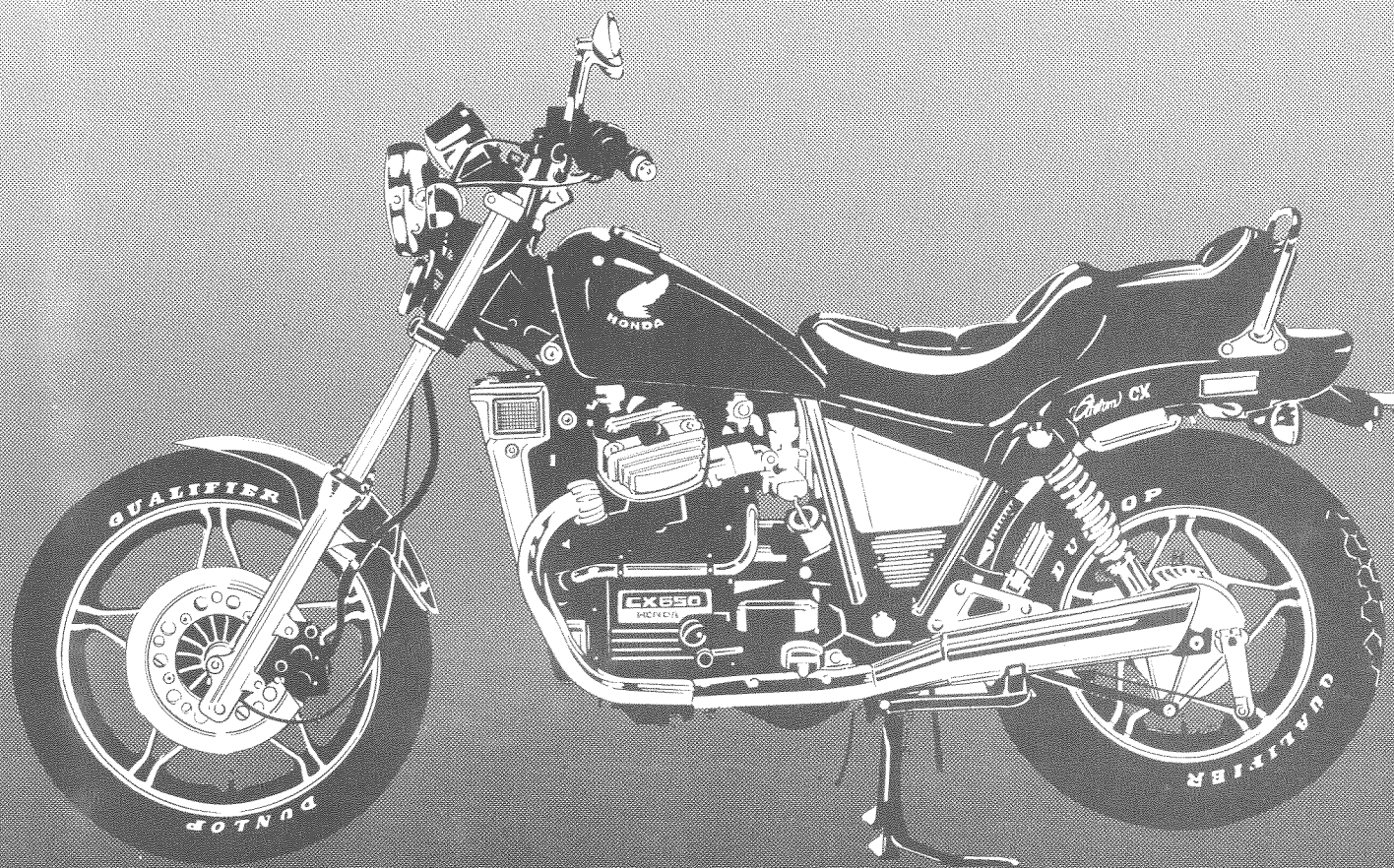


Official

HONDA

SHOP MANUAL

CX650C



'83

IMPORTANT SAFETY NOTICE



WARNING

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

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

NOTE: *Gives helpful information.*

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



HOW TO USE THIS MANUAL

Follow the Maintenance Schedule recommendations to ensure that the vehicle is in peak operating condition and the emission levels are within the standards set by the U.S. Environmental Protection Agency. Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Sections 1 through 3 apply to the whole motorcycle, while sections 4 through 20 describe parts of the motorcycle, grouped according to location.

Find the section you want on this page, then turn to the table of contents on page 1 of that section.

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

If you don't know what the source of the trouble is, refer to section 22, Troubleshooting.

All information, illustrations, directions and specifications included in this publication are based on the latest product information available at the time of approval for printing. Honda Motor Co., Ltd. reserves the right to make changes at any time without notice and without incurring any obligation whatever.

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HONDA
CX650C

MEMO



1. GENERAL INFORMATION

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GENERAL SAFETY

WARNING

If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas.

WARNING

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

WARNING

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.

WARNING

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.

SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that do not meet HONDA's design specifications may damage the motorcycle.
2. Use the special tools designed for this product.
3. Use only metric tools when servicing this motorcycle. Metric bolts, nuts, and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the motorcycle.
4. Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
5. When tightening bolts or nuts, begin with 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 non-flammable or high flash point solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown on page 1–9 Cable and Harness Routing and always away from sharp edges and areas where they might be pinched between moving parts.

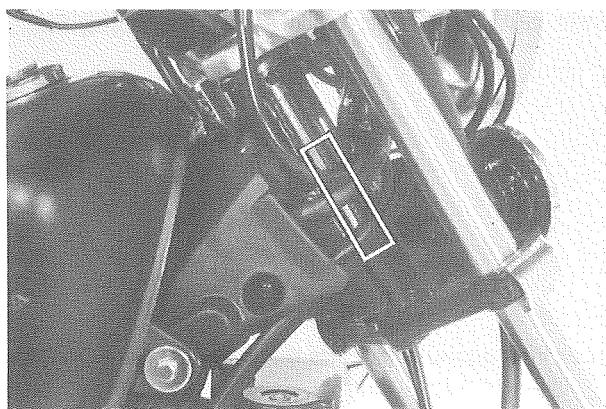


MODEL IDENTIFICATION



Beginning Frame Number: JH2RC110 * DM00001~
Engine Number: RC11E-200001~

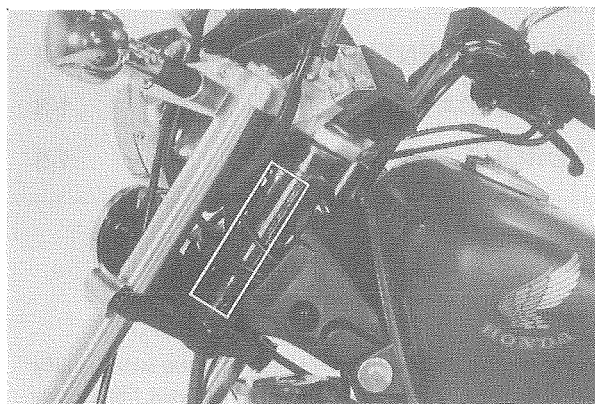
The frame serial number is stamped on the right side of the steering head.



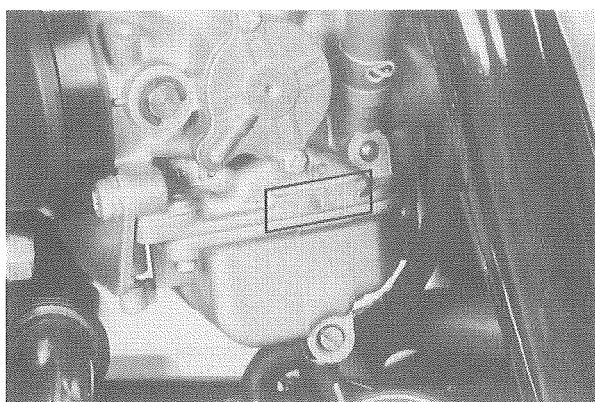
The engine serial number is stamped on the lower left side of the engine case.



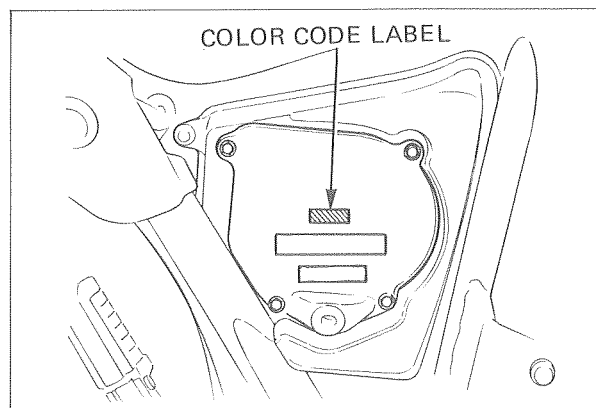
The vehicle identification number is on the left side of the steering head.



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



The color code label is attached to the air cleaner cover. When ordering a color coded part, always specify its designated color.




SPECIFICATIONS

	ITEM			
DIMENSIONS	Overall length			2,180 mm (85.8 in)
	Overall width			790 mm (31.1 in)
	Overall height			1,165 mm (45.9 in)
	Wheel base			1,515 mm (59.7 in)
	Seat height			780 mm (30.7 in)
	Foot peg height			320 mm (12.6 in)
	Ground clearance			155 mm (6.1 in)
	Dry weight			196 kg (432 lbs)
	Curb weight			210 kg (463 lbs)
FRAME	Type			Diamond
	Front suspension, travel			Telescopic, 160 mm (6.3 in)
	Rear suspension, travel			Swing arm, 120 mm (4.7 in)
	Front suspension air pressure			0–40 kPa (0–0.4 kg/cm ² , 0–6 psi)
	Front tire size, type			100/90-19 57H, Tubeless
	Rear tire size, type			140/90-15 70H, Tubeless
	Cold tire pressures	Up to 90 kg (200 lbs) load	Front-Rear	225 kPa (2.25 kg/cm ² , 32 psi) 225 kPa (2.25 kg/cm ² , 32 psi)
		Up to vehicle capacity load	Front-Rear	225 kPa (2.25 kg/cm ² , 32 psi) 280 kPa (2.80 kg/cm ² , 40 psi)
	Front brake and lining swept area			Single disc brake, 516 cm ² (80 sq.in)
	Rear brake and lining swept area			Internal expanding shoes, 201 cm ² (31 sq.in)
	Fuel capacity			12.4 lit (3.28 US gal, 2.73 Imp gal)
	Fuel reserve capacity			2.2 lit (0.58 US gal, 0.48 Imp gal)
	Caster angle			58°
	Trail length			126 mm (5.0 in)
	Front fork oil capacity			480 cc (16.2 US oz, 13.5 Imp oz) ATF after disassembly
ENGINE	Type, cylinder arrangement			Water cooled, V-twin 4-stroke O.H.V.
	Engine weight			74.5 kg (164 lbs)
	Bore and stroke			82.5 x 63.0 mm (3.25 x 2.48 in)
	Displacement			674 cm ³ (41.1 cu-in)
	Compression ratio			9.8:1
	Cylinder compression			1,200 kPa (12.0 kg/cm ² , 171 psi)
	Valve train			Chain driven camshaft and push rod
	Oil capacity			3.6 lit (3.8 US qt, 3.2 Imp qt) after disassembly
				3.1 lit (3.3 US qt, 2.7 Imp qt) after draining and oil filter replacement
				3.0 lit (3.2 US qt, 2.6 Imp qt) after draining
	Oil type			SAE 10W-40 SE or SF, Honda 4-stroke oil or equivalent
	Lubrication system			Forced pressure and wet sump
	Air filtration system			Dry paper element
	Cooling system capacity			2.1 lit (2.2 US qt, 1.8 Imp qt)
	Radiator cap relief pressure			75–105 kPa (0.75–1.05 kg/cm ² , 10.7–14.9 psi)


GENERAL INFORMATION

ITEM		
ENGINE	Camshaft	
	Intake valve	Opens Closes
	Exhaust valve	Opens Closes
	Valve clearance (cold)	IN EX
	Idle speed	
		7° BTDC (at 1 mm lift), 87°50' BTDC (at 0 lift) 53° ABDC (at 1 mm lift), 121°04' ABDC (at 0 lift) 40° BBDC (at 1 mm lift), 107°26' BBDC (at 0 lift) 15° ATDC (at 1 mm lift), 82° 26' ATDC (at 0 lift) 0.10 mm (0.004 in) 0.12 mm (0.005 in) 1,100 ± 100 rpm
CARBURETION	Carburetor type, size	VB, 35 mm (1.4 in) venturi bore
	Identification number	VB2AC
	Pilot screw	Refer to page 4-13
	Float level	15.5 mm (0.61 in)
DRIVE TRAIN	Clutch	Wet, multi-plate
	Transmission	5-speed constant-mesh
	Primary reduction ratio	2.114 (35/74)
	Gear ratio 1st	2.500 (16/40)
	Gear ratio 2nd	1.714 (21/36)
	Gear ratio 3rd	1.280 (25/32)
	Gear ratio 4th	1.036 (28/29)
	Gear ratio 5th	0.839 (31/26)
	Final reduction ratio	3.091 (11/34)
	Gear shift pattern	Left foot operated return system 1-N-2-3-4-5
		160–180 cc (5.4–6.1 oz)
ELECTRICAL	Ignition type	Transistorized
	Ignition timing "F" mark	15° BTDC at idle
	Full advance	40 ± 1.5° BTDC/3,500 rpm
	Starting system	Starting motor
	Alternator	14V-252W/5,000 rpm
	Battery capacity	12V – 14AH
	Spark plug	
Standard		DPR8EA-9 (NGK) or X24EPR-U9 (ND)
For extended high speed riding		DPR9EA-9 (NGK) or X27EPR-U9 (ND)
Spark plug gap		0.8–0.9 mm (0.031 – 0.035 in)
Fuses		10A, 15A and 30A (Main fuse)
LIGHTS	Headlight (High/Low)	12V–60/55W H4 bulb (Phillips 12342/99, or equivalent)
	Tail/brake light	12V–3/32 cp No. 1157
	Turn signals (Front) (Rear)	12V–32 cp No. 1034
		12V–32 cp No. 1073
		12V–4 cp
	License plate	12V–2 cp No. 158
	Meter light	12V–2 cp No. 158
	Neutral indicator	12V–2 cp No. 158
	Turn signal indicator	12V–2 cp No. 158
	High beam indicator	12V–2 cp
	Tail/brake light warning light	12V–2 cp
	Oil pressure warning light	12V–2 cp No. 158


TORQUE VALUES
ENGINE

ITEM	Q'TY	Thread Dia. (mm)	Torque		
			N·m	kg·m	ft·lb
Crankshaft cap bolt	7	8	20-24	2.0-2.4	14-17
Connecting rod cap nut	4	9	41-45	4.1-4.5	30-33
Cylinder head bolt	8	12	50-60	5.0-6.0	36-43
Valve adjuster lock nut	8	7	20-25	2.0-2.5	14-17
Flywheel bolt	1	12	90-105	9.0-10.5	65-76
Clutch center lock nut	1	20	80-100	8.0-10.0	58-72
Primary drive gear bolt	1	12	80-95	8.0-9.5	58-69
Starting clutch torx bolt	3	8	18-25	1.8-2.5	13-18
Cam sprocket lock nut	1	20	80-100	8.0-10.0	58-72
Cam sprocket bolt	2	7	16-20	1.6-2.0	12-14
Radiator drain bolt	1	12	1.5-3.0	0.15-0.30	1.1-2.2
Starter clutch torx bolt	3	6	18-25	1.8-2.5	13-17
Cylinder head cover bolt	4	6	8-12	0.8-1.2	6-9
Carburetor stay plate screw	8	6	2.8-4.2	0.28-0.42	2-3
Oil filter bolt	1		20-25	2.0-2.5	14-17
Transmission holder bolt 6x20mm	4	6	15-20	1.5-2.0	11-14
6x32mm	2	6	10-14	1.0-1.4	7-10

FRAME

Engine mount bolts — 12mm	2	12	60-80	6.0-8.0	43-58
— 10mm	3	10	45-70	4.5-7.0	33-51
Front engine hanger nut	4	10	30-40	3.0-4.0	22-29
Front axle	1	12	55-65	5.5-6.5	40-47
Front axle pinch bolt	1	8	18-25	1.8-2.5	13-18
Steering stem nut	1	24	90-120	9.0-12.0	65-87
Front fork upper pinch bolt	2	7	9-13	0.9-1.3	7-9
Front fork lower pinch bolt	2	10	45-55	4.5-5.5	33-40
Front fork brace bolt	4	8	18-28	1.8-2.8	13-20
Front fork tube cap	2	—	15-30	1.5-3.0	11-22
Front fork socket bolt	2	8	15-25	1.5-2.5	11-18
Handlebar holder bolt	4	8	25-35	2.5-3.5	18-25
Rear axle nut	1	16	60-80	6.0-8.0	43-58
Final driven flange bolt	5	10	50-60	5.0-6.0	36-43
Rear shock absorber mount bolt/nut	4	10	30-40	3.0-4.0	22-29
Rear brake stopper arm bolt	2	8	15-25	1.5-2.5	11-18
Foot peg bolt	2	10	30-40	3.0-4.0	22-29
Passenger foot peg bolt	2	10	45-60	4.5-6.0	33-43
Rear brake pedal bolt	1	6	10-15	1.0-1.5	7-11
Gear shift pedal bolt	1	6	10-14	1.0-1.4	7-10
Swing arm right pivot bolt	1	30	90-120	9.0-12.0	65-87
Swing arm left pivot bolt	1	30	10-14	1.0-1.4	7-10
Swing arm pivot lock nut	1	30	100-130	10.0-13.0	72-94
Rear axle pinch bolt	1	8	20-30	2.0-3.0	14-22
Final gear case nut	4	8	30-35	3.0-3.5	22-25
Final gear case cover bolt	6	8	23-28	2.3-2.8	17-20
	2	10	45-50	4.5-5.0	32-36
Final gear pinion retainer	1	64	100-120	10.0-12.0	72-87
Final gear pinion holder nut	1	16	100-120	10.0-12.0	72-87

AH: Torque values are not confirmed. HS.

Date of Issue: December, 1982

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GENERAL INFORMATION

FRAME (Continue)

ITEM	Q'TY	Thread Dia. (mm)	Torque		
			N·m	kg·m	ft·lb
Front brake caliper mount bolt	2	10	30-45	3.0-4.5	22-33
Front brake caliper pivot bolt	1	12	25-30	2.5-3.0	18-22
Front brake caliper bolt	1	8	20-25	2.0-2.5	14-18
Brake hose bolt	2	10	25-35	2.5-3.5	18-25
Exhaust pipe joint nut	4	6	8-14	0.8-1.4	6-10
Muffler band bolt	4	8	18-28	1.8-2.8	13-20
Brake pedal stopper bolt	1	6	6-9	0.6-0.9	4-7
Side stand pivot bolt	1	10	10-20	1.0-2.0	7-14
Side stand pivot nut	1	10	30-40	3.0-4.0	22-29
Fuel valve nut	1	18	20-25	2.0-2.5	14-18
Center stand bolt	2	10	30-40	3.0-4.0	22-29
Air cleaner case	2	6	6-9	0.6-0.9	4-7
Exhaust chamber bolt	3	8	24-30	2.4-3.0	17-22
Rear fender bolt	2	14	30-40	3.0-4.0	22-29

Torque specifications listed above are for the most important tightening points. If a torque specification is not listed, follow the standards given below.

STANDARD TORQUE VALUES





Type	Torque N·m (kg·m, ft·lb)	Type	Torque N·m (kg·m, ft·lb)
5 mm bolt, nut	4.5-6.0 (0.45-0.6, 3.3-4.3)	5 mm screw	3.5-5.0 (0.35-0.5, 2.5-3.6)
6 mm bolt, nut	8-12 (0.8-1.2, 6-9)	6 mm screw	7-11 (0.7-1.1, 5-8)
8 mm bolt, nut	18-25 (1.8-2.5, 13-18)	6 mm flange bolt, nut	10-14 (1.0-1.4, 7-10)
10 mm bolt, nut	30-40 (3.0-4.0, 22-29)	8 mm flange bolt, nut	24-30 (2.4-3.0, 17-22)
12 mm bolt, nut	50-60 (5.0-6.0, 36-43)	10 mm flange bolt, nut	30-40 (3.0-4.0, 22-29)




TOOLS

SPECIAL

*: These tools are designed and have not been used before.

DESCRIPTION	NUMBER	ALTERNATIVE	NUMBER	REF. PAGE
*Pinion Retainer Wrench	07910-ME80000	Lock nut wrench, 30x64mm	07916-MB00000	16-7, 16-11
*Pinion Puller	07924-ME80000			16-8
*Pinion Joint Holder	07931-ME80000			16-7, 16-16
Vacuum Gauge	07404-0020000	Equivalent tool commercially available in U.S.A.	M937B-021-xxxxx (U.S.A. only)	3-9
Carburetor Synchronization wrench	07908-4220100			3-9
Carburetor Pilot Screw Wrench	07908-4220201			4-13
Hand Vacuum Pump (U.S.A. only)	ST-AH-260-MC7	Hand Vacuum Pump (U.S.A. only)	A973x-041-xxxxx	4-15
Valve Guide Driver Attachment	07943-4150000			6-9
Valve Guide Reamer, 6.6mm	07984-6570100	Valve Guide Reamer	07984-6110000	6-8,6-10
Valve Guide Driver, 6.6mm	07942-6570100	Valve Guide Drive	07742-0010200	6-9
Clutch Center Holder	07923-415000	Equivalent tool commercially available in U.S.A.		7-3, 7-8
Gear Holder	07924-MC70002	Gear Holder (modified)	07924-MC70000 07924-4150000	8-6, 10-3, 10-8, 12-6
Mecanical Seal Driver Attachment	07945-4150400	Mecanical Seal Installer (U.S.A. only)	GN-AH-065-415	9-11
Lock Nut Wrench, 17x27mm	07907-4150000 07907-MC70000	Equivalent tool commercially available in U.S.A.		10-3, 10-8
Crank cap Driver	07945-4150100			11-3, 12-15
Crank Cap Puller	07935-4150000	(Use with hydraulic press: U.S.A. only)		12-7
Piston Remover	07941-MC70000			12-3
Main Bearing Disassembly Tool	07973-MC70000			12-11, 12-13
Bearing Remover, 20mm Bearing Remover Handle Bearing Remover Weight	07936-3710600 07936-3710100 07936-3710200	 Bearing Remover Set	07936-3710000	11-8, 14-16
Snap Ring Pliers	07914-3230001	Equivalent tool commercially available		13-19, 13-23
Fork Seal Driver	07947-4630100			15-9, 13-22
Hex Wrench, 6mm	07917-3230000	Equivalent tool commercially available		13-18, 13-22
Steering Stem Driver	07946-MB00000	 Steering Stem Driver Attachment	07946-3710601 07064-MB00200	13-27 13-27
Ball Race Remover	07946-3710400			13-27, 13-28
Swing Arm Pivot Lock Nut Wrench	07908-ME90000			14-15, 14-18
Bearing Remover	07936-4150000	Bearing Remover	07936-3710500	14-16
Hex Head Wrench, 10mm	07917-3710000	Equivalent tool commercially available		14-15, 14-18
Attachment	07945-3330300			16-8, 16-9
Attachment	07947-6340201			16-6
Driver	07931-4630300	 Fork Seal Driver Attachment	07947-3710100 07746-0010200	15-11
Driver	07945-3710200	 Driver Attachment, 25mm I.D.	07746-0030100 07746-0030200	15-10
Timing Inspection Plug	07999-4150000			18-6


GENERAL INFORMATION
COMMON

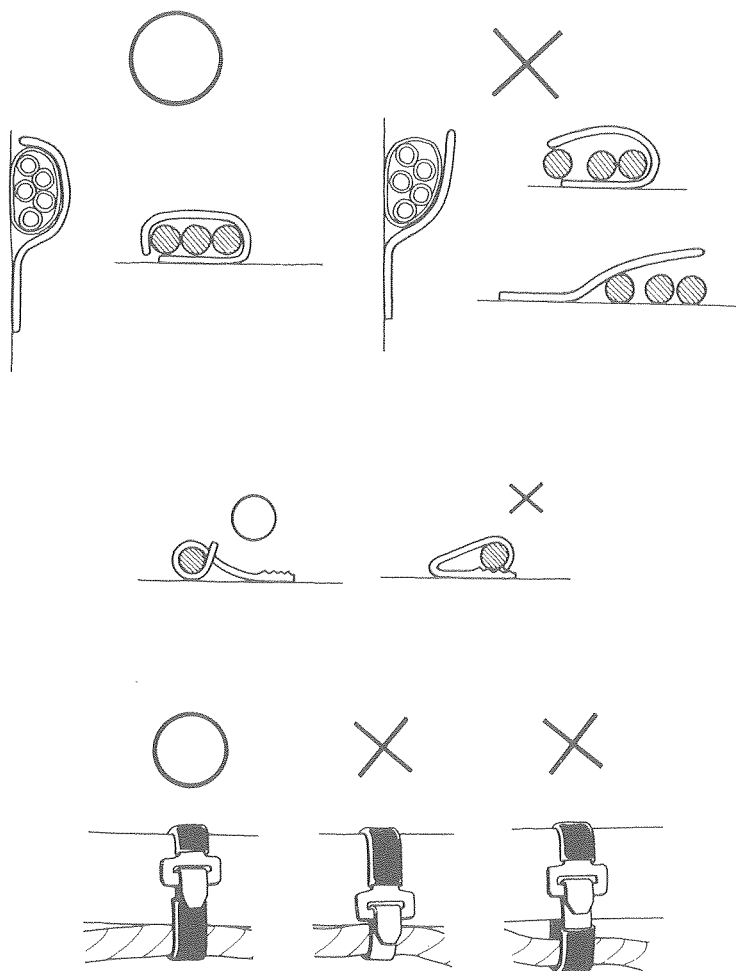
DESCRIPTION	NUMBER	ALTERNATIVE	NUMBER	REF. PAGE
Pin Spanner	07702-0010000	Steering Stem Socket	07916-3710100	13-26, 13-28
Float Level Gauge	07401-0010000			4-11
Valve Spring Compressor	07757-0010000	Valve Spring Compressor	97957-3290001	6-7, 6-13
Valve Adjuster Wrench, 10x12mm	07708-0030200	 Valve Adjuster	07908-3230000	3-8
Valve Adjuster B	07708-0030400			
Lock Nut Wrench, 26x30mm	07716-0020203	Lock Nut Wrench, 26x30mm	07716-0020202	7-3, 7-8
Extension	07716-0020500	Equivalent tool commercially available in U.S.A.		7-3, 7-8, 13-25, 13-29
Torx Driver Bit (T40)	07703-0010100			8-8
Piston Ring Compressor	07755-0010000			12-8
Lock Nut Wrench, 30x32mm	07716-0020400			13-25, 13-29
Bearing Remover Expander	07746-0050100			13-13, 14-5
Bearing Remover Corret, 15mm	07746-0050400			13-13
Bearing Remover Corret, 17mm	07746-0050500			14-5
Flywheel Puller	07733-0020001	Flywheel Puller	07933-3950000	8-6
Attachment, 32x35mm	07746-0010100			11-11, 14-16 16-9
Attachment, 42x47mm	07746-0010300			7-5, 8-10 11-11, 13-14 14-6, 16-2
Attachment, 52x55mm	07746-0010400			11-11, 15-9
Attachment, 62x68mm	07746-0010500			11-11
Pilot, 15mm	07746-0040300			13-14
Pilot, 17mm	07746-0040400			14-6
Pilot, 20mm	07746-0040500			11-11
Pilot, 25mm	07746-0040600			11-11
Pilot, 30mm	07746-0040700			16-6
Pilot, 22mm	07746-0041000			8-10
Driver	07749-0010000	Driver (May be used when pilot not used.)	07949-611000	7-5, 8-10 9-11, 11-11 13-14, 14-6 14-16, 15-5 16-8, 16-9 16-11, 15-12
Digital Circuit Tester (Kowa)	07411-0020000	Digital Multitester (U.S.A. only)	KS-AHM-32-003	18-2
Shock Absorber Compressor	07959-3290001			14-12, 14-14



CABLE & HARNESS ROUTING

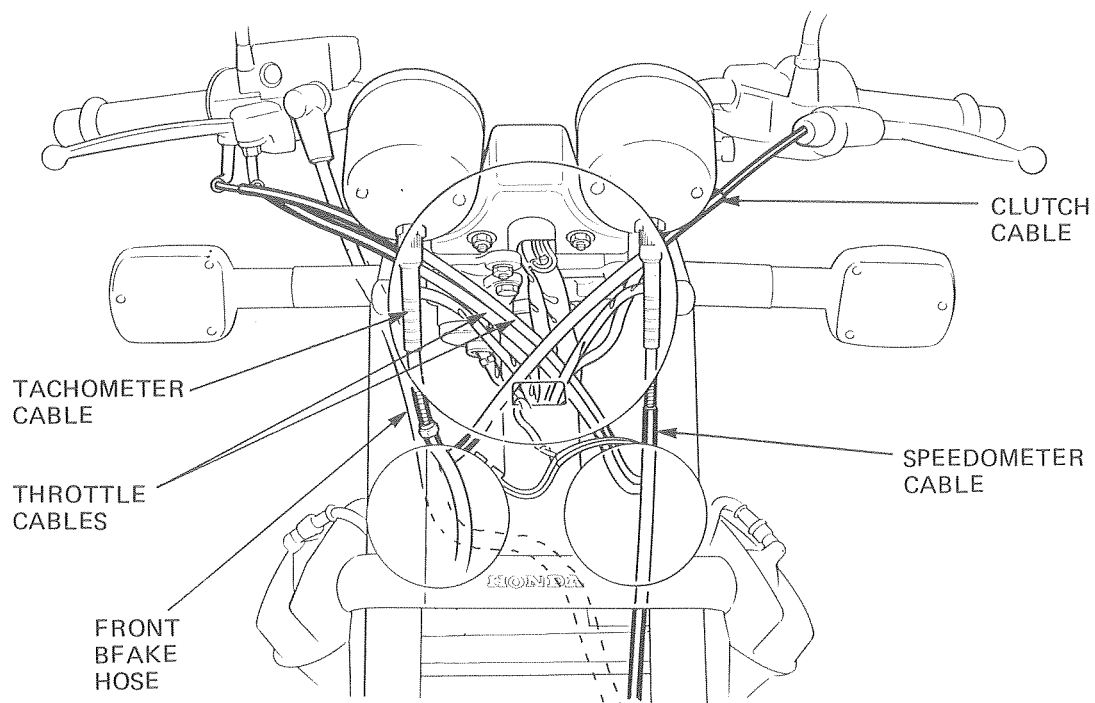
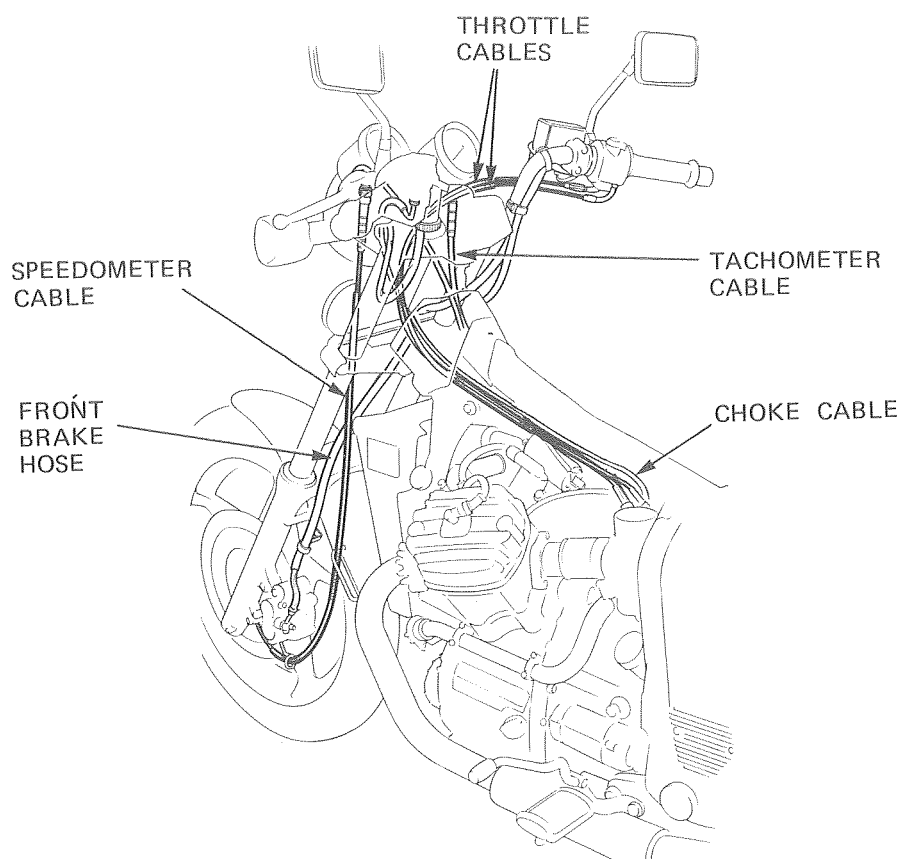
Note the following when routing cables and wire harnesses.

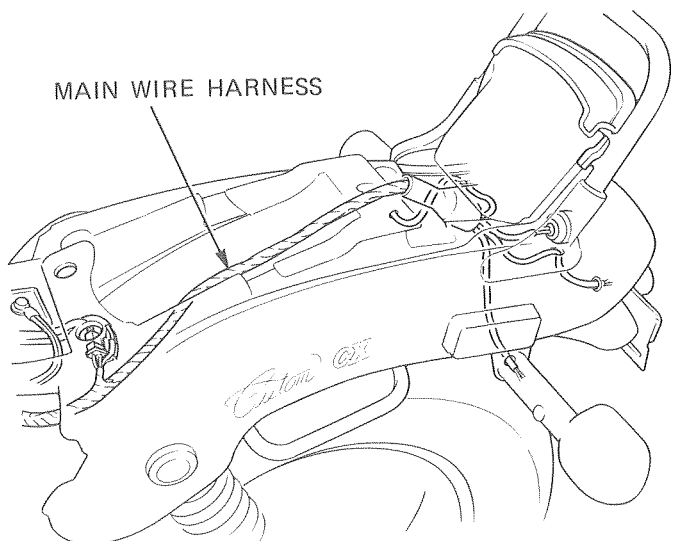
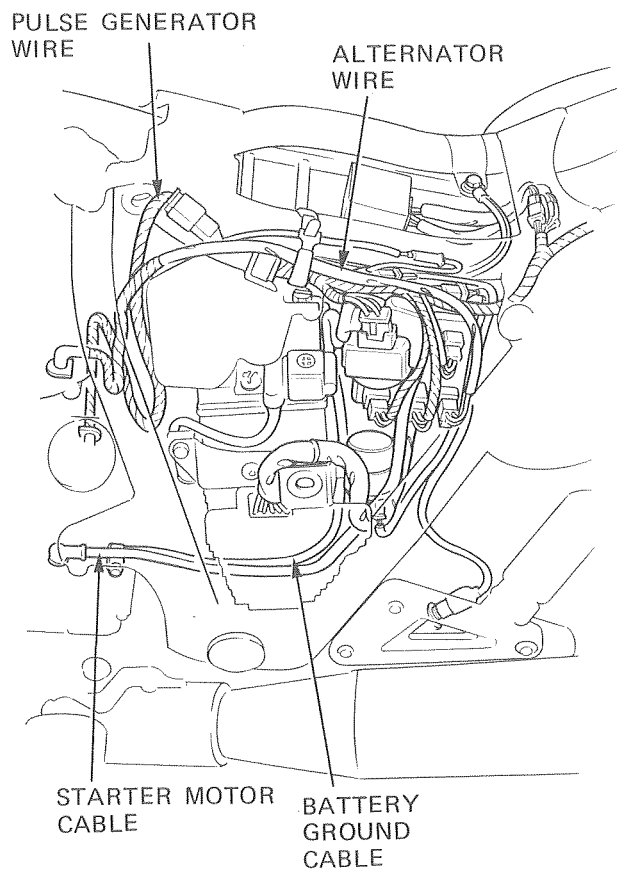
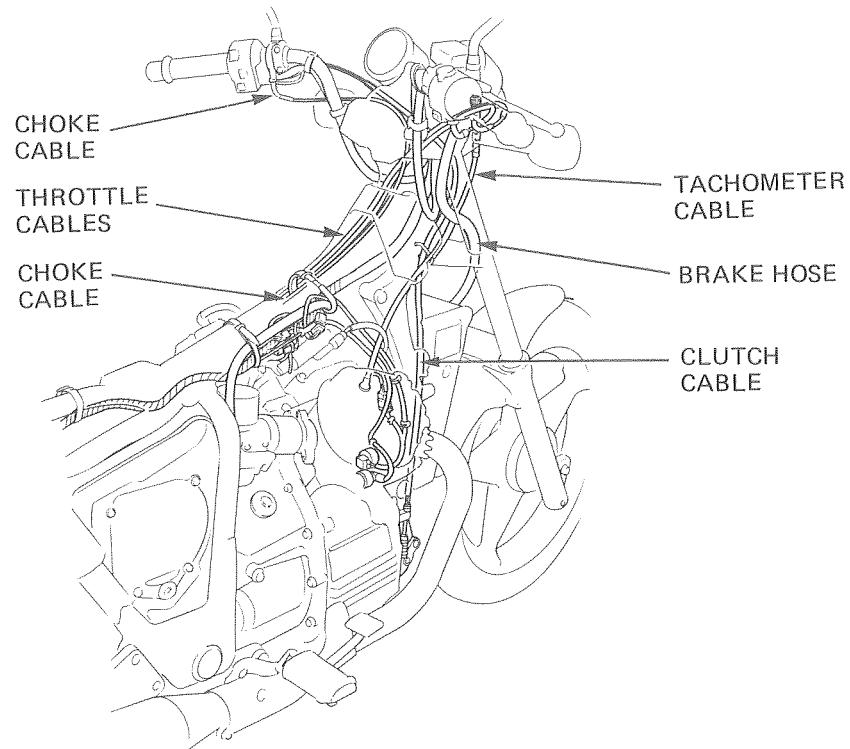
- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze wires against the weld or end of its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.
- Route harnesses so they are not pulled taut or have excessive slack.
- Protect wires and harnesses with electrical tape or tubes if they are contact a sharp edge or corner. Clean the attaching surface thoroughly before applying tape.
- Do not use wires or harnesses with a broken insulator. Repair by wrapping then with a protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners.
- Also avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipes and other hot parts.
- Be sure grommets are seated in their grooves properly.
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.





GENERAL INFORMATION







EMISSION CONTROL SYSTEM

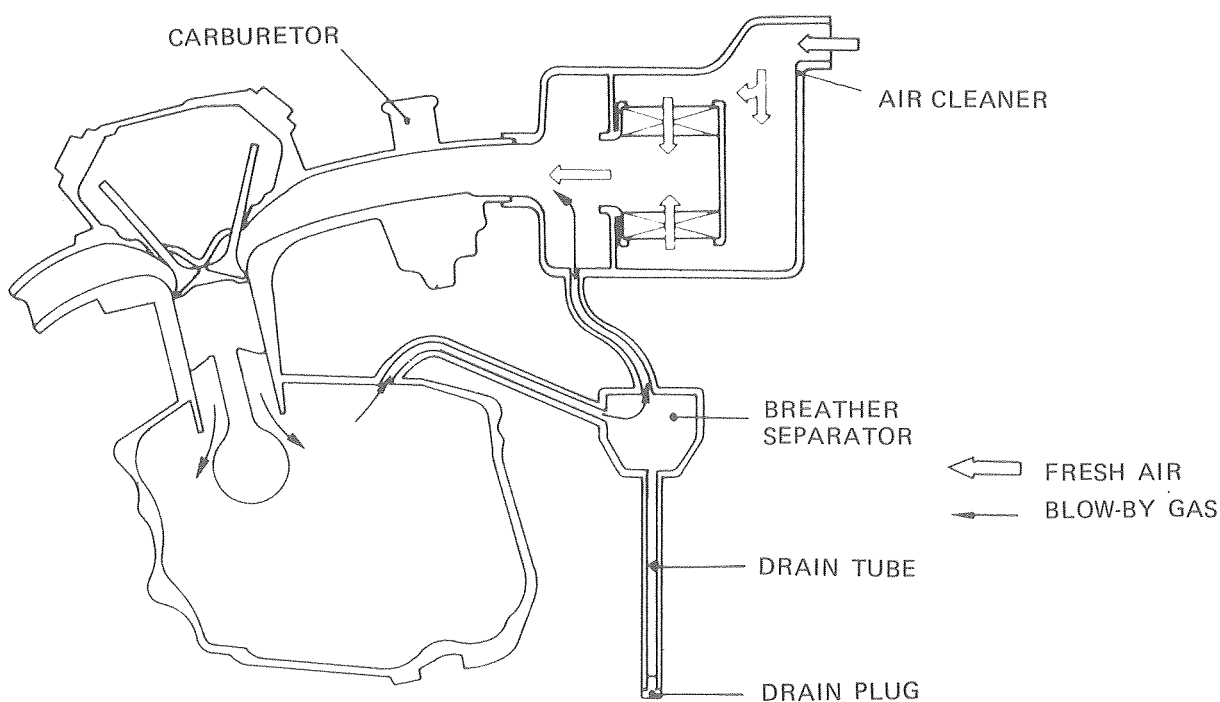
The CX650 CUSTOM is equipped with two emission control systems.

- **EXHAUST EMISSION CONTROL SYSTEM**

The exhaust emission control system is composed of a factory pre-set carburetor. No adjustment should be made except to the idle speed with the throttle stop screw.

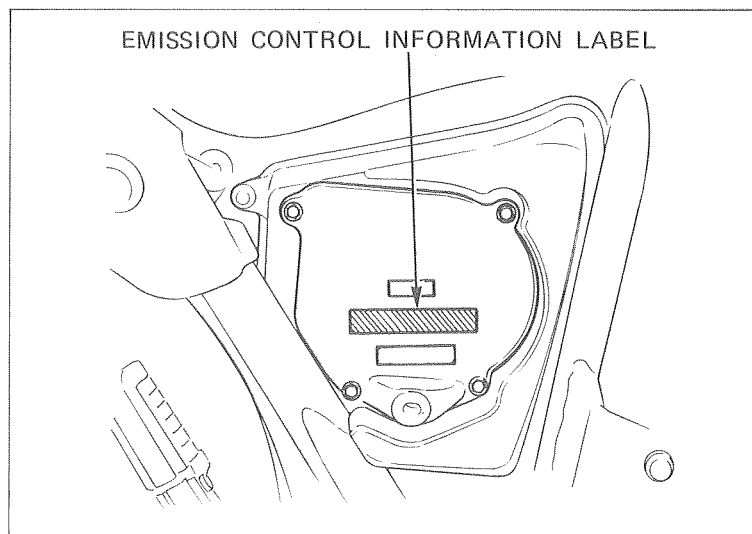
- **CRANKCASE EMISSION CONTROL SYSTEM**

The engine is equipped with a "closed crankcase system" to prevent crankcase emissions from entering the atmosphere. Blow-by gas is returned to the combustion chamber through the breather tube, separator and intake pipe.



EMISSION CONTROL INFORMATION LABEL

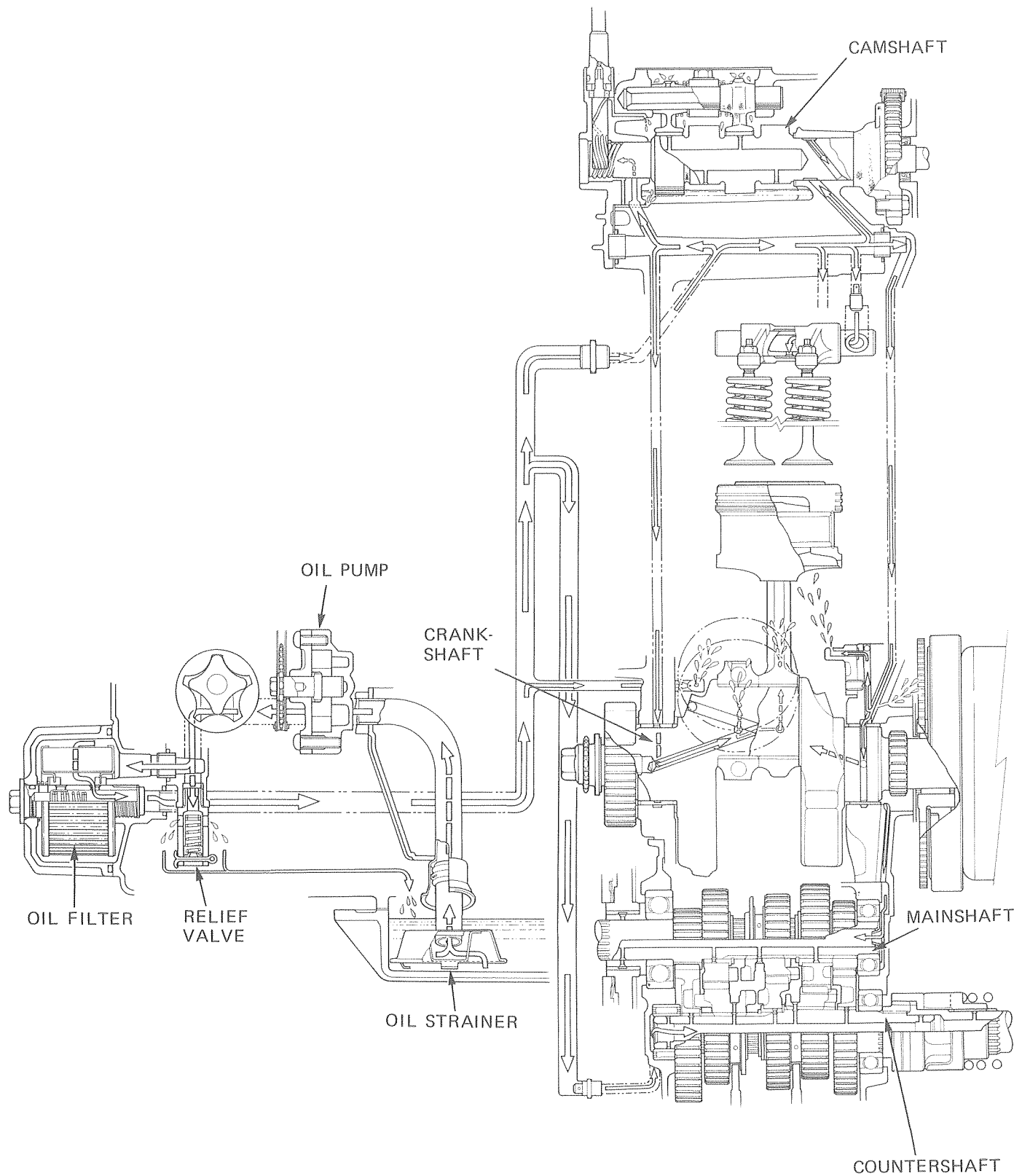
An Emission Control Information Label is attached to the air cleaner cover as shown. It gives basic tune-up specifications.





HONDA
CX650C

MEMO





SERVICE INFORMATION	2-1
TROUBLESHOOTING	2-1
ENGINE OIL LEVEL CHECK	2-2
ENGINE OIL & FILTER CHANGE	2-2
OIL STRAINER CLEANING	2-3
FINAL GEAR OIL CHECK/REPLACEMENT	2-4
CONTROL CABLE LUBRICATION	2-4
LUBRICATION POINTS	2-5

SERVICE INFORMATION

GENERAL

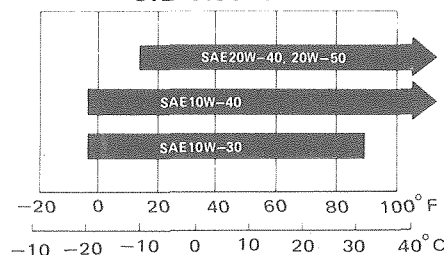
Oil pump	Refer to Section 7.
Oil pressure relief valve	Refer to Section 7.
Oil strainer	Refer to Section 7.

SPECIFICATIONS

Engine Oil

Oil capacity	3.1 lit (3.3 US qt, 2.7 Imp qt) at change 3.6 lit (3.8 US qt, 3.2 Imp qt) at disassembly
Oil recommendation	<p>Use Honda 4-Stroke Oil or equivalent. API Service Classification: SE or SF Viscosity: SAE 10W-40</p> <p>Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.</p>
Oil pump delivery	14.0-14.2 lit/min at 2,500 rpm

OIL VISCOSITIES



Final drive gear case

Oil capacity	160 – 180 cc (5.4 – 6.1 oz)			
Recommended oil	Hypoid gear oil	Above	5°C/41°F	SAE 90
		Below	5°C/41°F	SAE 80

TROUBLESHOOTING

Oil Level Too Low:

- External oil leaks.
- Worn piston rings.

Oil Contamination

- Oil or filter not changed often enough.
- Faulty head gasket.

Low Oil Pressure

- Faulty warning light switch.
- Pressure relief valve stuck open.
- Plugged oil pick-up screen.
- Oil pump worn.

High Oil Pressure:

- Pressure relief valve stuck closed.
- Plugged oil filter, gallery, or metering orifice.
- Incorrect oil being used.

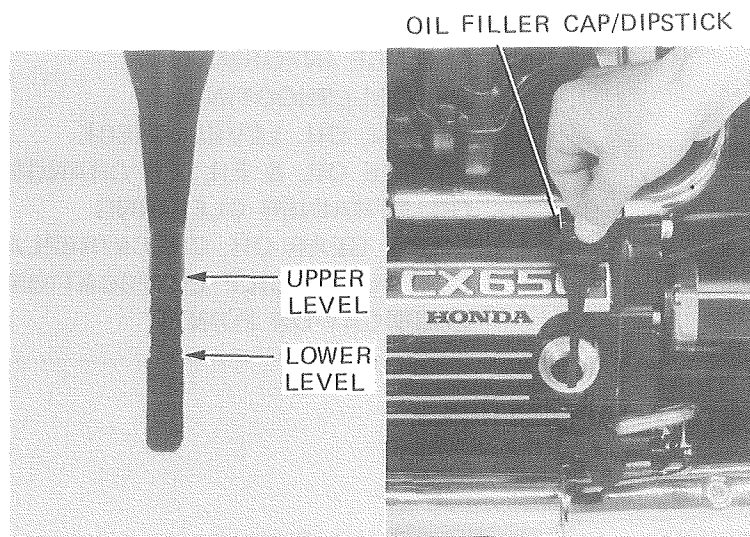
No Oil Pressure

- Oil level too low.
- Oil pump drive chain broken.
- Faulty oil pump.



ENGINE OIL LEVEL CHECK

Place the motorcycle on its center stand. Check the oil level with the filler cap/dipstick after 2–3 minutes. Do not screw in the cap when making this check. If the level is below the lower level mark on the dipstick, fill to the upper level mark with the recommended oil.



ENGINE OIL & FILTER CHANGE

NOTE

Engine oil change is performed with the engine at normal operating temperature and vehicle on its center stand to ensure complete and rapid draining.

Remove the oil filler cap.

Remove the drain plug to drain oil from the engine. Loosen the oil filter bolt and remove the oil filter element from the oil filter case. Check operation of the by-pass valve in the oil filter bolt.

Install a new oil filter element and retighten the oil filter bolt.

NOTE

Make sure that the O-ring on the filter bolt and the oil filter cover are not damaged and are in good condition.

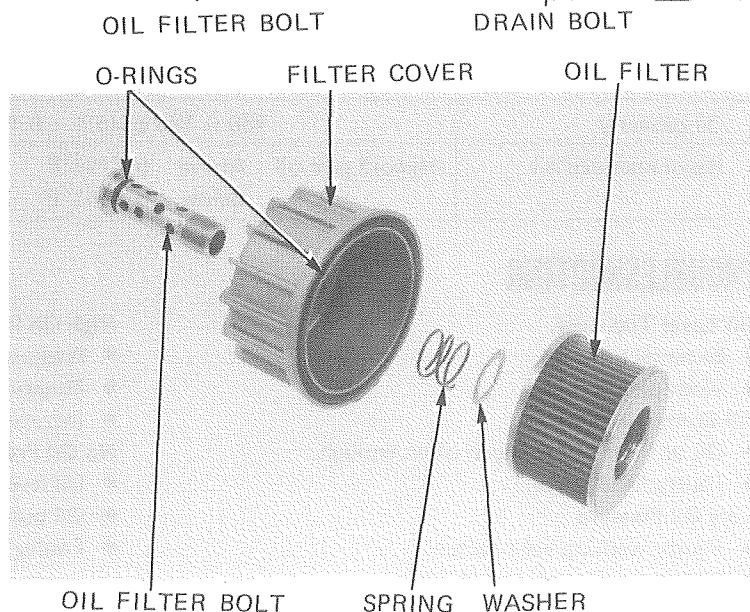
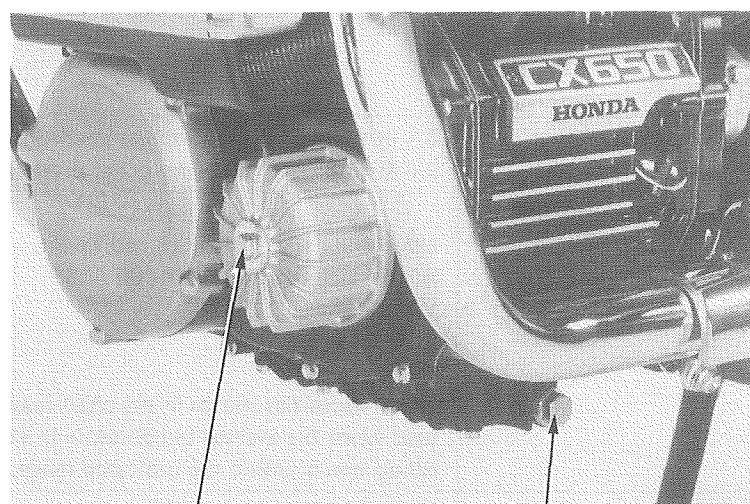
Torque the oil filter bolt.

TORQUE: 20–25 N·m
(2.0–2.5 kg·m, 14–18 ft-lb)

Reinstall the drain plug, making sure the sealing washer is in good condition. Fill the crankcase with 3.1 liters (3.3 U.S. qu) of recommended oil.

RECOMMENDED OIL: Use Honda 4-Stroke Oil or equivalent.
General, all temperatures : SAE 10W-40
API Service Classification : SE or SF

Start the engine and let it idle for a few minutes. Stop the engine, and make sure that the oil level is at the upper level mark, and that there are no oil leaks.





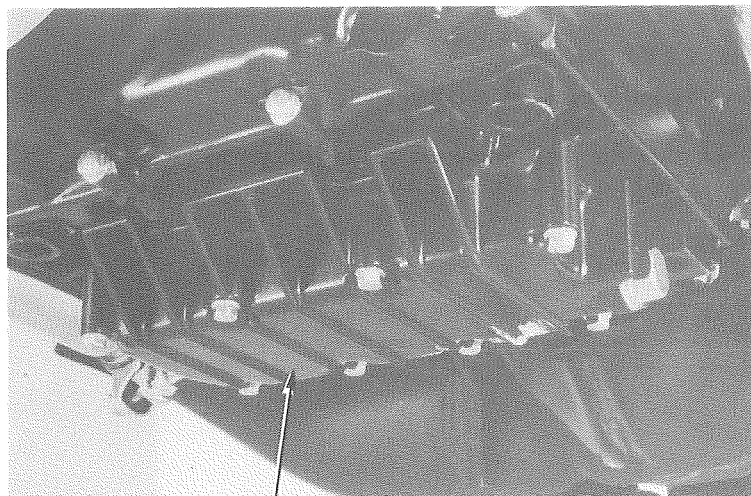
OIL STRAINER CLEANING

NOTE

The oil strainer can be removed with the engine mounted in the frame.

Drain the engine oil (page 2-2).

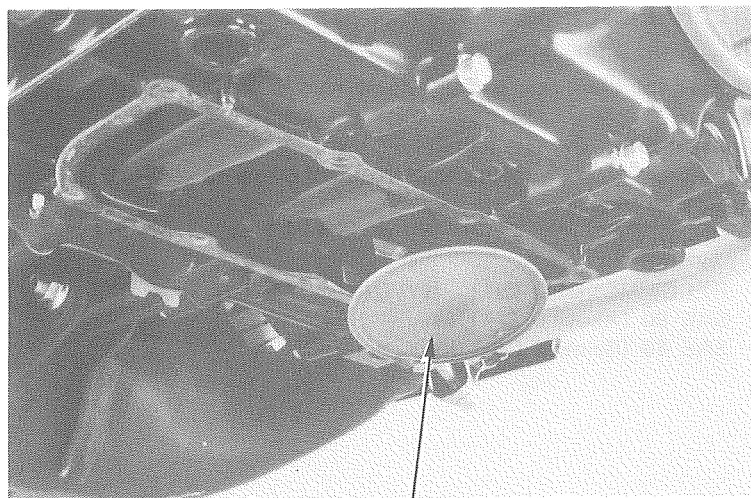
Remove the eight oil pan bolts and the oil pan.



OIL PAN

DRAIN BOLT

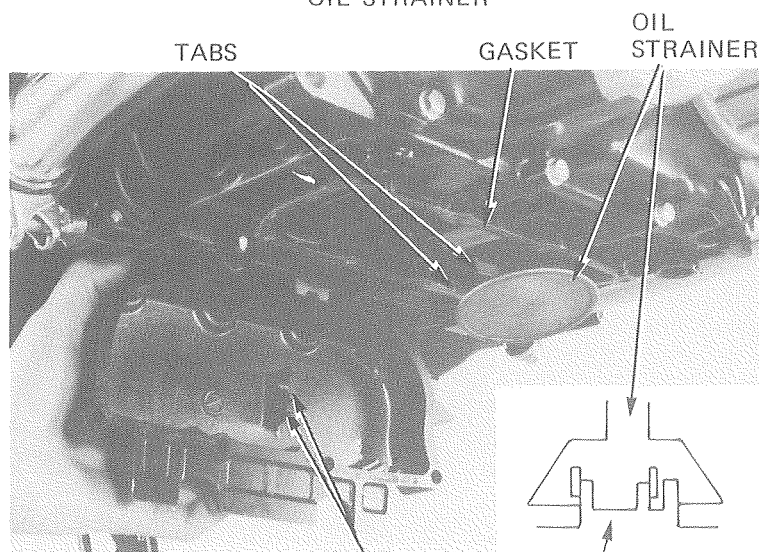
Remove the oil strainer from the oil pump.
Clean the oil strainer and oil pan thoroughly.
Make sure the O-ring on the oil strainer outlet pipe is in good condition and install the oil strainer.



OIL STRAINER

Replace the oil pan gasket with a new one.
Align the grooves of the oil pan with the tabs of the oil strainer and install the oil pan.

Fill the crankcase with recommended oil (page 2-1).



TABS

GASKET

OIL STRAINER

GROOVES

OIL PAN



FINAL GEAR OIL CHECK/REPLACEMENT

OIL LEVEL CHECK

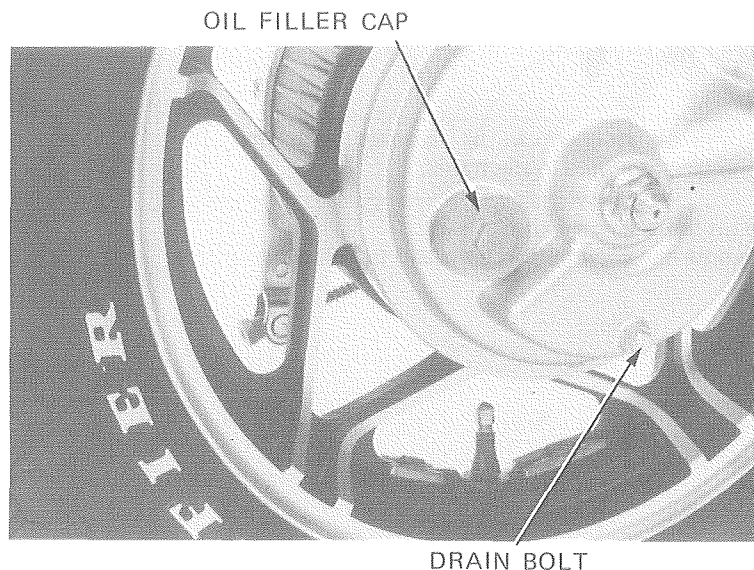
Place the motorcycle on its center stand.

Remove the oil filler cap.

Check that the final gear case is filled up to the lower edge of the oil filler cap hole.

NOTE

If the level is low, check for leaks. Pour fresh oil through the oil filler opening until it reaches the lower edge of the opening.



OIL REPLACEMENT

Remove the oil filler cap.

Remove the drain bolt to drain all oil from the final gear case.

Reinstall the drain bolt securely.

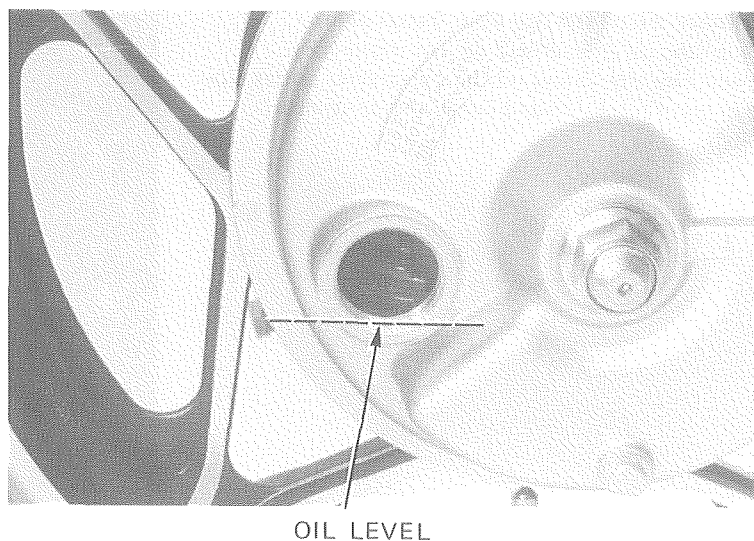
Fill the gear case with the recommended oil up to the correct level.

OIL CAPACITY: 160–180 cc (5.4–6.1 oz)

RECOMMENDED OIL: HYPOID GEAR OIL

SAE 90 (Above 5°C/41°F)

SAE 80 (Below 5°C/41°F)

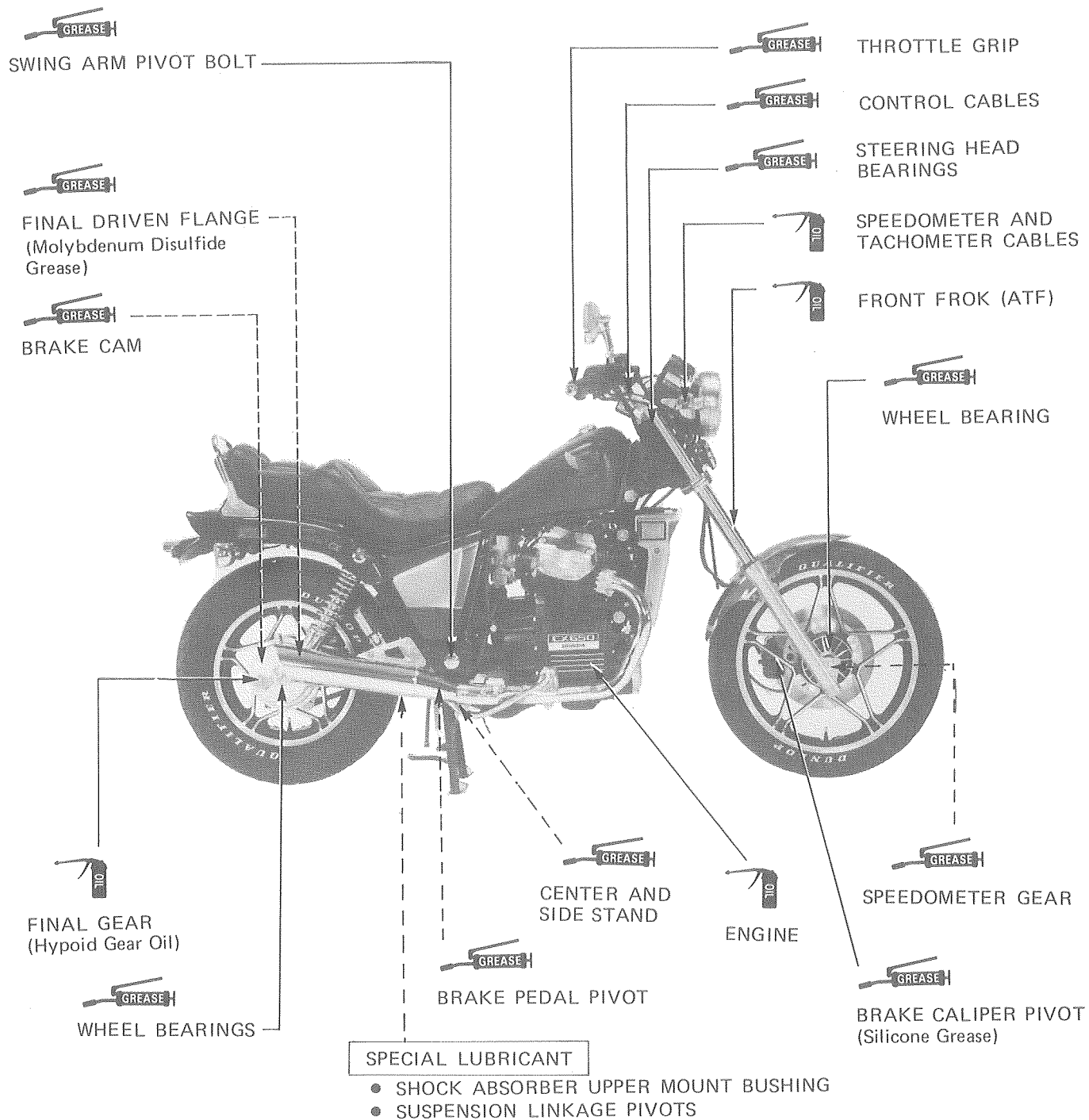


CONTROL CABLE LUBRICATION

Periodically, disconnect the throttle and clutch cables at their upper ends. Thoroughly lubricate the cables and their pivot points with a commercially available cable lubricant.



LUBRICATION POINTS



CAUTION

Apply paste grease containing more than 45% molybdenum, such as:

- Molykote® G-n PASTE manufactured by Dow Corning, U.S.A.
- Rocol Paste® manufactured by Sumico Lubricant Co. Ltd., Japan.
- Other lubricants of equivalent quality.



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CX650C

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SERVICE INFORMATION	3-1	COOLING SYSTEM HOSES	3-11
MAINTENANCE SCHEDULE	3-3	<CHASSIS>	
<ENGINE>		BATTERY	3-11
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SERVICE INFORMATION

GENERAL

- Engine oil See page 2-2
- Engine oil filter See page 2-2
- Final drive gear oil See page 2-4

SPECIFICATIONS

<Engine>

Spark plug: Recommended spark plug

	Standard	For extended high speed riding
NGK	DPR8EA-9	DPR9EA-9
ND	X24EPR-U9	X27EPR-U9

Plug gap	: 0.8-0.9 mm (0.031-0.035 in)
Ignition timing:	
"F" mark	: 15° BTDC at 1,100 rpm
Full advance	: 40 ± 1.5° BTDC at 3,500 rpm
Valve clearance, IN	: 0.10 mm (0.004 in)
EX	: 0.12 mm (0.005 in)
Throttle free play	: 2 - 6 mm (0.08 - 0.24 in)
Idle speed	: 1,100 ± 100 rpm
Vacuum pressure difference	
between carburetors	: 40 mm (1.6 in) Hg
Cylinder compression	: 1,200 ± 200 kPa (12 ± 2 kg/cm ² , 171 ± 28 psi)
Clutch free play	: 10 - 20 mm (3/8 - 3/4 in)



CHASSIS

Rear brake pedal free play: 20 – 30 mm (3/4 – 1/4 in)

Tires

Tire size		Front	Rear
		100/90-19 57H	1400/90-15 70H
Cold tire pressures kPa (kg/cm ² , psi)	Up to 90 kg (200 lbs) load	225 (2.25, 32)	225 (2.25, 32)
	90 kg (200 lbs) load to vehicle capacity load	225 (2.25, 32)	280 (2.80, 40)
Tire brand	BRIDGESTONE	L303	G508
	DUNLOP	F11	K627

Suspension air pressure: 0 – 40 kPa (0 – 0.4 kg/cm², 0 – 6 psi)

TOOLS

Special

Vacuum gauge

07404–0020000 or M937B–021–XXXXX (USA only)

Carburetor synchronization wrench

07908–4220201

Common

Valve adjusting wrench, 10 x 12 mm

07708–0030200

Valve adjuster B

07708–0030400 or 07908–3230000 or commercially available in U.S.A.



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

A : ADJUST

L : LUBRICATE

		FREQUENCY	WHICHEVER COMES FIRST ↓	ODOMETER READING (NOTE 3)								
				EVERY	600mi (1,000km)	4 000mi (6,400km)	8 000mi (12,800km)	12,000mi (19,200km)	16,000mi (25,600km)	20,000mi (32,000km)	24,000mi (38,400km)	Refer to page
EMISSION RELATED ITEMS	*	FUEL LINES				I		I		I	3—4	
	*	FUEL STRAINER		C	C	C	C	C	C	C	3—4	
	*	THROTTLE OPERATION		I		I		I		I	3—4	
	*	CARBURETOR-CHOKE				I		I		I	3—5	
		AIR CLEANER	NOTE 1			C	R	C	R	C	R	3—6
		CRANKCASE BREATHER	NOTE 2			C	C	C	C	C	C	3—7
		SPARK PLUGS			R	R	R	R	R	R	R	3—7
	*	VALVE CLEARANCE		I	I	I		I		I	3—8	
		ENGINE OIL	YEAR	R		R		R		R	2—2	
		ENGINE OIL FILTER	YEAR	R		R		R		R	2—2	
	*	CARBURETOR-SYNCHRONIZATION		I		I		I		I	3—9	
	*	CARBURETOR-IDLE SPEED		I	I	I	I	I	I	I	3—10	
		RADIATOR COOLANT				I		I		*R	3—10	
	*	RADIATOR CORE				I		I		I	3—10	
NON-EMISSION RELATED ITEMS	*	COOLING SYSTEM, HOSES & CONNECTIONS		I		I		I		I	3—11	
		FINAL DRIVE OIL				I		I		R	2—4	
		BATTERY	MONTH	I	I	I	I	I	I	I	3—11	
		BRAKE FLUID (FRONT)	MONTH I 2 YEARS *R	I	I	I	I	I	I	*R	3—11	
		BRAKE SHOE/PAD WEAR			I	I	I	I	I	I	3—12	
		BRAKE SYSTEM (REAR)		I		I		I		I	3—12	
	*	BRAKE LIGHT SWITCH		I		I		I		I	3—13	
	*	HEADLIGHT AIM		I		I		I		I	3—13	
		CLUTCH		I	I	I	I	I	I	I	3—14	
		SIDE STAND				I		I		I	3—14	
	*	SUSPENSION		I		I		I		I	3—15	
	*	NUTS, BOLTS, FASTENERS		I		I		I		I	3—16	
	**	WHEELS		I		I		I		I	3—16	
	**	STEERING HEAD BEARING		I		I		I		I	3—16	

* SHOULD BE SERVICED BY AN AUTHORIZED HONDA DEALER, UNLESS THE OWNER HAS PROPER TOOLS AND SERVICE DATA AND IS MECHANICALLY QUALIFIED.

** IN THE INTEREST OF SAFETY, WE RECOMMEND THESE ITEMS BE SERVICED ONLY BY AN AUTHORIZED HONDA DEALER.

NOTES: 1. Service more frequently when riding in dusty areas.

2. Service more frequently when riding in rain or at full throttle.

3. For higher odometer readings, repeat at the frequency interval established here.



FUEL LINES

Make sure that the fuel lines and connections are not deteriorated, damaged or leaking. Replace any parts which show signs of deterioration, damage or leakage.

FUEL STRAINER

Turn the fuel valve OFF.

Remove the fuel cup, O-ring and filter screen, draining the gasoline into a suitable container.

WARNING

Gasoline is flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks near the equipment while draining fuel.

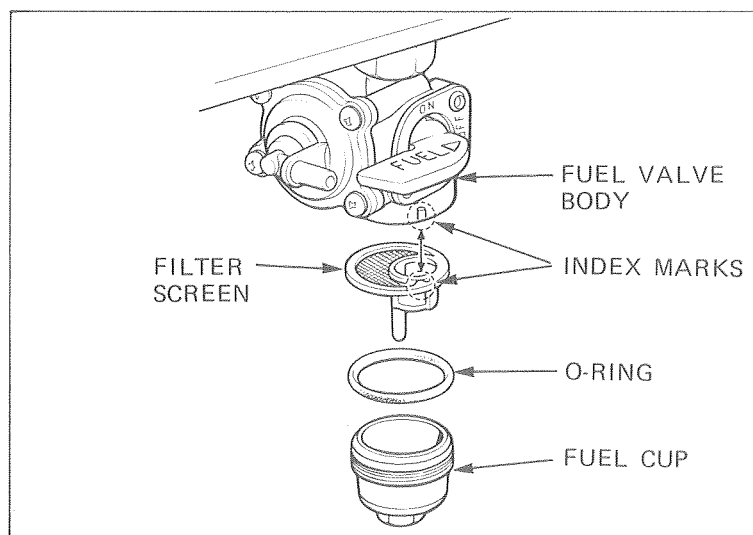
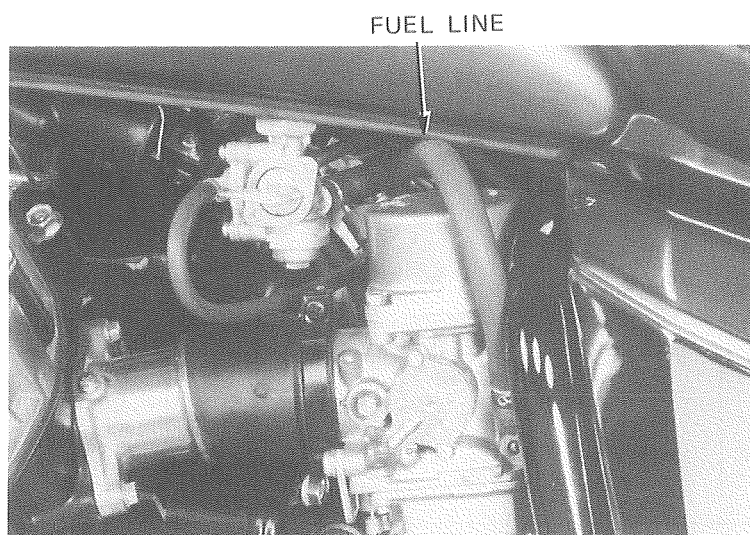
Wash the fuel cup and filter screen in clean non-flammable or high flash point solvent.

Reinstall the filter screen, aligning the index marks on the fuel valve body and the filter screen. Install a new O-ring into the fuel valve body.

Reinstall the fuel cup, making sure the new O-ring is in place. Finger-tighten the cup first, then torque it to specification.

TORQUE: 3–5 N·m (0.3–0.5 kg·m, 2–4 ft·lb)

After installing, turn the fuel valve ON and check that there are no fuel leaks.



THROTTLE OPERATION

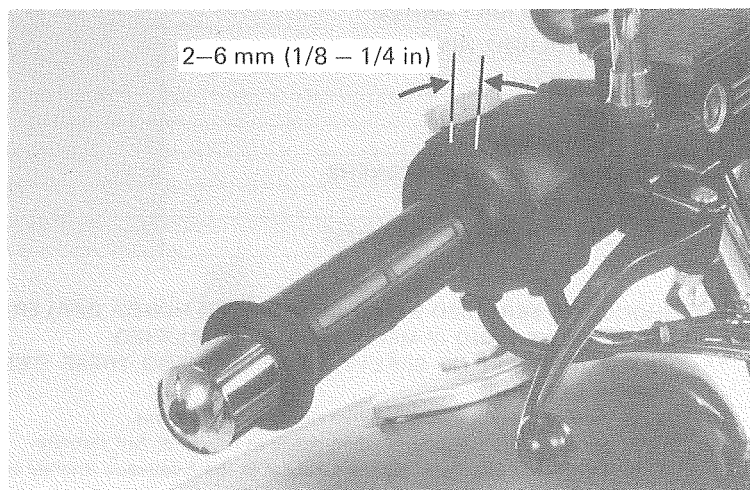
NOTE

The accelerator pump may flood the engine during this inspection.

Check for smooth throttle grip rotation from fully closed to fully open positions at all steering positions. Lubricate the cables if throttle grip operation is not smooth.

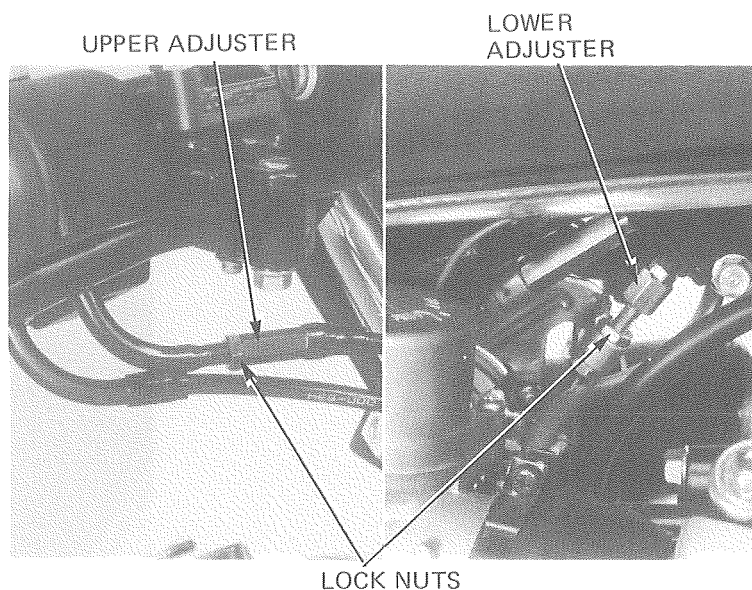
Check that there is no deterioration, damage, or kinks in the throttle cables, and that the throttle grip free play is **2–6 mm (1/8–1/4 in)** on the outer edge of the throttle grip flange.

Check that the throttle grip automatically returns from fully open to fully closed position when released. Adjust or replace, if necessary.





Throttle grip free play can be adjusted at either end of the throttle PULL cable. Major adjustments are made at the lower adjuster on the carburetor. Minor adjustments must be made at the upper adjuster. Adjust by loosening the adjuster lock nut and turning the adjuster. Tighten the lock nut. Recheck throttle operation.



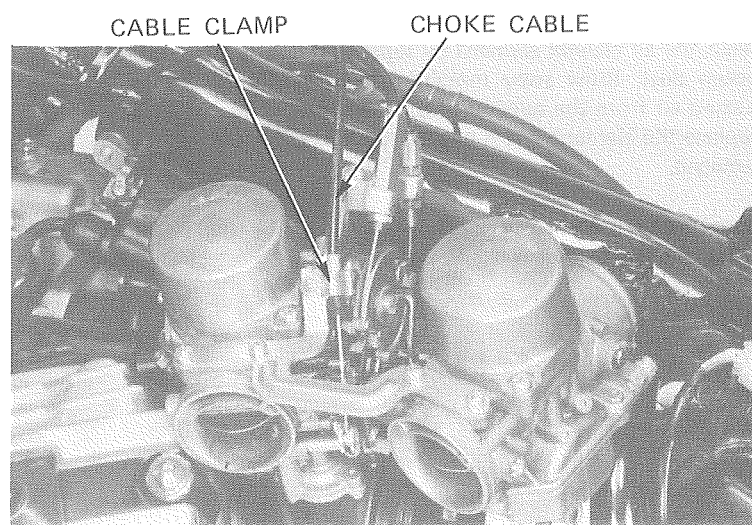
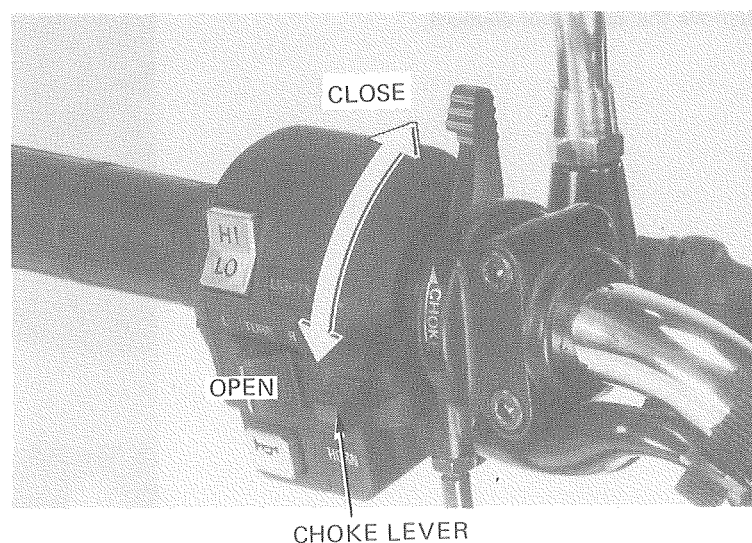
CARBURETOR CHOKE

Check for smooth upper choke lever operation. Lubricate the choke cable, if the operation is not smooth.

Push the choke lever on the handlebar all the way up to fully closed. Make sure the choke valve is closed by trying to move the choke lever on the carburetor, after removing the fuel tank. There should be no free play.

Adjust if necessary, by removing the carburetors (page 4-2) and loosening the choke cable clamp on the carburetor and moving the choke cable casing so the choke lever is fully closed. Tighten the clamp.

Pull the choke lever all the way down to fully open. Make sure the choke valve is fully open by checking for free play in the cable between the lever on the carburetor and cable casing. Reinstall the removed parts in the reverse order of removal.

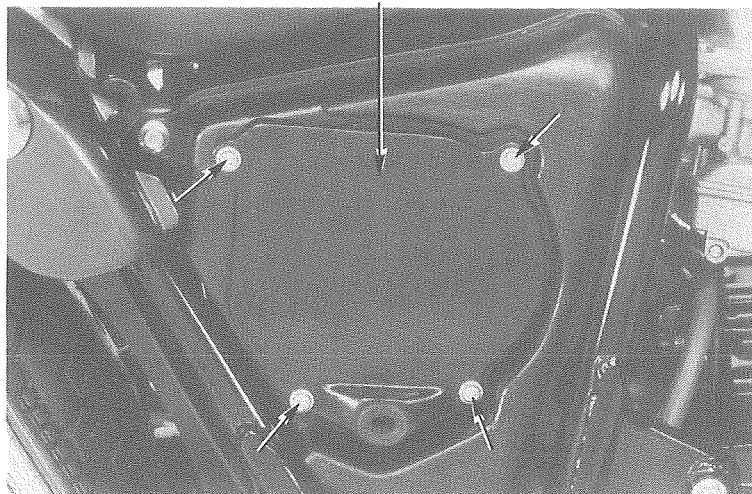




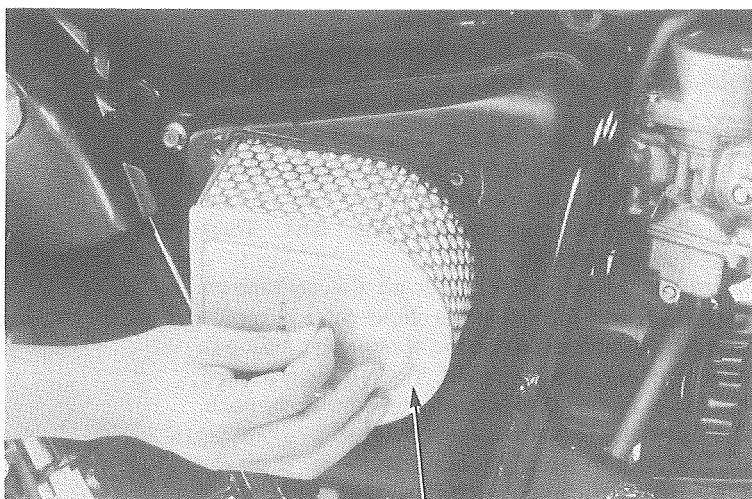
AIR CLEANER

Remove the right side cover.
Remove the air cleaner cover screws and cover.

AIR CLEANER COVER



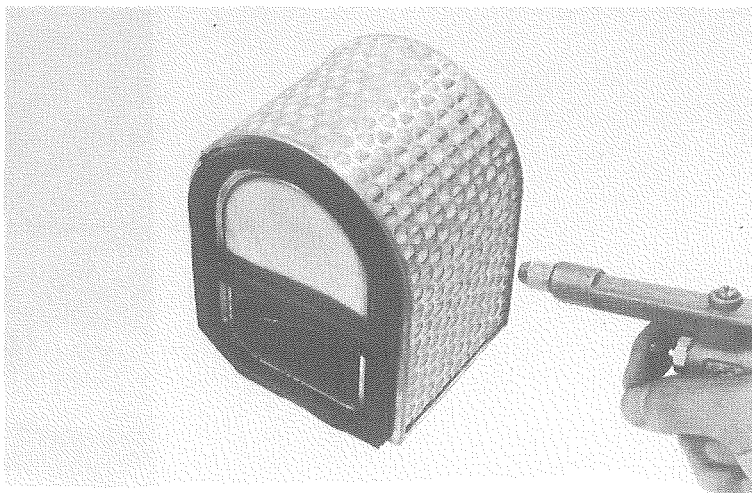
Remove the air cleaner element.



AIR CLEANER ELEMENT

Clean the air cleaner element by tapping it lightly to loosen dust. Blow away remaining dust with compressed air from the outside of the element. Replace the element if it is excessively dirty, torn or damaged.

Install element and cover.
Install the right side cover.





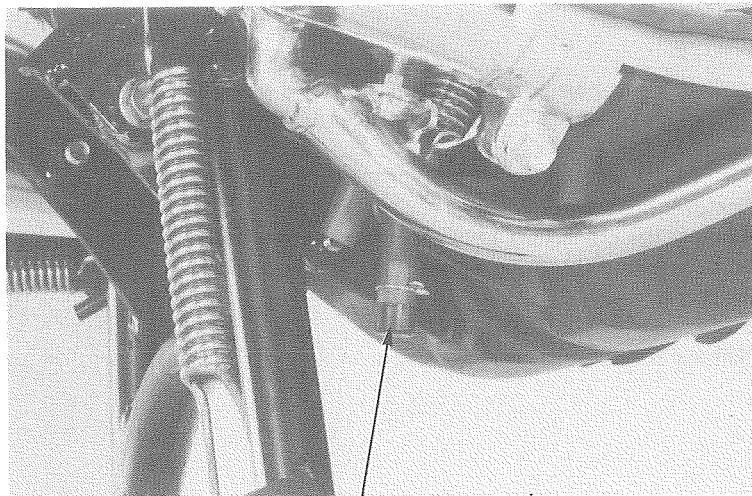
CRANKCASE BREATHER

Remove the plug from the drain tube to empty deposits.

Install the drain plug.

NOTE

Service more frequently when ridden in rain, or at full throttle or if the deposit level can be seen in the transparent section of the drain tube.



DRAIN PLUG

SPARK PLUGS

RECOMMENDED SPARK PLUGS:

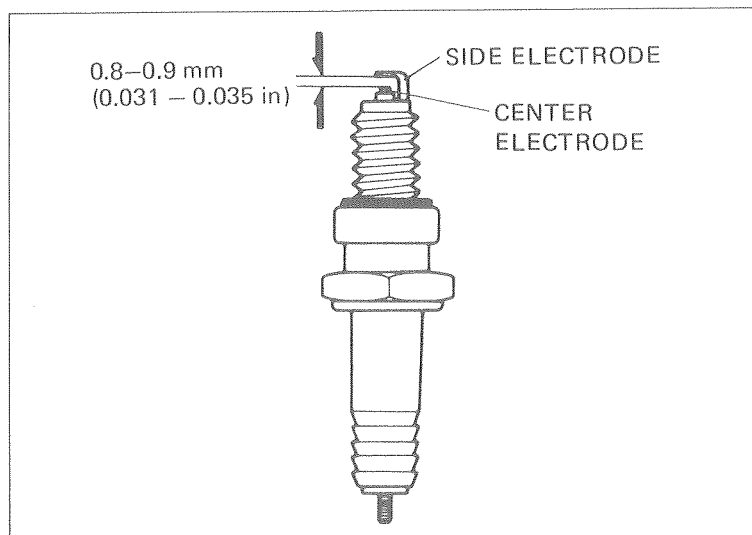
	Standard	For extended high speed riding
NGK	DPR8EA-9	DPR9EA-9
ND	X24EPR-U9	X27EPR-U9

Disconnect the spark plug caps.
Clean any dirt from around the spark plug base.
Remove and discard the spark plugs.
Measure the new spark plug gaps using a wire-type feeler gauge.

SPARK PLUG GAP:

0.8–0.9 mm (0.031–0.035 in)

Adjust by bending the side electrode carefully.
With the plug washer attached, thread the spark plugs in by hand to prevent cross-threading. Tighten the spark plugs another 1/2 turn with a spark plug wrench to compress the plug washer.
Connect the spark plug caps.





MAINTENANCE

VALVE CLEARANCE

NOTE

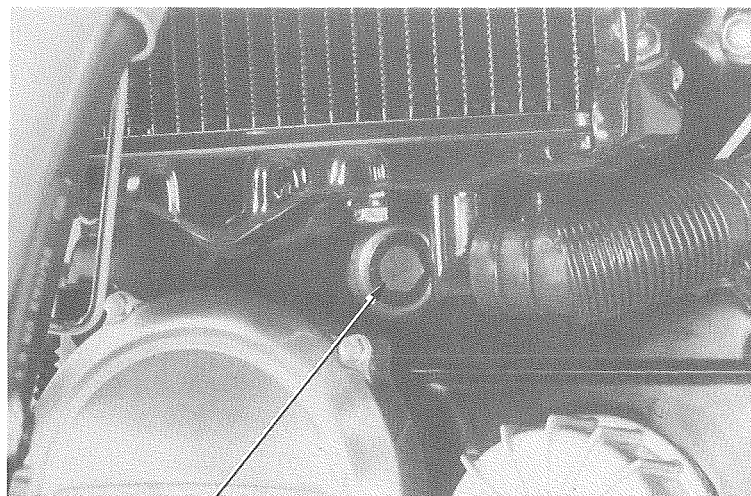
This inspection and adjustment must be performed while the engine is cold (below 35°C, 95°F).

Remove the radiator cover.

Remove the crankshaft hole cap from the transmission cover and the timing inspection hole cap from the rear cover.

Disconnect the spark plug caps.

Remove the cylinder head covers.



CRANKSHAFT

VALVE ADJUSTER 07708-0030400 OR
07908-3230000, OR COMMERCIALLY
AVAILABLE IN U.S.A.

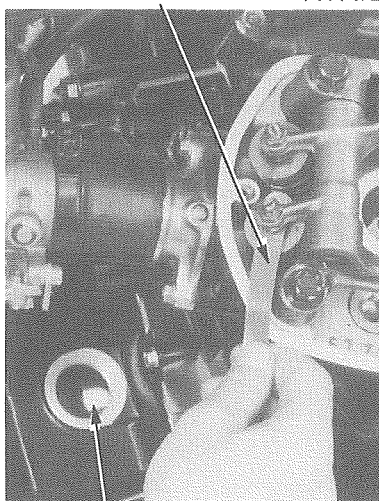
FEELER GAUGE

Turn the crankshaft clockwise and align the "TL" mark on the rotor with the index mark. The left piston must be at T.D.C. of the compression stroke. Check the intake and exhaust valve clearances of the left cylinder by inserting a feeler gauge between the clearance adjusting screw and valve stem.

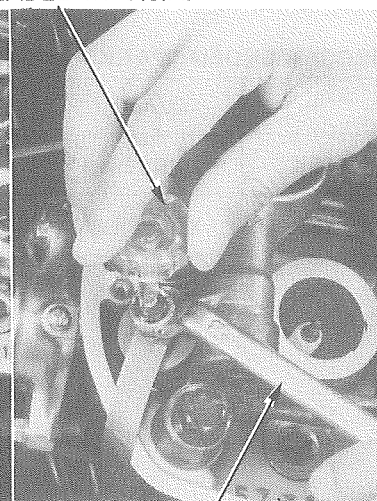
VALVE CLEARANCE

IN : 0.10 mm (0.004 in)

EX : 0.12 mm (0.005 in)



TIMING INSPECTION
HOLE



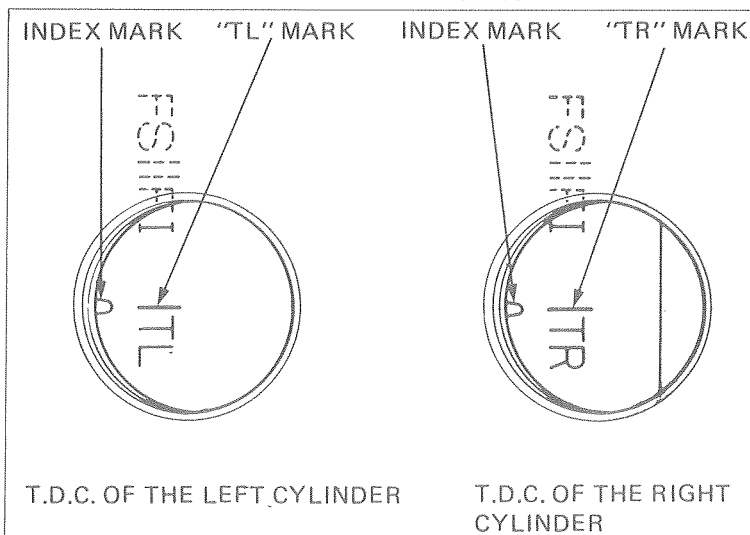
VALVE ADJUSTING
WRENCH, 10 x 12 mm
07708-0030400

Adjust, by loosening the lock nut, and turning the screw until there is a slight drag on the feeler gauge. Hold the screw and tighten the lock nut.

TORQUE: 20-25 N·m (2.0-2.5 kg-m,
14-17 ft-lb)

Recheck the valve clearances.

Turn the crankshaft clockwise and align the "TR" mark on the rotor with the index mark. The right piston must be at T.D.C. of the compression stroke. Check the intake and exhaust valve clearance of the right cylinder as described for the left cylinder.





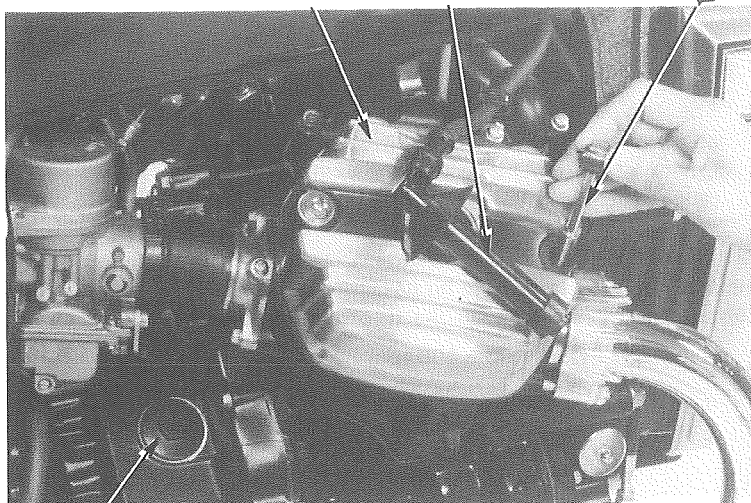
Install the removed parts in the reverse order of disassembly.

NOTE

Coat the cylinder head cover bolt rubbers with oil before tightening.

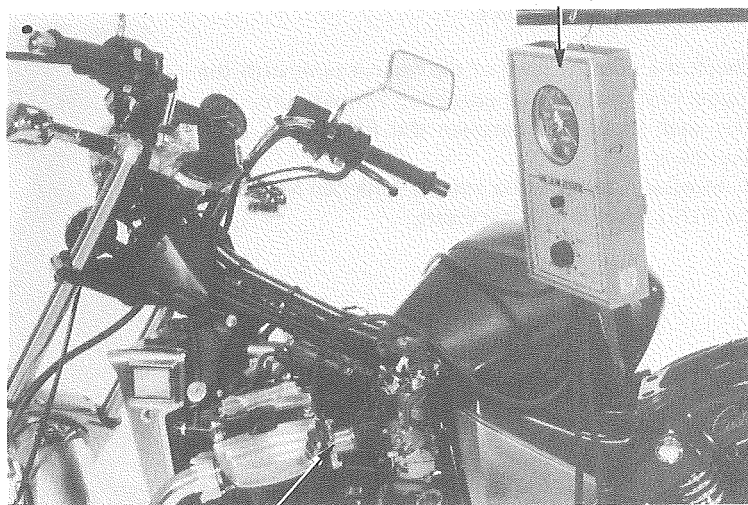
CYLINDER HEAD COVER

SPARK PLUG
CAP



TIMING
INSPECTION CAP

VACUUM GAUGE 07404-0020000 OR
M937B-021-XXXXX (U.S.A. ONLY)



CARBURETOR-SYNCHRONIZATION

NOTE

This adjustment is performed with engine at normal operating temperature, transmission in neutral, and the motorcycle on its center stand.

Prepare a longer fuel tube and connect it between the fuel tank and carburetor. Position the tank higher than normal.

Remove the screw plugs from the carburetor intake pipe and install the vacuum gauge adapters. Connect the vacuum gauges.

Apply vacuum of 12–20 mm Hg (0.5–0.8 in Hg.) to the fuel valve vacuum tube.

Start the engine and adjust the idle speed to **1,100 ± 100 rpm**.

The difference of vacuum between cylinders should be less than **40 mm (1.6 in) Hg**.

Loosen the adjusting screw lock nut.

Balance the vacuum between cylinders to within **40 mm (1.6 in) Hg** of each other, by turning the adjusting screw with tool 07908-4220100.

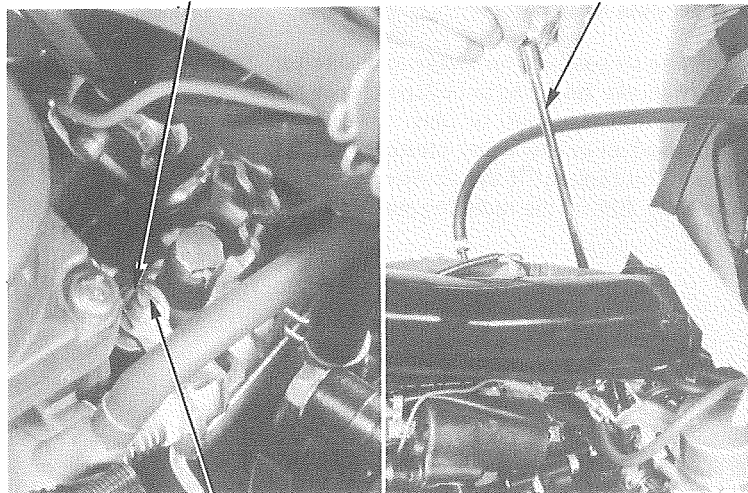
Hold adjusting screw, and tighten the lock nut.

Recheck the synchronization and idle speed. Remove the adaptors and install the carburetor intake pipe plugs.

Reinstall the fuel tank and seat.

CARBURETOR SYNCHRONIZATION
WRENCH 07908-4220100

LOCK NUT



ADJUSTING SCREW



CARBURETOR-IDLE SPEED

NOTE

The engine must be warm for accurate idle adjustment. Ten minutes of stop and go driving is sufficient; when the temperature gauge needle is in the wide white line.

Warm up the engine, place the transmission in neutral and the motorcycle on its center stand. Adjust the idle speed with the throttle stop screw.

IDLE SPEED: 1,100 ± 100 rpm



THROTTLE STOP SCREW

RADIATOR COOLANT

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

If necessary, remove the reserve tank cap and fill to the FULL level line, if necessary.

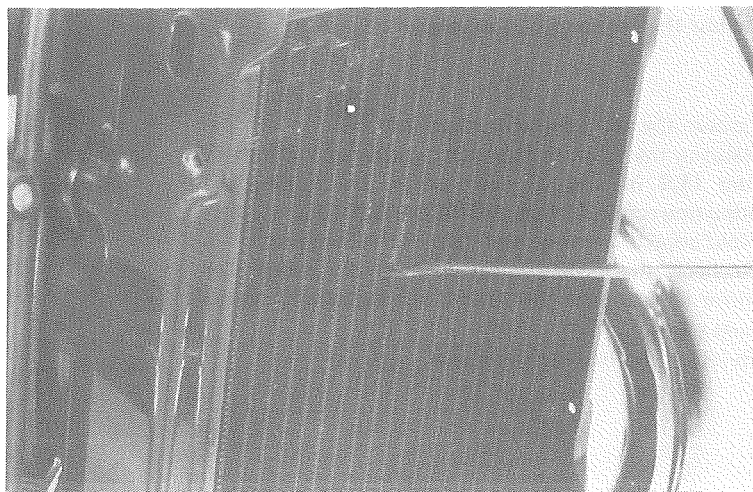


"FULL" MARK

"LOW" MARK

RADIATOR CORE

Check the air passages for clogging or damage. Straighten any bent fins or collapsed core tubes. Remove insects, mud or any obstructions with compressed air or low water pressure. Replace the radiator if the air flow is restricted over more than 20% of the radiating surface.



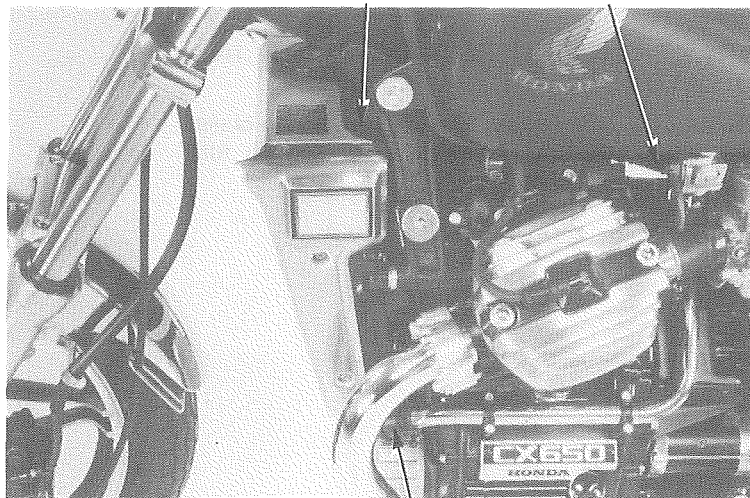


COOLING SYSTEM HOSES

Inspect the hoses for cracks, deterioration or leaks, and replace if necessary. Check the hose clamps, and tighten if necessary.

UPPER WATER HOSE

BY-PASS
HOSE



LOWER WATER HOSE

BATTERY

Remove the left side cover.

Inspect the battery electrolyte level. When the electrolyte level nears the lower level mark, fill with distilled water to the upper level mark.

If sulfation forms on the battery walls or sediments (paste) accumulate on the bottom of the battery, replace the battery.

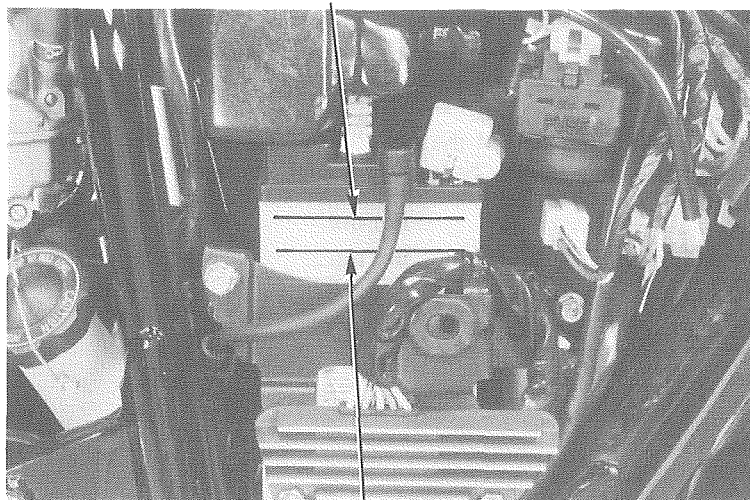
NOTE

Add only distilled water. Tap water will shorten the service life of the battery.

WARNING

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.

UPPER LEVEL LINE



LOWER LEVEL LINE

BRAKE FLUID

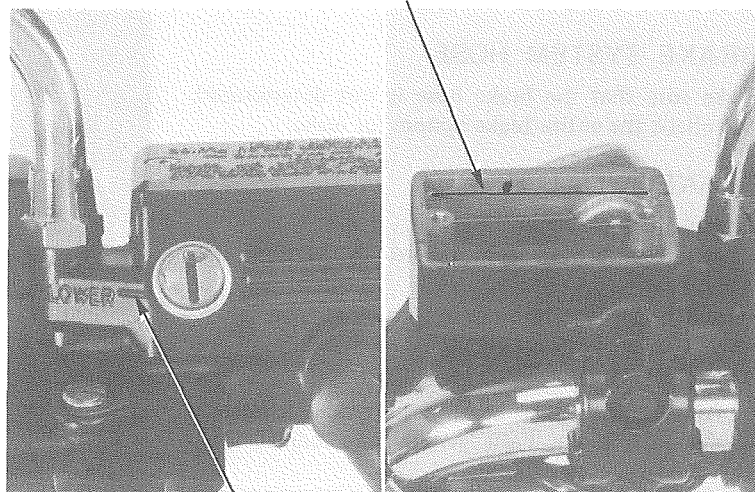
Check the front brake fluid reservoir level.

If the level nears the lower level mark, fill the reservoir with **DOT -3** Brake Fluid to the upper level mark. Check the entire system for leaks, if the level is low.

CAUTION

- Do not remove the cover until the handlebar has been tuned so that the reservoir is level.
- Avoid operating the brake lever with the cap removed. Brake fluid will squirt out if the lever is pulled.
- Do not mix different types of fluid, because they are not compatible.

UPPER LEVEL MARK



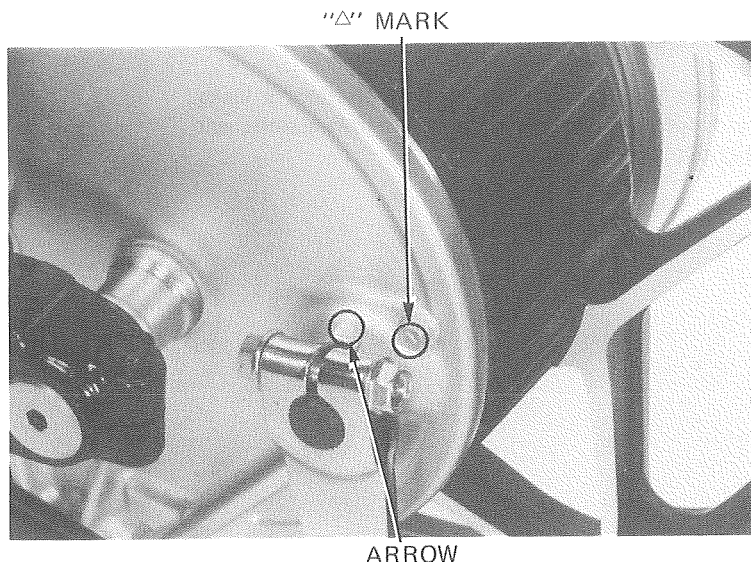
LOWER LEVEL MARK



BRAKE SHOE/PAD WEAR

BRAKE SHOE INSPECTION (WEAR INDICATOR)

Replace the brake shoes if the arrow on the brake arm aligns with the reference mark "△" on full application of the rear brake.



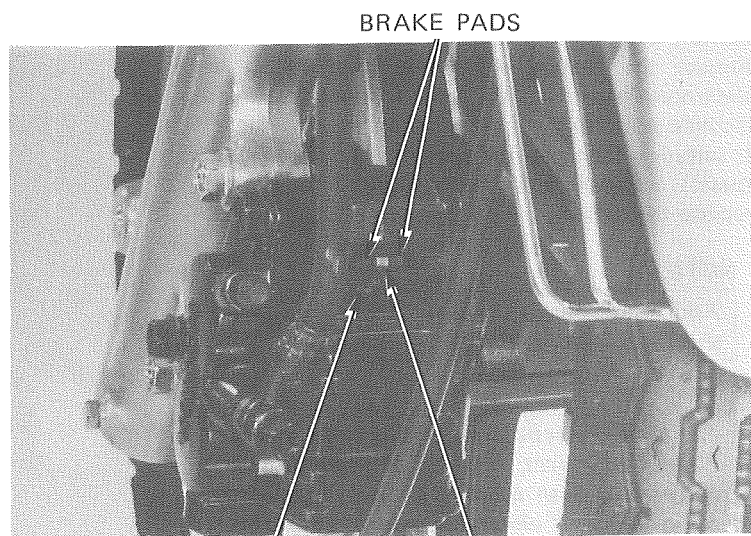
"△" MARK

ARROW

BRAKE PAD WEAR

Check the brake pads for wear by looking through the slot indicated by the arrow cast on the caliper assembly.

Replace the brake pads if the wear line on the pads reaches the edge of the brake disc (Refer to page 16-5).



BRAKE PADS

ARROW

BRAKE DISC

CAUTION

Always replace the brake pads in pairs to assure even disc pressure.

BRAKE SYSTEM

BRAKE SYSTEM HOSE

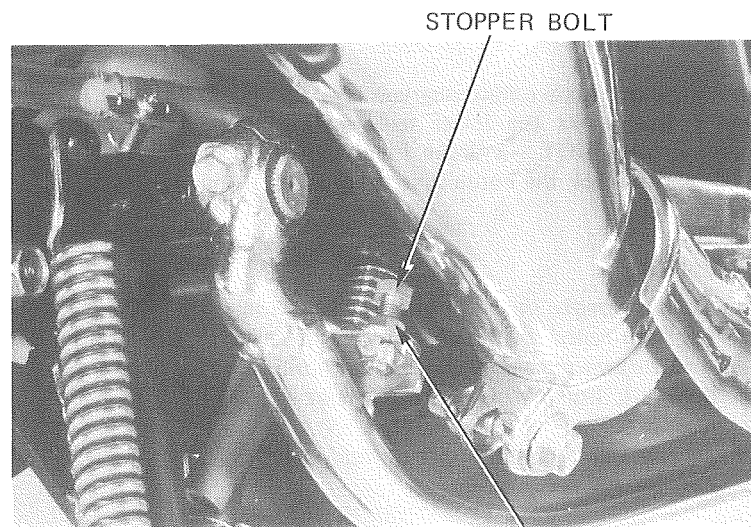
Make sure that the brake hose is not deteriorated and check the entire brake system for leaks.

BRAKE PEDAL HEIGHT

Loosen the lock nut.

Adjust the brake pedal height by turning the stopper bolt.

Retighten the lock nut.



STOPPER BOLT

LOCK NUT

NOTE

After adjusting the brake pedal height, check the rear brake light switch and adjust if necessary.



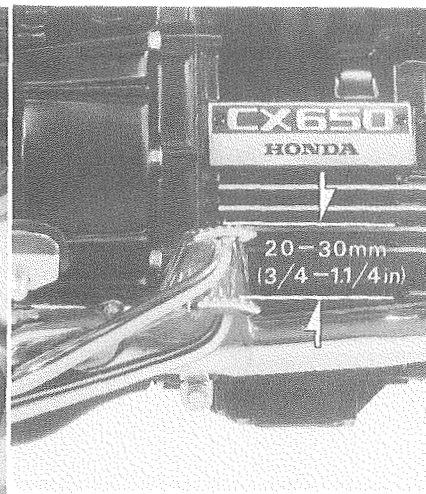
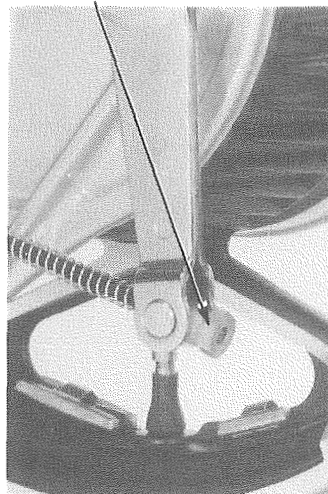
BRAKE PEDAL FREE PLAY

Check the brake pedal free play.

FREE PLAY: 20–30 mm (3/4–1-1/4 in)

If adjustment is necessary, turn the rear brake adjusting nut.

BRAKE ADJUSTING
NUT



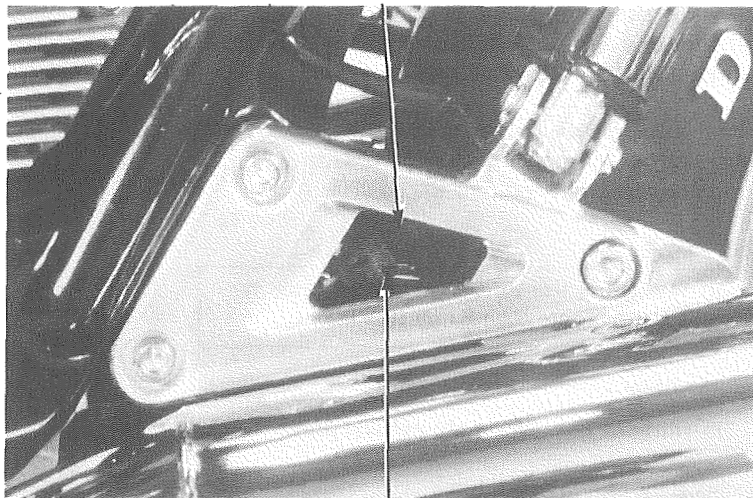
BRAKE LIGHT SWITCH

Adjust the brake light switch so that the brake light will come on when the brake pedal is depressed 20 mm (3/4 in), when the brake begins engagement. Adjust by turning the switch adjusting nut.

NOTE

- Perform brake light switch adjustment after adjusting brake pedal play and pedal height.
- Do not turn the switch body.

BRAKE LIGHT SWITCH



ADJUSTING NUT

HEADLIGHT AIM

Adjust vertically by loosening both headlight case mounting bolts.

Adjust horizontally by turning the adjusting screw on the headlight rim.

Turn the adjusting screw clockwise to direct the beam toward the right side of the rider.

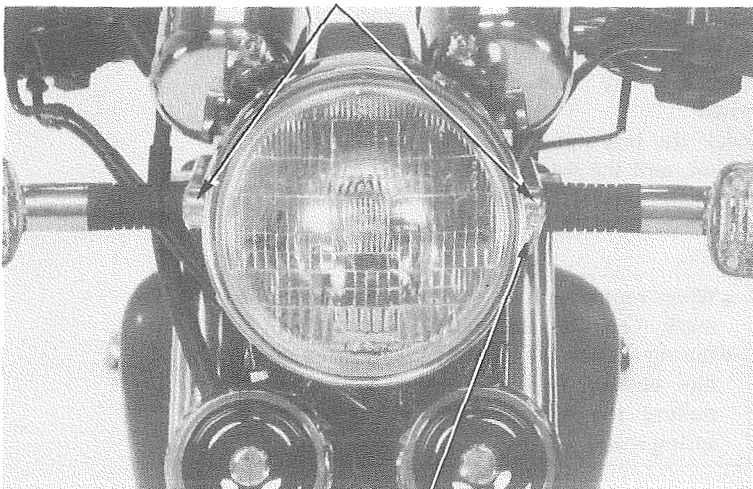
NOTE

Adjust the headlight beam as specified by local laws and regulations.

WARNING

An improperly adjusted headlight may blind oncoming drivers, or it may fail to light the road for a safe distance.

MOUNTING BOLTS



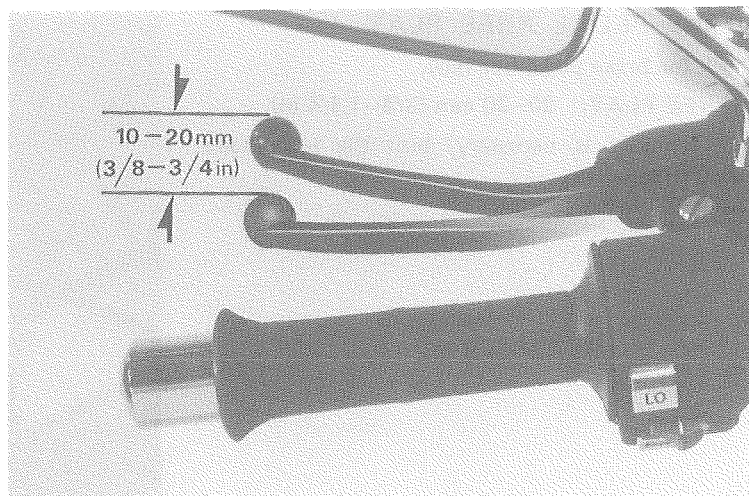
ADJUSTING SCREW



CLUTCH

Inspect the clutch lever free play at the end of the lever.

FREE PLAY: 10–20 mm (3/8–3/4 in)



Major adjustments should be made using the adjuster located at the clutch housing. Loosen the lock nut and turn the clutch cable adjusting nut.

Minor adjustments can be made with the clutch cable adjuster located on the clutch lever. Loosen the lock nut and turn the adjuster.

NOTE

Do not allow the threads at the adjuster to come out by more than **8 mm (0.3 in)**.

WARNING

Do not burn yourself on the exhaust pipe.

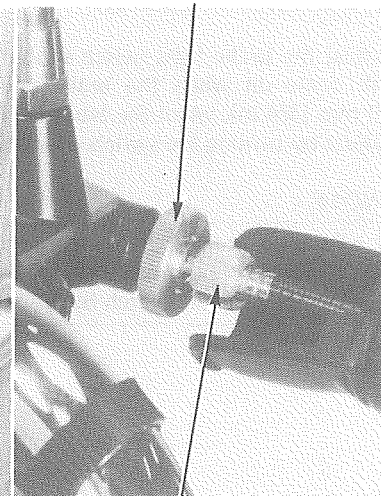
Recheck the clutch operation.

LOCK NUT



ADJUSTING NUT

LOCK NUT



ADJUSTER

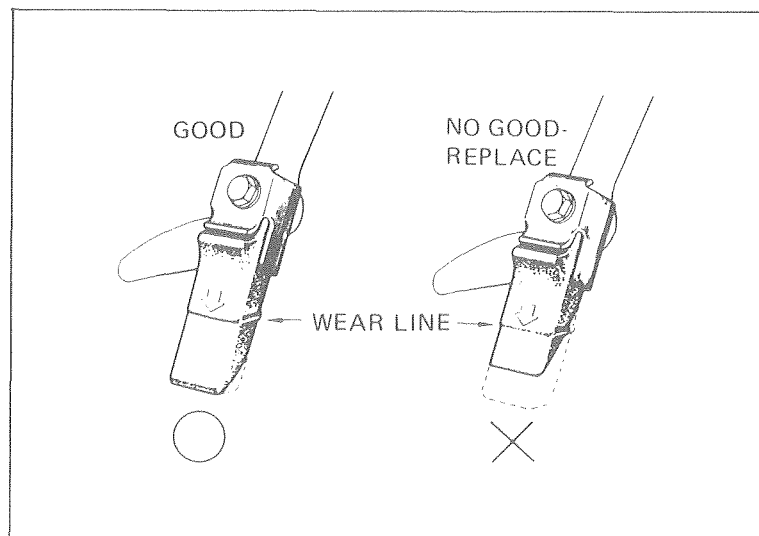
SIDE STAND

Check the rubber pad for deterioration or wear. Replace if any wear extends to the wear line as shown.

Check the side stand spring for damage and loss of tension, and the side stand assembly for freedom of movement and for being bent.

NOTE

- When replacing, use a rubber pad with the mark "Over 260 lbs ONLY"
- Spring tension is correct if the measurements fall within **2–3 kg (4.4–6.6 lb)**, when pulling the side stand lower end with a spring scale.





SUSPENSION

WARNING

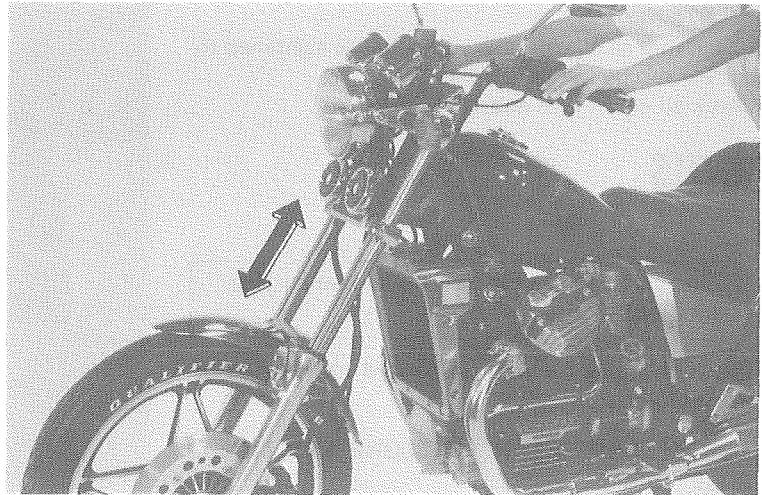
Do not ride a vehicle with faulty suspension. Loose, worn or damaged suspension parts impair vehicle stability and control.

FRONT

Check the action of the front forks by compressing them several times.

Check the entire fork assembly for leaks or damage. Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.



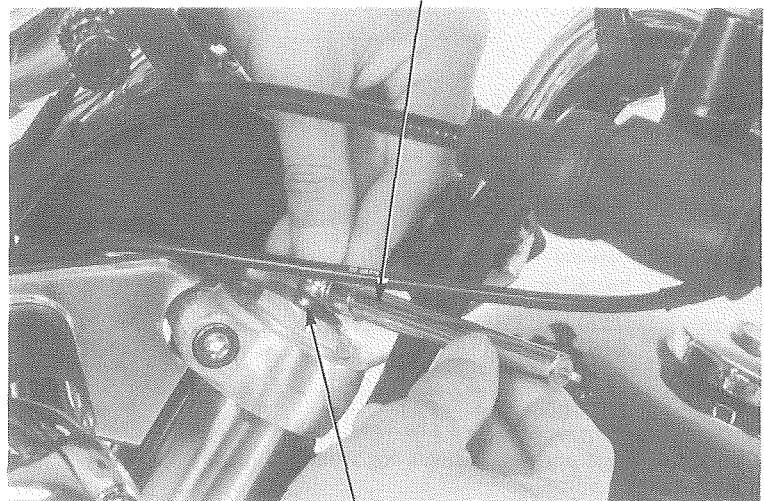
Check the front fork air pressure when the front forks are cold.

Place the vehicle on its center stand.

Remove the valve cap and measure the front fork air pressure.

FRONT FORK AIR PRESSURE:
0–40 kPa (0–0.4 kg/cm², 0–6 psi)

AIR GAUGE



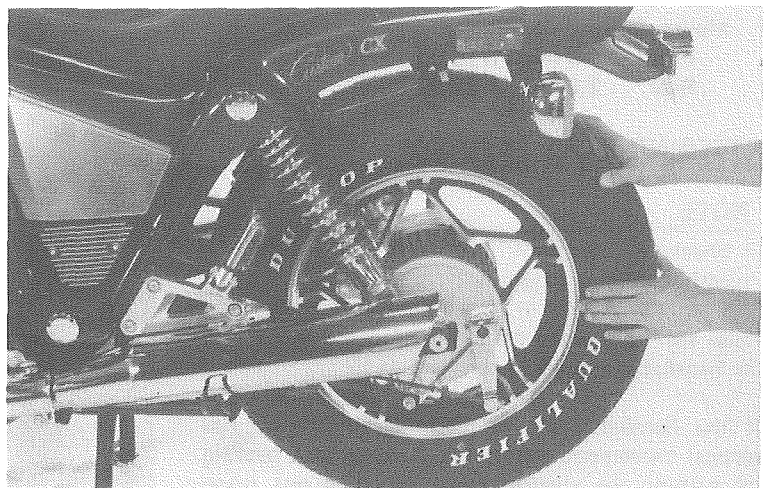
AIR VALVE

REAR

Place the motorcycle on its center stand.

Move the rear wheel sideways with force to see if the swing arm bearings are worn. Replace if excessively worn (page 14–16).

Check the shock absorber for leaks or damage. Tighten all rear suspension nuts and bolts to the correct torque values (page 1–5).





NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to correct torque values (page 1-5).
 Check all cotter pins and safety clips.

WHEELS

NOTE

Tire pressures should be checked when tires are **COLD**.

Check the tires for cuts, imbedded nails, or other sharp objects.

RECOMMENDED TIRE PRESSURE AND TIRE SIZE:

		Front	Rear
Tire size		100/90-19 57H	140/90-15 70H
Cold tire pres- sures kPa (kg/cm ² , psi)	Up to 90 kg (200 lbs) load	225 (2.25, 32)	225 (2.25, 32)
	90 kg (200 lbs) load to vehicle capacity load	225 (2.25, 32)	280 (2.80, 40)
Tire brand	BRIDGE- STONE	L303	G508
	DUNLOP	F11	K627

Check the front and rear wheels for trueness. (page 13-12, 14-4)

Measure the tread depth at the center of the tires.

Replace the tires if the tread depth reaches the following limits.

Minimum tread depth:

Front : 1.5 mm (1/16 in)

Rear : 2.0 mm (3/32 in)

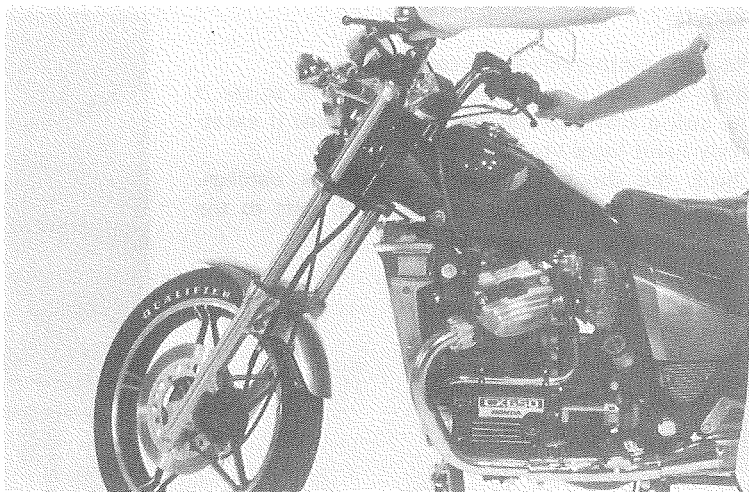
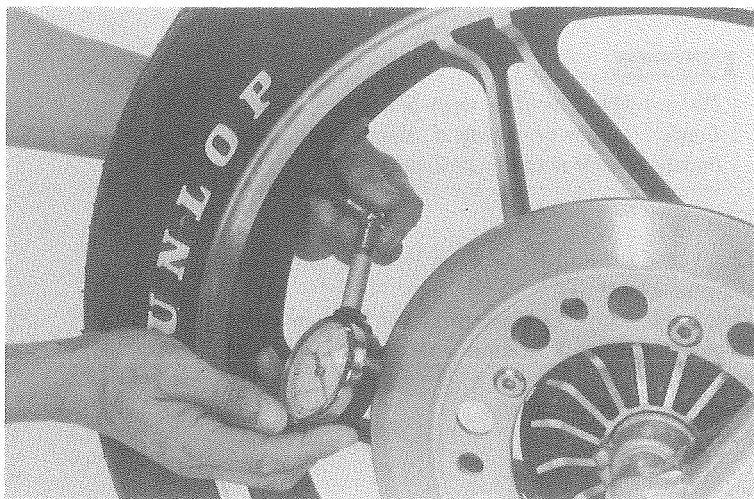
STEERING HEAD BEARINGS

NOTE

Check that the control cables do not interfere with handlebar rotation.

Raise the front wheel off the ground and check that the handlebar rotates freely.

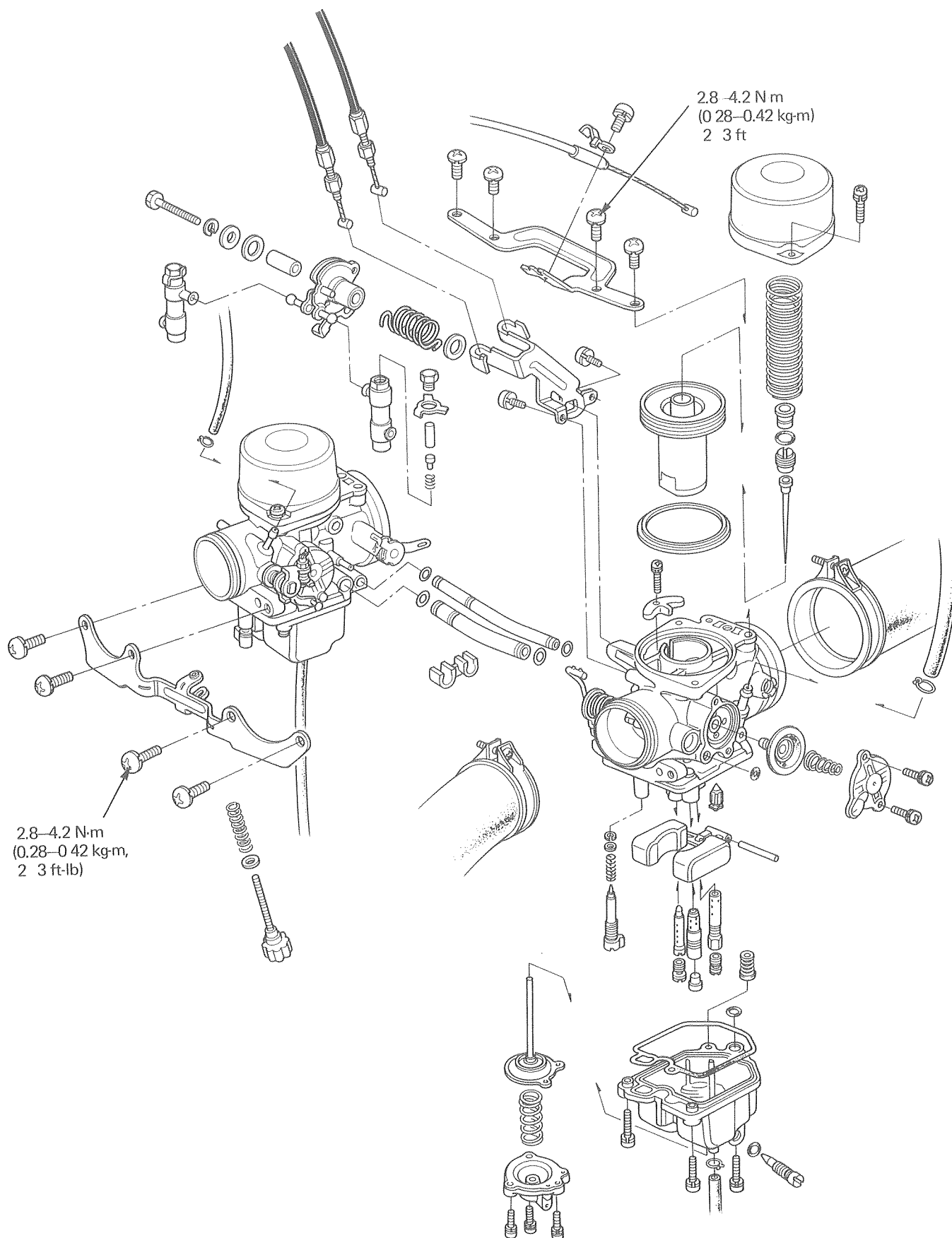
If the handlebar moves unevenly, binds, or has vertical movement, adjust the steering head bearing by turning the steering head adjusting nut (page 13-28).





HONDA
CX650C

MEMO





SERVICE INFORMATION	4-1	ACCELERATOR PUMP DISASSEMBLY	4-9
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CARBURETOR SEPARATION	4-2	FAST IDLE ADJUSTMENT	4-11
CARBURETOR ASSEMBLY	4-4	ACCELERATOR PUMP ADJUSTMENT	4-12
VACUUM CYLINDER		CARBURETOR INSTALLATION	4-12
DISASSEMBLY/INSPECTION	4-5	PILOT SCREW ADJUSTMENT	4-13
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AIR CUT-OFF VALVE		FUEL TANK	4-15
DISASSEMBLY	4-9	AIR CLEANER CASE	4-18

SERVICE INFORMATION

GENERAL

- Use caution when working with gasoline. Always work in a well-ventilated area and away from sparks or open flames.
- When disassembling fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
- The float bowls have drain plugs that can be loosened to drain residual gasoline.

SPECIFICATIONS

Venturi diameter	35 mm (1.4 in)	Idle speed	1,100 ± 100 rpm
Identification No.	VB2AB	Vacuum pressure difference between carburetors	40 mm (1.6 in) Hg
Float level	15.5 mm (0.61 in)	Throttle grip free play	2 – 6 mm (1/8 – 1/4 in)
Pilot screw	See page 4-13		

TROUBLE VALVE

- Carburetor front and rear stay screws
2.8–4.2 N·m (0.28–0.42 kg·m, 2–3 ft·lb)
- Fuel valve lock nut
20–25 N·m (2.0–2.5 kg·m, 14–18 ft·lb)

TOOLS

Special

Carburetor pilot screw wrench 07908–4220201

Hand vacuum pump A973X–041–XXXXX
(U.S.A. only) or ST–AH–260–MC7

Common

Float level gauge 07401–0010000

TROUBLESHOOTING

Engine Cranks But Won't Start

- No fuel in tank.
- No fuel getting to cylinders.
- Too much fuel getting to cylinders.
- No spark at plugs — ignition malfunction.
- Fuel flow restricted.

Engine Idles Roughly, Stalls, or Runs Poorly

- Idle speed incorrect.
- Ignition malfunction.
- Low compression.
- Rich mixture.
- Lean Mixture.
- Air cleaner clogged.
- Air leaking into intake pipe.
- Fuel flow restricted.
- Fuel contaminated.
- Carburetors not synchronized.
- Faulty vacuum piston.

Lean Mixture:

- Carburetor fuel jets clogged.
- Vacuum piston stuck closed.
- Fuel cap vent blocked.
- Fuel filter clogged.
- Fuel line blocked.
- Float valve faulty.
- Float level too low.
- Fuel flow restricted.

Rich Mixture:

- Choke stuck closed.
- Float level set too high or float sticking.
- Carburetor air jets clogged.
- Sticking float.
- Dirty air cleaner.

Fuel flow restricted:

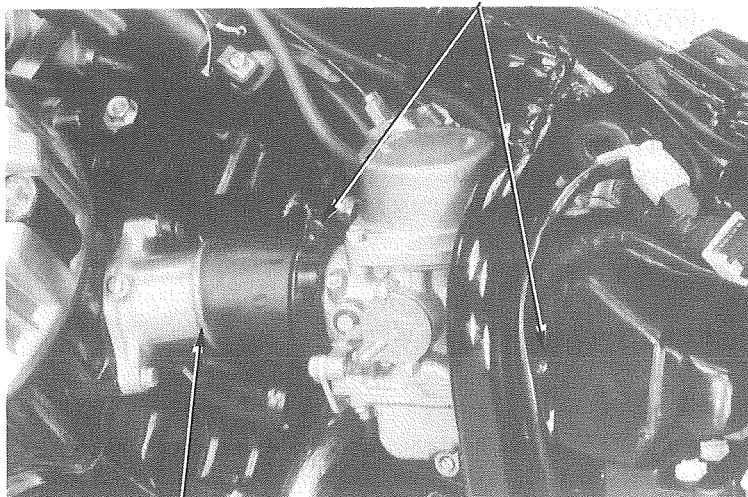
- Fuel strainer or fuel valve clogged.
- Fuel tank cap breather hole clogged.
- Vacuum tube or air vent tube clogged.
- Fuel valve diaphragm faulty.



CARBURETOR REMOVAL

Remove the fuel tank (page 4-15).
Disconnect the carburetor overflow drain tubes.
Loosen the carburetor band screws.
Remove the carburetor intake pipes and remove the carburetor assembly from the left side.

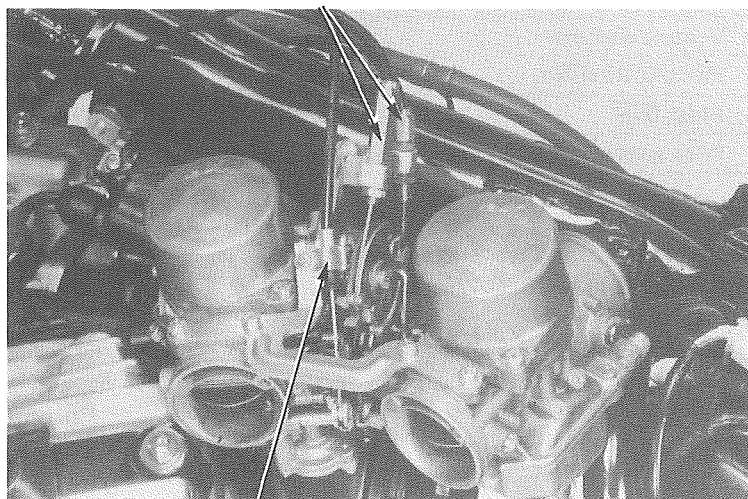
CARBURETOR BANDS



CARBURETOR INTAKE PIPE

Loosen the choke cable holder screw and disconnect the choke cable.
Loosen the cable lock nuts and disconnect the throttle cables.
Remove the carburetors.

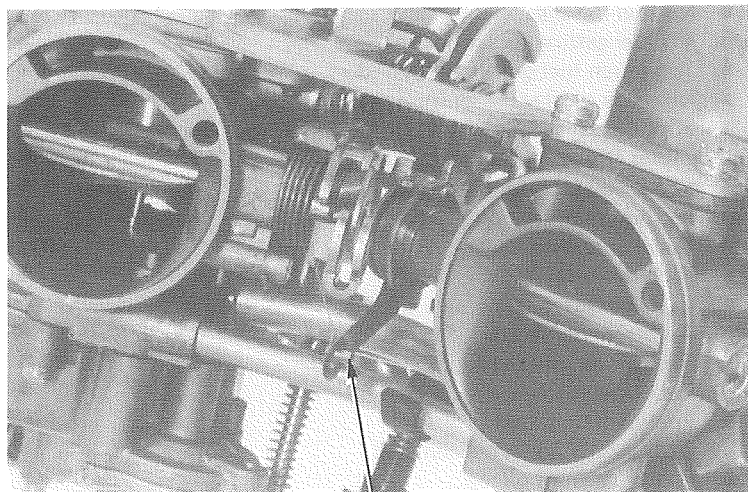
THROTTLE CABLES



CHOKE CABLE HOLDER

CARBURETOR SEPARATION

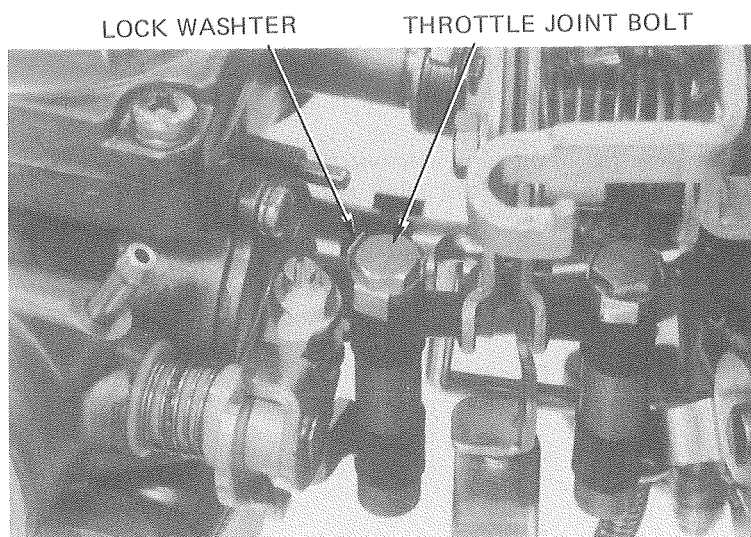
Disconnect the choke connecting springs.



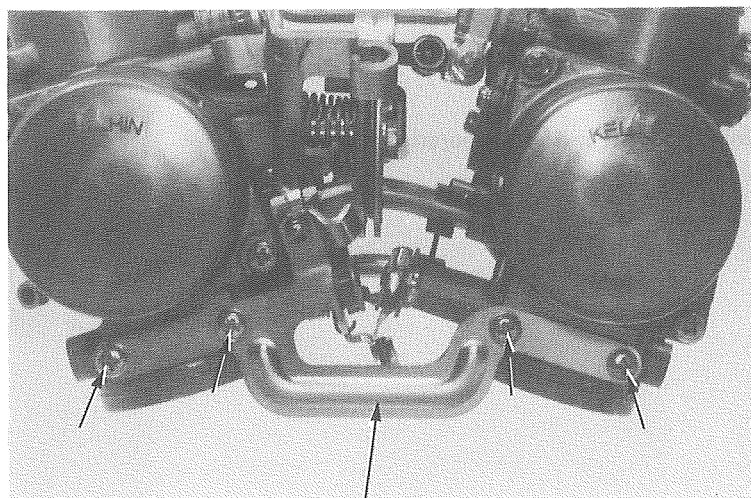
CHOKE CONNECTING SPRINGS



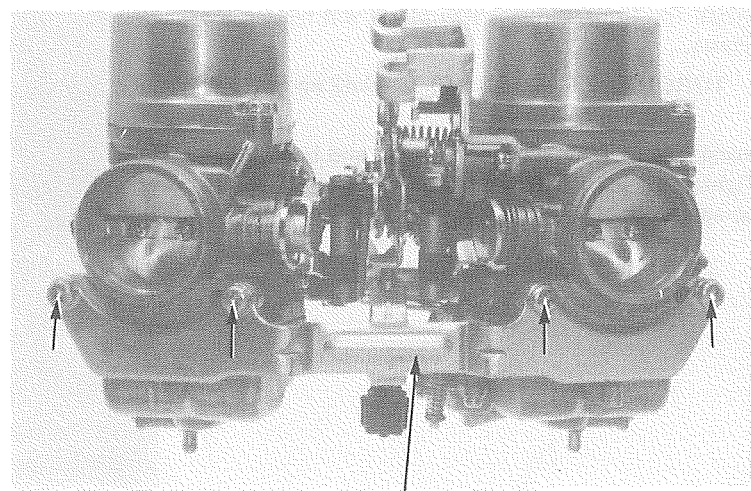
Bend the throttle joint bolt lock washer tabs down.
Remove the throttle joint bolt and lock washer.



Remove the rear stay plate.



Remove the front stay plate.

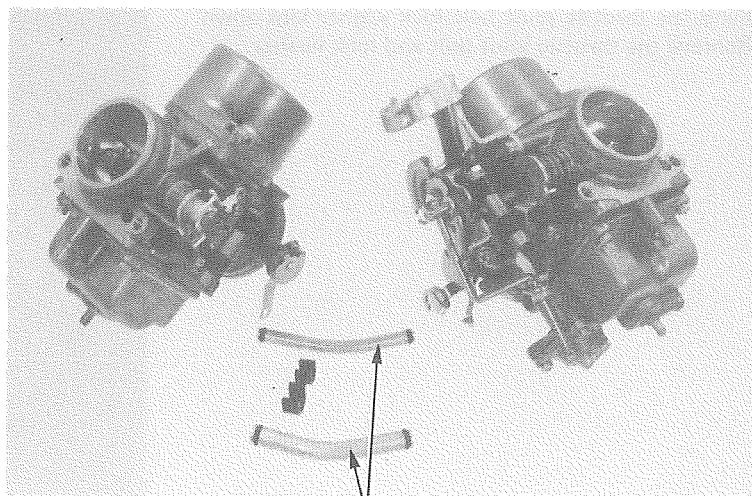




Separate the carburetors.

