

HONDA

SERVICE MANUAL



86-87

TRX70

FOURTRAX

HOW TO USE THIS MANUAL

Sections 1 through 3 apply to the whole Fourtrax, while sections 4 through 15 describe parts of the Fourtrax, grouped according to location.

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

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

If you don't know what the source of a problem is, refer to section 16, Troubleshooting.

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1. GENERAL INFORMATION

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1

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.

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 Fourtrax.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing this Fourtrax. 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 bolts first. Then tighten to the specified torque diagonally in 2 or 3 steps, unless a particular sequence is specified.
6. Clean parts in non-flammable or high flash point solvent upon disassembly.
7. Lubricate any sliding surfaces before reassembly.
8. After reassembly, check all parts for proper installation and operation.

GENERAL INFORMATION

MODEL IDENTIFICATION

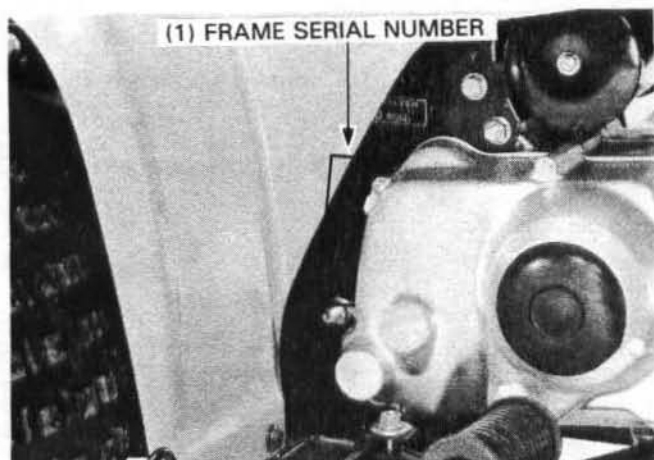
'86:



After '86:

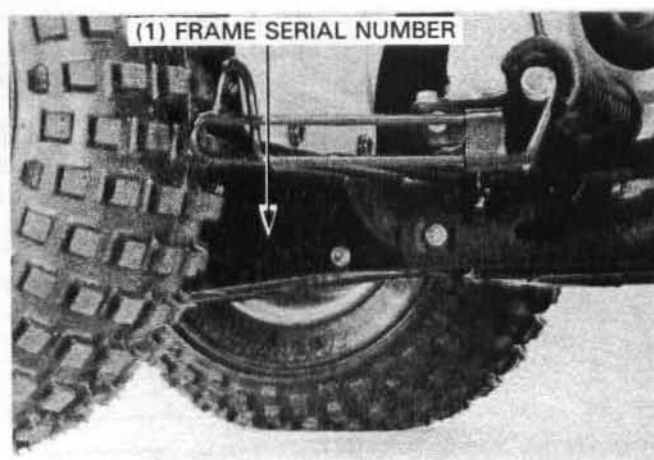


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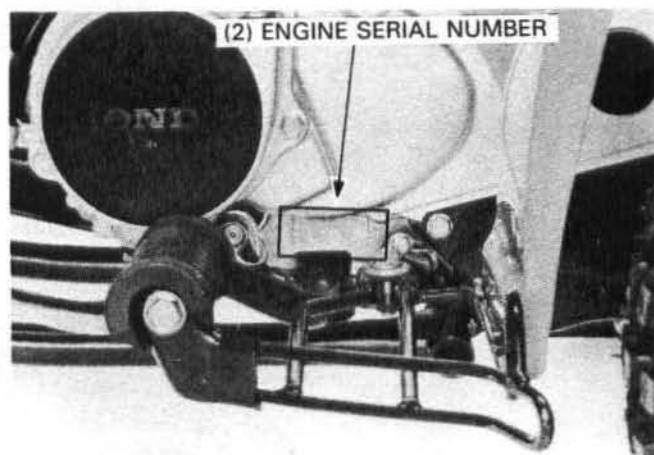


The frame serial number is stamped on the right side of the frame.

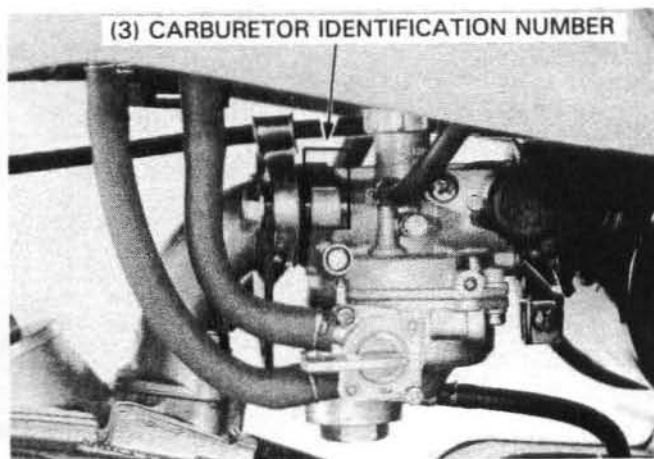
After '86:



The frame serial number is stamped on the right side of the lower main frame.



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



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

SPECIFICATIONS

Item		Specifications
DIMENSIONS	Overall length	1,305 mm (51.4 in)
	Overall width	795 mm (31.3 in)
	Overall height	795 mm (31.3 in)
	Wheelbase	895 mm (33.2 in)
	Tread	615 mm (24.2 in)
	Front	610 mm (24.1 in)
	Rear	570 mm (22.4 in)
	Seat height	210 mm (8.3 in)
	Foot peg height	85 mm (3.3 in)
	Ground clearance	85 mm (3.3 in)
FRAME	Dry weight	'86: 85 kg (187 lb) After '86: 86.5 kg (190 lb)
	Type	Backbone (Pressed)
	Rim size	5 spw x 7DT
	Front	5 spw x 7DT
	Rear	5 spw x 7DT
	Front tire size/pressure	16 x 8.00-7/2.2 psi (0.15 kg/cm ² , 15 kPa)
	Rear tire size/pressure	16 x 8.00-7/2.2 psi (0.15 kg/cm ² , 15 kPa)
	Front brake	Mechanical leading-trailing, drum
	Rear brake	Mechanical leading-trailing, drum
	Fuel capacity	3.8 lit (1.00 US gal, 0.84 Imp gal)
ENGINE	Fuel reserve capacity	0.9 lit (0.24 US gal, 0.20 Imp gal)
	Caster angle	5°
	Trail length	22.6 mm (0.89 in)
	Camber angle	0°
	Toe-in	5 ± 10 mm (0.2 ± 0.4 in)
	Type	Gasoline, air-cooled 4-stroke
	Cylinder arrangement	Single cylinder, 75° inclined from vertical
	Bore x stroke	47.0 x 41.4 mm (1.85 x 1.63 in)
	Displacement	72 cc (4.4 cu in)
	Compression ratio	7.5 : 1
CARBURETOR	Valve train	Overhead camshaft chain driven
	Maximum horse power	3.75 BHP/7,000 rpm
	Maximum torque	0.47 kg-m/3,000 rpm (3.4 ft-lb/3,000 rpm)
	Oil capacity	0.7 lit (0.74 US qt, 0.62 Imp. qt) at draining
	Cylinder compression	1,200 ± 150 kPa (12.0 ± 1.5 kg/cm ² , 170 ± 21 psi)
	Lubrication system	Forced pressure and wet sump
	Intake valve	OPENS 0° BTDC 20° ABDC 25° BBDC 5° BTDC
	Exhaust valve	OPENS CLOSSES at 1 mm lift
	Valve clearance	Intake 0.05 mm (0.002 in)
	(Cold) Exhaust	0.05 mm (0.002 in)
CARBURETOR	Idle speed	1,700 ± 100 rpm
	Identification mark/Type	PB86A/Piston valve
	Venturi diameter	13 mm (0.51 in)
	Main jet No.	#62
	Slow jet No.	#38
	Pilot screw opening	1—3/8 turns out
CARBURETOR	Jet needle setting	1—1/8 turns out
	Float level	3rd groove
		10.7 mm (0.42 in)

GENERAL INFORMATION

mm (in)

	Item	Specifications
DRIVE TRAIN	Clutch	Centrifugal wet multi-plate
	Transmission	4-speed constant-mesh, semi-automatic
	Primary reduction	4.059 : 1
	Gear ratio I	3.273 : 1
	Gear ratio II	1.938 : 1
	Gear ratio III	1.350 : 1
	Gear ratio IV	1.043 : 1
	Final reduction	2.769, drive sprocket 13T, driven sprocket 36T
ELECTRICAL	Gear shift pattern	Left foot operated return system, N-1-2-3-4
	Ignition system	CDI
	Starting system	Recoil starter
	Spark plug	NGK
	Standard	CR7HS
	For cold climate (below 5°C, 41°F)	CR6HS
	For extended high speed use	CR8HS
	Spark plug gap	0.6–0.7 mm (0.024–0.028 in)
	Ignition timing	25° ± 2° BTDC

TORQUE VALUES

ENGINE

Item	Q'ty	Thread-dia. (mm)	TORQUE: N·m (kg·m, ft·lb)
Cam chain tensioner sealing bolt	1	14	20-25 (2.0-2.5, 15-18)
Intake pipe mounting bolt	2	6	5-9 (0.5-0.9, 4-7)
Cylinder head bolt	1	6	10-14 (1.0-1.4, 7-10)
Cylinder mounting bolt	1	6	10-14 (1.0-1.4, 7-10)
Starter driven pulley bolt	4	6	8-12 (0.8-1.2, 6-9)
Valve adjusting screw lock nut	2	5	7-10 (0.7-1.0, 5-7)
Spark plug	1	—	12-19 (1.2-1.9, 9-14)
Valve inspection hole cap	2	—	10-14 (1.0-1.4, 7-10)
Cylinder head cover nut	4	6	9-12 (0.9-1.2, 7-9)
Cam sprocket bolt	3	5	5-9 (0.5-0.9, 4-7)
Cam chain guide roller bolt	1	6	7-13 (0.7-1.3, 5-9)
Clutch lock nut	1	14	38-45 (3.8-4.5, 27-33)
Flywheel nut	1	10	30-38 (3.0-3.8, 22-27)
Shift drum bolt	1	6	9-15 (0.9-1.5, 7-11)
Clutch adjusting screw lock nut	1	8	8-12 (0.8-1.2, 6-9)
Friction plate bolt	1	6	8-12 (0.8-1.2, 6-9)
Fuel strainer cup	1	—	3-5 (0.3-0.5, 2-4)
Oil drain plug	1	12	20-25 (2.0-2.5, 15-18)

FRAME

Item	Q'ty	Thread-dia. (mm)	TORQUE: N·m (kg·m, ft·lb)
Handlebar upper holder bolt	4	8	24-30 (2.4-3.0, 17-22)
Steering shaft nut	1	14	50-60 (5.0-6.0, 36-43)
Steering shaft bushing holder nut	2	8	24-30 (2.4-3.0, 17-22)
Wheel rim bolt	14	8	18-25 (1.8-2.5, 13-18)
Tie rod lock nut	4	10	35-43 (3.5-4.3, 25-31)
King pin nut	2	10	30-40 (3.0-4.0, 22-29)
Ball joint castle nut	4	10	35-43 (3.5-4.3, 25-31)
Handlebar lower holder nut	2	10	40-48 (4.0-4.8, 29-35)
Front wheel bolt	8	8	24-30 (2.4-3.0, 17-22)
Front axle nut	2	12	55-65 (5.5-6.5, 40-47)
Drive chain tensioner nut	2	10	40-50 (4.0-5.0, 29-36)
Front brake arm nut	2	5	4-7 (0.4-0.7, 3-5)
Rear brake arm nut	1	6	7-12 (0.7-1.2, 5-9)
Rear axle nut	2	14	60-80 (6.0-8.0, 43-58)
Rear wheel bolt	6	8	24-30 (2.4-3.0, 17-22)
Rear brake panel bolt	4	8	24-30 (2.4-3.0, 17-22)
Gearshift pedal bolt	1	6	12-14 (1.2-1.4, 9-10)
Brake pedal bolt	1	8	24-30 (2.4-3.0, 17-22)
Exhaust muffler mounting bolt	3	8	30-35 (3.0-3.5, 22-25)
Rear fender mounting bolt	2	6	10-14 (1.0-1.4, 7-10)
Rear fender/foot peg guard bolt	4	6	10-14 (1.0-1.4, 7-10)
Foot peg guard bolt A	2	8	24-30 (2.4-3.0, 17-22)
Foot peg guard bolt B	2	10	30-40 (3.0-4.0, 22-29)
Foot peg mounting bolt	4	8	18-25 (1.8-2.5, 13-18)
Engine hanger bolt	2	8	24-30 (2.4-3.0, 17-22)

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

STANDARD TORQUE VALUES

Item	TORQUE N·m (kg·m, ft·lb)	Item	TORQUE N·m (kg·m, ft·lb)
5 mm bolt, nut	4.5-6 (0.45-0.6, 3-4)	5 mm screw	3.5-5 (0.35-5, 2-4)
6 mm bolt, nut	8-12 (0.8-1.2, 6-9)	6 mm screw and 6 mm bolt with 8 mm head	7-11 (0.7-1.1, 5-8)
8 mm bolt, nut	18-25 (1.8-2.5, 13-18)	6 mm flange bolt, nut	10-14 (1.0-1.4, 7-10)
10 mm bolt, nut	30-40 (3.0-4.0, 22-29)	8 mm flange bolt, nut	24-30 (2.4-3.0, 17-22)
12 mm bolt, nut	50-60 (5.0-6.0, 36-43)	10 mm flange bolt, nut	35-45 (3.5-4.5, 25-33)

GENERAL INFORMATION

TOOLS

SPECIAL

TOOL NAME	TOOL NUMBER	ALTERNATIVE TOOL	REF. PAGE
Valve spring compressor attachment	07959-KM30100	<div> <div></div> Not available in U.S.A. or 089201-200-000 or 07984-0980000 (U.S.A. only) </div>	6-5, 11
Valve adjusting wrench set	07908-GE00000		3-7
- Valve adjusting screw	07908-GE00100		3-7
- Valve adjusting wrench	07908-GE00200		3-7
Valve guide reamer	07984-098000A		6-7, 8
Inspection adapter (C1)	07508-0012500	Not available in U.S.A.	14-2, 4
Spark adaptor	07GGK-0010100	Not available in U.S.A.	14-2

COMMON

TOOL NAME	TOOL NUMBER	ALTERNATIVE TOOL	REF. PAGE
Float level gauge	07401-0010000	07916-3710000 or equivalent available in U.S.A.	4-6
Lock nut wrench, 20 x 24 mm	07716-0020100	Equivalent available in U.S.A.	8-4, 12
Extension	07716-0020500		8-4, 12
Universal holder	07725-0030000	<div> 07933-0010000 07942-3290100 </div>	9-3, 5
Flywheel puller	07733-0010000		9-3
Valve guide driver, 5.5 mm	07742-0010100		6-7, 8
Attachment, 32 x 35 mm	07746-0010100		11-12, 19
Attachment, 37 x 40 mm	07746-0010200		10-5
Attachment, 52 x 55 mm	07746-0010400		12-7
Attachment, 24 x 26 mm	07746-0010700		11-20
Pilot, 15 mm	07746-0040300		11-12
Pilot, 17 mm	07746-0040400		11-19, 20
Pilot, 30 mm	07746-0040700		10-5
Bearing remover shaft	07746-0050100	<div> <div></div> Equivalents available in U.S.A. </div>	11-12, 20
Bearing remover head, 15 mm	07746-0050400		12-7
Bearing remover head, 17 mm	07746-0050500		11-12
Driver	07749-0010000		10-5
			11-12
Valve spring compressor	07757-0010000	07957-3290001	11-19, 20
Flywheel holder	07725-0040000	<div> U.S.A only or 07772-0050000 (Not available in U.S.A.) or 07772-0050100 or KS-AHM-32-003 (U.S.A. only) </div>	12-7
Universal bead breaker	GN-AH-958-BBI		6-5, 11
Tire bead breaker set	07772-0050001		8-4, 12
- Breaker arm	07772-0050200		11-7
- Breaker arm compressor	07772-0050101		11-8
Digital multimeter (KOWA) or	07411-0020000		14-3
Circuit tester (SANWA) or	07308-0020000		14-3
Circuit tester (KOWA)	TH-5H-1		14-3
Driver, 22 mm I.D.	07746-0020100		10-3
Attachment, 20 mm	07746-0020400		10-3

