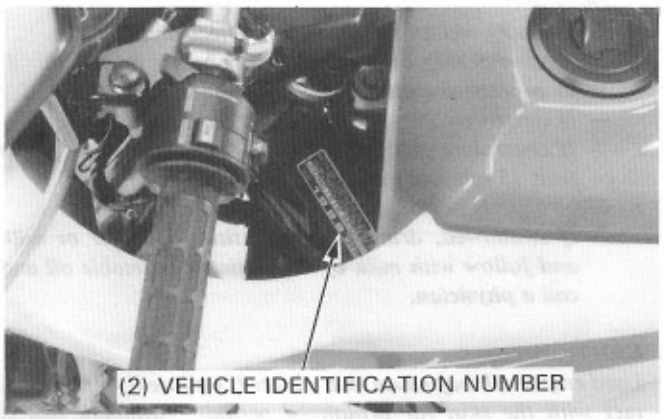
SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that do not meet HONDA's design specifications may damage the motorcycle.
2. Use the special tools designed for this product.
3. Use only metric tools when servicing this motorcycle. Metric bolts, nuts, and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the motorcycle.
4. Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
5. When tightening bolts or nuts, begin with the larger-diameter of inner bolts first, and tighten to the specified torque diagonally, 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 1-9 through 1-14, Cable and Harness Routing.

MODEL IDENTIFICATION

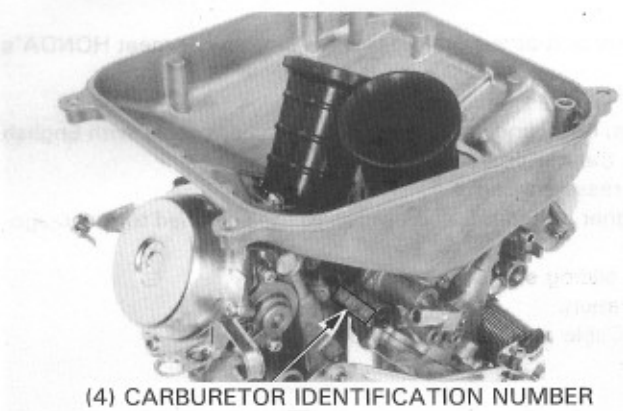


The frame serial number is stamped on the right side of the steering head.

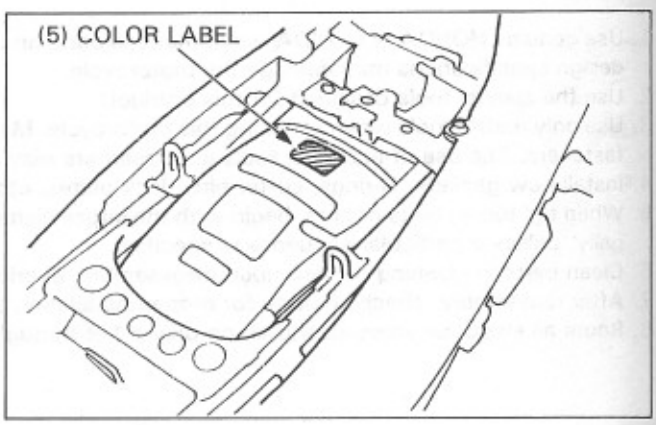


The vehicle identificaiton number (VIN) is attached on the left side of the steering head.

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



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



The color label is attached on the rear fender below the seat.

SPECIFICATIONS

[ ]: California model

ITEM				SPECIFICATIONS
DIMENSIONS	Overall length	'88:		2,040 mm (80.3 in) [2,030 mm (79.9 in)]
	Overall width	AFTER '88:		2,030 mm (79.9 in)
	Overall height			715 mm (28.1 in)
	Wheelbase			1,140 mm (44.9 in)
	Seat height	'88:		1,370 mm (53.9 in)
	Foot peg height	AFTER '88:		1,375 mm (54.1 in)
	Ground clearance			760 mm (29.9 in)
	Dry weight			340 mm (13.4 in)
	Curb weight			140 mm (5.5 in)
				150 kg (331 lb)
				165 kg (364 lb)
FRAME	Type			Diamond
	Front suspension, travel			Telescopic fork, 130 mm (5.1 in)
	Front suspension, air pressure			0–40 kPa (0–0.4 kg/cm², 0–6 psi)
	Rear suspension, travel			Swingarm, 100 mm (3.9 in)
	Vehicle capacity load			156 kg (345 lb)
	Front tire size			100/90–16 54S Tubeless
	Rear tire size			120/80–17 61S Tubeless
	Cold tire pressure	Up to 90 kg (200 lb) load	Front	225 kPa (2.25 kg/cm², 33 psi)
			Rear	225 kPa (2.25 kg/cm², 33 psi)
		Up to vehicle capacity load	Front	225 kPa (2.25 kg/cm², 33 psi)
			Rear	250 kPa (2.50 kg/cm², 36 psi)
	Front brake, lining swept area			Hydraulic single disc, 338 cm² (52.4 sq in)
	Rear brake, lining swept area			Mechanical drum, 132 cm² (20.5 sq in)
	Fuel capacity			13.0 lit (3.4 US gal, 2.9 Imp gal)
	Fuel reserve capacity			2.2 lit (0.6 US gal, 0.5 Imp gal)
	Caster angle			63°55'
	Trail length			100 mm (3.9 in)
	Fork oil capacity			306 cc (10.3 US oz, 10.7 Imp oz)
	Fork oil level			124 mm (4.9 in)
ENGINE	Type			Water cooled twin, 4-stroke DOHC (Dual Over Head Camshaft) engine
	Cylinder arrangement			2 Cylinders 90°V
	Bore and stroke			60.0 x 44.2 mm (2.36 x 1.74 in)
	Displacement			250 cc (15.3 cu-in)
	Compression ratio			11.0:1
	Valve train			Silent, multi-link chain drive and DOHC with rocker arms
	Oil capacity			2.5 lit (2.64 US qt, 2.20 Imp qt) after assembly
				1.8 lit (1.90 US qt, 1.58 Imp qt) after draining
	Coolant capacity			1.4 lit (1.48 US qt, 1.23 Imp qt) engine and radiator
				0.3 lit (0.32 US qt, 0.26 Imp qt) reserve tank
	Lubrication system			Forced pressure and wet sump
	Air filtration			Paper filter
	Cylinder compression			1320 ± 200 kPa (13.2 ± 20 kg/cm², 188 ± 28 psi)
	Intake valve : Opens			5° ATDC ┐
	: Closes			35° ABDC ┤ at 1 mm lift
	Exhaust valve: Opens			35° BBDC ┤
	: Closes			5° BTDC ┘
	Valve clearance (below 35°C/95°F)			IN, EX: 0.17 ± 0.02 mm (0.007 ± 0.001 in)
	Engine dry weight			46.5 kg (102.5 lb)
	Idle speed			1,500 ± 100 rpm

ITEM		SPECIFICATIONS
CARBURETION	Carburetor type	Constant Velocity dual carburetor
	Identification number	VD10C [VD10D]
	Pilot screw initial setting	See page 4-16
	Float level	6.8 mm (0.27 in)
DRIVE TRAIN	Clutch	Mechanical operating, multi-plate, wet
	Transmission	6-speed
	Primary reduction	2.821
	Final reducation '88:	3.214 (45/14)
	Final reducation AFTER '88:	3.000 (51/17)
	Gear ratio I '88:	2.562 (41/16)
	Gear ratio I AFTER '88:	2.733 (41/15)
	Gear ratio II '88:	1.850 (37/20)
	Gear ratio II AFTER '88:	2.000 (38/19)
	Gear ratio III '88:	1.478 (34/23)
	Gear ratio III AFTER '88:	1.590 (35/22)
	Gear ratio IV '88:	1.240 (31/25)
	Gear ratio IV AFTER '88:	1.333 (32/24)
	Gear ratio V '88:	1.074 (29/27)
	Gear ratio V AFTER '88:	1.071 (30/28)
	Gear ratio VI '88:	0.965 (28/29)
	Gear ratio VI AFTER '88:	1.035 (29/28)
	Gear shift pattern	Left foot operated return system, 1-N-2-3-4-5-6
ELECTRICAL	Ignition	Full transistor ignition
	Ignition timing "F" mark	10° BTDC at idle
	Starting system	Starter motor
	Alternator	330 W/5,000 rpm
	Battery capacity	12 V— 9 AH
	Spark plug	

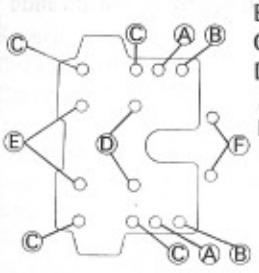
		NGK	ND
Standard	'88:	DPR8EA-9	X24EPR-U9
	AFTER '88:	CR8EH-9	U24FER-9
For extended high speed riding	'88:	DPR9EA-9	X27EPR-U9
	AFTER '88:	CR9EH-9	U27FER-9

Spark plug gap	0.8—0.9 mm (0.031—0.035 in)
Firing order	Front—270°—Rear—450°—Front
Fuse/Main fuse	10 A x 6, 15 A/30 A
LIGHTS	
Headlight (high/low beam)	12 V—60/55 W
Brake/taillight	12 V—27/8 W (32/3 cp) SAE No. 1157
License light	12 V—8 W (4 cp)
Turn signal light	12 V—23 W (32 cp) x 4 SAE No. 1034
Instrument light	12 V—3.4 W x 3, 12 V—3 W
Oil pressure warning indicator	12 V—3 W
High beam indicator	12 V—3 W
Turn signal indicator	12 V—3.4 W x 2
Neutral indicator	12 V—3 W

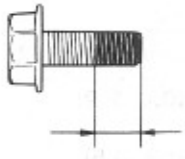
TORQUE VALUES

ENGINE

ITEM	Q'ty	Thread dia. (mm)	Torque N·m (kg-m, ft-lb)	Remark
Cylinder head cover bolt	8	6	10 (1.0, 7.2)	
Cam shaft holder bolt A '88:	4	6	12 (1.2, 9)	Flange bolt 6 x 48 mm (NOTE 1)
AFTER '88:	4	6	12 (1.2, 9)	Flange bolt 6 x 38 mm (NOTE 1)
B	4	6	12 (1.2, 9)	UBS flange bolt 6 x 40 mm (NOTE 1)
C	8	8	23 (2.3, 17)	UBS bolt 8 x 130 mm (NOTE 1)
D '88:	4	8	32 (3.2, 23)	UBS bolt 8 x 151 mm (NOTE 1)
AFTER '88:	4	8	36 (3.6, 26)	
E	4	6	12 (1.2, 9)	Flange bolt 6 x 43 mm (NOTE 1)
Cylinder head bolt F '88:	4	8	32 (3.2, 23)	UBS bolt 8 x 80 mm
AFTER '88:	4	8	36 (3.6, 26)	
Cam sprocket bolt	8	7	19 (1.9, 14)	Apply locking agent to the threads
Spark plug '88:	2	12	14 (1.4, 10)	
AFTER '88:	2	10	12 (1.2, 9)	
Connecting rod bearing nut	4	—	24 (2.4, 17)	Apply oil to the threads and seat
Oil pipe bolt ('88 only)	3	10	23 (2.3, 17)	
Flywheel bolt	1	10	85 (8.5, 61)	UBS bolt
Starter clutch cover bolt	3	8	28 (2.8, 20)	Flange bolt: Apply locking agent to the threads
Starter clutch bolt	1	10	85 (8.5, 61)	UBS bolt
Clutch center lock nut	1	20	65 (6.5, 47)	
Gearshift return spring pin	1	8	25 (2.5, 18)	Apply locking agent to the threads
Oil pump driven sprocket bolt	1	6	15 (1.5, 11)	Apply locking agent to the threads (NOTE 2)
Oil pressure switch	1	—	12 (1.2, 9)	Apply sealant to the threads (NOTE 3)
Neutral switch	1	10	12 (1.2, 9)	
Oil filter center bolt	1	20	18 (1.8, 13)	
Oil drain bolt	1	12	38 (3.8, 27)	
Crankcase bolt	11	6	12 (1.2, 9)	(NOTE 1)
	9	8	23 (2.3, 17)	(NOTE 1)
Rocker arm shaft	4	20	50 (5.0, 36)	Apply locking agent to the threads
Valve adjusting lock nut	8	5	11 (1.1, 8)	Apply oil to the threads and seat

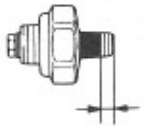


NOTE 1: Apply oil to all seats except for the one at the lower rear end.
NOTE 2: Apply locking agent as shown.



5.5–7.5 mm (0.22–0.30 in)

NOTE 3: Do not apply sealant as shown.