CAUTION

Separate the carburetors horizontally to prevent damage to the joint pipes and throttle linkage.

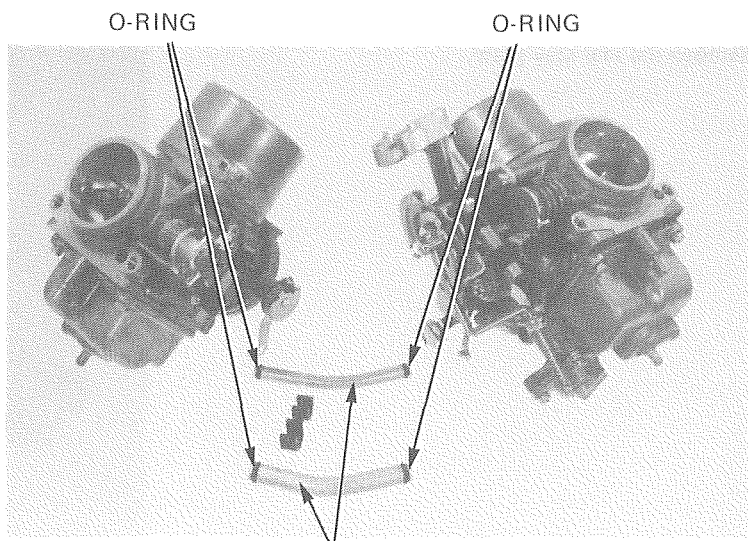


FUEL JOINT PIPES

CARBURETOR ASSEMBLY

Coat new O-rings with oil and install them on the fuel joint pipes.

Joint the right and left carburetors together.



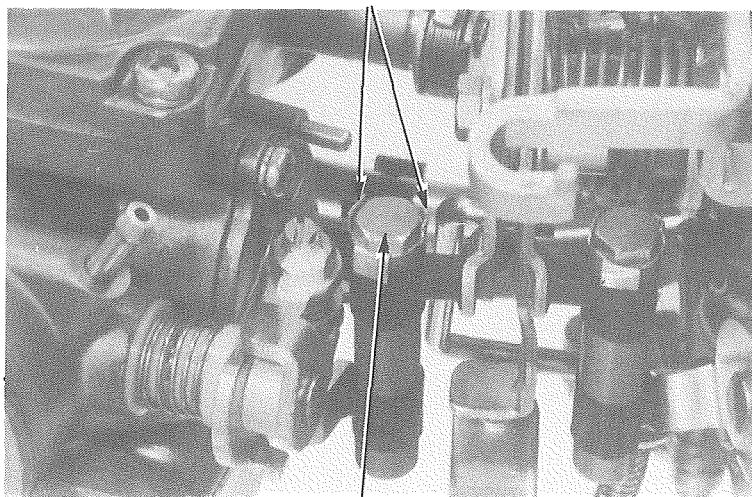
FUEL JOINT PIPES

LOCK WASHER TABS

Install the front and rear stay plates and tighten the screws.

TORQUE: 2.8–4.2 N·m (0.28–0.42 kg-m,
2–3 ft-lb)

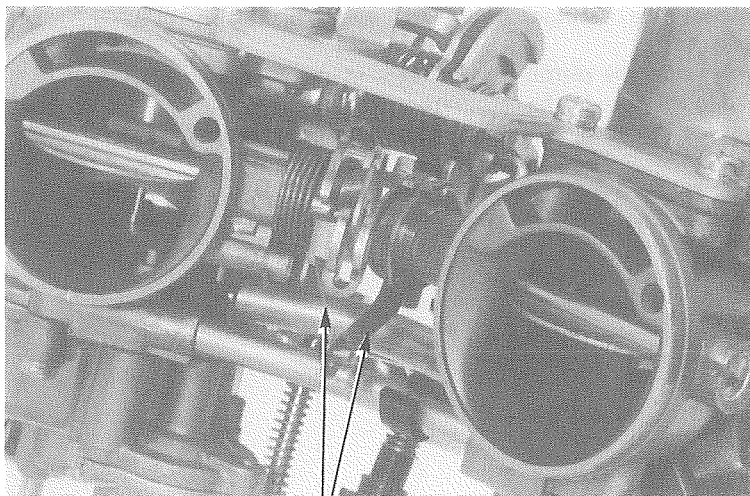
Install the throttle joint lock washer and bolt. Tighten the joint bolt and bend the lock washer tabs up against the bolt head.



JOINT BOLT



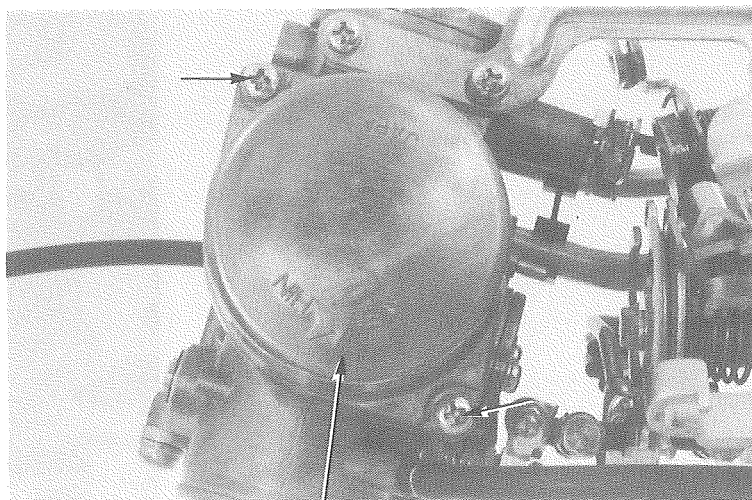
Connect the choke connecting springs.



CHOKE CONNECTING SPRINGS

VACUUM CYLINDER DISASSEMBLY/INSPECTION

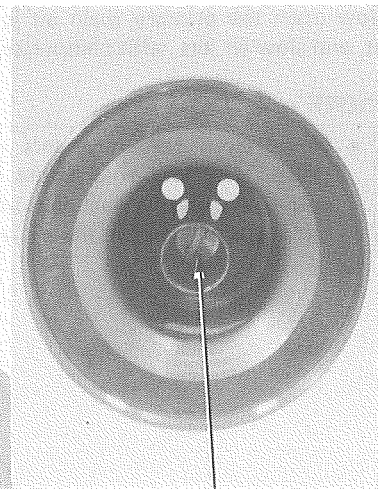
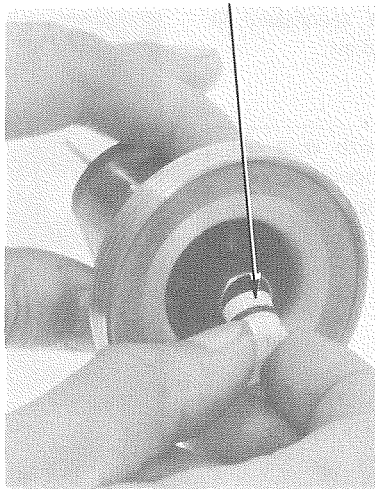
Remove the vacuum cylinder from the carburetor and remove the vacuum piston.



VACUUM CYLINDER

Remove the full-open stop.
Remove the needle set screw and the jet needle.

FULL-OPEN STOP



NEEDLE SET SCREW

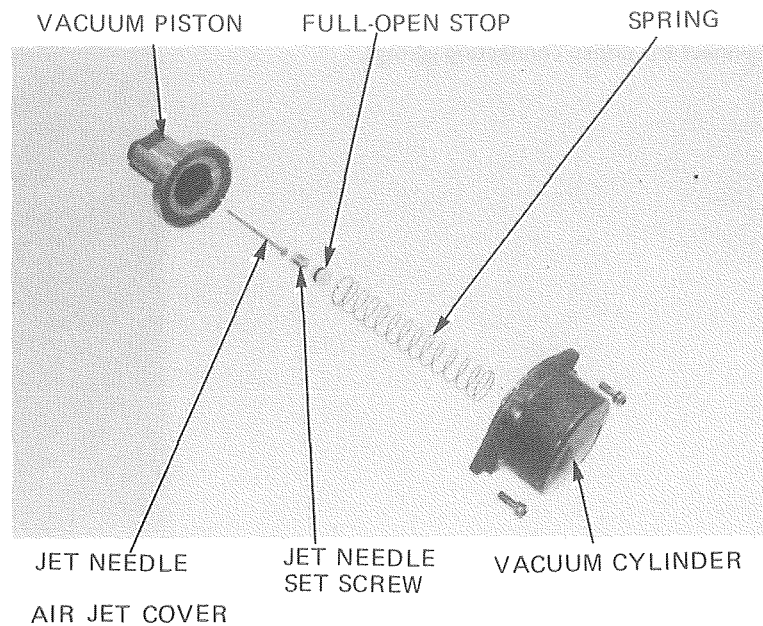


FUEL SYSTEM

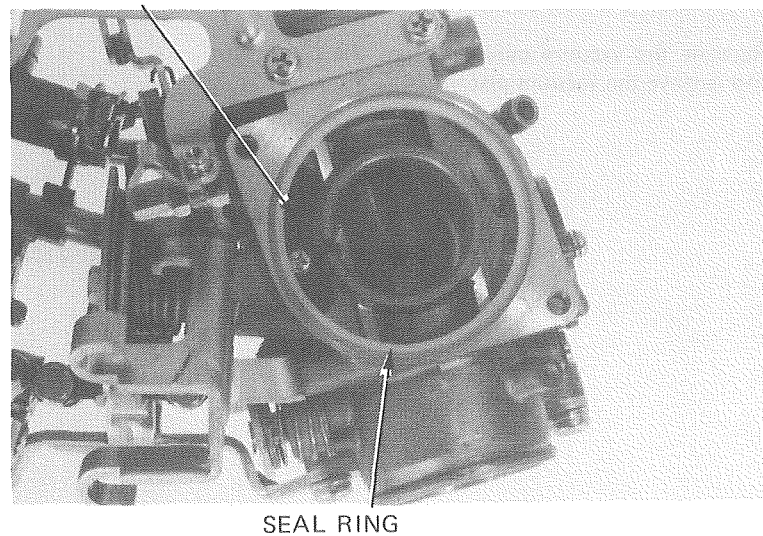
Inspect the vacuum piston for wear, nicks, or scratches.

Make sure the piston moves freely in the cylinder and in the bore of the carburetor.

Inspect the needle for wear, nicks, grooves, or other damage.



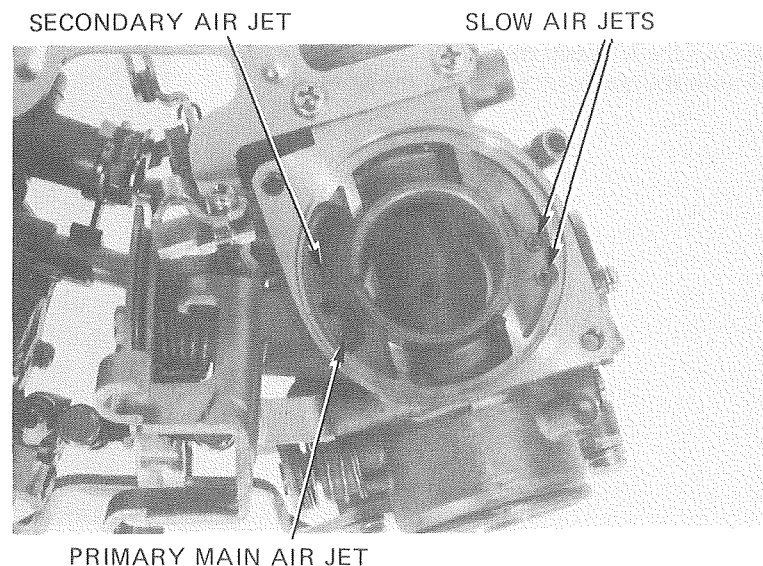
Remove the seal ring and air jet cover.



Blow open the primary main air jet, secondary air jet, and slow air jets, with compressed air.

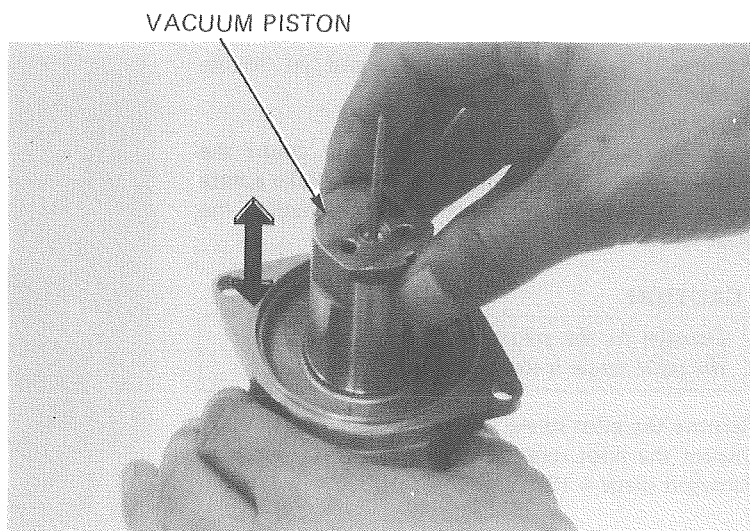
NOTE

- Never clean carburetor jets with wire or drills. They will enlarge the openings, resulting in excessive fuel consumption.
- Do not try to remove the air jets.





Make sure the vacuum piston moves freely in the cylinder.

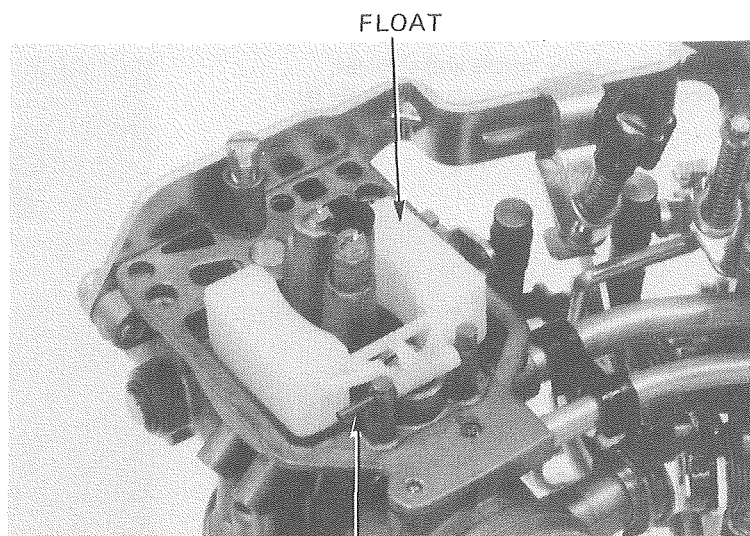


FLOAT CHAMBER DISASSEMBLY

NOTE

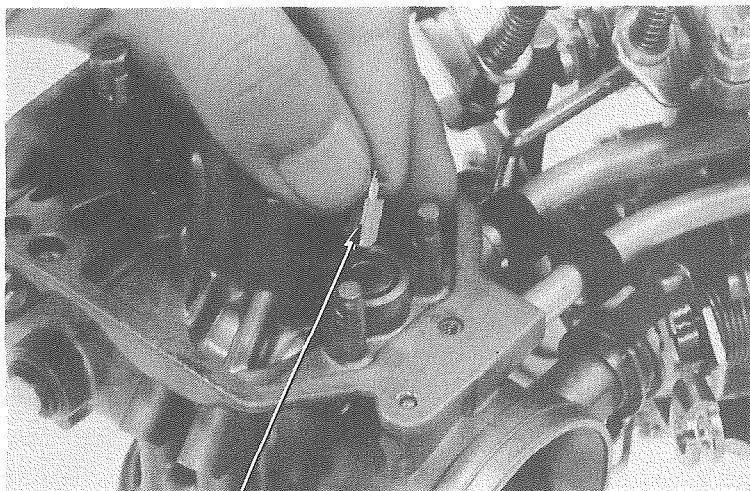
The pilot screws are factory pre-set and should not be removed unless the carburetor is overhauled.

Remove the float chamber body.
Remove the float arm pin, float and float valve.



FLOAT ARM PIN

Inspect the float valve and seat for deposits, grooves or other damage. Replace the valve and seat as a set if either one requires replacement.





Remove the secondary main jet and jet needle holder.

Remove the primary main jet.

Turn the pilot screw in and carefully count the number of turns before it seats lightly. Make a note of this to use as a reference when reinstalling the pilot screw.

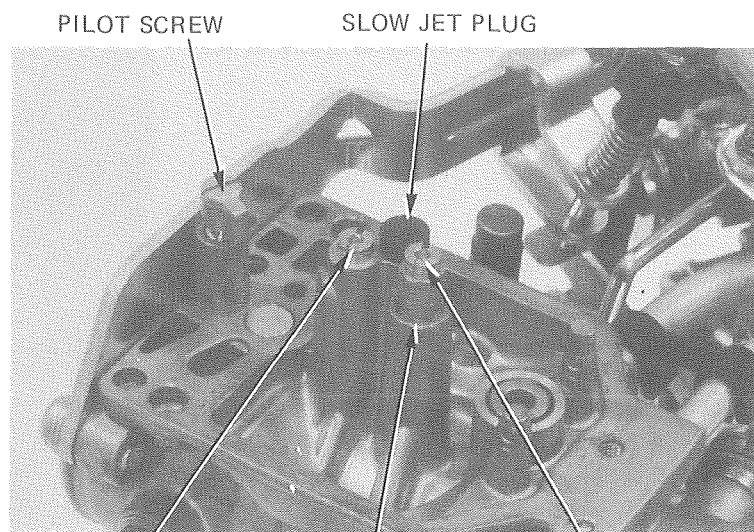
CAUTION

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

Remove the pilot screw.

Inspect the pilot screw and replace it if it is worn or damaged (page 4-13).

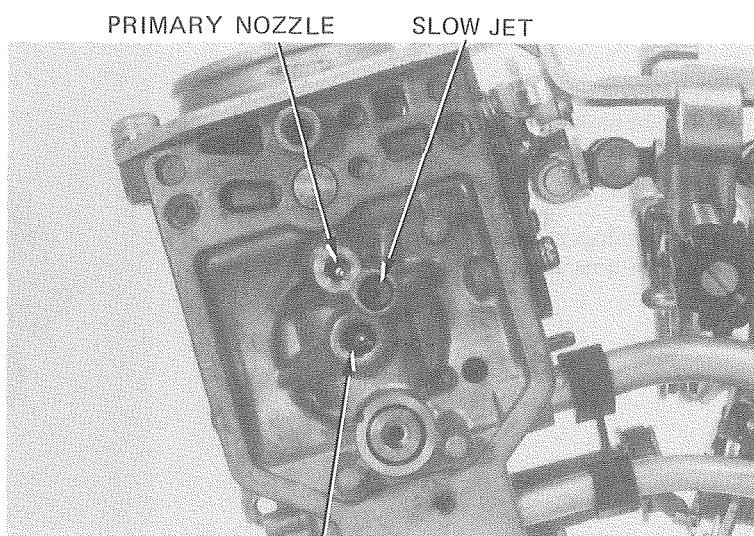
Remove the primary nozzle and slow jet.
Tilt the carburetor to remove the needle jet.



PRIMARY MAIN JET

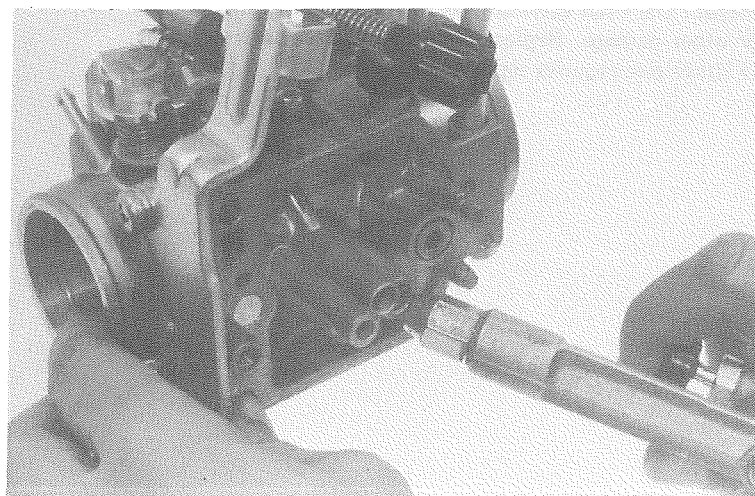
NEEDLE JET HOLDER

SECONDARY MAIN JET



NEEDLE JET

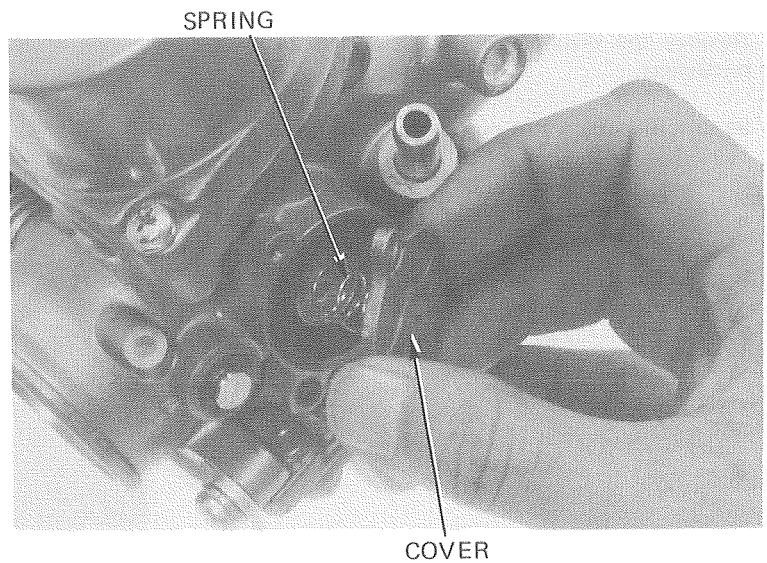
Clean the passages and jets with compressed air.



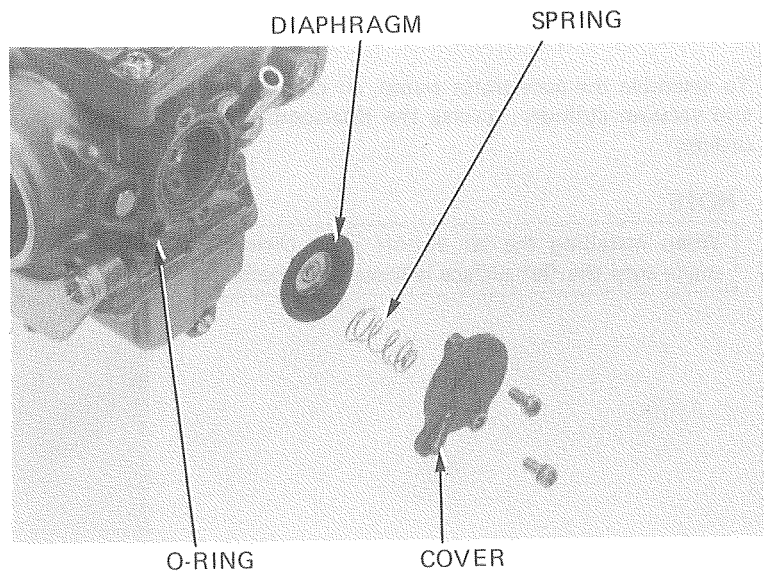


AIR CUT-OFF VALVE DISASSEMBLY

Remove the air cut-off valve cover and spring.

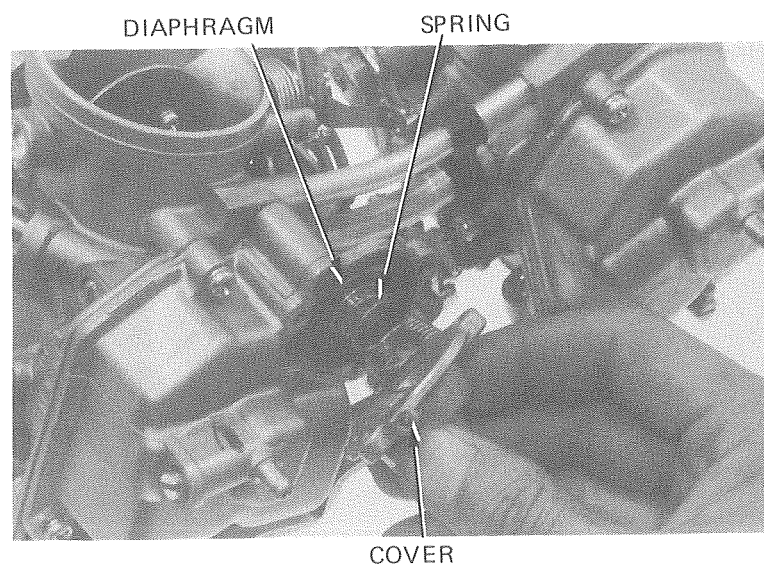


Remove the diaphragm, and O-ring.
Inspect the air holes and diaphragm for cracks or brittleness.



ACCELERATOR PUMP DISASSEMBLY

Remove the accelerator pump cover and spring.

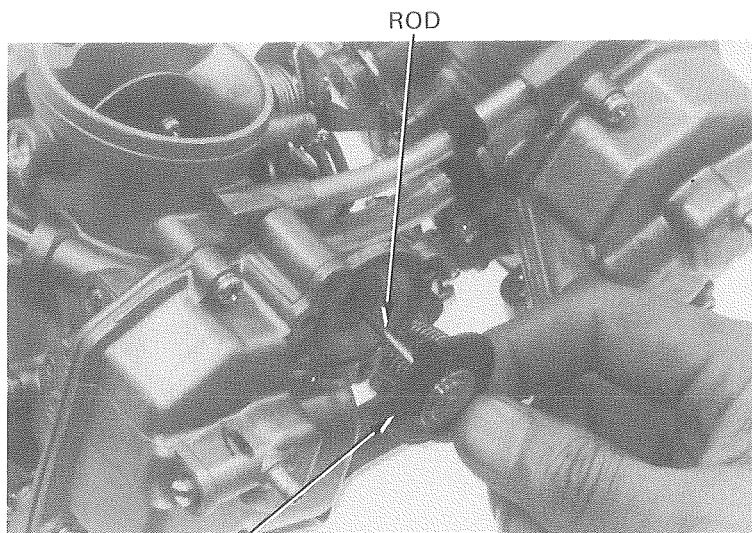




FUEL SYSTEM

Remove the diaphragm. Inspect it for cracks and brittleness.

Be sure the accelerator pump rod is not bent.

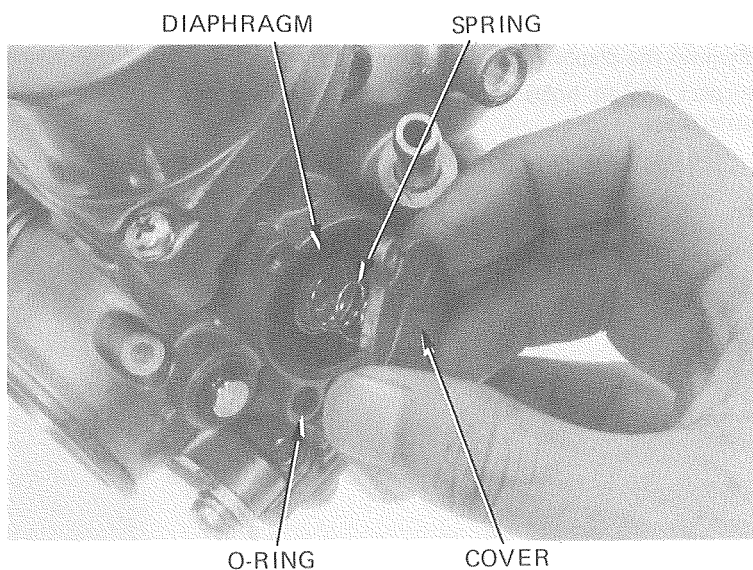


COMPONENT ASSEMBLY

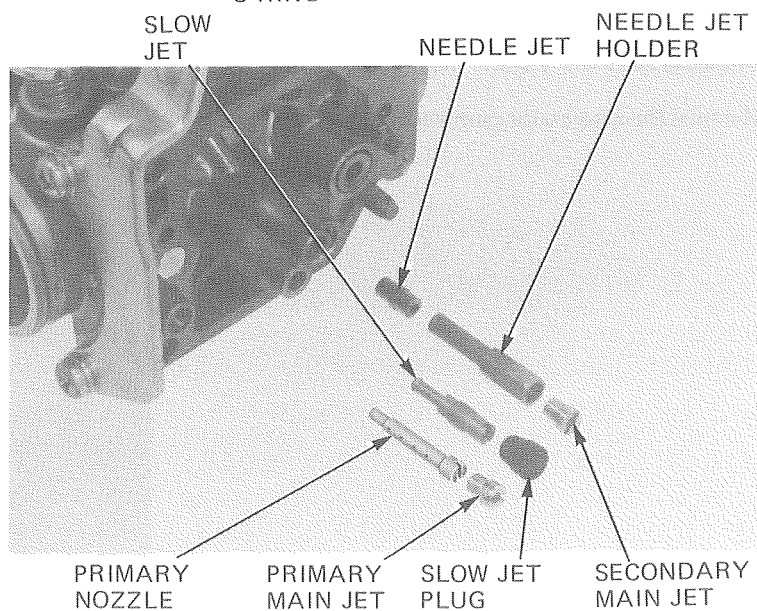
To assemble the accelerator pump, air cut-off valve and vacuum cylinder, reverse the disassembly procedure.

NOTE

When installing the air cut-off valve O-ring, make sure the flat surface is toward the body.



Install the jets into the carburetor body.



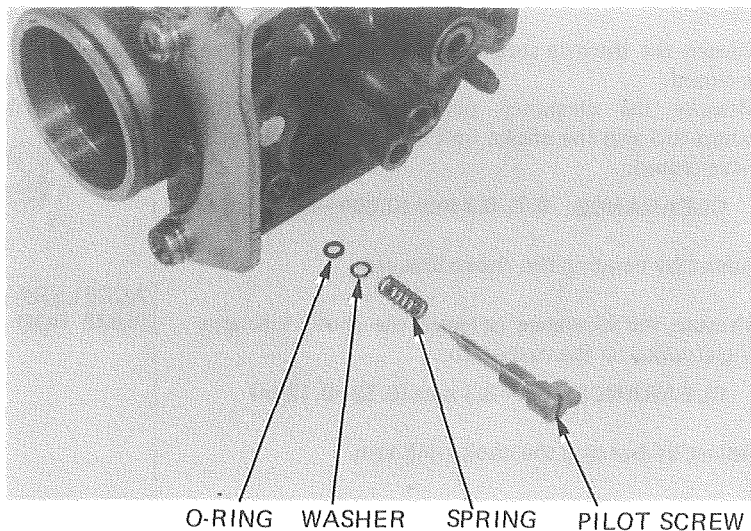


Install the pilot screw and return it to its original position as noted during removal. Perform pilot screw adjustment if a new pilot screw is installed (page 4-13).

NOTE

Do not install limiter caps on new pilot screws until after pilot screw adjustment is made.

Install the float and float chamber.



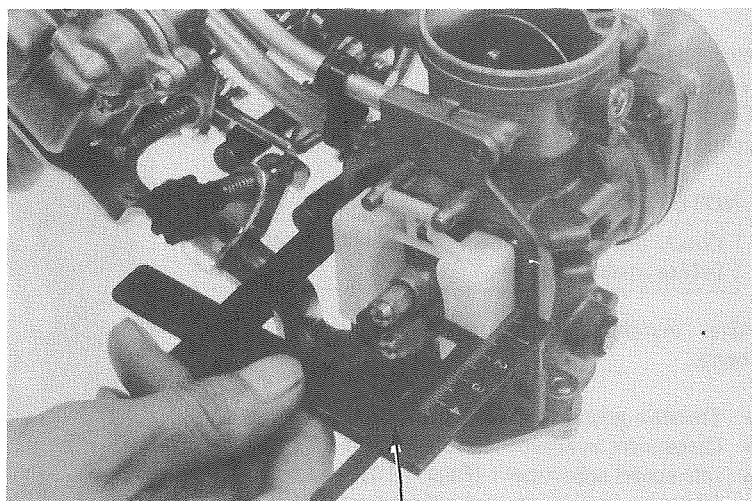
FLOAT LEVEL

Remove the float chamber.

Measure the float level with the float tip just contacting the float valve and the carburetor inclined $15^{\circ} \sim 45^{\circ}$ from vertical.

FLOAT LEVEL: $15.5 \pm 1 \text{ mm}$ ($0.61 \pm 0.04 \text{ in}$)

Replace the float if the float level is not within the specification.

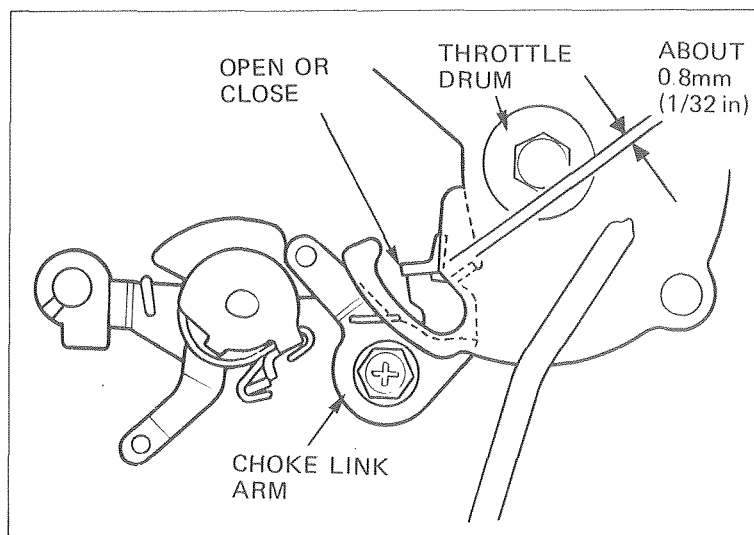


FAST IDLE ADJUSTMENT

FAST IDLE: 1,500–2,500 rpm

If adjustment of the fast idle is necessary, remove the carburetors (page 4-2), and close the throttle valves by turning the throttle stop screw out.

Adjust fast idle by opening or closing the fork end of the choke link arm until the clearance between the choke link arm and the throttle drum is about 0.8 mm (1/32 in).





ACCELERATOR PUMP ADJUSTMENT

Loosen the throttle stop screw, so the throttle valve is closed.

Measure the clearance between the accelerator pump rod and the choke link arm with the throttle valve closed.

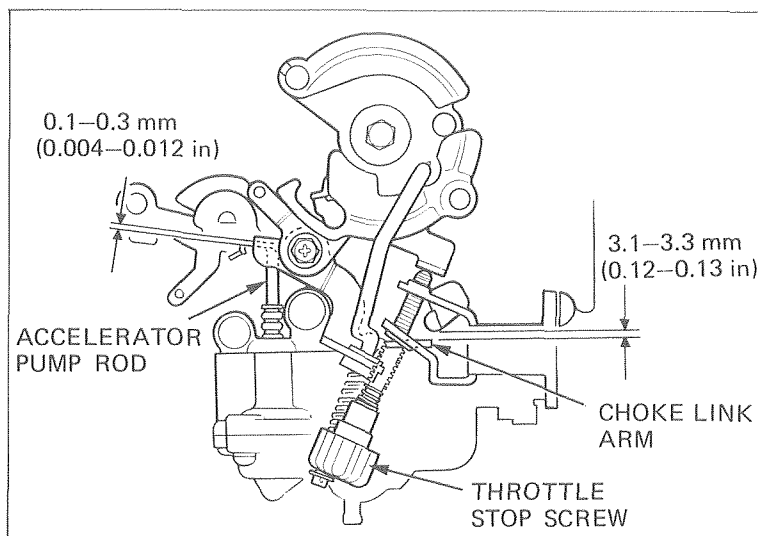
CLEARANCE: 0.1–0.3 mm (0.004–0.012 in)

Adjust by bending the choke link arm.

Measure the clearance between the choke link arm and stopper on the carburetor.

CLEARANCE: 3.1–3.3 mm (0.12–0.13 in)

Adjust by bending the choke link arm.



CARBURETOR INSTALLATION

Install the carburetors in the reverse order of removal.

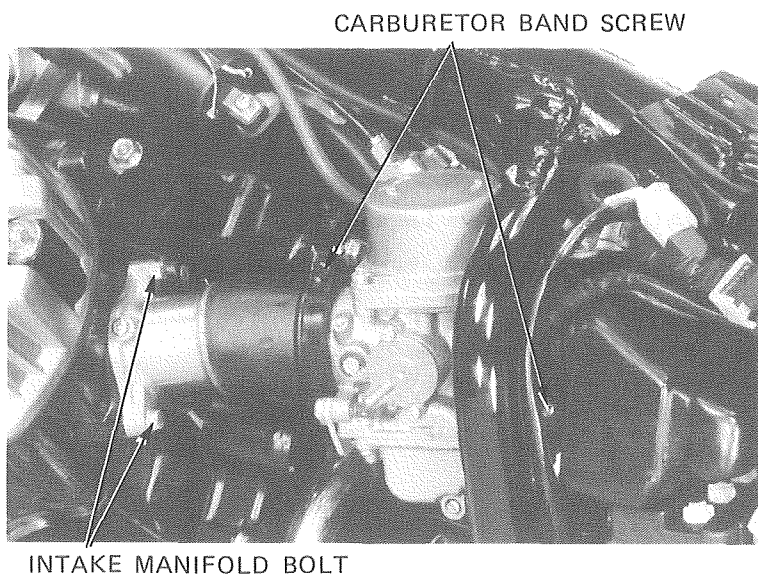
Tighten the intake manifold bolts and carburetor bands securely.

NOTE

Check the throttle and choke valve operation before installation.

After installation, perform the following adjustments.

- Throttle grip free play (Page 3-4).
- Carburetor synchronization (Page 3-9).
- Idle speed adjustment (Page 3-10).
- Pilot screw setting and adjustment (Page 4-13).





PILOT SCREW ADJUSTMENT

IDLE DROP PROCEDURE (U.S.A. ONLY)

NOTE

- The pilot screws are factory pre-set and no adjustment is necessary unless the pilot screw is replaced (Page 4-8).
- Limiter caps restrict adjustment to 7/8 of a turn.
- Use a tachometer with graduations of 100 rpm or smaller, that will accurately indicate a 100 rpm change.
Use pilot screw wrench 07908-4220201.

CAUTION

Any forcible attempt to remove the pilot screw limiter caps will cause screw breakage.

1. Turn each pilot screw clockwise until it seats lightly and back it out to the specification given. This is an initial setting prior to the final pilot screw adjustment.

INITIAL OPENING: 2-3/8 turns out

2. Warm up the engine to operating temperature. Stop and go driving for approximately 10 minutes is sufficient.
3. Attach a tachometer.
4. Adjust the idle speed with the throttle stop screw.

IDLE SPEED: 1,100 ± 100 rpm

5. Turn the pilot screw in or out to obtain the highest engine speed.
6. Readjust the idle speed with the throttle stop screw.
7. Turn the pilot screw in gradually until engine speed drops 100 rpm.

NOTE

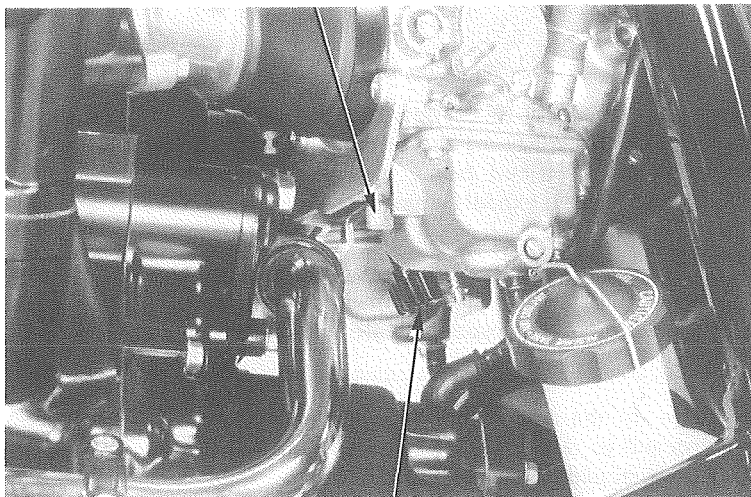
If the pilot screw seats before engine speed drops 100 rpm, go to step 8.

8. Turn the pilot screw 1 turn open from the position obtained in step 7.
9. Readjust the idle speed with the throttle stop screw.
10. Repeat steps 6 through 8 for the remaining carburetor.
11. Apply Loctite ® 601 or equivalent to the inside of the limiter caps. Place the caps over the pilot screws so that their tabs rest against the float chamber stop (Rich side), preventing further adjustment that would richen the fuel mixture (So the pilot screw cannot be turned counter-clockwise).

NOTE

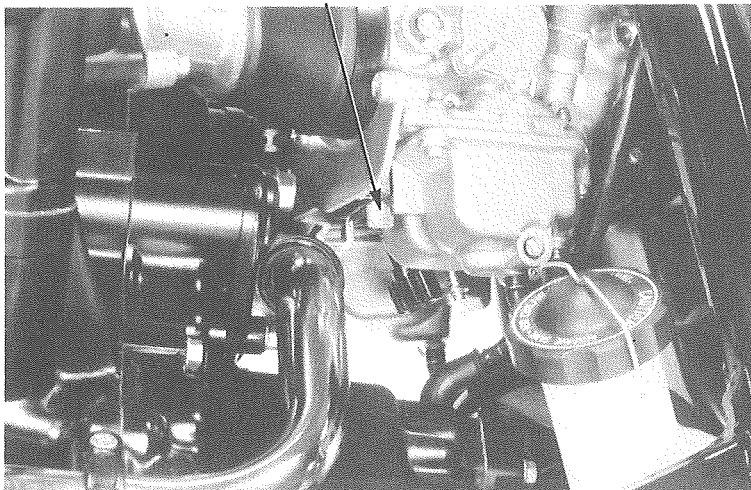
Do not turn the pilot screw when installing the limiter caps.

PILOT SCREW



THROTTLE STOP SCREW

LIMITER CAP





HIGH ALTITUDE ADJUSTMENT (USA ONLY)

When the vehicle is to be operated continuously above 6,500 ft (2,000 m) the carburetors must be readjusted as described below to improve driveability and decrease exhaust emissions.

NOTE

These adjustments must be made at high altitude to ensure proper high altitude operation.

1. Warm up the engine to operating temperature. Stop and go driving for 10 minutes is sufficient.
2. Turn each pilot screw clockwise 1/4 turn.
3. Adjust the idle speed to $1,100 \pm 100$ rpm with the throttle stop screw.
4. Attach the Vehicle Emission Control Information Update Label as shown. Refer to service Bulletin SL#132 for information on obtaining the label.

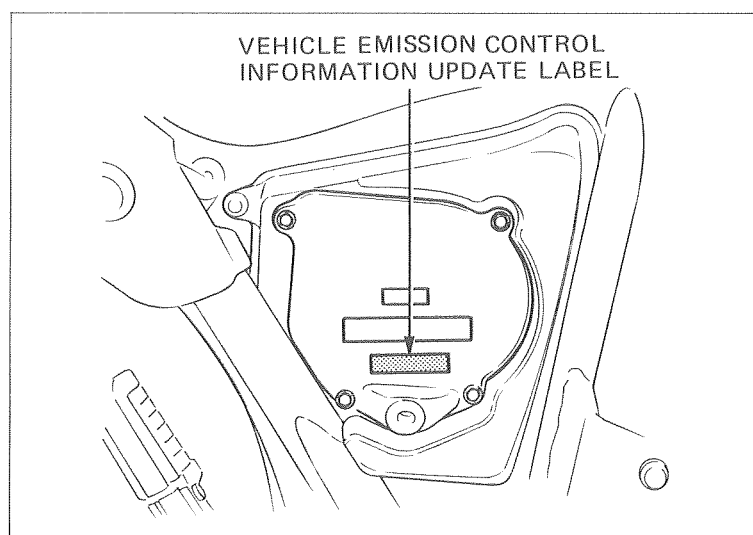
NOTE

Do not attach the label to any part that can be easily removed from the vehicle.

WARNING

Operation at an altitude lower than 5,000 ft (1,500 m) with the carburetors adjusted for high altitudes may cause the engine to idle roughly and stall.

When the vehicle is to be operated continuously below 5,000 ft (1,500 m), turn each pilot screw counter-clockwise to its original position against its stop and adjust the idle speed to $1,100 \pm 100$ rpm. Be sure to do these adjustments at low altitude.





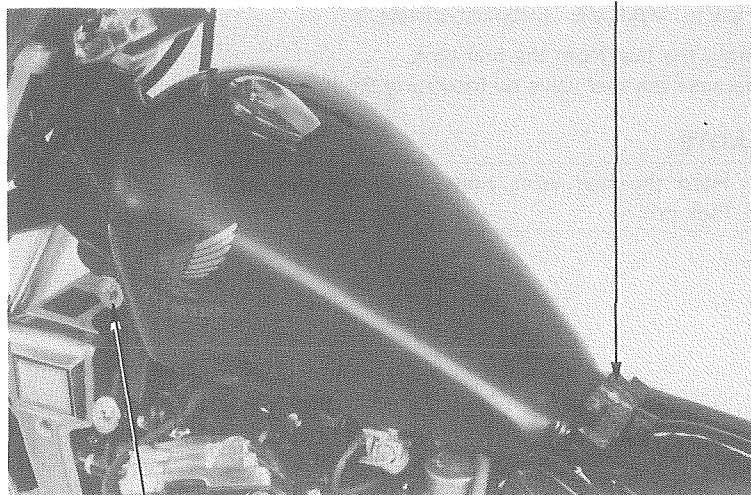
FUEL TANK

WARNING

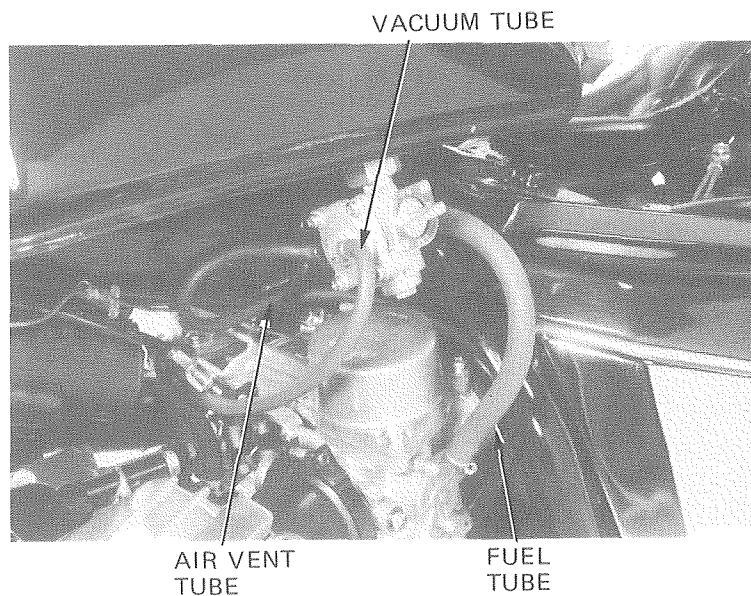
*Keep gasoline away from open flames or sparks.
Wipe up spilled gasoline at once.*

FUEL TANK REMOVAL

Remove the seat.
Remove the fuel tank mount bolts.



Disconnect the fuel tube, vacuum tube and air vent tube, then remove the fuel tank.



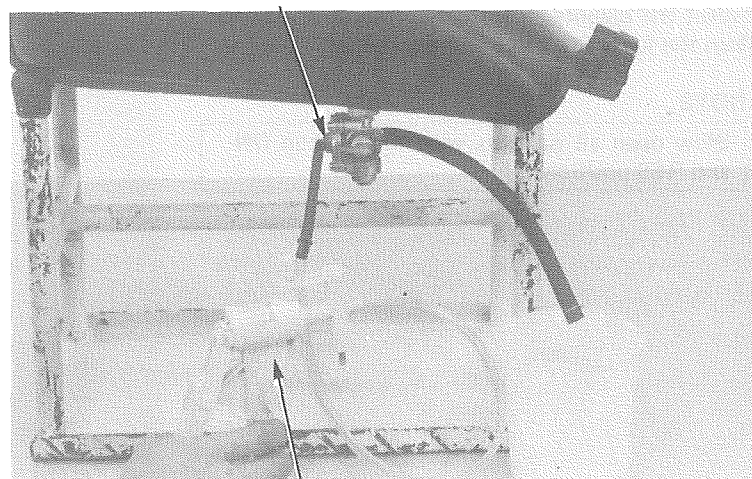
FUEL VALVE INSPECTION

Check that the fuel tank is full and turn the fuel valve on. Fuel should flow out from the fuel outlet tube when 12–20 mm Hg (0.5–0.8 in Hg) of vacuum is applied.

If the flow of fuel is restricted, turn the fuel valve to RES and check if fuel flows out then.

If fuel flows out of the fuel outlet, the fuel valve diaphragm is damaged or the fuel or vacuum circuit is clogged.

When the flow of fuel is still restricted with the fuel valve at RES, it indicates that either the fuel valve strainer, fuel passage or fuel tank cap breather hole is clogged.





FUEL SYSTEM

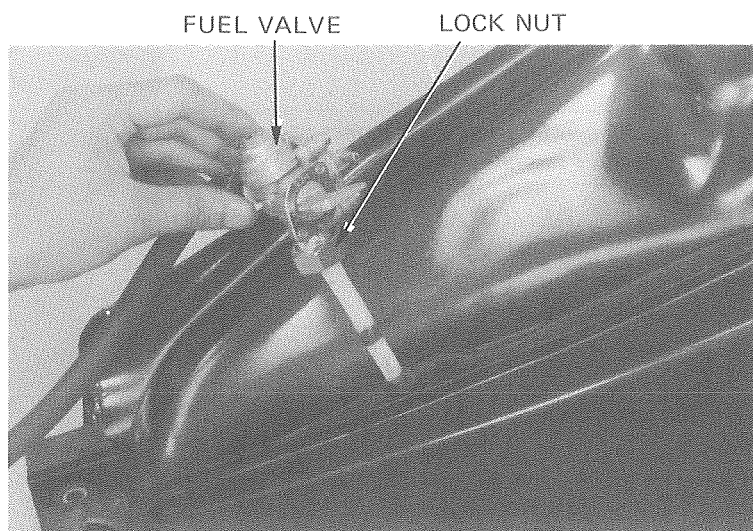
FUEL VALVE DISASSEMBLY

Drain the fuel from the fuel tank.

Remove the fuel valve by loosening the lock nut.

NOTE

Hold the fuel valve body while turning the lock nut.

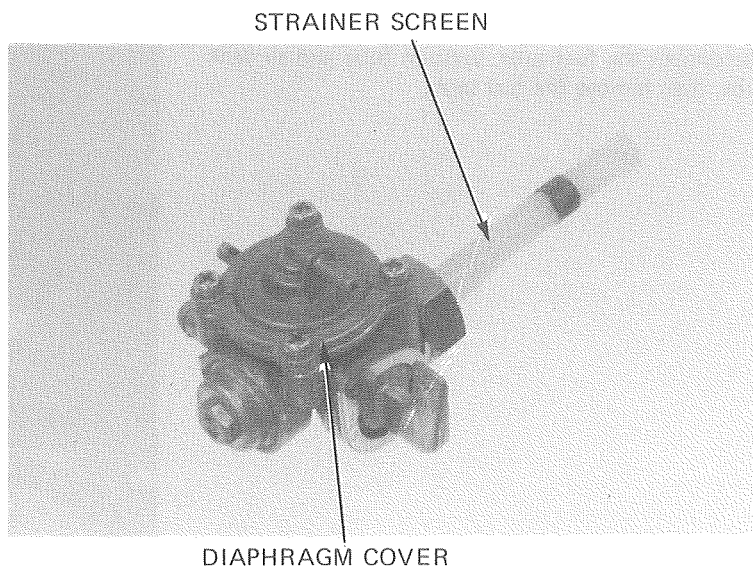


Remove the fuel strainer screen.

Blow dust and sediment off the screen using compressed air.

Check the O-ring for deterioration or damage and replace it with a new one if necessary.

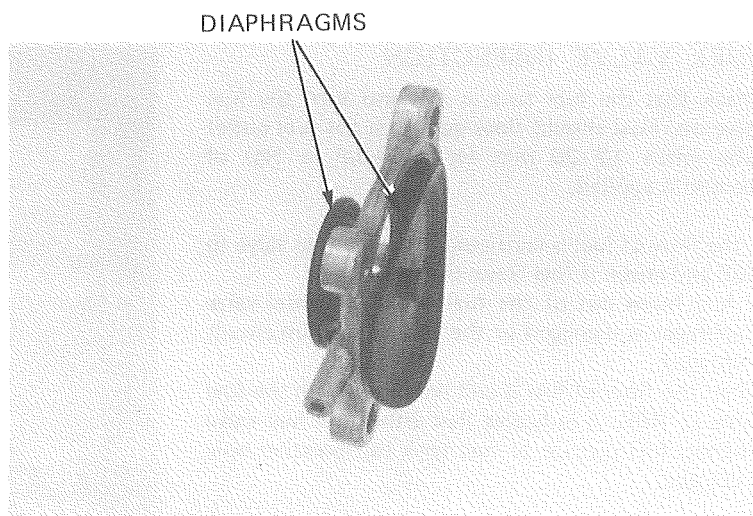
Remove the diaphragm cover by removing the four attaching screws.



Inspect the diaphragm for deterioration or damage. Clean the fuel valve using compressed air.

NOTE

Blow open all passages with the valve in ON and RES positions.





FUEL VALVE ASSEMBLY

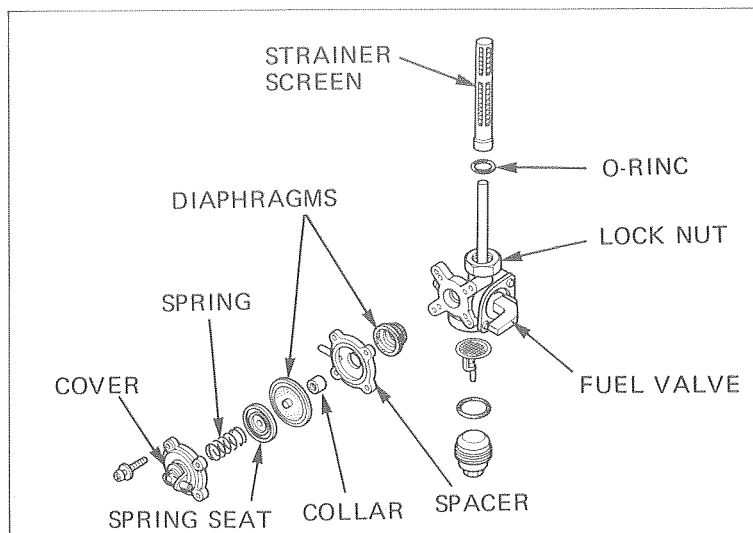
Assemble the fuel valve in the reverse order of disassembly.

Tighten the lock nut to the specified torque.

TORQUE: 20–25 N.m
(2.0–2.5 kg-m, 14–18 ft-lb)

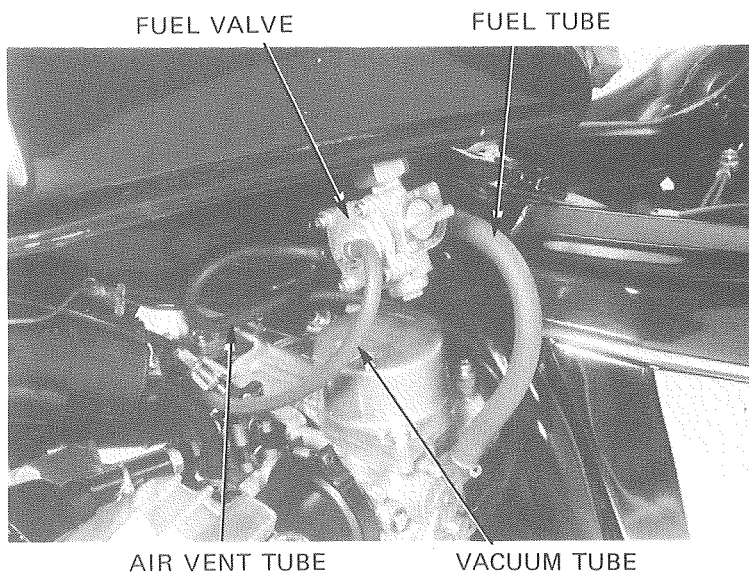
NOTE

- Make sure that the diaphragm is not pinched in the valve body.
- After installation, check the operation of the fuel valve. Also make sure that fuel is not leaking.
- Hold the fuel valve while turning the fuel valve lock nut.



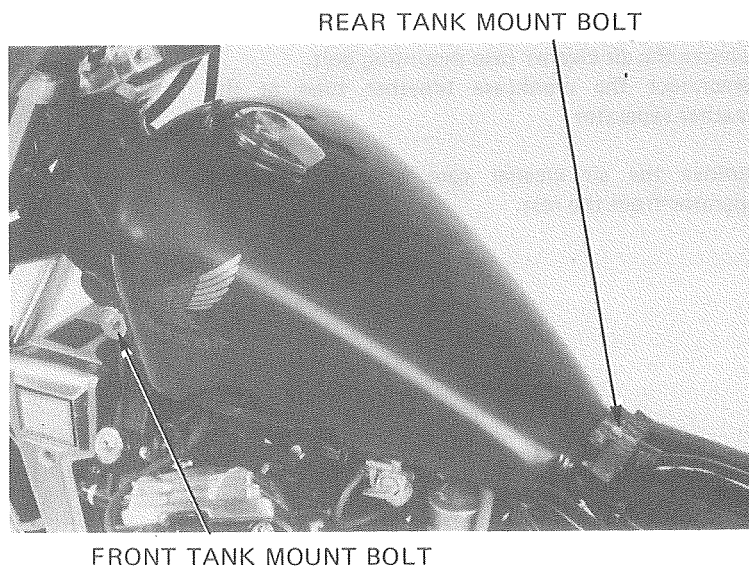
FUEL TANK INSTALLATION

Connect the fuel tube, vacuum tube and air vent tube to the fuel valve.



Install the fuel tank and tighten the fuel tank mount bolts.

Install the seat.





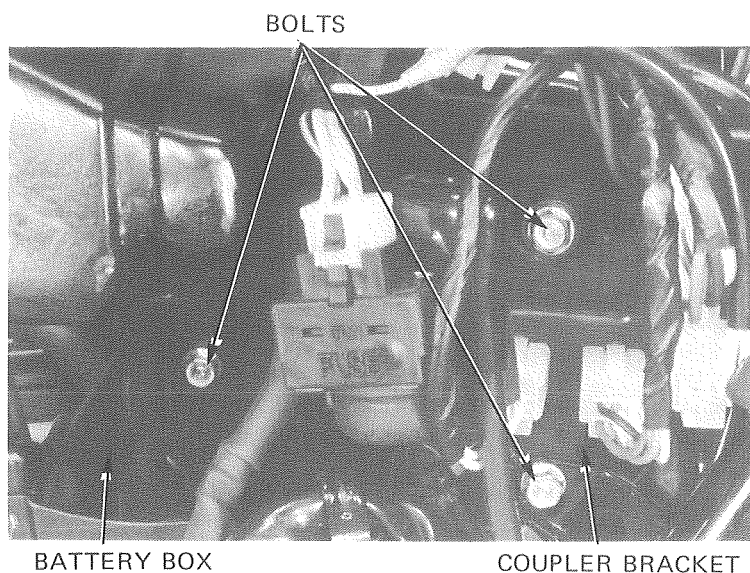
AIR CLEANER CASE

REMOVAL

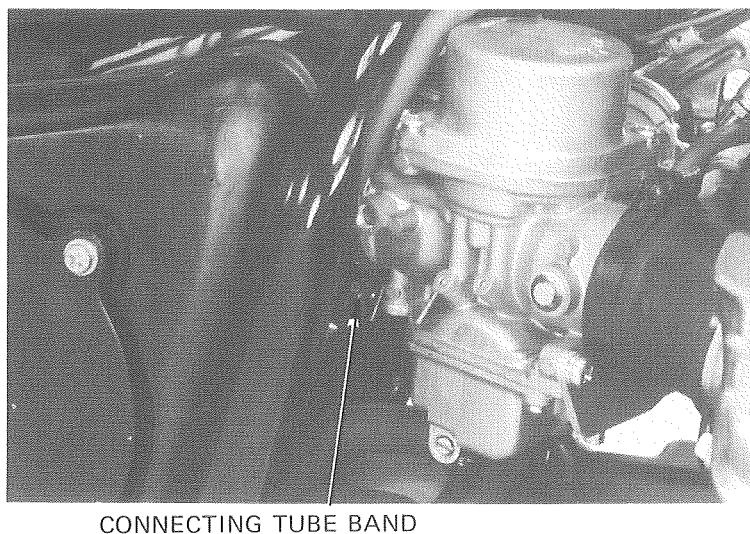
Remove the following:

- swing arm (page 14–15).
- battery (page 17-2).
- the 6 mm bolts attaching the battery box to the air cleaner case.
- the 6 mm bolts attaching the battery box to the air cleaner case.

Remove the battery box and coupler bracket.

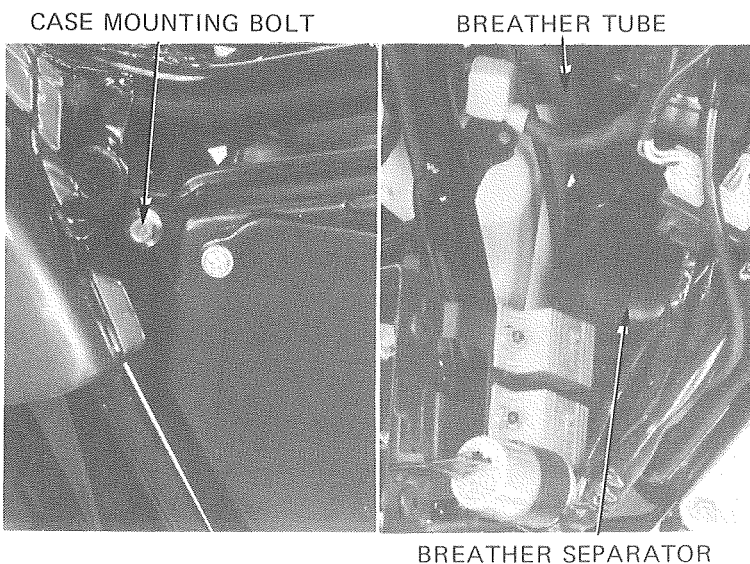


Loosen the air cleaner connecting tube bands.



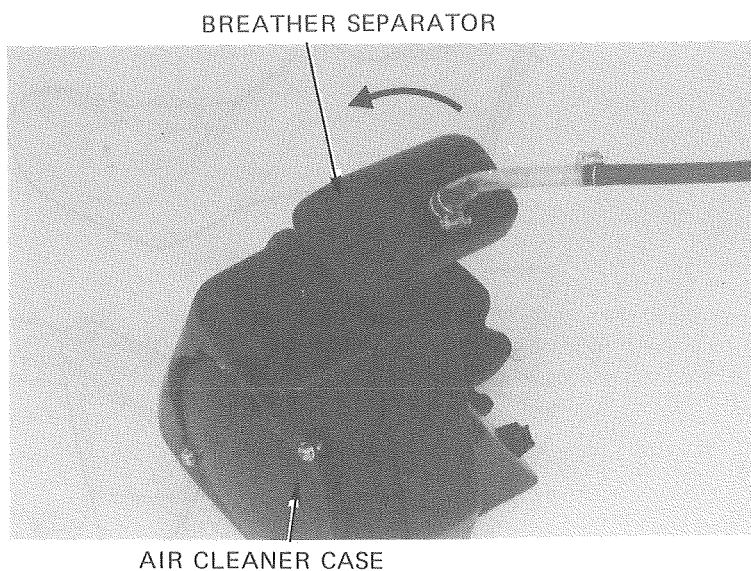
Remove the air cleaner case mounting bolt.
Disconnect the crankcase breather tube at the breather separator.

Remove the air cleaner case with the breather separator from the rear.





Remove the breather separator from the air cleaner case by turning it counter-clockwise 90 degrees.

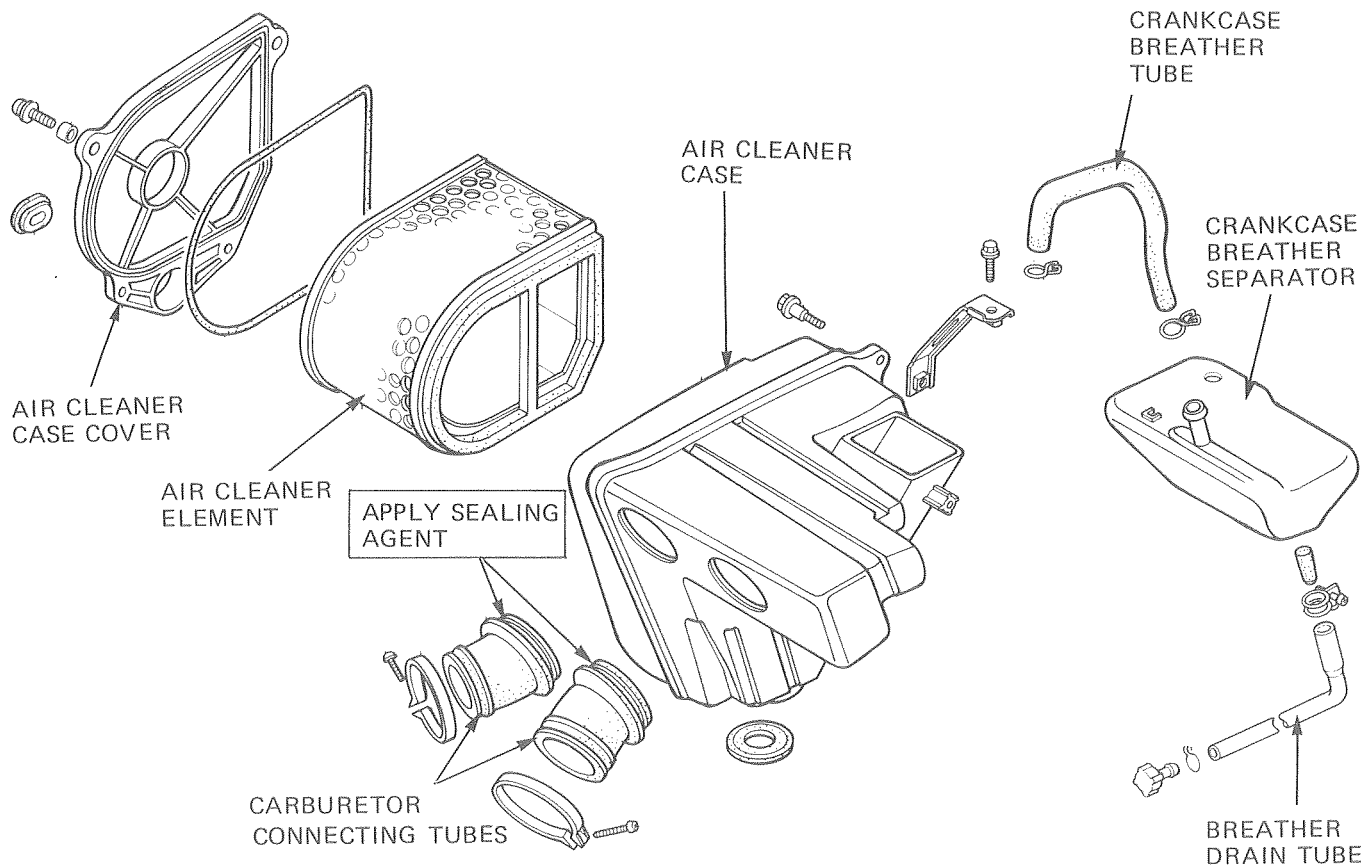


INSTALLATION

Install the air cleaner case in the reverse order of removal.

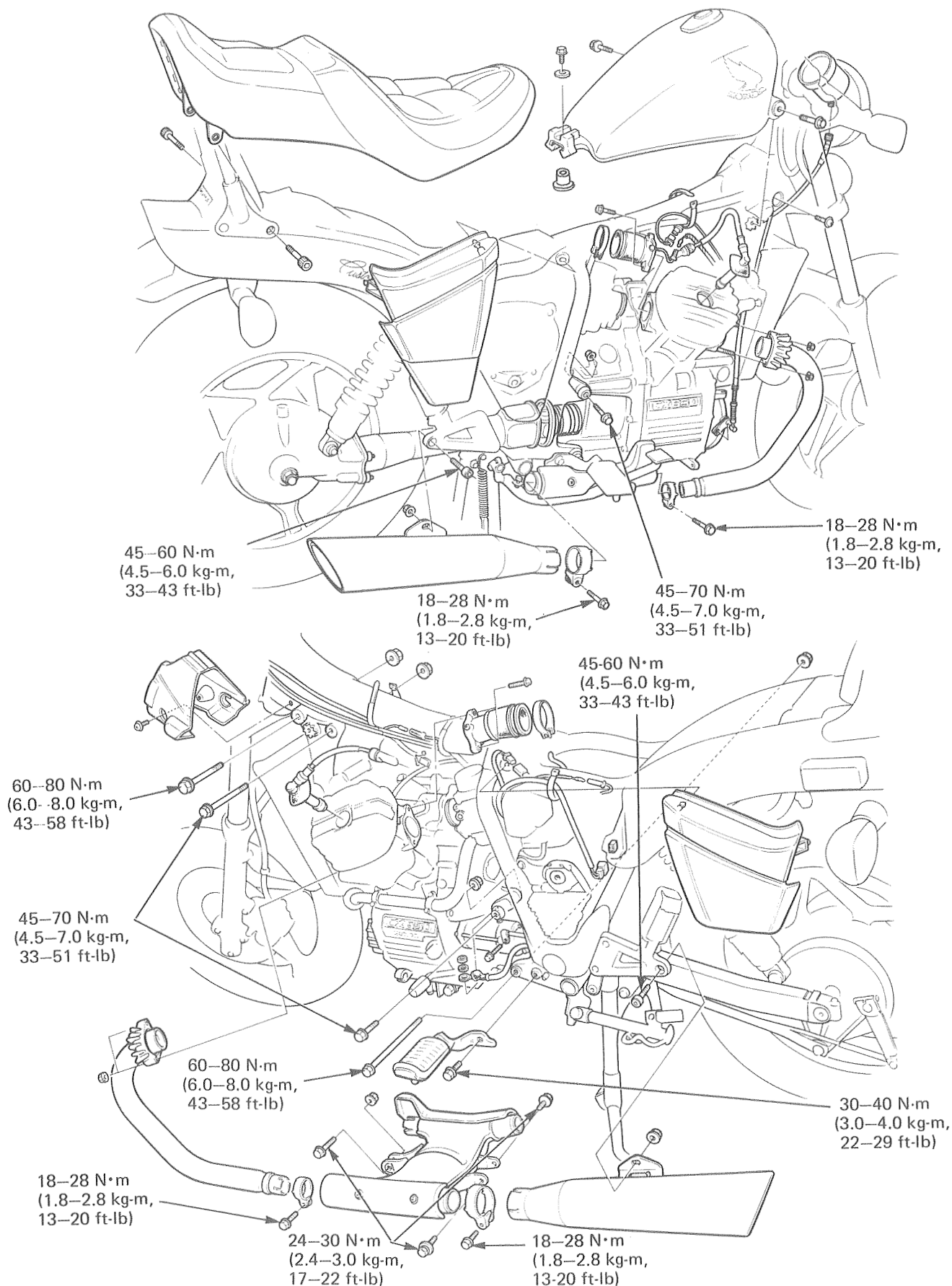
NOTE

Apply a sealing agent to the intake tube when installing it.





ENGINE REMOVAL/INSTALLATION





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5. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION	5-1
ENGINE REMOVAL	5-2
ENGINE INSTALLATION	5-7

SERVICE INFORMATION

GENERAL

- Parts requiring engine removal for servicing:
 - Crankshaft, Pistons
 - Connecting rods
 - Camshafts
 - Flywheel and starting clutch
 - Gearshift spindle
 - Transmission
 - Water pump mechanical seal
- Remove and install the engine with a hydraulic jack to support the engine's weight.
- Drain the engine oil before removing the engine if the front or rear cover is to be removed.
- For cooling system removal and installation, see section 9, Cooling System.

SPECIFICATIONS

Engine weight	74.5 kg (164 lbs)
Engine oil capacity	3.6 lit (3.8 US qt, 3.2 Imp qt)
Engine oil recommendation	See page 2-1
Coolant capacity (Radiator and engine)	1.7 lit (1.8 US qt, 1.5 Imp qt)

TORQUE VALUES

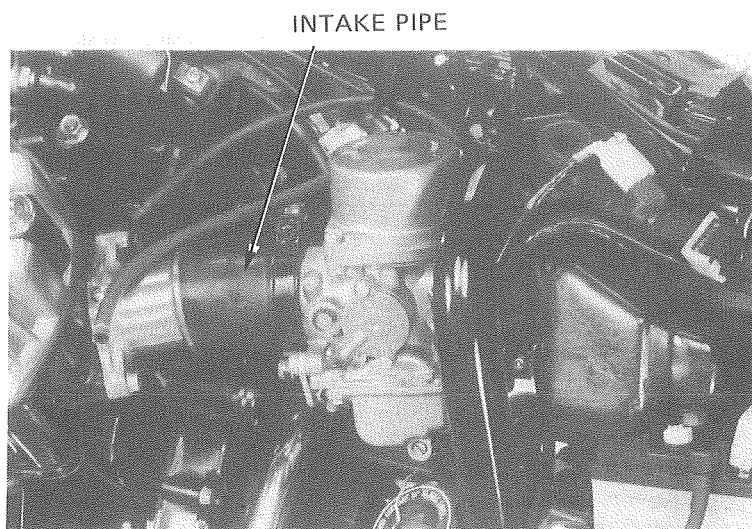
Front engine hanger nut	30 - 40 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
Front engine mount bolt (10 mm)	45 - 70 N·m (4.5 - 7.0 kg-m, 33 - 51 ft-lb)
(12 mm)	60 - 80 N·m (6.0 - 8.0 kg-m, 43 - 58 ft-lb)
Rear engine mount bolt (10 mm)	45 - 70 N·m (4.5 - 7.0 kg-m, 33 - 51 ft-lb)
(12 mm)	60 - 80 N·m (6.0 - 8.0 kg-m, 43 - 58 ft-lb)
Left foot peg bolt	30 - 40 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)
Passenger foot peg bolt	45 - 60 N·m (4.5 - 6.0 kg-m, 33 - 43 ft-lb)
Exhaust chamber bolt	24 - 30 N·m (2.4 - 3.0 kg-m, 17 - 22 ft-lb)
Muffler band bolt	18 - 28 N·m (1.8 - 2.8 kg-m, 13 - 20 ft-lb)



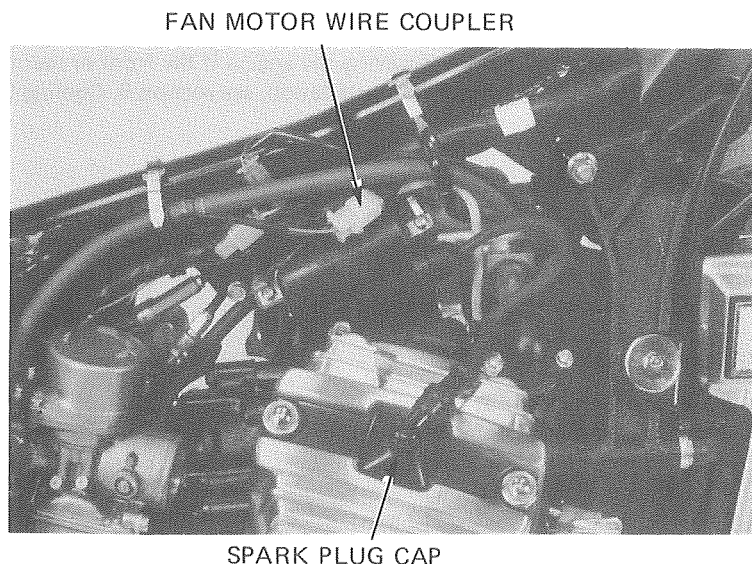
ENGINE REMOVAL/INSTALLATION

ENGINE REMOVAL

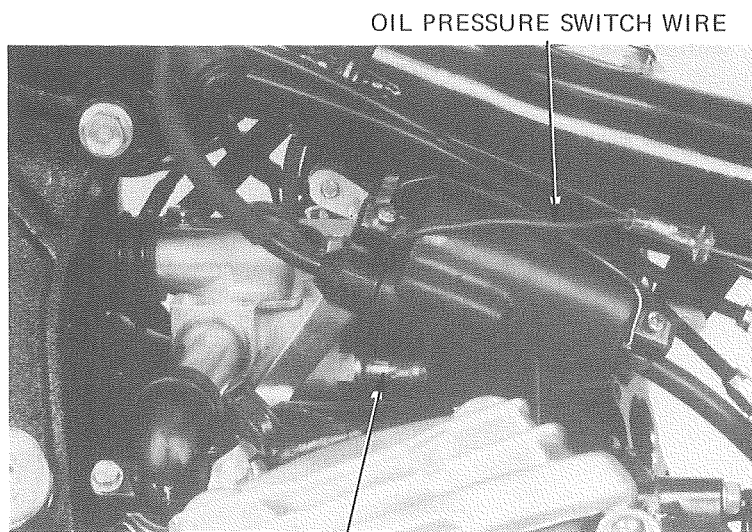
Turn the fuel valve off.
Remove the seat and fuel tank.
Remove the right and left side covers.
Drain the engine oil (page 2-3) and coolant (page 9-3).
Remove the carburetor intake pipes.



Disconnect the spark plug caps and the cooling fan motor wire coupler.

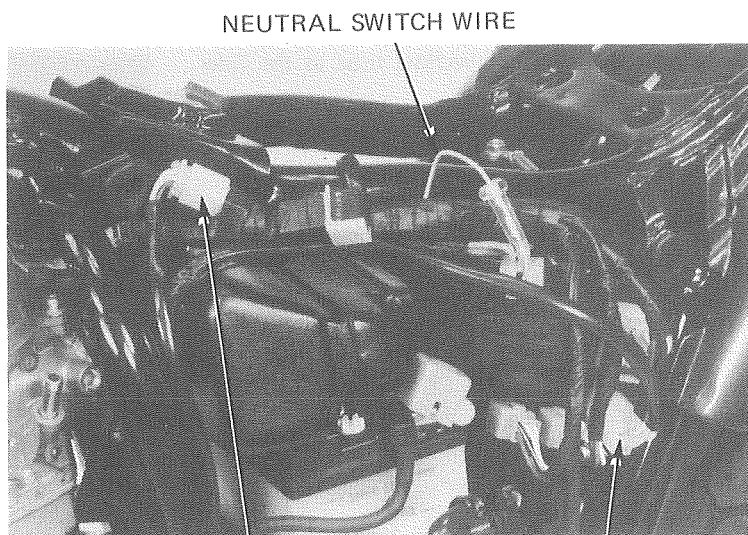


Disconnect the temperature sensor and oil pressure switch wires.

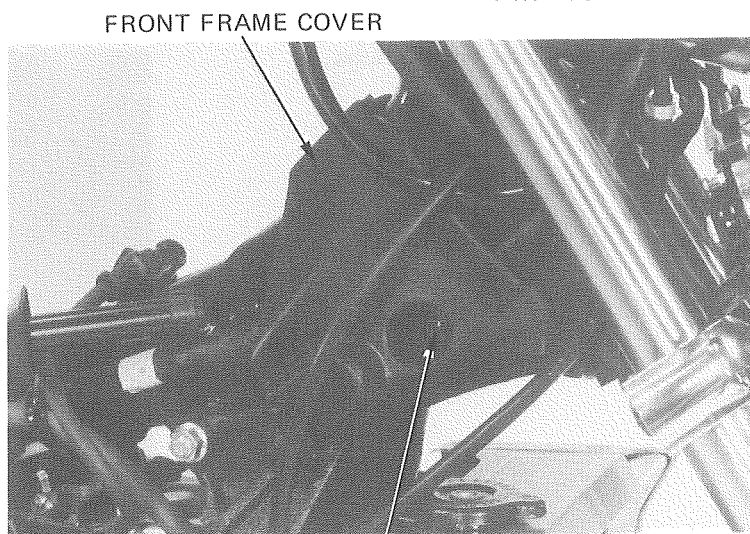




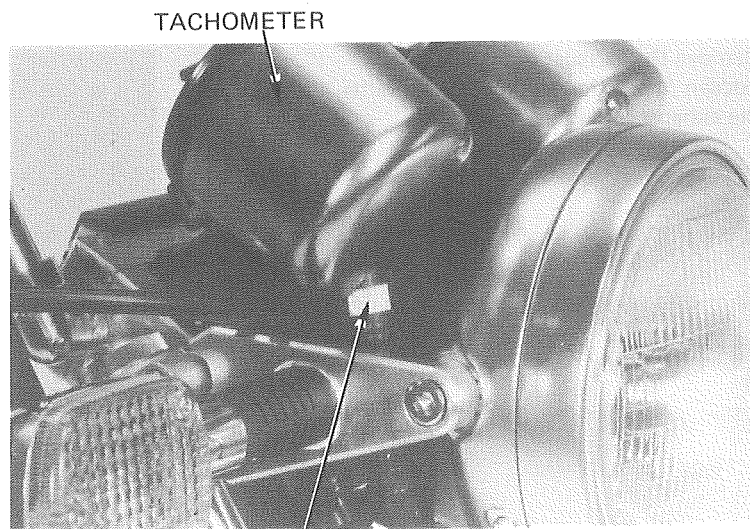
Disconnect the alternator and pulse generator wire couplers.
Disconnect the neutral switch wire.



Remove the two screws attaching the front frame cover and the cover.



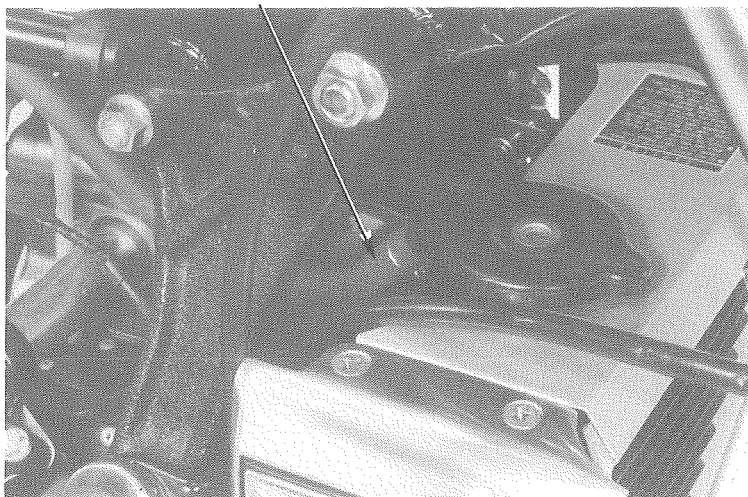
Disconnect the tachometer cable at the tachometer.





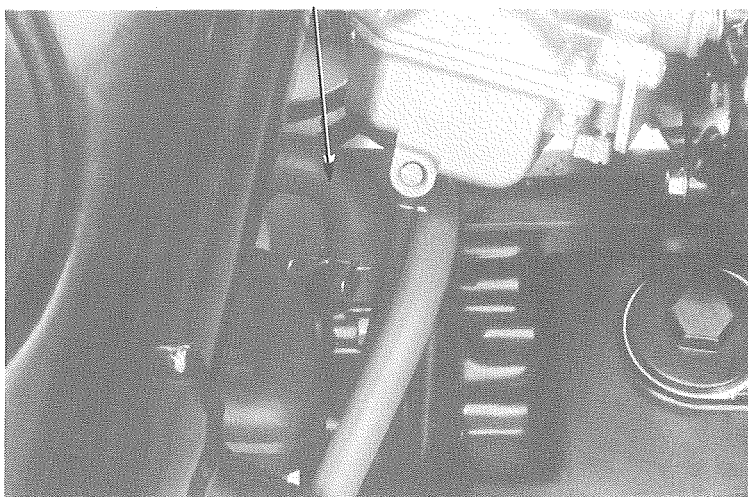
Disconnect the coolant overflow tube at the filler neck.

OVERFLOW TUBE



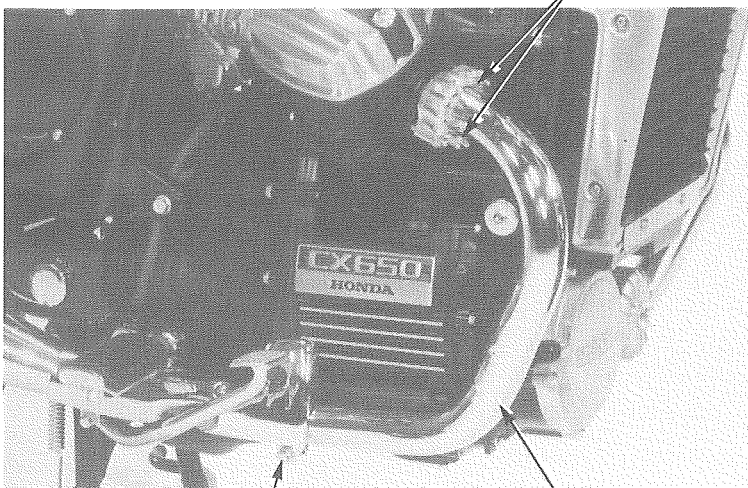
Disconnect the crankcase breather tube.

CRANKCASE BREATHER TUBE



Remove the exhaust pipe joint nuts.
Loosen the exhaust pipe clamp bolts and remove the exhaust pipes.

EXHAUST PIPE JOINT NUTS

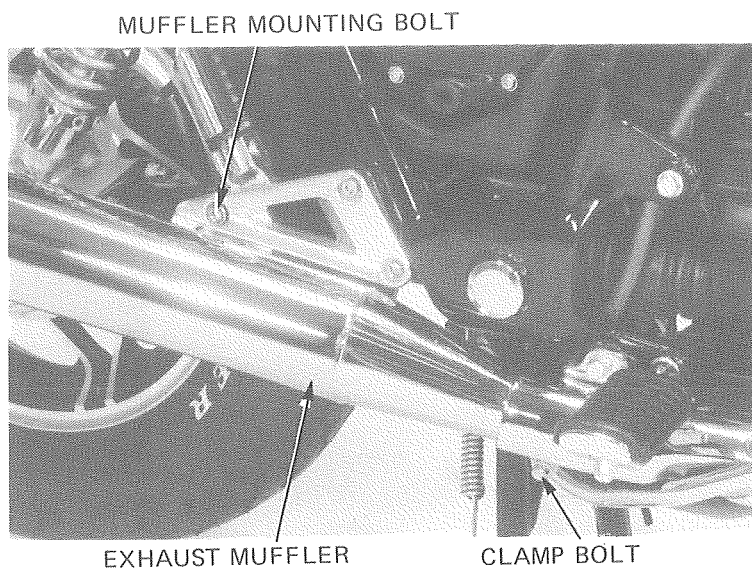


EXHAUST PIPE CLAMP BOLT

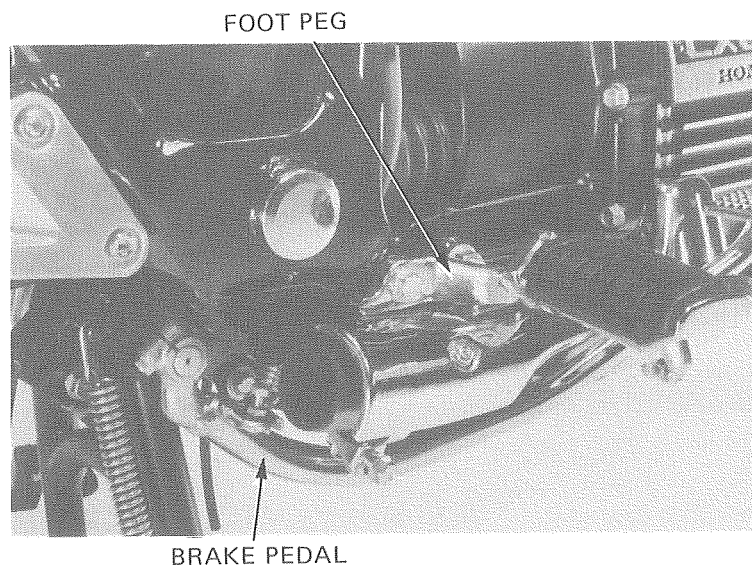
EXHAUST PIPE



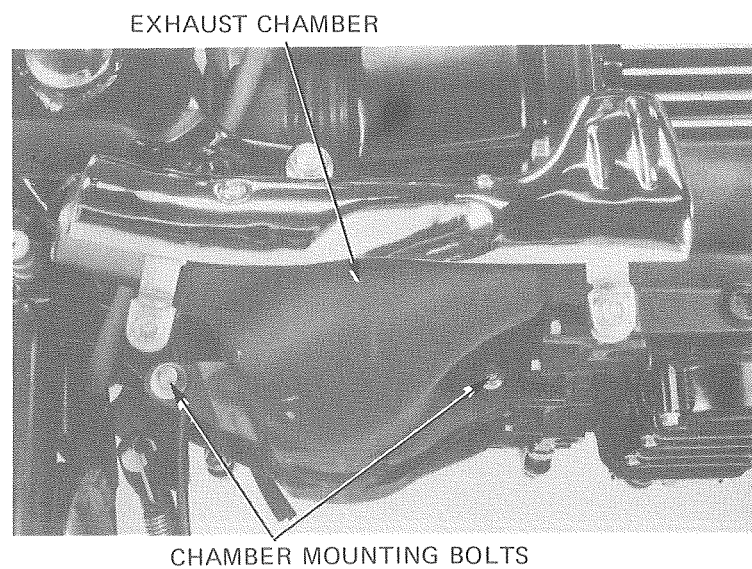
Remove the muffler mounting bolts.
Loosen the muffler clamp bolts, and remove the exhaust mufflers.



Remove the right and left foot pegs and brake pedal.



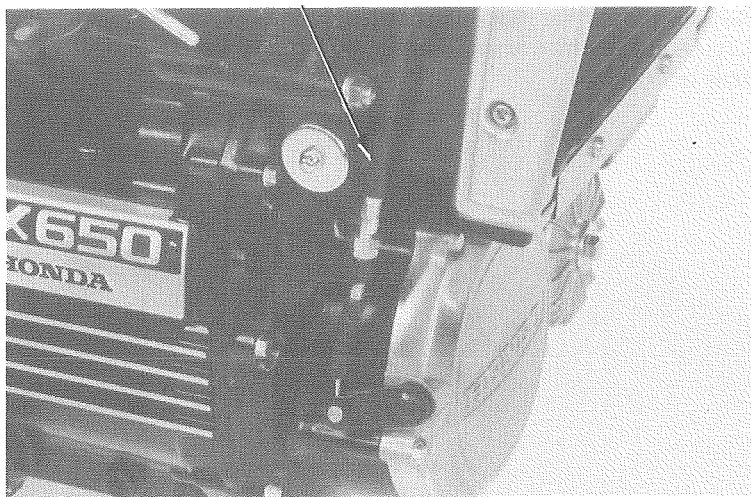
Remove the exhaust chamber mounting bolts and the chamber.





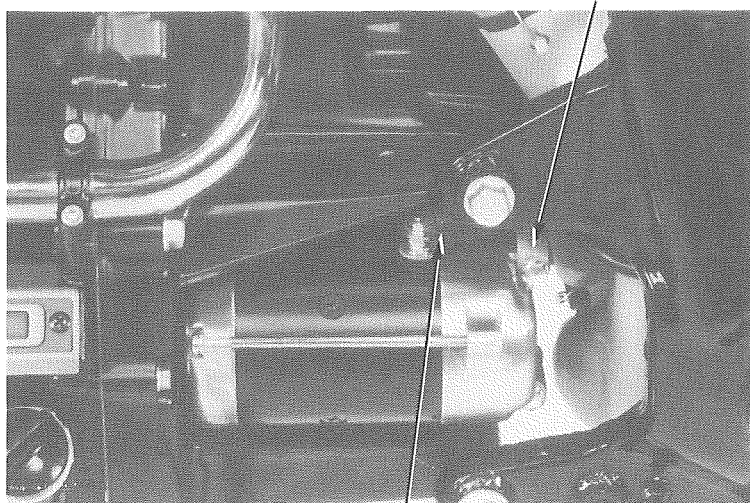
Disconnect the clutch cable at its lower end.

CLUTCH CABLE



Disconnect the starter motor and battery ground cables.

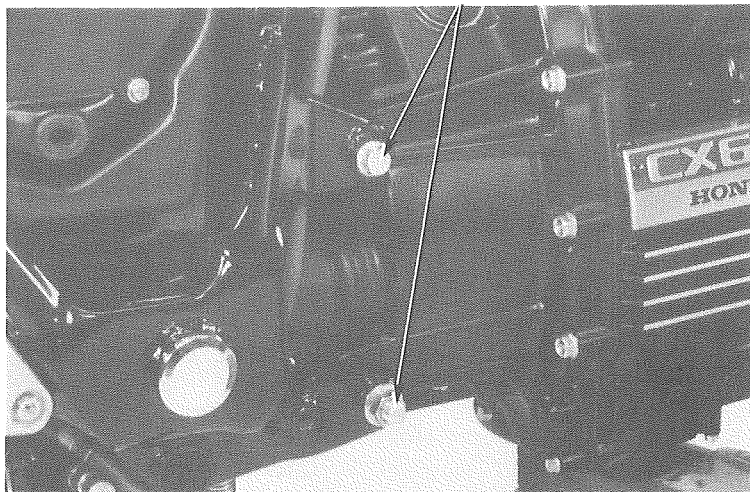
BATTERY GROUND CABLE



STARTER MOTOR CABLE

ENGINE REAR MOUNTING BOLTS

Place a jack under the engine to support its weight.
Remove the engine rear mounting bolts.





Remove the engine front mounting bolts.

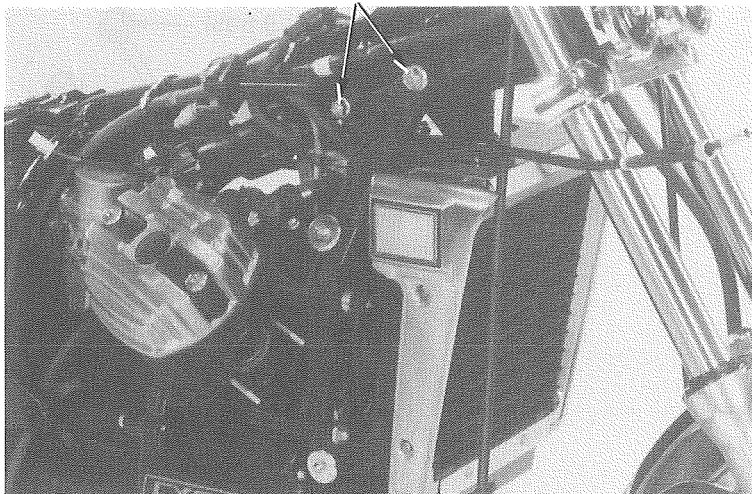
Disengage the drive shaft from the universal joint assembly by adjusting the jack height and moving the engine forward.

Remove the engine from the frame.

CAUTION

Jack height must be continuously adjusted during engine removal and installation to prevent damage to mounting bolt threads, wire harnesses and cables.

FRONT MOUNTING BOLTS



ENGINE INSTALLATION

The installation sequence is essentially the reverse of removal.

Place the transmission into gear.

Lubricate the final shaft splines with lithium-based multipurpose grease NLGI No. 2 (MoS₂ additive). Raise the engine with a jack and align the drive shaft with the universal joint.

Slide the drive shaft into the universal joint assembly by moving the engine backward. Make sure that the final drive splines are exposed 5–6 mm from the end of the universal joint.

NOTE

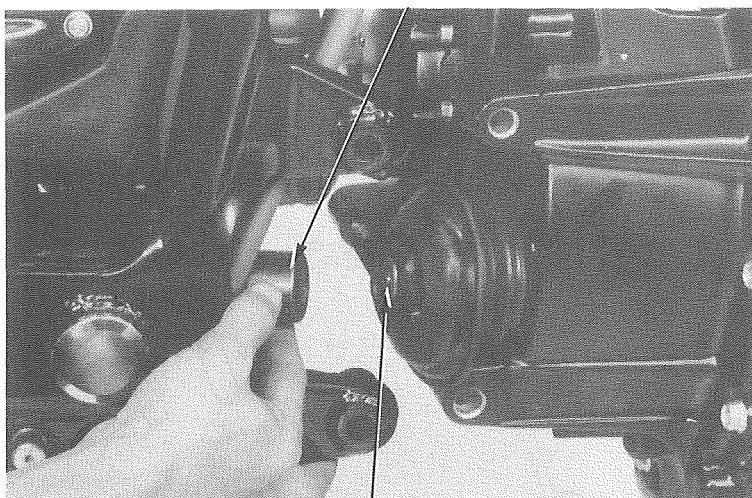
- Align the mounting surfaces carefully to prevent damage to mounting bolt threads, wire harnesses and cables.
- Route the wires and cables properly (Page 1–10, 11).

Tighten the engine mount bolts, to the correct torque values.

NOTE

- Fill the engine with the recommended oil and coolant.
- Perform the following inspections and adjustments:
 - Clutch free play (Page 3-14).
 - Engine oil level (Page 2-2).
 - Radiator coolant (Page 3-10).
 - Engine oil and coolant leakage.

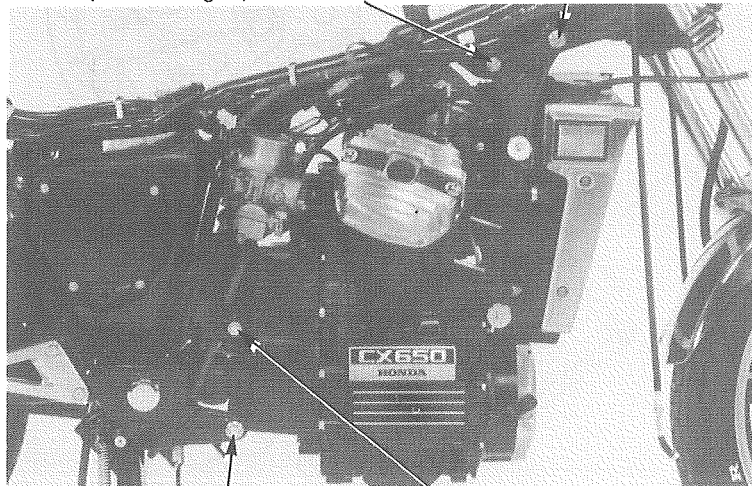
UNIVERSAL JOINT



DRIVE SHAFT

45–70 N·m
(4.5–7.0 kg-m, 33–51 ft-lb)

60–80 N·m
(6.0–8.0 kg-m, 43–58 ft-lb)



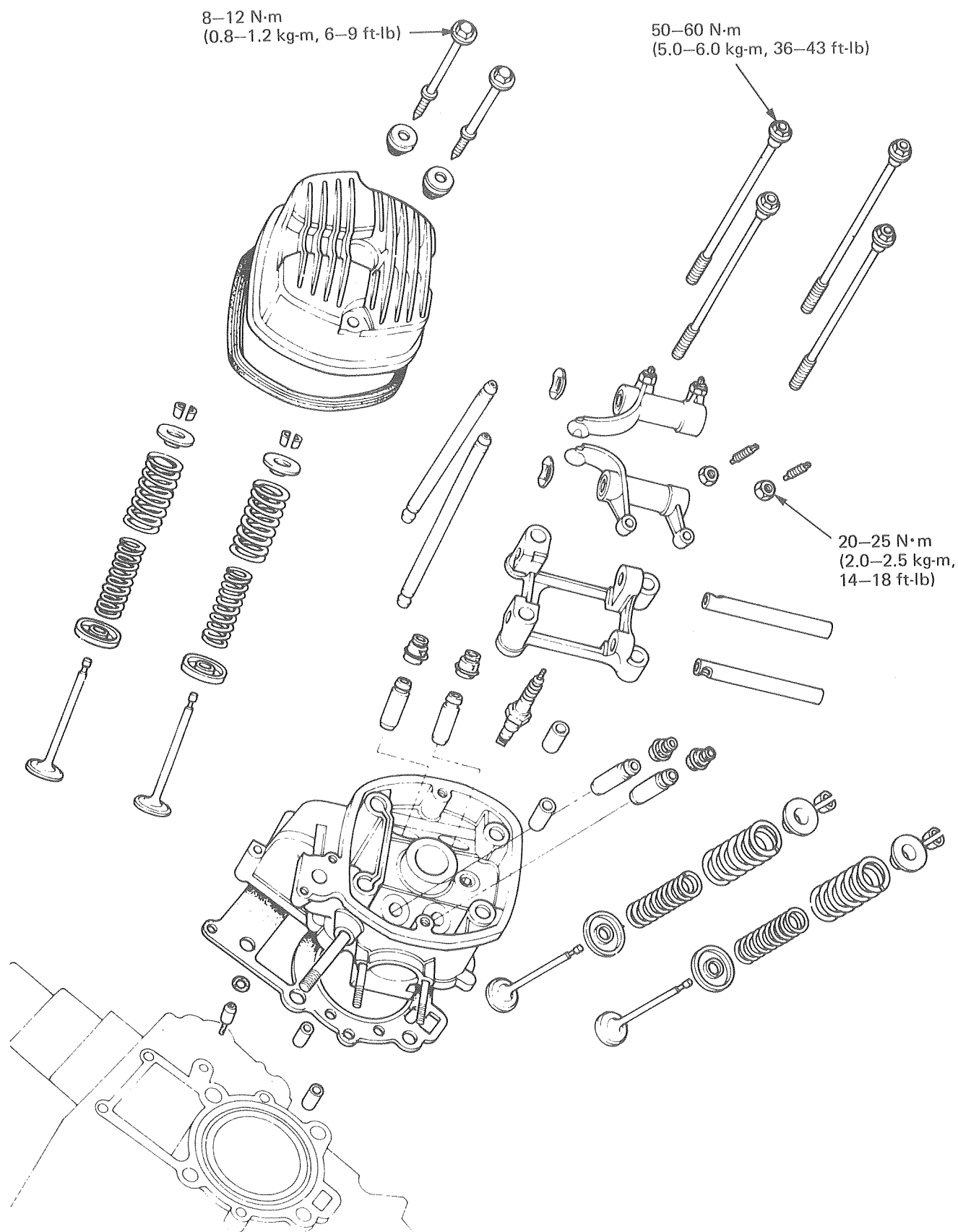
60–80 N·m
(6.0–8.0 kg-m, 43–58 ft-lb)

45–70 N·m
(4.5–7.0 kg-m, 33–51 ft-lb)



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CYLINDER HEAD/VALVE





SERVICE INFORMATION	6-1
TROUBLESHOOTING	6-2
ROCKER ARM/CYLINDER HEAD REMOVAL	6-3
CYLINDER HEAD DISASSEMBLY	6-7
VALVE GUIDE REPLACEMENT	6-9
VALVE SEAT INSPECTION/GRINDING	6-10
CYLINDER HEAD ASSEMBLY	6-13
ROCKER ARM ASSEMBLY	6-14
CYLINDER HEAD/ROCKER ARM INSTALLATION	6-14

SERVICE INFORMATION

GENERAL

- All cylinder head maintenance and inspection can be accomplished with the engine installed. Before removing the cylinder heads, it is necessary to drain coolant from the cylinder water jackets by removing the drain bolts.
- The engine must be cool before removing the cylinder head.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cylinder compression (cold)		1,200 kPa (1.20 kg/cm ² , 171 psi)	—
Rocker arms and Shafts	Rocker arm I.D.	15.000 – 15.018 (0.5906 – 0.5913)	15.04 (0.592)
	Rocker arm shaft O.D.	14.966 – 14.984 (0.5892 – 0.5899)	14.95 (0.589)
Valve spring	Free length	Outer (IN)	50.40 (1.983)
		Inner (IN)	49.50 (1.949)
		Outer (EX)	50.40 (1.984)
		Inner (EX)	49.50 (1.949)
	Preload/Length	Outer (IN)	28 kg/39.9 mm (61.7 lbs/1.57 in)
		Inner (IN)	13.5 kg/37.9 mm (29.8 lbs/1.49 in)
		Outer (EX)	28.5 kg/39.9 mm (62.8 lbs/1.57 in)
		Inner (EX)	13.5 kg/37.9 mm (29.8 lbs/1.49 in)



ROCKER ARM/CYLINDER HEAD REMOVAL

NOTE

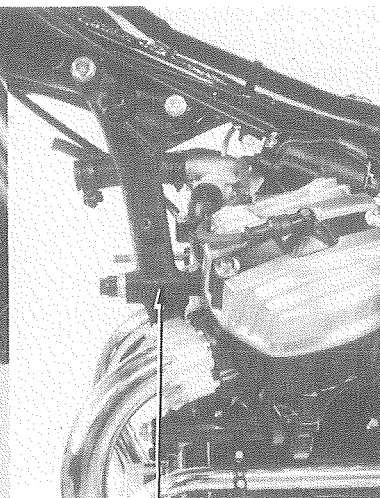
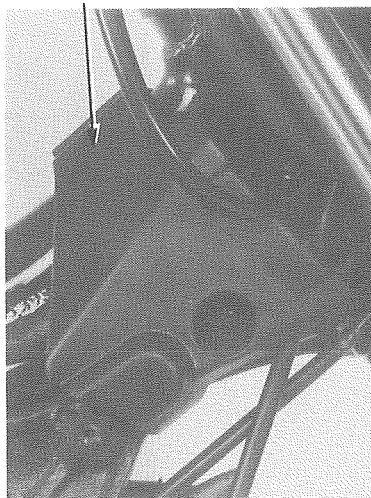
The rocker arms can be removed without removing the cooling system.

Remove the radiator (page 9-6).
Remove the front frame cover and front engine hanger.

Remove the exhaust pipe.
Remove the carburetor intake pipe bolts.

Remove the water pipe joints and water pipes.

FRAME COVER

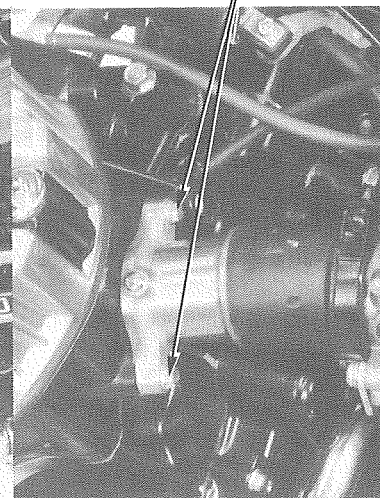


FRONT ENGINE HANGER

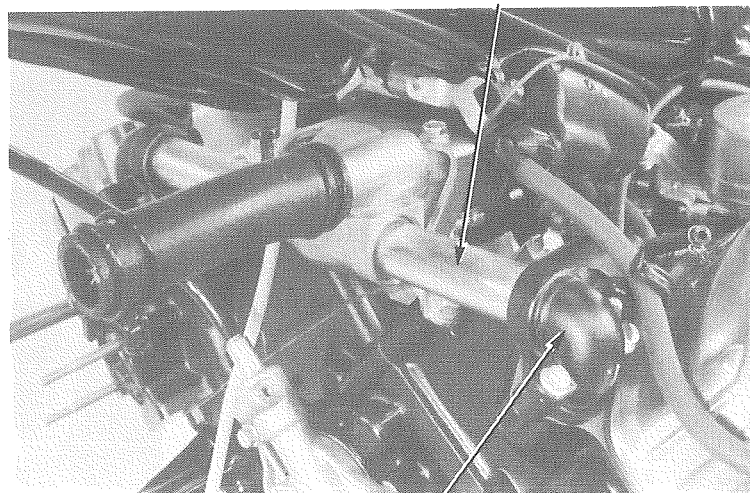
INTAKE PIPE BOLTS



EXHAUST PIPE



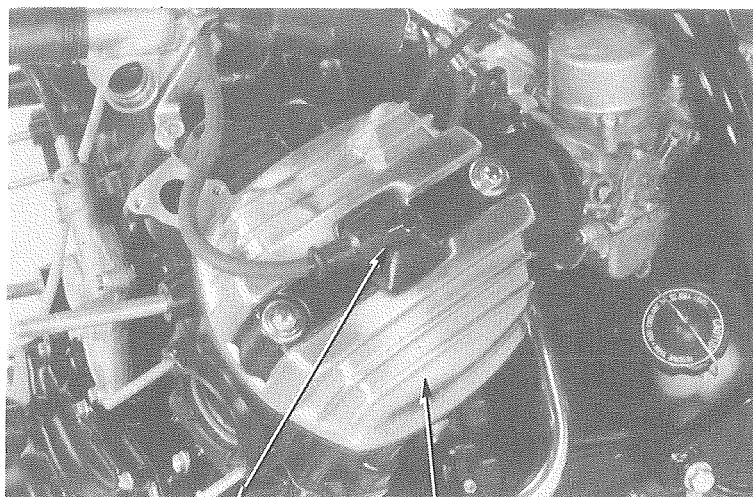
WATER PIPE



WATER PIPE JOINT



Remove the spark plug cap.
Loosen the cylinder head cover bolts and remove the cover.



SPARK PLUG CAP

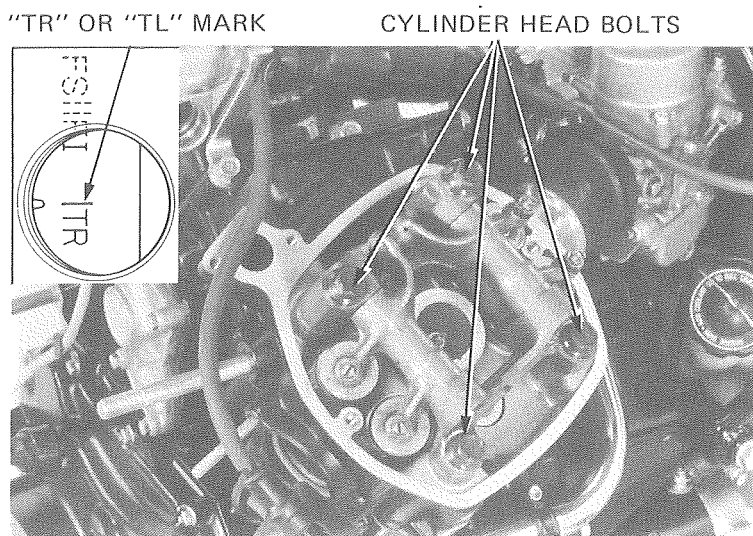
CYLINDER HEAD COVER

Remove the thermostat unit with bracket (Page 9-4).
Remove the crankshaft hole cap and timing inspection cap.
Bring the piston to T.D.C. of the compression stroke by turning the crankshaft.

NOTE

- Align the index mark with the "TR" mark for the right cylinder.
- Align the index mark with the "TL" mark for the left cylinder.

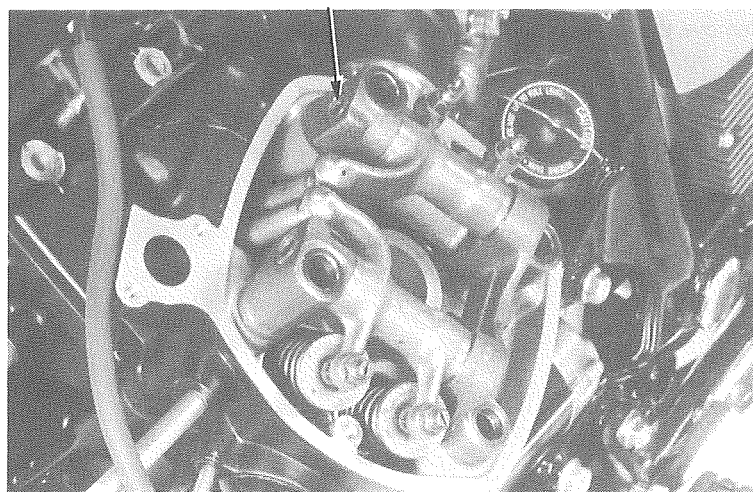
Loosen the cylinder head bolts in a crisscross pattern in two or more steps.



"TR" OR "TL" MARK

CYLINDER HEAD BOLTS

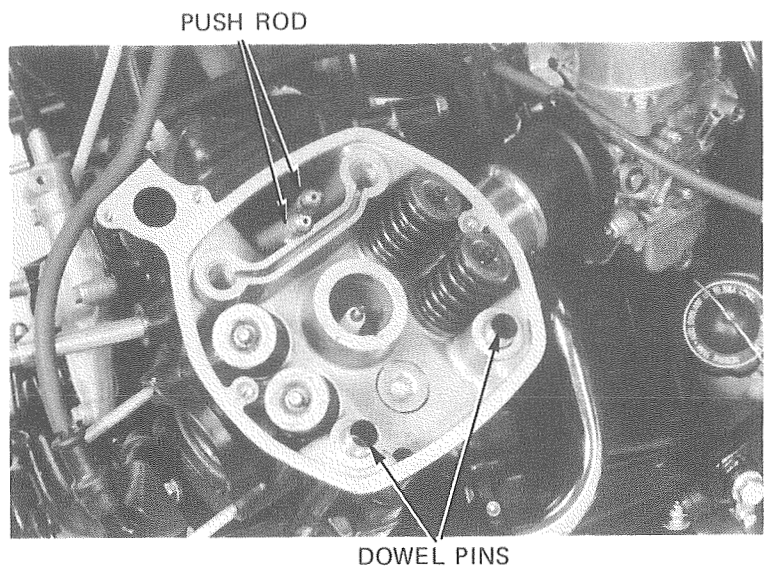
Remove the rocker arm holder assembly.



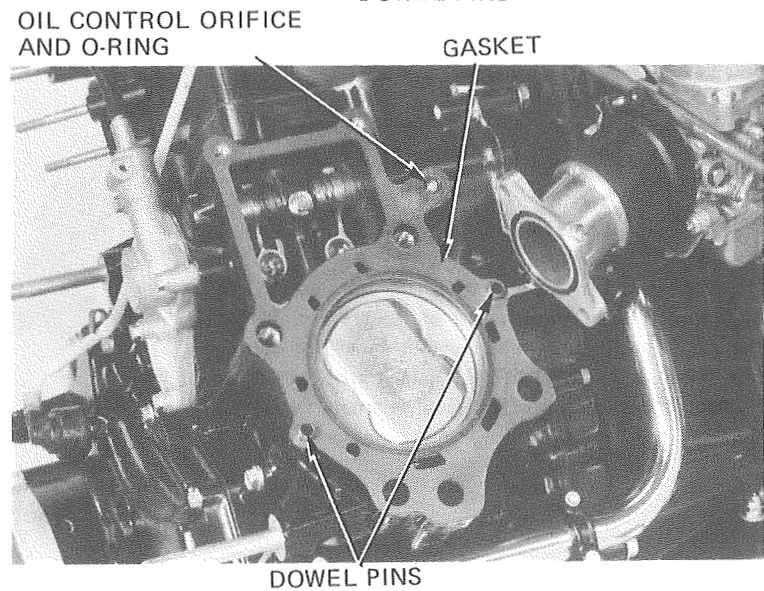
ROCKER ARM HOLDER



Remove the push rods and the cylinder head dowel pins.
Remove the cylinder head.

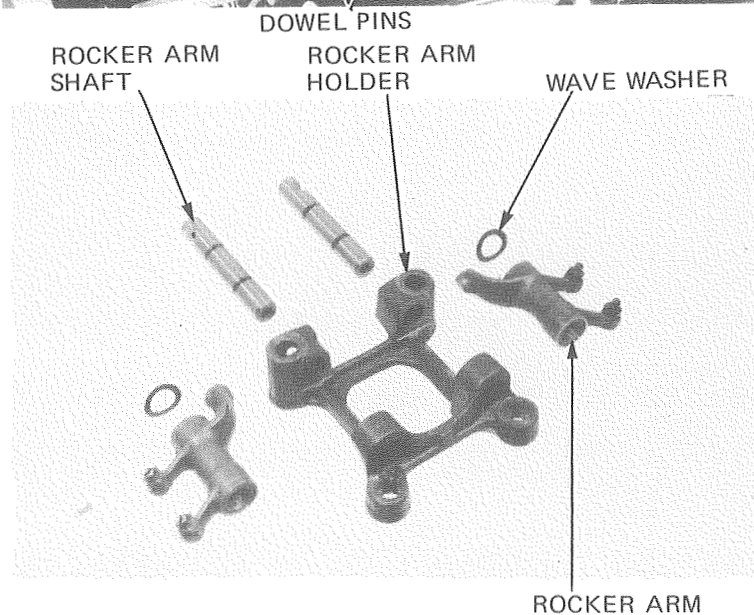


Remove the cylinder base dowel pins.
Remove the oil control orifice and O-ring.
Remove the cylinder head gasket.



ROCKER ARM HOLDER DISASSEMBLY

Withdraw the rocker arm shafts and remove the wave washers and rocker arms.



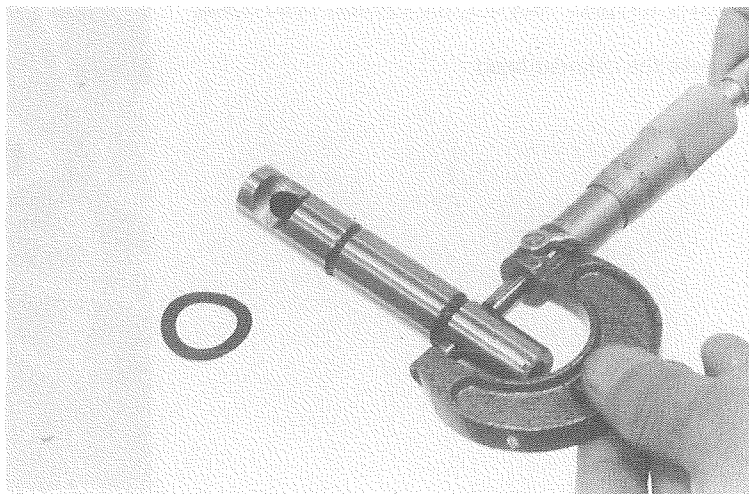


CYLINDER HEAD/VALVE

ROCKER ARM SHAFT INSPECTION

Examine the wave washers for damage.
Inspect each shaft for damage, scoring or nicks.
Measure the O.D. of each rocker arm shaft.

SERVICE LIMIT: 14.95 mm (0.589 in)

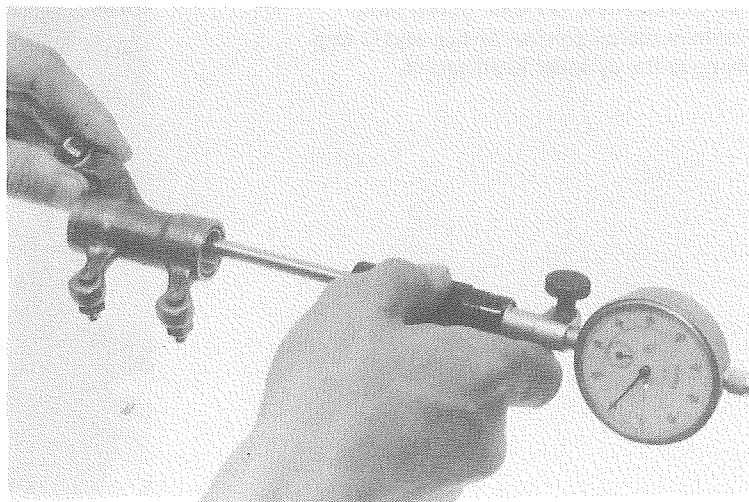


ROCKER ARM INSPECTION

Inspect each rocker arm for scoring, damage, or clogged oil holes. Measure the I.D. of each rocker arm.

SERVICE LIMIT: 15.04 mm (0.592 in)

If a rocker arm shows wear or damage to the adjusting screw or push rod contact faces, inspect the push rods and stem contact faces for scoring scratches, or evidence of insufficient lubrication. Inspect the push rods for wear, damage and trueness.





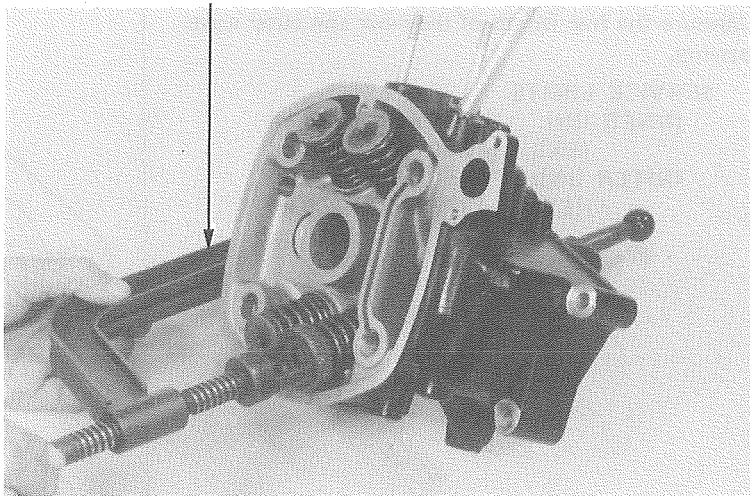
CYLINDER HEAD DISASSEMBLY

Remove the valve spring cotters, retainers, springs and valves.

NOTE

- Do not compress the valve springs more than necessary to remove the cotters.
- Mark all parts to ensure original assembly.

VALVE SPRING COMPRESSOR 07757-0010000

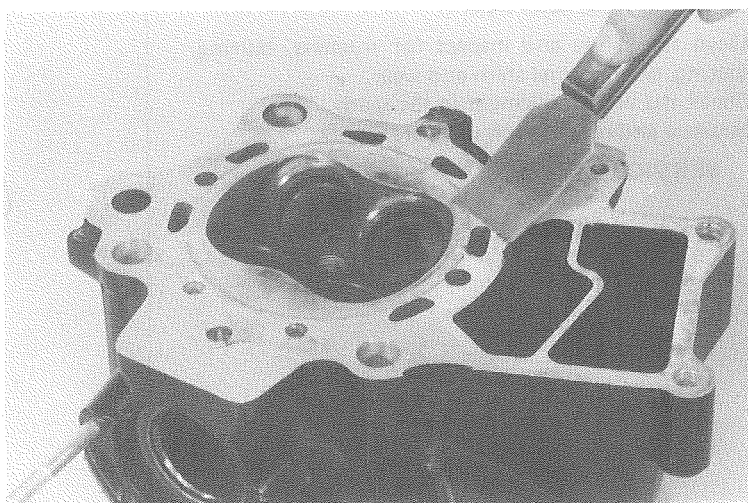


Remove carbon deposits from the combustion chamber.

Remove all gasket material from the head surfaces.

NOTE

- Do not damage the gasket surfaces.
- Avoid dropping gasket material into the jackets or oil passages.
- Gaskets will come off easier if they are soaked with solvent.

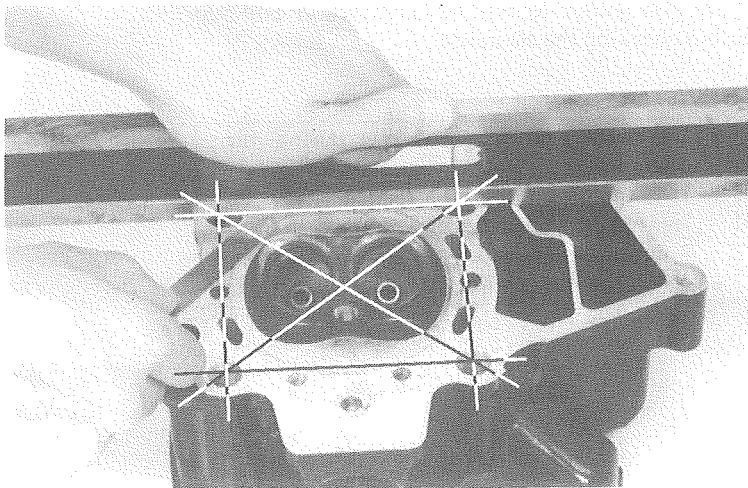


CYLINDER HEAD INSPECTION

Check the spark plug hole and valve areas carefully for cracks.

Check the cylinder head for warpage with a straight edge and feeler gauge in an X pattern.

SERVICE LIMIT: 0.10 mm (0.040 in)





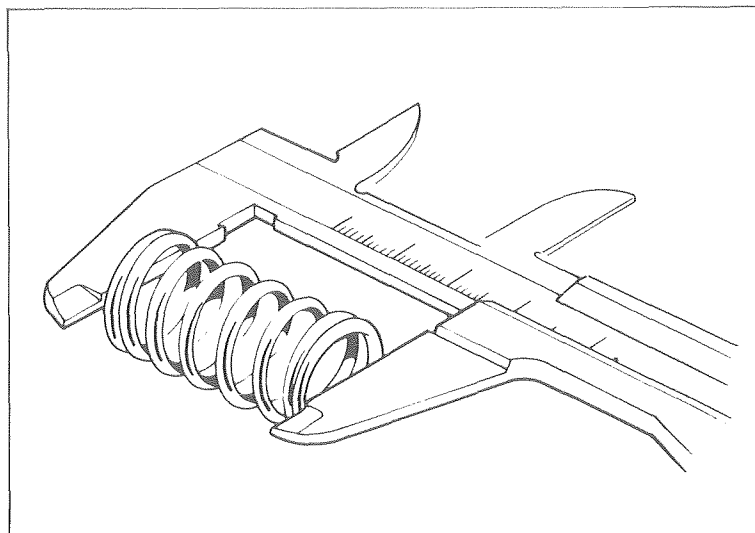
CYLINDER HEAD/VALVE

VALVE SPRING INSPECTION

Measure the free length of the inner and outer valve springs.

SERVICE LIMITS:

INNER (IN):	47.60 mm (1.874 in)
(EX):	47.60 mm (1.874 in)
OUTER (IN):	48.50 mm (1.909 in)
(EX):	48.50 mm (1.909 in)

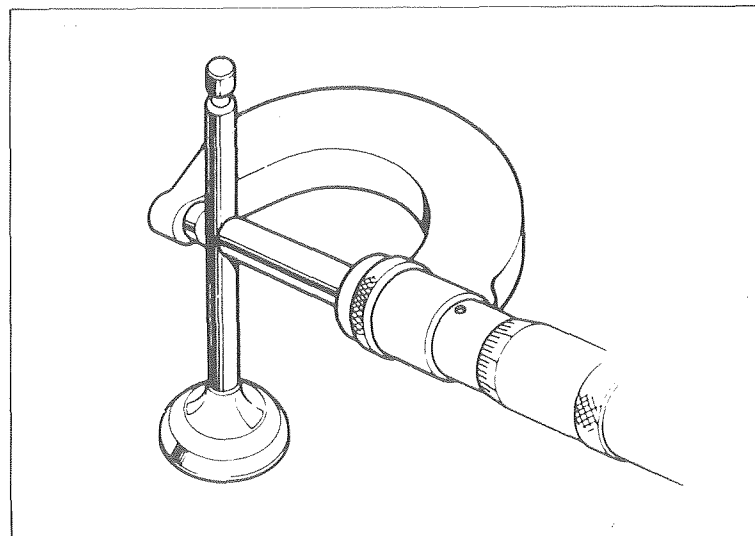


VALVE INSPECTION

Clean the valves and inspect for trueness, burring, scoring, or abnormal stem end wear.
Check the valve movement in the guide.
Measure and record each valve stem O.D.

SERVICE LIMITS:

(IN):	6.54 mm (0.258 in)
(EX):	6.54 mm (0.258 in)

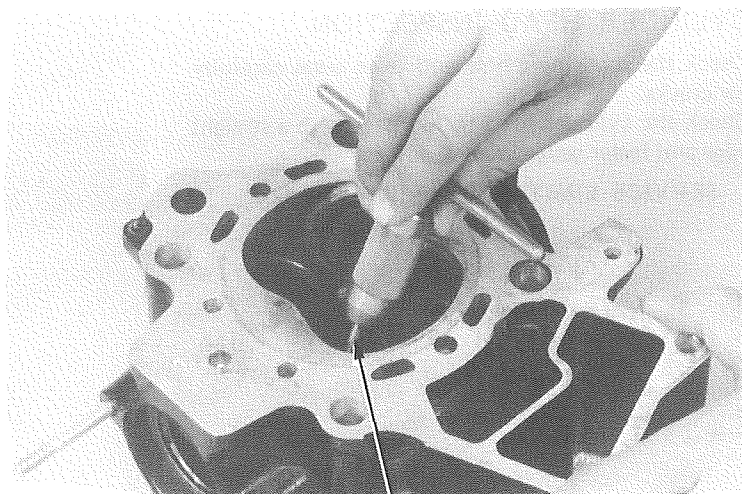


STEM-TO-GUIDE CLEARANCE INSPECTION

Ream the guides to remove any carbon build-up before checking the clearance.

NOTE

- Use cutting oil on the reamer during this operation.
- It is important that the reamer always be rotated in the same direction when it is inserted or removed.
- Clean the head thoroughly of any particles.



VALVE GUIDE REAMER, 6.6 mm
07984-6570100 or 07984-6110000



Measure and record each valve guide I.D. using a ball gauge or inside micrometer.

SERVICE LIMITS:

(IN/EX): 6.70 mm (0.264 in)

Calculate the stem to guide clearance.

SERVICE LIMITS:

(IN): 0.10 mm (0.040 in)

(EX): 0.10 mm (0.040 in)

NOTE

If the stem to guide clearance exceeds the service limit, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace guides as necessary and ream to fit.

VALVE GUIDE REPLACEMENT

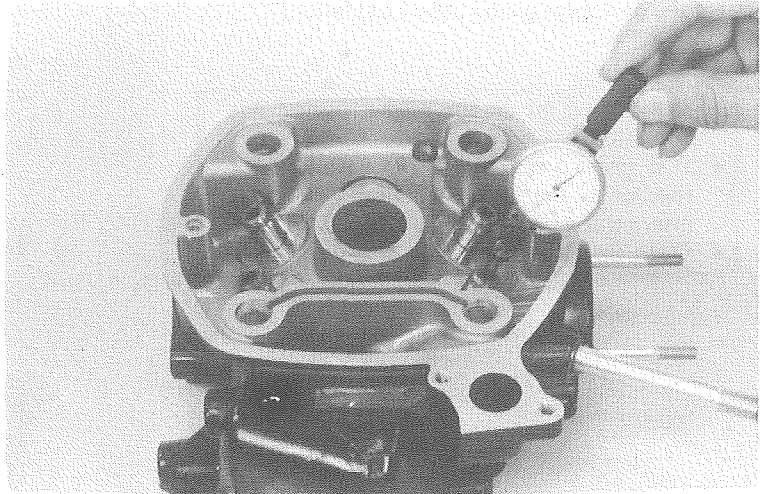
If the stem-to-guide clearance still exceeds the service limits with new guides, replace the valves and guides.

NOTE

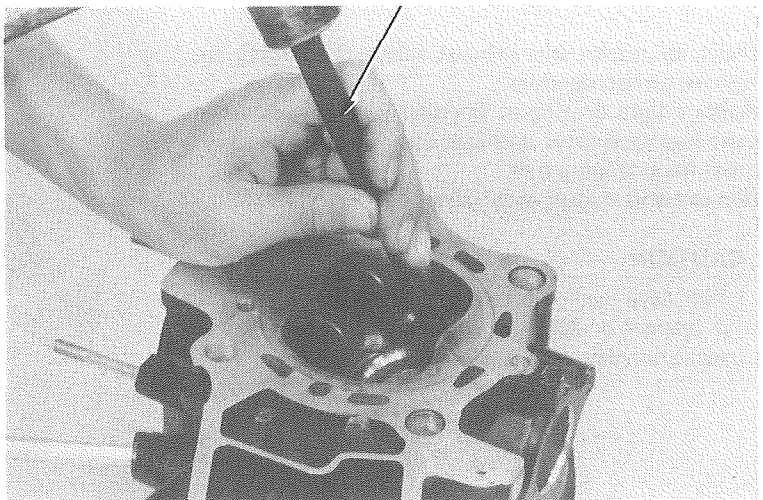
Be careful not to damage the cylinder head when replacing valve guides.

Support the cylinder head and drive out the guide from the valve port.

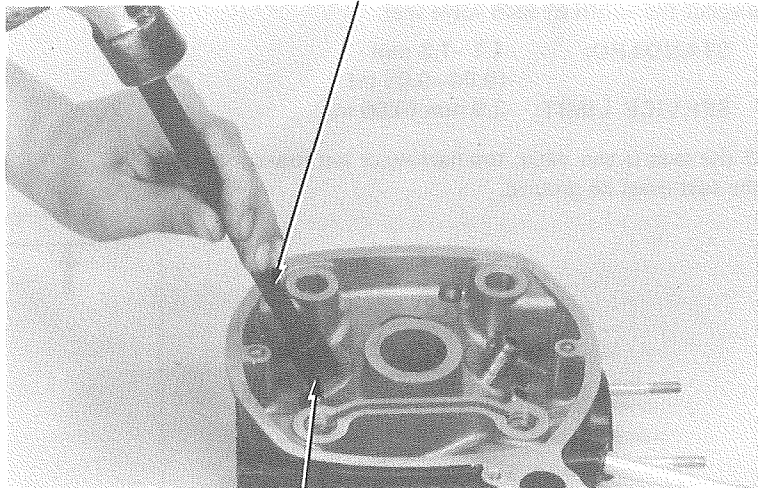
Place the Attachment on the Valve Guide Driver and drive the guides into place from the top of the head. Stop driving when the attachment contacts the head.



VALVE GUIDE DRIVER, 6.6mm
07942-6570100 or 07742-0010200



VALVE GUIDE DRIVER, 6.6 mm
07942-6570100 or 07742-0010200



ATTACHMENT, 07943-4150000

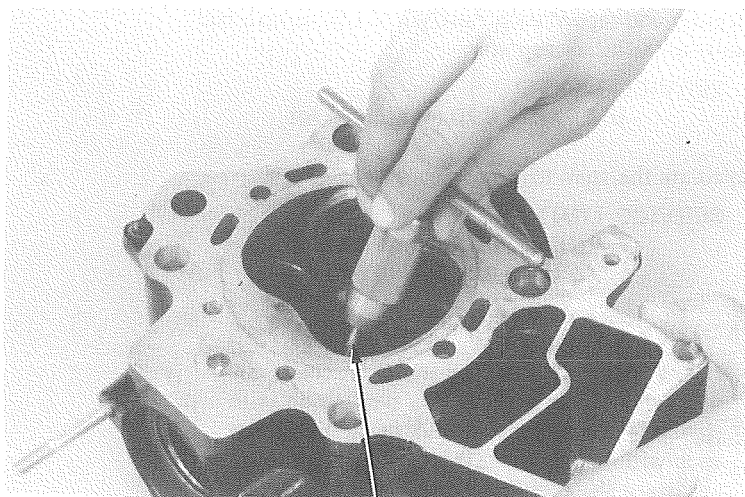


CYLINDER HEAD/VALVE

Ream the new valve guides after installation.

NOTE

- Use cutting oil on the reamer during this operation.
- It is important that the reamer always be rotated in the same direction when it is inserted or removed.
- Clean the head thoroughly of any particles.



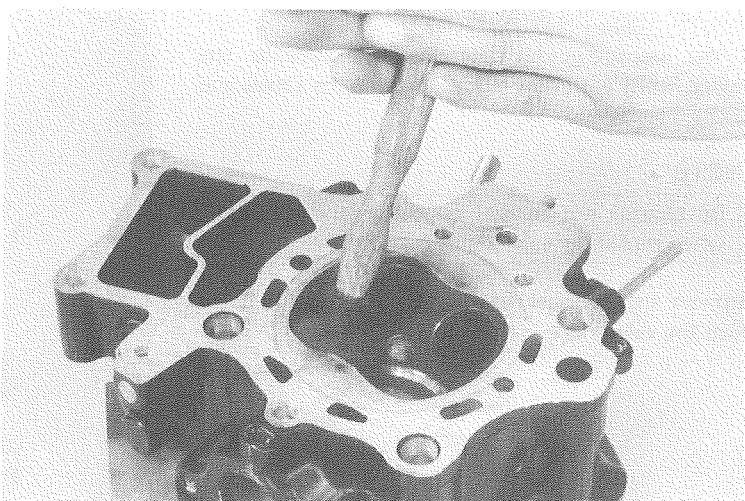
VALVE GUIDE REAMER, 6.6 mm
07984-6570100 or 97984-6110000

VALVE SEAT INSPECTION/GRINDING

Clean all intake and exhaust valves thoroughly to remove carbon deposits.

Apply a light coating of Prussian Blue to each valve seat. Lap each valve and seat using a rubber hose or other hand-lapping tool.

Remove and inspect each valve.



CAUTION

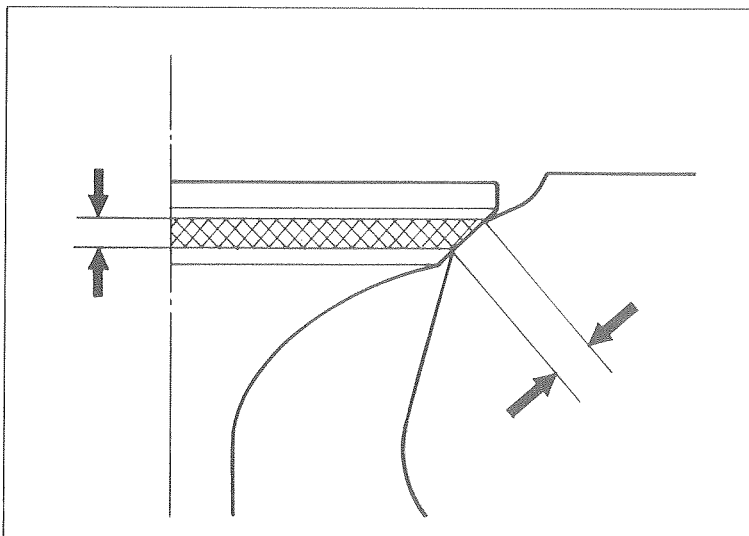
The valve cannot be ground. If the valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.

Inspect the width of each valve seat.

STANDARD: 1.1–1.3 mm
(0.04–0.05 in)

SERVICE LIMIT: 2.0 mm (0.08 in)

If the seat is too wide, too narrow or has low spots, the seat must be ground.



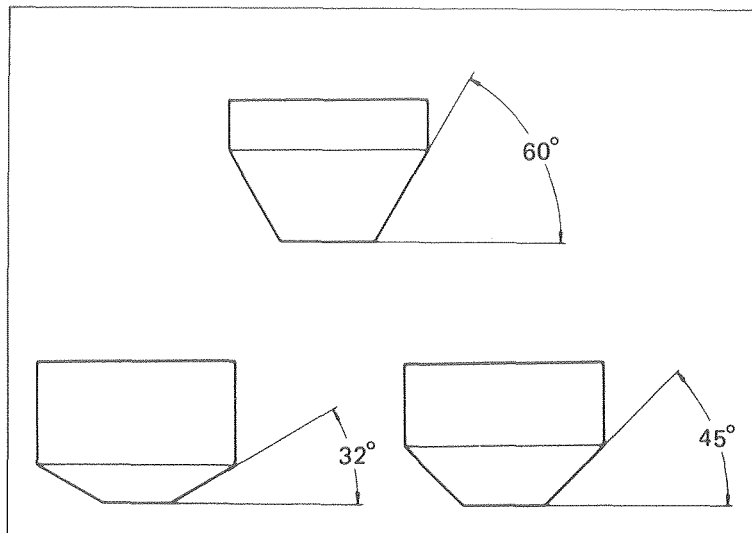


VALVE SEAT CUTTERS

Honda Valve Seat Cutters, grinder or equivalent valve seat refacing equipment are recommended to correct a worn valve seat.

NOTE

- Follow the refacer manufacturer's operating instructions.
- Honda valve seat cutters are not available in U.S.A.



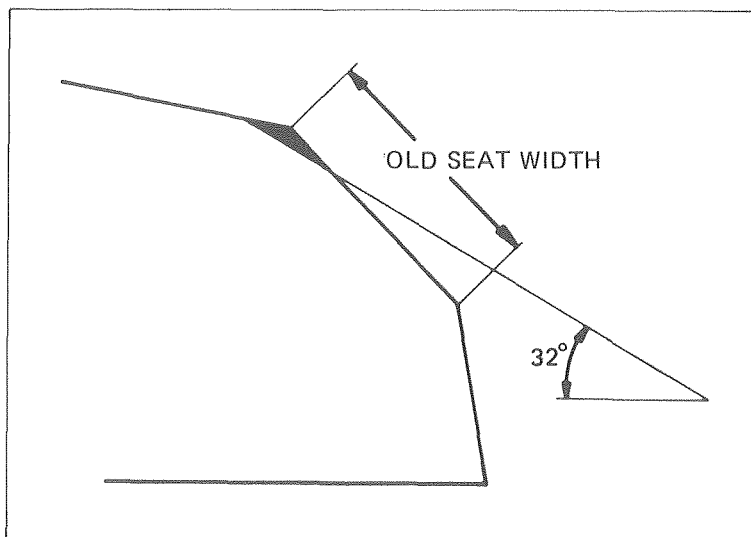
VALVE SEAT REFACING

Use a 45 degree cutter to remove any roughness or irregularities from the seat.

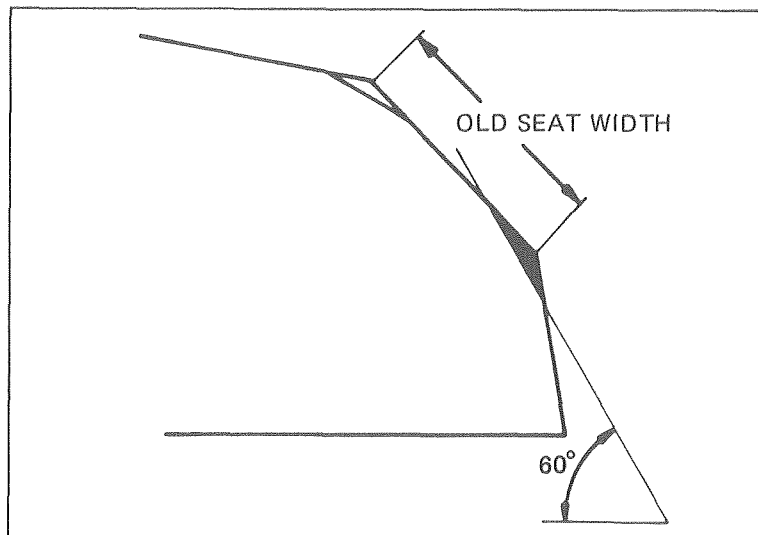
NOTE

Reface the seat with a 45 degree cutter when the valve guide is replaced.

Use a 32 degree cutter to remove the top 1/4 of the existing valve seat material.



Use a 60 degree cutter to remove the bottom 1/4 of the old seat. Remove the cutter and inspect the area you have just removed.