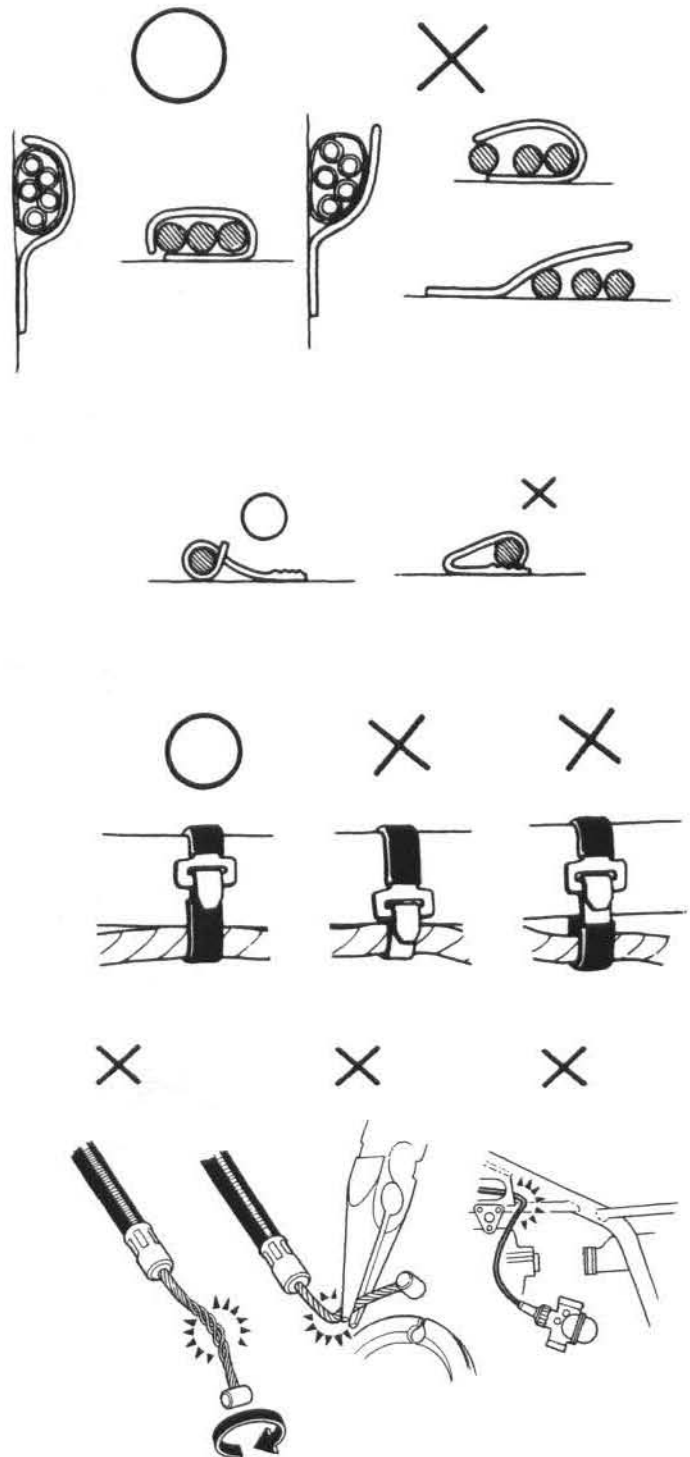
VALVE SEAT CUTTERS

TOOL NAME	TOOL NUMBER	ALTERNATIVE TOOL	REF. PAGE
Valve seat cutter 24 mm (45° IN)	07780-0010600	<div> Not available in U.S.A. Equivalent commercially available in U.S.A. </div>	6-9
Valve seat cutter 22 mm (45° EX)	07780-0010701		6-9
Valve flat cutter 25 mm (32° IN)	07780-0012000		6-9
Valve flat cutter 22 mm (32° EX)	07780-0012601		6-9
Valve interior cutter 26 mm (60° IN/EX)	07780-0014500		6-9
Valve seat cutter holder	07780-0010101		6-9

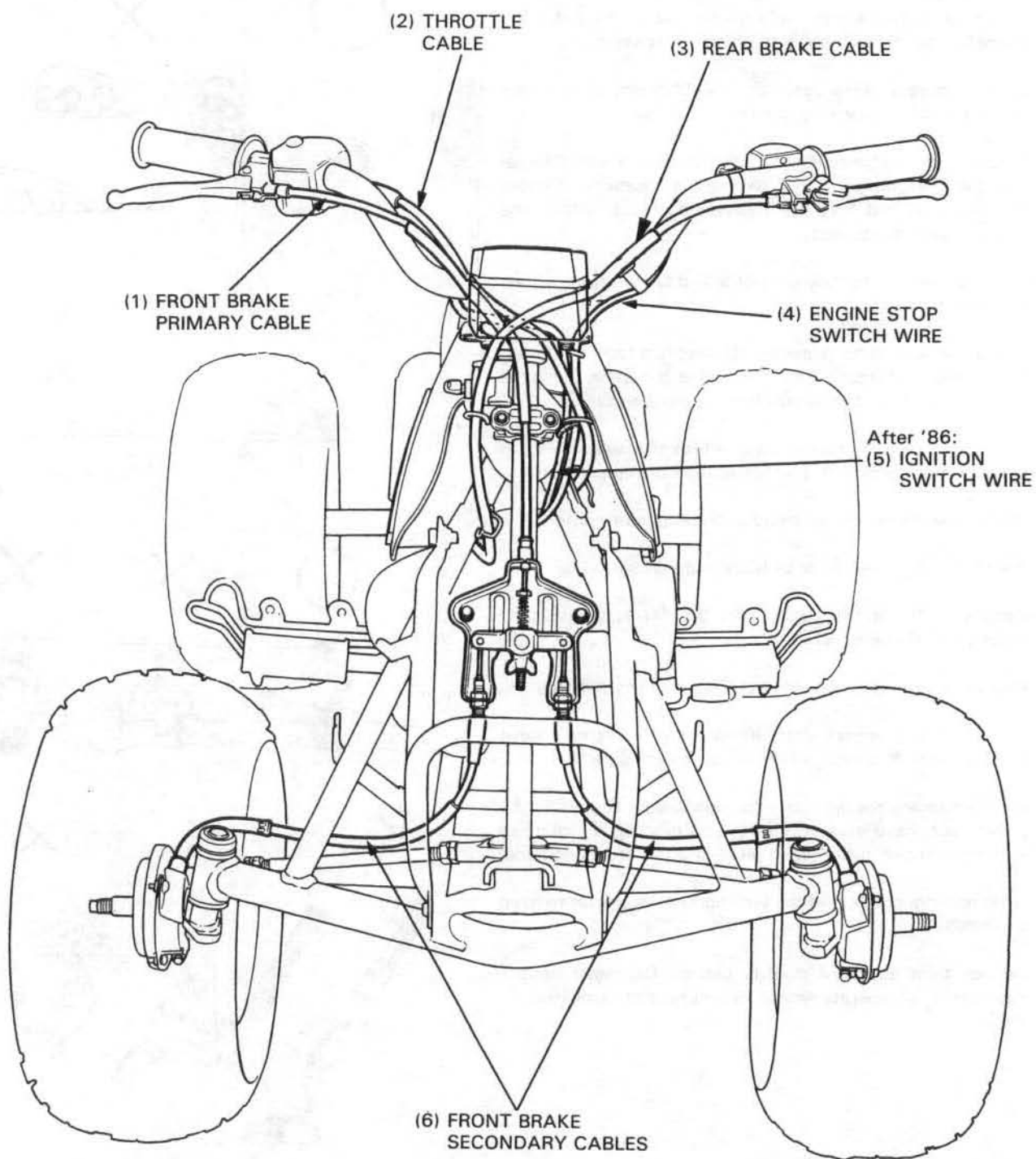
CABLE & HARNESS ROUTING

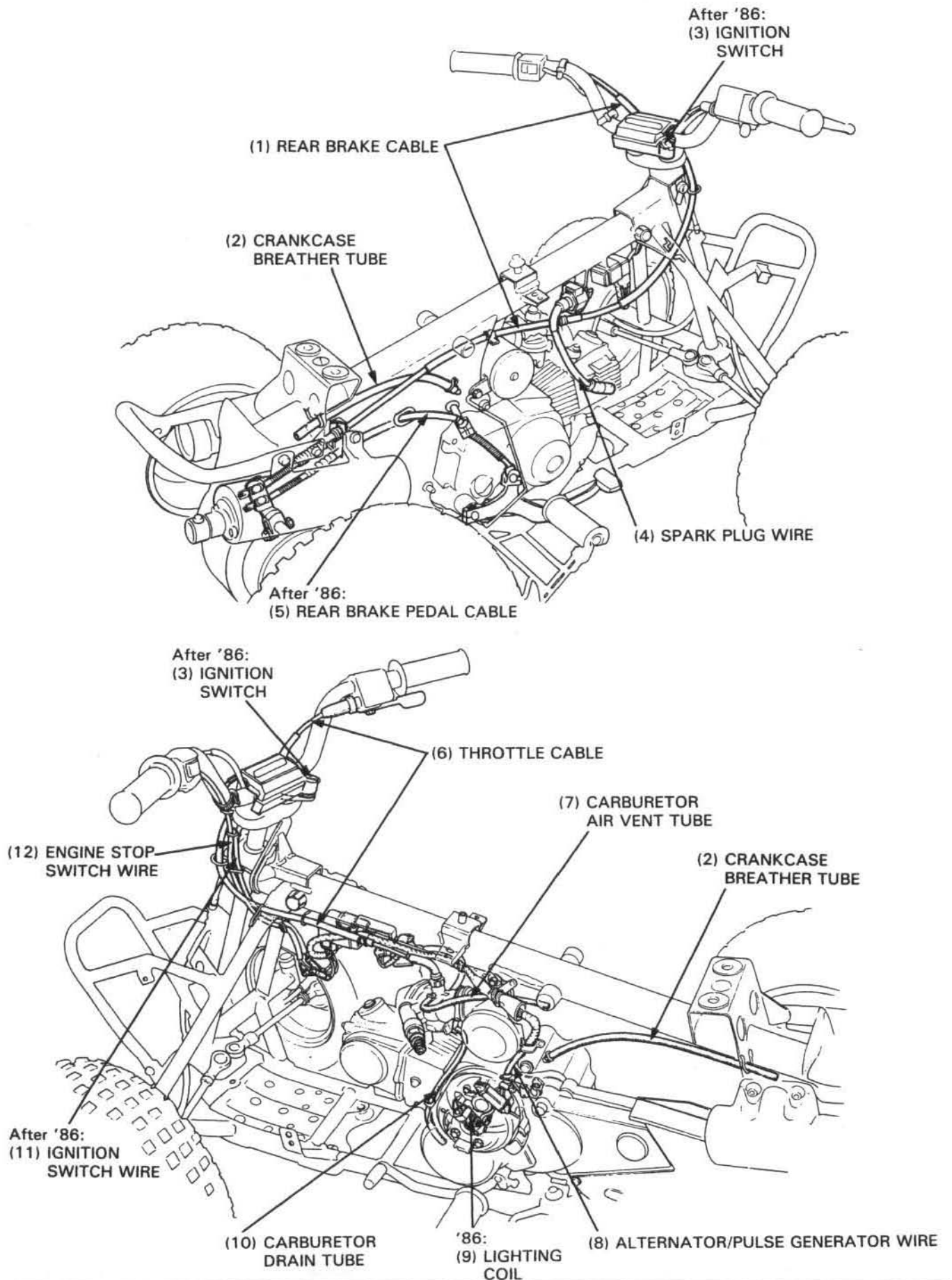
Note the following when routing cables and wire harnesses:

- 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 come in contact with 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.
- Avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipes 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 does not interfere with any moving or sliding parts.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.
- Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.



O: CORRECT
X: INCORRECT





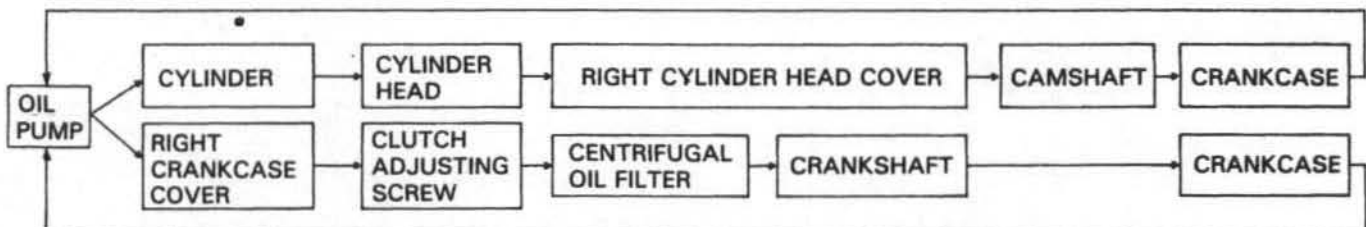
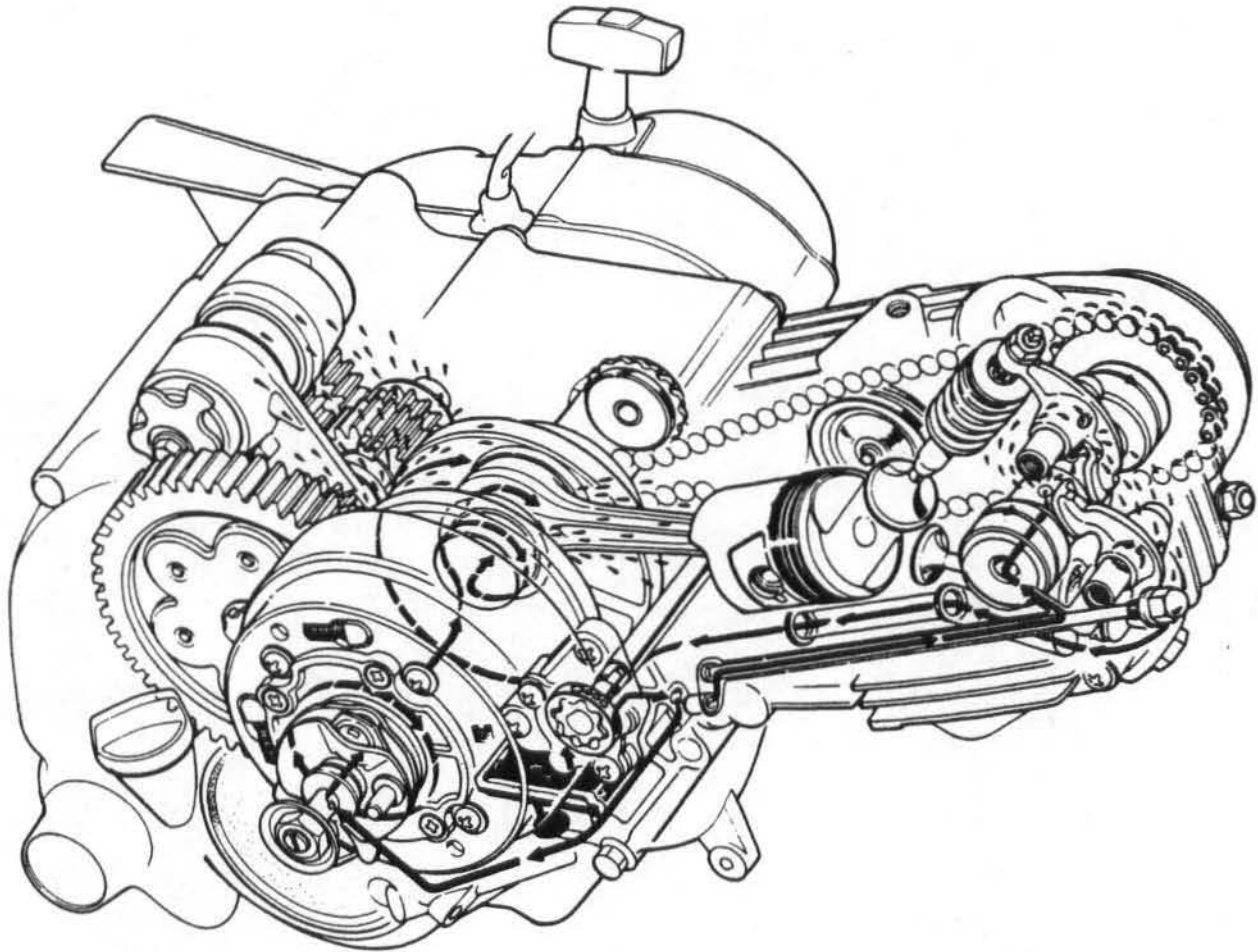
NOISE EMISSION CONTROL SYSTEM

- 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 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.

MEMO

LUBRICATION

ENGINE LUBRICATION SYSTEM



2. LUBRICATION

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SERVICE INFORMATION

GENERAL

- Oil filter rotor and screen maintenance can be made without removing the engine.
- Section 8 shows how to service the oil pump.

SPECIFICATIONS

	STANDARD	SERVICE LIMIT
Engine oil capacity	Approximately 0.7 lit (0.74 US qt, 0.62 Imp. qt) at draining 0.8 lit (0.85 US qt, 0.70 Imp. qt) at engine assembly	
Recommended oil	<p>Honda 4 stroke oil SAE 10W-40 or equivalent API service classification: SE or SF Other viscosities may be used when the average temperature in your riding area is within the indicated range.</p> <p>CAUTION</p> <ul style="list-style-type: none"> • Do not use oils with graphite or molybdenum additives; they will cause the centrifugal clutch to slip. <p>Recommended oil viscosities</p>	

TORQUE VALUE

Oil drain plug 20—25 N·m (2.0—2.5 kg-m, 15—18 ft-lb)

TROUBLESHOOTING

Oil level too low

- External oil leaks
- Worn valve guide or seal
- Worn piston rings

Oil contamination

- Oil not changed often enough
- Cylinder head gasket faulty
- Worn piston rings

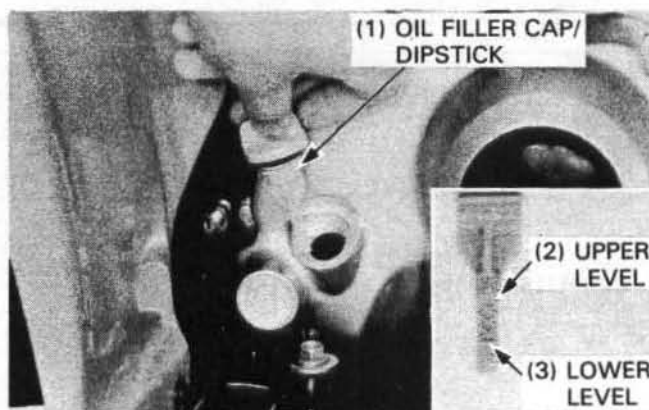
LUBRICATION

ENGINE OIL LEVEL

Place the Fourtrax on level ground.
Start the engine and let it idle for 2 or 3 minutes, then stop the engine.

Check the oil with the oil filler cap/dipstick.
Do not screw in the filler cap when making this check.

If the level is below the lower level mark on the dipstick, fill to the upper level mark with the recommended oil.



ENGINE OIL CHANGE

NOTE

- Drain the oil with the engine warm.

Remove the oil filler cap/dipstick and drain plug, and drain the oil.

With the engine stop switch "OFF", pull the recoil starter several times to completely drain any residual oil.

Check the condition of the drain plug sealing washer.
If it is damaged, replace it with a new one.

Install the drain plug and tighten it to the specified torque.