FRAME

ITEM	Q'ty	Thread dia. (mm)	Torque N·m (kg-m, ft-lb)	Remark
Engine hanger bolt and nut	5	10	45 (4.5, 33)	
Side stand pivot bolt	1	10	15 (1.5, 11)	
nut	1	10	35 (3.5, 25)	
Gearshift pedal bolt	1	6	10 (1.0, 7.2)	
Exhaust pipe joint cap nut	4	6	13 (1.3, 9)	
Rear shock absorber damper rod lock nut	1	14	68 (6.8, 49)	Apply locking agent to the threads
Front brake master cylinder holder bolt	2	6	12 (1.2, 9)	
Shock absorber mounting bolt	2	10	55 (5.5, 40)	
Swingarm pivot bolt (right)	1	25	16 (1.6, 12)	
(left)	1	25	95 (9.5, 69)	
Swingarm pivot lock nut	1	25	95 (9.5, 69)	
Rear axle nut	1	16	90 (9.0, 65)	
Shock link-to-shock arm bolt	1	10	65 (6.5, 47)	
Shock arm-to-swingarm bolt	1	10	65 (6.5, 47)	
Shock link-to-frame bolt	1	10	65 (6.5, 47)	
Brake pedal bolt	1	6	10 (1.0, 7.2)	
Foot peg bolt	4	8	23 (2.3, 17)	
Brake hose oil bolt '88:	2	10	30 (3.0, 22)	
AFTER '88:	2	10	35 (3.5, 25)	
Brake pad pin	1	8	18 (1.8, 13)	
Fuel tank mounting bolt (rear)	1	8	22 (2.2, 16)	
Front disc cover bolt	3	6	18 (1.8, 13)	
Caliper bleed valve	1	8	6 (0.6, 4.3)	
Caliper pin bolt	2	10	18 (1.8, 13)	
Steering bearing adjustment nut	1	26	22 (2.2, 16)	Apply oil to the threads
Clutch lever pivot nut	1	6	10 (1.0, 7.2)	
Handlebar pinch bolt	2	8	45 (4.5, 33)	
Front axle	1	12	60 (6.0, 43)	
Front axle holder nut	2	8	22 (2.2, 16)	
Fork socket bolt	2	8	20 (2.0, 14)	
Fork cap	2	31	23 (2.3, 17)	
Fork top pinch bolt	2	7	11 (1.1, 8)	
Fork bottom pinch bolt	2	10	50 (5.0, 36)	
Steering stem nut	1	24	105 (10.5, 76)	
Thermostatic switch	1	16	18 (1.8, 13)	
Temperature sensor	1	—	12 (1.2, 9)	Apply sealant to the threads
Driven sprocket nut	6	8	31 (3.1, 22)	Apply oil to the seat

Torque specifications listed above are for specific tightening points. If a specification is not listed, follow the standard torque values below.

STANDARD TORQUE VALUES

TYPE	TORQUE N·m (kg-m, ft-lb)	TYPE	TORQUE N·m (kg-m, ft-lb)
5 mm bolt, nut	5 (0.5, 3.6)	5 mm screw	4 (0.4, 2.9)
6 mm bolt, nut	10 (1.0, 7.2)	6 mm screw, 6 mm	
8 mm bolt, nut	22 (2.2, 16)	bolt with 8 mm head	9 (0.9, 6.5)
10 mm bolt, nut	35 (3.5, 25)	6 mm flange bolt, nut	12 (1.2, 9)
12 mm bolt, nut	55 (5.5, 40)	8 mm flange bolt, nut	27 (2.7, 20)
		10 mm flange bolt, nut	40 (4.0, 29)

TOOLS

SPECIAL

Description	Tool number	Alternative tool	Tool number	Refer to Section
Vacuum gauge set	07404—0030000	Vacuum gauge set (U.S.A. only)	M937B—021—XXXXX	3
Snap ring pliers	07914—3230001	equivalent commercially available in U.S.A.		15
Steering stem socket	07916—3710100			13
Clutch center holder	07HGB—001010A	U.S.A. only		7
Compression gauge	07305—0010000	equivalent commercially available in U.S.A.		3
Pressure pump (U.S.A. only)	ST—AH—255—MC7	Vacuum/Pressure pump (U.S.A. only)	A937X—041—XXXXX	4
Vacuum pump (U.S.A. only)	ST—AH—260—MC7			4
Attachment	07946—GC4000A	U.S.A. only		14
Remover weight	07741—0010201	Remover weight	07936—3710200	14
Remover handle	07936—3710100			14
Bearing remover	07936—8890300			14
Valve guide driver	07942—MA60000			9
Attachment ('88 only)	07945—3330300			13
Attachment ('88 only)	07946—3290000			13
Steering stem driver	07946—MB00000			13
Fork seal driver	07947—KA50100			13
Fork seal driver attachment	07947—KL40100			13
Ball race remover '88:	07GMD—KS40100			13
AFTER '88:	07953—4250002			
Ball race remover attachment ('88 only)	07953—KM10100	Ball race remover attachment	07953—MJ1000A	13
Bearing race remover (AFTER '88)	07946—3710500			
Shock absorber compressor attachment	07959—MB10000			14
Valve compressor attachment	07959—KM30101			9
Cam shaft holder	07979—MK30000			3
Valve guide reamer, 5.0 mm	07984—MA60000	Valve guide reamer	07984—MA6000B	9
Oil pressure gauge	07506—3000000	equivalent commercially available in U.S.A.		2
Oil pressure gauge attachment	07510—4220100			2
Christie battery charger	#MC1012/2	U.S.A. only		16
Honda battery tester	07GMJ—0010000	U.S.A. only		16
Digital multitester or	07411—0020000	Digital multitester (U.S.A. only)	KS—AHM—32—003	16
Circuit tester or	07308—0020001			16
Circuit tester	TH—5H			16

COMMON

Description	Tool number	Alternative tool	Tool number	Refer to Section
Float level gauge	07401—0010000			4
Wrench, 8 x 9 mm	07708—0030100	equivalent commercially available in U.S.A.		3
Lock nut wrench, 26 x 30 mm	07716—0020203			7
Lock nut wrench, 30 x 32 mm	07716—0020400	equivalent commercially available in U.S.A.		13
Flywheel holder	07725—0040000			7, 8
Rotor puller	07733—0020001	Rotor puller	07933—3950000	8
Attachment, 32 x 35 mm	07746—0010100			13, 14
Attachment, 37 x 40 mm	07746—0010200			14
Attachment, 42 x 47 mm	07746—0010300			13, 14
Attachment, 24 x 26 mm	07746—0010700			14
Driver, 22 mm I.D.	07746—0020100			11
Pilot, 10 mm	07746—0040100			14
Pilot, 20 mm	07746—0040500			14
Pilot, 15 mm	07746—0040300			13, 14
Pilot, 17 mm	07746—0040400			14
Bearing remover head, 15 mm	07746—0050400	equivalent commercially available in U.S.A.		13
Bearing remover shaft	07746—0050100			13, 14
Bearing remover head, 17 mm	07746—0050500			14
Valve adjusting wrench, B	07708—0030400	Valve adjusting wrench	89201—200—000 or 07908—KE90200	3
Driver	07749—0010000			13, 14
Valve spring compressor	07757—0010000			9
Shock absorber compressor — compressor screw assembly	07GME—0010000 07GME—0010100			14
Attachment, 52 x 55 mm (AFTER '88)	07746—0010400			13
Driver, Torx bit 50 (AFTER '88)	07HJA-0010100-T50	Commercially available in U.S.A.		19

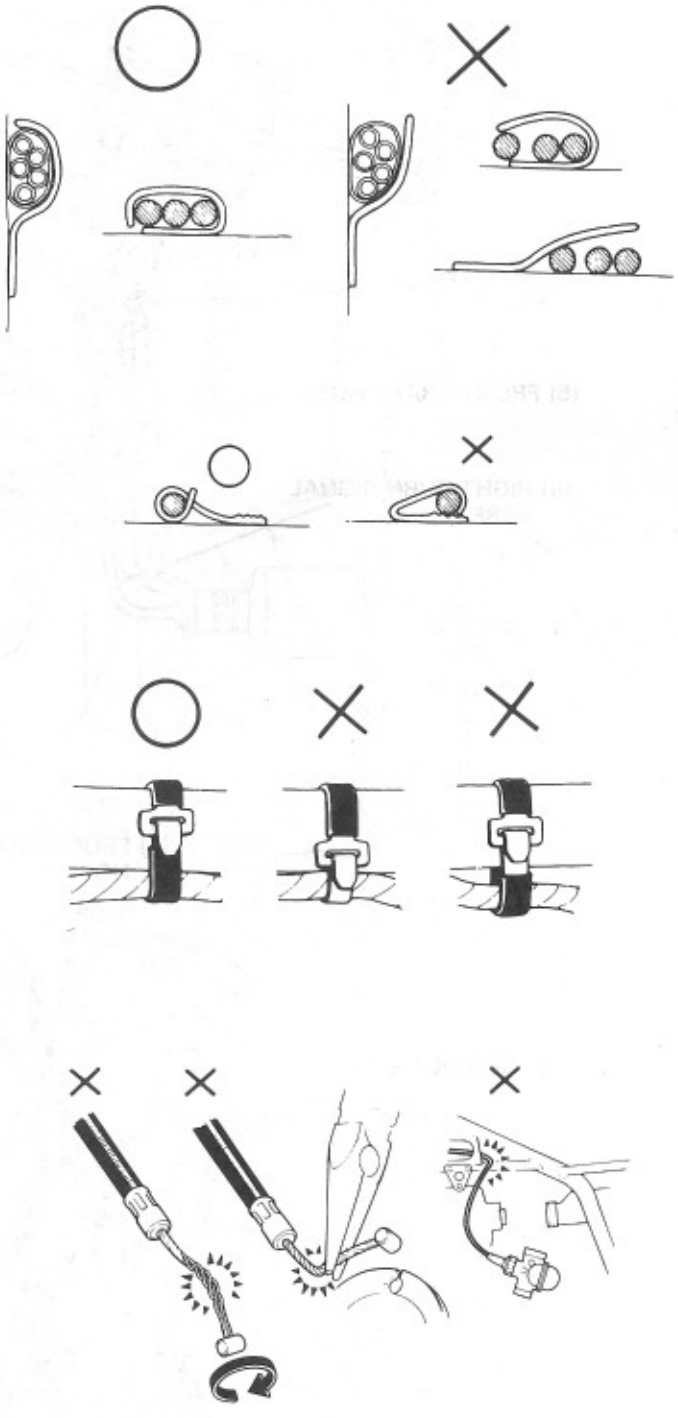
VALVE SEAT CUTTER (NOT AVAILABLE IN U.S.A.)

Description	Tool number	Remarks	Refer to Section
Seat cutter, 24.5 mm	07780—0010100	45° IN	9
Seat cutter, 22 mm	07780—0010701	45° EX	9
Seat cutter, 24 mm	07780—0012500	32° IN	9
Seat cutter, 22 mm	07780—0012601	32° EX	9
Seat cutter, 22 mm	07780—0014202	60° IN/EX	9
Cutter holder, 5 mm	07781—0010400		9

CABLE & HARNESS ROUTING

Note the following when routing cables and wire harnesses:

- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze wires against welds or clamps.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.
- Route harnesses so they are neither pulled taut nor have excessive slack.
- Protect wires and harnesses with electrical tape or a tube if they contact a sharp edge or corner. Clean the attaching surface thoroughly before applying tape.
- Do not use wires or harnesses with broken insulation. Repair by wrapping them with protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners. Also avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipes and other hot parts.
- Be sure grommets are seated in their grooves properly.
- After clamping, check each harness to be certain that it does not interfere with any moving or sliding parts.
- After routing, check that the wire harnesses are not twisted or kinked.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched by or interfere with adjacent or surrounding parts in all steering positions.
- Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.