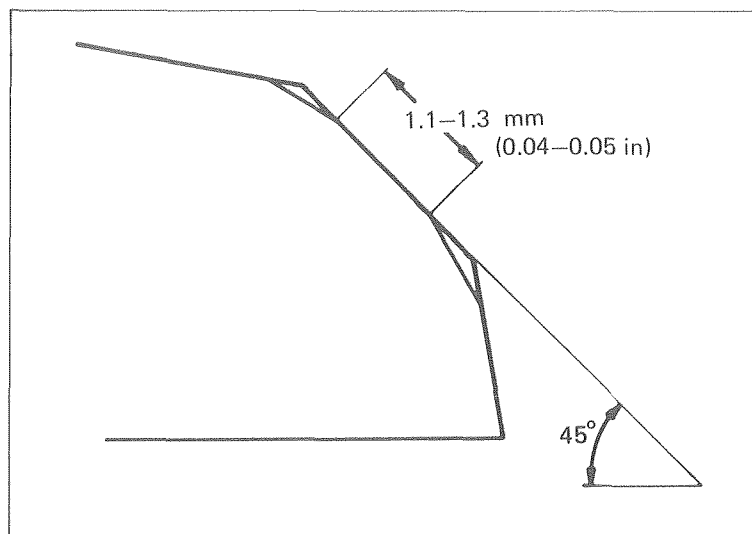


CYLINDER HEAD/VALVE

Install a 45 degree finish cutter and cut the seat to the proper width.

NOTE

Make sure that all pitting and irregularities are removed. Refinish if necessary.



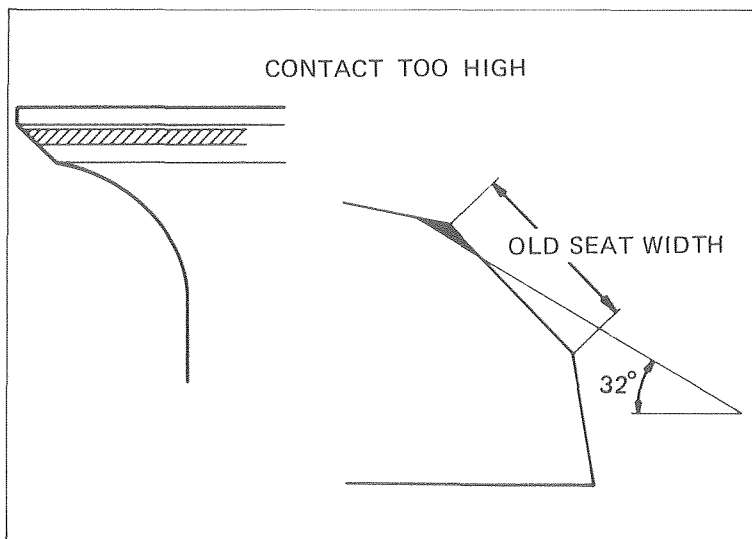
Apply a thin coating of Prussian Blue to the valve seat.

Press the valve through the valve guide and onto the seat to make a clear pattern.

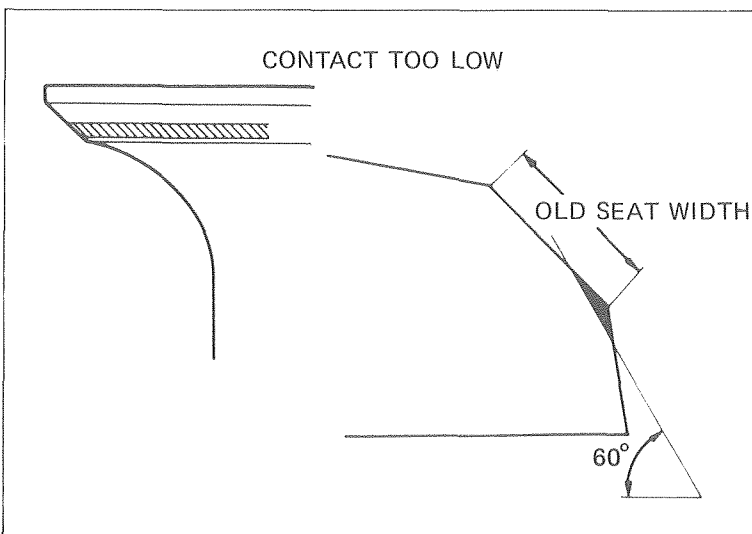
NOTE

The location of the valve seat in relation to the valve face is very important for good sealing.

If the contact area is too high on the valve, the seat must be lowered using a 32 degree flat cutter.



If the contact area is too low on the valve, the seat must be raised using a 60 degree inner cutter.



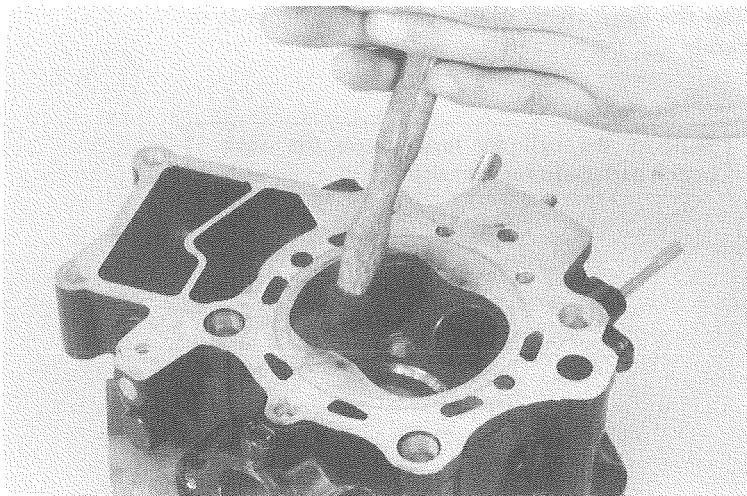


Refinish the seat to specifications, using a 45 degree finisher cutter.

After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure. After lapping, wash all residual compound off the cylinder head and valve.

NOTE

Do not allow lapping compound to enter the guides.



CYLINDER HEAD ASSEMBLY

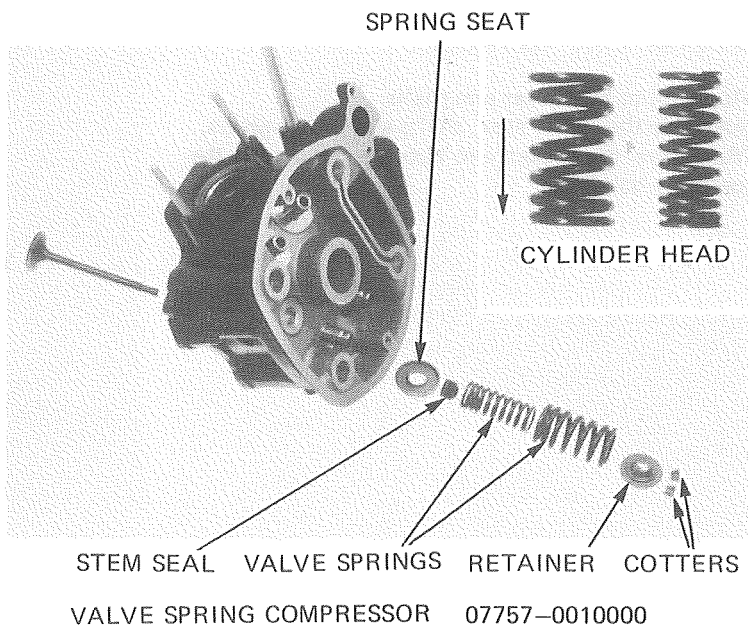
Install the valve stem seals and spring seats.

Lubricate the valve stems with oil, and insert the valves into the guides.

Install the valve springs and retainers.

NOTE

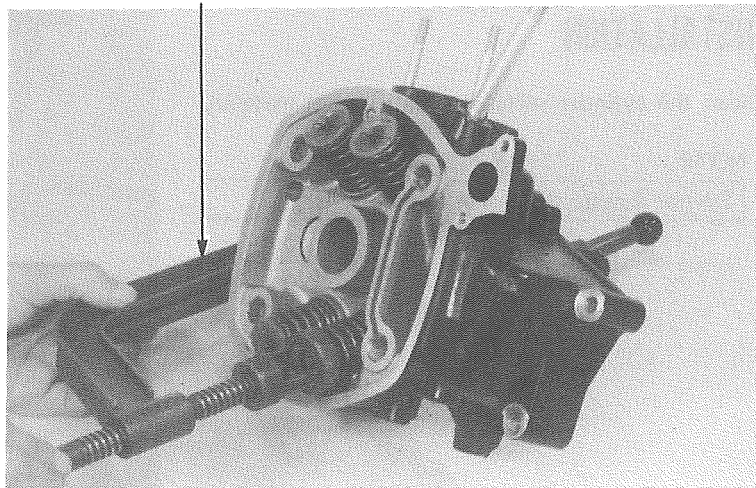
- Install the valve springs with the tightly wound coils facing the head.
- Replace the stem seals with new ones whenever disassembled.



Install the valve cotters.

CAUTION

To prevent loss of tension, do not compress the valve spring more than necessary.



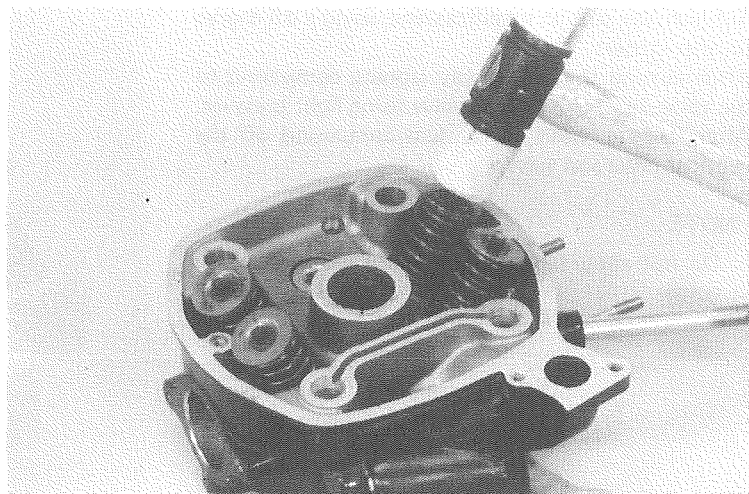


CYLINDER HEAD/VALVE

Tap the valve stems gently with a soft hammer to firmly seat the cotters.

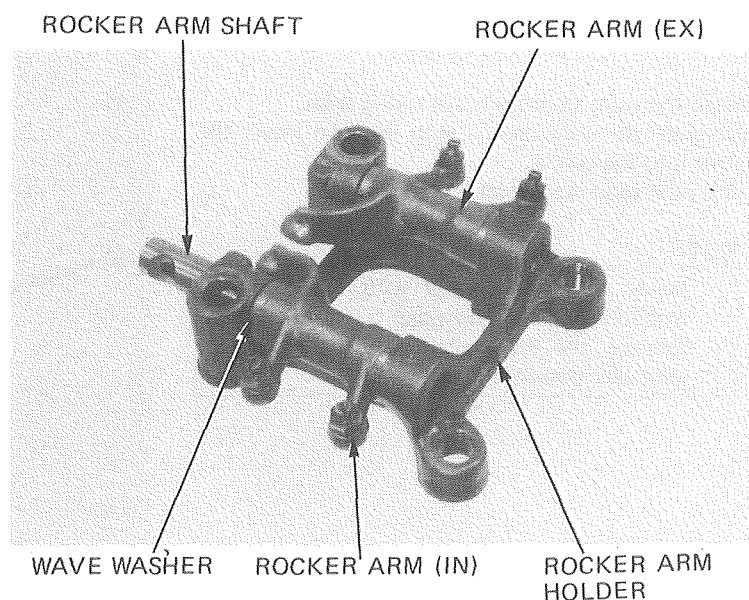
NOTE

Support the cylinder head above the work bench surface to prevent damage.



ROCKER ARM ASSEMBLY

Apply oil to the rocker arm shafts.
Assemble the rocker arms, shafts and wave washers.
Make sure the rocker arm cut-outs align with the assembly bolt holes.

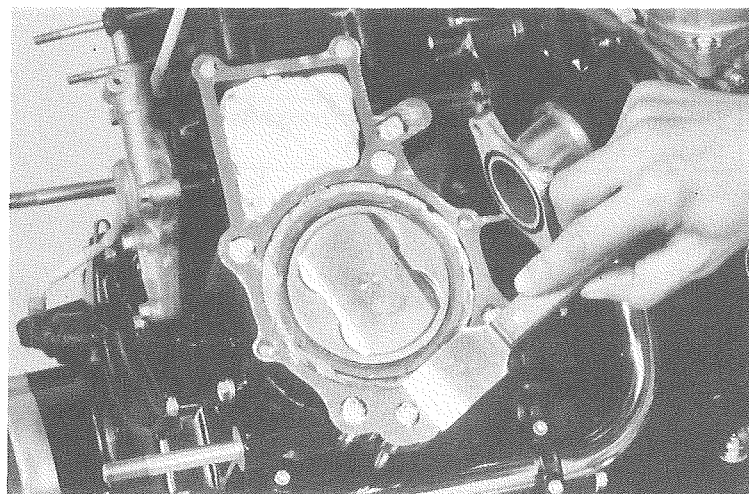


CYLINDER HEAD/ROCKER ARM INSTALLATION

Clean the cylinder surfaces of any gasket material.

NOTE

Do not damage the gasket surfaces.

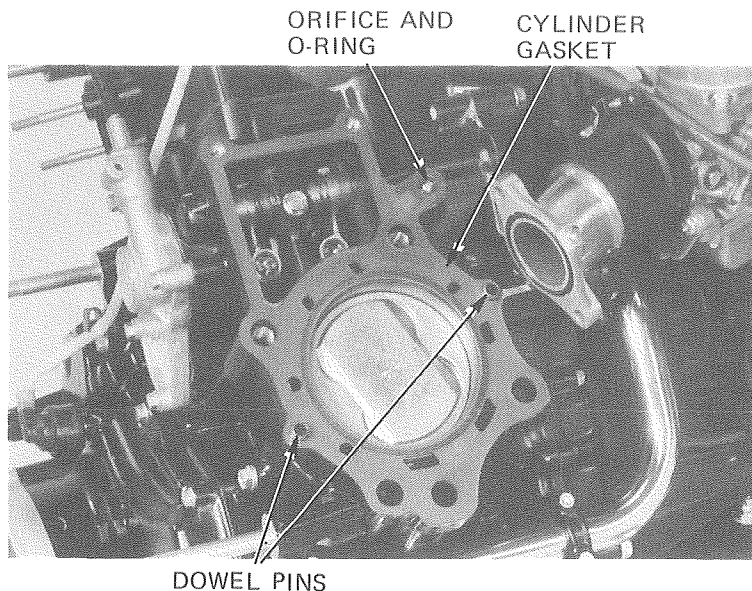




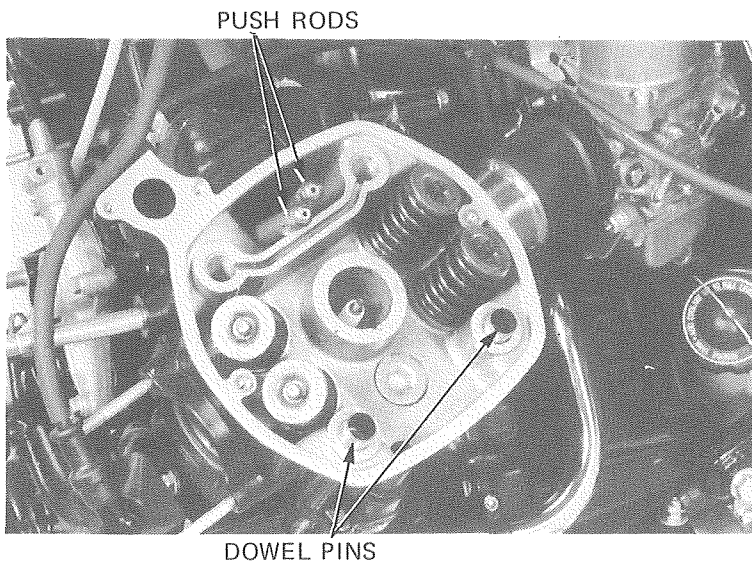
Install the O-rings and cylinder base dowel pins.
Install a new head gasket and make sure that the oil orifices are not obstructed by the gaskets.
Remove the timing inspection cap.
Make sure the piston is at T.D.C. on the compression stroke; turn the crankshaft, when both push rods are down and the timing marks align, the piston is on compression.

NOTE

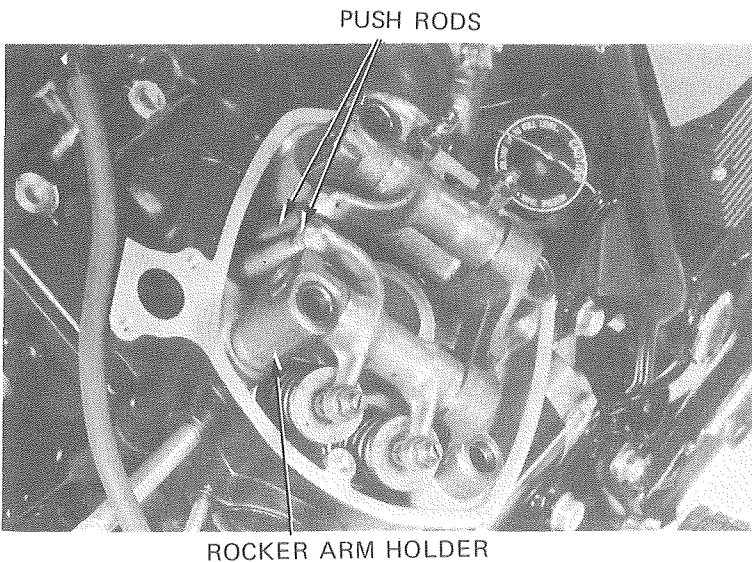
- Align the index mark with the "TR" mark for the right cylinder.
- Align the index mark with the "TL" mark for the left cylinder.



Install the cylinder head.
Install the cylinder head dowel pins.
Apply Multipurpose NLGI No. 2 (MoS₂ additive) Grease to the ends of each push rod.
Install the push rods into the rocker arm retainers.



Install the rocker arm holder assembly.
Align the rocker arms with the push rods.



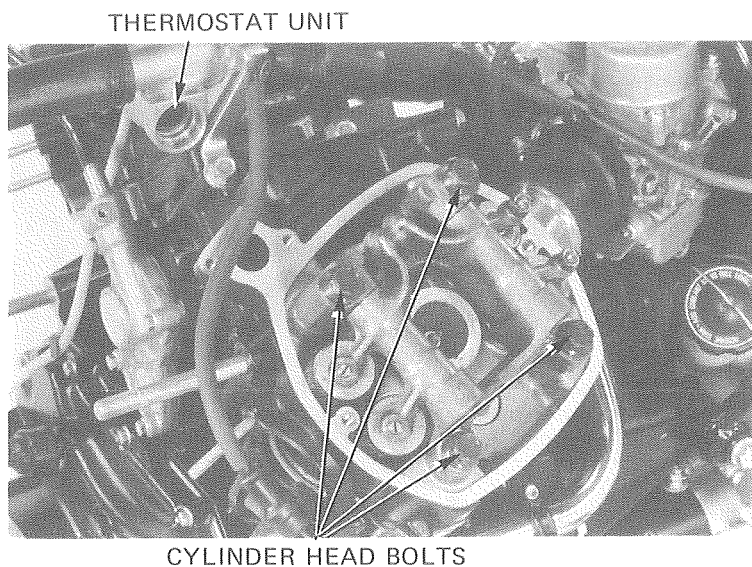


Tighten the cylinder head bolts in 2–3 steps in a crisscross pattern.

TORQUE: 50–60 N·m
(5.0–6.0 kg-m, 36–43 ft-lb)

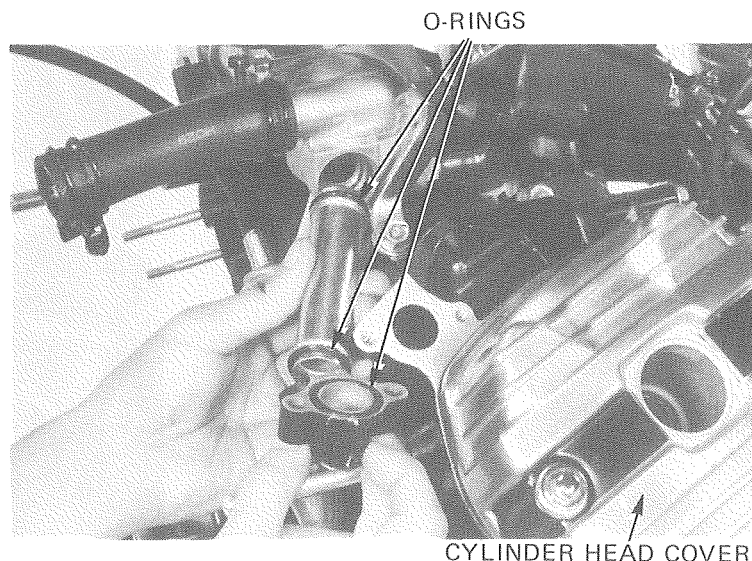
Check the valve clearance (Page 3–8) and adjust if necessary.

Install the thermostat unit (Page 9-5).



Install the cylinder head cover and connect the spark plug caps.

Install the water pipes and pipe joints, with new O-rings.

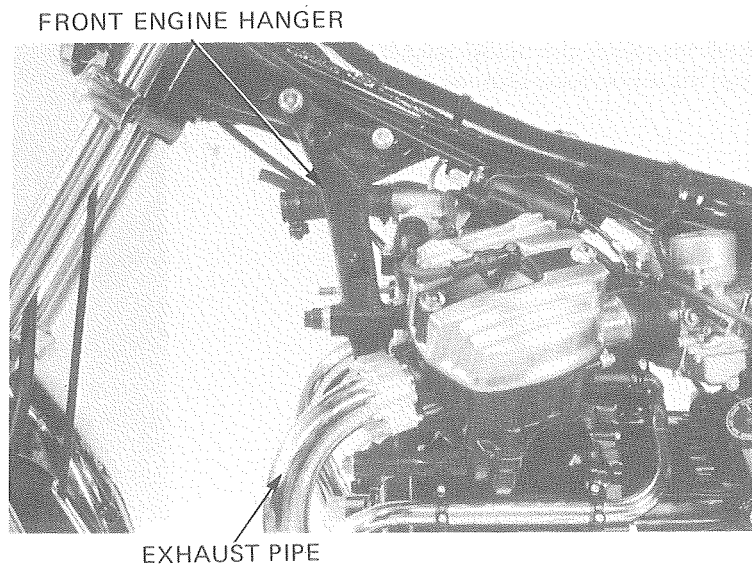


Install the carburetor intake and exhaust pipes.
Install the front engine hanger.

TORQUE:
10 mm bolt: 45–70 N·m
(4.5–7.0 kg-m, 33–51 ft-lb)
12 mm bolt: 60–80 N·m
(6.0–8.0 kg-m, 43–58 ft-lb)

Install the radiator (Page 9-9).

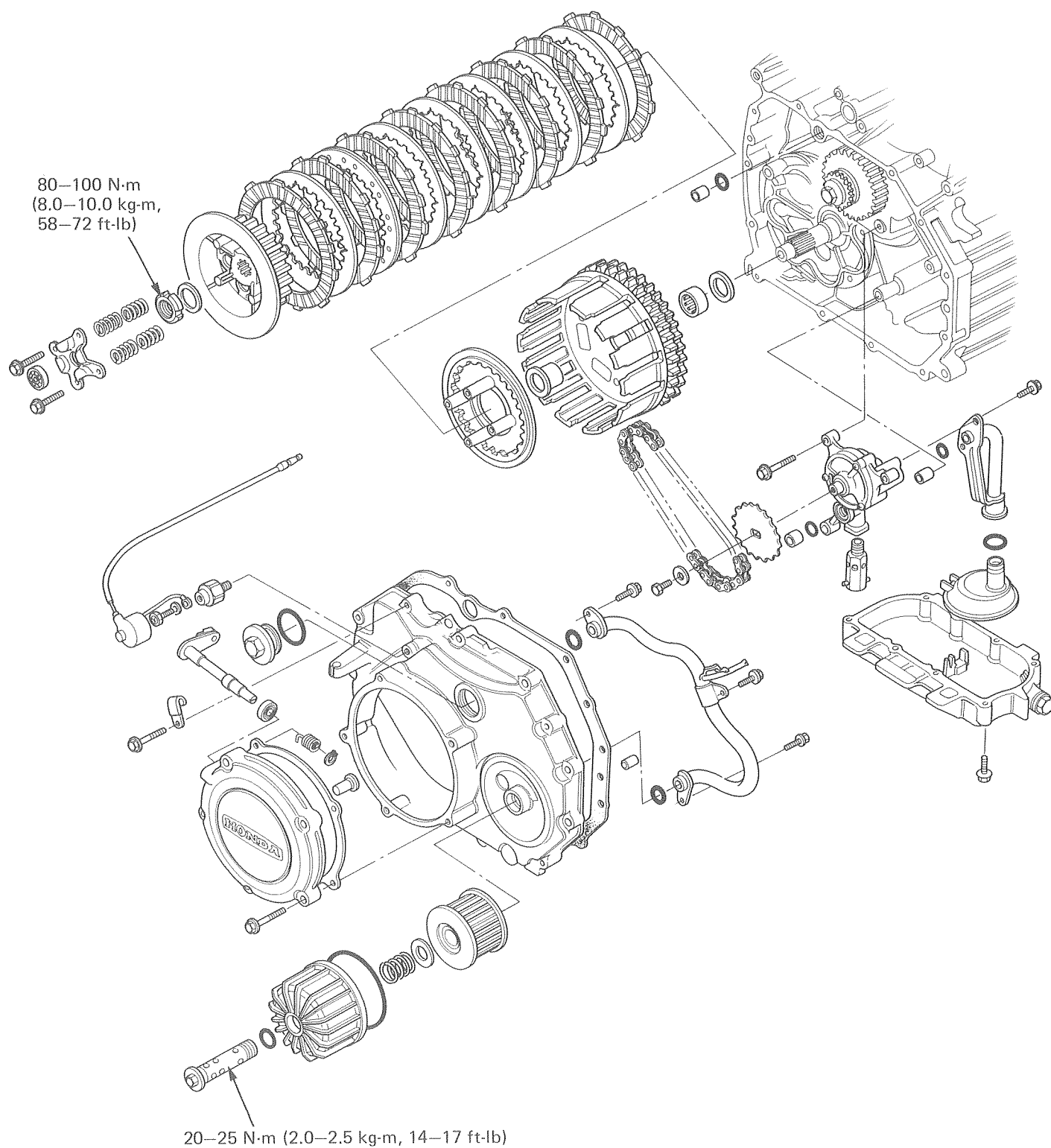
Fill the cooling system with the recommended coolant (Page 9-3).





HONDA
CX650C

MEMO





7. CLUTCH/OIL PUMP

SERVICE INFORMATION
TROUBLESHOOTING
CLUTCH DISASSEMBLY

7-1
7-1
7-2

CLUTCH INSTALLATION
OIL PUMP REMOVAL
OIL PUMP INSTALLATION

7-6
7-10
7-14

SERVICE INFORMATION

GENERAL

- Clutch discs, plates "A" and "B", clutch center, and clutch plates can be serviced by removing the clutch cover.
- To service the oil pump, it is necessary to remove the radiator and transmission cover.
- All these operations can be done with the engine in the frame.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Clutch	Lever free play (at lever end)		10–20 (3/8–3/4)	—
	Clutch spring	Free length	39.40 (1.551)	37.9 (1.49)
		Tension	23.7–26.3 kg/28.0 mm (52.2–58.0 lbs/1.10 in)	21.7 kg/28.0 mm (47.8 lbs/1.10 in)
	Disc thickness	A	2.7 (0.11)	2.3 (0.091)
		B	3.5 (0.14)	3.1 (0.122)
	Plate warpage	A	—	0.20 (0.008)
		B	—	0.20 (0.008)
	Outer guide O.D.		31.987–37.000 (1.2582–1.2589)	31.93 (1.257)
Oil pump	Inner-to-outer rotor clearance		—	0.10 (0.004)
	Outer rotor-to-body clearance		—	0.35 (0.014)
	Rotor-to-body clearance		—	0.10 (0.004)
Oil pressure relief valve relief pressure			500–600 kPa (5.0–6.0 kg/cm ² , 74–88 psi)	—

TORQUE VALUES

Clutch lock nut		80-100 N·m (8.0-10.0 kg-m, 58-72 ft-lb)
Engine hanger bolt	10 mm	45-70 N·m (4.5-7.0 kg-m, 33-51 ft-lb)
	12 mm	60-80 N·m (6.0-8.0 kg-m, 43-58 ft-lb)

TOOLS

Special

Clutch center holder : 07923-4150000 or equivalent commercially available in U.S.A.

Common

Lock nut socket wrench, 26 x 30 mm : 07716-0020203 or 07716-0020202

Extension : 07716-0020500 or equivalent commercially available in U.S.A.

Driver : 07749-0010000

Attachment, 42 x 47 mm : 07746-0010300

TROUBLESHOOTING

Oil Pump

- Refer to page 2-1 for oil pump troubleshooting.

Clutch

- Faulty clutch operation can usually be corrected by adjusting the free play.

Clutch Slips When Accelerating

- No free play.
- Discs worn.
- Springs weak.

Clutch Will Not Disengage

- Too much free play.
- Plates warped.

Clutch Chatters or Rattles

- Worn clutch outer and disc splines.

Motorcycle Creeps with Clutch Disengaged

- Too much free play.
- Plates warped.

Excessive Lever Pressure

- Clutch cable kinked, damaged or dirty.
- Lifter mechanism damaged.

Clutch Operation Feels Rough

- Outer drum slots rough.
- Disc plate wave spring weak or damaged.



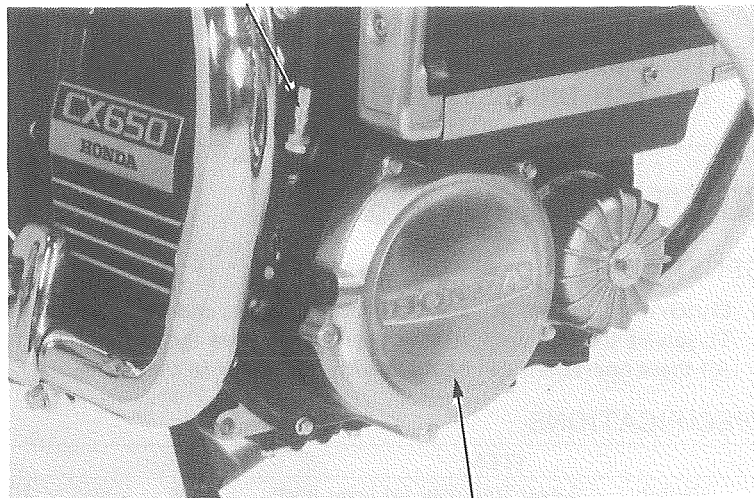
CLUTCH DISASSEMBLY

Drain the oil from engine.
Disconnect the clutch cable at the lower adjuster.
Remove the clutch cover and gasket.

NOTE

Move the clutch lever on the cover to help remove it.

CLUTCH CABLE

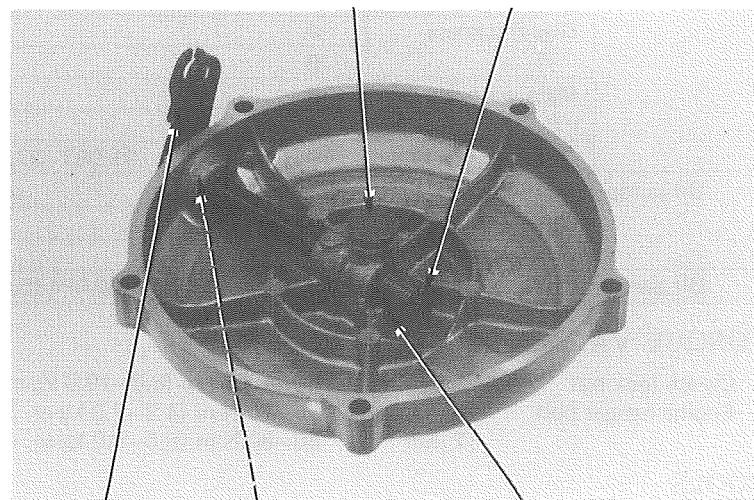


CLUTCH COVER

CLUTCH LIFTER REMOVAL

Remove the lifter piece, circlip, spring, clutch lever and O-ring.

LIFTER PIECE CIRCLIP

CLUTCH
LEVER

OIL SEAL

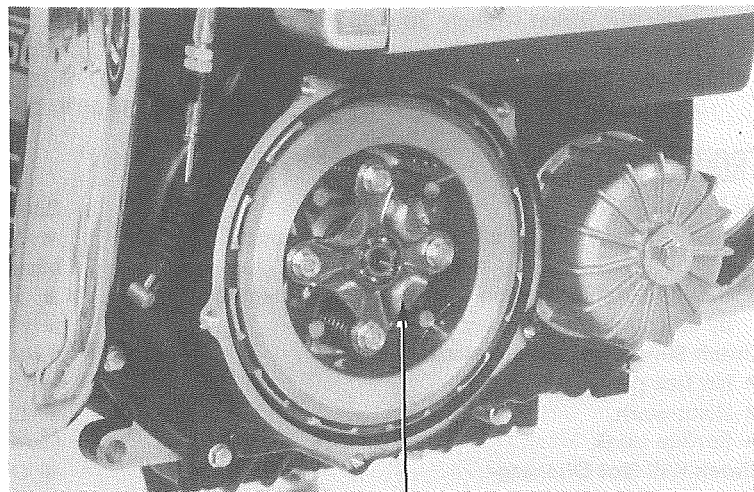
SPRING

CLUTCH LIFTER PLATE REMOVAL

Remove the bolts, springs and lifter plate.

NOTE

Loosen the bolts in an crisscross pattern in two or more steps.



LIFTER PLATE



CLUTCH REMOVAL

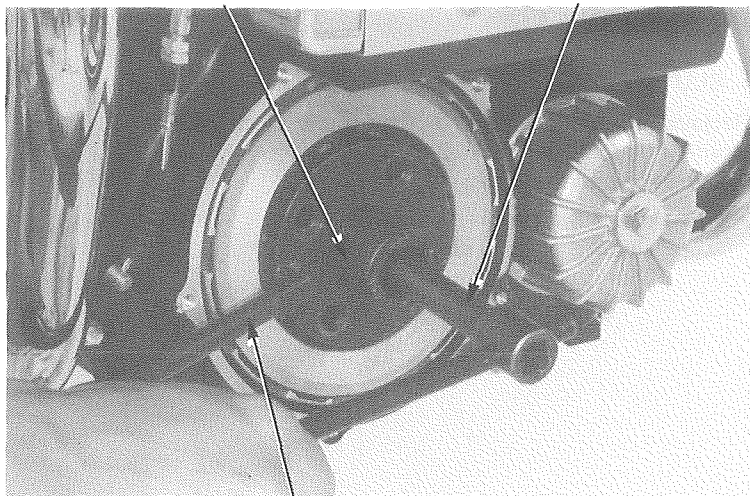
Attach the Clutch Center Holder onto the pressure plate boss with four bolts. Finger tighten the bolts.

CAUTION

Damage to the pressure plate will occur if the clutch center holder is not attached with 4 bolts.

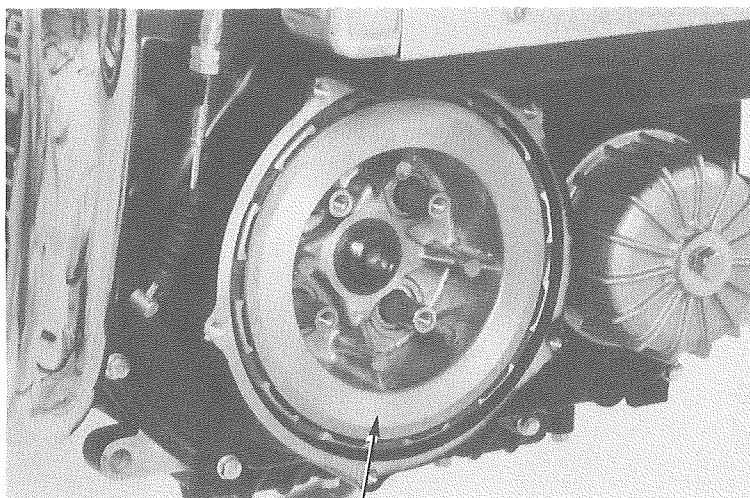
Remove the lock nut and lock washer.

LOCK NUT SOCKET WRENCH, 26 x 30 mm,
07716-002023 or 07716-002022 EXTENSION



CLUTCH CENTER HOLDER, 07923-4150000
or EQUIVALENT

Remove the pressure plate, discs A and B, plates A and B, and the clutch center as a unit.

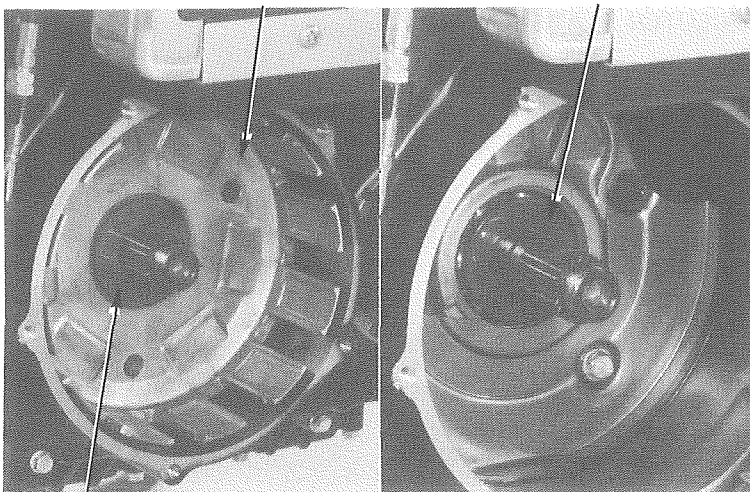


CLUTCH CENTER

Remove the outer guide and clutch outer.
Remove the thrust washer.

CLUTCH OUTER

THRUST WASHER



OUTER GUIDE

**INSPECTION****• CLUTCH DISC**

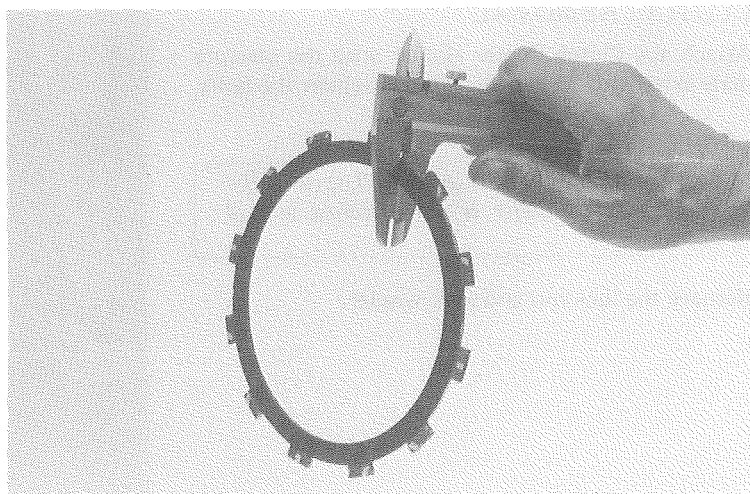
Replace the clutch discs if they show signs of scoring or discoloration.

Measure the disc thickness.

SERVICE LIMITS:

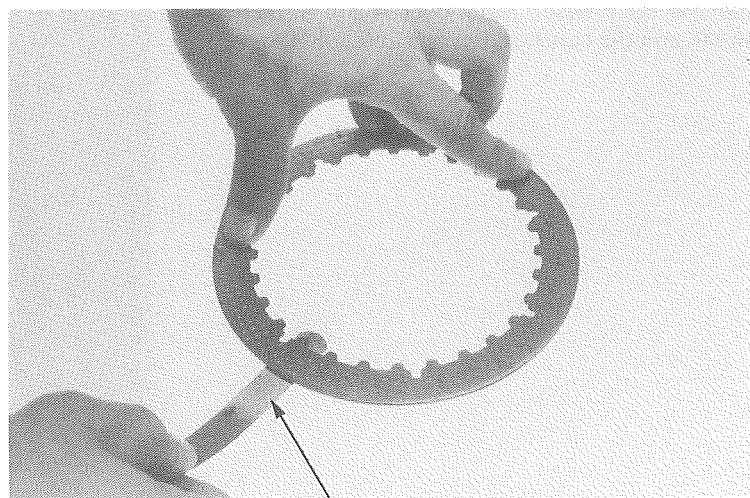
Disc A: 2.30 mm (0.091 in)

Disc B: 3.10 mm (0.122 in)

**• CLUTCH PLATE**

Check for plate warpage on a surface plate, using a feeler gauge.

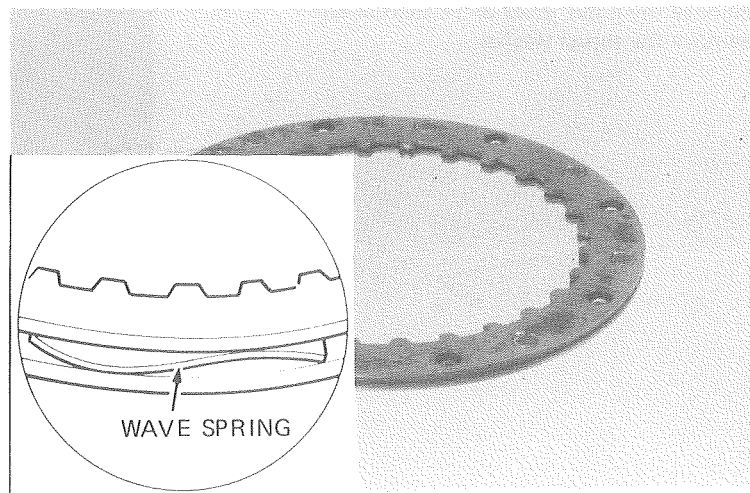
SERVICE LIMIT: 0.20 mm (0.008 in)



FEELER GAUGE

• CLUTCH PLATE B

Check the wave spring for damage.



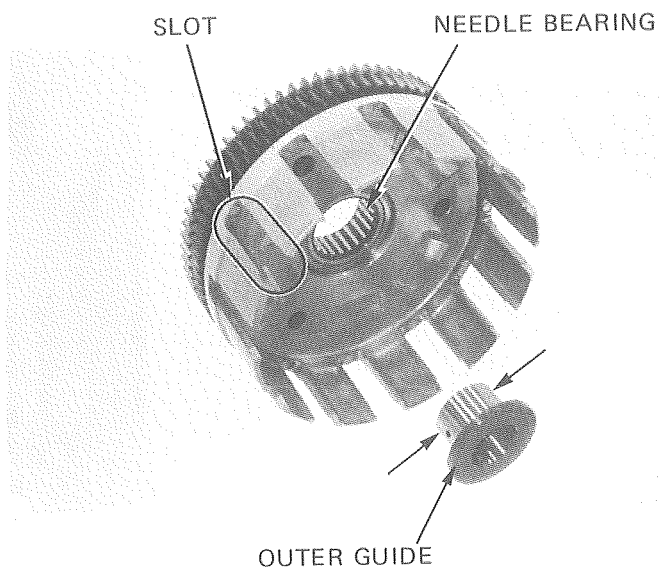


• CLUTCH OUTER AND OUTER GUIDE

Check the slots in the outer drum for nicks, cuts or indentations made by the friction discs.
Measure the O.D. of the clutch outer guide.

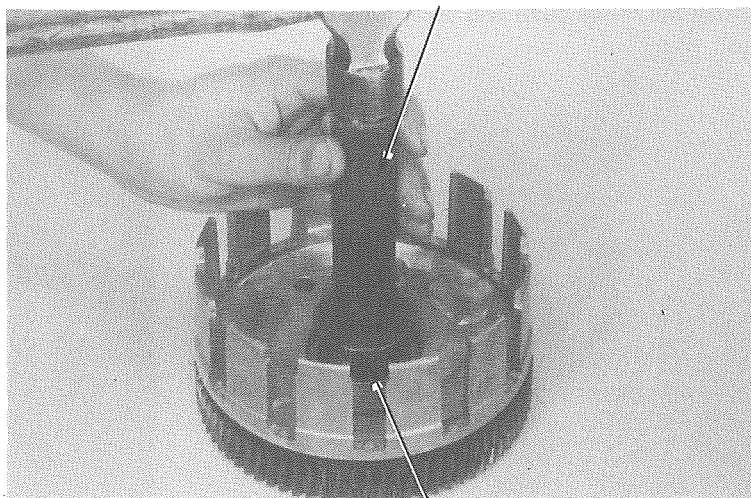
SERVICE LIMIT: 31.90 mm (1.256 in)

Check the clutch outer needle bearing for damage or excessive play.



DRIVER 07749-0010000

Replace the needle bearing with a new one, if necessary.



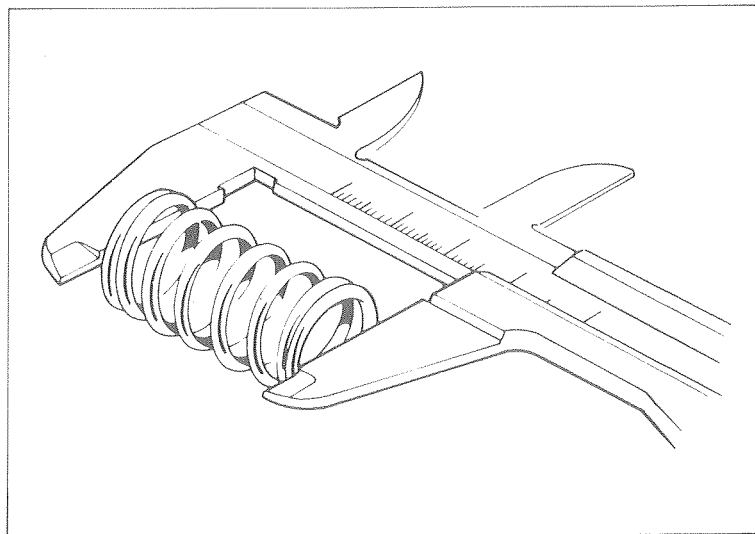
ATTACHMENT, 42 x 47 mm 07746-0010300

CLUTCH SPRING INSPECTION

Measure the spring free length.

SERVICE LIMIT: 37.9 mm (1.49 in)

Replace all the springs if even one is shorter than the service limit.

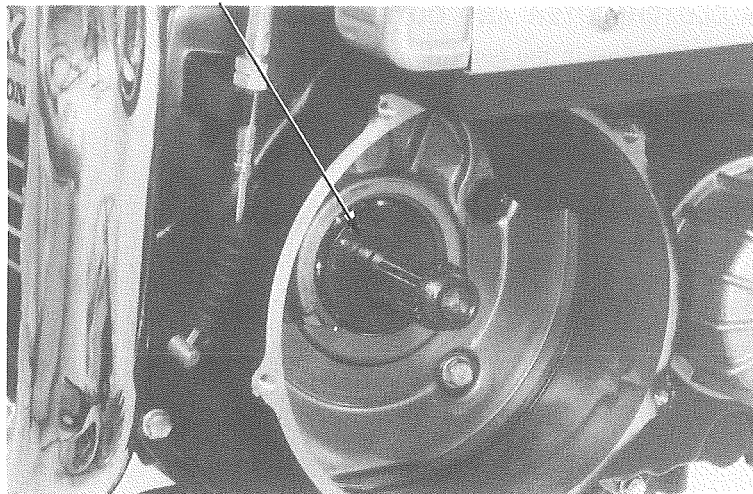




CLUTCH INSTALLATION

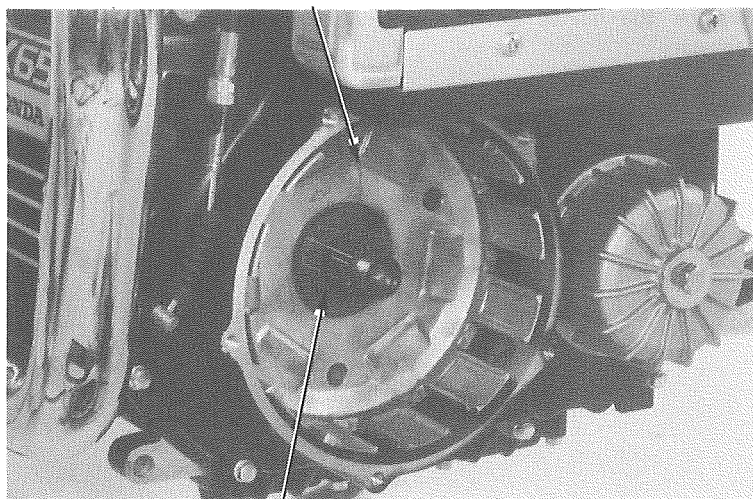
Install the thrust washer onto the transmission mainshaft.

THRUST
WASHER



Install the clutch outer and outer guide.

CLUTCH OUTER



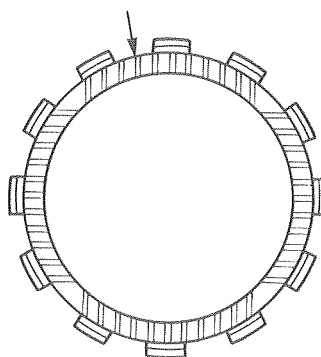
OUTER GUIDE

Install the pressure plate on the clutch outer.
Install the clutch plates and discs in the clutch outer
as shown here and on page 7-7.

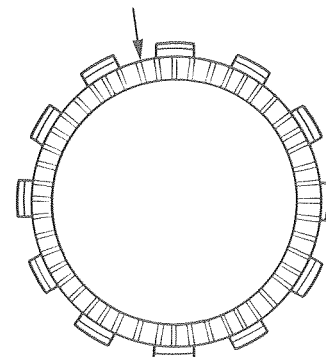
NOTE

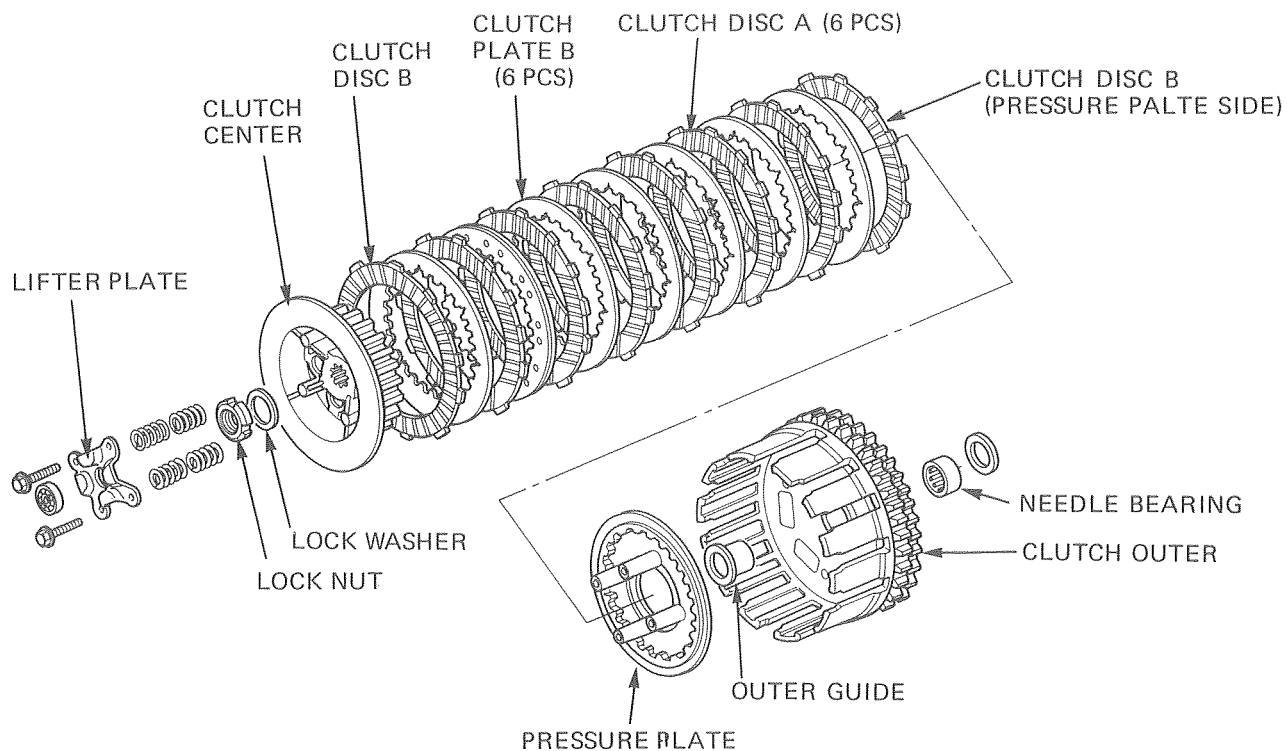
The disc on the pressure plate is identified by
the grooves in its lining.

CLUTCH DISC A



CLUTCH DISC B

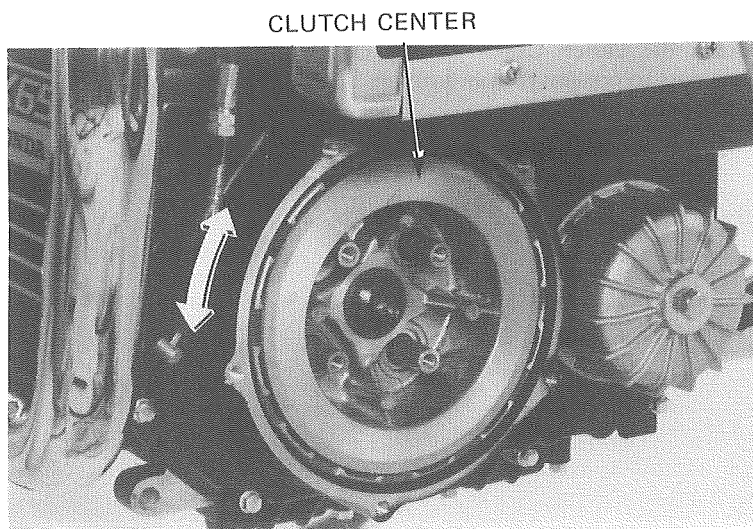




NOTE

The tabs on clutch disc B to be placed on the pressure plate side is smaller than clutch disc B that is placed on the clutch center.

Install the clutch center, aligning the splines by rotating the clutch center.



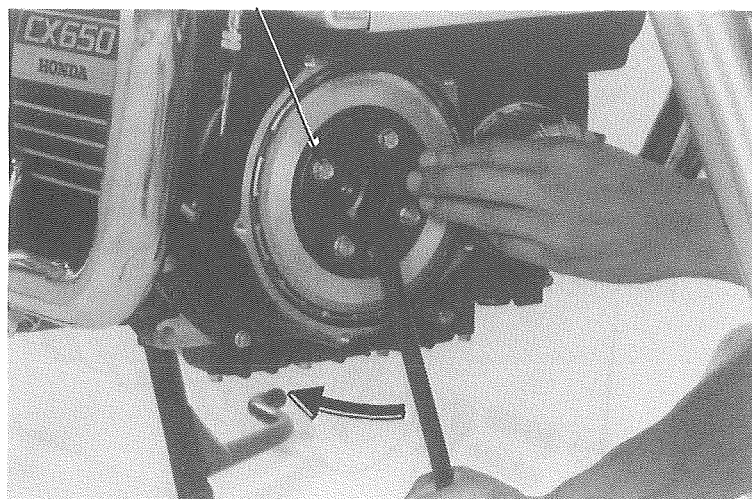


Install the clutch center holder onto the clutch pressure plate with four 6mm bolts. Finger tighten the bolts.

Turn the clutch assembly clockwise to align the teeth on the sub-gear with the primary drive gear and push the clutch assembly in.

Remove the clutch center holder.

CLUTCH CENTER HOLDER 07923-4150000
OR EQUIVALENT

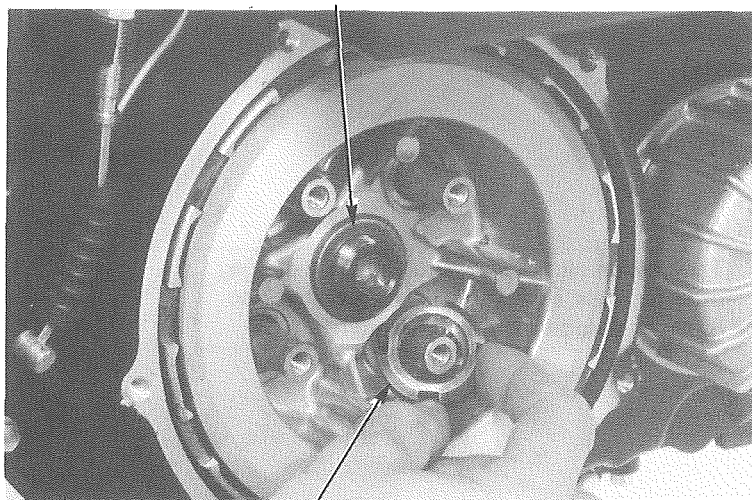


Install the lock washer and lock nut.

NOTE

- Install the lock washer with the mark "OUT SIDE" facing out.
- Install the lock nut with the flat end facing out.

LOCK WASHER



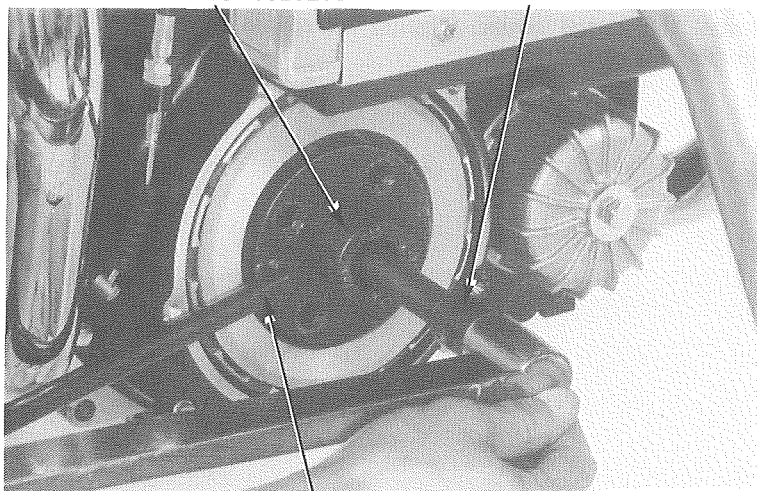
LOCK NUT

LOCK NUT WRENCH,
26 x 30 mm 07716-0020203

EXTENSION

Attach the Clutch Center Holder to the pressure plate boss to prevent it from turning. Tighten the lock nut.

TORQUE: 80-100 N·m
(8.0-10.0 kg-m, 58-72 ft-lb)



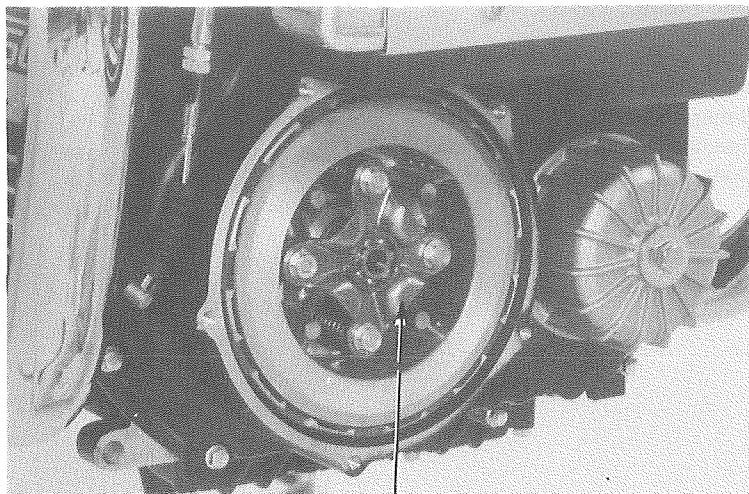
CLUTCH CENTER HOLDER 07923-4150000
OR EQUIVALENT



Install the clutch springs and lifter plate bolts.

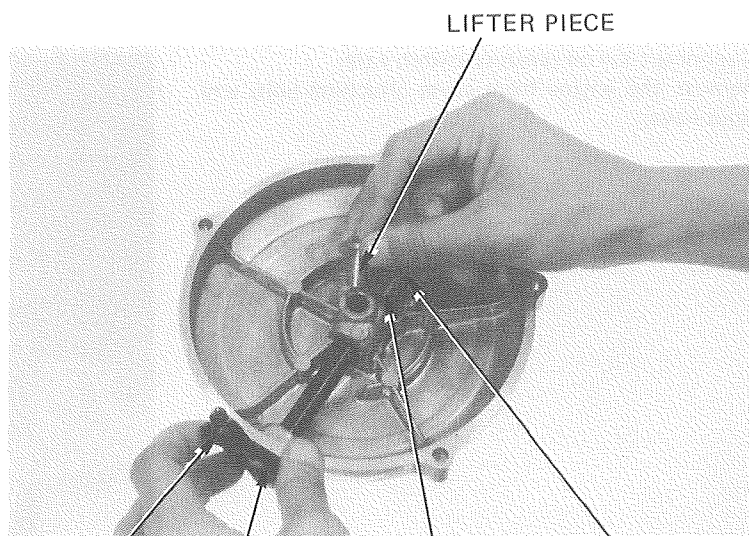
NOTE

Tighten the bolts evenly in 2–3 steps using a crisscross pattern.



LIFTER PLATE

Install the oil seal in the clutch cover.
Install the clutch lever, spring and circlip.
Rotate the clutch lever to align the hole in the lever with the hole in the clutch cover and insert the lifter piece.



LIFTER PIECE

CLUTCH
LEVER

OIL SEAL

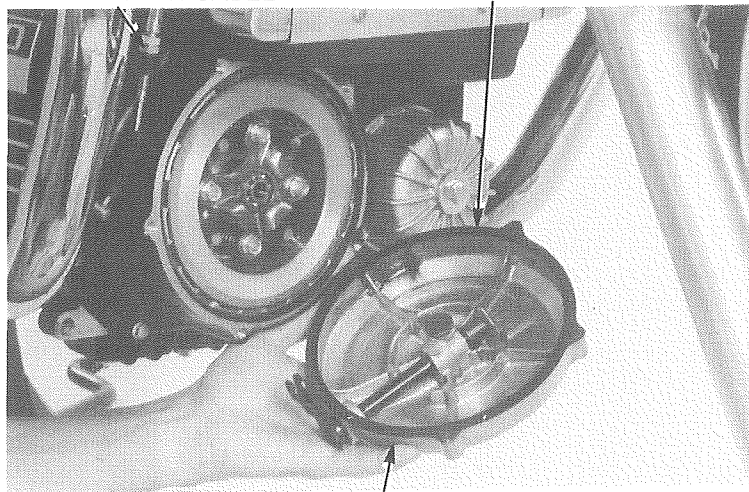
SPRING

CIRCLIP

CLUTCH CABLE

GASKET

Install the clutch cover gasket.
Install the clutch cover.
Connect the clutch cable and adjust the clutch (Page 3–14).

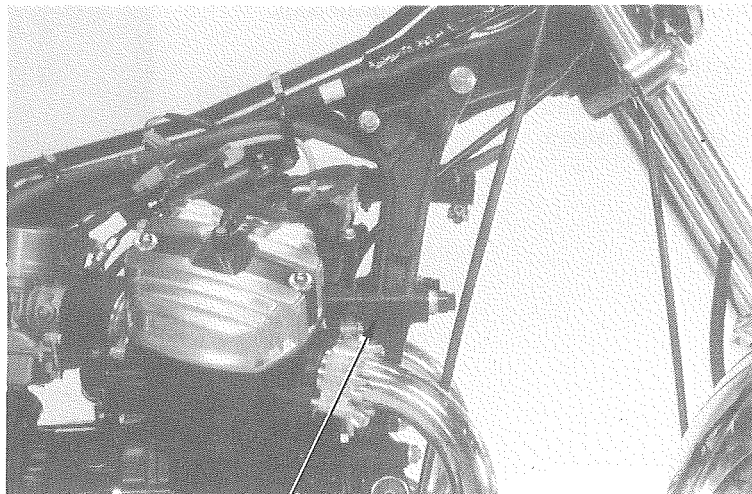


CLUTCH COVER



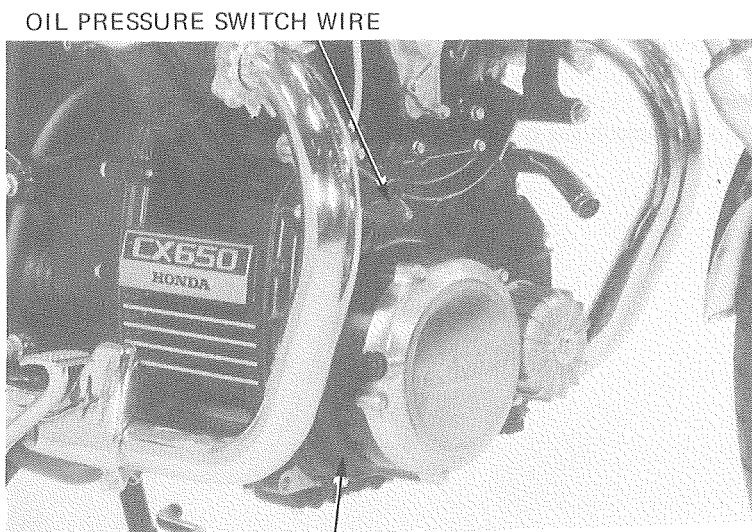
OIL PUMP REMOVAL

Remove the radiator (Page 9-6).
Disconnect the clutch cable at the lower end.
Remove the front frame cover.
Remove the right front engine hanger.
Drain the oil from the engine.



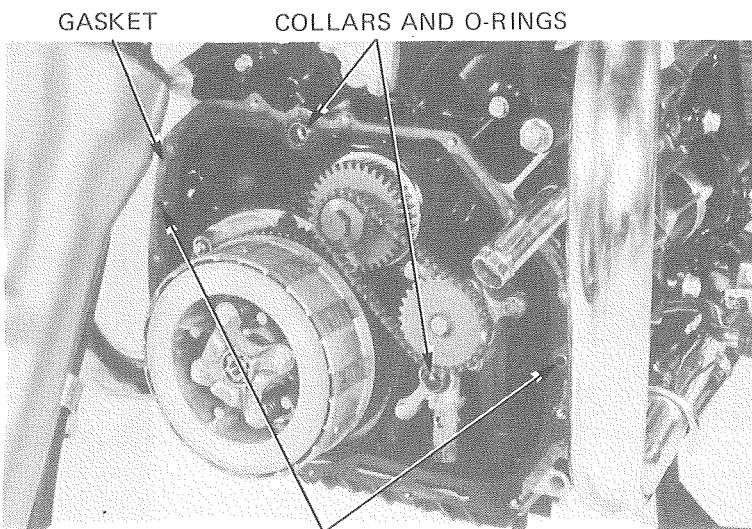
RIGHT FRONT ENGINE HANGER

Disconnect the oil pressure switch wire.
Remove the engine front cover attaching bolts and front cover.



ENGINE FRONT COVER

Remove the dowel pins collars, O-rings and gasket.



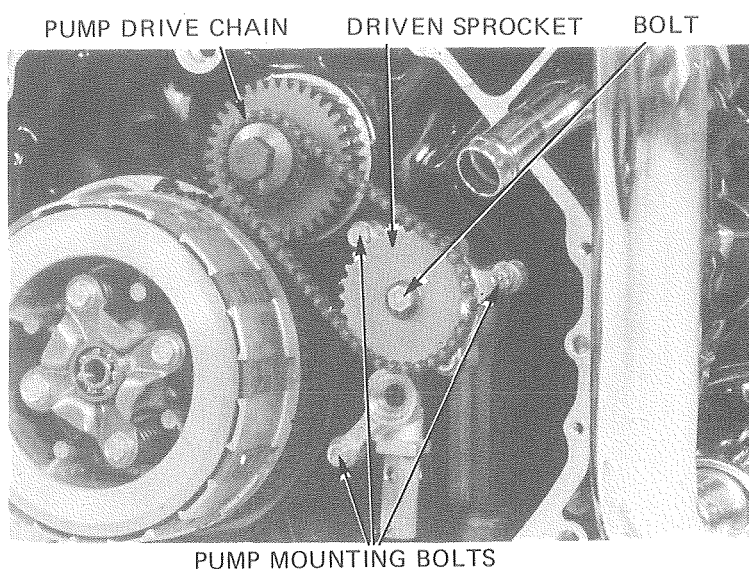
GASKET

COLLARS AND O-RINGS

DOWEL PINS

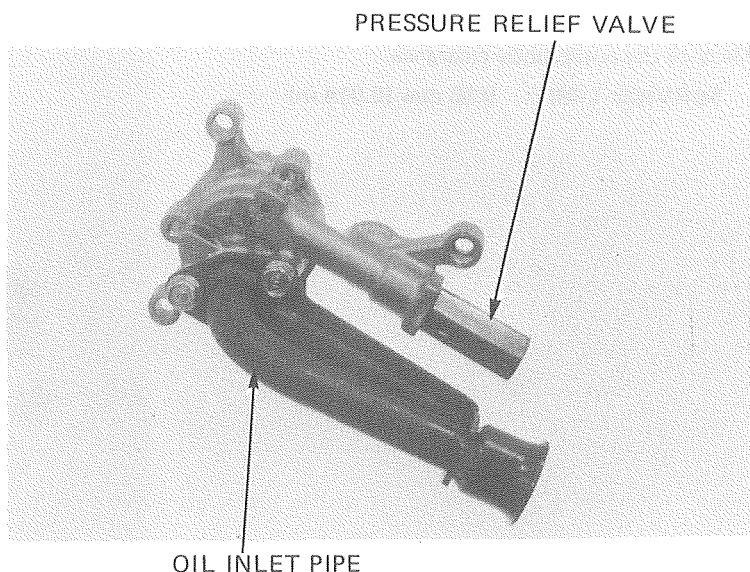


Remove the oil pump driven sprocket attaching bolt, driven sprocket and drive chain.
Remove the three oil pump mounting bolts and oil pump.

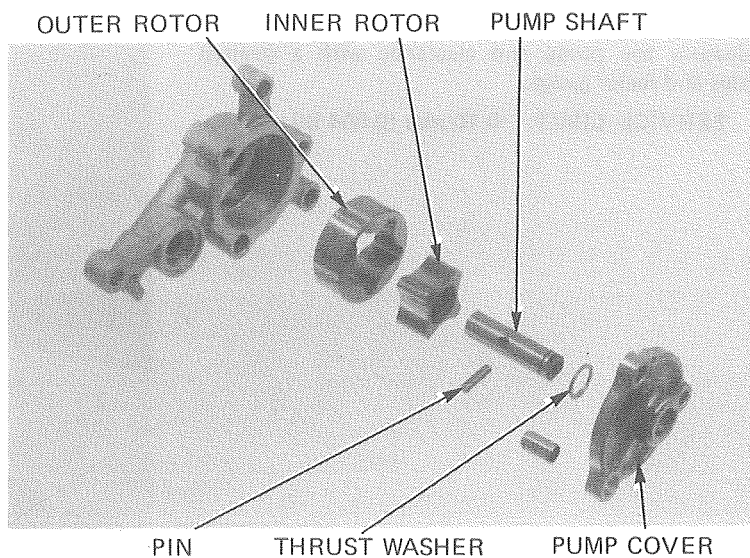


OIL PUMP DISASSEMBLY

Remove the oil pressure relief valve and oil inlet pipe.



Remove the pump cover, thrust washer, pump shaft, and drive pin.
Remove the inner and outer rotors.

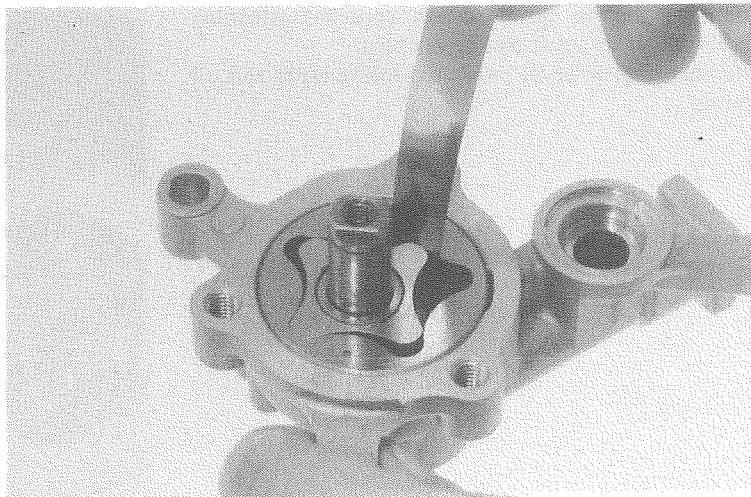




OIL PUMP INSPECTION

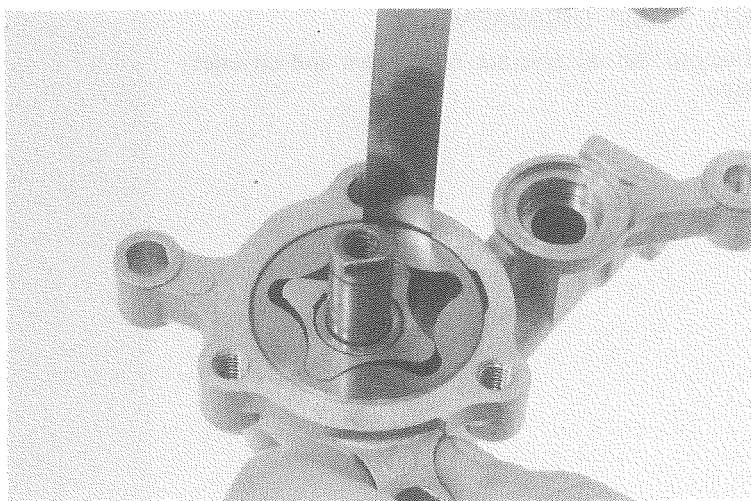
Measure the pump tip clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



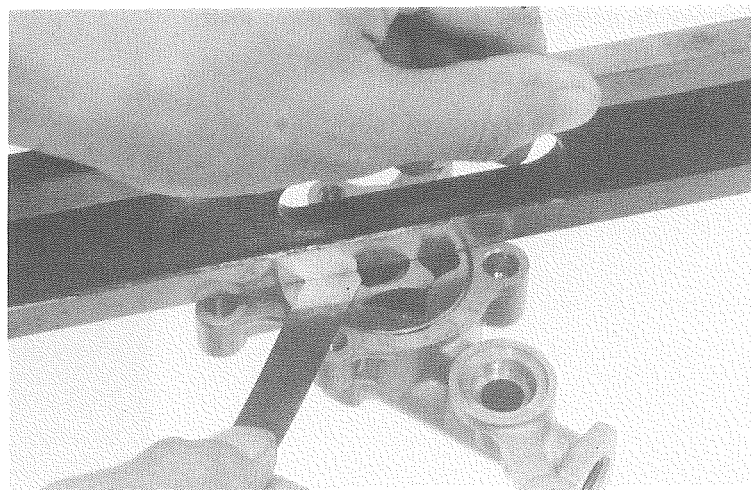
Measure the pump body clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)



Measure the pump end clearance with a straight edge and feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)

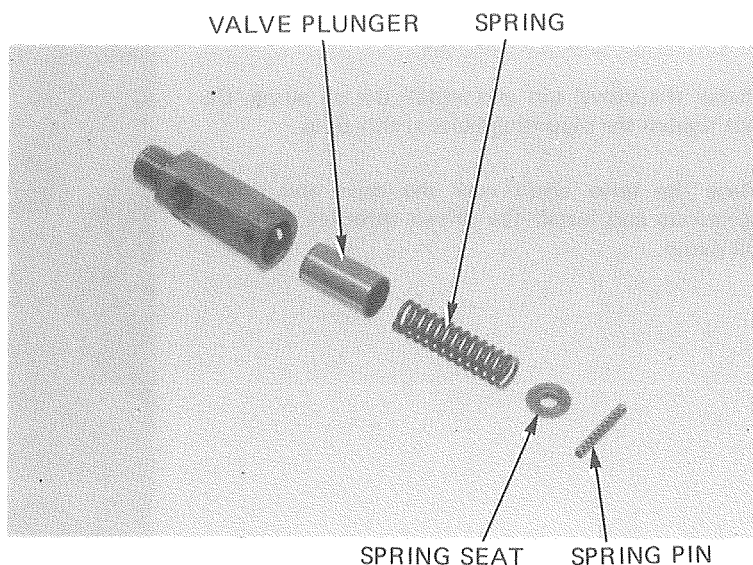




RELIEF VALVE INSPECTION

Remove the valve as an assembly and check its operation. If the valve does not operate properly, disassemble it and check for a stuck valve or weak spring.

Replace the relief valve as a unit if the spring or plunger is damaged.

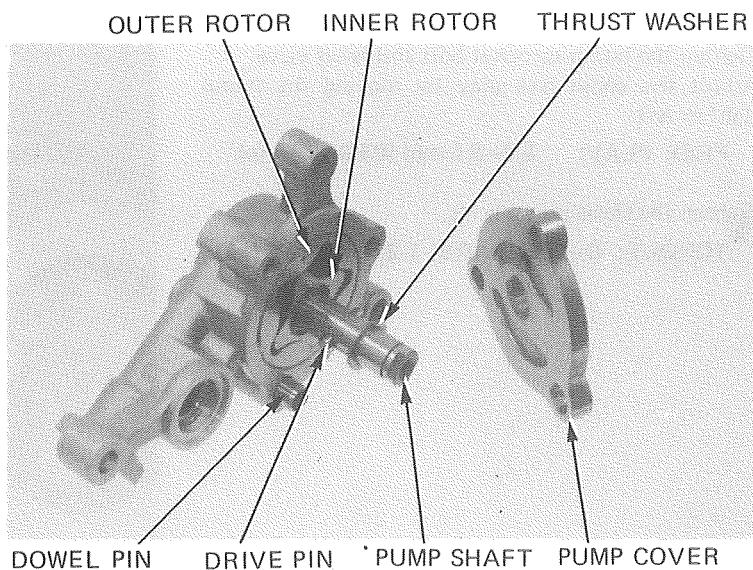


OIL PUMP ASSEMBLY

Insert the outer and inner rotors into the pump body. Slide the drive pin into the pump shaft, and install the shaft.

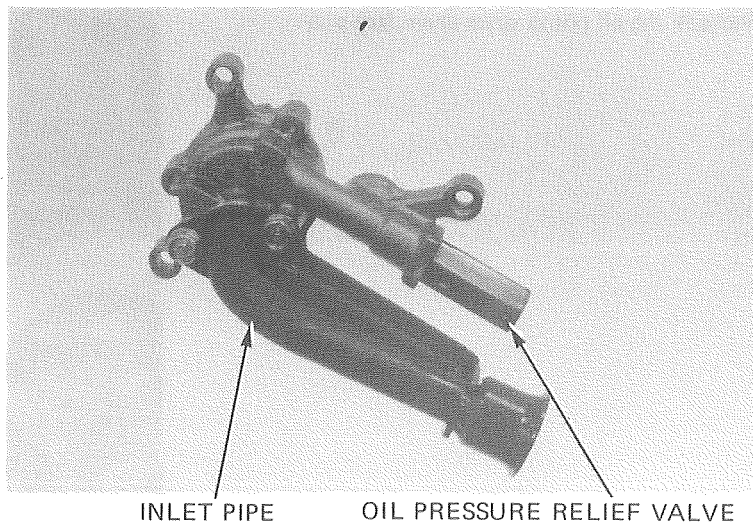
Install the thrust washer and dowel pin.

Install the pump cover.



Install the oil inlet pipe.

Install the oil pressure relief valve.

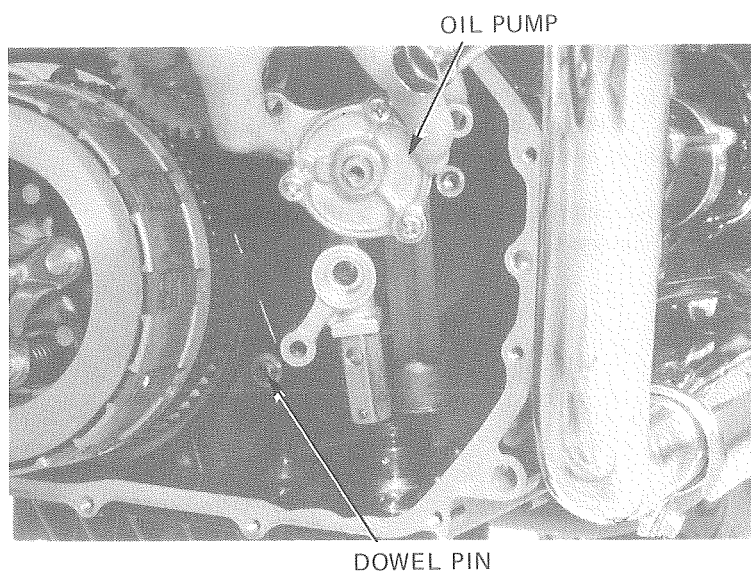




OIL PUMP INSTALLATION

Install the dowel pin and install the oil pump. Do not tighten the mounting bolts at this time.

Place the drive chain over the drive and driven sprockets and install the driven sprocket onto the oil pump.

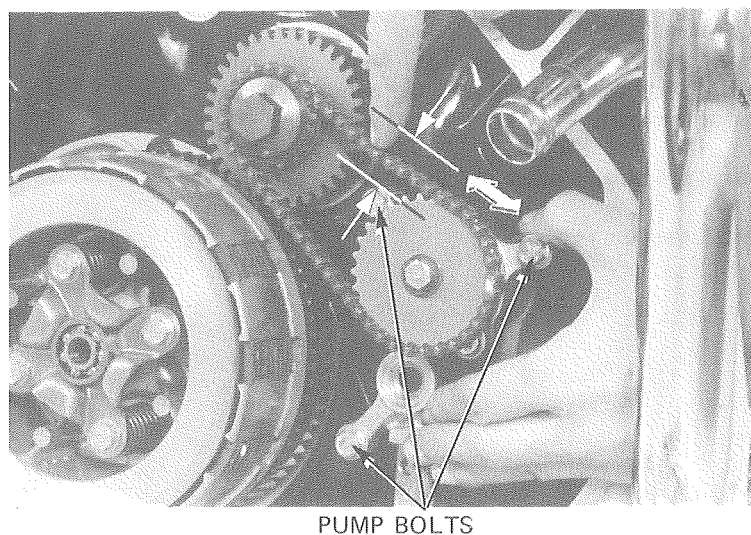


Tighten the pump sprocket bolt and relief valve. Adjust the chain free play by moving the pump right or left.

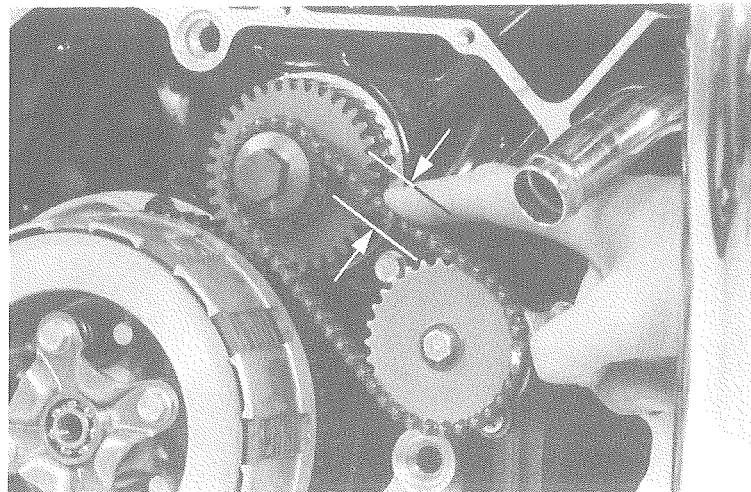
FREE PLAY: 2.0–3.5 mm (0.80–0.14 in)

Tighten the three pump bolts.

TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

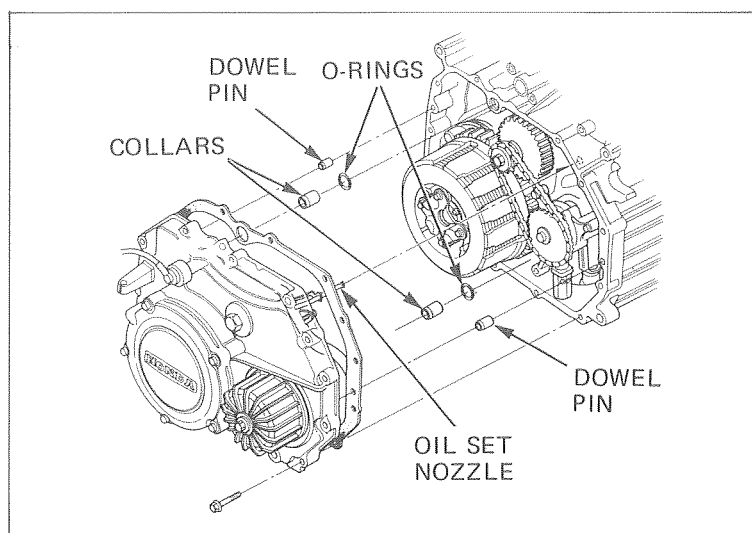


Recheck the oil pump drive chain free play.



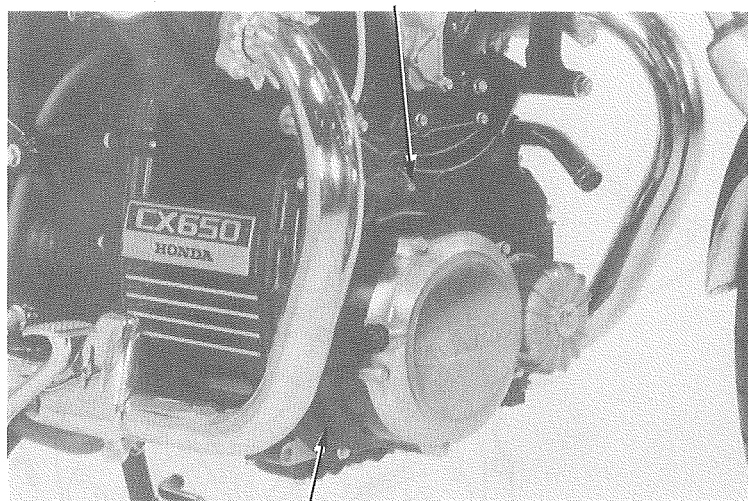


Install the dowel pins, collars, O-rings and gasket. Align the oil jet nozzle with the oil hole in the cylinder block and install the engine front cover.



Connect the oil pressure switch wire.

OIL PRESSURE SWITCH WIRE



ENGINE FRONT COVER

Install the right engine hanger and tighten the bolts.

TORQUE:

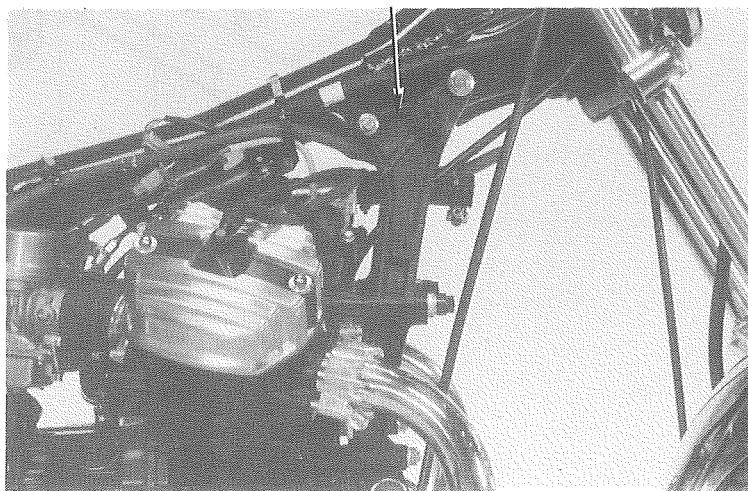
12mm bolt:	60–80 N·m (6.0–8.0 kg-m, 43–58 ft-lb)
10mm bolt:	45–70 N·m (4.5–7.0 kg-m, 33–51 ft-lb)

Install the front frame cover.

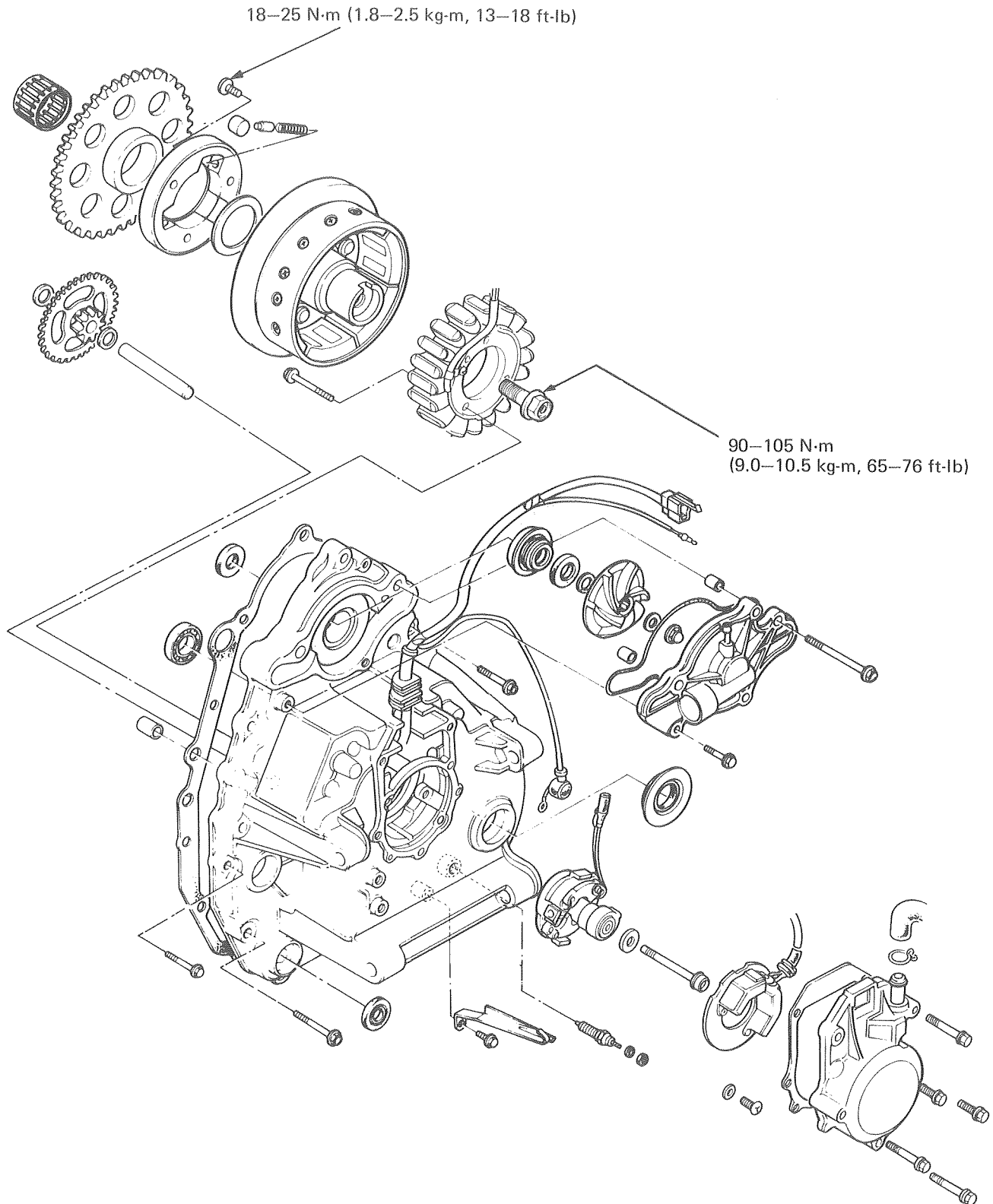
Connect the clutch cable and adjust the clutch free play (Page 3–14).

Install the radiator and fill to the proper level with coolant (Page 9-9).

Add the specified amount of engine oil (Section 2).



RIGHT FRONT ENGINE HANGER





HONDA
CX650C

8. ALTERNATOR/FLYWHEEL/REAR COVER

SERVICE INFORMATION	8-1	STARTER CLUTCH OUTER INSTALLATION	8-8
ENGINE REAR COVER REMOVAL	8-2	FLYWHEEL INSTALLATION	8-9
FLYWHEEL REMOVAL	8-6	ENGINE REAR COVER INSTALLATION	8-10
STARTER CLUTCH OUTER REMOVAL	8-8		

SERVICE INFORMATION

GENERAL

- To inspect and adjust the pulse generator, see Section 18 Ignition System.
- Be sure to adjust the ignition timing whenever the rear engine cover is removed.
- The pulse generator, starter motor and water pump impeller can be serviced with the engine installed in the frame.
- Take care not to cut the alternator and stator wires and wire harnesses when removing or installing parts.
- For alternator inspection, see section 17 Battery/Charging System.

SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter reduction gear-to-shaft clearance	—	0.20 (0.008)

TORQUE VALUES

Alternator rotor bolt	90–105 N·m (9.0–10.5 kg-m, 65–76 ft-lb)
Starter clutch torx bolt	18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)

TOOLS

Special

Gear holder	07924–MC70002 or 07924–MC70000 or 07924–4150000
Torx driver bit (T40)	07703–0010100 or equivalent commercially available in U.S.A.

Common

Extension	07716–0020500 or equivalent commercially available in U.S.A.
Flywheel puller	07733–0020001 or 07933–3950000
Driver	07749–0010000
Attachment, 42 x 47 mm	07946–0010300
Pilot, 22 mm	07746–0041000

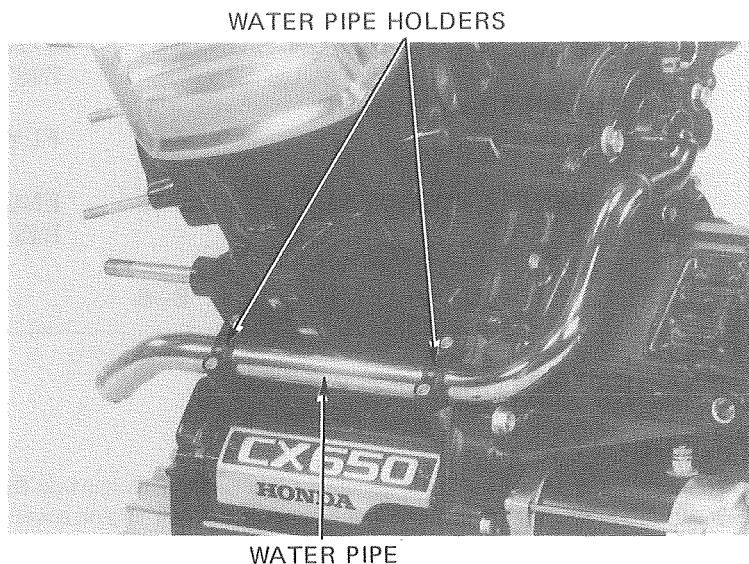


ENGINE REAR COVER REMOVAL

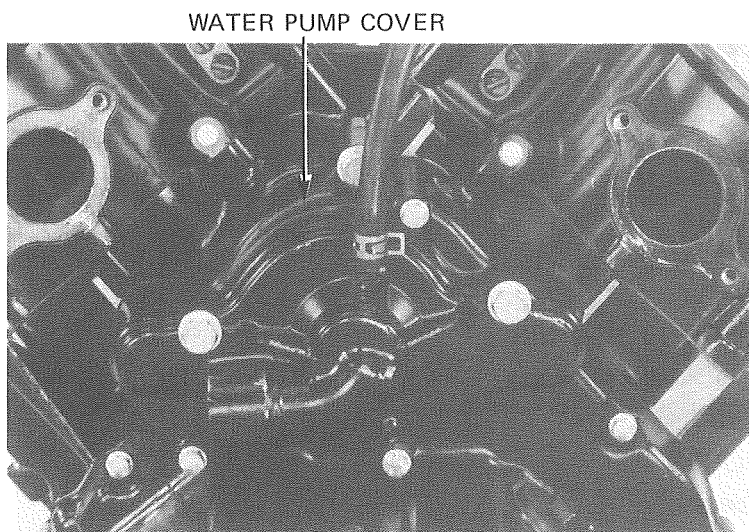
Drain the engine oil.
Remove the engine from the frame (Section 5).
Remove the radiator (Section 9).

WATER PUMP REMOVAL

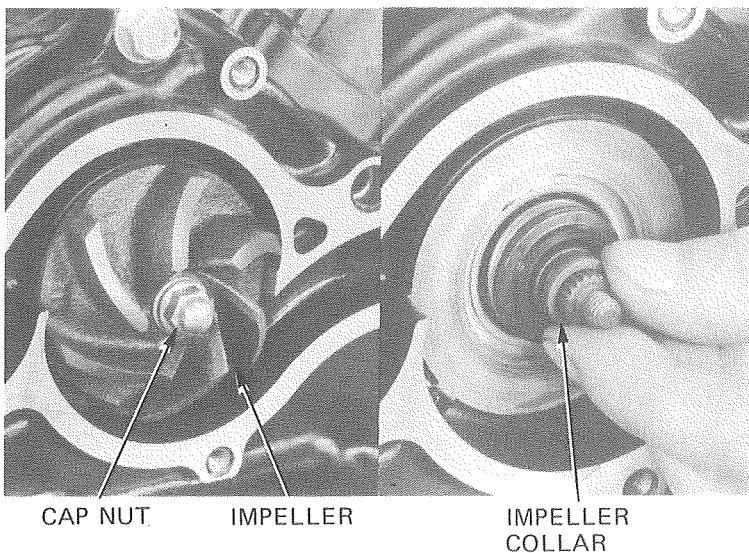
Remove the water pipe holders and the water pipe.



Remove the water pump cover and dowel pins.



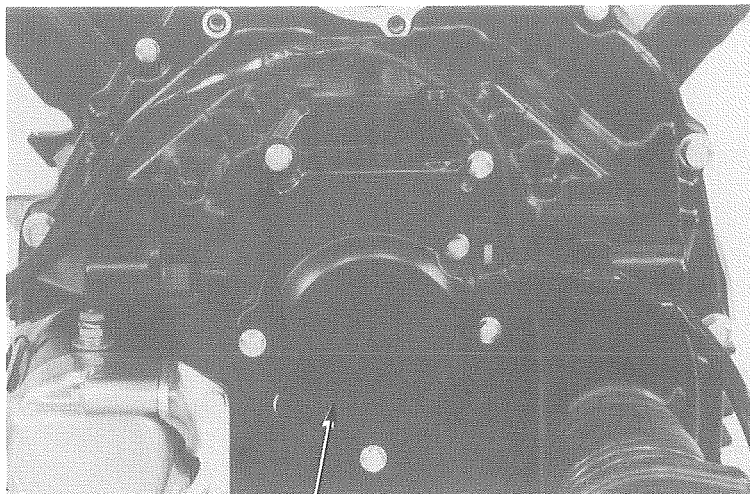
Remove the cap nut, copper washer and impeller.
Remove the impeller collar.





PULSE GENERATOR REMOVAL

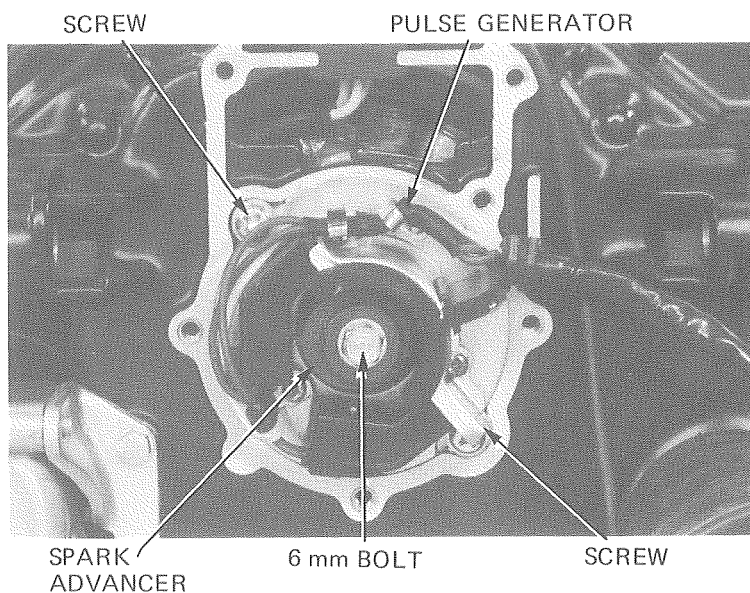
Remove the pulse generator cover.



PULSE GENERATOR COVER

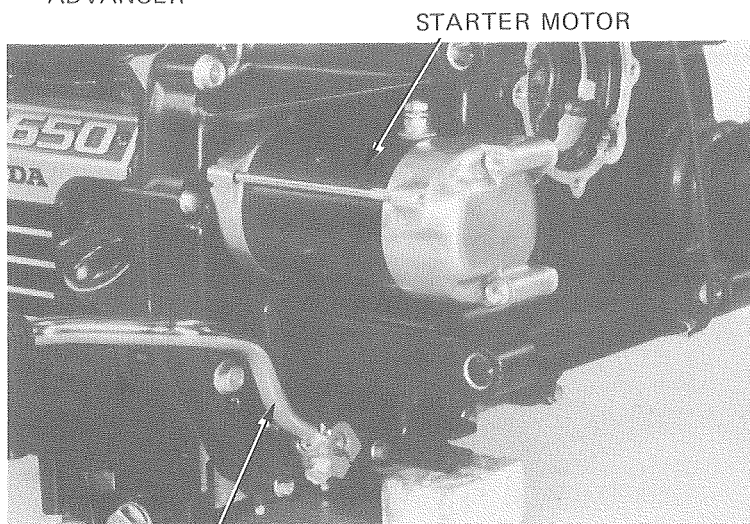
Remove the pulse generator by removing the two screws.

Remove the 6 mm bolt and spark advancer from the crankshaft.



REAR COVER REMOVAL

Remove the starter motor and gearshift pedal.

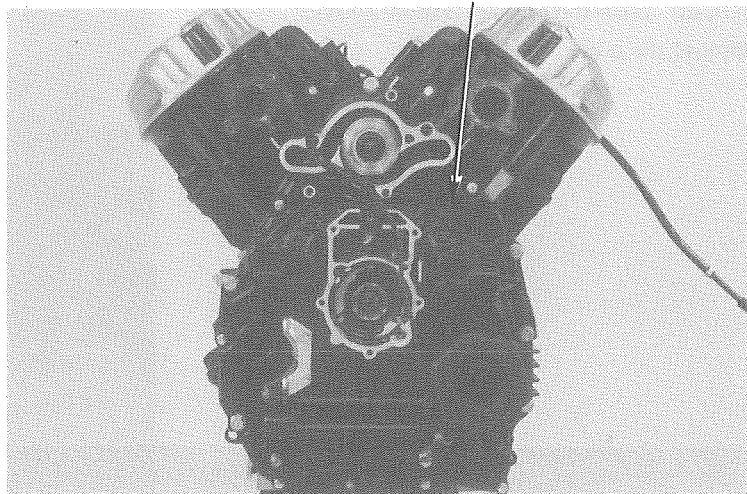


GEAR SHIFT PEDAL



Remove the engine rear cover.

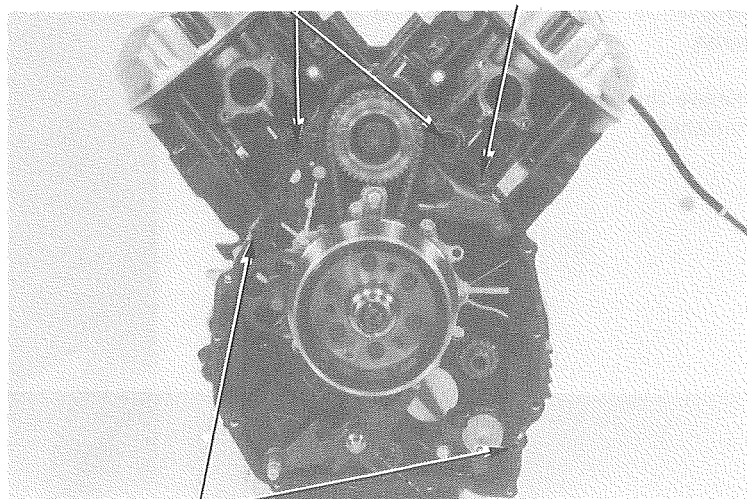
ENGINE REAR COVER



Remove the collars, O-rings, dowel pins, and gasket.

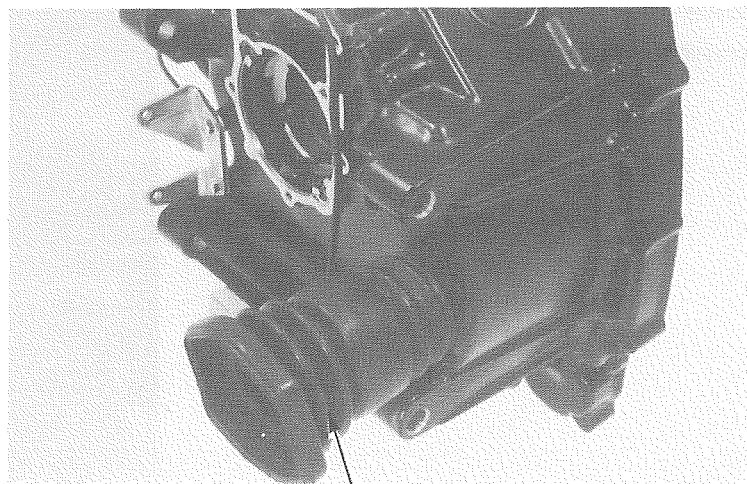
COLLAR AND O-RINGS

GASKET



DOWEL PINS

Remove the final shaft boot.

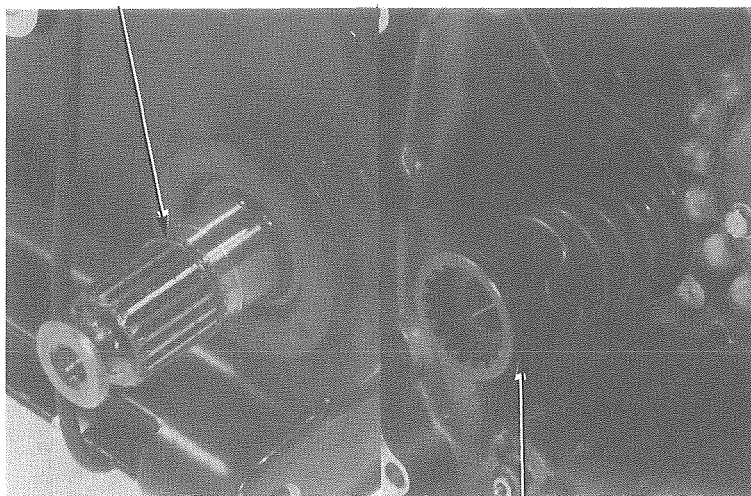


FINAL SHAFT BOOT



Remove the final shaft stop ring.
Remove the final shaft from the rear cover.

STOP RING



FINAL SHAFT

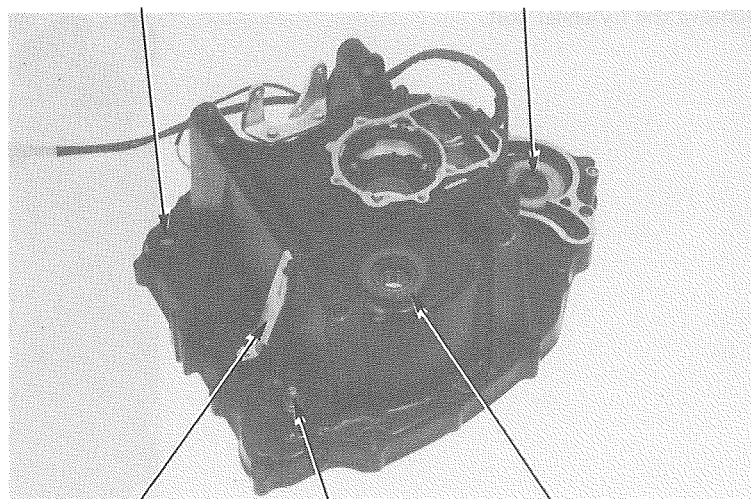
REAR COVER DISASSEMBLY

Remove the following from the rear cover.

- water pump mechanical seal (Page 9—11).
- final shaft and shift spindle oil seals.
- neutral wire clamp and disconnect it from the neutral switch.
- neutral switch and sealing washer.

OIL SEAL

MECHANICAL SEAL



WIRE CLAMP

NEUTRAL
SWITCH

OIL SEAL

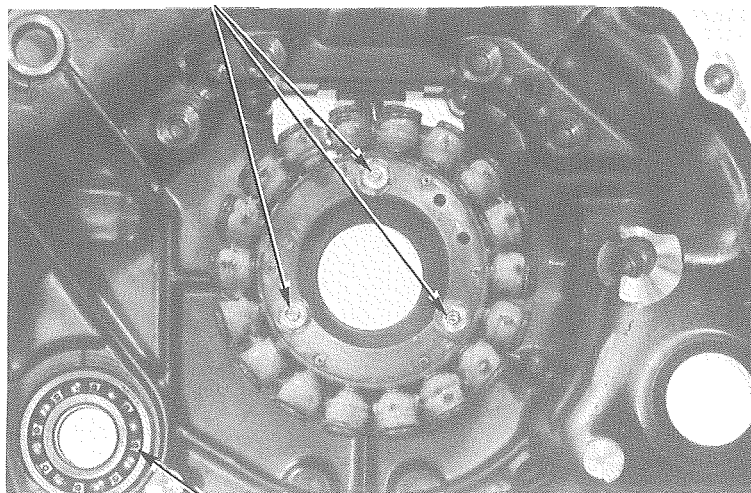
BOLTS

STATOR

Remove the alternator stator and the final shaft bearing.

NOTE

- Do not damage the stator coil.
- Refer to page 20-3, for neutral switch inspection.



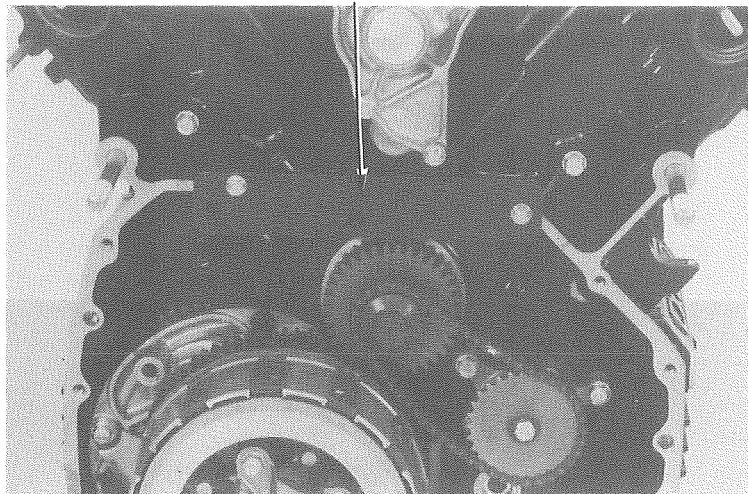
FINAL SHAFT BEARING



FLYWHEEL REMOVAL

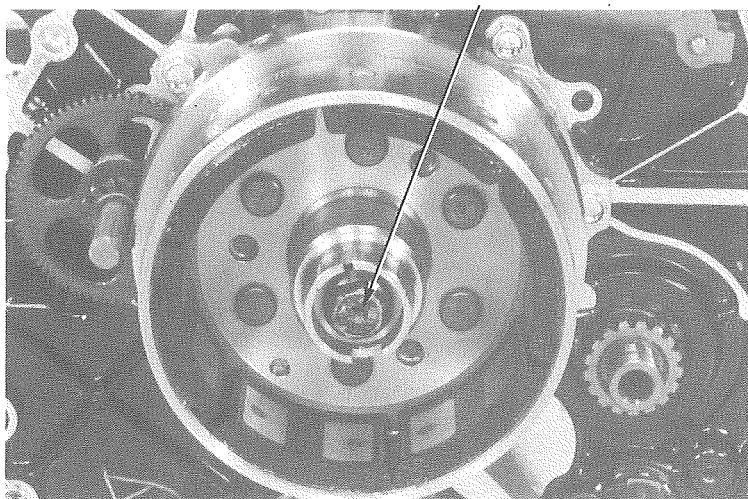
Remove the front engine cover (Page 7-10).
Attach the Gear Holder to the primary drive gear.

GEAR HOLDER 07924-MC70002 or
07924-MC70000 or 07924-4150000



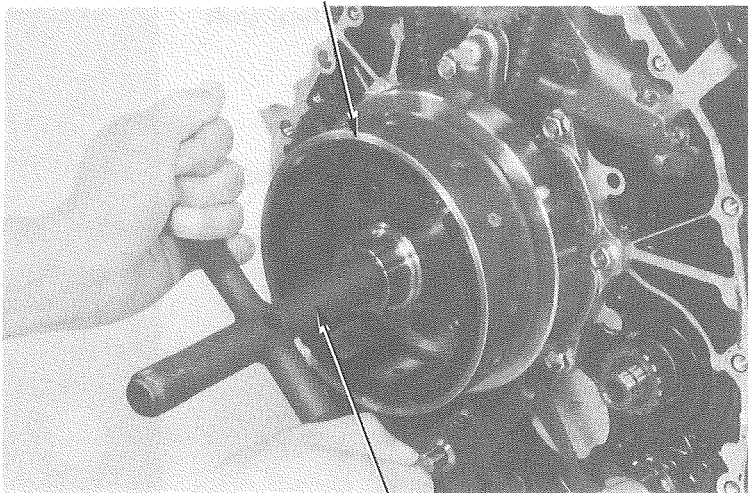
Remove the flywheel bolt.

FLYWHEEL BOLT



Remove the flywheel using the Flywheel puller.

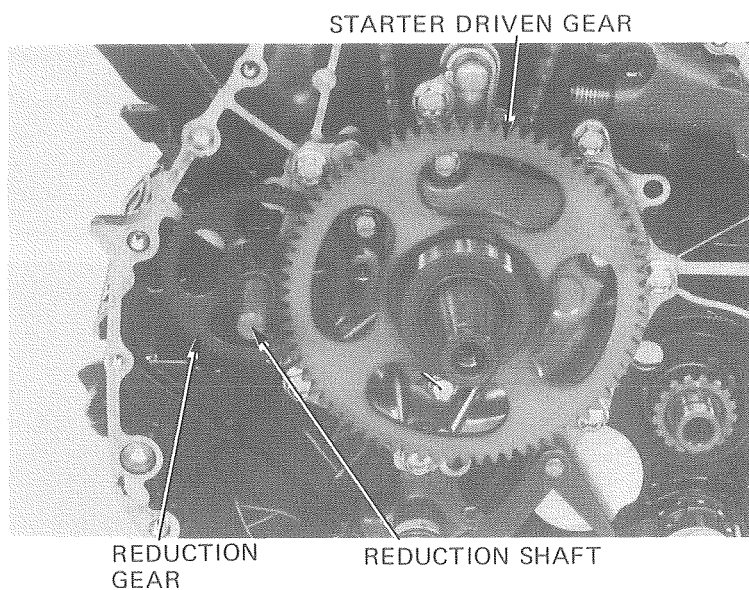
FLYWHEEL



FLYWHEEL PULLER
07733-0020001 or 07933-3950000



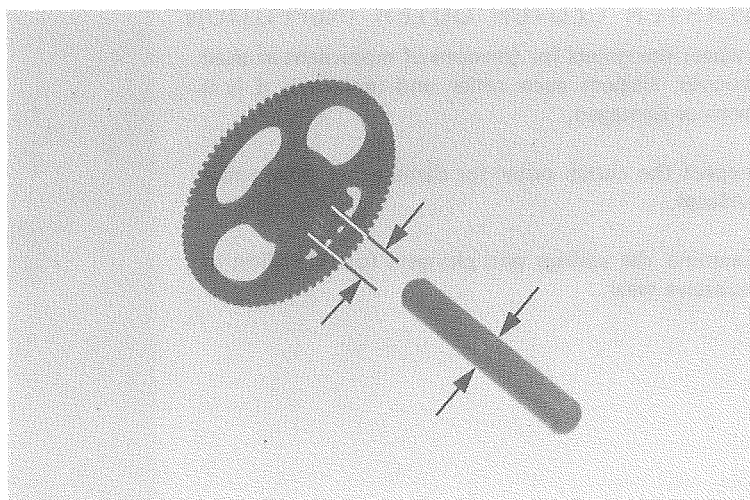
Remove the starter driven gear.
Remove the starter reduction shaft and gear.



REDUCTION GEAR INSPECTION

Inspect the reduction gear teeth for damage.
Measure the reduction gear I.D.
Measure the reduction gear shaft O.D., then calculate the gear to shaft clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



STARTER DRIVE GEAR INSPECTION

Check the drive gear for damage, excessive wear, indentations or other faults.

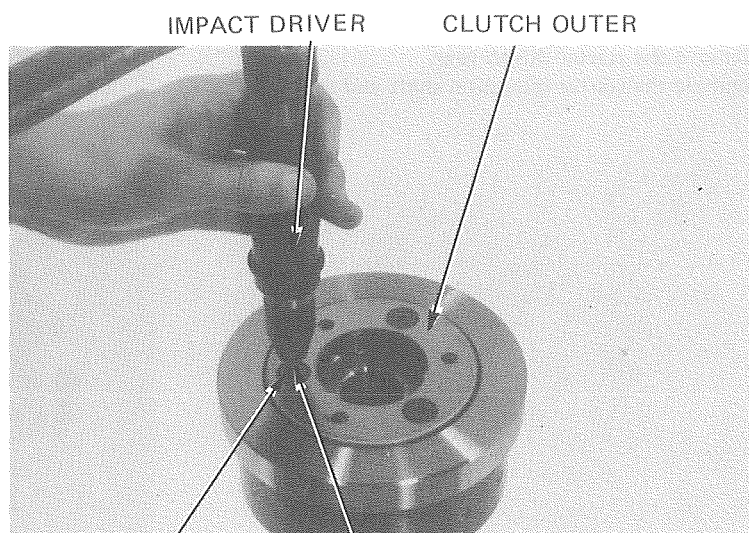




STARTER CLUTCH OUTER REMOVAL

Remove the starter clutch rollers, springs and plunger.

Remove the three Torx bolts and starter clutch outer.

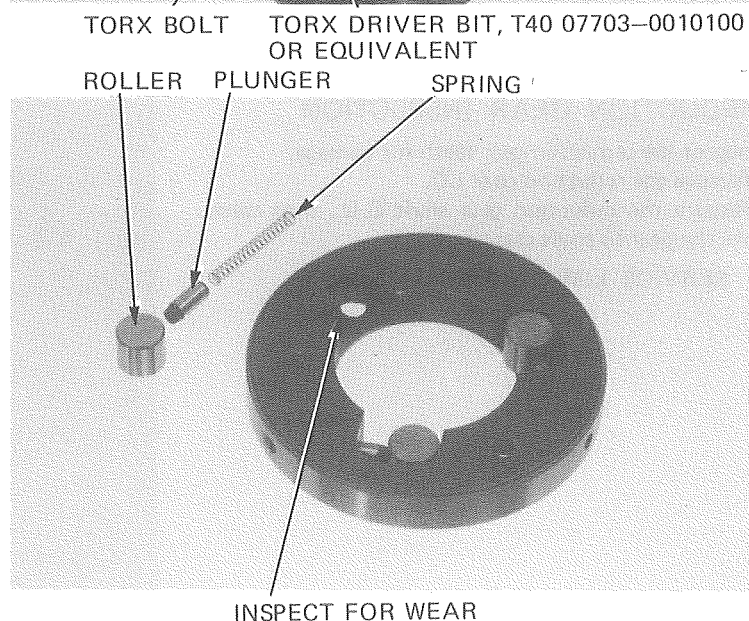


STARTER CLUTCH OUTER INSPECTION

Inspect the rollers for freedom of movement in their grooves. Inspect each roller and replace it if it is worn or damaged.

Inspect the clutch outer for damaged or worn roller surfaces.

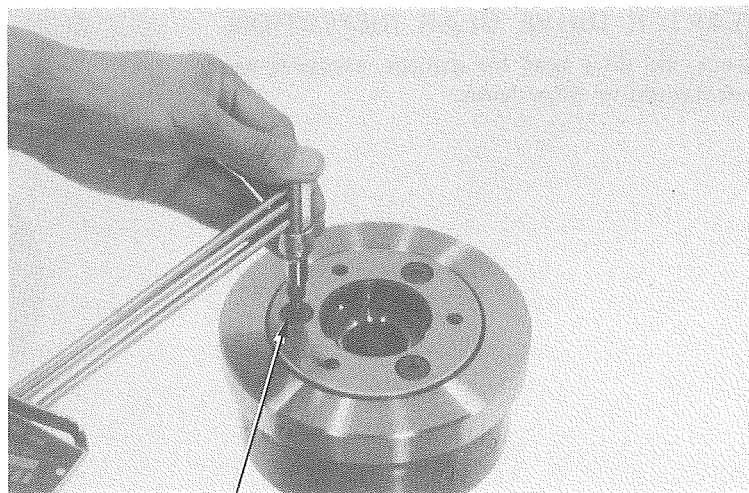
Examine the springs and plungers for distortion or excessive wear.



STARTER CLUTCH OUTER INSTALLATION

Slide the clutch outer into the flywheel, aligning the holes with the dowel pins in the flywheel. Coat the threads and undersides of the Torx bolts with a locking agent prior to installation. Install the Torx bolts and tighten them to the specified torque.

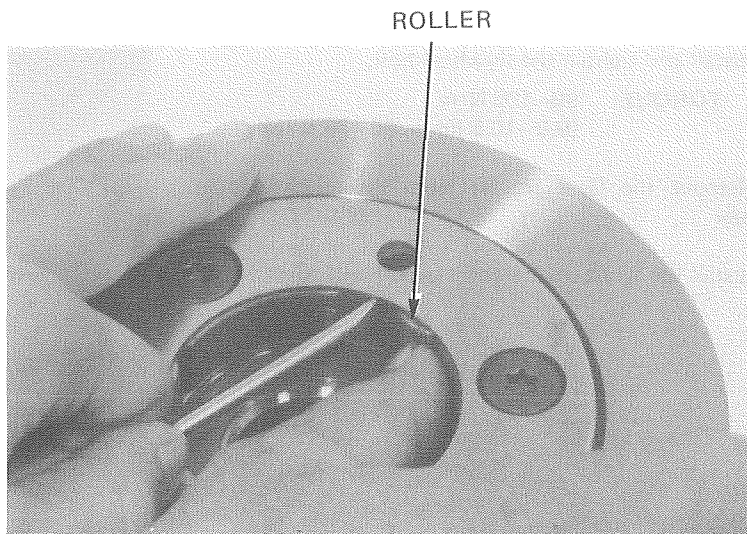
TORQUE: 18–25 N·m
(1.8–2.5 kg·m, 13–18 ft·lb)





Slide the spring into the plunger and install it in the clutch outer.

Position the roller into place while holding the plunger with a screwdriver as shown.



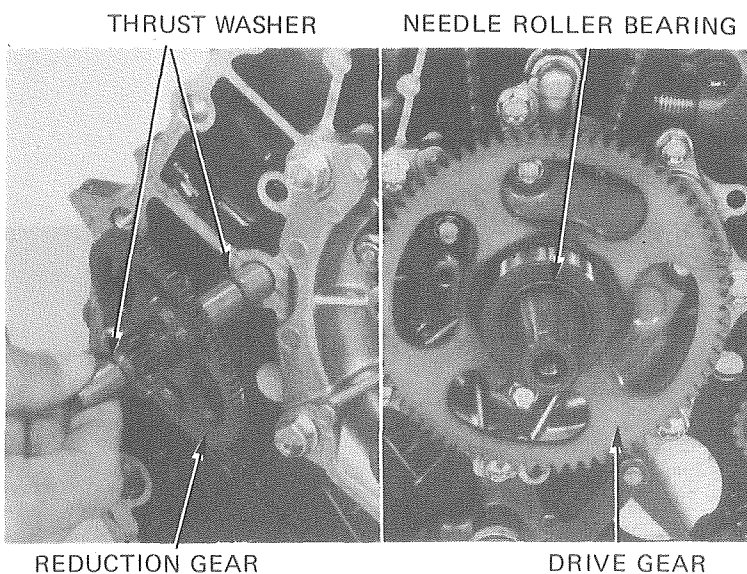
Install the reduction shaft, thrust washers and reduction gear.

NOTE

Use two thrust washers, one on each side of the reduction gear.

Install the needle roller bearing in the drive gear.

Install the drive gear onto the crankshaft.

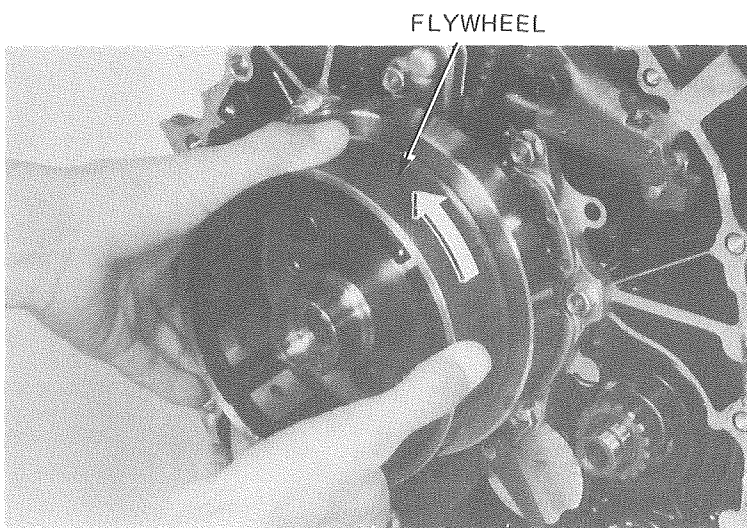


FLYWHEEL INSTALLATION

Install the flywheel onto the crankshaft.

NOTE

- Align the key in the crankshaft with the keyway in the flywheel.
- Rotate the flywheel counter-clockwise to aid installation.



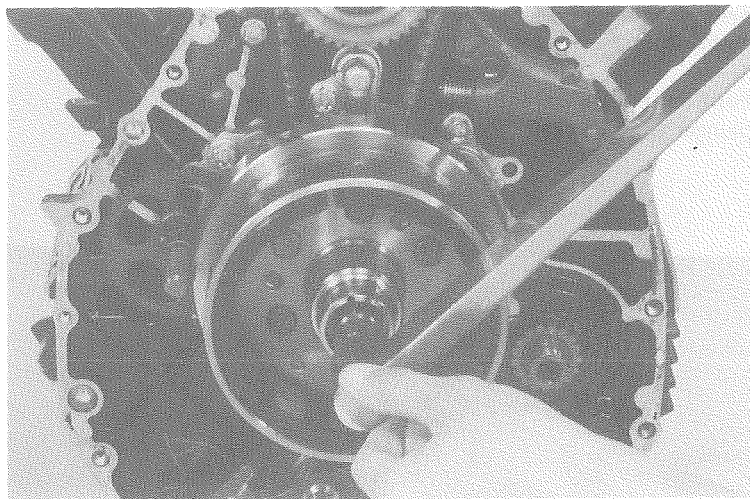


Install and tighten the flywheel bolt.

TORQUE: 90–105 N·m
(9.0–10.5 kg·m, 65–76 ft-lb)

Remove the Gear Holder from the primary drive gear.

Install the front engine cover gasket and cover.

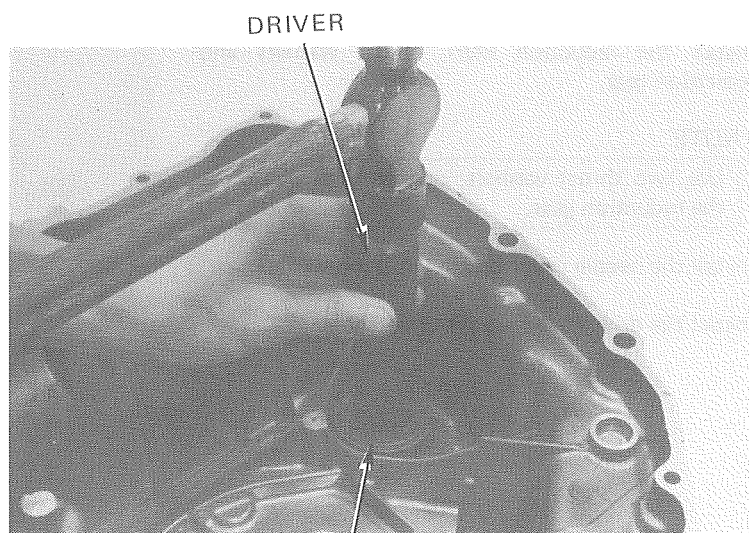


ENGINE REAR COVER INSTALLATION

Assemble the rear cover in the reverse order of disassembly.

NOTE

- Drive the final shaft bearing in until it seats fully.
- Refer to page 9–11 for water pump mechanical seal installation.

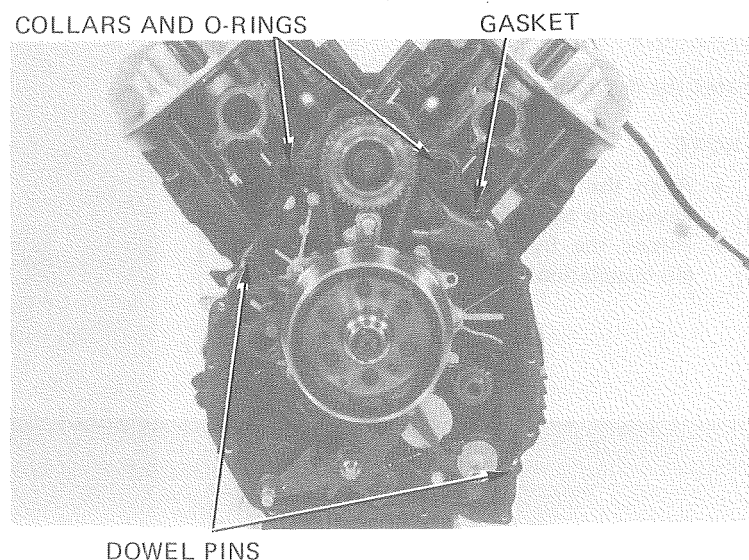


ATTACHMENT, 42 x 47 mm 07746-0010300
AND PILOT, 22 mm 07746-0041000

Install the final shaft.

Install the final shaft stop ring, boot and stator if removed.

Install the dowel pins, O-rings, collars and gasket.





Install the engine rear cover and tighten the bolts in a crisscross pattern in 2–3 steps. Begin with the 8 mm bolts.

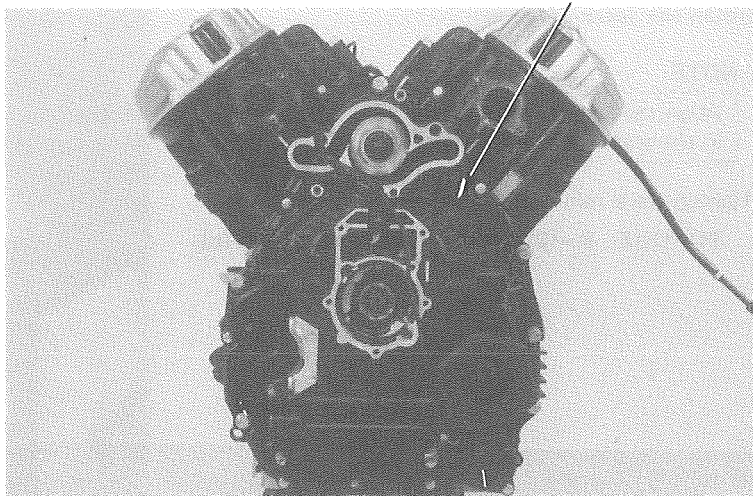
NOTE

Be careful not to damage the gearshift spindle oil seal

TORQUE:

8 mm bolts: 18–25 N·m
(1.8–2.5 kg-m, 12–18 ft-lb)
6 mm bolts: 8–12 N·m
(0.8–1.2 kg-m, 6–9 ft-lb)

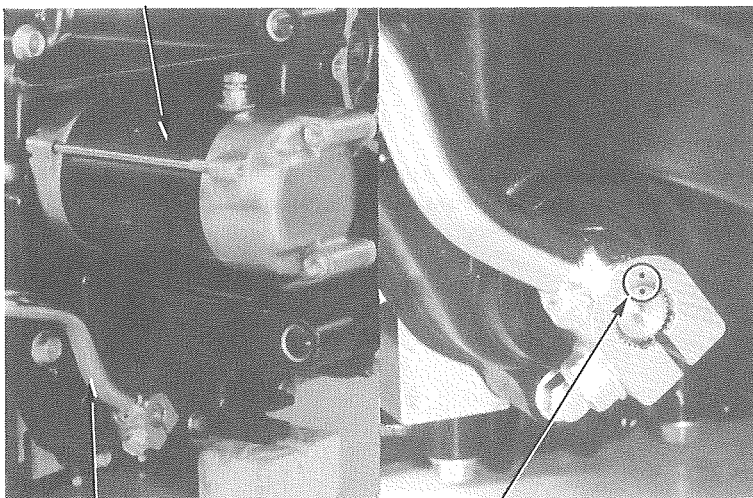
ENGINE REAR COVER



STARTER MOTOR

Install the starter motor.

Align the punch marks on the gearshift pedal and the gearshift spindle and install the pedal.

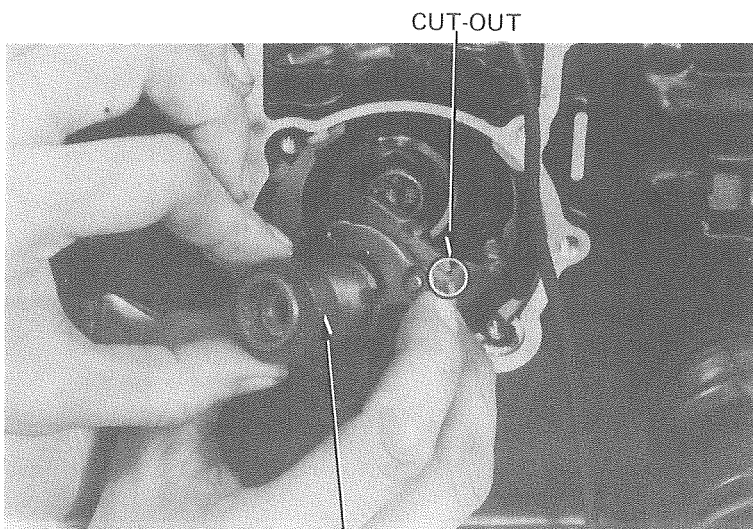


GEARSHIFT PEDAL

PUNCH MARKS

SPARK ADVANCER

Install the pulse generator rotor onto the spark advancer by aligning its tooth with the cut-out in the advancer base plate.



ROTOR TOOTH



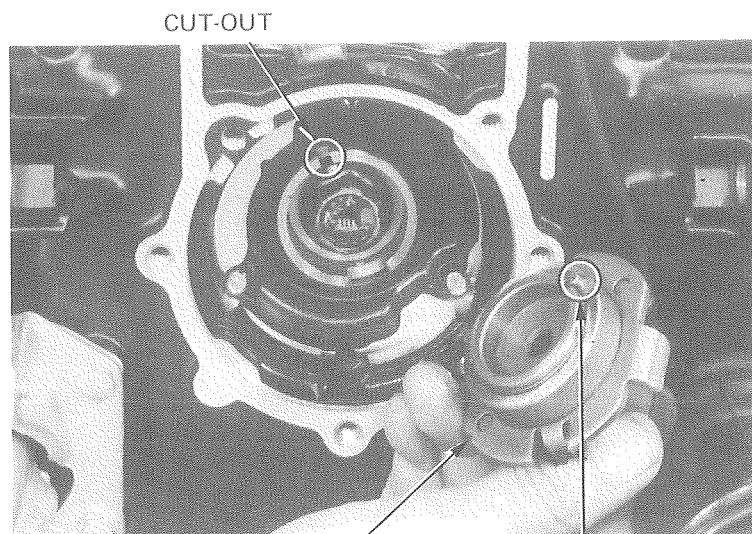
Install the spark advancer.

NOTE

Align the lug of the advancer with the cut-out in the crankshaft.

Tighten the 6 mm bolt.

TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)



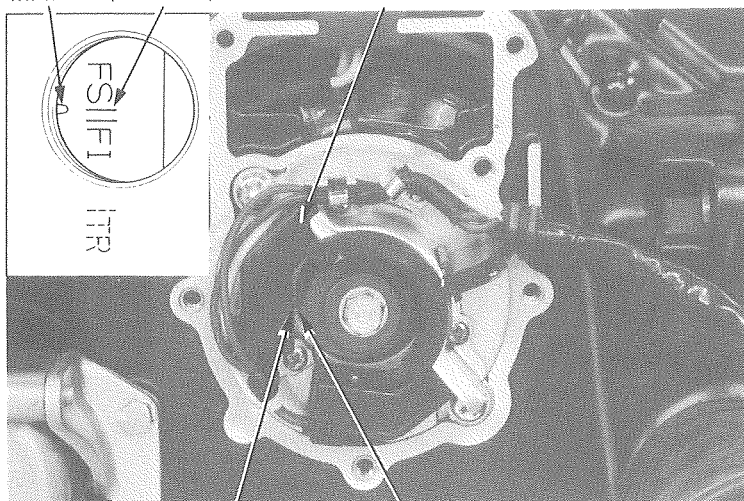
SPARK ADVANCER LUG
INDEX "FS" MARK MARK (R. SIDE) RIGHT PULSE GENERATOR

IGNITION TIMING ADJUSTMENT

Remove the timing inspection hole cap.

Rotate the crankshaft, and align the "FS" mark on the right side with the index mark on the rear engine cover.

Install the pulse generator assembly, aligning the right pulse generator steel core with the rotor tooth. Tighten the screws securely.

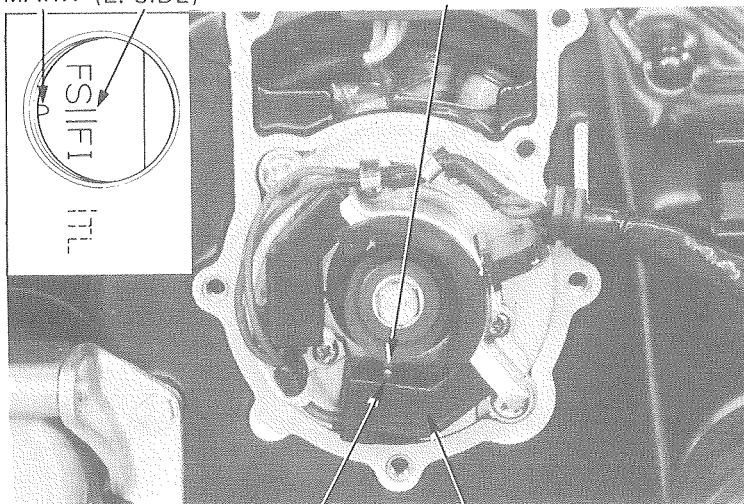


STEEL CORE ROTOR TOOTH
INDEX "FS" MARK MARK (L. SIDE) ROTOR TOOTH

Rotate the crankshaft clockwise, and align the "FS" mark on the left side with the index mark on the rear engine cover. Check that the rotor tooth is aligned with the left pulse generator steel core.

Check the air gap between the rotor tooth and steel core and adjust if necessary (Page 18-6).

To adjust: Move the pulse generator to the right or left by loosening the generator attaching screws. Tighten the attaching screws and recheck the gap.

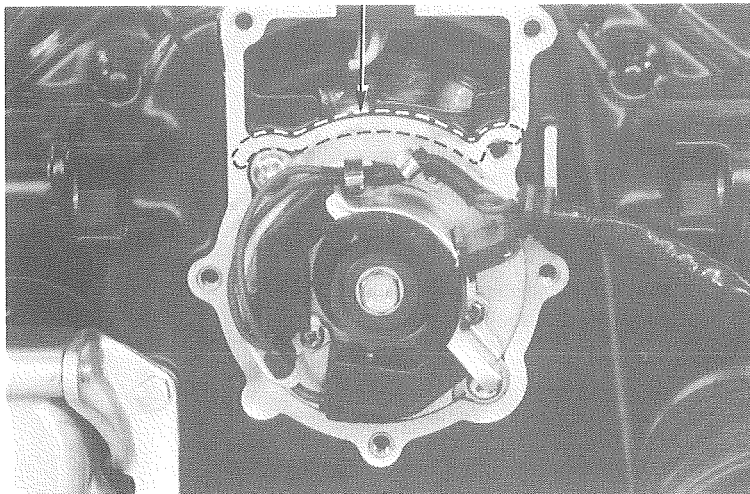


STEEL CORE LEFT PULSE GENERATOR

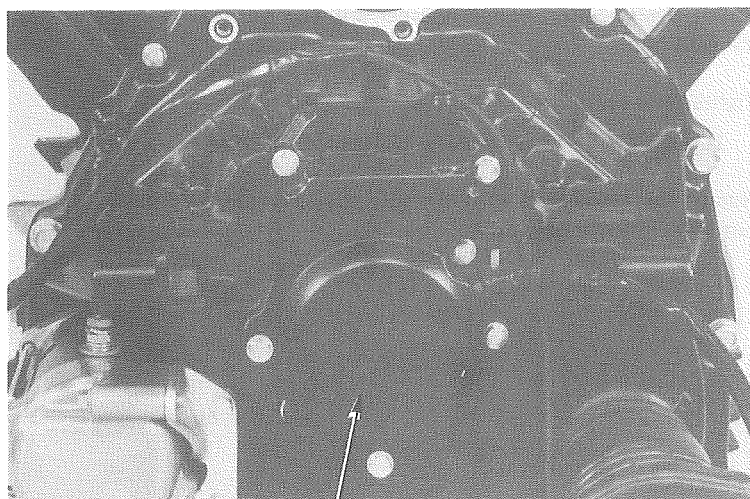


Apply adhesive to the surface indicated and install the gasket over the surface.

APPLY ADHESIVE HERE



Install the pulse generator cover.



PULSE GENERATOR COVER

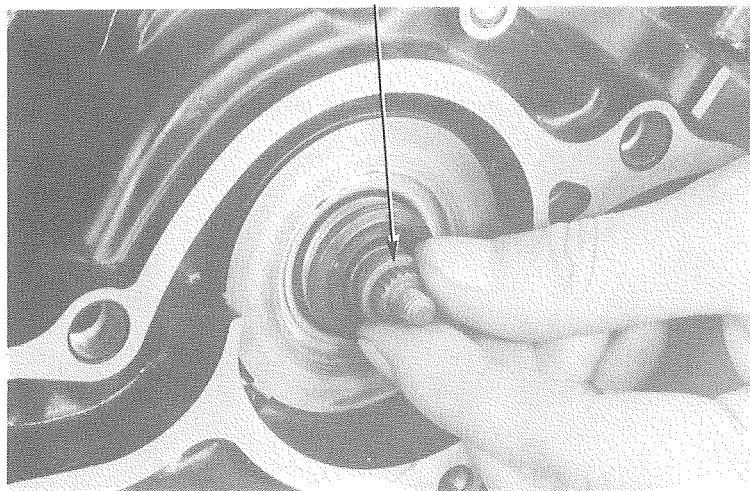
WATER PUMP INSTALLATION

Install the impeller collar on the camshaft.

NOTE

For water pump mechanical seal replacement, refer to page 9-11.

