

HONDA SERVICE MANUAL

Product: 1989 Honda FL400R PILOT ATV Service Repair
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89
FL400R
PILOT

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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 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 possible 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 service methods or tools selected.

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HOW TO USE THIS MANUAL

Follow the Competition Maintenance Schedule recommendations (Page 3-2) to ensure that the FL400R is always in peak operating condition.

Sections 1 through 3 apply to the whole FL400R, while sections 4 through 20 describe parts of the FL400R, 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 and specifications, torque values, general instructions, tools and troubleshooting for the section. The subsequent pages give detailed procedures for the section.

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

All information, illustrations, directions and specifications included in this publication are based on the latest product information available at the time of approval for printing. HONDA MOTOR CO., LTD. reserves the right to make changes at any time without notice and without incurring any obligation whatever. No part of this publication may be reproduced without written permission.

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Service Publication Office

CONTENTS

	GENERAL INFORMATION	1
	LUBRICATION	2
	MAINTENANCE	3
ENGINE	FUEL SYSTEM	4
	COOLING SYSTEM	5
	ENGINE REMOVAL/INSTALLATION	6
	CYLINDER HEAD/CYLINDER/PISTON	7
	RECOIL STARTER/ALTERNATOR/ BALANCER	8
	CRANKCASE/CRANKSHAFT	9
	BELT CONVERTER	10
	TRANSMISSION	11
	FRONT WHEEL/SUSPENSION/ STEERING	12
	REAR WHEEL/SUSPENSION/ DRIVE SHAFT	13
	CHASSIS	BRAKES
	FRAME PARTS/EXHAUST SYSTEM	15
ELECTRICAL	IGNITION SYSTEM	16
	BATTERY/CHARGING SYSTEM	17
	ELECTRIC STARTER	18
	LIGHTS/SWITCHES	19
	WIRING DIAGRAM	20
	TROUBLESHOOTING	21
	INDEX	22

1. GENERAL INFORMATION

GENERAL SAFETY	1-1	TORQUE VALUES	1-5
SERVICE RULES	1-1	TOOLS	1-7
MODEL IDENTIFICATION	1-2	CABLE & HARNESS ROUTING	1-9
SPECIFICATIONS	1-3	OPTIONAL PARTS LIST	1-14

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 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.

▲ WARNING

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

CAUTION

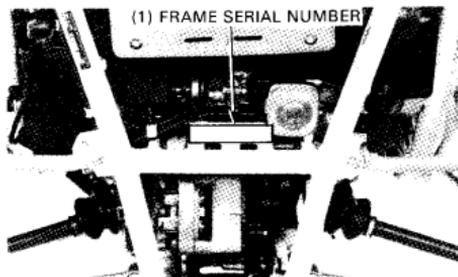
Used oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods.

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

- Use genuine Honda or Honda-recommended parts and lubricants or their equivalents. Parts that don't meet Honda's design specifications may damage the motorcycle.
- Use the special tools designed for this product.
- Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
- When torquing bolts or nuts, begin with larger-diameter or inner bolt first, and tighten to the specified torque diagonally in 2-3 steps, unless a particular sequence is specified.
- Clean parts in non-flammable or high flash point solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
- After reassembly, check all parts for proper installation and operation.
- Use only metric tools when servicing this vehicle. Metric bolts, nuts, and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the motorcycle.
- Route all electrical wires as shown on pages 1-9 through 1-13, Cable and Harness Routing.

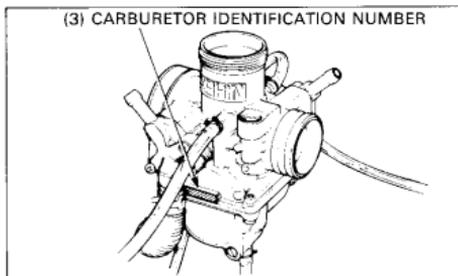
MODEL IDENTIFICATION



The frame serial number is stamped on the rear frame.



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



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

SPECIFICATIONS

ITEM		SPECIFICATIONS
DIMENSIONS	Overall length Overall width Overall height Wheelbase Tread Front Rear Seat height Ground clearance Dry weight Weight distribution Front Rear	2,195 mm (86.4 in) 1,510 mm (59.4 in) 1,450 mm (57.0 in) 1,580 mm (62.2 in) 1,120 mm (44.1 in) 1,235 mm (48.6 in) 325 mm (12.8 in) 235 mm (9.3 in) 269 kg (593 lb) 88 kg (194 lb) 181 kg (399 lb)
FRAME	Type Front suspension, travel Rear suspension, travel Rim size Front Rear Front tire size, pressure Rear tire size, pressure Maximum weight capacity Front brake Rear brake Fuel tank capacity Fuel reserve capacity Toe-in Camber angle Front Rear Caster angle Front Trail length	Space frame Double wishbone, 150 mm (5.9 in) at axle Double wishbone, 180 mm (7.1 in) at axle 10 × 5.5 AT 10 × 9.0 AT AT 22×7.00-10☆☆, 35±4 kPa (0.35±0.04 kg/cm ² , 5.1±0.6 psi) AT 24×11.00-10☆☆☆, 45±5 kPa(0.45±0.05 kg/cm ² , 6.5±0.7 psi) 170 kg (375 lb) Hydraulic operated leading trailing shoe Single disc brake 16.0 lit (4.23 US gal, 3.52 Imp gal) 5.0 lit (1.32 US gal, 1.10 Imp gal) 11 mm (0.43 in) 0° 0° 1°30' 27 mm (1.1 in)
ENGINE	Type Cylinder arrangement Bore × stroke Displacement Compression ratio Balancer oil capacity Lubrication system Fuel required Air filtration Coolant capacity	Liquid-cooled, 2-stroke engine Single cylinder, 20° inclined from vertical 80 × 79 mm (3.15×3.11 in) 397.1 cc (24.22 cu in) 6.2 : 1 0.24 lit (0.25 US qt, 0.21 Imp qt) at disassembly Gasoline/oil mixture Pre-mixed fuel : gasoline 20 : oil 1 Oiled polyuretane foam 2.04 lit (2.16 US qt, 1.79 Imp qt) at total

GENERAL INFORMATION

ITEM		SPECIFICATIONS
CARBURETOR	Type Venturi diameter Identification number Float level Main jet (standard) Slow jet (standard) Air screw opening Idle speed Jet needle clip Throttle lever free play	Piston valve 32 mm (1.26 in) PE 34A 16.0 mm (0.63 in) #140 #52 1-1/8 turns out 1,300 ± 150 rpm 2nd groove from the top 3-8 mm (0.12-0.31 in)
DRIVE TRAIN	Belt converter Transmission oil capacity Belt converter ratio Final reduction ratio Gear shift pattern	Torque sensitive belt converter 1.0 lit (1.06 US qt, 0.88 imp qt) at disassembly Forward: 3.000-0.700 Reverse: 3.000-0.700 Forward: 9.857 Reverse: 9.884 Right gear shift lever operated return system Forward-Neutral-Reverse
ELECTRICAL	Ignition system Ignition timing "F" mark Spark plug Standard For cold climate (Below 5°C/ 41°F) Spark plug gap Alternator capacity Battery Starting system	DC-CDI 19.5 ± 1.2°/BTDC at 2,000 rpm NGK BR7ES CHAMPION RN-4C NGK BR6ES CHAMPION RN-5C 0.7-0.8 mm (0.028-0.031 in) 0.2 kW/5,000 rpm 12 V-12 A Starter motor and recoil starter
LIGHTS	Headlight Tail/stop light Reverse light Neutral indicator Reverse indicator Fuel reserve indicator Temperature indicator Parking brake indicator	12 V-25/25 W×2 12 V-3/32 cp 12 V-21 cp 12 V-3.4 W 12 V-3.4 W 12 V-3.4 W 12 V-3.4 W 12 V-3.4 W 12 V-3.4 W