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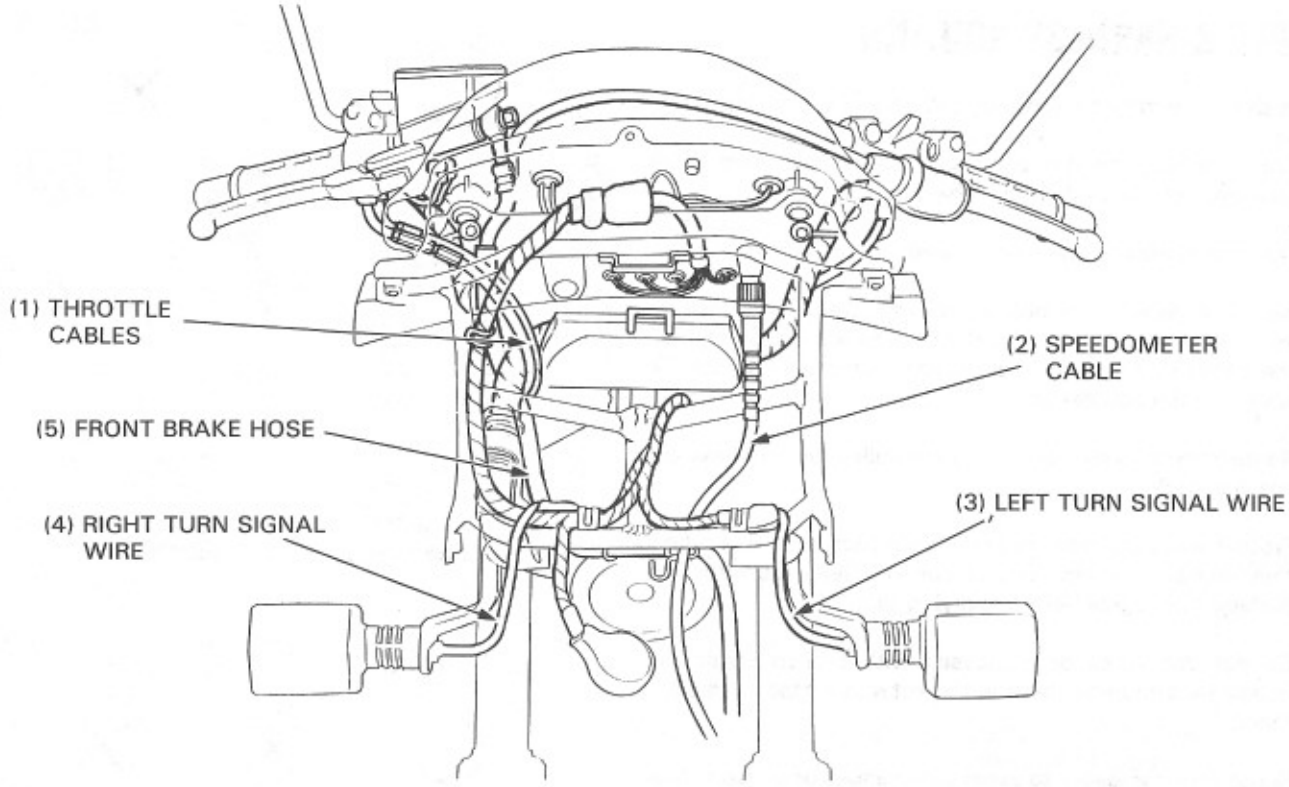
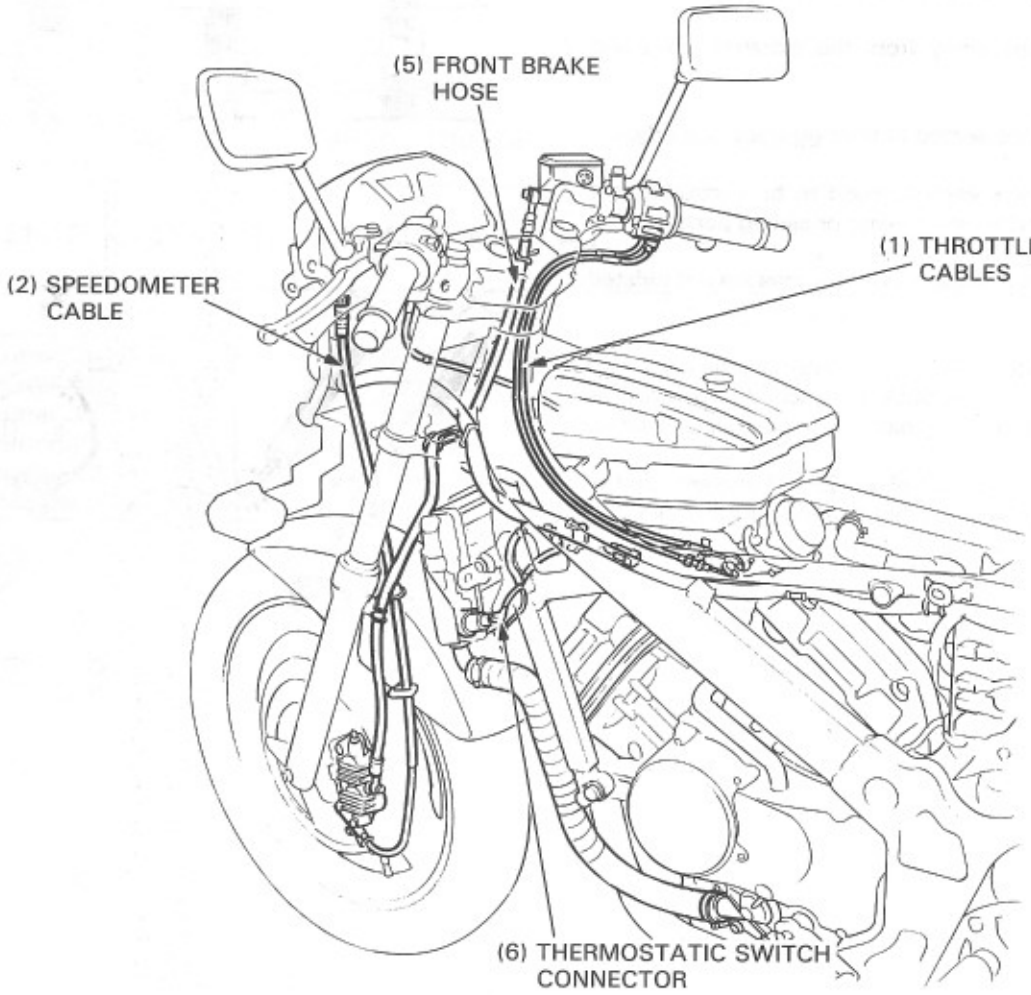
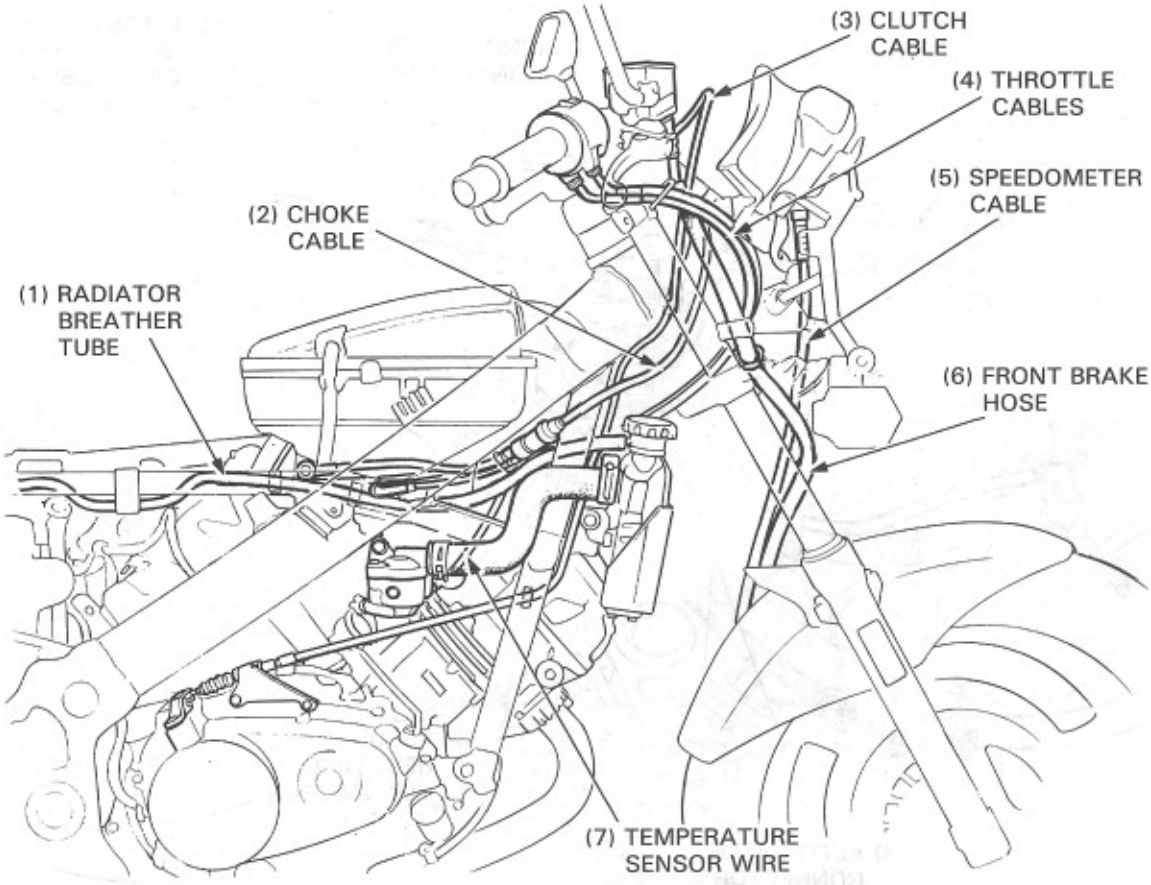
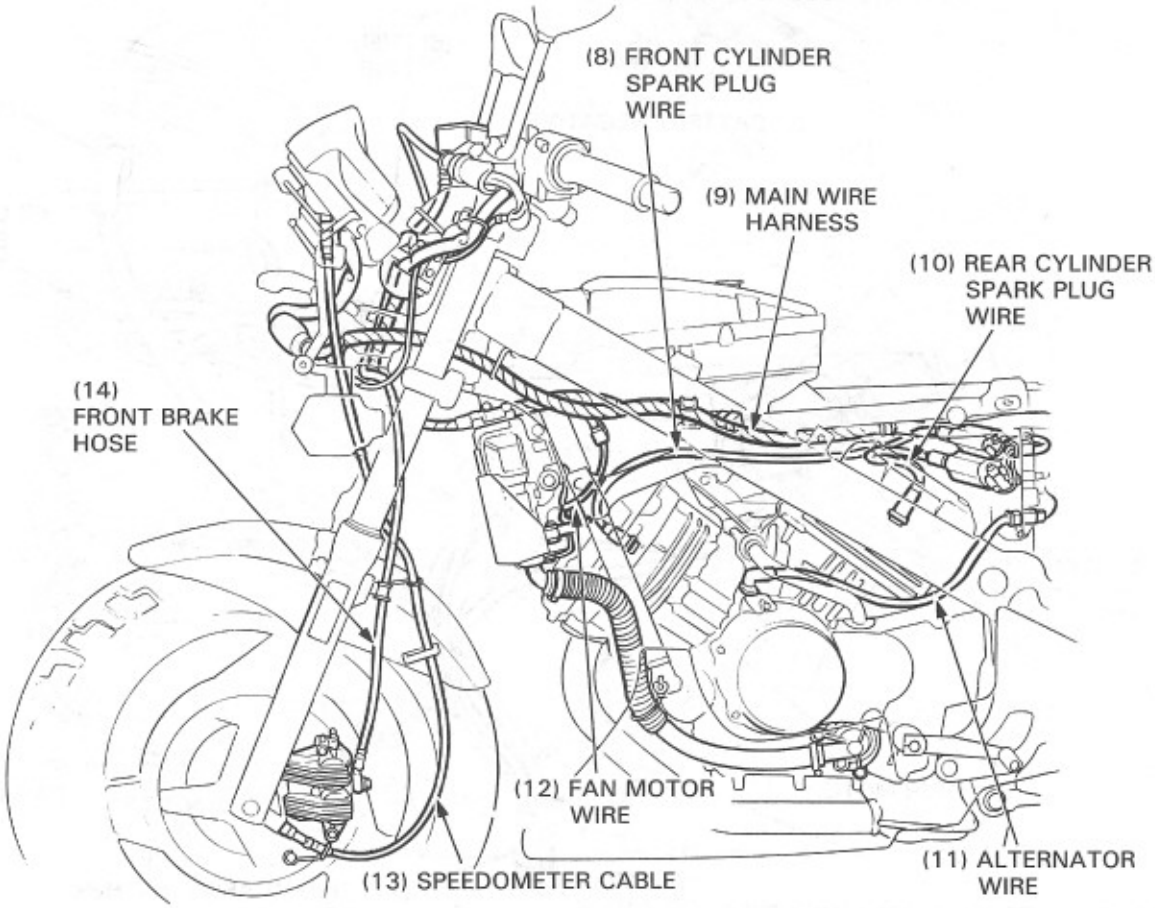
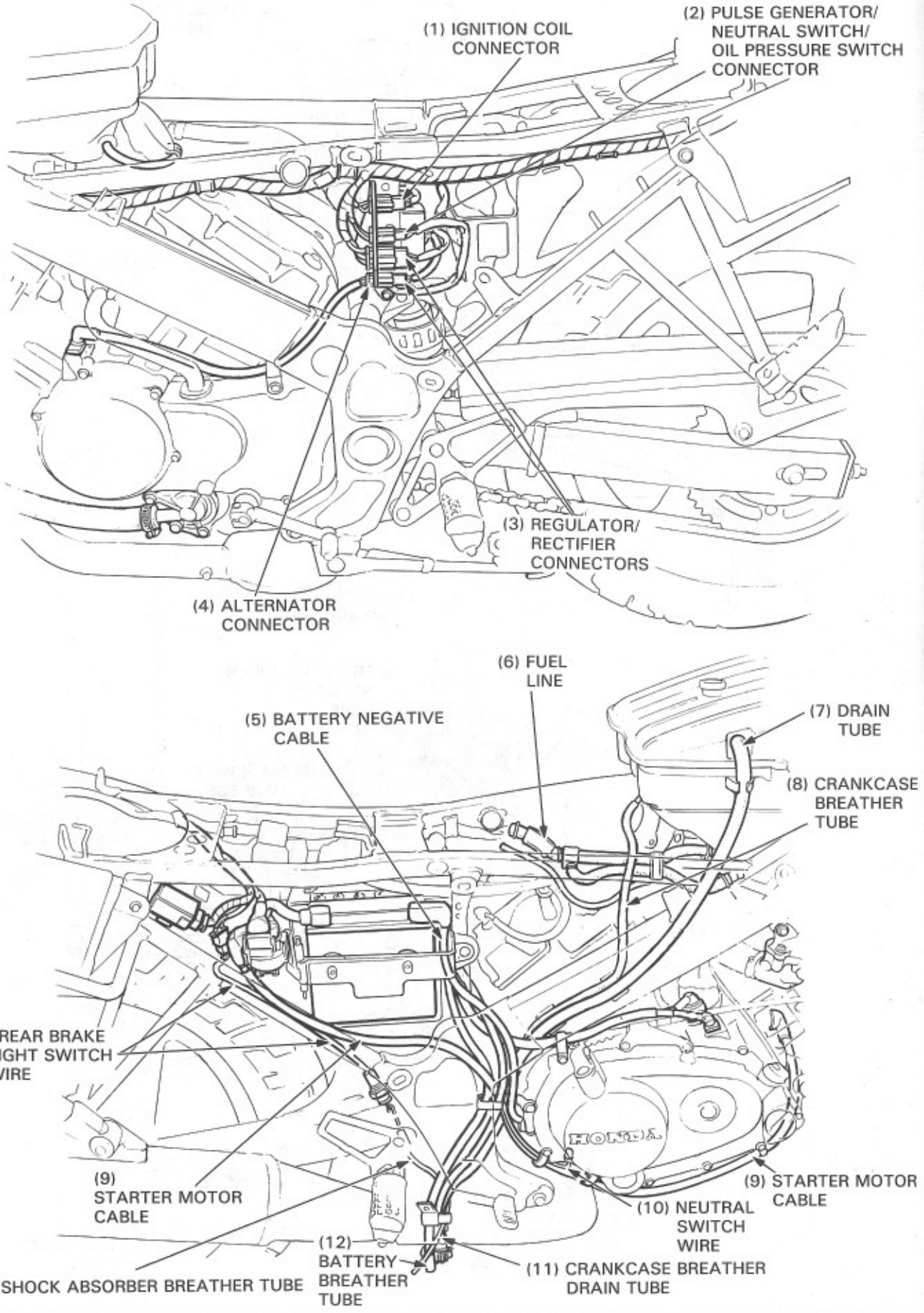
X: INCORRECT