IMPELLER COLLAR



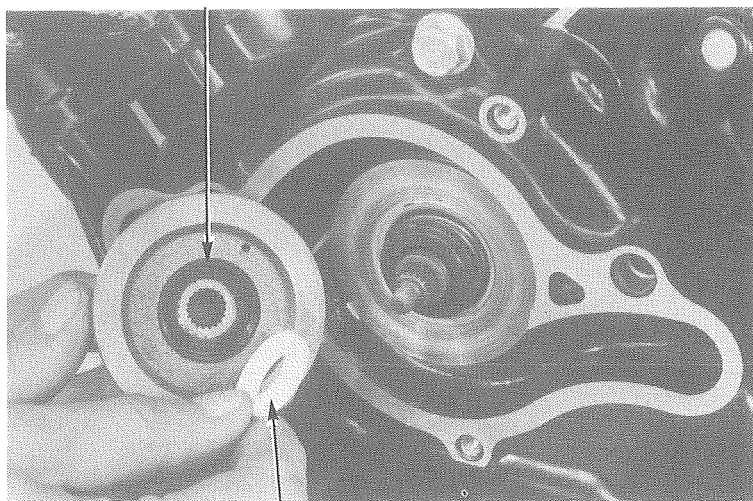


Install the rubber seal and seal washer in the impeller and apply soapy water to the sliding surfaces.

NOTE

- Dip the rubber seal in soapy water to facilitate installation.
- Check that the seal rubber is positioned properly.
- Install a new rubber seal and seal washer if the mechanical seal is replaced.

RUBBER SEAL



SEAL WASHER

Install the impeller, copper washer and cap nut on the camshaft.

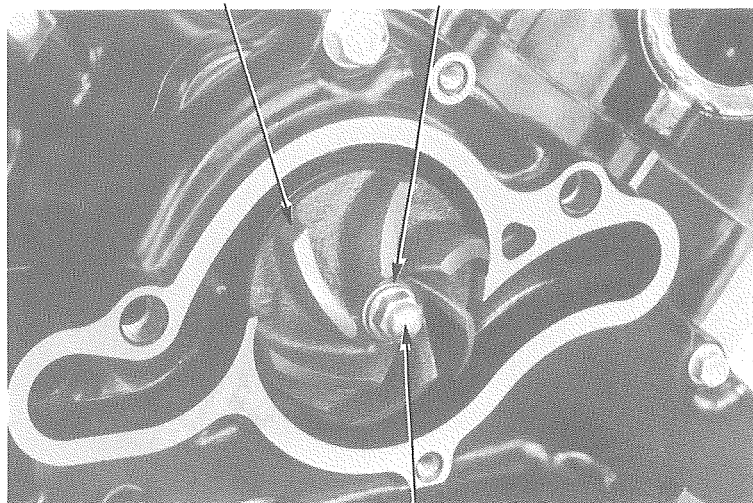
Tighten the cap nut.

TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

Rotate the crankshaft to make sure that the pump turns freely without binding.

IMPELLER

COPPER WASHER



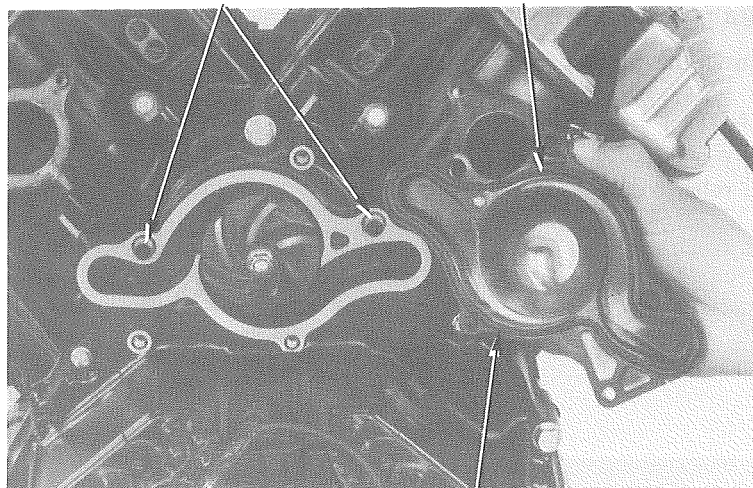
CAP NUT

Check the pump cover rubber packing for deterioration or damage and replace if necessary.

Install the dowel pins in the case and install the cover.

DOWEL PINS

RUBBER PACKING



WATER PUMP COVER

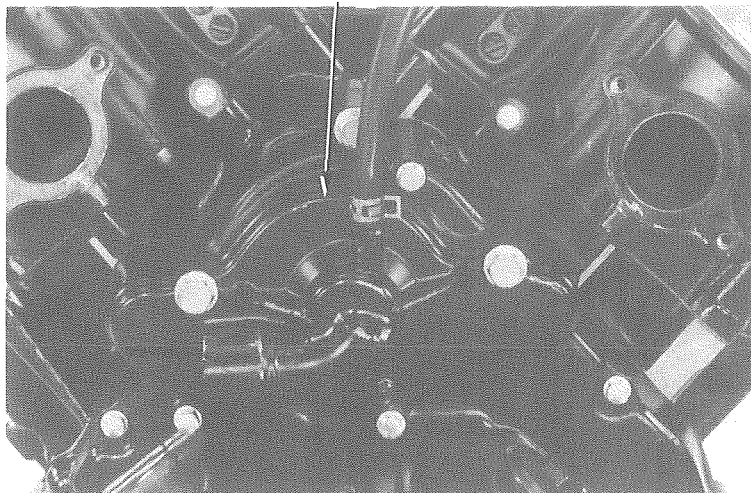


Tighten the pump cover bolts.

TORQUE:

- 8 mm bolts: 18–25 N·m
(1.8–2.5 kg-m, 13–18 ft-lb)
6 mm bolts: 8–12 N·m
(0.8–1.2 kg-m, 6–9 ft-lb)

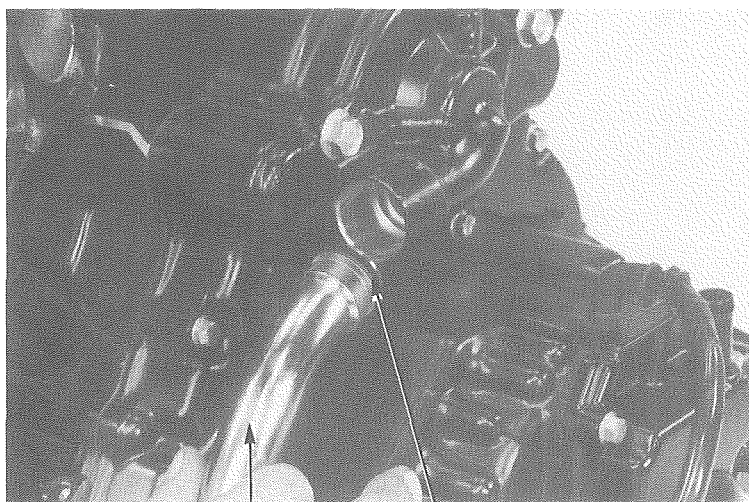
WATER PUMP COVER



Apply soapy water to new water pipe O-ring and insert the water pipe into the pump cover.

NOTE

Make sure that the O-ring is not twisted.



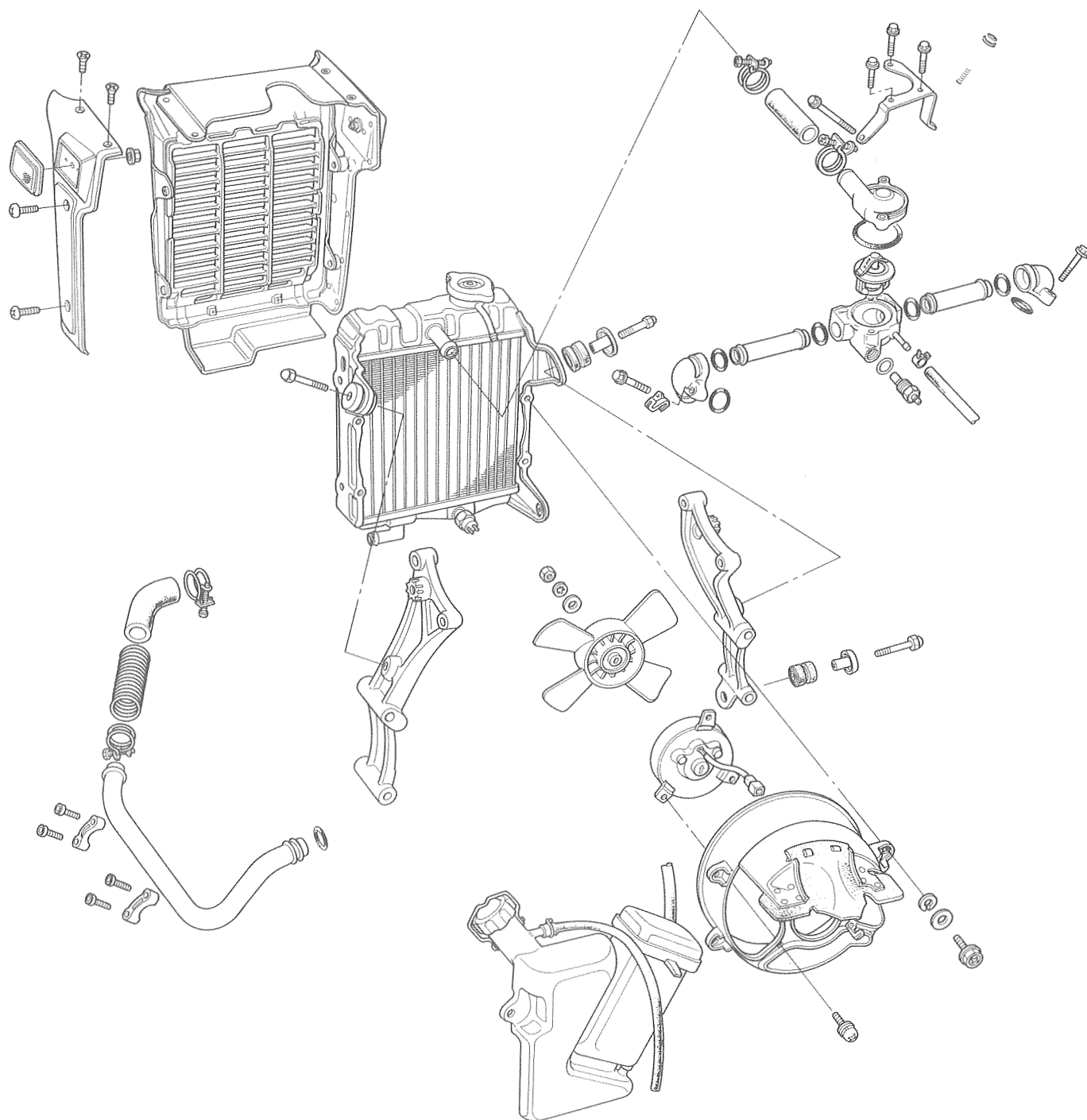
WATER PIPE

O-RING

Install the water pipe holders. Tighten the upper bolts first, then tighten the lower bolts.

WATER PIPE HOLDERS







SERVICE INFORMATION	9-1	THERMOSTAT	9-4
TROUBLESHOOTING	9-1	RADIATOR/COOLING FAN	9-6
SYSTEM TESTING	9-2	WATER PUMP MECHANICAL	
COOLANT REPLACEMENT	9-3	SEAL REPLACEMENT	9-11

SERVICE INFORMATION

GENERAL

- To service the water pump seal, it is necessary to remove the engine and the rear engine cover. All other cooling system services can be made with the engine in the frame.
- Do not remove the radiator cap when the engine is hot. The coolant is under pressure and severe scalding could result. The engine must be cool before servicing the cooling system.
- Avoid spilling coolant on painted surfaces. After servicing the system, check for leaks with a radiator tester.
- Refer to section 8 for water pump service.

SPECIFICATIONS

Radiator cap relief pressure	75–105 kPa (0.75–1.05 kg/cm ² , 10.8–15.2 psi)
Freezing point (Hydrometer test):	55% Distilled water + 45% ethylene glycol: –32°C (–26°F) 50% Distilled water + 50% ethylene glycol: –37°C (–35°F) 45% Distilled water + 55% ethylene glycol: –44.5°C (–48°F)
Coolant capacity: Radiator and engine Reserve tank Total system	1.7 liters (1.8 US qt) 0.38 liters (0.40 US qt) 2.08 liters (2.20 US qt)
Thermostat	Begins to open: 80° to 84°C (176° to 183°F) Fully open: 93° to 97°C (199° to 206°) Valve lift: Minimum of 8 mm at 95°C (0.315 in. at 203°F)
Boiling point (with 50–50 mixture):	Unpressurized: 107.7°C (226°) Cap on, pressurized: 125.6°C (258°F)

TOOLS

Special

Mechanical seal driver attachment

07945–4150400 or GN-AH-065-415 (USA only)

Common

Driver

07749–0010000 or 07949–6110000

TROUBLESHOOTING

Engine Temperature Too High

- Faulty temperature gauge or gauge sensor.
- Thermostat stuck closed.
- Faulty radiator cap.
- Insufficient coolant.
- Passages blocked in radiator, hoses, or water jacket.
- Fan blades bent.
- Faulty fan motor.

Engine Temperature Too Low

- Faulty temperature gauge or gauge sensor.
- Thermostat stuck open.

Coolant Leaks

- Faulty pump oil seal.
- Deteriorated O-rings.
- Radiator hose damage.
- Loose or over tightened hose clamps.



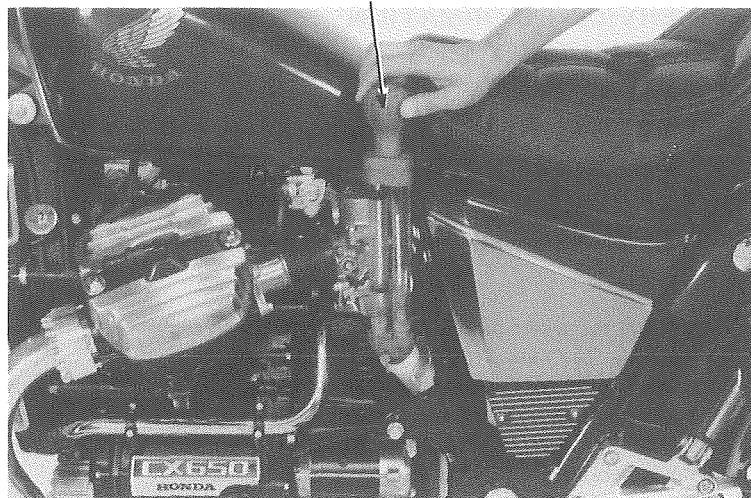
COOLING SYSTEM

SYSTEM TESTING

COOLANT

Test the coolant mixture with an anti-freeze tester. For minimum corrosion protection, a 50–50% solution of ethylene glycol and distilled water is recommended.

ANTI-FREEZE TESTER



RADIATOR CAP INSPECTION

Pressure test the radiator cap. Replace the radiator cap if it does not hold pressure, or if relief pressure is too high or too low. It must hold specified pressure for at least six seconds.

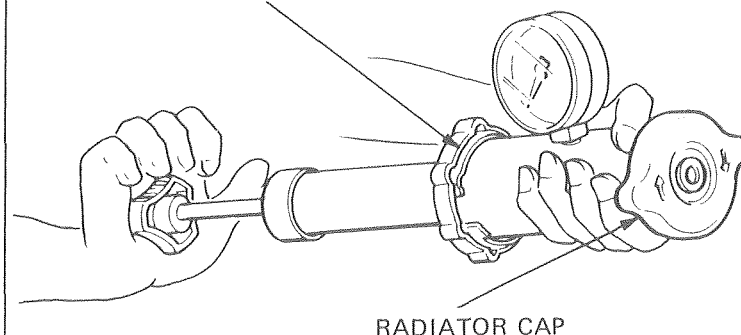
NOTE

Before installing the cap on the tester, moisten the sealing surfaces.

RADIATOR CAP RELIEF PRESSURE:

$90 \pm 15 \text{ kPa}$ ($0.9 \pm 0.15 \text{ kg/cm}^2$, $12.8 \pm 2.1 \text{ psi}$)

COOLING SYSTEM TESTER (COMMERCIALLY AVAILABLE IN U.S.A.)



COOLING SYSTEM TESTER (COMMERCIALLY AVAILABLE IN U.S.A.)

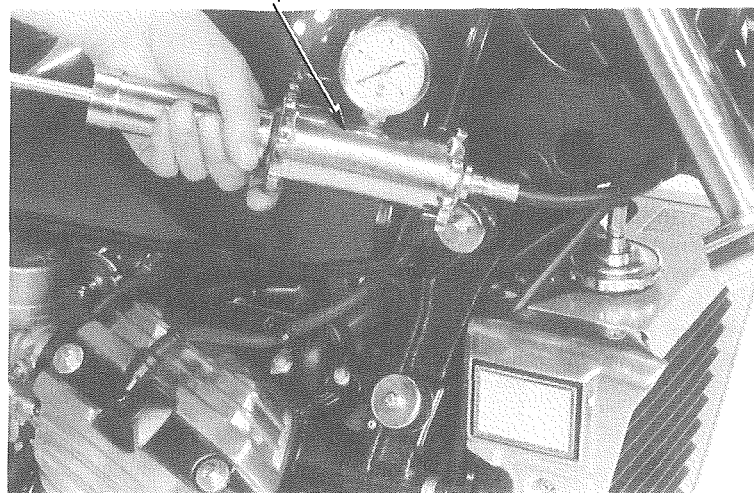
RADIATOR LEAKAGE TEST

Pressurize the radiator, engine and hoses, and check for leaks.

CAUTION

Excessive pressure can damage the radiator. Do not exceed 105 kPa (1.05 kg/cm^2 , 14.9 psi).

Repair or replace components if the system will not hold specified pressure for at least six seconds.





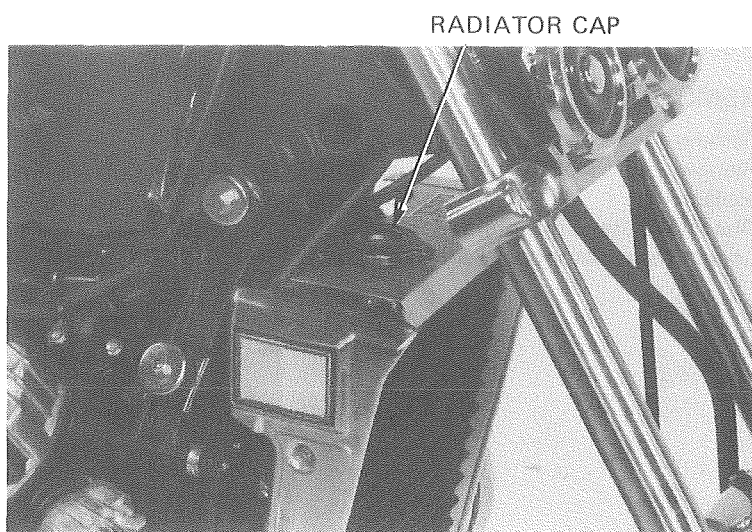
COOLANT REPLACEMENT

WARNING

The engine must be cool before servicing the cooling system, or severe scalding may result.

Remove the radiator cap.

Remove the radiator cover by removing the screws on the side of the cover.



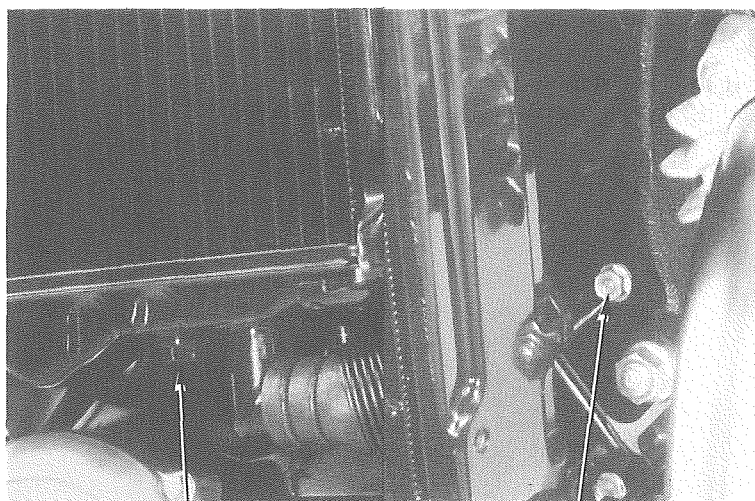
Remove the radiator drain plug, and drain the coolant.

To drain coolant from the cylinders, remove the cylinder drain plugs.

Replace the cylinder and radiator drain bolts.

CAUTION

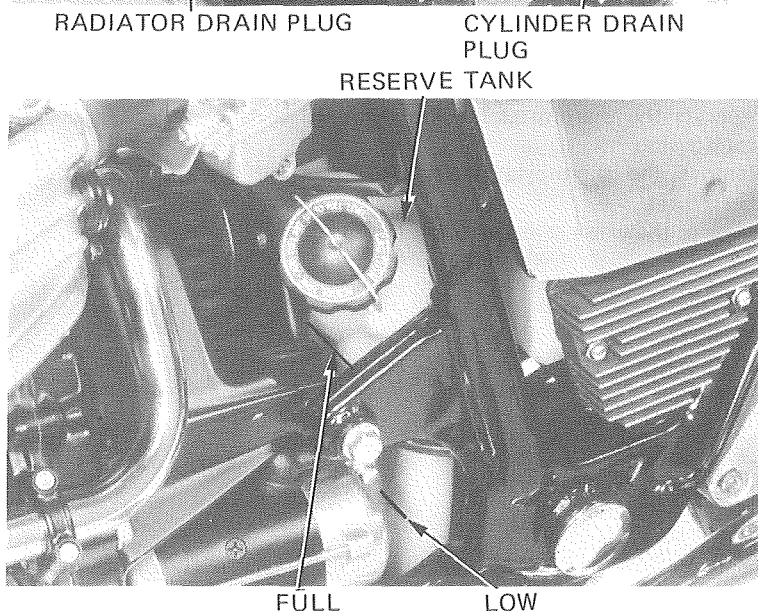
Do not overtighten the radiator drain plug.



Fill the system with a 50–50 mixture of distilled water and ethylene glycol.

Bleed air from the radiator.

- Start the engine and run until there are no air bubbles in the coolant, and the level stabilizes.
- Stop the engine and add coolant up to the proper level, if necessary.
- Reinstall the radiator cap.
- Check the level of coolant in the reserve tank and fill to the correct level if it is low.

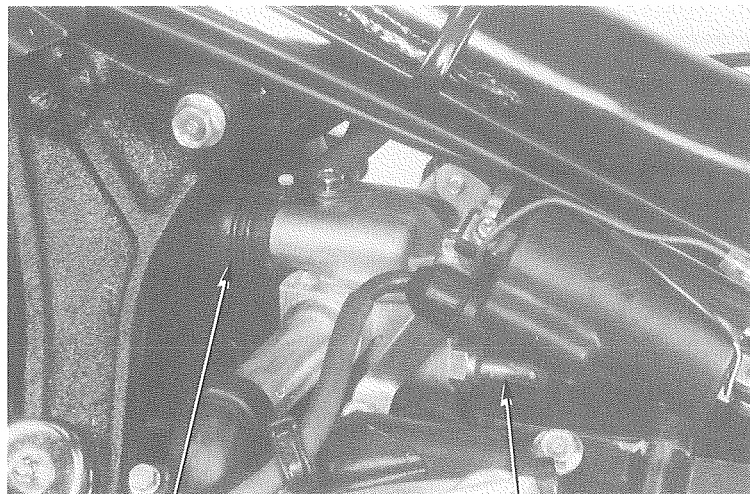




THERMOSTAT

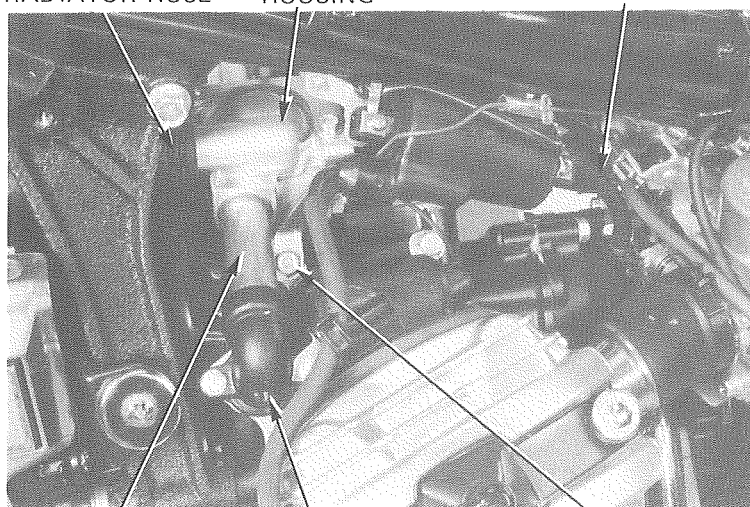
REMOVAL

Remove the seat and fuel tank.
Remove the coolant drain plug, and drain the coolant.
Disconnect the temperature sensor wire.
Loosen the radiator hose band.



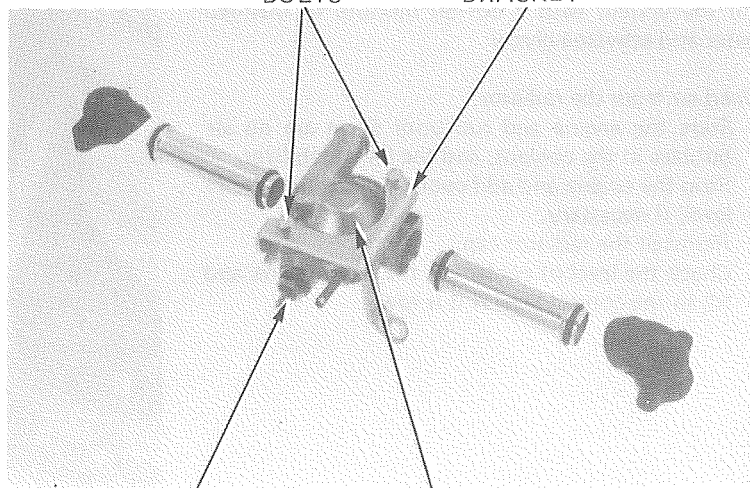
RADIATOR HOSE BAND
THERMOSTAT HOUSING
TEMPERATURE SENSOR WIRE
RADIATOR HOSE
BY-PASS HOSE

Disconnect the by-pass hose.
Remove the water pipe joints and water pipes.
Remove the thermostat bracket bolts.
Pull the thermostat housing off the radiator hose.



WATER PIPE
WATER PIPE JOINT
BRACKET BOLT
BOLTS
BRACKET

Separate the thermostat bracket from the thermostat housing.
Remove the thermostat cover and take out the thermostat.
Remove the water temperature sensor.



TEMPERATURE SENSOR
THERMOSTAT HOUSING COVER



TEMPERATURE SENSOR INSPECTION

Suspend the sensor in oil and measure the resistance through the sensor as the oil heats.

Temperature	60°C	85°C	110°C	120°C
	140°F	185°F	230°F	248°F
Resistance	104.0Ω	43.9Ω	20.3Ω	16.1Ω

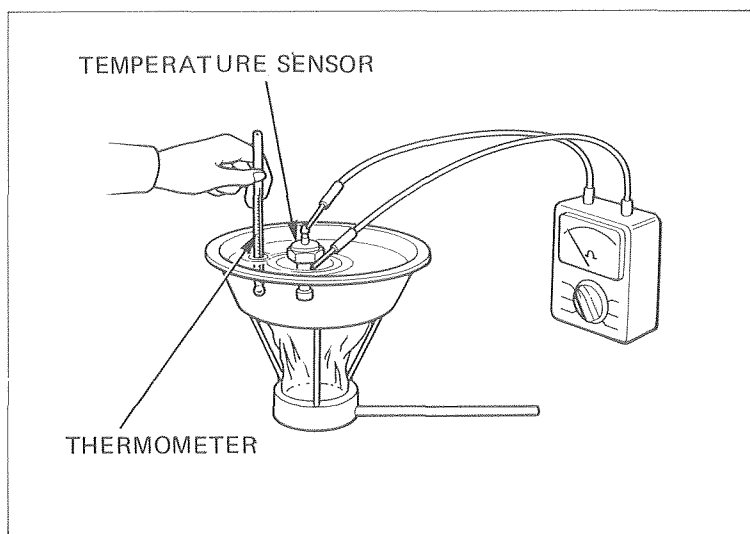
Do not let the sensor or thermometer touch the pan or false readings will result.

WARNING

Wear gloves and eye protection.

NOTE

Oil must be used as the heated liquid to check operation above 100°C (212°F).



THERMOSTAT INSPECTION

Inspect the thermostat visually for damage.

Suspend the thermostat in hot water to check its operation.

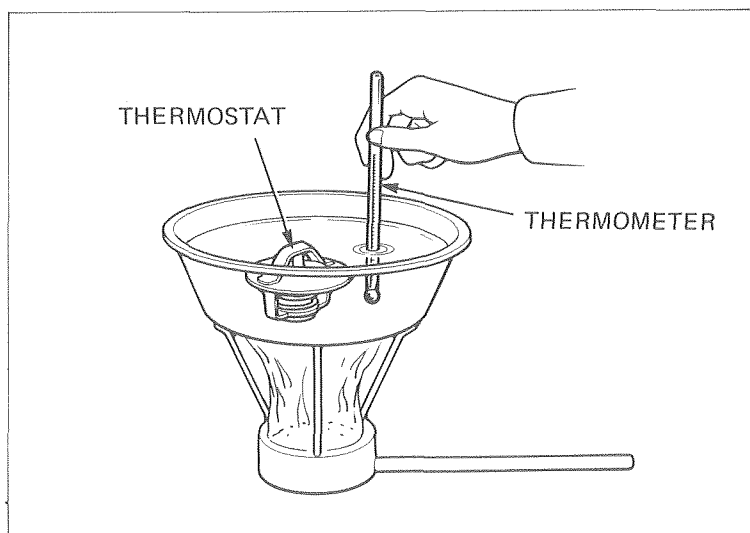
Do not let the thermostat or thermometer touch the pan or false readings will result.

Technical Data

Start to open	80° to 84°C (176°–183°F)
Fully open	95°C (203°F)
Valve lift	8 mm (0.31 in) minimum

NOTE

- Replace the thermostat if the valve stays open at room temperature, or if it responds at temperatures other than those specified.
- Valve lift must be checked by applying heat for five minutes.

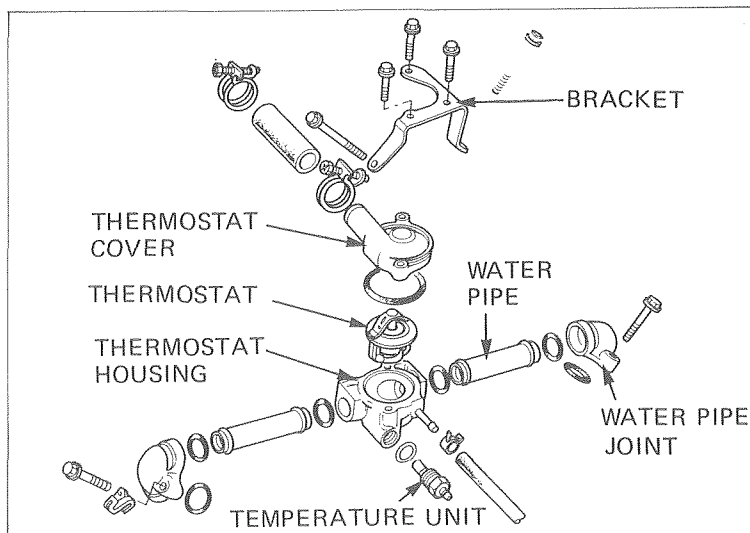


INSTALLATION

Insert the thermostat into the thermostat housing. Install a new O-ring on the thermostat case and attach the thermostat cover and bracket. Install the temperature unit.

NOTE

- Check that the O-rings are not dislodged.
- Make sure the thermostat is installed in the correct direction.

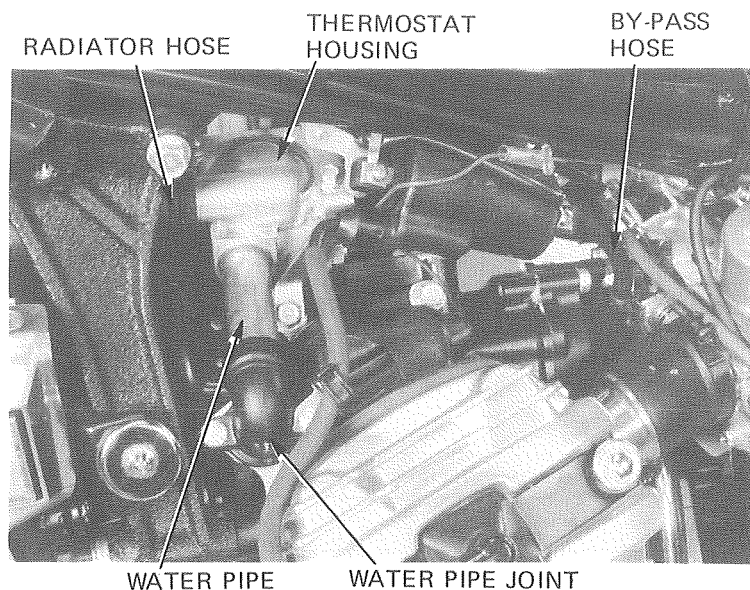




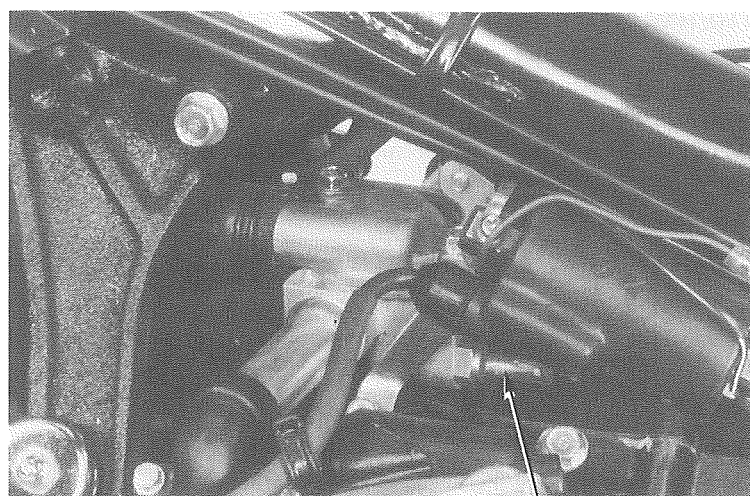
COOLING SYSTEM

Install the thermostat housing onto the engine.
Slide new O-rings onto the water pipes and press the water pipes into the thermostat housing.
Install the water pipe joints.
Connect the radiator hose and tighten the hose band bolt.

Connect the water by-pass hose.



Connect the temperature sensor wire to the sensor.
Fill the system with the recommended coolant (page 9-3).
Install the fuel tank and seat.

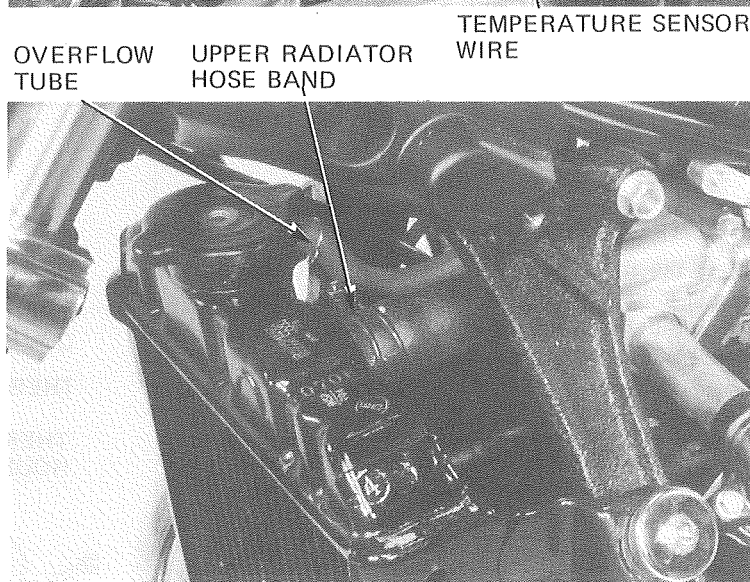


RADIATOR/COOLING FAN

REMOVAL

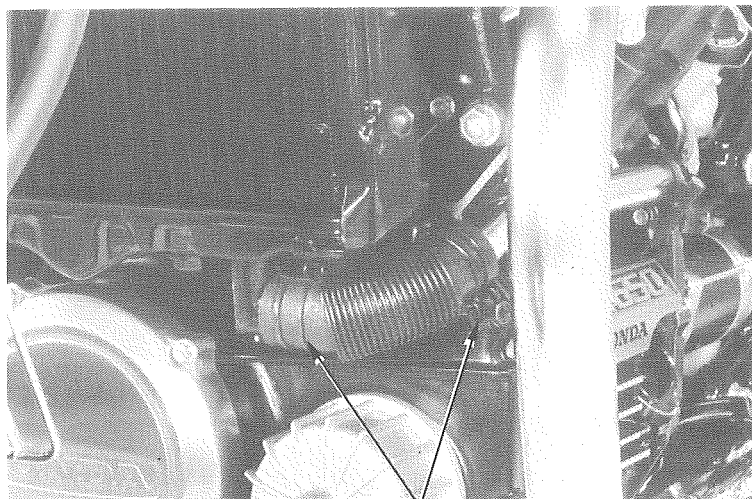
Remove the seat and fuel tank.
Remove the radiator covers.
Drain the coolant from the radiator.
Disconnect the fan motor and thermostatic switch wire coupler.

Disconnect the radiator overflow tube.
Loosen the upper radiator hose band.





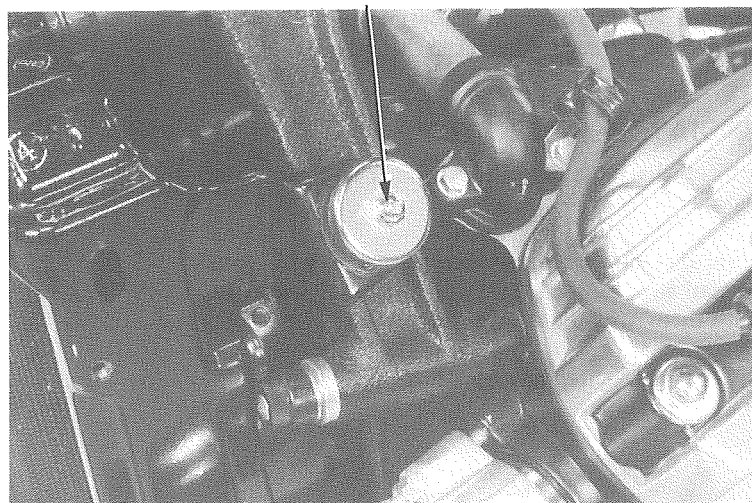
Loosen the lower radiator hose bands.



LOWER RADIATOR HOSE BANDS

RADIATOR MOUNTING NUT

Remove the radiator mounting nuts and pull the radiator off the upper and lower radiator hoses.



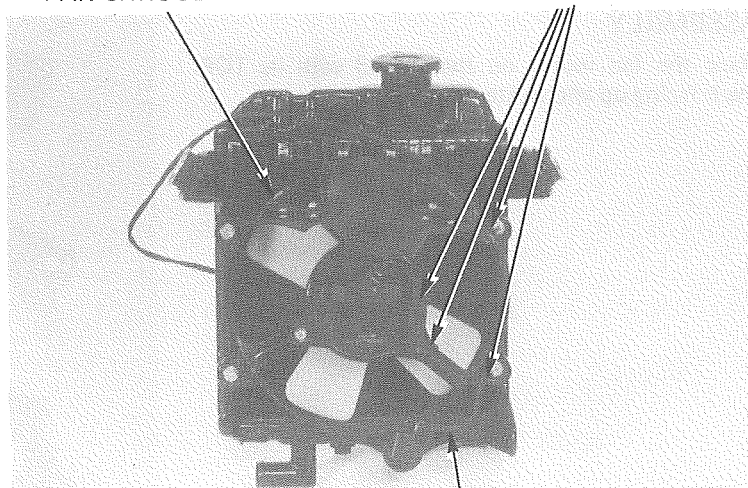
DISASSEMBLY

Bend down the thermostatic switch and fan motor wire clamps and remove the wires.

Remove the four fan shroud mounting bolts and fan shroud from the radiator.

FAN SHROUD

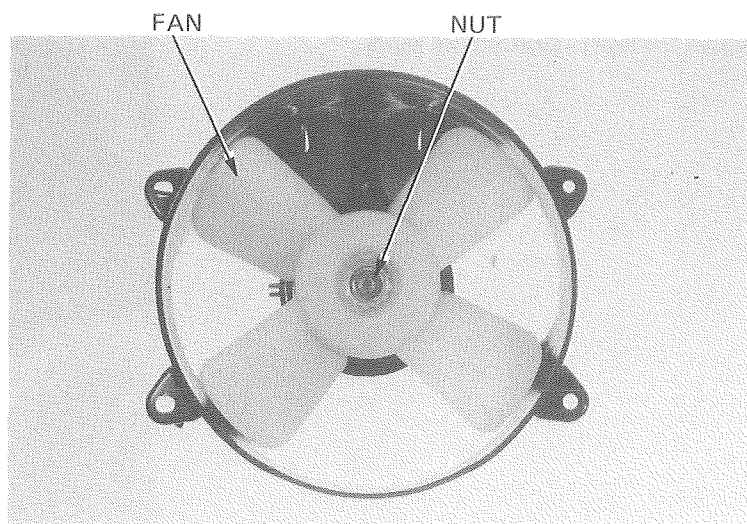
WIRE CLAMPS



FAN MOTOR AND THERMOSTATIC SWITCH WIRE



Remove the fan attaching nut and pull the fan off the fan motor.



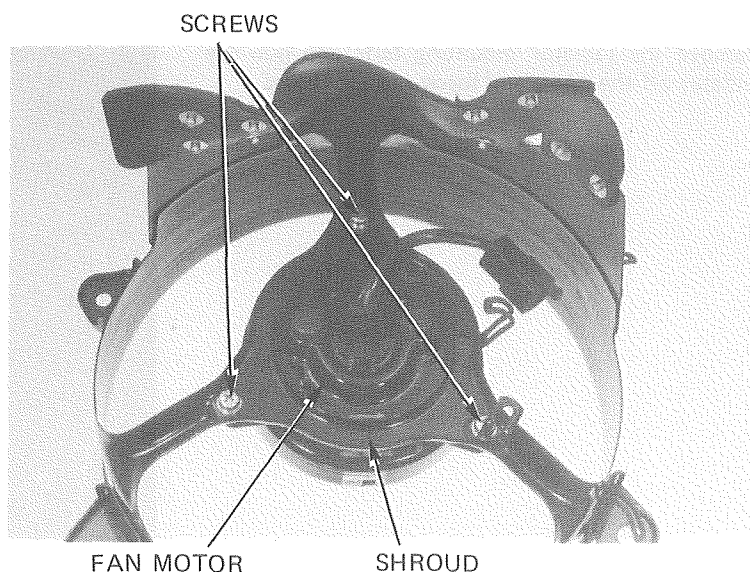
Remove the three fan motor attaching screws and remove the fan motor from the shroud.

RADIATOR INSPECTION

Inspect the radiator soldered joints and seams for leaks.

Blow dirt out from between core fins with compressed air. If insects, etc., are clogging the radiator, wash them off with low pressure water.

Carefully straighten any bent fins.

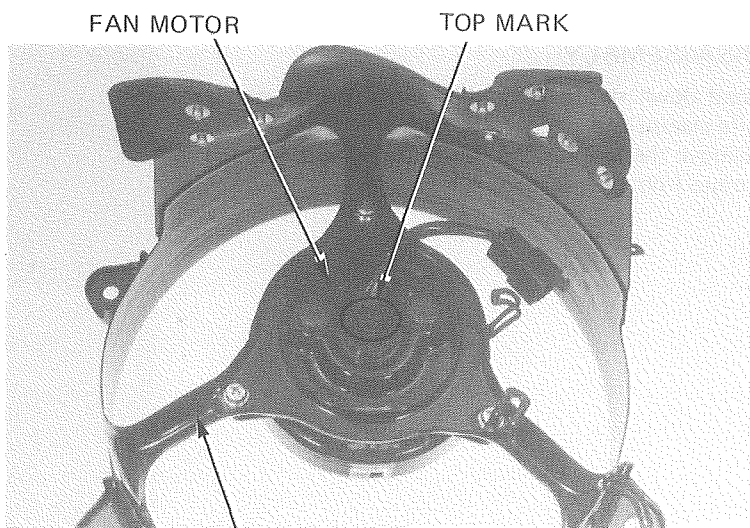


FAN MOTOR

SHROUD

ASSEMBLY

Place the fan motor on the shroud with its TOP mark facing up and tighten the three screws.



FAN MOTOR

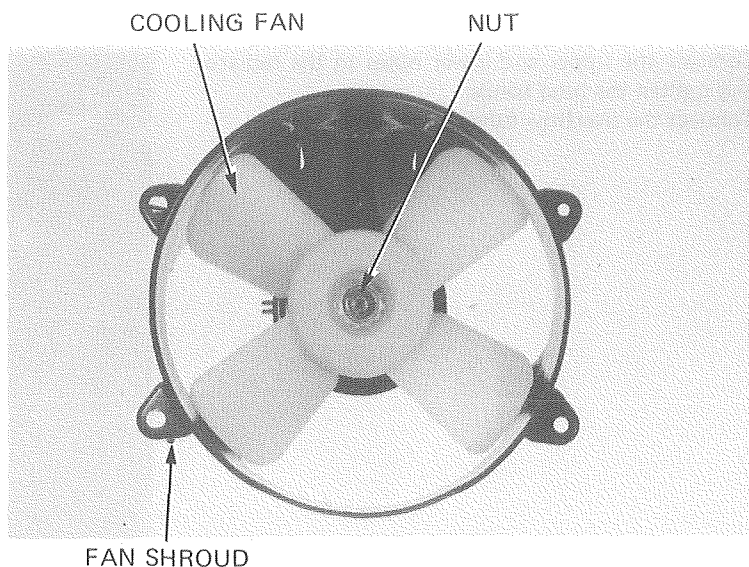
TOP MARK

FAN SHROUD



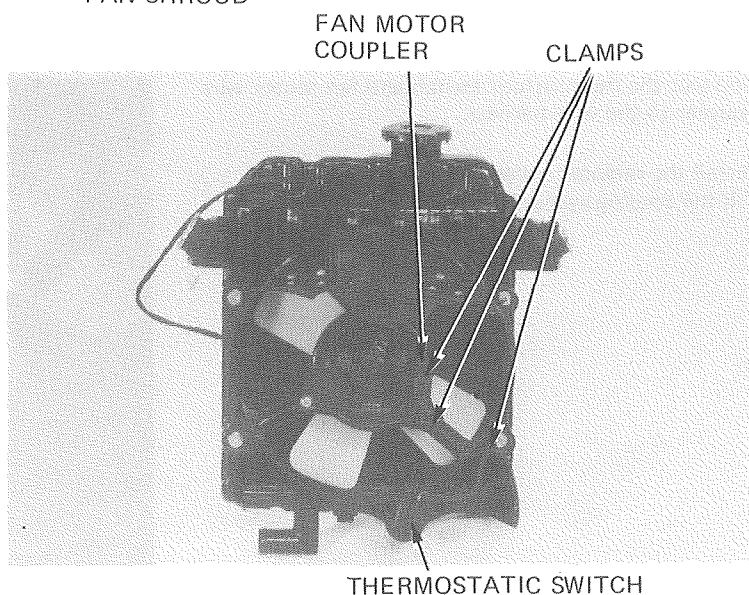
Place the fan over the motor shaft.

Apply a locking agent to the fan motor shaft threads, install and torque the plain washer, lock washer and nut.



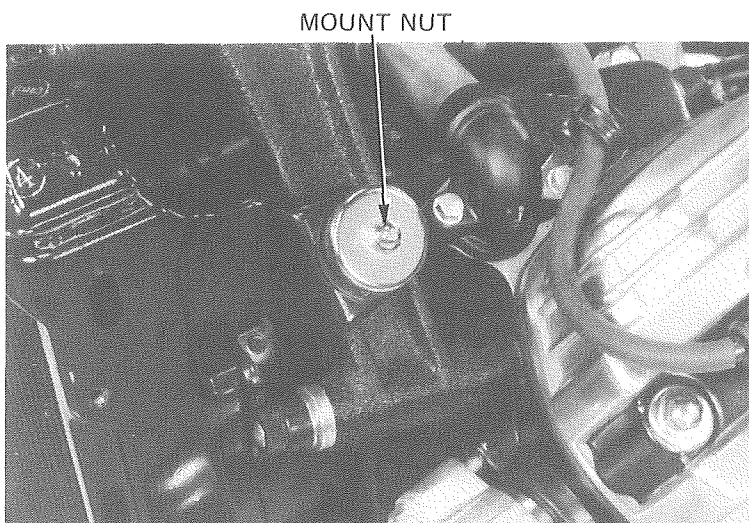
Attach the fan shroud to the radiator with the four bolts.
Connect the wire to the fan motor coupler and the thermostatic switch.

Secure the wires with the clamps on the shroud.



INSTALLATION

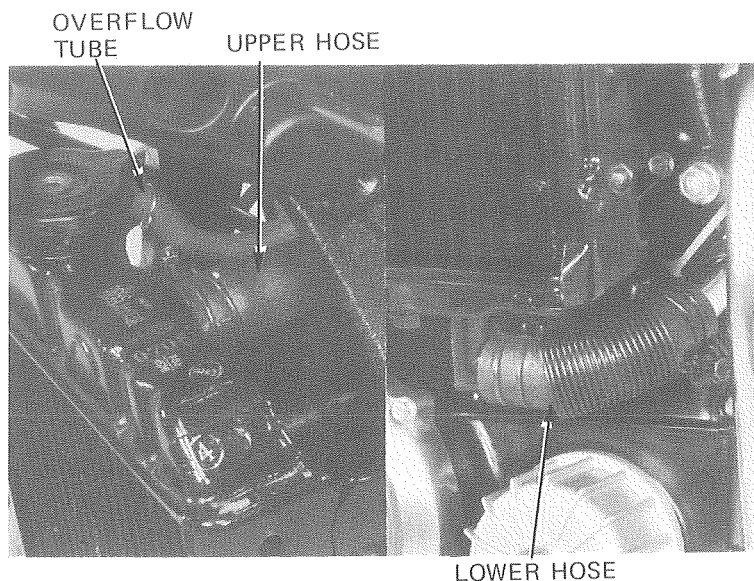
Install the radiator onto the frame and tighten the mounting nuts.





Connect the upper and lower hoses to the radiator and tighten the hose bands.

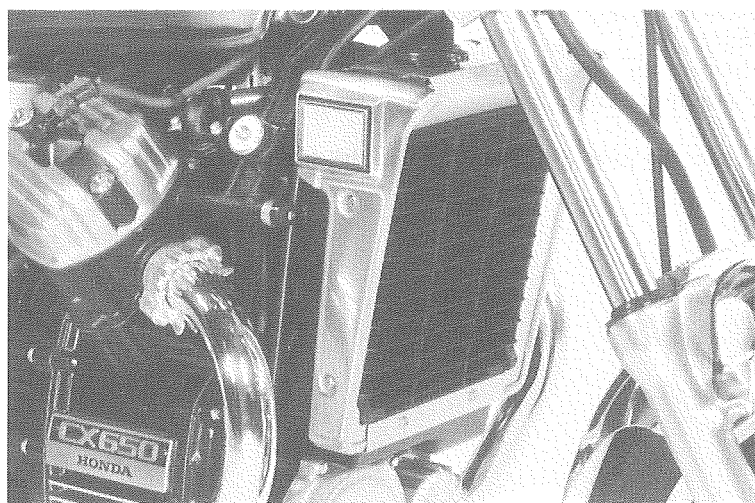
Connect the overflow tube to the filler neck.



Connect the thermostatic switch and fan motor wire coupler to the wire harness.

Install the radiator covers.

Fill the cooling system (page 9-3).





WATER PUMP MECHANICAL SEAL REPLACEMENT

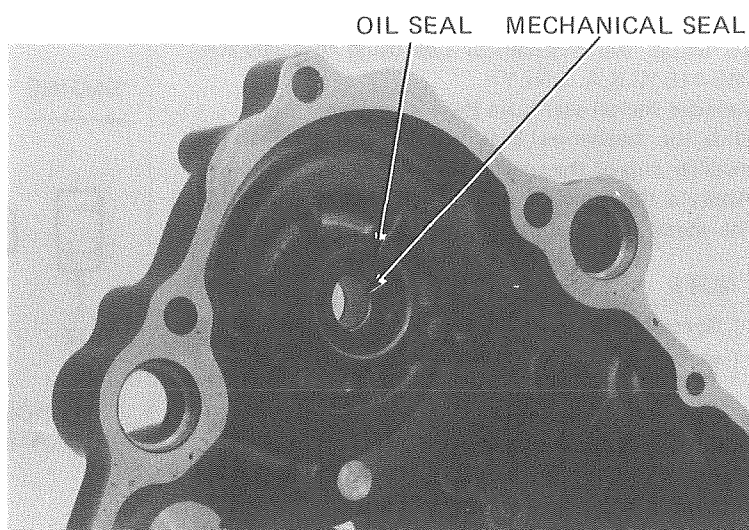
Remove the engine rear cover (Page 8-2).

REMOVAL

Drive the mechanical seal out from the inside being careful not to damage the water pump body.

NOTE

Install a new rubber seal and seal washer if the mechanical seal is replaced.



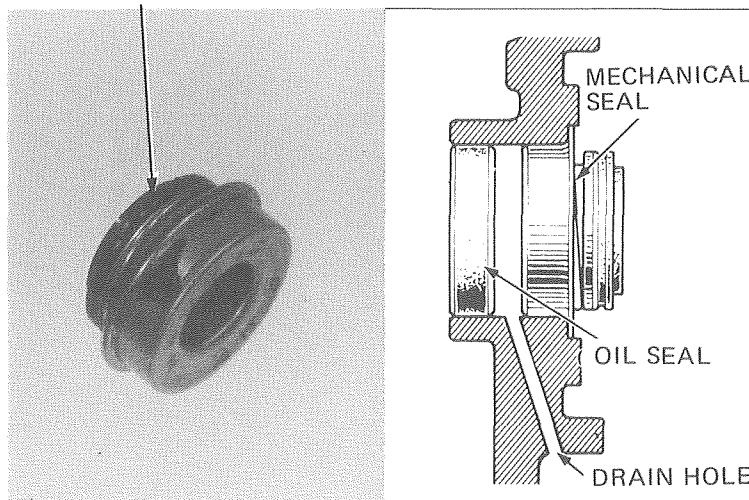
INSTALLATION

Apply a thin coat of liquid sealant to the outer edge of a new mechanical seal.

NOTE

- Check that the water pump drain hole is clear.
- Refer to page 9-12 for installation instructions using the tool available only in the U.S.A.

MECHANICAL SEAL

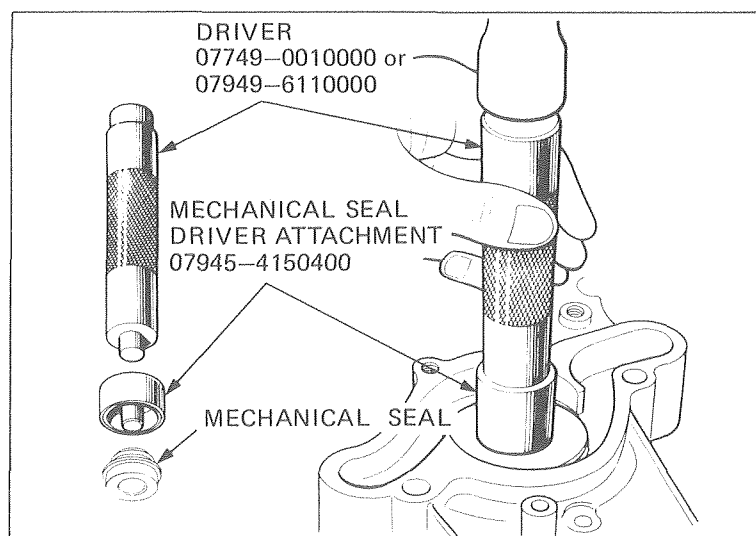


Drive the mechanical seal into position in the rear cover with the mechanical seal driver attachment and bearing driver handle. Be careful not to damage the water pump housing.

NOTE

- Assemble the driver as follows:
Install the seal driver attachment onto the driver handle. Place the mechanical seal into the attachment.
- Drive in the seal squarely.
- To install the mechanical seal using the special tool available in the U.S.A., refer to the page 9-12.

Install the rear cover (Page 8-10).





To install the mechanical seal using tool GN-AH-065-415 (U.S.A. ONLY):

Remove the oil seal from the rear cover.

Slide the mechanical seal onto the bolt and into the installer cup of the special tool.

Apply a thin coat of sealant to the outer surface of the metal casing of the seal.

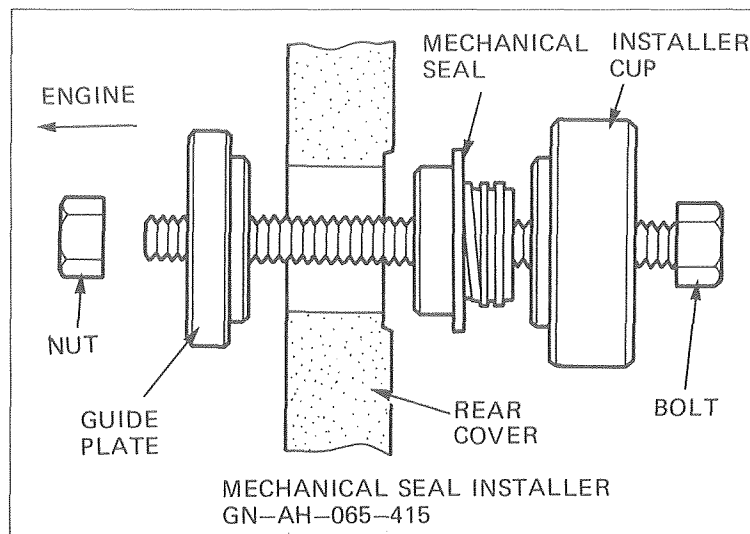
NOTE

Some mechanical seals may be precoated with sealant from the factory.

Position the seal and tool in the rear cover.

Install the guide plate and nut onto the bolt from the back side of the cover. Torque the nut to 42.6–44.8 N·m (380–400 lb-in.) (31.6–33.3 lb-ft).

Remove the tool and inspect the installation.



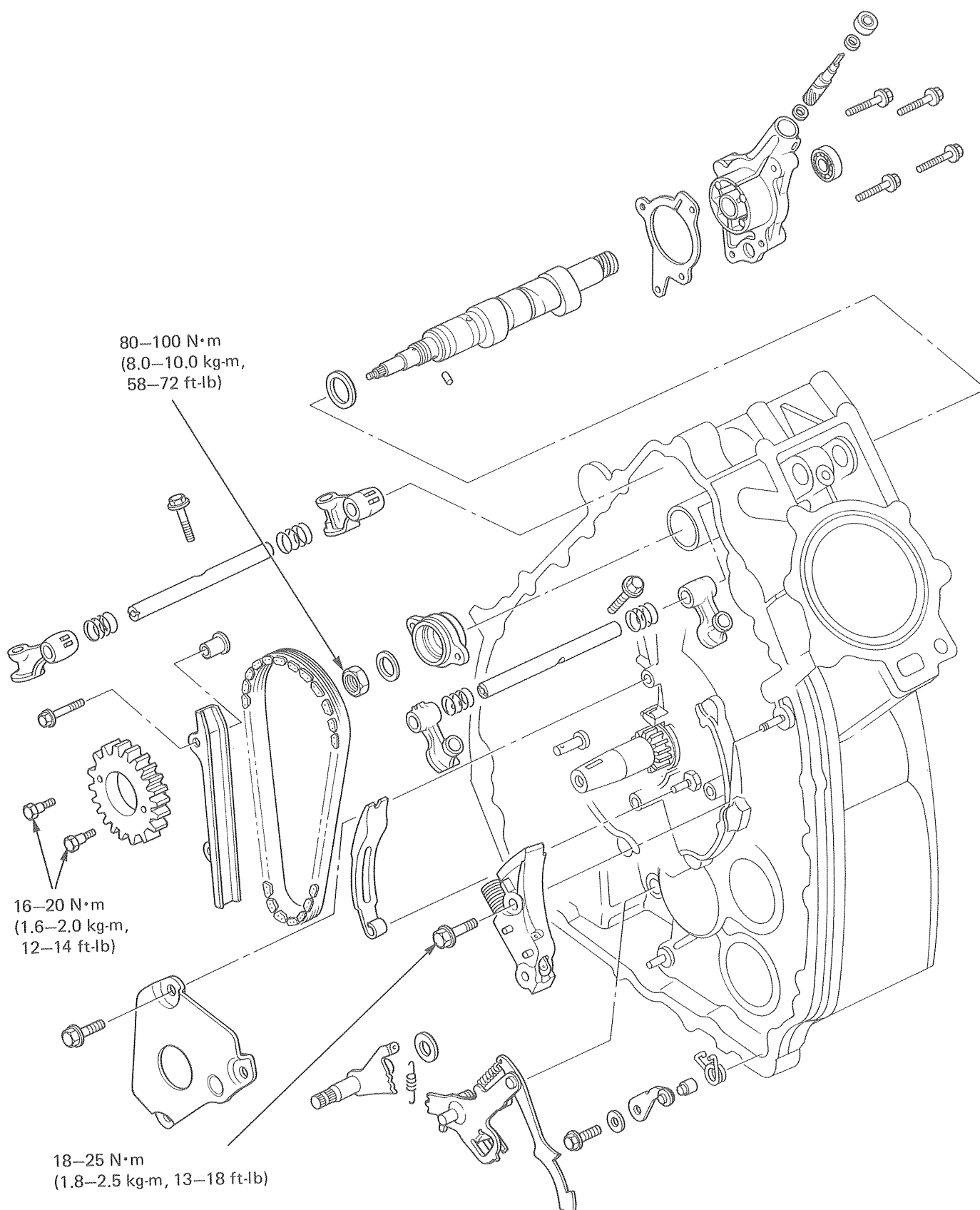


HONDA
CX650C

MEMO



HONDA
CX650C





10. CAMSHAFT/CAM CHAIN

SERVICE INFORMATION	10-1
TROUBLESHOOTING	10-1
CAM CHAIN REMOVAL	10-2
CAMSHAFT REMOVAL	10-3
ROCKER ARM REMOVAL	10-5
ROCKER ARM INSTALLATION	10-6
CAMSHAFT INSTALLATION	10-7
VALVE TIMING ADJUSTMENT	10-9

SERVICE INFORMATION

GENERAL

- Camshaft lubricating oil is fed from the oil filter to the front bearing through an oil control orifice located in the engine case, and to the rear bearing through an oil control orifice in the camshaft rear holder.
- Be sure these orifices are not clogged and that the O-rings and dowel pins are in place before assembling the engine.
- Before assembling the camshaft, lubricate the bearings with engine oil and pour 100 cc (3.38 oz) of engine oil into the engine case oil pockets to provide initial lubrication.

10

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Camshaft	Cam height	IN	37.988 (1.4956)	37.87 (1.491)
		EX	38.143 (1.5017)	38.02 (1.497)
	Journal O.D.	Front	21.959-21.980 (0.8645-0.8654)	21.910 (0.8526)
		Rear	25.959-26.980 (1.0220-1.0622)	25.910 (1.0201)
Rocker arms and shafts	Arm I.D.		14.016-14.027 (0.5518-0.5522)	14.046 (0.5530)
	Shaft O.D.		13.982-14.000 (0.5505-0.5512)	13.966 (0.5500)
	Camshaft holder I.D.		22.000-22.021 (0.8661-0.8670)	22.050 (0.8681)
	Camshaft bearing I.D.		26.000-26.021 (1.0236-1.0244)	26.170 (1.0303)

TORQUE VALUES

Camshaft lock nut	80 - 100 N·m (8.0 - 10.0 kg-m, 58 - 72 ft-lb)
Cam sprocket bolt	16 - 20 N·m (1.6 - 2.0 kg-m, 12 - 14 ft-lb)
Cam chain tensioner set bolt	18 - 25 N·m (1.8 - 2.5 kg-m, 13 - 18 ft-lb)

TOOLS

Special

Gear holder	07924-MC70002 or 07924-MC70000 or 07924-4150000
Lock nut socket wrench, 17 x 27 mm	07907-4150000 or 07907-MC70000 or commercially available

TROUBLESHOOTING

Excessive Noise

- Incorrect cam chain adjustment.
- Incorrect valve adjustment.
- Worn or damaged rocker arms or camshaft.
- Worn or damaged cam chain tensioner or cam chain guide.
- Worn cam sprocket teeth.
- Worn camshaft holder.



CAM CHAIN REMOVAL

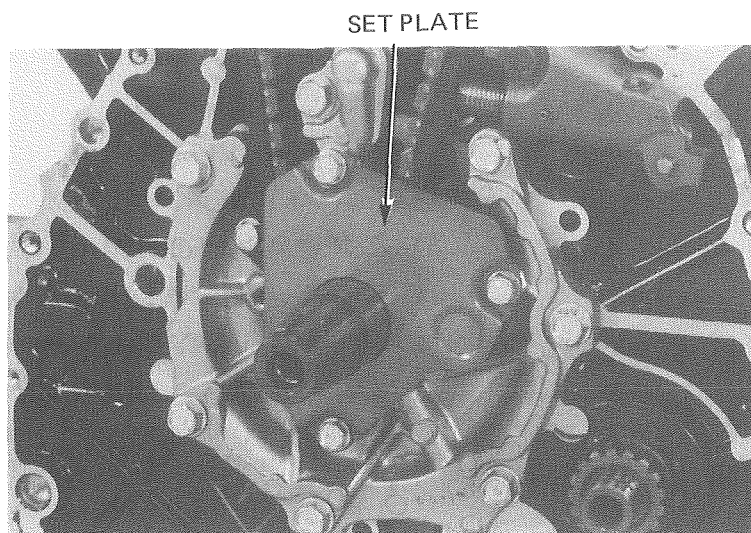
Remove the engine (Page 5-2).

Remove the engine rear cover (Section 8).

Remove the starter reduction gear, flywheel and starter driven gear (Section 8).

Remove the chain guide set plate bolts.

Remove the chain guide set plate.



Compress the push rod while pressing in the steel ball with a flat-end screwdriver. Hold the push rod by inserting the retaining pin through the push rod to the tensioner base.

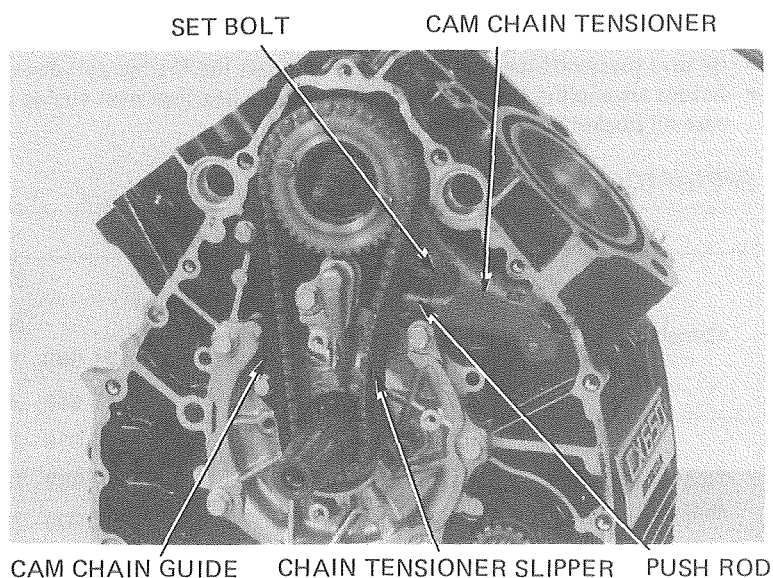
Remove the cam chain tensioner set bolt and tensioner.

CAUTION:

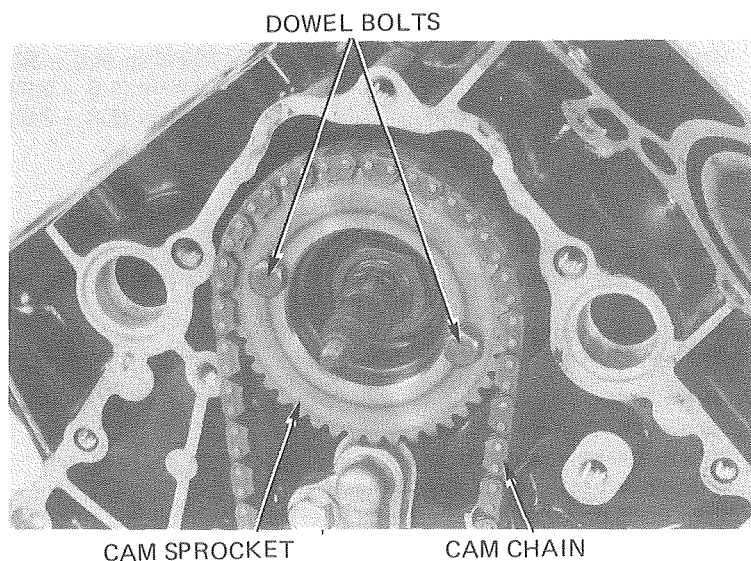
The set bolt has a special thread pitch. Do not use any other bolt in its place.

Remove the chain tensioner slipper.

Remove the cam chain guide.



Remove the cam sprocket dowel bolts, cam sprocket and cam chain.





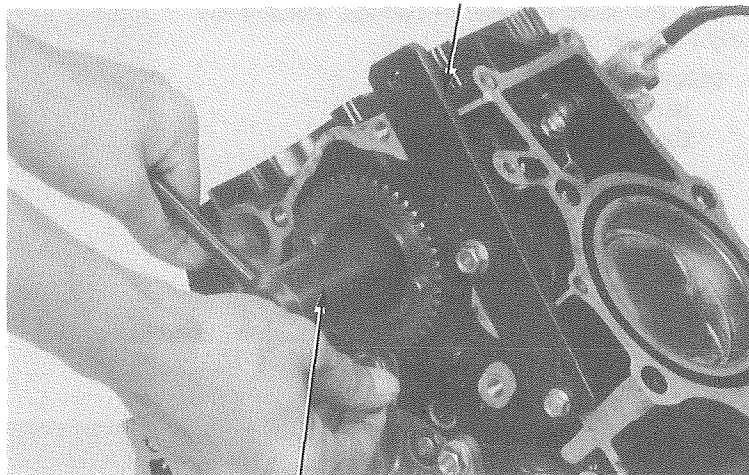
CAMSHAFT REMOAL

Remove the cylinder heads (Page 6-3).

Temporarily install the cam sprocket. Hold the cam sprocket with a Gear Holder to prevent it from turning.

Loosen the 27 mm nut and remove the cam sprocket and cam sprocket boss.

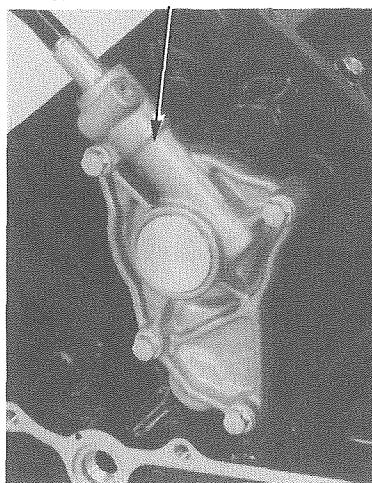
GEAR HOLDER 07924-MC70002 or 07924-MC70000 or 07924-4150000



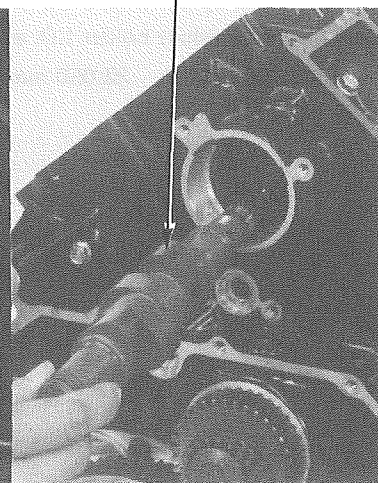
LOCK NUT SOCKET WRENCH 17 x 27 mm 07907-MC70000 or 07907-4150000 OR COMMERCIALY AVAILABLE IN U.S.A.

Remove the camshaft holder and the camshaft from the front.

CAMSHAFT HOLDER



CAMSHAFT



CAMSHAFT INSPECTION

Measure the O.D. of each camshaft bearing journal.

SERVICE LIMITS:

FRONT: 21.910 mm (0.8526 in)

REAR: 25.910 mm (1.0201 in)

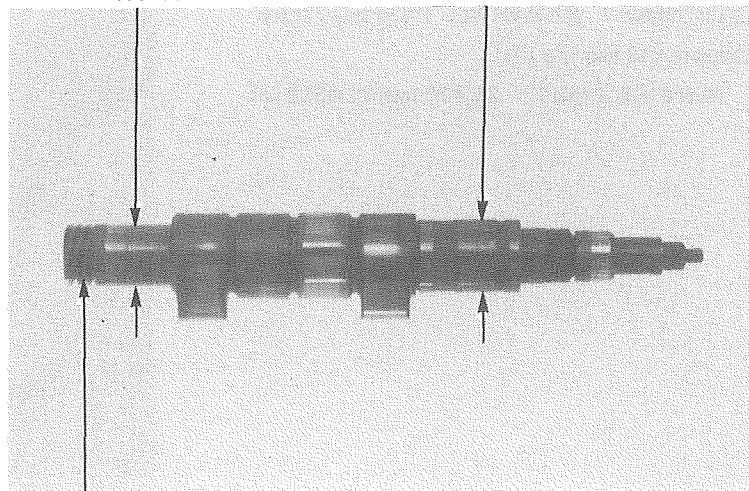
Calculate the journal and bearing clearance.

SERVICE LIMIT: 0.260 mm (0.0102 in)

Inspect the worm gear for wear or damage.

FRONT

REAR



WORM GEAR

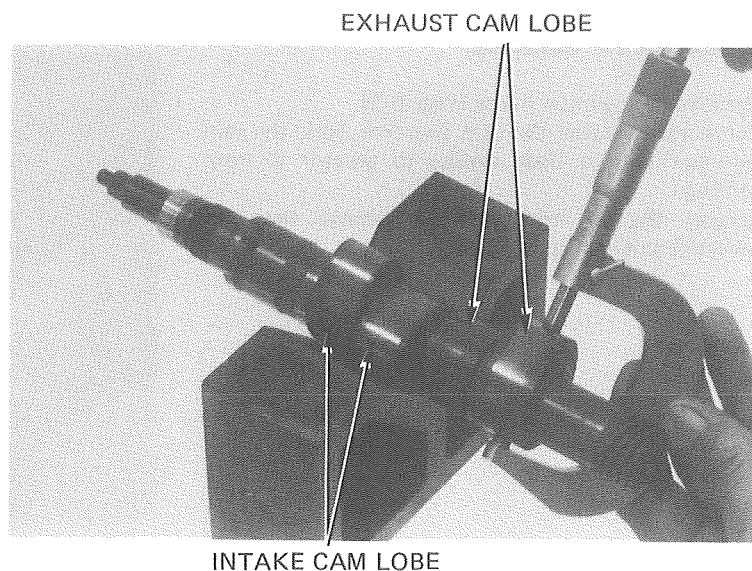


Inspect the lobes for wear or damage. Measure the height of each cam lobe.

SERVICE LIMIT:

IN: 37.87 mm (1.491 in)

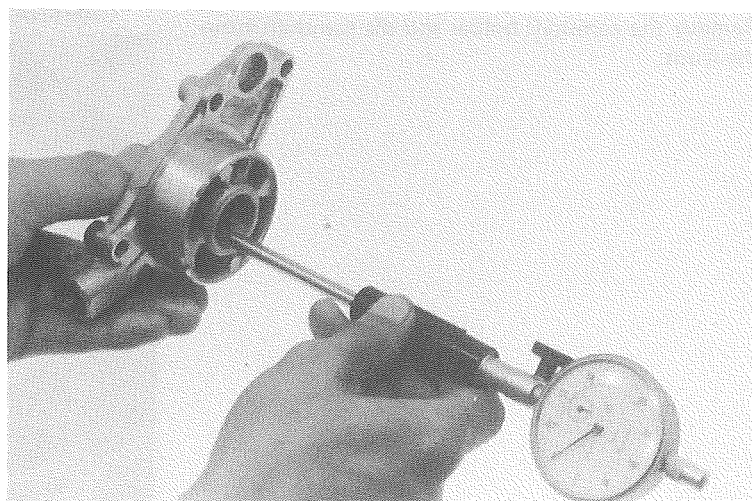
EX: 38.02 mm (1.497 in)



CAMSHAFT HOLDER INSPECTION

Measure the camshaft holder I.D. as shown.

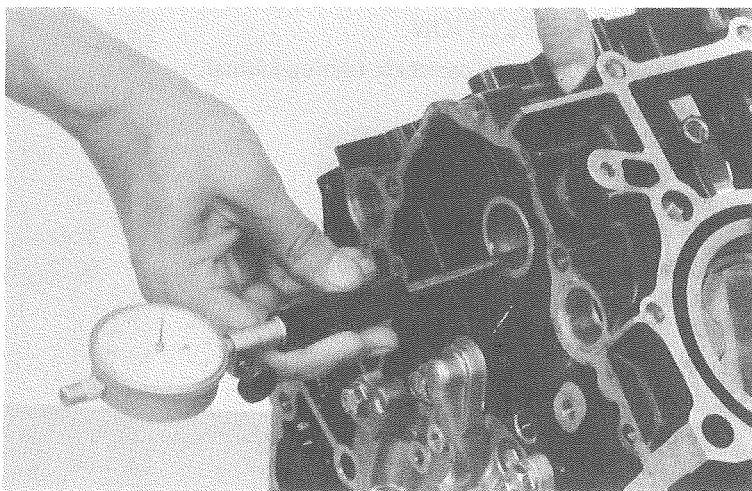
SERVICE LIMIT: 22.050 mm (0.8681 in)



CAMSHAFT BEARING INSPECTION

Measure the bearing I.D.

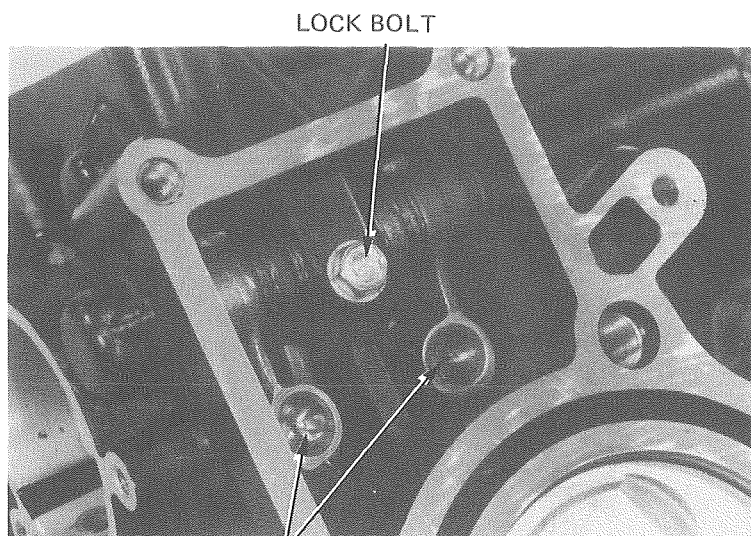
SERVICE LIMIT: 26.170 mm (1.0303 in)





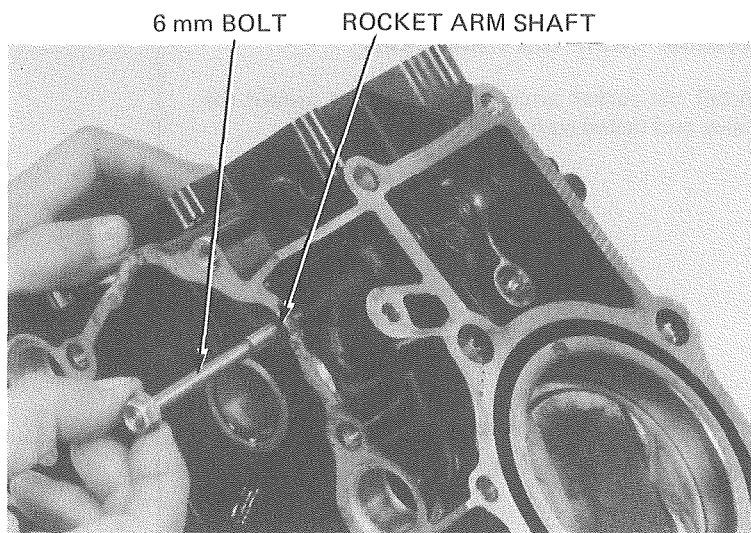
ROCKER ARM REMOVAL

Remove the rocker arm shaft lock bolts.



LOWER ROCKER ARMS

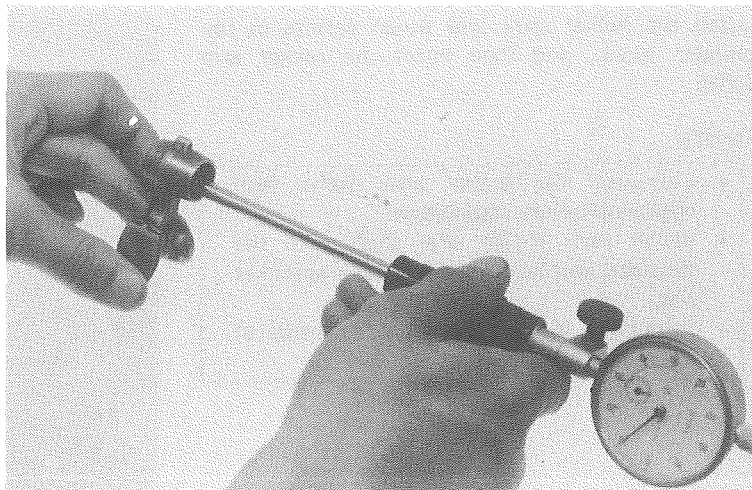
Screw a 6 mm bolt into the rocker arm shaft and remove the rocker arm shaft.
Remove the rocker arm and wave washer.



ROCKER ARM INSPECTION

Inspect the rocker arms for wear or damage to the camshaft contact surfaces, or clogged oil holes.
Measure the I.D. of each rocker arms.

SERVICE LIMIT: 14.046 mm (0.5530 in)





CAMSHAFT/CAM CHAIN

ROCKER ARM SHAFT INSPECTION

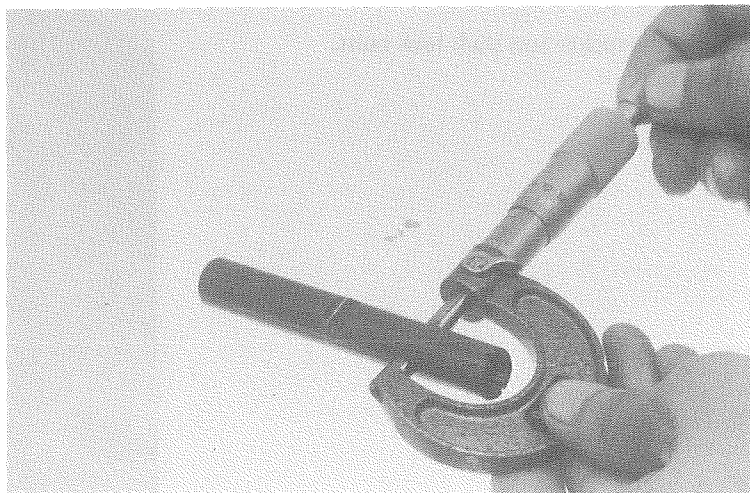
Measure each rocker arm shaft O.D.

SERVICE LIMIT: 13.966 mm (0.5510 in)

Inspect the shaft for wear or damage.

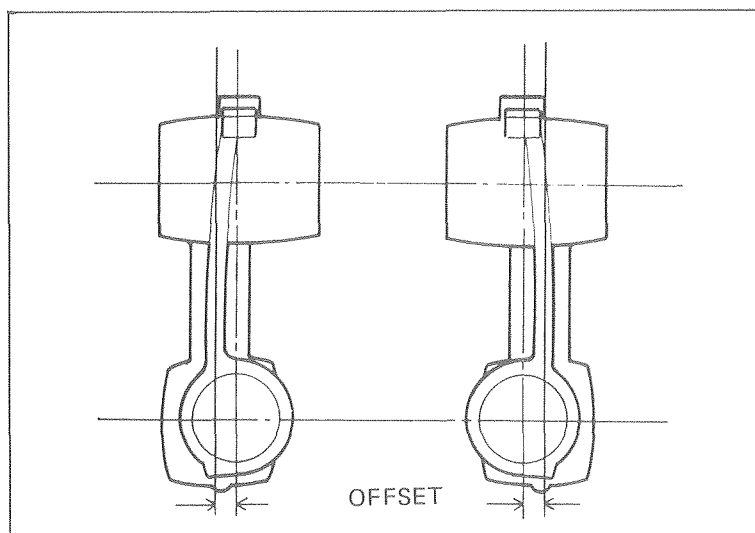
Calculate the clearance of the shaft and the rocker arm.

SERVICE LIMIT: 0.080 mm (0.0031 in)



ROCKER ARM INSTALLATION

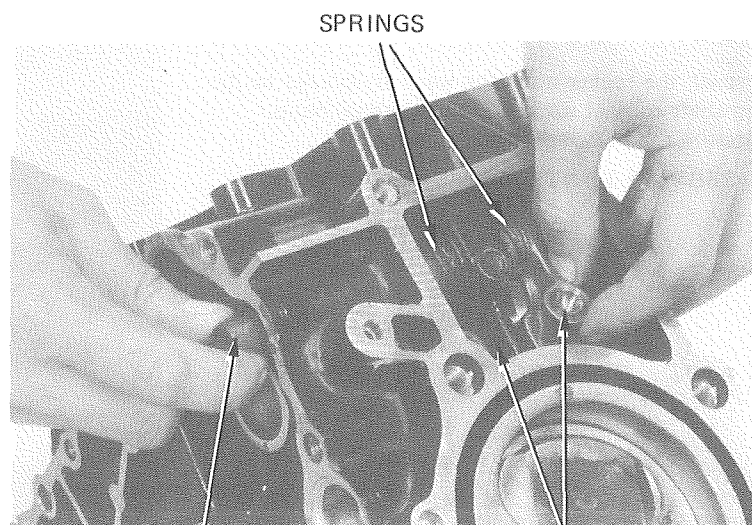
Install the rocker arms with the offset toward the inside and facing each other as shown.



Install the rocker arms and thrust springs in the cylinder block, and then insert the rocker arm shafts.

NOTE

- Lubricate the rocker arm shafts with engine oil before installation.
- Install each rocker arm shaft with the threaded end facing the rear (cam sprocket side).
- Install the thrust springs on the inside of the rocker arms.



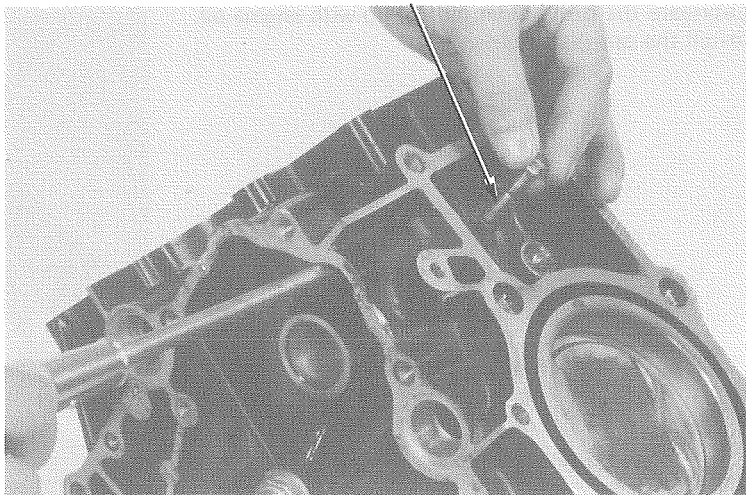
ROCKER ARM SHAFT

ROCKER ARMS



Rotate the rocker arm shaft with a screwdriver to align with the lock bolt hole. Install the lock bolt.

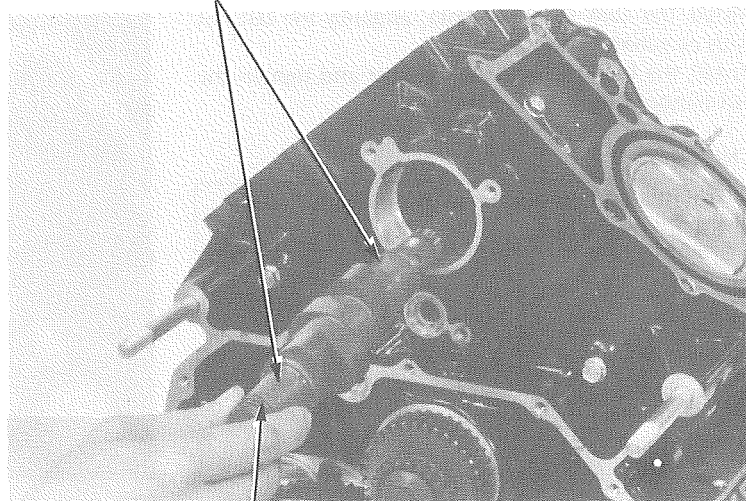
LOCK BOLT



CAMSHAFT INSTALLATION

Lubricate the camshaft journals with Multipurpose NLG1 No. 2 (MoS₂ additive) Grease.
Install the camshaft thrust washer and insert the camshaft from the front.

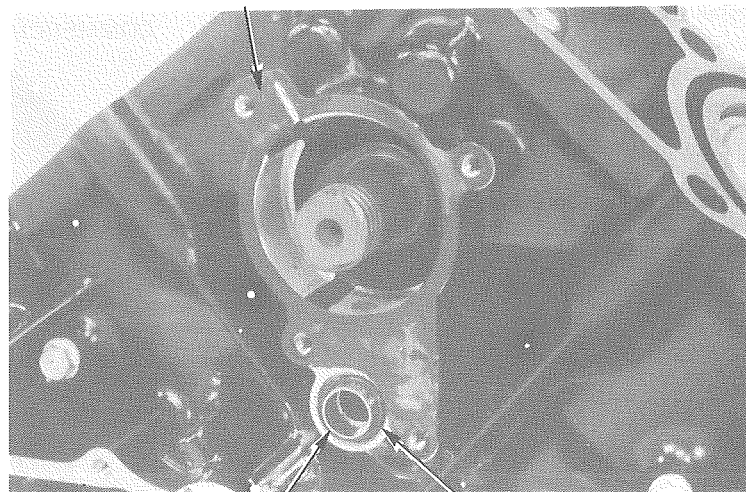
CAMSHAFT JOURNALS



CAMSHAFT

Install the camshaft holder gasket, O-ring, and collar.

GASKET



COLLAR

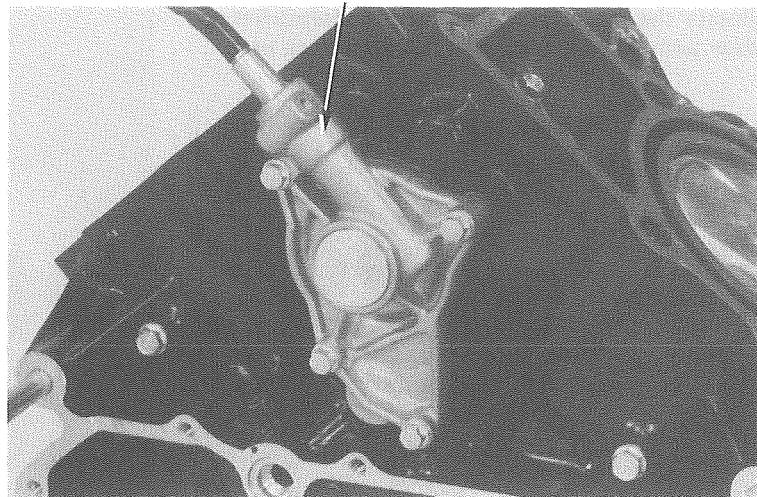
O-RING



CAMSHAFT/CAM CHAIN

Lubricate the cam holder oil seal lip with engine oil.
Install the camshaft holder.

CAMSHAFT HOLDER



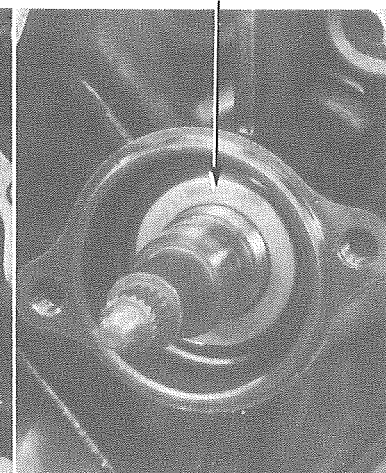
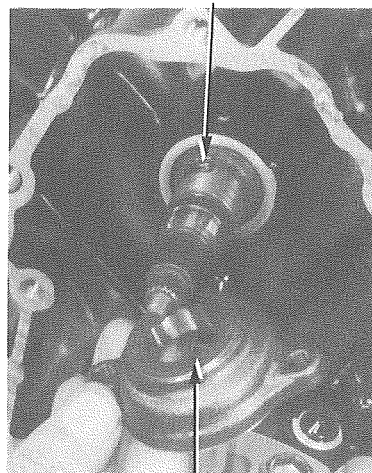
Install the cam sprocket boss, aligning the cut-out with camshaft dowel pin.
Install the lock nut and lock washer and tighten the nut temporarily.

NOTE

Install the lock washer with the mark "OUT-SIDE" facing out.

DOWEL PIN

LOCK WASHER



CUT-OUT

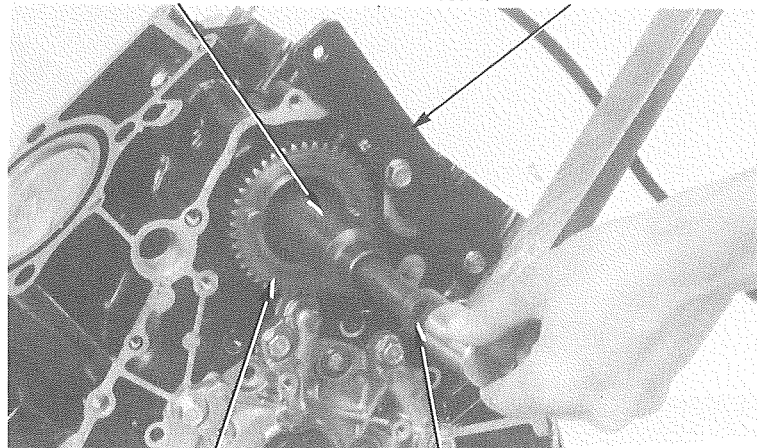
Install the cam sprocket and finger tighten the bolts.
Hold the cam sprocket with the Gear Holder.
Then tighten the lock nut.

TORQUE: 80–100 N·m
(8.0–10.0 kg-m, 58–72 ft-lb)

Remove the cam sprocket.

LOCK NUT SOCKET WRENCH 17 x 27 mm
07907–4150000 or 07907–MC70000 or
COMMERCIALLY AVAILABLE IN U.S.A.

GEAR HOLDER
07924–4150000 or
07924–MC70000 or
07924–ME90000



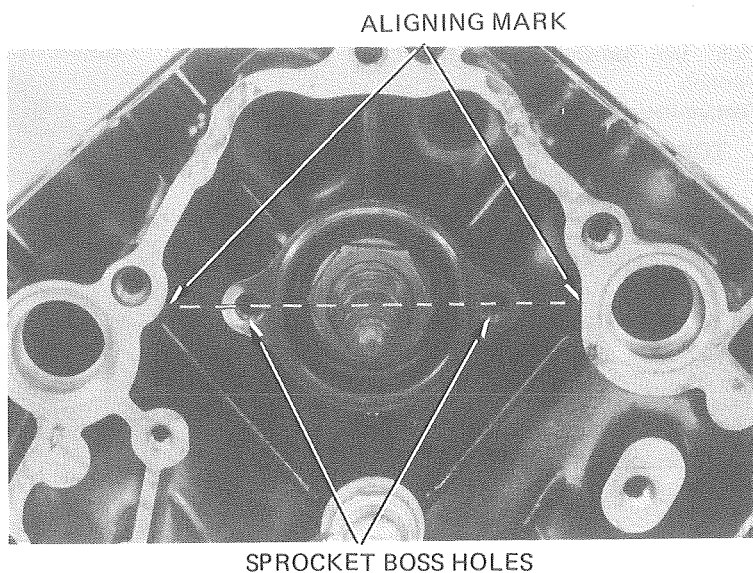
CAM SPROCKET

EXTENSION



VALVE TIMING ADJUSTMENT

Align the holes in the cam sprocket boss with the aligning marks on the engine case.



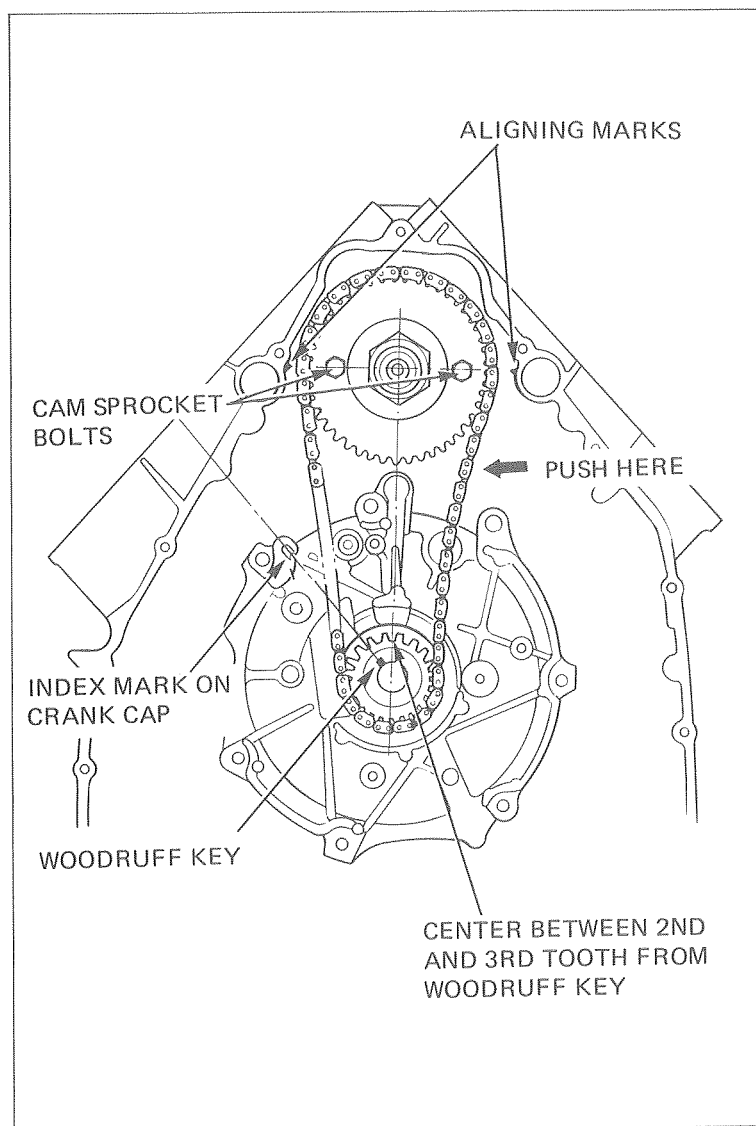
Rotate the crankshaft to bring the left piston to T.D.C.

The valve timing is correct when:

- The cam sprocket bolts are in line with the aligning marks on the engine case.
- Check that the flywheel woodruff key aligns with the index mark on the crankshaft cap.

NOTE

When inspecting the valve timing, push the cam chain from the right side so the tensioner side of the chain is pulled taut.





CAMSHAFT/CAM CHAIN

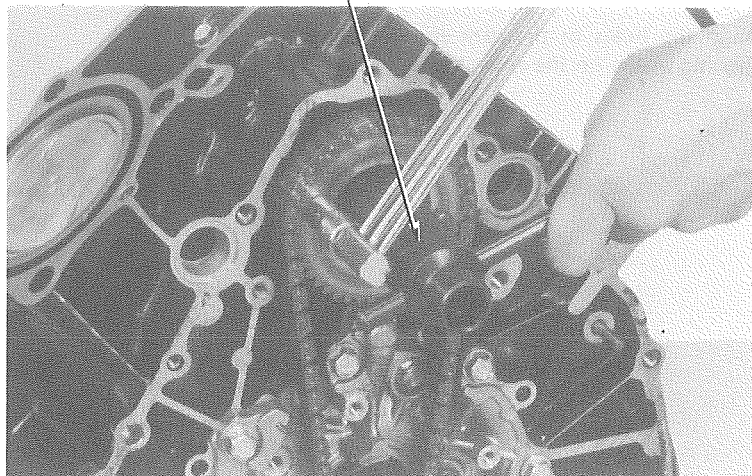
Hold the camshaft with the Lock Nut Socket Wrench.

Torque the cam sprocket bolts.

TORQUE: 16–20 N·m
(1.6–2.0 kg-m, 12–14 ft-lb)

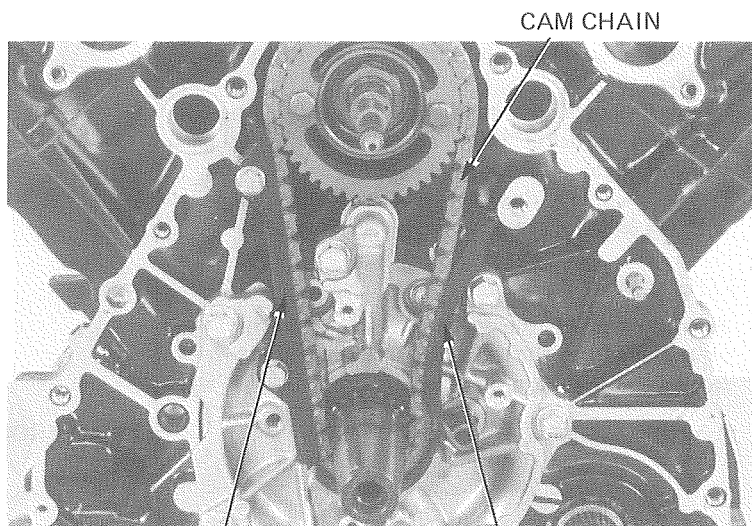
LOCK NUT SOCKET

WRENCH 17 x 27 mm 07907–4150000 or 07907–MC70000 or
COMMERCIALLY AVAILABLE IN U.S.A.



AUTOMATIC CAM CHAIN TENSIONER INSTALLATION

Install the cam chain tensioner slipper and guide.

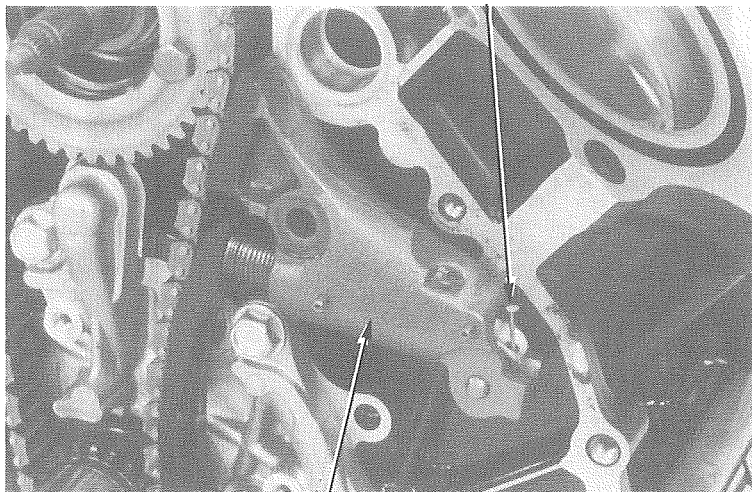


CAM CHAIN

CAM CHAIN GUIDE

SLIPPER

Install the tensioner into place on the engine case.



PIN

TENSIONER BODY



Tighten the cam chain tensioner set bolt.

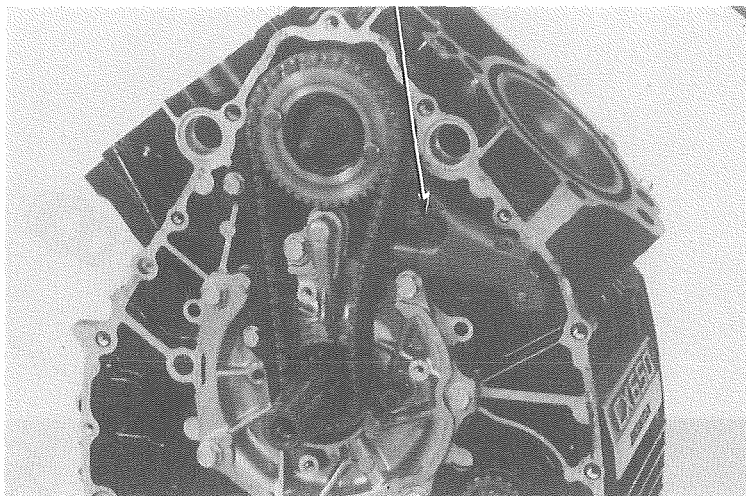
TORQUE: 18–25 N·m
(1.8–2.5 kg-m, 13–18 ft-lb)

CAUTION

Be sure to use the correct set bolt. Failure to use the special bolt will ruin the thread hole in the engine case.

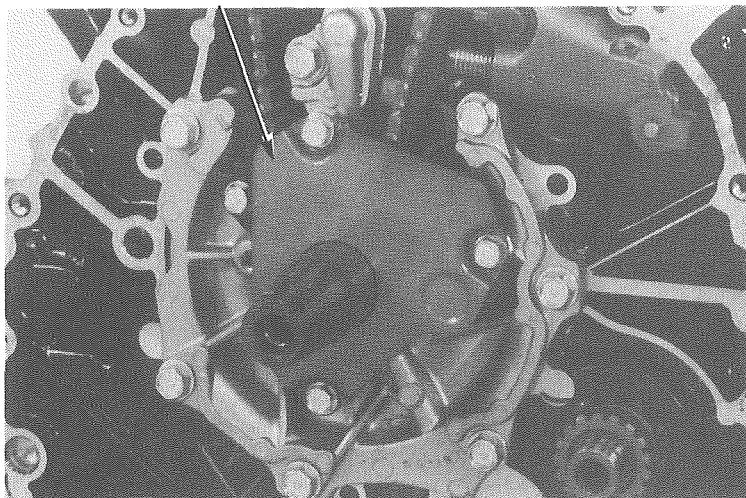
Remove the pin from the hole in the push rod, the tensioner will automatically give tension to the cam chain. Make sure the push rod moves smoothly by pressing the steel ball in.

TENSIONER SET BOLT



CAM CHAIN SET PLATE

Install the cam chain set plate and tighten the bolts.



Pour about 10 cc of engine oil into the oil pockets of the cylinder block.

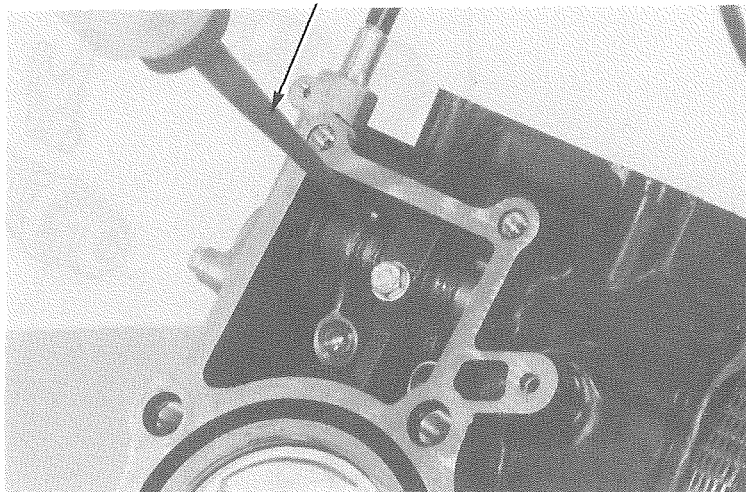
Install the flywheel (Page 8–9) and the cylinder head (Page 6-14).

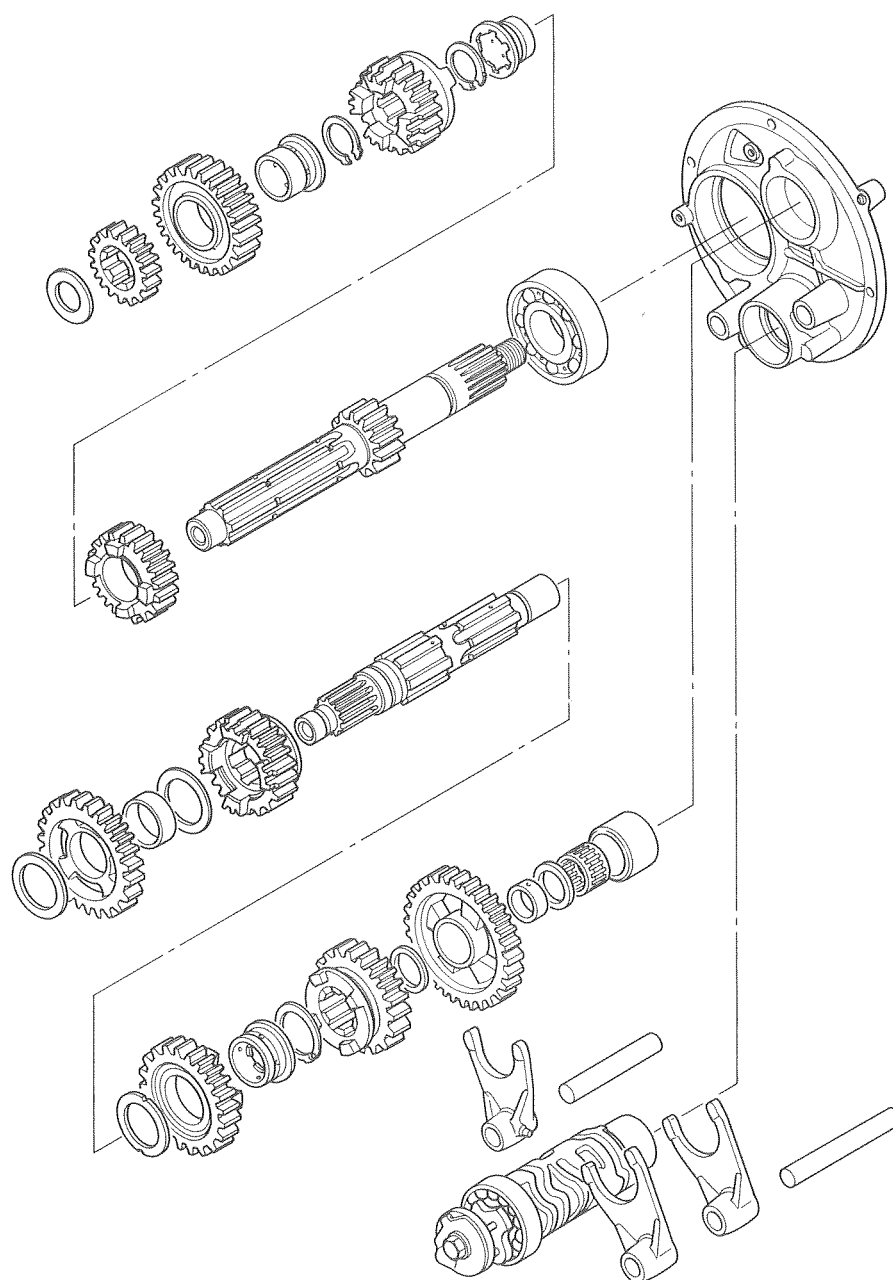
Adjust the valve clearance (Page 3–8).

Install the engine (See section 5).

Add the specified amount of engine oil (Section 2).

ENGINE OIL







SERVICE INFORMATION	11-1	FINAL SHAFT ASSEMBLY	11-4
TROUBLESHOOTING	11-2	TRANSMISSION DISASSEMBLY	11-5
GEARSHIFT LINKAGE REMOVAL	11-3	TRANSMISSION ASSEMBLY	11-10
FINAL SHAFT DISASSEMBLY	11-3	GEARSHIFT LINKAGE INSTALLATION	11-16

SERVICE INFORMATION

GENERAL

- Place all removed parts in parts racks in order, so they can be reassembled in their original places.
- Before reassembling, lubricate the M4 and M5 gears with Multipurpose NLG1 No. 2 Grease (MoS₂ additive) or an equivalent.
- Apply engine oil to the other gears.
- To service the transmission, it is necessary to remove the engine from the frame.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Transmission	M4 and M5 gear	I.D.	29.020 – 29.041 (1.1425 – 1.1433)	29.10 (1.146)
		Bushing O.D.	28.979 – 29.000 (1.1409 – 1.1417)	28.95 (1.140)
	C 1 gear		I.D.	24.020 – 24.041 (0.9457 – 0.9465)
	C 1 gear bushing		O.D.	23.984 – 24.005 (0.9443 – 0.9451)
			I.D.	20.020 – 20.041 (0.7882 – 0.7890)
	C 2 gear		I.D.	31.025 – 31.050 (1.2215 – 1.2224)
	C 2 gear bushing		O.D.	30.985 – 31.010 (1.2199 – 1.2209)
			I.D.	27.500 – 27.521 (1.0827 – 1.0835)
	C 3 gear	I.D.	29.020 – 29.041 (1.1425 – 1.1433)	29.10 (1.146)
		Bushing O.D.	28.979 – 29.000 (1.1409 – 1.1417)	28.95 (1.140)
	Countershaft O.D.		at C1	19.987 – 20.000 (0.7869 – 0.7874)
			at C2	27.459 – 27.480 (1.0811 – 1.0819)
	Gear-to-bushing clearance		—	0.15 (0.006)
	Bushing-to-shaft clearance		—	0.10 (0.004)

Shift fork	Claw thickness	5.93 – 6.00 (0.233 – 0.236)	5.50 (0.217)
	I.D.	13.000 – 13.018 (0.5118 – 0.5125)	13.05 (0.514)
Fork shaft	O.D.	12.966 – 12.984 (0.5105 – 0.5112)	12.95 (0.510)
Shift drum	Drum-to-transmission holder clearance	0.025 – 0.075 (0.0010 – 0.0030)	0.15 (0.006)
Final shaft	Damper spring free length	73.0 (2.87)	72.0 (2.83)



TRANSMISSION

TORQUE VALUES

Transmission holder	6 x 20 mm bolt	15 — 20 N·m (1.5 — 2.0 kg-m, 11 — 14 ft-lb)
	6 x 32 mm bolt	10 — 14 N·m (1.0 — 1.4 kg-m, 7 — 10 ft-lb)

TOOLS

Special

Crank cap driver	07945—4150100	} Bearing remover set	07936—3710000
Bearing remover, 20 mm	07936—3710600		
Bearing remover handle	07936—3710100		
Bearing remover weight	07936—3710200		
Driver	07949—3710000		

Common

Attachment, 42 x 47 mm	07746—0010300
Driver	07749—0010000
Attachment, 52 x 55 mm	07746—0010400
Pilot, 25 mm	07746—0040600
Attachment, 62 x 68 mm	07746—0010500
Pilot, 20 mm	07746—0040500
Attachment, 32 x 35 mm	07746—0010100

TROUBLESHOOTING

Hard to Shift

- Improper clutch adjustment: too much free play.
- Shift forks bent.
- Shift shaft bent.
- Shift fork claw bent.
- Shift drum cam grooves damaged.
- Shift guide pin damaged.

Transmission Jumps Out of Gear

- Gear dogs worn.
- Shift shaft bent.
- Shift drum stopper broken.
- Shift forks bent.



GEARSHIFT LINKAGE REMOVAL

Remove the following:

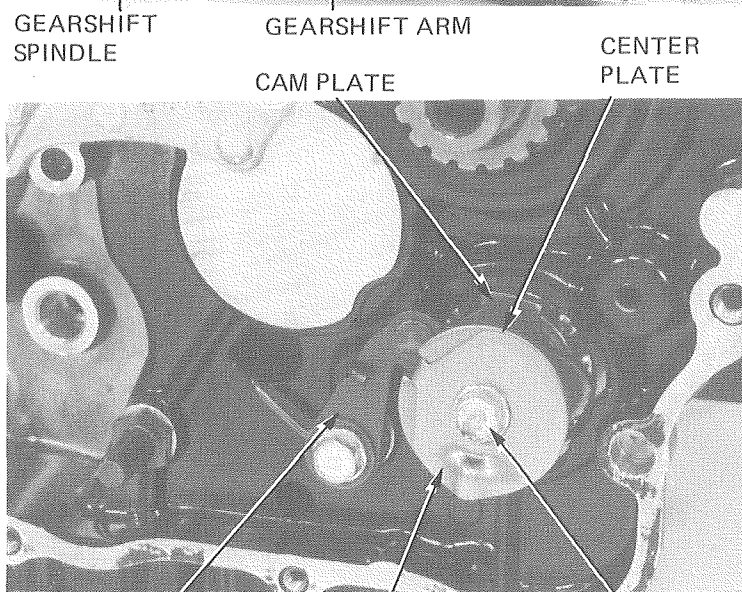
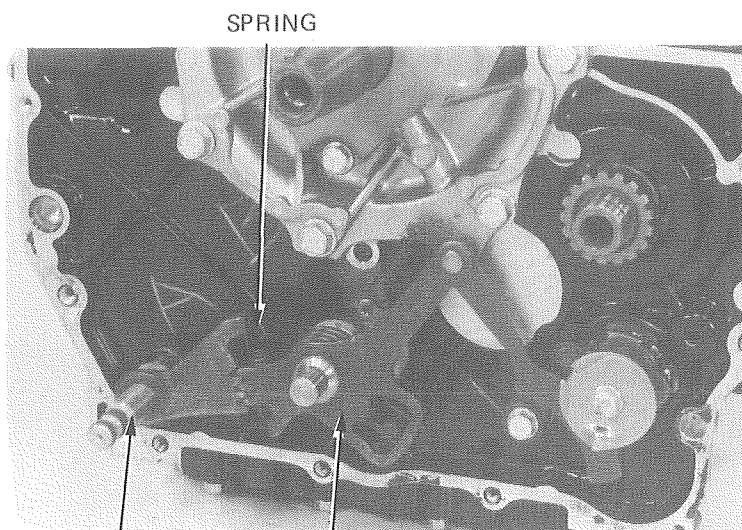
- engine (Section 5).
- engine front cover (Section 8).
- rear cover (Section 9).
- final shaft.
- gearshift spindle and shift spring.
- gearshift arm.

Remove the shift drum 6 mm bolt.
Remove the shift drum stopper.
Remove the neutral switch plate, drum cam plate,
gearshift drum pin, and collar.

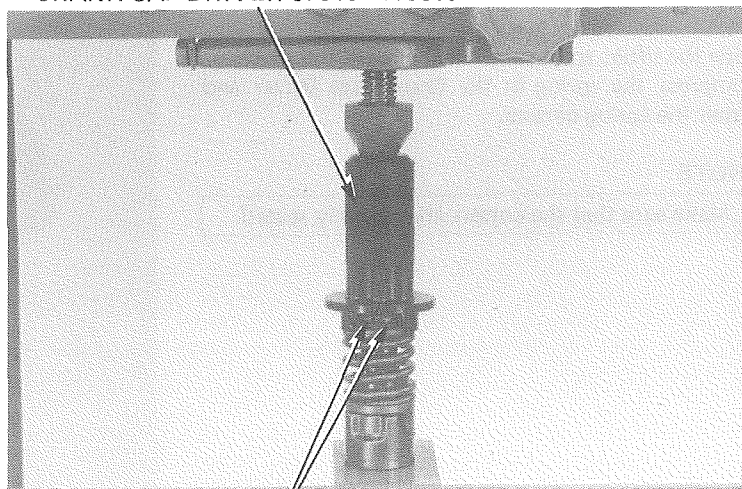
NOTE

Do not disassemble the shift drum plates and pin except when replacement is necessary.

Check all removed parts for wear or damage.



CRANK CAP DRIVER 07945-4150100



FINAL SHAFT DISASSEMBLY

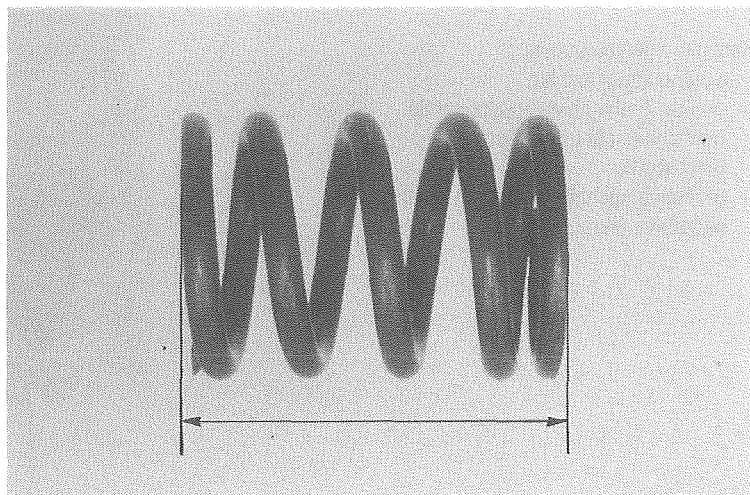
Compress the spring with a press and Crank Cap Driver and remove the spring cotter.

Remove the spring retainer, damper lifter and cam from the shaft.

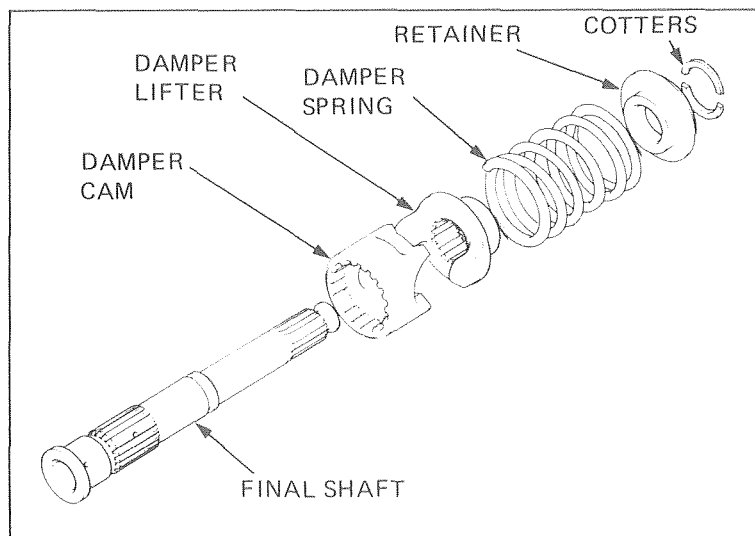


Measure the damper spring free length.

SERVICE LIMIT: 72.0 mm (2.83 in)



Inspect the damper lifter, shaft, and retainer for wear or damage.

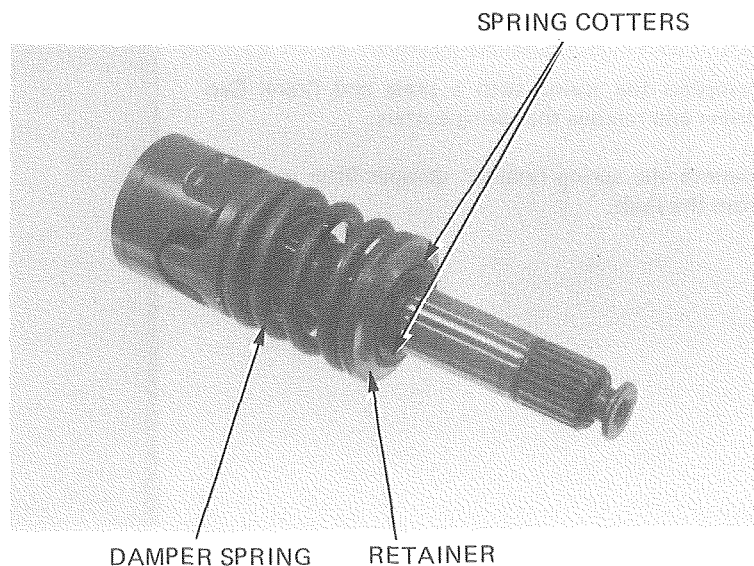


FINAL SHAFT ASSEMBLY

Slide the lifter, spring and retainer over the shaft. Compress the spring in the Crank Cap Driver and install the spring cotters.

NOTE

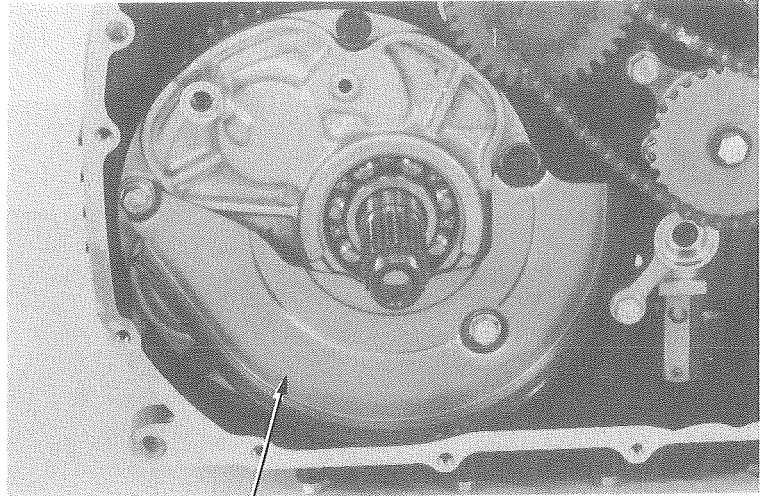
Make sure that the cotters are properly seated.





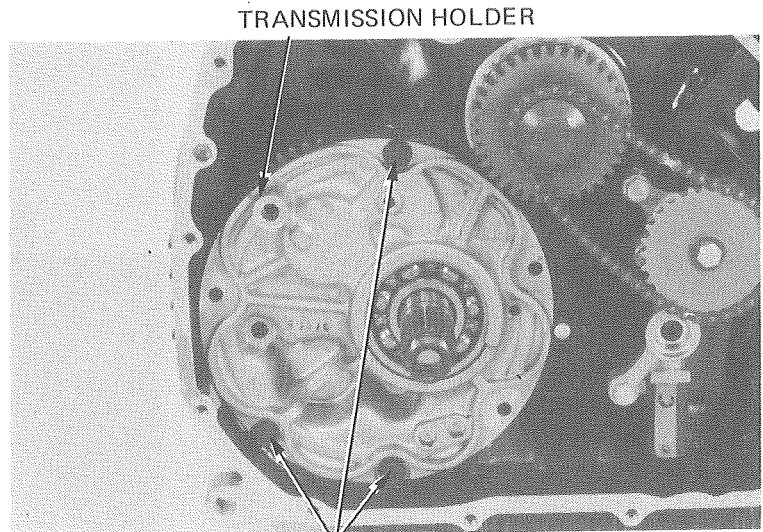
TRANSMISSION DISASSEMBLY

Remove the engine front cover and remove the clutch as an assembly, (Section 7).
Remove the oil separator.



OIL SEPARATOR

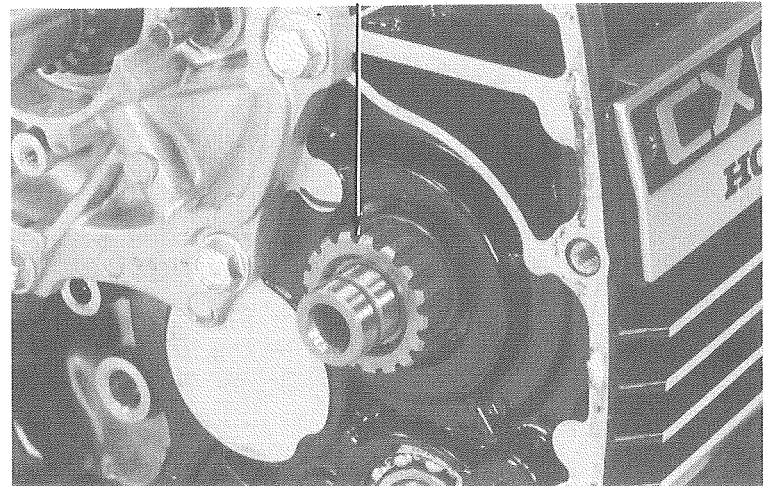
Remove the transmission holder bolts.



TRANSMISSION HOLDER

BOLTS

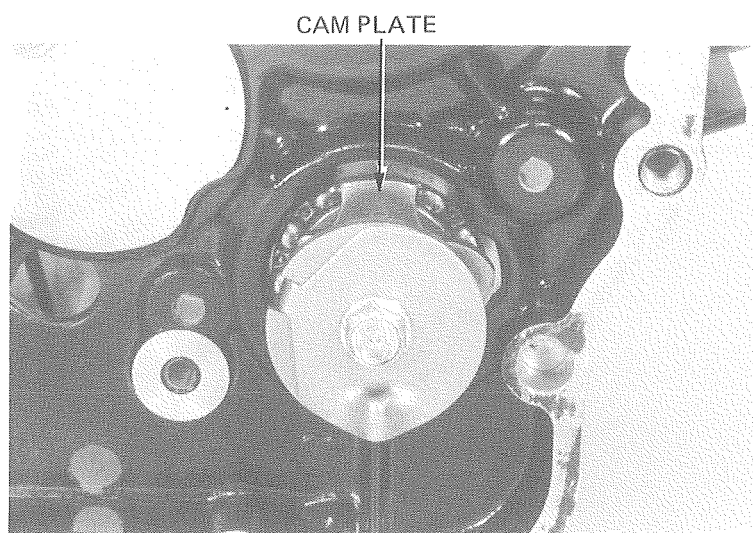
Remove the final drive spline collar.



FINAL DRIVE SPLINE COLLAR



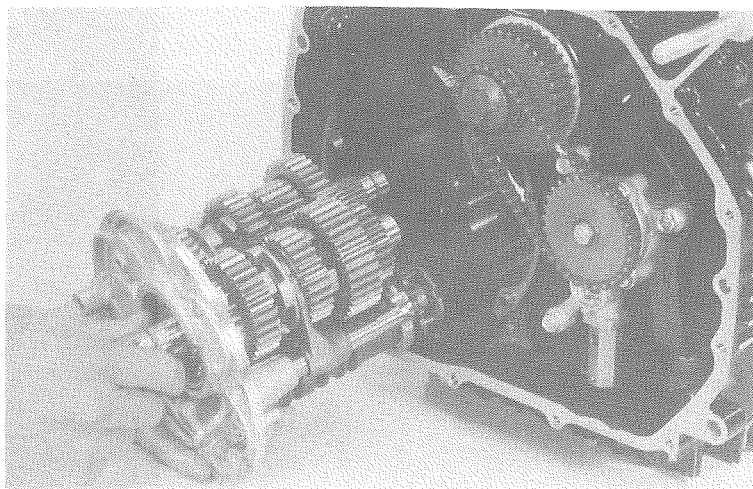
Align the projection on the shift drum cam plate with the cut-out in the engine case by rotating the shift drum.



Drive the ends of the countershaft and shift drum carefully and evenly with a soft hammer until the transmission holder is clear of the engine case.

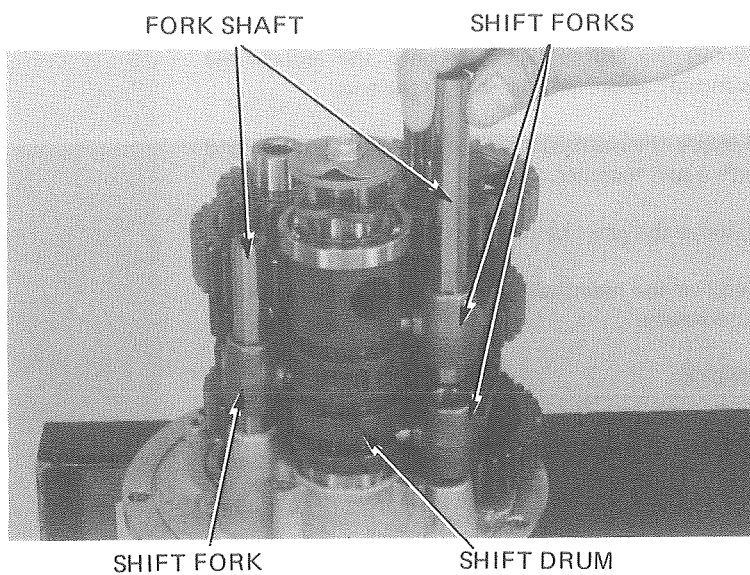


Remove the transmission assembly from the engine case.

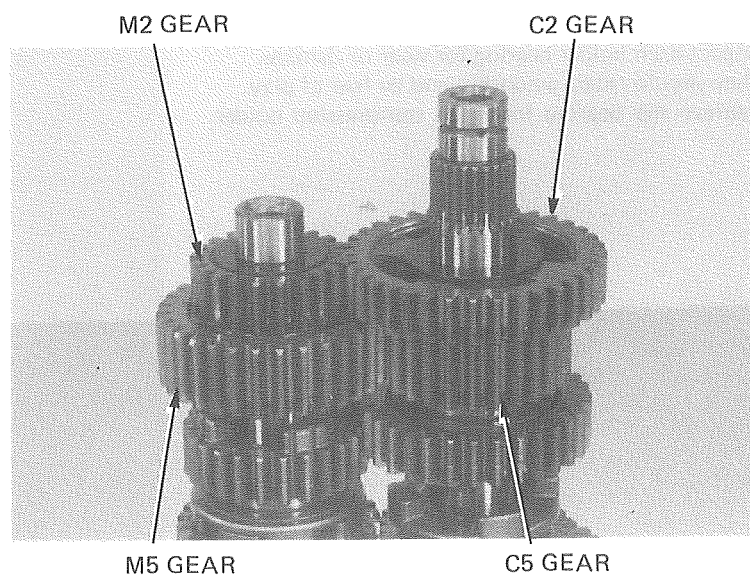




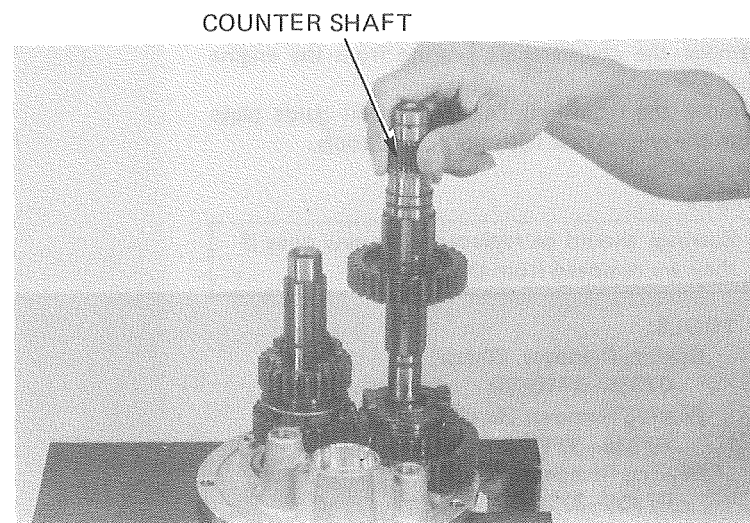
Remove the shift fork shafts, shift forks and shift drum.



Remove the thrust washers, 2nd and 5th gears from the countershaft and mainshaft.



Remove the countershaft 1st, 3rd and 4th gears and washers by removing the countershaft.





Thread the clutch lock nut onto the end of the mainshaft to prevent damage to the end.

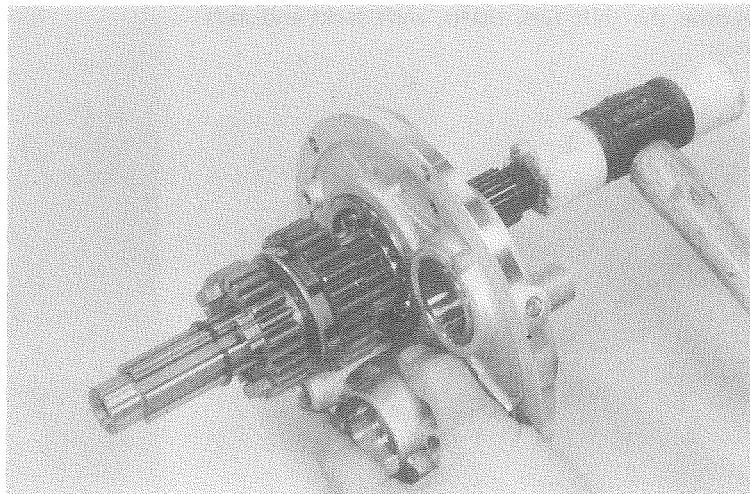
Remove the mainshaft by lightly tapping on the end with a soft hammer.

Remove the gears by prying off the snap ring.

Remove the mainshaft bearing with a bearing puller if necessary.

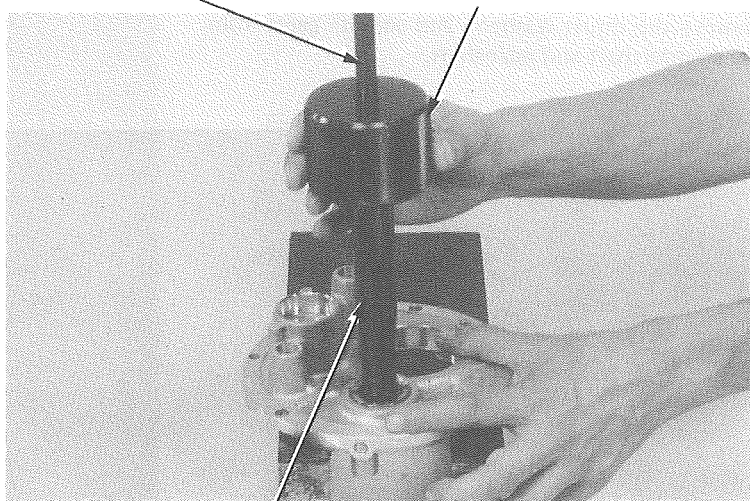
NOTE

The bearing should be replaced with a new one if it is removed from the mainshaft.



Inspect each holder bearing for wear or damage. They should rotate smoothly and be free of play. Remove the bearing from the transmission holder.

BEARING REMOVER HANDLE 07936-3710100 BEARING REMOVER WEIGHT 07936-3710200



BEARING REMOVER, 20 mm
07936-3710600
COUNTERSHAFT BEARING

MAINSHAFT
BEARING

Remove the countershaft bearing from the engine case.

Remove the mainshaft bearing and oil guide plate from the engine case with the special tools.

NOTE

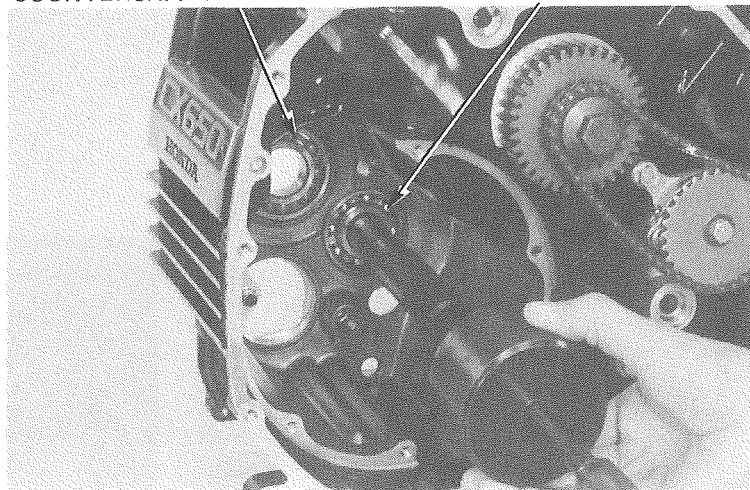
Bearings should be replaced with new ones if they are removed from the case.

TOOLS:

Bearing Remover, 20mm
07936-3710600

Bearing Remover Handle
07936-3710100

Bearing Remover Weight
07936-3710200





TRANSMISSION INSPECTION

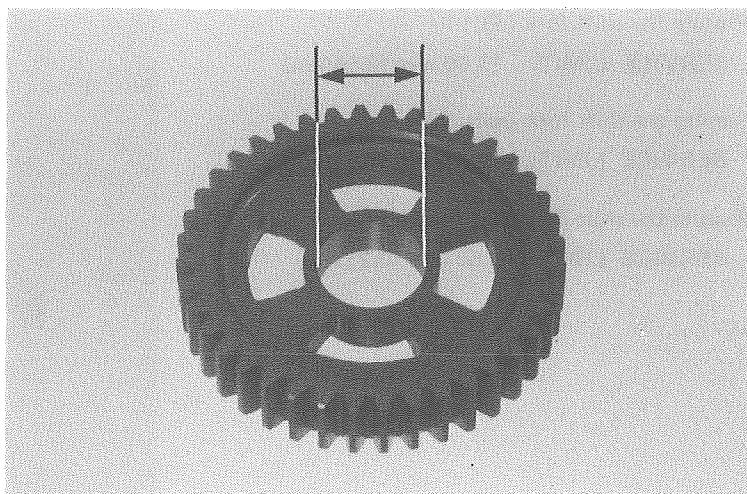
Check the gears for freedom of movement and rotation on the shaft.

Examine the gear dogs and slots for evidence of abnormal wear.

Measure the I.D. of each gear. If any gear exceeds the service limit, that gear must be replaced.

SERVICE LIMITS:

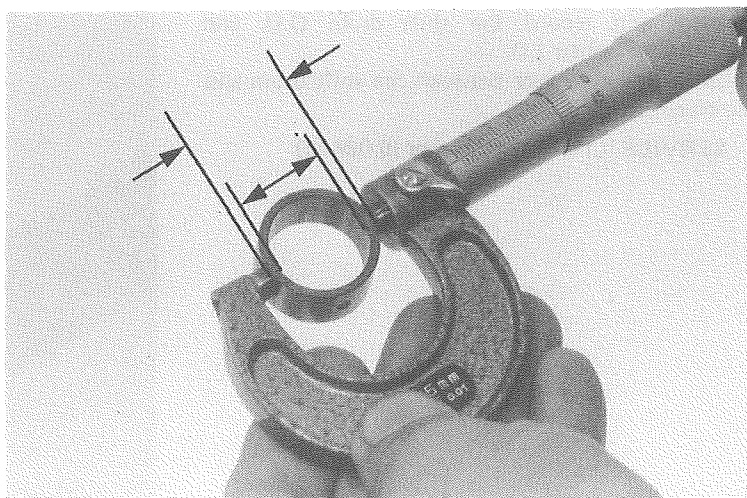
M4 and M5 GEARS	29.10 mm (1.146 in)
C1 GEAR	24.10 mm (0.949 in)
C2 GEAR	31.10 mm (1.224 in)
C3 and C4 GEARS	29.10 mm (1.146 in)



Measure the countershaft gear bushing I.D. and O.D.

