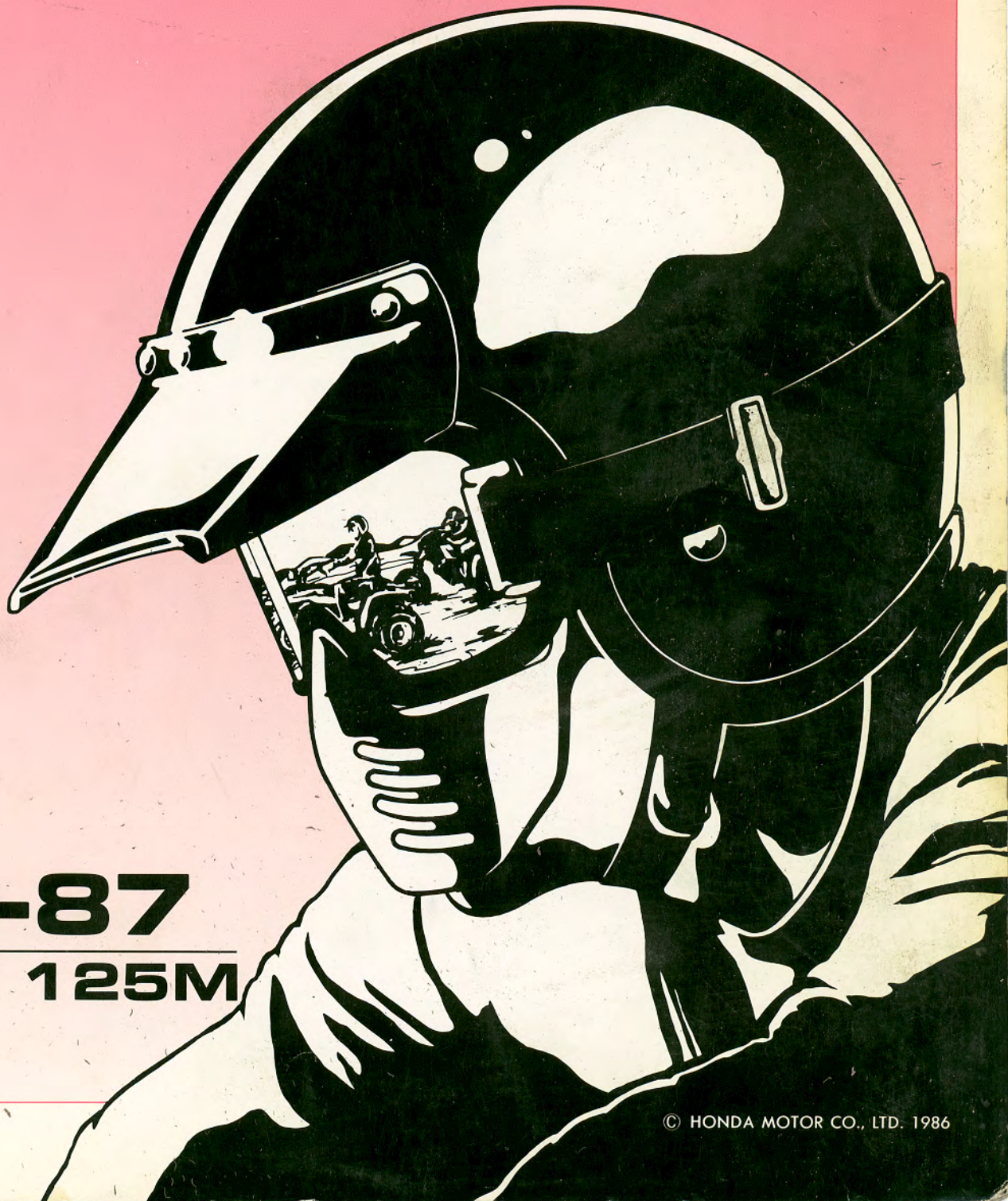


HONDA

SERVICE MANUAL



86-87

ATC[®] 125M

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

Sections 1 through 3 apply to the whole ATC, while sections 4 through 17 describe parts of the ATC, grouped according to location.

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

Most sections start with an assembly or system illustration and all the required specifications, torque values, general instructions, tools and troubleshooting for the section. The subsequent pages give detailed procedures.

If you there is a problem with the ATC and don't know the source of the trouble, see section 18, TROUBLESHOOTING.

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

HONDA MOTOR CO., LTD
SERVICE PUBLICATIONS OFFICE

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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 that may cause loss of consciousness and lead to death.

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.

WARNING

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

WARNING

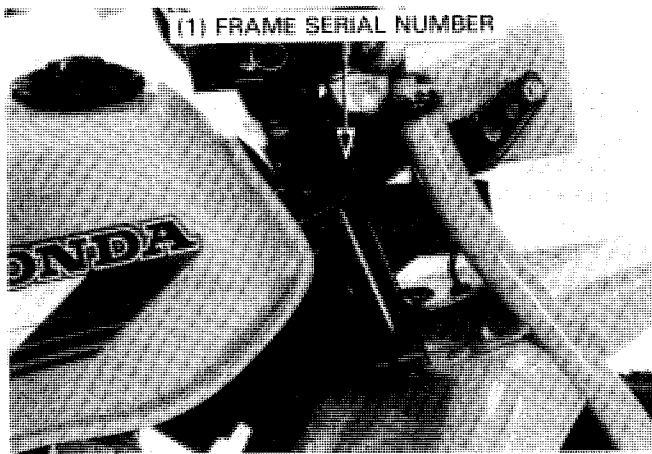
The battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and call a doctor if electrolyte gets in your eyes.

SERVICE RULES

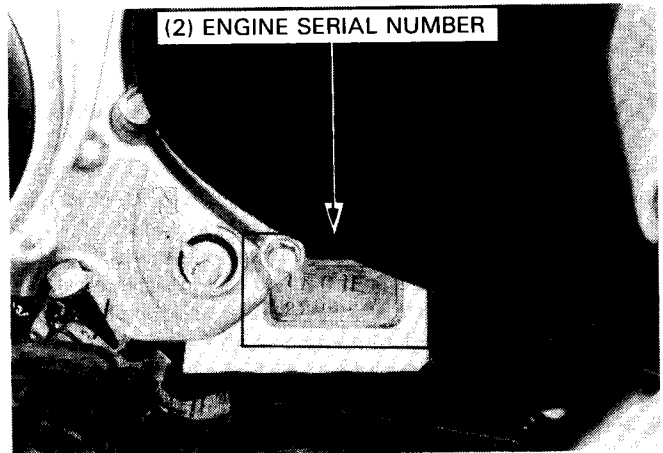
1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that don't meet HONDA's design specifications may cause damage to the ATC.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing this ATC. Metric bolts, nuts and screws are not interchangeable with English fasteners. Use of incorrect fasteners may damage the ATC.
4. Install new gaskets, O-rings cotter pins, and lock plates, etc. when reassembling.
5. When tightening bolts or nuts, begin with the larger-diameter or inner bolt first. Then tighten to the specified torque diagonally in 2-3 steps, unless a particular sequence is specified.
6. Clean parts in non-flammable or high flash point solvent upon disassembly.
7. Lubricate any sliding surfaces before reassembly.
8. After reassembly, check all parts for proper installation and operation.
9. Route all electrical wires and control cables as shown on page 1-9 through 1-12, Cable and Harness Routing.

GENERAL INFORMATION

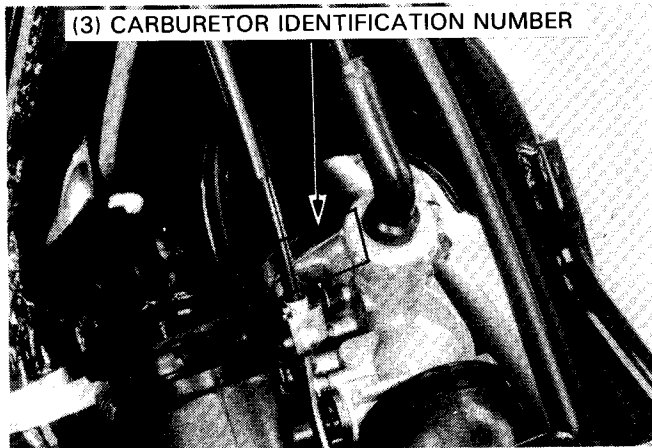
MODEL IDENTIFICATION



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



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



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

SPECIFICATIONS

*After '86

<p>DIMENSIONS</p>	<p>Overall length Overall width Overall height Wheelbase Rear tread Seat height Foot peg height Ground clearance Dry weight</p>	<p>1,660 mm (65.4 in) 990 mm (38.9 in) 965 mm (37.9 in) 1,085 mm (42.7 in) 720 mm (28.3 in) 680 mm (26.8 in) 245 mm (9.6 in) 115 mm (4.5 in) * 120 mm (4.7 in) 125 kg (276 lb)</p>
<p>FRAME</p>	<p>Type Rim size Front Rear Front tire size, pressure Rear tire size, pressure Front brake Rear brake Fuel tank capacity Fuel reserve capacity Caster angle Trail length</p>	<p>Semi double cradle 22 x 11.0—8 22 x 11.0—8 0.15 kg/cm² (2.2 psi, 15 kPa) 0.15 kg/cm² (2.2 psi, 15 kPa) Internal expanding shoe Internal expanding shoe 8.5 liters (2.2 US gal, 1.9 Imp gal) 1.4 liters (0.4 US gal, 0.3 Imp gal) 21° 16 mm (0.63 in)</p>
<p>ENGINE</p>	<p>Type Cylinder arrangement Bore x stroke Displacement Compression ratio Valve train Maximum horsepower Maximum torque Oil capacity Lubrication system Cylinder compression Intake valve OPENS CLOSES Exhaust valve OPENS CLOSES Valve clearance Intake (Cold) Exhaust Idle speed</p>	<p>Gasoline, air-cooled 4-stroke Single cylinder, 25° inclined from vertical 54 x 54.5 mm (2.12 x 2.14 in) 124 cc (7.6 cu in) 9.0 : 1 Overhead camshaft chain driven 9.3 BHP/7,500 rpm 0.96 kg-m/6,000 rpm (6.9 ft-lb/6,000 rpm) 1.3 liters (1.4 US qt, 1.1 Imp qt) at draining Forced pressure and wet sump 13.3 ± 1.0 kg/cm² (189 ± 14.2 psi, 1,330 ± 100 kPa) 0° BTDC 30° ABDC 30° BBDC 0° ATDC } at 1 mm lift 0.08 mm (0.003 in) 0.08 mm (0.003 in) 1,500 ± 100 rpm</p>
<p>CARBURETOR</p>	<p>Type Main jet No. Slow jet No. Pilot screw opening Jet needle Float level</p>	<p>Piston valve #95 #35 2 turns out 3rd groove 10.7 mm (0.42 in)</p>

GENERAL INFORMATION

<p>DRIVE TRAIN</p>	<p>Clutch Transmission Primary reduction Gear ratio</p> <p style="text-align: center;">I II III IV V Reverse</p> <p>Final reduction Gearshift pattern</p>	<p>Wet multi-plate automatic centrifugal type 5-speed constant-mesh with reverse 3.737 (71/19) 3.250 (39/12) 2.188 (35/16) 1.550 (31/20) 1.167 (28/24) 0.923 (24/26) 4.593 (31/12 x 32/18) 4.000 (12T/48T) Left foot operated return system Forward: N—S/L—1—2—3—4 Reverse: R—N</p>
<p>ELECTRICAL</p>	<p>Ignition Ignition timing</p> <p style="text-align: center;">Initial Full advance Capacity</p> <p>Alternator Battery Spark plug</p> <p>Spark plug gap Headlight Taillight Neutral indicator Reverse indicator</p>	<p>CDI 10° ± 2° BTDC at idle 28° ± 2° BTDC at 4,000 rpm 130W/5,000 rpm 12V—10AH NGK DR8ES-L ND X24ESR-U 0.6—0.7 mm (0.024—0.028 in) 12V-45W/45W 12V-5W 12V-3W 12V-3W</p>

TORQUE VALUES

ENGINE

Item	Q'ty	Thread dia. (mm)	N·m	kg-m	ft-lb	Remark
Cylinder head cap nut	4	8	28-30	2.8-3.0	20-22	Apply oil to cap nut
Spark plug	1	12	12-19	1.2-1.9	9-14	
Valve adjusting hole cover	2	36	9-15	0.9-1.5	6.5-11	
Valve adjuster lock nut	2	6	15-18	1.5-1.8	11-13	Apply oil to lock nut
Cam sprocket bolt	2	7	18-20	1.8-2.0	13-15	Apply oil to bolt
Cam chain tensioner sealing bolt	1	6	8-12	0.8-1.2	5.8-9	
Tensioner pivot bolt	1	6	10-14	1.0-1.4	7.2-10	
Centrifugal clutch lock nut	1	16	70-80	7.0-8.0	51-58	Apply oil to lock nut left hand thread
Manual clutch lock nut	1	16	50-60	5.0-6.0	36-43	Apply oil to lock nut
Clutch adjuster lock nut	1	8	19-25	1.9-2.5	14-18	
Gearshift return spring pin	1	8	24-30	2.4-3.0	17-22	
Starter driven pulley bolt	1	8	40-50	4.0-5.0	29-36	Apply oil to bolt
Drum plate center bolt	1	6	10-14	1.0-1.4	7.2-10	
Pulse generator mount screw	2	5	8-12	0.8-1.2	5.8-9	
Timing hole cap	1	14	10-14	1.0-1.4	7.2-10	
Oil drain bolt	1	12	35-40	3.5-4.0	25-29	
Intake pipe attaching bolt	2	6	6-9	0.6-0.9	4.3-6.5	
Cylinder head bolt	1	6	10-14	1.0-1.4	7.2-10	
Starter clutch bolt	3	8	26-30	2.6-3.0	19-22	
Alternator stator bolt	3	6	7-11	0.7-1.1	5.1-8	

GENERAL INFORMATION

FRAME

Item	Q'ty	Thread dia. (mm)	N·m	kg-m	ft-lb	Remarks
Handlebar holder bolt	4	8	18-30	1.8-3.0	13-22	
Handlebar holder nut	2	10	40-50	4.0-5.0	29-36	
Fork bridge bolt	2	12	50-70	5.0-7.0	36-51	
Steering stem nut	1	22	50-70	5.0-7.0	36-51	
Bearing adjusting nut	1	22	20-30	2.0-3.0	15-22	— Initial
			7-8	0.7-0.8	5.1-5.8	— Final
Engine hanger bolt	5	8	30-36	3.0-3.6	22-26	
	2	10	70-80	7.0-8.0	51-58	
Drive sprocket bolt	1	8	24-30	2.4-3.0	17-22	
Gearshift pedal bolt	1	6	14-18	1.4-1.8	10-13	
Footpeg bolt	4	12	80-100	8.0-10.0	58-72	
Seat/rear fender mount nut	4	6	6-9	0.6-0.9	4.5-6.5	
Mud guard bolt	10	6	6-9	0.6-0.9	4.5-6.5	
Front wheel hub nut	4	10	50-60	5.0-6.0	36-43	
Wheel rim nut	12	10	30-40	3.0-4.0	22-29	
Front axle nut	1	14	70-110	7.0-11.0	51-80	
Rear wheel hub nut	4	10	50-60	5.0-6.0	36-43	
Rear axle nut	2	18	80-100	8.0-10.0	58-72	
Rear brake drum nut		30	40-50	4.0-5.0	29-36	— Inner
			140-150	14.0-15.0	101-108	— Outer
Driven sprocket nut	4	8	28-32	2.8-3.2	20-23	
Rear axle bearing holder bolt	4	12	50-70	5.0-7.0	36-51	
Handlebar switch housing screw	2	5	1.5-2.5	0.15-0.25	1.1-1.8	
Muffler mounting bolt	2	10	45-55	4.5-5.5	33-40	

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

Item	Torque N·m (kg-m, ft-lb)	Item	Torque N·m (kg-m, ft-lb)
5 mm bolt, nut	4.5-6 (0.45-0.6, 3-4)	5 mm screw	3.5-5 (0.35-0.5, 2-4)
6 mm bolt, nut	8-12 (0.8-1.2, 6-9)	6 mm screw, 6 mm flange bolt with 8 mm head	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	35-45 (3.5-4.5, 25-33)

TOOLS

SPECIAL

Description	Number	Alternative	Ref. Page
Cylinder compression gauge attachment	07510—MB00101	—Equivalent commercially available in U.S.A.	3-16
Valve guide reamer, 5.48 mm	07984—0980000	—07984—098000A	6-9
Bearing remover set, 12 mm	07936—1660001		8-3
— bearing remover shaft assy, 12 mm	07936—1660100		8-3
— remover weight	07741—0010201	—07936—3710200	8-3, 10-8
Bearing remover, 15 mm	07936—KC10000		10-8
— remover assy, 15 mm	07936—KC10500		10-8
— remover shaft, 15 mm	07936—KC10100		10-8
— remover head, 15 mm	07936—KC10200		10-8
Clutch center holder	07923—9580000		8-9, 12
Attachment, 45 x 50 mm	07946—6920100		10-9
Spanner wrench, 41 mm	07916—9580200	—07916—958020A	12-4, 9
Wrench set, 41 mm	07916—9580300	—Equivalent commercially available in U.S.A.	12-4, 9
— wrench attachment, 41 mm	07916—9580400	—07916—958010A	12-4, 9
Ball race remover	07944—1150001	—M9360—277—91774 (U.S.A. only)	11-18
Steering stem driver	07946—GC40000		11-18
Shaft protector	07960—1870100	—Equivalent commercially available in U.S.A.	8-7
Digital multi-tester	KS—AHM—32—003	—U.S.A. only	

GENERAL INFORMATION

COMMON

Description	Number	Alternative	Ref. Page
Float level gauge	07401-0010000		4-8
Valve adjusting wrench A	07708-0030300	— valve adjusting wrench — 089201-200-000	3-9
Valve adjusting wrench, 10 x 12 mm	07708-0030200	— Equivalent commercially available — in U.S.A.	3-9
Flywheel holder	07725-0040000		9-7
Flywheel puller	07733-0010000	07933-2000000	9-7
Valve guide driver, 5.5 mm	07742-0010100	07942-3290100	6-8, 9
Steering stem socket, 26 x 30 mm	07716-0020203		11-17, 19
Lock wrench, 30 x 32 mm	07716-0020400		11-16, 20
Bearing remover head, 15 mm	07746-0050400	— Equivalent commercially available — in U.S.A.	11-8
Bearing remover shaft	07GGD-0010100		11-8
Valve spring compressor	07757-0010000	07957-3290001	6-7, 11
Attachment, 32 x 35 mm	07746-0010100		8-4, 10-9
Attachment, 37 x 40 mm	07746-0010200	07949-6110000	11-18
Attachment, 42 x 47 mm	07746-0010300		10-9, 11-8
Attachment, 52 x 55 mm	07746-0010400		12-14
Driver	07749-0010000		—
Pilot, 12 mm	07746-0040200		8-4
Pilot, 15 mm	07746-0040300		10-9, 11-8
Pilot, 20 mm	07746-0040500		10-9
Pilot, 22 mm	07746-0041000		10-9
Tire breaker set	07772-0050000	— Universal bead breaker	11-11
— breaker arm compressor	07772-0050100	(U.S.A. only) GN-AH-958-BB1	11-11
— breaker arm	07772-0050200		11-11

VALVE SEAT CUTTER

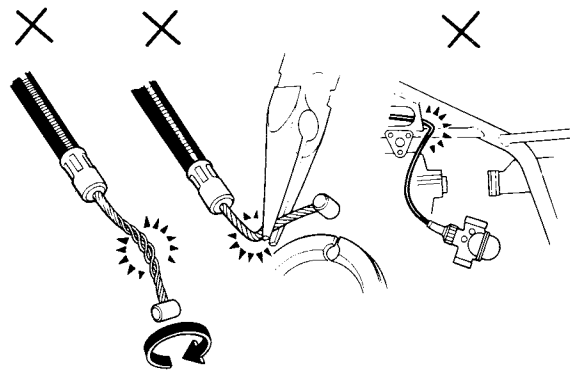
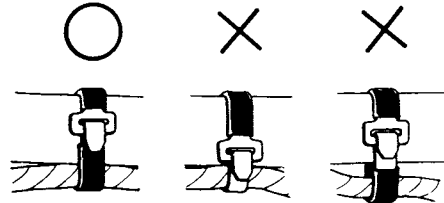
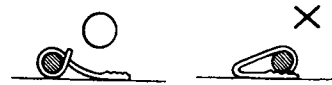
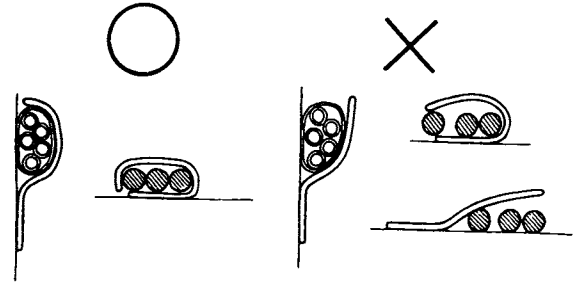
The valve seat cutters are commercially available in U.S.A. Therefore these cutters are not required in U.S.A.

Description	Tool number	Ref. Page
Valve seat cutter, 24.5 mm (EX 45°)	07780-0010100	6-10
Valve seat cutter, 29 mm (IN 45°)	07780-0010300	6-10
Valve seat cutter, 25 mm (EX 32°)	07780-0012000	6-10
Valve seat cutter, 30 mm (IN 32°)	07780-0012200	6-10
Valve seat cutter, 30 mm (IN/EX 60°)	07780-0014000	6-10
(Interior)		
Valve seat cutter holder, 5.5 mm	07781-0010101	6-10

CABLE & HARNESS ROUTING

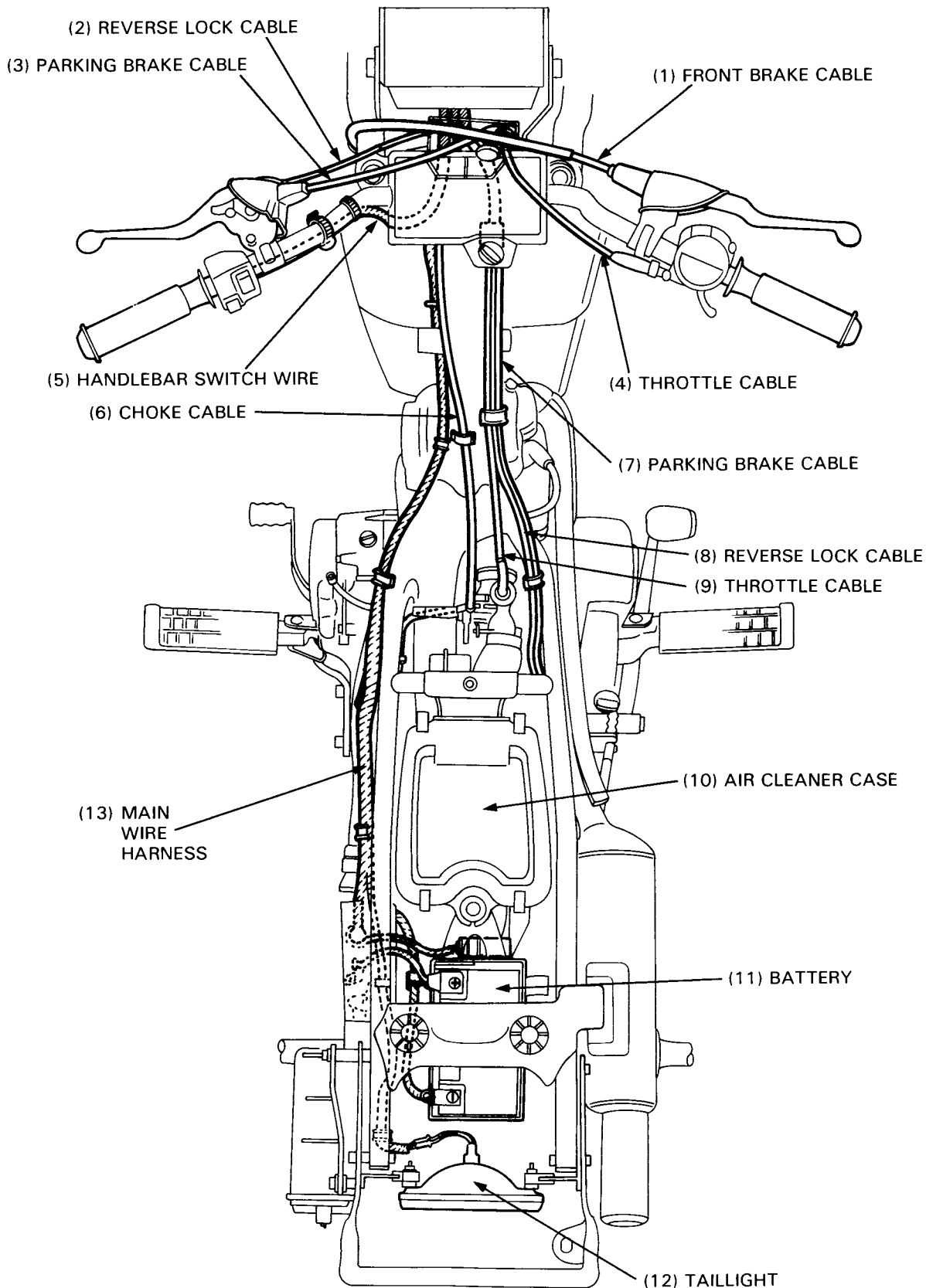
Note the following when routing cables and wire harnesses:

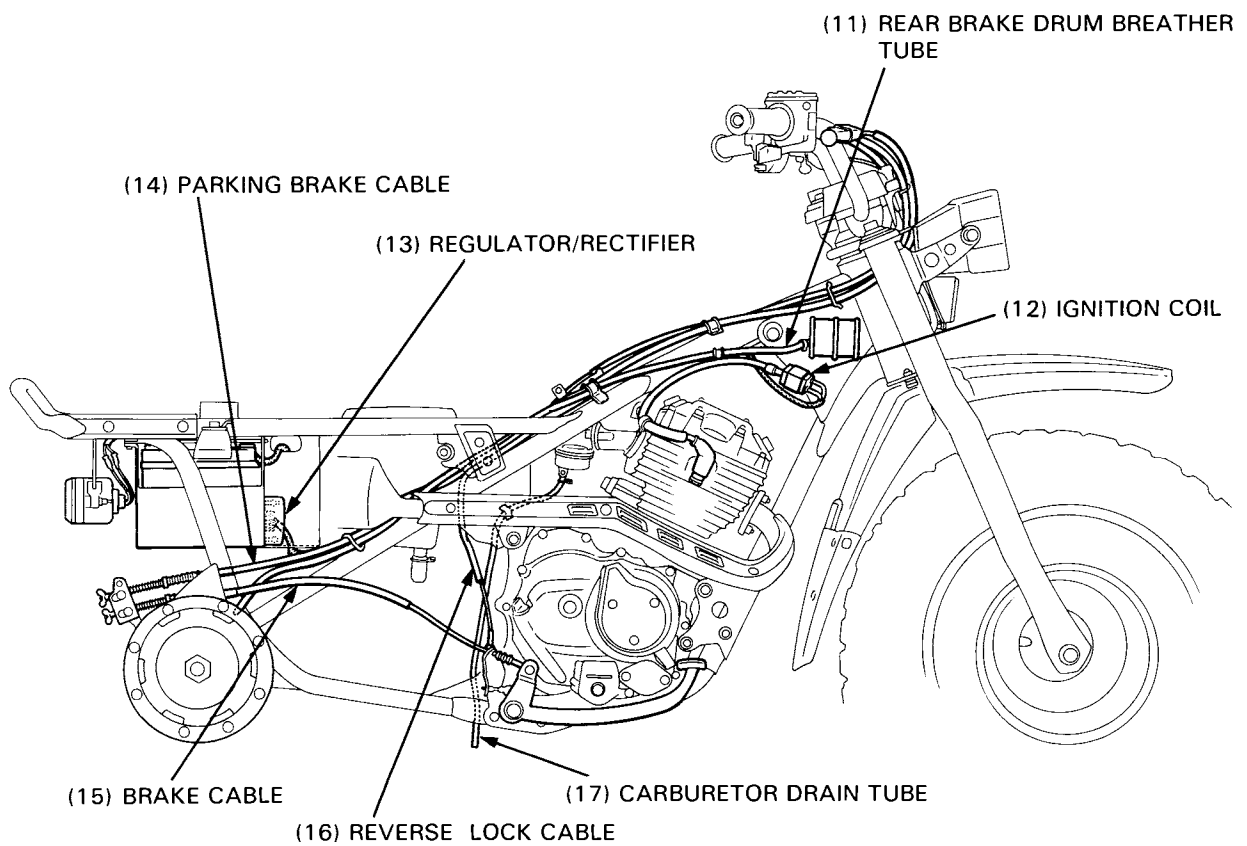
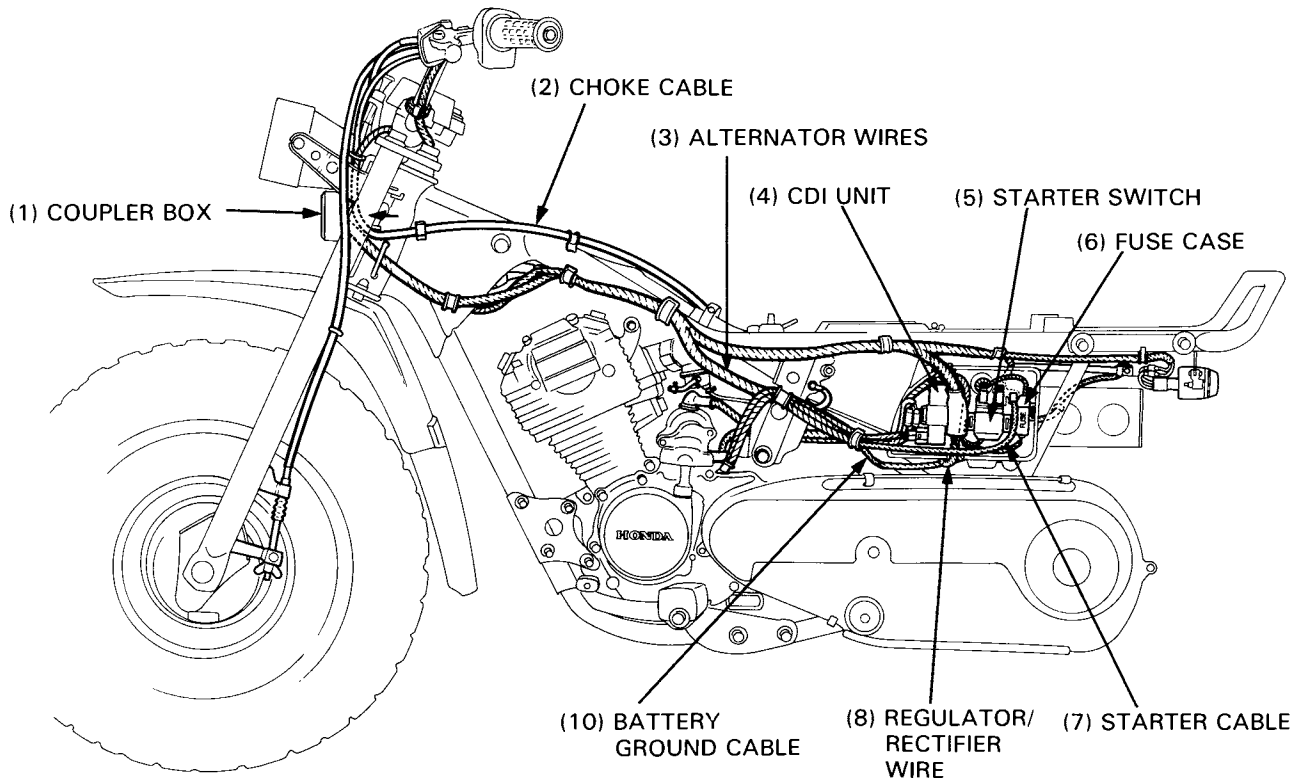
- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze a wire against a weld or end of its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated 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 contact a sharp edge or corner. Clean the attaching surface thoroughly before applying tape.
- Do not use wires or harnesses with a broken insulators. Repair by wrapping them with protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners. Also avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipe and other parts that get hot.
- 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 by, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.
- Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.



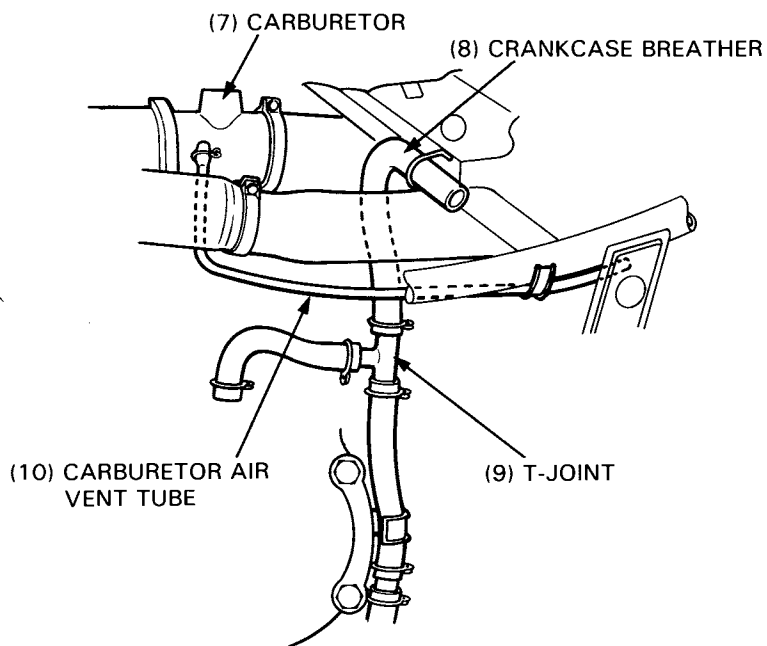
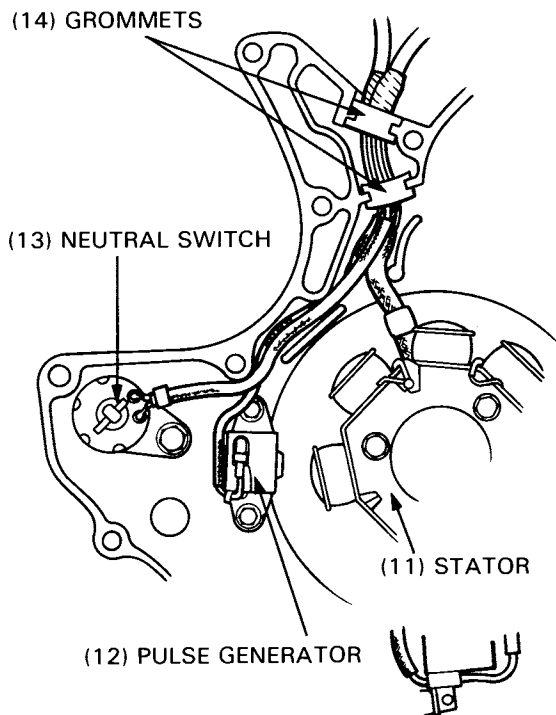
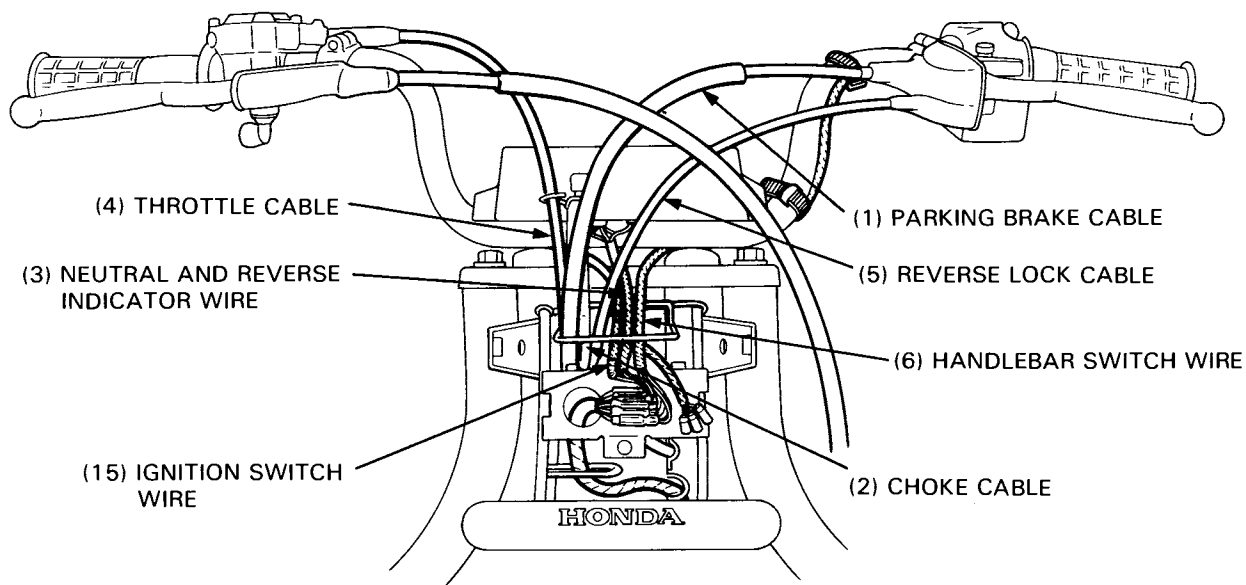
O: CORRECT
X: INCORRECT

GENERAL INFORMATION





GENERAL INFORMATION



NOISE EMISSION CONTROL SYSTEM (U.S.A. only)

- The U.S. Environmental Protection Agency requires manufacturers to certify that vehicles built after January 1, 1983 will comply with applicable noise emission standards for one year or 1,865 miles (3,000 km) after the time of sale to the ultimate purchaser, when operated and maintained according to the instructions provided. Compliance with the terms of the Distributor's Warranty for the Honda Vehicle Noise Emission Control System is necessary in order to keep the noise emission control system in effect.

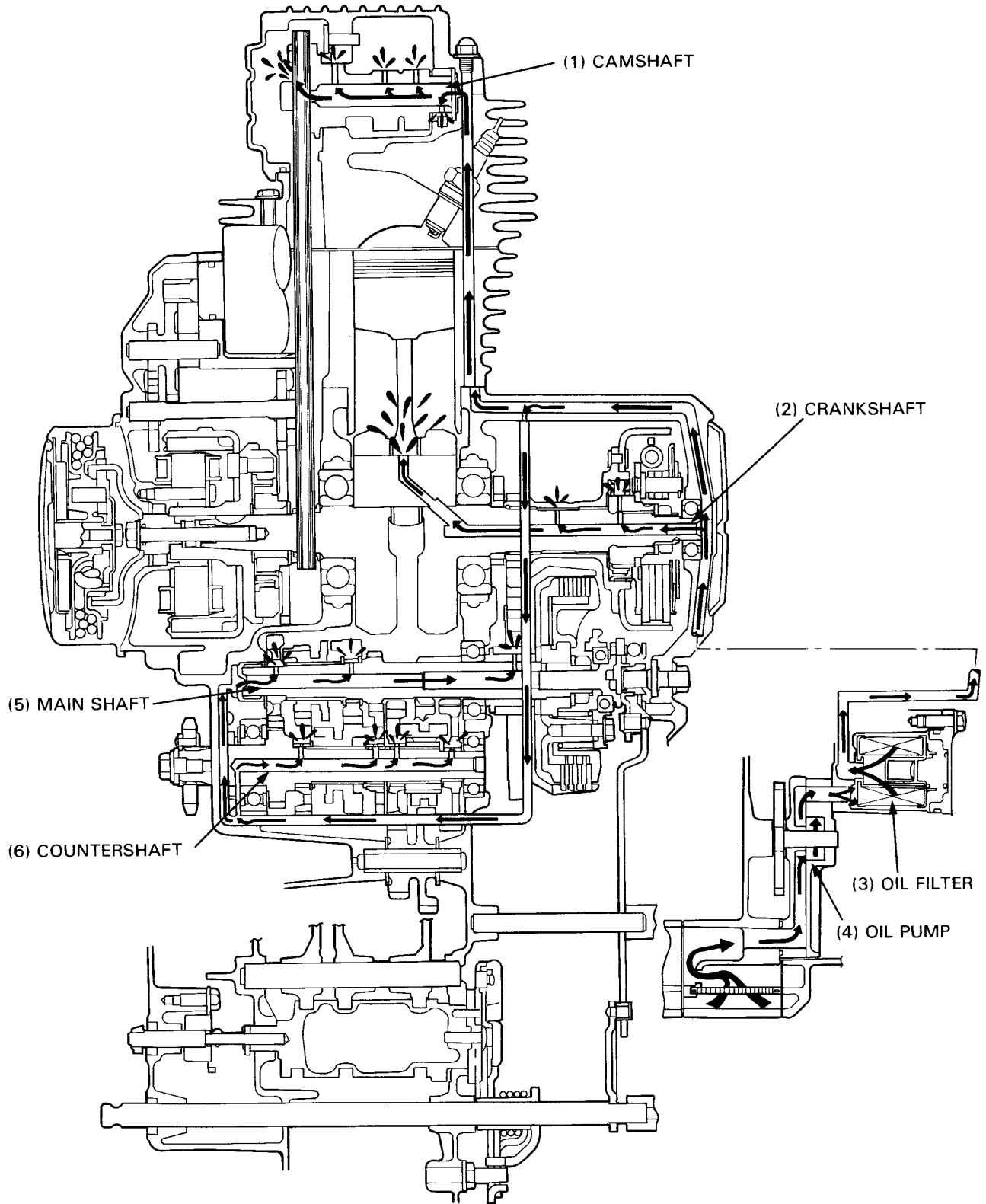
TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the vehicle after such device or element of design has been removed or rendered in operative by any person.

AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS LISTED BELOW:

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

LUBRICATION

LUBRICATION DIAGRAM



SERVICE INFORMATION	2-1	OIL FILTER SCREEN	2-3
TROUBLESHOOTING	2-1	OIL PUMP	2-3
ENGINE OIL LEVEL	2-2	LUBRICATION POINTS	2-7
ENGINE OIL & FILTER CHANGE	2-2		

SERVICE INFORMATION

GENERAL

- This section describes inspection and replacement of the engine oil, oil filter and oil filter screen and assembly and disassembly of the oil pump.
- Be sure to fill the oil pump with clean engine oil when reassembling the pump.

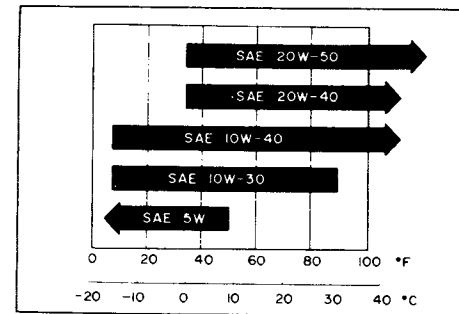
SPECIFICATIONS

Engine oil capacity 1.5 lit (1.6 US qt, 1.3 Imp qt) at disassembly
1.3 lit (1.4 US qt, 1.1 Imp qt) at draining

Engine oil recommendation Use Honda 4-stroke oil or equivalent.
API Service Classification: SE or SF
Viscosity: SAE 10W-40

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

ENGINE OIL VISCOSITIES



	ITEM	STANDARD	SERVICE LIMIT
OIL PUMP	Cover-to-rotor clearance	0.15–0.21 mm (0.006–0.008 in)	0.25 mm (0.009 in)
	Rotor tip clearance	0.15 mm (0.006 in)	0.20 mm (0.008 in)
	End clearance	0.05–0.10 mm (0.002–0.004 in)	0.12 mm (0.005 in)

TORQUE VALUE

Oil drain bolt 35–40 N·m (3.5–4.0 kg·m, 25–29 ft·lb)

TROUBLESHOOTING

Oil level too low—high oil consumption

- Normal oil consumption
- External oil leaks
- Worn piston rings
- Oil not changed often enough
- Faulty head gasket

Oil contamination

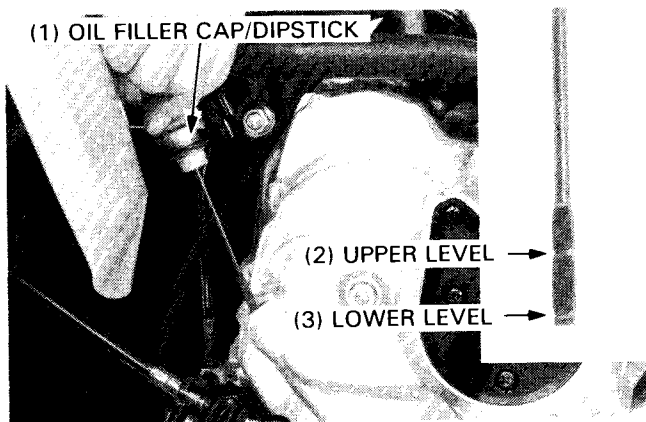
- Oil or filter not changed often enough
- Head gasket faulty
- Worn piston rings

LUBRICATION

ENGINE OIL LEVEL

Place the ATC 125M on level ground.
Check the oil level with the oil filler cap/dipstick, but do not screw it in when making this check.

If the oil level is below or near the lower level line on the dipstick, add the recommended oil (Page 2-1) up to the upper level.

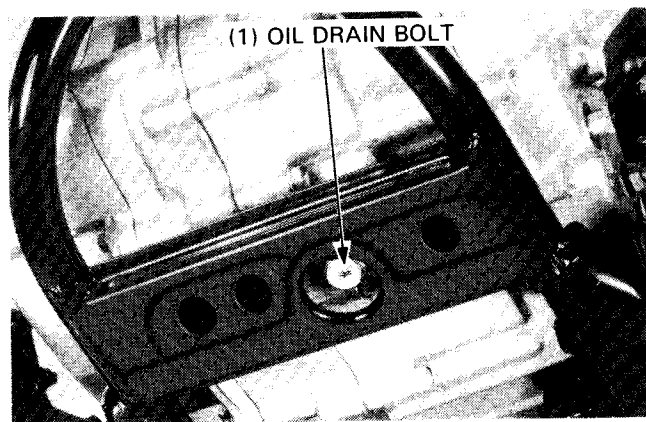


ENGINE OIL & FILTER CHANGE

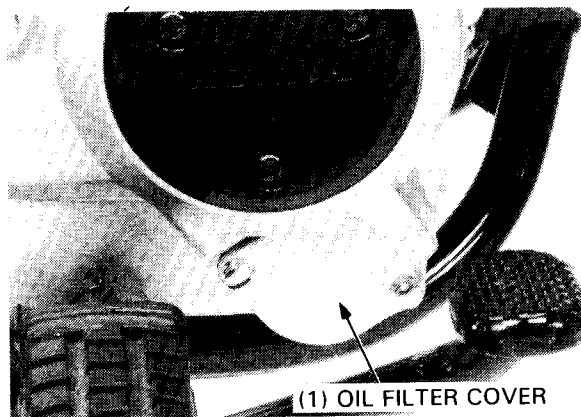
NOTE

- Drain the oil while the engine is warm to ensure rapid and complete draining.

Remove the oil filler cap and the drain bolt.



Remove the oil filter cover attaching bolts, cover, spring and oil filter.



Check that the sealing washer on the oil drain bolt is in good condition and install the drain bolt.

TORQUE: 35–40 N·m (3.5–4.0 kg·m, 25–29 ft·lb)

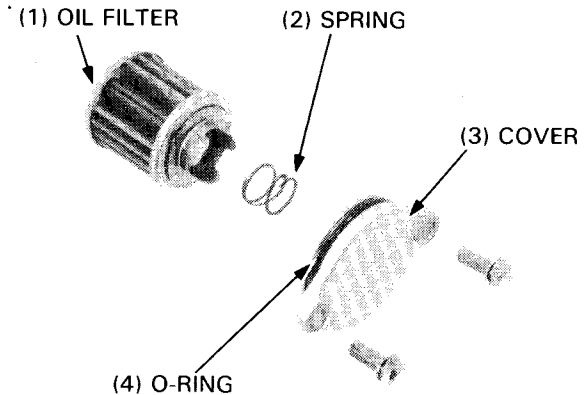
(1) SEALING WASHER

(2) OIL DRAIN BOLT

Make sure that the oil filter cover O-ring is in good condition. Install a new oil filter and the spring, then install the cover with the attaching bolts. Fill the crankcase with recommended oil (Page 2-1).

Install the oil filler cap/dipstick. Start the engine and let it idle for 2 or 3 minutes.

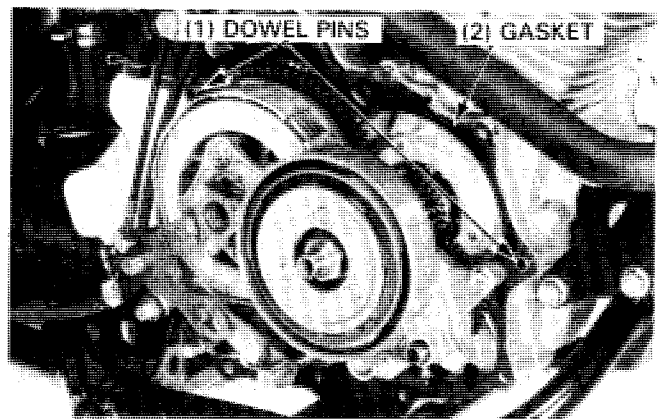
Stop the engine and check that the oil level is at the upper level line on the dipstick. Make sure there are no oil leaks.



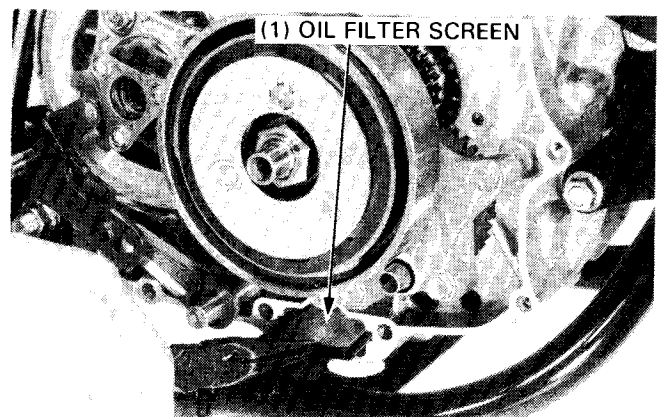
OIL FILTER SCREEN

Drain the engine oil (Page 2-1). Remove the right crankcase cover (Page 8-3).

Remove the gasket and dowel pins.



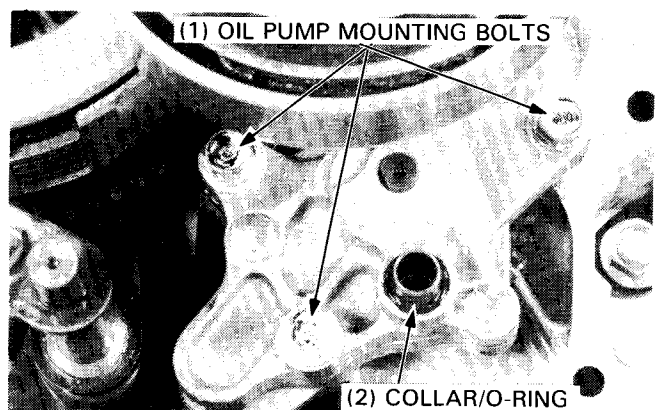
Remove and clean the oil filter screen. Inspect the screen for damage and replace it if necessary. Install the right crankcase cover with a new gasket in the reverse order of removal (Page 8-16).



OIL PUMP

REMOVAL

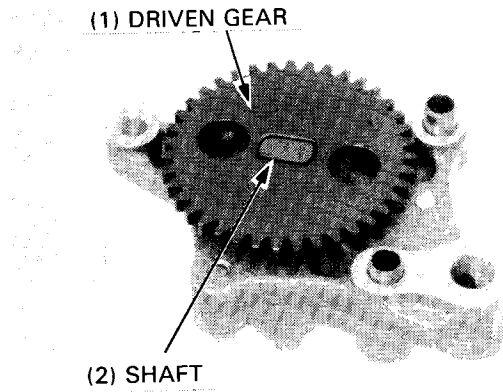
Remove the right crankcase cover (Page 8-3). Remove the gasket and dowel pin. Remove the O-ring with collar and oil pump mounting bolts.



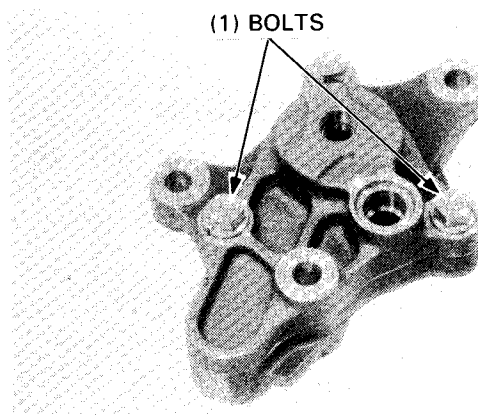
LUBRICATION

OIL PUMP DISASSEMBLY

Remove the oil pump driven gear, shaft and dowel pins.



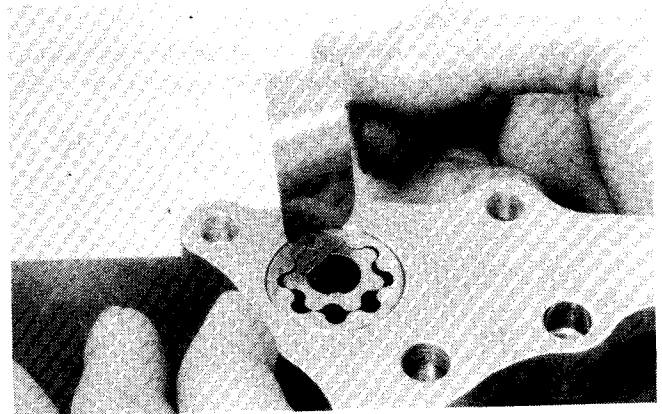
Remove the oil pump cover mounting bolts.



OIL PUMP INSPECTION

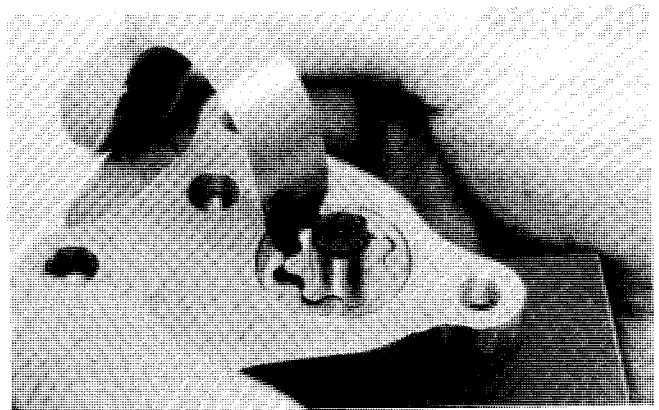
Measure the oil pump cover-to-rotor clearance.

SERVICE LIMIT: 0.25 mm (0.009 in)



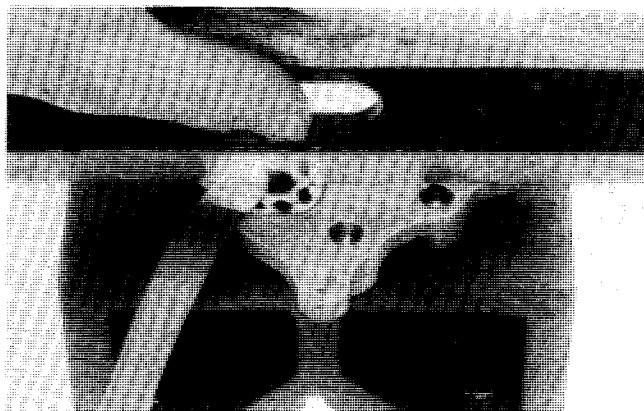
Install the oil pump drive gear shaft and measure the pump rotor tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)

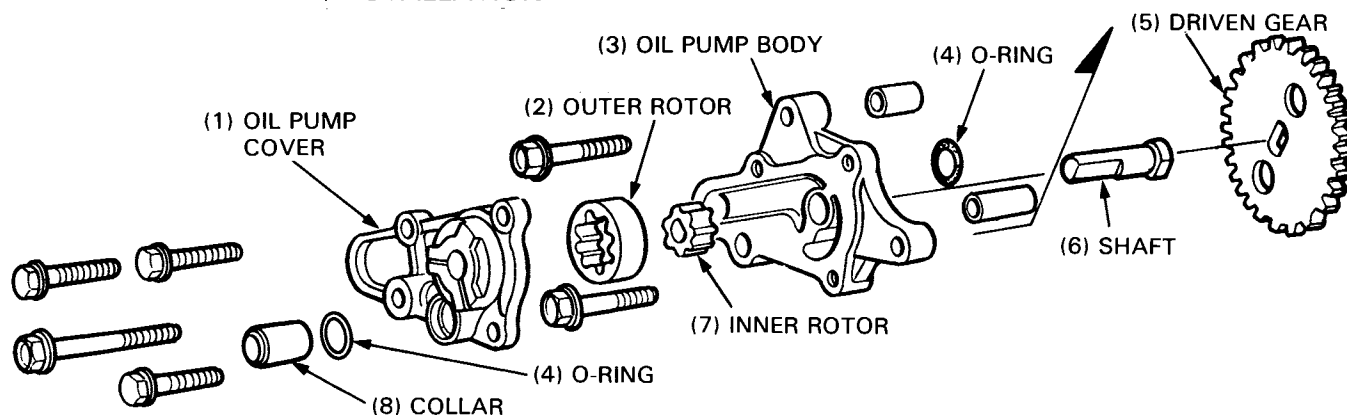


Remove the oil pump driven gear shaft and measure the pump end clearance.

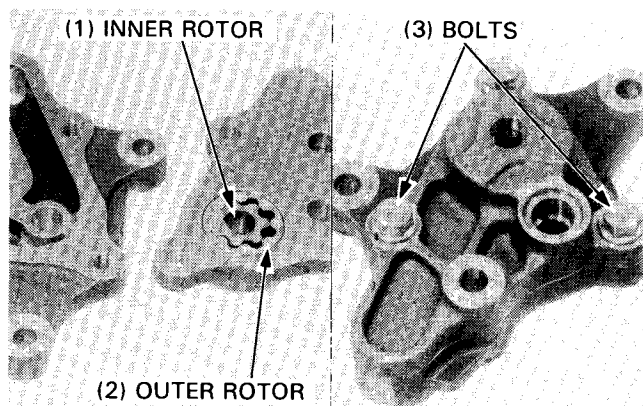
SERVICE LIMIT: 0.12 mm (0.005 in)



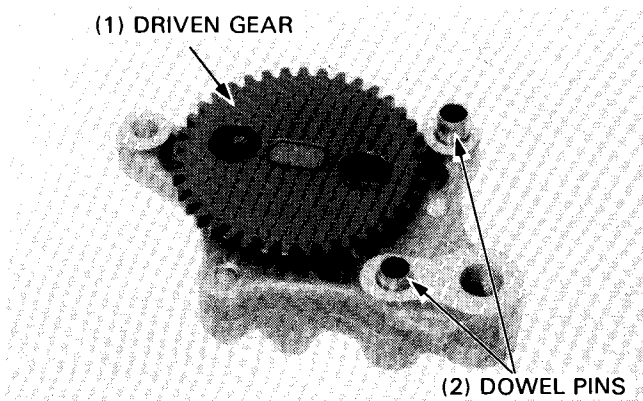
OIL PUMP ASSEMBLY/INSTALLATION



Assemble the oil pump cover with inner and outer rotors into the oil pump cover.
Temporarily tighten the oil pump cover bolts.
Fill the oil pump with clean engine oil.

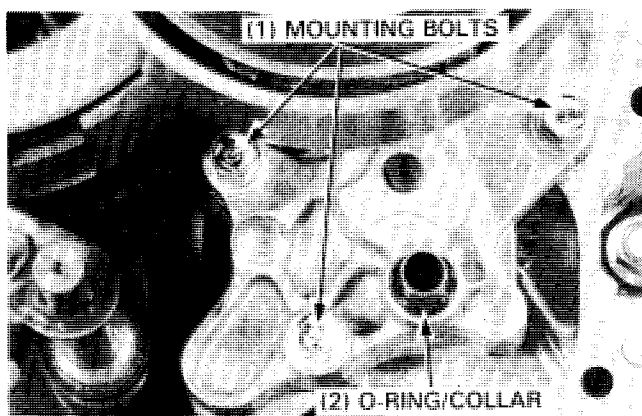


Install the dowel pins and tighten the cover screws securely.
Install the oil pump driven gear and shaft.
Install the O-ring onto the oil pump body.

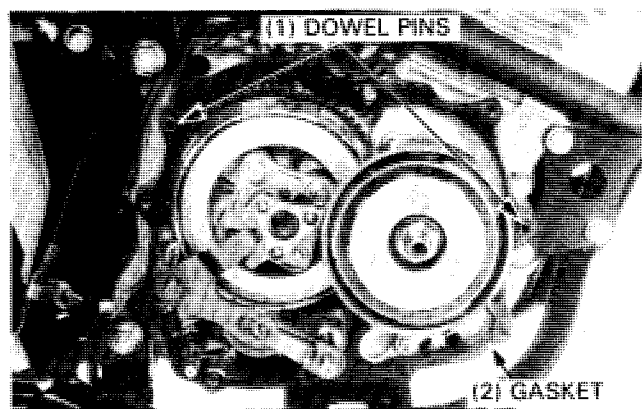


LUBRICATION

Install the oil pump onto the crankcase.
Tighten the oil pump mounting bolts.
Install the O-ring with collar onto the oil pump.

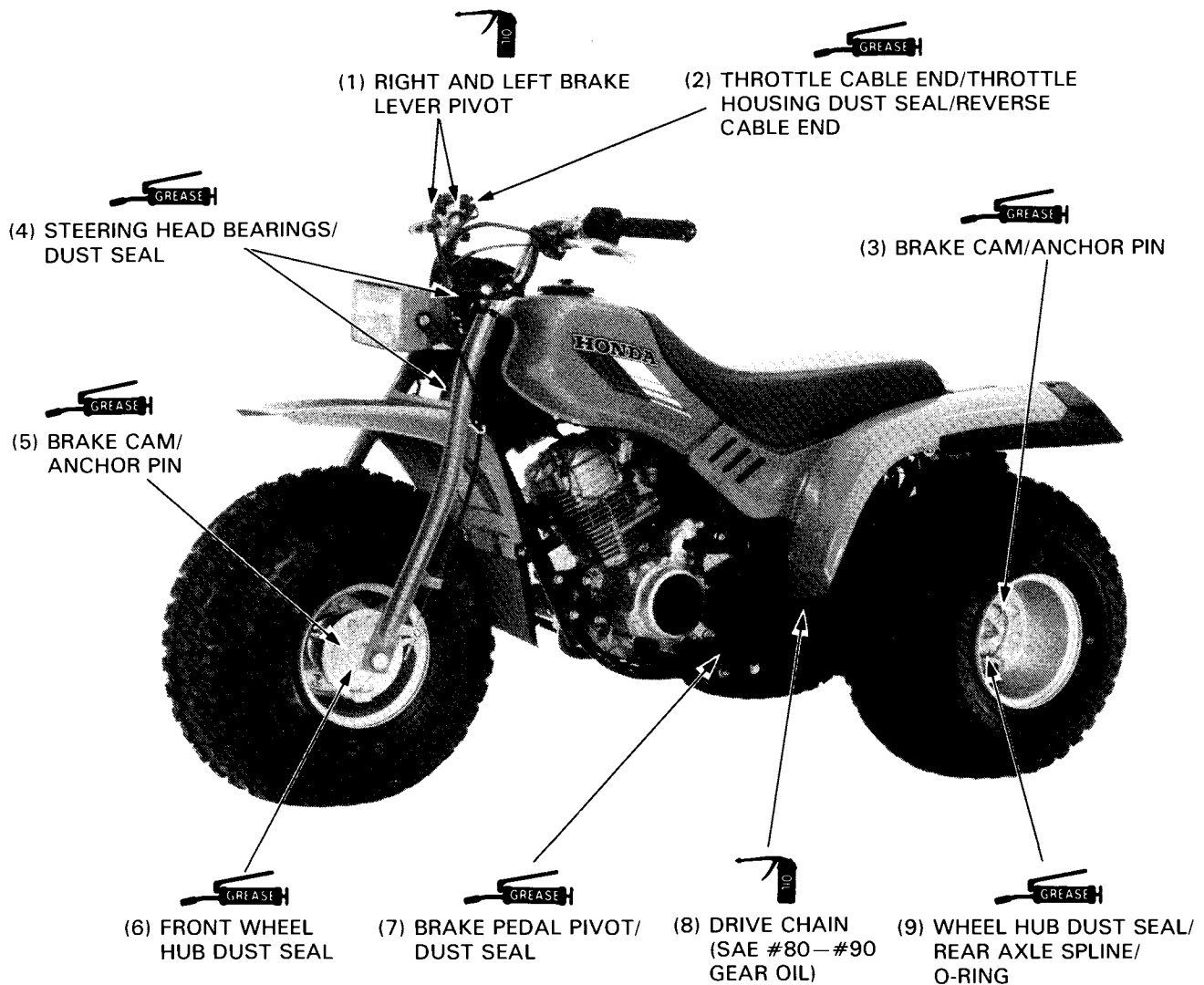


Install a new gasket and two dowel pins.
Install the new right crankcase cover (Page 8-16).



LUBRICATION POINTS

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



MEMO

3. MAINTENANCE

SERVICE INFORMATION	3-1	DRIVE CHAIN	3-9
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SERVICE INFORMATION

SPECIFICATIONS

Engine

Ignition timing:

Initial 10° ± 2° BTDC at idle
 Full advance 28° ± 2° BTDC at 4,000 rpm

Idle speed:

1,500 ± 100 rpm

Spark plug:

Spark plug gap 0.6–0.7 mm (0.024–0.028 in)
 Recommended spark plugs DR8ES-L (NGK)
 X24ESR-U (ND)

Valve clearance (cold):

Intake 0.08 mm (0.003 in)
 Exhaust 0.08 mm (0.003 in)

Throttle lever free play:

3–8 mm (1/8–5/16 in)

Cylinder compression:

Standard 13.3 ± 1.0 kg/cm² (189 ± 14.2 psi, 1,330 ± 100 kPa)

Chassis

Front brake lever free play 15–20 mm (5/8–3/4 in)

Rear brake pedal free play 15–20 mm (5/8–3/4 in)

Rear brake (parking brake) lever free play 15–20 mm (5/8–3/4 in)

Reverse lock cable free play 2–4 mm (1/16–1/8 in)

Drive chain slack 10–20 mm (3/8–3/4 in)

Drive chain length (95 pins):

Standard 1,193.8 mm (46.99 in)

Service limit 1,199.8 mm (47.24 in)

Front/rear rim size 22 x 11.0–8

Front/rear tire size 22 x 11.0–8

Front/rear tire pressure 0.15 kg/cm² (2.2 psi, 15 kPa)

Front/rear tire circumference:

Standard 1,742 mm (68.2 in)

MAINTENANCE

TORQUE VALUES

Rear axle bearing holder bolt	50–70 N•m (5.0–7.0 kg-m, 36–51 ft-lb)
Clutch adjuster lock nut	19–25 N•m (1.9–2.5 kg-m, 14–18 ft-lb)
Valve adjuster lock nut	15–18 N•m (1.5–1.8 kg-m, 11–13 ft-lb)
Spark plug	12–19 N•m (1.2–1.9 kg-m, 9–14 ft-lb)

TOOLS

Special

Cylinder compression gauge attachment 07510–MB00101 or Equivalent commercially available in U.S.A.

Common

Valve adjusting wrench A 07708–0030300 or Valve adjusting wrench
089201–200–000

Valve adjusting wrench, 10 x 12 mm 07708–0030200 or Equivalent commercially available in U.S.A.

MAINTENANCE SCHEDULES

'86

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		EVERY	INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
*	FUEL LINE	YEAR I			3-5
*	FUEL STRAINER SCREEN	YEAR C			3-5
*	THROTTLE OPERATION		I	I	3-5
*	CARBURETOR CHOKE			I	3-6
	AIR CLEANER	NOTE (1)		C	3-6
	AIR CLEANER CASE DRAIN TUBE	NOTE (2)		I	3-8
	SPARK PLUG			I	3-8
*	VALVE CLEARANCE		I	I	3-8
	ENGINE OIL		R	R	2-2
	ENGINE OIL FILTER		R	R	2-2
*	CARBURETOR IDLE SPEED		I	I	3-9
	DRIVE CHAIN	NOTE (1)	I, L	I, L	3-9
*	BRAKE SHOE WEAR	YEAR I, NOTE (2)			3-11
	BRAKE SYSTEM		I	I	3-12
*	REVERSE LOCK SYSTEM		I	I	3-14
*	CLUTCH SYSTEM		I	I	3-14
*	SPARK ARRESTER	NOTE (3)		C	3-14
*	NUT, BOLT, FASTENER		I	I	3-15
**	WHEEL		I	I	3-15
**	STEERING HEAD BEARING	YEAR I			3-15

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

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

NOTES: 1. Service more frequently when riding in dusty areas, sand or snow.
 2. Service more frequently after riding in very wet or muddy conditions.
 3. U.S.A. only.

MAINTENANCE

After '86

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		EVERY	INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
*	FUEL LINE	YEAR I			3-5
*	FUEL STRAINER SCREEN	YEAR C			3-5
*	THROTTLE OPERATION		I	I	3-5
*	CARBURETOR CHOKE			I	3-6
	AIR CLEANER	NOTE (1)		C	3-6
	AIR CLEANER CASE DRAIN TUBE	NOTE (2)		I	3-8
	SPARK PLUG			I	3-8
*	VALVE CLEARANCE		I	I	3-8
	ENGINE OIL		R	R	2-2
	ENGINE OIL FILTER		R	R	2-2
*	CARBURETOR IDLE SPEED		I	I	3-9
	DRIVE CHAIN	NOTE (1)	I, L	I, L	3-9
*	BRAKE SHOE WEAR	YEAR I, NOTE (2)			3-11
	BRAKE SYSTEM		I	I	3-12
*	REVERSE LOCK SYSTEM		I	I	3-14
	SKID PLATE, GUARD PLATE			I	3-14
*	CLUTCH SYSTEM		I	I	3-14
*	SPARK ARRESTER	NOTE (3)		C	3-14
*	NUT, BOLT, FASTENER		I	I	3-15
**	WHEEL		I	I	3-15
**	STEERING HEAD BEARING	YEAR I			3-15

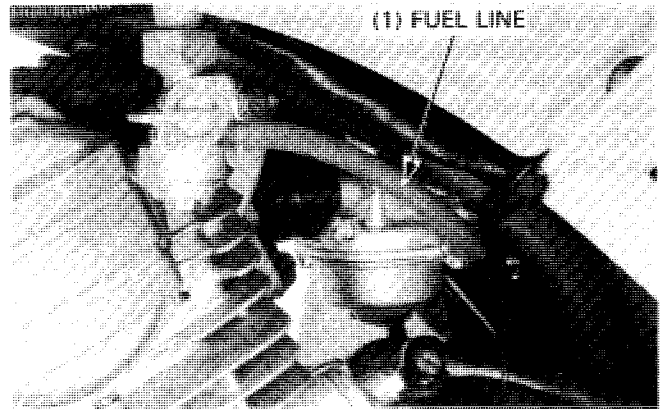
* Should be serviced by an authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.

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

NOTES: 1. Service more frequently when riding in dusty areas, sand or snow.
2. Service more frequently after riding in very wet or muddy conditions.
3. U.S.A. only.

FUEL LINE

Check the fuel line.
Replace any parts which show signs of deterioration, damage or leaks.

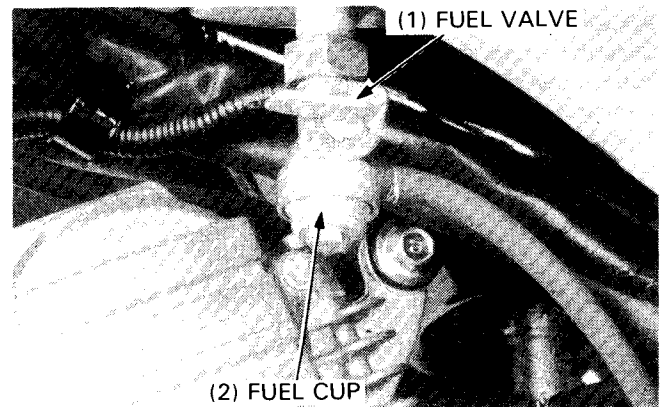


FUEL STRAINER SCREEN

Turn the fuel valve OFF.
Remove the fuel cup, O-ring and filter screen, and drain 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 cup and filter screen in clean non-flammable or high flash point solvent.

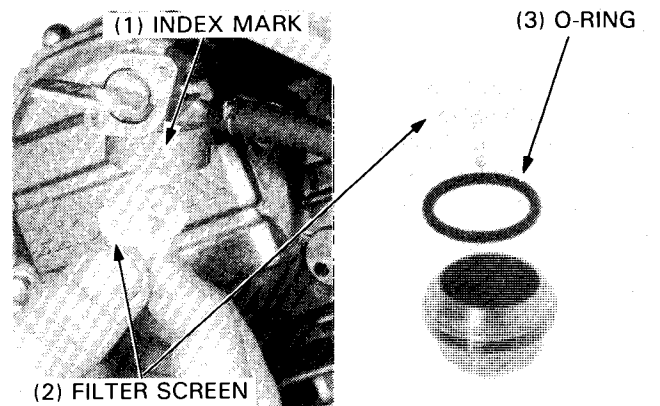
Reinstall the screen, aligning the index marks on the fuel valve body and filter screen. Install a new O-ring into the fuel valve body.

Reinstall the fuel cup, making sure the new O-ring is in place. Hand tighten the fuel cup and then torque it.

CAUTION

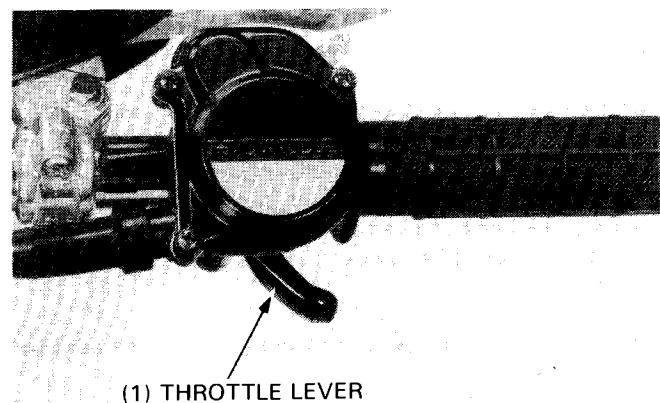
- *Do not overtighten the fuel cup.*

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



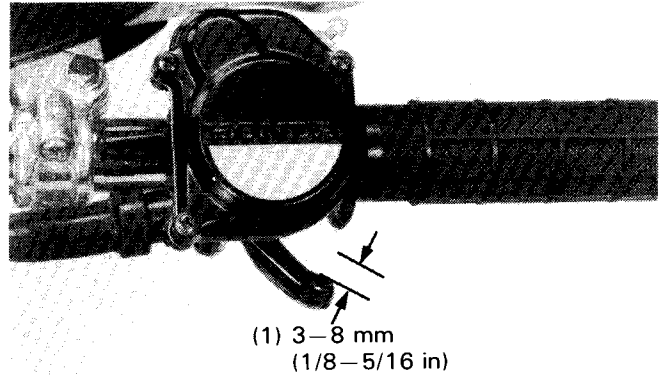
THROTTLE OPERATION

Check throttle lever for smooth full opening and automatic full closing operation in all steering positions. Make sure there is no deterioration, damage or kinking in the throttle cable. Replace any damaged parts.

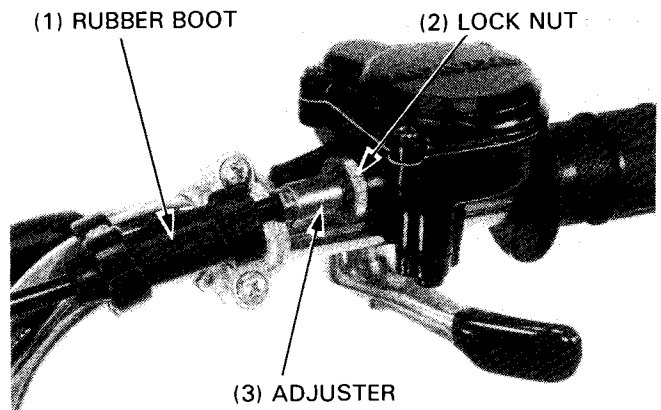


MAINTENANCE

Disconnect the throttle cable at the upper end. Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant to prevent premature wear. Install the throttle cable in the reverse order of removal. Make sure the throttle lever free play is 3–8 mm (1/8–5/16 in) at the tip of the throttle lever.



Adjust as follows:
Slide the rubber boot off the cable adjuster.
Loosen the lock nut and adjust the throttle cable free play by turning the cable adjuster.
Tighten the lock nut and install the rubber boot securely.



CARBURETOR CHOKE

Check for smooth choke knob operation. Pull the choke up all the way to “fully closed” and make sure the choke valve is fully closed by trying to move the choke lever on the carburetor. The choke lever on the carburetor should not be able to be moved.

To adjust the choke, remove the seat and fuel tank.

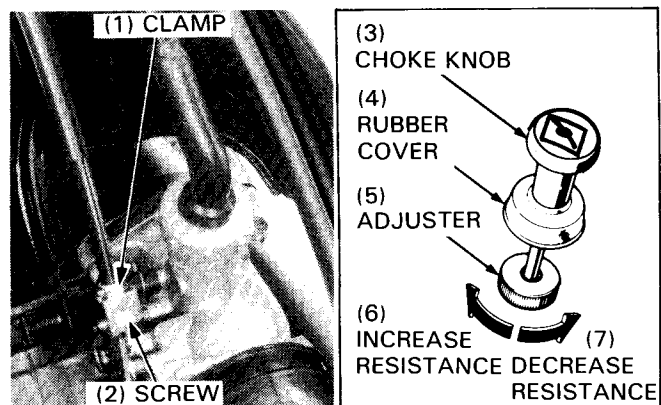
Loosen the choke cable clamp on the carburetor. Then tighten the clamp, holding the choke lever “fully closed.”

Push the choke knob down all the way to fully open. Make sure the choke valve is fully open by checking for free play between the lever and cable casing.

Recheck the choke operation. The choke knob must move smoothly and stay where positioned.

Adjust the choke operating friction by turning the adjuster.

Install the fuel tank and seat.



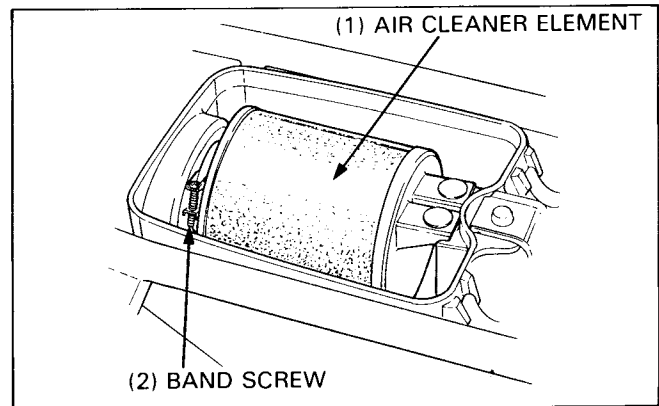
AIR CLEANER ELEMENT

Remove the seat by pulling the seat latch lever.

Release the retaining clips holding the air cleaner case cover, and remove the air cleaner case cover.



Loosen the band screw and remove the air cleaner element assembly from the case.