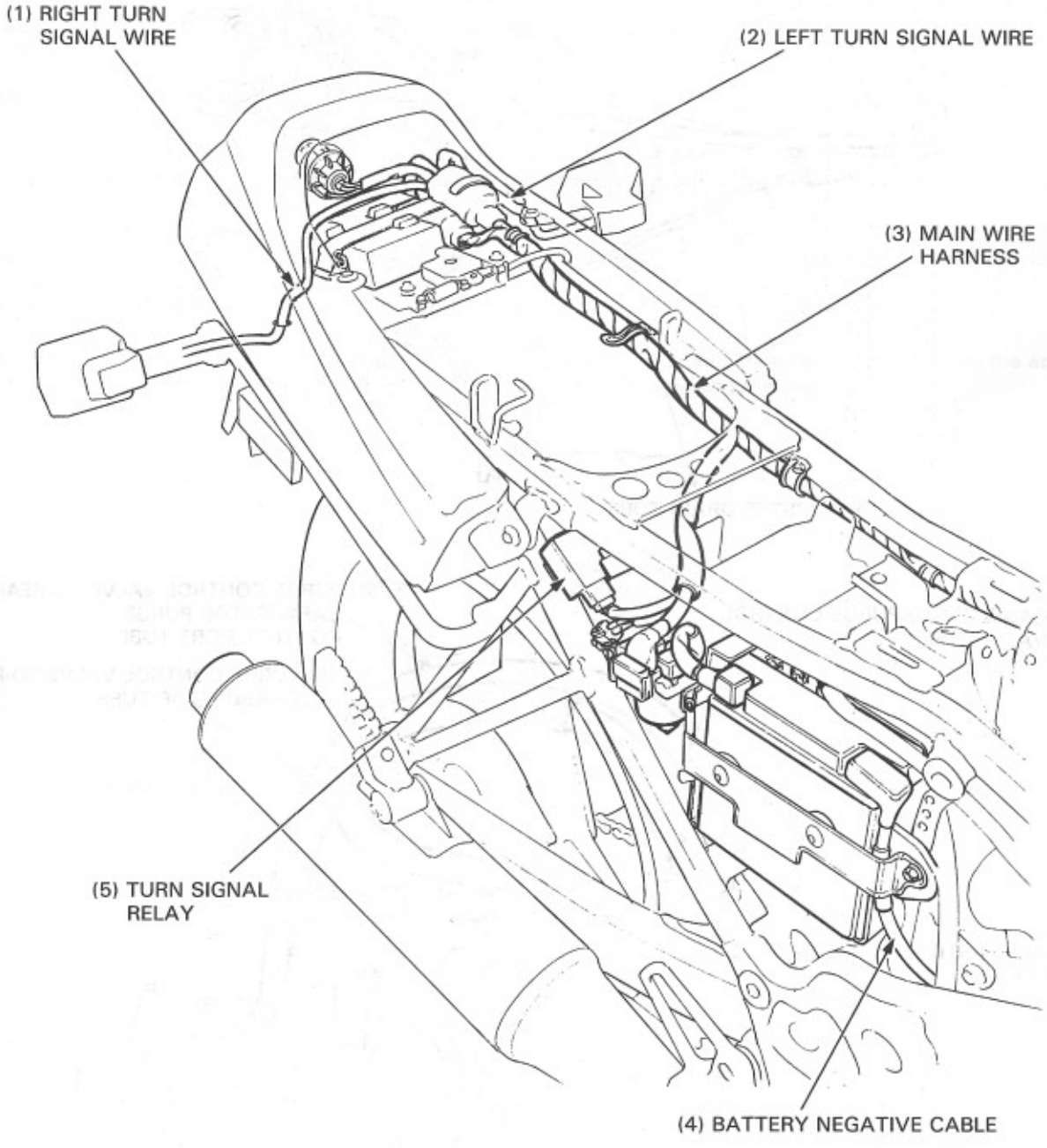

(1) THROTTLE CABLES
(2) SPEEDOMETER CABLE
(5) FRONT BRAKE HOSE
(3) LEFT TURN SIGNAL WIRE
(4) RIGHT TURN SIGNAL WIRE


(5) FRONT BRAKE HOSE
(1) THROTTLE CABLES
(2) SPEEDOMETER CABLE
(6) THERMOSTATIC SWITCH CONNECTOR

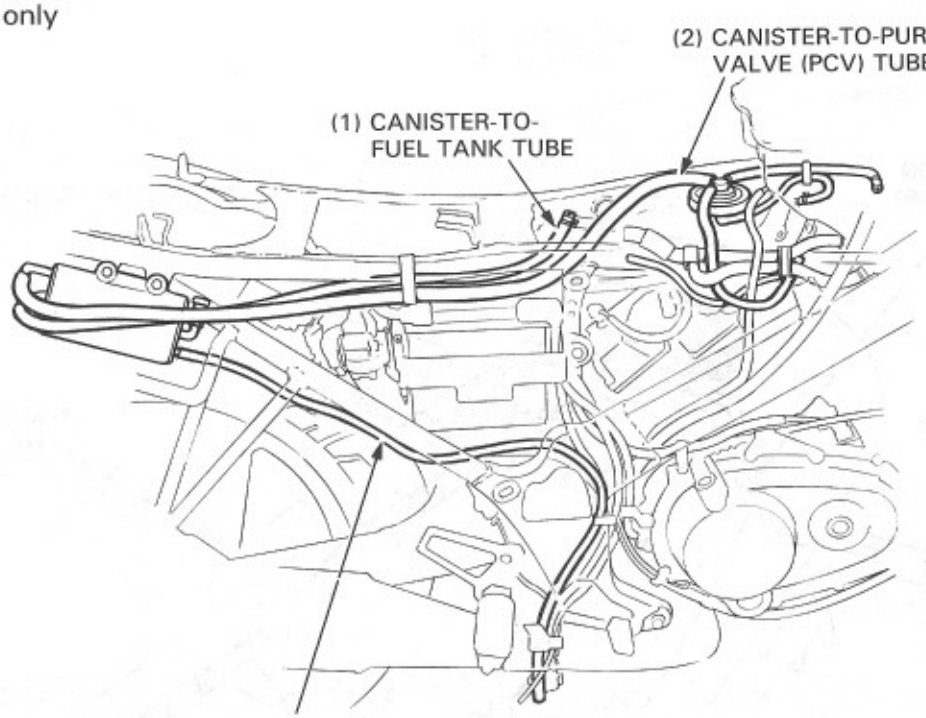

(3) CLUTCH CABLE
(4) THROTTLE CABLES
(5) SPEEDOMETER CABLE
(2) CHOKE CABLE
(1) RADIATOR BREATHER TUBE
(6) FRONT BRAKE HOSE
(7) TEMPERATURE SENSOR WIRE

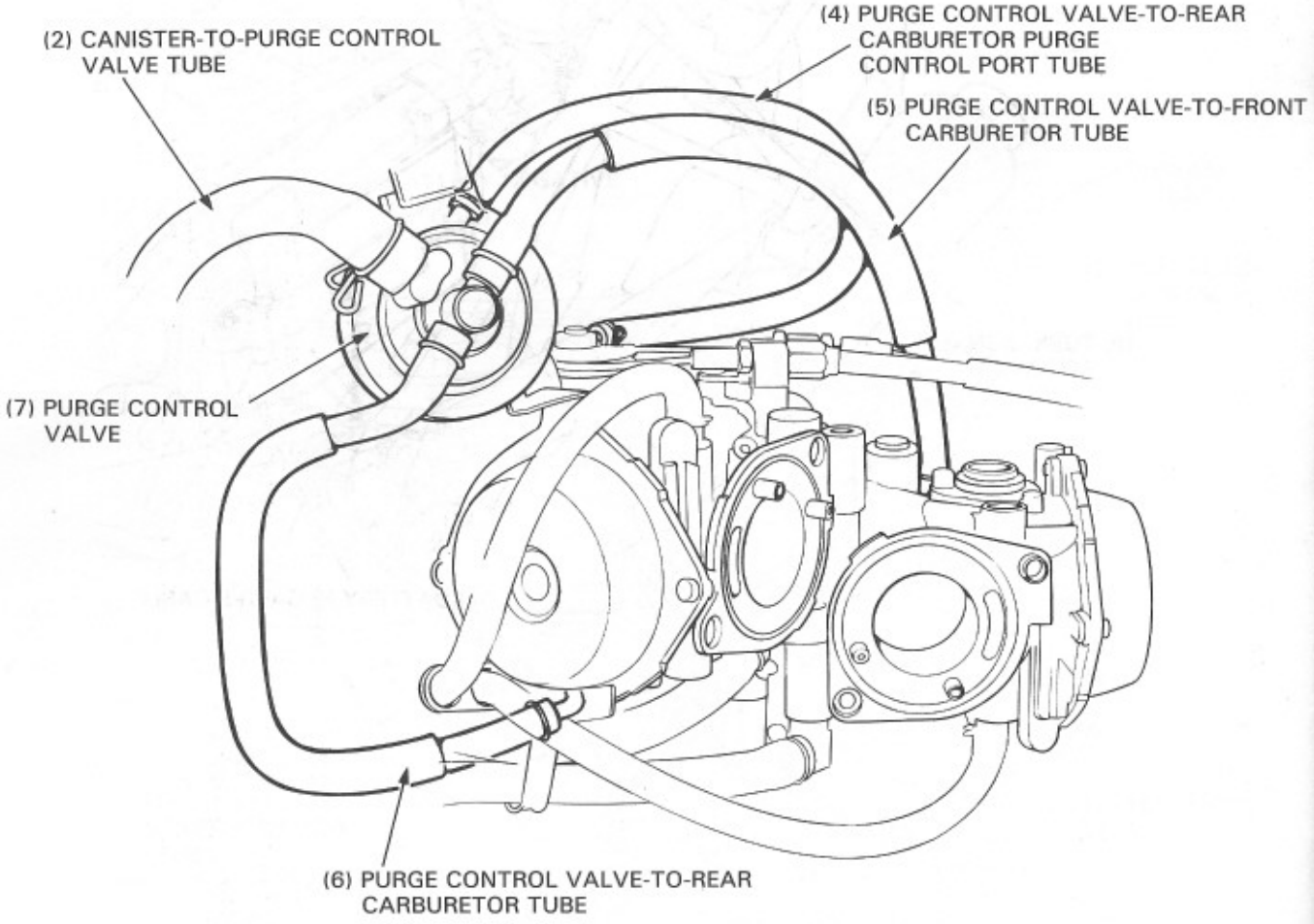

(8) FRONT CYLINDER SPARK PLUG WIRE
(9) MAIN WIRE HARNESS
(10) REAR CYLINDER SPARK PLUG WIRE
(14) FRONT BRAKE HOSE
(12) FAN MOTOR WIRE
(13) SPEEDOMETER CABLE
(11) ALTERNATOR WIRE


