

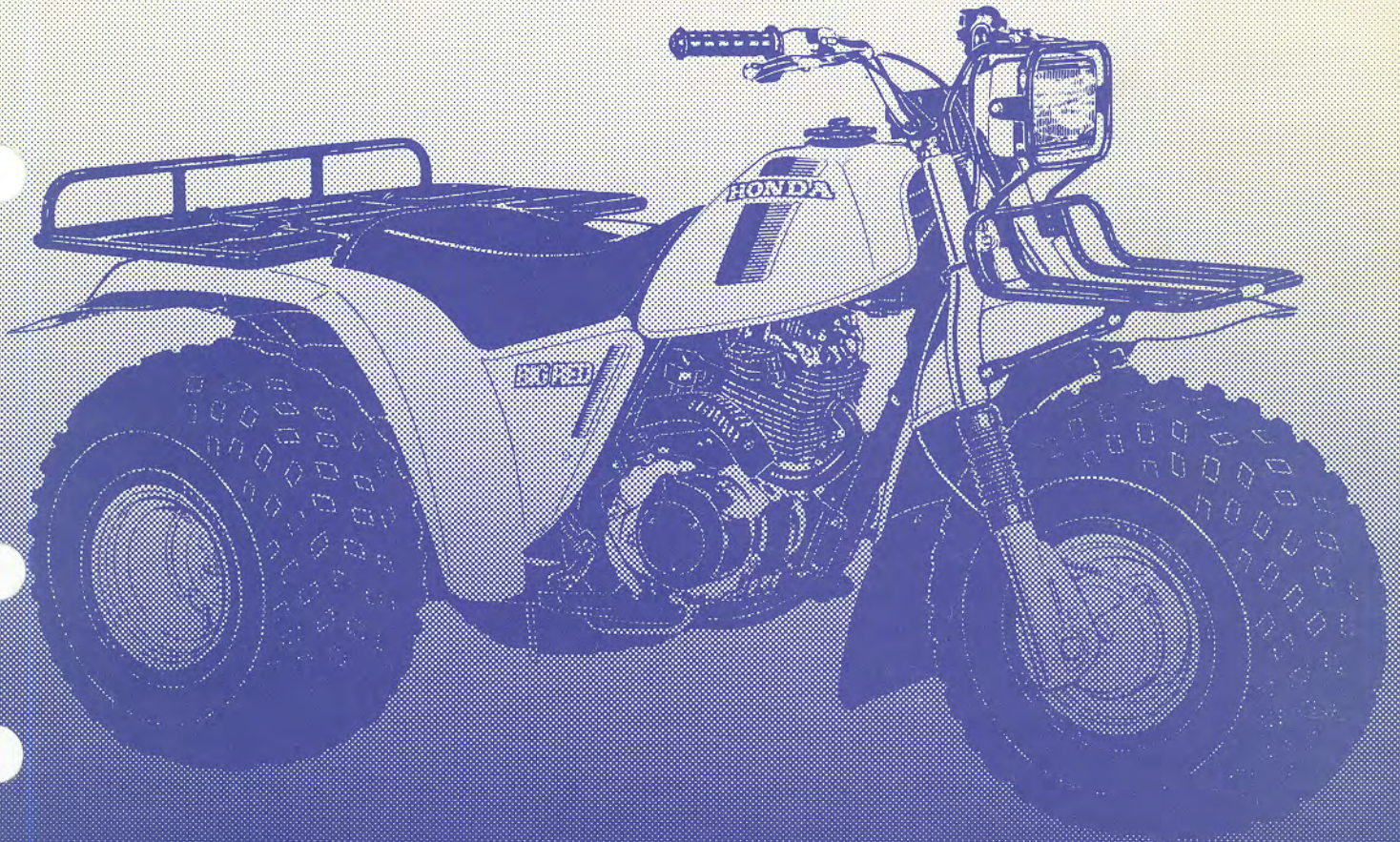
Official

HONDA

SHOP MANUAL

ATC BIG RED

ATC 200ES



'84

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IMPORTANT SAFETY NOTICE



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

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

NOTE: Gives helpful information.

Detailed descriptions 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 motorcycle, while sections 4 through 18 describe parts of the motorcycle, grouped according to location.

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

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

If you don't know the source of the trouble, see Section 19, TROUBLESHOOTING.

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION WHATEVER. NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION.

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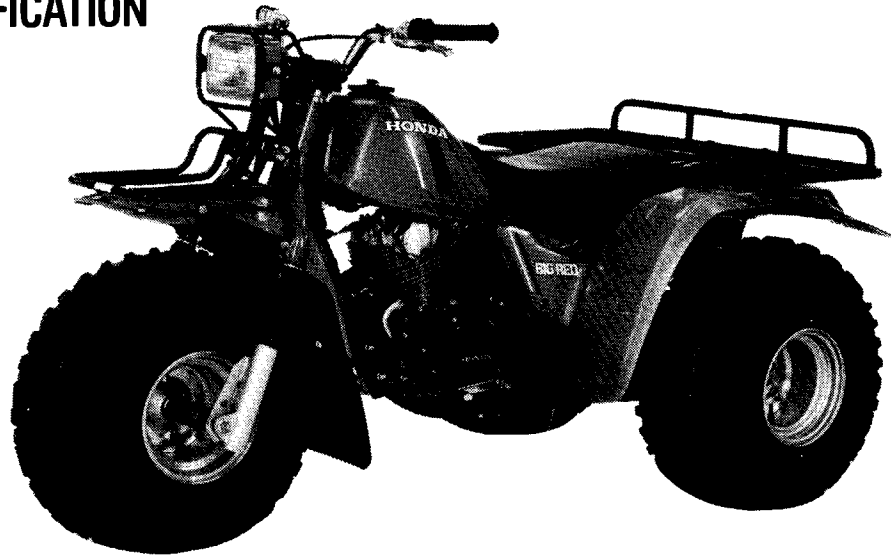
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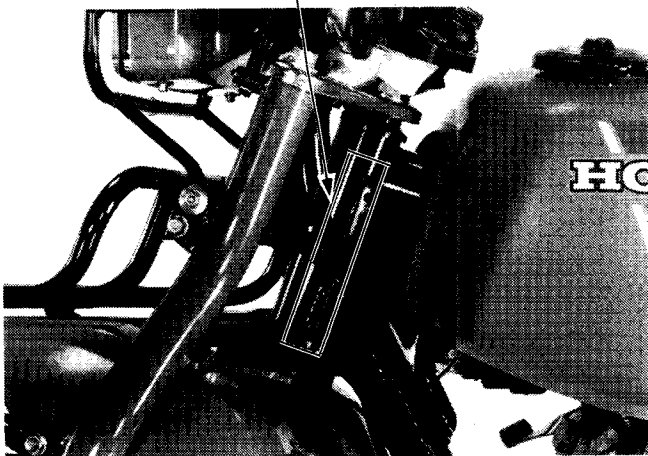


HONDA
ATC200ES

MODEL IDENTIFICATION

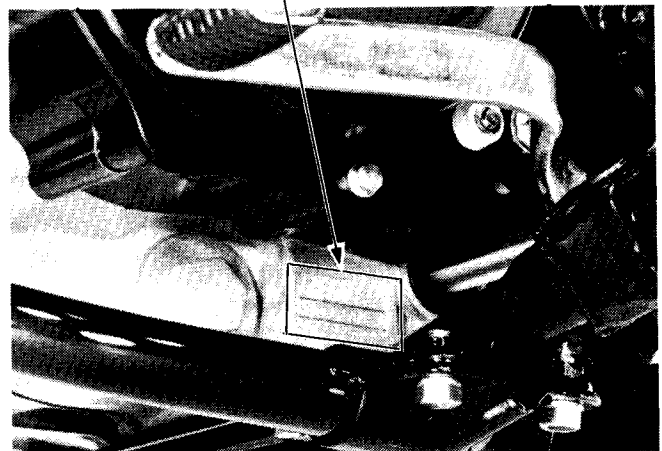


FRAME SERIAL NUMBER



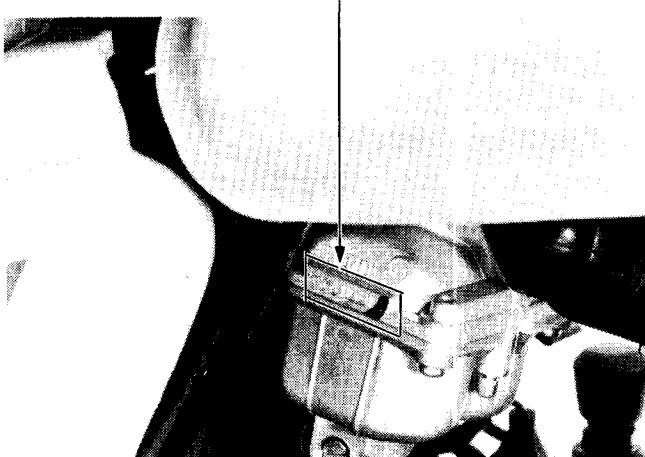
The frame serial number is stamped on the steering head left side.

ENGINE SERIAL NUMBER



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

CARBURETOR IDENTIFICATION NUMBER



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



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GENERAL SAFETY

WARNING

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

WARNING

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

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

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 motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing this motorcycle. Metric bolts, nuts, and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings cotter pins, and lock plates 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 1-4 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.



GENERAL INFORMATION

SPECIFICATIONS

<p>DIMENSIONS</p>	<p>Overall length Overall width Overall height Wheel base Rear tread Seat height Foot peg height Ground clearance Dry weight</p>	<p>1,850 mm (72.8 in) 1,070 mm (42.1 in) 1,005 mm (39.6 in) 1,230 mm (48.4 in) 800 mm (31.5 in) 685 mm (27.0 in) 260 mm (10.2 in) 150 mm (5.9 in) 170 kg (375 lb)</p>
<p>FRAME</p>	<p>Type Rim size Front Rear Front tire size, pressure Rear tire size, pressure Front brake Rear brake Fuel capacity Fuel reserve capacity Caster Trail</p>	<p>Semi-double cradle 9.2 x 9.0 9.2 x 9.0 25 x 12 - 9 0.15 kg/cm² (2.2 psi) 25 x 12 - 9 0.15 kg/cm² (2.2 psi) Cable operated leading shoe Cable operated leading shoe 11.5 liters (3.0 US gal, 2.5 Imp gal) 1.0 liter (0.26 US gal, 0.22 Imp gal) 69.5° 7 mm (0.28 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 Exhaust valve Valve clearance (Cold)</p>	<p>Gasoline, air-cooled 4-stroke Single cylinder inclined 15° 65.0 x 57.8 mm (2.56 x 2.28 in) 192 cc (11.7 cu in) 7.8 : 1 Overhead camshaft chain driven 13.0 BHP/7,000 rpm 1.46 kg-m/5,500 rpm (0.6 ft-lb/5,500 rpm) 1.8 liters (1.9 US qt, 1.6 Imp qt) 1.0 liter (1.1 US qt, 0.9 Imp qt) after draining Forced pressure and wet sump 11.0 ± 1.0 kg/cm² (156 ± 14 psi) 5° BTDC 35° ABDC 35° BBDC 5° ATDC } at 1 mm lift 0.05 mm (0.002 in) 0.05 mm (0.002 in)</p>
<p>CARBURETOR</p>	<p>Type Venturi dia. Main jet Pilot screw opening Jet needle Float level Idle speed</p>	<p>Piston valve 22 mm (0.9 in) #95 1-7/8 turns out 3rd 14 mm (0.55 in) 1,400 ± 100 rpm</p>



HONDA ATC200ES

GENERAL INFORMATION

<p>DRIVE TRAIN</p>	<p>Clutch Transmission Primary reduction Gear ratio (Posi-torque 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, semi-automatic 5-speed constant mesh with reverse 3.333 2.841 (4.339) 1.767 (2.698) 1.306 (1.995) 1.026 (1.567) 0.836 (1.277) 4.616 4.255 Left foot operated return system, Forward: N-1-2-3-4-5 Reverse: N-1</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</p>	<p>CDI 10 ± 2° BTDC at idle 30 ± 2° BTDC at 3,350 rpm 70W/5,000 rpm 12V-14AH DR8ES-L (NGK) X24ESR-U (ND) 0.6 - 0.7 mm (0.024 - 0.028 in) 12V 45W/45W 12V 5W</p>

**GENERAL INFORMATION****TORQUE VALUES****ENGINE**

Item	Q'ty	Thread Size (mm)	Torque		
			N-m	kg-m	ft-lb
Cylinder head cap nut	4	8 x 1.25	28-30	2.8-3.0	20-22
Clutch lock nut	1	16 x 1.0	50-60	5.0-6.0	36-43
Centrifugal clutch lock nut	1	22 x 1.25	105-115	10.5-11.5	76-83
Clutch adjusting screw lock nut	1	8 x 1.25	19-25	1.9-2.5	14-18
Alternator flywheel bolt	1	8 x 1.25	40-50	4.0-5.0	29-36
Valve adjuster cover	2	36 x 1.5	10-14	1.0-1.4	7-10
Oil filter screen cap	1	36 x 1.5	9-15	0.9-1.5	7-11
Spark plug	1	12 x 1.25	12-19	1.2-1.9	9-14
Cam sprocket bolt	2	6 x 1.0	8-12	0.8-1.2	6-9
Oil filter rotor cover bolt	3	6 x 1.0	10-14	1.0-1.4	7-10
Clutch lifter stopper bolt	1	8 x 1.25	18-25	1.8-2.5	13-18
Gearshift drum stopper arm bolt	1	6 x 1.0	10-14	1.0-1.4	7-10
Pulse generator screw	2	5 x 0.8	4-7	0.4-0.7	3-5
Pulse cover screw	2	5 x 0.8	4-7	0.4-0.7	3-5
Valve adjuster lock nut	2	6 x 0.75	15-18	1.5-1.8	11-13
Gearshift stopper plate bolt	1	6 x 1.0	8-12	0.8-1.2	6-9
Cam chain tensioner adjusting bolt	1	16 x 1.0	15-22	1.5-2.2	11-16
Cam chain tensioner check bolt	1	6 x 1.0	8-10	0.8-1.0	6-7
Decompressor pivot bolt	1	6 x 1.0	5-7	0.5-0.7	4-5
Right crankcase protector screw	3	Self tapping screw	3-7	0.3-0.7	2.2-5
Carburetor mounting nut	2	6 x 1.0	6-9	0.6-0.9	4-7
Cylinder head cover socket bolt	4	6 x 1.0	8-12	0.8-1.2	6-9
Change lever mount nut	1	8 x 1.25	18-25	1.8-2.5	13-18
Output driven gear bearing holder	3	8 x 1.25	26-30	2.6-3.0	19-22
Drive gear bearing outer race	1	70 x 1.5	90-100	9.0-10.0	65-72
Drive gear bearing inner race	1	28 x 1.0	70-80	7.0-8.0	51-58
Driven gear bearing outer race	1	56 x 1.5	90-100	9.0-10.0	65-72
Driven gear bearing inner race	1	24 x 1.0	70-80	7.0-8.0	51-58



FRAME

Item	Q'ty	Tread Size mm	Torque		
			N·m	kg·m	ft·lb
Upper engine hanger nut	1	8 x 1.25	20-25	2.0-2.5	14-18
Front engine hanger nut	2	10 x 1.25	40-48	4.0-4.8	29-35
Front engine hanger nut	2	8 x 1.25	23-27	2.3-2.7	17-20
Rear engine hanger lower nut	1	10 x 1.25	45-53	4.5-5.3	32-38
Rear engine hanger upper nut	1	10 x 1.25	40-80	6.0-8.0	29-35 43-58
Handlebar upper holder bolt	4	6 x 1.0	8-12	0.8-1.2	6-9
Handlebar lower holder nut	2	10 x 1.25	40-48	4.0-4.8	29-35
Fork top bridge bolt	2	12 x 1.25	50-70	5.0-7.0	36-51
Steering stem nut	1	22 x 1.0	50-70	5.0-7.0	36-51
Front axle nut	1	14 x 1.5	60-80	6.0-8.0	43-58
Front wheel hub nut	4	8 x 1.25	20-25	2.0-2.5	14-18
Front brake drum bolt	3	8 x 1.25	20-25	2.0-2.5	14-18
Front fork cap nut	2	—	15-25	1.5-2.5	11-18
Front fork mounting bolt	2	10 x 1.25	30-40	3.0-4.0	22-29
Rear wheel hub nut	8	8 x 1.25	20-25	2.0-2.5	14-18
Rear brake drum cover	6	8 x 1.25	24-30	2.4-3.0	17-22
Brake drum inner nut	1	32 x 1.0	40-50	4.0-5.0	29-36
Brake drum outer nut	1	32 x 1.0	120-140	12.0-14.0	87-101
Rear axle nut	2	14 x 1.5	60-80	6.0-8.0	43-58
Pinion retainer	1	58 x 1.5	100-120	10.0-12.0	72-87
Gear case cover	8	8 x 1.25	24-30	2.4-3.0	17-22
Pinion nut	1	16 x 1.5	80-100	8.0-10.0	58-72
Final gear case mounting bolt	2	10 x 1.25	50-70	5.0-7.0	36-51

NEW

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

**GENERAL INFORMATION****TOOLS****SPECIAL**

DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL	TOOL NUMBER	REF. PAGE
Lock nut wrench, 30/40 mm	07916-9690000			10-16, 10-23
Lock nut wrench attachment, 50 mm	07916-9690100			10-17, 10-22
Pinion holder attachment	07924-9690100			13-18, 15-19
Propeller shaft dis/assembly tool A	07967-9690100			13-14
Propeller shaft dis/assembly tool B	07967-9690200			13-14
Retainer wrench	07910-ME80000			13-19, 13-23
NEW NEW Lock nut spanner, 41 mm	07916-9580200	Nut holder wrench	07916-958020A (U.S.A. only)	13-4, 13-11
Wrench set, 41 mm	07916-9580300	Torque wrench adaptor, 41 mm Equivalent commercially available in U.S.A.	07916-958010A (U.S.A. only)	13-4
Wrench attachment, 41 mm	07916-9580400			13-4, 13-11
Socket wrench, 30 mm	07916-PD10000	Band strap wrench, commercially available in U.S.A.		8-6, 8-10
Clutch center holder	07923-9580000			8-12, 8-15
Lock nut wrench, 34/44 mm	07916-ME50000			10-17, 10-22
Shaft holder	07923-6890101			10-16, 10-17, 10-22, 10-23
Pinion holder	07924-ME40000			13-18, 13-19, 13-26
Shaft puller	07931-ME40000			13-19
Bearing remover, 17 mm	07936-3710300			8-5, 10-9
Remover handle	07936-3710100			8-5, 10-9
Remover weight	07741-0010201	Remover weight	07936-3710200	8-5, 10-9
Bearing remover, 15 mm	07936-KC10500			10-18, 11-9
NEW Ball race driver	07944-1150001	Bearing remover	M9360-277-9177A (U.S.A. only)	12-22
Driver	07945-3710101			13-16
Remover shaft	07965-ME30000			13-15
Valve guide reamer	07984-0980000			6-10
Attachment	07945-3330300	Attachment	07946-3710701	13-20
NEW Universal bead breaker	GN-AH-958-BB1	(U.S.A. only)		12-10

COMMON

DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL	TOOL NUMBER	REF. PAGE
Float level gauge	07401-0010000			4-9
Pin spanner	07702-0020000	Pin spanner	M9361-412-099788 (U.S.A. only)	12-21, 12-23
Lock nut wrench, 20 x 24 mm	07716-0020100			8-12, 8-15
Extension bar	07716-0020500	Equivalent commercially available in U.S.A.		8-6, 8-12, 8-15, 12-21, 12-24



DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL	TOOL NUMBER	REF. PAGE
Lock nut wrench, 30 x 32 mm	07716-0020400	Equivalent commercially available in U.S.A.		12-21, 12-24
Valve adjusting wrench	07708-0030200			3-6
Flywheel puller	07733-0010000	Flywheel puller	07933-0010000	9-8
Valve guide remover, 5.5 mm	07742-0010100	Valve guide remover	07942-3290100	6-10
Attachment, 32 x 35 mm	07746-0010100			10-9, 11-9, 13-21
Pilot, 15 mm	07746-0040300			10-9, 10-19, 11-9, 12-14, 13-21
Attachment, 42 x 47 mm	07746-0010300			10-19, 11-9, 12-14
Pilot, 20 mm	07746-0040500			11-9
Attachment, 37 x 40 mm	07746-0010200			8-5, 10-9, 12-22
Pilot, 17 mm	07746-0040400			8-5, 10-9, 12-22
Pilot, 25 mm	07746-0040600			10-20
Attachment, 52 x 55 mm	07746-0010400			10-19, 10-20, 11-9
Pilot, 30 mm	07746-0040700			11-9
Attachment, 62 x 68 mm	07746-0010500			13-8, 13-18
Attachment, 72 x 75 mm	07746-0010600			13-18, 13-21
Driver	07749-0010000			
Driver	07746-0020100			11-6
Attachment, 20 mm	07746-0020400			11-6
Attachment, 25 mm I.D.	07746-0030200			10-20, 11-6, 13-22
Driver	07746-0030100			10-20, 10-21, 11-5, 11-6, 13-22
Attachment, 30 mm I.D.	07746-0030300			10-21, 11-5
Valve spring compressor	07757-0010000	Valve spring compressor	07957-3290001	6-8, 6-14
Rear shock absorber compressor	07959-3290001			12-18, 12-19, 13-14

VALVE SEAT CUTTER

NOTE: 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, 29 mm (EX 90°)	07780-0010300	6-11
Valve seat cutter, 35 mm (IN 90°)	07780-0010400	6-11
Valve seat cutter, 28 mm (EX 116°)	07780-0012100	6-11
Valve seat cutter, 33 mm (IN 116°)	07780-0012900	6-11
Valve seat cutter, 30 mm (IN, EX 60°)	07780-0014000	6-11
Valve seat cutter holder	07781-0010101	6-11

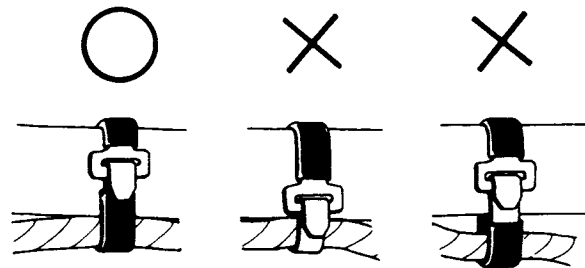
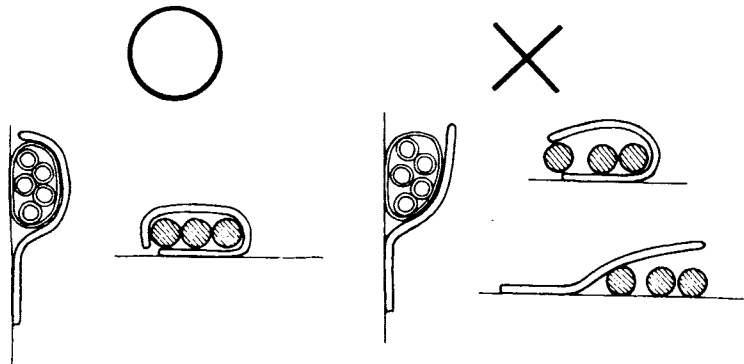


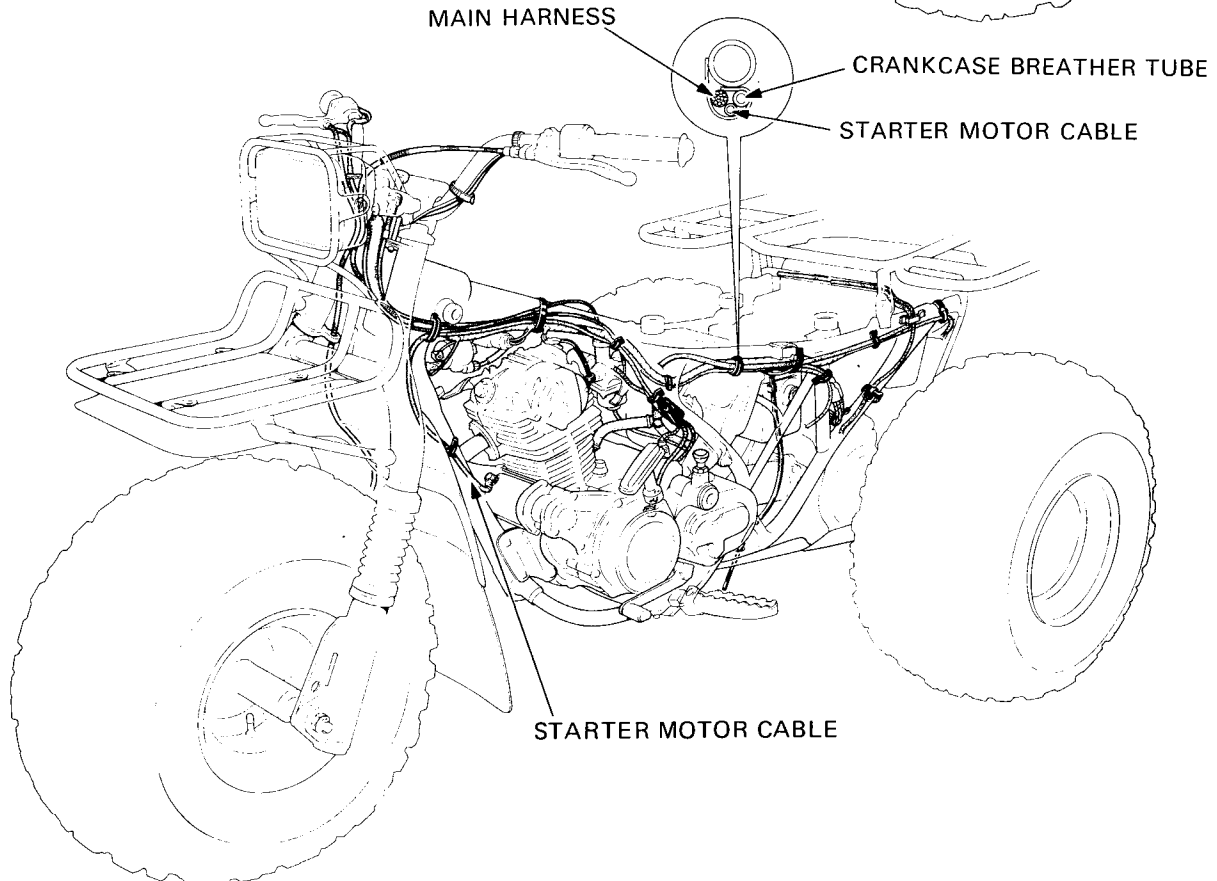
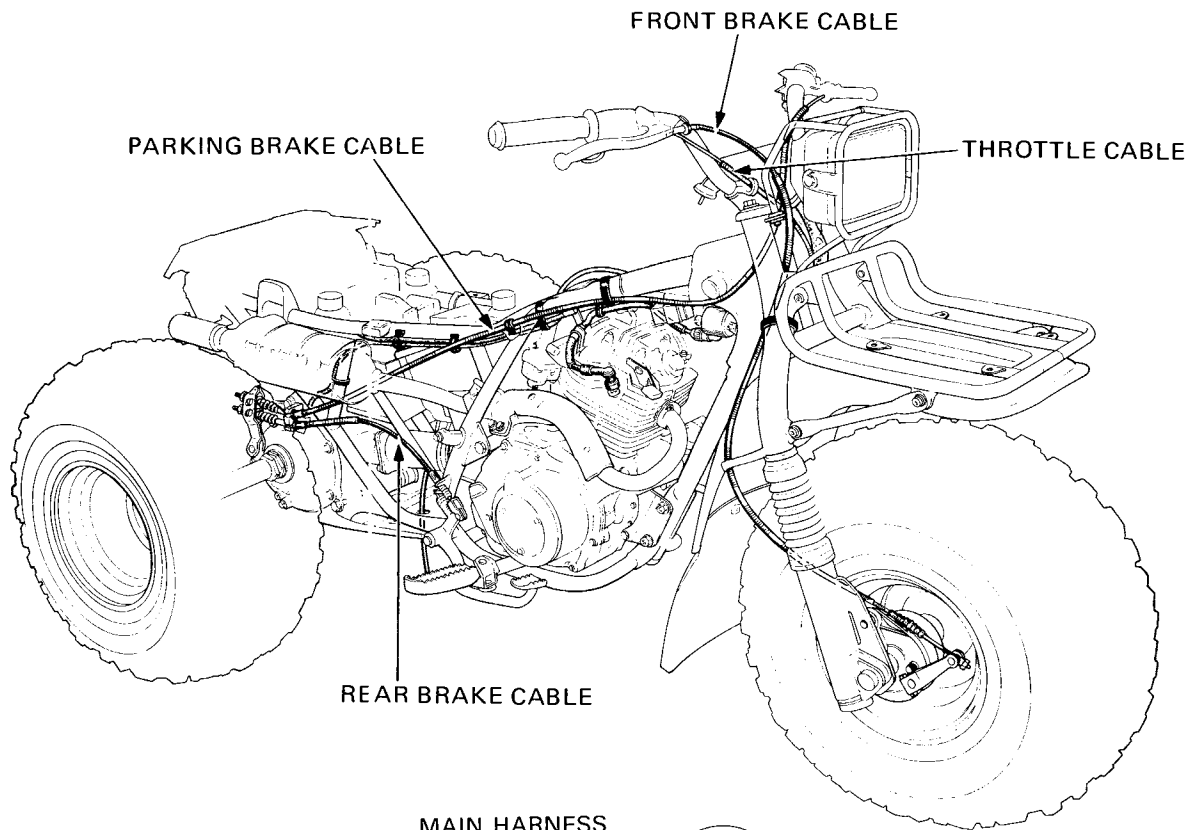
GENERAL INFORMATION

CABLE & HARNESS ROUTING

Note the following when routing cables and wire harnesses:

- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze wires against the weld or end of its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.
- Route harnesses so they are not pulled taut or have excessive slack.
- Protect wires and harnesses with electrical tape or tubes if they contact a sharp edge or corner. Clean the attaching surface thoroughly before applying tape.
- Do not use a wire or harness with a broken insulator. 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, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.

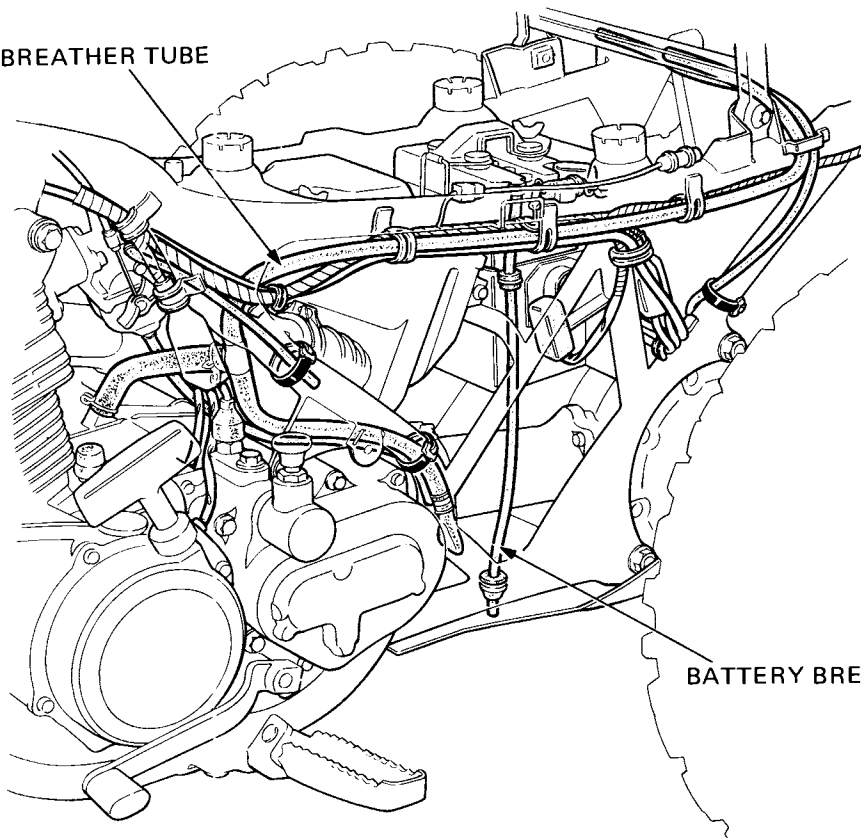






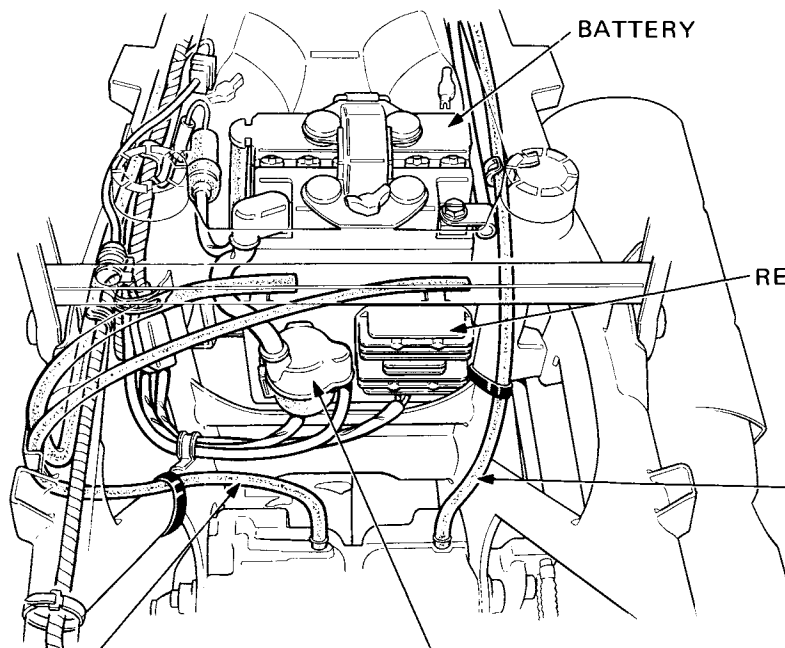
GENERAL INFORMATION

CRANKCASE BREATHER TUBE



BATTERY BREATHER TUBE

BATTERY



REGULATOR/RECTIFIER

REAR BRAKE
BREATHER TUBE

FINAL DRIVE
GEAR BREATHER TUBE

STARTER MOTOR RELAY



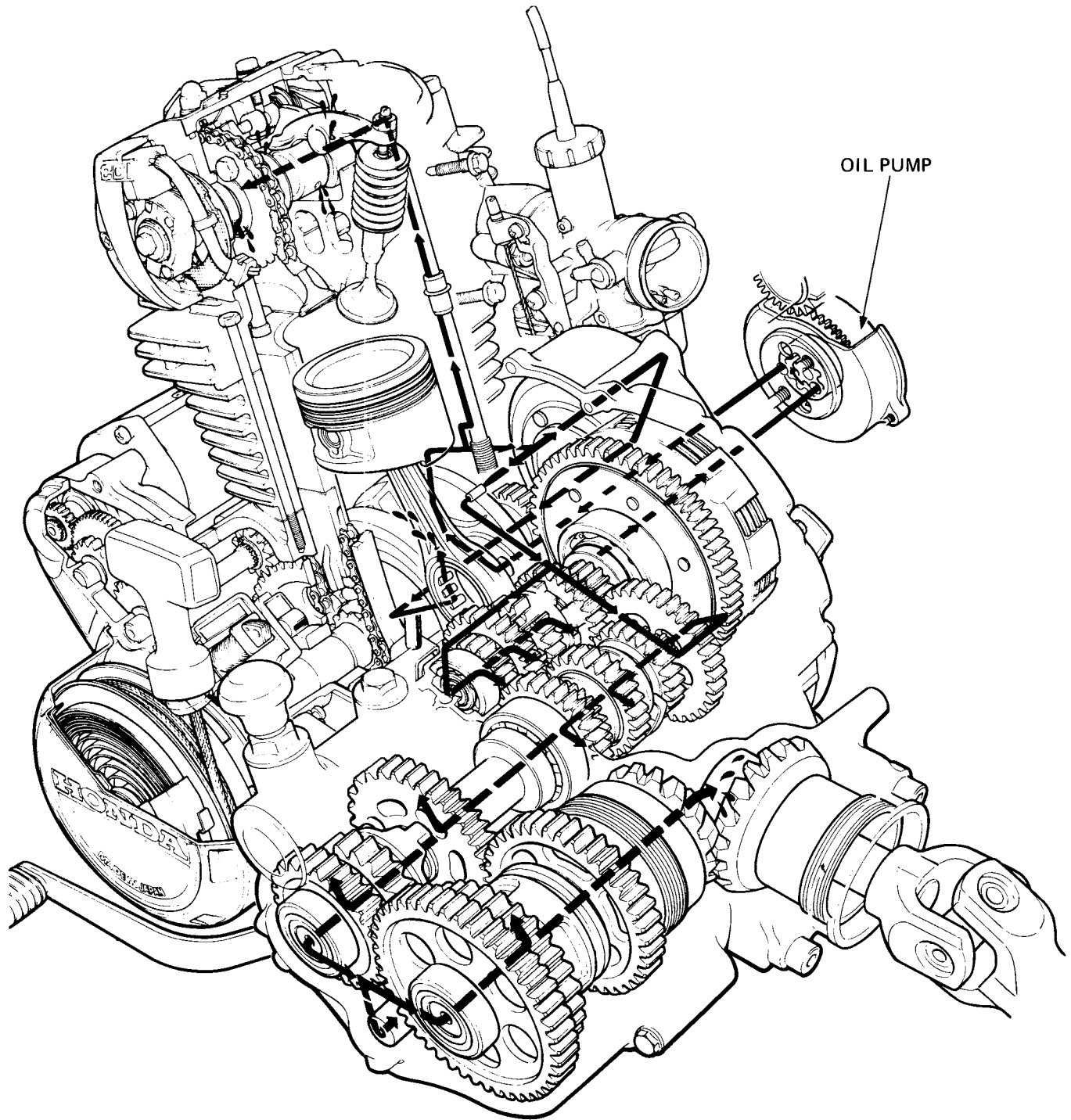
NOISE EMISSION CONTROL SYSTEM

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 inoperative by any person.

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

1. Removal of, or puncturing the muffler, bafflers, 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.





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SERVICE INFORMATION

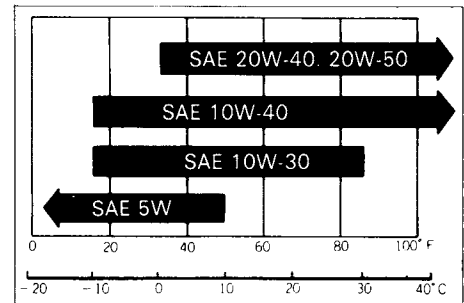
GENERAL

- Section 8 shows how to service the oil pump.

SPECIFICATIONS

Engine oil capacity	1.8 liters (1.9 US qt, 1.6 Imp qt) at disassembly 1.0 liter (1.1 US qt, 0.9 Imp qt) at draining
Engine oil recommendation	Use Honda 4-stroke oil or equivalent. API Service Classification: SE or SF Viscosity: SAE 10W-40
Final drive oil capacity	220 cc (7.4 oz)
Final drive oil recommendation	Hypoid gear oil SAE #80

OIL VISCOSITY



TORQUE VALUES

Oil filter screen cap	9-15 N·m (0.9-1.5 kg·m, 7-11 ft·lb)
Oil filter rotor cover bolt	10-14 N·m (1.0-1.4 kg·m, 7-10 ft·lb)

TROUBLESHOOTING

Oil level too low

1. Normal oil consumption
2. External oil leaks
3. Worn piston rings
4. Oil not changed often enough
5. Faulty head gasket

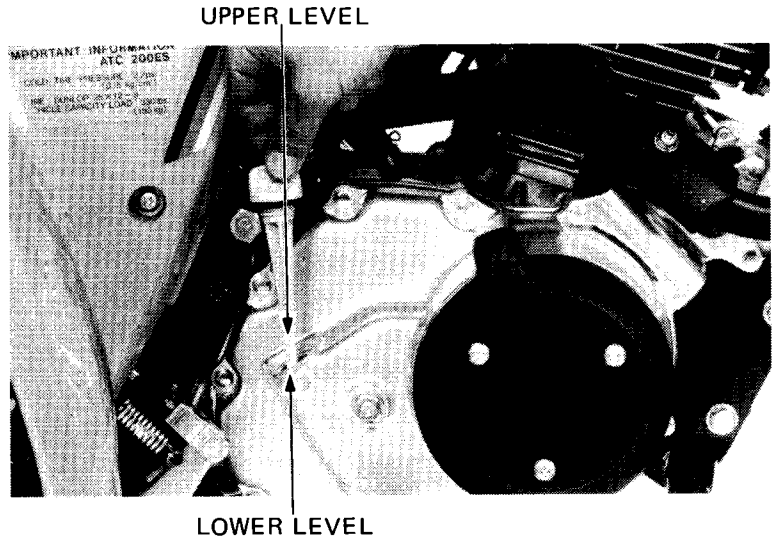


LUBRICATION

ENGINE OIL LEVEL CHECK

Place the ATC on level ground.
Check the oil level with the oil cap/dipstick.
Do not screw in the cap when making this check.

If the oil level is below the lower level mark on the dipstick, fill to the upper level mark with the recommended oil (Page 2-1).



ENGINE OIL CHANGE AND OIL FILTER SCREEN CLEANING

NOTE:

- Drain the oil with the engine warm.
- The oil filter screen and spring will come out when the oil filter screen cap is removed.

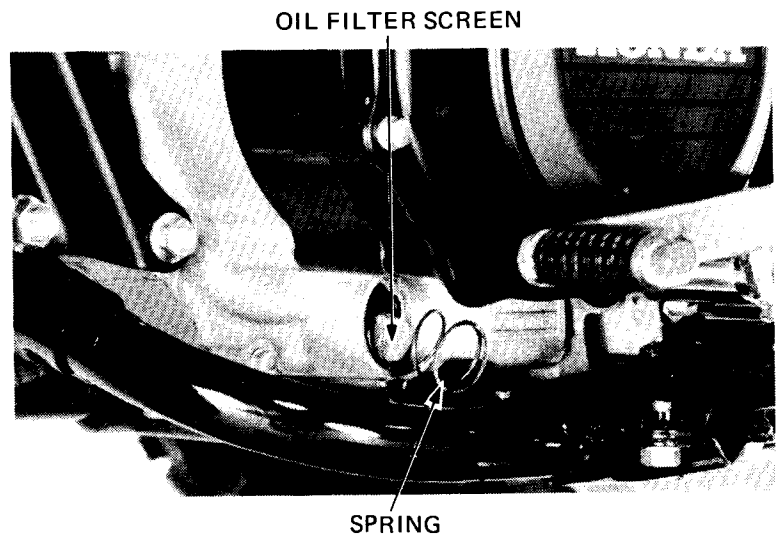
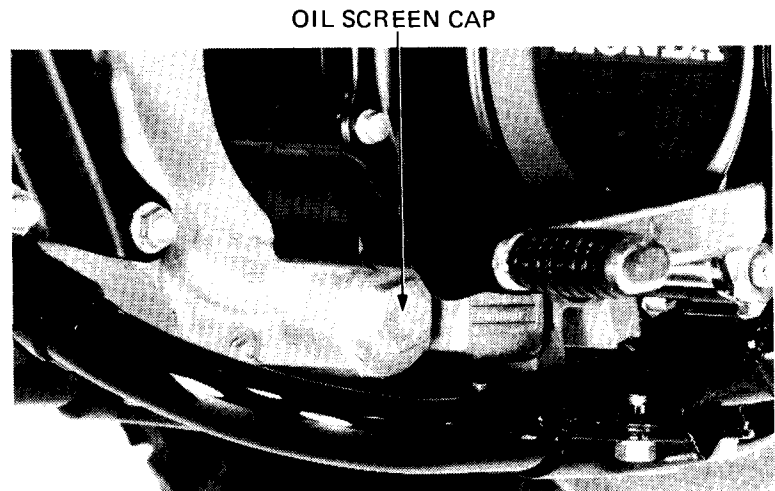
Remove the oil filler cap and oil filter screen cap. Operate the recoil starter several times to completely drain any residual oil. Clean the oil filter screen. Make sure that the oil filter screen, sealing rubber, screen cap and O-ring are in good condition. Install the oil filter screen, spring and screen cap.

TORQUE: 9–15 N·m (0.9–1.5 kg·m, 7–11 ft·lb)

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

ENGINE OIL CAPACITY:
1.0 liters (1.1 US qt, 0.9 Imp qt)
after draining

Install the oil filler cap.
Start the engine and let it idle for 2–3 minutes. Stop the engine.
With the ATC on level ground, make sure that the oil level is at the upper level mark.
Be sure there are no oil leaks.





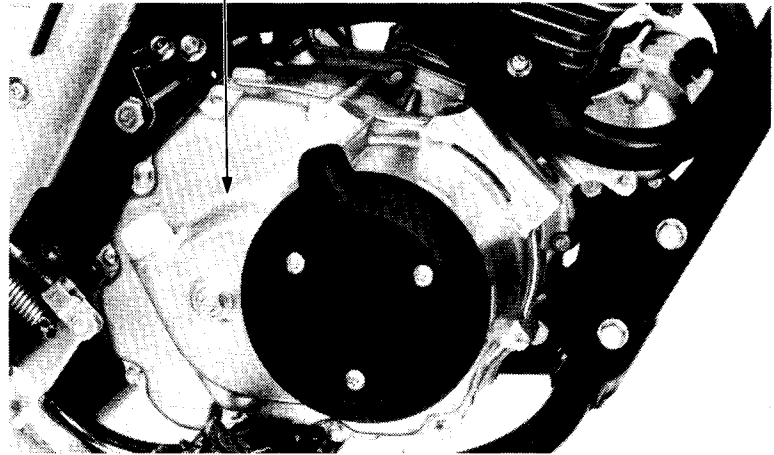
OIL FILTER ROTOR CLEANING

NOTE:

Clean the oil filter rotor before adding oil.

Remove the right crankcase cover (Page 8-3).

RIGHT CRANKCASE COVER



Remove the oil filter rotor cover and clean the inside of the rotor cover and rotor.

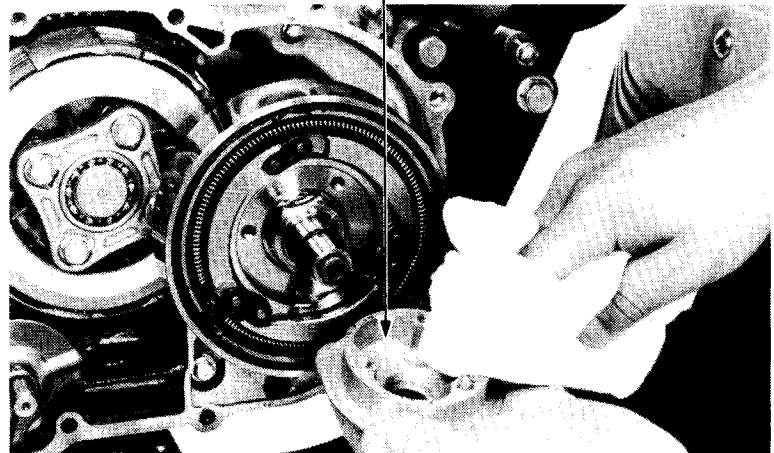
Install the oil filter rotor cover (Page 8-6).

TORQUE: 10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)

Install the right crankcase cover (Page 8-21).

Fill the engine with the recommended grade of oil (Page 2-1).

OIL FILTER ROTOR COVER



FINAL DAIVE OIL

CHECK

Remove the oil filler cap.

Level the rear wheel on the ground by placing a support block under the engine.

Check that the oil level reaches the lower edge of the oil filler cap hole.

Check for leaks, if the level is low. Pour fresh oil through the oil filler hole until it reaches the lower edge.

CHANGE

Remove the oil filler cap.

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

Install the drain bolt securely.

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

OIL CAPACITY: 350 cc (11.8 US oz)

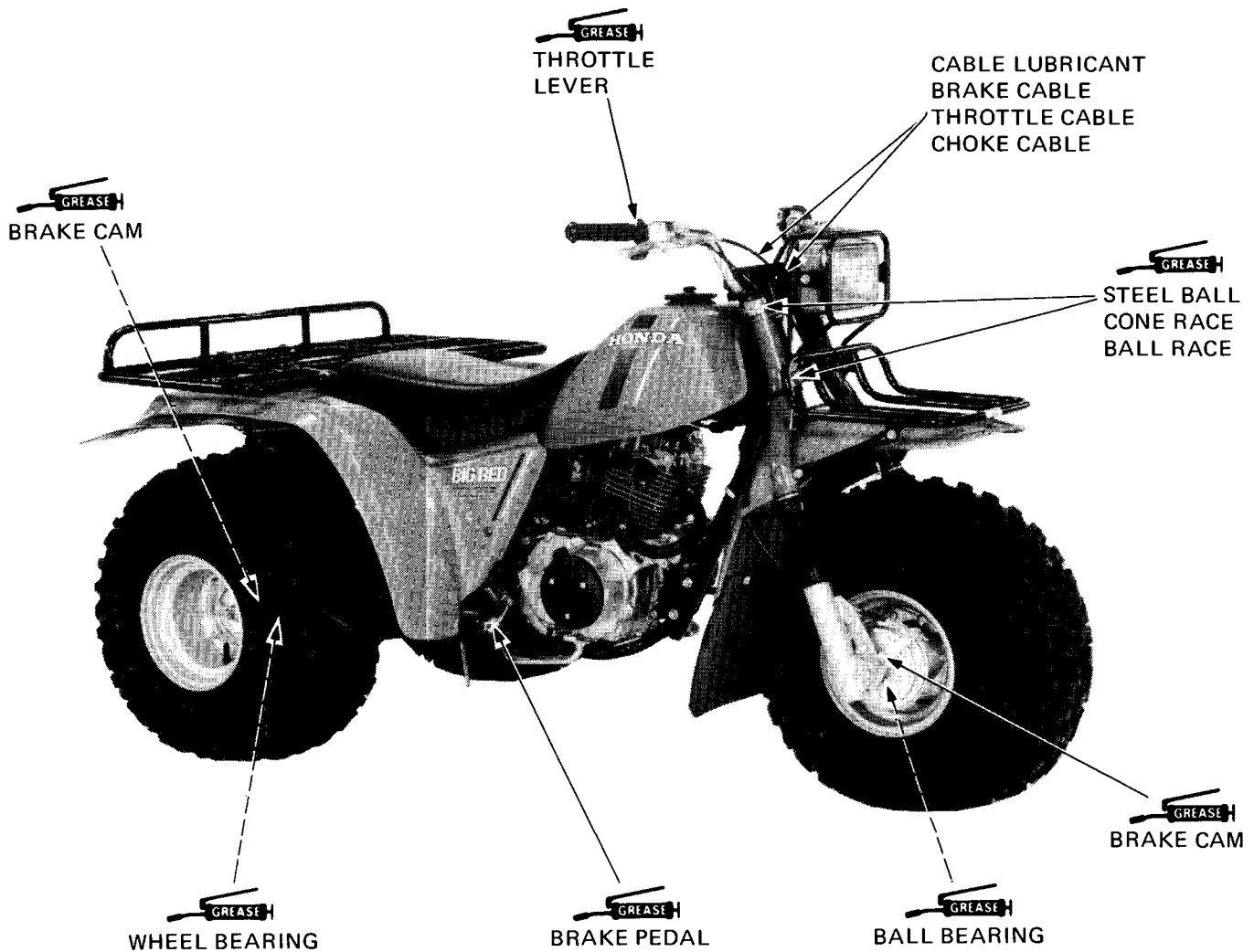
RECOMMENDED OIL: Hypoid gear oil SAE #80



LUBRICATION

LUBRICATION POINTS

Use general purpose grease when no other specification is given. Apply oil or grease to any 2 sliding surfaces and cables not shown here.





SERVICE INFORMATION	3-1	CYLINDER COMPRESSION	3-9
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IGNITION TIMING	3-8	STEERING HEAD BEARINGS	3-14

SERVICE INFORMATION

SPECIFICATIONS

Ignition timing:

Initial 10° ± 2° BTDC at idle
Full advance 30° ± 2° BTDC at 3,350 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 0.05 mm (0.002 in)
Exhaust 0.05 mm (0.002 in)

Throttle lever free play

5–10 mm (3/16–3/8 in)

Idle speed

1,400 ± 100 rpm

Cylinder compression

11.0 ± 1.0 kg/cm² (156 ± 14 psi)

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 lever (parking brake lever)
free play

15–20 mm (5/8–3/4 in)

Front/rear rim size

9.2 x 9.0

Front/rear tire size

25 x 12–9

Front/rear tire pressure

Recommended pressure 2.2 psi (15 kPa, 0.15 kg/cm²)
Minimum pressure 1.7 psi (12 kPa, 0.12 kg/cm²)
Maximum pressure 2.6 psi (18 kPa, 0.18 kg/cm²)

Front/rear tire circumference

Standard 1,920 mm (75.6 in)



MAINTENANCE

TORQUE VALUES

Spark plug	12–19 N·m (1.2–1.9 kg·m, 9–14 ft·lb)
Valve adjuster cover	10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)
Cam chain tensioner adjusting bolt	15–22 N·m (1.5–2.2 kg·m, 11–16 ft·lb)
Clutch adjusting screw 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)

TOOL

Common

Valve adjusting wrench, 10 x 12 mm	07708–0030200
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MAINTENANCE

The maintenance intervals shown in the following schedule are based upon average riding conditions. ATC's subjected to severe use, or ridden in wet or unusually dusty areas, require more frequent servicing. Items marked * should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner.

Perform the PRE-RIDE INSPECTION in the Owner's Manual at every maintenance period.

I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary.

C: Clean

A: Adjust

R: Replace

ITEM	INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
ENGINE OIL (NOTE 1, 2)	R	R	2-2
* ENGINE OIL FILTER SCREEN	C	C	2-2
* ENGINE OIL FILTER ROTOR		C	2-3
AIR CLEANER ELEMENT (NOTE 2)		I	3-4
SPARK PLUG		I	3-5
BATTERY	I	I	3-9
* VALVE CLEARANCE	I	I	3-5
* CAM CHAIN TENSIONER	A	A	3-7
* CARBURETOR	I	I	3-8
FUEL LINE	I: (EVERY YEAR)		3-8
* FUEL FILTER	C: (EVERY YEAR)		3-6
THROTTLE OPERATION	I	I	3-7
FINAL DRIVE OIL	I: (EVERY YEAR), R: (EVERY 2 YEARS)		2-3
* BRAKE SHOES	I: (EVERY YEAR)		3-10
BRAKE CONTROL LINKAGE	I	I	3-11
* CLUTCH	A	A	3-13
* SPARK ARRESTER		C	3-13
ALL NUTS, BOLTS, FASTENERS	I	I	3-13
LIGHTING EQUIPMENT	I	I	3-14
TIRES	I	I	3-14
* STEERING HEAD BEARING	A: (EVERY YEAR)		12-22

NOTES: 1. Replace every 30 operating days or every 3 months, whichever comes first.

2. Service more frequently when riding in dusty areas.

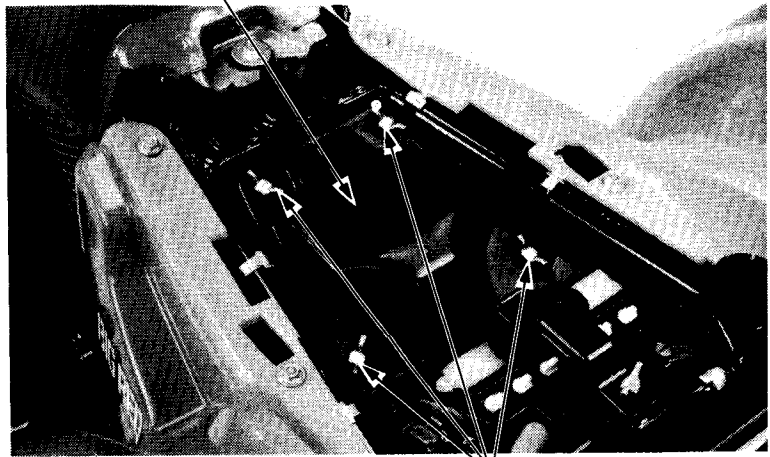


MAINTENANCE

AIR CLEANER

Remove the seat by pulling the seat lever.
Remove the four wing bolts attaching the air cleaner case cover.
Remove the air cleaner case cover.
Remove the air cleaner element assembly from the air cleaner case.

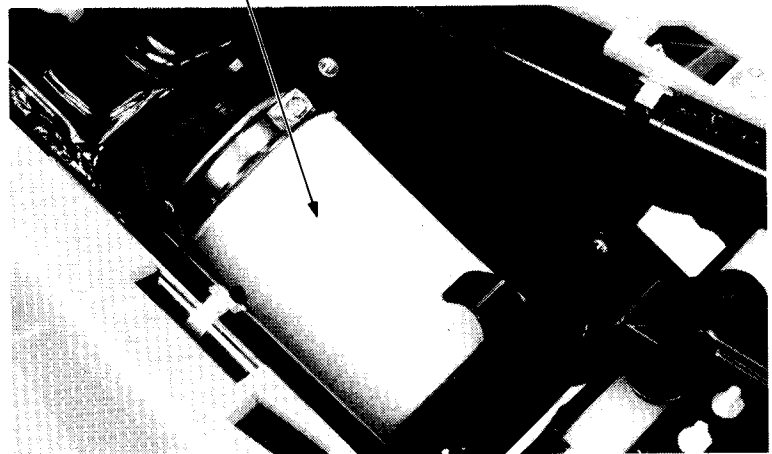
AIR CLEANER CASE COVER



WING BOLTS

Remove the bracket from the element holder.
Remove the air cleaner element from the element holder.

AIR CLEANER ELEMENT

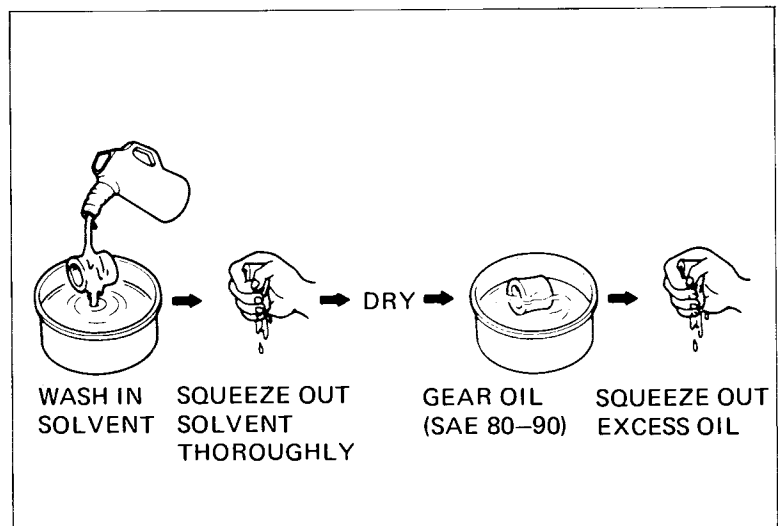


Wash the element in non-flammable or high flash point solvent, squeeze out the solvent thoroughly, and allow to dry.

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

Install the bracket onto the element holder.
Install the air cleaner case cover with the four wing bolts.
Install the seat.

Install the element assembly into the air cleaner case.





SPARK PLUG

Disconnect the spark plug cap and remove the spark plug.

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

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

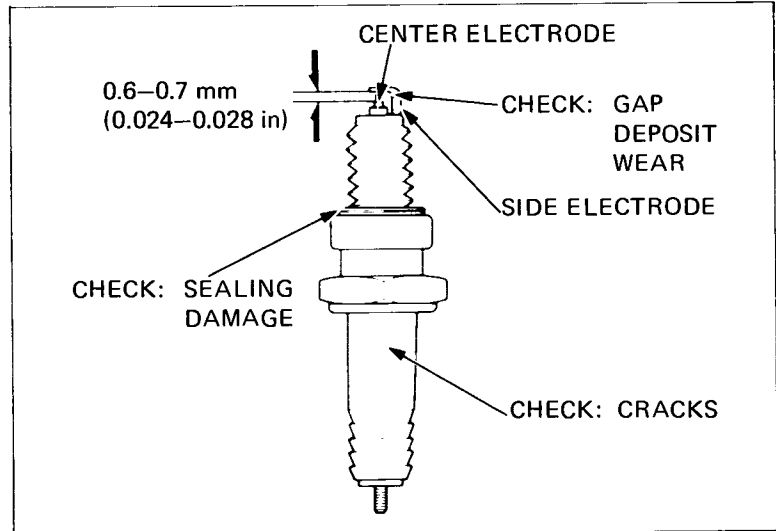
SPARK PLUG GAP:

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. Tighten the spark plug to the specified torque.

TORQUE: 12–19 N·m (1.2–1.9 kg·m, 9–14 ft·lb)

Connect the spark plug cap.

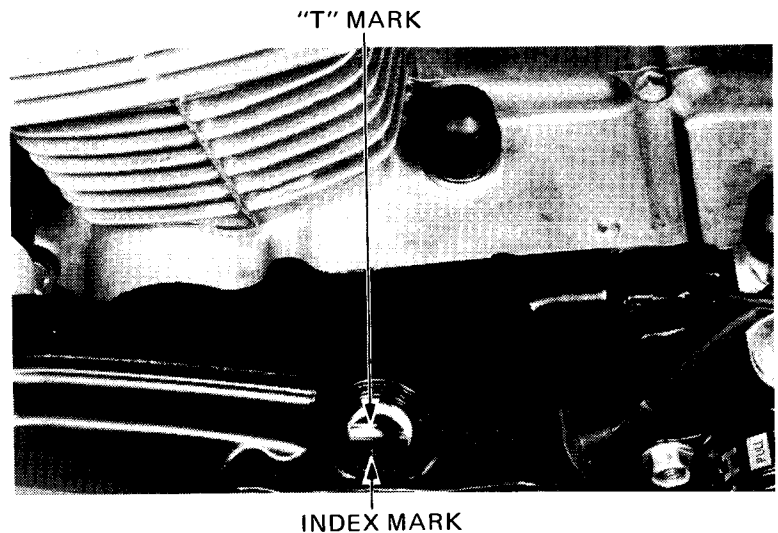
VALVE CLEARANCE

NOTE:

- Inspect and adjust valve clearance while the engine is cold (below 35°C/95°F).
- Make sure the decompressor valve lifter has free play.

Remove the timing mark hole cap.
Remove the valve adjuster covers.

Rotate the crankshaft by using the recoil starter and align the "T" mark on the rotor with the index mark. The piston must be at TDC of the compression stroke.





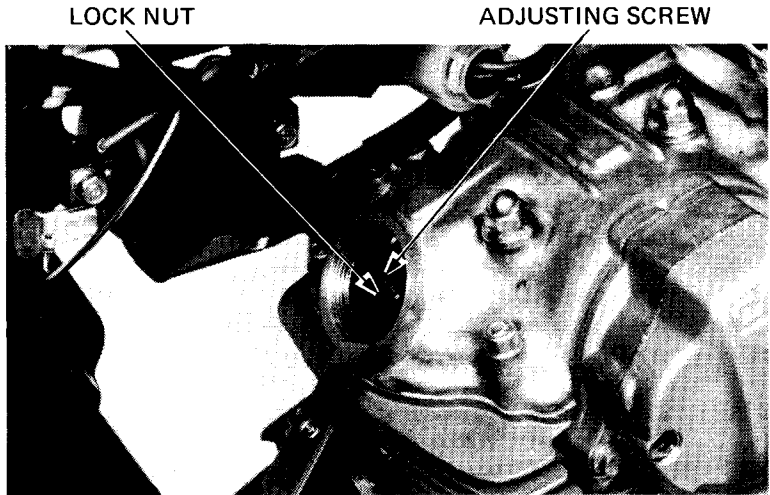
MAINTENANCE

Inspect the intake and exhaust valve clearances by inserting the feeler gauge between the adjusting screw and valve stem.

VALVE CLEARANCES:

Intake: 0.05 mm (0.002 in)

Exhaust: 0.05 mm (0.002 in)



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

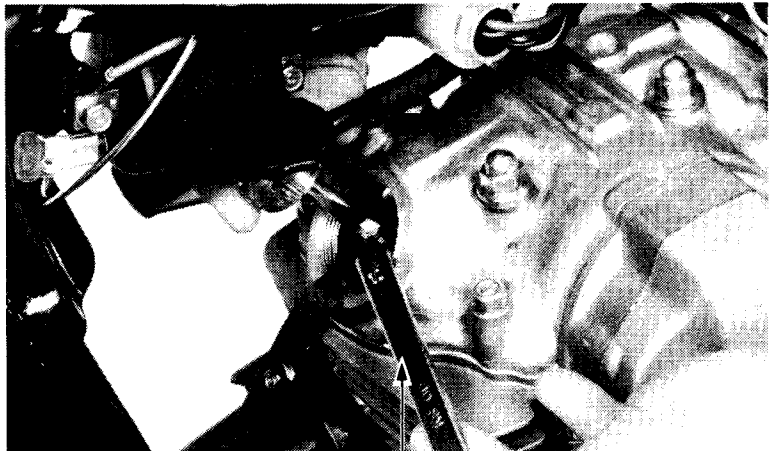
Hold the adjusting screw and tighten the lock nut.

**TORQUE: 15–18 N·m (1.5–1.8 kg·m,
11–13 ft·lb)**

Recheck the valve clearance and install the valve adjuster covers.

TORQUE: 10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)

Install the timing hole cap.



VALVE ADJUSTING WRENCH, 10 x 12 mm
07708-0030200

FUEL STRAINER

Disconnect the fuel tube and drain fuel from the tank.

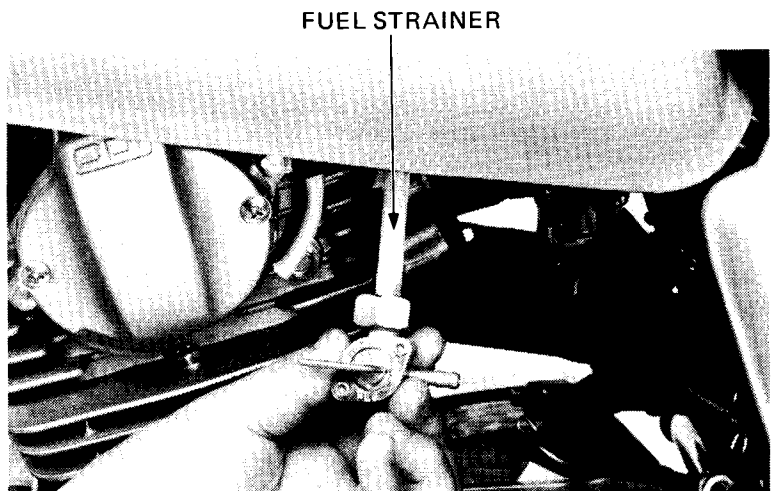
WARNING

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

Remove the fuel valve by loosening the valve nut. Remove the fuel strainer and wash it in clean non-flammable or high flash point solvent.

Install the strainer and valve and attach the fuel line.

Fill the fuel tank and turn the fuel valve "ON" and check for leaks.





THROTTLE OPERATION

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

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 5–10 mm (3/16–3/8 in) at the tip of the throttle lever.

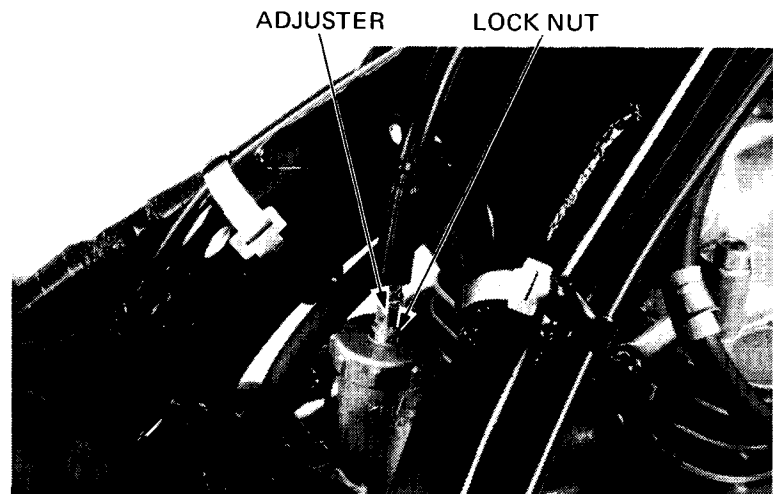
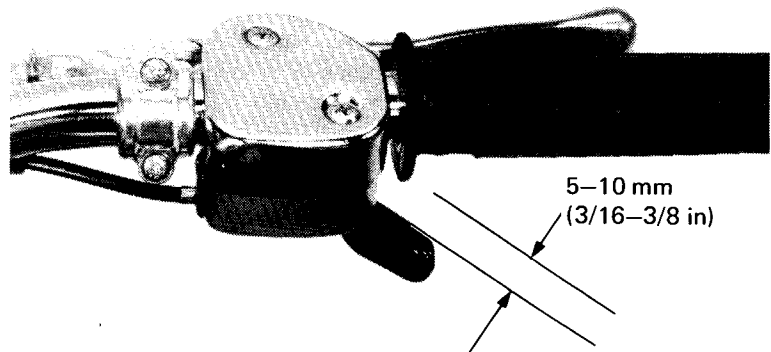
Adjust as follows:

Remove the fuel tank.

Slide the rubber cap off the adjuster on the carburetor cap.

Adjust the throttle lever free play by loosening the lock nut and turning the adjuster on the carburetor. Tighten the lock nut and install the adjuster rubber cap.

Install the fuel tank.



CAM CHAIN TENSION

Start the engine and allow it to idle.

Remove the rubber cap and loosen the cam chain tensioner adjusting bolt.

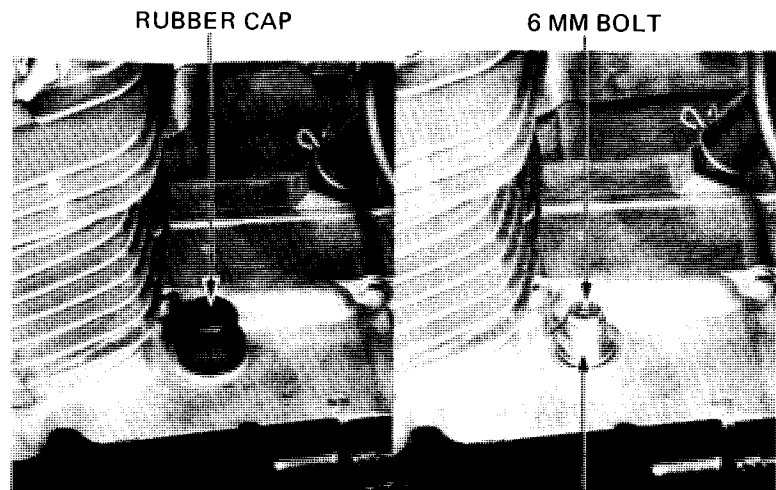
When the cam chain tensioner adjusting bolt is loosened, the tensioner will automatically position itself to provide the correct tension.

Retighten the adjusting bolt and install the rubber cap.

**TORQUE: 15–22 N·m (1.5–2.2 kg·m,
11–16 ft·lb)**

NOTE:

Do not attempt to loosen the 6 mm bolt while adjusting.



ADJUSTING BOLT



MAINTENANCE

CARBURETOR IDLE SPEED

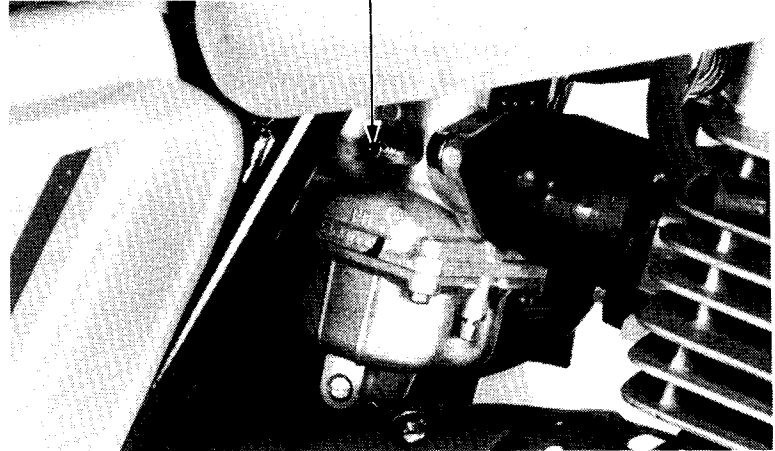
NOTE:

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

Warm up the engine for about ten minutes. Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 1,400 ± 100 rpm

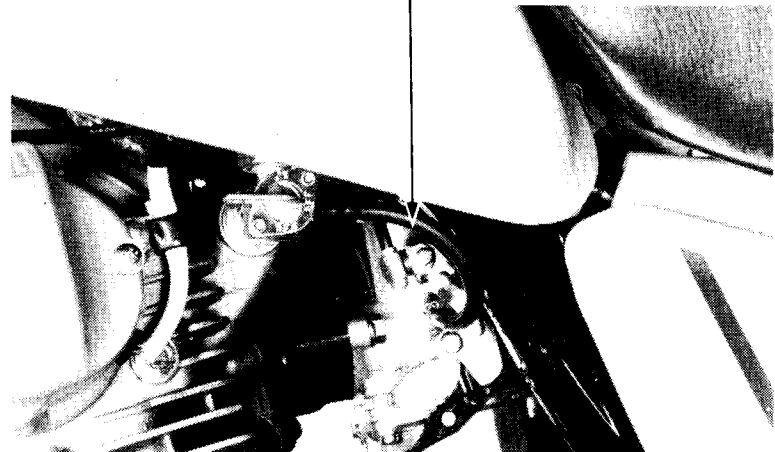
THROTTLE STOP SCREW



FUEL LINE

Replace any parts which show signs of deterioration, damage or leaks.

FUEL LINE



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: 1,400 ± 100 rpm

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





CYLINDER COMPRESSION

Warm up the engine. After the engine is warm, stop the engine and remove the spark plug.

Insert a compression gauge.

Pull out the choke knob all the way and fully open the throttle.

Push the starter button until the compression gauge reading stops rising.

NOTE:

Watch for compression leaking at the gauge connection.

COMPRESSION:

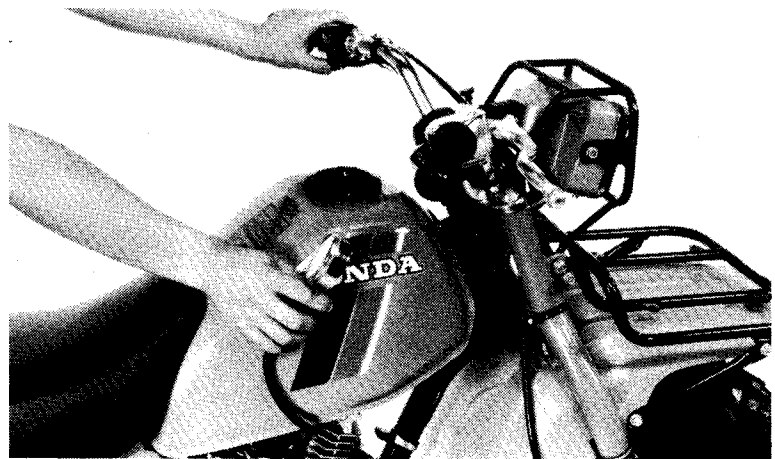
$11.0 \pm 1.0 \text{ kg/cm}^2$ ($156 \pm 14 \text{ psi}$)

Low compression can be caused by:

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

High compression can be caused by:

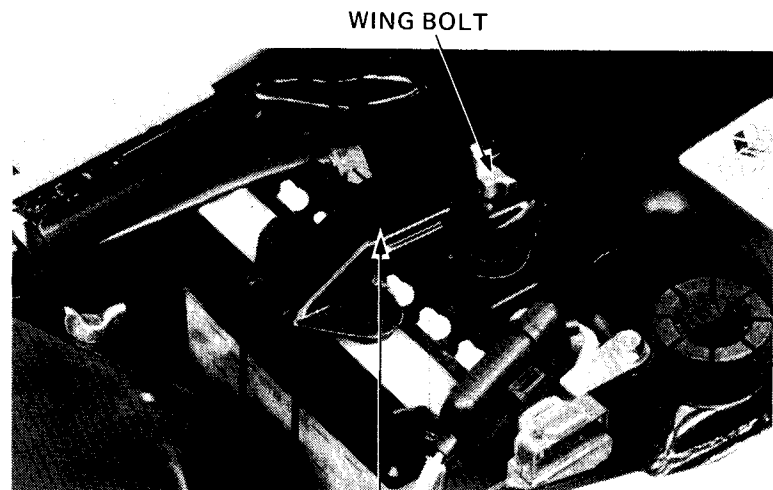
Carbon deposits in combustion chamber or on piston crown. The maximum reading is usually reached within 4–7 seconds.



BATTERY

Remove the seat by pulling the seat lever.

Remove the battery holder by loosening the wing bolt.



WING BOLT

BATTERY HOLDER



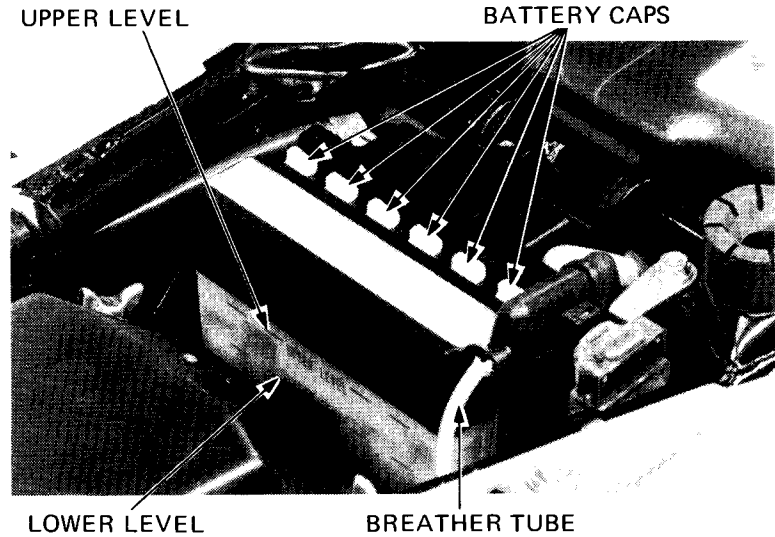
MAINTENANCE

Inspect the battery fluid level.

When the fluid level nears the lower level, refill with distilled water to the upper level. Add only distilled water. Tap water will shorten the service life of the battery.

WARNING

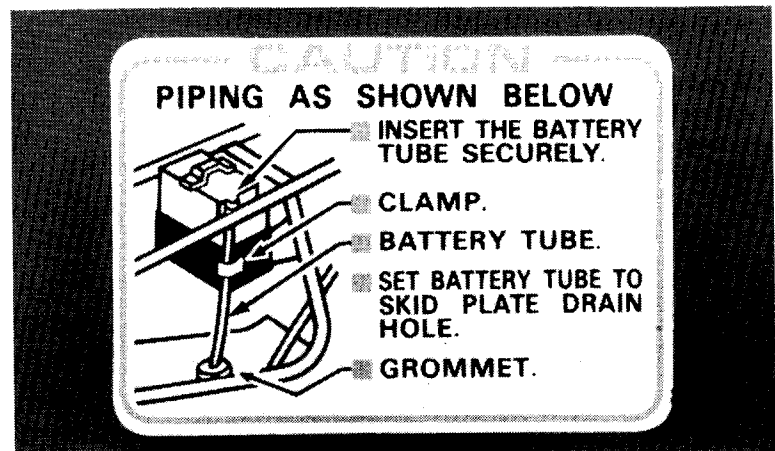
- *The battery electrolyte contains sulfuric acid. Protect your eyes skin and clothing. In case of contact flush thoroughly with water and contact a doctor if electrolyte gets in your eyes.*
- *Batteries produce explosive gases. Keep sparks, flames and cigarettes away.*



CAUTION

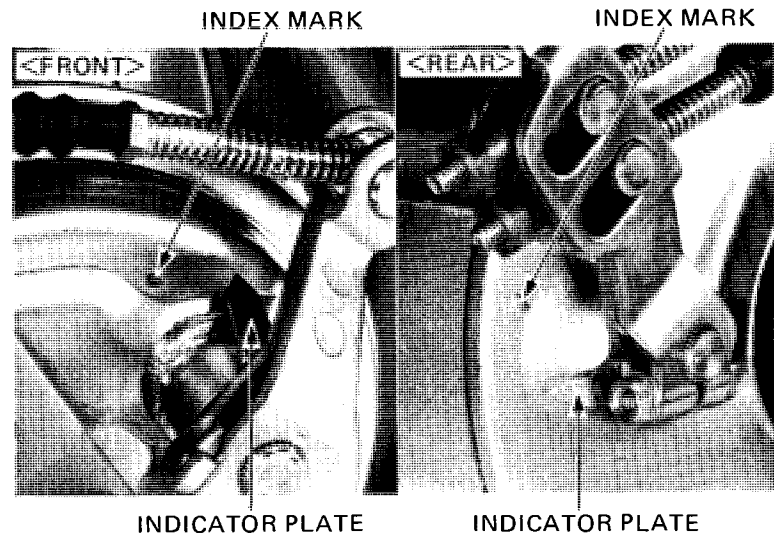
The battery breather tube must be routed as shown on the label. Do not bend or twist the breather tube. A bent or kinked breather tube may pressurize the battery and damage its case causing electrolyte leakage.

Replace the battery if sulphation forms or sediments (paste) accumulate on the bottom.



BRAKE SHOES

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.





HONDA

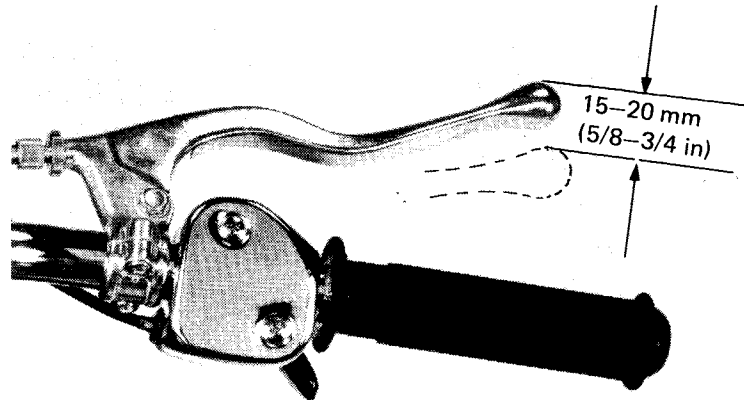
ATC200ES

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.

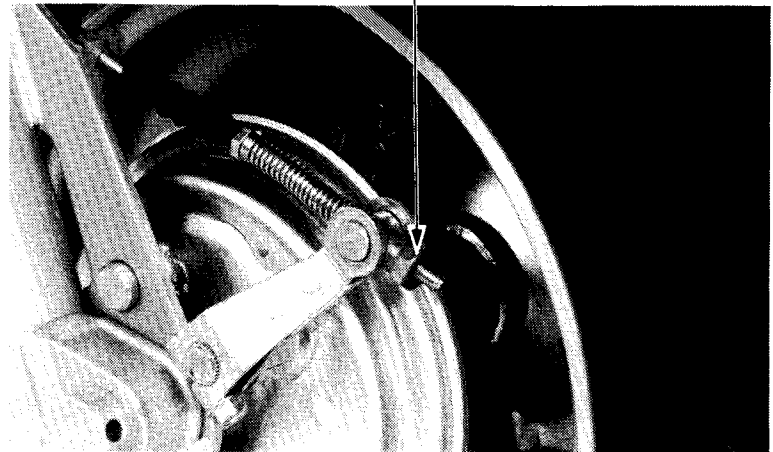


Adjust free play by turning the adjusting nut.

NOTE:

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

ADJUSTING NUT



REAR BRAKE

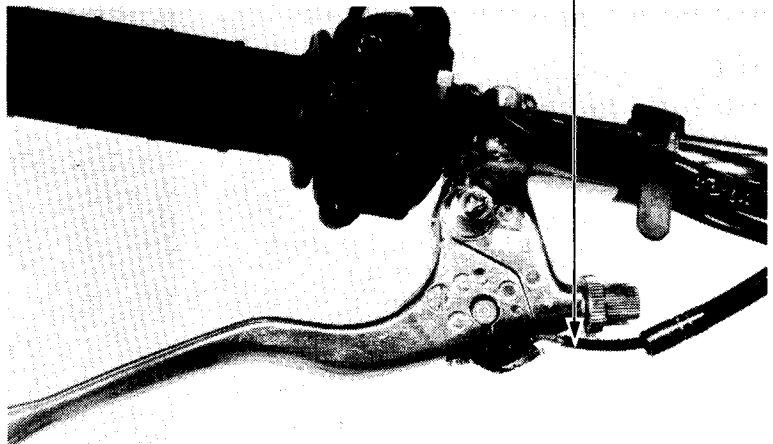
Check the cable, brake lever and brake pedal for loose connections, excessive play, or other damage.

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

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

Install the cables.

BRAKE CABLE

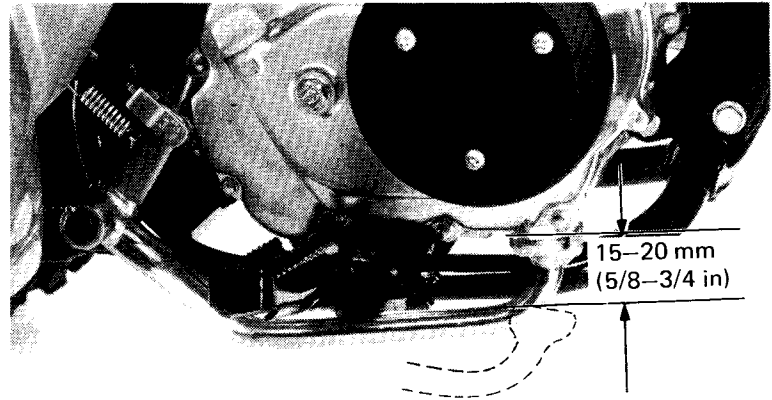




MAINTENANCE

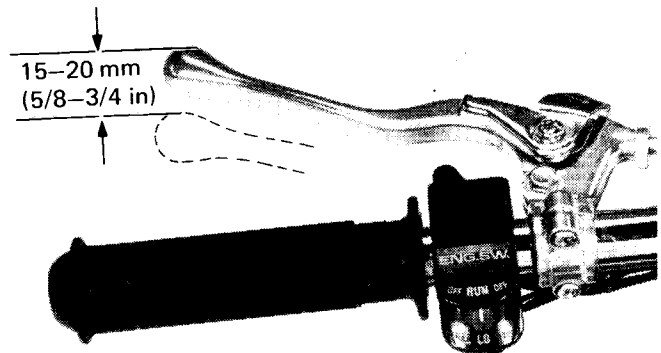
Measure the brake pedal free play at the end of the brake pedal.

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



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

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



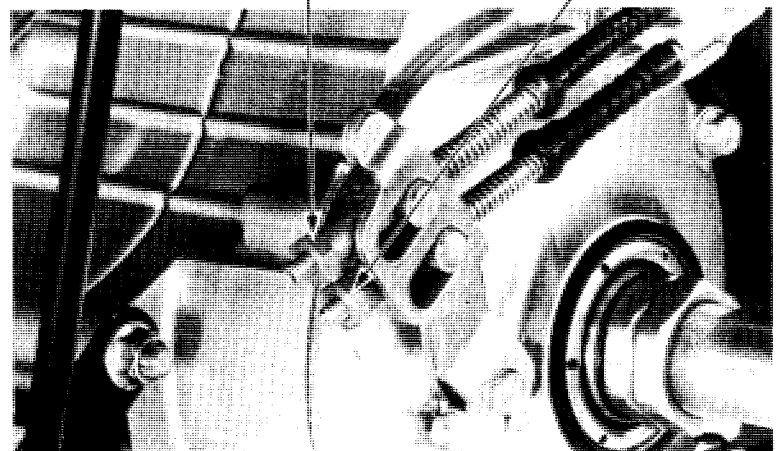
Adjust the lever and pedal free play by turning the adjusting nuts at the lower end of the cables.

NOTE:

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

PEDAL ADJUSTING NUT

LEVER ADJUSTING NUT





CLUTCH

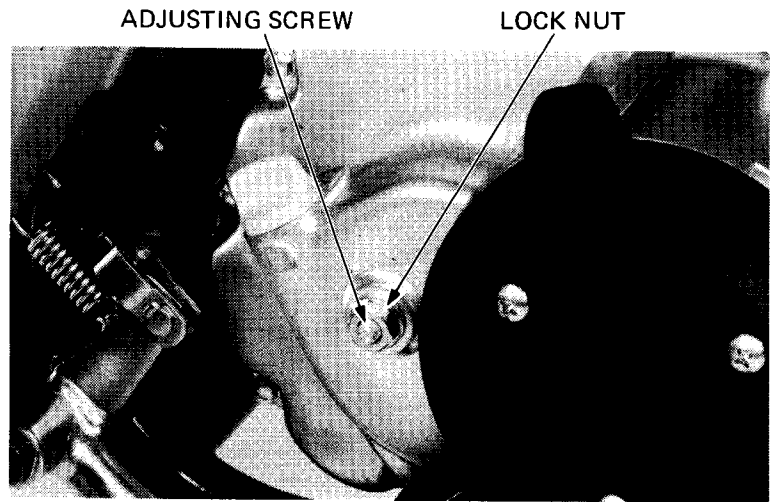
Stop the engine.
Loosen the clutch adjusting screw lock nut.

Slowly turn the adjusting screw counterclockwise until resistance is felt.

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

TORQUE: 19–25 N·m (1.9–2.5 kg-m,
14–18 ft-lb)

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



SPARK ARRESTER CLEANING

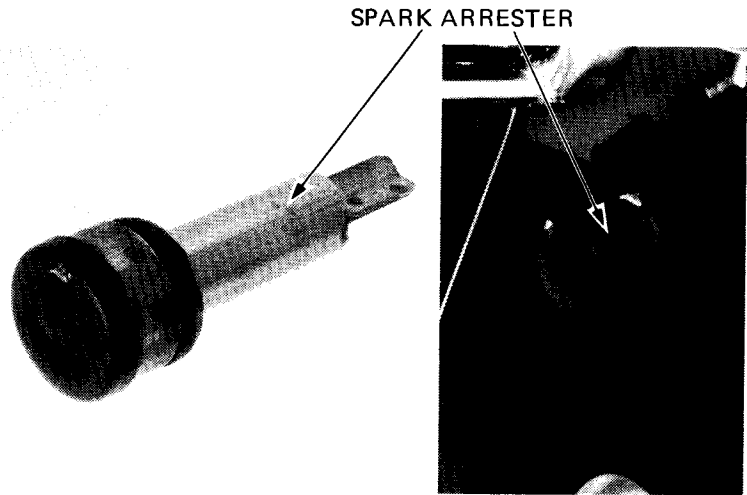
WARNING

- *Do not remove and install the spark arrester while the exhaust pipe is hot.*
- *Perform this operation in a well-ventilated area, free from fire hazard.*
- *Use adequate eye protection.*

Remove the spark arrester bolts and the spark arrester.
Remove any accumulated carbon from the arrester.

Start the engine and remove accumulated carbon from the exhaust system by momentarily revving up the engine several times.

Stop the engine and reinstall the spark arrester.



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 1-4). Check that all cotter pins and safety clips are in place.



MAINTENANCE

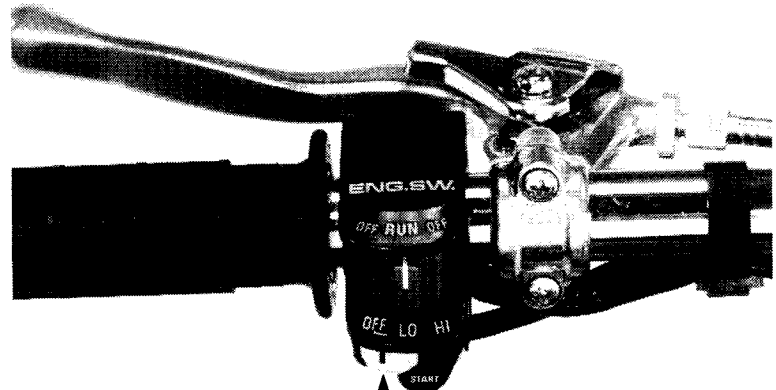
LIGHTING EQUIPMENT

Apply the parking brake lever.
Start the engine.

Check the headlight and taillight by operating the lighting switch.

Position	Function
OFF	Headlight is OFF.
LO	Headlight low beam and taillight should be ON.
HI	Headlight high beam and taillight should be ON.

If the light does not work properly, check the bulbs and refer to page 18-3 to test the switch if necessary.



LIGHTING SWITCH

TIRES

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

NOTE:

Tire pressure should be checked when the tires are COLD.

Check the tire pressures.

TIRE PRESSURES:

Recommended pressure:

2.2 psi (15 kPa, 0.15 kg/cm²)

Minimum pressure:

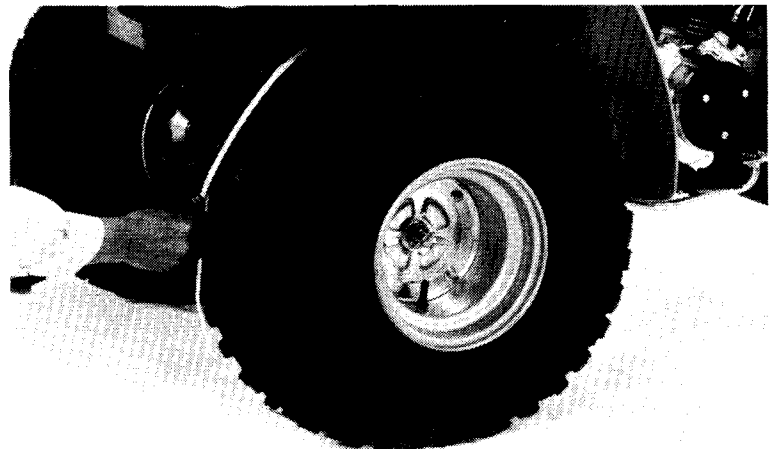
1.7 psi (12 kPa, 0.12 kg/cm²)

Maximum pressure:

2.6 psi (18 kPa, 0.18 kg/cm²)

STANDARD TIRE CIRCUMFERENCE:

1,920 mm (75.6 in)



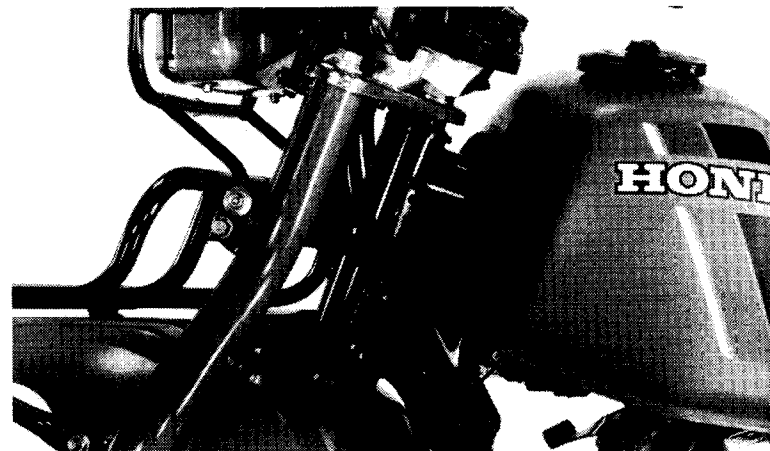
STEERING HEAD BEARINGS

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.

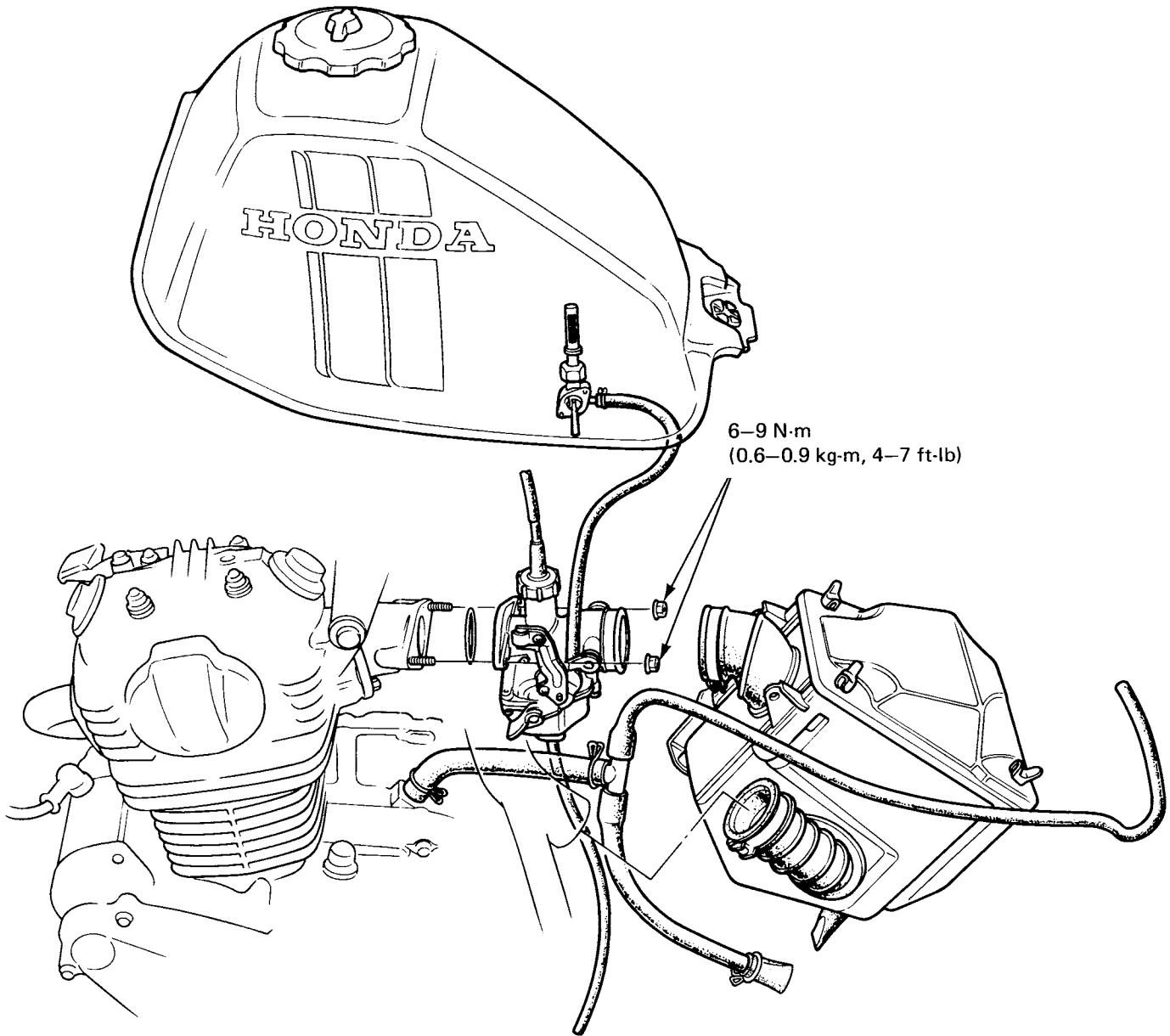
If the handlebar moves unevenly, binds or has vertical movement, adjust the steering head bearing by turning the steering head adjusting nut with a pin spanner (Page 12-22).





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SERVICE INFORMATION

GENERAL

- 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 with new O-rings during reassembly.
- The carburetor float bowl has a drain screw that can be loosened to drain gasoline.

SPECIFICATIONS

Fuel tank capacity 11.5 liter (3.0 US gal, 2.5 Imp. gal)
 Fuel reserve capacity 1.0 liter (0.26 US gal, 0.22 Imp. gal)

Carburetor

Identification mark	PD55A
Type	Piston valve
Venturi dia	22 mm (0.9 in)
Float level	14 mm (0.55 in)
Pilot screw opening	1-7/8 turns out
Idle speed	1,400 ± 100 rpm
Main jet	#95
Throttle lever free play	5-10 mm (3/16-3/8 in)
Jet needle	3rd

TORQUE VALUE

Carburetor mounting nut 6-9 N·m (0.6-0.9 kg-m, 4-7 ft-lb)

TOOL

Common

Float level gauge 07401-0010000



FUEL SYSTEM

TROUBLESHOOTING

Engine cranks but won't start.