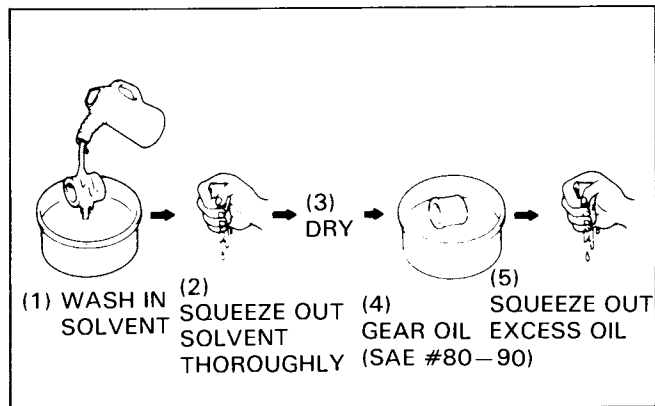


Remove the element holder cover by turning the screw counterclockwise.

Remove the element from the core.

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

Soak the element in gear oil (SAE #80-90) and squeeze out the excess.



Place the element onto the element core.

Install the element holder cover as shown.

Install the air cleaner element in the case with UP mark facing up.

Tighten the band screw securely.

Install the air cleaner case cover and clips.

Install the seat.



MAINTENANCE

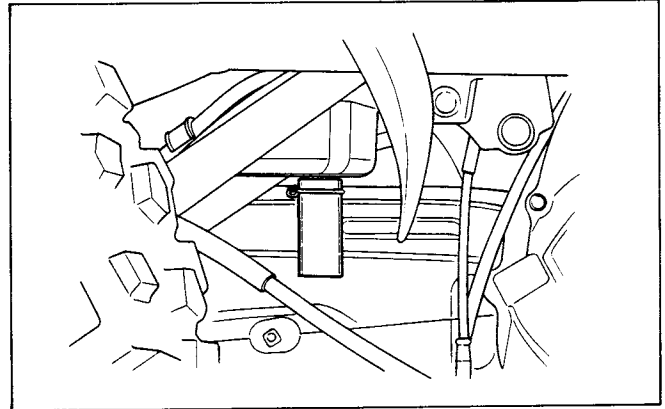
AIR CLEANER CASE DRAIN TUBE

Remove the plug from the drain tube to empty any deposits.

Install the drain plug.

NOTE

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



SPARK PLUG

Disconnect the spark plug cap and remove the spark plug.

Visually inspect the spark plug electrodes for wear. The center electrode should have square edges and the side electrode should have a constant thickness. Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped.

Measure the gap with a wire-type feeler gauge and adjust if necessary by carefully bending the side electrode.

SPARK PLUG GAP:

0.6–0.7 mm (0.024–0.028 in)

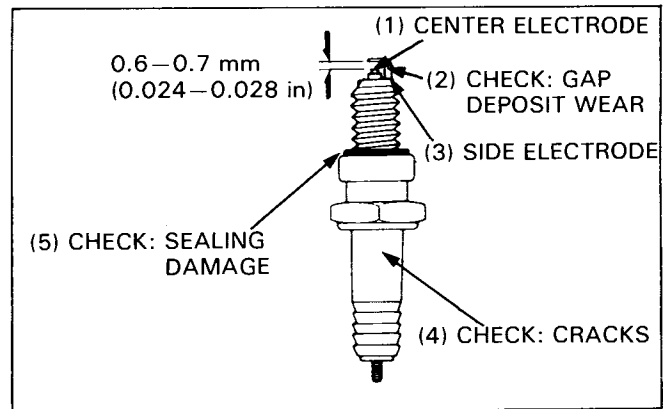
RECOMMENDED REPLACEMENT PLUG:

DR8ES-L (NGK)

X24ESR-U (ND)

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

With the sealing washer attached, thread the spark plug in by hand to prevent cross-threading. Re-used plugs should be tightened 1/8 to 1/4 turn; tighten a new spark plug another 1/2 turn with a spark plug wrench to compress the sealing washer.

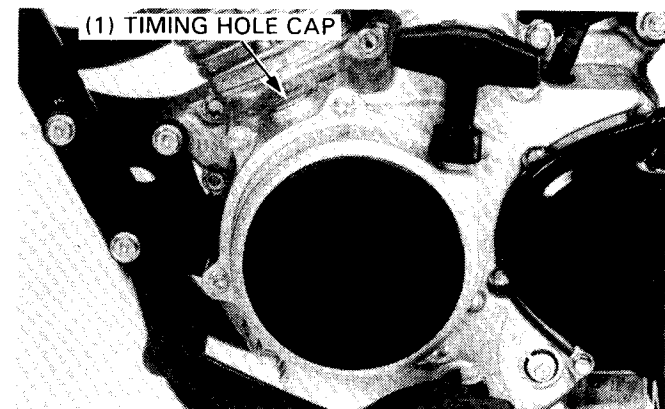


VALVE CLEARANCE

NOTE

- Inspect and adjust valve clearance while the engine is cold (below 35°C/95°F).

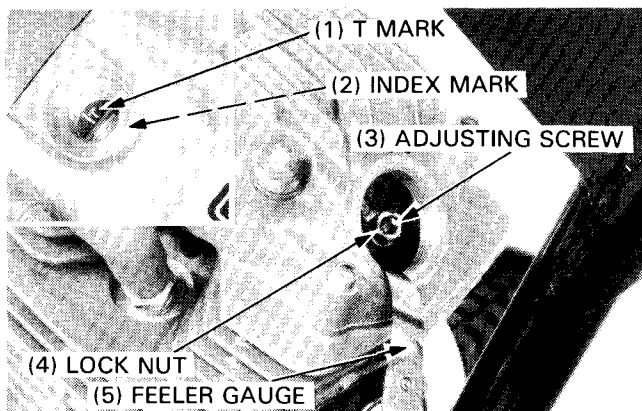
Remove the timing hole cap.



Remove the fuel tank (Page 4-3).
 Remove the valve adjusting hole covers.
 Rotate the crankshaft counterclockwise by pulling the recoil starter handle and align the "T" mark on the rotor with the index mark. The piston must be at TDC on the compression stroke.
 Inspect the intake and exhaust valve clearances by inserting the feeler gauge between the adjusting screw and valve stem.

VALVE CLEARANCES

- Intake: 0.08 mm (0.003 in)
- Exhaust: 0.08 mm (0.003 in)



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

TOOLS:

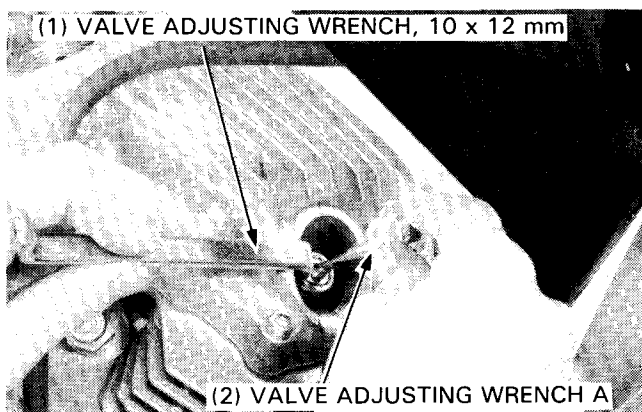
- Valve adjusting wrench, 10 x 12 mm 07708-0030200
 or equivalent commercially available in U.S.A.
- Valve adjusting wrench A 07708-0030300
 or valve adjusting wrench 089201-200-000

Hold the adjust screw and tighten the lock nut.

Recheck the valve clearance and install the valve adjusting hole covers.

Install the timing hole cap.

Install the removed parts.



CARBURETOR IDLE SPEED

NOTE

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

Warm up the engine for about ten minutes, shift the transmission into neutral and connect a tachometer.
 Turn the throttle stop screw as required to obtain the specified idle speed.

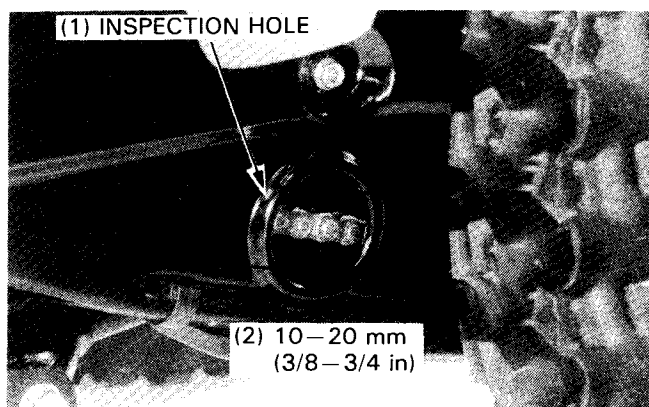
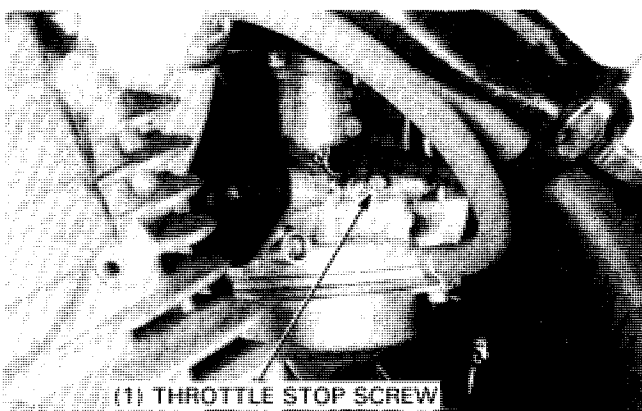
IDLE SPEED: 1,500 ± 100 rpm

DRIVE CHAIN

Stop the engine and shift the transmission into neutral.
 Remove the drive chain inspection hole cap.

Check the amount of chain slack through the inspection hole.

DRIVE CHAIN SLACK: 10-20 mm (3/8-3/4 in)



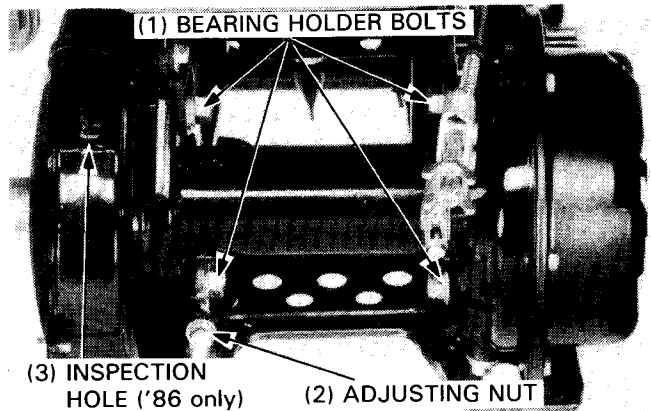
MAINTENANCE

CHAIN SLACK ADJUSTMENT

Loosen the rear axle bearing holder bolts.
Turn the adjusting nut to obtain the specified chain slack.
Retighten the rear axle bearing holder bolts.

TORQUE: 50–70 N·m (5.0–7.0 kg·m, 36–51 ft·lb)

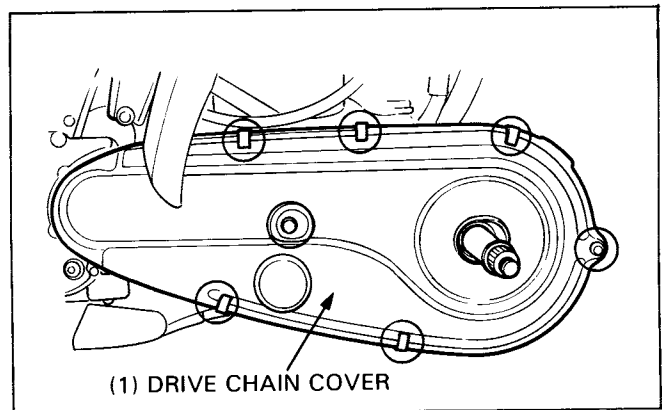
Check the rear wheels for free rotation.
Adjust the rear brake (Page 3-11).



Lubricate the drive chain with SAE #80 or #90 gear oil lubricant through the inspection hole.

Install the inspection hole cap.

When the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication.



INSPECTION/LUBRICATION

Remove the skid plate, drive chain cover and loosen the bearing holder bolts. (Page 12-10).
Remove the chain retaining clip carefully.
Remove the master link, O-rings and the drive chain.

CAUTION

- *Be careful not to lose the O-rings when the clip and master link are removed.*

Visually inspect the drive chain for kinks or damage.
Measure the drive chain length with the chain held so that all links are straight.

PIN LENGTH:

STANDARD: 1,193.8 mm (46.99 in)
SERVICE LIMIT: 1,199.8 mm (47.24 in)

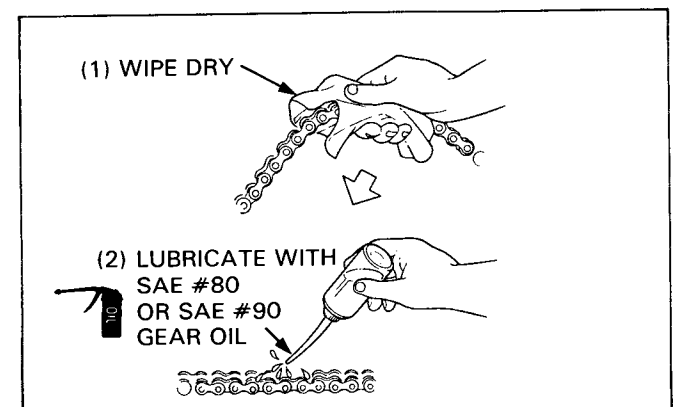
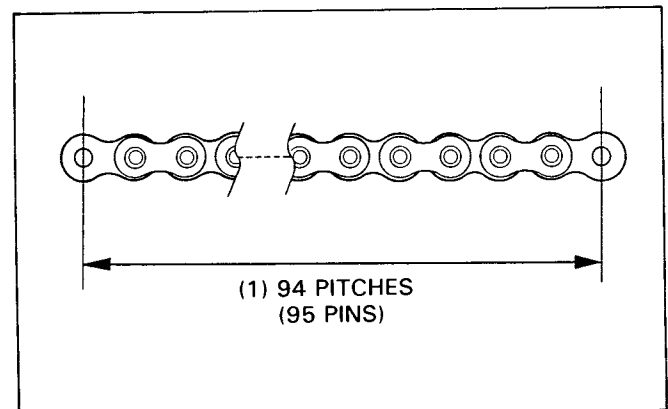
Clean the drive chain with a small amount of kerosene and wipe dry.

CAUTION

- *Do not use a steam cleaner, high pressure washers or aerosol chain lubricants as these will damage the O-rings.*

Inspect the drive chain and O-rings for possible wear or damage. Replace the chain, if it is worn excessively or damaged.

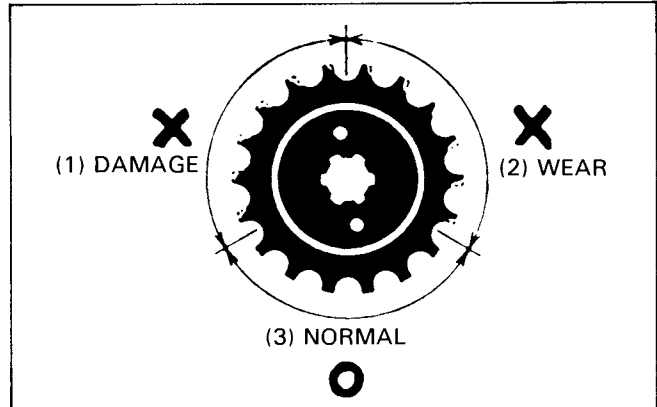
Lubricate the drive chain with SAE #80 or #90 gear oil.



Inspect the sprocket teeth for excessive wear or damage. Replace if necessary.

NOTE

- Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprockets must be in good condition, or the new replacement chain or sprockets will wear rapidly.



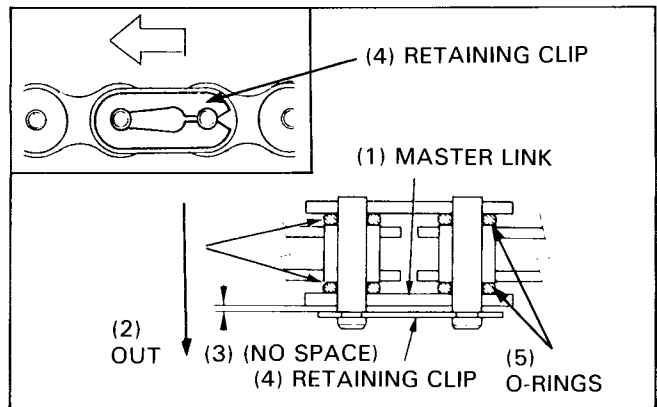
INSTALLATION

Install the drive chain.
Install the master link with O-rings and chain retaining clip.

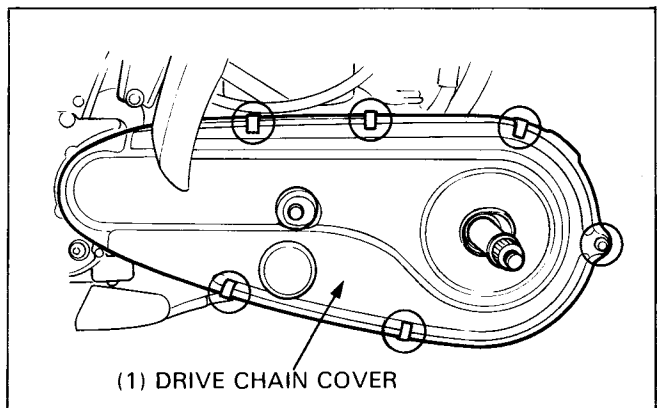
Note the direction of the chain retaining clip.
Its open end should face in the opposite direction of the wheel rotation as shown.
Adjust the drive chain slack and tighten the bearing holder bolts.

CAUTION

- Do not assemble the drive chain without the four O-rings. Be sure that there is no space between the master link and chain retaining clip.

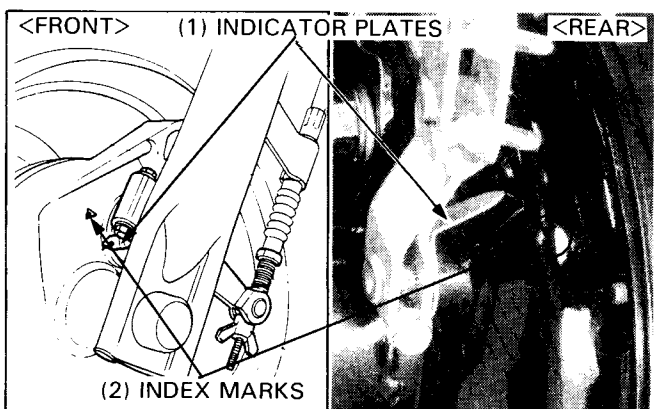


Install the drive chain cover and skid plate in the reverse order of removal.



BRAKE SHOE WEAR

Replace the brake shoes if the indicator plate aligns with the brake panel index mark when the front brake lever, rear brake lever or pedal is applied.



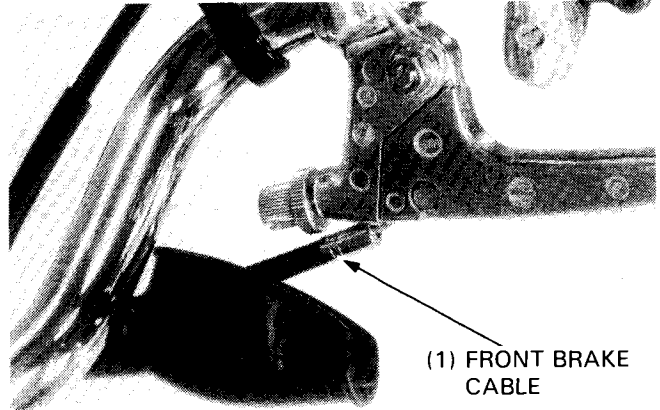
MAINTENANCE

BRAKE SYSTEM

FRONT BRAKE

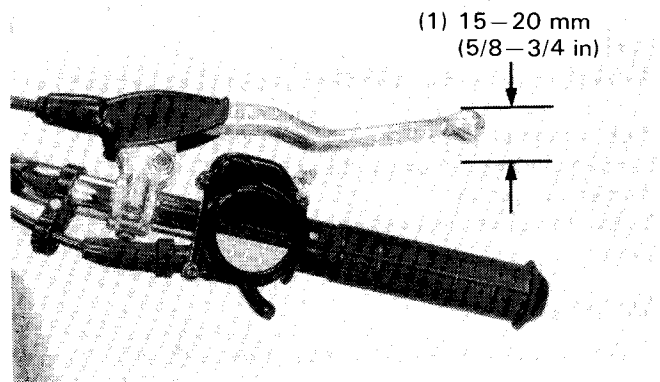
Check the cable and brake lever for loose connections, excessive play, or other damage. Replace or repair if necessary.

Disconnect the brake cable at the upper end. Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant to prevent premature wear.



Install the brake cable. Make sure brake lever free play is 15–20 mm (5/8–3/4 in) at the brake lever tip.

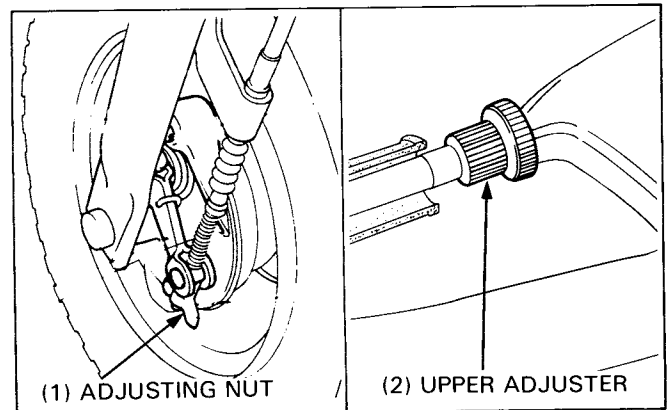
FRONT BRAKE LEVER FREE PLAY: 15–20 mm (5/8–3/4 in)



Adjust free play by turning the adjusting nut.

NOTE

- Minor free play adjustments are made with the upper adjuster on the brake lever; major adjustments are made with the lower adjuster.
- Make sure the cut-out of the lower adjusting nut is seated on the brake arm pin.



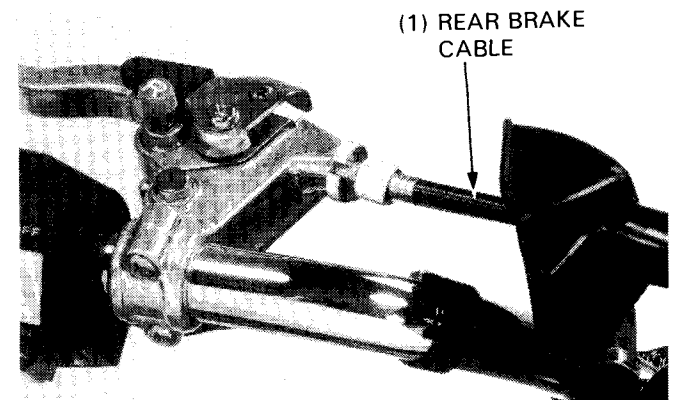
REAR BRAKE

Check the brake lever cable and brake pedal for loose connections, excessive play, or other damage.

Replace or repair if necessary. Disconnect the brake cables at the brake lever or pedal ends.

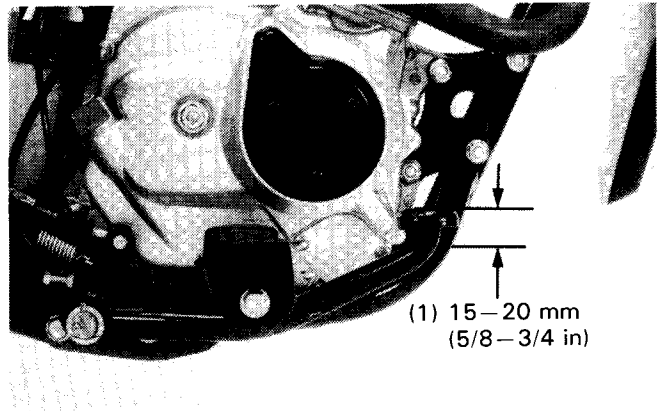
Thoroughly lubricate the cables and their pivot points with a commercially available cable lubricant to prevent premature wear.

Install the cables.



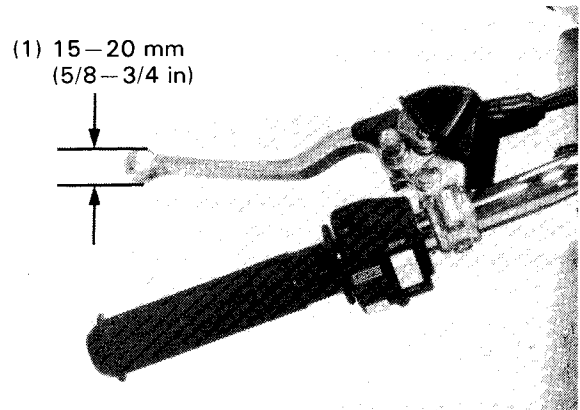
Measure the brake pedal free play at the end of the brake pedal.

BRAKE PEDAL FREE PLAY: 15–20 mm (5/8–3/4 in)



Measure the rear brake (parking brake) lever free play at the end of the brake lever.

REAR BRAKE LEVER FREE PLAY: 15–20 mm (5/8–3/4 in)

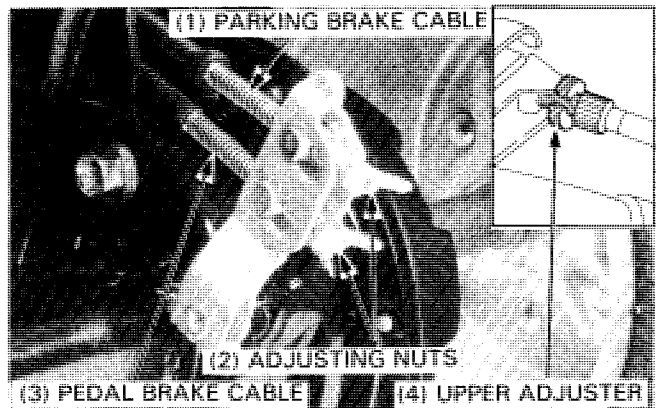


Adjust the lever and pedal free play by turning the adjusting nuts at the lower end of the cables.

Minor brake lever adjustments are made with the upper adjuster on the lever; major adjustments are made at the lower adjuster on the brake arm.

NOTE

- Make sure the cut-out of each adjusting nut is seated on the brake arm pin.

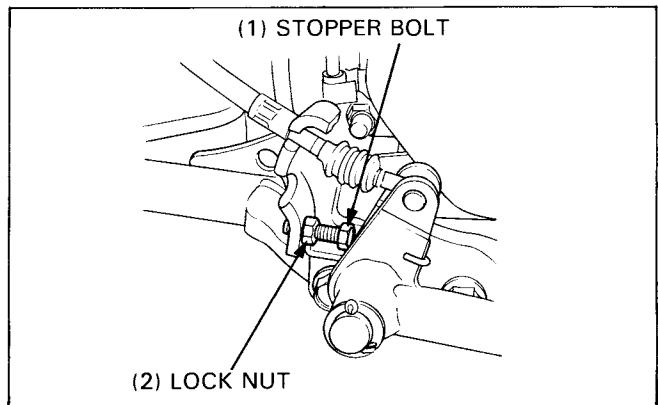


BRAKE PEDAL HEIGHT

To adjust:
Loosen the stopper bolt lock nut and turn the stopper bolt.
Retighten the lock nut.

NOTE

- After adjusting the brake pedal height, check the brake pedal free play and adjust if necessary.



MAINTENANCE

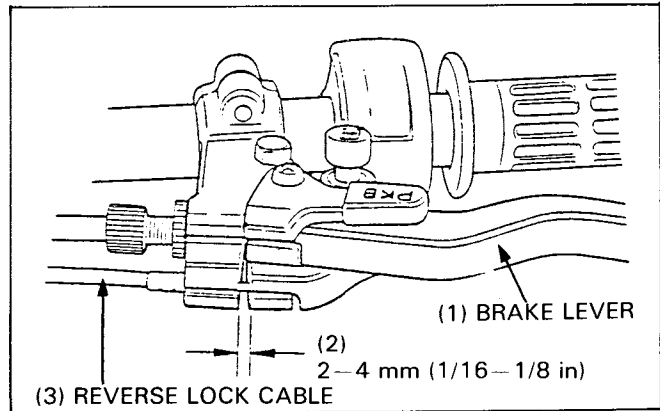
REVERSE LOCK SYSTEM

Check the lever and cable for loose connections, excessive play, or other damage.

Replace or repair as necessary.

Measure the reverse selector lever free play at the lever end of the cable side.

REVERSE CABLE FREE PLAY: 2–4 mm (1/16–1/8 in)

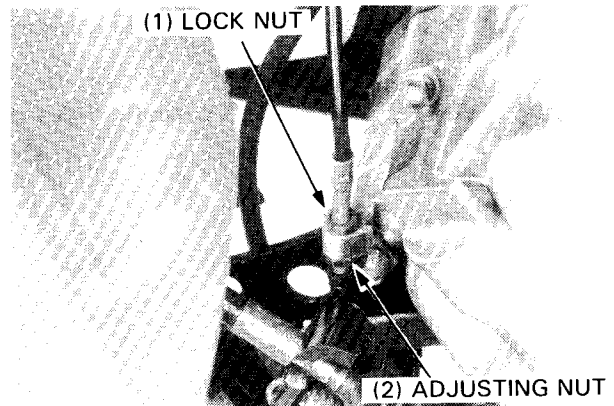


To adjust, loosen the lock nut and turn the adjusting nut. Tighten the lock nut securely.

SKID PLATE, GUARD PLATE (After '86)

Check the skid plate and other guard plate for damage or interference with any moving parts.

Repair or replace as necessary.



CLUTCH SYSTEM

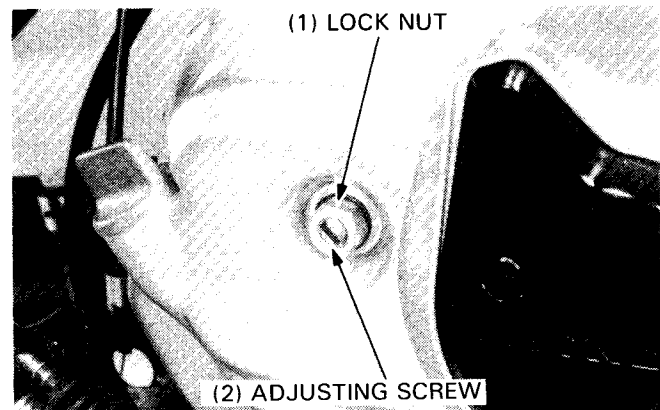
Stop the engine.

Loosen the clutch adjusting screw lock nut.

Slowly turn the adjusting screw counterclockwise until resistance is felt.

Then turn the adjusting screw clockwise 1/8–1/4 turn, and tighten the lock nut.

After adjustment, start the engine and check for proper clutch operation.



SPARK ARRESTER

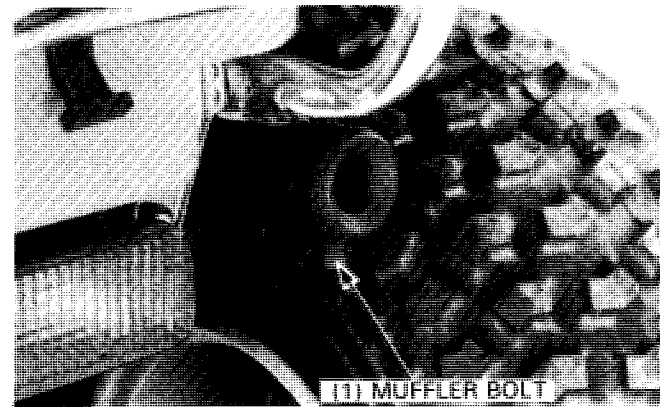
WARNING

- Do not touch the exhaust components while the exhaust system is hot.
- Perform this operation in a well-ventilated area, free from fire hazard.
- Use adequate eye protection.

Remove the muffler bolt.

Start the engine with the transmission in neutral, and purge accumulated carbon from the spark arrester system by momentarily revving up the engine several times.

Stop the engine and allow the exhaust system to cool. Install the muffler bolt.



NUTS, BOLTS, FASTENERS

Tighten bolts, nuts and fasteners at regular intervals shown in the Maintenance Schedule (Page 3-3). Check that all chassis nuts and bolts are tightened to their correct torque values (Page 1-5). Check that all cotter pins and safety clips are in place.

WHEEL

Check the tires for cuts, imbedded nails, or other damage. Measure the groove depth of tires at the center as shown. Operating the vehicle with excessively worn tires will decrease traction and increase skidding.

WARNING

- *Replace tires before tread depth at the center of the tires reaches the minimum limit.*

Minimum tread depth: 4 mm (0.16 in)

Check the tire pressure and adjust accordingly.

TIRE PRESSURES:

	STANDARD	MAXIMUM	MINIMUM
FRONT AND REAR kg/cm ² (psi, kPa)	0.15 (2.2, 15)	0.18 (2.6, 18)	0.12 (1.8, 12)

NOTE

- Tire pressure should be checked when the tires are COLD.

'86:

Measure the tire circumference and adjust accordingly.

TIRE CIRCUMFERENCE:

FRONT AND REAR	1,742 mm (68.6 in)
----------------	--------------------

NOTE

- Raise the wheels off the ground when measuring tire circumferences.

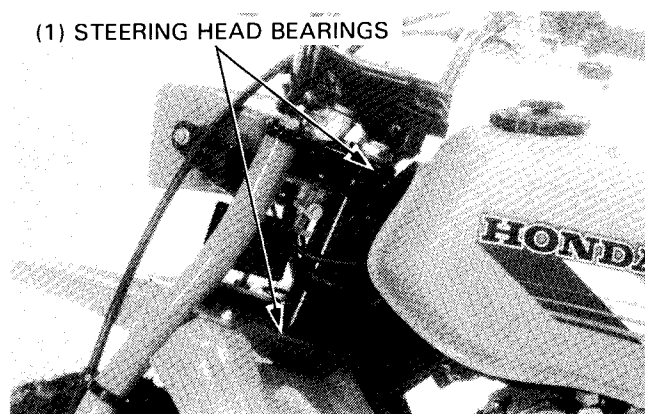
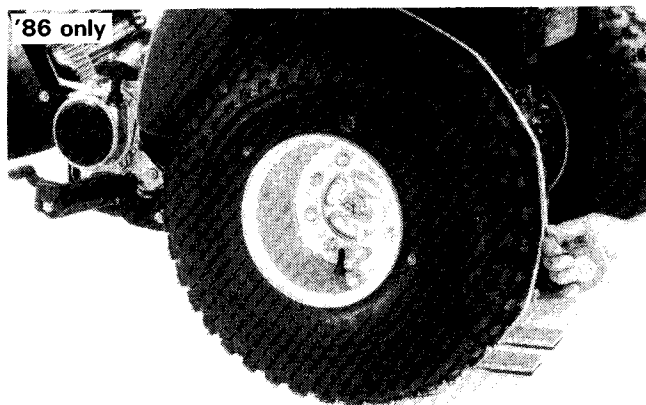
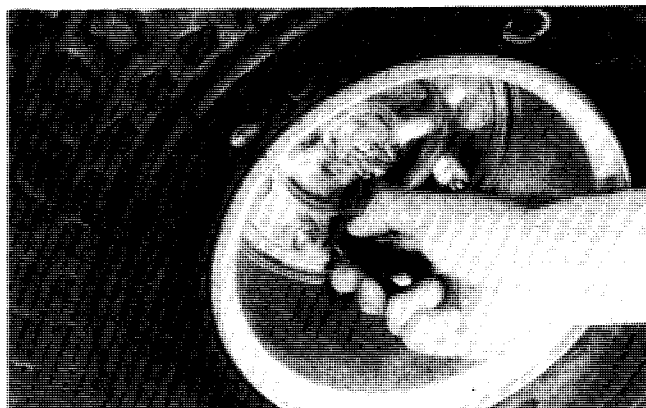
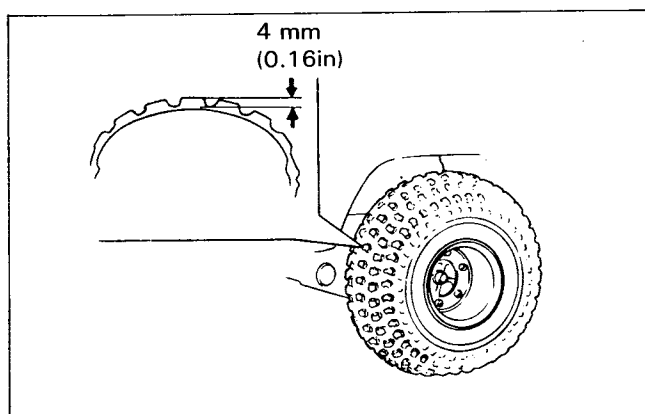
STEERING HEAD BEARINGS

NOTE

- Make sure the cables do not interfere with the rotation of the handlebar.

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

If the handlebar moves unevenly, binds or has vertical movement, adjust the steering head bearings by turning the bearing adjusting nut with a steering stem socket (Page 11-19).



MAINTENANCE

CYLINDER COMPRESSION

Warm up the engine.
Stop the engine and remove the spark plug.
Install a compression gauge.

TOOL:

Cylinder compression gauge attachment 07510—MB00101
or Equivalent commercially available in U.S.A.

Open the throttle all the way and crank the engine with the starter motor until the gauge reading stops rising.

NOTE

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

COMPRESSION PRESSURE:

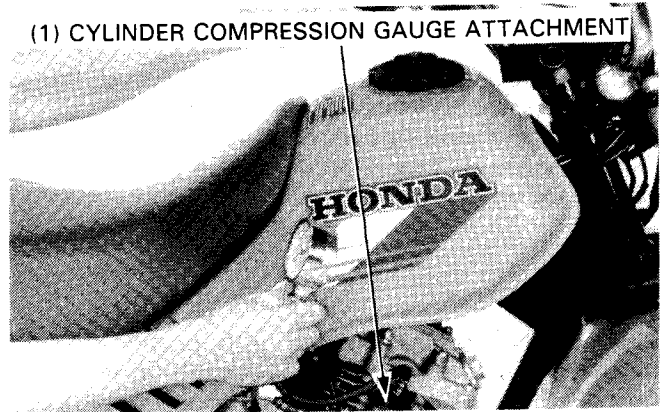
$13.3 \pm 1.0 \text{ kg/cm}^2$ ($189 \pm 14.2 \text{ psi}$, $1,330 \pm 100 \text{ kPa}$)

Low compression can be caused by:

- Blown cylinder head gasket
- Improper valve adjustment
- Valve leakage
- Worn piston ring or cylinder

High compression can be caused by:

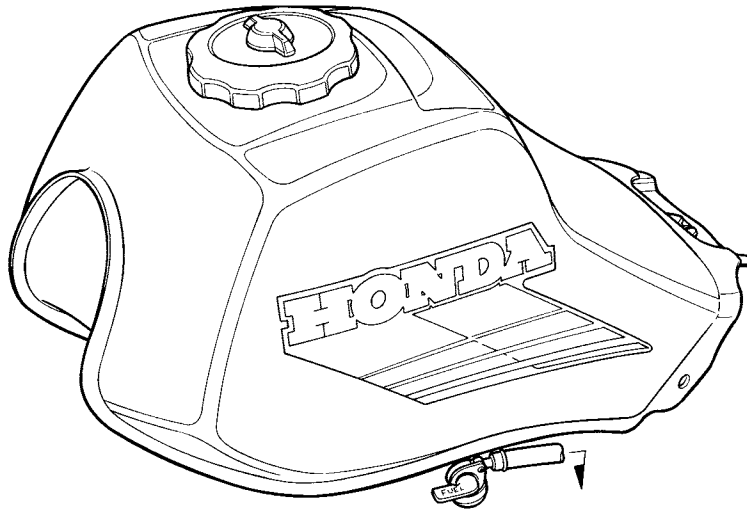
- Carbon deposits in combustion chamber or on piston head



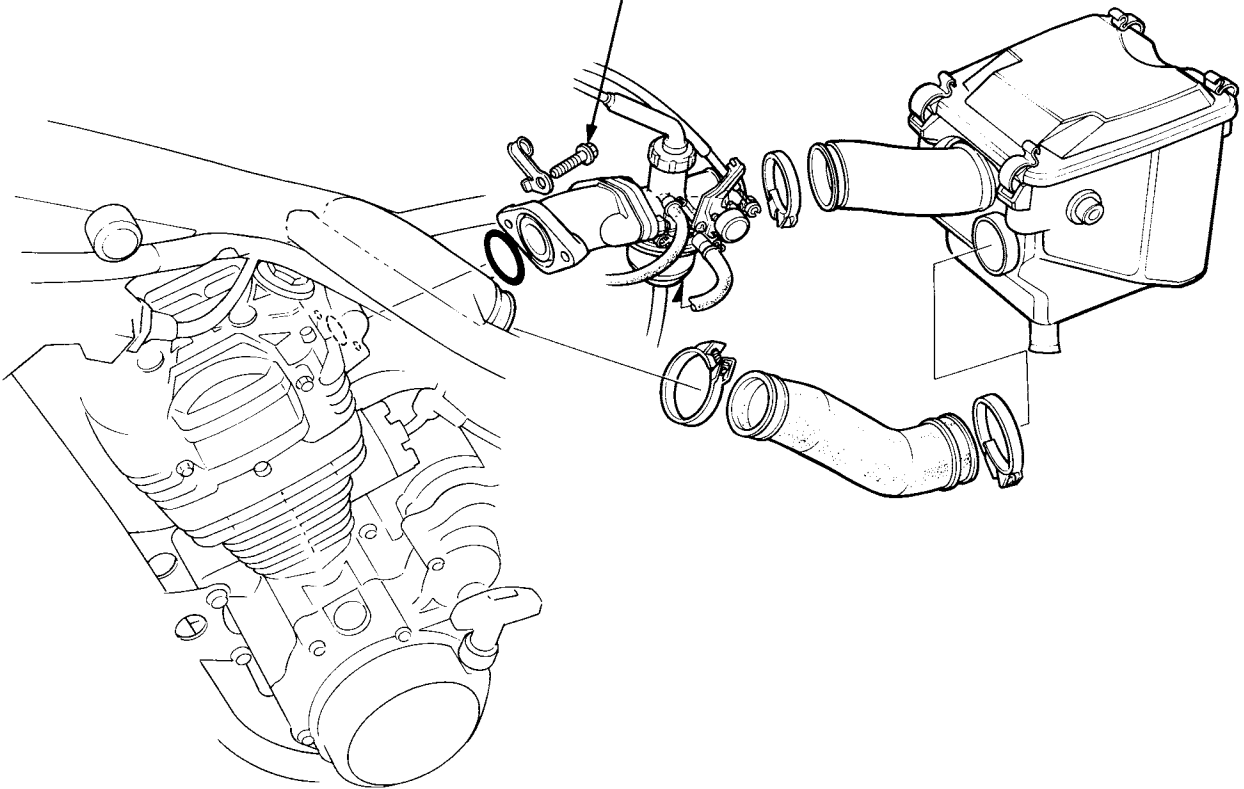
MEMO

FUEL SYSTEM

'86 Shown



6–9 N·m (0.6–0.9 kg-m, 4.3–6.5 ft-lb)



4. FUEL SYSTEM

SERVICE INFORMATION	4-1	CARBURETOR ASSEMBLY	4-8
TROUBLESHOOTING	4-2	FLOAT LEVEL MEASUREMENT	4-8
FUEL TANK	4-3	CARBURETOR INSTALLATION	4-9
AIR CLEANER CASE	4-4	THROTTLE VALVE ASSEMBLY	4-9
THROTTLE VALVE DISASSEMBLY	4-5	PILOT SCREW ADJUSTMENT	4-10
CARBURETOR REMOVAL	4-5	HIGH ALTITUDE ADJUSTMENT	4-11
FLOAT, FLOAT VALVE AND JETS	4-6		

SERVICE INFORMATION

GENERAL

 **WARNING**

- Use caution when working with gasoline. Always work in a well ventilated area away from sparks or flames.
- When disassembling fuel system parts, note the locations of the O-rings. Replace them during reassembly.

CAUTION

- Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

SPECIFICATIONS

<Fuel tank>

Fuel tank capacity	8.5 lit (2.2 US gal, 1.9 Imp gal)
Fuel reserve capacity	1.4 lit (0.4 US gal, 0.3 Imp gal)

<Carburetor>

Identification mark	PB85A
Main jet	#95
Slow jet	#35
Jet needle setting	3rd groove from the top
Pilot screw opening	2 turns out
Float level	10.7 mm (0.42 in)
Idle speed	1,500 ± 100 rpm

TORQUE VALUE

Intake pipe attaching bolt 6–9 N·m (0.6–0.9 kg-m, 4.3–6.5 ft-lb)

TOOL

Common

Float level gauge 07401–0010000

TROUBLESHOOTING

Engine cranks but won't start

- No fuel in tank
- No fuel to cylinder
- Too much fuel getting to cylinder
- No spark at plug (ignition malfunction)
- Air cleaner clogged

Engine idles roughly, stalls, or runs poorly

- Idle speed incorrect
- Ignition malfunction
- Rich mixture
- Lean mixture
- Air cleaner dirty
- Insulator leaks

Lean mixture

- Carburetor fuel jet clogged
- Fuel cap vent blocked
- Fuel filter clogged
- Fuel line kinked or restricted
- Float valve faulty
- Float level too low

Rich mixture

- Carburetor choke stuck closed
- Float valve faulty
- Float level too high
- Carburetor air jet clogged
- Air cleaner dirty

FUEL TANK

Remove the seat/rear fender by pulling the seat release lever. Turn the fuel valve OFF and disconnect the fuel line from the fuel valve.

Remove the fuel tank mounting bolt and fuel tank.

WARNING

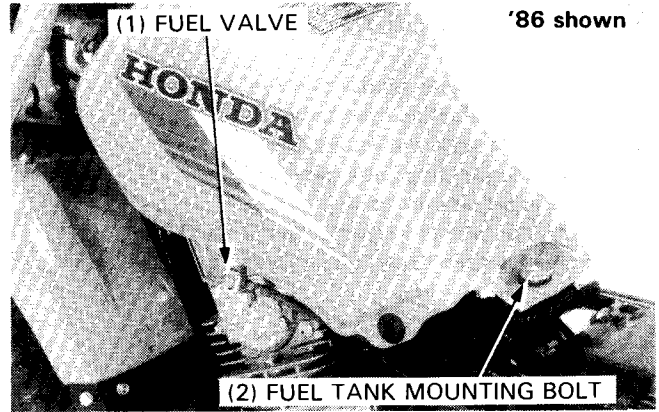
- *Keep gasoline away from flames or sparks. Wipe up spilled gasoline at once.*

Use a drain pan and check that fuel flows freely out of the fuel valve.

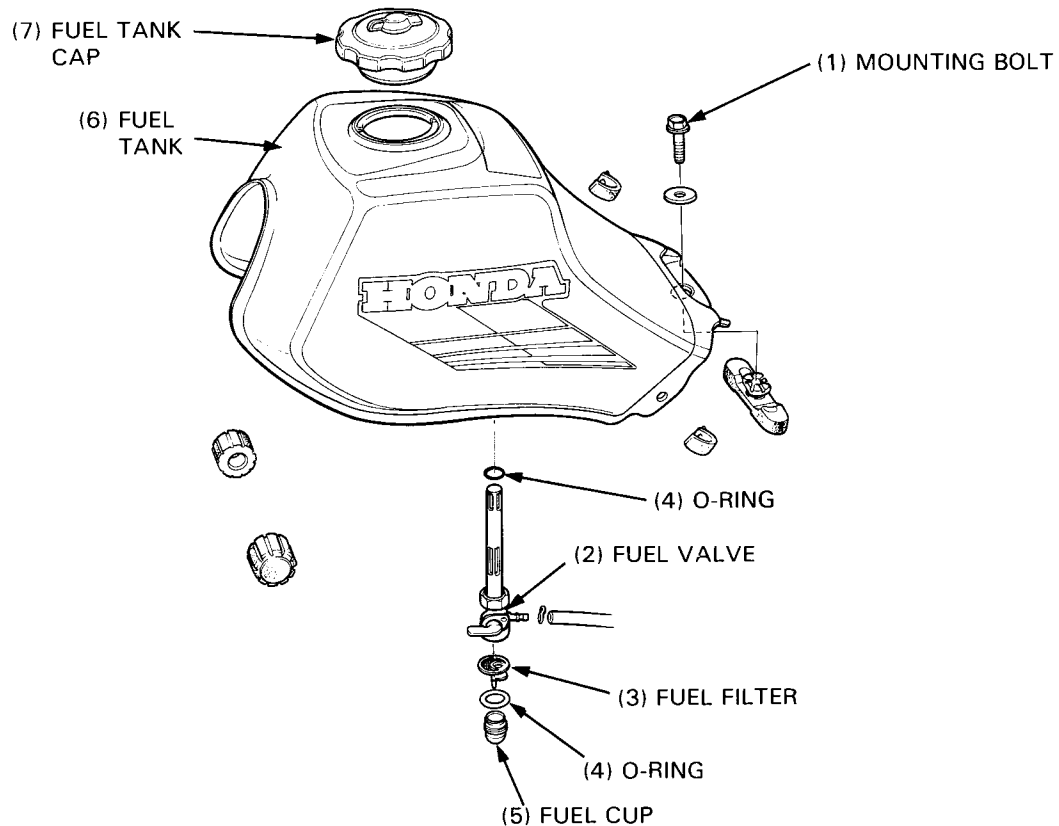
Install the fuel tank and tighten the bolt. Connect and clamp the fuel line securely. Install the seat.

NOTE

- Be sure the fuel tank front brackets are on the rubber cushions.
- After assembly, make sure there are no fuel leaks.

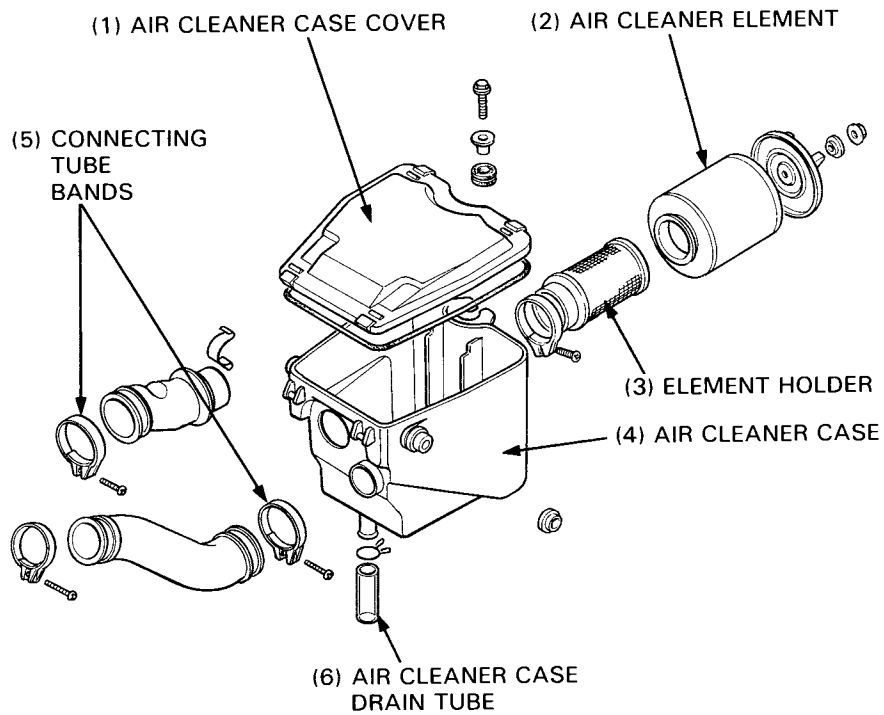


'86 Shown



AIR CLEANER CASE

- Remove the seat/rear fender and fuel tank.
- Remove the air cleaner case mounting bolt.
- Remove the battery and battery holder.
- Loosen the connecting tube bands.
- Remove the air cleaner case.
- For air cleaner element service, see Page 3-7.
- For air cleaner case drain tube service, see Page 3-8.

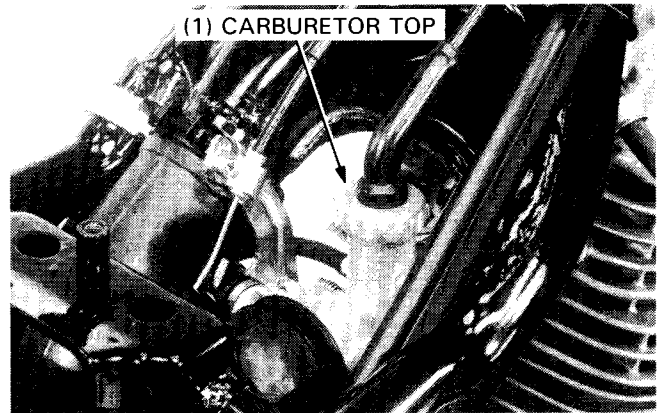


THROTTLE VALVE DISASSEMBLY

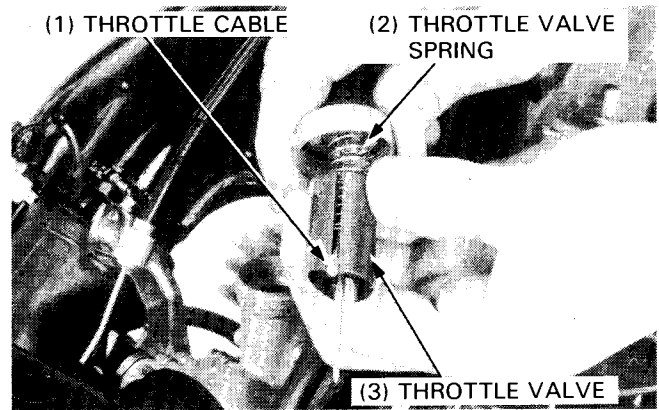
Remove the seat/rear fender and fuel tank.
Remove the carburetor top from the carburetor.

CAUTION

- *The carburetor top is an intergral part of the throttle cable assembly. The carburetor top cannot be separated from the assembly without causing damage to the cable.*
- *Never kick or twist control cables. They will not operate smoothly and may stick if they are kinked or twisted.*

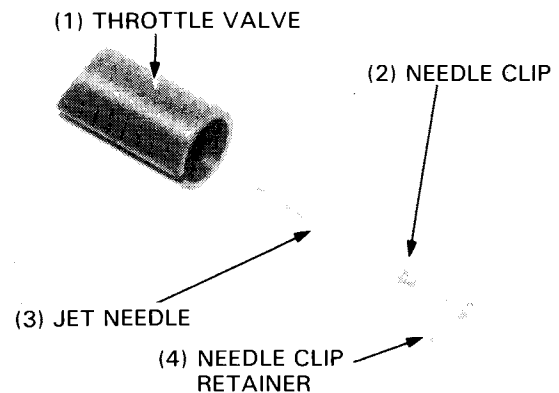


Remove the throttle cable from the throttle valve while depressing the throttle valve spring.



Remove the needle clip retainer.
Remove the jet needle and needle clip.

Inspect the throttle valve and jet needle surface for dirt, scratches or wear.

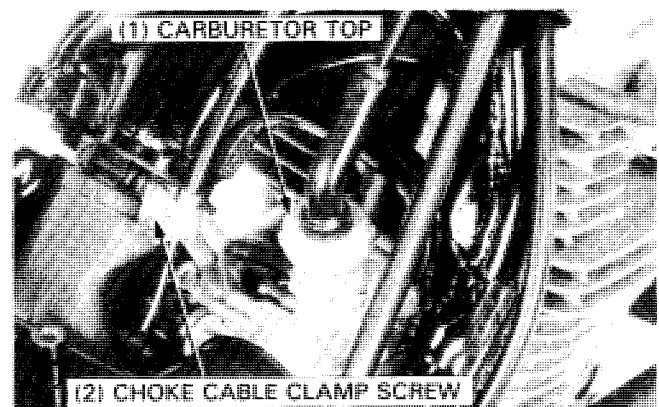


CARBURETOR REMOVAL

Turn the fuel valve OFF, disconnect the fuel line from the fuel valve and remove the fuel tank.

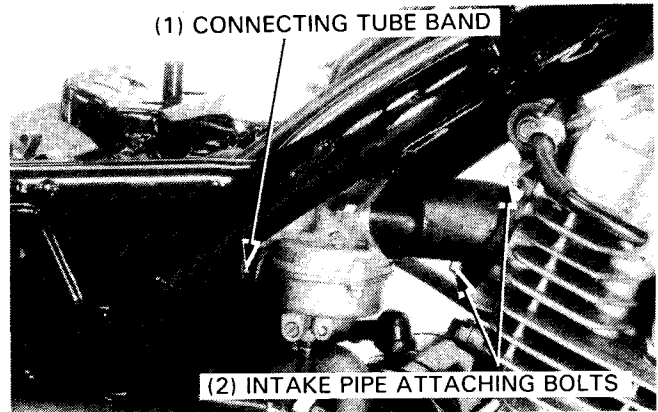
Remove the carburetor top.

Loosen the choke cable clamp screw and disconnect the choke cable from the carburetor.

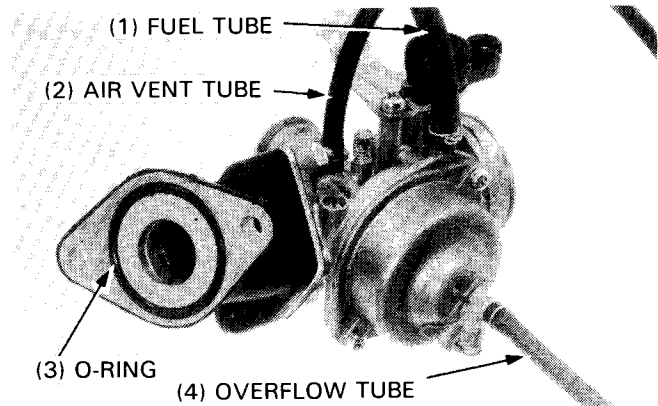


FUEL SYSTEM

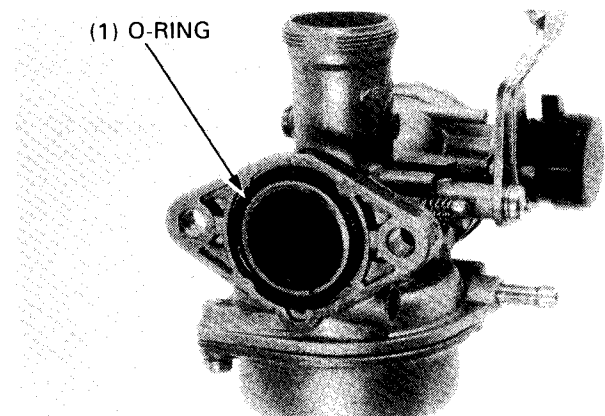
Loosen the carburetor connecting tube band.
Remove the intake pipe attaching bolts and remove the carburetor with the intake pipe.



Separate the intake pipe from the carburetor and remove the intake pipe O-ring.
Remove the air vent, overflow and fuel tubes from the carburetor.

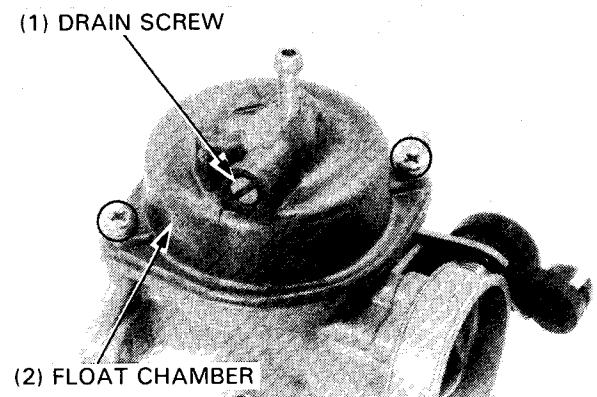


Remove the insulator plate, gasket and O-ring from the carburetor.

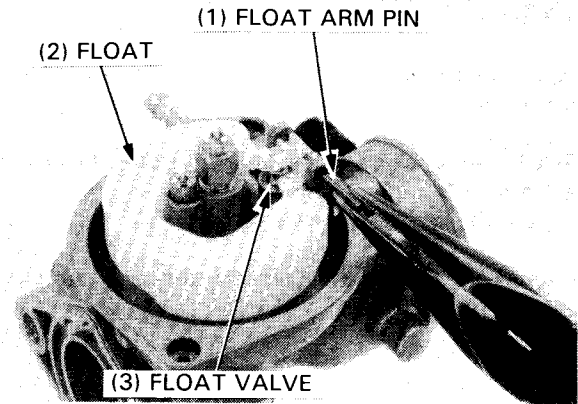


FLOAT, FLOAT VALVE AND JETS

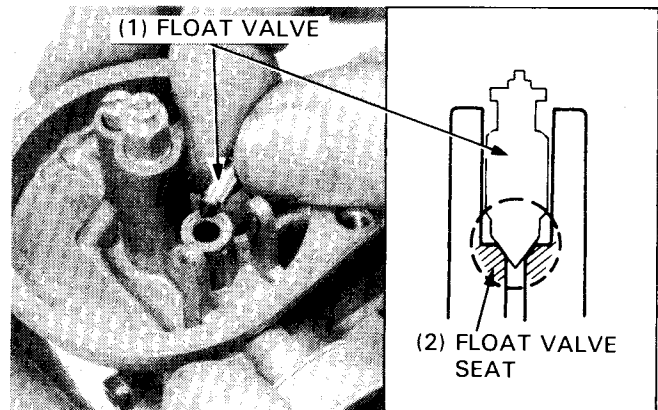
Loosen the drain screw and drain the gasoline.
Remove the float chamber by removing the screws.



Remove the float arm pin.
Remove the float and float valve.



Inspect the float valve and seat for wear or damage.



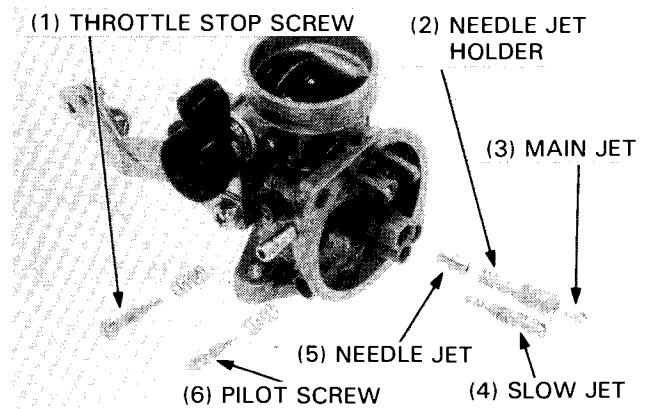
Remove the slow jet.
Remove the main jet, needle jet holder and needle jet.

Before removing the pilot screw, record the number of turns until the screw seats lightly, then remove the screw.

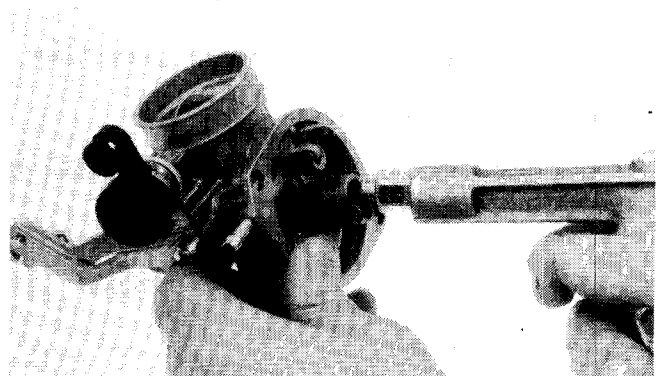
Blow open all jets and body openings with compressed air.

Inspect the pilot screw, needle jet, needle jet holder and main jet.

Check each part for wear or damage.



Clean the passages and jets with compressed air.



FUEL SYSTEM

CARBURETOR ASSEMBLY

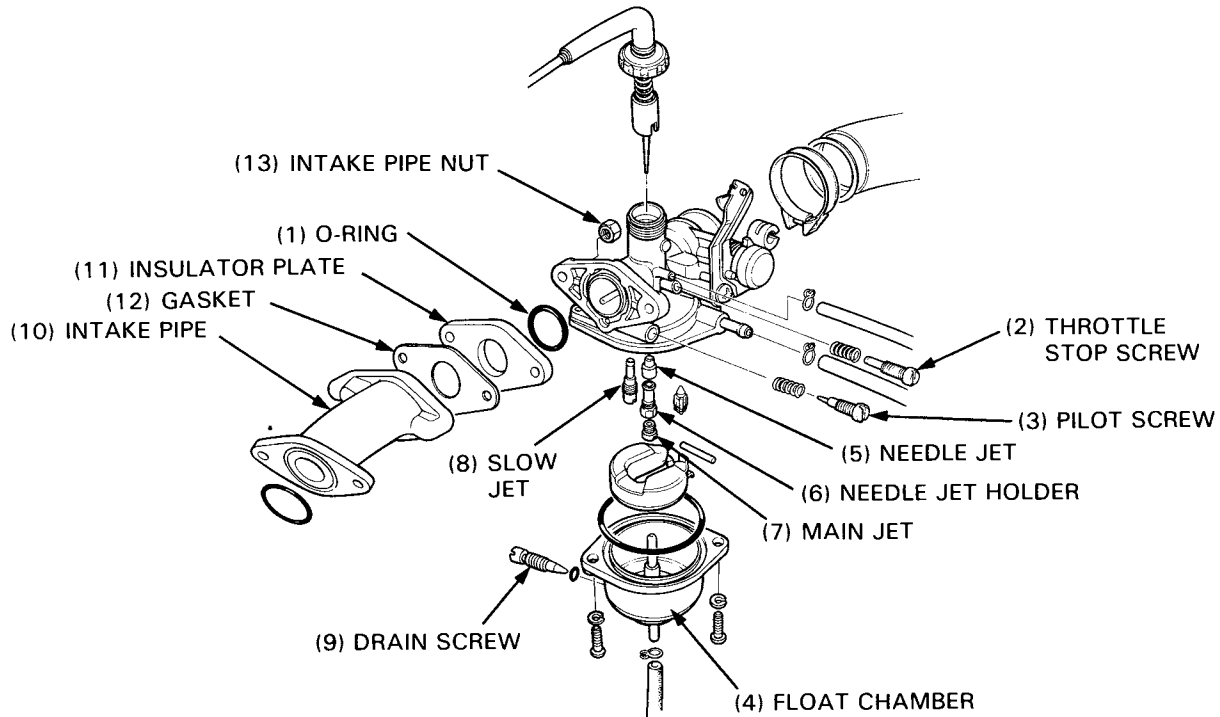
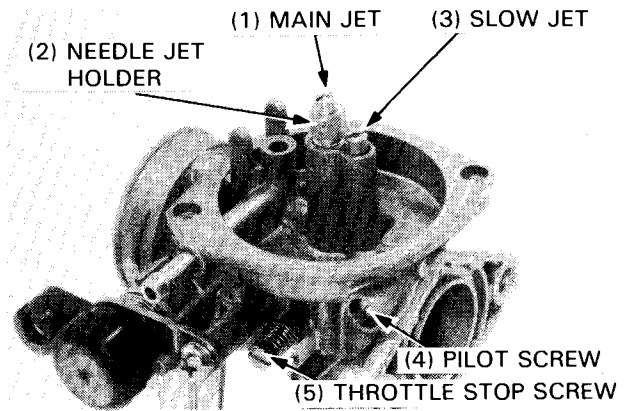
Clean all parts in high flash point solvent and blow dry with compressed air.

Install a new gasket and insulator plate onto the intake pipe, install a new O-ring onto the carburetor. Tighten the intake pipe nuts securely.

Carburetor assembly is essentially the reverse order of disassembly.

NOTE

- Handle all jets and needles with care. They can be easily scored or scratched.
- Set the pilot screw at the position recorded during disassembly.



FLOAT LEVEL MEASUREMENT

Measure the float level with a float level gauge as shown.

FLOAT LEVEL: 10.7 mm (0.42 in)

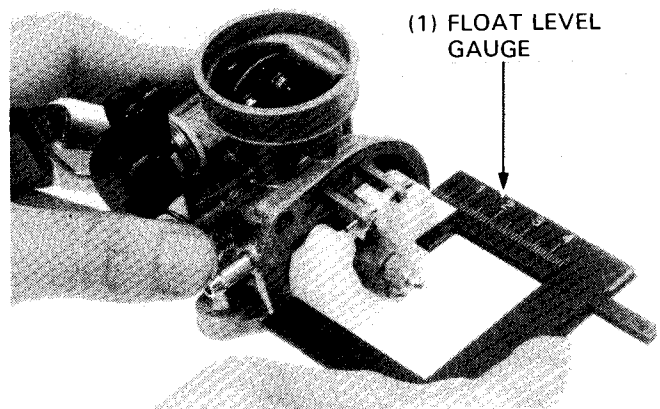
If the float level is out of specification, install a new float. The float is not adjustable.

TOOL:

Float level gauge

07401-0010000

Install the float chamber.

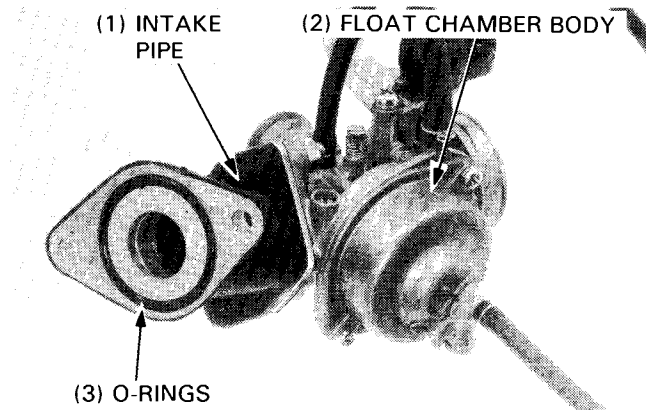


CARBURETOR INSTALLATION.

Install the air vent tube, overflow tube and fuel tube.
 Install a new O-ring onto the carburetor.
 Install the intake pipe onto the carburetor and tighten the nuts.

TORQUE: 6–9 N·m (0.6–0.9 kg·m, 4.3–6.5 ft-lb)

Install a new O-ring onto the intake pipe.



Install the carburetor and intake pipe in the reverse order of removal.

NOTE

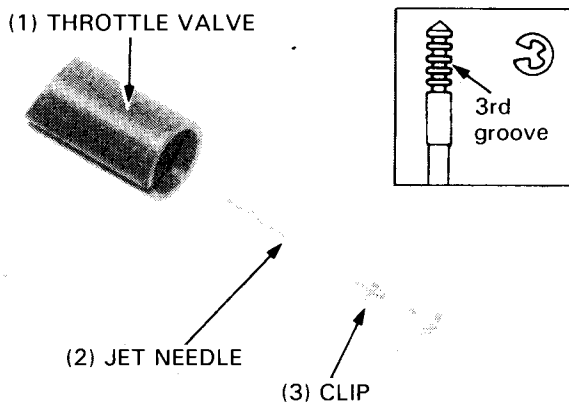
- After installing the carburetor, perform the following adjustments:
 - Throttle lever free play (Page 3-4).
 - Carburetor pilot screw adjustment (Page 4-10), if the carburetor was overhauled or cleaned.



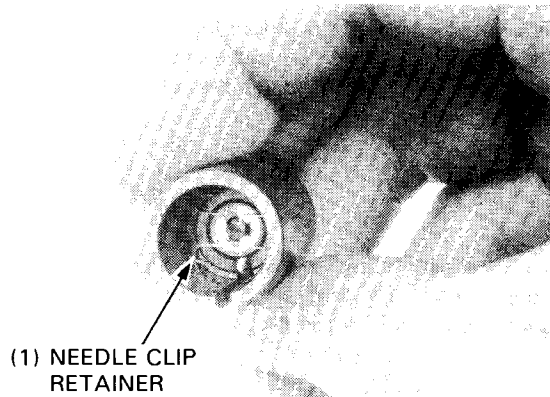
THROTTLE VALVE ASSEMBLY

Install the needle clip on the jet needle.

STANDARD SETTING: 3rd groove

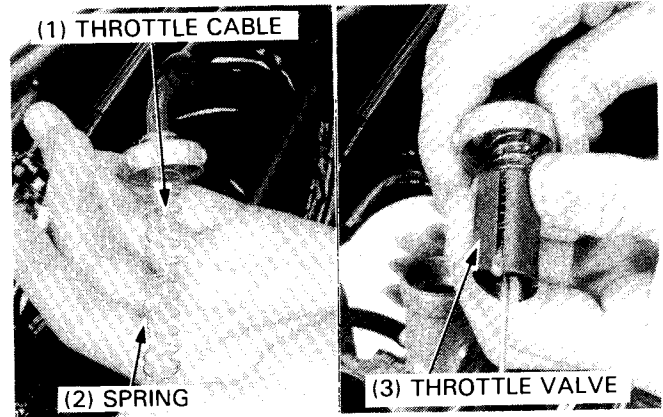


Install the jet needle into the throttle valve and secure it with the needle clip retainer.

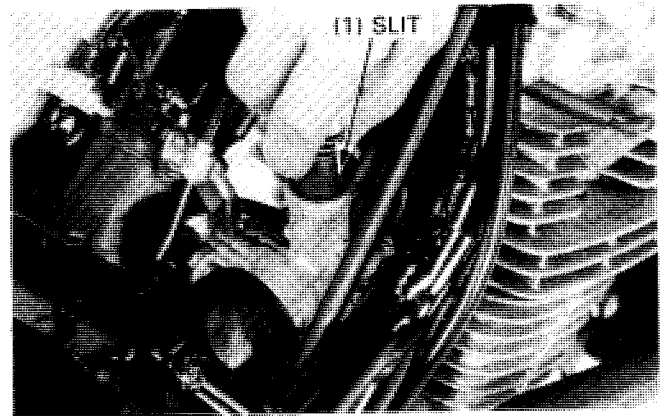


FUEL SYSTEM

Install the throttle cable, spring, and throttle valve.



Align the throttle valve slit with the pin in the carburetor body and install the carburetor top onto the carburetor. Adjust throttle lever free play (Page 3-5).



PILOT SCREW ADJUSTMENT

NOTE

- The pilot screw is factory pre-set. Adjustment is not necessary unless the carburetor is overhauled or cleaned.

CAUTION

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

Turn the pilot screw clockwise until it seats lightly and back it out 2.0 turns.

This is an initial setting prior to the final pilot screw adjustment.

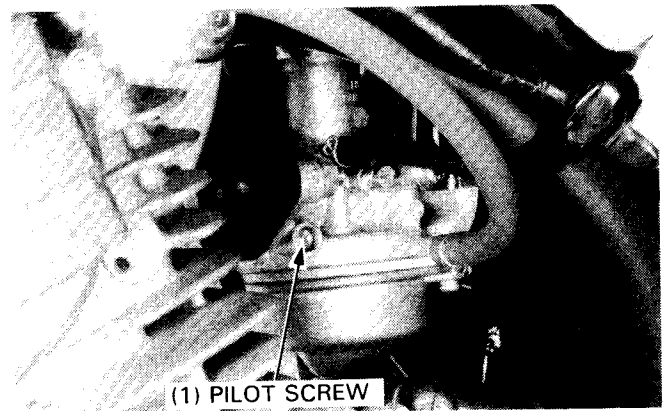
Warm the engine up to operating temperature.

Stop the engine and connect a tachometer.

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

IDLE SPEED: 1500 ± 100 rpm

Turn the pilot screw in slowly until the engine stops, and then back it out 1-1/2 turn. Start the engine and readjust the idle speed with the throttle stop screw, if necessary.



HIGH ALTITUDE ADJUSTMENT

The carburetor must be adjusted for high altitude riding (above 6,500 ft/2,000 m).

STANDARD SETTING: 6,500 ft (2,000 m) max.
HIGH ALTITUDE SETTING: 5,000 ft (1,500 m) min.

High altitude carburetor adjustment is performed as follows:

Remove and disassemble the carburetor (Page 4-5, 6 and 4-7).

Replace the standard main jet with the high altitude type (#88).

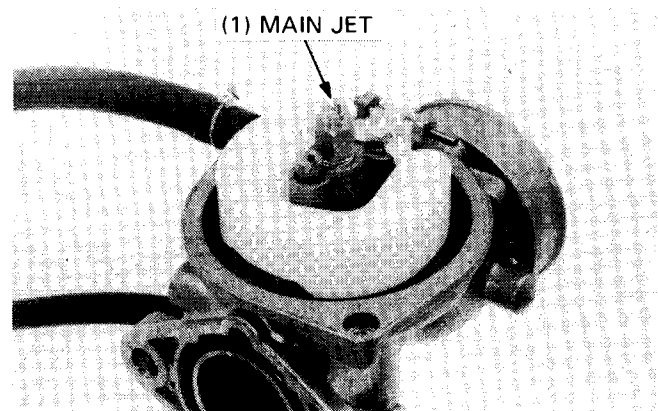
Assemble and install the carburetor.
 Start the engine and adjust the idle speed at high altitude to ensure proper high altitude operation.

CAUTION

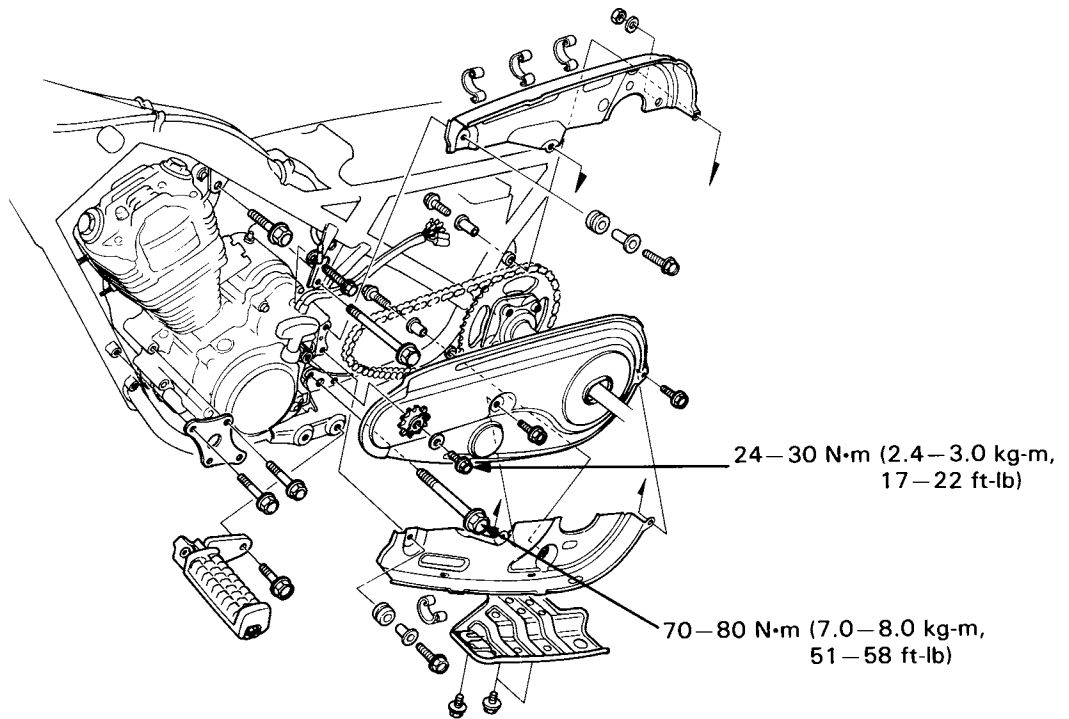
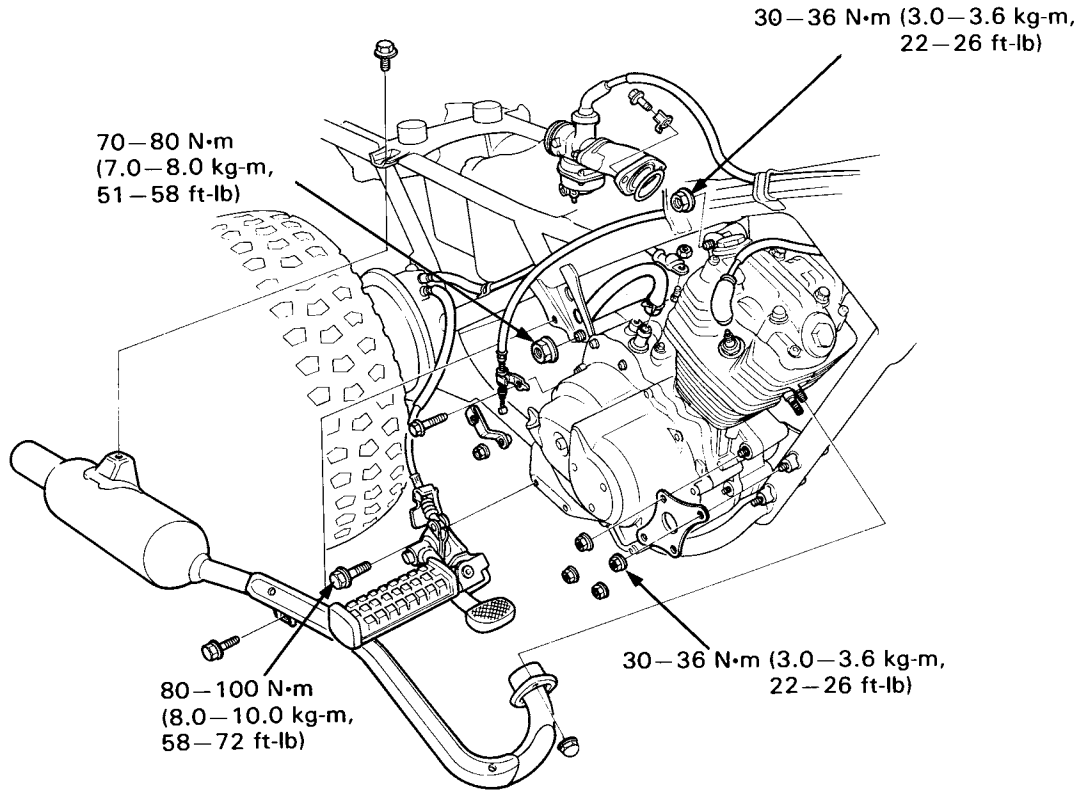
- Sustained operation below, 5,000 feet (1,500 m) with the high altitude settings may cause engine overheating and damage. Install the #95 main jet, when riding below 5,000 feet (1,500 m).