TORQUE VALUES

ENGINE

Item	Q'ty	Thread Dia (mm)	Torque N·m (kg·m, ft·lb)	Remarks
Cylinder head nut	8	8	27 (2.7, 20)	
Cylinder nut	4	10	43 (4.3, 31)	
Crankcase stud bolt	4	10	12 (1.2, 9)	
Balancer drive gear nut	1	30	120 (12.0, 87)	Stake the nut Left hand thread
Starter driven gear bolt	4	8	27 (2.7, 20)	Apply a locking agent to the threads
Recoil starter pulley nut	1	12	85 (8.5, 61)	
Balancer bearing holder bolt	2	6	12 (1.2, 9)	NOTE 1
Starter motor bolt	2	6	12 (1.2, 9)	
Water pump impeller nut	1	6	10 (1.0, 7)	
Coolant drain bolt	2	6	10 (1.0, 7)	
Engine balancer oil level check bolt	1	6	10 (1.0, 7)	
Engine balancer oil drain bolt	1	12	25 (2.5, 18)	
Spark plug	1	14	18 (1.8, 13)	
Torque limiter lock nut	1	18	60 (6.0, 43)	Stake the nut
Transmission oil drain bolt	1	8	22 (2.2, 16)	
Float chamber plug	1	-	10 (1.0, 7)	
Transmission oil check bolt	1	12	25 (2.5, 18)	
Change arm bolt and nut	1	6	13 (1.3, 9)	
Brake disc hub nut	1	34	110 (11.0, 80)	Stake the nut Apply a locking agent to the threads
Drive pulley bolt	1	12	90 (9.0, 65)	
Movable drive face cover bolt	3	6	12 (1.2, 9)	
Movable drive face cover cap	1	30	20 (2.0, 14)	
Spider plate nut	1	27	130 (13.0, 94)	Stake the nut
Weight roller bolt	3	6	12 (1.2, 9)	
Driven pulley bolt	1	10	40 (4.0, 29)	
Neutral switch	1	10	13 (1.3, 9)	
Reverse switch	1	10	13 (1.3, 9)	
Coolant temperature sensor	1	16	18 (1.8, 13)	
Thermosatic switch	1	16	18 (1.8, 13)	

FRAME

Item	Q'ty	Thread Dia (mm)	Torque N·m (kg·m, ft·lb)	Remarks
Parking brake adjust bolt lock nut	1	8	18 (1.8, 13)	
Tie-rod lock nut	4	12	55 (5.5, 40)	
Fuel drain bolt	1	12	50 (5.0, 36)	
Engine-transmission connecting bracket bolt	6	12	55 (5.5, 40)	
Engine mounting bolt	2	10	40 (4.0, 29)	
Transmission case mounting bolt	3	10	40 (4.0, 29)	
Wheel nut	16	10	65 (6.5, 47)	
Front axle nut	2	18	80-120 (8.0-12.0, 58-87)	
Steering shaft nut	1	12	55 (5.5, 40)	NOTE 2
Front shock absorber nut	4	10	45 (4.5, 33)	NOTE 1
Front arm mounting nut	8	10	40 (4.0, 29)	NOTE 1, 2
Front arm ball joint nut	4	12	50-60 (5.0-6.0, 36-43)	
Tie-rod ball joint nut	4	12	55 (5.5, 40)	NOTE 1
Brake pipe joint nut	10	10	14 (1.4, 10)	Apply oil to the threads
Rear axle nut	2	18	80-120 (8.0-12.0, 58-87)	
Rear shock absorber upper nut	2	10	45 (4.5, 33)	NOTE 1
Rear shock absorber lower bolt	2	10	45 (4.5, 33)	

(CONTD.)

GENERAL INFORMATION

FRAME (CONTD.)

Item	Q'ty	Thread Dia (mm)	Torque N·m (kg·m, ft·lb)	Remarks
Radius rod nut (frame side)	2	12	65 (6.5, 47)	NOTE 1
(knuckle side)	2	12	65 (6.5, 47)	NOTE 1, 2
Rear upper arm nut	4	10	40 (4.0, 29)	NOTE 1, 2
Rear lower rod nut (frame side)	4	12	65 (6.5, 47)	NOTE 1, 2
(knuckle side)	2	12	65 (6.5, 47)	NOTE 1
Rear shock absorber stay bolt	4	12	55 (5.5, 40)	
Rear knuckle ball joint nut	2	10	40-50 (4.0-5.0, 29-36)	
Brake reservoir cover screw	4	4	2 (0.2, 1.4)	
Bleed valve	3	8	6 (0.6, 4.3)	
Brake lever pivot bolt	2	6	6 (0.6, 4.3)	
Brake lever pivot nut	2	6	6 (0.6, 4.3)	
Master cylinder cover bolt	2	5	5 (0.5, 3.6)	
Brake light switch screw	2	4	1.2 (0.12, 0.9)	
Brake hose bolt	3	10	35 (3.5, 25)	
Wheel cylinder bolt	4	6	8 (0.8, 6)	
Brake shoe adjuster bolt	4	6	8 (0.8, 6)	
Pad pin	1	8	18 (1.8, 13)	
Pad pin plug	1	8	2.5 (0.25, 1.8)	
Caliper pin bolt	2	12	28 (2.8, 20)	
Brake disc bolt	6	8	33 (3.3, 24)	
Parking brake base bolt	2	8	23 (2.3, 17)	
Seat bolt	4	10	60 (6.0, 43)	
Seat belt bolt	4	7/16 in	33 (3.3, 24)	
Roll bar nut	20	10	45 (4.5, 33)	
Engine guard bolt	6	8	35 (3.5, 25)	
Fuel reserve sensor	1	18	33 (3.3, 24)	
Radiator hose band	4	—	1 (0.1, 0.7)	
Exhaust chamber/muffler clamp bolt	1	8	23 (2.3, 17)	
Steering column bolt	4	8	33 (3.3, 24)	
Gearshift lever lock nut	1	8	15 (1.5, 11)	
Gearshift lever	1	17	43 (4.3, 31)	
Choke knob nut	1	12	2.5 (0.25, 1.8)	
Recoil starter handle lock nut	1	12	2.5 (0.25, 1.8)	

NOTE 1: Re-use strictly prohibited.

NOTE 2: Apply grease to the threads and 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(0.50, 3.6)	5 mm screw	4 (0.40, 2.9)
6 mm bolt, nut	10(1.0, 7.2)	6 mm screw, 6 mm bolt with 8 mm head	9 (0.9, 6.5)
8 mm bolt, nut	22(2.2, 16)	6 mm flange bolt, nut	12 (1.2, 9)
10 mm bolt, nut	35(3.5, 25)	8 mm flange bolt, nut	27 (2.7, 20)
12 mm bolt, nut	55(5.5, 40)	10 mm flange bolt, nut	40 (4.0, 29)

TOOLS

NEWLY PROVIDED TOOL

DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. SEC.
Recoil pulley holder	07KMB-HE00100			8
Flywheel puller	07KMC-HE00100			8
Special washer	07KMF-HE0000A	(U.S.A. only)		9
Driven pulley compressor	07KME-HE0010A	(U.S.A. only)		10
Drive pulley puller	07KMC-HE00200			10
Bearing remover, 28 mm	07KMC-HE00300			11