TORQUE: 20–25 N·m (2.0–2.5 kg-m, 15–18 ft-lb)

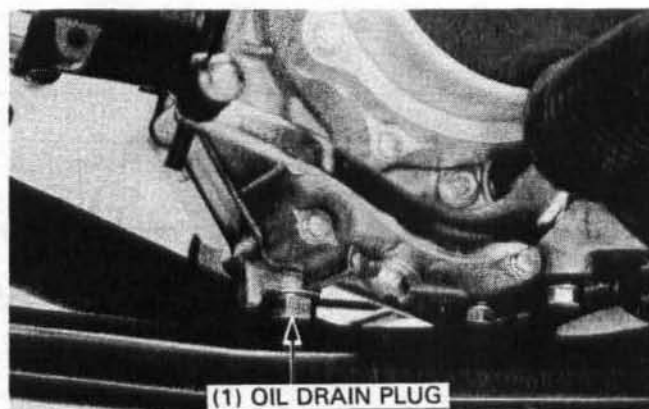
Fill the crankcase with the recommended grade of oil (page 2-1).

ENGINE OIL CAPACITY:

0.7 lit (0.74 US qt, 0.62 Imp. qt) at draining

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

With the Fourtrax on level ground, make sure that the oil level is at the upper level mark and that there are no leaks.



OIL FILTER ROTOR AND SCREEN

NOTE

- Clean the oil filter rotor before adding oil.

Remove the right crankcase cover by removing the mounting bolts.

Remove the clutch lever, cam, cam spring and outer cover (page 8-4).

Clean the clutch outer cover and the inside of the clutch outer using clean lint-free cloth.

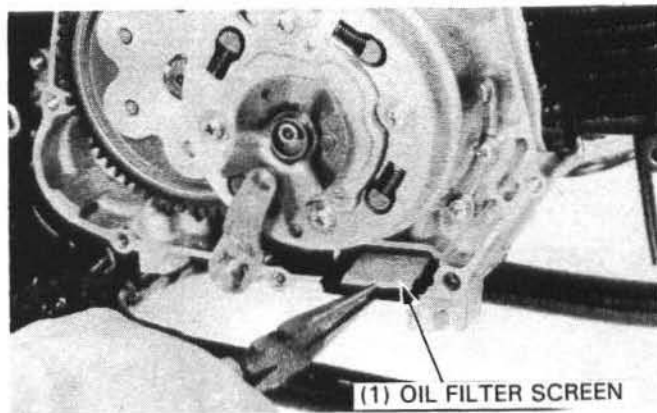
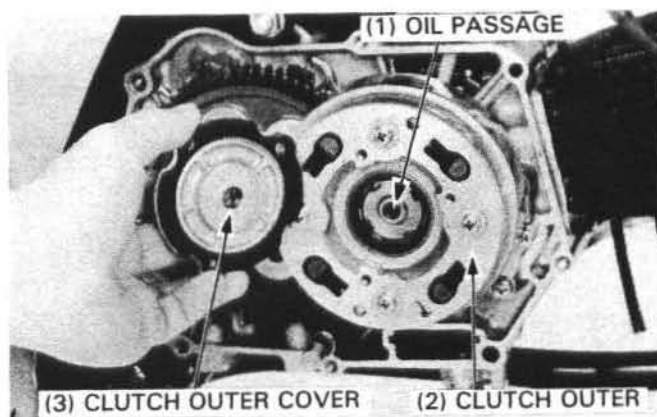
NOTE

- Do not allow dust and dirt to enter the crankshaft oil passage.
- Do not use compressed air.

Remove the oil filter screen from the crankcase.
Clean and reinstall the filter screen.

Install the clutch outer cover, cam, cam spring and lever and the right crankcase cover.

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



LUBRICATION

LUBRICATION POINTS

Use general purpose grease where not otherwise specified.

Apply oil or grease to any other sliding surfaces not shown here.

CONTROL CABLE LUBRICATION

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

'86 shown; After '86 similar:



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SERVICE INFORMATION

SPECIFICATIONS

Ignition timing:	
Initial	25° ± 2° BTDC
Spark plug:	
Spark plug gap	0.6—0.7 mm (0.024—0.028 in)
Recommended spark plugs	NGK CR7HS (CR6HS, CR8HS) ND U22FSR-U (U20FSR-U, U24FSR-U)
Valve clearance (cold):	
Intake/Exhaust	0.05 mm (0.002 in)
Throttle lever free play:	5—10 mm (3/16—3/8 in)
Idle speed:	1,700 ± 100 rpm
Cylinder compression:	
Standard	1,200 ± 150 kPa (12.0 ± 1.5 kg/cm ² , 170 ± 21 psi)
Service limit	900 kPa (9.0 kg/cm ² , 128 psi)
Brake lever free play	15—20 mm (5/8—3/4 in)
Brake pedal free play (After '86):	15—20 mm (5/8—3/4 in)
Drive chain slack	10—20 mm (3/8—3/4 in)
Drive chain length (72 pins):	
Standard	901.7 mm (35.50 in)
Service limit	919.7 mm (36.21 in)
Drive chain tensioner guide roller O.D.:	
Standard	41.0 mm (1.61 in)
Service limit	37.0 mm (1.46 in)
Front/rear rim size	5 spw x 7 DT
Front/rear tire size	16 x 8.00—7
Front/rear tire pressure	2.2 psi (0.15 kg/cm ² , 15 kPa)
Front/rear tire circumference:	
Standard	1,285 mm (50.6 in)
Toe-in	5 ± 10 mm (0.2 ± 0.4 in)

TORQUE VALUES

Spark plug	12—19 N·m (1.2—1.9 kg-m, 9—14 ft-lb)
Valve inspection hole cap	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Drive chain tensioner nut	40—50 N·m (4.0—5.0 kg-m, 29—36 ft-lb)
Clutch adjusting screw lock nut	8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)
Valve adjusting screw lock nut	7—10 N·m (0.7—1.0 kg-m, 5—7 ft-lb)
Tie-rod lock nut	35—43 N·m (3.5—4.3 kg-m, 25—31 ft-lb)
Fuel strainer cup	3—5 N·m (0.3—0.5 kg-m, 2—4 ft-lb)

TOOLS

Special

Valve adjusting wrench set	07908—GE00000	Not available in U.S.A. or 089201—200—000
— Valve adjusting screw	07908—GE00100	
— Valve adjusting wrench	07908—GE00200	

MAINTENANCE

MAINTENANCE SCHEDULE

'86:

The maintenance intervals shown in the following schedule are based upon average riding conditions. Fourtraxs subjected to severe use; or ridden in unusually wet or dusty areas, require more frequent servicing.

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

I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust L: Lubricate		INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
*	FUEL LINE	YEAR I		3-4
*	FUEL STRAINER SCREEN	YEAR C		3-4
*	THROTTLE OPERATION		I	3-4
	AIR CLEANER	NOTE 1	C	3-5
	SPARK PLUG		I	3-6
*	VALVE CLEARANCE		I	3-6
	ENGINE OIL		R	2-2
**	ENGINE OIL STRAINER SCREEN		C	2-3
**	ENGINE OIL CENTRIFUGAL FILTER		C	2-3
*	CARBURETOR IDLE SPEED		I	3-7
	DRIVE CHAIN	NOTE 1	I, L	3-8
	DRIVE CHAIN SLIDER		I	3-10
*	BRAKE SHOE WEAR	YEAR I NOTE 2		3-10
	BRAKE SYSTEM		I	3-10
*	CLUTCH SYSTEM		I	3-12
*	SPARK ARRESTER	NOTE 3	C	3-13
*	NUTS, BOLTS, FASTENERS		I	3-13
**	WHEELS/TIRES		I	3-13
**	STEERING SYSTEM	YEAR 1		3-14

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

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

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

After '86:

The maintenance intervals shown in the following schedule are based upon average riding conditions. Fourtraxs subjected to severe use; or ridden in unusually wet or dusty areas, require more frequent servicing.

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

I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust L: Lubricate			INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
*	FUEL LINE	YEAR I			3-4
*	FUEL STRAINER SCREEN	YEAR C			3-4
*	THROTTLE OPERATION		I	I	3-4
	AIR CLEANER	NOTE 1		C	3-5
	SPARK PLUG			I	3-6
*	VALVE CLEARANCE		I	I	3-6
	ENGINE OIL		R	R	2-2
**	ENGINE OIL STRAINER SCREEN			C	2-3
**	ENGINE OIL CENTRIFUGAL FILTER			C	2-3
*	CARBURETOR IDLE SPEED		I	I	3-7
	DRIVE CHAIN	NOTE 1	I, L	I, L	3-8
	DRIVE CHAIN SLIDER			I	3-10
*	BRAKE SHOE WEAR	YEAR I NOTE 2			3-10
	BRAKE SYSTEM		I	I	3-10
	SKID PLATE, GUARD PLATE			I	—
*	CLUTCH SYSTEM		I	I	3-12
*	SPARK ARRESTER	NOTE 3		C	3-13
*	NUTS, BOLTS, FASTENERS		I	I	3-13
**	WHEELS/TIRES		I	I	3-13
**	STEERING SHAFT HOLDER BEARING	YEAR 1			—
**	STEERING SYSTEM	YEAR 1			3-14

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

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

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

FUEL LINE

Check the fuel lines for deterioration, damage or leakage and replace if necessary.



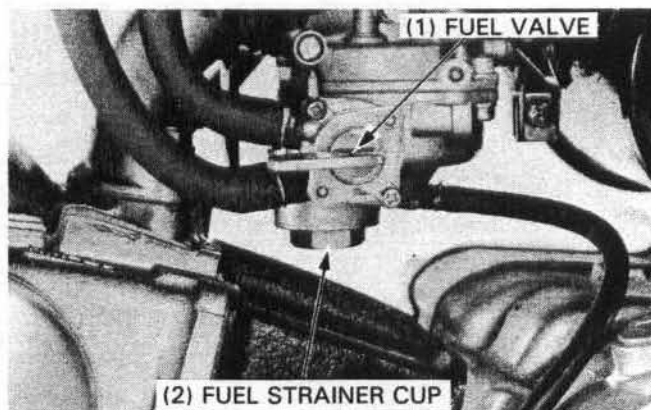
FUEL STRAINER SCREEN

Turn the fuel valve OFF.

Remove the fuel strainer cup and O-ring and the strainer screen.

WARNING

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



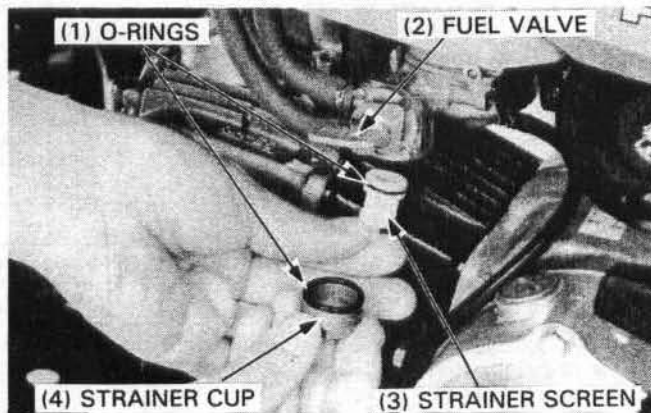
Wash the strainer cup and screen in non-flammable solvent. Reinstall the strainer screen with a new O-ring into the carburetor.

Reinstall the strainer cup making sure the new O-ring is in place.

Finger-tighten the cup first, then torque it to specification.

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

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



THROTTLE OPERATION

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

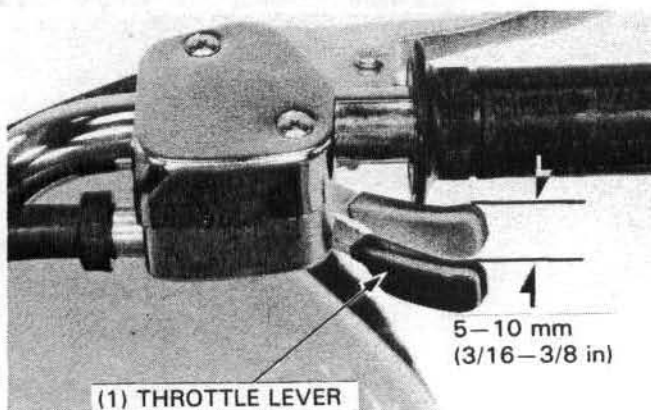
Make sure there is no deterioration, damage or kinking in the throttle cable.

Replace any damaged parts.

Disconnect the throttle cable at the upper end (page 11-3). Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant to prevent premature wear.

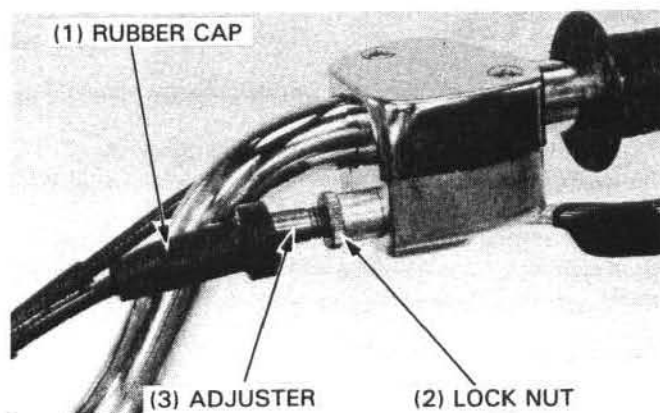
Install the throttle cable in the reverse order of removal.

Make sure the throttle lever free play is 5–10 mm (3/16–3/8 in) at the tip of the throttle lever.



ADJUSTMENT

Slide the rubber cap of the adjuster off the throttle housing. Loosen the lock nut and adjust the throttle lever free play by turning the adjuster on the throttle housing. Tighten the lock nut and inspect the throttle lever free play. Reinstall the rubber cap securely.

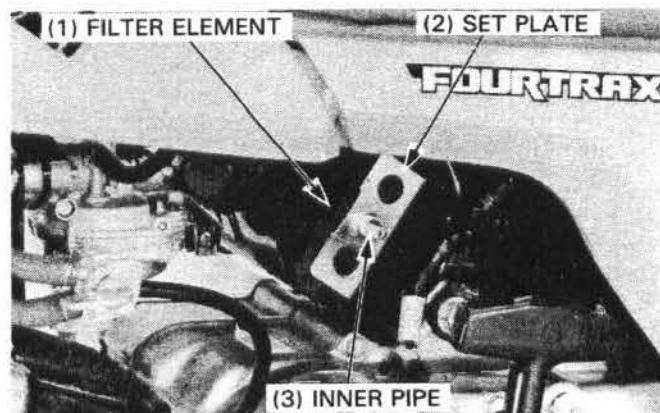


AIR CLEANER

Remove the case cover cap nut and remove the cover and gasket.



Separate the set plate and inner pipe from the element. Pull the element from the air cleaner case.

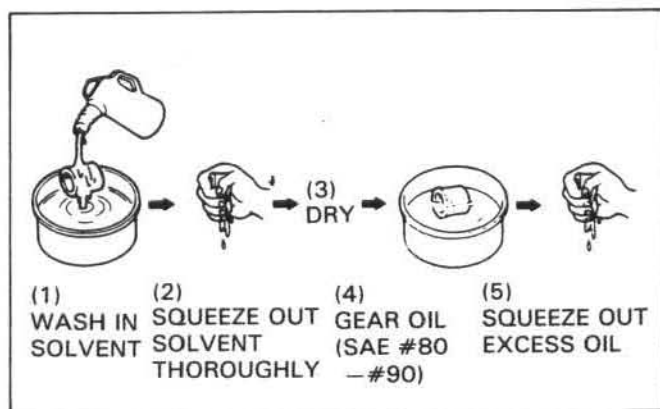


Wash the element in non-flammable solvent, squeeze out the solvent thoroughly, and allow to dry.

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

Install the element in the air cleaner case with the set plate and inner pipe.

Install the gasket, cover and cap nut.



MAINTENANCE

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 feeler gauge and adjust by carefully bending the side electrode.

SPARK PLUG GAP:

0.6–0.7 mm (0.024–0.028 in)

RECOMMENDED SPARK PLUGS:

	NGK	ND
Standard:	CR7HS	U22FSR-U
For cold climate (below 5°C, 41°F):	CR6HS	U20FSR-U
For extended high speed use:	CR8HS	U24FSR-U

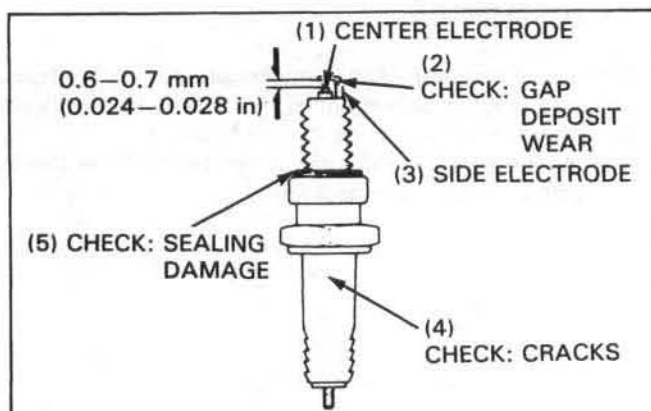
Check the sealing washer and replace with a new one if damaged.

With the sealing washer attached, thread the spark plug in by hand to prevent crossthreading.

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).

Remove the recoil starter by removing the mounting bolts. Remove the timing and valve inspection hole caps.