SPECIFICATIONS

	Below 6,500 ft (2,000 m)	Above 5,000 ft (1,500 m)
Main jet	No. 95	No. 88
Pilot screw opening	Factory preset	Screw in 1/4 turn
Jet needle	3rd	3rd



ENGINE REMOVAL/INSTALLATION



5. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION
ENGINE REMOVAL

5-1 ENGINE INSTALLATION
5-2

5-4

SERVICE INFORMATION

GENERAL

- The following parts or components can be serviced with the engine installed in the frame:
 - Carburetor Section 4
 - Oil pump Section 2
 - Alternator Section 9
 - Starter motor Section 14
 - Clutch Section 8
 - Gear shift linkage Section 8

SPECIFICATIONS

Engine dry weight 30.9 kg (68.1 lb)
Engine oil capacity 1.5 lit (1.6 US qt, 1.3 Imp qt) after disassembly
1.3 lit (1.4 US qt, 1.1 Imp qt) after draining

TORQUE VALUES

Engine hanger bolt 8 mm 30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)
10 mm 70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)
Footpeg bolt 80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Drive sprocket bolt 24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

ENGINE REMOVAL/INSTALLATION

ENGINE REMOVAL

Remove the seat/rear fender.

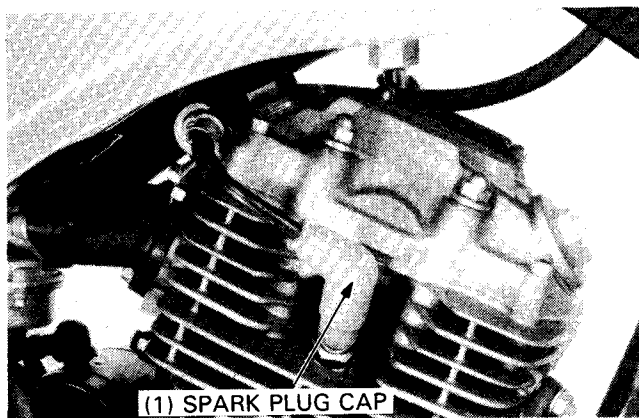
Turn the fuel valve OFF, disconnect the fuel line and remove the fuel tank (Page 4-3).

Disconnect the spark plug cap from the spark plug and remove the ignition coil from the frame.

Drain the engine oil (Page 2-2).

Disconnect the battery negative cable at the battery.

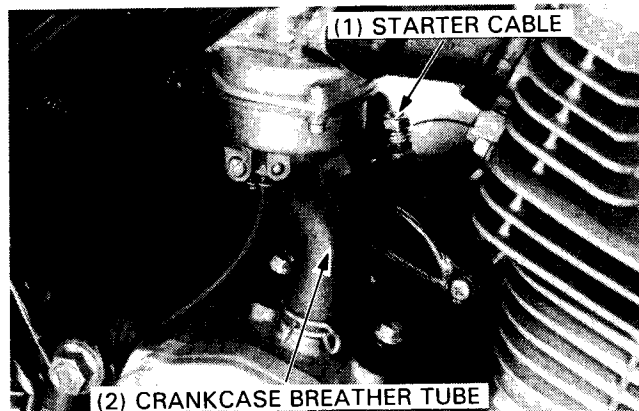
Remove the exhaust muffler (Page 13-2).



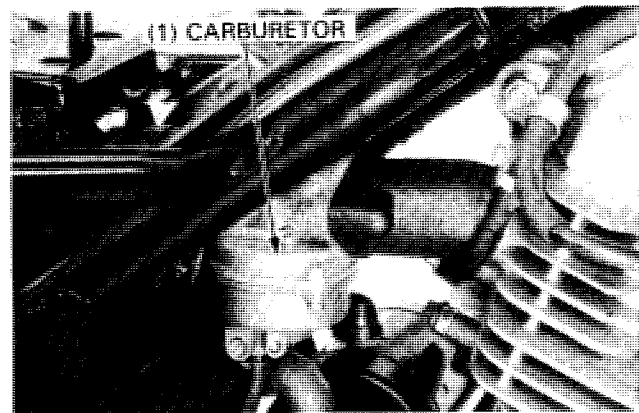
Disconnect the starter cable at the starter motor.

Disconnect the crankcase breather tube from the crankcase.

Remove the battery ground cable.

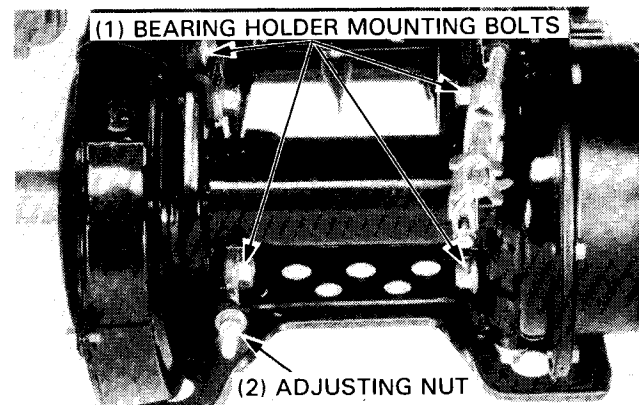


Remove the carburetor (Page 4-5).

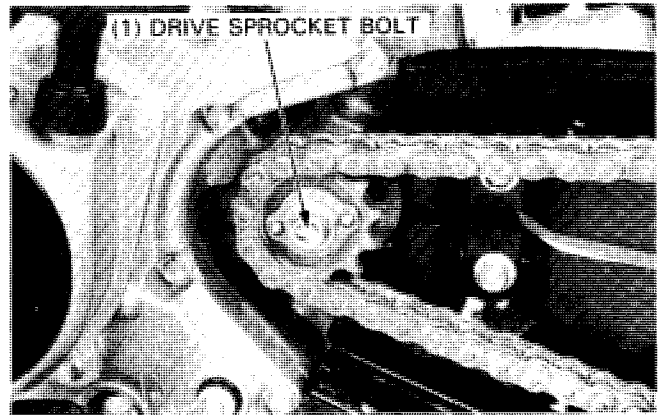


Loosen the rear bearing holder mounting bolts and drive chain adjusting nut.

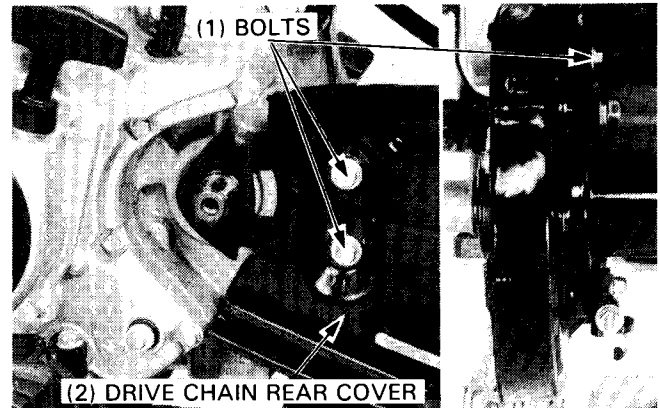
Remove the skid plate by removing its three mounting screws.



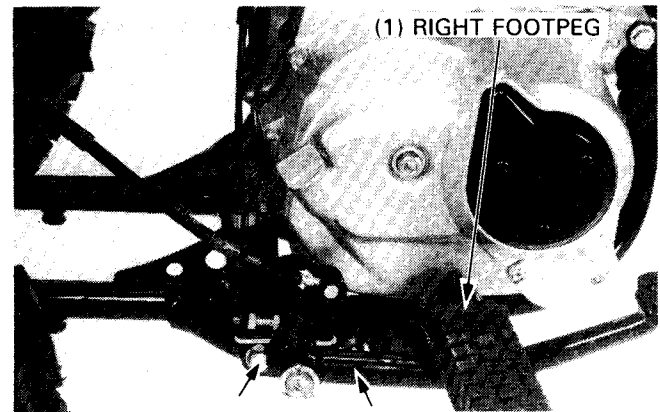
Remove the drive sprocket bolt and drive sprocket.



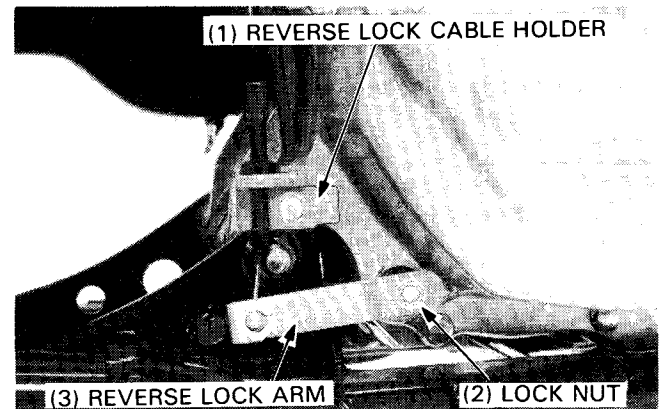
Remove the upper and lower drive chain rear cover by removing four mounting bolts.



Remove the right footpeg mounting bolts and footpeg.



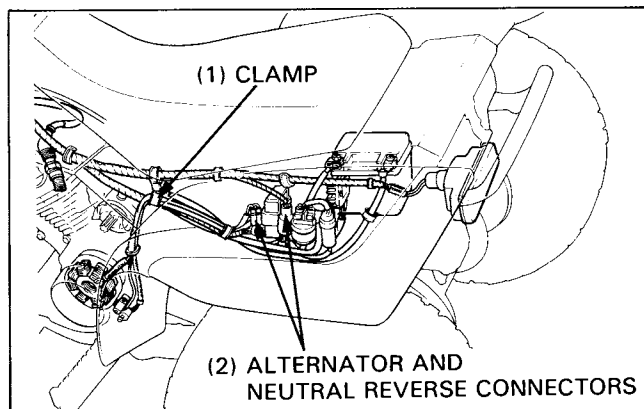
Remove the lock nut, reverse lock arm and reverse lock cable holder bolt.



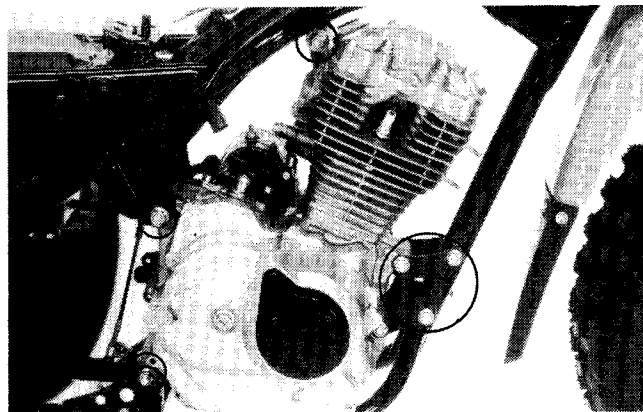
ENGINE REMOVAL/INSTALLATION

Remove the junction box cover.

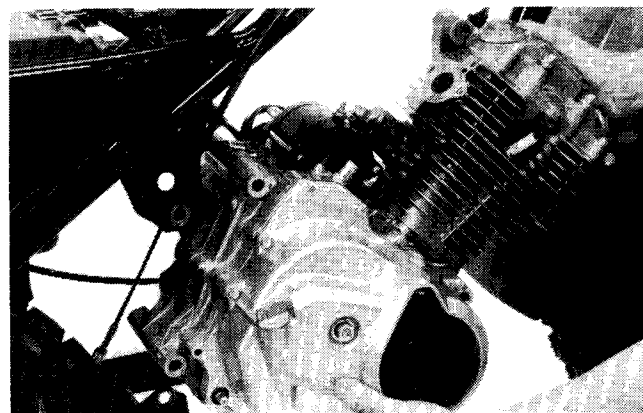
Remove the wire harness from the clamp on the frame, disconnect the alternator connectors and neutral/reverse switch connectors.



Remove the 8 mm and 10 mm engine hanger bolts, nuts and front brackets.



Remove the engine from the right side of the frame.

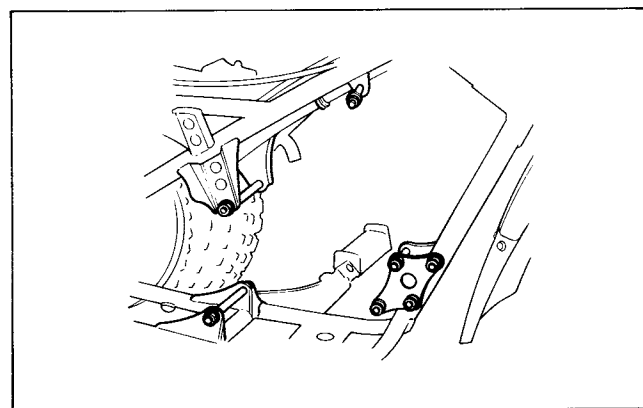


ENGINE INSTALLATION

Install the engine in the reverse order of removal.

NOTE

- Be sure to use the correct bolts in the proper position.
- Tighten the engine hanger bolts after they are all installed loosely.



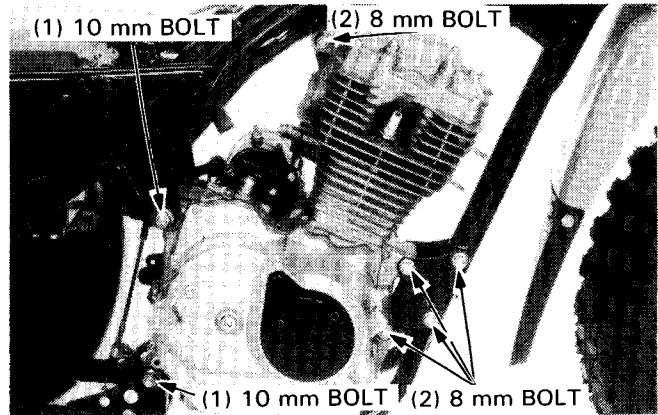
TORQUE:

10 mm hanger bolts:

70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)

8 mm hanger bolts:

30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)

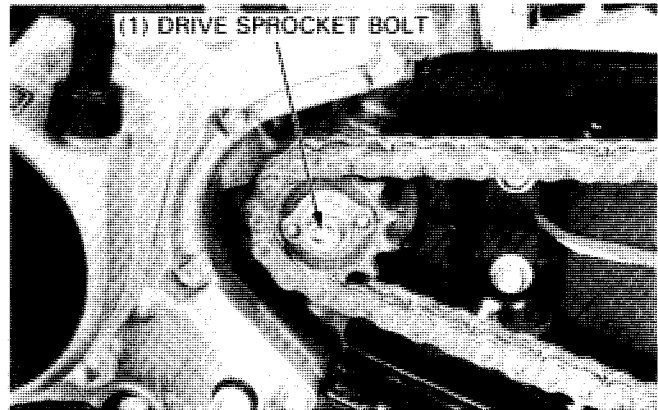


Drive sprocket bolt:

24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

Footpeg bolts:

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



NOTE

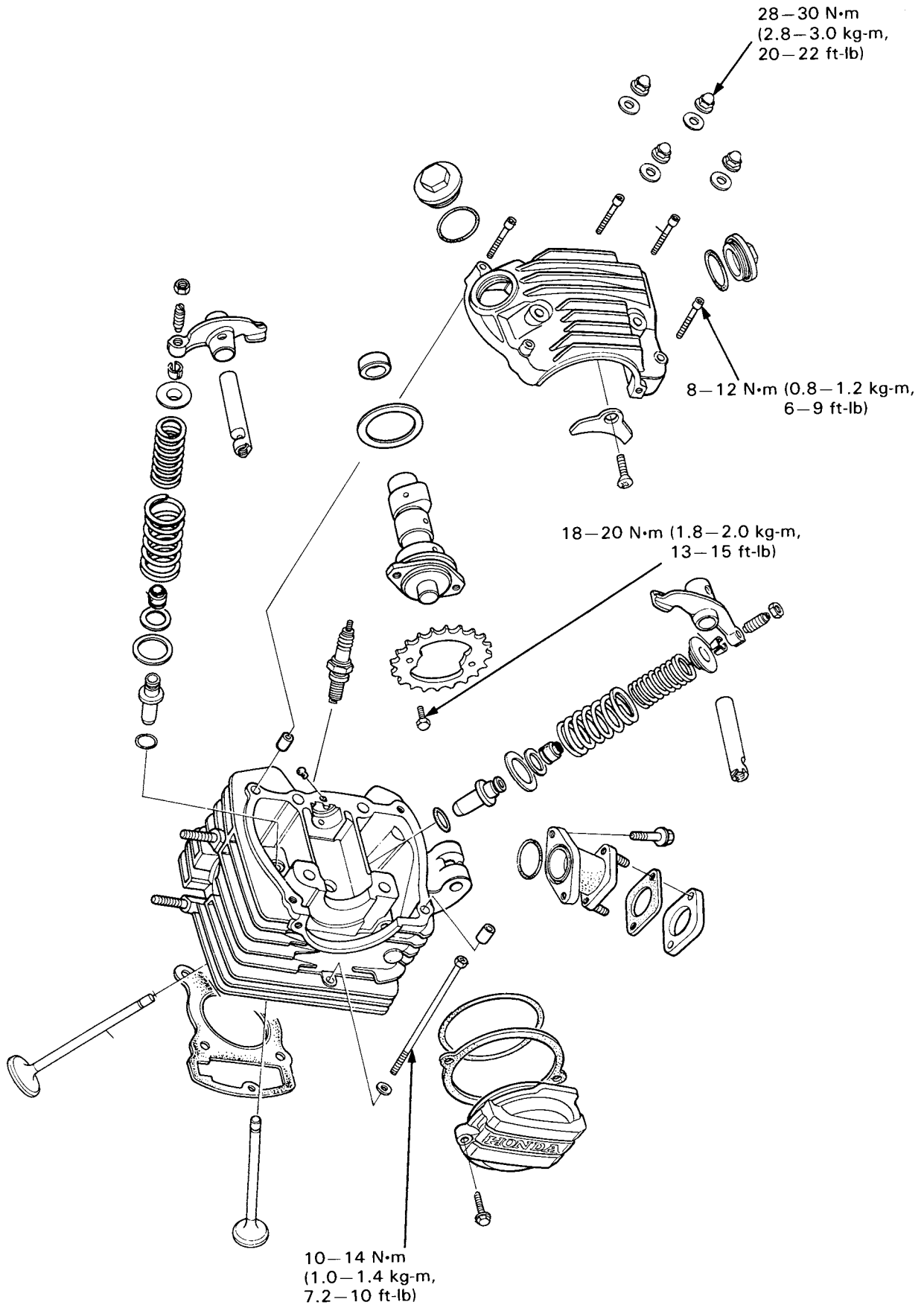
After installing the engine, perform the following inspections and adjustments:

- Engine oil level (Page 2-1).
- Throttle lever free play (Page 3-5).
- Drive chain slack (Page 3-9).
- Check that exhaust gas is not leaking.
- Check the electrical equipment performance.
- Route the wire and cable properly (Page 1-9).

WARNING

- *Connect the neutral (Light green/Red) and reverse (Gray) switch properly. If the switch wire connections are interchanged, the neutral indicator come on in the transmission in reverse and the ATC will reverse suddenly.*

CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER



6. CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER

SERVICE INFORMATION	6-1	CYLINDER HEAD DISASSEMBLY	6-7
TROUBLESHOOTING	6-2	VALVE SEAT INSPECTION/REFACING	6-9
CAMSHAFT REMOVAL	6-3	CYLINDER HEAD ASSEMBLY	6-11
CAMSHAFT INSTALLATION	6-4	CYLINDER HEAD INSTALLATION	6-12
CAM CHAIN TENSIONER	6-4	CYLINDER HEAD COVER ASSEMBLY/ INSTALLATION	6-12
CYLINDER HEAD COVER REMOVAL	6-5		
CYLINDER HEAD REMOVAL	6-7		

SERVICE INFORMATION

6

GENERAL

- This section covers cylinder head, valves, camshaft, rocker arms and cam chain tensioner maintenance.
- The engine must be removed from the frame to service cylinder head cover, rocker arms and cylinder head. To remove the camshaft, engine removal is not required.
- Camshaft lubrication oil is fed to the cylinder head through an oil control orifice in the engine case. Be sure this orifice is not clogged and that the O-rings and dowel pins are in place before installing the cylinder head.
- Before assembly, apply molybdenum disulfide grease to the camshaft bearings to provide initial lubrication. Pour clean engine oil into the oil pockets in the cylinder head during assembly to lubricate the cam lobes.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Cylinder compression		13.3 ± 1.0 kg/cm ² (189 ± 14.2 psi, 1,330 ± 100 kPa)	—
Camshaft journal O.D.	Right	19.967–19.980 mm (0.7865–0.7866 in)	19.90 mm (0.783 in)
	Left	33.959–33.975 mm (1.3396–1.3376 in)	33.90 mm (1.335 in)
Cam lobe height	IN	31.083–31.243 mm (1.2237–1.2300 in)	30.98 mm (1.220 in)
	EX	30.681–30.841 mm (1.2079–1.2142 in)	30.58 mm (1.204 in)
Rocker arm I.D.		12.000–12.027 mm (0.4724–0.4735 in)	12.05 mm (0.474 in)
Rocker arm shaft O.D.		11.977–11.995 mm (0.4715–0.4722 in)	11.93 mm (0.470 in)
Rocker arm shaft clearance		—	0.08 mm (0.003 in)
Cylinder head warpage		—	0.10 mm (0.004 in)
Valve spring free length	IN	39.4 mm (1.55 in)	35.5 mm (1.39 in)
	OUT	45.5 mm (1.79 in)	41.0 mm (1.61 in)
Valve stem O.D.	IN	5.450–5.465 mm (0.2146–0.2152 in)	5.42 mm (0.213 in)
	EX	5.430–5.445 mm (0.2138–0.2144 in)	5.40 mm (0.212 in)
Valve guide I.D.	IN/EX	5.475–5.485 mm (0.2156–0.2159 in)	5.50 mm (0.217 in)
Stem-to-guide clearance	IN	0.010–0.035 mm (0.0004–0.0014 in)	0.08 mm (0.003 in)
	EX	0.030–0.055 mm (0.0012–0.0022 in)	0.10 mm (0.004 in)
Valve face width	IN/EX	1.2–1.5 mm (0.05–0.06 in)	1.8 mm (0.07 in)
Valve seat width	IN	1.2 mm (0.05 in)	1.5 mm (0.06 in)
	EX	1.5 mm (0.06 in)	1.8 mm (0.07 in)
Camshaft bearing I.D. (left side)		34.000–34.025 mm (1.3386–1.3396 in)	34.05 mm (1.341 in)
Camshaft bushing I.D. (right side)		20.005–20.026 mm (0.7876–0.7884 in)	20.05 mm (0.789 in)
Camshaft-to-bearing clearance		0.025–0.064 mm (0.0009–0.0025 in)	0.15 mm (0.006 in)
Camshaft-to-bushing clearance		0.025–0.059 mm (0.0009–0.0023 in)	0.15 mm (0.006 in)

CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER

TORQUE VALUES

Cylinder head cap nut	28–30 N·m (2.8–3.0 kg-m, 20–22 ft-lb)
6 mm socket bolt	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Cylinder head bolt	10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Cam sprocket bolt	18–20 N·m (1.8–2.0 kg-m, 13–15 ft-lb)

TOOLS

Special

Valve guide reamer, 5.48 mm 07984–0980000 or 07984–098000A (U.S.A. only)

Common

Valve guide driver, 5.5 mm 07742–0010100 (or 07942–3290100)
Valve spring compressor 07757–0010000 (or 07957–3290001)
Cutter holder, 5.5 mm 07781–0010101 or Equivalent commercially available in U.S.A.
Valve seat cutter Equivalent commercially available in U.S.A.

TROUBLESHOOTING

Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test, or by tracing engine noises to the top end with a sounding rod or stethoscope.

Low compression

- Valve
 - Incorrect valve adjustment
 - Worn or damaged valve seats
 - Burned or bent valve
 - Incorrect valve timing
 - Weak valve spring
- Cylinder head
 - Leaking or damaged head gasket
 - Warped or cracked cylinder head
- Faulty cylinder piston (Section 7)

Excessive noise

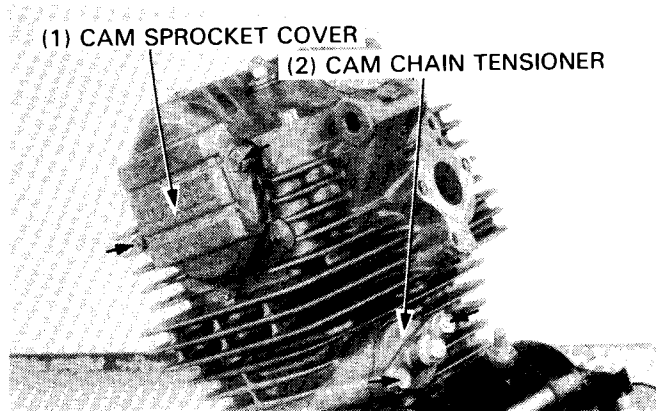
- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Damaged or worn rocker arm or camshaft
- Worn or damaged cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth

Excessive smoke

- Damaged valve stem seal
- Faulty cylinder or piston rings (Section 7)

CAMSHAFT REMOVAL

Remove the cam sprocket cover.
Remove the cam chain tensioner by removing the two bolts.

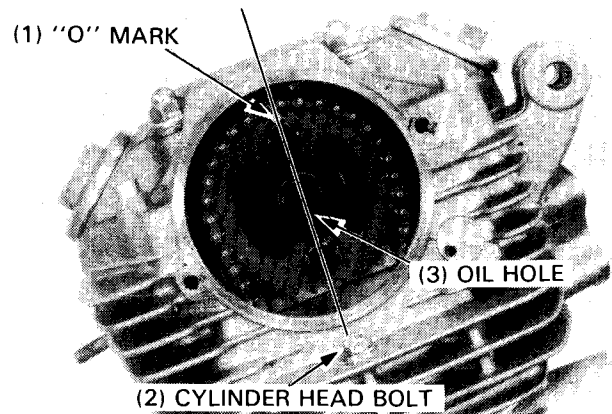


Remove the valve adjusting hole covers and loosen the valve adjuster screws.
Turn the crankshaft with recoil starter until the cam sprocket "O" mark and cylinder head bolt align.

NOTE

- The camshaft oil hole should be facing down.

Remove the cam sprocket bolts, sprocket with the cam chain from the camshaft.
Remove the cam chain from the cam sprocket.
Suspend the cam chain with a piece of wire to prevent it from falling into the crankcase.
Remove the camshaft.

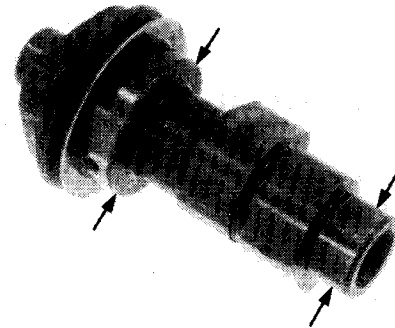


CAMSHAFT INSPECTION

Measure the camshaft journal O.D.

SERVICE LIMITS:

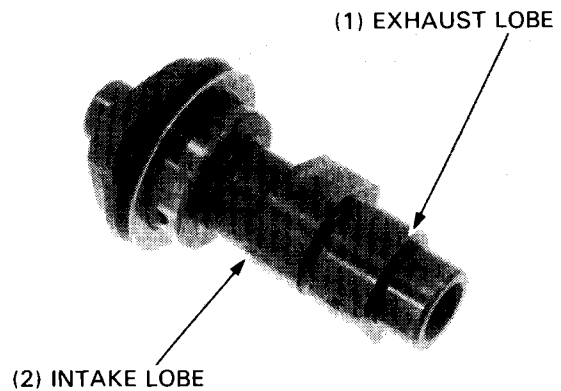
- R: 19.90 mm (0.783 in)
- L: 33.90 mm (1.335 in)



Measure the maximum height of the cam lobes and inspect them for wear or damage.

SERVICE LIMITS:

- IN: 30.98 mm (1.220 in)
- EX: 30.58 mm (1.204 in)



CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER

CAMSHAFT BEARING AND BUSHING I.D. INSPECTION

Measure the camshaft bushing I.D.

SERVICE LIMIT: 20.05 mm (0.789 in)

Calculate the camshaft bushing-to-camshaft clearance.

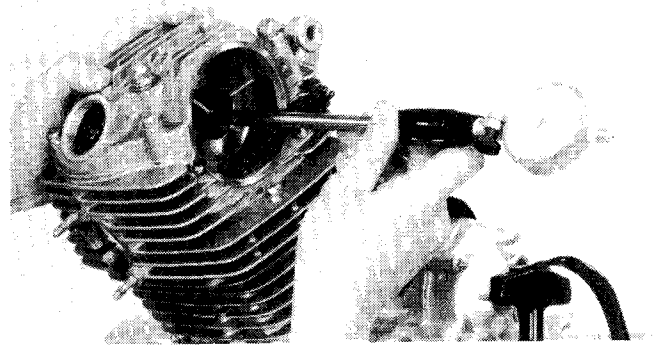
SERVICE LIMIT: 0.15 mm (0.006 in)

Measure the bearing I.D.

SERVICE LIMIT: 34.05 mm (1.341 in)

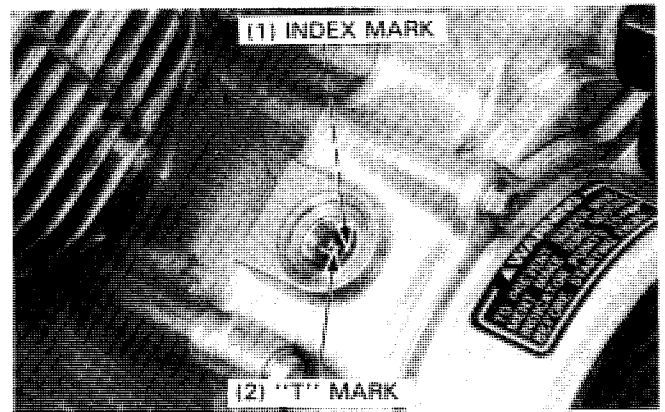
Calculate the camshaft-to-bearing clearance.

SERVICE LIMIT: 0.15 mm (0.006 in)



CAMSHAFT INSTALLATION

Align the "T" mark on the flywheel with the index mark on the alternator cover by turning the flywheel clockwise.



Install the camshaft and position it so that both cam lobes are facing down.

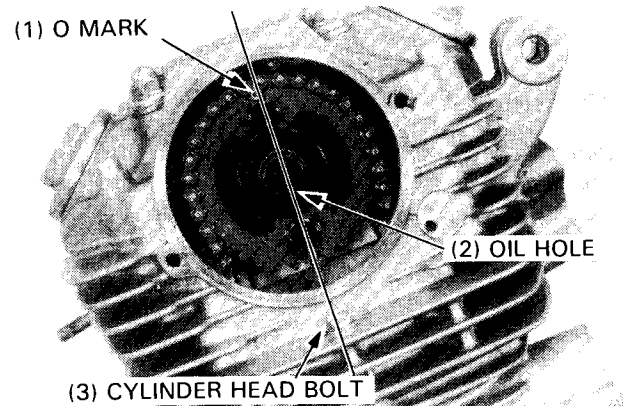
NOTE

- Camshaft oil hole should face down also.

Position the cam sprocket with cam chain so that its "O" mark aligns with the cylinder head bolt.
Torque the cam sprocket bolts.

TORQUE: 18–20 N·m (1.8–2.0 kg·m, 13–15 ft·lb)

Adjust the valve clearance.
Install the valve adjusting hole covers.
Install the cam sprocket cover and tighten the bolts.



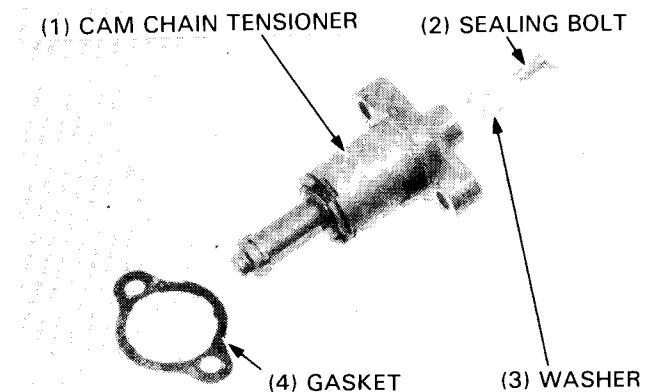
CAM CHAIN TENSIONER

REMOVAL

Remove the two tensioner mounting bolts and pull the tensioner out of the cylinder.

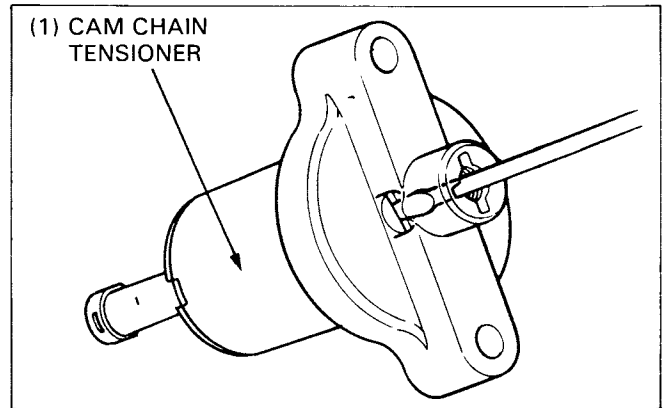
INSTALLATION

Remove the sealing bolt and gasket.

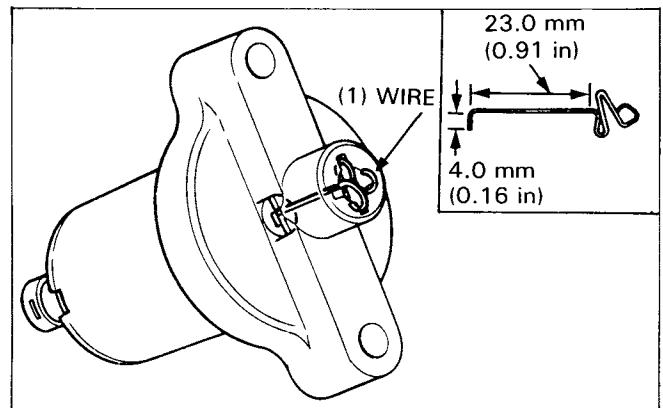


CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER

Screw in the tensioner shaft all the way through the hole in the tensioner head.



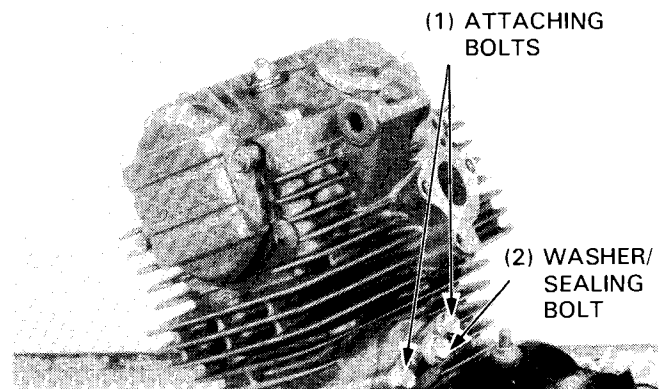
Wedge the tensioner shaft with a piece of wire or plate as shown to hold the tensioner.



Install the cam chain tensioner with a new gasket into the cylinder head.

Tighten the attaching bolts.

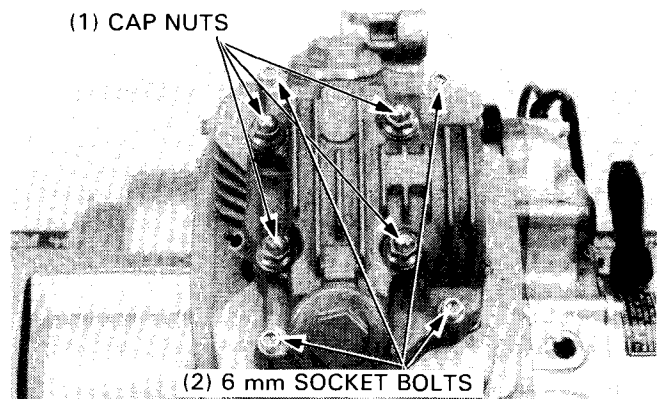
Remove the piece of wire and install a new washer and the sealing bolt.



CYLINDER HEAD COVER REMOVAL

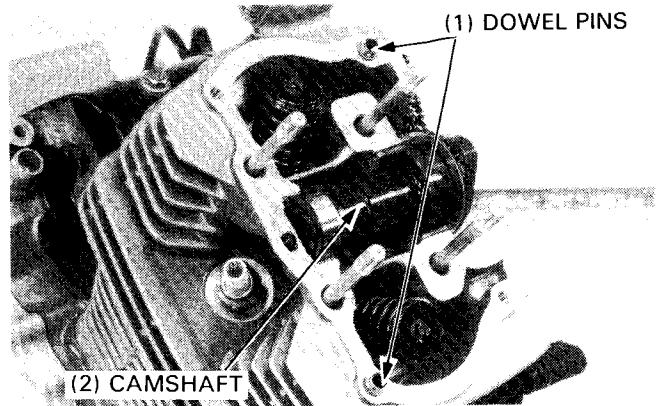
Remove the following:

- engine from the frame (Section 5)
- cam chain tensioner from the cylinder head
- cam sprocket
- cylinder head cover 6 mm socket bolts and cap nuts
- cylinder head cover

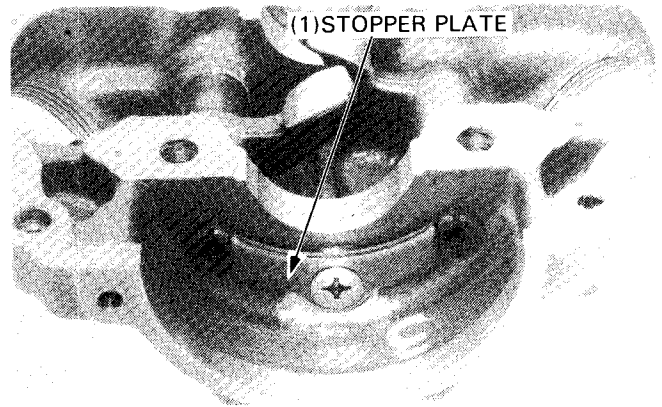


CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER

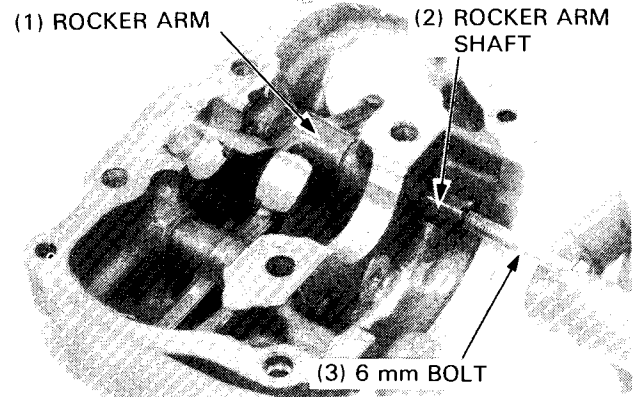
Remove the dowel pins and camshaft.



Remove the rocker arm shaft stopper plate from the head cover.



Screw a 6 mm bolt into the rocker arm shaft threaded end. Pull on the bolt to remove the shafts and rocker arms.



ROCKER ARM INSPECTION

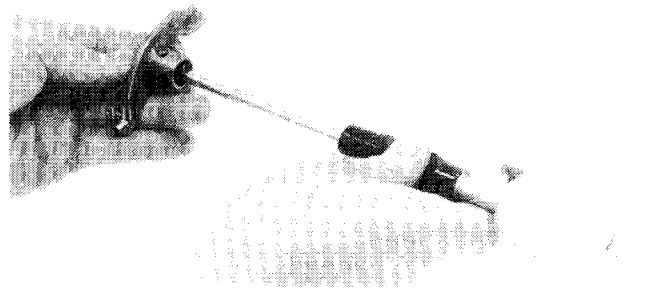
Inspect the rocker arms for damage, wear or clogged oil holes.

NOTE

- If either rocker arm requires servicing or replacement, inspect the cam lobes for scoring, chipping or flat spots.

Measure the I.D. of each rocker arm.

SERVICE LIMIT: 12.05 mm (0.474 in)



ROCKER ARM SHAFT INSPECTION

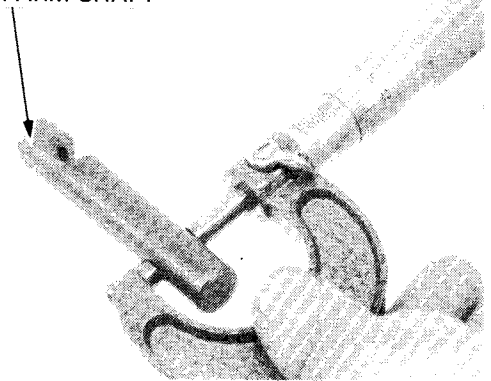
Inspect the rocker arm shafts for wear or damage.
Measure the O.D. with a micrometer.

SERVICE LIMIT: 11.93 mm (0.470 in)

Calculate the rocker arm-to-shaft clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)

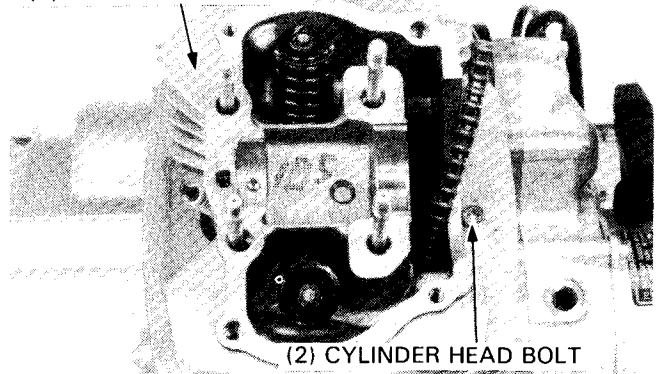
(1) ROCKER ARM SHAFT



CYLINDER HEAD REMOVAL

Remove the cylinder head cover.
Remove the cylinder head bolt and the cylinder head.

(1) CYLINDER HEAD



CYLINDER HEAD DISASSEMBLY

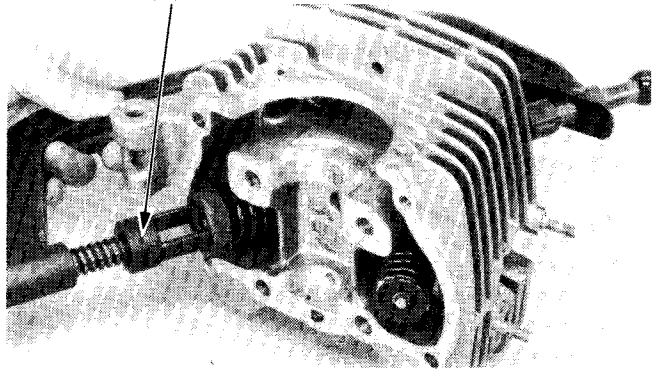
Remove the valve cotters, spring retainers and valve springs with a valve spring compressor.

TOOL:

Valve spring compressor

07757-0010000
or 07957-3290001

(1) VALVE SPRING COMPRESSOR

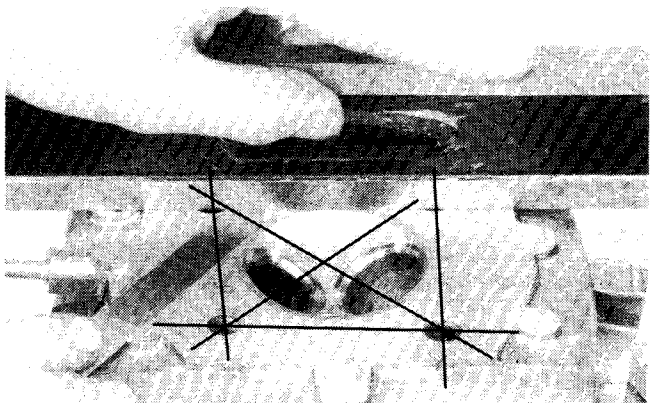


CYLINDER HEAD INSPECTION

Remove carbon deposits from the combustion chamber.
Clean off any gasket material from the cylinder head surface.

Check the spark plug hole and valve area for cracks.
Check the cylinder head diagonally for warpage with a straight edge and feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)



CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER

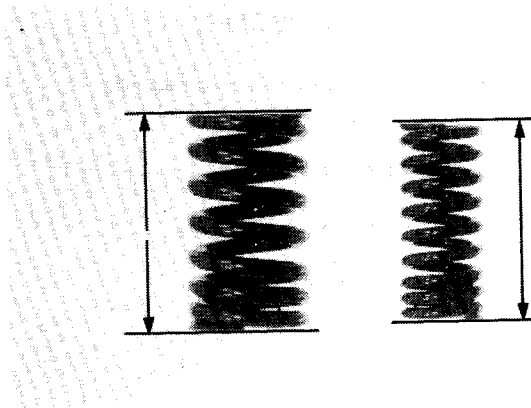
VALVE SPRING INSPECTION

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

SERVICE LIMIT:

INNER: 35.5 mm (1.39 in)

OUTER: 41.0 mm (1.61 in)



VALVE/VALVE GUIDE INSPECTION

Inspect each valve for trueness, burning, scratches or abnormal stem wear.

Check the valve movement in the guide.

Measure and record each valve stem O.D.

SERVICE LIMIT:

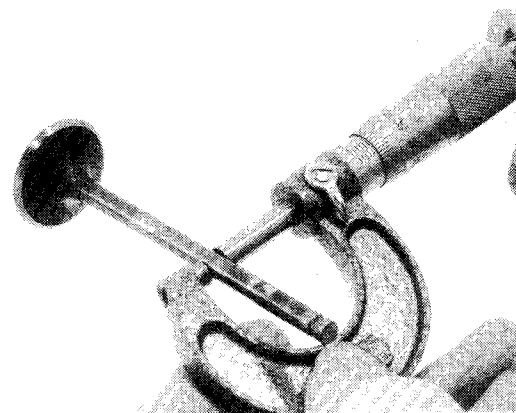
IN: 5.42 mm (0.213 in)

EX: 5.40 mm (0.212 in)

Measure and record the valve guide I.D.

NOTE

- Ream the guides to remove any carbon build up before checking the valve guide I.D.



SERVICE LIMIT:

IN/EX: 5.50 mm (0.217 in)

Calculate the stem-to-guide clearance.

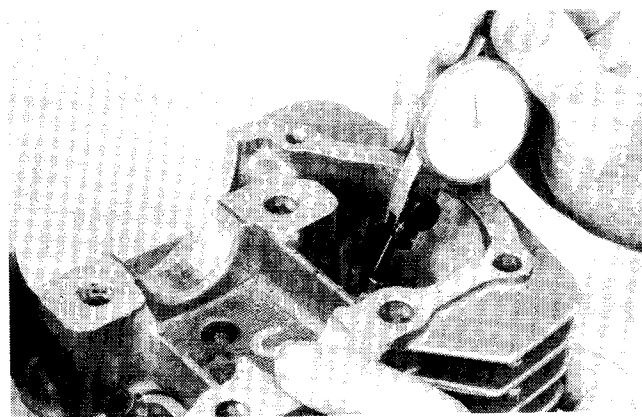
SERVICE LIMIT:

IN: 0.08 mm (0.003 in)

EX: 0.10 mm (0.004 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.
- If the valve guide is replaced, the valve seat must be refaced.



VALVE GUIDE REPLACEMENT

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

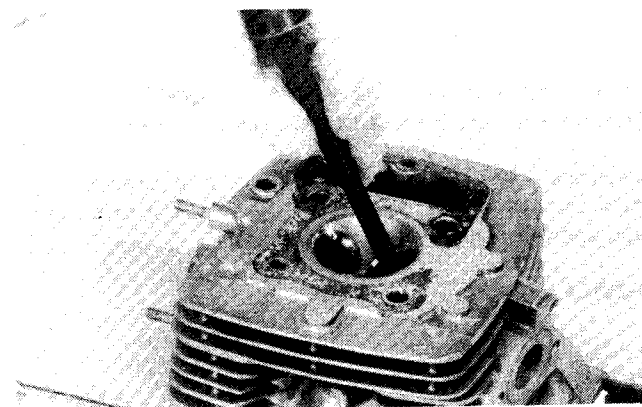
CAUTION

- *When driving out the guide, do not damage the cylinder head.*

TOOL:

Valve guide driver, 5.5 mm

07742-0010100
or 07942-3290100



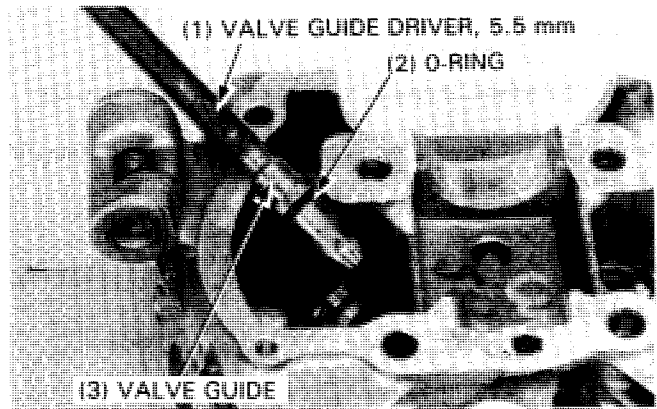
Install an O-ring on the new valve guide and drive it in the guide from the top of the head.

NOTE

- Inspect the valve guide for damage.

TOOL:

Valve guide driver, 5.5 mm 07742-0010100
 or 07942-3290100



Ream the new valve guide after installation.

NOTE

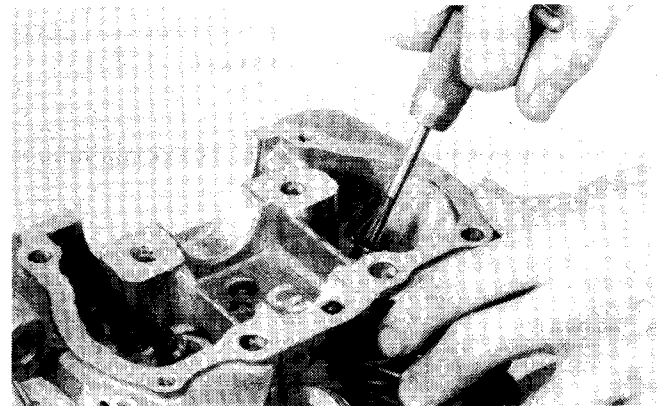
- Use cutting oil on the reamer during this operation
- Always rotate the reamer in the same direction.

Clean the cylinder head thoroughly to remove any metal particles.

Reface the valve seat.

TOOL:

Valve guide reamer, 5.48 mm 07984-0980000 or
 07984-098000A
 (U.S.A. only)



VALVE SEAT INSPECTION/REFACING

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 hand-lapping tool.

Remove and inspect each valve.

STANDARD:

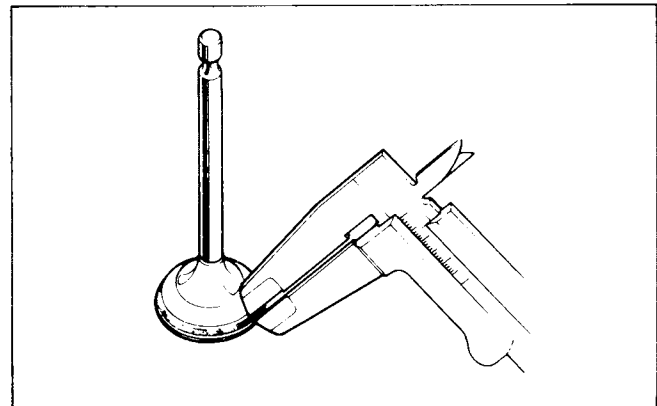
IN/EX: 1.2 – 1.5 mm (0.05 – 0.06 in)

SERVICE LIMIT:

IN/EX: 1.8 mm (0.07 in)

CAUTION

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



Inspect each valve seat.

STANDARD:

IN 1.2 mm (0.05 in)

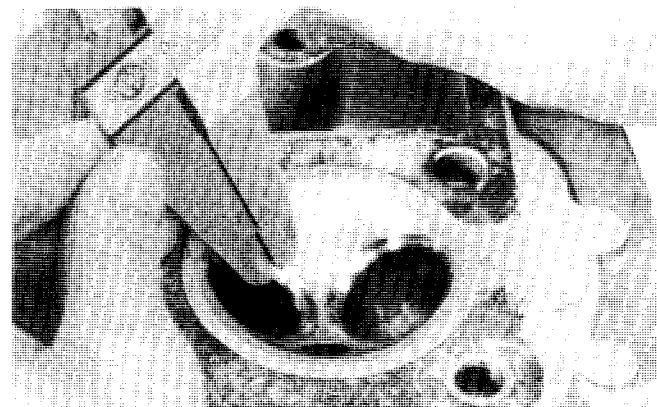
EX 1.5 mm (0.06 in)

SERVICE LIMIT:

IN 1.5 mm (0.06 in)

EX 1.8 mm (0.07 in)

If the seat is too wide, too narrow, or has low spots, the seat must be refinished to seal properly.



CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER

VALVE SEAT GRINDING

Follow the refacer manufacturer's operating instructions.

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.

TOOL:

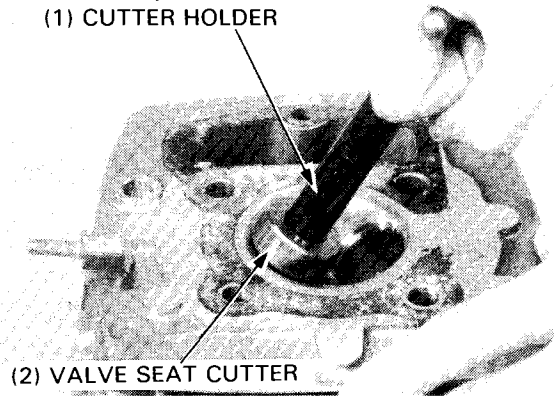
Cutter holder, 5.5 mm

07781-0010101
or Equivalent commercially
available in U.S.A.
Valve seat cutter
or Equivalent commercially
available in U.S.A.

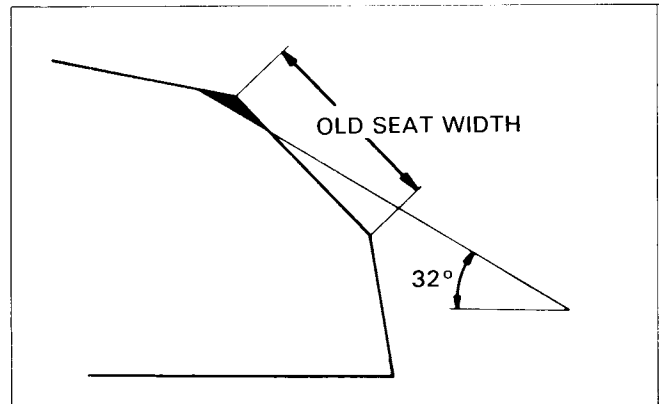
Valve seat cutter

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

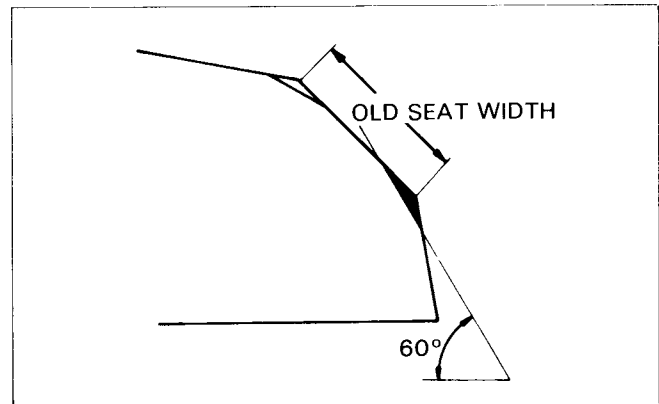
(1) CUTTER HOLDER



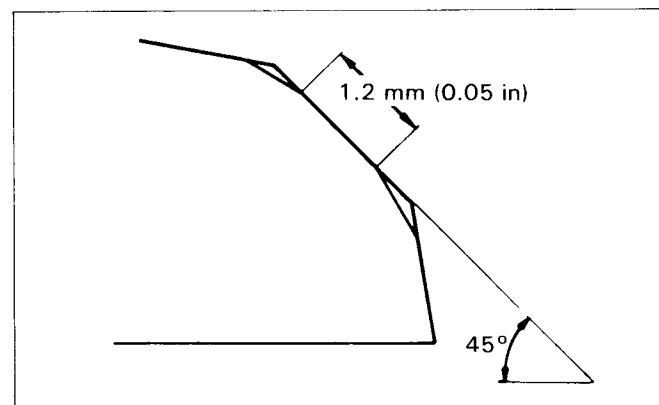
(2) VALVE SEAT CUTTER



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



Install a 45 degree finish cutter and cut the seat to the proper width. Make sure that all pitting and irregularities are removed. Refinish if necessary.



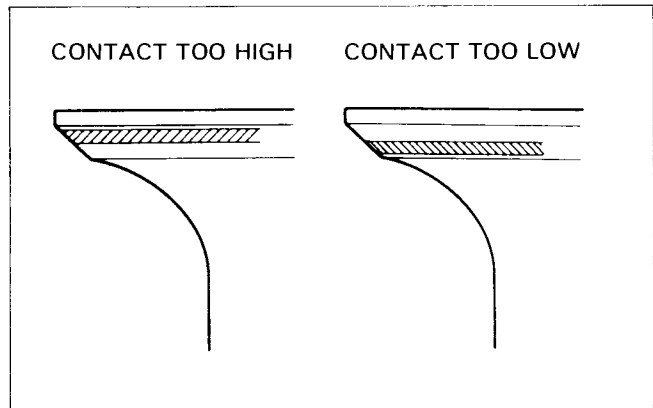
Apply a thin coat of Prussian Blue to the valve seat.

Without rotate the valve, insert 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.

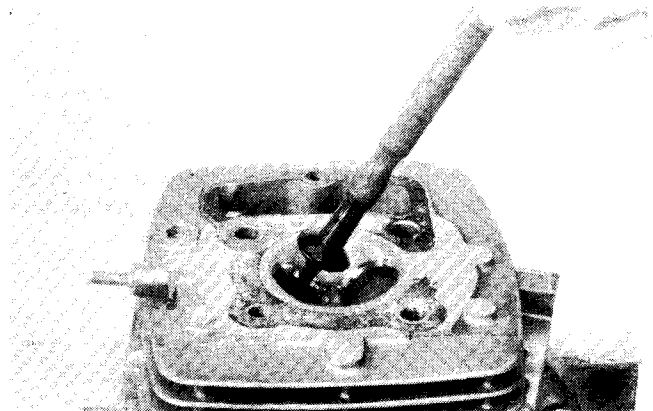
Refinish the seat to specifications using a 45 degree seat cutter.

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.



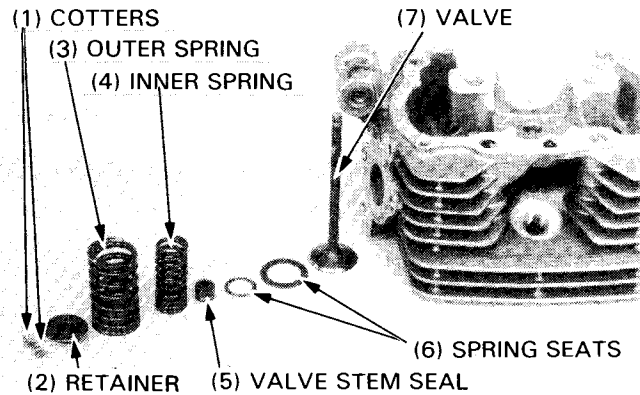
CYLINDER HEAD ASSEMBLY

NOTE

- Install new valve stem seals after disassembling.
- Install the valve springs with the tightly wound coils facing the cylinder head.

Lubricate each valve stem with oil.
Insert the valves into the guides.

Install the valve spring seats and springs.



Install the valve spring, retainers and the cotters.

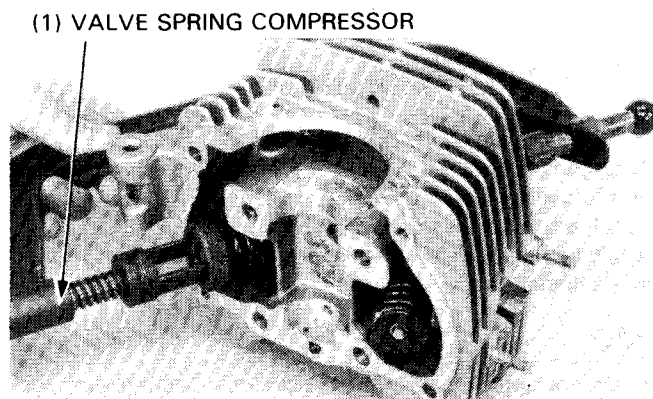
CAUTION

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

TOOL:

Valve spring compressor

07757-0010000
or 07957-3290001

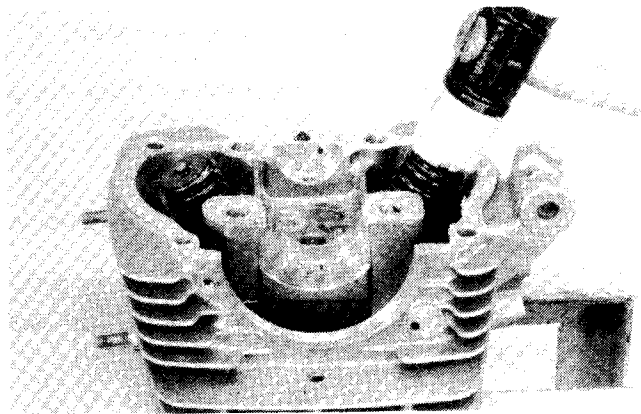


CYLINDER HEAD/VALVES/CAM CHAIN TENSIONER

Tap the valve stems gently with a plastic hammer to firmly seat the cotter pins.

CAUTION

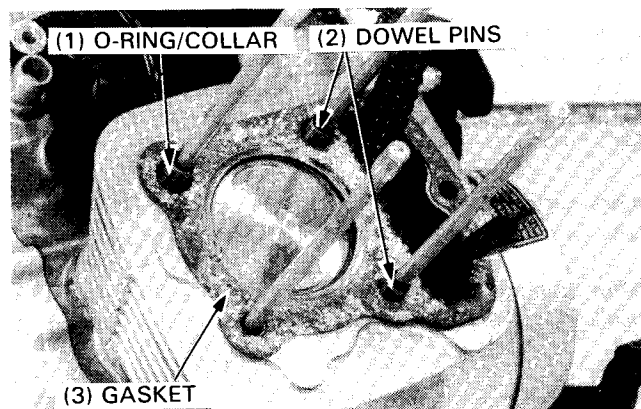
- Support the cylinder head above the work bench surface to prevent possible valve damage.



CYLINDER HEAD INSTALLATION

Clean off any gasket material from the cylinder surface. Install the O-ring/collar, dowel pins and a new gasket.

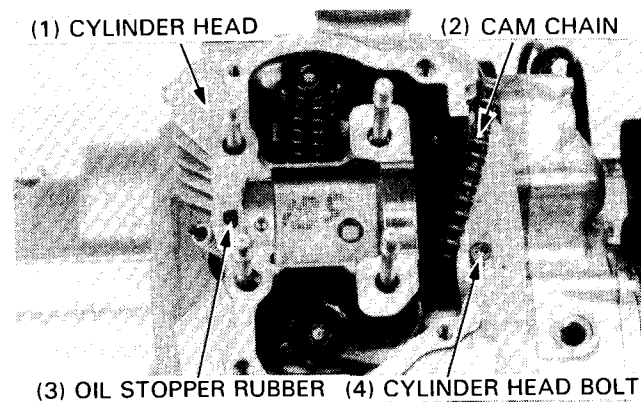
Make sure that the cam chain guide is installed with its lower end aligned with the groove in the crankcase and its bosses with the grooves in the cylinder upper surface.



Install the cylinder head and raise the cam chain. Install and tighten the cylinder head bolt.

TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)

Reinstall the oil stopper rubber if it was removed during disassembly.

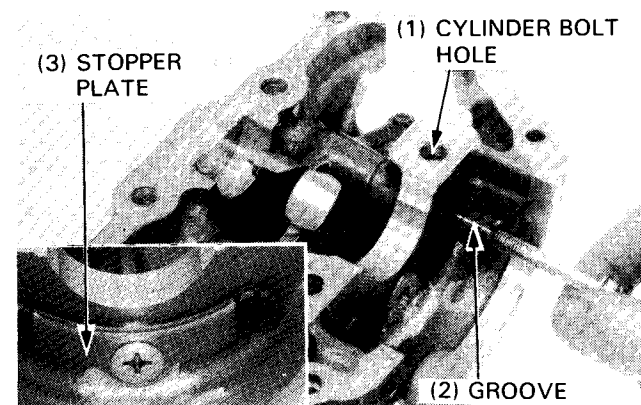


CYLINDER HEAD COVER ASSEMBLY/INSTALLATION

Install the rocker arms and rocker arm shafts. Align the grooves on the rocker arm shafts with the bolt holes on the cylinder head cover. Install the rocker arm shaft stopper plate. Apply liquid sealant to the mating surfaces of the head cover and cylinder head.

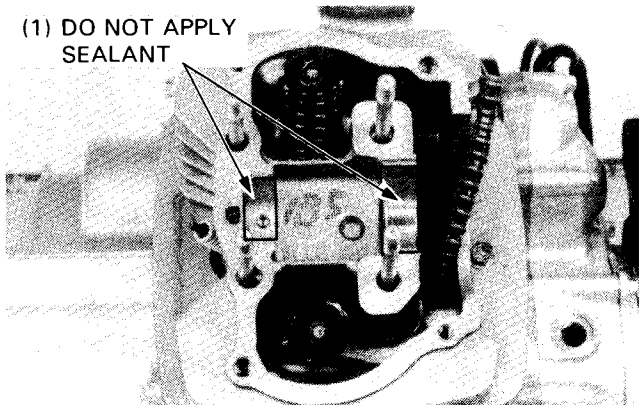
NOTE

- Do not apply sealant to the camshaft bearing surfaces.

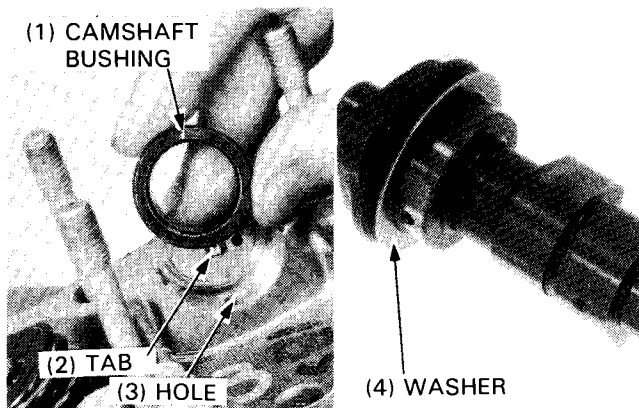


NOTE

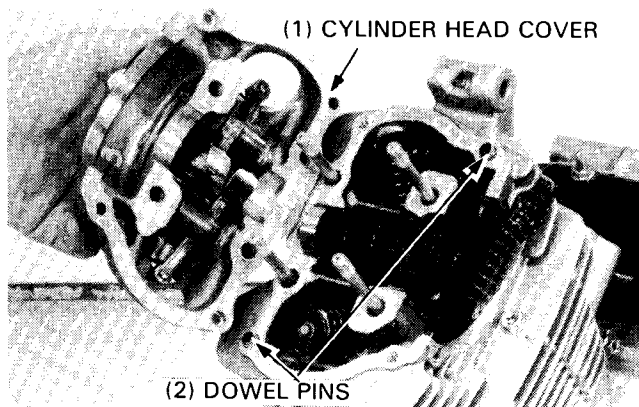
- Do not apply sealant to the camshaft bearing surfaces.



Install the camshaft bushing onto the cylinder head.
Align the tab on the bushing with the hole on the cylinder head.
Install the washer onto the camshaft.



Install the camshaft.
Fill the oil pocket in the cylinder head with fresh oil.
Install the two dowel pins onto the cylinder head, then install the cylinder head cover.
Install the cam sprocket (Page 6-4.).

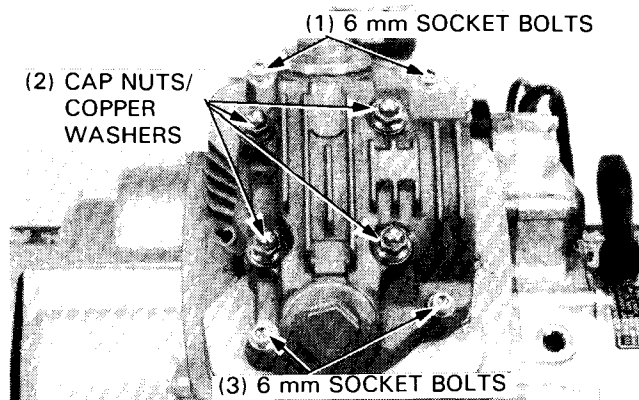


Tighten the cylinder head cover bolts in a crisscross pattern in 2 or 3 steps.

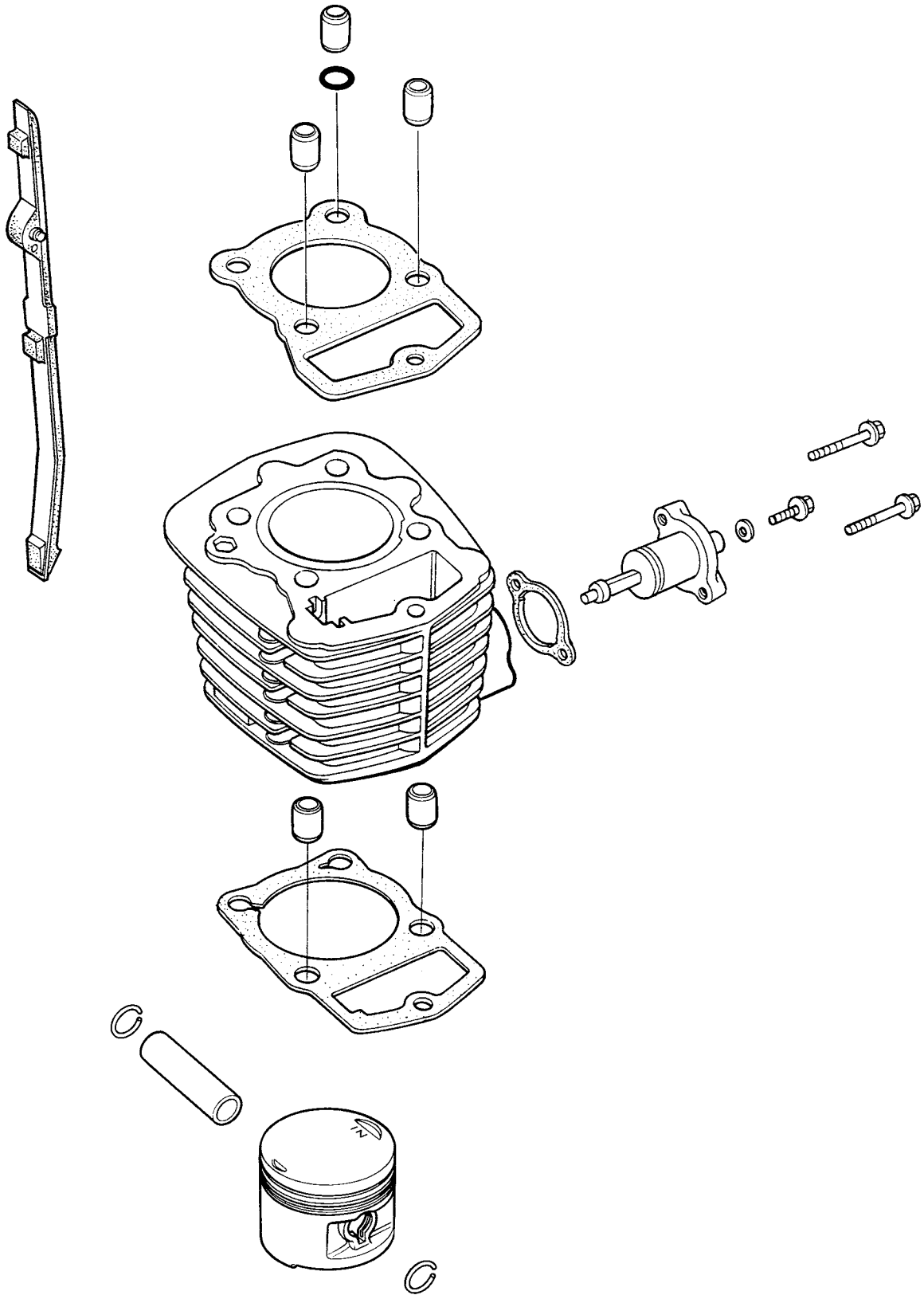
TORQUE:

- 6 mm socket bolt:**
8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
- Cap nuts:**
28–30 N·m (2.8–3.0 kg-m, 20–22 ft-lb)

Install the valve adjusting hole covers.
Install the cam chain tensioner (Page 6-4).



CYLINDER/PISTON



7. CYLINDER/PISTON

SERVICE INFORMATION	7-1	PISTON REMOVAL	7-3
TROUBLESHOOTING	7-1	PISTON INSTALLATION	7-6
CYLINDER REMOVAL	7-2	CYLINDER INSTALLATION	7-6

SERVICE INFORMATION

GENERAL

- Camshaft lubrication oil is fed to the cylinder head through an orifice in the cylinder head and crankcase. Be sure that this orifice is not clogged and that the O-rings and dowel pins are in place before installing the cylinder head.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT	
Cylinder	I.D.	54.00–54.01 mm (2.125–2.126 in)	54.10 mm (2.129 in)	
	Taper	—	0.10 mm (0.004 in)	
	Out of round	—	0.10 mm (0.004 in)	
	Warpage across top	—	0.10 mm (0.004 in)	
	Cylinder-to-piston clearance	0.015–0.055 mm (0.0006–0.0022 in)	0.10 mm (0.004 in)	
Piston, piston pin, piston rings	Piston O.D.	53.955–53.985 mm (2.1242–2.1254 in)	53.90 mm (2.122 in)	
	Piston pin bore	15.002–15.008 mm (0.5906–0.5909 in)	15.02 mm (0.591 in)	
	Piston pin O.D.	14.994–15.000 mm (0.5903–0.5906 in)	14.98 mm (0.589 in)	
	Piston-to-pin clearance	0.002–0.014 mm (0.0001–0.0006 in)	0.02 mm (0.001 in)	
	Piston ring-to-ring groove clearance	TOP	0.010–0.045 mm (0.0004–0.0018 in)	0.12 mm (0.005 in)
		SECOND	0.015–0.050 mm (0.0006–0.0019 in)	0.12 mm (0.005 in)
	Piston ring end gap	TOP/SEC	0.10–0.30 mm (0.004–0.012 in)	0.50 mm (0.020 in)
OIL		0.20–0.80 mm (0.008–0.031 in)	—	
Connecting rod small end I.D.		15.016–15.034 mm (0.5912–0.5919 in)	15.06 mm (0.593 in)	

7

TROUBLESHOOTING

Low or unstable compression

- Worn cylinder or piston rings

Excessive smoke

- Worn cylinder, piston, or piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall
- Damaged valve stem seal

Overheating

- Excessive carbon build-up on piston or combustion chamber wall

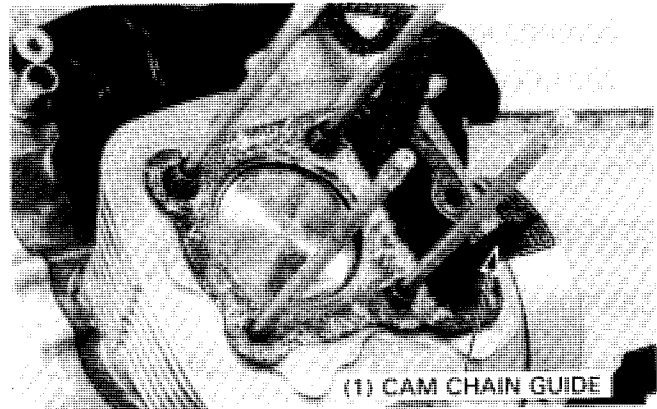
Knocking or abnormal noise

- Worn piston and cylinder
- Excessive carbon build-up

CYLINDER REMOVAL

Remove the cylinder head (Section 6).

Remove the cam chain guide and cylinder.



Remove the gasket and dowel pins.

Clean off any gasket material from the cylinder surface.

NOTE

- Be careful not to damage the gasket surface.

INSPECTION

Inspect the cylinder wall for scratches and wear. Measure and record the cylinder I.D. at three levels in both an X and Y axis for a total of six measurement. Take the maximum reading to determine the cylinder wear.

SERVICE LIMIT: 54.10 mm (2.129 in)

Calculate the piston-to-cylinder clearance by taking the maximum reading and subtracting the piston O.D. Refer to Page 7-4 for measurement of the piston O.D.

SERVICE LIMIT: 0.10 mm (0.004 in)

Calculate the cylinder taper by taking the readings at the three levels and subtracting the minimum from the maximum reading.