SPECIAL

DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. SEC.
Lock nut wrench, 30 x 64 mm	07916-MB00001			8
Socket wrench, 46 mm	07JMA-MN50100			11
Clutch center holder	07923-9580000	Clutch center holder	07HGB-001010A (U.S.A. only)	11
Bearing remover set, 12 mm	07936-1660001			5
-bearing remover assembly 12 mm	07936-1660101			5
-remover head, 12 mm	07936-1660110			5
-remover shaft	07936-1660120			5
-remover sliding weight	07741-0010201			5
Bearing remover set, 25 mm	07936-ZV10000	(Not available in U.S.A.)		9
-remover shaft assembly, 25 mm	07936-ZV10100			9
-remover sliding weight	07741-0010201			9
Bearing remover, 17 mm	07936-3710300			11, 12
Remover handle	07936-3710100			11, 12
Remover sliding weight	07741-0010201	Remover sliding weight	07936-3710200	11, 12
Sliding shaft	07736-0010101			11
Universal bearing puller	07631-0010000	or equivalent commercially available in U.S.A.		9, 13
Ball joint puller	07941-6920003			11, 12, 13
Flare nut wrench	07921-0010100			12, 14
Attachment	07945-4150400			5
Housing puller	07HAC-PK40100			9
Attachment, 28 x 30 mm	07946-1870100			5, 10, 12
Oil seal driver	07948-SC20200	Fork seal driver	07947-KA50000	13
Attachment	07GAD-SD40101			11
Compressor attachment	07959-MB10000			12
Dis/assembly tool (A)	07965-3710101	Oil seal driver	07965-MC70100	13
Disassembly/assembly collar	07965-GC70100			13
Universal bead breaker	GN-AH-958-BB1	(U.S.A. only)		13
Adapter plate	07972-VM0010A	(U.S.A. only)		13
Chankcase assembly tool	07965-VM00000	(Not available in U.S.A.)		9
-threaded adapter	07965-VM00300	Threaded adapter	07931-KF00200 (U.S.A. only)	9
-threaded shaft	07965-VM00200	Threaded shaft	07931-ME4000A (U.S.A. only)	9
-assembly collar	07965-VM00100			9
Assembly bolt	07965-1660200			9
Holder base	07967-KC10100			12
Spherical bearing driver	07HMF-HC00100	Fork seal driver	07GAD-PH70100	12, 13
Attachment	07HMF-MM90400			13
Flywheel puller	07933-2000000			10
Snap ring pliers	07914-5670100			10

(CONTD.)

GENERAL INFORMATION

DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. SEC.
Snap ring pliers	07914-3230001	or equivalent commercially available in U.S.A.		14
Christie battery charger	≅MC1012 2	(U.S.A. only)		17
Honda battery tester	07GMJ-0010000	(U.S.A. only)		17
Kowa digital multi-meter or Sanwa electric tester or Kowa electric tester	07411-0020000 07308-0020001 TH-5H	Digital multi-meter (U.S.A. only)	KS-AHM-32-003	16, 17, 18 19

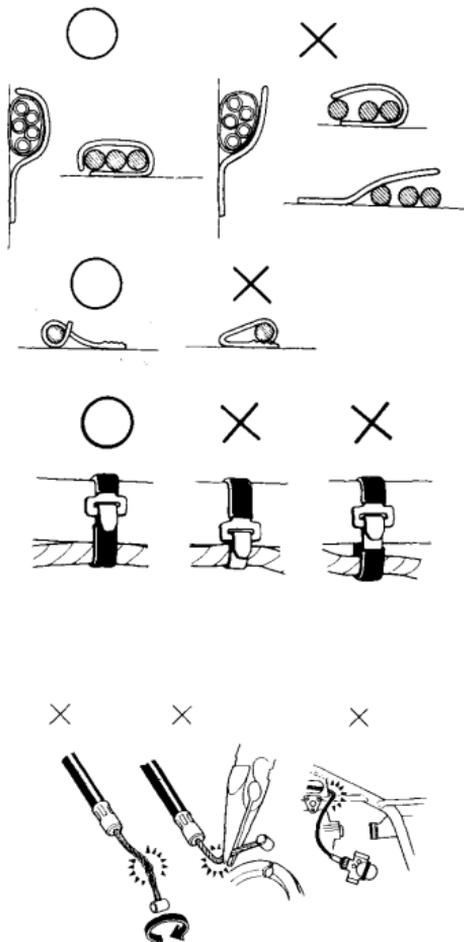
COMMON

DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. SEC.
Float level gauge	07401-0010000			4
Tor x ^B driver (T20H)	07703-0010400			4
Tor x ^B driver grip	07703-0010300			4
Gear holder	07724-0010100	(Not available in U.S.A.)		8
Universal holder	07725-0030000			10
Flywheel holder	07725-0040000	or equivalent commercially available in U.S.A.		8
Attachment, 37 x 40 mm	07746-0010200			10
Attachment, 42 x 47 mm	07746-0010300			10, 11, 12, 13
Attachment, 52 x 55 mm	07746-0010400			9
Attachment, 62 x 68 mm	07746-0010500			11, 13
Attachment, 72 x 75 mm	07746-0010600			9, 11
Attachment, 24 x 26 mm	07746-0010700			10
Pilot, 17 mm	07746-0040400			11
Pilot, 20 mm	07746-0040500			12
Pilot, 25 mm	07746-0040600			8
Pilot, 30 mm	07746-0040700			9
Pilot, 35 mm	07746-0040800			11, 13
Pilot, 22 mm	07746-0041000			12
Pilot, 28 mm	07746-0041100			11, 12
Retainer wrench body	07710-0010401			10
Bearing remover shaft	07746-0050100	or equivalent commercially available in U.S.A.		12
Bearing remover head, 20 mm	07746-0050600			12
Shock absorber compressor - compressor screw assembly	07GME-0010000 07GME-0010100	Shock absorber compressor	07959-3290001	12 12
Driver	07749-0010000			5, 8, 9, 11, 12, 13

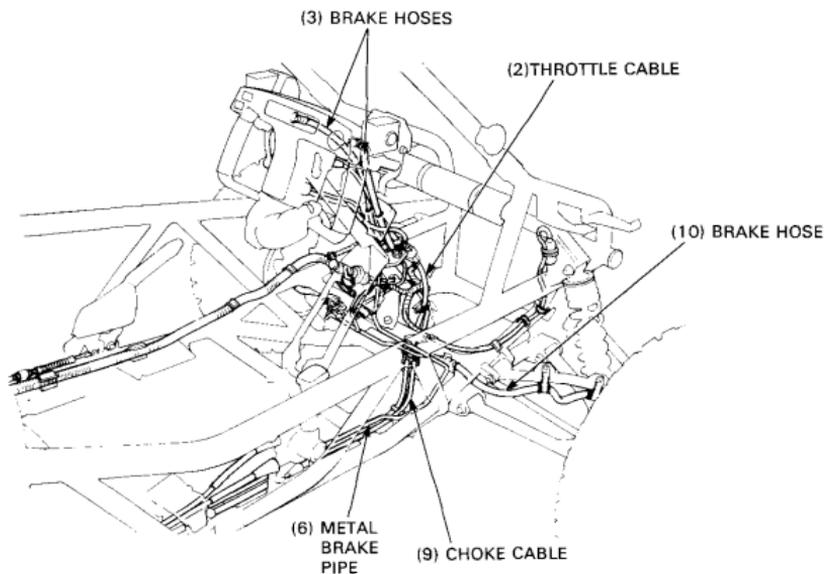
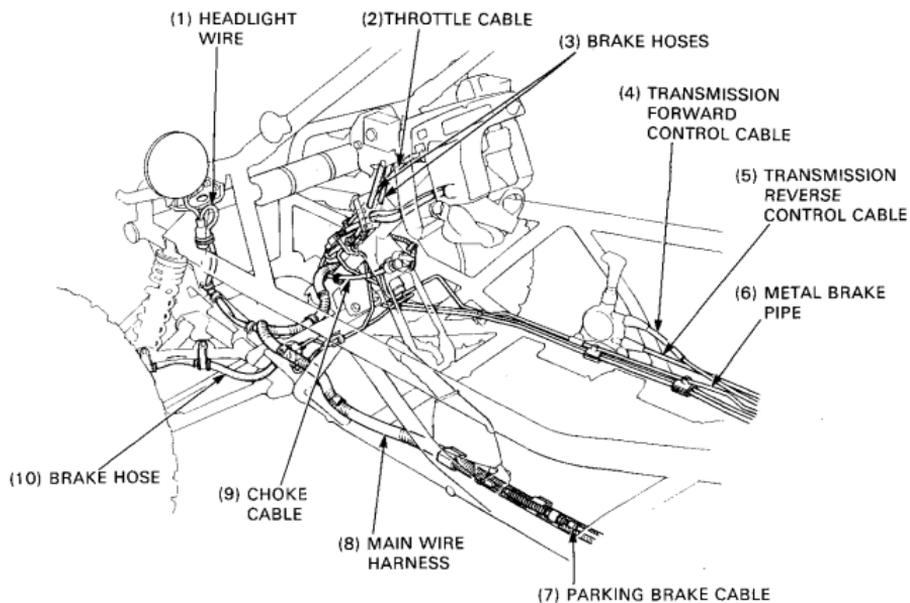
CABLE & HARNESS ROUTING