1. No fuel in tank
2. No fuel to carburetor
3. Too much fuel getting to cylinder
4. No spark at plug (ignition malfunction)
5. Air cleaner clogged

Engine idles roughly, stalls, or runs poorly

1. Idle speed incorrect
2. Ignition malfunction
3. Rich mixture
4. Lean mixture
5. Air cleaner dirty
6. Insulator leaks

Lean mixture

1. Carburetor fuel jet clogged
2. Fuel cap vent blocked
3. Fuel filter clogged
4. Fuel line kinked or restricted
5. Float valve faulty
6. Float level too low

Rich mixture

1. Carburetor choke stuck closed
2. Float valve faulty
3. Float level too high
4. Carburetor air jet clogged
5. Air cleaner dirty



FUEL TANK

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

WARNING

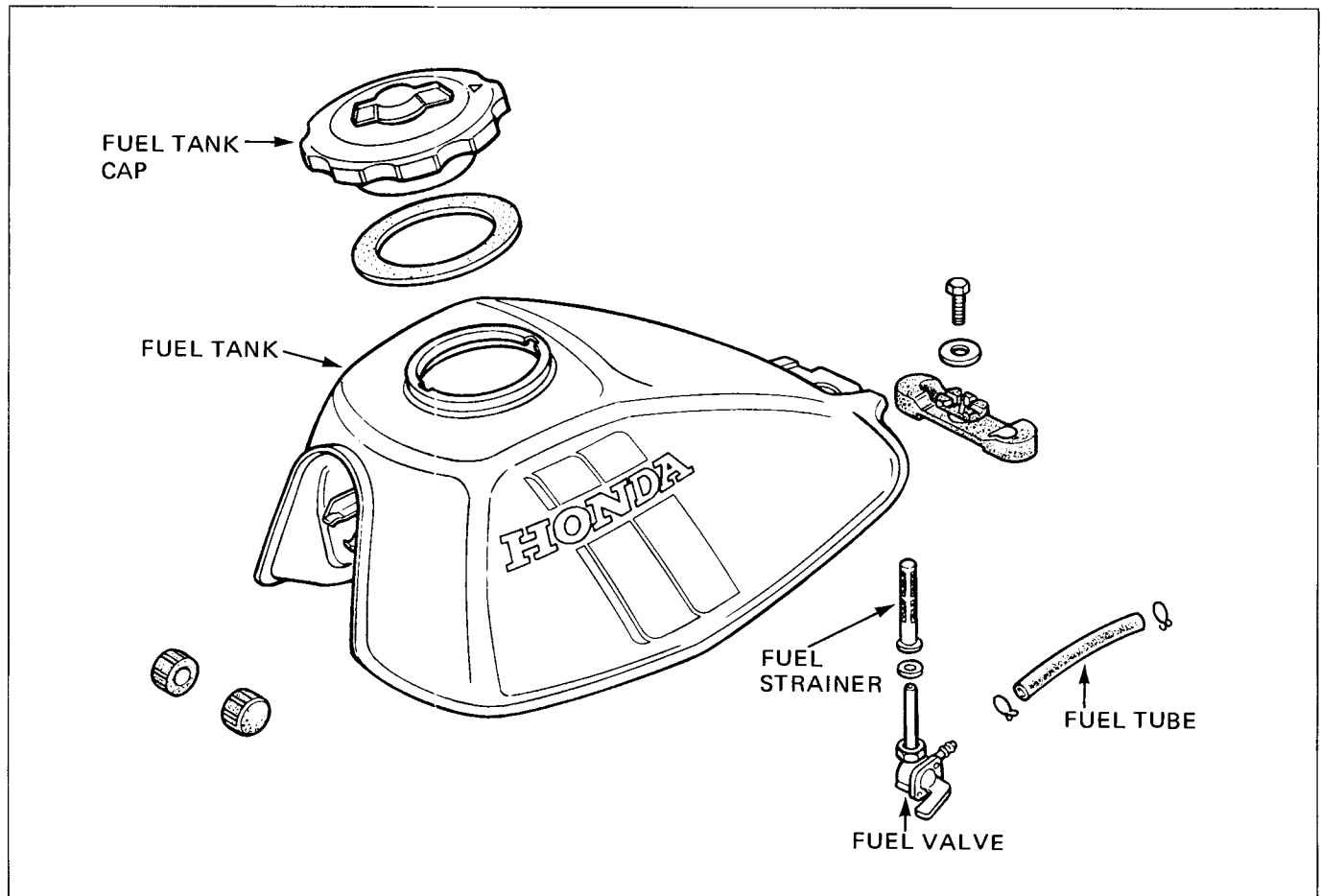
*Keep gasoline away from flames or sparks.
Wipe up spilled gasoline at once.*

Use a drain pan and check that fuel flows freely out of the fuel valve. If flow is restricted, clean the fuel strainer (Page 3-6).
Install the fuel tank and connect the fuel tube.
Install the seat.



NOTE:

- Be sure the front fuel tank brackets are on the rubber cushions.
- After assembly, make sure there are no fuel leaks.
- Do not overtighten the fuel valve lock nut.

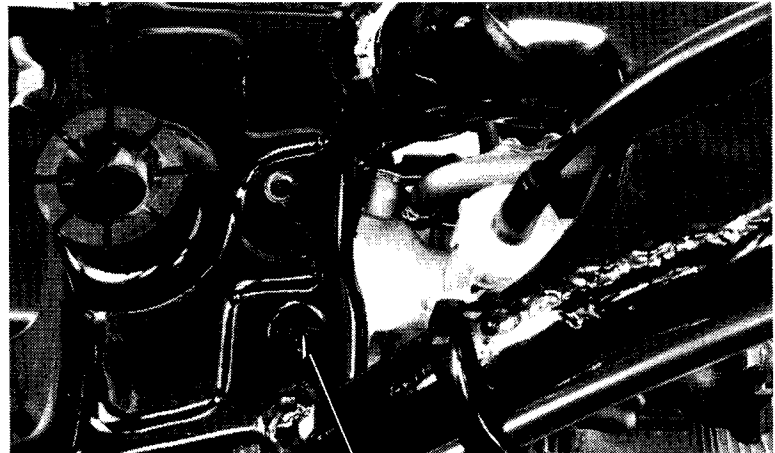




FUEL SYSTEM

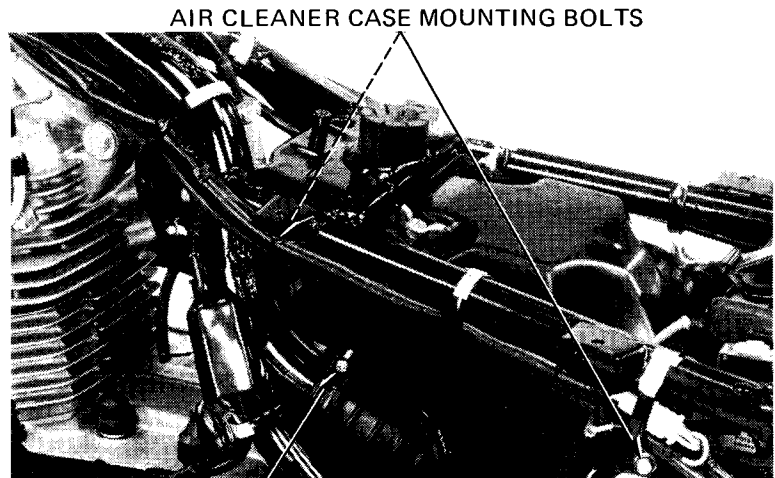
AIR CLEANER CASE

Remove the seat, fuel tank and rear fenders (Page 14-2).
Loosen the air cleaner-to-carburetor connecting tube band.



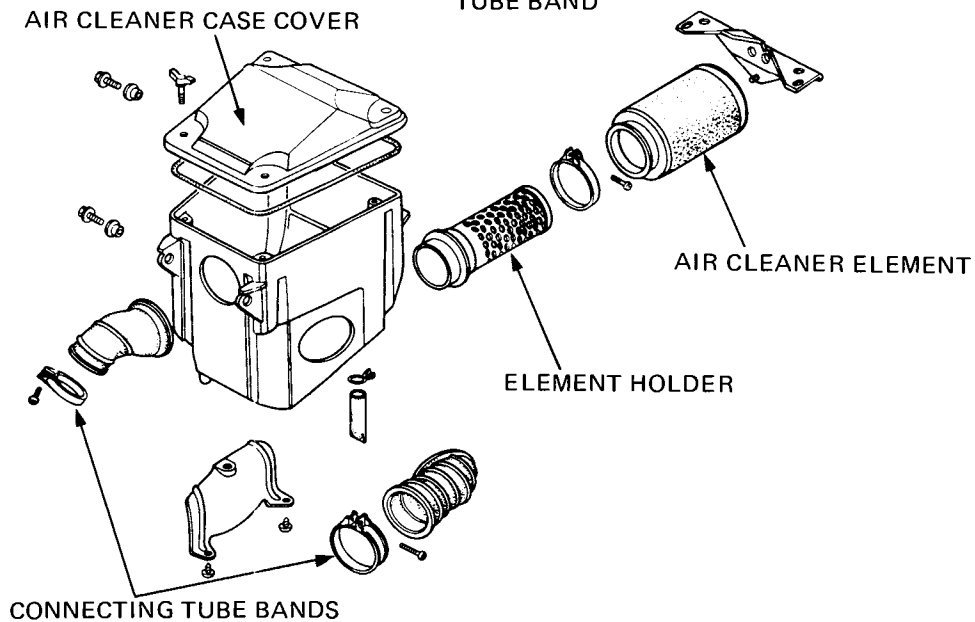
**AIR CLEANER-TO-CARBURETOR
CONNECTING TUBE BAND**

Loosen the air cleaner-to-frame connecting tube band.
Remove the four air cleaner case mounting bolts and the air cleaner case.



AIR CLEANER CASE MOUNTING BOLTS

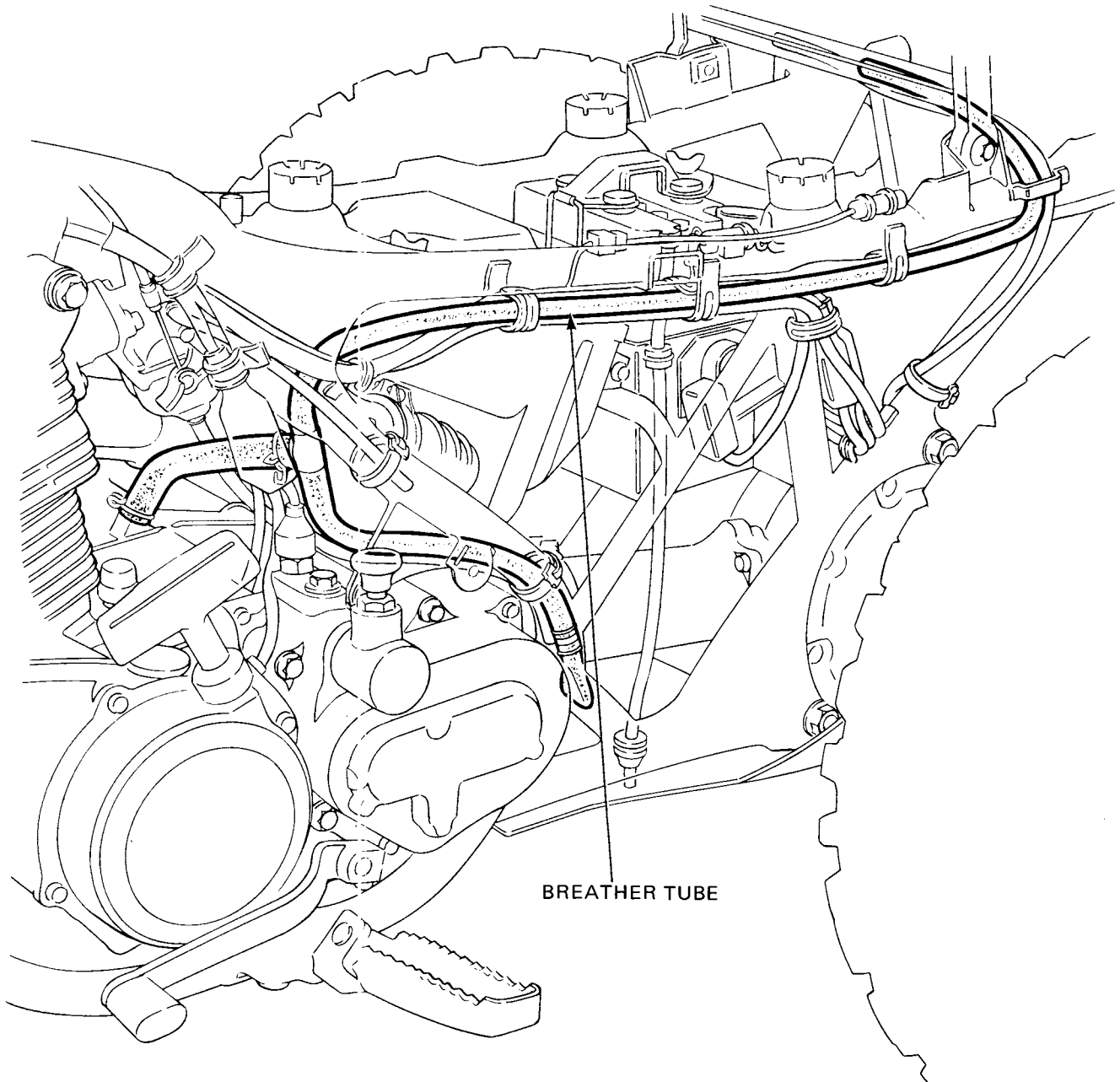
**AIR CLEANER-TO-FRAME CONNECTING
TUBE BAND**





CRANKCASE BREATHER

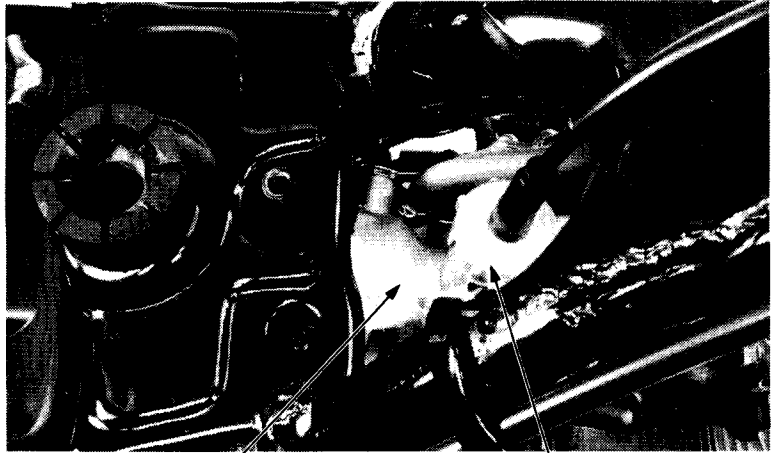
Route the crankcase breather tube as shown.





THROTTLE VALVE DISASSEMBLY

Remove the seat and fuel tank.
Unscrew and remove the carburetor top from the carburetor.



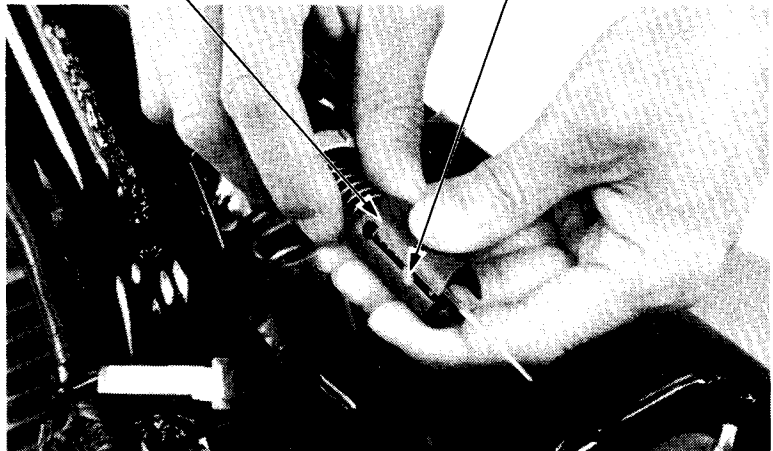
CARBURETOR

CARBURETOR TOP

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

THROTTLE VALVE

THROTTLE CABLE



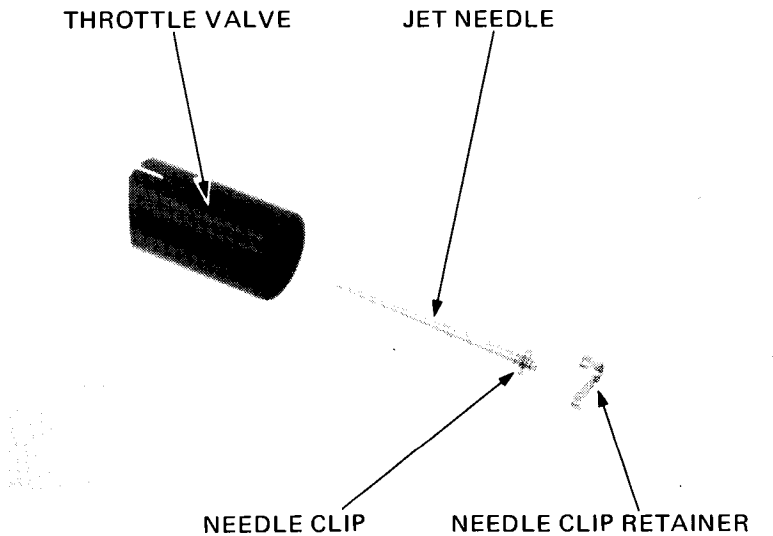
Remove the needle clip retainer, jet needle and needle clip. Inspect the throttle valve and jet needle surfaces for dirt, scratches or wear.

THROTTLE VALVE

JET NEEDLE

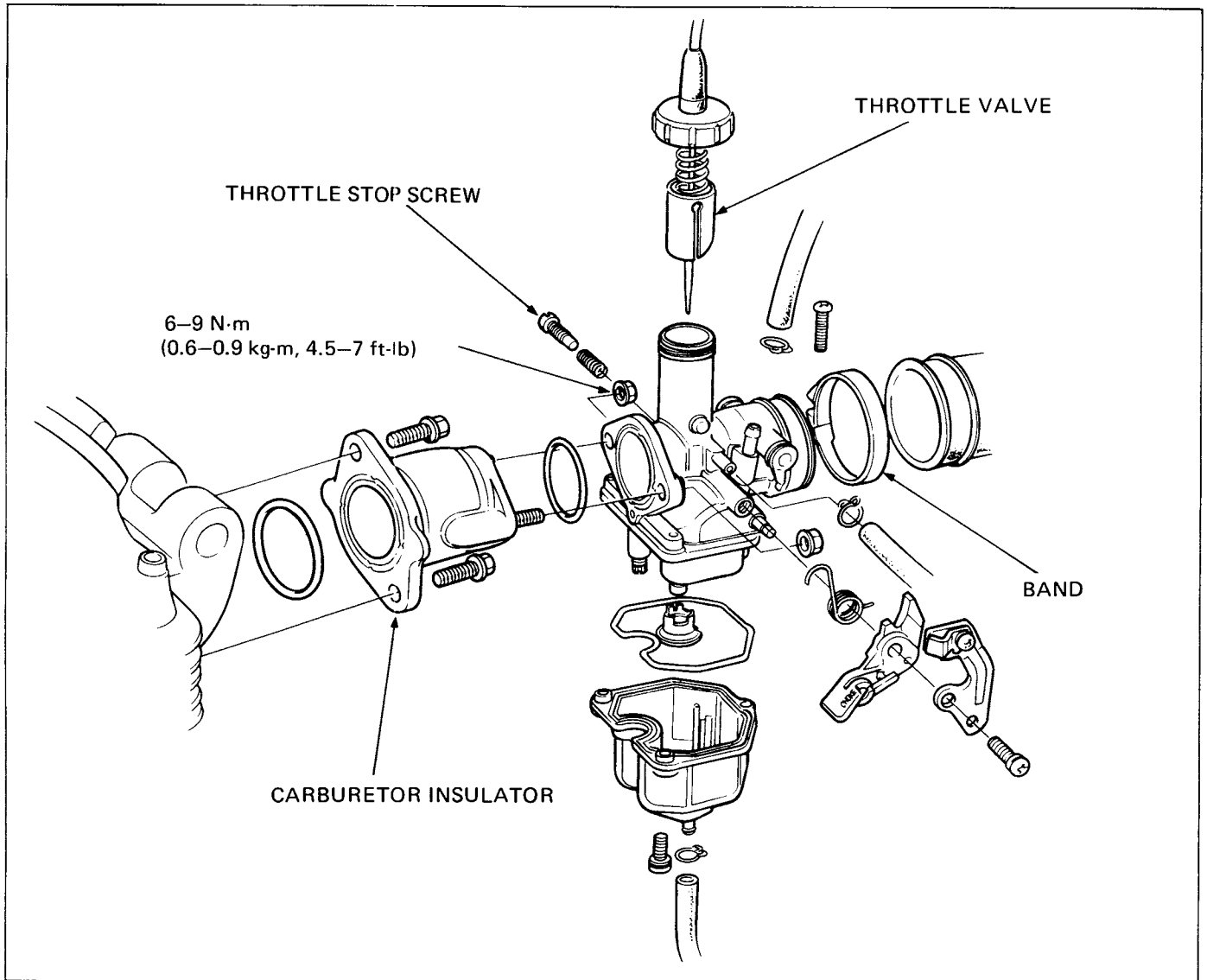
NEEDLE CLIP

NEEDLE CLIP RETAINER





CARBURETOR REMOVAL



CARBURETOR TOP

Remove the seat.

Turn the fuel valve OFF and disconnect the fuel line.

Remove the fuel tank.

Loosen the carburetor drain screw and drain the gasoline.

Unscrew the carburetor top and pull the throttle valve out.

Loosen the screw securing the carburetor band with a screwdriver through the hole in the frame.



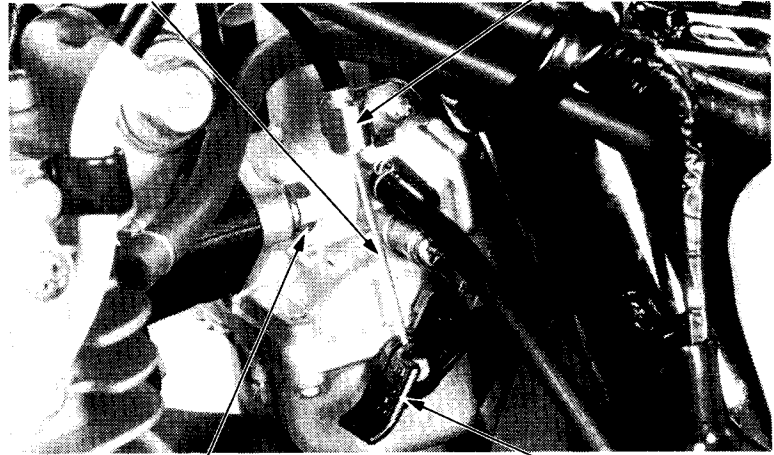


FUEL SYSTEM

Loosen the choke cable clamp screw and disconnect the choke cable from the carburetor.
Remove the two carburetor mounting nuts and the carburetor.

CHOKE CABLE

CHOKE CABLE CLAMP



CARBURETOR MOUNTING NUT

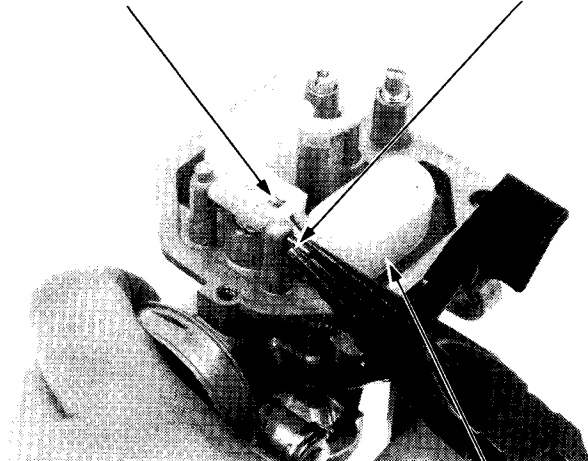
CHOKE LEVER

FLOAT, FLOAT VALVE AND JETS

Remove the float chamber body.
Remove the float arm pin with pliers.
Remove the float and float valve.

FLOAT VALVE

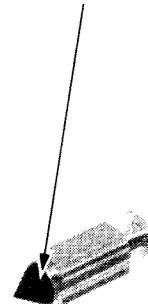
FLOAT ARM PIN



FLOAT

Inspect the float valve and seat for wear or damage.
Replace them as a set if wear or damage can be seen.

WEAR OR DAMAGE





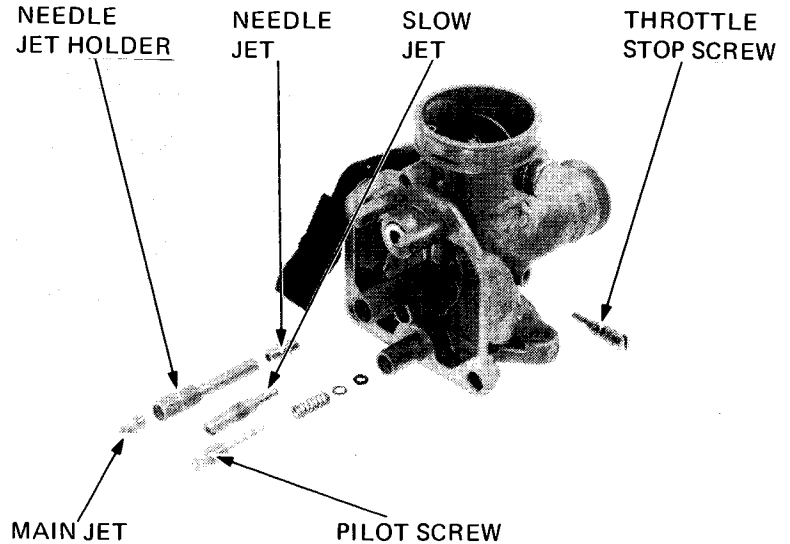
Remove the main jet, needle jet holder and needle jet.
Then remove the slow jet.

Before removing the pilot screw, record the number of turns in before the screw seats lightly. The pilot screw can then be returned to its original position, during reassembly without performing pilot screw adjustment.
Remove the pilot 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.

Replace any parts that show wear or damage.

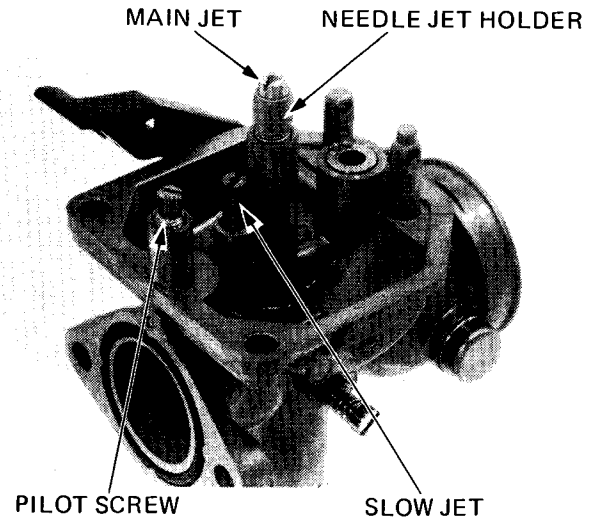


CARBURETOR ASSEMBLY

Carburetor assembly is essentially the reverse order of disassembly.

NOTE:

- Use new O-rings whenever the carburetor is reassembled.
- Handle all jets and needles with care. They can easily be scored or scratched.
- Set the pilot screw to the position recorded during disassembly.



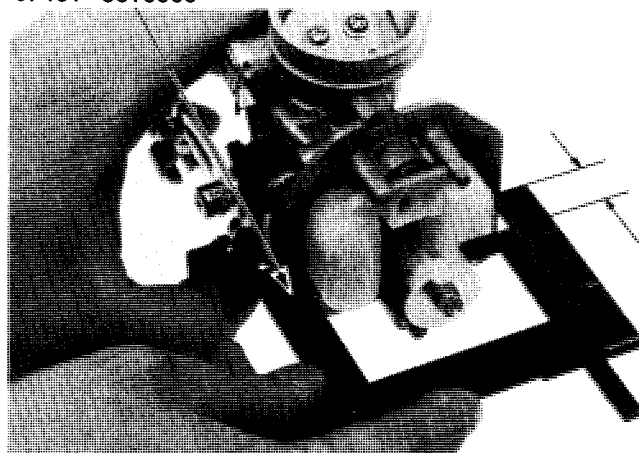
FLOAT LEVEL ADJUSTMENT

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

FLOAT LEVEL: 14 mm (0.55 in)

To adjust the float level, bend the float arm carefully until the float tip just contacts the float valve.

FLOAT LEVEL GAUGE
07401-0010000





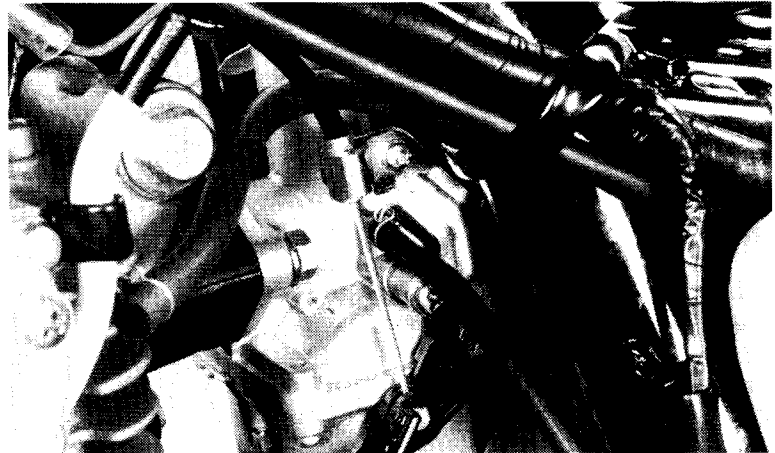
FUEL SYSTEM

CARBURETOR INSTALLATION

Carburetor installation is essentially the reverse of removal.

NOTE:

- After installing the carburetor, perform the following adjustments:
Throttle lever free play (Page 3-7).
Carburetor pilot screw adjustment (Page 4-11) if the carburetor was overhauled.



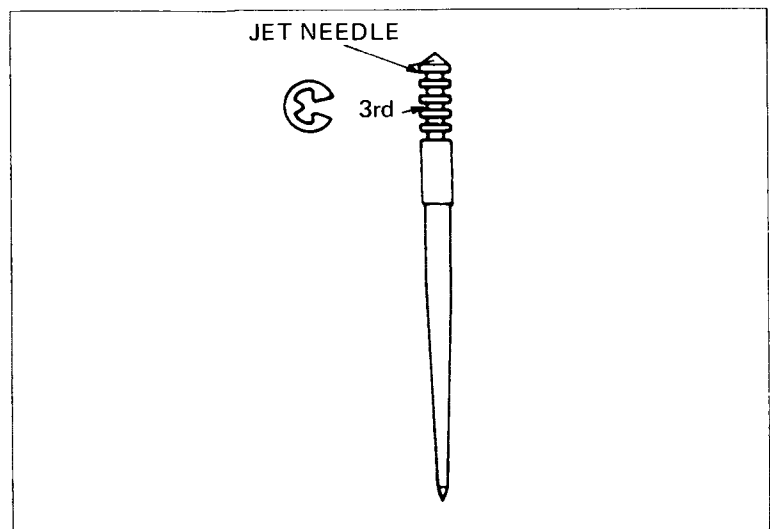
THROTTLE VALVE ASSEMBLY

Install the needle clip on the jet needle.

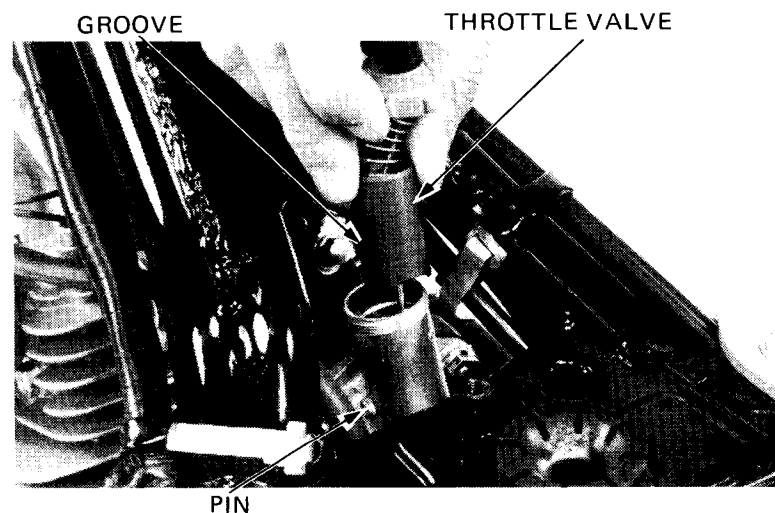
STANDARD SETTING: 3rd groove

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

Install the throttle cable and spring into the throttle valve.



Install the throttle valve into the carburetor body aligning the groove on the valve with the pin in the carburetor.





PILOT SCREW ADJUSTMENT

NOTE:

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

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 1-7/8.

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.

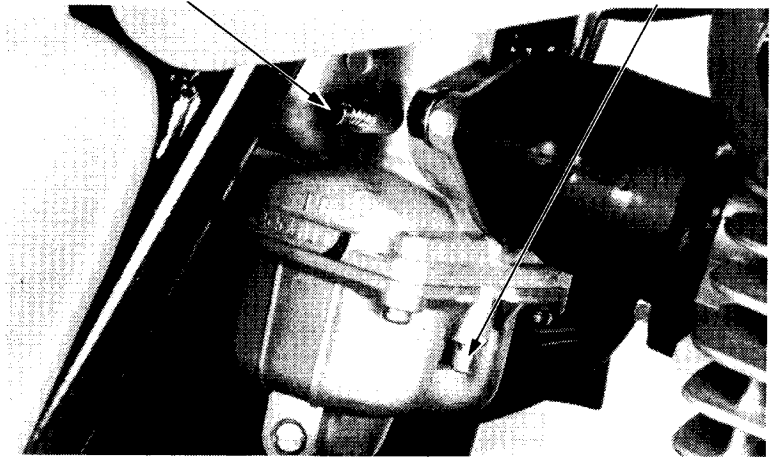
Start the engine and adjust the idle speed with the throttle stop screw.

IDLE SPEED: 1,400 ± 100 rpm

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

THROTTLE STOP SCREW

PILOT SCREW



SPECIFICATIONS

	Below 6,000 ft (1,800 m)	Above 5,000 ft (1,500 m)
Main jet	#95	#90
Pilot screw opening	Factory preset	Factory preset
Jet needle	3rd groove	2nd groove

HIGH ALTITUDE ADJUSTMENT

The carburetor must be adjusted for high altitude riding (above 6,000 ft/1,800 m).

STANDARD SETTING:

6,000 ft (1,800 m) max.

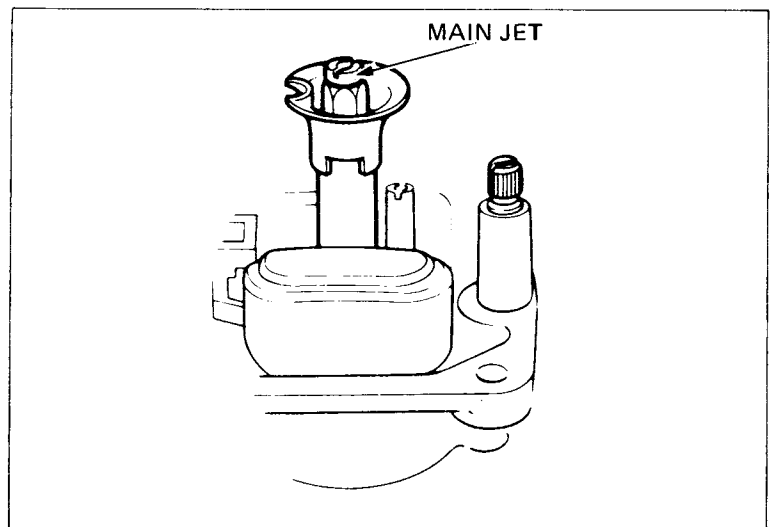
HIGH ALTITUDE SETTING:

5,000 ft (1,500 m) min.

High altitude carburetor adjustment is performed as follows:

Remove and disassemble the carburetor (Page 4-7 and 4-8).

Replace the standard main jet with the high altitude type (#90).





FUEL SYSTEM

Remove the throttle valve and remove the jet needle (Page 4-6).

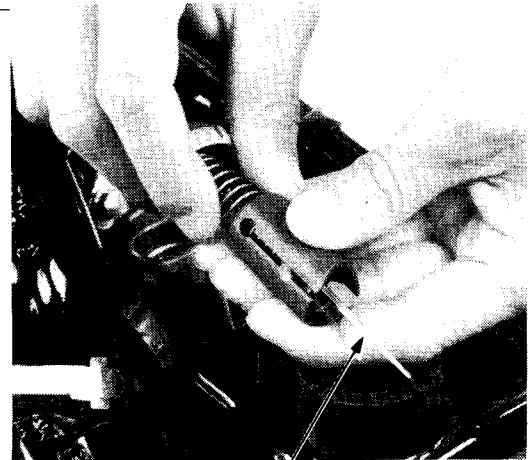
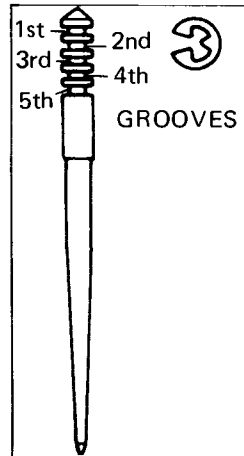
Change the jet needle clip position from the 3rd groove (standard) to the 2nd groove.

Install the jet needle and install the throttle valve.

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 engine damage. Install the #95 main jet and return the jet needle clip position to the 3rd groove, when riding below 5,000 feet (1,500 m).



JET NEEDLE

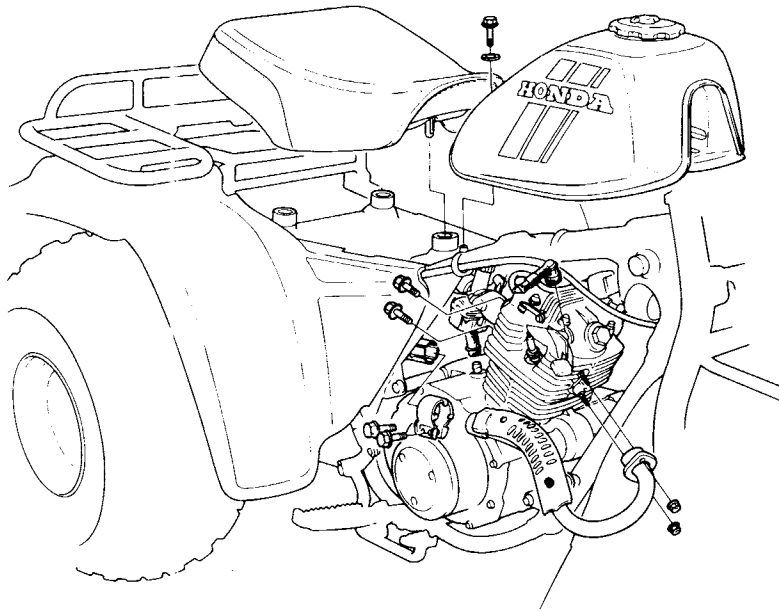


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ENGINE REMOVAL/INSTALLATION



20-25 N·m (2.0-2.5 kg-m,
14-18 ft-lb)

23-27 N·m (2.3-2.7 kg-m,
17-20 ft-lb)

40-48 N·m (4.0-4.8 kg-m,
29-35 ft-lb)

~~60-80~~ ~~45-53~~ ~~33-38~~
60-80 60-80
45-53 N·m (4.5-5.3 kg-m,
33-38 ft-lb)
43-58

40-48 N·m (4.0-4.8 kg-m,
29-35 ft-lb)



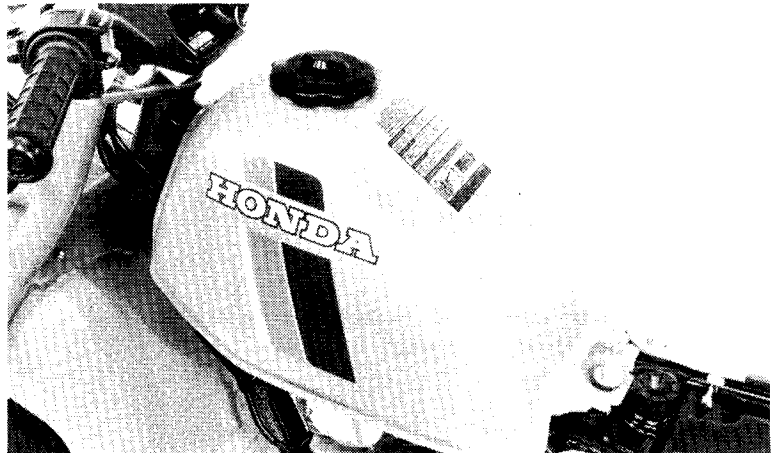
ENGINE REMOVAL/INSTALLATION

ENGINE REMOVAL

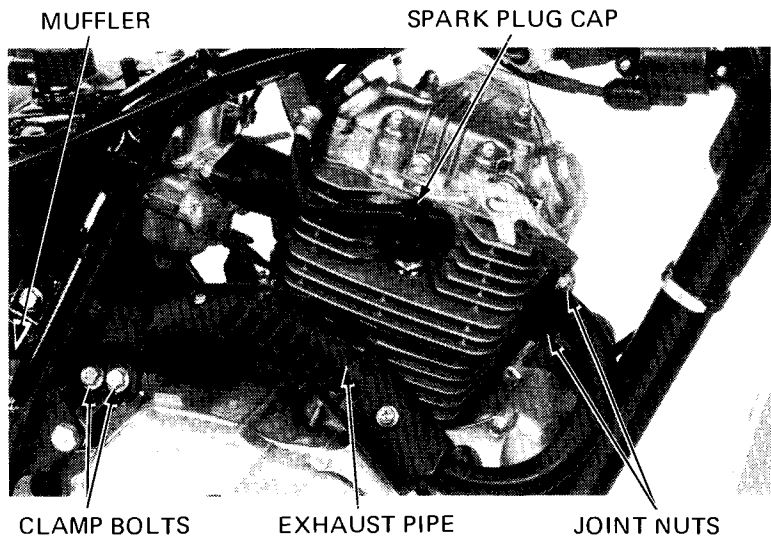
Drain the oil from the engine.
Remove the seat.
Turn the fuel valve OFF, disconnect the fuel tube and remove the fuel tank (Page 4-3).

Shift the transmission to neutral.

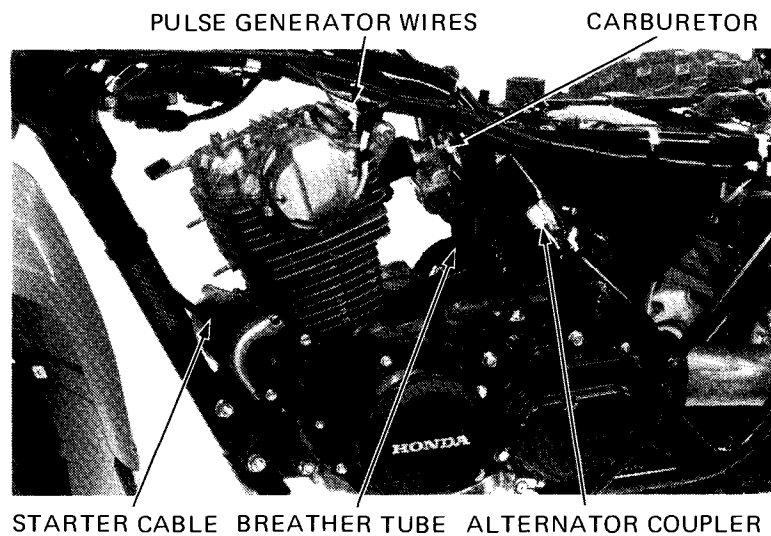
Disconnect the battery negative cable at the battery.
Remove the rear carrier and rear fender. (Pages 14-1 and 14-2).



Disconnect the spark plug cap.
Remove the exhaust pipe and muffler (Page 14-3).



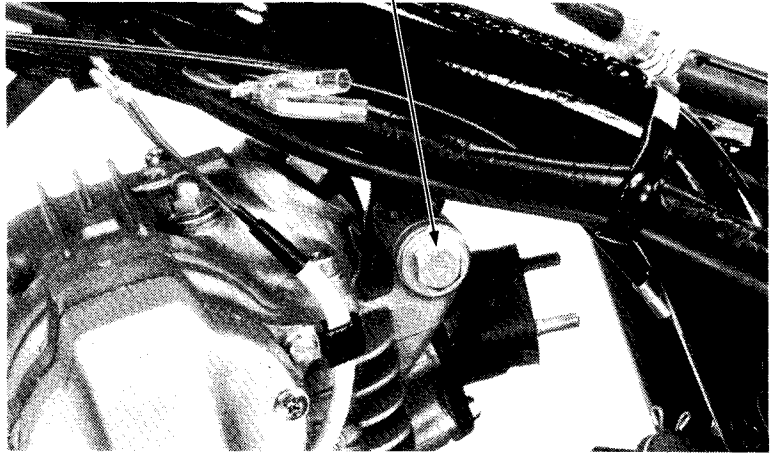
Disconnect the crankcase breather tube from the crankcase.
Disconnect the alternator coupler, pulse generator wires and starter cable.
Remove the carburetor (Page 4-7).





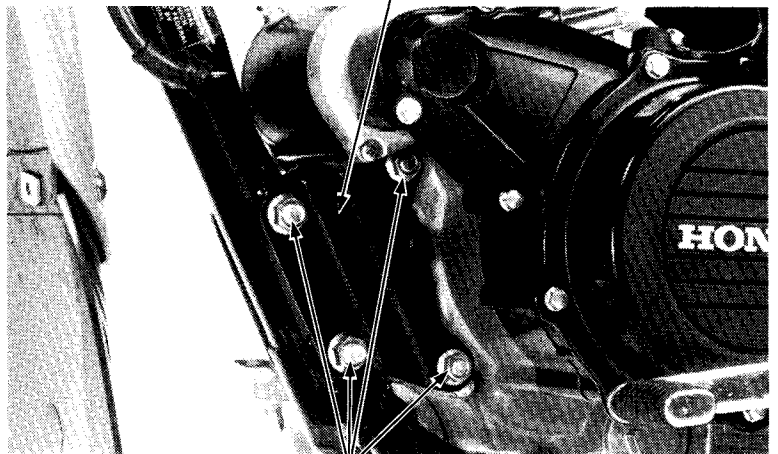
Remove the upper engine hanger bolt.

UPPER ENGINE HANGER BOLT



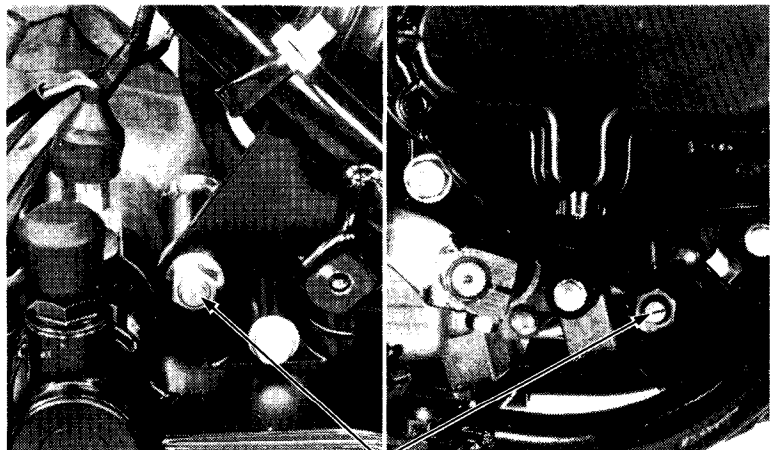
Remove the front engine hanger bolts and plates.

FRONT ENGINE HANGER PLATE



FRONT ENGINE HANGER BOLTS

Remove the rear engine hanger bolts.

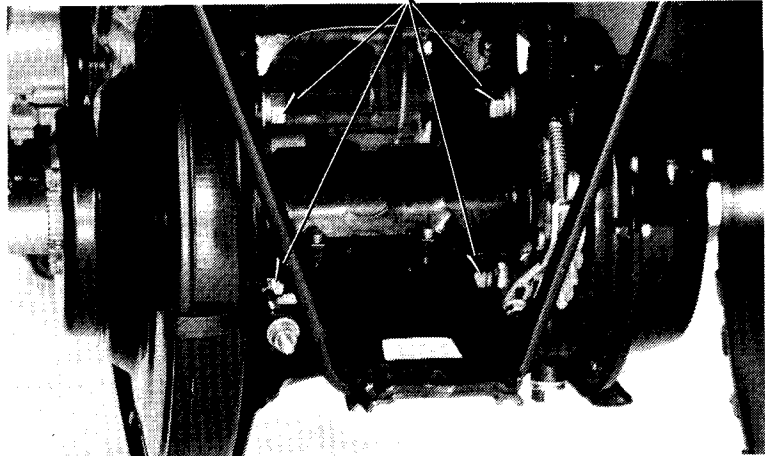


REAR ENGINE HANGER BOLTS



REAR WHEEL BEARING HOLDER

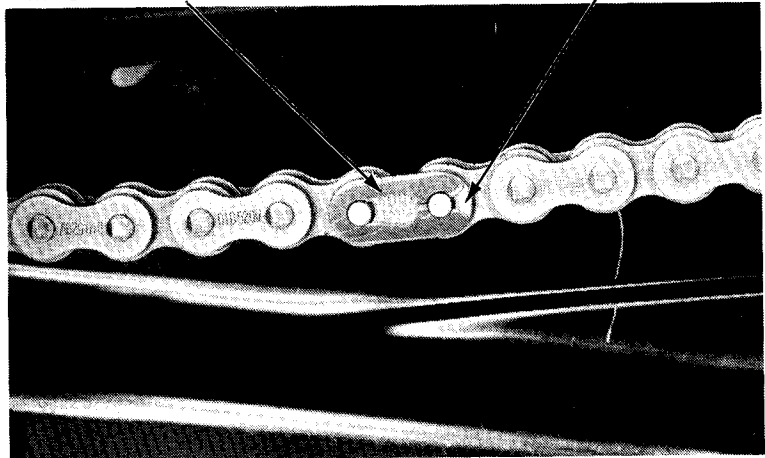
Loosen the rear wheel bearing holder attaching bolt and drive chain adjusting nuts.



Remove the chain master link and drive chain.

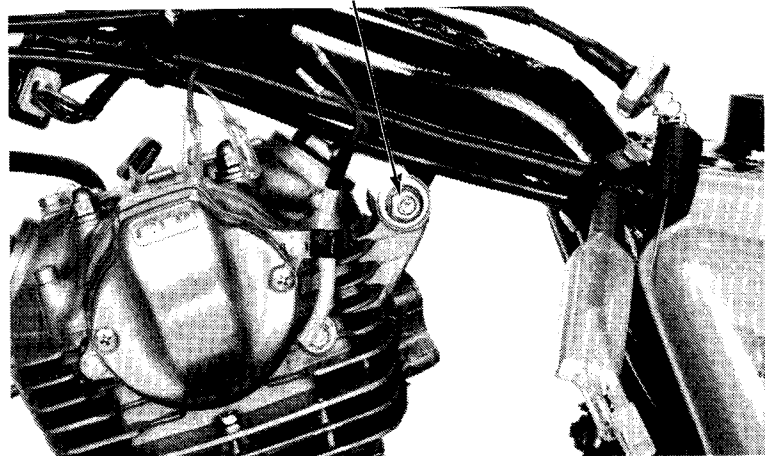
MASTER LINK

DRIVE CHAIN



Remove the upper engine hanger bolt.

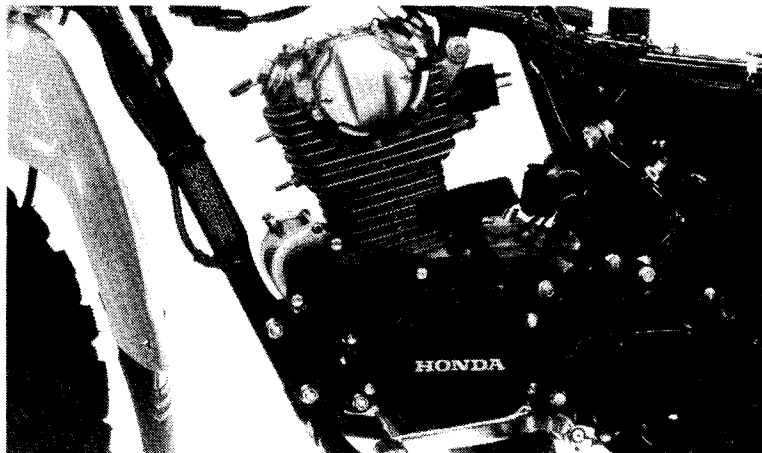
UPPER ENGINE HANGER BOLT





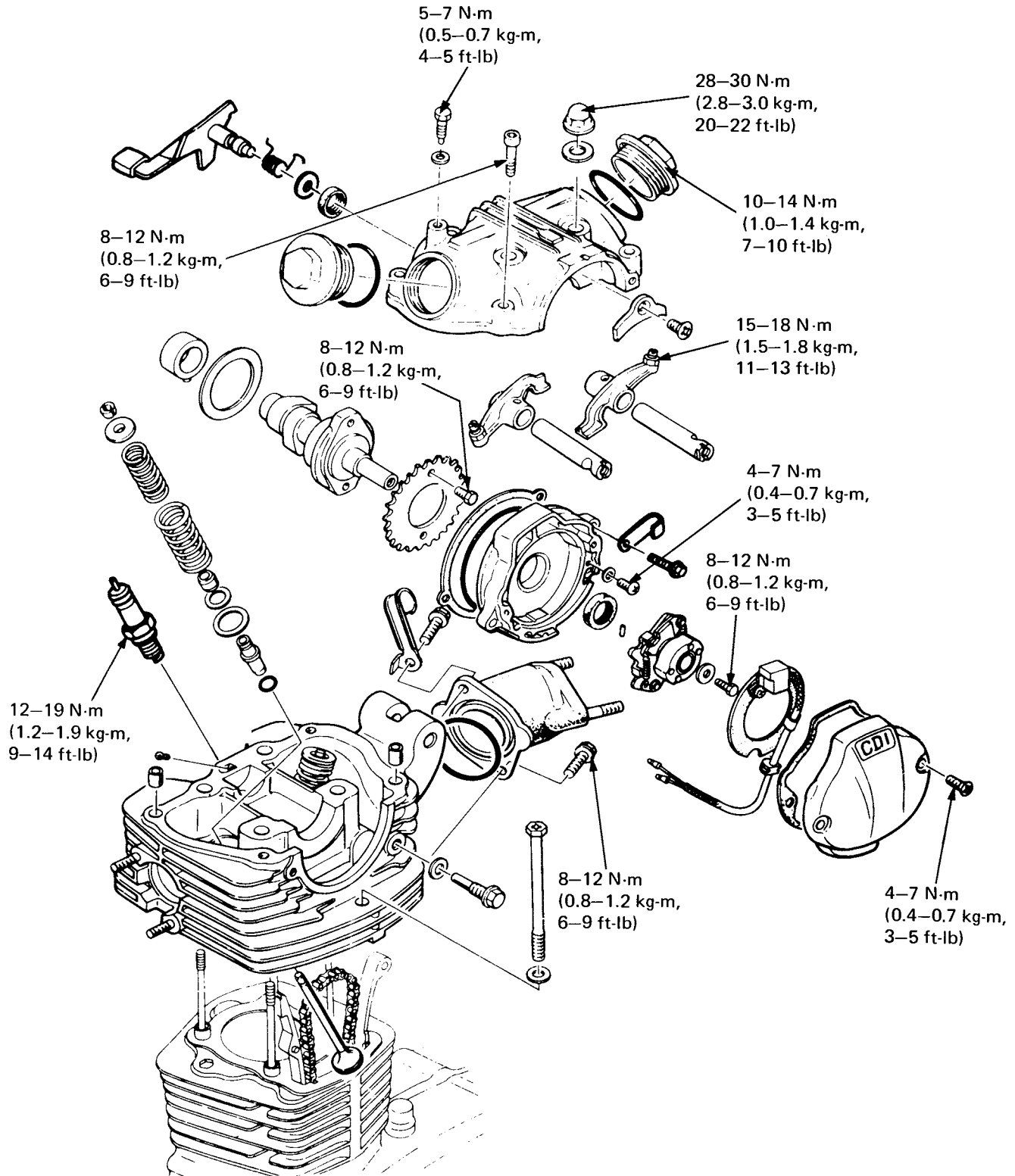
NOTE:

- Route the wires and cables properly (Pages 1-9 and 1-10).
- After installing the engine, perform the following inspections and adjustments:
 - Engine oil level (Page 2-2)
 - Throttle lever free play (Page 3-7)
 - Check that exhaust gas is not leaking past the exhaust pipe connection.
 - Check the performance of the electrical equipments.





CYLINDER HEAD/VALVES





6. CYLINDER HEAD/VALVES

SERVICE INFORMATION	6-1	CYLINDER HEAD DISASSEMBLY	6-8
TROUBLESHOOTING	6-2	VALVE SEAT INSPECTION/REFACING	6-11
CAMSHAFT REMOVAL	6-3	CYLINDER HEAD ASSEMBLY	6-13
CYLINDER HEAD COVER REMOVAL	6-5	CYLINDER HEAD INSTALLATION	6-14
CYLINDER HEAD REMOVAL	6-7	CAMSHAFT INSTALLATION	6-17

SERVICE INFORMATION

GENERAL

- This Section covers cylinder head, valves, camshaft and rocker arm maintenance.
- The engine must be removed from the frame to service the cylinder head and valves. To remove the cylinder head cover or the rocker arms, 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 camshaft lobes.

6

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			11.0 ± 1.0 kg/cm ² (159 ± 14 psi)	—————
Camshaft	Cam height	IN	31.379 mm (1.2354 in)	31.199 mm (1.2283 in)
		EX	30.978 mm (1.2196 in)	30.798 mm (1.2125 in)
	Journal O.D.	R	19.967–19.980 mm (0.7861–0.7866 in)	19.90 mm (0.783 in)
		L	33.957–33.970 mm (1.3370–1.3376 in)	33.90 mm (1.335 in)
Cylinder head	Bearing I.D.	L	33.980–34.075 mm (1.3378–1.3415 in)	34.05 mm (1.341 in)
	Warpage		—————	0.10 mm (0.004 in)
Camshaft bushing		I.D.	20.005–20.026 mm (0.7876–0.7884 in)	20.05 mm (0.789 in)
Rocker arm		I.D.	12.000–12.018 mm (0.4724–0.4730 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-to-shaft clearance			0.005–0.041 mm (0.0002–0.0016 in)	0.08 mm (0.003 in)
Valve spring	Free length	Inner	39.4 mm (1.55 in)	35.5 mm (1.40 in)
		Outer	45.5 mm (1.79 in)	41.0 mm (1.61 in)
	Preload	Inner	83.0 ± 0.6 kg/33.7 mm (18.3 ± 1.3 lb/1.33 in)	—————
		Outer	21.0 ± 1.5 kg/38.4 mm (46.3 ± 3.3 lb/1.51 in)	—————
Valve, valve guide	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 (0.213 in)
	Guide I.D.	IN	5.475–5.485 mm (0.2156–0.2159 in)	5.50 mm (0.217 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)	0.12 mm (0.005 in)
		EX	0.030–0.055 mm (0.0012–0.002 in)	0.14 mm (0.006 in)
Valve face width			1.7 mm (0.07 in)	2.0 mm (0.08 in)
Valve seat width			1.2 mm (0.05 in)	1.5 mm (0.06 in)

**CYLINDER HEAD/VALVES****TORQUE VALUES**

Cylinder head cover socket bolt	8–12 N·m (0.8–1.2 kg·m, 6–9 ft·lb)
Cylinder head cap nut	28–30 N·m (2.8–3.0 kg·m, 20–22 ft·lb)
Cam sprocket	8–12 N·m (0.8–1.2 kg·m, 6–9 ft·lb)
Decompressor pivot bolt	5–7 N·m (0.5–0.7 kg·m, 4–5 ft·lb)
Valve adjuster cover	10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)
Spark plug	12–19 N·m (1.2–1.9 kg·m, 9–14 ft·lb)
Pulse cover screw	4–7 N·m (0.4–0.7 kg·m, 3–5 ft·lb)
Pulse generator screw	4–7 N·m (0.4–0.7 kg·m, 3–5 ft·lb)
Valve adjuster lock nut	15–18 N·m (1.5–1.8 kg·m, 11–13 ft·lb)

TOOLS**Special**

Valve guide reamer, 5.5 mm 07984–0980000

Common

Valve guide remover, 5.5 mm 07742–0010100 or 07942–3290100
 Valve spring compressor 07757–0010000 or 07957–3290001

Valve seat cutter, 29 mm (EX 90°) 07780–0010300
 Valve seat cutter, 35 mm (IN 90°) 07780–0010400
 Valve seat cutter, 28 mm (EX 116°) 07780–0012100
 Valve seat cutter, 33 mm (IN 116°) 07780–0012900
 Valve seat cutter, 30 mm (IN, EX 60°) 07780–0014000
 Valve seat cutter holder 07781–0010101

NOTE: Valve seat cutters are 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

- Valves:
 - Incorrect valve adjustment
 - Burned or bent valve
 - Incorrect valve timing
 - Weak valve spring
- Cylinder head:
 - Leaking or damaged head gasket
 - Warped or cracked cylinder head
- Cylinder and piston (Section 7)
- Faulty decompressor lever

High compression

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

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

Poor idling

- Compression too low
- Faulty decompressor lever

Hard starting

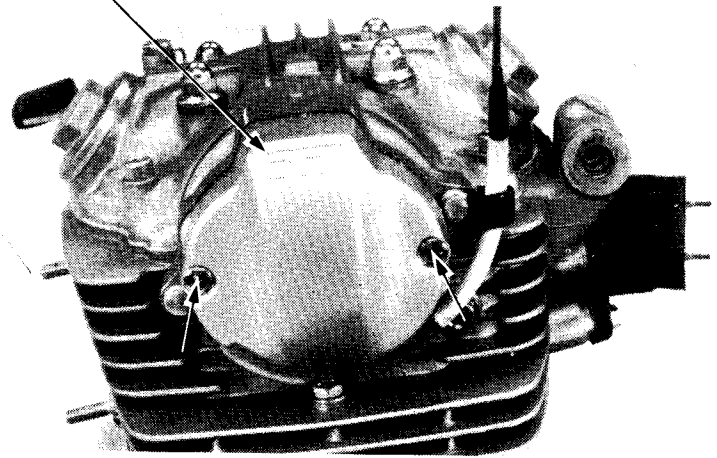
- Faulty decompressor lever



CAMSHAFT REMOVAL

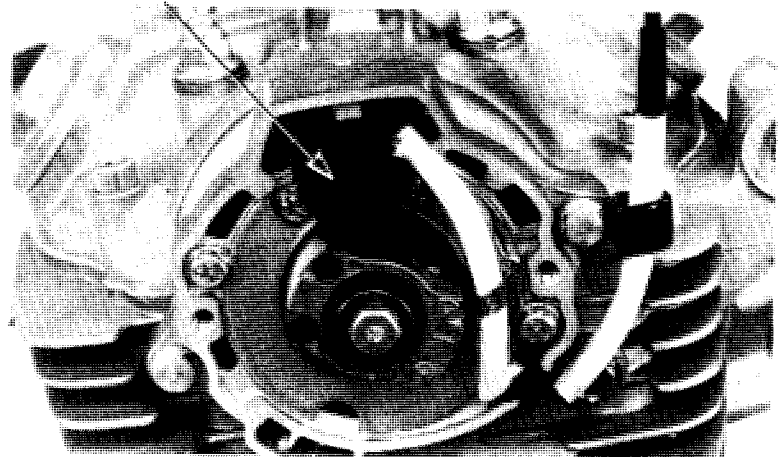
Remove the pulse cover.

PULSE COVER



Remove the pulse generator screws, and remove the pulse generator.
Remove the pulse rotor.

PULSE GENERATOR

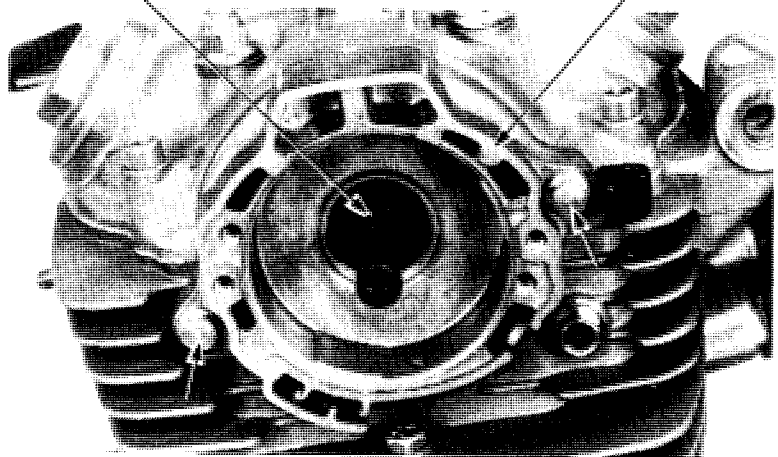


PULSE ROTOR

Remove the dowel pin.
Remove the pulse base.

DOWEL PIN

PULSE BASE

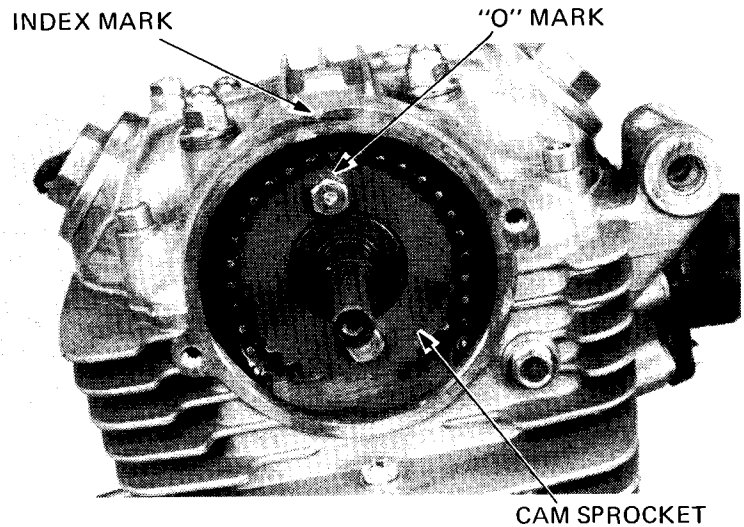




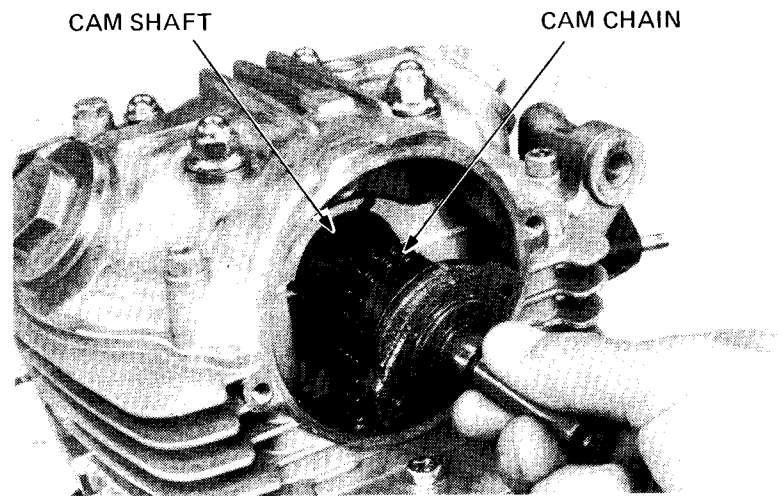
CYLINDER HEAD/VALVES

Remove the timing mark hole cap.
Turn the crankshaft with the recoil starter until the cam sprocket "O" mark and cylinder head index mark align.

Remove the cam sprocket bolts and cam sprocket.



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

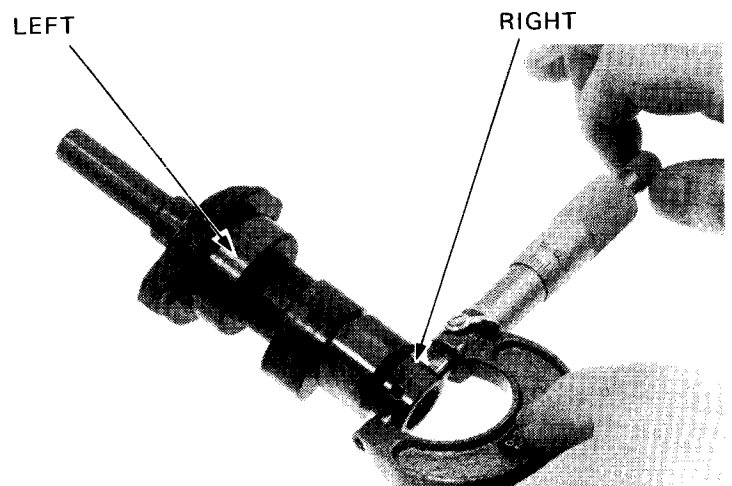


CAMSHAFT INSPECTION

Measure the camshaft O.D. of the bushing and bearing surfaces with a micrometer.

SERVICE LIMITS:

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



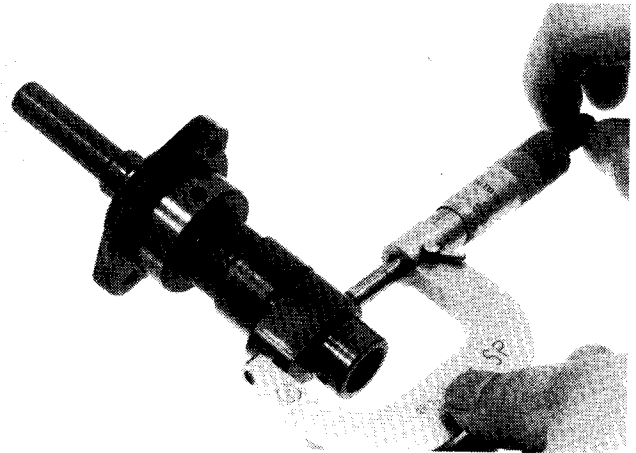


Using a micrometer, measure the height of each cam lobe and inspect it for wear or damage.

SERVICE LIMITS:

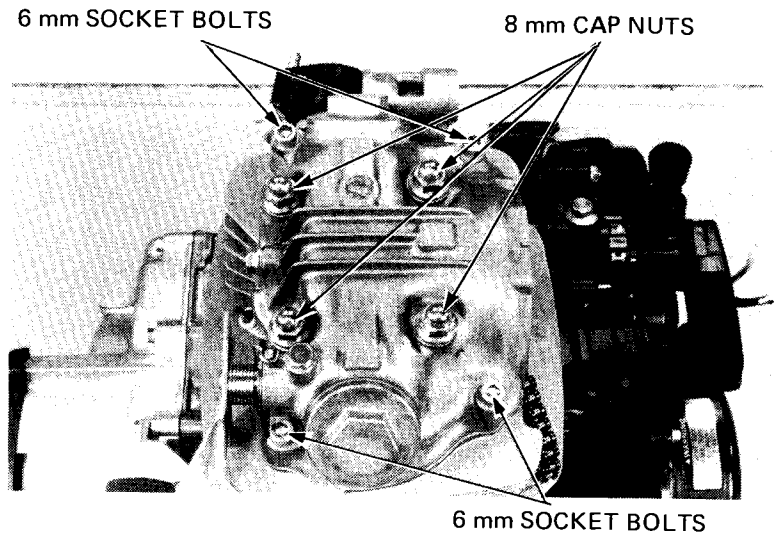
INTAKE: 31.199 mm (1.2283 in)

EXHAUST: 30.798 mm (1.2125 in)

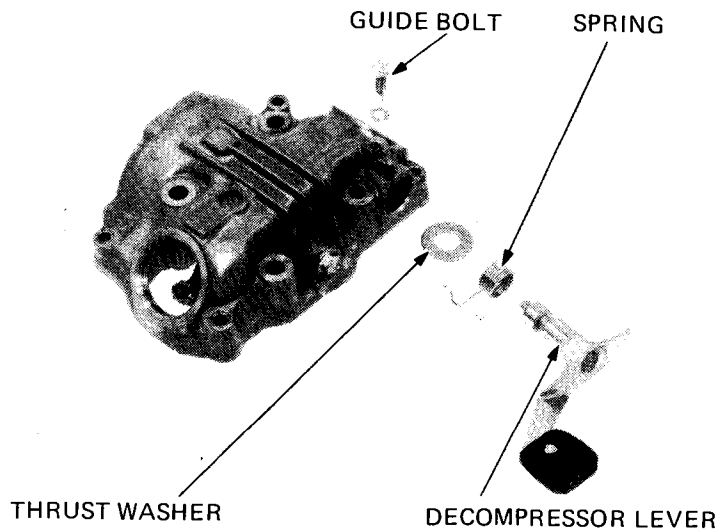


CYLINDER HEAD COVER REMOVAL

Remove the engine from the frame (Page 5-2). Remove the 6 mm socket bolts and 8 mm cap nuts. Remove the cylinder head cover and remove the camshaft bushing.



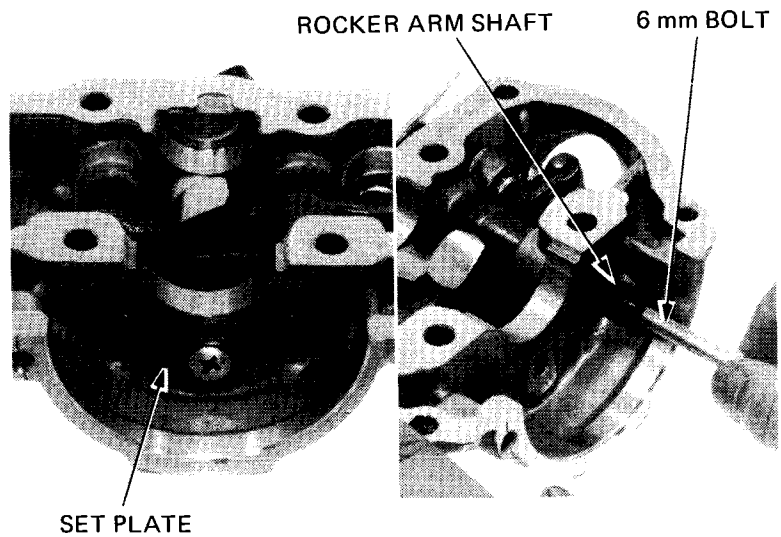
Remove the decompressor lever and spring by removing the decompressor lever guide bolt.





CYLINDER HEAD/VALVES

Remove the rocker arm shaft set plate.
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

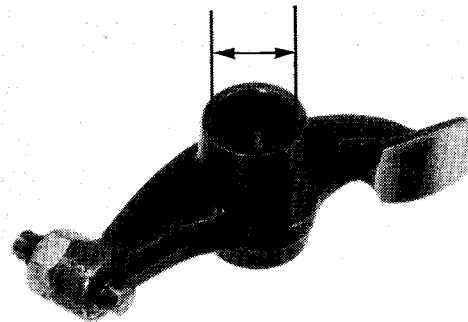
Inspect the rocker arms for damage, wear or clogged oil holes.

NOTE:

If any rocker arms require 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)

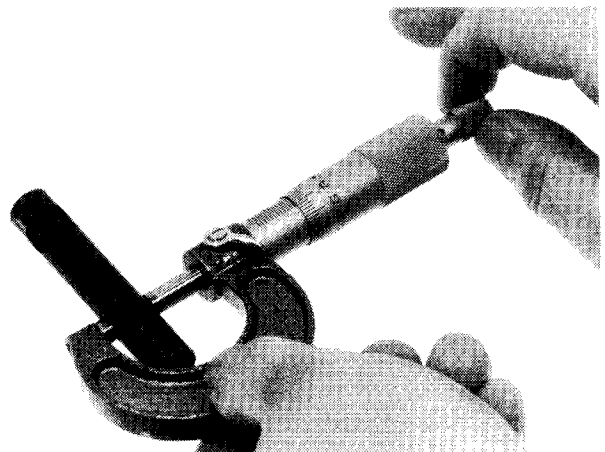


ROCKER ARM SHAFT INSPECTION

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

Calculate the rocker arm-to-shaft clearance.

SERVICE LIMIT: 11.93 mm (0.470 in)



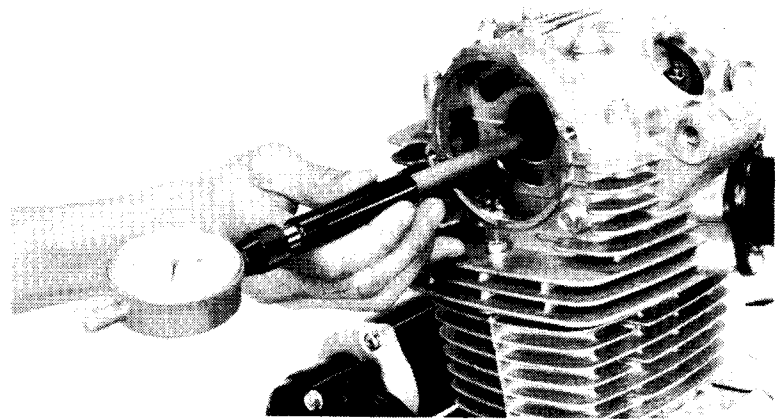


CAMSHAFT BEARING INSPECTION

Install the cylinder head cover with 8 mm nuts.
Measure the camshaft bearing I.D. and calculate the camshaft-to-bearing clearance.

SERVICE LIMIT: 34.05 mm (1.341 in)

Refer to page 6-4 for camshaft measurement.



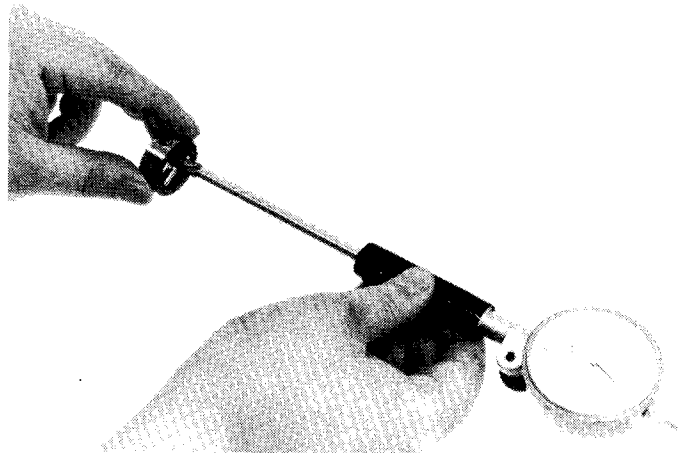
CAMSHAFT BUSHING INSPECTION

Measure the camshaft bushing I.D.

SERVICE LIMIT: 20.05 mm (0.789 in)

Calculate the camshaft bushing-to-camshaft clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)



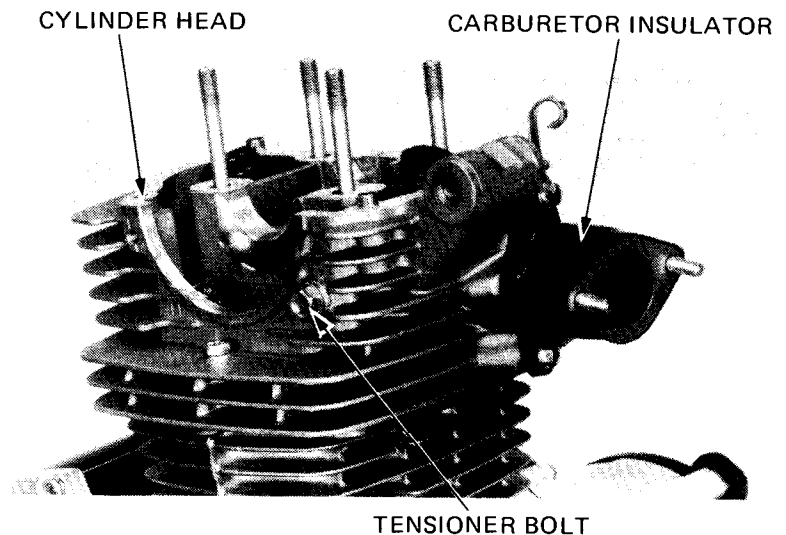
CYLINDER HEAD REMOVAL

Remove the cylinder head cover (Page 6-5) and carburetor insulator.

Remove the cam chain tensioner bolt, cylinder head base bolt and cylinder head.

NOTE:

To prevent the cam chain from dropping into the crankcase, the cam chain should be held by a piece of wire.



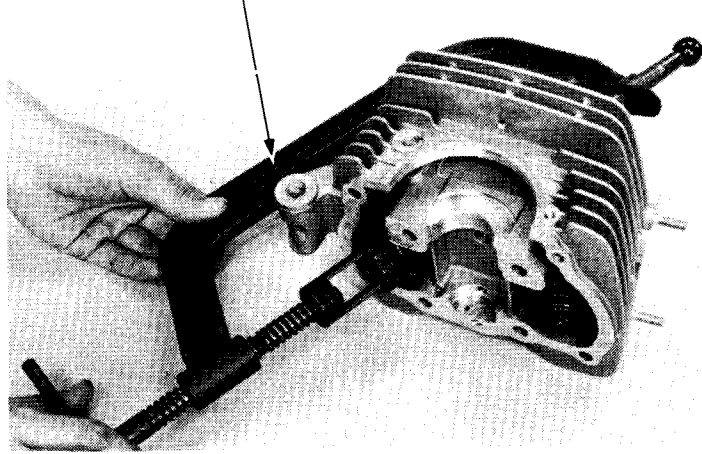


CYLINDER HEAD/VALVES

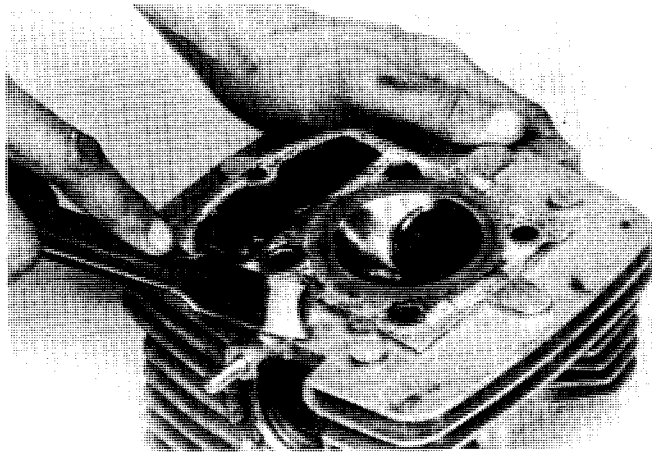
CYLINDER HEAD DISASSEMBLY

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

VALVE SPRING COMPRESSOR
07757-0010000 OR 07957-3290001



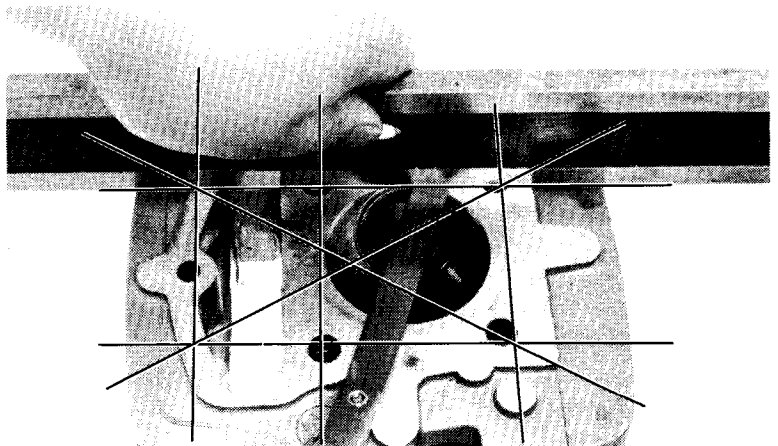
Remove carbon deposits from the combustion chamber.
Clean off any gasket material from the cylinder head surface.



CYLINDER HEAD INSPECTION

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)



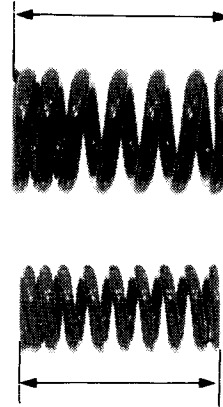


VALVE SPRING INSPECTION

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

SERVICE LIMITS:

INNER: 35.5 mm (1.40 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's O.D.

SERVICE LIMITS:

INTAKE: 5.42 mm (0.213 in)
EXHAUST: 5.40 mm (0.213 in)

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

Measure and record the valve guide I.D.

SERVICE LIMIT: 5.50 mm (0.217 in)

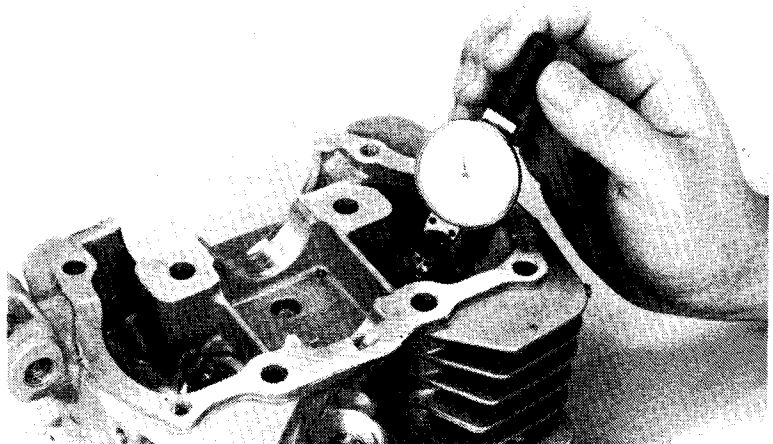
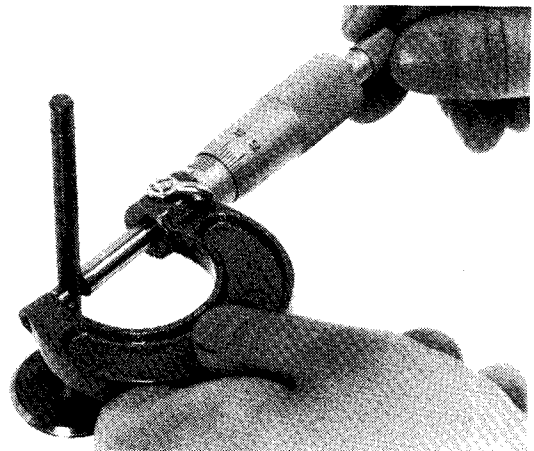
Calculate the stem-to-guide clearance.

SERVICE LIMITS:

INTAKE: 0.12 mm (0.005 in)
EXHAUST: 0.14 mm (0.006 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.





CYLINDER HEAD/VALVES

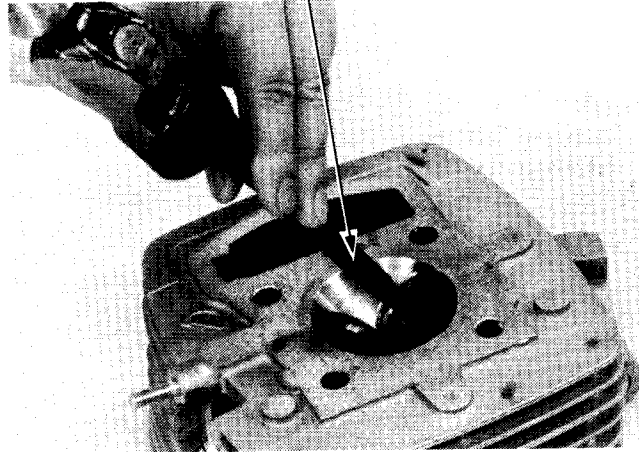
VALVE GUIDE REPLACEMENT

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

NOTE:

When driving out the guide, be careful not to damage the head.

VALVE GUIDE REMOVER
07742-0010100 OR 07942-3290100

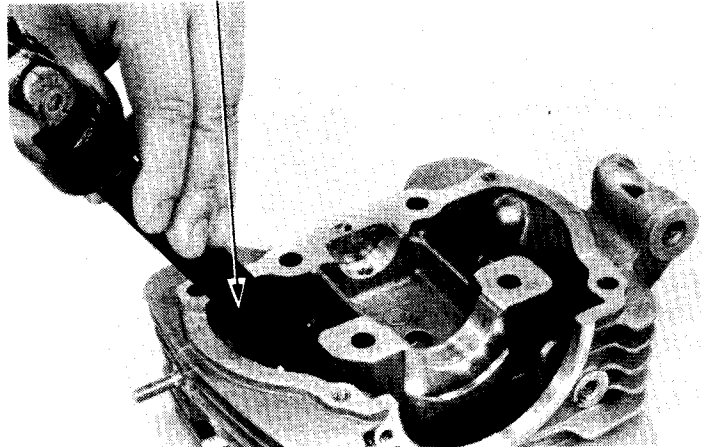


Install an O-ring on the new valve guide. Drive in the guide from the top of the head.

NOTE:

Inspect the valve guide for damage.

VALVE GUIDE REMOVER
07742-0010100 OR 07942-3290100



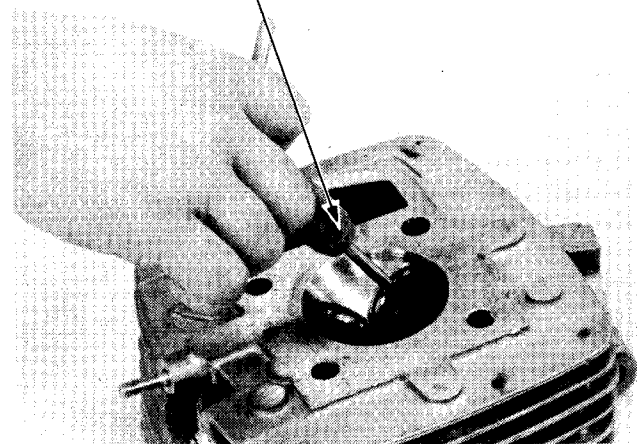
Ream the new valve guide after installation.

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 (Page 6-11).

VALVE GUIDE REAMER
07984-0980000





VALVE SEAT INSPECTION/ REFACING

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

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

Remove and inspect each valve.

Measure the width of the valve face.

SERVICE LIMIT: 2.0 mm (0.08 in)

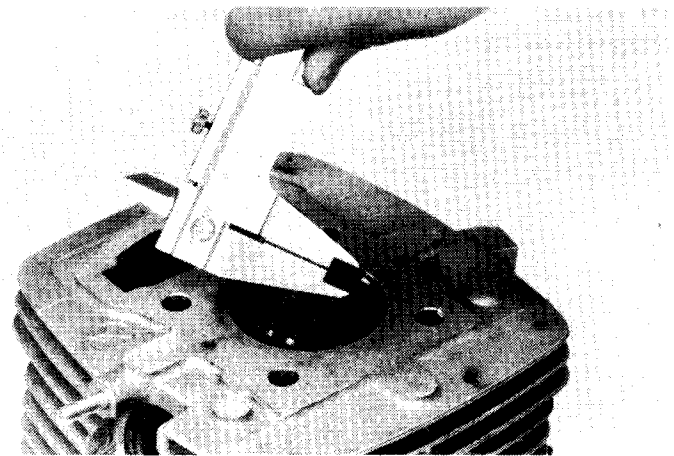
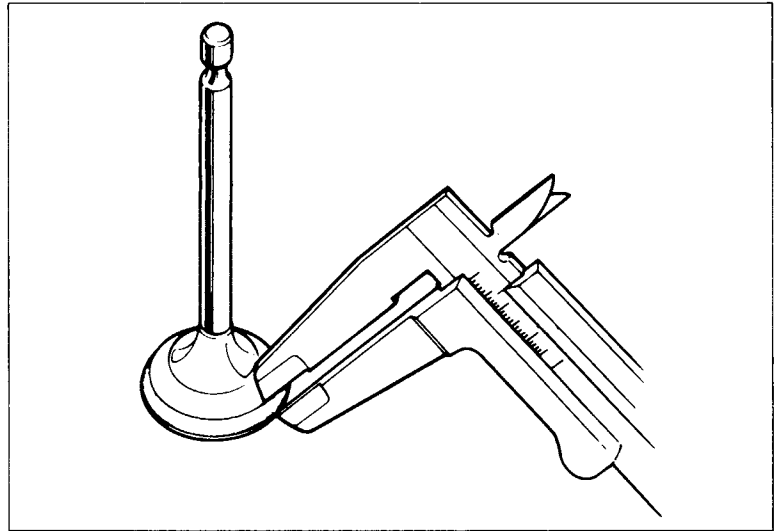
CAUTION:

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

Inspect each valve seat.

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

SERVICE LIMIT: 1.5 mm (0.06 in)

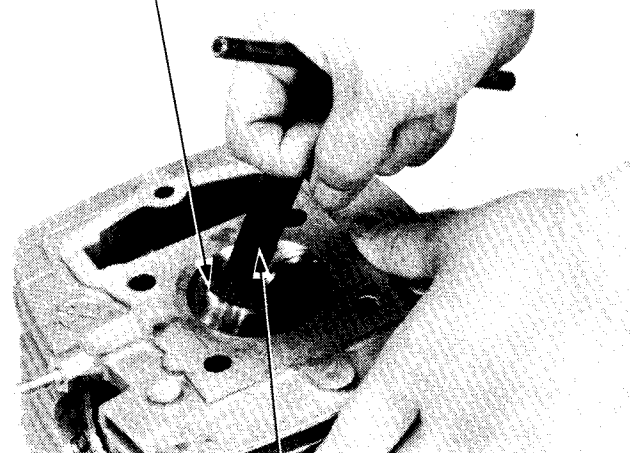


VALVE SEAT GRINDING

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

Follow the instructions supplied with the Valve Seat Refacing Equipment.

VALVE SEAT CUTTER



CUTTER HOLDER



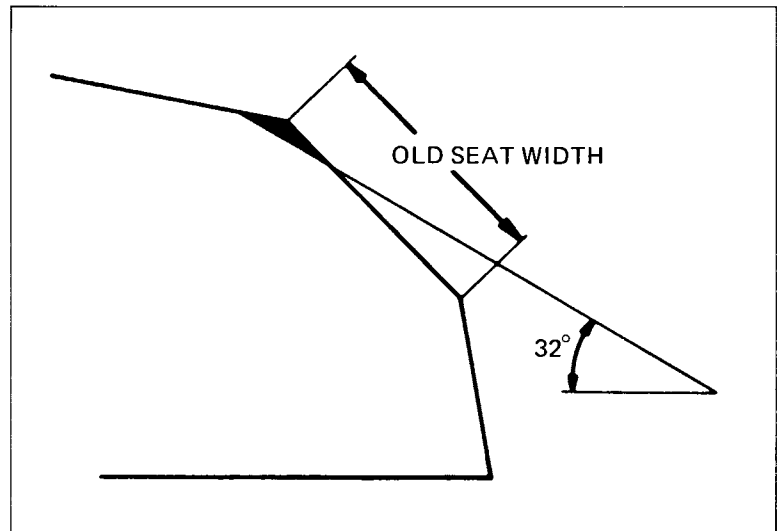
CYLINDER HEAD/VALVES

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

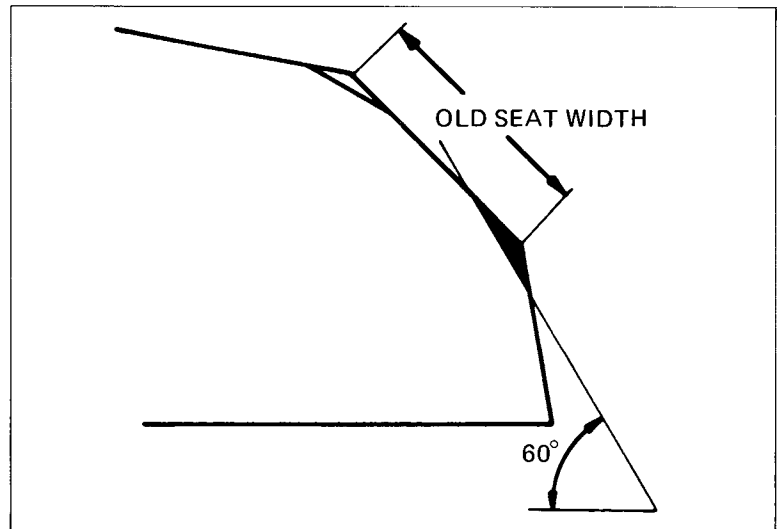
NOTE:

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

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



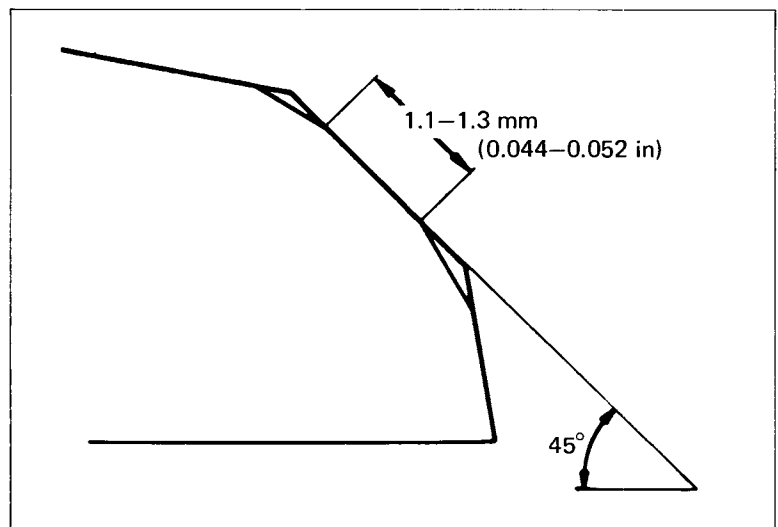
Use a 60 degree cutter to remove the lower 1/4 of the old seat. Remove the cutter and inspect the area you have just cut.



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

NOTE:

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





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

Press the valve through the valve guide and onto the seat without rotating it to make a clear pattern.

NOTE:

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

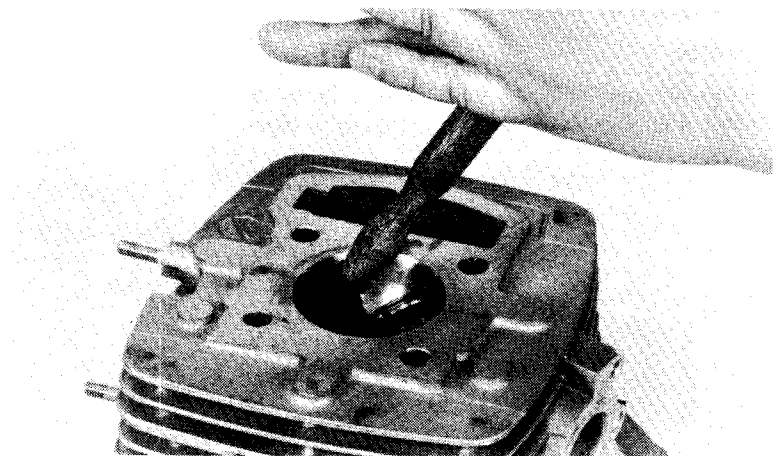
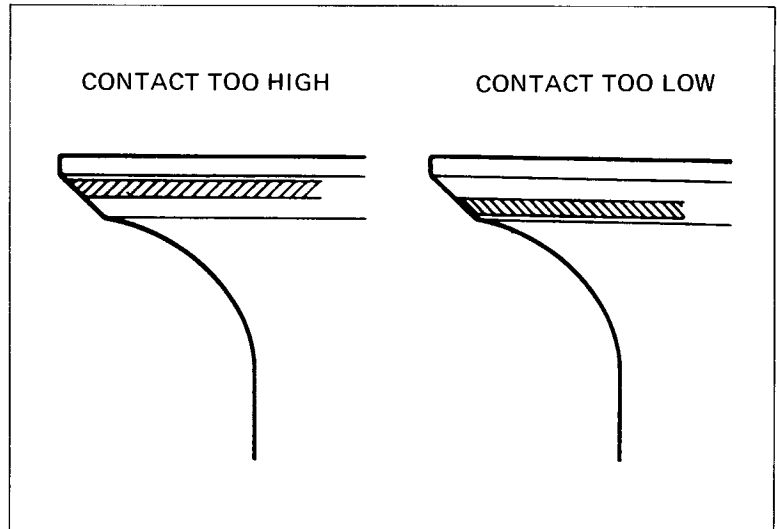
If the contact area is too high on the valve, the seat must be lowered using a 32 degree flat cutter.