SERVICE LIMIT: 0.10 mm (0.004 in)

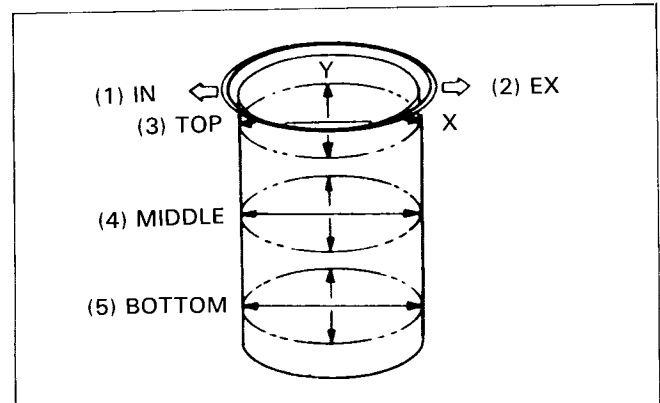
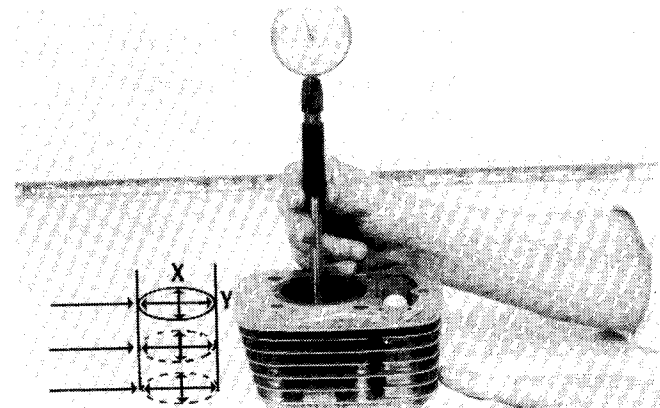
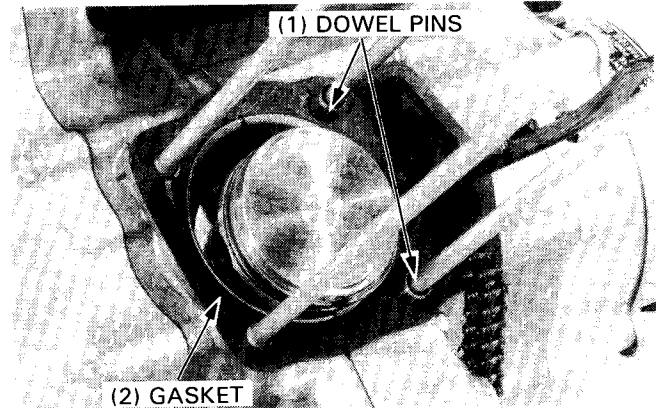
Calculate the cylinder out-of-round by checking for a difference between the X and Y readings at each of the three levels. If there is any difference, take the maximum reading to determine the out-of-round.

SERVICE LIMIT: 0.10 mm (0.004 in)

The cylinder must be rebored, and oversize pistons fitted, if any of the service limits are exceed.

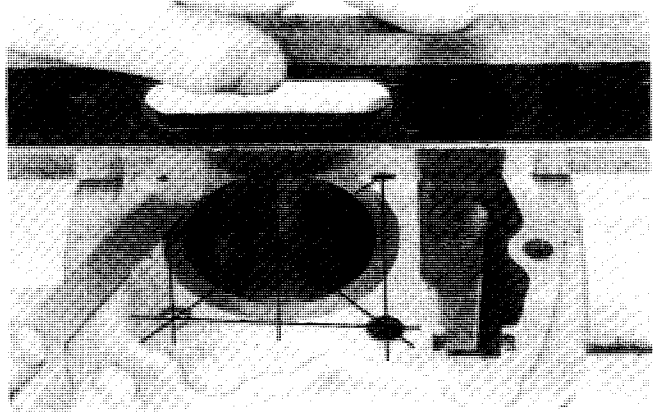
The following oversize pistons are available:
0.25 mm (0.010 in), 0.50 mm (0.020 in), 0.75 mm (0.030 in) and 1.00 mm (0.039 in)

The cylinder must be rebored so that the clearance to an oversize piston is 0.015–0.055 mm (0.0006–0.0022 in).



Inspect the top of the cylinder for warpage.

SERVICE LIMIT: 0.10 mm (0.004 in)



PISTON REMOVAL

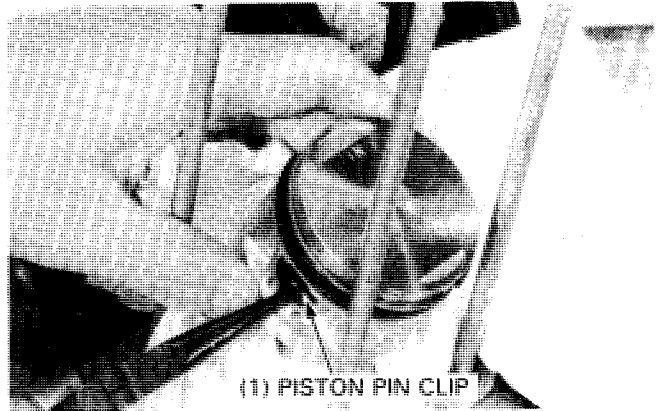
Stuff a shop towel into the crankcase.

Remove the piston pin clips with needle nose pliers.

NOTE

- Do not allow the clips fall into the crankcase.

Press the piston pin out of the piston.
Remove the piston.



(1) PISTON PIN CLIP

PISTON/PISTON RING INSPECTION

Measure the piston ring-to-groove clearance.

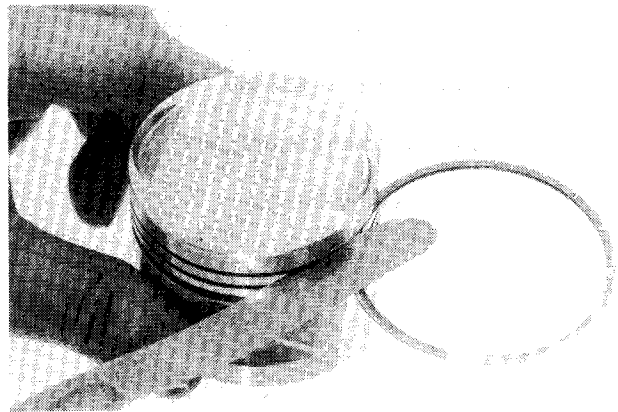
SERVICE LIMIT:

TOP: 0.12 mm (0.005 in)

SECOND: 0.12 mm (0.005 in)

Remove the piston rings, being careful not to damage them.

Inspect the piston for wear or damage.



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

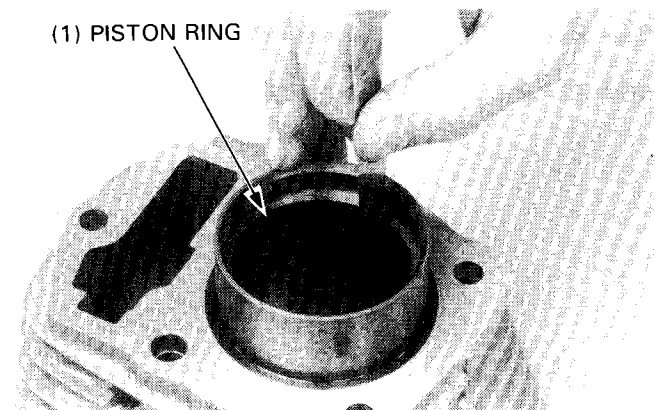
NOTE

- Push the rings into the cylinder with the top of the piston to be sure they are squarely set in the piston.

SERVICE LIMIT:

TOP: 0.50 mm (0.020 in)

SECOND: 0.50 mm (0.020 in)



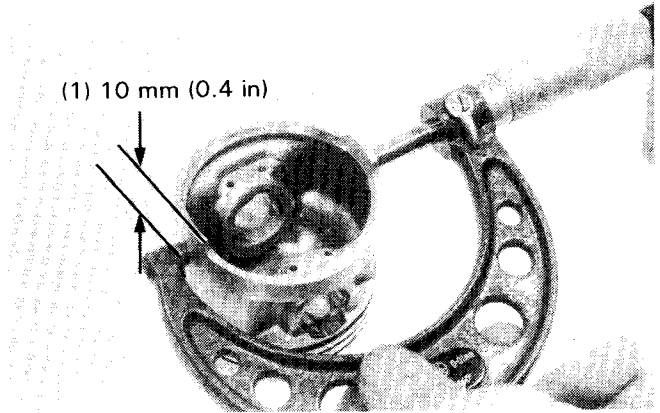
(1) PISTON RING

CYLINDER/PISTON

Measure and record the piston O.D. at a point 10 mm (0.4 in) from the bottom, and 90° to the piston pin bore.

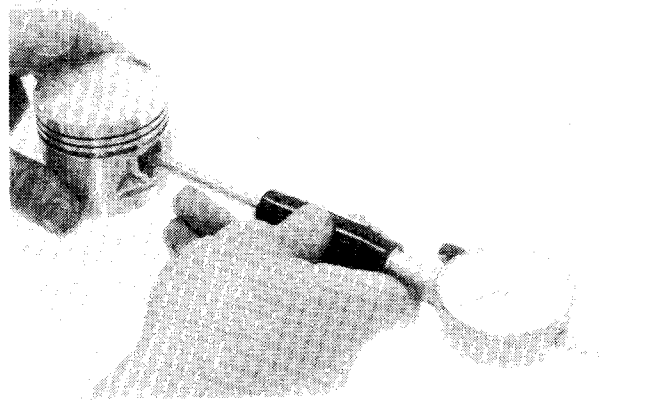
SERVICE LIMIT: 53.90 mm (2.122 in)

Compare this measurement against the service limit and calculate piston-to-cylinder clearance.
Refer to page 7-2 for measuring them cylinder.



Measure the piston pin hole I.D.

SERVICE LIMIT: 15.02 mm (0.591 in)

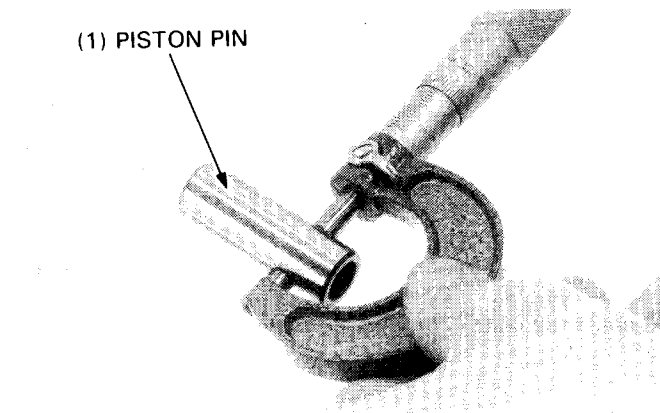


Measure the piston pin O.D.

SERVICE LIMIT: 14.98 mm (0.589 in)

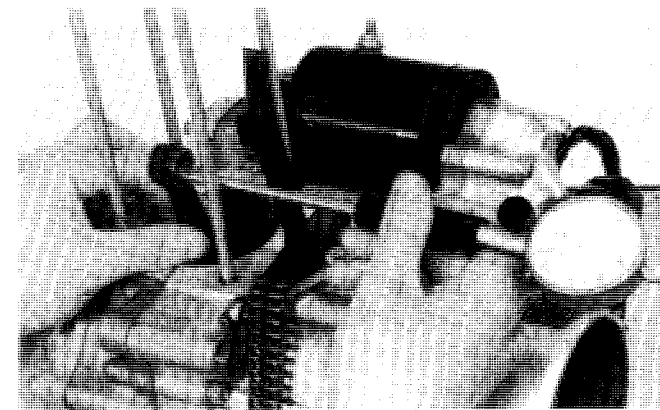
Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)



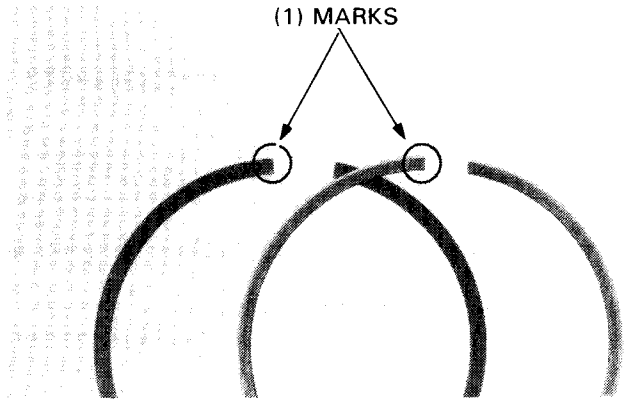
Measure the connecting rod small end I.D.

SERVICE LIMIT: 15.06 mm (0.593 in)



PISTON RING INSTALLATION

Clean the piston ring grooves thoroughly and install the piston rings with the marks facing up.

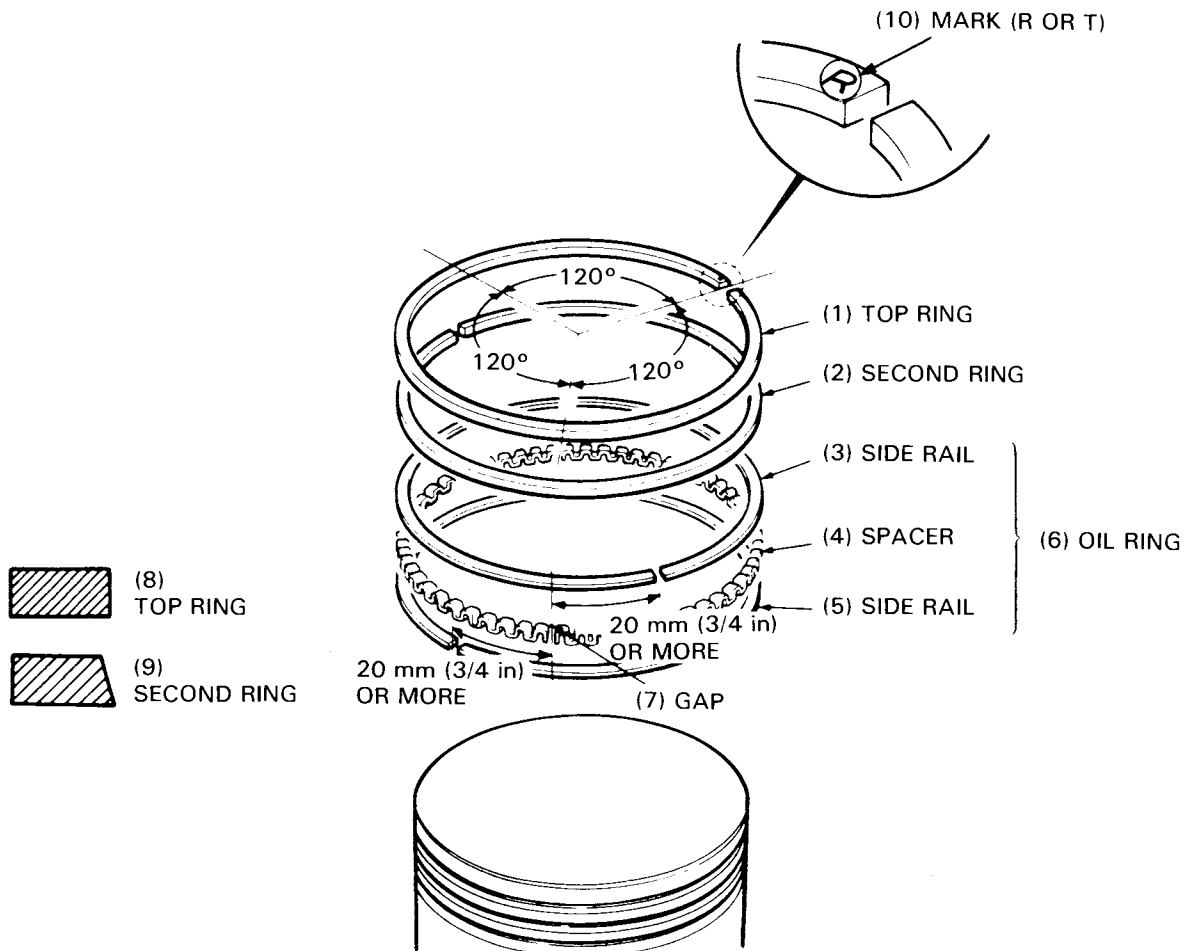


NOTE

- Avoid piston and piston ring damage during installation.
- Do not mix the top and second rings.

Space the piston ring end gaps 120 degrees apart. Do not align the gaps in the oil rings (side rails).

After installation, the rings should be free to rotate in the ring grooves.



CYLINDER/PISTON

PISTON INSTALLATION

Clean off any gasket material from the crankcase surface.

NOTE

- Be careful not to damage the gasket surface.

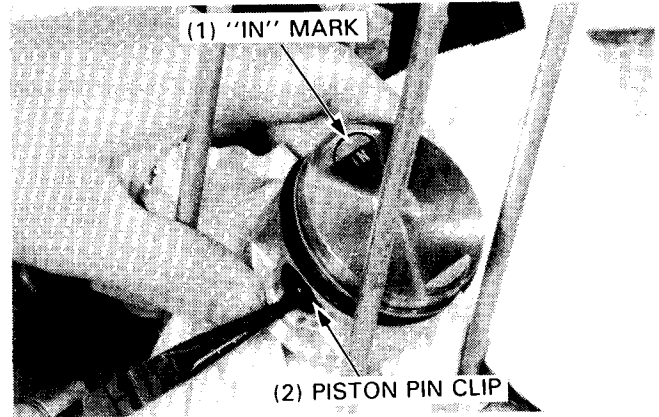
Install the piston with its "IN" mark on the intake valve side.

Install the piston pin with new pin clips.

Do not align the piston pin clip end gap with the piston cutout.

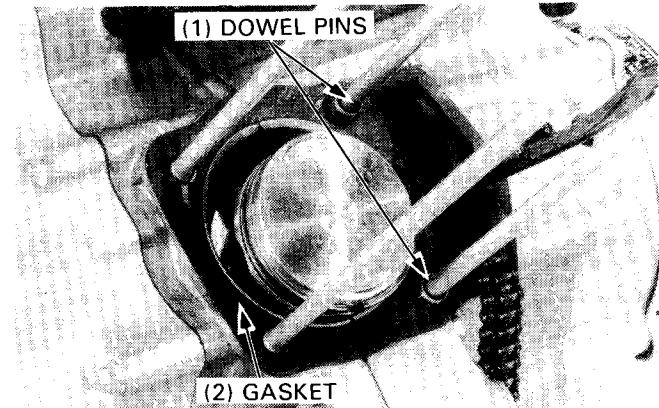
NOTE

- Do not allow the clip fall into the crankcase.



CYLINDER INSTALLATION

Install a new gasket and dowel pins.



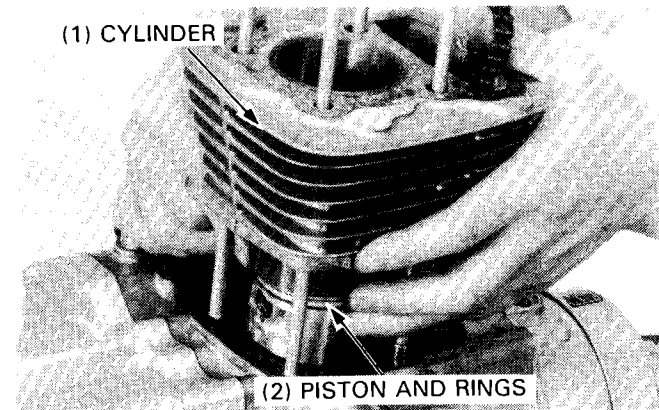
Stagger the piston ring end gaps 120° part (Page 7-5).
Coat the cylinder bore and piston rings with engine oil and install the cylinder.

NOTE

- Avoid piston ring damage during installation.
- Do not allow the cam chain fall into the crankcase.

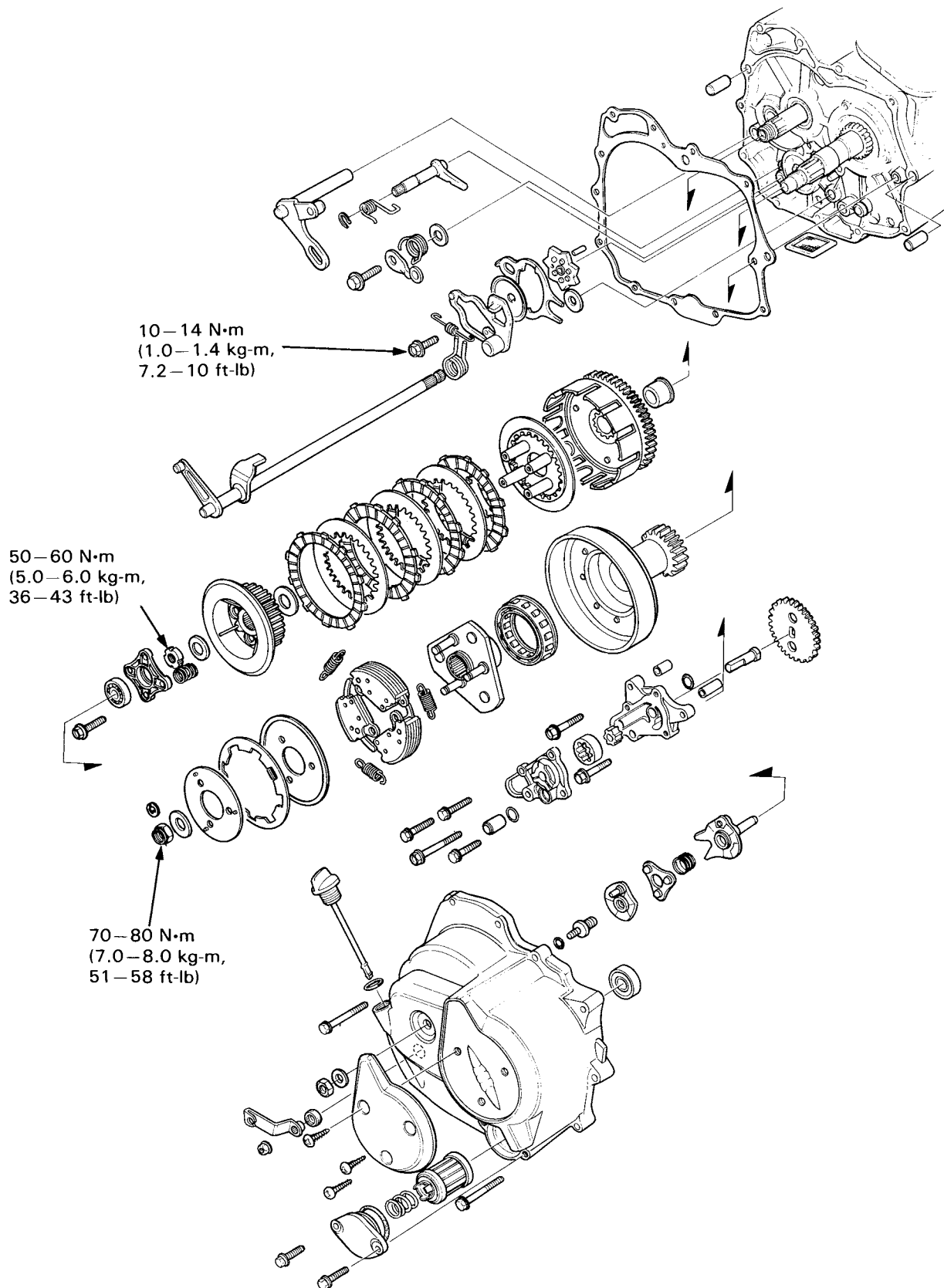
Install the cam chain guide.

Install the cylinder head (Page 6-12).



MEMO

CLUTCH/GEARSHIFT LINKAGE



8. CLUTCH/GEARSHIFT LINKAGE

SERVICE INFORMATION	8-1	MANUAL CLUTCH	8-9
TROUBLESHOOTING	8-2	GEARSHIFT LINKAGE	8-13
RIGHT CRANKCASE COVER REMOVAL	8-3	RIGHT CRANKCASE COVER INSTALLATION	8-16
CENTRIFUGAL CLUTCH	8-5		

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the right crankcase cover, centrifugal clutch, manual clutch and gearshift linkage.

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Centrifugal clutch	Weight lining thickness		1.5 mm (0.06 in)	1.3 mm (0.05 in)
	Drum I.D.		102.0–102.2 mm (4.01–4.02 in)	102.4 mm (4.03 in)
	Bushing	I.D.	23.000–23.021 mm (0.9055–0.9063 in)	23.05 mm (0.907 in)
Crankshaft O.D.			22.959–22.980 mm (0.9039–0.9047 in)	22.93 mm (0.903 in)
Manual clutch	Outer I.D.		28.000–28.021 mm (1.1024–1.1032 in)	28.05 mm (1.104 in)
	Outer bushing	I.D.	19.979–20.000 mm (0.7866–0.7874 in)	20.03 mm (0.789 in)
		O.D.	27.959–27.980 mm (1.1007–1.1016 in)	27.93 mm (1.099 in)
	Spring		27.6 mm (1.09 in)	26.5 mm (1.04 in)
	Disc thickness		2.9–3.0 mm (0.11–0.12 in)	2.6 mm (0.10 in)
Disc and plate warpage		—	0.2 mm (0.01 in)	
Mainshaft O.D.			19.959–19.980 mm (0.7858–0.7866 in)	19.93 mm (0.785 in)

CLUTCH/GEARSHIFT LINKAGE

TORQUE VALUES

Centrifugal clutch lock nut	70–80 N•m (7.0–8.0 kg-m, 51–58 ft-lb)
Manual clutch lock nut	50–60 N•m (5.0–6.0 kg-m, 36–43 ft-lb)
Drum plate center bolt	10–14 N•m (1.0–1.4 kg-m, 7.2–10 ft-lb)

TOOLS

Special

Bearing remover set, 12 mm	07936–1660001
– Bearing remover shaft assy, 12 mm	07936–1660100
– remover weight	07741–0010201 or 07936–3710200
Shaft protector	07960–1870100 or Equivalent commercially available in U.S.A.
Clutch center holder	07923–9580000

Common

Attachement, 32 x 35 mm	07746–0010100
Pilot, 12 mm	07746–0040200
Driver	07749–0010000

TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the clutch.

Clutch slips when accelerating

- Faulty clutch lifter mechanism
- Discs worn
- Weak spring
- Incorrect clutch adjustment

Clutch will not disengage

- Faulty clutch lifter
- Incorrect clutch adjustment
- Plates warped

ATC creeps with engine idling

- Faulty centrifugal clutch

Clutch operation feels rough

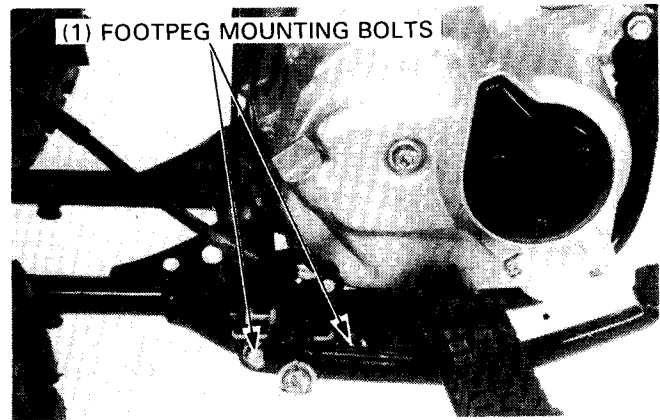
- Rough manual clutch outer slots
- Worn or damaged centrifugal clutch shoes or drum

Gearshift pedal will not return

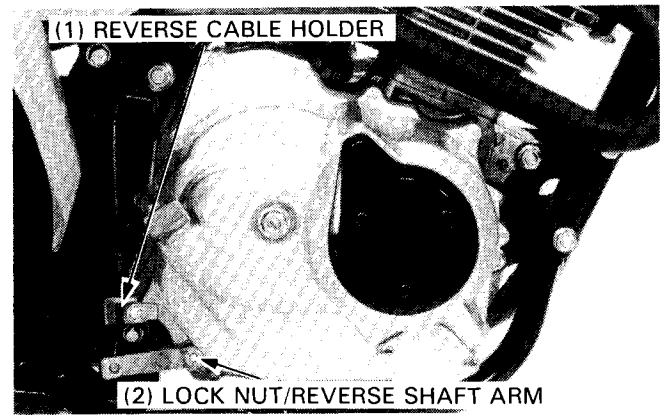
- Weak or broken gearshift spindle return spring
- Binding gearshift spindle

RIGHT CRANKCASE COVER REMOVAL

Drain the oil from the engine (Page 2-2).
Remove the footpeg mounting bolts.

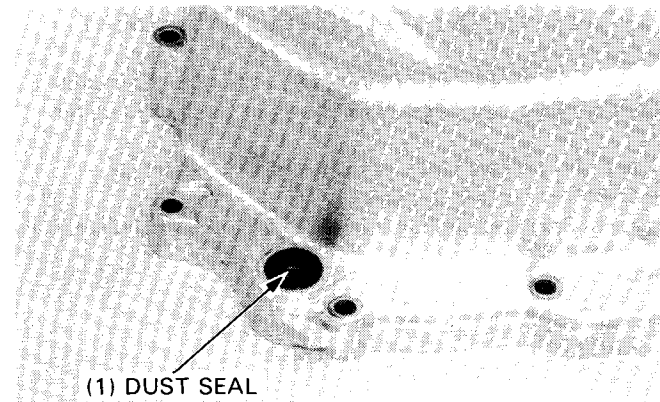


Remove the reverse cable holder with the cable, lock nut and reverse shaft arm.
Remove the right crankcase cover bolts and cover.
Remove the gasket and dowel pins.



BEARING AND DUST SEAL REPLACEMENT

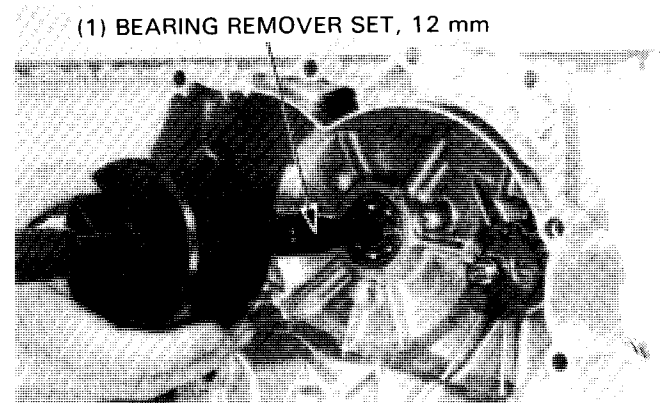
Inspect the reverse shaft dust seal in the right crankcase cover for wear or damage.
Replace the dust seal, if necessary.



Inspect the crankshaft bearing on the right crankcase cover for wear or damage, if necessary.
Remove the bearing using bearing remover.

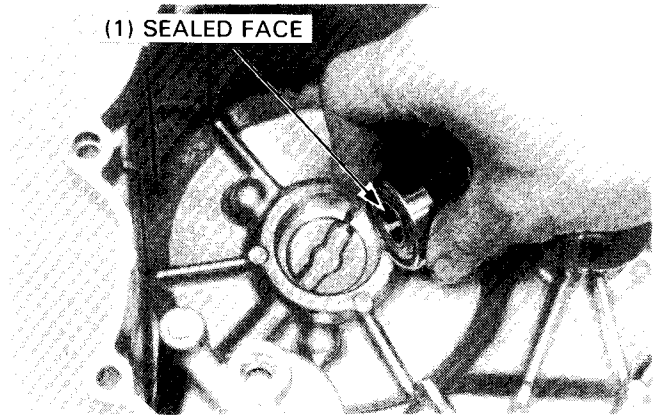
TOOL:

Bearing remover set, 12 mm	07936-1660001
– Bearing remover shaft assy, 12 mm	07936-1660100
– remover weight	07741-0010201 or 07936-3710200



CLUTCH/GEARSHIFT LINKAGE

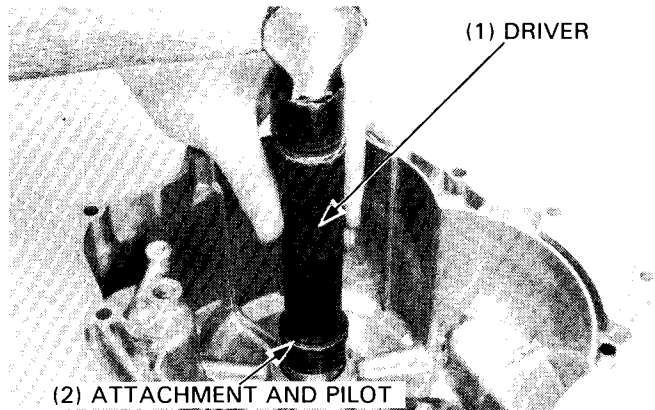
Install the new bearing with sealed face down.



Drive in a new bearing.

TOOLS:

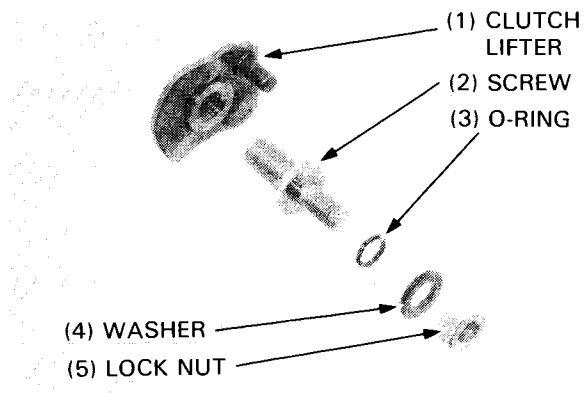
Driver	07749-0010000
Attachment, 32 x 35 mm	07746-0010100
Pilot, 12 mm	07746-0040200



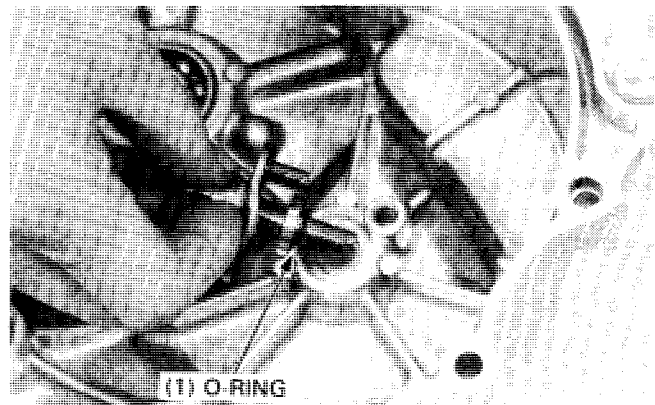
CLUTCH LIFTER DISASSEMBLY/ASSEMBLY

Remove the clutch adjusting screw lock nut and washer.
Remove the clutch lifter from the right crankcase cover.

Check the disassembled parts for wear or damage.
Replace the parts if necessary.
Refer to Page 8-9 for ball retainer and clutch cam plate removal.



Screw the adjusting screw into the clutch lifter and install a new O-ring.
Install the pin on the clutch lifter in the hole in the right crankcase cover.
Install the washer and lock nut.



CENTRIFUGAL CLUTCH

WEIGHT LINING INSPECTION

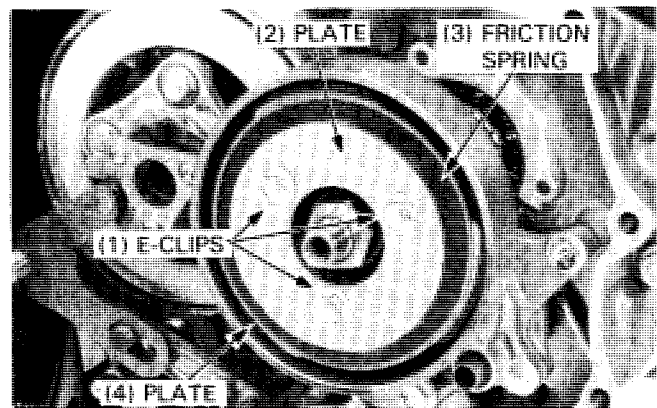
Measure the weight lining thickness.

SERVICE LIMIT: 1.3 mm (0.05 in)

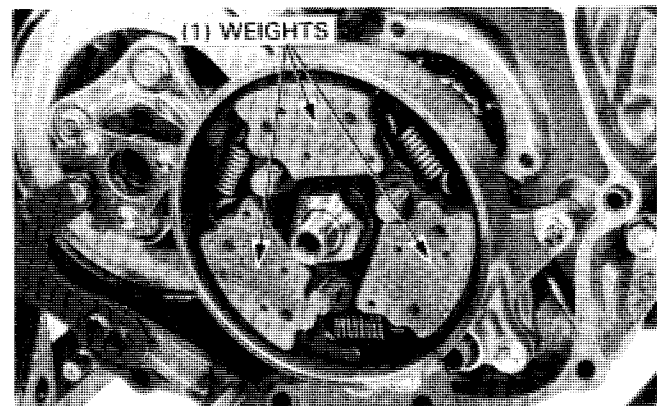


WEIGHT REMOVAL

Remove the E-clips, plate, friction spring and washer.



Remove the centrifugal clutch weights.



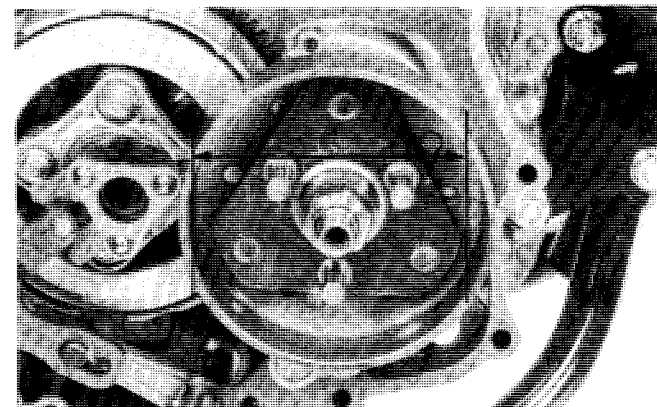
CLUTCH DRUM INSPECTION

Check the inside of the clutch drum for scratches or excessive wear. Replace if necessary.
Measure the I.D. of the clutch drum.

SERVICE LIMIT: 102.4 mm (4.03 in)

FRICTION SPRING INSPECTION

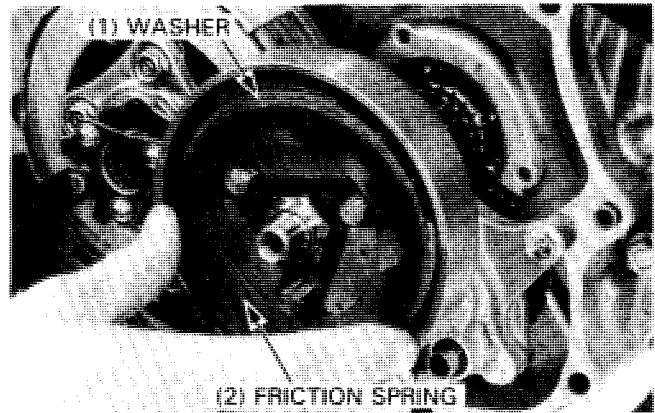
Inspect the friction spring for wear or damage.
Replace the friction spring, if necessary.



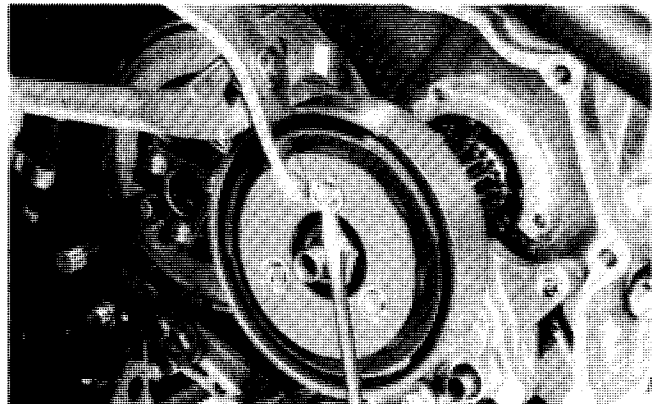
CLUTCH/GEARSHIFT LINKAGE

WEIGHT INSTALLATION

Install the weights, washer and friction spring.

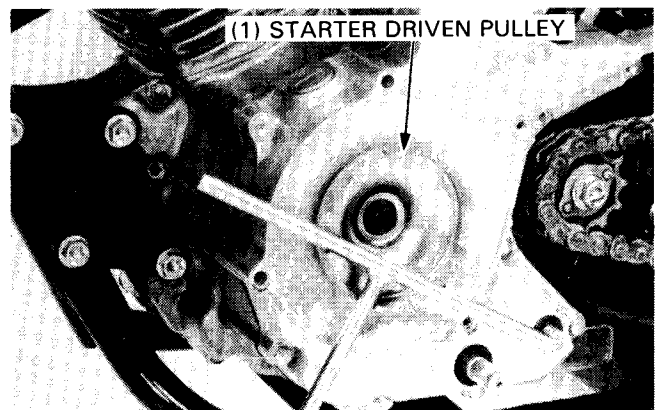


Install the plate and E-clips securely as shown.



CENTRIFUGAL CLUTCH REMOVAL

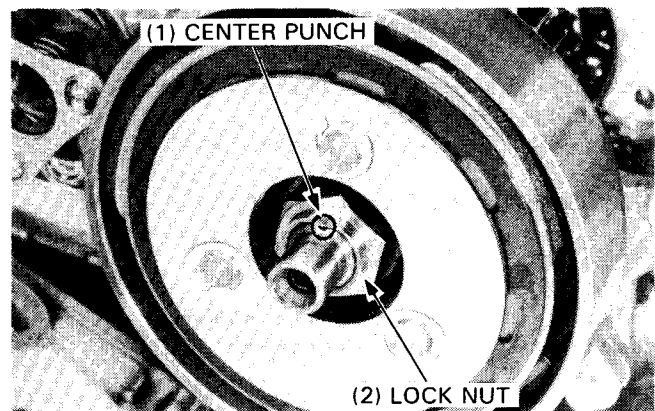
Remove the recoil starter (Page 9-2).
Hold the starter driven pulley as shown.



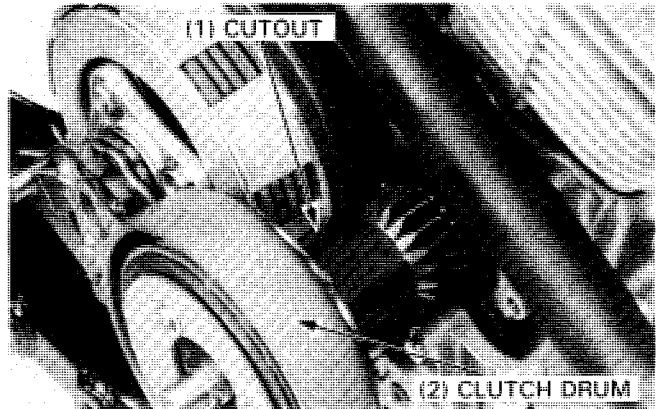
Unstake the lock nut center punch with the drill or grinder.
Remove the lock nut and washer.

NOTE

- The lock nut has left hand threads.



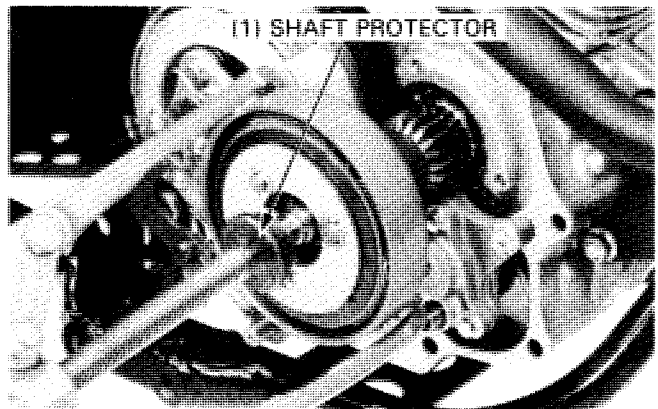
Align the clutch outer cutout with the drive gear on the clutch drum.



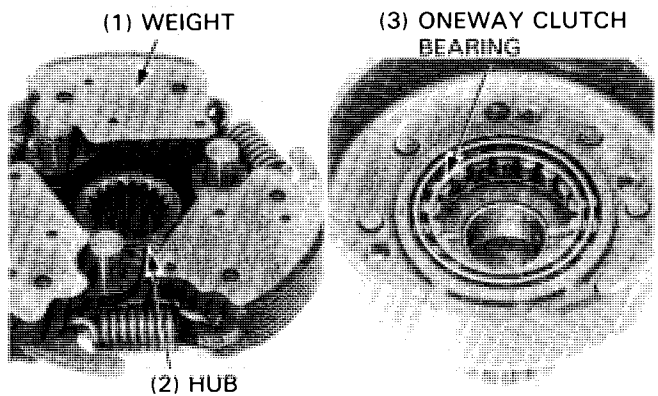
Remove the centrifugal clutch assembly using the bearing puller and shaft protector.

TOOL:
Shaft protector

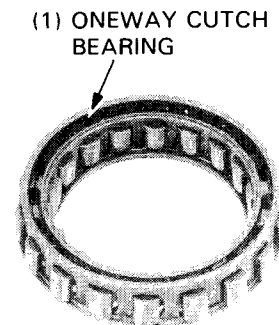
07960-1870100
or Equivalent commercially
available in U.S.A.



Remove the clutch weights and the hub.
Remove the oneway clutch bearing from the drum.



Inspect the oneway clutch bearing for excessive wear or damage and replace it if necessary.



CLUTCH/GEARSHIFT LINKAGE

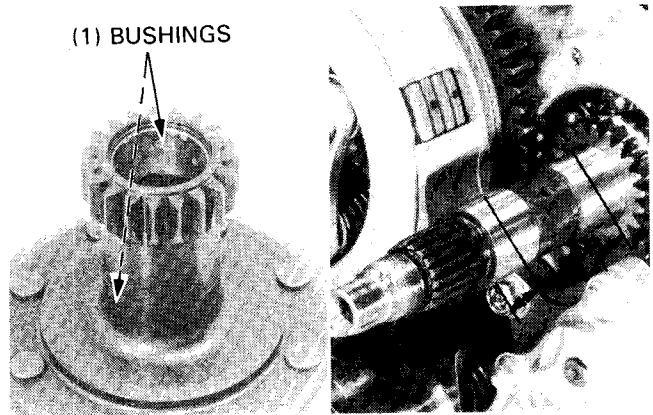
CENTRIFUGAL CLUTCH BUSHING INSPECTION

Inspect the bushings for wear or damage.
Measure the I.D. of the centrifugal clutch bushings.

SERVICE LIMIT: 23.05 mm (0.907 in)

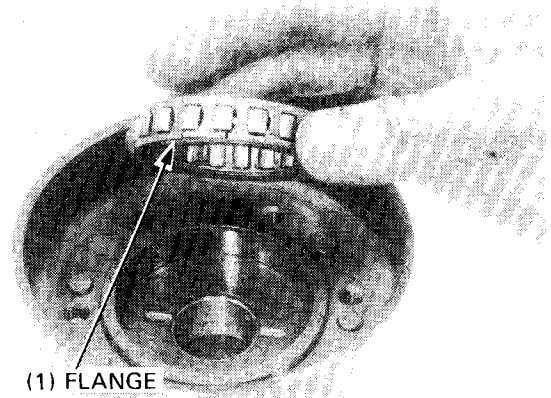
Measure the O.D. of the crankshaft at the two points.

SERVICE LIMIT: 22.93 mm (0.903 in)

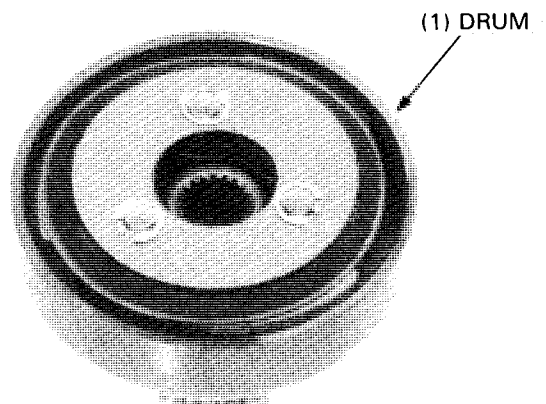


CENTRIFUGAL CLUTCH INSTALLATION

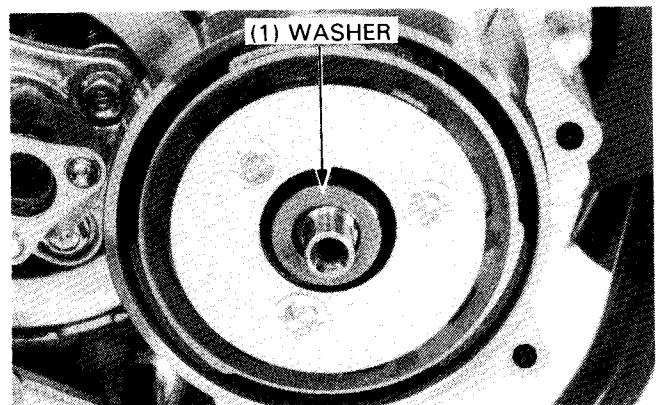
Install the oneway clutch bearing with the flange facing down.



Assemble the weight, washer, friction spring, plate and E-clips onto the drum.



Install the centrifugal clutch onto the crankshaft aligning the cutout on the clutch outer with the centrifugal clutch drive gear.
Install the washer.



Hold the starter driven pulley (Page 8-6) and install the lock nut.

NOTE

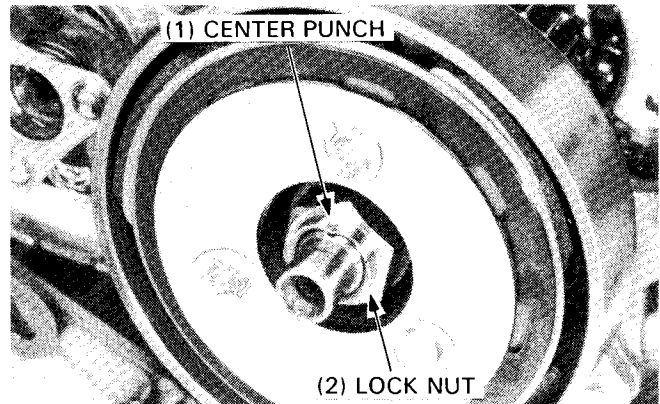
- The lock nut has left hand threads.

Tighten the lock nut.

TORQUE: 70–80 N·m (7.0–8.0 kg·m, 51–58 ft·lb)

Stake the lock nut into the hole in the crankshaft with a center punch.

Install the recoil starter (Page 9-5).

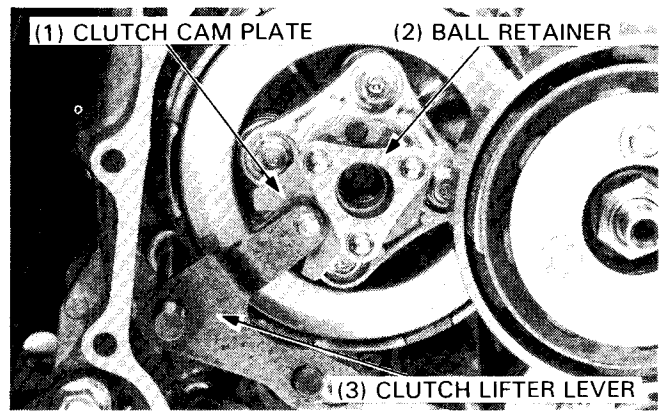


MANUAL CLUTCH

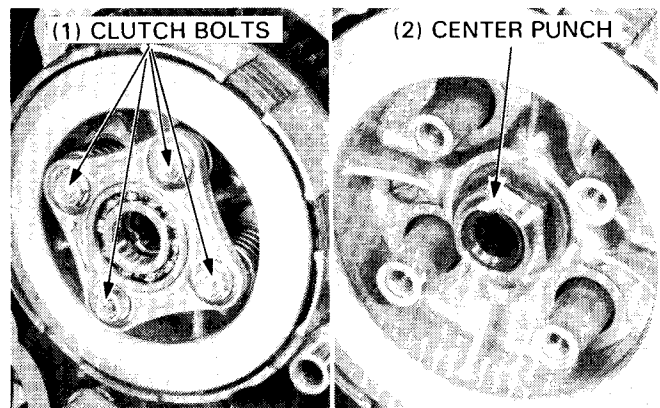
REMOVAL

Remove the centrifugal clutch (Page 8-5).

Remove the clutch lifter lever, clutch cam plate and ball retainer with the spring.



Remove the clutch bolts, springs and lifter plate.
Unstake the lock nut center punch.

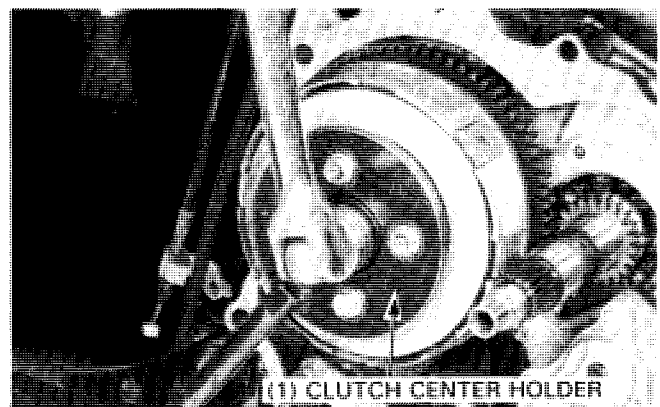


Install the clutch center holder as shown and remove the lock nut and washer.

TOOL:

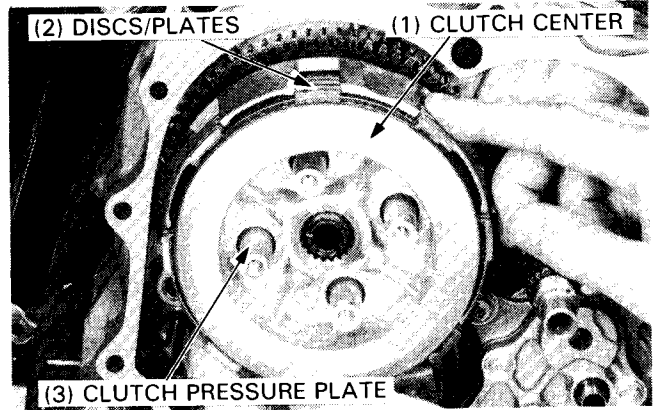
Clutch center holder

07923–9580000

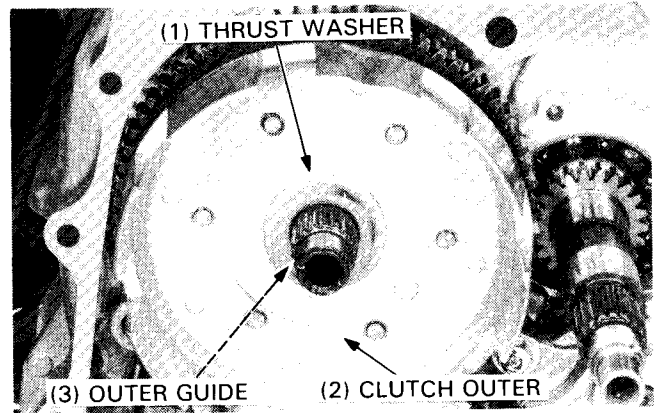


CLUTCH/GEARSHIFT LINKAGE

Remove the clutch center, discs, plates and clutch pressure plate.



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

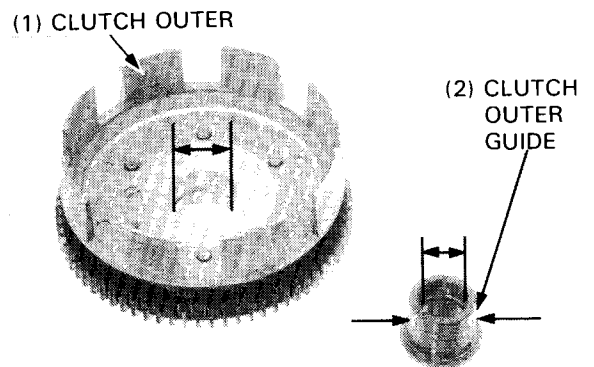


INSPECTION

Check the slots of the clutch outer for wear or damage made by the clutch discs.
Replace the outer if necessary.
Measure the I.D. and O.D. of the clutch outer guide.

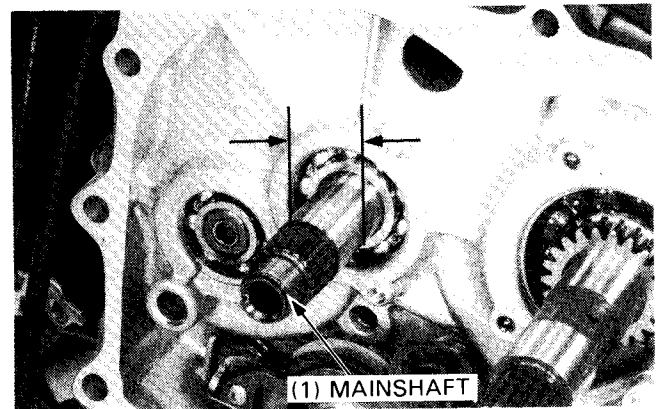
SERVICE LIMIT:

I.D. 20.03 mm (0.789 in)
O.D. 27.93 mm (1.099 in)



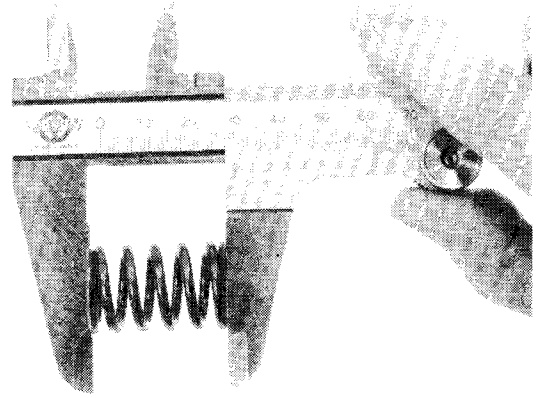
Measure the O.D. of the mainshaft.

SERVICE LIMIT: 19.93 mm (0.785 in)



Measure the clutch spring free length.

SERVICE LIMIT: 26.5 mm (1.04 in)



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

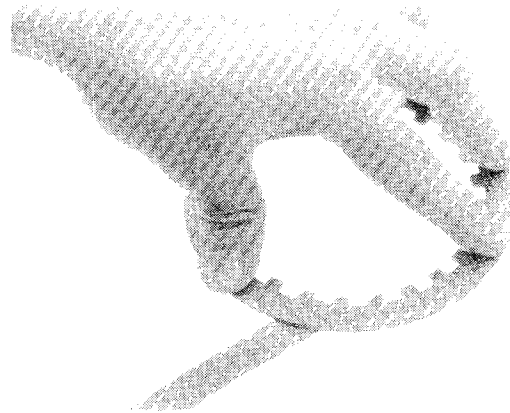
Measure the disc thickness.

SERVICE LIMIT: 2.6 mm (0.10 in)



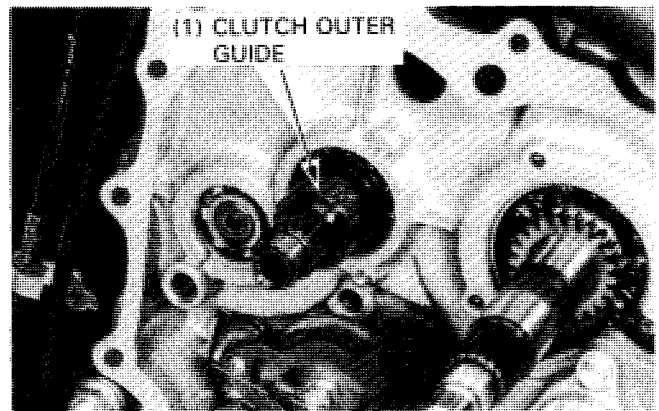
Check plate and disc for warpage on a flat surface using a feeler gauge.

SERVICE LIMIT: 0.2 mm (0.01 in)



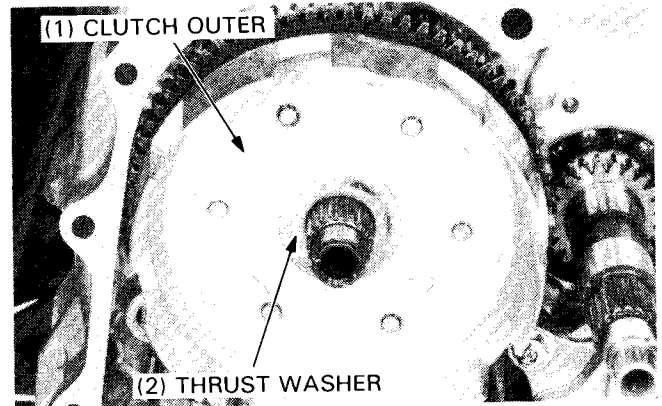
INSTALLATION

Install the clutch outer guide onto the mainshaft.



CLUTCH/GEARSHIFT LINKAGE

Install the clutch outer and thrust washer.

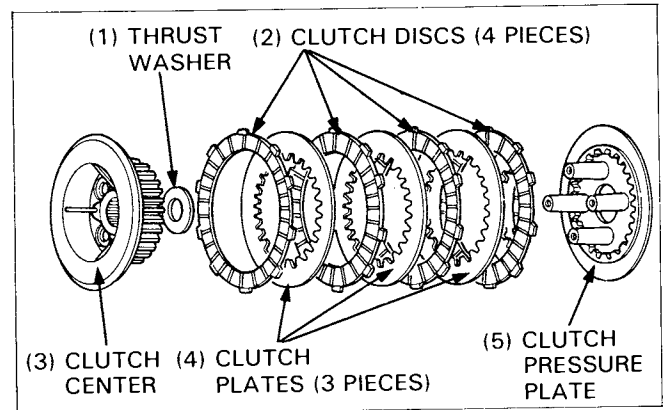


Assemble the clutch pressure plate, discs, plates and clutch center.

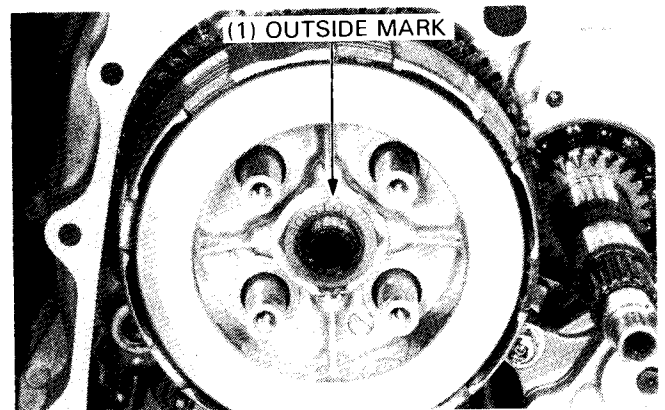
NOTE

- Stack the discs and plates alternately.
- Coat new clutch discs with the engine oil.

Install the clutch assembly into the clutch outer.



Install the washer with the word OUTSIDE facing out, and a new lock nut.



Install the clutch center holder with the clutch bolts.

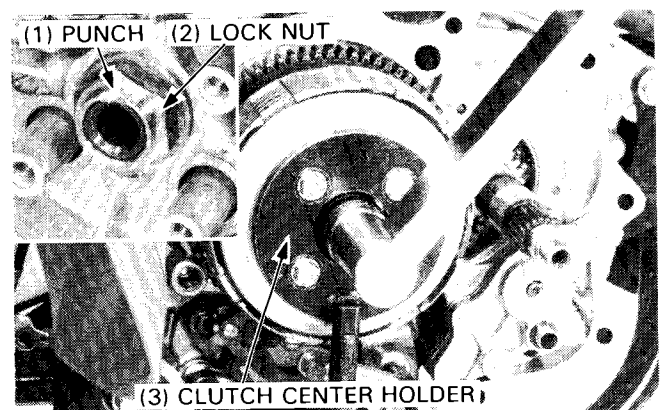
TOOL:

Clutch center holder 07923-9580000

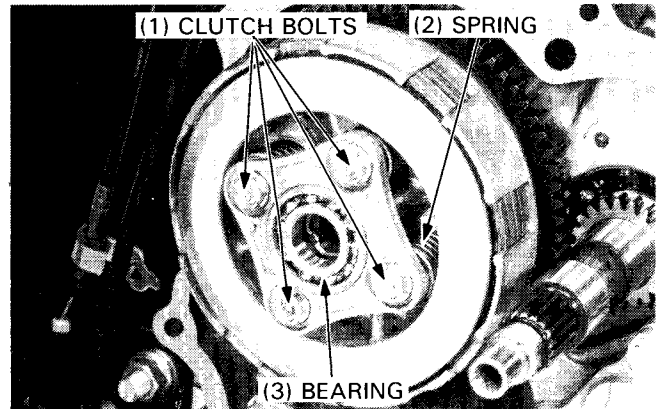
Tighten the lock nut.

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

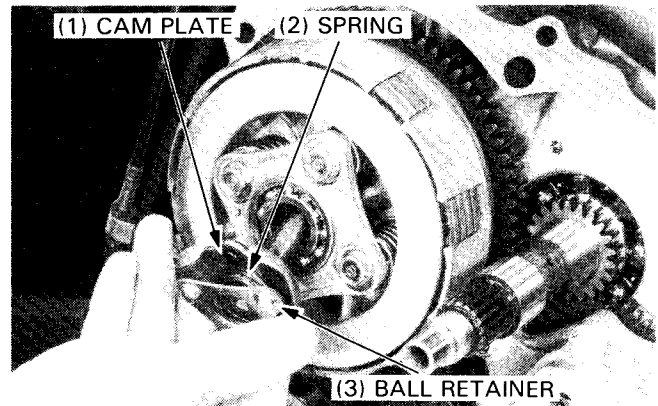
Stake the lock nut into the hole in the mainshaft with a center punch.



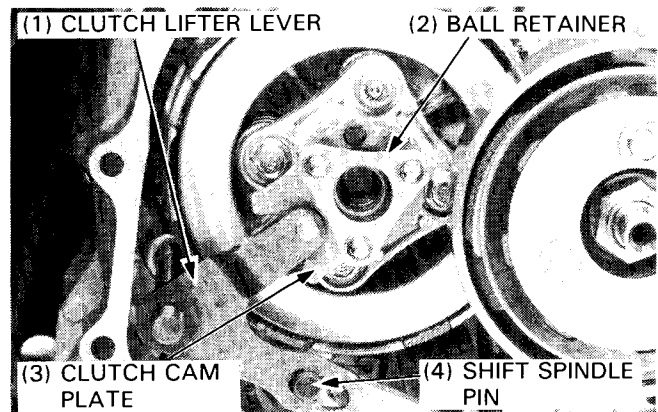
Install the clutch springs and lifter plate with the bearing. Tighten the clutch bolts.



Assemble the clutch cam plate, spring and ball retainer and install them.



Install the clutch lifter lever end hole over the shift spindle pin. Align the steel ball in the ball retainer with the lug of clutch cam plate and the clutch lifter lever. Install the centrifugal clutch (Page 8-8).



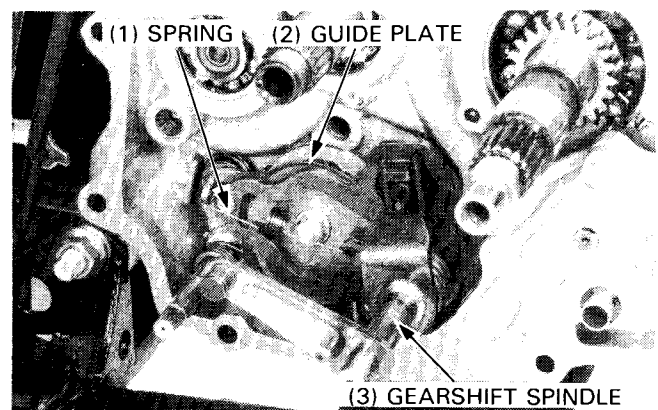
GEARSHIFT LINKAGE

REMOVAL

Remove the following;

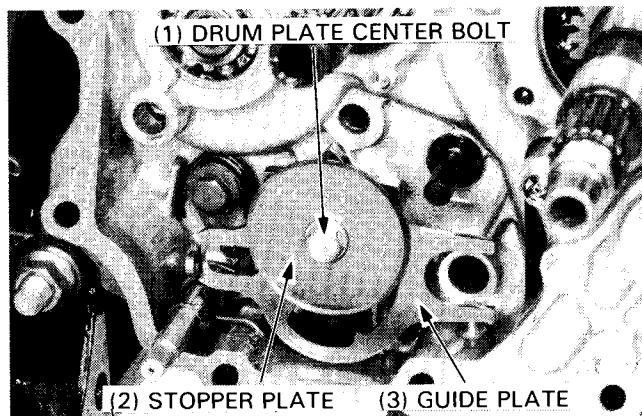
- Gearshift pedal.
- Centrifugal clutch (Page 8-5).
- Manual clutch (Page 8-9).

Unhook the spring from the guide plate and pull the gearshift spindle out of the crankcase.

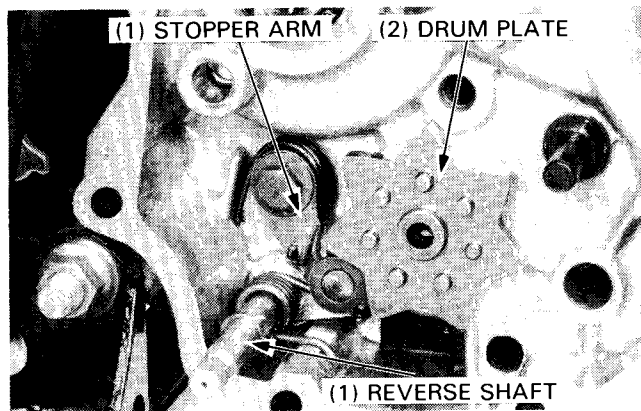


CLUTCH/GEARSHIFT LINKAGE

Remove the drum plate center bolt, stopper plate and guide plate.

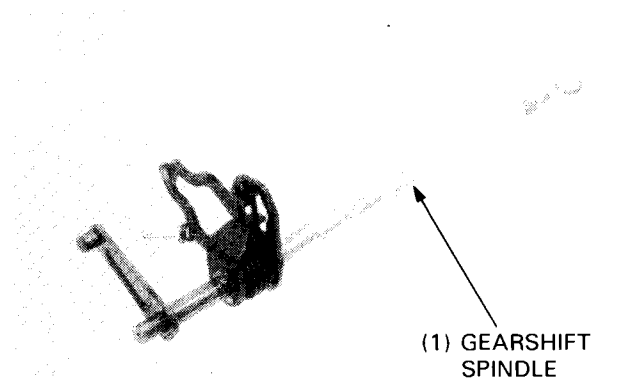


Remove the drum plate and stopper arm by removing the bolt. Remove the reverse shaft.



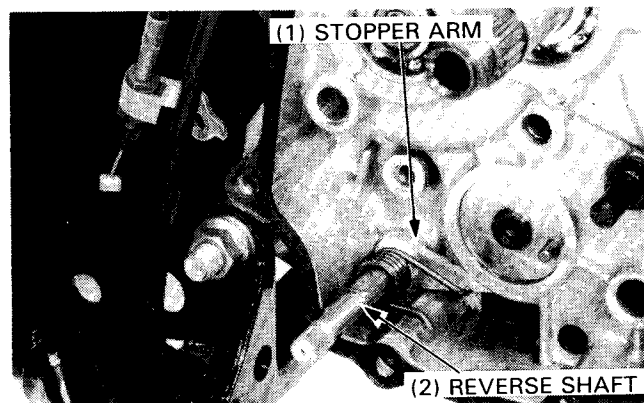
INSPECTION

Check the gearshift spindle for wear or damage.



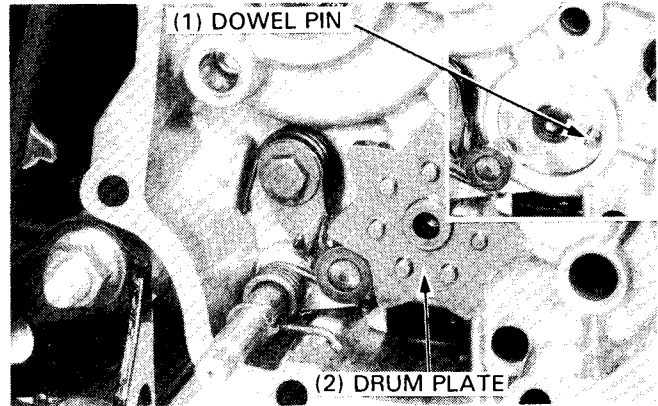
INSTALLATION

Install the reverse shaft. Assemble the stopper arm, spring and washer, and install them.



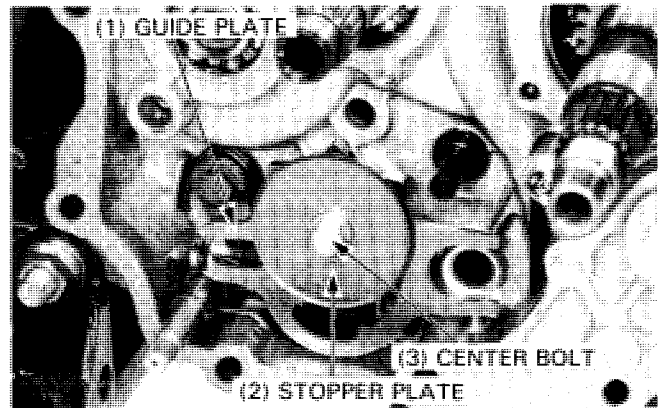
CLUTCH/GEARSHIFT LINKAGE

Install the dowel pin into the shift drum.
Install the drum plate by aligning the hole in the plate with the dowel pin.

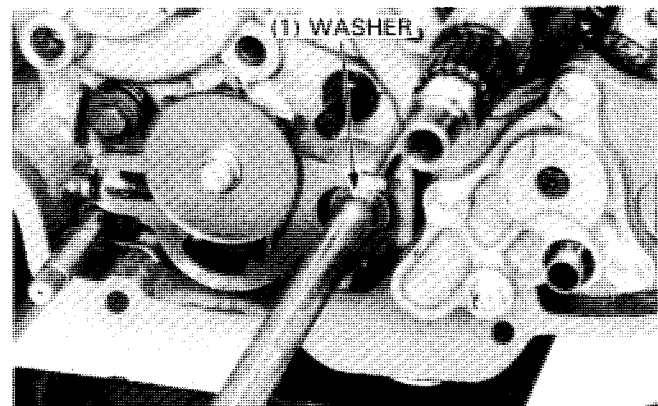


Install the guide plate, stopper plate and drum plate center bolt.
Tighten the drum plate center bolt.

TORQUE: 10 – 14 N·m (1.0 – 1.4 kg·m, 7.2 – 10 ft·lb)



Install the washer over the gearshift spindle.

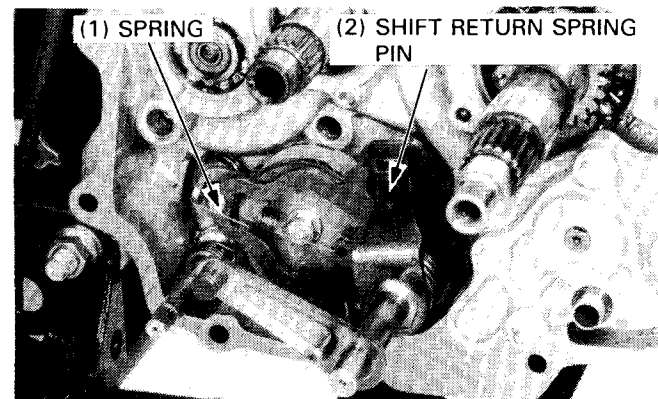


Install the gearshift spindle.
Insert the end of the return spring into the return spring pin.
Hook the spring onto the guide plate.

NOTE

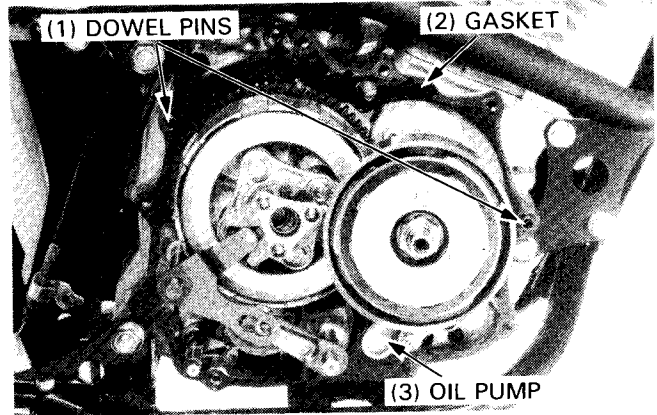
- The shift spindle hole in the left crankcase cover has an oil seal. When installing the spindle, use care not to damage it.

Install the gearshift pedal (Page 9-12).

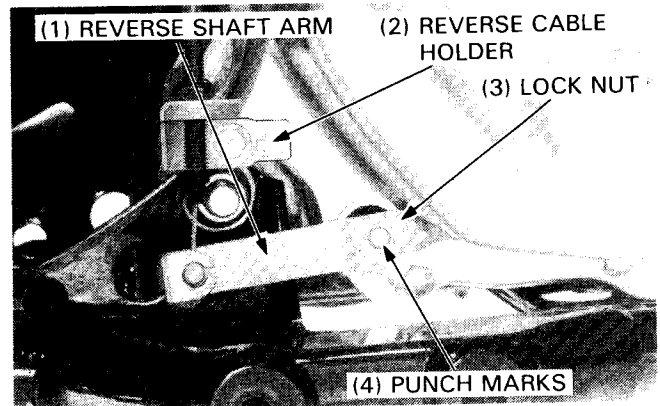


RIGHT CRANKCASE COVER INSTALLATION

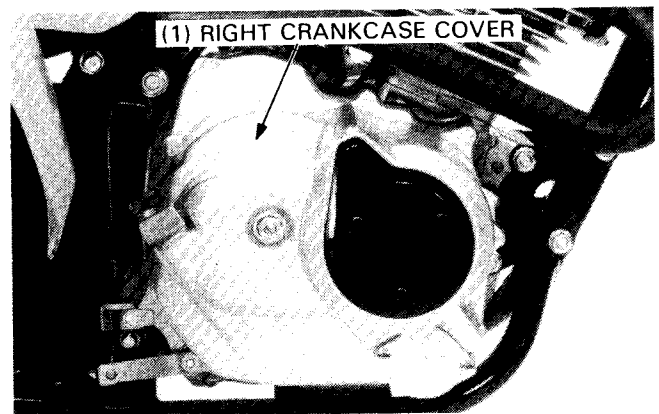
Install a new gasket and dowel pins.



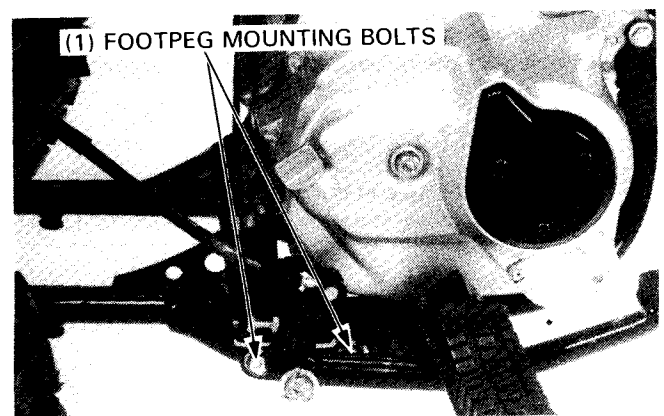
Install the right crankcase cover and bolts.
Connect the reverse cable to the reverse shaft arm and install the reverse shaft arm onto the reverse shaft.
Align the punch marks on the reverse shaft arm and the shaft.
Install the lock nut and reverse cable holder.



Tighten the right crankcase cover bolts securely.