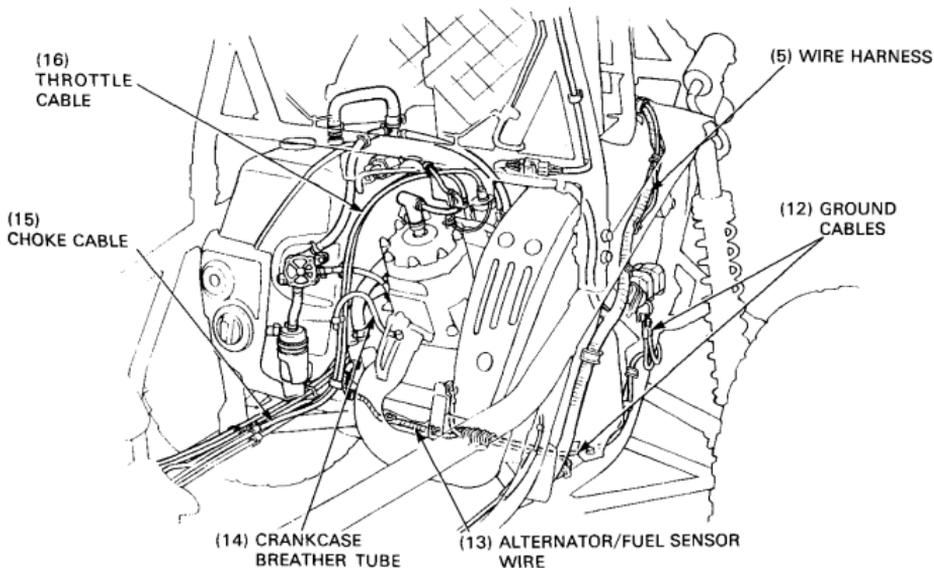
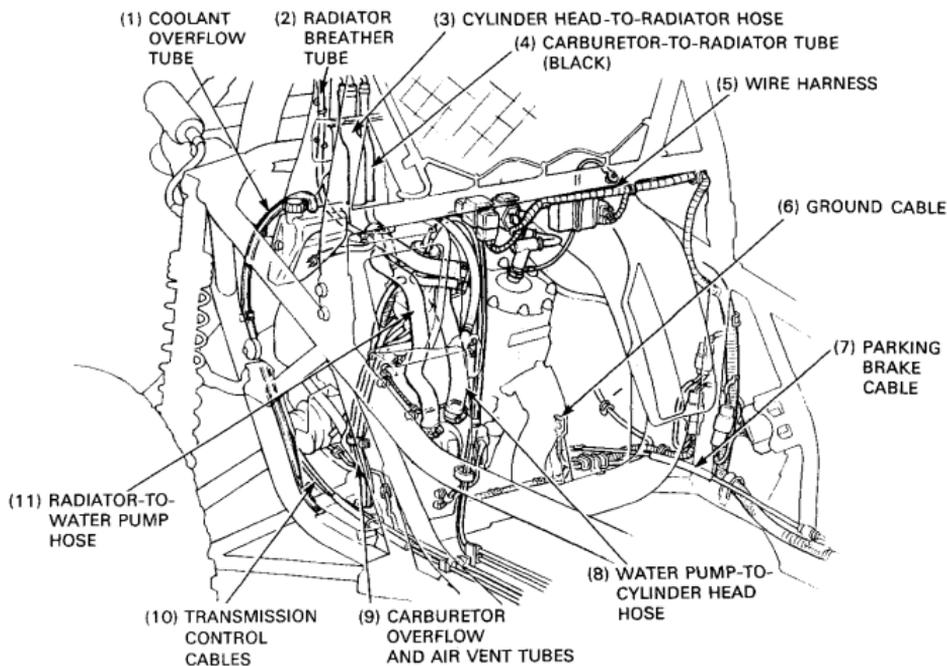
Note the following when routing cables and wire harnesses:

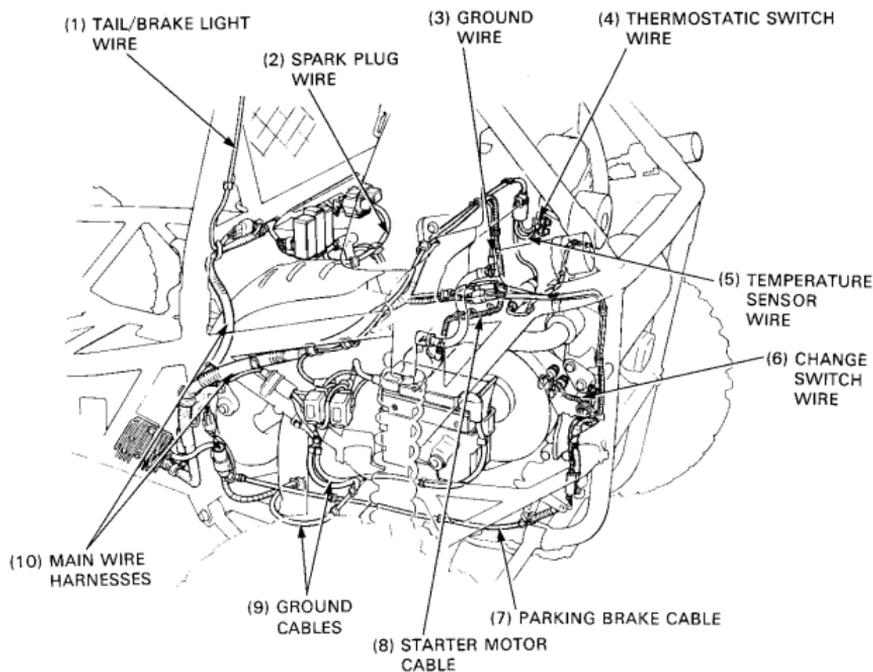
- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze wires against welds or the ends of clamps.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.
- Route harnesses so they are neither pulled taut nor have excessive slack.
- Route wire harness so avoid sharp edges or corners. Also avoid the projected ends of bolts and screws.
- 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 a protective tape or replace them.
- 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.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.
- Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

