HONDA GOLD WING

About This Manual

The service procedures in this supplement are unique to the 1985 GL1200L. In those instances where the Interstate or Aspencade model procedures apply, refer to the base service manual.

The GL1200L Service Manual Supplement is divided into 14 sections. The first page of each section is marked with a black tab that lines up with the tabs on this page. The section symbols printed on the tabs also appear at the top of each page of the section so you can quickly get to where you want to be in the manual.

Page one of sections 1-13 lists the contents of each section and gives specific page references. Section 14 is an overall index for this supplement. A Wiring Diagram is located inside the back cover.

In sections 10 through 13, "Service Information" follows each contents; be sure to read those few lines before you start any procedure to avoid any difficulty once you're in the middle of a job. In most cases a torque reference drawing will be in Service Information. Torque values are given in the metric standard newton-meters (N.m) and also in foot-pounds (ft-lb). (See page 1-6 for a specific explanation of the use of metric equivalents.) A system troubleshooting list follows the torque reference drawing, and then the service procedures begin.

Sections 1-3 apply to the whole motorcycle, while sections 4-13 describe parts of the GL1200L grouped according to location. Be sure to refer to the Maintenance Schedule (Section 3) whenever a GL1200L is brought in for service. Use the schedule to know what the vehicle needs to stay in peak operating condition and within EPA-established emissions standards. The first scheduled maintenance is especially important since it compensates for the initial wear that occurs during the break-in period.

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., Inc. reserves the right to make changes at any time without notice and without incurring any obligation whatever.

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General Information

Service Safety

Pay special attention to statements preceded by these symbols.

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.

WARNING:

- **If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas.**
- **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.**
- **The battery electrolyte contains sulfuric acid. Protect your eyes, skin, and clothing. In case of contact, flush thoroughly with water, and call a doctor if electrolyte gets in your eyes.**
- **The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially while charging it.**

IMPORTANT SAFETY NOTICE

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.

Service Rules

1. Use genuine Honda or Honda-recommended parts and lubricants or their equivalent. 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 larger-diameter or inner bolts first, and tighten to the specified torque diagonally in 2-3 steps, unless a particular sequence is specified.
6. Clean parts in high flash point solvent after disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.

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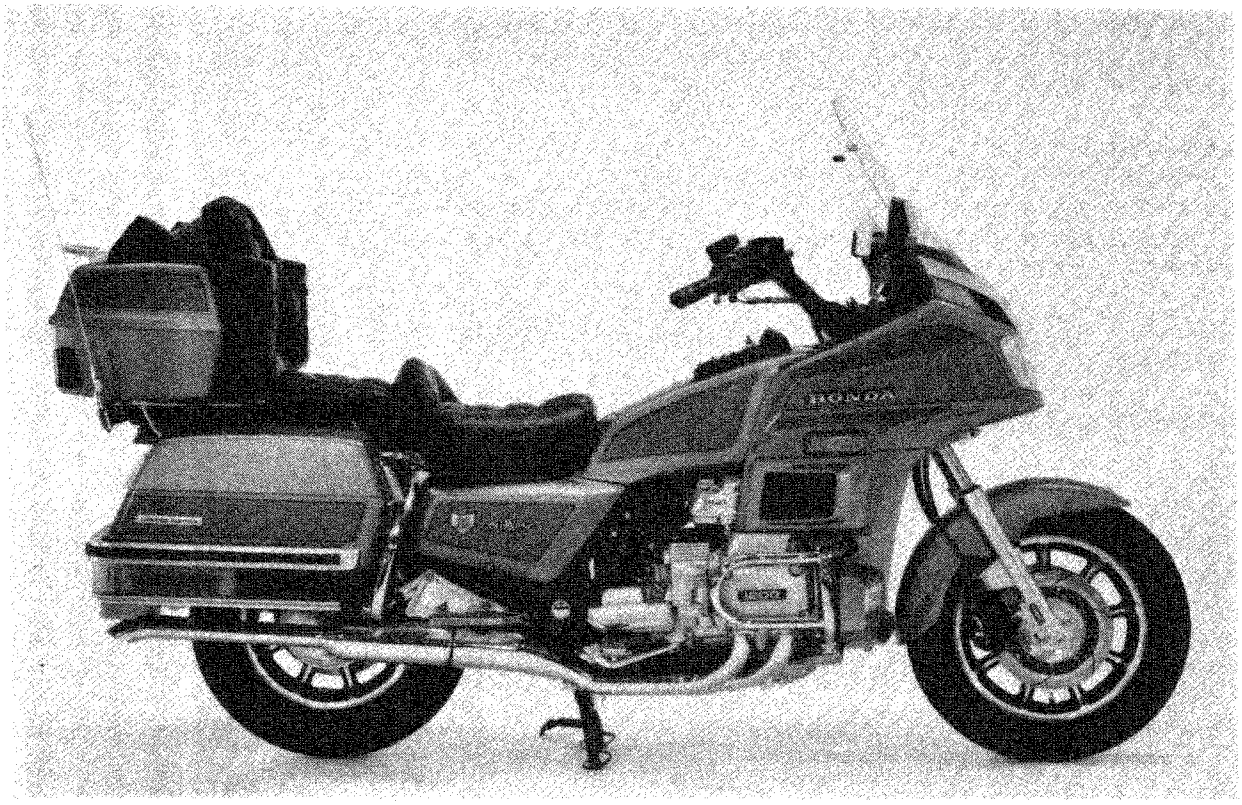
Model Identification

GL1200L Limited



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Emission Control Systems

The U.S. Environmental Protection Agency and California Air Resources Board (CARB) require manufacturers 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 Warranties 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 a secondary air supply system, as well as other systems, to reduce carbon monoxide and hydrocarbons.

Exhaust Emission Control System (Secondary Air Supply System)

The exhaust emission control system consists of a secondary air supply system which introduces filtered air into the exhaust gases in the exhaust port. Fresh air is drawn into the exhaust port whenever there is a negative pressure pulse in the exhaust system. This charge of fresh air promotes burning of the unburned exhaust gases and changes a considerable amount of hydrocarbons and carbon monoxide into relatively harmless carbon dioxide and water.

The reed valve prevents reverse air flow through the system. The anti-afterburn valve reacts to high intake vacuum and will cut off the supply of fresh air during engine deceleration, thereby preventing afterburn in the exhaust system.

No adjustments to the secondary air supply system should be made, although periodic inspection of the components is recommended.

Crankcase Emission Control System

The engine is equipped with a closed crankcase system to prevent crankcase emissions from being discharged into the atmosphere. Blow-by gases are returned to the combustion chamber through the air cleaner. Condensed crankcase vapors are accumulated in a storage tank which must be emptied periodically.

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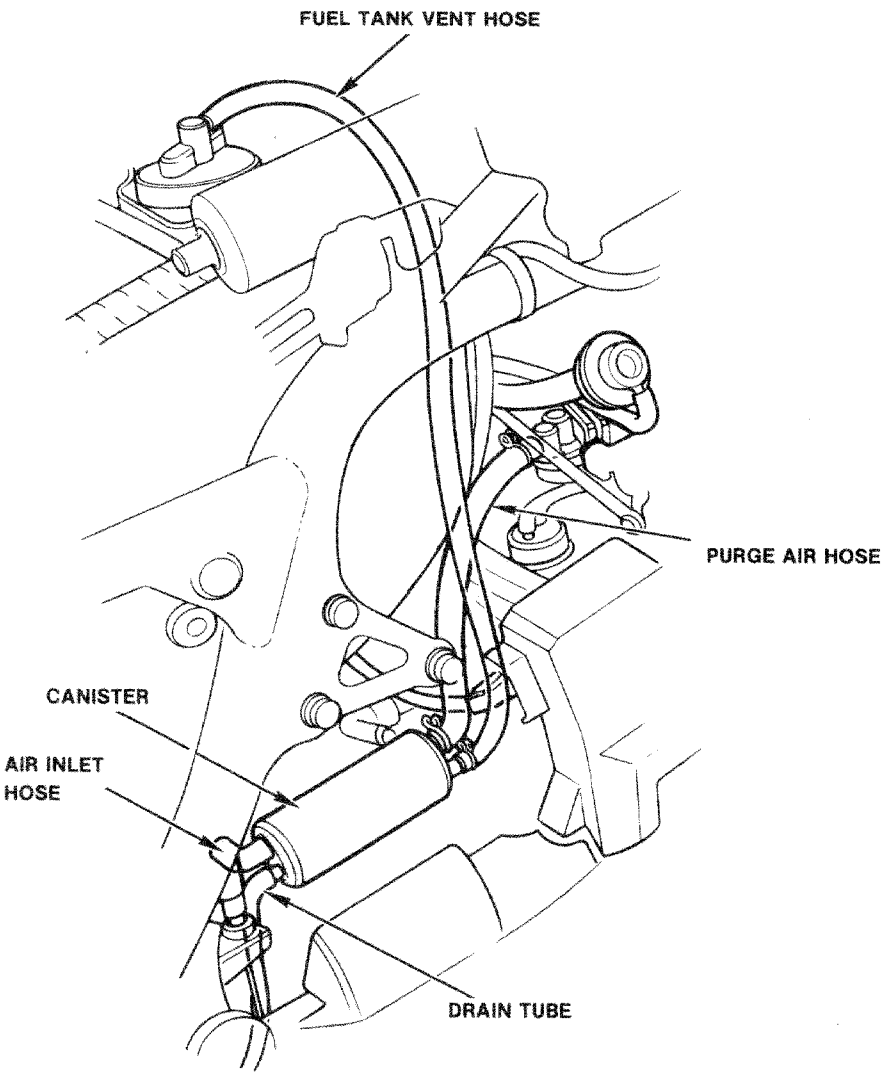
Evaporative Emission Control System (California Only)



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

No adjustments to the evaporative emission control system are necessary; however, periodic inspection of the hoses and canister is recommended.

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Emission Control Systems (cont'd)

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:

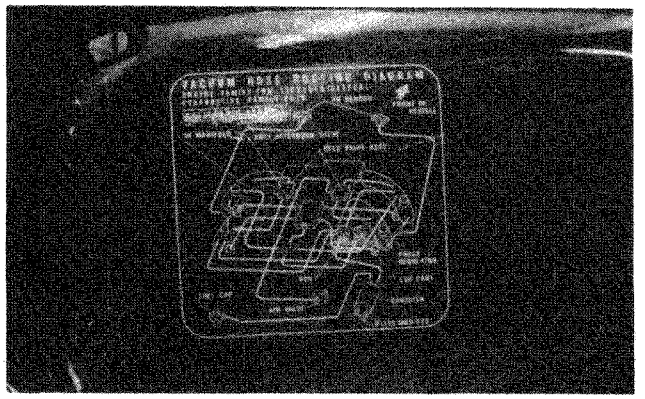
1. Removal of, or puncturing the muffler, baffles, header pipes or any other component which conducts exhaust gases.
2. Removal of, or puncturing of any part of the intake system.
3. Lack of proper maintenance.
4. Replacing any moving parts of the vehicle, or parts of the exhaust or intake system, with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

Emission Control Information Label

The Emission Control Information Label is located on the frame tube below the rear brake pedal and carries tune up specifications for the motorcycle.

Vacuum Hose Routing Diagram Label (California Only)

A Vacuum Hose Routing Diagram Label is attached to the fuel tank behind the right side cover. Route the vacuum hoses as shown on this label.



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Metric Conversions

To convert from metric to English equivalents, use the following conversion factors.

Given	Multiply By	To Obtain
Torque:		
Newton-meters (N.m)	0.723	Foot pounds (ft-lb)
Foot pounds (ft-lb)	1.383	Newton-meters (N.m)
Length:		
Meter (m)	3.281	Feet (ft)
Millimeter (mm)	0.03937	Inches (in)
Feet (ft)	0.3048	Meter (m)
Inches (in)	25.40	Millimeter (mm)
Kilometer (km)	0.6214	Mile (mi)
Mile (mi)	1.609	Kilometer (km)
Pressure:		
Kilogram/Sq. centimeter (kg/cm^2)	14.22	Pounds/Sq. inch (psi)
Pounds/Sq.inch (psi)	0.0703	Kilogram/Sq. centimeter (kg/cm^2)
Temperature:		
Centigrade (C°)	(C° x 1.8) + 32	Fahrenheit (F°)
Fahrenheit (F°)	(F° − 32) ÷ 1.8	Centigrade (C°)
Capacity:		
Liter (l)	0.2642	Gallon (gal)
Liter (l)	1.0568	Quart (qt)
Quart (qt)	0.9463	Liter (l)
Gallon (gal)	3.785	Liter (l)
Volume:		
Cubic centimeter (cc)	0.061	Cubic inches (cu in)
Cubic inches (cu in)	16.39	Cubic centimeters (cc)
Weight:		
Kilogram (kg)	2.205	Pounds (lb)
Gram (g)	0.03527	Ounces (oz)
Pounds (lb)	0.4536	Kilogram (kg)
Ounces (oz)	28.3495	Gram (g)
Speed:		
Kilometer/hour (km/h)	0.6214	Miles/hour (mph)
Miles/hour (mph)	1.609	Kilometer/hour (km/h)

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Specifications

General

	Item		LIMITED EDITION GL1200LTD
Dimensions	Overall length		2,505 mm (98.6 in)
	Overall width		970 mm (38.2 in)
	Overall height		1,510 mm (59.4 in)
	Wheelbase		1,610 mm (63.4 in)
	Seat height		780 mm (30.7 in)
	Ground clearance		140 mm (5.5 in)
	Dry weight		355 kg (783 lb)
	Curb weight (wet)		380 kg (838 lb)
Frame	Type		Double cradle
	Front suspension	Travel	Telescopic, 140 mm (5.5 in)
		Air pressure	0-1.0 kg/cm^2 (0-14 psi)
	Rear suspension	Travel	Swing arm, 105 mm (4.1 in)
		Air pressure	2.0-6.5 kg/cm^2 (28-92 psi)
	Front tire	Size	130/90-16 67H
		Air pressure	2.25 kg/cm^2 (32 psi)
	Rear tire	Size	150/90-15 74H
		Air pressure	2.25 kg/cm^2 (32 psi)
	Front brake and lining swept area		Double disc, 952 cm^2 (148 sq. in)
	Rear brake and lining swept area		Single disc, 516 cm^2 (80 sq. in)
	Fuel capacity		22 lit. (5.8 US gal)
	Caster angle		60°
	Trail length		118 mm (4.6 in)
	Front fork oil capacity		345 cc (11.7 oz) after disassembly
Engine	Type		Water cooled, O.H.C. 4 stroke
	Cylinder arrangement		Opposed four
	Bore and stroke		75.5 x 66.0 mm (2.97 x 2.59 in)
	Displacement		1,182 cc (72.1 cu-in)
	Compression ratio		9.0:1
	Valve train		Belt driven overhead camshaft
	Oil capacity	At disassembly	4.0 lit. (4.2 US qt.)
		After draining	3.2 lit. (3.4 US qt.)
	Lubrication system		Forced and wet sump
	Cooling system capacity		2.7 lit. (2.9 US qt.)
	Cylinder compression		13.0 kg/cm^2 (185 psi)
	Engine weight		111 kg (245 lb)
Camshaft	Intake valve	Opens	10° BTDC (At 1 mm lift)
		Closes	40° ABDC (At 1 mm lift)
	Exhaust valve	Opens	40° BBDC (At 1 mm lift)
		Closes	10° ATDC (At 1 mm lift)
	Valve clearance		Hydraulic valve adjuster system
	Idle speed		1,000 ± 100 rpm

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	Item	LIMITED EDITION GL1200LTD
Fuel System	Fuel System	Computerized Fuel Injection
	Fuel Pressure	2.4-2.7 kg/cm^2 (34-38 psi)
Drive Train	Clutch type	Wet, multi-plate
	Transmission	5-speed, constant mesh
	Primary reduction ratio	0.973 (36/37)
	Secondary reduction ratio	2.571 (36/14)
	Gear ratios 1st	2.643 (37/14)
	2nd	1.667 (40/24)
	3rd	1.250 (35/28)
	4th	1.000 (32/32)
	5th	0.800 (28/35)
	Final reduction ratio	2.833 (34/12)
	Gear shift pattern	Left foot operated return system, 1-N-2-3-4-5
	Final gear oil capacity	170cc (5.7 oz) after rebuild
Electrical	Ignition	Battery, Computerized
	Ignition timing "F" mark	10° BTDC
	Full advance	45° BTDC
	Starting system	Starting motor
	Alternator	476 W/5,000 rpm
	Battery capacity	12V-20A
Spark plug	Standard NGK	DPR8EA-9
	ND	X24EPR-U9
	For cold climate (Below 5°C, 41°F) NGK	DPR7EA-9
	ND	X22EPR-U9
	For extended high speed riding NGK	DPR9EA-9
	ND	X27EPR-U9
	Spark plug gap	0.8-0.9 mm (0.031-0.035 in)
	Firing order	1-3-2-4
	Fuses	7.5A, 10A, 15A and 30A (main fuse)

CFI System

Item			Standard
Fuel pressure	Ignition switch ON		2.4-2.7 kg/cm^2, (34-38 psi)
	At idle speed		2.0-2.4 kg/cm^2, (28-34 psi)
Injector coil resistance			1.55-1.85 Ohms (20°C, 68°F)
P_B sensor output voltage		atmospheric pressure	3.58-4.02V
	test	100 mm Hg	2.85-3.50V
	vacuum	300 mm Hg	2.16-2.45V
	applied	500 mm Hg	1.21-1.40V
P_B sensor input voltage			4.75-5.25V
Throttle sensor	Input voltage		4.75-5.25V
	Sensor resistance (R-G leads)		4-6 K Ohms
	Output voltage with 2.9mm gauge		0.475-0.495V
Ns sensor	Coil resistance (20°C, 68°F)		29.7-36.3 Ohms
	Air gap		0.4-0.9 mm (0.016-0.035in)
GR/GL sensor	Coil resistance (20°C, 68°F)		30-36 Ohms
	Air gap		58-62 mm (0.023-0.024in)
T1, Tw sensor resistance	At 20°C (68°F)		2-3 K Ohms
	At 80°C (176°F)		0.2-0.4 K Ohms
Air valve coil resistance			65-100 Ohms
Fuel injector resistor resistance			2.9-3.2 Ohms
Fuel pump capacity			630cc (21.3 oz.)/minute minimum

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Specifications

Electrical

	Item		Standard	
Lights	Headlight		12V-60/55 W H4 bulb (Philips 12342/99, or equivalent)	
	Tail/stoplight		12V-2/32 cp	
	Turn signal light (Front)		12V-3/32 cp (SAE No. 1034)	
	(Rear)		12V-32 cp (SAE No. 1073)	
	Running light		12V-4W	
	Tach/speedometer light		12V-2 cp (SAE No. 57)	
	Neutral indicator		12V-2 cp (SAE No. 57)	
	Turn signal indicator		12V-2 cp (SAE No. 57)	
	High beam indicator		12V-2 cp (SAE No. 57)	
	Instrument indicator lights		12V-2 cp (SAE No. 57)	
	License light		12V-2 cp (SAE No. 57)	
Charging	Battery capacity		12V-20A	
	Battery specific gravity/voltage (At 20°C, 68°F)	Fully charged Normal reading Needs charging	1.280/12-13V 1.260/11-12V 1.200/below 12V	
	Battery charging rate		2A max./3,000 rpm	
	Alternator		490W/5,000 rpm	
	Regulator/rectifier	Type Regulated voltage Charging starts	Transistorized 14-15V 1,000-1,200 rpm	
Electrical	Starter motor	Brush length Brush spring tension	12-13 mm (0.47-0.51 in) 560-680 g (19.8-24.0 oz)	Limit: 7.5 mm (0.30 in) Limit: 440 g (15.5 oz)
	Oil pressure switch continuity pressure		0.2-0.4 kg/cm^2 (2.8-5.7 psi)	
	Fan motor switch	No continuity temperature Continuity temperature	93-97°C (199-207°F) 98-102°C (208-216°F)	
	Temperature sensor resistance	At 60°C (140°F) At 85°C (185°F) At 110°C (230°F) At 120°C (248°F)	104 Ohms 44 Ohms 20 Ohms 16 Ohms	
	Fuel gauge sensor resistance	E ½ F	106-117 Ohms 29-39 Ohms 0-7 Ohms	
	Turn signal angle sensor resistance		10-19K Ohms	

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Standards/Service Limits

Cylinder Head

	Item		Standard Unit: mm (in)	Service Limit
Cylinder Head	Cylinder head warpage			0.10 (0.004)
	Valve stem O.D.	IN	6.580-6.590 (0.2591-0.2594)	6.54 (0.257)
		EX	6.550-6.560 (0.2579-0.2583)	6.54 (0.257)
	Valve guide I.D.	IN, EX	6.600-6.615 (0.2598-0.2604)	6.64 (0.261)
	Valve stem-to-guide clearance	IN	0.010-0.035 (0.0004-0.0014)	0.08 (0.003)
		EX	0.040-0.065 (0.0016-0.0026)	0.10 (0.004)
	Valve head diameter	IN	36.00 (1.417)	
		EX	32.00 (1.260)	
	Valve seat width		1.4 (0.06)	
	Valve spring free length	Inner	40.2 (1.58)	39.0 (1.54)
		Outer	43.75 (1.72)	42.5 (1.67)
	Spring force at compressed length	Inner	28.8 ± 2.0 kg/26 mm (63.5 ± 4.4 lbs/1.0 in)	
		Outer	51.5 ± 3.6 kg/28 mm (113.5 ± 7.9 lbs/1.1 in)	
	Rocker arm I.D.	IN, EX	14.000-14.018 (0.5512-0.5519)	14.05 (0.553)
	Rocker arm shaft O.D.	IN, EX	13.973-13.984 (0.5501-0.5506)	13.84 (0.545)
	Assist spring free length		17.5 (0.69)	16.0 (0.63)
	Valve adjuster compression stroke w/kerosene		0-0.30 (0-0.012)	0.3 (0.012) max.
Camshaft	Cam lobe height	IN, EX	35.8 (1.41)	35.6 (1.40)
	Journal O.D.	Center	24.934-24.950 (0.9817-0.9823)	24.91 (0.981)
		Both ends	26.954-26.970 (1.0612-1.0618)	26.91 (1.059)
	Bearing I.D.	Center	25.000-25.021 (0.9843-0.9851)	25.05 (0.986)
		Both ends	27.000-27.021 (1.0630-1.0638)	27.05 (1.065)
	Bearing clearance	Center	0.050-0.087 (0.0020-0.0034)	0.14 (0.006)
		Both ends	0.030-0.067 (0.0012-0.0026)	0.14 (0.006)

Cylinder/Piston/Crankshaft

Cylinder	Cylinder compression			11-15 kg/cm^2, (156-213 psi)	10 kg/cm^2 (142psi)
	Cylinder	Inside Diameter		75.500-75.515 (2.9724-2.9730)	75.60 (2.976)
		Out-of-round			0.15 (0.006)
		Taper			0.05 (0.002)
		Warpage across top of cylinders			0.10 (0.004)
	Piston	O.D. at skirt		75.470-75.490 (2.9713-2.9720)	75.35 (2.967)
		Piston-to-cylinder clearance		0.010-0.045 (0.0004-0.0018)	0.15 (0.006)
Piston	Piston ring	End gap	Top and second	0.10-0.30 (0.004-0.012)	0.6 (0.02)
			Oil ring side rail	0.20-0.90 (0.008-0.035)	1.1 (0.04)
		Ring-to-land clearance		0.015-0.045 (0.0006-0.0018)	0.12 (0.005)
	Piston pin	O.D.		18.994-19.000 (0.7478-0.7480)	18.98 (0.747)
		Piston hole I.D.		19.010-19.016 (0.7484-0.7487)	19.03 (0.749)
		Pin-to-piston clearance		0.010-0.022 (0.004-0.0009)	0.05 (0.002)
		Pin-to-rod interference		0.015-0.039 (0.0006-0.0015)	
Crankshaft	Main bearing oil clearance			0.020-0.044 (0.0008-0.0017)	0.08 (0.003)
	Connecting rod bearing oil clearance			0.020-0.044 (0.0008-0.0017)	0.08 (0.003)
	Crankshaft runout (at center journal)				0.05 (0.002)
	Connecting rod side clearance			0.15-0.30 (0.006-0.012)	0.40 (0.016)
	Crankpin and main journal	Taper			0.004 (0.0002)
		Out-of-round			0.008 (0.0003)
		Runout			0.05 (0.002)

(cont'd)

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Specifications

Standards/Service Limits (cont'd)

Clutch

	Item	Standard Unit: mm (in)	Service Limit
Slave cylinder	Cylinder I.D	33.600-33.662 (1.3228-1.3253)	33.68 (1.326)
	Piston O.D.	33.550-33.575 (1.3209-1.3218)	33.52 (1.320)
Clutch	Plate warpage		0.30 (0.012)
	Disc thickness	3.45-3.55 (0.136-0.140)	3.2 (0.13)
	Clutch spring free height	5.80 (0.228)	5.5 (0.22)

Oil Pumps

Main oil pump	Tip clearance	0.15 (0.006)	0.35 (0.014)
	Pump body clearance	0.15-0.21 (0.006-0.008)	0.41 (0.016)
	Pump side clearance	0.02-0.07 (0.001-0.003)	0.12 (0.005)
Scavenge pump	Tip clearance	0.15 (0.006)	0.35 (0.014)
	Pump body clearance	0.15-0.21 (0.006-0.008)	0.41 (0.016)
	Pump side clearance	0.02-0.10 (0.001-0.004)	0.12 (0.005)
Pressure relief valve	Relief pressure	5.0-5.8 kg/cm^2 (71-82 psi)	
	Relief valve spring free length	72.8 (2.87)	67.0 (2.64)
Oil pressure	Cold (35°C/95°F)		
	Idle speed	4.5 kg/cm^2 (64 psi)	
	5,000 rpm	5.3 kg/cm^2 (75 psi)	
	Hot (80°C/176°F)		
	Idle speed	1.0 kg/cm^2, (14 psi)	
	5,000 rpm	5.2 kg/cm^2, (74 psi)	

Transmission

Transmission	Gear I.D.	C1	31.000-31.025 (1.2205-1.2215)	31.05 (1.222)
		C2, C3	31.000-31.033 (1.2205-1.2218)	31.06 (1.223)
		M4	25.020-25.041 (0.9850-0.9859)	25.06 (0.987)
		M5	28.020-28.041 (1.1031-1.1040)	28.06 (1.105)
	Gear bushing O.D.	C1, C2, C3	30.950-30.975 (1.2185-1.2195)	30.90 (1.217)
		M5	27.959-27.980 (1.1007-1.1016)	27.90 (1.098)
	Gear-to-bushing clearance	C1	0.025-0.075 (0.0010-0.0030)	0.15 (0.006)
		C2, C3	0.025-0.083 (0.0010-0.0033)	0.16 (0.006)
		M5	0.040-0.082 (0.0016-0.0032)	0.16 (0.006)
	Gear-to-shaft clearance	M4	0.040-0.082 (0.0016-0.0032)	0.15 (0.006)
	Mainshaft assembled length		177.4 (6.98)	
	Output shaft Installed length		84.5 (3.33)	
	Spring Free length		110.9 (4.37)	100 (3.9)
	Alternator drive gear back lash (at rotor)		0.05 (0.002)	Min. 0.010 (0.0004) Max. 0.100 (0.0039)
Gearshift	Shift fork shaft O.D.		12.966-12.984 (0.5105-05112)	12.90 (0.508)
	Shift fork I.D.	L,C	13.000-13.018 (0.5118-0.5189)	13.04 (0.513)
		R	13.000-13.027 (0.5118-0.5129)	13.05 (0.514)
	Shift drum Minor diameter		11.966-11.984 (0.4711-0.4718)	11.95 (0.470)
	Groove width		7.05-7.15 (0.278-0.281)	
	Shift fork claw thickness		6.4-6.5 (0.25-0.26)	6.1 (0.24)

Cooling

Radiator cap relief pressure		0.75-1.05 kg/cm^2 (11-15 psi)	
Thermostat	Start to open temperature	80-84°C (176-190°F)	
	Fully opened temperature	95°C (194°F)	
	Valve lift (heated to 97°C/5 minutes)	8.0 (0.32)	7.0 (0.28)

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Suspension

Item	Standard Unit: mm (in)	Service Limit
Front suspension air pressure	0-1.0 kg/cm^2 (0-14 psi)	
Rear suspension air pressure	2.0-6.5 kg/cm^2 (28-92 psi)	
Front fork spring free length		
Spring A	162.9 (6.41)	162.6 (6.40)
Spring B	400.2 (15.8)	399.4 (15.7)
Front fork oil capacity		
After disassembly	345cc (11.66 US oz)	
After draining	323cc (10.92 US oz)	
Front fork oil	ATF	
Fork tube runout		0.20 (0.008)
Rear shock absorber oil capacity	255cc (8.62 US oz)	
Rear shock absorber oil	ATF	

Wheels/Tires

Axle runout			0.20 (0.008)
Wheel rim runout	Axial		2.0 (0.08)
	Radial		2.0 (0.08)
Tire tread depth	Front		1.5 (0.06)
	Rear		2.0 (0.08)

Final Drive

Recommended oil		Hypoid gear oil SAE 80, API GL-5	
Capacity	After disassembly	170cc (5.7 US oz)	
	After draining	130cc (4.4 US oz)	
Final gear backlash		0.08-0.18 (0.003-0.007)	0.3 (0.01)
	Difference at 3 points		0.10 (0.004)
Final gear assembly preload		2.0-4.0 kg-cm (1.7-3.5 in-lb)	
Ring gear-to-case stopper clearance		0.3-0.6 (0.01-0.02)	

Brakes

Front brake master cylinder				
	Cylinder I.D.		12.700-12.743 (0.5000-0.5017)	12.755 (0.5022)
	Piston O.D.		12.684-12.657 (0.4994-0.4983)	12.645 (0.4978)
Front brake caliper	Cylinder I.D.	Right caliper	25.400-25.490 (1.0000-1.0035)	25.460 (1.0024)
		Left caliper	32.030-32.080 (1.2610-1.2630)	32.090 (1.2634)
	Piston O.D.	Right caliper	25.318-25.368 (0.9968-0.9987)	25.310 (0.9965)
		Left caliper	31.948-31.998 (1.2578-1.2598)	31.940 (1.2575)
Front brake disc	Thickness		9.9-10.1 (0.39-0.40)	9.0 (0.35)
	Runout			0.3 (0.01)
Front brake pad thickness			5.4-5.6 (0.21-0.22)	
Rear brake master cylinder		Cylinder I.D.	15.870-15.913 (0.6248-0.6265)	15.925 (0.6270)
		Piston O.D.	15.827-15.854 (0.6231-0.6242)	15.815 (0.6226)
Rear brake caliper		Cylinder I.D.	32.030-32.080 (1.2610-1.2630)	32.090 (1.2634)
		Piston O.D.	31.948-31.998 (1.2578-1.2598)	31.940 (1.2575)
Rear brake disc		Thickness	6.9-7.1 (0.27-0.28)	6.0 (0.24)
		Runout		0.3 (0.01)
Rear brake pad thickness			6.4-6.6 (0.25-0.26)	
Brake fluid			DOT 4	

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Specifications

Torque Values

Engine Item	Qty.	Thread dia.(mm)	Torque N.m	Torque ft-lb	Remarks
Cylinder head bolt	12	10	55	40	NOTE 1
Timing belt drive pulley bolt	1	12	75	54	
Timing belt driven pulley bolt	2	8	27	20	
Camshaft holder bolt	8	10	20	14	
Camshaft holder dowel bolt	4	10	20	14	
Hydraulic valve adjuster plug	8	—	25	18	
Rocker arm assist spring bolt	8	6	12	9	
Timing belt tensioner bolt	4	8	26	19	
Clutch center lock nut	1	20	60	43	
Alternator rotor nut	1	22	85	62	NOTE 5
Engine case bolt (10 mm)	6	10	35	25	NOTE 1
(8 mm)	2	8	26	19	
(6 mm)	24	6	12	9	
Crankshaft bearing cap bolt (12 mm)	4	12	70	51	NOTE 1
(10 mm)	2	10	50	36	NOTE 1
Connecting rod cap nut	8	9	32	23	NOTE 3
Gearshift arm lock bolt	1	8	26	19	
Gearshift fork lock bolt	1	7	16	12	
Oil filter bolt	1	12	30	22	
Oil drain plug	1	14	38	27	
Alternator drive shaft holder bolt	5	6	12	9	
Oil pressure switch	1	—	12	9	NOTE 4
Starter clutch outer torx bolt	3	8	25	18	NOTE 2
Coolant temperature sensor	1	—	23	17	NOTE 4
Thermostatic fan motor switch	1	—	28	20	NOTE 4
Oil pipe bolt	3	—	14	10	
Spark plug	4	12	16	12	
Timing belt cover bolt	4	6	12	9	
Cylinder head cover bolt	8	6	12	9	
Alternator cover cap	1	—	12	9	
Intake pipe clamp screw	4	5	5	4	
Oil pressure sensor	1	—	10	8	
Fuel delivery pipe joint nuts	3	12	22	16	
Fuel filter banjo bolts	2	12	22	16	
Fuel hose joint nut	1	—	28	20	

NOTES:

(1) Apply molybdenum disulfide grease to the threads and seating surfaces.
(2) Apply locking agent to the threads.
(3) Apply engine oil to the threads and seating surfaces.
(4) Apply sealant to the threads.
(5) Apply locking agent to the threads and apply engine oil to the seating surfaces.

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Frame Item	Qty.	Thread dia.(mm)	Torque N.m	Torque ft-lb	Remarks
Steering stem nut	1	24	100	72	
Fork bridge pinch bolt	1	8	22	16	
Steering stem adjustment nut	1	26	15	11	
Handlebar holder bolt	4	8	25	18	NOTE 3
Front fork pinch bolt (upper)	2	7	11	8	
(lower)	4	8	22	16	NOTE 3
Fork cap bolt	2	37	23	16	
Fork air equalizer set screw	2	6	10	7	
Fork air equalizer air valve	1	8	5.5	4	
Air hose joint (10 mm)	—	10	18	13	
(8 mm)	—	8	5.5	4	
Air hose connector	2	8	10	7	
Air pressure sensor	1	—	10	7	
Front axle nut	1	12	60	43	
Front axle holder nut	4	8	25	18	
Front brake disc bolt	5	8	30	22	
Front brake caliper bracket (upper)	2	10	35	25	
(lower)	2	8	23	16	
Brake caliper pivot bolt	3	12	28	20	
Brake caliper bolt	3	8	23	17	
Brake hose oil bolt	4	10	30	22	
Brake metal line joint	6	10	17	12	
Front brake master cylinder holder bolt	2	6	12	9	
Rear brake disc nut	5	8	30	22	
Rear brake master cylinder bolt	2	8	27	19	
Rear brake rod joint lock nut	1	8	18	13	
Rear axle nut	1	18	95	70	
Rear shock absorber mount nut (upper)	2	10	35	25	
Rear shock absorber mount bolt (right)	1	8	23	16	
(left)	1	18	70	50	
Rear axle pinch bolt	1	8	27	19	
Swing arm pivot bolt (right)	1	30	100	70	
(left)	1	30	19	14	
Swing arm pivot lock nut	1	30	100	70	
Final drive gear case nut	4	8	27	20	
Final drive gear case filler cap	1	30	12	9	

(cont'd)

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Specifications

Torque Values (cont'd)

Frame Item	Qty.	Thread dia.(mm)	Torque N.m	Torque ft-lb	Remarks
Final drive gear case drain plug	1	6	12	9	
Final drive gear case cover bolt (8mm)	6	8	26	18	
(10mm)	2	10	48	35	
Final drive pinion joint nut	1	16	110	80	
Engine mount bolt/nut (12 mm)	3	12	60	43	
(10 mm)	3	10	35	25	
(8 mm)	6	8	22	16	
Sub frame cap nut	3	10	35	25	
Footpeg bolt/nut	2	12	60	43	
Passenger footpeg bolt	2	10	40	29	
Exhaust pipe nut	4	8	18	13	
Muffler mount bolt	2	10	40	29	
Muffler joint bolt	4	8	22	16	
Center stand pivot pinch bolt	2	8	18	13	
Side stand pivot lock nut	1	10	22	16	
Rear brake pedal bolt	1	8	22	16	
Gearshift pedal	1	6	10	7	
Rear fender mounting bolt	2	8	14	10	
Seat bolt	2	8	22	16	

Standard Torque Values

Item	Torque Values	Item	Torque Values
5 mm bolt and nut	5 N.m (4 ft-lb)	5 mm screw	4 N.m (3 ft-lb)
6 mm bolt and nut	10 N.m (7 ft-lb)	6 mm screw	9 N.m (7 ft-lb)
8 mm bolt and nut	22 N.m (16 ft-lb)	6 mm flange bolt and nut	12 N.m (9 ft-lb)
10 mm bolt and nut	35 N.m (25 ft-lb)	8 mm flange bolt and nut	27 N.m (20 ft-lb)
12 mm bolt and nut	55 N.m (40 ft-lb)	10 mm flange bolt and nut	40 N.m (30 ft-lb)

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Maintenance

Maintenance Schedule 3-2
Fuel Filter 3-3
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Throttle Valve Synchronization . . . 3-5
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Maintenance

Maintenance Schedule

Perform the PRE-RIDE INSPECTION in the Owner's Manual at each scheduled maintenance period.
I: INSPECT AND CLEAN, ADJUST, LUBRICATE, OR REPLACE IF NECESSARY.
C: CLEAN, R: REPLACE, L: LUBRICATE

		ITEM	FREQUENCY: WHICHEVER COMES FIRST / EVERY	ODOMETER READING (NOTE 4): 600 mi (1,000 km)	4,000 mi (6,400 km)	8,000 mi (12,800 km)	12,000 mi (19,200 km)	16,000 mi (25,600 km)	20,000 mi (32,000 km)	24,000 mi (38,400 km)	Refer to page
EMISSION RELATED ITEMS	*	FUEL LINES				I		I		I	***
	*	FUEL FILTER								R	3-2
	*	THROTTLE OPERATION		I		I		I		I	13-21
		AIR CLEANER	NOTE 1			R		R		R	3-4
		CRANKCASE BREATHER	NOTE 2		C	C	C	C	C	C	***
		SPARK PLUGS			R	R	R	R	R	R	***
		ENGINE OIL	YEAR	R		R		R		R	***
		ENGINE OIL FILTER	YEAR	R		R		R		R	***
	*	THROTTLE VALVE SYNCHRONIZATION		I		I		I		I	3-5
	*	ENGINE -IDLE SPEED		I	I	I	I	I	I	I	***
		RADIATOR COOLANT				I		I		*R	***
	*	RADIATOR CORE				I		I		I	***
	*	COOLING SYSTEM HOSES & CONNECTIONS		I		I		I		I	***
	*	SECONDARY AIR SUPPLY SYSTEM				I		I		I	***
	*	EVAPORATIVE EMISSION CONTROL SYSTEM	NOTE 3			I		I		I	***
NON-EMISSION RELATED ITEMS		FINAL DRIVE OIL				I		I		R	***
		BATTERY	MONTH	I	I	I	I	I	I	I	***
		BRAKE FLUID	MONTH I 2 YEARS* R	I	I	I	*R	I	I	*R	***
		BRAKE PAD WEAR			I	I	I	I	I	I	***
		BRAKE SYSTEM		I		I		I		I	***
	*	BRAKE LIGHT SWITCH		I		I		I		I	***
	*	HEADLIGHT AIM		I		I		I		I	***
		CLUTCH FLUID	MONTH I 2 YEARS* R	I	I	I	*R	I	I	*R	***
		CLUTCH SYSTEM		I		I		I		I	***
		SIDE STAND				I		I		I	***
	*	SUSPENSION		I		I		I		I	***
	*	CRUISE VALVE ELEMENT								R	3-6
	*	AIR PUMP ELEMENT					C			C	***
	*	AIR DRIER		I		I		I		I	***
	*	NUTS, BOLTS, FASTENERS		I		I		I		I	***
	**	WHEELS		I		I		I		I	***
	**	STEERING HEAD BEARINGS		I		I		I		I	***

* Should be serviced by an authorized Honda dealer, unless the owner has proper tools and service data and is mechanically inclined.
** In the interest of safety, we recommend these items be serviced only by an authorized Honda dealer.
*** If a page reference is not listed, consult the GL1200I/A Service Manual.

NOTES:
1. Service more frequently when riding in dusty areas.
2. Service more frequently when riding in rain or at full throttle.
3. California type only.
4. For higher odometer readings, repeat at the frequency interval established here.

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Fuel Filter

WARNING:

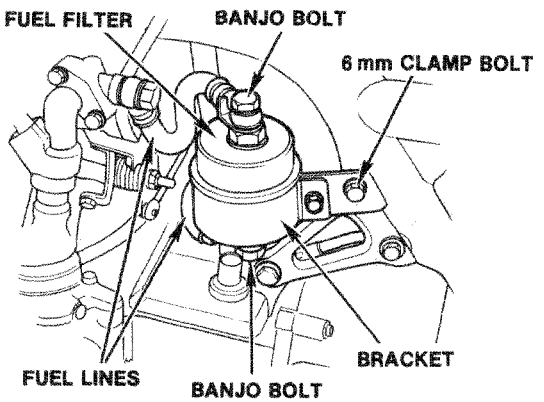
- **Gasoline is flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.**

- **The fuel lines are pressurized. Wear eye protection when working on the fuel system. If gasoline gets in your eyes, flush with water and get prompt medical attention.**

Turn the fuel valve and ignition switch OFF.

Wrap a shop towel around the fuel line and fittings. Loosen the fuel line banjo bolts slowly to drain the lines and filter and to keep gasoline from spraying out.

Remove the banjo bolts to disconnect the fuel lines. Loosen the 6 mm clamp bolt, and remove the filter from its bracket.



Install the new filter in the filter bracket. Connect the fuel lines.

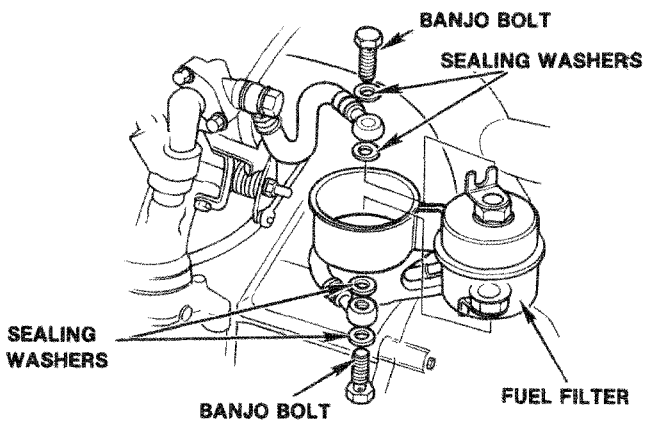
NOTE: Use new sealing washers. Align the fuel line with the filter stopper.

Tighten the banjo bolts.

Torque: 22 N.m (16 ft-lb)

Tighten the 6 mm clamp bolt.

Turn the ignition switch ON to check for fuel line leaks.



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Maintenance

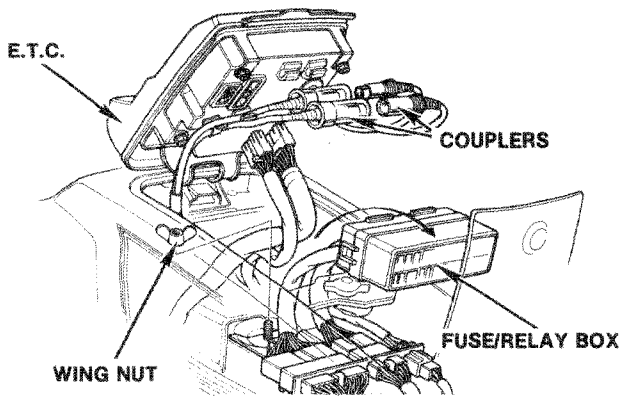
Air Cleaner

Open the top compartment cover.

Pull the fuse/relay box up and to the rear.

Disconnect the couplers from the E.T.C.

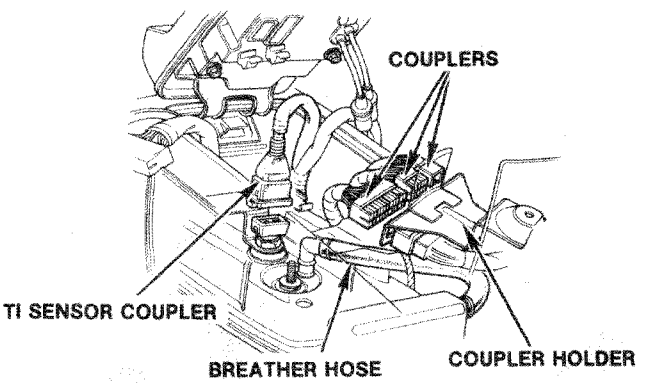
Remove the wing nut.



Disconnect the three couplers to remove the fuse/relay box and coupler holder.

Disconnect the T1 sensor coupler and the breather hose from the air cleaner cover.

Remove the air cleaner cover.



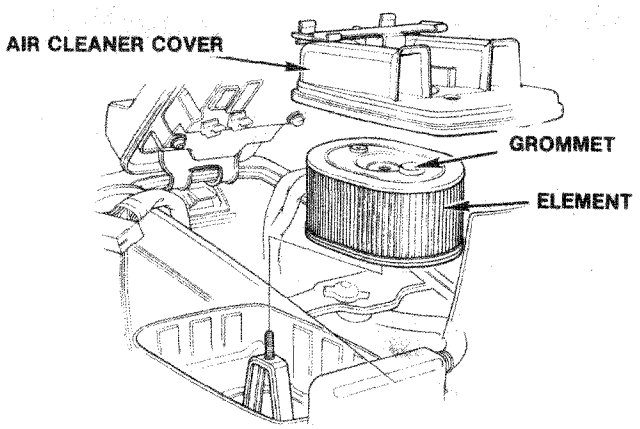
Remove and discard the air cleaner element.

Install the new element with the breather hose grommet facing the rear.

Install the air cleaner cover with wing nut, and attach the breather hose.

Install parts in the reverse order of removal.

NOTE: Be careful not to damage the coupler terminals during installation.



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Throttle Valve Synchronization

NOTE: Perform this maintenance with the engine at normal operating temperature, transmission in neutral, and motorcycle on its center stand.

Remove the throttle body covers, right and left fairing lower covers and inner covers.

Remove the plugs from the intake pipes and install vacuum gauge adapters and vacuum gauges.

Start the engine and adjust the idle speed with the throttle stop screw.

Idle speed: 1000 ± 100 rpm

The difference in vacuum readings should be 40 mm (1.6 in) Hg or less.

Turn the adjusting screw to fix any difference in vacuum readings between the right (#1 and 3) and left (#2 and 4) bank cylinders. If any one cylinder vacuum reading is low, check for a secondary air leak past the intake pipe.

Adjustment between the front and rear cylinders (#1 and 3, or #2 and 4) are not possible. Differences in vacuum readings between these cylinders is probably due to carbon build-up on the throttle valve.

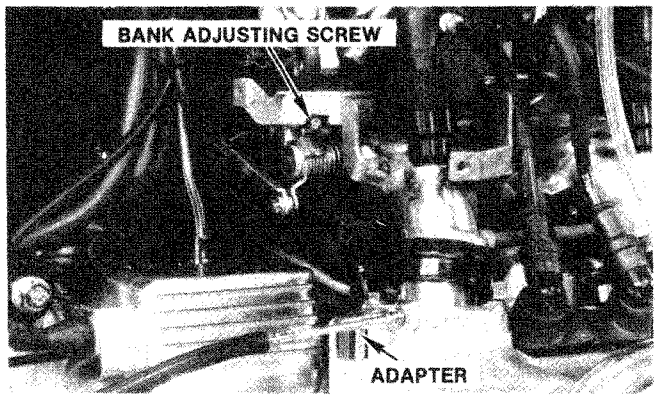
To clean the throttle valve, remove the air cleaner case and element holder.

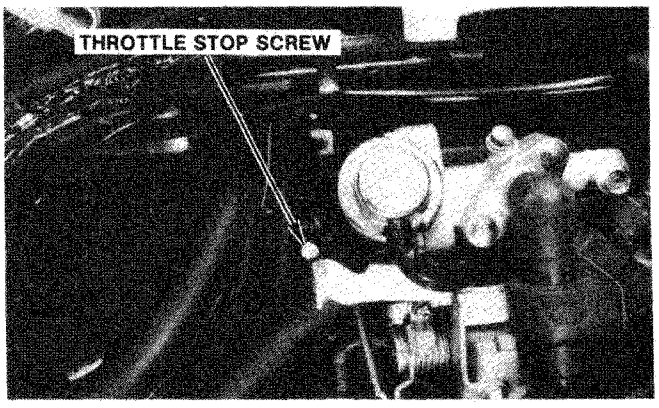
Connect the coupler to the T1 sensor. Connect a vacuum gauge. Start the engine and let it idle.

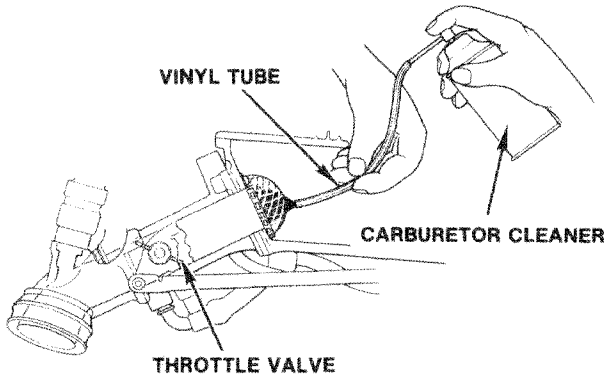
NOTE: Keep dirt from being drawn into the air chamber. Use a vinyl hose to spray carburetor cleaner into the intake pipe through the wire screen.

NOTES:
- Decarbonize the throttle valve with the highest vacuum reading first, the lowest last.
- Snap the throttle while spraying the cleaner.
- Use a cleaner containing a rust inhibitor.

The idle speed will rise when the throttle valves on both banks are synchronized. After the difference in vacuum has been stablized within 40 mm (1.6 in) Hg or less, install the air cleaner case and element. Recheck throttle valve synchronization and idle speed.







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Cruise Valve Element

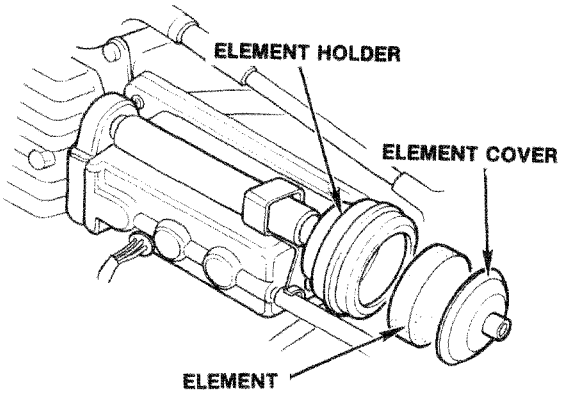
Remove the seat, side covers, and top compartment.

Remove the element cover.

Remove and discard the cruise valve element.

Install the new element and assemble the parts in reverse order of removal.

WARNING: Do not block the air inlet hole or hose during installation, or the cruise control will not disengage.



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Engine Removal/Installation

Removal 4-2
Installation 4-6

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Engine Removal/Installation

Removal

Disconnect the battery ground cable.

NOTE: Drain the engine oil if the front or rear cover will be removed. Install the drain plug.

For easiest access to the electrical couplers, remove the fairing.

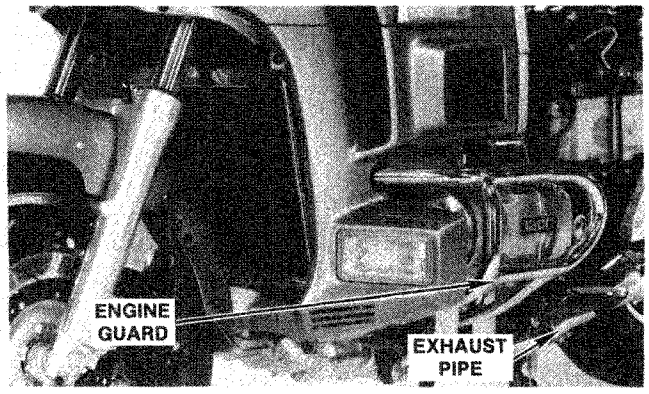
Remove the radiator.

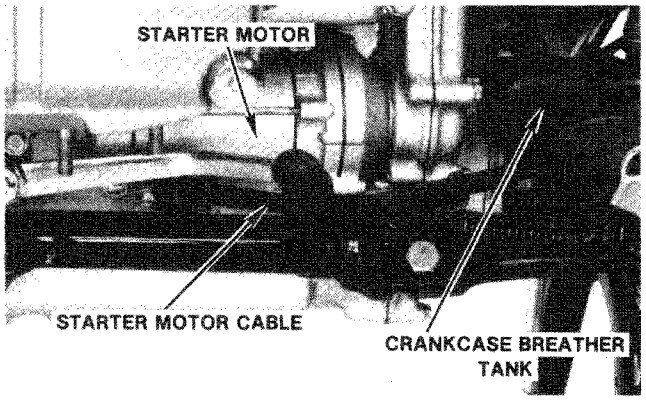
Remove the exhaust pipes and engine guards.

Remove the air chamber assembly (see page 10-34).

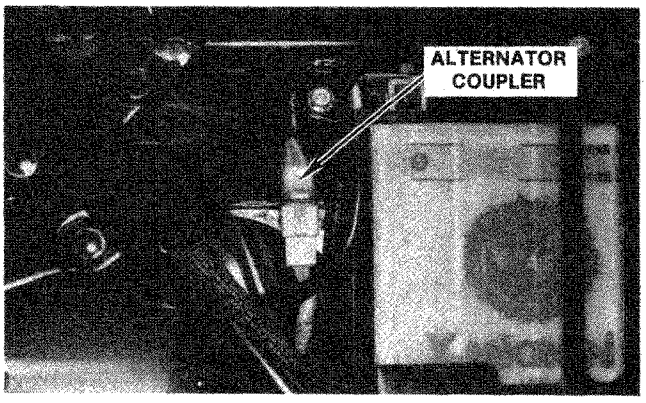
Disconnect the starter motor cable at the starter.

Remove the crankcase breather tank.

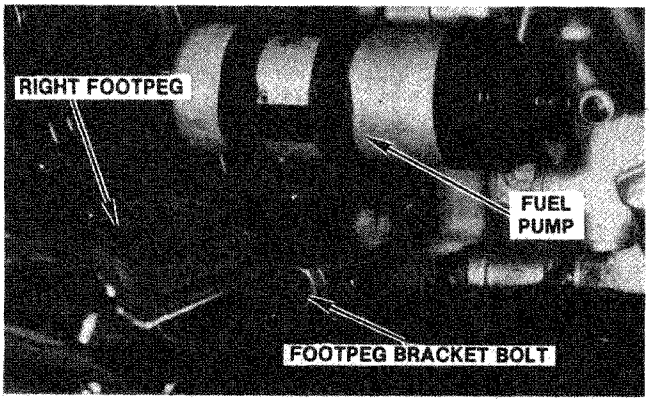




Disconnect the alternator coupler.



Remove the fuel pump and right footpeg bracket bolt. Remove the foot peg and support the fuel pump with string or wire.



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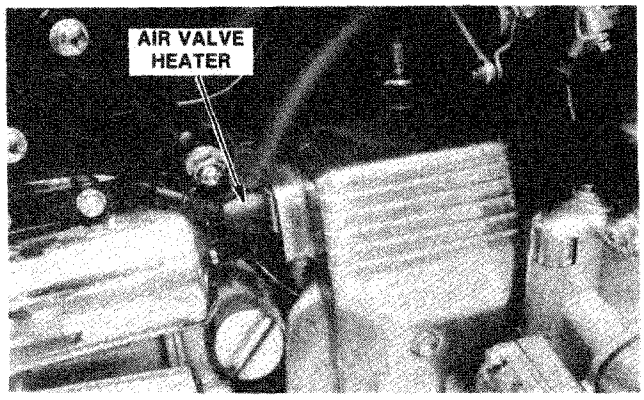
Disconnect the air valve heater coupler from the air valve.



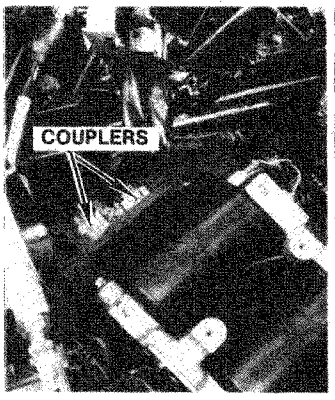
Disconnect the gear shift sensor wire coupler.

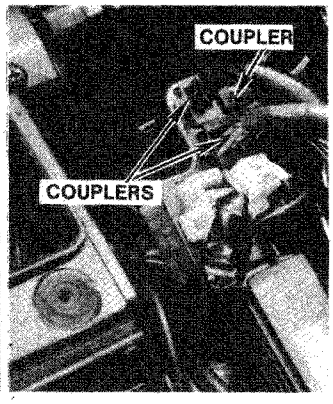
Disconnect the engine sub-harness (white 2P and red 6P) couplers.

Disconnect the Ns sensor wire (white 2P, yellow/white wires) coupler.

Disconnect the GR/GL sensor wire (white 4P coupler.

Release the wires from the wire band.

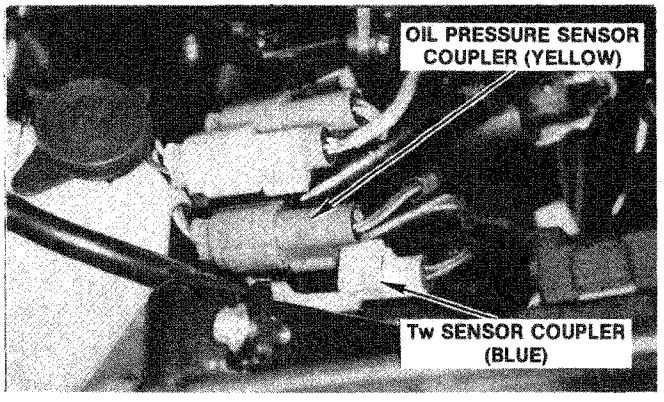




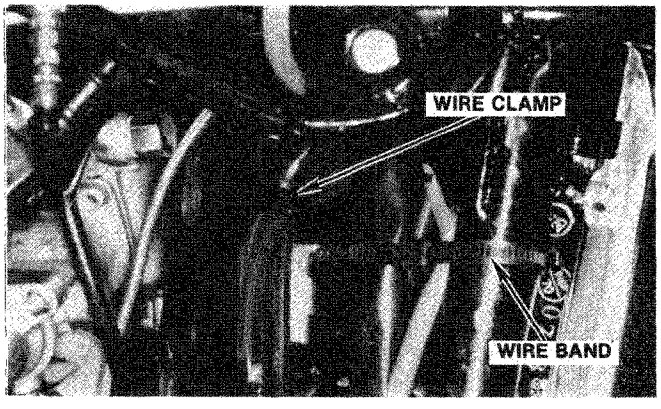
Disconnect the oil pressure sensor (yellow waterproof 3P) coupler.

Disconnect the Tw sensor (blue waterproof 2P) coupler.

Release the wires from the wire bands.



Release the engine sub-harness, shift sensor wire, Ns sensor wire, and fan motor wires from the wire bands and wire clamps.