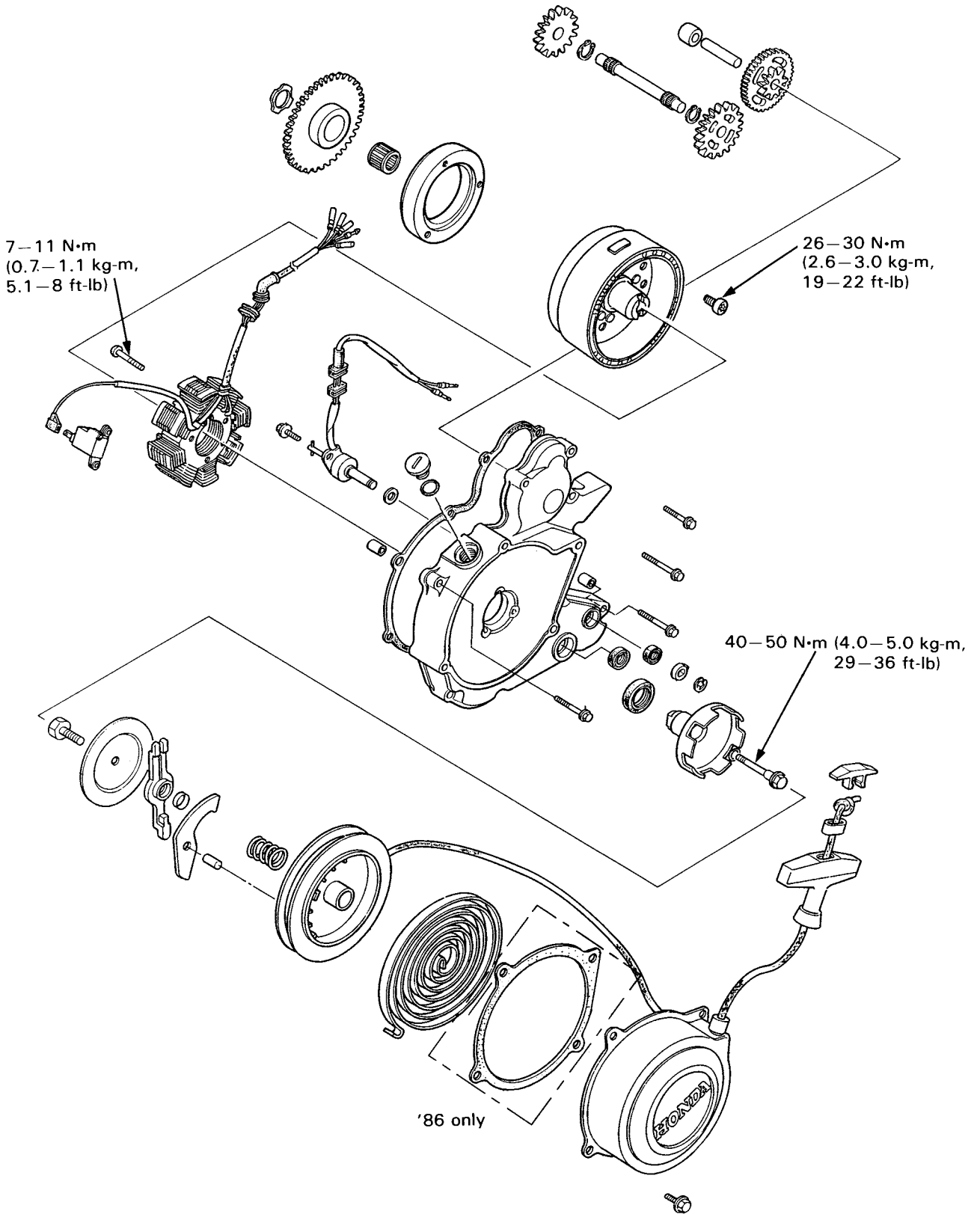


Install the right footpeg mounting bolts.
Adjust the clutch and reverse cable (Page 3-14).
Fill the engine with recommended oil. Check the clutch and reverse lock mechanism for smooth operation.
Check for oil leaks.



MEMO

RECOIL STARTER/ALTERNATOR



9. RECOIL STARTER/ALTERNATOR

SERVICE INFORMATION	9-1	ALTERNATOR	9-5
TROUBLESHOOTING	9-1	FLYWHEEL/STARTER CLUTCH	9-7
RECOIL STARTER	9-2		

SERVICE INFORMATION

GENERAL

- This section covers the removal and installation of recoil starter, left crankcase cover, starter gears, alternator and starter clutch.
- Refer to Section 15 for alternator inspection.

TORQUE VALUES

Starter driven pulley bolt	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Starter clutch bolt	26–30 N·m (2.6–3.0 kg-m, 19–22 ft-lb)
Alternator stator bolt	7–11 N·m (0.7–1.1 kg-m, 5.1–8 ft-lb)
Gearshift pedal bolt	14–18 N·m (1.4–1.8 kg-m, 10–13 ft-lb)
Footpeg bolt	80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)

TOOLS

Common

Flywheel puller	07733–0010000 or 07933–2000000
Flywheel holder	07725–0040000 or equivalent commercially available in U.S.A.

TROUBLESHOOTING

Engine does not turn

- Faulty oneway starter clutch
- Starter gear broken

Engine does not turn when operating recoil starter

- Faulty starter ratchet
- Faulty starter driven pulley
- Faulty starter drive pulley

Starter rope does not recoil

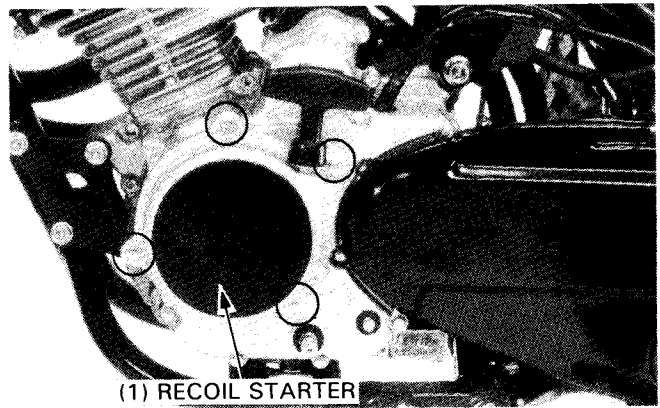
- Faulty recoil spring

RECOIL STARTER/ALTERNATOR

RECOIL STARTER

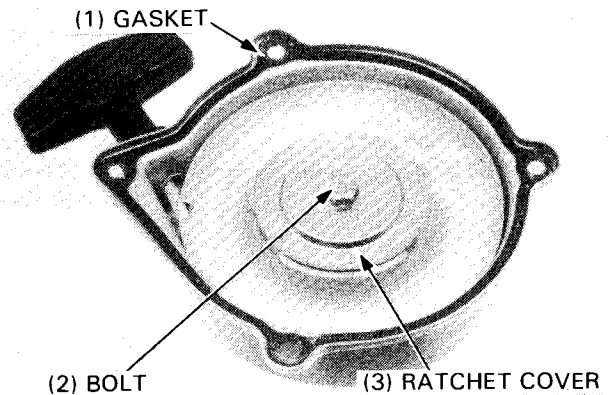
REMOVAL

Shift the transmission into neutral.
Remove the recoil starter.

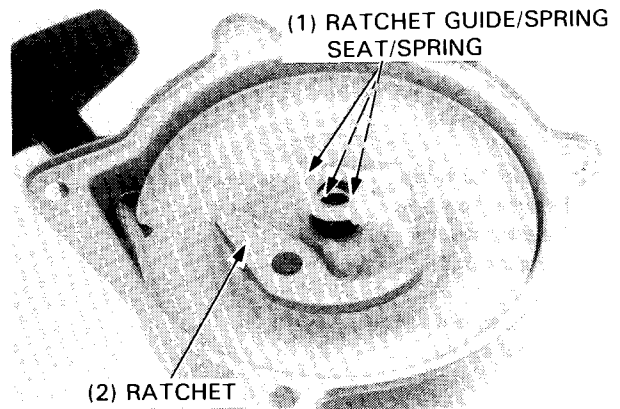


DISASSEMBLY

Remove the gasket, the bolt and the ratchet cover.



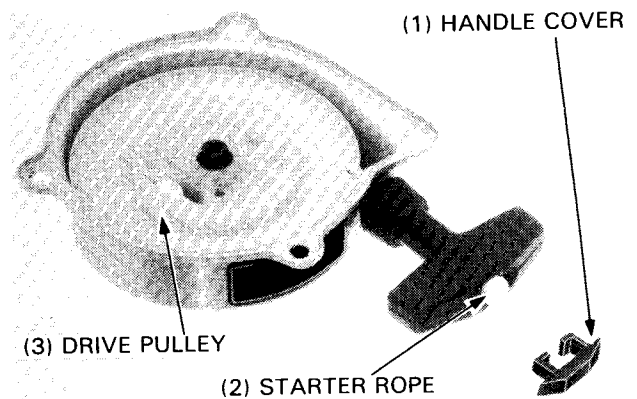
Remove the ratchet, ratchet guide, spring seat and spring.
Check the ratchet, ratchet guide and spring for wear or damage.



Remove the starter handle cover.
Untie the starter rope and remove the starter handle.
Release the starter rope slowly.
Remove the starter drive pulley.

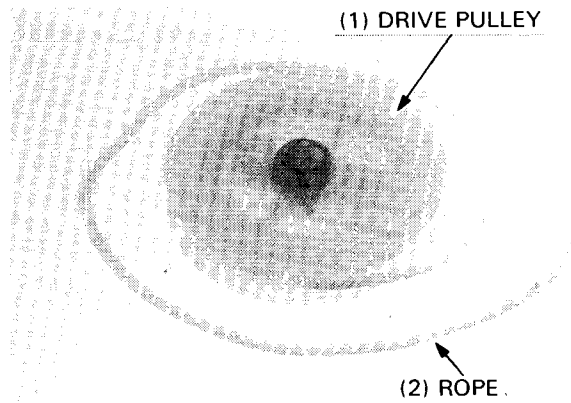
CAUTION

- *Wear eye protection and use care when removing the drive pulley and starter spring. The spring can pop out of the housing if care is not used.*

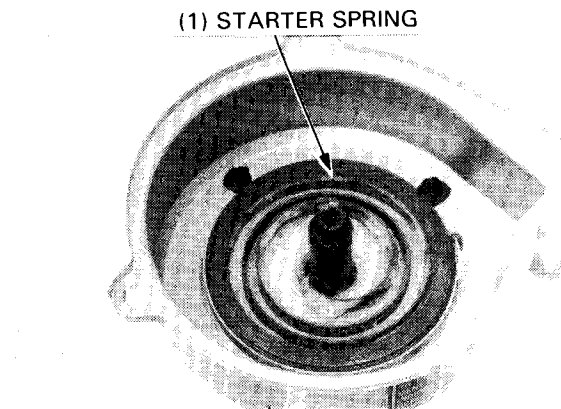


RECOIL STARTER/ALTERNATOR

Remove the starter rope from the drive pulley.
Check the starter rope for wear or damage.



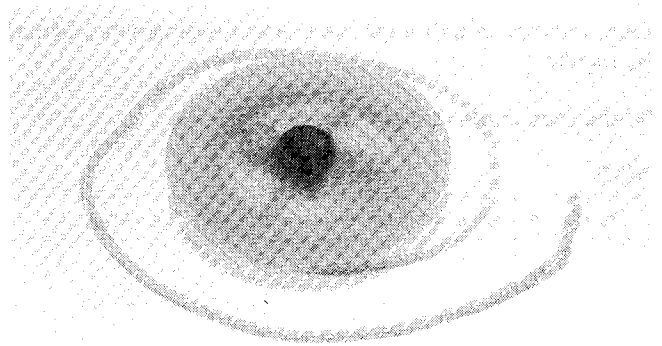
Check the recoil starter spring.
Remove the spring if it is broken.



ASSEMBLY

Install the starter rope and tie a square knot in the end.

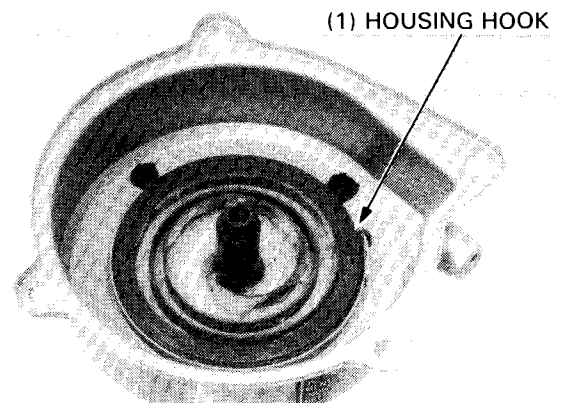
Wrap the rope around the drive pulley in a counterclockwise direction as viewed from the housing side.



Install the spring by hooking the end on the housing hook.

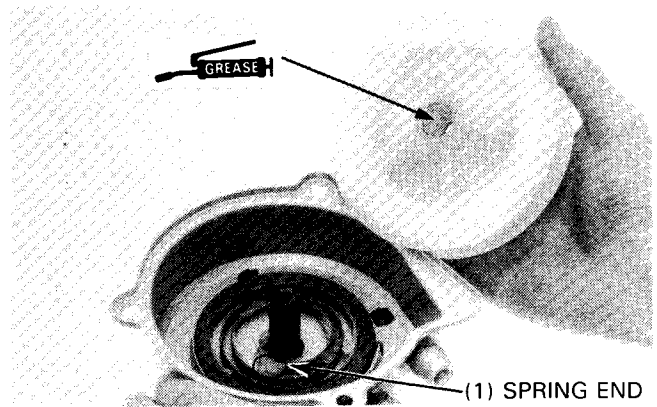
CAUTION

- *Wear eye protection and use care when installing the starter spring. The spring can pop out of the housing if care is not used.*

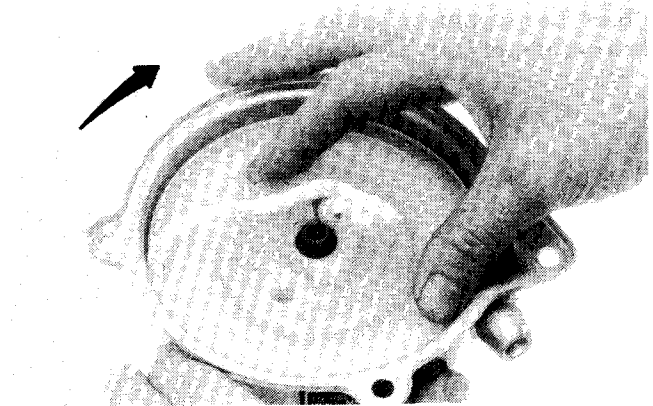


RECOIL STARTER/ALTERNATOR

Apply grease to the pulley shaft and install the drive pulley by hooking the end of the spring on the housing.



Preload the starter spring by turning the pulley 2 turns clockwise.

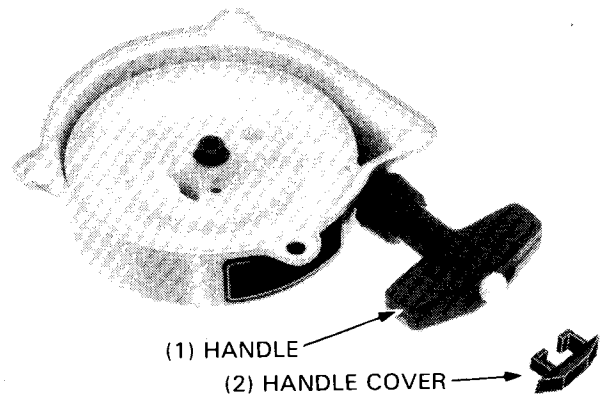


Route the rope end through the starter housing hole and install the handle.

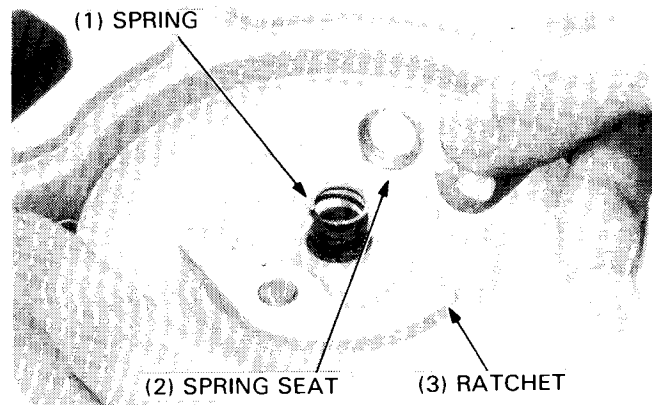
Tie the rope end and install the handle cover.

NOTE

- Do not lift the pulley up when installing the rope.

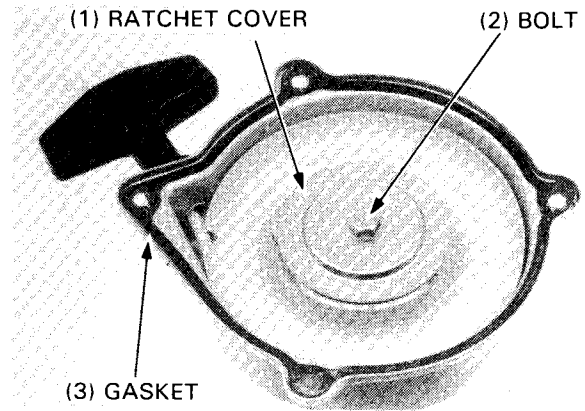


Apply grease to the ratchet and install the ratchet onto the drive pulley.
Install the spring, spring seat and ratchet.



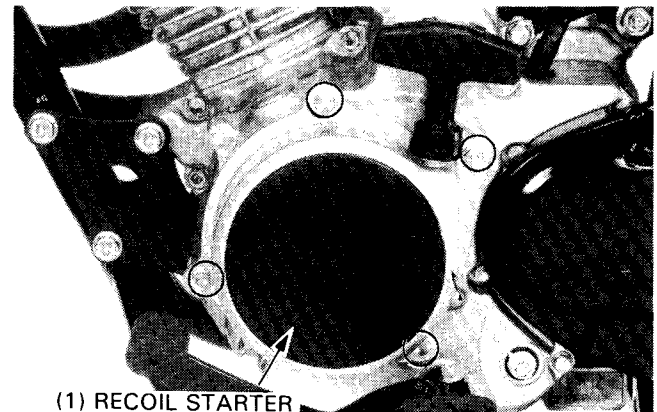
Install the ratchet cover and tighten the bolt.
Check recoil starter operation by pulling the starter handle.

Install a new gasket onto the cover.



INSTALLTION

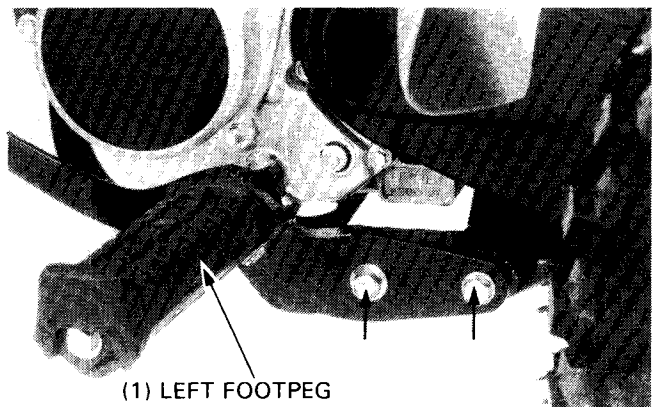
Install the recoil starter with four bolts.



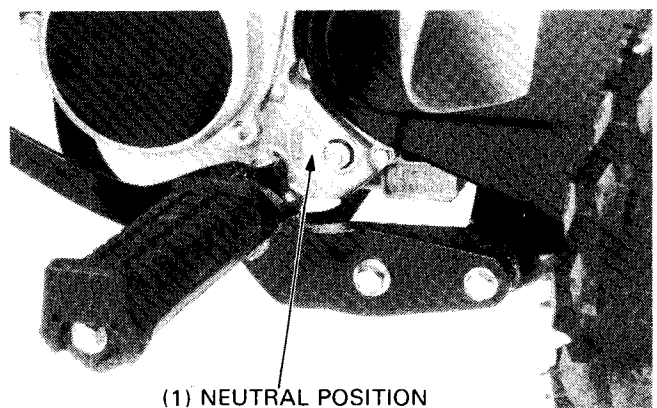
ALTERNATOR

LEFT CRANKCASE COVER REMOVAL

Drain the engine oil (Page 2-2).
Shift the transmission into neutral.
Remove the left footpeg and gearshift pedal.

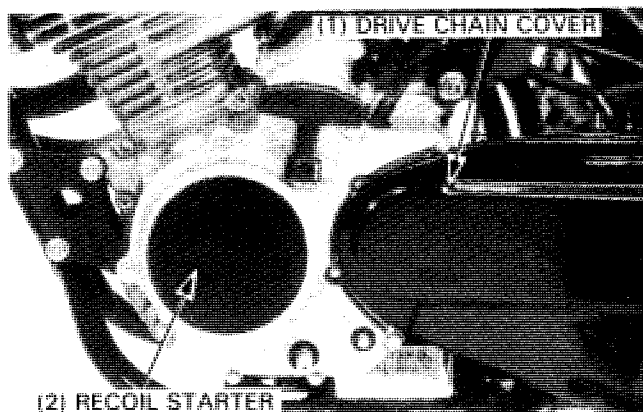


Make sure that the neutral indicator is in neutral position.

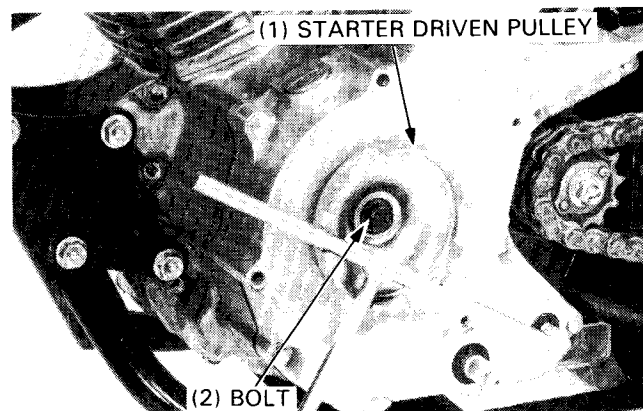


RECOIL STARTER/ALTERNATOR

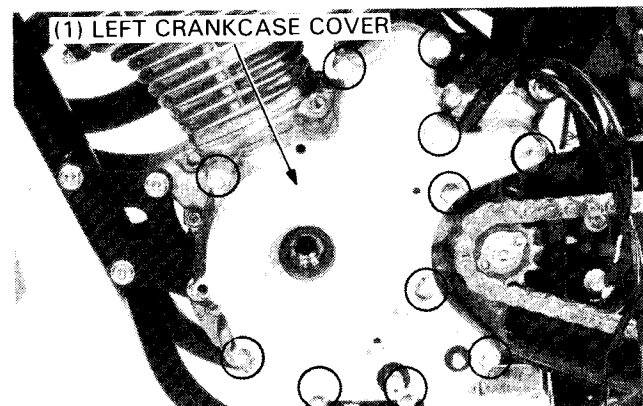
Disconnect the alternator, neutral reverse switch wire connectors.
Remove the drive chain cover and recoil starter (page 9-2).



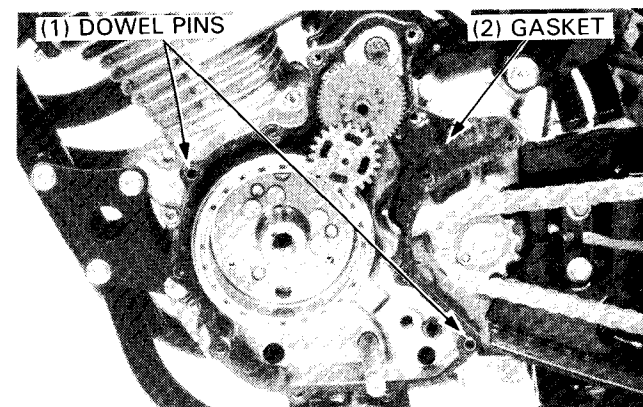
Hold the starter driven pulley with suitable tool and remove its mounting bolt, and then remove the pulley.



Remove the left crankcase cover bolts and cover.

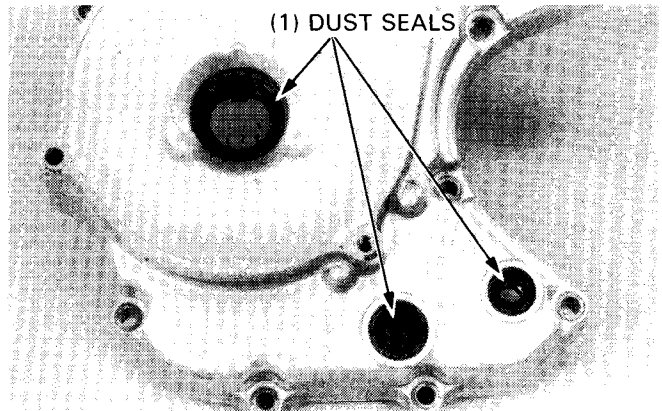


Remove the gasket and dowel pins.



LEFT CRANKCASE COVER DUST SEALS INSPECTION

Check the dust seals for wear or damage, replace if necessary.



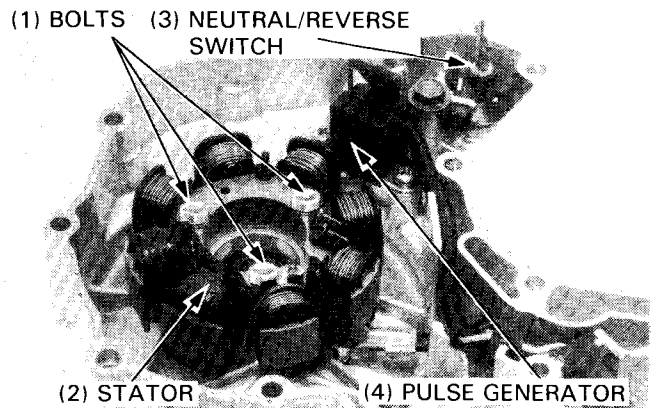
LEFT CRANKCASE COVER DISASSEMBLY/ ASSEMBLY

Remove the three bolts mounting the stator and the stator from the left crankcase cover.

Install the stator onto the crankcase cover and tighten the bolts and insert the alternator wire grommets into the groove in the crankcase cover.

TORQUE: 7 – 11 N·m (0.7 – 1.1 kg·m, 5.1 – 8.0 ft·lb)

Remove the pulse generator by removing the screws. Remove the neutral/reverse switch mounting bolt and switch. Install the neutral/reverse switch and pulse generator in the reverse order of removal.



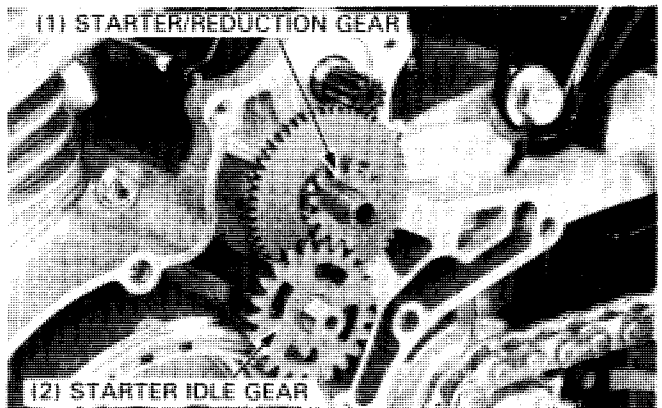
WARNING

- *Connect the neutral (Light green/Red) and reverse (Gray) switch wires properly at installation.*

FLYWHEEL/STARTER CLUTCH

REMOVAL

Remove the starter reduction gear and starter idle gears.



Hold the flywheel with the flywheel holder or band strap wrench and remove the flywheel with the rotor puller.

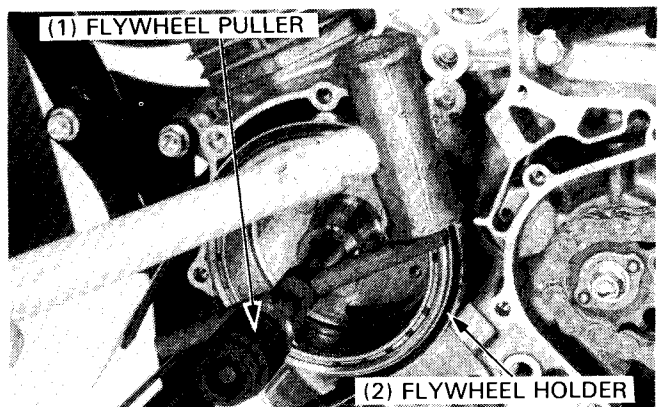
TOOLS:

Flywheel puller

07733 – 0010000 or
07933 – 2000000

Flywheel holder

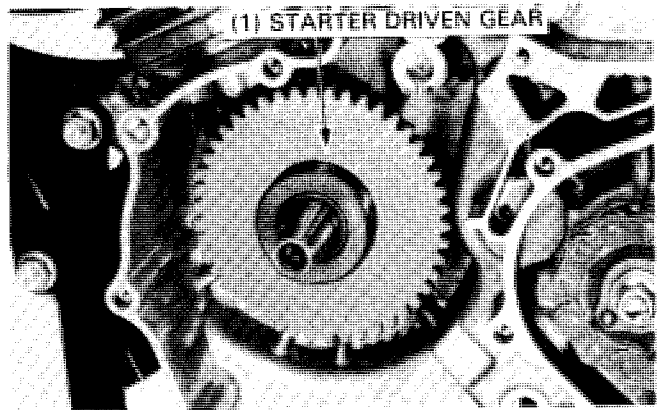
07725 – 0040000 or
equivalent commercially
available in U.S.A.



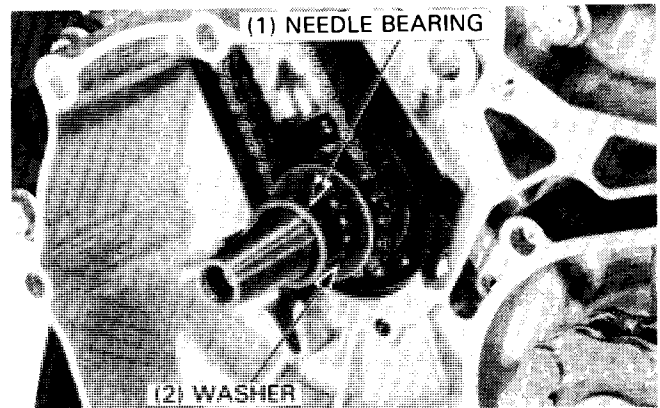
Refer to Page 9-10 for flywheel installation.

RECOIL STARTER/ALTERNATOR

Remove the starter driven gear.



Remove the needle bearing and washer.



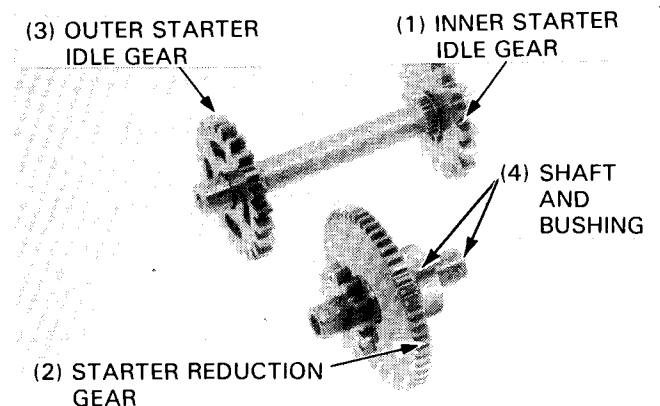
INSPECTION

Inspect the starter reduction gear, inner starter idle gear and outer starter idle gear for wear or damage.

NOTE

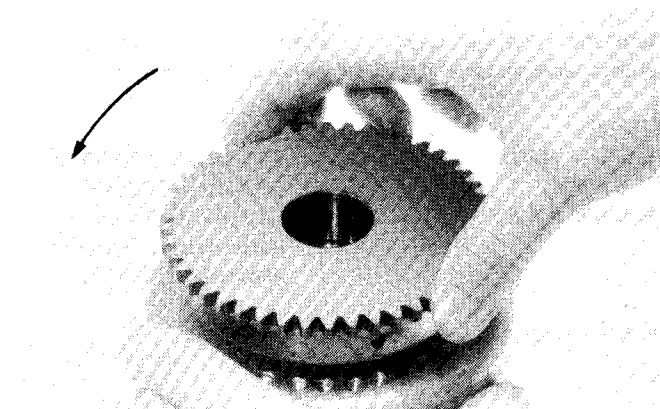
- Do not mix up the inner starter idle gear (18T) and the outer starter idle gear (22T) at installation.

Inspect the reduction gear shaft and the shaft bushing for wear or damage.



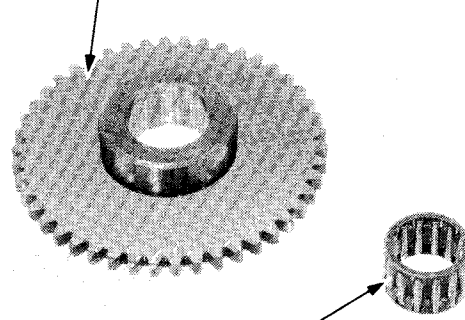
Install the starter driven gear into the oneway clutch outer by turning it clockwise.

Check the operation of the oneway clutch by turning the driven gear. You should be able to turn the driven gear counterclockwise smoothly, but should not be able to turn it clockwise.



Inspect the starter driven gear and needle bearing for wear or damage.

(1) STARTER DRIVEN GEAR



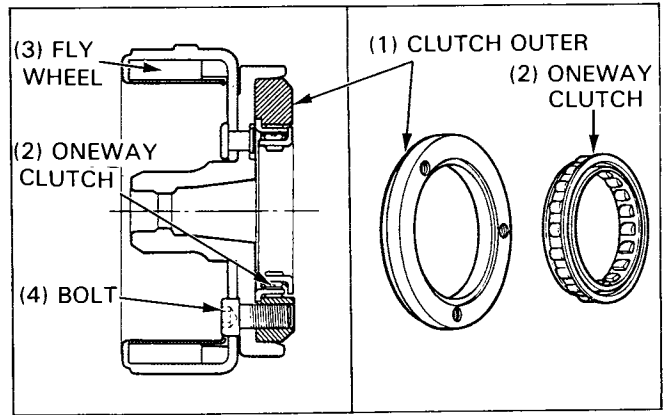
(2) NEEDLE BEARING

ONEWAY CLUTCH DISASSEMBLY/ASSEMBLY

Remove the oneway clutch bolts, oneway clutch and clutch outer from the flywheel. Check the oneway clutch rollers for wear or damage. Apply lock agent to bolt threads and assemble the clutch outer, oneway clutch and bolts to the flywheel. Tighten the bolts.

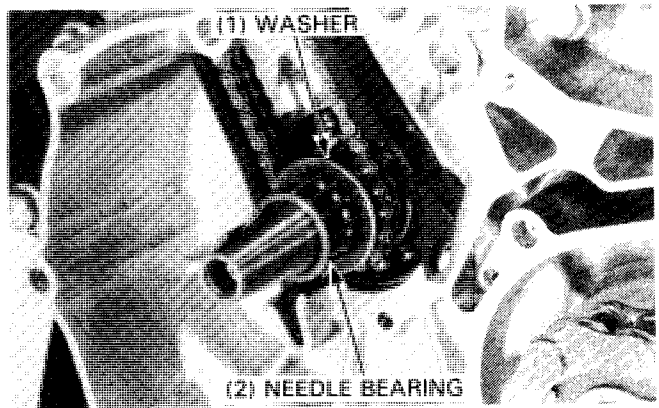
TORQUE: 26 – 30 N·m (2.6 – 3.0 kg·m, 19 – 22 ft·lb)

Recheck the oneway clutch operation.

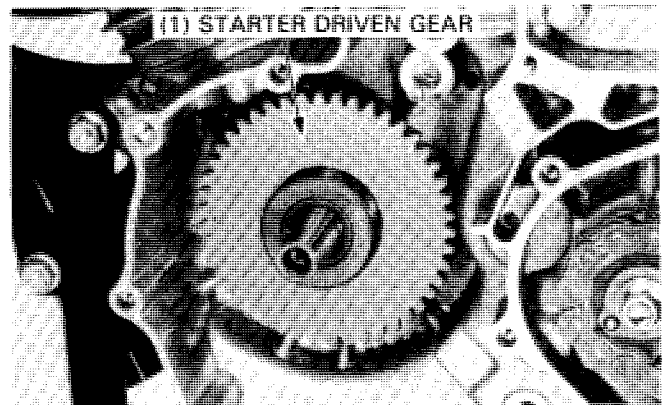


INSTALLATION

Install the washer and needle bearing onto the crankshaft.



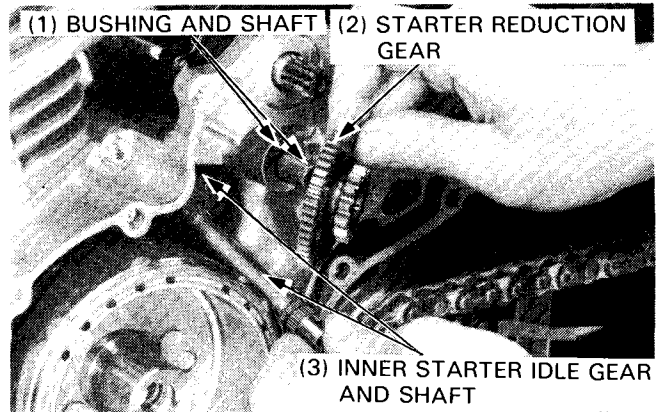
Install the starter driven gear.



RECOIL STARTER/ALTERNATOR

Align the key way in the flywheel with the key on the crankshaft and install the flywheel.

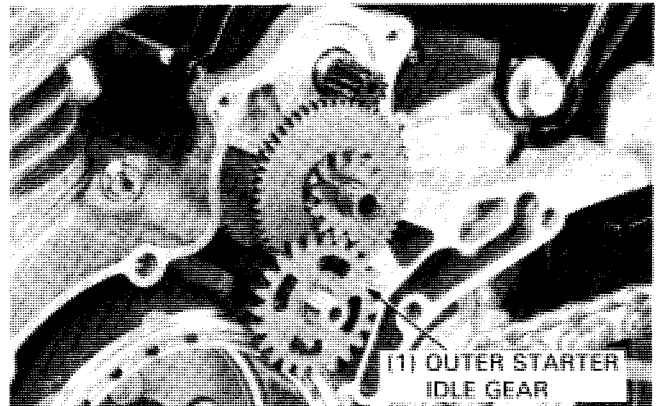
Install starter reduction gear shaft and bushing. Assemble the inner starter idle gear (18 T) and shaft, then install them and the reduction gear.



Install the outer starter idle gear (22 Teeth).

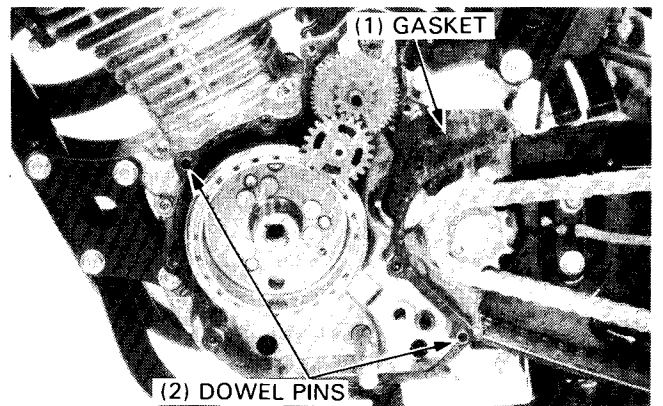
NOTE

- Install the inner starter idle gear (18T) and outer starter idle gear (22T) correctly.
- Incorrect engagement could damage the gears.

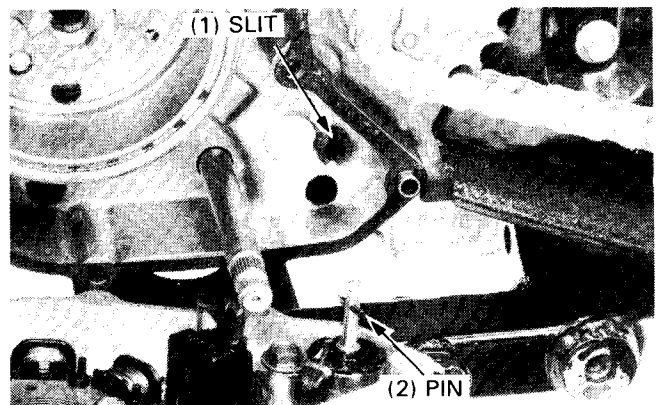


LEFT CRANKCASE COVER INSTALLATION

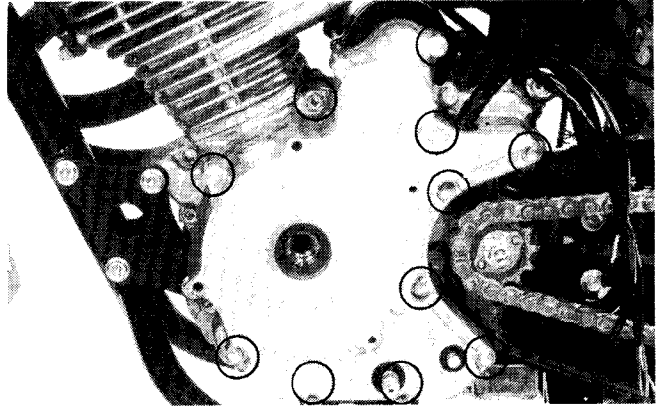
Install new gasket and dowel pins.



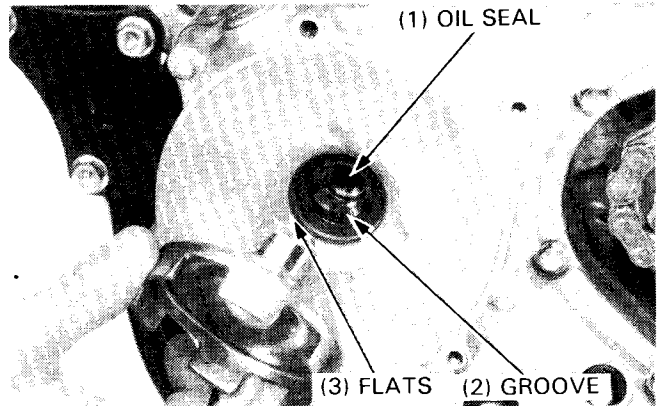
Align the slit on the shift drum with the pin on the neutral switch.



Install the left crankcase cover and tighten the cover bolts.



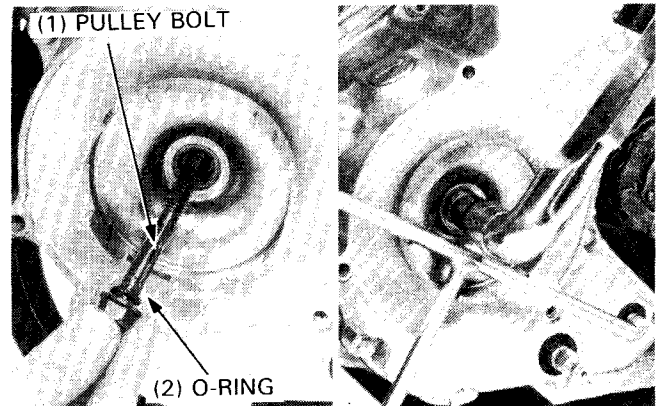
Apply grease to the oil seal lip and install the starter driven pulley by aligning its flats with the groove in the flywheel.



Install the O-ring onto the pulley bolt.

Hold the driven pulley with suitable tool and tighten the pulley bolt.

TORQUE: 40 – 50 N·m (4.0 – 5.0 kg-m, 29 – 36 ft-lb)



Install the following:

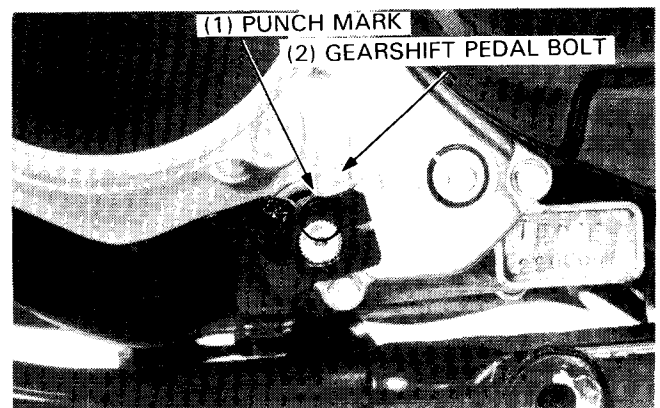
- recoil starter (Page 9-2).
 - drive chain cover
 - gearshift pedal with aligning the punch marks
- Tighten the gearshift pedal bolt.

TORQUE: 14 – 18 N·m (1.4 – 1.8 kg-m, 10 – 13 ft-lb)

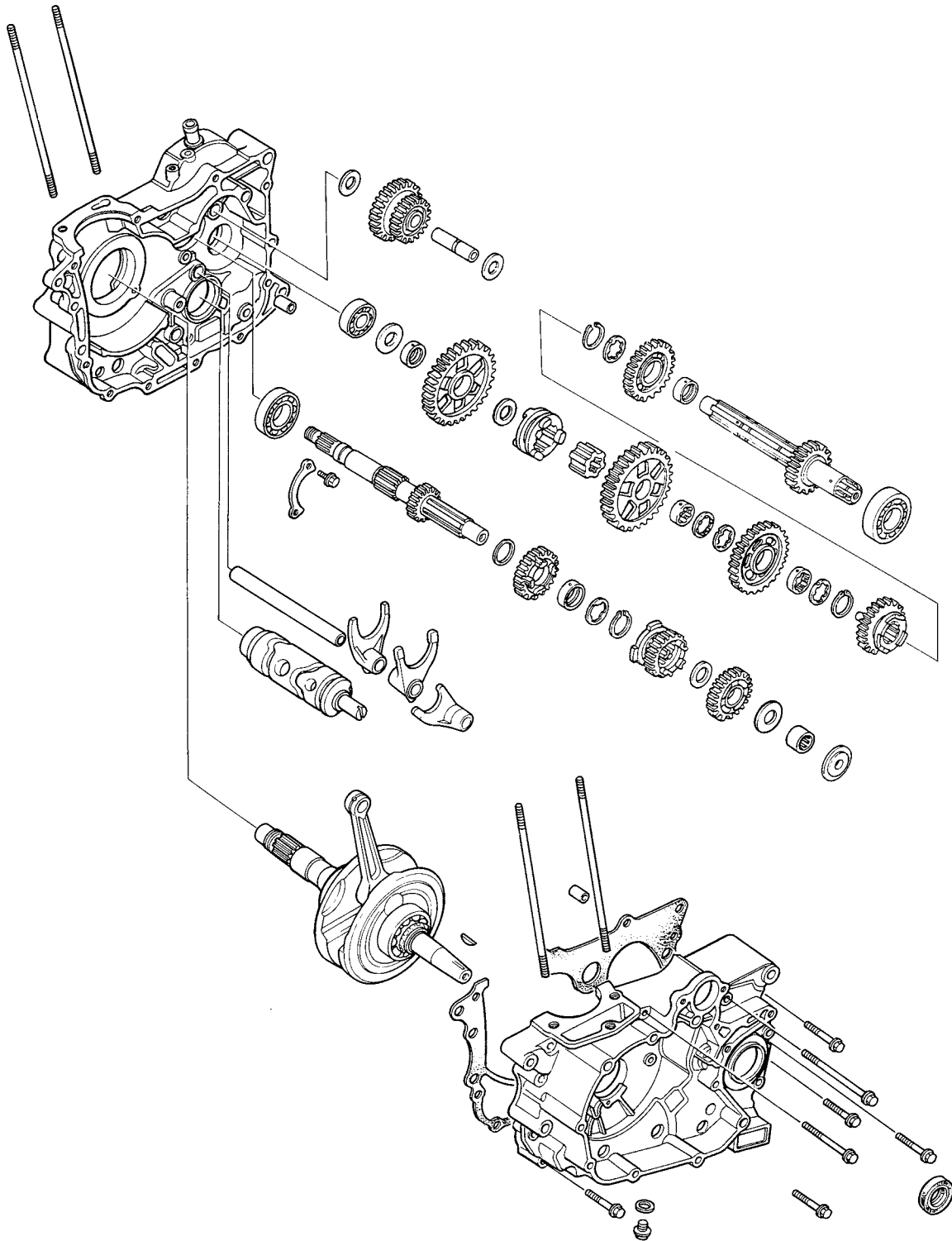
- left footpeg

Connect the alternator, neutral/reverse switch wire connectors.

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



TRANSMISSION/CRANKSHAFT



10. TRANSMISSION/CRANKSHAFT

SERVICE INFORMATION	10-1	TRANSMISSION DISASSEMBLY	10-5
TROUBLESHOOTING	10-2	TRANSMISSION ASSEMBLY	10-10
CRANKCASE SEPARATION	10-3	CRANKCASE ASSEMBLY	10-11
CRANKSHAFT	10-4		

SERVICE INFORMATION

GENERAL

- For crankshaft and transmission repair, the crankcase must be separated.
- Remove the following parts before separating the crankcase.

Cylinder head	Section 6	Clutch and gearshift linkage	Section 8
Cylinder and Piston	Section 7	Oil pump	Section 2
Starter motor	Section 16		
Recoil starter	Section 9		

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT	
Crankshaft	Runout	Right	—	
		Left	—	
	Connecting rod big end side clearance		0.05–0.50 mm (0.002–0.019 in)	0.80 mm (0.031 in)
	Connecting rod big end radial clearance		0–0.008 mm (0–0.0003 in)	0.05 mm (0.002 in)
Transmission	Shift fork shaft O.D.		12.966–12.984 mm (0.5105–0.5112 in)	12.96 mm (0.510 in)
	Shift fork	I.D.	13.000–13.021 mm (0.5118–0.5126 in)	13.04 mm (0.513 in)
		Claw thickness	4.93–5.00 mm (0.194–0.197 in)	4.50 mm (0.177 in)
	Reverse idle gear	I.D.	13.000–13.018 mm (0.5118–0.5125 in)	13.05 mm (0.514 in)
		Shaft O.D.	12.972–12.987 mm (0.5107–0.5113 in)	12.93 mm (0.509 in)
	Gear I.D.	M4	23.020–23.041 mm (0.9063–0.9071 in)	23.07 mm (0.908 in)
		M5	15.000–15.018 mm (0.5906–0.5913 in)	15.07 mm (0.593 in)
		C1	18.016–18.034 mm (0.7093–0.7099 in)	18.07 mm (0.711 in)
		CR	23.020–23.041 mm (0.9063–0.9071 in)	23.07 mm (0.908 in)
		C2	23.020–23.041 mm (0.9063–0.9071 in)	23.07 mm (0.908 in)
		C3	23.020–23.041 mm (0.9063–0.9071 in)	23.07 mm (0.908 in)
	Bushing I.D. and O.D.	C1 I.D.	15.016–15.034 mm (0.5912–0.5919 in)	15.06 mm (0.593 in)
		C1 O.D.	17.966–17.984 mm (0.7073–0.7080 in)	17.93 mm (0.706 in)
		C3, M4 I.D.	20.020–20.041 mm (0.7882–0.7890 in)	20.07 mm (0.790 in)
C3, M4 O.D.		22.959–22.980 mm (0.9039–0.9047 in)	22.93 mm (0.903 in)	
Bushing O.D.	CR, C2	22.959–22.980 mm (0.9039–0.9047 in)	22.93 mm (0.903 in)	

TRANSMISSION/CRANKSHAFT

ITEM		STANDARD	SERVICE LIMIT
Mainshaft and Countershaft O.D.	M4	19.959–19.980 mm (0.7858–0.7866 in)	19.93 mm (0.785 in)
	M5	14.966–14.984 mm (0.5892–0.5899 in)	14.93 mm (0.588 in)
	C3	19.959–19.980 mm (0.7858–0.7866 in)	19.93 mm (0.785 in)
	C1	14.983–14.994 mm (0.5899–0.5903 in)	14.93 mm (0.588 in)

TORQUE VALUE

Tensioner pivot bolt 10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)

TOOLS

Special

Bearing remover, 15 mm	07936–KC10000
– remover assy, 15 mm	07936–KC10500
– remover shaft, 15 mm	07936–KC10100
– remover head, 15 mm	07936–KC10200
– remover weight	07741–0010201 or 07936–3710200
Attachment, 45 x 50 mm	07946–6920100

Common

Driver	07749–0010000
Attachment, 32 x 35 mm	07746–0010100
Attachment, 42 x 47 mm	07746–0010300
Pilot, 15 mm	07746–0040300
Pilot, 20 mm	07746–0040500
Pilot, 22 mm	07746–0041000

TROUBLESHOOTING

Hard to shift

- Shift fork bent
- Shift fork shaft bent

Transmission jumps out of gear

- Gear dogs worn
- Shift fork bent or damaged

Crankshaft noisy

- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft main journal bearing

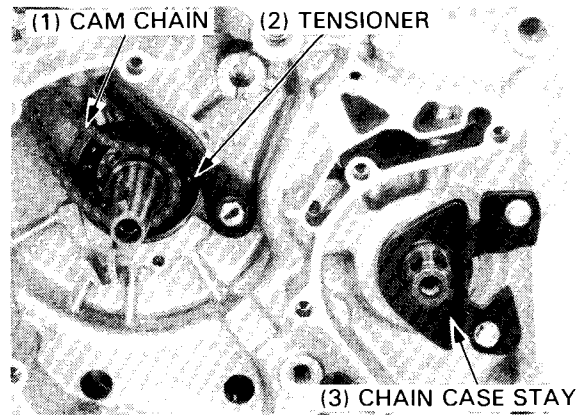
Gears noisy

- Worn transmission gear

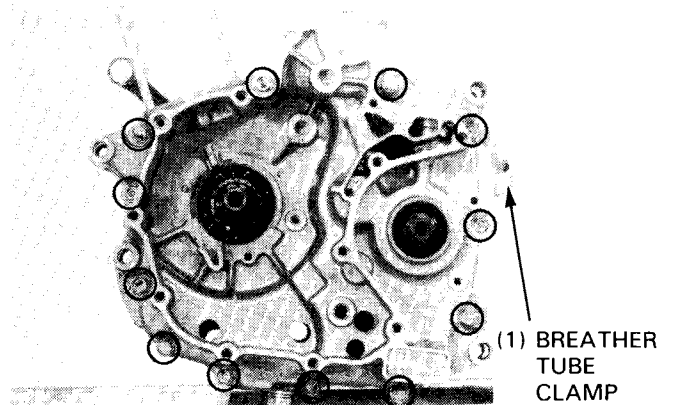
CRANKCASE SEPARATION

Remove the following:

- counterhshaft chain case stay
- tensioner
- cam chain



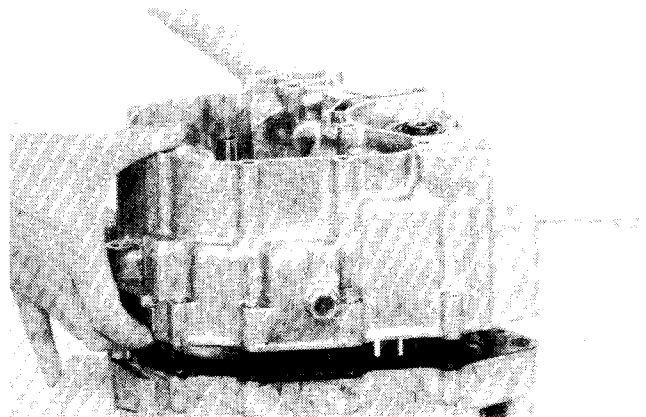
Remove the twelve bolts and breather tube clamp.



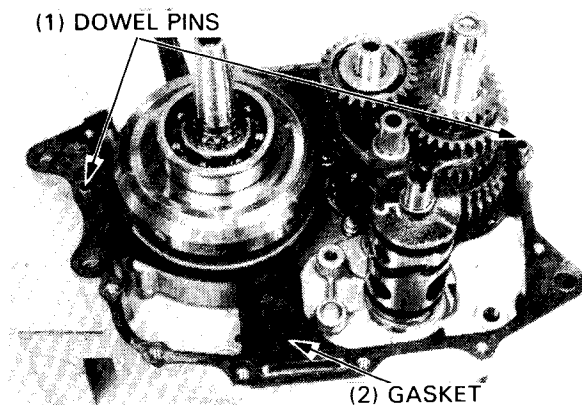
Place the engine with the right crankcase side down. Remove the left crankcase while tapping the cases at several locations with soft hammer.

CAUTION

- *Do not pry between the left and right crankcases.*



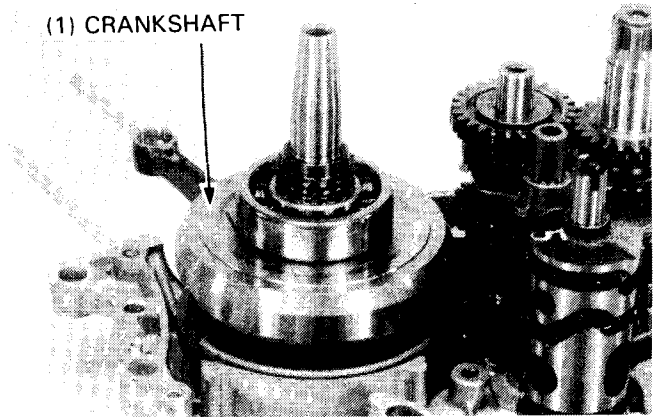
Remove the dowel pins and gasket.



CRANKSHAFT

REMOVAL/INSPECTION

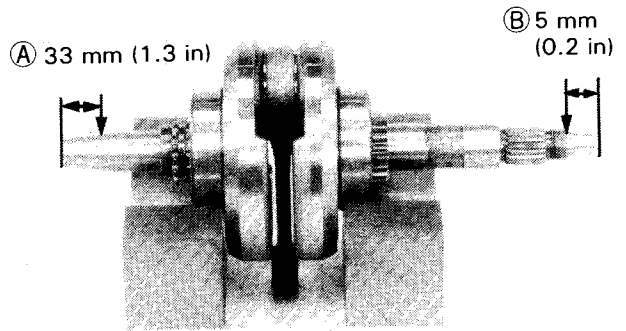
Remove the crankshaft.



Set the crankshaft on a stand or V-blocks and read the runout using a dial indicator.

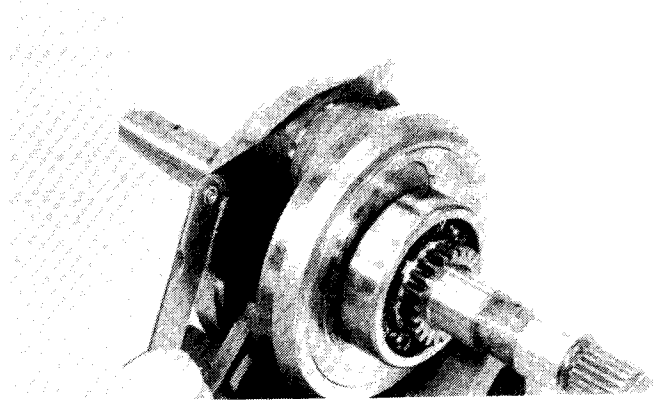
SERVICE LIMIT:

- Ⓐ LEFT: 0.08 mm (0.003 in)
- Ⓑ RIGHT: 0.10 mm (0.004 in)



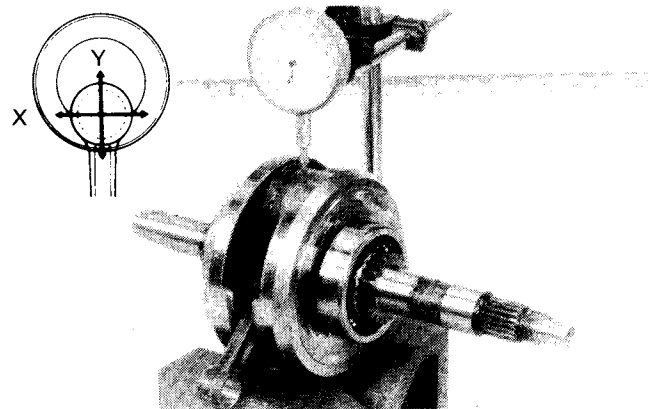
Measure the side clearance at the connecting rod big end with a feeler gauge.

SERVICE LIMIT: 0.80 mm (0.031 in)



Measure the radial clearance at the connecting rod big end, at two points in the direction indicated by the arrows.

SERVICE LIMIT: 0.05 mm (0.002 in)

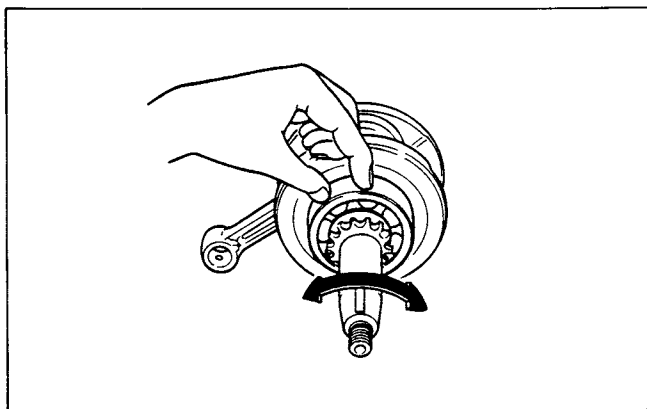


Turn the outer race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing inner race fits tightly on the crankshaft.

Remove and discard the bearings, if the races do not turn smoothly, quietly, or if they fit loosely on the crankshaft.

NOTE

- Replace crankshaft bearings in pairs.

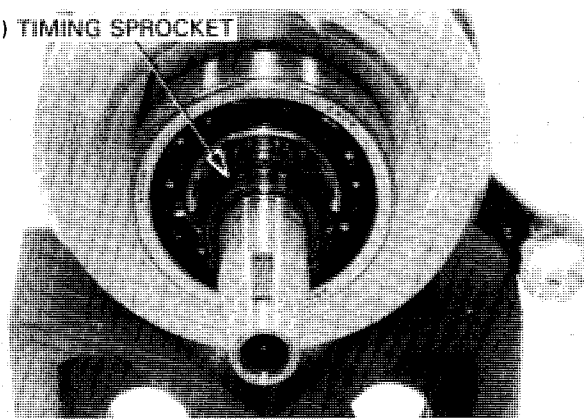


Check the sprocket teeth for wear; replace if necessary. Make sure that the sprocket is positioned correctly. Align any tooth end with the keyway center in the crankshaft.

INSTALLATION

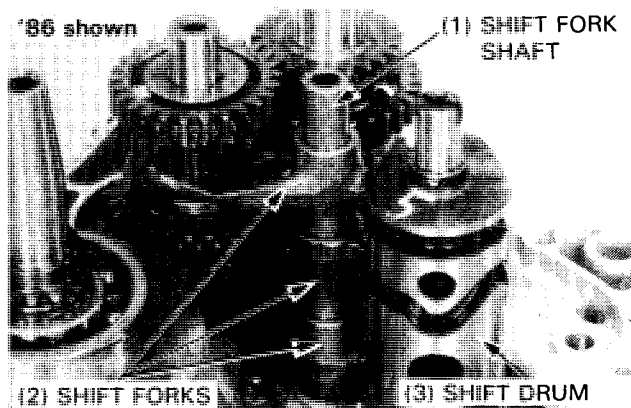
Install the crankshaft in the reverse order of removal.

(1) TIMING SPROCKET

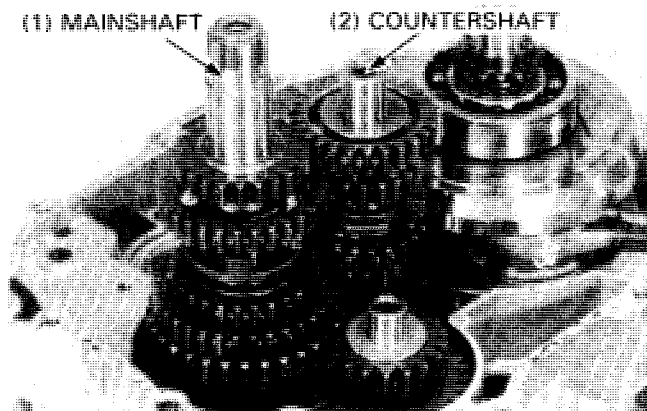


TRANSMISSION DISASSEMBLY

Pull the gearshift fork shaft out and remove the shift forks and shift drum.

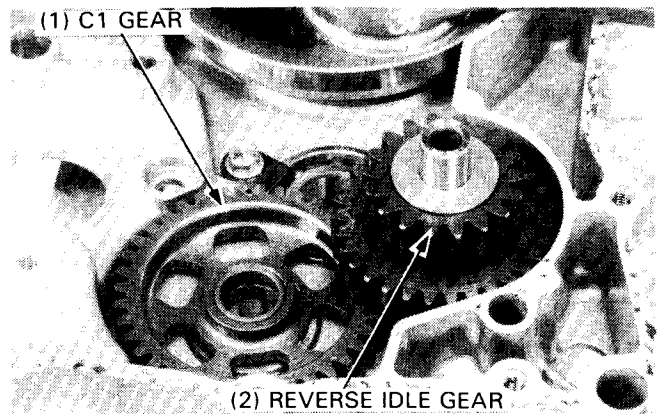


Remove the mainshaft and countershaft assemblies.



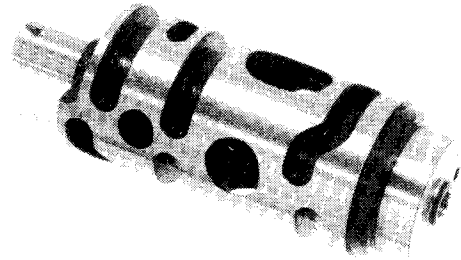
TRANSMISSION/CRANKSHAFT

Remove the C1 gear and the reverse idle gear assembly.



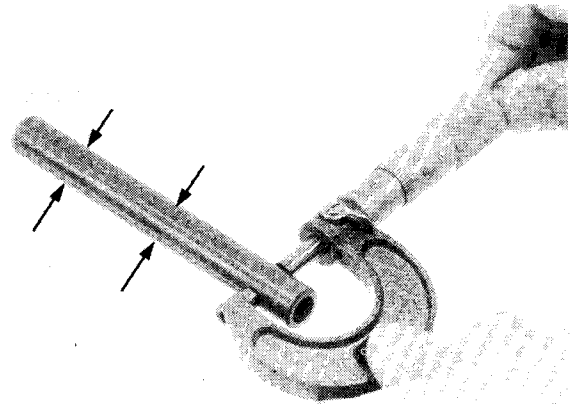
INSPECTION

Inspect the shift drum for scoring, scratches, or lack of lubrication.
Check the shift drum grooves for damage.



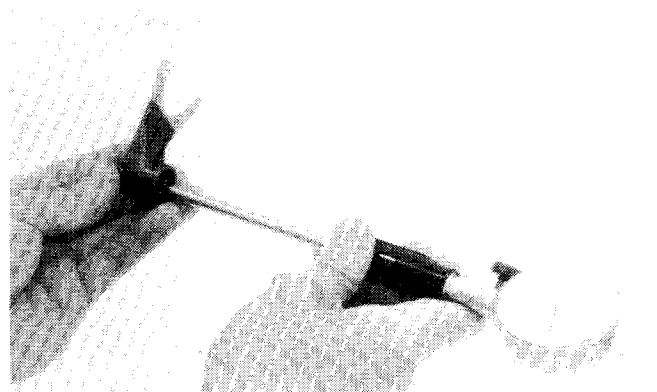
Check the shift fork shaft for wear or damage.
Measure the shift fork shaft O.D.

SERVICE LIMIT: 12.96 mm (0.510 in)



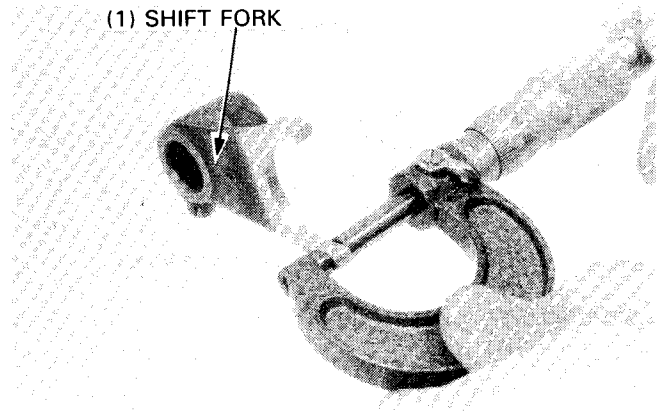
Check the shift forks for wear or damage.
Measure the I.D. of the shift fork.

SERVICE LIMIT: 13.04 mm (0.513 in)



Measure each fork claw thickness.

SERVICE LIMIT: 4.50 mm (0.177 in)



Check the gear dogs, dog holes and teeth for abnormal wear, or lack of lubrication.

Measure the I.D. of the reverse idle gear hole.

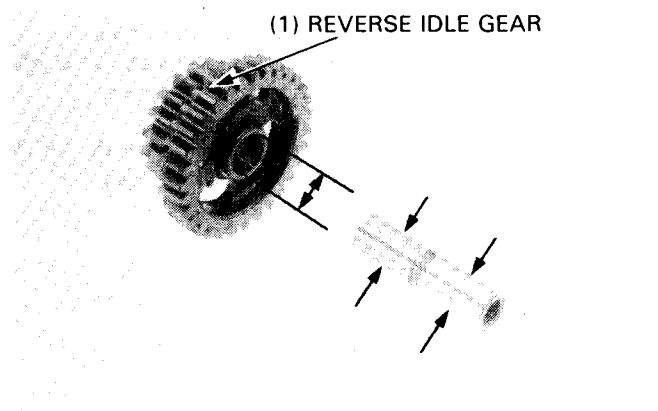
SERVICE LIMIT: 13.05 mm (0.514 in)

Measure the O.D. of the reverse idle gear shaft.

SERVICE LIMIT: 12.93 mm (0.509 in)

Calculate the shaft-to-gear clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



Measure the I.D. of the each gear.

SERVICE LIMIT:

M4	23.07 mm (0.908 in)
M5	15.07 mm (0.593 in)
C1	18.07 mm (0.711 in)
C Reverse	23.07 mm (0.908 in)
C2	23.07 mm (0.908 in)
C3	23.07 mm (0.908 in)

Measure the I.D. and O.D. of each gear bushings.

SERVICE LIMIT:

C1	I.D. 15.06 mm (0.593 in)
	O.D. 17.93 mm (0.706 in)
C3, M4	I.D. 20.07 mm (0.790 in)
	O.D. 22.93 mm (0.903 in)

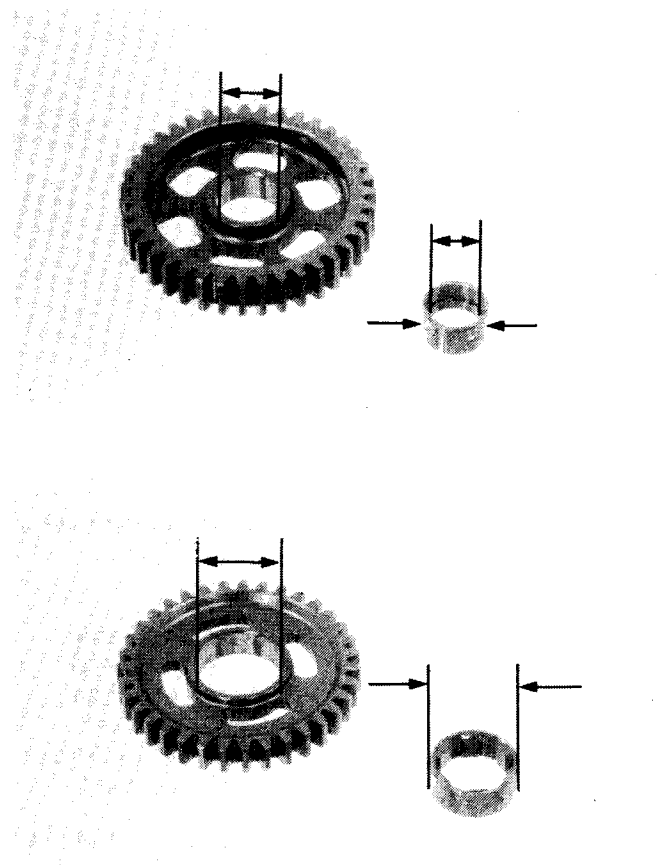
Measure the O.D. of remaining bushing.

SERVICE LIMIT:

C Reverse and C2	22.93 mm (0.903 in)
------------------	---------------------

Calculate the gear bushing-to-gear clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



TRANSMISSION/CRANKSHAFT

Measure the O.D. of the mainshaft and countershaft.

SERVICE LIMIT:

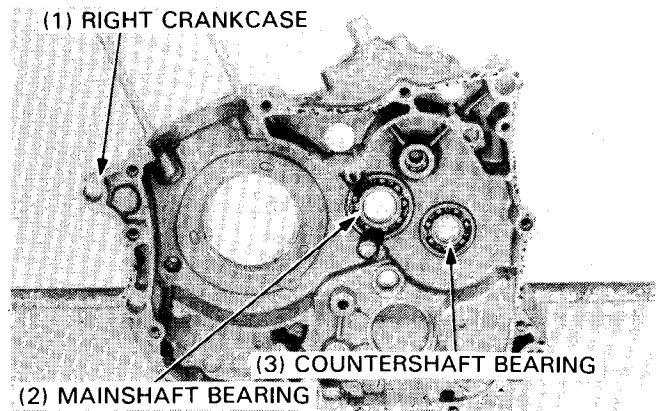
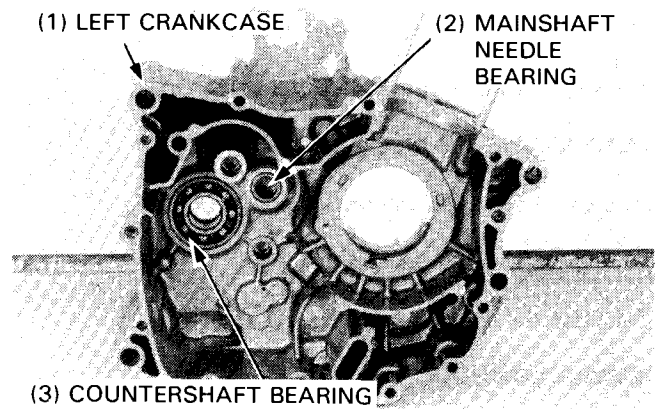
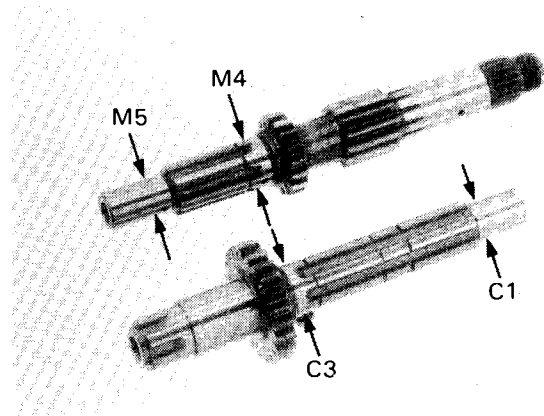
- M4 19.93 mm (0.785 in)
- M5 14.93 mm (0.588 in)
- C3 19.93 mm (0.785 in)
- C1 14.93 mm (0.588 in)

Calculate the shaft-to-bushing or gear clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the case.

Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the case.



BEARING REPLACEMENT

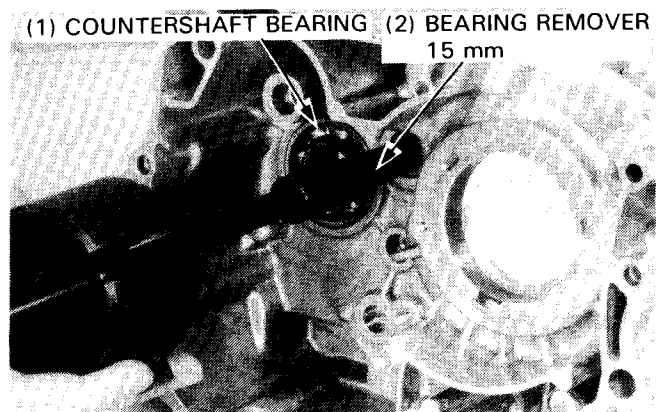
Remove the mainshaft needle bearing from the left crankcase.

TOOLS:

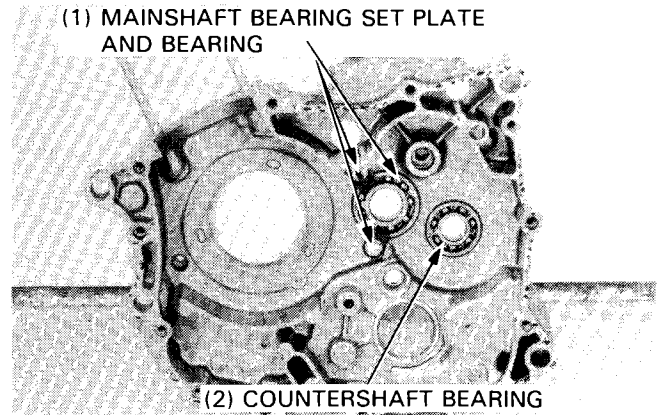
Mainshaft bearing:

- | | |
|------------------------|------------------|
| Bearing remover, 15 mm | 07936-KC10000 |
| – remover assy, 15 mm | 07936-KC10500 |
| – remover shaft, 15 mm | 07936-KC10100 |
| – remover head, 15 mm | 07936-KC10200 |
| – remover weight | 07741-0010201 or |
| | 07936-3710200 |

Drive the dust seal and countershaft bearing out of the left crankcase.



Remove the mainshaft bearing set plate, mainshaft bearing and countershaft bearing from the right crankcase.



Drive new bearings in with the following tools:

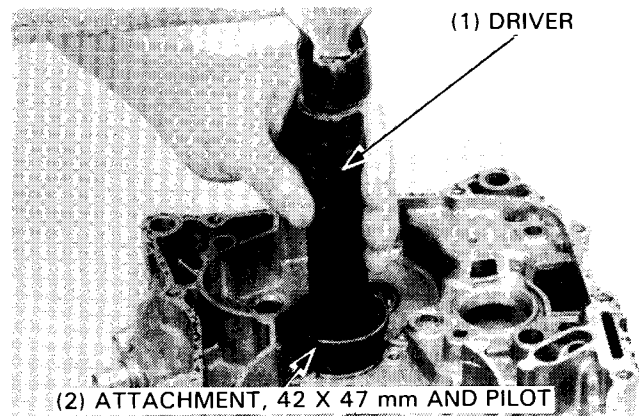
TOOLS:

RIGHT CRANKCASE

Mainshaft bearing:

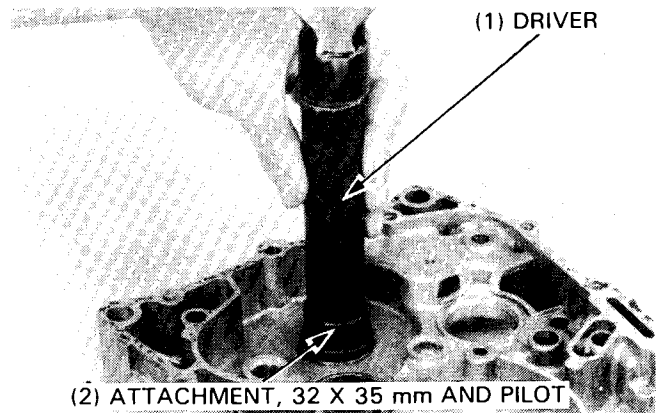
- | | |
|------------------------|---------------|
| Driver | 07749-0010000 |
| Attachment, 42 x 47 mm | 07746-0010300 |
| Pilot, 20 mm | 07746-0040500 |

Install the mainshaft bearing set plate and tighten the screws.