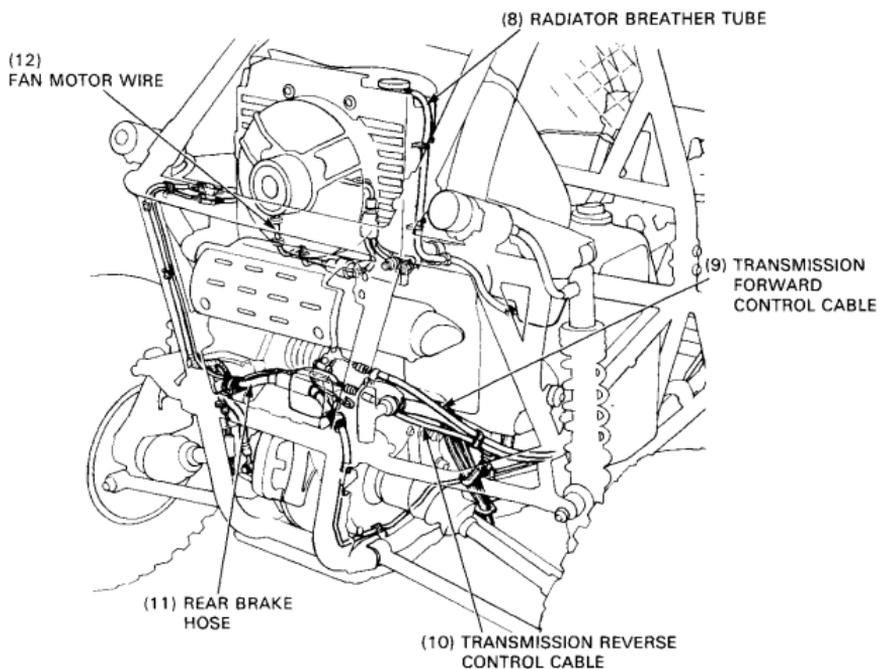
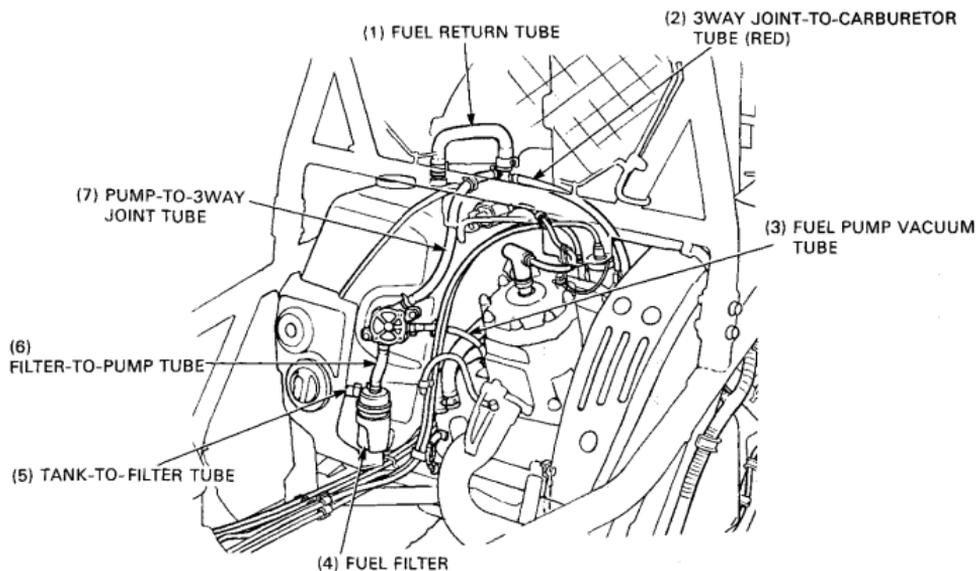


O: CORRECT
X: INCORRECT









OPTIONAL PARTS LIST

ITEM	REMARKS												
<p>ENGINE</p> <ul style="list-style-type: none"> ● Oversize piston rings ● Oversize pistons <table border="1"> <thead> <tr> <th>Piston oversize</th> <th>Piston manufacturing tolerance mm (in)</th> </tr> </thead> <tbody> <tr> <td>0.25 mm (0.01 in)</td> <td>80.164-80.182 (3.1561-3.1568)</td> </tr> <tr> <td>0.50 mm (0.02 in)</td> <td>80.414-80.432 (3.1659-3.1666)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Piston oversize</th> <th>Cylinder I.D. mm (in)</th> </tr> </thead> <tbody> <tr> <td>0.25 mm (0.01 in)</td> <td>80.244-80.274 (3.1592-3.1604)</td> </tr> <tr> <td>0.50 mm (0.02 in)</td> <td>80.494-80.524 (3.1690-3.1702)</td> </tr> </tbody> </table>	Piston oversize	Piston manufacturing tolerance mm (in)	0.25 mm (0.01 in)	80.164-80.182 (3.1561-3.1568)	0.50 mm (0.02 in)	80.414-80.432 (3.1659-3.1666)	Piston oversize	Cylinder I.D. mm (in)	0.25 mm (0.01 in)	80.244-80.274 (3.1592-3.1604)	0.50 mm (0.02 in)	80.494-80.524 (3.1690-3.1702)	<p>0.25 mm (0.01 in), 0.50 mm (0.02 in): 2 sizes 0.25 mm (0.01 in), 0.50 mm (0.02 in): 2 sizes The cylinder must be rebored, and an oversize piston and piston rings fitted if worn or seized. Use the correct oversize piston rings with an oversize piston.</p> <p>CAUTION:</p> <ul style="list-style-type: none"> • <i>Be careful not to damage the cylinder wall.</i> <p>NOTE:</p> <ul style="list-style-type: none"> • After reboring, remove all burrs from each port edge and chamber as indicated below.
Piston oversize	Piston manufacturing tolerance mm (in)												
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	<p>Upper and lower edge</p> <p>Both sides edge</p>												
<p>CARBURETOR</p> <ul style="list-style-type: none"> ● Main jet 	<p># 135, # 138, # 142, # 145 (See page 4-14 for altitude and temperature adjustment)</p>												

2. LUBRICATION

SERVICE INFORMATION	2-1	TRANSMISSION OIL	2-2
TROUBLESHOOTING	2-1	LUBRICATION POINTS	2-3
ENGINE BALANCER OIL	2-2		

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 transmission 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.

- This section describes the inspection and replacement of the engine balancer oil and transmission oil.
- The FL400R's two-stroke engine requires a gasoline and oil, pre-mixed fuel.

SPECIFICATIONS

Recommended engine oil	Honda 2-stroke oil or equivalent
Mixing ratio (Gasoline Oil)	20 : 1
Engine balancer oil capacity	0.24 lit(0.25 U.S.qt,0.21 Imp qt) at disassembly 0.19 lit(0.20 U.S.qt,0.17 Imp qt) at draining
Transmission oil capacity	1.00 lit(1.06 U.S.qt,0.88 Imp qt) at disassembly 0.96 lit(1.01 U.S.qt,0.84 Imp qt) at draining

Engine balancer oil, Transmission oil recommendation

Use HONDA 4-stroke oil or equivalent

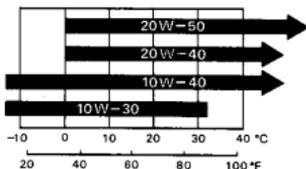
API service classification: SE or SF

Viscosity: SAE 10W-40

NOTE

- Other oil viscosities may be used when the average temperature in your riding area is within indicated range.

OIL VISCOSITIES



TORQUE VALUES

Engine balancer oil drain bolt	25 N·m(2.5 kg-m, 18 ft-lb)
Engine balancer oil level check bolt	10 N·m(1.0 kg-m, 7 ft-lb)
Transmission oil check bolt	25 N·m(2.5 kg-m, 18 ft-lb)
Transmission oil drain bolt	22 N·m(2.2 kg-m, 16 ft-lb)

TROUBLESHOOTING

Engine does not have sufficient power

- Deteriorated fuel-oil mixture
- Worn rings and/or piston
- Worn cylinder

Engine stalls frequently

- Deteriorated fuel-oil mixture

Spark plug is fouled

- Incorrect fuel-oil mixture ratio

Engine balancer oil level and transmission oil level too low

- External oil leaks
- Worn right crankshaft oil seal (balancer oil)

ENGINE BALANCER OIL**OIL LEVEL**

Place the vehicle on level ground.

Check the oil level by removing the oil level check bolt. If the oil does not flow out from the bolt hole, the oil level is low; Remove the oil filler cap and add the recommended oil (page 2-1) until the oil flows out from the bolt hole.

Make sure the sealing washer on the check bolt is in good condition and tighten the bolt.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)

Reinstall the oil filler cap.

**OIL CHANGE****NOTE**

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

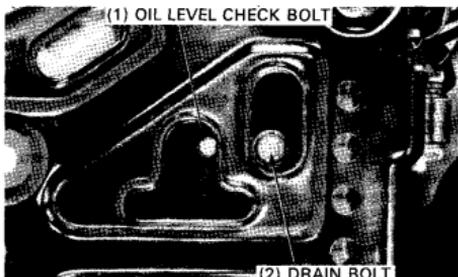
Remove the balancer oil filler cap.

Place an oil drain pan under the engine to catch the oil, and remove the drain bolt.

After the oil has been completely drained, check that the drain bolt sealing washer is in good condition and tighten the drain bolt.

TORQUE: 25 N·m (2.5 kg-m, 18 ft-lb)

Fill the engine with proper amount of the recommended oil, referring to the oil level check procedure.

**TRANSMISSION OIL****OIL LEVEL**

Place the vehicle on level ground and remove the oil level check/filler bolt.

The oil should flow out from the bolt hole.

If oil does not flow out, pour the recommended oil (page 2-1) into the oil level check/filler bolt hole until oil flows out.

After checking, tighten the bolt.