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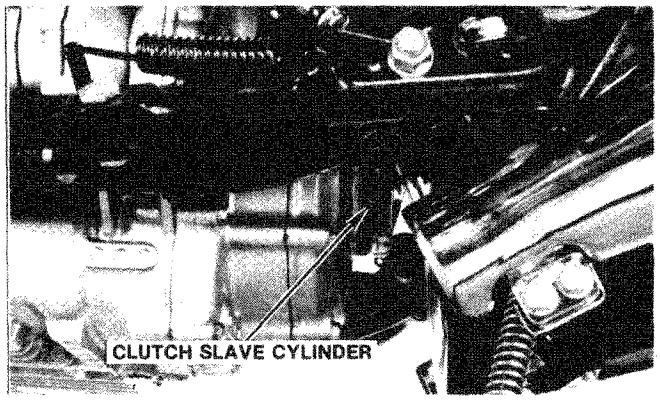
Engine Removal/Installation

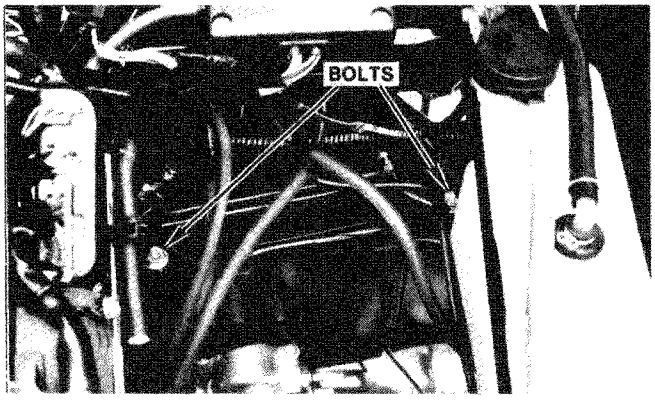
Removal (cont'd)

Remove the clutch slave cylinder from the engine. The pushrod should stay in the engine.

NOTE: Pull the clutch lever in and tie it to the handlebar grip. This prevents overextension of the slave cylinder piston.

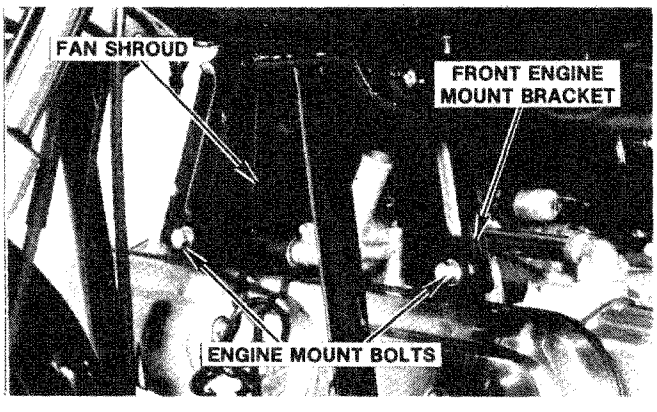


Remove the two bolts from the top of the front engine mount bracket.

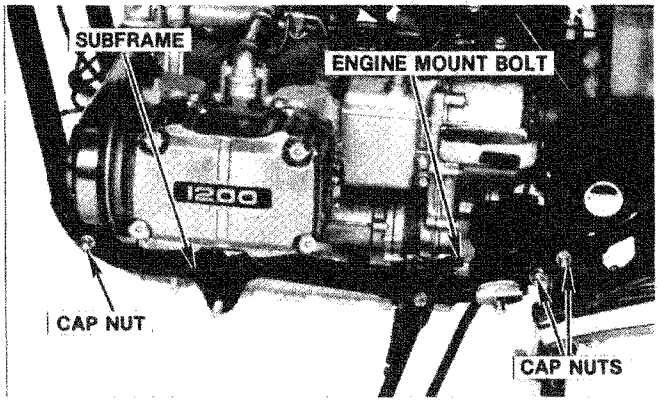


Remove the two bolts from the bracket front.

Remove the fan shroud and the front bracket.



Remove the left engine mount bolt and the cap nuts, then remove the subframe.



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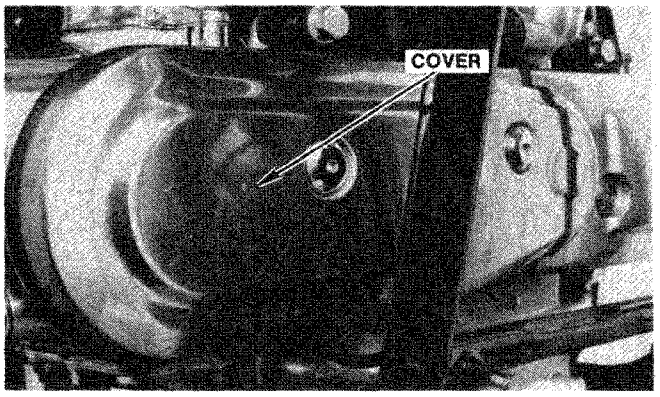
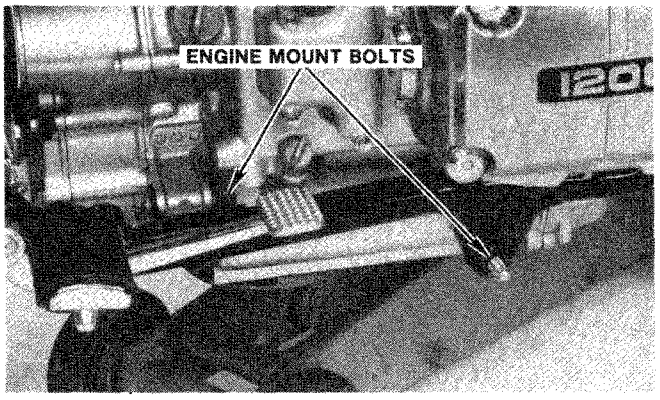
Remove the right timing belt cover for added clearance during engine removal.



Place a floor jack or other adjustable support under the engine.

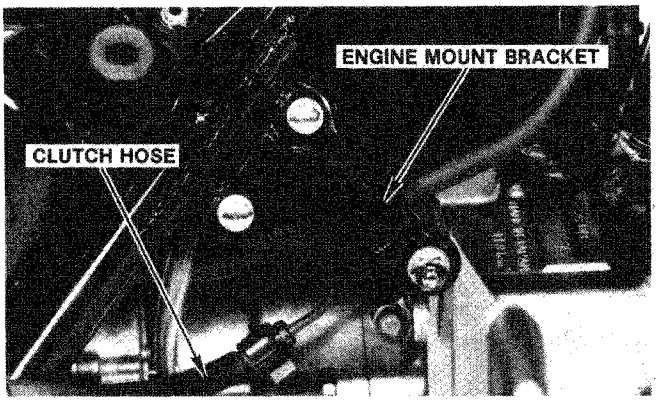
NOTE: The jack height must be continually adjusted as mounting bolts are removed to relieve stress from remaining bolts.

Remove the right engine mount bolts.

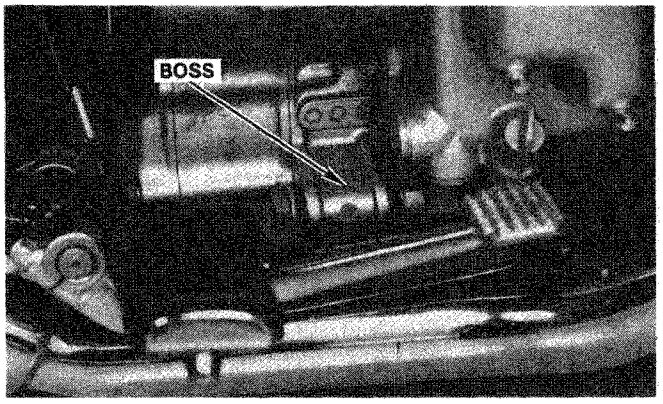


Remove the triangular engine mount bracket from each side.

Release the clutch hose from the hose clamp.



With the aid of another person to steady the engine, adjust the jack while you raise the right rear engine mount boss out of the frame tabs.



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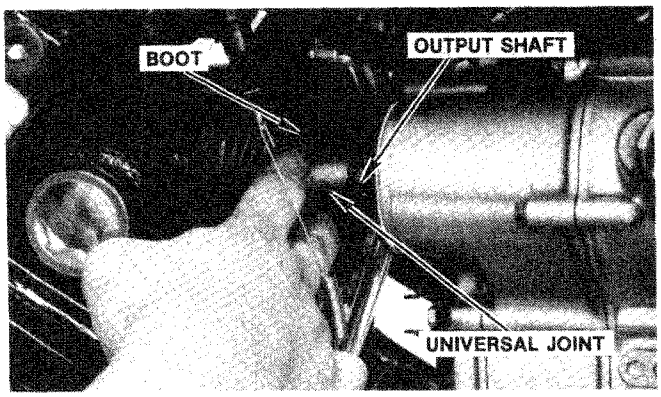
Engine Removal/Installation

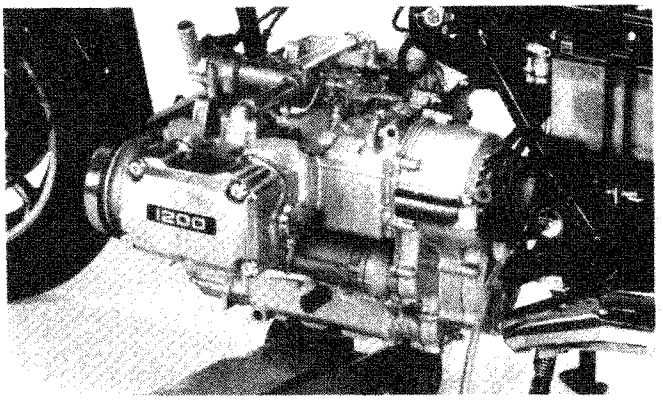
Removal (cont'd)

Move the engine forward to disengage the output shaft from the universal joint.



Move the engine out of the frame.

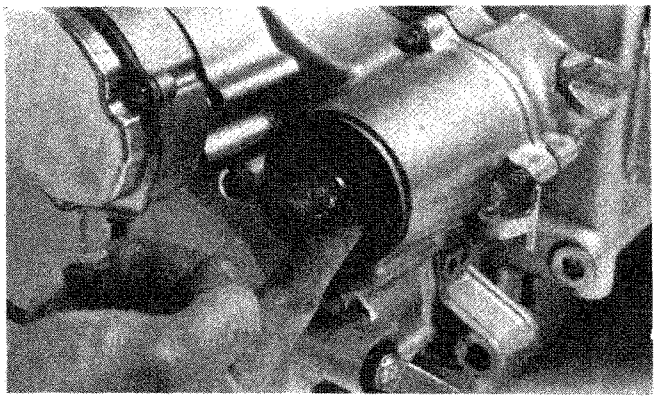
CAUTION: Be careful not to damage the brake lines during engine removal.



Installation

Install the engine in the reverse order of removal.

Lubricate the output shaft splines with a multipurpose NLGI no. 2 grease with 40% molybdenum disulfide (MoS2) additive.

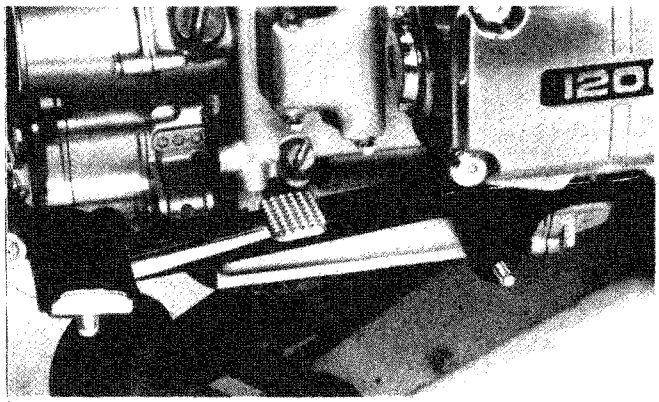


Carefully manuever the engine into the frame while aligning the output shaft with the universal joint.

CAUTION: Be careful not to damage the brake lines during installation.

Slide the output shaft back into the universal joint.

CAUTION: Carefully align mounting points with the jack to prevent damage to mounting bolt threads, wire harnesses and cables.



Hand tighten mounting bolts and nuts (and install parts noted) in this order:

1. The left and then the right rear mount bolts.
2. The subframe and footpeg bolts.
3. The forward mount bolt.
4. The right and left mount brackets and upper engine mount bolts, including the battery ground with the left side mount.
5. The upper and lower front mount bracket bolts.

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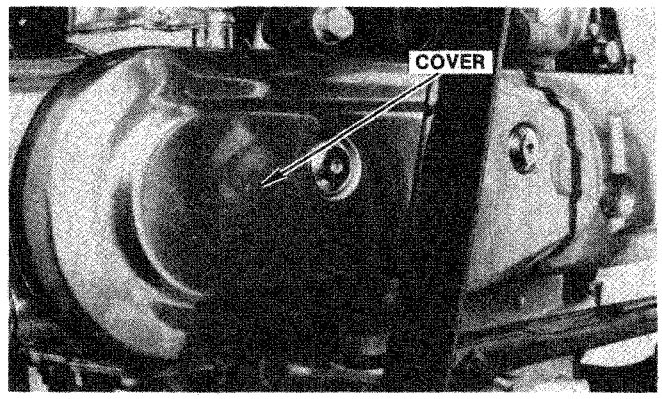
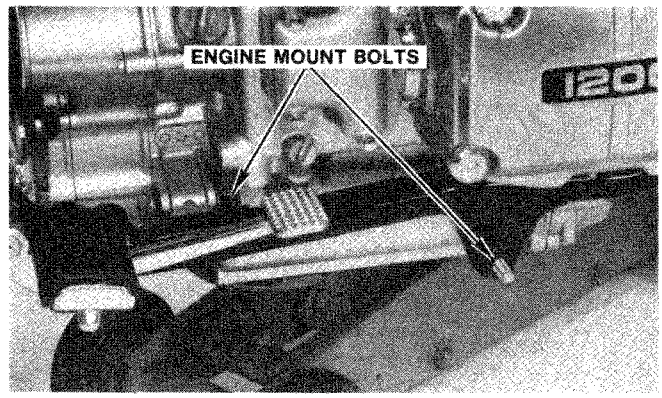
Remove the right timing belt cover for added clearance during engine removal.



Place a floor jack or other adjustable support under the engine.

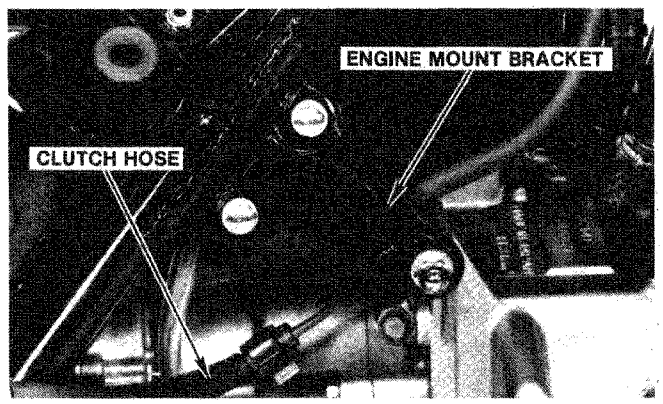
NOTE: The jack height must be continually adjusted as mounting bolts are removed to relieve stress from remaining bolts.

Remove the right engine mount bolts.

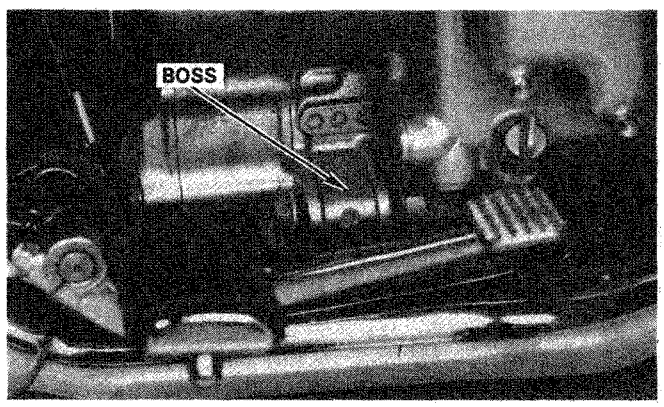


Remove the triangular engine mount bracket from each side.

Release the clutch hose from the hose clamp.



With the aid of another person to steady the engine, adjust the jack while you raise the right rear engine mount boss out of the frame tabs.



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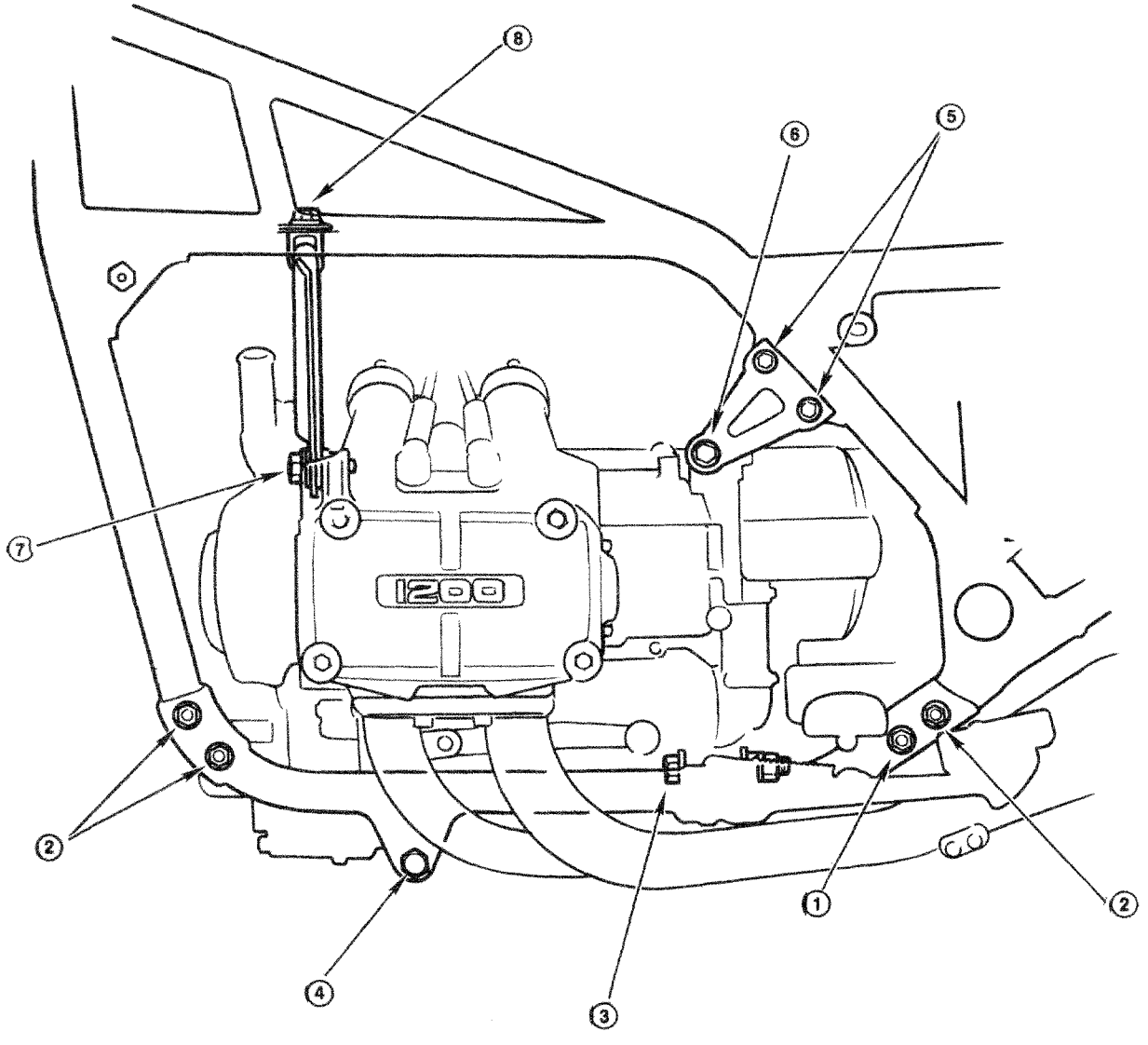
Remove the jack and torque the mounting bolts in the sequence shown:

1. 60 N.m (43 ft-lb) Left side only
2. 35 N.m (25 ft-lb) Left side only
3. 60 N.m (43 ft-lb)
4. 60 N.m (43 ft-lb)
5. 22 N.m (16 ft-lb)
6. 35 N.m (25 ft-lb)
7. 35 N.m (25 ft-lb)
8. 22 N.m (16 ft-lb)



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Frame/Suspension

Handlebar Replacement 5-2
Front Fork Illustration 5-3
Rear Shock Illustration 5-3

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Frame/Suspension

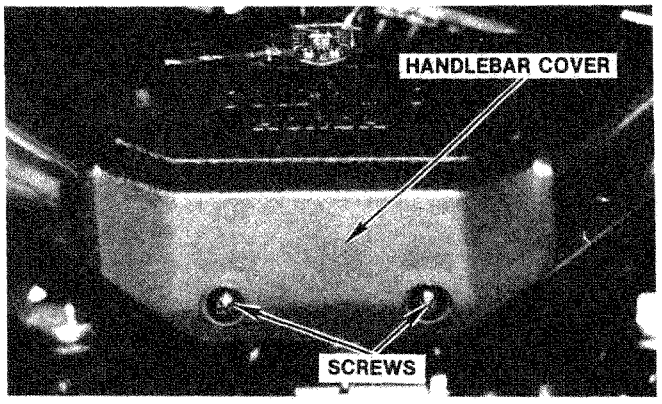
Handlebar Replacement

Removal

Remove the clutch lever and brake master cylinder from the handlebar.

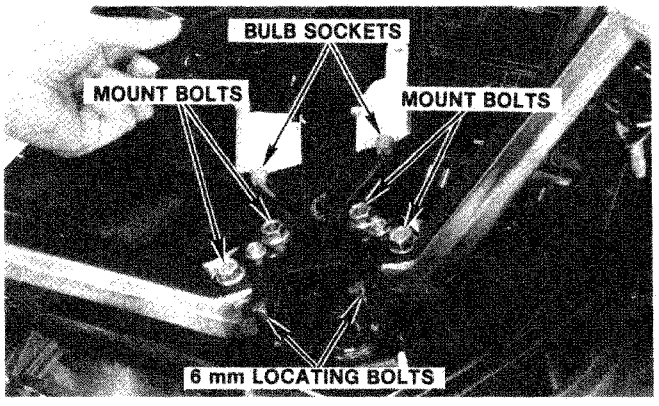
Remove the handlebar switch.

Release the handlebar cover by removing two screws.



Remove the two 6 mm locating bolts and four handlebar mount bolts.

Remove the set plate and handlebar.



Installation

Install the handlebar in the reverse order of removal.

Torque:
Handlebar mount bolt (10 mm): 35 N.m (26 ft-lb)

Handlebar locating bolt (6 mm): 10 N.m (7 ft-lb)

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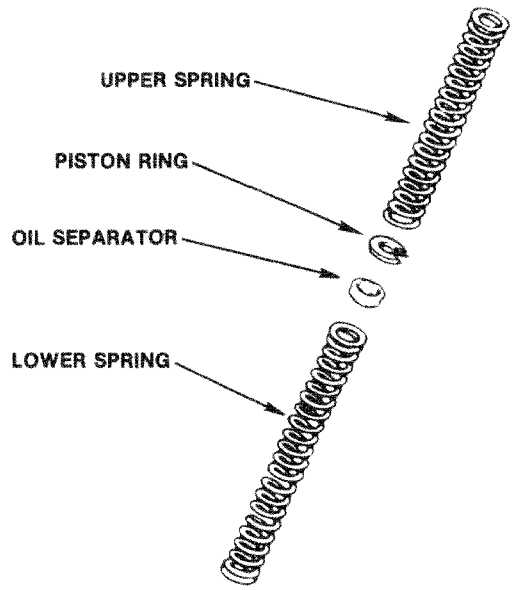
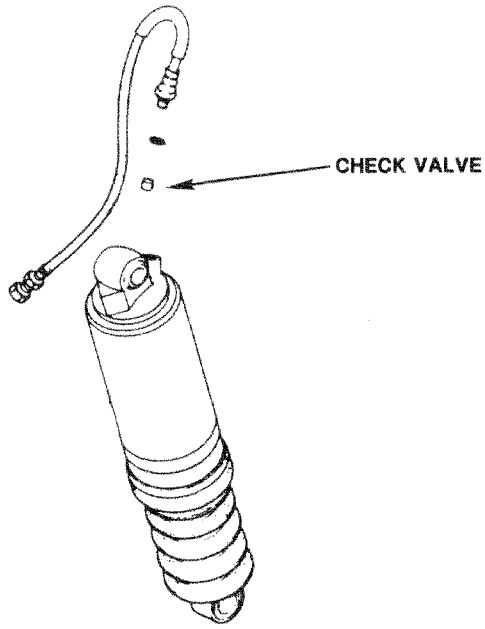
Front Fork Illustration

The GL1200L has an extra piston ring and an oil separator between the upper and lower fork springs.



Rear Shock Illustration

The GL1200L has a check valve at each rear shock absorber.



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Brakes

Front Master Cylinder 6-2

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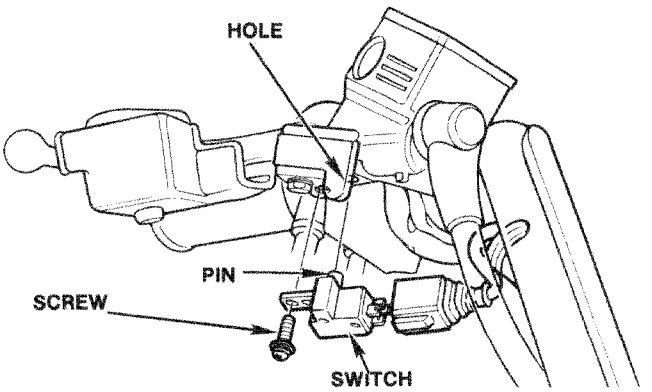
Brakes

Front Master Cylinder

Removal/Disassembly

Remove and disassemble according to the base manual procedures.

Remove the brake light/cruise cancel switch from the master cylinder by loosening the screw.

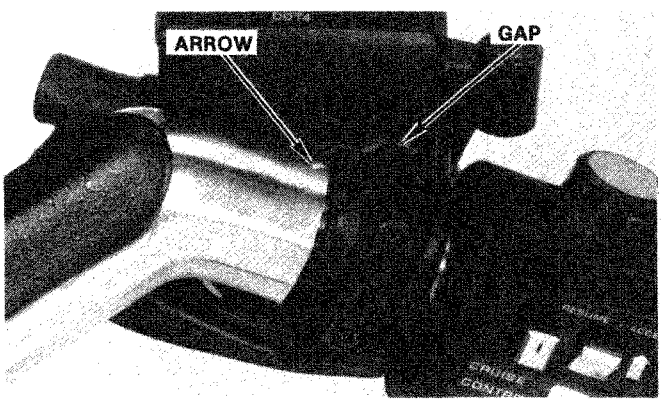


Installation

Align the gap between the holder and the master cylinder with the arrow on the handlebar.

Install the brake light/cruise cancel switch by aligning the switch pin with the master cylinder hole.

Tighten the screw securely.



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Ignition

Service Information 7-2
Troubleshooting 7-4
Ignition Timing 7-5
Ignition Coil 7-6
Spark Unit 7-7
Spark Unit Resister 7-8

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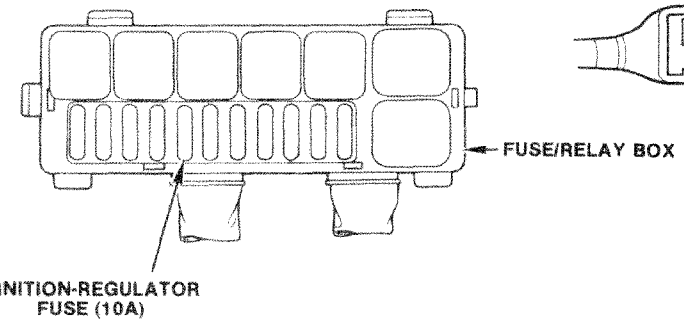
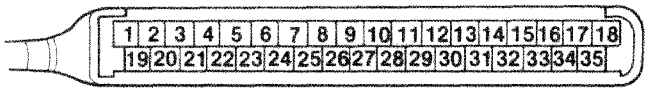
Ignition System
Service Information

- Ignition timing is electronically controlled by the CFI electronic control unit (ECU), which receives input signals from these sensors: Ns, PB, 0th, GR/GL, and TW. Refer to the CFI System (Section 10) for sensor inspection.
- Be sure the battery is fully charged before troubleshooting the ignition system.
- Measuring outputs at coupler pins: Insert the tester probes from behind the coupler pins to avoid bending or prying them open. Be careful not to short out pins.
- Disconnecting a coupler or connector: Turn the ignition switch OFF. Positive (+) and negative (−) sides are so marked. Do not remove waterproof grommets from the couplers.

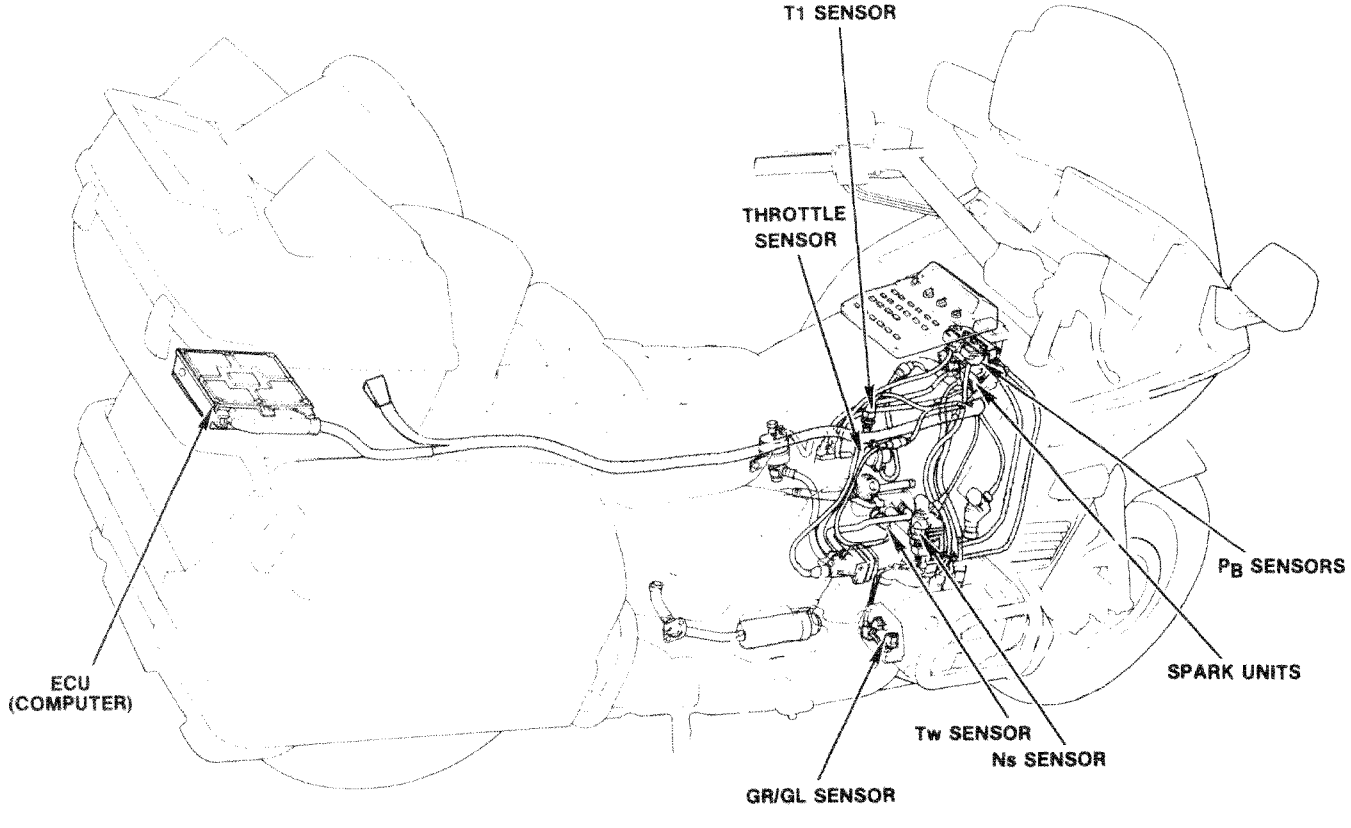
Fuses/Relays



ECU Coupler Pin Numbers



Parts Location



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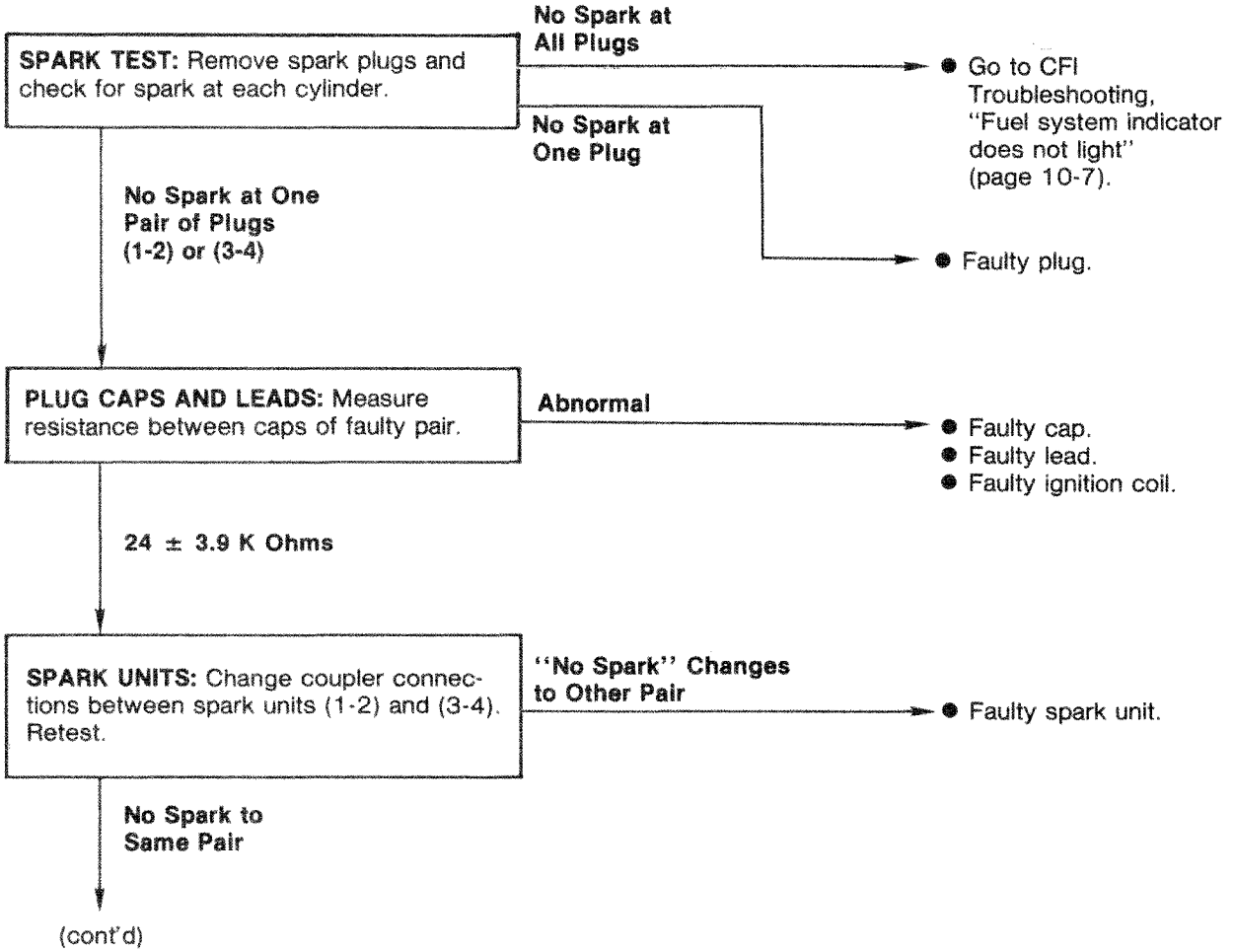
Troubleshooting

Follow the troubleshooting sequence given here if the engine does not start. If the engine starts but runs poorly, check ignition timing (see page 7-5).

WARNING: Observe the following when performing a spark test:
- Keep open flames or sparks away from the work area.
- Purge the cylinder of residual gasoline by cranking 2 or 3 seconds with the engine stop switch and fuel valve OFF.

NOTES:
- Before beginning be sure that the battery is fully charged and all wires and cables are connected properly.
- Each pair of spark plugs (1-2, 3-4) has its own ignition circuit.

Engine does not start or is hard to start.



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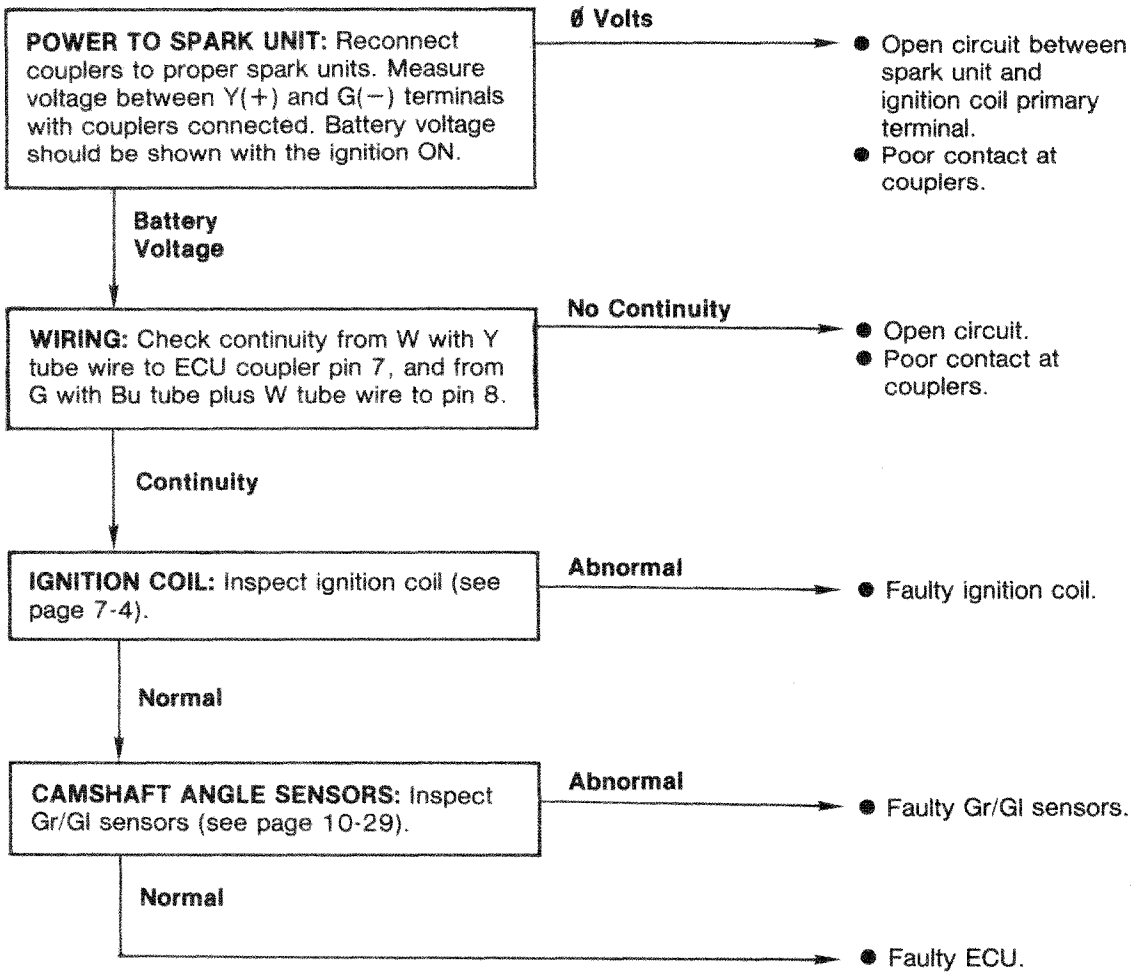

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Ignition Timing

Inspection

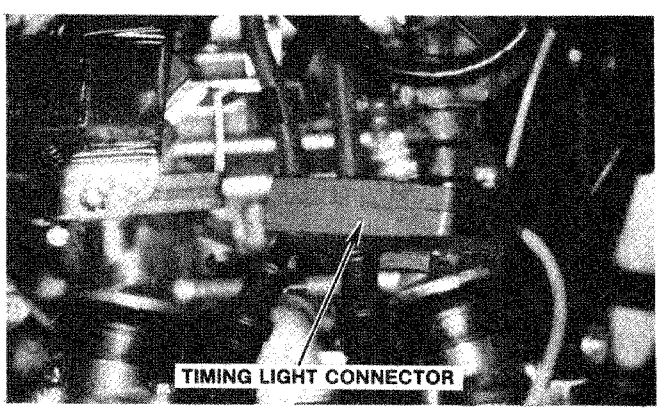
NOTE: Inspect ignition timing while the engine is hot, because the ECU will compensate timing for a cold engine.

Remove the fuel strainer from the engine mount bracket without disconnecting the fuel lines.

Remove the timing inspection plug and install the timing inspection cap.

Connect a stroboscopic timing light to the No. 1 or No. 2 cylinder spark plug wire. Start the engine and let it idle.

Idle speed: 1000 ± 100 rpm



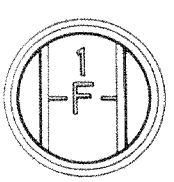
The timing is correct if the flywheel F1 mark aligns with the inspection cap center index mark at idle.

Timing advance is correct if when the engine speed is raised, the F1 mark moves up and disappears.

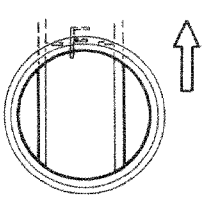
Connect the timing light to the No. 3 or No. 4 cylinder spark plug wire and repeat the procedure using the F2 mark.

If the timing is incorrect, check the PBR/PBL, Ns, 0th, NR/NL, and Tw sensors. If these sensors are OK, install a new ECU.

AT IDLE SPEED (1,000 ± 100 RPM):



AT INCREASED ENGINE SPEED:



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Ignition
Ignition Coil

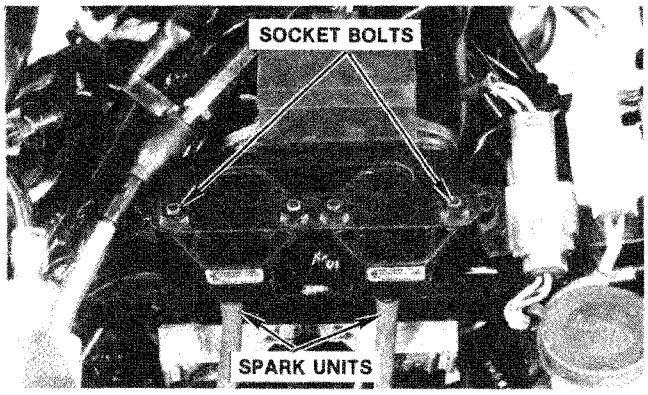
Removal

Remove the top compartment.

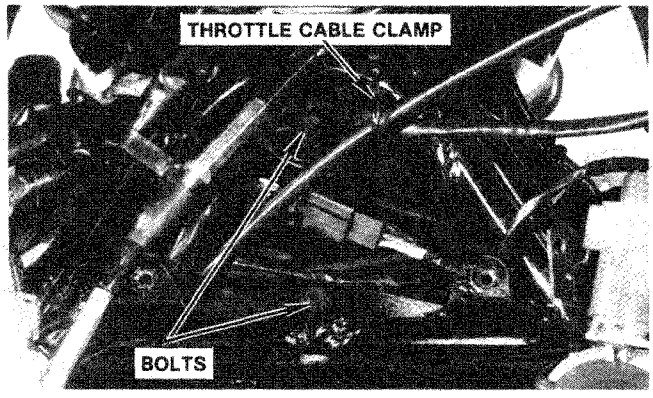
Remove the two socket bolts. Remove the PB sensor/fuel pump shut-off sensor together.

Remove the air cleaner case assembly.

Remove the mounting bolts. Remove both spark units.

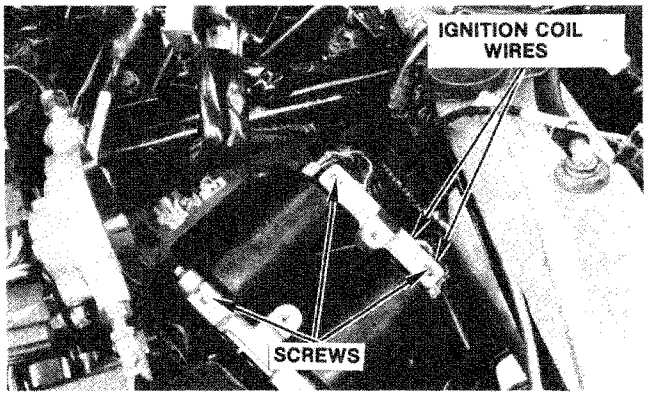


Remove the two bolts and the throttle cable guide. Pull the ignition coil toward the air cleaner.



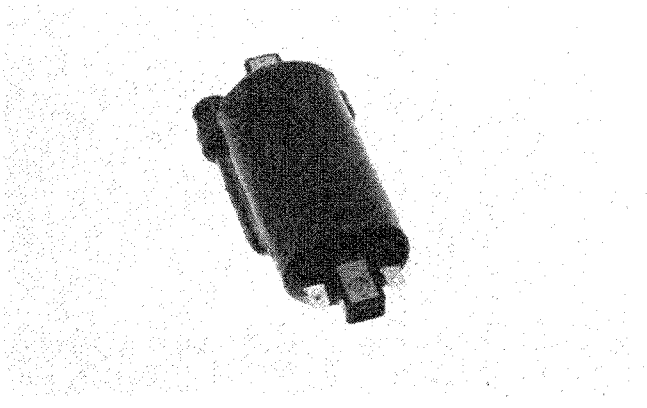
Remove the ignition coil screws and disconnect the terminal wires. Remove the ignition coil.

NOTE: When installing the coils, the Bl/W and Y/Bu wires go to the left coil (1-2). The Bl/W and Bu/Y wires go to the right coil (3-4). Coil polarity has no effect on performance.



Inspection

See the base manual for ignition coil inspection.



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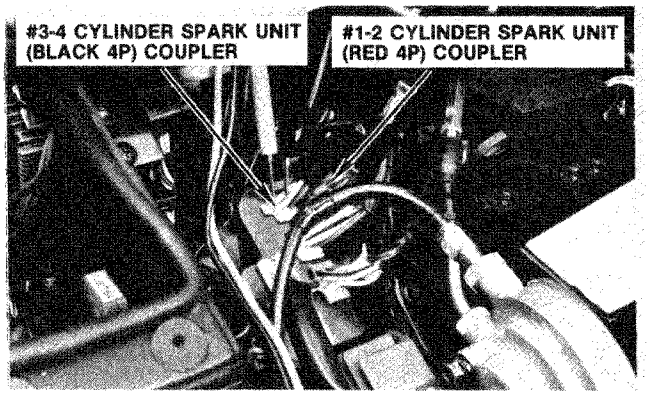
Spark Unit

Inspection

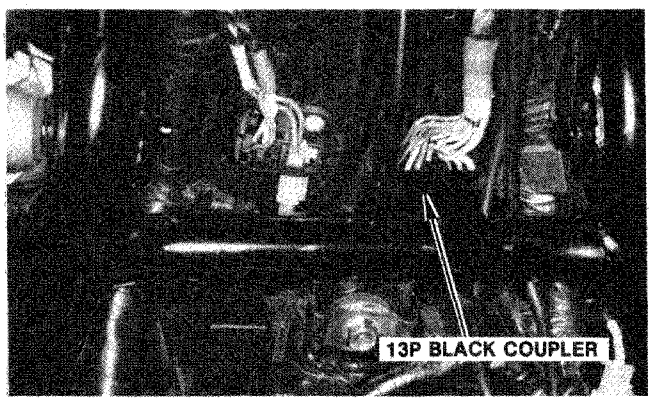
Remove the top compartment. Turn the ignition switch ON.

Measure the voltage between the coupler wires of both spark units, as described below.



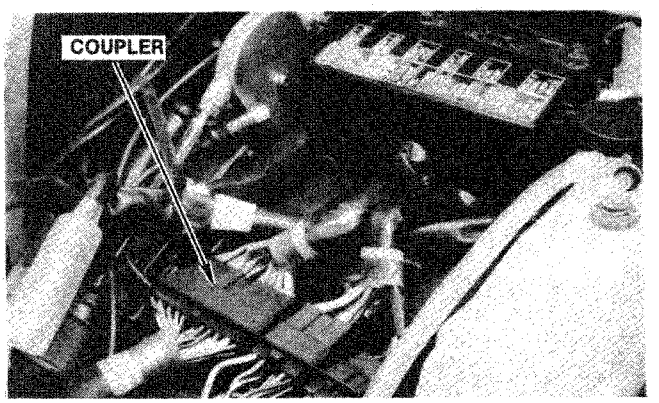
Check for battery voltage between the coupler W (+) and G (−) wires.

If there is no voltage, disconnect the coupler and check for continuity between the Y harness lead, the ECU coupler No. 33 terminal, and the black 13P coupler Y lead on the rear fender. If there is no continuity, the wiring harness has an open.



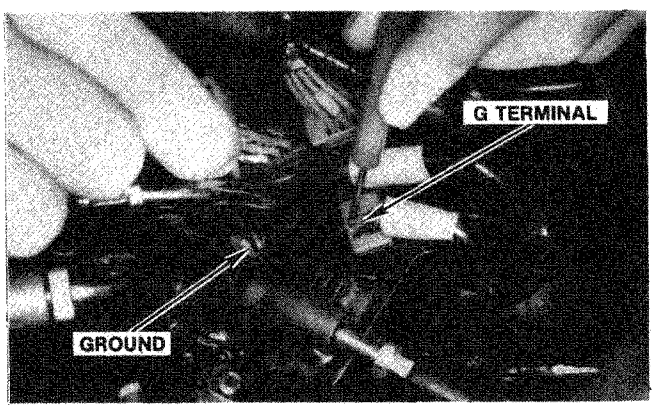
Check for battery voltage between the coupler Bl/W (+) and G (−) terminals.

If there is no voltage, check for continuity between the 21P black coupler W terminal on the fuse box and the spark unit coupler Bl/W terminal. If there is no continuity, the wiring harness has an open.



Check for battery voltage between the coupler Y (+) and G (−) terminals.

If there is no voltage, check for continuity between spark unit coupler G terminal and ground. If there is no continuity, the coupler G wire is open. If there is continuity, the spark unit is faulty.



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Spark Unit (cont'd)

Removal/Installation

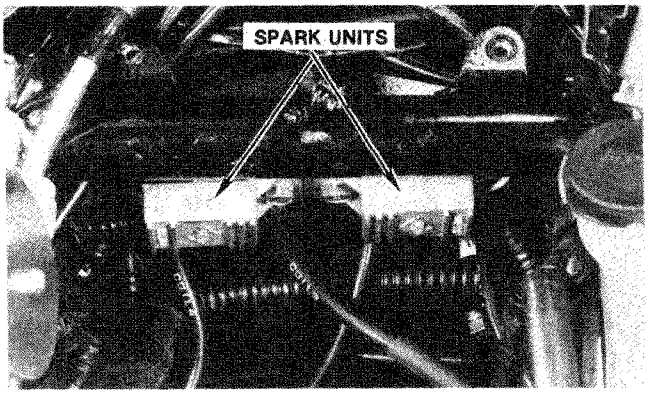
Remove the top compartment, air cleaner, and air cleaner case.

Remove the spark unit coupler.

Remove the bolt and spark unit.

NOTE: The No. 1-2 cylinder spark unit 4P coupler is red. The No. 3-4 cylinder coupler is black.

Install the spark units in the reverse order of removal.



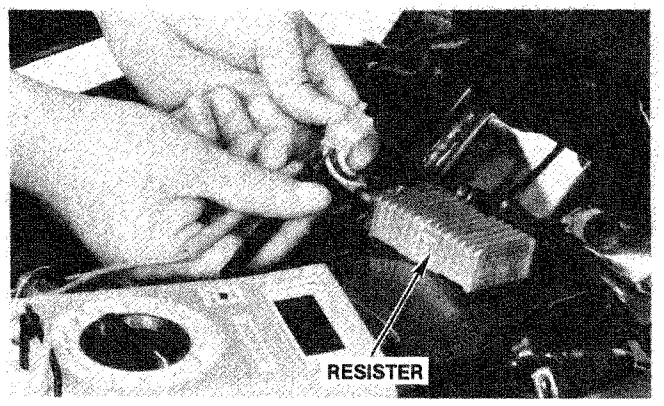
Spark Unit Resister

Inspection

Disconnect the coupler and measure resistance between the white and black wire terminals.

Resistance: 2.9- 3.2 ohms

If resistance is outside these limits, install a new resister.



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Lights/Switches/Instruments

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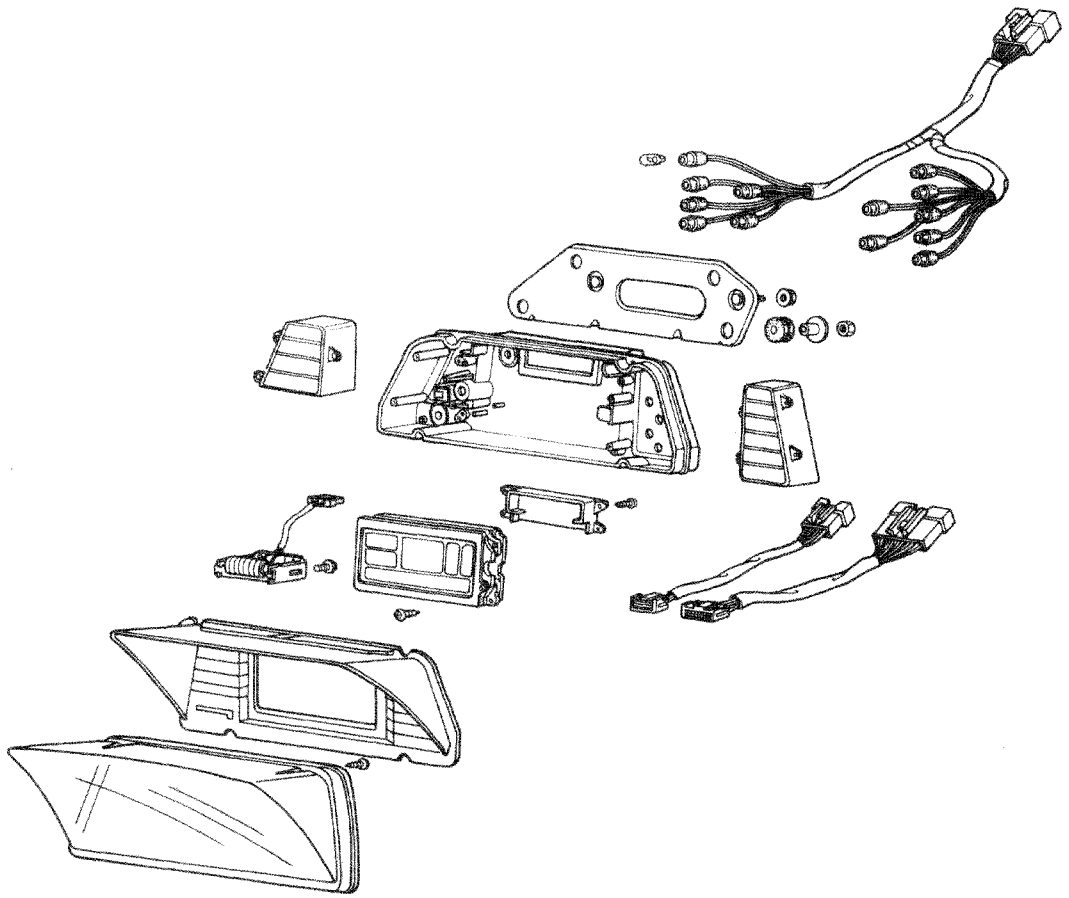
Lights/Switches/Instruments

Service Information

Refer to the base manual for disassembly/assembly procedures.



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Troubleshooting

All Liquid Crystal Displays (L.C.D.'s) remain OFF.

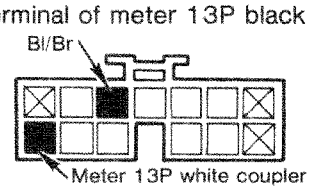
NOTE: Measure battery voltage before starting troubleshooting procedure.

FUSE: Inspect "meter" fuse in fuse/relay box.

→ **Blown** → Replace fuse. If replacement fuse blows, repair short circuit. See wiring diagram.

↓ **OK**

POWER TO COUPLER: Turn ignition ON. Measure voltage between Bl/Br terminal of meter 13P white coupler and G terminal of meter 13P black coupler.



→ **Battery Voltage (11.5 to 13.5 V)** → Disconnect meter 20P white coupler. Check for continuity between Bl/Br terminal of meter 20P white coupler (on harness die) and body ground.

- **Continuity** → ● Bl/Br wire shorted.
- **No Continuity** → ● Faulty meter.

↓ **0 Volts**

POWER TO FUSE/RELAY BOX: Measure voltage between Bl/Br terminal of fuse/relay box 9P black coupler and battery negative (−) terminal.

→ **Battery Voltage**

- ● Open circuit between main wire harness or fairing wire harness.
- ● Poor contact at right fairing coupler.

↓ **0 Volts**

FUSE/RELAY BOX: Measure voltage between each of two Bl terminals of fuse/relay box 4P black coupler and battery negative (−) terminal.

→ **Battery Voltage**

- ● Faulty fuse box.
- ● Poor contact at fuse terminals.

↓ **0 Volts**

IGNITION SWITCH: Check ignition switch for continuity; coupler for poor contacts.

→ **Abnormal**

- ● Faulty ignition switch.
- ● Poor contact at coupler.

↓ **Normal**

→ ● Open circuit in wire harness.

(cont'd)

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Troubleshooting (cont'd)

Faulty Oil Pressure Gauge.

WARNING LAMP: Start engine. Check that oil pressure warning lamp is OFF, then stop engine.

→ **On** → ● Faulty engine lubricating system (stop engine immediately).

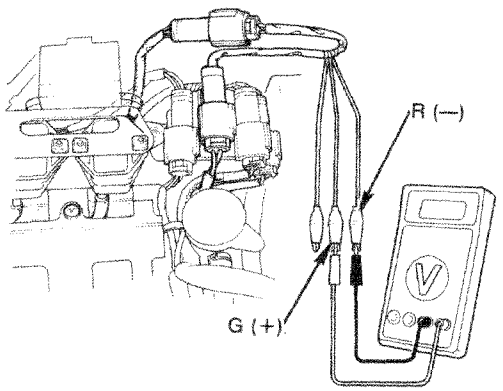
↓ **Off**

VENT TUBE: Check oil pressure sensor air vent tube for blockage or pinching.

→ **Blocked** → ● Clear air vent tube.

↓ **OK**

POWER TO SENSOR: Disconnect yellow waterproof 3P coupler of oil pressure sensor, connect inspection adapter between couplers. Turn ignition ON. Measure voltage between G (+) and R (—) leads of adapter.



→ **0 Volts** → **POWER TO METER:** Measure voltage between Bl/Br (+) terminals of meter white 20P coupler and G/Bl (—) terminal of meter white 13P coupler.

- ↓ **About 5 V** → ● Open or short circuit in Bl/Br or G/Bl wire between meter and sensor couplers. ● Poor contact at meter or left fairing coupler.
- ↓ **0 Volts** → ● Faulty meter.

→ **Abnormal (Voltage)** → ● Faulty meter. ● Short circuit in Bl/Br or G/Bl wire between meter and sensor couplers.

↓ **About 5 V**

SENSOR SIGNAL: Measure voltage between W(+) and R(−) leads of inspection adapter. Voltage should be 0.7-1.3V.

→ **0 Volts** → **SIGNAL WIRE TO METER:** Check for continuity between Bu/Y terminal of meter white 20P coupler and white lead of inspection adapter.

- ↓ **No Continuity** → ● Open circuit in Bu/Y wire of harness. ● Poor contact at left fairing coupler.
- ↓ **Continuity** → ● Faulty oil pressure sensor.