Countershaft bearing:

- | | |
|------------------------|---------------|
| Driver | 07749-0010000 |
| Attachment, 32 x 35 mm | 07746-0010100 |
| Pilot, 15 mm | 07746-0040300 |

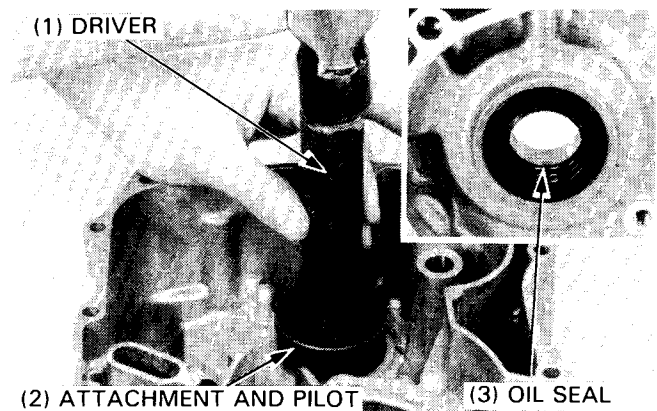


LEFT CRANKCASE

Countershaft bearing:

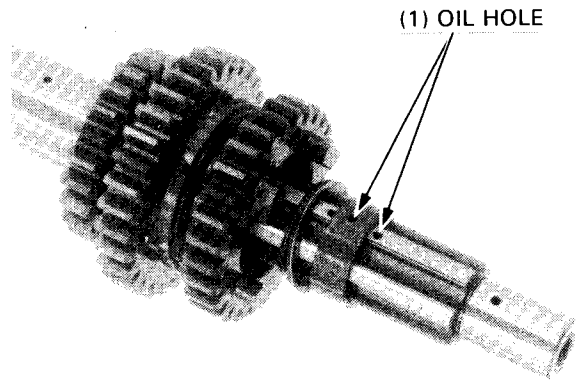
- | | |
|-----------------------|---------------|
| Driver | 07749-0010000 |
| Attachment 45 x 50 mm | 07946-6920100 |
| Pilot, 22 mm | 07746-0041000 |

Apply grease to the oil seal lips and install the oil seal.

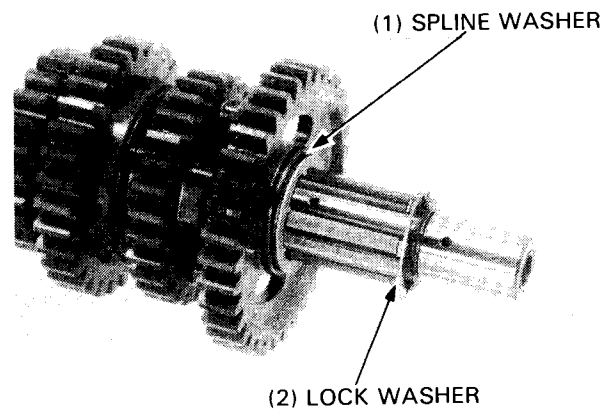


TRANSMISSION ASSEMBLY

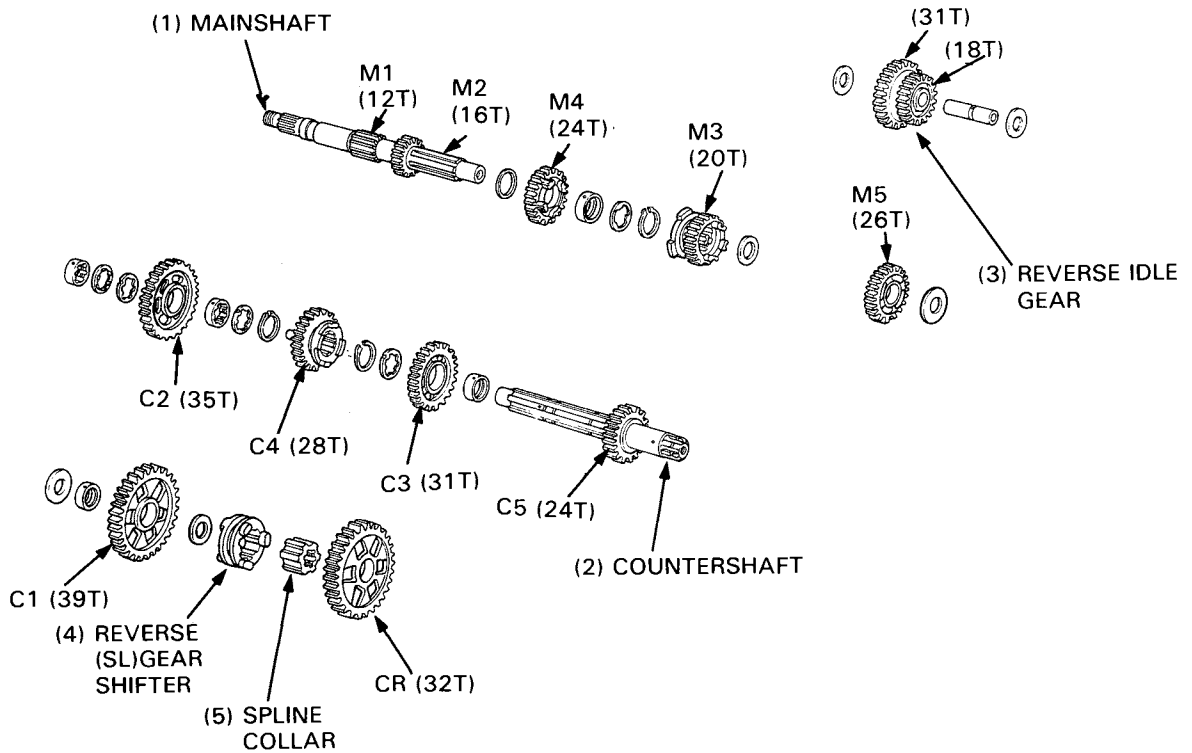
Align the oil holes on the bushings and shafts.



Install the C2 lock washer by aligning its tabs with the grooves in the spline washer.

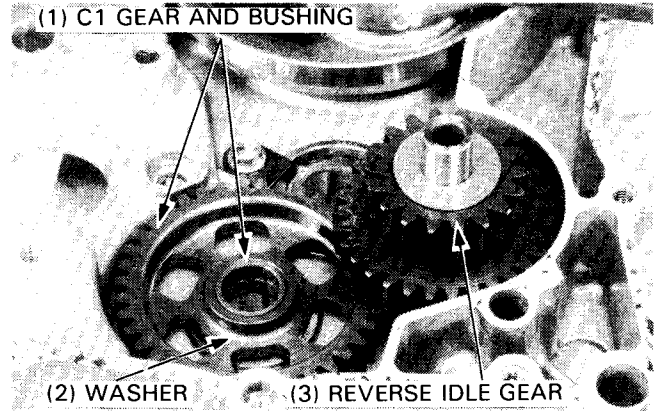


Assemble the mainshaft, countershaft and reverse idler in the reverse order of disassembly.



Install the washer onto the right crankcase countershaft bearing.
Install the C1 gear with the bushing and reverse idle gear assembly.

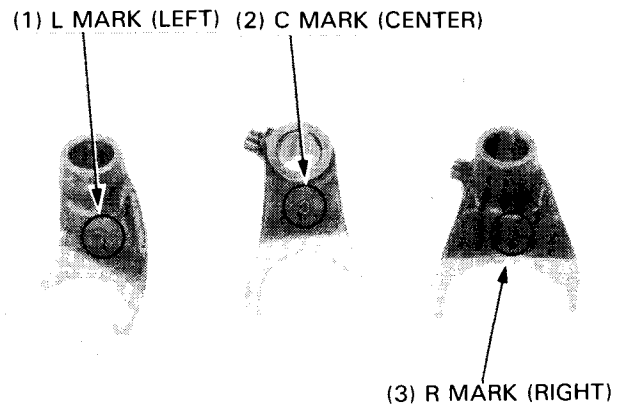
Install the mainshaft and countershaft assemblies together in the right crankcase.



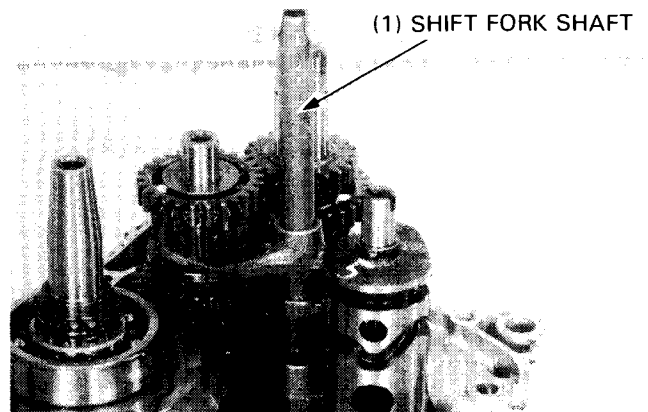
NOTE

- The shift fork marks are: L for left, C for center and R for right.

Install the shift forks with their marks facing up.

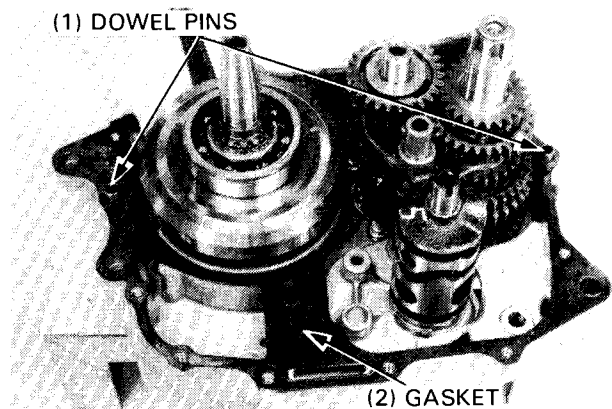


Install the shift drum and align each shift for guide pin with groove in the drum.
Insert the shift fork shaft through the shift forks into the hole in the right crankcase.



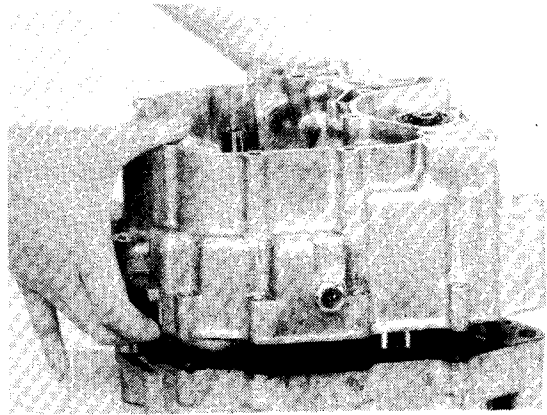
CRANKCASE ASSEMBLY

Install a new gasket and dowel pins.

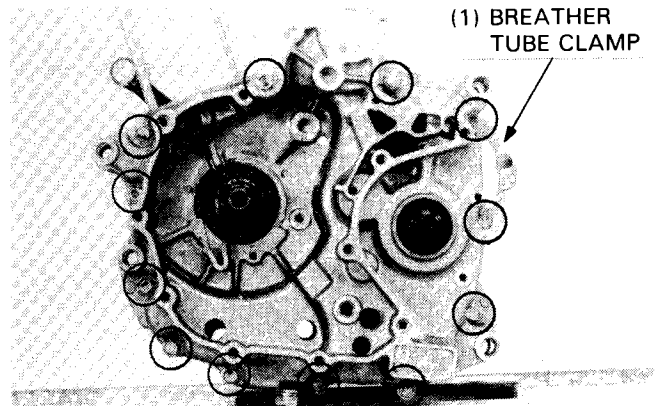


TRANSMISSION/CRANKSHAFT

Assemble the right and left crankcase halves.

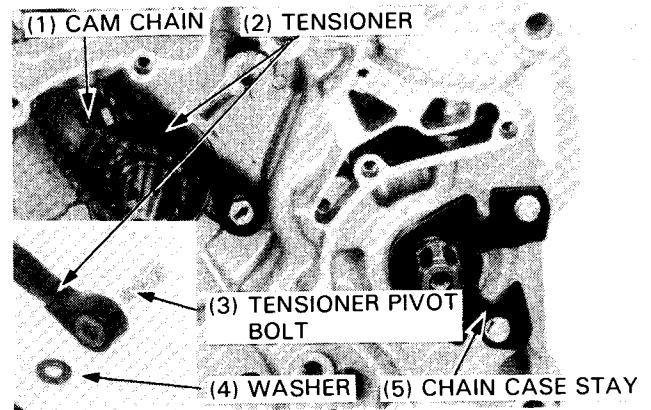


Install the breather tube clamp and tighten all the crankcase bolts.



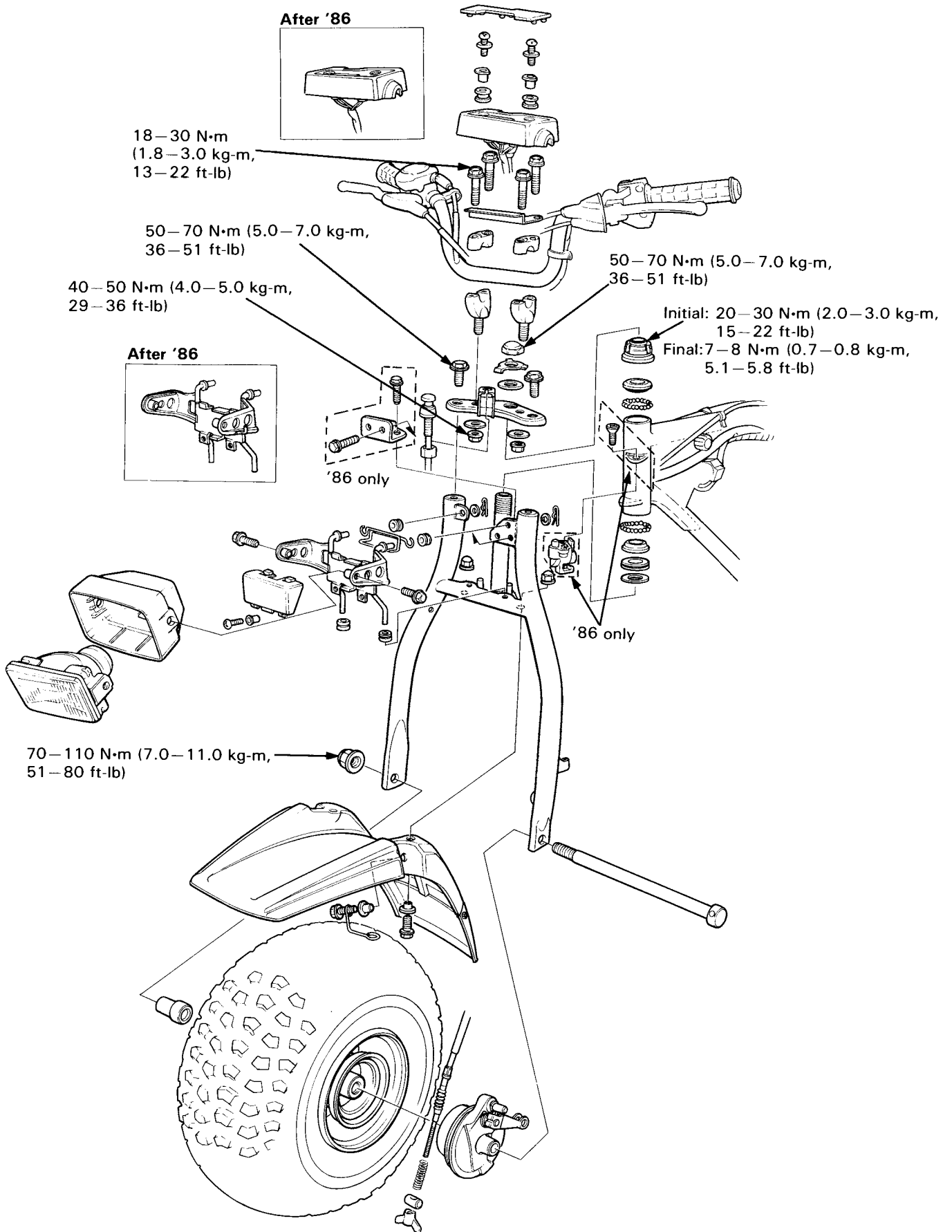
Install the chain case stay and the cam chain.
Install the washer, tensioner and tensioner pivot bolt.
Tighten the tensioner pivot bolt.

TORQUE: 10 – 14 N·m (1.0 – 1.4 kg-m, 7.2 – 10 ft-lb)



MEMO

FRONT WHEEL/BRAKE/STEERING



11. FRONT WHEEL/BRAKE/STEERING

SERVICE INFORMATION	11-1	FRONT WHEEL	11-6
TROUBLESHOOTING	11-2	TIRE	11-9
HANDLEBAR	11-3	FRONT BRAKE	11-13
THROTTLE HOUSING	11-5	STEERING STEM	11-16

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the front wheel, front brake and steering system.
- A jack or other support is required to support the ATC.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Front axle runout		—	0.5 mm (0.002 in)
Front brake drum I.D.		110 mm (4.3 in)	111 mm (4.4 in)
Front brake lining thickness		4 mm (0.2 in)	2 mm (0.1 in)
Front wheel rim runout	axial	—	0.4 mm (0.2 in)
	radial	—	0.4 mm (0.2 in)

11

TORQUE VALUES

Handlebar holder bolt	18–30 N·m (1.8–3.0 kg-m, 13–22 ft-lb)
Handlebar holder nut	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Front axle nut	70–110 N·m (7.0–11.0 kg-m, 51–80 ft-lb)
Wheel rim nut	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)
Bearing adjusting nut	initial: 20–30 N·m (2.0–3.0 kg-m, 15–22 ft-lb)
	final: 7–8 N·m (0.7–0.8 kg-m, 5.1–5.8 ft-lb)
Fork bridge bolt	50–70 N·m (5.0–7.0 kg-m, 36–51 ft-lb)
Steering stem nut	50–70 N·m (5.0–7.0 kg-m, 36–51 ft-lb)
Front wheel hub nut	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Handlebar switch housing screw	1.5–2.5 N·m (0.15–0.25 kg-m, 1.1–1.8 ft-lb)

TOOLS

Special

Steering stem driver	07946–GC40000
Ball race remover	07944–1150001 or M9360–277–91774 (U.S.A. only)
Universal bead breaker	GN–AH–958–BB1 (U.S.A. only)

Common

Driver	07749–0010000	} or Equivalent commercially available in U.S.A.
Bearing remover head, 15 mm	07746–0050400	
Bearing remover shaft	07GGD–0010100	
Attachment, 37 x 40 mm	07746–0010200 or 07949–6110000	
Attachment, 42 x 47 mm	07746–0010300	
Pilot, 15 mm	07746–0040300	
Steering stem socket, 26 x 30 mm	07716–0020203	} or Equivalent commercially available in U.S.A.
Lock nut wrench, 30 x 32 mm	07716–0020400	

FRONT WHEEL/BRAKE/STEERING

Tire breaker set	07772-0050000	} Not available in U.S.A.
Breaker arm	07772-0050200	
Breaker arm compressor	07772-0050100	

TROUBLESHOOTING

Hard steering

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

Steers to one side or does not track straight

- Bent front forks
- Bent front axle, wheel installed incorrectly

Front wheel wobbling

- Bent rim
- Worn front wheel bearing
- Faulty tire or incorrect tire installation
- Axle not tightened properly

Improper brake performance

- Incorrect adjustment of lever
- Brake shoes worn
- Brake shoes contaminated
- Brake cam worn
- Brake drum worn
- Brake arm serrations improperly engaged
- Cam contacting area of shoes worn

Brake drag

- Incorrect brake adjustment
- Sticking brake cam
- Sticking brake cable

Front suspension noise

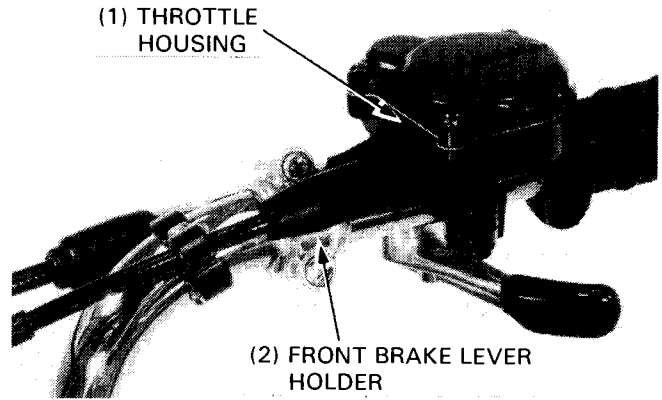
- Loose fork fasteners

HANDLEBAR

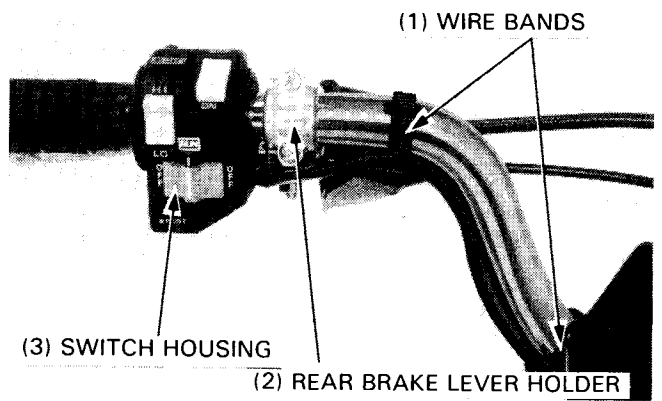
REMOVAL

Remove the following:

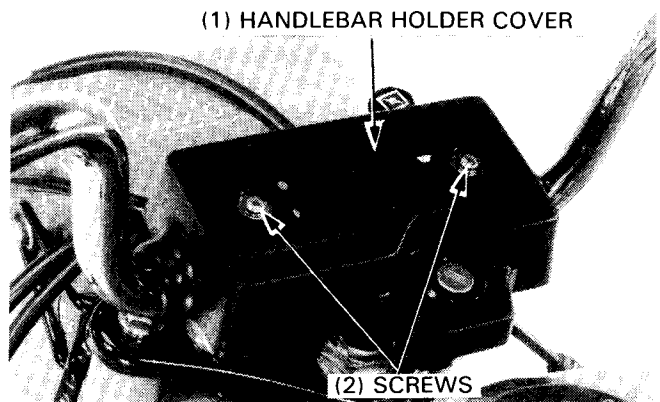
- throttle housing
- front brake lever holder



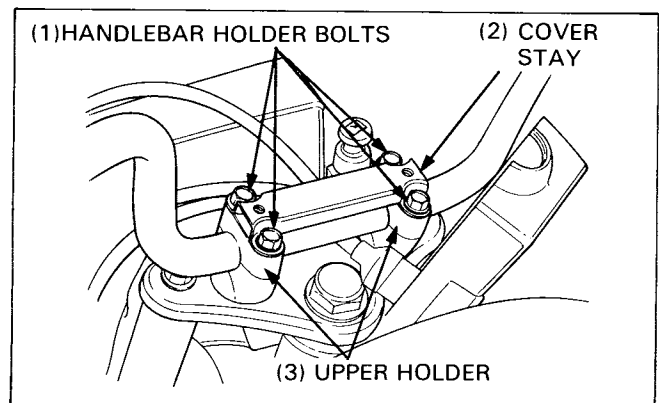
- wire bands
- rear brake lever holder
- switch housing



Remove the handlebar holder cover screws and the cover.



Remove the handlebar holder bolts, cover stay and upper holders, then remove the handlebar.

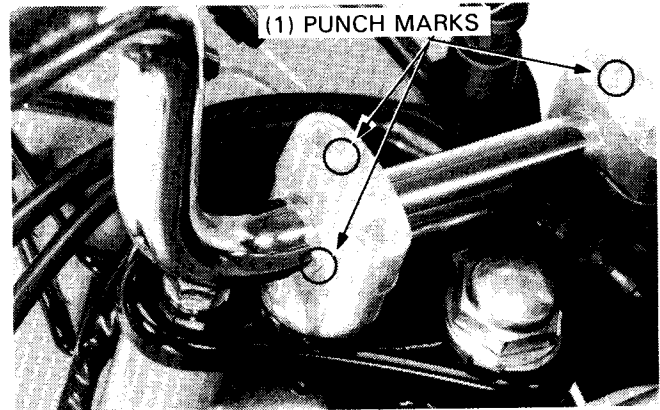


FRONT WHEEL/BRAKE/STEERING

INSTALLATION

Place the handlebar on the lower holders.
Align the punch marks on the handlebar with the top of the lower holders.
Install the upper holders on the handlebar with their punch marks facing forward.
Install the cover stay.
Tighten the forward bolts first, then tighten the rear bolts.

TORQUE: 18–30 N·m (1.8–3.0 kg·m, 13–22 ft·lb)



Apply Honda Bond A, Honda Grip Cement (U.S.A. only) to the inside surface of the grips and to the clean surface of the left handlebar and throttle pipe.
Wait 3–5 minutes and install the grips. Rotate the grips for even application of the adhesive.

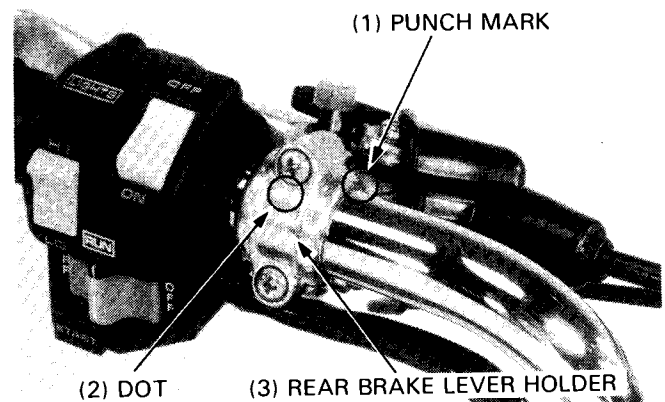
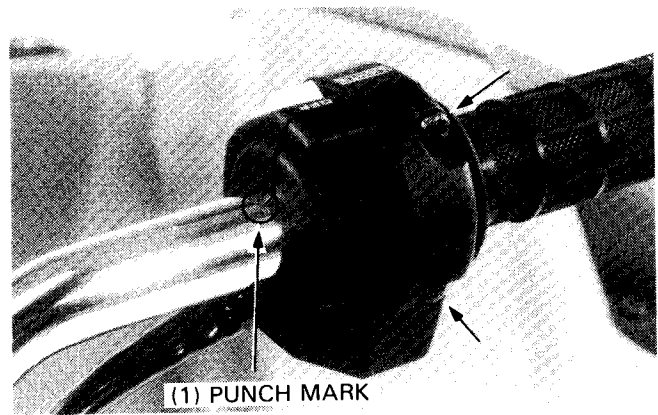
NOTE

- Allow the adhesive to dry for an hour before using.

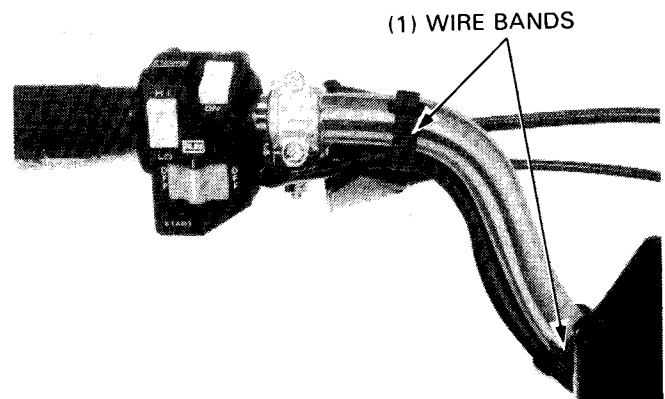
Install the switch housing by aligning its mating surface with the punch mark on the handlebar.
Tighten the upper screw first, then tighten the lower screw.

TORQUE: 1.5–2.5 N·m (0.15–0.25 kg·m, 1.1–1.8 ft·lb)

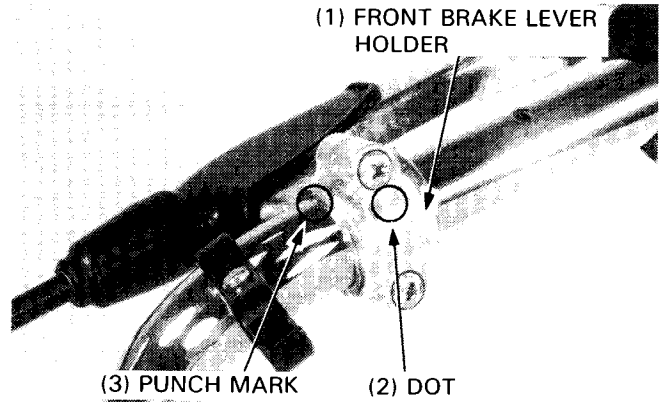
Install the rear brake lever holder with the dot on the holder facing up. Align the end of the holder with the punch mark on the handlebar.
Tighten the upper screw first, then tighten the lower screw.



Install the wire bands securely.

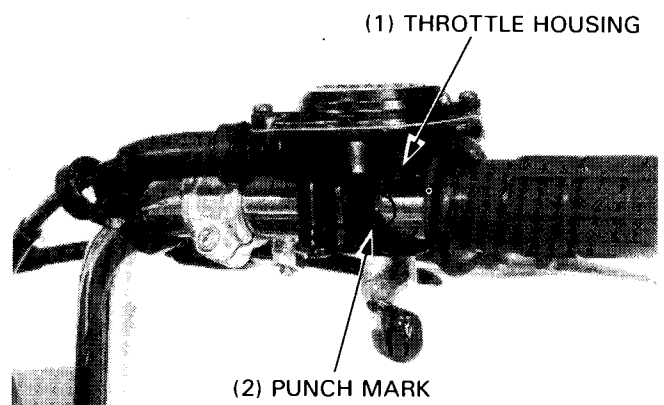


Install the front brake lever holder with the dot facing up. Align the end of the holder with punch mark on the handlebar. Tighten the upper screw first, then the lower screw.



Install the throttle housing on the handlebar. Align the end of the throttle housing with the punch mark on the handlebar. Tighten the forward screw first, then rear screw.

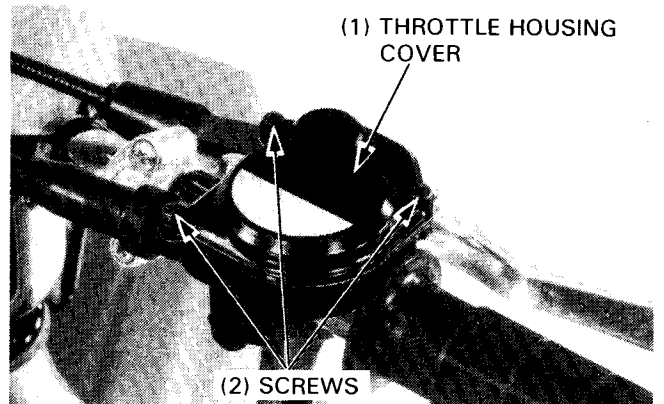
Install the handlebar holder cover and tighten the screws.



THROTTLE HOUSING

DISASSEMBLY

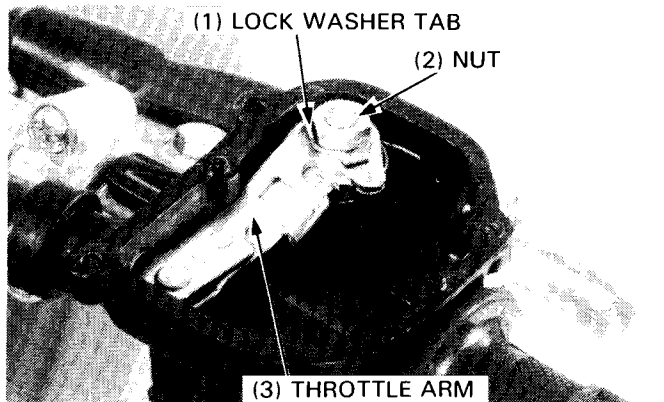
Remove the throttle housing cover by removing three screws.



Bend down the lock washer tab and remove the nut and lock washer.

Remove the throttle arm from the throttle lever shaft and disconnect the throttle cable from the throttle arm.

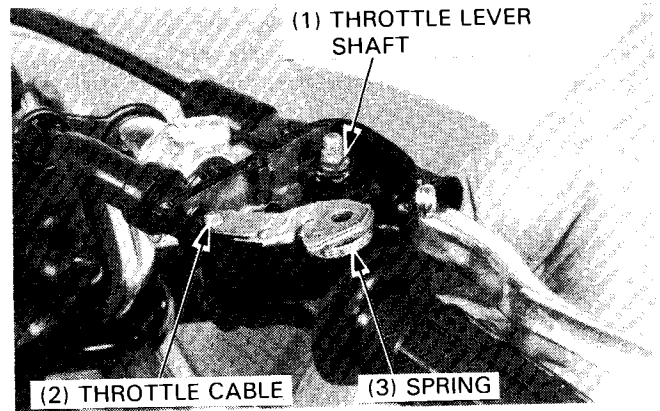
Remove the spring and throttle lever from the throttle housing.



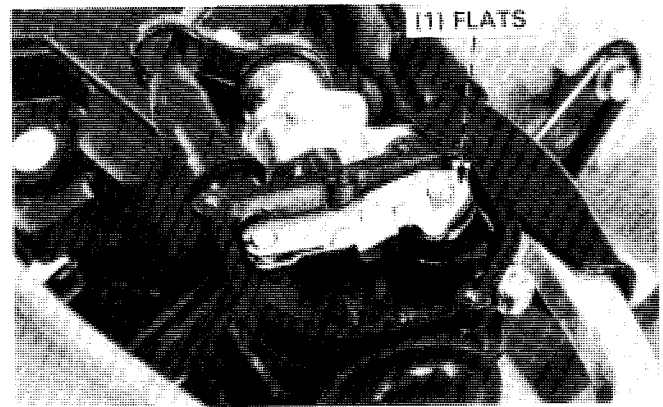
FRONT WHEEL/BRAKE/STEERING

ASSEMBLY

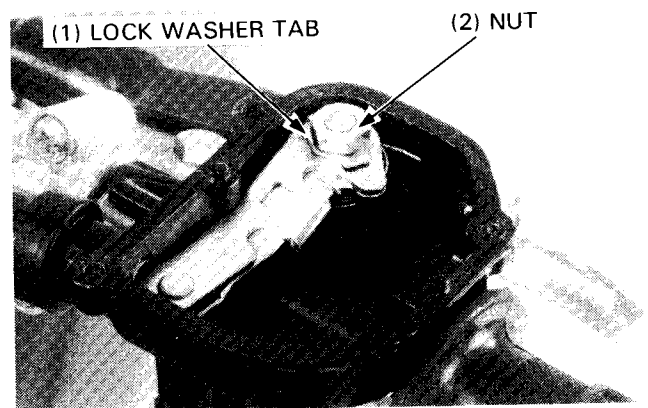
Apply grease to the throttle lever shaft.
Connect the throttle cable to the throttle arm and install the spring onto the arm.



Install the throttle arm onto the lever by aligning their flats.



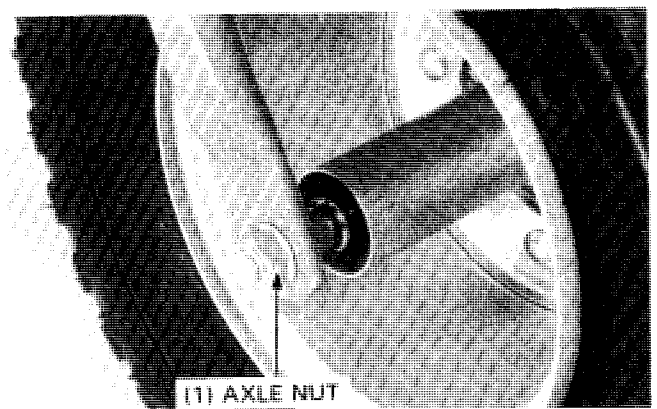
Install a new lock washer and nut.
Bend the lock washer tab up against the nut.
Install the throttle housing cover with new cover gasket, if necessary.
Tighten the three screws.
Check the throttle lever free play (Page 3-4).



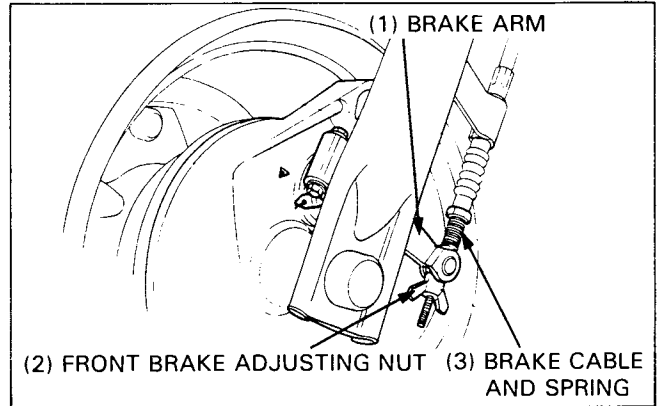
FRONT WHEEL

REMOVAL

Loosen the front axle nut and raise the front wheel off the ground by placing a block or workstand under the engine.



Remove the front brake adjusting nut and disconnect the brake cable from the brake arm.
Remove the spring from the brake cable.
Remove the front axle, nut and front wheel.

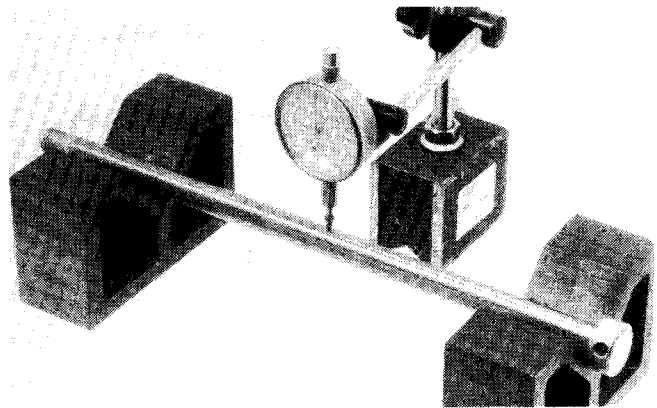


FRONT AXLE INSPECTION

Set the axle in V-blocks, rotate and measure the runout with a dial indicator.

Actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.5 mm (0.02 in)



BEARING INSPECTION

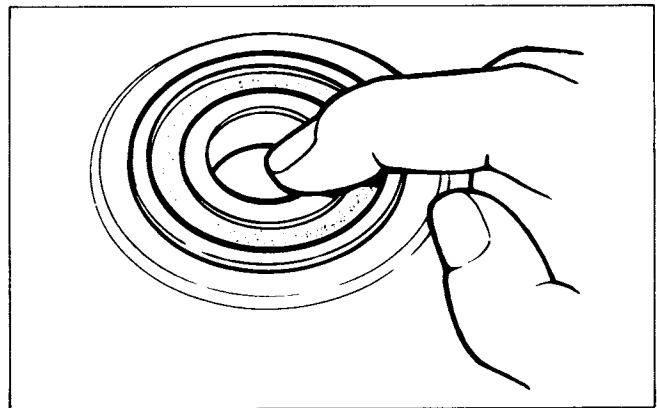
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the hub.

NOTE

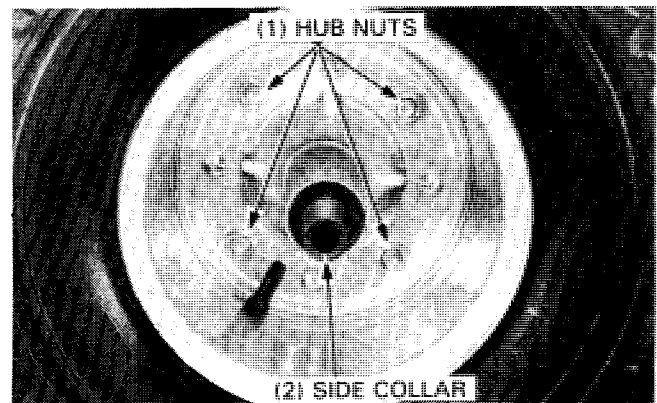
- Replace the bearings in pairs.

For replacement of bearing, see Page 11-8.



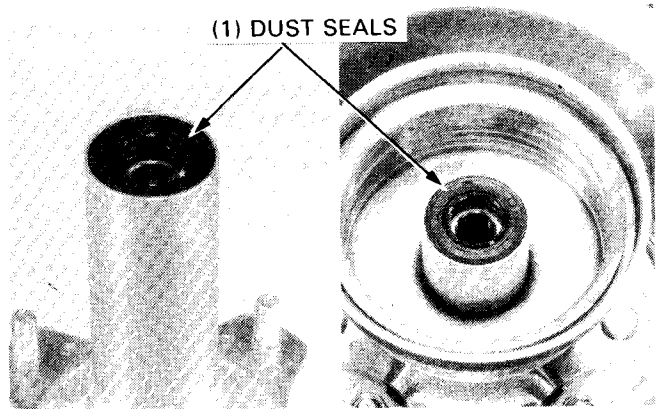
BEARING REPLACEMENT

Remove the side collar.
Remove the front brake panel, hub nuts and hub.



FRONT WHEEL/BRAKE/STEERING

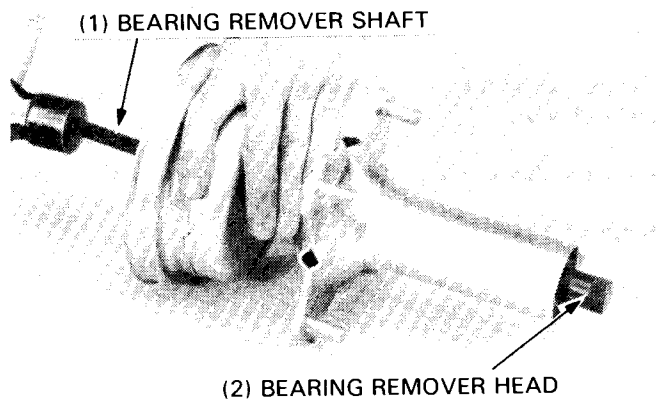
Remove the dust seals.



Remove the front hub bearings and distance collar.

TOOLS:

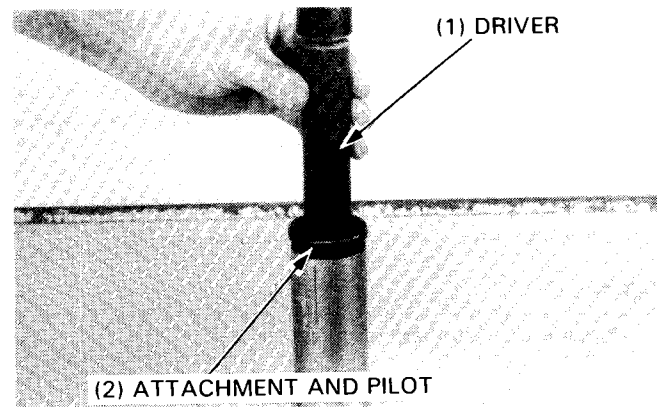
Bearing remover head, 15 mm 07746-0050400
Bearing remover shaft 07GGD-0010100
 or Equivalent commercially
 available in U.S.A.



Drive in right bearing squarely until it seats.
 Install the distance collar and drive in the left bearing squarely until it seats.
 Apply grease to the lips of the dust seals and install them in the hub.

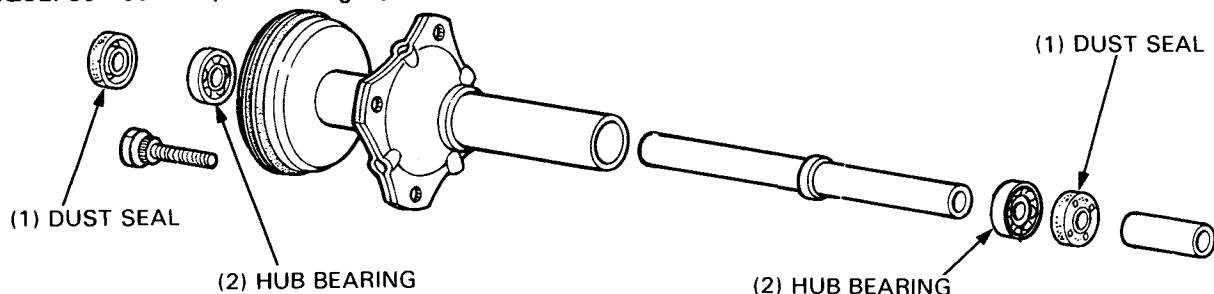
TOOLS:

Driver 07749-0010000
Attachment, 42 x 47 mm 07746-0010300
Pilot, 15 mm 07746-0040300



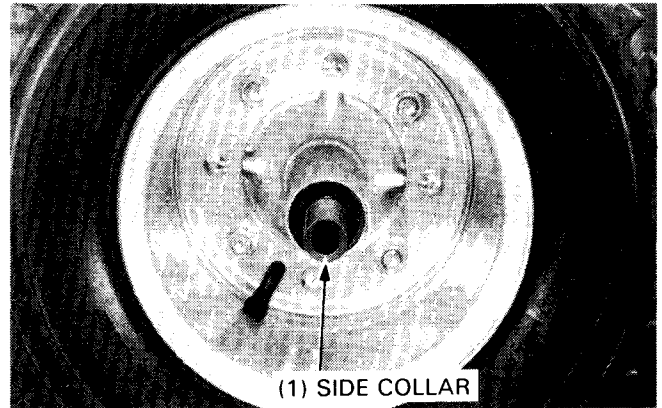
Install the front wheel hub on the wheel and tighten the hub nuts.

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



FRONT WHEEL INSTALLATION

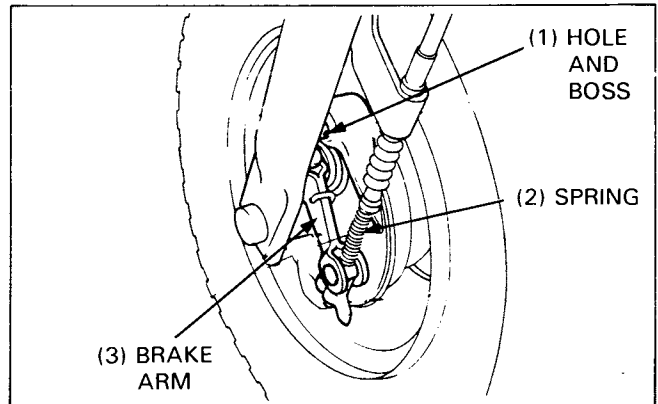
Install the front brake panel and side collar.



Position the front wheel between the fork legs and align the boss in the brake panel with the hole on the left fork leg. Install the front axle and nut. Tighten the axle nut.

TORQUE: 70–110 N·m (7.0–11.0 kg·m, 51–80 ft·lb)

Install the spring on the brake rod and connect the brake rod to the brake arm. Adjust the front brake (Page 3-12).



TIRE

REMOVAL (U.S.A. ONLY)

NOTE

- This service requires the Universal Bead Breaker (07712–0040400 Separator handle set) available in U.S.A. only.

Remove the core from the valve stem.

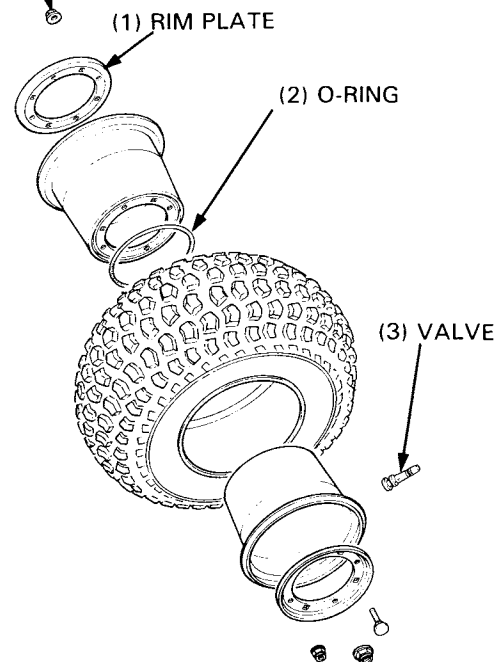
CAUTION

- Use of the Bead Breaker tool is required for tire removal.
- Do not damage the bead seating area of the rim.
- Use a Coats 220 Tire Changer or equivalent to remove the tire from the rim. If a tire changer is not available, rim protectors and tire irons may be used.

WARNING

- Use only water as a lubricant when removing or mounting tires. Soap or some mounting lubricants may leave a slippery residue which can cause the tire to shift on the rim and lose air pressure during riding.

(4) RIM NUT
30–40 N·m (3.0–4.0 kg·m,
22–29 ft·lb)



FRONT WHEEL/BRAKE/STEERING

Install the proper size blade onto the breaker arm assembly.

Short blade—7"/8" rims.

Long blade—9"/11" rims.

CAUTION

- Use of an improper size blade may result in damage to the rim, tire or blade.

Place the proper size adapter onto the threaded shaft and then put the wheel over the threaded shaft and adapter.

Lubricate the bead area with water, pressing down on the tire sidewall/bead area in several places, to allow the lubricant to run into and around the bead. Also lubricate the area where the breaker arm will contact the sidewall of the tire.

While holding the breaker arm assembly at an approximate 45° position, insert the blade of the breaker arm between the tire and rim. Push the breaker arm inward and downward until it is in the horizontal position with its press block in contact with the rim.

With the breaker arm in the horizontal position, place the breaker press head assembly over the breaker arm press block. Make sure the press head bolt is backed out all the way and then position the nylon buttons on the press head against the inside edge of the rim.

Insert the threaded shaft through the appropriate hole in the breaker press head assembly and then tighten the lever nut until both ends of the breaker press head assembly are in firm contact with the rim.

NOTE

- Insert bolts through the holes in the rim hub mounting tabs and the adapter to position the adapter properly.

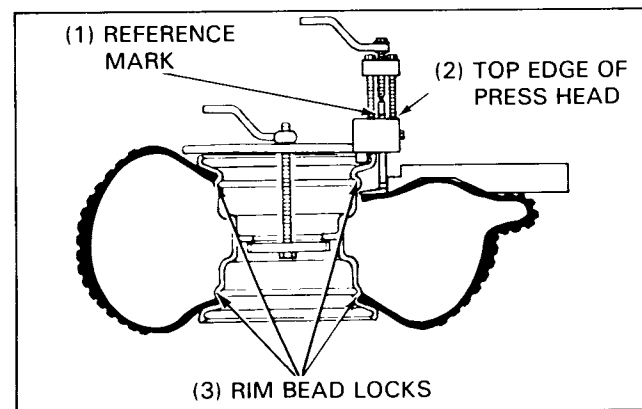
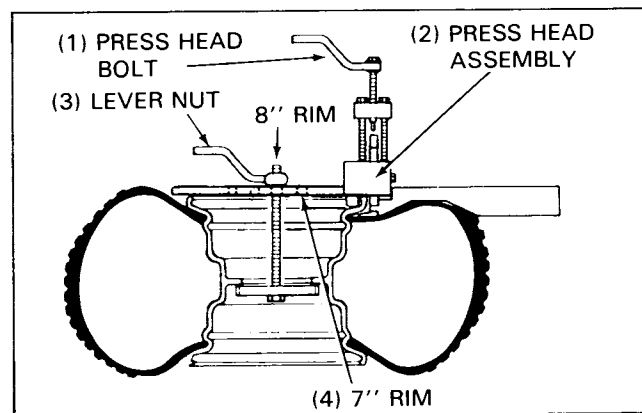
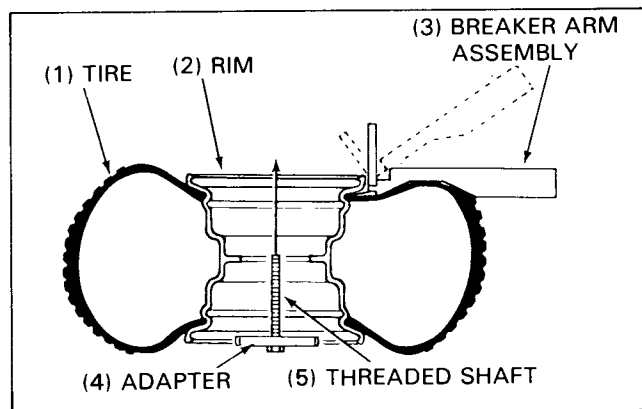
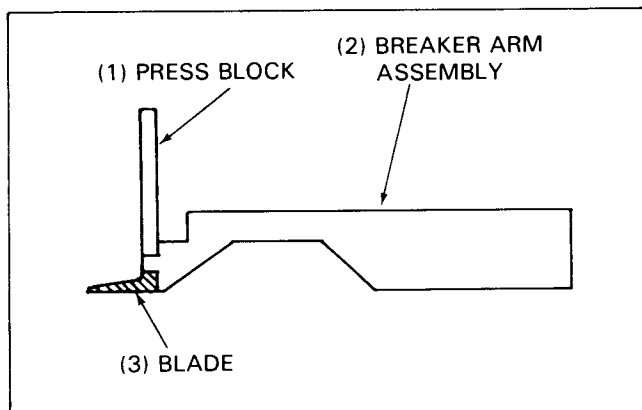
Tighten the press head bolt until the reference mark on the press block is aligned with the top edge of the press head.

If the rest of the bead cannot be pushed down into the center of the rim by hand, loosen the press head bolt and the lever nut. Rotate the breaker arm assembly 1/8 to 1/4 the circumference of the rim.

Tighten the lever nut and then tighten the press head bolt as described. Repeat this procedure as necessary until the remainder of the bead can be pushed down into the center of the rim.

Assemble the Universal Bead Breaker on the other side of the wheel and break the bead following the same procedures.

Remove the four rim mounting bolts and remove the rim halves from the tire.



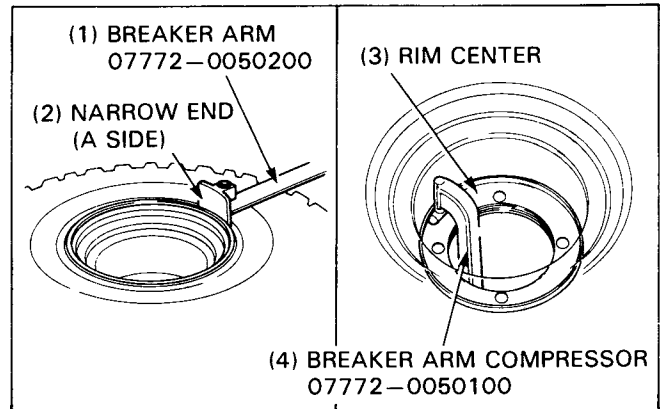
REMOVAL (EXCEPT U.S.A.)

NOTE

- This service requires the Tire Bead Breaker (07772-0040000) not available in U.S.A.

CAUTION

- Do not apply water, soap water, oil etc. to the tire, rim and tool when removing the tire. The tire bead breaker arm may slip off the tire and the bead can not be broken off the tire.
- Do not damage the bead seating area of the rim.
- Follow the breaker manufacturer's instructions.



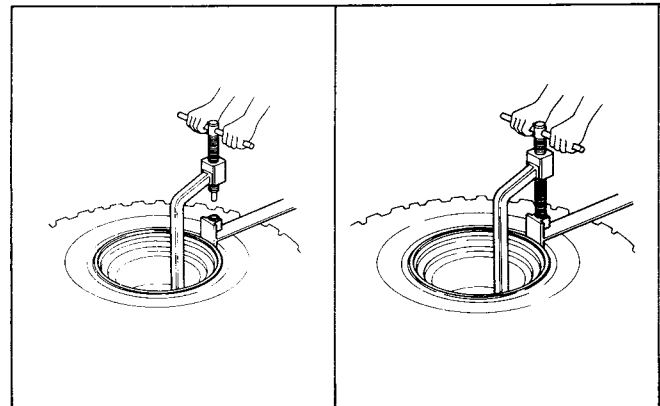
Insert the narrow end (A side) of the breaker arm between the tire and the rim.

Position the breaker arm compressor onto the rim center as shown.

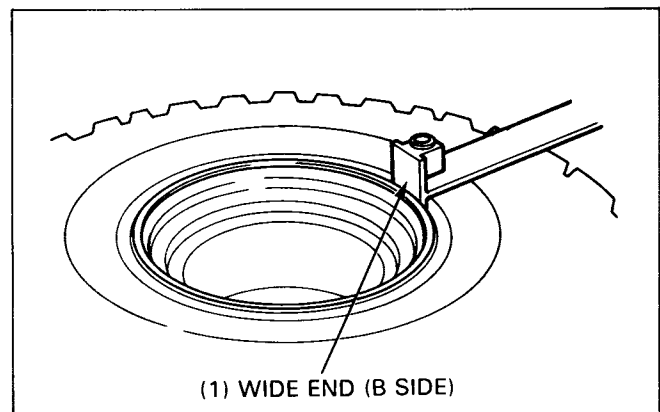
Keep the breaker arm horizontal and align the end of the compressor bolt with the arm hole.

Screw in the breaker arm compressor bolt to break the bead from the tire.

If the rest of the bead cannot be pushed down into the center of the rim, remove and reposition the compressor and arm 1/8 to 1/4 the circumference of the rim. Tighten the compressor bolt to break the bead. Repeat this procedure as necessary until the remainder of the bead is pushed down into the center of the rim.



If the bead breaking is difficult with the narrow end (A side) of the breaker arm, use the wide end (B side) of the arm and repeat the procedure above.



ASSEMBLY

Clean the rim bead seat, flange and O-ring grooves.

Inspect the O-ring for damage, discard if broken or nicked.

Assemble the rim halves into the tire, making sure the O-ring is seated in its groove.

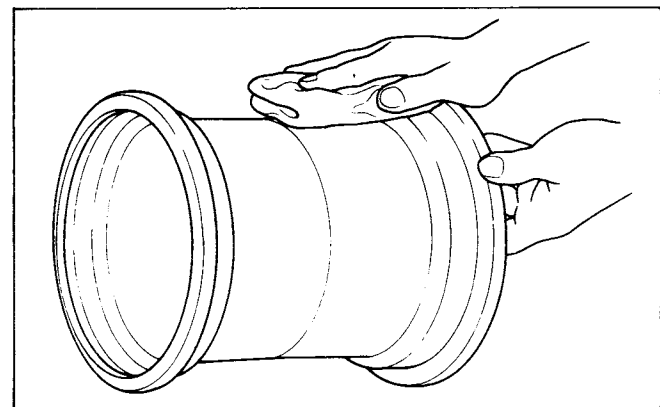
Install and tighten the four rim nuts.

TORQUE: 30-40 N·m (3.0-4.0 kg·m, 22-29 ft·lb)

NOTE

- For more air volume, do not install the valve core when inflating the tire to seat the bead.

Inflate the tire to seat the bead.



FRONT WHEEL/BRAKE/STEERING

WARNING

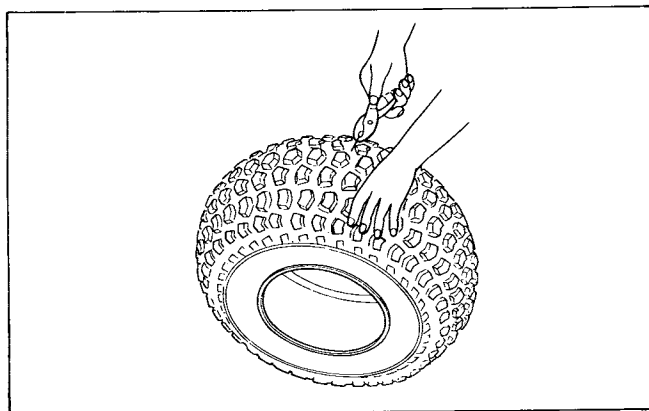
- *Use only water as a lubricant when mounting tires. Soap or some mounting lubricants may leave a slippery residue which can cause the tire to shift on the rim and lose air pressure during riding.*

Deflate the tire. Wait 1 hour and inflate the tire to the specified pressure (Page 3-15).

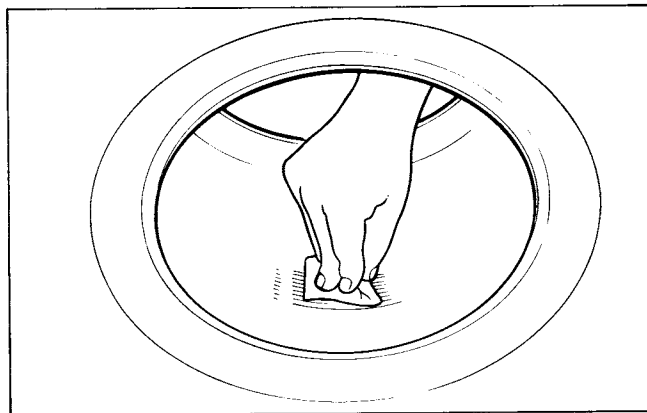
Check for air leaks and install the valve cap.

TIRE REPAIR (WITH COLD PATCH)

Check the tire tread for puncturing objects. Chalk mark the punctured area and remove the puncturing objects.



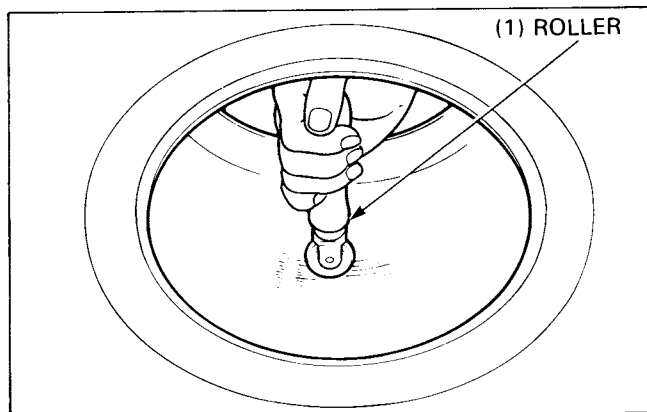
Clean and roughen the punctured area inside the tire with a tire rubber cleaner or a wire brush. Clean the area with non-flammable solvent.



Apply rubber cement around the torn area and allow it to dry. Remove the lining from the patch and center it over the injury. Press the patch against the injury using a special roller.

NOTE

- Allow cement to dry before applying patch.
- Do not touch cement surface with dirty or greasy hands.



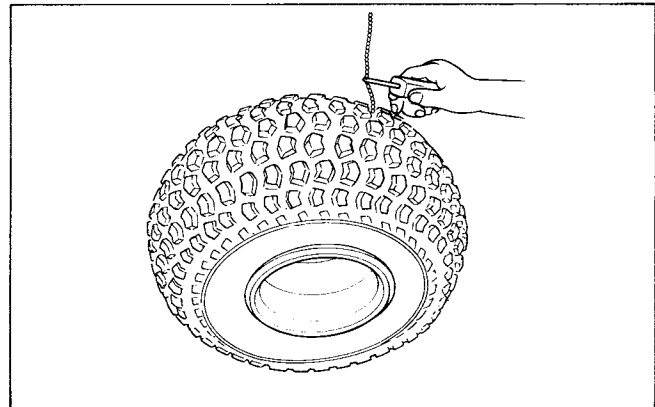
TIRE REPAIR (WITH RUBBER PLUG)

NOTE

- This method is for emergency repair only.
- Replace the plug at the first opportunity with a cold patch.

Remove the puncturing object.
 Insert a rubber plug through the eye of an inserting needle.

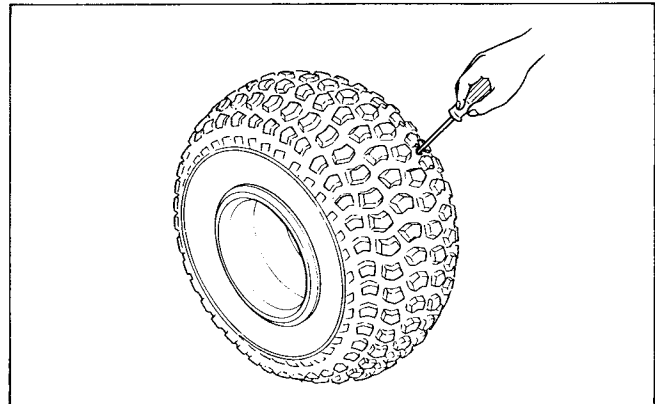
Apply patching cement to the plug.



Center the needle on the plug and insert until the plug is all the way in the tire. Twist the needle several times.

Pull the needle straight out so that the plug is about 10 mm (3/8 in) above the tread surface. Trim the plug 2 mm (1/16 in) above the surface.

Repeat the above procedure if the puncture is large.



FRONT BRAKE

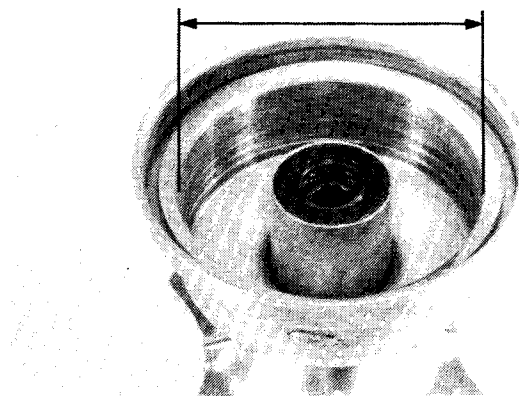
BRAKE PANEL REMOVAL

Remove the front wheel (Page 11-6).
 Remove the brake panel from the front wheel.

BRAKE DRUM INSPECTION

Measure the brake drum I.D.

SERVICE LIMIT: 111 mm (4.4 in)

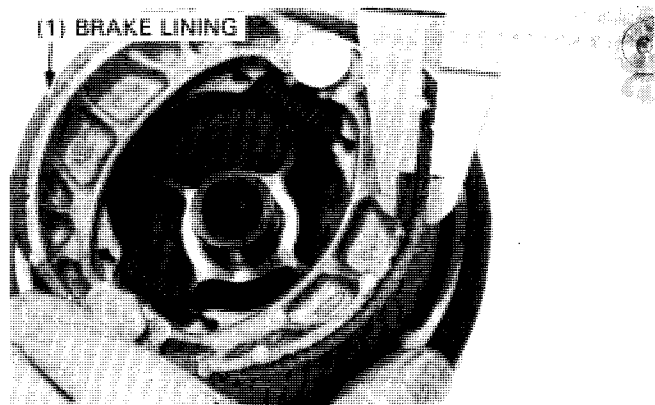


BRAKE LINING INSPECTION

Measure the brake lining thickness.

SERVICE LIMIT: 2 mm (0.1 in)

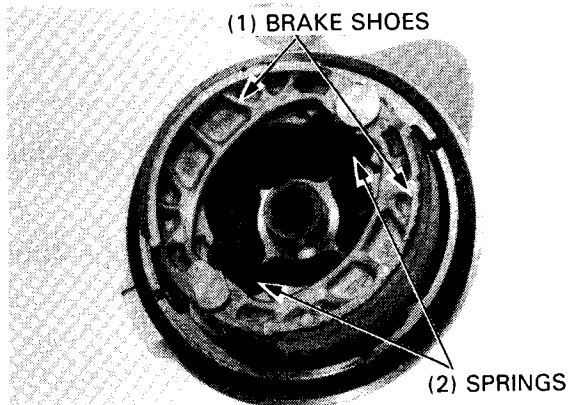
Replace the brake linings if they are thinner than the service limit.



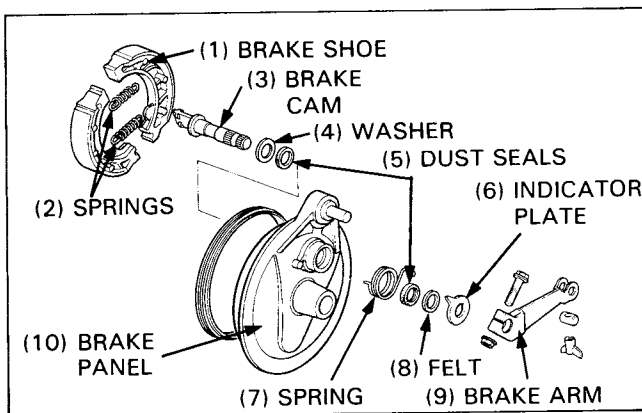
FRONT WHEEL/BRAKE/STEERING

BRAKE PANEL DISASSEMBLY

Expand and remove the brake shoes by hand.

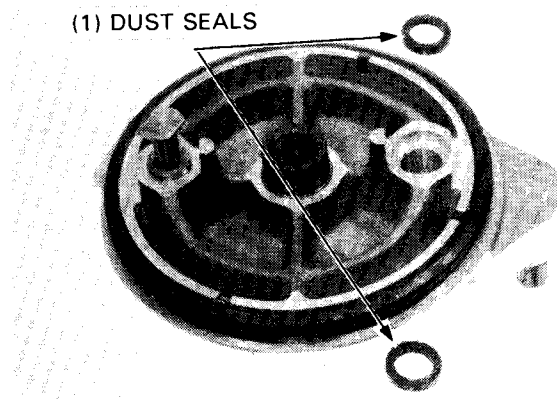


Remove the brake arm bolt, brake arm spring and indicator plate.
Remove the brake cam, felt, thrust washer and dust seals.

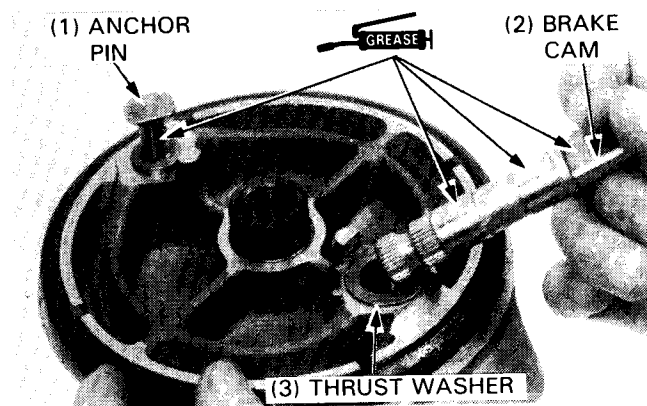


BRAKE PANEL ASSEMBLY

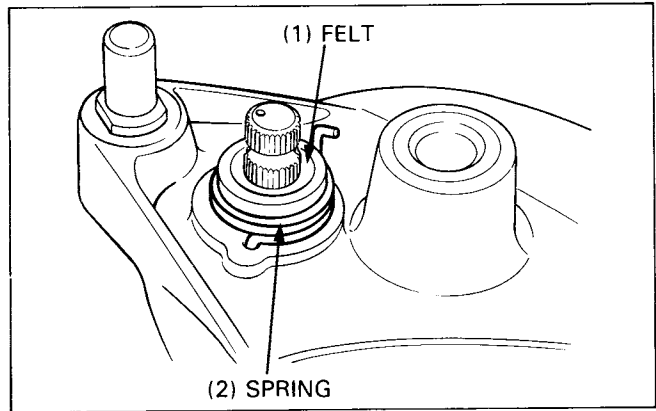
Apply grease to the dust seals and install them.



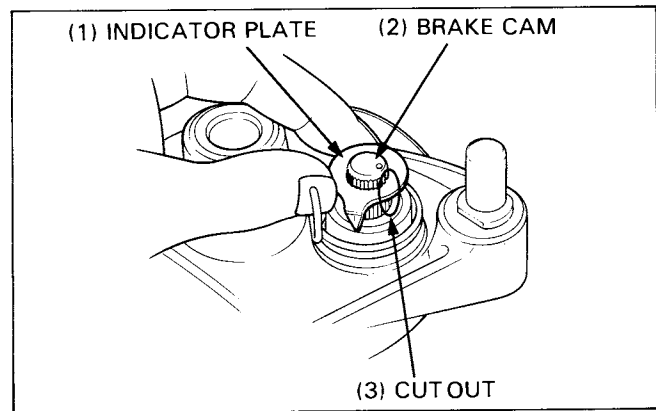
Apply grease to the brake cam and anchor pin and install the brake cam and thrust washer.



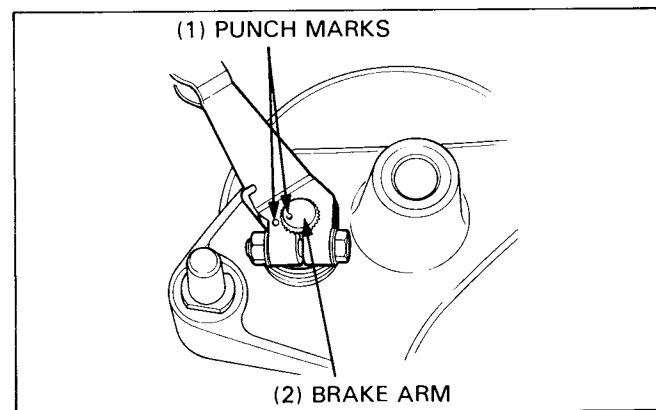
Install the spring and felt.



Install the wear indicator plate onto the brake cam by aligning the indicator tab with the cutout in the cam.



Install the brake arm by aligning the punch marks. Torque the brake arm bolt.



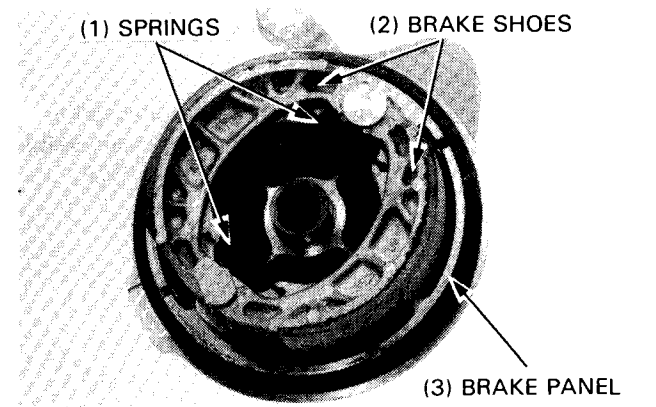
Install the brake shoes and springs onto the brake panel.

WARNING

- *A contaminated brake lining reduces stopping power.*
- *Keep grease off the linings. Wipe excess grease off the cam.*

FRONT BRAKE PANEL INSTALLATION

Install the brake panel assembly to the front brake drum.

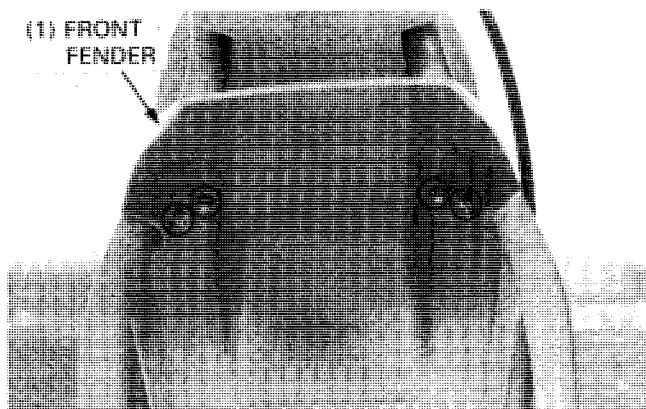


STEERING STEM

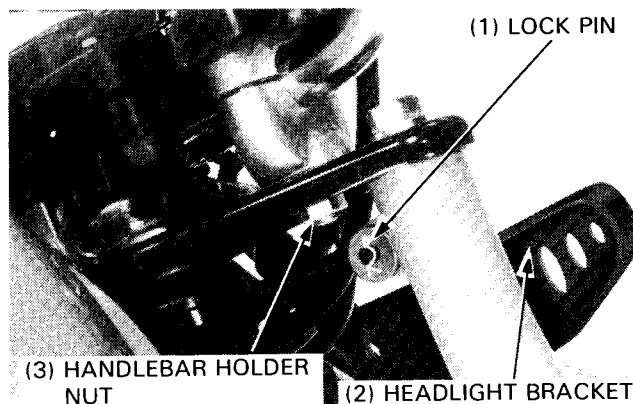
REMOVAL

Remove the following:

- headlight (Page 17-2)
- wire connector box
- front wheel (Page 11-6)
- front fender



- lock pins securing the headlight bracket
- headlight bracket
- choke cable from the top bridge
- handlebar holder nuts
- handlebar with the upper holder cover



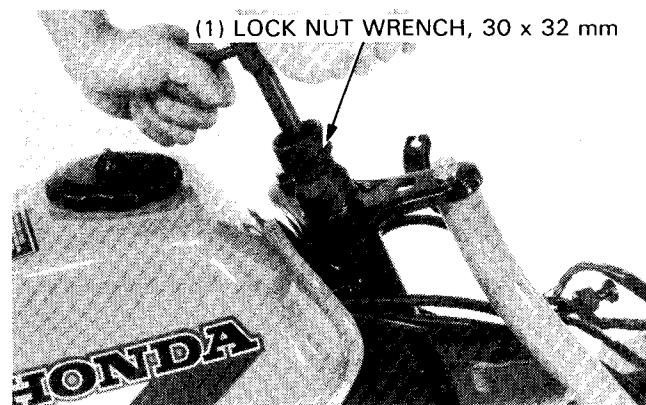
Bend down the lock washer tab.



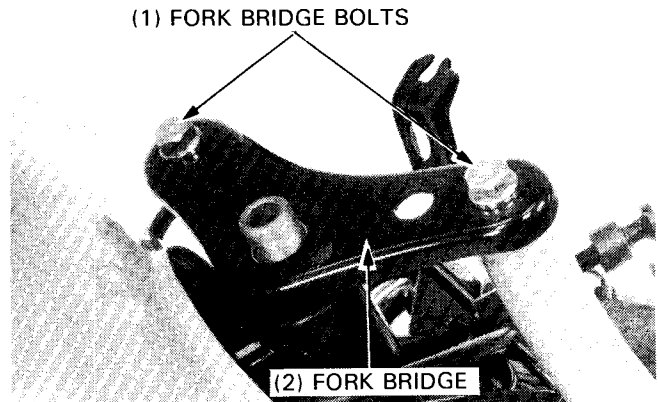
Remove the steering stem nut and lock washer.

TOOL:

Lock nut wrench, 30 x 32 mm 07716-0020400 or
Equivalent commercially
available in U.S.A.

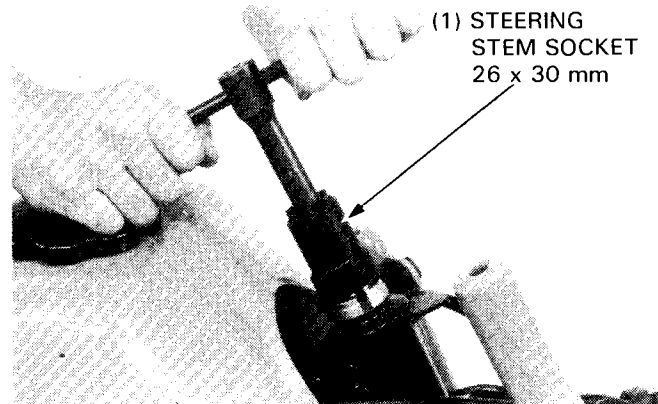


Remove the fork bridge bolts and the top bridge.

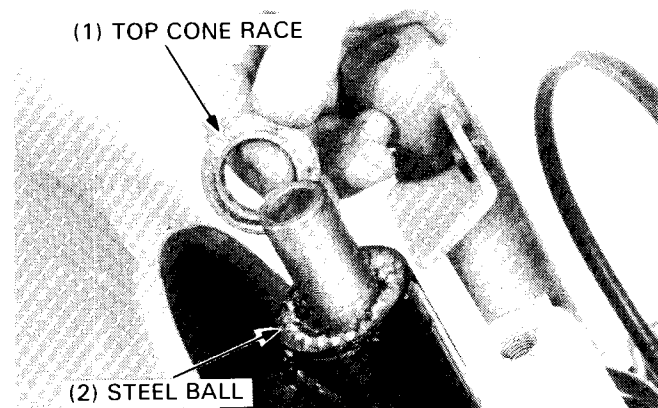


Remove the bearing adjusting nut.

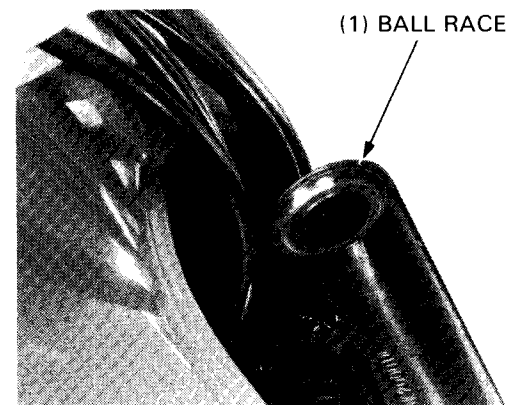
TOOL:
Steering stem socket, 26 x 30 mm 07716—0020203 or
Equivalent commercially
available in U.S.A.



Remove the top cone race, ball bearings and steering stem, being careful not to drop the steel balls.



Check the ball races for wear or damage and remove them if necessary.