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.

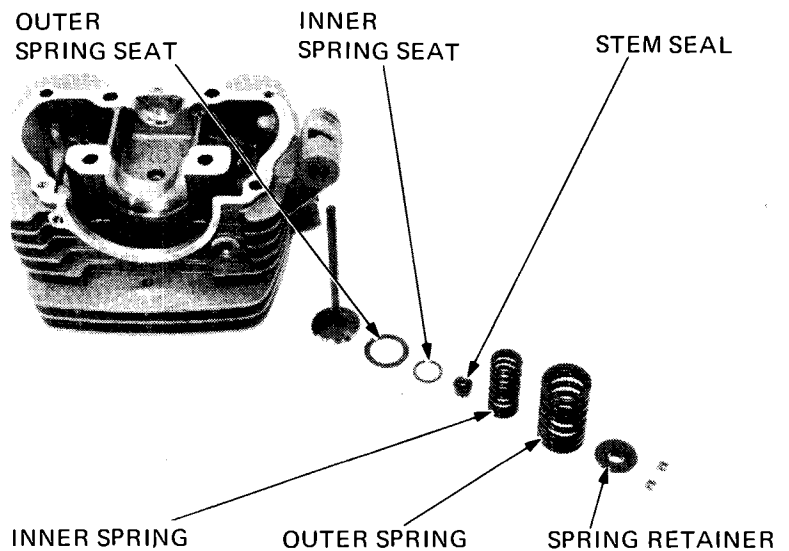


CYLINDER HEAD ASSEMBLY

Install new valve stem seals.

Lubricate each valve stem with oil and insert the valves into the valve guides.

Install the valve spring seats and valve springs with the tightly wound coils facing the cylinder head.





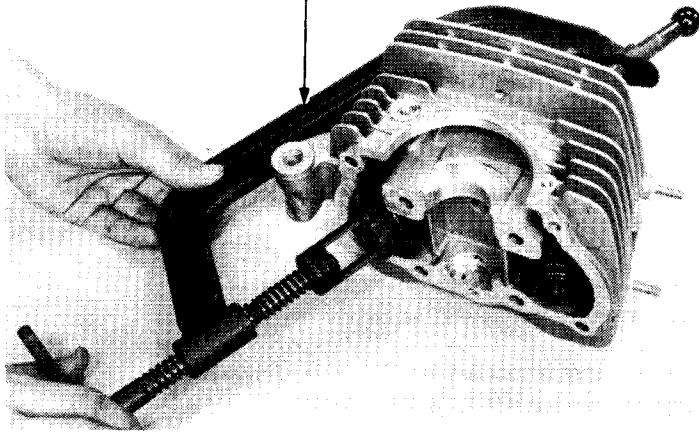
CYLINDER HEAD/VALVES

Install the valve spring retainers and install the valve cotters.

CAUTION

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

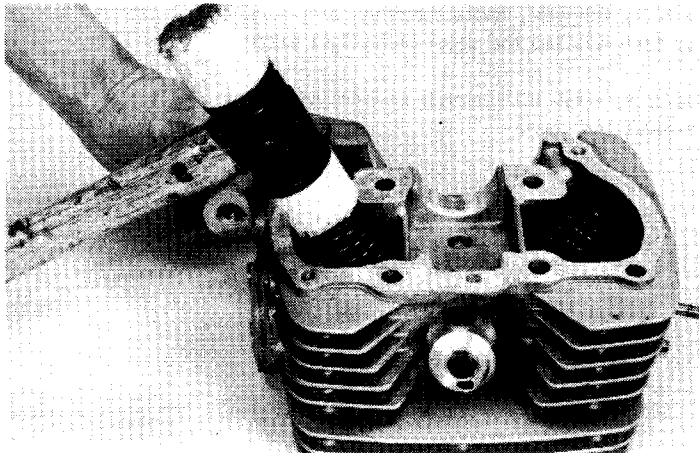
VALVE SPRING COMPRESSOR
07757-0010000 OR 07957-3290001



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

CAUTION

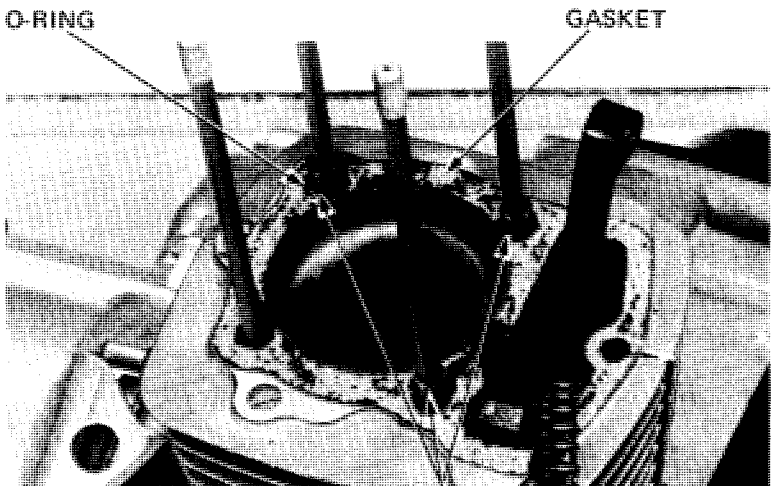
Support the cylinder head above the work bench surface to prevent possible valve damage.



CYLINDER HEAD INSTALLATION

Clean off any gasket material from the cylinder surface.

Install a new O-ring, dowel pins and a new gasket.



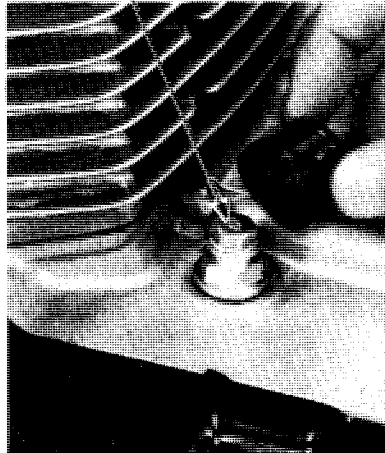
DOWEL PINS



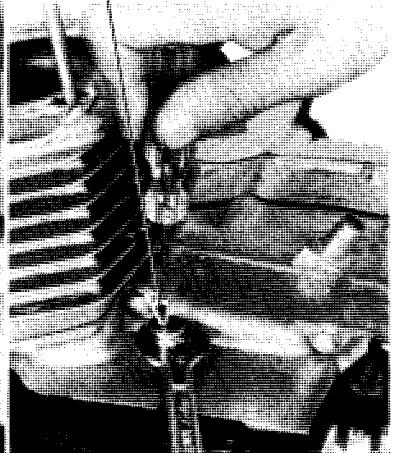
Remove the cam chain tensioner adjusting bolt rubber cap.
Remove the check bolt and loosen the tensioner adjusting bolt.

Push the tensioner down with a screwdriver, as shown, while tightening the adjusting bolt. Install the check bolt and rubber cap.

CHECK BOLT



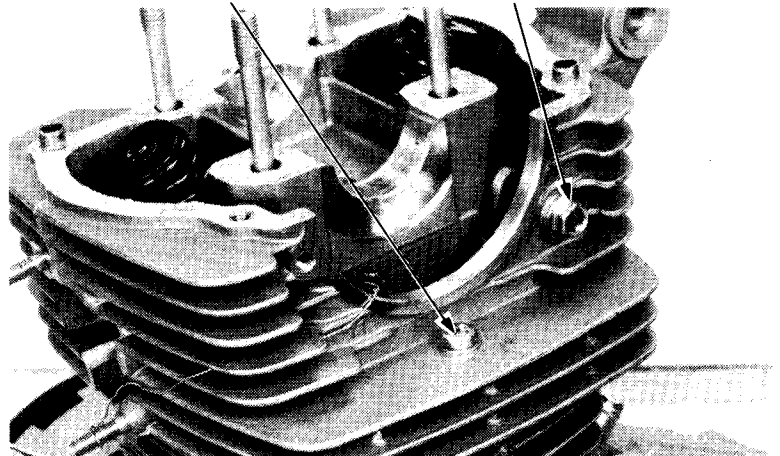
ADJUSTING BOLT



Install the cylinder head.
Install the cylinder head bolts and cam chain tensioner bolt.

CYLINDER HEAD BOLT

TENSIONER BOLT



Install the dowel pins and camshaft bushing.

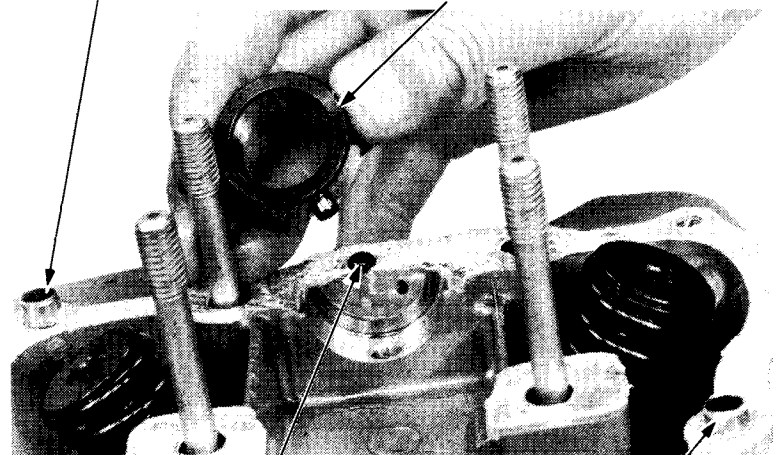
NOTE:

Align the camshaft bushing dowel pin with the cutout in the cylinder head.

Install the oil hole plug.
Pour oil into the cylinder head oil pockets so the cam lobes will be lubricated.

DOWEL PIN

CAMSHAFT BUSHING



OIL HOLE PLUG

DOWEL PIN

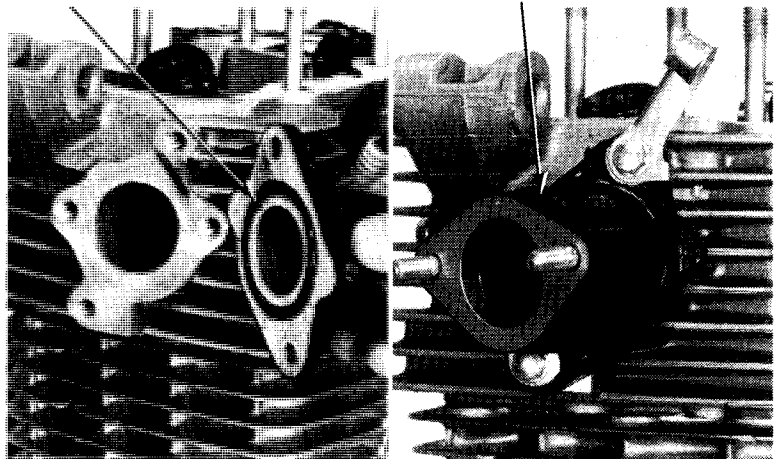


CYLINDER HEAD/VALVES

Install the carburetor insulator making sure that the O-ring is properly seated.

O-RING

CARBURETOR INSULATOR

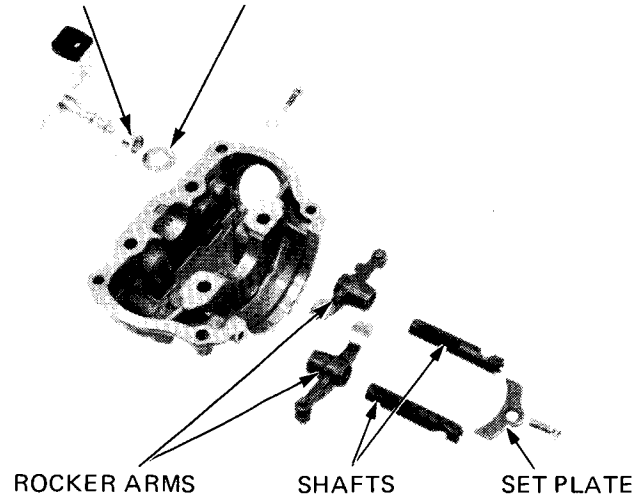


Install the rocker arms and rocker arm shafts in the cylinder head cover.
Install the set plate and tighten the set plate screw.
Install the decompressor lever.
Tighten the decompressor lever pivot bolt.

TORQUE: 5–7 N·m (0.5–0.7 kg·m, 4–5 ft·lb)

SPRING

THRUST WASHER

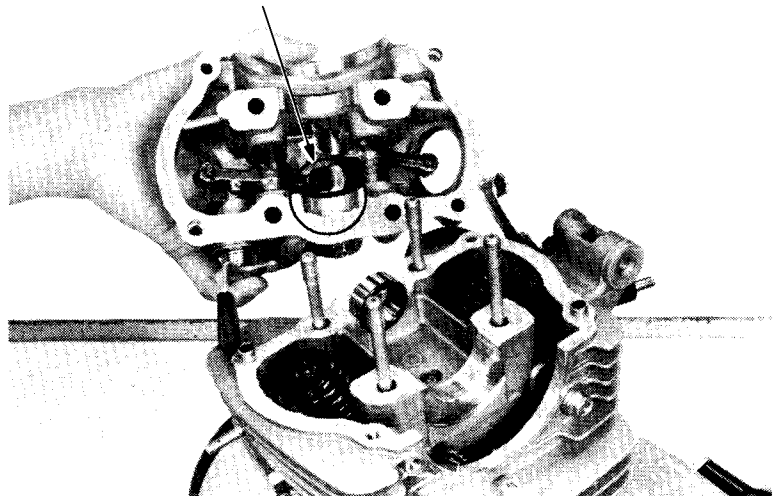


Loosen the valve adjusting screws.
Apply liquid sealant to the cylinder head cover mating surface.

NOTE:

Keep sealant away from the camshaft bearing surfaces.

DO NOT APPLY SEALANT TO THIS AREA





Coat the camshaft bearing and bushing with molybdenum disulfide grease.
 Install the cylinder head cover.
 Install and tighten the 8 mm cap nuts.

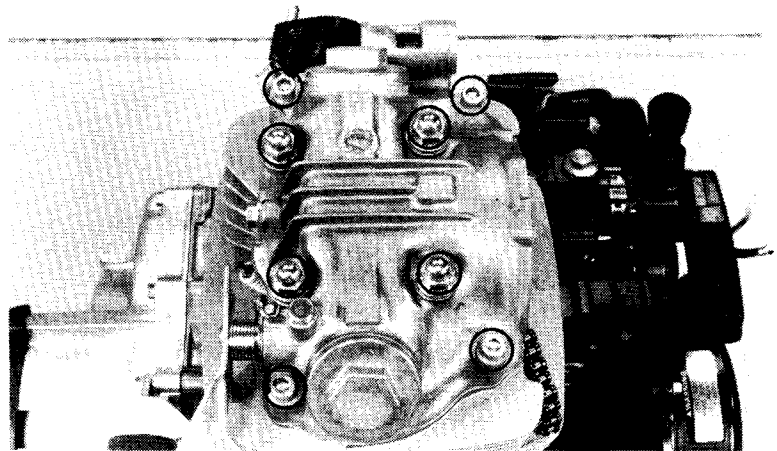
TORQUE: 28–30 N·m (2.8–3.0 kg-m,
20–22 ft-lb)

Install and tighten the 6 mm socket bolts.

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

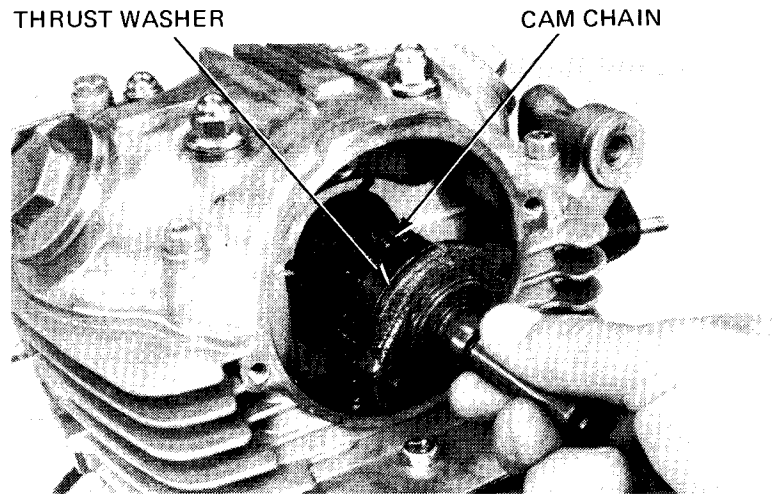
NOTE:

Tighten the 8 mm cap nuts and 6 mm bolts in a crisscross pattern in 2–3 steps.



CAMSHAFT INSTALLATION

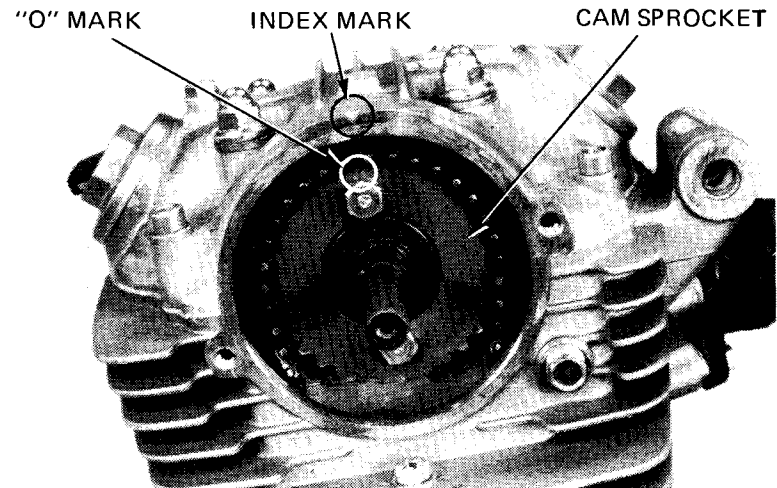
Coat the camshaft journals with molybdenum disulfide grease.
 Place the thrust washer onto the camshaft.
 Place the camshaft through the cam chain and into the cylinder head.



Turn the crankshaft counterclockwise and align the "T" and index marks.
 Install the cam sprocket. Align the timing mark "O" on the cam sprocket with the index mark on the cylinder head cover.

Tighten the cam sprocket bolts.

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





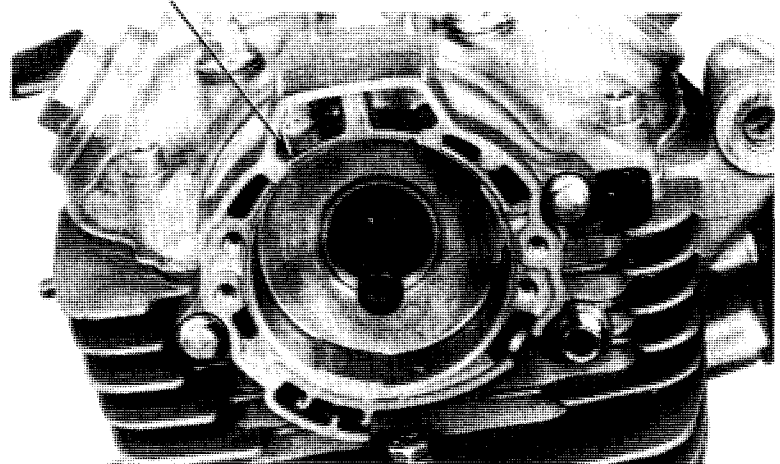
CYLINDER HEAD/VALVES

Install the pulse base.

CAUTION

Do not turn the oil seal lip inside out.

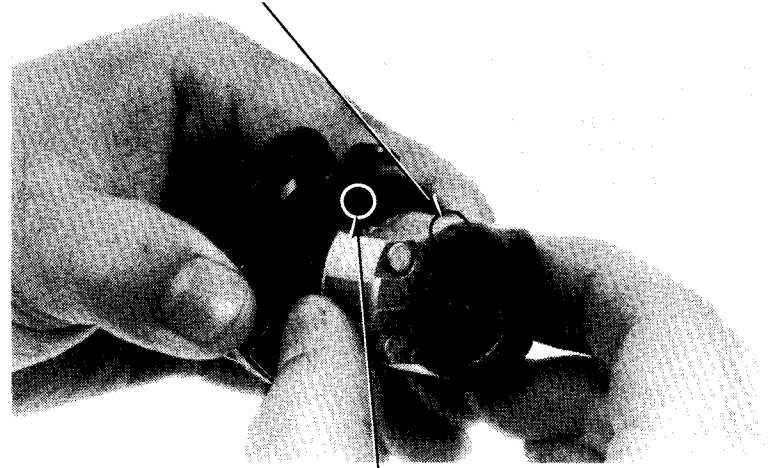
PULSE BASE



PULSE ROTOR ASSEMBLY

Align the punch mark on the rotor with the index mark on the spark advancer and assemble.

PUNCH MARK



INDEX MARK

Install the dowel pins and pulse rotor/advancer assembly.

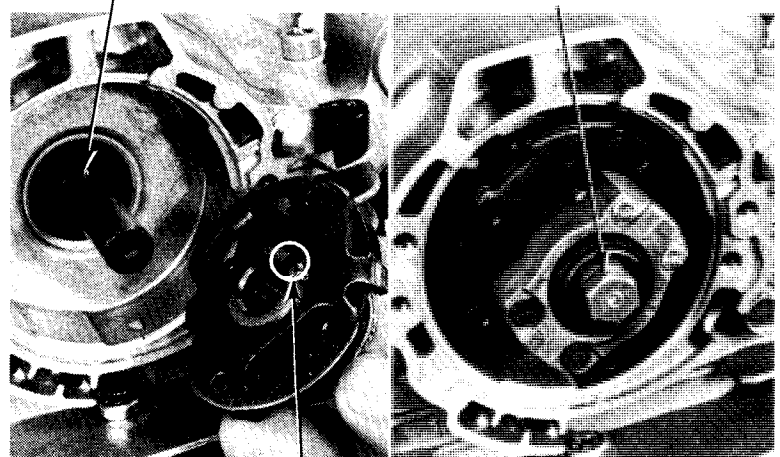
NOTE:

Align the dowel pin with the advancer groove.

Tighten the pulse rotor bolt.

DOWEL PIN

PULSE ROTOR BOLT



GROOVE



Install the pulse generator.

Turn the crankshaft counterclockwise and align the "F" mark with the crankcase cover index mark.

Align the pulse rotor and pulse generator index marks.

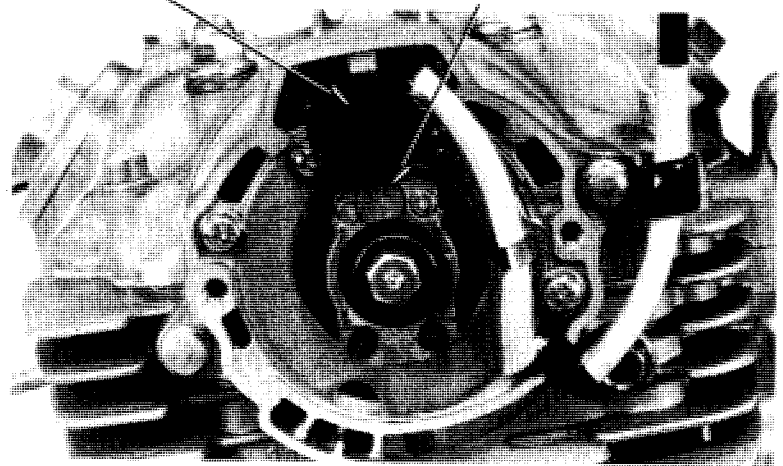
Adjust the pulse rotor and generator air gap to 0.40–0.65 mm (0.015–0.025 in).

Install the pulse generator cover.

Pour fresh oil into the oil pockets in the cylinder head so that the cam lobes are submerged.

PULSE GENERATOR

MARK

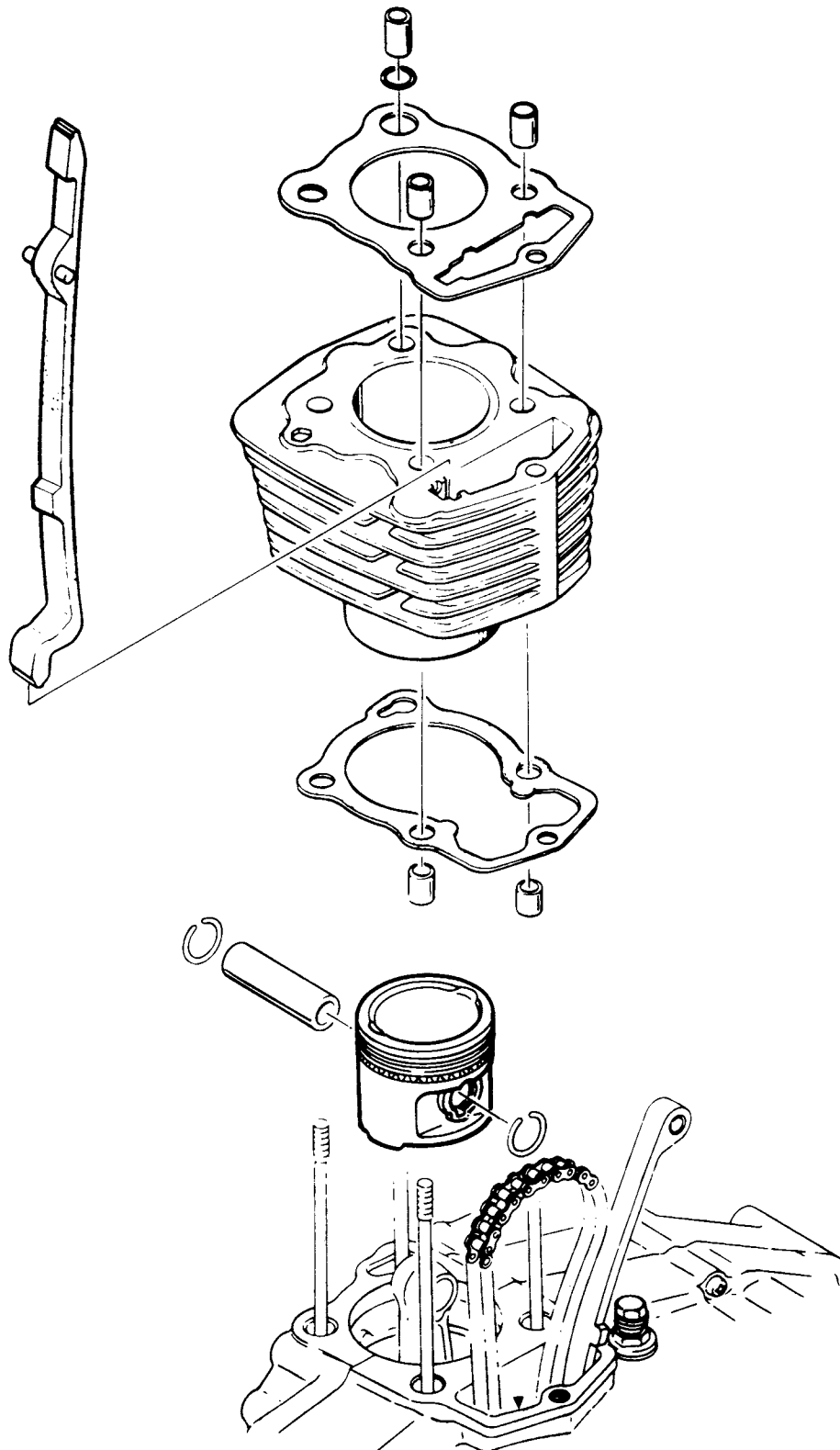


Do the following after installing the pulse generator cover.

- Adjust valve clearance (Page 3-5).
- Adjust cam chain tension (Page 3-7).
- Inspect ignition timing (Page 3-8).
- Test cylinder compression (Page 3-9).



CYLINDER/PISTON





7. CYLINDER / PISTON

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

SERVICE INFORMATION

GENERAL

- Camshaft lubrication oil is fed to the cylinder head through an orifice in the cylinder and crankcase. Be sure 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.	65.00–65.01 mm (2.559–2.560 in)	65.10 mm (2.563 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)	
Piston, piston pin, piston rings	Piston O.D.	64.955–64.985 mm (2.5573–2.5585 in)	64.90 mm (2.555 in)	
	Piston pin bore	15.002–15.008 mm (0.5906–0.5909 in)	15.04 mm (0.592 in)	
	Piston pin O.D.	14.994–15.000 mm (0.5903–0.5906 in)	14.96 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	0.015–0.050 mm (0.0006–0.0020 in)	0.09 mm (0.004 in)
		SECOND	0.015–0.045 mm (0.0006–0.0018 in)	0.09 mm (0.004 in)
	Piston ring end gap	TOP/SECOND	0.20–0.40 mm (0.008–0.016 in)	0.50 mm (0.020 in)
OIL		0.30–0.90 mm (0.012–0.035 in)	_____	
Cylinder-to-piston clearance		0.015–0.055 mm (0.0006–0.0022 in)	0.10 mm (0.004 in)	

7

TROUBLESHOOTING

Low or unstable compression

1. Worn cylinder or piston rings
2. Decompressor lever out of adjustment

Excessive smoke

1. Worn cylinder, piston, or piston rings
2. Improper installation of piston rings
3. Scored or scratched piston or cylinder wall

Overheating

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

Knocking or abnormal noise

1. Worn piston and cylinder
2. Excessive carbon build-up



CYLINDER/PISTON

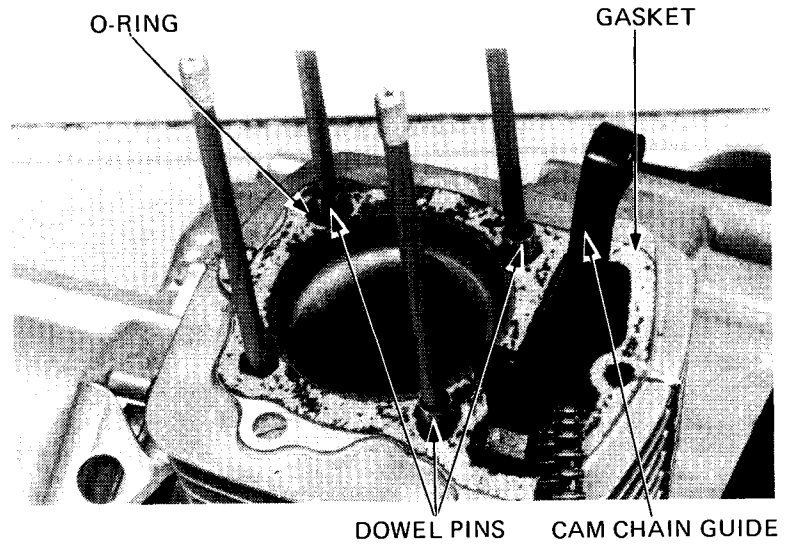
CYLINDER REMOVAL

Remove the cylinder head (Section 6).
Remove the gasket, dowel pins and O-ring.
Remove the cam chain guide.

NOTE:

Keep the cam chain from falling into the crankcase when removing the cylinder.

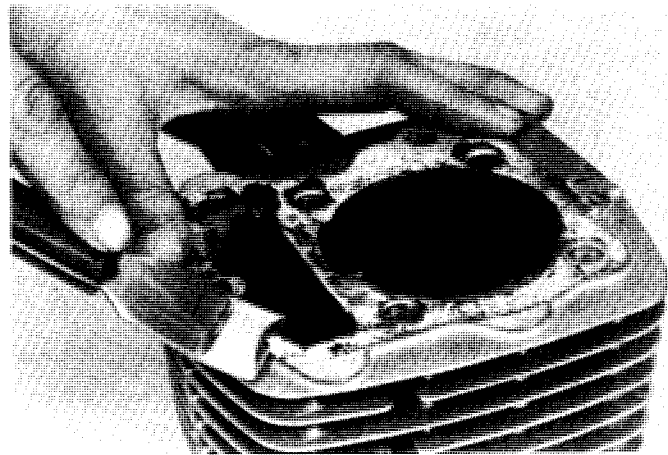
Remove the cylinder.
Remove the gasket and dowel pins.



Clean off any gasket material from the cylinder surface.

NOTE:

Be careful not to remove any metal from the gasket surface.



CYLINDER INSPECTION

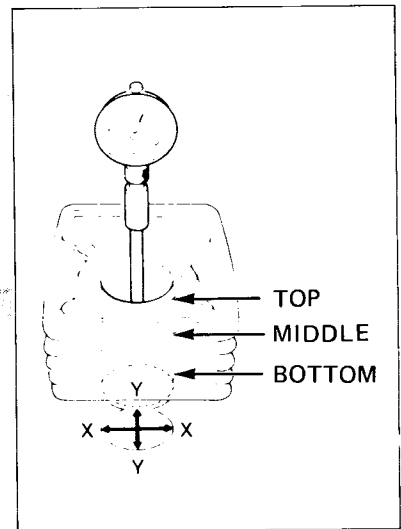
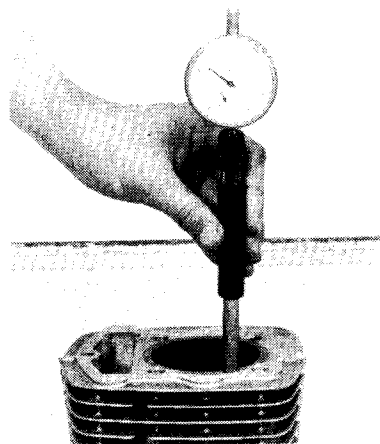
Inspect the cylinder bore for wear or damage.
Measure the cylinder I.D.
Check the cylinder I.D. at X and Y axis at three locations.

SERVICE LIMIT: 65.10 mm (2.563 in)

Calculate the taper and out of round.

SERVICE LIMITS:

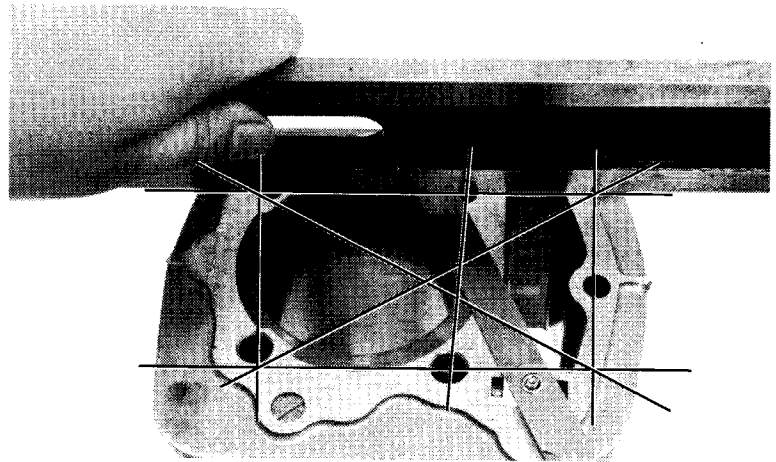
Taper: 0.10 mm (0.004 in)
Out of round: 0.10 mm (0.004 in)





Inspect the top of the cylinder for warpage.

SERVICE LIMIT: 0.10 mm (0.004 in)



PISTON REMOVAL

Remove the piston pin clip with pliers.

NOTE:

Do not let the clips fall into the crankcase.

Press the piston pin out of the piston and remove the piston.

PISTON PIN CLIP



PISTON/PISTON RING INSPECTION

Measure the piston ring-to-groove clearance.
Remove the piston rings.

NOTE:

Do not damage the piston rings during removal.

Inspect the piston for wear or damage.

SERVICE LIMITS:

TOP: 0.09 mm (0.004 in)

SECOND: 0.09 mm (0.004 in)





CYLINDER/PISTON

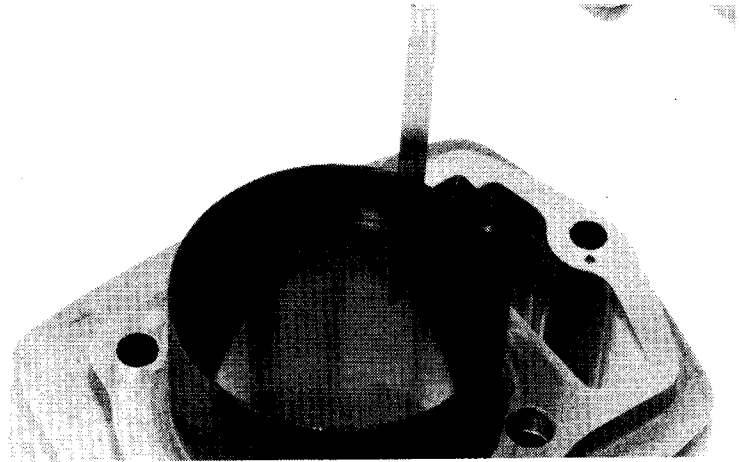
Insert each piston ring squarely into the cylinder and measure the ring end gap.

NOTE:

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

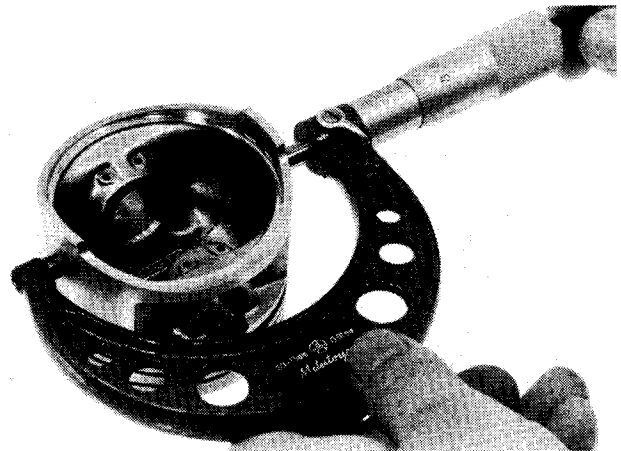
SERVICE LIMIT:

TOP/SECOND: 0.50 mm (0.020 in)



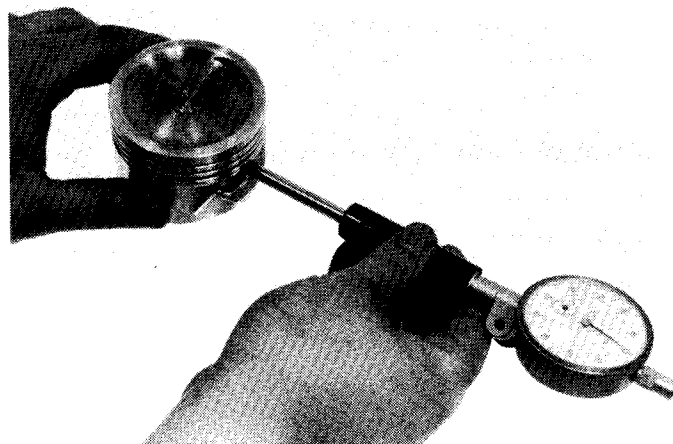
Measure the diameter of the piston 10 mm from the bottom and 90° to the piston pin hole. Calculate the piston-to-cylinder clearance. Refer to page 7-2 for cylinder bore inspection.

SERVICE LIMIT: 64.90 mm (2.555 in)



Measure the piston pin hole I.D.

SERVICE LIMIT: 15.04 mm (0.592 in)



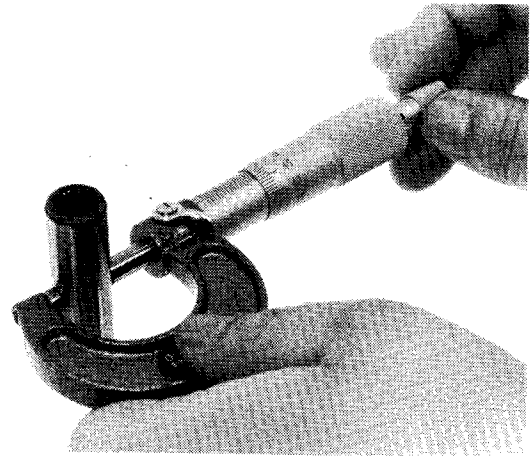


Measure the O.D. of the piston pin.

SERVICE LIMIT: 14.96 mm (0.589 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)



PISTON RING INSTALLATION

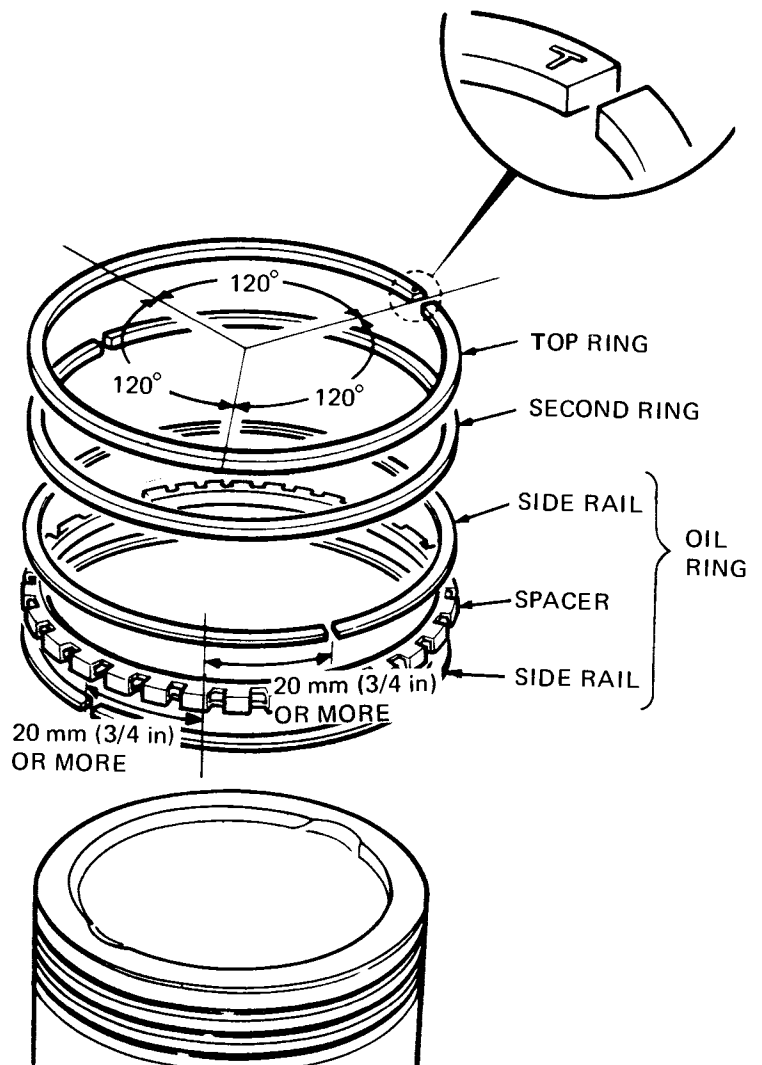
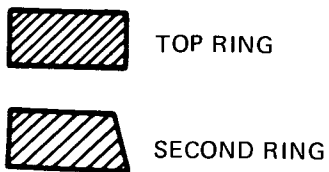
Clean the piston ring grooves thoroughly and install the piston rings.

NOTE:

- Avoid piston and piston ring damage during installation.
- Install the piston rings with the marking facing up.
- 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.





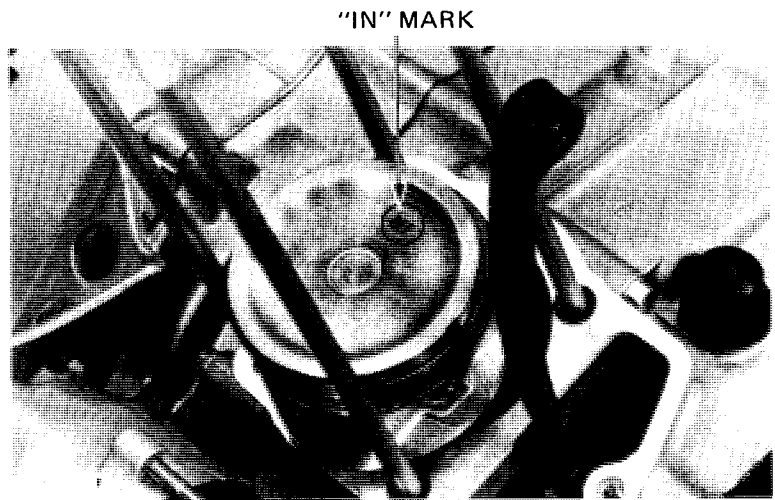
CYLINDER/PISTON

PISTON INSTALLATION

Install the piston and piston pin, using new piston pin clips.

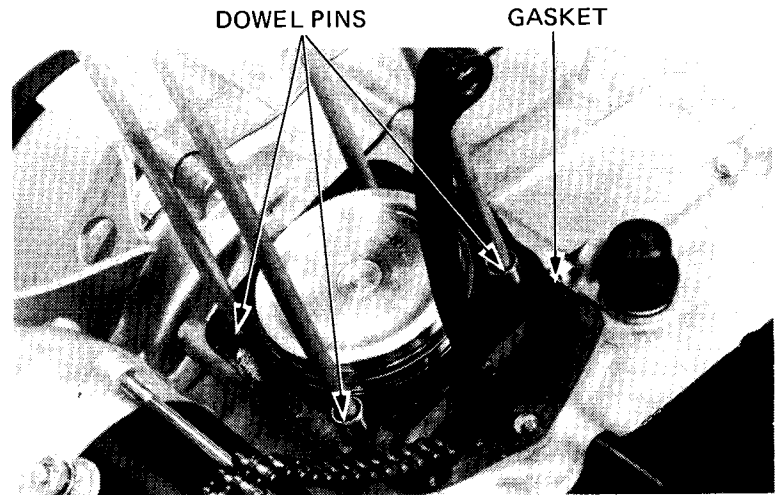
NOTE:

- Position the piston "IN" mark on the intake valve side.
- Do not align the piston pin clip end gap with the piston cutout.
- Do not let the clip fall into the crankcase.



CYLINDER INSTALLATION

Install a new gasket and dowel pins.



Coat the cylinder bore and piston rings with engine oil and install the cylinder.

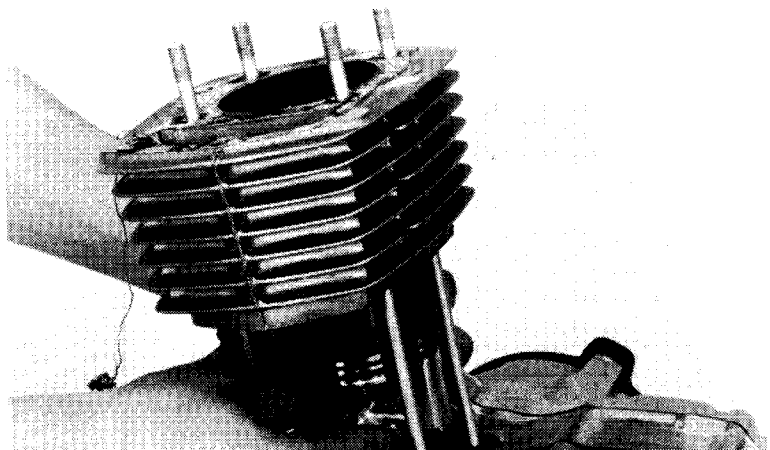
NOTE:

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

Install the cam chain guide.

Install a new gasket, the dowel pins and a new O-ring.

Install the cylinder head (Page 6-14).



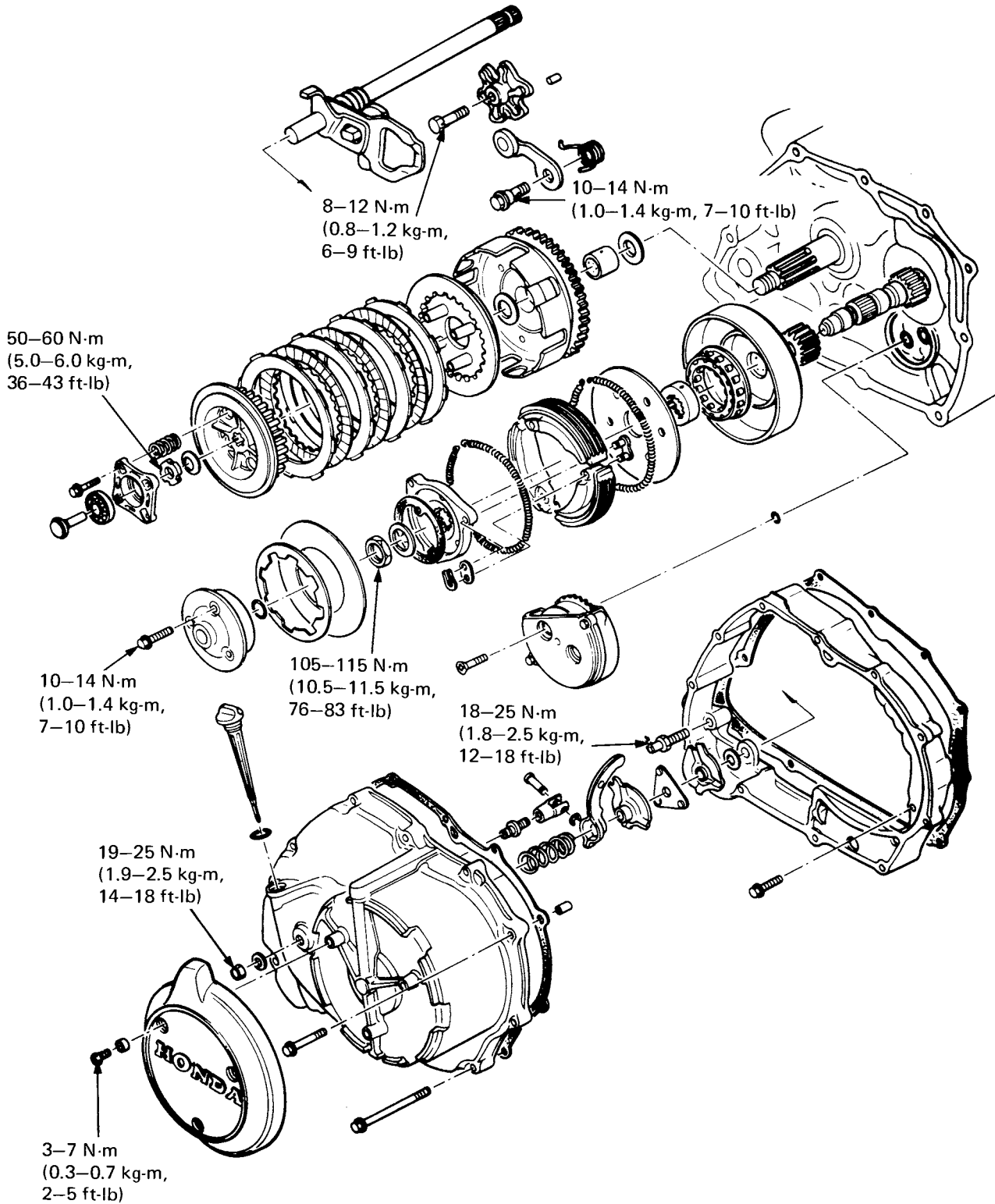


HONDA
ATC200ES

MEMO



CLUTCH/OIL PUMP/GEARSHIFT LINKAGE





8. CLUTCH / OIL PUMP / GEARSHIFT LINKAGE

SERVICE INFORMATION	8-1	MANUAL CLUTCH	8-12
TROUBLESHOOTING	8-2	OIL PUMP	8-16
RIGHT CRANKCASE COVER REMOVAL	8-3	GEARSHIFT LINKAGE	8-20
CENTRIFUGAL CLUTCH	8-6	RIGHT CRANKCASE COVER INSTALLATION	8-21

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the centrifugal clutch, manual clutch, oil pump and gearshift linkage.
- The clutches, oil pump and gearshift linkage can be serviced with the engine installed in the frame.

SPECIFICATIONS

	ITEM	STANDARD	SERVICE LIMIT
Manual clutch	Spring free length	25.7 mm (1.01 in)	25.0 mm (0.98 in)
	Spring preload	37.5 kg (86.67 lb)	_____
	Disc thickness	2.9–3.0 mm (0.11–0.12 in)	2.6 mm (0.10 in)
	Disc warpage	_____	0.20 mm (0.008 in)
	Plate warpage	_____	0.20 mm (0.008 in)
Centrifugal clutch	Clutch outer guide	20.000–20.021 mm (0.7874–0.7882 in)	20.05 mm (0.789 in)
	Drum I.D.	116 mm (4.57 in)	116.3 mm (4.58 in)
	Weight thickness	4.3 mm (0.17 in)	4.1 mm (0.16 in)
	Spring free length	267.5 mm (10.53 in)	282 mm (11.1 in)
	Spring preload	12.3–13.7 kg (27.1–30.20 lb)	_____
Oil pump	Rotor-to-cover clearance	0.15–0.20 mm (0.006–0.008 in)	0.25 mm (0.010 in)
	Rotor tip clearance	0.15 mm (0.006 in)	0.20 mm (0.008 in)
	Rotor-to-body clearance	0.30–0.36 mm (0.012–0.014 in)	0.40 mm (0.016 in)

8

TORQUE VALUES

Oil filter rotor cover bolts	10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)
Manual clutch lock nut	50–60 N·m (5.0–6.0 kg·m, 36–43 ft·lb)
Centrifugal clutch lock nut	105–115 N·m (10.5–11.5 kg·m, 76–83 ft·lb)
Clutch adjusting screw lock nut	19–25 N·m (1.9–2.5 kg·m, 14–18 ft·lb)
Clutch lifter stopper bolt	18–25 N·m (1.8–2.5 kg·m, 13–18 ft·lb)
Gearshift drum stopper arm bolt	10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)
Gearshift drum stopper plate bolt	8–12 N·m (0.8–1.2 kg·m, 6–9 ft·lb)

TOOLS

Special

Bearing remover, 17 mm	07936–3710300
Remover handle	07936–3710100
Remover weight	07741–0010201 or 07936–3710200
Socket wrench, 30 mm	07916–PD10000 or Equivalent tool commercially available in U.S.A.
Clutch center holder	07923–9580000 or Band strap wrench

Common

Lock nut wrench, 20 x 24 mm	07716–0020100
Extension bar	07716–0020500 or Equivalent tool commercially available in U.S.A.
Driver	07749–0010000
Attachment, 37 x 40 mm	07746–0010200
Pilot, 17 mm	07746–0040400



CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

TROUBLESHOOTING

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

Clutch slips when accelerating

1. Faulty clutch lifter
2. Discs worn
3. Weak spring

Clutch will not disengage

1. Faulty clutch lifter
2. Plates warped

Motorcycle creeps with clutch disengaged

1. Faulty centrifugal clutch
2. Plates warped

Clutch operation feels rough

1. Outer drum slots rough

Hard to shift

1. Stopper plate damaged
2. Incorrect clutch adjustment
3. Faulty clutch lifter

Gearshift pedal will not return

1. Weak or broken shift return spring
2. Shift spindle binding with case

Transmission jumps out of gears

1. Weak or broken stopper spring

Low oil pressure

1. Faulty oil pump
2. Oil pump drive gear broken

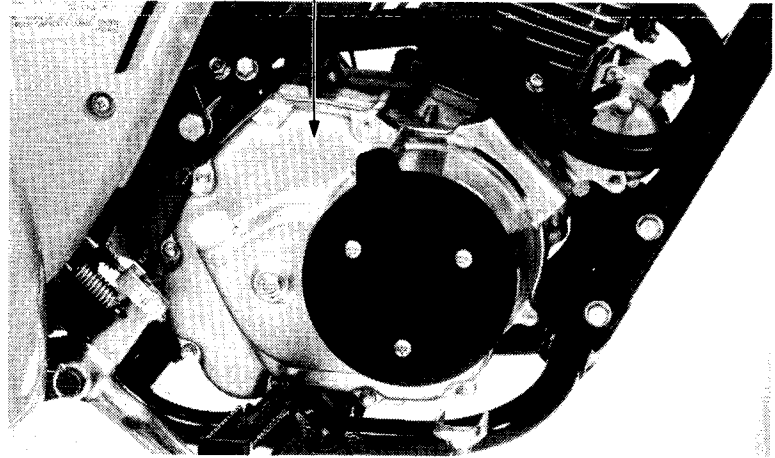


RIGHT CRANKCASE COVER REMOVAL

Drain the oil from the engine.

Remove the right crankcase cover bolts and cover. Remove the gasket and dowel pins.

RIGHT CRANKCASE COVER

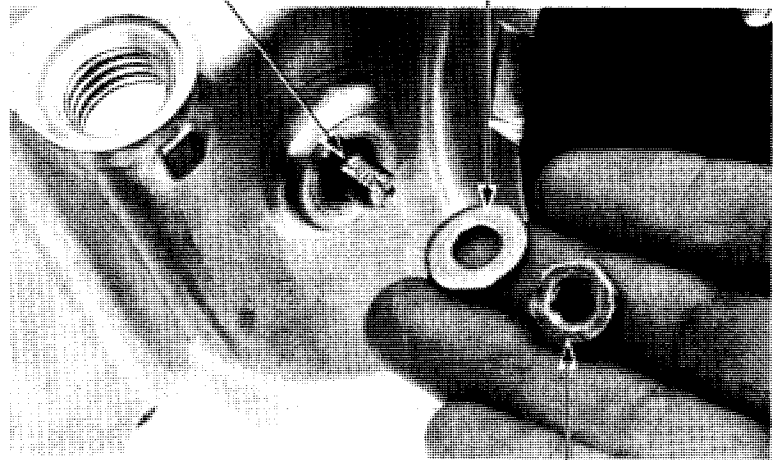


CLUTCH LIFTER DISASSEMBLY

Remove the clutch adjusting screw lock nut, washer and O-ring.
Remove the clutch lifter lever and spring.

O-RING

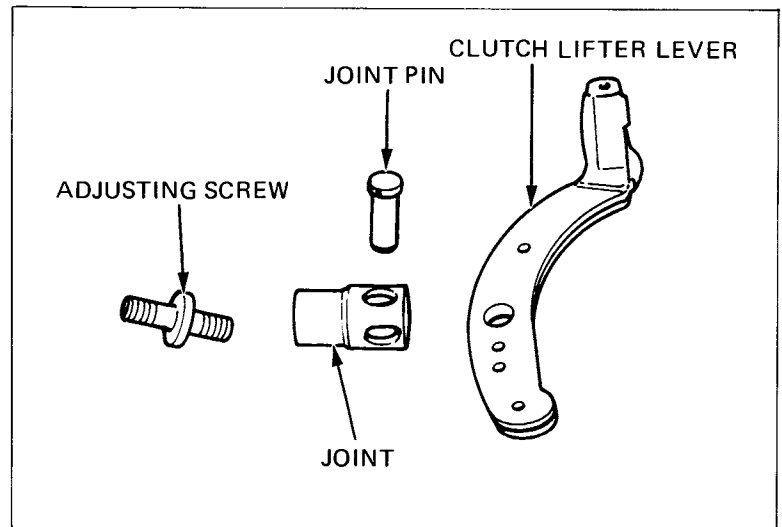
PLAIN WASHER



LOCK NUT

Remove the clutch adjusting screw.
Remove the E-crip and disassemble the clutch lifter lever.

Check the disassembled parts for damage or wear, replace the parts if necessary.

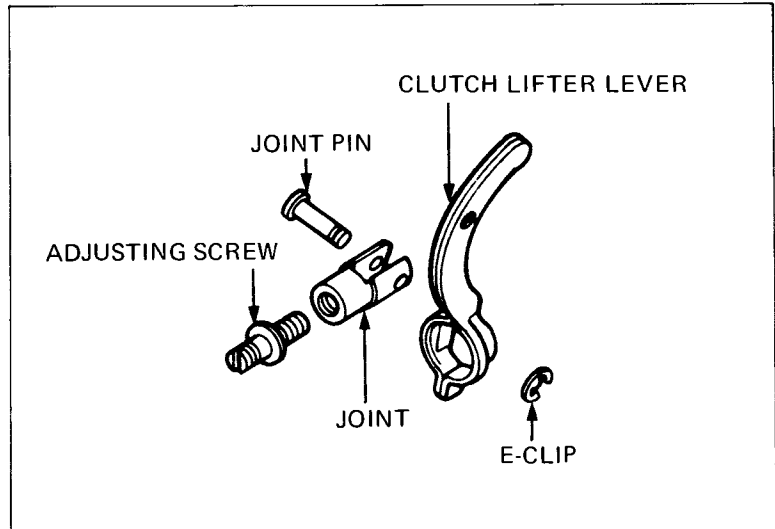




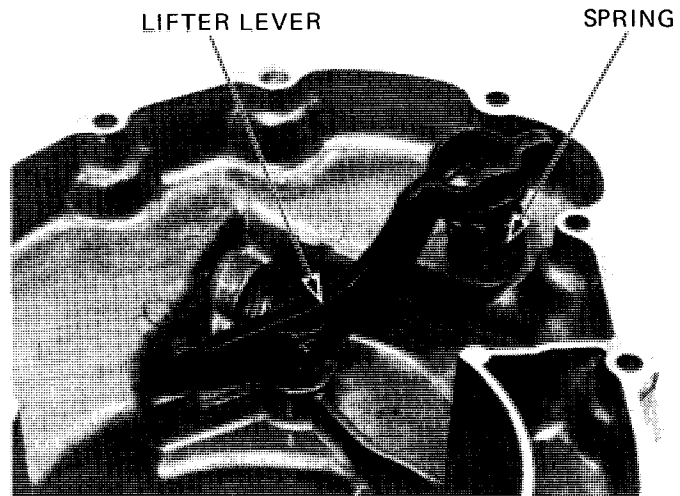
CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

CLUTCH LIFTER ASSEMBLY

Install the joint and joint pin on the lifter lever and secure them with the E-clip.
Install the clutch adjusting screw into the joint.

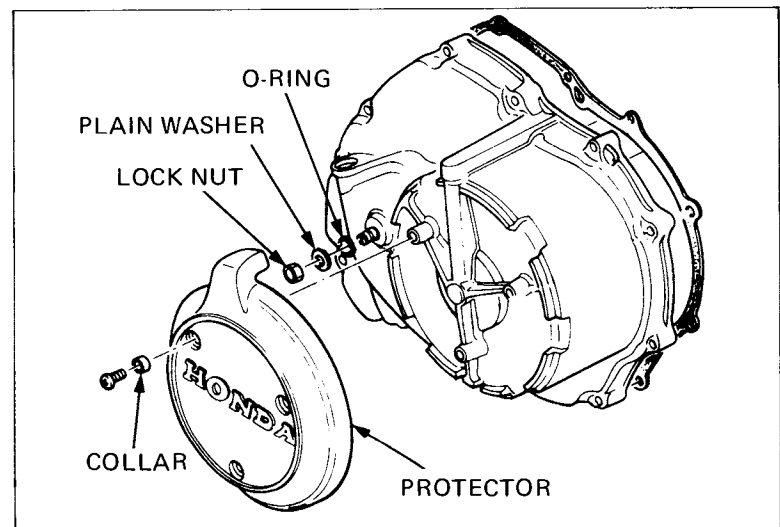


Install the spring and clutch lifter lever onto the right crankcase cover.



Slip the O-ring onto the clutch adjusting screw.

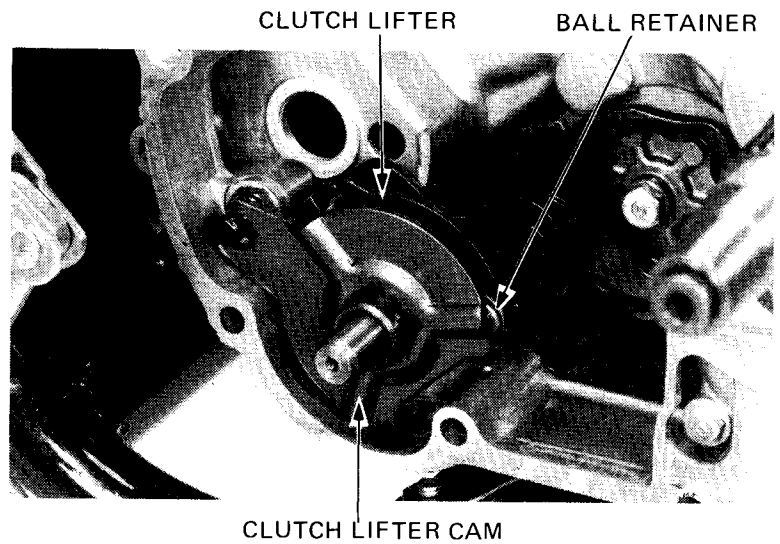
Install the lock nut and right crankcase cover protector.
Install the right crankcase cover (Page 8-21).





CLUTCH LIFTER REMOVAL

Remove the clutch lifter cam, ball retainer and clutch lifter.



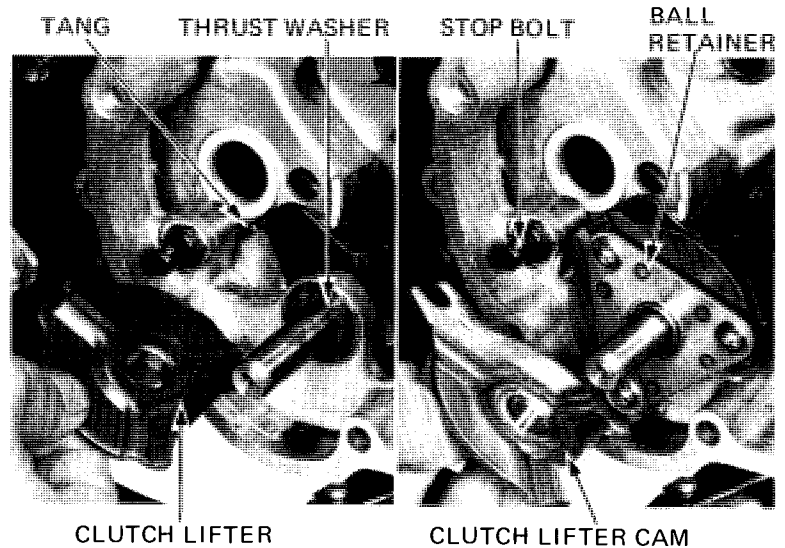
CLUTCH LIFTER INSTALLATION

Install the thrust washer.

Install the clutch lifter aligning its groove with the tang on the gearshift spindle.

Install the ball retainer.

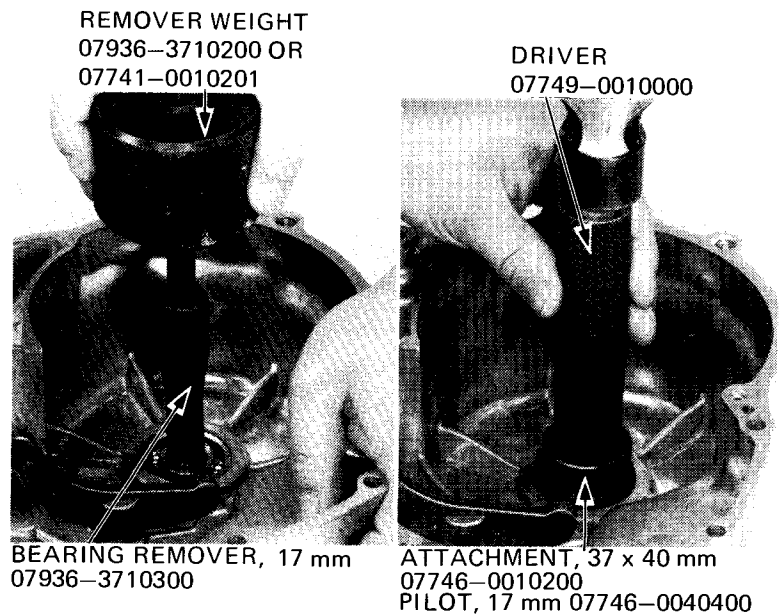
Install the clutch lifter cam by aligning its groove with the stop bolt on the right crankcase spacer.



BEARING REPLACEMENT

Remove the bearing from the right crankcase cover with the special tool.

Drive a new bearing into the right crankcase.





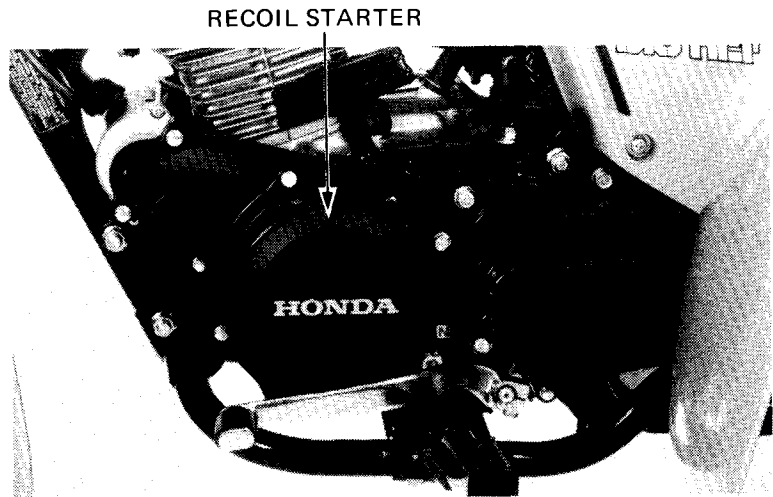
CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

CENTRIFUGAL CLUTCH

REMOVAL

Remove the recoil starter from the left crankcase cover (Page 9-2).

Hold the recoil starter driven pulley with a screwdriver or suitable lever.

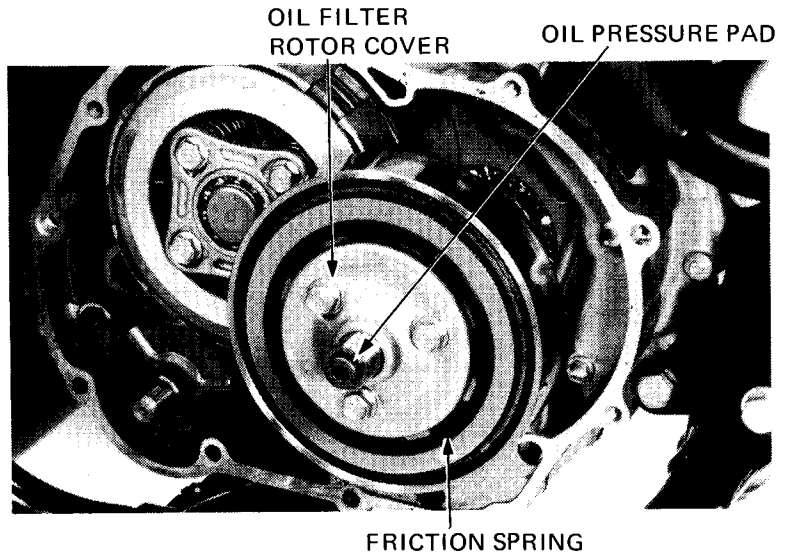


Remove the right crankcase cover (Page 8-3).

Remove the oil filter rotor cover, friction spring, plain washer and O-ring.

CAUTION

Be careful not to damage the oil pressure pad.

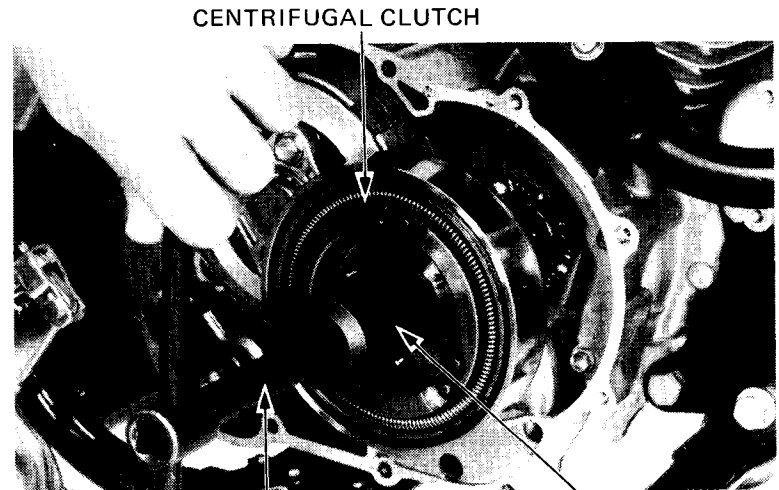


Remove the lock nut by turning it clockwise.

NOTE:

The lock nut has left hand threads.

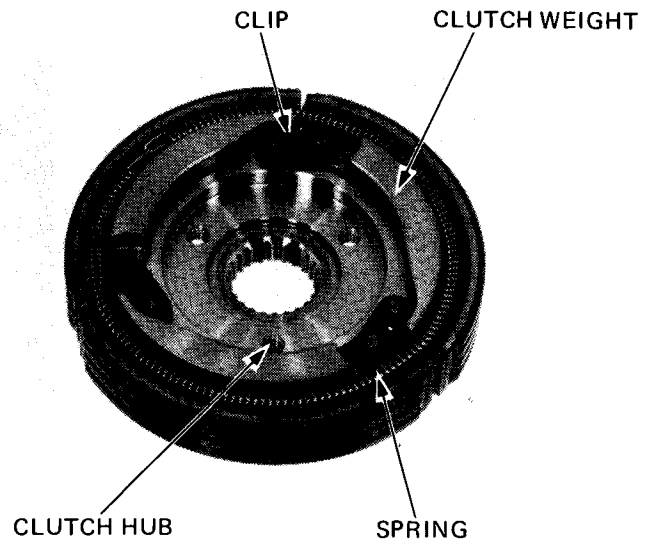
Remove the centrifugal clutch weights.



EXTENSION BAR 07716-0020500 OR SOCKET WRENCH, 30 mm
EQUIVALENT TOOL 07916-PD10000
COMMERCIALLY AVAILABLE IN U.S.A.



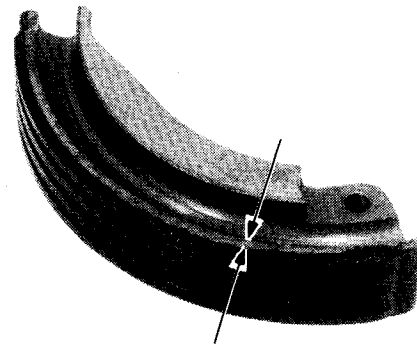
Remove the spring.
Remove the clips and centrifugal clutch weights.



WEIGHT INSPECTION

Measure the weight lining thickness.

SERVICE LIMIT: 4.1 mm (0.16 in)

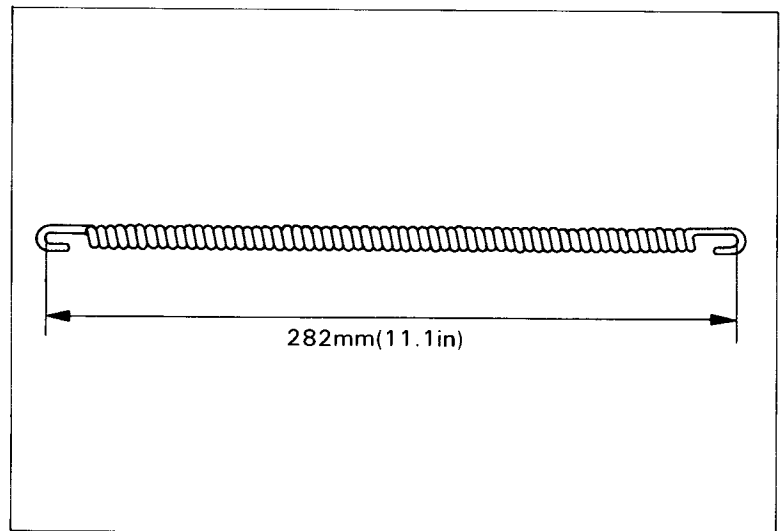


Measure the weight spring free length.

NOTE:

The spring free length is the distance between the insides of the hooks.

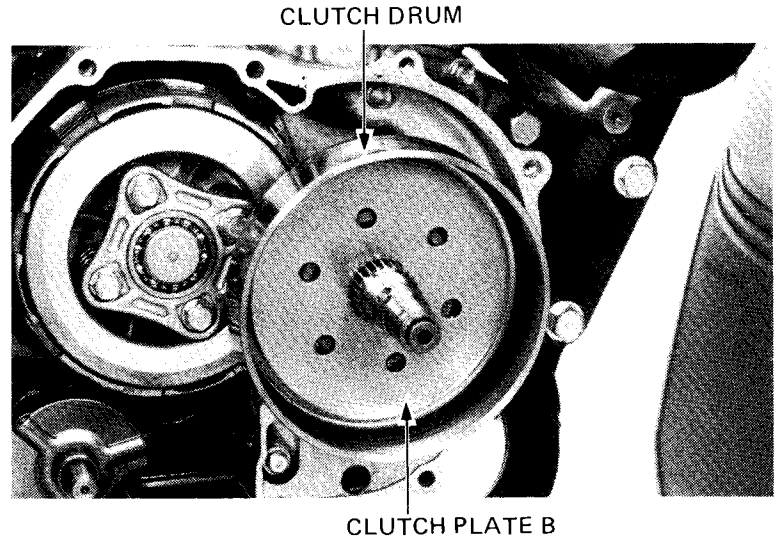
SERVICE LIMIT: 282 mm (11.1 in)



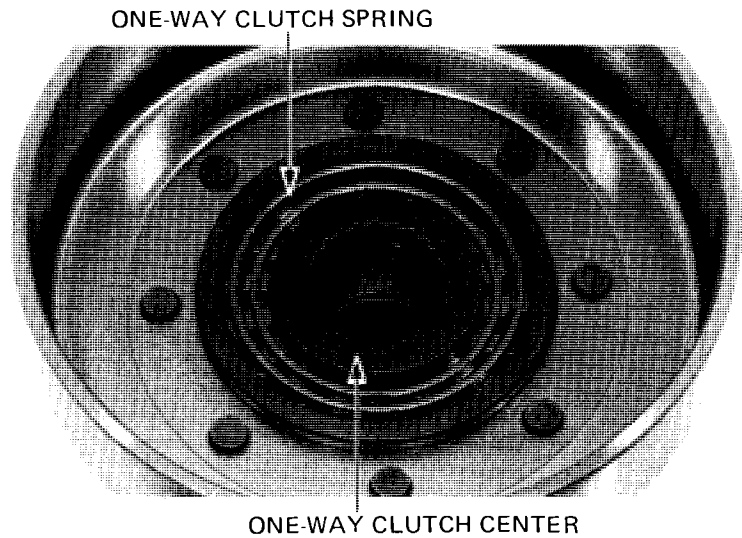


CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

Remove the clutch plate B.
Align the clutch outer cutout with the drive gear
and remove the clutch drum.



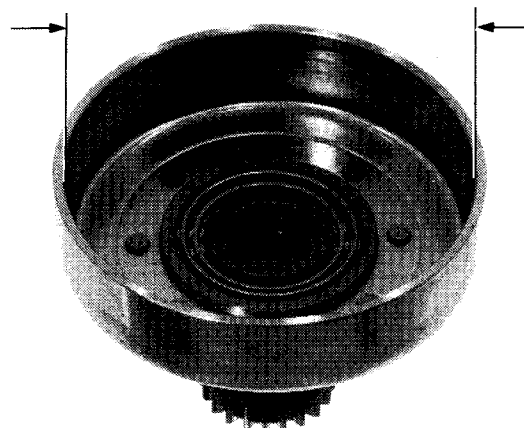
Remove the one-way clutch center and sprag.



CLUTCH DRUM INSPECTION

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

SERVICE LIMIT: 116.3 mm (4.58 in)



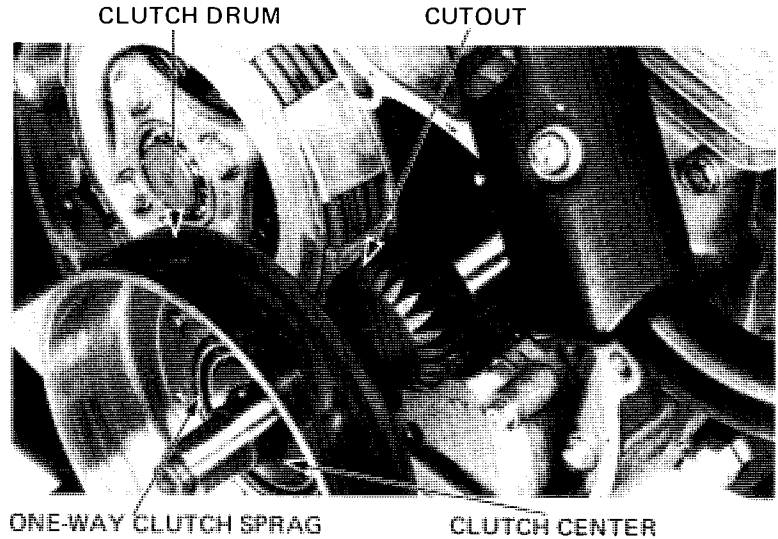


INSTALLATION

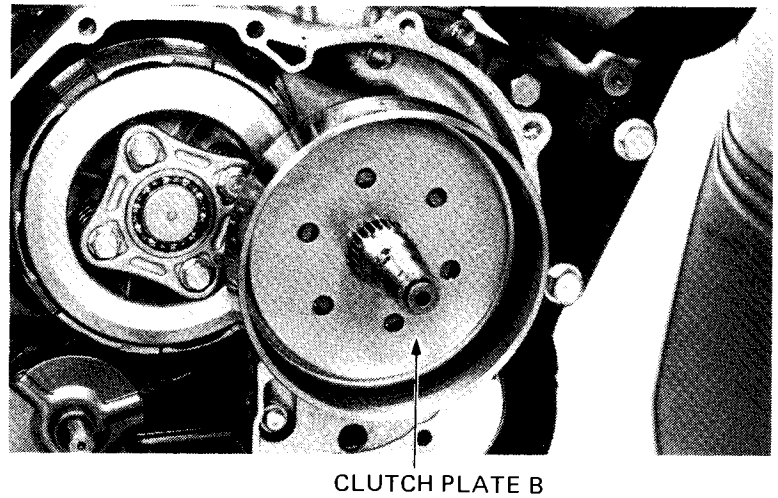
Install the one-way clutch sprag into the centrifugal clutch drum.

Install the clutch center by turning it counterclockwise.

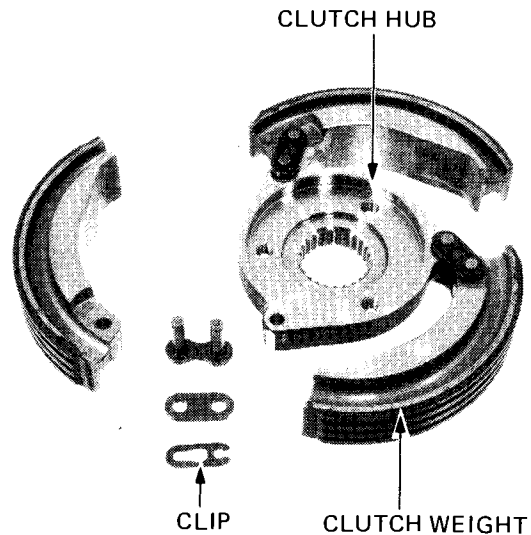
Install the centrifugal clutch drum aligning the clutch outer cutout with the drive gear on the clutch drum.



Install clutch plate B onto the clutch drum.



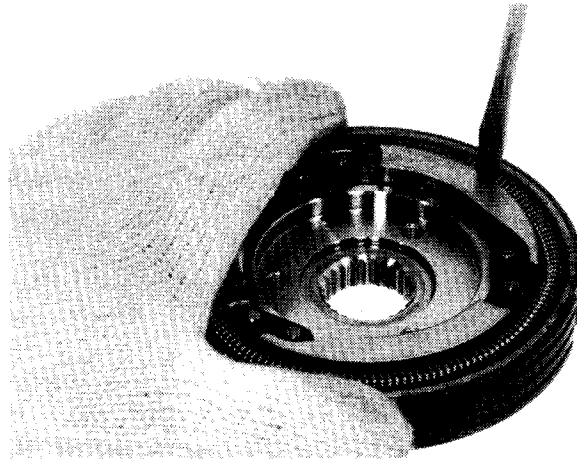
Attach the centrifugal clutch weights to the clutch hub with the links and clips.



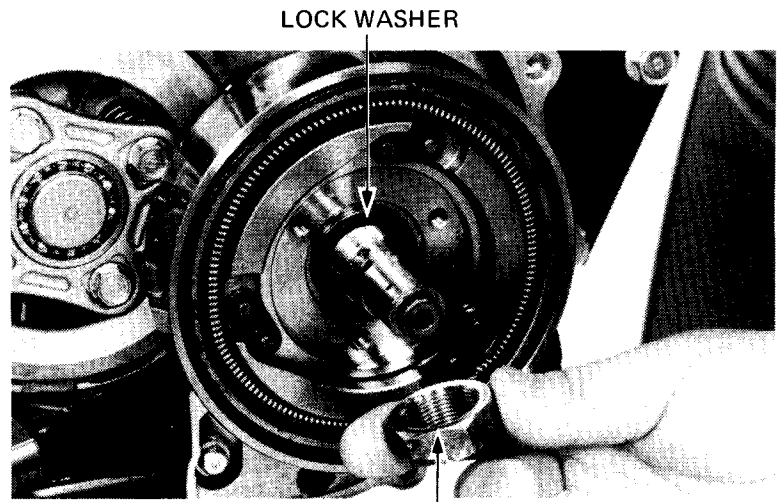


CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

Using a screwdriver, install the centrifugal clutch springs so that the spring ends are positioned on the center of the clutch weight.



Install the centrifugal clutch weight assembly onto the clutch drum.
Install the lock washer with its cupped face in.
Install the lock nut.



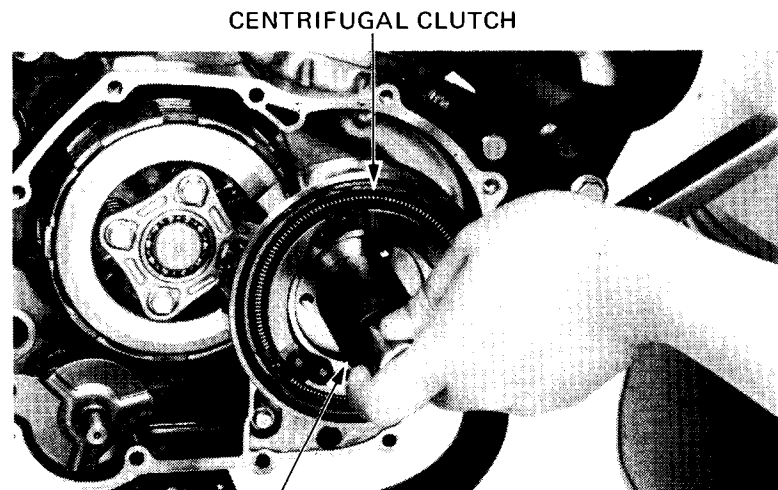
LOCK NUT (LEFT HAND THREADS)

Hold the recoil starter driven pulley with a screwdriver or suitable lever (Page 9-7).
Turn the lock nut counterclockwise to tighten it.

**TORQUE: 105–115 N·m (10.5–11.5 kg·m,
76–83 ft·lb)**

NOTE:

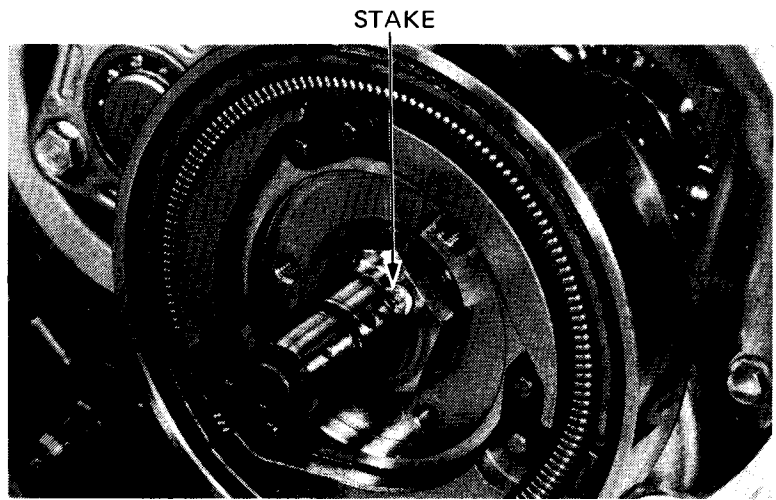
The lock nut has left hand threads.



30 mm SOCKET WRENCH 07916-PD10000 OR
EQUIVALENT COMMERCIALLY AVAILABLE
IN U.S.A.



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

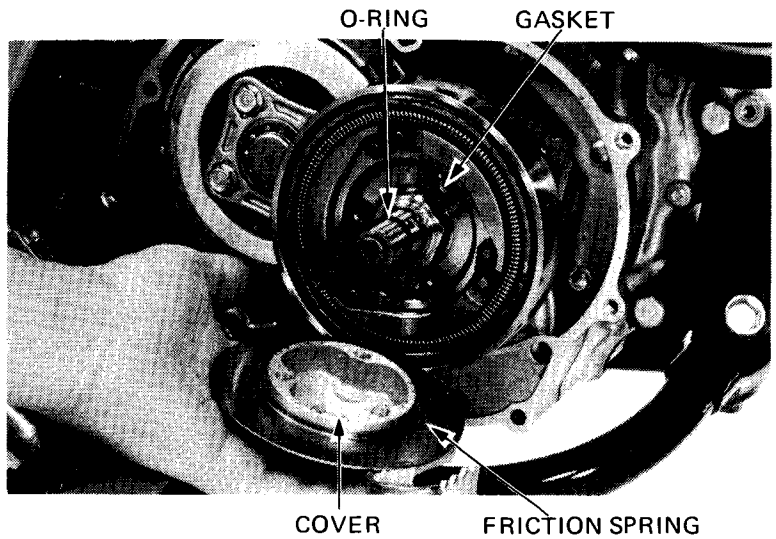


Place the oil filter rotor cover gasket onto the clutch hub.

Slip a new O-ring onto the crankshaft.
Install the thrust washer, side friction spring and oil filter rotor cover.

NOTE:

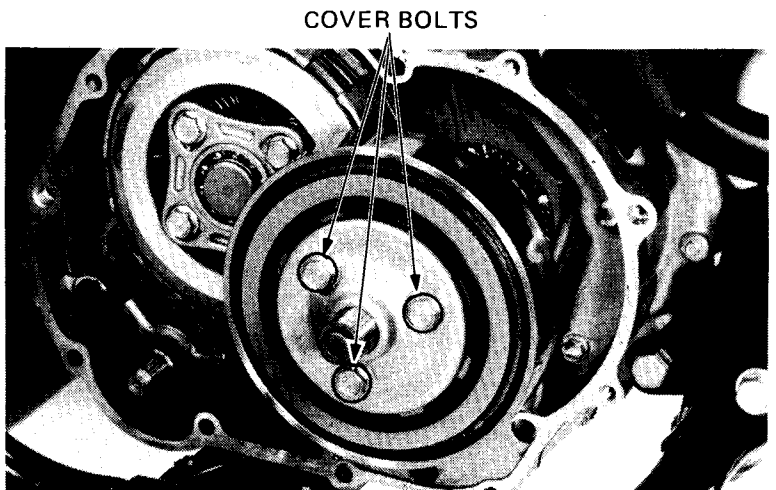
Align the teeth of the friction spring with the step on the cover.



Tighten the cover bolts.

TORQUE: 10–14 N·m (1.0–1.4 kg·m,
7–10 ft·lb)

Install the right crankcase cover (Page 8-21).
Install the recoil starter and gearshift pedal (Page 9-6).



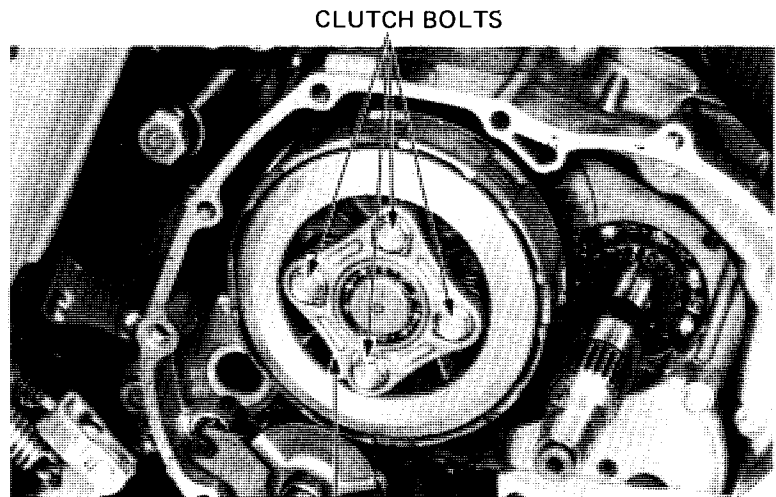


MANUAL CLUTCH

REMOVAL

Remove the following:

- right crankcase cover (Page 8-3)
- centrifugal clutch (Page 8-6)
- clutch bolts
- lifter plate
- clutch springs

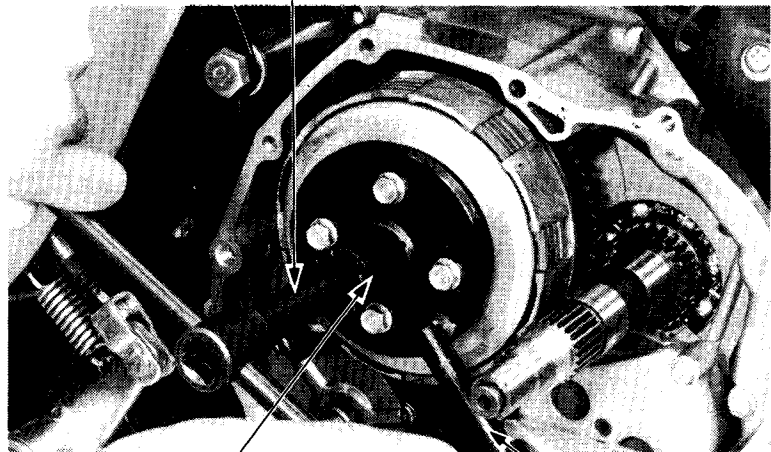


CLUTCH BOLTS

LIFTER PLATE

Install a Clutch Center Holder as shown, and remove the clutch lock nut.

EXTENSION BAR 07716-0020500 OR
EQUIVALENT COMMERCIALY AVAILABLE
IN U.S.A.

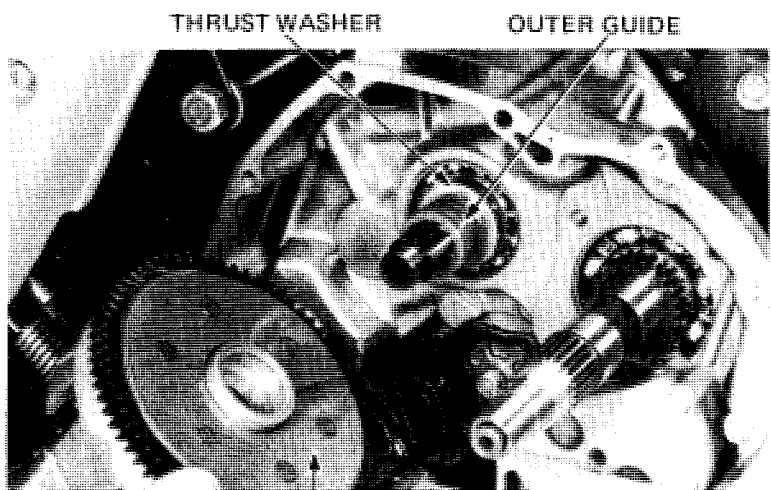


LOCK NUT WRENCH,
20 x 24 mm
07716-0020100

CLUTCH CENTER HOLDER
07923-9580000 OR
BAND STRAP WRENCH

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

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



THRUST WASHER

OUTER GUIDE

CLUTCH OUTER

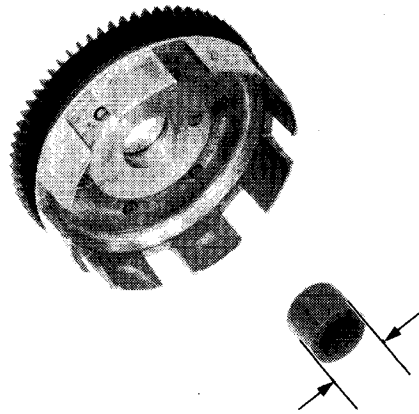


INSPECTION

Check the slots of the clutch outer for nicks, cuts or indentations made by the clutch discs. Replace if necessary.

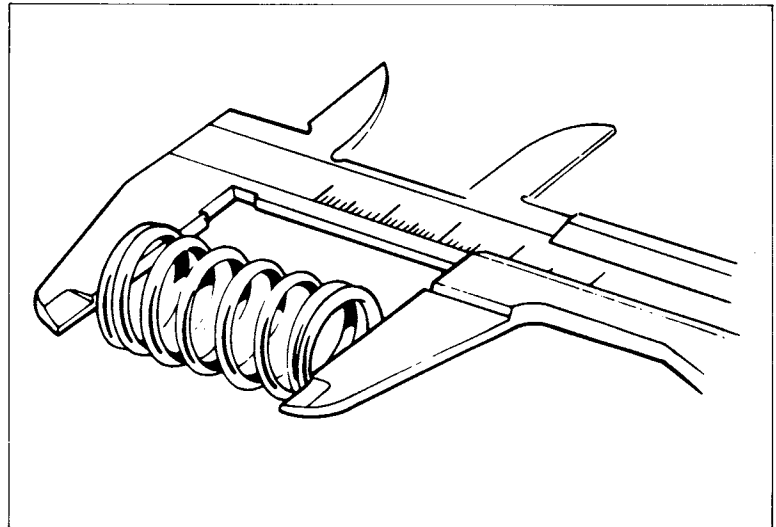
Measure the O.D. of the clutch outer guide.

SERVICE LIMIT: 20.05 mm (0.789 in)



Measure the spring free length.

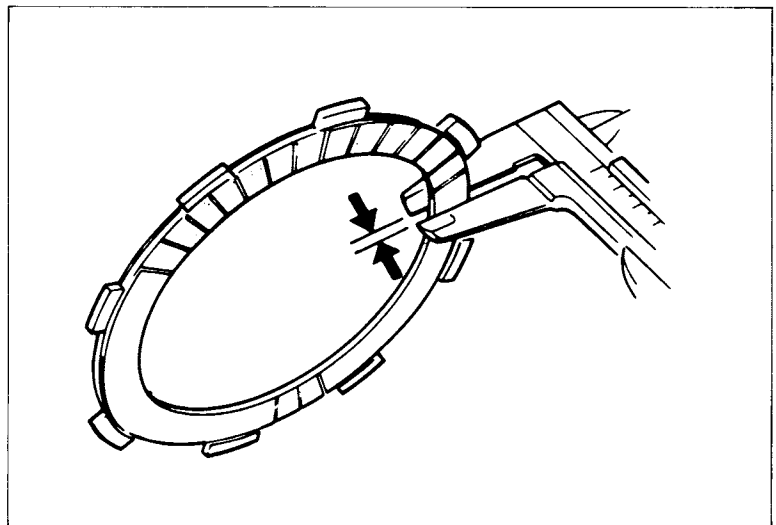
SERVICE LIMIT: 25.0 mm (0.98 in)



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

Measure the disc thickness.