TORQUE: 25 N·m (2.5 kg-m, 18 ft-lb)

OIL CHANGE

Remove the oil level check/filler bolt.

Place an oil drain pan under the transmission case to catch the oil, and remove the drain bolt.

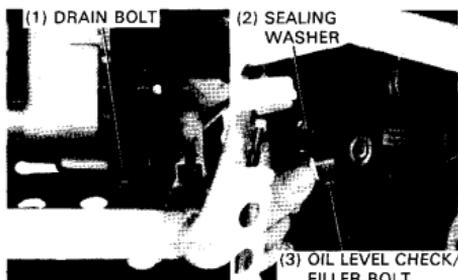
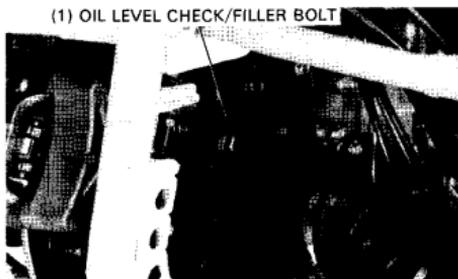
After oil has been completely drained, check that the sealing washer on the bolt is in good condition and tighten the drain bolt.

TORQUE: 22 N·m (2.2 kg-m, 16 ft-lb)

Fill the transmission case with proper amount of the recommended oil referring to the oil level check procedure.

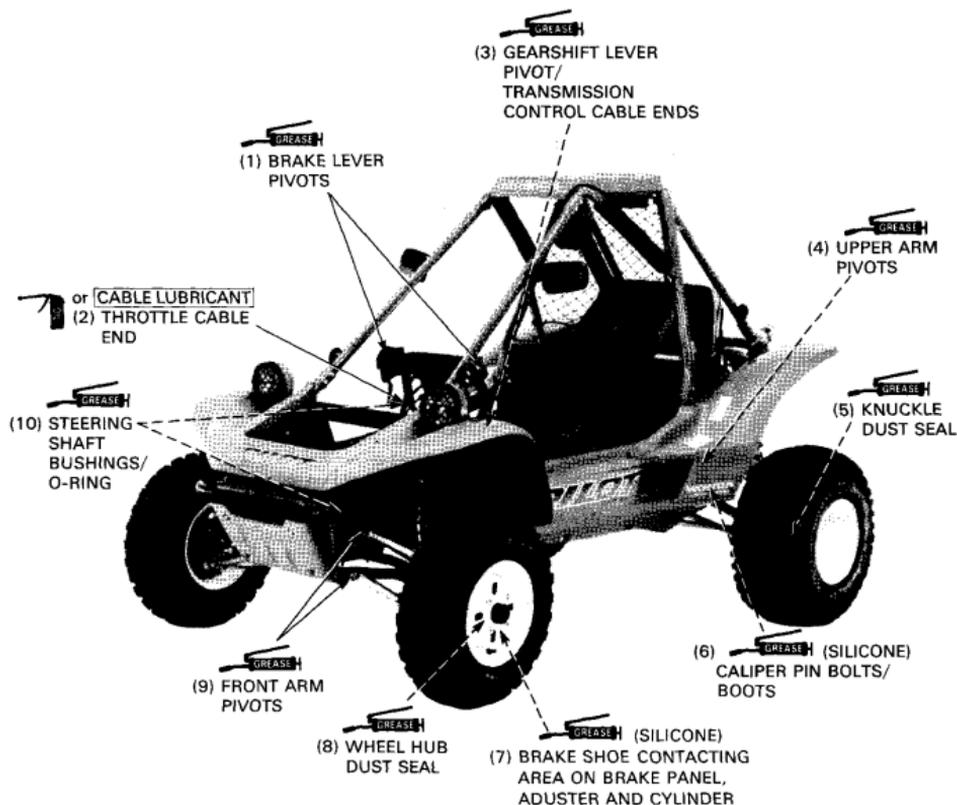
Tighten the oil level check/filler bolt.

TORQUE: 25 N·m (2.5 kg-m, 18 ft-lb)



LUBRICATION POINTS

Use general purpose grease when no other specification is given. Apply oil or grease to the other sliding surfaces and cables not shown here.



MEMO

SERVICE INFORMATION	3-1	BRAKE SHOE WEAR	3-9
MAINTENANCE SCHEDULE	3-2	BRAKE PAD WEAR	3-9
PERIODIC REPLACEMENT PARTS	3-3	BRAKE SYSTEM	3-9
FUEL LINE	3-4	PARKING BRAKE SYSTEM	3-10
FUEL FILTER	3-4	TRANSMISSION CONTROL CABLE	3-11
THROTTLE OPERATION	3-4	ENGINE GUARD AND SKID PLATE	3-11
CARBURETOR CHOKE	3-5	SUSPENSION	3-11
AIR CLEANER	3-5	SPARK ARRESTER	3-12
AIR CLEANER CASE DRAIN TUBE	3-6	NUTS, BOLTS, FASTENERS	3-12
SPARK PLUG	3-6	WHEELS/TIRES	3-12
CARBURETOR IDLE SPEED	3-7	STEERING SHAFT BUSHINGS	3-13
RADIATOR COOLANT	3-7	STEERING SYSTEM	3-13
COOLING SYSTEM	3-7	DRIVE SHAFT	3-14
BELT CONVERTER	3-8	HEADLIGHT AIM	3-14
DRIVE BELT INSPECTION	3-8	CYLINDER COMPRESSION	3-14
BRAKE FLUID	3-8		

SERVICE INFORMATION

GENERAL

▲WARNING

- Place the vehicle in an upright position on level ground before starting any work.
- 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 the work area or where gasoline is stored.
- 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.

Engine balancer oil	(page 2-2)
Transmission oil	(page 2-2)

SPECIFICATIONS

<ENGINE>

Spark plug gap	0.7-0.8 mm (0.028-0.031 in)
Spark plug	NGK : BR7ES [BR6ES] CHAMPION: RN-4C [RN-5C]
[]: Cold climate(Below 5 °C/41 °F)	
Throttle level free play	3-8 mm(0.12-0.31 in)
Idle speed	1,300 ± 150 rpm
Cylinder compression	1,050-1,100 kPa (10.5-11.0 kg/cm ² , 149-156 psi)

<FRAME>

Tire minimum tread depth	4 mm (0.16 in)
Tire pressures (cold)	FRONT: 35 ± 4 kPa (0.35 ± 0.04 kg/cm ² , 5.1 ± 0.6 psi) REAR : 45 ± 5 kPa (0.45 ± 0.05 kg/cm ² , 6.5 ± 0.7 psi)
Front brake lever free play	15-25 mm (5/8-1 in)
Front brake shoe lining thickness	Standard : 4.0 mm (0.16 in) Service limit : 2.0 mm (0.08 in)
Toe-in	11 mm (0.43 in)
Drive belt width	Standard : 30.4 mm (1.20 in) Service limit : 28 mm (1.10 in)
Steering preload	2.2 kg (4.85 lb) maximum
Transmission control cable free play	2-5 mm(0.08-0.20 in)

MAINTENANCE

TORQUE VALUES

Spark plug	18 N·m (1.8 kg-m, 13 ft-lb)
Parking brake arm lock nut	18 N·m (1.8 kg-m, 13 ft-lb)
Tie-rod lock nut	55 N·m (5.5 kg-m, 40 ft-lb)

MAINTENANCE SCHEDULE

The maintenance intervals shown in the following schedule are based upon average driving conditions. Machines subjected to severe use, or driven in unusually dusty, sandy, wet or muddy areas, require more frequent servicing.

Perform the Pre-drive Inspection in Owner's Manual at each scheduled maintenance period.