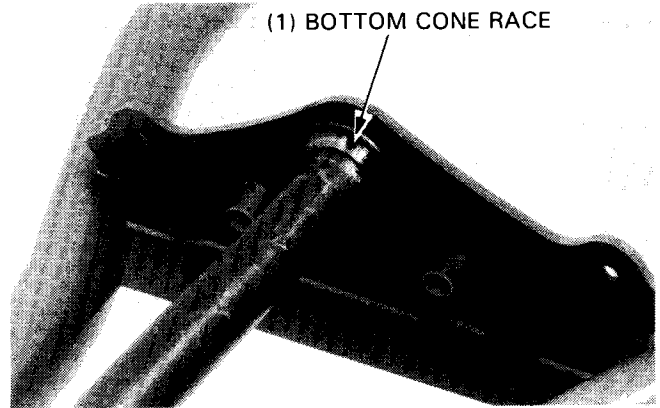
FRONT WHEEL/BRAKE/STEERING

BEARING RACES REPLACEMENT

NOTE

- Always replace the steel balls and bearing races as a set.

Remove the bottom cone race, dust seal and washer from the steering stem.

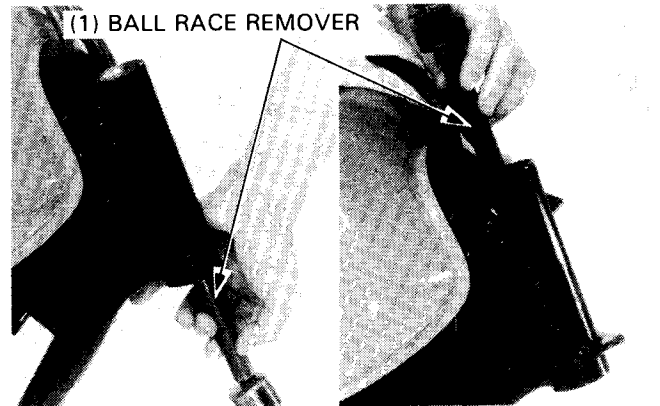


Remove the top and bottom bearing races from the steering head.

TOOL:

Ball race remover

07944-1150001 or
M9360-277-91774
(U.S.A. only)



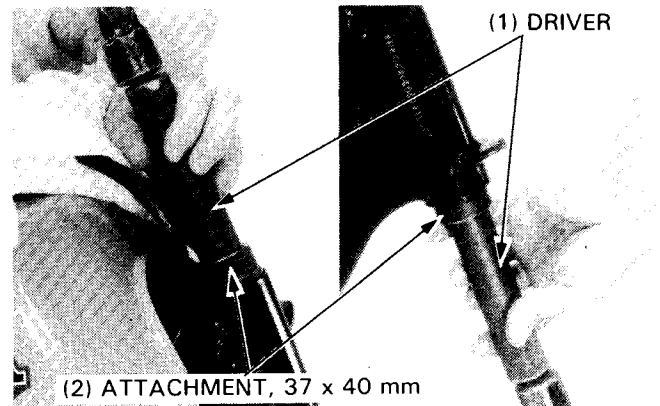
Install new bearing races.

TOOLS:

Driver

Attachment, 37 x 40 mm

07749-0010000
07746-0010200
or 07949-6110000



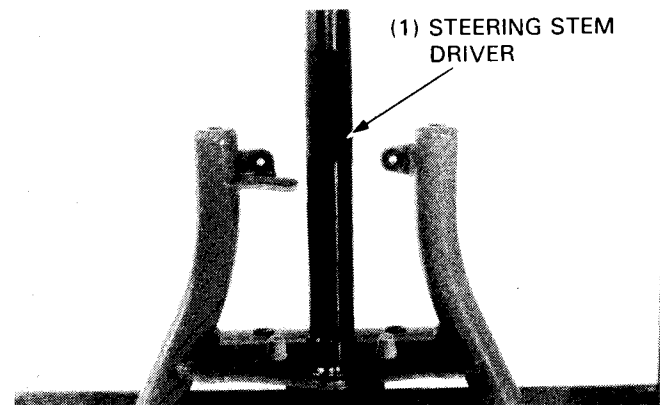
Install washer and dust seal.

Install the bottom cone race using a hydraulic press and steering stem driver.

TOOL:

Steering stem driver

07946-GC40000



INSTALLATION

Apply grease to the top and bottom ball races and install 21 ball bearings for both the top and bottom ball races. Insert the steering stem into the steering head pipe and install the top cone race.

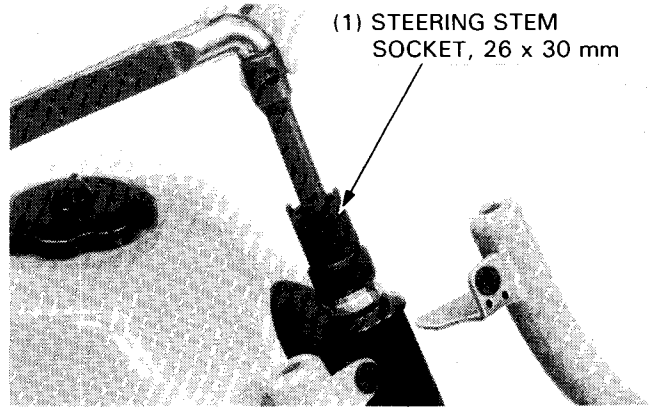


Tighten the bearing adjusting nut using special tool.

TORQUE: 20–30 N·m (2.0–3.0 kg-m, 15–22 ft-lb)

TOOL:

Steering stem socket, 26 x 30 mm 07716–0020203
or Equivalent commercially available in U.S.A.

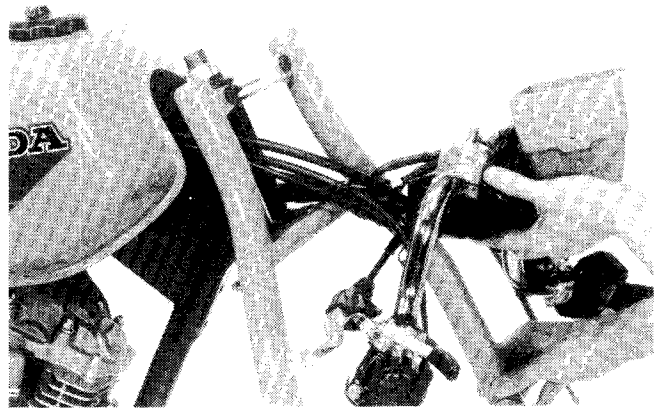


Turn the steering stem lock-to-lock 2–3 turns to seat the bearings.

Retighten the adjustment nut to final torque.

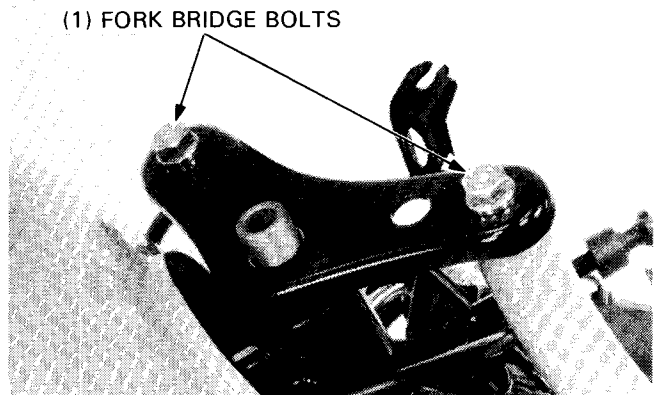
TORQUE: 7–8 N·m (0.7–0.8 kg-m, 5.1–5.8 ft-lb)

Make sure that there is no vertical movement and that the stem rotates freely.



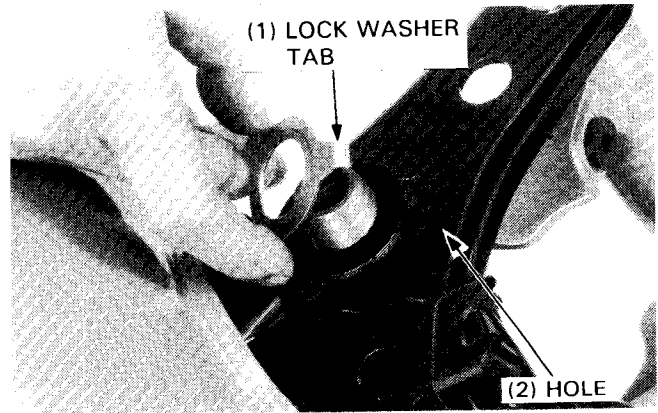
Install the fork bridge and bolts.
Tighten the fork bridge bolts.

TORQUE: 50–70 N·m (5.0–7.0 kg-m, 36–51 ft-lb)



FRONT WHEEL/BRAKE/STEERING

Install the lock nut, align the lock washer tab with the hole in the fork bridge.

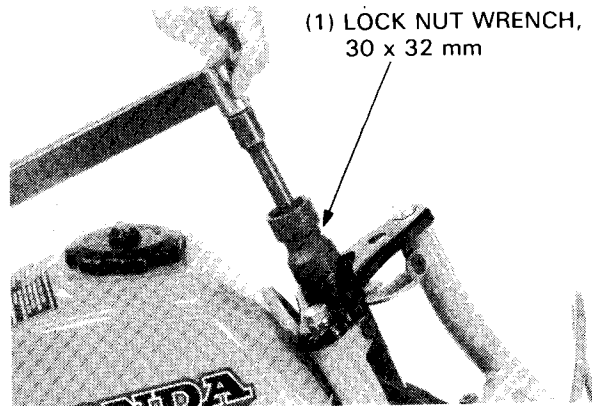


Install the steering stem nut and tighten the nut.

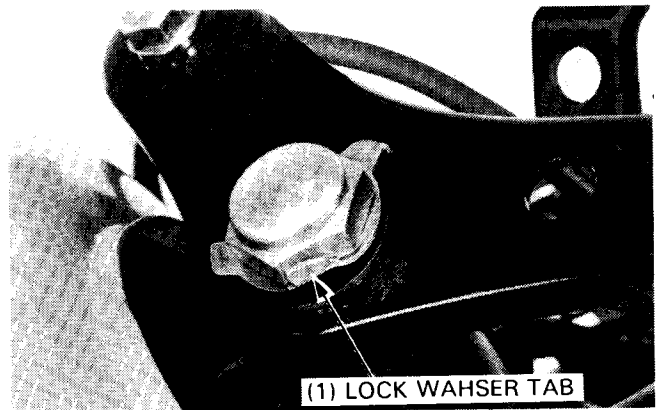
TORQUE: 50–70 N·m (5.0–7.0 kg·m, 36–51 ft·lb)

TOOL:

Lock nut wrench, 30 x 32 mm 07716–0020400 or
Equivalent commercially
available in U.S.A.

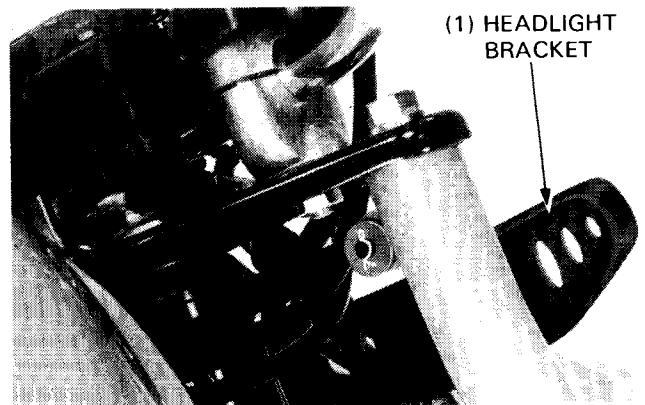


Bend up the lock washer tab against the steering stem nut.



Install the following:

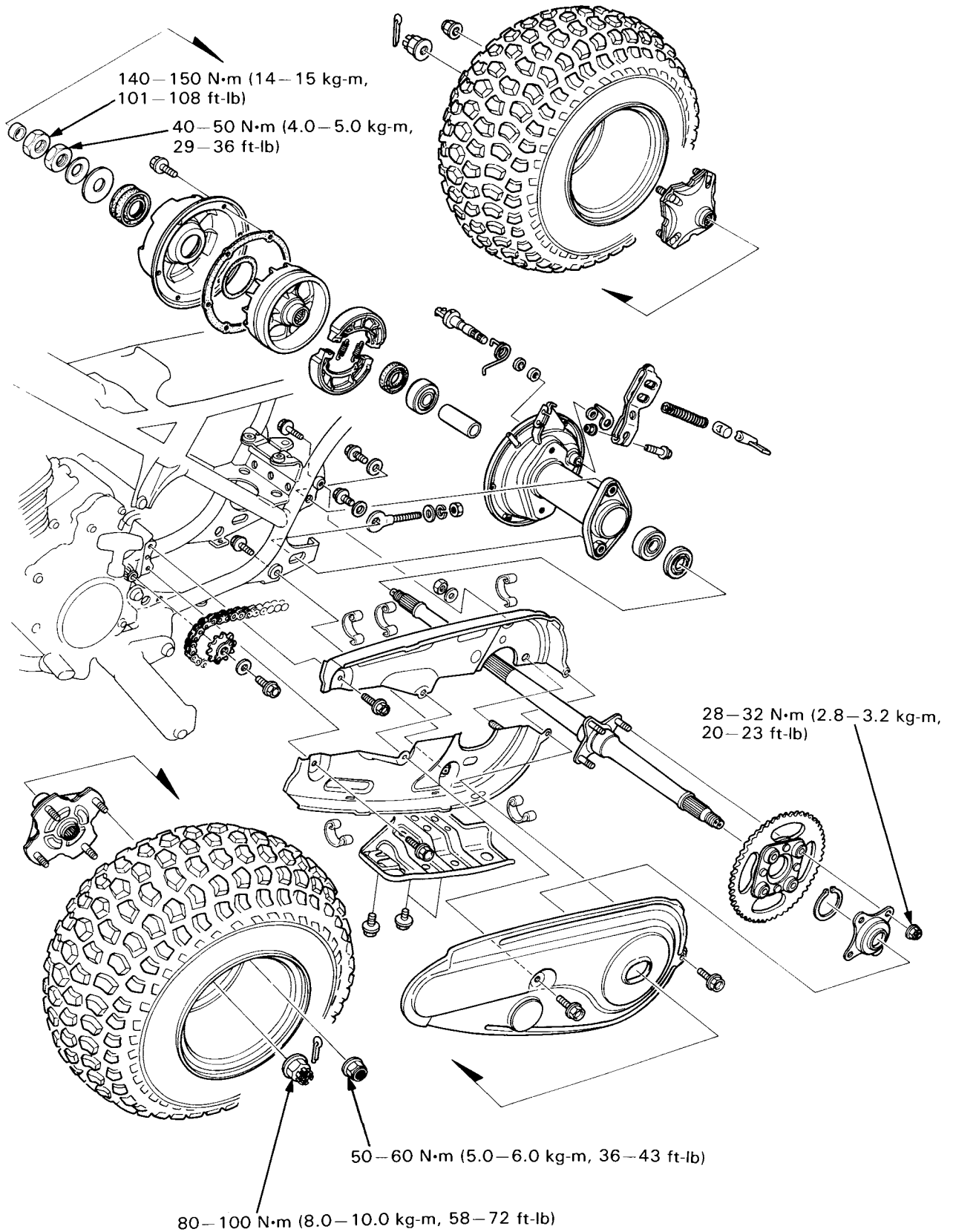
- handlebar
- headlight bracket
- choke cable
- headlight case
- wire connector box
- front fender
- front wheel



MEMO

REAR WHEEL/BRAKE/DRIVE MECHANISM

'86 shown



12. REAR WHEEL/BRAKE/DRIVE MECHANISM

SERVICE INFORMATION	12-1	REAR AXLE/FINAL DRIVEN SPROCKET	12-10
TROUBLESHOOTING	12-2	REAR AXLE BEARING HOLDER	12-13
REAR WHEEL	12-3	BRAKE PEDAL	12-14
REAR BRAKE	12-4		

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the rear wheel and drive mechanism.
- A jack or block is required to support the ATC.
- Refer to Section 11 for tire servicing.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Rear axle runout		—	3.0 mm (0.12 in)
Rear brake drum I.D.		140 mm (0.55 in)	141 mm (5.6 in)
Rear brake lining thickness		4 mm (0.2 in)	2 mm (0.1 in)
Rim runout	Axial	—	4.0 mm (0.16 in)
	Radial	—	4.0 mm (0.16 in)

TORQUE VALUES

Rear wheel hub nut		50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Rear brake drum nut	Inner:	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
	Outer:	140–150 N·m (14.0–15.0 kg-m, 101–108 ft-lb)
Rear axle nut		80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Rear axle bearing holder bolt		50–70 N·m (5.0–7.0 kg-m, 36–51 ft-lb)
Driven sprocket nut		28–32 N·m (2.8–3.2 kg-m, 20–23 ft-lb)

TOOLS

Special

Spanner wrench, 41 mm	07916–9580200 or 07916–958020A
Wrench set, 41 mm	07916–9580300 or equivalent commercially available in U.S.A.
– Wrench attachment	07916–9580400 or 07916–958010A

Common

Driver	07749–0010000
Attachment, 52 x 55 mm	07746–0010400

TROUBLESHOOTING

Wobble or vibration in ATC

- Bent rim
- Loose wheel bearing
- Faulty rear axle bearing holder
- Faulty tire
- Axle not tightened properly

Poor brake performance

- Improper brake adjustment
- Worn brake shoes
- Brake linings oily, greasy or dirty
- Worn brake cam
- Worn brake drum
- Brake arm serrations improperly engaged
- Brake shoes worn at cam contact area

Brake drag

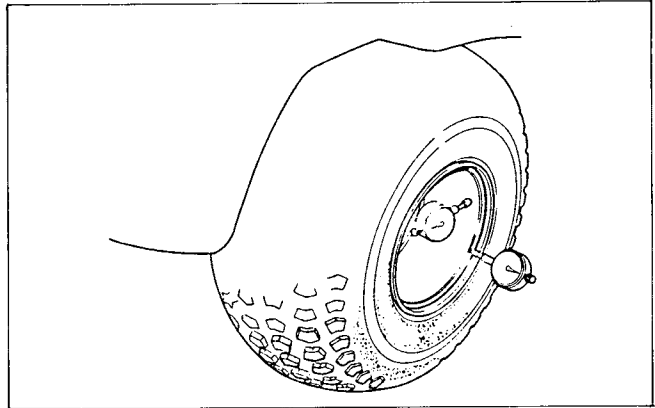
- Incorrect brake adjustment
- Sticking brake cam
- Sticking brake cable

REAR WHEEL

RIM RUNOUT INSPECTION

Measure the rear wheel rim runout.

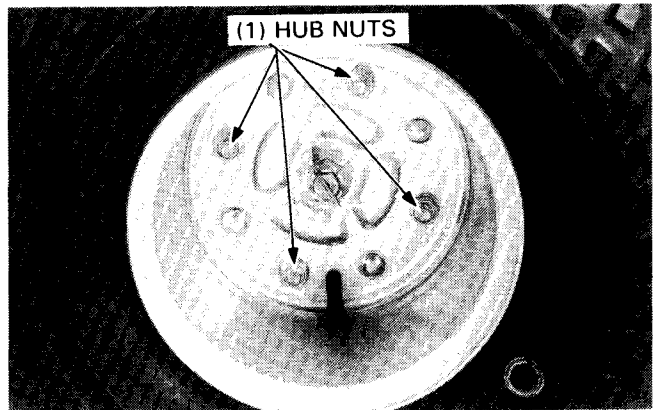
SERVICE LIMIT: 4.0 mm (0.16 in)



REMOVAL

Raise the rear wheels off the ground with a jack or block under the engine.

Remove the rear wheel hub nuts and the rear wheels.



WHEEL DISASSEMBLY/ASSEMBLY

For tire disassembly, assembly and repair, refer to Pages 11-9 to 11-13.

NOTE

- Each rear tire has one rim plate located on the inside rim.

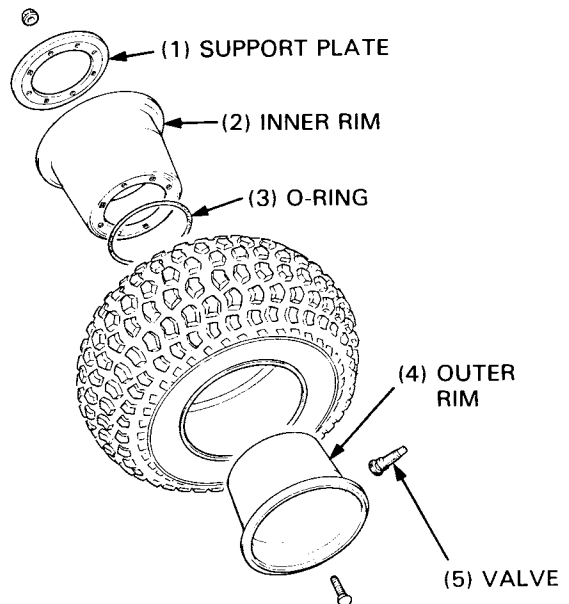
INSTALLATION

Install the rear wheel with the tire valve facing out. Tighten the hub nuts.

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

NOTE

- Install the rear wheels so tire tread directional pattern will be same as front tire.



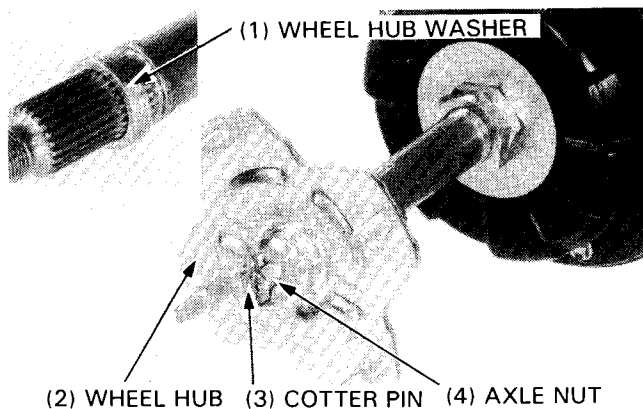
REAR WHEEL/BRAKE/DRIVE MECHANISM

REAR BRAKE

REMOVAL

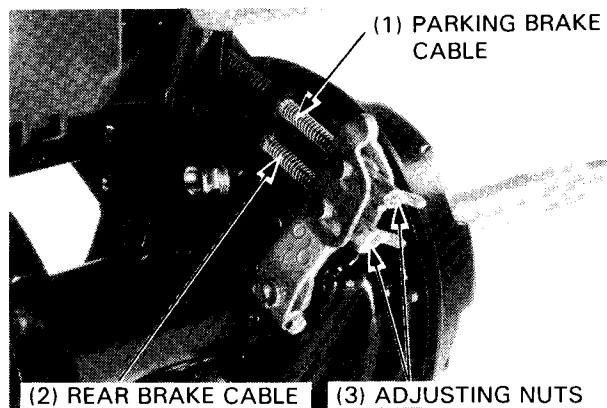
Remove the following:

- right rear wheel (Page 12-3)
- cotter pin and axle nut
- rear right wheel hub and wheel hub washer



Remove the rear brake cable and parking brake cable adjusting nuts.

Disconnect the cables from the rear brake arm.



Remove the brake drum nuts using the special tools.

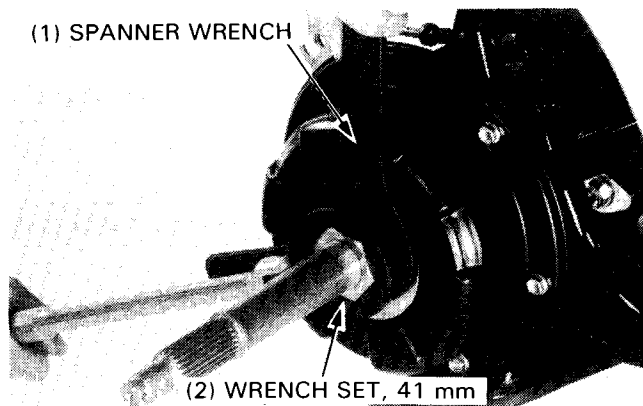
TOOLS:

Spanner wrench, 41mm

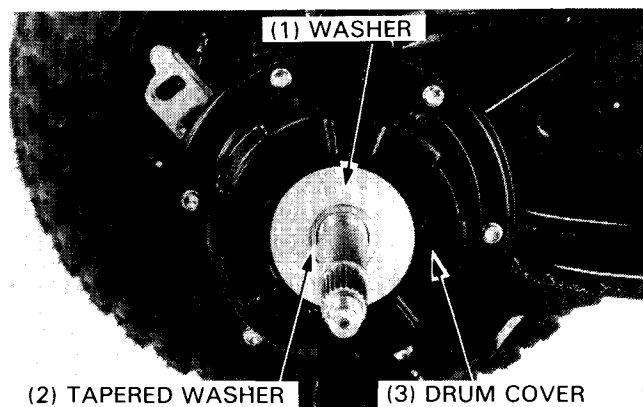
Wrench set, 41 mm

Wrench attachment

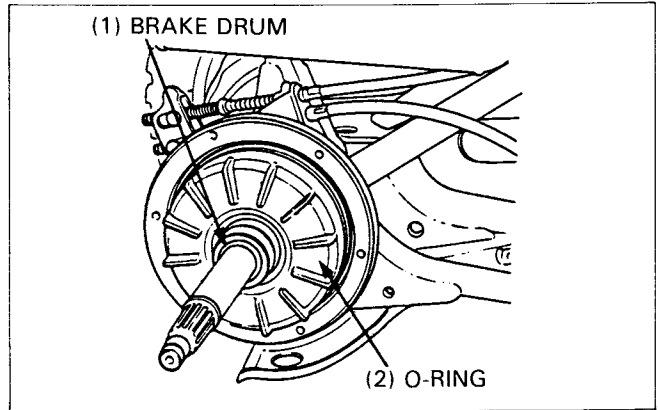
07916-9580200 or
07916-958020A
07916-9580300 or
equivalent commercially
available in U.S.A.
07916-9580400 or
07916-958010A



Remove the tapered washer, washer, drum cover mounting bolts and drum cover.



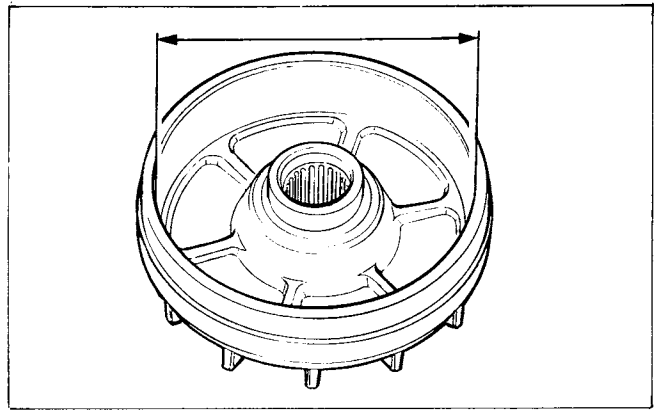
Remove the O-ring and rear brake drum.



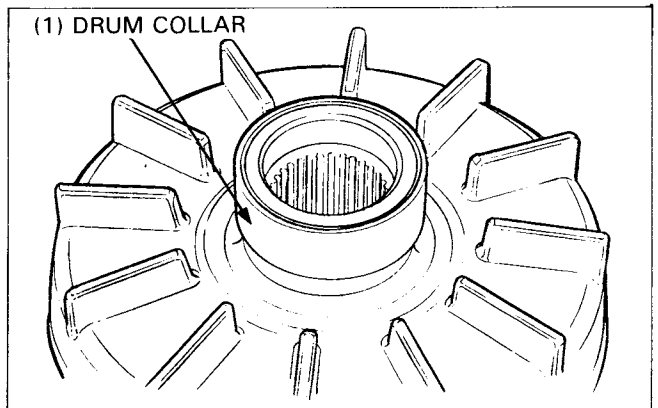
INSPECTION

Measure the brake drum I.D.

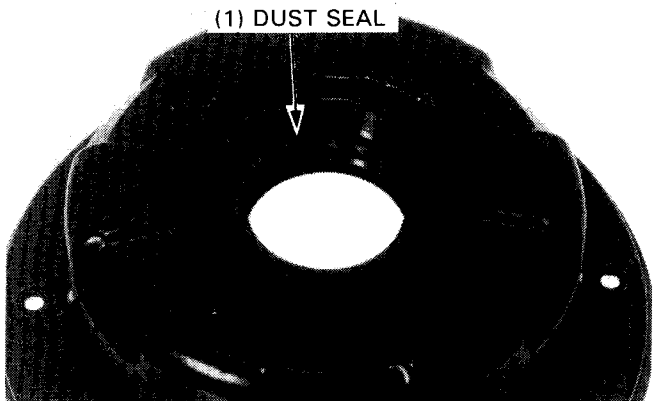
SERVICE LIMIT: 141 mm (5.6 in)



Check the brake drum collar for damage.



Check the cover dust seal for damage and replace if necessary.

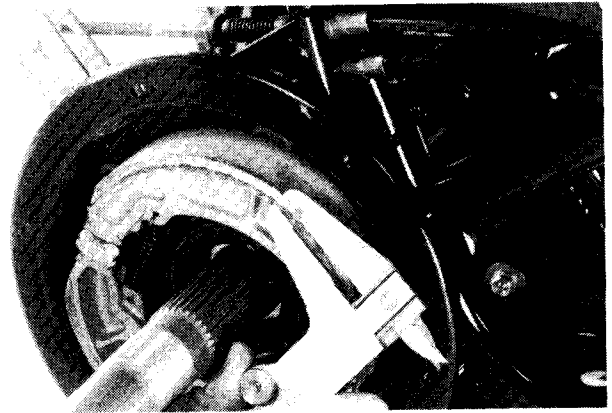


REAR WHEEL/BRAKE/DRIVE MECHANISM

Measure the brake lining thickness.

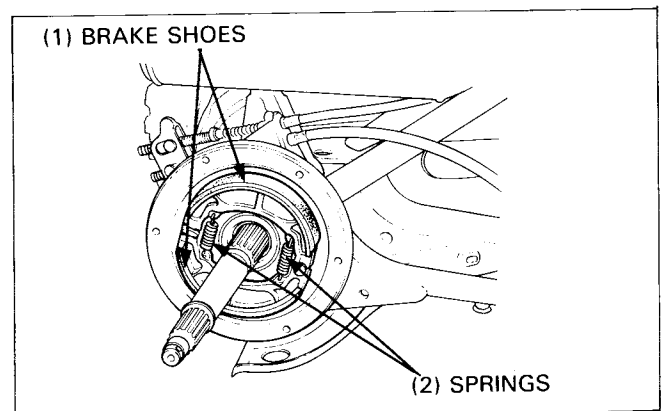
SERVICE LIMIT: 2 mm (0.1 in)

Replace the brake lining if it is thinner than the service limit.

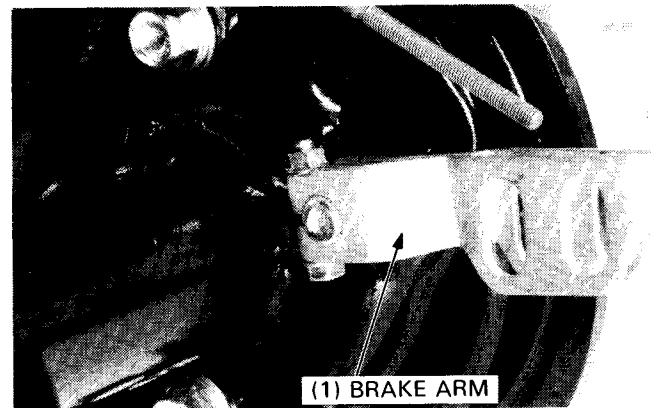


DISASSEMBLY

Expand and remove the brake shoes by hand.



Remove the brake arm nut, bolt and brake arm.
Remove the indicator plate and felt.
Remove the brake cam, return spring and dust seals.



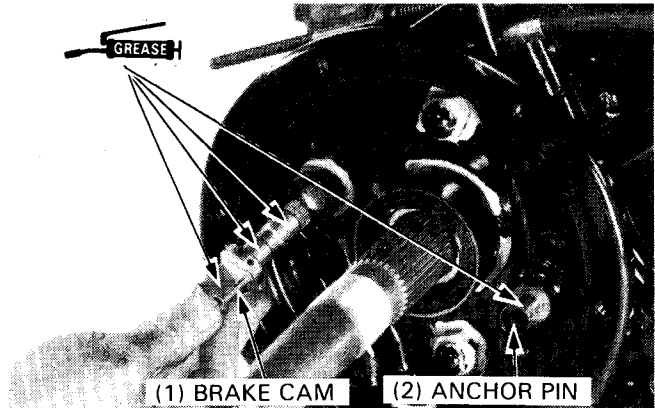
BRAKE ASSEMBLY/INSTALLATION

Install new dust seals into the brake cam hole.

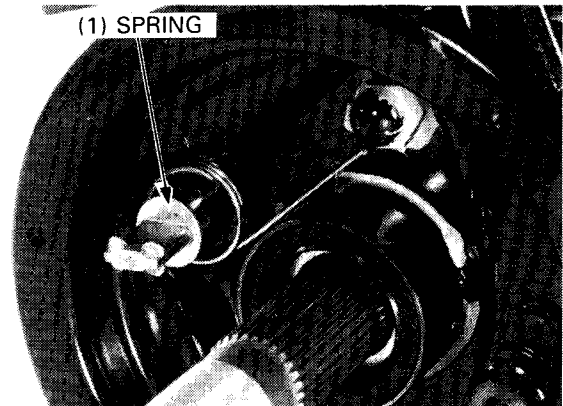


REAR WHEEL/BRAKE/DRIVE MECHANISM

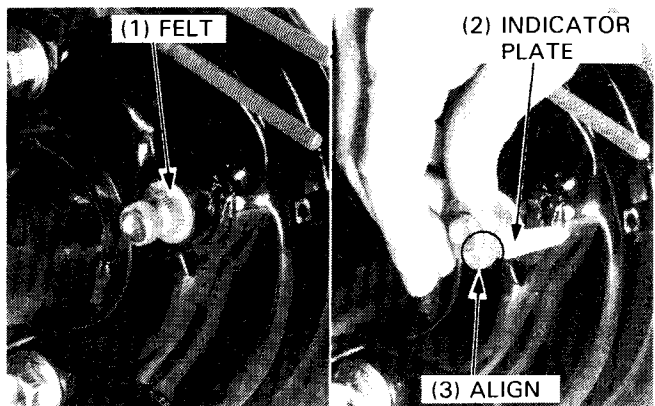
Apply grease to the anchor pin and brake cam and insert the brake cam into the hole.



Install the return spring as shown.

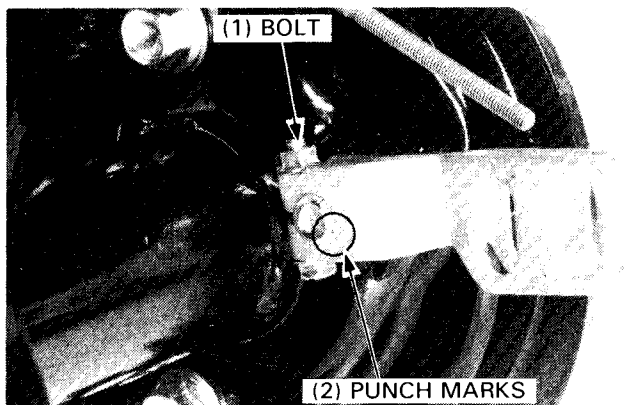


Install the felt and align the tab on the indicator plate with the punch mark on the brake cam and install the indicator plate.



Align the punch marks and install the brake arm over the brake cam.

Install the brake arm bolt and nut.
Tighten the bolt securely.

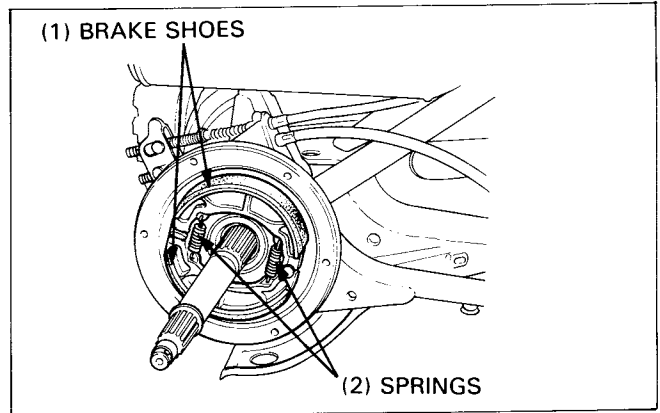


REAR WHEEL/BRAKE/DRIVE MECHANISM

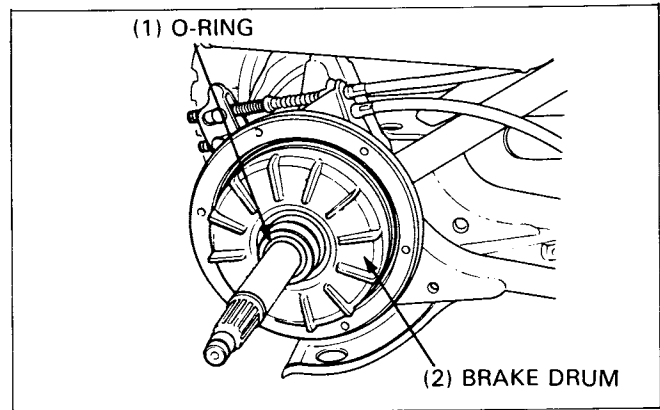
Install the brake shoes and springs.

WARNING

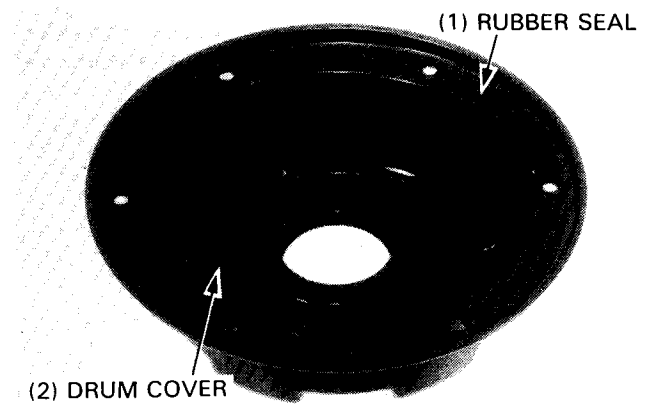
- Contaminated brake linings reduce stopping power.
- Keep grease off the linings. Wipe excess grease off the cam.



Install the brake drum and O-ring.



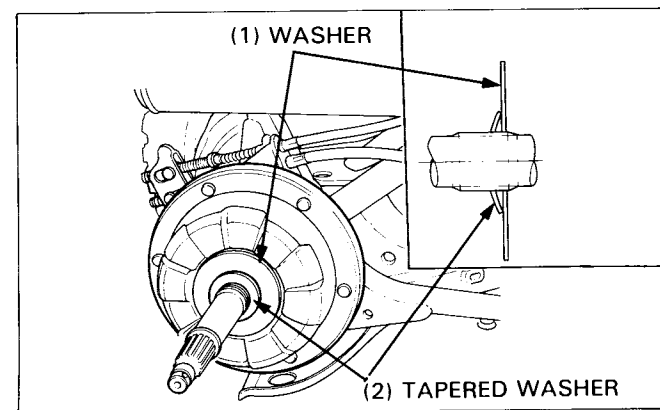
Install the rubber seal onto the brake drum cover.



Install the drum cover and tighten the six bolts.
Install the washer and tapered washer.

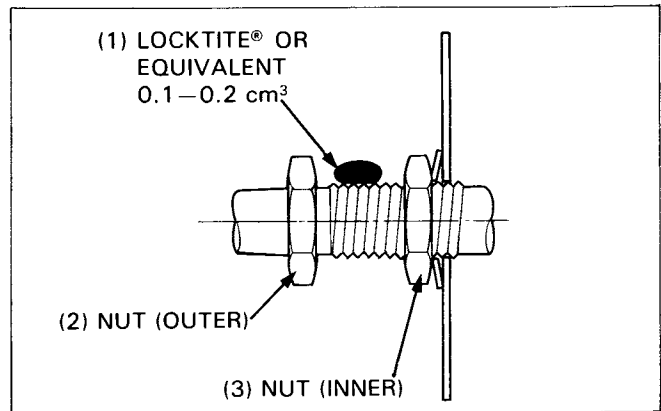
NOTE

- Note the direction of the tapered washer.



REAR WHEEL/BRAKE/DRIVE MECHANISM

Apply LOCKTITE® or equivalent to the shaft threads.



Tighten the inner nut.

TORQUE: 40–50 N·m (4.0–5.0 kg·m, 29–36 ft·lb)

Tighten the outer nut.

TORQUE: 140–150 N·m (14.0–15.0 kg·m, 101–108 ft·lb)

TOOL:

Spanner wrench, 41 mm

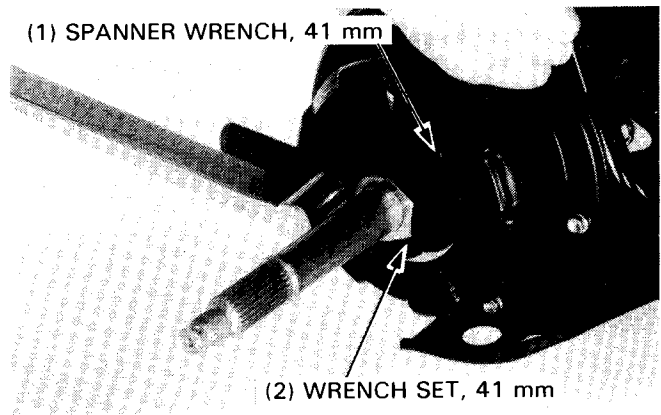
07916–9580200
or 07916–958020A

Wrench set, 41 mm

07916–9580300
or equivalent commercially
available in U.S.A.

Wrench attachment

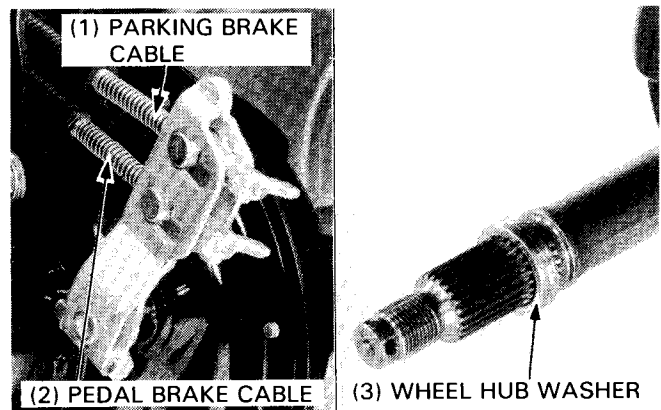
07916–9580400
or 07916–958010A



Connect the rear brake cable and parking brake cables.
Install the wheel hub washer onto the axle right side.

NOTE

- Use the wheel hub washer with the rear axle right side only.

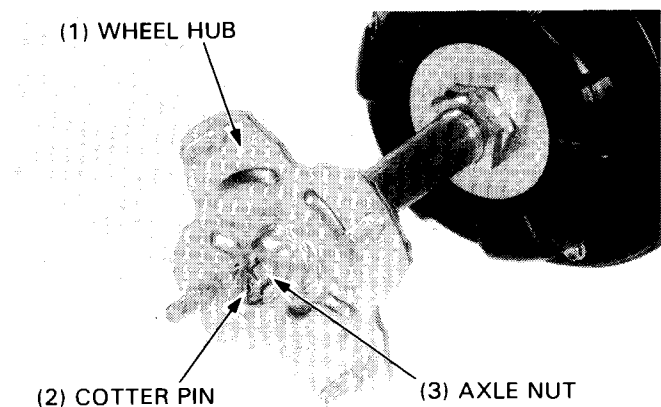


Install the wheel hub and axle nut.

Tighten the axle nut and install new cotter pin.

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

Adjust the rear brake cables (Page 3-12).



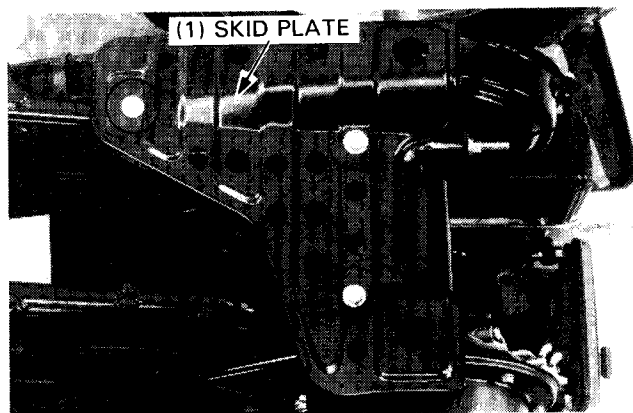
REAR WHEEL/BRAKE/DRIVE MECHANISM

REAR AXLE/FINAL DRIVEN SPROCKET

AXLE REMOVAL

Remove the three skid plate bolts mounting and remove the plate.

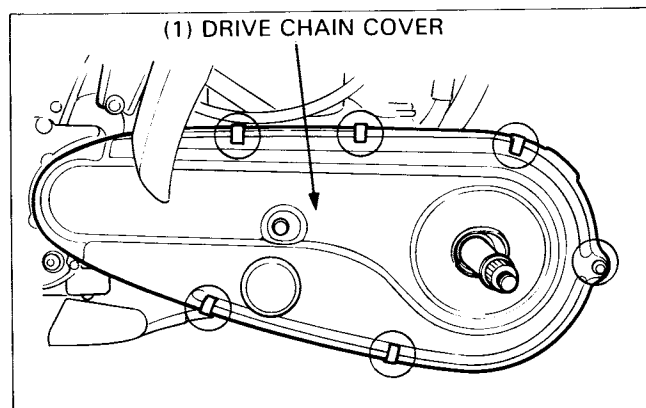
Remove the rear wheels (Page 12-3).



Remove the right wheel hub, wheel hub washer and left wheel hub by removing the cotter pins and nuts (Page 12-4).

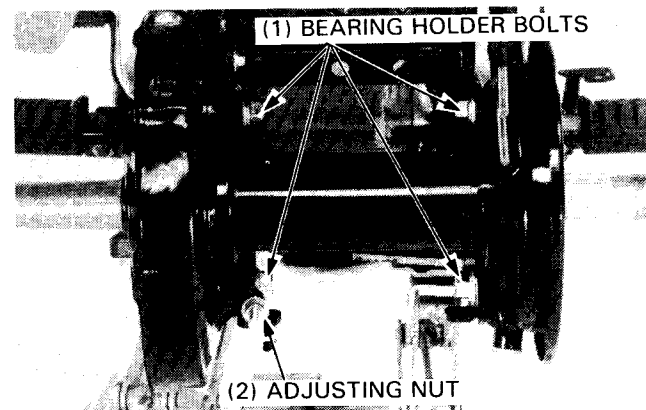
Remove the brake drum cover and drum (Page 12-6).

Remove the drive chain cover.

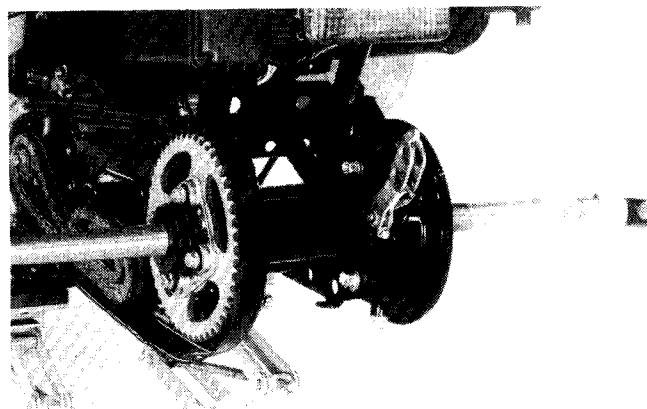


Loosen the drive chain adjusting nut and bearing holder bolts.

Loosen and remove the drive chain by pushing the axle forward.



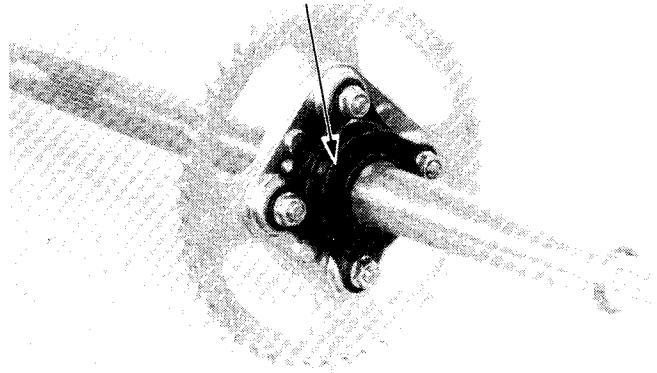
Drive the rear axle out of the right side using a soft hammer.



AXLE DISASSEMBLY

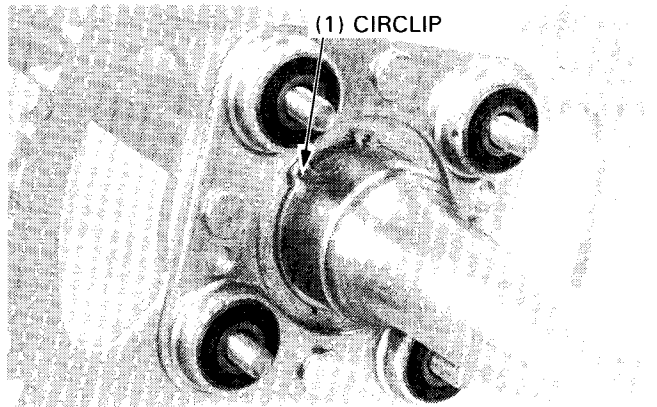
Remove the four damper cover nuts and the damper cover.

(1) DAMPER COVER



Remove the circlip securing the final driven sprocket.
Remove the sprocket from the axle.

(1) CIRCLIP

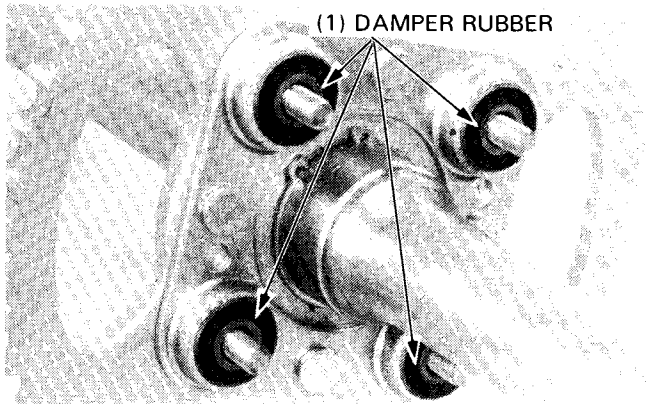


FINAL DRIVEN SPROCKET INSPECTION

Check the damper rubbers for damage. Replace if necessary.

Check the condition of the final driven sprocket teeth.
Replace the sprocket if it is worn or damaged.

(1) DAMPER RUBBER



NOTE

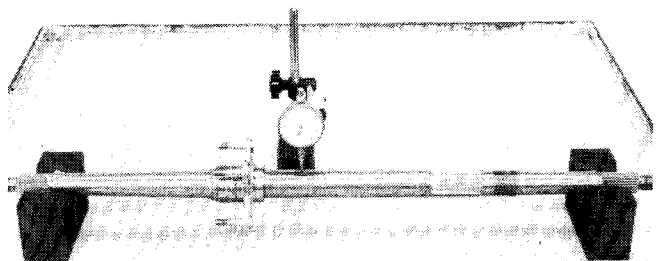
- If the driven sprocket is worn or damaged, the drive chain and the drive sprocket must be inspected.
- Never install a new drive chain on a worn sprocket or a worn chain on new sprockets. Both chain and sprocket must be in good condition or the replacement chain or sprockets will wear rapidly.

AXLE INSPECTION

Place the rear axle in V-blocks and measure the runout.

The actual runout is 1/2 of the Total Indicator Reading.

SERVICE LIMIT: 3.0 mm (0.12 in)



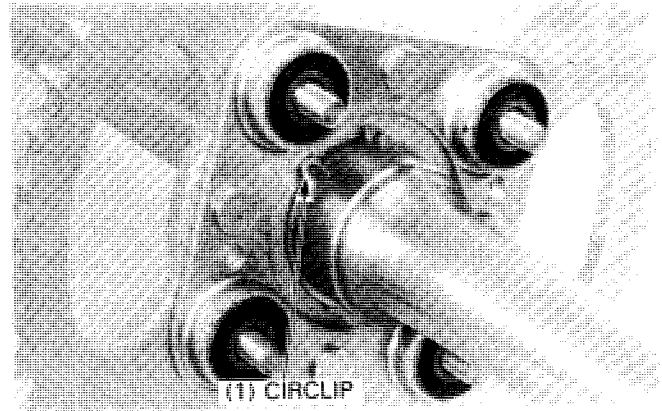
REAR WHEEL/BRAKE/DRIVE MECHANISM

AXLE ASSEMBLY

Install the final driven sprocket onto the axle and secure it with the circlip.

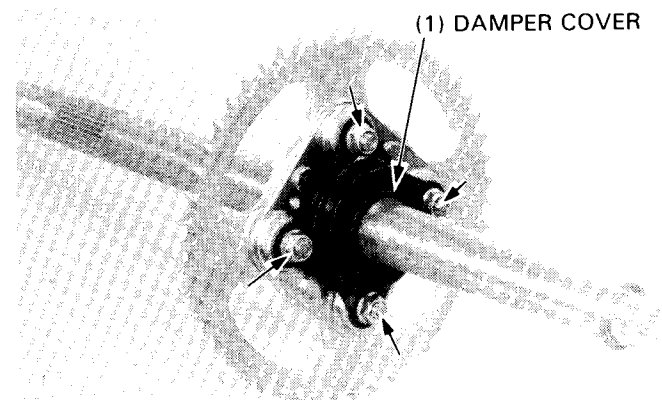
NOTE

- Install the circlip with sharp edge facing out.



Install the damper cover and tighten it with the driven sprocket nut.

TORQUE: 28–32 N·m (2.8–3.2 kg·m, 20–23 ft·lb)

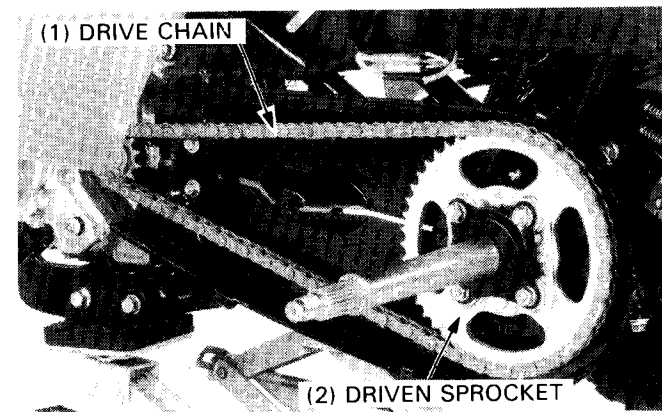


AXLE INSTALLATION

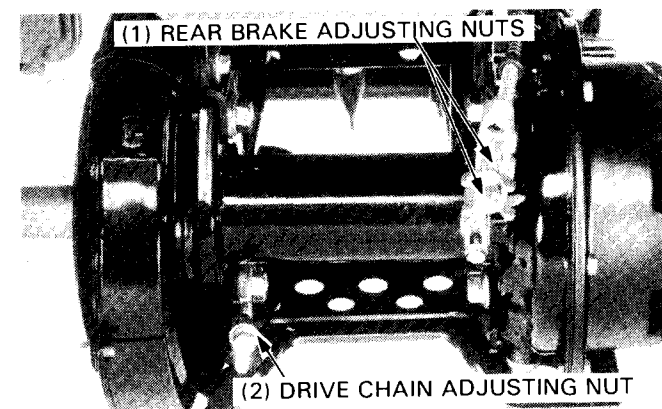
Insert the axle into the bearing holder from the left side. Install the drive chain over the sprocket.

Install the following:

- drive chain cover
- brake drum (Page 12-6)
- side washer and right wheel hub (Page 12-9)
- left wheel hub
- skid plate
- rear wheels (Page 12-3)



Adjust the drive chain slack (Page 3-9).
Adjust the rear brake (Page 3-12).

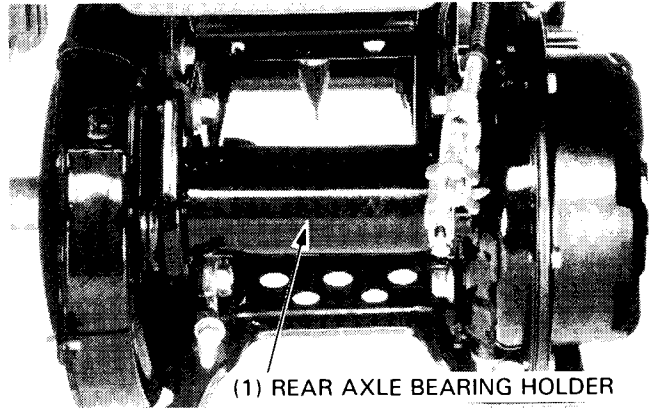


REAR AXLE BEARING HOLDER

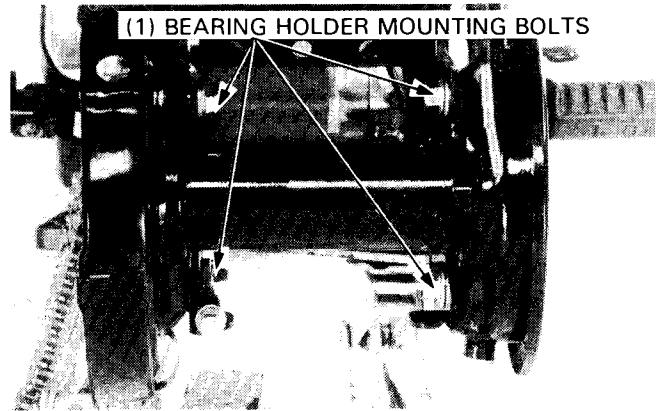
REMOVAL

Remove the following:

- rear wheel (Page 12-3)
- rear axle (Page 12-10)



Remove the four bearing holder mounting bolts and the bearing holder from the frame.

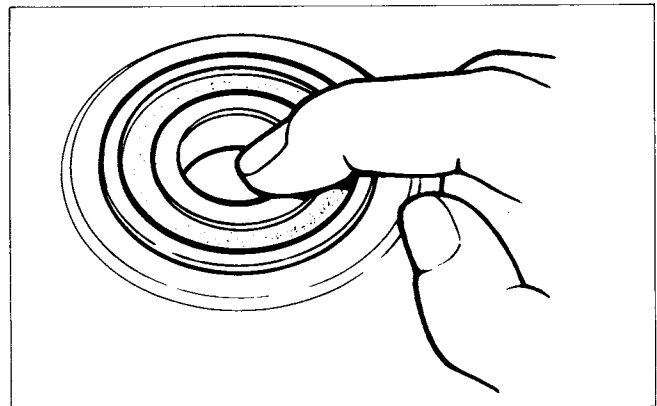


REAR WHEEL BEARING INSPECTION

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the holder. Replace the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the holder.

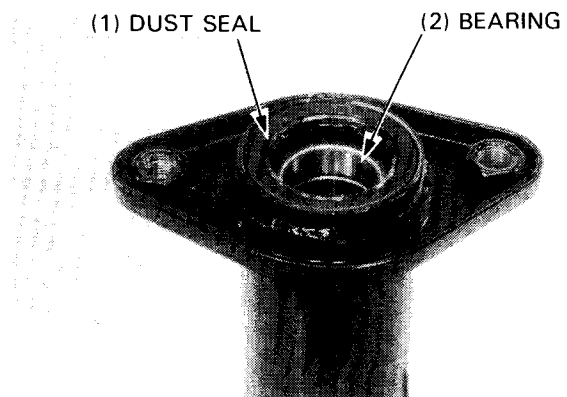
NOTE

- Replace the bearings in pairs.



BEARING REPLACEMENT

Remove the dust seals and drive out the bearings. Remove the center collar.



REAR WHEEL/BRAKE/DRIVE MECHANISM

ASSEMBLY

NOTE

- Install the bearings with marks facing out.

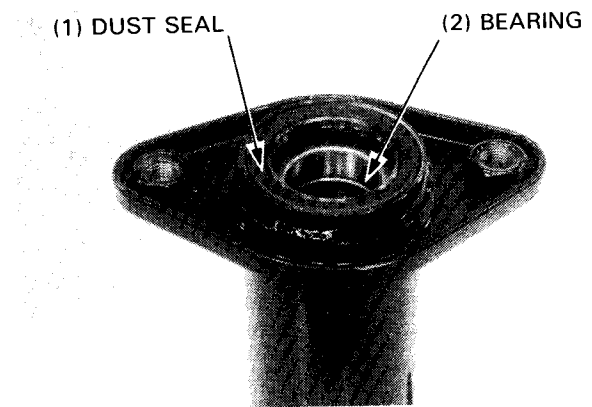
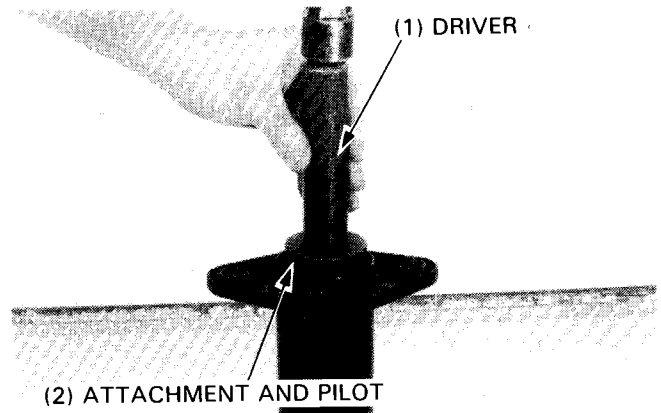
Drive a new right bearing securely into the bearing holder until it seats.

Install the center collar and drive a new left bearing securely until it seats.

TOOL:

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

Coat the dust seal lips with grease and install the dust seals.



INSTALLATION

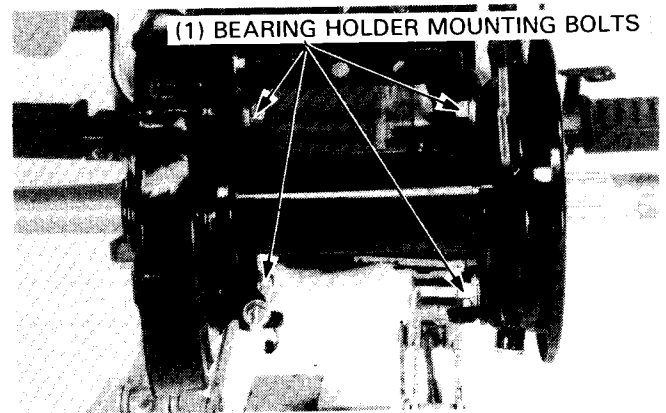
Install the bearing holder and drive chain adjuster with the four holder bolts.

NOTE

- Do not tighten the bolts before adjusting the drive chain.

Install the removed parts in the reverse order of removal.
Adjust the drive chain slack (Page 3-9).
Adjust the rear brake (Page 3-12).
Tighten the bearing holder mounting bolts.

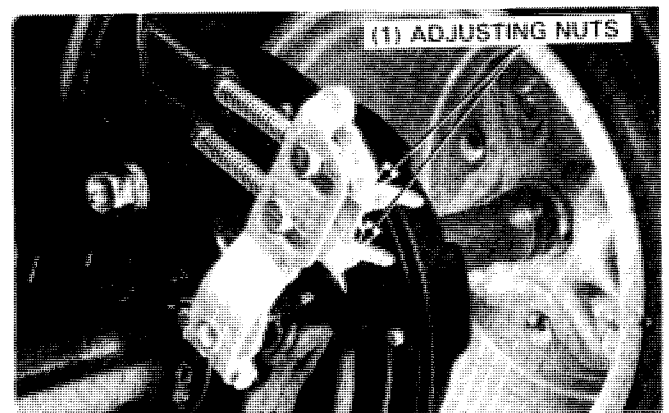
TORQUE: 50–70 N·m (5.0–7.0 kg·m, 36–51 ft·lb)



BRAKE PEDAL

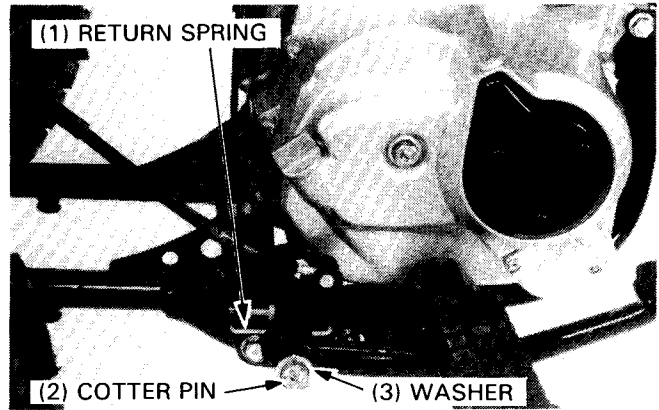
REMOVAL

Remove the rear brake and parking brake cables adjusting nuts.



REAR WHEEL/BRAKE/DRIVE MECHANISM

Remove the brake pedal return spring.
Remove the cotter pin, washer and rear brake pedal and disconnect the brake cable from the pedal linkage.



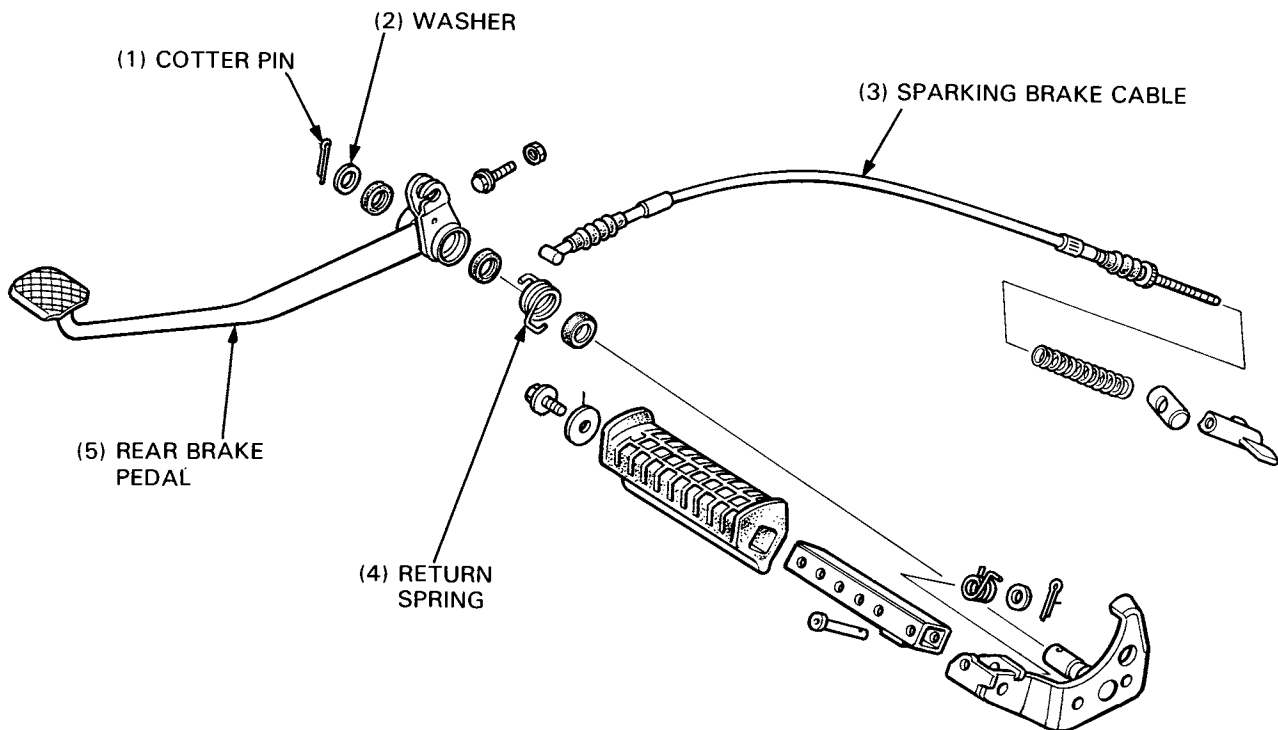
INSTALLATION

Intall the brake pedal in the reverse order of removal.

NOTE

- Apply grease to the brake pedal pivot shaft, link pin and cable end.

Adjust the rear brake (Page 3-12).



MEMO

13. REAR FENDER/EXHAUST MUFFLER

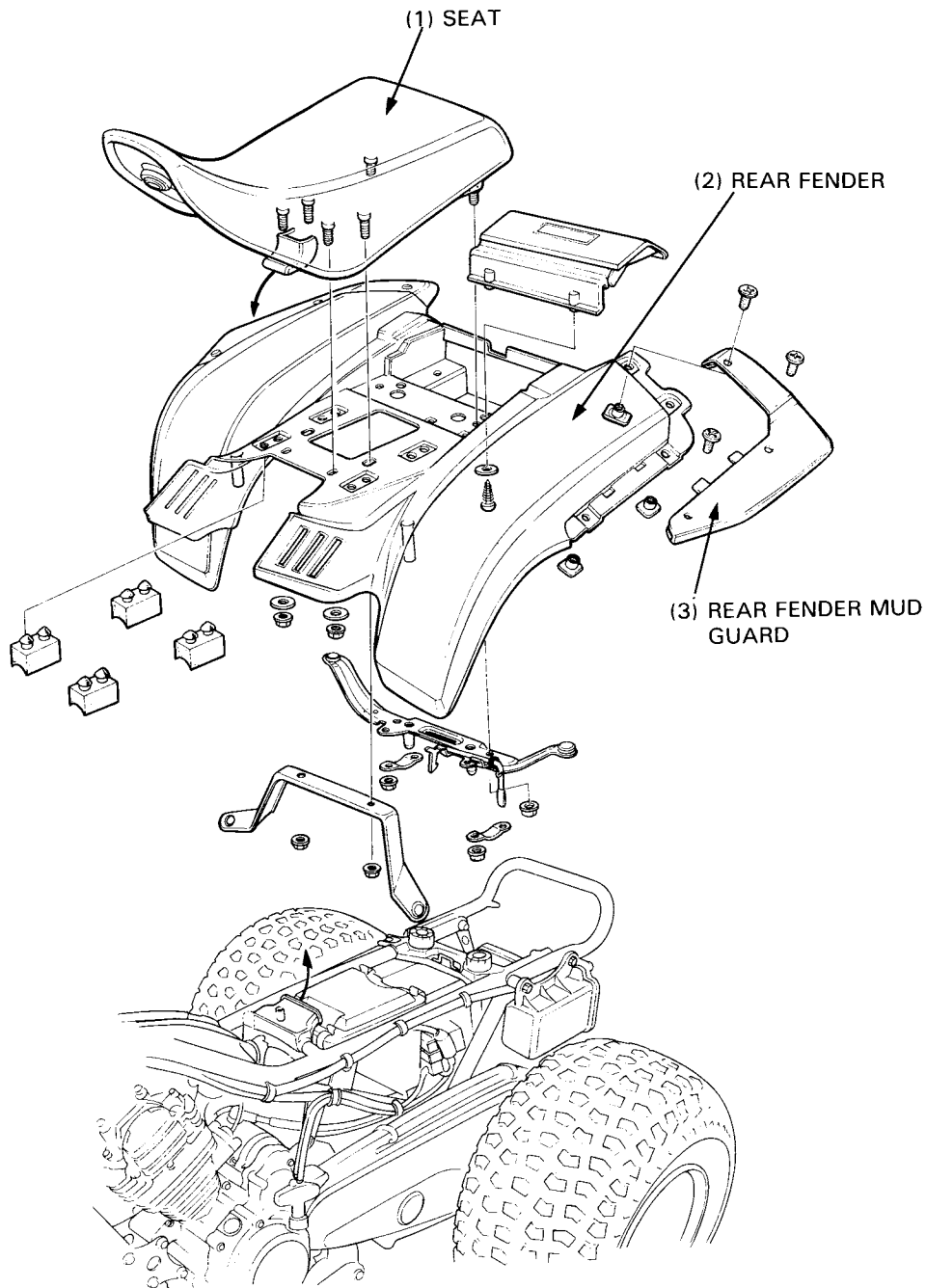
REAR FENDER

13-1 EXHAUST MUFFLER

13-2

REAR FENDER

DISASSEMBLY/ASSEMBLY



13

EXHAUST MUFFLER

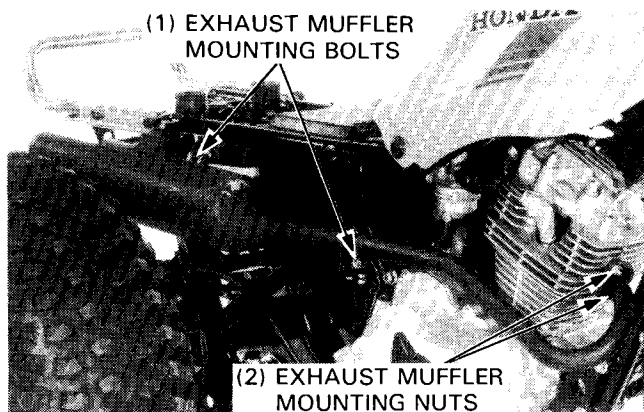
Refer to Page 3-14 for spark arrester cleaning.

WARNING

- *Do not service the exhaust muffler while it is hot.*

REMOVAL

Remove the seat/rear fender.
Remove the exhaust muffler joint nuts.
Remove the two exhaust muffler mounting bolts and the exhaust muffler.

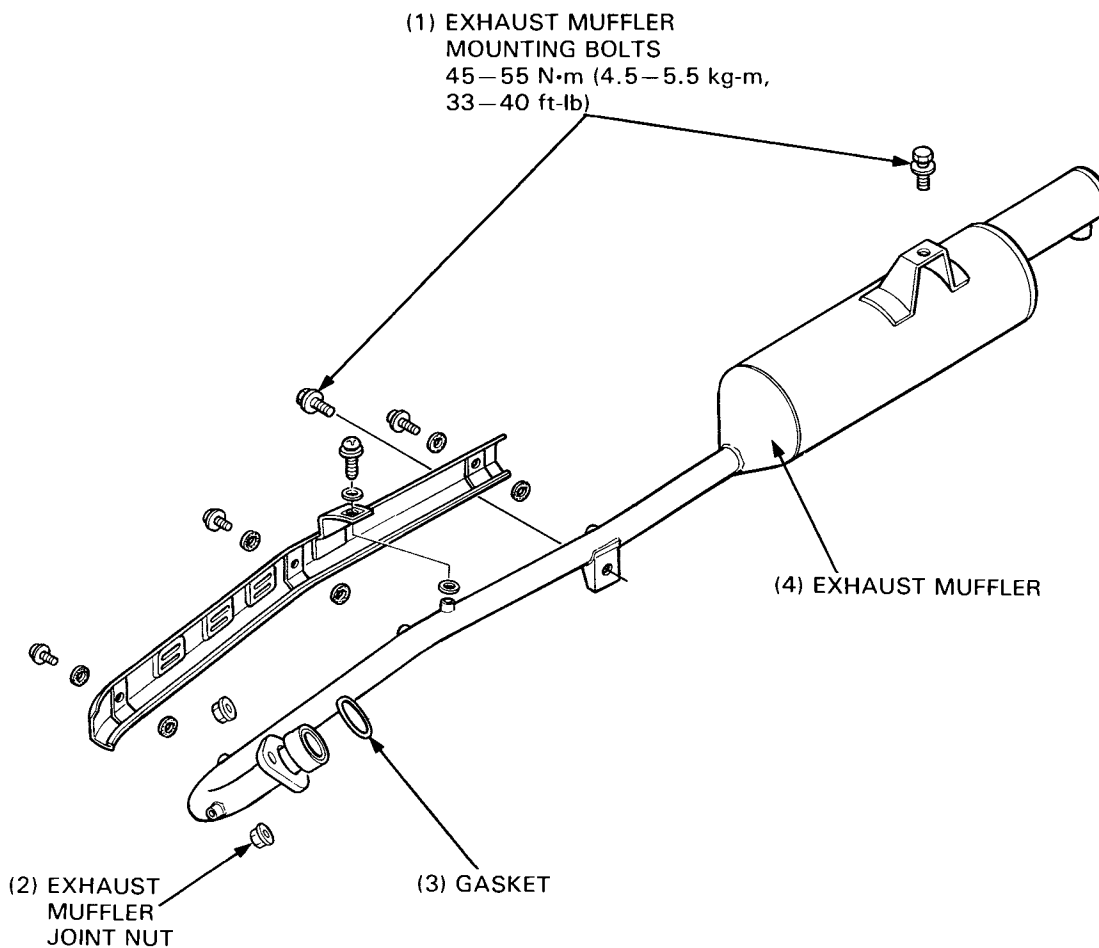


INSTALLATION

Installation is the reverse order of removal.

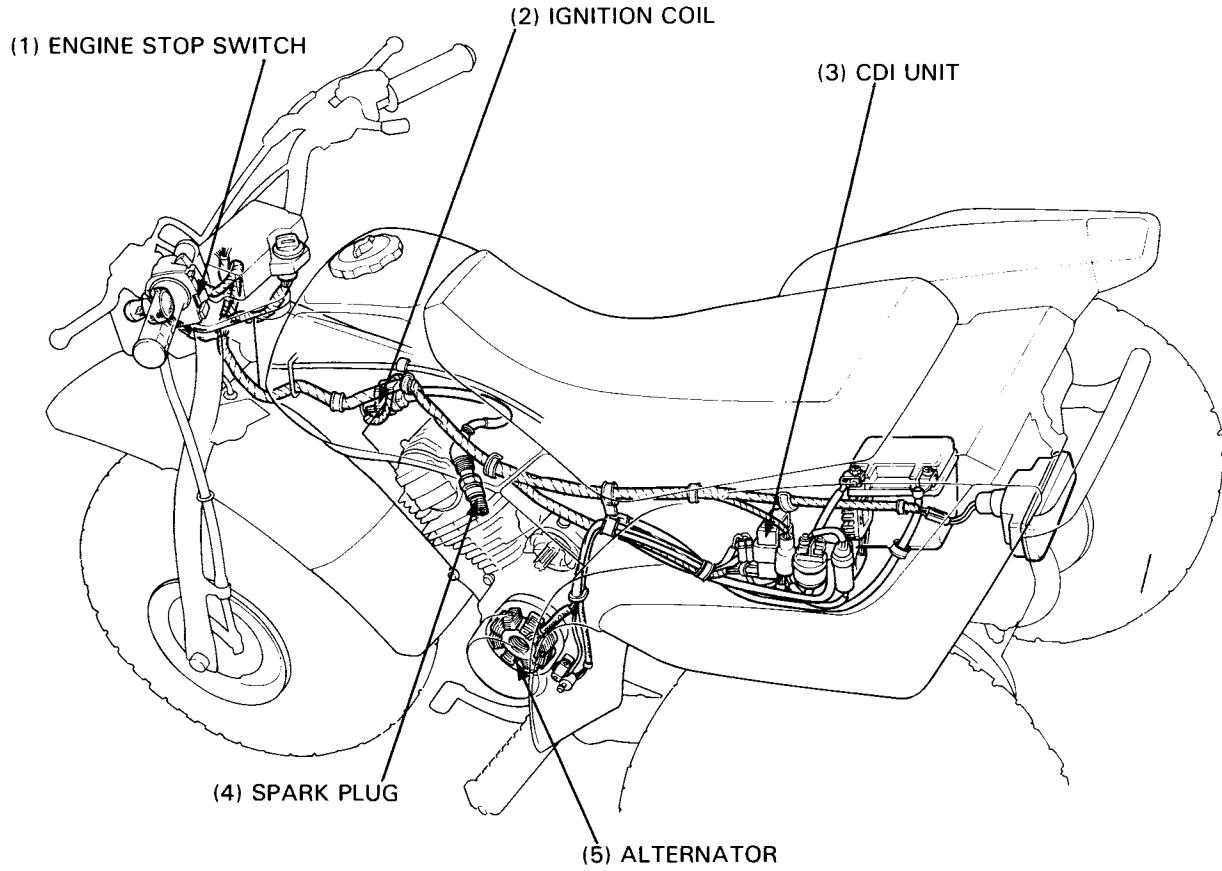
NOTE

- After installation, make sure that there are no exhaust leaks.
- Apply a locking agent to the muffler protector screw threads.