↓ **Normal**

MEASURE OIL PRESSURE: Remove oil pressure switch (not the sensor) and connect an oil pressure gauge. Start engine and measure voltages between W (+) and R (—) leads of inspection adapter at pressures shown:

Oil Pressure	Voltage
4.0 kg/cm^2 (57 psi)	2.5 V±10%
2.0 kg/cm^2 (28 psi)	1.75 V ±10%
1.0 kg/cm^2 (14 psi)	1.4 V ±10%

→ **Abnormal** → ● Faulty oil pressure sensor.

↓ **Normal** → ● Faulty meter.

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Faulty Tachometer.

WIRING: Check for continuity and short circuits between meter and spark unit couplers as follows:

Meter Coupler	Spark Unit Coupler
Y/G	Bu/Y
Y/Bu	Y/Bu

No Continuity →
- Open or short circuit in wire harness.
- Poor contact at left fairing harness coupler.

Continuity ↓

COUPLER: Check for poor contact at meter coupler.

Abnormal →
- Poor contact at meter coupler.

Normal →
- Faulty meter

Faulty Oil Temperature Gauge.

POWER TO SENSOR: Disconnect sensor wire from oil temperature sensor. Measure voltage between sensor wire and body ground with ignition switch ON.

0 Volts →

SENSOR WIRE: Check for continuity between Bu/W terminal of meter white 20P coupler and sensor wire terminal.

No Continuity →
- Poor contact at left fairing coupler or sensor red 6P coupler.
- Open circuit in engine sensor sub harness or fairing sub harness.

Continuity ↓

SENSOR WIRE: Disconnect meter white 20P coupler. Check for continuity between sensor wire terminal and body ground.

Continuity →
- Short circuit in engine sub harness, main harness or fairing sub harness.

No Continuity →
- Check meter coupler for loose contact. If coupler is OK, meter is faulty.

About 5 Volts ↓

METER: Ground sensor wire terminal; turn ignition switch ON. Check that temperature rises by one segment every 15 seconds. Also check that temperature decreases by one segment every 15 seconds by separating the sensor terminal from ground.

Normal ↓

Abnormal →

Above 200 Ω →

SENSOR: Connect sensor wire to sensor, and disconnect meter white 20P coupler. Measure resistance between Bu/W terminal of meter 20P white coupler (on harness side) and body ground. Resistance should be above 200 Ω when engine is cold (below 40°C/104°F).

Below 200 Ω →
- Check for poor contact between sensor wire and sensor. If OK, sensor is faulty.

Above 200 Ω ↓

NOTE:
Resistance will be less when engine is hot.

→
- Recheck with a known good meter.

(cont'd)

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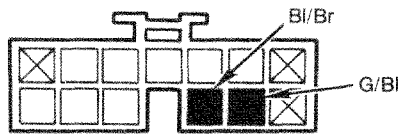
Troubleshooting (cont'd)

Faulty Speedometer.

POWER TO SENSOR: Turn ignition ON. Measure voltage between Bl/Br (+) and G/Bl (—) terminals of meter white 13P coupler.



0 Volts →

WIRING: Disconnect meter white 13P coupler, and check for continuity between Bl/Br and body ground on harness side coupler.

- **Continuity** ↓
  - ● Short circuit in harness.
- **No Continuity** ↓
  - ● Faulty meter.

Battery Voltage ↓

SENSOR SIGNAL: Measure voltage between Bl/Y (+) and G/Bl (—) terminals of meter white 13P coupler. Rotate front wheel slowly. High (above 3.5 V) and Low (below 1.5 V) pulses should appear (ETC must be connected).

Abnormal →

WIRING: Disconnect meter white 13P coupler, and check for continuity between Bl/Br and Bl/Y terminals of harness side coupler and sensor black 3P coupler.

- **Normal** ↓
  - ● Faulty sensor.
- **Abnormal** ↓
  - ● Open or short circuit in harness
  - ● Poor contact at left fairing coupler or sensor coupler

Normal →

- ● Check for poor contact at meter coupler. If it is OK, meter is faulty.

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Tachometer Will Not Shift to Digital Display.

METER: With the couplers connected, short Lg/Y terminal of meter white 20P coupler to G/Bl terminal of meter white 13P coupler. Meter should shift to digital display.

Meter Does Not Shift →
- Check for poor contact at meter coupler. If it is OK, meter is faulty.

Meter Shifts ↓

ETC UNIT/WIRING: Short Lg/Y terminal of E.T.C. 17P coupler to the 13P G/Bl terminal. Meter is normal if it shifts to digital display.

Meter Does Not Shift →
- Open or short circuit in harness.
- Poor contact at left fairing coupler.

Meter Shifts →
- Check for poor contact at ETC unit coupler. If coupler is OK, ETC unit printed circuit board is faulty.

Water Temperature/Fuel Gauge Will Not Shift to Oil Temperature/Pressure Gauge.

METER: Short Lb/W terminal of meter white 20P coupler to G/Bl terminal of meter white 13P coupler. Meter is normal if display shifts.

Display Does Not Shift →
- Check for poor contact at meter coupler. If it is OK, meter is faulty.

Display Shifts ↓

ETC UNIT/WIRING: Short Lb/W terminal of ETC unit to ETC white 17P coupler G/Bl terminal. Display should shift.

Display Does Not Shift →
- Open or short circuit in wire harness.
- Poor contact at left fairing coupler.

Display Shifts →
- Check for poor contact at ETC unit coupler. If it is OK, ETC unit printed circuit board is faulty.

(cont'd)

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Troubleshooting (cont'd)

Display Will Not Shift Between "km" and "mile".

METER: Short Bu/Bl terminal of meter white 20P coupler to G/Bl terminal of meter white 13P coupler. Display should shift.

Display Does Not Shift →
- Check for poor contact at meter coupler. If coupler is OK, meter is faulty.

Display Shifts ↓

ETC UNIT/WIRING: Short Bu/Bl terminal of ETC unit white 17P coupler to G/Bl terminal. Display should shift.

Display Does Not Shift →
- Open or short circuit in wire harness.
- Poor contact at left fairing coupler.

Display Shifts →
- Check for poor contact at ETC unit coupler. If coupler is OK, trouble is in ETC unit printed circuit board.

Tripmeter Cannot Be Reset.

METER: Short R/G terminal of meter white 20P coupler to G/Bl terminal of meter white 13P coupler. Meter is normal if it resets.

Meter Does Not Reset →
- Check for poor contact at meter coupler. If coupler is OK, meter is faulty.

Meter Resets ↓

ETC UNIT/WIRING: Disconnect meter white 20P coupler and ECU white 17P coupler. Check for continuity between R/G terminals of both couplers.

No Continuity →
- Open or short circuit in wire harness.
- Poor contact at left fairing coupler.

Normal →
- Check for poor contact at ETC unit coupler. If coupler is OK, trouble is in ETC unit printed circuit board.

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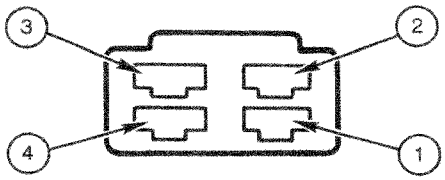
One Cornering Light Will Not Come On.

RELAY: Exchange relays (6) and (7) in fuse/relay box.

Fault Shifts to Other Side → ● Faulty relay.

Fault Does Not Shift ↓

Remove relay and short relay base terminal 1 to terminal 2. Check that light goes ON when ignition switch is ON.



Light Comes ON ↓

- Poor contact at relay terminal.
- Faulty relay.

Light Stays OFF → **POWER TO RELAY:** Measure voltage between terminals (1) (+) and (4) (−).

0 Volts ↓ **POWER TO COUPLER:** Measure voltage between Br/Bu (+) and G (−) terminals of fuse/relay box black 21P coupler.

Battery Voltage

- Blown bulb.
- Poor contact at fuse/relay box coupler.
- Open circuit in wire between relay terminal and coupler.

0 Volts ↓ **FUSE:** Check for blown fuse (3) or poor fuse contact.

Battery Voltage → ● Open circuit in fuse/relay box.

Fuse OK ↓ **FUSE/RELAY BOX:** Measure voltage between Bl (Lb banded) (+) and G (−) terminals of fuse/relay box black 21P coupler.

Fuse Blown → ● Replace fuse or repair as necessary.

0 Volts ↓

- Poor contact at tail-light relay coupler.
- Faulty taillight relay (under ignition coils).
- Open circuit in wire harness.

Battery Voltage → ● Open circuit in fuse/relay box.

Light Stays OFF ↓ **SIGNAL TO RELAY:** With left handlebar switch couplers connected, measure voltage between Lb/W or O/W (brown 9P) and G (black 9P) terminals of switch couplers under rubber cover next to left fairing pocket. Battery voltage should be present between these terminals:

Switch position	Lb/W-G	O/W-G
R	0V	12V
OFF (Neutral)	12V	12V
L	12V	0V

Check Both

Normal → **WIRING:** Check Lb/W and O/W wires for continuity between handlebar switch coupler and fuse/relay box black 21P coupler.

Normal ↓

- Open circuit in fuse/relay box.

Abnormal

- Open circuit in wire harness.

Abnormal ↓ Ⓐ

(cont'd)

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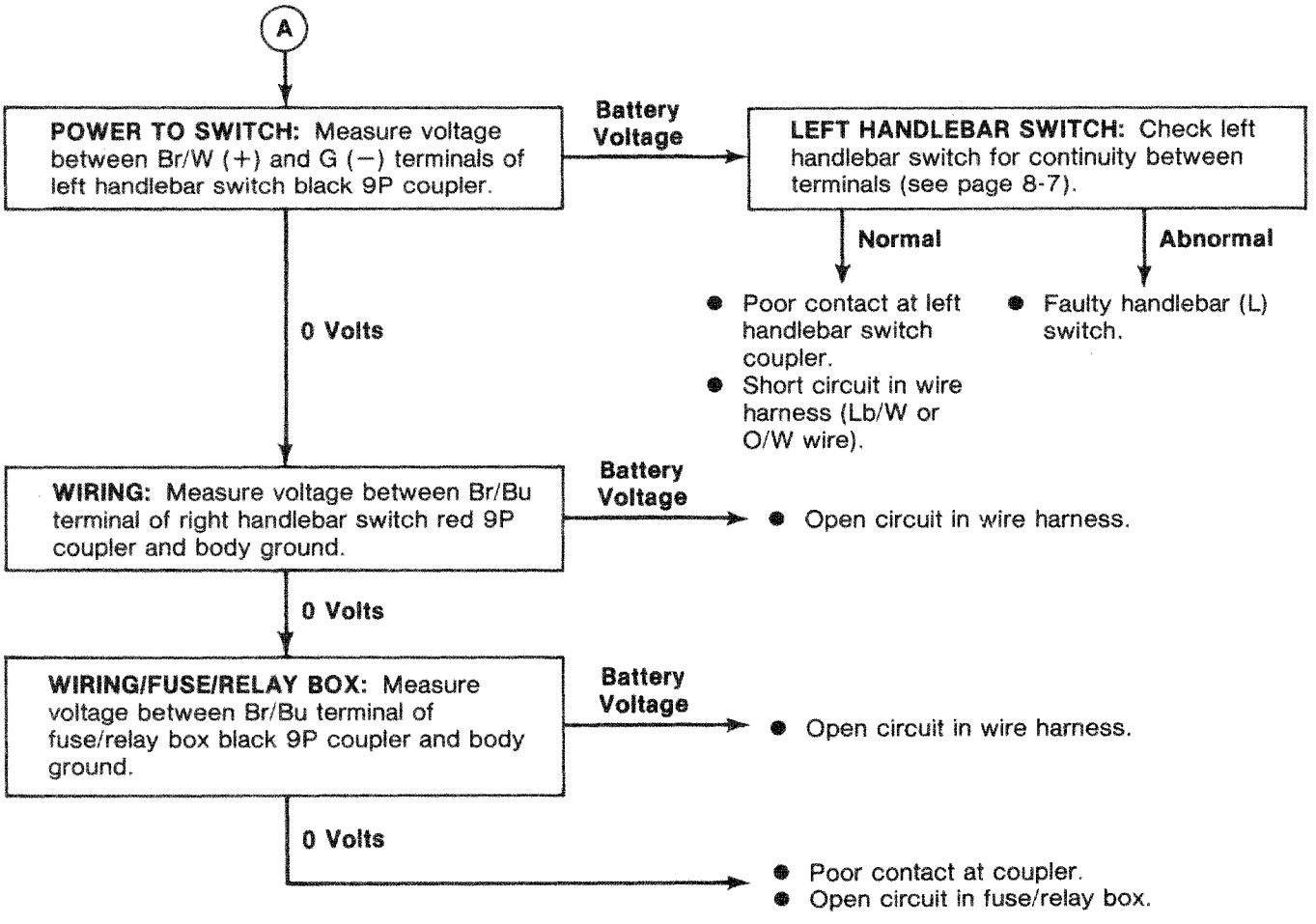
Troubleshooting (cont'd)



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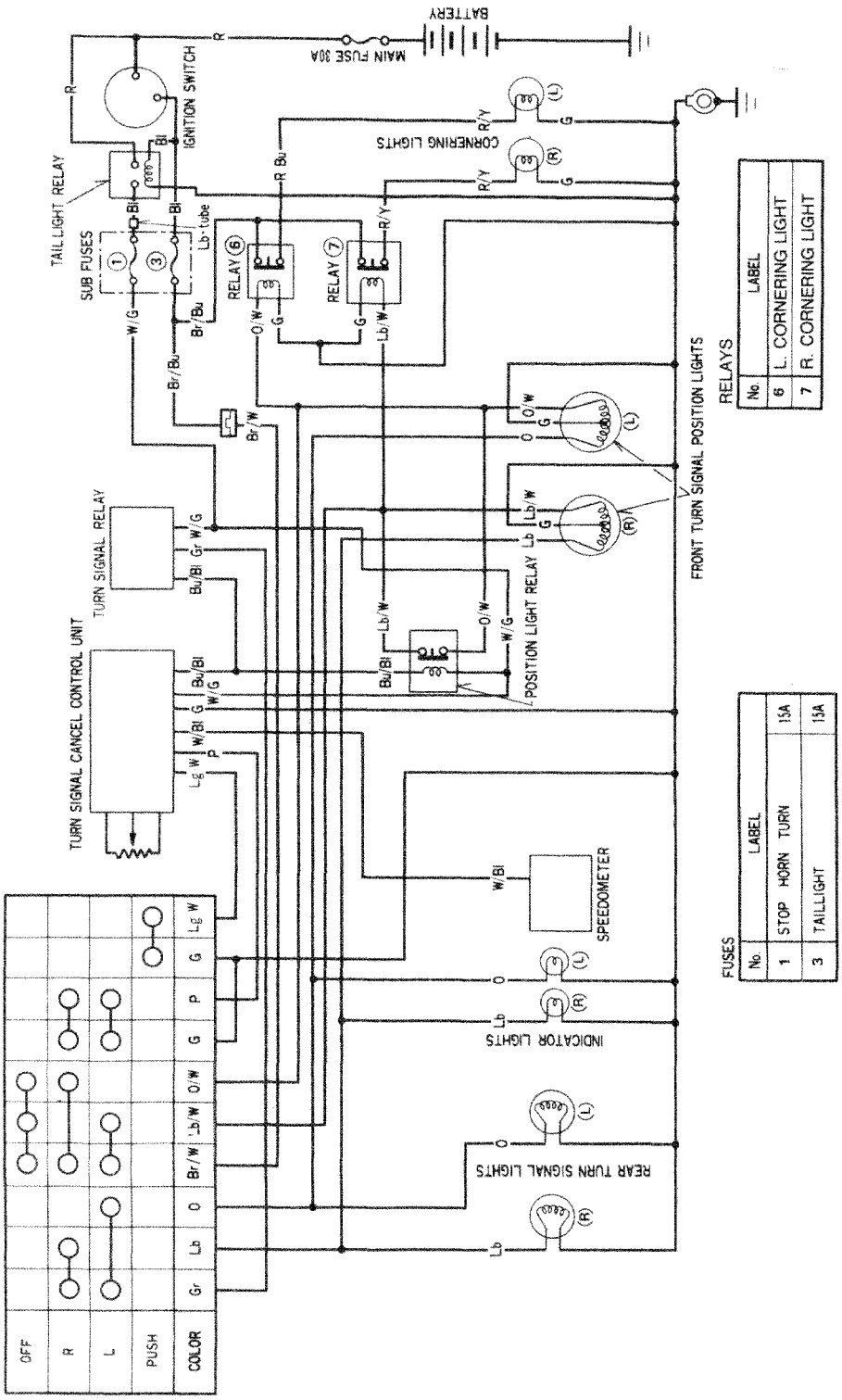
Turn Signal/Cornering Lights

System Diagram



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Front Brake Light Switch

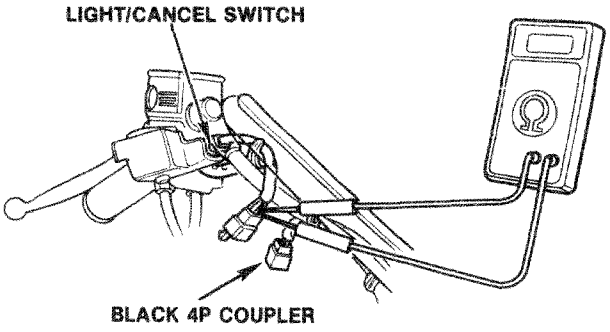
Inspection

Disconnect the front brake light/cancel switch connector under the right handlebar.

Check continuity between G/Y and W/G wire terminals on the switch side coupler.

Lever released: No continuity
Lever pulled: Continuity

Check continuity at the switch terminals and replace the switch if continuity is abnormal.



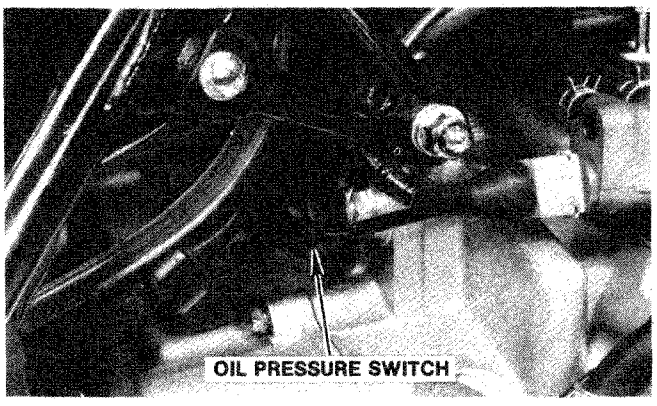
Oil Pressure Warning Switch

Installation

The oil pressure warning switch is behind the charcoal canister on the California model.

Torque: 12 N.m (9 ft-lb)

NOTE: Make sure the switch wire doesn't contact the clutch cable after installation.



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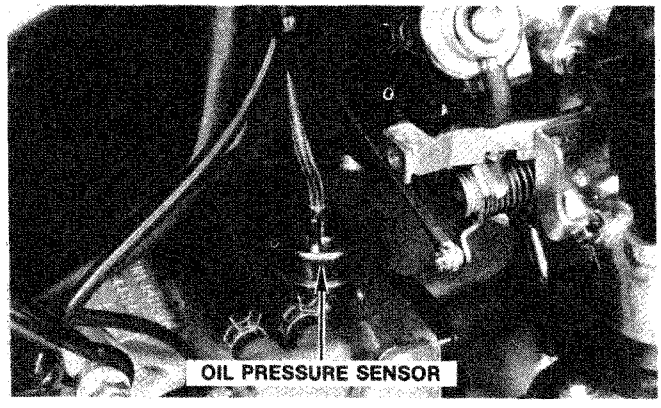
Oil Pressure Sensor

Removal



Disconnect the yellow 3P sensor coupler under the right side of the shelter.

Remove the air cleaner cover.

Release the wire from its two guides and pull the coupler through the gap between the frame and radiator neck.

NOTE: Be careful not to twist the sensor wire during removal and installation.

Remove the air vent hose, then the oil pressure sensor.

Installation

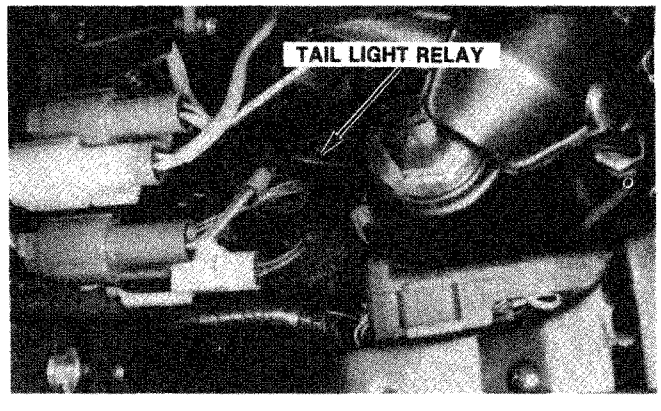
Apply sealant to the switch threads. Install and tighten the switch.

Torque: 12 N.m (9 ft-lb)

Connect the sensor coupler and air vent tube. Install the air cleaner cover.

Tail Light Relay

Inspection

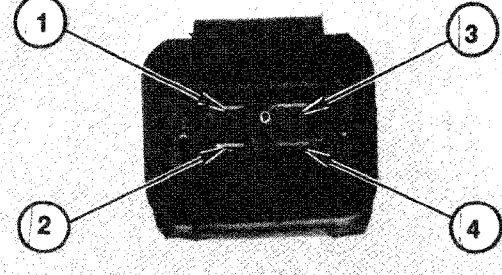


Remove the shelter.

The relay is just to the left of the radiator cap. Remove the relay from the bracket and pull off the rubber cover.

Depress the catch on the coupler with a long screwdriver and pull the relay out.

Check for no continuity between terminals #1 and #2. If there is continuity, install a new relay.



Apply battery voltage across terminals #3 and #4 and check the continuity between #1 and #2. If there is no continuity, install a new relay.

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Lights/Switches/Instruments

Handlebar Switches

Turn Signal Switch

Remove the left side fairing pocket and shelter.

Inspect at the black and brown 9P couplers behind the rubber cover.

Test for continuity between the color coded wires.

Color	Gr	Lb	O	Br/W	Lb/W	O/W	G	P	G	Lg/W
R	○—○			○—	—○	○	○—○			
N			○—	—○—	—○					
L	○—	——	—○	○—	—○		○—○			
PUSH									○—○	

Starter Button

Inspect at the 9P red coupler on the right inner side of the fairing.
Test for continuity between the color coded wires.

	Bl/Lg	Y/R	Bl/R	Bu/W
FREE			○—	—○
PUSH	○—	—○		

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Accessories

Fairing Lower Covers 9-2

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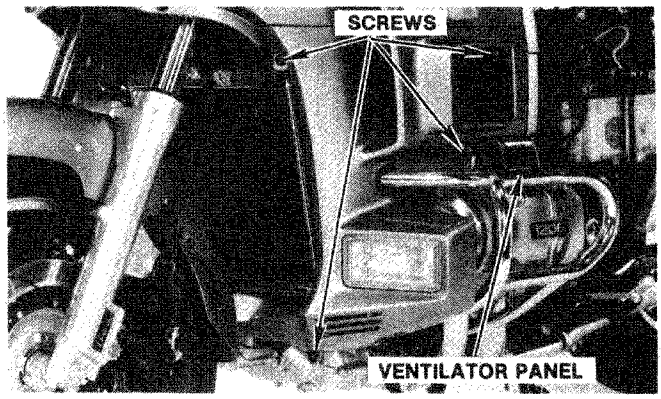
Accessories

Fairing Lower Covers

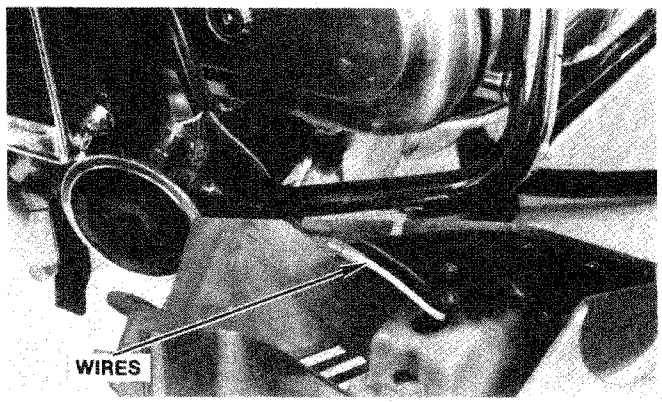
Removal

Remove the five screws and collars to release the fairing lower cover.

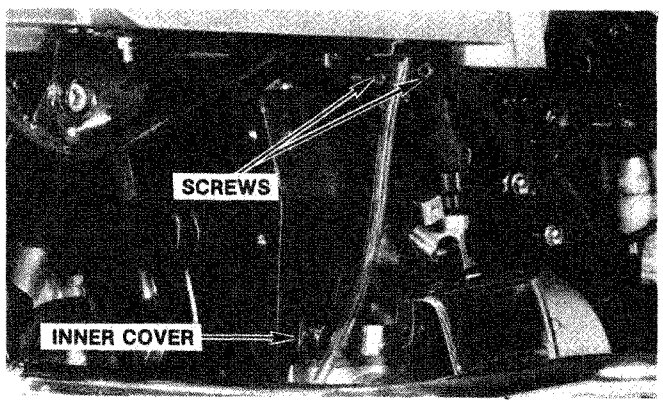
Remove the air ventilator panel from the fairing.



Hold the lower cover while you disconnect the cornering light wires, then remove the cover.



Release the inner cover by removing the screws.



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CFI (Computerized Fuel Injection) System

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(TW) Sensor 10-30
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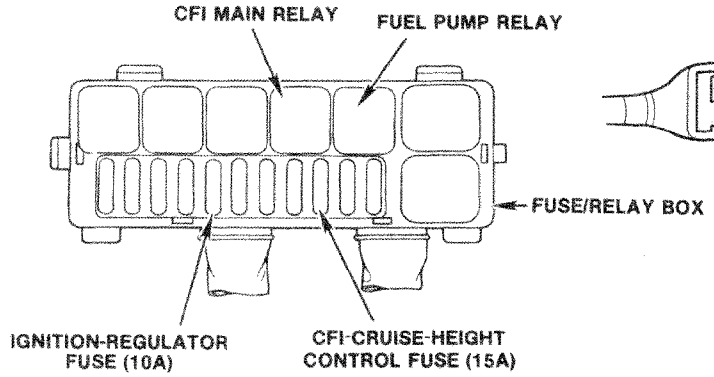
CFI System

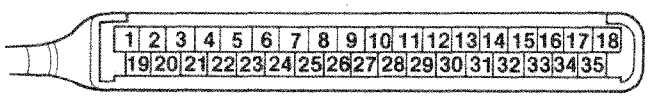
Service Information

- Disconnecting fuel lines: Turn the ignition switch OFF when fuel lines are separated. Install new O-rings and sealing washers during reassembly.
- Measuring outputs at coupler pins: Insert the tester probes from behind the coupler pins to avoid bending or prying them open. Be careful not to short out pins.
- Disconnecting a coupler or connector: Turn the ignition switch OFF. Positive (+) and negative (−) sides are so marked. Do not remove waterproof grommets from the couplers.

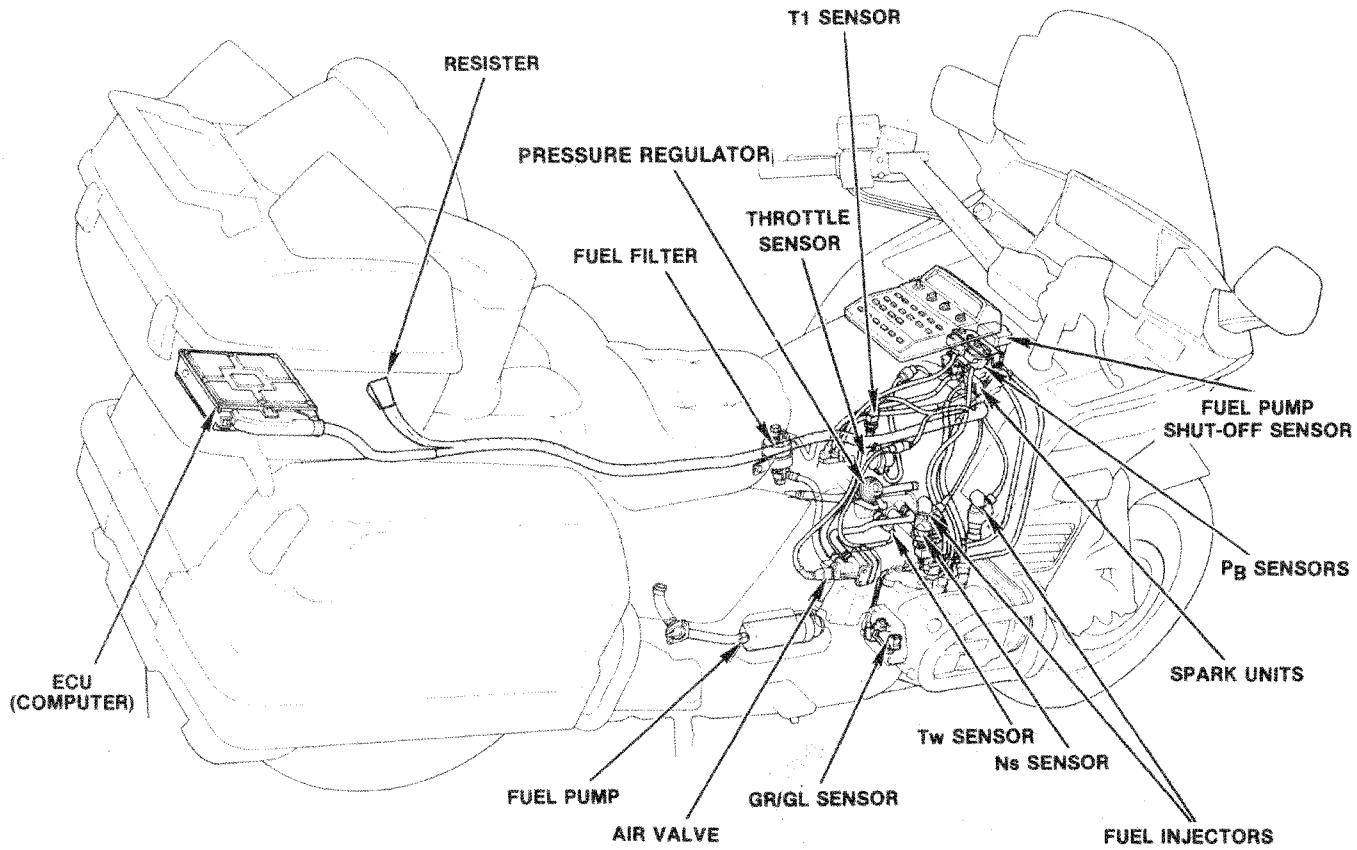
Fuses/Relays



ECU Coupler Pin Numbers



Parts Location



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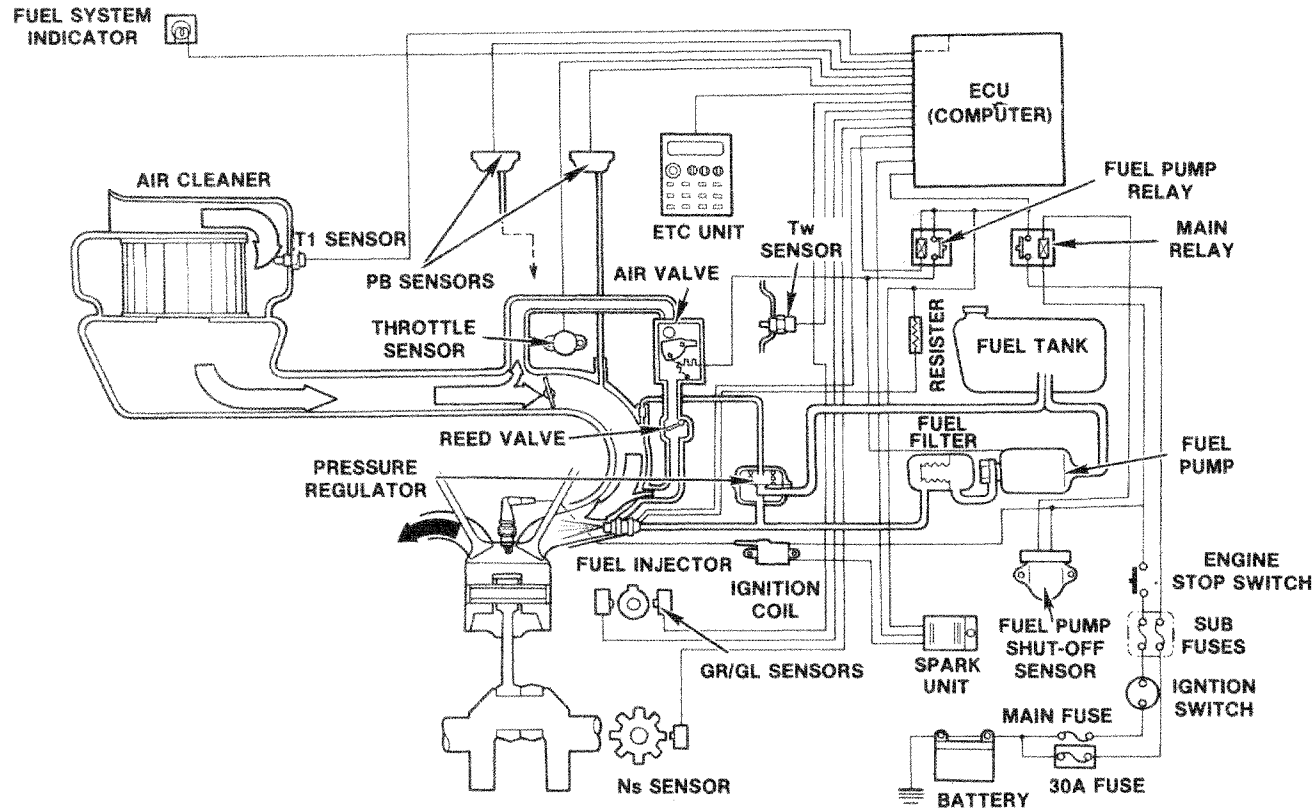
System Diagram



Parts Functions

Part Name	Function
Air temperature sensor (T_1)	To detect intake air temperature and send signals to micro computer.
Pressure sensors (P_{BR}/P_{BL})	To detect right and left intake pipe pressure and send signals to micro computer.
Throttle sensor (0th)	To detect opening angle of throttle and send signals to micro computer.
Coolant temperature sensor (T_W)	To detect coolant temperature and send signals to micro computer.
Crankshaft angle sensor (Ns)	To detect variations of crankshaft speed and to send signals to the micro computer. Micro computer controls ignition timing and fuel injection volume accurately.
Camshaft angle sensor (GR/GL)	To detect specific angular position of crankshaft and send signals to micro computer. Micro computer then determines fuel injection and ignition timing for both cylinders.
Fuel pump relay	To control fuel pump power supply according to voltage from the micro computer.
Main relay	To turn computer power supply on and off depending on how ignition switch or engine stop switch is operated. Entire function of CFI system is stopped when supply of power to micro computer is shut down.
Fuel pump shut-off sensor	To turn main relay off when motorcycle is leaned over 60° on either side, stopping the function of the CFI system.
Computer unit	● Receives signals from various sensors to get fuel into cylinders in correct amount and at the right time through the injectors. ● Determines optimum ignition timing based on signals sent from various sensors. Also controls ON/OFF of ignition current. ● Controls fuel pump. ● Indicates faulty system or components through self-diagnosis system and offers fail-safe functions.

(cont'd)

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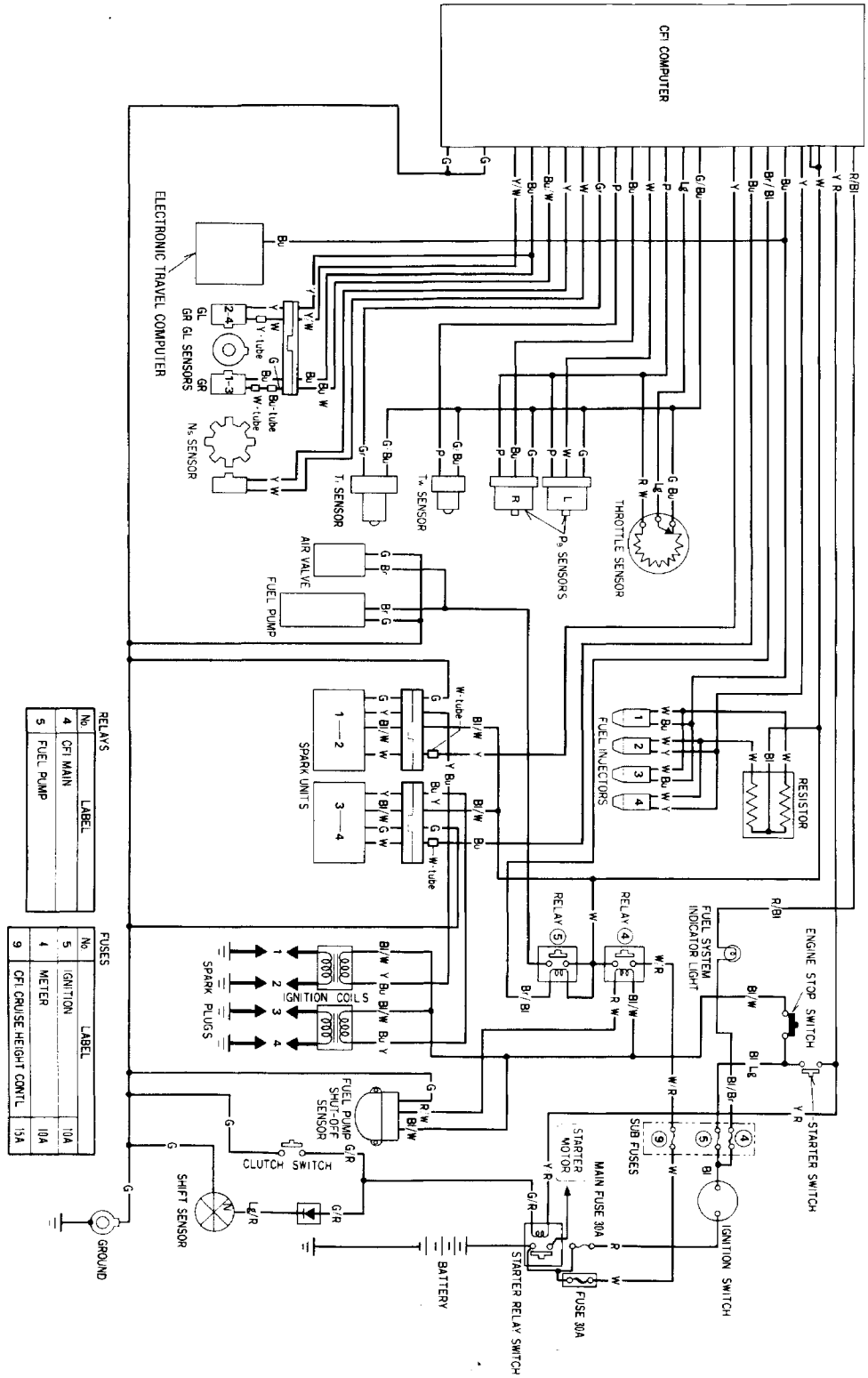
CFI System

Service Information (cont'd)

System Wiring Diagram



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CFI Quick Reference Chart

•.....Probable cause
○.....Other possibilities

System	Symptom / Faulty part	Hard starting (cold)	Hard starting (hot)	Erratic or poor idling	Engine stalling	Poor acceleration/lack of power	Poor performance driveability	Excessive fuel consumption	Afterfire	Misfire /Backfire	Knocking	Overheating	Poor engine braking	Abnormal noise	Excessive white smoke	Excessive black smoke	Ref. page
FUEL SYSTEM	Fuel pressure	•	•	•	•	•	○	•	•	•						•	10-20
	Fuel leak	○	○	○	○	○	○	○	○	○							*
	Gasoline										•						*
	Fuel valve	○	○	○	○	○	○	○	○	○							*
	Fuel filter	○	○	○	○	○	○	○	○	○							3-3
	Fuel pressure regulator	•	•	○	○	○	○	○	○	○							10-20
CFI SYSTEM	Fuel pump (confirm by operating noise)	•	•		○												10-31
	Injector (confirm by "click")	•	•	○	○	○			○							○	10-20
	Throttle sensor					○	•	•								○	10-24
	PBR/PBL sensors	○	○	•	•	○	•	•	•	○						○	10-22
	Air valve/reed valve	○		•						•			○				10-34, 36
	T1 sensor			○					○	○							10-29
	TW sensor	○		○												•	10-30
	Wire connectors	•	•	•	•	•	•	○	○	○						○	10-28
	Tubing	○	•	•	•	•	•	○	○	○						○	*
	ECU unit	•	•	○	○	•	○	○	○	•	•					○	*
	Throttle valve synchronization			•	○			○	○	•							10-33
IGNITION SYSTEM	Spark plugs	•	•	•	•	•	•	•	•	•	•					•	3-5
	Spark plug wire	○	○	○	○	•	○										*
	Ignition coil	○	○	○	○	○	○										*
	Spark unit	○	○		○				○	○							*
	Wire connectors	•	•	○	○	•	•	•	○	•	•	○					7-7
	Battery	○	○	○													7-2
	GR/GL sensors	•	•	○	○		○	○	○								*
	Ns sensor				○	•	•	○	○	○							10-27
	Plug gap	○	○	•	○	○	○	○	○	○							*
ENGINE	Secondary air leak			•	•	•	•			•				•			*
	Leaky exhaust parts					○								•	•		*
	Cylinder compression	○	○	○	○	○						○					*
	Insulator (fuel settled)				○					•						○	*
	Worn piston/rings/cylinder														•		*
	Worn valve stems/guides/seals					○		○				•			•		*
FRAME	Brake dragging					○		•									*
	Coolant level											•					*
	Clogged crankcase breather														•		*
	Ref. page	10-10		10-18		10-12	10-13	10-17	10-14	10-15	*	*	*	*	10-17		

* If a page reference is not listed, consult the GL1200 I/A Service Manual.

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CFI System

CFI Self-Diagnostic System

The computer memory includes some fail-safe functions and a self-diagnosis program with a series of LED's on the computer housing side. These indicators light to indicate problems in the systems and components listed below.

The system includes a LED self-checking function. The five LED's and the fuel system warning light should remain ON for about 1.5 seconds after the ignition switch is turned ON. The LED's can be inspected without removing the computer from its mount.

◑ : Blinking ● : On ○ : Off

DISPLAY 3 2 1 0 W	LOCATION	PROBLEM	FAIL-SAFE FUNCTION
○○○◑●	PBR sensor	• Open circuit • Shorted signal wire	PBL sensor output is used. When PBL sensor is faulty, N_E-Oth map is used for both injection and ignition timing.
○○◑○●	PBL sensor	• Open circuit • Shorted signal wire	PBR sensor output is used. When PBR sensor is faulty, N_E-Oth map is used for controlling fuel injection and ignition timing.
○○◑◑●	Throttle sensor	• Open circuit • Shorted signal wire	N_E-P_B map is used for controlling fuel injection and ignition timing. When P_B sensors are also faulty, fuel discharge duration and ignition timing are both fixed.
○◑○○●	ECU (P_I sensor)	• Faulty ECU (P_I sensor)	P_I is fixed to 760 mm (30 in) Hg.
○◑○◑●	T_I sensor	• Open circuit • Shorted signal wire	T_I is fixed to 25°C (77°F).
○◑◑○●	Tw sensor	• Open circuit • Shorted signal wire	Tw is fixed to 85°C (185°F)
○◑◑◑●	#2, 4 cylinder injectors	• Open or short circuit (NOTE 1) (NOTE 2)	Fuel injection and ignition timing are both stopped.
◑○○○●	#1, 3 cylinder injectors	• Open or short circuit (NOTE 1) (NOTE 2)	Fuel injection and ignition timing are both stopped.
◑○○◑●	Ns sensor	• Open circuit • Shorted signal wire (NOTE 1)	Fuel injection and ignition timing are both stopped.
◑○◑◑●	G_L sensor	• Open circuit • Shorted signal wire (NOTE 1)	Normal fuel injection and ignition timing control occur on G_R signals. When both G_L and G_R sensors are faulty, fuel injection and timing control are stopped.
◑◑○○●	G_R sensor	• Open circuit • Shorted signal wire (NOTE 1)	Normal fuel injection and timing control are done by signals from G_L sensor. When both G_L and G_R sensors are faulty, fuel injection and timing control are stopped.

NOTES:

1. LED indicators for faulty injectors, open circuit, and Ne, NR/NL sensors will turn off when the ignition switch is turned OFF, and not relight until the engine is re-started.

2. Indicators for injectors faulty by open circuit will light only when both injectors in either bank fail simultaneously. Indicators will light, however, for a single injector faulty by a short circuit.

3. LED's will blink alternately when indicating more than one problem.

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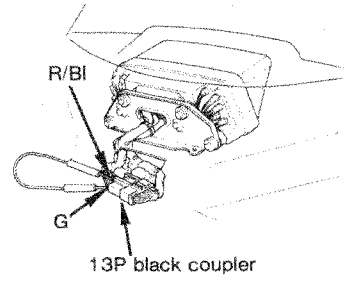
Troubleshooting

Fuel system indicator does not light (while other indicators are lit).

LED's: LED's on ECU stay ON after ignition switch is turned ON?

Led's ON

BULB: Short the R/Bl and G wire terminals at 13P black coupler. Indicator should light with the ignition switch ON.



Good

- Damaged R/Bl wire between 13P black coupler and ECU.
- Poor contact at coupler.

No Good

- Burned out bulb or damaged R/Bl or G wires in instrument.

LED's OFF

POWER TO ECU: Measure ECU input voltage between ECU coupler terminals 1 (+) and 2 (−).

Battery Voltage

ECU: Check ECU coupler for loose contact.

No Good

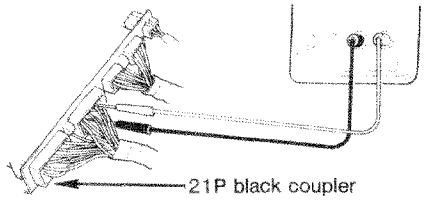
- Poor contact.

Good

- Faulty ECU.

0 Volts

POWER TO RELAY BOX: Measure voltage between W (+) and G (−) terminals of fuse/relay box 21P black coupler.



Battery Voltage

- Poor contact at black 13P coupler on rear fender.
- Damaged W wire between this coupler and ECU coupler (pins 1 and 19).

0 Volts

RELAY: Replace CFI main relay in fuse/relay box with a known good relay. Recheck indicator.

Good

RELAY: Check CFI main relay operation (see page 10-31).

Good

- Poor contact at main relay terminal.

No Good

- Faulty CFI main relay.

No Good

(A)

(cont'd)

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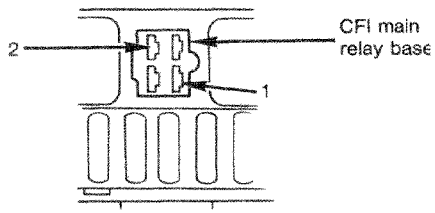
(A)

POWER TO RELAY: Remove CFI main relay and measure voltage between terminal 1 of relay base and ground.



0 Volts →
- Faulty ignition switch.
- Faulty engine stop switch.
- Broken or loose subfuse (5).
- Poor contact at couplers.
- Open or short circuit in harness.

Battery Voltage

WIRING: Measure voltage between terminal 2 of relay base and ground.

0 Volts →
- Broken or loose subfuse (9) or 30A fuse.
- Open or short circuit in wire harness (W wire).
- Open or short circuit in fuse relay box (W/R wire).
- Poor contact at couplers.

Battery Voltage

SENSOR: Check fuel pump shut-off sensor (see page 10-32).

No Good →
- Faulty fuel pump shut-off sensor.
- Damaged fuel pump shut-off sensor wire or poor contact at coupler.

Good

- Damaged W/R wire in fuse/relay box.

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Low fuel pressure (engine OFF).

REGULATOR: Connect a fuel pressure gauge (see page 10-20). Pinch return fuel line closed and observe pressure.

- **Increase** → ● Faulty pressure regulator.
- **No Increase** ↓

LINES: Check for pinched or blocked fuel lines between tank and pump.

- **Blocked** → ● Repair as necessary.
- **Clear** ↓

REGULATOR: Measure fuel pump output (see page 10-31).

- **Normal** → ● Faulty pressure regulator.
- **Low** ↓

FUEL FILTER: Replace fuel filter and recheck fuel pump output.

- **Normal** → ● Blocked filter.
- **Low** → ● Faulty fuel pump.

Abnormal fuel pressure (only at idle).

VACUUM HOSE: Repair leaking or blocked regulator vacuum hose.

High fuel pressure (engine OFF).

RETURN LINE: Check fuel return line for pinching or blockage.

- **Normal** → ● Faulty pressure regulator.
- **Abnormal** → ● Repair as necessary.

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CFI System

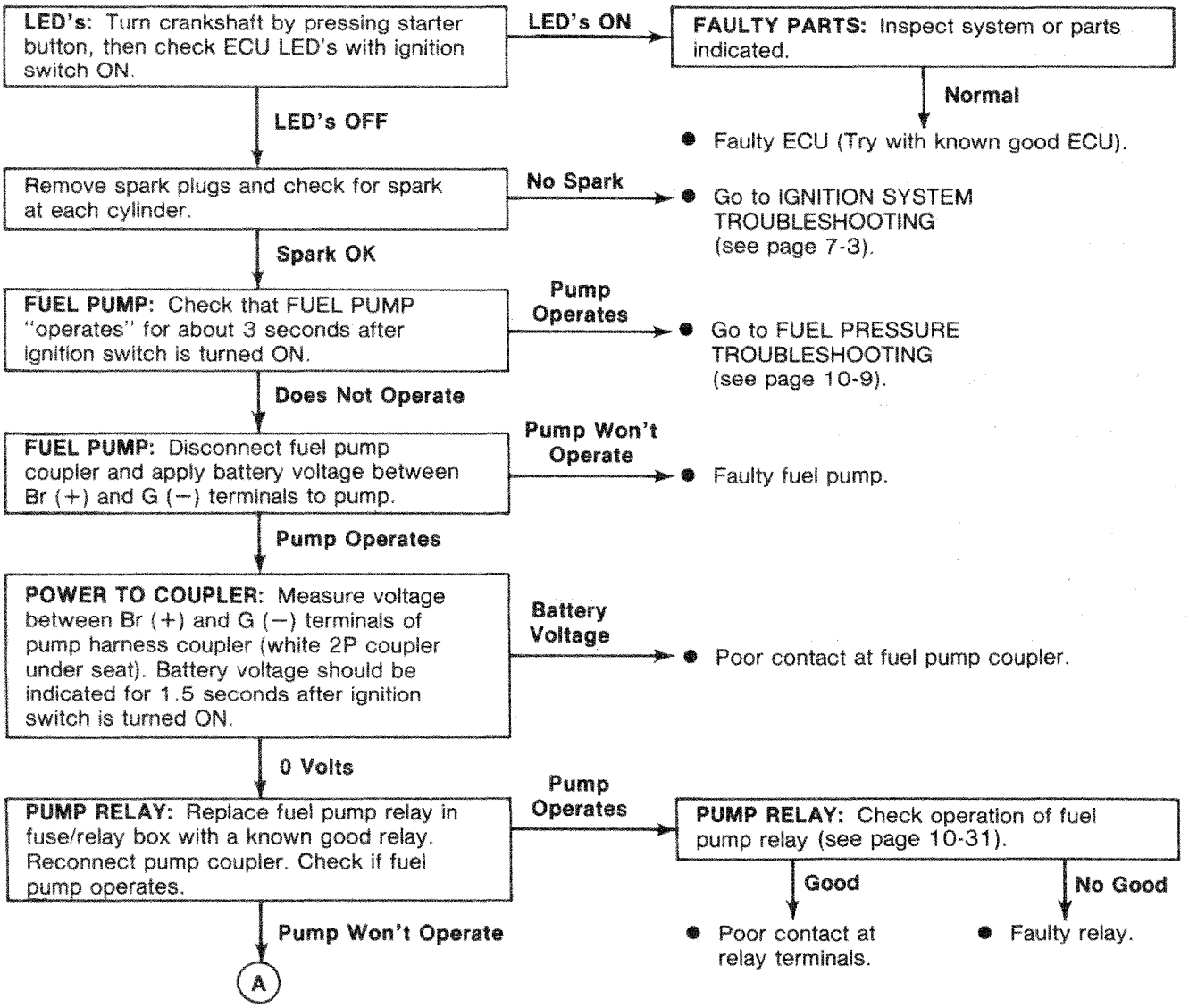
Troubleshooting (cont'd)

Engine does not start or is hard to start

Check the following items before using this chart:

1) Fuel level.
2) Fuel valve ON.
3) Ignition switch ON.
4) Fuel pump shut-off sensor ON.
5) Starting motor is in good condition.
6) Crankshaft is turned by starting motor.
7) Spark plug condition.
8) Neutral indicator is ON.
9) Fuel system indicator comes on for 1.5 seconds when ignition switch is turned ON.

WARNING: Observe the following when performing a spark test:
- Keep open flames or sparks away from the work area.
- Purge the cylinder of residual gasoline by cranking 2 or 3 seconds with the engine stop switch and fuel valve OFF.



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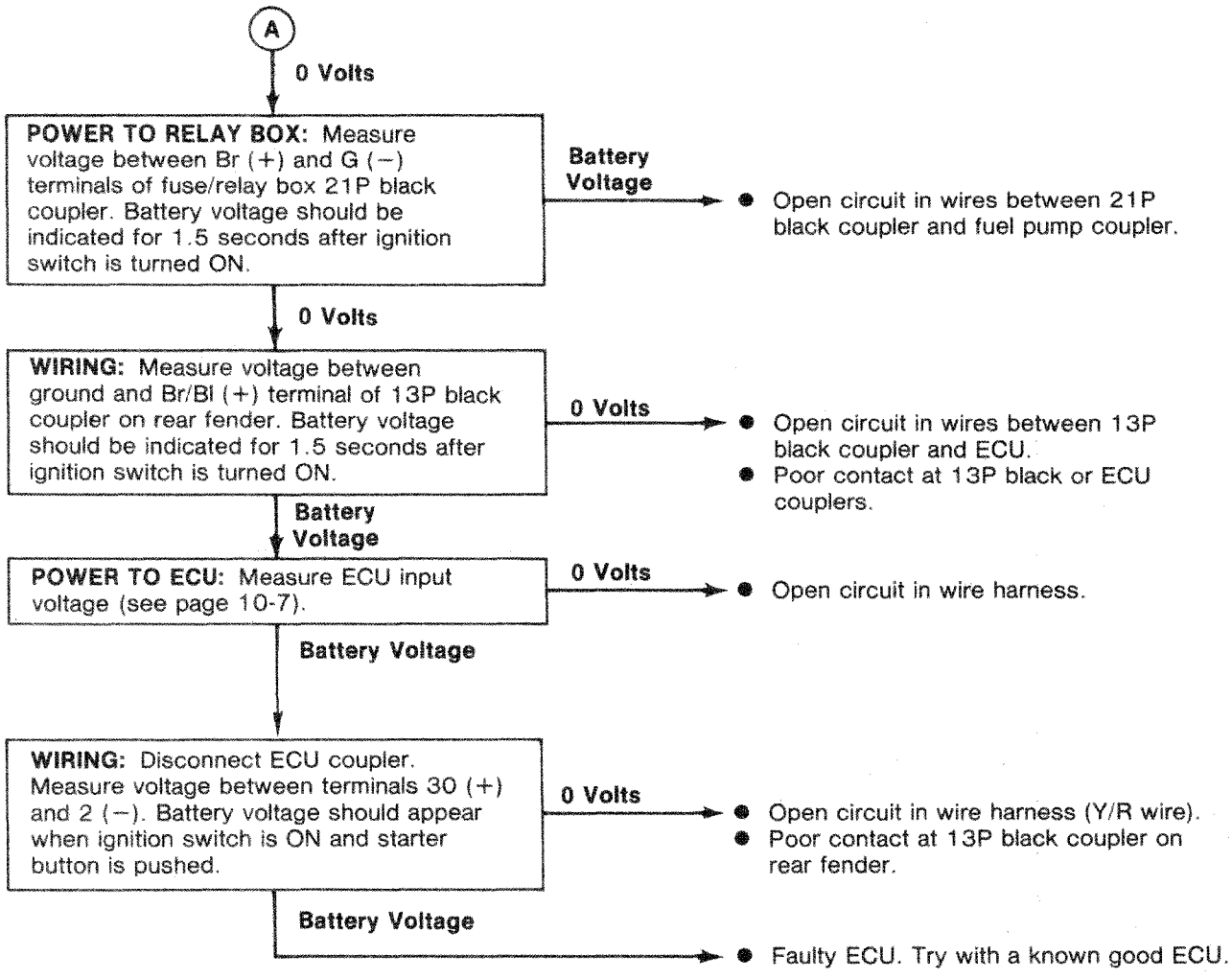

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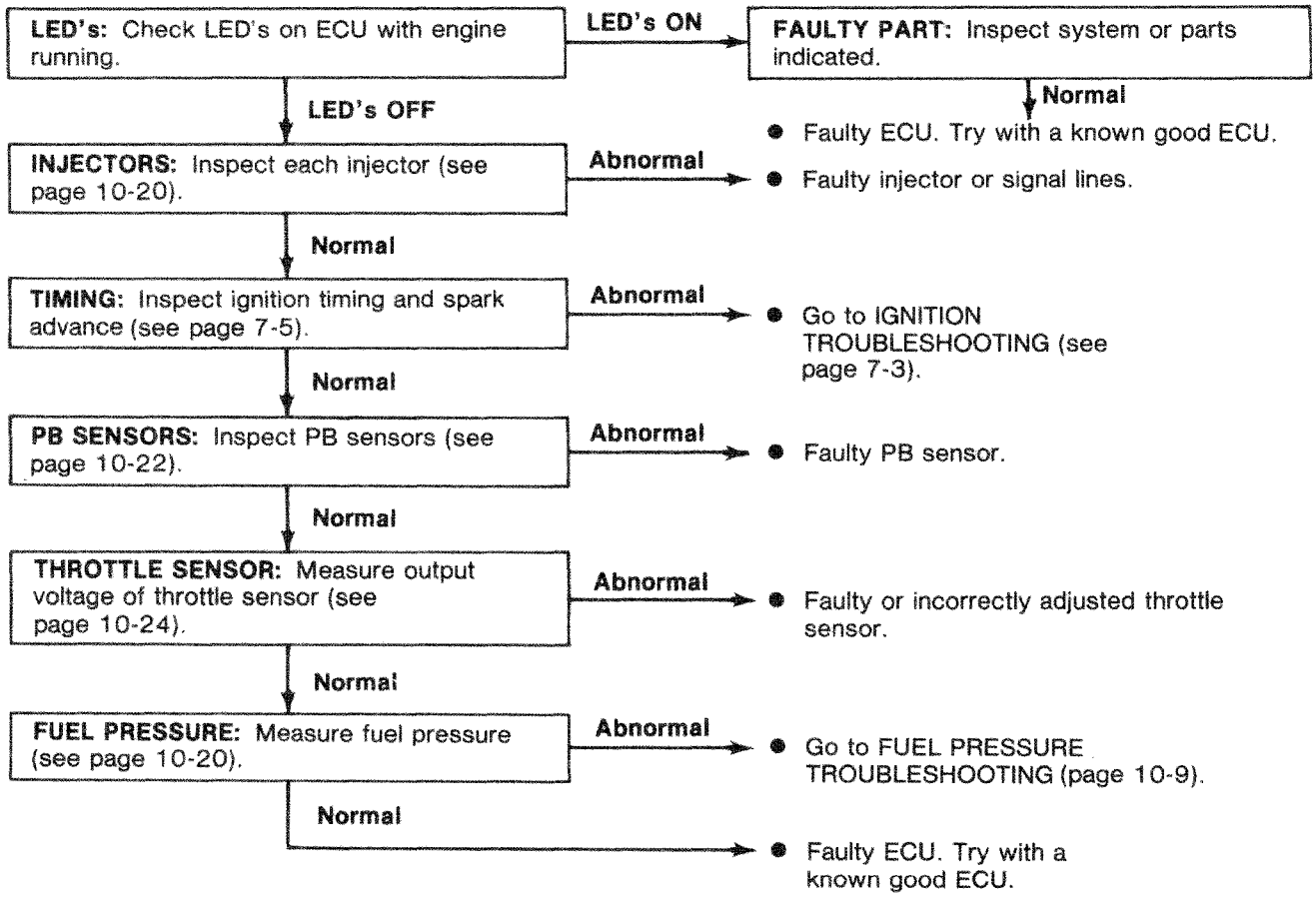
CFI System

Troubleshooting (cont'd)

Loss of power/poor acceleration.