SERVICE LIMIT: 2.6 mm (0.10 in)

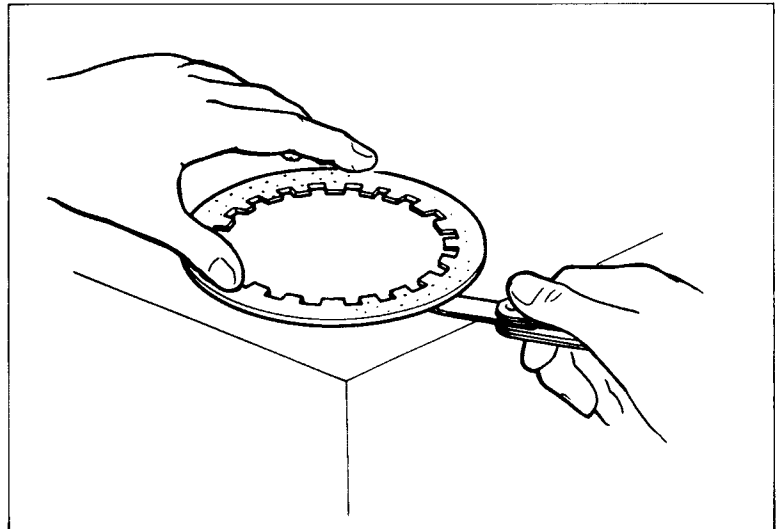




CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

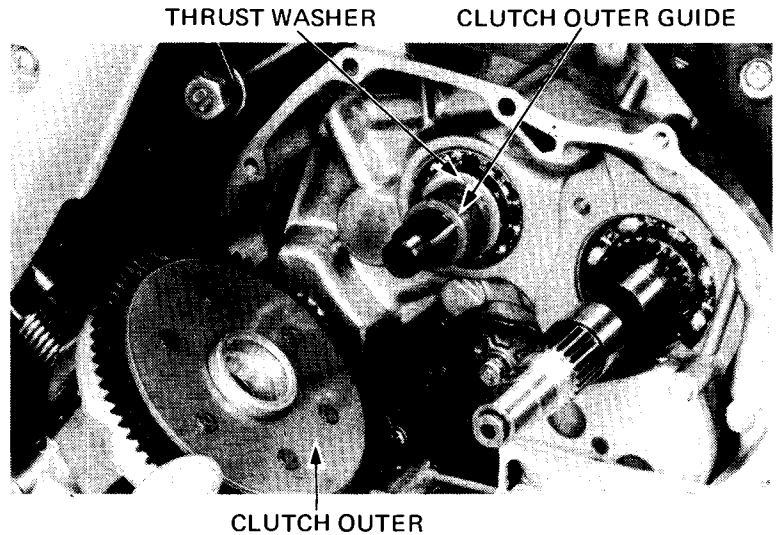
Check for plate and disc warpage on a surface plate using a feeler gauge.

SERVICE LIMIT: 0.20 mm (0.008 in)



INSTALLATION

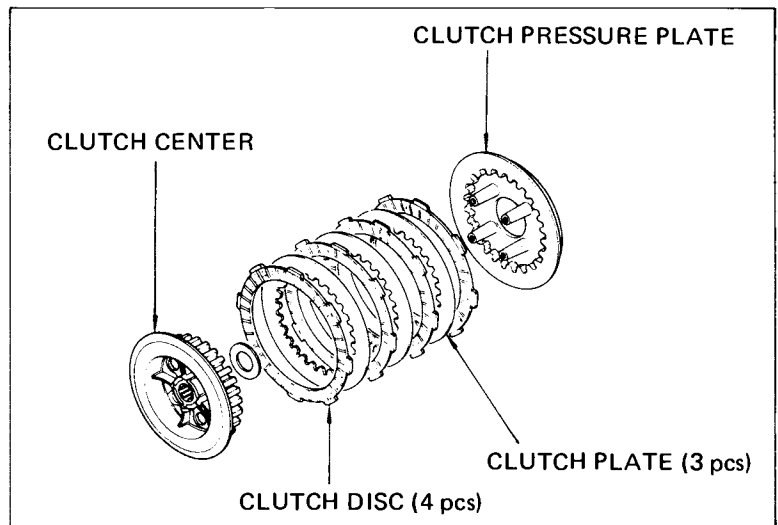
Install the thrust washer, clutch outer guide, and clutch outer.



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

NOTE:

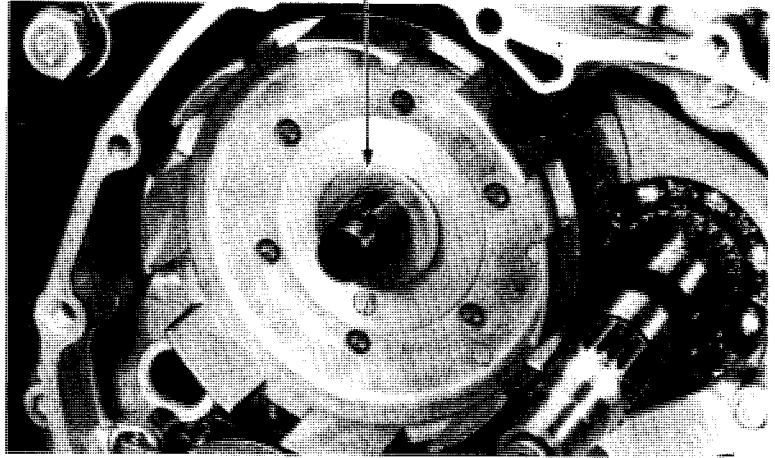
- Stack the discs and plates alternately.
- Coat new clutch discs with engine oil.





Install the thrust washer and clutch assembly.

THRUST WASHER



Install the lock washer with the ward "OUTSIDE" facing out.

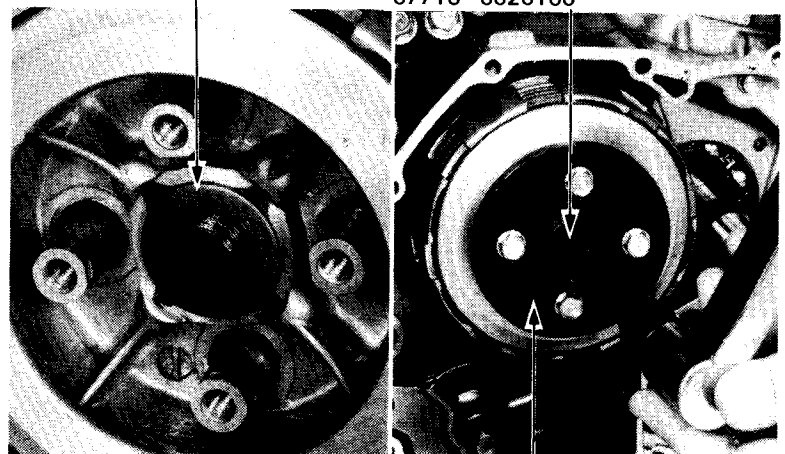
Install the clutch center holder with the clutch bolts.

Tighten the lock nut.

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

LOCK WASHER

LOCK NUT WRENCH, 20 x 24 mm
07716-0020100



CLUTCH CENTER HOLDER
07923-9580000 OR
BAND STRAP WRENCH

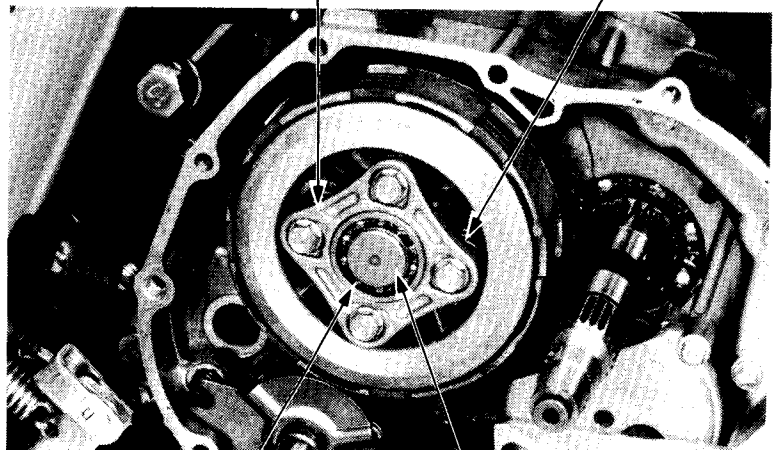
Install the clutch springs and lifter plate.
Tighten the clutch bolts.

Install the bearing and push rod.
Install the centrifugal clutch (Page 8-9).

Install the right crankcase cover (Page 8-21).

LIFTER PLATE

CLUTCH SPRING



BEARING

PUSH ROD



CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

OIL PUMP

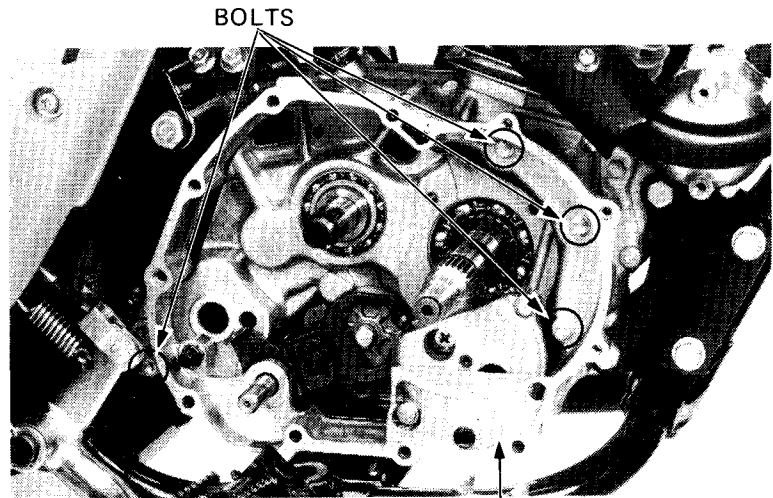
REMOVAL

Remove the following:

- centrifugal clutch (Page 8-6)
- clutch (Page 8-12)
- clutch lifter cam, ball retainer and clutch lifter (Page 8-5)

Remove the four bolts mounting the right crankcase spacer and the spacer.

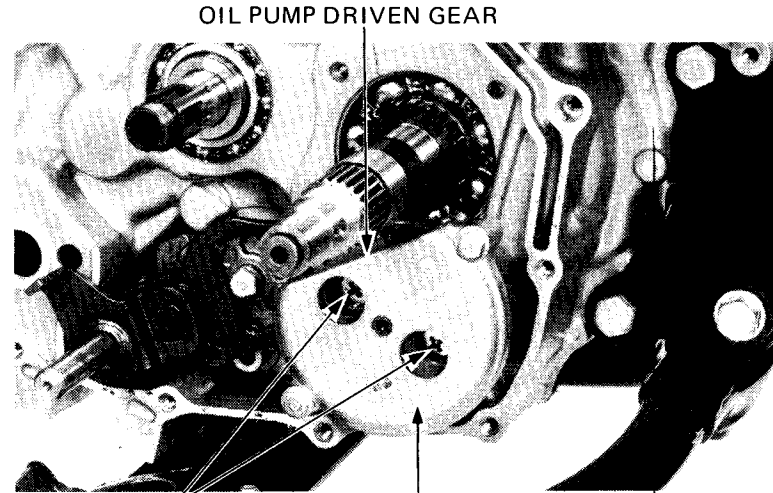
Remove the gasket and dowel pins.



RIGHT CRANKCASE SPACER

Turn the crankshaft and align the oil pump driven gear holes with the pump gear cover holes.

Remove the oil pump mounting screws and oil pump.



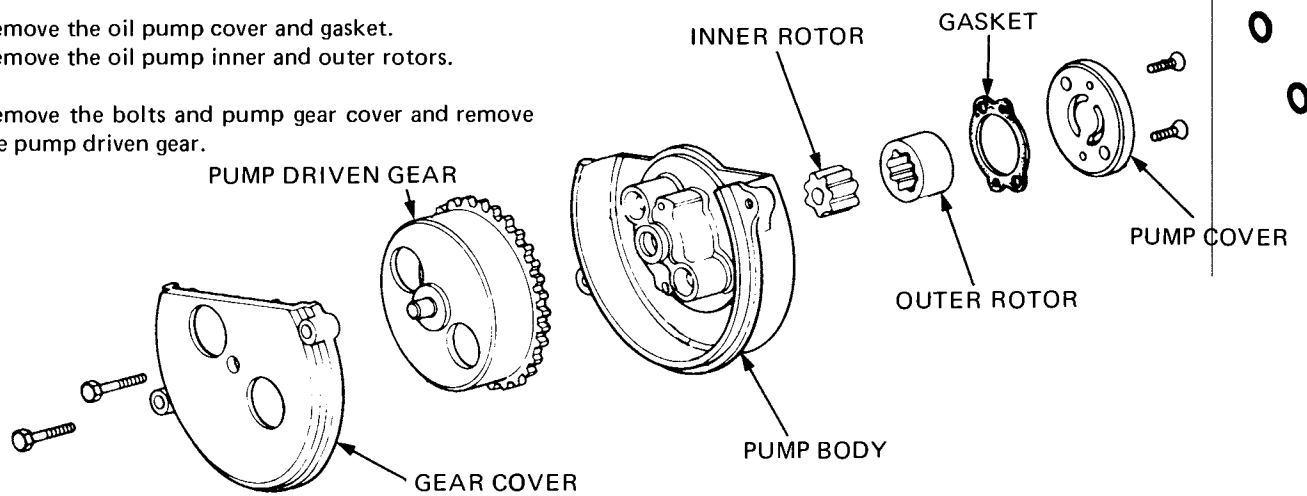
SCREWS

GEAR COVER

DISASSEMBLY

Remove the oil pump cover and gasket.
Remove the oil pump inner and outer rotors.

Remove the bolts and pump gear cover and remove the pump driven gear.

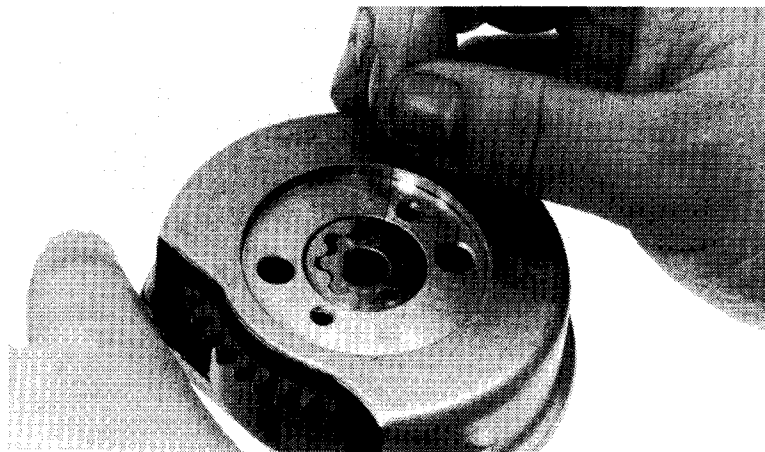




OIL PUMP INSPECTION

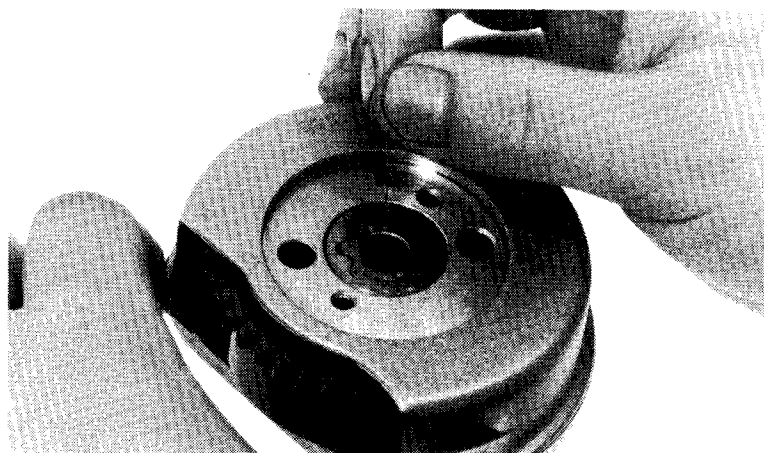
Measure the pump body to rotor clearance.

SERVICE LIMIT: 0.40 mm (0.016 in)



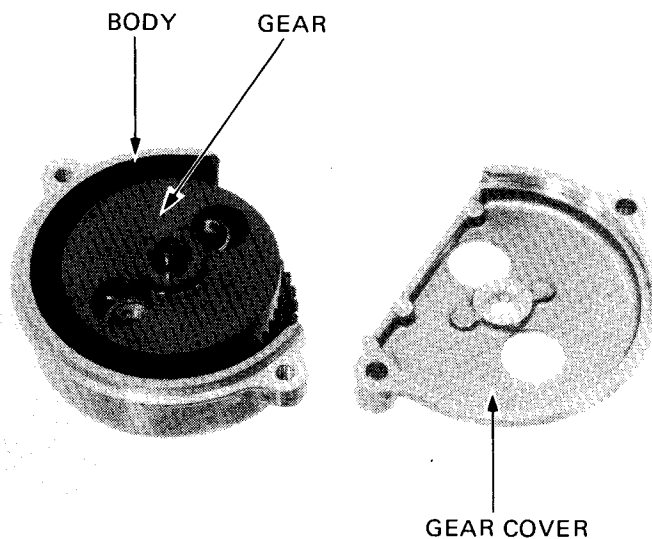
Measure the pump clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



ASSEMBLY

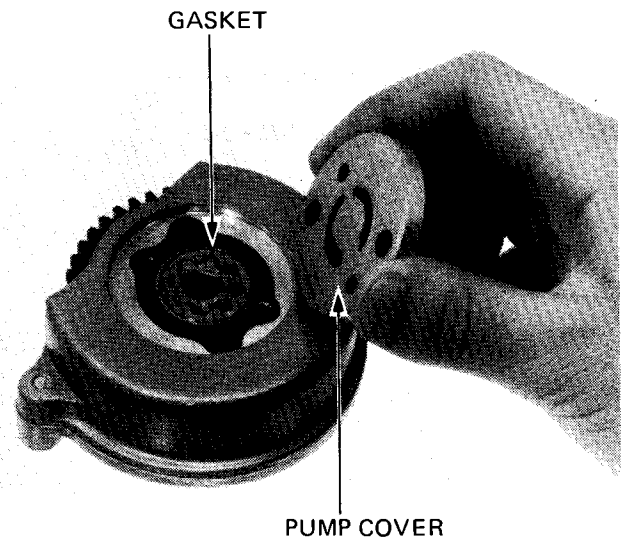
Install the pump gear and gear cover onto the oil pump body.





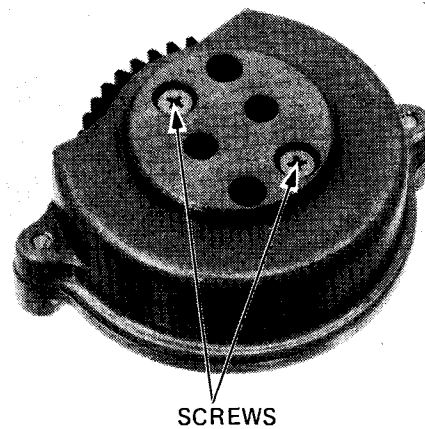
CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

Install the inner and outer rotors.
Install the gasket and pump cover.



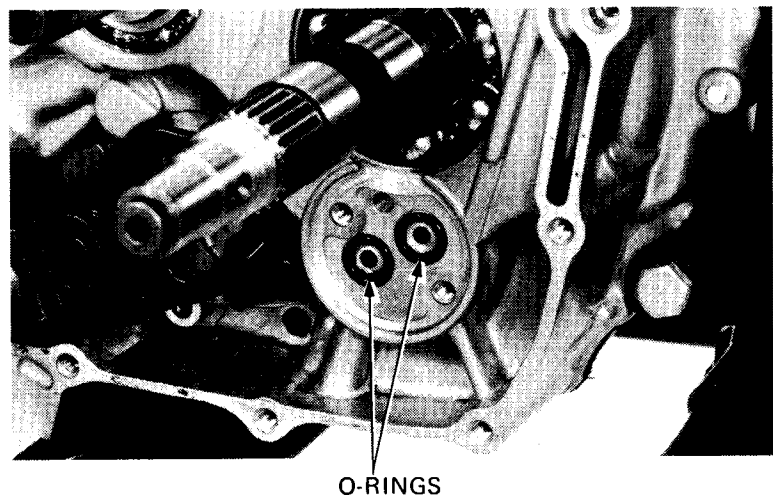
Tighten the screws.

Check the operation of the pump by rotating the pump gear by hand.



INSTALLATION

Install the O-rings onto the crankcase.



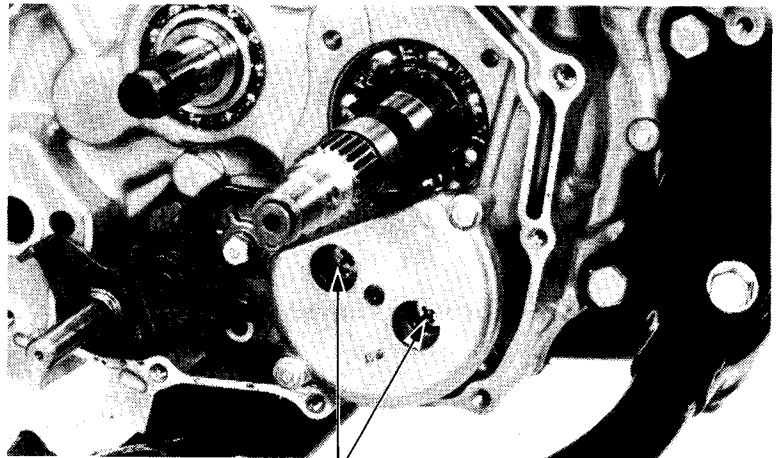


Align the oil pump driven gear holes with the gear cover holes and install the oil pump assembly.

NOTE:

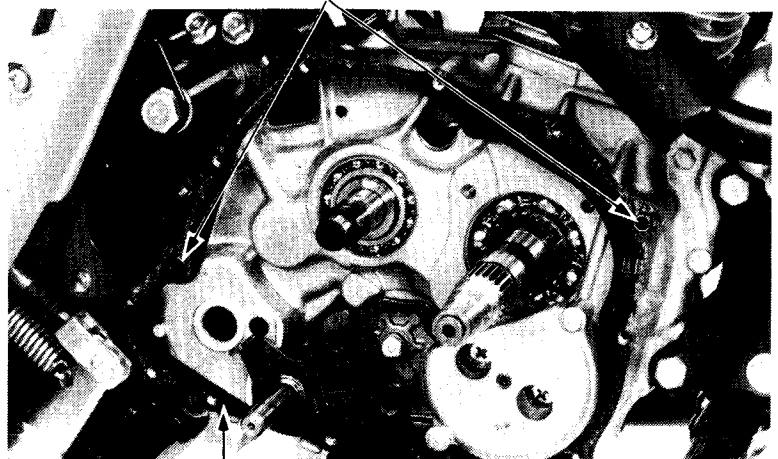
Make sure that the O-rings remain in place when installing the pump.

Tighten the two oil pump mounting screws.



SCREWS

Install the two dowel pins and a new gasket.



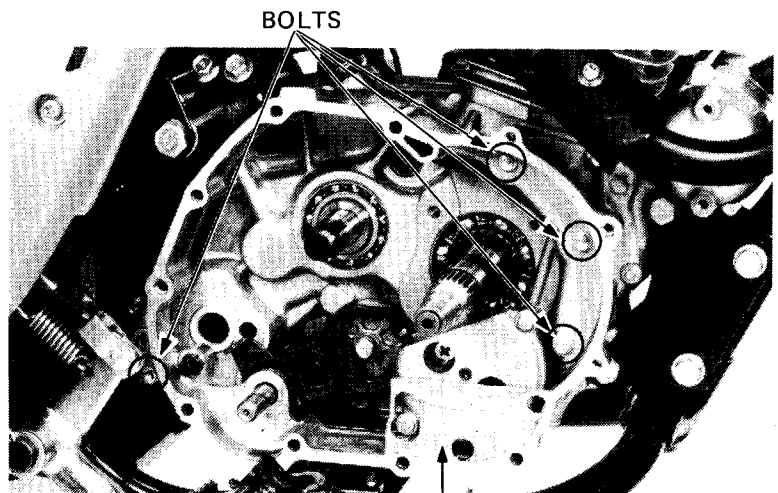
DOWEL PINS

GASKET

Install the right crankcase spacer and tighten it with the four bolts.

Install the following:

- clutch lifter, ball retainer and lifter cam (Page 8-5)
- clutch (Page 8-14)
- centrifugal clutch (Page 8-9)
- right crankcase cover (Page 8-21)



BOLTS

RIGHT CRANKCASE SPACER



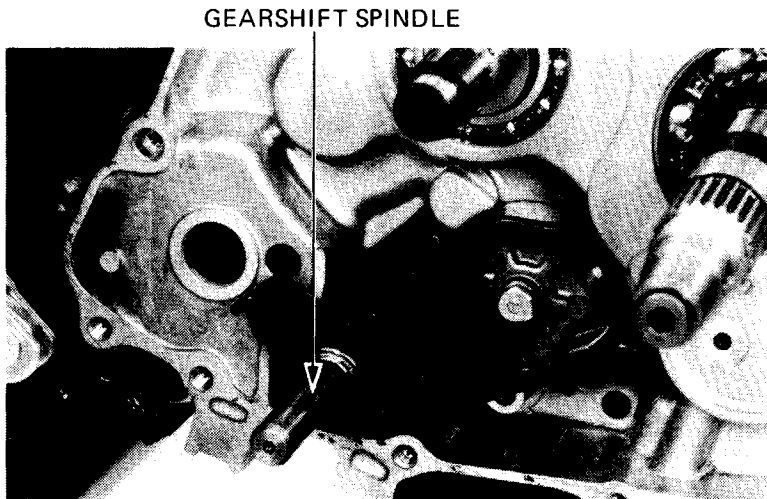
GEARSHIFT LINKAGE

DISASSEMBLY

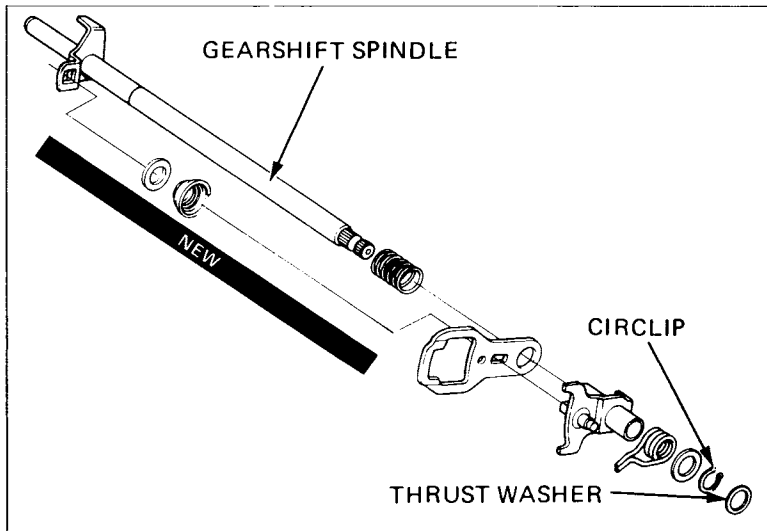
Remove the following:

- right crankcase cover (Page 8-3)
- centrifugal clutch (Page 8-6)
- manual clutch (Page 8-12)
- clutch lifter (Page 8-5)
- oil pump (Page 8-16)

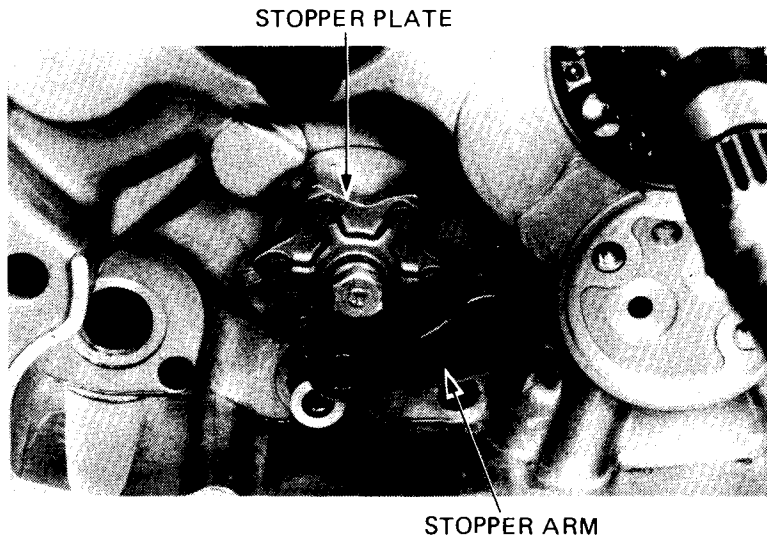
Pull the gearshift spindle out of the crankcase.



Remove the thrust washer, circlip and disassemble the gearshift spindle.



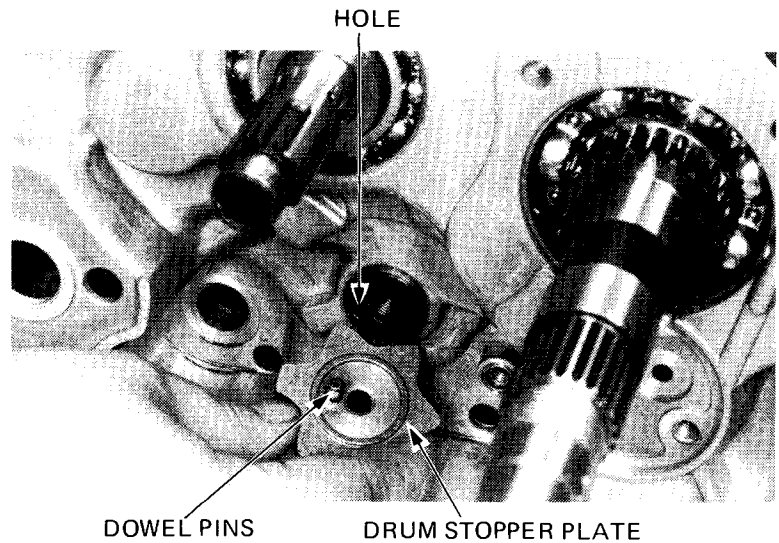
Remove the drum stopper plate and drum stopper arm.





ASSEMBLY

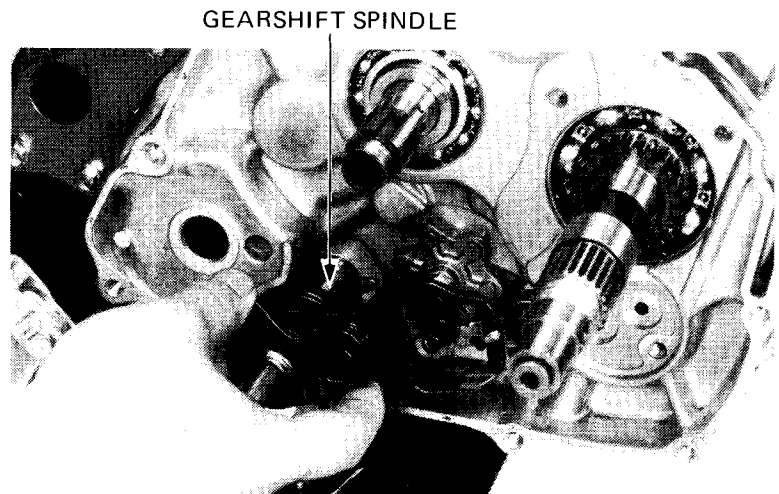
Install the drum stopper plate by aligning the hole and dowel pin.
Install the stopper arm.



Assemble and install the gearshift spindle.

Install the following:

- oil pump (Page 8-18)
- manual clutch (Page 8-14)
- centrifugal clutch (Page 8-9)
- clutch lifter (Page 8-5)
- right crankcase cover



**RIGHT CRANKCASE COVER
INSTALLATION**

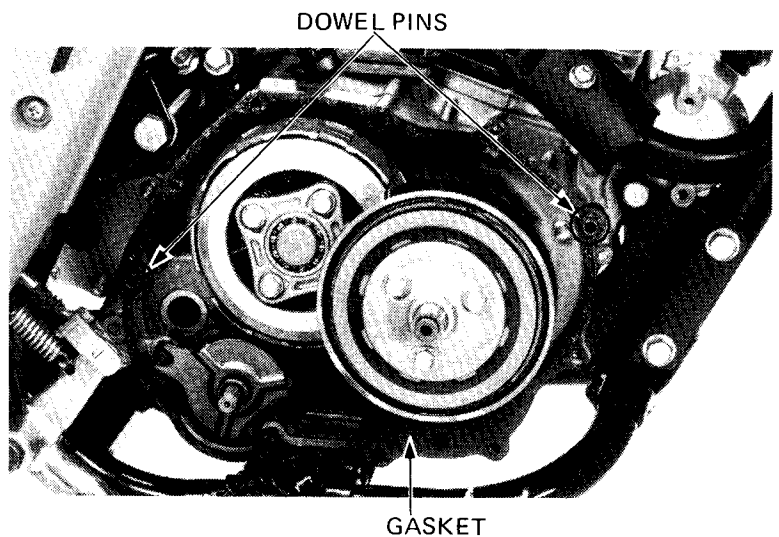
Install the dowel pins and a new gasket.
Install the right crankcase cover.

Adjust the clutch (Page 3-13).

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

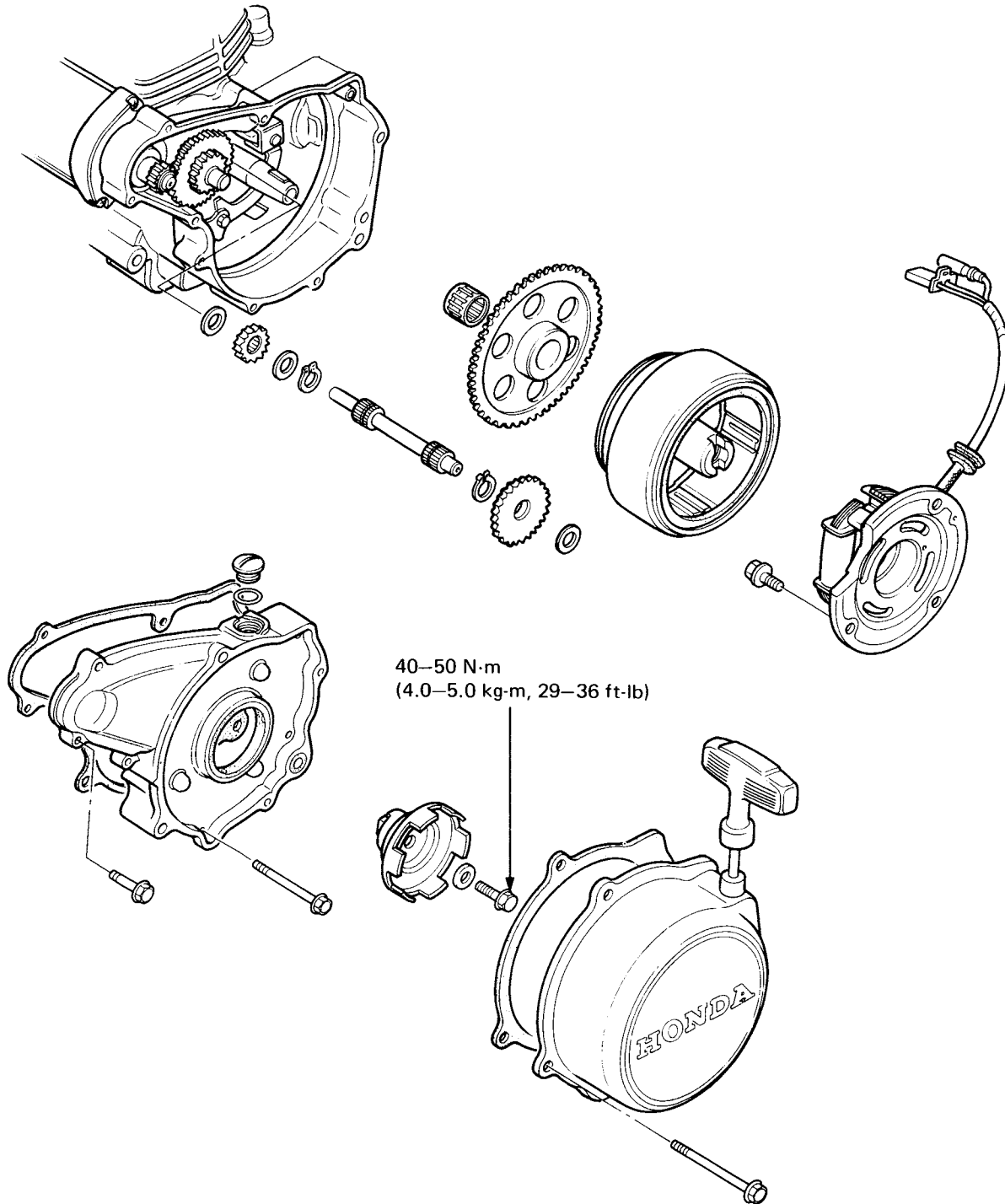
Start the engine and check the clutch for smooth operation.

Be sure there are no oil leaks.





RECOIL STARTER/ALTERNATOR/STARTER CLUTCH





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ATC200ES

9. RECOIL STARTER / ALTERNATOR / STARTER CLUTCH

SERVICE INFORMATION	9-1
TROUBLESHOOTING	9-1
RECOIL STARTER	9-2
ALTERNATOR	9-7
STARTER CLUTCH	9-10

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the recoil starter, alternator and starter clutch.
- Refer to Section 16 for alternator inspection.

TORQUE VALUE

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

TOOL

Common

Flywheel puller 07733-0010000 or 07933-0010000

TROUBLESHOOTING

Engine does not turn when operating recoil starter

1. Faulty starter ratchet
2. Faulty driven pulley
3. Faulty drive pulley

Starter rope does not recoil

1. Faulty recoil spring

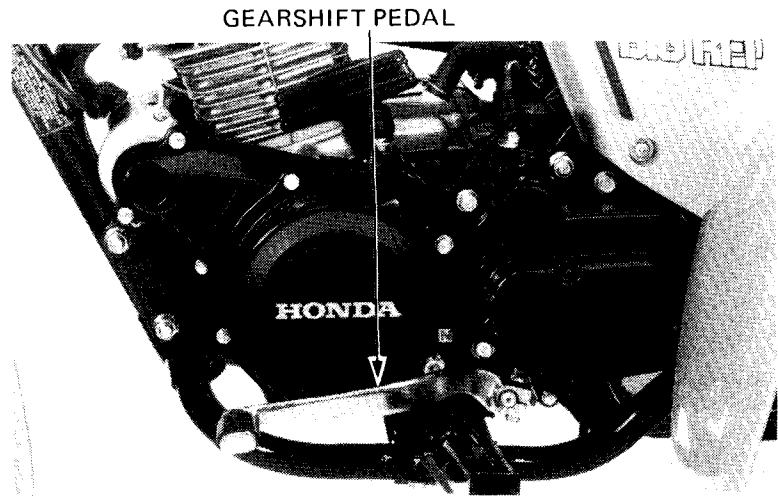


RECOIL STARTER/ALTERNATOR/STARTER CLUTCH

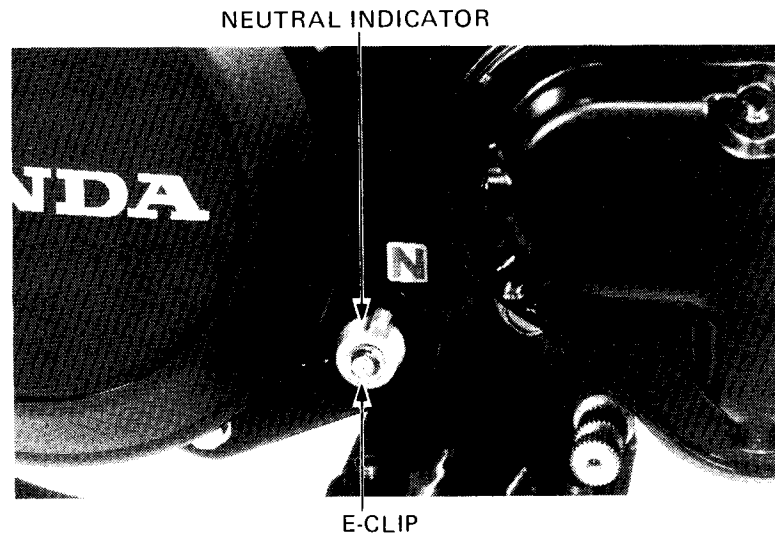
RECOIL STARTER

REMOVAL

Shift the transmission into neutral.
Remove the gearshift pedal.

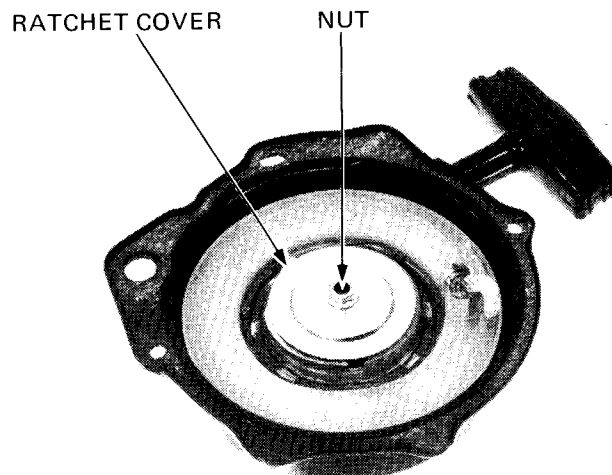


Remove the E-clip securing the neutral indicator and the indicator.
Remove the four recoil starter mounting bolts and the recoil starter.



DISASSEMBLY

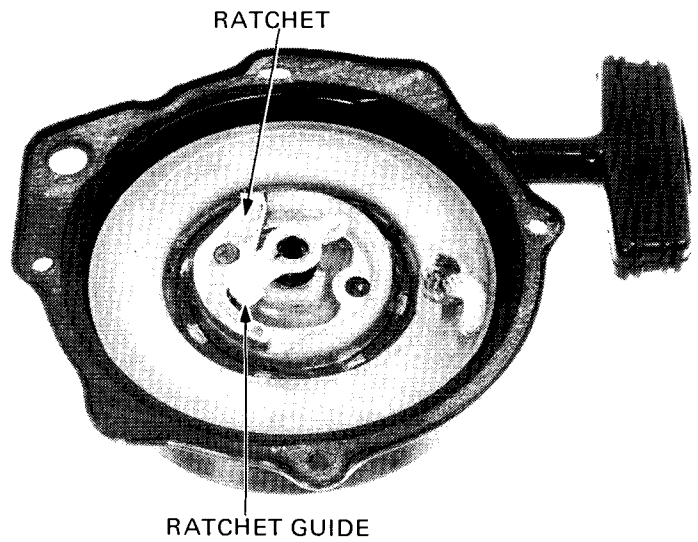
Remove the nut attaching the ratchet cover and cover.





Remove the ratchet, ratchet guide, spring seat and spring.

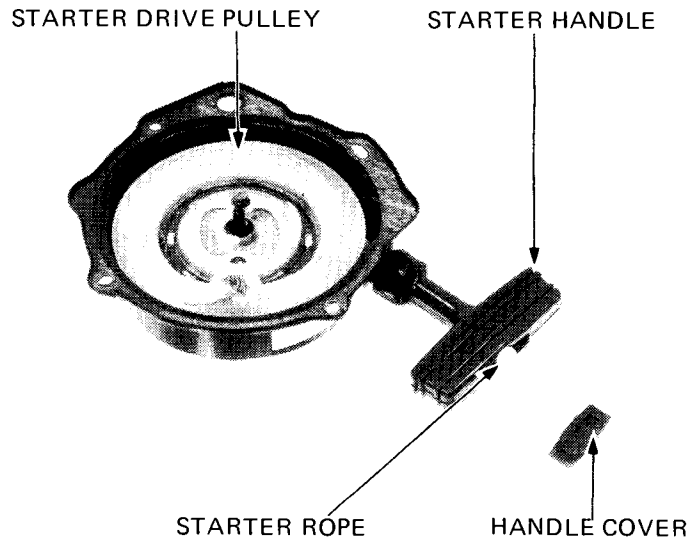
Check the ratchet, ratchet guide and spring for wear or damage.



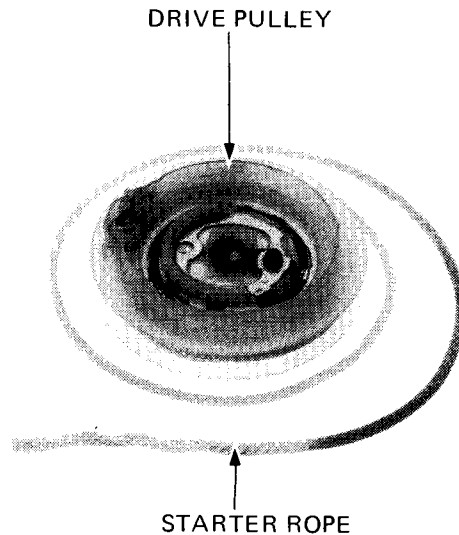
Remove the starter handle cover.
Untie the starter rope and remove the starter handle.
Release the starter rope slowly.
Remove the starter drive pulley.

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.



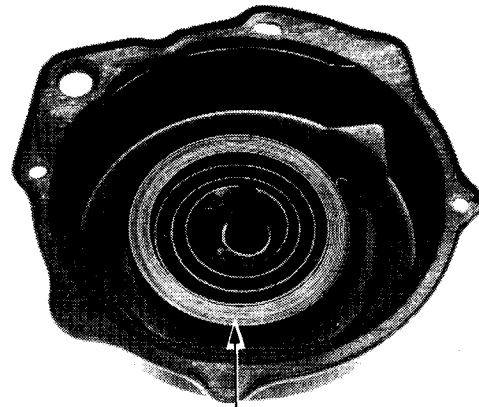
Remove the starter rope from the drive pulley.
Check the starter rope for wear or damage.





RECOIL STARTER/ALTERNATOR/STARTER CLUTCH

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

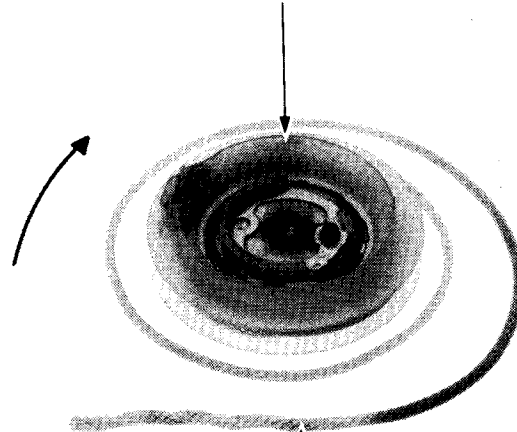


RECOIL STARTER SPRING

ASSEMBLY

Install the starter rope and tie a square knot as shown.
Wrap the rope around the starter pulley in a clockwise direction as viewed from the ratchet side as shown.

DRIVE PULLEY



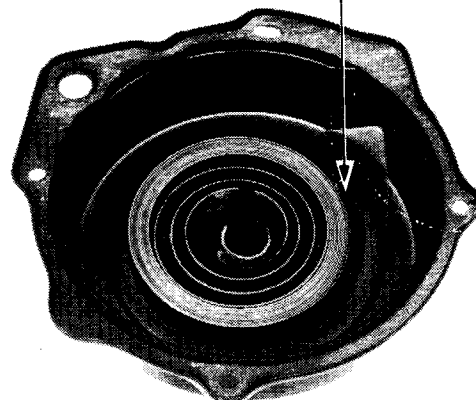
ROPE

Install the spring by hooking the end on the starter 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.

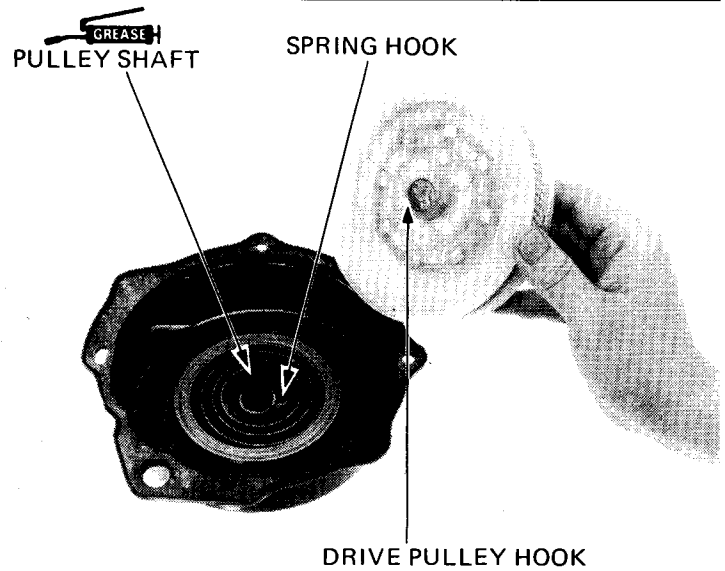
HOOK



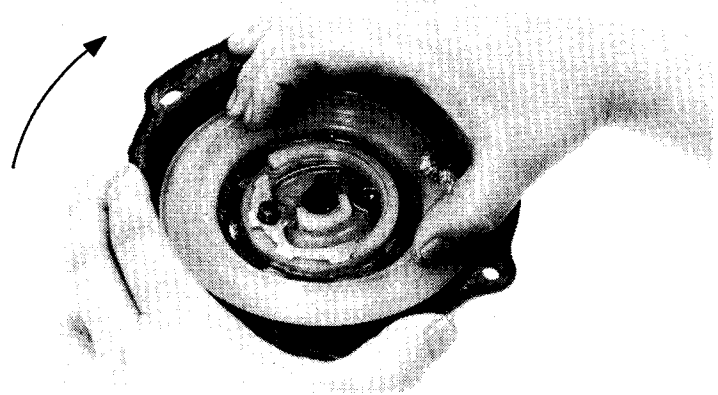


RECOIL STARTER/ALTERNATOR/STARTER CLUTCH

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

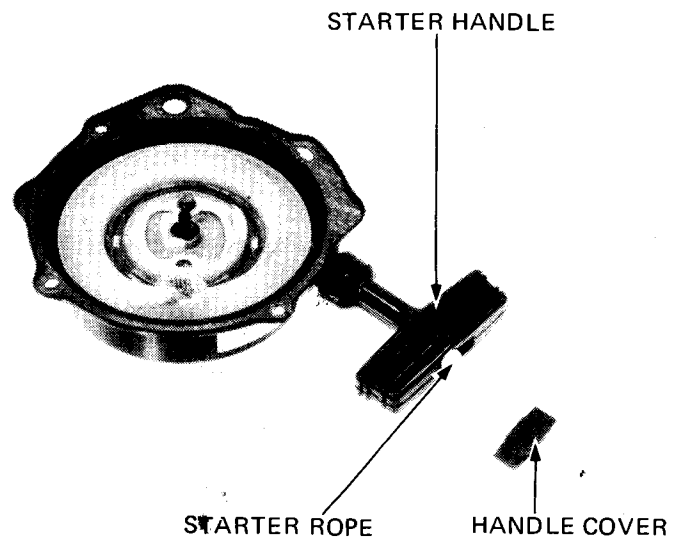


Preload the starter spring by turning the pulley 2 turns clockwise.



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

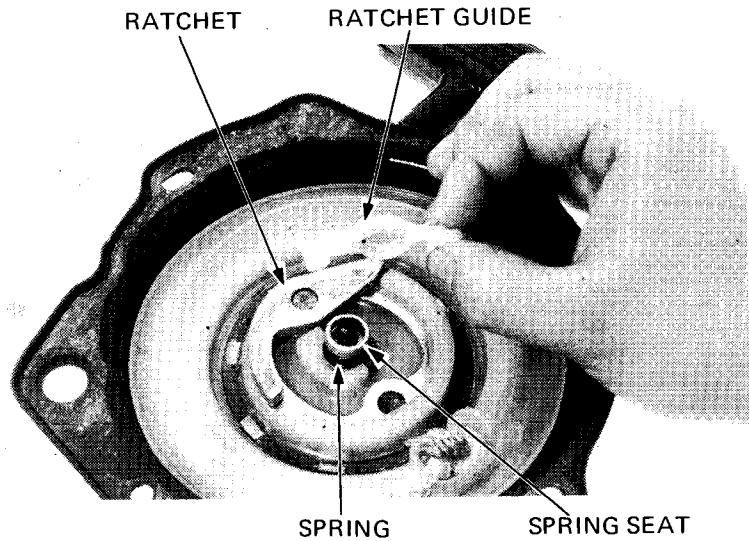
Tie the rope end in a square knot and install the handle cover.





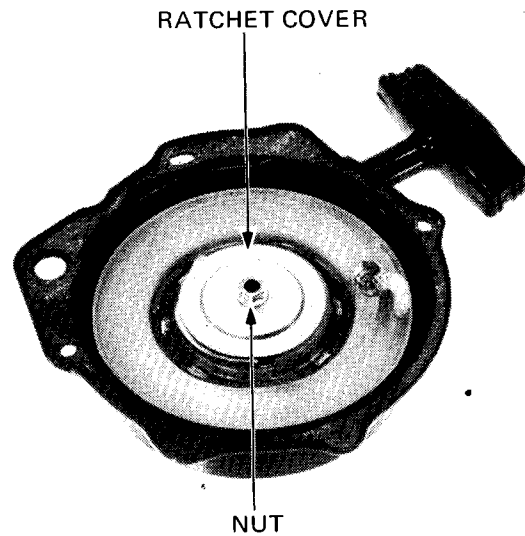
RECOIL STARTER/ALTERNATOR/STARTER CLUTCH

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



Install the ratchet cover and tighten the nut.

Check recoil starter operation by pulling the starter grip.



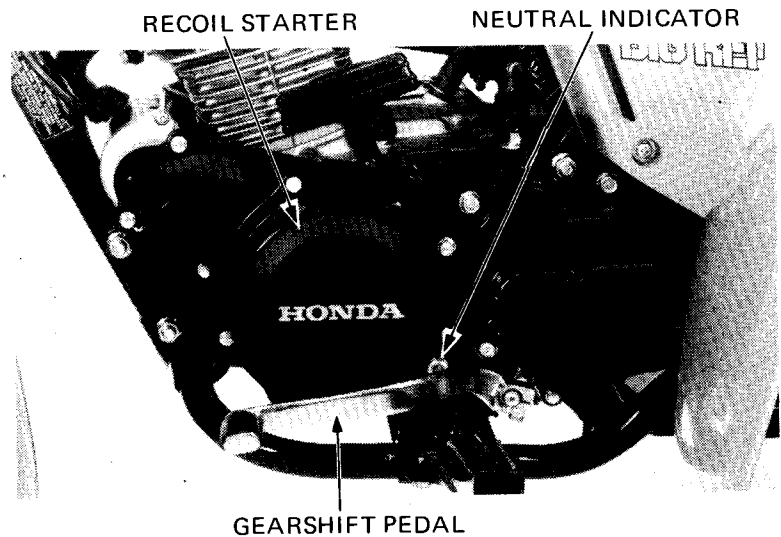
INSTALLATION

Install the starter gasket and recoil starter with the four bolts.

Install the neutral indicator and secure it with the E-clip.

Install the gearshift pedal.

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



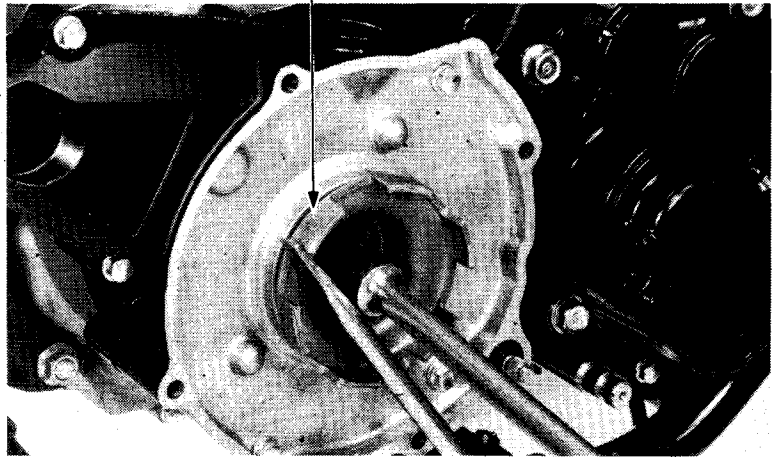


ALTERNATOR

LEFT CRANKCASE COVER REMOVAL

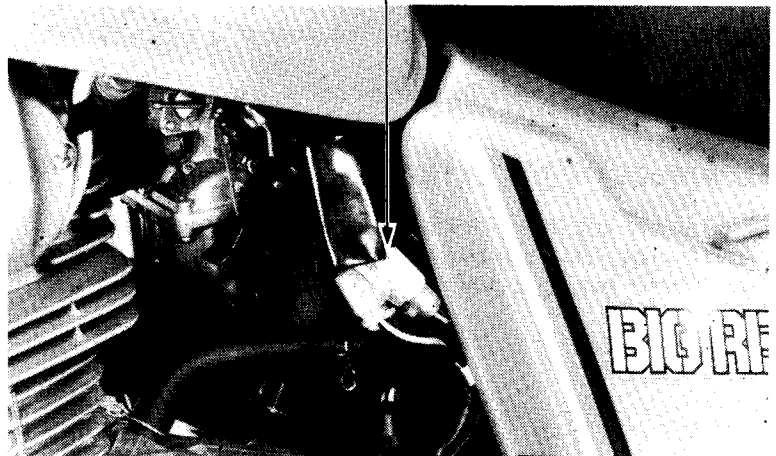
Drain the engine oil (Page 2-2).
Remove the recoil starter (Page 9-2).
Hold the starter driven pulley with a screwdriver.
Remove the bolt attaching the starter driven pulley and the pulley.

STARTER DRIVEN PULLEY



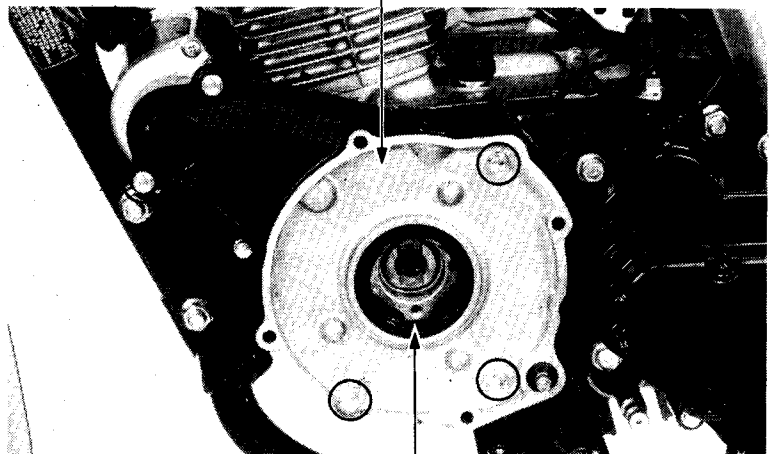
Disconnect the alternator coupler.

ALTERNATOR COUPLER



Remove the six bolts attaching the left crankcase cover and the cover.
Check the seals on the left crankcase cover and replace if necessary.

LEFT CRANKCASE COVER



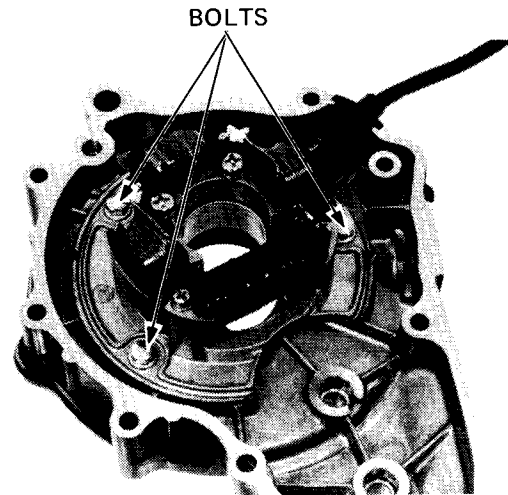
SEALS



RECOIL STARTER/ALTERNATOR/STARTER CLUTCH

STATOR REMOVAL

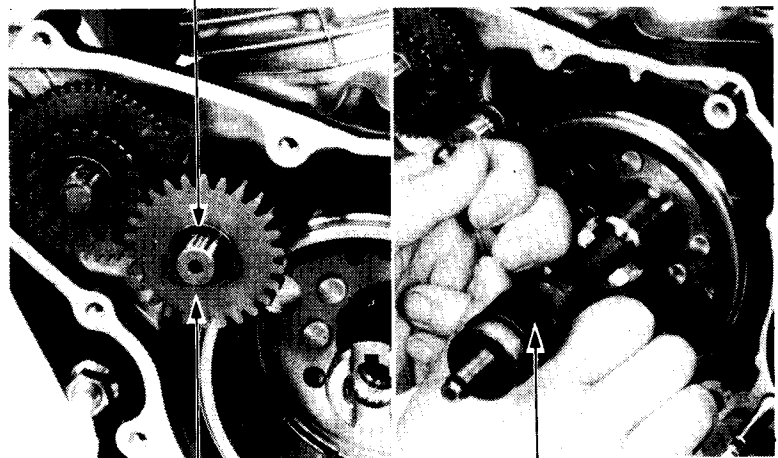
Remove the three bolts mounting the stator and the stator from the left crankcase.



FLYWHEEL REMOVAL

Remove the thrust washer and starter reduction gear B.
Remove the flywheel with the flywheel puller.

THRUST WASHER



**STARTER
REDUCTION
GEAR B**

**FLYWHEEL PULLER
07733-0010000 OR
07933-0010000**

FLYWHEEL INSTALLATION

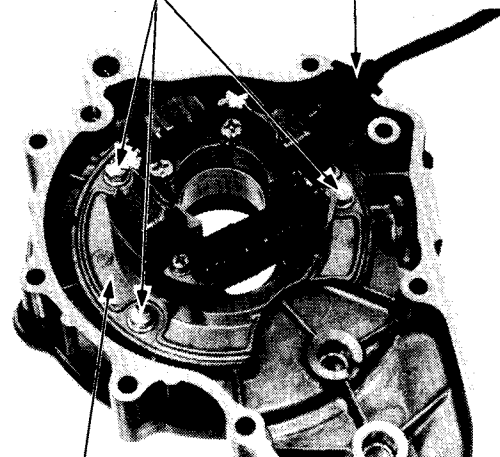
Align the key way in the flywheel with the key on the crankshaft and install the flywheel.
Install starter reduction gear B and thrust washer.

STATOR INSTALLATION

Install the stator onto the left crankcase cover and tighten it with the three bolts.
Insert the wire grommet into the groove in the left crankcase cover.

BOLTS

WIRE GROMMET

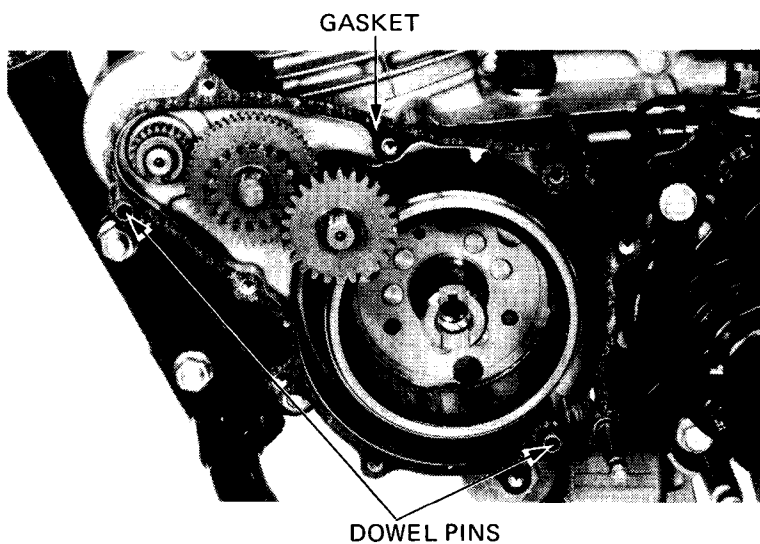


STATOR

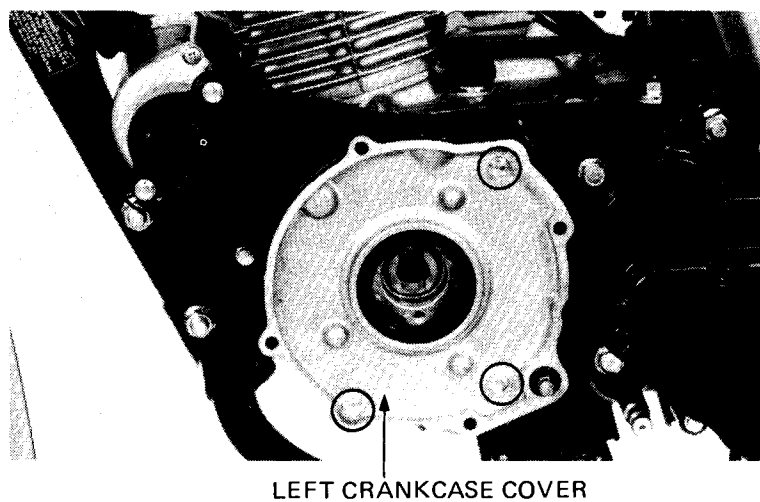


**LEFT CRANKCASE COVER
INSTALLATION**

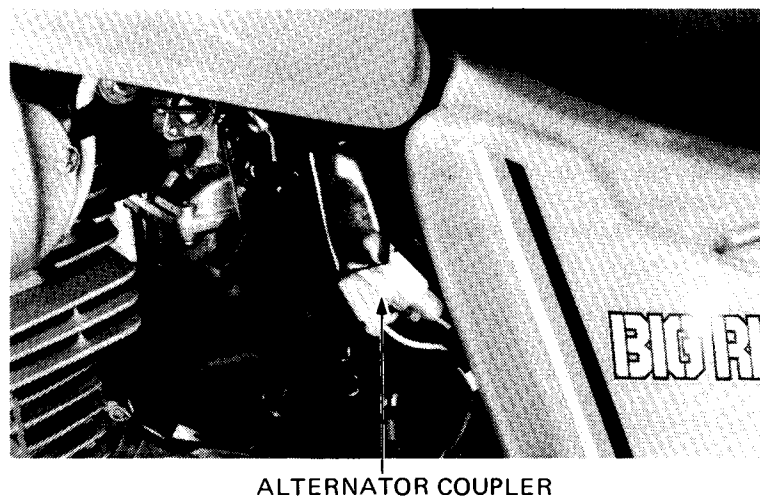
Install the two dowel pins and a new gasket.



Install the left crankcase cover using the six bolts.



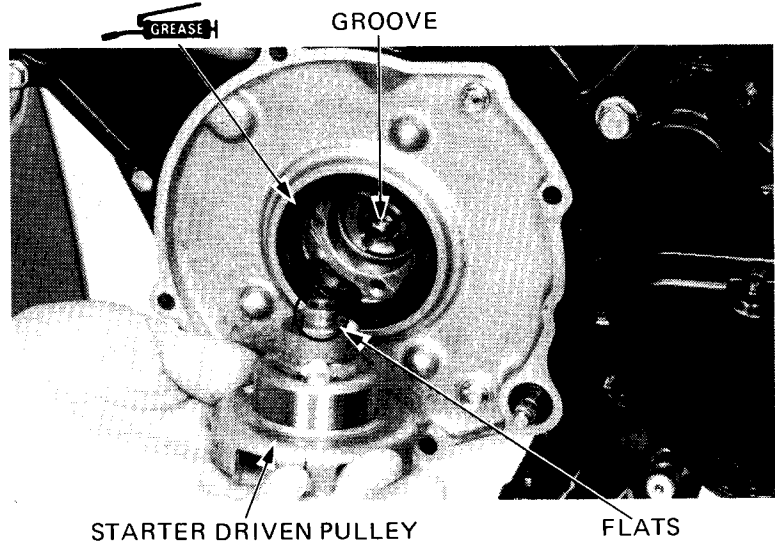
Connect the alternator coupler to the wire harness.





RECOIL STARTER/ALTERNATOR/STARTER CLUTCH

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

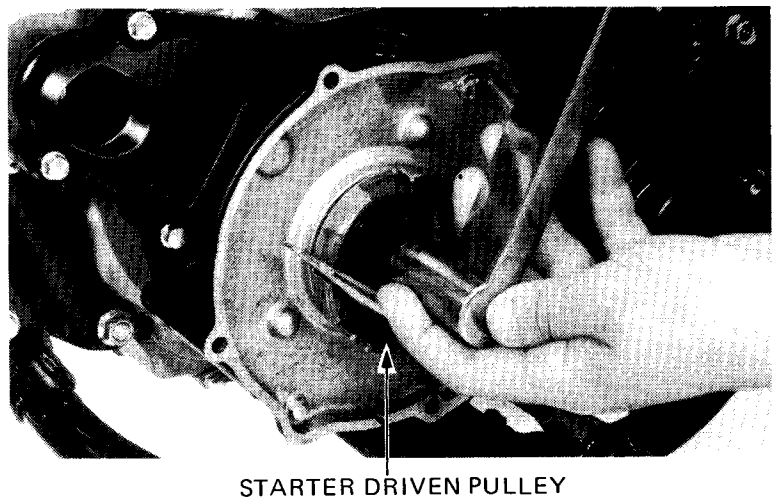


Install the pulley bolt, washer and O-ring.

Hold the driven pulley with a screwdriver and tighten the bolt.

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

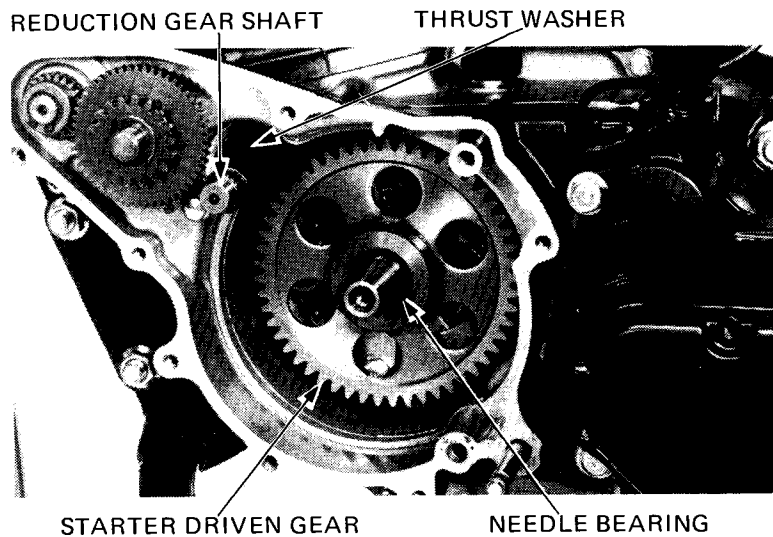
Install the recoil starter (Page 9-6).
Fill the crankcase with the recommended oil (Page 2-1).



STARTER CLUTCH

REMOVAL

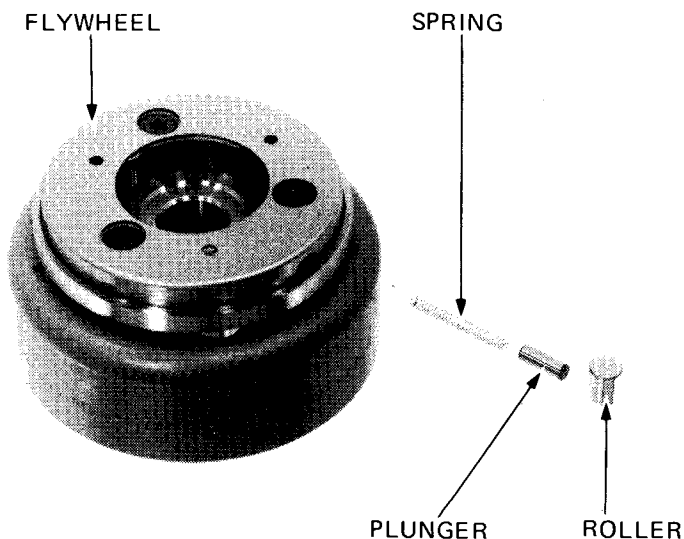
Remove the left crankcase cover (Page 9-7).
Remove the flywheel (Page 9-8).
Remove the starter reduction gear shaft, thrust washers and gear A.
Remove the starter driven gear and needle bearing.





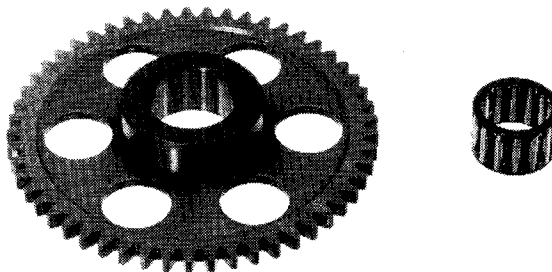
INSPECTION

Remove the one way clutch rollers, plungers and springs from the flywheel and check them for wear or damage.



Check the outside diameter surface of the starter driven gear for dents, scratches or scoring, and replace if necessary.

Check the needle bearing for wear or damage and replace if necessary.



INSTALLATION

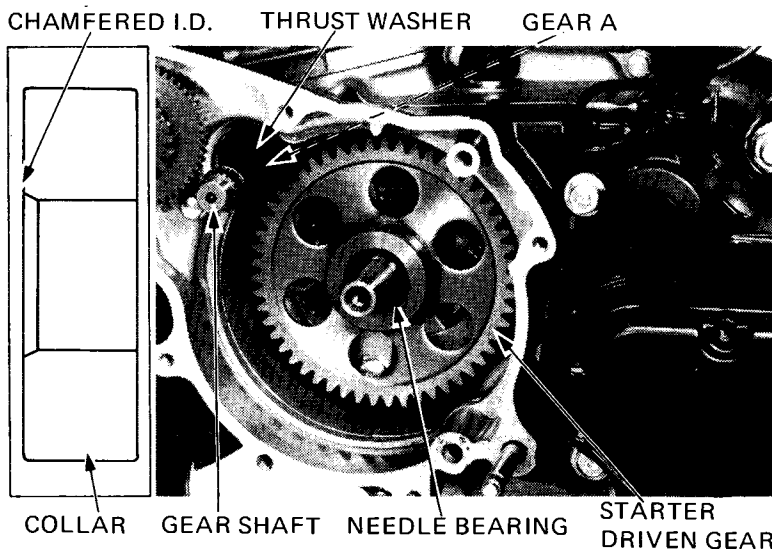
Install the starter driven gear collar over the crankshaft with its chamfered I.D. facing out.

Install the starter driven gear and needle bearing.

Install the flywheel (Page 9-8).

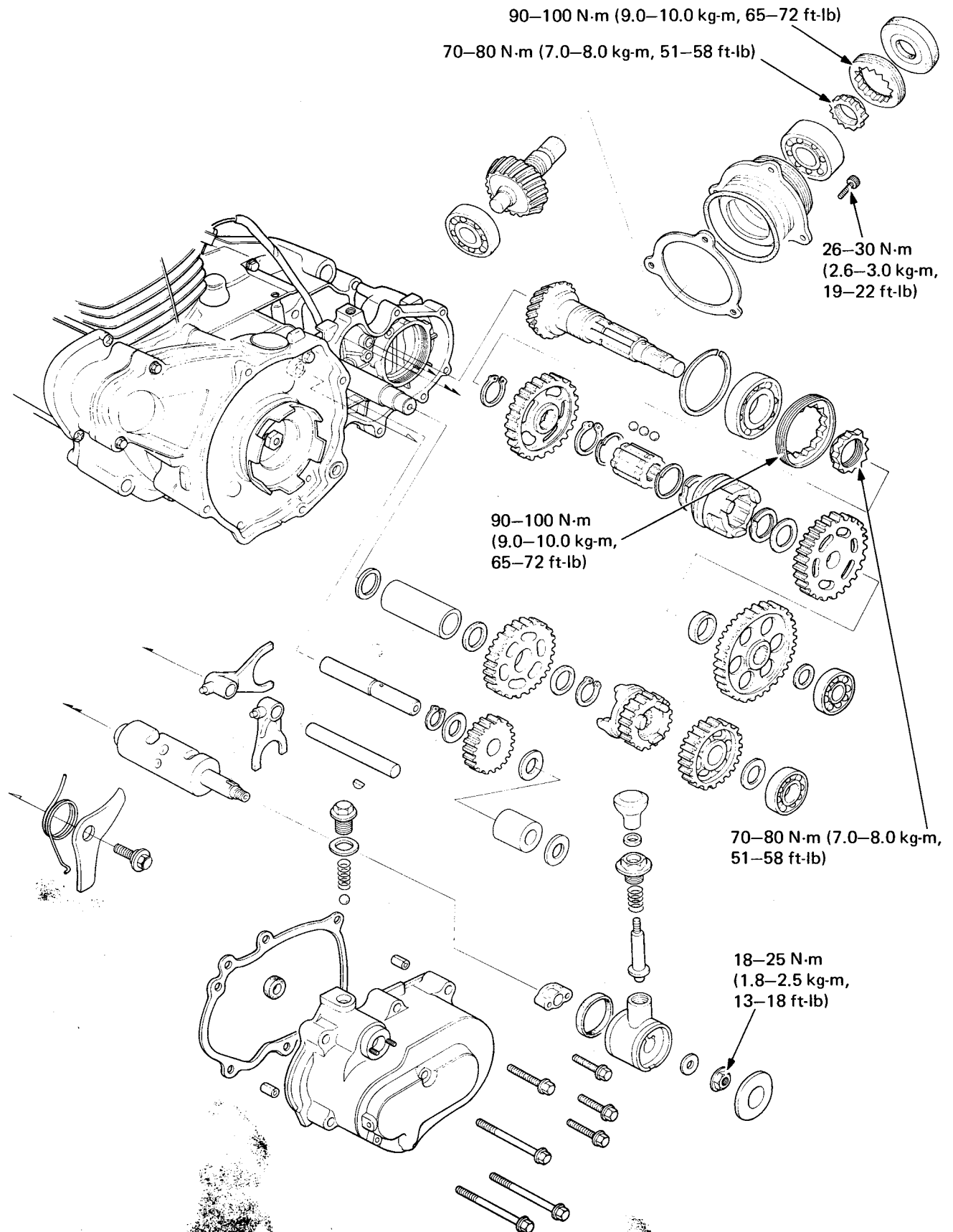
Install the left crankcase cover (Page 9-9).

Install the recoil starter (Page 9-6).





SUBTRANSMISSION/OUTPUT GEAR





HONDA
ATC200ES

10. SUB TRANSMISSION/ OUTPUT GEAR

SERVICE INFORMATION	10-1	SUBTRANSMISSION COVER INSTALLATION	10-11
TROUBLESHOOTING	10-2	OUTPUT GEAR CASE REMOVAL	10-14
SUBTRANSMISSION COVER REMOVAL	10-3	OUTPUT GEAR DISASSEMBLY	10-15
SUBTRANSMISSION DISASSEMBLY	10-5	OUTPUT GEAR ASSEMBLY	10-21
SUBTRANSMISSION ASSEMBLY	10-10	OUTPUT GEAR CASE INSTALLATION	10-25

SERVICE INFORMATION

GENERAL

This section covers removal and installation of the subtransmission and output gear.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT	
Shift fork	I.D.	12.000–12.018 mm (0.4724–0.4731 in)	12.050 mm (0.4744 in)	
	Claw thickness	5.000–5.007 mm (0.1968–0.1971 in)	4.900 mm (0.1929 in)	
Shift fork shaft O.D.		11.966–11.984 mm (0.4711–0.4718 in)	11.960 mm (0.4709 in)	
Subtrans- mission	Gear I.D.	Low drive gear	16.516–16.534 mm (0.6502–0.6509 in)	16.584 mm (0.6529 in)
		High drive gear	20.020–20.041 mm (0.7882–0.7890 in)	20.091 mm (0.8232 in)
		Reverse driven gear	22.020–22.041 mm (0.8669–0.8678 in)	22.091 mm (0.8697 in)
		Reverse idler gear	15.000–15.018 mm (0.5905–0.5912 in)	15.068 mm (0.5932 in)
	Counter- shaft O.D.	at low drive gear	16.466–16.484 mm (0.6483–0.6490 in)	16.416 mm (0.6463 in)
		at high drive gear	19.959–19.980 mm (0.7858–0.7866 in)	19.909 mm (0.7838 in)
	Output drive shaft O.D. (at reverse driven gear)		21.959–21.980 mm (0.8645–0.8654 in)	21.909 mm (0.8626 in)
Reverse idler shaft O.D.		14.966–14.984 mm (0.5892–0.5897 in)	14.916 mm (0.5872 in)	
Output gear	Backlash	0.080–0.180 mm (0.0031–0.0071 in)	0.250 mm (0.0098 in)	

10

TORQUE VALUES

Change lever body	18–25 N·m (1.8–2.5 kg·m, 13–18 ft·lb)
Output driven gear bearing holder	26–30 N·m (2.6–3.0 kg·m, 19–22 ft·lb)
Drive gear bearing outer race	90–100 N·m (9.0–10.0 kg·m, 65–72 ft·lb)
Drive gear bearing inner race	70–80 N·m (7.0–8.0 kg·m, 51–58 ft·lb)
Driven gear bearing outer race	90–100 N·m (9.0–10.0 kg·m, 65–72 ft·lb)
Driven gear bearing inner race	70–80 N·m (7.0–8.0 kg·m, 51–58 ft·lb)



SUBTRANSMISSION/OUTPUT GEAR

TOOLS

Special

Bearing remover	07936-3710300
Remover handle	07936-3710100
Remover weight	07741-0010201 or 07936-3710200
Mainshaft holder	07923-6890101
Lock nut wrench, 34/44 mm	07916-ME50000
Lock nut wrench, 30/40 mm	07916-9690000
Lock nut wrench attachment, 50 mm	07916-9690100
Bearing remover, 15 mm	07936-KC10000
Side gear bearing driver attachment	07946-9690100

Common

Driver	07749-0010000
Attachment, 32 x 35 mm	07746-0010100
Attachment, 37 x 40 mm	07746-0010200
Attachment, 42 x 47 mm	07746-0010300
Attachment, 52 x 55 mm	07746-0010400
Pilot, 15 mm	07746-0040300
Pilot, 17 mm	07746-0040400
Pilot, 25 mm	07746-0040600
Driver	07746-0030100
Pilot, 25 mm I.D.	07746-0030200
Pilot, 30 mm I.D.	07746-0030300

TROUBLESHOOTING

Rear noisy

- Worn subtransmission gear

Jumps out of gear

1. Shift fork bent or damaged
2. Shift fork shaft bent
3. Shift claw bent
4. Gear engagement dogs or slots worn
5. Shift drum cam grooves damaged

Hard to shift

1. Shift fork bent or damaged
2. Shift fork shaft bent

Excessive output gear noise

1. Output drive and driven gears worn or damaged
2. Bearing worn or damaged
3. Excessive backlash between output drive and driven gears
4. Improper shim thickness



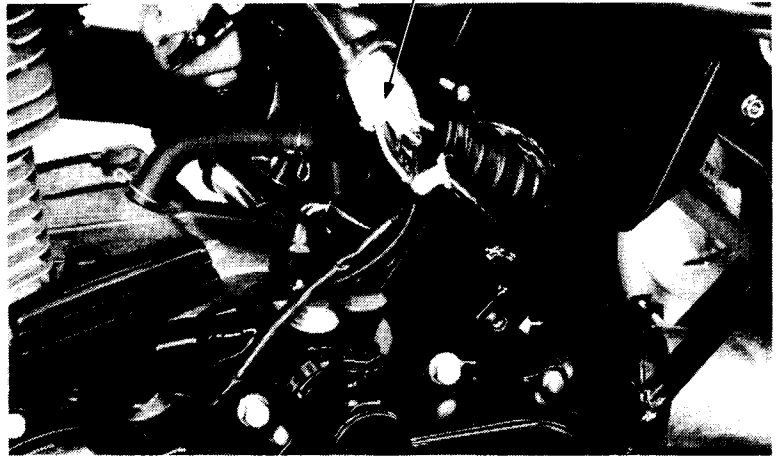
SUBTRANSMISSION COVER REMOVAL

Remove the rear carrier and left rear fender (Page 14-1).

Drain the engine oil (Page 2-2).

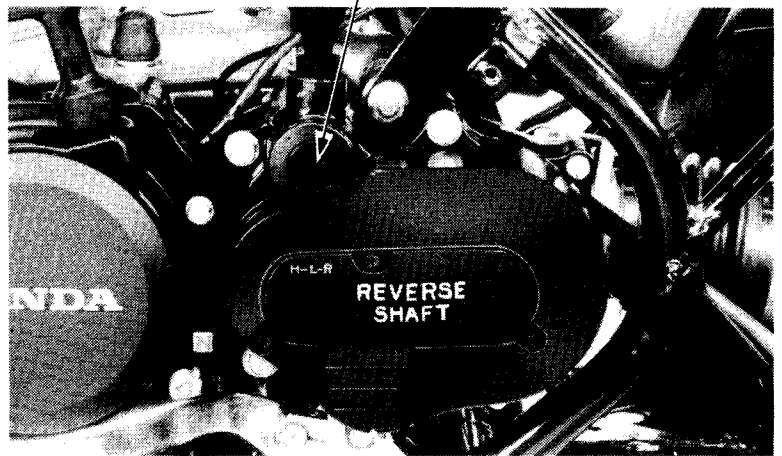
Disconnect the reverse sensor wire coupler.

REVERSE SENSOR WIRE COUPLER



NEW Remove the cap from the change lever mount.

CAP



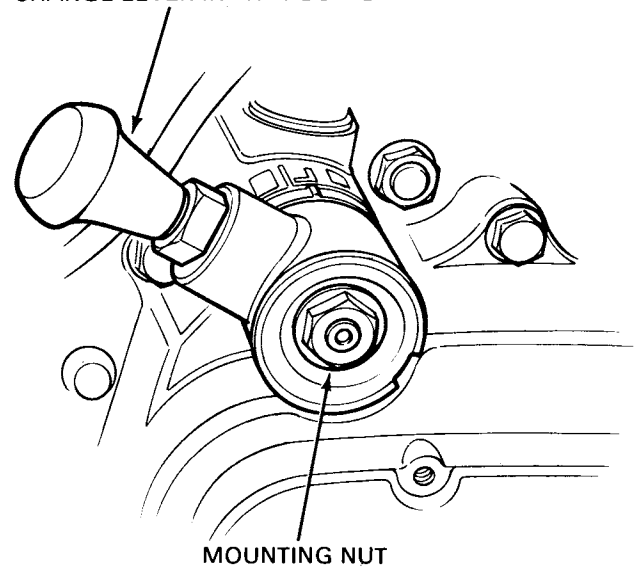
CHANGE LEVER IN "H" POSITION

NEW Move the transmission change lever to the "H" (high range) position.

Remove the change lever mounting nut.

CAUTION:

Be sure the change lever is in the correct position before removing the mounting nut to prevent damage to the transmission.

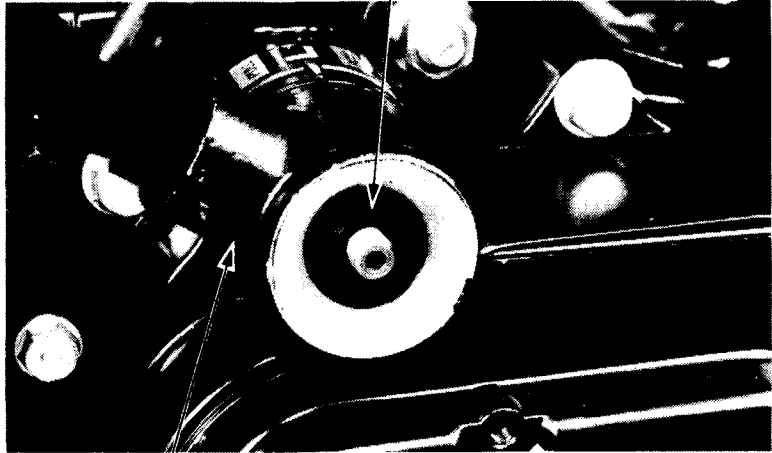




SUBTRANSMISSION/OUTPUT GEAR

Remove the conical spring washer.
Remove the change lever body from the shift drum.

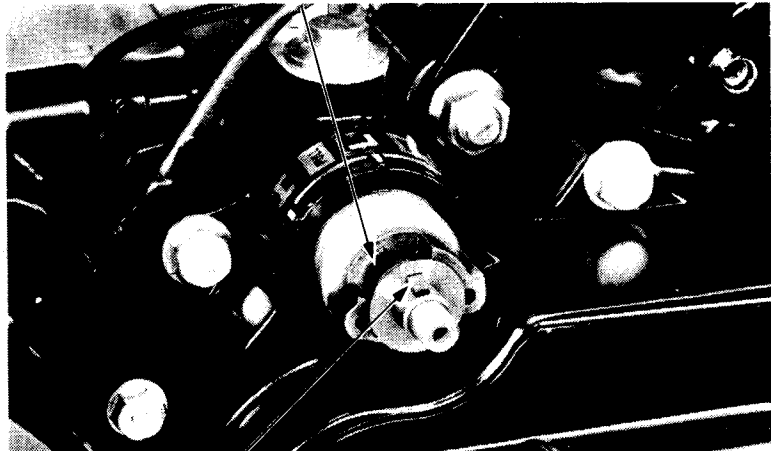
CONICAL SPRING WASHER



CHANGE LEVER BODY

Remove the woodruff key and subtransmission lever cam.

SUBTRANSMISSION LEVER CAM



WOODRUFF KEY

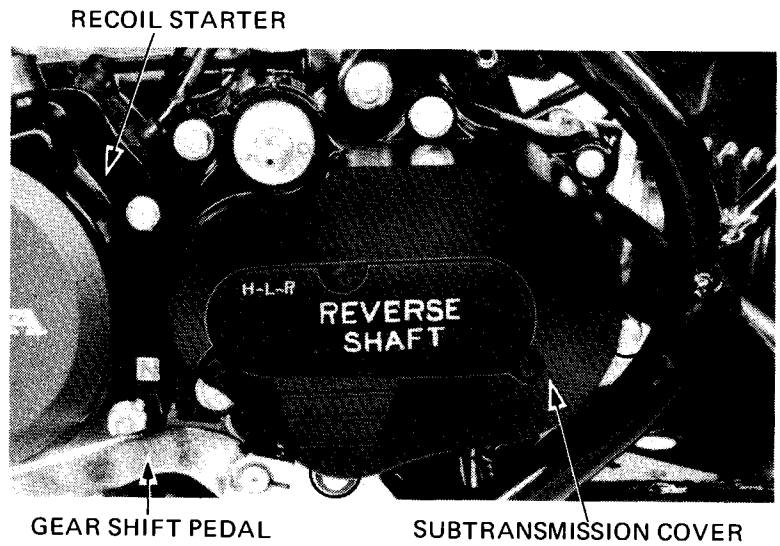
Remove the subtransmission shift drum setting bolt, spring and steel ball.

SETTING BOLT



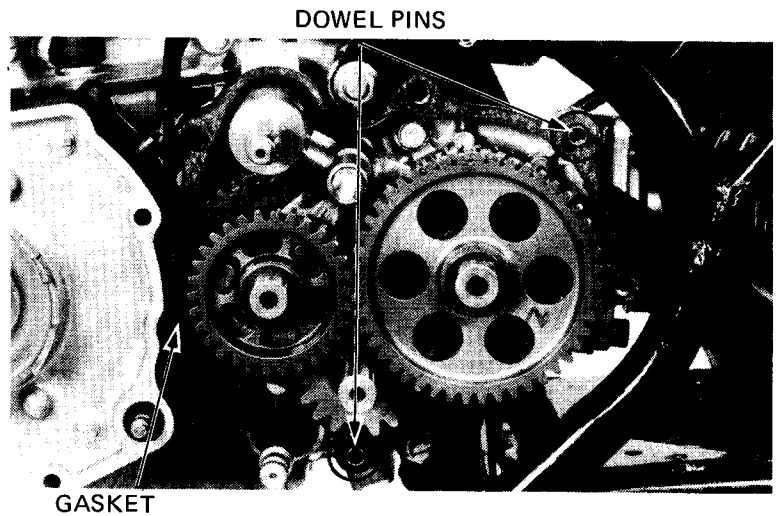


Remove the gear shift pedal and recoil starter.
Remove the subtransmission cover by removing the cover mount bolts.

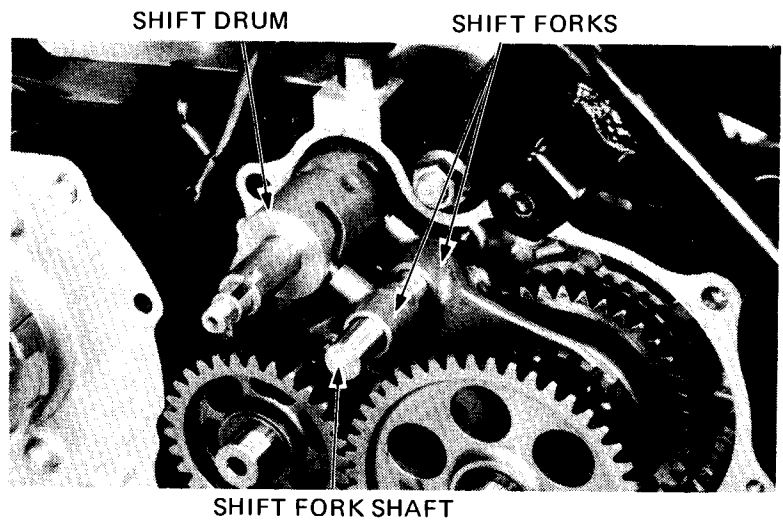


**SUBTRANSMISSION
DISASSEMBLY**

Remove the gasket and dowel pins.



Remove the shift fork shaft and shift fork.
Remove the shift drum.

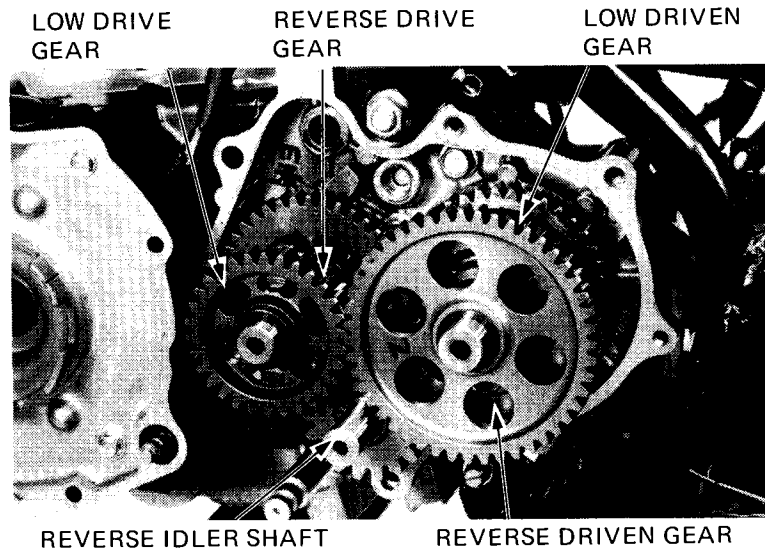




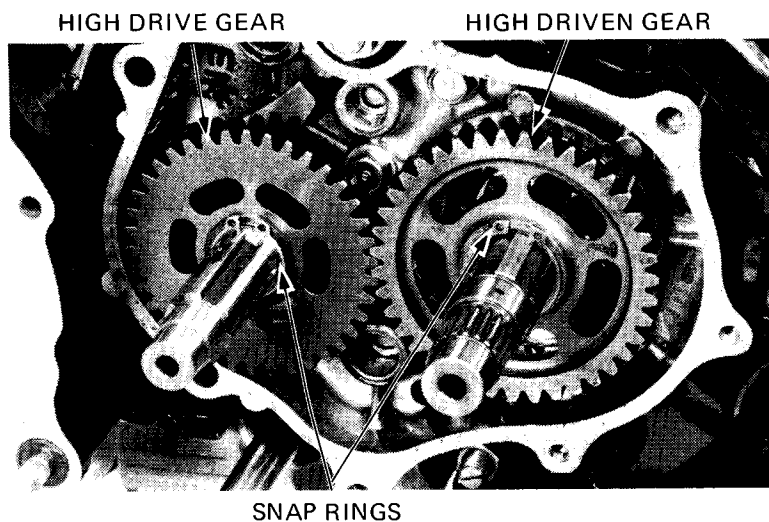
SUBTRANSMISSION/OUTPUT GEAR

Remove the subtransmission low drive and driven gears, reverse drive and driven gears, and reverse slider.

Remove the reverse idler shaft with the gear.



Remove the snap rings and the high drive and driven gears.



INSPECTION

Inspect the shift drum ends for scoring, scratches, or evidence of insufficient lubrication.

Check the shift drum grooves for damage.





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

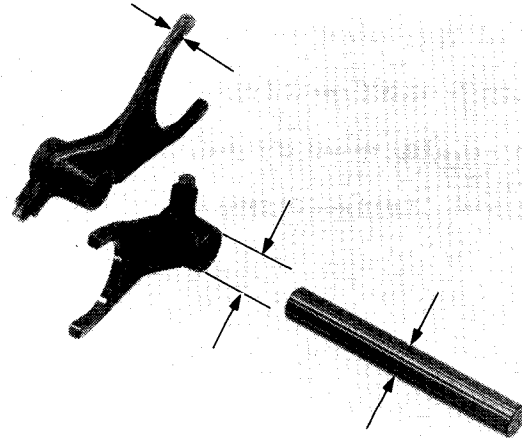
SERVICE LIMIT: 12.050 mm (0.4744 in)

Measure the shift fork claw thickness.

SERVICE LIMIT: 4.900 mm (0.1929 in)

Measure the shift fork shaft O.D.

SERVICE LIMIT: 11.960 mm (0.4709 in)



Check the gear dogs, slots and teeth for excessive or abnormal wear, or evidence of insufficient lubrication.

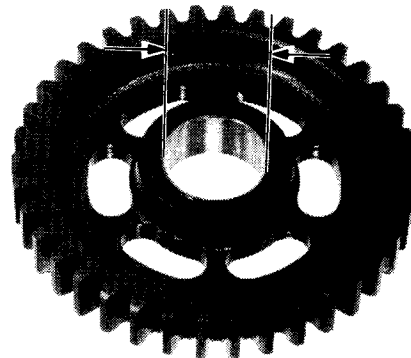
Measure the I.D. of each gear.

SERVICE LIMITS:

LOW DRIVE GEAR: 16.584 mm (0.6529 in)

HIGH DRIVE GEAR: 20.091 mm (0.8697 in)

**REVERSE DRIVEN GEAR:
22.091 mm (0.8697 in)**



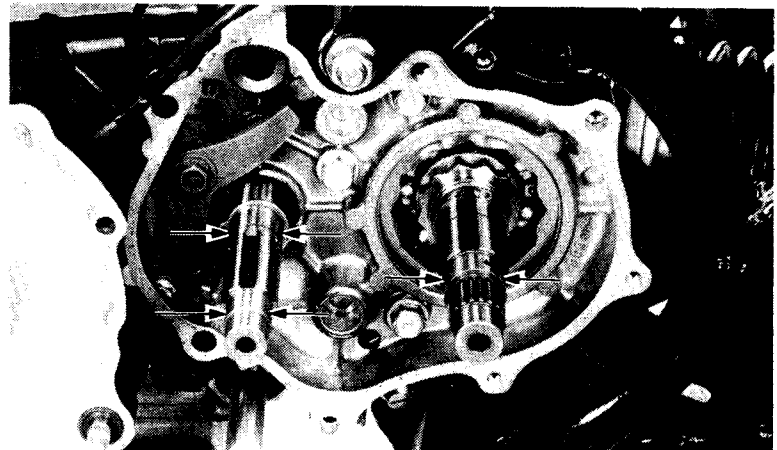
Measure the O.D. of the countershaft and output drive gear shaft.

SERVICE LIMITS:

A (LOW DRIVE GEAR): 16.416 mm (0.6463 in)

B (HIGH DRIVE GEAR) 19.909 mm (0.7838 in)

**C (REVERSE DRIVEN GEAR):
21.909 mm (0.8626 in)**





SUBTRANSMISSION/OUTPUT GEAR

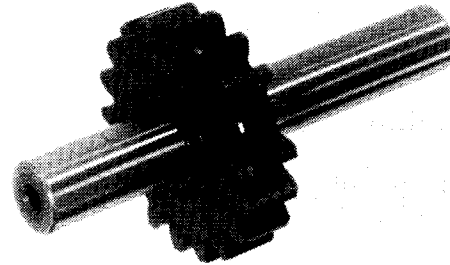
Check the reverse idler shaft and gear for wear or damage.

Measure the I.D. of the reverse idler gear.

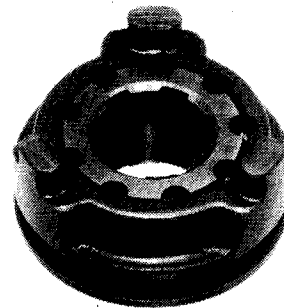
SERVICE LIMIT: 15.068 mm (0.5932 in)

Measure the O.D. of the reverse idler shaft.