SERVICE LIMITS:

C1	O.D:	23.95 mm (0.943 in)
	I.D:	20.06 mm (0.790 in)
C2	O.D:	30.06 mm (1.219 in)
	I.D:	27.54 mm (1.084 in)



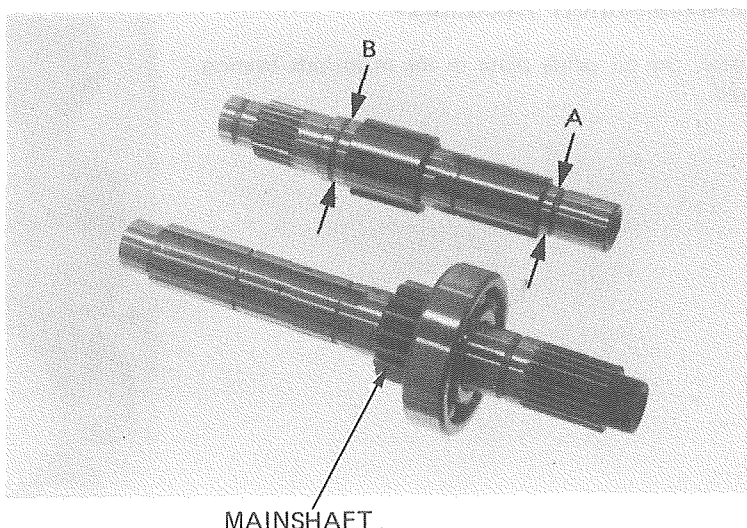
Measure and record the O.D. of the countershaft at the locations shown.

SERVICE LIMITS:

A (C1):	19.96 mm (0.786 in)
B (C2):	27.44 mm (1.080 in)

Calculate the clearance between the gear and gear shaft or bushing.

SERVICE LIMIT:	0.15 mm (0.006 in)
----------------	--------------------





TRANSMISSION

Measure the shift fork I.D.

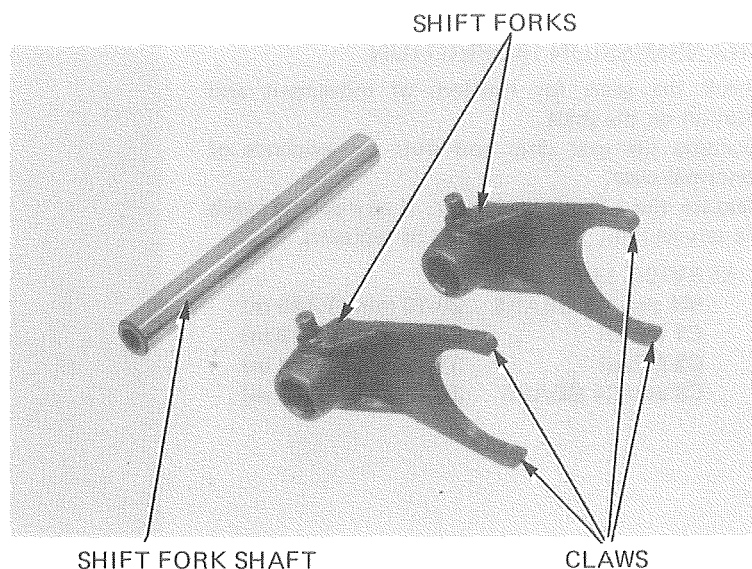
SERVICE LIMIT: 13.05 mm (0.514 in)

Measure the shift fork shaft O.D.

SERVICE LIMIT: 12.95 mm (0.510 in)

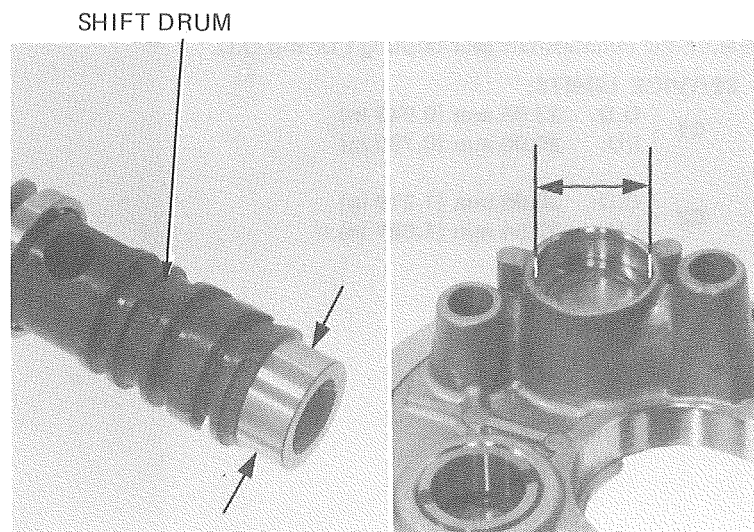
Measure the shift fork claw thickness.

SERVICE LIMIT: 5.50 mm (0.217 in)



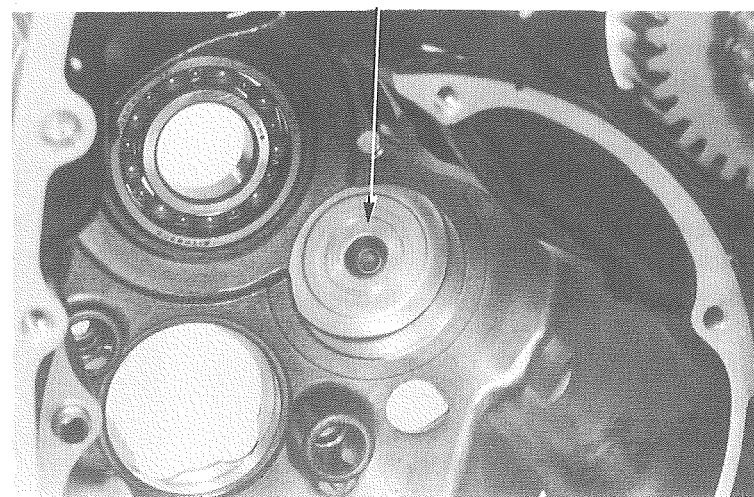
Measure and record the shift drum O.D. and transmission holder I.D.
Calculate the clearance between the shift drum and the transmission holder.

SERVICE LIMIT: 0.15 mm (0.006 in)



TRANSMISSION ASSEMBLY

Install the oil guide plate in the mainshaft bearing hole.





Install the mainshaft and countershaft bearings into the case.

TOOLS

Mainshaft Bearing

- Attachment, 42 x 47 mm 07746-0010300
- Driver 07749-0010000 or 07949-3710000

Countershaft Bearing

- Attachment, 52 x 55 mm 07746-0010400
- Pilot, 25 mm 07746-0040600
- Driver 07749-0010000

Drive the countershaft needle bearing outer race into the transmission holder. Insert the needle bearing into outer race.

Drive the mainshaft bearing into the transmission holder if it was removed.

NOTE

Support the transmission holder above the workbench to prevent damaging it.

TOOLS

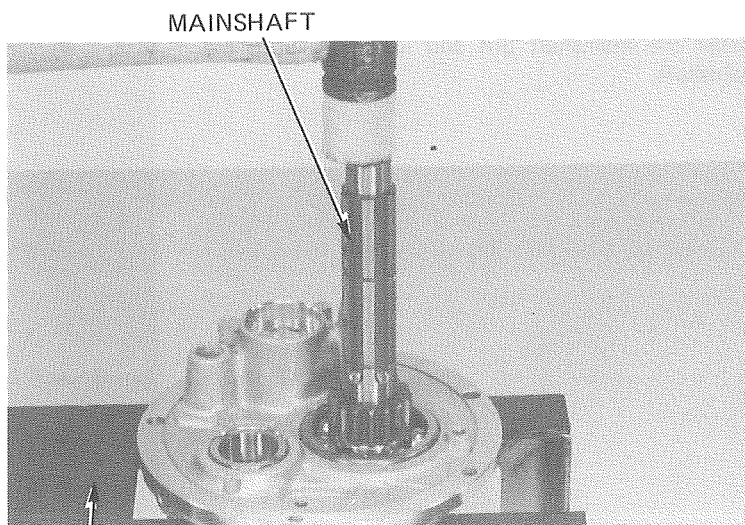
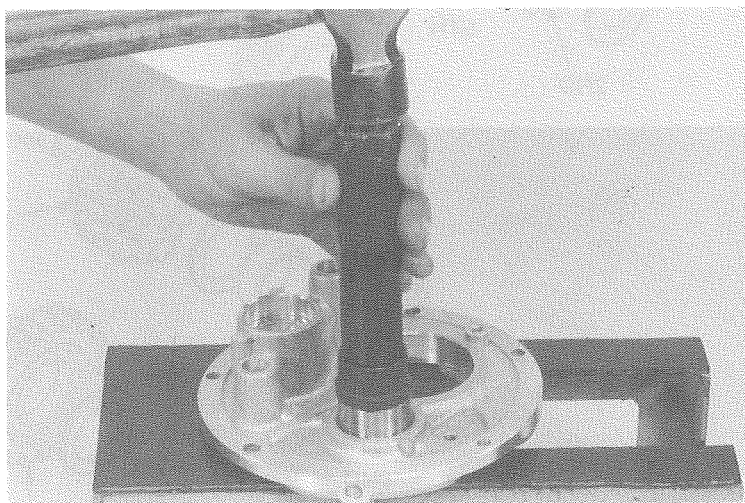
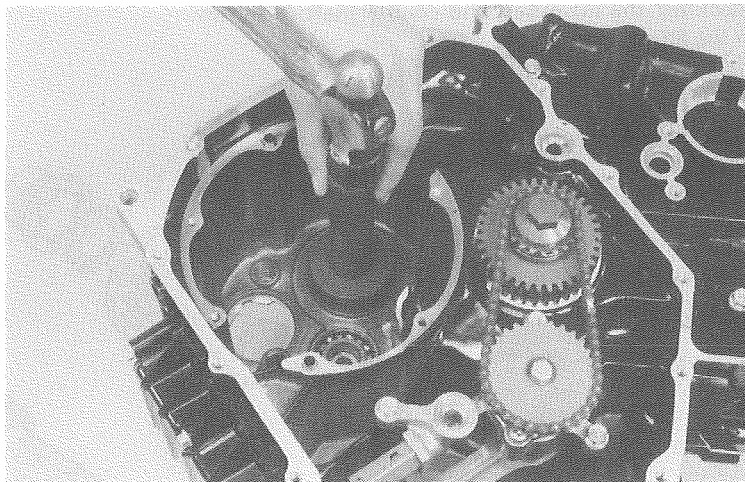
Mainshaft Bearing

- Attachment, 62 x 68 mm 07746-0010500
- Pilot, 25 mm 07746-0040600
- Driver 07749-0010000

Countershaft Bearing

- Attachment, 32 x 35 mm 07746-0010100
- Pilot, 20 mm 07746-0040500
- Driver 07749-0010000

Drive the mainshaft into the mainshaft bearing.

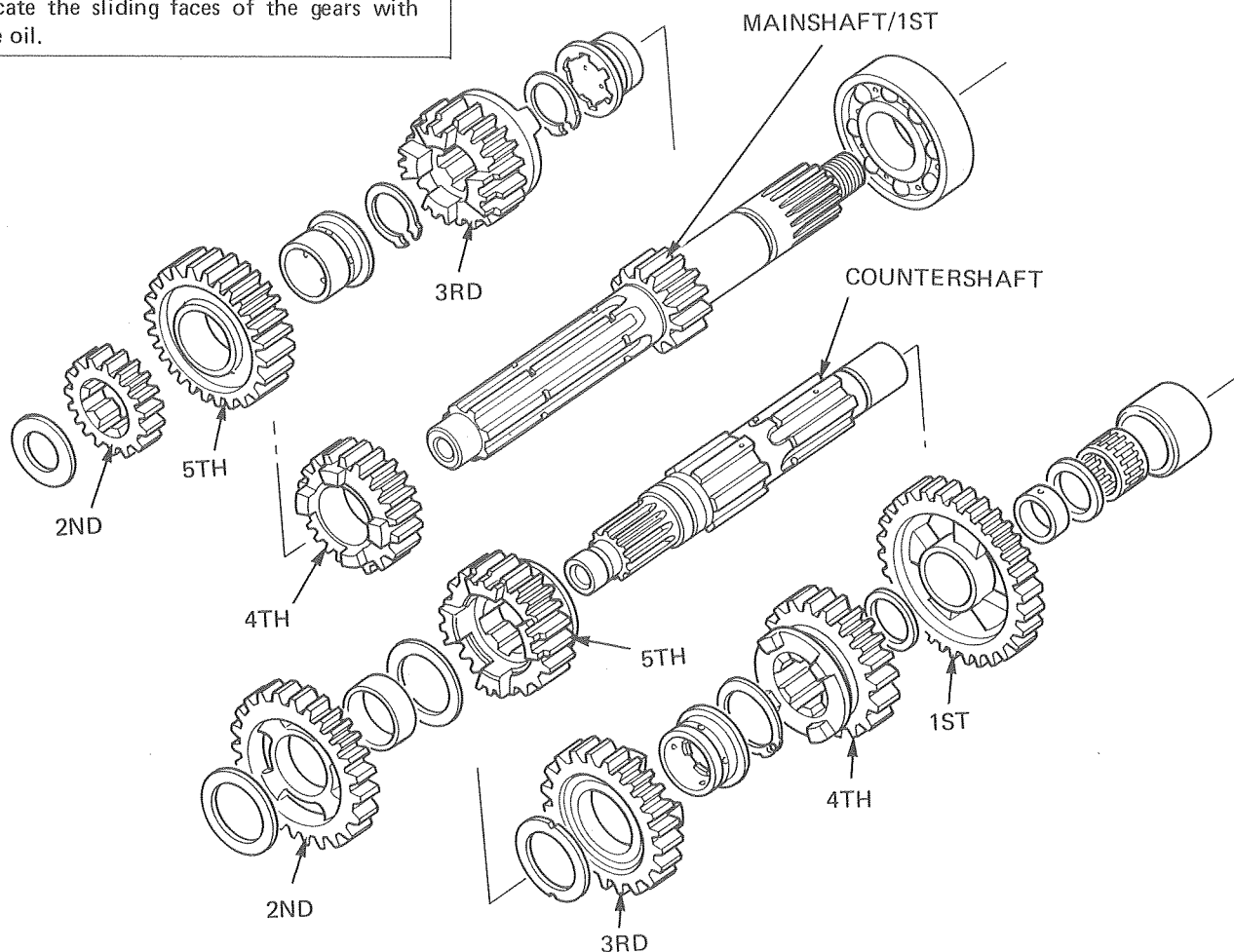




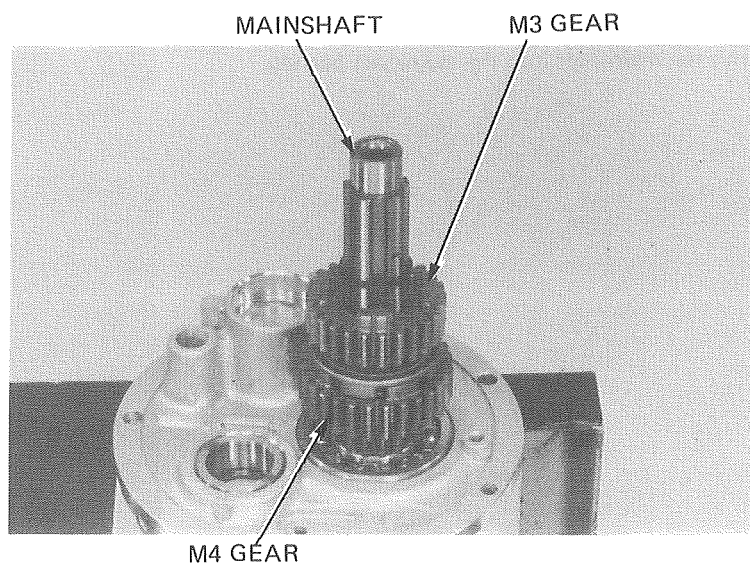
Assemble the mainshaft and countershaft as shown in the illustration below.

NOTE

Lubricate the sliding faces of the gears with engine oil.

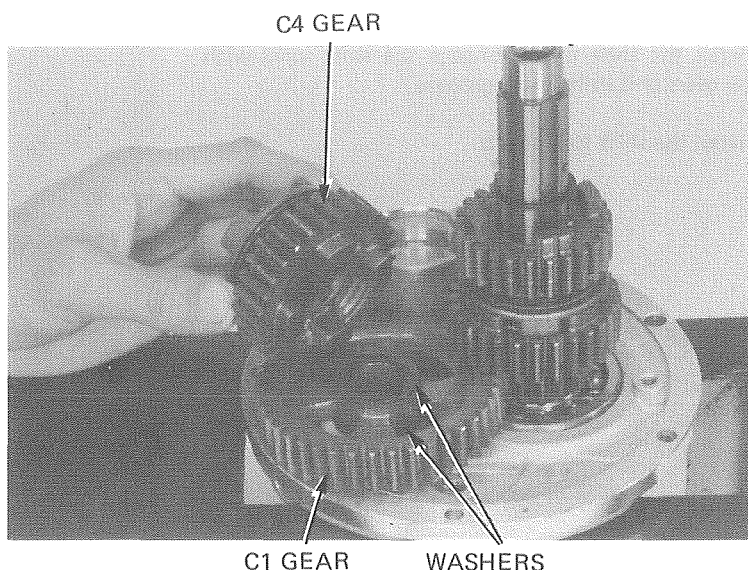


Install the mainshaft 3rd and 4th gears onto the mainshaft.





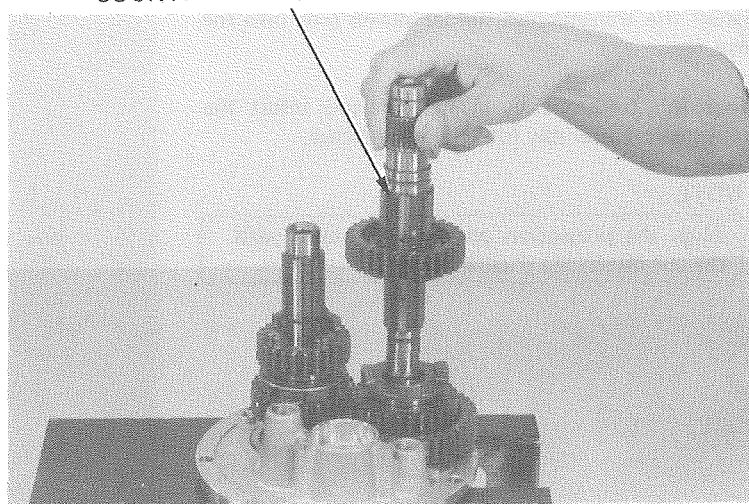
Place the countershaft low gear, washer and 4th gear over the needle bearing outer race.



Install 3rd gear and the splined bushing onto the countershaft.

Install the countershaft with 3rd gear through 4th and 1st gears and into the needle bearing.

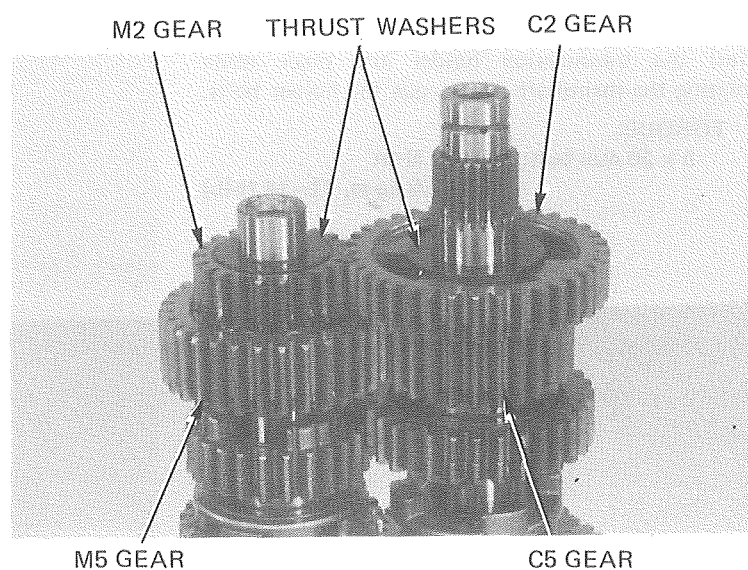
COUNTERSHAFT/3RD GEAR ASSEMBLY



Slide 5th and 2nd gears onto the countershaft and mainshaft.

Place the thrust washers on the M2 and C2 gears.

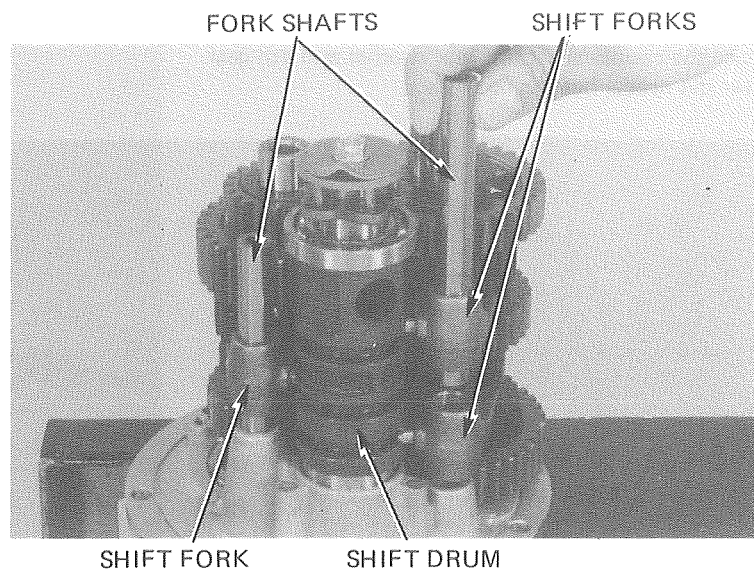
Check the engagement of the gears on the countershaft and mainshaft.





Install the shift drum. Engage the shift forks with the gears and shift drum grooves.

Install the shift fork shafts.

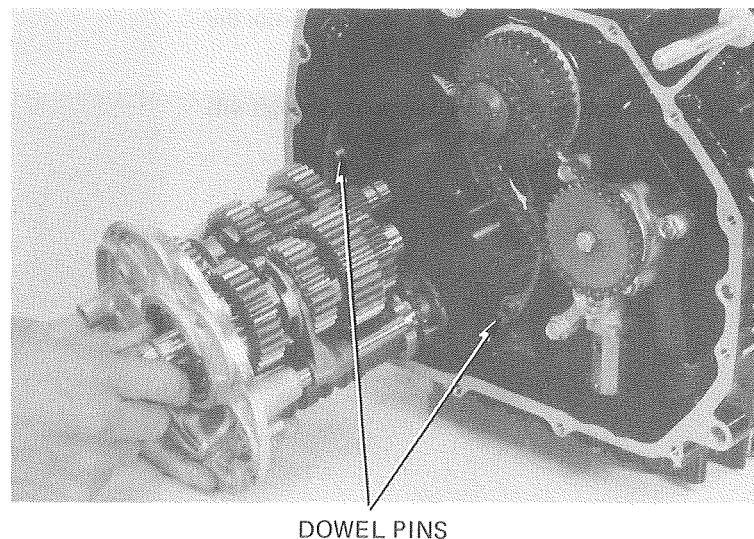


Install the transmission holder dowel pins into the case.

Place the transmission in neutral and insert the transmission assembly into the engine case.

NOTE

Align the projection on the shift drum with the cut-out in the engine case.

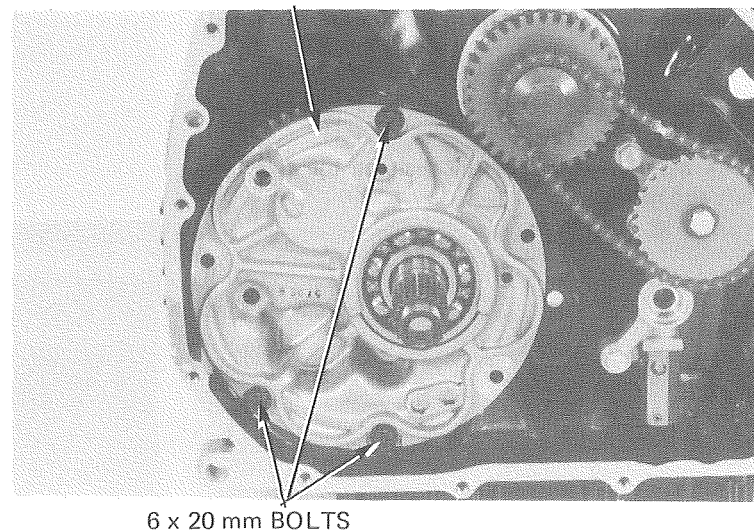


TRANSMISSION HOLDER

Press the transmission holder into place while rotating the mainshaft and torque the holder bolts.

TORQUE:

6 x 20 mm bolt: 15–20 N·m
(1.5–2.0 kg-m, 11–14 ft-lb)





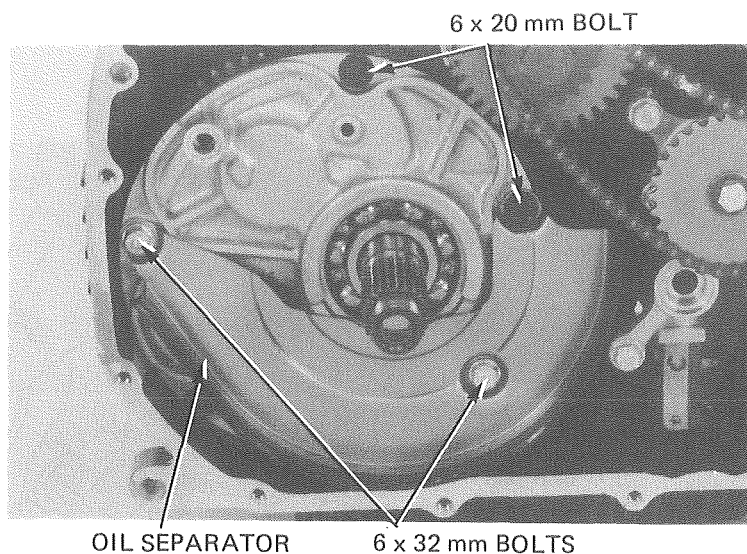
Install the oil separator.

TORQUE:

6 x 20 mm bolt: 15–20 N·m
(1.5–2.0 kg·m, 11–14 ft·lb)

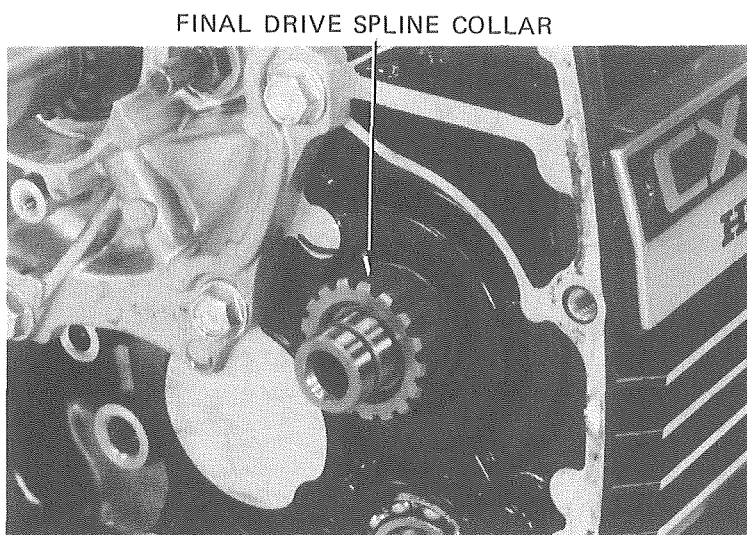
6 x 32 mm bolt: 10–14 N·m
(1.0–1.4 kg·m, 7–10 ft·lb)

After tightening the bolts, make sure that the shafts rotate freely.



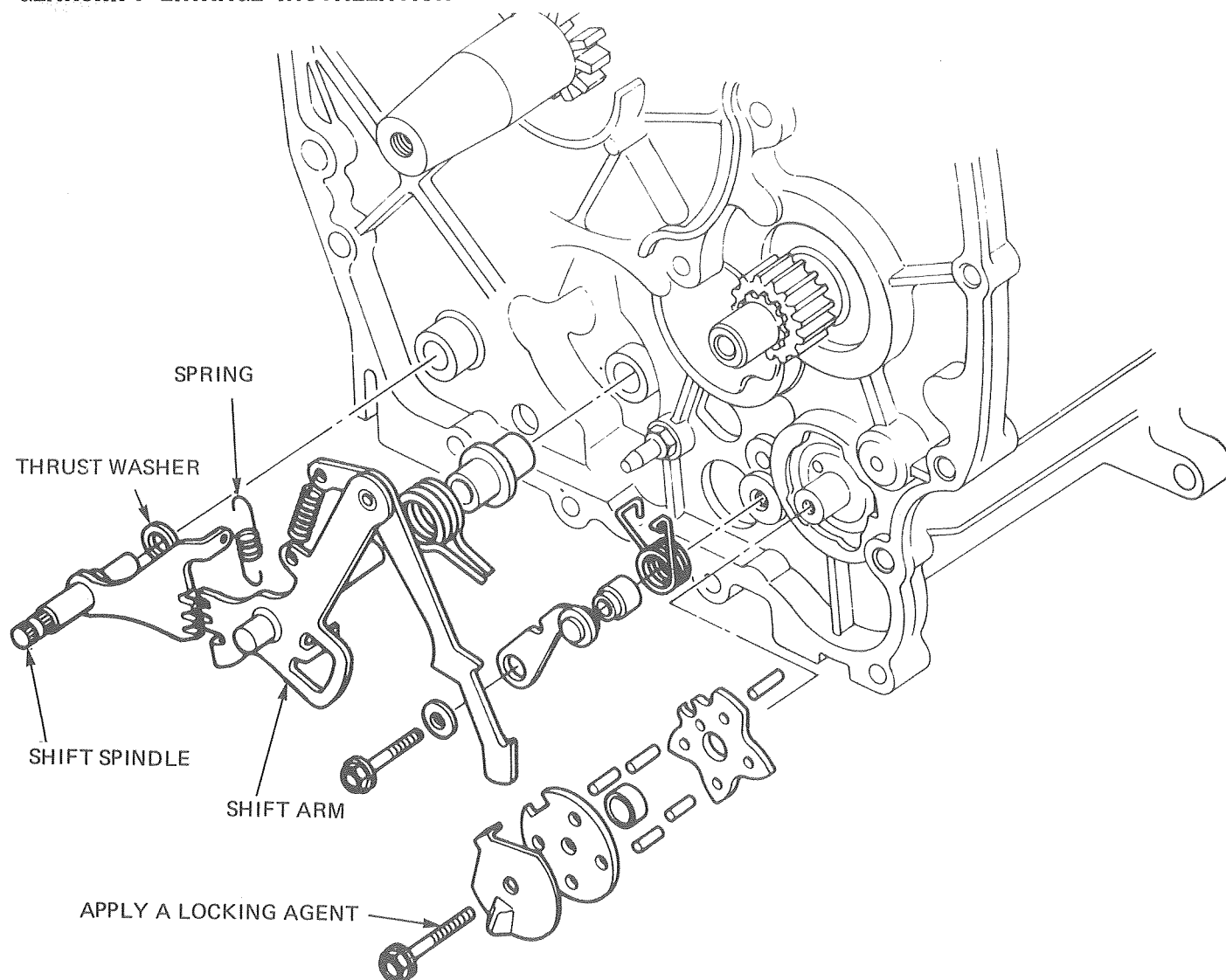
Install the final drive spline collar over the counter-shaft.

Install the clutch assembly (Section 7).
Install the engine front cover (Section 7).





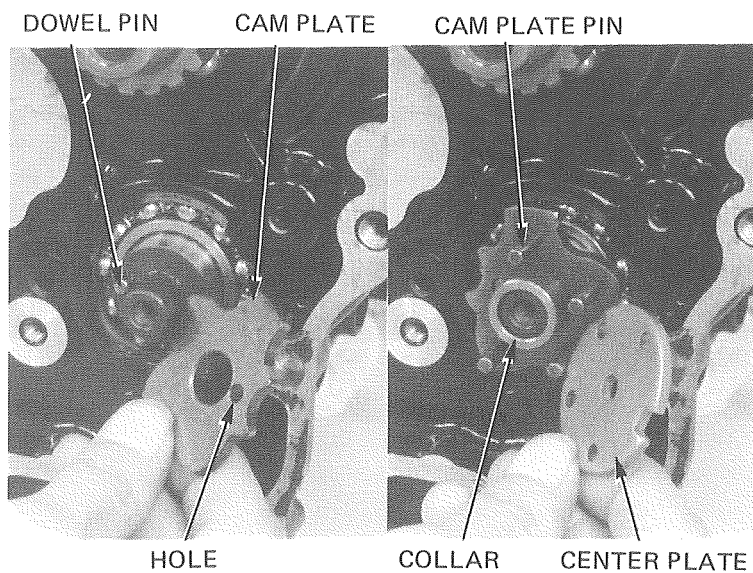
GEARSHIFT LINKAGE INSTALLATION



Install the dowel pin into the hole of the shift drum.

Align the cam plate hole with the dowel pin and install the cam plate.

Install the four cam plate pins, collar and center plate.



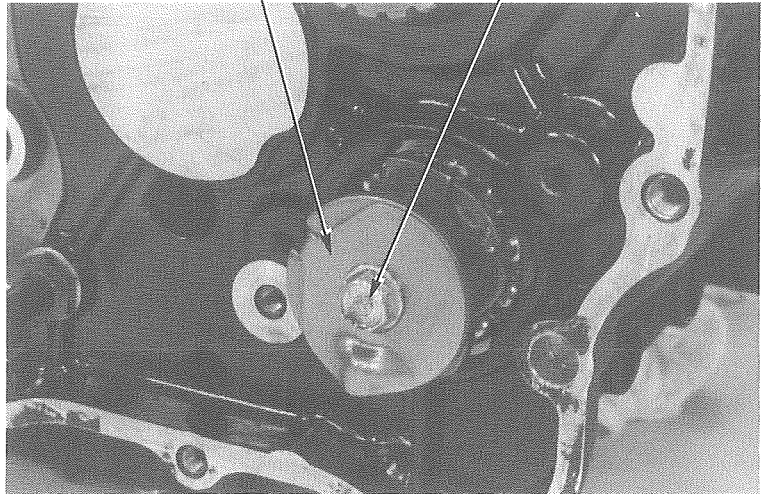


Install the neutral switch plate onto the center plate.

Apply a locking agent to the 6 mm bolt threads and tighten it.

NEUTRAL SWITCH PLATE

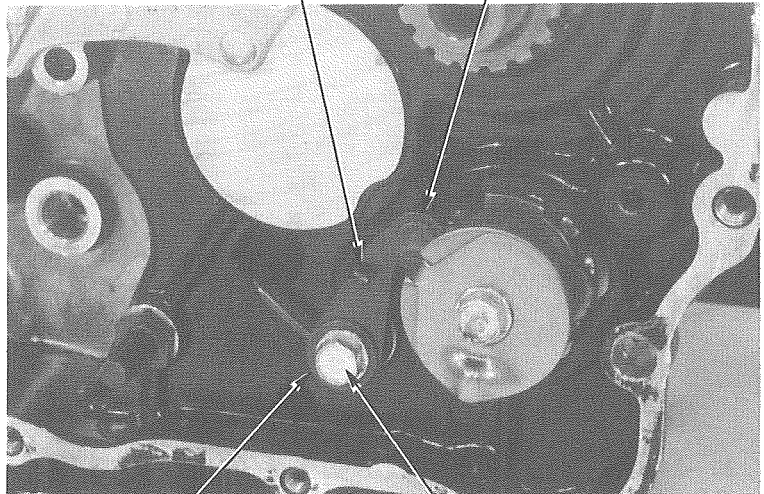
6 mm BOLT



Install the stopper arm spring, collar and arm and tighten with the plain washer and bolt.

STOPPER ARM SPRING

STOPPER ARM



WASHER

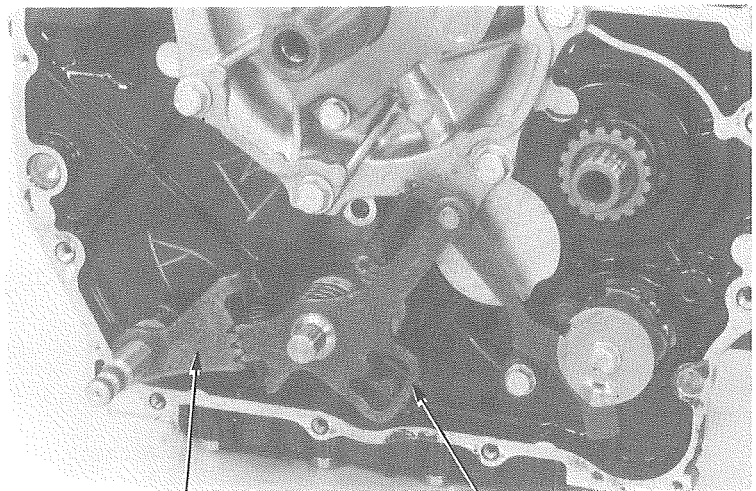
BOLT

Install the gearshift arm and shift spindle.

Install the rear cover (Section 9).

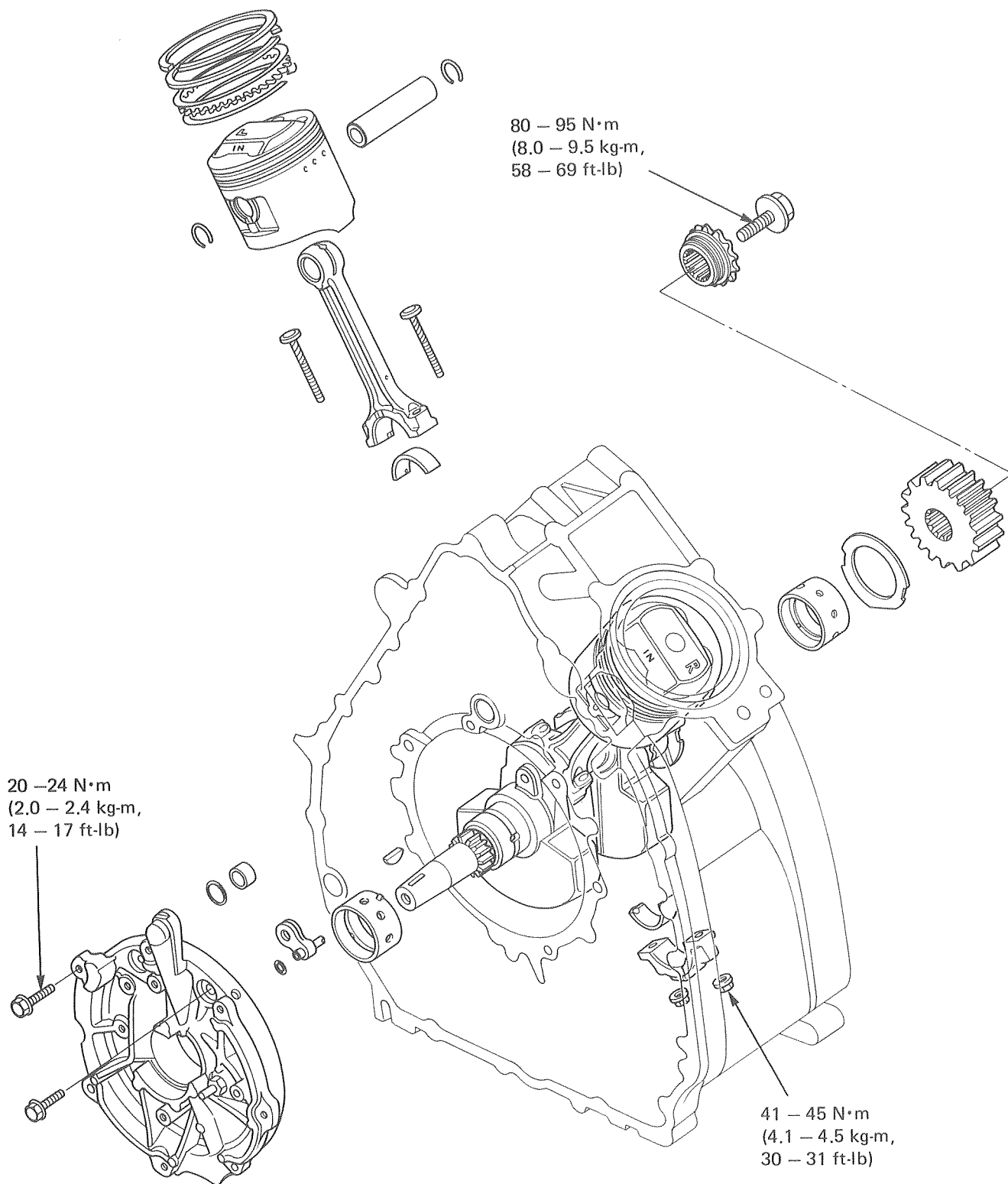
NOTE

After installing the rear cover, install the gearshift pedal and check its operation.



GEARSHIFT SPINDLE

GEARSHIFT ARM





12. CRANKSHAFT/PISTON

SERVICE INFORMATION	12-1	CRANK PIN BEARING INSPECTION/	
TRUBLESHOOTING	12-2	SELECTION	12-8
CONNECTING ROD REMOVAL	12-3	MAIN JOURNAL BEARING	12-10
PISTON REMOVAL	12-4	INSPECTION/SELECTION	12-10
CYLINDER INSPECTION	12-5	CRANKSHAFT INSTALLATION	12-14
CRANKSHAFT REMOVAL	12-6	PISTON INSTALLATION	12-17
		CONNECTING ROD INSTALLATION	12-18
		CYLINDER COMPRESSION	12-19

SERVICE INFORMATION

GENERAL

- All bearing inserts are a select fit and are identified by color codes. Select replacement bearing from the color code table.
- After installing new bearings, recheck them with plastigauge.
- Before removing the piston and connecting rod assemblies, clean the top of the cylinder of carbon deposits.
- The right piston can be serviced by removing the oil pump and transmission cover. To service the left piston, it is necessary to remove the transmission.
- Apply molybdenum disulfide grease to the journals, crankpins and bearings during assembly.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Main journal oil clearance		0.020–0.060 (0.0008–0.0024)	0.085 (0.0033)
	Crank pin oil clearance		0.028–0.052 (0.0011–0.0020)	0.085 (0.0033)
	Connecting rod side clearance		0.150–0.350 (0.0059–0.014)	0.50 (0.020)
Cylinder	I.D.		82.500–82.515 (3.2480–3.2486)	82.60 (3.252)
	Warpage		—	0.10 (0.004)
Piston ring	Ring-to-groove clearance	Top	0.015–0.050 (0.0006–0.0020)	0.10 (0.004)
		Second	0.015–0.050 (0.0006–0.0020)	0.10 (0.004)
	Ring end gap	Top	0.20–0.35 (0.008–0.014)	0.60 (0.024)
		Second	0.20–0.35 (0.008–0.014)	0.60 (0.024)
		Oil (side rail)	0.30–0.90 (0.012–0.035)	1.10 (0.043)
Piston/ Piston pin	Piston O.D.		82.460–82.485 (3.2465–3.2474)	82.365 (3.2427)
	Piston pin bore		21.002–21.008 (0.8268–0.8271)	21.040 (0.8283)
	Piston pin O.D.		20.994–21.000 (0.8265–0.8268)	20.984 (0.8261)
	Small end I.D.		21.020–21.041 (0.8276–0.8284)	21.068 (0.8294)
	Piston-to-cylinder clearance		—	0.10 (0.004)

TORQUE VALUES

Crankshaft cap bolt	20–24 N•m (2.0–2.4 kg-m, 14–17 ft-lb)
Connecting rod cap nut	41–45 N•m (4.1–4.5 kg-m, 30–31 ft-lb)
Primary drive gear bolt	80–95 N•m (8.0–9.5 kg-m, 58–69 ft-lb)



CRANKSHAFT/PISTON

TOOLS

Special

Gear holder	07924—MC70002 or 07924-MC70001 07924—MC70000 or 07924—4150000
Piston remover	07941—MC70000
Crank cap puller	07935—4150000 (not available in U.S.A.)
Crank cap driver	07945—4150100
Main bearing disassembly tool	07973—MC70000

Common

Piston ring compressor	07755—0010000 or commercially available in U.S.A.
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TROUBLESHOOTING

Excessive Noise

- Crankshaft
 - Worn main bearing.
 - Worn rod bearing.
- Piston and Connecting Rod
 - Worn piston or cylinder.
 - Worn piston pin or pin hole.
 - Worn rod small end.

Low Compression or Uneven Compression

- Worn cylinder or piston ring.

Excessive Smoke

- Worn cylinder, piston or piston rings.
- Improperly installed piston rings.
- Damaged piston or cylinder.

Overheating

- Excessive carbon build-up on piston head.
- Blocked or restricted flow of coolant.
- Sticking thermostat.

Knocking or Abnormal Noise

- Worn pistons and cylinders.
- Excessive carbon build-up on piston head.

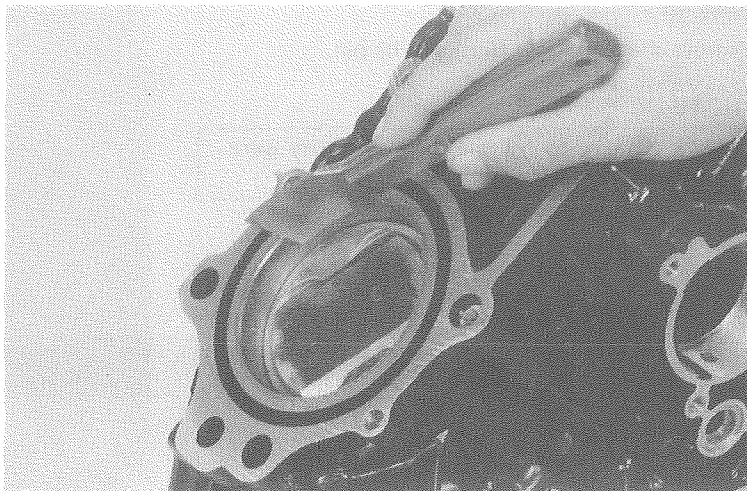


CONNECTING ROD REMOVAL

Remove the following:

- cylinder head (Page 6-3).
- oil pump (Page 7-10).
- transmission (Page 11-5).

Scrape all deposits from the top of the cylinder.

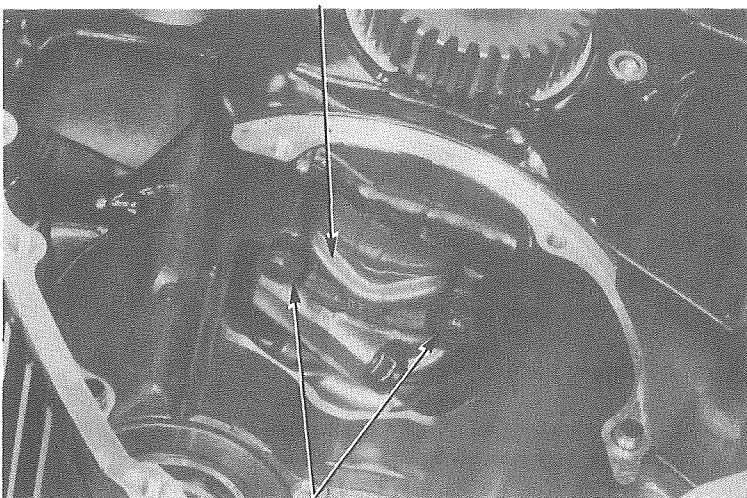


Turn the crankshaft so that the piston to be removed is at B.D.C. (Bottom Dead Center).

Remove the bearing cap and mark the bearing caps and rods to indicate cylinder position.

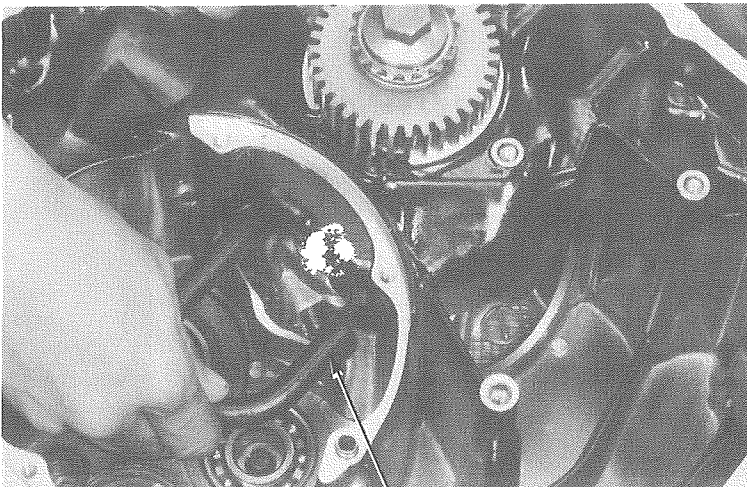
Remove the left side cap from the transmission. Work through the hole on the oil pump side to remove the right side cap.

CONNECTING ROD BEARING CAP



BEARING CAP NUTS

Turn the crankshaft so that the piston is at T.D.C. Place the Piston Remover over the rod bolts, and push the piston and rod assembly out.



PISTON REMOVER 07941-MC70000 or
COMMERCIALLY AVAILABLE IN U.S.A.



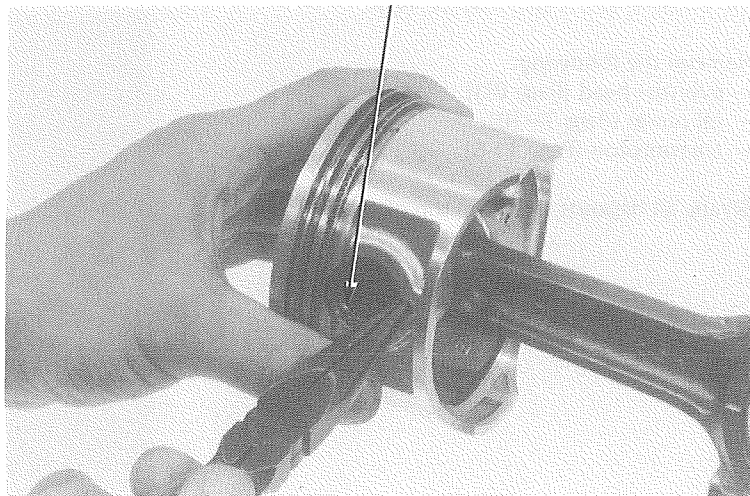
PISTON REMOVAL

Remove the piston pin clips and the pin.

NOTE

Mark the pins to indicate the piston they were removed from.

PISTON PIN CLIP



PISTON INSPECTION

Measure the ring-to-groove clearance.

SERVICE LIMIT:

(TOP/SECOND): 0.10 mm (0.004 in)

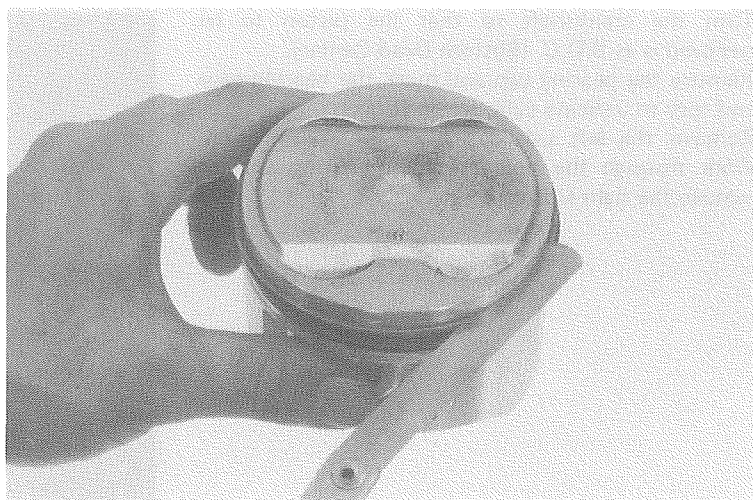
Remove the piston rings.

NOTE

Mark the rings so they can be reinstalled on the piston they were removed from.

Clean and inspect the piston crown.

Inspect the piston for damage and cracks; check the ring grooves for excessive wear.



Insert each piston ring into the cylinder and measure the ring end gap.

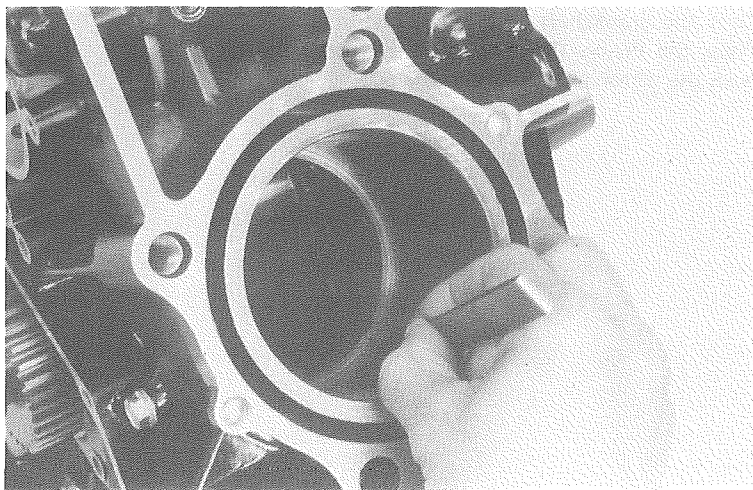
SERVICE LIMIT:

TOP/SECOND: 0.60 mm (0.024 in)

OIL (SIDE RAIL): 1.10 mm (0.043 in)

NOTE

To measure the gap, use a piston and push the ring squarely into the cylinder.

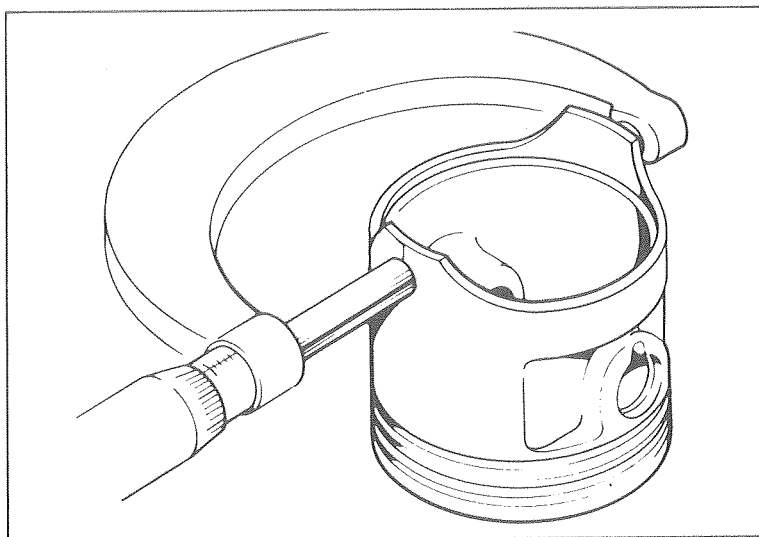




Measure the diameter of each piston; 7–10 mm (0.28–0.40 in) from the bottom of the piston and 90° to the piston pin hole.

SERVICE LIMIT: 82.365 mm (3.2427 in)

If the pistons show wear beyond the limit, replacement is necessary.



CYLINDER INSPECTION

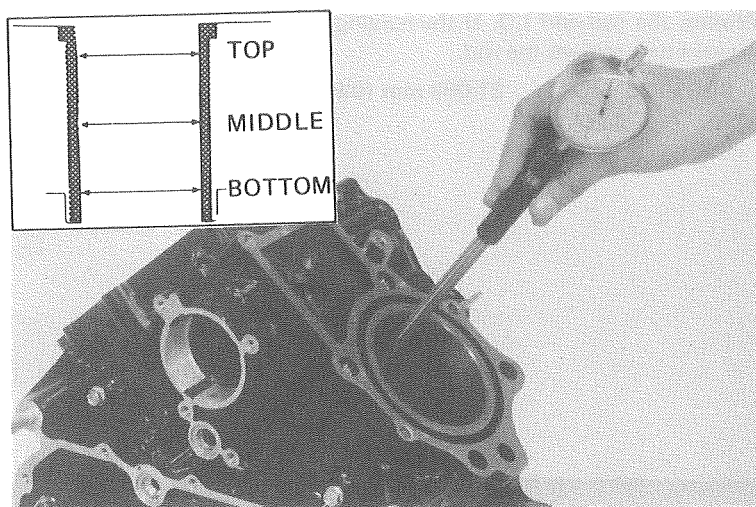
Measure the cylinder I.D.

SERVICE LIMIT: 82.60 mm (3.252 in)

Calculate the piston to cylinder clearance.

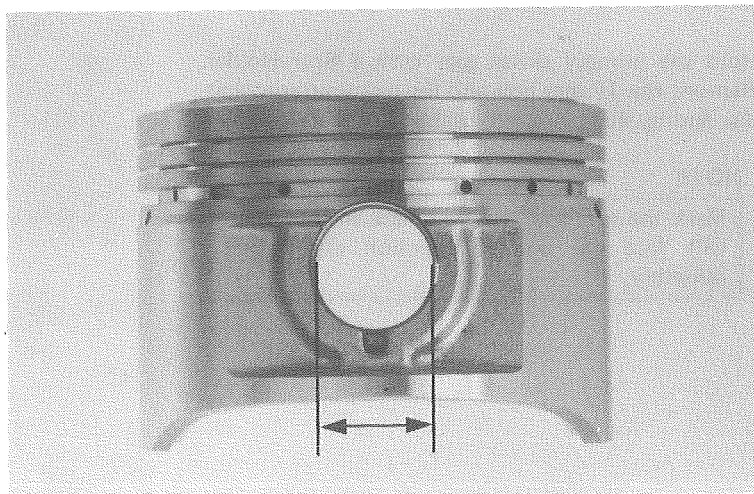
SERVICE LIMIT: 0.10 mm (0.004 in)

Oversize pistons are available in the following sizes:
0.25 and 0.50 mm.



Measure the piston pin bore of each piston.

SERVICE LIMIT: 21.040 mm (0.8283 in)





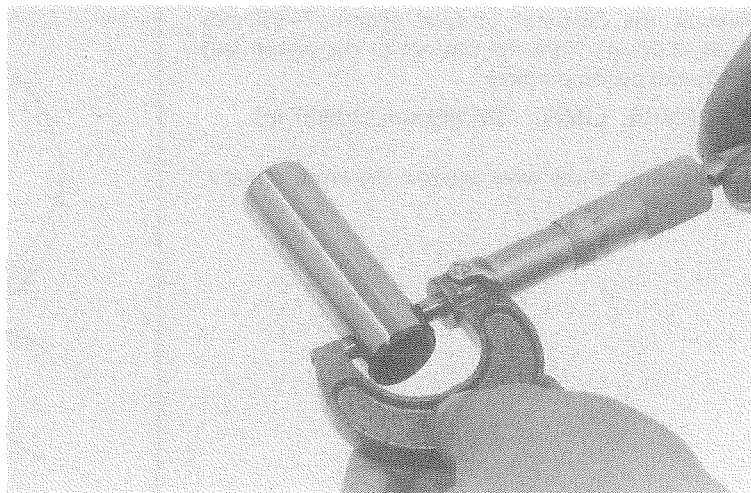
CRANKSHAFT/PISTON

Measure the O.D. of the piston pin.

SERVICE LIMIT: 20.984 mm (0.8261 in)

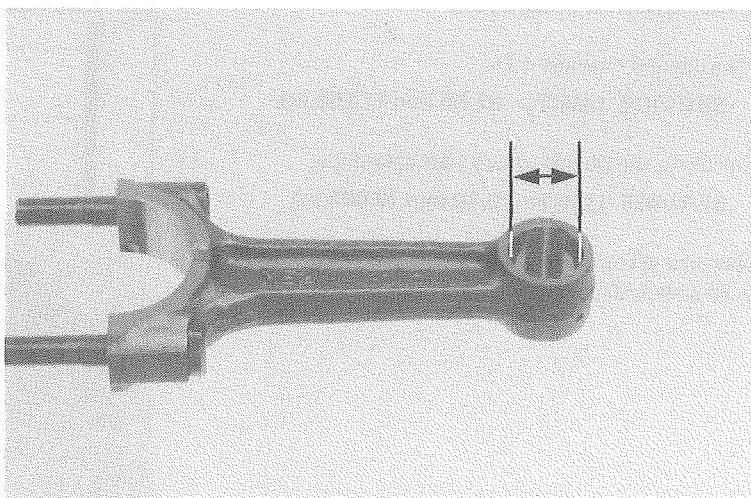
Calculate the piston pin-to-piston clearance.

SERVICE LIMIT: 0.05 mm (0.002 in)



Measure the rod end I.D. If the reading exceeds the service limit, replace the rod.

SERVICE LIMIT: 21.068 mm (0.8294 in)



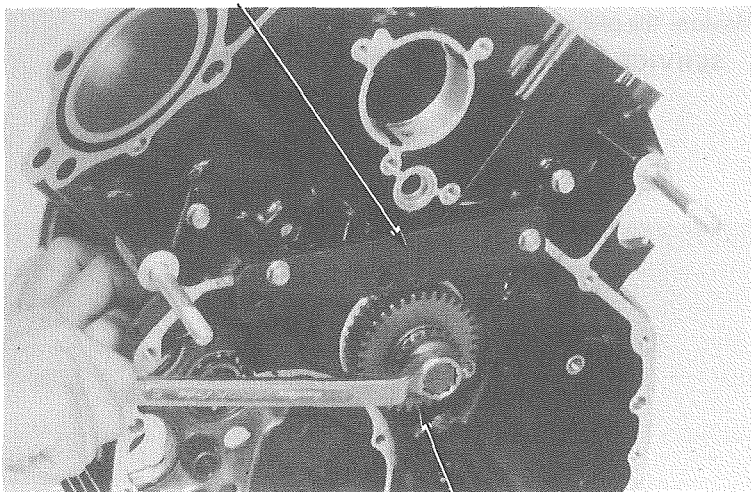
CRANKSHAFT REMOVAL

Hold the primary driver gear with a Gear Holder. Remove the 12 mm bolt and the oil pump sprocket, disc spring, side plate, sub gear and primary gear.

NOTE

Mark the sub gear and side plate so that they will face the correct direction during re-assembly.

GEAR HOLDER 07924-MC70002 or 07924-MC70001 or
07924-MC70000 or 07924-4150000



PRIMARY DRIVE GEAR

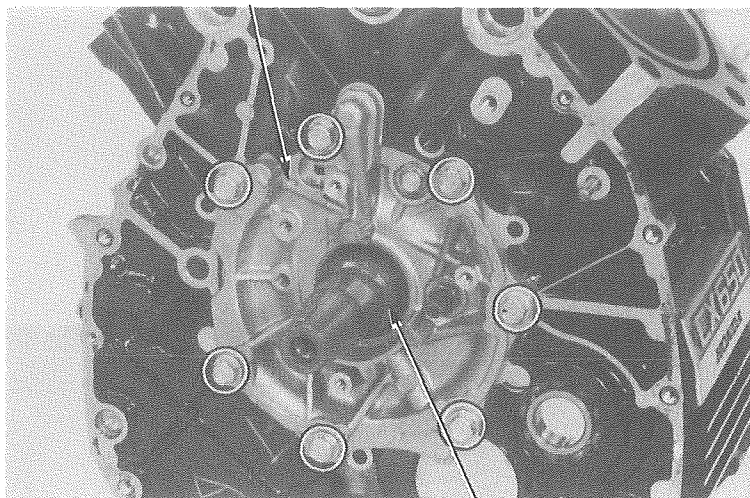


Remove the flywheel and cam chain (Page 10-2).
Remove the crankshaft cap bolts.

NOTE

Before removing the crankshaft, wrap the splines of the primary gear and timing sprocket with vinyl tape to prevent damage to the main journal bearings.

CRANKSHAFT CAP



CRANK CAP PULLER 07935-4150000
(NOT AVAILABLE IN U.S.A.)

Attach the Crank Cap Puller to the front of the engine.

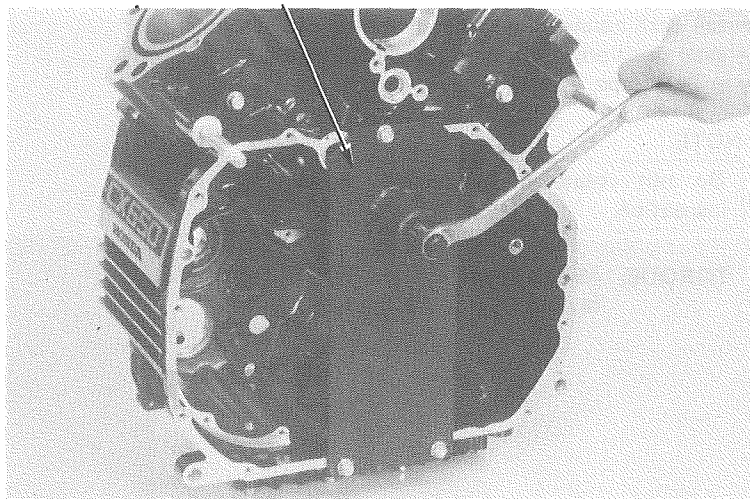
Press the crankshaft out by screwing in the Crank Cap Puller, or use a press to remove the crankshaft.

CAUTION

Be careful not to damage the bearing when removing the crankshaft.

Place the engine case in a hydraulic press on supports so that it is at least 2 inches above the adjustable cross beam.

Press the crankshaft out while holding the crankshaft cap.



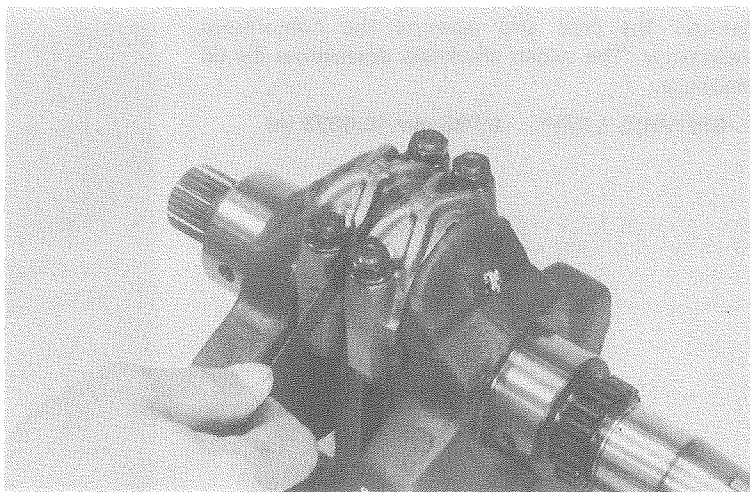
ROD SIDE CLEARANCE INSPECTION

Install each connecting rod and bearing cap in its original position and torque to specifications evenly in 2-3 steps.

TORQUE: 41-45 N·m
(4.1-4.5 kg-m, 30-31 ft-lb)

Measure the rod side clearance with a feeler gauge.

SERVICE LIMIT: 0.50 mm (0.020 in)





CRANKSHAFT/PISTON

CRANK PIN BEARING INSPECTION/SELECTION

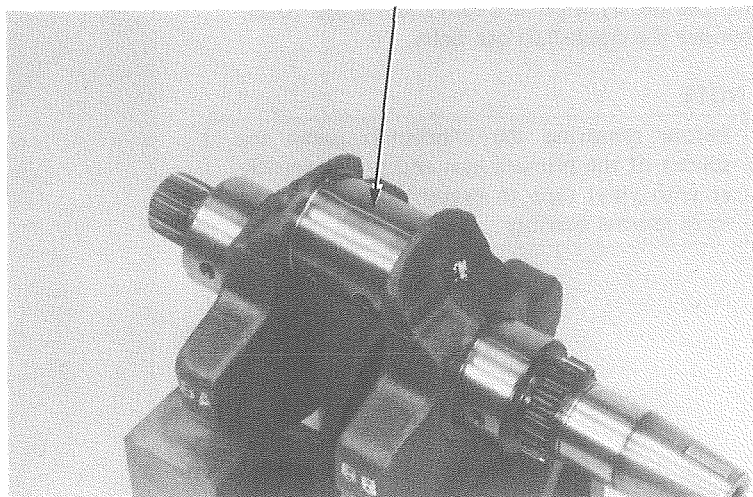
INSPECTION

Inspect each bearing insert for separation or other damage.

Put the connecting rod inserts in each rod cap.

Place a plastigauge strip across each crank pin, avoiding the oil hole.

PLASTIGAUGE STRIP

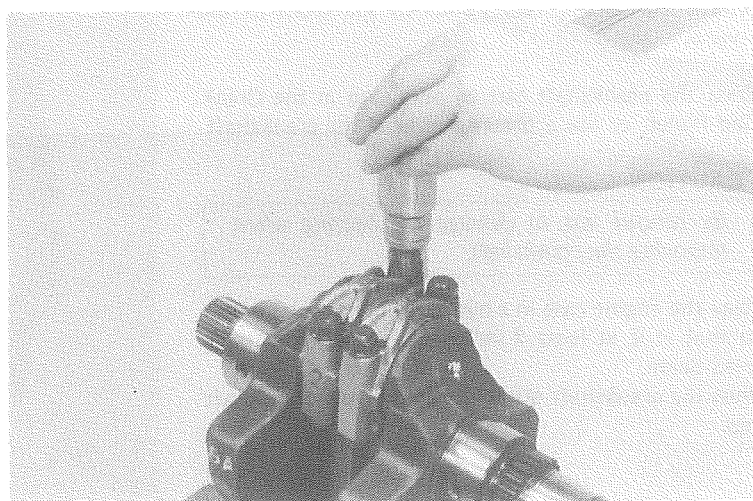


Install each connecting rod and bearing cap in their original positions and torque to specifications evenly in 2–3 steps.

NOTE

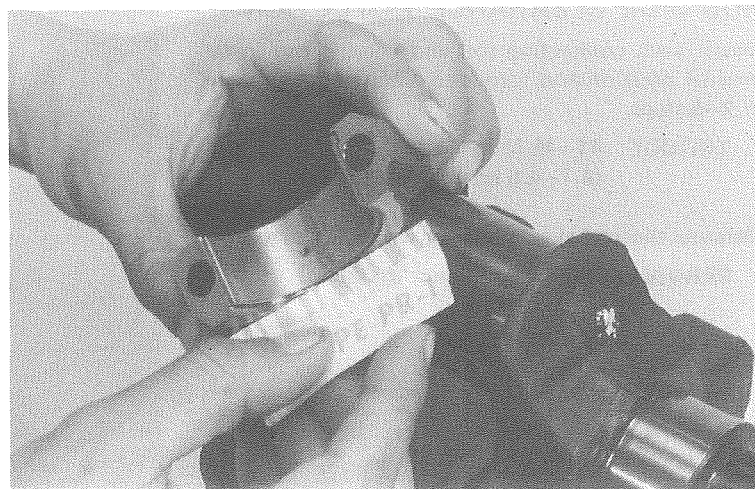
Do not rotate the crankshaft during the inspection.

TORQUE: 41–45 N·m
(4.1–4.5 kg·m, 30–33 ft·lb)



Remove the caps and measure the compressed plastigauge. The widest thickness determines the oil clearance.

SERVICE LIMIT: 0.085 mm (0.0033 in)





BEARING SELECTION

Determine and record each connecting rod I.D. code number.

Determine and record the crank pin O.D. code letters.

Cross reference the crank pin and rod codes to determine the replacement bearing color.

CRANK PIN BEARING SELECTION

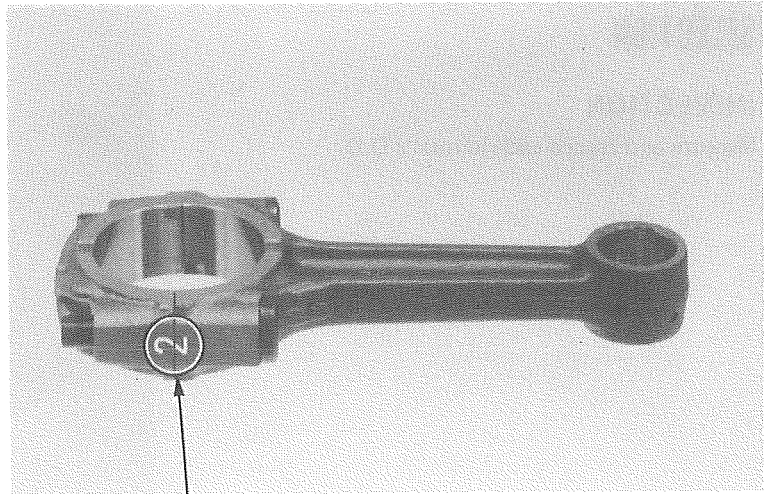
CRANK PIN SIZE CODE LETTER		A	B	C
		42.982— 42.990 mm (1.6922— 1.6925 in)	42.974— 42.982 mm (1.6919— 1.6922 in)	42.966— 42.974 mm (1.6916— 1.6919 in)
CON- NECTING ROD I.D. CODE NUMBER		COLOR IDENTIFICATION		
1	46.000— 46.008 mm (1.8110— 1.8113 in)	PINK	YELLOW	GREEN
2	46.008— 46.016 mm (1.8113— 1.8116 in)	YELLOW	GREEN	BROWN
3	46.016— 46.024 mm (1.8116— 1.820 in)	GREEN	BROWN	BLACK

CRANK PIN BEARING SIZES

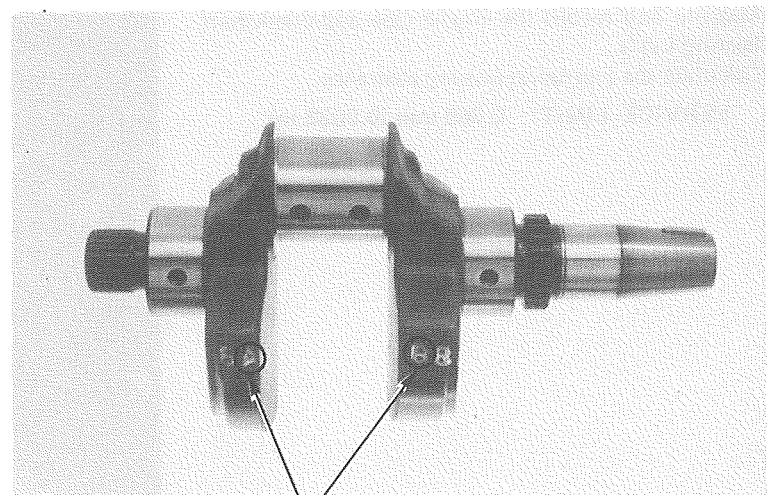
COLOR	BEARING THICKNESS
BLACK	1.503 — 1.507 mm
BROWN	1.499 — 1.503 mm
GREEN	1.495 — 1.499 mm
YELLOW	1.491 — 1.495 mm
PINK	1.487 — 1.491 mm

NOTE

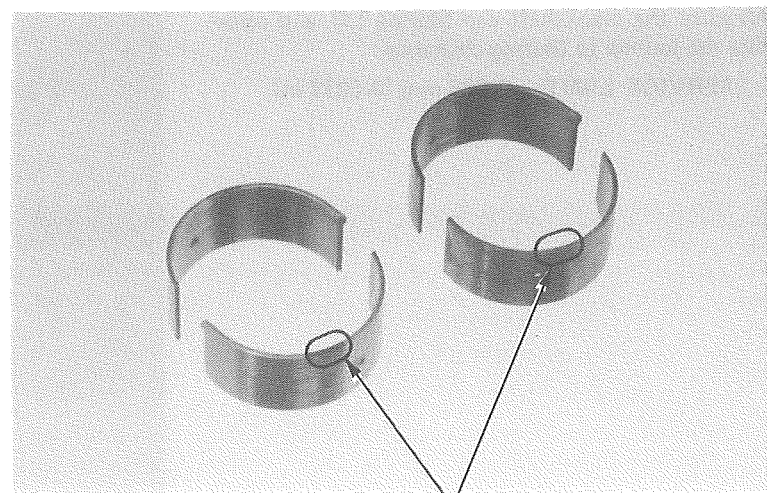
After fitting new bearing inserts, they should be rechecked with plastigauge.



CODE NO.



CRANK PIN O.D. CODE



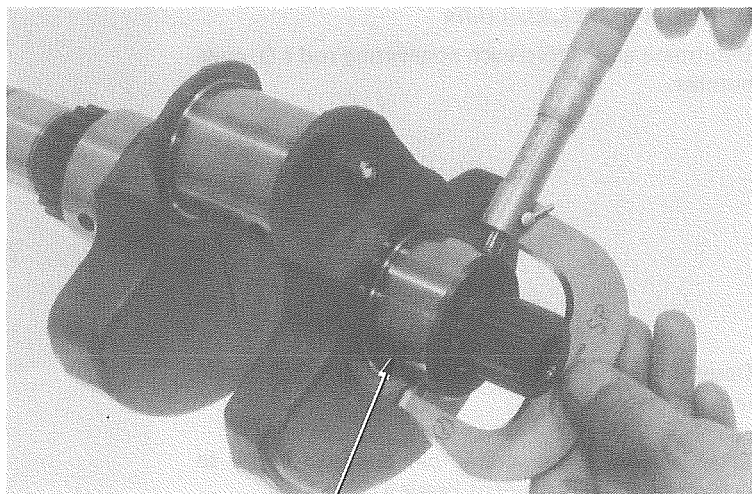
COLOR CODE



MAIN JOURNAL BEARING INSPECTION/ SELECTION

INSPECTION

Measure and record each journal's O.D.

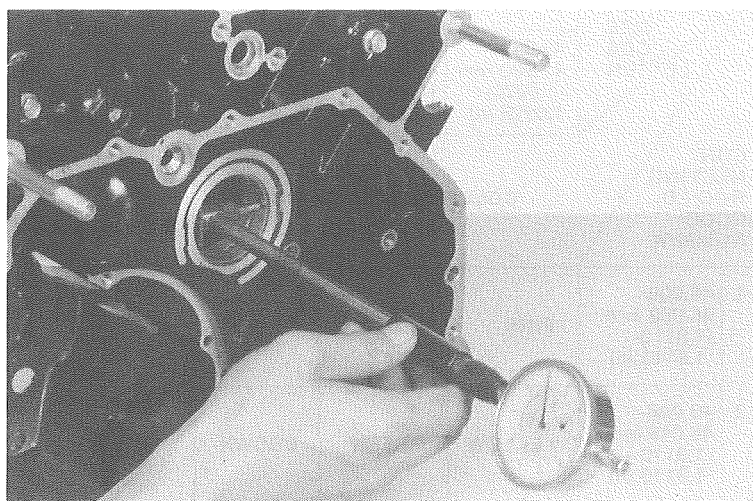


MAIN JOURNAL

Measure and record the engine case and crankshaft bearing I.D.'s.

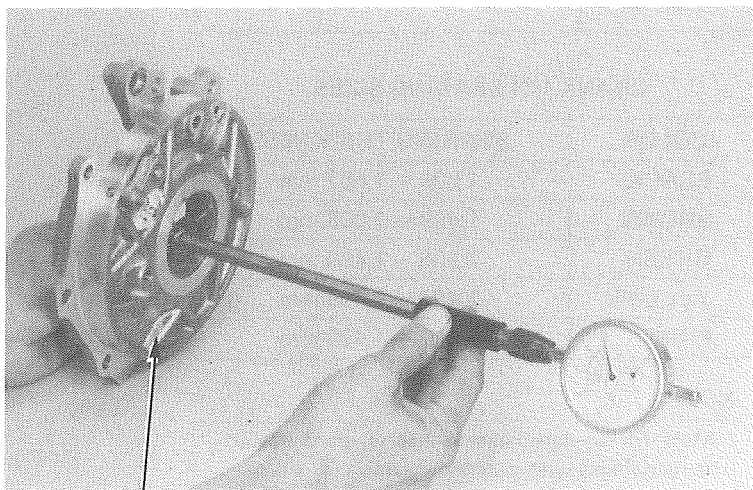
Calculate the journal-to-bearing clearance.

SERVICE LIMIT: 0.085 mm (0.0033 in)



Measure the crankshaft cap bearing I.D. and calculate the journal to bearing clearance.

SERVICE LIMIT: 0.085 mm (0.0033 in)



CRANKSHAFT CAP



MAIN JOURNAL BEARING REPLACEMENT

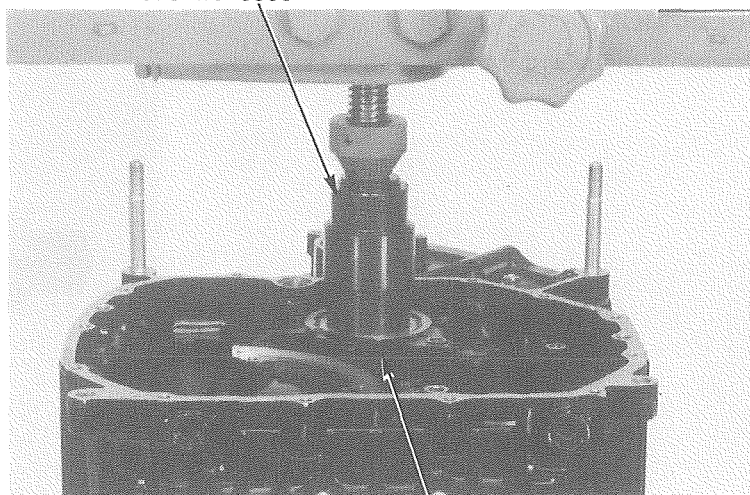
REMOVAL

Press the bearing out with a hydraulic press and Main Bearing Dis/assembly Tool; use the end with the "R" mark.

CAUTION

To prevent engine case damage, always use a hydraulic press and bearing removal tool to remove bearings.

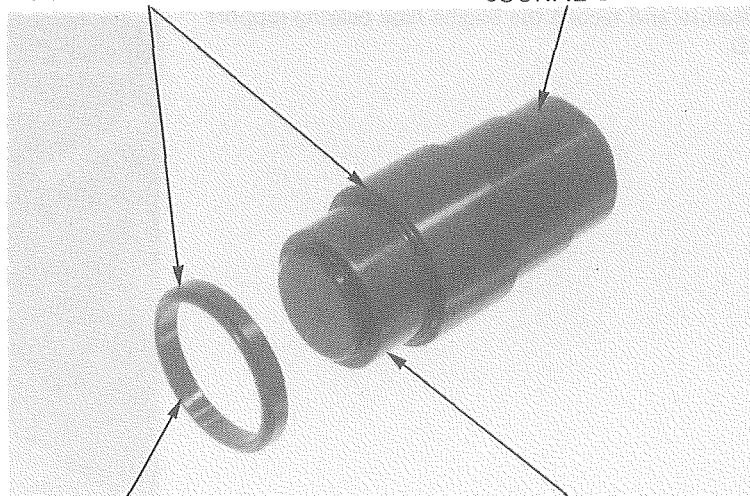
MAIN BEARING DIS/ASSEMBLY TOOL
07973-MC70000



MAIN BEARING DIS/ASSEMBLY
TOOL 07973-MC70000

"R" MARK

TO PRESS OUT MAIN
JOURNAL BEARINGS



ATTACHEMNT
TO PRESS CRANK CAP BEARING IN

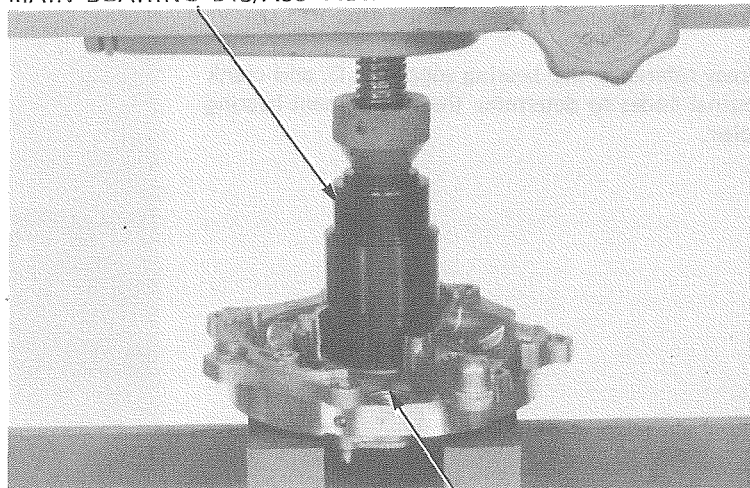
TO PRESS IN MAIN
JOURNAL BEARING

MAIN BEARING DIS/ASSEMBLY TOOL 07973-MC70000

Press the bearings out of the crankshaft cap bearing support with a hydraulic press and bearing removal tool. Use the tool end with the "R" mark.

CAUTION

To prevent crankshaft cap damage, always use a hydraulic press and bearing removal tool to remove bearings.

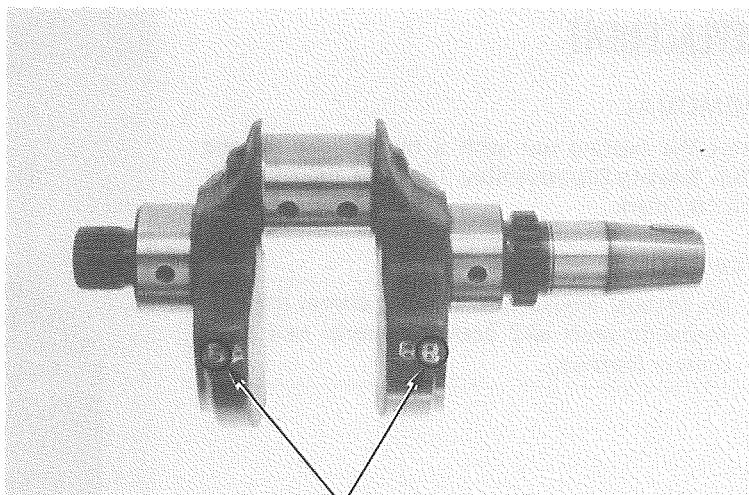


"R" MARK



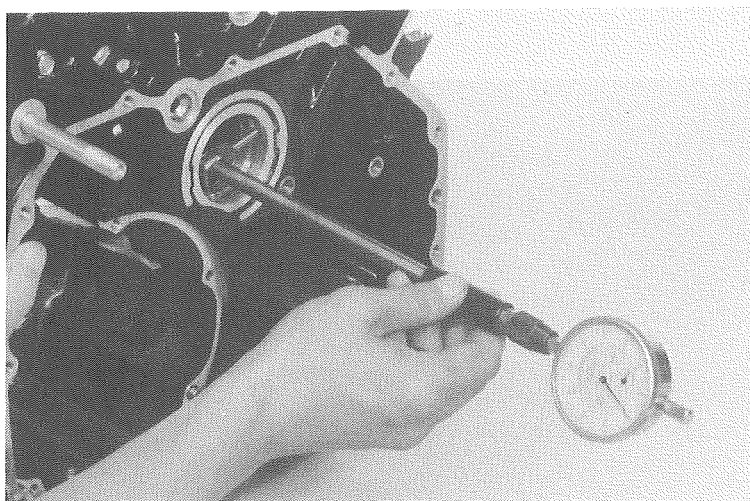
SELECTION

Determine and record the main journal O.D. codes.



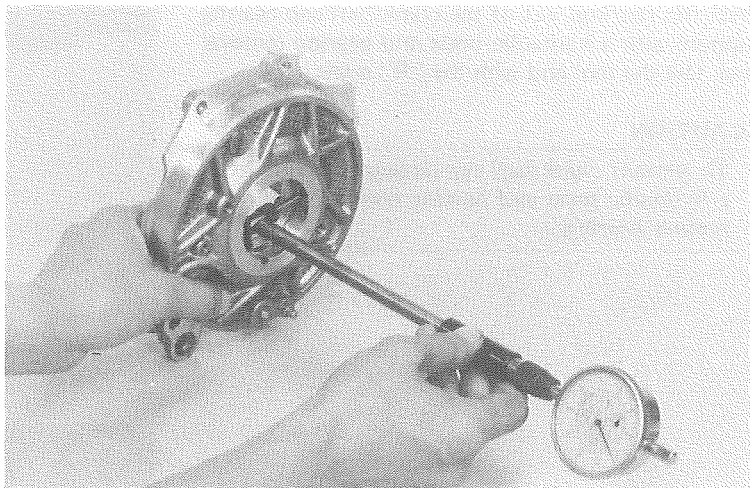
MAIN JOURNAL O.D. CODES

Measure and record the engine case bearing support I.D.



Measure the crankshaft cap bearing support I.D.

Cross reference the bearing support I.D. and crank journal codes to determine the replacement bearing color.





MAIN BEARING SELECTION

	MAIN JOURNAL SIZE CODES	
	A	B
CRANKCASE/CAP BEARING SUPPORT I.D.	BEARING IDENTIFICATION COLOR	
46.030–46.040 mm (1.8122–1.8126 in)	BROWN	BLACK
46.020–46.030 mm (1.8118–1.8122 in)	BLACK	BLUE

JOURNAL BEARING SIZES

COLOR	THICKNESS
BROWN	1.989–1.999 mm (0.0783–0.0787 in)
BLACK	1.994–2.004 mm (0.0785–0.0789 in)
BLUE	1.999–2.009 mm (0.0787–0.0791 in)

INSTALLATION

Apply engine oil or molybdenum disulfide grease to the bearing outer surface.

Align the tab of the bearing insert with the holder cap groove and press the bearings into place. Use the end of the tool with the "P" mark and the attachment.

NOTE

Draw two lines on the outside of the bearings to match the tab to aid in bearing alignment.

CAUTION

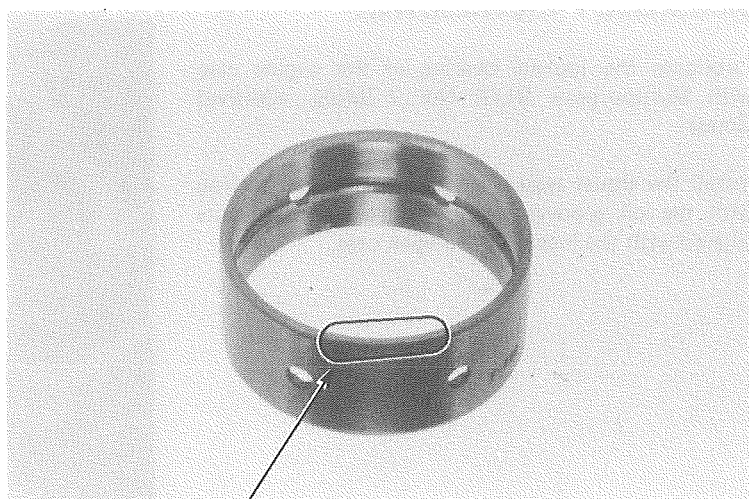
Be careful not to damage the bearings, when press fitting them.

Lubricate the outer surface of the bearing with engine oil or molybdenum disulfide grease.

Align the tab of the bearing insert with the crankcase bearing support groove and press the bearings into place. Use the end of the tool with the "P" mark.

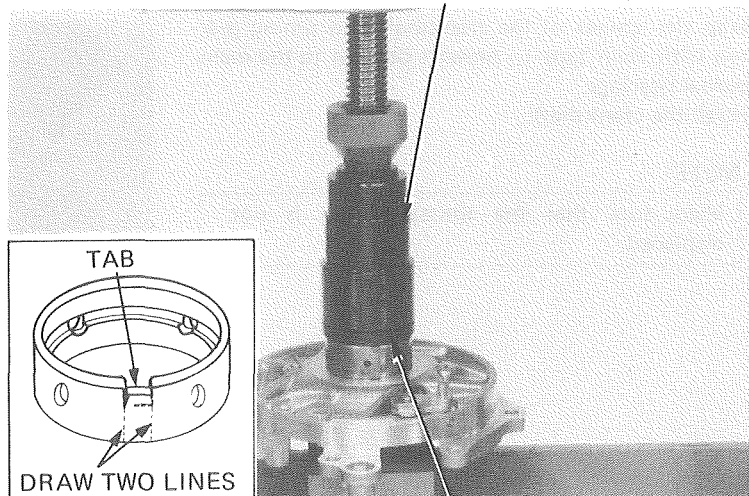
CAUTION

Be careful not to damage the bearings, when press fitting them.

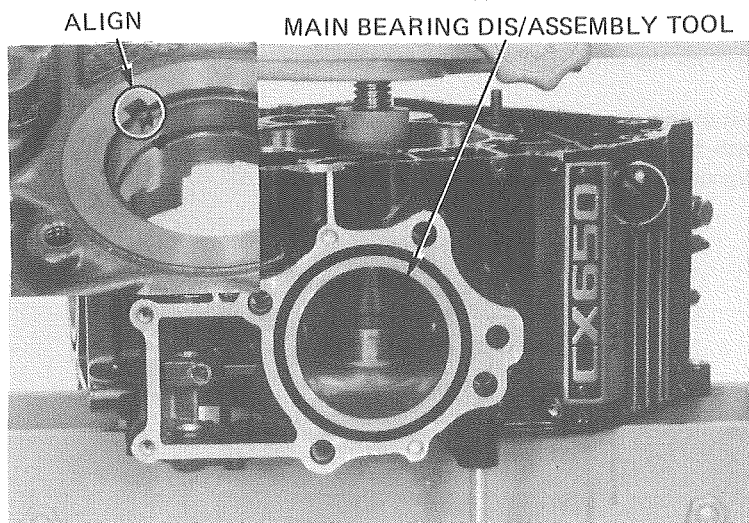


COLOR CODE

MAIN BEARING DIS/ASSEMBLY TOOL
07973-MC70000



ATTACHMENT INCLUDED
WITH 07973-MC70000

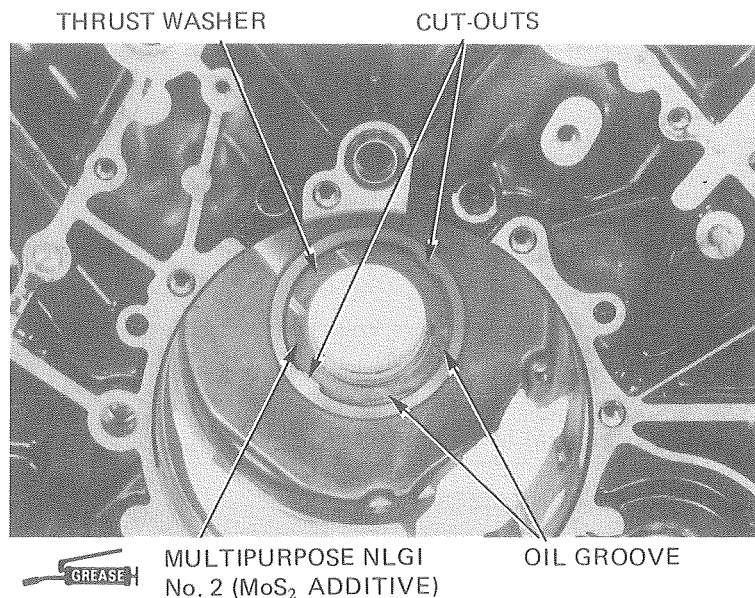




CRANKSHAFT INSTALLATION

Lubricate the journal bearing of the engine case with Multipurpose NLGI No. 2 (MoS₂ additive) Grease.

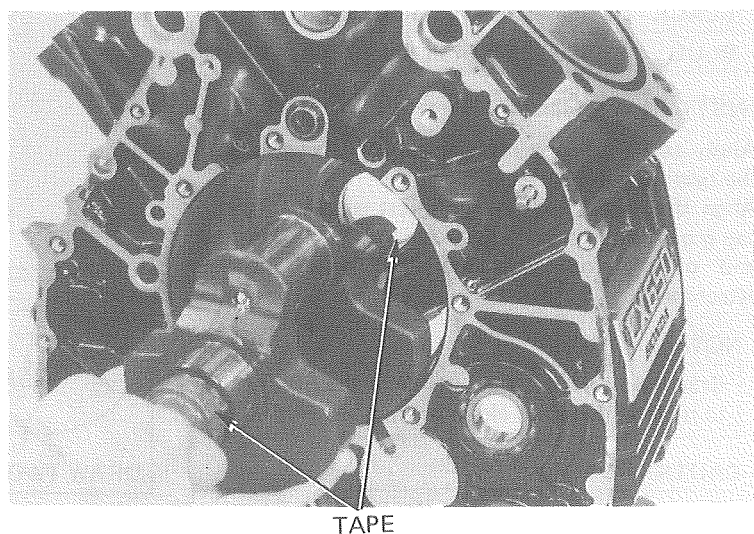
Install the thrust washer on the engine case bearing with the oil grooves facing the rear and cut-outs aligned with the lugs on the engine case.



Wrap the splines of the crankshaft and timing gear area with vinyl tape to prevent damage to the main journal bearings.
Install the crankshaft.

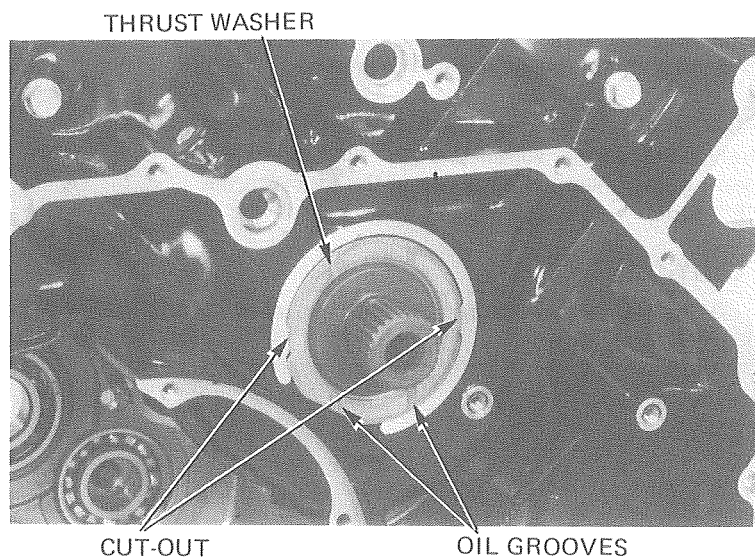
NOTE

Make sure that the thrust washer is not displaced.



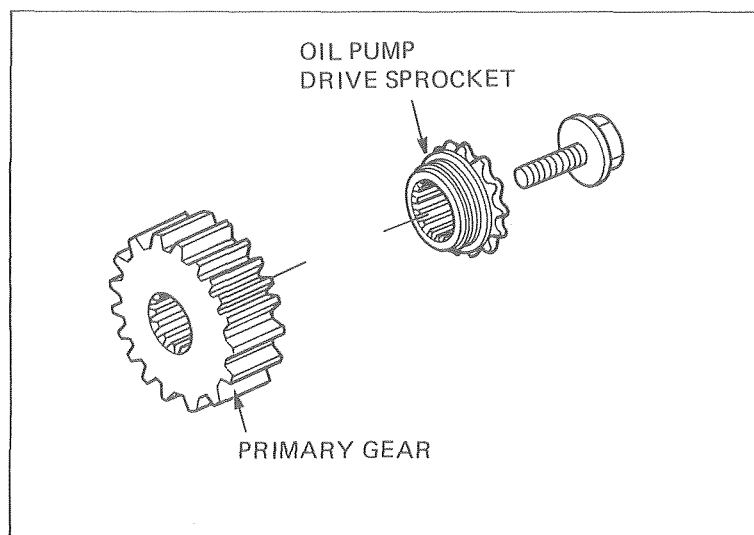
Remove the vinyl tape from the splines.

Install the thrust washer on the engine case bearing with the oil grooves facing the front and cut-outs aligned with the lugs on the engine case.





Install the primary gear onto the crankshaft.
Install the oil pump drive sprocket on the crankshaft.
Install the primary drive gear bolt and tighten it loosely.



Lubricate the main journal bearing of the crank cap with Multipurpose NLGI No. 2 (MoS₂ additive) Grease.

Install the O-ring and collar.

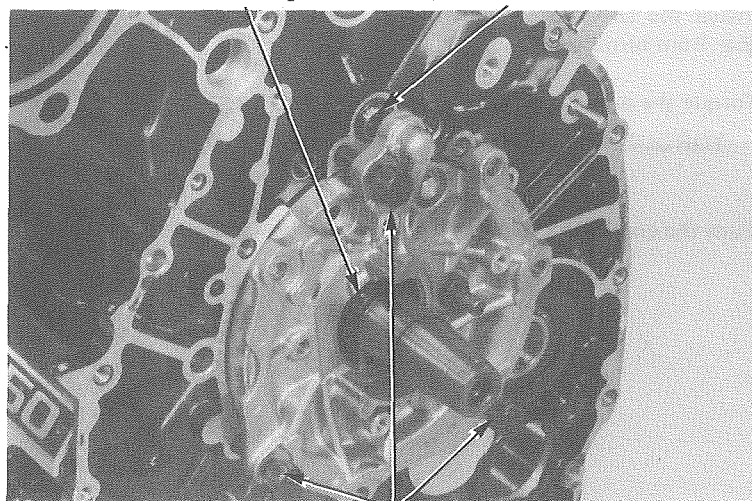
Install the crankshaft holder cap.

Install the guide bolts in the crankshaft holder cap as shown.

NOTE

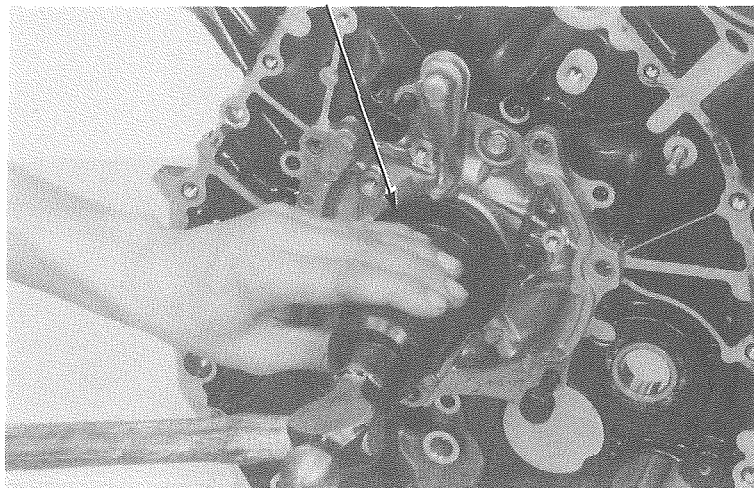
Screw in the guide bolts evenly so that the cap is not tilted.

 MULTIPURPOSE NLGI
No. 2 (MoS₂ ADDITIVE) O-RING AND COLLAR



CRANK CAP DRIVER 07945-4150100

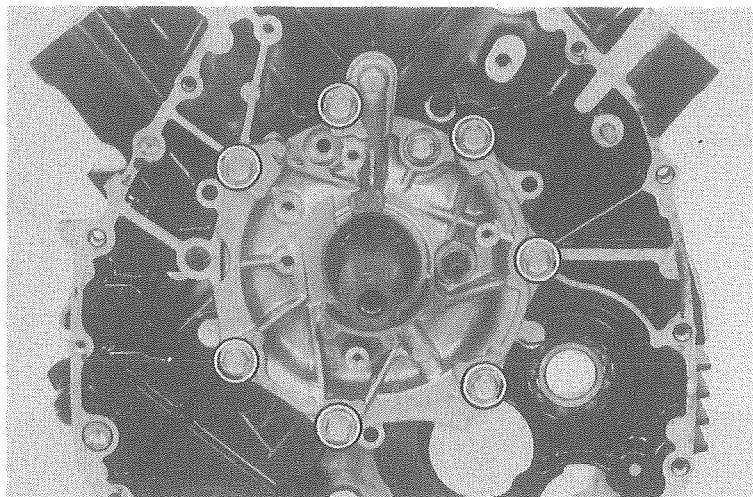
Press the crankshaft holder cap into place with the Crank Cap Driver.





Tighten the crank cap bolts in a crisscross pattern.

TORQUE: 20–24 N·m
(2.0–2.4 kg-m, 14–17 ft-lb)



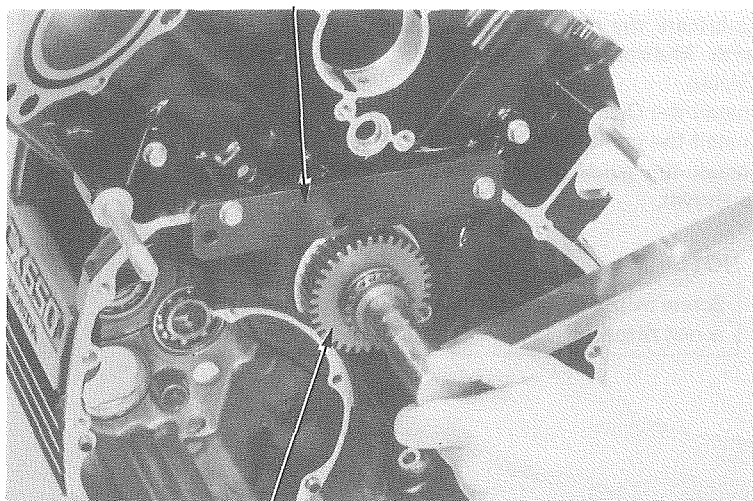
Install the Drive Gear Holder to prevent the drive gear from turning.

Torque the primary drive gear bolt.

TORQUE: 80–95 N·m
(8.0–9.5 kg-m, 58–69 ft-lb)

Turn the crankshaft to make sure it moves freely.

DRIVE GEAR HOLDER 07924–MC70002 or 07924–MC70001
or 07924–MC70000 or 07924–4150000



PRIMARY DRIVE GEAR



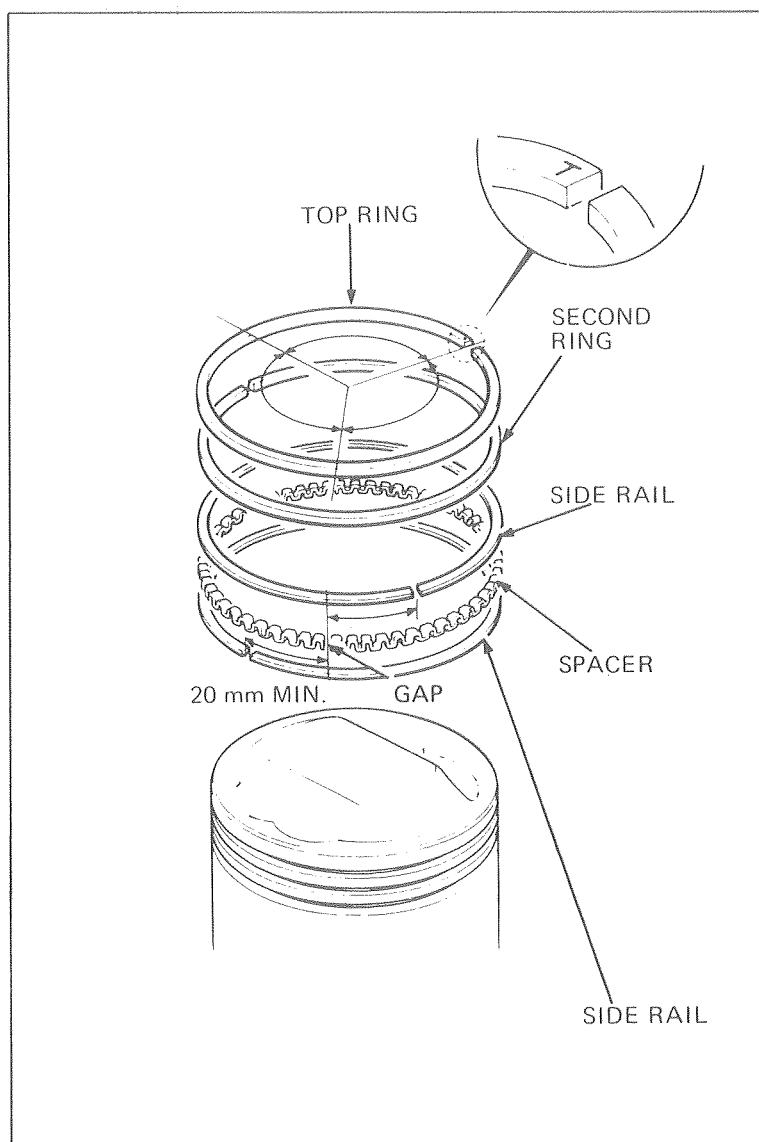
PISTON INSTALLATION

Clean the piston crown, ring lands, and side faces.

Carefully install the piston rings.

NOTE

- Be careful not to damage the pistons and piston rings during assembly.
- All rings should be installed with the markings facing up.
- Space the piston ring end gaps 120 degrees apart, avoiding the piston pin and thrust sides.
- Do not align the gaps in the oil rings.
- After installing the rings, they should move freely in their grooves.

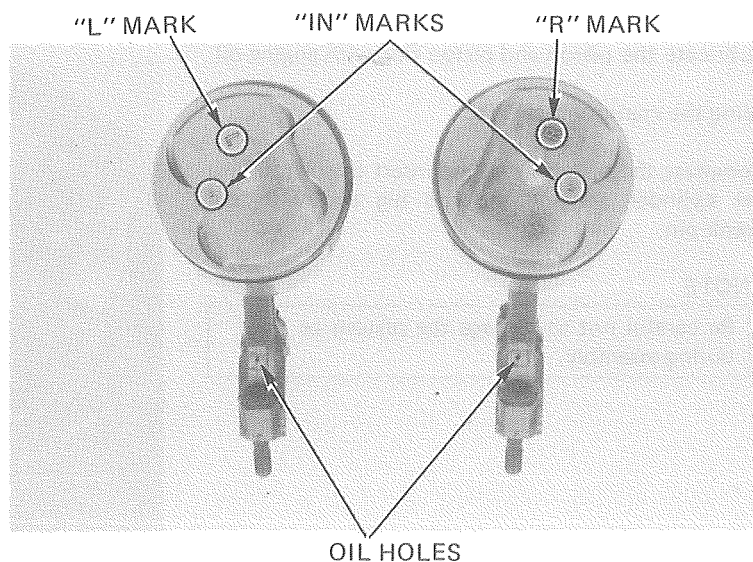


Coat the rod small end with molybdenum disulfide grease.

Assemble the pistons and connecting rods with the piston pins and new piston pin clips.

NOTE

- Do not interchange the pistons, piston pins and connecting rods.
- Make sure that the piston pin clips are properly seated.
- Install the piston with the "L" mark on the left and the piston with the "R" mark on the right.



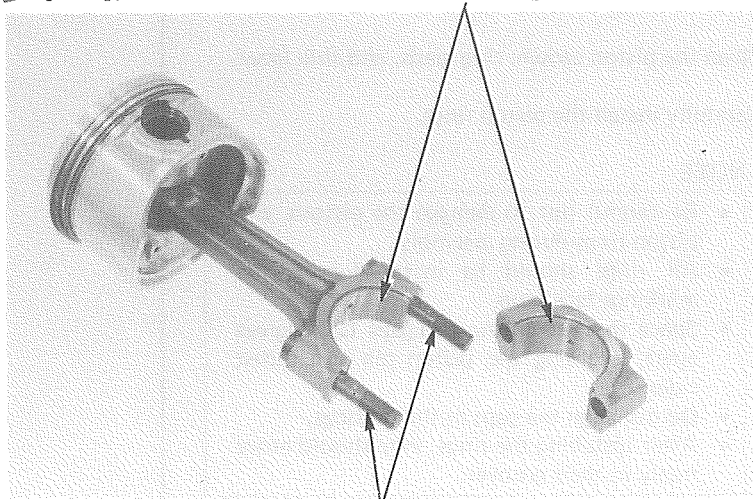



CONNECTING ROD INSTALLATION

Lubricate the rod bearing with Multipurpose NLGI No. 2 (MoS₂ additive) Grease.

Clean the connecting rod cap bolts and apply engine oil to the bolt threads.

 GREASE MULTIPURPOSE NLGI No. 2 (MoS₂ ADDITIVE) GREASE

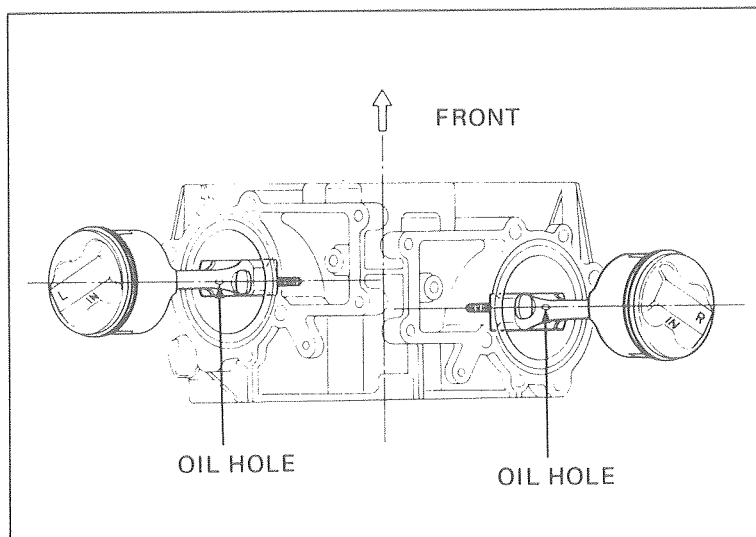


 ENGINE OIL

Install the rod assemblies into the cylinders from the top of the engine case.

NOTE

- The rod assemblies should be installed with the piston "IN" markings to the rear.
- Install the piston with the "R" mark on the right cylinder and piston with the "L" mark on the left cylinder.



Lubricate the piston and piston ring with engine oil.

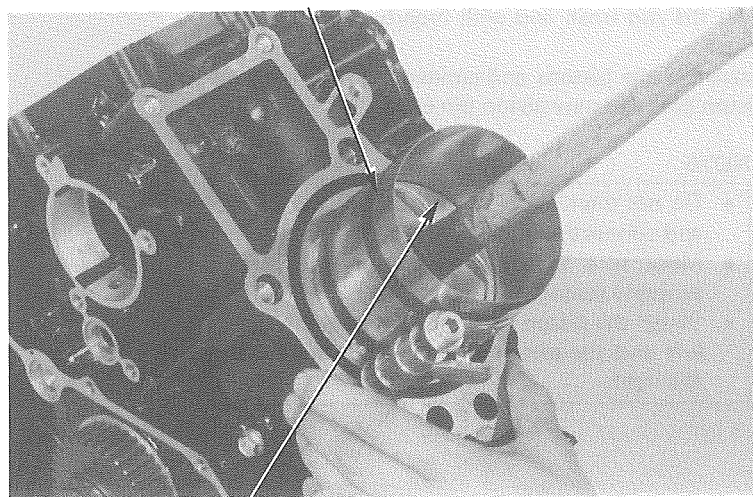
Bring the crankshaft to TDC.


Compress the piston rings and insert the piston into the cylinder aligning the rod big end with the crank pin.

NOTE

- Be careful not to damage the pistons or rings during assembly.

PISTON RING COMPRESSOR OR EQUIVALENT



 ENGINE OIL



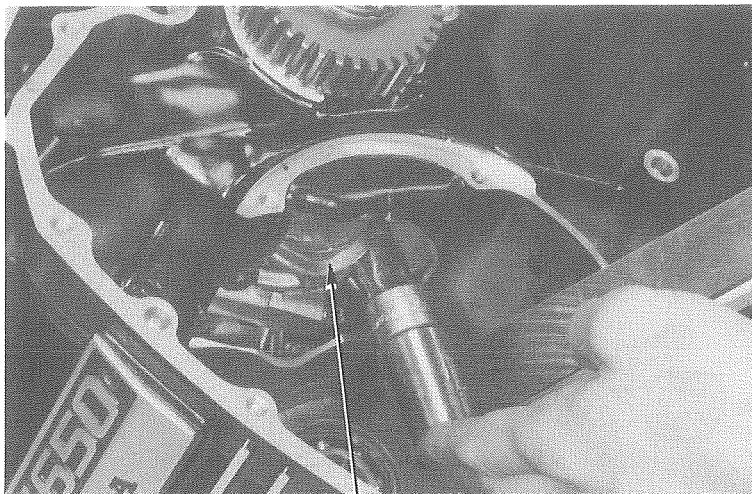
Coat the connecting rod cap nuts with clean engine oil and install the connecting rod caps. Torque the connecting rod cap nuts evenly in 2-3 steps.

TORQUE: 41–45 N·m
(4.1–4.5 kg-m, 30–33 ft-lb)

Turn the crankshaft to make sure the rods rotate freely without binding.

NOTE

Be sure the connecting rod bearing caps are installed in their original locations.



CONNECTING ROD BEARING CAP

CYLINDER COMPRESSION

Warm up the engine to operating temperature. Stop the engine.

Disconnect the spark plug caps and remove the spark plugs.

Turn the engine stop switch OFF.

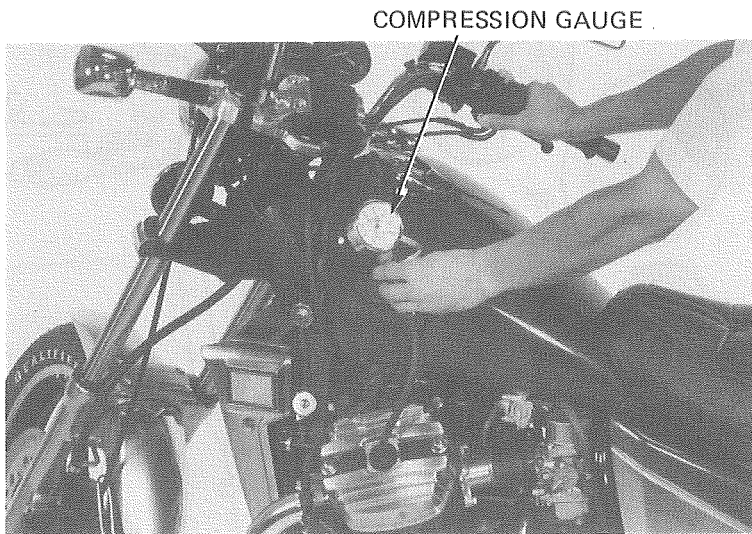
Insert a compression gauge into the spark plug hole. Open the throttle valves fully and crank the engine with the starter motor until the gauge needle stops rising.

NOTE

The maximum reading is usually reached within 4–7 seconds.

COMPRESSION PRESSURE:

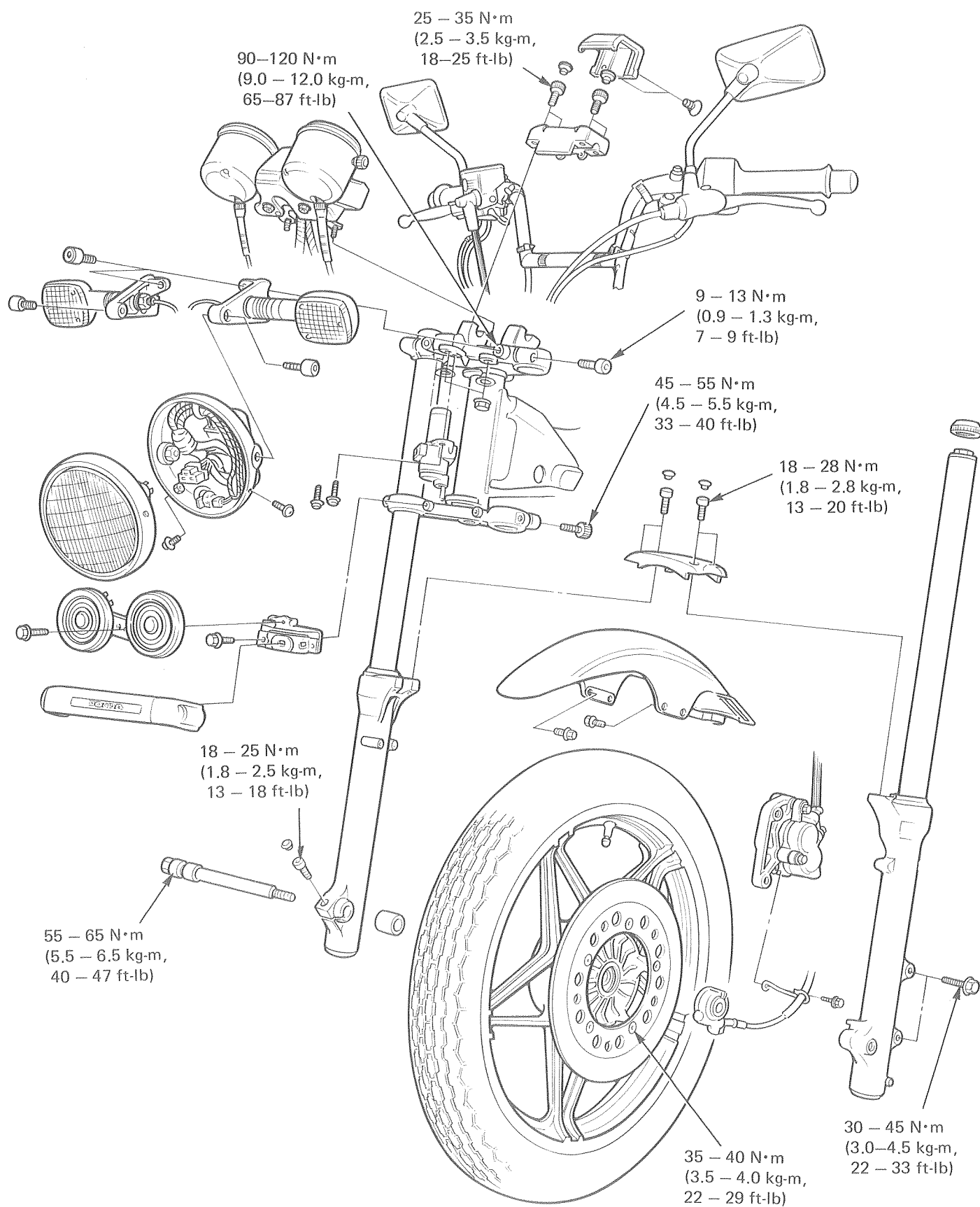
1,000–1,400 kPa
(10.0–14.0 kg/cm², 145–203 psi)





HONDA
CX650C

FRONT WHEEL/SUSPENSION





HONDA
CX650C

13. FRONT WHEEL/SUSPENSION

SERVICE INFORMATION	13-1	HANDLEBAR	13-6
TROUBLESHOOTING	13-2	FRONT WHEEL	13-11
HEADLIGHT	13-3	FRONT FORKS	13-17
INSTRUMENTS	13-5	STEERING STEM	13-25

SERVICE INFORMATION

GENERAL

- A jack or other support is required to support the motorcycle.
- Never ride on the rim.
- Tubeless tire removal, repair and remounting procedures are covered in the Tubeless Tire Manual.

SPECIFICATIONS

Unit : mm (in)

ITEM		STANDARD	SERVICE LIMIT
Axle shaft runout		—	0.20 (0.008)
Front wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Front fork spring free length		498.3 (19.62)	483.4 (19.02)
Front fork tube runout		—	0.20 (0.008)
Front fork oil capacity		480 cc (16.2 oz)	—
Fork air pressure		0-40 kPa (0-0.4 kg/cm ² , 0-6 psi)	—

TORQUE VALUES

Handlebar holder bolt	25-35 N·m (2.5-3.5 kg-m, 18-25 ft-lb)
Front fork upper pinch bolt	9-13 N·m (0.9-1.3 kg-m, 7-9 ft-lb)
Front fork lower pinch bolt	45-55 N·m (4.5-5.5 kg-m, 33-40 ft-lb)
Front axle	55-65 N·m (5.5-6.5 kg-m, 40-47 ft-lb)
Steering stem nut	90-120 N·m (9.0-12.0 kg-m, 65-87 ft-lb)
Front axle pinch bolt	18-25 N·m (1.8-2.5 kg-m, 13-18 ft-lb)
Caliper mount bolt	30-45 N·m (3.0-4.5 kg-m, 22-33 ft-lb)
Fork brace mount bolt	18-28 N·m (1.8-2.8 kg-m, 13-20 ft-lb)
Front fork tube cap	15-30 N·m (1.5-3.0 kg-m, 11-22 ft-lb)
Front fork socket bolt	15-25 N·m (1.5-2.5 kg-m, 11-18 ft-lb)

TOOLS

Special

Snap ring pliers	07914-3230001	} or equivalent commercially available in U.S.A.
Hex wrench, 6 mm	07917-3230000	
Fork seal driver	07947-4630100	
Ball race remover	07946-3710400	
Steering stem driver	07946-MB0000 or 07946-MB00200 and 07946-3710601	

Common

Pin spanner	07702-0010000	or steering stem socket 07916-3710100
Socket wrench, 30 x 32 mm	07716-0020400	
Extension	07716-0020500	
Attachment, 42 x 47 mm	07746-0010300	
Pilot, 15 mm	07746-0040300	
Driver	07749-0010000	
Bearing remover expander	07746-0050100	or equivalent commercially available in U.S.A.
Bearing remover collet, 15 mm	07746-0050400	or equivalent commercially available in U.S.A.



TROUBLESHOOTING

Hard Steering

- Steering stem nut too tight.
- Faulty steering stem bearings.
- Damaged steering stem ball race and/or cone race.
- Insufficient tire pressure.

Steers to One Side or Does Not Track Straight

- Bent forks.
- Bent frame.
- Forks installed incorrectly.
- Axle installed incorrectly.
- Bent swing arm.
- Wheel installed incorrectly.

Front Wheel Wobbling or Vibration

- Loose axle (front or rear).
- Loose wheel bearings.
- Loose steering stem nut or bearings.
- Loose lock nut on swing arm pivot bolt.
- Unbalanced tire and wheel.
- Bent wheel.
- Excessive lateral runout in wheel.
- Bent forks.
- Bent swing arm.
- Bent or cracked frame.
- Loose engine mounts.

Soft Suspension

- Weak fork spring.
- Insufficient fluid in front forks.
- Insufficient fork air pressure.

Hard Suspension

- Incorrect fluid weight in front forks.
- Clogged fork hydraulic passage.
- Bent fork tubes.
- Slider binding.
- Too much air pressure.

Front Suspension Noise

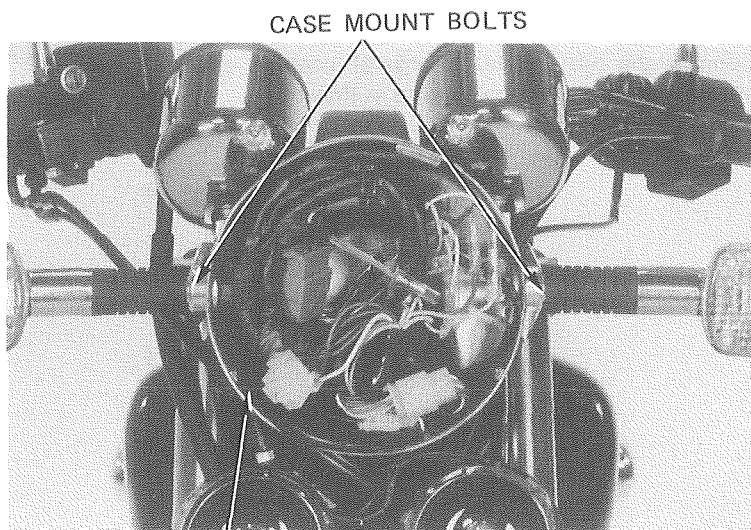
- Slider binding.
- Insufficient fluid in forks.
- Loose front fork fasteners.
- Steering stem nut loose.
- Broken parts in forks.



HEADLIGHT

CASE REMOVAL

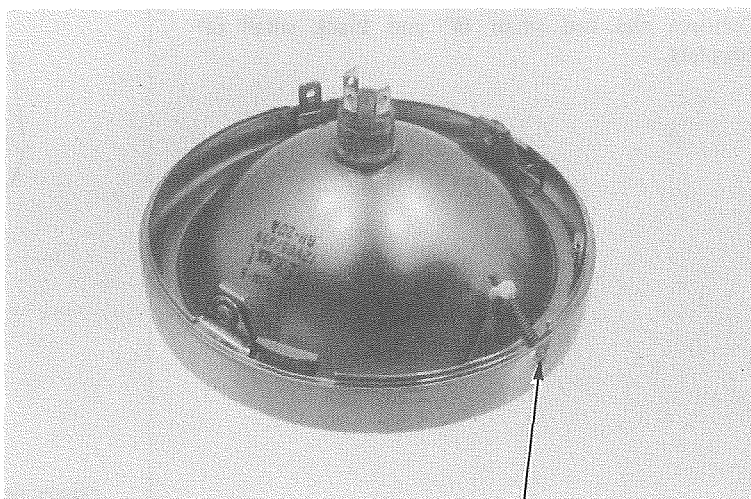
Remove the headlight.
Disconnect all wires at their couplers and connectors.
Unscrew the headlight case mounts and remove the case.



HEADLIGHT CASE

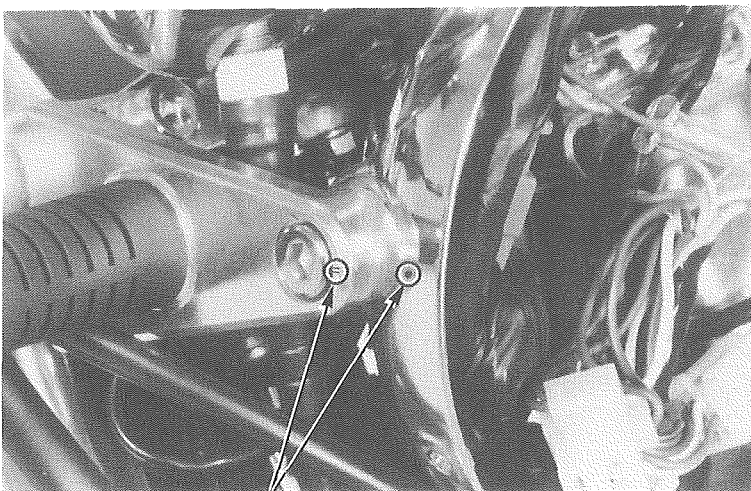
DISASSEMBLY/ASSEMBLY

Remove the retaining screws and horizontal adjusting screw from the rim.
Remove the two headlight unit retaining screws, and headlight unit.
Assembly is the reverse of disassembly.



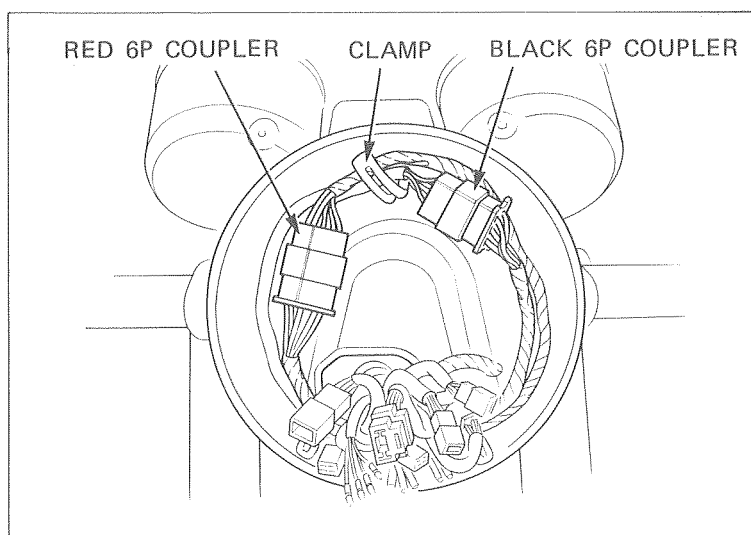
CASE INSTALLATION

Align the punch marks on the headlight case and bracket.

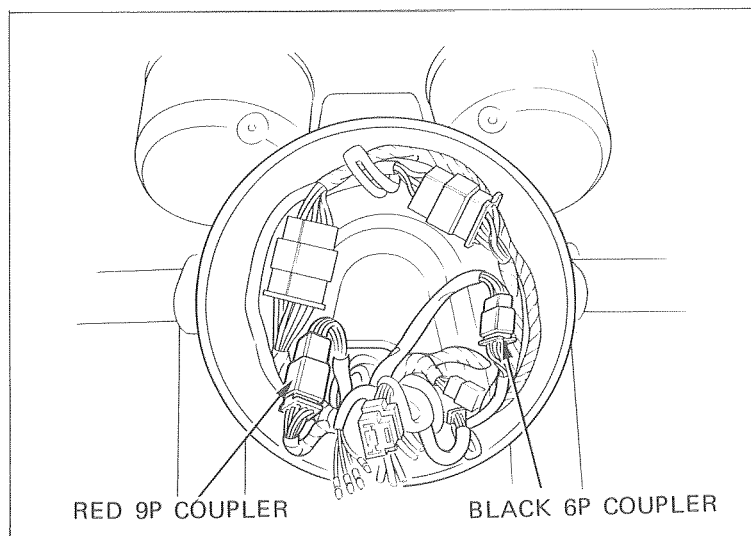




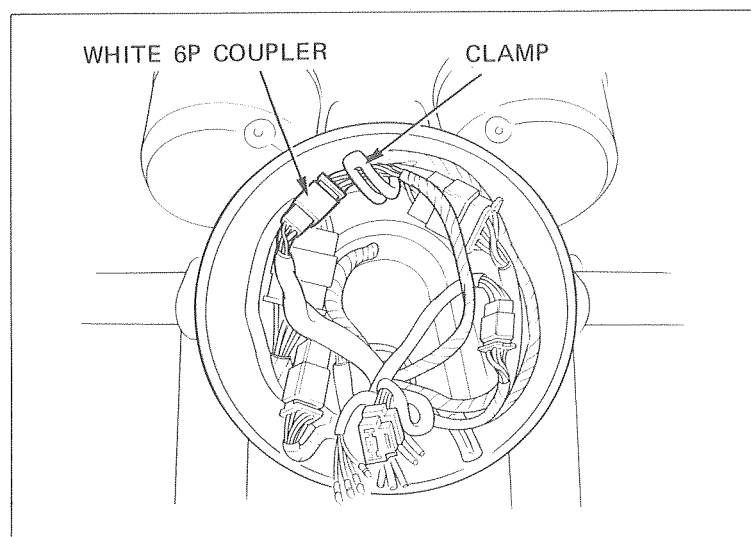
Connect the red and black large 6P couplers and secure them with the upper clamp as shown.



Connect the red small 9P and black small 6P couplers.



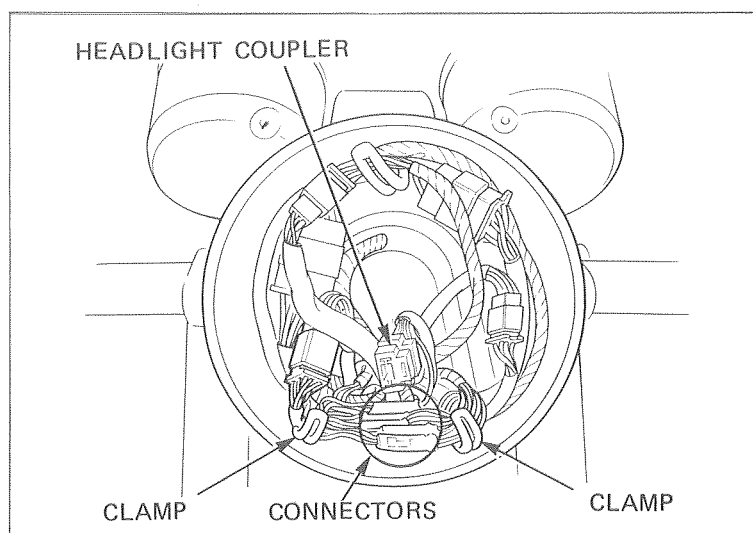
Connect the white small 6P coupler, secure it with the upper clamp and position its harness to the interior of the headlight case.





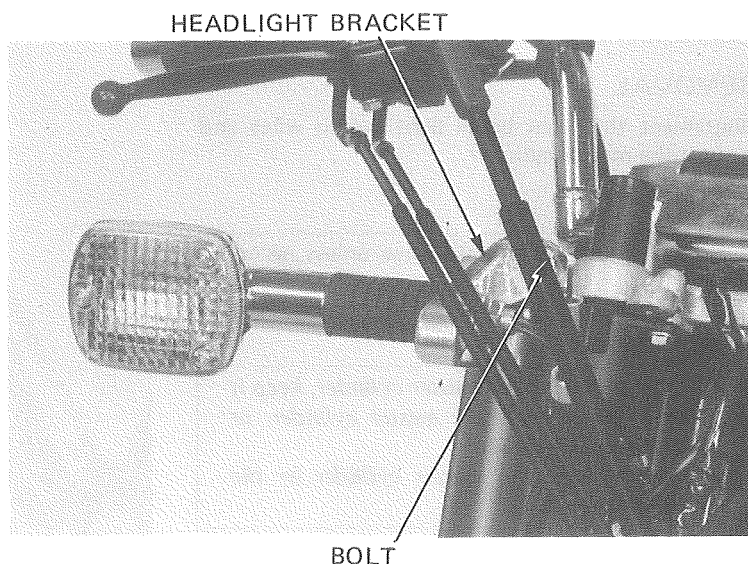
Connect all connectors and clamp their wires with the lower two clamps as shown.
Position all wires around the inside of the headlight case to make space for the headlight unit.

Connect the headlight coupler.
Align the headlight thread holes with the headlight case holes.
Secure the headlight with two screws.
Adjust the headlight aim after assembly (Page 3-13).



BRACKET REMOVAL/INSTALLATION

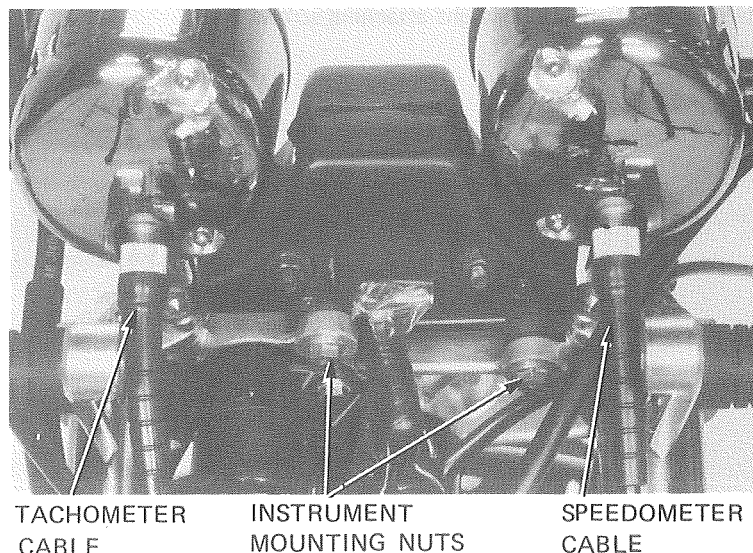
Remove the instruments (page 13-5).
Remove the headlight bracket mount bolts and bracket/turn signal assemblies.
Install the headlight bracket.



INSTRUMENTS

REMOVAL

Remove the headlight case.
Disconnect the instrument wire connectors and coupler.
Remove the speedometer and tachometer cables from the instruments.
Remove the instrument mounting nuts and the instruments.





DISASSEMBLY

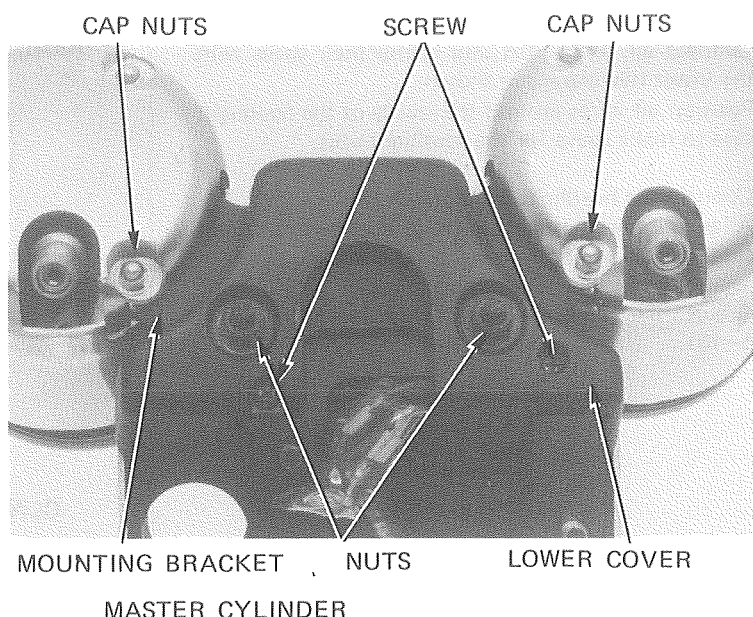
Remove the instrument lower cover attaching screws and lower cover.

Remove the meter mounting nuts and meter from the mounting bracket.

Remove the cap nuts and meter cover.

Remove the screw and indicator panel.

Install the removed parts in the reverse order of disassembly.



HANDLEBAR

REMOVAL

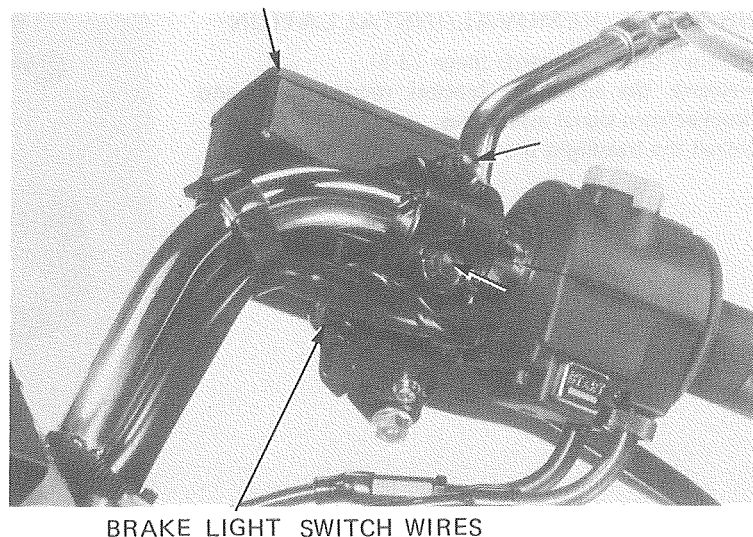
Disconnect the front brake light switch wires and remove the master cylinder.

NOTE

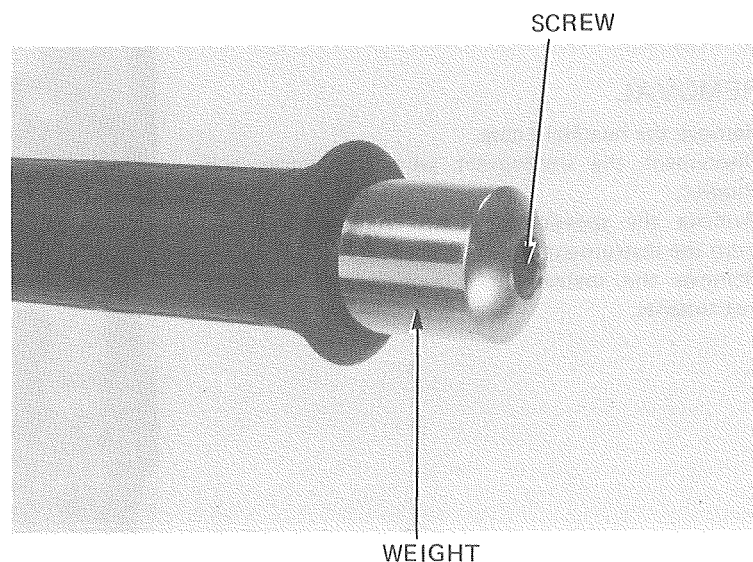
Do not loosen the brake hose unless necessary.

WARNING

- After removing the master cylinder, keep it level. Do not tilt the master cylinder, or turn it upside down.
- Do not hang the master cylinder by the brake hose.

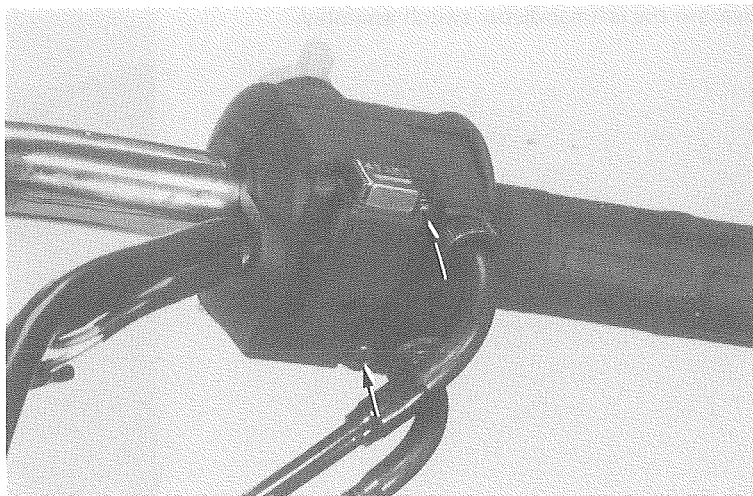


Remove the handlebar weight attaching screws and weights.