Check the following items before using this chart:

1) Fouled or clogged air cleaner.
2) Tire pressures.
3) Brake dragging.
4) Spark plugs.
5) Cylinder compression.



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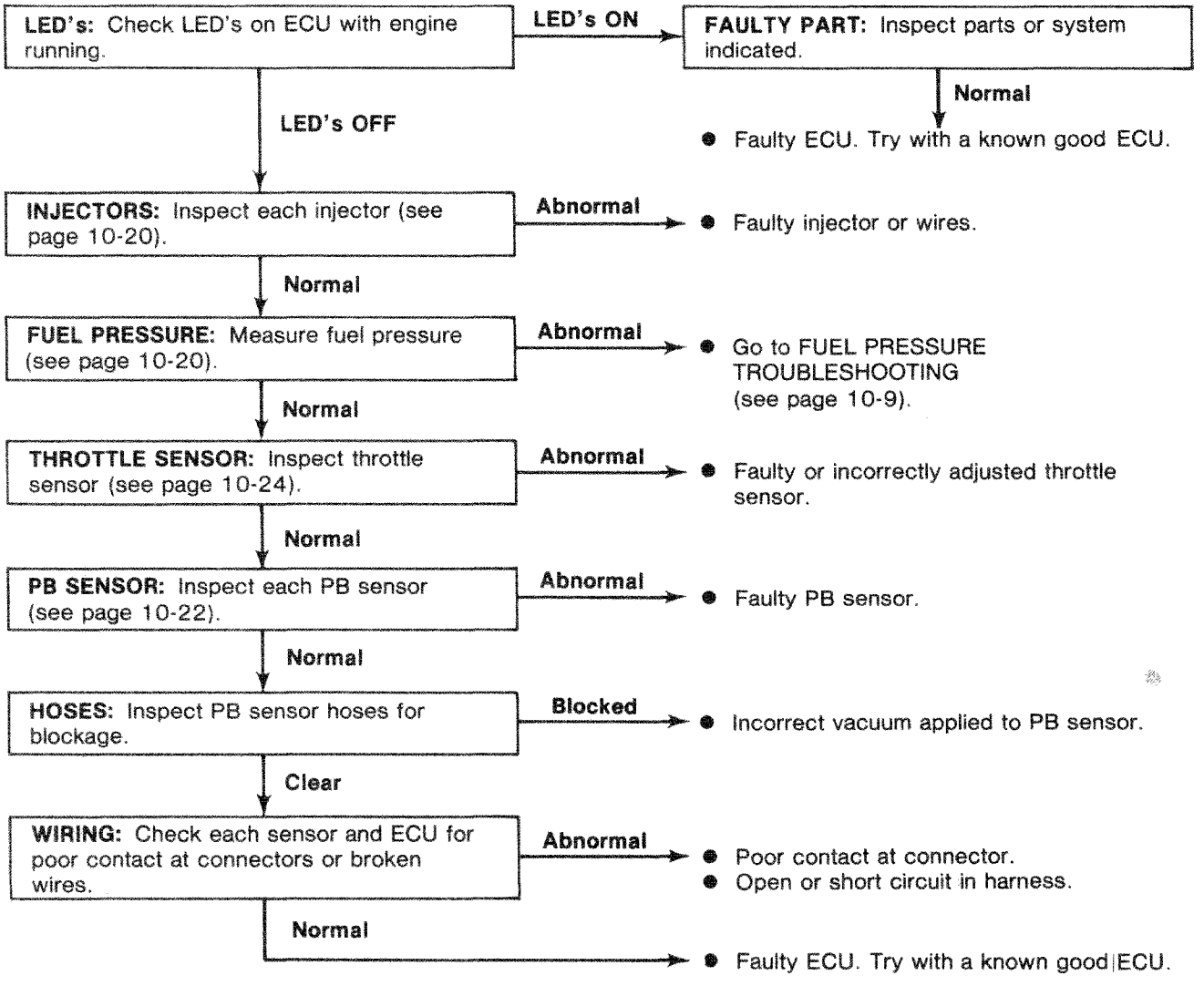
Poor performance at medium and high speeds.

Check the following items before using this chart:

1) Clogged air cleaner.
2) Spark plugs.
3) Cylinder compression.
4) Routing of sensor tubes.
5) Loose battery terminals.
6) Poorly connected ground.
7) Clogged pressure regulator tubes.



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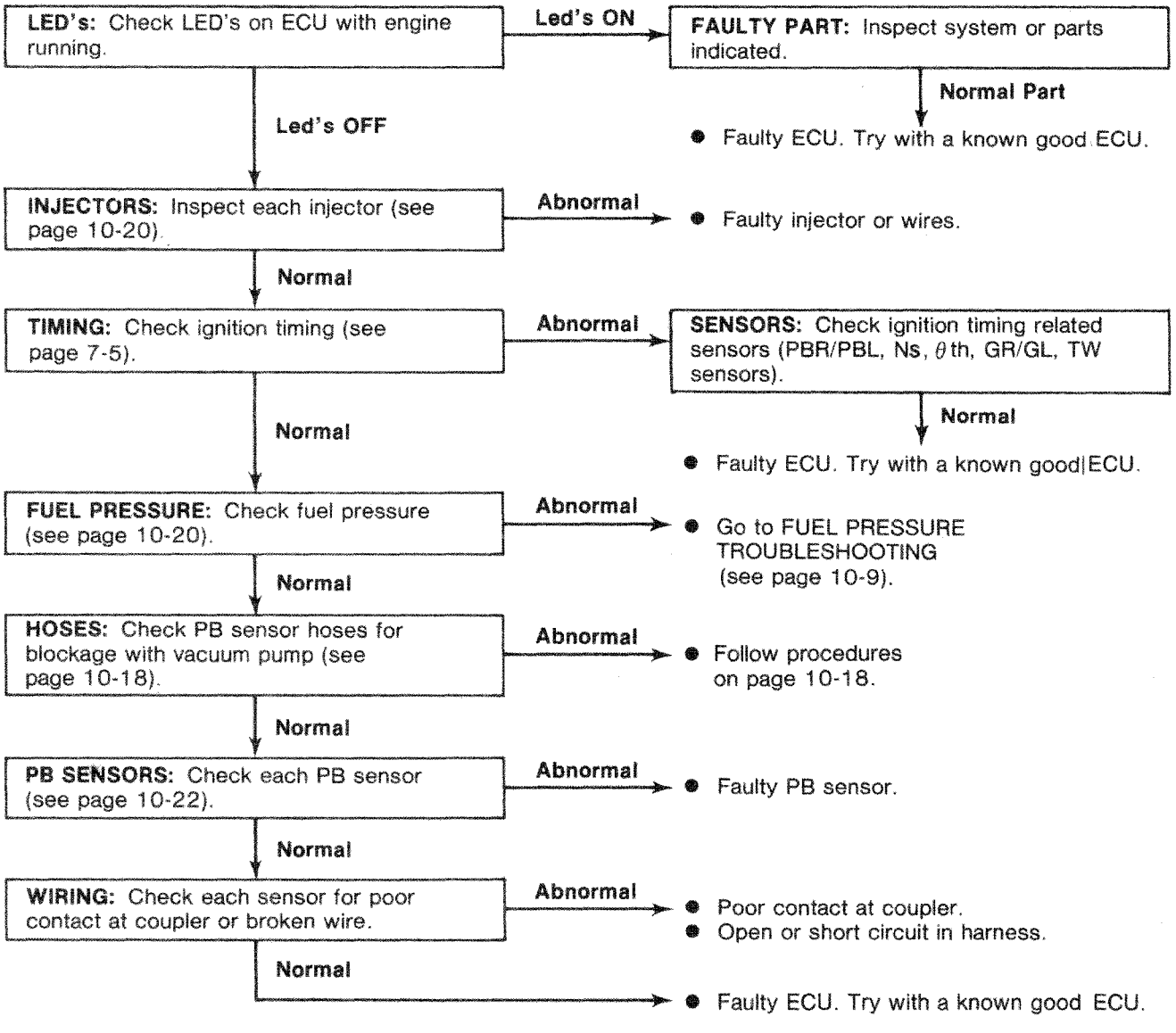
CFI System

Troubleshooting (cont'd)

Afterfire

Check the following items before using this chart:

1) Spark plugs.
2) Secondary air supply system.
3) Secondary air leaking at intake system.
4) Loose exhaust pipe joints.



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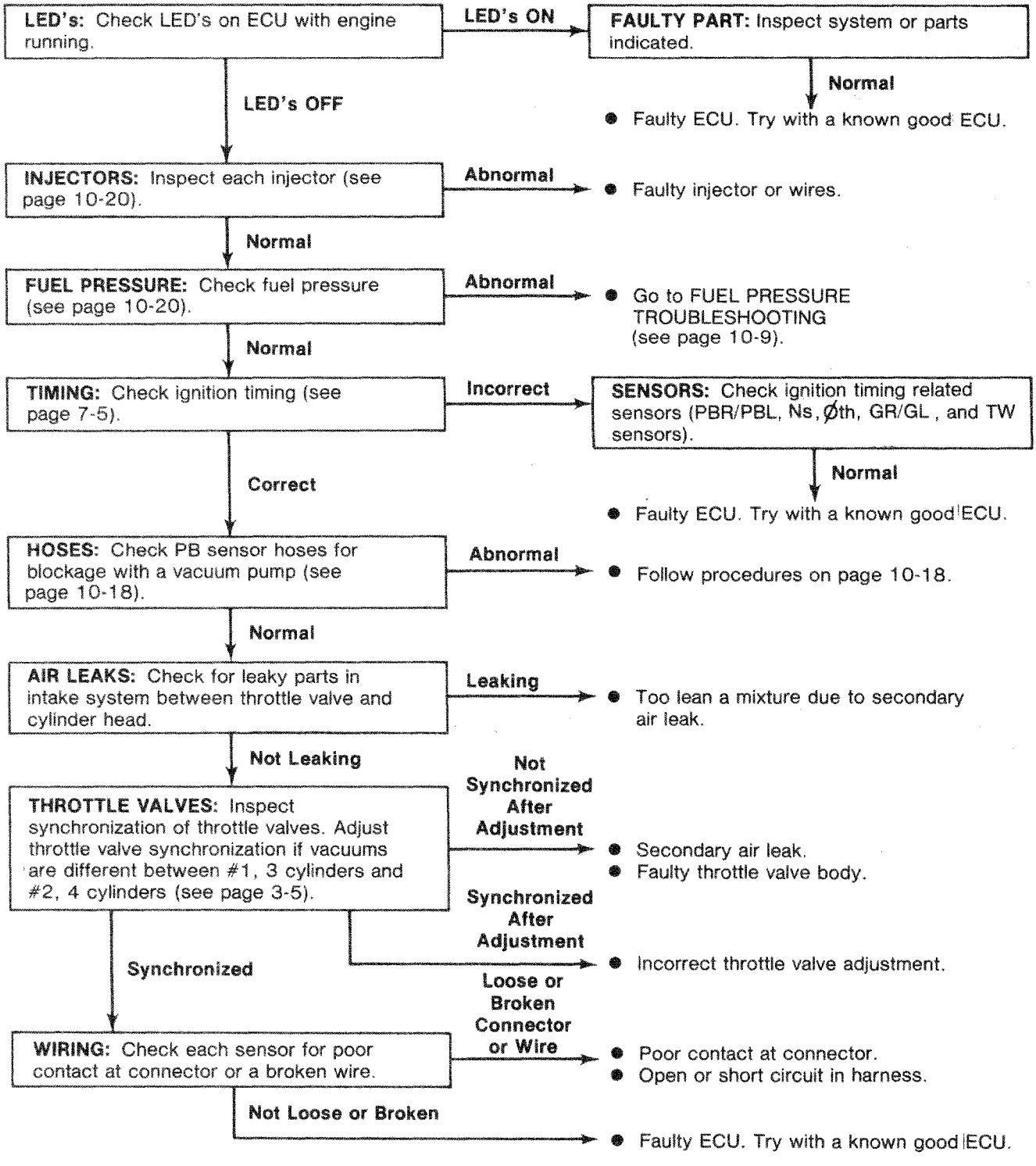
Backfire

Check the spark plugs before using this chart.



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Fast idle speed does not decrease when warm.

NOTE: Warm engine up to normal operating temperature before inspecting.

WIRING: Disconnect coupler from air valve. Measure input voltage between Br (+) and G (−) terminals of wire harness coupler. Battery voltage should be indicated about 3 seconds after ignition switch is turned ON.

0 Volts → ● Open circuit in wire harness.

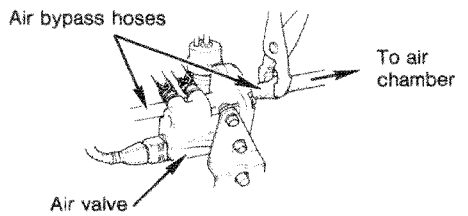
Battery Voltage

AIR VALVE: Measure resistance between coupler terminals of air valve (see page 10-34).

Abnormal → ● Faulty air valve.

65-100 Ω

AIR VALVE: Pinch air bypass hoses between air valve and air chamber, air valve and reed valves. Recheck idle speed. Idle speed should decrease.



Idle Speed Decreases → ● Faulty air valve.

Not Decreased

COOLING: Check water bypass hoses between air valve and thermostat housing. There should be no blocking.

Blocked → ● Coolant cannot reach air valve.

Clear

AIR LEAKS: Check for air leaks in intake system between throttle valve and cylinder head.

Abnormal → ● Secondary air leak.

Normal → ● Damaged or leaking bypass hose.

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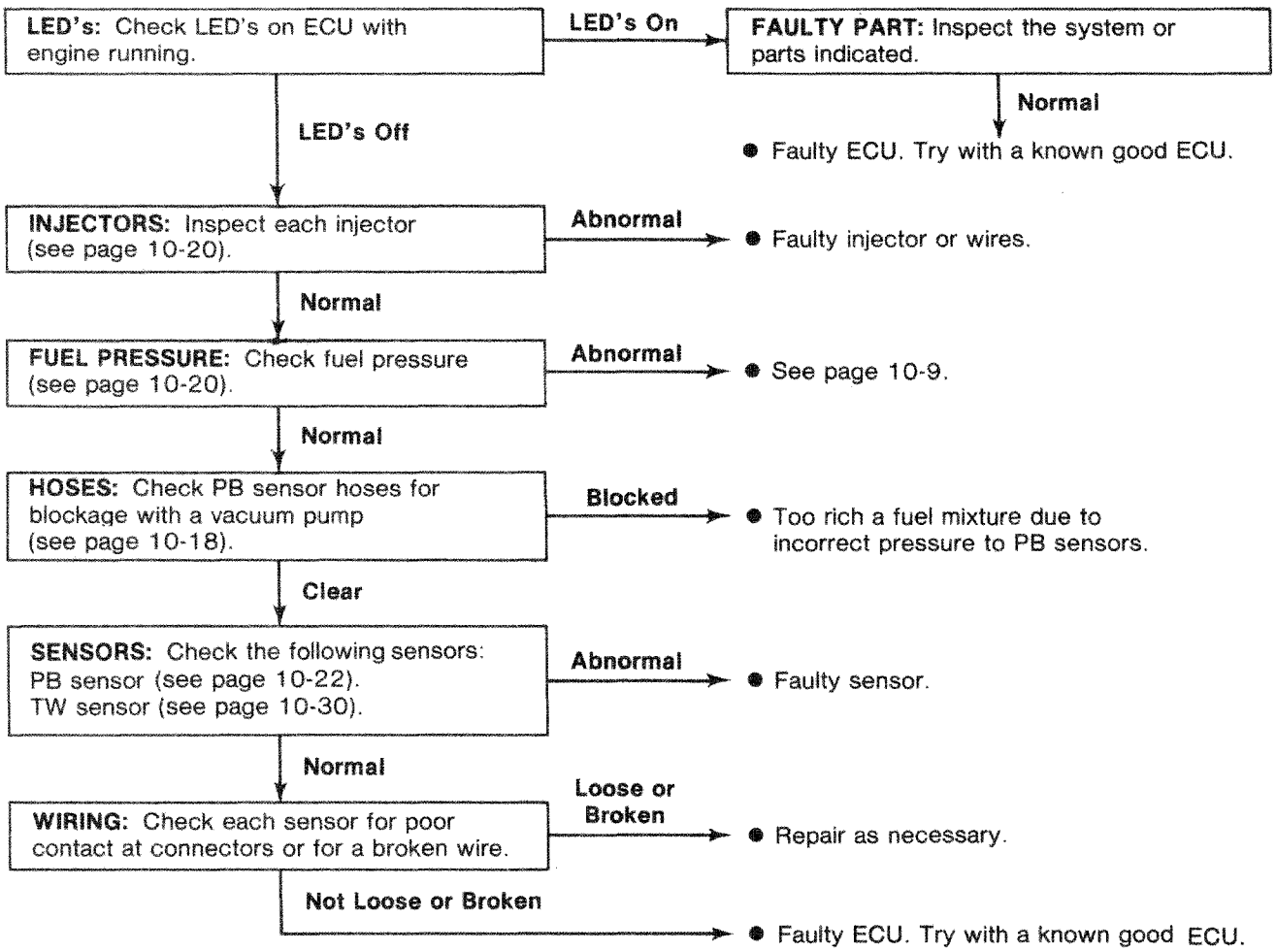
Excessive black smoke.

Note: Check the following items before using this chart:

1) Engine is at normal operating temperature.
2) Spark plug condition.



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CFI System

Troubleshooting (cont'd)

Poor performance at low and idle speeds.

Check the following items before using this chart:

1) Spark plugs.
2) Idle speed.
3) Cylinder compression (valve clearance).
4) Fouled or clogged air cleaner.
5) Loose battery terminals.
6) Poor ground contact (engine side).

LED's: Check LED's on ECU with engine running.

LED's ON → **FAULTY PART:** Inspect system or parts indicated.

Normal → ● Faulty ECU. Try with a known good ECU.

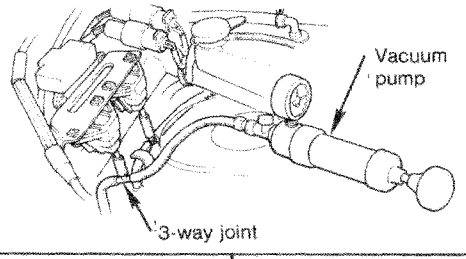
LED's OFF

INJECTORS: Inspect each injector (see page 10-20).

Abnormal → ● Faulty injector or wires.

Normal

Connect a vacuum pump as shown. Start engine and check PB sensor hoses for blockage. Vacuum gauge should indicate intake manifold vacuum.



Abnormal → **HOSES:** Check and repair PB hose routing.

Correct → **AIR JETS:** Inspect vacuum air jets at each intake pipe for blockage (see page 10-24).

Blocked → ● Incorrect pressure applied to PB sensor.

Incorrect → ● Incorrect pressure applied to PB sensor.

Normal

PB SENSOR: Inspect each PB sensor (see page 10-22).

Abnormal → ● Faulty PB sensor.

Normal

THROTTLE VALVES: Inspect synchronization of throttle valves (see page 3-5).

Correct → ● Go to FUEL PRESSURE (see page 10-9).

Incorrect

THROTTLE VALVES: Check and adjust synchronization (see page 3-5).

Correct → Recheck engine performance.

No Good → ● Go to FUEL PRESSURE (see page 10-9).

Good → ● Incorrect synchronization.

Incorrect → (A)

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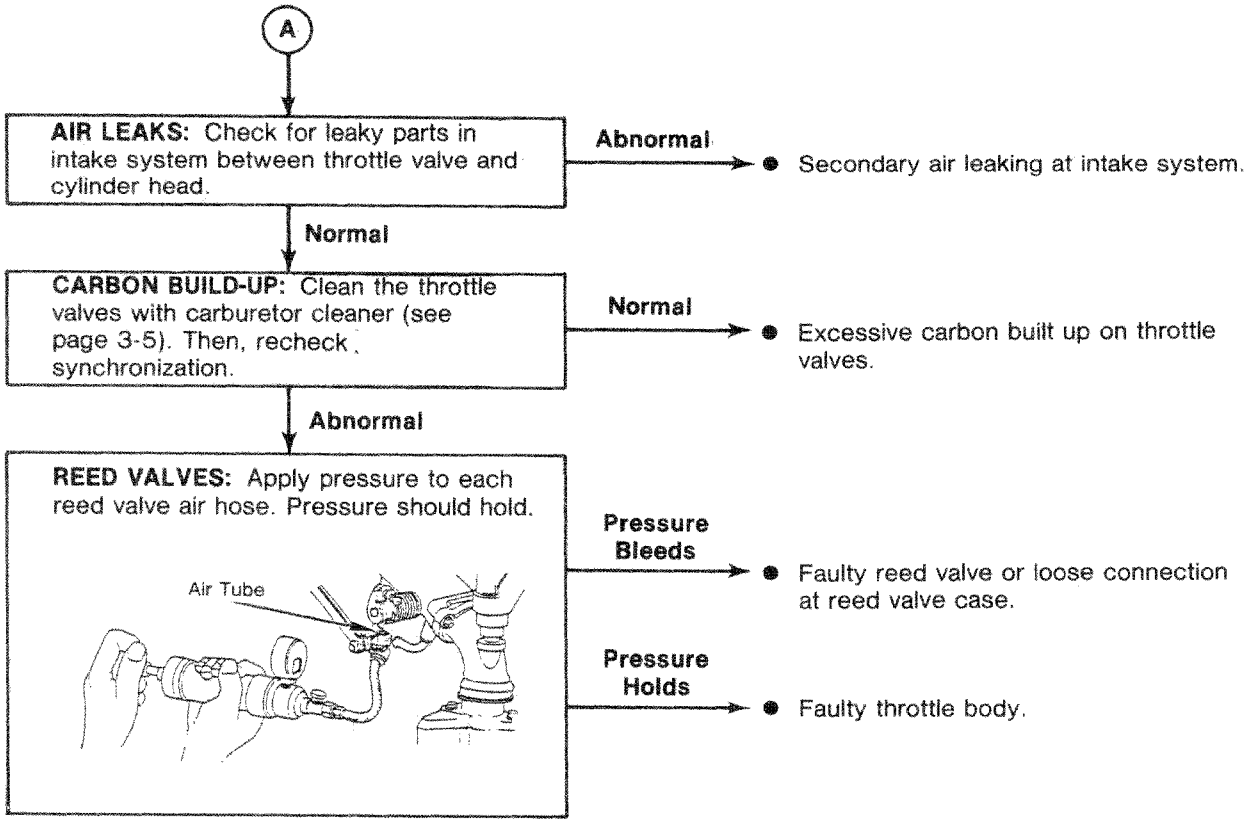

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CFI System

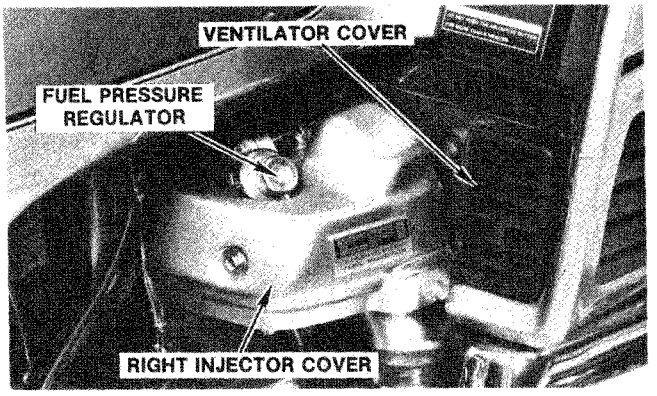
Fuel Pressure Inspection

With the engine stopped, turn the ignition switch ON. You should hear the fuel pump operating for about three seconds.

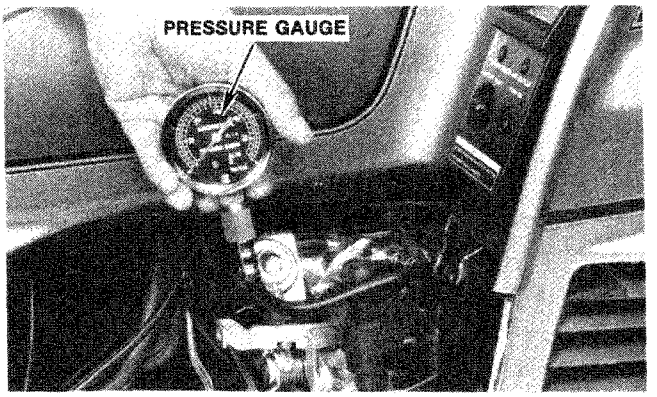
NOTE: Fuel pressure can also be felt by pinching the fuel return hose between your fingers.

Remove the right injector cover and right fairing lower cover.

WARNING: The fuel line is pressurized. Place a shop towel around the check plug and remove it slowly from the fuel delivery pipe.



Connect a fuel pressure gauge and measure fuel pressure with the ignition switch ON.



Engine stopped: 2.4-2.7 kg/cm^2 (34-38 psi)

Idle: 2.0-2.4 kg/cm^2 (28-34 psi)

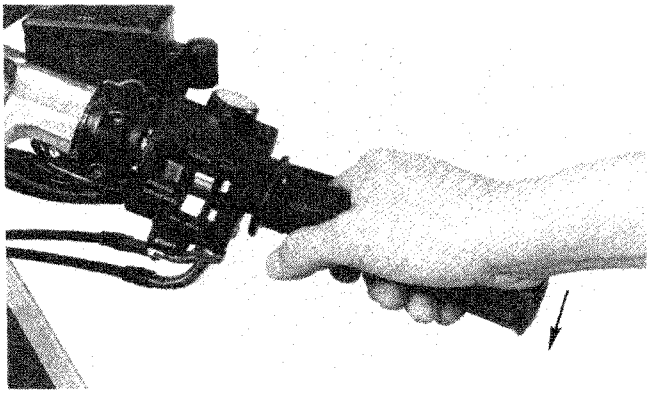
If pressure is not within specification, replace the fuel pressure regulator.

NOTE: Install a new aluminum washer when you reconnect the fuel line.

Fuel Injectors

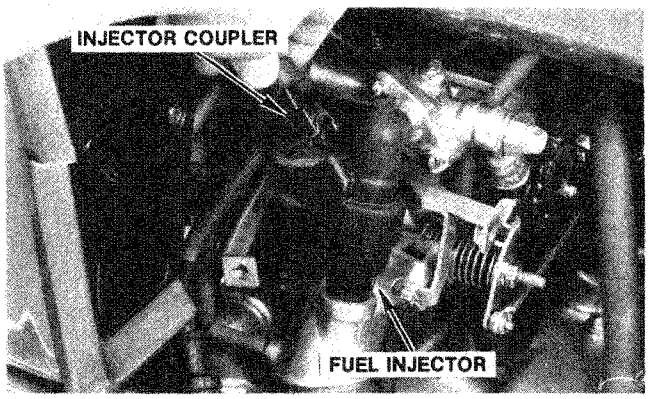
Operation Inspection

With the engine stopped, turn the ignition switch ON and quickly open the throttle. You should hear the injector 'click'.



LED Inspection

The LED's will indicate trouble by cylinder banks. Disconnect the injector couplers one at a time and bump the starter to isolate the problem injector. (Remove the coupler retaining wire before disconnecting the coupler.)



Reconnect the couplers.

NOTE: LED's will only indicate an **open** circuit if both injectors of either bank are affected simultaneously. Be sure to check the injector lines or injector for a **short** circuit.

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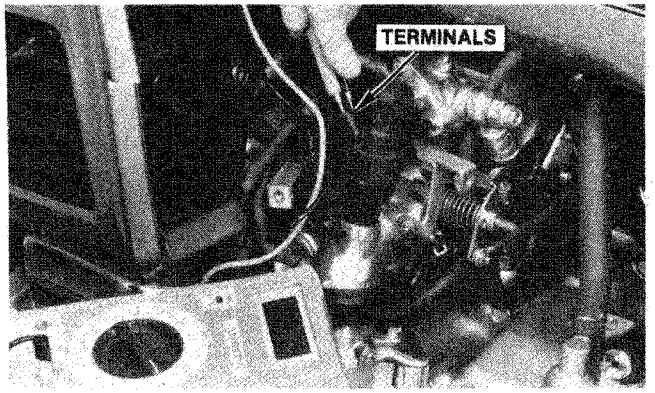
Injector Coil Inspection

With the engine stopped and the ignition switch ON check the wiring for continuity by observing the LED's.

NOTE: Be sure couplers are connected securely.

Turn the ignition switch OFF. Disconnect the injector coupler and measure the resistance between the terminals.

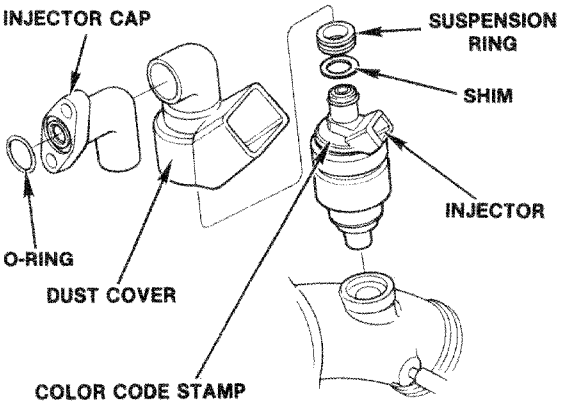
Standard: 1.55-1.85 ohms (20° C, 68° F)



Removal/Installation

Disconnect the injector coupler. Remove the injector cap, dust cover, suspension ring and shim. Keep all removed parts in their original sets.

Install parts in the reverse order of removal. Apply a thin coat of clean engine oil to the injector O-ring, and the intake pipe mating face. Use only dowel bolts to install the injector cap.



Shim Selection

NOTE: Injectors must be adjusted with shims when any of the following parts are replaced:

- Fuel injector
- Fuel delivery pipe
- Fuel injector cap
- Throttle body
- Intake pipe

Shim only the affected injector.

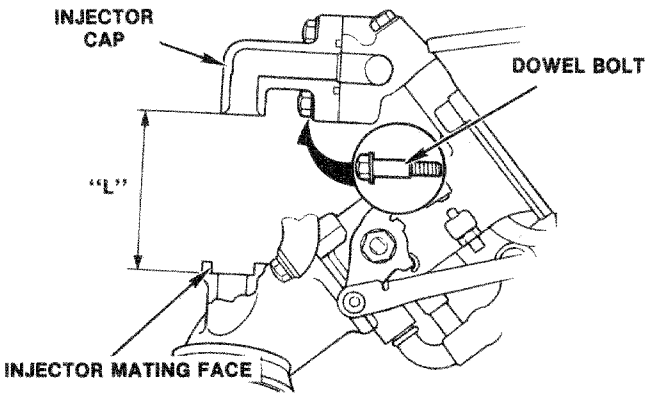
SHIM SELECTION TABLE **Unit: mm(in)**

Distance "L" / Injector Color Code	58.5 (2.30) to 59.0 (2.32)	59.0 (2.32) to 59.5 (2.34)	59.5 (2.34) to 60.0 (2.36)	60.0 (2.36) to 60.5 (2.38)
No color code	Yellow 0.5 mm (0.02 in)	Green 1.0 mm (0.04 in)	Brown 1.6 mm (0.06 in)	Black 2.0 mm (0.08 in)
Blue	Shim not used	Yellow	Green	Brown

Determine the injector color code.

Measure the distance "L" between the cap end and intake pipe injector mating face.

Select a shim from the table based on the "L" distance and color code.



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LED Inspection

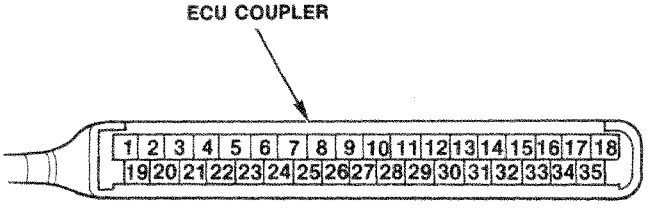
Reverse the PBR and PBL sensors' couplers. If the trouble indication shifts from the PBR to the PBL sensor, replace the PBR sensor.

Connect the inspection adapter between the PB sensor couplers and measure input voltage (see limits below).

Check for continuity between the inspection adapter white lead and the No. 9 (PBR) or No. 27 (PBL) ECU coupler terminal.

With the sensor coupler disconnected, check for no continuity between the #9/#27 terminals and body ground, and the #9/#27 terminals and any of the other ECU terminals.

Check the sensor coupler for loose or poorly contacted terminals.



Input/Output Voltage Inspection

NOTE: Further testing requires measurements which must be compensated for atmospheric pressure and temperature.

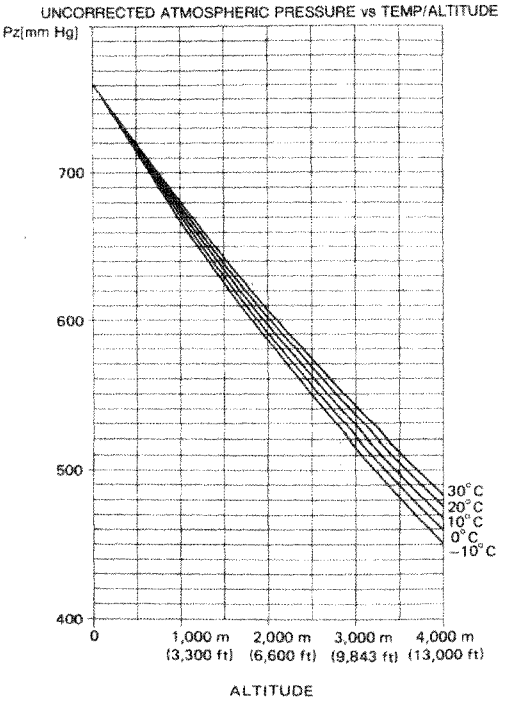
Determine atmospheric pressure (Pz) based on altitude and temperature by using the chart at the right. (If available, use a barometer.)

Compensate the voltage reading for Pz using this formula:

Voltmeter reading + [0.005 X (760- Pz)] = Reading to be compared

EXAMPLE

Conditions:
Altitude 1500 m (5000 ft)
Temperature 20° C (68° F)
Output voltage 2.35 V
Output Compensation:
2.35 + [0.005 X (760- 640)] = 2.95 V



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Remove the top compartment. Disconnect the green PBR sensor coupler and the white PBL sensor coupler.

Connect the inspection adapter between the PB sensor couplers.

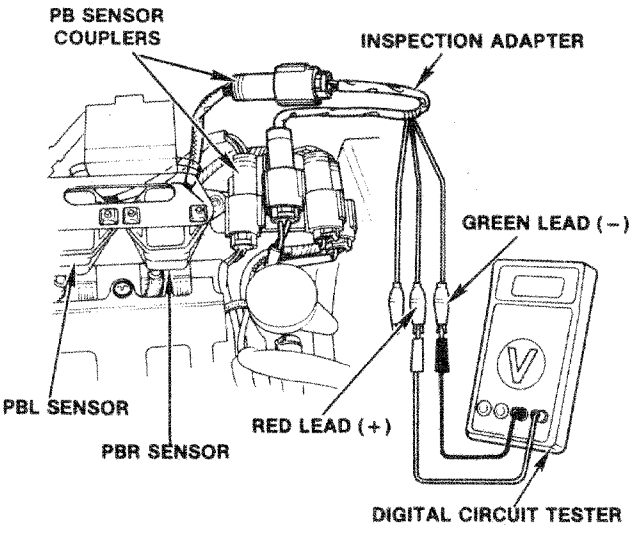
Turn the ignition switch ON and measure the input voltage between the red and green adapter leads.

Input voltage (under atmospheric pressure): 4.75-5.25 V

If there is no voltage, inspect the wiring harness for an open circuit.

Check for continuity between the No. 29 ECU terminal and the adapter red lead.

If the above test results indicate no problem, measure input voltage between the #1 and #2 terminals of the ECU coupler. If all voltage readings are correct, install a new ECU.



Disconnect the vacuum tube from the PB sensor. Turn the ignition switch ON. Measure the output voltage between the white (+) and green (–) inspection adapter leads.

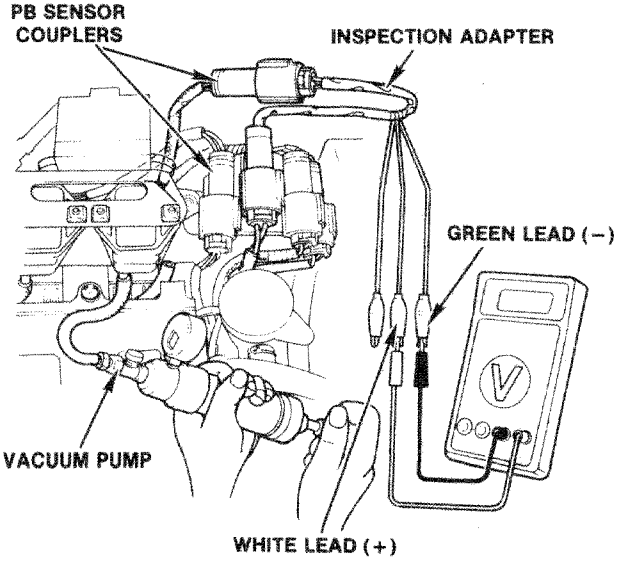
Output voltage (under atmospheric pressure): 3.58-4.02 V

Connect a hand vacuum pump to the PB sensor and apply vacuum.

Turn the ignition switch ON. While maintaining the vacuum, measure the output voltage between the white and green adapter leads.

The PB sensor is OK if the voltage readings fall within the limits shown below.

TEST VACUUM				OUTPUT VOLTAGE
mm Hg	kPa	kg/cm^2	psi	
100	13.73	0.14	1.93	2.85-3.50V
300	40.21	0.41	5.83	2.16-2.45V
500	66.69	0.68	9.67	1.21-1.40V



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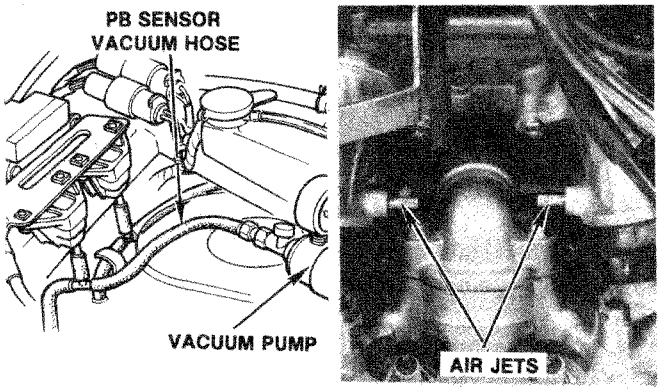
CFI System

Pressure (PB) Sensors (cont'd)

Vacuum Hose Inspection

Remove the plug from the dead end hose and connect a hand vacuum pump between the PB sensor and vacuum hose as shown.

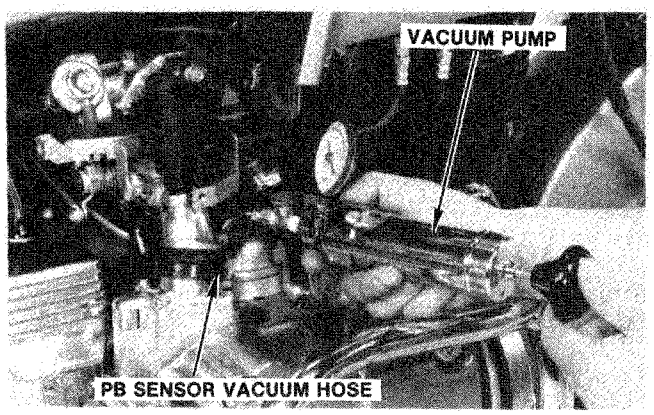
Start the engine. If the pointer of the tester does not swing, check for a blocked or collapsed vacuum hose, or clogged intake pipe air jet.



Connect the vacuum hose to the PB sensor and disconnect the vacuum hose from the 3-way joint.

Connect a vacuum tester to the vacuum hose and apply vacuum.

If vacuum decreases faster than 20 mm (7.8 in) Hg per minute, check the vacuum hose for deterioration.



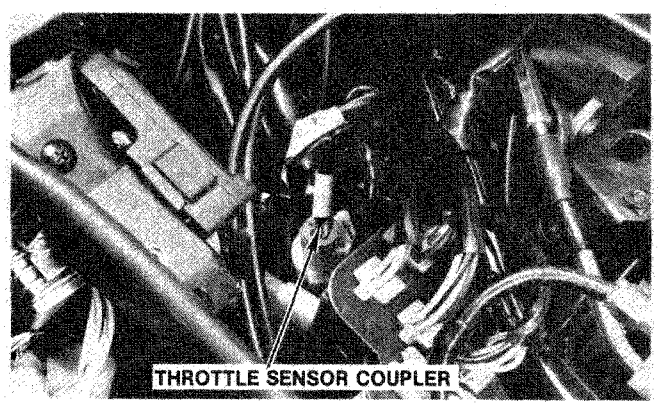
Throttle (Øth) Sensor

LED Inspection

Connect the inspection adapter between the ECU and throttle sensor couplers and measure the input voltage (see page 10-13).

Check for continuity between the white adapter lead and the #11 ECU coupler terminal.

With the sensor coupler disconnected, check for no continuity between the #11 ECU coupler terminal and the body ground.



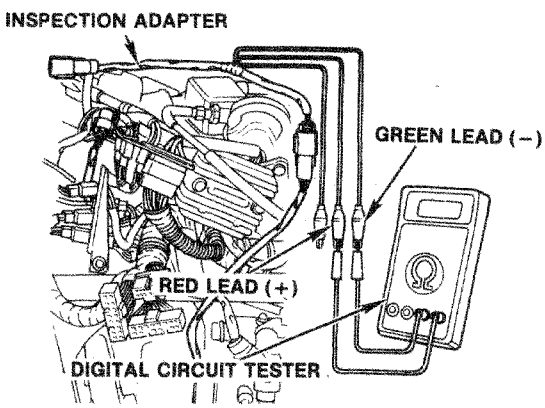
Sensor Resistance Inspection

Check the sensor coupler for loose or poorly contacted terminals.

Turn the ignition switch OFF. Disconnect the wire harness coupler from the adapter. Measure the resistance between the red and green adapter leads connected to the coupler's sensor side.

Sensor resistance: 4-6 K ohms

Install a new sensor if the resistance is outside specifications.



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Input/Output Voltage Inspection

Disconnect the throttle sensor coupler from the coupler holder. Connect the inspection adapter between the sensor couplers.

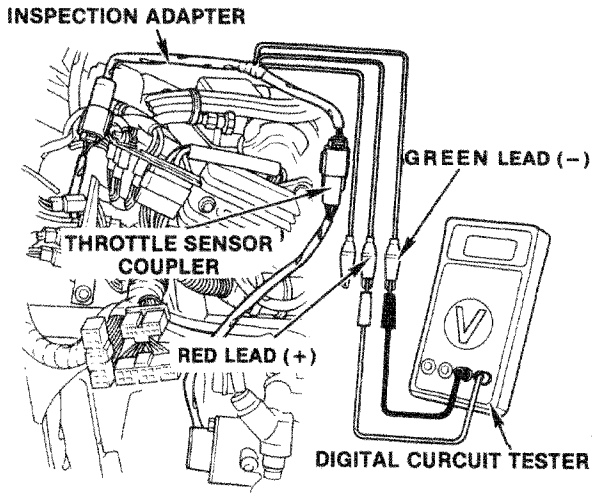
With the ignition switch ON, measure the input voltage between the red (+) and green (−) adapter leads.

Input voltage: 4.75- 5.25 V

If the voltage is incorrect, check the wiring harness and ECU.

If input voltage is not present, check for continuity between the red adapter lead and the No. 29 ECU coupler terminal.

If there is continuity, measure the voltage between the No. 1-2 ECU coupler terminals. If the voltage is OK, install a new ECU.



With the ignition switch ON, measure the output voltage between the white (+) and green (−) adapter leads while gradually opening the throttle.

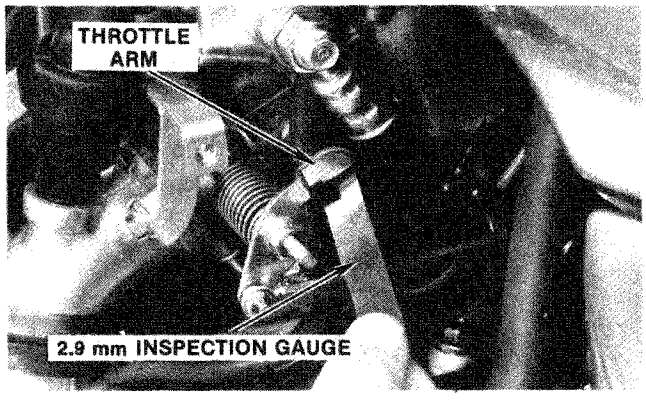
Replace the sensor if the voltage does not rise smoothly as the throttle is opened.

Loosen the idle adjustment screw and insert a 2.9 mm (0.11 in) inspection gauge between the throttle arm and throttle stop screw.

Set the tester in the 2V range and measure the voltage with the inspection gauge left in place.

Output voltage: 0.475- 0.495 V

NOTES:
- Do not loosen the stop screw lock nut.
- Use only a 2.9 mm (0.11 in) inspection gauge.



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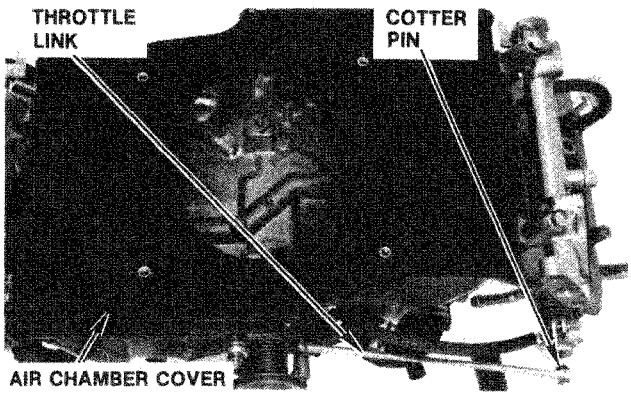
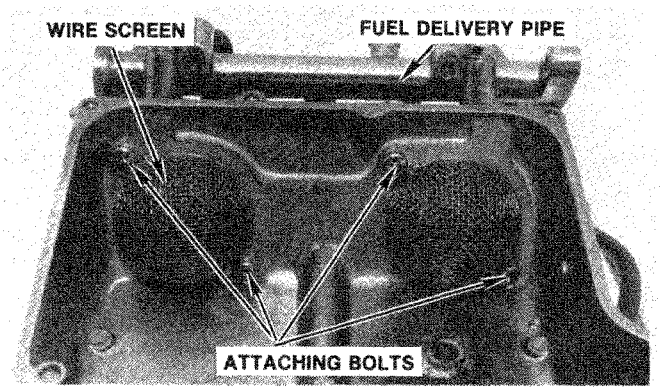
Removal/Installation

Remove the air chamber cover. Remove the cotter pin and washer. Disconnect the throttle link from the throttle arm.



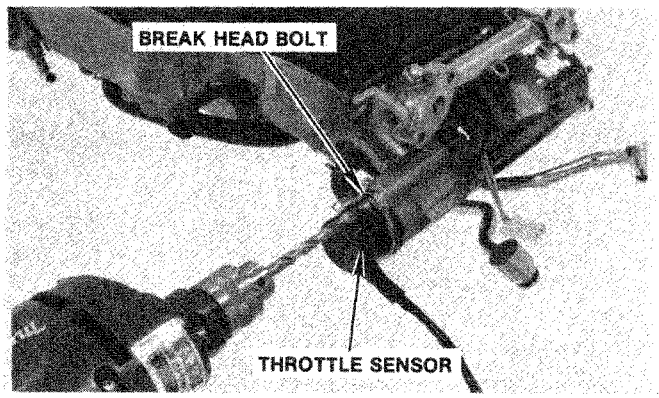
Unscrew the three bolts and remove the fuel delivery pipes. Unbolt and remove the throttle body and wire screen.



Center punch the break head bolt. Break the head off the bolt by drilling a 9 mm (0.35 in) hole through the marked location.

Install a new sensor on the throttle body using new break head bolts.

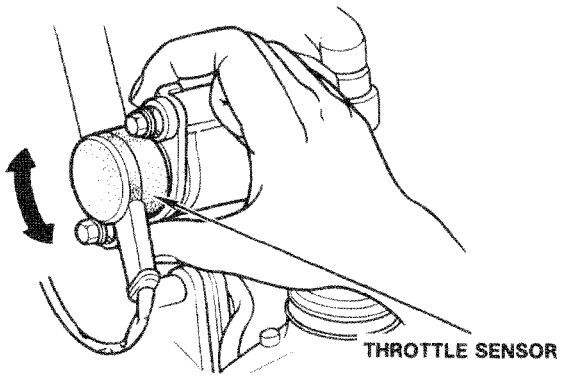
NOTE: Do not break the heads off the bolts until after adjusting the sensor.



Install the throttle body on the engine. Insert the 2.9 mm gauge between the throttle valve arm and stop screw.

Turn the sensor until the output voltage is 0.475-0.495.

Start the engine and recheck the voltage. If the voltage is OK, turn the bolts further to break off the heads.



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Crankshaft Angle (Ns) Sensor

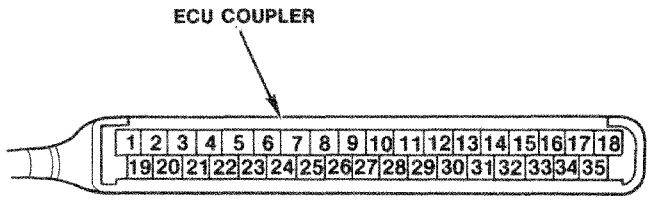
LED Inspection

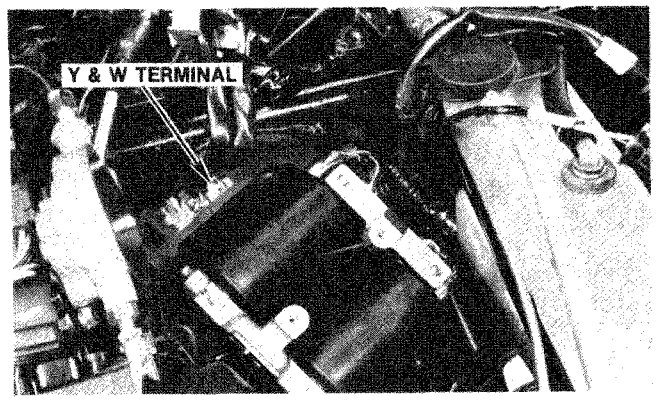
Measure sensor coil resistance between the No. 6 and No. 25 ECU coupler terminals. Resistance should be 297- 363 ohms at 20° C (68° F). If resistance is incorrect, check the sensor (see below).

Check for continuity between the sensor coupler harness side terminal and the ECU coupler. The sensor is normal if there is continuity between the No. 6 ECU terminal and the sensor harness Y terminal; the No. 25 ECU terminal and the sensor harness W terminal.

With the sensor disconnected, check for continuity between the No. 6 and No. 25 ECU terminal and ground or other terminals.

Check the sensor coupler for poor contact at the terminals.



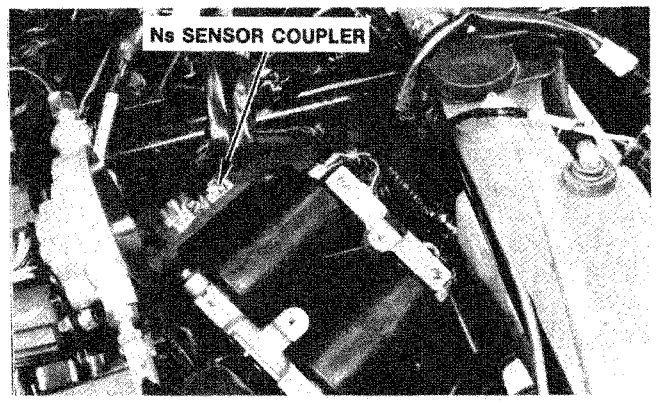


Coil Resistance Inspection

Remove the ignition coil from the frame (see page 7-5). Remove the Ns sensor white 2P coupler from the holder. Measure the resistance between the yellow and white coupler terminals.

Resistance: 297-363 ohms

Check for no continuity between each of the two terminals and body ground. Install a new Ns sensor if the resistance is out of specification.



Air Gap Inspection

NOTE: Inspect the air gap when the sensor is replaced or the timing belt drive pulley is removed.

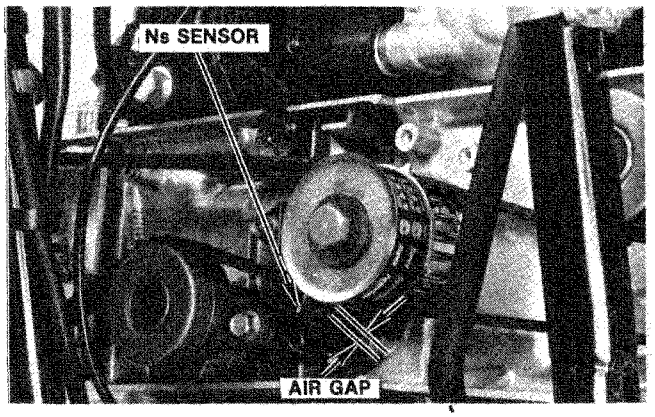
Remove the radiator.

Remove the right and left front timing belt covers.

Rotate the crankshaft and align the rotor projection with the sensor.

Measure the air gap.

Air gap: 0.4-0.9 mm (0.016-0.035 in)



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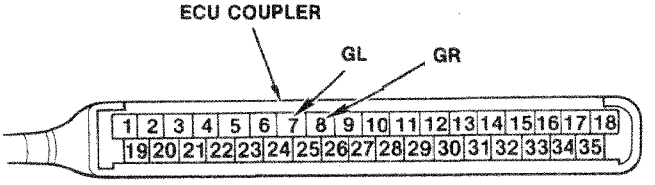
Camshaft Angle (GR, GL) Sensors

LED Inspection

If the GR sensor is faulty, measure the resistance between the No. 8 and No. 24 ECU coupler terminals. If the GL sensor is faulty, measure the resistance between the No. 7 and No. 24 ECU coupler terminals. Resistance should be 140-180 ohms at 20° C (68° F).



Disconnect the sensor coupler and measure the resistance of the sensor coil (see below).

Check for continuity between the harness side sensor coupler terminals and the ECU terminals. The sensor is normal if there is continuity between the Y/W sensor terminal and the No. 7 ECU terminal; the Bu/W terminal and the No. 8 terminal, and each of the yellow and blue terminals and the No. 24 terminal.

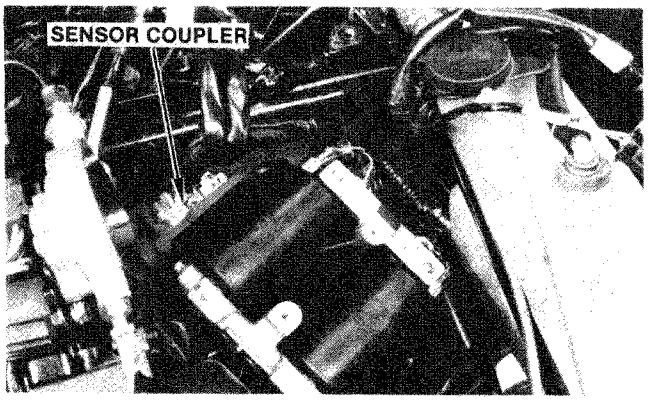
With the sensor coupler disconnected, check for no continuity between the No. 7 and No. 8 ECU coupler terminals and ground or other terminals.

Check the sensor coupler for poor contact at the terminals.

Coil Resistance Inspection

Remove the fairing.

Remove the GR/GL white 4P sensor coupler from the holder. Measure the GL sensor coil resistance between the W with Y tube and Y terminal. Measure the NR sensor coil resistance between the G with Bu and W tubes and Bu terminal.



Resistance: 140-180 ohms (at 20° C, 68° F)

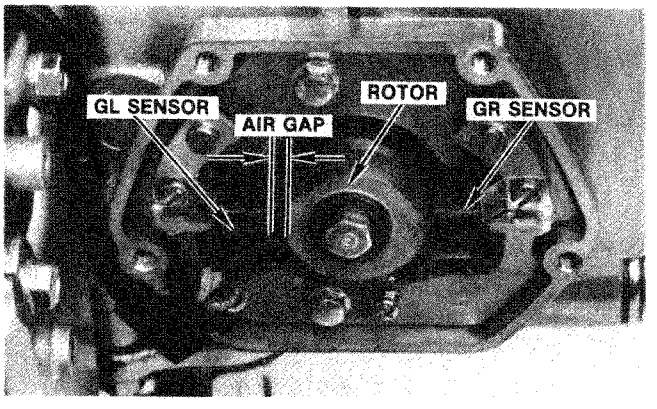
Check for no continuity between each terminal and body ground. Install a new sensor if there is continuity.

Air Gap Inspection

NOTE: Check the air gap when the sensor is removed or replaced.

Remove the sensor cover. Rotate the crankshaft and align the rotor projection with the sensor.

Measure the air gaps.



Air gap: 0.58-0.62 mm (0.023-0.024 in)

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Removal/Installation

Remove the ignition coil from the frame (see page 7-3).

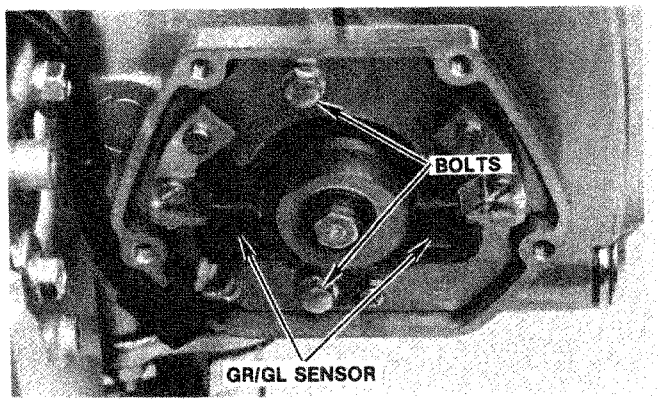
Remove the white 4P sensor couplers from the GR/GL coupler holder.

Remove the sensor cover. Remove the two bolts and remove the sensors.

NOTE: The GR and GL sensors should be handled as a matched set. Install them in pairs.

Install the sensors in the reverse order of removal.

NOTE: Inspect the air gap when the sensors or rotors are replaced (see page 10-28).



Air Temperature (T1) Sensor

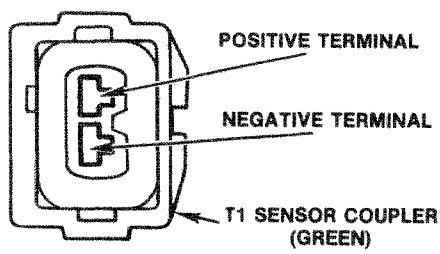
LED Inspection

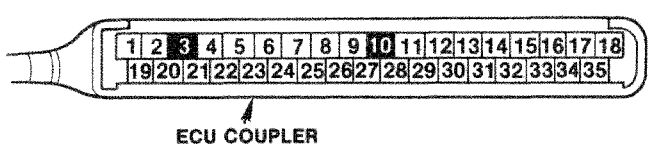
Disconnect the coupler from the sensor and measure voltage between the terminals. Voltage should be 4.75-5.25 V with the ignition switch ON.

If there is no voltage, check the wiring harness for an open circuit. Check for continuity between the sensor negative (−) terminal and the No. 3 ECU terminal; between the positive (+) terminal and the No. 10 ECU terminal.