SERVICE LIMIT: 14.916 mm (0.5872 in)

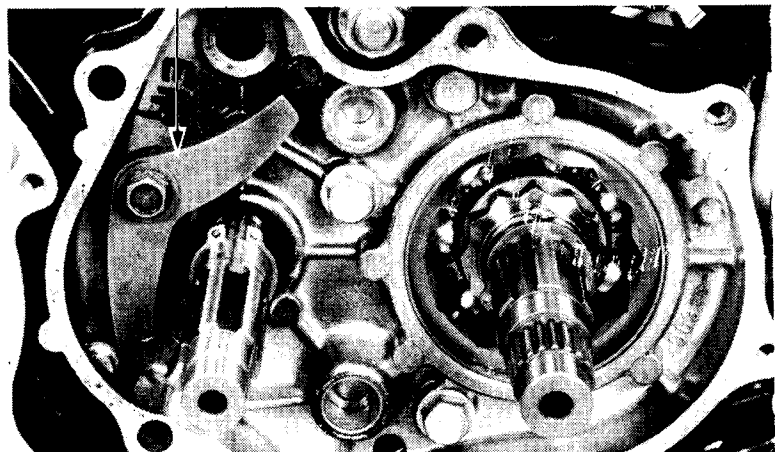


Check that the reverse slider moves smoothly.



Check the reverse stopper lever and spring for wear or damage and for smooth movement.

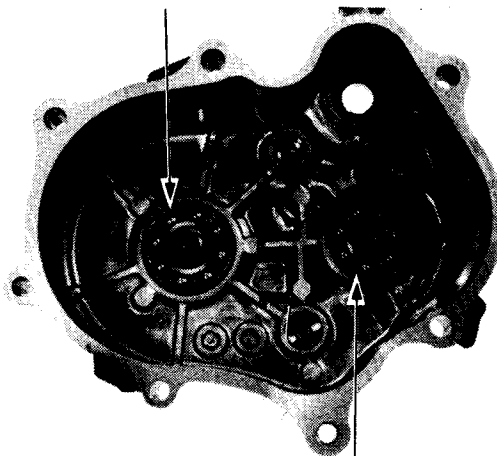
REVERSE STOPPER LEVER





Check the subtransmission bearings for excessive play or damage and replace if necessary.

FINAL DRIVE GEAR SHAFT BEARING



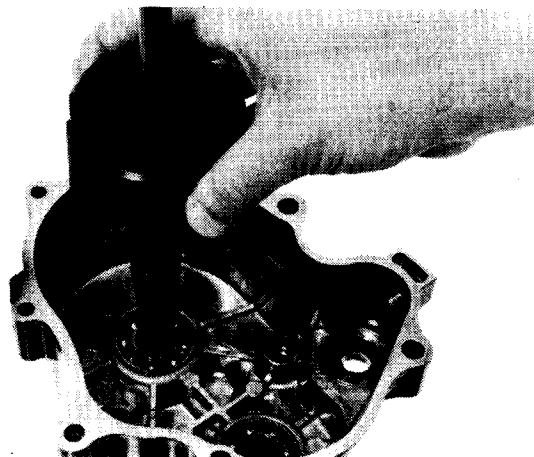
COUNTERSHAFT BEARING

BEARING REPLACEMENT

Remove the subtransmission bearings with bearing removers.

Countershaft bearing:
Bearing remover, 15 mm 07936-KC10000

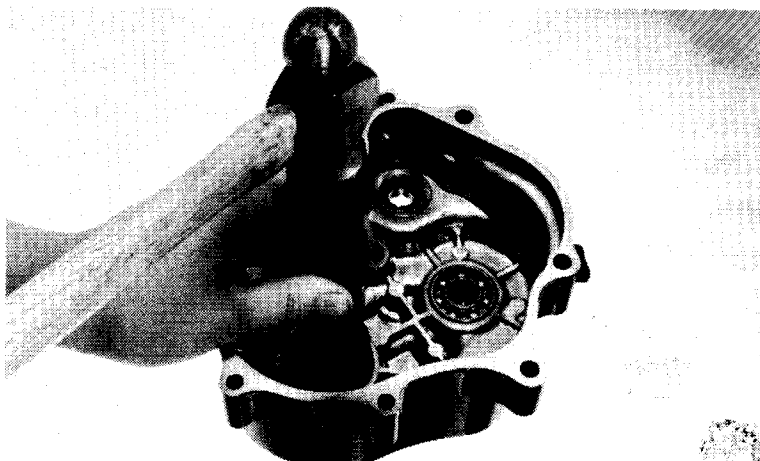
Output drive gear shaft bearing:
Bearing remover 07936-3710300
Remover handle 07936-3710100
Remover weight 07741-0010201
 or 07936-3710200



Drive the bearings into the subtransmission cover with the following tools.

Countershaft bearing:
Driver 07749-0010000
Attachment, 32 x 35 mm 07746-0010100
Pilot, 15 mm 07746-0040300

Output drive gear shaft bearing:
Driver 07749-0010000
Attachment, 37 x 40 mm 07746-0010200
Pilot, 17 mm 07746-0040400





SUBTRANSMISSION/OUTPUT GEAR

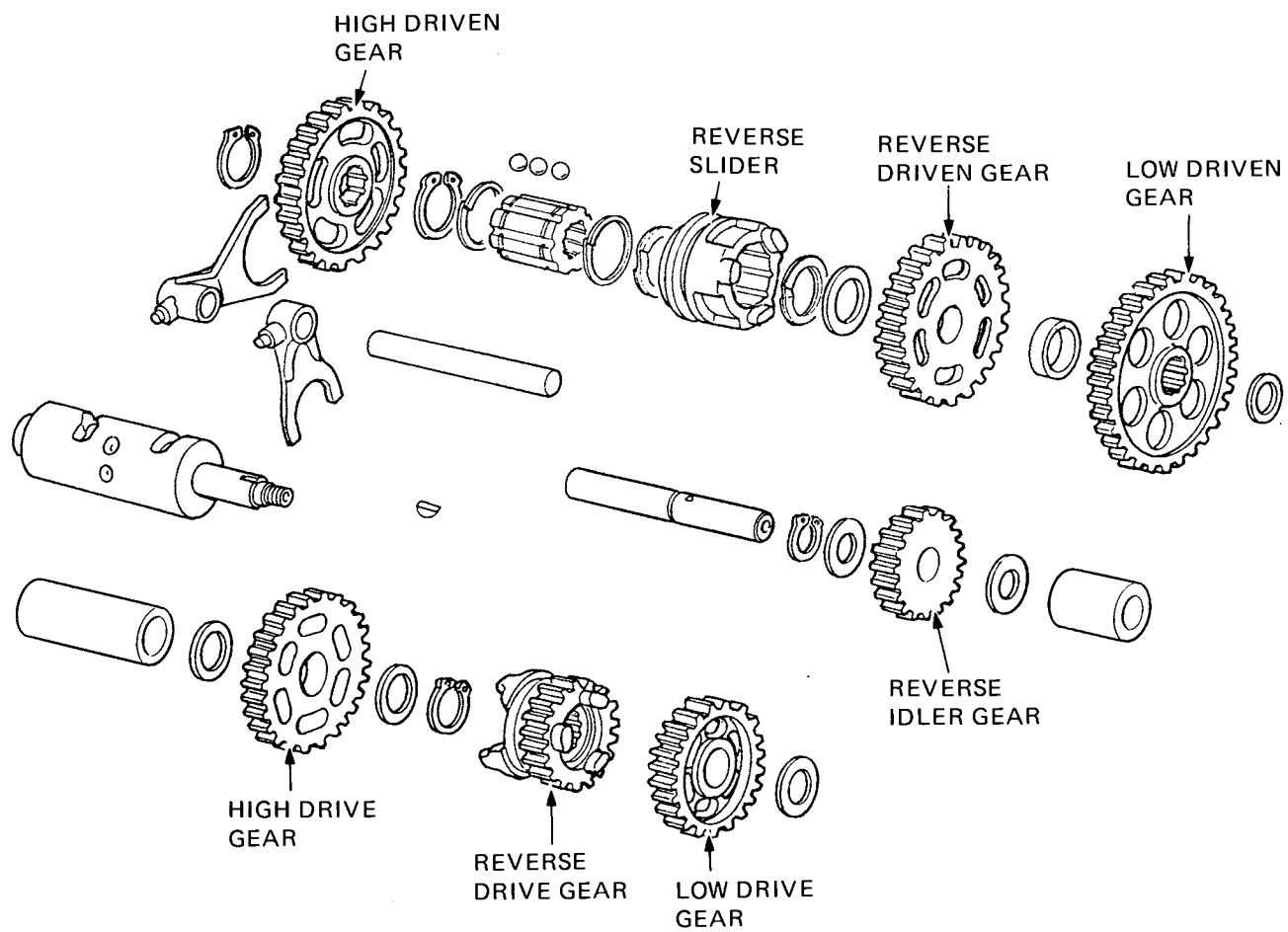
SUBTRANSMISSION ASSEMBLY

Coat all parts with oil.

Assemble the subtransmission shaft and gears noting the locations of the thrust washers and snap rings.

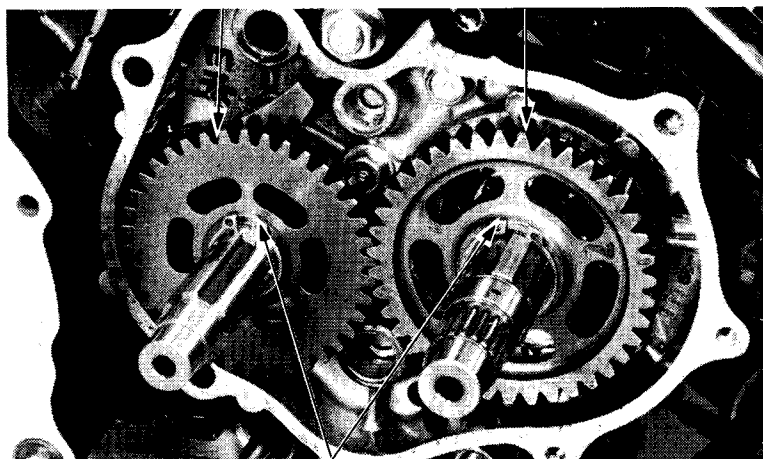
NOTE:

Make sure the snap rings are seated properly.



Install the high drive and driven gears.
Install the snap rings.

HIGH DRIVE GEAR HIGH DRIVEN GEAR

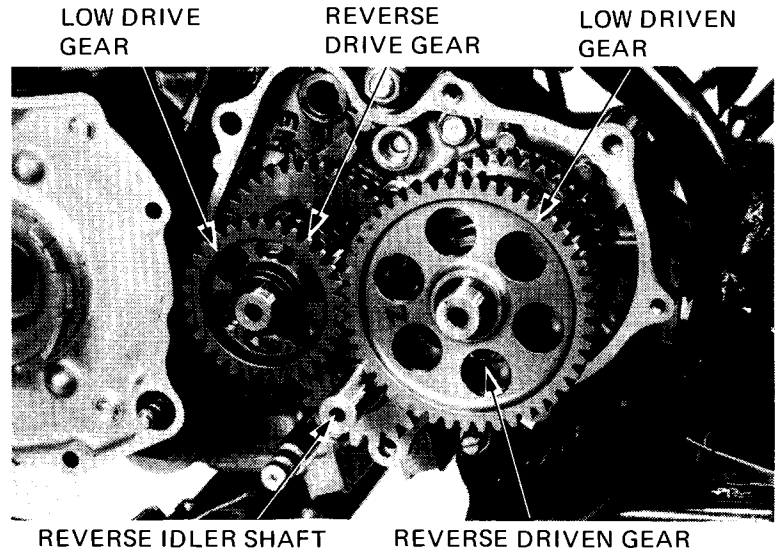


SNAP RINGS

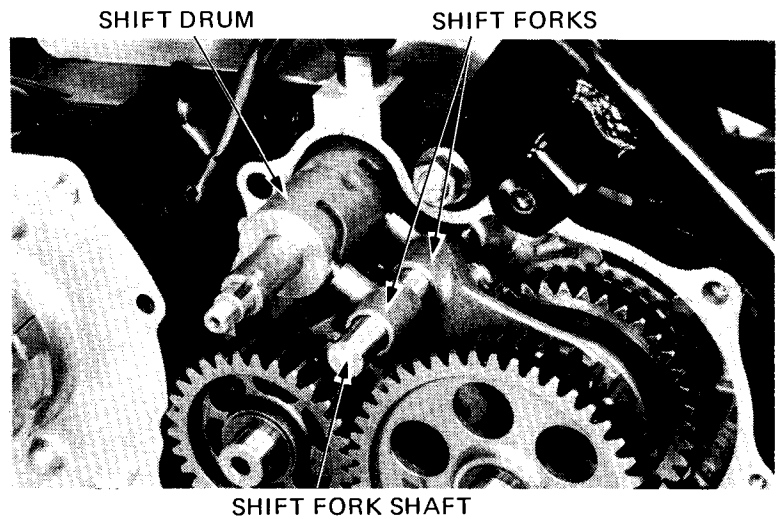


SUBTRANSMISSION/OUTPUT GEAR

Install the reverse idler shaft and gear.
Install the reverse slider, reverse drive and driven gears, and low drive and driven gears.

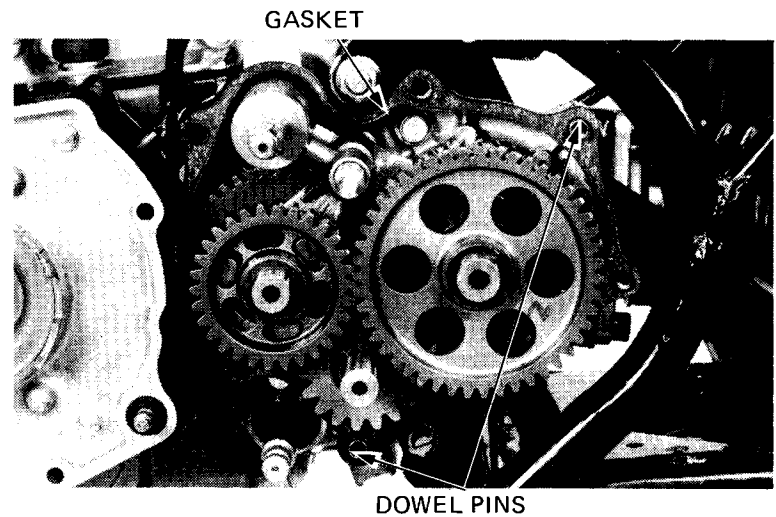


Install the shift forks and shift drum.
Install the shift fork shaft.



SUBTRANSMISSION COVER
INSTALLATION

Install the dowel pins and a new gasket.

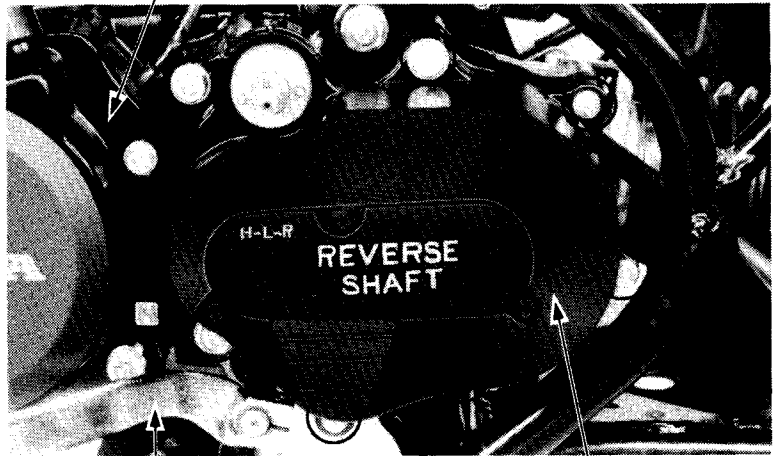




SUBTRANSMISSION/OUTPUT GEAR

Install the subtransmission cover.
Install the recoil starter and gearshift pedal.

RECOIL STARTER

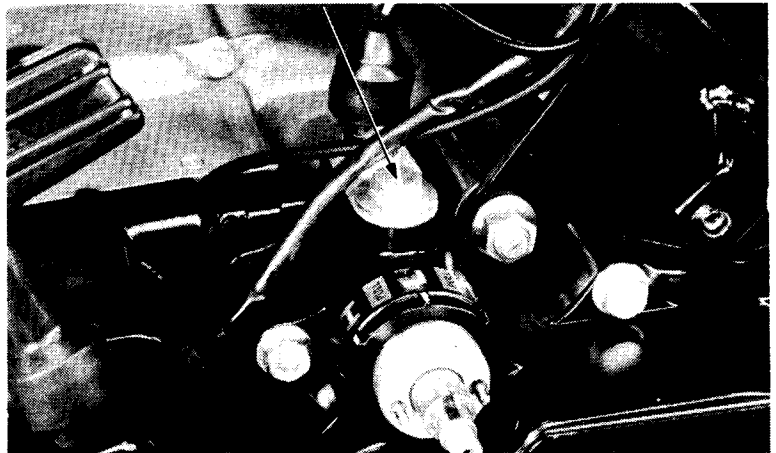


GEARSHIFT PEDAL

SUBTRANSMISSION COVER

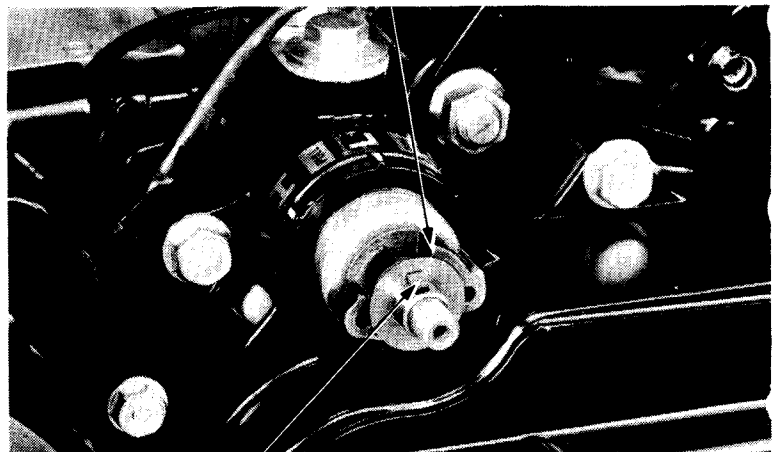
Install the steel ball, spring and subtransmission shift drum setting bolt.

SETTING BOLT



Install the subtransmission lever cam and woodruff key.

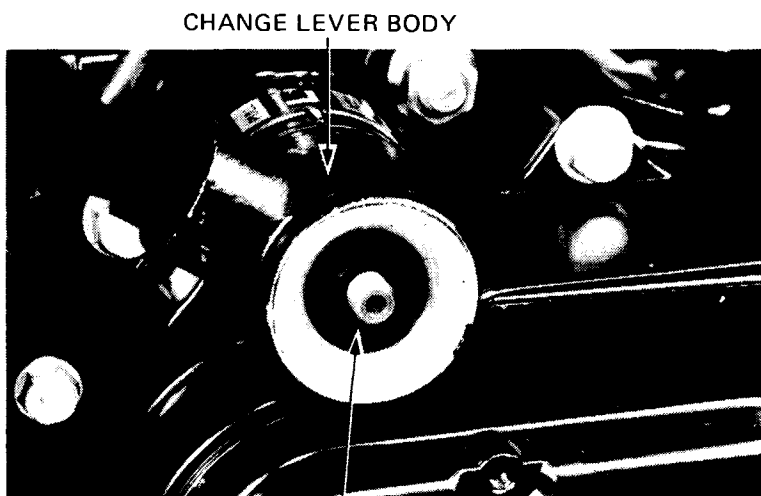
SUBTRANSMISSION LEVER CAM



WOODRUFF KEY



Install the change lever body onto the shift drum.
Install the conical spring washer.



CHANGE LEVER BODY

CONICAL SPRING WASHER

Move the transmission change lever to the "R" (Reverse) position.

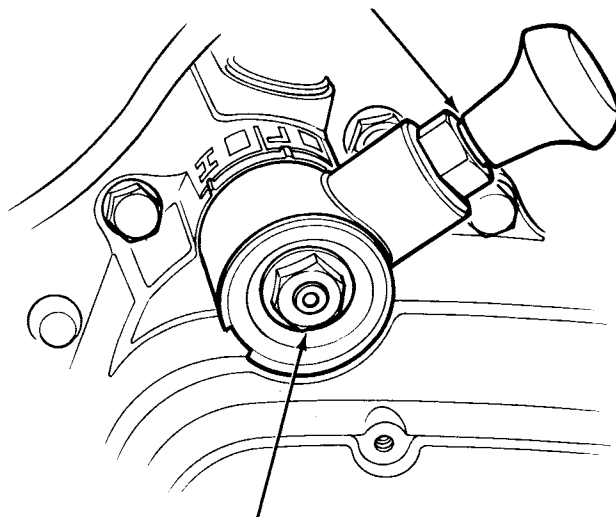
Install the change lever mounting nut and tighten it to the specified torque.

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

CAUTION:

Be sure the change lever is in the correct position before installing the mounting nut to prevent damage to the transmission.

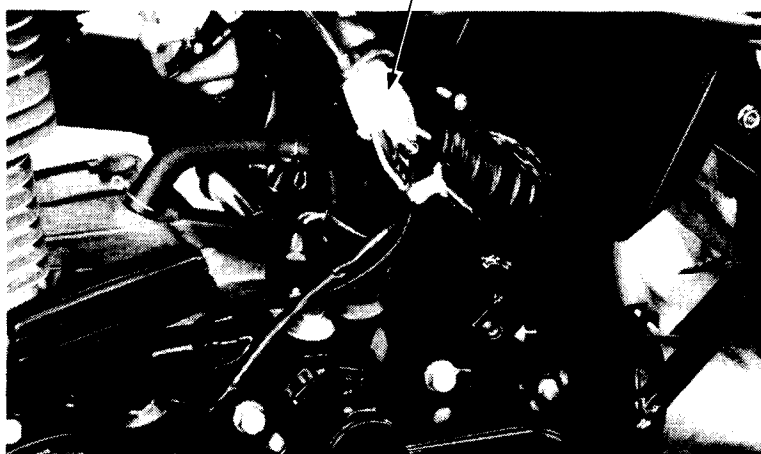
CHANGE LEVER IN "R" POSITION



MOUNT NUT

Connect the reverse sensor wire coupler.
Fill the crankcase with the recommended oil (Page 2-1).
Install the rear carrier and left rear fender (Page 14-1).

REVERSE SENSOR WIRE COUPLER

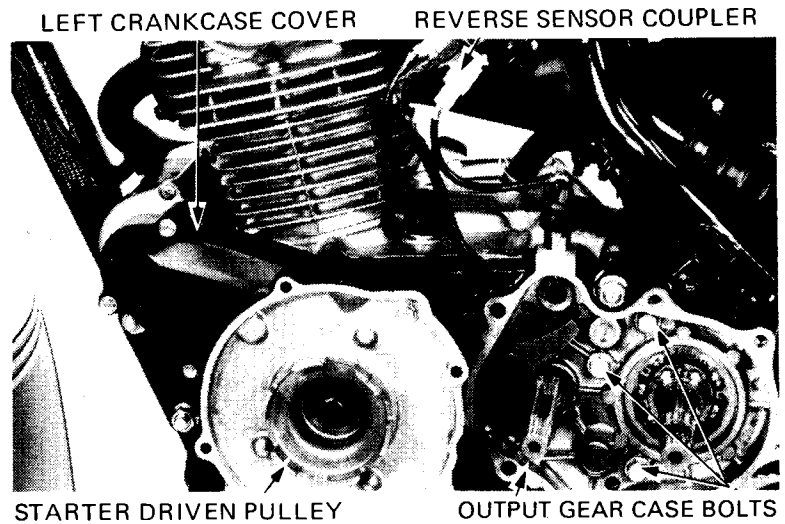




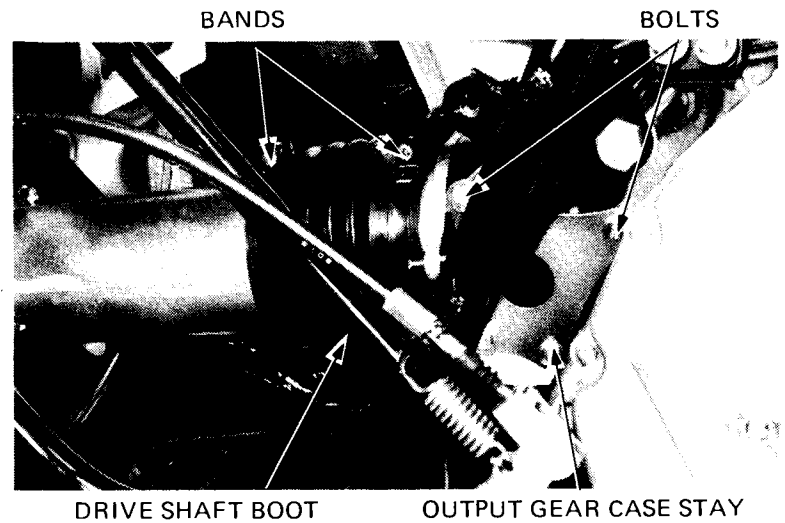
SUBTRANSMISSION/OUTPUT GEAR

OUTPUT GEAR CASE REMOVAL

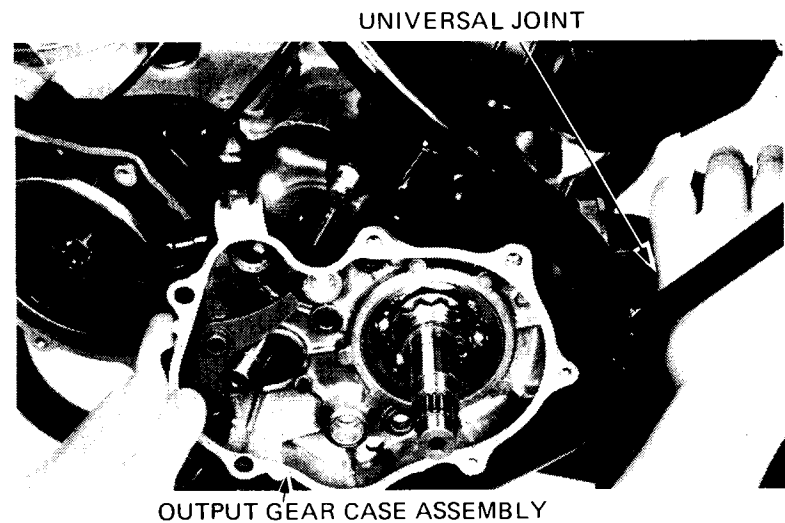
Disassemble the subtransmission (Page 10-5).
Remove the starter driven pulley and left crankcase cover (Page 9-7).
Disconnect the reverse sensor wire coupler.
Remove the three bolts mounting the output gear case and remove the case.



Loosen the drive shaft boot bands and slide the boot to the rear.
Remove the four bolts attaching the output gear case stay and the stay.



Slide the universal joint to the rear and remove the output gear case assembly.





BACKLASH INSPECTION

Place the output gear case in a vise with soft jaws or a shop towel.

Set a horizontal type dial indicator on the output drive shaft as shown.

Hold the output driven gear shaft and rotate the drive shaft until gear slack is taken up.

Turn the drive shaft back and forth to read backlash.

STANDARD: 0.080–0.180 mm
(0.0031–0.0071 in)
SERVICE LIMIT: 0.250 mm (0.0098 in)

Remove the dial indicator. Turn the output drive shaft 120° and measure backlash. Repeat this procedure once more.

Compare the difference of the three measurement.

DIFFERENCE OF MEASUREMENTS

SERVICE LIMIT: 0.10 mm (0.004 in)

If the difference in the measurements exceeds the limit, it indicates that the bearing is not installed squarely.

Inspect the bearings and replace if necessary.

If backlash is excessive, replace the driven shaft adjustment shim with a thinner one.

If the backlash is too small, replace the driven shaft adjustment shim with a thicker one.

Backlash is changed by about 0.06 mm (0.002 in) when the thickness of the shim is changed by 0.10 mm (0.004 in).

OUTPUT DRIVEN GEAR SHAFT ADJUSTMENT SHIMS:

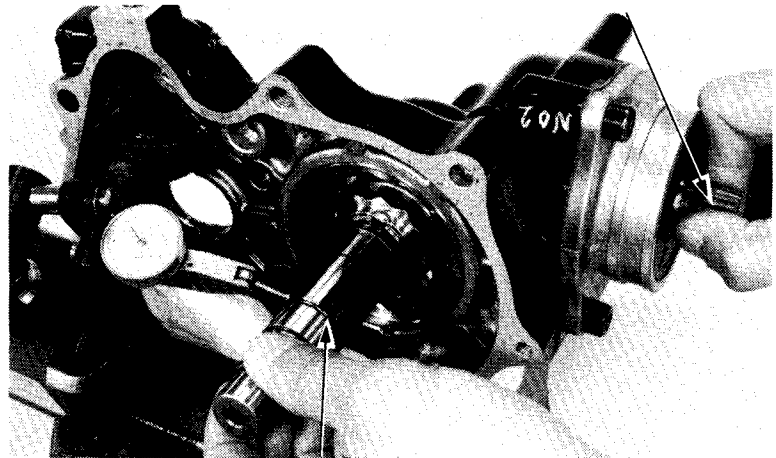
- A: 0.40 mm (0.016 in)
- B: 0.45 mm (0.018 in)
- C: 0.50 mm (0.020 in) Standard
- D: 0.55 mm (0.022 in)
- E: 0.60 mm (0.024 in)
- F: 0.30 mm (0.012 in)
- G: 0.35 mm (0.014 in)

OUTPUT GEAR DISASSEMBLY

Place the output gear case in a vise with soft jaws, being careful not to distort it.

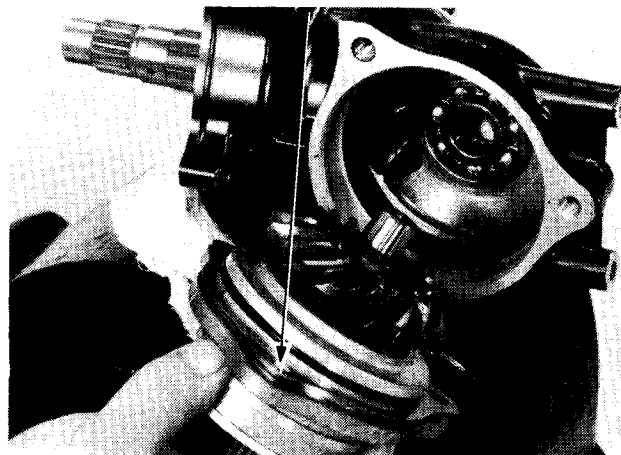
Remove the oil seal.

OUTPUT DRIVEN GEAR

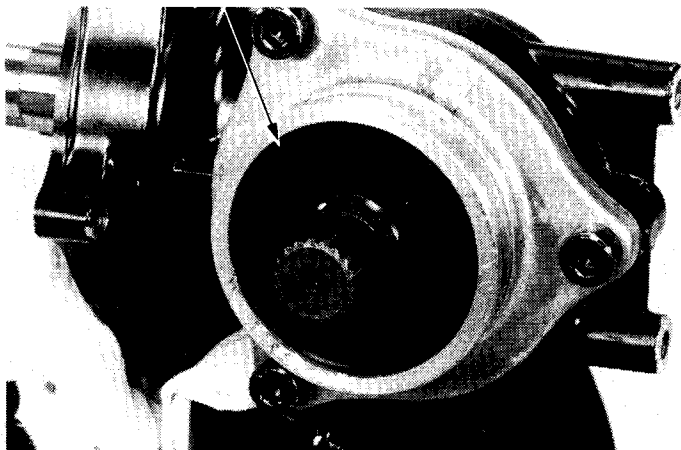


OUTPUT DRIVE GEAR

OUTPUT DRIVEN GEAR SHAFT ADJUSTMENT SHIM



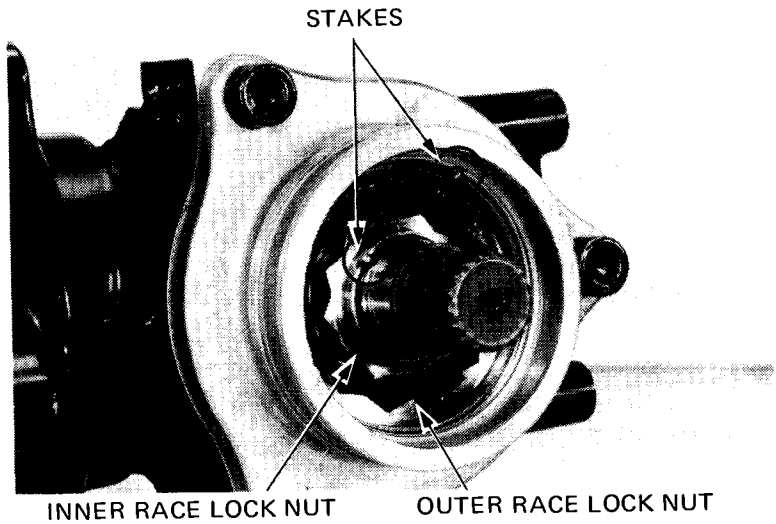
OIL SEAL





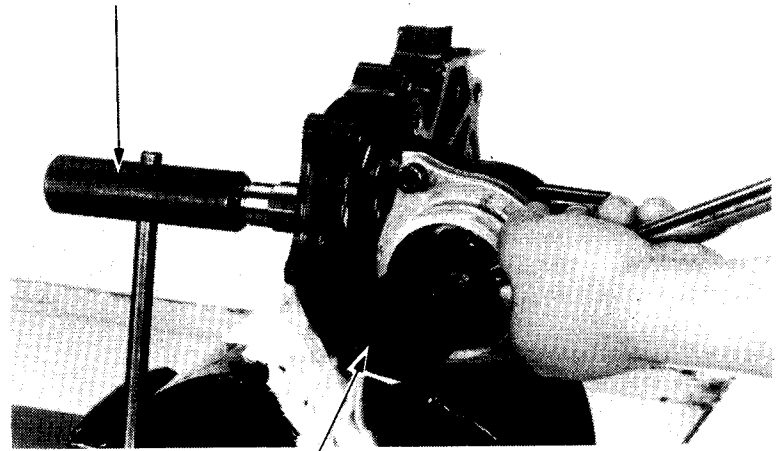
SUBTRANSMISSION/OUTPUT GEAR

Unstake the driven gear bearing race lock nuts with a drill or grinder. Be careful that metal particles do not enter the bearing and the threads on the shaft are not damaged.



Remove the inner race lock nut and discard it.

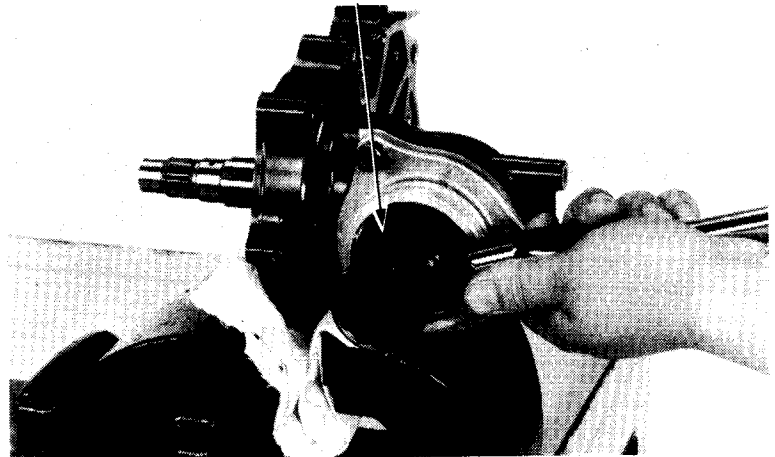
SHAFT HOLDER
07923-6890101



LOCK NUT WRENCH, 30/40 mm
07916-9690000

Remove the outer race lock nut.

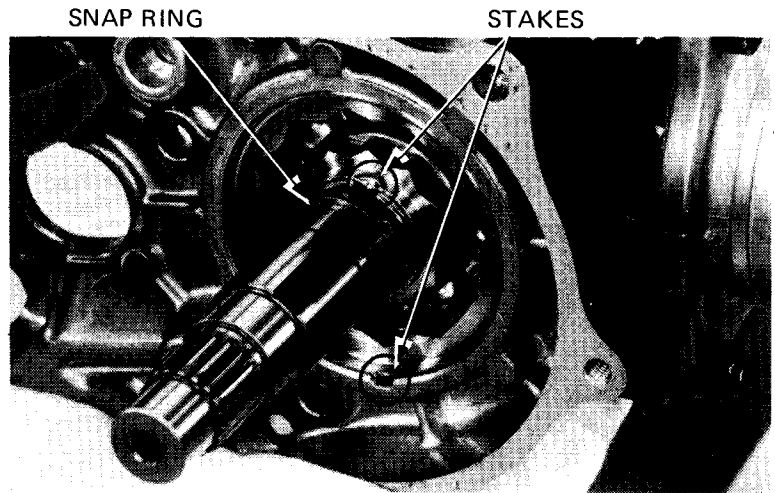
LOCK NUT WRENCH, 30/40 mm
07916-9690000



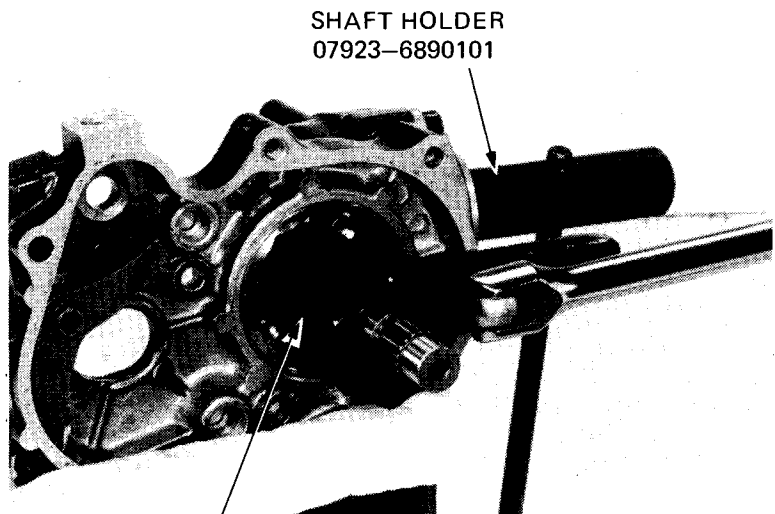


Remove the snap ring from the output drive gear shaft.

Unstake the inner and outer bearing race lock nuts with a drill or grinder. Be careful that metal particles do not enter the bearing and the threads on the shaft are not damaged.

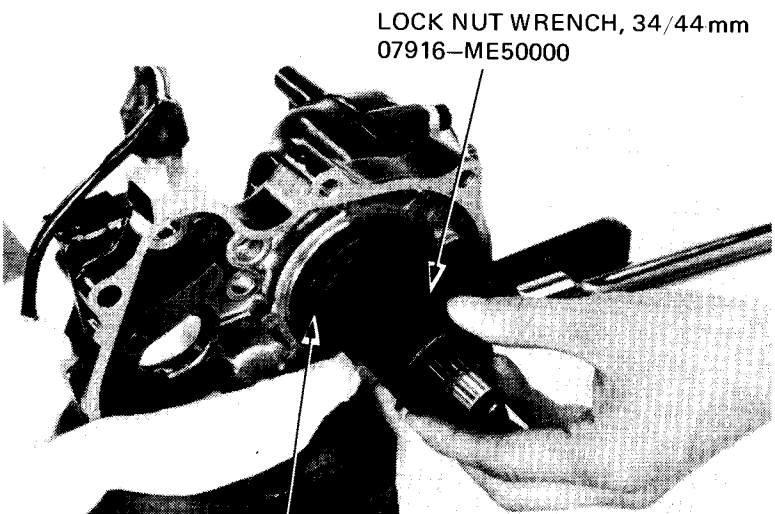


Hold the driven gear shaft with the shaft holder and remove the inner bearing race lock nut.



LOCK NUT WRENCH, 34/44 mm
07916-ME50000

Remove the outer bearing race lock nut.

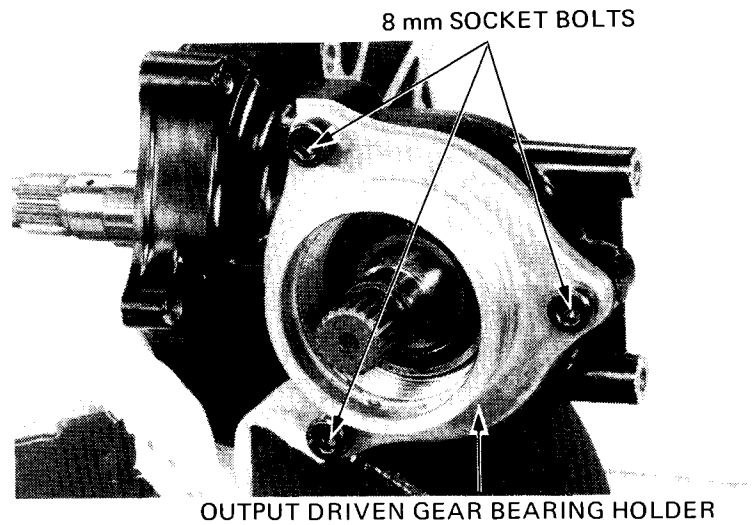


LOCK NUT WRENCH ATTACHMENT, 50 mm
07916-9690100



SUBTRANSMISSION/OUTPUT GEAR

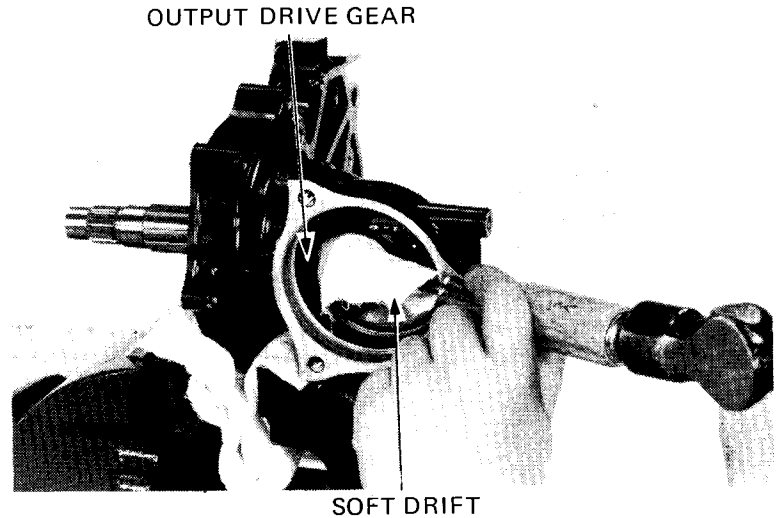
Remove the 8 mm socket bolts attaching the output driven gear bearing holder and remove the driven gear assembly.



Drive the output drive gear from inside of the case with a soft drift.

NOTE:

Be careful not to damage the gear teeth.



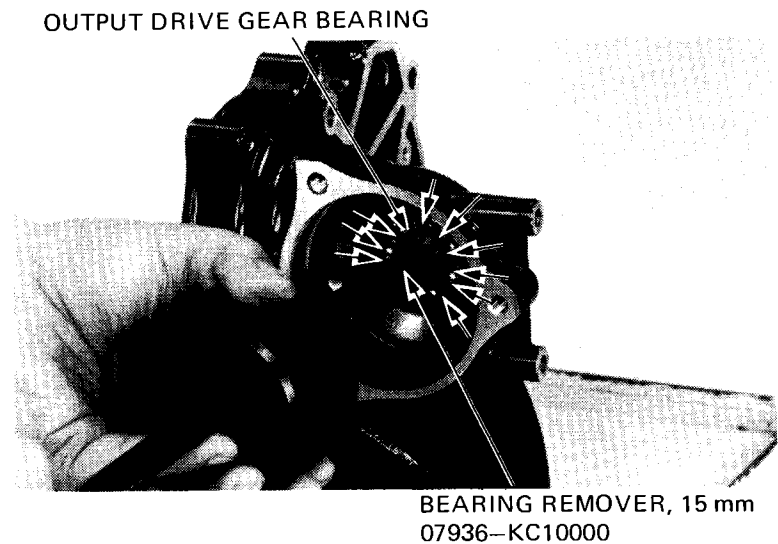
OUTPUT DRIVEN GEAR CASE BEARING REPLACEMENT

Heat the output gear case around the driven shaft bearing to 80°C (176°F).

CAUTION

Always wear gloves when handling a heated gear case.

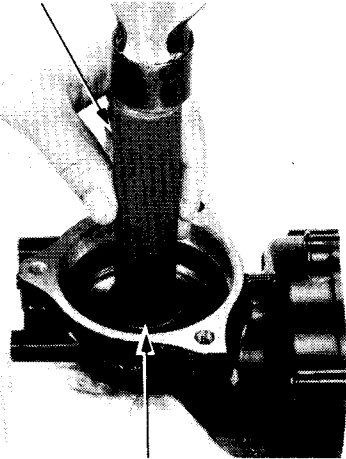
Remove the bearing with the bearing remover.





Drive a new bearing into the output gear case.

DRIVER
07749-0010000



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

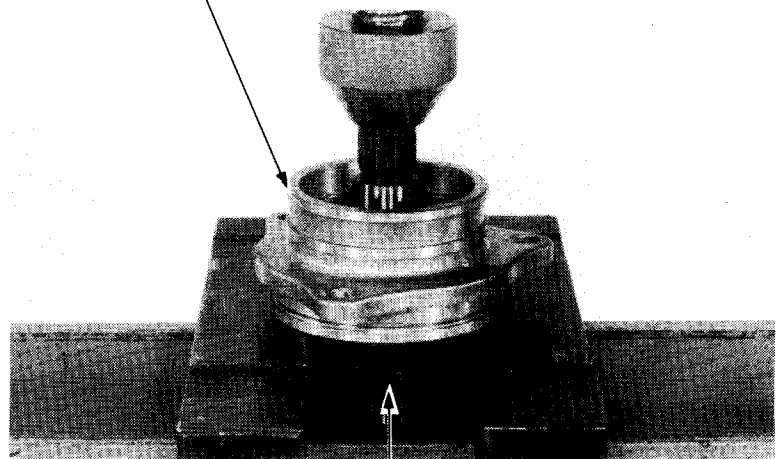
OUTPUT DRIVEN GEAR BEARING REPLACEMENT

NOTE:

The driven gear must be removed before replacing the bearing.

Place the bearing holder in a press and remove the driven gear.

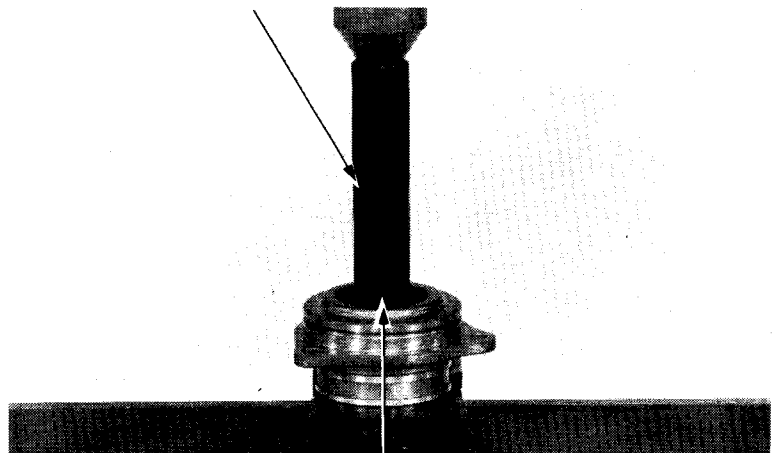
BEARING HOLDER



OUTPUT DRIVEN GEAR

Place the bearing holder in the press and remove the bearing.

DRIVER
07749-0010000



ATTACHMENT, 52 x 55 mm 07746-0010400

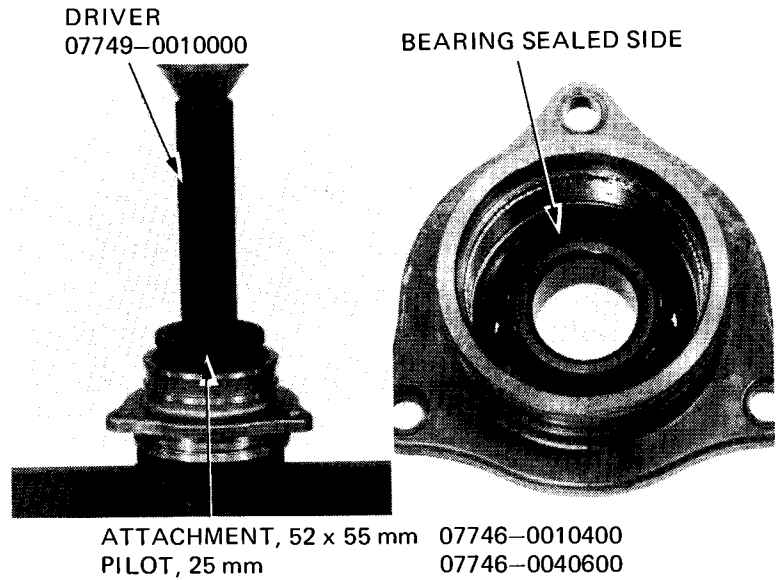


SUBTRANSMISSION/OUTPUT GEAR

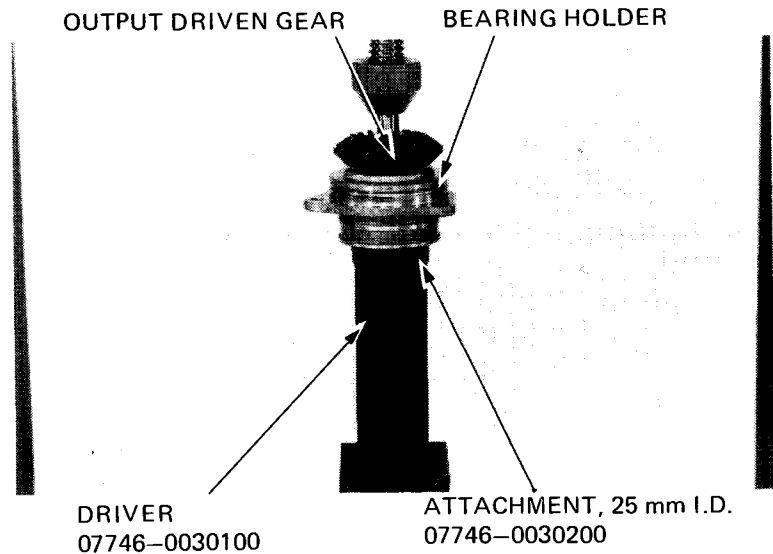
Press in a new bearing.

NOTE:

Install the bearing with its sealed side facing out.

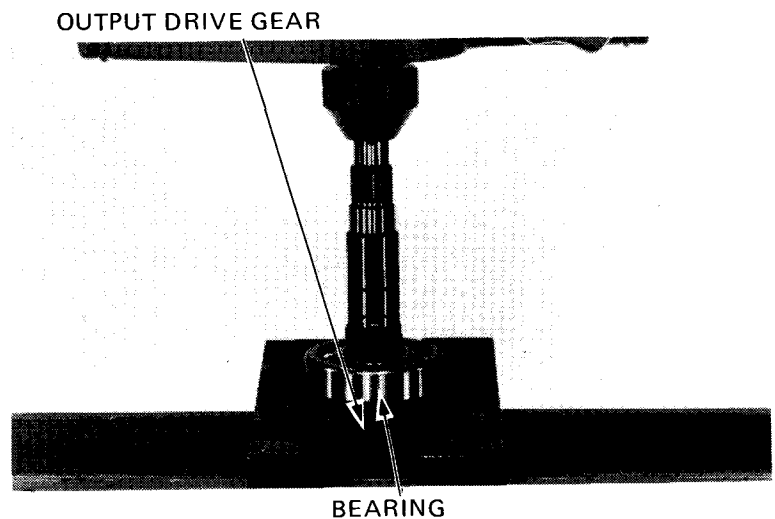


Press the output driven gear into the bearing.



OUTPUT DRIVE GEAR BEARING REPLACEMENT

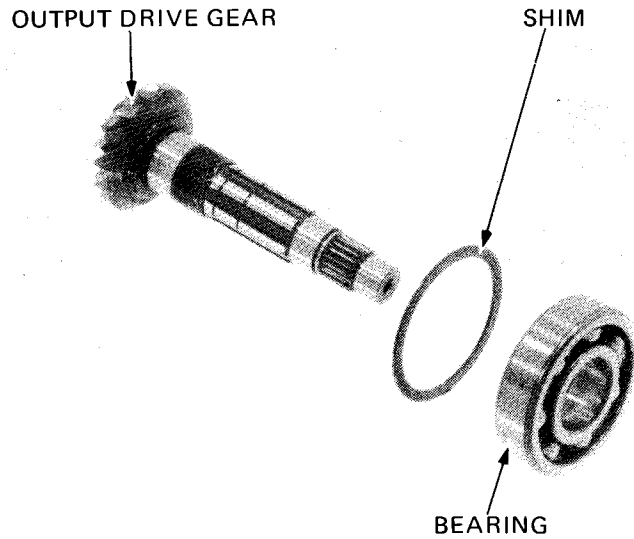
Place the output drive gear in a press and remove the drive gear and shim.



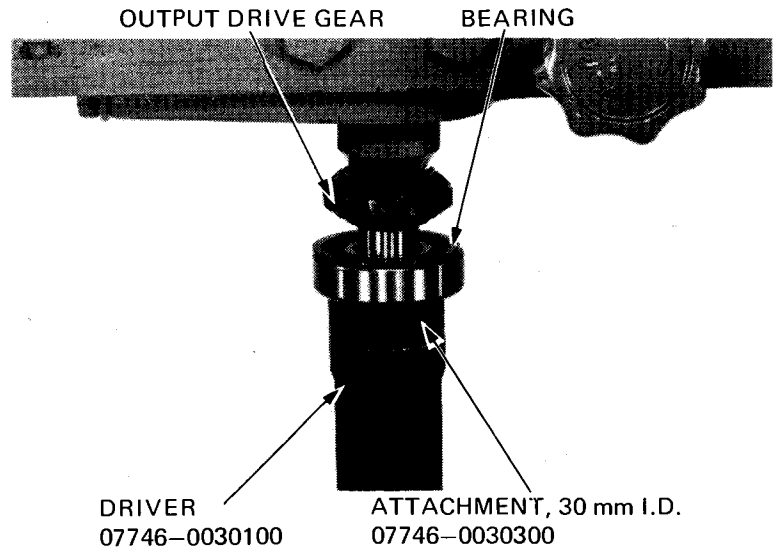


NOTE:

When the gear set, drive gear and/or gear case has been replaced, use a shim of 1.00 mm (0.039 in) thickness for initial reference.



Press the output drive gear into the bearing.



OUTPUT GEAR ASSEMBLY

Drive the output drive gear into the gear case.

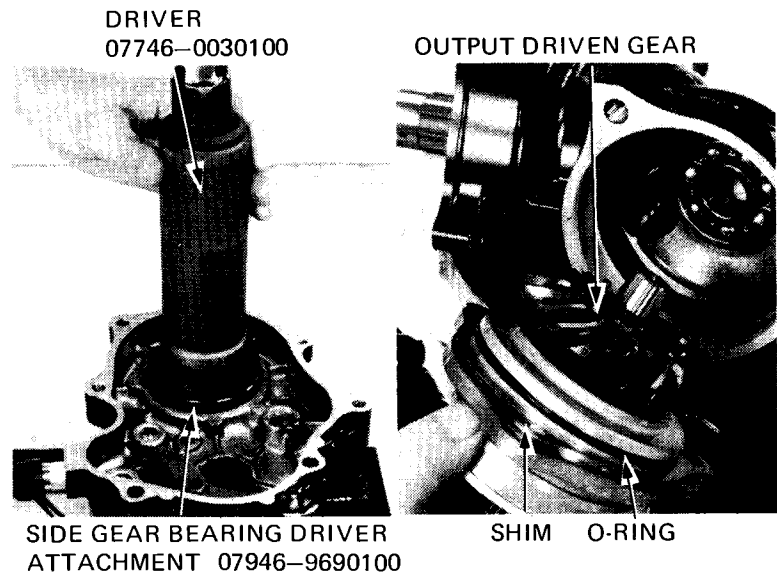
Install a new O-ring onto the output driven gear bearing holder.

Apply oil to the O-ring and place the shim onto the bearing holder.

Install the output driven gear into the gear case.

NOTE:

When the gear set, driven gear holder, driven gear bearing and/or gear case has been replaced, use a shim of 0.50 mm (0.020 in) thickness for initial reference.

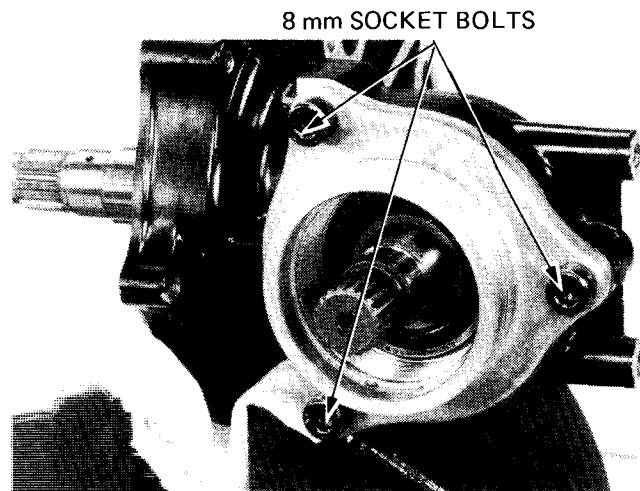




SUBTRANSMISSION/OUTPUT GEAR

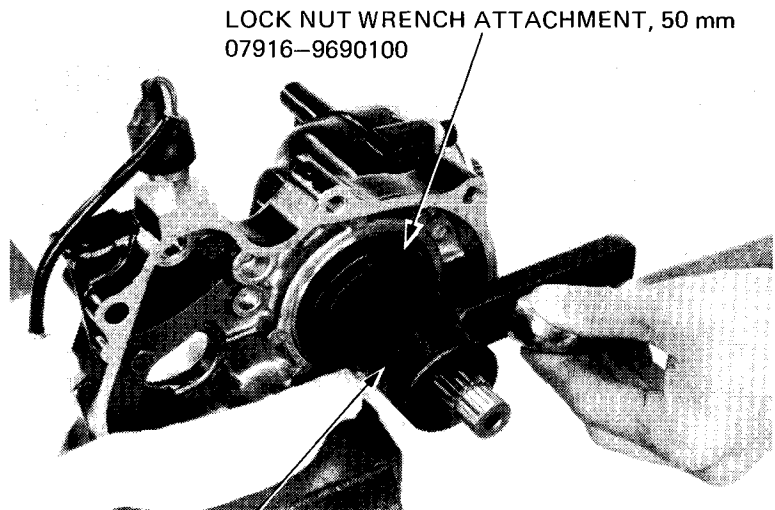
Tighten the output driven gear bearing holder with three 8 mm socket bolts.

**TORQUE: 24–30 N·m (2.4–3.0 kg·m,
17–22 ft·lb)**



Tighten the drive gear bearing outer race lock nut.

**TORQUE: 90–100 N·m (9.0–10.0 kg·m,
65–72 ft·lb)**

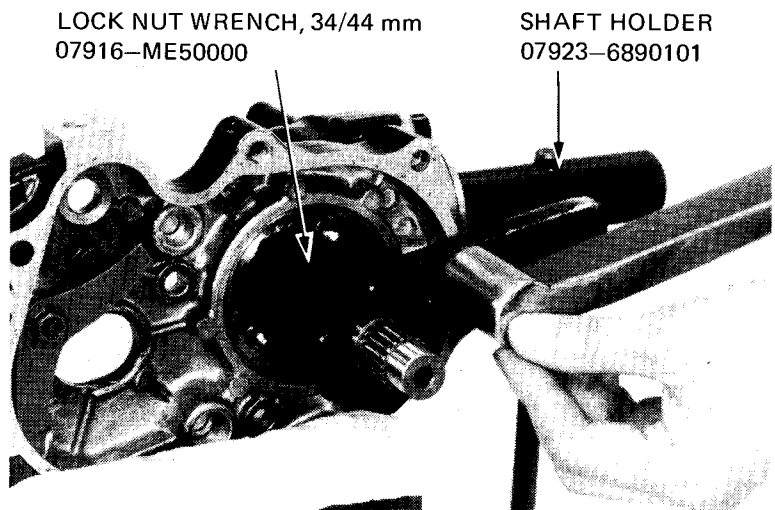


**LOCK NUT WRENCH, 34/44 mm
07916-ME50000**

Hold the driven gear shaft with the shaft holder.

Tighten the drive gear inner race lock nut.

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

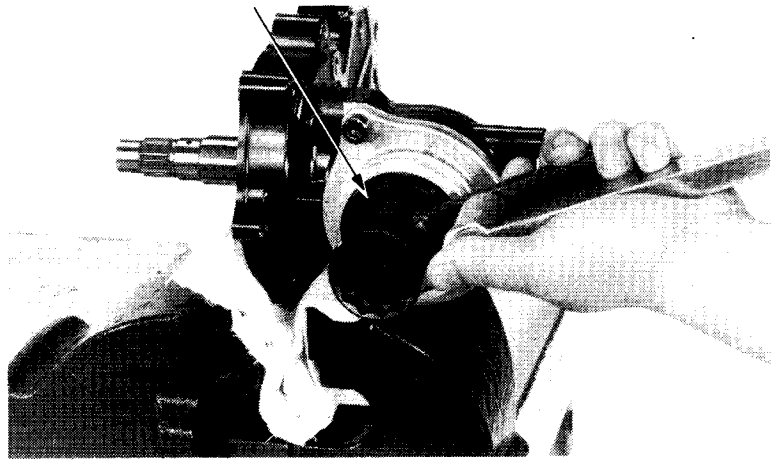




Tighten the driven gear bearing outer race lock nut.

**TORQUE: 90–100 N·m (9.0–10.0 kg·m,
65–72 ft·lb)**

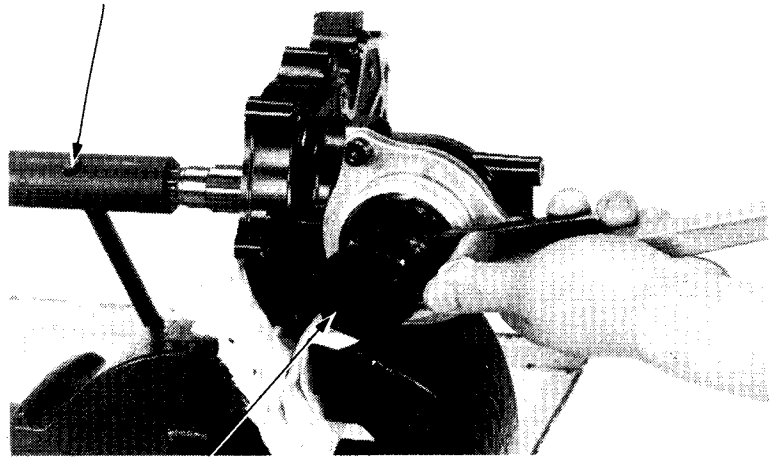
LOCK NUT WRENCH, 30/40 mm
07916–9690000



Hold the drive shaft with the shaft holder.
Tighten the driven gear bearing inner race lock nut.

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

SHAFT HOLDER
07923–6890101



LOCK NUT WRENCH, 30/40 mm
07916–9690000

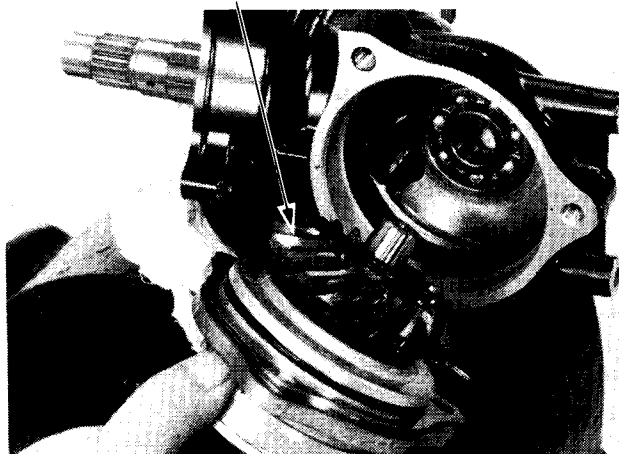
GEAR TOOTH CONTACT PATTERN CHECK

Remove the three 8 mm socket bolts attaching the driven gear holder and the driven gear assembly.

Apply Prussian Blue to the driven gear teeth.
Install the driven gear with the standard shim.
Rotate the drive gear several times in the normal direction of rotation.

Check the gear tooth contact pattern after removing the driven gear.

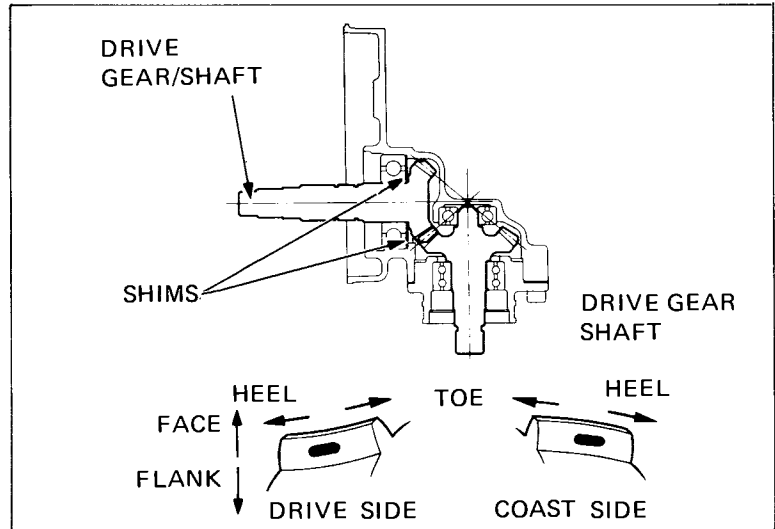
DRIVEN GEAR





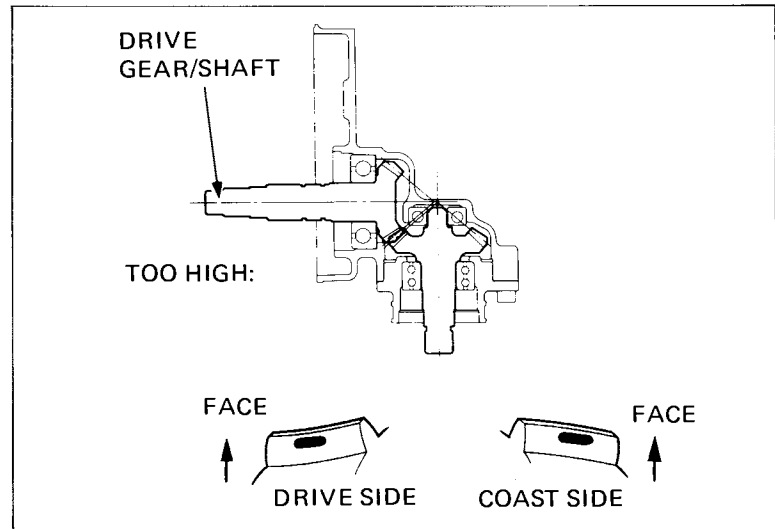
SUBTRANSMISSION/OUTPUT GEAR

Contact is normal if Prussian Blue is transferred to the approximate center of each tooth and slightly to the side.



If the pattern is not correct, remove and replace the drive gear adjustment shim.

Replace the shim with a thinner one if the contact pattern is too high.



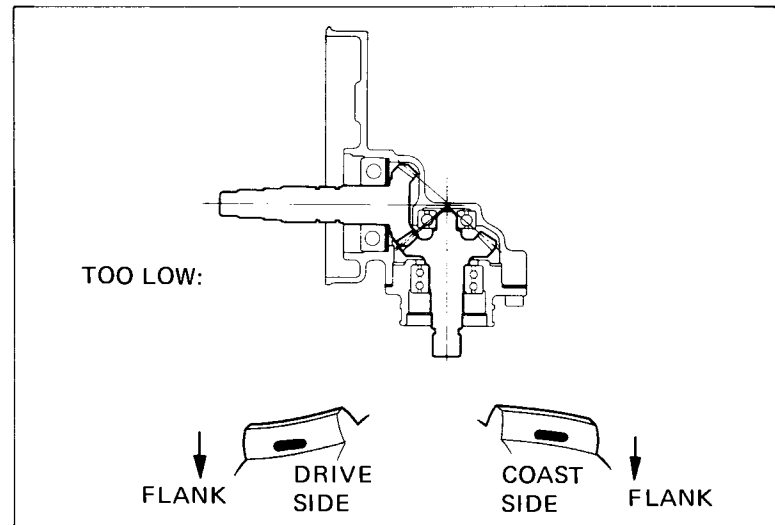
Replace the drive gear adjustment shim with a thicker one if the contact is too low.

The pattern will shift about 1.0mm(0.04in) when the thickness of the shim is changed by 0.10 mm (0.04 in).

OUTPUT DRIVE GEAR ADJUSTMENT SHIM:

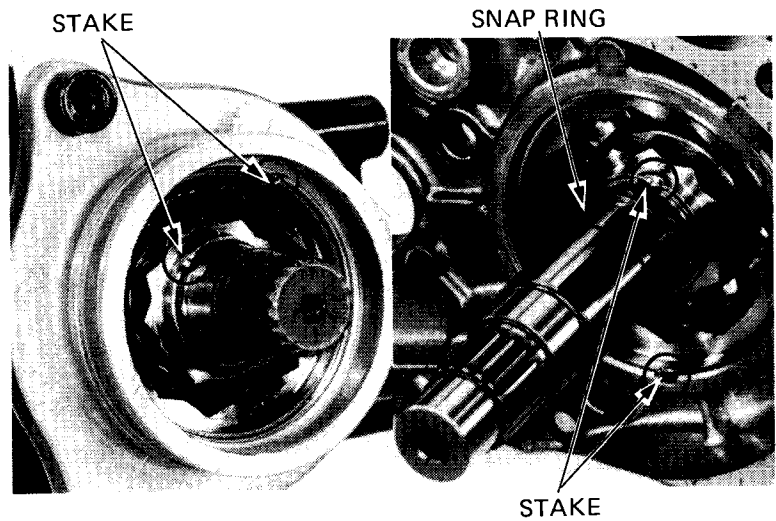
- A: 0.90 mm (0.035 in)
- B: 0.95 mm (0.037 in)
- C: 1.00 mm (0.039 in) **STANDARD**
- D: 1.05 mm (0.041 in)
- E: 1.10 mm (0.043 in)
- F: 1.15 mm (0.045 in)
- G: 1.20 mm (0.047 in)

Check the backlash (See page 10-15).

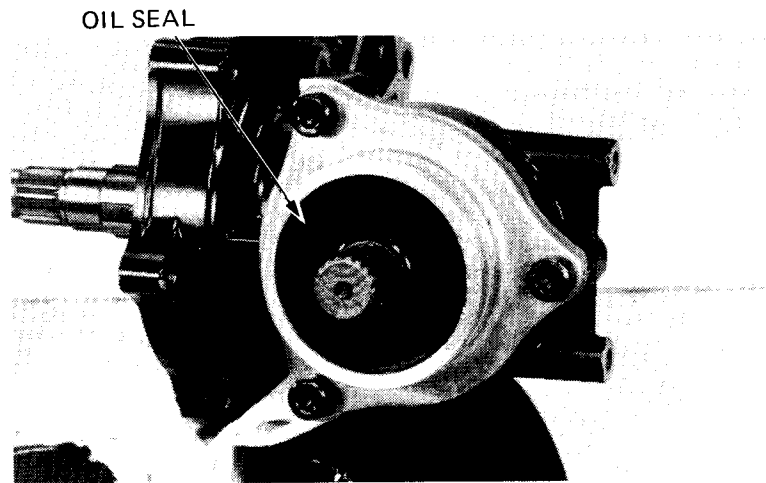




Stake the outer race and inner race lock nuts.
Install the snap ring into the drive gear shaft groove.

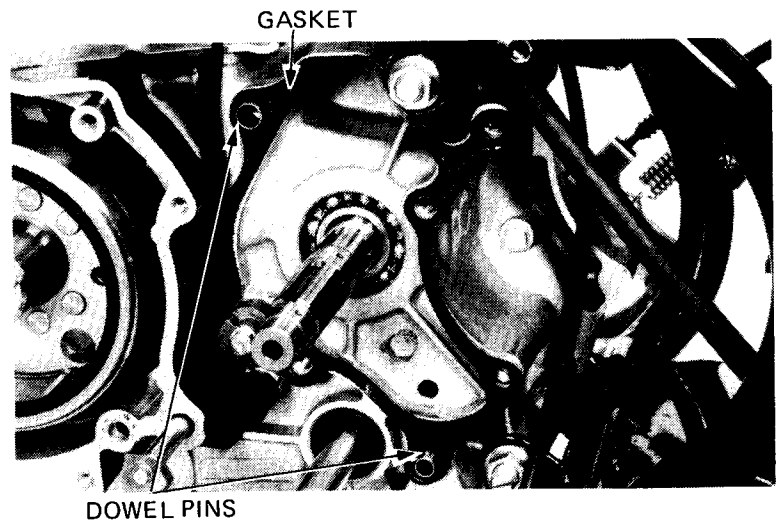


Install a new oil seal.



OUTPUT GEAR CASE INSTALLATION

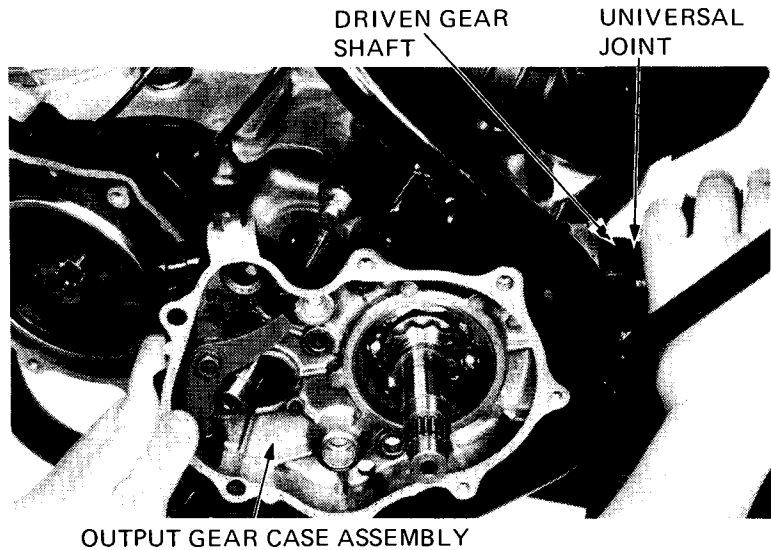
Install the two dowel pins and a new gasket.



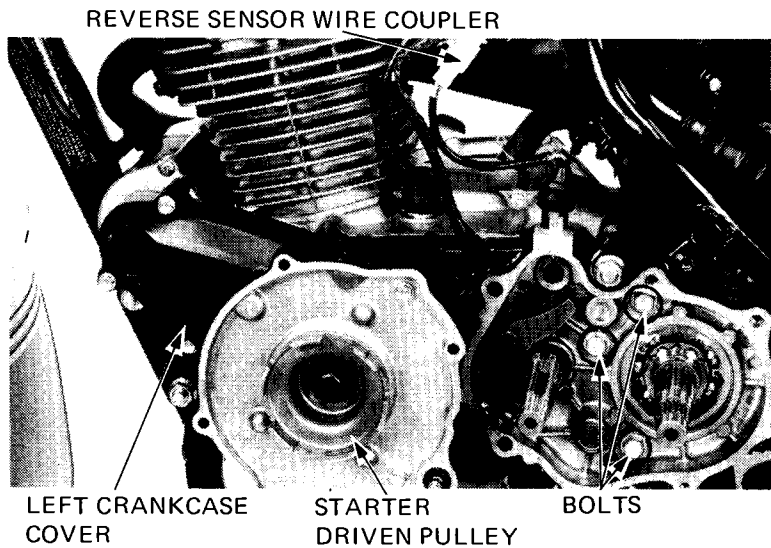


SUBTRANSMISSION/OUTPUT GEAR

Install the output gear case assembly while aligning the driven gear shaft splines with the universal joint.

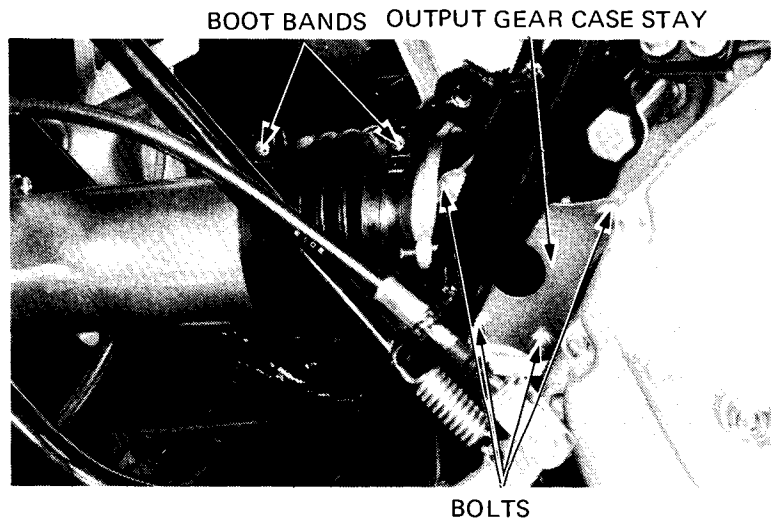


Tighten the output gear case with the three bolts. Connect the reverse sensor wire coupler to the wire harness. Install the left crankcase cover and starter driven pulley (Page 9-9).



Install the output gear case stay with the four bolts. Slide the drive shaft boot over the output gear case and tighten the boot bands.

Install the subtransmission (Page 10-11).
Fill the crankcase with the recommended oil (2-1).



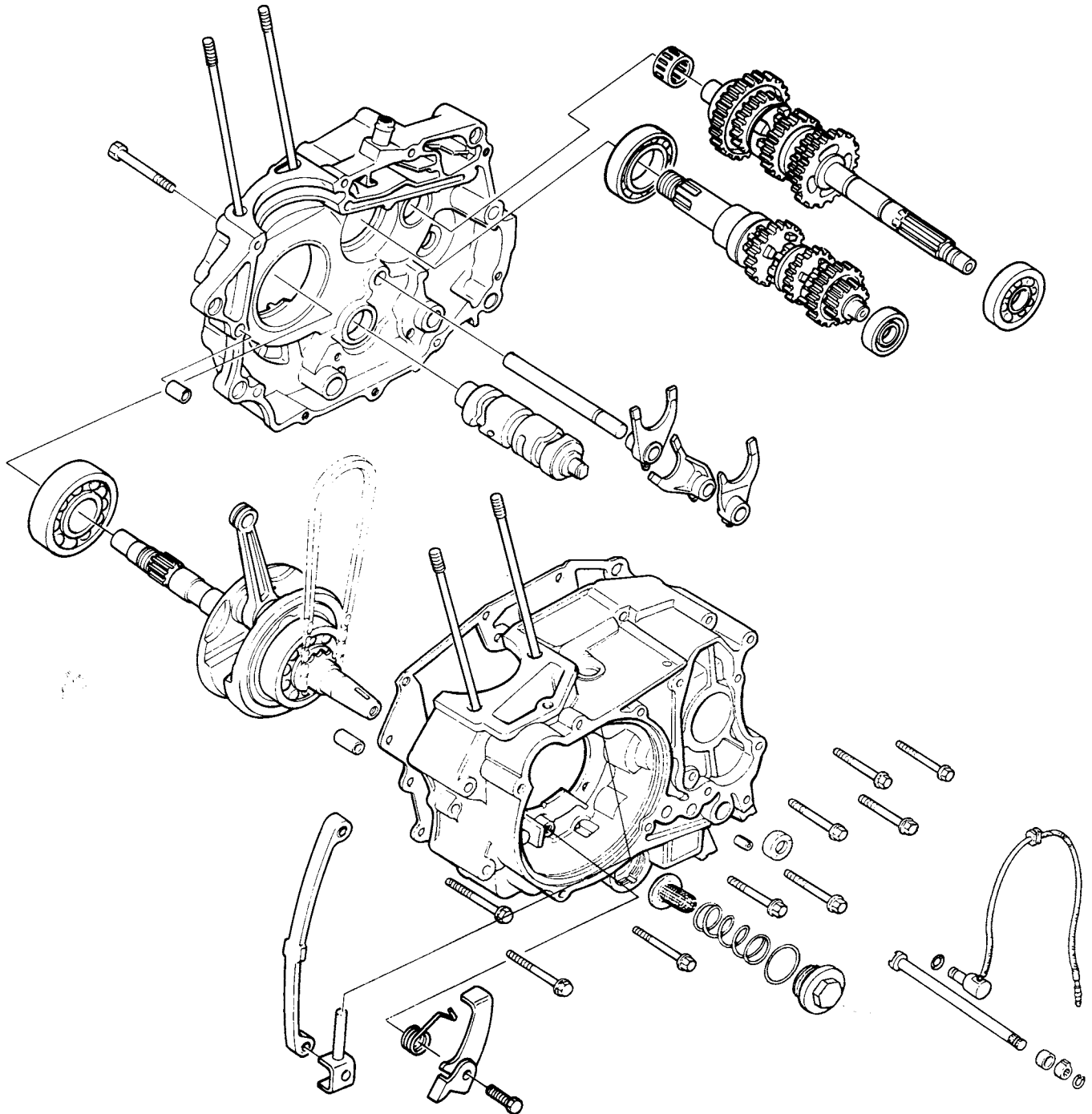


HONDA
ATC200ES

MEMO



TRANSMISSION/CRANKSHAFT





TRANSMISSION/CRANKSHAFT

TOOLS

Special

Bearing remover, 15 mm 07936-KC10000

Common

Driver 07749-0010000
Attachment, 32 x 35 mm 07746-0010100
Attachment, 42 x 47 mm 07746-0010300
Attachment, 52 x 55 mm 07746-0010400
Pilot, 15 mm 07746-0040300
Pilot, 20 mm 07746-0040500
Pilot, 30 mm 07746-0040700
Driver 07746-0020100
Attachment, 20 mm 07746-0020400
Driver 07746-0030100
Attachment, 25 mm I.D. 07746-0030200
Attachment, 30 mm I.D. 07746-0030300

TROUBLESHOOTING

Hard to shift

1. Shift fork bent
2. Shift fork shaft bent

Transmission jumps out of gear

1. Gear dogs worn
2. Shift fork bent or damaged
3. Shift fork shaft bent

Crankshaft noisy

1. Worn connecting rod big end bearing
2. Bent connecting rod
3. Worn crankshaft main journal bearing

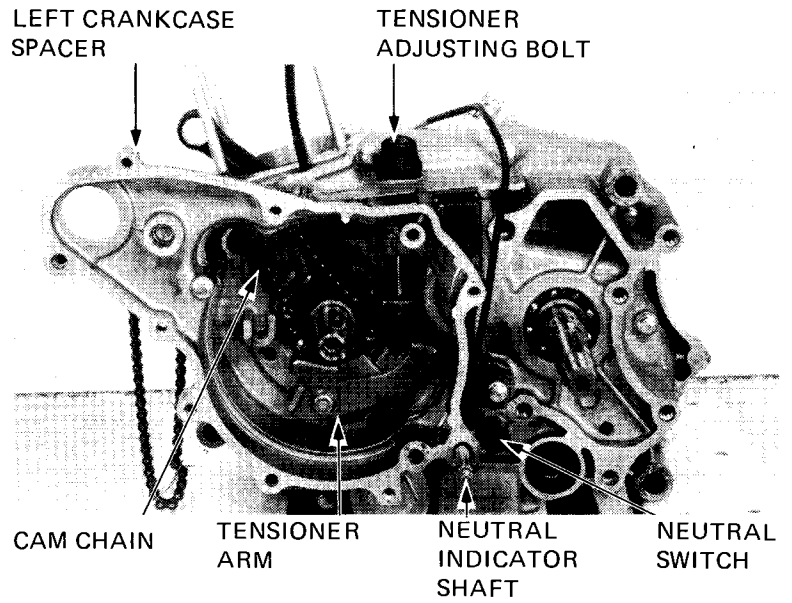
Gears noisy

1. Worn transmission gear
2. Worn spline shafts

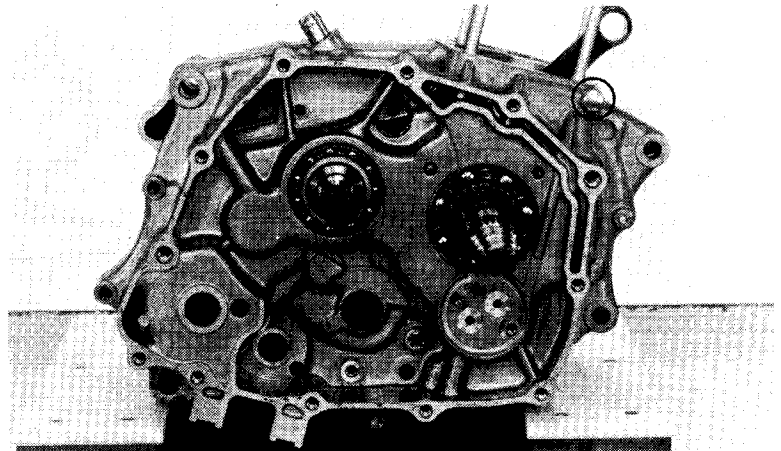


CRANKCASE SEPARATION

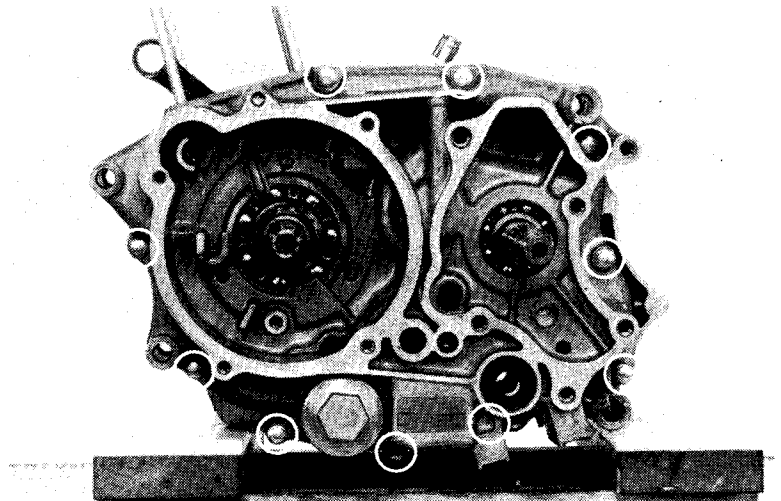
Remove the bolt mounting the left crankcase spacer and the spacer.
Remove the neutral indicator shaft.
Remove the cam chain tensioner adjusting bolt, cam chain tensioner arm, tensioner and cam chain.
Remove the neutral switch.



Remove the right crankcase bolt.



Remove the left crankcase bolts.
Place the engine with the right crankcase side down and separate the left crankcase from the right crankcase.
Remove the gasket and dowel pins.





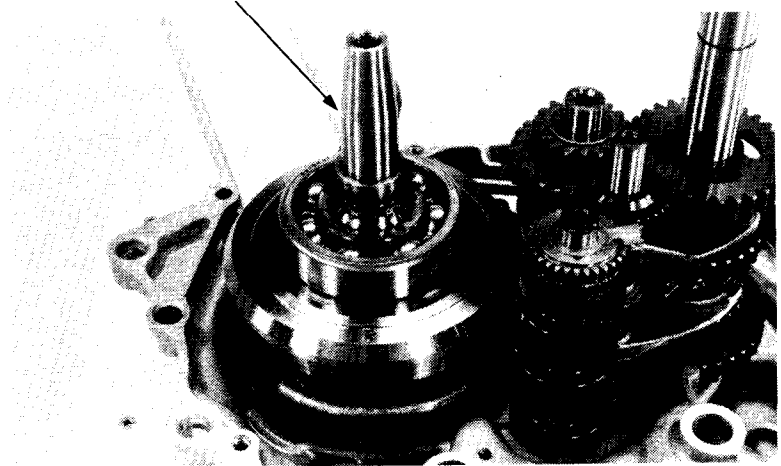
TRANSMISSION/CRANKSHAFT

CRANKSHAFT REMOVAL

Remove the left crankcase (Page 11-3).

Be careful not to damage the oil pressure pad.

CRANKSHAFT



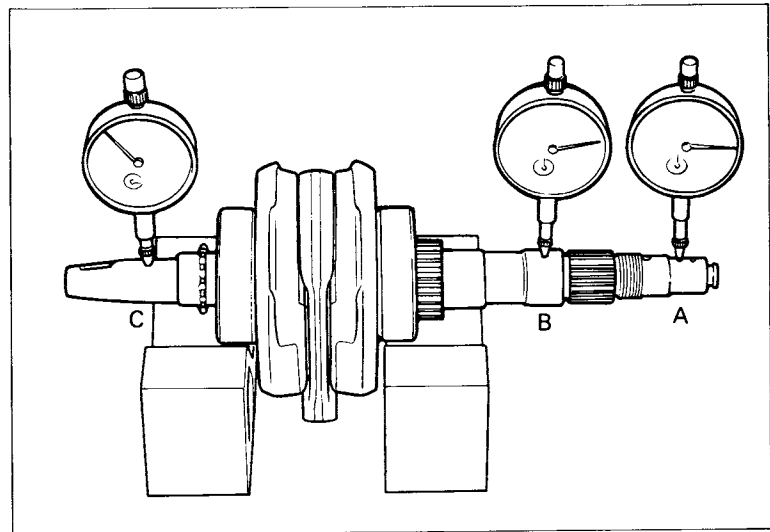
CRANKSHAFT INSPECTION

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

SERVICE LIMITS:

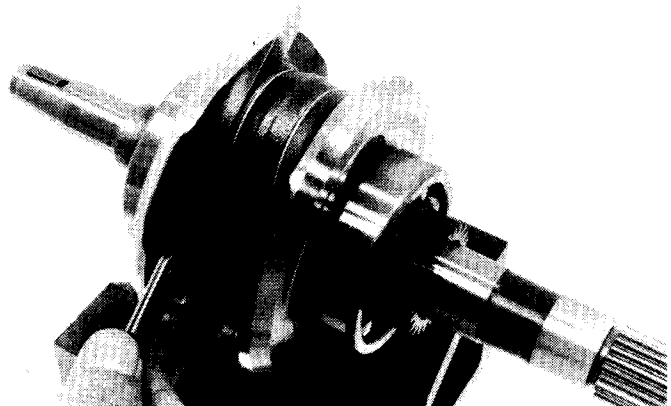
A: 0.12 mm (0.005 in)

B, C: 0.08 mm (0.003 in)



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

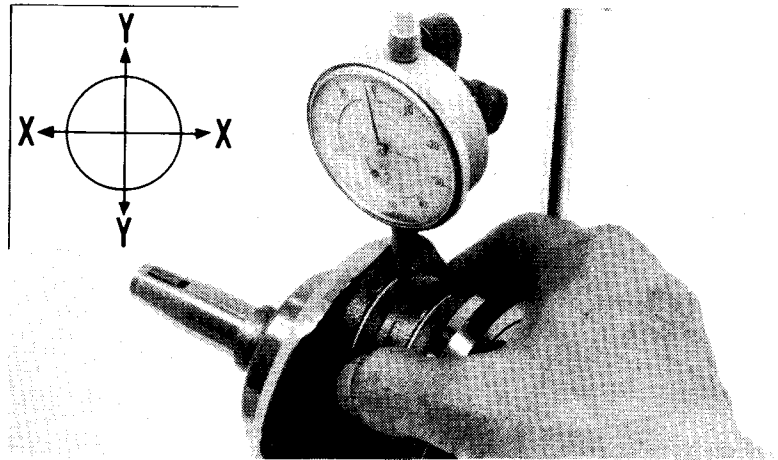
SERVICE LIMIT: 0.80 mm (0.032 in)





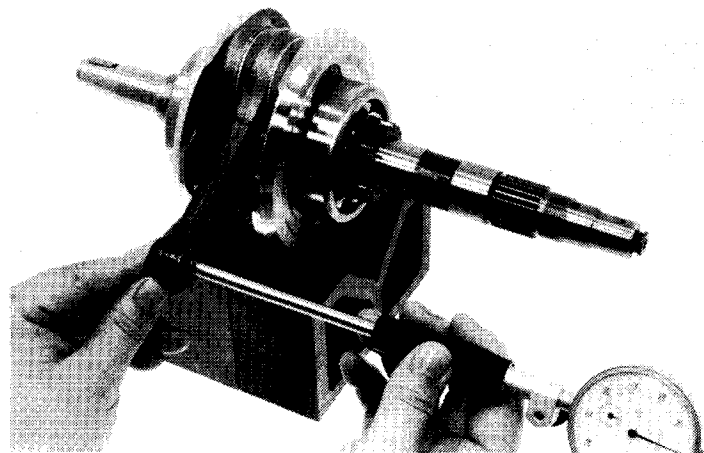
Measure the radial clearance at the connecting rod big end, at two points in the directions indicated by the arrows.

SERVICE LIMIT: 0.05 mm (0.002 in)



Measure the connecting rod small end I.D.

SERVICE LIMIT: 15.06 mm (0.593 in)

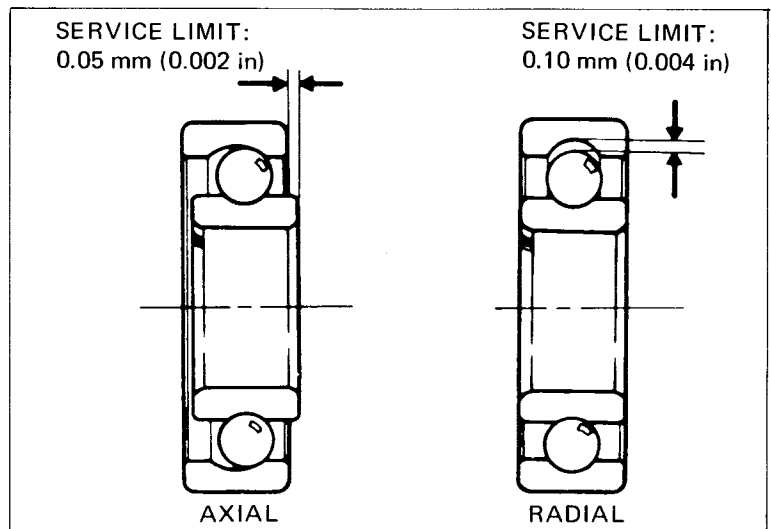


CRANKSHAFT BEARING INSPECTION

Spin the crankcase bearings by hand and check for play.

The bearings must be replaced if they are noisy or have excessive play.

Drive a new bearing with the following tools.
Driver 07746-0030100
Attachment, 30 mm I.D. 07746-0030300





TRANSMISSION/CRANKSHAFT

TIMING SPROCKET AND OIL PUMP DRIVE GEAR INSPECTION

Inspect the timing sprocket and oil pump drive gear teeth for wear or damage.
Replace the parts if necessary.

Install a new sprocket, aligning any tooth center with the keyway center in the crankshaft.

Drive in the parts with the following tools.

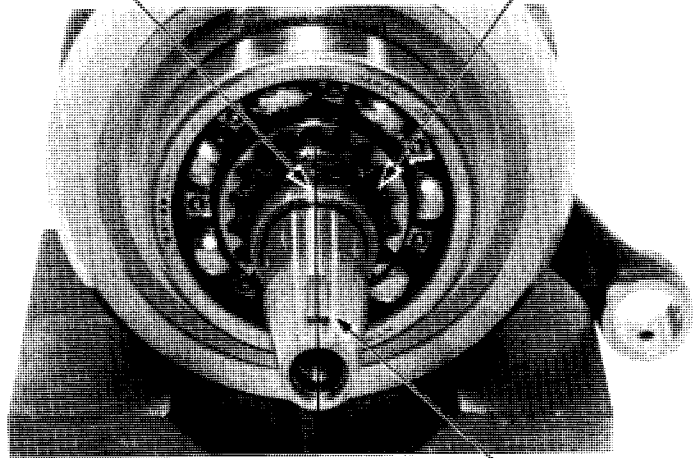
Timing sprocket:

- Driver 07746-0020100
- Attachment, 20 mm 07746-0020400

Oil pump drive gear:

- Driver 07746-0030100
- Attachment, 25 mm I.D. 07746-0030200

TOOTH CENTER TIMING SPROCKET

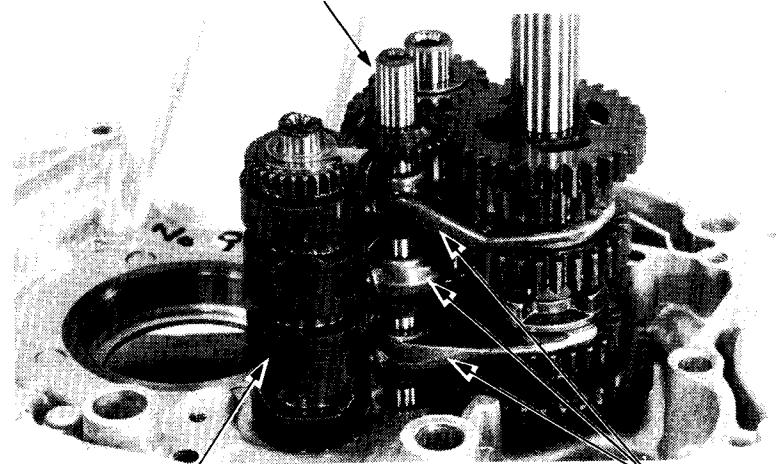


KEY WAY

TRANSMISSION DISASSEMBLY

Remove the shift fork shaft and remove the shift forks.
Remove the shift drum.

SHIFT FORKS SHAFT

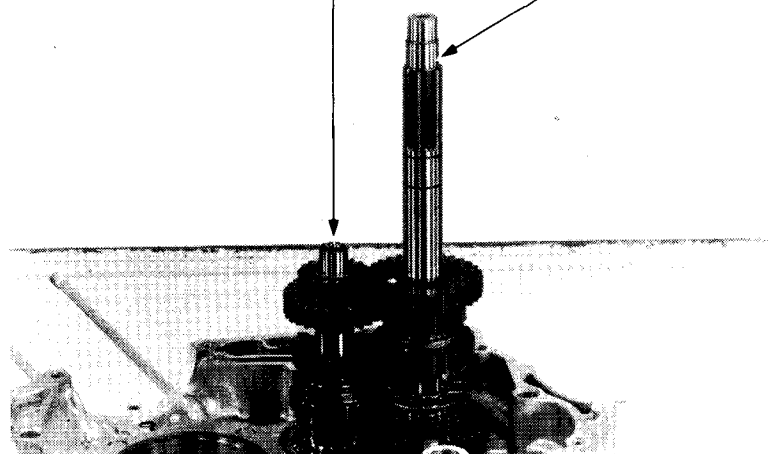


SHIFT DRUM

SHIFT FORKS

Remove the mainshaft and countershaft.
Disassemble the mainshaft and countershaft.

MAINSHAFT COUNTERSHAFT





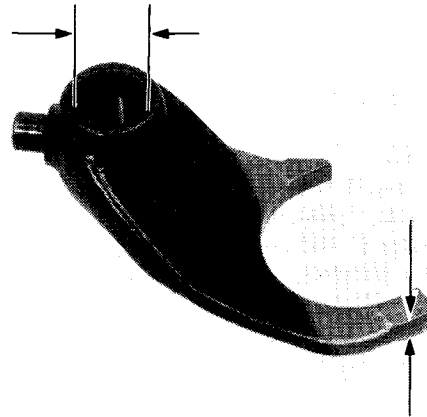
INSPECTION

Check the shift fork for wear, bending or damage.
Measure the I.D. of the shaft hole.

SERVICE LIMIT: 12.04 mm (0.474 in)

Measure the shift fork claw thickness.

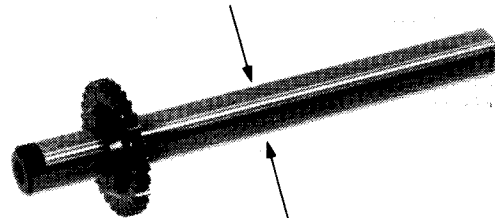
SERVICE LIMIT: 4.50 mm (0.177 in)



Measure the shift fork shaft O.D.

SERVICE LIMIT: 11.96 mm (0.471 in)

Inspect the gear for wear or damage and replace if necessary.



Inspect the shift drum end for scoring, scratches, or evidence of insufficient lubrication.
Check the shift drum grooves for damage.
Inspect the shift drum gear for wear or damage.