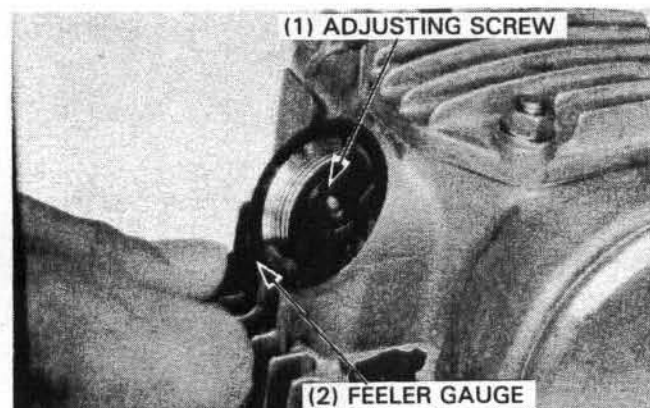
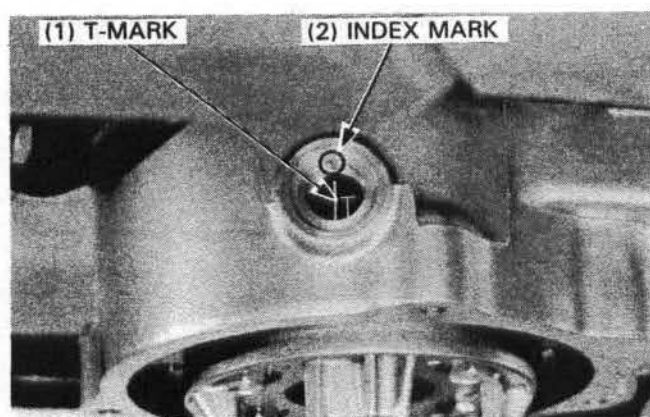
Turn the flywheel counterclockwise and align the "T" mark with the index mark.

Make sure the piston is at T.D.C. on the compression stroke.

Check the valve clearances by inserting a feeler gauge between the adjusting screw and valve stem.

VALVE CLEARANCES:

INTAKE/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: 7–10 N·m (0.7–1.0 kg-m, 5–7 ft-lb)

TOOL:

VALVE ADJUSTING WRENCH SET 07908—GE00000 (Not available in U.S.A.) or 089201—200—000

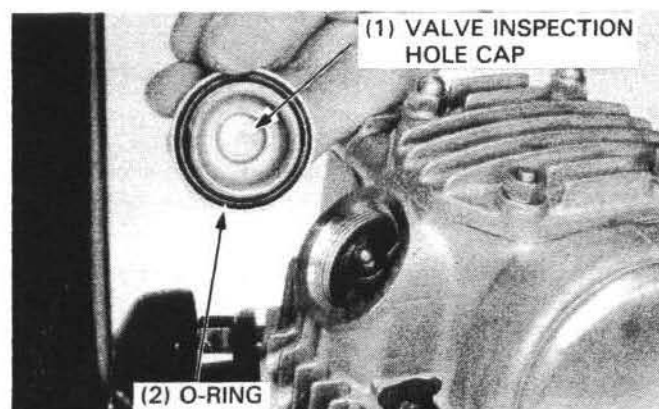
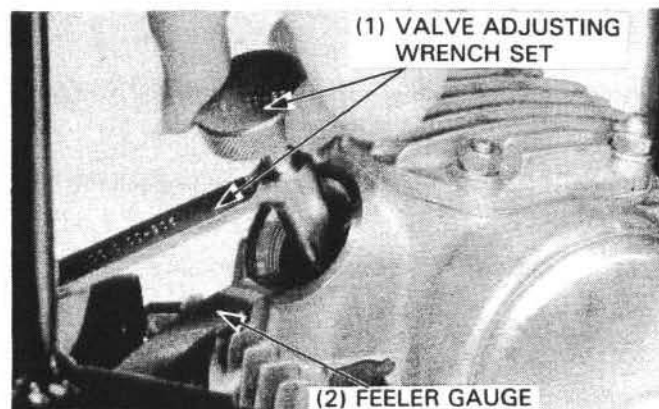
Recheck the valve clearance.

Inspect the O-ring on the valve inspection hole cap; replace it if it is damaged. Tighten the cap with O-ring to the specified torque.

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

Inspect the timing inspection hole cap's O-ring for damage, then install the cap.

Install the recoil starter with the three bolts.



CARBURETOR-IDLE SPEED

NOTE

- Inspect and adjust the carburetor idle speed after all other engine adjustments are within specification.
- The engine must be warm for accurate idle inspection and adjustment.

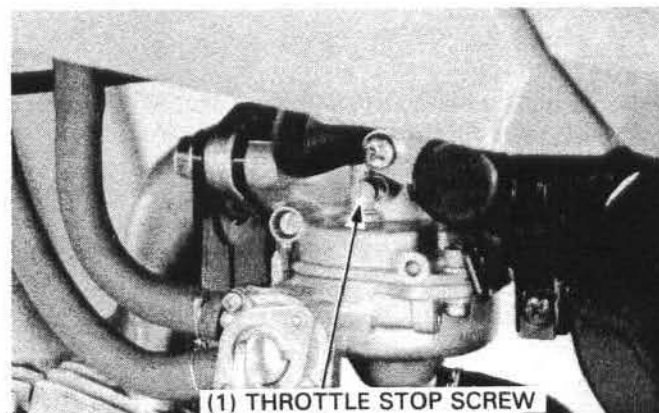
Connect a tachometer.

Warm up the engine. Stop and go riding for ten minutes is sufficient.

Shift the transmission to NEUTRAL.

Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 1,700 ± 100 rpm



CYLINDER COMPRESSION

Warm up the engine.

Stop the engine and remove the spark plug.

Insert a compression gauge.

Open the choke and hold the throttle fully open.

Operate the recoil starter several times, until the gauge reading stops rising.

NOTE

- Watch for compression leaks at the gauge connection.

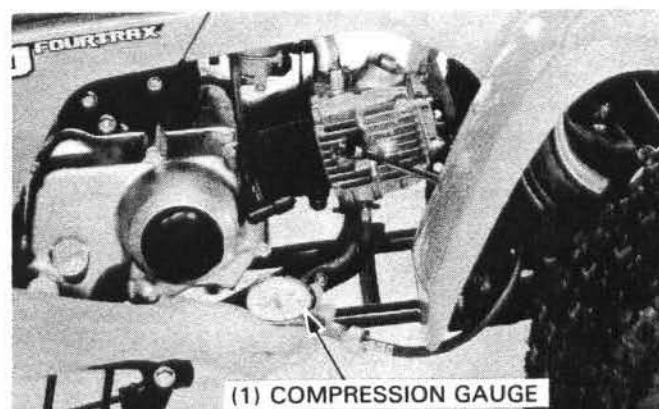
COMPRESSION:

STANDARD:

1,200 ± 150 kPa (12.0 ± 1.5 kg/cm², 170 ± 21 psi)

SERVICE LIMIT:

900 kPa (9.0 kg/cm², 128 psi)



DRIVE CHAIN

Stop the engine and put the transmission in NEUTRAL.
Remove the drive chain inspection hole cap.

Check the amount of drive chain slack through the inspection hole.

CHAIN SLACK: 10–20 mm (3/8–3/4 in)

Adjust as follows:

Carefully stand the Fourtrax on its rear carrier and rear wheels.

CAUTION

- *To prevent fuel spillage, if the fuel tank is more than half full, either drain some fuel or remove the tank (page 4-3).*

Loosen the lock nut and adjusting nut and adjust the drive chain slack.

Tighten the lock nut and adjusting nut.

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

Recheck the amount of the drive chain slack and install the inspection hole cap.

Remove the drive chain lubrication hole cap and lubricate the drive chain with a commercial chain lubricant.

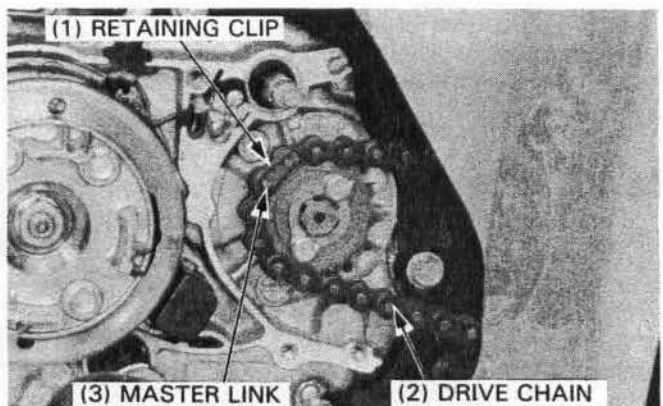
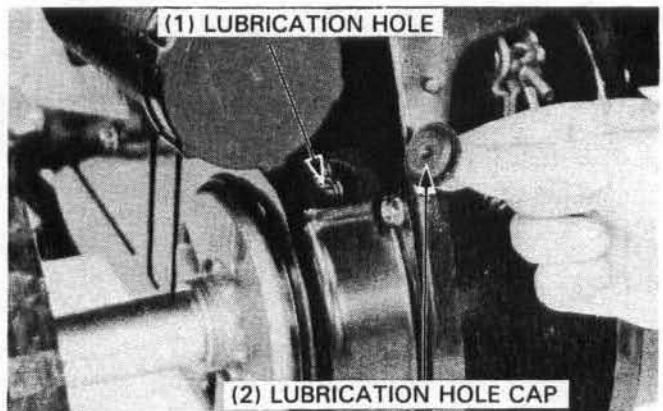
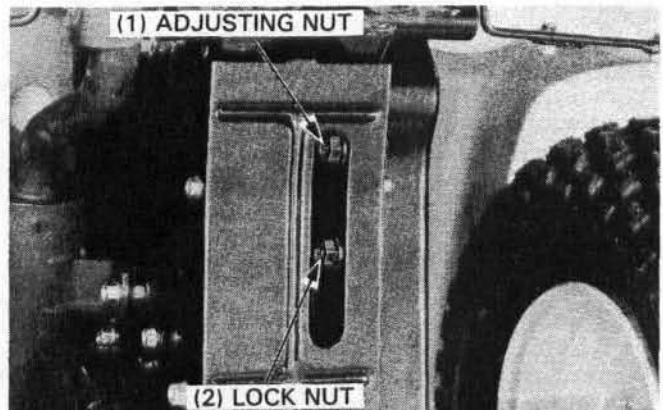
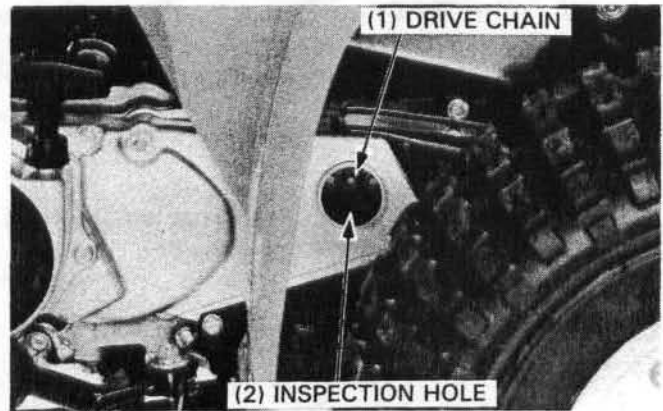
After lubricating the drive chain be sure to install the lubrication hole cap.

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

Remove the drive chain cover (page 12-5).

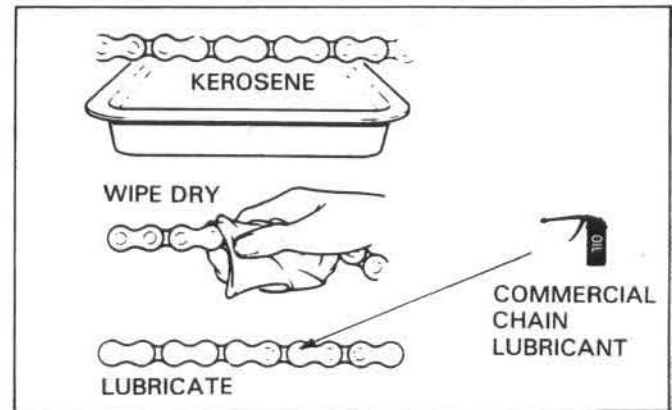
Remove the left crankcase cover by removing two mounting bolts.

Remove the retaining clip, master link and drive chain.



Clean the drive chain with kerosene and wipe dry.

Lubricate the drive chain with a commercial chain lubricant.



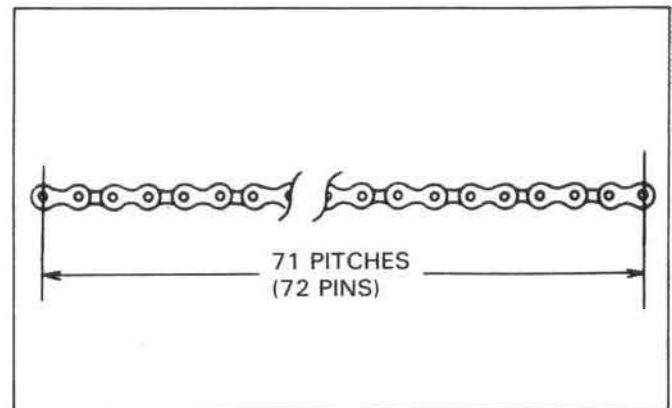
Inspect the drive chain for possible wear or damage. Replace the chain, if it is worn excessively or damaged.

Measure the drive chain length with the chain held so that all links are straight.

72 PIN LENGTH:

STANDARD: 901.7 mm (35.50 in)

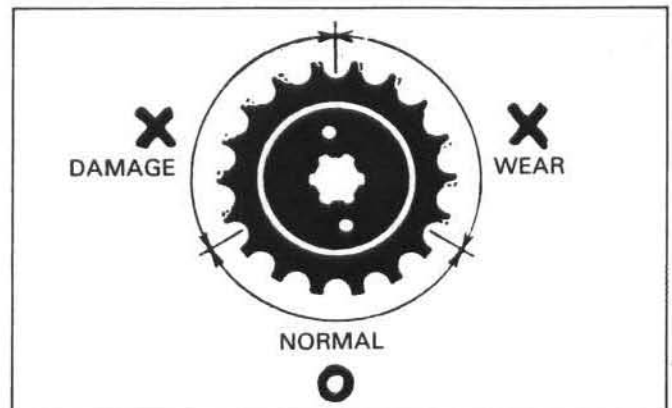
SERVICE LIMIT: 919.7 mm (36.21 in)



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

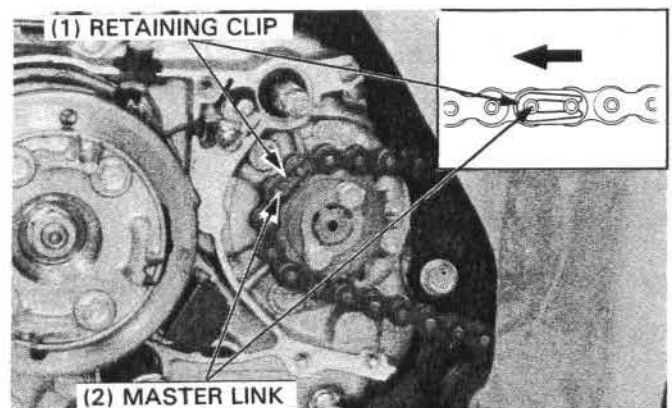
NOTE

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



Install the drive chain in the reverse order of removal noting the chain retaining clip direction.

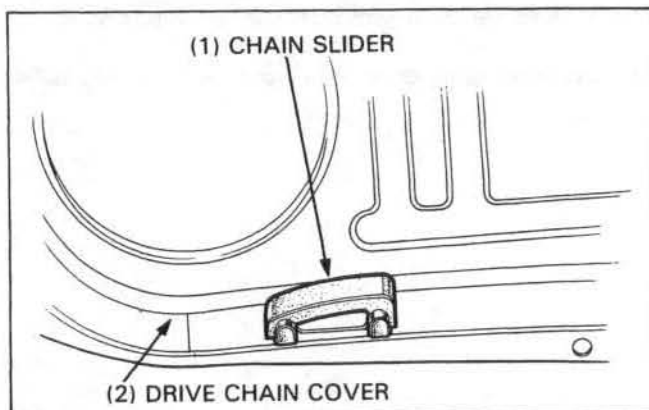
Install the left crankcase and drive chain cover.



MAINTENANCE

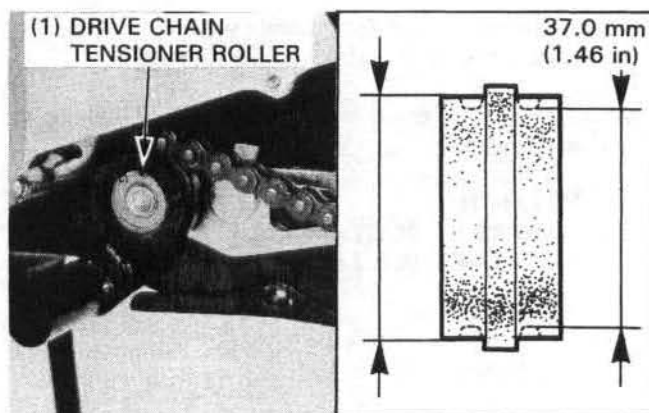
DRIVE CHAIN SLIDER

Remove the drive chain cover (page 12-5).
Inspect the chain slider on the inside of the drive chain cover for wear or damage and replace if necessary.



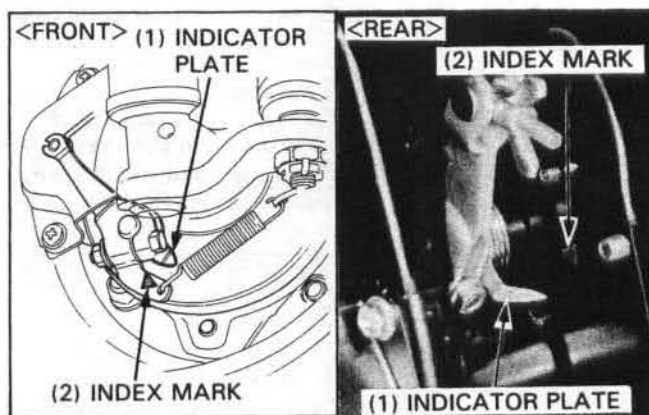
Measure the chain tensioner roller O.D.

SERVICE LIMIT: 37.0 mm (1.46 in)



BRAKE SHOE WEAR

Replace the brake shoes if the indicator plate aligns with the brake panel index mark when the brake lever is applied.