With the sensor coupler disconnected, check for no continuity between the No. 10 ECU terminal and each of the other terminals and ground. If there is continuity, check the wiring harness for a short circuit.

Check the sensor coupler for poor contact at the terminals. If the coupler is OK, check the sensor.





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CFI System

Air Temperature (T1) Sensor (cont'd)

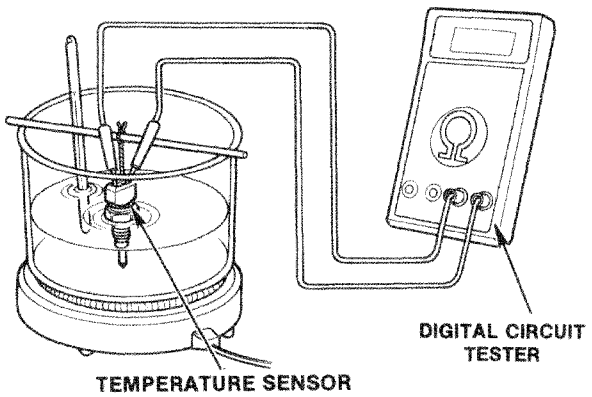
Sensor Inspection

Suspend the sensor in cold water. Heat the water slowly. Measure resistance between the terminals.

Resistance:
2-3 K ohms at 20° C (68° F)
0.2-0.4 K ohms at 80° C (176° F)

NOTE: If the unit or thermometer touches the pan, false readings will result.

If resistance is outside the above ranges, replace the T1 sensor.



Removal/Installation

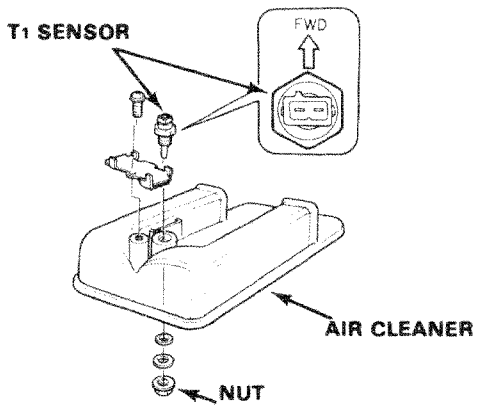
Open the top compartment.

Remove the fuse/relay box from the holder.

Disconnect the coupler from the sensor.

Remove the sensor from the air cleaner cover by removing the nut.

Install the sensor and fuse/relay box in the reverse order of removal.



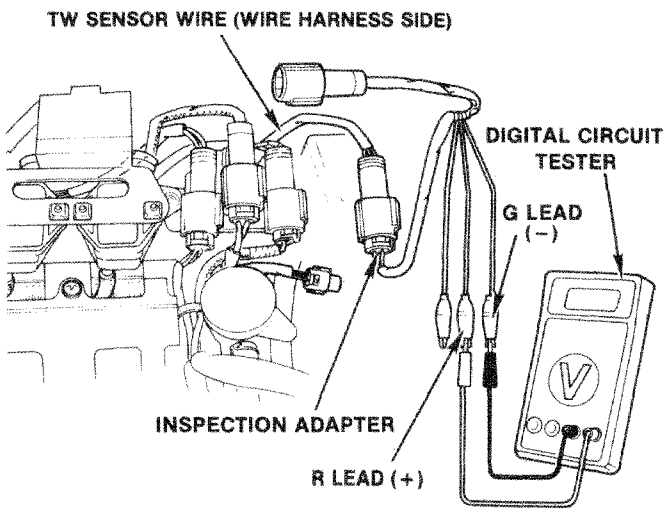
Coolant Temperature (TW) Sensor

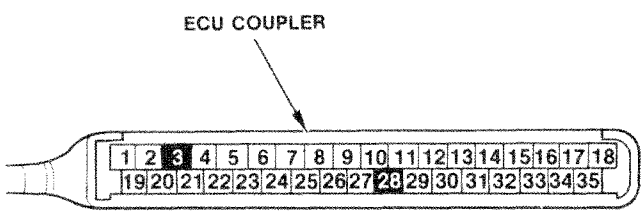
Disconnect the sensor (waterproof 2P blue) coupler. Connect the inspection adapter to the harness side coupler. Turn the ignition ON. There should be 4.75-5.25 V across the red (+) and green (−) adapter leads.

If there is no voltage, check the wiring harness. Check for no continuity between the red lead and the No. 28 ECU terminal, and between the green lead and the No. 3 terminal. Continuity indicates an open circuit.

With the sensor coupler disconnected, check for no continuity between the No. 28 ECU terminal and each of the other terminals and body ground. Continuity indicates a short circuit.

If the above test results indicate no problem, measure resistance between the terminals on the sensor side. Resistance should range between 1 and 3 K ohms with the engine cold. If resistance indicates no continuity, check the sensor sub-harness for an open or short circuit, and the sensor coupler for poor contact at the terminals.





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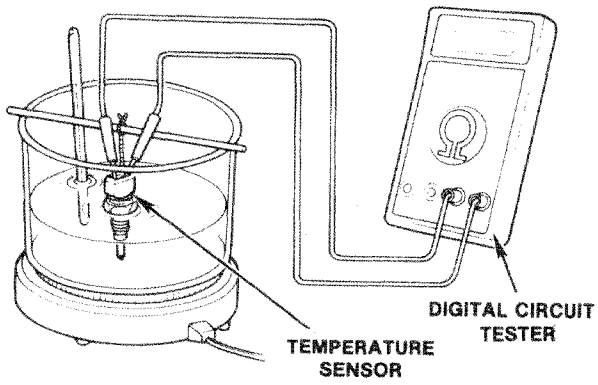
Sensor Inspection

Inspect the sensor following the same steps used to test the T1 sensor (see page 10-18).

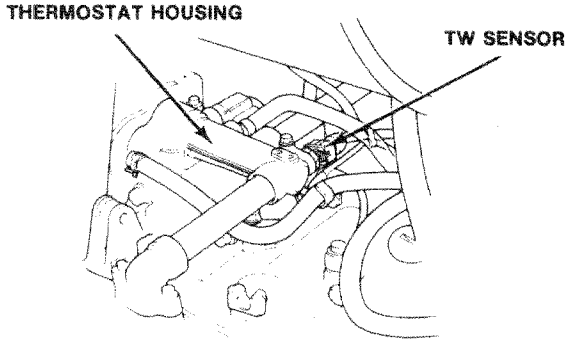


Removal/Installation

Remove the throttle body/air chamber assembly (see page 10-34). Remove the sensor from the thermostat housing, and plug the hole with a cap.

Install the sensor in the reverse order of removal.

NOTES:
- Coat the sensor threads with a sealing agent before installation.
- After installation, check for leaks and check the coolant level.



Fuel Pump

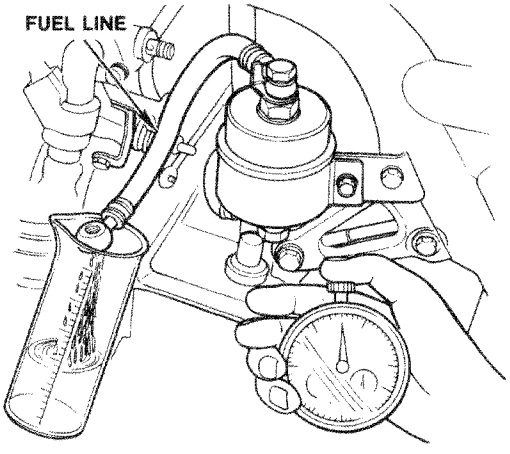
Operation Inspection

Turn the ignition OFF. Disconnect the fuel line from the left fuel delivery pipe by removing the joint nut.

Engage the transmission with the clutch lever out, and push the starter button so the starter motor will not work but the fuel pump operates.

Measure the amount of fuel discharged.

Fuel pump capacity: 630 cc (21.3 oz)/minute minimum

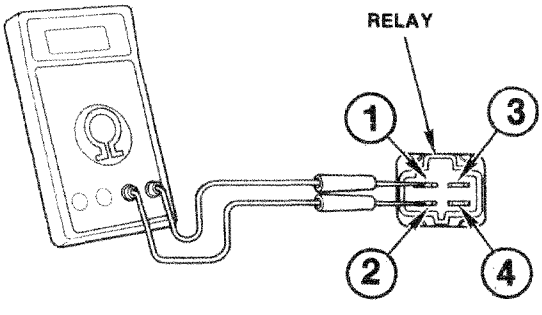


Main/Fuel Pump Relay Inspection

Remove the relay from the fuse/relay box.

Check for no continuity between terminals (1) and (2). If there is continuity, install a new relay.

Apply battery voltage across terminals (3) and (4) and check for continuity between terminals (1) and (2). If there is no continuity, install a new relay.



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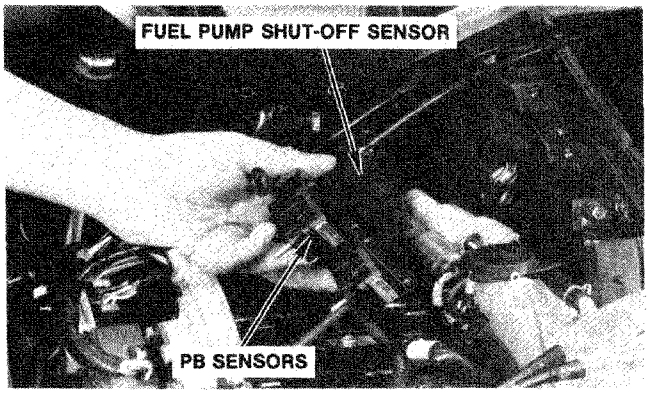
Shut-Off Sensor Inspection

Disconnect the vacuum hoses from the PB sensors. Leaving the couplers connected, detach the fuel pump shut-off sensor and PB sensors as a unit.

Turn the ignition ON and tilt the sensor to the left and right. The main and fuel pump relays in the fuse/relay box should operate as the sensor tilts past 56-64 degrees



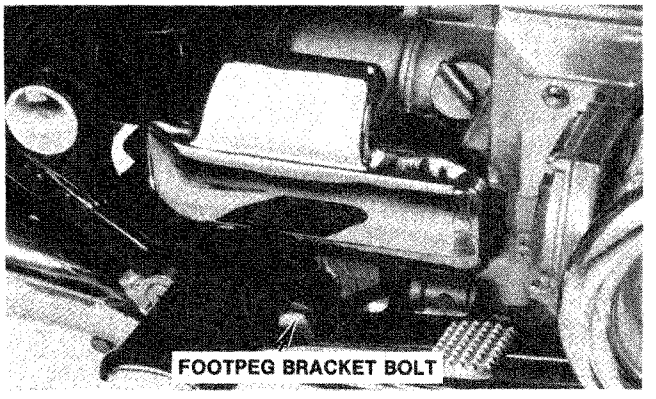
Removal/Installation

Disconnect the fuel pump white 2P coupler, located on the rear fender.

Remove the pump cover bolts and the cover.

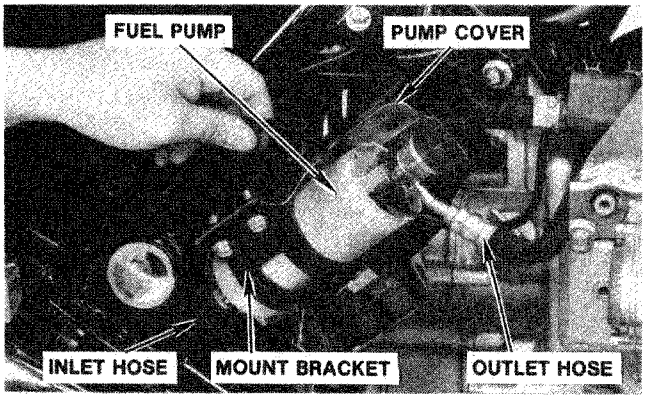
Wrap a shop towel around the fuel line and fitting. Loosen the fuel hose banjo nut slowly, then disconnect the hose.

Remove the right footpeg bracket bolt, and the fuel pump.



Disconnect the fuel lines from the pump.

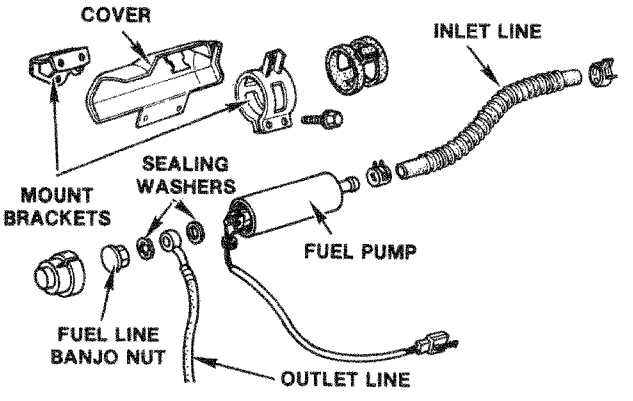
Remove the mounting bracket.



Install in the reverse order of removal.

Torque values:
Fuel hose banjo nut: 28 N.m (20 ft-lb)
Footpeg bracket bolt: 60 N.m (43 ft-lb)

NOTES:
- Use new sealing washers on the banjo fittings.
- Keep the fuel lines away from sharp edges and corners.
- Check for leaks after installation.



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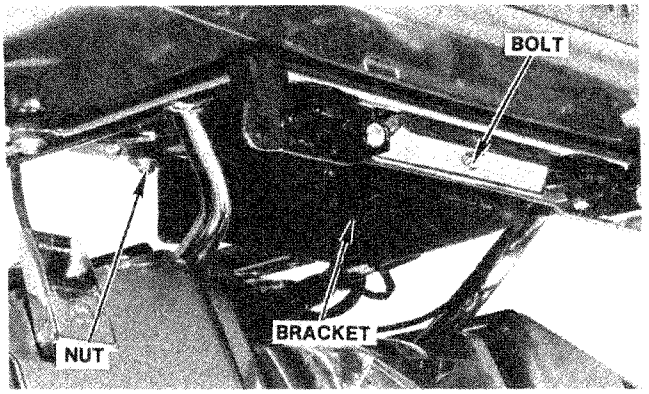
CFI Electronic Control Unit (ECU)

Removal

Remove the seat and the saddlebag lids. Remove the license plate light.

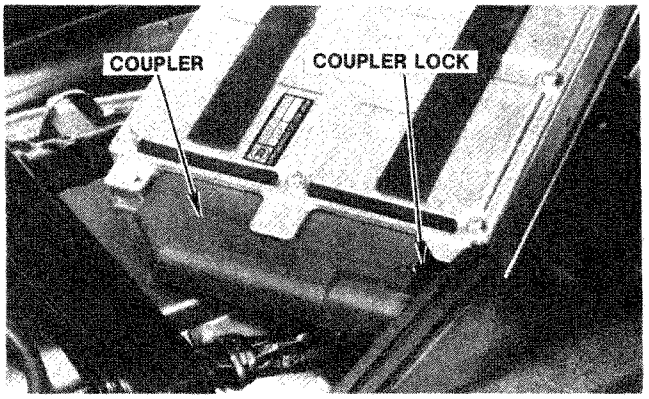
Remove the bolt and 2 ECU bracket nuts, then remove the ECU from the travel trunk bracket.



Carefully slide the ECU out of its case. Press out the ECU coupler lock, and disconnect the coupler from the ECU.

NOTES:

- Do not pry the coupler open or bend the terminals.
- Keep water, oil, and dirt away from the terminals.
- Do not attempt to disassemble the ECU.



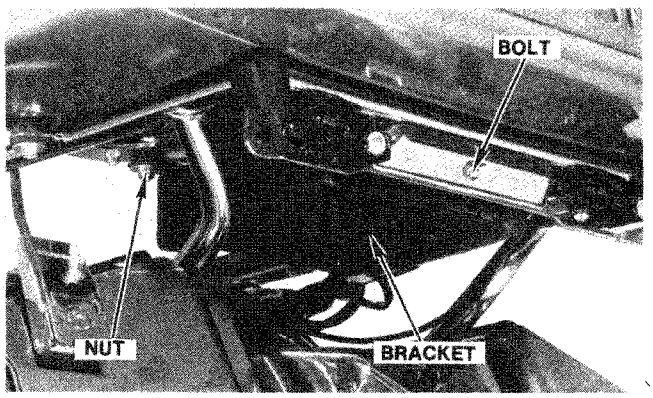
Installation

Attach the ECU coupler to the ECU hinge, and push it in until the lock engages.

Slide the ECU into its case, and install the dust cover.

CAUTION: If the dust cover is not installed, the ECU may be damaged by water or dust.

Position the ECU under the travel trunk, and install the bolt and mounting nuts.



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CFI System

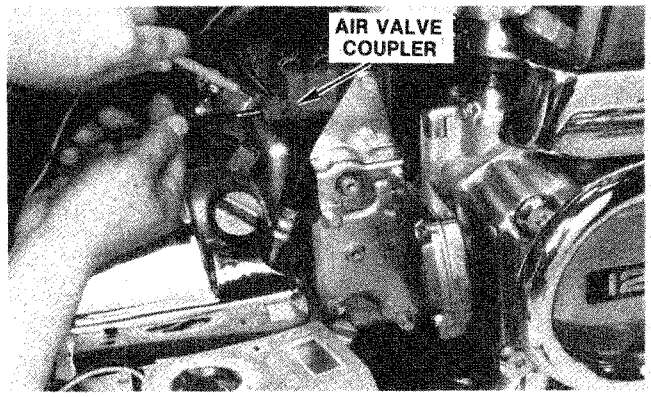
Air Valve

Inspection

Remove the air valve cover, and disconnect the coupler.

Measure the resistance between the terminals.

Resistance: 65-100 ohms



Removal/Installation

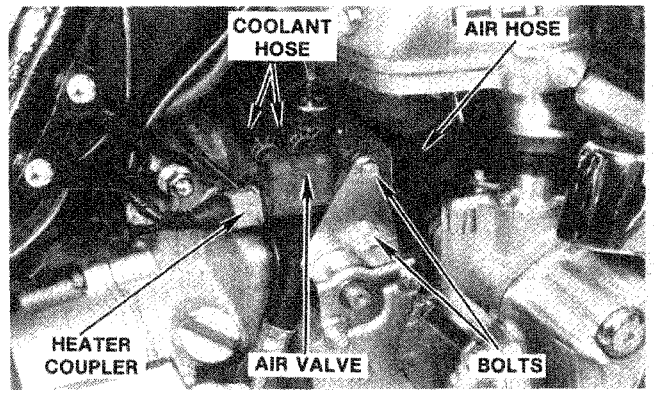
Remove the two mounting bolts and the air valve cover.

Disconnect the heater coupler from the air valve.

Disconnect the coolant and air hoses.

Remove the two air valve bolts and remove the valve.

Install in the reverse order of removal.



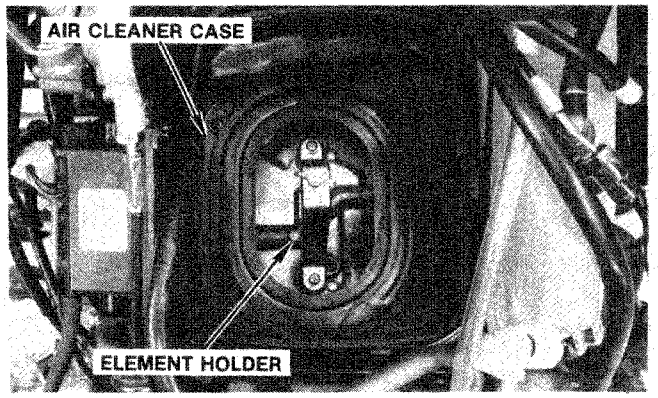
Air Chamber

Removal

NOTES:

- Keep the intake pipes, injectors, and caps in their original sets, and install them in their original locations.
- Adjust the injectors with shims whenever you install these new parts: injector, cap, delivery pipe, throttle body, and intake pipe.

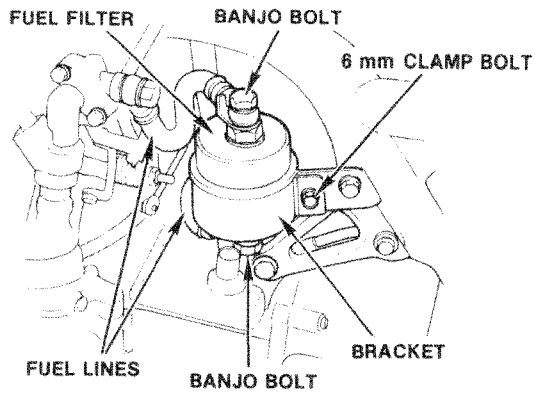
Turn the ignition OFF and disconnect the fuel pump coupler.



Remove the fuel filter from the left engine mount bracket.

Remove the fairing lower and inner covers (see page 9-2).

Remove the air cleaner element. Remove the four screws and the air cleaner case. Remove the element holder.



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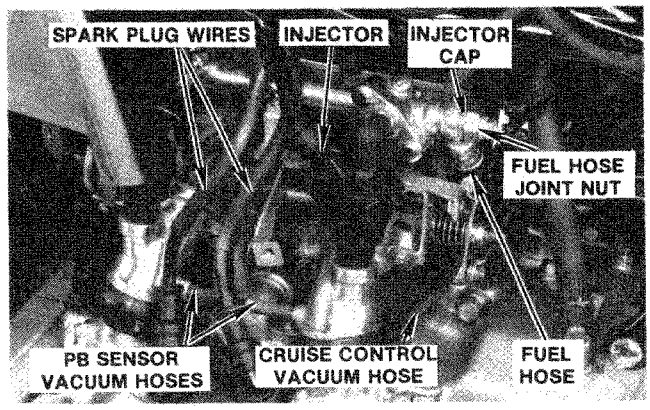
WARNING: The fuel lines are pressurized. Wear eye protection. If gasoline gets in your eyes, flush with water and get prompt medical attention.

Wrap a shop towel around the fuel line and fitting. Loosen the fuel hose banjo nut slowly, then disconnect the hose.

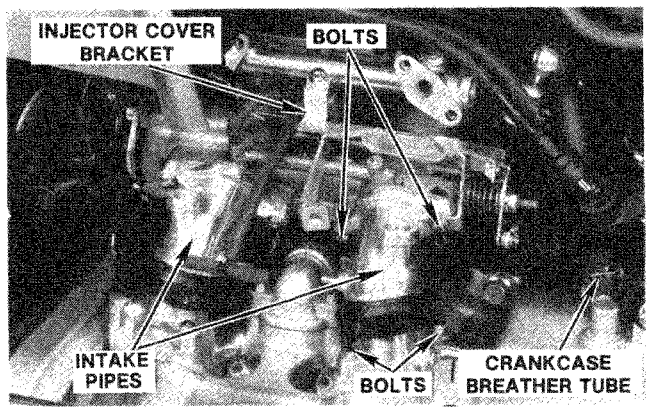
Remove the injector cap bolts and caps. Plug each injector port to keep out dirt.

Disconnect the spark plug wires. Disconnect the PB and cruise control vacuum hoses.

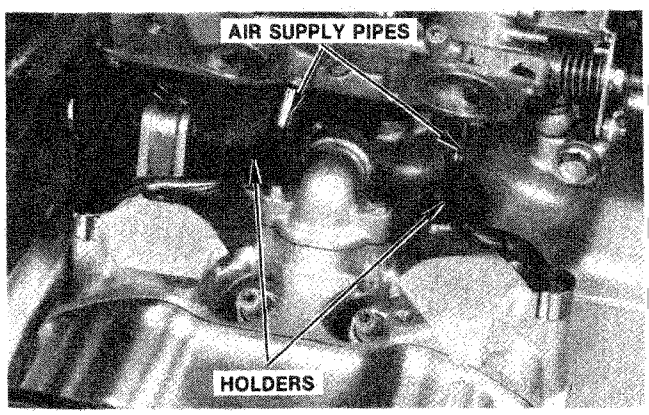


Remove the intake pipe mounting bolts, pipes, and the injector cover bracket.

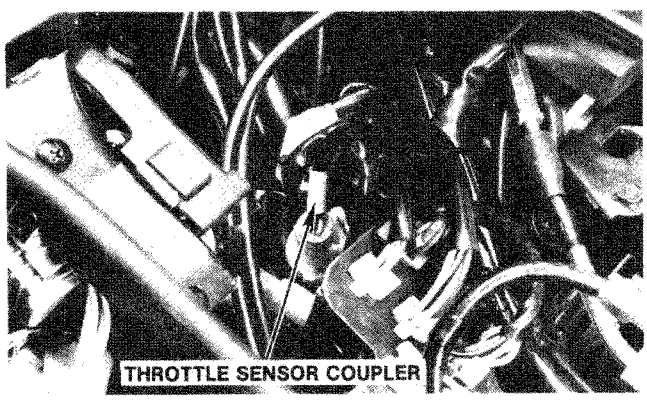
Disconnect the crankcase breather tube.



Disconnect the secondary air supply tubes from the cylinder heads and engine case holders.



Disconnect the cruise control throttle grip cancel switch and throttle sensor couplers.



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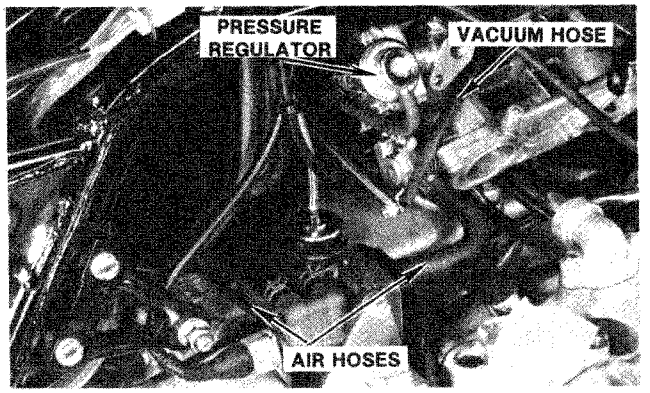
Remove the air inlet and outlet hoses from the air valve. Disconnect the vacuum hose.

Remove the fuel pressure regulator.

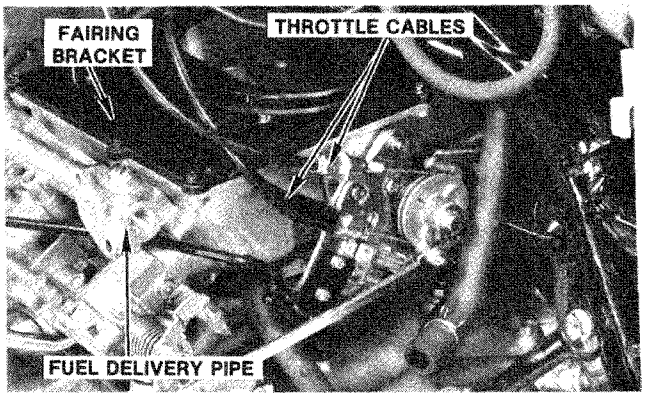
NOTE: Take care not to damage the regulator during removal.

On California models, disconnect the cannister purge air hose from the purge control valve.



Pull the air chamber out to the left, and disconnect the throttle cables.

NOTE: If the left fairing bracket interferes with with the air chamber, remove the left fuel delivery pipe.

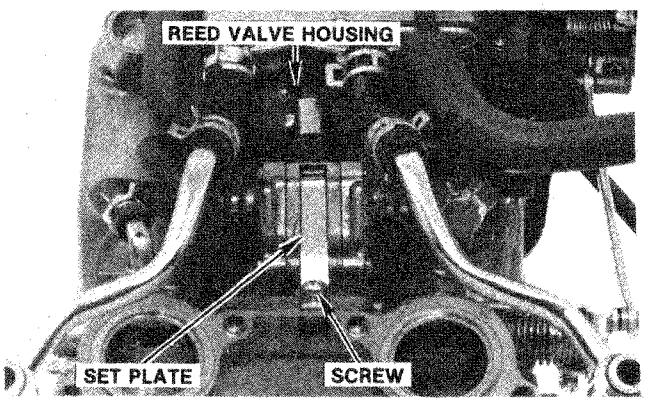


Disassembly

NOTE: See the base manual for service of the secondary air supply reed valves, and the purge control valve.

Remove the primary reed valve set plate.

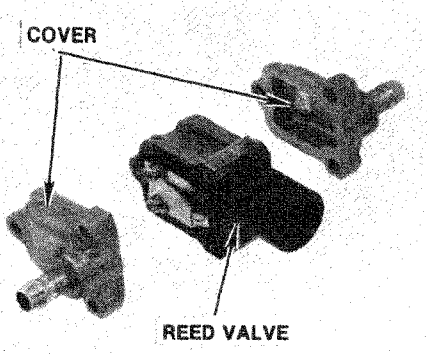
Disconnect the air hoses from the housing.



Remove the reed valve covers.

Check the reeds for signs of damage or fatigue, and replace if necessary.

Install new reeds and valves if the seat rubber is cracked or damaged, or if there is clearance between the reed and seat.



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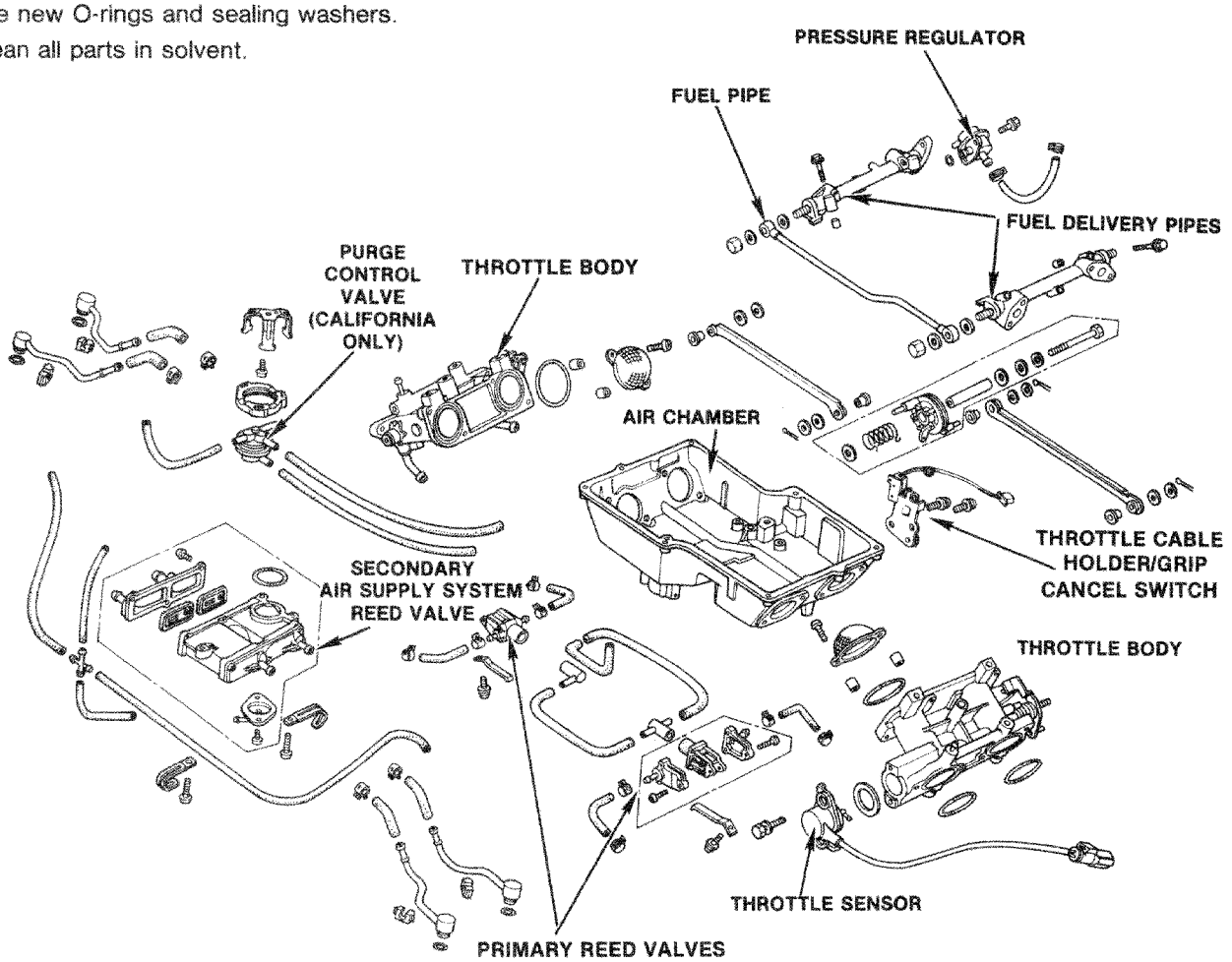
Assembly

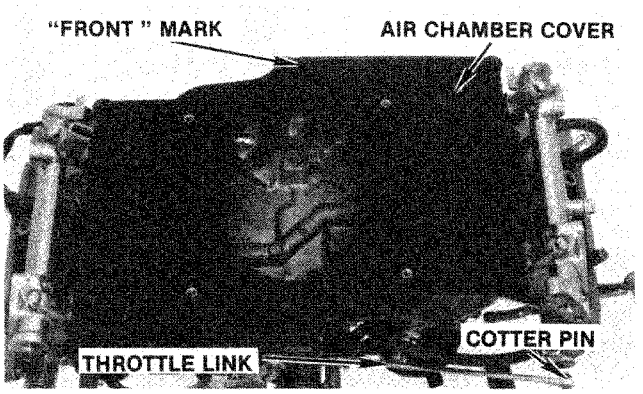
Assemble in the reverse order of disassembly.

NOTES:
- Use new O-rings and sealing washers.
- Clean all parts in solvent.



Install the air chamber cover with the "front" mark facing forward.

Connect the throttle link to the throttle arm, install the washer and a new cotter pin.



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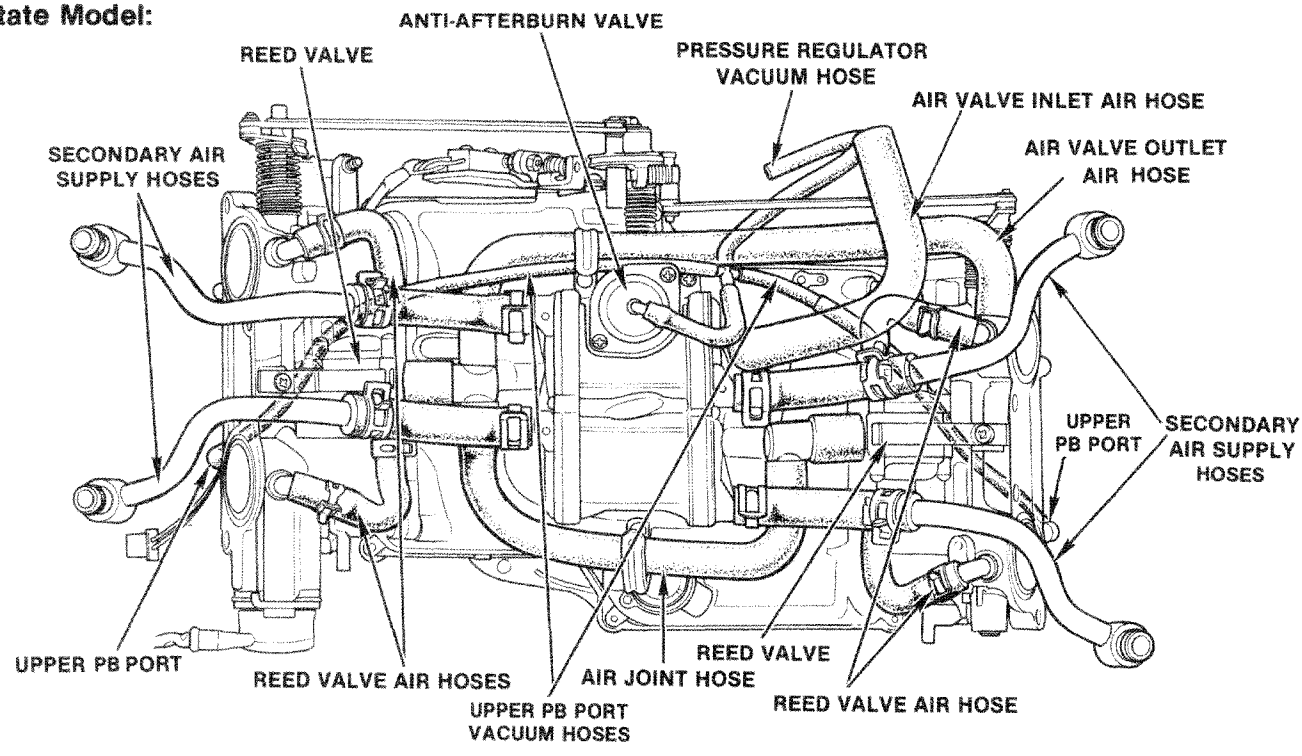
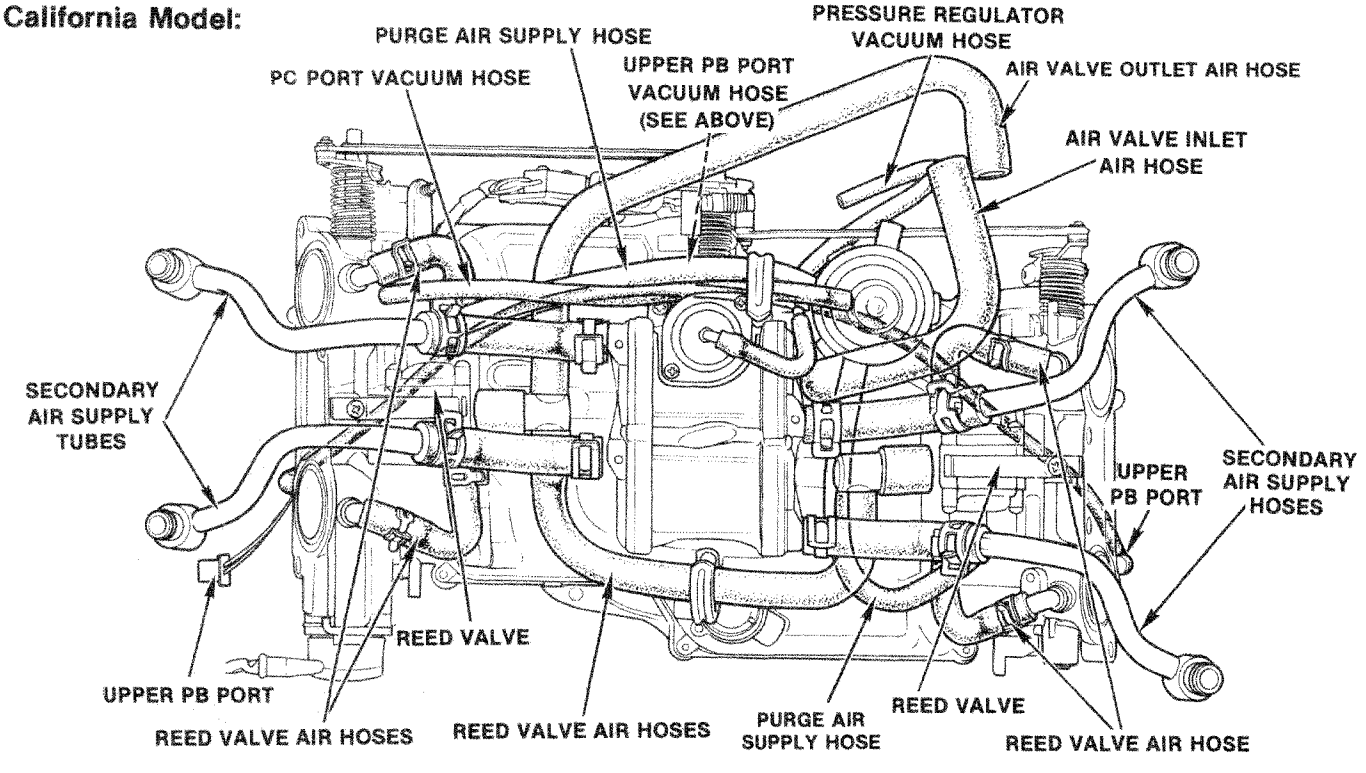
After installing the air chamber, check the vacuum hose routing diagram label.

49-State Model:



California Model:



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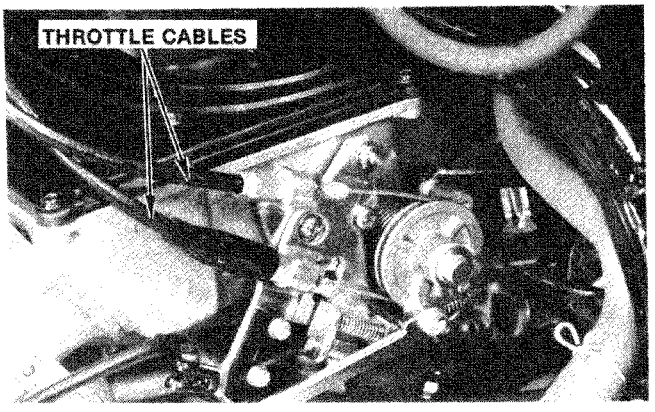
Installation

Working from the left side, push the air chamber partially into place and connect the throttle cables to the throttle drum. Check the cables for smooth operation.

NOTE: Make sure the throttle cable is connected in the junction box.

If a new throttle grip cancel switch or throttle cable holder is installed, adjust the switch (see page 28-11).



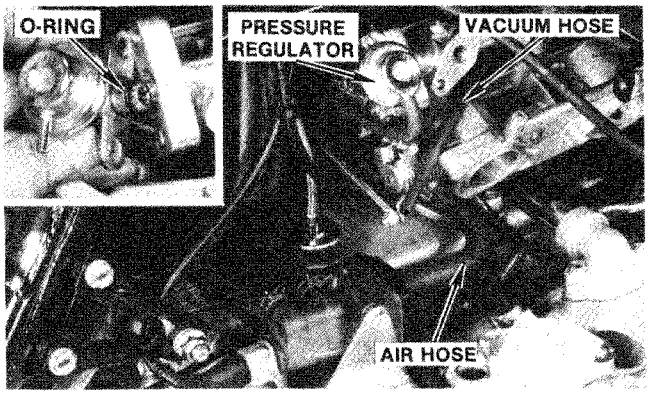
Push the air chamber into place.

NOTE: Check that the hose and pipes are not caught on surrounding parts and disconnected.

Apply a thin coat of clean engine oil to the pressure regulator O-rings, and install the right fuel delivery pipe.

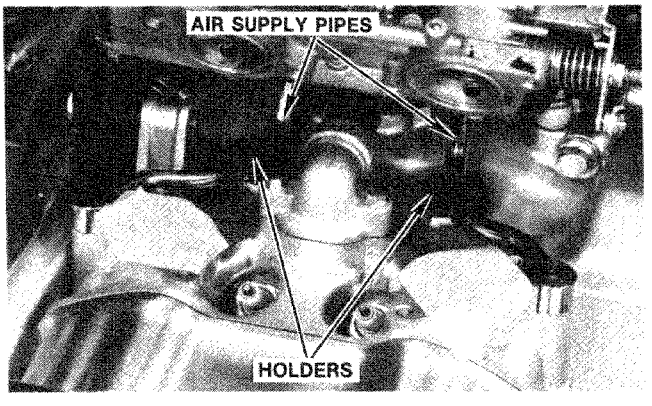
Connect the vacuum hoses to the pressure regulator.

Connect the air outlet and inlet hoses to the air chamber.



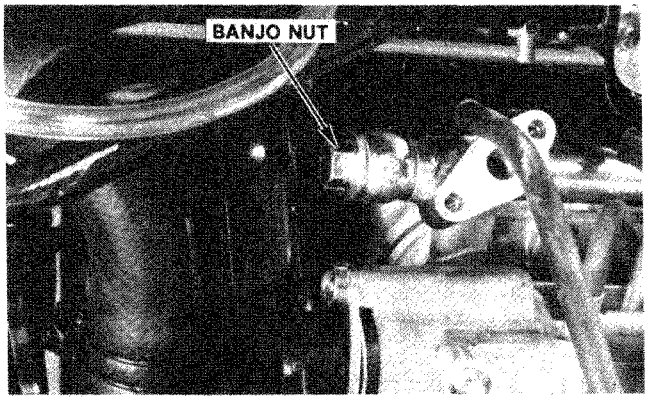
On California models, connect the purge air hose to the purge control valve.

Connect the secondary air supply hoses to the cylinder heads and to the holders on the engine case.



Connect the fuel lines to the right and left fuel delivery pipes and temporarily tighten the banjo nuts.

NOTE: Tighten the nuts after the intake pipes have been installed.



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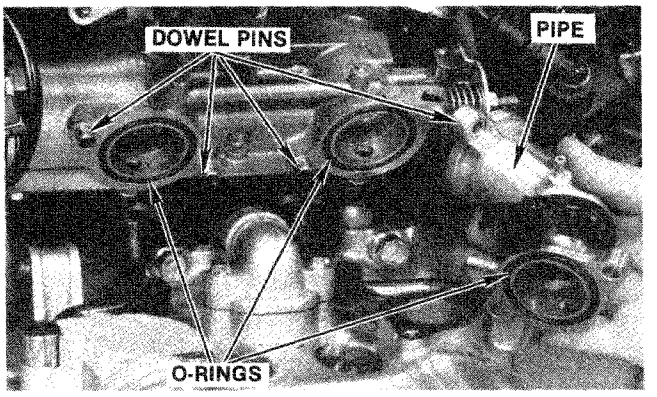
Installation (cont'd)

Install the O-ring and dowel pin on the throttle body.

Install the O-ring on the cylinder head end of the intake pipe.

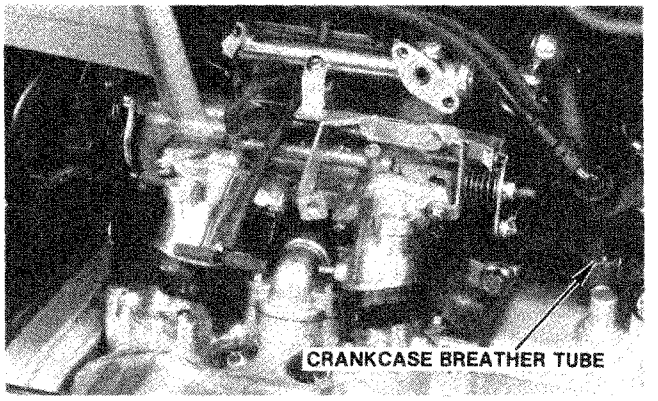
Hold the O-rings in place with grease.



Install the intake pipes between the cylinder head and throttle body.

Install the throttle body cover bracket and tighten the bolts.

Connect the crankcase breather tube to the engine.



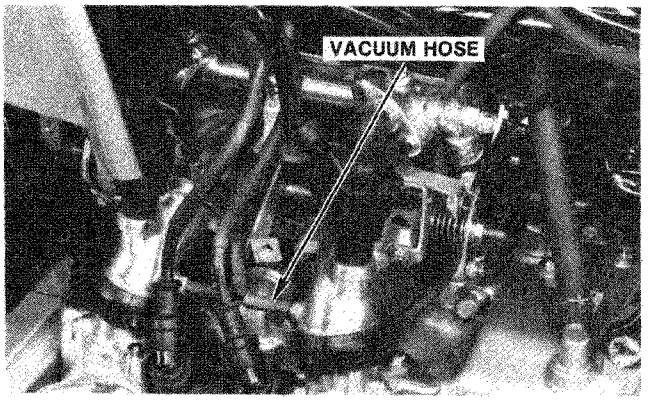
Connect the vacuum hose to the intake pipe. Connect the spark plug leads. Connect the fuel line to the left fuel delivery pipe and tighten the banjo nut.

Torque: 22 N.m (16 ft-lb)

Connect the throttle sensor and cruise control throttle grip cancel switch couplers. Install the air cleaner case and air cleaner.

Connect the fuel pump coupler, pressurize the system by turning the ignition ON, and check for leaks.

Install the fuel filter on the left engine mount bracket. Install all removed parts in the reverse order of removal.



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Electronic Travel Computer

Service Information 11-2
Troubleshooting 11-4
Removal 11-12
Disassembly 11-12
Assembly 11-14

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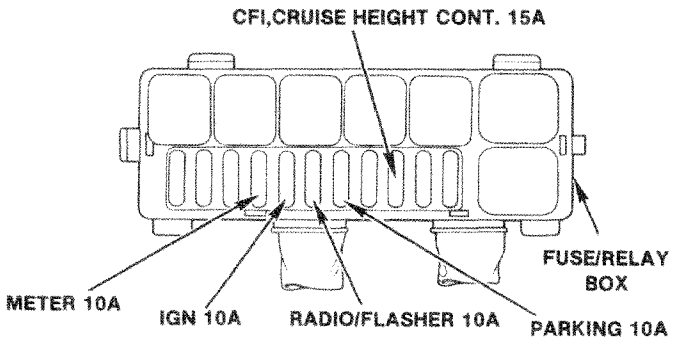
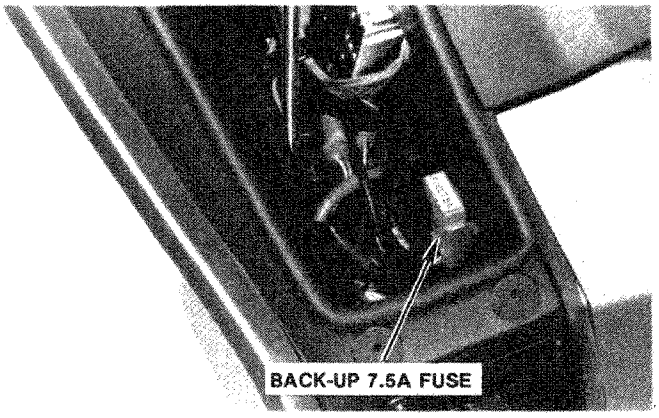
Electronic Travel Computer

Service Information

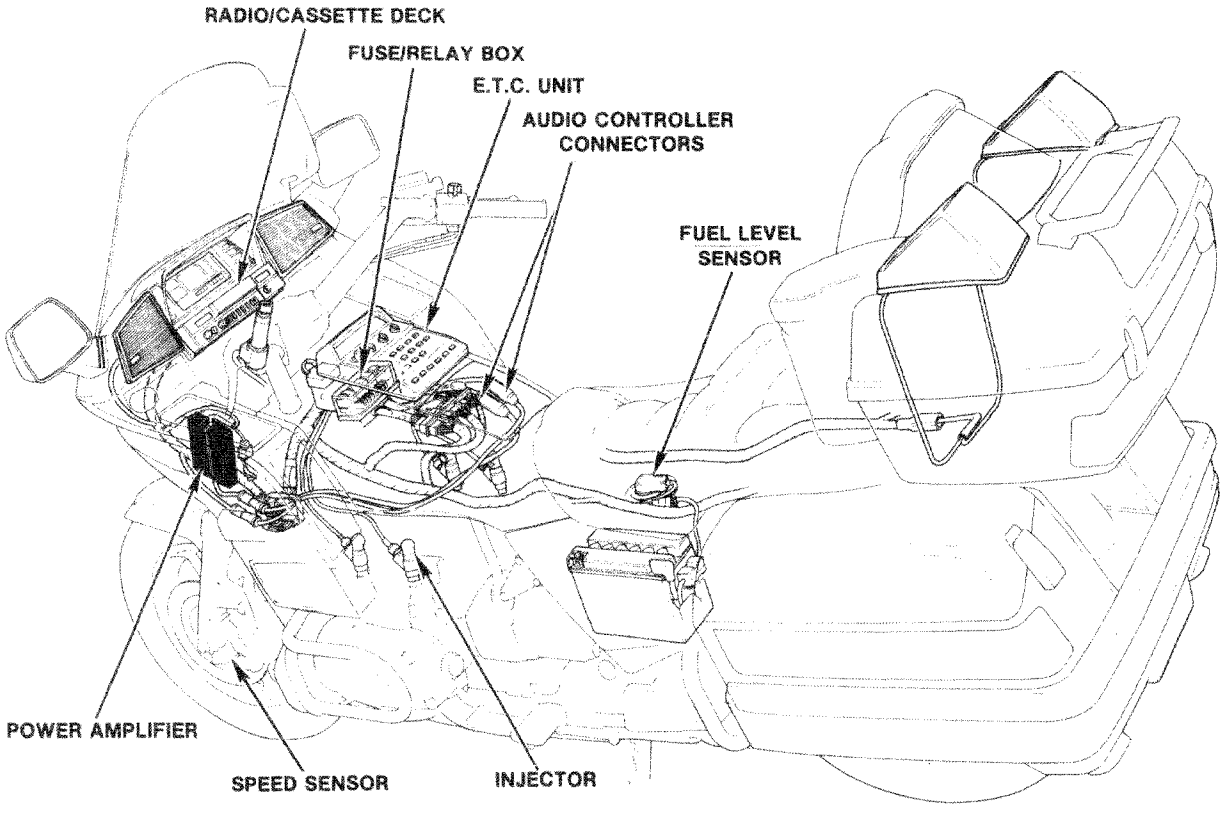
- Measuring outputs at coupler pins: Insert the tester probes from behind the coupler pins to avoid bending or prying them open. Be careful not to short out pins.
- Testing for continuity, or measuring a voltage or resistance: Make sure all related couplers or wires are connected securely.
- Disconnecting a coupler or connector: Turn the ignition switch OFF. Positive (+) and negative (−) sides are so marked.

Fuses/Relays





Parts Location



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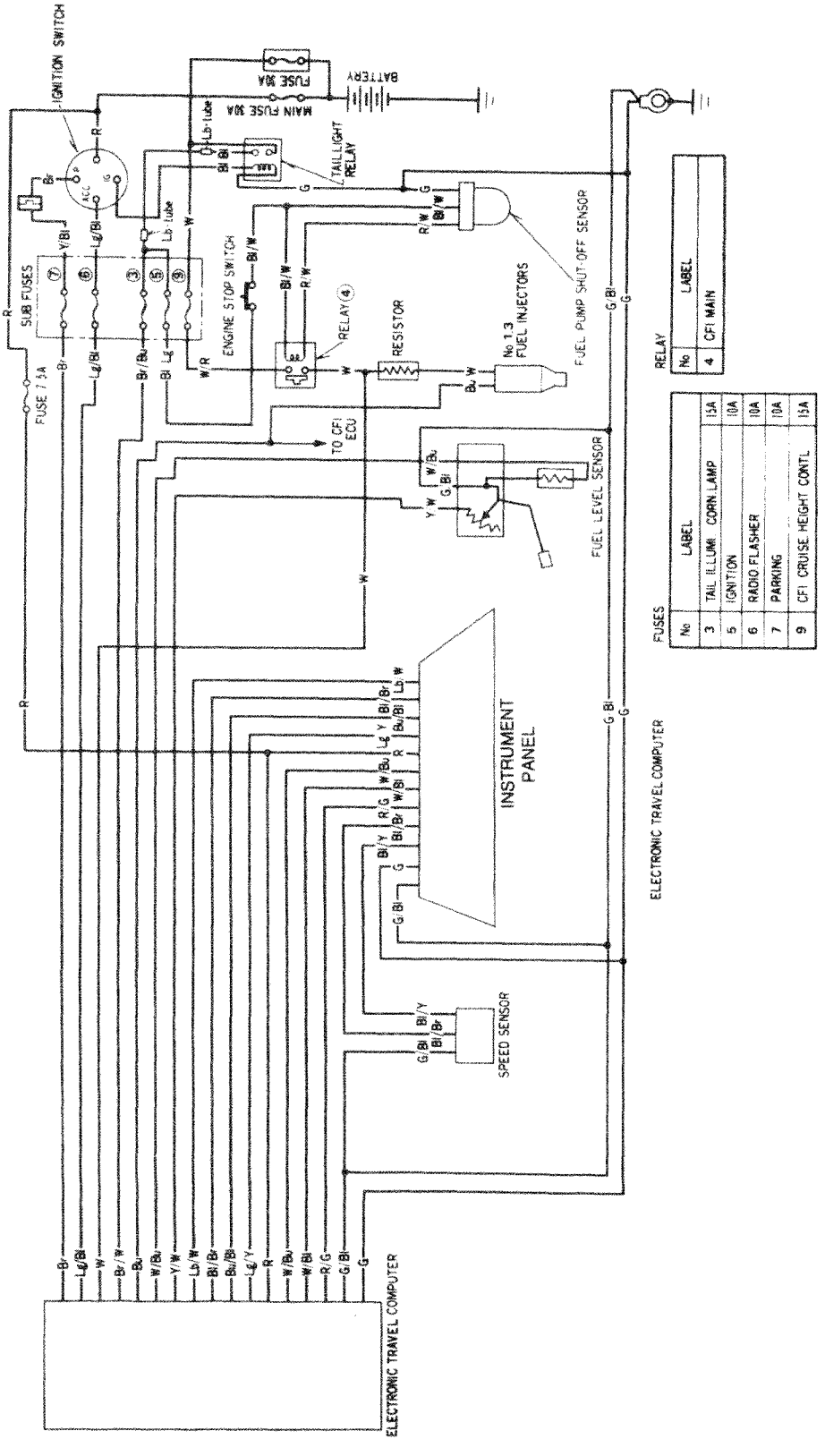
System Wiring Diagram



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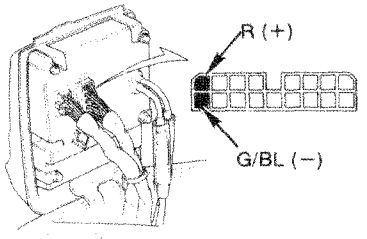
Electronic Travel Computer

Troubleshooting

All liquid crystal displays (L.C.D.'s) remain OFF (including clock).

POWER TO ETC: Measure voltage between R (+) AND G/Bl (−) terminals of the 17P white coupler.
Battery voltage should be indicated regardless of ignition switch position.



Battery Voltage → **COUPLER:** Check 17P white coupler for poor contact at connector.

Not Loose →
- Faulty ETC unit (try with a known good ETC unit).

0 Volts →

WIRING: Check for continuity between G/Bl terminal of the ETC 17P white coupler and the battery negative terminal.

No Continuity →
- Open circuit in wire harness.

Continuity →

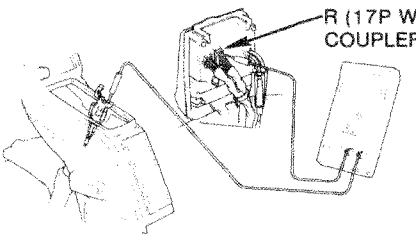
FUSE: Check 7.5 A fuse under left fairing pocket.

Blown Fuse →
- Short circuit between fuse and ETC unit.

Fuse OK →

POWER TO FUSE: Measure voltage between 7.5 A fuse positive terminal (red wire with white tape) and battery negative terminal.

Battery Voltage → **WIRING:** Remove 7.5 A fuse from fuse holder. Check for continuity between the fuse wire and R of ETC unit 17P coupler.

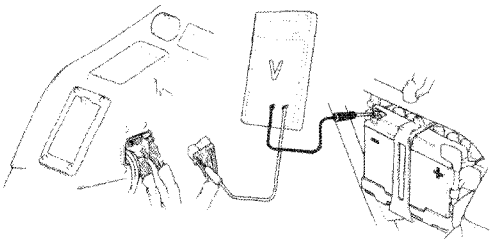


No Continuity
- Loose or poor contact at left fairing coupler (20P black coupler).
- Open circuit between fuse and ETC unit.

Continuity
- Poor contact at fuse terminal.

0 Volts →

WIRING: Measure voltage between R (+) of fairing 13P white coupler and battery negative terminal.



Battery Voltage
- Poor contact at 13P white coupler.
- Open circuit in fairing sub-harness.

0 Volts
- Open circuit in wire harness.

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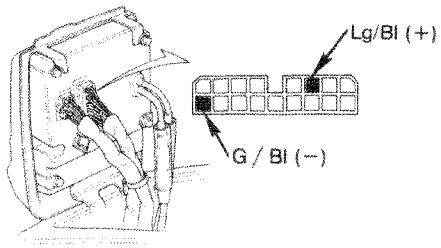
All liquid crystal displays (L.C.D.'s remain OFF (except clock).

POWER TO ETC: Measure voltage between the Lg/Bl (+) and G/Bl (−) terminals of the 17P white coupler. Turn ignition switch to ACC.