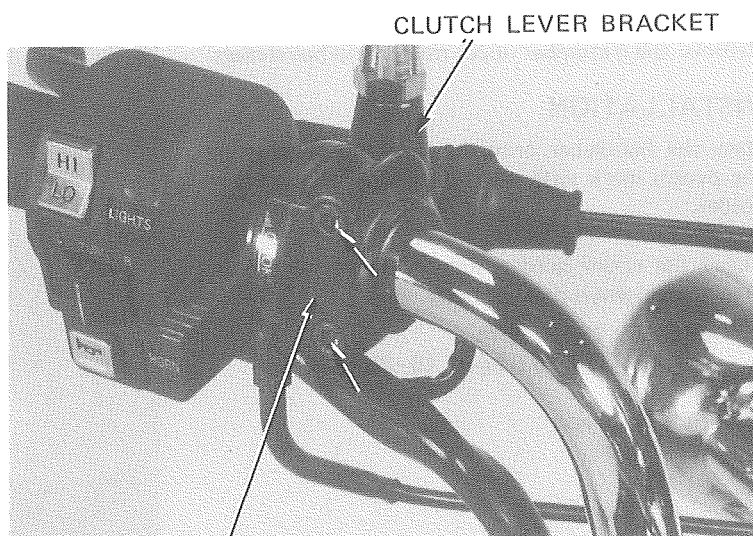




Remove the right handlebar switch assembly.



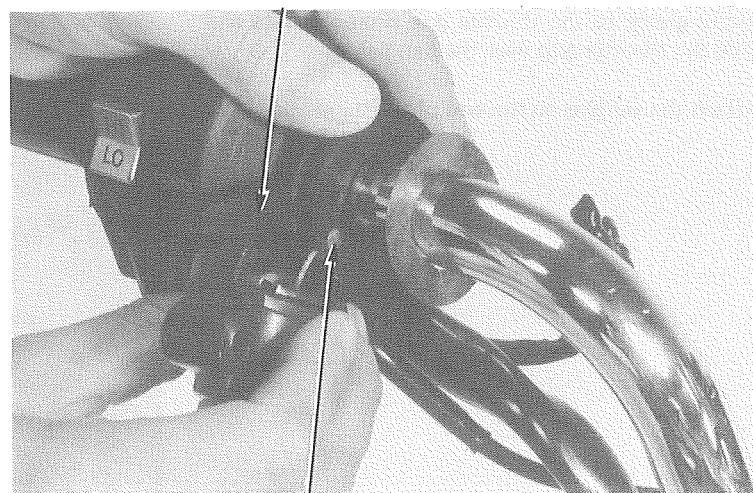
Disconnect the clutch switch wires.
Remove the clutch lever bracket holder and bracket.



BRACKET HOLDER

CHOKE LEVER

Disconnect the choke cable from the choke lever.

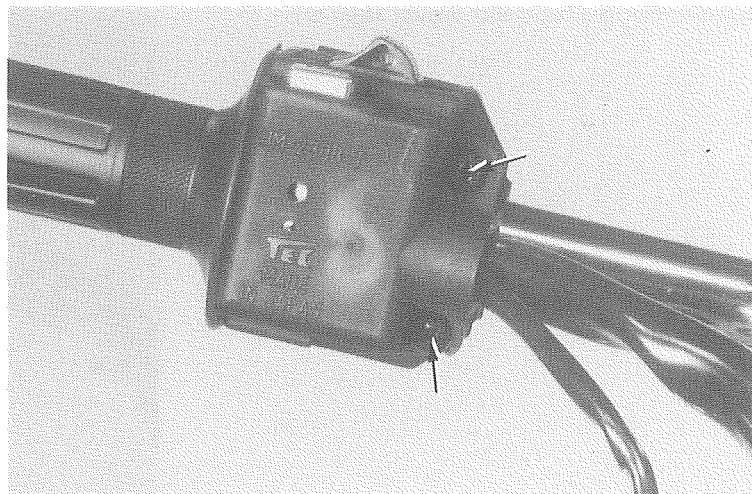


CHOKE CABLE



FRONT WHEEL/SUSPENSION

Remove the left handlebar switch assembly.



Remove the handlebar upper holder and handlebars.

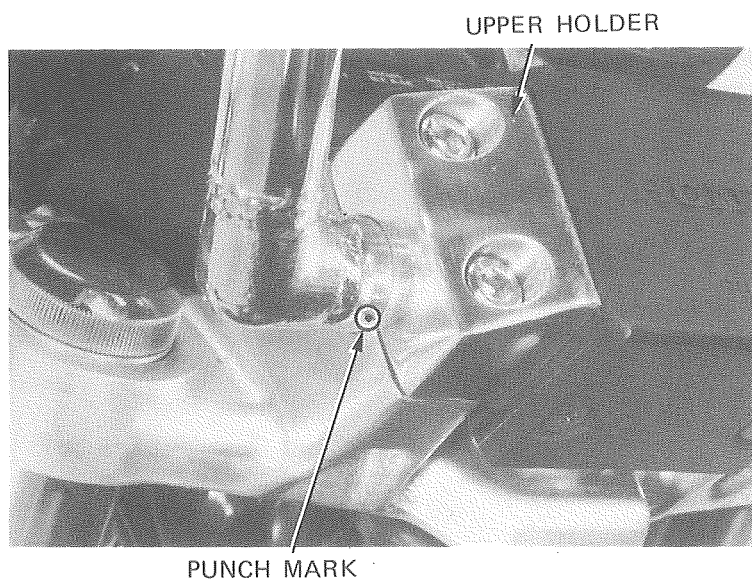
INSTALLATION

Place the handlebar onto the lower holder aligning the punch mark with the upper face of the lower holder.

Install the upper holder, tighten the forward bolts first, then tighten the rear bolts.

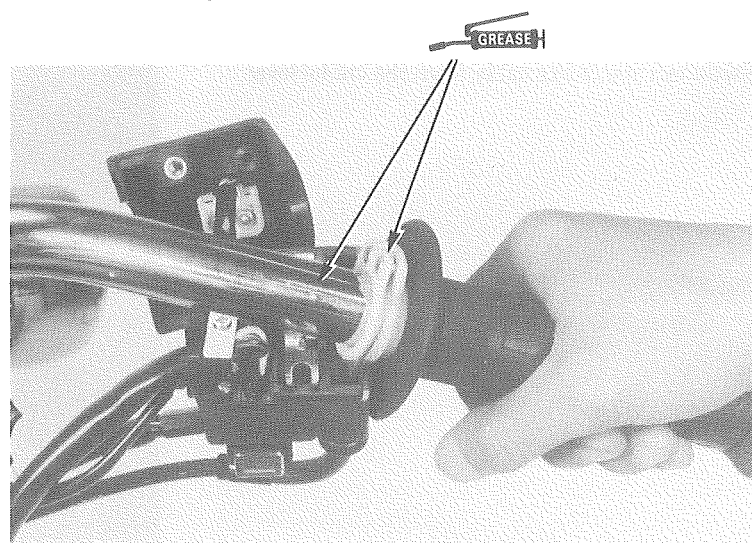
TORQUE: 25–35 N·m
(2.5–3.5 kg-m, 18–25 ft-lb)

Install the bolt caps.



Apply grease to the throttle grip sliding surface and slide the throttle grip over the handlebar.

Attach the weights to the end of the handlebar.

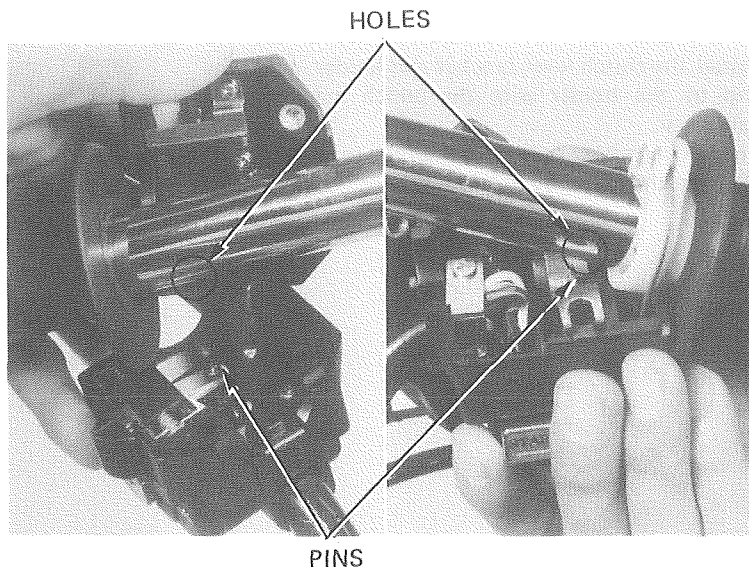




Insert the pin on the bottom half of each switch assembly into the hole in the handlebar. Tighten the forward screws first, then tighten the rear screws.

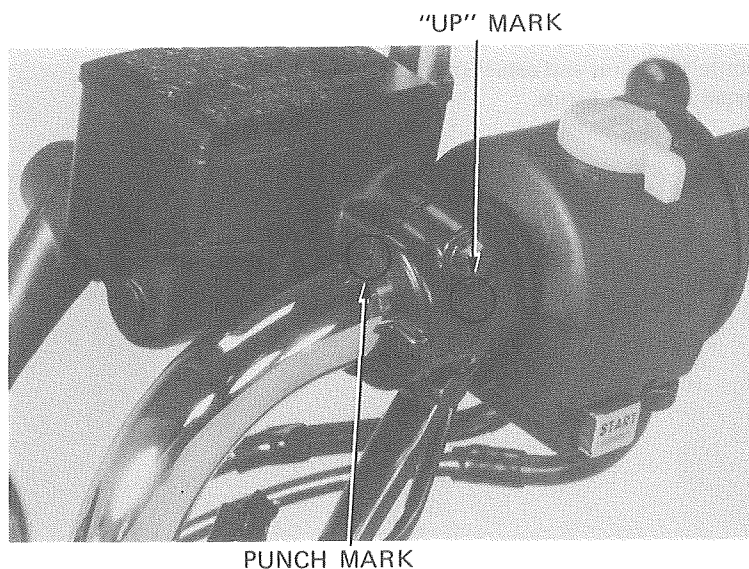
CAUTION

Make sure the wire harness is not pinched between the switch assembly and the handlebar.

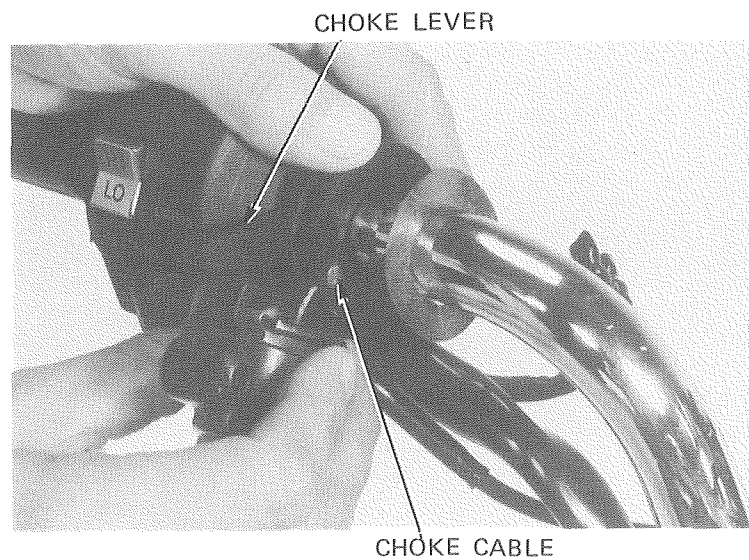


Install the front brake master cylinder with the "UP" mark on the holder facing up. Align the end of the holder with the handlebar punch mark. Tighten the upper bolt first, then the lower bolt.

Connect the brake light switch wires.



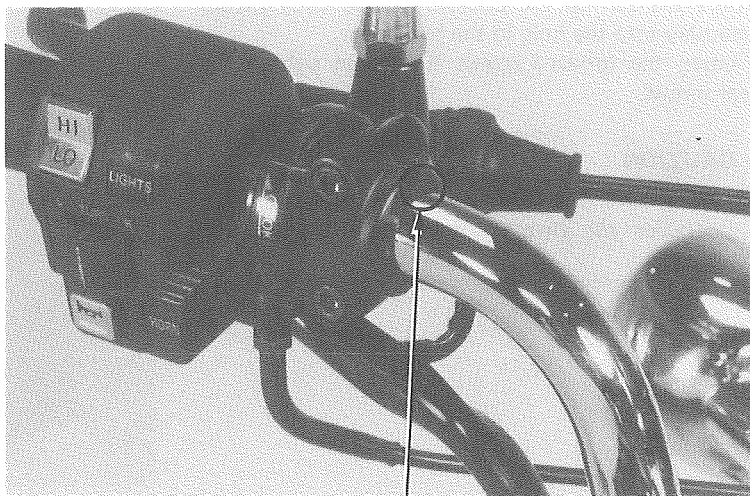
Connect the choke cable to the choke lever.





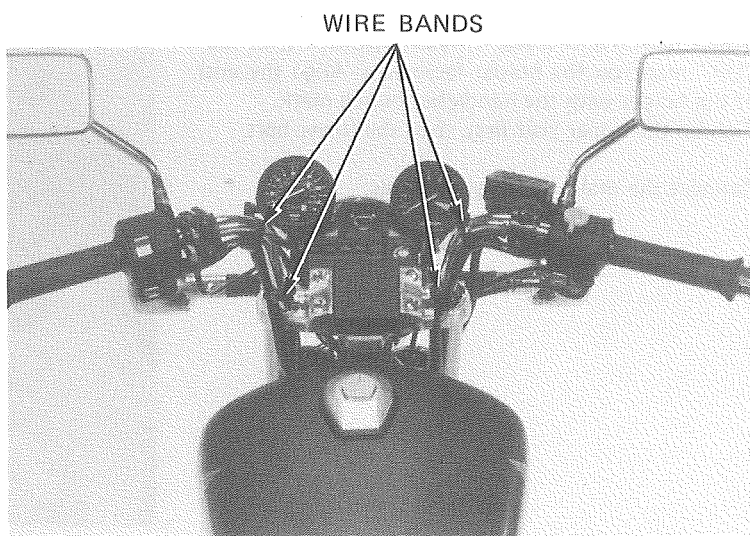
Install the clutch lever bracket and holder. Align the end of the holder with the punch mark on the handlebar.

Tighten the upper bolt first, then the lower bolt.
Connect the clutch switch wires.



PUNCH MARK

Route the wires and cables properly (page 1—9) and install the wire bands.



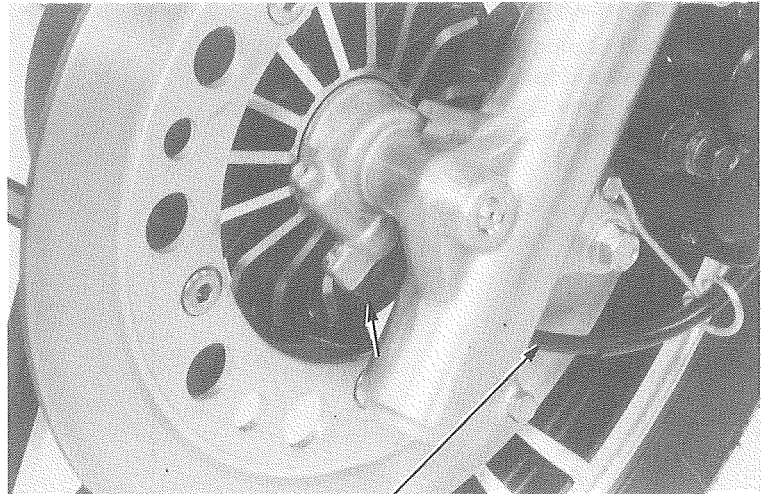
WIRE BANDS



FRONT WHEEL

REMOVAL

Place the motorcycle on its center stand.
Place a jack under the engine and raise the front wheel off the ground.
Remove the speedometer cable set screw and the speedometer cable.



SPEEDOMETER CABLE

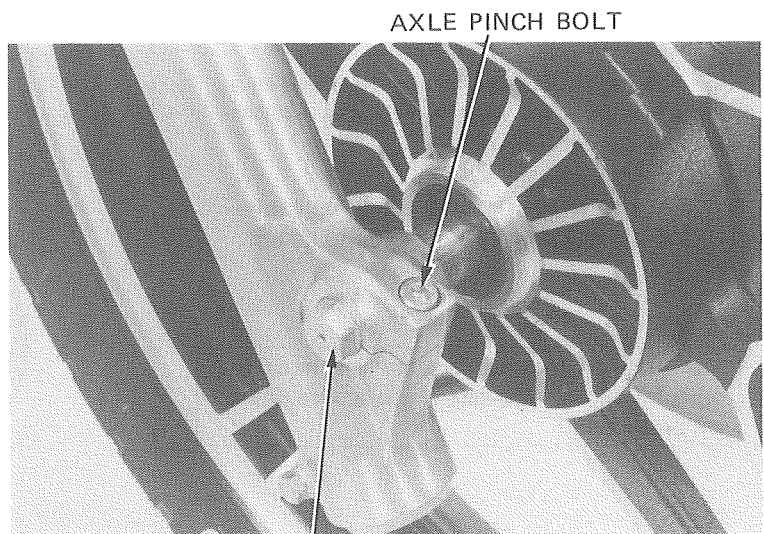
Loosen the axle pinch bolt.

Loosen and remove the front axle.

Remove the front wheel.

NOTE

Do not operate the front brake lever after removing the wheel. To do so will make it difficult to refit the brake disc between the brake pads.



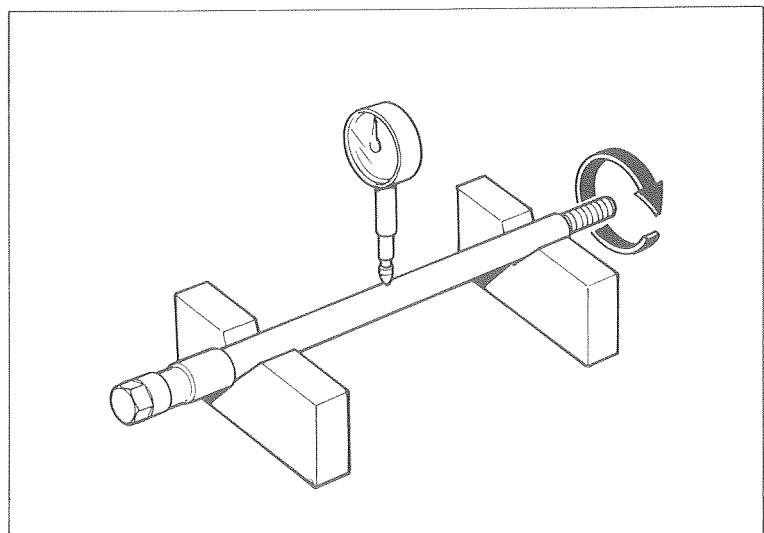
FRONT AXLE

INSPECTION

• AXLE

Set the axle in V blocks and measure the runout. The actual runout is 1/2 of the total indicator reading.

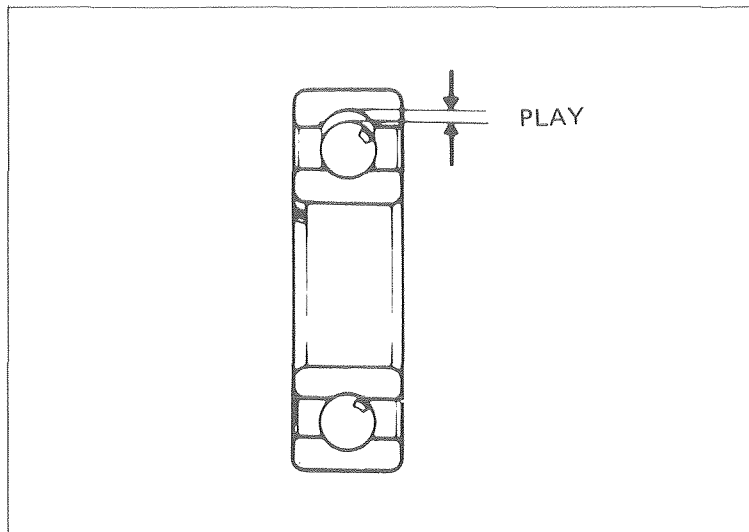
SERVICE LIMIT: 0.2 mm (0.01 in)





- **WHEEL BEARING**

Check wheel bearing play by placing the wheel in a truing stand and spinning the wheel by hand. Replace the bearings with new ones if they are noisy or have excessive play.



- **WHEEL**

Check the rim runout by placing the wheel in a truing stand. Spin the wheel slowly and read the runout using a dial indicator.

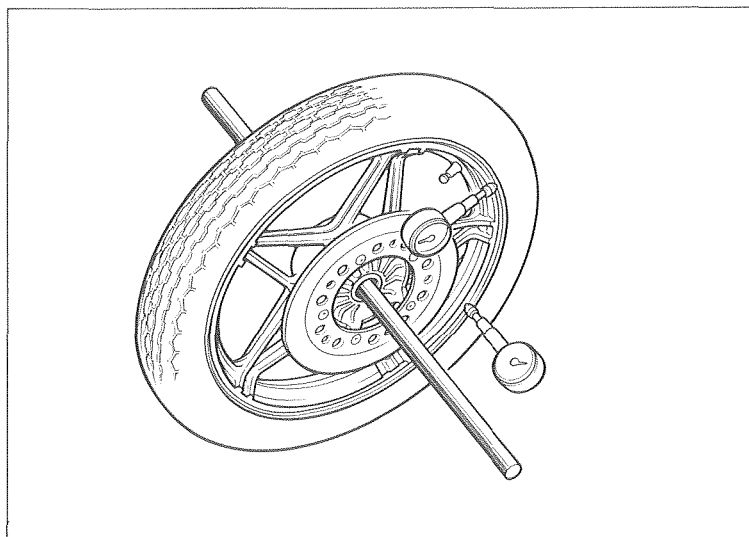
SERVICE LIMITS:

RADIAL RUNOUT: 2.0 mm (0.08 in)

AXIAL RUNOUT: 2.0 mm (0.08 in)

NOTE

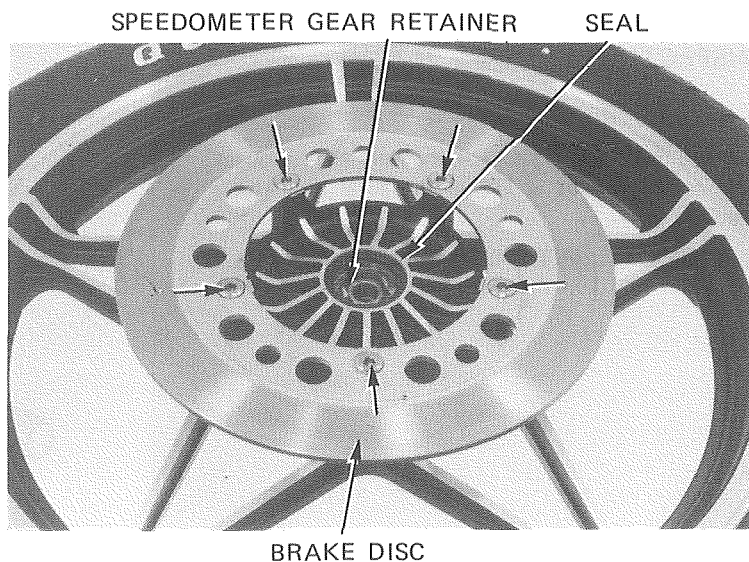
The wheel cannot be repaired and must be replaced with a new one if the service limits are exceeded.



DISASSEMBLY

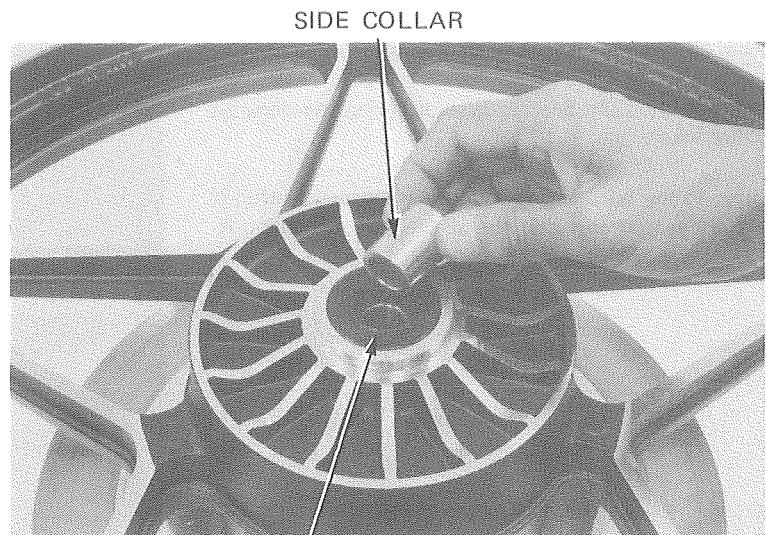
Remove the brake disc mounting bolts, and disc.

Remove the seal and speedometer gear retainer.





Remove the side collar and right seal.



SEAL
WHEEL BEARING REMOVER EXPANDER
07746-0050100 OR EQUIVALENT

Remove the wheel bearings and the distance collar from the hub.

NOTE

If the bearings are removed, they should be replaced with new ones.

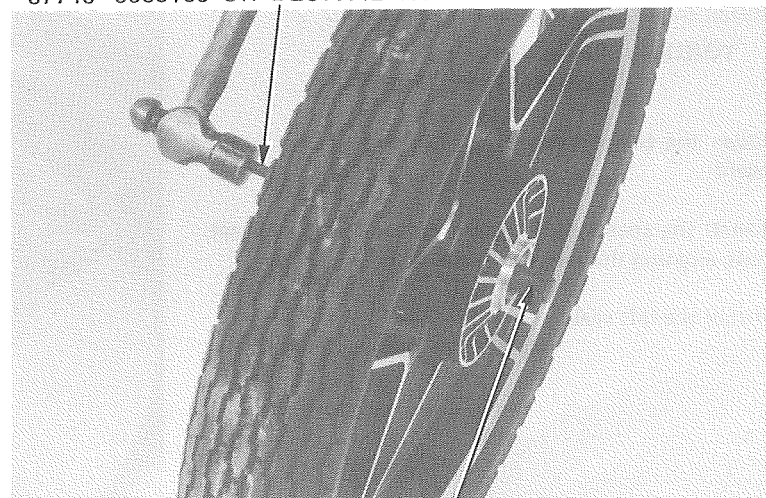
ASSEMBLY

WARNING

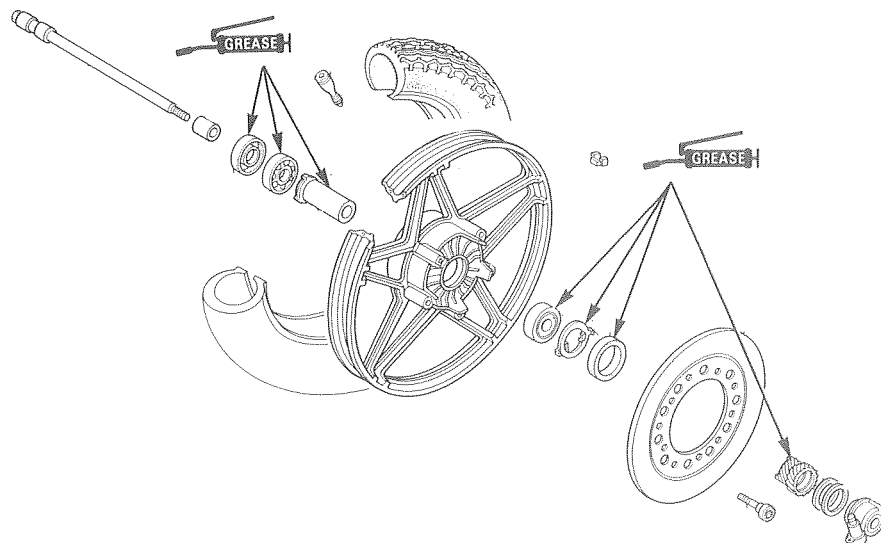
Do not get grease on the brake disc or stopping power will be reduced.

NOTE

- The cast wheel has no rim band.
- The front wheel uses a tubeless tire. For tubeless tire repair, refer to the Honda Tubeless Tire Manual.



WHEEL BEARING REMOVER COLLET,
15 mm 07746-0050400 OR EQUIVALENT



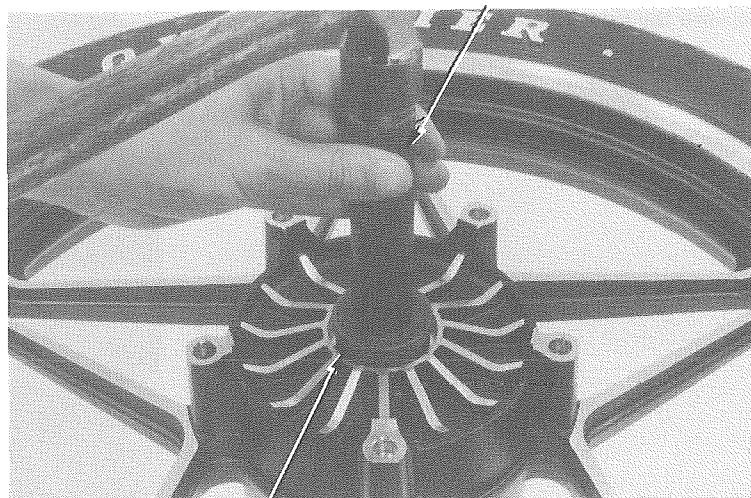


Pack all bearing cavities with grease.

Drive in the right bearing first and press the distance collar into place.

Drive in the left bearing squarely making sure that it is fully seated and that the sealed side is facing out.

DRIVER 07749-0010000



ATTACHMENT, 42 x 47 mm 07746-0010300
PILOT, 15 mm 07746-0040300

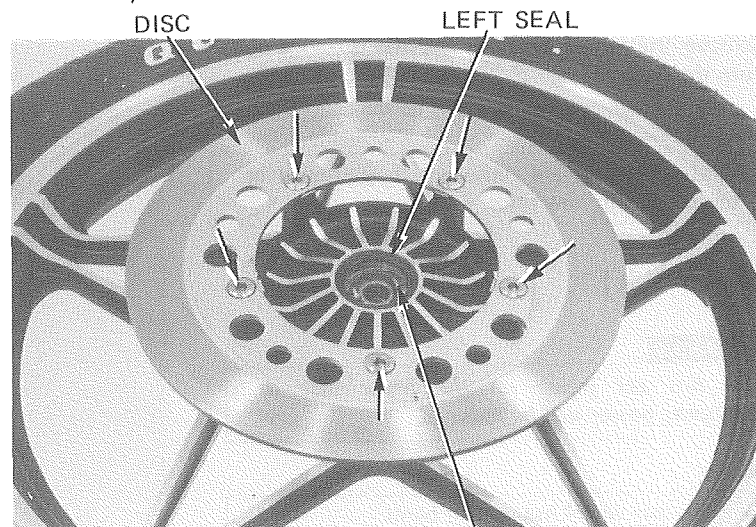
Install the brake disc onto the wheel hub.

TORQUE: 35—40 N·m
(3.5—4.0 kg·m, 22—29 ft-lb)

Clean the brake disc with a high quality degreasing agent.

Install the speedometer gear retainer into the wheel hub, aligning the tangs with the slots.

Install the left seal.

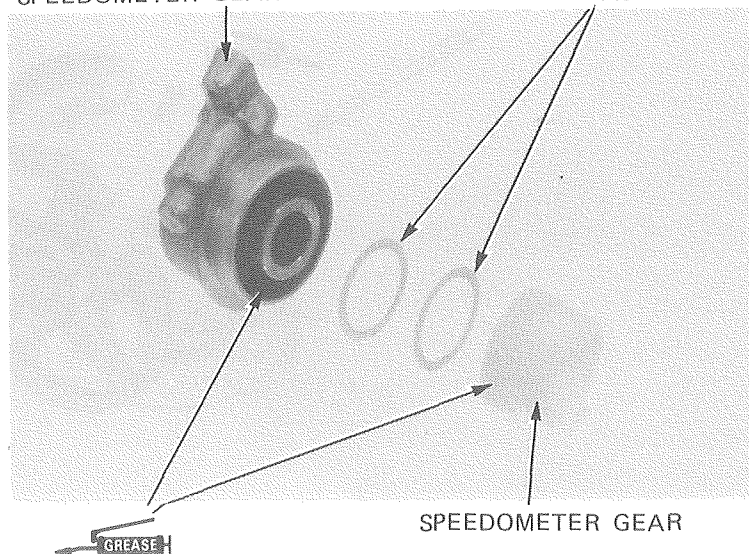


SPEEDOMETER GEAR RETAINER

Disassemble the speedometer gear box and lubricate the gears and sliding surfaces.

SPEEDOMETER GEAR BOX

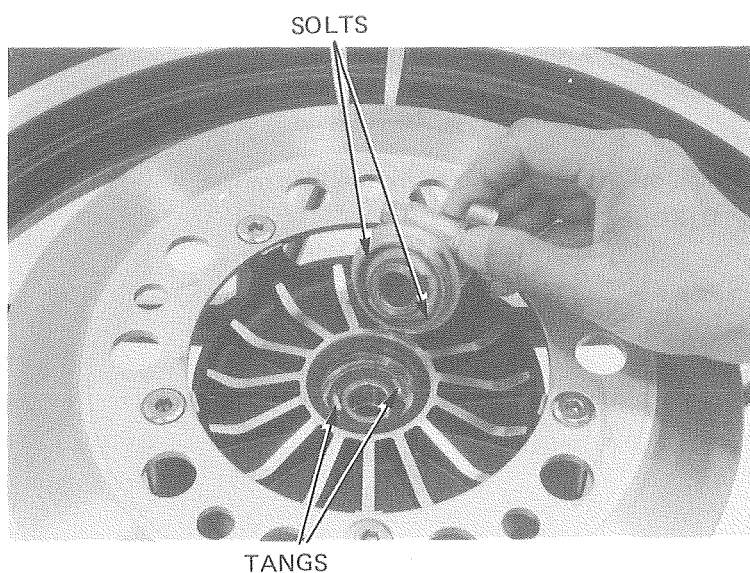
WASHERS



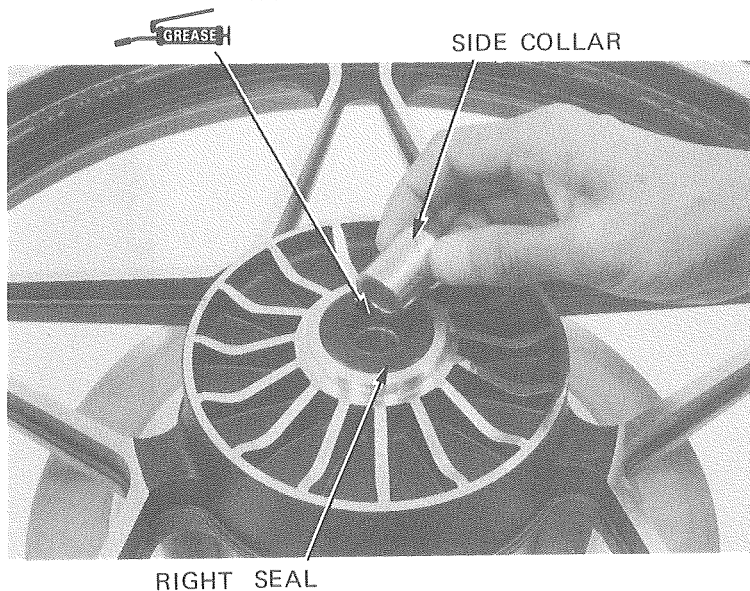
SPEEDOMETER GEAR



Install the speedometer gear box into the wheel hub, aligning the tangs with the slots.



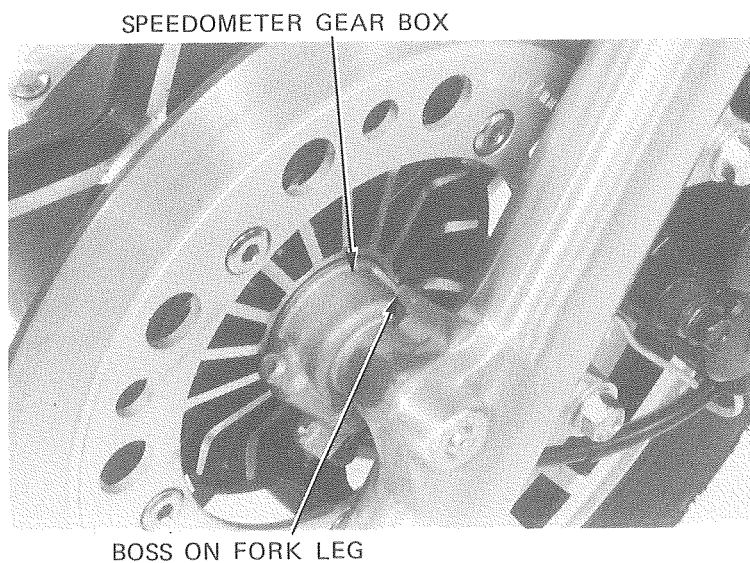
Install the right seal and side collar.



INSTALLATION

Fit the calipers over the disc, taking care not to damage the brake pads.

Align the speedometer gear box with the boss on the left fork leg as shown.



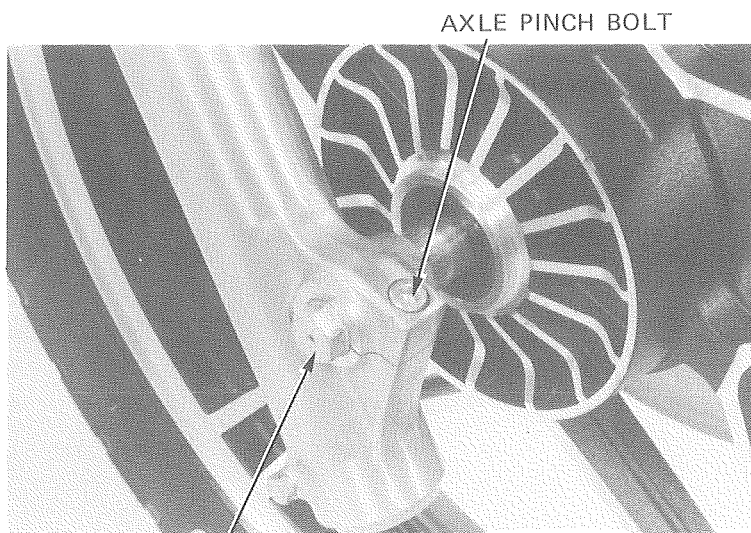


Tighten the axle to the specified torque.

TORQUE: 55–65 N·m
(5.5–6.5 kg-m, 40–47 ft-lb)

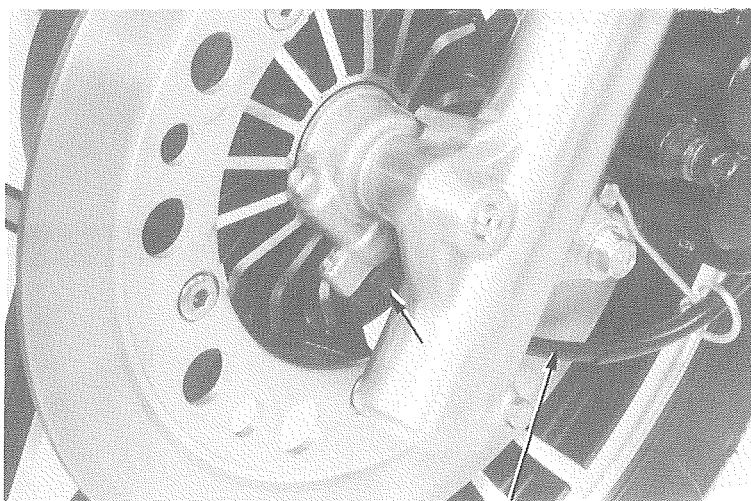
Tighten the axle pinch bolt to the specified torque.

TORQUE: 18–25 N·m
(1.8–2.5 kg-m, 13–18 ft-lb)



FRONT AXLE

Install the speedometer cable into the speedometer gear box and tighten the set screw.



SPEEDOMETER CABLE

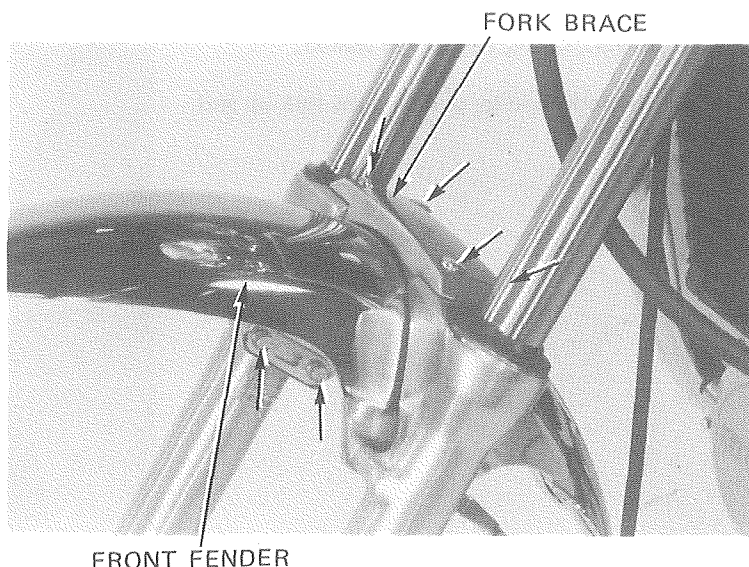


FRONT FORKS

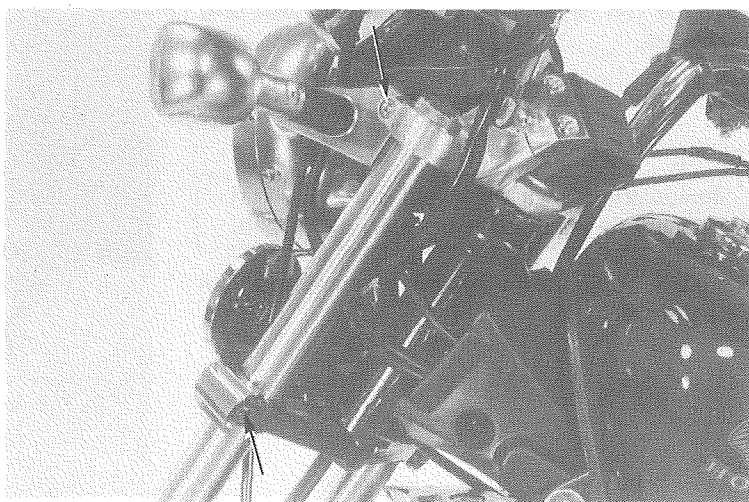
REMOVAL

Remove the following parts:

- front wheel.
- brake caliper.
- front fender.
- fork brace.



Loosen the fork upper and lower pinch bolts and remove the front fork tube.



DISASSEMBLY

Depress the air valve and release front fork air pressure.

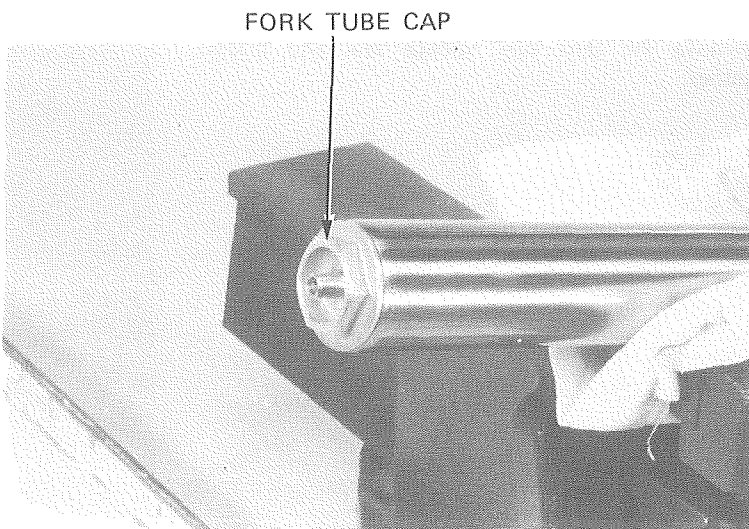
CAUTION

- If air pressure is not released before disassembling, the fork tube cap may become a projectile.
- The cap is also under spring pressure. Use care when removing; wear eye and face protection.

Hold the fork tube in a vise with soft jaws or a shop towel and remove the fork tube cap.

CAUTION

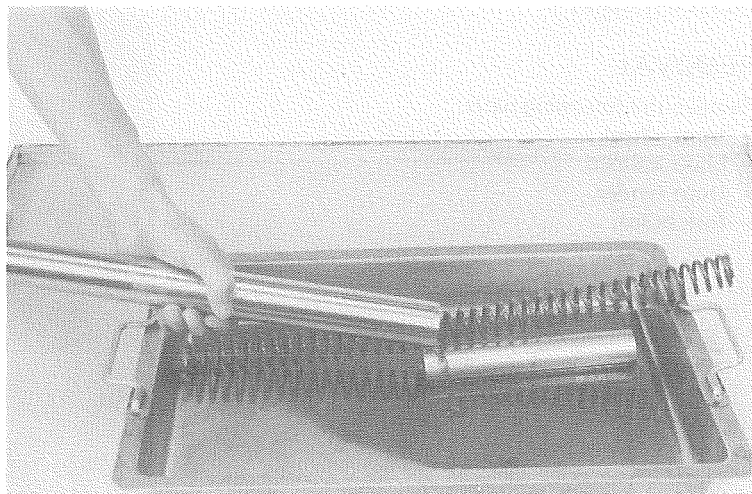
- Be careful not to damage the fork tube's sliding surface.





Remove the fork spring, spacer and washer.

Pour out the fork fluid by pumping the fork up and down several times.



Hold the fork slider in a vise with soft jaws or a shop towel.

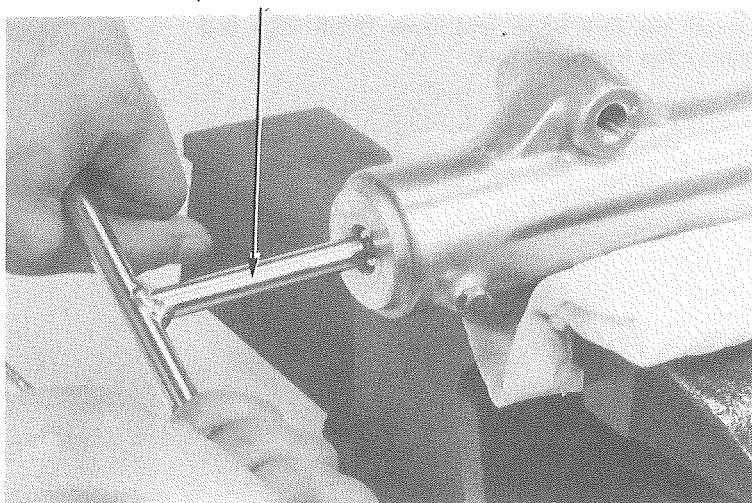
Remove the socket bolt with a hex wrench.

NOTE

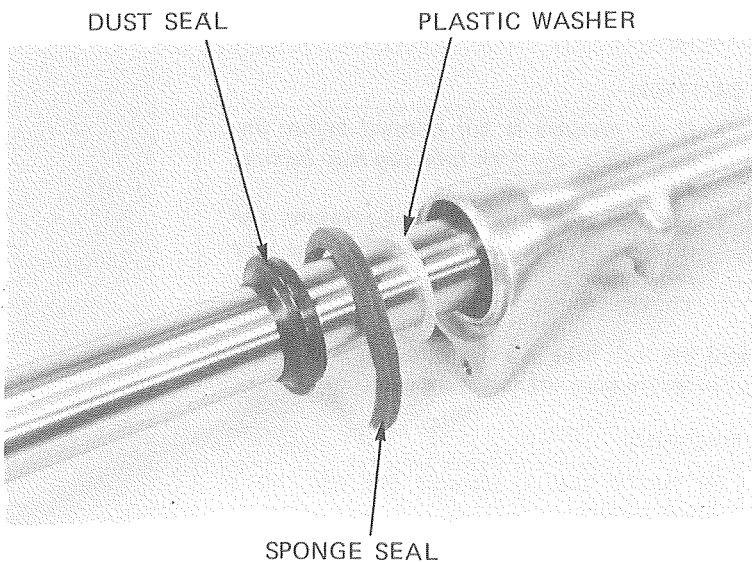
Temporarily install the spring and fork bolt if difficulty is encountered in removing the bolt.

The piston and rebound spring can be removed from the right fork.

HEX WRENCH, 6 mm 07917-3230000 OR EQUIVALENT

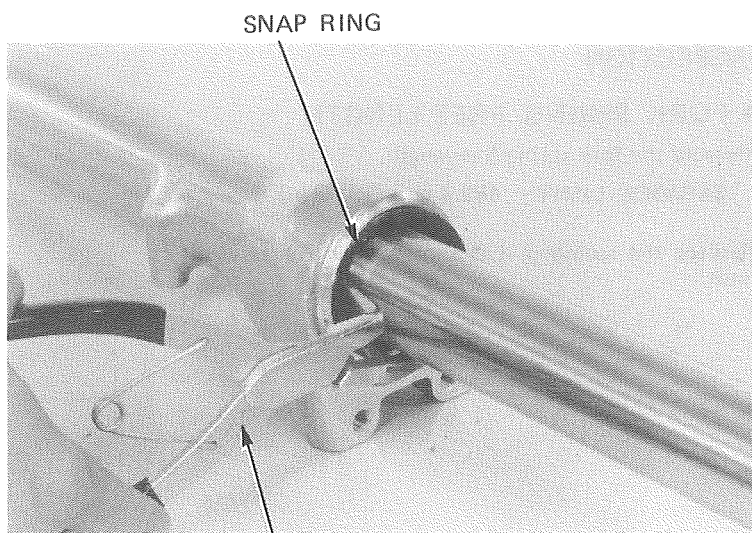


Remove the dust seal, sponge seal and plastic washer.





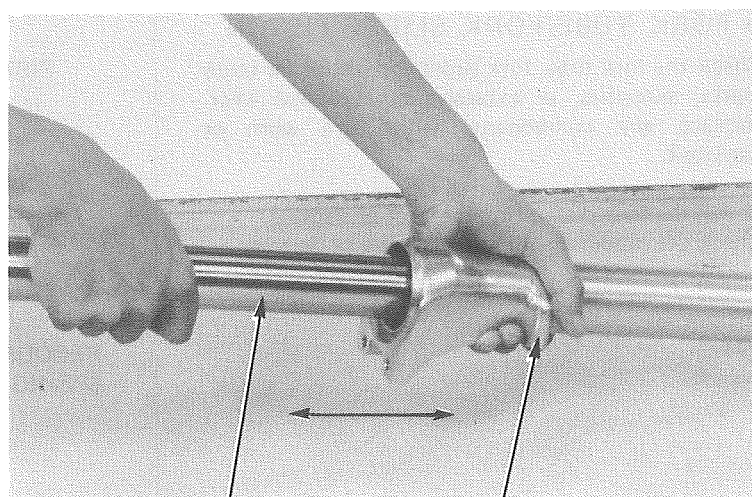
Remove the snap ring.



SNAP RING PLIERS 07914-3230001
OR EQUIVALENT

Pull the fork tube out until resistance from the slider bushing is felt. Then move it in and out, tapping the bushing lightly until the fork tube separates from the slider. The slider bushing will be forced out by the fork tube bushing.

Remove the oil lock piece from inside the slider.



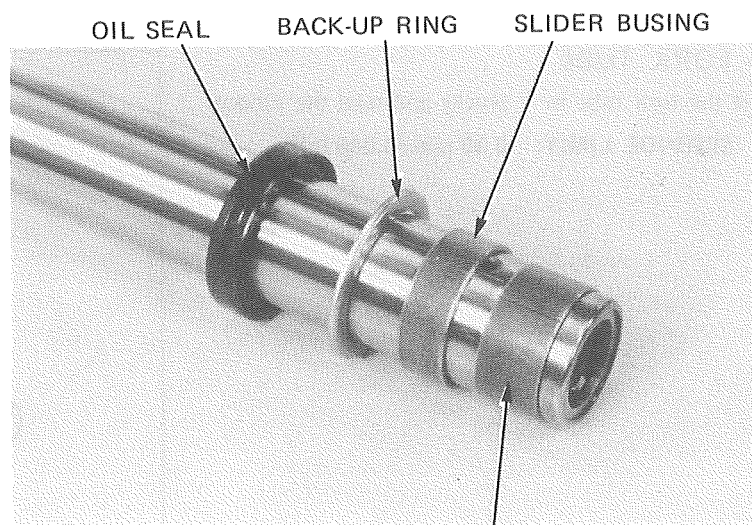
FORK TUBE

FORK SLIDER

Remove the oil seal, back-up ring and slider bushing from the fork tube.

NOTE

Do not remove the fork tube bushing unless it is necessary to replace it with a new one. See bushing inspection, page 13-21.



FORK TUBE BUSHING



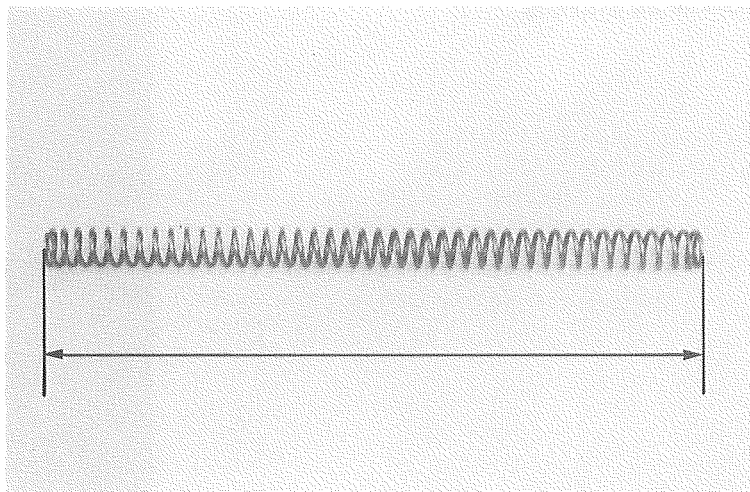
INSPECTION

● FORK SPRING FREE LENGTH

Measure the fork spring free length.

SERVICE LIMIT: 483.4 mm (19.03 in)

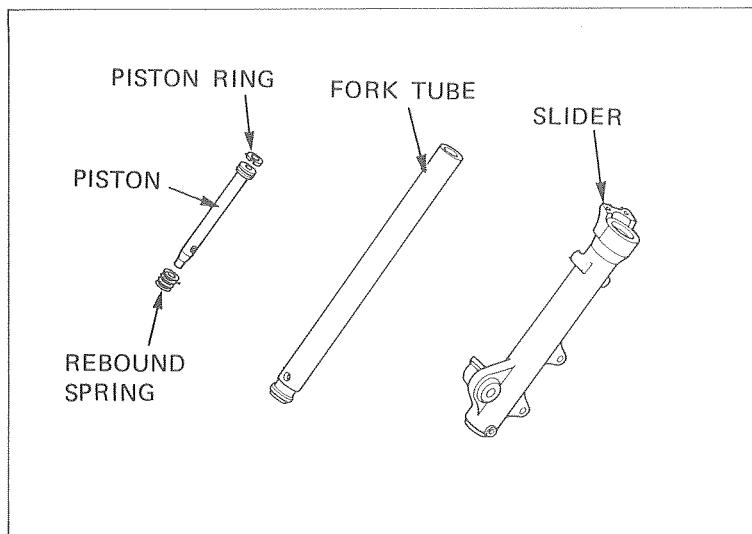
Replace the spring if it is shorter than the service limit.



● FORK TUBE/FORK SLIDER/PISTON

Check the fork tube, fork slider and piston for score marks, scratches, or excessive or abnormal wear. Replace any components which are worn or damaged.

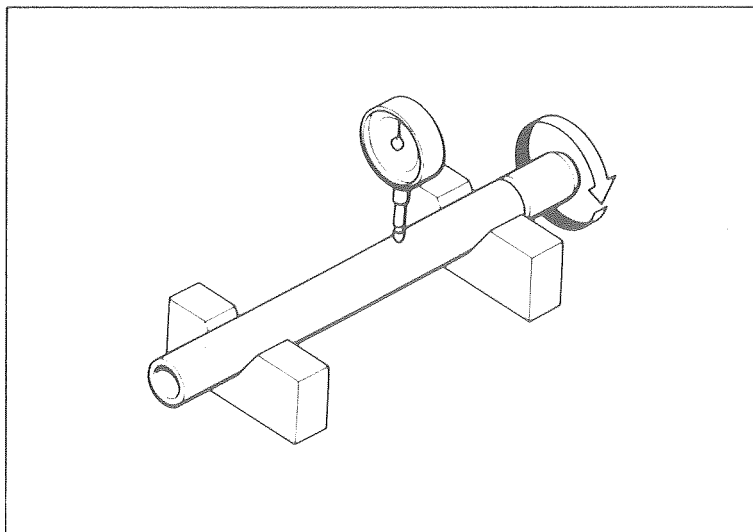
Check the fork piston ring for wear or damage.
Check the rebound spring for fatigue or damage.



● FORK TUBE

Set the fork tube in V blocks and read the runout.

SERVICE LIMIT: 0.20 mm (0.008 in)

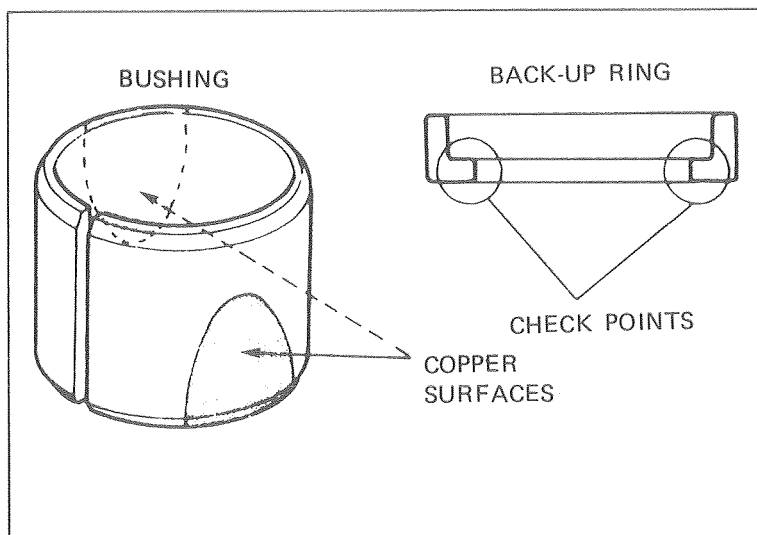




● **BUSHING/BACK-UP RING**

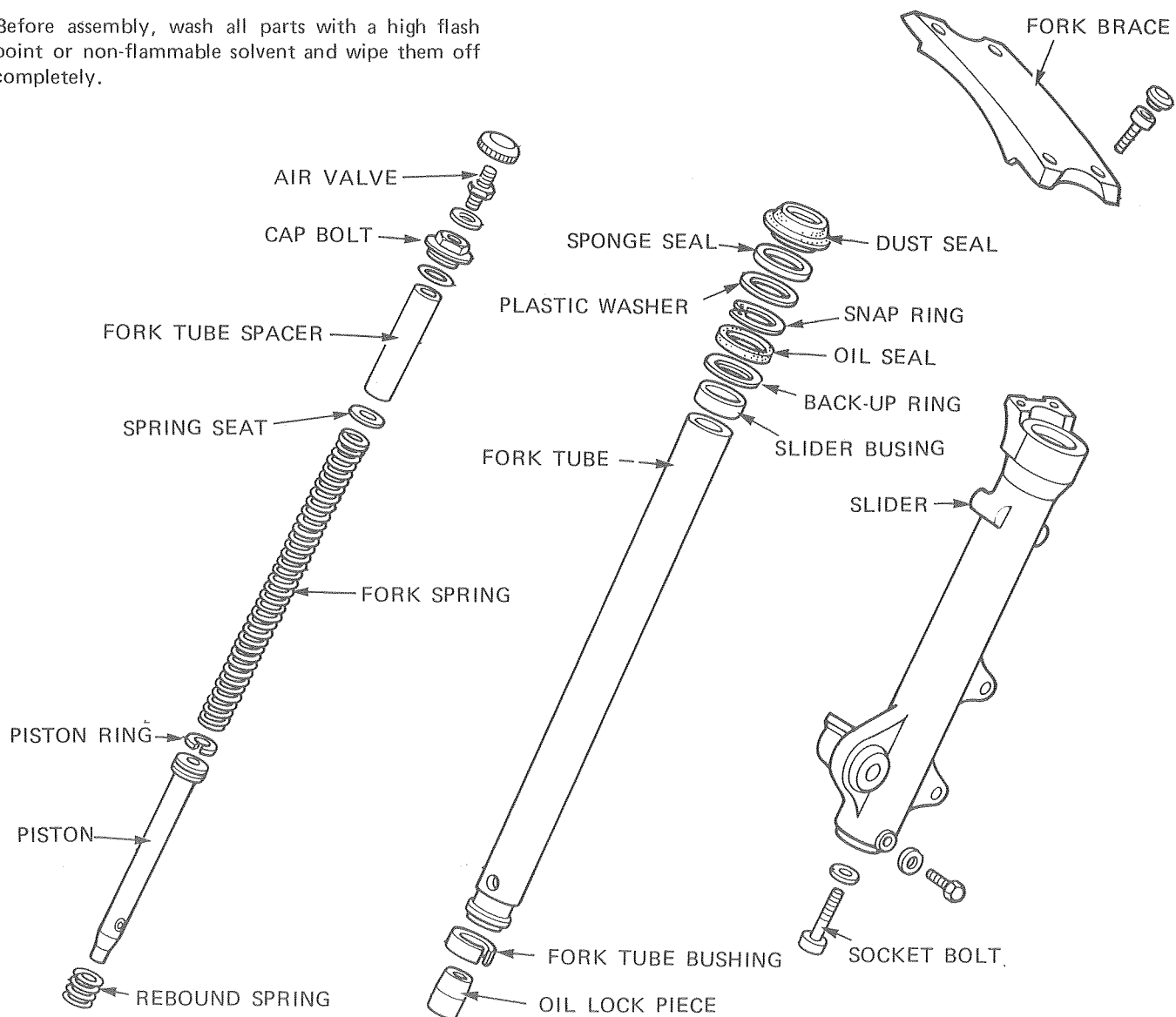
Visually inspect the slider and fork tube bushings. Replace the bushings if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface appears on more than 3/4 of the entire surface.

Check the back-up ring; replace it if there is any distortion at the check points shown.



ASSEMBLY

Before assembly, wash all parts with a high flash point or non-flammable solvent and wipe them off completely.

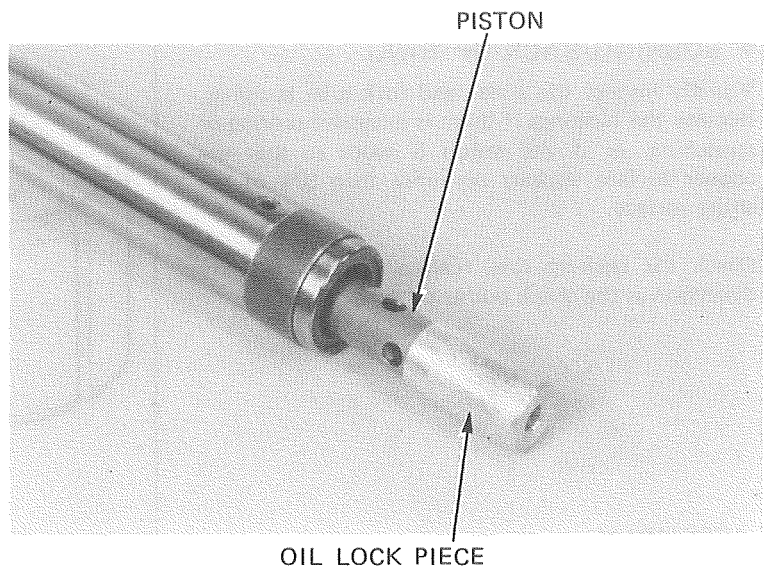




FRONT WHEEL/SUSPENSION

Insert the rebound spring and piston into the fork tube.

Place the oil lock piece on the end of the piston and insert the fork tube into the slider.



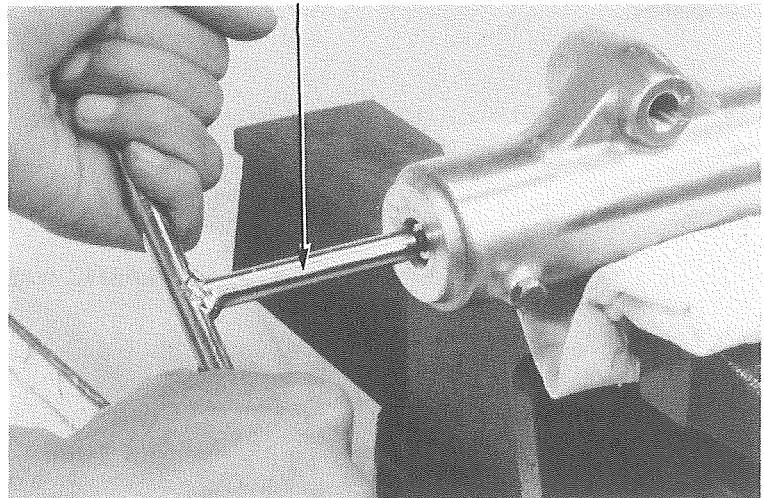
Place the fork slider in a vise with soft jaws or a shop towel. Apply a locking agent to the socket bolt and thread it into the piston. Tighten it with a 6 mm hex wrench.

NOTE

Temporarily install the fork spring and fork cap bolt to tighten the socket bolt.

TORQUE: 15–25 N·m
(1.5–2.5 kg·m, 11–18 ft·lb)

HEX WRENCH, 6 mm 07917–3230000 OR EQUIVALENT

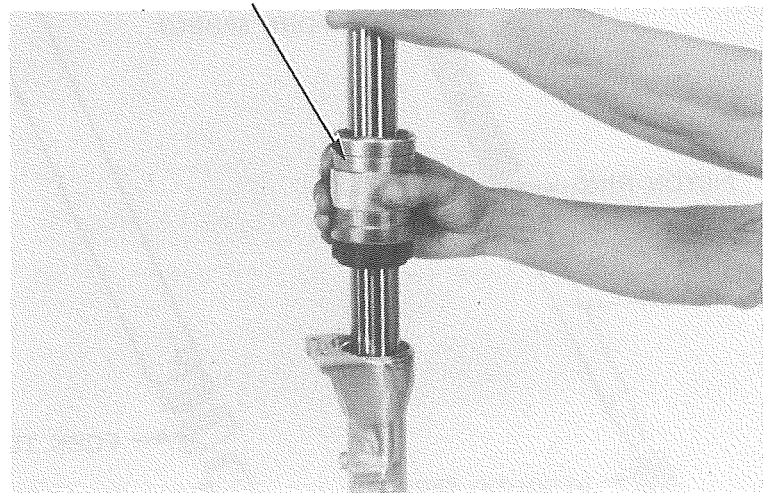


Place the slider bushing over the fork tube and rest it on the slider. Put the back-up ring and an old bushing or equivalent tool on top.

Drive the bushing into place with the seal driver and remove the old bushing or equivalent tool.

Coat a new oil seal with ATF and install it with the seal markings facing up. Drive the seal in with the seal driver.

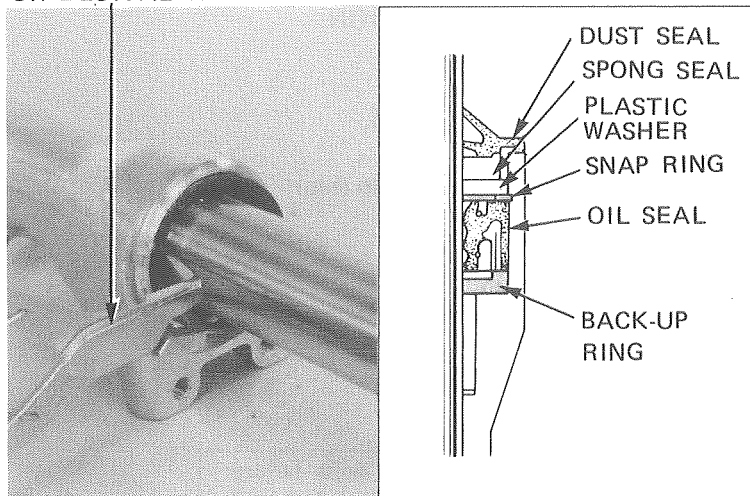
FORK SEAL DRIVER 07947–4630100





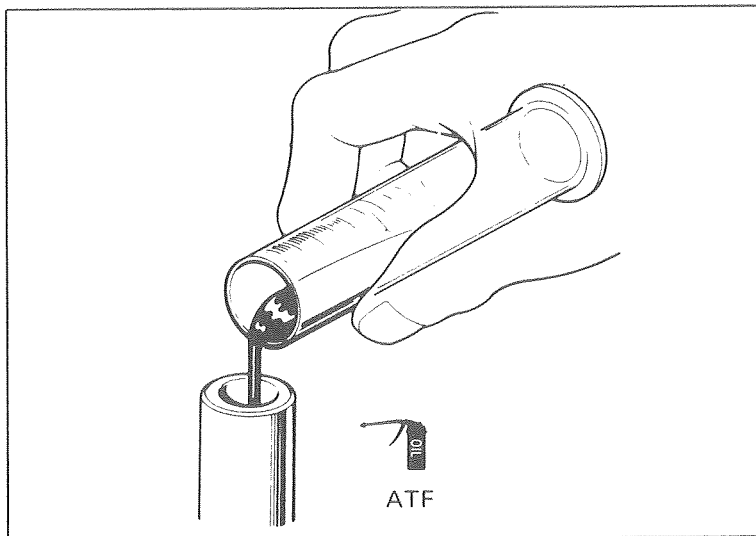
Install the snap ring with its radiused edge facing down and install the plastic washer, sponge and dust seals.

SNAP RING PLIERS 07914-3230001
OR EQUIVALENT



Pour the specified amount of ATF into the fork tube.

CAPACITY: 480 cc (16.2 ozs)



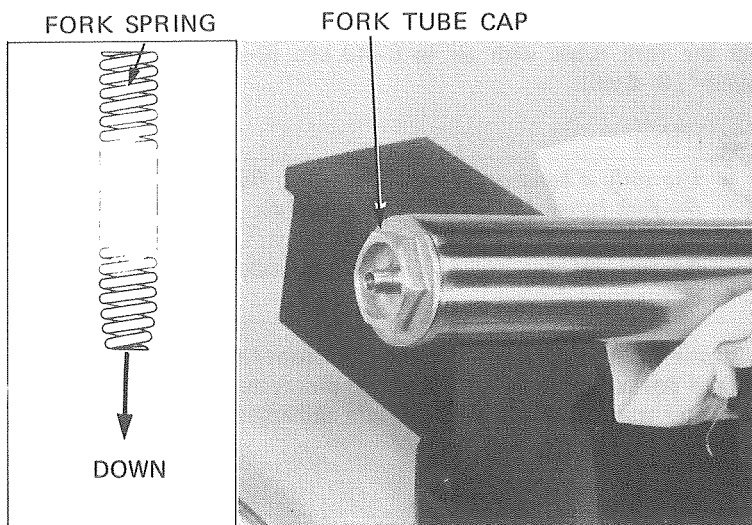
Install the fork spring, spring seat and spacer into the fork tube.

NOTE

Note the spring direction, the narrow coils should face toward the bottom.

Install and torque the fork tube cap.

TORQUE: 15-30 N·m
(1.5-3.0 kg-m, 11-22 ft-lb)





FRONT FORK INSTALLATION

Install the front forks.

Tighten the bottom fork pinch bolts.

TORQUE: 45–55 N·m
(4.5–5.5 kg-m, 33–40 ft-lb)

Tighten the top fork pinch bolts.

TORQUE: 9–13 N·m
(0.9–1.3 kg-m, 7–9 ft-lb)

Loosely install the front fork brace.

NOTE

Do not torque the fork brace bolts before torquing the front fork pinch bolts, and front axle.

Install the removed parts in the reverse order of removal.

- front fender.
- brake caliper.
- front wheel.

Tighten the front fork brace to the specified torque.

TORQUE: 18–28 N·m
(1.8–2.8 kg-m, 13–20 ft-lb)

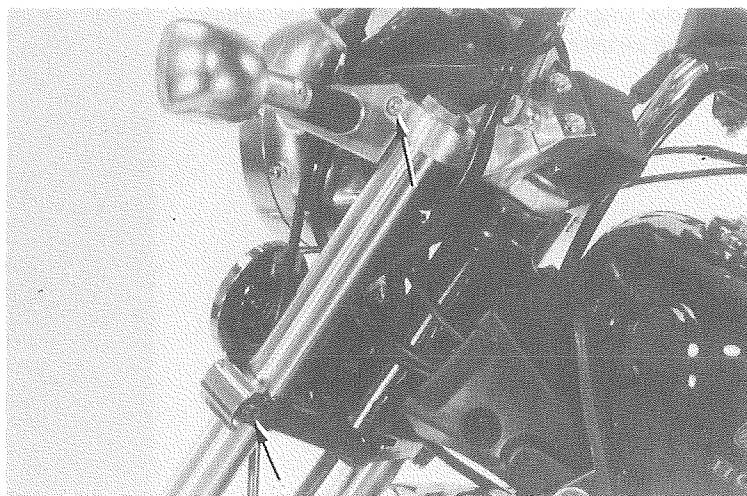
Install the bolt caps

Fill the fork tubes with air to 0–40 kPa (0–0.4 kg/cm², 0–6 psi).

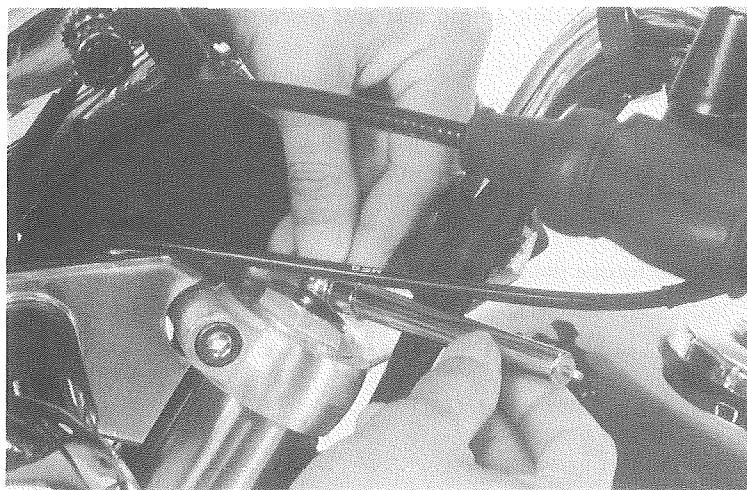
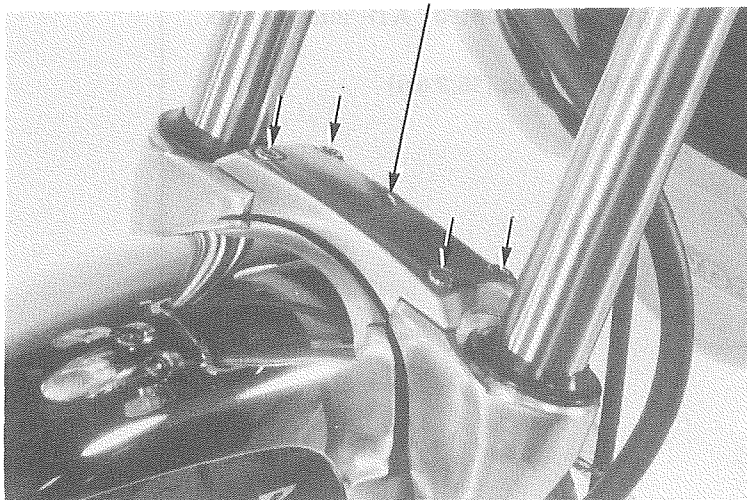
CAUTION

- Use only a hand operated air pump to fill the fork tubes. Do not use compressed air.
- Maximum pressure is 300 kPa (3 kg/cm², 43 psi). Do not exceed this or fork tube component damage may occur.

With the front brake applied, pump the front forks up and down several times. Place the motorcycle on its center stand. Check the air pressure and adjust if necessary.



FRONT FORK BRACE



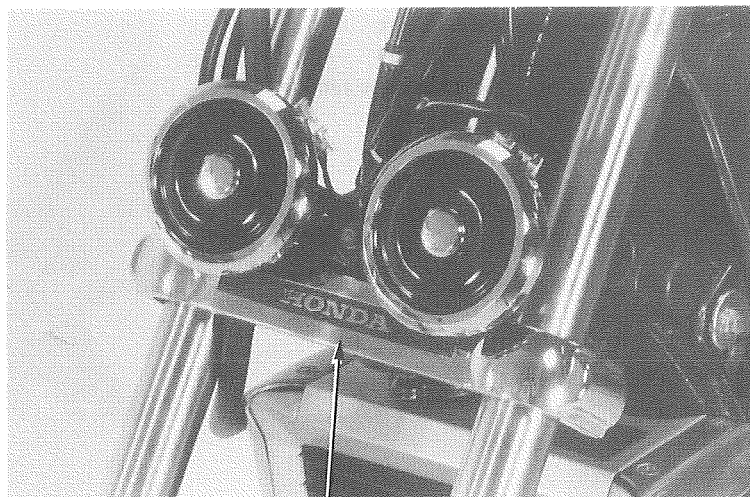


STEERING STEM

REMOVAL

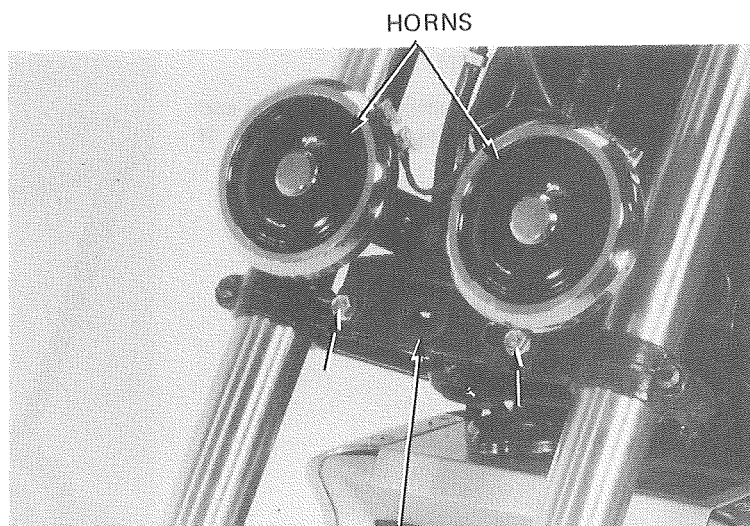
Remove the following components:

- headlight, headlight case and brackets (page 13-3, 13-5).
- instruments (page 13-5).
- ignition switch (page 20-5).
- handlebar (page 13-6).
- front wheel (page 13-11).
- front emblem.



FRONT EMBLEM

- horns with bracket.

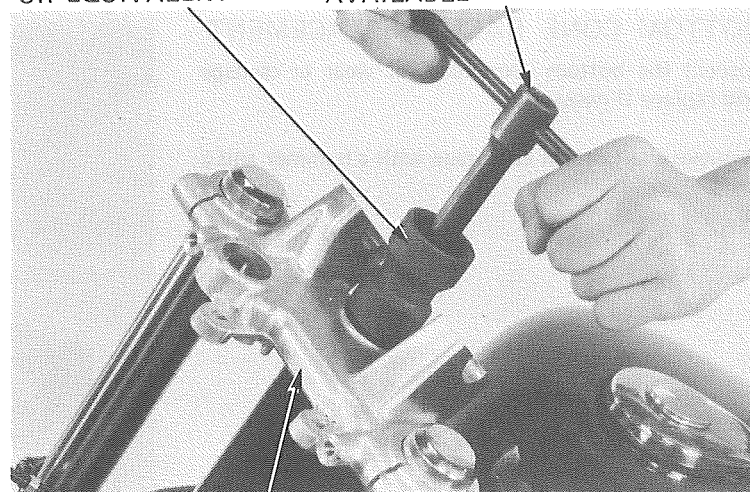


HORNS

LOCK NUT WRENCH,
30 x 32 mm
OR EQUIVALENT

HORN BRACKET
EXTENSION BAR COMMERCIALY
AVAILABLE

- steering stem nut.
- front forks (page 13-17).
- fork top brodge.



FORK TOP BRIDGE



FRONT WHEEL/SUSPENSION

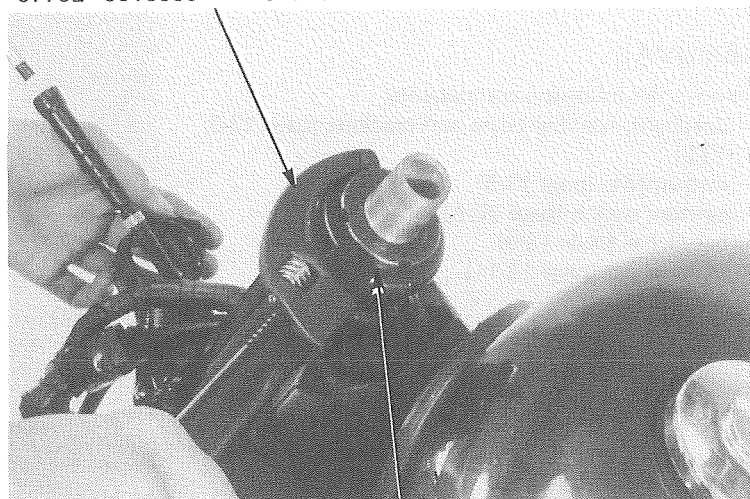
Remove the bearing adjustment nut.

Remove the steering stem, top cone race and steel balls.

NOTE

Do not allow the steel balls to fall.

PIN SPANNER 07702-0010000 OR STEERING STEM SOCKET 07916-3710100



BEARING ADJUSTMENT NUT

BEARING INSPECTION

Check the upper and lower bearing race surfaces and steel balls for wear or damage and replace if necessary.



BOTTOM CONE RACE REPLACEMENT

Inspect the bottom cone race for wear or damage and replace if necessary.

Remove the bottom cone race with a hammer and a drift.



BOTTOM CONE RACE



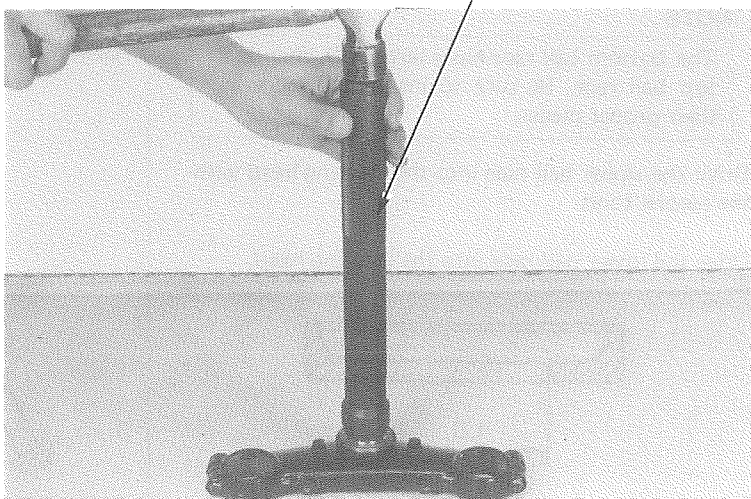
Install a new dust seal and drive a new bearing into place.

NOTE

Replace the dust seal and bearing whenever they are removed from the steering stem.

STEERING STEM DRIVE

07946-MB00000 OR 07946-3710100 AND 07964-MB00200



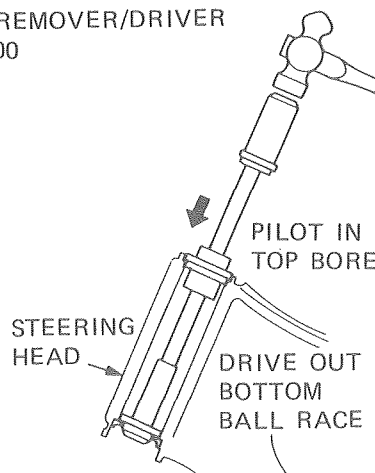
BALL RACE REPLACEMENT

Remove the lower ball race with the special tool.

NOTE

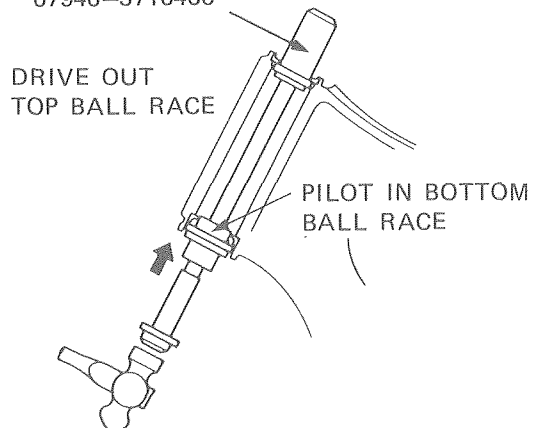
If the motorcycle has been involved in an accident, examine the area around the steering head for cracks.

BALL RACE REMOVER/DRIVER
07946-3710400



remove the upper ball race with the special tool.

BALL RACE REMOVER/DRIVER
07946-3710400



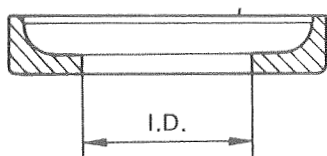


NOTE

The bottom ball race has a larger I.D. than the top ball race. Be sure to install the races in their proper places.

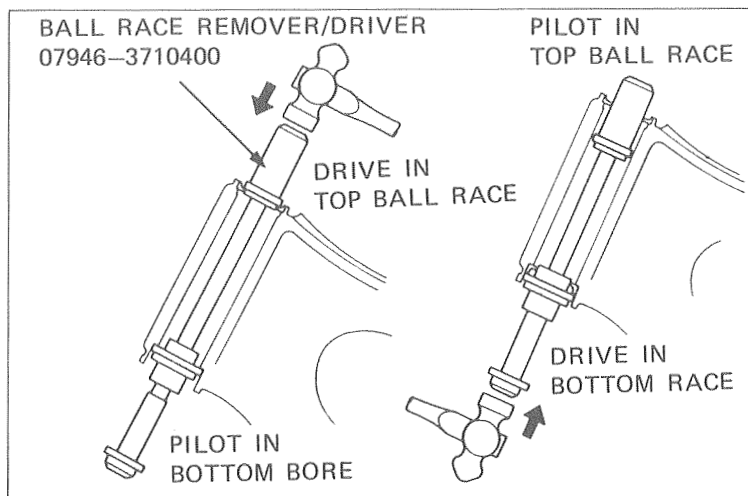
Drive the upper ball race into the steering head with the special tools.

Drive the lower ball race into the steering head.



(Top ball race installation)

(Bottom ball race installation)



INSTALLATION

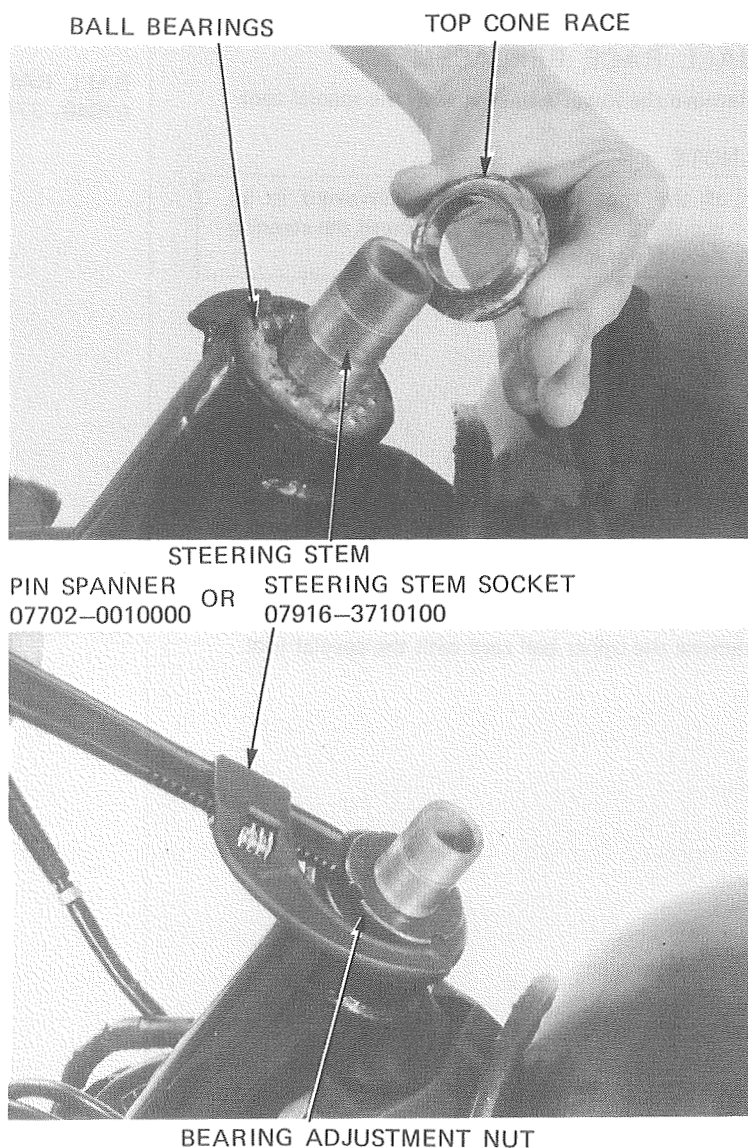
Apply grease to the top ball race and install 18 ball bearings.

Apply grease to the bottom ball race and install 19 ball bearings.

Insert the steering stem into the steering head pipe and install the top cone race.

Install the bearing adjustment nut and tighten it snug against the top cone race. Then, back it off 1/8 turn.

Make sure that there is no vertical movement and that the stem rotates freely.





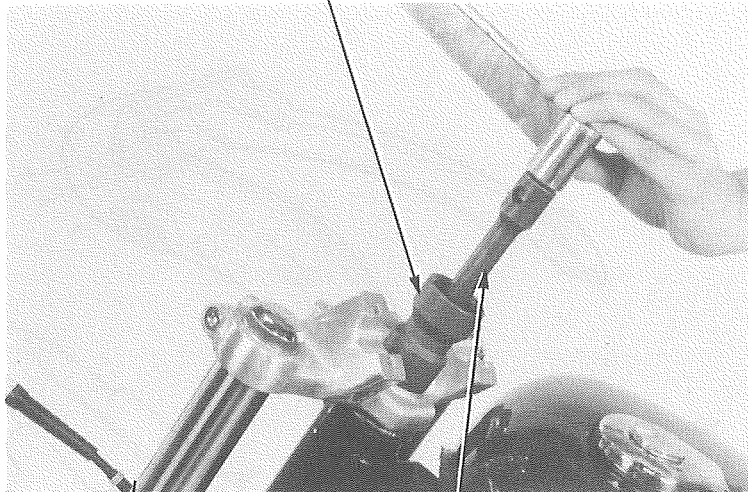
Install the fork top bridge and stem nut.

Temporarily install the front forks and tighten the stem nut.

TORQUE: 90–120 N·m
(9.0–12.0 kg-m, 65–87 ft-lb)

Install the removed parts in the reverse order of removal.

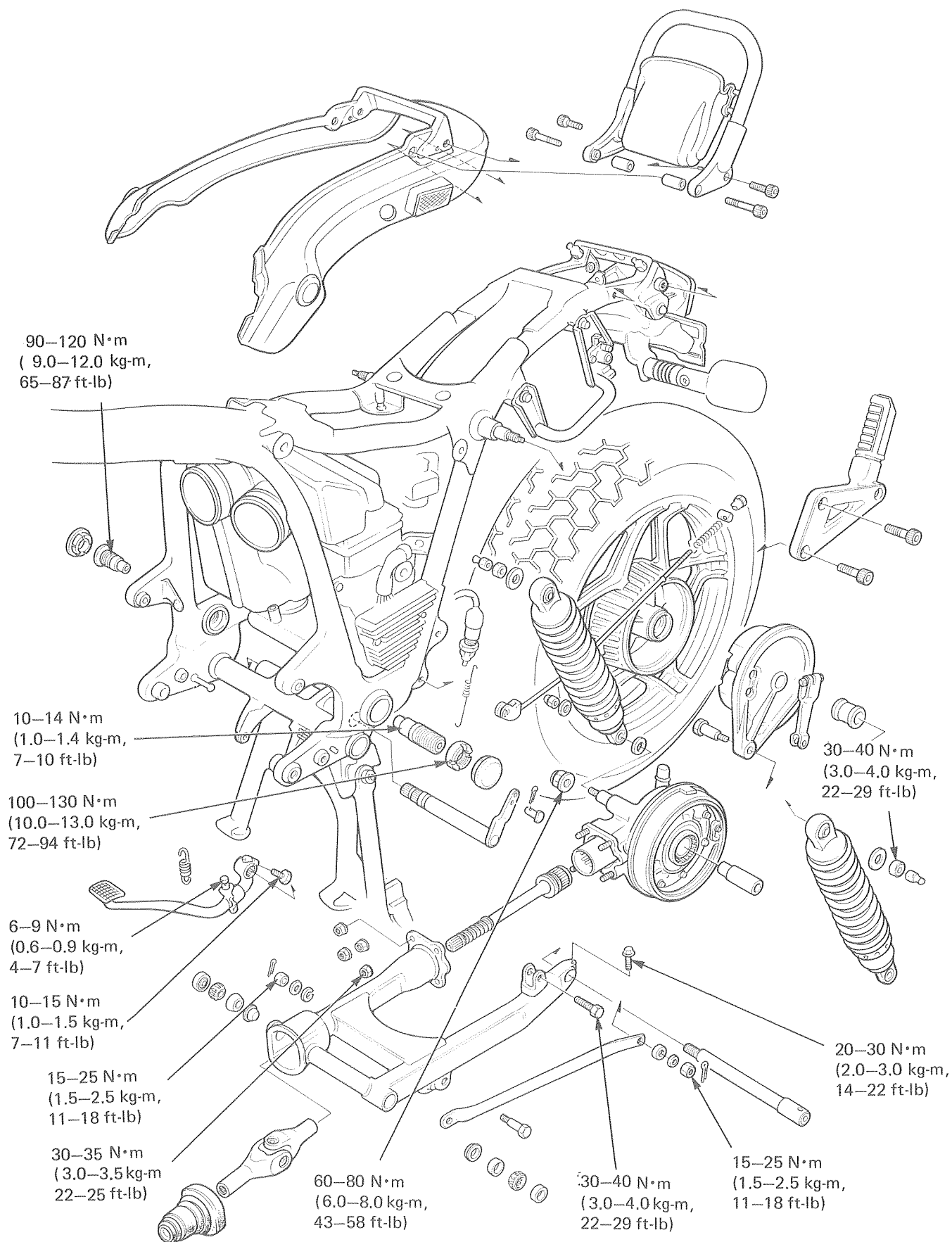
LOCK NUT WRENCH, 30 x 32 mm OR EQUIVALENT



EXTENSION BAR,
COMMERCIALY AVAILABLE



REAR WHEEL/SUSPENSION/BRAKE





SERVICE INFORMATION	14-1	REAR BRAKE PEDAL	14-10
TROUBLESHOOTING	14-2	SHOCK ABSORBER	14-12
REAR WHEEL	14-3	SWING ARM	14-15
REAR BRAKE PANEL	14-8		

SERVICE INFORMATION

GENERAL

- The rear wheel uses a tubeless tire. For tubeless tire repairs, refer to the Tubeless Tire Manual.
- Never ride on the rim.
- When using the lock nut wrench, use a deflecting beam type torque wrench 355–510 mm's (14–20 inches) long. The lock nut wrench increases the torque wrench's leverage, so the torque wrench reading will be less than the torque actually applied to the lock nut. The specification given is the actual torque applied to the lock nut, not the reading on the torque wrench when used with the lock nut wrench. What the torque wrench scale reading should be is given along with the actual torque specification.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Axle runout		—	0.2 mm (0.01 in)
Rear wheel rim runout	Radial	—	2.0 mm (0.08 in)
	Axial	—	2.0 mm (0.08 in)
Shock absorber spring free length		241.9 mm (9.52 in)	234.6 mm (9.2 in)
Brake drum I.D.		160.0–160.3 mm (6.30–6.31 in)	161 mm (6.34 in)
Rear brake lining thickness		4.9–5.0 mm (0.19–0.20 in)	2.0 mm (0.08 in)

TORQUE VALUES

Rear axle nut	60–80 N•m (6.0–8.0 kg-m, 43–58 ft-lb)
Brake torque link bolt	15–25 N•m (1.5–2.5 kg-m, 11–18 ft-lb)
Axle pinch bolt	20–30 N•m (2.0–3.0 kg-m, 14–22 ft-lb)
Brake arm	24–30 N•m (2.4–3.0 kg-m, 17–22 ft-lb)
Shock absorber mount bolt	30–40 N•m (3.0–4.0 kg-m, 22–29 ft-lb)
Final driven flange	50–60 N•m (5.0–6.0 kg-m, 36–43 ft-lb)
Swing arm left pivot bolt	10–14 N•m (1.0–1.4 kg-m, 7–10 ft-lb)
Swing arm right pivot bolt	90–120 N•m (9.0–12.0 kg-m, 65–87 ft-lb)
Swing arm pivot lock nut	100–130 N•m (10.0–13.0 kg-m, 72–94 ft-lb)

TOOLS

Special

Swing arm pivot lock nut wrench	07908–ME90000
Hex head wrench, 10 mm	07917–3710000 or equivalent commercially available in U.S.A.
Bearing remover	07936–4150000 or 07936–3710500
Remover handle	07936–3710100
Remover weight	07936–3710200 or 07741–0010201



HONDA
CX650C

REAR WHEEL/SUSPENSION/BRAKE

Common

Driver	07749-0010000	
Attachment, 42 x 47 mm	07746-0010300	
Pilot, 17 mm	07746-0040400	
Attachment, 32 x 35 mm	07746-0010100	
Shock absorber compressor	07959-3290001	
Wheel bearing remover collet, 17 mm	07746-0050500	or equivalent commercially available in U.S.A.
Wheel bearing remover expander	07746-0050100	

TROUBLESHOOTING

Oscillation

- bent rim.
- Loose wheel bearings.
- Faulty tire.
- Loose axle.
- Tire pressure incorrect.
- Swing arm bearings worn.
- Worn tires.

Soft Suspension

- Weak spring(s).

Hard Suspension

- Bent shock absorber.

Suspension Noise

- Shock case binding.
- Loose fasteners.

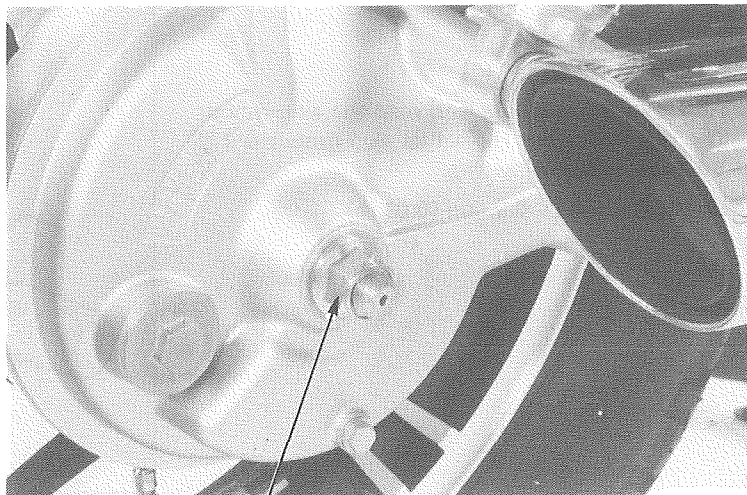


REAR WHEEL

REMOVAL

Place the motorcycle on its center stand and deflate the rear tire to facilitate wheel removal.

Remove the axle nut.

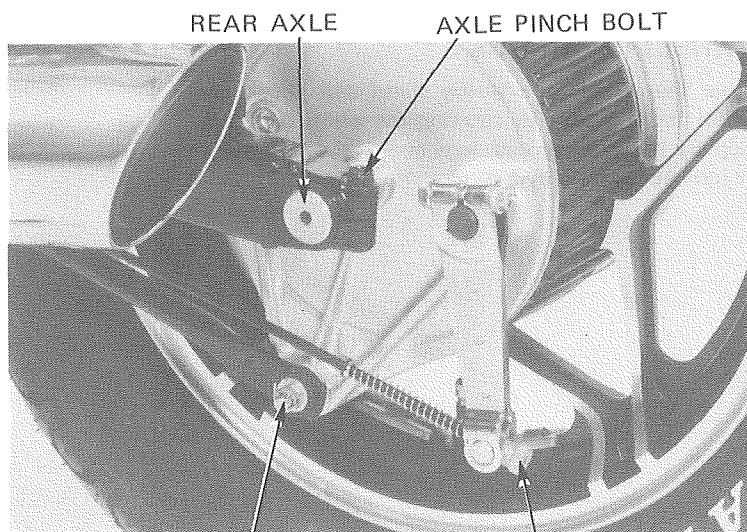


AXLE NUT

Remove the brake torque link bolt and disconnect the torque link.

Remove the brake adjusting nut and the brake rod.

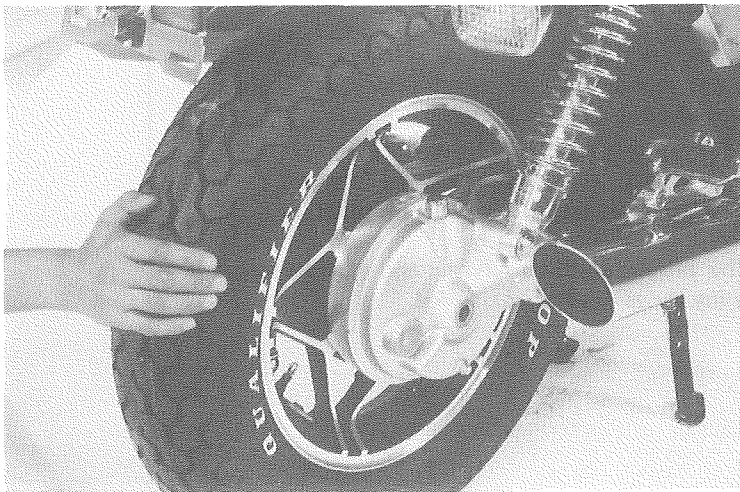
Loosen the axle pinch bolt and remove the rear axle.



TORQUE LINK BOLT

BRAKE ADJUSTING NUT

Move the wheel to the left to separate it from the final drive gear case and remove the rear wheel.



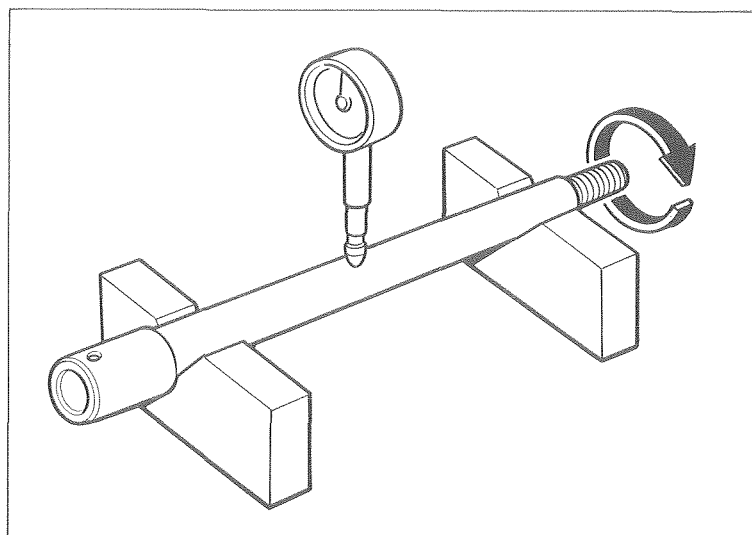


INSPECTION

• AXLE

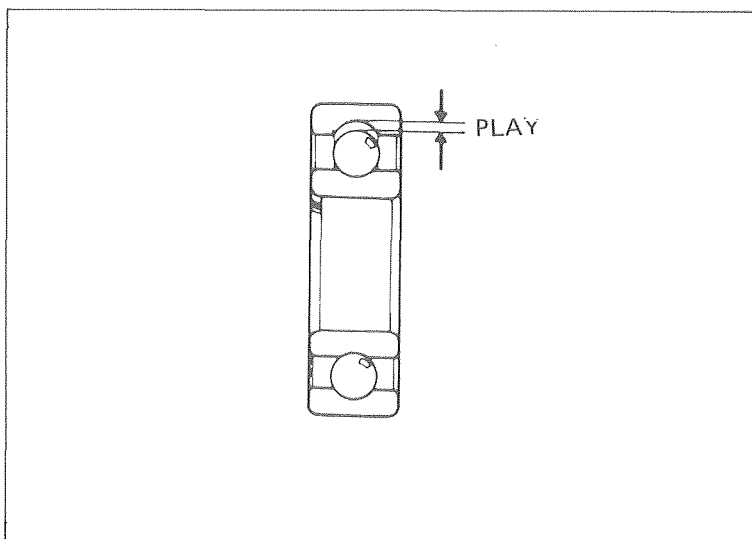
Set the axle in V blocks and read the axle runout with a dial indicator. The actual axle runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)



• WHEEL BEARINGS

Place the wheel in a truing stand and check the wheel bearing play by rotating the wheel by hand. Replace the bearings with new ones if they are noisy or have excessive play.



• WHEEL RIM RUNOUT

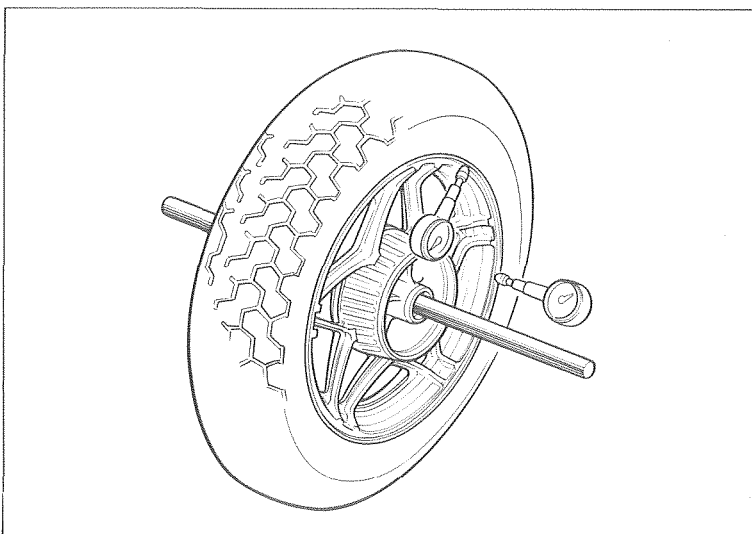
Check the rim for runout by placing the wheel in a truing stand. Spin the wheel slowly, and read the runout using a dial indicator.

SERVICE LIMITS:

RADIAL RUNOUT: 2.0 mm (0.08 in)

AXIAL RUNOUT: 2.0 mm (0.08 in)

The wheel cannot be serviced and must be replaced if the above limits are exceeded.

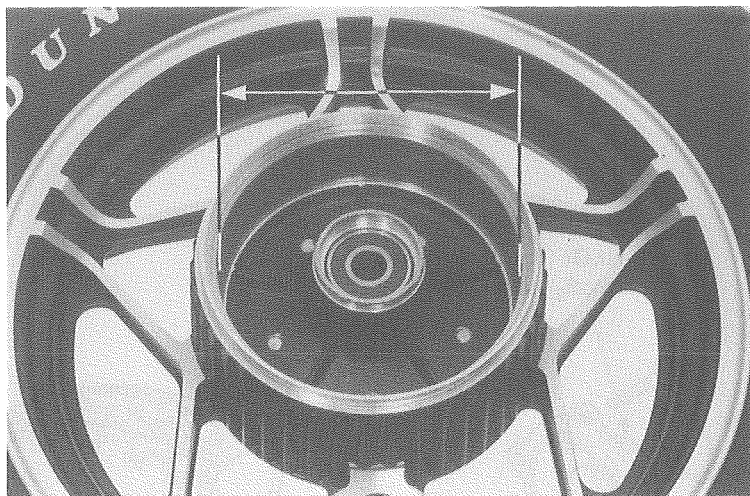




• BRAKE DRUM I.D.

Measure the brake drum I.D.

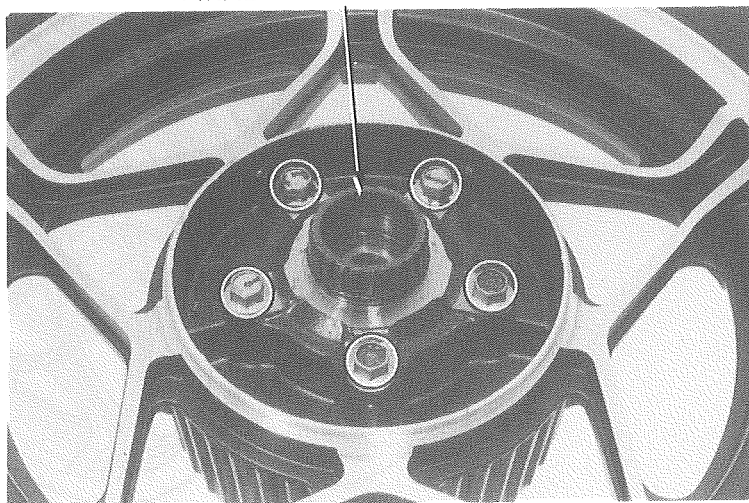
SERVICE LIMIT: 161 mm (6.34 in)



DISASSEMBLY

Remove the final driven flange mount bolts and lift the driven flange out of the hub.

FINAL DRIVEN FLANGE



WHEEL BEARING REMOVER COLLET, 17 mm
07746-0050500 OR EQUIVALENT

Remove the wheel bearings and distance collar with the special tool.



WHEEL BEARING REMOVER EXPANDER
07746-0050100 OR EQUIVALENT



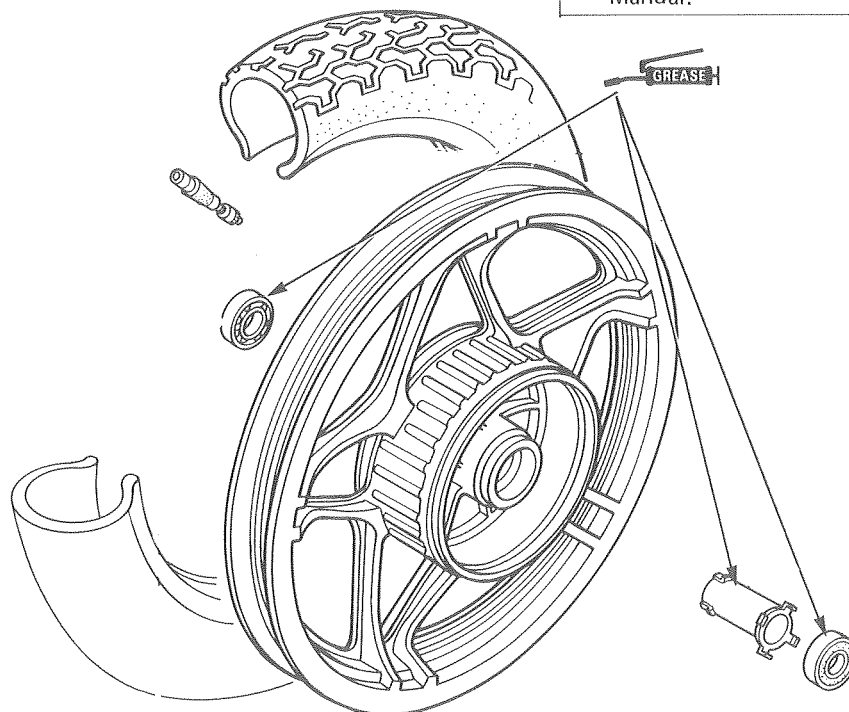
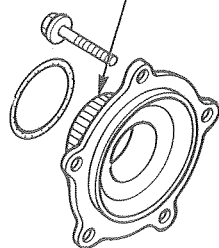
ASSEMBLY

NOTE

Use lithium-based Multipurpose grease with MoS₂-additive as follows:

- Molykote BR2-S manufactured by Dow Corning, U.S.A.
- MULTIPURPOSE M-2 manufactured by Mitsubishi Oil, Japan.
- Sta-Lube NLGI #2.
- Other lubricants of equivalent quality.
- The wheel uses a tubeless tire. For tubeless tire repairs, refer to the Tubeless Tire Manual.

MULTIPURPOSE
NLGI No. 2 GREASE
(MoS₂-additive)



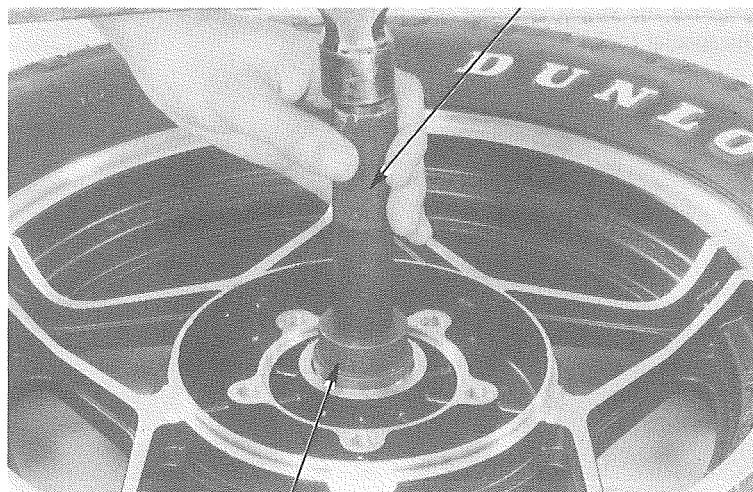
DRIVER
07749-0010000

Pack all bearing cavities with grease.

Press the distance collar into place from the left side. Drive the right ball bearing in first, then the left ball bearing.

CAUTION

- Drive the bearings in squarely.
- Install the bearings with the sealed end facing out, making sure they are fully seated.



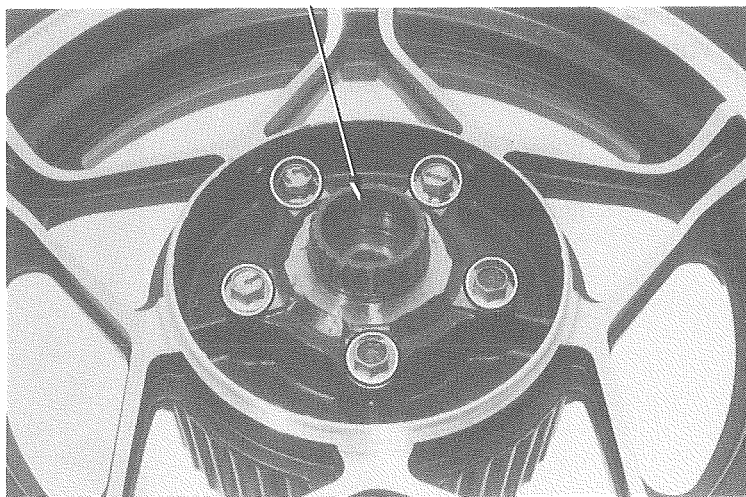
ATTACHMENT, 42 x 47 mm 07746-0010300
PILOT, 17 mm 07746-0040400



Install the final driven flange onto the rear wheel and tighten the bolts.

TORQUE: 50–60 N·m
(5.0–6.0 kg-m, 36–43 ft-lb)

FINAL DRIVEN FLANGE

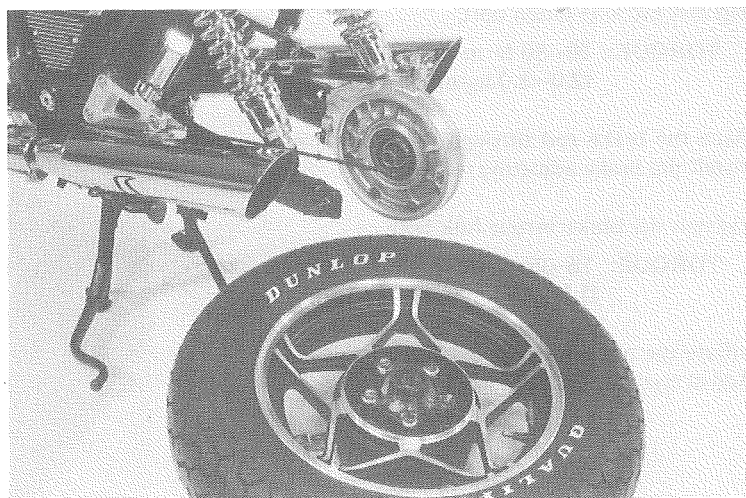


INSTALLATION

Deflate the rear tire to facilitate wheel installation. Apply Multipurpose NLGI No. 2 grease (MoS₂-additive) to the final driven flange and ring gear engagement splines.

Loosen the final gear case attaching nuts to ease axle installation and to assure proper driven flange alignment.

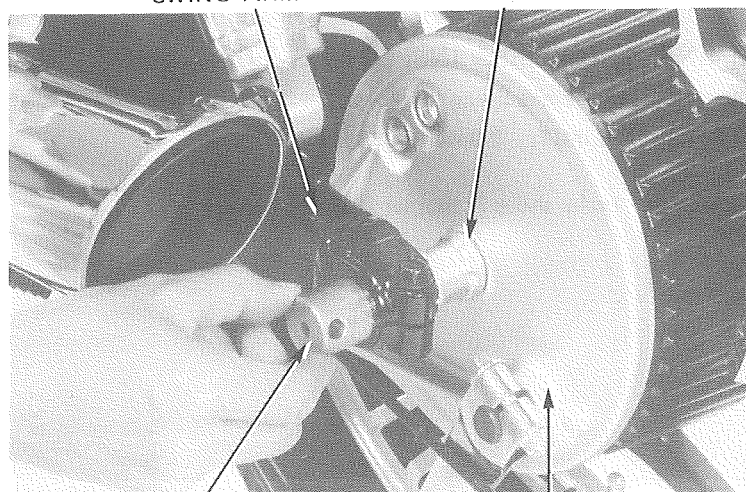
Engage the rear wheel with the final drive case, making sure the splines are correctly aligned.



Insert the rear axle through the swing arm, side collar, brake panel, hub and final drive gear.

SWING ARM

SIDE COLLAR



REAR AXLE

BRAKE PANEL

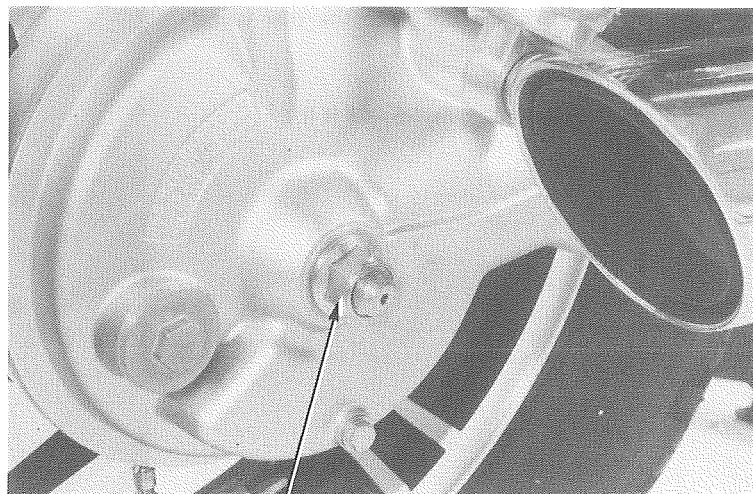


Tighten the axle nut.

TORQUE: 60–80 N·m
(6.0–8.0 kg-m, 43–58 ft-lb)

Tighten the final gear case attaching nuts.

TORQUE: 30–40 N·m
(3.0–4.0 kg-m, 22–29 ft-lb)



AXLE NUT

Tighten the axle pinch bolt.

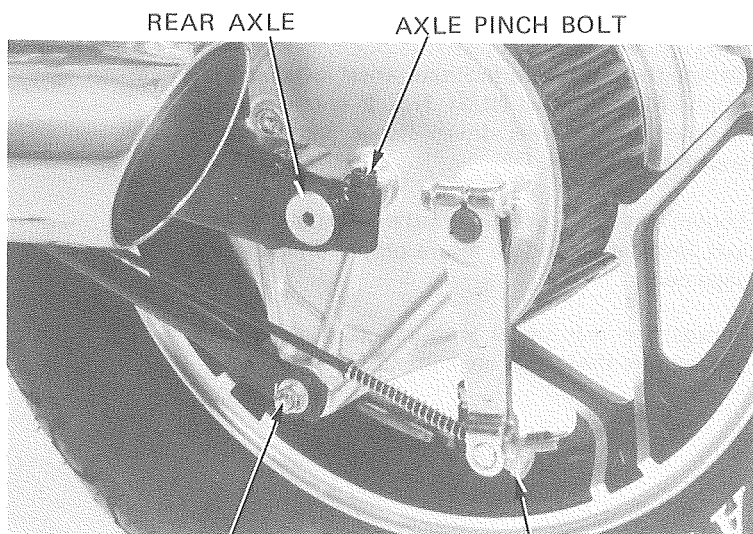
TORQUE: 20–30 N·m
(2.0–3.0 kg-m, 14–22 ft-lb)

Place the brake rod through the brake arm pin and install the brake adjusting nut.

Tighten the brake torque link bolt.

TORQUE: 15–25 N·m
(1.5–2.5 kg-m, 11–18 ft-lb)

Inflate the rear tire (page 3-16).
Adjust the rear brake (page 3-13).



TORQUE LINK BOLT

BRAKE ADJUSTING NUT

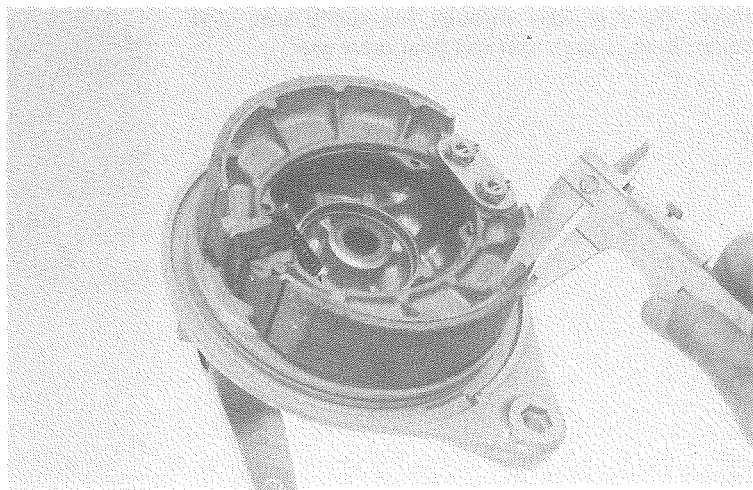
REAR BRAKE PANEL

LINING THICKNESS INSPECTION

Measure the rear brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)

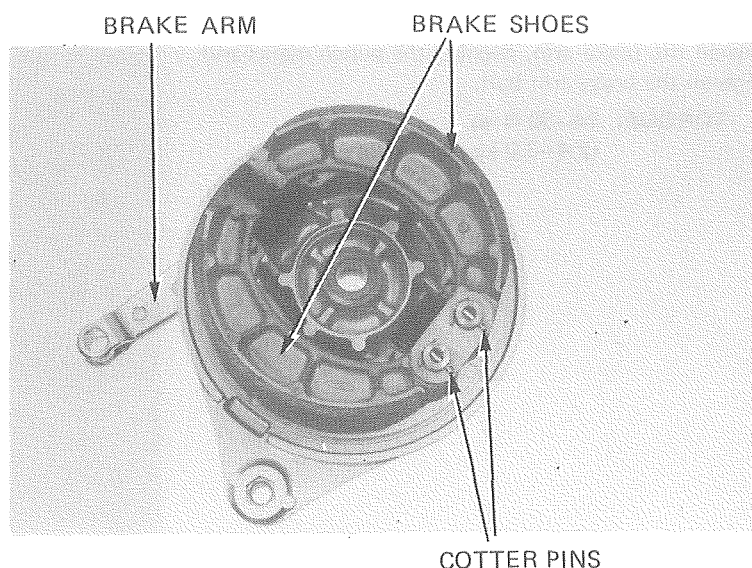
Replace the brake shoes if thinner than the service limit.





DISASSEMBLY

Remove the rear brake arm.
Remove the cotter pins and brake shoes.



ASSEMBLY

Apply grease to the anchor pins and brake cam.

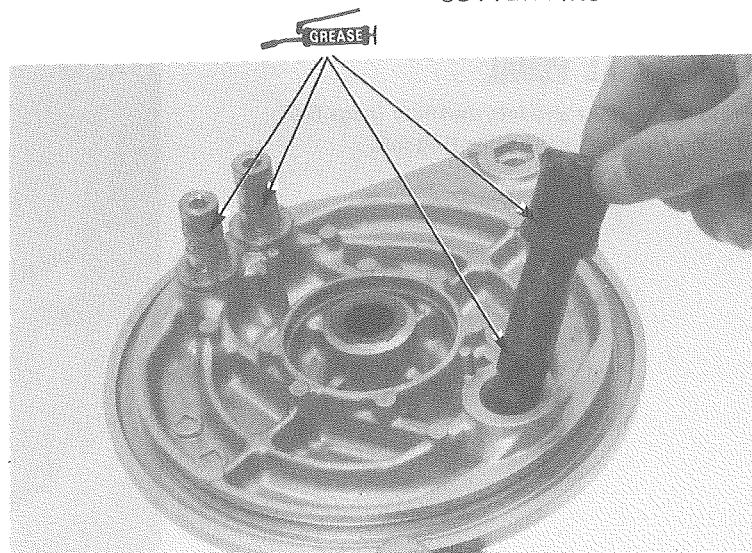
Install the brake cam.

WARNING

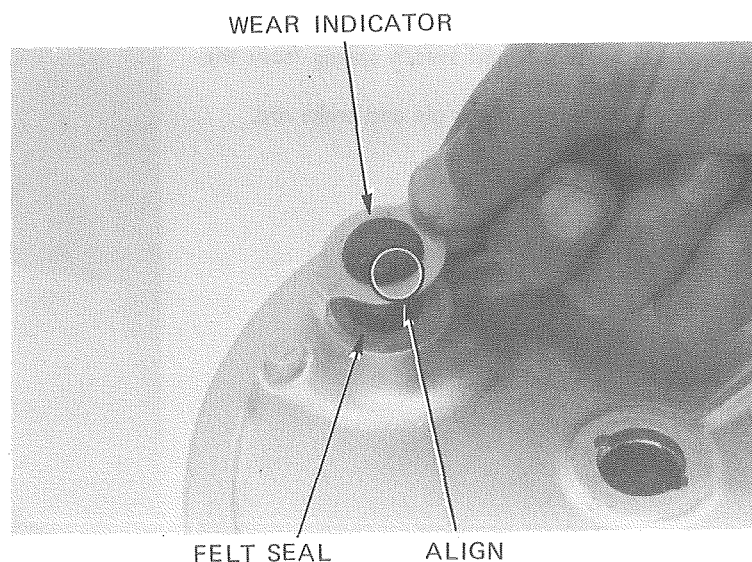
Contaminated brake linings reduce stopping power. Keep grease off the brake linings. Wipe any excess grease off the cam.

Install the following:

- brake shoes.
- cotter pins.



Install the felt seal, and wear indicator aligning its tooth with the brake cam punch mark.

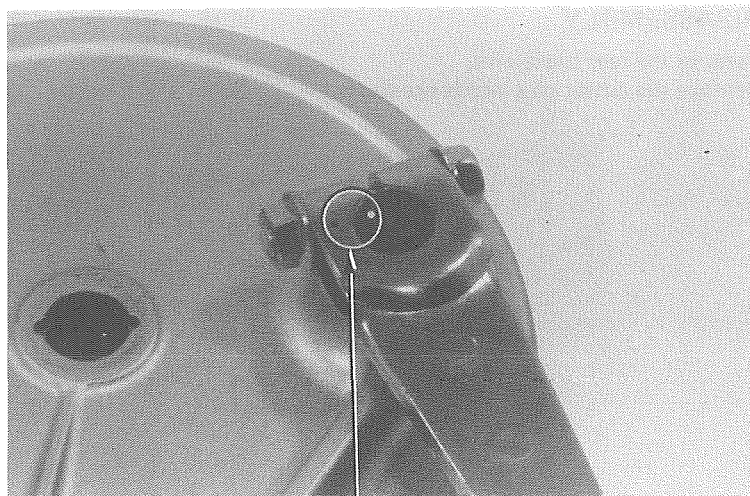




REAR WHEEL/SUSPENSION/BRAKE

Install the brake arm, aligning the punch marks and tighten the brake arm bolt.

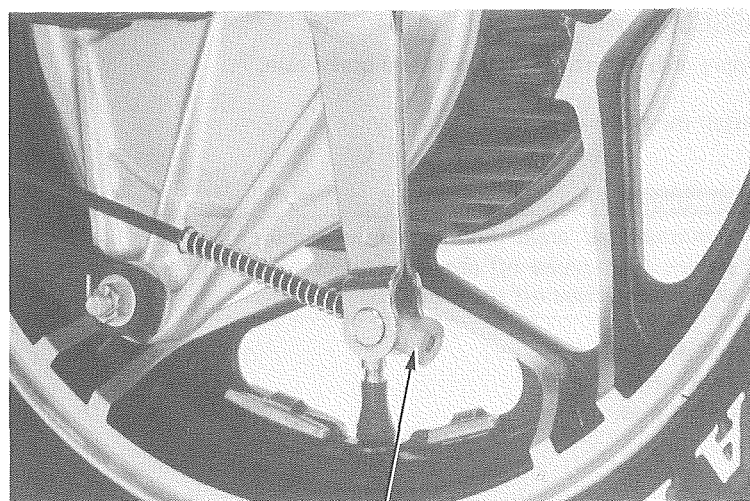
TORQUE: 24–30 N·m
(2.4–3.0 kg-m, 17-22 ft-lb)



PUNCH MARKS

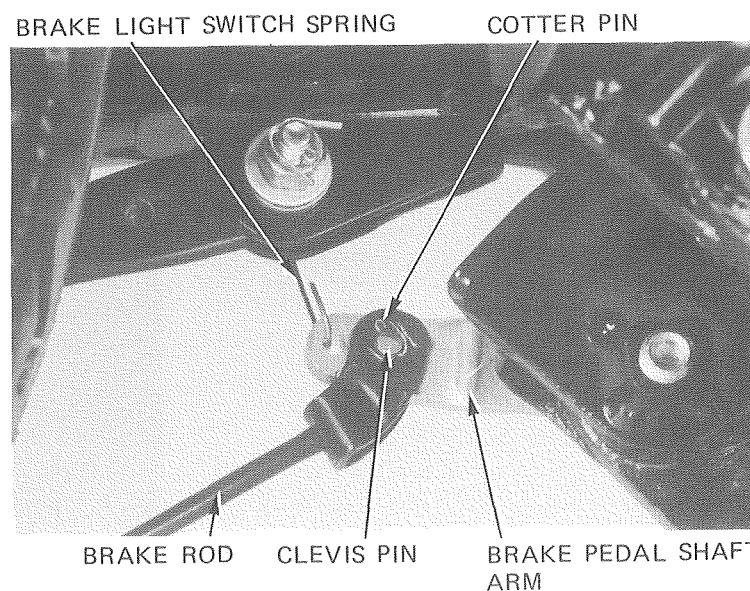
REAR BRAKE PEDAL

Remove the right and left mufflers (page 5-4).
Remove the rear brake adjusting nut.



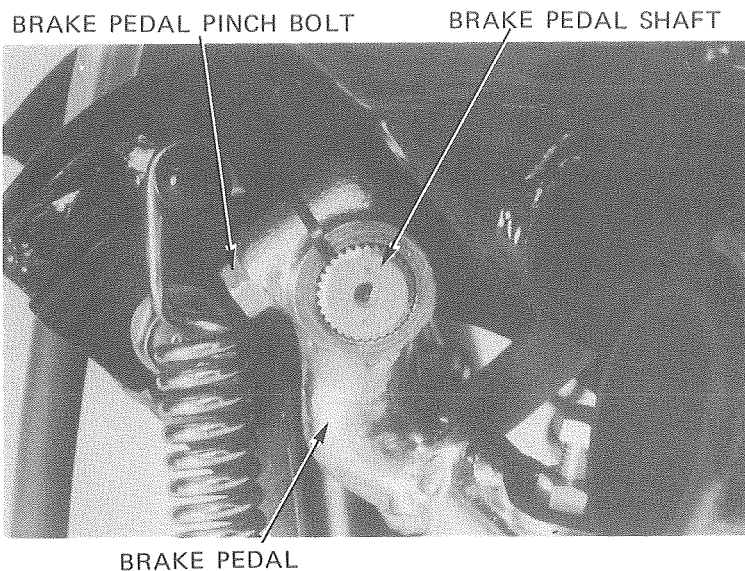
BRAKE ADJUSTING NUT

Disconnect the brake light switch spring from the brake pedal shaft arm.
Remove the cotter pin, clevis pin and brake rod.



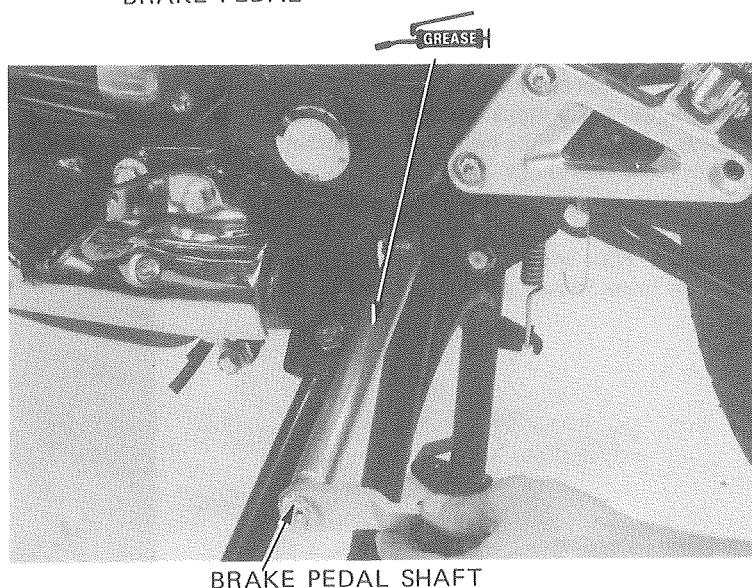


Remove the brake pedal return spring.
Remove the brake pedal pinch bolt and remove the brake pedal.
Remove the brake pedal shaft.



ASSEMBLY

Apply grease to the brake pedal shaft and insert it into the pivot hole.

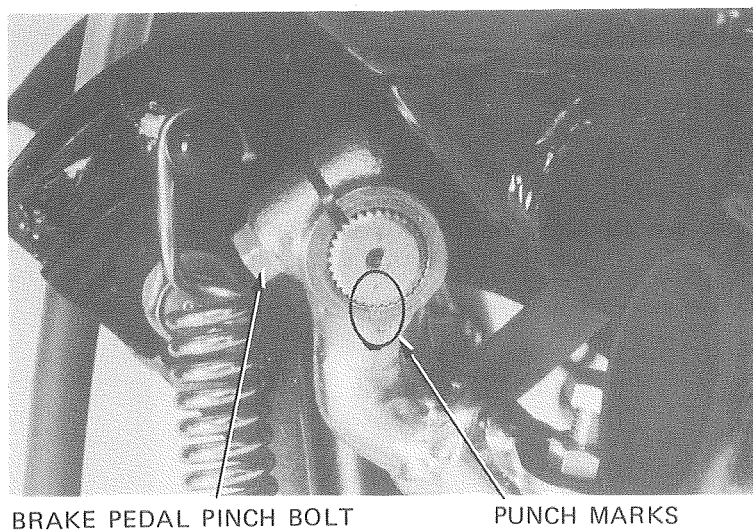


Align the punch mark on the brake pedal with the punch mark on the pedal shaft and install the brake pedal.

Tighten the brake pedal pinch bolt.

TORQUE: 10–15 N·m
(1.0–1.5 kg-m, 7–11 ft-lb)

Attach the brake pedal return and brake light switch springs.
Attach the brake rod to the brake pedal shaft arm.
Install the brake adjusting nut.
Adjust the rear brake (page 3-13).
Install the mufflers.



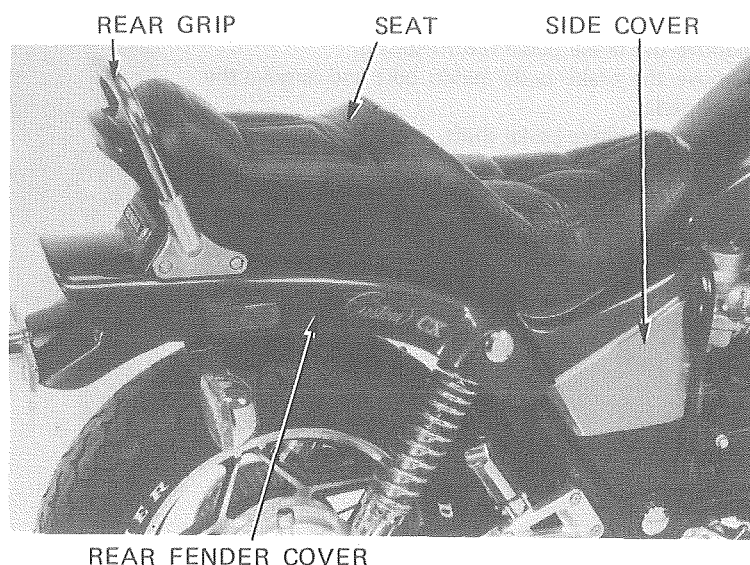


REAR WHEEL/SUSPENSION BRAKE

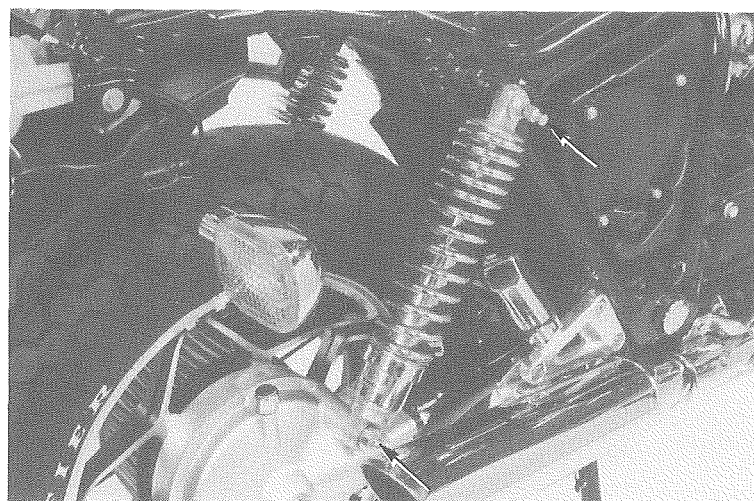
SHOCK ABSORBER

REMOVAL

Place the motorcycle on its center stand.
Remove the seat, both frame side covers, rear grip and rear fender cover.



Adjust the shock absorber to the softest position.
Remove the right shock absorber upper and lower mounts and remove the right shock absorber.
Remove the left shock absorber upper mount and remove the shock absorber from the upper mount stud bolt.
Raise the rear wheel and remove the left shock absorber lower mount and left shock absorber.



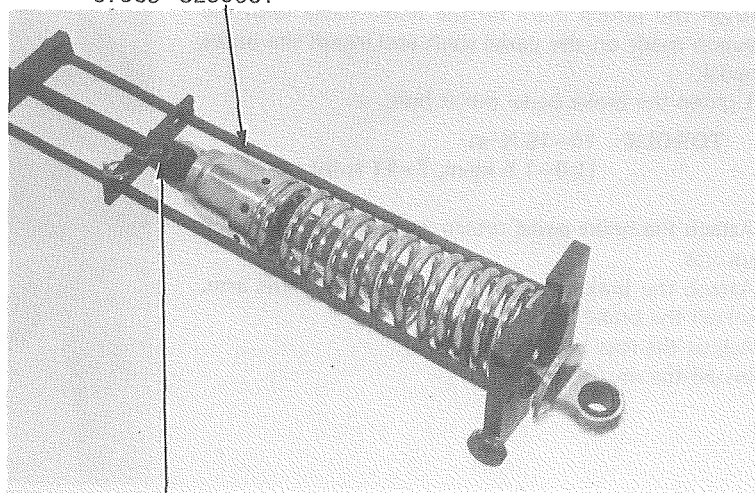
SHOCK COMPRESSOR
07959-3290001

DISASSEMBLY

Set the shock in the compressor as shown and compress the spring 30 mm by turning the compressor handle.

CAUTION

Be sure the base is adjusted correctly for the shock spring and the clevis pin is all the way in.

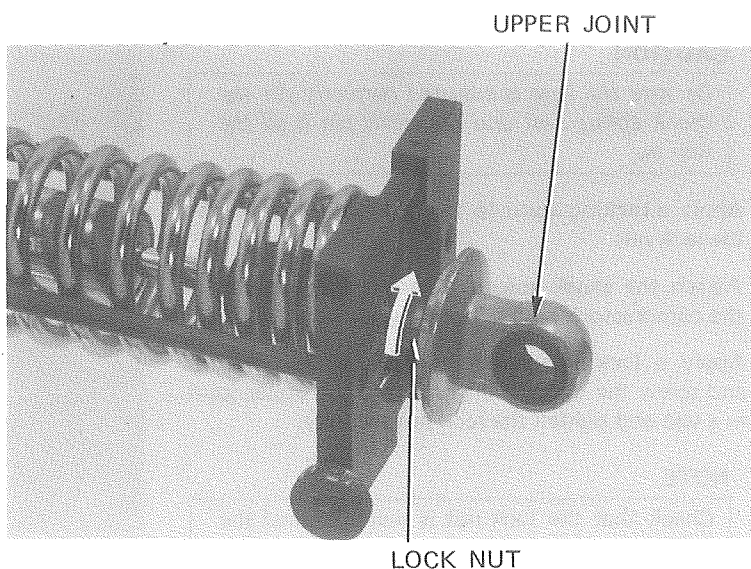


CLEVIS PIN



Place the upper joint in a vise and pull the shock rod out.