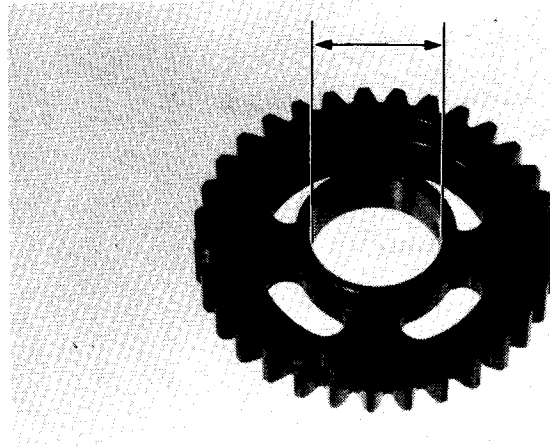
TRANSMISSION/CRANKSHAFT

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

Measure the I.D. of each gear.

SERVICE LIMITS:

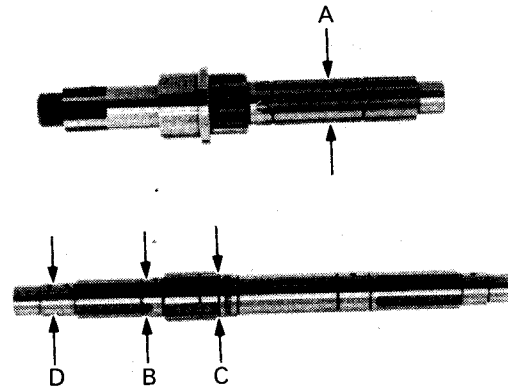
- M4 – 20.09 mm (0.791 in)
- M5 – 20.09 mm (0.791 in)
- C1 – 16.58 mm (0.653 in)
- C2 – 22.09 mm (0.870 in)
- C3 – 20.09 mm (0.791 in)



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

SERVICE LIMITS:

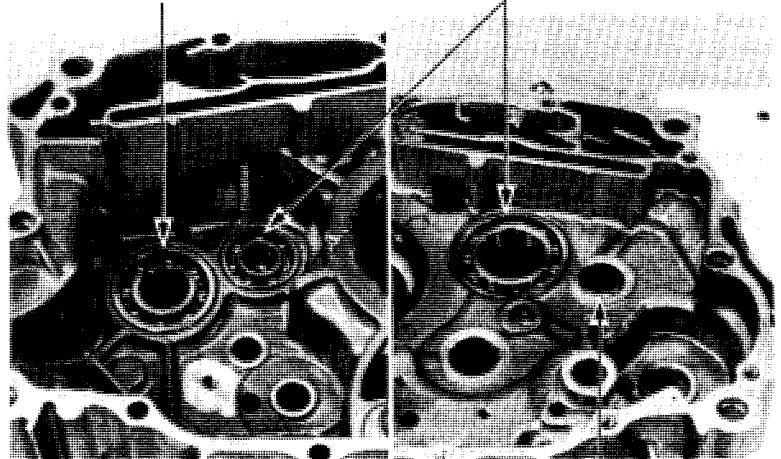
- A (at M4, M5 gears): 19.91 mm (0.784 in)
- B (at C3 gear): 19.91 mm (0.784 in)
- C (at C2 gear): 21.91 mm (0.863 in)
- D (at C1 gear): 16.42 mm (0.646 in)



Check the transmission bearings for excessive play or damage and replace if necessary.

COUNTERSHAFT BEARING

MAINSHAFT BEARINGS



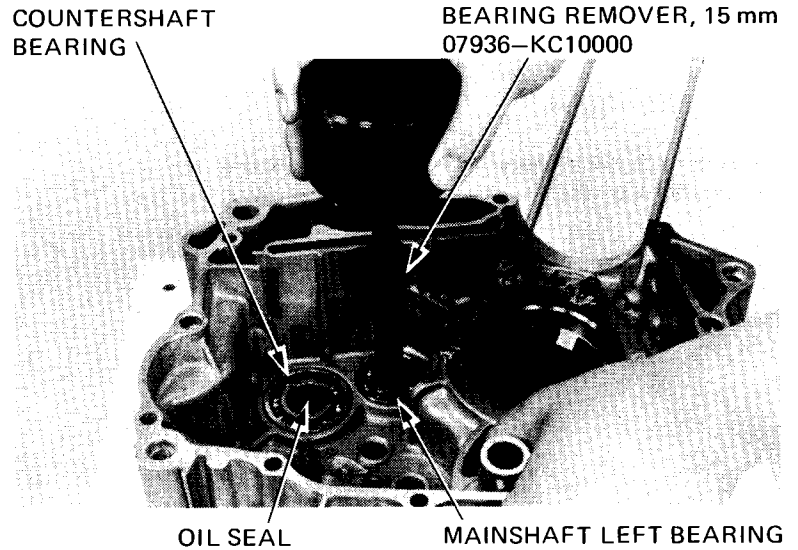
COUNTERSHAFT NEEDLE BEARING



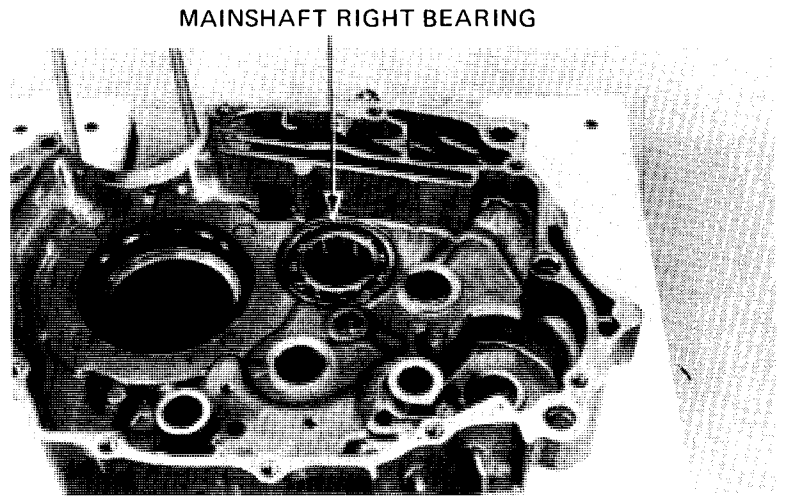
BEARING REPLACEMENT

Remove the oil seal and countershaft bearing from the left crankcase.

Remove the mainshaft left bearing with the 15 mm bearing remover.



Remove the mainshaft right bearing from the right crankcase.



Drive the bearings into the right and left crankcases with the following tools:

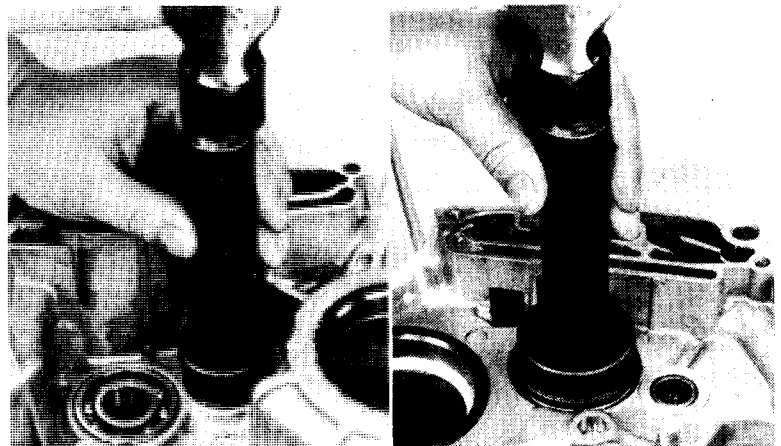
Left crankcase:

- Countershaft bearing –
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300
- Pilot, 20 mm 07746-0040500
- Mainshaft left bearing –
- Driver 07749-0010000
- Attachment, 32 x 35 mm 07746-0010100
- Pilot, 15 mm 07746-0040300

Right crankcase:

- Mainshaft right bearing –
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400
- Pilot, 30 mm 07746-0040700

Install the new countershaft oil seal.





TRANSMISSION/CRANKSHAFT

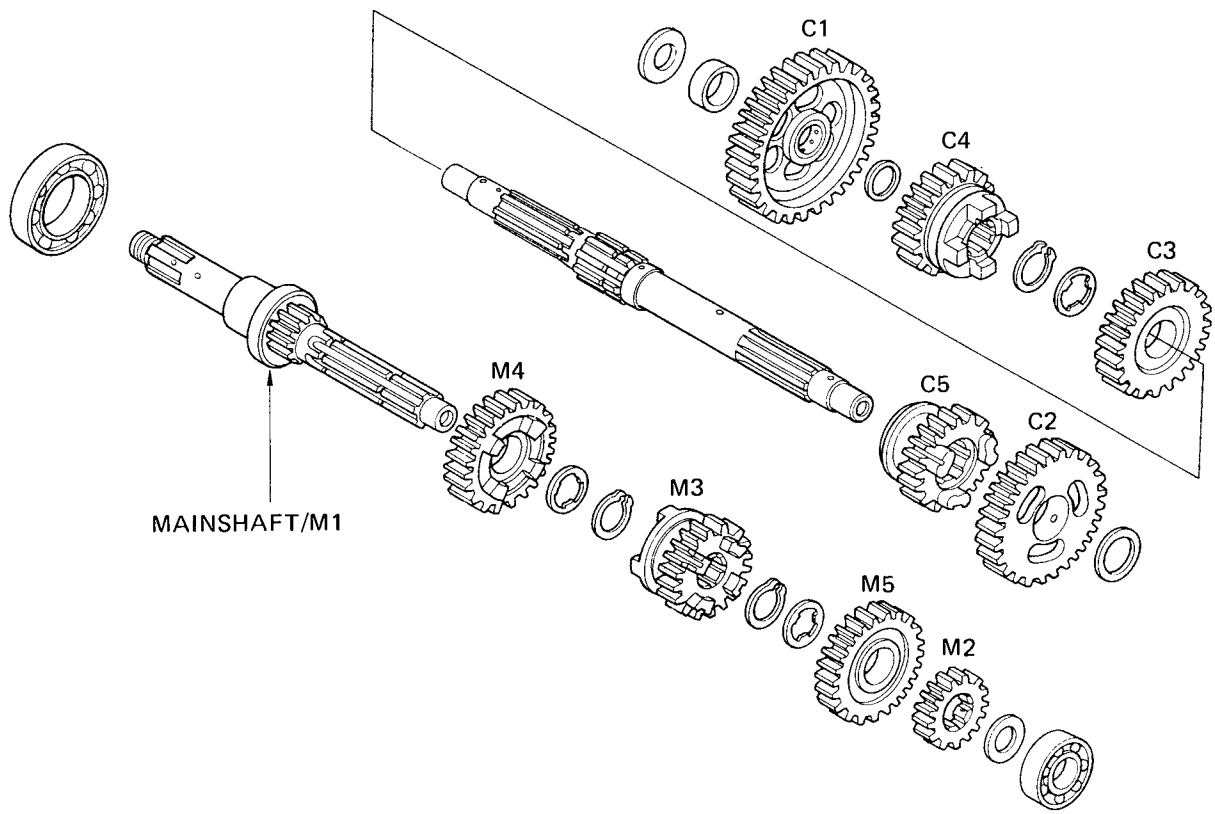
TRANSMISSION ASSEMBLY

Coat all parts with oil.

Assemble the transmission shaft and gears noting the locations of the thrust washers and snap rings.

NOTE:

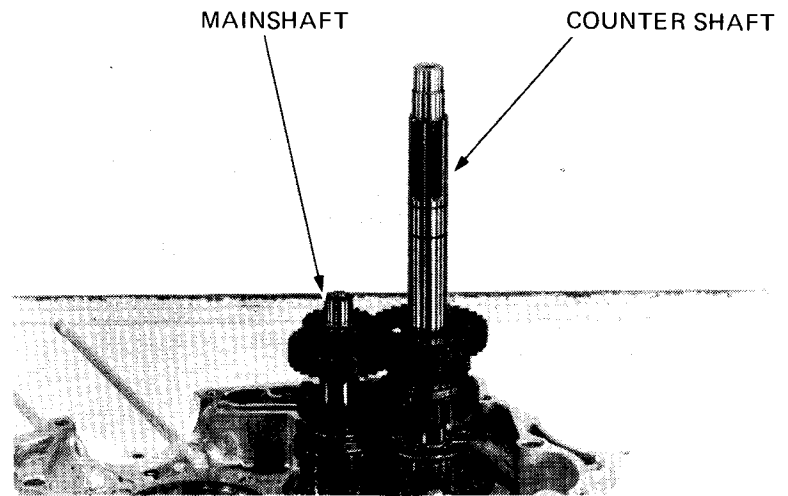
Make sure the snap rings are seated properly.



Install the mainshaft and countershaft assemblies into the right crankcase.

NOTE:

Make sure the thrust washer stays in place during this operation.



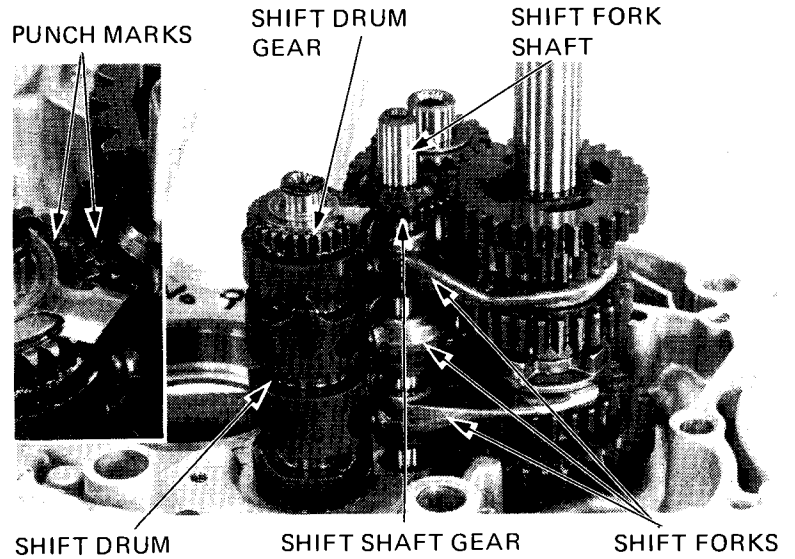


Install the shift drum and shift forks.

Install the shift fork shaft.

Align the punch marks on the shift fork shaft and shift drum gears.

Rotate the mainshaft by hand to be sure that the gears rotate smoothly.



CRANKCASE ASSEMBLY

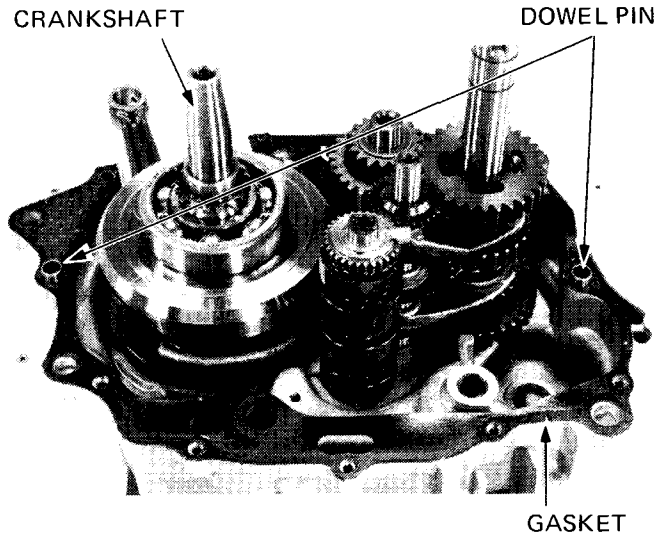
Install the crankshaft.

Install the dowel pins and a new gasket.

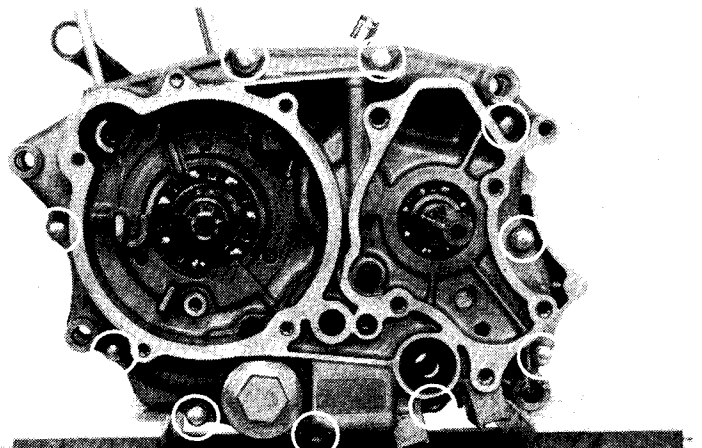
Install the left crankcase onto the right crankcase.

NOTE:

Make sure that the gasket stays in place.



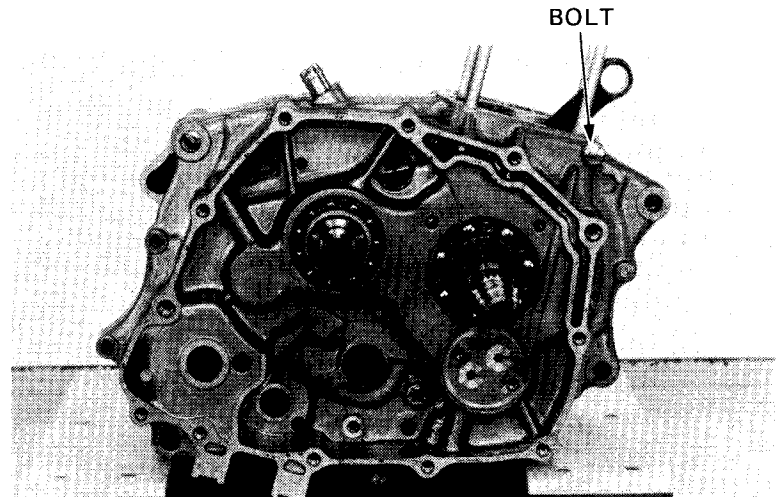
Tighten the left crankcase 6 mm bolts in a criss-cross pattern.





TRANSMISSION/CRANKSHAFT

Tighten the right crankcase bolt.

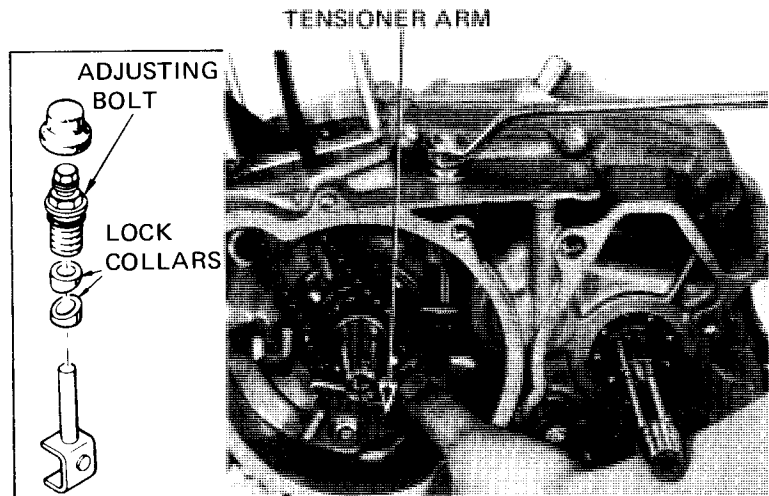


Install the cam chain tensioner and tensioner rod.

Install the cam chain and tensioner arm.
Install the tensioner lock collar.
With the tensioner arm held down all the way,
tighten the adjusting bolt.

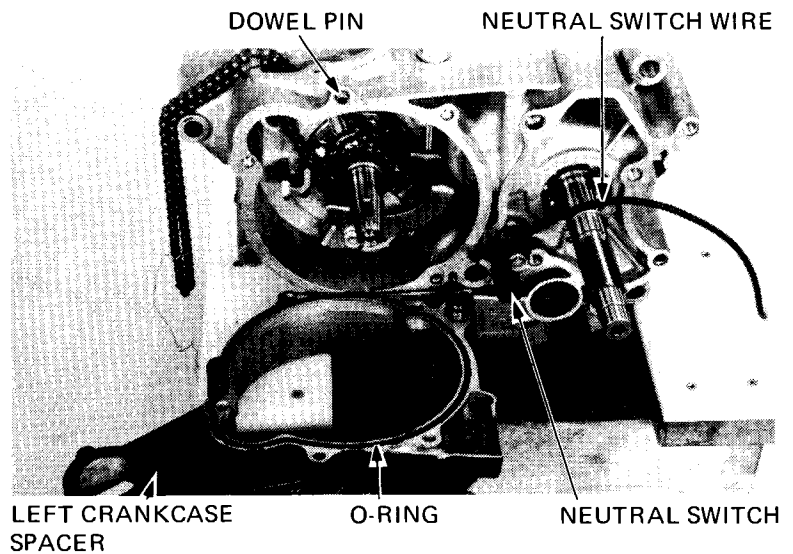
NOTE:

Note the tensioner lock collar direction.



Install the neutral switch and route the switch wire properly.

Install the neutral indicator shaft.
Install the dowel pin.
Install a new O-ring in the groove of the left crankcase spacer and install the spacer.
Tighten the left crankcase spacer bolt.



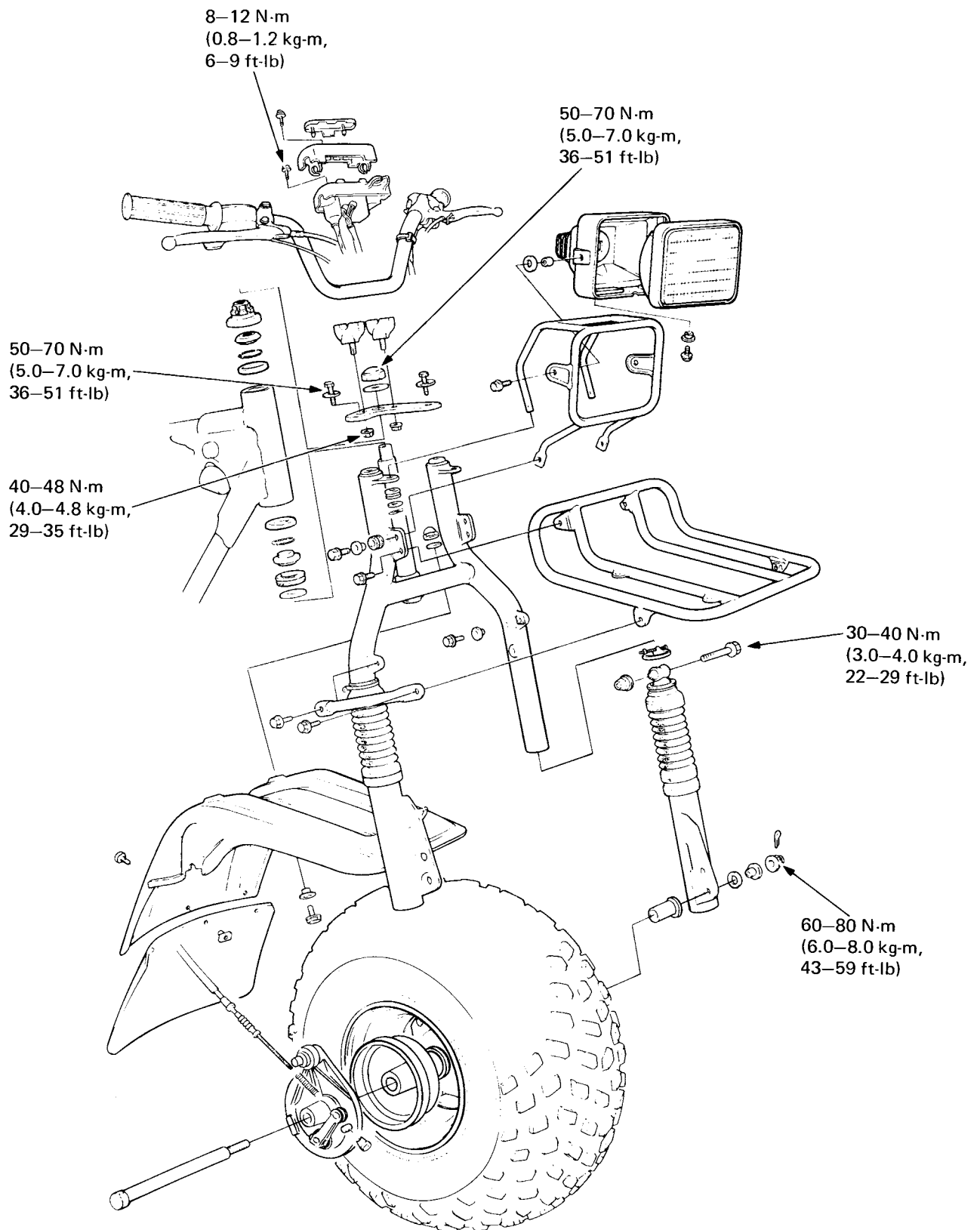


HONDA
ATC200ES

MEMO



FRONT WHEEL/BRAKE/STEERING





12. FRONT WHEEL/BRAKE/STEERING

SERVICE INFORMATION	12-1
TROUBLESHOOTING	12-2
HEADLIGHT	12-3
HANDLEBAR	12-4
FRONT WHEEL	12-7
FRONT BRAKE	12-15
FRONT FORK	12-17
STEERING STEM	12-21

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the front wheel, front fork, 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 (0.02 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 bearing play	Radial	_____	0.05 mm (0.002 in)
	Axial	_____	0.10 mm (0.004 in)
Front fork spring free length	Spring A	287.2–281.6 mm (11.307–11.087 in)	278.7 mm (10.97 in)
	Spring B	40.1–39.3 mm (1.579–1.547 in)	38.9 mm (1.53 in)

12

TORQUE VALUES

Handlebar upper holder bolt	6 mm	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Handlebar lower holder nut	10 mm	40–48 N·m (4.0–4.8 kg-m, 29–35 ft-lb)
Fork top bridge bolt	12 mm	50–70 N·m (5.0–7.0 kg-m, 36–51 ft-lb)
Steering stem nut	22 mm	50–70 N·m (5.0–7.0 kg-m, 36–51 ft-lb)
Front axle nut	14 mm	60–80 N·m (6.0–8.0 kg-m, 43–59 ft-lb)
Front wheel hub nut	8 mm	20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)
Front brake drum bolt	8 mm	20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)
Front fork cap nut		15–25 N·m (1.5–2.5 kg-m, 11–18 ft-lb)
Front fork mounting bolt/nut	10 mm	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)



FRONT WHEEL/BRAKE/STEERING

TOOLS

Special

Ball race driver	07944-1150001
Universal bead breaker	GN-AH-958-BB1

Common

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 15 mm	07746-0040300
Shock absorber compressor	07959-3290001
Pin spanner	07702-0020000 or M9361-412-099788 (U.S.A. only)
Lock nut wrench, 30 x 32 mm	07716-0020400
Extension bar	07716-0020500 } or Equivalent commercially available in U.S.A.
Attachment, 37 x 40 mm	07746-0010200
Pilot, 17 mm	07746-0040400

TROUBLESHOOTING

Hard steering

1. Steering stem nut too tight
2. Faulty steering stem bearings
3. Damaged steering stem ball race or cone race
4. Insufficient tire pressure

Steers to one side or does not track straight

1. Bent front forks
2. Bent front axle, wheel installed incorrectly

Front wheel wobbling

1. Bent rim
2. Worn front wheel bearing
3. Faulty tire
4. Axle not tightened properly

Improper brake performance

1. Incorrect adjustment of lever
2. Brake shoes worn
3. Brake shoes contaminated
4. Brake cam worn
5. Brake drum worn
6. Brake arm serrations improperly engaged
7. Cam contacting area of shoes worn

Soft suspension

1. Weak fork spring

Front suspension noise

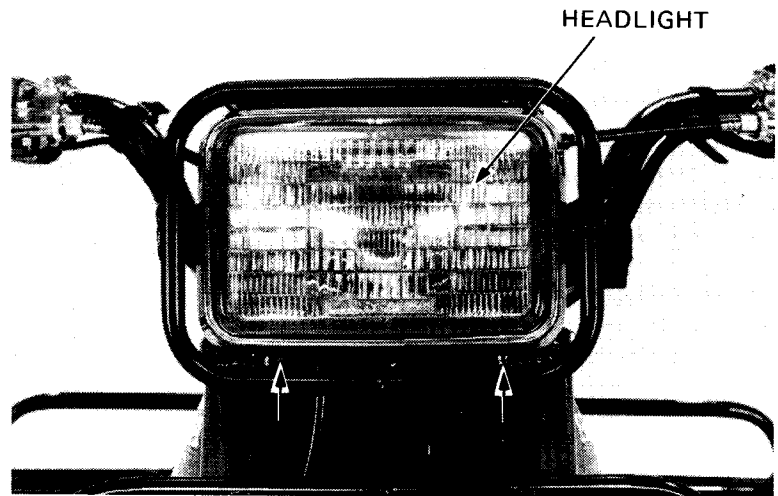
1. Loose fork fasteners



HEADLIGHT

CASE REMOVAL

Remove the headlight and disconnect the wire connectors.



Remove the headlight mounting bolts.
Remove the headlight case.



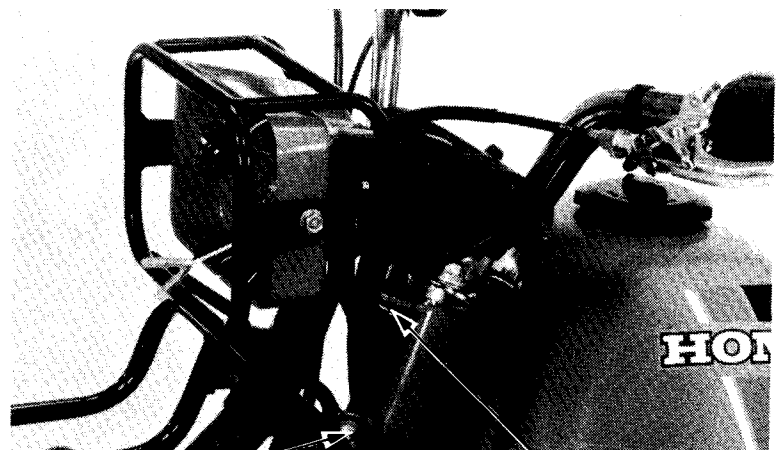
HEADLIGHT MOUNTING BOLTS

Remove the headlight and disconnect the wire connectors.

Remove the headlight bracket bolts and collar.
Remove the lock pins and plain washers.

CASE INSTALLATION

Install the headlight case bracket with the bolts, lock pins and plain washers.
Install the headlight case.
Connect the wires color-to-color.
Install the headlight.



BOLT

LOCK PIN AND WASHER



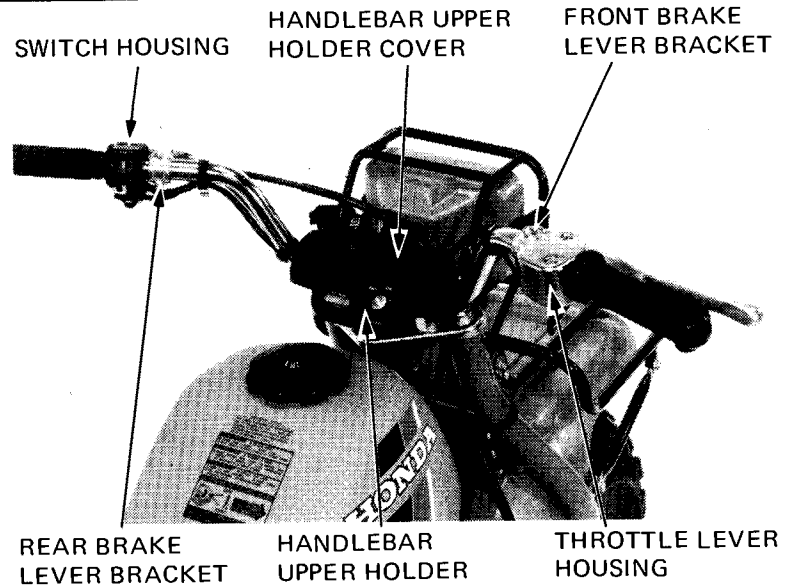
FRONT WHEEL/BRAKE/STEERING

HANDLEBAR

REMOVAL

Remove the wire bands.
Remove the front and rear brake lever brackets.
Remove the throttle lever housing.
Remove the switch housing.

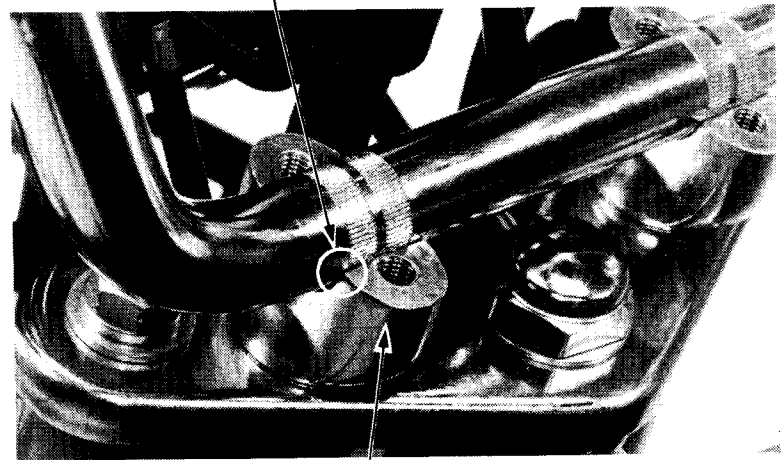
Remove the handlebar upper holder cover cap.
Remove the handlebar upper holder cover by removing the two screws.
Remove the handlebar upper holder and the handlebar.



INSTALLATION

Place the handlebar on the handlebar lower holder.
Align the punch mark on the handlebar with the top of the handlebar lower holder.

PUNCH MARK



HANDLEBAR LOWER HOLDER

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

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

Install the handlebar upper holder cover and cap.

Install the switch housing. Tighten the forward screw first, then tighten the rear screw.

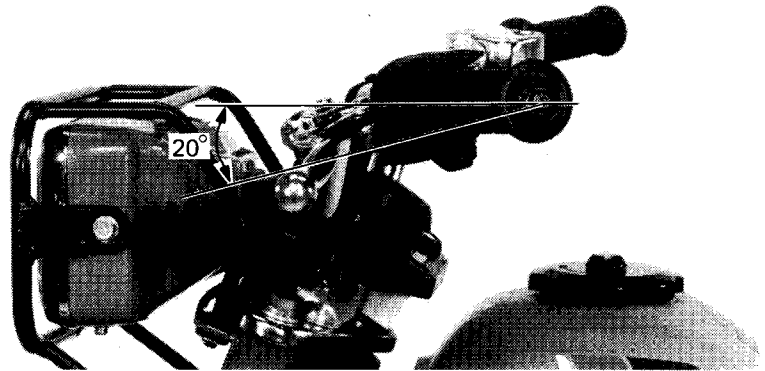
HANDLEBAR UPPER HOLDER





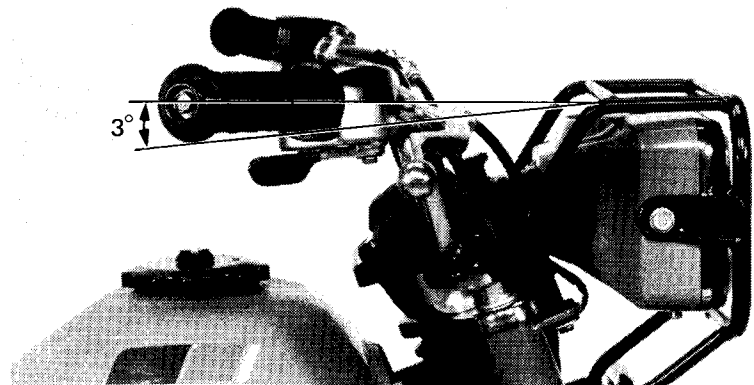
Position the front and rear brake lever brackets and holders at a angle as shown.

Tighten the holder upper screw first, then tighten the lower screw.



Install the throttle lever housing onto the handlebar 3° below horizontal as shown.

Install the wire bands.

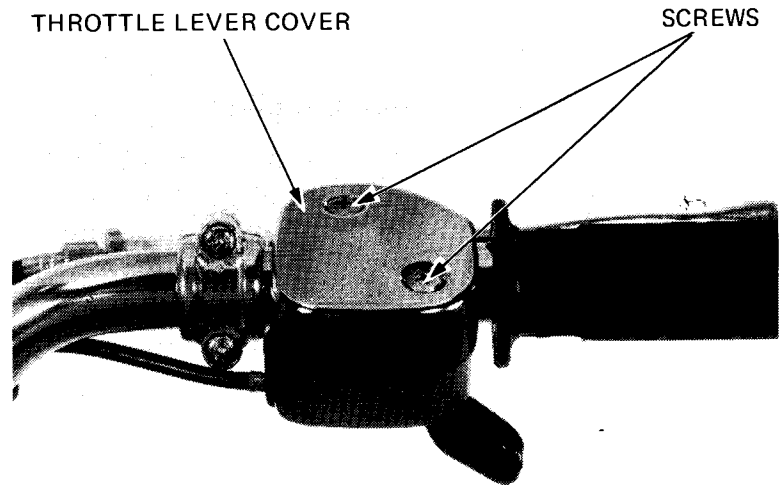




FRONT WHEEL/BRAKE/STEERING

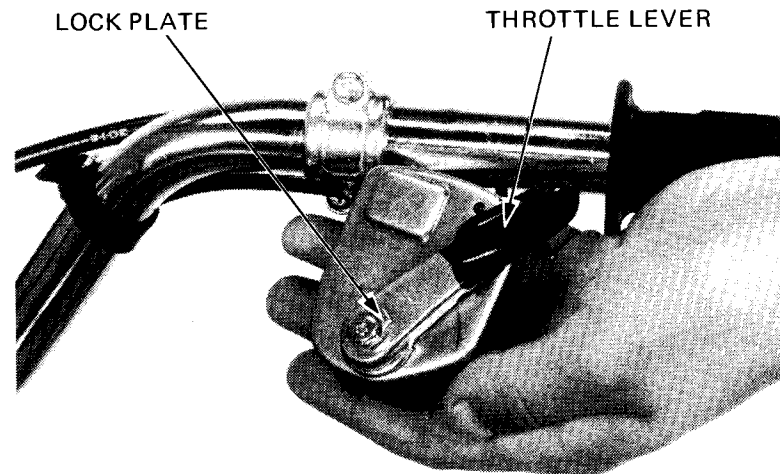
THROTTLE LEVER DISASSEMBLY

Remove the screws and throttle lever cover.



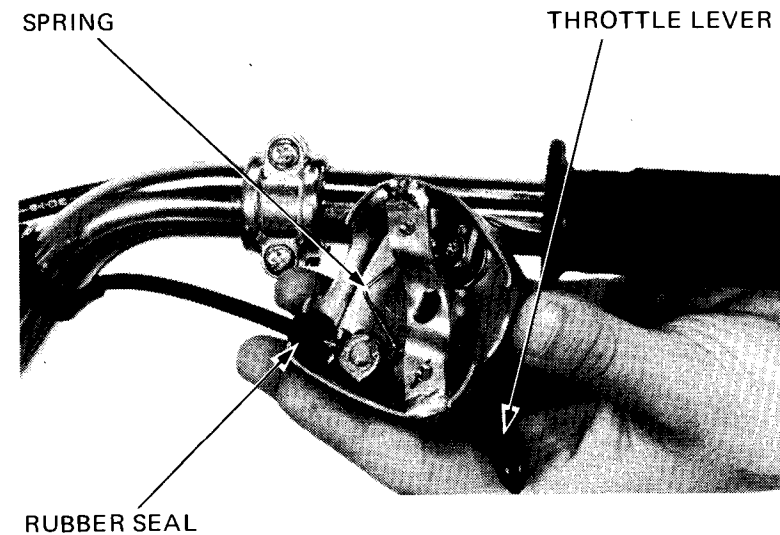
Raise the tab of the lock plate and remove the bolt.

Remove the throttle lever and spring.
Disconnect the throttle cable.



THROTTLE LEVER ASSEMBLY

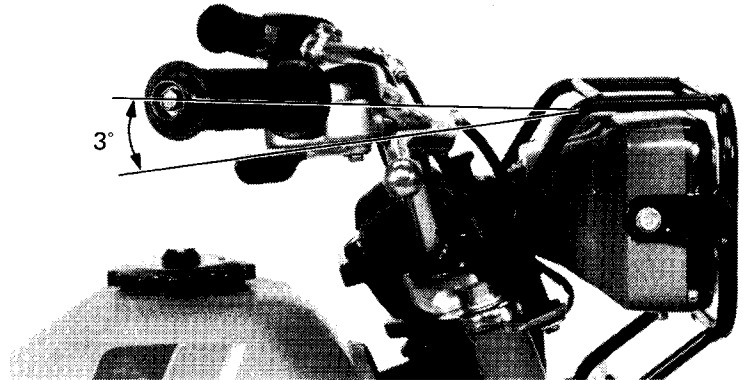
Install the throttle lever, spring, and rubber seal.





Install the lock plate.
Screw in the pivot bolt and check the lever for smooth operation.

Bed the tabs of the lock plate.
Install the throttle lever housing onto the handlebar 3° below horizontal as shown.



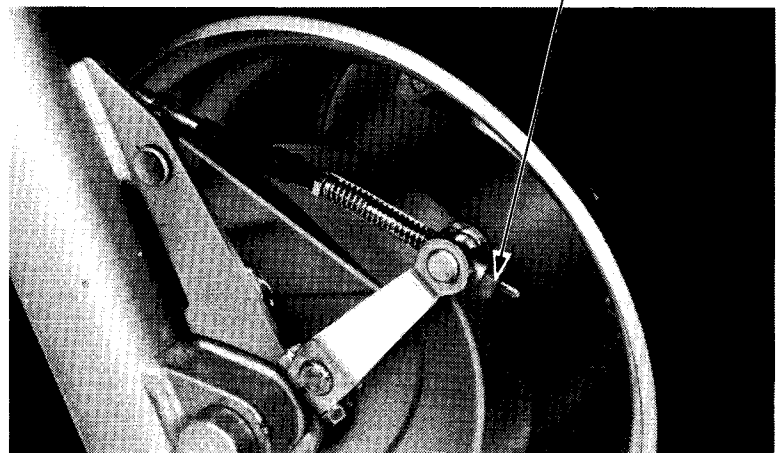
FRONT WHEEL

REMOVAL

Raise the front wheel off the ground by placing a block or work stand under the engine.

Remove the front brake adjusting nut and disconnect the front brake cable.

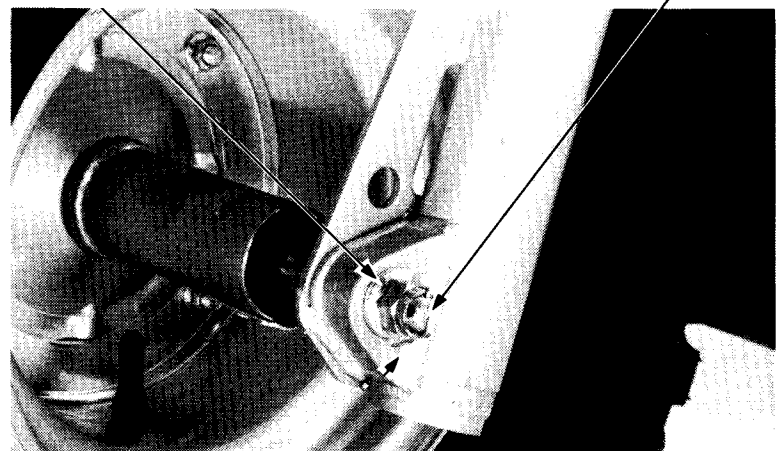
FRONT BRAKE ADJUSTING NUT



Remove the cotter pin and axle nut.
Remove the front axle and collar.
Remove the wheel.

AXLE NUT

COTTER PIN





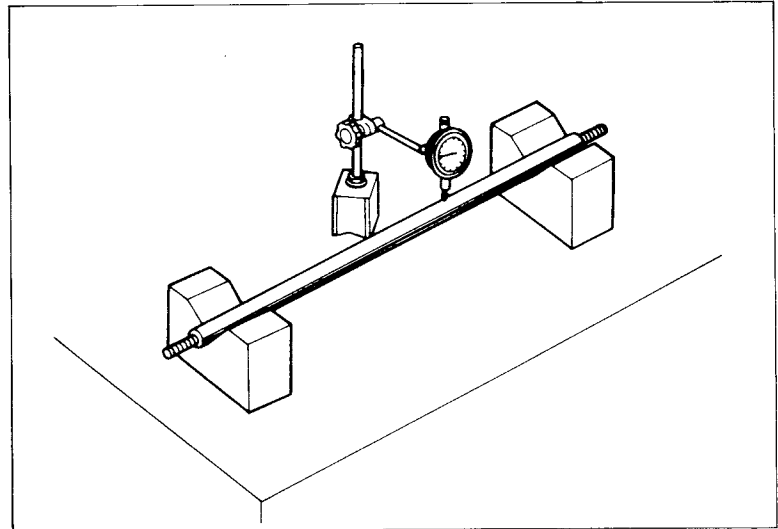
FRONT WHEEL/BRAKE/STEERING

FRONT AXLE INSPECTION

Set the axle in V-blocks, rotate and measure the runout.

Actual runout is 1/2 of TIR (Total Indicator Reading).

SERVICE LIMIT: 0.5 mm (0.02 in)

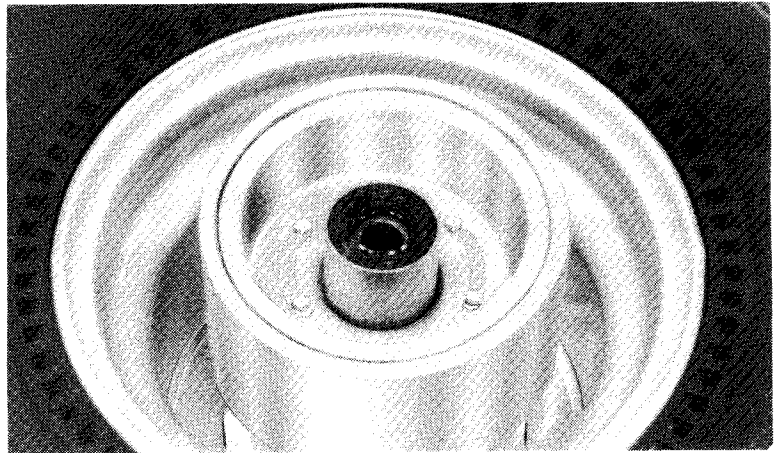


BRAKE DRUM

Remove the brake panel assembly and measure the brake drum I.D.

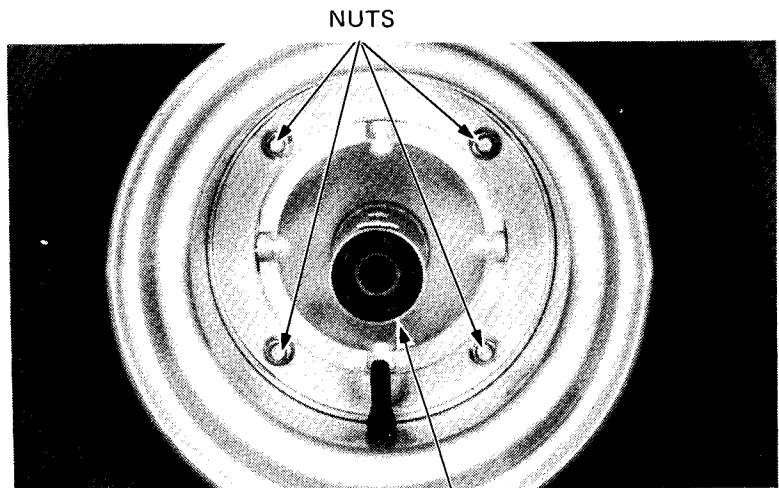
SERVICE LIMIT: 111 mm (4.4 in)

Refer to page 12-15 for brake lining inspection.



FRONT WHEEL DISASSEMBLY

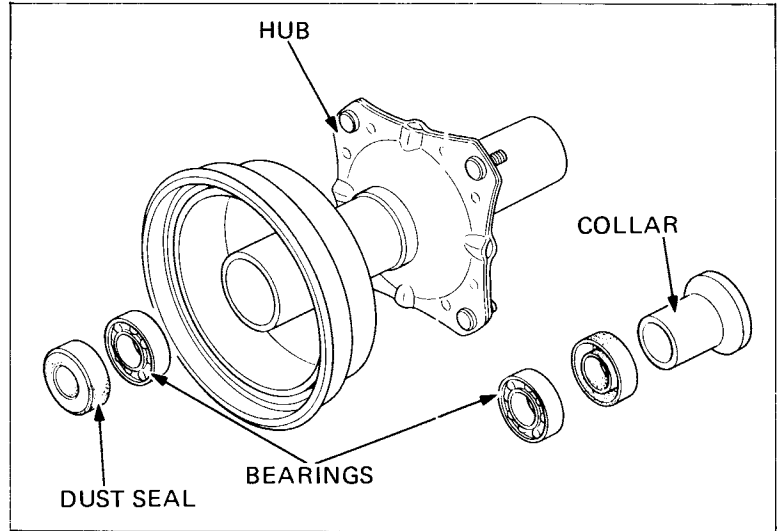
Remove the front wheel hub nuts and hub.



FRONT WHEEL HUB



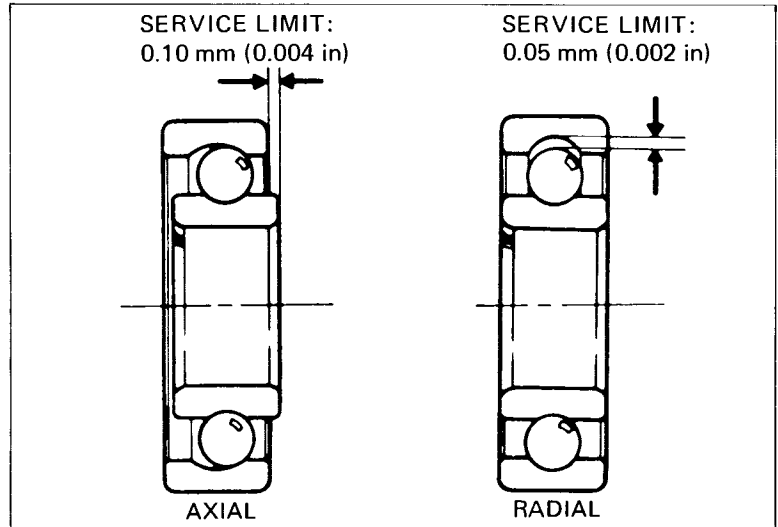
Remove the dust seals and drive the bearings out.
Remove the center collar.



BEARING INSPECTION

Check the wheel bearings by placing the wheel between V-blocks and spinning the wheel by hand.

Replace the bearings with new ones if they are noisy or have excessive play.





FRONT WHEEL/BRAKE/STEERING

TIRE REMOVAL

NOTE:

This service requires the Universal Bead Breaker (GN-AH-958-BB1) 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.

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.

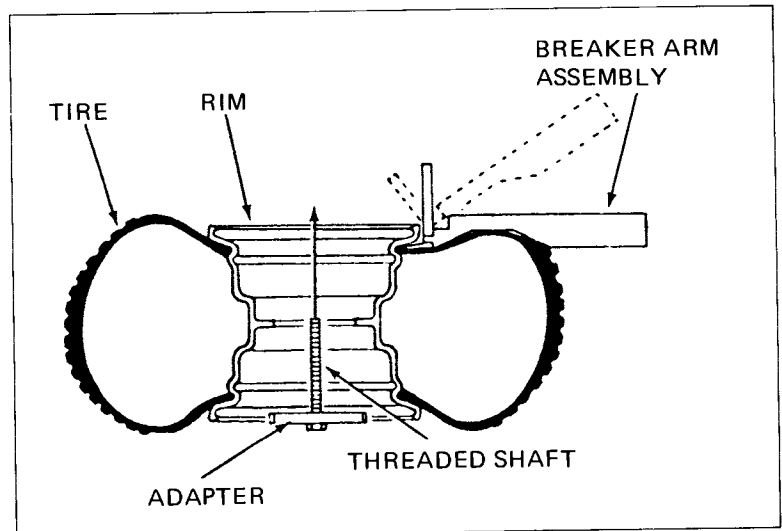
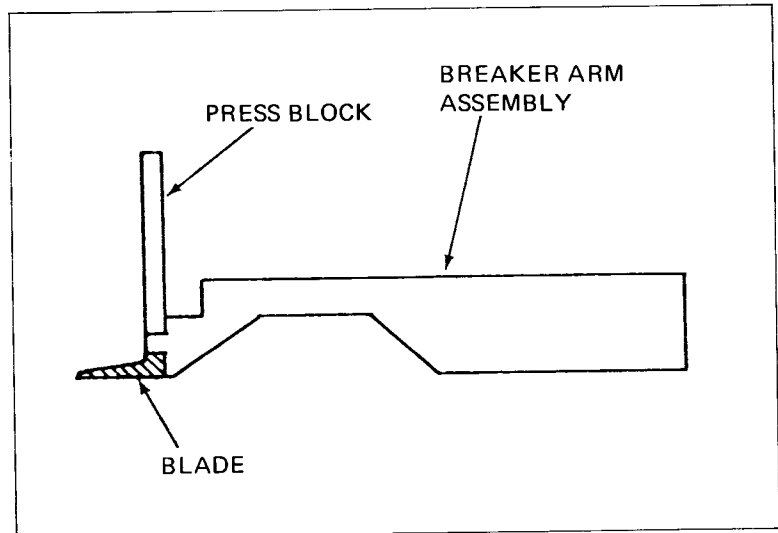
Place the proper size adapter onto the threaded shaft and then put the wheel over the threaded shaft and adapter.

Lube the bead area with rubber lubricant, pressing down on the tire sidewall/bead area in several places, to allow the lubricant to run into and around the bead. Also lube 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.

NOTE:

It may be necessary to tap the breaker arm with a brass hammer to install it the last 3 mm. While doing so, be sure to hold the arm down in the horizontal position.





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:

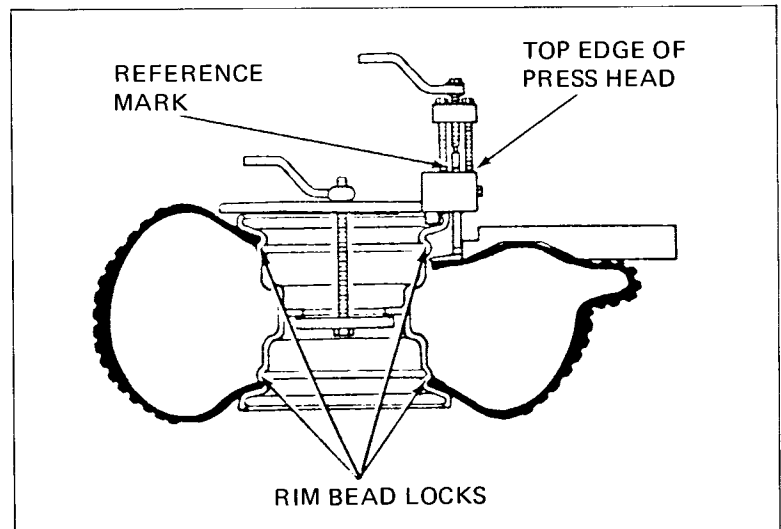
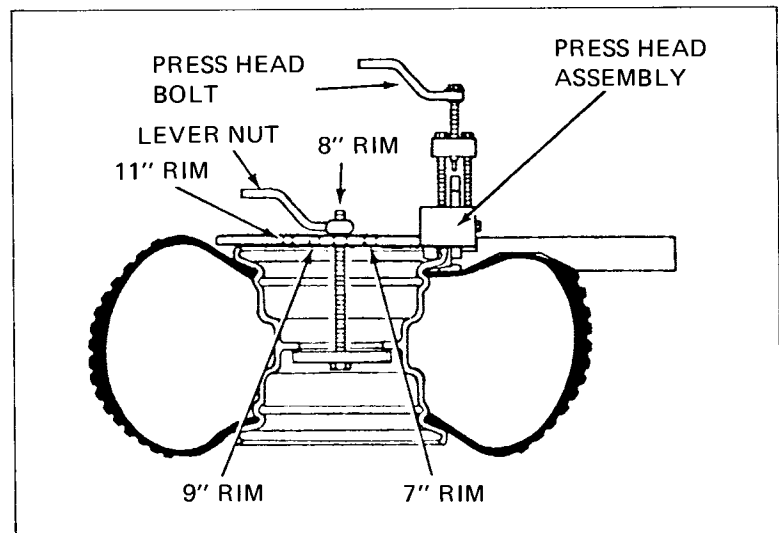
Insert bolts through the holes in the rim hub mounting tabs and the adapter to position the adapter properly.

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 assembly and breaker press head 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 tire from the rim using a tire changer machine or tire irons and rim protectors.

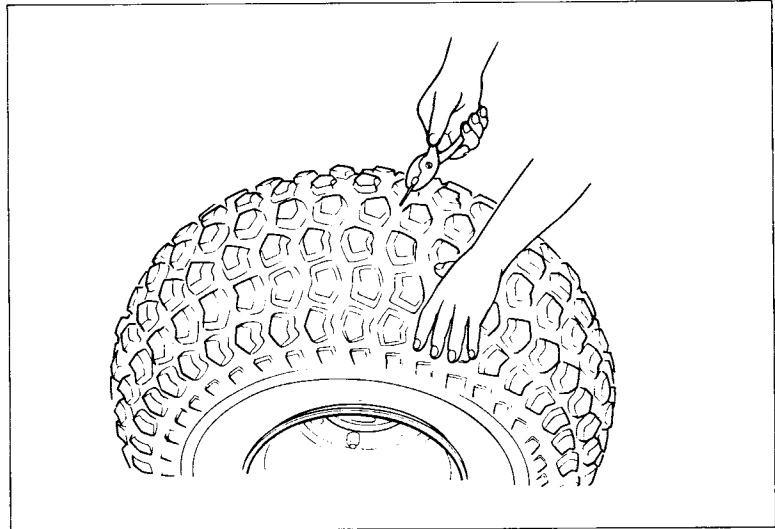




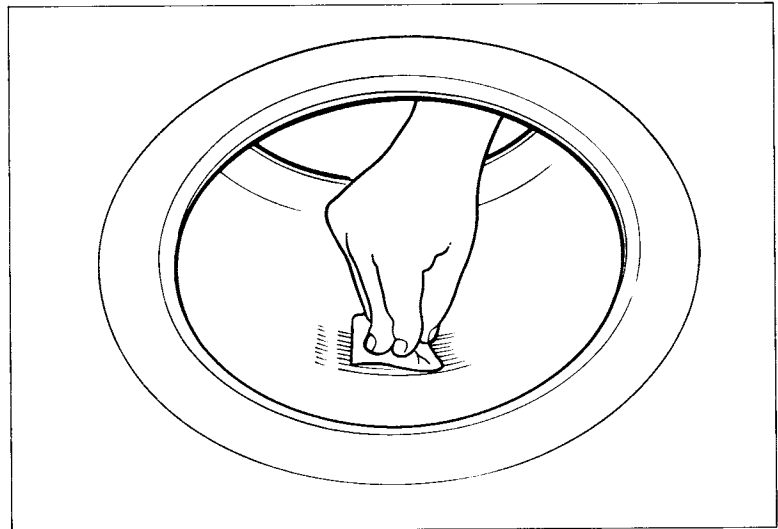
FRONT WHEEL/BRAKE/STEERING

TIRE REPAIR (WITH COLD PATCH)

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



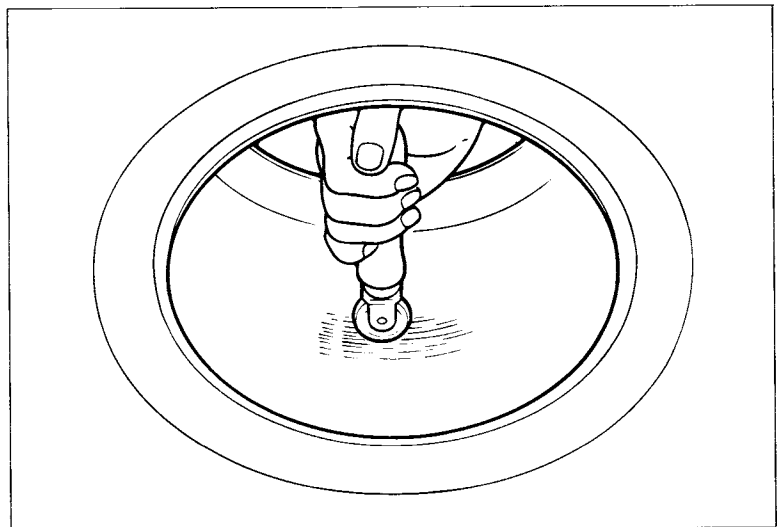
Clean and roughen the punctured area inside the tire with a tire rubber cleaner or a wire brush. Clean the area with non-flammable solvent.



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 until tacky before applying patch.
- Do not touch cement surface with dirty or greasy hands.





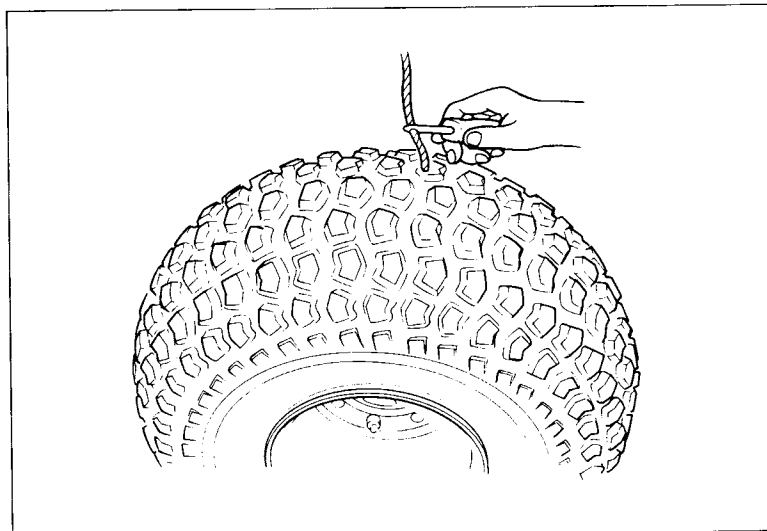
TIRE REPAIR (WITH RUBBER PLUG)

NOTE:

This method is an 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.

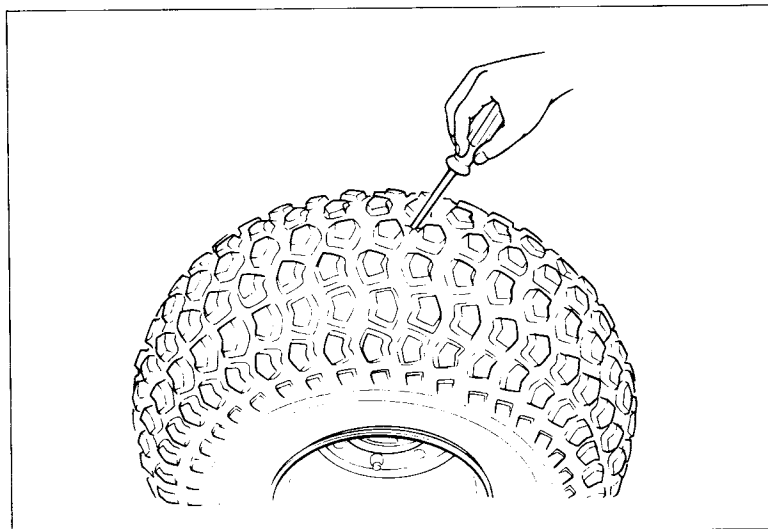
Apply patching cement to the plug.



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.



TIRE ASSEMBLY

Clean the rim bead seat and flanges.
Apply clean water to the rim flanges, bead seat and
base.

Inflate the tire to seat the tire bead.

NOTE:

Use tire mounting lubricant or a soap and
water solution to help seat the tire bead.

Deflate the tire. Wait 1 hour and inflate the tire to
the specified pressure.

TIRE PRESSURE:

2.2 psi (0.15 kg/cm², 15 kPa)

Min. Pressure: 1.7 psi (0.12 kg/cm², 12 kPa)

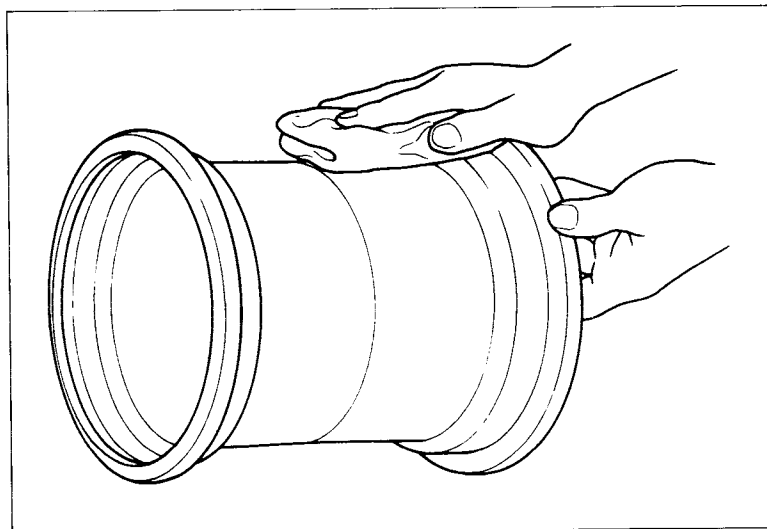
Max. Pressure: 2.6 psi (0.18 kg/cm², 18 kPa)

Measure the tire circumference.

STANDARD TIRE CIRCUMFERENCE:

1,920mm (75.6 in)

Check for air leaks and install the valve cap.





FRONT WHEEL/BRAKE/STEERING

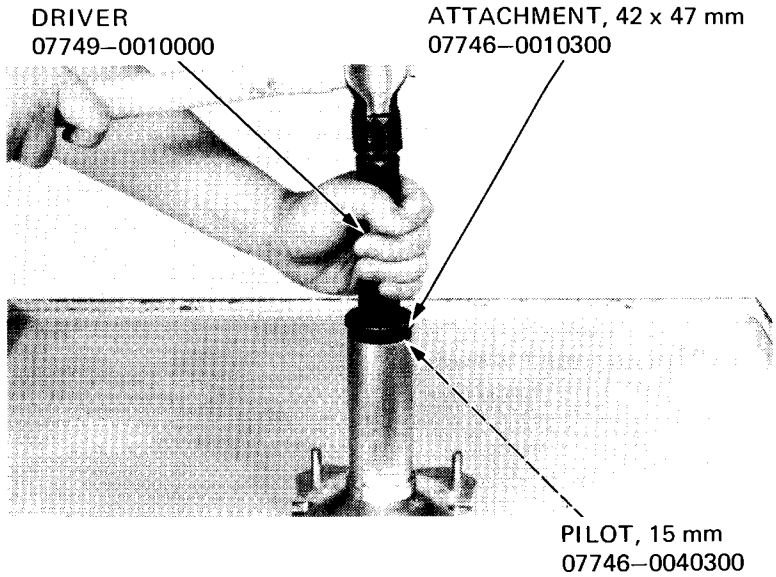
FRONT WHEEL ASSEMBLY

Pack all front wheel bearing cavities with grease.

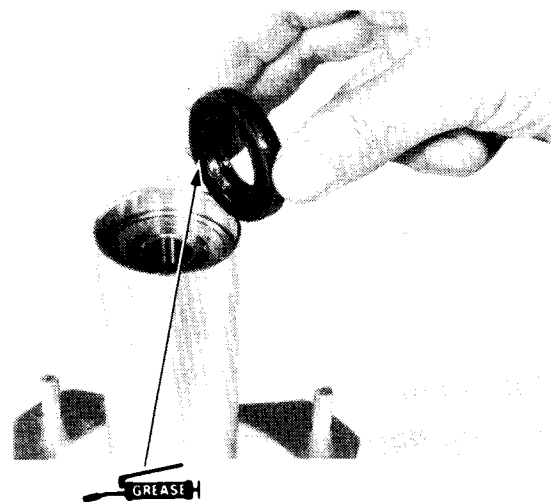
Drive in the left bearing squarely until it seats. Install the center collar and drive in the right bearing squarely until it seats.

NOTE:

Do not allow the bearings to tilt while driving them in.

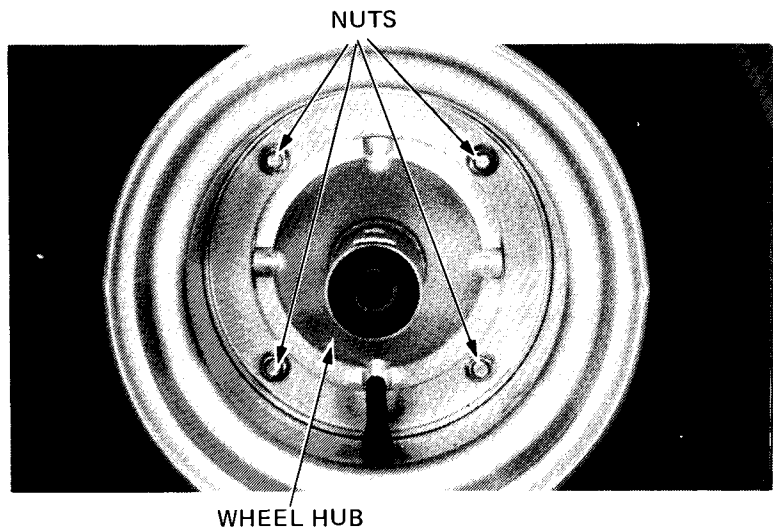


Apply grease to the inside of the dust seals and drive them into the wheel hub.



Install the front wheel hub and tighten the hub nuts.

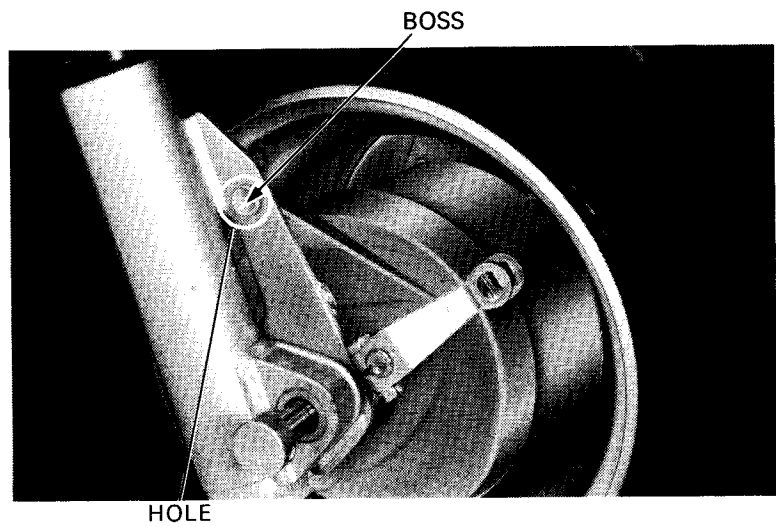
TORQUE: 20-25 N·m (2.0-2.5 kg·m,
14-18 ft·lb)





INSTALLATION

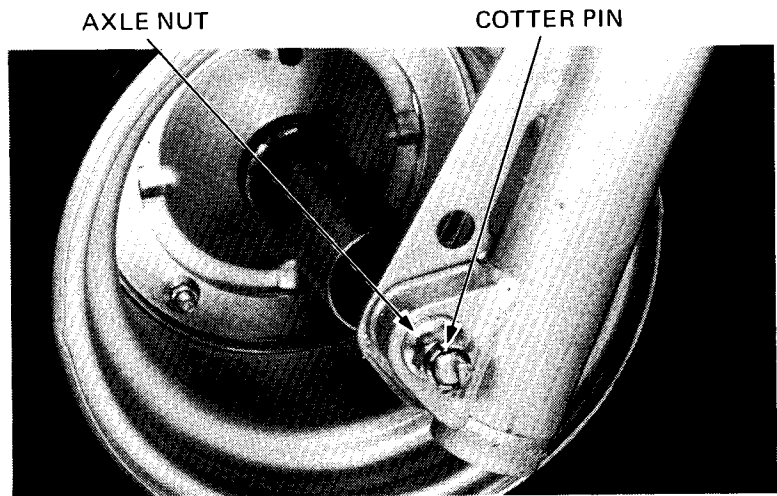
Install the front brake panel.
Install the front wheel between the forks and insert the boss on the brake panel into the hole in the right fork.



Install the collar and insert the axle from right side.
Tighten the axle nut.

**TORQUE: 60–80 N·m (6.0–8.0 kg·m,
43–59 ft·lb)**

Install the new cotter pin and bend the ends securely.
Connect the front brake cable and adjust the front brake lever free play.



FRONT BRAKE

REMOVAL

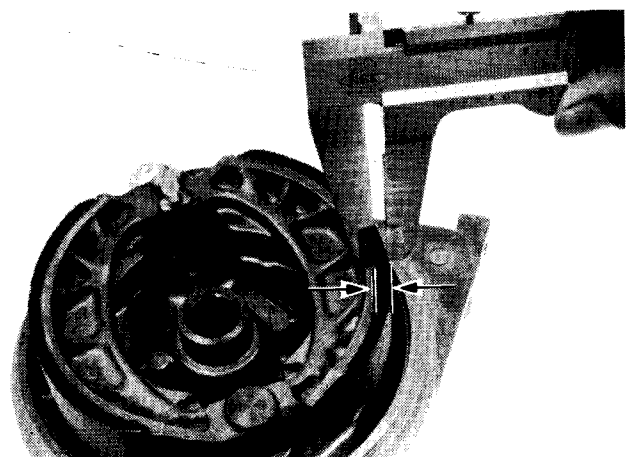
Remove the front wheel (Page 12-7).
Remove the brake panel from the wheel.

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. Refer to page 12-8 for brake drum inspection.



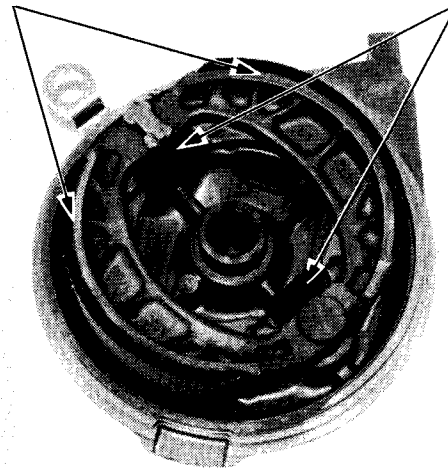


FRONT WHEEL/BRAKE/STEERING

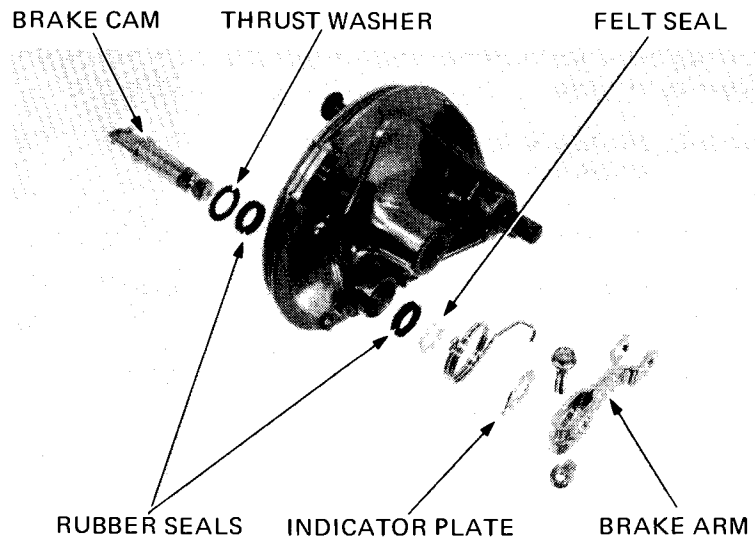
BRAKE PANEL DISASSEMBLY

Expand and remove the brake shoes by hand.

BRAKE SHOES **SHOE SPRINGS**



Remove the brake arm bolt brake arm and indicator plate.
Remove the brake cam and thrust washer, rubber seals and felt seal.



BRAKE PANEL ASSEMBLY

Install new rubber and felt seals.
Apply grease to the brake camshaft.

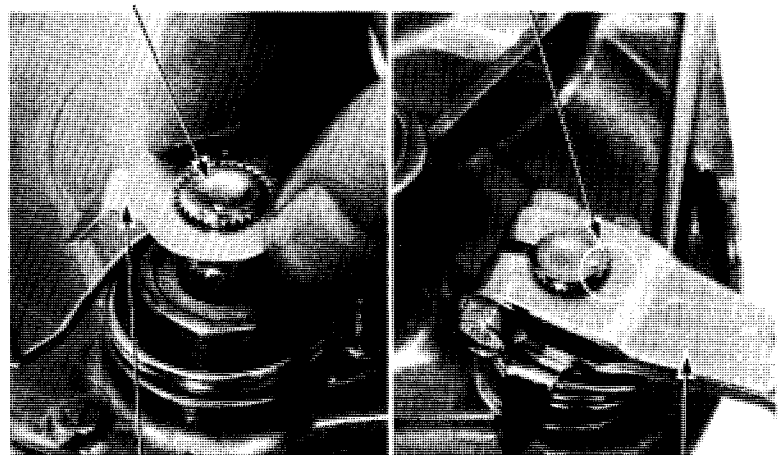
WARNING

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

Install the indicator plate, aligning the wide tooth on the indicator plate with the wide groove on the brake cam.

Install the brake arm, aligning the punch marks on the brake cam and arm.

BRAKE CAM **PUNCH MARKS**



INDICATOR PLATE

BRAKE ARM

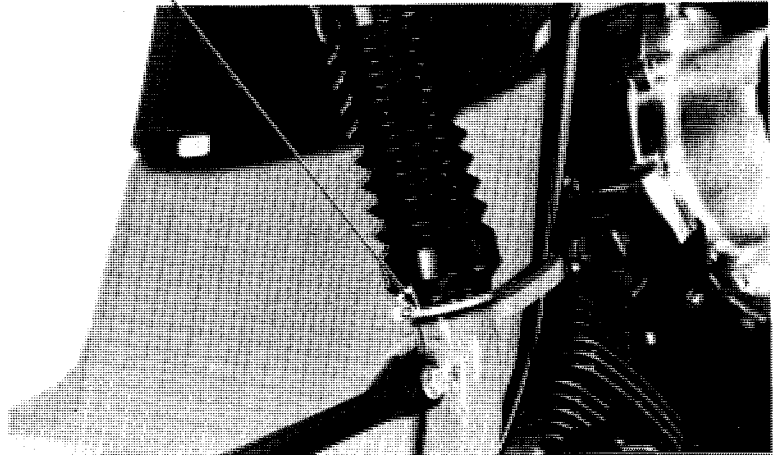


FRONT FORK

DISASSEMBLY

Place a support block under the engine to raise the front wheel off the ground.
Remove the front wheel (Page 12-7).
Remove the boot clamp and slide the rubber boot down.

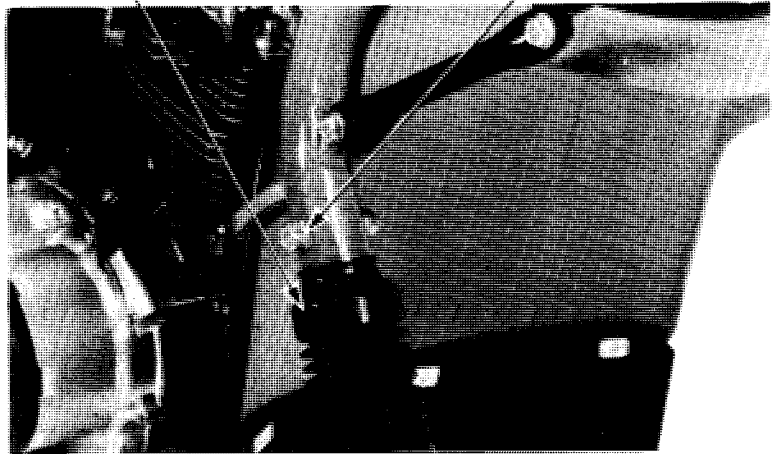
BOOT CLAMP



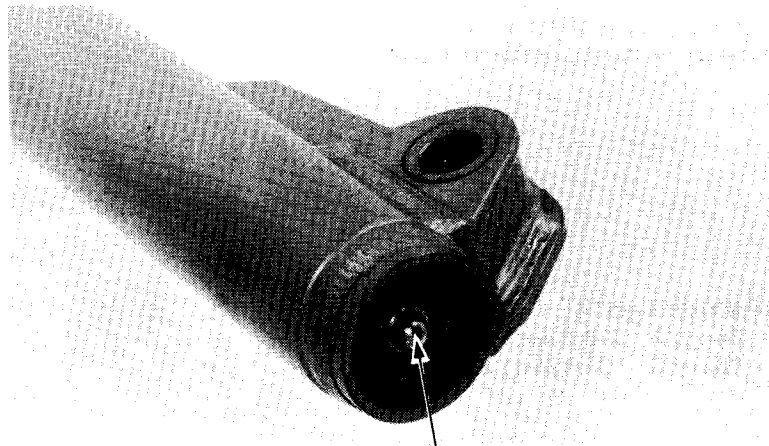
Remove the front fork setting bolt and remove the front fork.

BOOT

SETTING BOLT



Remove the fork tube setting cap nut.
Remove the damper from the fork slider.





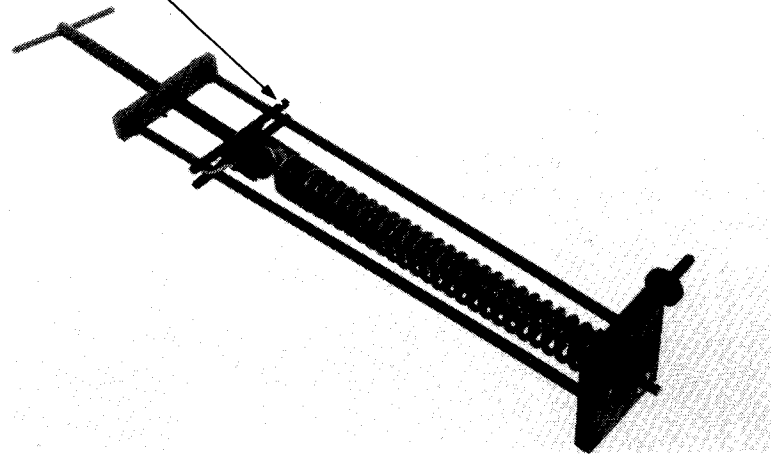
FRONT WHEEL/BRAKE/STEERING

Compress the damper with the spring compressor.

CAUTION

Be careful that the lower end of the damper do not slip out of the compressor.

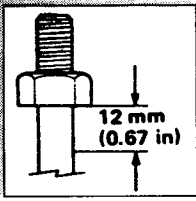
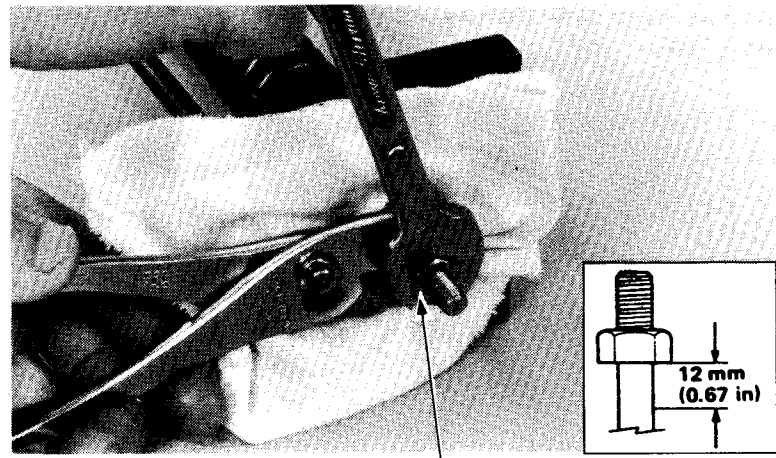
SHOCK ABSORBER COMPRESSOR
07959-3290001



Slip the rubber down, and hold the damper rod with pliers and a shop towel.
Remove the damper lock nut.

CAUTION

Hold the damper rod only in the area shown.



LOCK NUT

INSPECTION

Inspect spring A and B for damage.
Measure the free length of each spring.

y

SPRING A



SERVICE LIMITS:

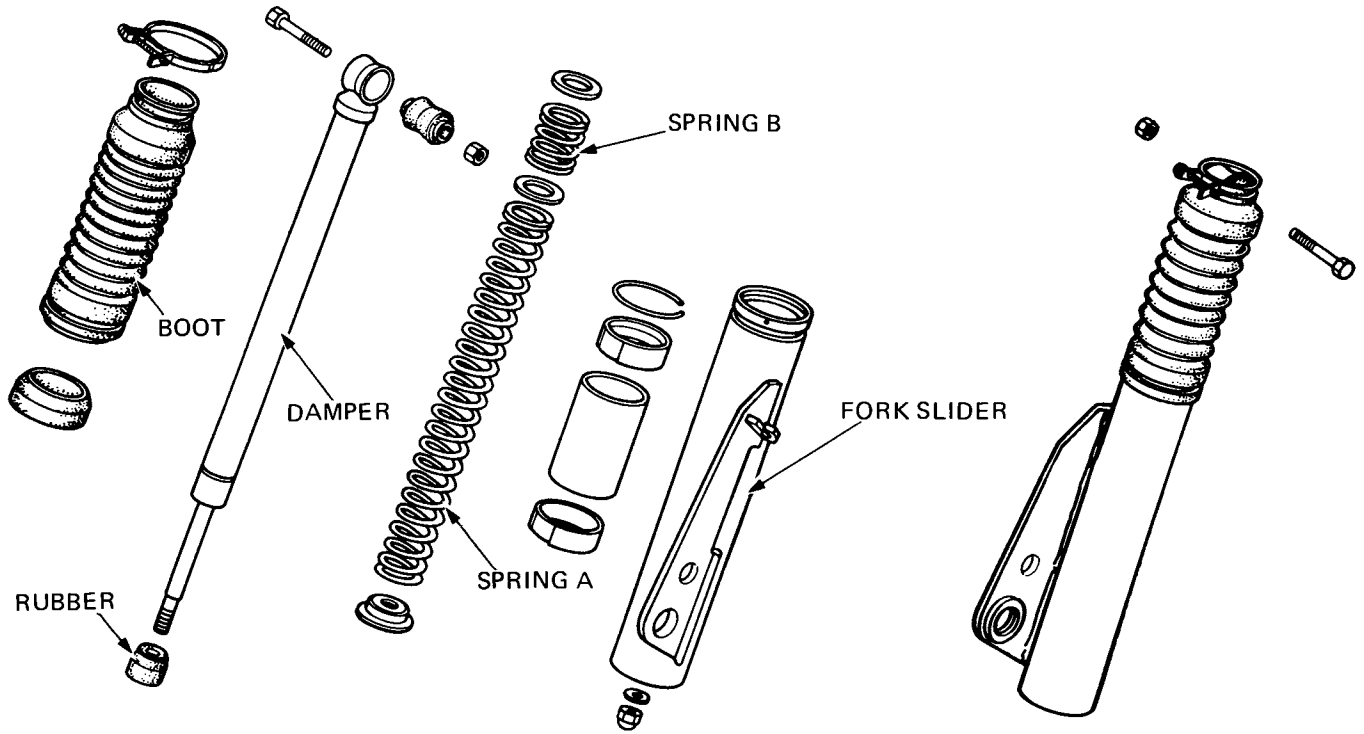
- Spring A: 278.7 mm (10.97 in)
- Spring B: 38.9 mm (1.50 in)



SPRING B

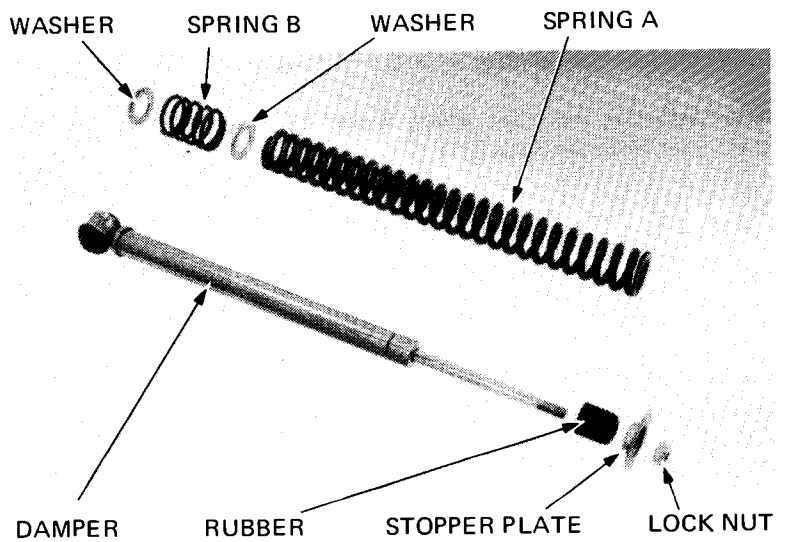


INSTALLATION



Install a washer, spring B, the other washer, spring A and stopper plate using the spring compressor.

Tighten the lock nut securely.

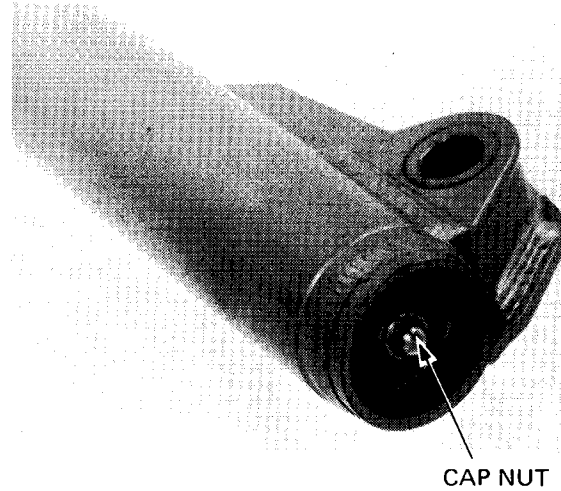




FRONT WHEEL/BRAKE/STEERING

Install the damper into the slider and tighten the cap nut.

TORQUE: 15–25 N·m (1.5–2.5 kg·m,
11–18 ft·lb)



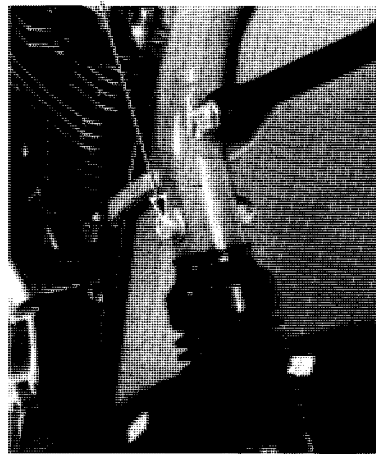
Install the front fork slider and damper into the front fork.

Insert the mounting bolt through the front fork and the top of the damper. Tighten the bolt and nut.

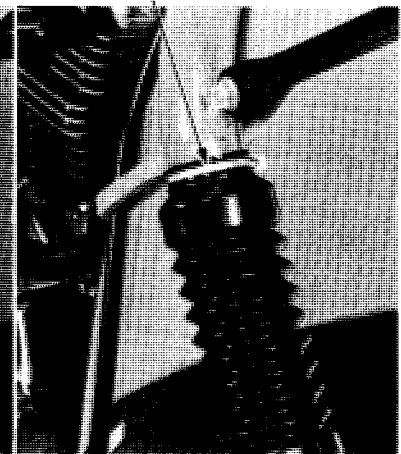
TORQUE: 30–40 N·m (3.0–4.0 kg·m,
22–29 ft·lb)

Pull the boot up and tighten the clamp screw.

SETTING BOLT



BOOT CLAMP



Install the front wheel (Page 12-15).

After installing the front wheel, check the front brake lever free play (Page 3-11).

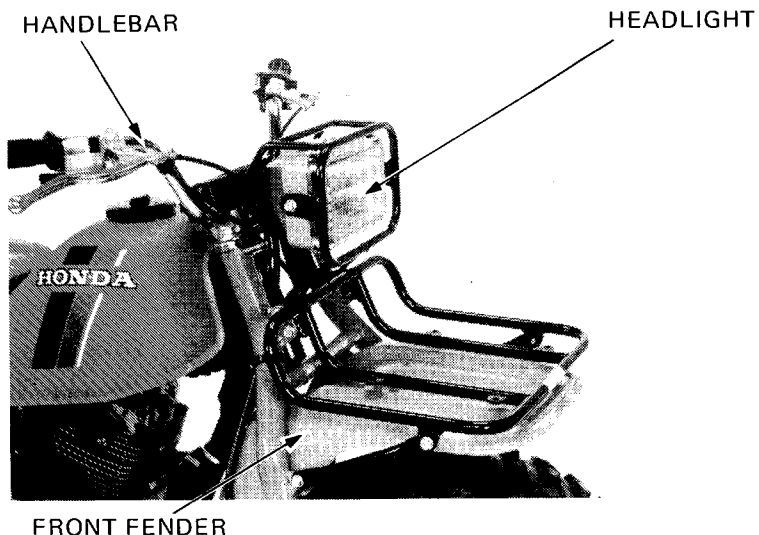


STEERING STEM

FORK BRIDGE REMOVAL

Remove the following:

- headlight and headlight case bracket (Page 12-3)
- handlebar (Page 12-4)
- front wheel (Page 12-7)
- front fender



EXTENSION BAR 07716-0020500 OR
EQUIVALENT COMMERCIALY AVAILABLE IN U.S.A.

Remove the steering stem nut and fork bridge bolts.

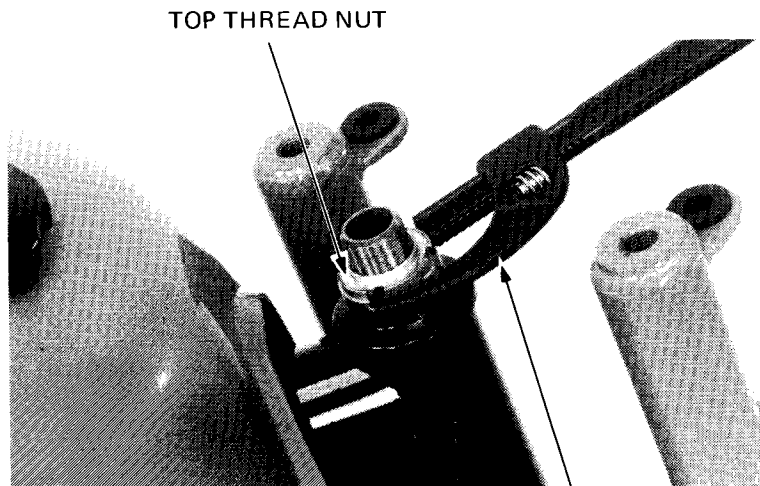
Remove the fork bridge.



LOCK NUT WRENCH, 30 x 32 mm
07716-0020400 OR EQUIVALENT
COMMERCIALY AVAILABLE IN U.S.A.

FRONT FORK REMOVAL

Remove the steering top thread nut.



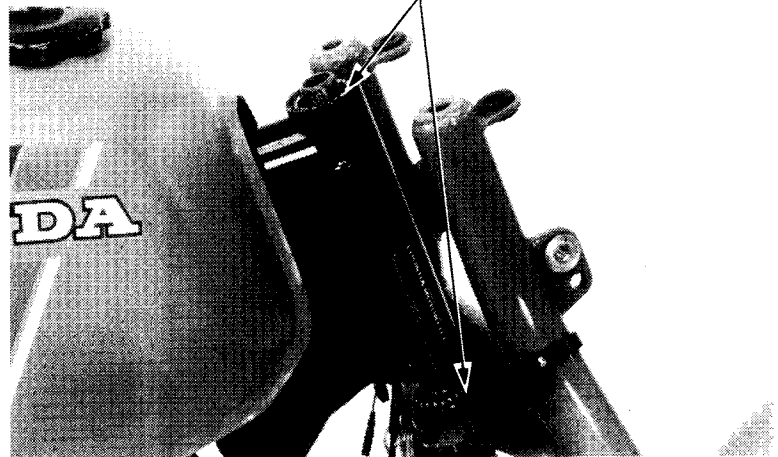
PIN SPANNER 07702-0020000 OR
M9361-412-099788 (U.S.A. ONLY)



FRONT WHEEL/BRAKE/STEERING

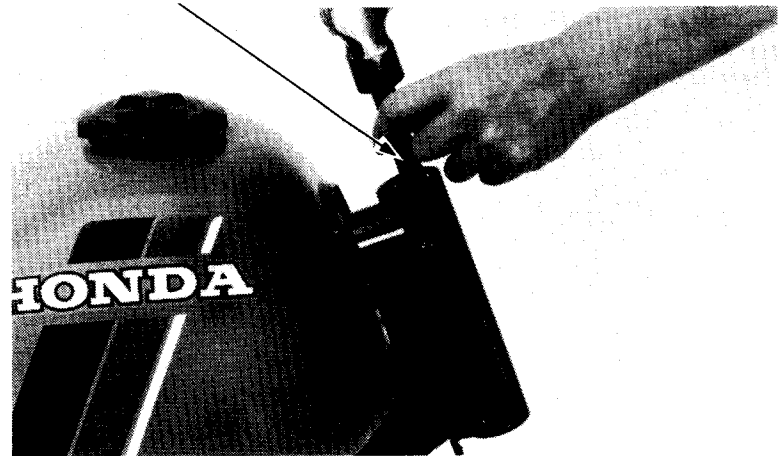
Remove the front fork and bearings being careful not to drop the ball bearings.

STEERING HEAD BEARING



Check the ball race for wear or damage and replace if necessary.

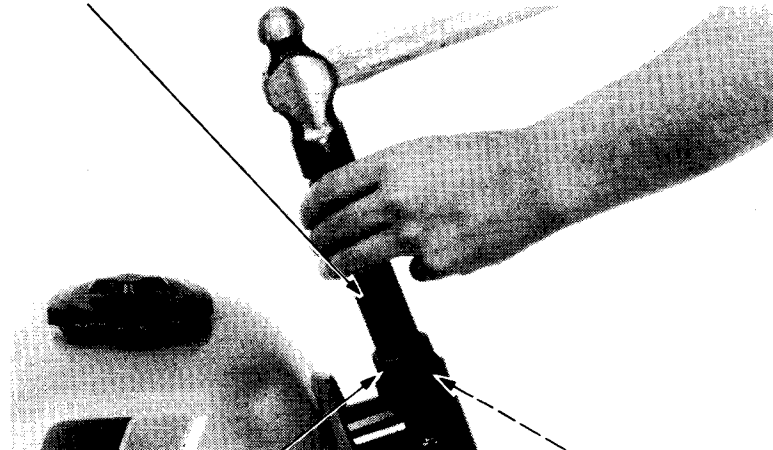
BALL RACE DRIVER
07944-1150001



STEERING STEM INSTALLATION

If the races were removed, drive them in.

DRIVER
07749-0010000



ATTACHMENT, 37 x 40 mm
07746-0010200

PILOT, 17 mm
07746-0040400



Apply grease to the upper and bottom ball races and install the steel balls and the races.

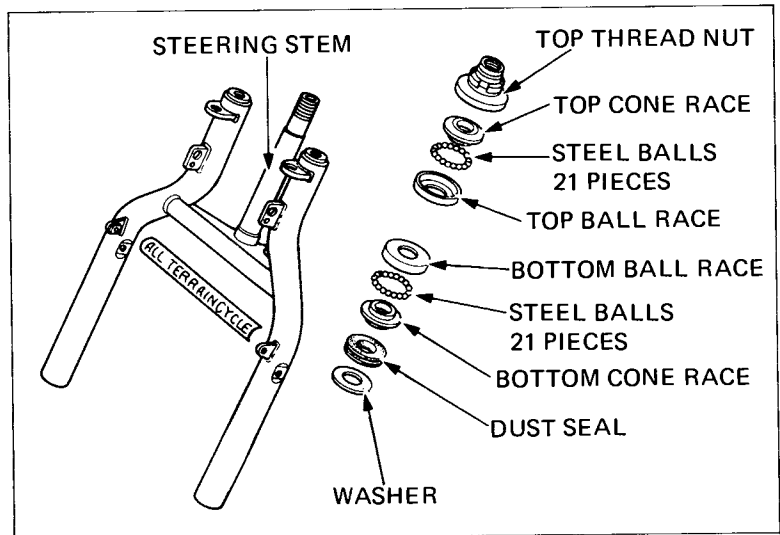
NOTE:

21 steel balls are used for both the upper and lower races.