Battery Voltage Indicated → **COUPLER:** Check 17P white coupler for poor contact at connector.

Not Loose

- Faulty ETC unit (try with a known good ETC unit).

0 Volts

WIRING: Check for continuity between the G/Bl terminal of ETC unit 17P white coupler and battery negative terminal.

No Continuity

- Open circuit in wire harness.

Continuity

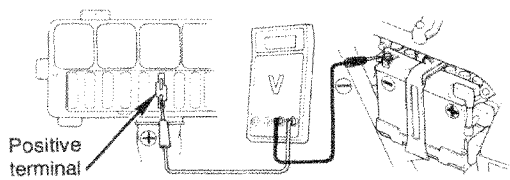
FUSE: Check fuse (RADIO/FLASHER) in fuse/relay box.

Blown Fuse

- Short circuit in harness (radio will not operate).

Fuse OK

POWER TO FUSE: Remove fuse (RADIO/FLASHER) and measure voltage between fuse positive terminal (+) and battery negative terminal with ignition switch in the ACC position.



0 Volts → **IGNITION SWITCH:** Check ignition switch for continuity (see base manual).

Normal

- Poor contact at ignition switch coupler or fuse box coupler.
- Open coupler in harness between ignition switch and fuse terminal.

Abnormal

- Faulty ignition switch.

Battery Voltage

WIRING: Check for continuity between fuse/negative terminal and Lg/Bl of fuse/relay box 13P black coupler.

No Continuity

- Open circuit in fuse/relay box.
- Poor contact at fuse/relay box coupler.

Continuity

WIRING: Check for continuity between sub-fuse negative terminal and Lg/Bl terminals of ETC unit white 17P coupler.

No Continuity

- Open circuit between fuse terminal and ETC unit.
- Poor contact at fuse/relay box couplers.

Continuity

- Faulty ETC unit (try with a known good ETC unit).

(cont'd)

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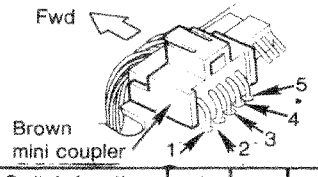
Electronic Travel Computer

Troubleshooting (cont'd)

Time cannot be adjusted.

NOTE: The clock can only be adjusted when the ignition switch is in the ON or ACC position.

ETC/CLOCK SWITCH: Remove ETC unit cover and check for continuity between terminals.



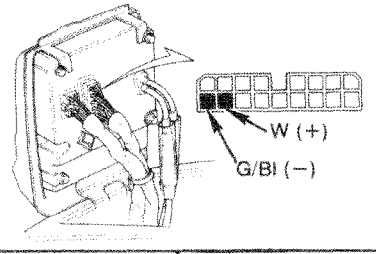
Switch function	1	2	3	4
Push		0		0
Turn to H	0			0
Turn to M			0	0

Abnormal → ● Faulty clock switch.

Normal → ● Faulty ETC unit (try with a known good ETC unit).

Average speed and trip functions do not operate.

POWER/FUEL SYSTEM INDICATOR: Turn ignition switch ON. Measure voltage between W (+) and G/Bl (−) terminals of 17P white coupler.



0 Volts → Check the fuel system indicator. The fuel system indicator should come on for about 3 seconds when the ignition is switched ON.

- **Abnormal** → ● Go to FUEL SYSTEM INDICATOR DOES NOT LIGHT troubleshooting (see page 10-7).
- **Normal** → ● Open circuit in wire harness.

Battery Voltage → **SPEEDOMETER/ODOMETER:** Check speedometer and odometer functions.

- **Abnormal** → **SENSOR SIGNAL:** Measure voltage between Bl/Y (+) terminal of the instrument 20P black coupler and G/Bl (−) terminal of instrument 13P white coupler with ignition switch in the ON position. Volt meter should indicate about 1 to 9V alternately when the front wheel is turned slowly.
  - **Not OK** → (A)
  - **OK** → ● Faulty instrument.
- **Normal** → (B) (cont'd next page)

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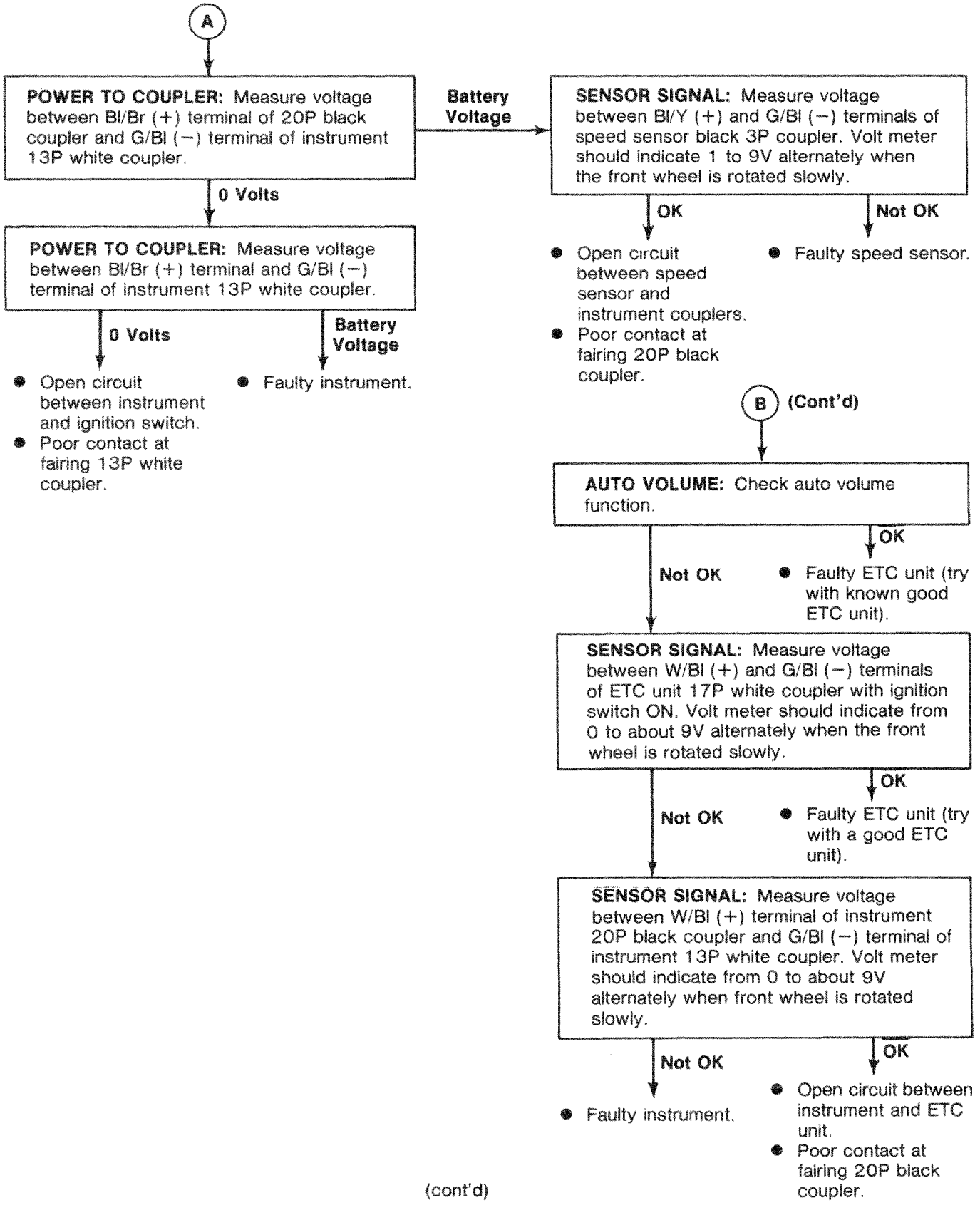

(cont'd)

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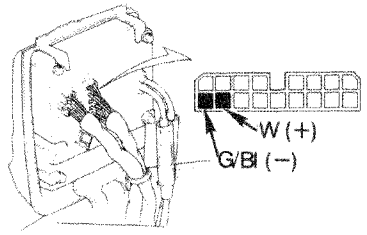
Electronic Travel Computer

Troubleshooting (cont'd)

Fuel left in Tank is not indicated with ignition switch ON.

POWER/FUEL SYSTEM INDICATOR: Measure voltage between W (+) and G/Bl (−) terminals of 17P white coupler.



0 Volts →
Check fuel system indicator. The fuel system indicator should come on for about 3 seconds when ignition is switched ON.

- **Abnormal** → ● Go to FUEL SYSTEM INDICATOR DOES NOT LIGHT troubleshooting (see page 10-7).
- **Normal** → ● Open circuit in wire harness.

Battery Voltage ↓

FUEL QUANTITY: Check amount of fuel left in fuel tank. Amount should be more than 10 liters (2.6 gal).

Less than 10 Liters → ● Refill tank.

More than 10 Liters ↓

FUEL GAUGE: Check fuel gauge. LCD should light more than 3 segments.

No →
SENSOR: Check fuel level sensor (see base manual).

- **OK** → **Yes** ↓
- **Not OK** → ● Faulty fuel level sensor.

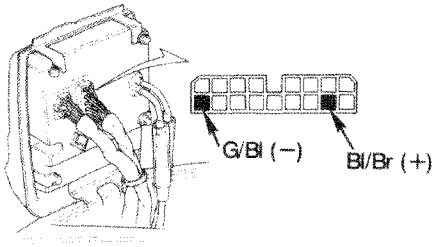
LOW FUEL INDICATOR: Check low fuel indicator. Indicator should go off about 3 seconds after ignition is switched ON.

No →
SENSOR SIGNAL: Measure voltage between W/Bu (+) and G/Bl (−) terminals of the fuel level sensor terminals. Volt meter should indicate more than 7V.

- **Correct Voltage** → ● Faulty ETC unit.
- **No Voltage Indicated** → ● Faulty fuel level sensor.

Yes ↓

WIRING: Measure voltage between Bl/Br (+) and G/Bl (−) terminals of 17P white coupler. Voltage should be about 5V with ignition switch ON.



Abnormal → ● Open circuit between instrument and ETC unit.

Normal ↓

SENSOR: Check fuel level sensor (see page 18-24 in base manual).

Incorrect → ● Faulty fuel level sensor.

Correct ↓

Ⓐ

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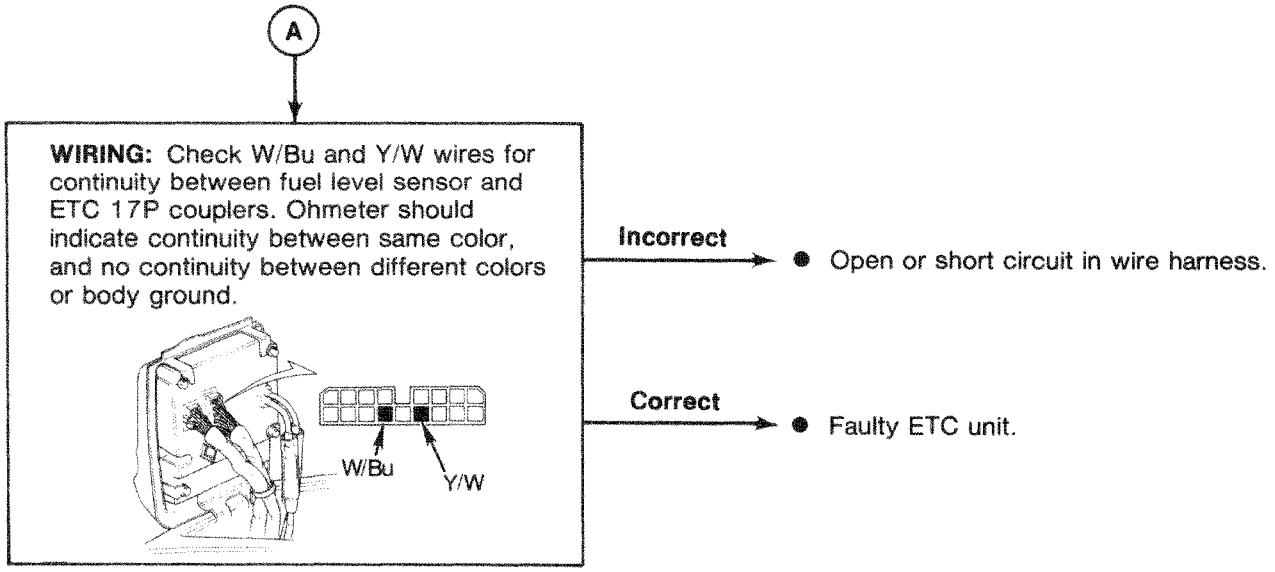
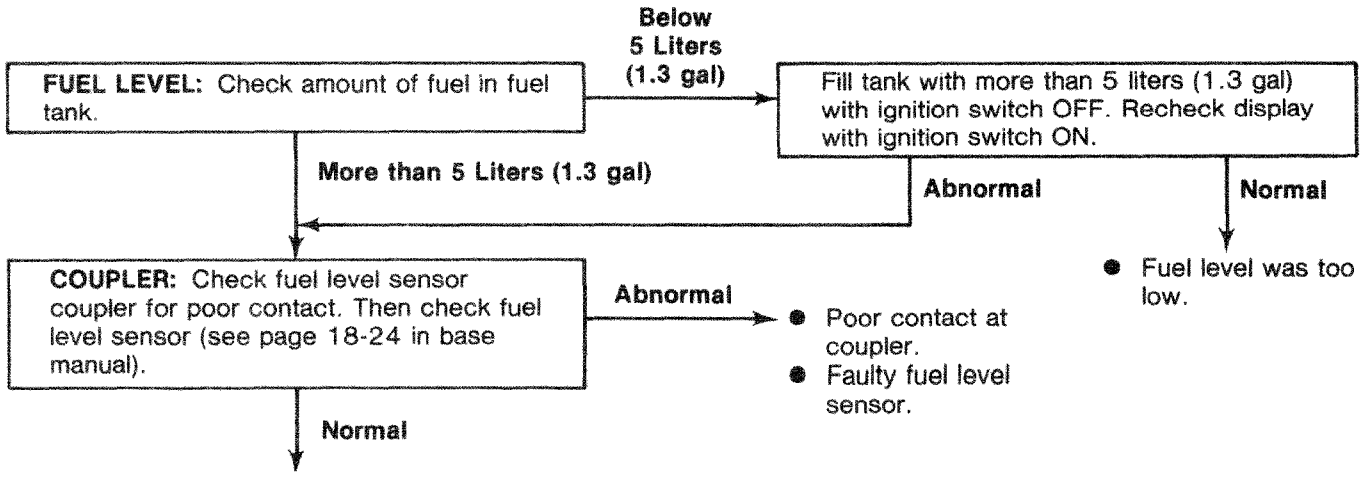


ABNORMAL INDICATIONS

Four bars "— — — —" flashing at display in QTY and RANGE functions.



(cont'd)

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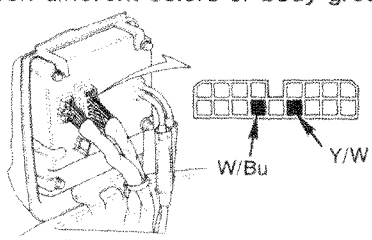
Electronic Travel Computer

Troubleshooting (cont'd)

WIRING: Check for continuity in W/Bu and Y/W wires between fuel level sensor coupler and ETC unit 17P coupler. Ohmmeter should indicate continuity between same color and no continuity between different colors or body ground.



No Continuity → Open circuit.

Continuity → **WIRING:** Check for continuity between body ground and W/B and Y/W terminals of fuel level sensor coupler. Ohmmeter should indicate no continuity.

- **No Continuity** → **WIRING:** Check for continuity between body ground and G/Bl terminal of the sensor coupler. Ohmmeter should indicate no continuity.
  - **No Continuity** → **COUPLER:** Check ETC unit 17P white coupler for loose contact.
    - **Normal** → ● Faulty ETC unit (try with a known good ETC unit).
    - **Abnormal** → ● Poor contact at 17P coupler.
  - **Continuity** → ● Short circuit in wire harness.
- **Continuity** → ● Short circuit in wire harness.

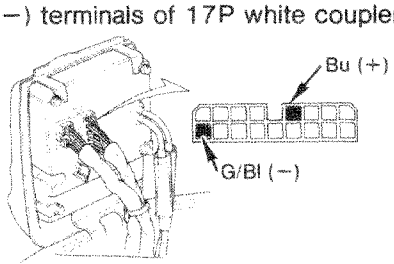
Fuel consumption does not decrease on display.

SIGNAL/ETC UNIT: Disconnect white 3P coupler resistor on the rear fender. Check fuel consumption function with ignition switch ON. Fuel consumption display should increase about 10 liters (2.6 gal) for every 50 seconds.

- **No** → ● Faulty ETC unit (try with a known good ETC unit).
- **Yes** → ● Go to AVERAGE SPEED AND TRIP FUNCTIONS DO NOT OPERATE (see page 11-6).

Excessive fuel consumption displayed.

SIGNAL/ETC UNIT: Turn ignition switch ON. Measure voltage between Bu (+) and G/Bl (−) terminals of 17P white coupler.



- **0 Volts** → ● Open circuit between ETC unit and injector.
- **Battery Voltage** → ● Faulty ETC unit.

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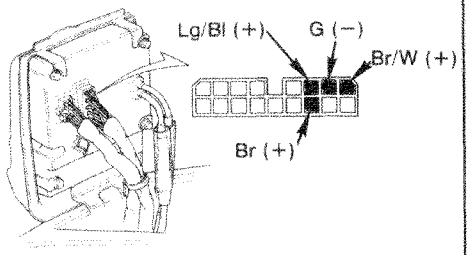
LCD night light does not come on.

POWER TO LIGHT: Measure voltage between Lg/Bl, Br/W, Br (+) and G (−) terminals of 17P white coupler at each ignition switch position. Battery voltage should be indicated as shown:

Wire Color \ Switch Position	P	Off Lock	ACC	ON
Lg/Bl (−) − G (−)	12V	0V	12V	12V
Br (+) − G (−)	12V	0V	0V	0V
Br/W (+) − G (−)	0V	0V	0V	12V



Abnormal → **WIRING:** Check for continuity between body ground and G terminal of 17P white coupler.

- **Continuity** → **IGNITION SWITCH:** Check ignition switch continuity (see page 18-22 in base manual).
  - **Normal** → **COUPLERS:** Check contact at ETC 17P and ignition switch couplers.
    - **Normal** → ● Open or short circuit in wire harness.
    - **Abnormal** → ● Poor contact at coupler.
  - **Abnormal** → ● Faulty ignition switch.
- **No Continuity** → ● Open circuit between coupler and ground terminal.

Normal → **BULB:** Check bulb socket for poor contact. Check for burned out meter illumination light bulb.

Normal → ● Faulty ETC unit.

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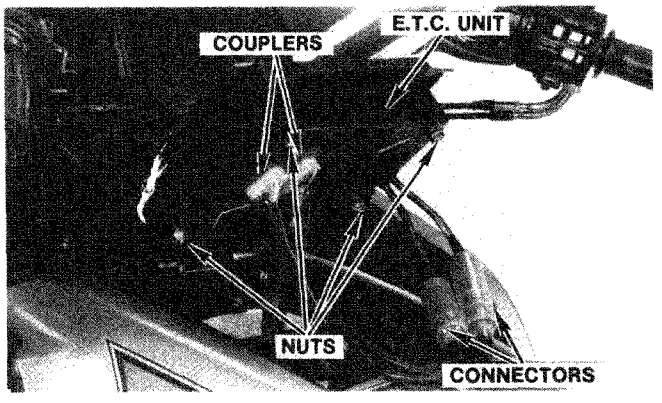
Electronic Travel Computer

Removal

Open the top compartment cover.

Disconnect the couplers and connectors from the E.T.C. unit.

Remove the four mounting nuts which secure the E.T.C. unit.

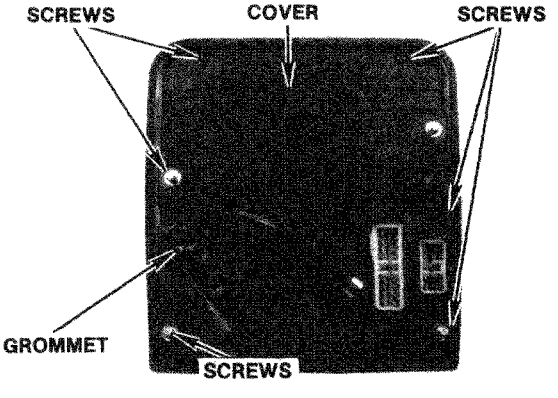


Disassembly

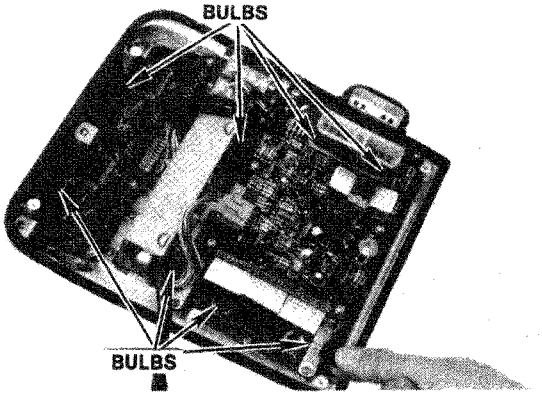
CAUTION: Keep water and dirt away from the printed board and other parts.

Unscrew the six cover mounting screws.

Press the wire grommet down into the cover. Remove the cover.



Remove the illumination bulbs by turning the sockets counterclockwise.



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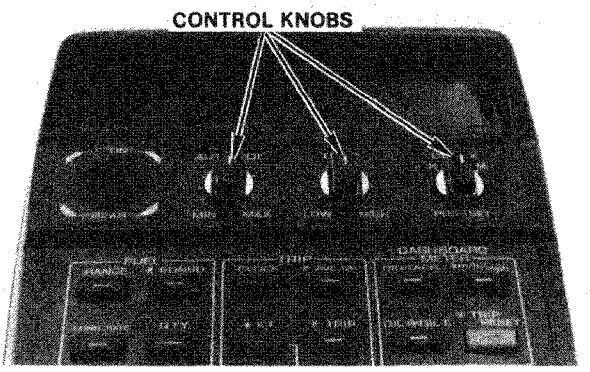
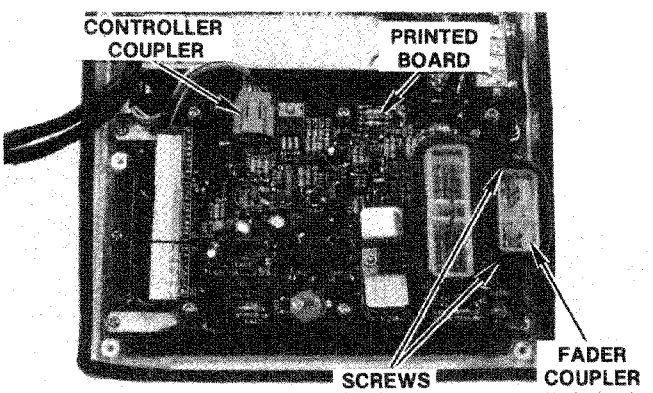
Remove the control knobs only if replacing the audio controls.



Remove the six top screws and unplug the controller coupler from the top printed board.

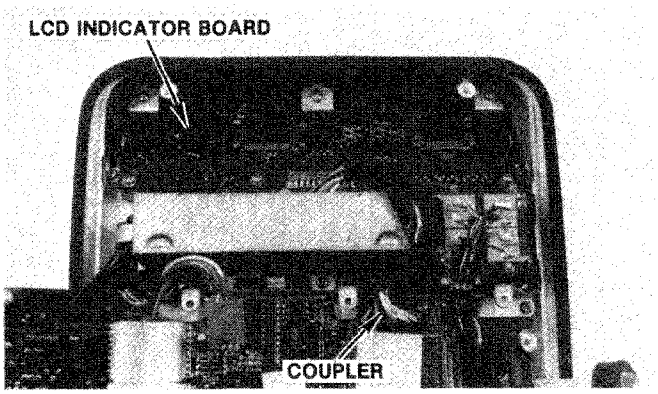
Remove the top printed board from the fader coupler by removing the two screws.

NOTE: Be careful not to damage the taped harness between printed boards during disassembly. Do not remove the base printed board.



Disconnect the black LCD indicator coupler from the printed board.

Release the LCD indicator from the case by removing the seven self-tapping screws.

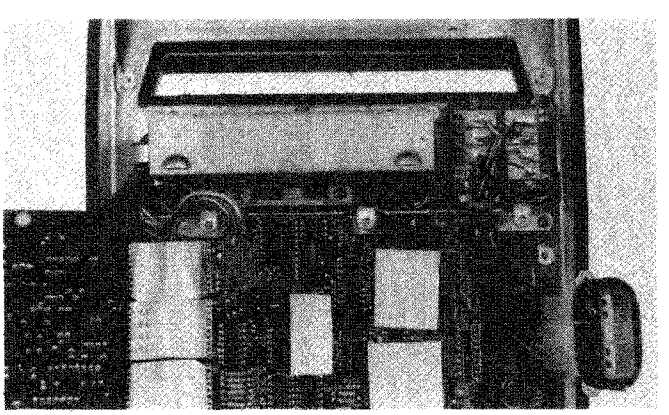


Remove the screws, radio controller and fader.

Remove the screws which secure the printed boards.

Remove the water shield and buttons from the case.

NOTE: Record the button colors and note the location of paper insulators as they are removed so they can be reinstalled in their original locations.



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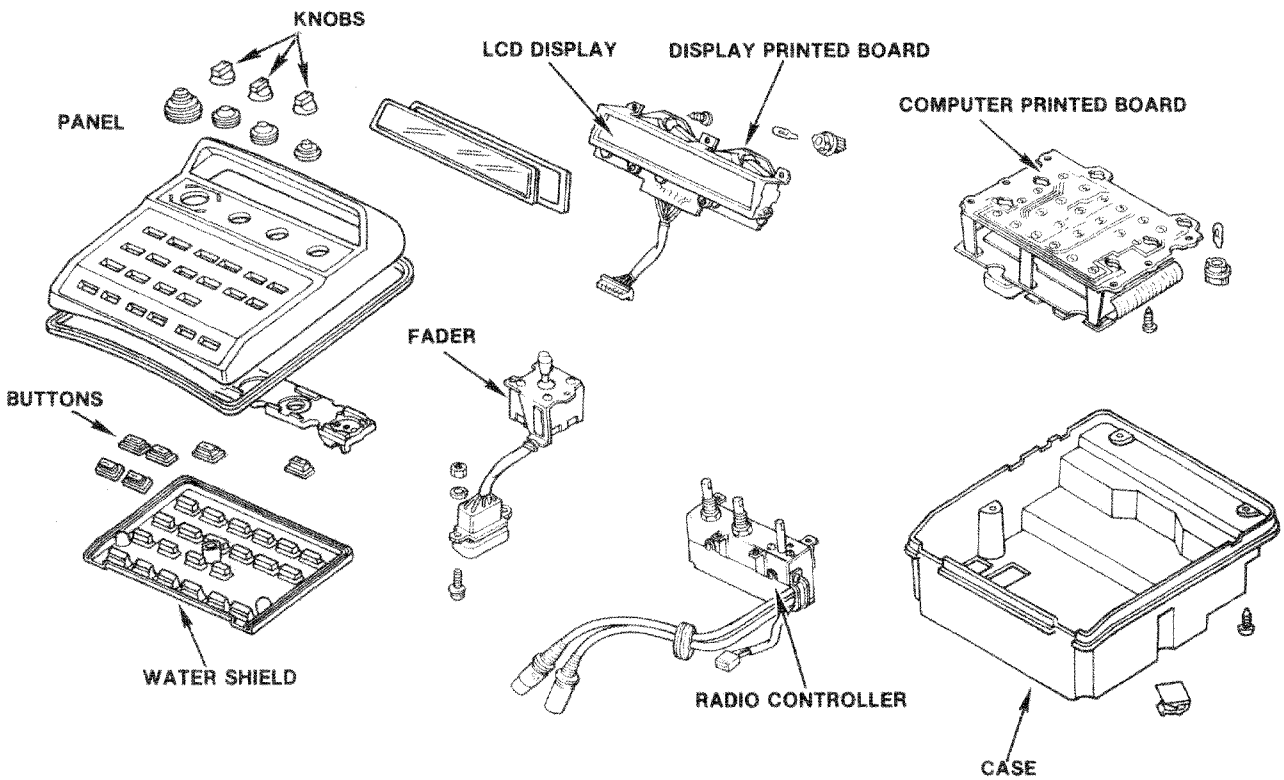
Electronic Travel Computer

Assembly

Assemble in the reverse order of disassembly.



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Auto Leveling Rear Suspension

Service Information 12-2
Troubleshooting 12-4
Air Pump Relay 12-17
Suspension Control Switch 12-17
Air Distributor 12-18
Pressure Relief Valve 12-23
Suspension Computer 12-23
Height Sensor 12-24

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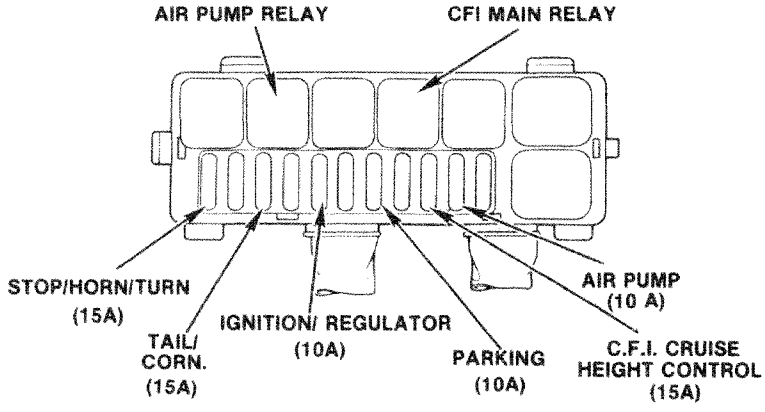
Auto Leveling Rear Suspension

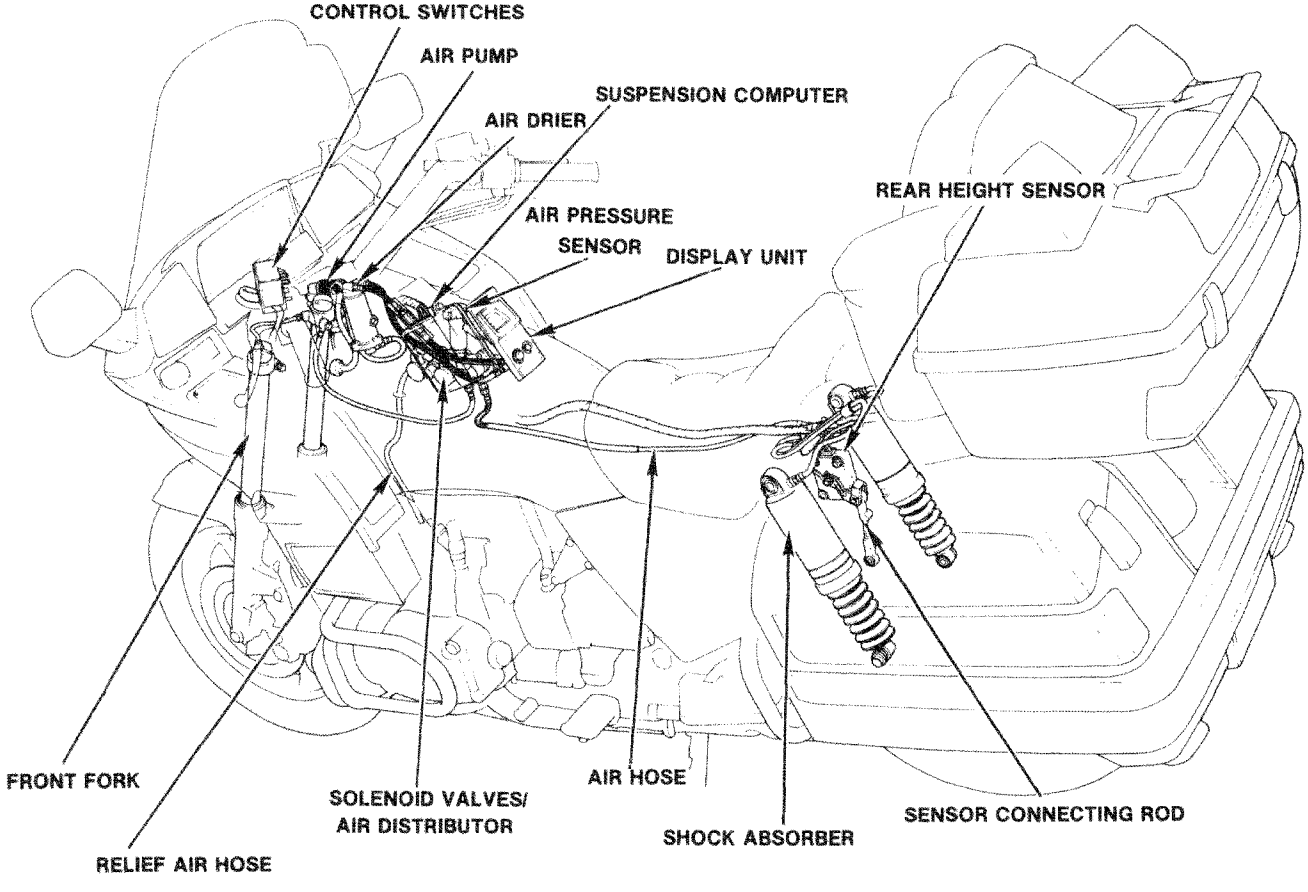
Service Information

- Measuring outputs at coupler pins: Insert the tester probes from behind the coupler pins to avoid bending or prying them open. Be careful not to short out pins.
- Testing for continuity, or measuring a voltage or resistance: Make sure all related couplers or wires are connected securely.
- Disconnecting a coupler or connector: Turn the ignition switch OFF. Positive (+) and negative (−) sides are so marked.

Fuses/Relay Box



Parts Location



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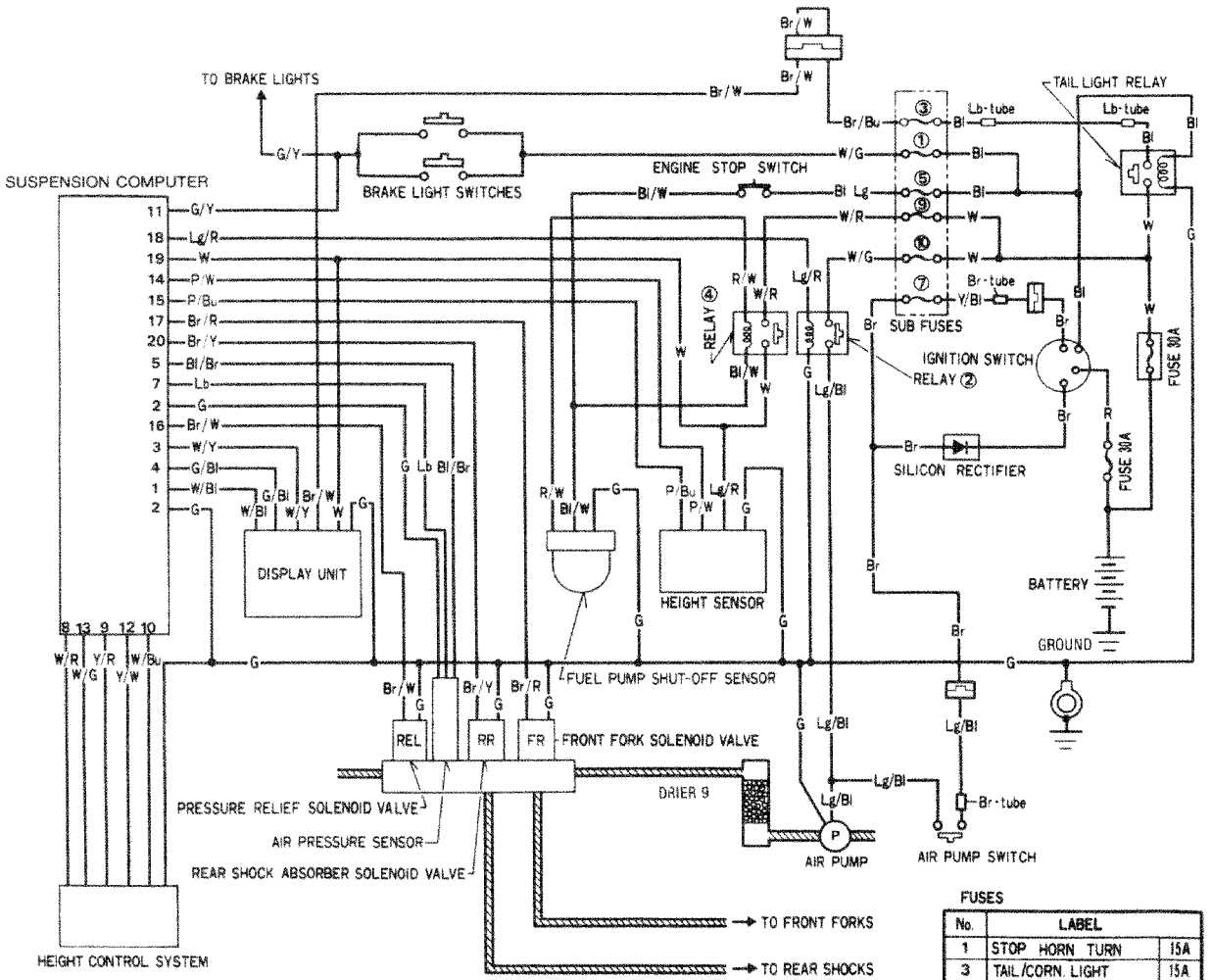
Wiring Diagram



FUSES

No.	LABEL	
1	STOP HORN TURN	15A
3	TAIL/CORN. LIGHT	15A
5	IGNITION	10A
9	CFI. CRUISE/HEIGHT CONTL	15A
10	AIR PUMP	10A
7	PARKING	10A

RELAYS

No.	LABEL
4	CFI MAIN
2	AIR PUMP

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Auto Leveling Rear Suspension

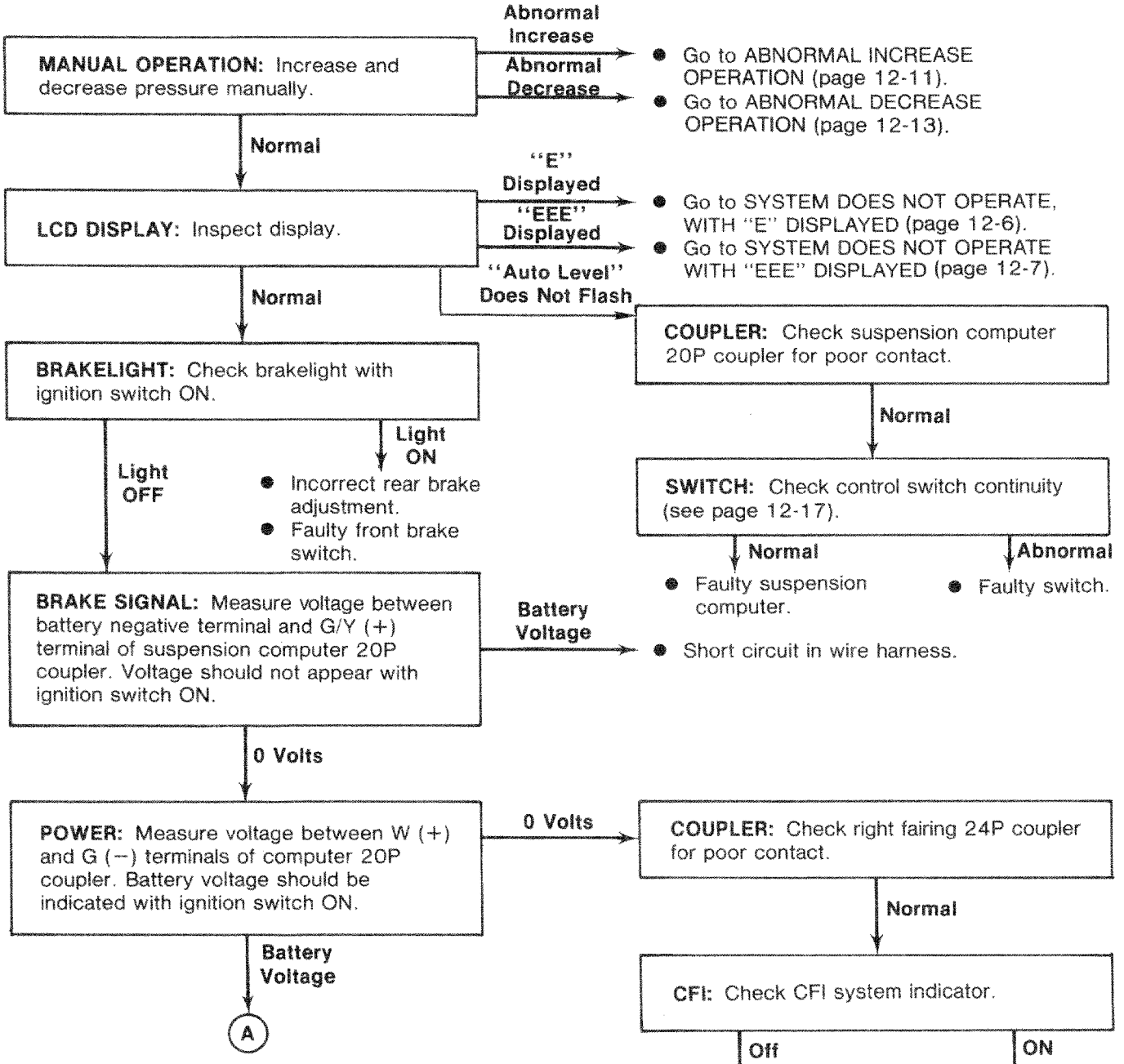
Troubleshooting

NOTE: Repeated pressure checks may cause air to leak gradually.

System does not operate.

NOTES:

- The system will not operate when the front or rear brake is applied.
- The system will stop automatically after about 90 seconds of operation.
- The system will not operate when battery voltage is below 10 V.



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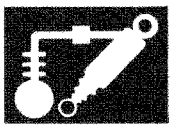

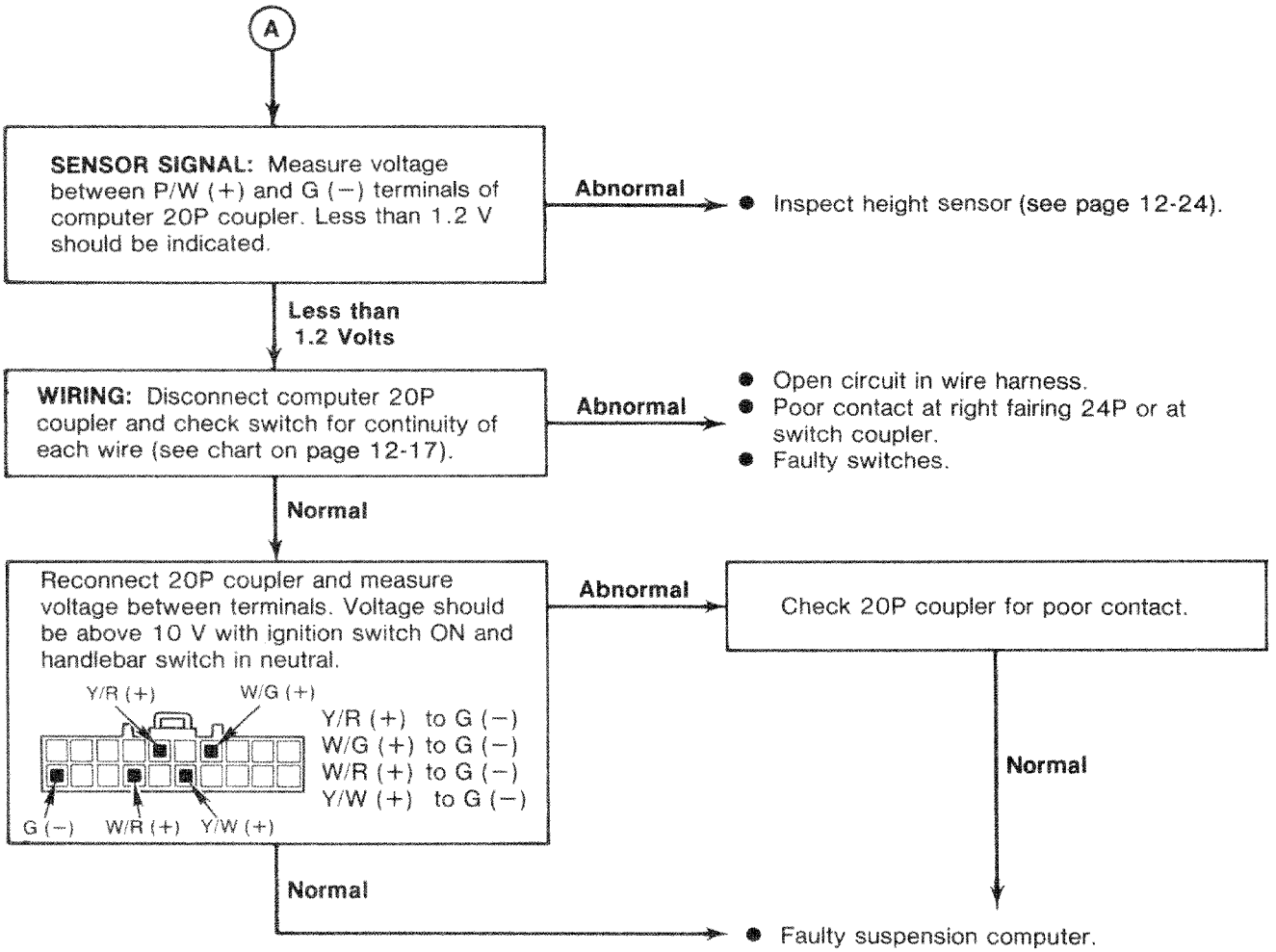

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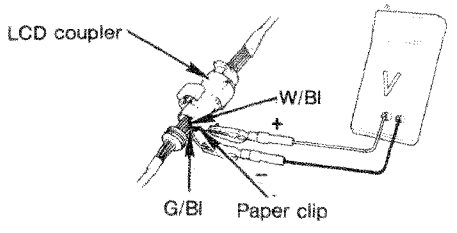
Auto Leveling Rear Suspension

Troubleshooting (cont'd)

System does not operate, with "E" displayed.

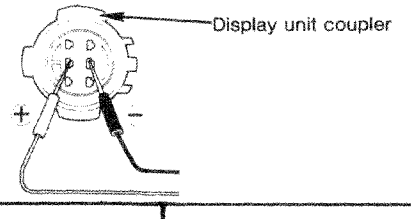
LCD DISPLAY: Remove grommet from LCD 6P water proof coupler and measure voltage between W/Bl (+) and G/Bl (−) terminals with coupler connected. Voltage should be above 3.0 V with ignition switch ON.



Above 3.0 Volts → ● Faulty LCD display.

Below 3.0 Volts

LCD DISPLAY: Disconnect LCD coupler. Apply battery voltage to display side as shown. LCD should show three bars "— — —".



Abnormal ("EEE" Indicated) → ● Faulty LCD display.

Normal

COUPLER: Reconnect LCD 6P water-proof coupler and recheck display.

"E" Not Indicated → ● Connector was loose.

"E" Indicated

COUPLER: Check suspension computer 20P coupler for poor contact. If coupler is secure, install a known good suspension computer.

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System does not operate, with "EEE" displayed.

COUPLERS: Check solenoid valve, RHC unit, and air pump relay coupler terminals for poor contact.

↓ **Normal**

RELAY: Replace air pump relay in fuse/relay box with a known good relay and recheck operation.

→ **Normal** → ● Faulty air pump relay.

↓ **Abnormal**

WIRING: Disconnect suspension computer 20P coupler. Check resistance between Lg/R and body ground. Ohmmeter should indicate about 100 Ω .

→ **Abnormal** →
- ● Poor contact at terminals.
  - — Relay/fuse box coupler.
  - — Right fairing coupler.
  - — Air pump relay terminals.
- ● Open or short circuit in wire harness.

↓ **About 100Ω**

WIRING: Disconnect suspension computer and solenoid valve 4P couplers. Check G, Br/W, Br/R and Br/Y wires for continuity between RHC unit and solenoid valve couplers of wire harness. Between same color: Continuity. Between different colors: No continuity.

→ **Abnormal** → ● Open or short circuit in subharness.

↓ **Normal**

SOLENOID VALVE: Connect suspension computer coupler. Measure resistance at 4P coupler of solenoid valves with coupler disconnected.

Br/R – G: 7.9 – 9.3 Ω
Br/Y – G: 7.9 – 9.3 Ω
Br/W – G: 13.3 – 15.7 Ω

→ **Abnormal** → ● Faulty solenoid valve.

↓ **Normal**

Ⓑ

(cont'd)

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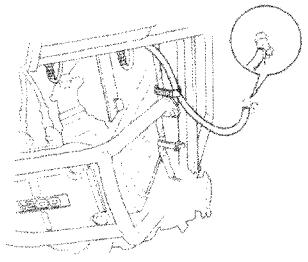
Auto Leveling Rear Suspension

Troubleshooting (cont'd)

(B)

Normal

AIR HOSE: Using soapy water, check that air flows through air relief hose when ignition switch is turned ON.



No Air Flow
- Blocked or pinched air relief hose.
- Blocked relief port on air distributor.

Air Flows

WIRING: Disconnect pressure sensor 3P red coupler. Check for continuity between G terminal and battery negative terminal.

No Continuity
- Poor contact at coupler.
- Faulty suspension computer.
- Open circuit in sub wire harness.

Continuity

COMPUTER: Measure voltage between Bl/Br (+) and G (−) terminals with coupler connected. Voltage should be 2-3 V with ignition switch turned ON.

Abnormal
- Faulty suspension computer.

2-3 Volts

SENSOR SIGNAL: Measure voltage between Lb (+) and G (−) terminals of 3P red coupler with coupler connected. There should be below 0.3 V when ignition switch is ON.

Normal
- Faulty suspension computer.

0 Volts

PRESSURE SENSOR: Inspect the air pressure sensor (refer to On Board Air Compressor System in base manual).

Abnormal
- Faulty pressure sensor.

Normal

RELIEF VALVE: Check air pressure relief valve operation (see page 12-23).

Abnormal
- Faulty air pressure relief valve.
- Blocked air relief port.

Normal

(C)

(cont'd)

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C

Normal

AIR DISTRIBUTOR: Check air distributor for blockage (see page 12-19).

Abnormal → ● Blocked air distributor parts.

Normal

RELIEF VALVE: Check air drier cover relief valve operation (see page 12-23).

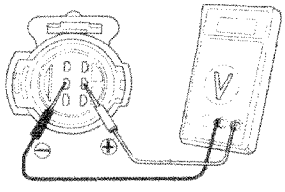
Abnormal → ● Faulty air drier cover relief valve.

Normal

COUPLERS/COMPUTER: Check solenoid valve, ECU and air pump relay couplers for poor contact. If the couplers are secure, install a known good suspension computer.

LCD does not display.

POWER: Disconnect LCD 6P water proof coupler under right fairing pocket. Measure voltage between terminals on wire harness side as shown. Battery voltage should be indicated with ignition switch ON.



Display unit coupler (wire harness side)

Battery Voltage → **COUPLER:** Check 6P coupler for poor contact. If coupler is secure, install new LCD display.

0 Volts

SYSTEM OPERATION: Check auto leveling system operation.

Operates → ● Open circuit in fairing subharness.

Does Not Operate

WIRING: Disconnect right fairing 24P coupler. Measure voltage between battery negative terminal and W (+) terminal of 24P coupler on wire harness side.

Battery Voltage → **COUPLER:** Check right fairing 24P coupler contact. If coupler is secure, go to SYSTEM DOES NOT OPERATE (see page 12-4).

0 Volts

D

(cont'd)

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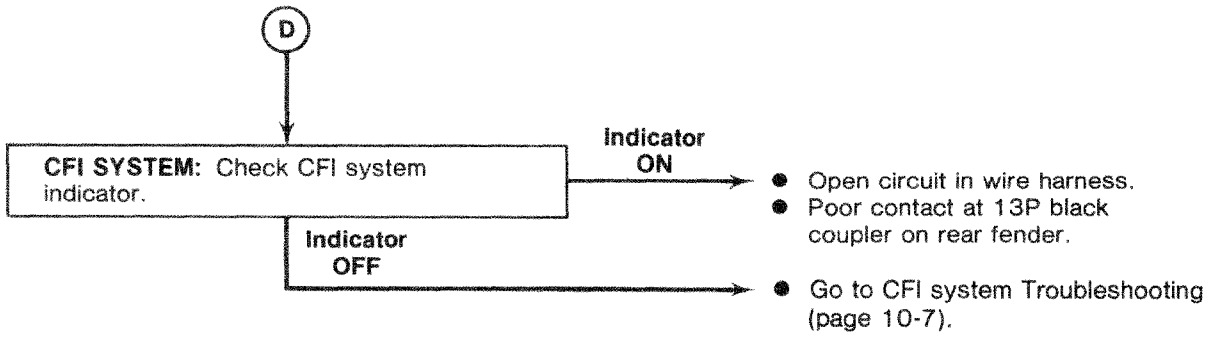
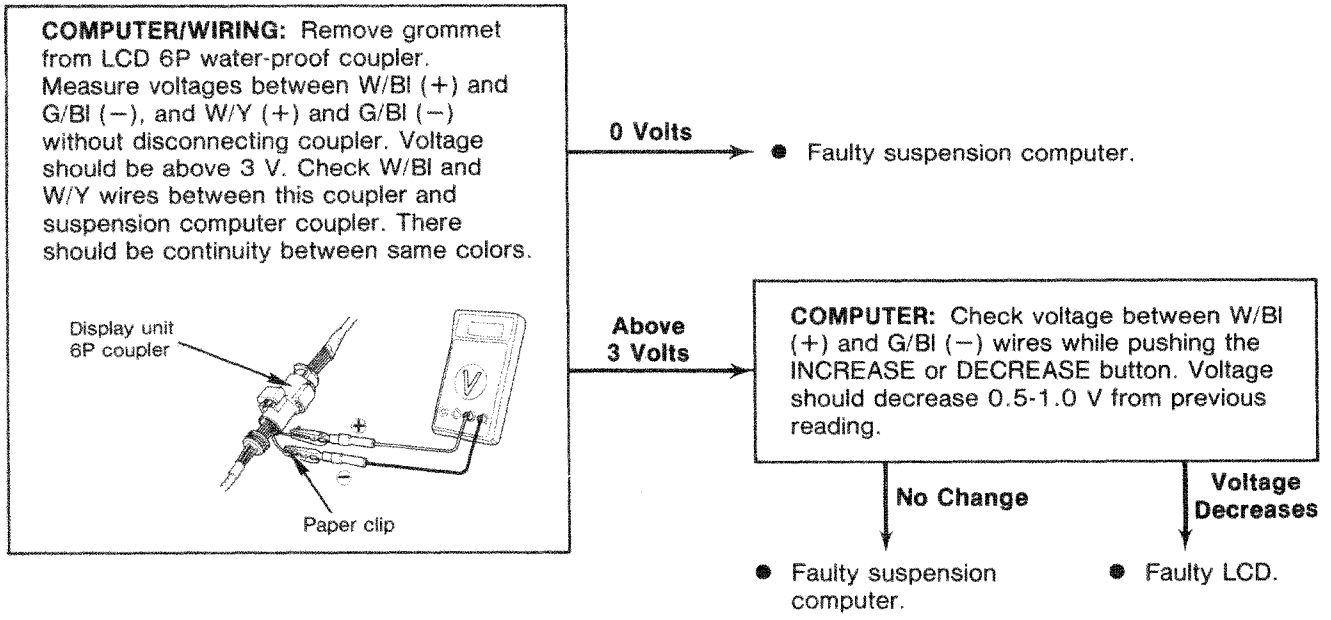
Auto Leveling Rear Suspension

Troubleshooting (cont'd)



ABNORMAL INDICATIONS

Liquid Crystal Displays indicate "— — — —" when pushing "INCREASE" or "DECREASE" button. Pressure indicated does not change. "AUTO LEVEL" is not indicated.



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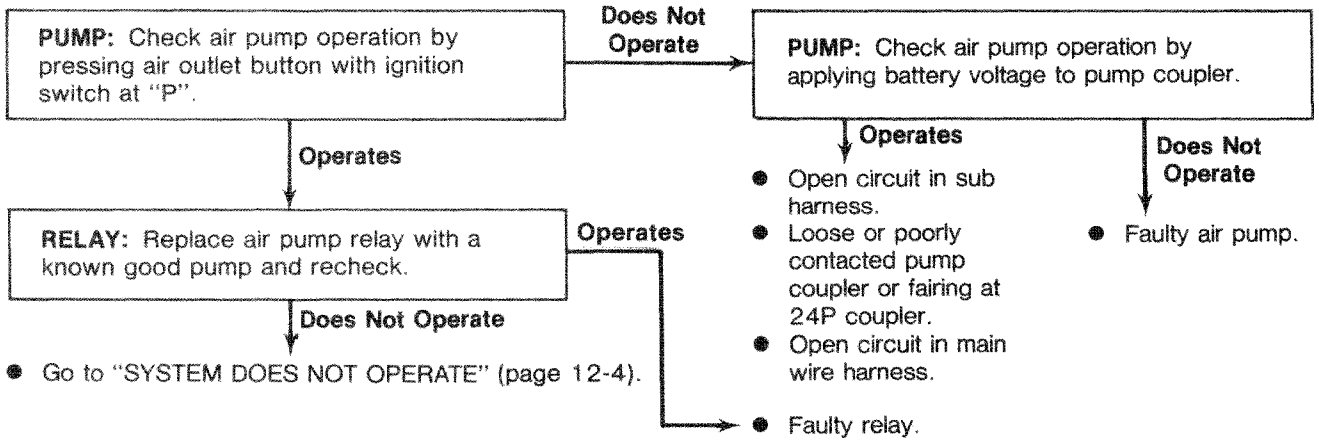
ABNORMAL INCREASE OPERATION.

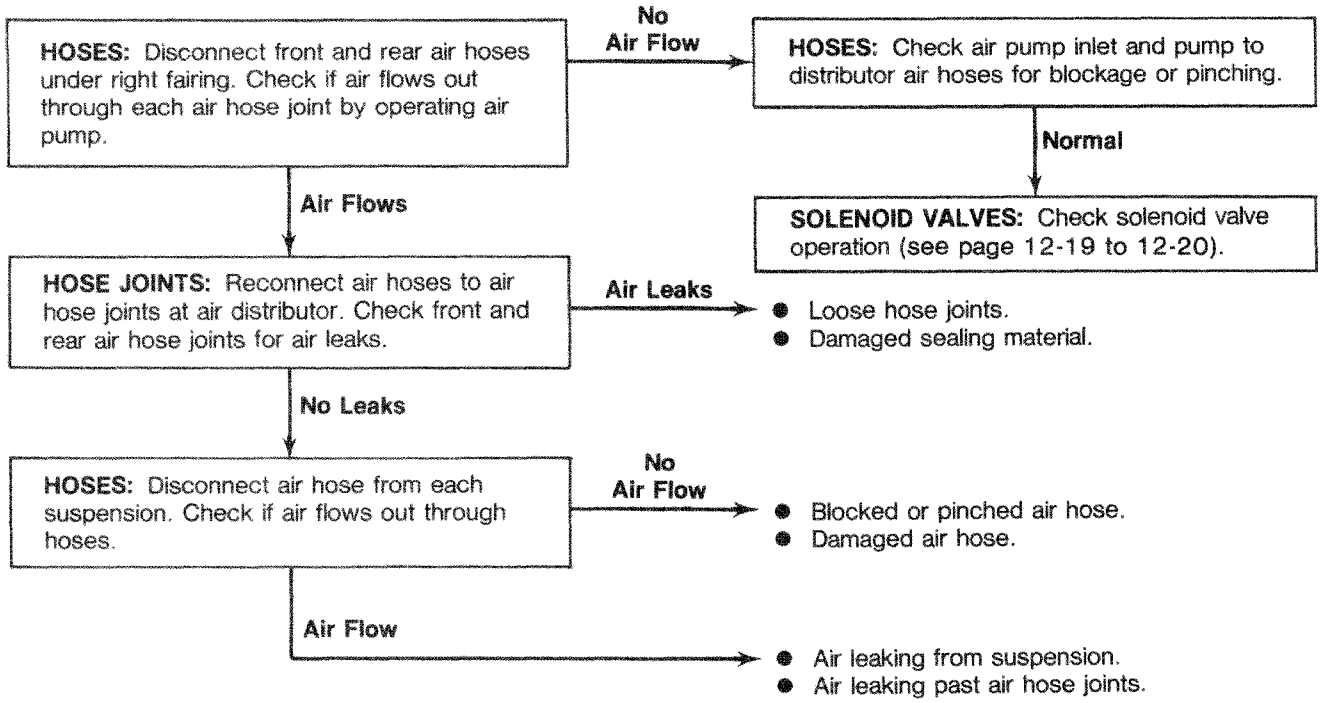
NOTES:

- System will not work when front or rear brake is applied.
- Air pump will stop automatically after about 90 seconds of operation.
- System does not operate when battery voltage is below 10 V.
- Air will stop increasing automatically at 10 kg/cm^2 (14 psi) for front, and 6.5 kg/cm^2 (92 psi) for rear.