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

ITEM	FREQUENCY	EVERY	INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating day)	REFER TO PAGE
* FUEL LINE		YEAR I			3-4
* FUEL FILTER		6 MONTH R			3-4
* THROTTLE OPERATION			I	I	3-4
* CARBURETOR CHOKE				I	3-5
AIR CLEANER		(NOTE 1)		C	3-5
AIR CLEANER CASE DRAIN TUBE		(NOTE 2)		I	3-6
SPARK PLUG				I	3-6
* CARBURETOR IDLE SPEED			I	I	3-7
RADIATOR COOLANT		(NOTE 3)		I	3-7
* COOLING SYSTEM				I	3-7
TRANSMISSION OIL		2 YEAR R		I	2-2
BALANCER OIL		2 YEAR R		I	2-2
* BELT CONVERTER			I	I	3-8
DRIVE BELT		(NOTE 1,2)	I	I	3-8
BRAKE FLUID		(NOTE 3)		I	3-8
* BRAKE SHOE WEAR		YEAR I, (NOTE 2)			3-9
* BRAKE PAD WEAR		YEAR I, (NOTE 1,2)			3-9
BRAKE SYSTEM			I	I	3-9
PARKING BRAKE SYSTEM			I	I	3-10
ENGIN GUARD AND SKID PLATE				I	3-11
* SUSPENSION				I	3-11
* SPARK ARRESTER		(NOTE 4)		C	3-12
* NUTS, BOLTS, FASTENERS			I	I	3-12
** WHEELS/TIRES			I	I	3-12
** STEERING SYSTEM		YEAR I			3-13

* Should be serviced by an authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.

** In the interest of safety, we recommend these items be serviced only by an authorized Honda dealer.

NOTES: 1. Service more frequently when riding in dusty areas, sand or snow.

2. Service more frequently after riding in very wet or muddy conditions.

3. Replace every 2 years. Replacement requires mechanical skill.

4. U.S.A. only.

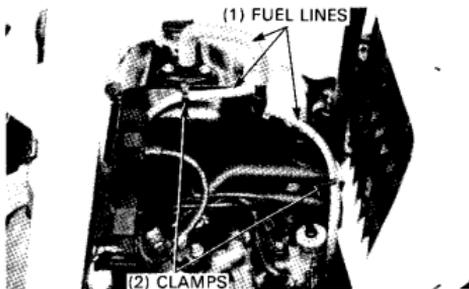
PERIODIC REPLACEMENT PARTS

The following table serves as a guide in replacing parts when the machine is subject to severe use, or driven in unusually dusty areas.

Part Name	Interval	Items to be checked
Piston	Every 30 hours	Damage at skirt, wear
Piston pin	Every 30 hours	Seizure, damage, wear
Piston rings	Every 30 hours	Chipped end, wear
Connecting rod big end bearing	Every 30 hours	Damage
Connecting rod small end bearing	Every 30 hours	Damage
Spark plug	Every 10 hours	Worn electrode, improper gap, cracked insulator
Transmission oil	Every 30 hours	Dirt, contamination
Balancer oil	Every 30 hours	Dirt, contamination
Drive belt	Every 10 hours	Wear, cracks, damage
Belt converter	Every 10 hours	Wear, cracks, damage
Front brake shoes	—	Wear
Rear brake pads and pad pin	—	Wear indicator
Front/Rear brake fluid	Every year	Dirt, contamination
Brake hoses	Every 4 years	Cracks, damage
Cylinder head gasket	Every 30 hours	Leak
Exhaust pipe spring	—	Wear on hook
Reed valve	Every 30 hours	Improper seating, cracks

FUEL LINE

Check the fuel lines for damage and that they are secured with the clips at each connection and clamped properly. Replace any parts that are damaged, leaking or that show signs of deterioration.



FUEL FILTER

⚠ 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.
- Wipe up spilled gasoline at once.

Check the fuel filter for clogging.

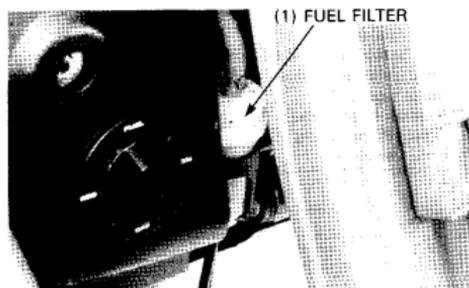
If filter replacement is necessary, follow the replacement procedure that follows.

Turn the fuel valve OFF.

Remove the fuel filter from the fuel line by loosening the clip at each end.

Install a new filter in the reverse order of removal.

After installing, turn the fuel valve ON and check for fuel leaks.



THROTTLE OPERATION

Check the throttle opens smoothly and completely and closes automatically without drag in all steering positions.

Measure the throttle lever free play at the end of the throttle lever.

FREE PLAY: 3-8 mm(0.12-0.31 in)

Check that the throttle cable doesn't bind or stick through the entire range of steering positions.

Replace the cable if it has become worn or kinked.

Lubricate the cable if necessary (page 2-3).

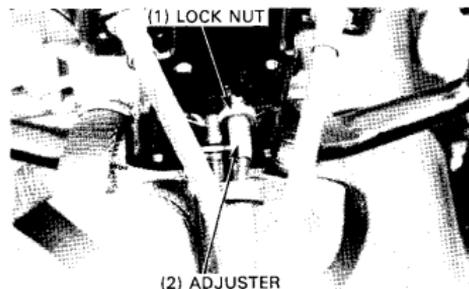
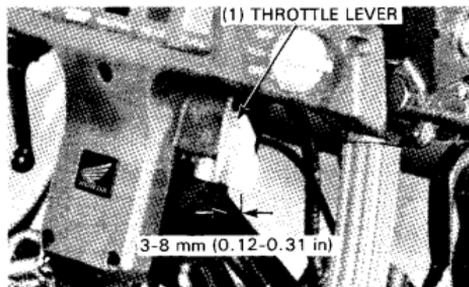
Adjust as follows:

The cable adjuster is located behind the steering wheel.

Loosen the lock nut and turn the adjuster to obtain the correct free play.

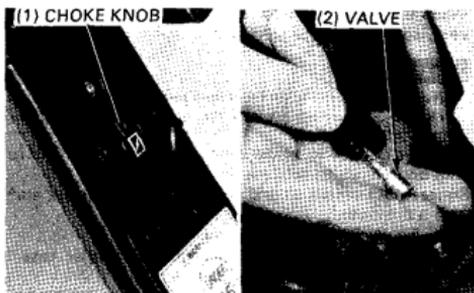
After adjusting, tighten the lock nut securely.

Check that the throttle lever moves smoothly and returns completely.



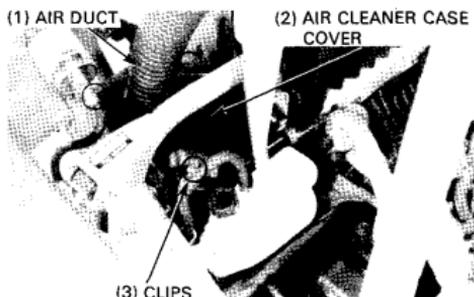
CARBURETOR CHOKE

Check the choke knob for smooth operation. Disconnect the choke cable from the carburetor and check the choke valve for scars. After inspection, reinstall the valve and thread the nut securely. Lubricate the cable if necessary. (page 2-3)

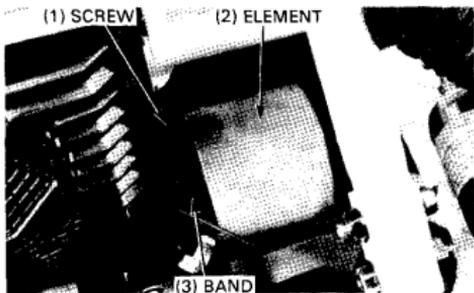


AIR CLEANER

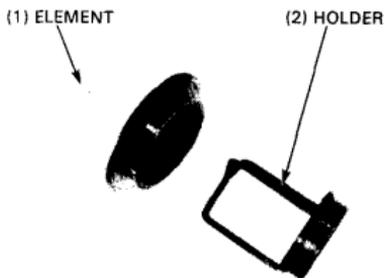
Loosen the air duct clip and disconnect the air duct from the air cleaner case cover. Remove the air cleaner case cover by unfastening the four clips.



Loosen the band and remove the air cleaner element with the holder.



Remove the element from the element holder.



MAINTENANCE

Wash the element in non-flammable or high flash point solvent, squeeze out the solvent thoroughly, and allow to dry.