Install the washer, dust seal and bottom race and steel balls onto the steering stem.

Slide the steering stem through the steering head from the bottom.

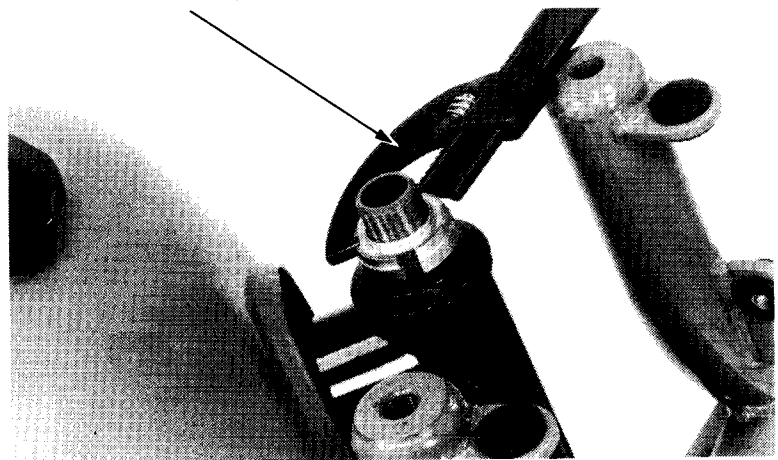
Install the top race and steel balls.
Thread on the top thread nut.



Tighten the top thread nut until snug against the top ball race and back off about 1/8 turn.

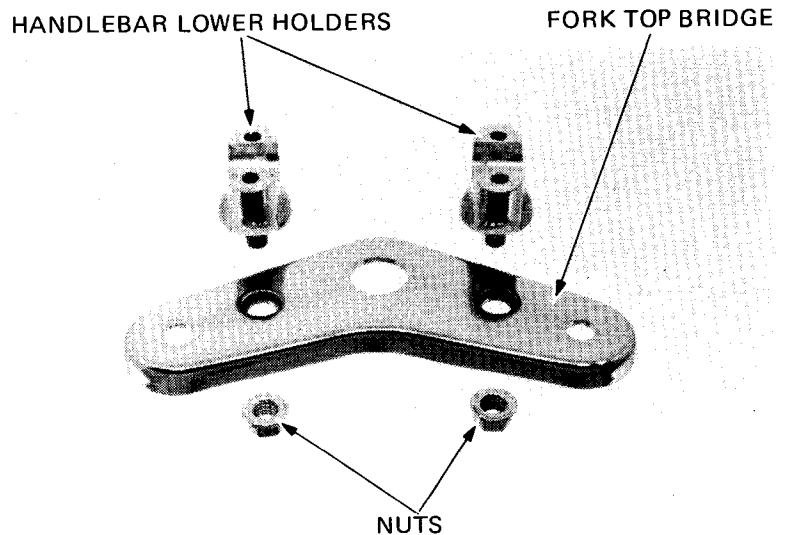
Check that the stem rotates freely without axial play.

PIN SPANNER 07702-0020000 OR
M9361-412-099788 (U.S.A. ONLY)



FORK BRIDGE INSTALLATION

Attach the handlebar lower holders loosely to the fork top bridge.





FRONT WHEEL/BRAKE/STEERING

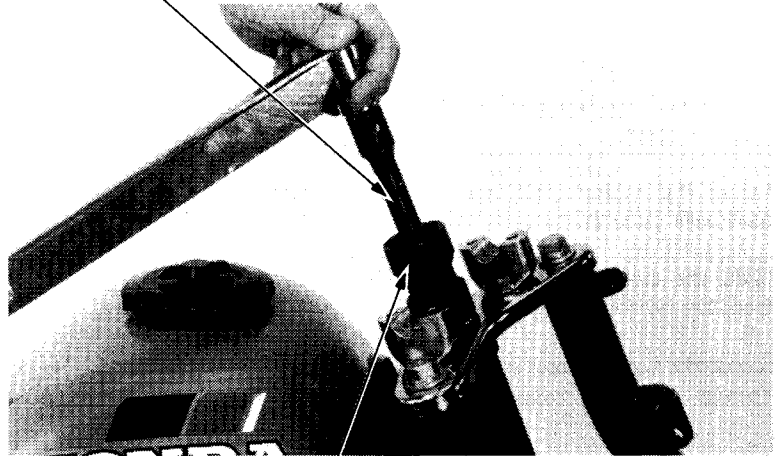
Install the fork bridge and tighten the steering stem nut.

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

Tighten the fork top bridge bolts.

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

EXTENSION BAR 07716-0020500 OR
EQUIVALENT COMMERCIALLY AVAILABLE IN U.S.A.



LOCK NUT WRENCH, 30 x 32 mm
07716-0020400 OR EQUIVALENT
COMMERCIALLY AVAILABLE IN U.S.A.

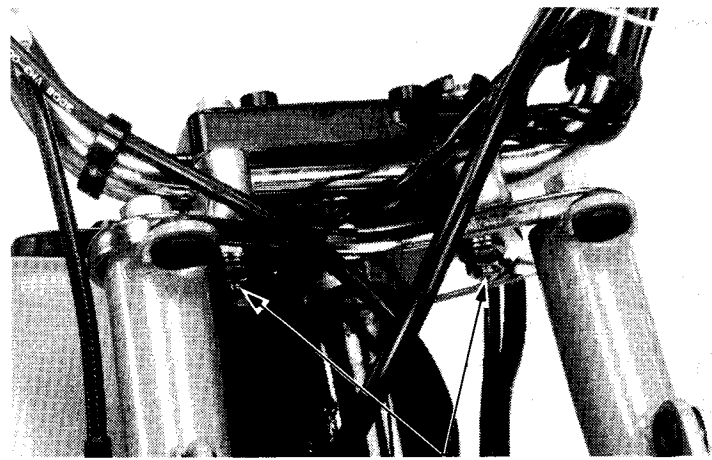
Install the handlebar.

Tighten the handlebar lower holder nuts.

**TORQUE: 40–48 N·m (4.0–4.8 kg-m,
29–35 ft-lb)**

Install the front fender.

Install the headlight case bracket, case and headlight.



HANDLEBAR LOWER HOLDER NUTS

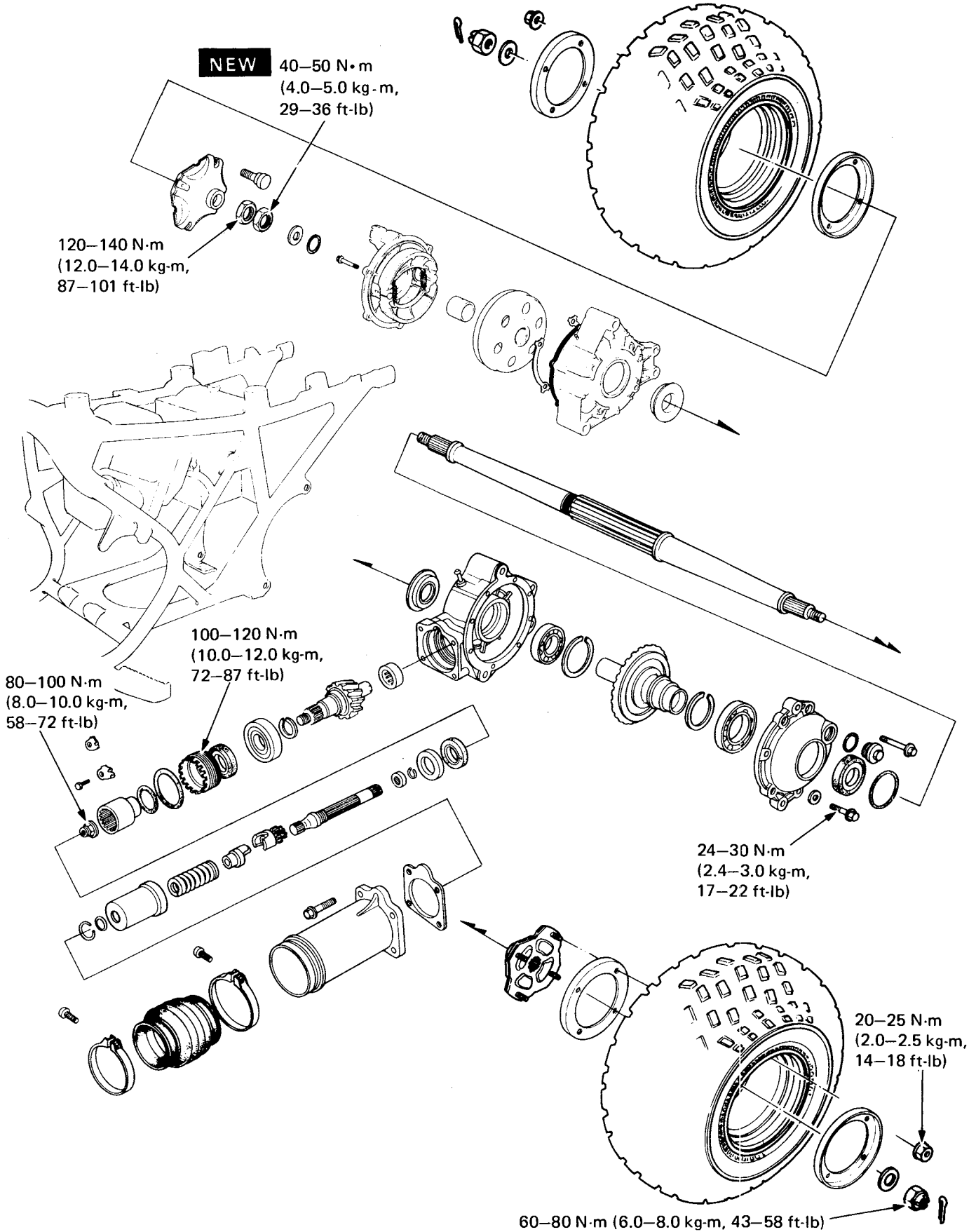


HONDA
ATC200ES

MEMO



REAR WHEEL/BRAKE/FINAL DRIVE





SERVICE INFORMATION	13-1
TROUBLESHOOTING	13-2
REAR WHEEL	13-3
REAR BRAKE AND AXLE	13-3
FINAL DRIVE REMOVAL	13-13
DRIVE SHAFT	13-13
UNIVERSAL JOINT	13-16
FINAL DRIVE GEAR	13-17
FINAL DRIVE INSTALLATION	13-27

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the rear wheel and drive mechanism.
- A jack or block is required to support the ATC.
- The final drive gear assembly must be removed together with the drive shaft.
- Replace all oil seals and O-rings whenever the final drive gear assembly is disassembled.
- Check tooth contact pattern and gear backlash when the bearing, gear set and/or gear case has been replaced.
- Use the torque adapter wrench (available in U.S.A. only) with a 14-20 inch long torque deflecting beam torque wrench to tighten the rear brake drum nuts. The adapter wrench increases the torque wrench's leverage, so the torque reading will be less than the torque actually applied. The specifications given are the actual torque values applied, not the reading on the torque wrench. The torque wrench scale readings are given in the procedures with the actual torque specifications.

NEW

13

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Rear axle runout		_____	3.0 mm (0.12 in)
Rear brake drum I.D.		140 mm (5.5 in)	141 mm (5.6 in)
Rear brake lining thickness		4 mm (0.2 in)	2 mm (0.1 in)
Rear wheel bearing play	Radial	_____	0.05 mm (0.002 in)
	Axial	_____	0.10 mm (0.004 in)
Final gear oil	Capacity	350 cc (11.8 US oz)	_____
	Recommended oil	Hypoid-gear oil SAE #80	_____
Gear backlash		0.08-0.18 mm (0.003-0.007 in)	0.25 mm (0.010 in)
Gear assembly preload		0.5 N·m (5.0 kg·cm, 4.3 in·lb) max.	_____
Damper cam spring free length		53.0 mm (2.09 in)	48.0 mm (1.89 in)

**REAR WHEEL/BRAKE/FINAL DRIVE****TORQUE VALUES**

Rear wheel hub nut	20–25 N·m (2.0–2.5 kg·m, 14–18 ft·lb)
Rear brake drum cover	24–30 N·m (2.4–3.0 kg·m, 17–22 ft·lb)
NEW Brake drum inner nut	40–50 N·m (4.0–5.0 kg·m, 29–36 ft·lb)
NEW Brake drum outer nut	120–140 N·m (12.0–14.0 kg·m, 87–101 ft·lb)
Rear axle nut	60–80 N·m (6.0–8.0 kg·m, 43–58 ft·lb)
Pinion retainer	100–120 N·m (10.0–12.0 kg·m, 72–87 ft·lb)
Gear case cover	24–30 N·m (2.4–3.0 kg·m, 17–22 ft·lb)
Pinion nut	80–100 N·m (8.0–10.0 kg·m, 58–72 ft·lb)
Final gear case mounting bolts	50–70 N·m (5.0–7.0 kg·m, 36–51 ft·lb)

TOOLS**Special**

NEW Lock nut spanner, 41 mm	07916–9580200 or 07916–958020A (U.S.A. only)
Wrench set, 41 mm	07916–9580300 or 07916–958010A (U.S.A. only)
Wrench attachment, 41 mm	07916–9580400 inc. in 07916–9580300, or 07916–958010A (U.S.A. only)
Propeller shaft dis/assembly tool A	07967–9690100
Propeller shaft dis/assembly tool B	07967–9690200
Remover shaft	07965–ME30000
Driver	07945–3710101
Pinion holder	07924–ME40000
Pinion holder attachment	07924–9690101
Retainer wrench	07910–ME80000
Shaft puller	07931–ME40000
Attachment	07945–3330300 or attachment 07946–3710101

Common

Driver	07749–0010000
Attachment, 62 x 68 mm	07746–0010500
Rear shock absorber spring compressor	07959–3290001
Attachment, 72 x 75 mm	07746–0010700
Attachment, 32 x 35 mm	07746–0010100
Pilot, 15 mm	07746–0040300
Driver	07746–0030100
Attachment, 25 mm I.D.	07746–0030200

TROUBLESHOOTING**Wobble or vibration in ATC**

1. Bent rim
2. Loose wheel bearing
3. Faulty rear axle bearing holder
4. Faulty tire
5. Axle not tightened properly.

Poor brake performance

1. Improper brake adjustment
2. Worn brake shoes
3. Brake linings oily, greasy or dirty
4. Worn brake cam
5. Worn brake drum
6. Brake arm serrations improperly engaged
7. Brake shoes worn at cam contact area

Excessive noise

- | | |
|-----|---|
| NEW | <ol style="list-style-type: none"> 1. Brake drum nuts have incorrect torque 2. Worn or scored ring gear shaft and driven flange 3. Scored driven flange and wheel hub 4. Worn or scored drive pinion and splines 5. Worn pinion and ring gears 6. Excessive backlash between pinion and ring gear 7. Oil level too low |
|-----|---|

Oil leak

1. Clogged breather
2. Oil level too high
3. Seals damaged



REAR WHEEL

REMOVAL

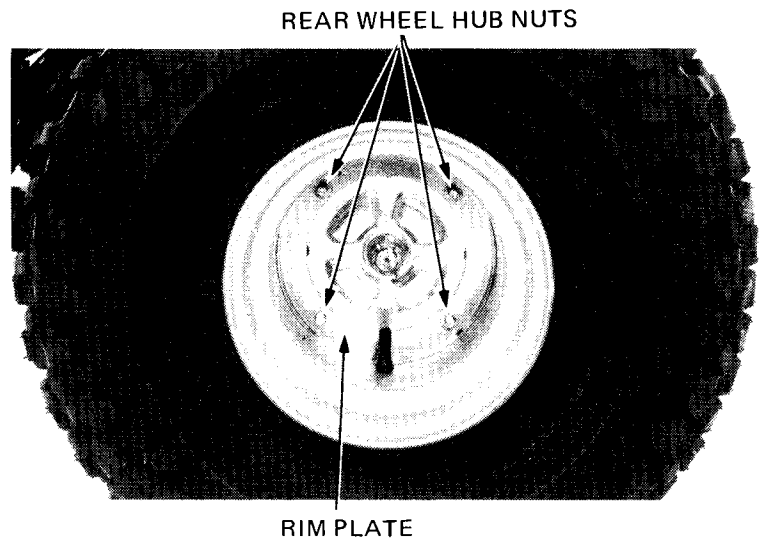
Raise the rear wheels off the ground with a jack or block under the engine.

Remove the rear wheel hub nuts and rim plates.
Remove the rear wheels and rim plates.

INSTALLATION

Install the rear wheel and rim plates with the tire valve facing out.
Install the rear wheel hub nuts and tighten them.

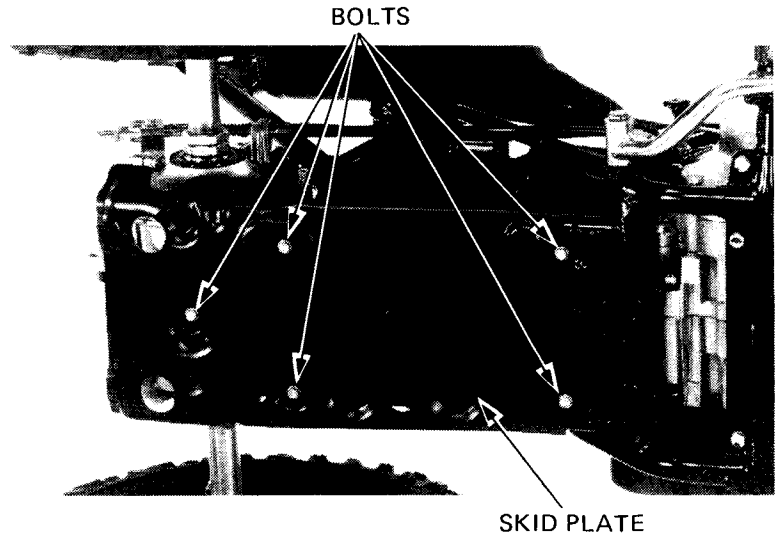
**TORQUE: 20–25 N·m (2.0–2.5 kg·m,
14–18 ft·lb)**



REAR BRAKE AND AXLE

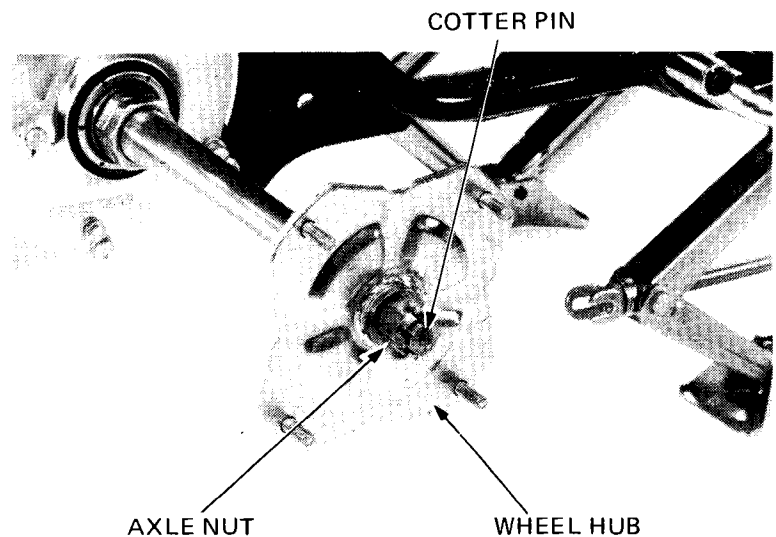
REAR BRAKE REMOVAL

Remove the five bolts and the skid plate.



Remove the right rear wheel.

Remove the cotter pin and axle nut, and remove the right rear wheel hub from the axle shaft.

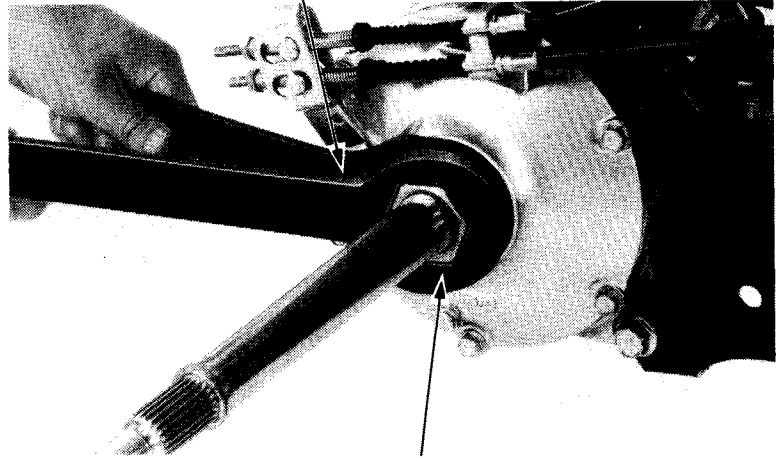




REAR WHEEL/BRAKE/FINAL DRIVE

Remove the rear brake drum nuts using special tools.

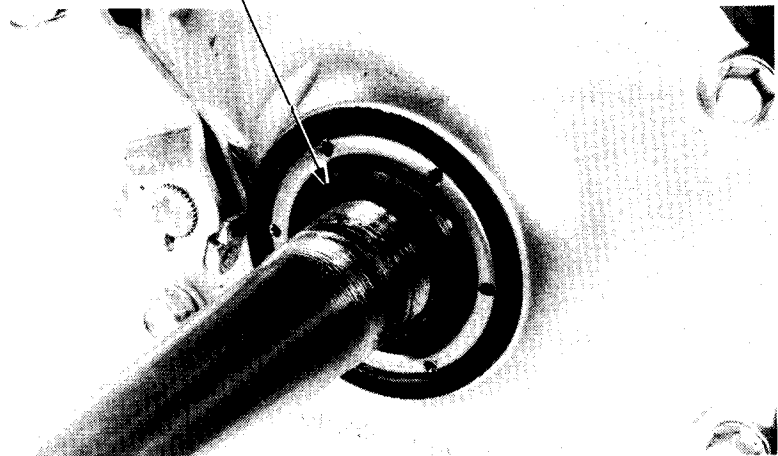
LOCK NUT SPANNER, 41 mm
07916-9580200



WRENCH SET, 41 mm
07916-9580300

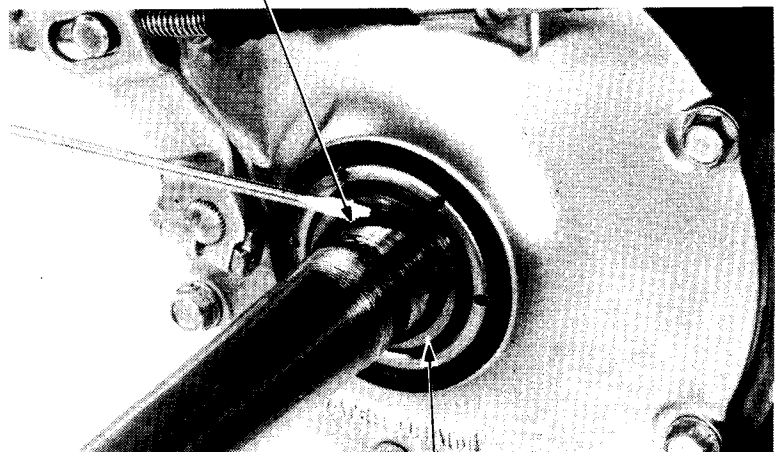
Remove the taper washer.

TAPER WASHER



Remove the O-ring from the inside of the rear axle collar.

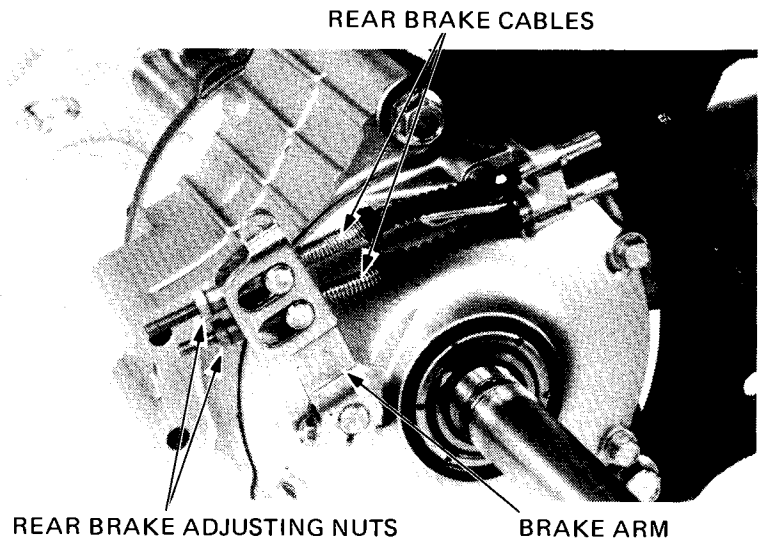
O-RING



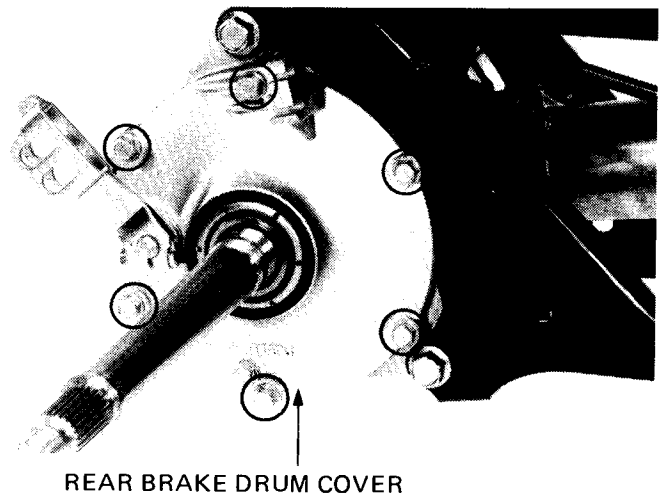
REAR AXLE COLLAR



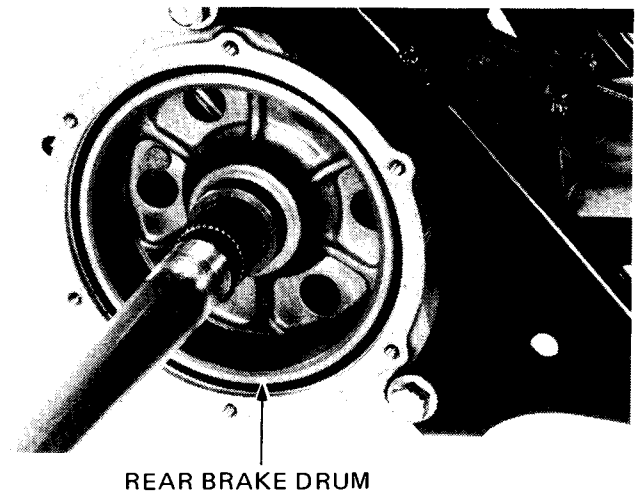
Remove the rear brake adjusting nuts and disconnect the brake cables from the brake arm.



Remove the rear brake drum cover mounting bolts and remove the cover assembly from the axle shaft.



Remove the rear brake drum.



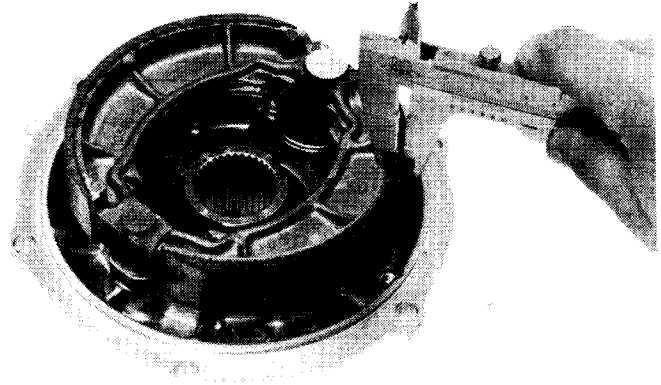


REAR WHEEL/BRAKE/FINAL DRIVE

REAR BRAKE LINING INSPECTION

Measure the brake lining thickness.

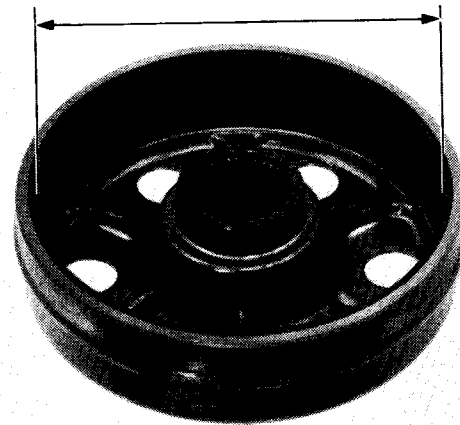
SERVICE LIMIT: 2 mm (0.1 in)



REAR BRAKE DRUM INSPECTION

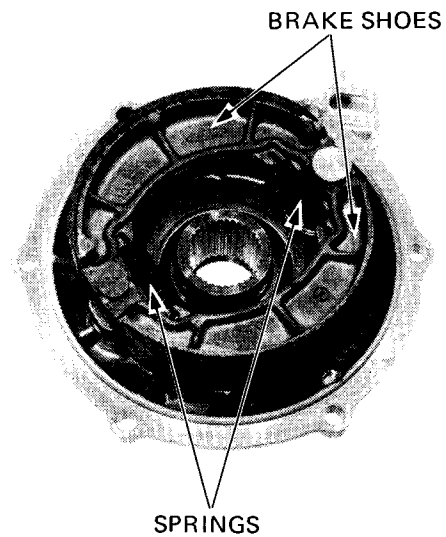
Measure the brake drum I.D.

SERVICE LIMIT: 141 mm (5.6 in)



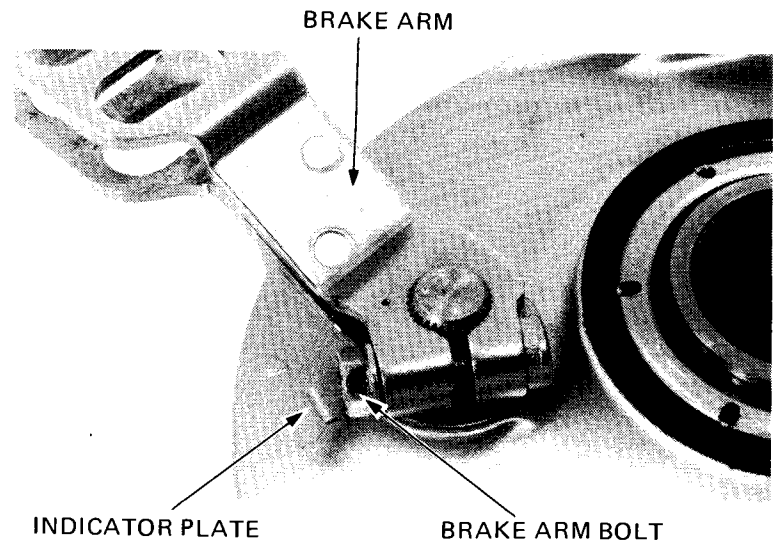
REAR BRAKE DISASSEMBLY

Remove the brake shoes and springs.

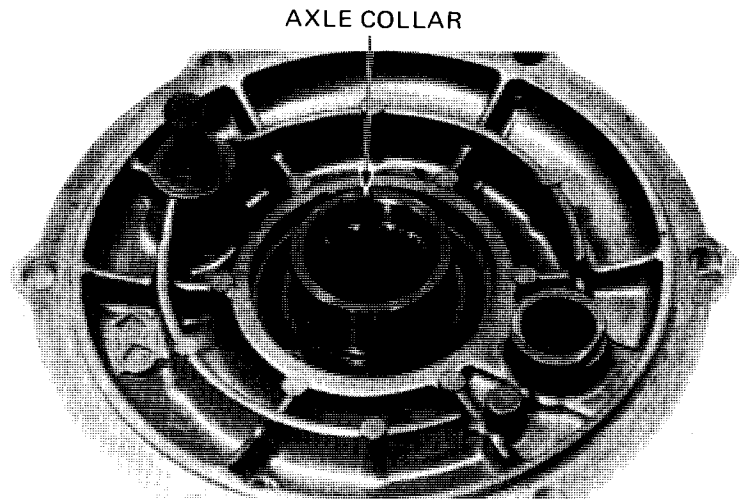




Remove the brake arm bolt, brake arm and indicator plate.



Remove the rear axle collar.

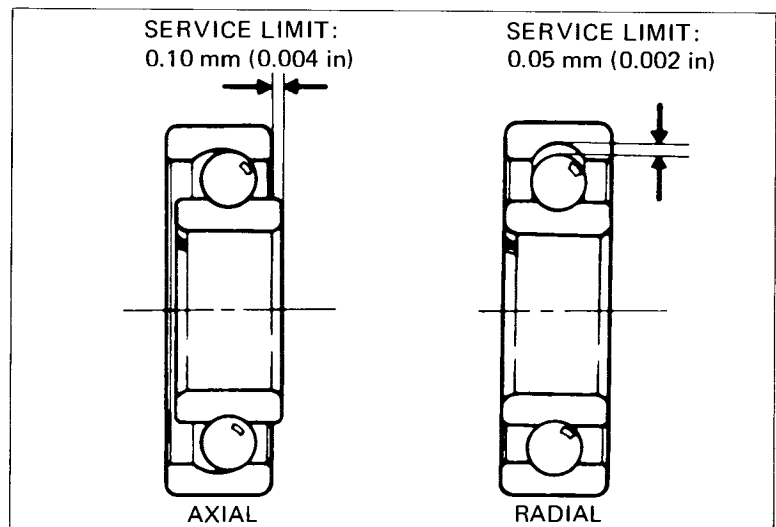


REAR WHEEL BEARING INSPECTION

Check the rear wheel bearing.
Replace the bearing if it is noisy or has excessive play.

SERVICE LIMIT:

- RADIAL: 0.05 mm (0.002 in)
- AXIAL: 0.10 mm (0.004 in)

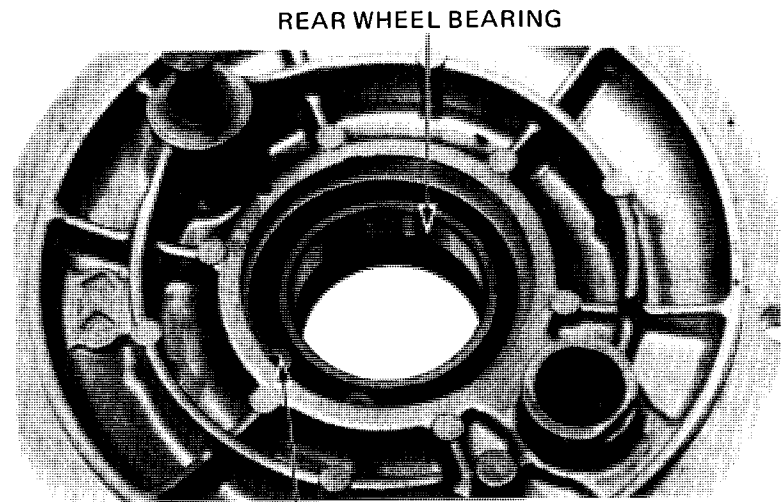




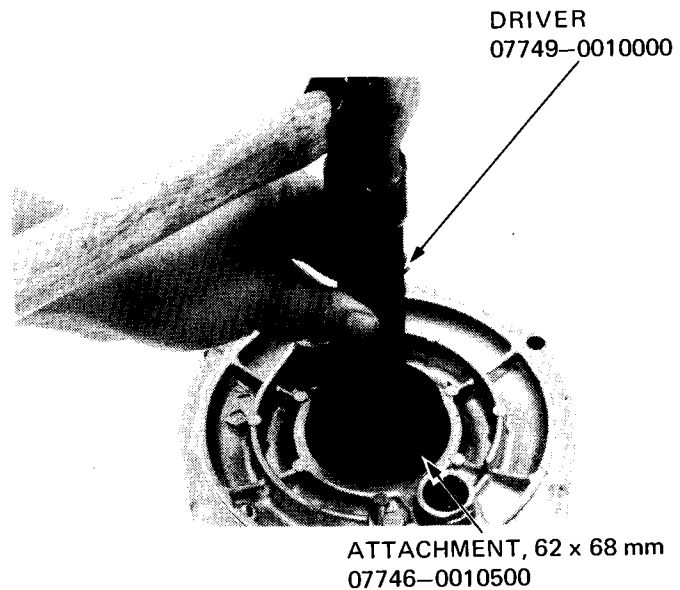
REAR WHEEL/BRAKE/FINAL DRIVE

REAR WHEEL BEARING REPLACEMENT

Remove the snap ring and drive the rear wheel bearing out of the rear brake drum cover.

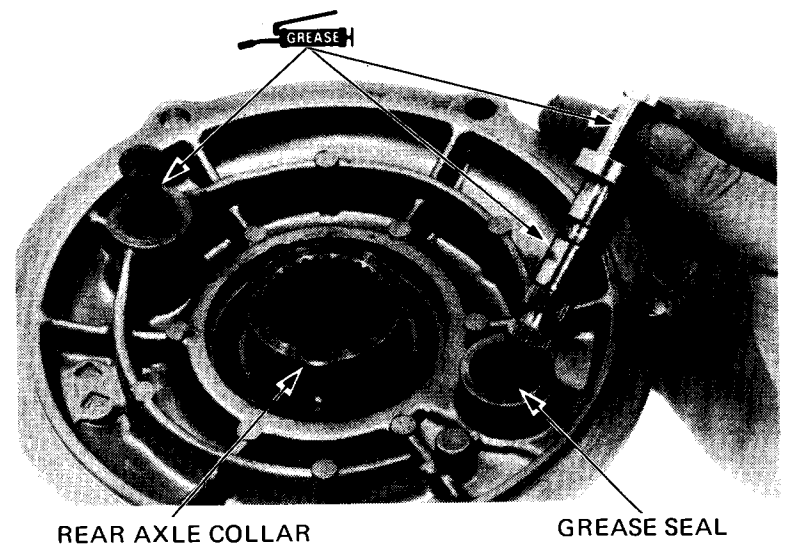


Drive a new bearing into the drum cover.



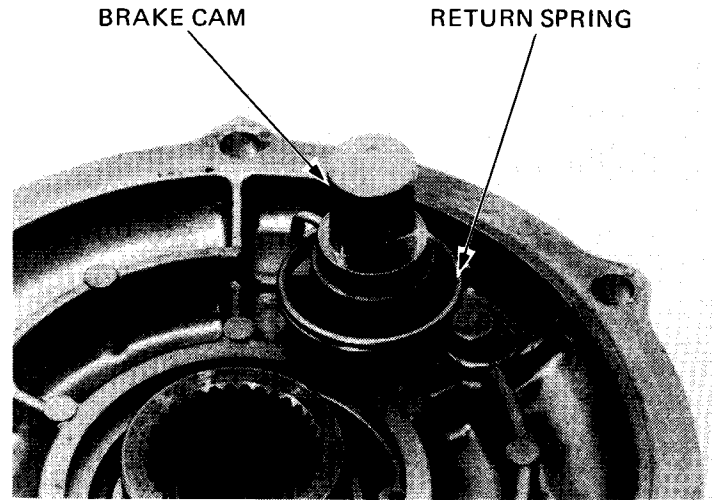
REAR BRAKE ASSEMBLY

Install a new grease seal into the brake cam hole. Apply grease to the anchor pin and brake cam. Install the rear axle collar.

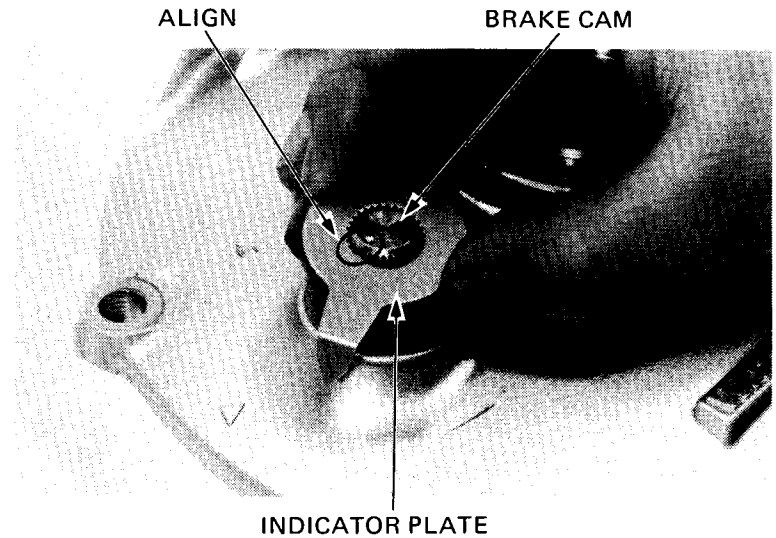




Install the brake cam and return spring as shown.

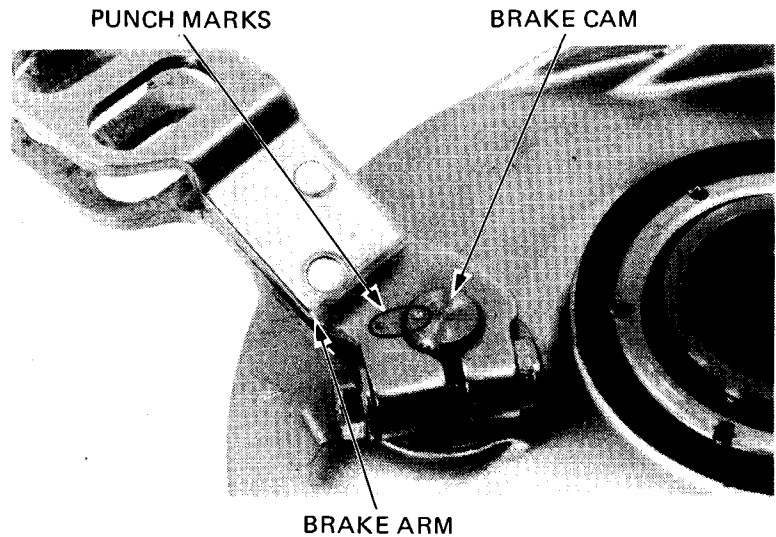


Install a new grease seal and felt seal.
Align the wide tooth on the indicator plate with the wide groove on the brake cam, and install the indicator plate.



Install the brake arm, aligning the punch marks on the brake arm and brake cam.

Tighten the brake arm bolt securely.



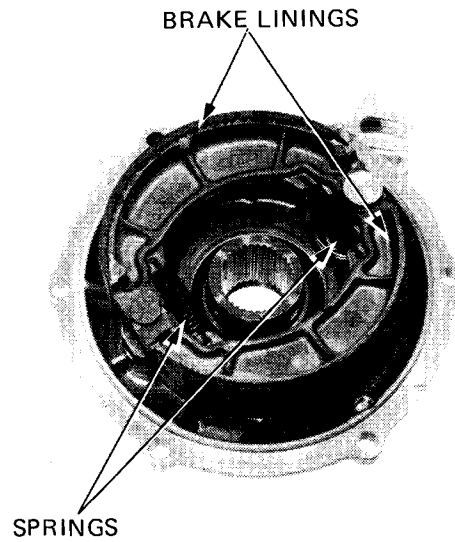


REAR WHEEL/BRAKE/FINAL DRIVE

Install the brake linings and springs.

WARNING

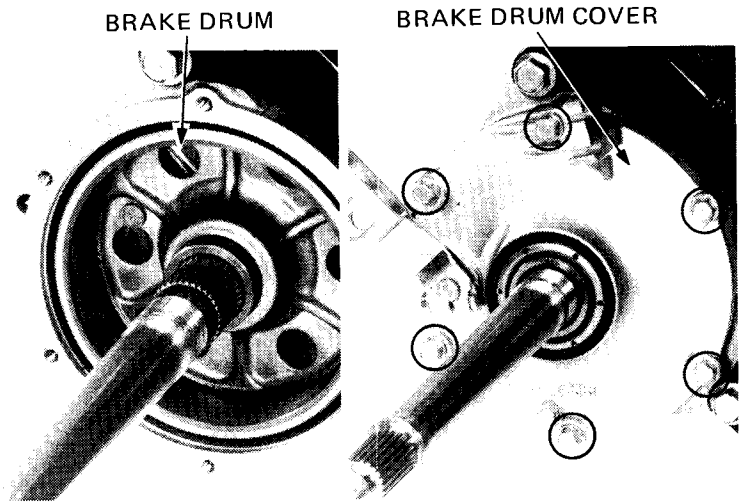
Contaminated brake linings reduce stopping power. Keep grease off the linings. Wipe excess grease off the cam.



REAR BRAKE INSTALLATION

Install the brake drum.
Install the brake drum cover with a new gasket and tighten the mounting bolts.

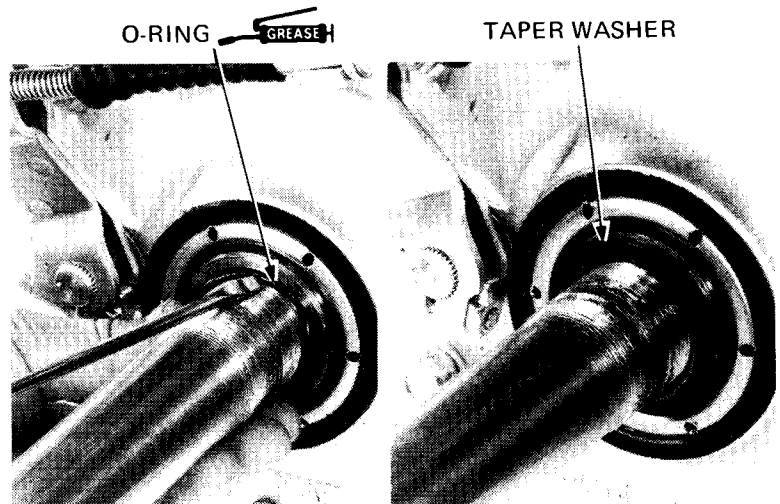
TORQUE: 24–30 N·m (2.4–3.0 kg·m,
17–22 ft·lb)



Connect the rear brake cables to the brake arm.

Apply grease to a new O-ring and install it over the axle shaft.

Install the taper washer.





HONDA ATC200ES

REAR WHEEL/BRAKE/FINAL DRIVE

Tighten the brake drum inner nut.

NEW

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

Torque wrench scale reading with adapter wrench:

37–47 N·m (3.7–4.7 kg·m, 27–34 ft·lb)

NOTE:

The adapter wrench is available in U.S.A. only.

Apply Loctite[®] 277 or equivalent to the threads of the axle shaft.

NOTE:

Wipe grease off the shaft before applying Loctite[®] 277 or equivalent.

NEW

Tighten the brake drum outer nut.

**TORQUE: 120–140 N·m (12–14 kg·m,
87–101 ft·lb)**

Torque wrench scale reading with adapter wrench:

112–130 N·m (11.2–13.0 kg·m, 81–94 ft·lb)

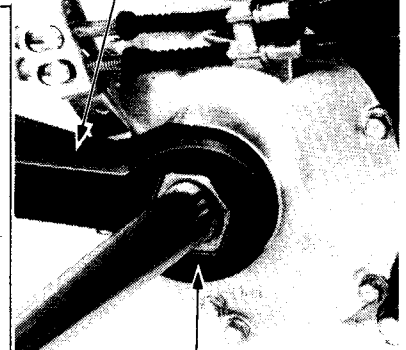
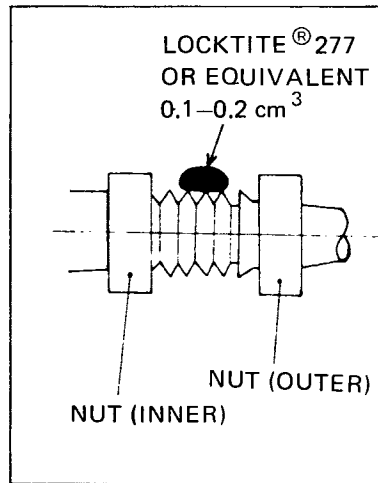
Apply grease to the splines on the end of the axle.

Install the rear wheel hub onto the axle.
Install the lock washer with its "OUTSIDE" mark facing out.
Install and tighten the rear axle nut.

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

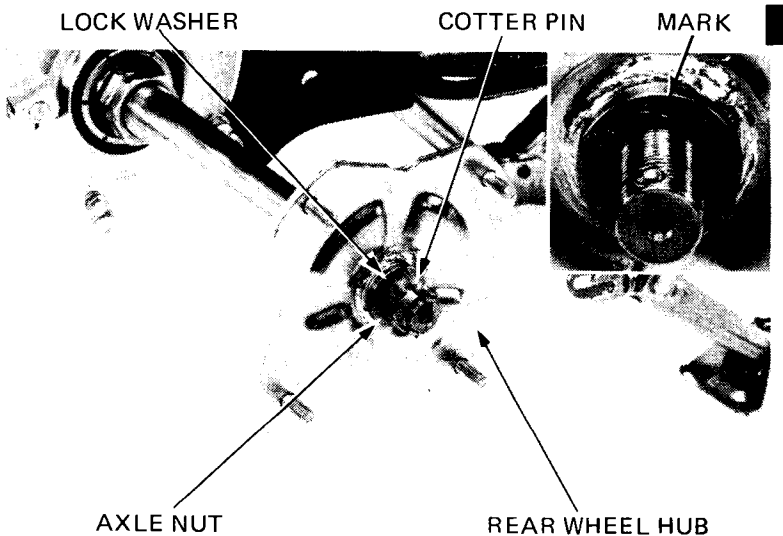
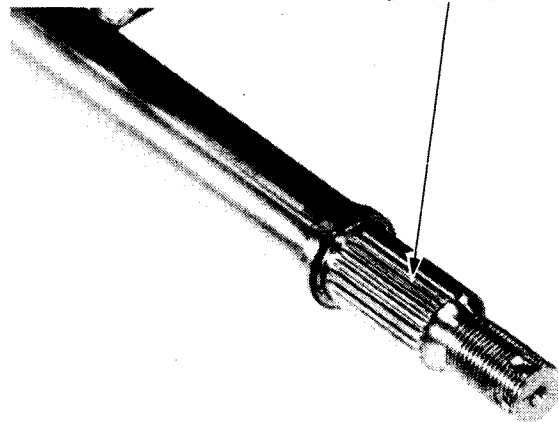
Secure the axle nut with a new cotter pin.
Install the right rear wheel.
Adjust the rear brake (Page 3-11).

LOCK NUT SPANNER, 41 mm **NEW**
07916-9580200 or 07916-958020A (U.S.A. only)



WRENCH, 41 mm
07916-9580400 or
07916-958010A
(U.S.A. only)

NEW



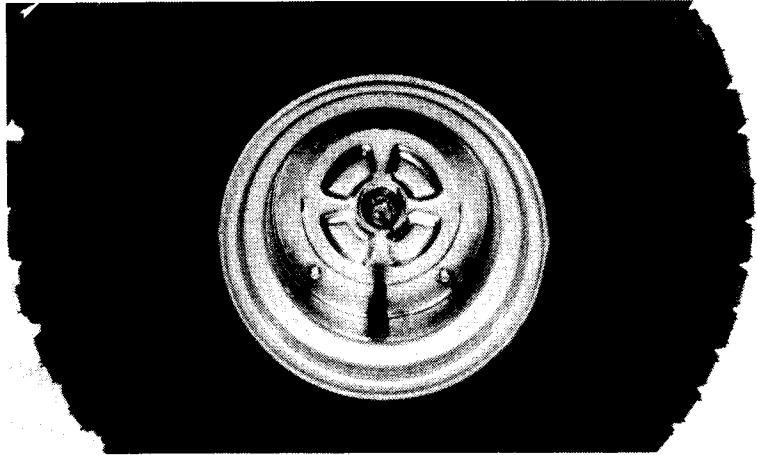


REAR WHEEL/BRAKE/FINAL DRIVE

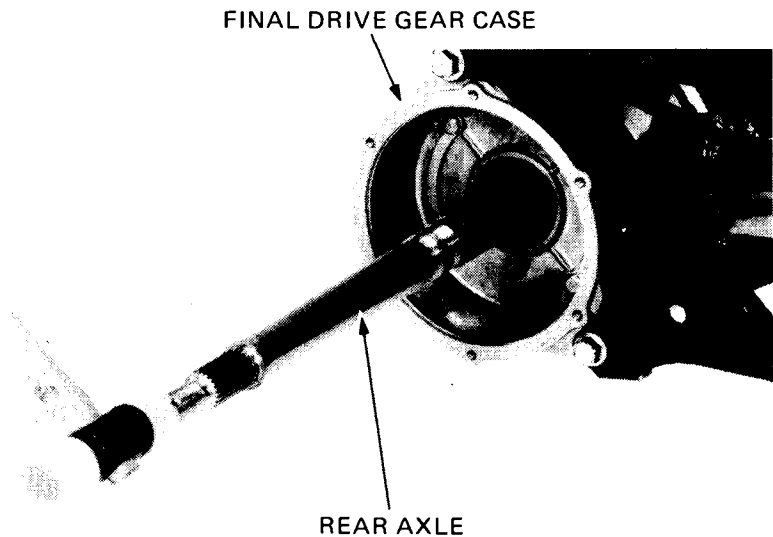
REAR AXLE REMOVAL

Remove the following parts:

- Rear brake (Page 13-3).
- Left rear wheel.
- Left rear wheel hub.



Drive the rear axle out of the final drive gear case.



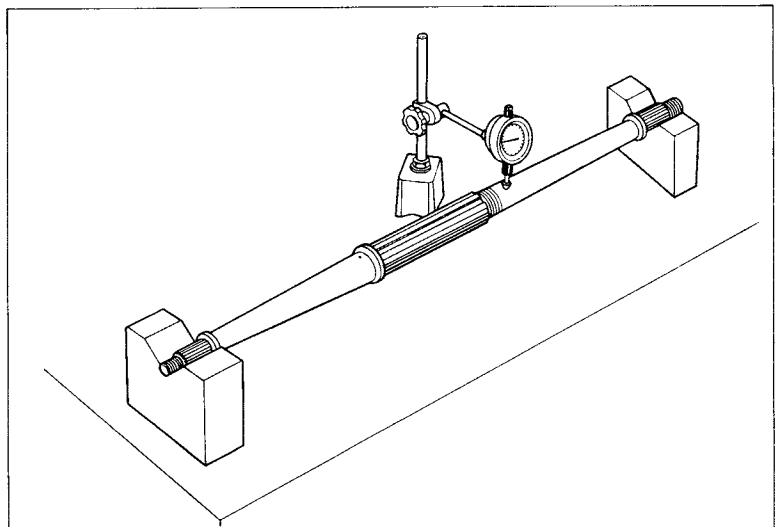
REAR AXLE INSPECTION

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 AXLE INSTALLATION

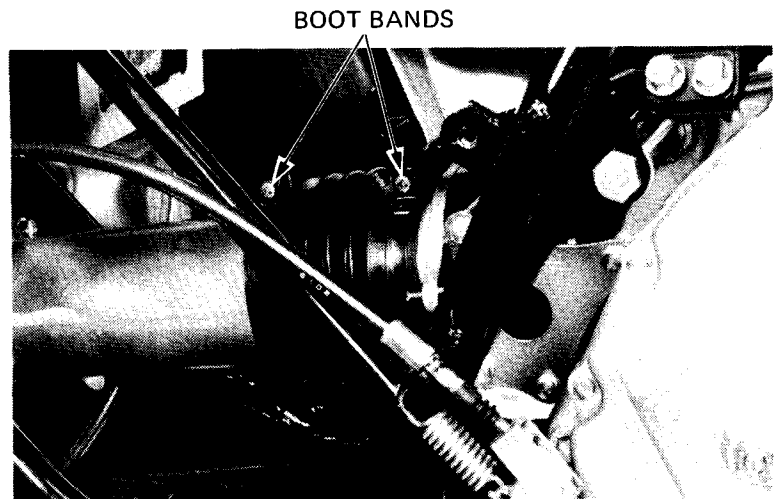
Install the rear axle in the reverse order of removal.



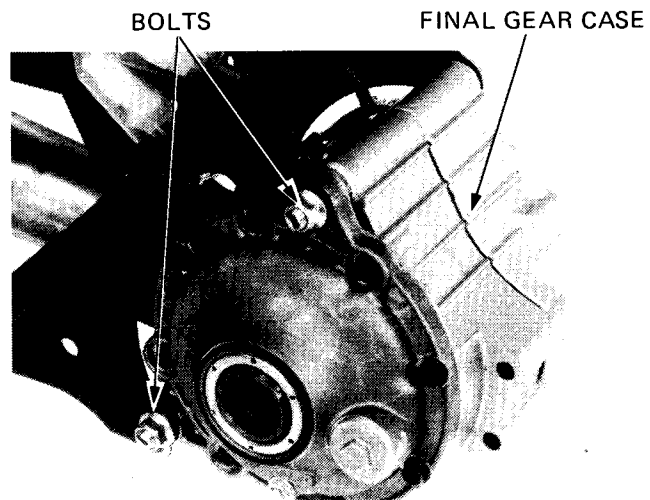


FINAL DRIVE REMOVAL

Remove the rear axle shaft (Page 13-12).
Loosen the drive shaft boot bands.



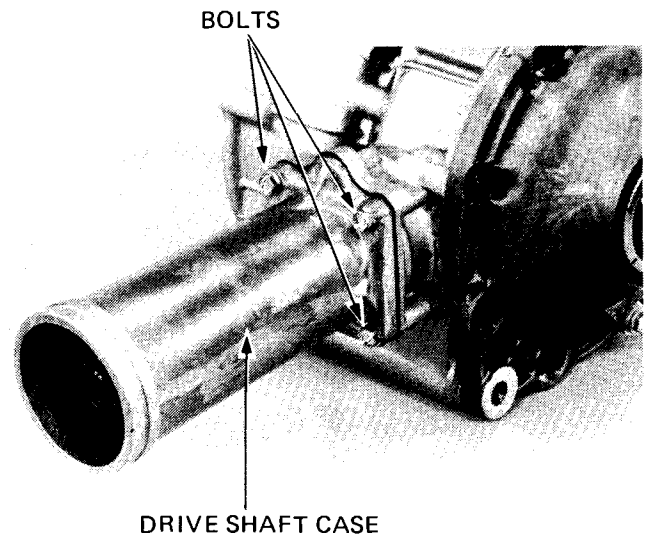
Drain the final gear oil (Page 2-3).
Remove the two bolts mounting the final gear case
and remove the final gear case from the frame.



DRIVE SHAFT

REMOVAL

Remove the four bolts attaching the drive shaft case
to the gear case and remove the drive shaft case.
Remove the gasket.

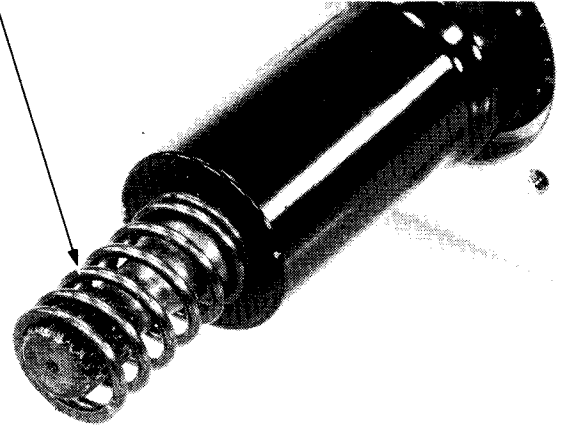




REAR WHEEL/BRAKE/FINAL DRIVE

Remove the damper spring.

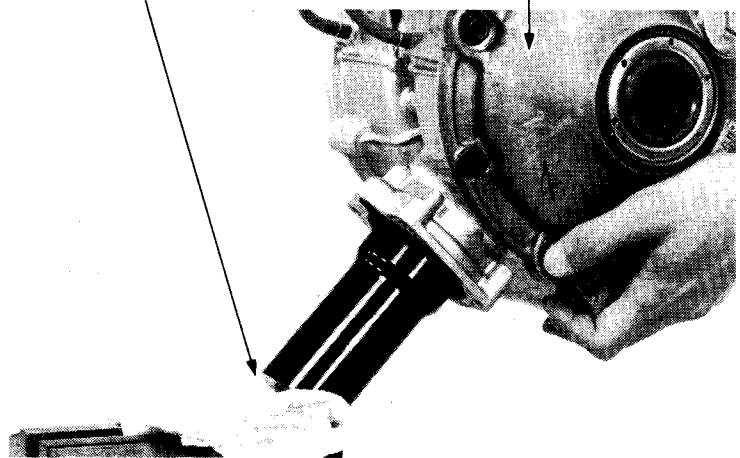
DAMPER SPRING



Place the drive shaft in a vise with the final drive gear case side up. Work the final drive case from the drive shaft.

DRIVE SHAFT

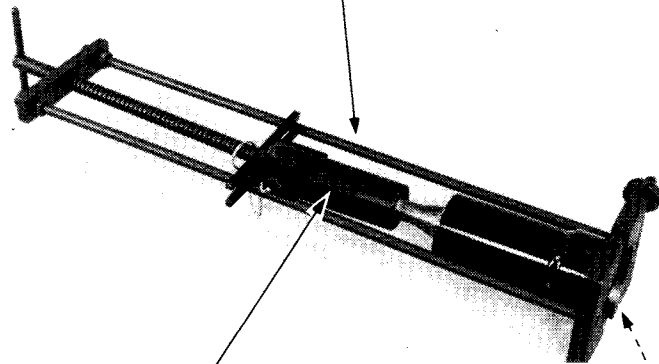
FINAL DRIVE CASE



DISASSEMBLY

Drain the gear oil from the damper case. Remove the large spring clip from the damper cam to avoid damaging it. Compress the drive shaft with the rear shock absorber compressor and attachment tools.

REAR SHOCK ABSORBER COMPRESSOR
07959-3290001



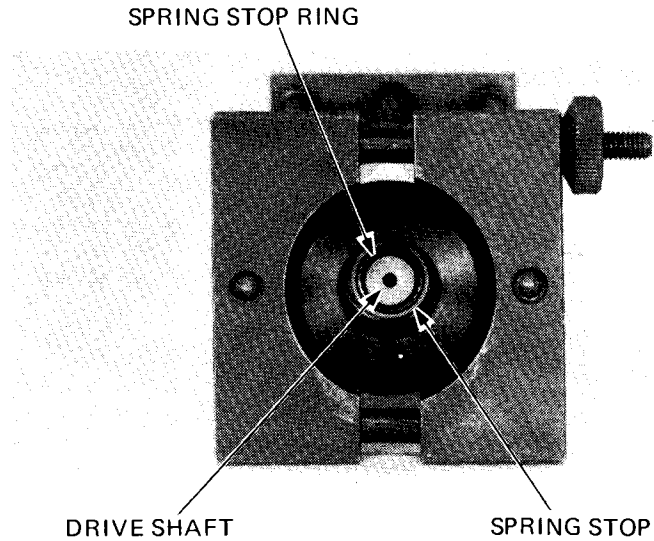
PROPELLER SHAFT DIS/ASSEMBLY
TOOL A 07967-9690100

PROPELLER SHAFT DIS/
ASSEMBLY TOOL B
07967-9690200



Remove the spring stop ring and spring stop from the drive shaft.

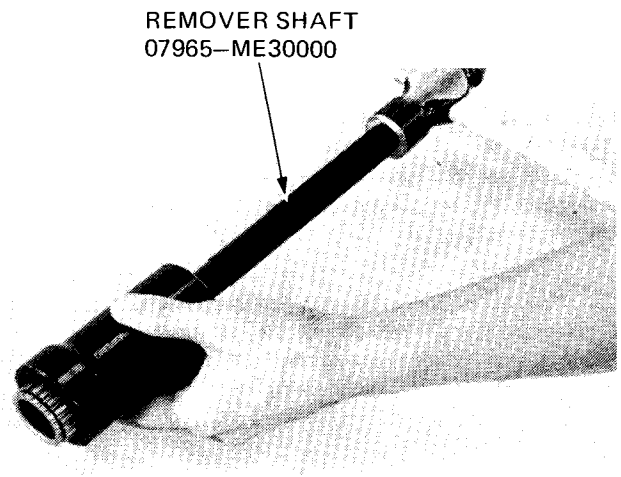
Remove the compressor.
Remove the drive shaft from the damper case.



Drive the damper lifter out of the damper case together with the damper cam, oil seal guide and oil seal.

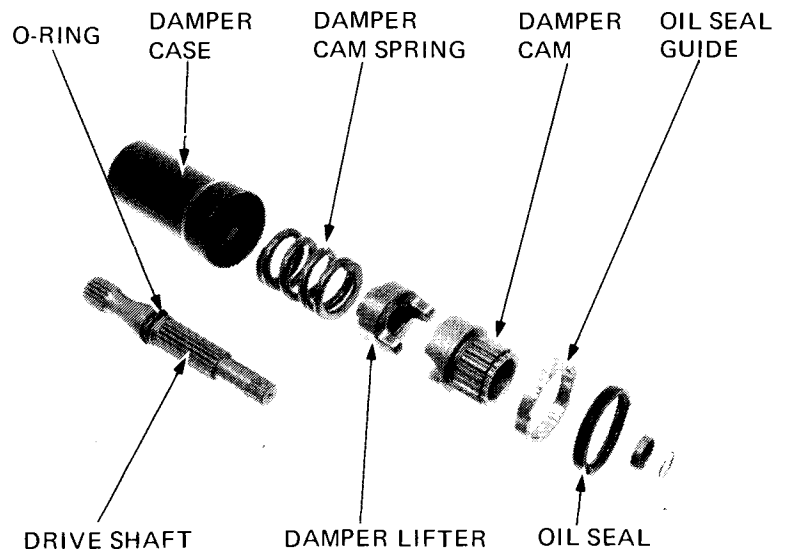
NOTE:

Replace the oil seal with a new one if it is removed.



Remove the O-ring from the final drive shaft.
Remove the damper cam spring.

Check the damper lifter and cam for wear or damage.



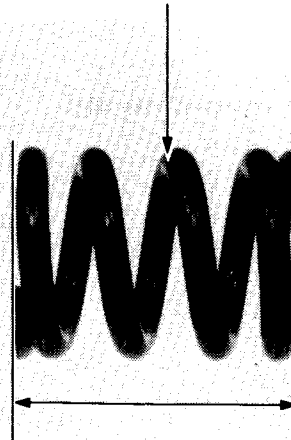


REAR WHEEL/BRAKE/FINAL DRIVE

Measure the damper cam spring free length.

SERVICE LIMIT: 48.0 mm (1.89 in)

DAMPER CAM SPRING



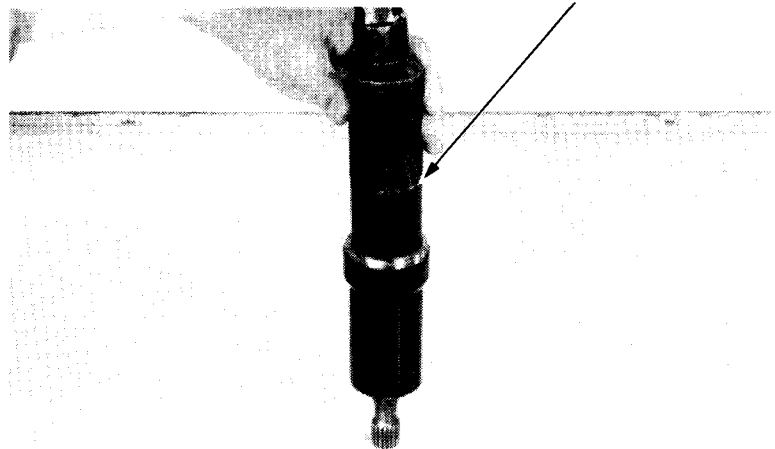
ASSEMBLY

Install the damper cam spring, damper lifter and cam into the damper case.
Drive the oil seal guide and oil seal into the damper case with the special tool.
Assemble the remaining parts in the reverse order of disassembly.

NOTE:

Replace the O-ring, oil seal and stop ring with new ones when reassembling the drive shaft.

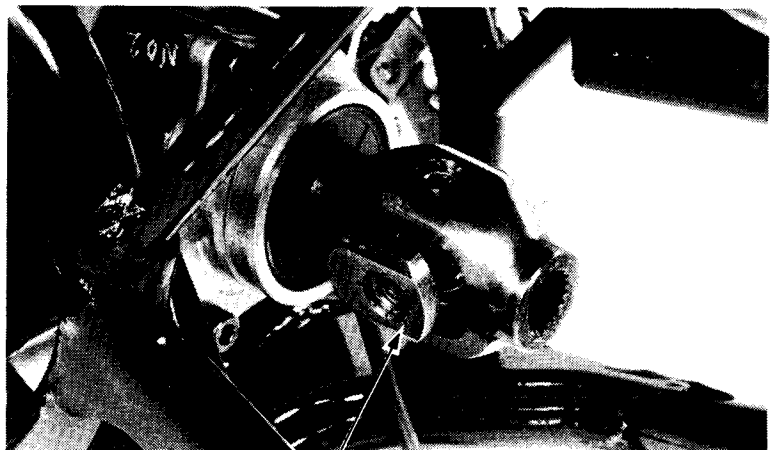
BEARING DRIVER
07945-3710101



UNIVERSAL JOINT

REMOVAL/INSTALLATION

Remove the universal joint from the engine output shaft.

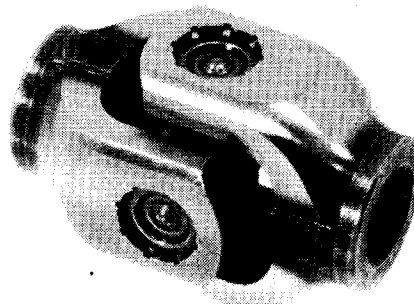


UNIVERSAL JOINT



Inspect the universal joint bearings for excessive play or damage.

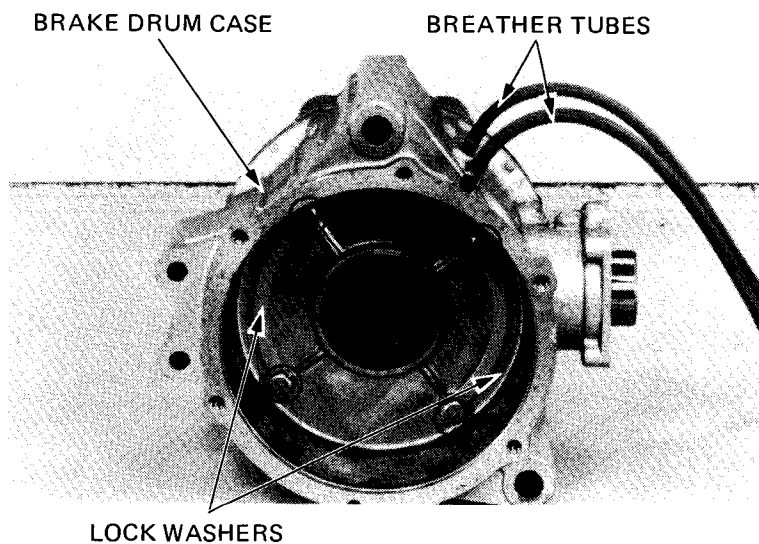
Apply grease to the splines and install the universal joint.



FINAL DRIVE GEAR

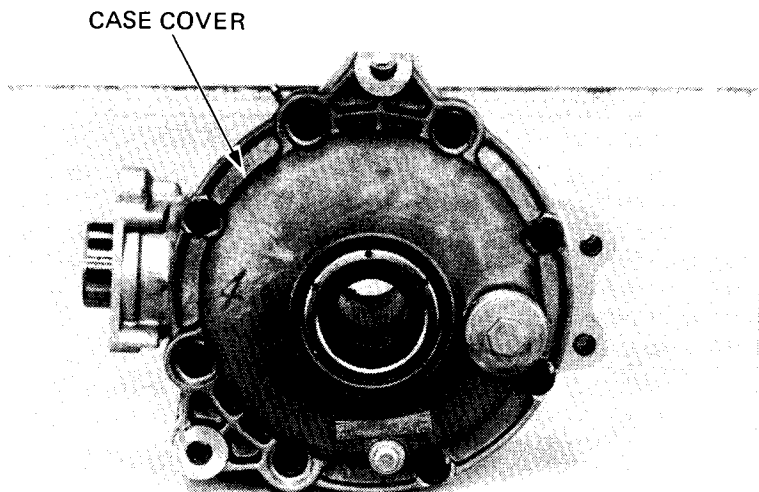
BRAKE DRUM CASE REMOVAL

Remove the breather tubes.
Bend down the lock washer tabs and remove the four bolts.
Remove the brake drum case from the final gear case.



RING GEAR REMOVAL

Remove the eight case cover bolts and cover.



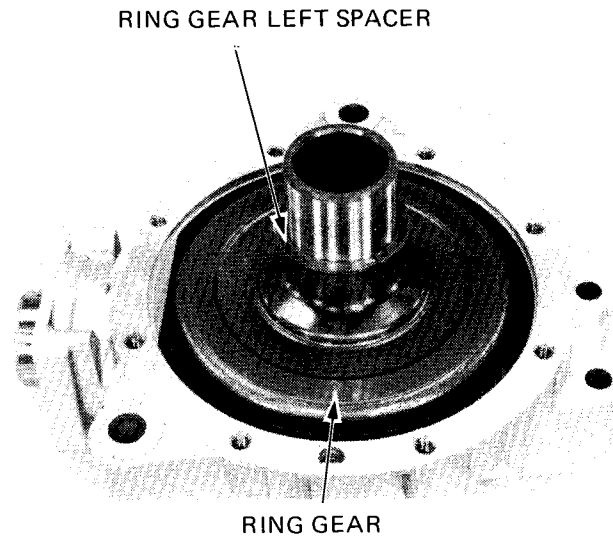


REAR WHEEL/BRAKE/FINAL DRIVE

Remove the ring gear from the final drive case.
Remove the ring gear adjustment spacers.

NOTE:

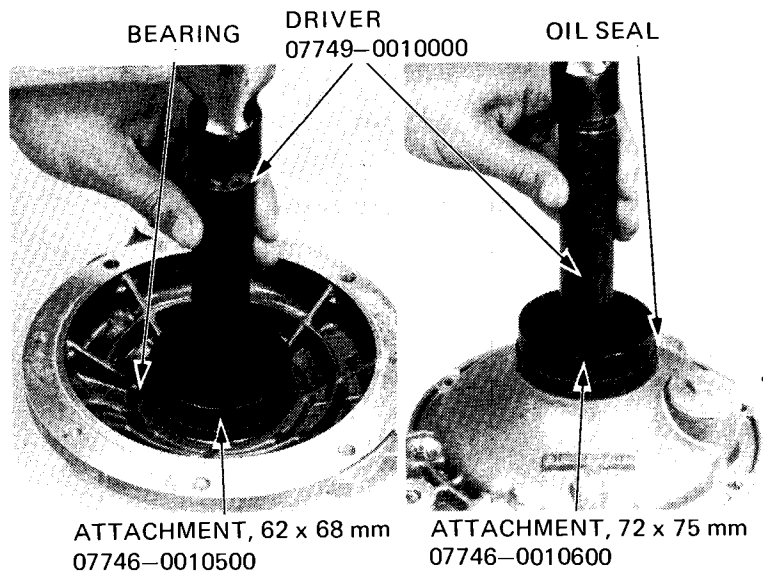
Mark the right and left ring gear spacers for proper reassembly.



RING GEAR OIL SEAL/BEARING REPLACEMENT

Remove the oil seal from the case cover.
Remove the ring gear bearing.

Drive a new bearing into the case cover.
Drive a new oil seal into the case cover.



PINION GEAR REMOVAL

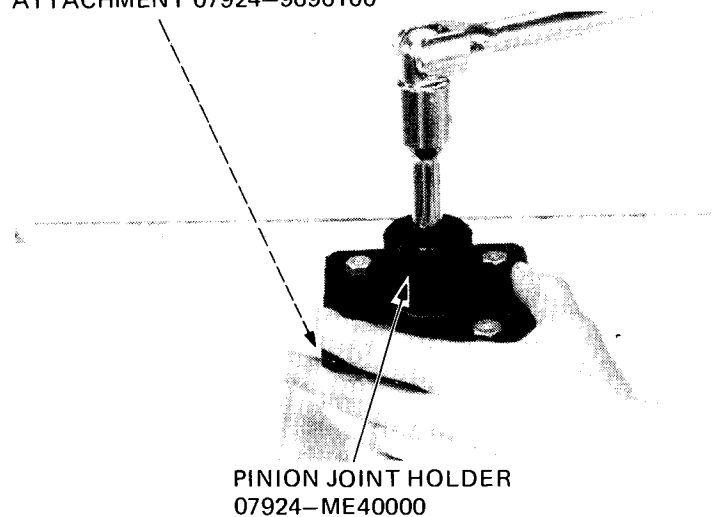
Install pinion joint holder onto the final gear case with the drive shaft case attaching bolts.

NOTE:

Use the small holes in the tool to install.

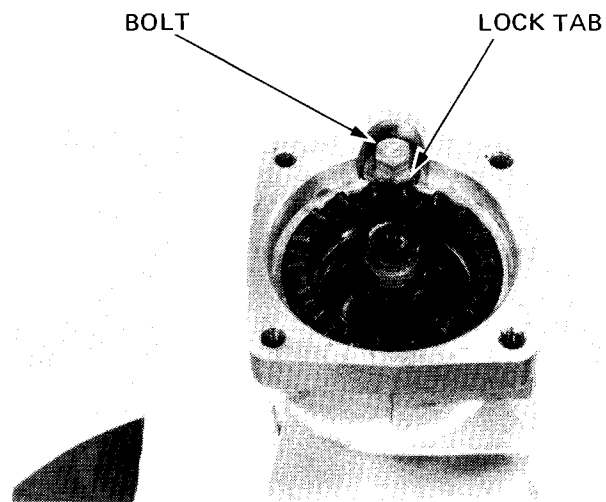
Install the pinion joint holder on the bosses on the attachment and onto the pinion joint.
Remove the pinion shaft nut.
Remove the tools and pinion joint.

PINION JOINT HOLDER
ATTACHMENT 07924-9690100

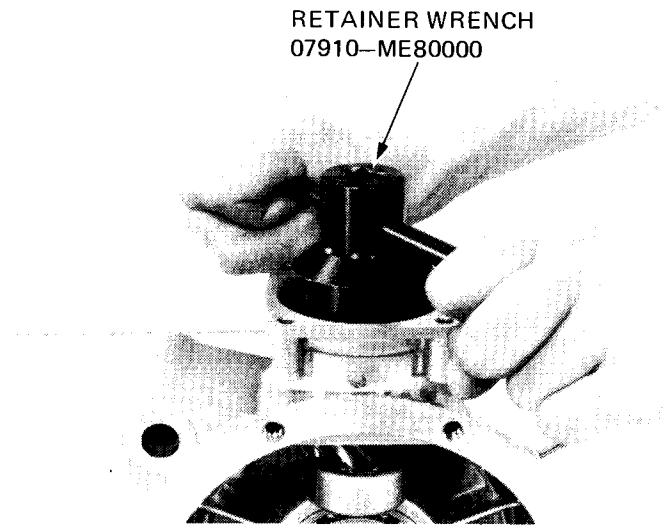




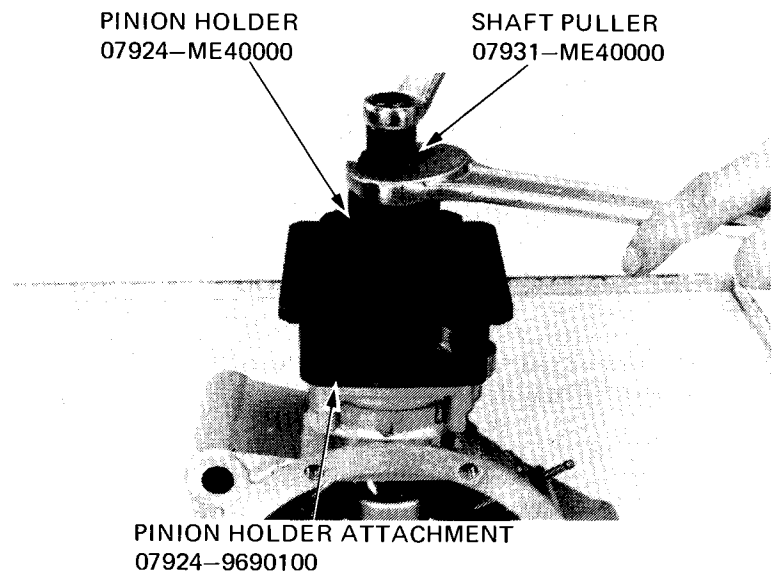
Remove the retainer lock tab.



Remove the pinion retainer with the pinion retainer wrench.



Pull the pinion assembly off with the shaft puller.

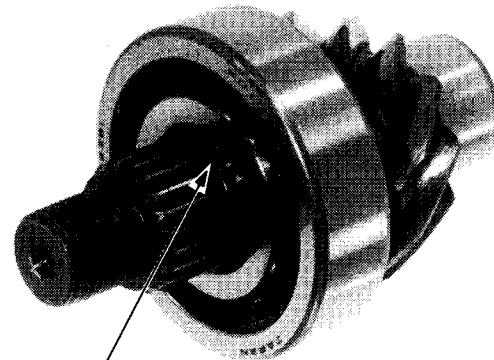




REAR WHEEL/BRAKE/FINAL DRIVE

PINION BEARING REMOVAL

Remove the O-ring from the pinion shaft.



O-RING

Pull the bearing outer and inner races off the shaft with the bearing puller.

Pull the other inner race off with the same tool.

Remove the pinion adjustment spacer.

PINION BEARING



BEARING PULLER
(COMMERCIALY
AVAILABLE)

DRIVER
07749-0010000

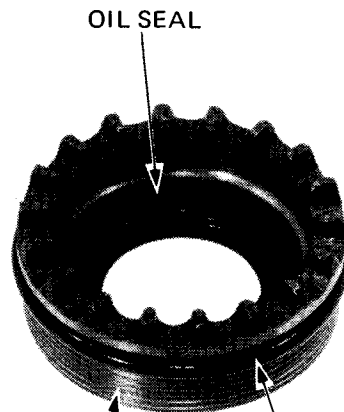
**PINION RETAINER OIL SEAL
REPLACEMENT**

Remove the O-ring and oil seal from the pinion re-
tainer.

Drive a new oil seal into the retainer.

Coat a new O-ring with oil and install it onto the
retainer.

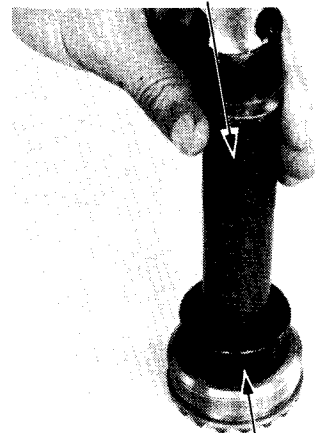
To install a new oil seal, use driver 07749-0010000
and attachment 07945-3330300.



OIL SEAL

PINION RETAINER

O-RING



ATTACHMENT
07945-3330300



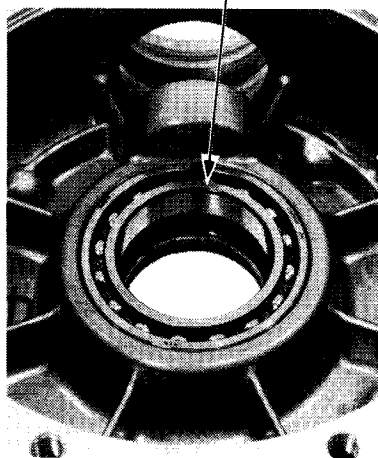
CASE BEARING AND OIL SEAL REPLACEMENT

Heat the gear case to 80°C (176°F). Tap the gear case with a plastic hammer and remove the ring gear and pinion bearings.

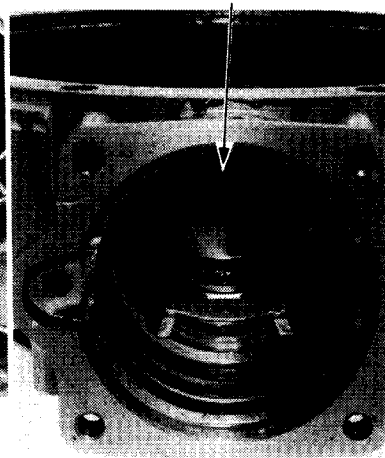
WARNING

Always wear gloves when handling the gear case after it has been heated.

RING GEAR BEARING



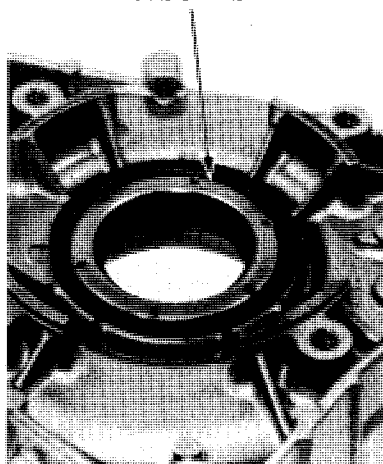
PINION BEARING



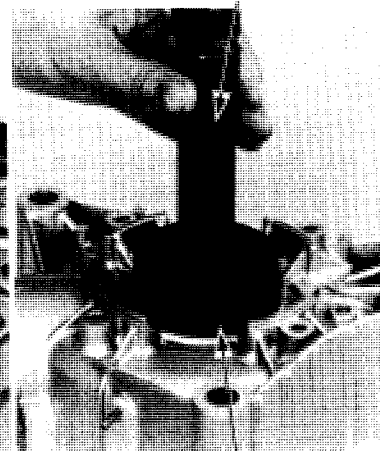
Remove the ring gear shaft oil seal.

Drive a new oil seal into the case, using the special tools.

OIL SEAL



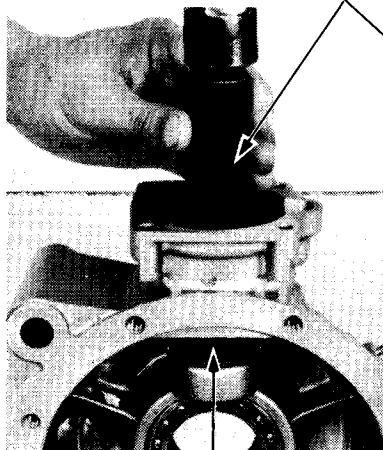
DRIVER
07749-0010000



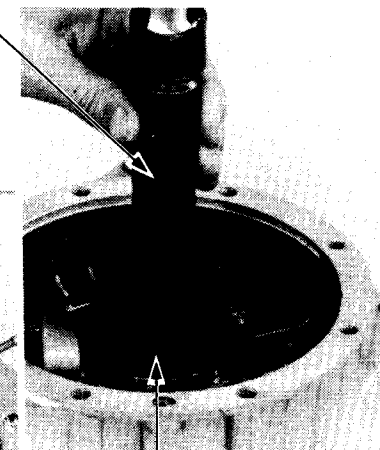
ATTACHMENT, 72 x 75 mm
07746-0010600

Drive new pinion and ring gear bearings into the case.

DRIVER
07749-0010000



ATTACHMENT, 32 x 35 mm 07746-0010100
PILOT, 15 mm 07746-0040300



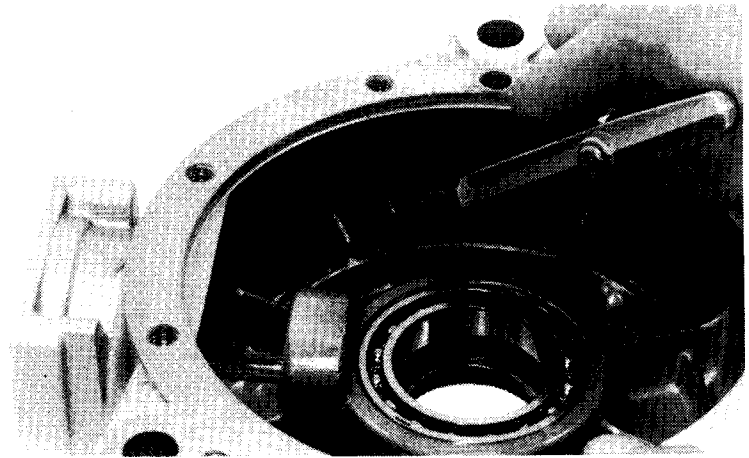
ATTACHMENT, 72 x 75 mm
07746-0010600



REAR WHEEL/BRAKE/FINAL DRIVE

BREATHER HOLE CLEANING

Blow through the breather hole with compressed air.



PINION GEAR ASSEMBLY

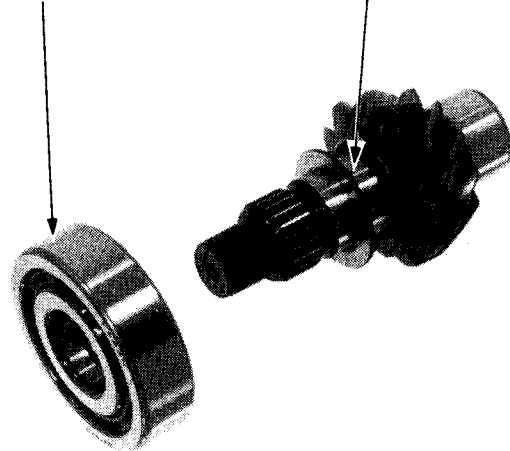
Install the original pinion gear spacer.

NOTE:

When the gear set, pinion bearing and/or gear case has been replaced, use a 1.5 mm (0.059 in) thickness spacer.

PINION BEARING

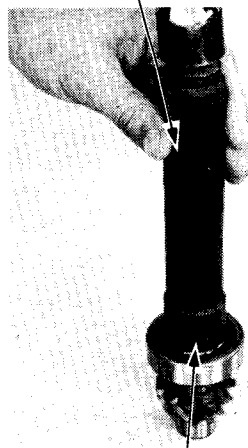
PINION SPACER



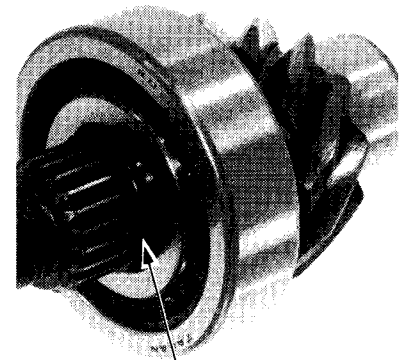
Press the bearing onto the pinion gear shaft with the special tools shown.

Install a new O-ring over the pinion shaft.

DRIVER
07746-0030100



ATTACHMENT, 25 mm I.D.
07746-0030200



O-RING



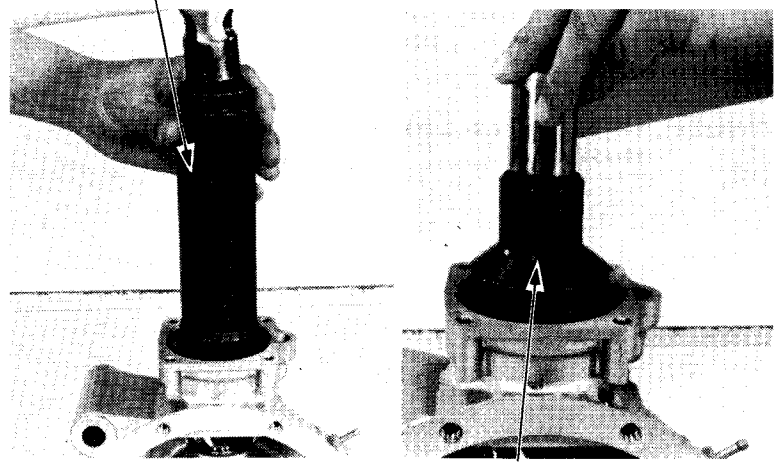
Place the pinion assembly into the gear housing. Drive the pinion assembly into the gear case until the pinion retainer threads can engage with the case threads.

Apply gear oil to the O-ring and threads on the pinion retainer.

Screw in the pinion retainer to press the pinion bearing in place, then tighten it to the specified torque.

**TORQUE: 100–120 N·m (10.0–12.0 kg·m,
72–87 ft·lb)**

BEARING RACE INSERT
ATTACHMENT 07931-4630300



RETAINER WRENCH
07910-ME80000

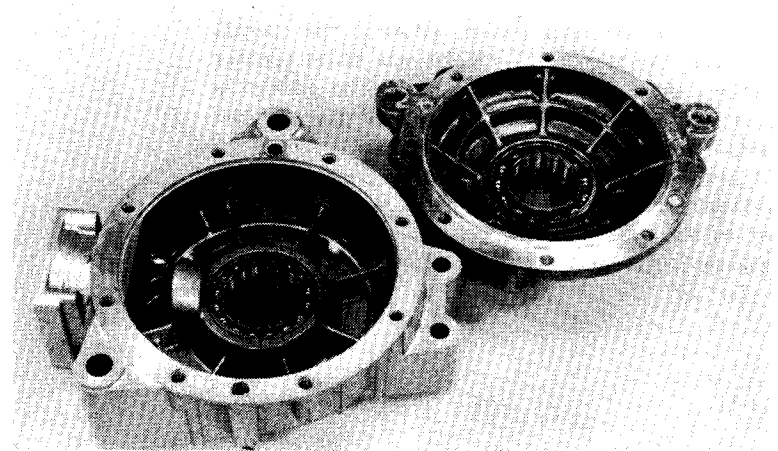
GEAR TOOTH CONTACT PATTERN CHECK

Clean all sealing material off the mating surfaces of the gear case and cover.

NOTE:

- Keep dust and dirt out of the gear case.
- Be careful not to damage the mating surfaces.

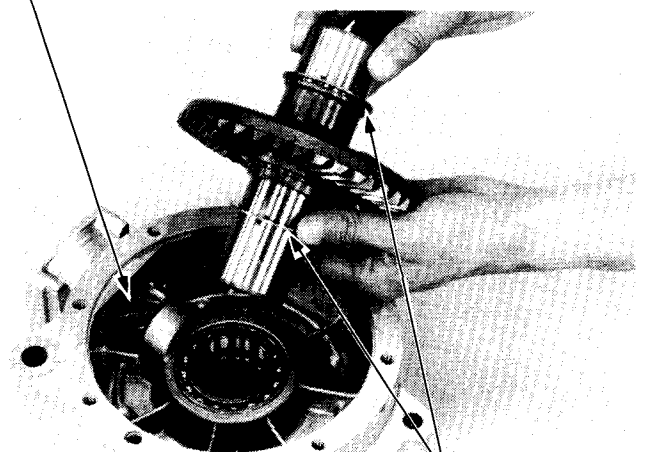
Apply liquid sealant to the mating surface of the gear case cover.



Apply a thin coat of Prussian Blue to the pinion gear teeth for a gear tooth contact pattern check. Place the ring gear spacers and ring gear into the gear case.

Apply gear oil to the lip of the oil seal on the gear case cover and install the gear case cover.

PRUSSIAN BLUE



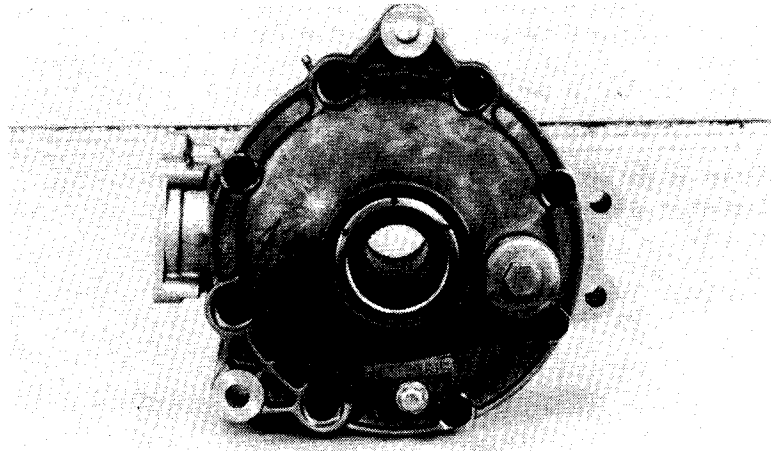
RING GEAR SPACERS



REAR WHEEL/BRAKE/FINAL DRIVE

Tighten the cover bolts in 2–3 steps until the cover evenly touches the gear case, then tighten the bolts to the specified torque in a criss-cross pattern in two or more steps.

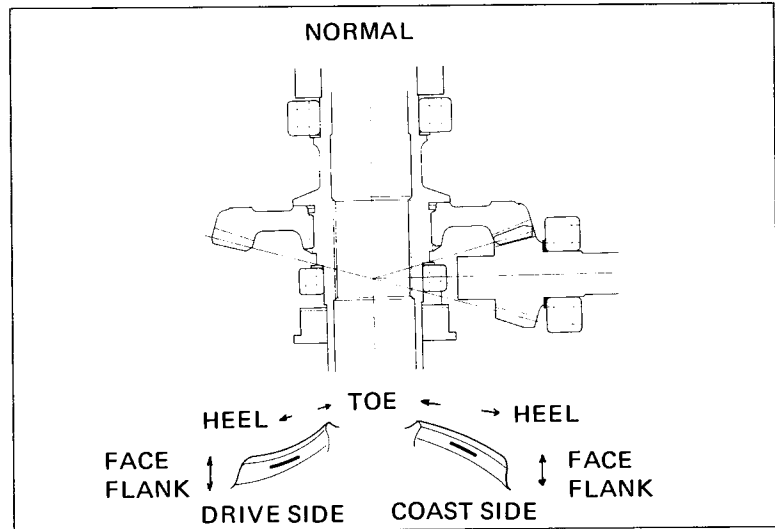
TORQUE: 24–30 N·m (2.4–3.0 kg·m,
17–22 ft·lb)



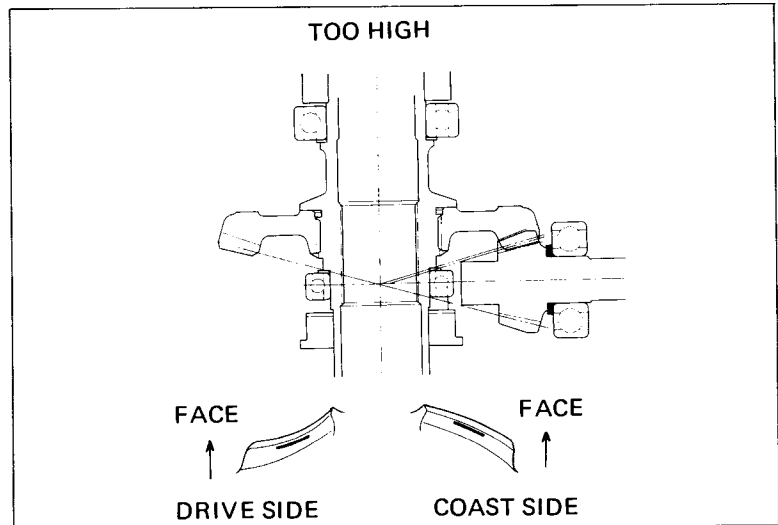
Remove the oil filler cap from the final gear case.

Rotate the ring gear several times in the normal direction of rotation. Check the gear tooth contact pattern through the oil filler hole. The pattern is indicated by the Prussian Blue applied to the pinion before assembly.

Contact is normal if the Prussian Blue is transferred to the approximate center of each tooth and slightly to the flank side.



If the patterns are not correct, remove and replace the pinion spacer. Replace the pinion spacer with a thicker one if the contacts are too high, toward the face.

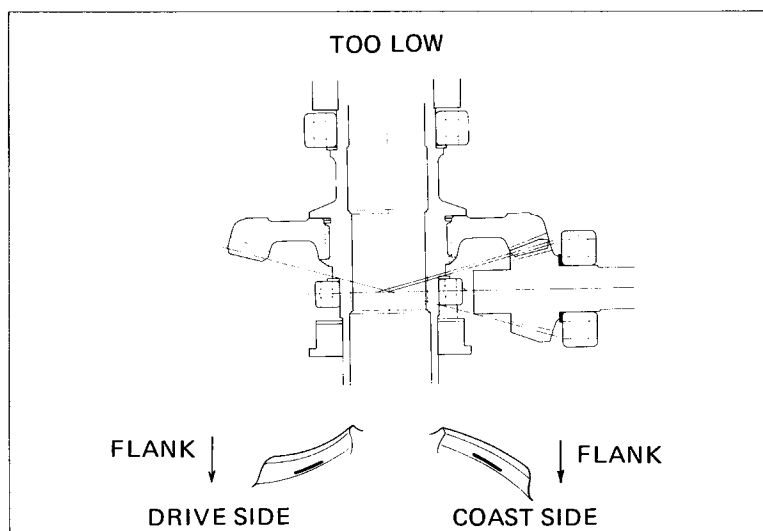




Replace the pinion spacer with a thinner one if the contacts are too low, to the flank side. The patterns will shift about 1.5–2.0 mm (0.06–0.08 in) when the thickness of the spacer is changed by 0.10 mm (0.004 in).