Pump does not operate.



Pump operates — LCD shows increase, but system doesn't respond.



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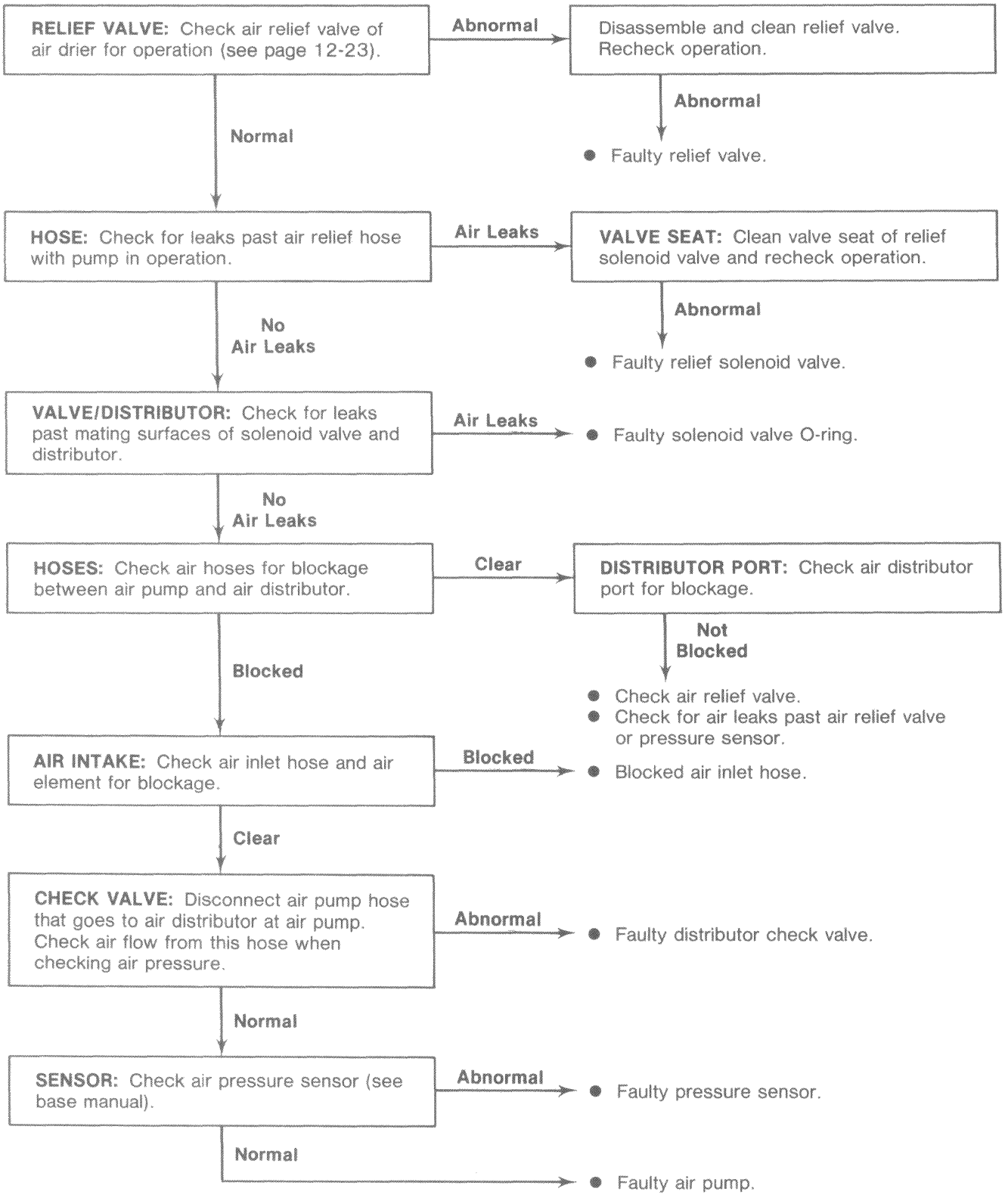
Auto Leveling Rear Suspension

Troubleshooting (cont'd)

Pump operates but pressure does not increase.



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Front air pressure equalized with rear pressure.

Disconnect front and rear air hoses under right fairing. Check distributor operation by operating INCREASE button. There should be no air leaks past front and rear hose joints.

Abnormal → Check solenoid valve operation (see page 12-19).

ABNORMAL DECREASE OPERATION

Pressure will not decrease.

NOTES:

- Air stops decreasing if front or rear brake is applied or battery voltage is below 10 V.
- Air stops decreasing when 2.0 kg/cm^2 (28 psi) has been reached.

TROUBLE CODES: Check LCD display.

"E" or "EEE" Displayed → ● Go to "SYSTEM DOES NOT OPERATE" (page 12-4).

Normal

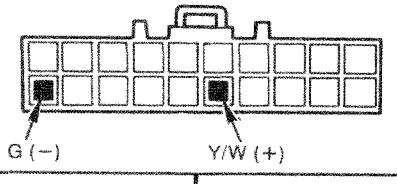
SWITCH: Disconnect suspension computer 20P coupler. Check Increase/Decrease switch for continuity (see page 12-17).

Abnormal →
- Open circuit in main or fairing sub wire harness.
- Poor contact at right fairing 24P or switch coupler.
- Faulty switch.

Normal

SUSPENSION COMPUTER: Reconnect 20P coupler. Measure voltage between Y/W (+) and G (−) of terminals suspension computer 20P coupler. Voltage should be above 9.0 V with ignition switch ON and handlebar switch in neutral.

Abnormal → ● Faulty suspension computer.



E

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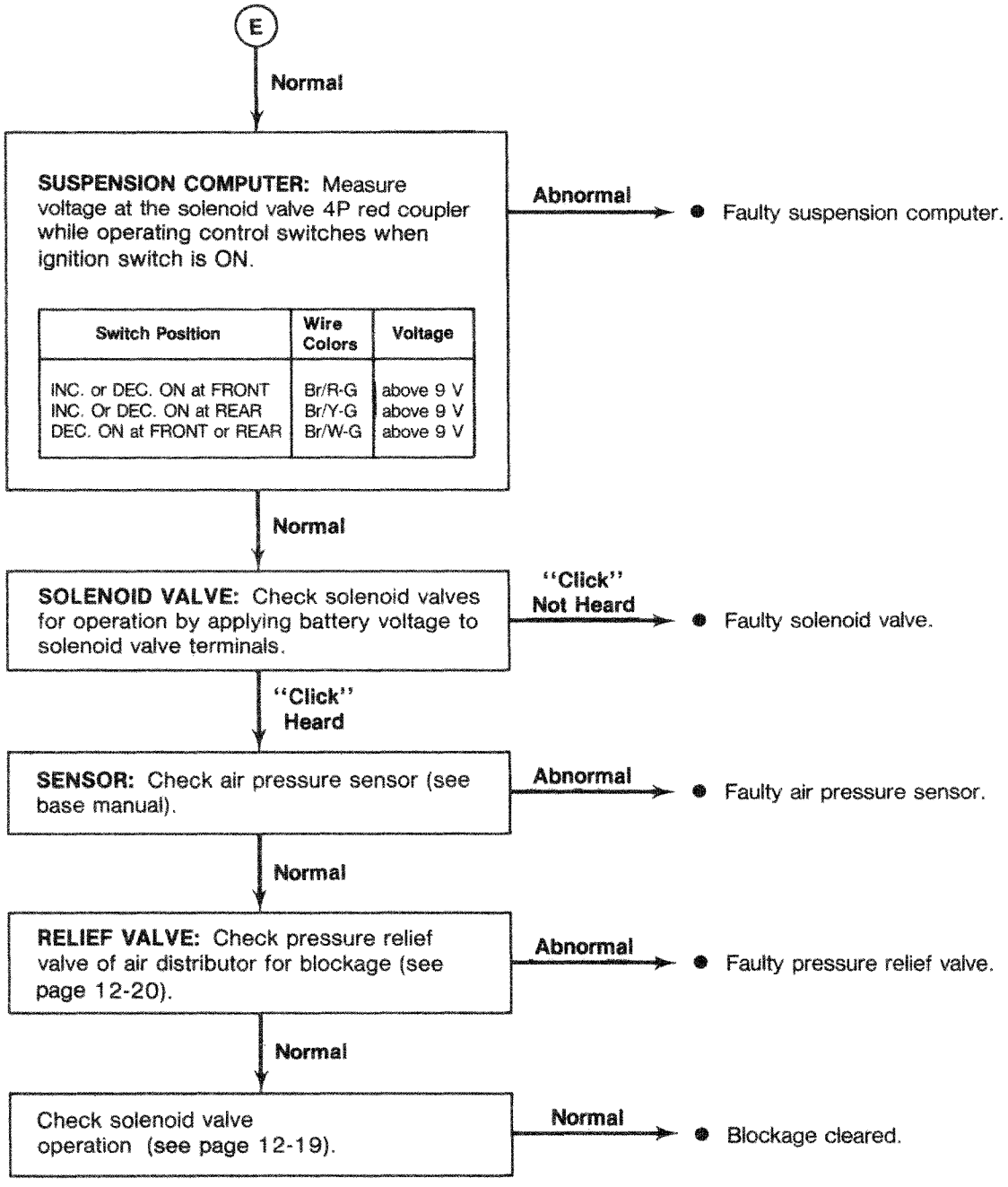
Auto Leveling Rear Suspension

Troubleshooting (cont'd)



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LCD shows decrease, but system doesn't respond.

HOSES: Check if air pressure decreases by loosening air hose joint under right fairing.

→ **Not Decreased** → ● Blocked or pinched air hoses.

↓ **Decreased**

HOSE JOINTS: Disconnect front and rear air hoses under right fairing. Check for air flow through air hose joints by operating air pump.

→ **No Air Flow** → **SOLENOID VALVE:** Check solenoid valve operation (see page 12-19).

↓ **Normal**

● Blocked air distributor.

Rapid pressure decrease, or loss after pressure check.

NOTE: When the suspension air pressure is at maximum, 1.0 kg/cm^2 (14 psi) front, and 6.5 kg/cm^2 (92 psi) rear, pushing the PRESSURE CHECK lever will reduce pressure to as low as 0.6 kg/cm^2 (9 psi) front, and 5.5 kg/cm^2 (78 psi) rear. This is normal operation.

TEST: Support motorcycle on its center stand. Increase rear suspension pressure to 6.5 kg/cm^2 (92 psi). Measure time for pressure to decrease from 6.5 kg/cm^2 (92 psi) to 2.0 kg/cm^2 (28 psi).

→ **More Than 4 Seconds** → ● Normal.

↓ **Less Than 4 Seconds**

CHECK VALVE: Disconnect air pump hose that goes to air distributor at air pump. Check for air flow through this hose in DECREASE.

→ **Air Flows** → ● Faulty distributor check valve.

↓ **No Air Flow**

LEAKS: Check for air leaks from air distributor.

→ **Air Leaking** → ● Air leaks between distributor port and port mating surfaces.

↓ **Normal**

LEAKS: Check pressure relief valve of air distributor (see page 12-18).

→ **Abnormal** → ● Faulty pressure relief valve.

↓ **Normal**

LEAKS: Check pressure sensor (refer to On Board Air Compressor System in the base manual).

→ **Abnormal** → ● Faulty pressure sensor.

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Auto Leveling Rear Suspension

Troubleshooting (cont'd)

Oil leaks from air relief hose in DECREASE.

NOTES:

- Shock oil will leak into the air hoses if the shocks are laid down. Check rear shock absorber oil levels when there has been excessive oil leakage.
- Clean the air hoses and air distributor before inspecting the system.

SEPARATORS: Check front fork oil separators for damage.
→ **Abnormal** → ● Faulty oil separator (disassemble and clean fork).

↓ **Normal**

CHECK VALVES: Inspect rear shock check valves for damage or blockage.
→ **Abnormal** → ● Incorrect check valve operation.

↓ **Normal**

OIL LEVEL: Check suspension oil level.
→ **Abnormal** → ● Incorrect oil level.

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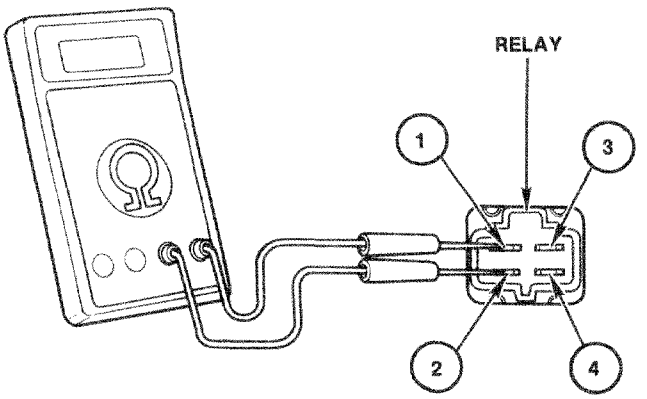
Air Pump Relay

Inspection

Remove the air pump relay (second from left) from the fuse/relay box.

Check for no continuity between terminals 1 and 2. If there is continuity, install a new relay.

Apply battery voltage across terminals 3 and 4 and check for continuity between terminals 1 and 2. If there is no continuity, install a new relay.



Suspension Control Switch

Inspection

Remove the right fairing pocket.

Disconnect the 20P coupler from the computer and check for continuity between the terminals indicated.

If tests indicate no continuity, check for a loose switch coupler or right fairing coupler, and for an open or short circuit in the wire harness or fairing sub harness.

INCREASE/DECREASE SELECT SWITCH

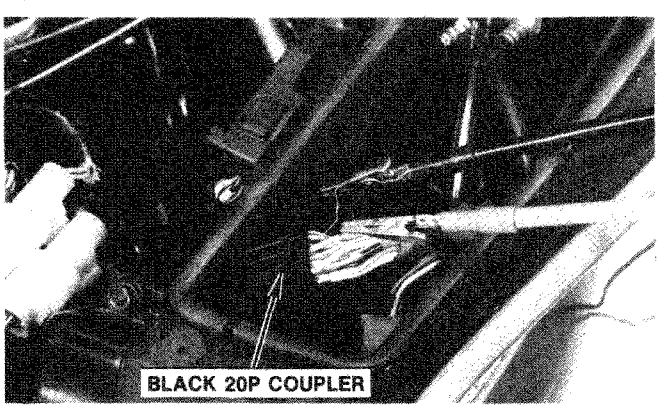
WIRE COLOR / CODE / SWITCH POSITION	Y/R	G	Y/W
INCREASE	O	O	
NEUTRAL			
DECREASE		O	O

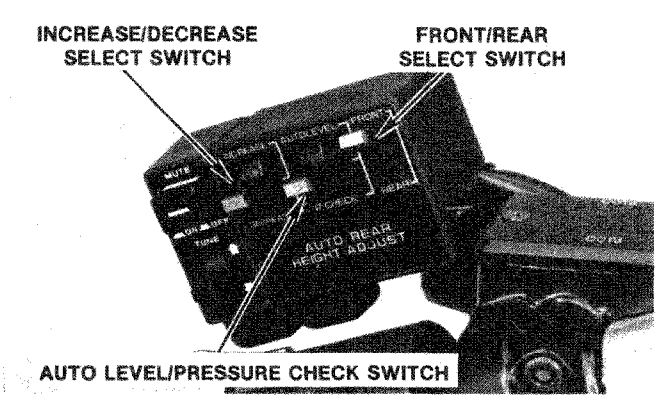
AUTO LEVEL/PRESSURE CHECK SWITCH

WIRE COLOR / CODE / SWITCH POSITION	W/R	G	W/G
AUTO LEVEL	O	O	
NEUTRAL			
P. CHECK		O	O

FRONT/REAR SELECT SWITCH

WIRE COLOR / CODE / SWITCH POSITION	W/Bu	G
FRONT		
REAR	O	O





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Auto Leveling Rear Suspension

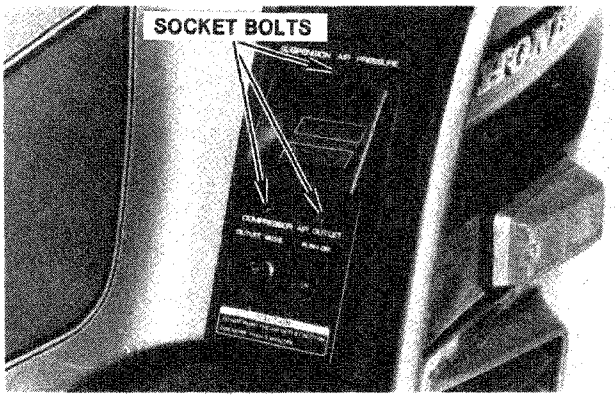
Air Distributor

Removal

Remove the plugs from the three socket bolts.

Remove the bolts.

Disconnect the coupler to remove the display unit.

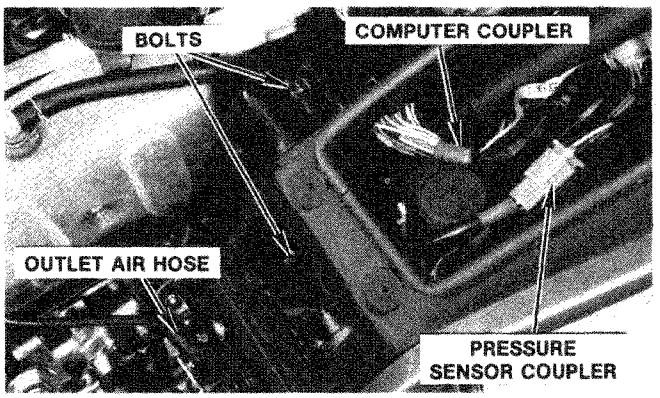


Remove the top compartment.

Remove the pressure sensor bracket mount bolts.

Disconnect the computer, pressure sensor, and solenoid valve couplers.

Disconnect the outlet air hose and fitting from the fairing panel.

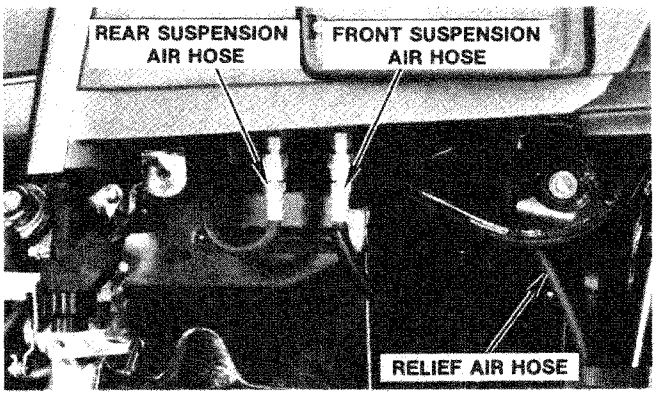


Remove the right fairing inner cover.

Disconnect the front and rear suspension air hoses from the air distributor.

NOTE: Use a wrench to keep the hose joint from turning while loosening the hose joint nut. Remove hoses slowly to allow pressure to bleed from air lines.

Free the air relief hose from the wire band.

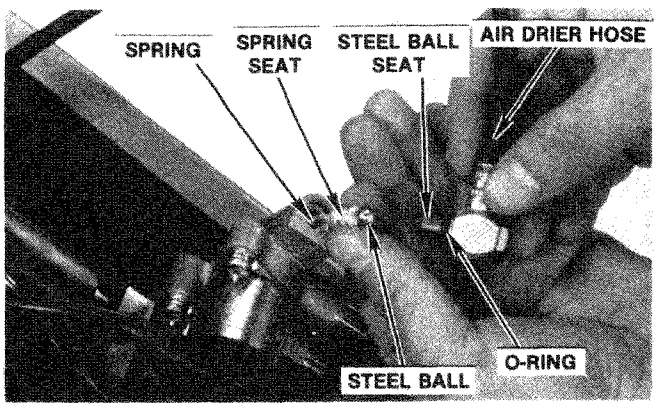


Lift the air distributor out of the fairing. Disconnect the air drier hose.

NOTE: The hose joint contains a steel ball, spring seat and spring. Be careful not to drop these. Inspect the O-ring and steel ball seat for damage or deterioration.

Remove the vent hose from the front of the air distributor.

Remove the air distributor.



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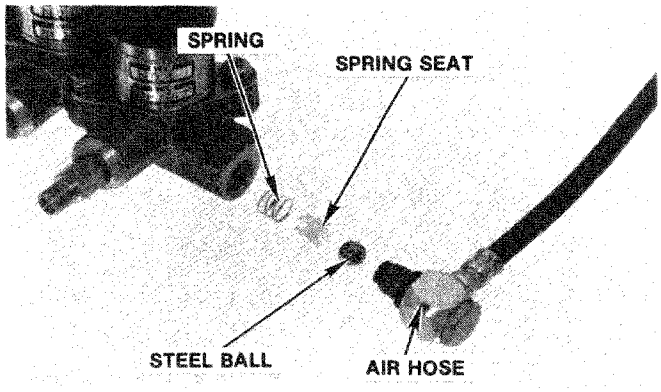
Inspection (Solenoid Valve)

Reinstall the spring, spring seat, and steel ball in the hose joint. Connect the air hose to the air distributor.

Remove the pressure sensor from the air distributor. Attach a hand air pump to the front outlet joint and apply pressure.

If pressure does not remain steady, remove the solenoid valve and replace the rubber seat at the top of the rod.

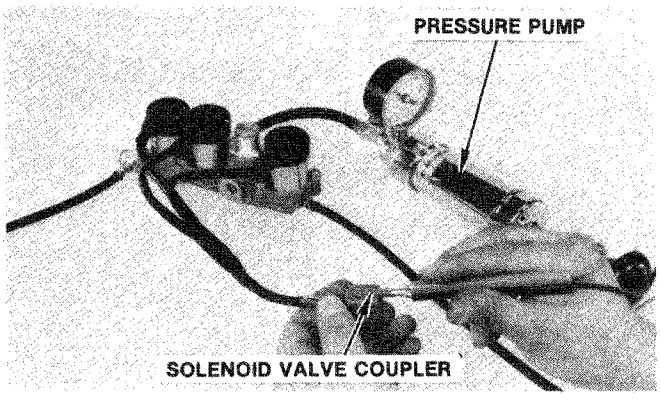


While maintaining pressure, apply battery voltage between the Br/R (+) and G (−) terminals of the solenoid valve coupler.

If pressure is not relieved through the mounting hole of the pressure sensor, install new solenoid valve(s).

If pressure remains steady even when the solenoid valve is activated, clean the air passage in the air distributor.

Repeat the above procedure for the rear side applying battery voltage between the Br/Y (+) and G (−) terminals of the valve coupler



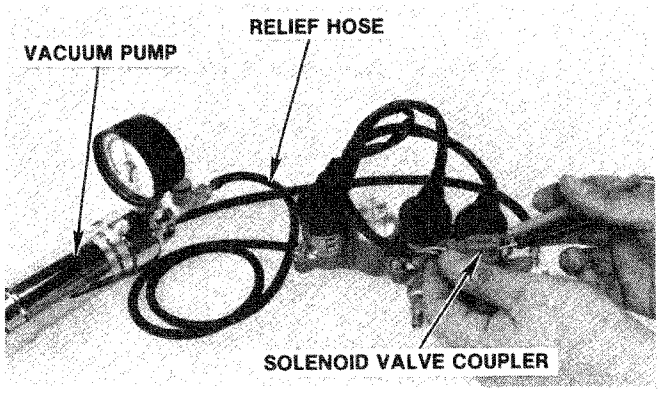
Apply vacuum to the air distributor relief port. If vacuum does not remain steady, remove the solenoid valve and replace the rubber seat at the top of the rod.

While maintaining vacuum, apply battery voltage between the Br/W (+) and G (−) terminals of the solenoid coupler. Vacuum should be relieved slowly.

If vacuum is relieved quickly, install a new air control needle in the relief port.

If the valves do not "click", install new ones.

If vacuum remains steady even when the the solenoid valve is activated, clean the air distributor relief port.



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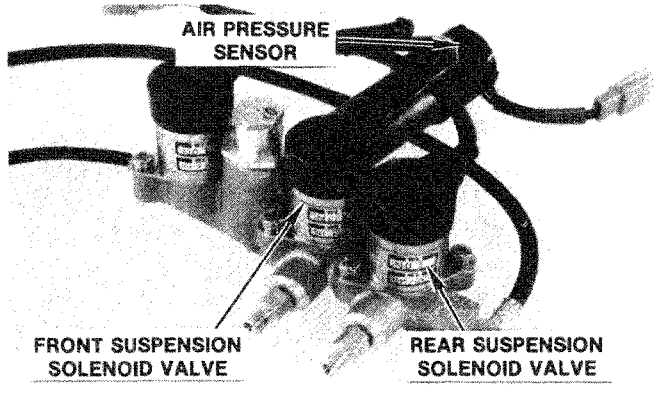
Auto Leveling Rear Suspension

Air Distributor (cont'd)

Disassembly

Remove the pressure sensor from the distributor.

Remove the front and rear suspension solenoid valves.

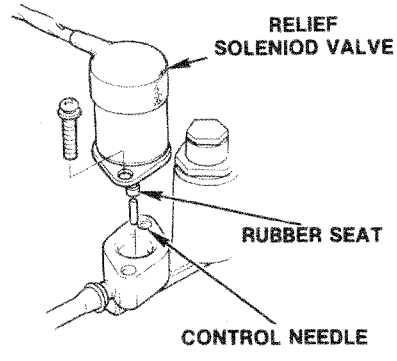


Remove the relief solenoid valve and air control needle.

NOTE: Remove the air control needle from the relief port so you do not lose it.

Check the rubber seat at the end of each valve rod.

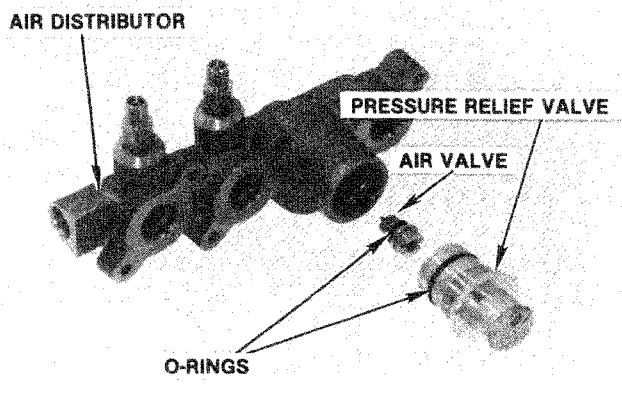
Replace damaged or deteriorated seats.



Remove the pressure relief valve and air valve.

Check the O-rings for damage or deterioration.

Check that the air valve moves freely.



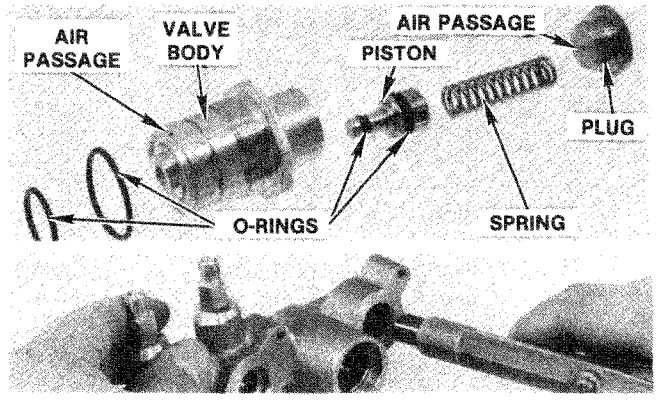
Disassemble the pressure relief valve.

Check the O-rings for damage or deterioration.

Check the air passages for obstructions.

Blow open all passages in the valve.

Blow open all passages in the distributor.



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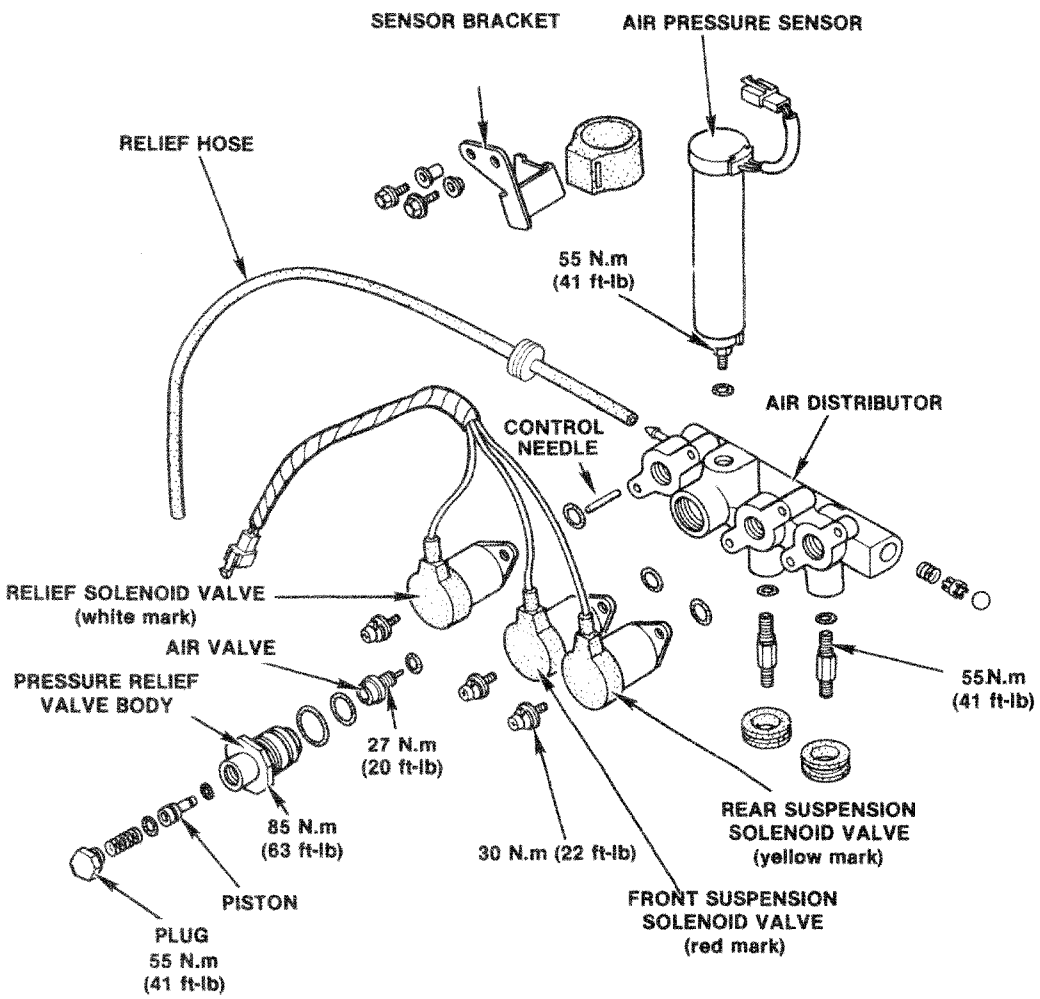
Assembly

Assemble in the reverse order of disassembly.

NOTES:

- Clean all parts before assembly.
- Apply a thin coat of clean engine oil or grease to all O-rings.
- Make sure the rubber solenoid valve seats are in place during assembly. Check each valve for proper seating.
- Torque the parts as indicated.



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Auto Leveling Rear Suspension

Air Distributor (cont'd)

Installation

Position the air distributor in the right fairing pocket with the relief hose facing forward.

Install the spring, spring seat, and steel ball into the air distributor hose joint. Apply clean engine oil or grease to the O-ring.

Position the air hose facing left and tighten the hose joint bolt.

Torque: 55 N.m (41 ft-lb)

Route the relief hose through the forward fairing hole.

Position the hose joints onto the fairing grommets. Use a chemical lubricant (CRC 5-56 or equivalent) to help position the hose joints.

Route the air relief hose.

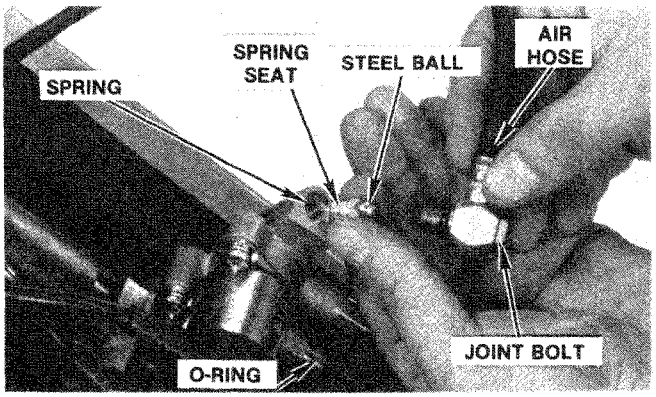
NOTE: Be careful not to pinch the air relief hose. If the hose is blocked or restricted, the RHC reacts as if the pressure sensor is faulty and shuts the system down.

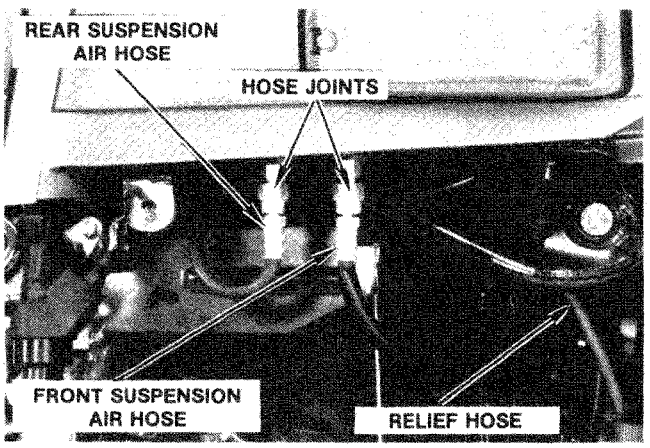
Connect the front and rear air hoses to the air distributor joints.

NOTE: Do not interchange front and rear air hose positions. Use a wrench to keep the hose joints from turning while tightening the hose coupler.

Tighten the hose joint nuts.

Torque: 12.5 N.m (9 ft-lb)





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Pressure Relief Valve

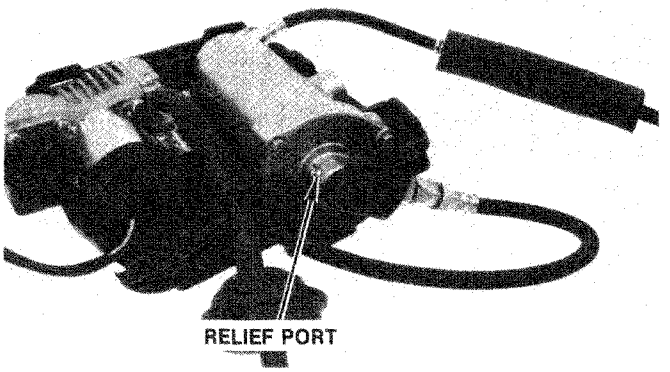
Removal/Inspection/Installation

Remove the air pump.

Remove the air pump cover.

Connect the air pump wire to the wiring harness.

Check that no air leaks past the the relief port during operation of the pump.



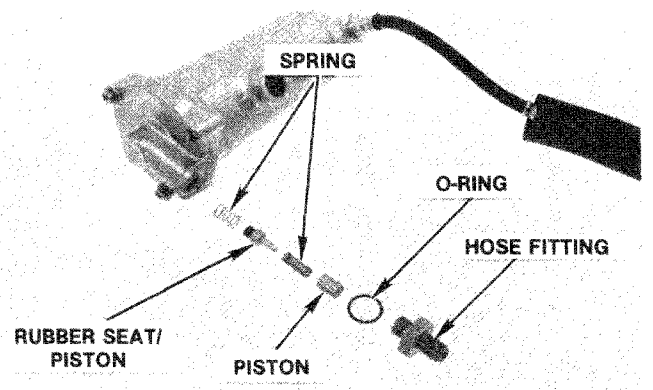
If air does leak, disassemble the relief valve and check the pistons, rubber seat and O-ring for wear or damage.

Install new parts as necessary.

Install the relief valve components.

Tighten the hose fitting.

Torque: 55 N.m (41 ft-lb)



Suspension Computer

Removal

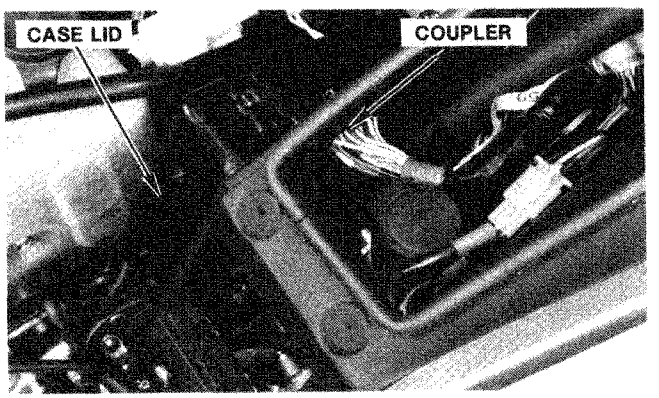
Remove the top compartment and right fairing pocket.

Disconnect the 20P black coupler.

Remove the two bolts and case lid.

Remove the computer from the case.

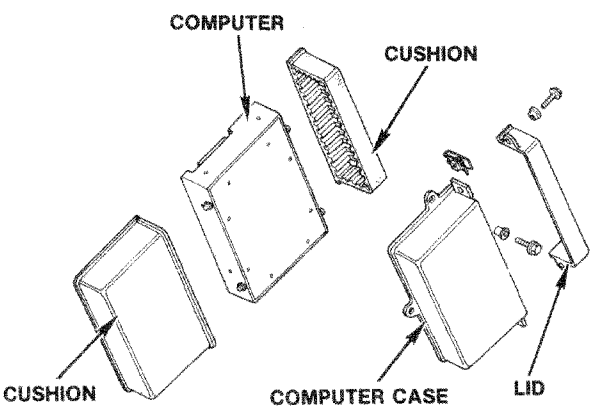
NOTE: To remove the computer case, the fairing must be removed.



Installation

Install in the reverse order of removal.

NOTE: Keep moisture, oil, and grease away from all computer parts.



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Auto Leveling Rear Suspension

Height Sensor

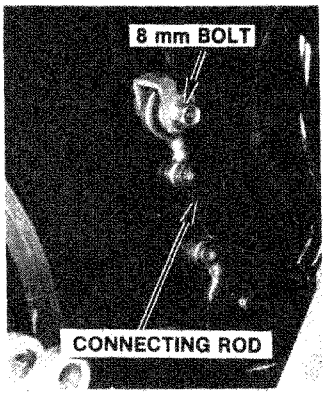
Removal

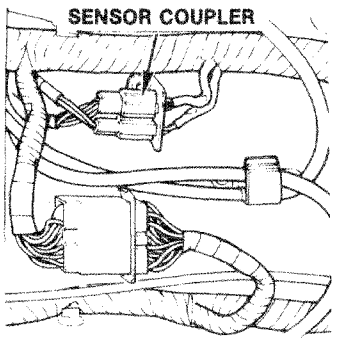
Support the motorcycle on its center stand.

Remove the 8 mm bolt to disconnect the sensor arm from the connecting rod.

Remove the seat.

Disconnect the black 4P sensor coupler on the rear fender.

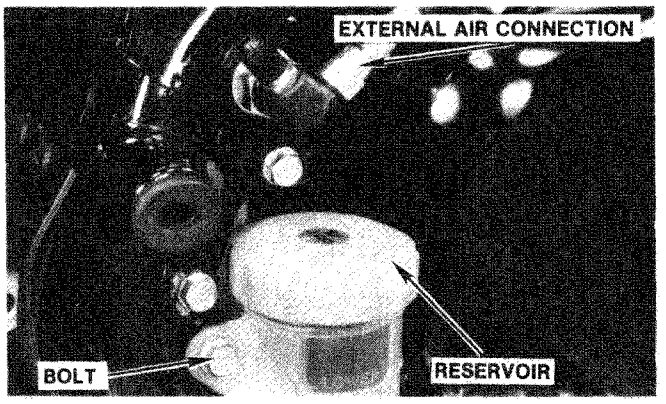




Remove the rear brake reservoir from the bracket.

Remove the external air connection.

Pull the arm through the rubber grommet and remove the sensor through the gap between the frame and fuel tank.



Inspection

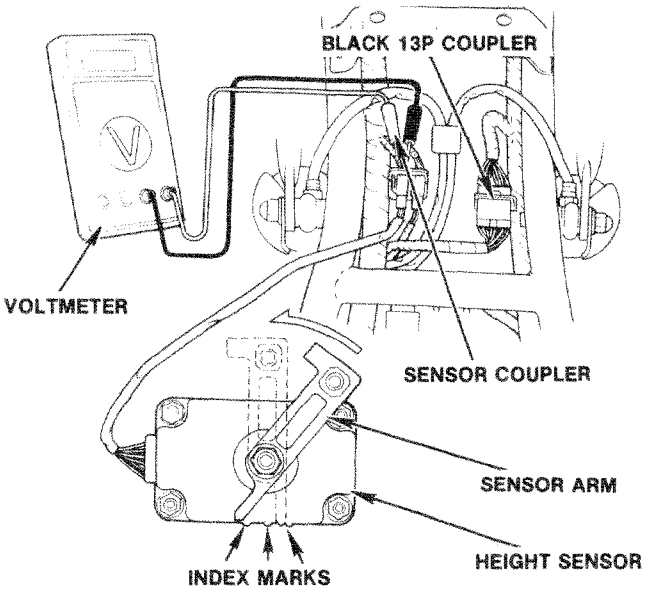
Reconnect the sensor wire to the wiring harness.

Measure the voltage between the Lg/R (+) and G/B (−) terminals of the sensor coupler with the ignition switch ON.
If there is no voltage, check the black 13P coupler on the rear fender for looseness.

If the coupler is OK, check the wire harness for an open circuit.

With the ignition switch ON, measure voltage between the sensor terminals in each of the three positions.

The voltage should be above 4V at the HI level, and below 1.2V at the LO level.



WIRE COLOR	VOLTAGE
P/W(+) — G/Bl(−)	Hi / Lo
P/Bu(+) — G/Bl(−)	Hi / Lo / Lo
SENSOR ARM POSITION	(1) (2) (3)

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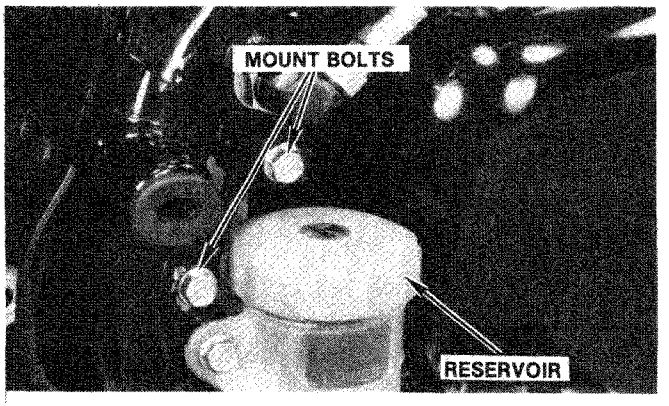
Installation

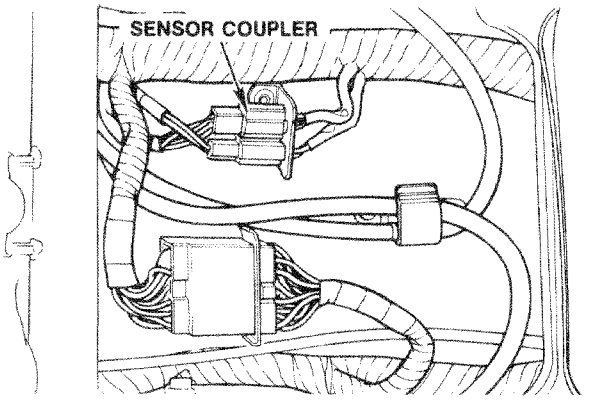
Position the sensor with the arm through the boot.

Insert the brake reservoir bolt through the frame and rotate the bracket into place.

Install the rear brake reservoir.

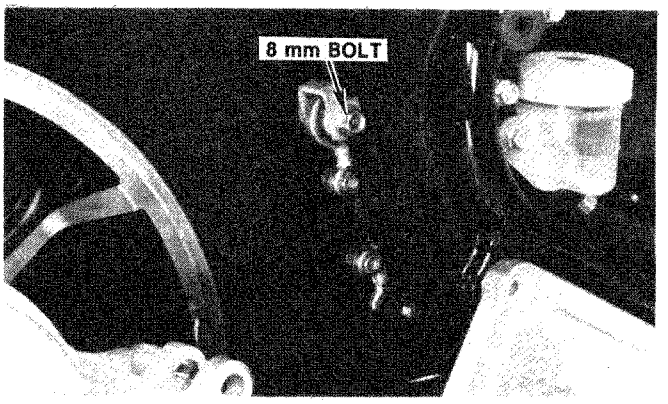


Route the sensor wire and connect the sensor coupler.



Connect the sensor arm to the connecting rod. Tighten the 8 mm bolt.

Torque: 21 N.m (15 ft-lb)



Adjustment

Support the motorcycle on its center stand.

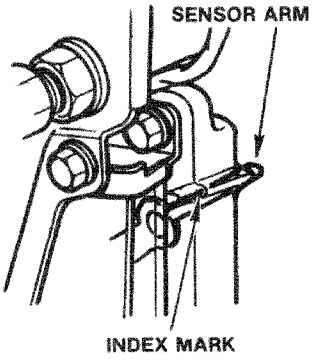
Loosen the adjusting rod pinch bolts.

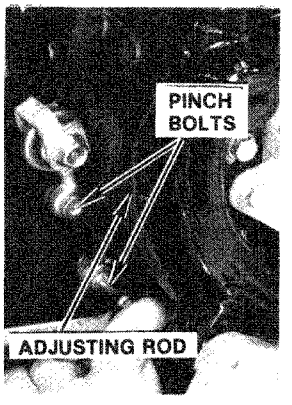
Turn the adjusting rod to align the end of the sensor arm with the sensor case index mark.

Tighten the adjusting rod pinch bolts.

Torque: 12 N.m (9 ft-lb)

Install parts in the reverse order of removal.





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Cruise Control

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Troubleshooting 13-4
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Cruise Actuator 13-13
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Junction Box 13-19
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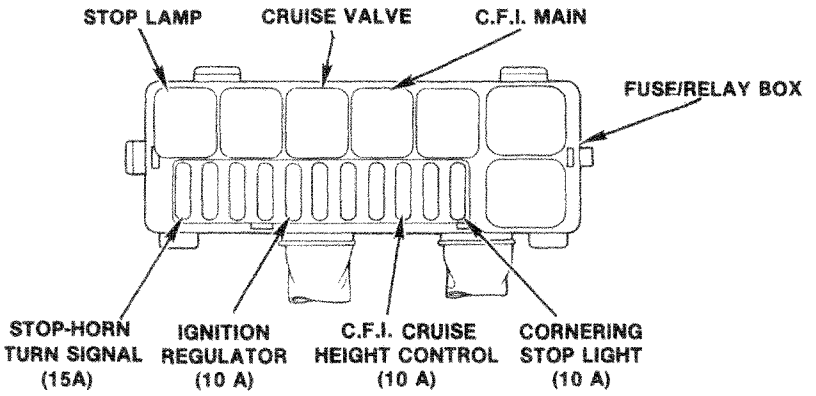
Cruise Control

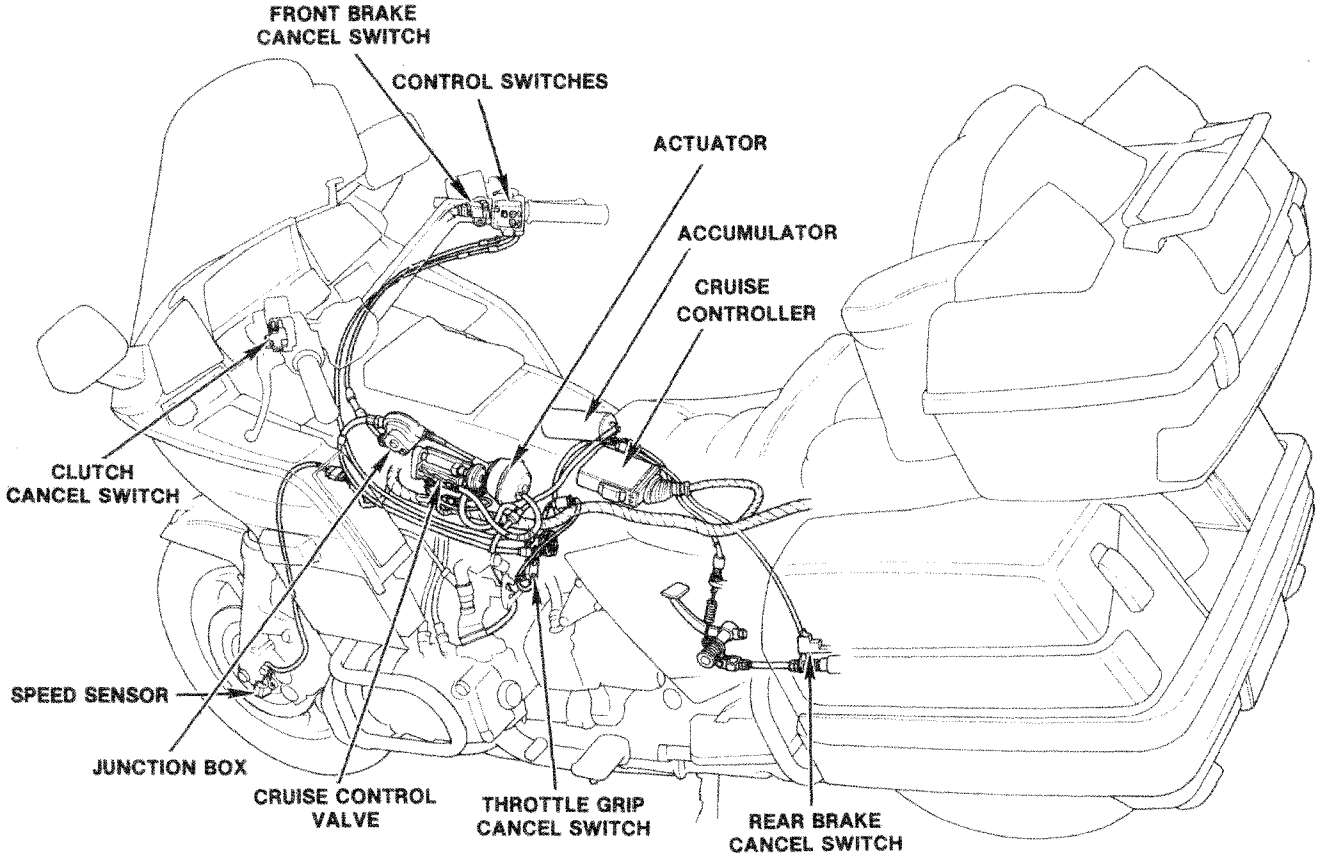
Service Information

- Measuring outputs at coupler pins: Insert the tester probes from behind the coupler pins to avoid bending or prying them open. Be careful not to short out pins.
- Testing for continuity, or measuring a voltage or resistance: Make sure all related couplers or wires are connected securely.
- Disconnecting a coupler or connector: Turn the ignition switch OFF. Positive (+) and negative (−) sides are so marked.

Fuses/Relays



Parts Location



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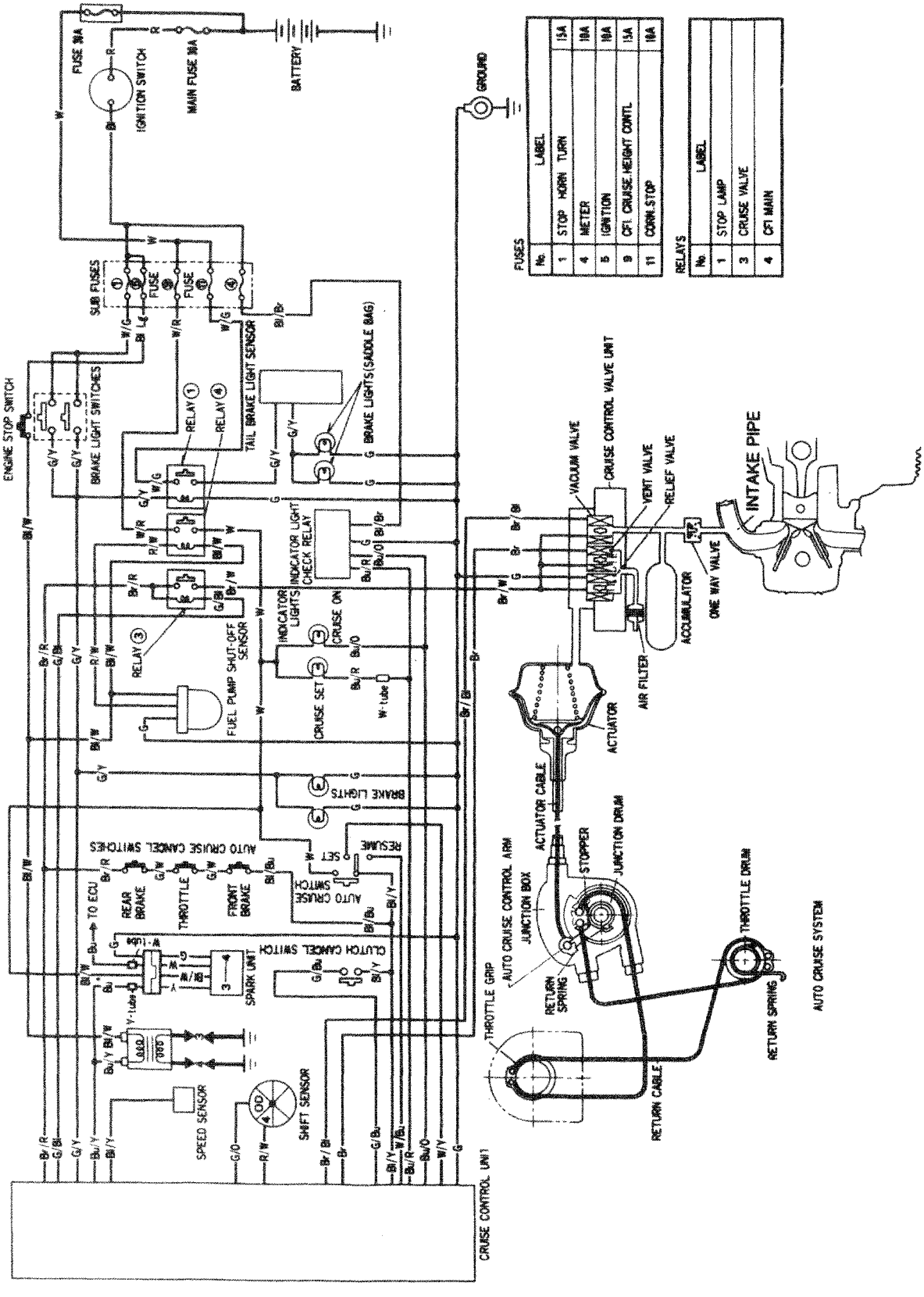
System Wiring Diagram



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Cruise Control

Troubleshooting

Cruise control does not function at all.

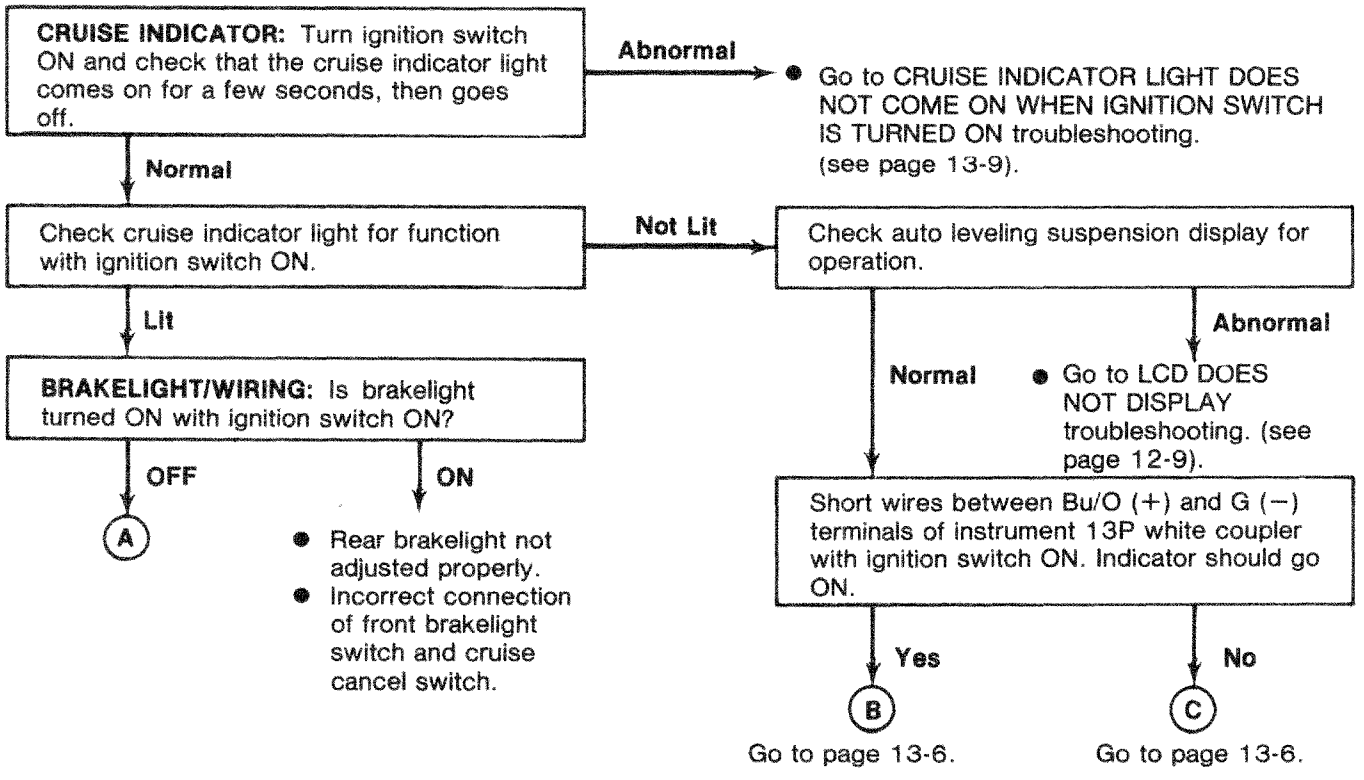
NOTES:

Cruise control will be cancelled when:

- Either brake is applied.
- Clutch lever is operated.
- Transmission is shifted.
- Two or more switches are operated simultaneously.
- Throttle is returned.
- Ignition switch, engine stop switch or cruise switch is operated.

Cruise control will not function under the following conditions.

- At speeds other than 30-80 mph.
- Transmission set in other than 4th or OD.



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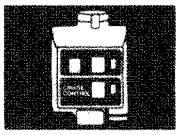


(A)

LED: Is LED on cruise control unit ON?