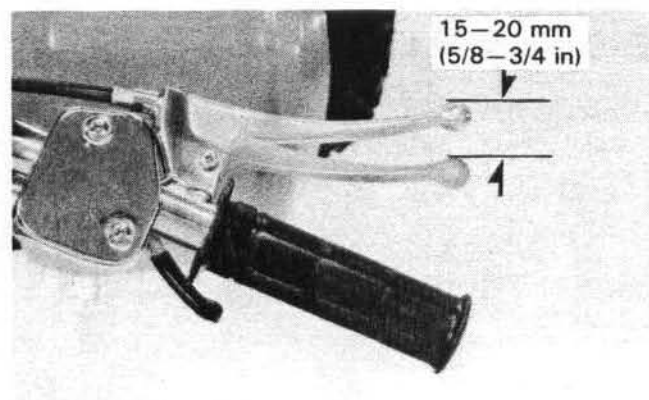
BRAKE SYSTEM

FRONT

Check the brake lever and cable for excessive play or other damage.
Replace or repair as necessary.

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

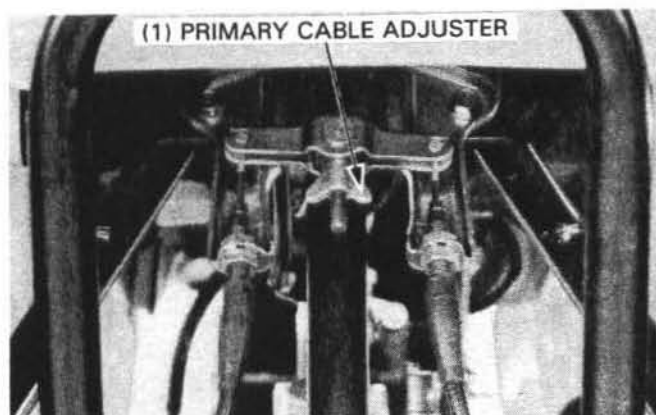
FREE PLAY: 15–20 mm (5/8–3/4 in)



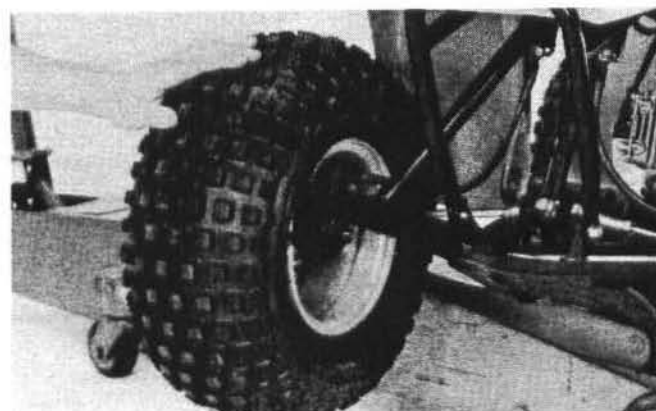
Adjust the brake lever free play by turning the primary cable adjuster.

NOTE

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



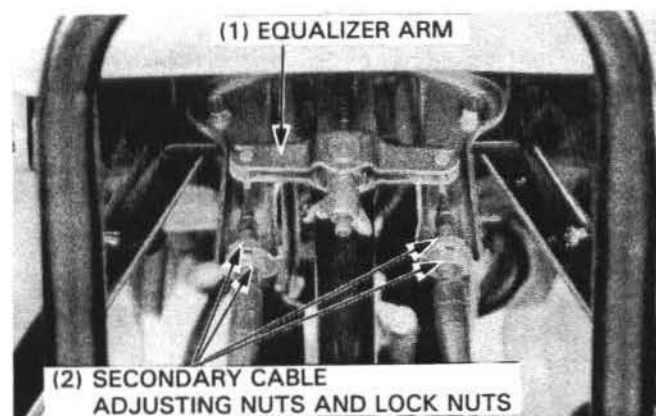
Inspect the front brake effect at both wheels while applying the brake lightly.



If the braking action is uneven, loosen the lock nuts and turn the secondary cable adjusting nuts as required to equalize the brake effect.

If the equalizer arm had inclined excessively to one side, inspect the brake drum and brake lining on that side.

Tighten the secondary cable lock nuts and adjust the front brake lever free play.

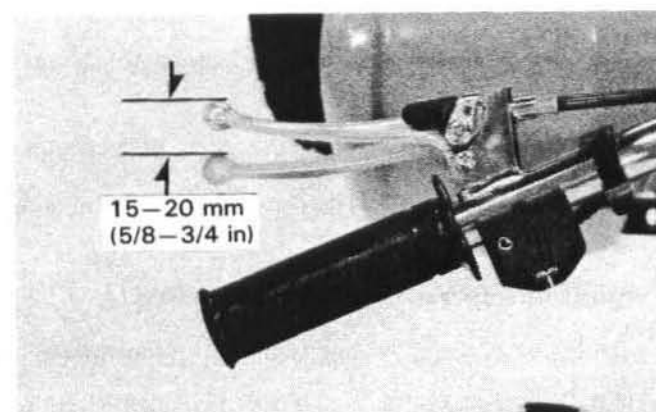


REAR

Check the brake lever and cable for excessive play or other damage.
Replace or repair as necessary.

Measure the rear brake lever free play at the end of the lever and adjust as described below.

FREE PLAY: 15–20 mm (5/8–3/4 in)

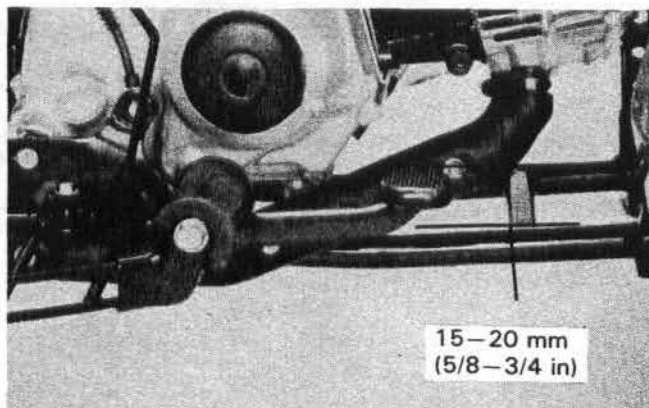


MAINTENANCE

After '86:

Measure the brake pedal free play at the end of the brake pedal and adjust as described below.

FREE PLAY: 15–20 mm (5/8–3/4 in)

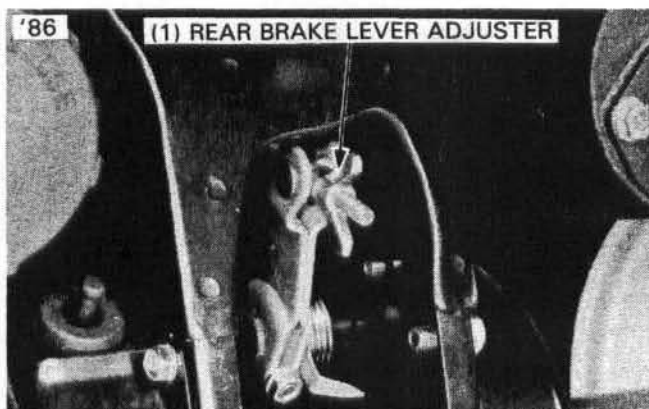


'86:

Adjust the brake lever free play by turning the adjuster.

NOTE

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

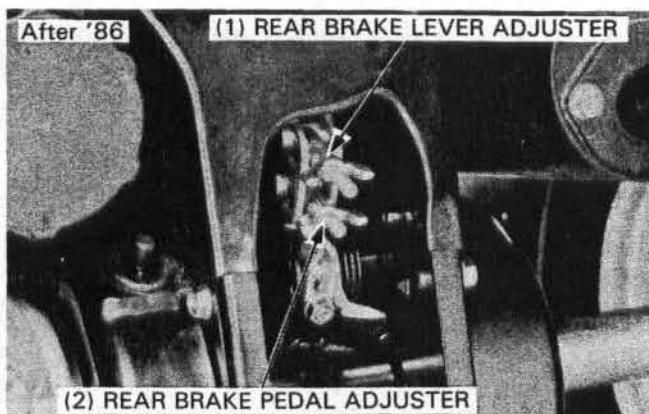


After '86:

Adjust the rear brake lever and pedal free play by turning the adjusters at the lower end of the cables.

NOTE

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



CLUTCH SYSTEM

Stop the engine.

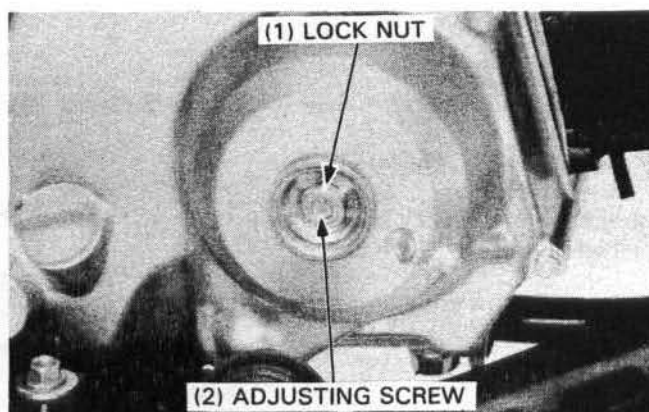
Remove the clutch adjuster cap and loosen the adjusting screw lock nut.

Slowly turn the adjusting screw counterclockwise until resistance is felt.

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

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

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



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 bolt and pull out the spark arrester. Remove any accumulated carbon from the spark 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 3-2).

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

WHEELS/TIRES

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

NOTE

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

Check the tire pressure.

TIRE PRESSURES:

Recommended pressure: 2.2 psi (0.15 kg/cm², 15 kPa)

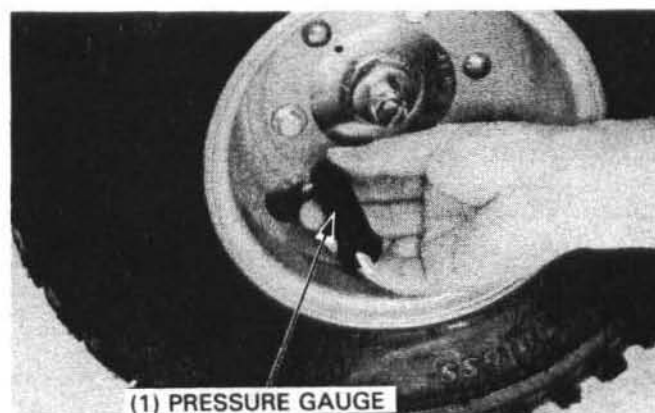
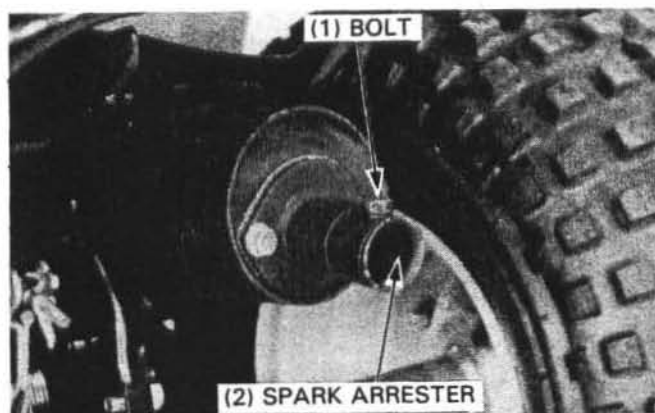
Minimum pressure: '86: 1.9 psi (0.13 kg/cm², 13 kPa)

After '86: 1.7 psi (0.12 kg/cm², 12 kPa)

Maximum pressure: 2.6 psi (0.18 kg/cm², 18 kPa)

Raise up the rear wheel and check the circumference of the tires.

STANDARD TIRE CIRCUMFERENCE: 1,285 mm (50.6 in)



STEERING SYSTEM

Inspect the steering shaft free play with the front wheels turned straight ahead.

If there is excessive play, inspect the tie-rod, kingpin bushing and ball joint (section 11).

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, inspect the steering shaft upper bushing and lower bearing (section 11).

NOTE

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

TOE-IN

Place the vehicle on level ground with the front wheels facing straight ahead.

Mark the centers of the tires with chalk to indicate the axle center height.

Measure the distance between the chalk marks.

Slowly move the vehicle back until the wheels have turned 180° so the marks on the tires are aligned with the axle center height.

Measure the distance between the chalk marks.

Calculate the difference in the front and rear measurements.

TOE-IN: 5 ± 10 mm (0.2 ± 0.4 in)

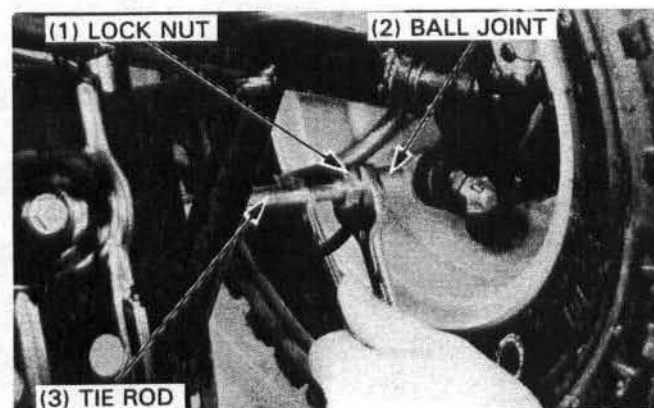
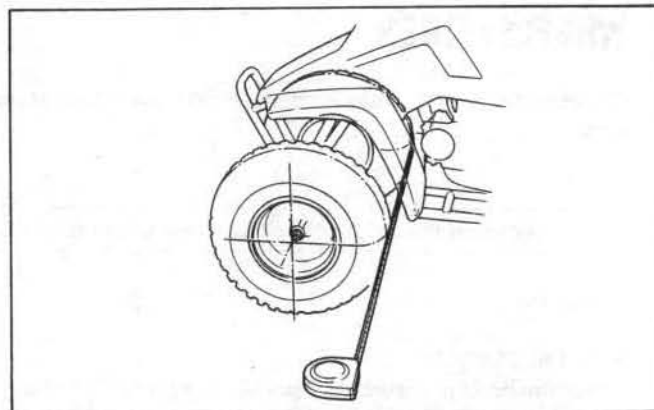
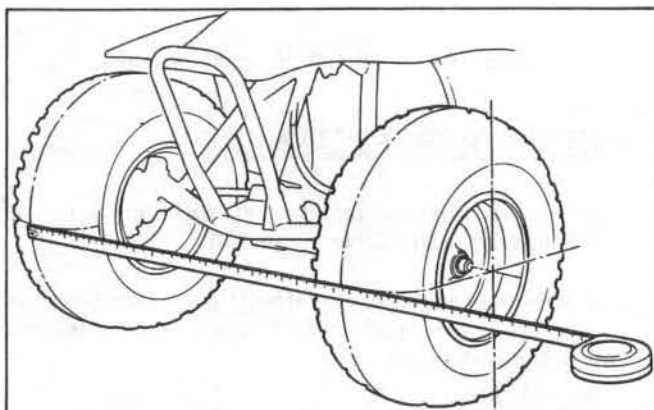
When the toe-in is out of specification, adjust it by changing the length of the tie-rods equally by turning the tie-rod while holding the ball joint.

Tighten the lock nuts.

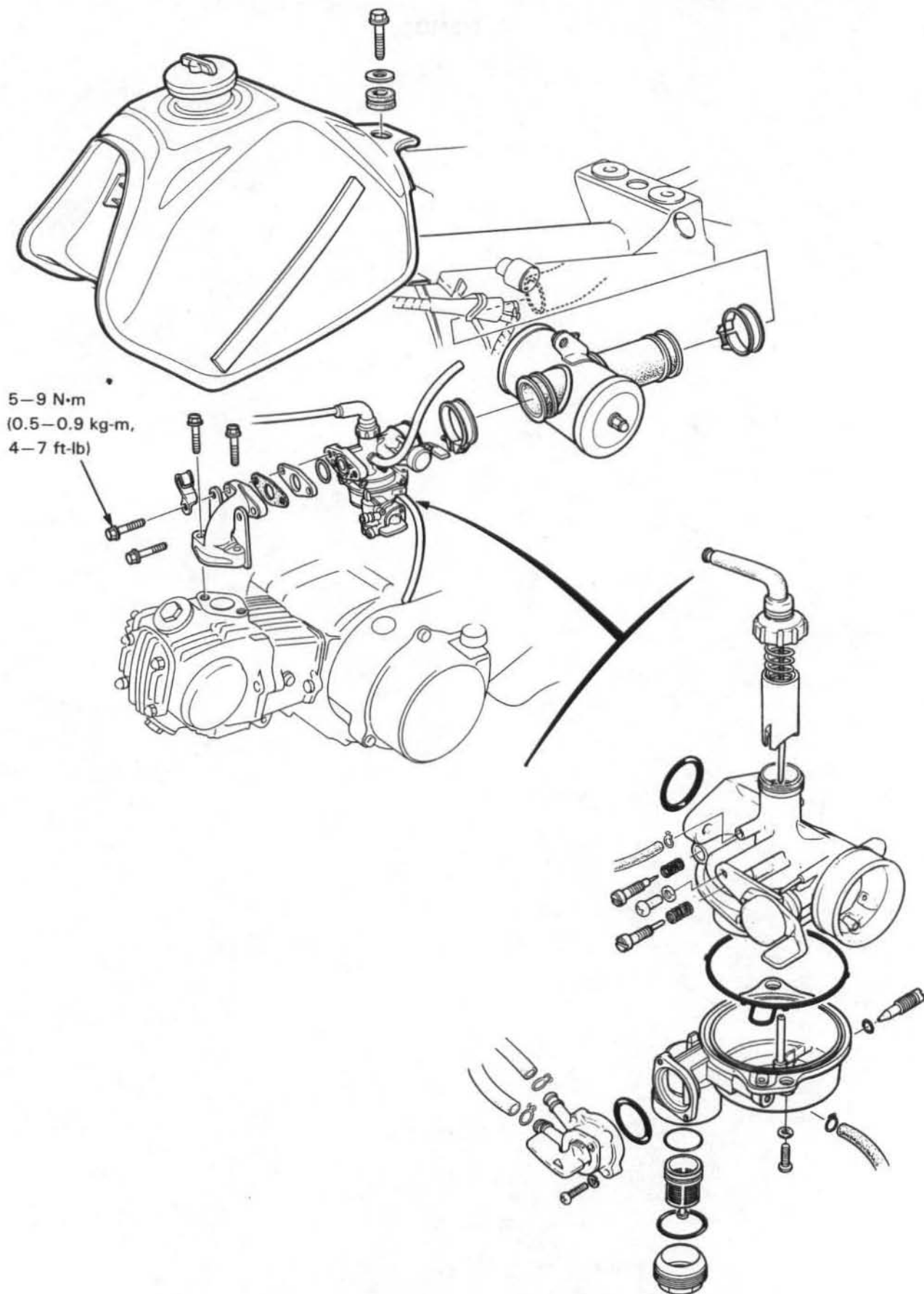
TORQUE: 35–43 N·m (3.5–4.3 kg·m, 25–31 ft·lb)

Recheck the toe-in.