(1) IGNITION COIL CONNECTOR
(2) PULSE GENERATOR/ NEUTRAL SWITCH/ OIL PRESSURE SWITCH CONNECTOR
(3) REGULATOR/ RECTIFIER CONNECTORS
(4) ALTERNATOR CONNECTOR
(5) BATTERY NEGATIVE CABLE
(6) FUEL LINE
(7) DRAIN TUBE
(8) CRANKCASE BREATHER TUBE
(9) STARTER MOTOR CABLE
(9) STARTER MOTOR CABLE
(10) NEUTRAL SWITCH WIRE
(11) CRANKCASE BREATHER DRAIN TUBE
(12) BATTERY BREATHER TUBE
(13) REAR SHOCK ABSORBER BREATHER TUBE
(14) REAR BRAKE LIGHT SWITCH WIRE


(1) RIGHT TURN SIGNAL WIRE
(2) LEFT TURN SIGNAL WIRE
(3) MAIN WIRE HARNESS
(5) TURN SIGNAL RELAY
(4) BATTERY NEGATIVE CABLE

California model only





EMISSION CONTROL SYSTEMS (U.S.A. only)

The U.S. Environmental Protection Agency and California Air Resources Board (CARB) require manufactures to certify that their motorcycles comply with applicable exhaust emissions standards during their useful life, when operated and maintained according to the instructions provided, and that motorcycles built after January 1, 1983 comply with applicable noise emission standards for one year or 6,000 km (3,730 miles) after the time of sale to the ultimate purchaser, when operated and maintained according to the instructions provided. Compliance with the terms of the Distributor's Limited Warranty for Honda Motorcycle Emission Control Systems is necessary in order to keep the emissions system warranty in effect.

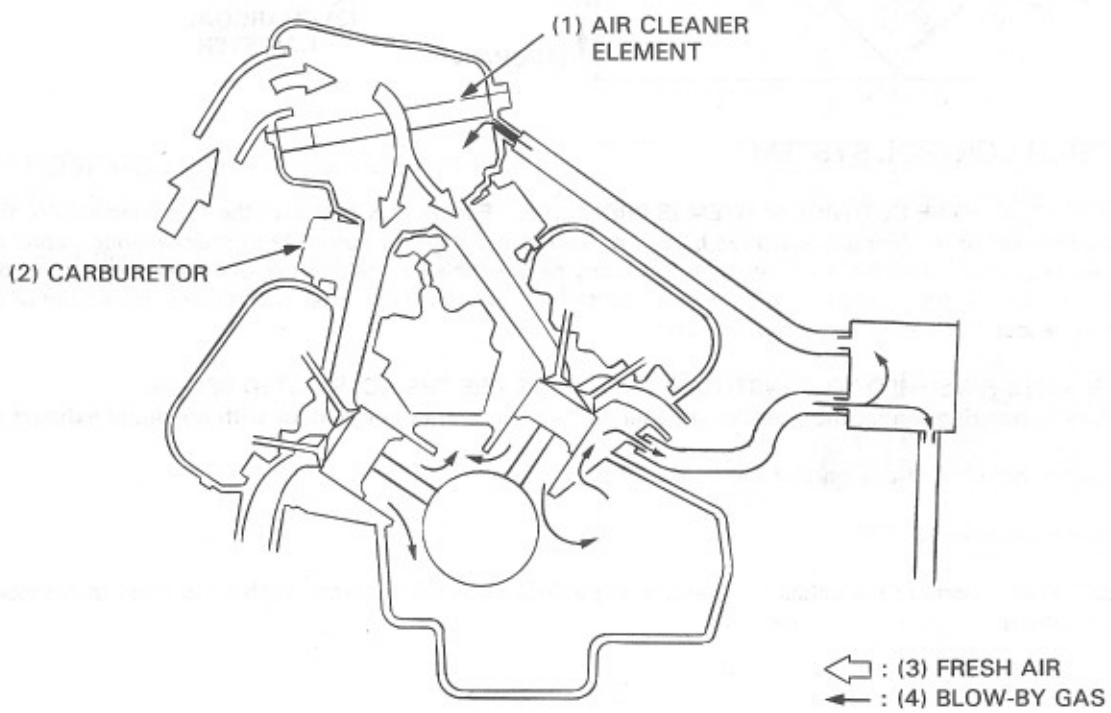
SOURCE OF EMISSIONS

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

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

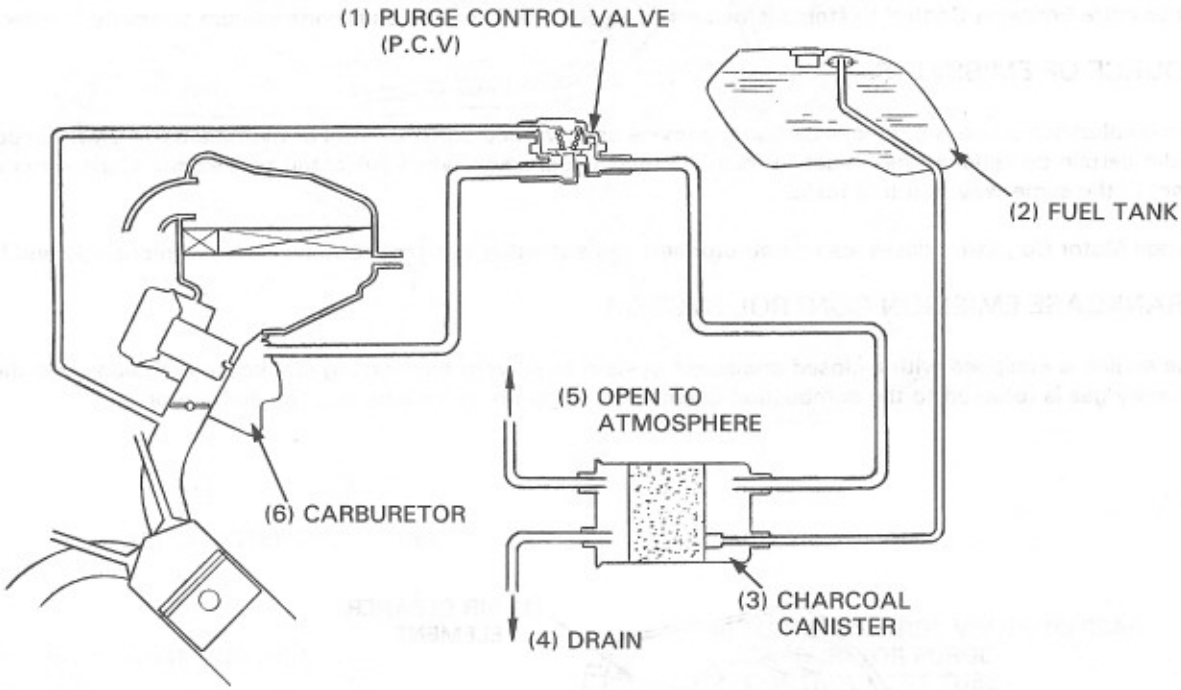
CRANKCASE EMISSION CONTROL SYSTEM

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



EVAPORATIVE EMISSION CONTROL SYSTEM (California model only)

This model complies with California Air Resources Board evaporative emission requirements.
Fuel vapor from the fuel tank is directed into the charcoal canister where it is adsorbed and stored while the engine is stopped. When the engine is running and the purge control diaphragm valve is open, fuel vapor in the charcoal canister is drawn into the engine through the carburetor.



NOISE EMISSION CONTROL SYSTEM

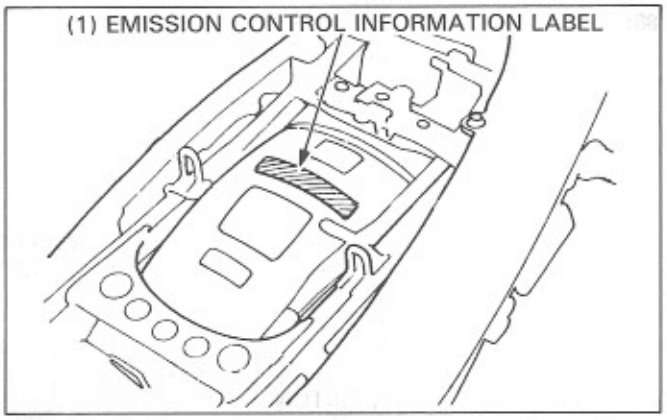
TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any new vehicle 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 ACTS LISTED BELOW:

1. Removal of, or puncturing the muffler, baffles, header pipes or any other component with 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 than those specified by the manufacturer.

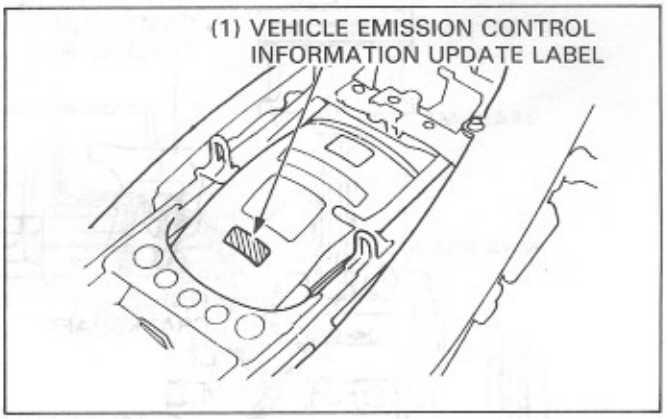
EMISSION CONTROL INFORMATION LABELS (U.S.A. only)

An Emission Control Information Label is located on the rear fender under the seat as shown. It gives basic tune-up specifications.



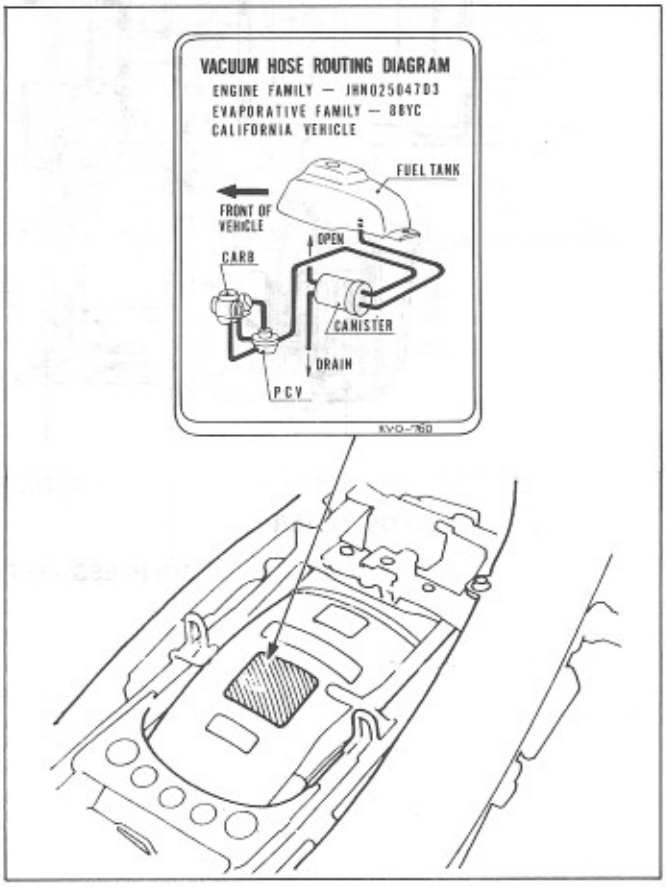
EMISSION CONTROL INFORMATION UPDATE LABEL

After making a high altitude carburetor adjustment (page 4-17), attach an update label on the rear fender under the seat as shown.
Instructions for obtaining the update label are given in Service Letter No. 132.