ON

CRUISE CONTROL UNIT: Turn cruise set switch OFF. After 5-6 seconds, again turn cruise set switch ON. Are LED's still ON?

OFF

ON

- Faulty cruise control unit.

OFF

WIRING: Check for continuity between G terminal of ECU and body guard.

No Continuity

- Open circuit in wire harness.

Continuity

CANCEL SWITCHES: With ignition and cruise switches ON, check if there is battery voltage between Br/R (+) and G (−) terminals of ECU coupler.

0 Volts

- Improperly adjusted or faulty front brake, rear brake, or throttle grip cancel switch or open circuit in wire harness.
- Loose or improperly connected terminals.

Note: Check that front brake and front brake cancel switches are connected properly.

Battery Voltage

POWER TO RELAY: With ignition switch and cruise switch ON, check that there is battery voltage between G/Bl (+) and G (−) terminals of ECU coupler.

0 Volts

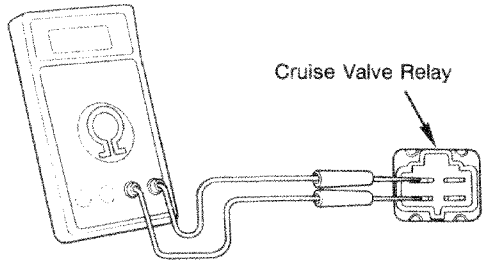
RELAY: Check Cruise Valve Relay (see page 13-13).

- Faulty relay

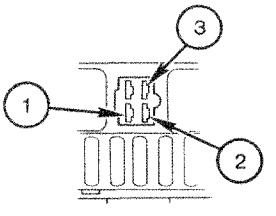
Normal

Battery Voltage

RELAY: Check for continuity between the cruise valve relay terminals. There should be no continuity.



WIRE: Check for continuity between terminal (1) of relay socket and G/Bl terminal of ECU coupler.



No Continuity

- Open circuit in harness (G/Bl wire).
- Poor contact coupler.

Continuity

(E) Go to page 13-7.

Continuity

(D) Go to page 13-7.

No Continuity

Faulty relay.

(cont'd)

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From page 13-4. (B)

From page 13-4. (C)

WIRING: Check Bu/O wire for continuity between instrument 13P coupler and ECU coupler.

Continuity

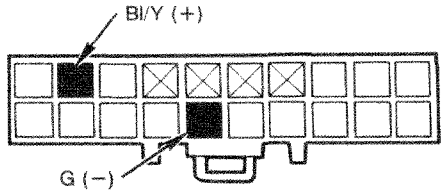
- Blown lamp.
- Open circuit in meter.
- Open circuit of W wire in right fairing pocket.

No Continuity

- Open circuit.
- Poorly connected 13P white coupler of right fairing coupler.

Yes

Is there battery voltage between Bl/Y (+) and G (−) terminals of control unit coupler with ignition and cruise control switches ON.



0 Volts

- Faulty cruise set switch.
- Open circuit in harness or poor contact at coupler.

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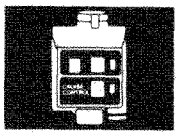

(D) From page 13-5.

(E) From page 13-5.

Normal

POWER TO RELAY: Measure voltage between relay socket terminals (2) and (3). Battery voltage should appear with ignition and cruise set switch ON. (See previous page).

Battery Voltage

- Poor contact at relay terminals.

0 Volts

- Open circuit in wire harness.
- Poor contact at harness coupler.

ONE-WAY VALVE: Check vacuum one-way valve (see page 13-15).

Abnormal

- Faulty one-way valve.

Normal

CLUTCH SWITCH: With ignition/cruise switch ON, measure voltage between G/Bu (+) and G (−) terminals of ECU coupler. Battery voltage should appear when clutch lever is pulled in.

0 Volts

- Faulty clutch switch or open circuit in wire harness.

Battery Voltage

GEAR INDICATOR: Is indication of gear position indicator normal?

Abnormal

- Faulty gearshift sensor.
- Short or open circuit in wire harness.
- Poor contact at gearshift sensor coupler.

Normal

GEARSHIFT SENSOR/WIRING: Disconnect cruise control unit coupler and check for continuity between R/W and G (−) terminals. There should be continuity only when the transmission is in 4th gear. Check for continuity between G/O and G (−) terminal. There should be continuity only when transmission is in OD.

Abnormal

- Open circuit or short in wire between gearshift sensor and ECU coupler.
- Poor contact at coupler.

Normal

SWITCHES: Check cruise and resume switches (See page 13-10).

Abnormal

- Faulty right handlebar switch.
- Poor contact at switch coupler.
- Open circuit in wire harness.

Normal

(F)

(cont'd)

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Cruise Control
Troubleshooting (cont'd)

(F)

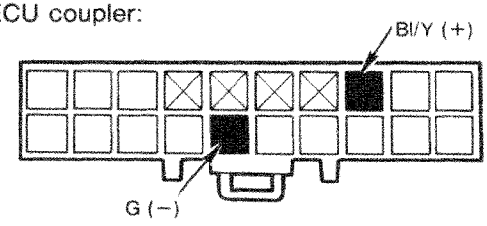
Normal

POWER TO INSTRUMENT SPEED SENSOR: Does battery voltage appear between Bu/Y (+) and G (−) terminals of ECU coupler with ignition switch ON?

0 Volts → ● Open circuit in wire harness.

Battery Voltage

SPEED SENSOR: With ignition switch ON and cruise switch ON, measure voltage between Bl/Y (+) and G (−) terminals of ECU coupler:



Voltage should change from about 9V to less than 1V alternately when front wheel is rotated slowly.

Abnormal → Check speed sensor (see base manual).

- **Abnormal** → ● Faulty speed sensor.
- **Normal** → ● Short or open circuit in wire harness. ● Poor contact at coupler.

Normal

HOSES: Check vacuum hoses for damage or clogging.

Abnormal → ● Faulty vacuum circuit.

Normal

ACTUATOR: Check actuator (see page 13-13).

Abnormal → ● Faulty actuator or cable.

Normal

CONTROL VALVE: Check cruise control valve unit (see page 13-15).

Abnormal → ● Faulty cruise control valve unit.

Normal → ● Try with a known good ECU.

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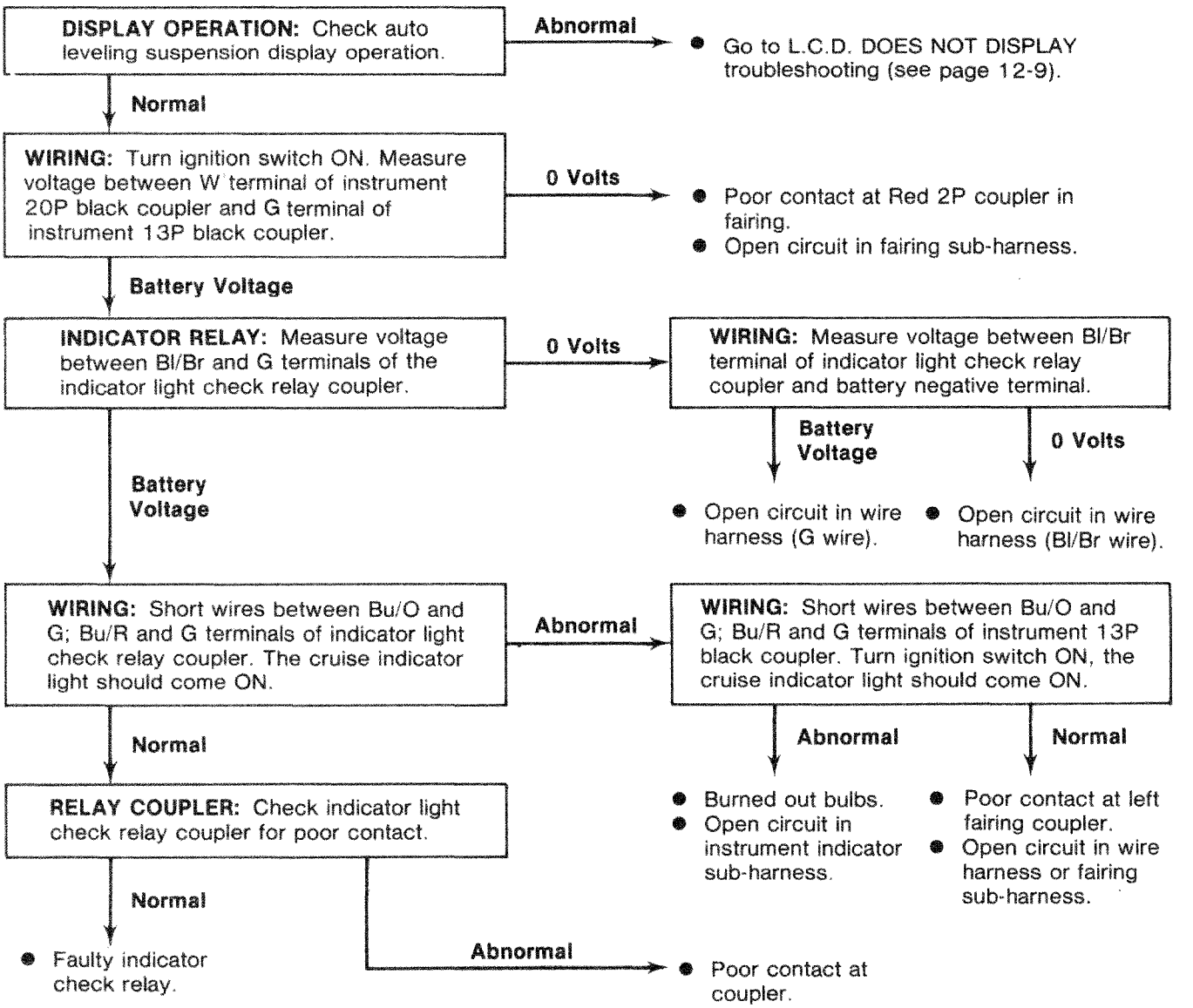
Cruise Indicator Light Does Not Come On When Ignition Switch Is Turned On.

NOTE: Check indicator bulbs if either cruise "set" or cruise "on" indicator does not come on.



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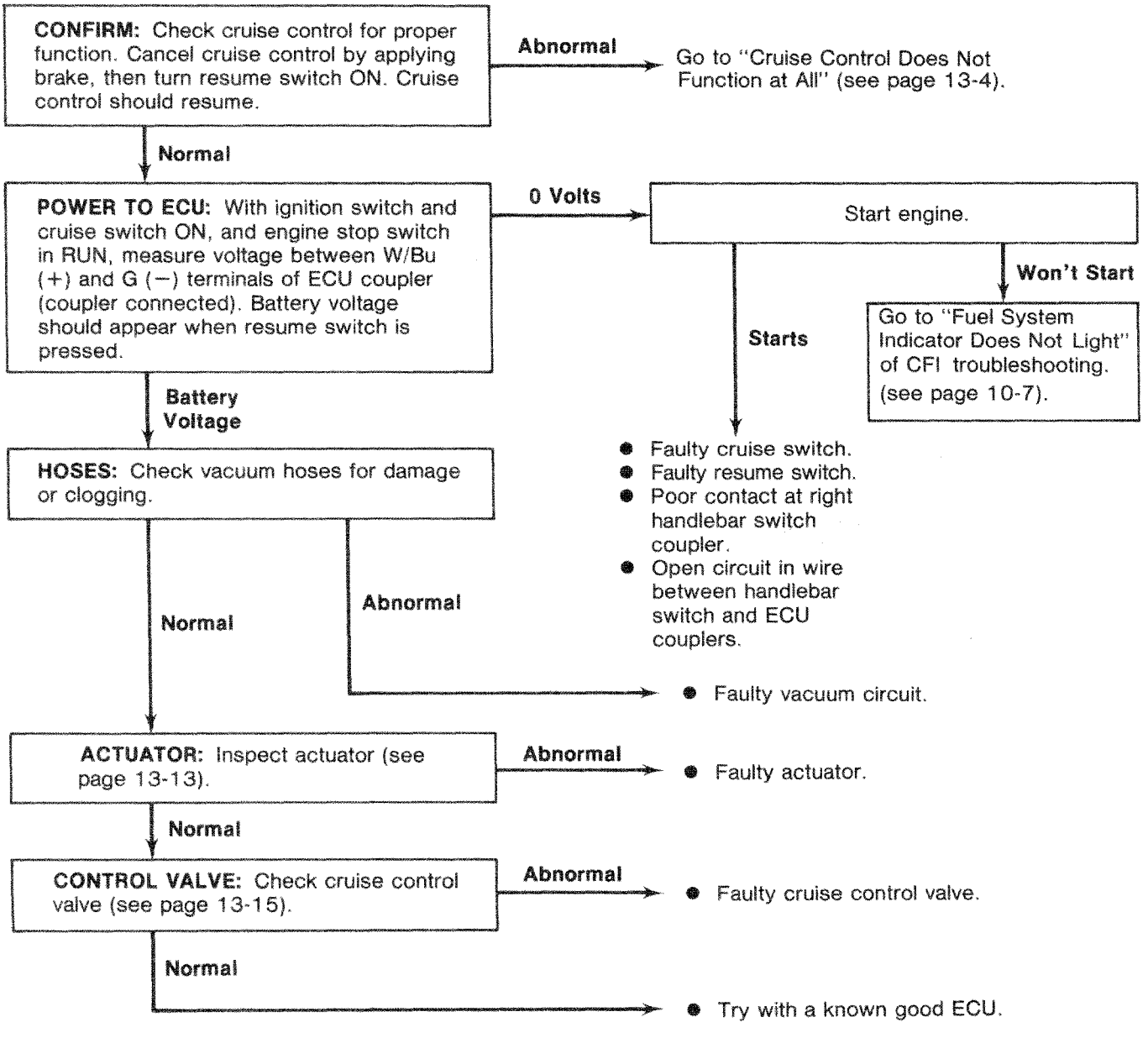
Cruise Control
Troubleshooting (cont'd)

Cruise Control Will Not Resume

NOTES:

- Cruise control will not resume below 30 mph.
- Holding resume/acc switch ON causes the motorcycle to accelerate to nearly full throttle. However, cruise control will only operate to 80 mph.
- Cruise control is not resumed when either the cruise set switch, engine stop switch or ignition switch is turned OFF, or when both the resume and set switch are operated simultaneously (memory is erased).



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Cruise Speed Fluctuates Excessively (More Than 5 mph) Immediately After Setting

HOSES: Check vacuum hoses for disconnection, clogging or damage.
- Abnormal → ● Faulty vacuum circuit.
- Normal ↓

CABLES: Check throttle cables and junction linkages for smooth operation.
- Abnormal → ● Binding or jammed cable or link.
- Normal ↓

FREE PLAY: Inspect actuator cable for free play (see page 13-13).
- Abnormal → ● Stiff cable movement or improper cable free play.
- Normal ↓

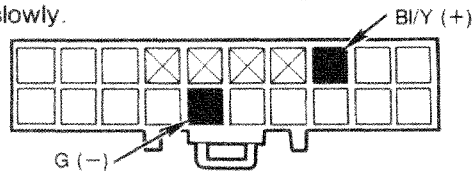
ACTUATOR: Check actuator (see page 13-13).
- Abnormal → ● Faulty actuator.
- Normal ↓

CONTROL VALVE: Check cruise control valve unit (see page 13-15).
- Abnormal → ● Faulty cruise control valve unit.
- Normal ↓

ONE-WAY VALVE: Check one-way valve (see page 13-15).
- Abnormal → ● Faulty one-way valve.
- Normal → ● Try with a known good ECU.

Cruise Control is Cancelled Accidently.

SENSOR SIGNAL: With ignition switch ON, measure voltage between Bl/Y (+) and G (−) terminals fo ECU coupler. Voltage should change from about 9V to less than 1V alternately when rotating front wheel slowly.



- Abnormal → Check speed sensor (see base manual).
  - Abnormal → ● Faulty speed sensor.
  - Normal → ● Short or open circuit in wire harness. ● Poor contact at coupler.
- Normal ↓

CANCEL SWITCHES: Check rear brake and throttle grip cancel switches for adjustment.
- Abnormal → ● Improper switch adjustment.
- Normal ↓

RELAY: Check for faulty cruise valve relay (see page 13-13) or poor contact at relay terminals and fuse/relay box couplers.
- Abnormal → ● Faulty relay or poor contact at relay terminals.
- Normal ↓

● Check each cancel switch, brake/stoplight switch and shift sensor for looseness or poor contact.

(cont'd)

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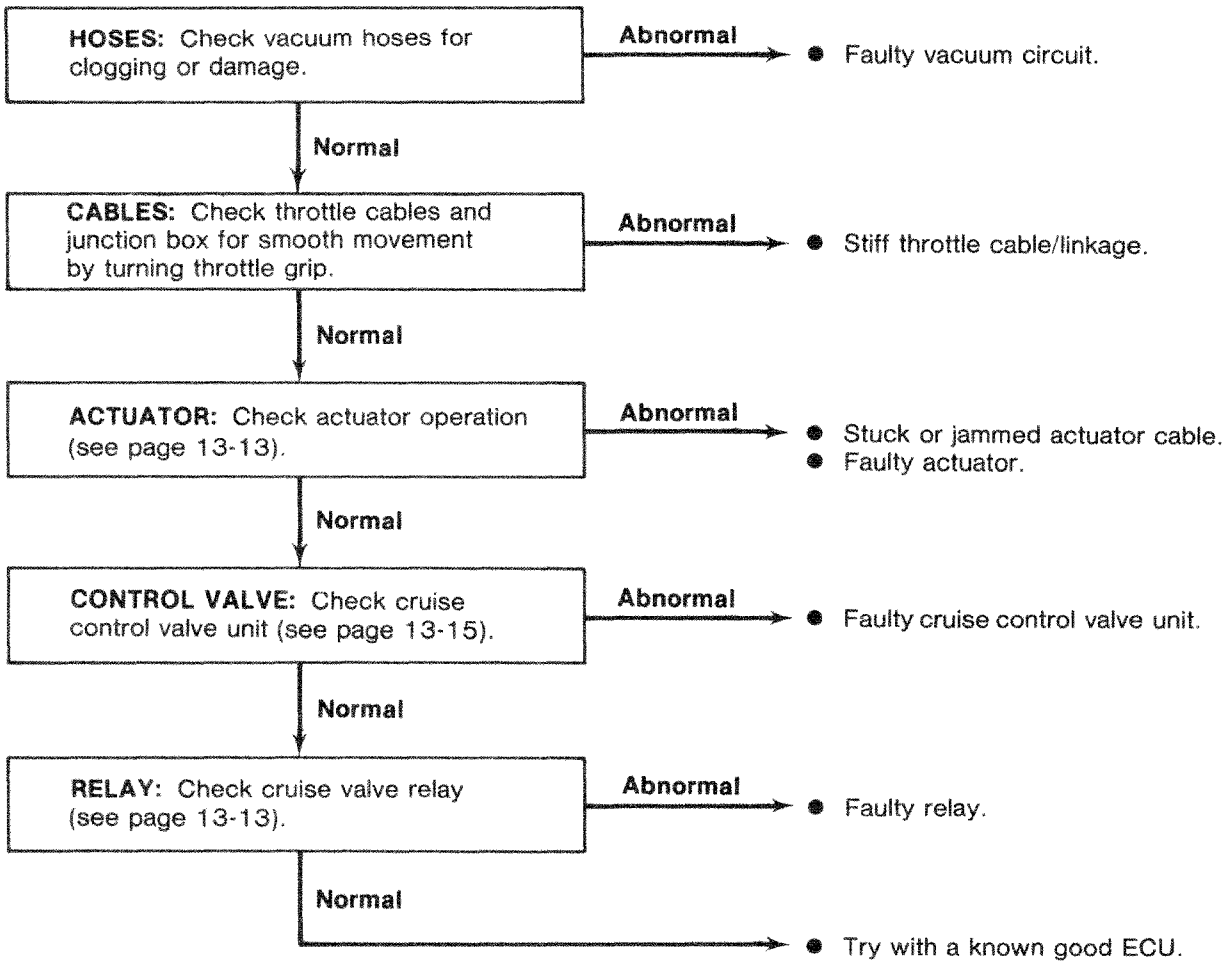
Cruise Control

Troubleshooting (cont'd)

Cruise Control Cannot be Cancelled.

Note: The cruise control should cancel when brake is applied, clutch lever is operated, throttle grip is returned, or transmission is shifted. Before going into details, check the cancel switch, brake/stoplight switch or sensor for proper operation.



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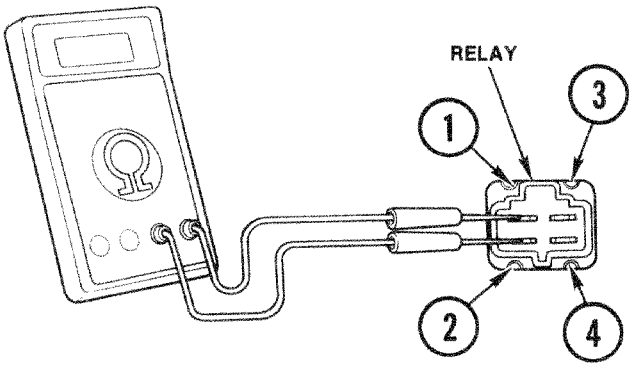
Cruise Valve Relay

Inspection

Remove the cruise valve relay from the fuse/relay box. (Third relay from the left.)

Check for no continuity between terminals #1 and #2. If there is continuity, install a new relay.

Apply battery voltage across terminals #3 and #4 and check for continuity between terminals #1 and #2. If there is no continuity, install a new relay.



Cruise Actuator

Inspection

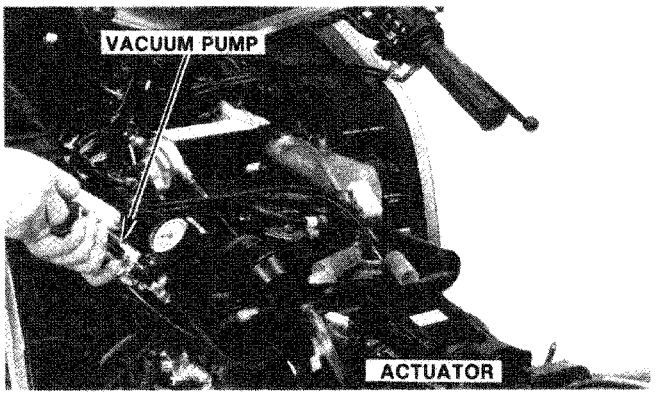
Remove the top compartment.

Disconnect the vacuum hose from the actuator, and connect a vacuum pump to the actuator. Apply vacuum.

If vacuum does not remain steady, install a new actuator.

If the throttle grip does not rotate with vacuum applied, check the following:

- Throttle Operation
- Junction box (operation of drum and lever)
- Actuator cable
- Throttle cables



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Cruise Control

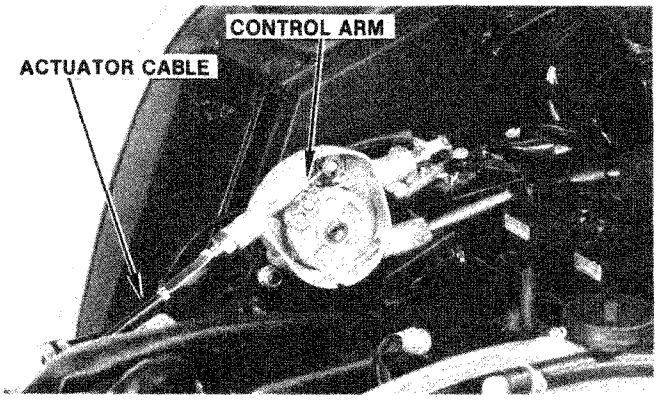
Cruise Actuator (cont'd)

Removal

Remove the cover from the junction box and disconnect the end of the actuator cable from the control arm.

Remove the two nuts. Remove the actuator from the bracket. Loosen the cable joint nut and disconnect the cable from the junction box.

Pull the vacuum hose off the actuator. (Be careful not to puncture the hose.)



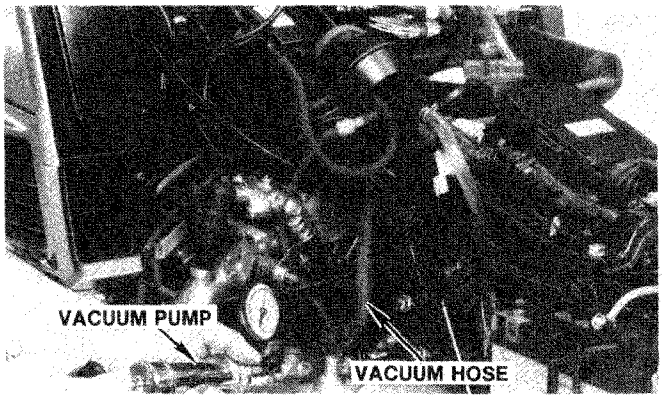
Vacuum Hose

Inspection

Disconnect the vacuum hose from the intake pipe of the No. 4 cylinder.

Connect a vacuum pump to the hose and apply vacuum.

If vacuum does not remain steady, check the vacuum hose for damage, deterioration or loose connection.



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One-Way Valve

Inspection

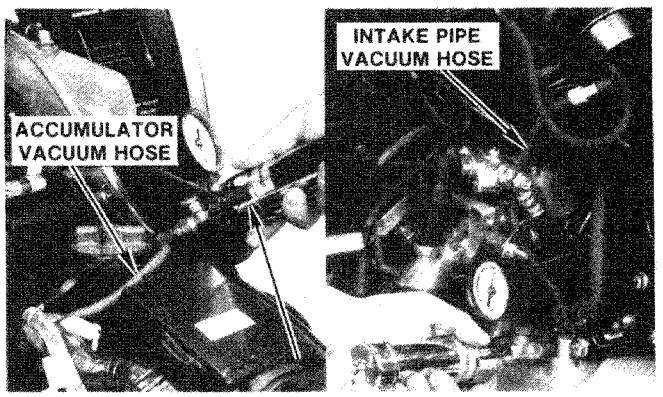
Disconnect the vacuum hose from the accumulator. Connect a hand air pump to the vacuum hose and apply air pressure.

Pressure should not remain.

Disconnect the vacuum hose from the intake pipe of the no. 4 cylinder. Connect a hand air pump to the vacuum hose and apply air pressure.

Pressure should remain steady.

If unable to obtain the above results, install a new one-way valve.



Cruise Control Valve

Inspection

Remove the cruise control valve from its bracket. Disconnect the valve coupler. Pry off the intake pipe and actuator vacuum hoses with a small screwdriver.

CAUTION: The plastic connectors are fragile. Pull the hoses straight off; side stress may break the connectors.

Connect a vacuum pump to the intake pipe vacuum hose and apply vacuum. If the vacuum does not remain steady, install a new valve.

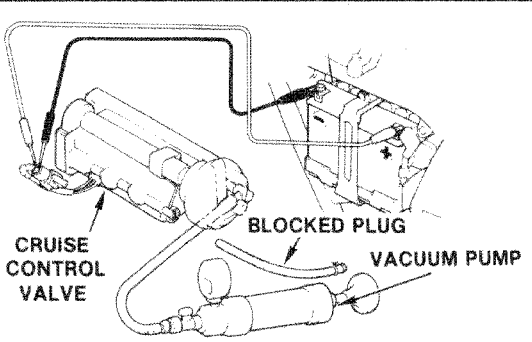
While maintaining vacuum, apply battery voltage across the coupler terminals shown in the table on the right.

Test each pair of terminals (wires) with the actuator hose port open and then blocked with a plugged hose.

CAUTION: Avoid touching the positive (+) battery test wire to the negative (−) test wire. If a test involves two or more negative wires, first connect all negative wires to the negative battery wire, then connect the positive wire to the positive battery wire.

If unable to obtain specified results, install a new valve.

(cont'd)



NOTES:
HOLD: Vacuum should remain steady when battery voltage is applied to the terminals.
RELIEVE: Vacuum should be relieved when battery voltage is applied.
DECREASE: About 100-150 mmHg of vacuum will be lost each time battery voltage is applied.

Battery Voltage		Vacuum	
(−) battery wire	(+) battery wire	Blocked tube connected (Port closed)	Blocked tube not connected (Port open)
Current not applied		HOLD	HOLD
Br/Bl	Br/W	RELIEVE	RELIEVE
G	Br/W	HOLD	HOLD
Br	Br/W	HOLD	HOLD
Br/Bl, G	Br/W	RELIEVE	RELIEVE
Br/Bl, Br	Br/W	RELIEVE	RELIEVE
Br, G	Br/W	HOLD	HOLD
Br/Bl, Br, G	Br/W	DECREASE	RELIEVE

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Cruise Control

Cruise Control Valve (cont'd)

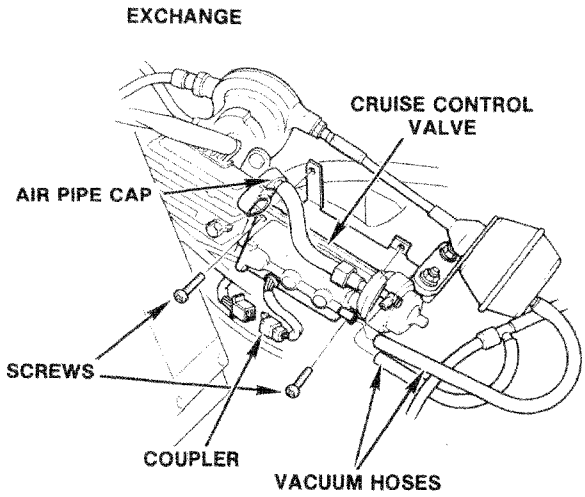
Remove the two screws to release the valve.

Disconnect the coupler.

Remove the air pipe cap from the valve.

Disconnect the vacuum hoses from the valve.

CAUTION: The plastic connectors are fragile. Pull the hoses straight off; side stress may break the connectors.



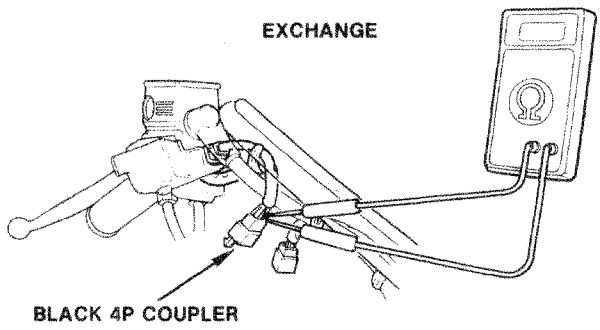
Cruise Cancel Switches

Front Brake

Disconnect the black 4P coupler behind the right handlebar.

Check for continuity between the Bl/Bu and G/W wire terminals.

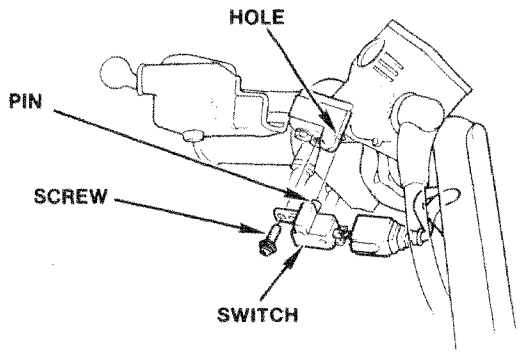
Brake lever released: Continuity
Brake lever pulled in: No continuity



If unable to obtain the above results, check for continuity at the switch terminal. If switch continuity is normal, check the sub-harness for continuity. If continuity is abnormal, install a new switch.

Remove the screw and disconnect the wires from the switch.

NOTE: When installing the switch, align the switch pin with the master cylinder hole. Connect the wires to the correct size terminals.



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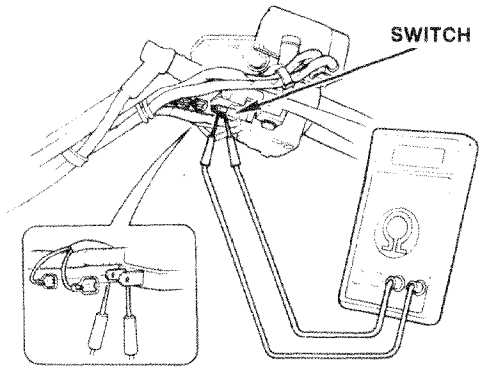
Clutch

Disconnect the Bl/Y and G/Bu wires from the terminals on the cruise cancel switch.

Check for continuity between the switch terminals.

Clutch lever released: No continuity
Clutch lever pulled in: Continuity

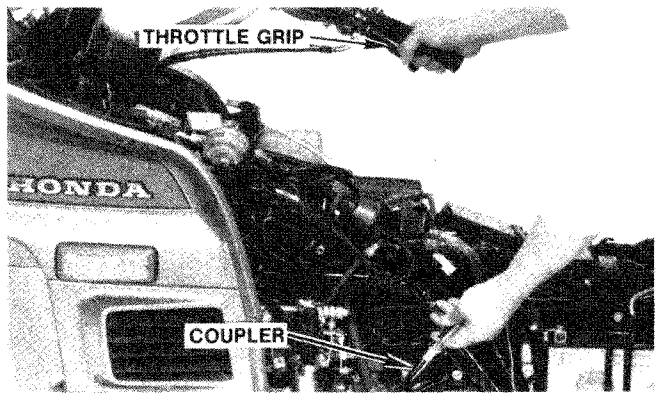


Throttle

Disconnect the throttle cancel switch coupler from the wire harness.

Check for continuity at the 2P coupler just left of the cruise control unit.

Throttle closed: Continuity
Further return: No continuity



To adjust, remove the fuel strainer from the left engine mount bracket.

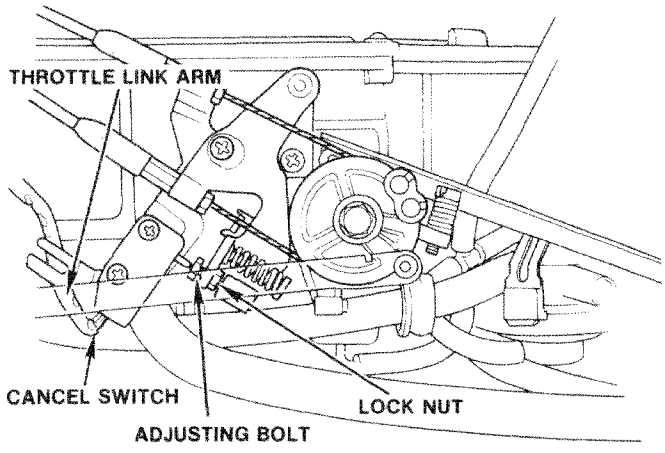
Disconnect the left throttle link arm from the throttle arm.

Loosen the adjusting bolt lock nut.

Connect an ohmmeter to the switch wires and turn the adjusting bolt until "continuity" shifts to "no continuity".

Back off the adjusting bolt 2-1/3 rotations and tighten the lock nut.

NOTE: Replace the switch if continuity or no continuity fails to shift.



(cont'd)

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Cruise Control

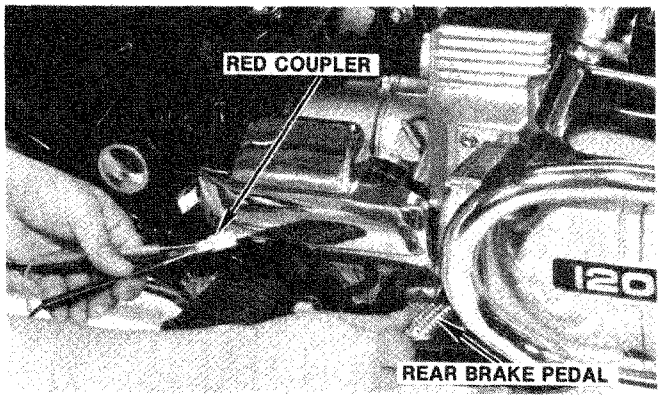
Cruise Cancel Switches (cont'd)

Rear Brake

Disconnect the rear brake cancel switch coupler.

Check for continuity between the wires sheltered on the right side just below the cruise vacuum accumulator.

Brake pedal released: continuity
Brake pedal depressed: No continuity



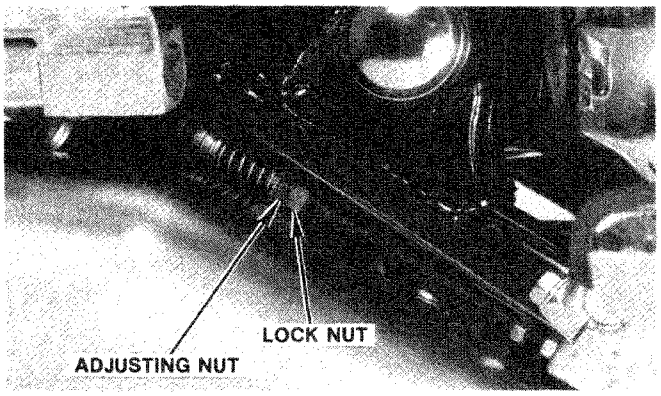
To adjust, remove the exhaust pipe and muffler.

Loosen the lock nut on the master cylinder push rod.

Connect an ohmmeter to the switch wires and turn the adjusting nut until "continuity" shifts to "no continuity".

Back the adjusting nut off 1/2 turn (toward the brake pedal) and tighten the lock nut.

NOTE: Replace the switch if continuity or no continuity fails to shift.



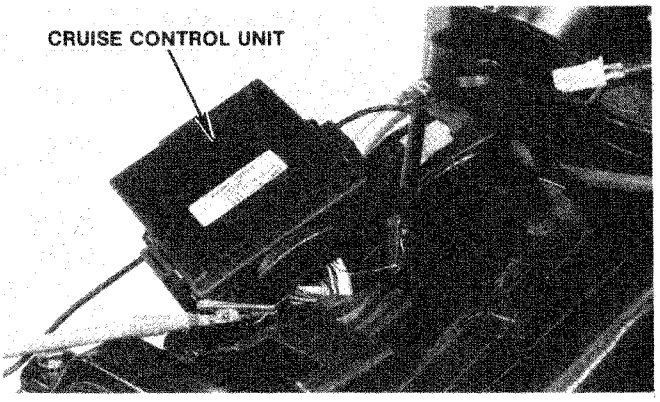
Cruise Control Switches

Cruise Switch

Remove the cruise control unit dust cover. Measure voltage between the Bl/Y(+) and G(−) terminals of the coupler.

NOTE: Do not confuse this wire with the Bl/Y speed sensor wire.

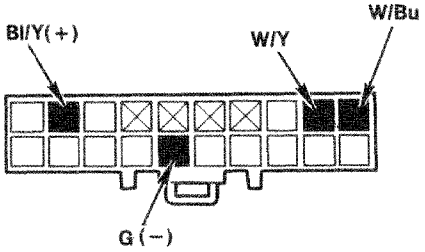
The switch is normal if battery voltage is present with the cruise control and ignition switches ON.



Set Switch

Measure voltage between the W/Y(+) and G(−) terminals of the cruise control coupler.

The switch is normal if battery voltage is present with the set switch flipped down and the ignition switch ON.



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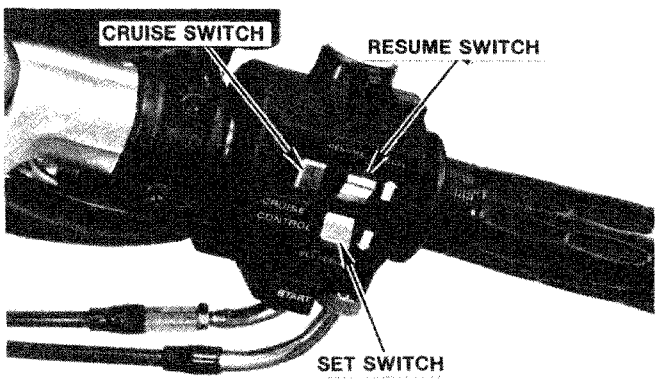
Resume Switch

Measure voltage between the W/Y(+) and G(−) terminals of the cruise control coupler.

The switch is normal if battery voltage is present with the resume switch flipped up, and the cruise and ignition switches ON.

To further test the resume switch, check for continuity between the terminals of the handlebar switch coupler.

Remove the coupler holder from the fairing and disconnect the brown 6P right handlebar switch coupler. Check for continuity between the terminals.



Junction Box

Removal/Disassembly

Remove the cover from the junction box.

Remove the actuator cable and loosen the throttle cable lock nuts.

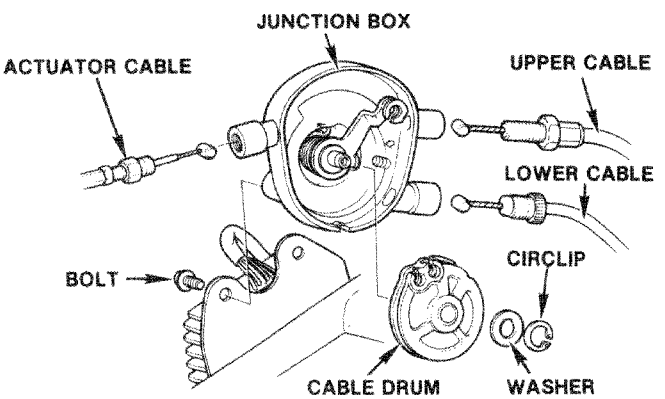
Remove the mount bolts and junction box from its bracket.

Remove the circlip and washer.

Remove the cable drum from the cable ends.

Disconnect the lower throttle cable first, then the upper throttle cable.

Remove the control arm and return spring from the junction box.



(cont'd)

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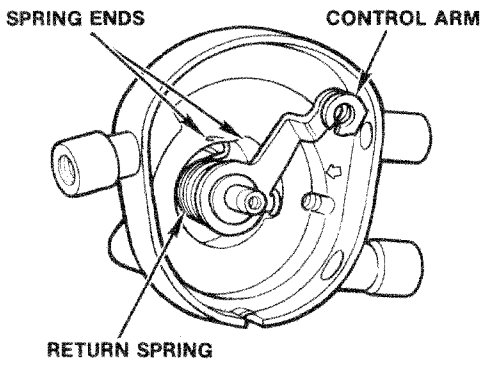
Assembly/Installation

CAUTION: Keep contaminants away from junction box sliding surfaces. Clean parts with solvent before assembly.

Coat the sliding faces of the control arm and shaft with grease.

Hook the ends of the return spring against the case and arm securely with the control arm in the six o'clock position. Rotate the control arm counterclockwise to the twelve o'clock position and push it back into the junction box assembly.

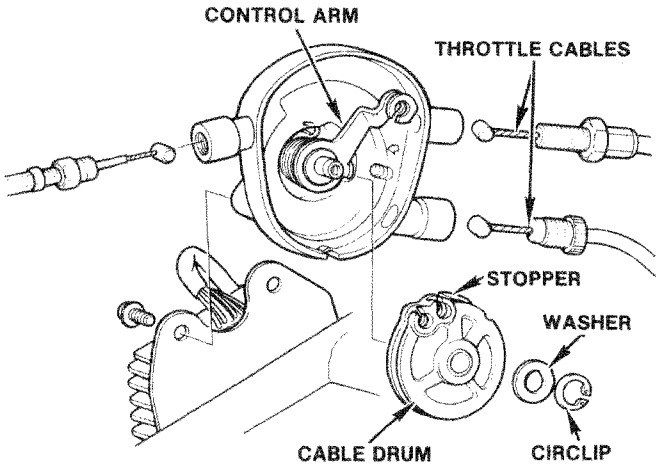


Connect the throttle cables to the junction box. Coat the sliding faces of the cable drum and drum shaft with grease.

Insert the ends of the throttle cables into the slots in the cable drum. Install the cable drum in the case.

NOTE: Install the cable drum with the stopper facing the inside. Connect the cables to the cable drum with the stopper contacting the control arm.

Install the washer and a new circlip on the drum shaft. Install the circlip with the sharp edge facing out. Be sure the circlip is seated all the way around the circlip groove.



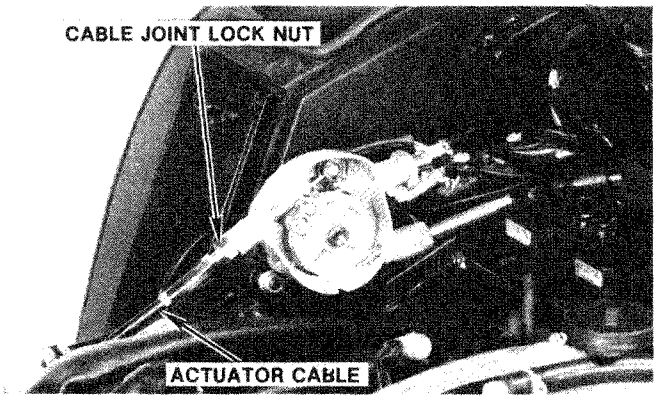
Grease the end of the actuator cable and connect the cable end to the control arm.

Tighten the cable joint lock nut.

Recheck the throttle grip operation.

Install the junction box on the bracket.

Adjust the throttle cables (see page 13-22).



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Throttle Operation

Check for smooth throttle grip full opening and automatic full closing in all steering positions.

Make sure there is no deterioration, damage, or kinking in the throttle cables. Replace any damaged parts.

If throttle operation is not smooth, check the inner cable condition. Replace them if they are frayed or kinked.

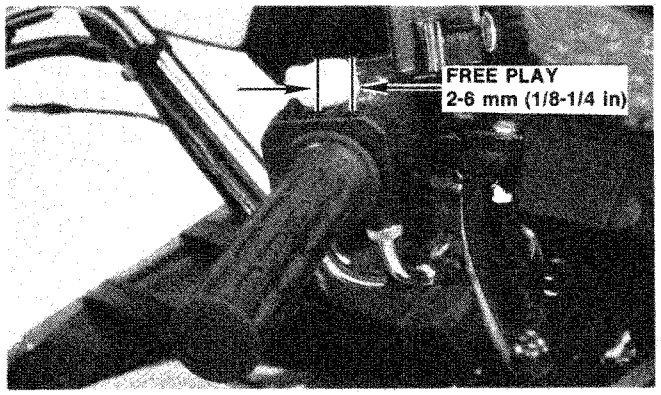
Make sure throttle grip free play is 2-6 mm (1/8-1/4 in) at the throttle grip flange.

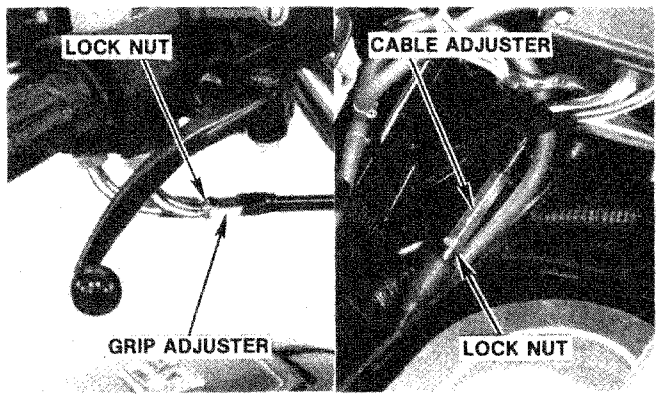
Make minor adjustments with the throttle grip adjuster.

Make major throttle grip free play adjustments with the middle cable adjuster after removing the top compartment.

To adjust, loosen the lock nut, turn the adjuster as required, and tighten the lock nut.

Recheck throttle operation and install all removed parts.





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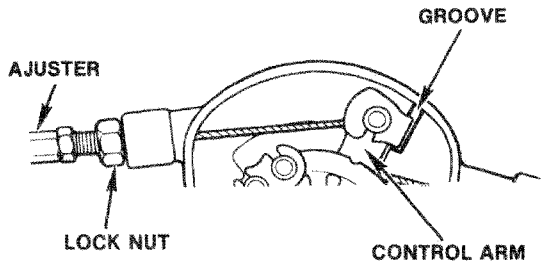
Cruise Control

Throttle Cable Adjustment

Position the actuator on the bracket and slightly tighten the mount nuts. (Allow free movement of the actuator for further adjustment.)

Loosen the actuator cable lock nut and turn the cable adjuster until the front end of the control lever is in the groove in the case as shown.

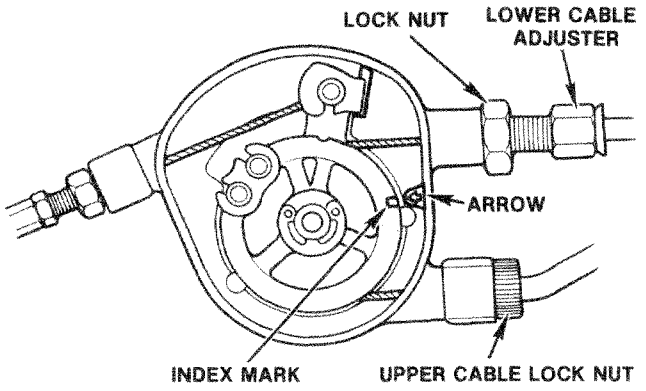


Tighten the adjuster lock nut.

Tighten the actuator mount nuts.

Loosen the upper throttle cable adjusters to allow play in the upper throttle cable.

Turn the lower throttle cable adjuster to align the index mark on the cable drum with the arrow mark on the case.



Tighten the throttle cable adjuster lock nut.

Tighten the upper cable lock nut.

NOTE: Adjust throttle grip free play and check operation of the throttle grip and cancel switch. Recheck alignment of the index and arrow marks.

Install the junction box cover.

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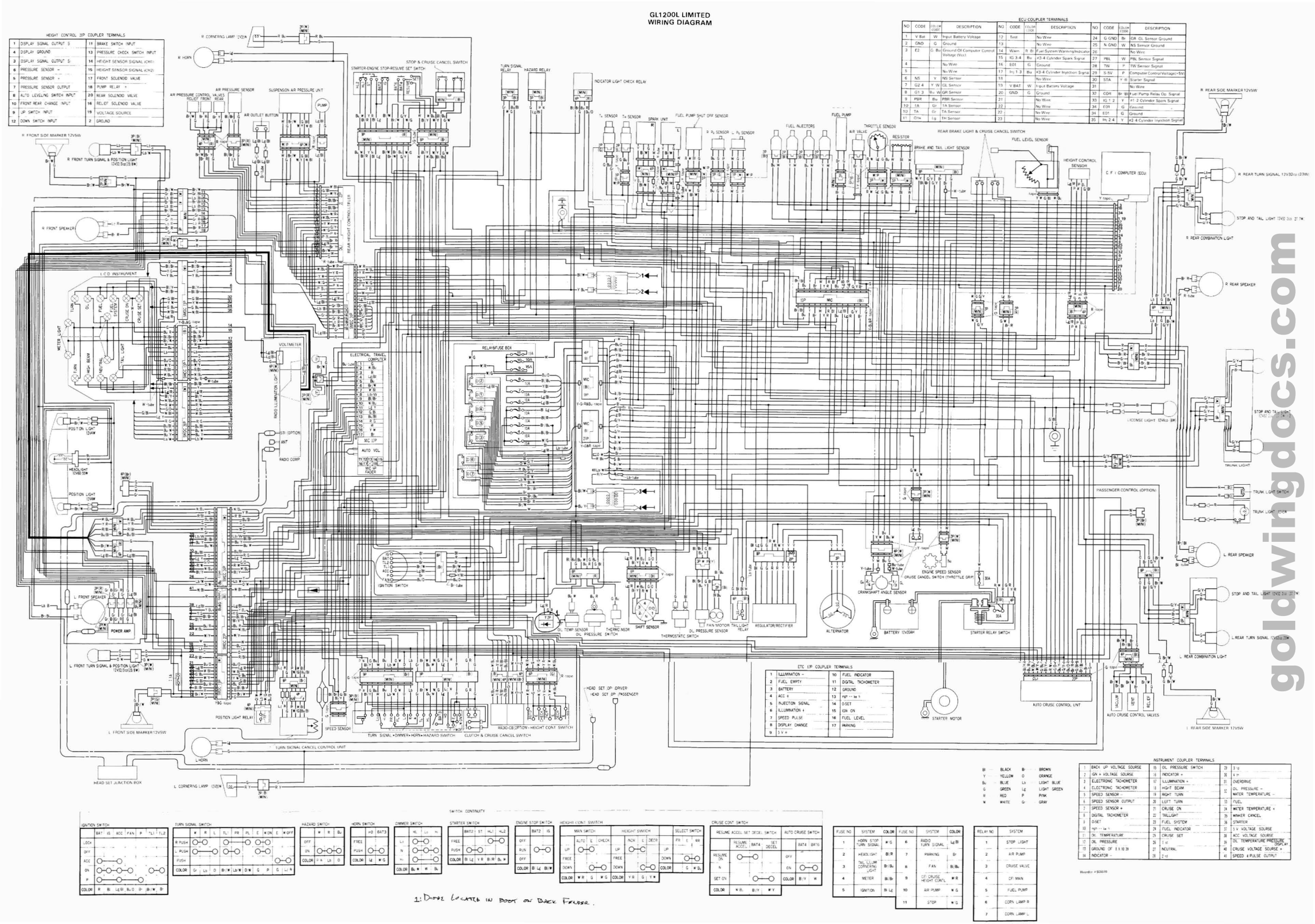
WIRING DIAGRAM



HEIGHT CONTROL 2XP COUPLER TERMINALS

1	DISPLAY SIGNAL OUTPUT S	11	BRAKE SWITCH INPUT
4	DISPLAY GROUND	13	PRESSURE CHECK SWITCH INPUT
3	DISPLAY SIGNAL OUTPUT S-	14	HEIGHT SENSOR SIGNAL (CH1)
6	PRESSURE SENSOR -	15	HEIGHT SENSOR SIGNAL (CH2)
5	PRESSURE SENSOR +	17	FRONT SOLENOID VALVE
7	PRESSURE SENSOR OUTPUT	18	PUMP RELAY +
8	AUTO LEVELING SWITCH INPUT	20	REAR SOLENOID VALVE
10	FRONT REAR CHANGE INPUT	16	RELIEF SOLENOID VALVE
9	UP SWITCH INPUT	19	VOLTAGE SOURCE
12	DOWN SWITCH INPUT	2	GROUND

ECU COUPLER TERMINALS

NO	CODE	COLOR CODE	DESCRIPTION	NO	CODE	COLOR CODE	DESCRIPTION	NO	CODE	COLOR CODE	DESCRIPTION
1	V Bat	W	Input Battery Voltage	12	Test		No Wire	24	G GND	Br	GR GL Sensor Ground
2	GND	G	Ground	13			No Wire	25	N GND	W	NS Sensor Ground
3	E2	G Bu	Ground Of Computer Control Voltage (Vcc)	14	Warn	R Bl	Fuel System Warning Indicator	26			No Wire
4				15	IG 3,4	Bu	#3,4 Cylinder Spark Signal	27	PBL	W	PBL Sensor Signal
5			No Wire	16	EOI	G	Ground	28	TW	P	TW Sensor Signal
6			No Wire	17	Inj 1,3	Bu	#3,4 Cylinder Injection Signal	29	S-5V	P	Computer Control Voltage(+5V)
6	NS	Y	NS Sensor	18			No Wire	30	STA	Y R	Starter Signal
7	G2,4	Y W	GL Sensor	19	V BAT	W	Input Battery Voltage	31			No Wire
8	G1,3	Bu W	GR Sensor	20	GND	G	Ground	32	COI	Br Bl	Fuel Pump Relay Op. Signal
9	PBR	Bu	PBR Sensor	21			No Wire	33	IG 1,2	Y	#1,2 Cylinder Spark Signal
10	TA	Gr	TA Sensor	22			No Wire	34	EOI	G	Ground
11	OTH	Lg	TH Sensor	23			No Wire	35	Inj 2,4	Y	#2,4 Cylinder Injection Signal

ETC I/P COUPLER TERMINALS

1	ILLUMINATION -	10	FUEL INDICATOR
2	FUEL EMPTY	11	DIGITAL TACHOMETER
3	BATTERY	12	GROUND
4	ACC +	13	[illegible]
5	INJECTION SIGNAL	14	D.SET
6	ILLUMINATION +	15	IGN ON
7	SPEED PULSE	16	FUEL LEVEL
8	DISPLAY CHANGE	17	PARKING
9	5 V +		

INSTRUMENT COUPLER TERMINALS

1	BACK UP VOLTAGE SOURSE	15	OIL PRESSURE SWITCH
2	GN + VOLTAGE SOURSE	16	INDICATOR +
3	ELECTRONIC TACHOMETER	17	ILLUMINATION +
4	ELECTRONIC TACHOMETER	18	HIGH BEAM
5	SPEED SENSOR -	19	RIGHT TURN
6	SPEED SENSOR OUTPUT	20	LEFT TURN
7	SPEED SENSOR +	21	CRUISE ON
8	DIGITAL TACHOMETER	22	TAILLIGHT
9	D.SET	23	FUEL SYSTEM
10	[illegible]	24	FUEL INDICATOR
11	OIL TEMPERATURE	25	CRUISE SET
12	OIL PRESSURE	26	[illegible]
13	GROUND OF 8,9,10,39	27	NEUTRAL
14	INDICATOR -	28	[illegible]
		29	[illegible]
		30	[illegible]
		31	OVERDRIVE
		32	OIL PRESSURE - WATER TEMPERATURE -
		33	FUEL
		34	WATER TEMPERATURE +
		35	WINKER CANCEL
		36	STARTER
		37	5 V VOLTAGE SOURSE
		38	ACC VOLTAGE SOURSE
		39	OIL TEMPERATURE PRESSURE DISPLAY
		40	CRUISE VOLTAGE SOURSE +
		41	SPEED 4 PULSE OUTPUT

Mounter #SC0270

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

SWITCH CONTINUITY

IGNITION SWITCH

	BAT	IG	ACC	FAN	P	TL1	TL2
LOCK							
OFF							
ACC	○		○				
ON	○	○	○				
P	○	○		○	○		
COLOR	R	Bl	Lg/B	Bu/O	Br	Br/W	Br

TURN SIGNAL SWITCH

	W	R	L	TL	PR	PL	E	W ON	E	W OFF
R PUSH										
L PUSH										
PUSH										
COLOR	Gr	Lb	O	Br/W	Lb/W	O/W	G	P	G	L/W

HAZARD SWITCH

	W	R	Bu
OFF			
ON	○	○	○
COLOR	P/R	Lb	O

HORN SWITCH

	HO	BAT3
FREE		
PUSH	○	○
COLOR	Lg	W/G

DIMMER SWITCH

	HL	Lo	Hi
Lo		○	
N			
Hi	○		○
COLOR	Bu/W	W	Bu

STARTER SWITCH

	BAT2	ST	HL1	HL2
FREE				
PUSH	○	○	○	○
COLOR	B	Lg	Y/R	B/R

ENGINE STOP SWITCH

	BAT2	IG
OFF		
RUN	○	○
OFF		
COLOR	B	Lg/B/W

HEIGHT CONT SWITCH

MAIN SWITCH				HEIGHT SWITCH					SELECT SWITCH		
	AUTO	E	CHECK		NOR	E	DES			FR	E
UP				UP				UP			
FREE				FREE				DOWN	COLOR	G	W/Bl
DOWN				DOWN							
COLOR	W/R	G	W/G	COLOR	Y/R	G	Y/W				

CRUISE CONT SWITCH

RESUME ACCEL SET DECEL SWITCH				AUTO CRUISE SWITCH	
	RESUME ACCEL	BAT4	SET DECEL		BAT4
RESUME ON				OFF	
N					
SET ON				ON	○
COLOR	W/Bl		B/Y	COLOR	B/Y

FUSE NO	SYSTEM	COLOR
1	HORN, STOP, TURN SIGNAL	W G
2	HEADLIGHT	B/R
3	TAIL LLUM CORNERING LIGHT	B/Bu
4	METER	Bl/Br
5	IGNITION	Br Lg

FUSE NO	SYSTEM	COLOR
6	RADIO TURN SIGNAL	Lg/B
7	PARKING	Br
8	FAN	B/Bu
9	EF CRUISE, HEIGHT CONT,	W R
10	AIR PUMP	W G
11	STOP	W G

RELAY NO	SYSTEM
1	STOP LIGHT
2	AIR PUMP
3	CRUISE VALVE
4	EF MAIN
5	FUEL PUMP
6	CORN LAMP R
7	CORN LAMP L

1: DIODE LOCATED IN BOOT ON BACK FENDER.

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