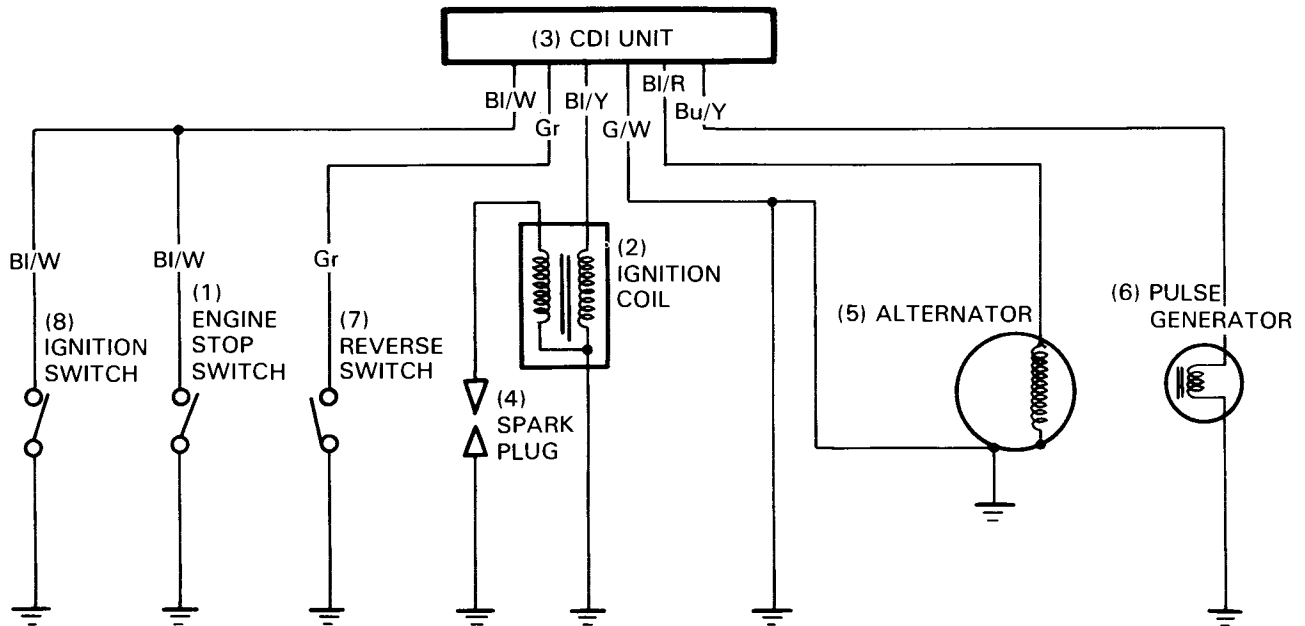


MEMO

IGNITION SYSTEM



- (9) Bl: Black
- (10) W: White
- (11) Gr: Gray
- (12) Y: Yellow
- (13) G: Green
- (14) R: Red
- (15) Bu: Blue



14. IGNITION SYSTEM

SERVICE INFORMATION	14-1	PULSE GENERATOR	14-3
TROUBLESHOOTING	14-1	ALTERNATOR EXCITER COIL	14-4
CDI UNIT	14-2	IGNITION TIMING	14-4
IGNITION COIL	14-3		

SERVICE INFORMATION

GENERAL

- Ignition timing does not normally need to be adjusted since the CDI (Capacitive Discharge Ignition) unit is factory preset.
- For spark plug inspection, refer to Page 3-8.
- For pulse generator removal, see Page 9-7.

SPECIFICATIONS

Spark plug	NGK	DR8ES-L
	ND	X24ESR-U
Spark plug gap		0.6–0.7 mm (0.024–0.028 in)
Ignition timing	Initial	10° ± 2° BTDC/1,500 ± 100 rpm
	Full advance	28° ± 2° BTDC/4,000 ± 100 rpm

TOOL

Digital Multitester

KS–AHM–32–003 (U.S.A. only) or TH–5H–1 or
07308–0020000

TROUBLESHOOTING

Engine starts but stops

- No spark at plug
- Improper ignition timing
- Faulty spark plug

No spark at plug

- Engine stop switch “OFF”
- Poorly connected, broken or shorted wires
 - Between alternator and CDI unit
 - Between CDI unit and engine stop switch
 - Between CDI unit and ignition coil
 - Between ignition coil and spark plug
 - Between pulse generator and CDI unit
- Faulty ignition coil
- Faulty CDI unit
- Faulty pulse generator
- Faulty alternator

Engine starts but runs poorly

- Ignition primary circuit
 - Faulty ignition coil
 - Loose or bare wire
 - Faulty alternator
 - Faulty CDI unit
- Ignition secondary circuit
 - Faulty plug
 - Faulty pulse generator
 - Faulty high tension wire
- Improper ignition timing
 - Faulty advance rotor
 - Faulty pulse generator
 - Faulty CDI unit

IGNITION SYSTEM

CDI UNIT

REMOVAL

Remove the seat and rear fender.
Disconnect the wire coupler and remove the CDI unit.

Check for continuity between the BI/W wire terminal and ground with the engine stop and ignition switches in each position.

- continuity with the ignition and engine stop switches off.
- continuity with the engine stop switch off and ignition switch on.
- continuity with the ignition switch off and engine stop switch to RUN.
- no continuity with the engine stop switch to RUN and ignition switch on.

Check for continuity between the Gr wire terminal and ground with the transmission into the REVERSE.

Check for continuity between the G/W wire terminal and ground.

There should be continuity.

If any of the above checks fails, check the following:

- wiring for short or open circuit, or loose connection.
- ignition switch (Page 17-3).
- engine stop switch (Page 17-4).
- reverse switch (Page 17-3).

Measure the resistance between the BI/Y wire terminal and ground.

STANDARD: 0.1—0.3 Ω

If the resistance is not within the standard, check the ignition coil (Page 14-3).

Measure the resistance between the BI/R and G/W wire terminals.

STANDARD: 100—300 Ω

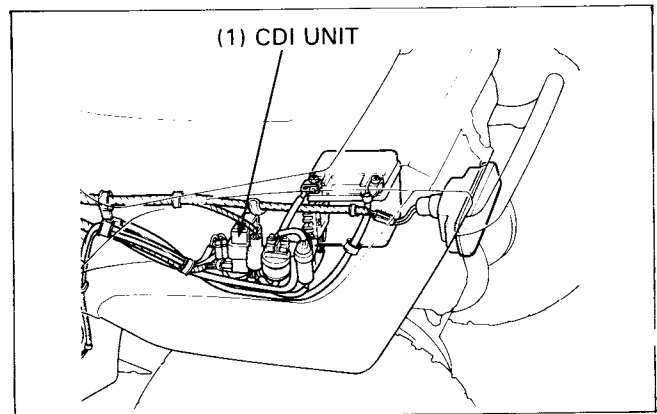
If the resistance is not within the standard, check the alternator exciter coil (Page 14-3).

Measure the resistance between the Bu/Y wire terminal and ground.

STANDARD: 290—360 Ω

If the resistance is not within the standard, check the pulse generator (Page 14-4).

If all related systems are in good condition but the ignition timing is incorrect, replace the CDI unit with a new one and recheck the ignition timing (Page 14-4).



IGNITION COIL

Remove the seat/rear fender.
Disconnect the CDI unit coupler and measure the resistance between the Bl/Y wire terminal and ground.

STANDARD: 0.1 – 0.3 Ω

If the resistance is not within the standard, remove the fuel tank and disconnect the ignition coil primary wire terminals from the coil and measure the resistance between the terminals.

STANDARD: 0.1 – 0.3 Ω

If the resistance is not within the standard, replace the ignition coil with a new one.

If the resistance is within the standard, check the wireharness between the CDI unit and ignition coil for short or open circuit, or loose connection.

Disconnect the spark plug cap from the spark plug and measure the ignition coil secondary coil resistance between the coil primary terminal (G) and the spark plug cap.

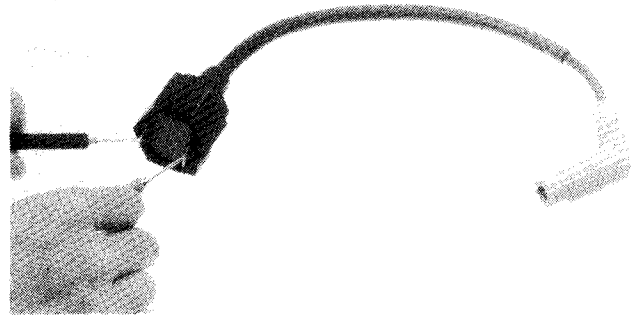
STANDARD: 7.4 – 1.1 k Ω

If the resistance is not within the standard, remove the spark plug cap from the spark plug wire and measure the resistance of the secondary coil without the cap.

STANDARD: 3.7 – 4.5 k Ω

If the resistance is within the standard, replace the spark plug cap with a new one and retest.

If the resistance is not within the standard, replace the ignition coil with a new one.



PULSE GENERATOR

Remove the seat/rear fender.
Disconnect the CDI unit coupler and measure the resistance between the Bu/Y wire terminal and ground.

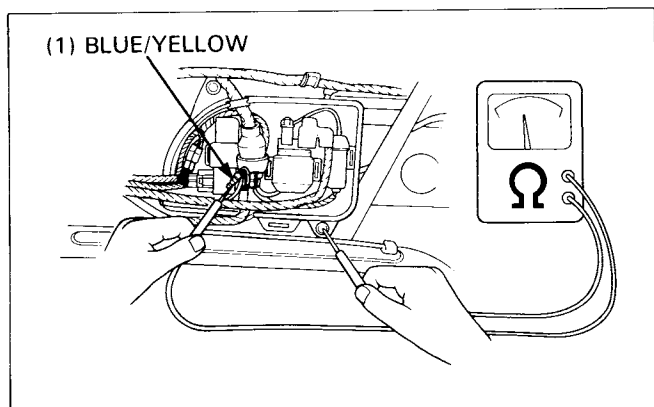
STANDARD: 290 – 360 Ω

If the resistance is not within the standard, disconnect the pulse generator wire connector and measure the resistance between the Bu/Y wire terminal and ground.

STANDARD: 290 – 360 Ω

If the resistance is within the standard, check the wire harness for short or open circuit, or loose connection.

If the resistance is not within the standard, replace the pulse generator (Page 9-7).



IGNITION SYSTEM

ALTERNATOR EXCITER COIL

Remove the seat/rear fender.
Disconnect the CDI unit coupler and measure the resistance between the BI/R and G/W wire terminals.

STANDARD: 100–300 Ω

If the resistance is not within the standard, disconnect the alternator BI/R wire connector and measure the resistance between the BI/R wire terminal and ground.

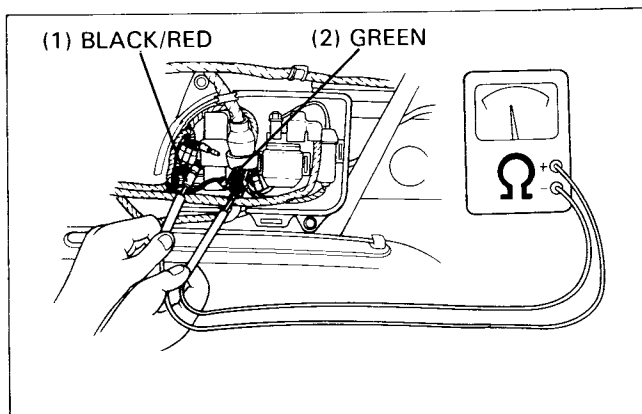
STANDARD: 100–300 Ω

If the resistance is not within the standard, replace the alternator with a new one (Page 9-5).

If the resistance is within the standard, check the wire harness for short or open circuit, or loose connection.

Check for continuity between the CDI unit G/W wire terminal and ground.

If there is no continuity repair or replace the wire harness.



IGNITION TIMING

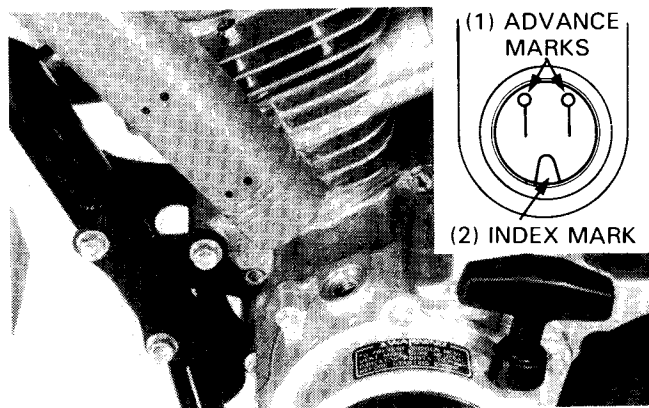
NOTE

- The Capacitive Discharge Ignition (CDI) system is factory pre-set and does not require adjustment. To inspect the function of the CDI components, ignition timing inspection procedures are given here.

Remove the timing hole cap.
Connect a tachometer and timing light.
Start the engine and allow it to idle.

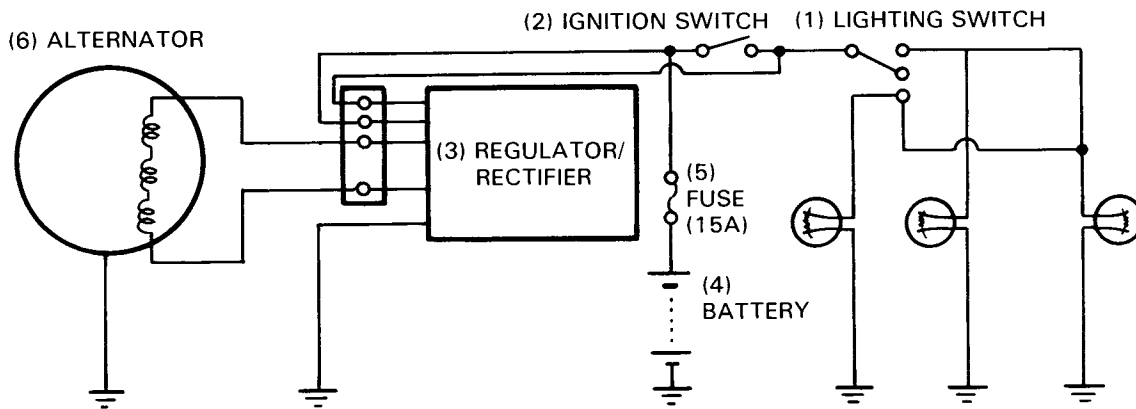
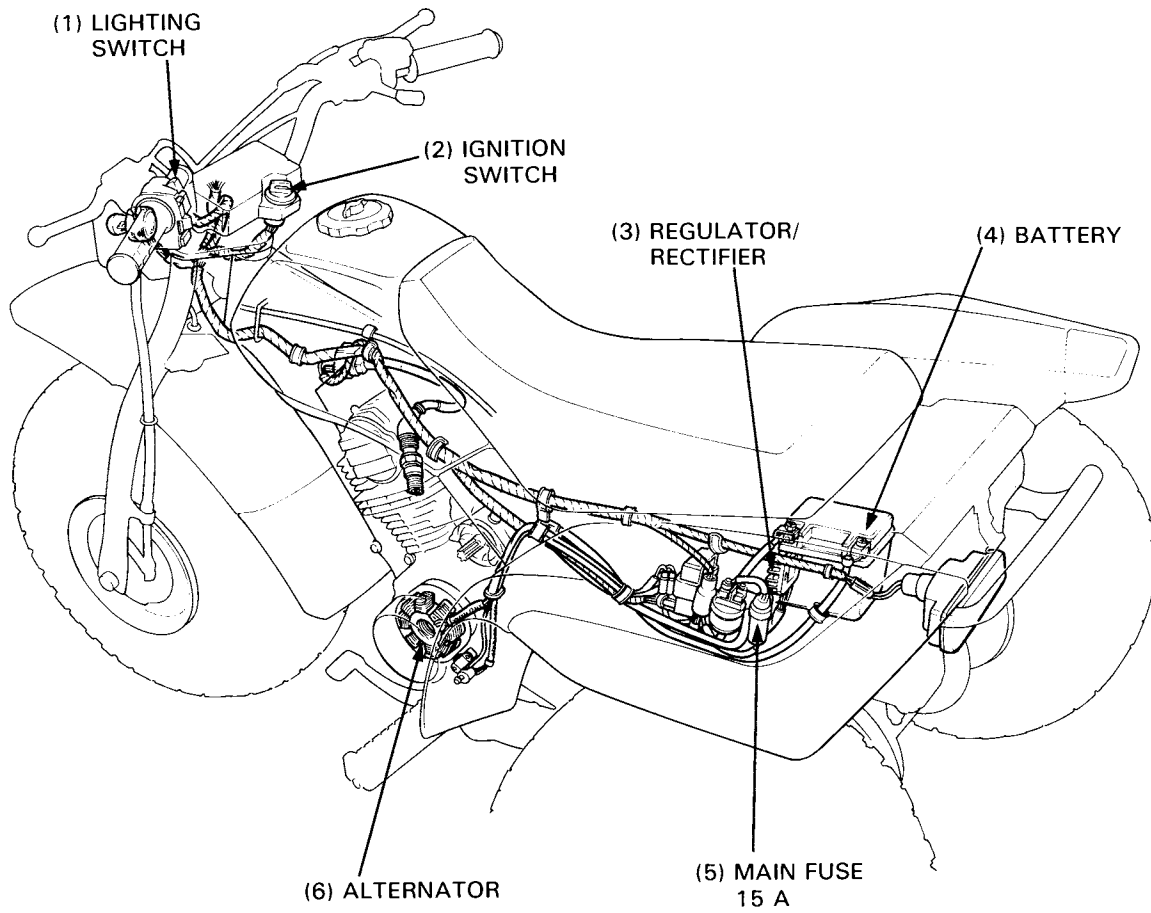
IDLE SPEED: 1,500 \pm 100 rpm

Inspect the ignition timing.
Timing is correct if the "F" mark on the alternator rotor is aligned with the index mark on the left crankcase cover at idle.



MEMO

BATTERY/CHARGING SYSTEM



15. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION	15-1	BATTERY	15-2
TROUBLESHOOTING	15-1	CHARGING SYSTEM	15-3

SERVICE INFORMATION

GENERAL

- Quick charging should be limited to an emergency. Slow charging is preferred.
- Remove the battery from the ATC for charging. If the battery must be charged on the ATC, disconnect the battery cables.
- The battery on this ATC is a sealed type. Never remove the filling hole caps even when the battery is being charged.
- Be sure to charge the battery with the amount of current and for the time indicated on the battery label and as given below. Charging with excessive current or charging too quickly may cause battery failure.

WARNING

- *Do not smoke around a charging battery, and keep sparks away from it. The gas produced by a battery will explode if a flame or spark is brought near.*

- Use only a sealed-type battery on this vehicle.
- All charging system components can be tested on the vehicle.

SPECIFICATIONS

Battery	Capacity	12 V—10 AH
	Charging current	At slow: 1.2 A At quick: 5 A
	Charging time	At slow: 5.0 hours, At quick: 1.0 hour
Alternator capacity	130 W/5,000 rpm	
Voltage regulator	Transistorized non-adjustable regulator	

TOOLS

Digital multimeter	07411—0020000 or KS—AHM—32—003 (U.S.A. only)
Circuit tester (SANWA)	07308—0020000
or	
Circuit tester (KOWA)	TH—5H—1

15

TROUBLESHOOTING

No power—key turned on

- Dead battery
- Disconnected battery cable
- Main fuse burned out
- Faulty ignition switch

Low power—key turned on

- Weak battery
- Loose battery connection

Low power—engine running

- Battery undercharged
- Charging system failure
- Loose connection or short circuit in lighting system

Intermittent power

- Loose battery connection
- Loose charging system connection
- Loose starting system connection

Charging system failure

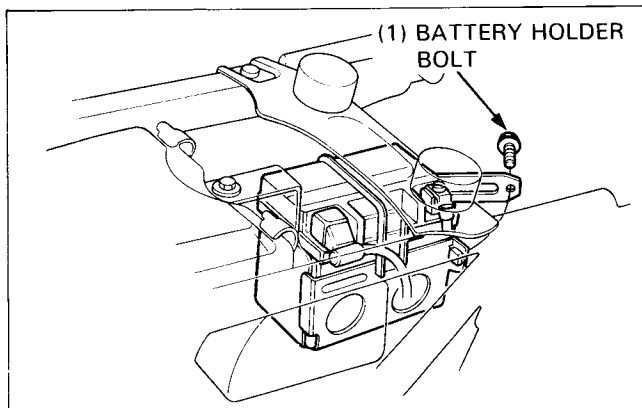
- Loose, broken, or shorted wire or connection
- Faulty voltage regulator
- Faulty alternator

BATTERY/CHARGING SYSTEM

BATTERY

REMOVAL/INSPECTION

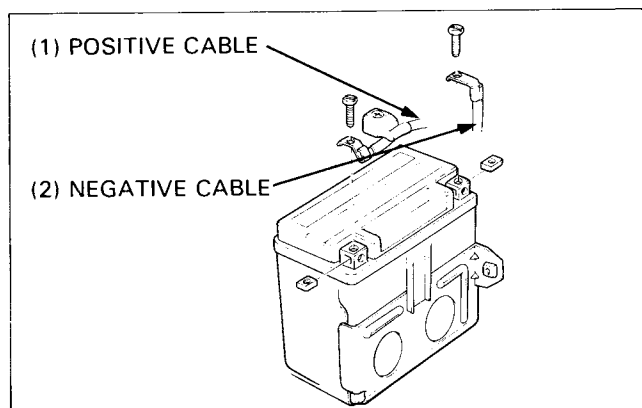
Remove the seat/rear fender.
Remove the battery holder bolt.



Disconnect the negative cable and then the positive cable and remove the battery.

Measure the battery voltage using a digital voltmeter.

VOLTAGE: Fully charged: 13.1 V
Undercharged: Below: 12.8 V



CHARGING

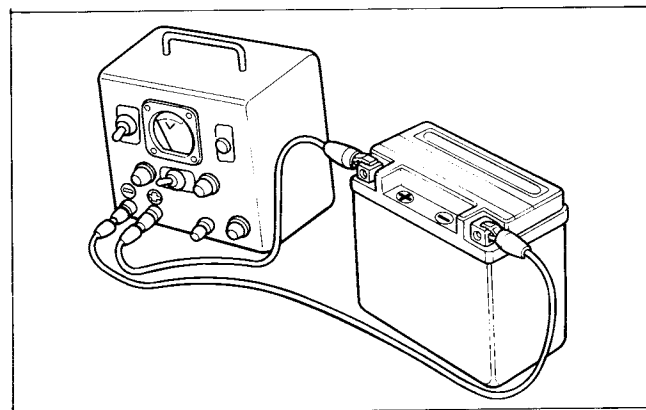
Connect the charger positive (+) cable to the battery positive (+) terminal.

Connect the charger negative (-) cable to the battery negative (-) terminal.

	At slow	At quick
Charging current	1.2 A	5 A
Charging time	5 hours	1 hour

WARNING

- *Keep flames and sparks away from a battery being charged.*
- *Turn power ON/OFF at the charger, not at the battery terminals.*



CAUTION

- *Quick charging should be limited to an emergency; slow charging is preferred.*
- *For battery charging, do not exceed the charging current and time specified on the battery cover. Using excessive current or extending the charging time may damage the battery.*

INSTALLATION

Install the battery in the reverse order of removal.

After installing the battery, coat the terminals with clean grease.

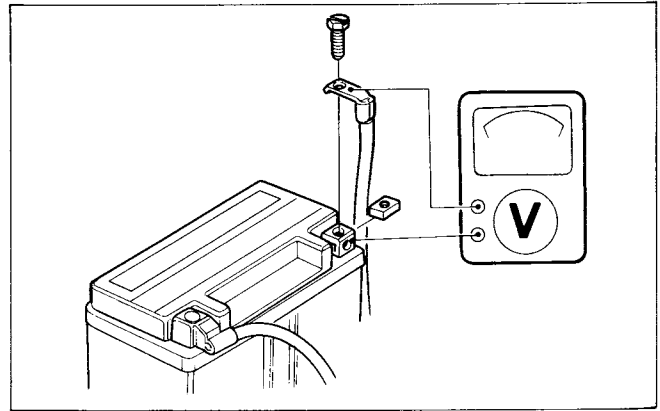
CHARGING SYSTEM

LEAK TEST

Turn the ignition switch off and disconnect the negative cable from the battery.

Measure the voltage between the battery negative terminal and negative (ground) cable.

There should be no voltage with the ignition switch off.



CHARGING VOLTAGE INSPECTION

NOTE

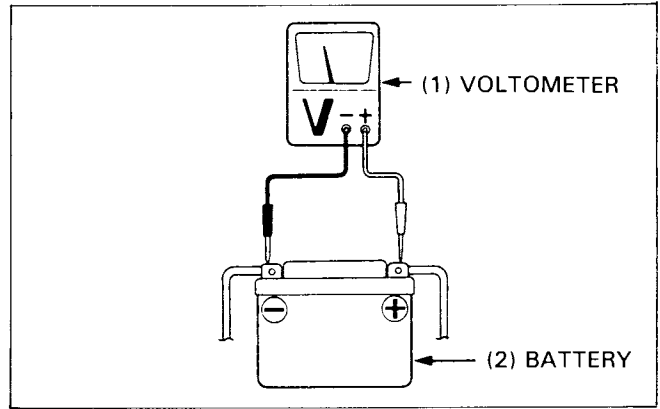
- The battery voltage must be above 12.3 V when performing this test.

Warm up the engine.

Connect a voltmeter between the battery terminals.

CAUTION

- *Be careful not to let the battery positive cable contact the frame while testing.*



Start the engine, turn the headlight on, and read the voltmeter. Gradually increase the engine speed and check that the voltage is regulated.

REGULATED VOLTAGE: 14.0 – 15.0 V

If the voltage exceeds the specification, measure the battery voltage, between the Black and Green terminals of the regulator/rectifier coupler when the ignition switch is turned ON.

Check the Black or Green wires for an open circuit in the wire harness if there is no voltage with the ignition switch ON.

If voltage is OK, replace the regulator/rectifier.

If the voltage does not increase above the previous measurement, though the engine speed rises, stop the engine and check the following:

- Check the regulator/rectifier coupler for looseness or disconnection.
- Make sure that the battery voltage appears between the Red (+) and Green (-) terminals of the regulator/rectifier couplers. Check the Red or Green wires for an open circuit if voltage does not appear.
- Check the charging coil of the alternator as described on Page 15-4.

BATTERY/CHARGING SYSTEM

REGULATOR/RECTIFIER INSPECTION

Range: $\text{Sanwa: k}\Omega$

Kowa: 100Ω

Check the resistance between the leads with an ohmmeter.

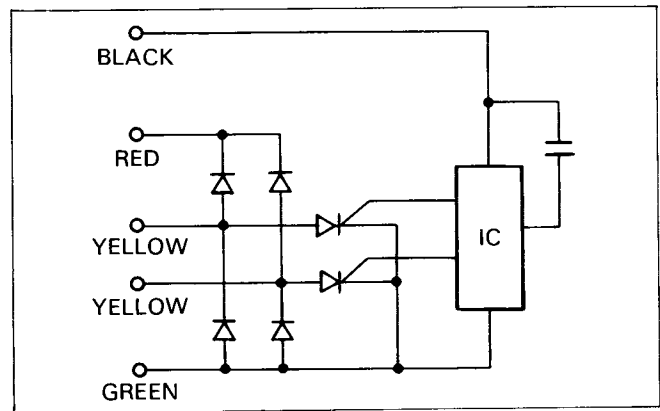
Replace the regulator/rectifier if the readings are not within the limits shown in the table.

+Probe \ -Probe	Yellow	Yellow	Green	Red	Black
Yellow	∞	∞	∞	1 - 20	∞
Yellow	∞	∞	∞	1 - 20	∞
Green	1 - 20	1 - 20	∞	3 - 100	0.2 - 20
Red	∞	∞	∞	∞	∞
Black	1 - 50	1 - 50	0.2 - 10	3 - 10	∞

REGULATOR/RECTIFIER PERFORMANCE TEST

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 - 15.0 V.



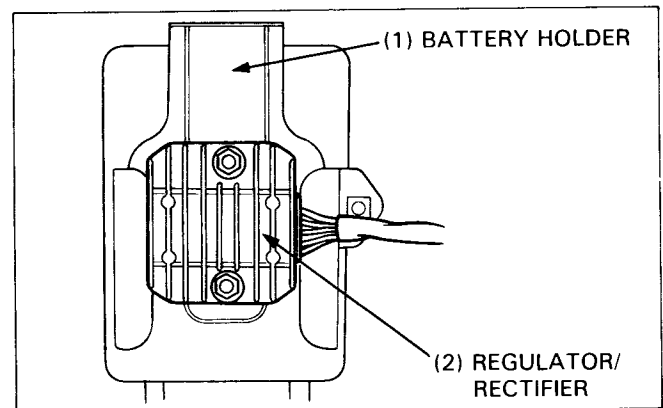
REGULATOR/RECTIFIER REPLACEMENT

Remove the seat/rear fender.

Disconnect the regulator/rectifier wire coupler. Remove the two bolts and nuts, and remove the old part.

Install the new regulator/rectifier and connect the coupler.

Reinstall the seat/rear fender.



ALTERNATOR CHARGING COIL INSPECTION

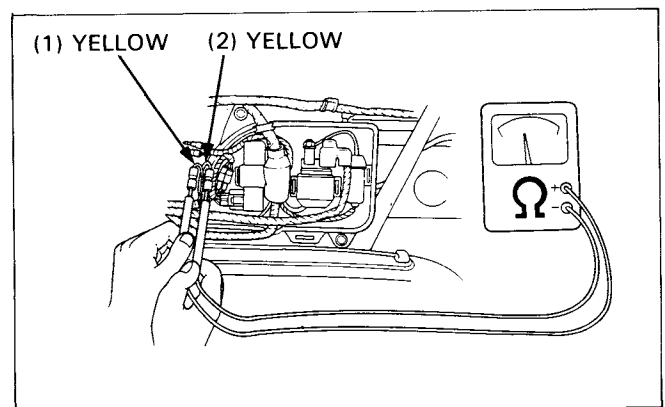
Remove the alternator wire connectors.

Check the resistance between the yellow and the yellow wire terminals.

RESISTANCE: 0.1 - 1.0 ohms

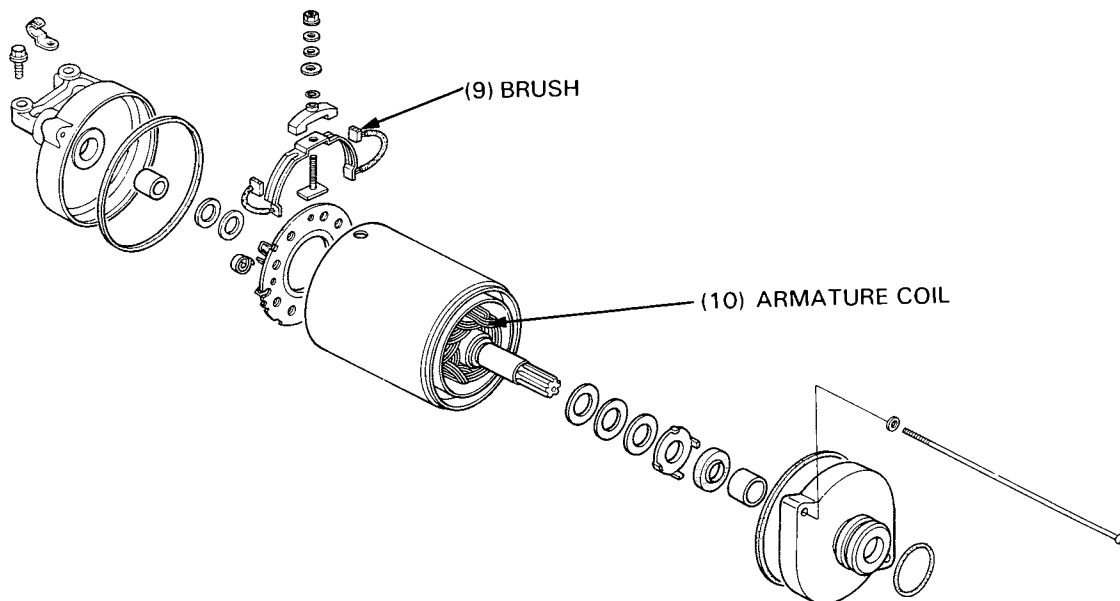
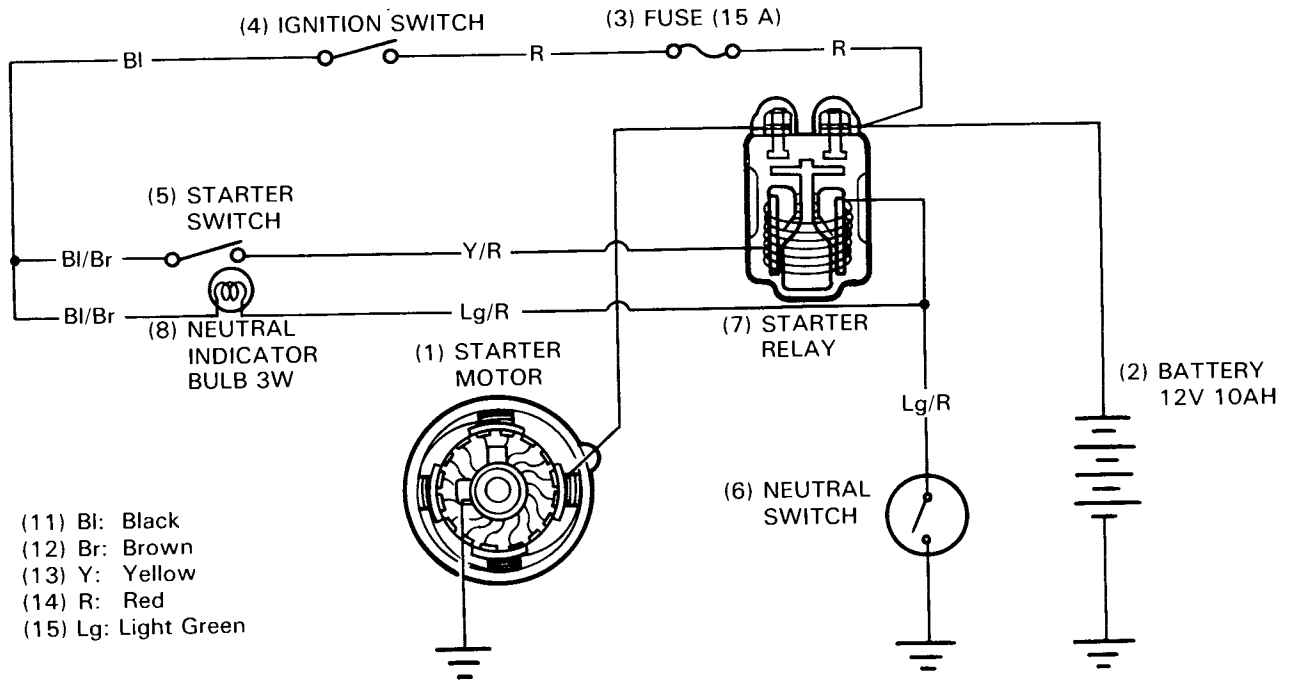
Check for continuity between the wire terminals and ground.

Replace the alternator stator if readings are not within the limit, or if any lead has continuity to ground. Refer to Section 9 for stator removal.



MEMO

STARTER SYSTEM



16. STARTER SYSTEM

SERVICE INFORMATION	16-1	STARTER MOTOR	16-2
TROUBLESHOOTING	16-1	STARTER RELAY SWITCH	16-3

SERVICE INFORMATION

GENERAL

- The starter motor can be removed with the engine in the frame.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Starter motor	Brush spring tension	680–920 g (1.5–2.0 lb)	680 g (1.5 lb)
	Brush length	12.0–12.5 mm (0.47–0.49 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

Starter motor turns engine slowly

- Low battery
- Excessive resistance in circuit
- Binding in starter motor
- Loose or poorly contacted battery or starter motor cable terminals

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 turns, but engine does not start

- Faulty ignition system
- Engine problems
- Faulty engine stop switch

STARTER SYSTEM

STARTER MOTOR

REMOVAL

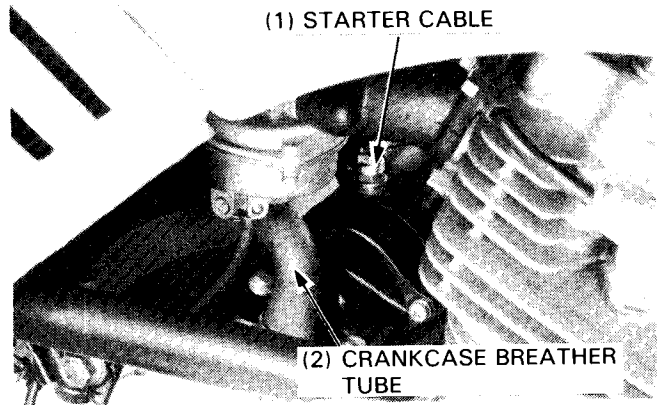
CAUTION

- *With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.*

Remove the exhaust pipe and disconnect the crankcase breather tube from the crankcase.

Disconnect the starter cable.

Remove the starter motor mounting screws and pull the motor out of the engine case.



BRUSH INSPECTION

Remove the starter motor case screws and rear cover.

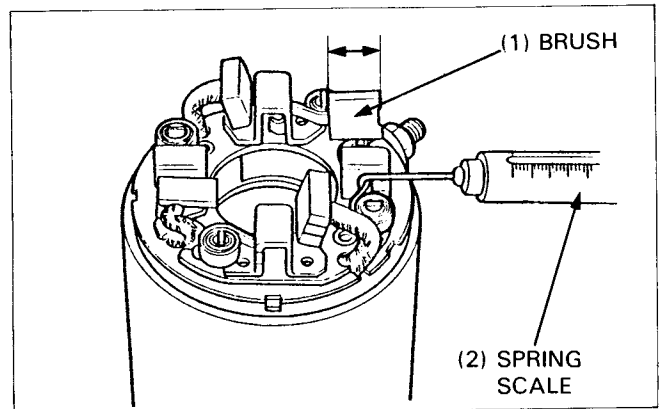
Inspect the brushes and measure the brush length.

Measure brush spring tension with a spring scale.

SERVICE LIMIT:

Brush length: 5.5 mm (0.22 in)

Brush spring tension: 680 g (1.5 lb)



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.

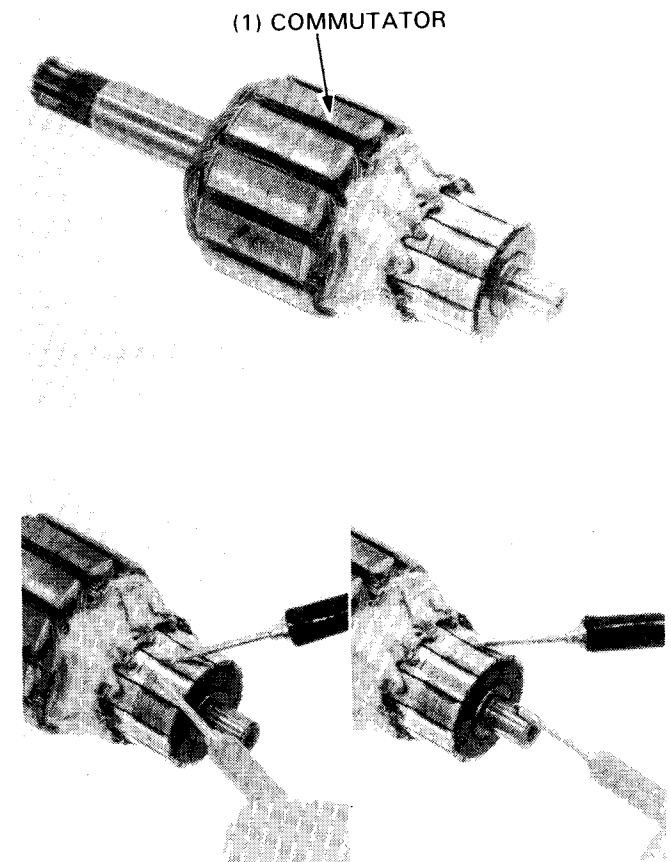
NOTE

- 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.

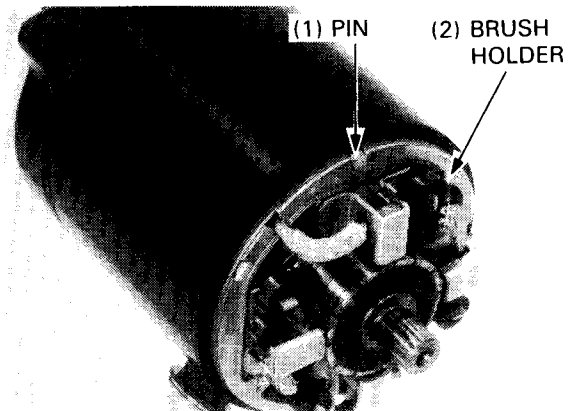
CONTINUITY BETWEEN
COMMUTATOR BAR PAIRS: NORMAL

NO CONTINUITY BETWEEN
COMMUTATOR BARS AND ARMATURE SHAFT: NORMAL



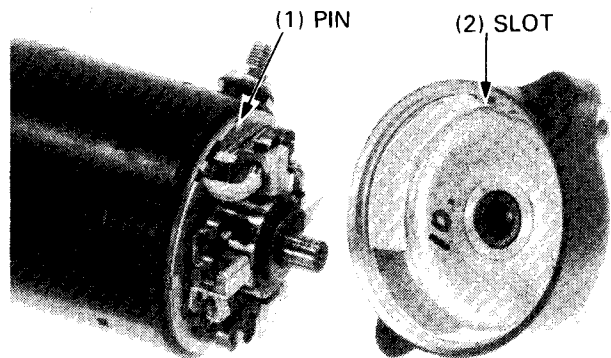
ASSEMBLY/INSTALLATION

Assemble the starter motor. Align the case notch with the brush holder pin.



Install the rear cover aligning its slot with the brush holder pin.

Install the starter motor in the reverse order of removal.

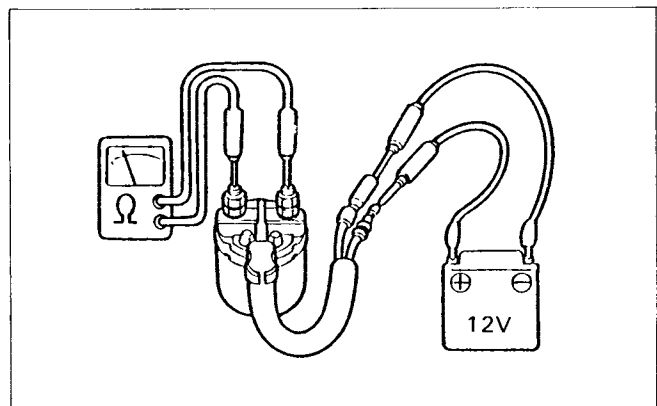
**STARTER RELAY SWITCH****INSPECTION**

Remove the starter relay switch cover.

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 wire terminals. The switch is normal if there is continuity.



MEMO

17. LIGHTS/SWITCHES

SERVICE INFORMATION	17-1	IGNITION SWITCH	17-3
TROUBLESHOOTING	17-1	HANDLEBAR SWITCHES	17-4
HEADLIGHT	17-2	WIRING DRIAGRAM	17-5
TAILLIGHT	17-3		
NEUTRAL AND REVERSE INDICATOR LIGHTS	17-3		

SERVICE INFORMATION

GENERAL

- A continuity check can usually be made without removing the part form the ATC by simply disconnecting the wires and connecting a continuity tester or voltmeter to the termnals.

SPECIFICATIONS

Headlight (High/Low beam)	12 V-45/45 W
Taillight	12 V-5 W
Neutral and reverse indicator	12 V-3 W x 2

TROUBLESHOOTING

Light does not come on when light switch is turned on (Engine is running)

- Bulb burned out
- Faulty switch
- Wiring to the component has open circuit

Headlight beams do not shift when hi-lo switch is operated

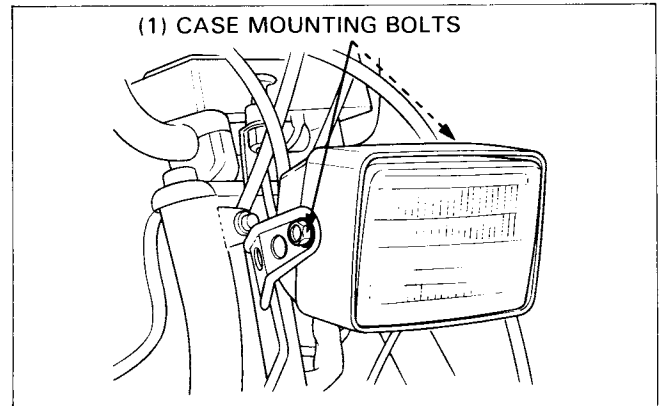
- Faulty dimmer switch
- Bulb burned out
- Wiring to the component has open circuit

LIGHTS/SWITCHES

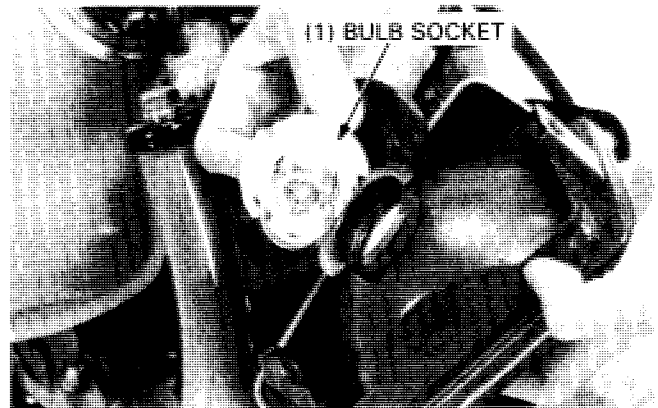
HEADLIGHT

REMOVAL

Remove the headlight case mounting bolts and remove the headlight.

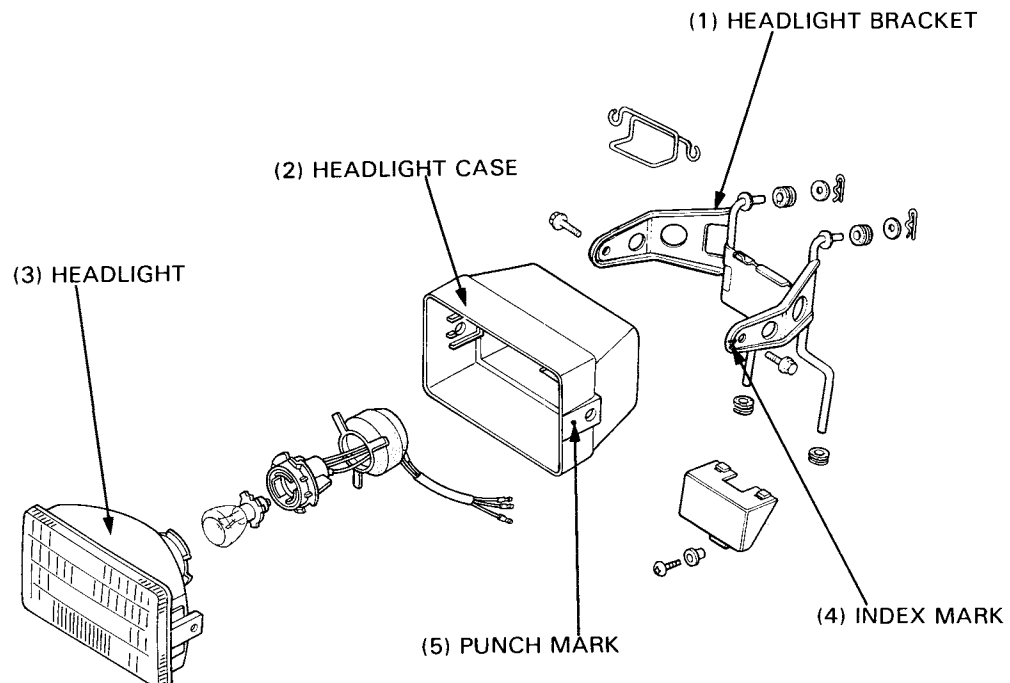


To replace the headlight bulb, disconnect the socket from the headlight.



INSTALLATION

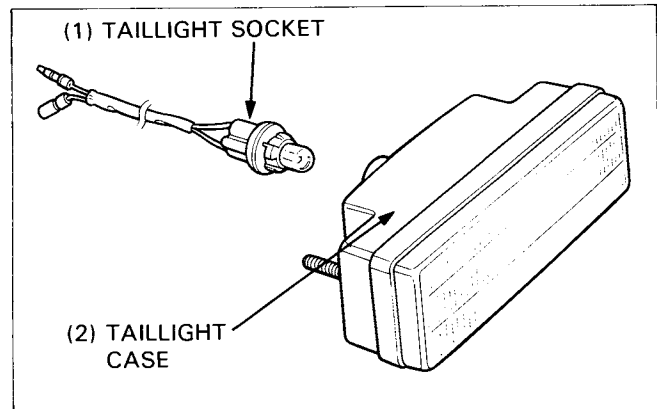
Install the headlight in the reverse order of removal. Align the punch mark on the headlight case with the index mark on the bracket.



TAILLIGHT

REMOVAL/INSTALLATION

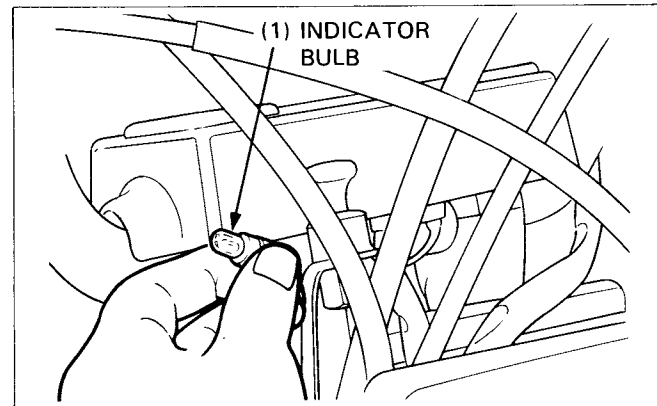
Rotate the taillight socket and remove the taillight bulb. Replace the bulb with a new one. Remove the taillight mounting nuts and disconnect the taillight connectors, then remove the taillight case and the wire. Installation is the reverse order of removal.



NEUTRAL AND REVERSE INDICATOR LIGHTS

BULB REPLACEMENT

Pull the bulb sockets from the indicator light panel. Replace the bulbs with a new one. Install the bulb socket.



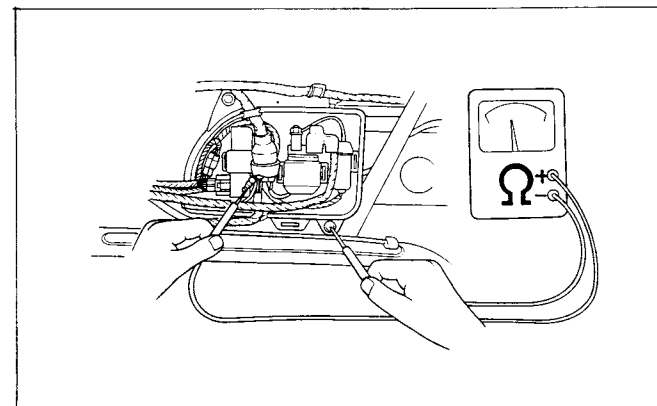
NEUTRAL AND REVERSE SWITCH

Remove the junction cover and disconnect the switch connectors.

Remove the switch cover and connectors. Check the continuity between the switch terminal and ground.

The neutral switch is functional if continuity exists with the transmission in neutral.

The reverse switch is functional if continuity exists with the transmission in reverse.



WARNING

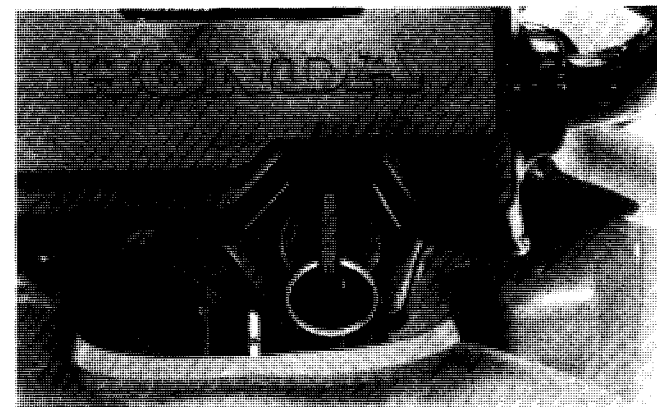
- *Connect the neutral (Light green/Red) and reverse (Gray) switch wires properly. If the switch wire connections are interchanged, the neutral indicator comes on in the transmission in reverse and the ATC will reverse suddenly.*

IGNITION SWITCH

Remove the headlight and disconnect the ignition switch wire connectors.

Check continuity of the ignition switch wires in each switch position.

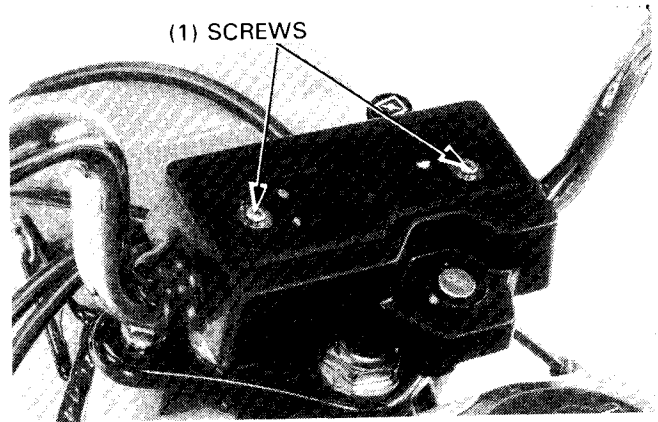
Terminal \ Position	IG	E	BAT	HO
OFF	○	○		
ON			○	○
Color	Black/White	Green	Red	Black



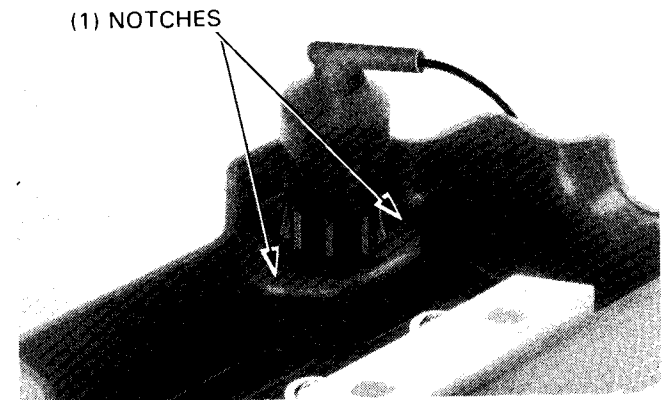
LIGHTS/SWITCHES

REMOVAL/INSTALLATION

Disconnect the ignition switch wires, and the neutral and reverse bulbs.
Remove the handlebar holder cover by removing the cover screws.

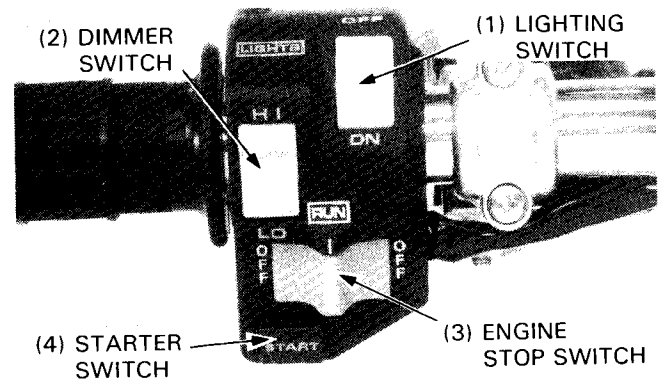


Release the notches on the ignition switch and remove the switch from the handlebar upper holder.
Install in the reverse order of removal.



HANDLEBAR SWITCHES

The handlebar cluster switches (lights, engine stop and starter) must be replaced as assemblies.
Remove the headlight and disconnect the switch wires.
Perform continuity tests for the components of the handlebar cluster switches.
Continuity should exist between the color coded wires in each chart.



ENGINE STOP SWITCH

Terminal	IG	E
Position		
OFF	○—○	
RUN		
OFF	○—○	
Color	Black/ White	Green

Lighting switch

	LIGHTING			DIMMER		
	C	TL	(HL)	HI	(HL)	LO
OFF				HI	○—○	
ON	○	○	○	(N)	○—○—○	
Color	B/Br	Br		LO		○—○
				Color	L	
						W

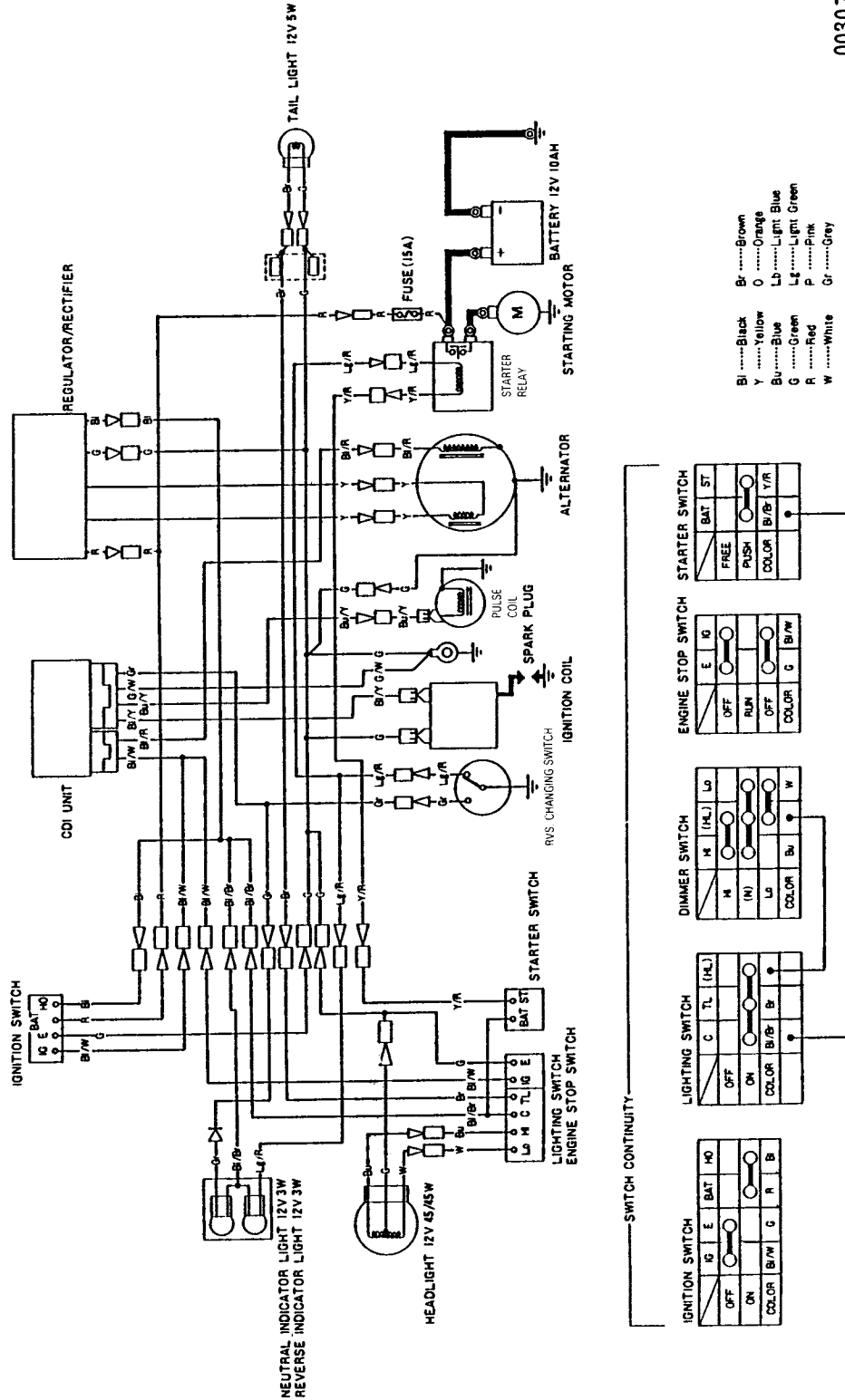
Starter switch

	START	
	BAT	ST
FREE		
PUSH	○—○	
Color	B/Br	Y/R

The switch is normal if there is continuity between the circuits marked "○—○"

WIRING DIAGRAM

0030Z-HB6-0000

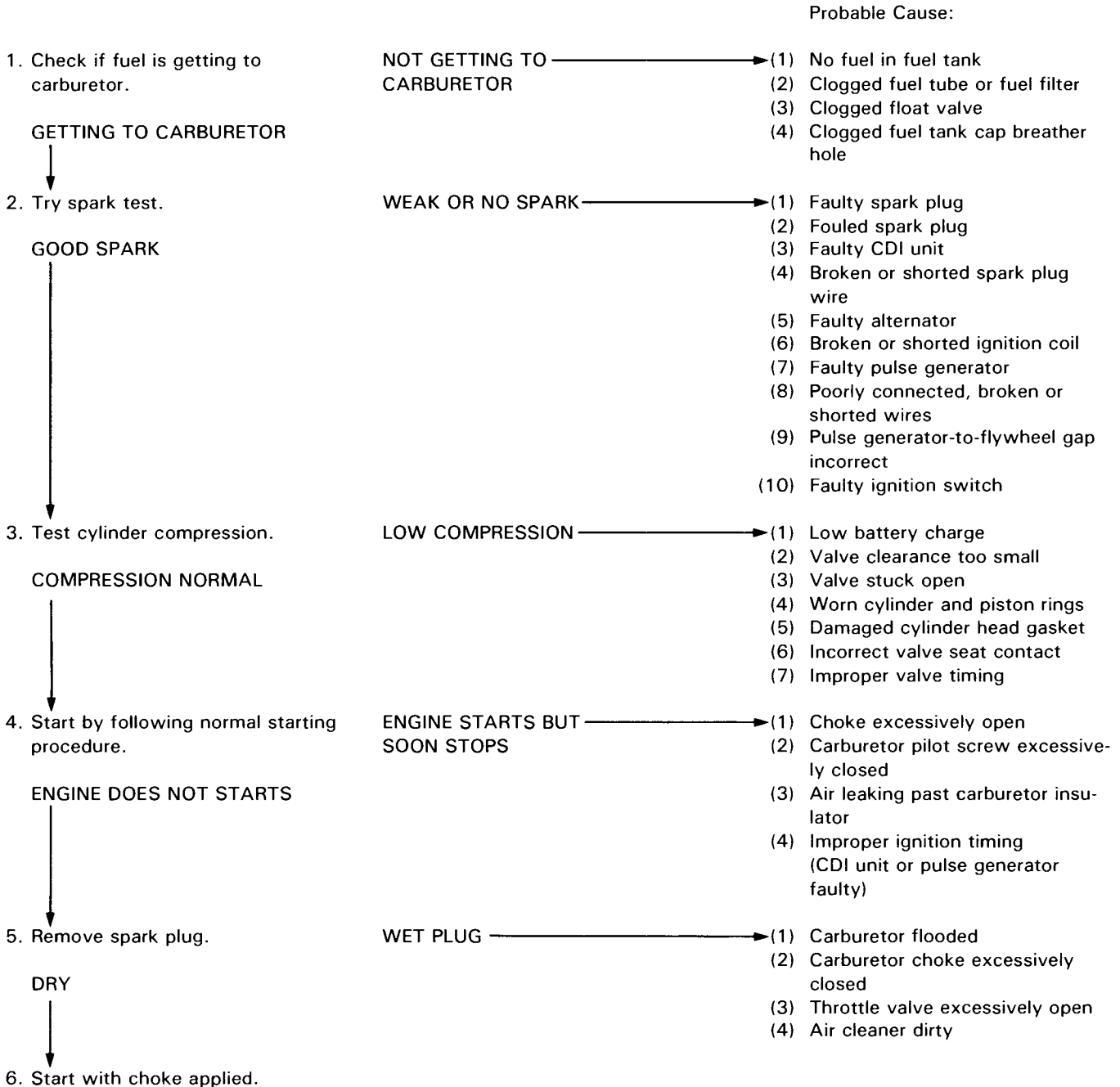


MEMO

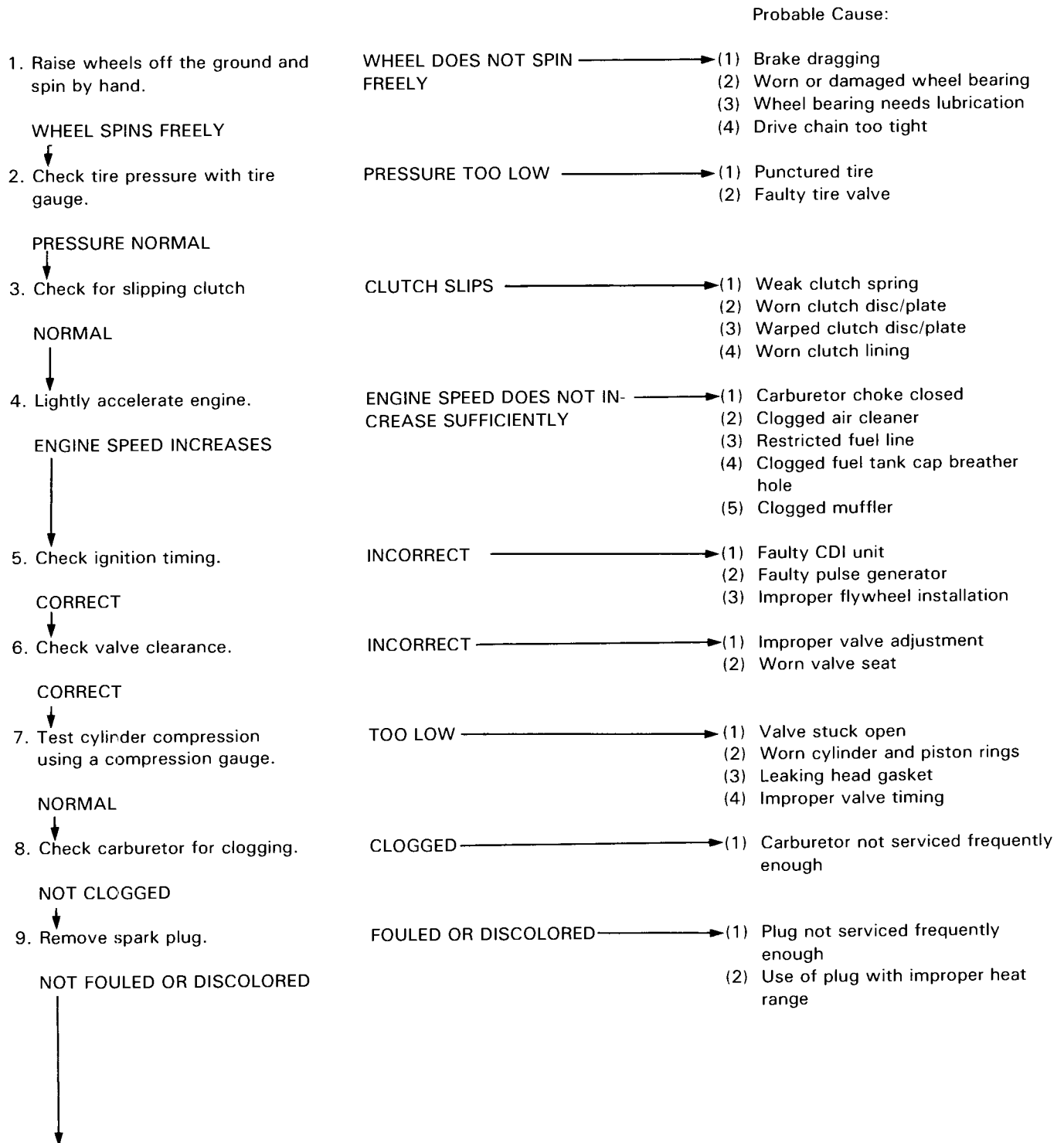
18. TROUBLESHOOTING

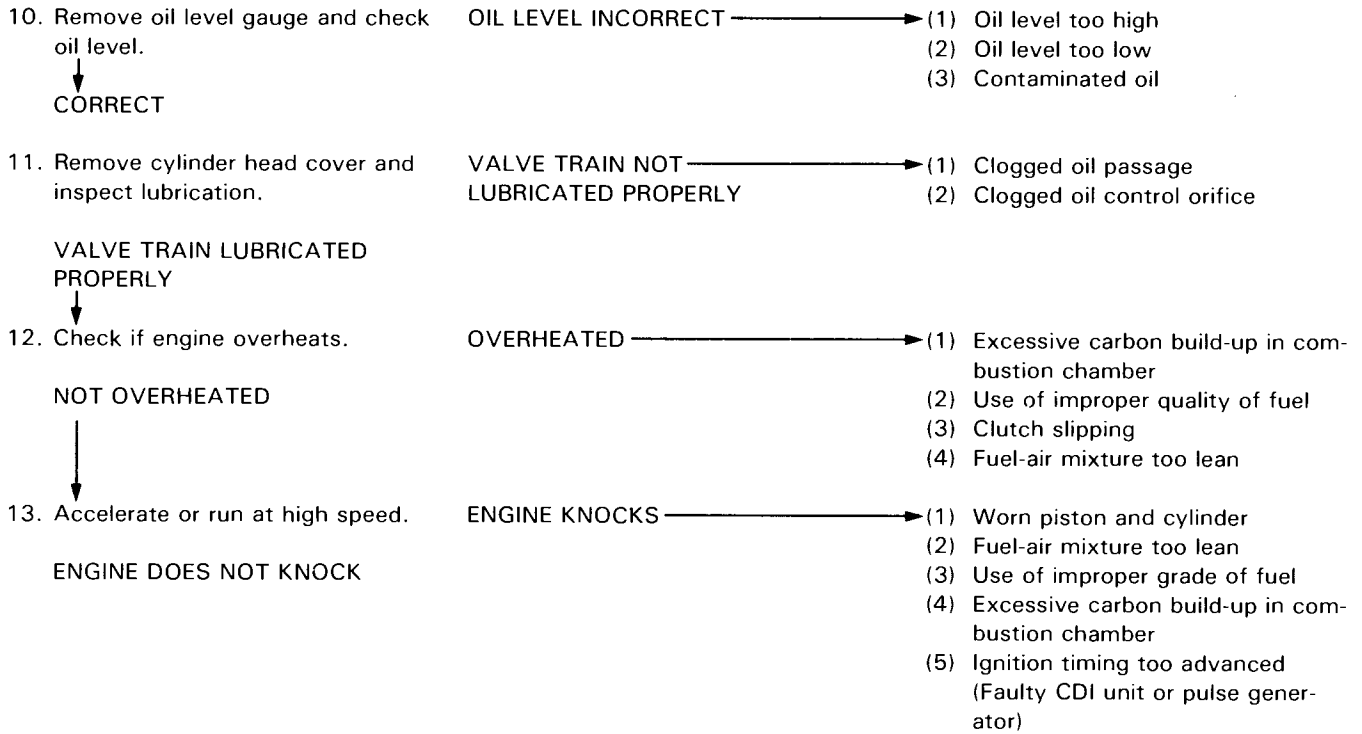
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ENGINE LACKS POWER	18-2	POOR HANDLING	18-4
POOR PERFORMANCE AT LOW AND IDLE SPEEDS	18-3		

ENGINE DOES NOT START OR IS HARD TO START

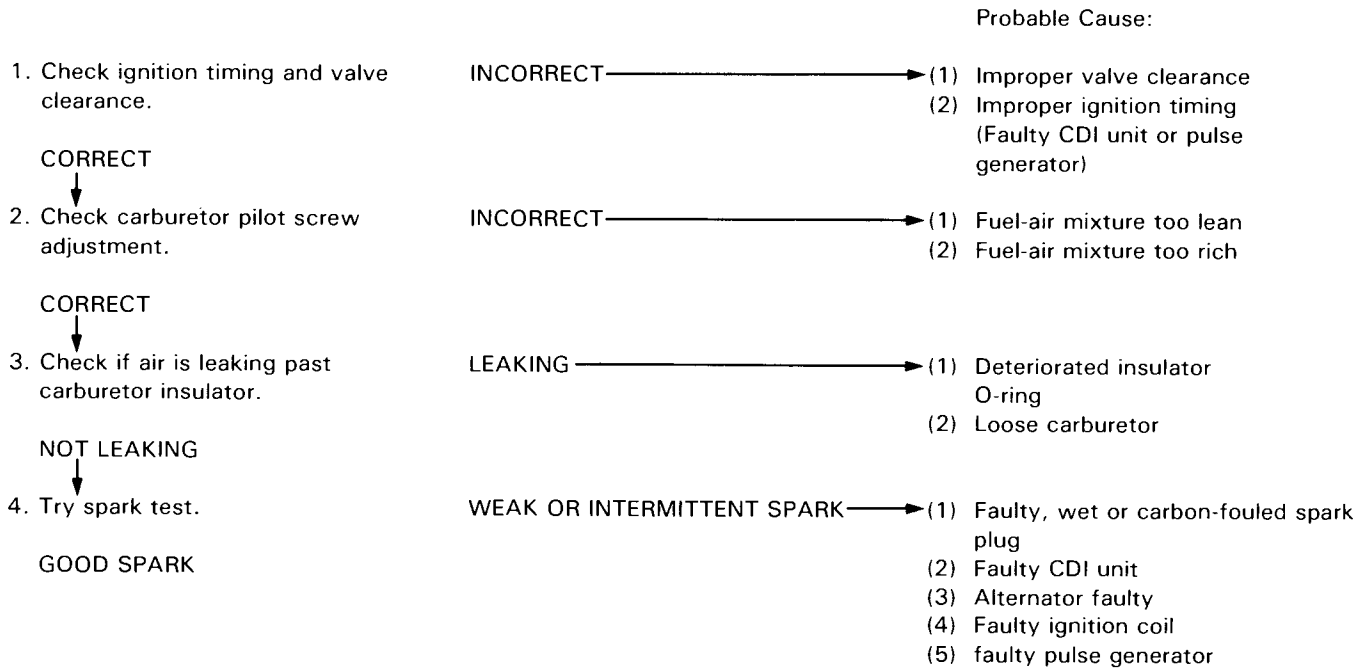


ENGINE LACKS POWER



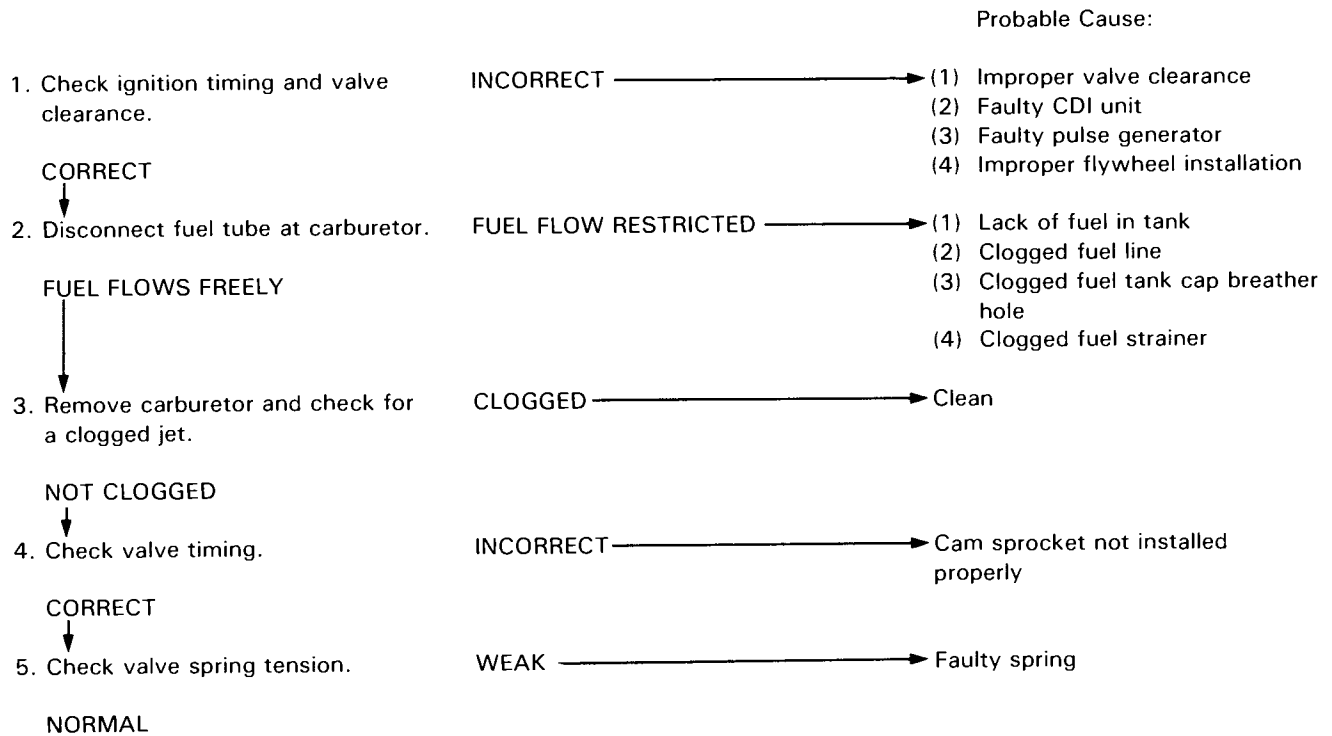


POOR PERFORMANCE AT LOW AND IDLE SPEEDS



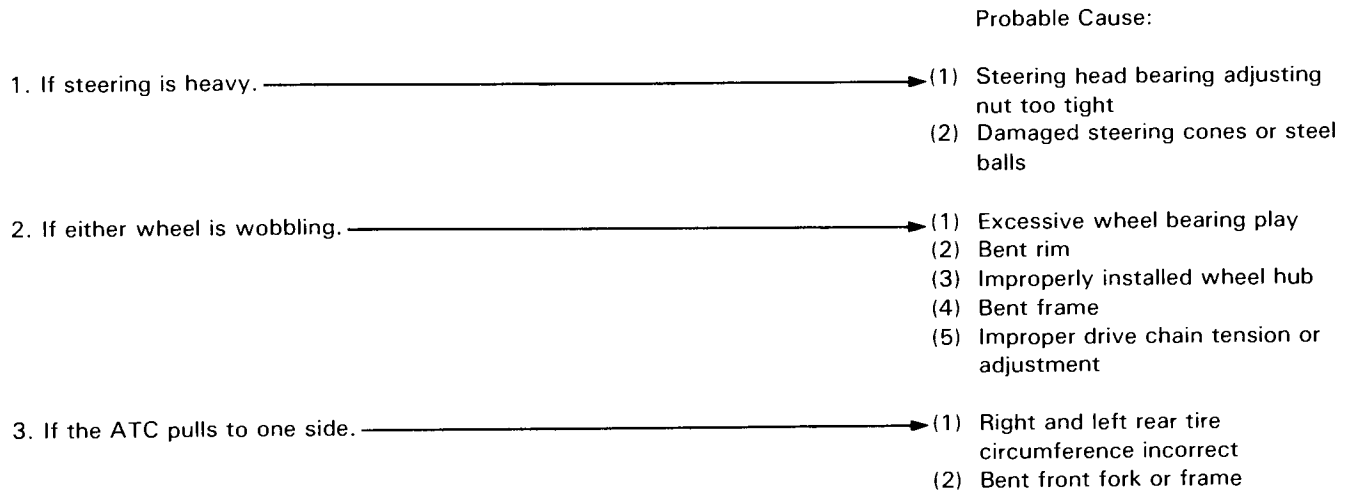
TROUBLESHOOTING

POOR PERFORMANCE AT HIGH SPEEDS



POOR HANDLING

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