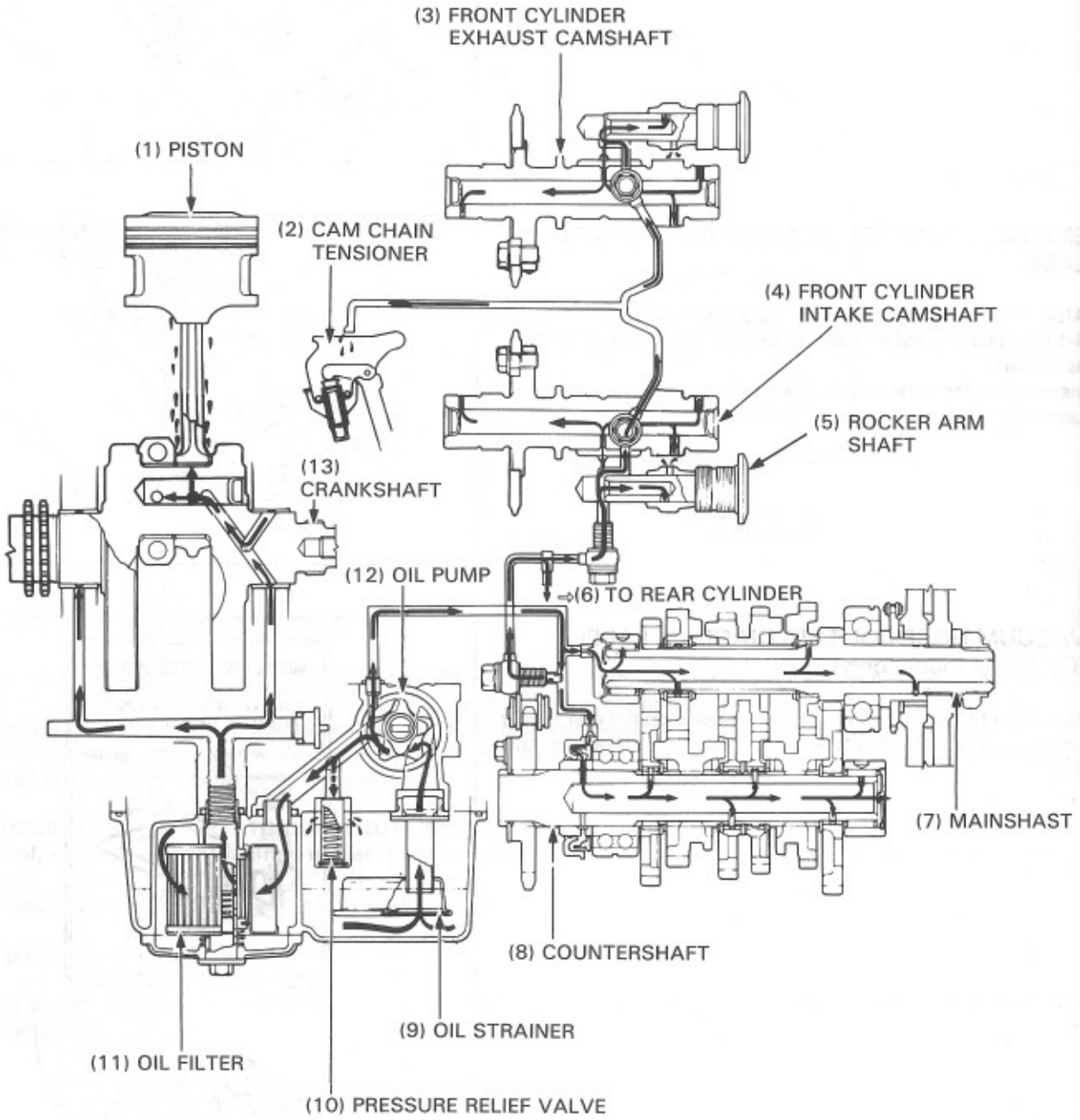


VACUUM HOSE ROUTING DIAGRAM LABEL (California model only)

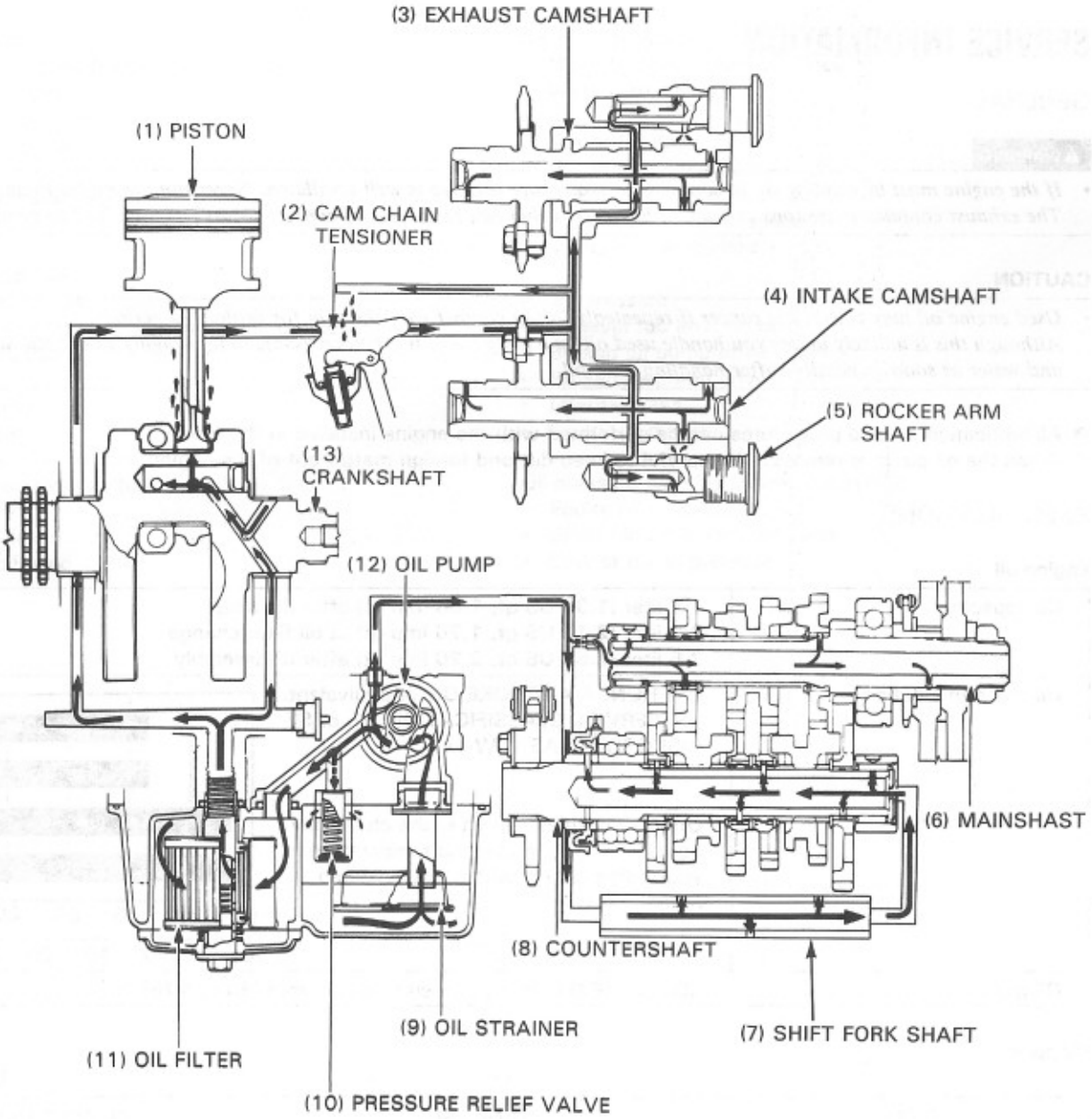
The Vacuum Hose Routing Diagram Label is on the rear fender under the seat. Route the vacuum hoses as shown on this label.



'88:


(3) FRONT CYLINDER EXHAUST CAMSHAFT
(1) PISTON
(2) CAM CHAIN TENSIONER
(4) FRONT CYLINDER INTAKE CAMSHAFT
(5) ROCKER ARM SHAFT
(13) CRANKSHAFT
(12) OIL PUMP
⇨(6) TO REAR CYLINDER
(7) MAINSHAST
(8) COUNTERSHAFT
(9) OIL STRAINER
(11) OIL FILTER
(10) PRESSURE RELIEF VALVE

AFTER '88:


(3) EXHAUST CAMSHAFT
(1) PISTON
(2) CAM CHAIN TENSIONER
(4) INTAKE CAMSHAFT
(5) ROCKER ARM SHAFT
(13) CRANKSHAFT
(12) OIL PUMP
(6) MAINSHAST
(8) COUNTERSHAFT
(9) OIL STRAINER
(7) SHIFT FORK SHAFT
(11) OIL FILTER
(10) PRESSURE RELIEF VALVE

SERVICE INFORMATION

GENERAL

⚠WARNING

- *If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.*

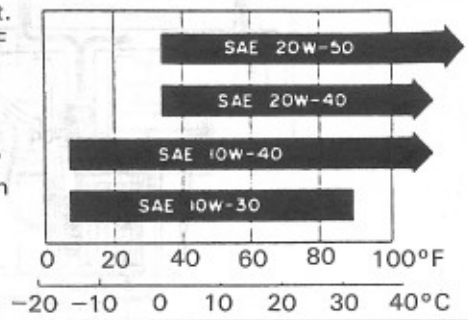
CAUTION

- *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.*

- All lubrication service procedures can be performed with the engine installed in the frame.
- When the oil pump is removed, be careful to keep dirt and foreign matter out of the engine.

SPECIFICATIONS

Engine oil

Oil capacity	1.8 liter (1.90 US qt, 1.58 Imp qt) after draining 2.0 liter (2.11 US qt, 1.76 Imp qt) at oil filter change 2.5 liter (2.64 US qt, 2.20 Imp qt) after disassembly
Oil recommendation	Use HONDA 4-STROKE OIL or equivalent. API SERVICE CLASSIFICATION: SE or SF VISCOSITY: SAE 10W—40 Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range. 
Oil pressure	500 kPa (5.0 kg/cm², 71 psi) at 6,000 rpm (80°C/176°F)

Oil pump

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Rotor tip clearance	0.15 (0.006)	0.20 (0.008)
Pump body clearance	0.15—0.22 (0.006—0.009)	0.35 (0.014)
Pump end clearance	0.02—0.07 (0.001—0.003)	0.10 (0.004)

TORQUE VALUES

Engine oil drain bolt	38 N·m (3.8 kg-m, 27 ft-lb)
Oil filter center bolt	18 N·m (1.8 kg-m, 13 ft-lb)
Oil pressure switch	12 N·m (1.2 kg-m, 9 ft-lb) Apply sealant to the threads (page 1-5)
Oil pump driven sprocket bolt	15 N·m (1.5 kg-m, 11 ft-lb) Apply locking agent to the threads (page 1-5)

TOOLS

Special

Oil pressure gauge	07506–3000000	or equivalent commercially available in U.S.A.
Oil pressure gauge attachment	07510–4220100	

TROUBLESHOOTING

Oil level too low
- Oil not replenished frequently enough
- External oil leaks
- Worn valve stem seal
- Worn valve guide
- Worn piston rings
- Improperly installed piston rings
- Worn cylinder

Oil pressure too high
- Pressure relief valve stuck closed
- Clogged oil filter, gallery, or metering orifice
- Incorrect oil used

Low oil pressure
- Oil level low
- Plugged oil filter or screen
- Pressure relief valve stuck open
- Oil pump faulty
- Internal oil leaks
- Incorrect oil used

Oil contamination
- Oil or filter not changed often enough
- Worn piston rings

Oil emulsification
- Radiator coolant contamination
  - — Blown cylinder head gasket
  - — Leaky coolant passage
- Water contamination

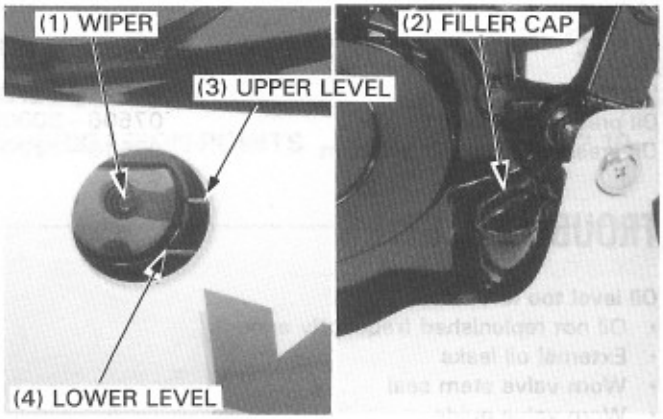
No oil pressure
- Oil level too low; no oil
- Broken oil pump drive chain
- Broken oil pump drive shaft
- Internal leaks
- Faulty oil pump

Oil pressure warning indicator stays on
- Faulty oil pressure switch
- Short circuit in indicator wire
- Low or no oil pressure

ENGINE OIL LEVEL

Run the engine and allow to idle for 2—3 minutes.