After finally tightening the lock nuts, make sure the ball joints operate properly by rotating the tie-rods.



MEMO



4. FUEL SYSTEM

SERVICE INFORMATION	4-1	CARBURETOR REMOVAL	4-4
TROUBLESHOOTING	4-2	CARBURETOR INSTALLATION	4-7
FUEL TANK	4-3	PILOT SCREW ADJUSTMENT	4-8
AIR CLEANER CASE	4-3	HIGH ALTITUDE ADJUSTMENT	4-8

SERVICE INFORMATION

4

GENERAL

WARNING

- Use caution when working with gasoline. Always work in a well ventilated area away from sparks or flames.

- When disassembling fuel system parts, note the locations of the O-rings. Replace them during reassembly.

SPECIFICATIONS

Fuel tank

ITEM	STANDARD
Fuel capacity	3.8 lit (1.00 US gal, 0.84 Imp gal)
Fuel reserve capacity	0.9 lit (0.24 US gal, 0.20 Imp gal)

Carburetor

ITEM	STANDARD
Identification mark/Type	PB86A/Piston valve
Venturi diameter	13 mm (0.51 in)
Main jet No.	#62
Slow jet No.	#38
Jet needle setting	3rd groove
Pilot screw opening	'86: 1—3/8 turns out After '86: 1—1/8 turns out
Float level	10.7 mm (0.42 in)
Idle speed	1,700 ± 100 rpm

TORQUE VALUE

Intake pipe mounting bolt 5—9 N·m (0.5—0.9 kg-m, 4—7 ft-lb)

TOOL

Common

Float level gauge 07401—0010000

TROUBLESHOOTING

Engine cranks but won't start.

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

Engine idles roughly, stalls, or runs poorly

- Idle speed incorrect
- Incorrect pilot screw adjustment
- Ignition malfunction
- Rich mixture
- Lean mixture
- Air cleaner dirty
- Insulator leaks
- Fuel strainer screen clogged
- Fuel tank cap breather hole clogged

Lean mixture

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

Rich mixture:

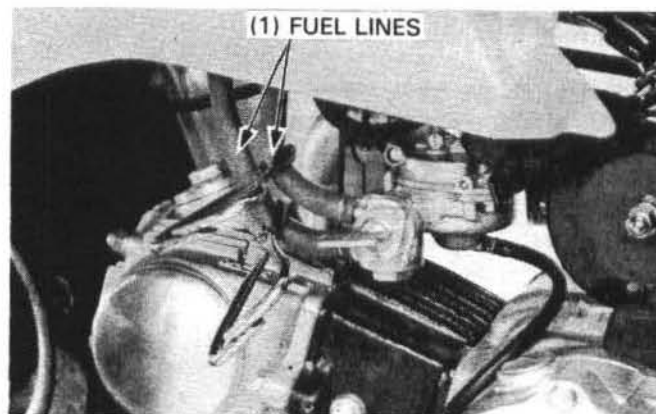
- Carburetor choke stuck closed
- Float valve faulty
- Float level too high
- Carburetor air jet clogged
- Air cleaner dirty

FUEL TANK

REMOVAL

Remove the seat/rear fender and the front fender mounting bolts (page 13-1).

Clamp the fuel lines and disconnect them from the carburetor.



Remove the fuel tank cap and mounting bolt.



While holding the front fender up, pull the fuel tank rearward and off of the frame.

NOTE

- Attach protective tape on the fuel tank to prevent scratching it.

WARNING

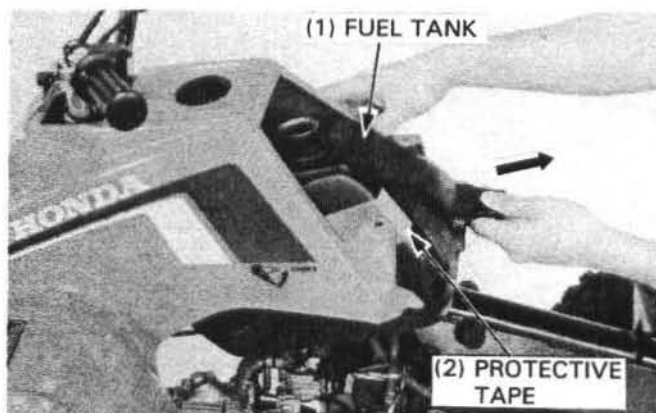
- *Keep gasoline away from flames or sparks. Wipe up spilled gasoline at once.*

INSTALLATION

Install the fuel tank in the reverse order of removal. Install the front fender and seat/rear fender (pages 13-2, 3).

NOTE

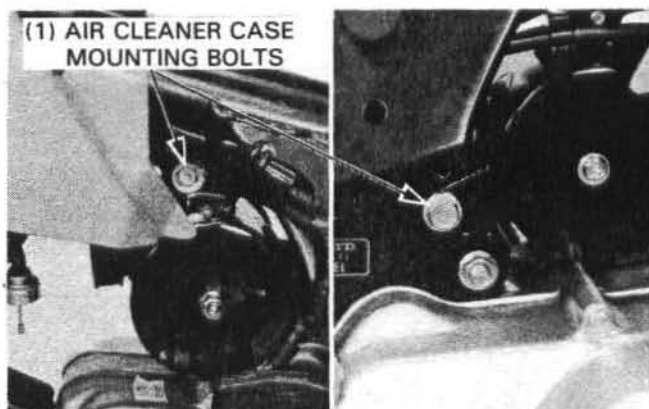
- Be sure the front fuel tank brackets are on the rubber cushions.
- After assembly, check for fuel leaks.



AIR CLEANER CASE

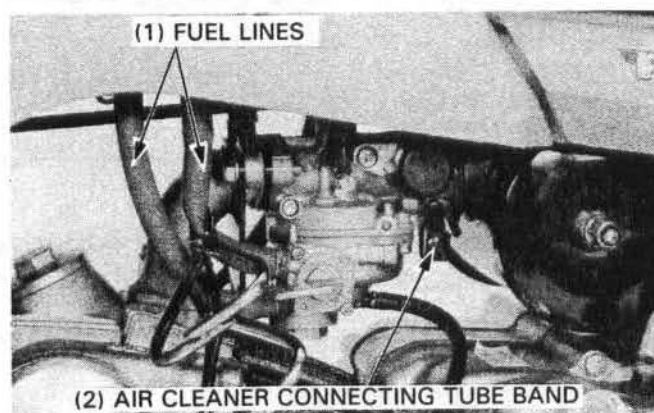
Remove the carburetor (page 4-4).
Remove the air cleaner case mounting bolts.
Remove the air cleaner case.

For air cleaner service, refer to page 3-5.

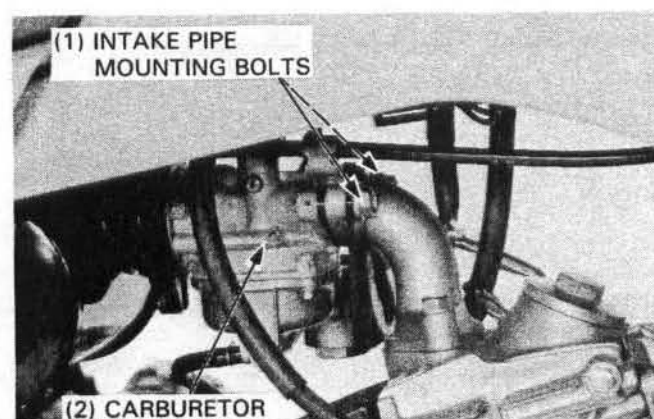


CARBURETOR REMOVAL

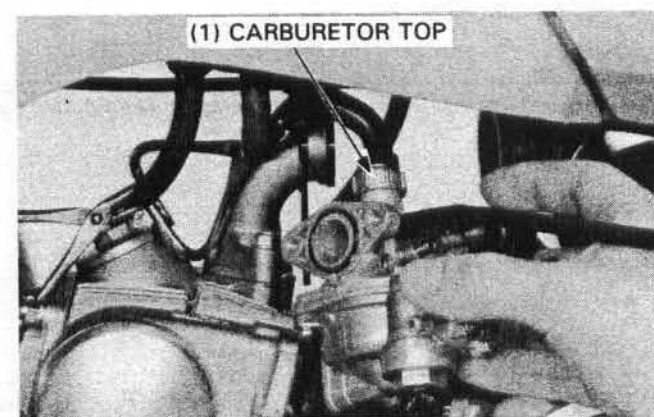
Loosen the air cleaner connecting tube band. Clamp the fuel lines and disconnect them.



Remove the intake pipe mounting bolts at the carburetor then remove the carburetor.



Remove the carburetor top.

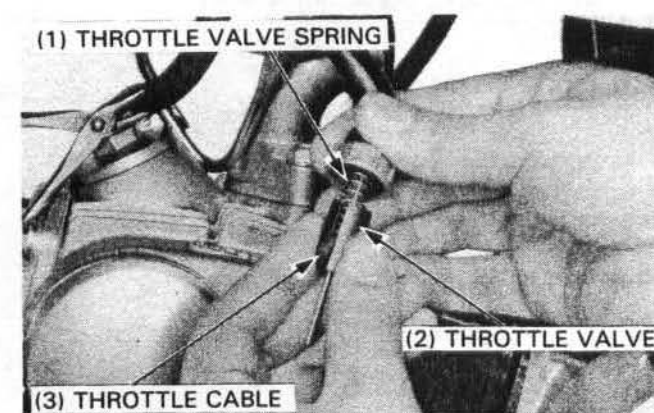


THROTTLE VALVE DISASSEMBLY

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

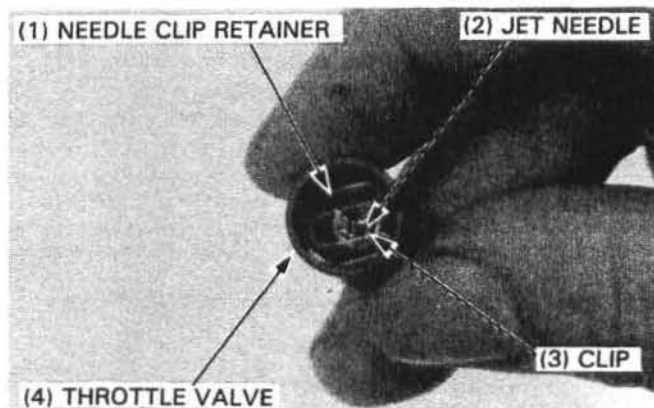
CAUTION

- The carburetor top is an integral part of the throttle cable assembly. The top cannot be separated from the assembly without causing damage to the cable.



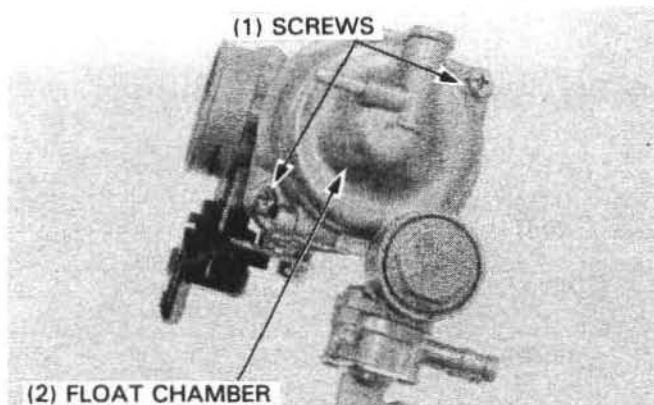
Remove the needle clip retainer, the jet needle and needle clip.

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

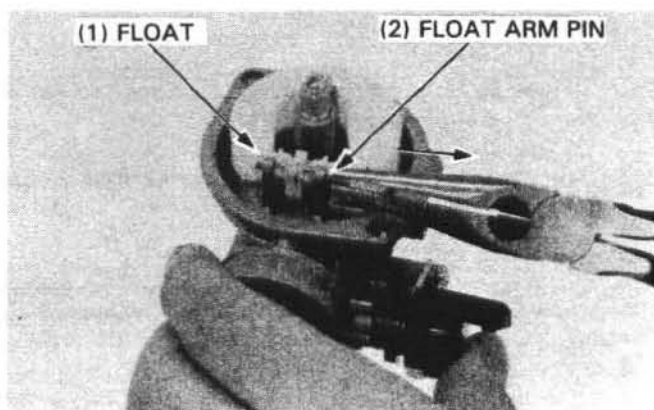


CARBURETOR DISASSEMBLY

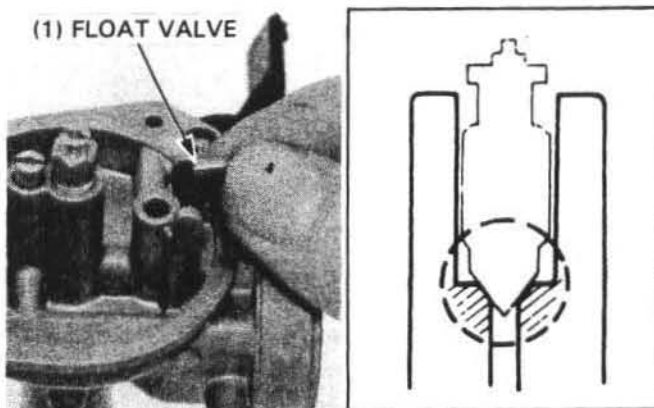
Remove the float chamber.



Remove the float arm pin, float and float valve.



Inspect the float valve seat for wear or damage.



FUEL SYSTEM

Remove the slow jet.

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

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

CAUTION

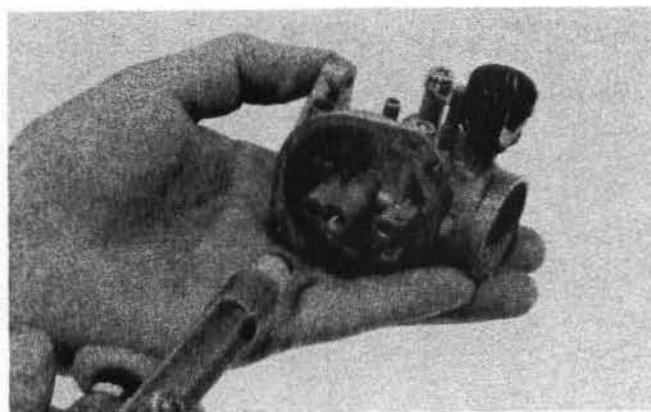
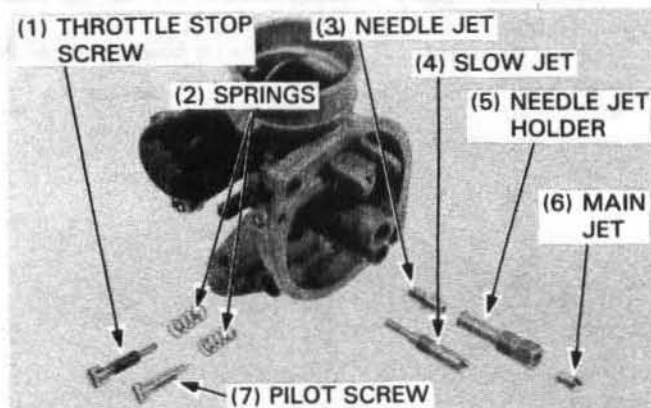
- *Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.*

Then remove the screw.

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

Check each part for wear or damage.

Clean the passages and jets with compressed air.



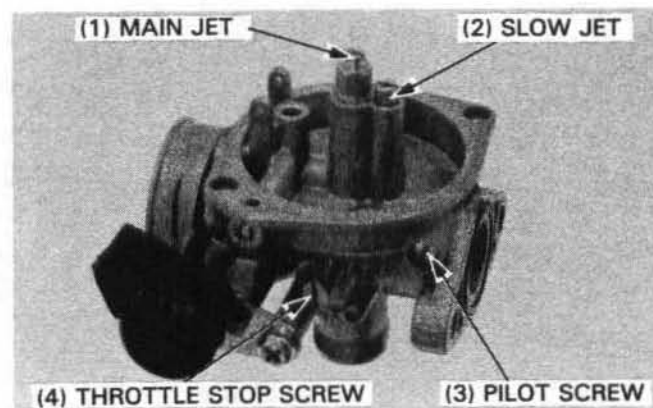
CARBURETOR ASSEMBLY

Clean all parts in non-flammable or high flash point solvent and blow dry with compressed air.

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 damaged.
- Set the pilot screw at the position recorded during disassembly.



FLOAT LEVEL INSPECTION

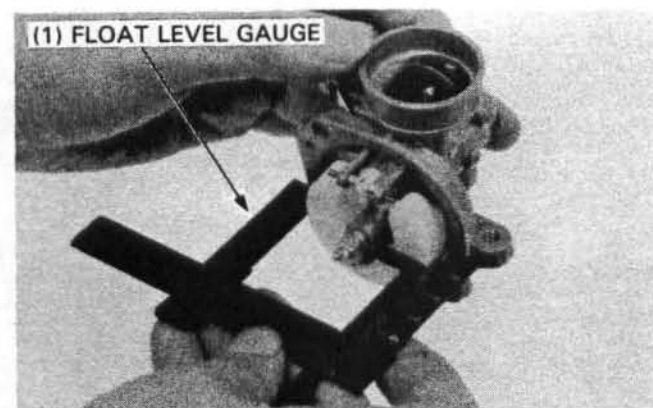
Measure the float level with a float level gauge as shown.