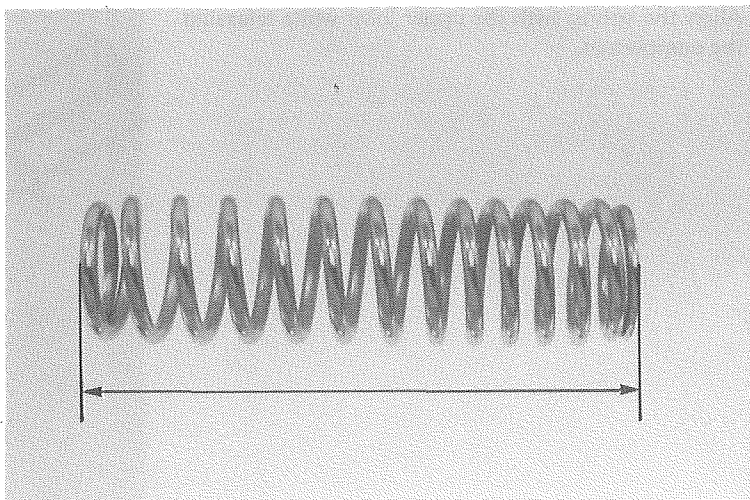
Separate the upper joint by rotating the lock nut in the direction shown and removing the compressor.



SPRING FREE LENGTH

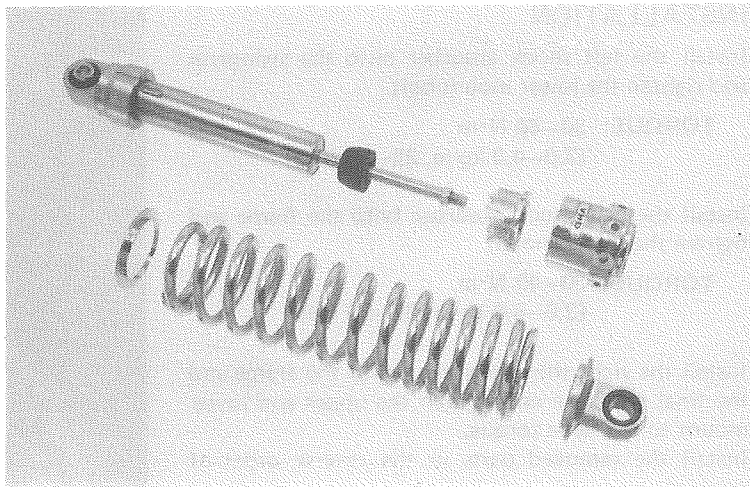
Measure the rear shock absorber spring free length.

SERVICE LIMIT: 234.6 mm (9.2 in)



ASSEMBLY

Place the spring adjuster, the spring lower seat, spring upper seat and stopper rubber on the damper.





REAR WHEEL/SUSPENSION/BRAKE

CAUTION

Be sure the base is adjusted correctly for the shock spring seat and the clevis pin is all the way in.

Apply a locking agent to the rod threads and install the lock nut.

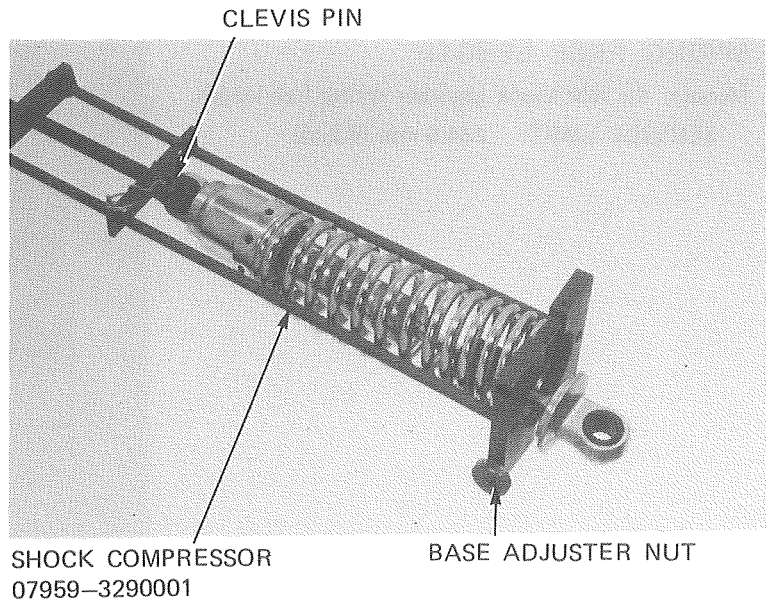
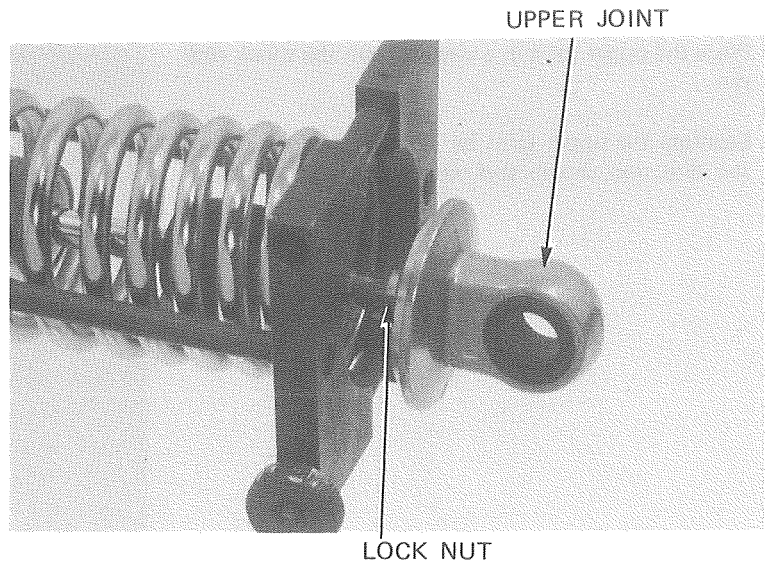
Attach the shock absorber compressor, screwing in the compressor's base adjuster nut.

Apply a locking agent to the damper rod threads and screw the upper joint on. Hold the upper joint in a vise and tighten the lock nut securely.

NOTE

Check that the lock nut is seated against the rod's bottom thread.

Align the spring with the upper joint while releasing the compressor.



INSTALLATION

Install the left shock absorber onto the swingarm and tighten the lower mount bolt.

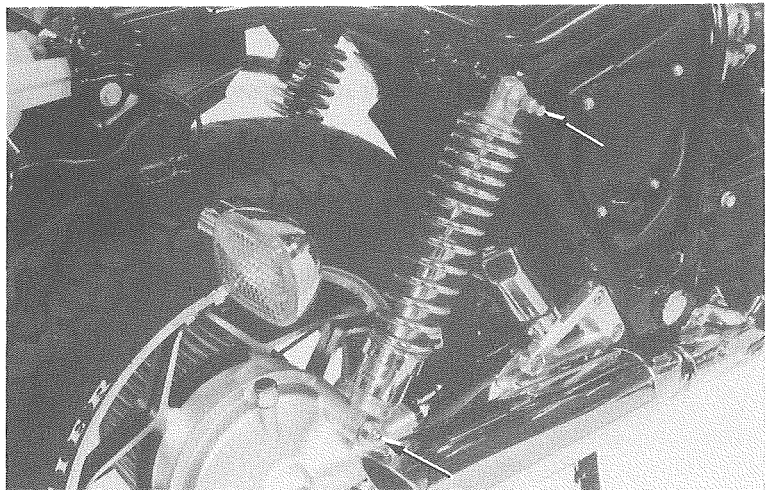
TORQUE: 30–40 N·m
(3.0–4.0 kg-m, 22–29 ft-lb)

Install the left shock absorber onto the frame and tighten the upper mount.

TORQUE: 30–40 N·m
(3.0–4.0 kg-m, 22–29 ft-lb)

Install the right shock absorber onto the frame and the final gear case and tighten the upper and lower mount to the same torque.

Install the removed parts in the reverse order of removal.



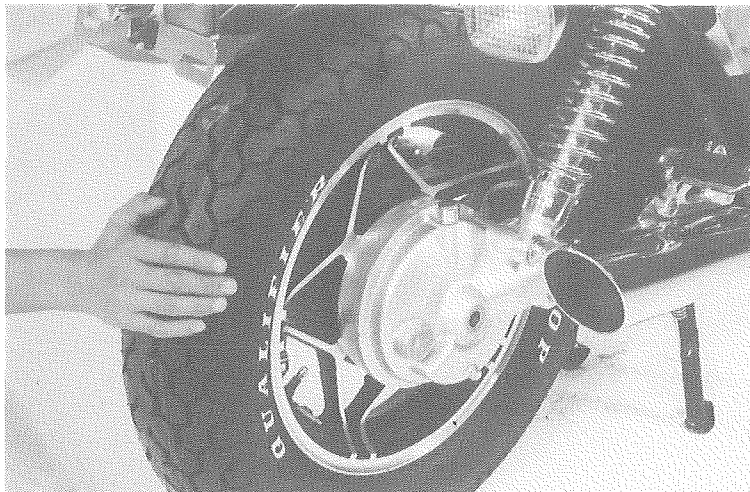


SWING ARM

REMOVAL

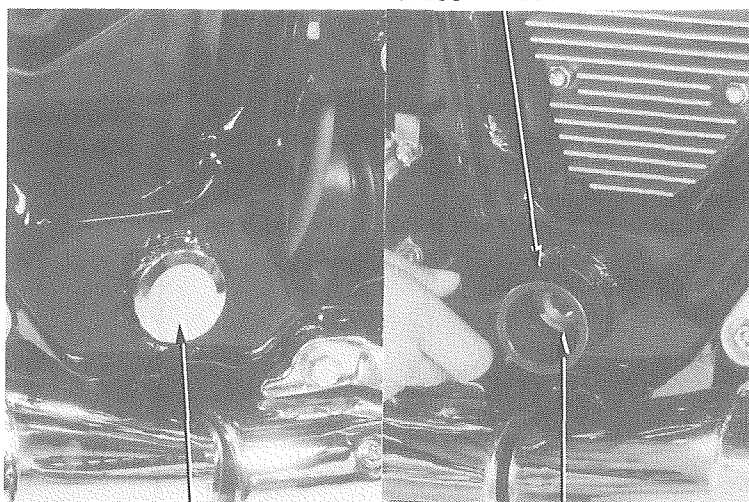
Remove the rear wheel (page 14-3) and the final drive gear case (page 16-3).

Remove the rear shock absorbers (page 14-12).



SWING ARM PIVOT LOCK NUT WRENCH
07908-ME90000

Remove the swing arm pivot caps and loosen the left pivot bolt lock nut.



PIVOT CAP

LOCK NUT

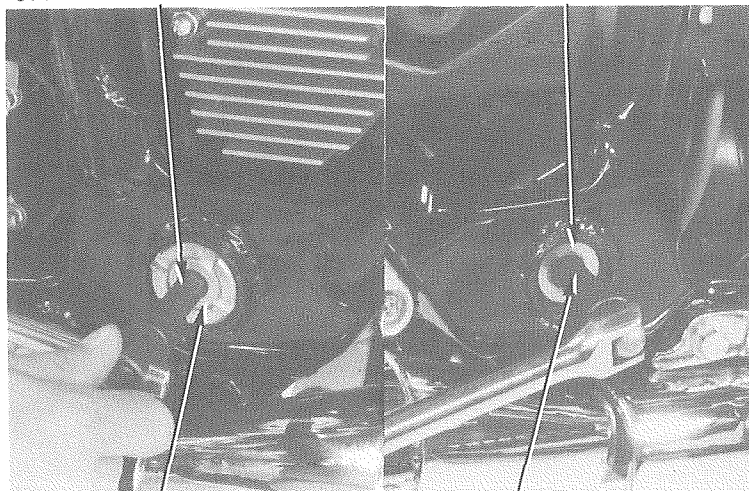
HEX HEAD WRENCH
07917-3710000 OR EQUIVALENT

RIGHT PIVOT BOLT

Remove the left pivot bolt, using the 10 mm Hex Head Wrench.

Remove the right pivot bolt and remove the swing arm.

Remove the brake torque link from the swing arm.



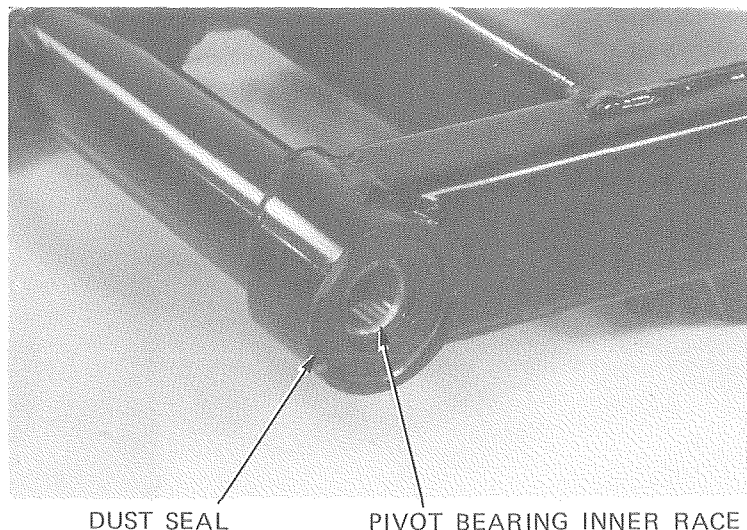
LEFT PIVOT BOLT

HEX HEAD WRENCH, 14 mm OR
EQUIVALENT COMMERCIALLY AVAILABLE



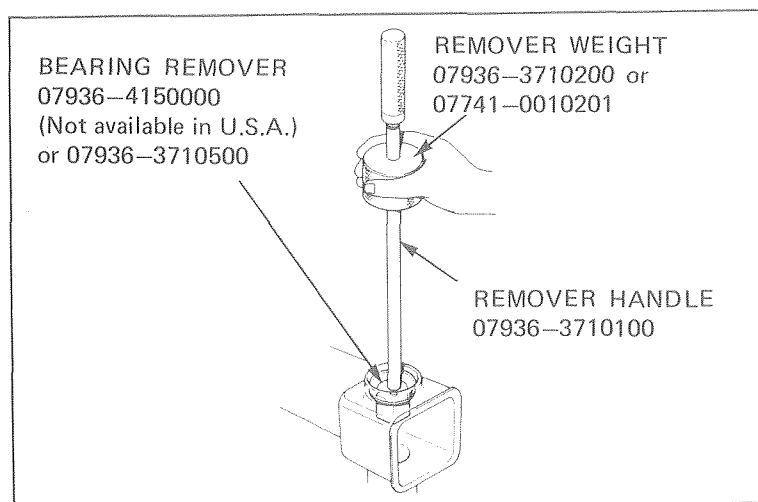
PIVOT BEARING REPLACEMENT

Remove the dust seals and pivot bearing inner races.



Punch or drill a 13 mm (1/2 in) hole into each grease retainer.

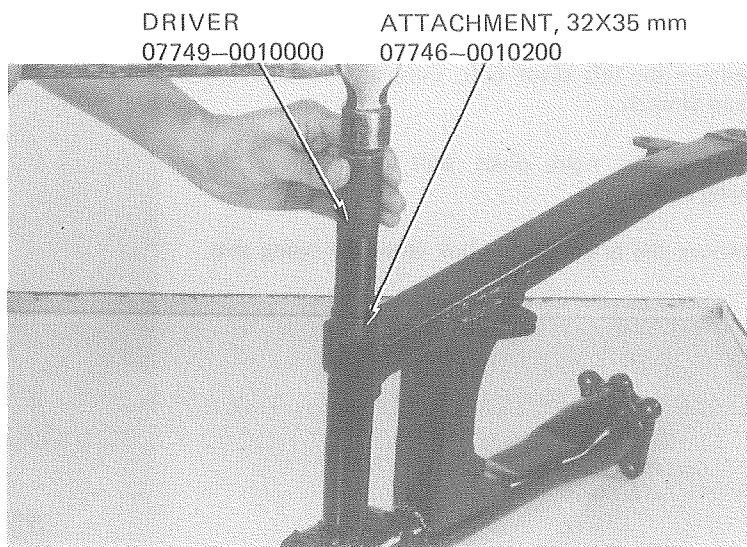
Remove the attachment from the special tool, 07936-3710500. Slide the shaft through the hole and install a 29 mm (O.D.) washer or equivalent and attachment onto the shaft. Install the slide hammer and handle and remove the race. Repeat for the other side.



NOTE

Replace the bearing inner and outer races as a set. Replace the grease retainer plate whenever it is removed.

Install new grease retainer plates and drive new bearing outer races into the swing arm pivot.

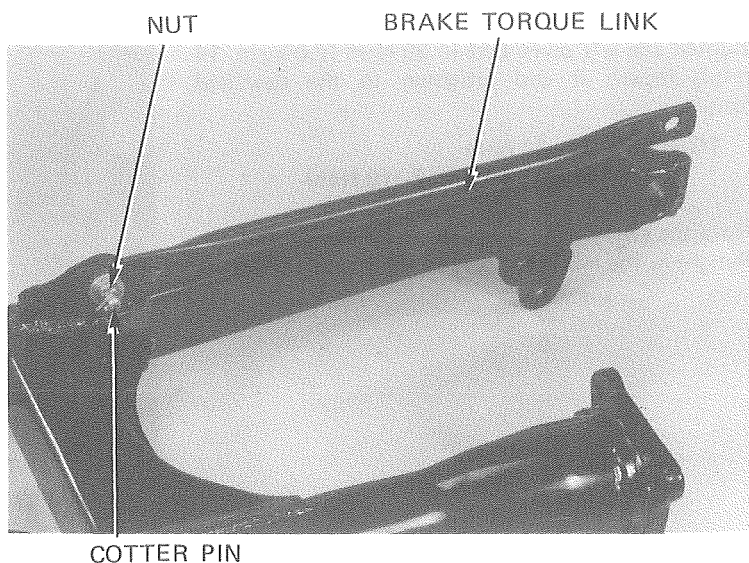




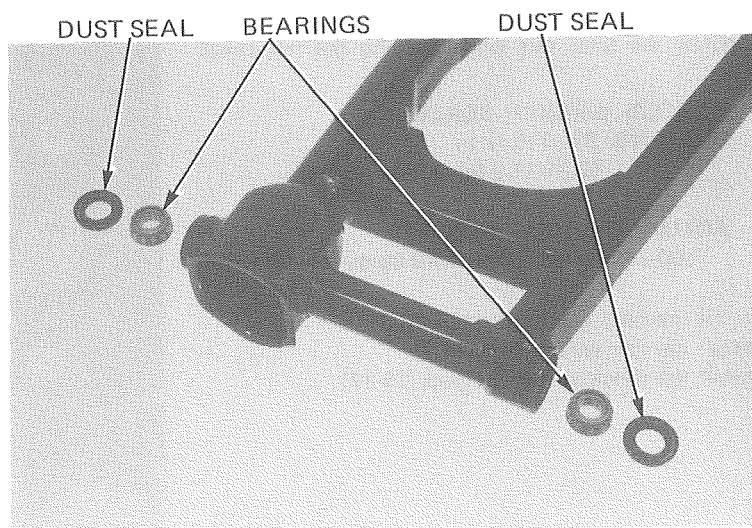
INSTALLATION

Install the rear brake torque link to the swing arm and tighten the nut.

TORQUE: 15–25 N·m
(1.5–2.5 kg-m, 11–18 ft-lb)



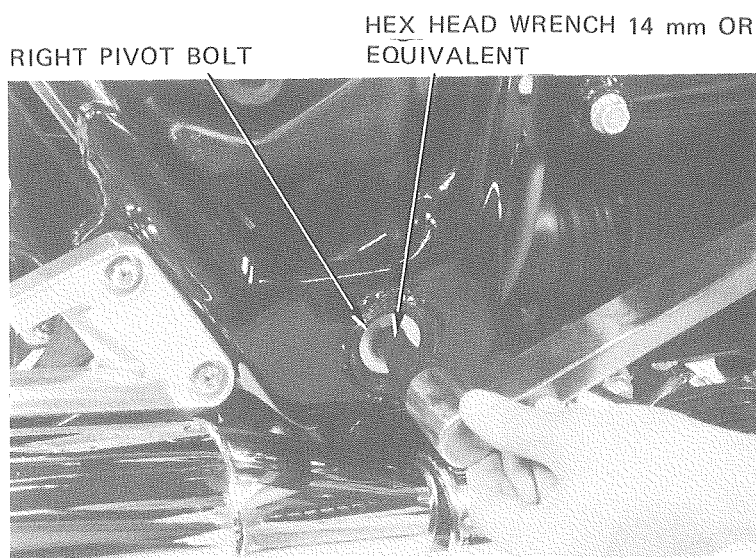
Pack all bearing cavities with grease.
Apply grease to the pivot bolt tips and dust seal lips.



Install the swing arm and pivot bolts.

Tighten the right pivot bolt to the specified torque.

TORQUE: 90–120 N·m
(9.0–12.0 kg-m, 65–87 ft-lb)





HONDA
CX650C

REAR WHEEL/SUSPENSION/BRAKE

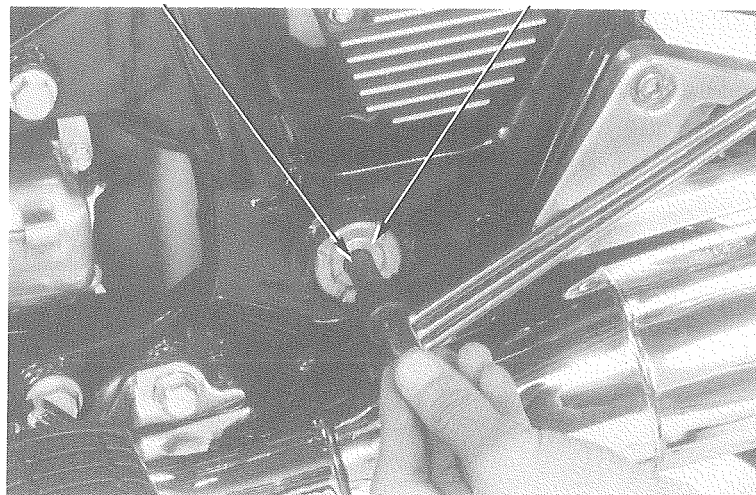
Tighten the left pivot bolt to 20 N·m (2.0 kg-m, 14 ft-lb), loosen it and retighten to the specified torque.

TORQUE: 10–14 N·m
(1.0–1.4 kg-m, 7–10 ft-lb)

Move the swing arm up and down several times.
Retighten the left pivot bolt to the specified torque.

HEX HEAD WRENCH, 10 mm OR
EQUIVALENT

LEFT PIVOT BOLT



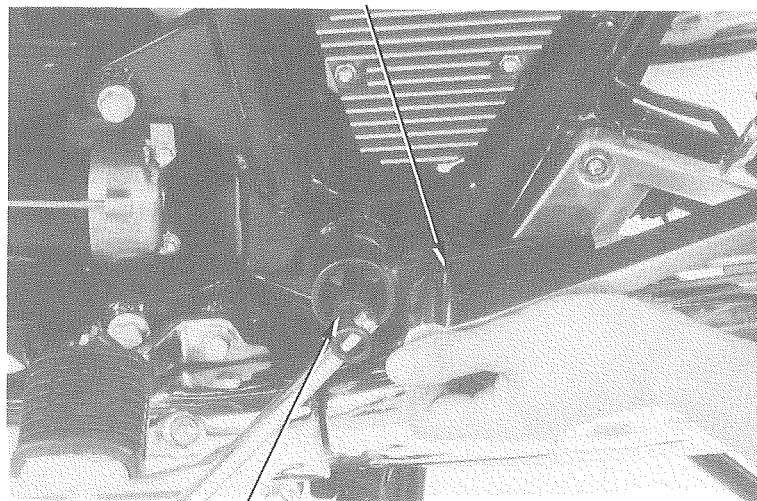
SWING ARM LOCK NUT WRENCH
07908-ME90000

Tighten the lock nut while holding the left pivot bolt.

TORQUE WRENCH SCALE
READING: 93–115 N·m
(9.3–11.5 kg-m, 64–85 ft-lb)

ACTUAL TORQUE APPLIED:
100–130 N·m (10.0–13.0 kg-m, 72–94 ft-lb)

Install the final gear case (page 16-3).
Install the rear wheel (page 14-7).
Install the shock absorbers (page 14-14).

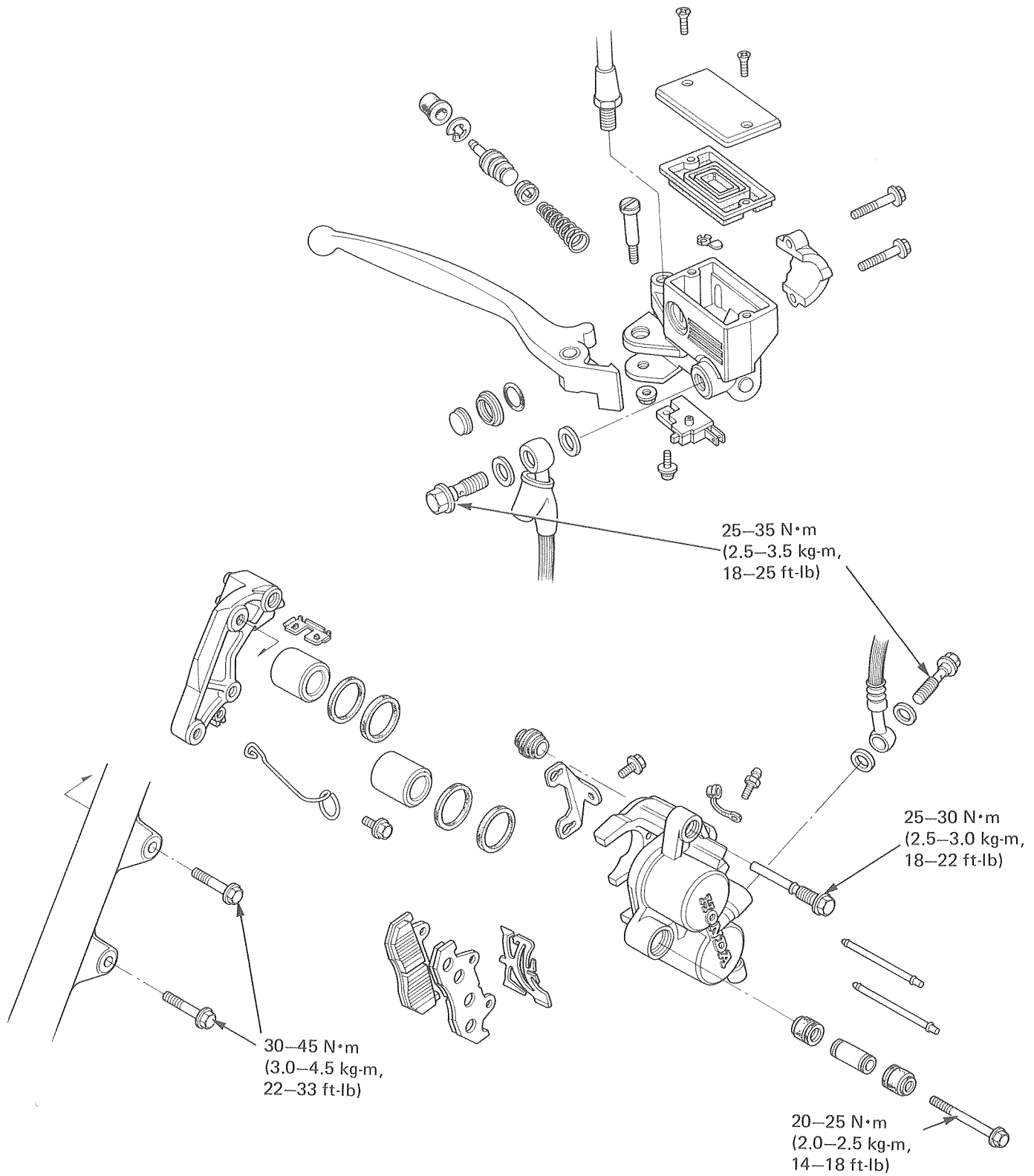


HEX HEAD WRENCH, 10 mm OR EQUIVALENT



HONDA
CX650C

MEMO





SERVICE INFORMATION	15-1
TROUBLESHOOTING	15-2
BRAKE FLUID REPLACEMENT/AIR BLEEDING	15-3
BRAKE PAD/DISC	15-5
MASTER CYLINDER	15-8
BRAKE CALIPER	15-11

SERVICE INFORMATION

GENERAL

- The brake caliper can be removed without disconnecting the hydraulic system.
- Bleed the hydraulic system if it is disassembled or if the brake feels spongy.
- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling brake fluid on painted surfaces or instrument lenses, as severe damage can result.
- Always check brake operation before riding the motorcycle.

SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Front disc thickness	4.9–5.1 (0.19–0.20)	4.0 (0.16)
Front disc runout	—	0.3 (0.012)
Front master cylinder I.D.	14.000–14.043 (0.5512–0.5529)	14.055 (0.553)
Front master piston O.D.	13.957–13.984 (0.5495–0.5506)	13.945 (0.549)
Front caliper piston O.D.	31.998–32.048 (1.2598–1.2617)	31.94 (1.258)
Front caliper cylinder I.D.	32.030–32.080 (1.2610–1.2630)	32.09 (1.263)

TORQUE VALUES

Brake hose bolt	25–35 N•m (2.5–3.5 kg-m, 18–25 ft-lb)
Front brake caliper bracket	30–45 N•m (3.0–4.5 kg-m, 22–33 ft-lb)
Front brake caliper bolt	20–25 N•m (2.0–2.5 kg-m, 14–18 ft-lb)
Front brake caliper pivot bolt	25–30 N•m (2.5–3.0 kg-m, 18–22 ft-lb)

TOOL

Special	
Snap ring pliers	07914–3230001



HYDRAULIC BRAKE

TROUBLESHOOTING

Brake Lever Soft or Spongy

- Air bubbles in hydraulic system.
- Low fluid level.
- Hydraulic system leaking.

Brake Lever Too Hard

- Sticking piston(s)
- Clogged hydraulic system.
- Pads glazed or worn excessively.

Brakes Drag

- Hydraulic system sticking.
- Sticking piston(s)
- Incorrect rear brake pedal adjustment.

Brakes Grab or Pull to One Side

- Pads contaminated.
- Disc or wheel misaligned.

Brake Chatter or Squeal

- Pads contaminated.
- Excessive disc runout.
- Caliper installed incorrectly.
- Disc or wheel misaligned.

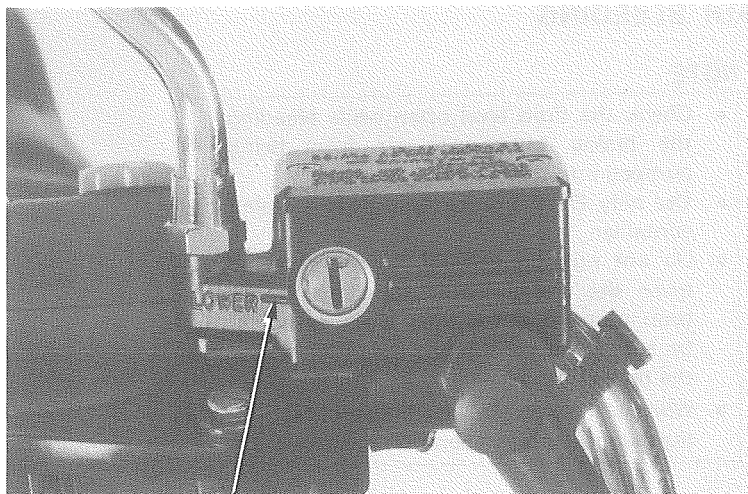


BRAKE FLUID REPLACEMENT/ AIR BLEEDING

Check the fluid level with the fluid reservoir parallel to the ground.

CAUTION

- Install the diaphragm on the reservoir when operating the brake lever. Failure to do so will allow brake fluid to squirt out of the reservoir during brake operation.
- Avoid spilling fluid on painted surfaces. Place a rag over the fuel tank whenever the system is serviced.



LOWER LEVEL

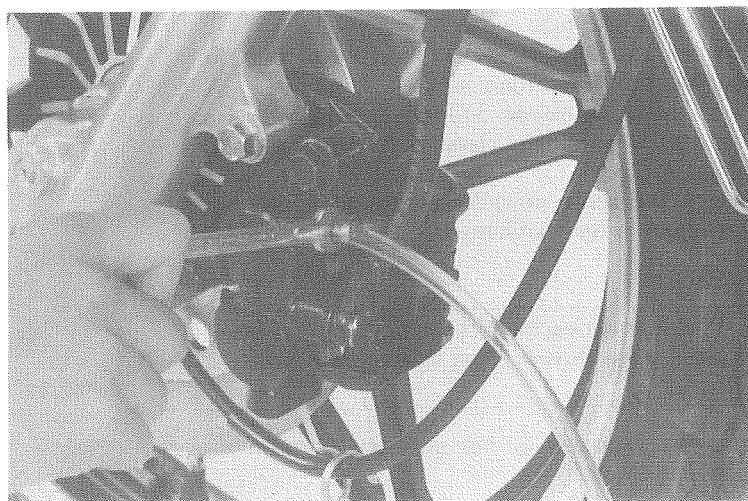
BRAKE FLUID DRAINING

Connect a bleed hose to the bleed valve.

Loosen the caliper bleed valve and pump the brake lever. Stop operating the lever when fluid stops flowing out of the bleed valve.

WARNING

A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.



BRAKE FLUID FILLING

NOTE

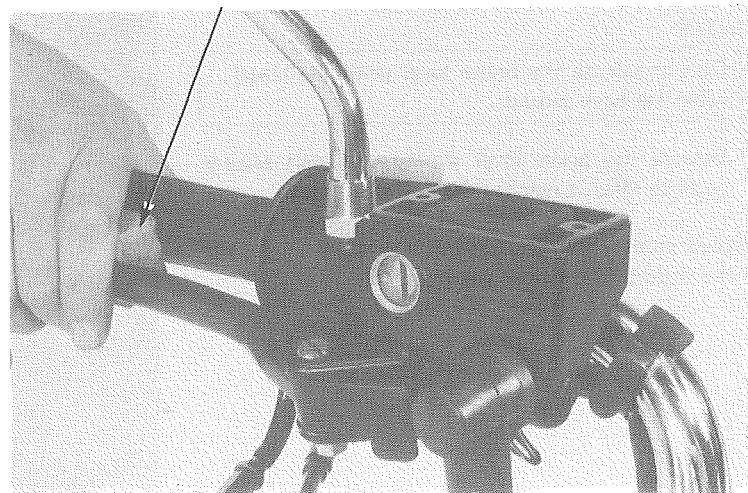
Do not mix different types of fluid. They are not compatible.

Close the bleed valve, fill the reservoir, and install the diaphragm.

To prevent piston overtravel and brake fluid seepage, keep a 20 mm (3/4 in) spacer between the handlebar grip and lever when filling and bleeding the front brake system. Pump up the system pressure with the lever until there are no air bubbles in the fluid flowing out of the reservoir small hole and lever resistance is felt.

Bleed the system as described on the next page.

20mm (3/4 in) SPACER



**AIR BLEEDING****NOTE**

- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- Use only DOT 3 brake fluid from a sealed container.
- Do not mix brake fluid types and never reuse the contaminated fluid which has been pumped out during brake bleeding, because that would impair the efficiency of the brake system.
- When using a brake bleeding tool, follow the manufacturer's operation instructions.

Pump the brake lever to bring the caliper pads in contact with the disc.

Remove the master cylinder cap and fill the reservoir to near full.

Connect the Mityvac Brake Bleeder No. 6860 or equivalent to the bleed valve.

Pump the brake bleeder and loosen the bleed valve. Add fluid when the fluid level in the master cylinder reservoir is low.

Repeat the above procedures until air bubbles do not appear in the plastic hose.

NOTE

If air is entering the bleeder from around the bleed valve threads. Seal threads with teflon tape.

If a brake bleeder is not available, perform the following procedure.

- 1) Squeeze the brake lever, open the bleed valve 1/2 turn and then close the valve.

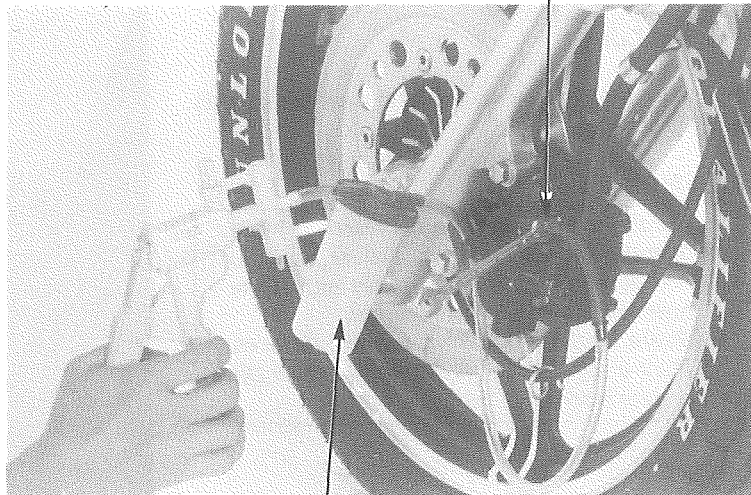
NOTE

Do not release the brake lever until the bleed valve has been closed.

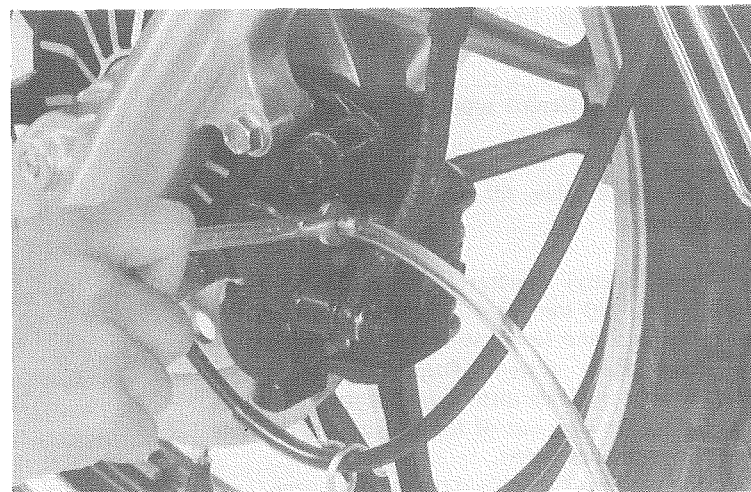
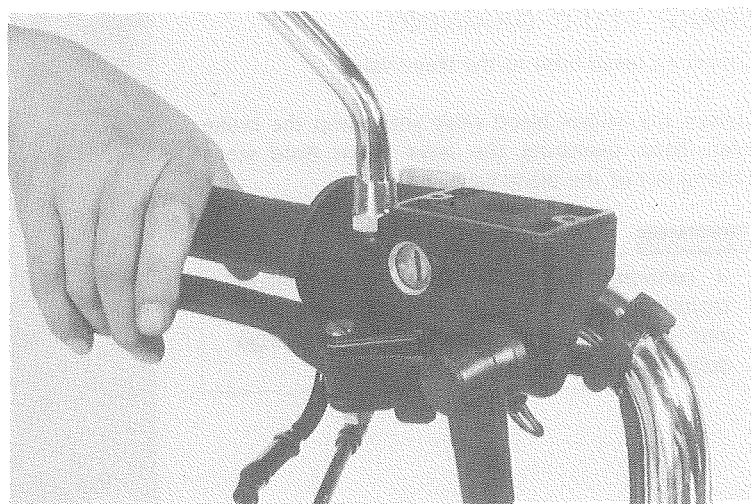
- 2) Release the brake lever slowly and wait several seconds after it reaches the end of its travel.

Repeat steps 1 and 2 until bubbles cease to appear in the fluid at the end of the hose.

AIR BLEED VALVE



MITYVAC BRAKE BLEEDER OR EQUIVALENT

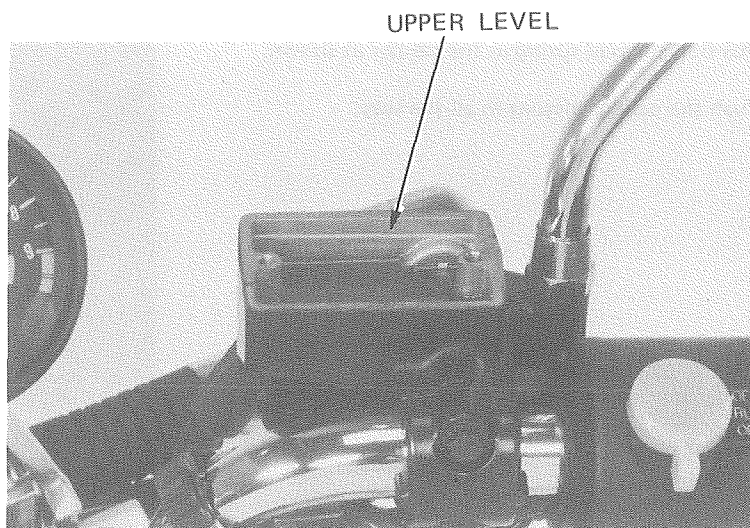




Fill the fluid reservoir to the upper level mark.

WARNING

A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.



BRAKE PAD/DISC

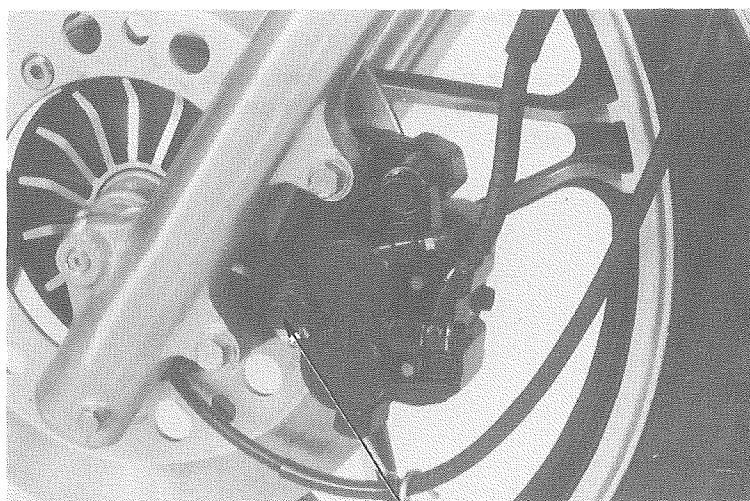
PAD REPLACEMENT

NOTE

Always replace the brake pads in pairs to assure even disc pressure.

Remove the caliper bolt.

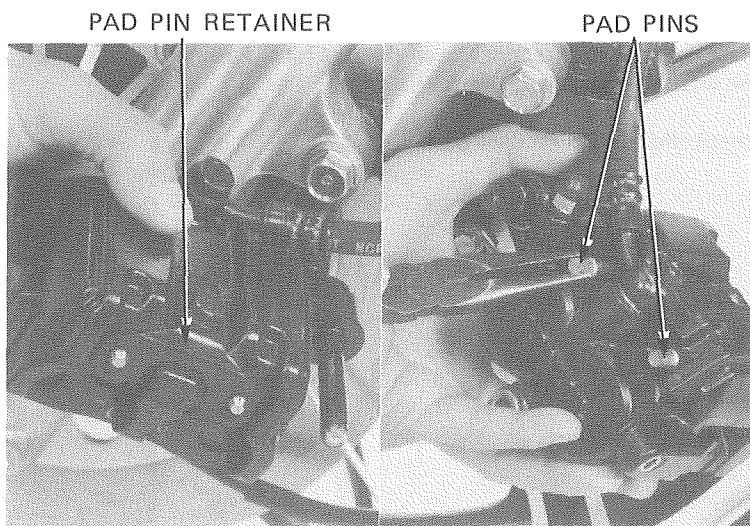
Pivot the caliper up out of the way and remove the caliper from the bracket.



CALIPER BOLT

Remove the pad pin retainer and pull the pad pins out of the caliper.

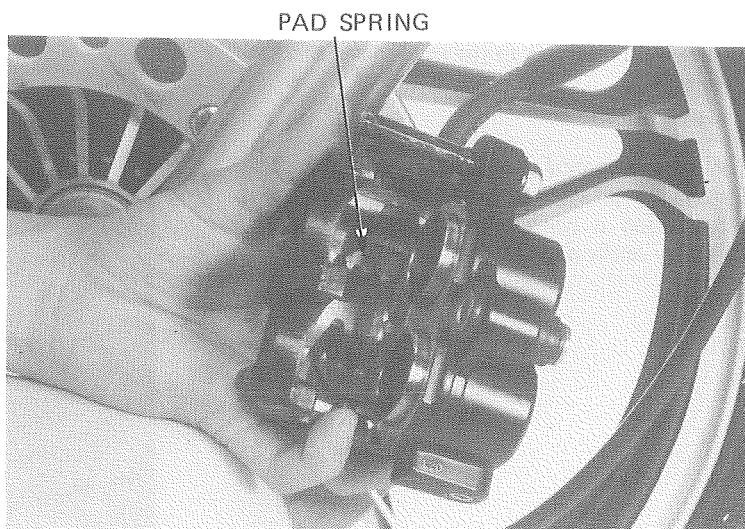
Remove the brake pads.





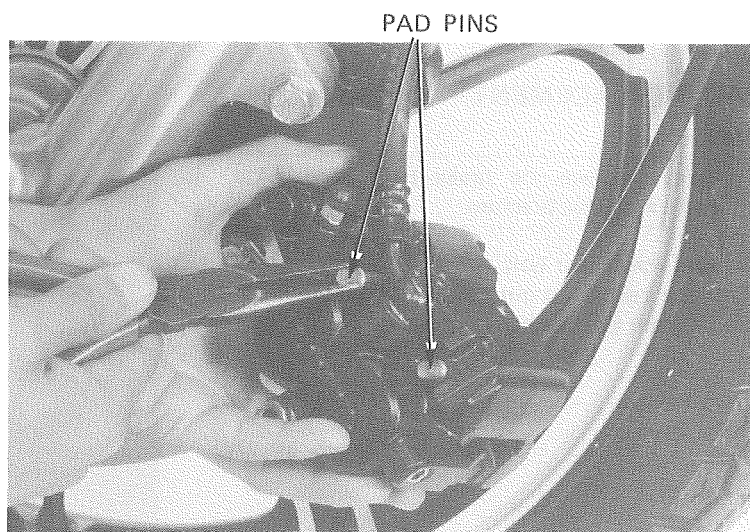
Position the pad spring in the caliper as shown.

Push the caliper pistons in all the way.



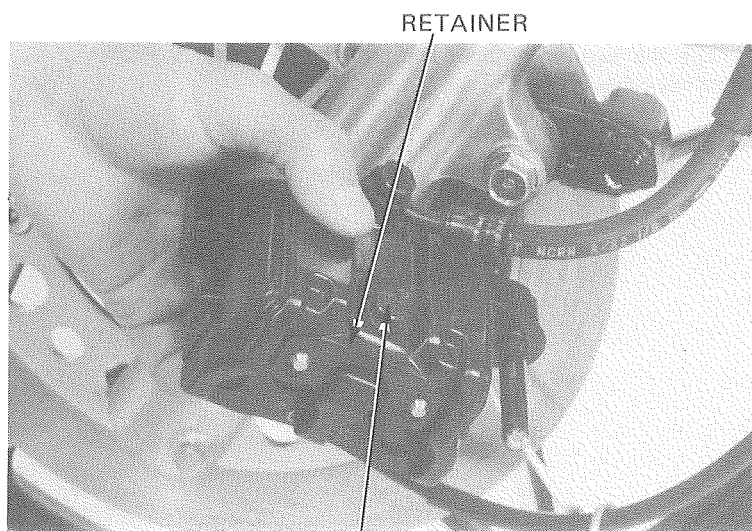
Install the new pads in the caliper.

Install the pad pins, one pad pin first, then install the other pin by pushing the pads against the caliper to depress the pad spring.



Place the pad pin retainer over the pad pins. Push the retainer down to secure the pins.

Install the pad pin retainer bolt.

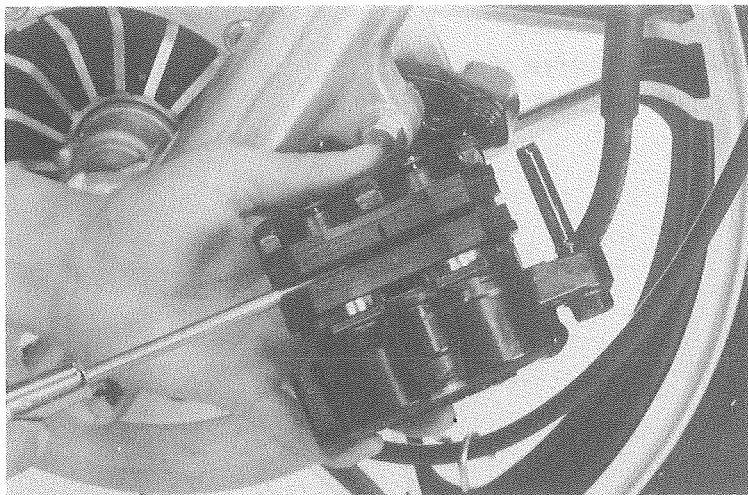




Push the piston all the way in to allow installation of new brake pads.

NOTE

Check the brake fluid level in the brake master cylinder reservoir as such operation causes the level to rise.

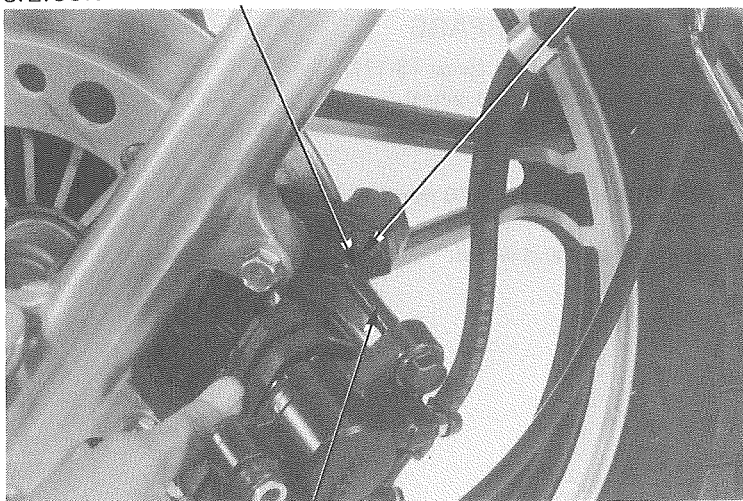


Apply silicone grease or brake fluid to the caliper pivot bolt and insert the pivot bolt into the pivot bolt hole.



SILICONE GREASE OR BRAKE FLUID

PIVOT HOLE

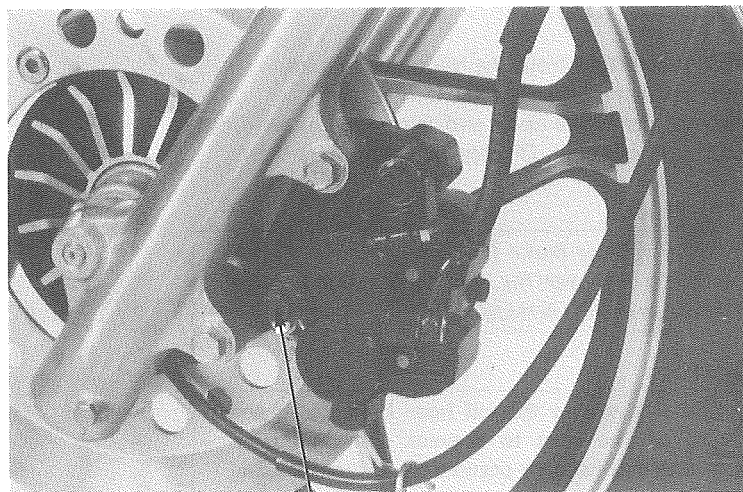


PIVOT BOLT

Pivot the caliper down so the brake disc is positioned between the pads, making sure not to damage the pads.

Install the caliper bolt and tighten it.

TORQUE: 20–25 N·m
(2.0–2.5 kg-m, 14–18 ft-lb)



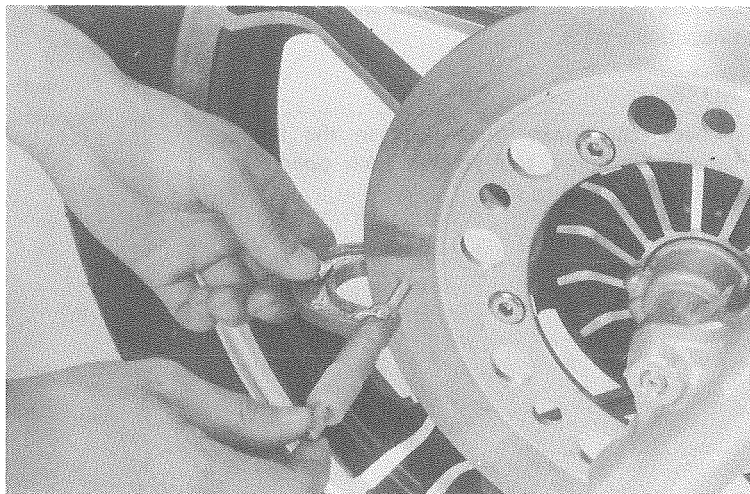
CALIPER BOLT



DISC THICKNESS

Measure the thickness of each disc.

SERVICE LIMIT: 4.0 mm (0.16 in)



BRAKE DISC WARPAGE

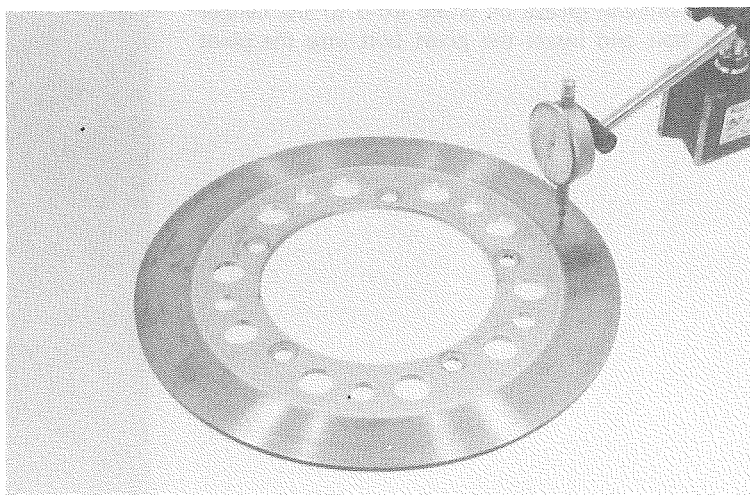
Remove the front wheel (page 13-11).

Remove the disc from the wheel.

Measure the brake disc for warpage on a surface plate.

SERVICE LIMIT: 0.30 mm (0.012 in)

Reinstall the disc and wheel.



MASTER CYLINDER

DISASSEMBLY

Drain brake fluid from the hydraulic system.

Disconnect the brake light switch wires.

Remove the brake lever and rear view mirror from the master cylinder. Disconnect the brake hose.

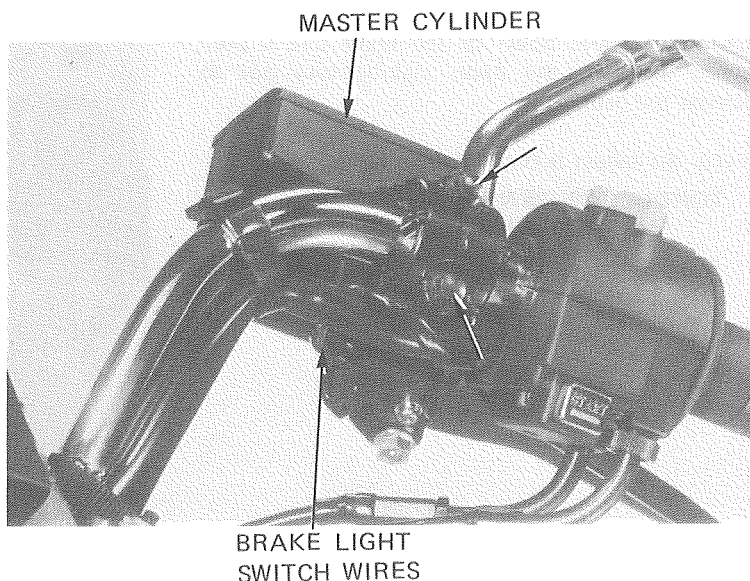
CAUTION

*Avoid spilling brake fluid on painted surfaces.
Place a rag over the fuel tank whenever the
brake system is serviced.*

NOTE

When removing the oil hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent fluid from leaking out.

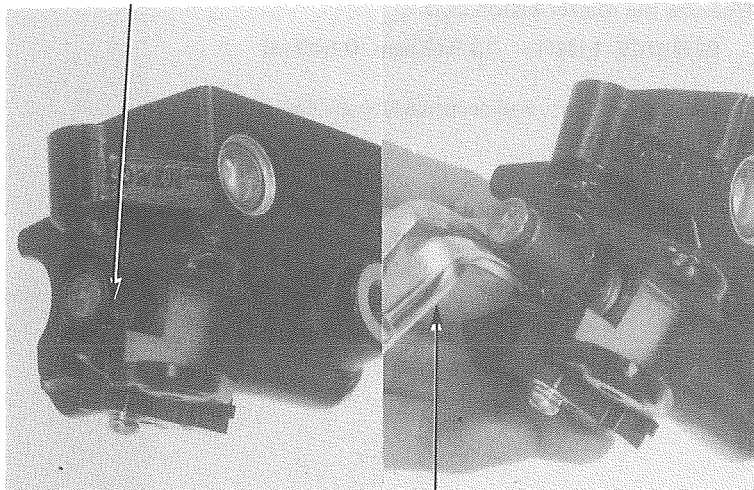
Remove the master cylinder.





Remove the piston boot and the circlip from the master cylinder body.

PISTON BOOT

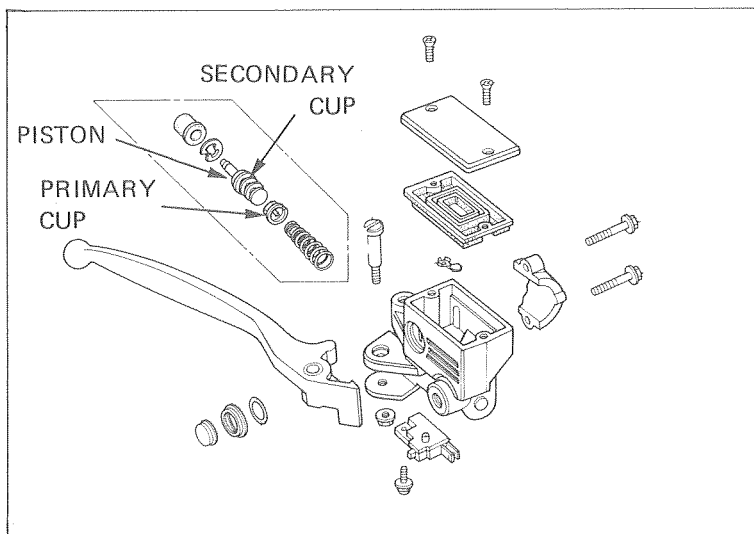


SNAP RING PLIERS
07914-3230001

Remove the secondary cup and piston. Then remove the primary cup and spring.

Remove the brake light switch from the master cylinder body, if necessary.

Clean the inside of the master cylinder and reservoir with brake fluid.

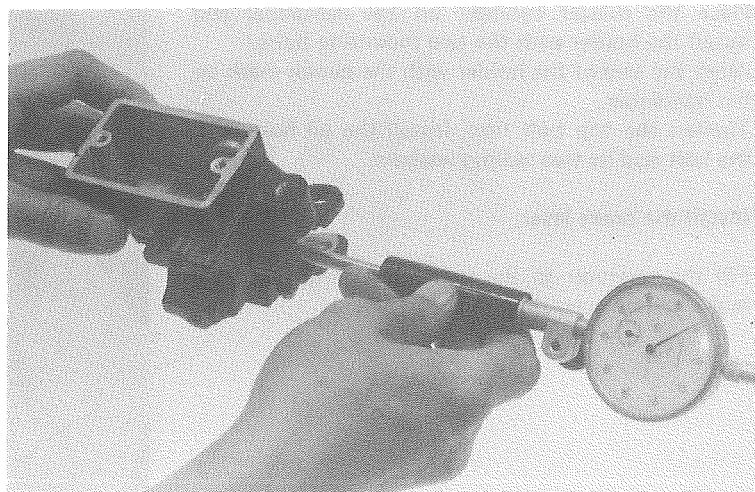


INSPECTION

Measure the master cylinder I.D.

SERVICE LIMIT: 14.055 mm (0.553 in)

Check the master cylinder for scores, scratches or nicks.

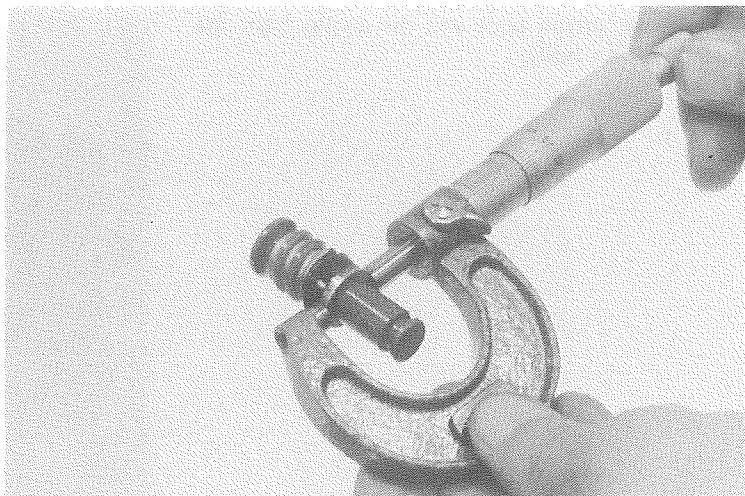




Measure the master piston O.D.

SERVICE LIMIT: 13.945 mm (0.549 in)

Check the primary and secondary cups for damage before assembly.



ASSEMBLY

CAUTION

Handle the master cylinder piston, cylinder and spring as a set.

Assemble the master cylinder. Coat all parts with clean brake fluid before assembly. Install the spring and primary cup together.

Dip the piston cup in brake fluid before assembly.

CAUTION

When installing the cups, do not allow the lips to turn inside out. Be certain the circlip is seated firmly in the groove.

Install the piston clip and boot.

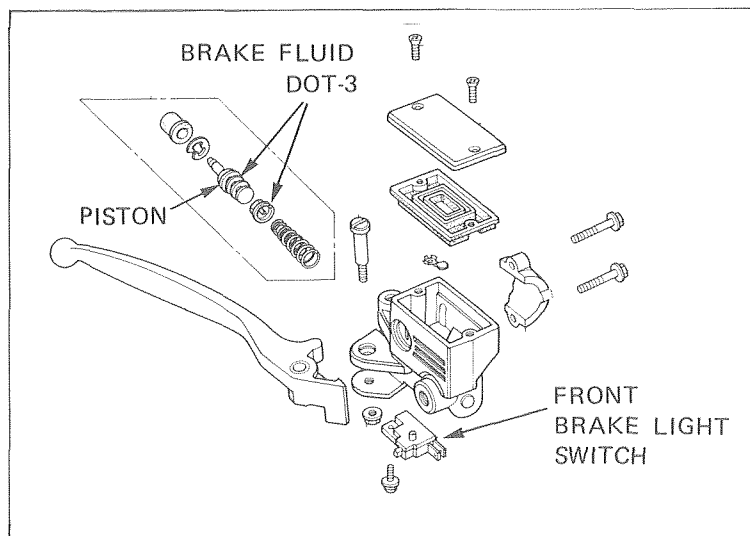
Place the master cylinder on the handlebar and install the holder with the two mounting bolts.

Align the end of the holder with the punch mark on the handlebar.

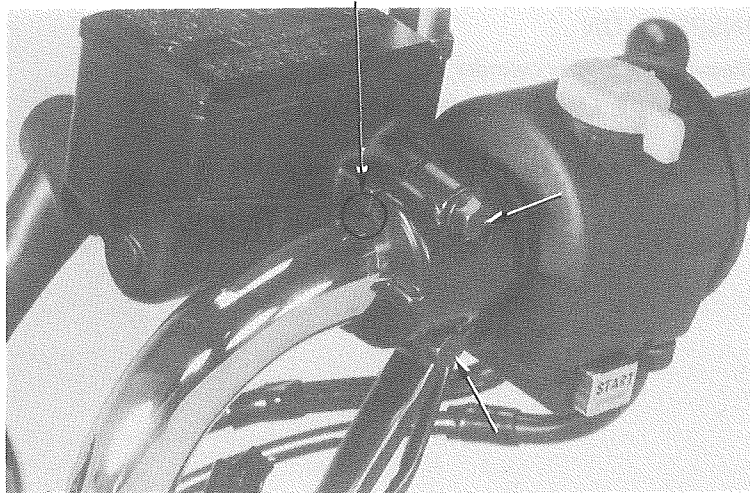
Tighten the top bolt first. Install the oil hose with the bolt and its two sealing washers.

Install the brake lever.

Fill the reservoir to the upper level and bleed the brake system according to page 15-4.



PUNCH MARK





BRAKE CALIPER

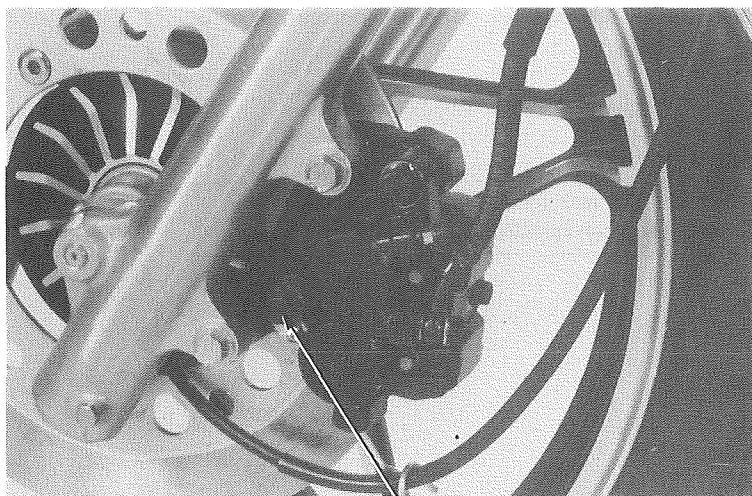
REMOVAL

Place a clean container under the caliper and disconnect the brake hose from the caliper.

CAUTION

Avoid spilling brake fluid on painted surfaces.

Remove the caliper bolt and caliper.

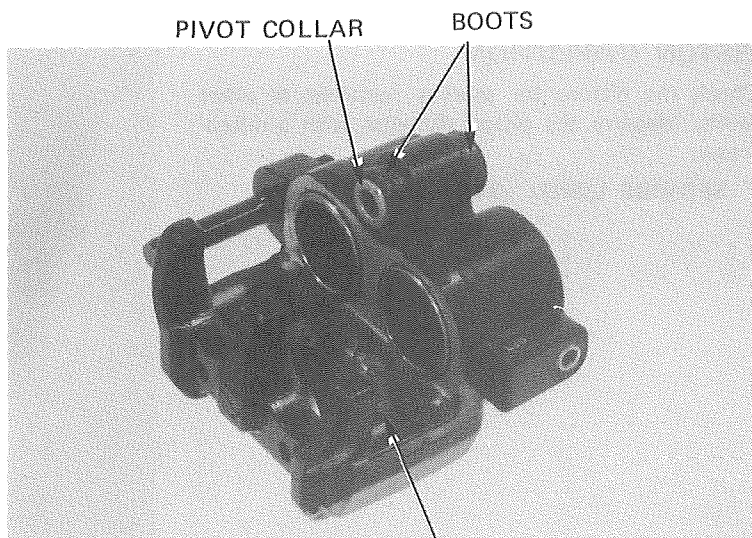


CALIPER BOLT

DISASSEMBLY

Remove the following:

- pads and pad spring.
- caliper pivot collar and boots.
- pistons from the caliper.



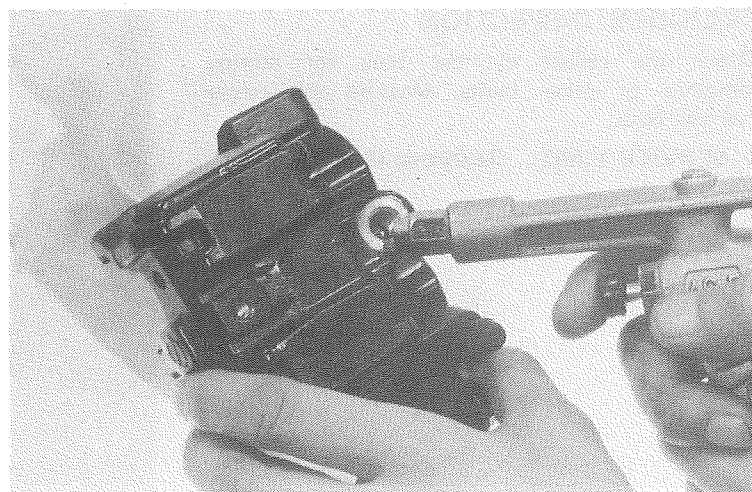
PAD SPRING

If necessary, apply compressed air to the caliper fluid inlet to get the piston out. Place a shop rag under the caliper to cushion the piston when it is expelled. Use the air in short spurts.

CAUTION

Do not bring the nozzle too close to the inlet.

Examine the pistons and cylinders for scoring, scratches or other damage and replace if necessary.





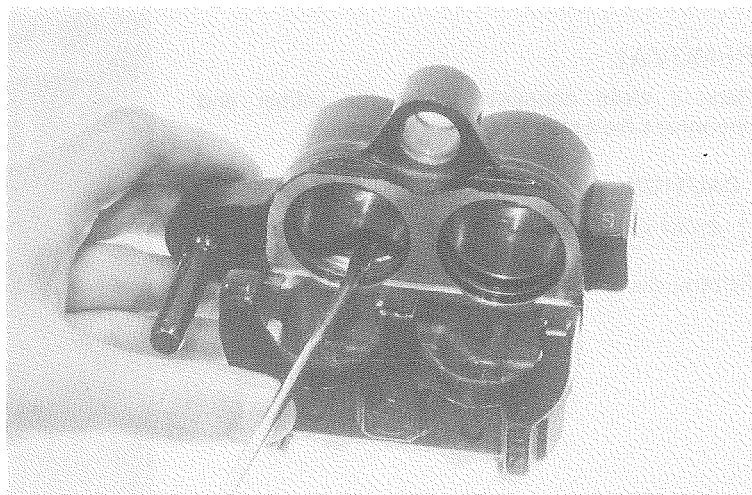
HYDRAULIC BRAKE

Push the piston seals in, lift them out and discard them.

Clean the oil seal grooves with brake fluid.

CAUTION

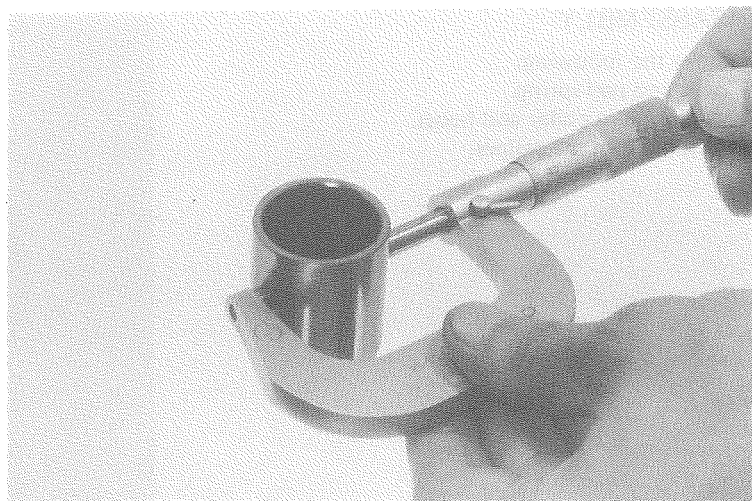
Be careful not to damage the piston sliding surfaces when removing the seals.



PISTON INSPECTION

Check the pistons for scoring, scratches or other faults. Measure the piston diameter with a micrometer.

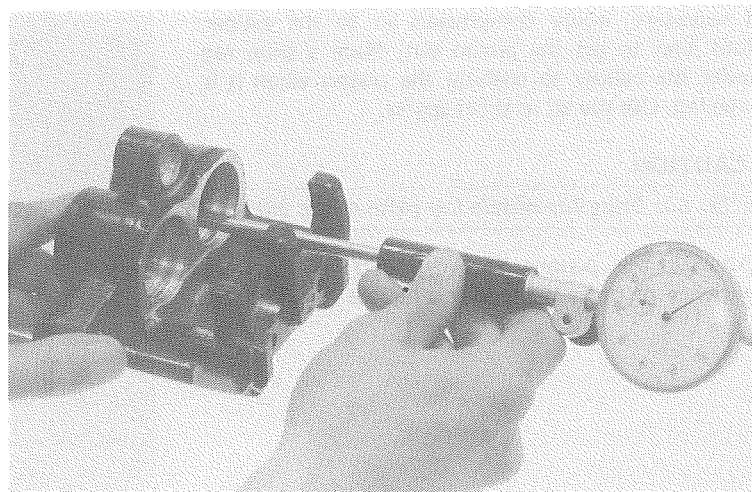
SERVICE LIMIT: 31.94 mm (1.258 in)



CYLINDER INSPECTION

Check the caliper cylinder bore for scoring, scratches or other faults. Measure the caliper cylinder bore.

SERVICE LIMIT: 32.09 mm (1.263 in)





ASSEMBLY

If the piston boots are hardened or deteriorated, replace them with new ones. The piston seals must be replaced with new ones whenever they are removed. Coat the seals with silicone grease or brake fluid before assembly.

Install the pistons with the dished ends toward the pads. Then install the piston boots.

Install the collar boots and collar making sure that the boots are seated in the collar and caliper grooves properly.

Install the pad spring and pads.

Install the caliper pivot bolt, if it was removed.

TORQUE: 25–30 N·m
(2.5–3.0 kg-m, 18-22 ft-lb)

INSTALLATION

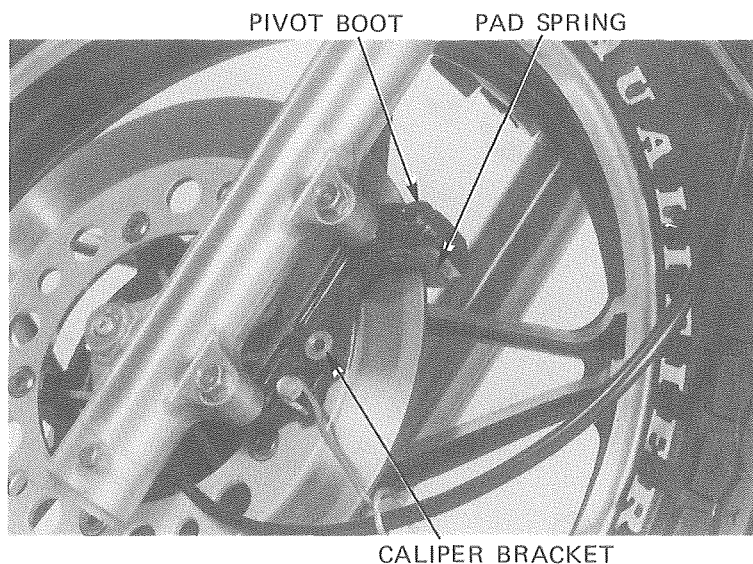
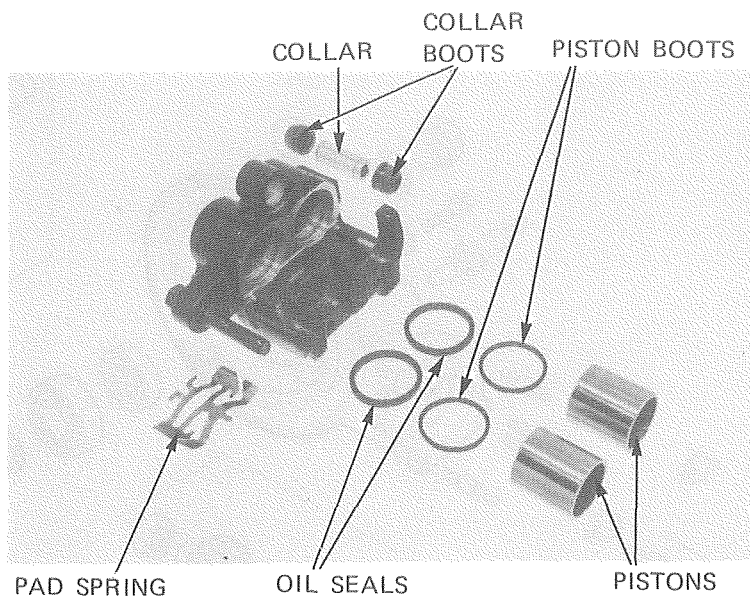
Install the pivot boot and pad spring as shown.

Apply silicone grease or brake fluid to the caliper pivot bolt.

Install the caliper assembly over the brake disc so that the disc is positioned between the pads.

CAUTION

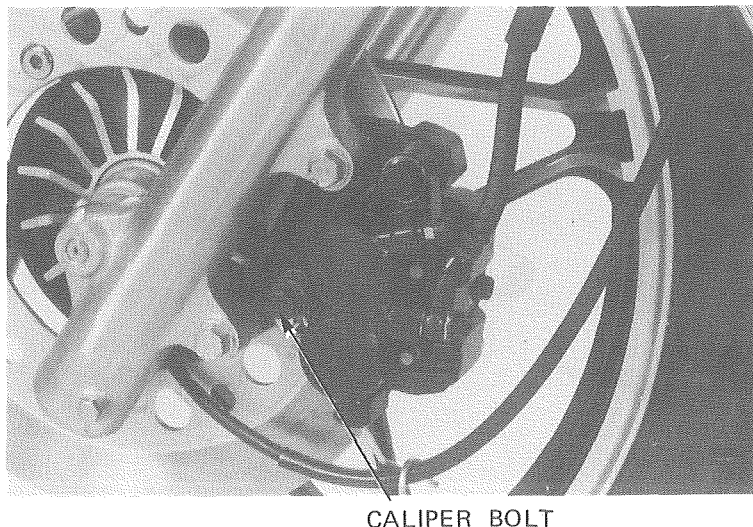
Be careful not to damage the pads.



Install the caliper bolt.

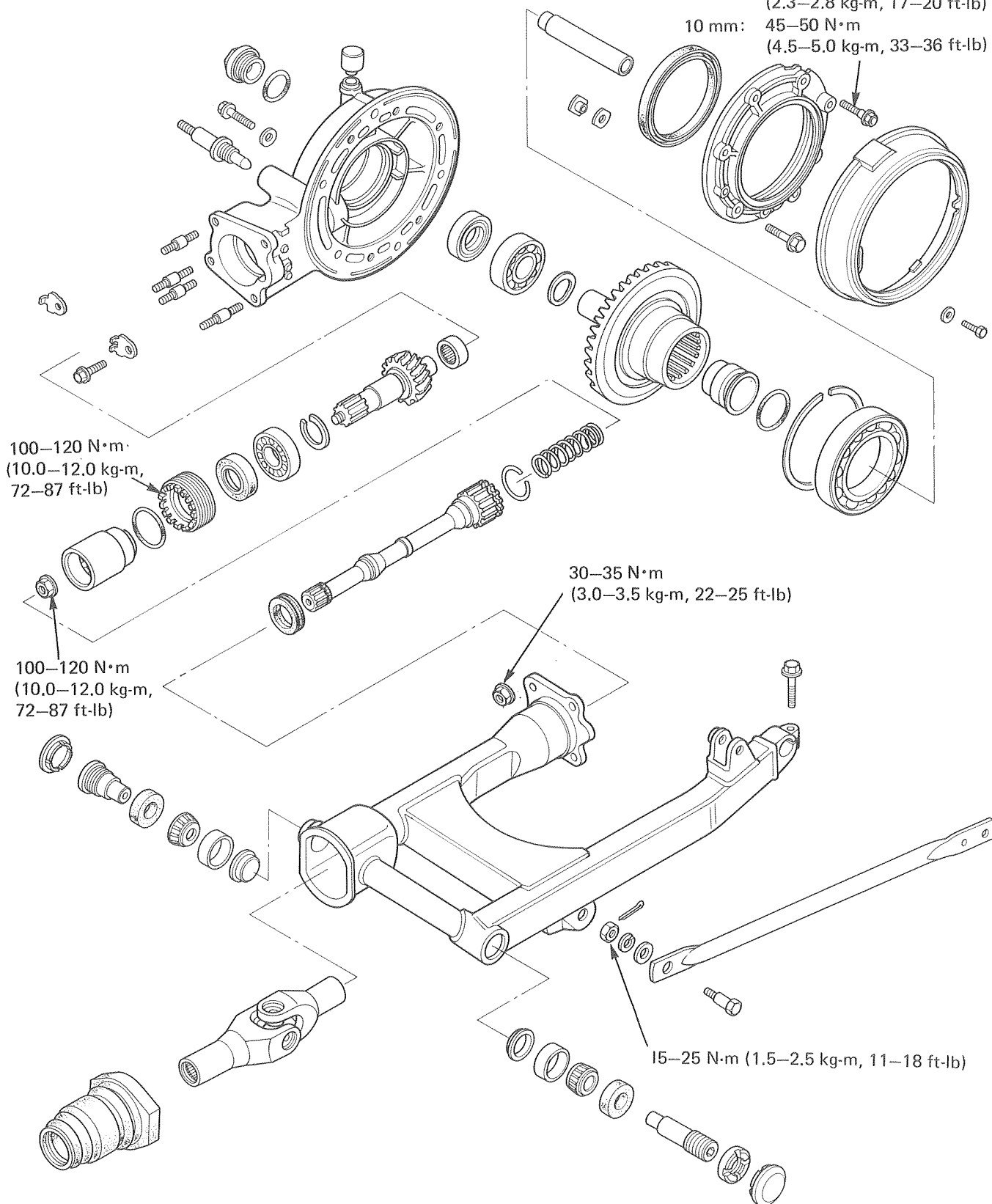
TORQUE: 20–25 N·m
(2.0–2.5 kg-m, 14–18 ft-lb)

Connect the brake hose and fill the brake fluid reservoir. Bleed the front brake system (page 15-4).





8 mm: 23–28 N·m
(2.3–2.8 kg-m, 17–20 ft-lb)
10 mm: 45–50 N·m
(4.5–5.0 kg-m, 33–36 ft-lb)





SERVICE INFORMATION	16-1
TROUBLESHOOTING	16-2
FINAL DRIVE REMOVAL	16-3
DRIVE SHAFT	16-3
UNIVERSAL JOINT	16-4
FINAL DRIVE GEAR	16-5
FINAL DRIVE INSTALLATION	16-17

SERVICE INFORMATION

GENERAL

- The final drive gear assembly must be removed together with the drive shaft.
- Replace all oil seals and O-rings whenever the final drive gear assembly is disassembled.
- Check tooth contact pattern and gear backlash when the bearing, gear set and/or gear case has been replaced.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Final gear oil	Capacity	160–180 cc (5.4–6.1 ozs)	—
	Recommended oil	Hypoid-gear oil API, GL-5 Above 5°C/41°F SAE # 90 Below 5°C/41°F SAE # 80	—
Gear backlash		0.08–0.18 mm (0.003–0.007 in)	0.30 mm (0.012 in)
Gear assembly preload		0.2–0.4 N·m (2–4 kg·cm, 1.2–2.4 in·lb)	

TORQUE VALUES

Pinion bearing retainer	100–120 N·m (10.0–12.0 kg·m, 72–87 ft·lb)
Pinion nut	100–120 N·m (10.0–12.0 kg·m, 72–87 ft·lb)
Gear case cover bolt 10 mm	45–50 N·m (4.5–5.0 kg·m, 33–36 ft·lb)
8 mm	23–28 N·m (2.3–2.8 kg·m, 17–20 ft·lb)
Final gear case attaching nut	30–35 N·m (3.0–3.5 kg·m, 22–25 ft·lb)



FINAL DRIVE

TOOLS

Special

Attachment	07945-3330300
Attachment	07947-6340201
Pinion retainer wrench	07910-ME80000
Pinion puller	07924-ME80000
Pinion joint holder	07931-ME80000
Driver	07931-4630300 or 07947-3710101 and 07746-0010200

Common

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Attachment, 52 x 55 mm	07746-0010400
Attachment, 32 x 35 mm	07746-0010100
Pilot, 30 mm	07746-0040700
Driver	07746-0030100
Attachment, 25 mm I.D.	07746-0030200 } or Driver 07945-3710200

TROUBLESHOOTING

Excessive Noise

- Worn or scored ring gear shaft and driven flange.
- Scored driven flange and wheel hub.
- Worn or scored drive pinion and splines.
- Worn pinion and ring gears.
- Excessive backlash between pinion and ring gear.
- Oil level too low.

Oil Leak

- Clogged breather.
- Oil level too high.
- Seals damaged.



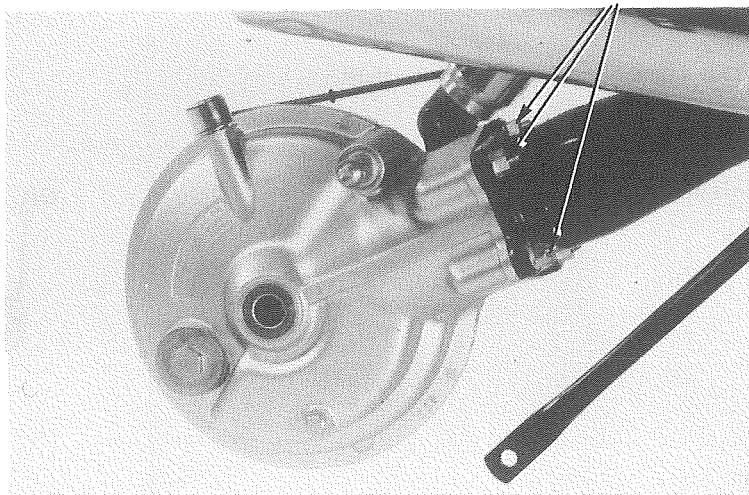
FINAL DRIVE REMOVAL

Place the motorcycle on its center stand. Drain the final gear oil (page 2-11) and remove the rear wheel (page 14-3).

Remove the right shock absorber (page 14-12).

Remove the final gear case attaching nuts and remove the gear case from the swing arm.

FINAL GEAR CASE
ATTACHING NUTS

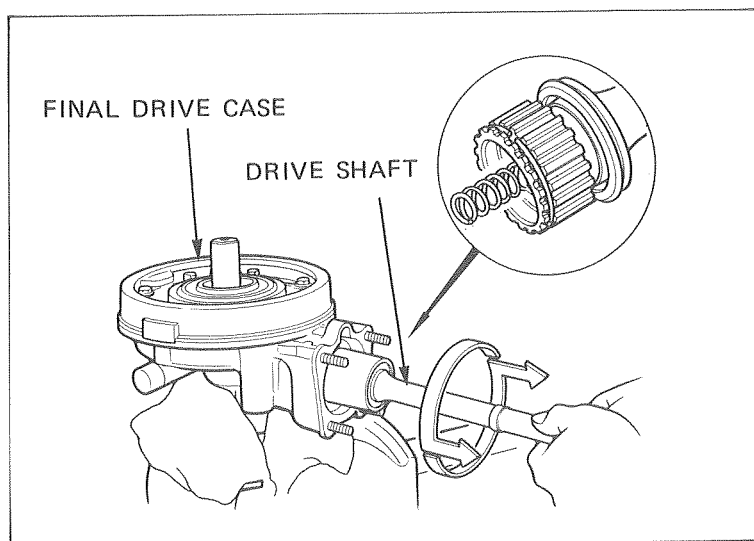


DRIVE SHAFT

REMOVAL

Insert the axle through the gear case and secure the case in a vise with soft jaws or shop rags by clamping the axle. Place the shock mount between the jaws for stability.

Separate the drive shaft from the gear case by gently revolving the shaft in a circular motion while tugging slightly.



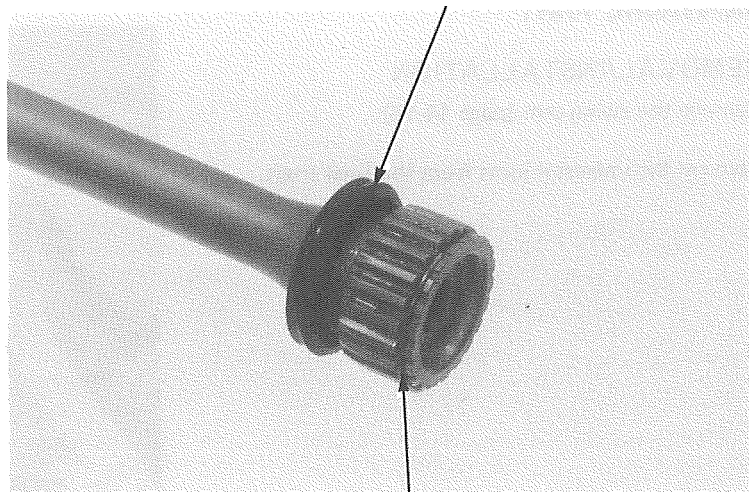
DISASSEMBLY

Remove the spring, oil seal and stop ring from the drive shaft.

NOTE

Replace the oil seal with a new one if it is removed.

OIL SEAL



STOP RING

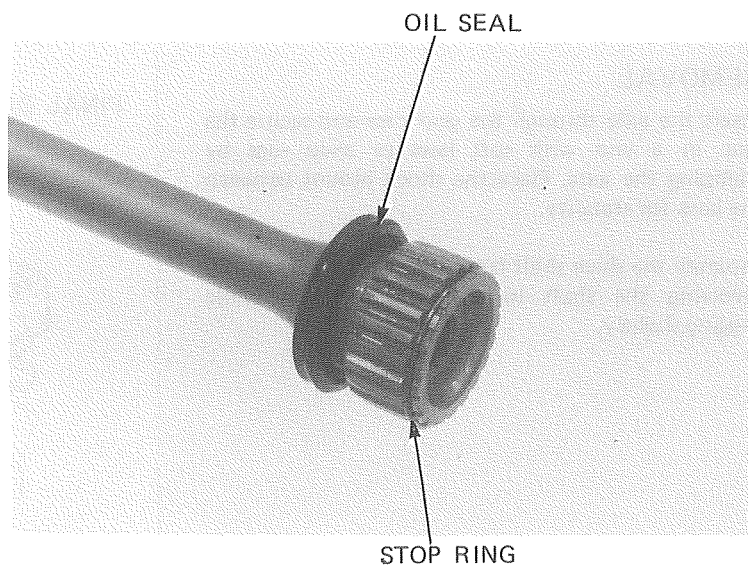
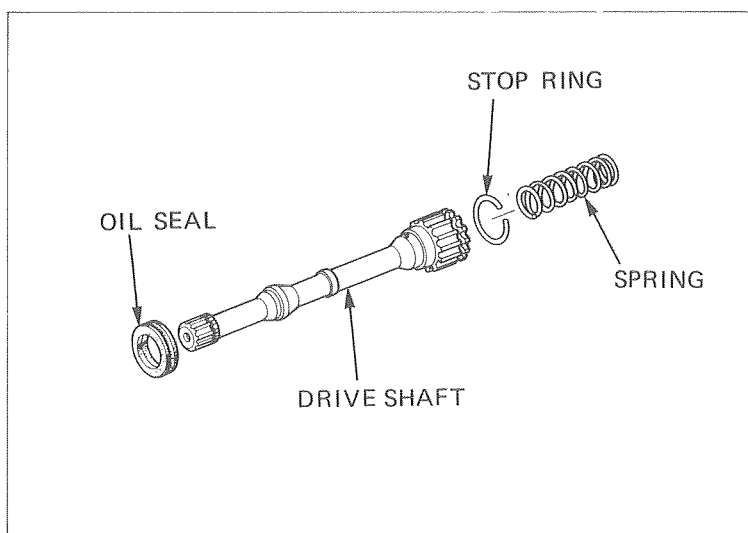


ASSEMBLY

Place a new oil seal over the drive shaft.

Install a new stop ring.

Install the spring.

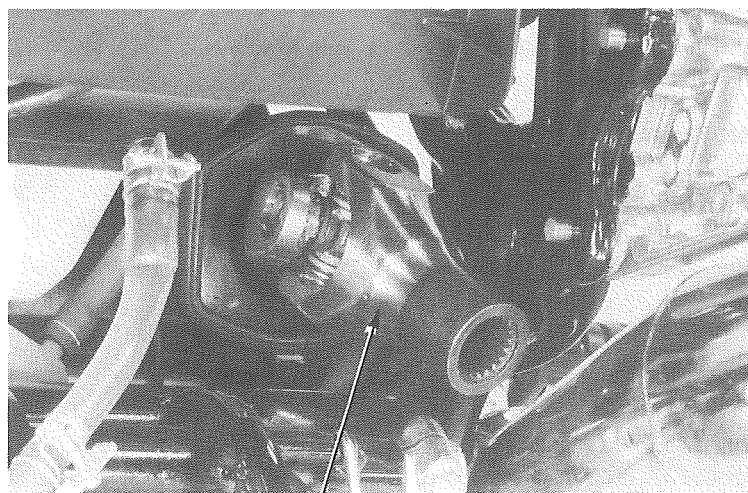


UNIVERSAL JOINT

REMOVAL/INSTALLATION

Remove the swing arm (page 14-15)

Remove the universal joint from the final shaft.



UNIVERSAL JOINT

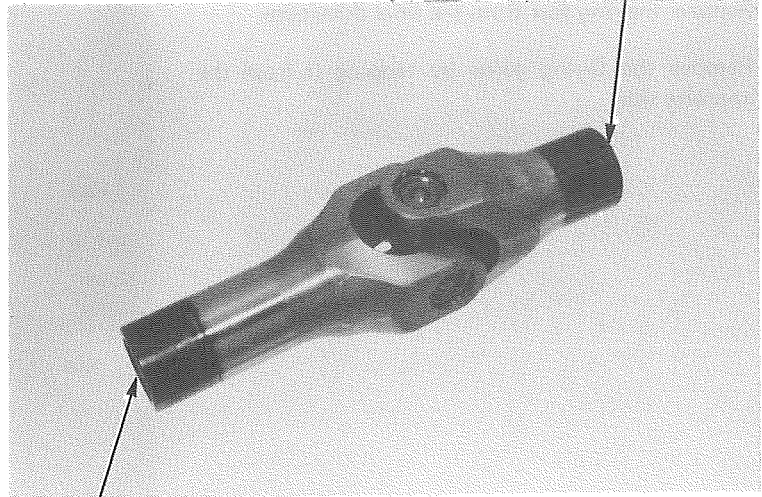


Inspect the universal joint bearings for excessive play or damage. Replace the universal joint if necessary.

Apply Multipurpose NLGI No. 2 (MoS₂ additive) grease to the splines and install the universal joint.



MULTIPURPOSE NLGI No. 2
(MoS₂ additive) GREASE



MULTIPURPOSE NLGI No. 2
(MoS₂ additive) GREASE

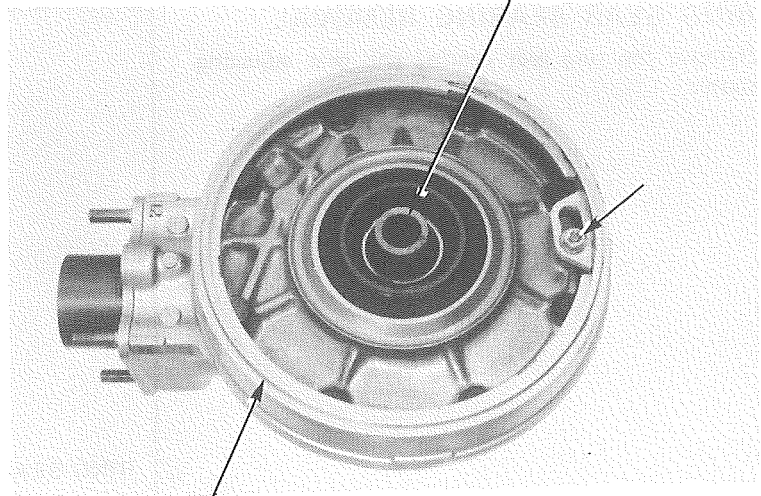
FINAL DRIVE GEAR

RING GEAR REMOVAL

Remove the distance collar.

Remove the dust guard plate bolts and the dust guard plate by turning it clockwise.

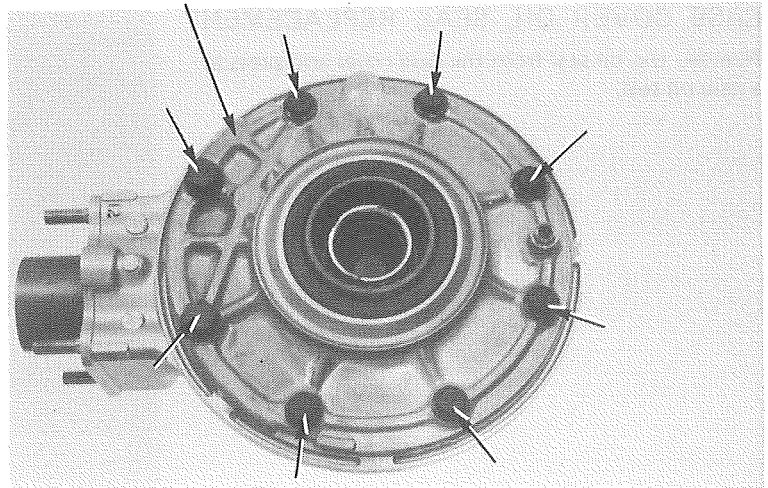
DISTANCE COLLAR



DUST GUARD PLATE

CASE COVER

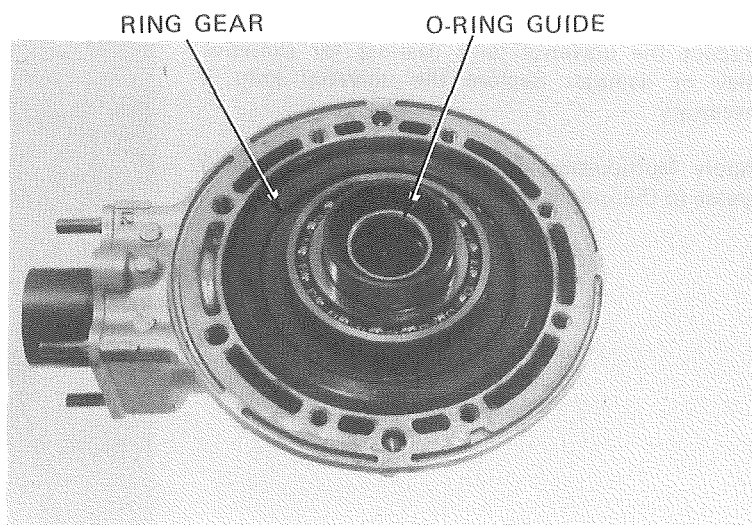
Remove the eight case cover bolts and cover. If the ring gear stays in the cover, do the following: Place the cover in a press with the ring gear down. Make sure the cover is securely supported. Press the ring gear out of the cover with driver 07749-0010000 and attachment, 32 x 35 mm 07746-0010100.





Remove the ring gear from the final drive case.

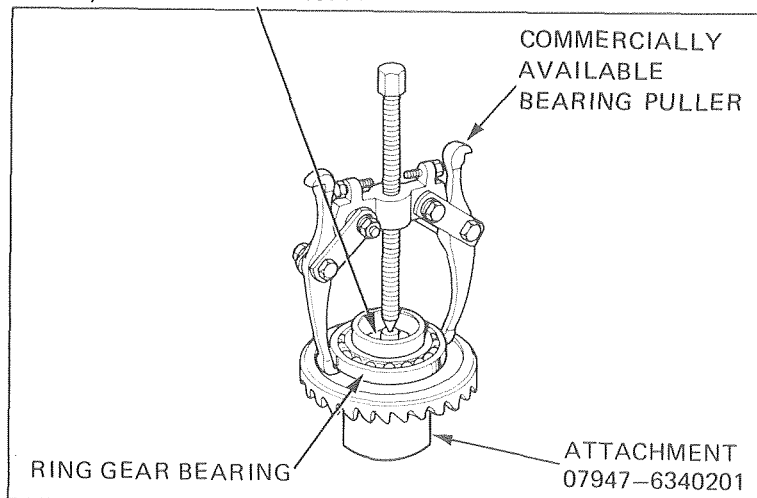
Remove the O-ring guide by tapping it from the opposite side.



RING GEAR BEARING REMOVAL

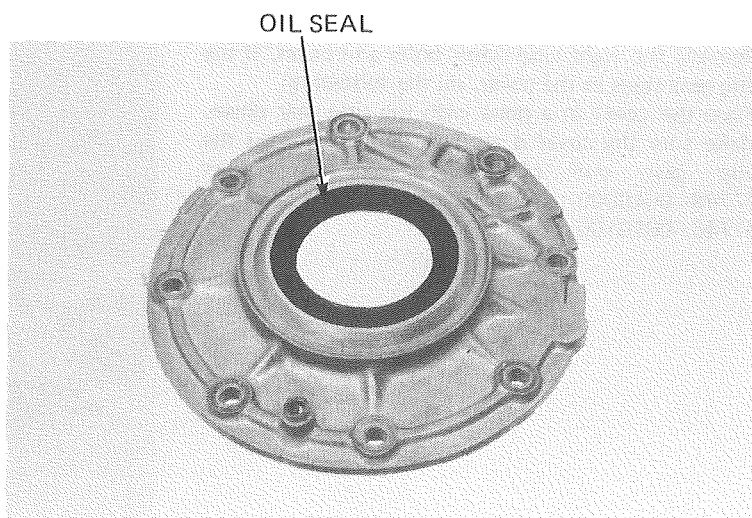
Remove the ring gear bearing and gear adjusting spacer.

ATTACHMENT, 32 x 35 mm 07746-0010100
PILOT, 30 mm 07746-0040700



CASE COVER OIL SEAL REPLACEMENT

Remove the oil seal from the case cover and press in a new oil seal.

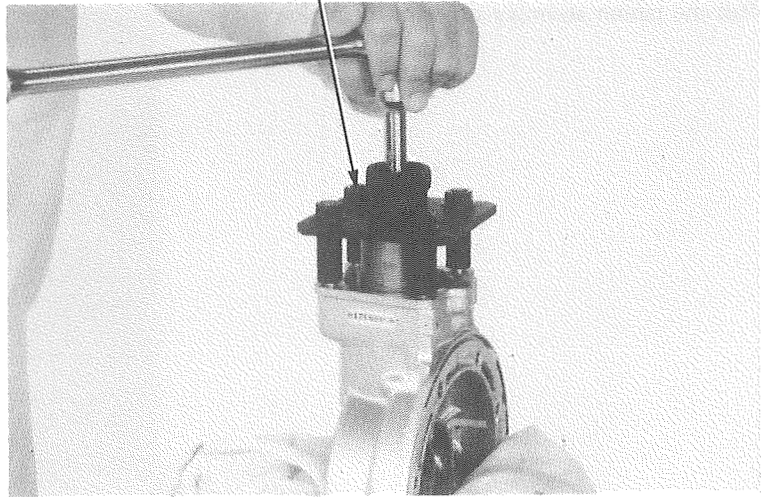




PINION GEAR REMOVAL

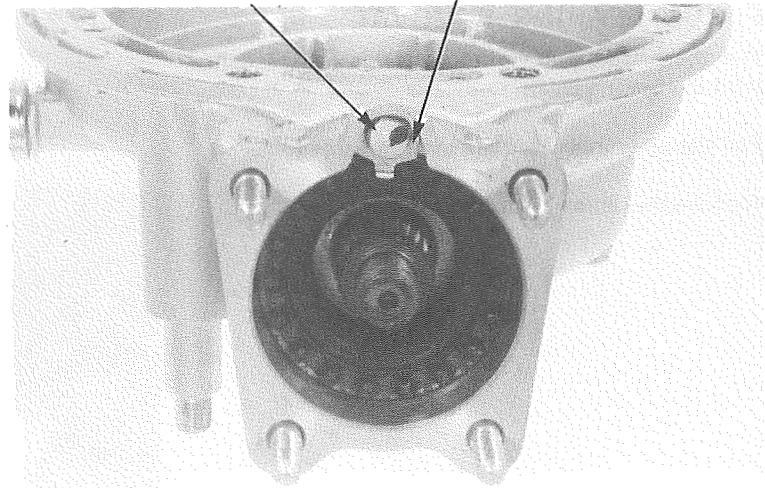
Install the pinion joint holder onto the pinion joint and remove the pinion shaft nut. Remove the tool and pinion joint.

PINION JOINT HOLDER
07924-ME80000



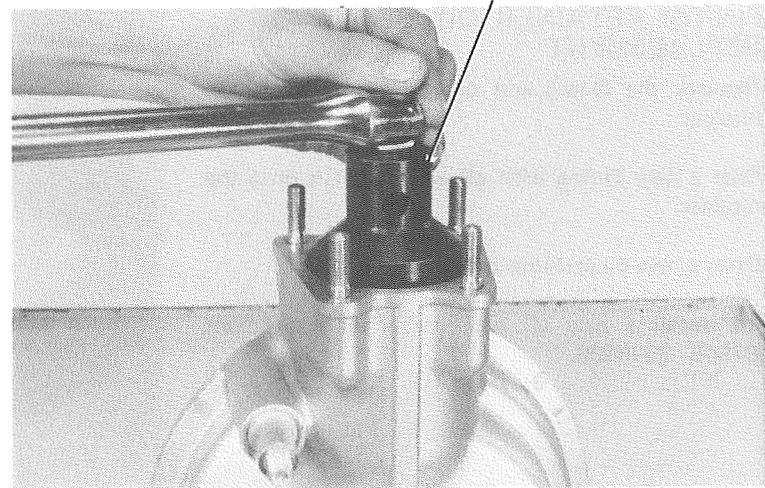
Remove the retainer lock tab.

BOLT LOCK TAB



Remove the pinion retainer with the pinion retainer wrench.

RETAINER WRENCH
07910-ME80000

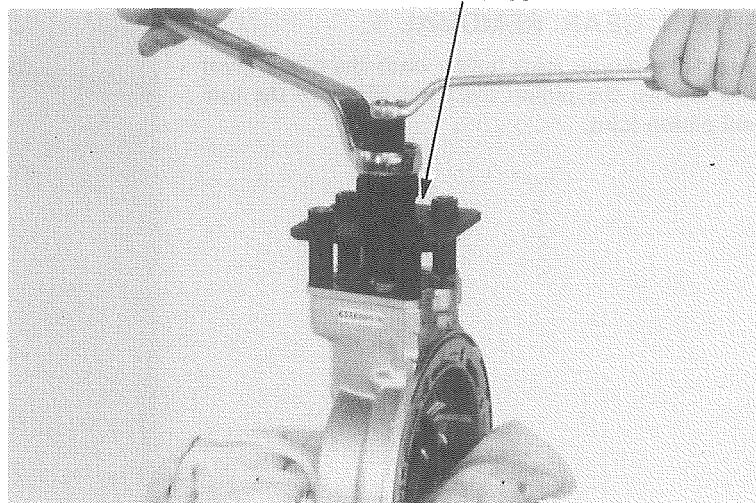




FINAL DRIVE

Pull the pinion assembly off with the pinion puller.

PINION PULLER
07924-ME80000



PINION BEARING REMOVAL

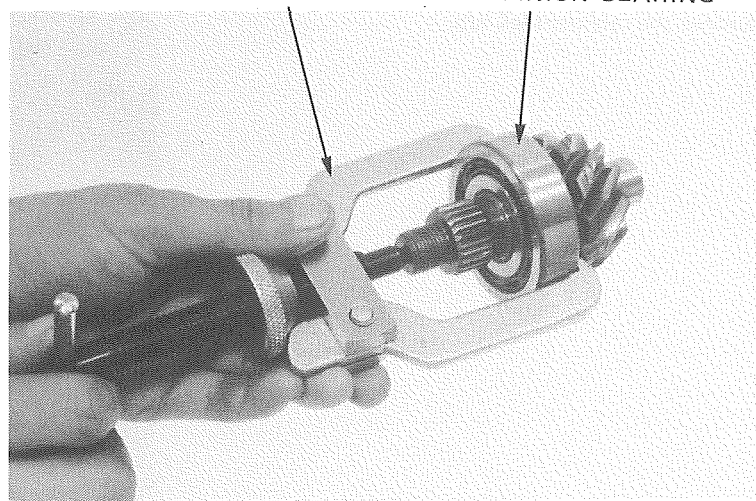
Pull the bearing outer and inner races off the shaft with the bearing puller.

Pull the other inner race off with the same tool.

Remove the pinion adjustment spacer.

COMMERCIALLY AVAILABLE
BEARING PULLER

PINION BEARING



PINION RETAINER OIL SEAL REPLACEMENT

Remove the O-ring and oil seal from the pinion retainer.

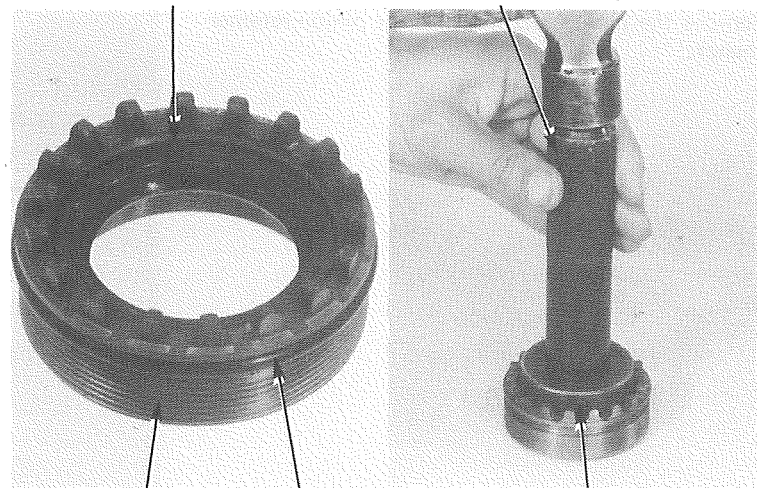
Coat a new O-ring with oil and install it onto the retainer.

Drive a new oil seal into the retainer.

To install a new oil seal, use driver attachment 07945-3330300.

OIL SEAL

DRIVER
07749-0010000



PINION RETAINER O-RING

ATTACHMENT
07945-3330300



CASE BEARING AND OIL SEAL REPLACEMENT

NOTE

If the bearings are removed, replace them with new bearings during assembly.

Heat the gear case to 80°C (176°F). Tap the gear case with a plastic hammer and remove the ring gear and pinion bearings.

CAUTION

Always wear gloves when handling the gear case after it has been heated.

NOTE

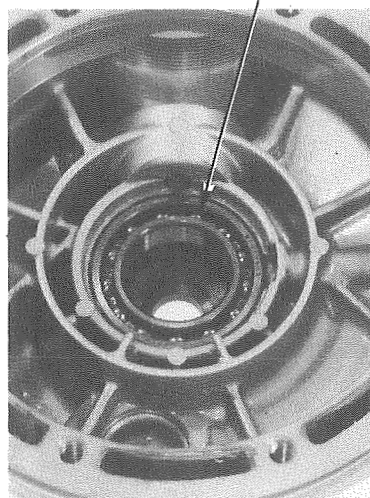
Use bearing remover (35 mm) 07936-3710400 to remove the ring gear case bearing.

Remove the ring gear shaft oil seal.

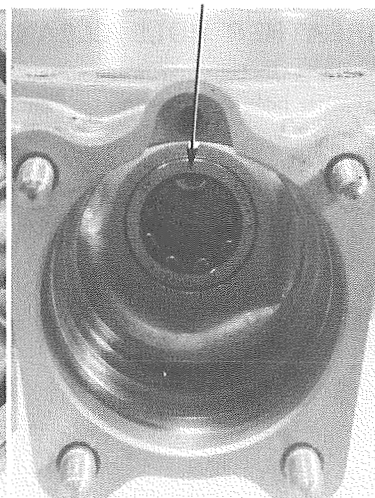
Drive a new oil seal into the case, using the special tools.

Drive new pinion and ring gear bearings into the case.

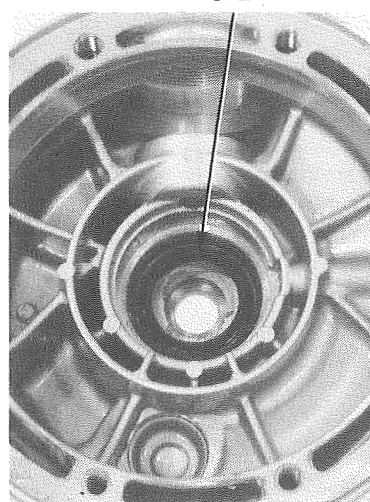
RING GEAR BEARING



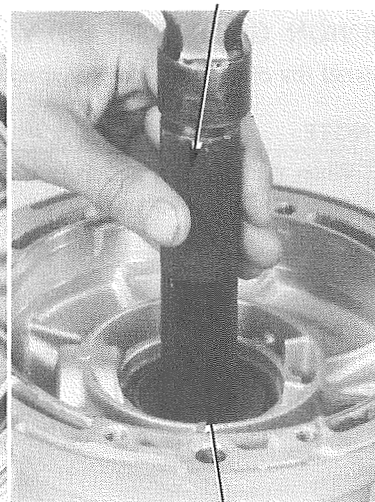
PINION BEARING



OIL SEAL

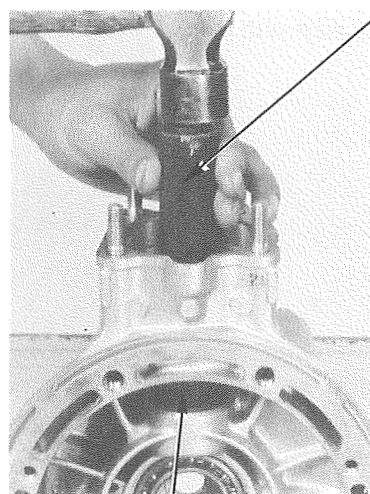


DRIVER
07749-0010000

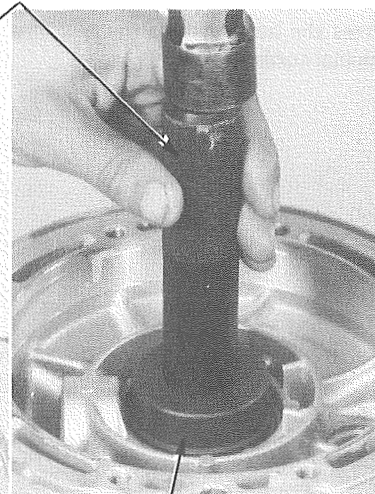


ATTACHMENT
07945-3330300

DRIVER
07749-0010000



ATTACHMENT, 32 x 35 mm
07746-0010100

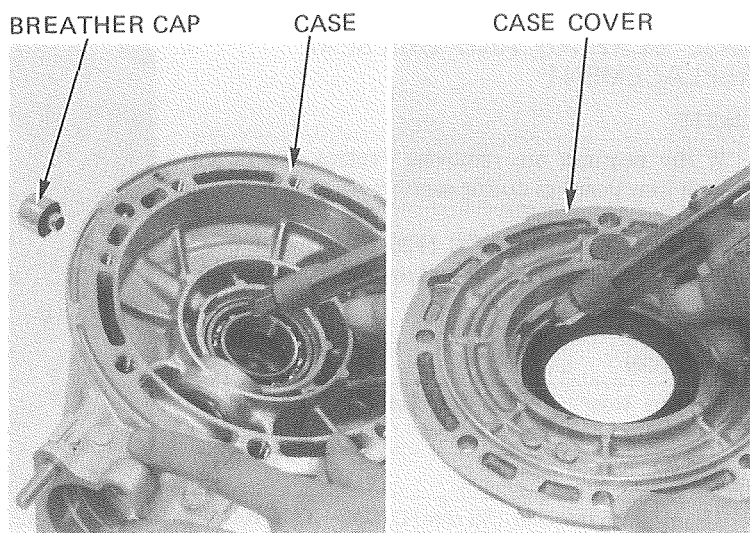


ATTACHMENT, 52 x 55 mm
07746-0010400



BREATHER HOLE CLEANING

Remove the breather hole cap and blow through the breather hole with compressed air.

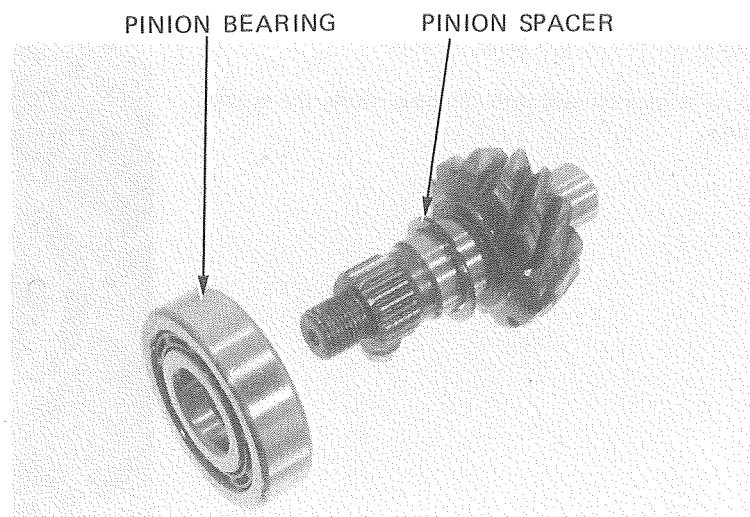


PINION GEAR ASSEMBLY

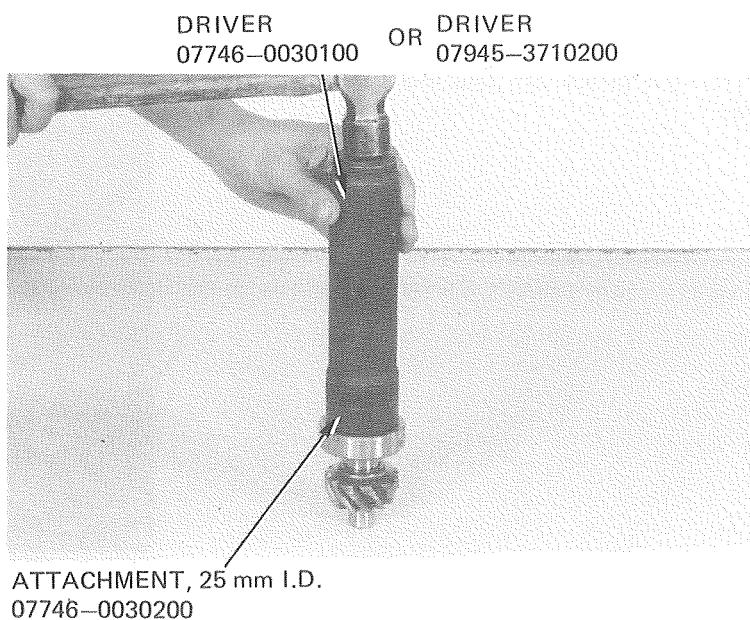
Install the original pinion gear spacer.

NOTE

When the gear set, pinion bearing and/or gear case has been replaced, use a 2.0 mm thick spacer.



Press the bearing onto the pinion gear shaft with the special tools shown.





Place the pinion assembly into the gear housing. Drive the pinion assembly into the gear case until pinion retainer threads can engage with the case threads.

Apply gear oil to the O-ring and threads on the pinion retainer.

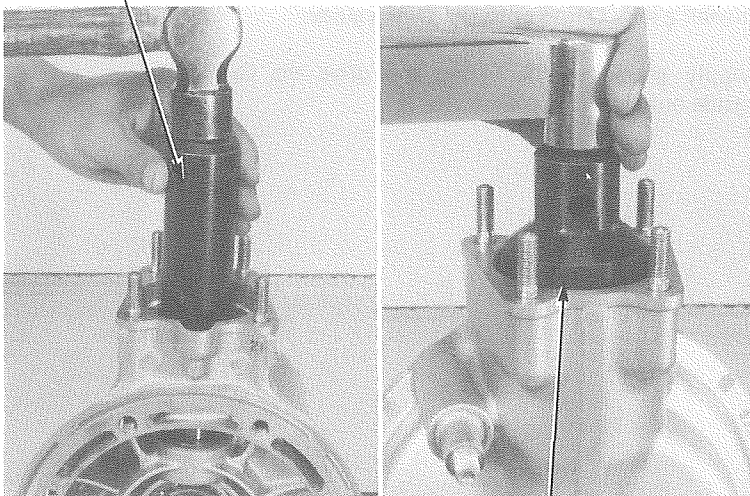
Screw in the pinion retainer to press the pinion bearing into place, then tighten it to the specified torque.

TORQUE: 100–120 N·m
(10.0–12.0 kg-m, 72–87 ft-lb)

DRIVER
07931–4630300

OR

FORK SEAL DRIVER 07947–3710100
AND ATTACHMENT 07746–0010200



PINION RETAINER WRENCH
09910–ME80000

RING GEAR ASSEMBLY

Install the original spacer onto the ring gear.

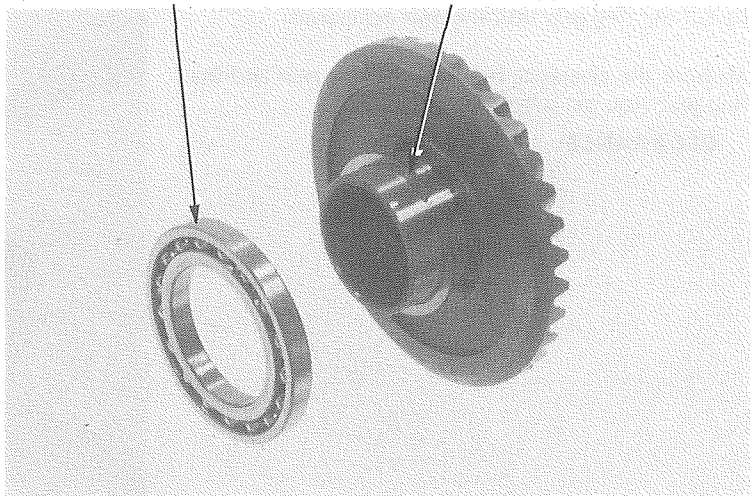
NOTE

If the gear set, pinion bearing, ring gear bearing and/or gear case is replaced, install a 2.0 mm thick spacer.

Place the ring gear bearing over the ring gear shaft.

RING GEAR BEARING

RING GEAR SPACER

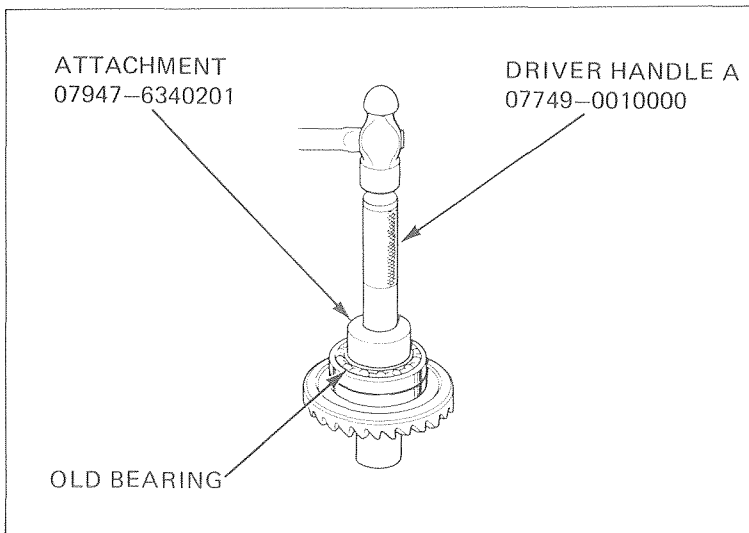


Place a new ring gear bearing on the ring gear shaft. Place the old bearing on top of it. Then, drive the new bearing onto the shaft with the old bearing and attachment. Then remove the old bearing.

ATTACHMENT
07947–6340201

DRIVER HANDLE A
07749–0010000

OLD BEARING

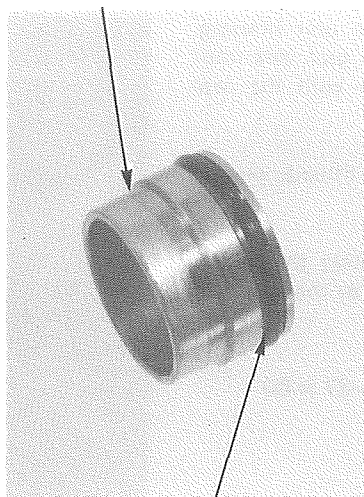




Install a new O-ring onto the O-ring guide.

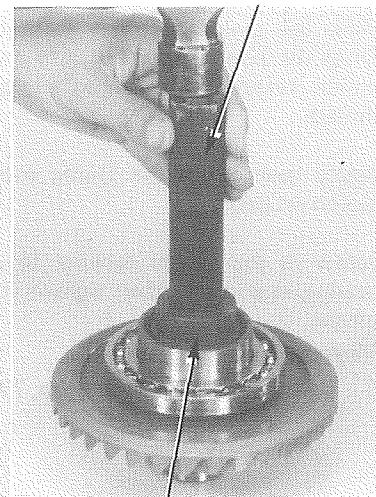
Apply grease to the O-ring and drive the O-ring guide onto the ring gear shaft.

O-RING GUIDE



O-RING

DRIVER
07749-0010000



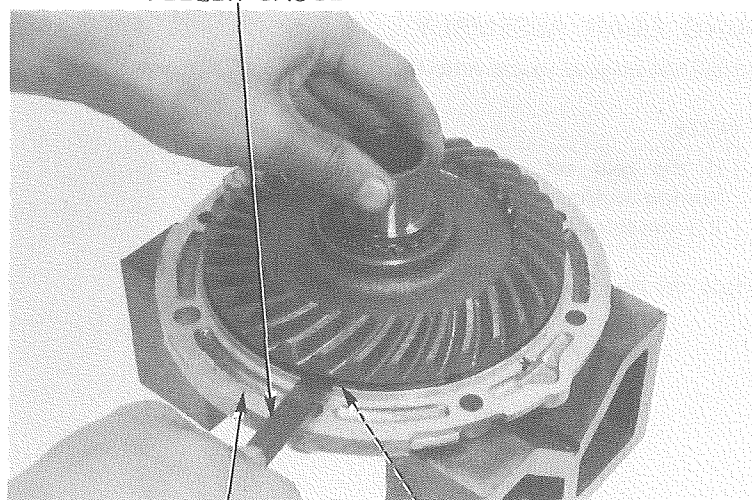
ATTACHMENT, 42 x 47 mm
07746-0010300

Install the ring gear into the gear case cover.

Measure the clearance between the ring gear and the ring gear stop pin with a feeler gauge.

CLEARANCE: 0.30–0.60 mm
(0.012–0.024 in)

FEELER GAUGE



GEAR CASE COVER

STOP PIN

Remove the ring gear. If the clearance exceeds the service limit, heat the gear case cover to approximately 80°C (176°F) and remove the stop pin by tapping the cover.

CAUTION

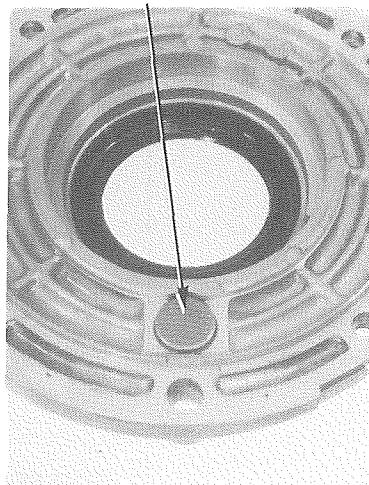
Always wear gloves when handling the gear case cover after it has been heated.

Install a stop pin shim to obtain the correct clearance.

SHIM THICKNESS: A: 0.10 mm (0.004 in)
B: 0.15 mm (0.006 in)

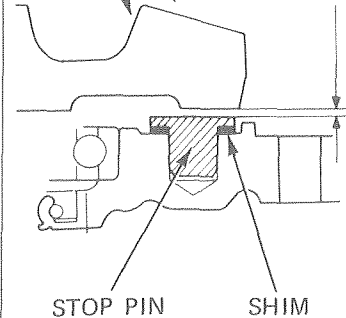
Install the shim and drive the stop pin into the case cover.

STOP PIN



RING GEAR

0.30–0.60 mm
(0.012–0.024 in)



STOP PIN

SHIM

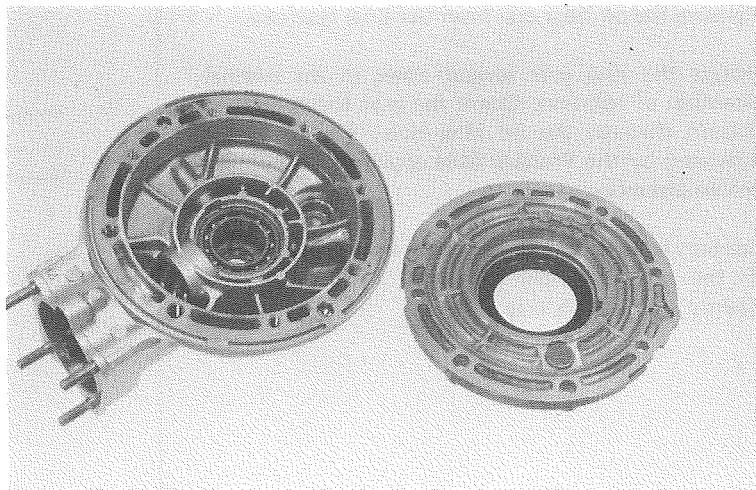


Clean all sealing material off the mating surfaces of the gear case and cover.

NOTE

- Keep dust and dirt out of the gear case.
- Be careful not to damage the mating surfaces.

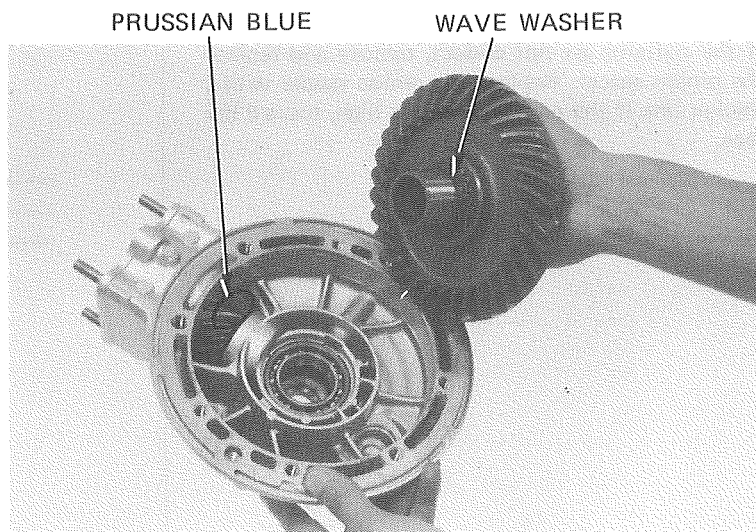
Apply liquid sealant to the mating surface of the gear case cover.



GEAR TOOTH CONTACT PATTERN CHECK

Apply a thin coat of Prussian Blue to the pinion gear teeth for a gear tooth contact pattern check. Place the wave washer and ring gear into the gear case.

Apply gear oil to the lip of the oil seal on the gear case cover and install the gear case cover.

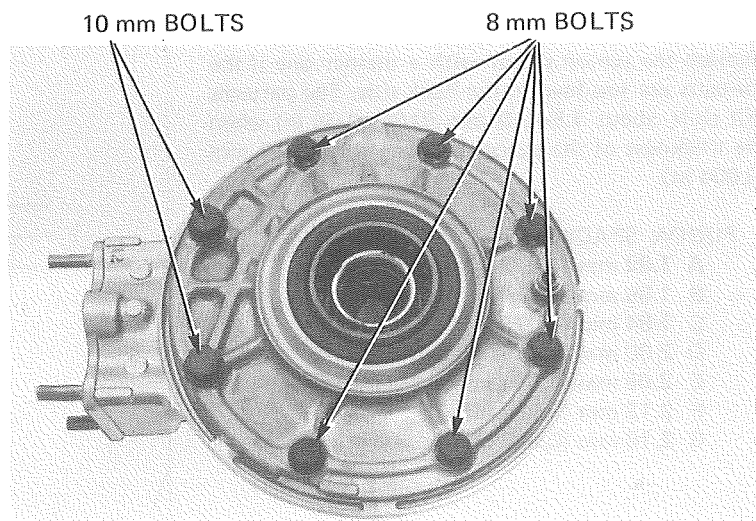


Tighten all the cover bolts in 2–3 steps until the cover evenly touches the gear case, then tighten the 8 mm bolts to the specified torque in a crisscross pattern in two or more steps.

TORQUE: 23–28 N·m
(2.3–2.8 kg-m, 17–20 ft-lb)

Then tighten the 10 mm bolts.

TORQUE: 45–50 N·m
(4.5–5.0 kg-m, 33–36 ft-lb)

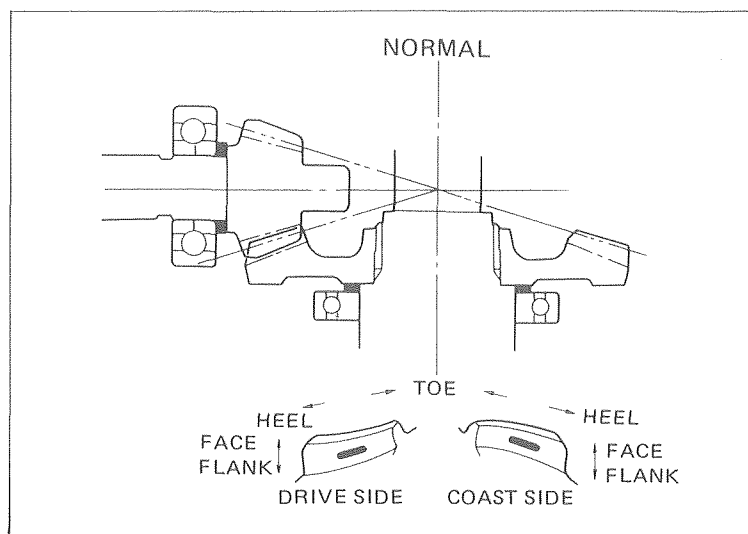


**FINAL DRIVE**

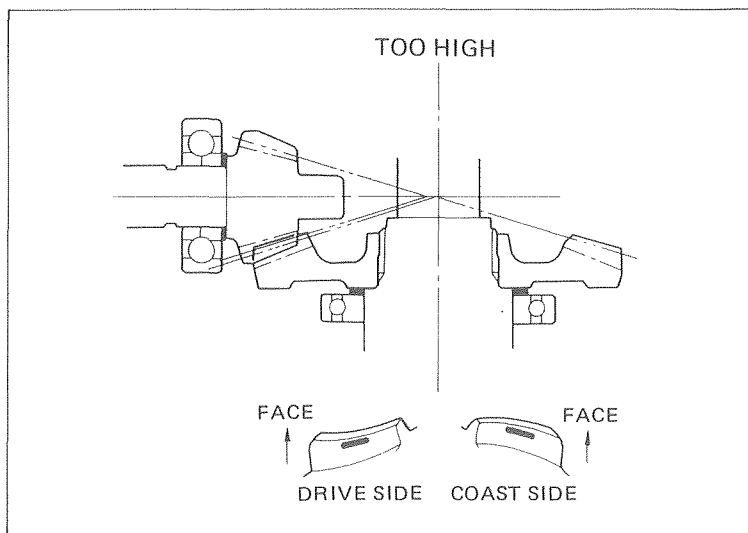
Remove the oil filler cap from the final gear case.

Rotate the ring gear several times in the normal direction of rotation. Check the gear tooth contact pattern through the oil filler hole. The pattern is indicated by the Prussian Blue applied to the pinion before assembly.

Contact is normal if the Prussian Blue is transferred to the approximately center of each tooth and slightly to the flank side.



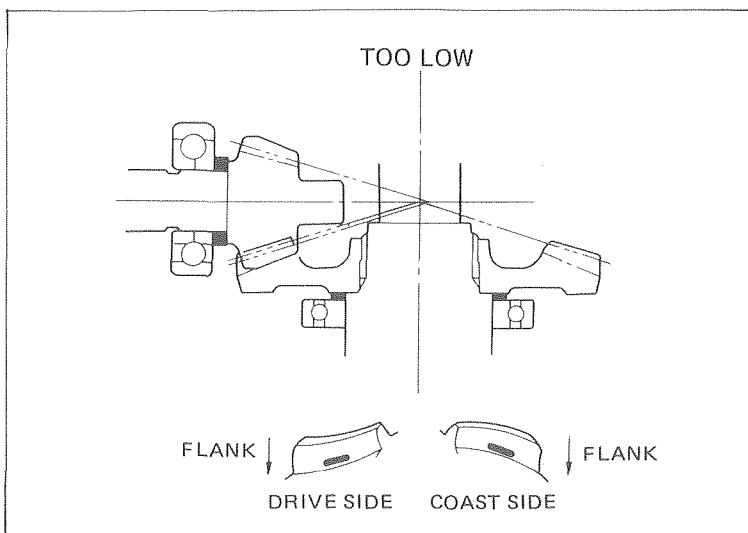
If the patterns are not correct, remove and replace the pinion spacer. Replace the pinion spacer with a thicker one if the contacts are too high, toward the face.



Replace the pinion spacer with a thinner one if the contacts are too low, to the flank side. The patterns will shift about 1.5–2.0 mm (0.06–0.08 in) when the thickness of the spacer is changed by 0.10 mm (0.004 in).

PINION SPACER:

- A 1.82 mm (0.072 in)
- B 1.88 mm (0.074 in)
- C 1.94 mm (0.076 in)
- D 2.00 mm (0.079 in) **Standard**
- E 2.06 mm (0.081 in)
- F 2.12 mm (0.084 in)
- G 2.18 mm (0.086 in)





BACKLASH INSPECTION

Remove the oil filler cap.

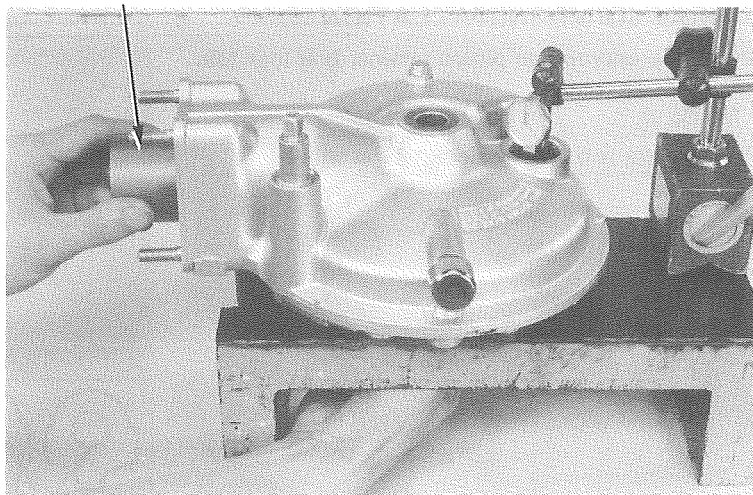
Set the final gear assembly into a jig or stand to hold it steady. Set a horizontal type dial indicator on the ring gear, through the oil filler hole.

Temporarily install the pinion joint onto the pinion gear and hold the pinion joints by hand. Rotate the ring gear by hand until gear slack is taken up. Turn the ring gear back and forth to read backlash.

STANDARD: 0.08–0.18 mm (0.003–0.007 in)

SERVICE LIMIT: 0.30 mm (0.02 in)

PINION JOINT



Remove the dial indicator. Turn the ring gear 120° and measure backlash. Repeat this procedure once more.

Compare the difference of the three measurements.

DIFFERENCE OF MEASUREMENT

SERVICE LIMIT: 0.10 mm (0.004 in)

If the difference in measurements exceeds the limit, it indicates that the bearing is not installed squarely. Inspect the bearings and reinstall if necessary.

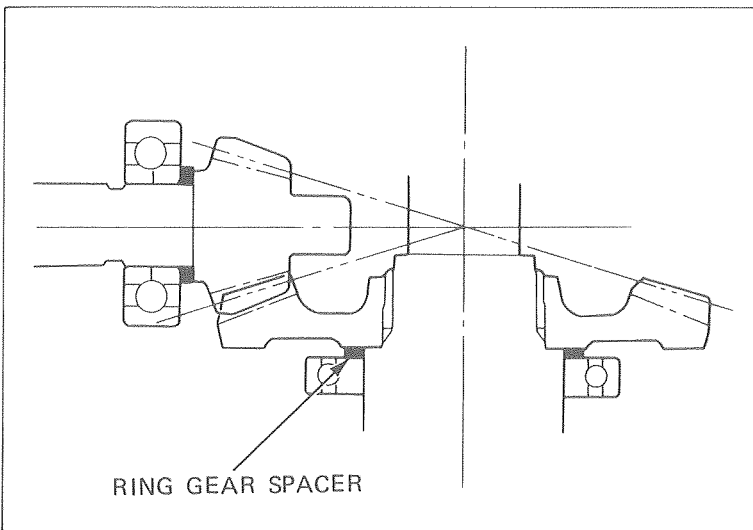
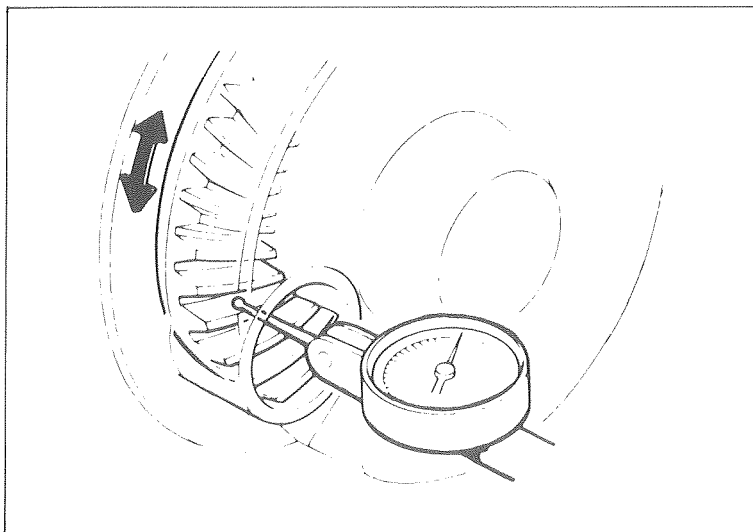
If backlash is too small, replace the ring gear spacer with a thinner one.

Backlash is changed by about 0.06–0.07 mm (0.002–0.003 in) when thickness of the spacer is changed by 0.10 mm (0.004 in).

RING GEAR SPACER:

- A 1.82 mm (0.072 in)
- B 1.88 mm (0.074 in)
- C 1.94 mm (0.076 in)
- D 2.00 mm (0.079 in) Standard
- E 2.06 mm (0.081 in)
- F 2.12 mm (0.084 in)
- G 2.18 mm (0.086 in)
- H 2.24 mm (0.088 in)
- I 2.30 mm (0.091 in)

Remove the pinion joint from the pinion gear.



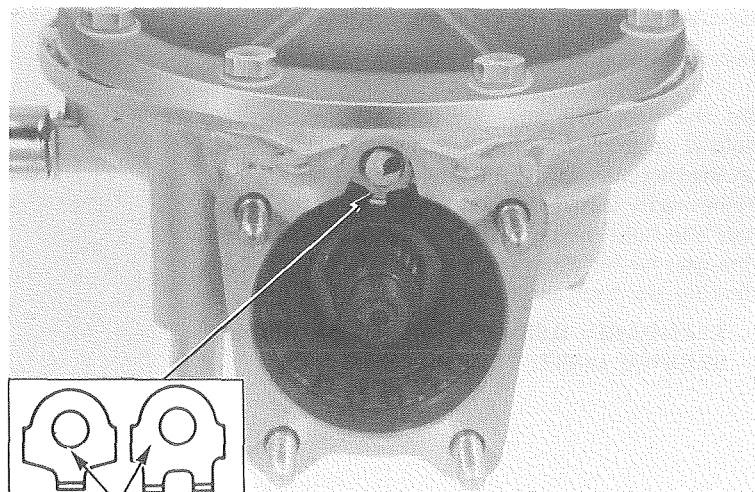


PINION JOINT INSTALLATION

Install the appropriate pinion retainer bolt lock tab.