Stop the engine and support the motorcycle in an upright position on level ground.
Check the oil level at the engine oil inspection window on the right crankcase cover after a few minutes.
If the inspection window is dirty, clean it by turning the wiper with a screwdriver.
If the oil level is below the lower level mark on the inspection window, remove the filler cap and fill to the upper level mark.



ENGINE OIL & FILTER CHANGE

CAUTION

- *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.

NOTE

- Change engine oil with the engine warm and support the motorcycle in an upright position on level ground to assure complete and rapid draining.

Stop the engine and remove the oil filler cap.
Remove the drain bolt and drain the engine oil.
Remove the oil filter center bolt and oil filter element.
Remove the O-rings from the oil filter cover and center bolt.
Install new O-rings onto the oil filter center bolt and cover.
Apply oil to the O-rings.

Make sure the sealing washer is in good condition and install the drain plug.

TORQUE: 38 N·m (3.8 kg-m, 27 ft-lb)

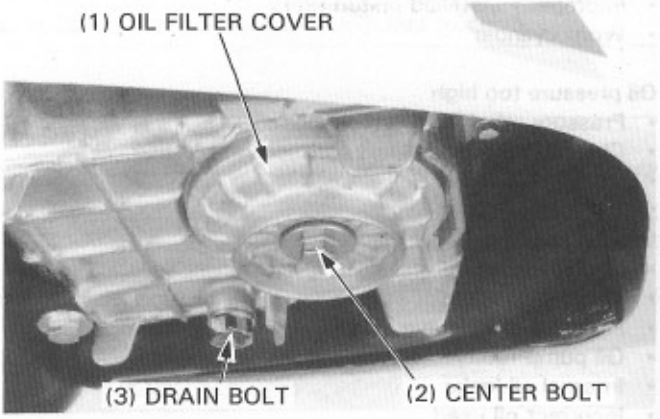
Install the new oil filter with the oil filter center bolt.

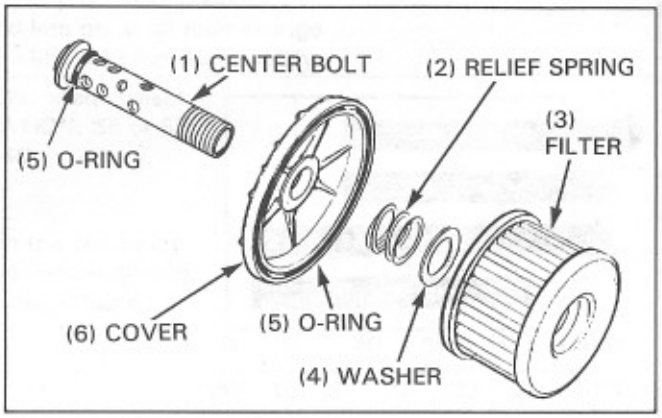
TORQUE: 18 N·m (1.8 kg-m, 13 ft-lb)

Fill the crankcase with the recommended oil.

OIL CAPACITY: 2.0 liter (2.11 US qt 1.76 Imp qt)
after oil filter change

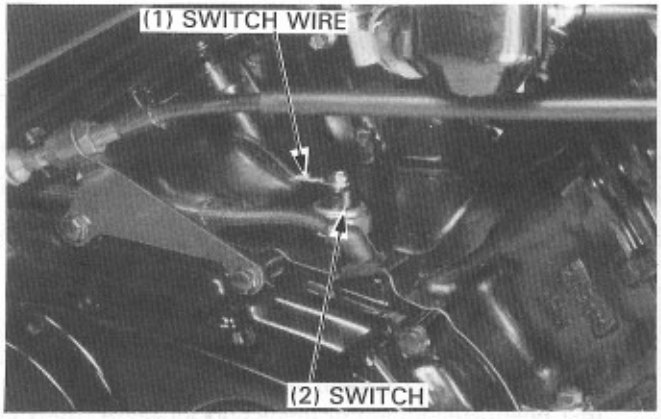
Start the engine and let it idle for 2—3 minutes, then stop the engine.
Make sure that the oil level is at the upper level mark in the inspecetion window and that there are no oil leaks.





OIL PRESSURE CHECK

Check the oil level.
Warm the engine up to normal operating temperature (approximately 80°C/176°F).
Stop the engine, disconnect the oil pressure switch wire and remove the oil pressure switch.



Connect an oil pressure gauge and attachment to the pressure switch hole.

TOOLS:

Oil pressure gauge attachment	**07510—4220100 or equivalent commercially available in U.S.A.**
Oil pressure gauge	**07506—3000000 or equivalent commercially available in U.S.A.**

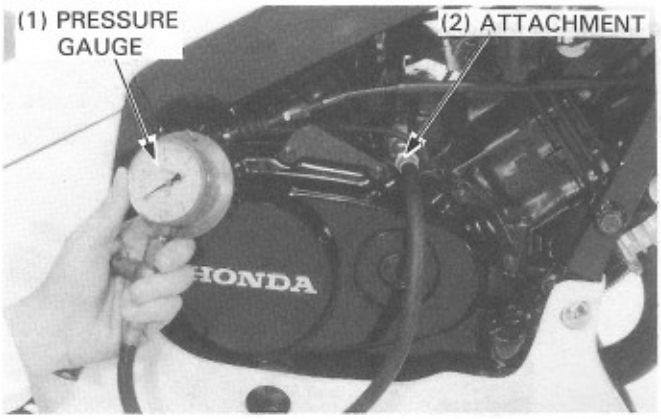
Start the engine.
Check the oil pressure at 6,000 rpm.

OIL PRESSURE: 500 kPa (5.0 kg/cm², 71 psi)

Stop the engine.
Apply sealant to the pressure switch threads (page 1-5) and tighten the switch.

TORQUE: 12 N·m (1.2 kg-m, 9 ft-lb)

Connect the oil pressure switch wire.



OIL PUMP

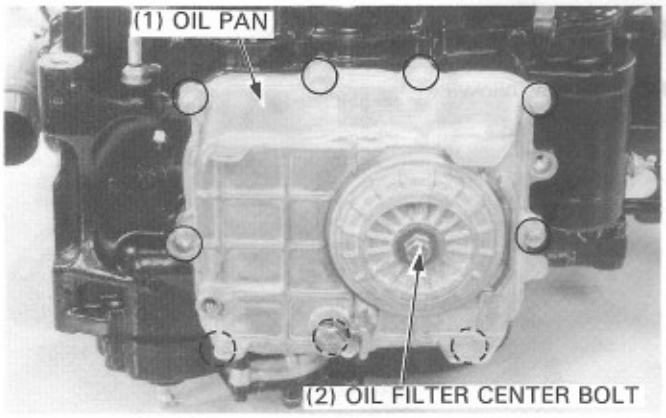
REMOVAL

NOTE

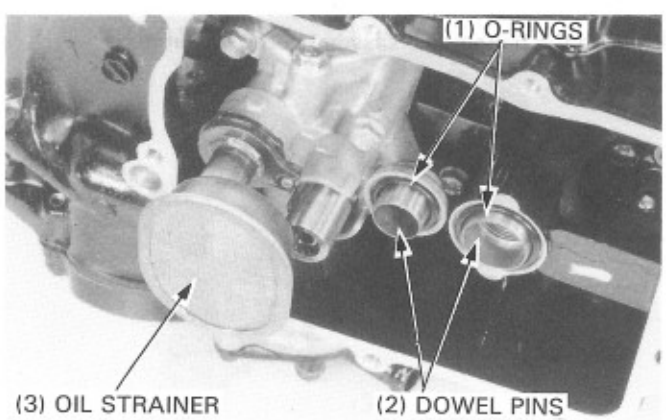
- The oil pump can be removed with the engine in the frame.

Remove the exhaust pipe and muffler (page 12-4).
Drain the engine oil (page 2-4).

Remove the following:
– oil filter
– oil pan

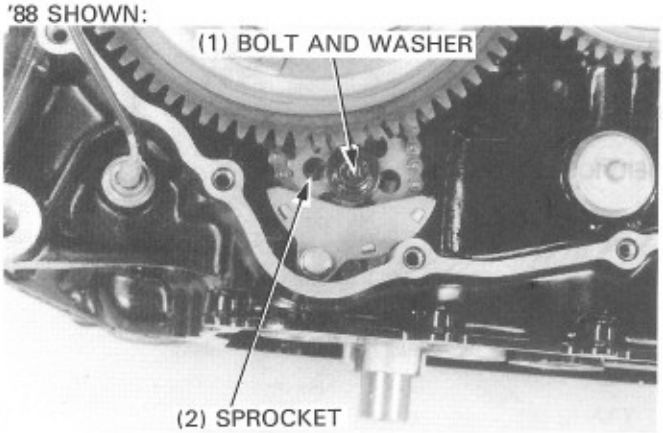


– dowel pins and O-rings
– oil strainer
Clean the oil strainer and oil pan.



Remove the right crankcase cover (page 7-3).
Remove the oil pump driven sprocket bolt, washer and sprocket.

'88 SHOWN:



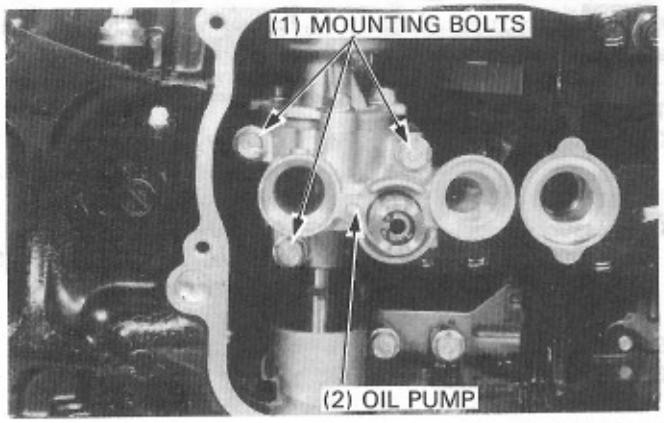
CAUTION

- *A locking agent is applied to the bolt threads. Be careful not to wrench off the bolt head.*

NOTE

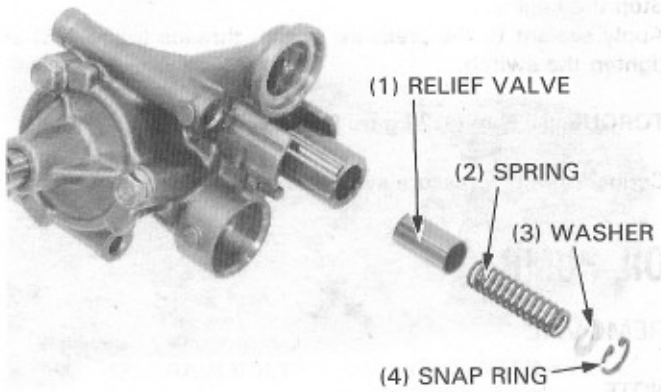
- The oil pump drive sprocket and drive chain can be removed after the clutch is removed.