FLOAT LEVEL: 10.7 mm (0.42 in)

TOOL:

Float level gauge

07401-0010000



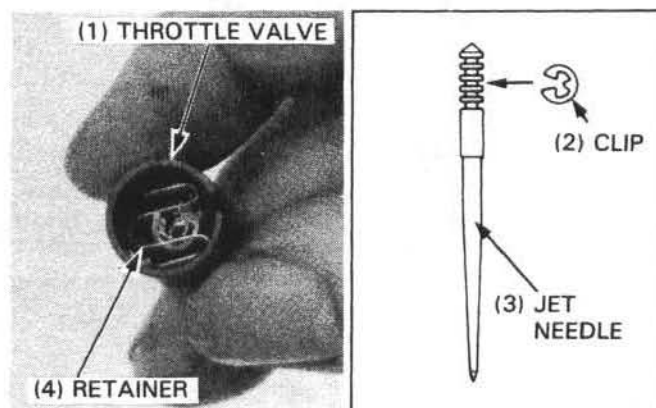
CARBURETOR INSTALLATION

THROTTLE VALVE ASSEMBLY

Install the needle clip on the jet needle.

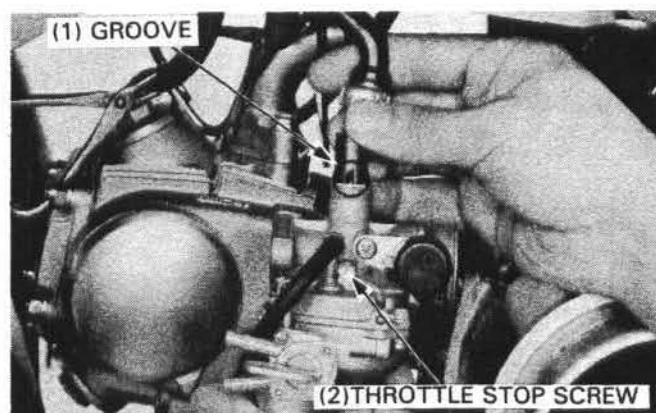
STANDARD SETTING: 3rd groove

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



Install the throttle cable, spring, and throttle valve.

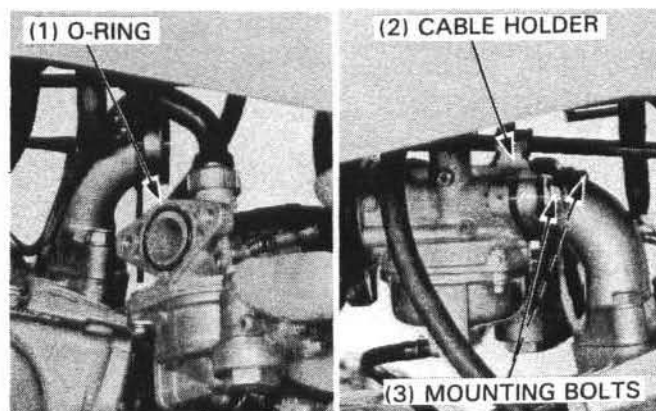
Align the throttle valve groove with the throttle stop screw and install the carburetor top onto the carburetor.



Check the O-ring on the intake pipe flange for wear or damage. Install the carburetor.

Install the intake pipe mounting bolts with the rear brake cable holder and tighten them to the specified torque.

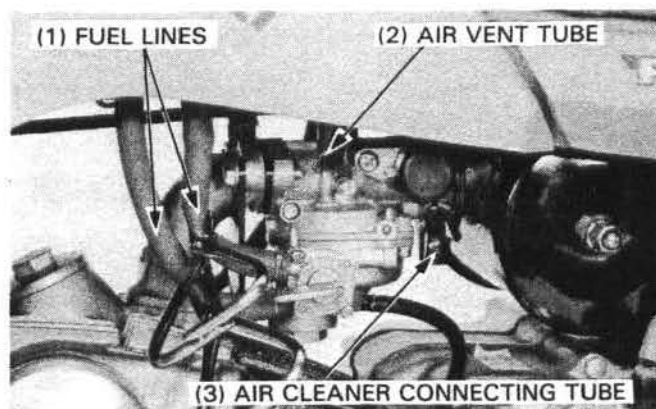
TORQUE: 5–9 N·m (0.5–0.9 kg·m, 4–7 ft·lb)



Install the air cleaner connecting tube band and fuel lines. Route the air vent tube properly (page 1-9).

NOTE

- After installing the carburetor, perform the following adjustments:
 - Throttle lever free play (page 3-4).
 - Carburetor pilot screw adjustment (page 4-8), if the carburetor was overhauled or cleaned.



FUEL SYSTEM

PILOT SCREW ADJUSTMENT

CAUTION

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

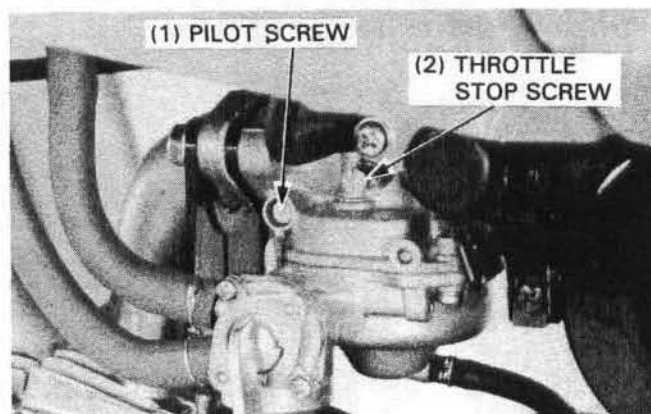
Turn the pilot screw clockwise until it seats lightly and back it out 1-3/8 turns. (After '86: 1-1/8 turns)

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

Warm the engine up to operating temperature.

Stop the engine and connect a tachometer.

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



IDLE SPEED: 1,700 ± 100 rpm

Turn the pilot screw in 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.

HIGH ALTITUDE ADJUSTMENT

The carburetor must be adjusted for high altitude riding (above 5,000 ft/ 1,500 m).

SPECIFICATIONS

	Below 5,000 ft (1,500 m)	Above 4,500 ft (1,350 m)
Main jet	#62	#60
Pilot screw opening	Factory preset	1/4 screw in

STANDARD SETTING: 5,000 ft(1,500 m) max.

HIGH ALTITUDE SETTING: 4,500 ft (1,350 m) min.

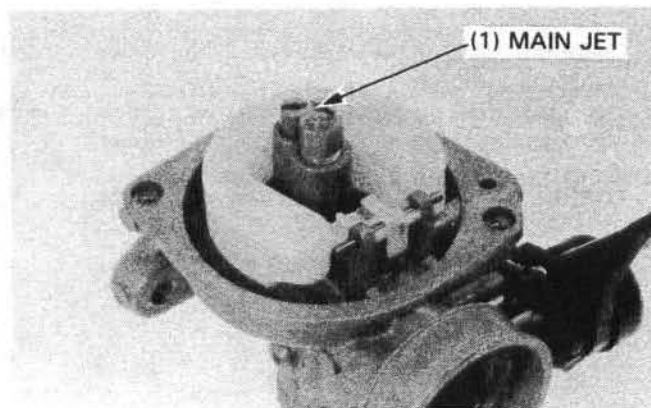
The high altitude carburetor adjustment is performed as follows:

Remove the carburetor (page 4-4) and float chamber.

Replace the standard main jet with the high altitude type (#60). Assemble and install the carburetor.

Turn-in the pilot screw 1/4 turn.

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

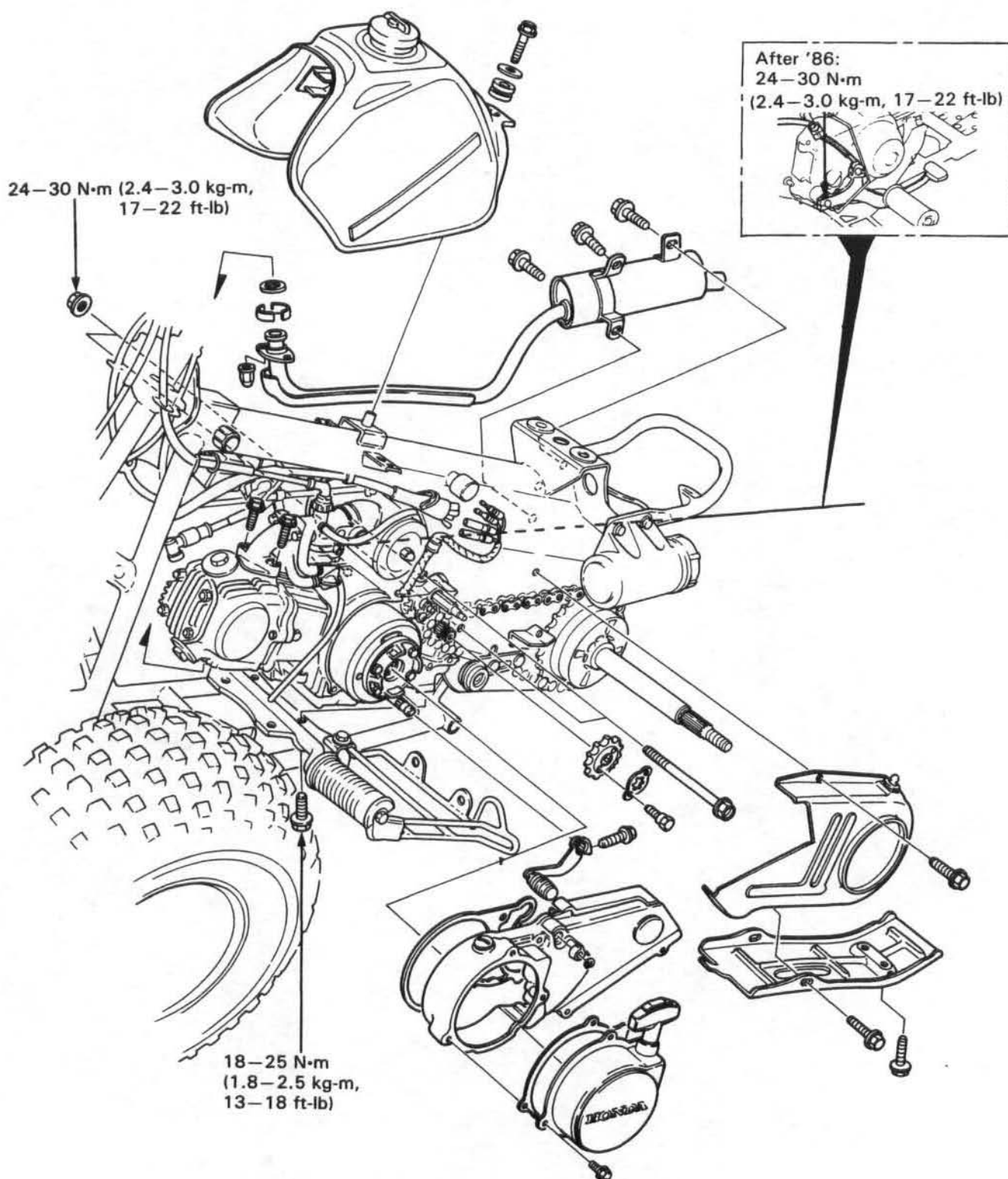


CAUTION

- *Sustained operation below 4,500 feet (1,350 m) with the high altitude settings may cause engine overheating and engine damage. Install the #62 main jet and screw out the pilot screw 1/4 turn, when riding below 4,500 feet (1,350 m)*

MEMO

RIDE RED



5. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION

5-1

ENGINE INSTALLATION

5-3

ENGINE REMOVAL

5-2

SERVICE INFORMATION

GENERAL

The only operation requiring engine removal is transmission and crankshaft service.

SPECIFICATIONS

Engine oil capacity

0.8 lit (0.85 US qt, 0.70 Imp. qt) at engine assembly
0.7 lit (0.74 US qt, 0.62 Imp. qt) at draining

TORQUE VALUES

Engine hanger bolt

24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

Rear fender/foot peg guard bolt

10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

Foot peg guard bolt A

24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

Foot peg guard bolt B

30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)

Foot peg mounting bolt

18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)

Brake pedal bolt (After '86:)

24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

5

ENGINE REMOVAL/INSTALLATION

ENGINE REMOVAL

Drain the engine oil (page 2-2).

Remove the seat/rear fender (page 13-1).

After '86:

Remove the brake cable guard and brake pedal (page 12-4).

Remove the spark plug cap from the spark plug.

- the exhaust pipe (page 13-3).
- the foot peg and foot peg guard (page 8-3).

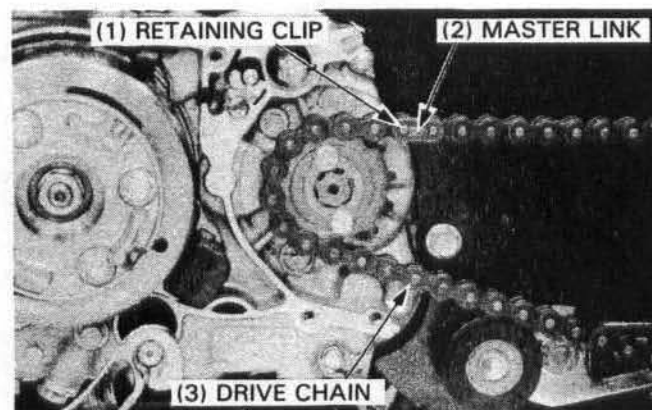
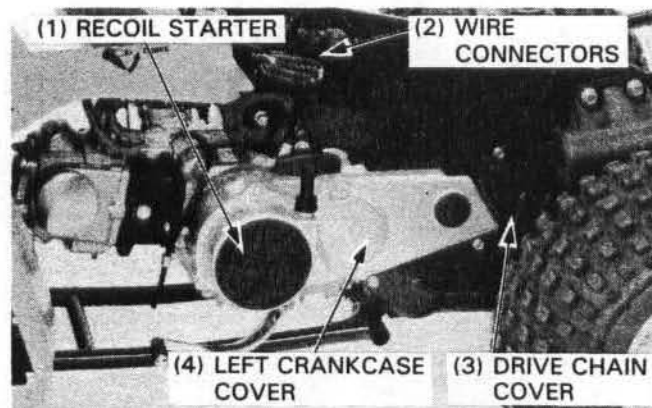
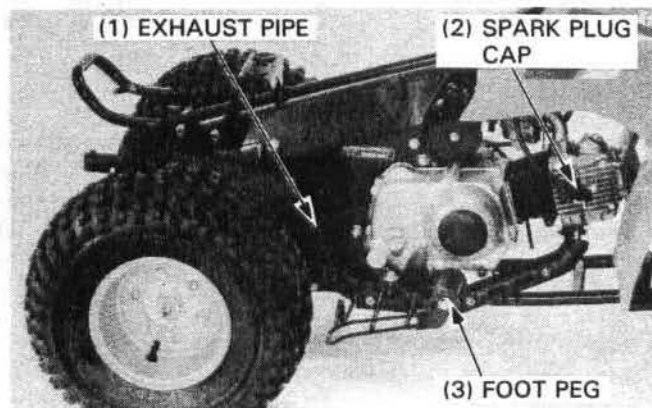
Disconnect the wire connectors and remove the wire from frame clamps.

Remove the three recoil starter mounting bolts and the starter.

Remove the drive chain cover (page 12-5).

Remove the left crankcase cover mounting bolts and cover.

Remove the drive chain retaining clip and master link, and remove the drive chain.

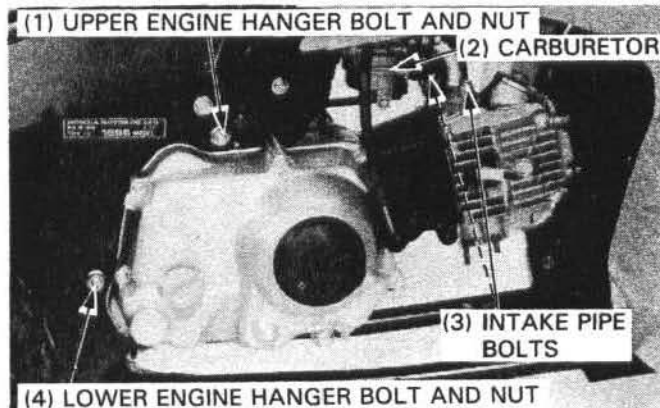


Remove the intake pipe mounting bolts at the cylinder head.

Remove the carburetor (page 4-4).

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

Remove the upper and lower engine hanger nuts and bolts.
Remove the engine from the left side.



ENGINE INSTALLATION

Engine installation is essentially the reverse order of removal. Use a floor jack or other adjustable support to carefully maneuver the engine into place.