NOTE

There are two types of lock tabs as shown.



LOCK TABS

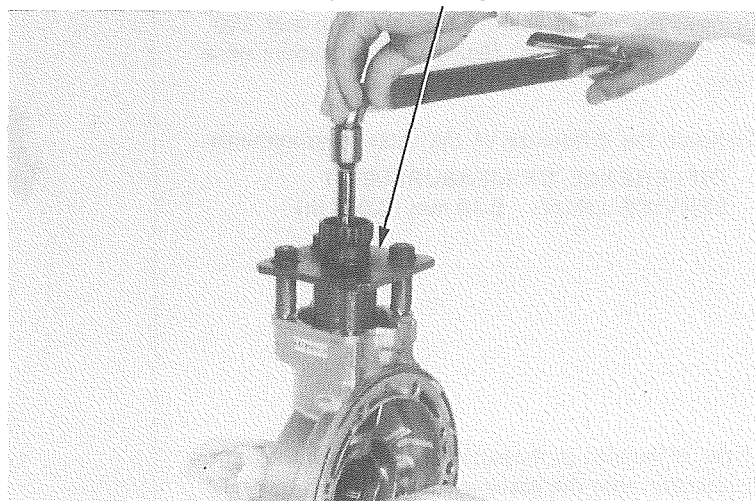
PINION JOINT HOLDER
07924-ME80000

Apply gear oil to the oil seal lip contact surface of the pinion joint and install the pinion joint.

Install the pinion joint holder tool and tighten the pinion nut.

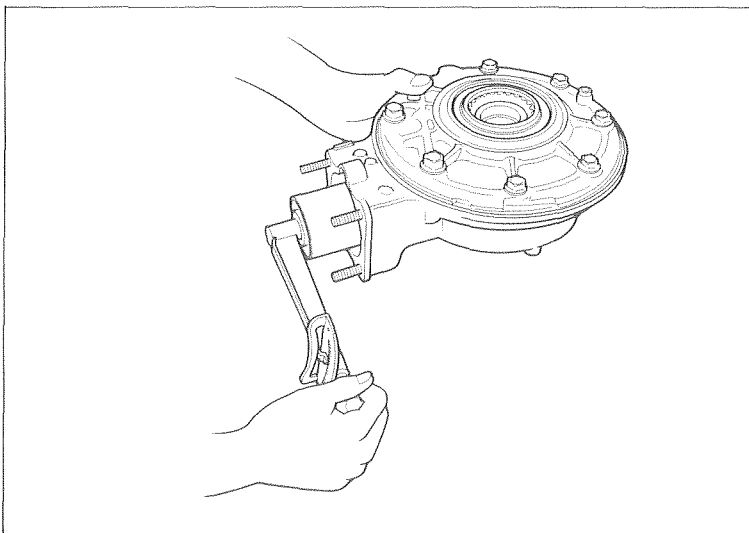
TORQUE: 100–120 N·m
(10.0–12.0 kg-m, 72–87 ft-lb)

Remove the pinion joint holder tool.



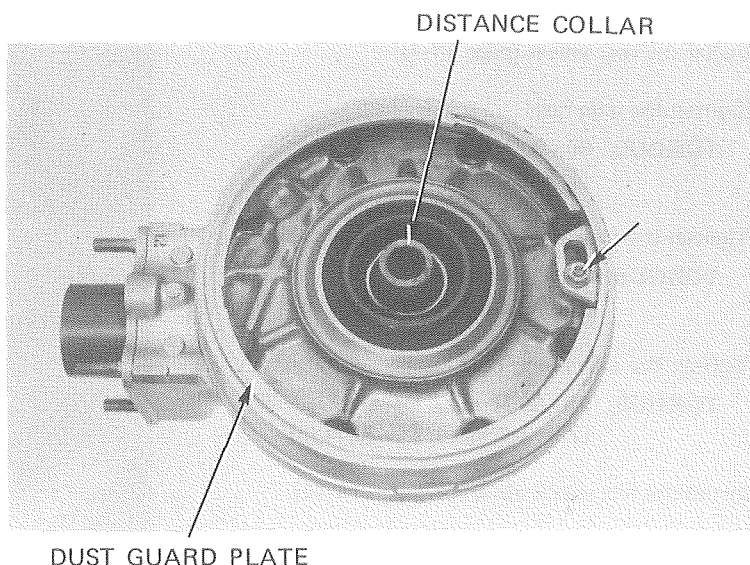
Make sure that the gear assembly rotates smoothly without binding by turning the pinion joint.

GEAR ASSEMBLY PRELOAD:
0.2–0.4 N·m (2–4 kg-cm, 1.2–2.4 in-lb)





Install the dust guard plate and torque the bolt.
Install the distance collar.



FINAL DRIVE INSTALLATION

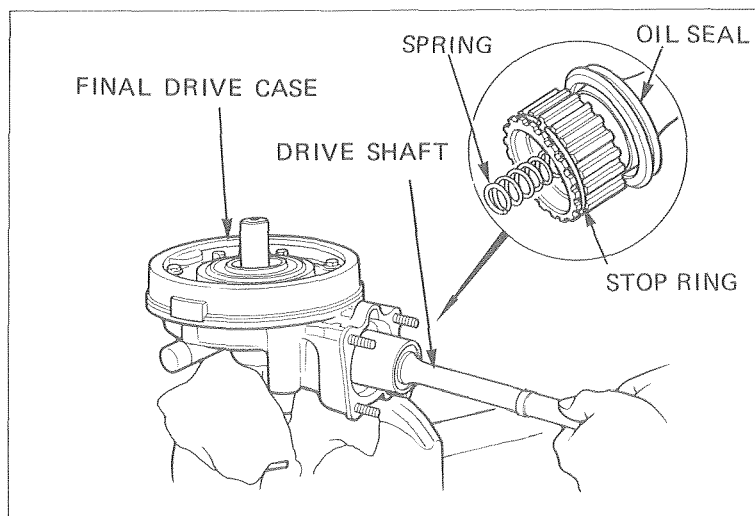
Apply grease to the pinion joint splines and drive shaft oil seal.

Insert the drive shaft into the pinion joint until the stop ring seats in the pinion joint spline grooves.

NOTE

- Make sure that the stop ring is seated properly by pulling on the drive shaft lightly.
- Be careful not to damage the drive shaft oil seal.

Lubricate the splines of the drive shaft with multipurpose NLGI No. 2 (MoS2 additive) Grease.

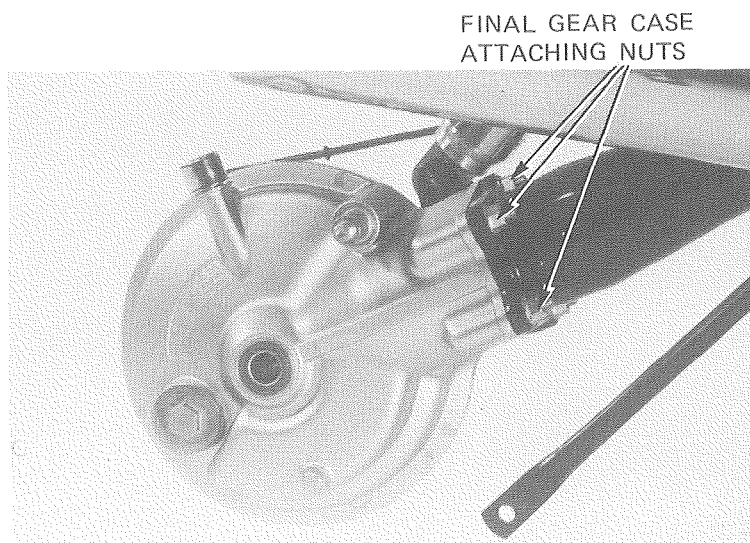


Insert the drive shaft assembly into the swing arm and align its splines with the universal joint.

Attach the gear case onto the swing arm loosely.

NOTE

To ease axle installation, do not tighten the gear case nuts until after the axle is installed.





FINAL DRIVE

Install the rear wheel (page 14-7).

Tighten the axle nut.

TORQUE: 60–80 N·m
(6.0–8.0 kg-m, 43–58 ft-lb)

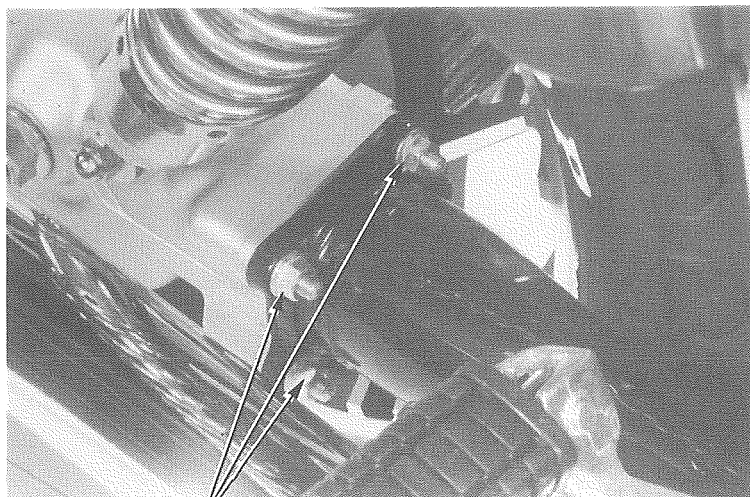
Tighten the four final gear case attaching nuts.

TORQUE: 30–35 N·m
(3.0–3.5 kg-m, 22–25 ft-lb)

Tighten the axle pinch bolt.

TORQUE: 20–30 N·m
(2.0–3.0 kg-m, 14–22 ft-lb)

Install the left shock absorber (page 14-14)



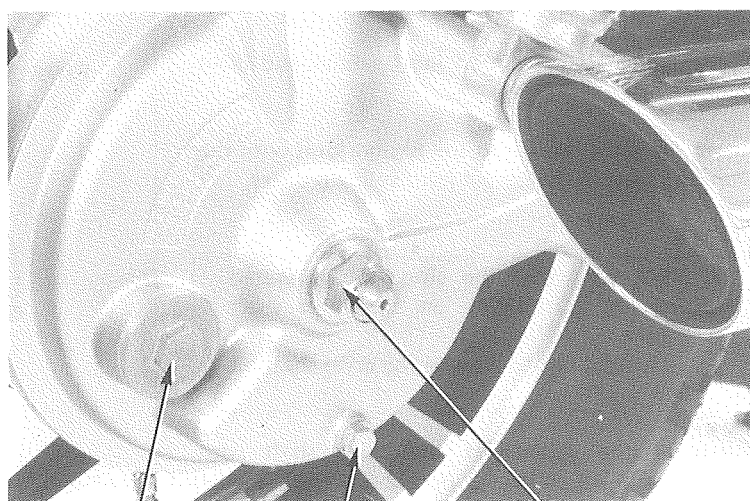
FINAL GEAR CASE
ATTACHING NUTS

Make sure that the case drain bolt is tightened.

Remove the oil filler cap and pour the specified amount of recommended oil up to the filler neck.

RECOMMENDED OIL: HYPOID GEAR OIL
Over 5°C: SAE 90
Below 5°C: SAE 80

OIL CAPACITY: 160–180 cc (5.4–6.1 oz)



FILLER
CAP

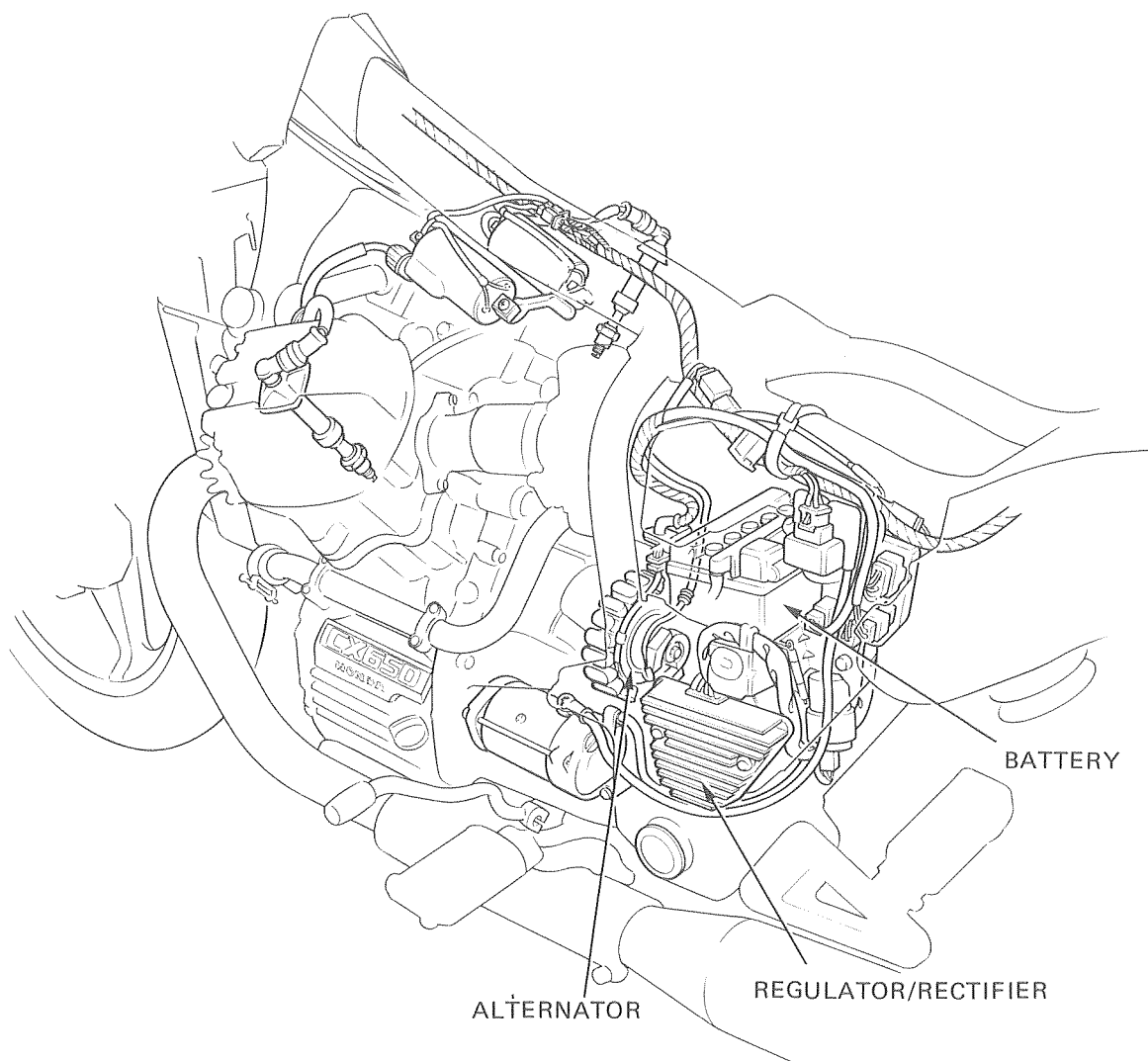
DRAIN BOLT

REAR
AXLE NUT

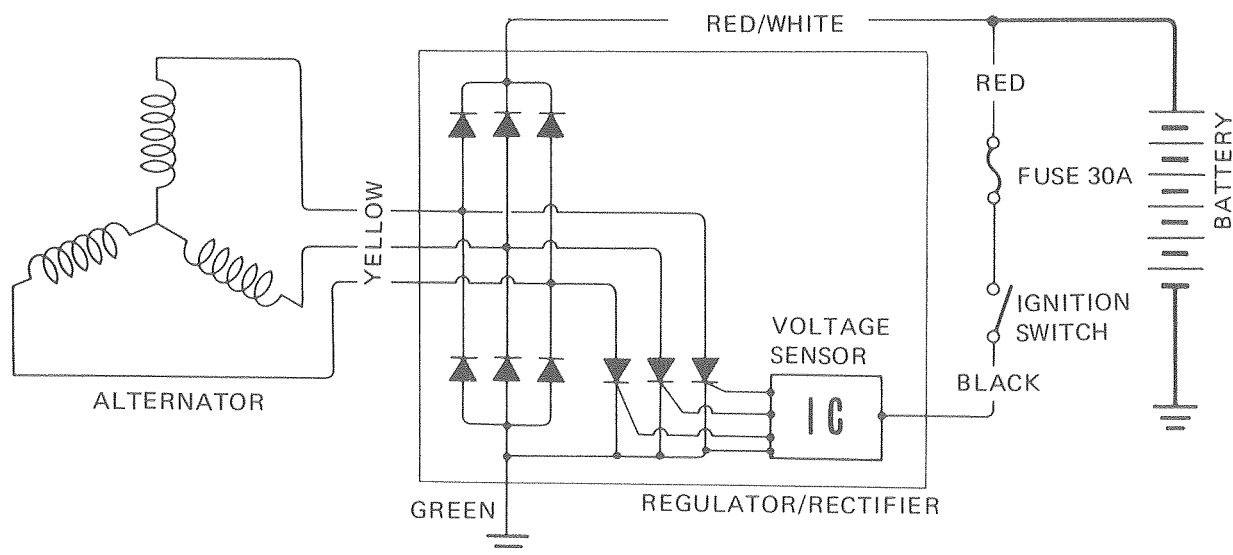


HONDA
CX650C

MEMO



BATTERY CHARGING DIAGRAM





HONDA
CX650C

17. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION	17-1
TROUBLESHOOTING	17-1
BATTERY	17-2
CHARGING SYSTEM	17-3

SERVICE INFORMATION

GENERAL

- The battery fluid level should be checked regularly. Fill with distilled water as necessary.
- Quick charge the battery only in an emergency. Slow-charging is preferred.
- Remove the battery from the motorcycle for charging. If the battery must be charged on the motorcycle, disconnect the battery cables.

WARNING

Do not smoke or have flames near a charging battery. The gas produced by a battery is highly flammable and can explode.

- For alternator removal and installation, refer to section 8.
- All charging system components can be tested on the motorcycle.

SPECIFICATIONS

Battery	Capacity	12V, 14 ampere-hours
	Specific gravity	1.28/20°C (68°F)
	Charging rate	1.4 amperes maximum
Alternator	Capacity	High beam: 18 amperes minimum/5,000 rpm (14 volts)
Voltage regulator	Type	Transistorized non-adjustable

TROUBLESHOOTING

No Power — Key Turned On:

- Dead battery.
 - Low fluid level.
 - Low specific gravity.
 - Charging system failure.
- Disconnected battery cable.
- Main fuse burned out.
- Faulty ignition switch.

Low Power — Key Turned On:

- Weak battery.
 - Low fluid level.
 - Low specific gravity.
 - Charging system failure.
- Loose battery connection.

Low Power — Engine Running:

- Battery undercharged.
 - Low fluid level.
 - One or more dead cells.
- Charging system failure.

Intermittent Power:

- Loose battery connection.
- Loose charging system connection.
- Loose starting system connection.
- Loose connection or short circuit in ignition system.
- Loose connection or short circuit in lighting system.

Charging System Failure:

- Loose, broken, or shorted wire or connection.
- Faulty voltage regulator/rectifier.
- Faulty alternator.

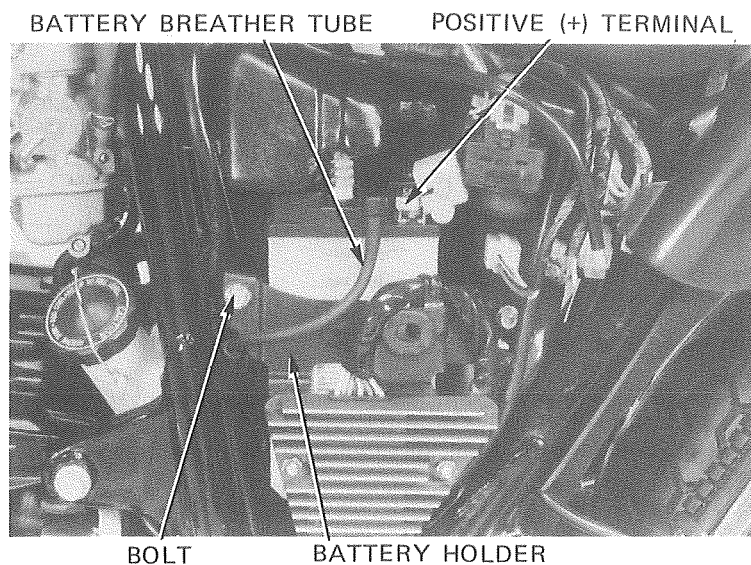
17



BATTERY

REMOVAL

Remove the frame left side cover.
Remove the battery holder bolt and open the holder. Pull out the battery and disconnect the ground cable at the battery terminal.
Disconnect the positive (+) cable at the battery.
Disconnect the battery breather tube, and remove the battery.



TESTING SPECIFIC GRAVITY

Test each cell with a hydrometer.

SPECIFIC GRAVITY (20°C, 68°F):

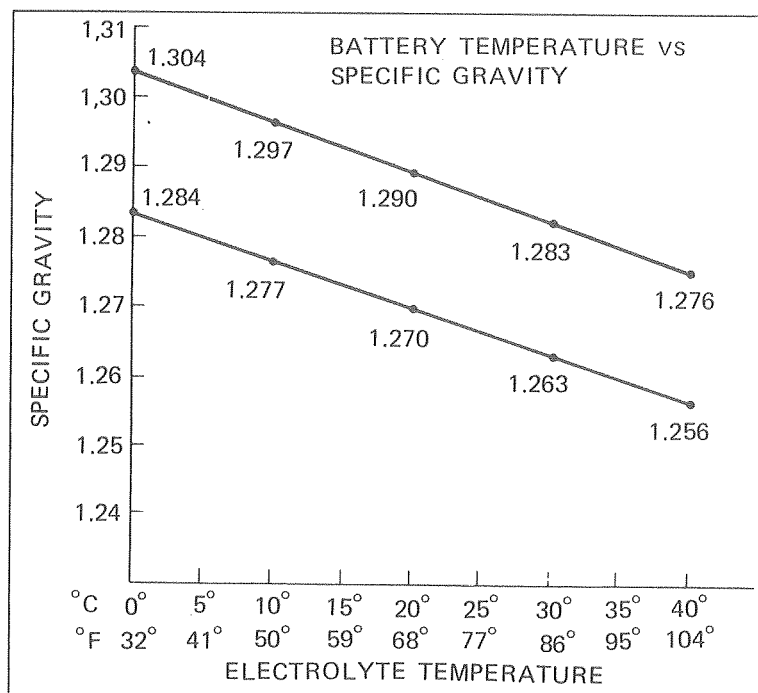
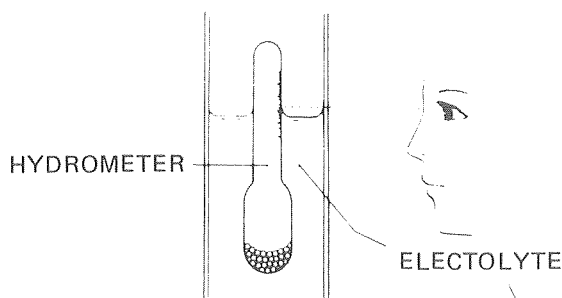
1.270–1.290	Fully charged
Below 1.260	Undercharged

NOTE

- The battery must be recharged if the specific gravity is below 1.230.
- The specific gravity varies with the temperature as shown in the table.
- Replace the battery if sulfation is evident or if the space below the cell plates is filled with sediment.

WARNING

The battery electrolyte contains sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote: Flush with water and call a doctor if electrolyte gets in your eyes.



Specific gravity changes by 0.007 for every 10°C (18°F).



BATTERY CHARGING

Remove the battery cell caps.

Connect the charger positive (+) cable to the battery positive (+) terminal.

Connect the charger negative (–) cable to the battery negative (–) terminal.

Charging current:

1.4 amperes max.

Charging:

Charge the battery until specific gravity is 1.270–1.290 at 20°C (68°F).

WARNING

- Before charging a battery, remove each cell cap.
- Keep flames and sparks away from a charging battery.
- Turn power ON/OFF at the charger, not at the battery terminals.
- Discontinue charging if the electrolyte temperature exceeds 45°C (113°F).

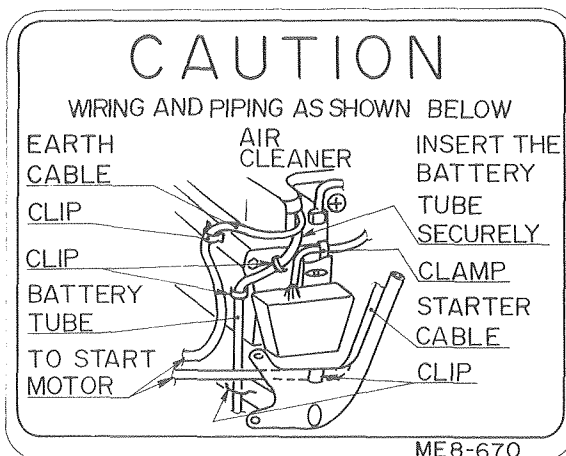
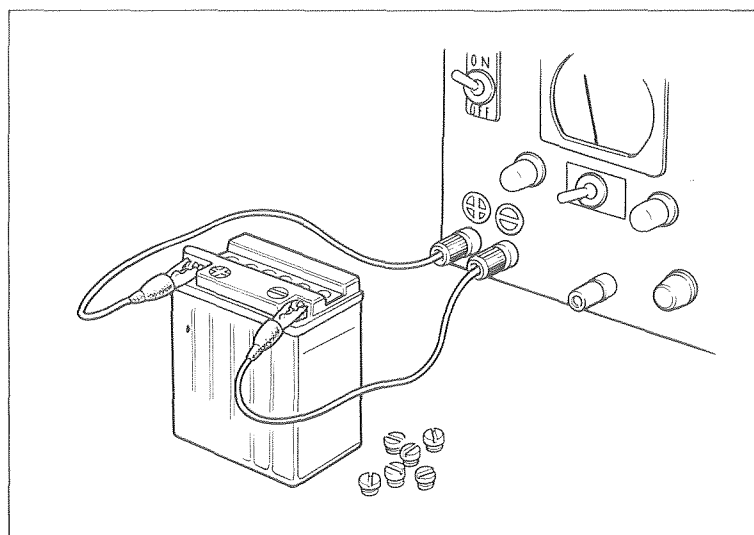
CAUTION

Quick-charging should only be done in an emergency; slow-charging is preferred.

After installing the battery, coat the terminals with clean grease before reconnecting the battery cables.

CAUTION

Route the breather tube as shown on the battery caution label.



CHARGING SYSTEM

CHARGING OUTPUT TEST

Warm up the engine before taking readings. Disconnect the main fuse coupler. Open the main fuse cover and remove the main fuse, then reconnect the coupler.

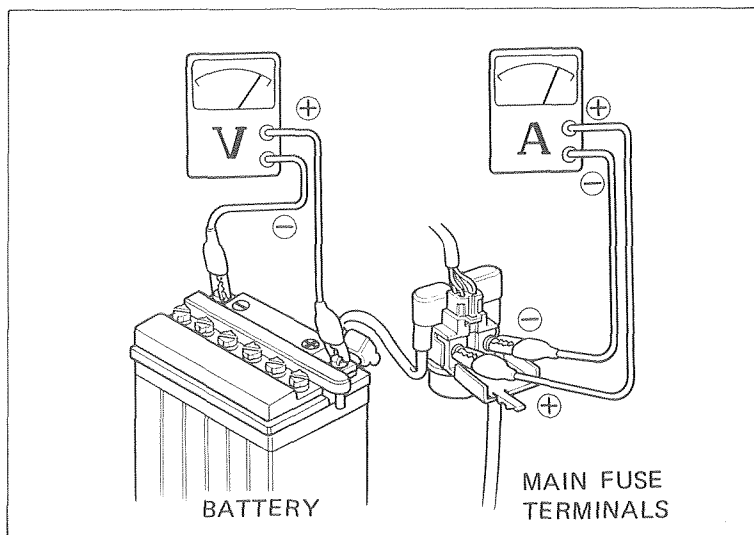
Connect a voltmeter and ammeter as shown.

NOTE

Use a fully charged battery to check the charging system output.

TECHNICAL DATA:

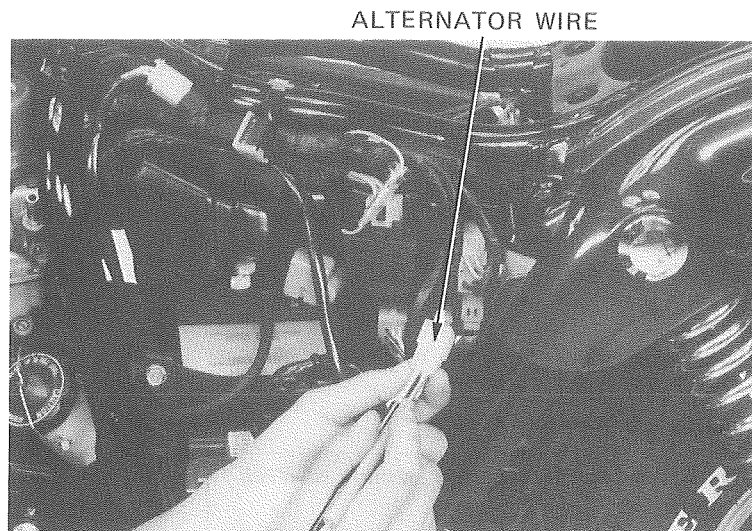
MAIN SWITCH	LIGHT-ING SWITCH	CHARG-ING RPM	5,000 rpm
ON	High beam	1,600 rpm	(18 amperes minimum/ 14.0 volts)





STATOR COIL CONTINUITY TEST

Check the yellow leads to the alternator stator for continuity with each other. Replace the stator if any yellow lead is not continuous with the others, or if any lead has continuity to ground. See Stator Removal (Page 8-5).

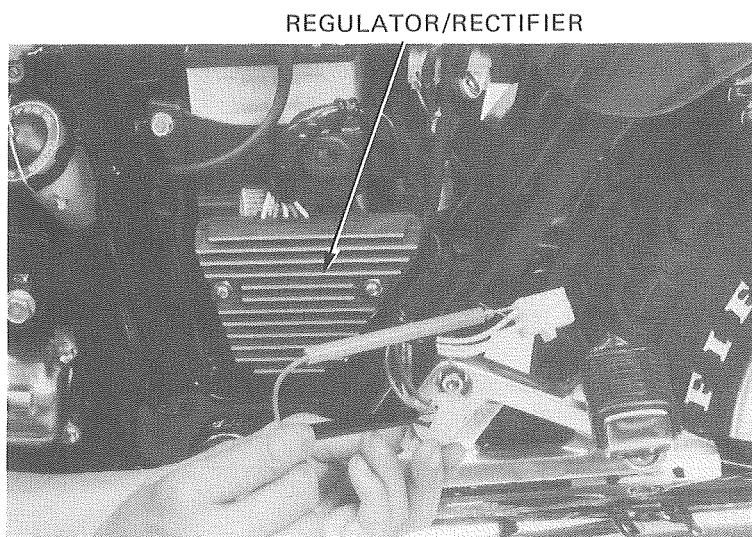


VOLTAGE REGULATOR/RECTIFIER TEST

Check the resistances between the leads with an ohmmeter.

NOTE

The test results shown are for a positive ground ohmmeter and the opposite results will be obtained when a negative ground ohmmeter is used.

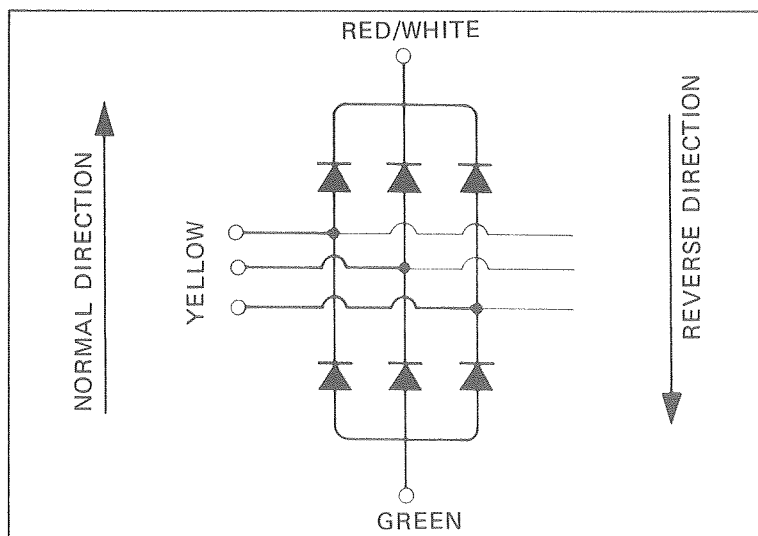


NORMAL DIRECTION: CONTINUITY

	⊕ probe	⊖ probe
I	YELLOW	GREEN
II	RED/WHITE	YELLOW

REVERSE DIRECTION: NO CONTINUITY

	⊕ probe	⊖ probe
I	GREEN	YELLOW
II	YELLOW	RED/WHITE



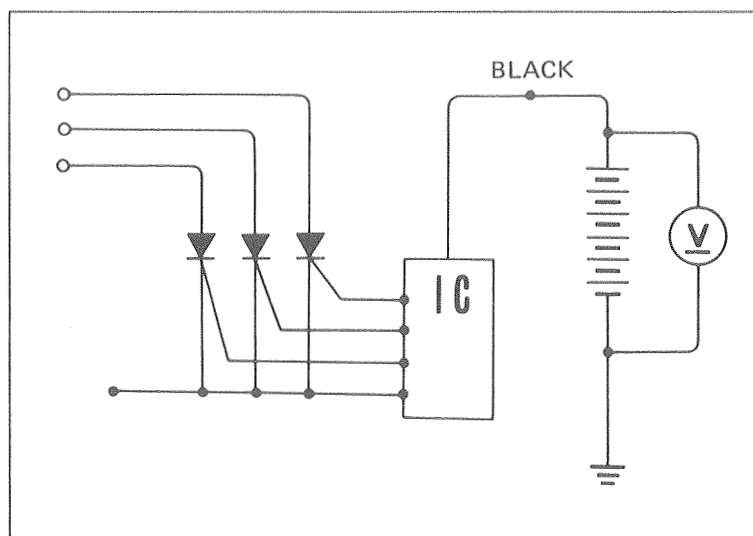


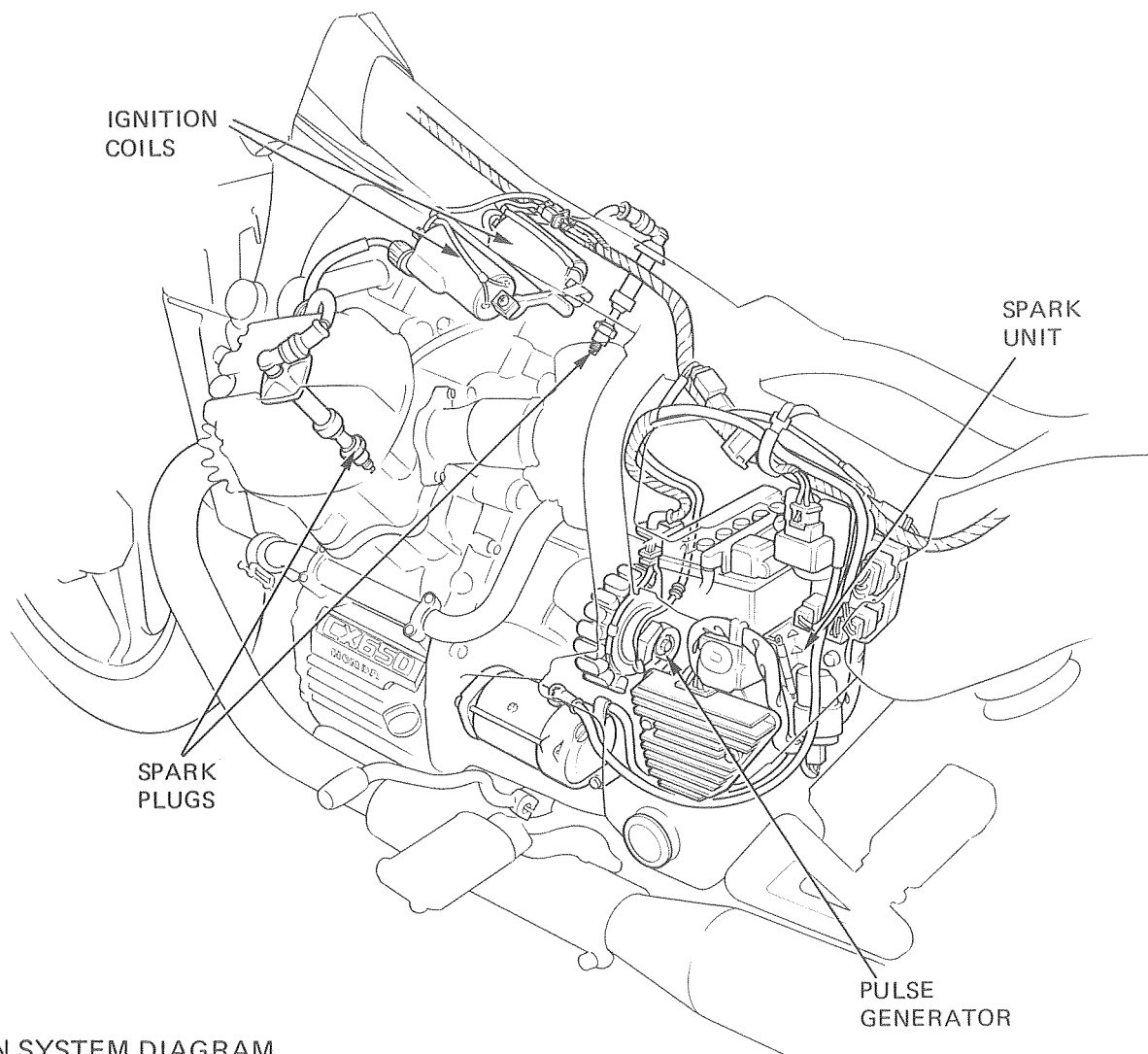
**VOLTAGE REGULATOR
PERFORMANCE TEST**

Test with a voltmeter.

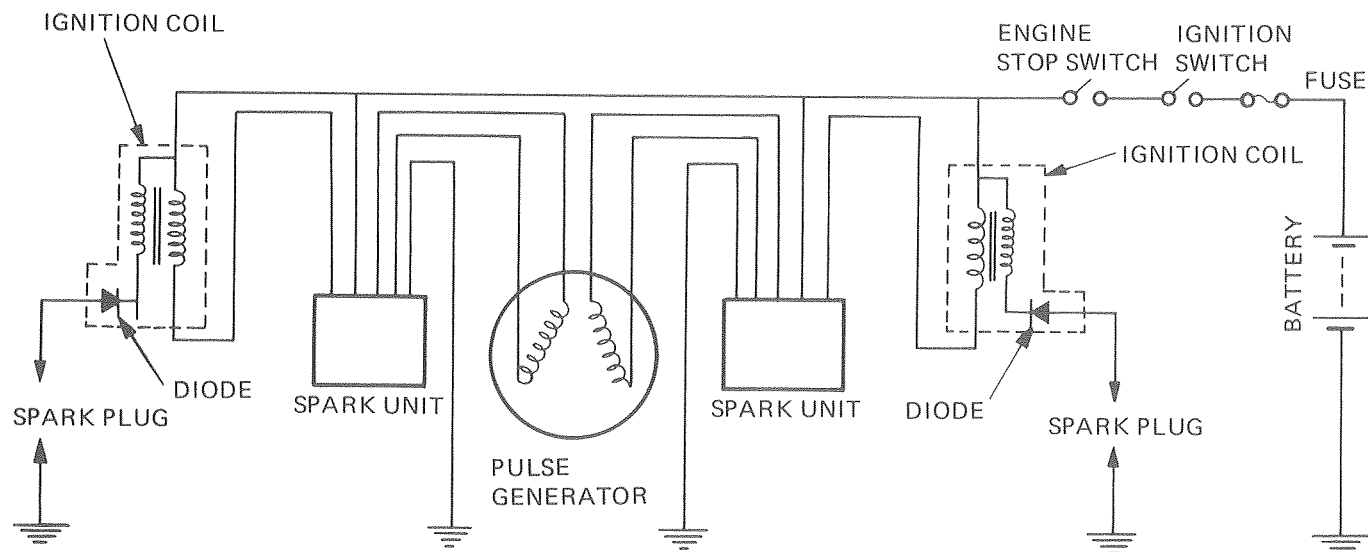
Connect a voltmeter across the battery.

Check regulator performance with the engine running. The regulator must divert current to ground when battery voltage reaches 14.0 – 15.0V.





IGNITION SYSTEM DIAGRAM





SERVICE INFORMATION	18-1
TROUBLESHOOTING	18-1
IGNITION COIL	18-2
TRANSISTORIZED IGNITION SYSTEM (Pulse Generator, Spark Unit)	18-3
SPARK UNIT	18-4
SPARK ADVANCER	18-5
IGNITION TIMING CHECK	18-6

SERVICE INFORMATION

GENERAL

- A Transistorized Ignition System is used and no adjustments are to be made unless the pulse generator screws are loosened or the pulse generator is removed.
- To adjust the ignition timing, see Page 8-12
- For spark plug information, see Page 3-7.

SPECIFICATIONS

RECOMMENDED SPARK PLUG

	Standard	For extended high speed riding
NGK	DPR8EA-9	DPR9EA-9
ND	X24EPR-U9	X27EPR-U9

Spark plug gap: 0.8—0.9 mm (0.031—0.035 in)
 Ignition timing: "F" mark: 15° BTDC at 1,100 rpm
 Full advance: 40 ± 1.5° BTDC at 3,500 rpm
 Pulse generator air gap: 0.45—0.65 mm (0.018—0.026 in)

TOOLS

Special

Timing inspection plug 07999—4150000

Common

Circuit tester Sanwa tester 07308—0020000 or Kowa tester TH-5H,

TROUBLESHOOTING

Engine Cranks But Will Not Start

- Engine stop switch OFF.
- No spark at plugs.
- Faulty spark unit.
- Faulty pulse generator.

No Spark at Plug

- Engine stop switch OFF.
- Poorly connected, broken or shorted wires.
 - Between ignition switch and engine stop switch.
 - Between spark unit and engine stop switch.
 - Between spark unit and ignition coil.
 - Between ignition coil and plug.
 - Between spark unit and pulse generator.

- Faulty ignition coil.
- Faulty ignition switch.
- Faulty spark unit.
- Faulty pulse generator.

Engine Starts But Runs Poorly

- Ignition primary circuit.
 - Faulty ignition coil.
 - Loose or bare wire.
 - Intermittent short circuit.
- Secondary circuit.
 - Faulty plug.
 - Faulty high tension cord.

Timing Advance Incorrect

- Centrifugal advancer faulty.

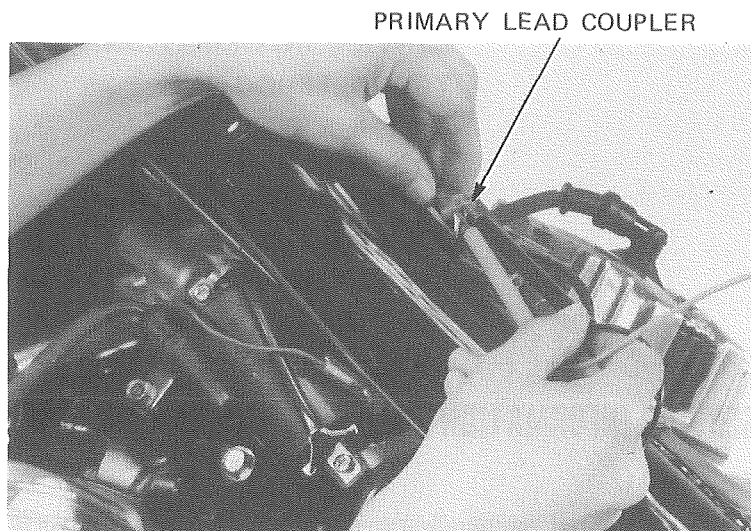


IGNITION COIL

PRIMARY COIL INSPECTION

Remove the fuel tank (page 4-15).
Check the resistance between the leads with an ohmmeter as shown.

RESISTANCE: 2–3 ohms



SECONDARY COIL INSPECTION

The secondary coil inspection method differs depending on whether or not there is a mark on the ignition coil body. Look for an "S" mark before testing.

WITH "S" MARK

Measure the resistance between the black/white coupler terminal and the high tension terminal.

NOTE

- Use a Kowa Tester (TH-5H) or Sanwa Tester (07308-0020000).
- Use new test batteries for this test.

Connect the negative probe of the tester to the coupler terminal and positive probe to the high tension terminal and measure the resistance.

RESISTANCE:

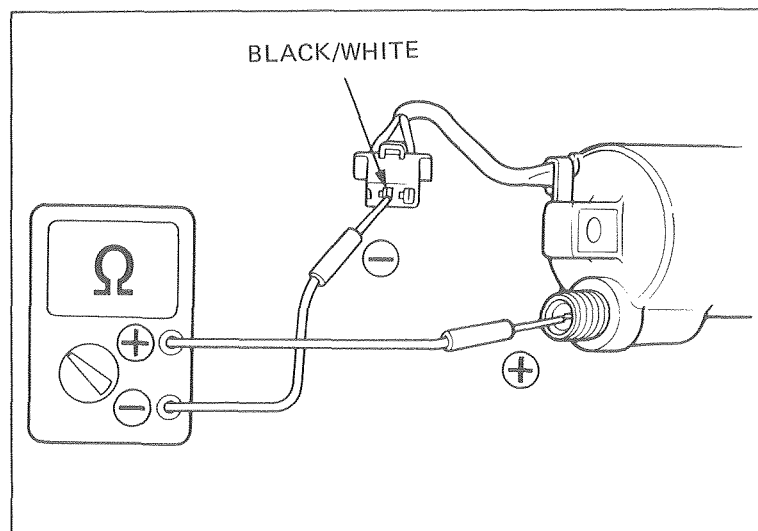
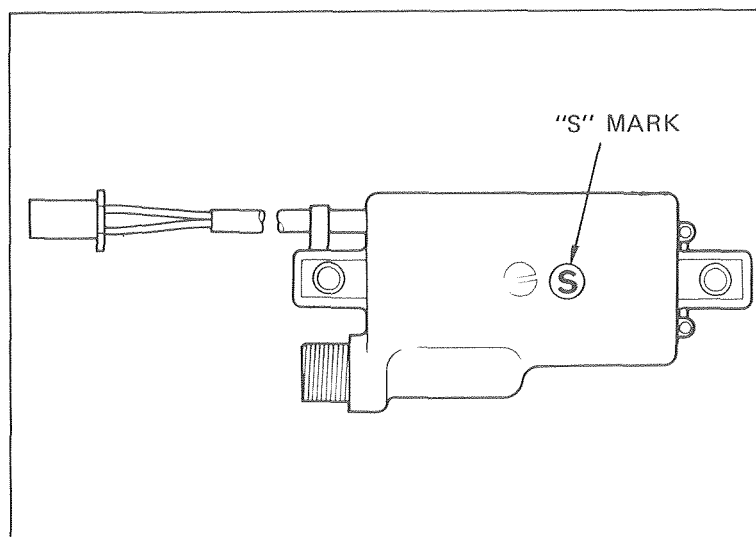
SANWA TESTER: 200–350 kΩ

KOWA TESTER: 50–200 kΩ

Change the tester polarities and measure the resistance.

RESISTANCE: ∞ ohms

Replace the ignition coil if the resistance limits are not met.





WITHOUT "S" MARK

Connect the ignition coil, tester and two 12V batteries as shown in the figure.

NOTE

Make sure the battery voltage is 23–25V before measuring.

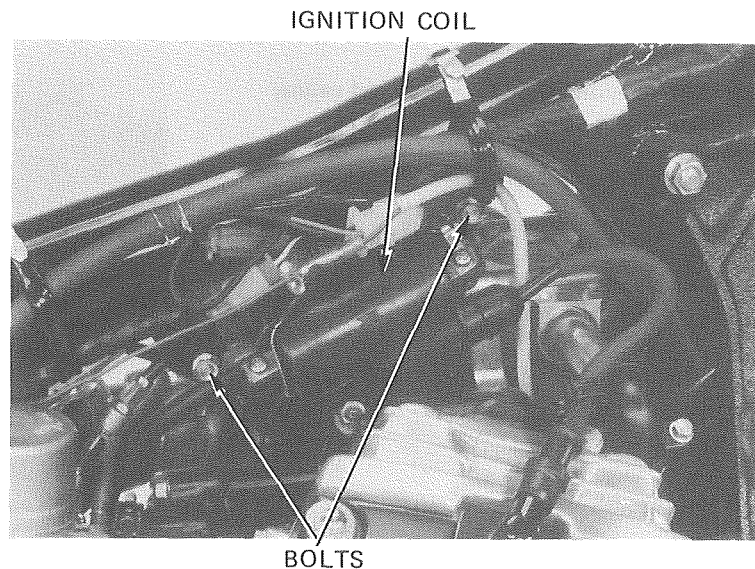
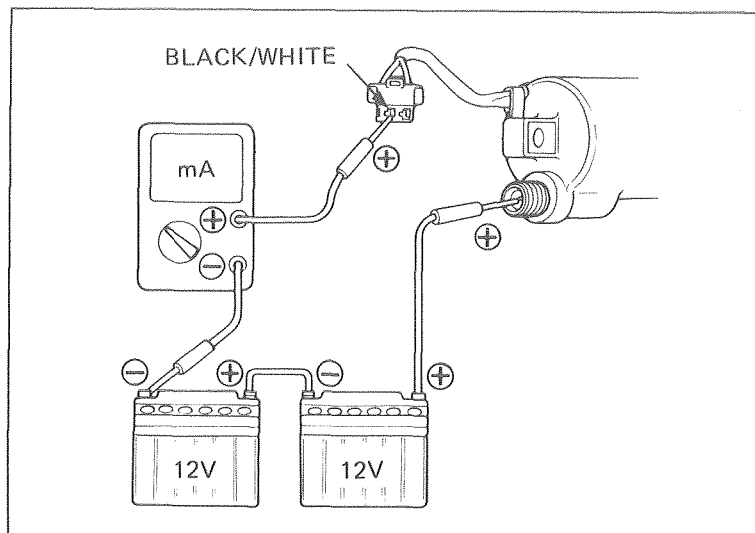
Replace the ignition coil if the reading does not meet the specification.

Tester	Measuring range	Specification
SANWA	25 mA	Approximately 3 mA
KOWA	100 mA	Needle should swing slightly.

Change the tester polarities. Replace the ignition coil if there is continuity.

REMOVAL

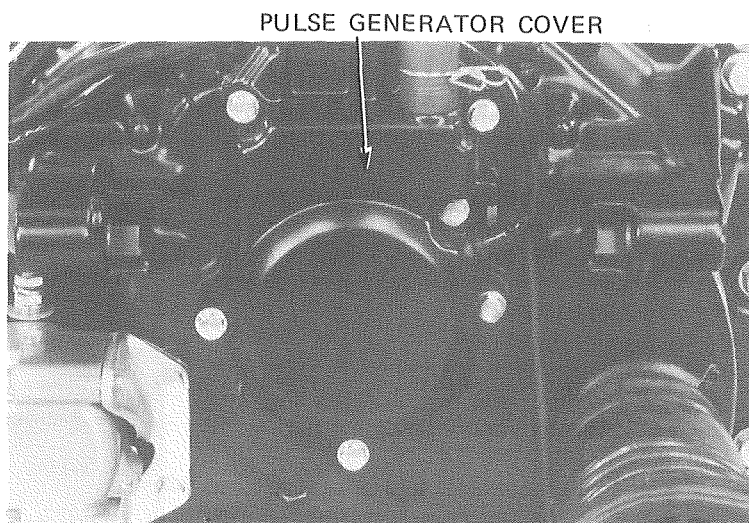
Disconnect the ignition switch couplers.
Remove the coil by removing the attaching bolts.



TRANSISTORIZED IGNITION SYSTEM

INSPECTION

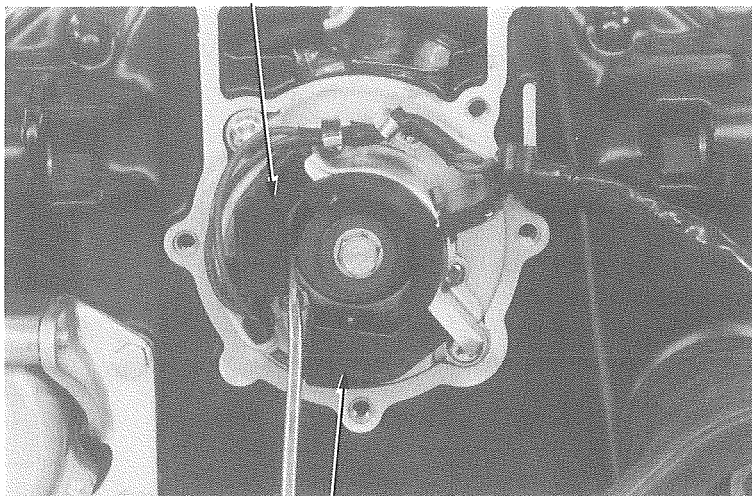
Remove the swing arm (Page 14–15), air cleaner case (Page 4-18), and rear inner fender.
Remove the pulse generator cover.





Disconnect the spark plugs. Hold each plug against convenient engine ground.
Turn the ignition switch on.
Touch the end of a screwdriver to one pulse generator steel core.
A good spark to the plug means that the ignition system for that cylinder is in good shape.
Repeat the above for the other pulse generator.

RIGHT CYLINDER COIL

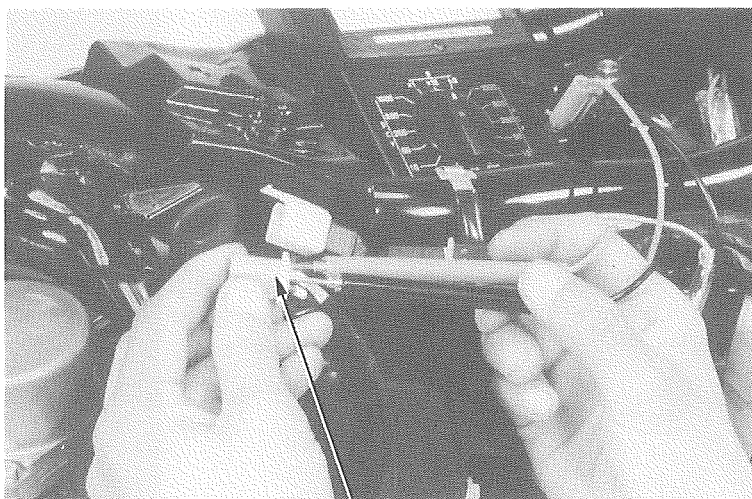


LEFT CYLINDER COIL

Measure the coil resistance.

Between yellow with white tube and yellow leads (Right cylinder) and;
Between blue with white tube and blue leads (Left cylinder)

COIL RESISTANCE: 530 ± 50 ohms (20°C , 68°F)



PULSE GENERATOR WIRE COUPLER

SPARK UNIT

INSPECTION

Disconnect the pulse generator coupler.

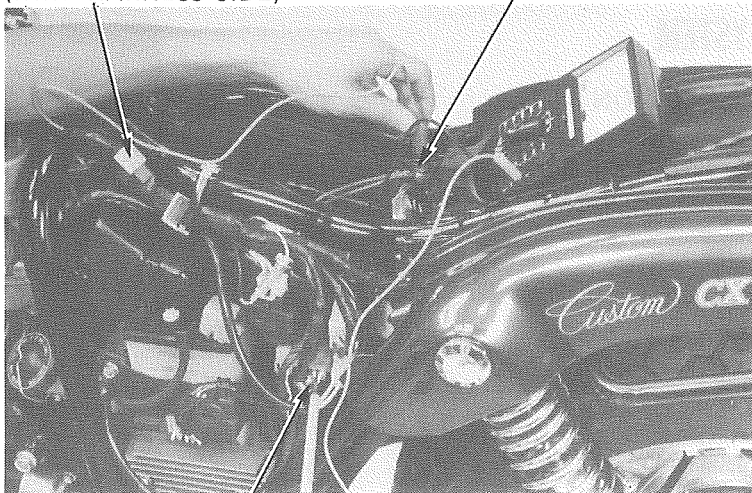
Attach the negative lead to any convenient ground.
Turn the ignition switch on.
terminal (R) of the spark unit 6-pole coupler.
Attach the negative lead to any convenient ground.
Turn the ignition switch on.

Ground each corresponding terminal (L: blue wire terminal, R: yellow wire terminal) of the wire harness 4-pole coupler intermittently.

The transistor unit is normal if the voltage indicated by the voltmeter changes from 12V to 0V in each test.

PULSE GENERATOR COUPLER
(WIRE HARNESS SIDE)

GROUND



6-POLE COUPLER



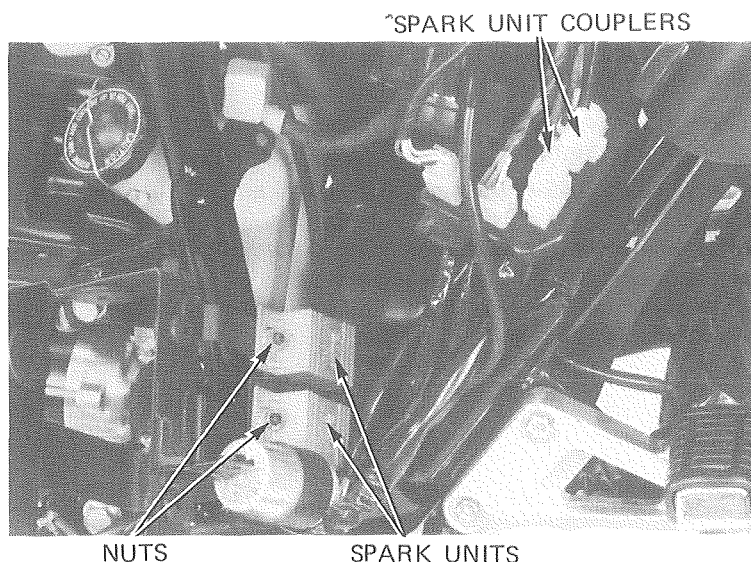
REPLACEMENT

Remove the battery (page 17-2) and battery box (page 4-18).

Disconnect the spark unit coupler.

Remove the spark unit mounting nut and spark unit.

Install the spark unit in the reverse order of removal.



SPARK ADVANCER

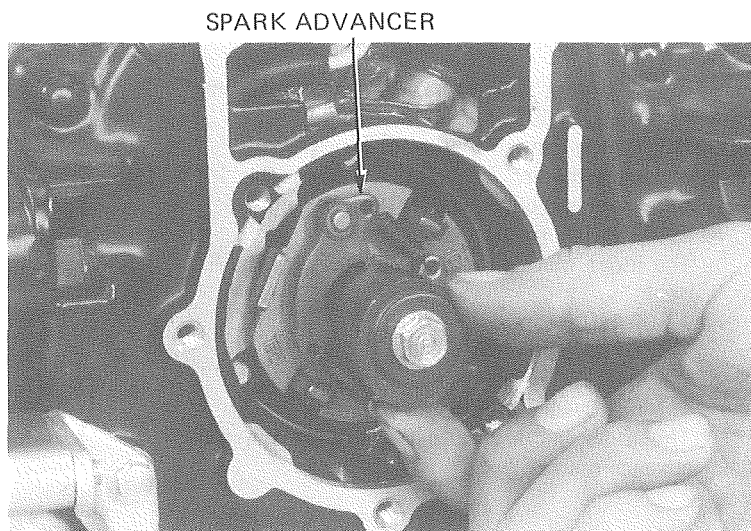
Remove the pulse generator (Page 8-3).

Check the mechanical advancer cam for sticking.

Lubricate the sliding surfaces, and check the spring for loss of tension and advancer pin for excessive wear.

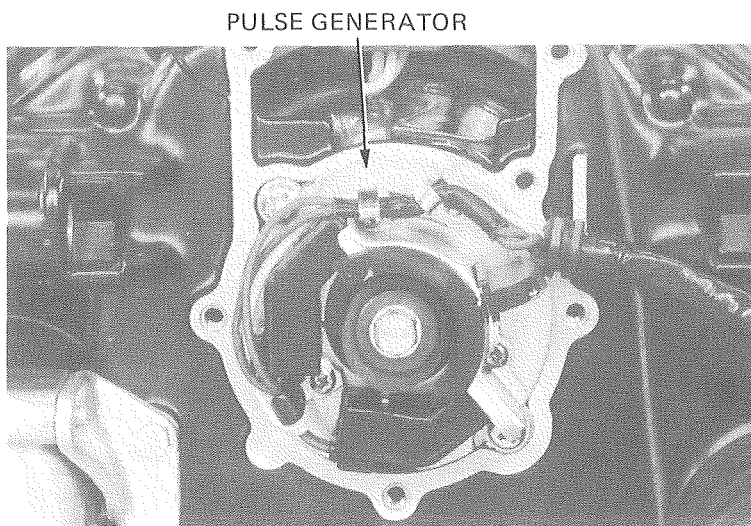
NOTE

Align the rotor tooth with the cut-out of the advancer when assembling.



Install the spark advancer.

Install the pulse generator and adjust the ignition timing (Page 8-12).



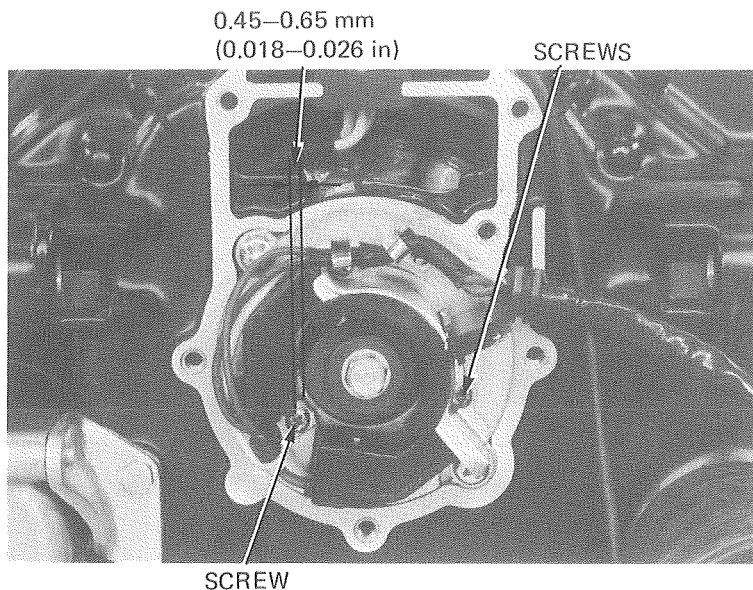


PULSE GENERATOR AIR GAP ADJUSTMENT

Measure the air gaps between the pulse generators and the rotor tooth.

AIR GAP: 0.45–0.65 mm (0.018–0.026 in)

When adjustment is necessary, loosen the pulse generator coil attaching screws and move the coil to achieve the correct gap. Tighten the screws and recheck the ignition timing.



IGNITION TIMING CHECK

Remove the timing hole cap and install the timing inspection plug, 07999–4150000.

Connect a timing light to the right cylinder.

Connect a tachometer.

Start the engine and check the ignition timing:

At 1,100 ± 100 rpm:

The index mark should be aligned with the FI mark.

At 1,500 ± 100 rpm:

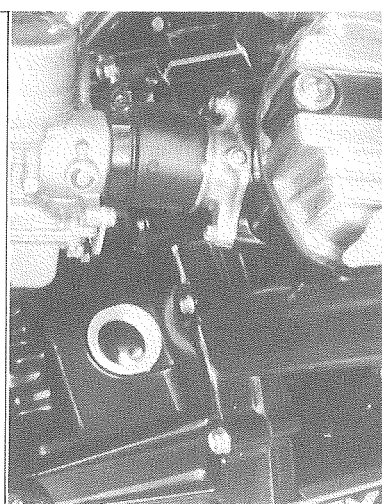
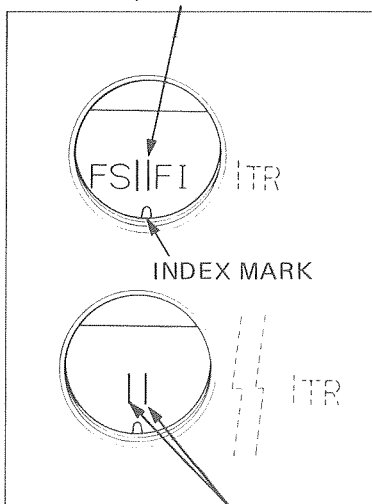
Timing advance should start.

At 3,500 ± 150 rpm:

Timing advance should stop.

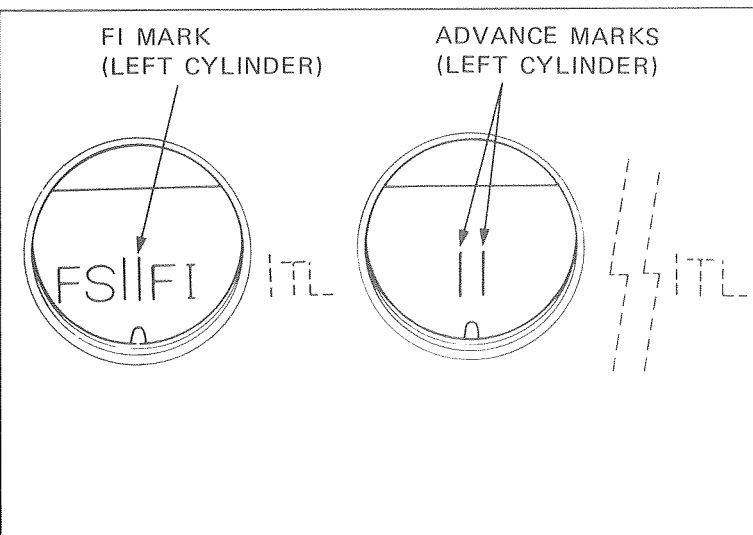
The index mark should be between the full advance marks.

FI MARK (RIGHT CYLINDER)



ADVANCE MARKS
(RIGHT CYLINDER)

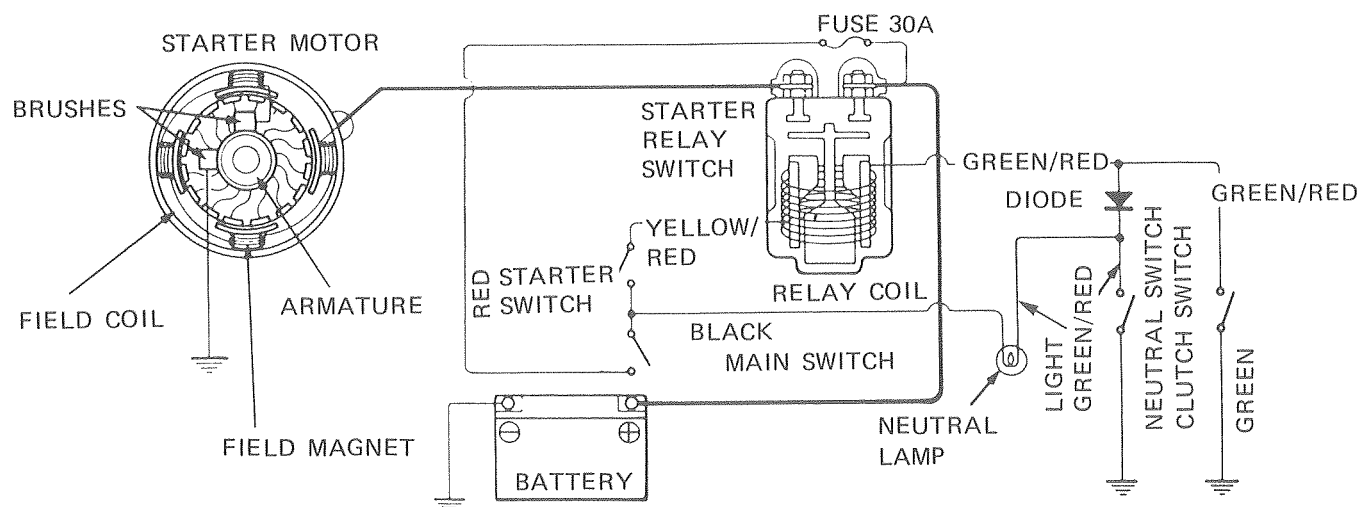
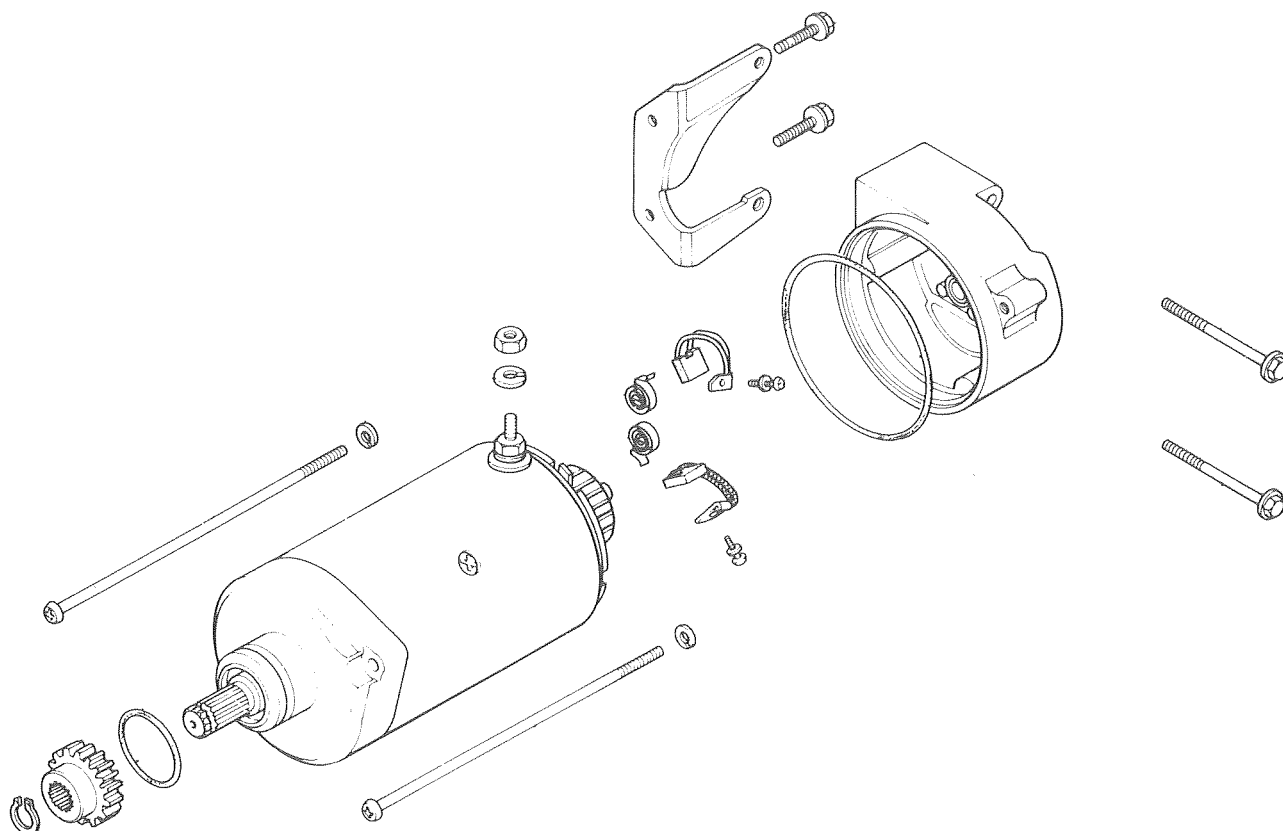
Check the left cylinder using the FI mark and the full advance marks.





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SERVICE INFORMATION	19-1
TROUBLESHOOTING	19-1
STARTER MOTOR	19-2
STARTER RELAY SWITCH	19-4
CLUTCH SWITCH DIODE	19-5

SERVICE INFORMATION

GENERAL

The starter motor can be removed with the engine in the frame. Starter clutch repairs (Page 8-8).

SPECIFICATIONS

Item		Standard	Service Limit
Starter motor	Brush spring tension	495-605 g (17.5-21.3 oz)	400 g (14.1 oz)
	Brush length	11.0-12.5 mm (0.43-0.49 in)	5.5 mm (0.22 in)

TROUBLESHOOTING

Starter Motor Will Not Turn:

- Dead battery.
- Faulty ignition switch.
- Faulty starter switch.
- Faulty neutral switch.
- Faulty starter relay switch.
- Loose or disconnected wire or cable.
- Clutch switch diode open.
- Faulty clutch switch.

Starter Motor Turns Engine Slowly:

- Low battery.
- Excessive resistance in circuit.
- Binding in starter motor.

Starter Motor Turns, But Engine Does Not Turn:

- Faulty starter clutch.
- Faulty starter motor gears.
- Faulty starter motor or idle gear.

Starter Motor and Engine Turn, But Engine Does Not Start:

- Faulty ignition system.
- Engine problems.
- Faulty engine stop switch.



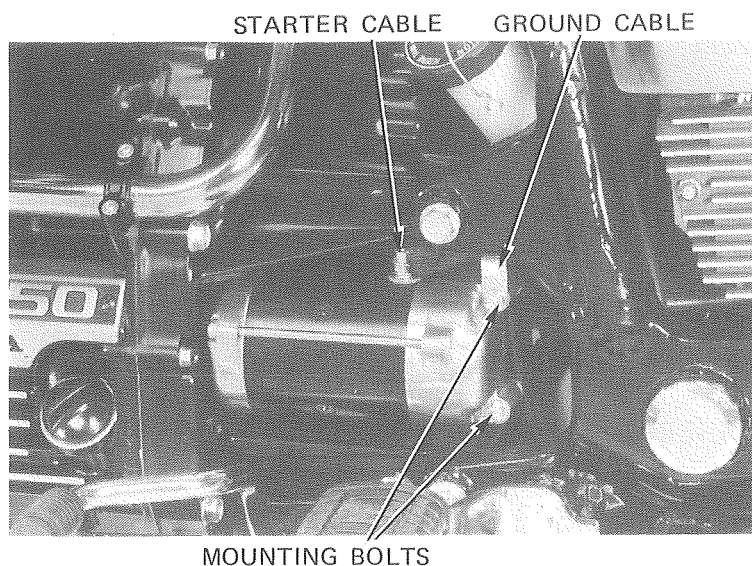
STARTER MOTOR

REMOVAL

CAUTION

With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.

Remove the starter mounting bolts and pull the motor out of the engine case.
Disconnect the starter cable.



BRUSH INSPECTION

Remove the starter motor case screws and rear cover.

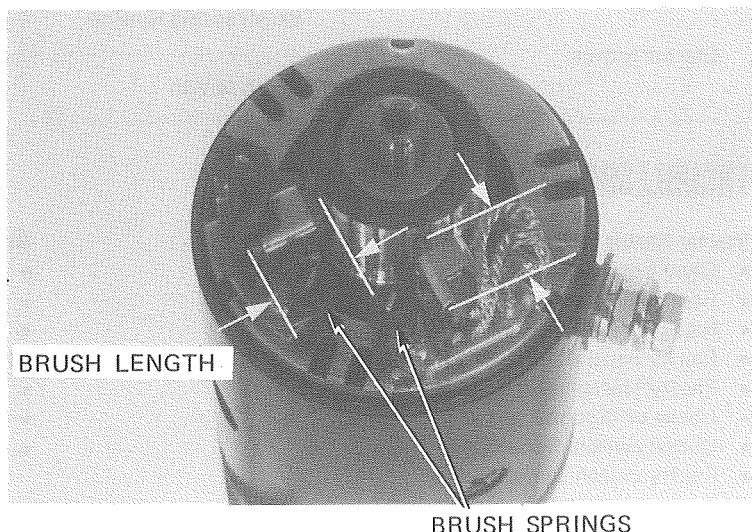
Inspect the brushes and measure the brush length.

Measure brush spring tension with a spring scale.

SERVICE LIMITS:

Brush length: 5.5 mm (0.22 in)

Brush spring tension: 400 g (141.1 oz)



COMMUTATOR INSPECTION

Remove the starter motor case.

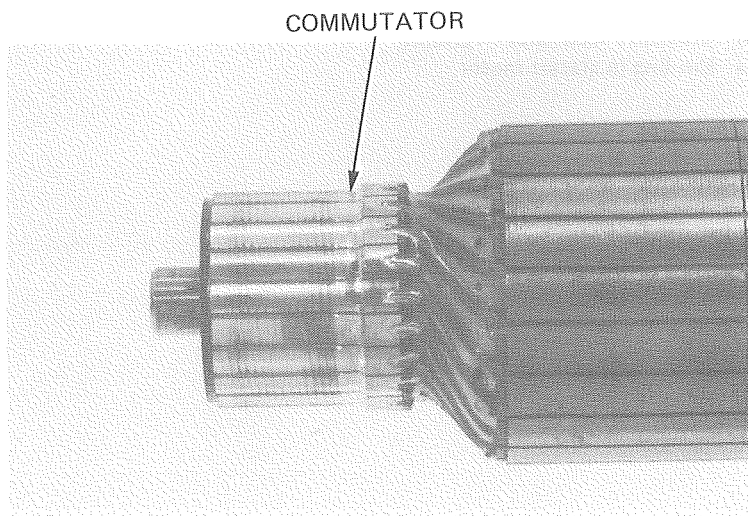
NOTE:

Record the location and number of thrust washers.

Inspect the commutator bars for discoloration. Bars discolored in pairs indicate grounded armature coils, in which case the starter motor must be replaced.

NOTE:

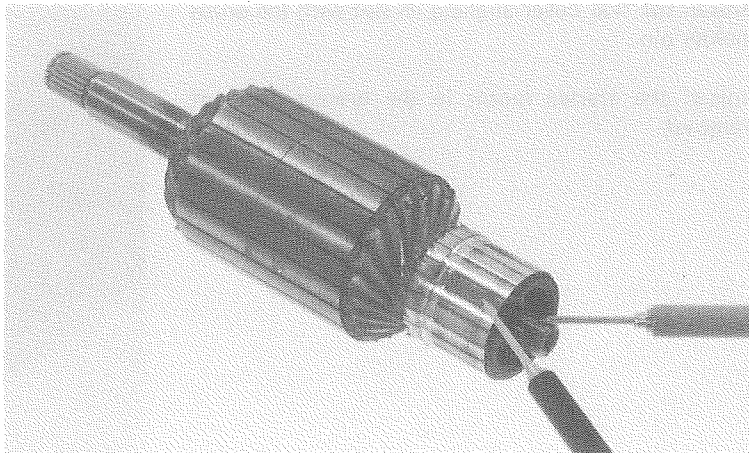
Do not use emery or sand paper on the commutator.



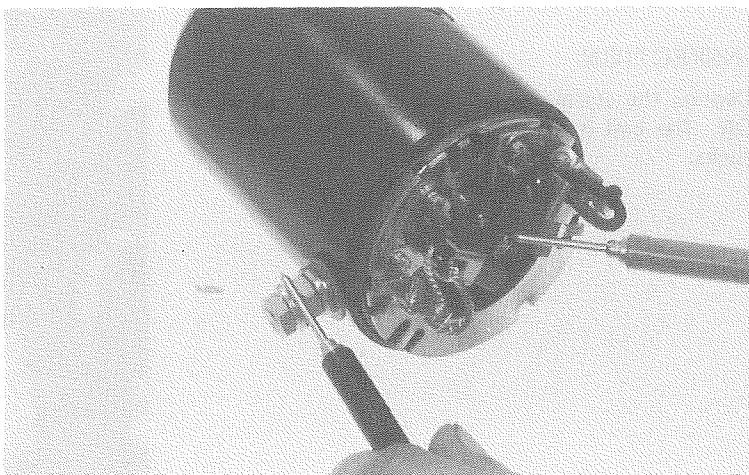


Check for continuity between pairs of commutator bars. Also, make a resistance check between individual commutator bars and the armature shaft. There should be no continuity.

CONTINUITY BETWEEN
COMMUTATOR BAR PAIRS: NORMAL



NO CONTINUITY BETWEEN
COMMUTATOR BARS AND ARMATURE SHAFT: NORMAL
NO CONTINUITY BETWEEN
CABLE TERMINAL AND MOTOR CASE: NORMAL



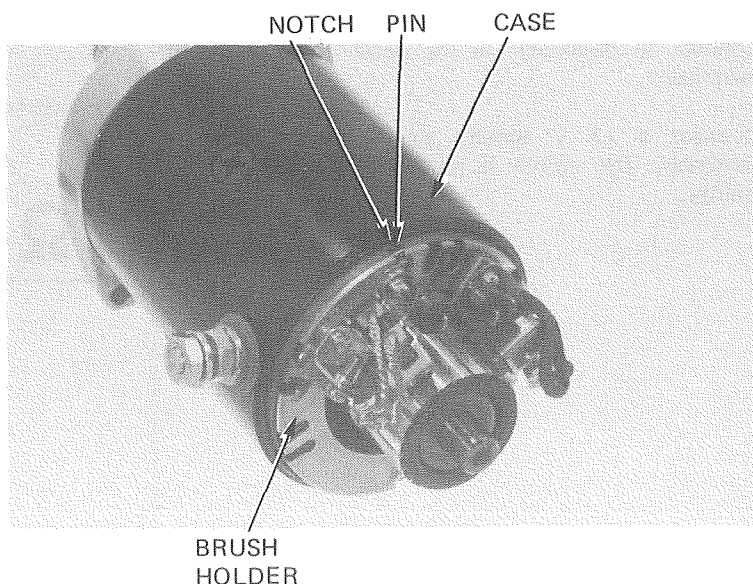
CONTINUITY BETWEEN
CABLE TERMINAL AND BRUSH WIRE (INSULATED): NORMAL

FIELD COIL INSPECTION

Check for continuity from the cable terminal to the motor case and from the cable terminal to the brush wire. Replace the starter motor if the field coil does not have continuity or if it is shorted to the motor case.

ASSEMBLY/INSTALLATION

Assemble the starter motor. Align the case notch with the brush holder pin.

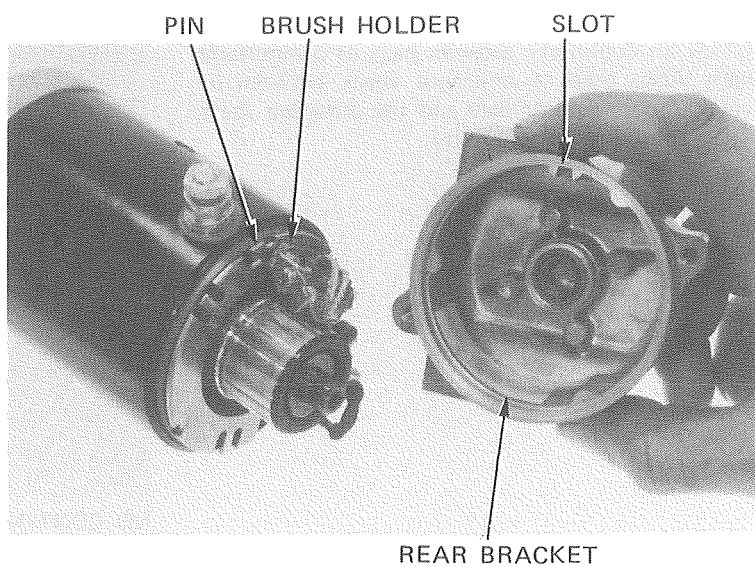




STARTER SYSTEM

Install the rear cover aligning its slot with the brush holder pin.

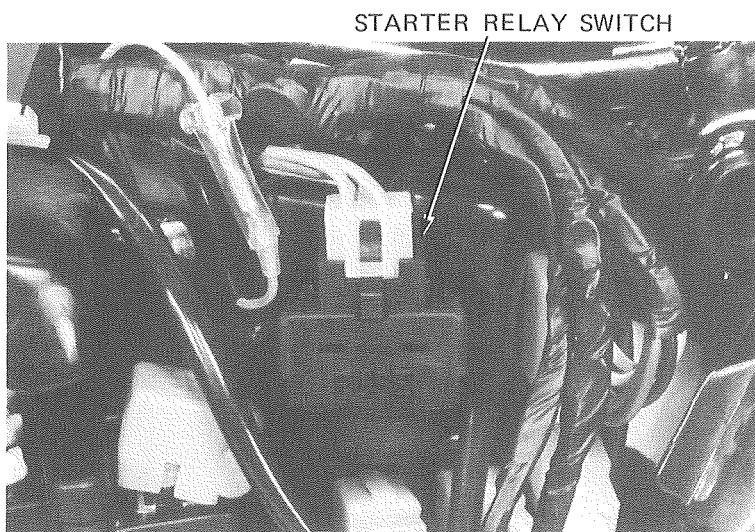
Install the starter motor in the reverse order of removal.



STARTER RELAY SWITCH

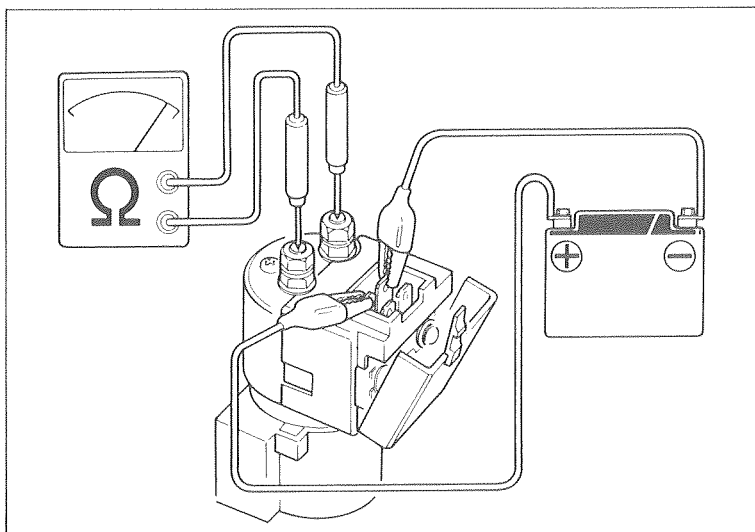
INSPECTION

Depress the starter switch button with the ignition ON. The coil is normal if the starter relay switch clicks.



Connect an ohmmeter to the starter relay switch terminals.

Connect a 12 V battery to the switch cable terminals. The switch is normal if there is continuity,





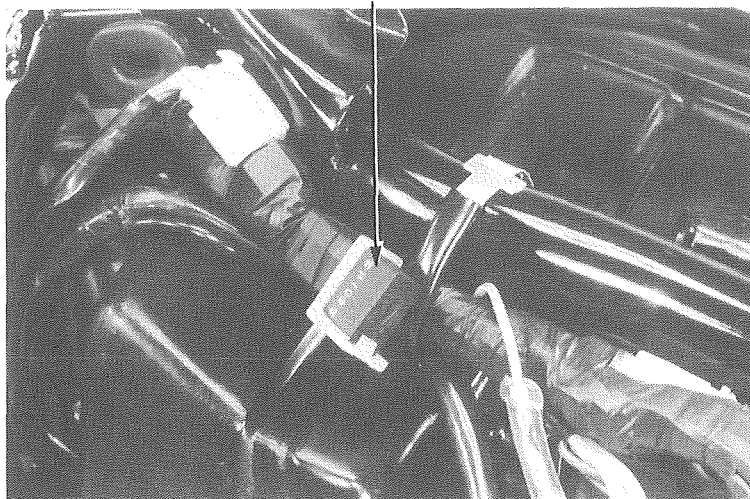
CLUTCH SWITCH DIODE

REMOVAL

Remove the fuel tank.

Remove the clutch switch diode from the wire harness.

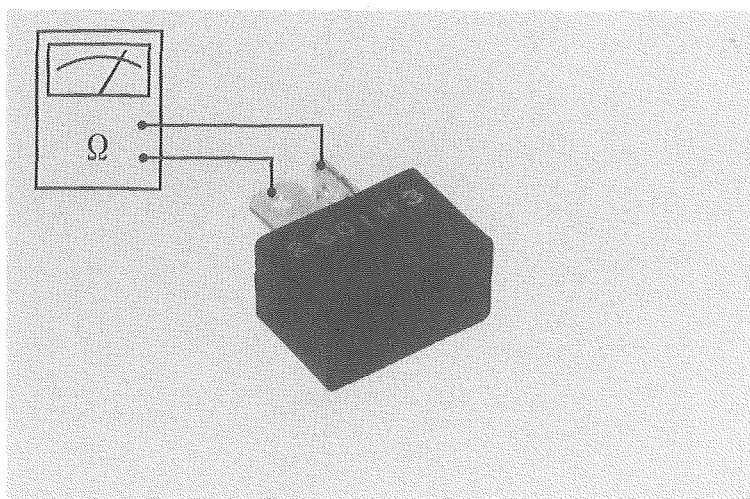
CLUTCH SWITCH DIODE



NORMAL DIRECTION: CONTINUITY
REVERSE DIRECTION: NO CONTINUITY

INSPECTION

Check for continuity with an ohmmeter.





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SERVICE INFORMATION	20-1	IGNITION SWITCH	20-5
OIL PRESSURE SWITCH	20-2	THERMOSTATIC SWITCH	20-7
BRAKE LIGHT SWITCH	20-2	TEMPERATURE GAUGE	20-7
NEUTRAL SWITCH	20-3	BRAKE AND TAIL LIGHT SENSOR	20-8
CLUTCH SWITCH	20-3	BULB REPLACEMENT	20-9
HANDLEBAR SWITCHES	20-3		

SERVICE INFORMATION

GENERAL

- Some wires have different colored bands around them near the connector. These are connected to other wires which correspond with the band color.
- All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.
- The following color codes used are indicated throughout this section and on the wiring diagram.

Bu = Blue
Bl = Black
Br = Brown

G = Green
Gr = Grey
LB = Light Blue

LG = Light Green
O = Orange
P = Pink

R = Red
W = White
Y = Yellow

- To isolate an electrical failure, check the continuity of the electrical path through the part. A continuity check can usually be made without removing the part from the motorcycle. Simply disconnect the wires and connect a continuity tester or volt-ohmmeter to the terminals or connections.
- A continuity tester is useful when checking to find out whether or not there is an electrical connection between the two points. An ohmmeter is needed to measure the resistance of a circuit, such as when there is a specific coil resistance involved, or when checking for high resistance caused by corroded connections.



OIL PRESSURE SWITCH

Drain the engine oil.

Remove the radiator (page 9-6).

Disconnect the oil pressure switch lead and remove the switch.

Check for continuity while applying pressure to the switch.

Replace the switch if necessary.

Apply a liquid sealant to the switch threads before installing the switch.

Screw the switch in the crankcase and leave two threads from the bottom. Then tighten it to the specified torque. Do not over tighten it.

TORQUE: 18–23 N·m (1.8–2.3 kgm,
13–17 ft-lb)

CAUTION

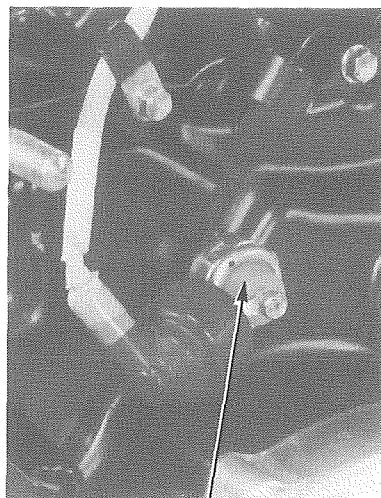
Be careful not to overtighten the switch to prevent damage to the engine cover.

BRAKE LIGHT SWITCH

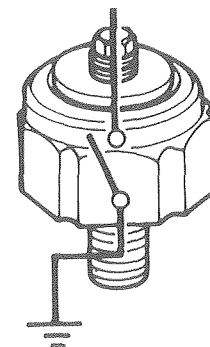
Check the rear brake light switch for continuity with the rear brake applied.

Check the front brake light switch for continuity with the front brake applied.

Replace the switch, if necessary.

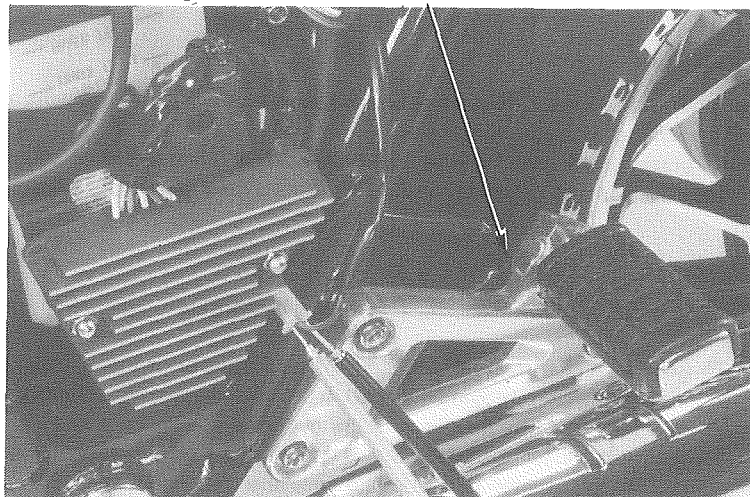


OIL PRESSURE SWITCH

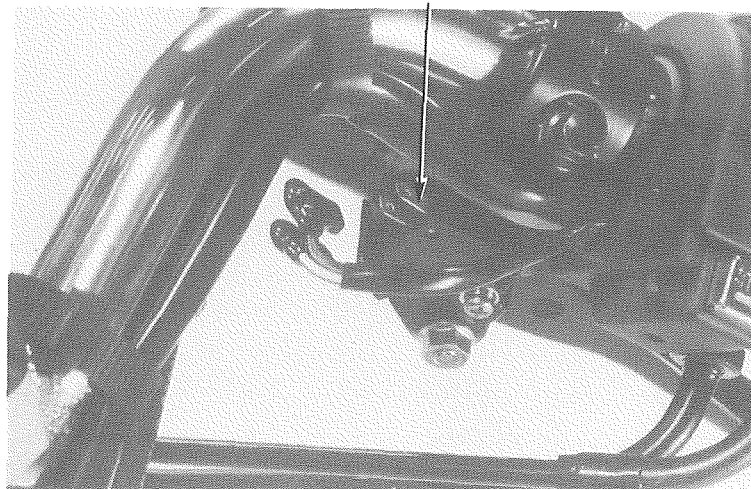


CONTINUITY: BELOW
30 ± 10 kPa
(0.3 ± 0.1 kg/cm², 4.3 ± 1.4 psi)

REAR BRAKE LIGHT SWITCH



FRONT BRAKE LIGHT SWITCH



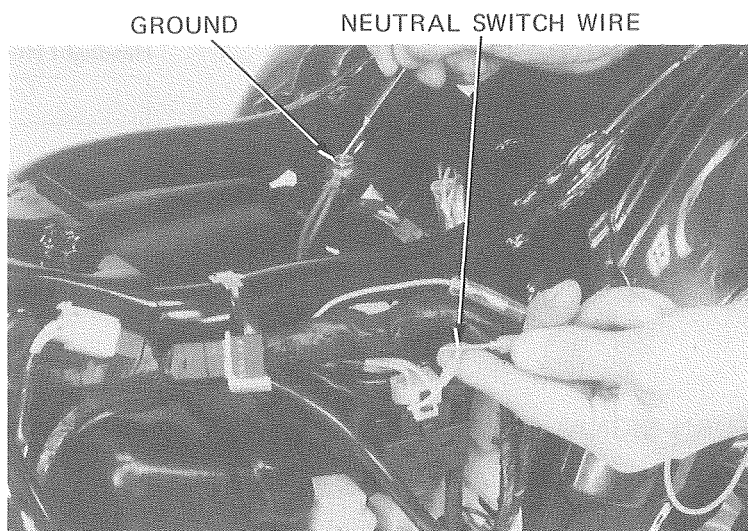


NEUTRAL SWITCH

Remove the left side cover and seat.
Disconnect the neutral switch wire connector.

Check the switch for continuity between the switch terminal (wire removed) and ground with the transmission in neutral and with the transmission in any gear.

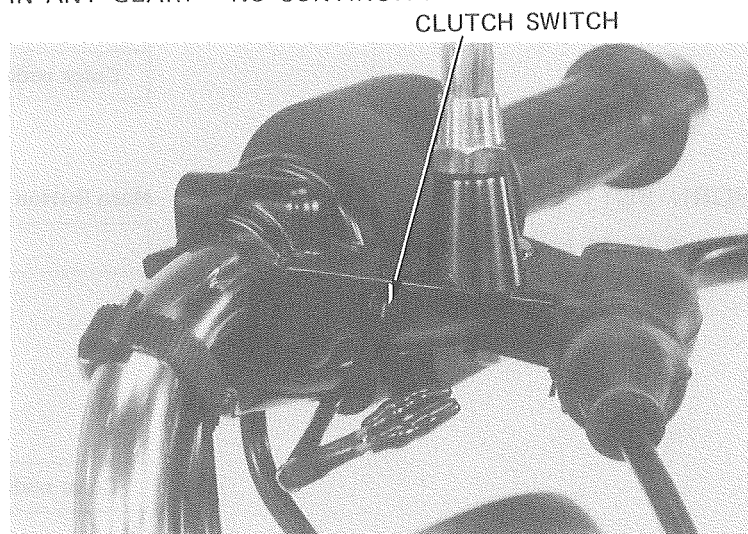
Replace the neutral switch if necessary (page 8-5).



IN NEUTRAL: CONTINUITY
IN ANY GEAR: NO CONTINUITY

CLUTCH SWITCH

Check continuity of the clutch lever (safety) switch with the clutch released and applied. Replace if necessary.



CLUTCH APPLIED: CONTINUITY
CLUTCH RELEASED: NO CONTINUITY

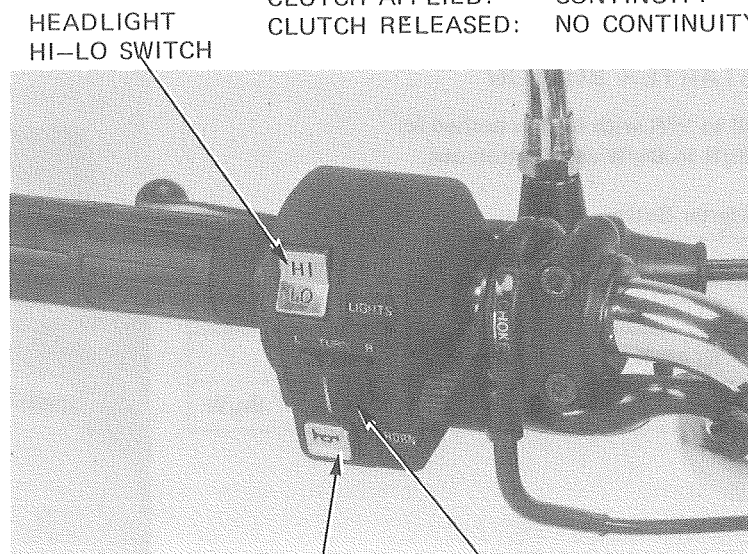
HANDLEBAR SWITCHES

The handlebar cluster switches (lights, turn signals, horn, etc.) must be replaced as assemblies.

Remove the headlight.

Continuity tests for the components of the handlebar cluster switches follow:

Continuity should exist between the color coded wires in each chart.



HORN BUTTON TURN SIGNAL SWITCH



SWITCHES/LIGHTS

HEADLIGHT HI-LOW SWITCH

HI: Bu/W to Bu
MIDDLE (N): Bu/W to W to Bu
LO: Bu/W to W

Headlight Hi-Low Switch

	HL	Hi	Lo
Hi			
(N)			
Lo			
Color code	Bu/W	Bu	W

TURN SIGNAL SWITCH

LEFT: Gr to O, Br/W to LB/W
OFF: Br/W to LB/W and O/W
RIGHT: Gr to LB, Br/W to O/W

Turn Signal Switch

	W	L	R	TL ₁	PR	PL
LEFT						
OFF						
RIGHT						
Color code	Gr	O	LB	Br/W	LB/W	O/W

HORN BUTTON

LG to W/G with button depressed
No continuity with button released

Horn Button

	Ho ₁	Ho ₂
Color code	LG	W/G

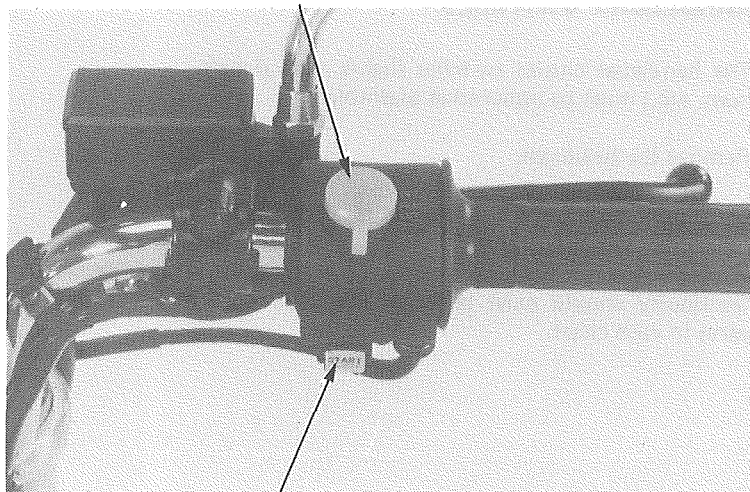
STARTER BUTTON

BI to Y/R with button pushed in.
BI/R to Bu/W with button out.

Starter Button

	BAT ₂	ST	BAT ₃	HL
OUT				
START				
Color code	BI	Y/R	BI/R	Bu/W

ENGINE STOP SWITCH



STARTER BUTTON



ENGINE STOP SWITCH

RUN: BI to BI/W
OFF: No continuity

Engine Stop Switch

	BAT ₂	IG ₂
OFF		
RUN	○—○	
OFF		
Color code	BI	Bu/W

IGNITION SWITCH

Remove the headlight and disconnect the ignition switch coupler.

Check continuity of terminals on the ignition switch coupler in each switch position.

SWITCH POSITION

LOCK: No continuity
OFF: No continuity
ON: R to BI, Br/W to Br — continuity
PARK: Br to R — continuity

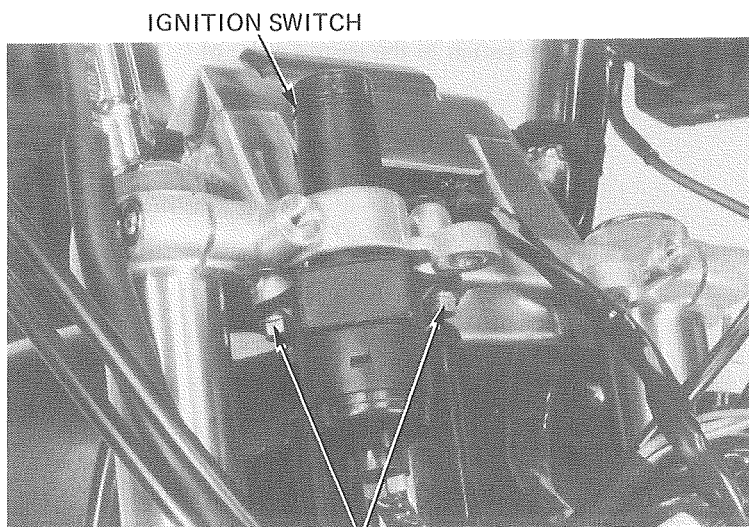
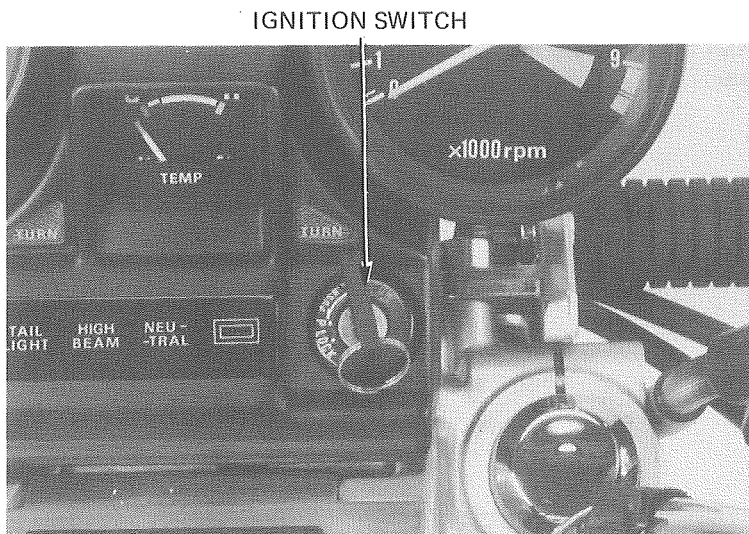
Terminal Position	P	BAT	IG	TL ₁	TL ₂
ON		○—○		○—○	
OFF					
P	○—○				
LOCK					
Color code	Br	R	BI	Br/W	Br

REMOVAL/INSTALLATION

Remove the instruments (page 13–5) and headlight bracket (page 13–5).

Remove the two ignition switch mounting bolts and ignition switch.

Install the ignition switch in the reverse order of removal.



BOLTS

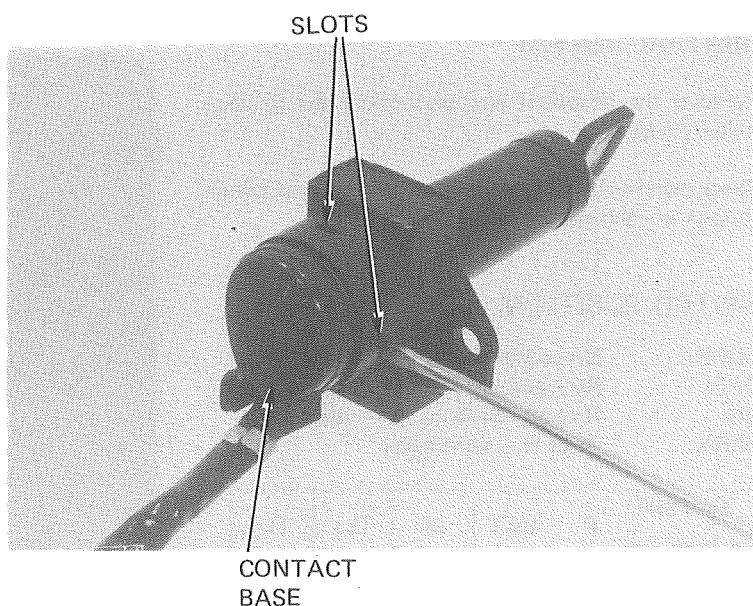


DISASSEMBLY

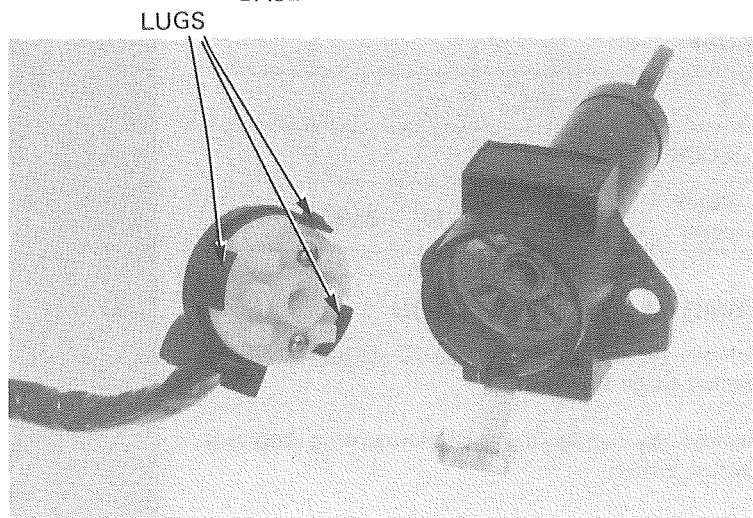
Insert the key and position it in the middle of "ON" and "OFF" positions.



Push the lugs from the slots and remove the contact base.



Assemble the ignition switch in the reverse order of disassembly.

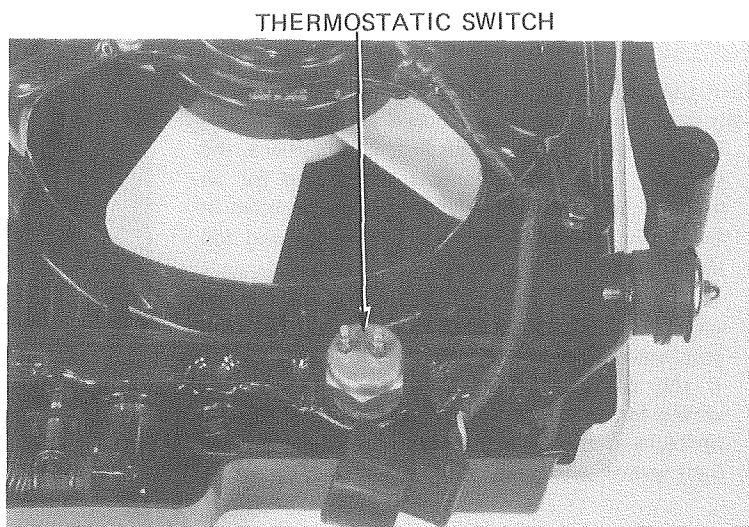




THERMOSTATIC SWITCH

The cooling fan motor is actuated by the thermostatic switch located in the left tank of the radiator.

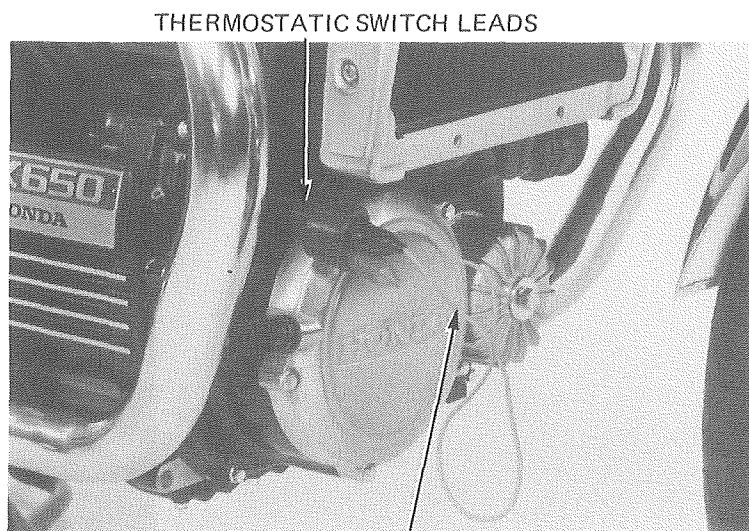
Run the engine until coolant temperature reaches 98–102°C (208–216°F). The fan motor should start running. The fan motor should stop when the coolant temperature drops to 93–97°C (200–207°F).



If the fan motor does not start, disconnect the black/blue and green leads from the thermostatic switch and short them together with a jumper wire as shown.

Turn the ignition switch on. The cooling fan motor should start running. If it starts, replace the fan thermostatic switch and retest.

If it does not start, check for battery voltage from the black lead (positive) to the green lead (negative) of the fan motor coupler. If there is no voltage, check for a blown or faulty fuse, loose terminals or connectors, or an open circuit.



JUMPER WIRE

TEMPERATURE GAUGE

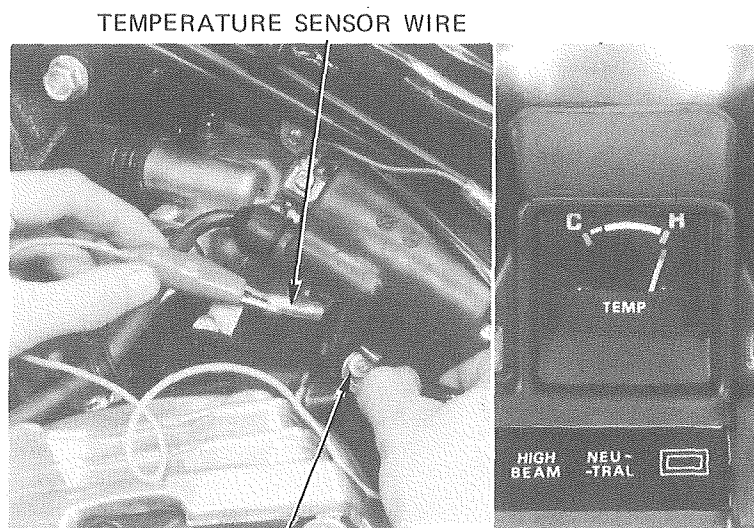
Remove the fuel tank (page 4–15)

Disconnect the wire from the temperature sensor and short it to ground.

Turn the ignition switch to ON. The temperature gauge needle should move all the way to the right.

CAUTION

Do not leave the temperature sensor wire grounded for longer than a few seconds or the temperature gauge will be damaged.



GROUND



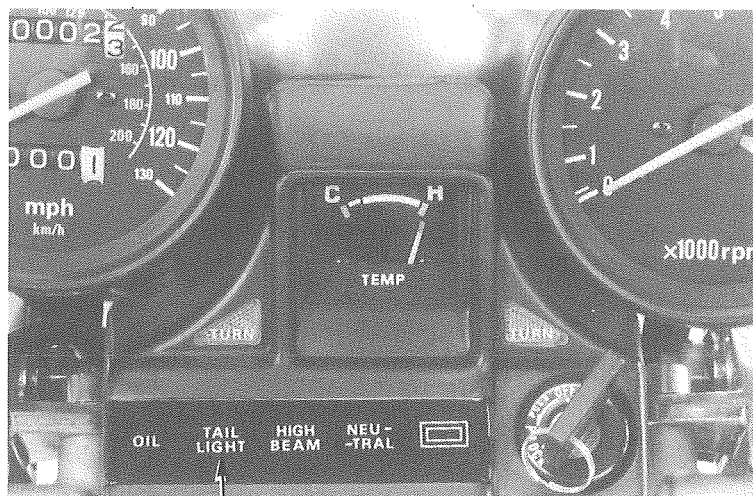
BRAKE AND TAIL LIGHT SENSOR

Turn the ignition switch ON. The tail light warning light should light for a few seconds and go out.

If the warning light does not light, check the warning light bulb filament, or wiring for an open or short circuit. If there is no problem in the bulb or wiring, replace the brake and tail light sensor with a new one.

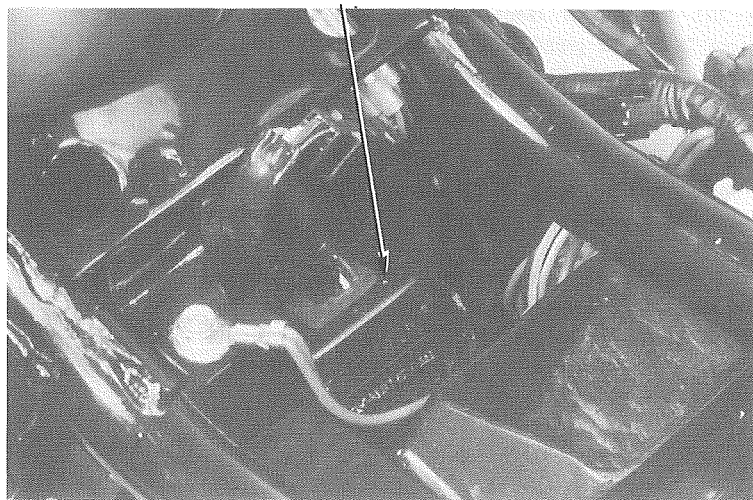
If the warning light does not go out after a few seconds, check the brake/tail light bulb filament and replace if necessary.

If the brake/tail light bulb is OK, check the wiring for an open or short circuit. If there is no problem in the wiring, replace the brake and tail light sensor with a new one.



BRAKE AND TAIL LIGHT WARNING LIGHT

BRAKE AND TAIL LIGHT SENSOR

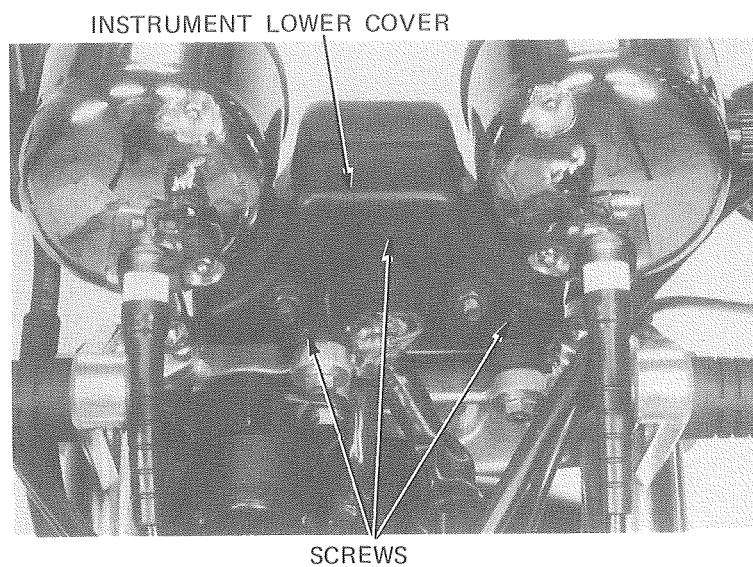




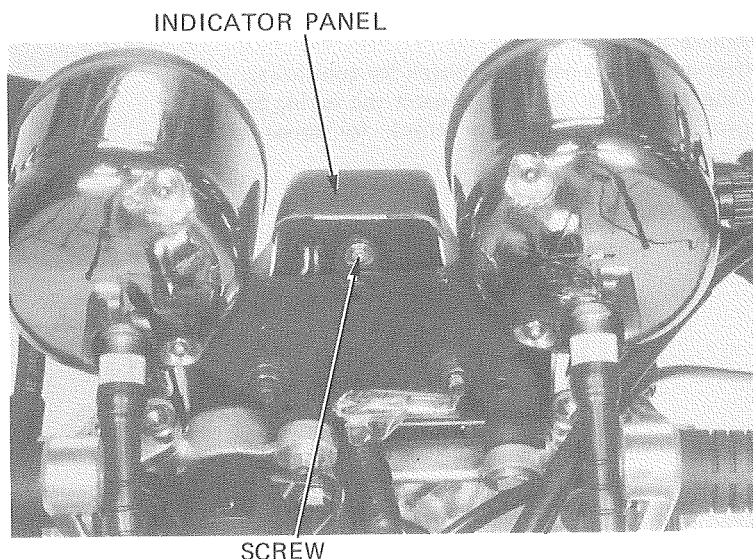
BULB REPLACEMENT

INDICATOR LIGHT BULB

Remove the instrument lower cover attaching screws and lower cover.

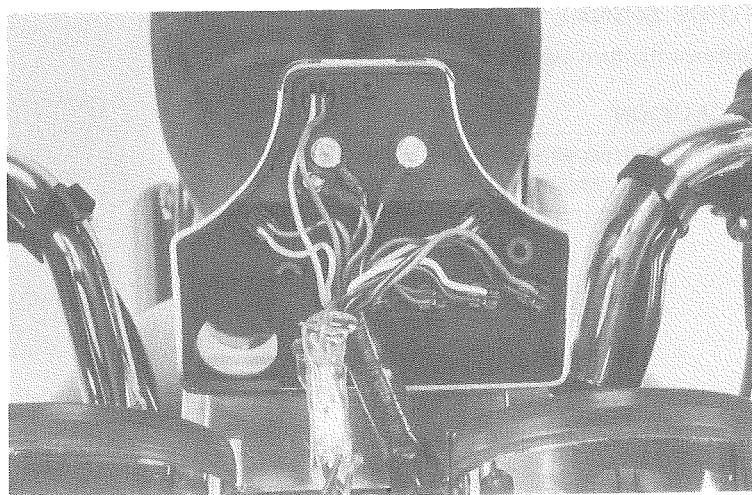


Remove the indicator panel attaching screw and raise the indicator panel.



Replace the bulb.

After installing a new bulb, check for continuity. If the bulb does not light, inspect the wiring for an open or short circuit, or for loose connections.



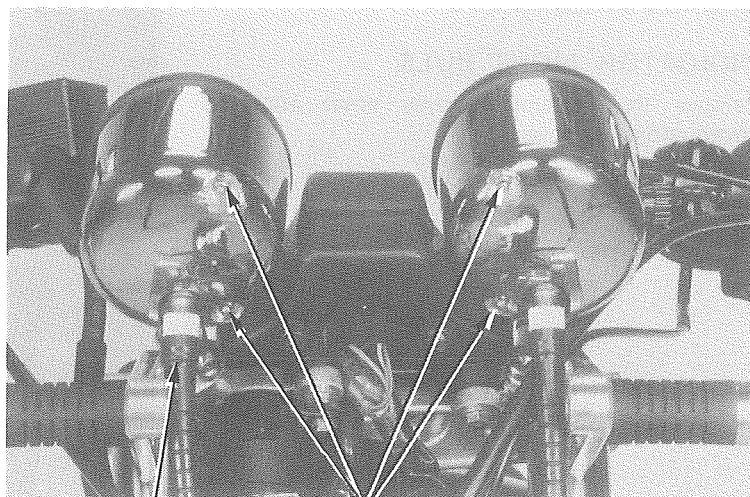


SWITCHES/LIGHTS

METER BULB

Disconnect the meter cables.

Remove the meter attaching nuts and raise the meter.



TACHOMETER CABLE

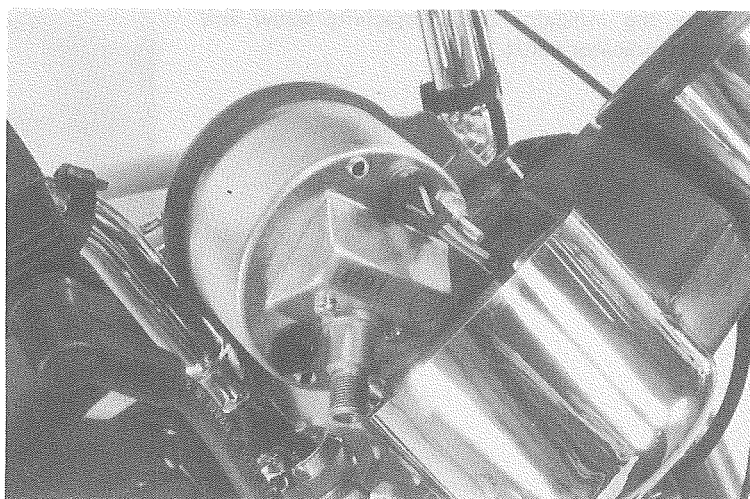
NUTS

SPEEDOMETER CABLE

Replace the bulb.

After installing a new bulb, check for continuity.

If the bulb does not light, inspect the wiring for an open or short circuit, or check for loose connections.

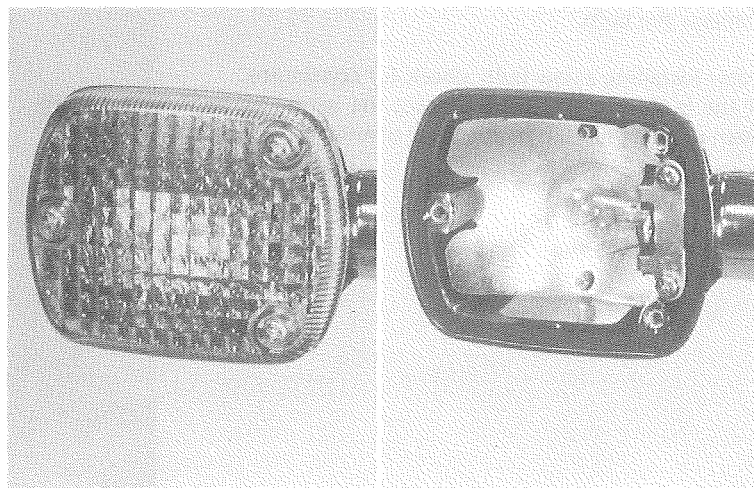


TURN SIGNAL BULB

Remove the turn signal lens to remove the bulb.

CAUTION

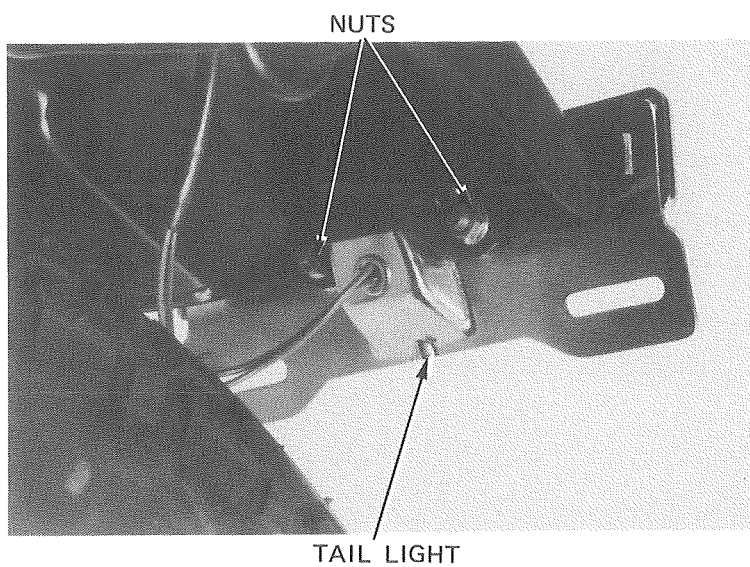
Do not overtighten the lens mounting screws to prevent cracking the lens.



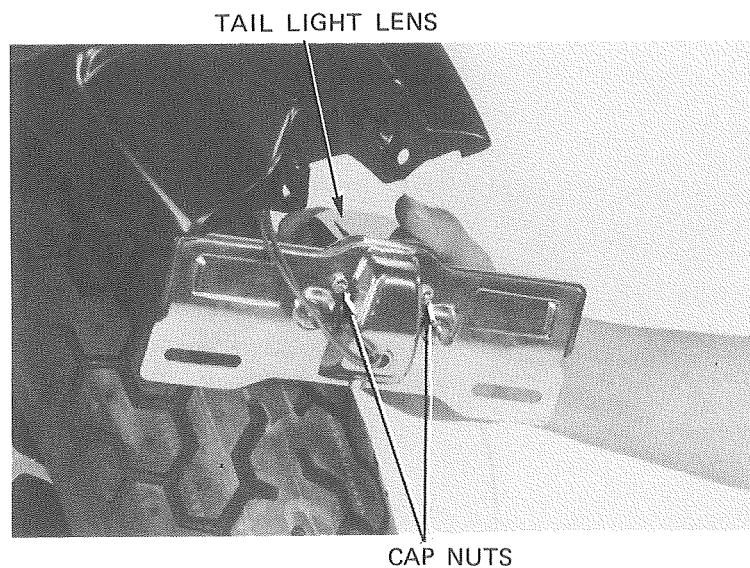


LICENSE PLATE

Remove the two tail light mounting nuts and tail light.



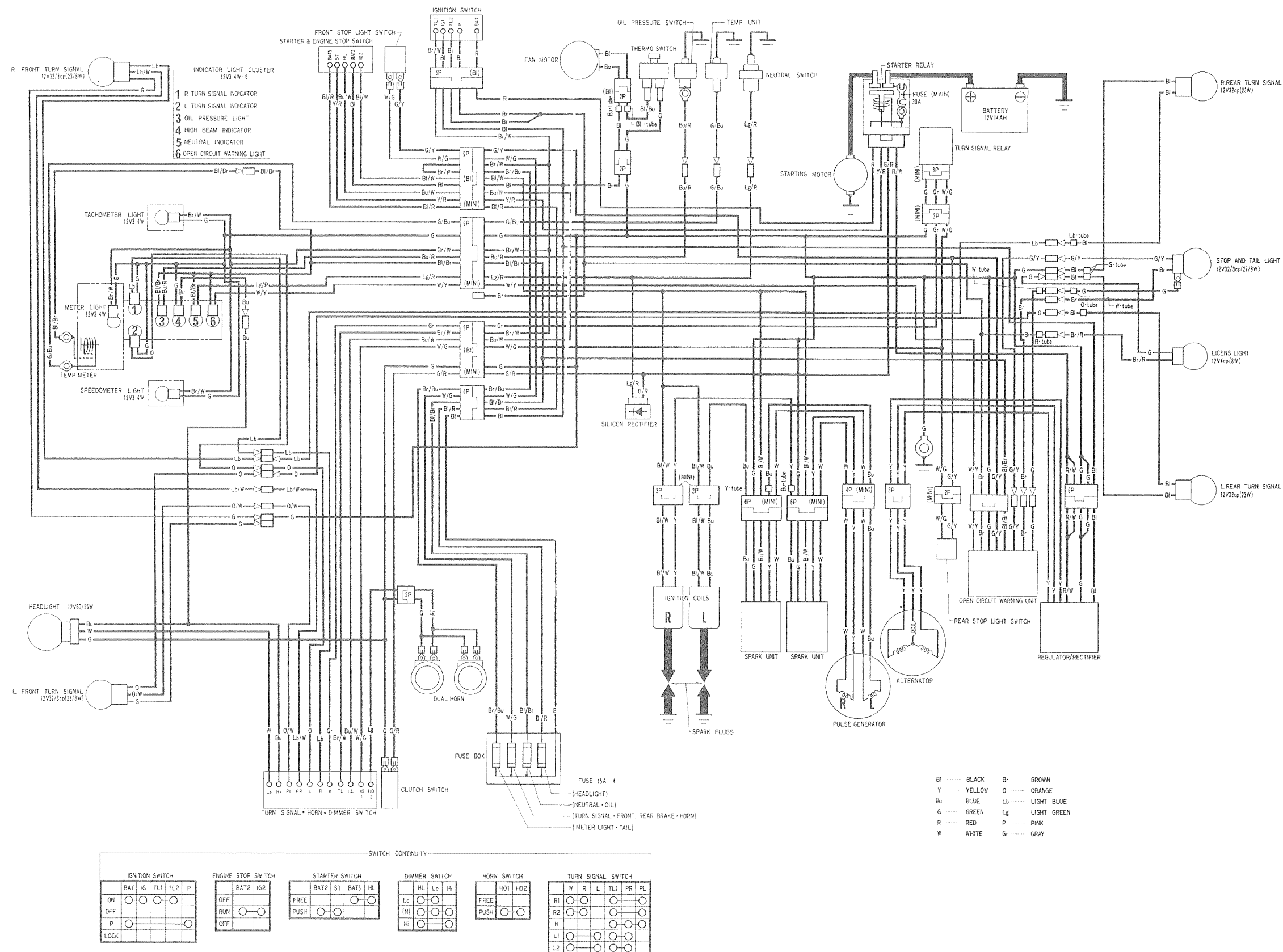
Remove the two tail light lens attaching cap nuts and replace the bulb.





HONDA
CX650C

MEMO

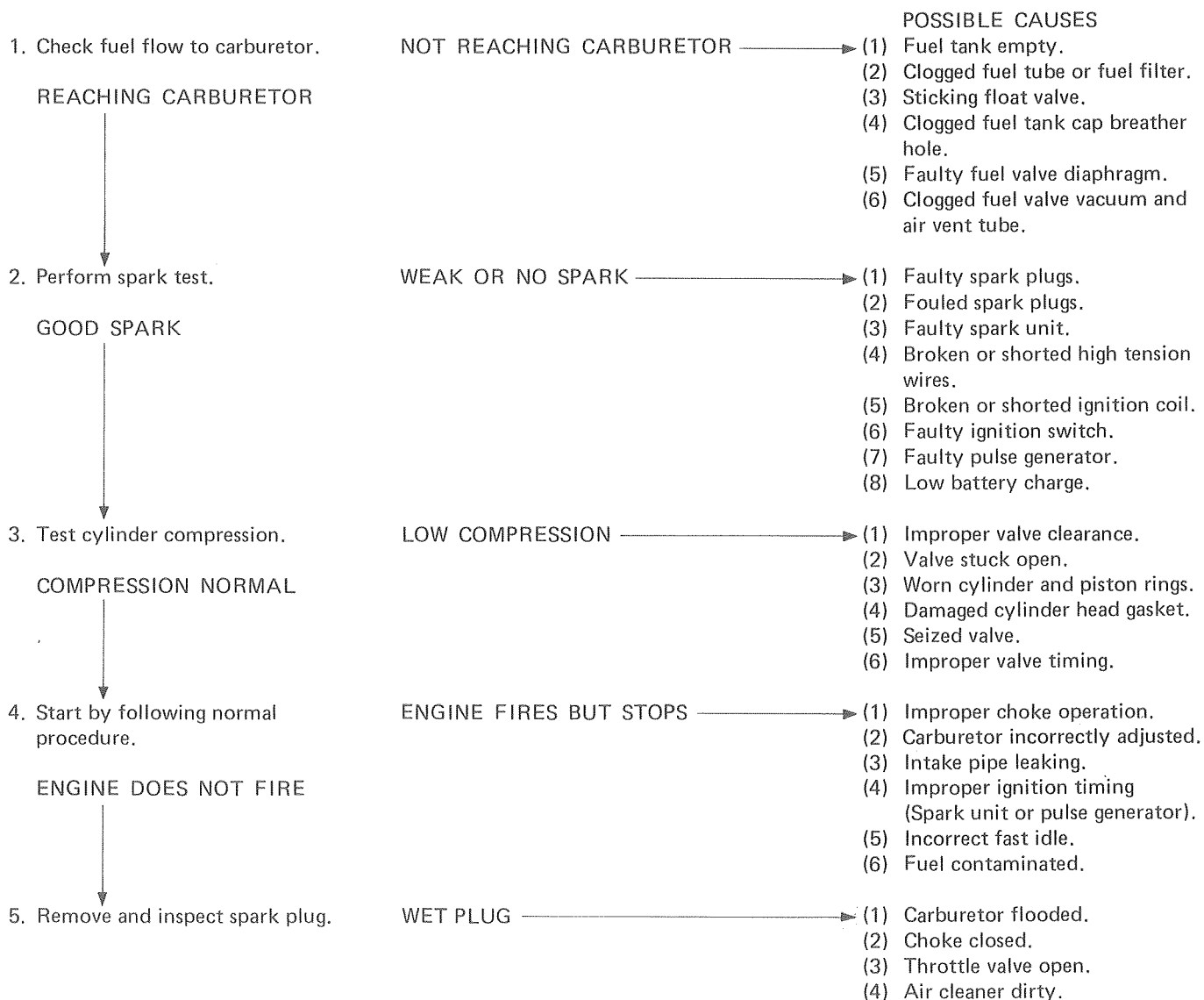




22. TROUBLESHOOTING

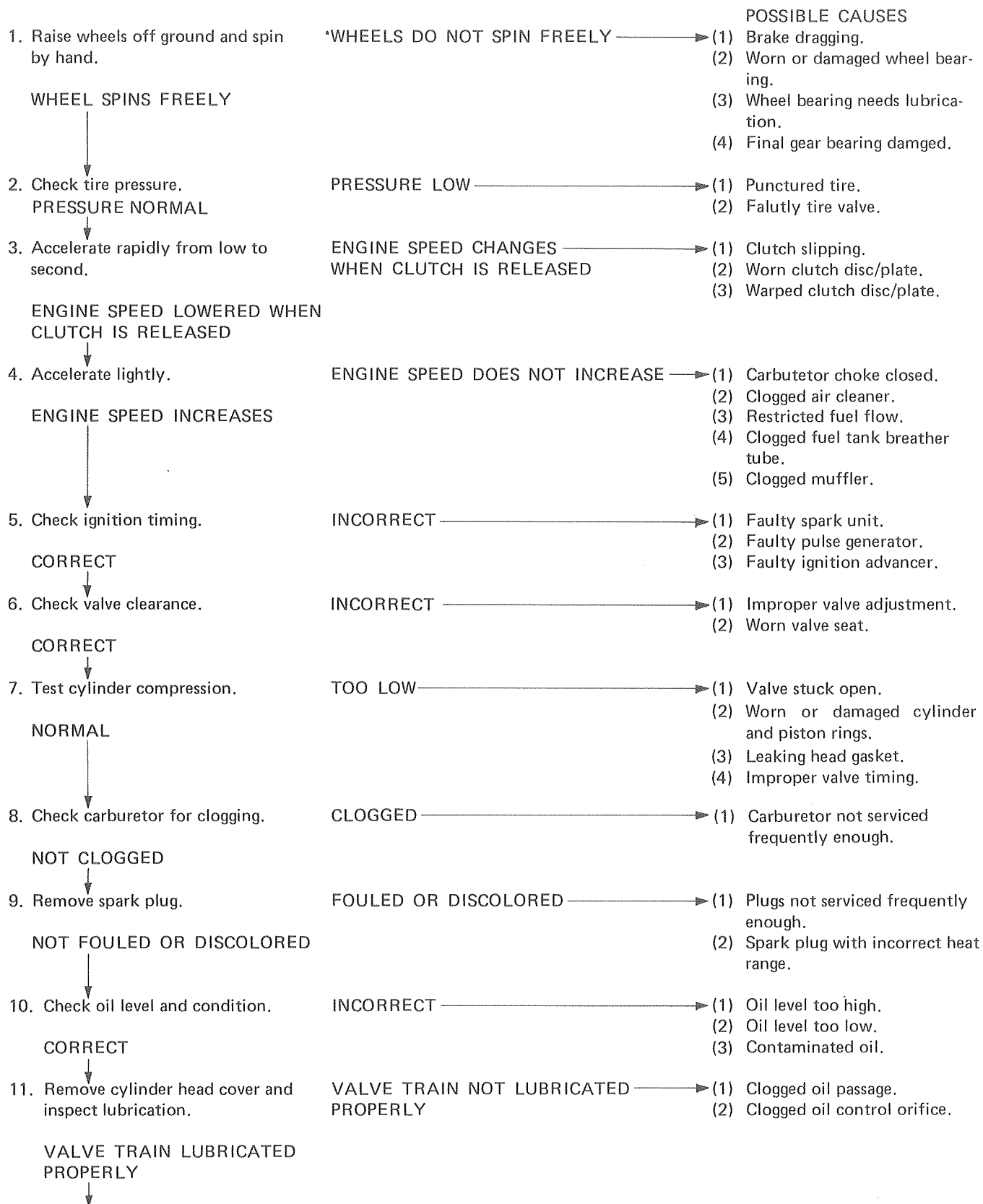
ENGINE DOES NOT START OR IS HARD TO START	22-1
ENGINE LACKS POWER	22-2
POOR PERFORMANCE AT LOW SPEEDS	22-3
POOR PERFORMANCE AT HIGH SPEED	22-4
POOR HANDLING	22-4

ENGINE DOES NOT START OR IS HARD TO START





ENGINE LACKS POWER





12. Check for engine overheating.

NOT OVERHEATING



13. Accelerate or run at high speed.

ENGINE DOES NOT KNOCK

OVERHEATING



- (1) Excessive carbon build-up in combustion chamber.
- (2) Use of poor quality fuel.
- (3) Clutch slipping.

ENGINE KNOCKS



- (1) Worn piston and cylinder.
- (2) Wrong type of fuel.
- (3) Excessive carbon build-up in combustion chamber.
- (4) Ignition timing too advanced (Faulty spark unit or advancer).

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

1. Check ignition timing and valve clearance

CORRECT



2. Check carburetor pilot screw adjustment

CORRECT



3. Check for leaking intake pipe.

NO LEAK



4. Perform spark test

GOOD SPARK

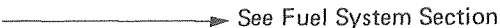
INCORRECT



POSSIBLE CAUSES

- (1) Improper valve clearance.
- (2) Improper ignition timing (Faulty spark unit or spark advancer).

INCORRECT



See Fuel System Section

LEAKING



- (1) Deteriorated insulator O-ring.
- (2) Loose carburetor.
- (3) Damaged fuel valve vacuum tube.

WEAK OR INTERMITTENT SPARK

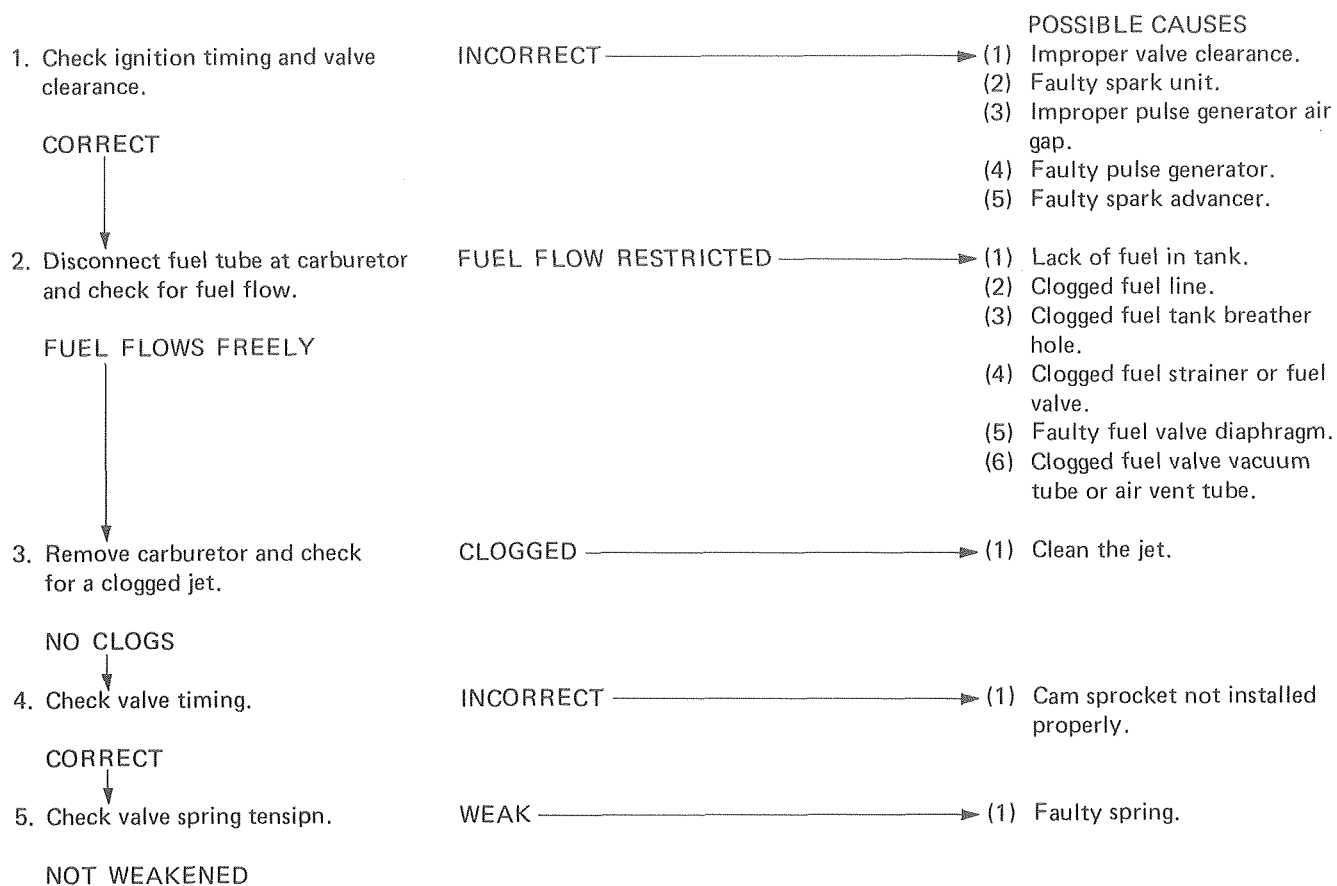


- (1) Faulty, carbon or wet fouled spark plug.
- (2) Faulty spark unit.
- (3) Faulty ignition coil.
- (4) Faulty spark advancer.



TROUBLESHOOTING

POOR PERFORMANCE AT HIGH SPEED



POOR HANDLING ————— Check tire pressure