Remove the following:
- oil pump mounting bolts
- oil pump
- dowel pin, oil orifice and O-ring

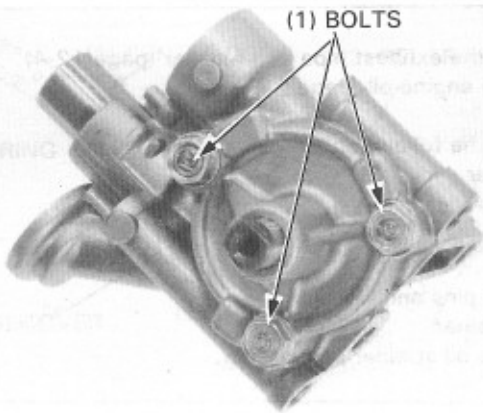


DISASSEMBLY

Remove the following:
- snap ring
- washer
- spring
- pressure relief valve



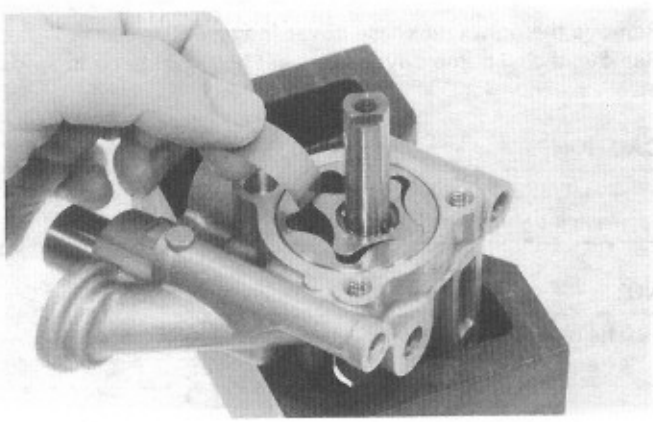
Remove the bolts and disassemble the oil pump.



INSPECTION

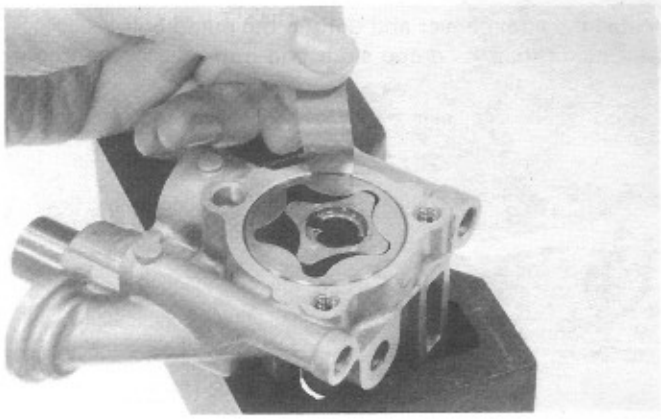
Measure the rotor tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



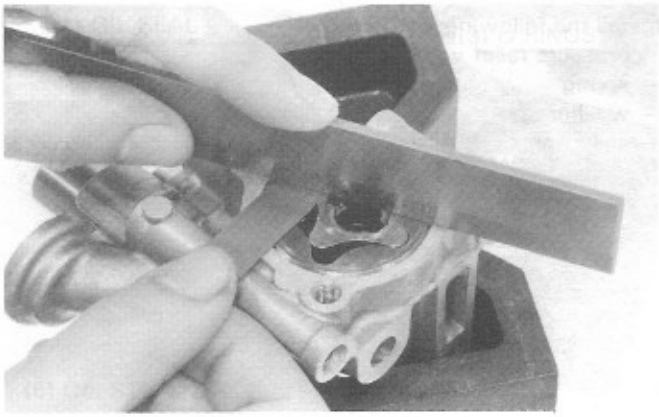
Measure the pump body clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)



Remove the rotor shaft and measure the pump end clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



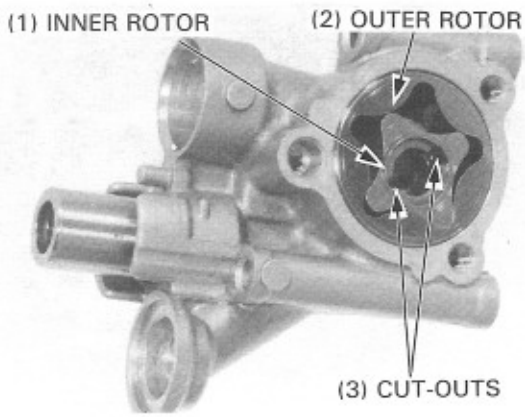
ASSEMBLY

Clean all the disassembled parts and coat them with clean engine oil.

Install the inner and outer rotors into the oil pump body.

NOTE

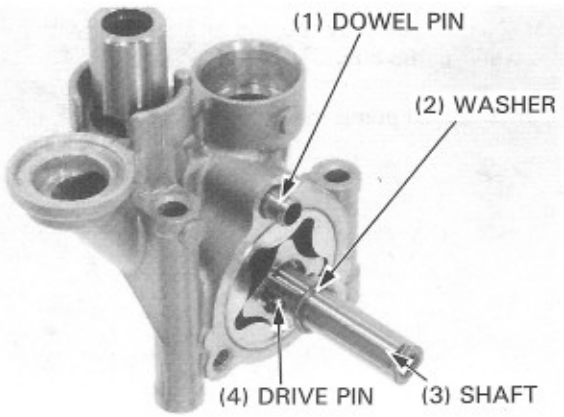
- Install the inner rotor by facing the cut-outs toward the cover.



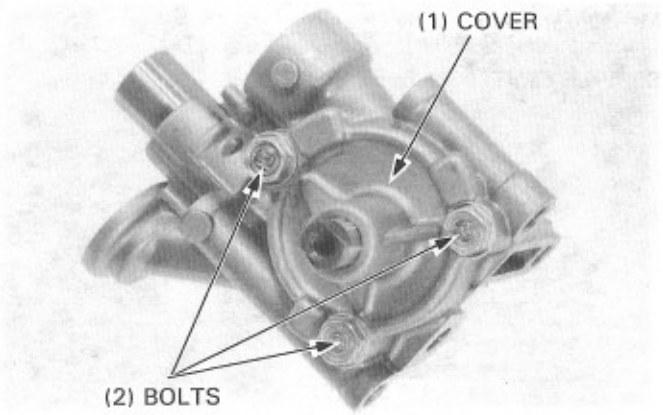
Install the drive pin into the drive shaft hole.
Install the drive shaft into the pump body.

Position the drive pin in the cut-outs of the inner rotor then push it in the correct position.

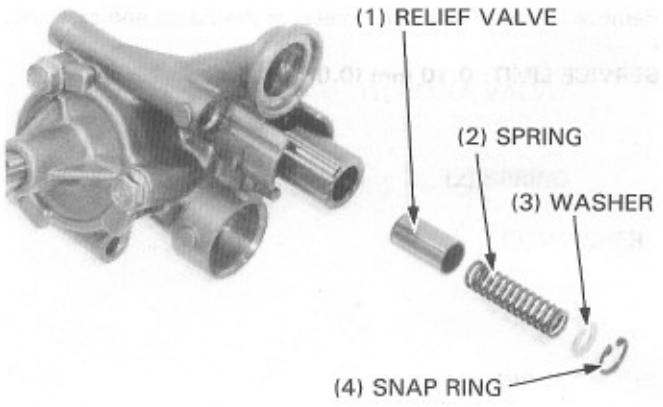
Install the thrust washer onto the drive shaft.
Install the dowel pin in the pump body.



Install the pump cover and tighten the pump bolts.
Make sure that the pump shaft and rotors turn smoothly.

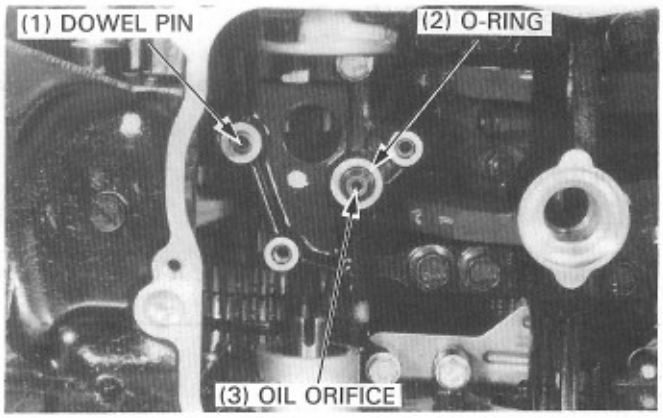


Install the following:
- pressure relief valve
- spring
- washer
- snap ring



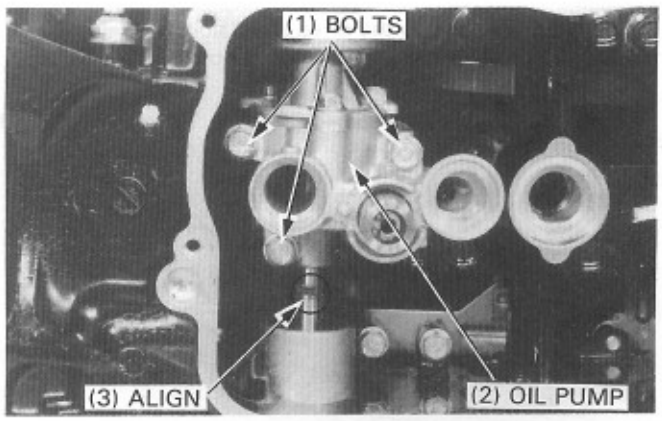
INSTALLATION

Install the dowel pin, oil orifice and O-ring.



Install the oil pump by aligning its shaft end with the cut-out in the water pump shaft.

Tighten the oil pump mounting bolts securely.



Install the oil pump driven sprocket by aligning the cut-out of the sprocket with the projection on the oil pump.

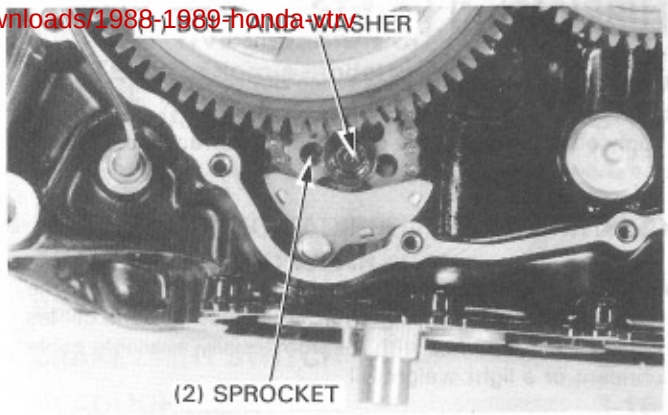
NOTE

- Note the installation direction (page 7-10).

Apply locking agent to the driven sprocket bolt threads (page 1-5).
Tighten the driven sprocket bolt with the washer to the specified torque.

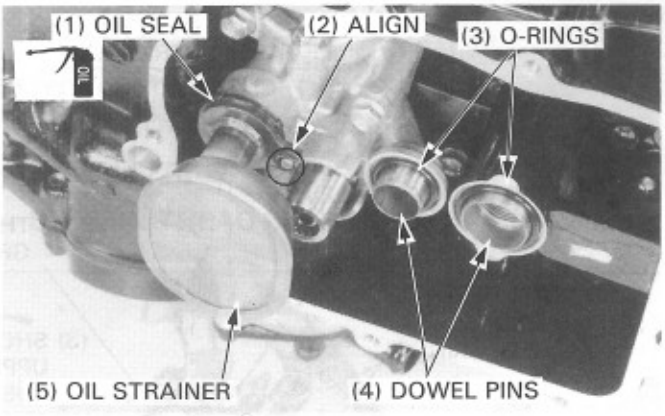
TORQUE: 15 N·m (1.5 kg-m, 11 ft-lb)

Install the right crankcase cover (page 7-13).

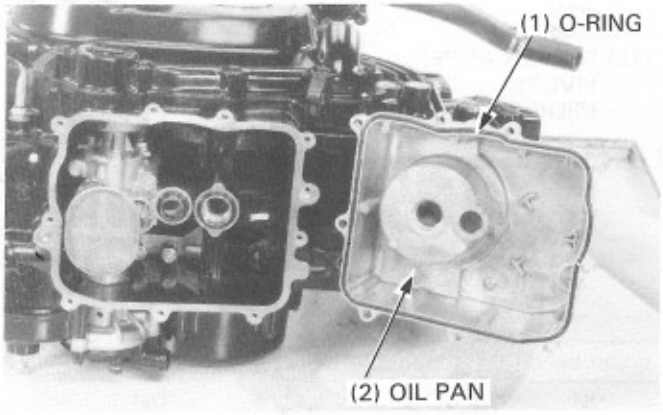


Install the oil strainer with a new oil seal by aligning its cut-out with the projection on the oil pump.

Install the O-rings and dowel pins.



Check the condition of the oil pan O-ring. Install a new one if necessary.



Install the oil pan and tighten the bolts securely.
Install the oil filter and tighten the filter center bolt to the specified torque.

TORQUE: 18 N·m (1.8 kg-m, 13 ft-lb)

Install the exhaust pipe and muffler (page 12-4).
Fill the crankcase with the recommended engine oil (page 2-2).