PINION SPACER:

- A 1.32 mm (0.052 in)
- B 1.38 mm (0.054 in)
- C 1.44 mm (0.057 in)
- D 1.50 mm (0.059 in) **Standard**
- E 1.56 mm (0.061 in)
- F 1.62 mm (0.064 in)
- G 1.68 mm (0.066 in)



BACKLASH INSPECTION

Set the final gear assembly into a jig or stand to hold it steady. Set a horizontal type dial indicator on the pinion gear spline.

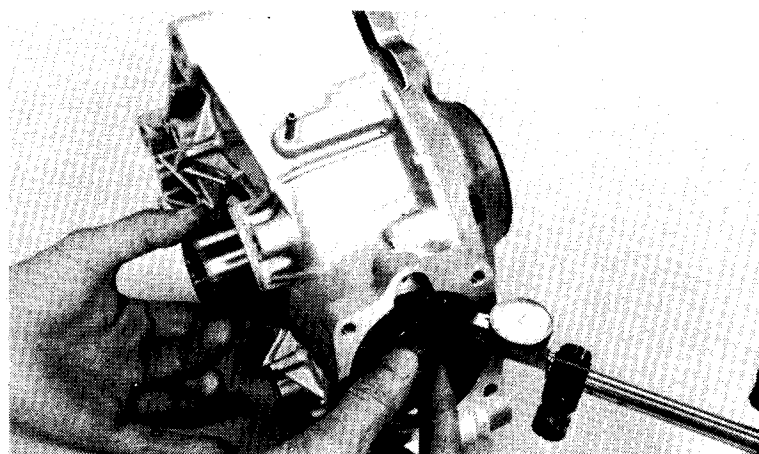
Hold the ring gear by hand. Rotate the pinion gear by hand until gear slack is taken up. Turn the pinion gear back and forth to read backlash.

STANDARD: 0.08–0.18 mm
(0.003–0.007 in)

SERVICE LIMIT: 0.25 mm (0.010 in)

Remove the dial indicator. Turn the pinion gear 120° and measure backlash. Repeat this procedure once more.

Compare the difference of the three measurements.



DIFFERENCE OF MEASUREMENT

SERVICE LIMIT: 0.10 mm (0.004 in)

If the difference in measurements exceeds the limit, it indicates that the bearing is not installed squarely. Inspect the bearings and reinstall if necessary.

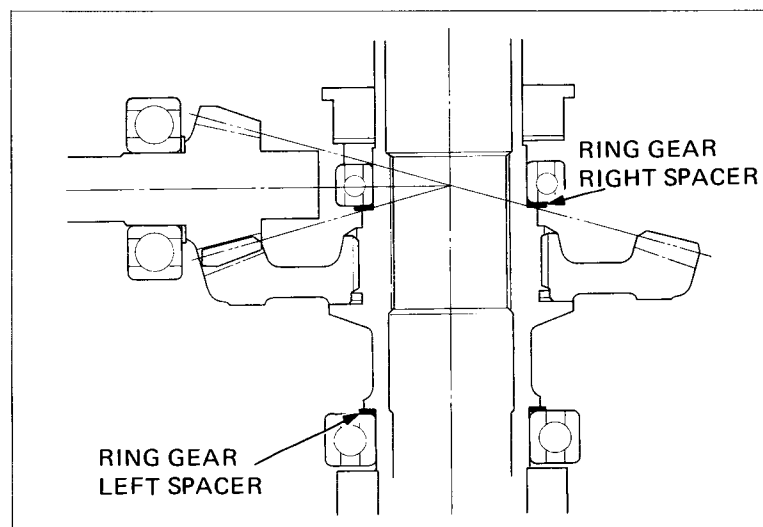
If backlash is too small, replace the ring gear right side spacer with a thicker one.

Backlash is changed by about 0.06 mm (0.002 in) when thickness of the spacer is changed by 0.10 mm (0.004 in).

RING GEAR SPACER:

- B: 1.32 mm (0.052 in)
- C: 1.38 mm (0.054 in)
- D: 1.44 mm (0.057 in)
- E: 1.50 mm (0.059 in)
- F: 1.56 mm (0.061 in)
- G: 1.62 mm (0.064 in)
- H: 1.68 mm (0.066 in)
- I: 1.74 mm (0.069 in)
- J: 1.80 mm (0.071 in)

Change the left side spacer thickness an opposite amount to what the right side spacer was changed; if the right spacer was replaced with a 0.10 mm (0.004 in) thicker spacer, replace the left spacer with one that is 0.10 mm (0.004 in) thinner.





REAR WHEEL/BRAKE/FINAL DRIVE

PINION JOINT INSTALLATION

Apply gear oil to the oil seal lip contact surface of the pinion joint and install the pinion joint. Apply locking agent to the pinion nut threads.

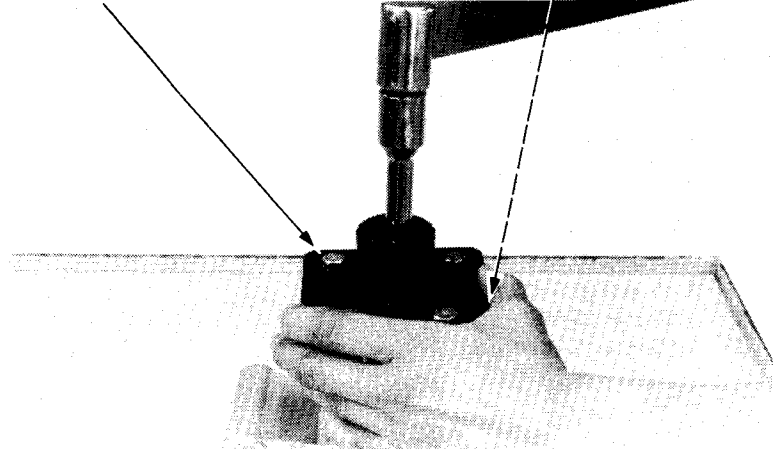
Install the pinion joint holder attachment and holder and tighten the pinion nut.

**TORQUE: 80–100 N·m (8–10 kg·m,
58–72 ft·lb)**

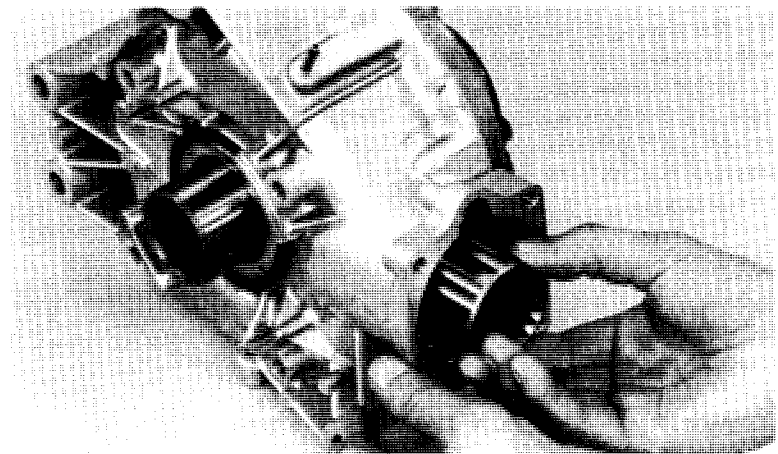
Remove the pinion joint holder attachment and holder.

PINION JOINT HOLDER
07924-ME40000

PINION JOINT HOLDER
ATTACHMENT 07924-9690100

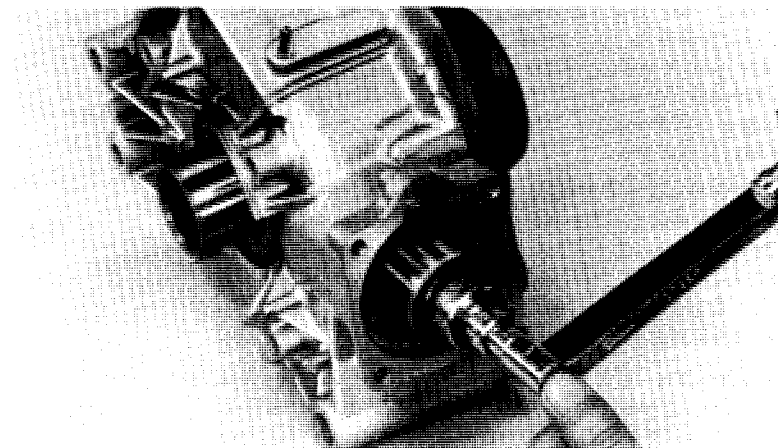


Make sure that the gear assembly rotates smoothly without binding by turning the pinion joint.



Measure the final gear assembly preload.

PRELOAD: 0.5 N·m (5.0 kg·cm, 4.3 in·lb) max.

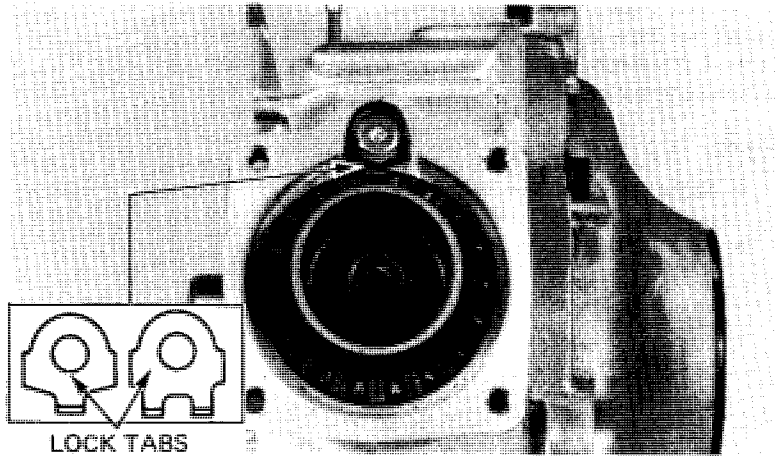




Install the appropriate pinion retainer lock tab.

NOTE:

There are two types of lock tabs as shown.

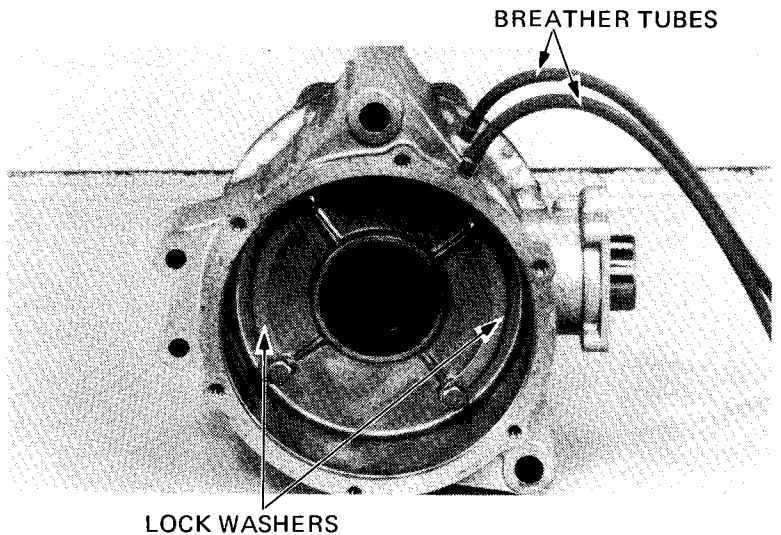


BRAKE DRUM CASE INSTALLATION

Install the brake drum case onto the final drive gear case and tighten it with new lock plates and the four bolts.

Bend up the lock washer tabs against the bolt heads.

Install the two breather tubes.



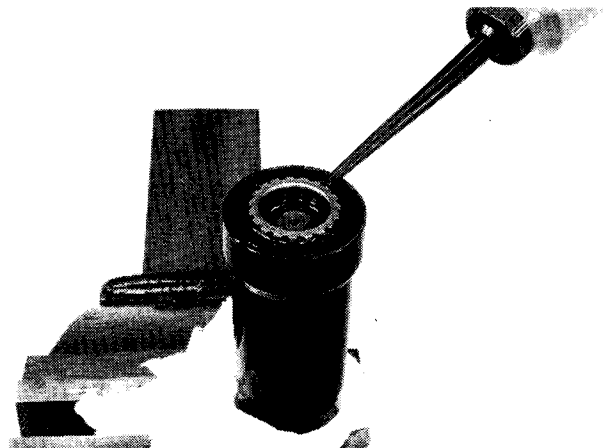
FINAL DRIVE INSTALLATION

Fill the damper case with the recommended type and amount of lubricant.

RECOMMENDED OIL:

HYPOID GEAR OIL API, GL-5 SAE #80

OIL CAPACITY: 40 cc (1.35 US oz)





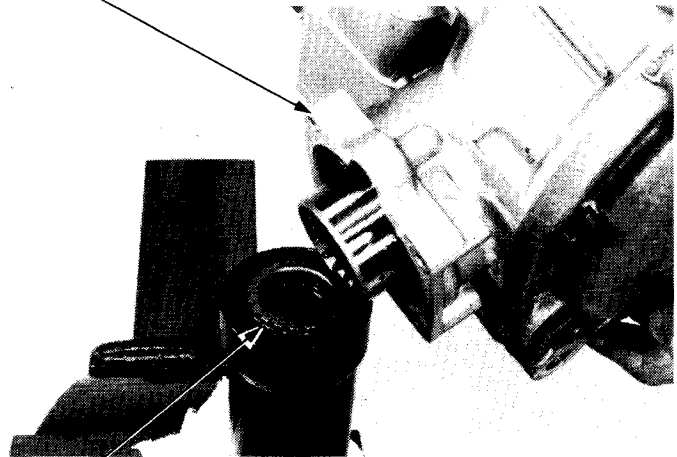
REAR WHEEL/BRAKE/FINAL DRIVE

Install the joint stop ring in the groove of the damper cam and install the damper spring.
Install the final drive case over the damper cam and push it down until the joint stop ring seats in the pinion joint spline groove.

NOTE:

- Make sure that the joint stop is seated properly by lifting the gear case up lightly.
- Be careful not to damage the drive shaft oil seal.

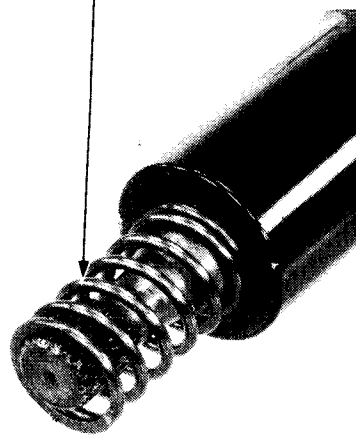
FINAL GEAR CASE



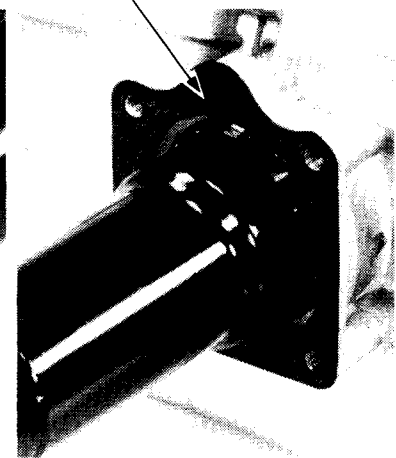
JOINT STOP RING

Install the damper spring over the drive shaft.
Install a new gasket onto the final gear case.

DAMPER SPRING

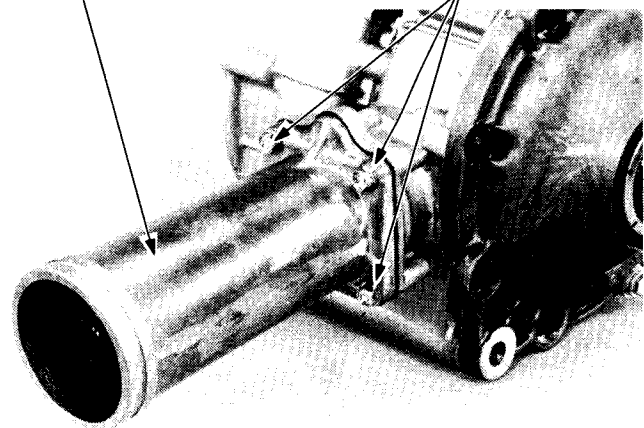


GASKET



Install the drive shaft case and tighten the four bolts.

DRIVE SHAFT CASE

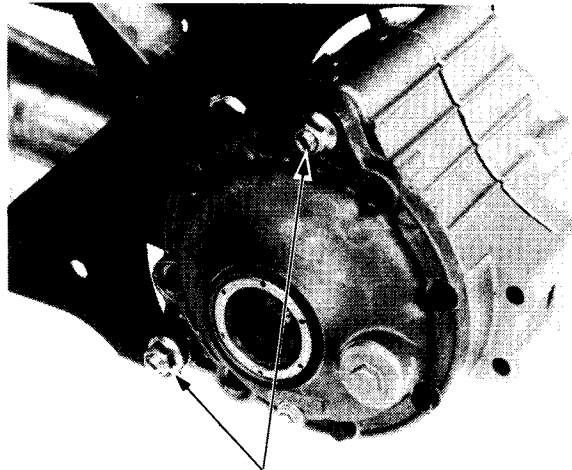


BOLTS



Align the drive shaft splines with the universal joint and install the gear case on the frame. Install and tighten the two gear case mounting bolts and nuts.

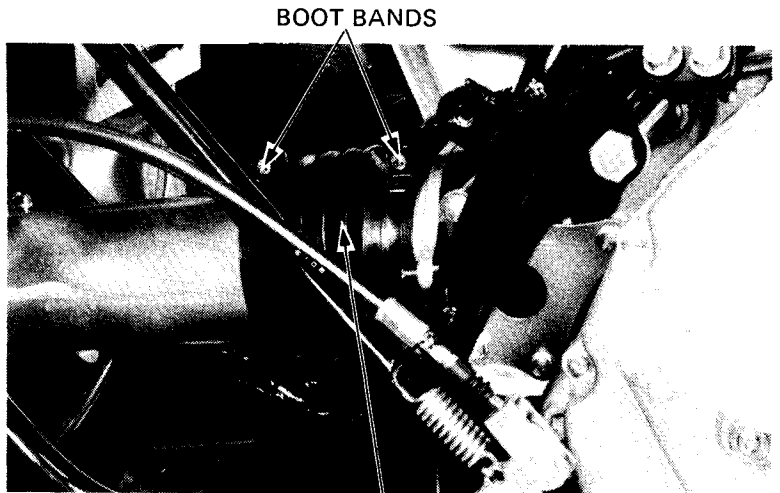
TORQUE: 50–70 N·m (5.0–7.0 kg·m,
36–51 ft·lb)



MOUNTING BOLTS

Slide the drive shaft boot over the drive shaft case and the output gear case and tighten the boot bands.

Install the removed parts in the reverse order of removal.



BOOT

Make sure that the drain bolt is tightened.

Remove the oil filler cap and pour the specified amount of recommended oil up to the filler neck (Page 2-3).

RECOMMENDED OIL:

HYPOID GEAR OIL SAE #80

OIL CAPACITY: 350 cc (11.8 US oz)



HONDA
ATC200ES

MEMO



FRONT CARRIER	14-1
REAR CARRIER/REAR FENDER/TRAILER HITCH	14-1
EXHAUST PIPE	14-3

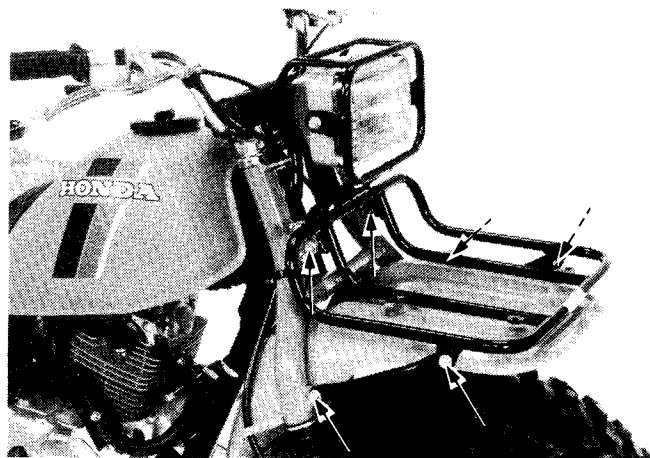
FRONT CARRIER

REMOVAL

Remove the six front carrier mounting bolts and remove the front carrier.

INSTALLATION

Install the front carrier with the mounting bolts.



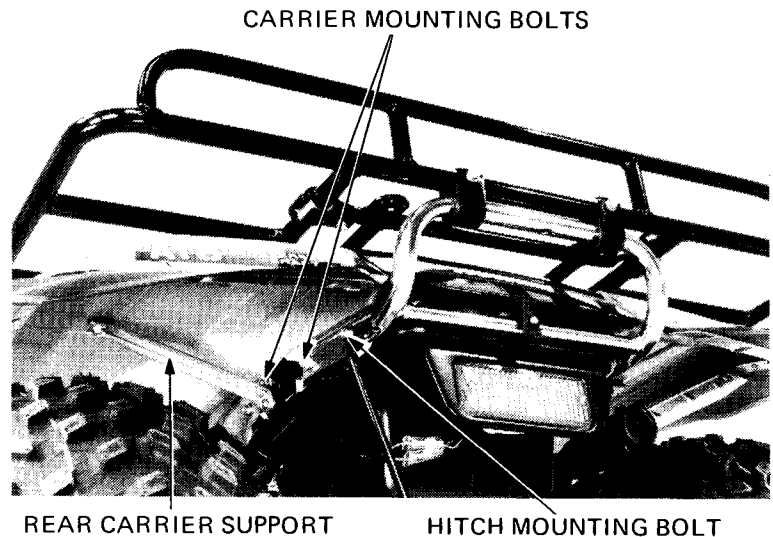
REAR CARRIER/ REAR FENDER/ TRAILER HITCH

REAR CARRIER REMOVAL

Remove the seat.
Remove the two trailer hitch mounting bolts and remove the trailer hitch from the rear carrier.
Remove the four carrier support bolts and carrier supports.
Remove the four rear carrier mounting bolts and rear carrier.

REAR CARRIER INSTALLATION

The installation sequence is essentially the reverse order of removal.





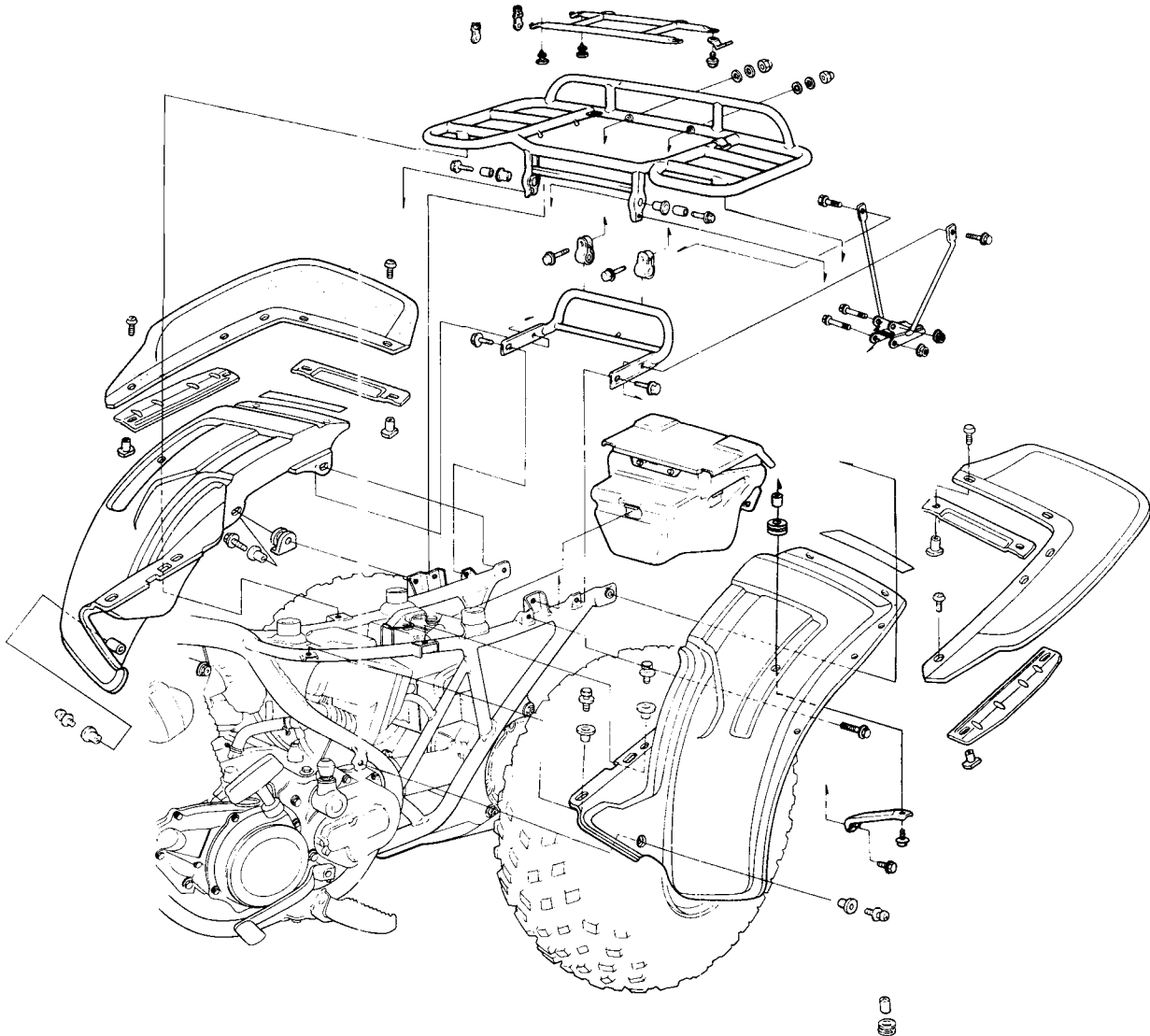
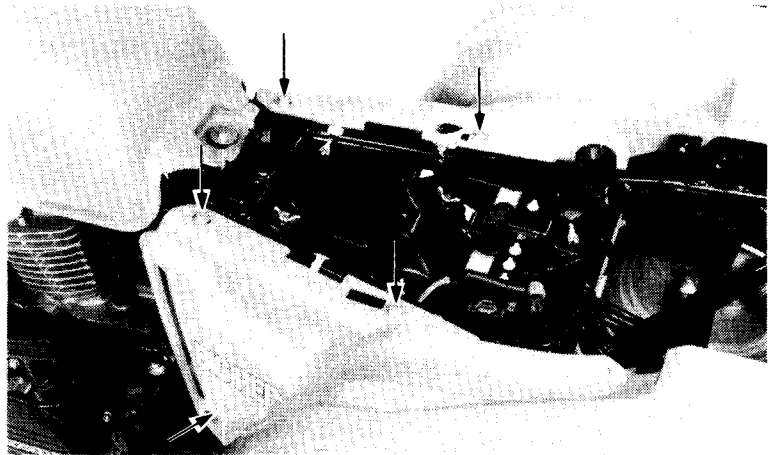
CARRIERS/REAR FENDER/HITCH/EXHAUST

REAR FENDER REMOVAL

Remove the seat.
Remove the four bolts and two screws on the rear fender.
Remove the rear fender.

REAR FENDER INSTALLATION

The installation sequence is essentially the reverse order of removal.



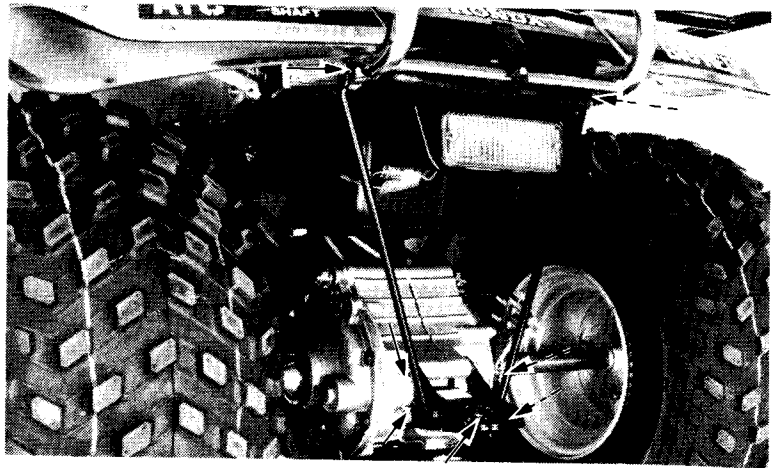


TRAILER HITCH REMOVAL

Remove the two bolts on the rear carrier and four bolts on the final gear case.
Remove the trailer hitch.

TRAILER HITCH INSTALLATION

Installation is the reverse order of removal.



TRAILER HITCH

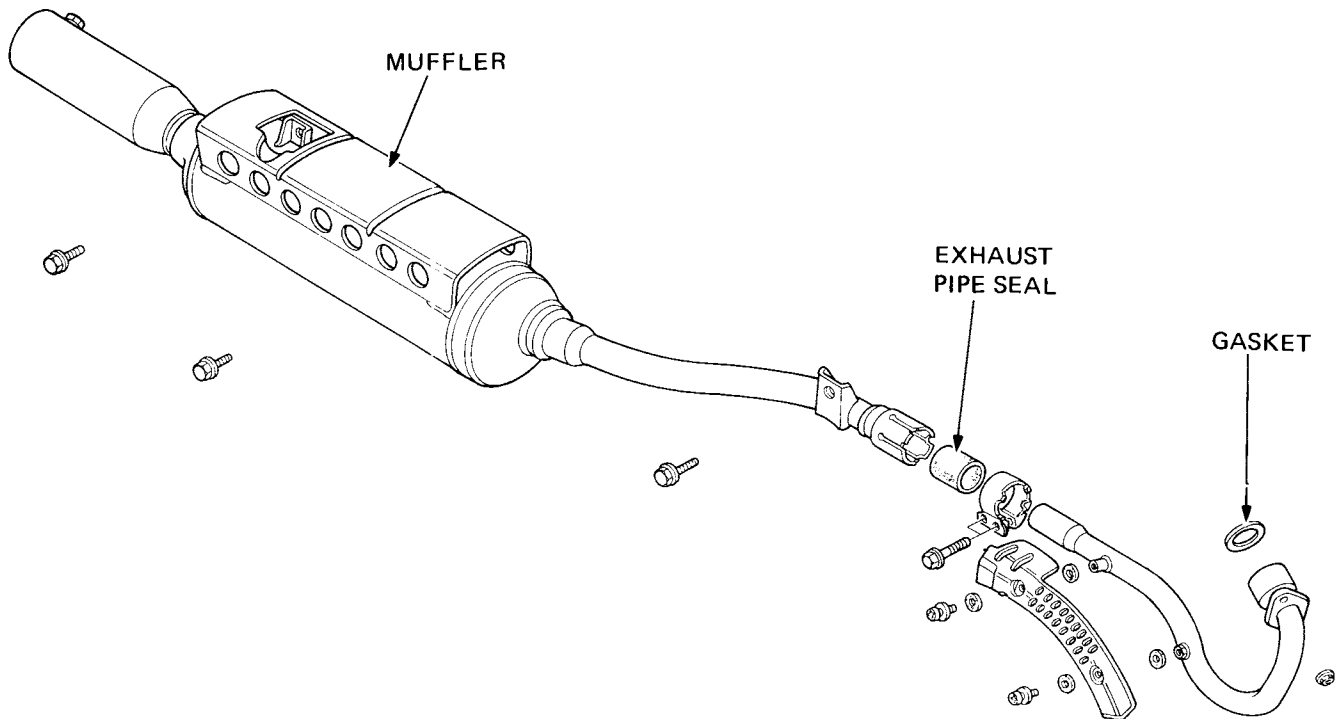
EXHAUST PIPE

WARNING

Do not service the exhaust pipe or muffler when they are hot.

SPARK ARRESTER CLEANING

Refer to page 3-13 for spark arrester cleaning.





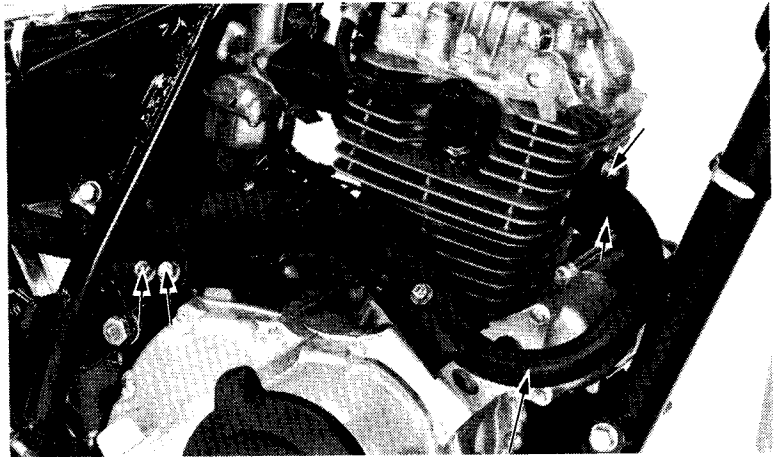
CARRIERS/REAR FENDER/HITCH/EXHAUST

EXHAUST PIPE REMOVAL

Remove the seat.
Remove the trailer hitch and right rear fender.
Remove the exhaust pipe band.
Remove the exhaust pipe joint nuts and exhaust pipe.

NOTE:

Check the gasket and pipe seal for wear.
Replace them with new ones.



EXHAUST PIPE

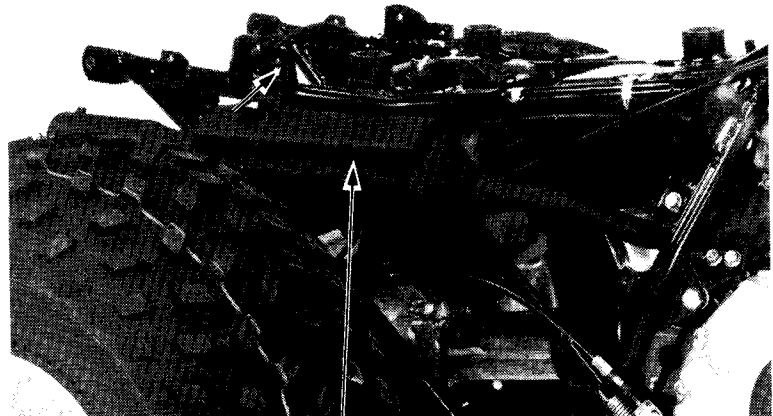
Remove the muffler mounting bolts and muffler.

EXHAUST PIPE INSTALLATION

Installation is the reverse order of removal.

NOTE:

After installing the exhaust pipe, make sure that there are no exhaust leaks.

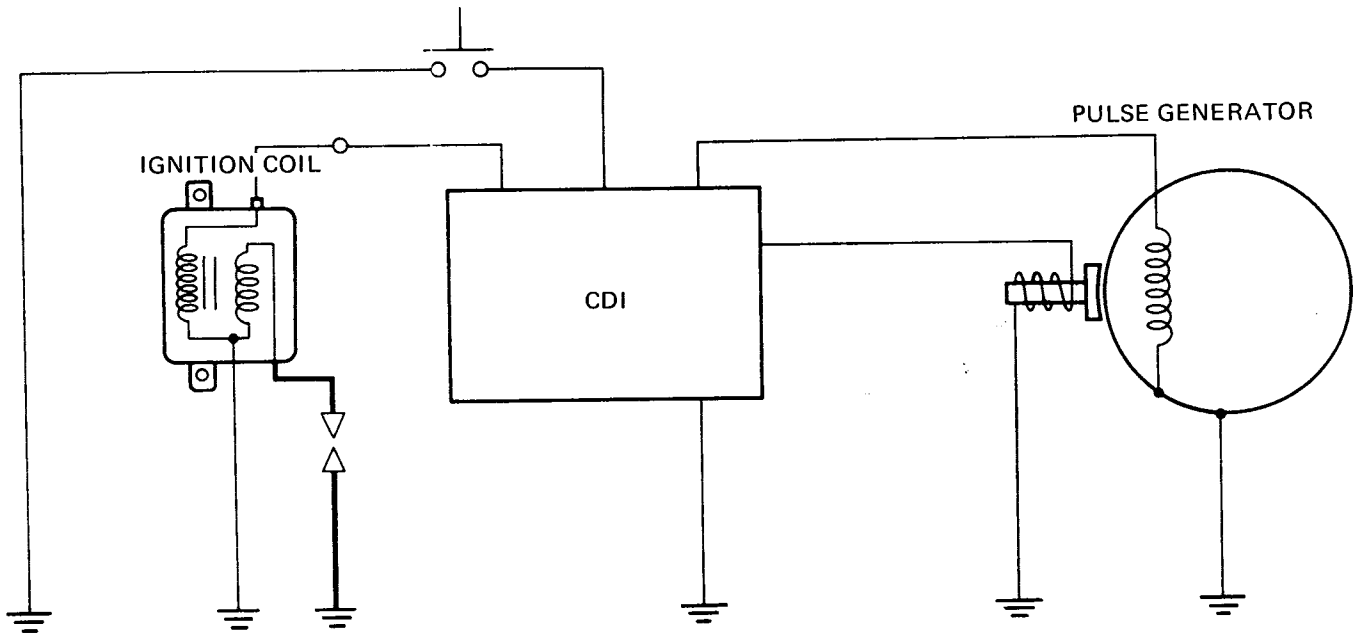
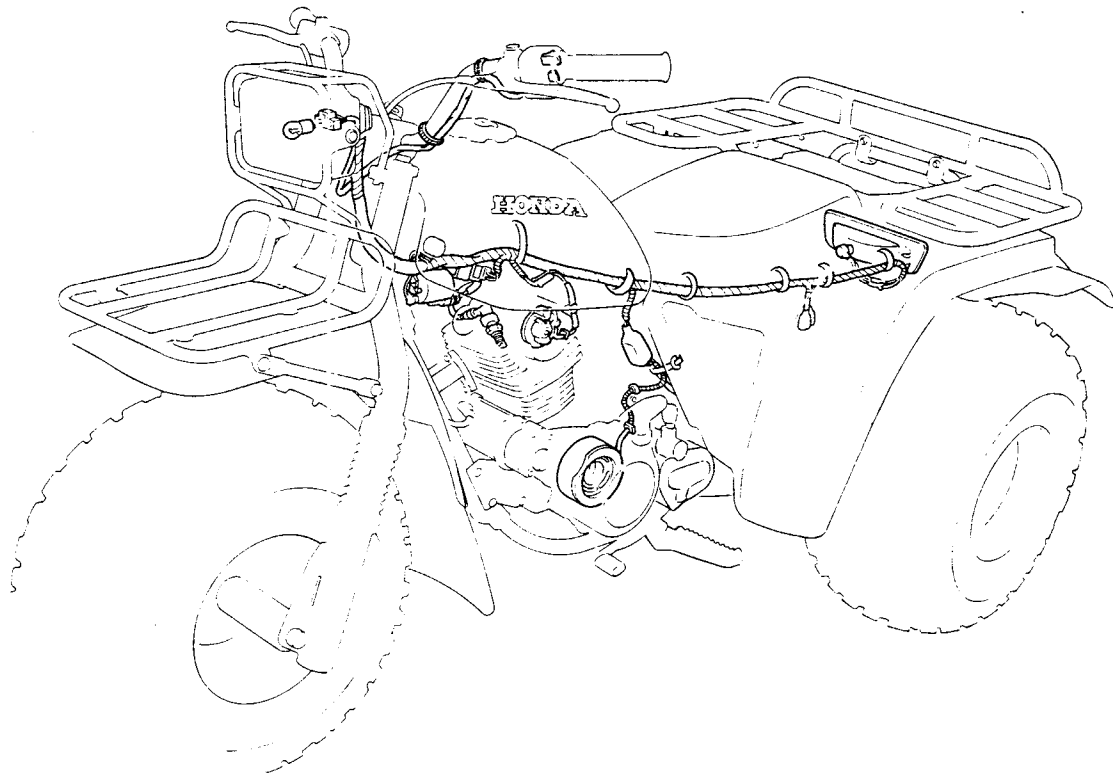


MUFFLER



HONDA
ATC200ES

MEMO





SERVICE INFORMATION	15-1
TROUBLESHOOTING	15-1
IGNITION COIL	15-2
ALTERNATOR	15-2
C.D.I. UNIT	15-3

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 3-5.
- For pulse generator removal, see page 9-7.

SPECIFICATIONS

Spark plug	DR8ES-L (NGK) X24ESR-U (ND)
Spark plug gap	0.6-0.7 mm (0.024-0.028 in)
Ignition timing:	
- Initial	10 ± 2° BTDC/1,400 ± 100 rpm
- Advance start	1,950 ± 150 rpm
- Full advance	30 ± 2° BTDC/3,350 ± 150 rpm
- Alternator	2.4A (above) at 2,000 rpm 5.0A (above) at 10,000 rpm (at 14V)

TOOL

Digital multi-tester	KS-AHM-32-003 (U.S.A. only)
----------------------	-----------------------------

TROUBLESHOOTING

Engine starts but stops

1. No spark at plug
2. Improper ignition timing
3. Faulty spark plug

No spark at plug

1. Engine stop switch "OFF"
2. 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
3. Faulty ignition coil
4. Faulty CDI unit
5. Faulty pulse generator
6. Faulty alternator

Engine starts but runs poorly

1. Ignition primary circuit
 - Faulty ignition coil
 - Loose or bare wire
 - Faulty alternator
2. Ignition secondary circuit
 - Faulty plug
 - Faulty CDI unit
 - Faulty pulse generator
 - Faulty spark plug wire
3. Improper ignition timing
 - Faulty advancer rotor
 - Faulty pulse generator
 - Faulty CDI unit



IGNITION SYSTEM

REMOVAL

Remove the spark plug cap from the spark plug. Disconnect the ignition coil primary wire and remove the ignition coil.



INSPECTION

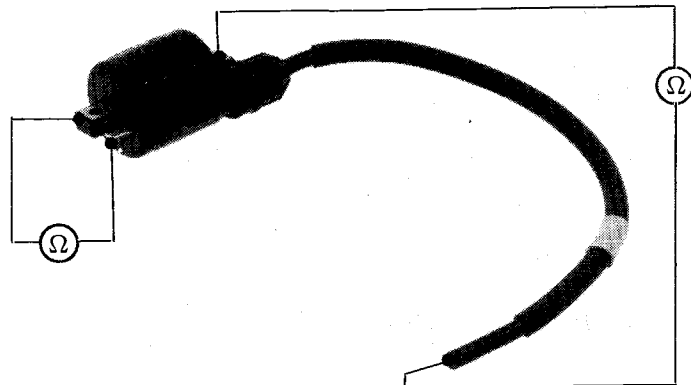
Check the resistances between the leads of the primary and secondary coils:

Primary coil: 0.2–0.4 Ω

Second coil: 3–5 k Ω

INSTALLATION

Install the ignition coil and connect the primary wire.
Connect the spark plug cap.



ALTERNATOR

Disconnect the alternator wire coupler and test as follows.

NOTE:

It is not necessary to remove the starter coil to make this test.

The exciter coil is in operating condition if there is continuity between the black wire with red tube and ground.

RESISTANCE: 100–400 Ω





CDI UNIT

REMOVAL

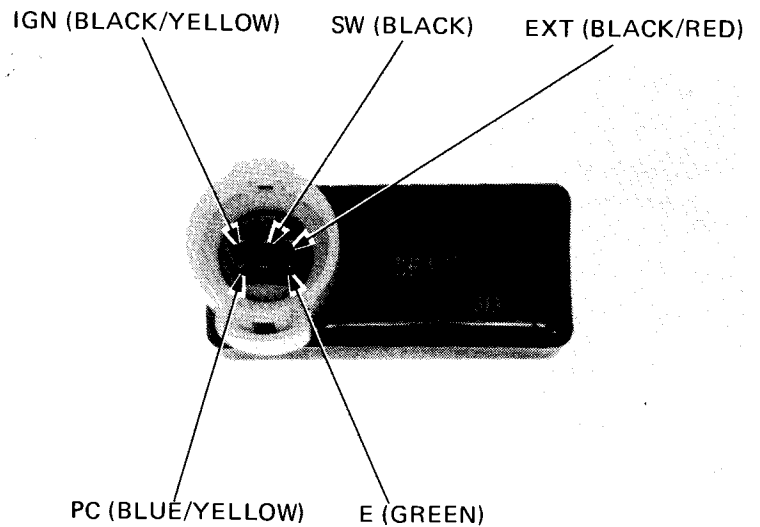
Disconnect the wire coupler and remove the CDI unit.

INSPECTION

Replace the CDI unit if the readings are not within the limits shown in the table.

NOTE:

- The CDI unit is fully transistorized. For accurate testing, it is necessary to use a specified electrical tester. Use of an improper tester may give false readings.
- Use a SANWA ELECTRIC TESTER (P/N 7308-0020000) or a KOWA DIGITAL MULTI-METER (KS-AHM-32-003). U.S.A. only.



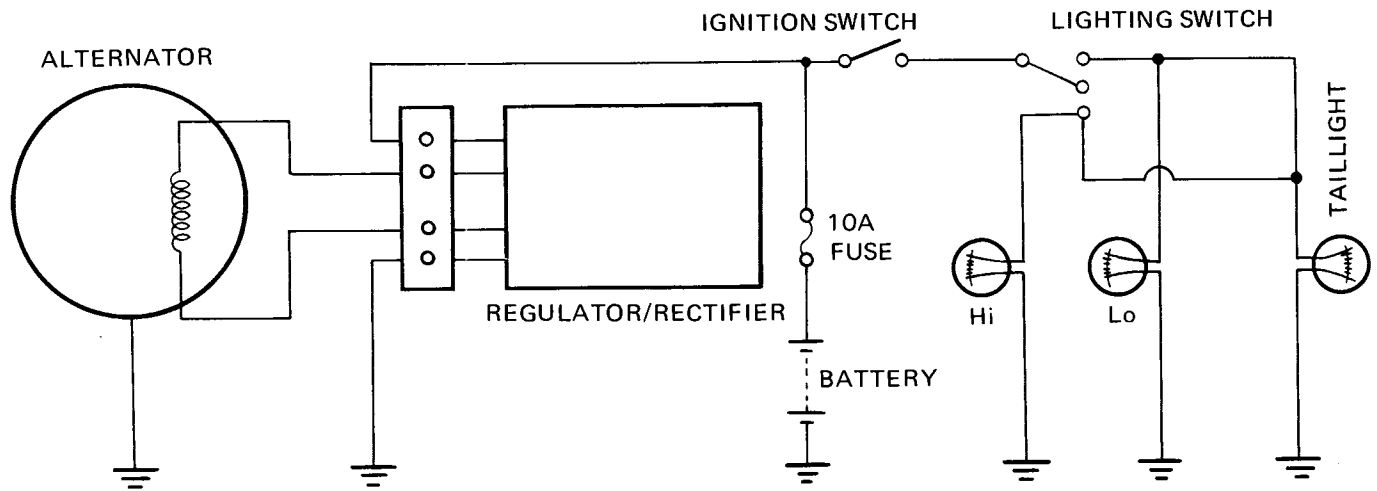
Set the tester on the R x kΩ

Unit: kΩ

(-) \ (+)	SW (Black)	EXT (Black/Red)	PC (Blue/Yellow)	E (Green)	IGN (Black/Yellow)
SW (Black)		∞	∞	∞	∞
EXT (Black/Red)	0.1 - 20		∞	∞	∞
PC (Blue/Yellow)	0.5 - 200	0.5 - 100		1 - 5	∞
E (Green)	0.2 - 60	0.1 - 2.0	∞		∞
IGN (Black/Yellow)	∞	∞	∞	∞	



BATTERY/CHARGING SYSTEM





16. BATTERY/ CHARGING SYSTEM

SERVICE INFORMATION	16-1
TROUBLESHOOTING	16-2
BATTERY	16-3
CHARGING SYSTEM	16-4

SERVICE INFORMATION

GENERAL

- Battery fluid level should be checked regularly. Fill with distilled water when necessary.
- Quick charge a battery, only in an emergency. Slow-charging is preferred.
- Remove the battery from the motorcycle for charging. If the battery must be charged on the motorcycle, disconnect the battery cables.

WARNING

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

- All charging system components can be tested on the ATC.

SPECIFICATIONS

Battery	Capacity	12 V – 14 ampere – hours
	Specific gravity	1.270 – 1.290 (20°C, 68°F)
	Charging rate	1.4 amperes maximum
Alternator	Capacity	HIGH BEAM: 4.5 amperes/5,000 rpm (14 volts)
Voltage regulator		Transistorized non-adjustable regulator



TROUBLESHOOTING

No Power – Key Turned On:

1. Dead battery
 - Low fluid level
 - Low specific gravity
 - Charging system failure
2. Disconnected battery cable
3. Main fuse burned out
4. Faulty ignition switch

Low Power – Key Turned On:

1. Weak battery
 - Low fluid level
 - Low specific gravity
 - Charging system failure
2. Loose battery connection

Low Power – Engine Running:

1. Battery undercharged
 - Low fluid level
 - One or more dead cells
2. Charging system failure
3. Loose connection or short circuit in lighting system

Intermittent Power:

1. Loose battery connection
2. Loose charging system connection
3. Loose starting system connection

Charging System Failure:

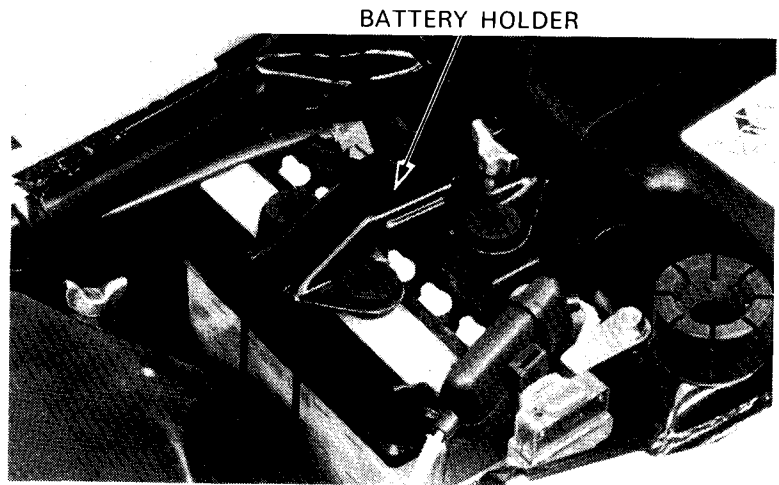
1. Loose, broken, or shorted wire or connection
2. Faulty voltage regulator
3. Faulty alternator



BATTERY

REMOVAL

- Remove the seat.
- Remove the battery holder.
- Disconnect the negative cable at the battery.
- Disconnect the positive cable at the battery.
- Remove the battery.



TESTING SPECIFIC GRAVITY

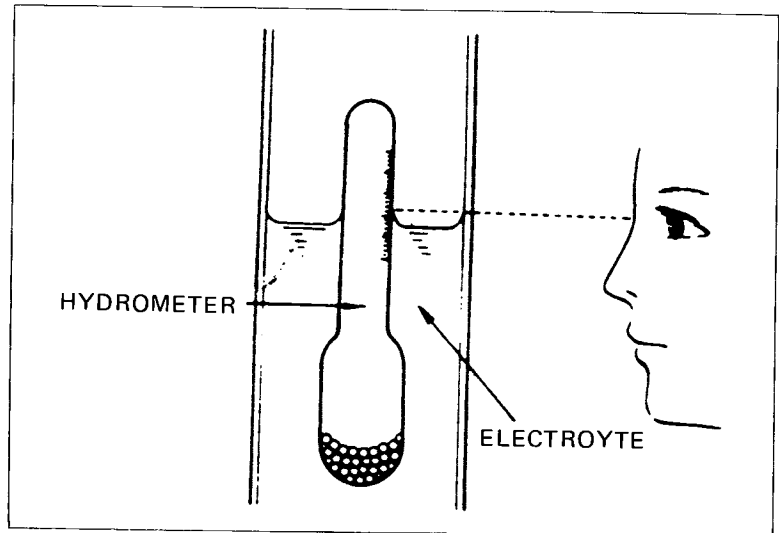
Test each cell with a hydrometer.

SPECIFIC GRAVITY: 1.270–1.290 (20°C, 68°F)

1.270–1.290	Fully charged
Below 1.260	Undercharged

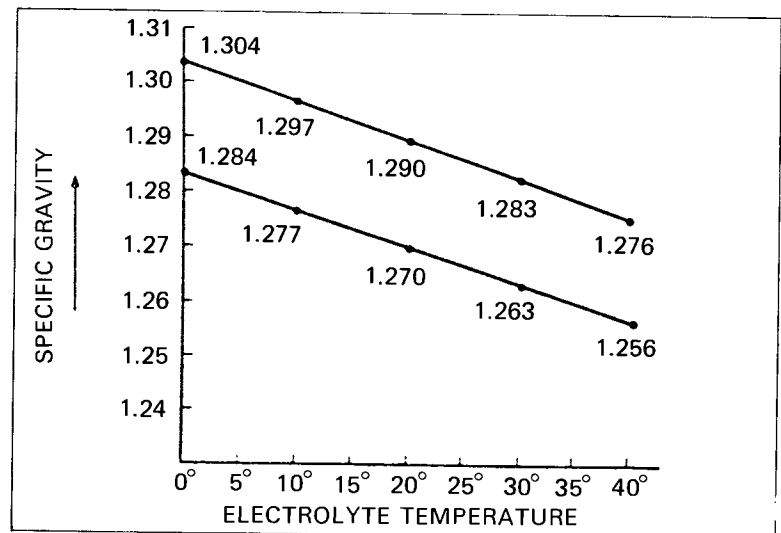
NOTE:

- The battery must be recharged if the specific gravity is below 1.230.
- The specific gravity varies with the temperature as shown in the accompanying table.
- Replace the battery if sulfation is evident or if the space below the cell plates is filled with sediment.



WARNING

*The battery contains sulfuric acid. Avoid contact with skin, eyes, or clothing.
Antidote: Flush with water and get prompt medical attention.*





BATTERY/CHARGING SYSTEM

CHARGING

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

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

Charging current: 1.4 amperes max.

Charging: Charge the battery until specific gravity is 1.270–1.290 at 20°C (68°F).

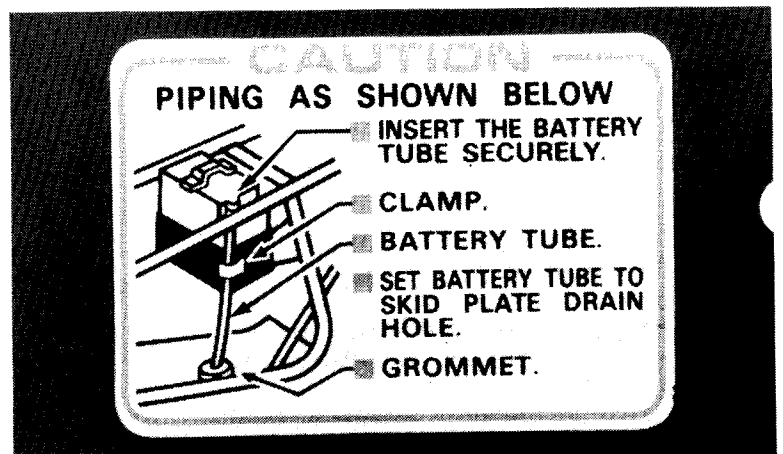
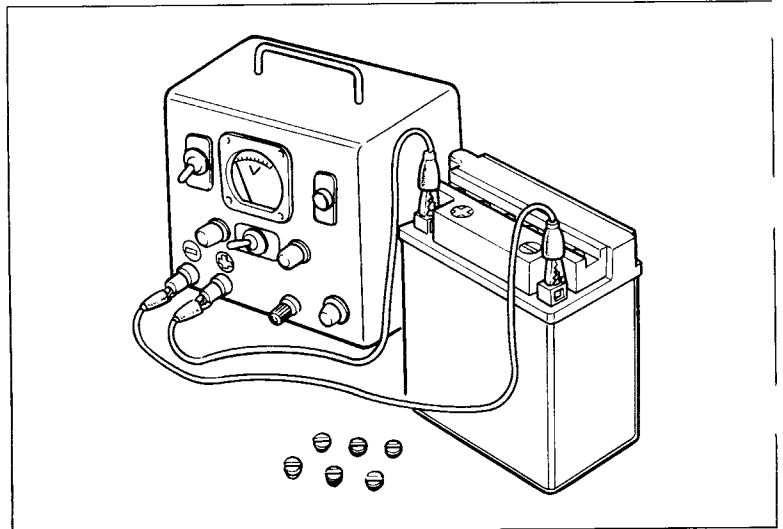
WARNING

- Before charging a battery, remove the cap from each cell.
- Keep flames and sparks away from a charging battery.
- Turn power ON/OFF at the charger, not at the battery terminals.
- Discontinue charging if the electrolyte temperature exceeds 45°C (113°F).

CAUTION

- Quick-charging should only be done in an emergency; slow-charging is preferred.
- Route the breather tube as shown on the battery caution label.

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



CHARGING SYSTEM

CHARGING OUTPUT TEST

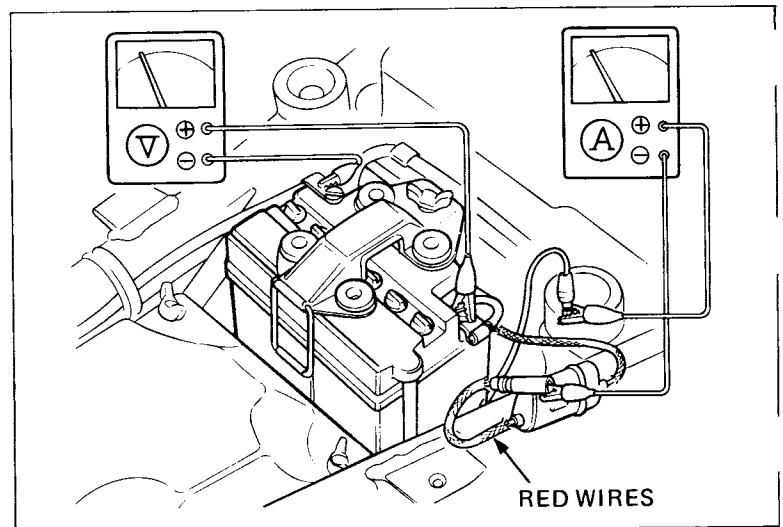
NOTE:

Be sure the battery is in good condition before performing this test.

Warm up the engine before testing.
Remove the seat.
Disconnect the red wire at the fuse connector.
Connect an ammeter between the red wires.
Connect a voltmeter between the battery positive and negative terminals.
Start the engine.

TECHNICAL DATA:

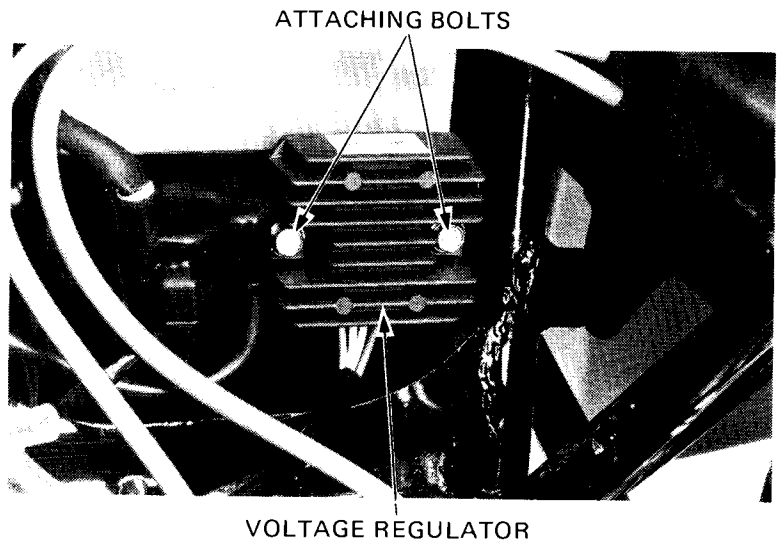
IGNITION SWITCH	LIGHTING SWITCH	5,000 rpm
ON	ON	4.5 A (14 V)





VOLTAGE REGULATOR REPLACEMENT

Remove the rear fenders and tool box (Page 4-1).
Disconnect the voltage regulator wire coupler.
Remove the two bolts attaching the voltage regulator and replace it with a new one.

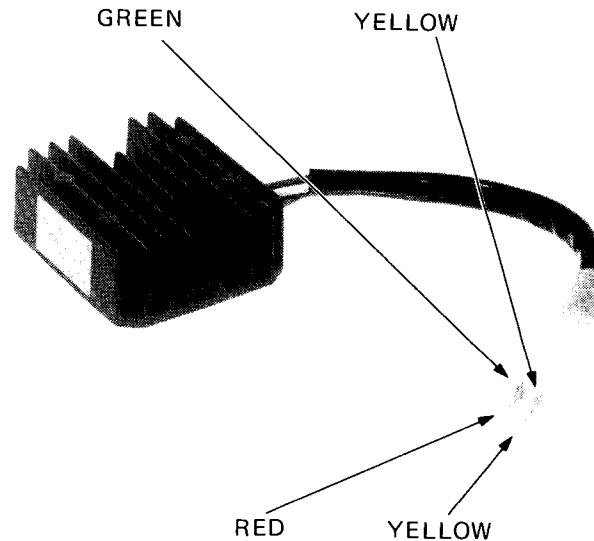


VOLTAGE REGULATOR INSPECTION

Check the resistance between the leads with an ohmmeter.

Range: Sanwa: $k\Omega$
Kowa: 100Ω

+Probe -Probe	Red	Yellow	Yellow	Green
Red	—	∞	∞	∞
Yellow	0.1–10	—	1–50	0.5–50
Yellow	0.1–10	1–50	—	0.5–50
Green	0.2–30	0.1–10	0.1–10	—



ALTERNATOR CHARGING COIL

Disconnect the alternator wire coupler.
Check the resistance between the coupler terminals.

RESISTANCE: 0.1–1 ohms

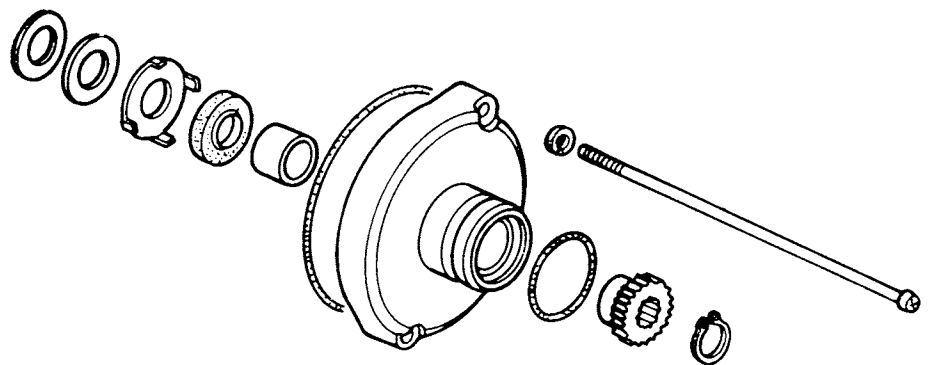
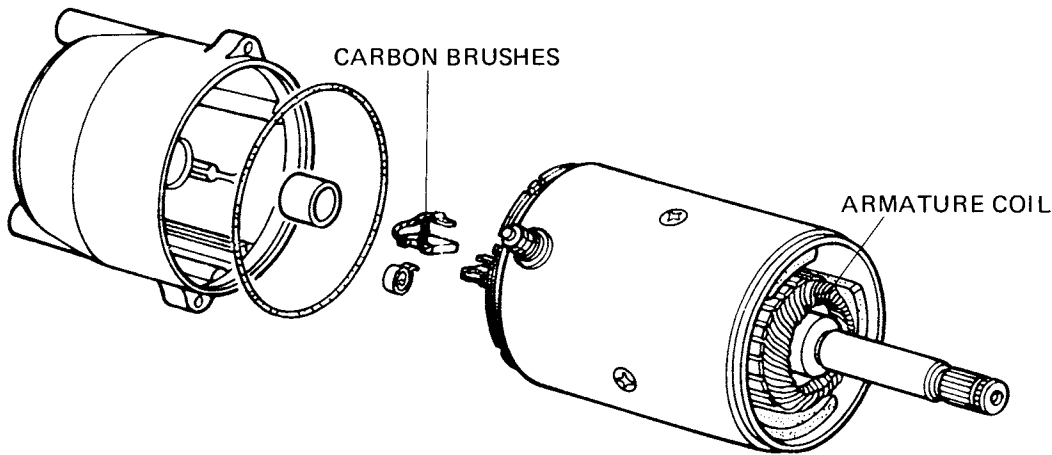
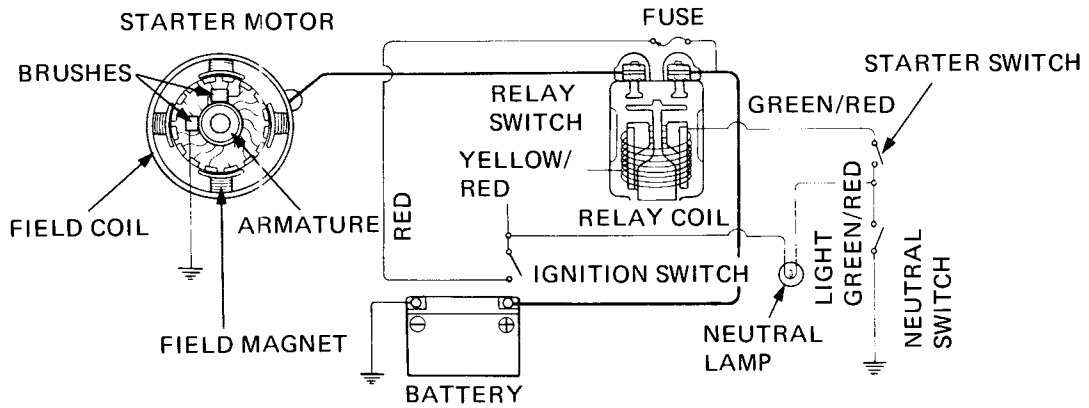
Check for continuity between the coupler terminal and ground.

Replace the alternator stator if readings are not within the limit or if any lead has continuity to ground. See Stator Removal (Page 9-7).





STARTER SYSTEM





17. STARTER SYSTEM

SERVICE INFORMATION	17-1
TROUBLESHOOTING	17-1
STARTER MOTOR	17-2
STARTER RELAY SWITCH	17-4

SERVICE INFORMATION

GENERAL

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

SPECIFICATIONS

		STANDARD	SERVICE LIMIT
Starter motor	Brush spring tension	0.560–0.680 kg (1.23–1.50 lb)	400 g (14.1 oz)
	Brush length	12–13 mm (0.47–0.51 in)	5.5 mm (0.22 in)

TROUBLESHOOTING

Starter motor will not turn

1. Dead battery
2. Faulty ignition switch
3. Faulty starter switch
4. Faulty neutral switch
5. Faulty starter relay switch
6. Loose or disconnected wire or cable

Starter motor turns engine slowly

1. Low battery
2. Excessive resistance in circuit
3. Binding in starter motor

Starter motor turns, but engine does not turn

1. Faulty starter clutch
2. Faulty starter motor gears
3. Faulty starter motor or idle gear

Starter motor and engine turn, but engine does not start

1. Faulty ignition system
2. Engine problems
3. Faulty engine stop switch



STARTER SYSTEM

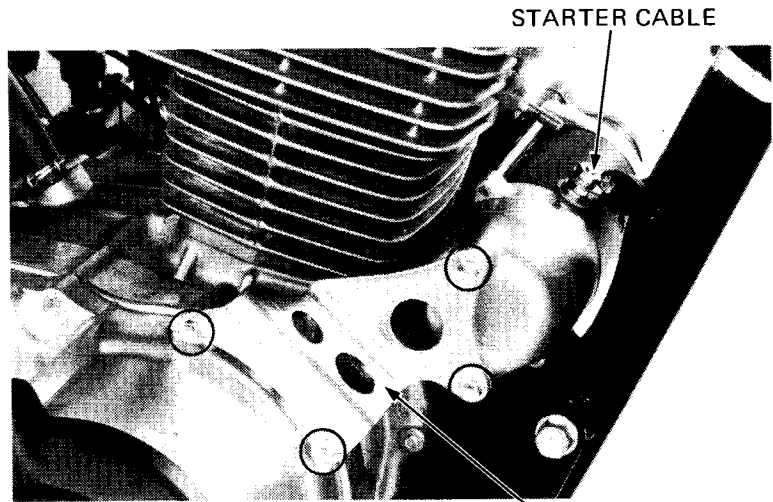
STARTER MOTOR

REMOVAL

CAUTION

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

Remove the exhaust pipe (Page 14-3).
Disconnect the starter cable.
Remove the starter motor mounting bolts and bracket and pull the motor out of the engine case.



BRACKET

BRUSH INSPECTION

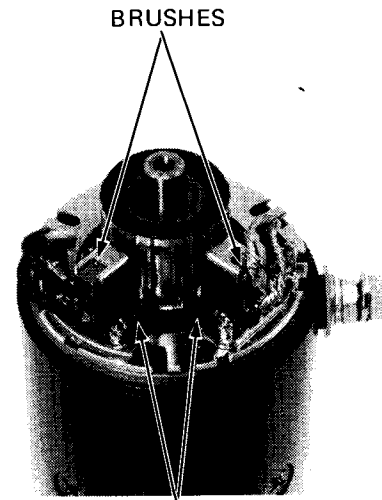
Remove the starter motor case screws and rear cover.

Inspect the brushes and measure the brush length.

SERVICE LIMIT: 5.5 mm (0.22 in)

Measure brush spring tension with a spring scale.

SERVICE LIMITS: 400g (14.1 oz)



BRUSH SPRINGS

COMMUTATOR INSPECTION

Remove the starter motor case.

NOTE:

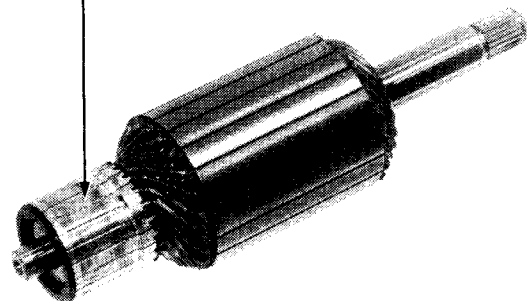
Record the location and number of thrust washers.

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.

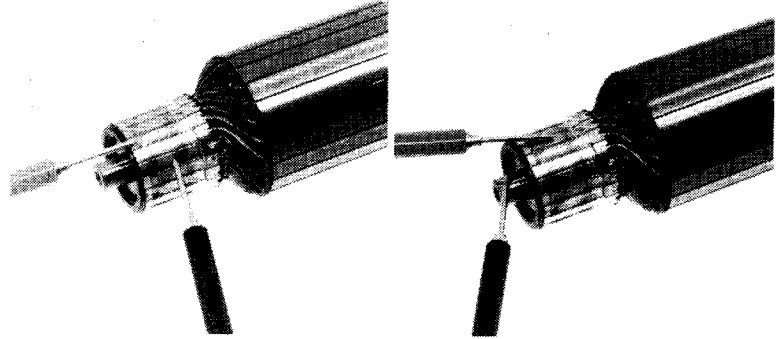
COMMUTATOR





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

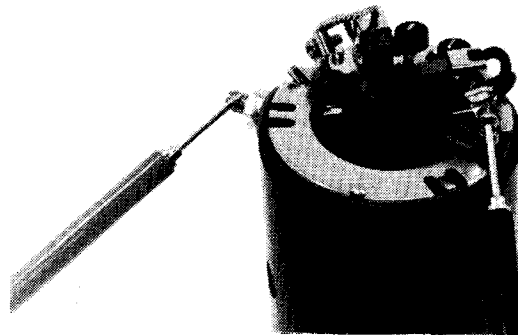


NO CONTINUITY BETWEEN
COMMUTATOR BARS AND ARMATURE SHAFT: NORMAL

FIELD COIL INSPECTION

Check for continuity from the cable terminal to the motor case and from the cable terminal to the brush wire. Replace the starter motor if the field coil does not have continuity or if it is shorted to the motor case.

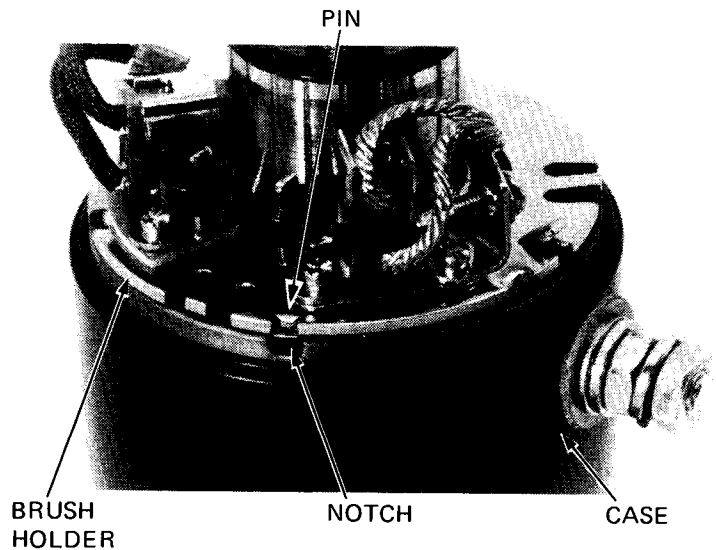
NO CONTINUITY BETWEEN
CABLE TERMINAL AND MOTOR CASE: NORMAL



CONTINUITY BETWEEN
CABLE TERMINAL AND BRUSH WIRE (INSULATED) NORMAL

ASSEMBLY/INSTALLATION

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

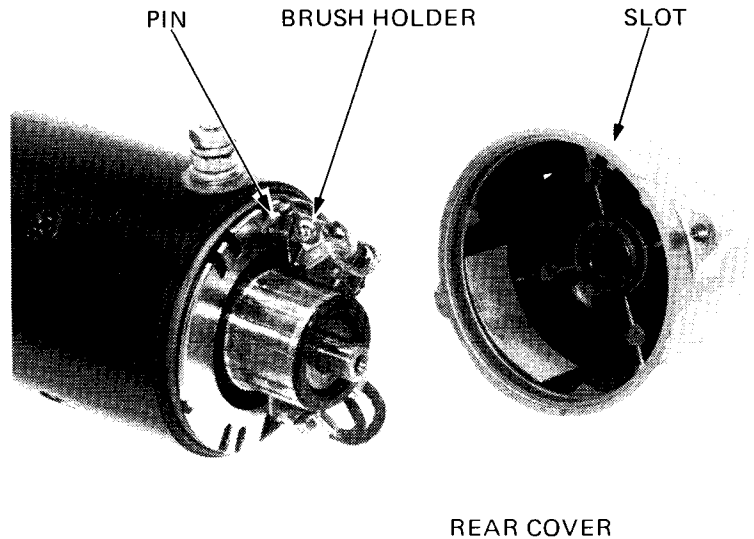




STARTER SYSTEM

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

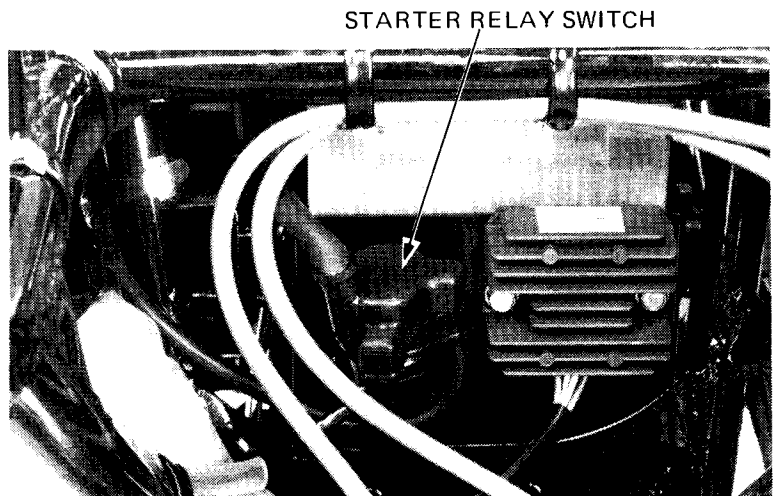
Install the starter motor in the reverse order of removal.



STARTER RELAY SWITCH

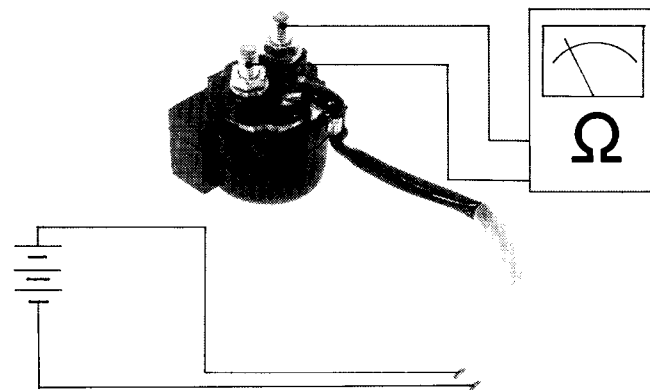
INSPECTION

Remove the rear fenders and tool box (Page 14-1). Depress the starter switch button with the ignition ON. The coil is normal if the starter relay switch clicks.



Connect an ohmmeter to the starter relay switch terminals.

Connect a 12 V battery to the switch cable terminals. The switch is normal if there is continuity.



12 V BATTERY



SERVICE INFORMATION	18-1
TROUBLESHOOTING	18-1
HEADLIGHT	18-2
TAILLIGHT	18-2
LIGHT/DIMMER SWITCH	18-3
ENGINE STOP SWITCH	18-3
IGNITION SWITCH	18-4
STARTER SWITCH	18-4
WIRING DIAGRAM	18-5

SERVICE INFORMATION

GENERAL

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

SPECIFICATIONS

Headlight	12V 45/45W
Tail light	12V 5W

TROUBLESHOOTING

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

1. Bulb burned out
2. Faulty switch
3. Wiring to that component has open circuit

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

1. Faulty dimmer switch
2. Bulb burned out
3. Wiring to that component has open circuit



LIGHTS/SWITCHES

HEADLIGHT

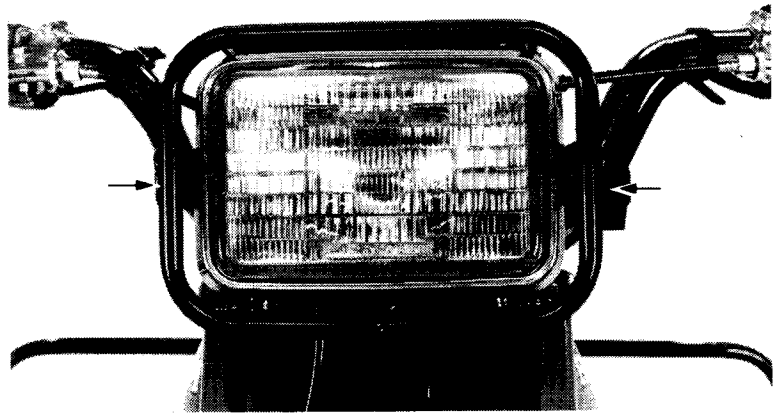
HEADLIGHT DISASSEMBLY

Remove the headlight mounting screws and disconnect the wires.

Remove and disassemble the headlight.

HEADLIGHT ASSEMBLY

Assemble the headlight in the reverse order of disassembly.



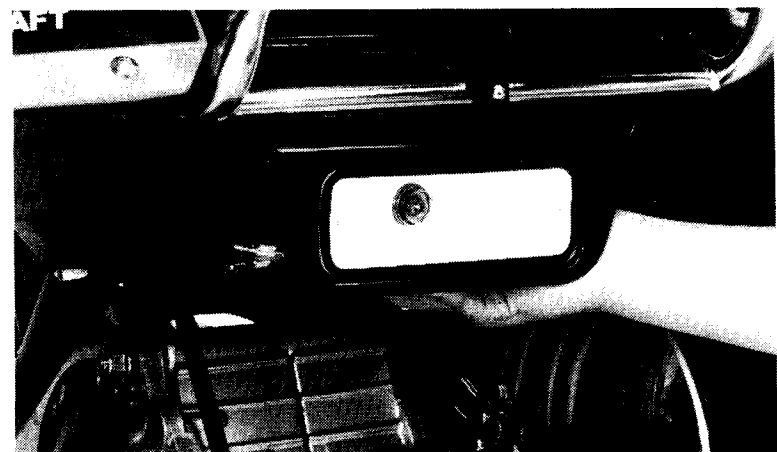
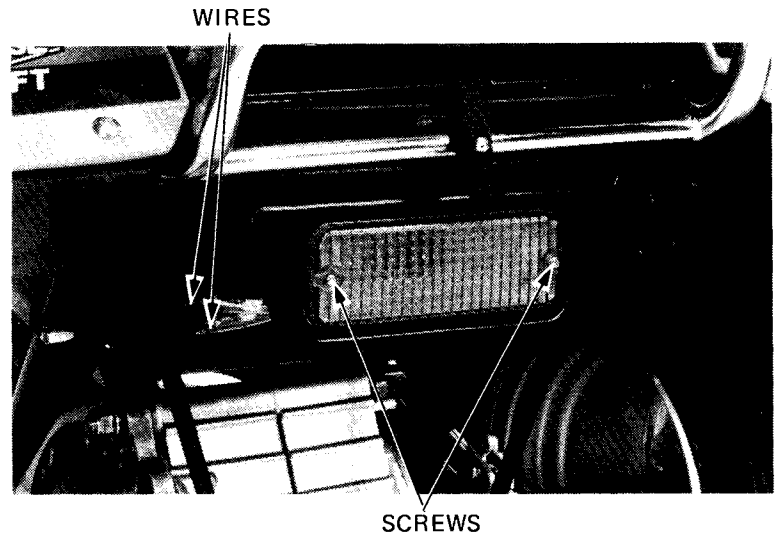
TAILLIGHT

TAILLIGHT DISASSEMBLY

Remove the lens screws.
Disconnect the taillight wires.
Remove the taillight bulb.

TAILLIGHT ASSEMBLY

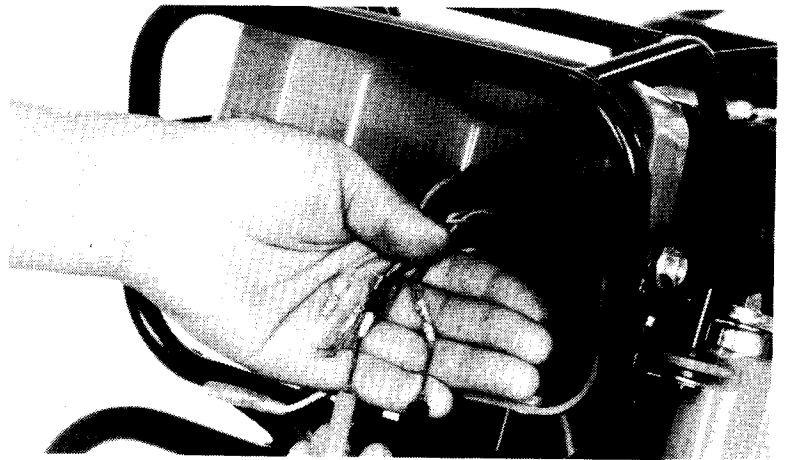
Assemble the taillight in the reverse order of disassembly.





LIGHT/DIMMER SWITCH

Remove the headlight (Page 18-2).
Check the switch for continuity between the terminals shown in the table for each switch position.



LIGHT SWITCH	BROWN	YELLOW	WHITE	BLUE
OFF				
LOW	○	○	○	
(N)	○	○	○	○
HIGH	○	○		○

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

ENGINE STOP SWITCH

Remove the headlight (Page 18-2).
Check the switch for continuity between the Black and Green terminals with the switch "OFF".
The switch is normal if there is continuity between the terminals.

	BLACK	GREEN
OFF	○	○
RUN		

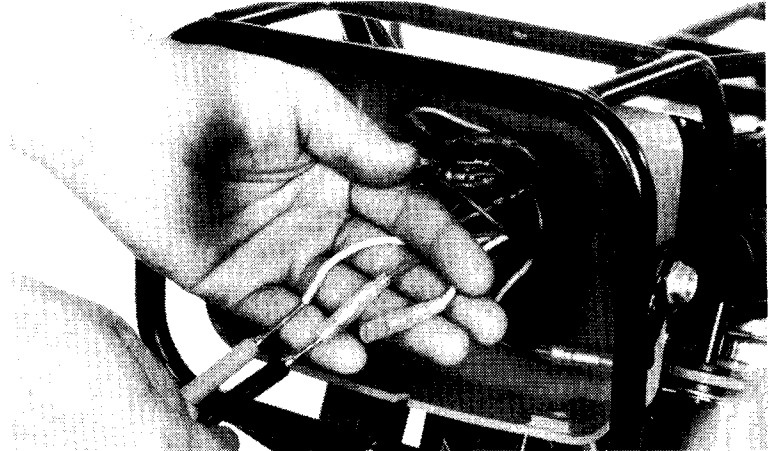




LIGHTS/SWITCHES

IGNITION SWITCH

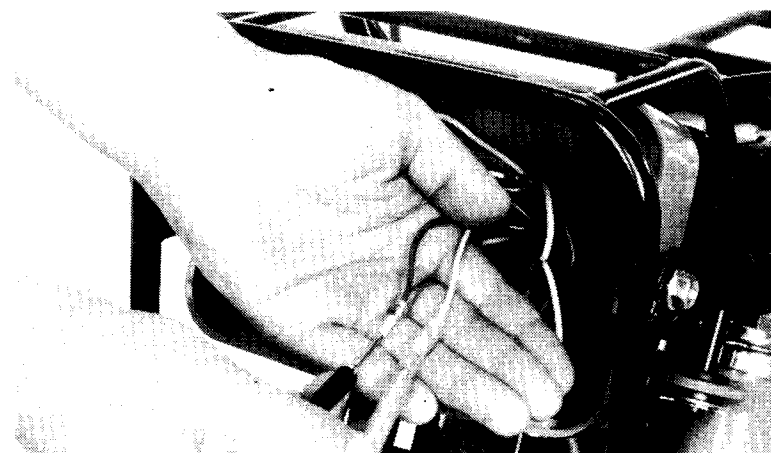
Remove the headlight (Page 18-2).
Check the switch for continuity between the Black and green wires with the switch "OFF", or red and yellow/red with the switch "ON".



	IG	E	BAT	HO
OFF	○	○		
ON			○	○
COLOR	BI	G	R	Y/R

STARTER SWITCH

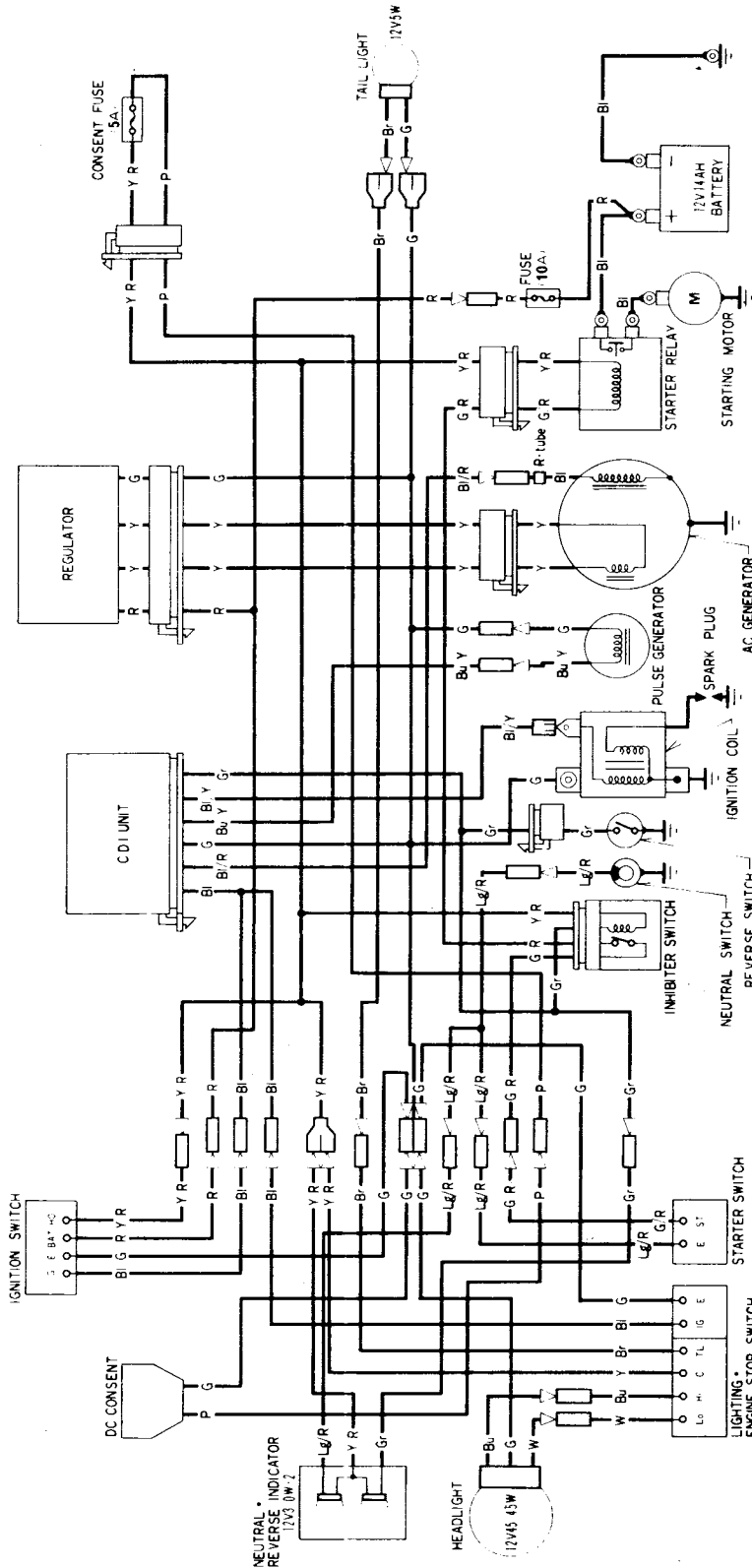
Remove the headlight (Page 18-2).
Check the switch for continuity between the green/red and light green/red wires while pushing the starter button.



	ST	E
RELEASED		
PUSHED	○	○
COLOR	G/R	Lg/R



WIRING DIAGRAM



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

SWITCH CONTINUITY

IGNITION SWITCH	ENGINE STOP SWITCH	LIGHTING SWITCH	STARTER SWITCH
IG	IG	TL	ST
E	E	C	E
BAT	BAT	L0	FREE
HO	HO	N	PUSH
OFF	OFF	HI	COLOR
ON	ON	COLOR	G/R
COLOR	COLOR	Br	Lg/R
BI	BI	Y	
G	G	W	
R	R	Bu	
Y	Y		

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ATC200ES

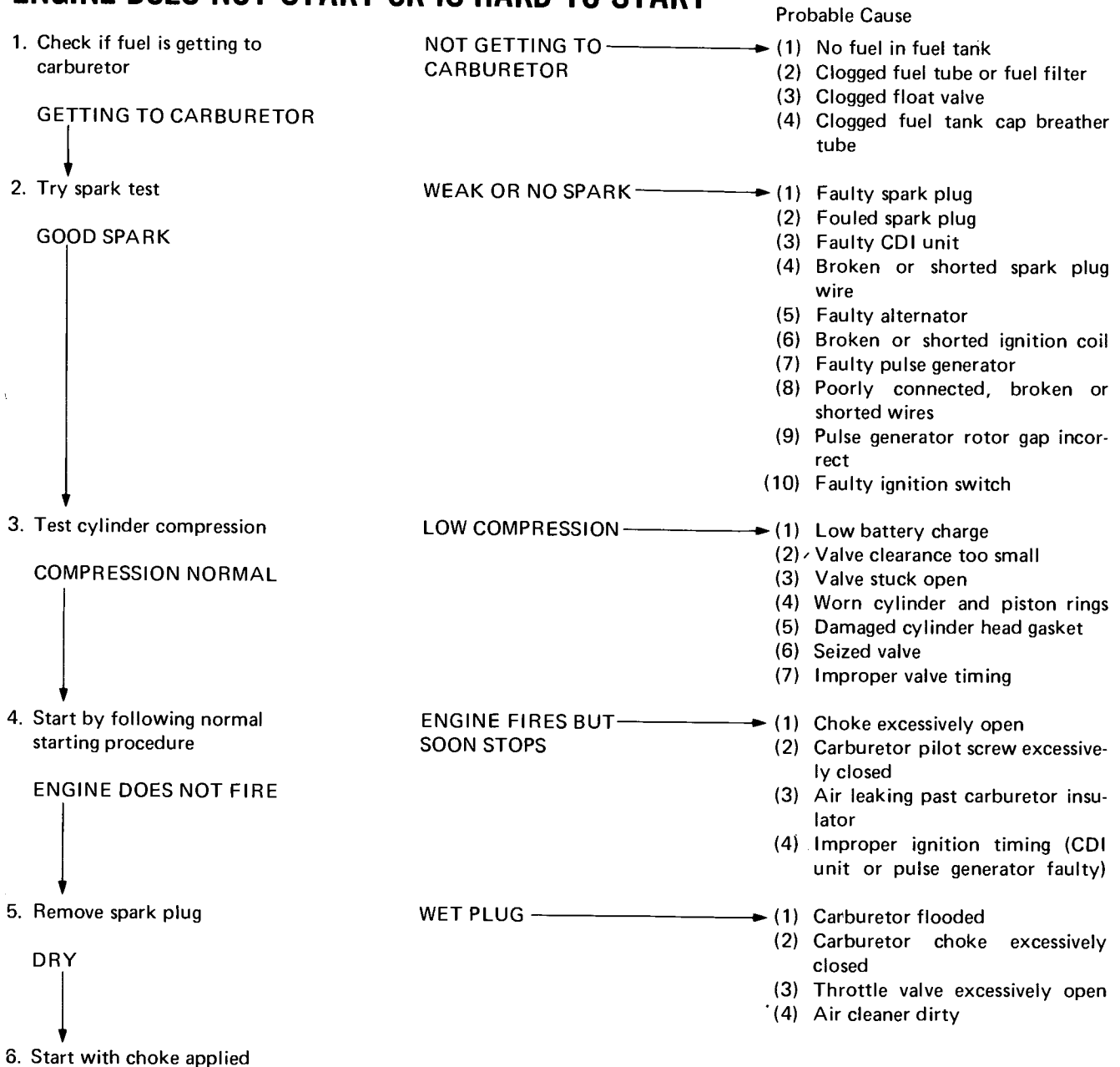
MEMO



19. TROUBLESHOOTING

ENGINE DOES NOT START OR IS HARD TO START	19-1
ENGINE LACKS POWER	19-2
POOR PERFORMANCE AT LOW AND IDLE SPEEDS	19-3
POOR PERFORMANCE AT HIGH SPEEDS	19-4
POOR HANDLING	19-4

ENGINE DOES NOT START OR IS HARD TO START





TROUBLESHOOTING

ENGINE LACKS POWER





10. Remove oil level gauge and check oil level

CORRECT



11. Remove cylinder head cover and inspect lubrication

VALVE TRAIN LUBRICATED PROPERLY



12. Check if engine overheats

NOT OVERHEATED



13. Accelerate or run at high speed

ENGINE DOES NOT KNOCK

OIL LEVEL INCORRECT

- (1) Oil level too high
- (2) Oil level too low
- (3) Contaminated oil

VALVE TRAIN NOT LUBRICATED PROPERLY

- (1) Clogged oil passage
- (2) Clogged oil control orifice

OVERHEATED

- (1) Excessive carbon build-up in combustion chamber
- (2) Use of improper quality of fuel
- (3) Clutch slipping
- (4) Fuel-air mixture too lean

ENGINE KNOCKS

- (1) Worn piston and cylinder
- (2) Fuel-air mixture too lean
- (3) Use of improper grade of fuel
- (4) Excessive carbon build-up in combustion chamber
- (5) Ignition timing too advanced (Faulty CDI unit or advancer)

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

1. Check ignition timing and valve clearance

CORRECT



2. Check carburetor pilot screw adjustment

CORRECT



3. Check if air is leaking past carburetor insulator

NOT LEAKING



4. Try spark test

GOOD SPARK

INCORRECT

Probable Cause

- (1) Improper valve clearance
- (2) Improper ignition timing (Faulty CDI unit or spark advancer)

INCORRECT

- (1) Fuel-air mixture too lean
- (2) Fuel-air mixture too rich

LEAKING

- (1) Deteriorated insulator O-ring
- (2) Loose carburetor

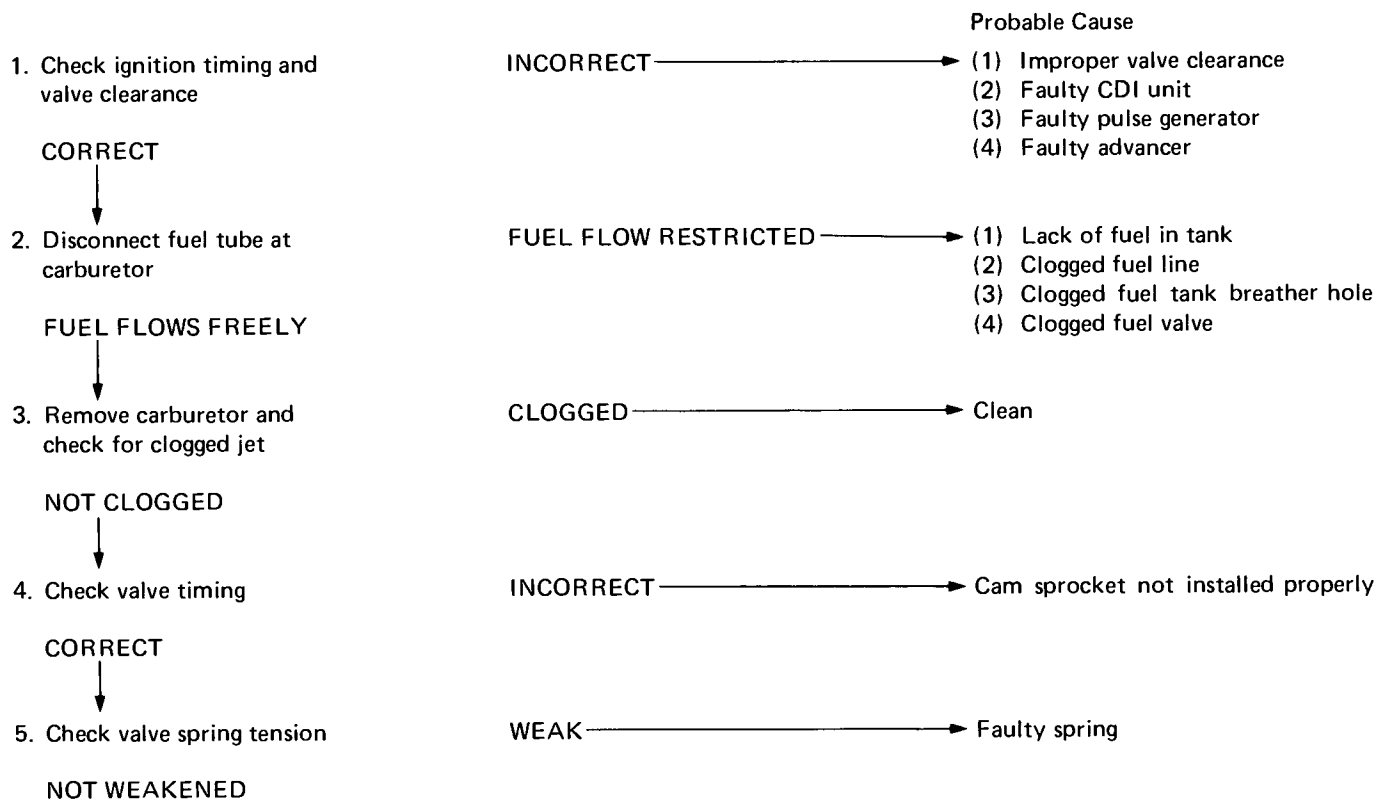
WEAK OR INTERMITTENT SPARK

- (1) Faulty, carbon or wet fouled spark plug
- (2) Faulty CDI unit
- (3) Alternator faulty
- (4) Faulty ignition coil
- (5) Faulty pulse advancer



TROUBLESHOOTING

POOR PERFORMANCE AT HIGH SPEEDS



POOR HANDLING ————— Check tire pressure