▲WARNING

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

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

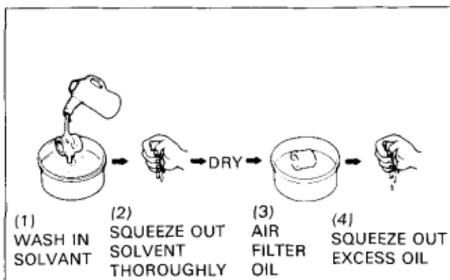
Squeeze out excess oil and wipe oil off the element surface with a dry cloth.

Place the element onto the element holder.

Install the element assembly into the air cleaner case and secure it by fastening the element band.

Install the air cleaner case cover and secure it with four clips.

Connect the air duct to the air cleaner case cover and secure it with the clip.



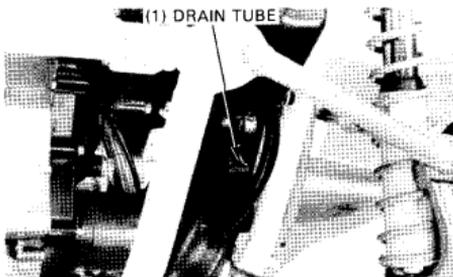
AIR CLEANER CASE DRAIN TUBE

Remove the drain tube and drain the deposits.

Reinstall the drain tube.

NOTE

- Service more frequently when riding very wet or muddy conditions, or when deposits are seen in the drain tube.



SPARK PLUG

Disconnect the spark plug cap and remove the spark plug.

Visually inspect the spark plug electrodes for wear.

The center electrode should have square edges and the side electrode should have a constant thickness.

Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped. Measure the gap with a wire-type feeler gauge and adjust by carefully bending the side electrode.

RECOMMENDED REPLACEMENT PLUG:

	NGK	CHAMPION
Standard	BR7ES	RN-4C
For cold climate (Below 5°C/41°F)	BR6ES	RN-5C

SPARK PLUG GAP: 0.7-0.8 mm (0.028-0.031 in)

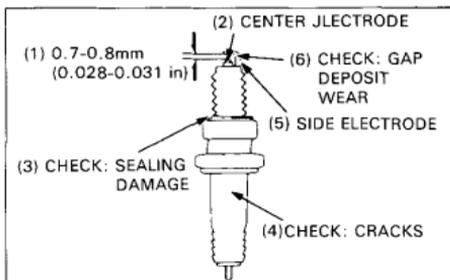
Check the sealing washer and replace with a new one if damaged.

With the sealing washer attached, thread the spark plug in by hand to prevent cross-threading.

Tighten the spark plug to the specified torque.

TORQUE: 18 N·m (1.8 kg·m, 13 ft·lb)

Connect the spark plug cap.



CARBURETOR IDLE SPEED

▲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.*

NOTE

- Inspect and adjust the idle speed after all other maintenance items have been performed and are within specifications.
- The engine must be warm for accurate idle speed inspection and adjustment.

Warm the engine up to the normal operating temperature. Connect a tachometer to the engine and check the carburetor idle speed.

Turn the throttle stop screw using a screwdriver to obtain the specified idle speed.

IDLE SPEED: 1,300 ± 150 rpm

RADIATOR COOLANT

Check the coolant level of the reserve tank with the engine at normal operating temperature. The level should be maintained between the "UP" and "LOW" level lines.

If necessary, remove the reserve tank cap then fill to the "UP" level line with a 50/50 mixture of distilled water and antifreeze.

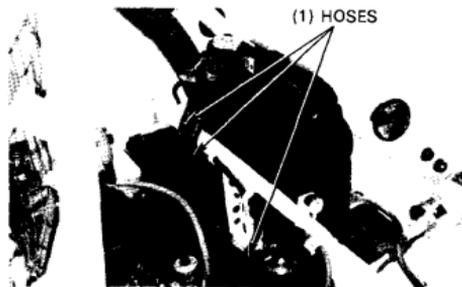
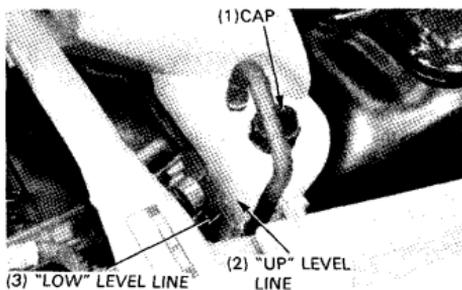
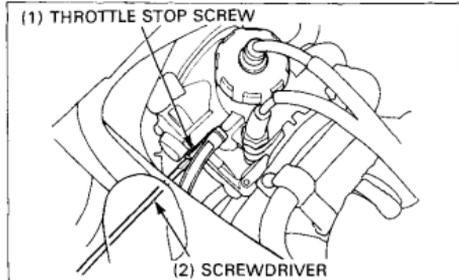
COOLING SYSTEM

Remove the radiator grille from the radiator shroud.
Remove the radiator shroud from the radiator by removing the four bolts.

Make sure the hoses are in good condition: they should not show any signs of deterioration.

Replace any hose that show any signs of deterioration.

Check that all hose bands are tight.



MAINTENANCE

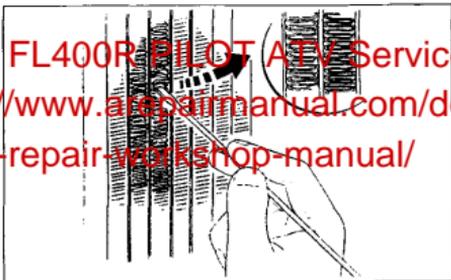
Check the air passages for clogging or damage.

Straighten bent fins or collapsed core tubes and remove insects, mud or any obstructions with compressed air or low water pressure.

Replace the radiator if the air flows restricted over more than 30% of the radiating surface.

For radiator replacement, refer to page 9-4.

Product: 1989 Honda FL400R PILOT ATV Service R
Full Download: <https://www.airepairmanual.com/download/motorcycle-service-repair-workshop-manual/>



BELT CONVERTER

Place the rear of the FL400R on a secure support, with the wheels off the ground and remove the rear wheels (page 13-3).

Start the engine and move the gear selector in and out of gear to check the drive and driven pulleys operation while gradually revving up the engine.

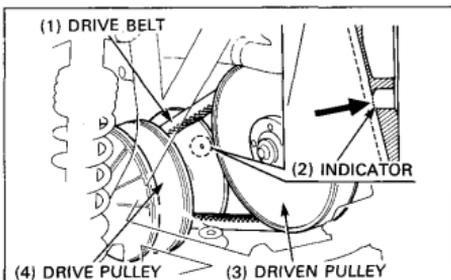
Shut the engine off.

Check the drive belt for wear or damage as described below.

Install the rear wheels (page 13-3).

NOTE

- Replace the drive pulley if the hole (indicator) is visible on the drive pulley (section 10).
- Prevent any foreign objects from falling between the drive housing and the movable face.



DRIVE BELT INSPECTION

Remove the drive belt (page 10-3).

Check for wear, burnt spots or cracks.

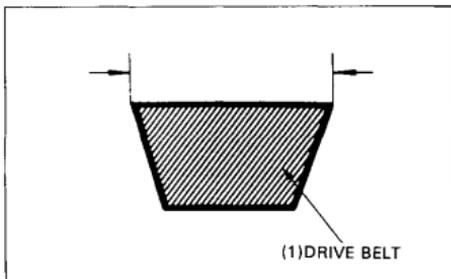
Replace the belt if it shows any signs of damage.

Measure the width of the drive belt.

Replace with a new one if necessary (page 10-3).

STANDARD: 30.4 mm(1.20 in)

SERVICE LIMIT: 28 mm(1.10 in)



BRAKE FLUID

Check that the brake fluid reservoirs are full.

If the level is near the lower level mark, fill the reservoir up to the upper level mark.

Check the entire system for leaks if the level is low.

CAUTION

- When adding brake fluid, be sure the reservoir is horizontal before the cap is removed, or brake fluid may spill out.
- Use only DOT 4 brake fluid from a sealed container.
- Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.
- Never allow contamination (dirt, water, etc.) to enter the brake fluid reservoir.