TORQUE:

Engine hanger bolt:

24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

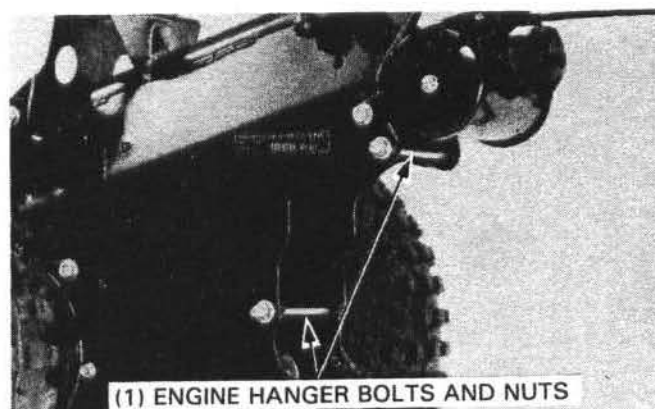
After '86:

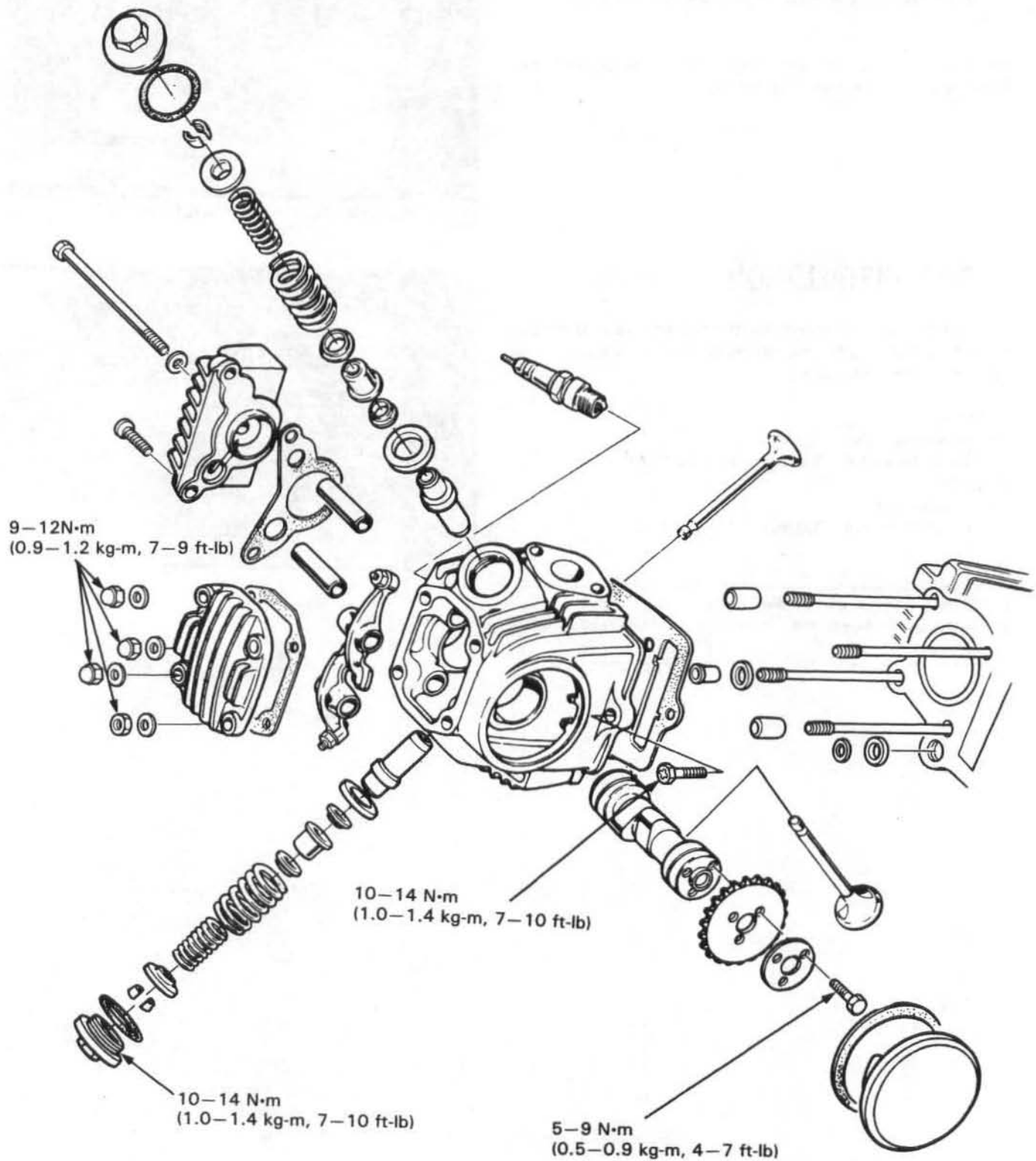
Brake pedal bolt

24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

NOTE

- Route the wires and cables properly (page 1-8, 9).
- Fill the crankcase to the proper level with the recommended oil (page 2-1, 2).





6. CYLINDER HEAD/VALVES

SERVICE INFORMATION	6-1	VALVE GUIDE REPLACEMENT	6-7
TROUBLESHOOTING	6-2	VALVE SEAT INSPECTION/REFACING	6-8
CYLINDER HEAD REMOVAL	6-3	CYLINDER HEAD ASSEMBLY	6-10
CYLINDER HEAD DISASSEMBLY	6-4	CYLINDER HEAD INSTALLATION	6-12

SERVICE INFORMATION

GENERAL

- This section covers maintenance and inspection of the cylinder head, valves, camshaft and rocker arms. These services can be done with the engine installed.
- Camshaft and rocker arm lubricating oil is fed through oil passages. Be sure the passages are not clogged.
- During assembly, apply molybdenum disulfide grease to the camshaft journal to provide initial lubrication.
- Be sure to use a new gasket and O-rings when installing the cylinder head.

SPECIFICATIONS

mm (in)

ITEM			STANDARD	SERVICE LIMIT
Compression pressure			1,200 ± 150kPa (12.0 ± 1.5 kg/cm ² , 170 ± 21 psi)	900 kPa (9.0 kg/cm ² , 128 psi)
Camshaft	Cam lobe height	IN.	26.07 (1.026)	25.69 (1.011)
		EX.	26.07 (1.026)	25.69 (1.011)
	Oil clearance		0.010—0.025 (0.0004—0.0010)	0.05 (0.002)
Rocker arm shaft O.D.			9.978—9.989 (0.3928—0.3933)	9.91 (0.390)
Rocker arm I.D.			10.000—10.015 (0.3937—0.3943)	10.10 (0.398)
Valve spring	Free length	Inner	25.1 (0.99)	23.9 (0.94)
		Outer	28.1 (1.11)	26.9 (1.06)
	Preload/length	Inner	2.45—2.75 kg/22.7 (5.401—6.063 lbs/0.89)	2.3 kg/22.7 (5.07 lbs/0.89)
		Outer	6.65—7.75 kg/24.9 (14.661—17.086 lbs/0.98)	6.3 kg/24.9 (13.89 lbs/0.98)
Valve guide/ valve	Valve stem O.D.	IN.	5.455—5.465 (0.2148—0.2152)	5.40 (0.213)
		EX.	5.435—5.445 (0.2140—0.2144)	5.40 (0.213)
	Valve guide I.D.	IN.	5.475—5.485 (0.2156—0.2159)	5.50 (0.217)
		EX.	5.475—5.485 (0.2156—0.2159)	5.50 (0.217)
	Stem-to-guide clearance	IN.	0.010—0.030 (0.0004—0.0012)	0.08 (0.003)
		EX.	0.030—0.050 (0.0012—0.0020)	0.10 (0.004)
	Valve seat width		1.0 (0.04)	1.6 (0.06)
Cylinder head warpage			—	0.05 (0.002)

CYLINDER HEAD/VALVES

TORQUE VALUES

Cylinder head cover nut	9—12 N·m (0.9—1.2 kg-m, 7—9 ft-lb)
Cam sprocket bolt	5—9 N·m (0.5—0.9 kg-m, 4—7 ft-lb)
Valve inspection hole cap	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Cylinder mounting bolt	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Cylinder head bolt	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Cam chain tensioner sealing bolt	20—25 N·m (2.0—2.5 kg-m, 15—18 ft-lb)

TOOLS

Special

Valve guide reamer	07984—098000A or 07984—0980000 (U.S.A. only)
Valve spring compressor attachment	07959—KM30100

Common

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

TROUBLESHOOTING

Performance problems related to the cylinder head can usually be diagnosed by a compression test, or by tracing noises with a sounding rod or stethoscope.

Low Compression

- Valves
 - Incorrect valve adjustment
 - Burned or bent valves
 - Incorrect valve timing
 - Broken valve spring
- Cylinder head
 - Leaking or damaged head gasket
 - Warped or cracked cylinder head
- Cylinder and piston (Refer to Section 7)

High Compression

- Excessive carbon build-up on piston head or in combustion chamber

Excessive Noise

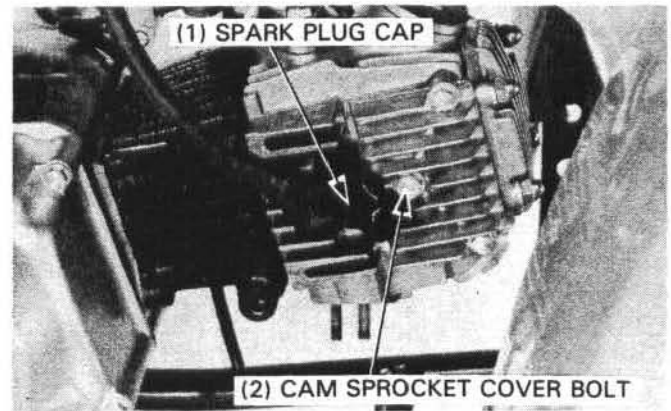
- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Damaged or worn camshaft
- Loose or worn cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth

CYLINDER HEAD REMOVAL

Remove the following parts:

- exhaust pipe (page 13-3).
- timing inspection hole cap.
- spark plug cap.

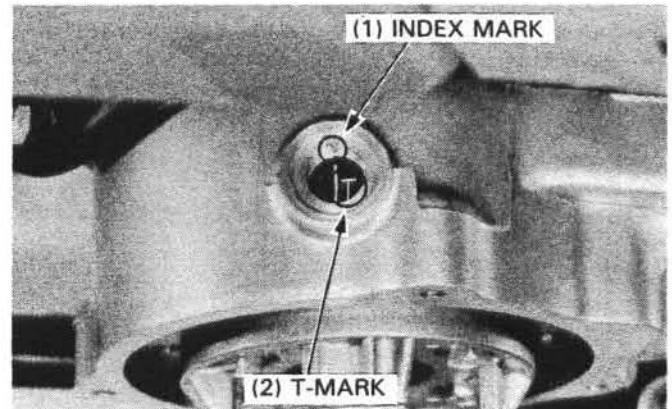
Remove the cam sprocket cover bolt and cover from the left side of the cylinder head.



Remove the recoil starter by removing the mounting bolts.

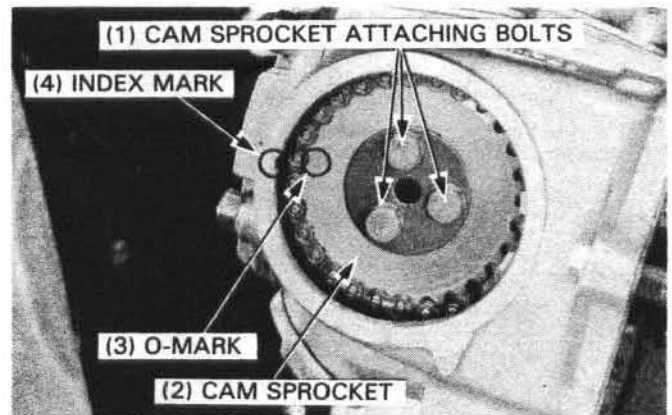
Turn the flywheel counterclockwise and align the T-mark with the index mark.

Remove the cam chain tensioner sealing bolt and spring (page 9-4).



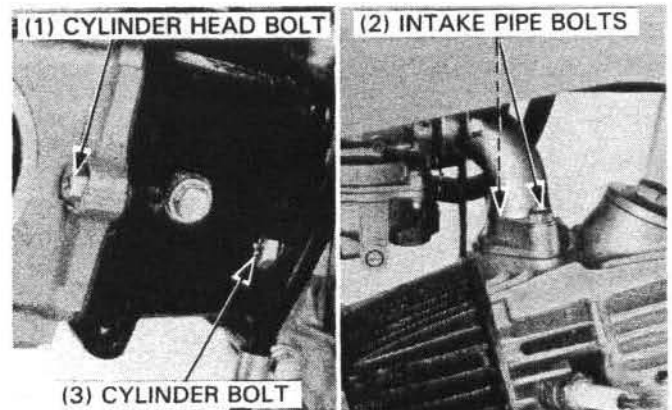
Make sure that the O-mark on the cam sprocket aligns with the index mark on the cylinder head.

Hold the flywheel and remove the three attaching bolts and the cam sprocket.



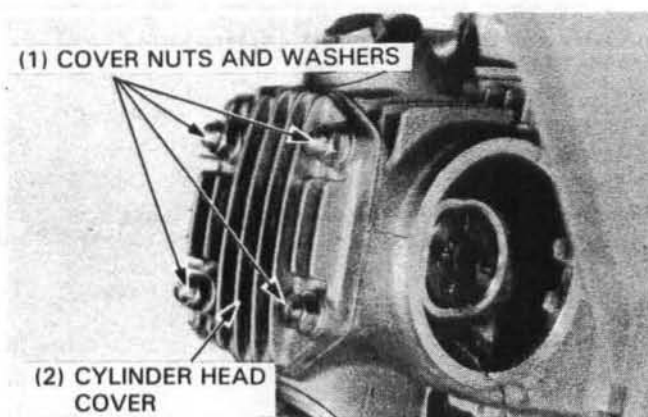
Loosen the cylinder head bolt and the cylinder mounting bolt.

Remove the intake pipe mounting bolts.



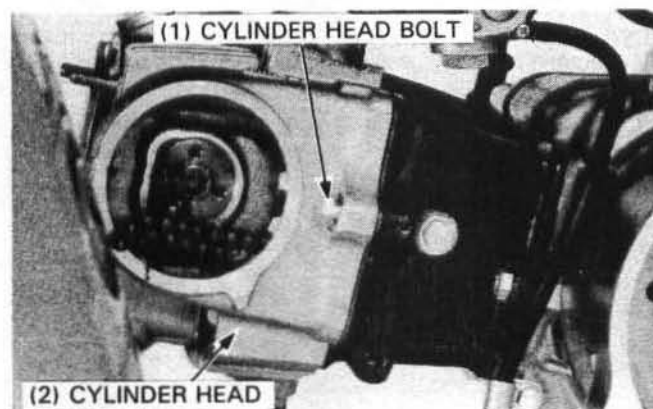
CYLINDER HEAD/VALVES

Remove the four cylinder head cover nuts and washers, and remove the cylinder head cover.



Remove the cylinder head bolt and the cylinder head.

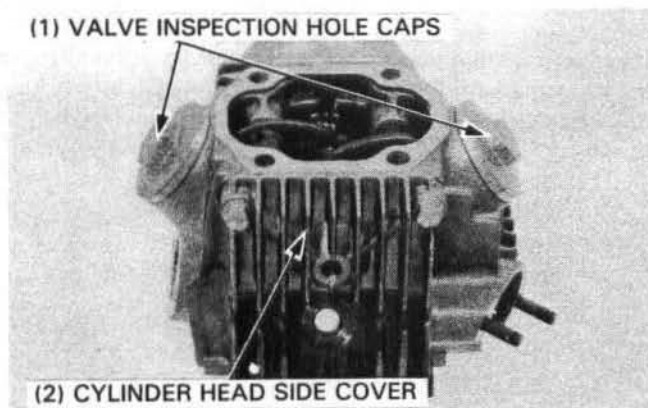
Remove the head gasket, O-rings and dowel pins.



CYLINDER HEAD DISASSEMBLY

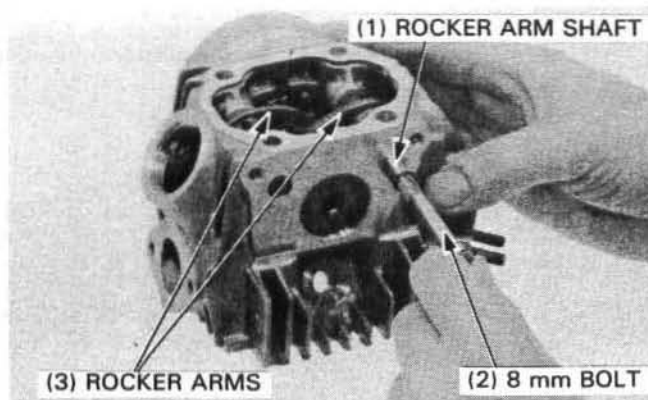
Remove the cylinder head side cover and gasket.

Remove the valve inspection hole caps and O-rings.

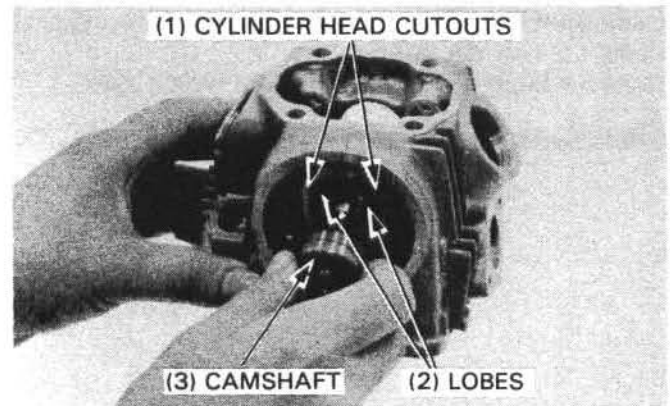


Screw an 8 mm bolt into the rocker arm shafts and pull the shafts out of the cylinder head.

Remove the rocker arms.



Remove the camshaft aligning the cam lobes with the cylinder head cutouts.



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

CAUTION

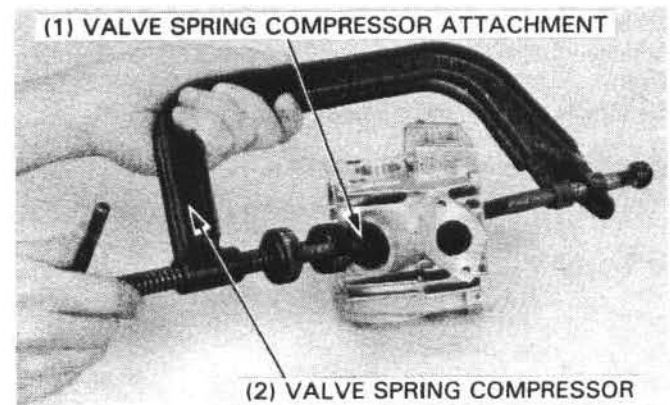
- To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.

Remove valve spring seats, stem seal caps and stem seals.

TOOL:

Valve spring compressor 07757-0010000 or
07957-3290001

Valve spring compressor attachment 07959-KM30100

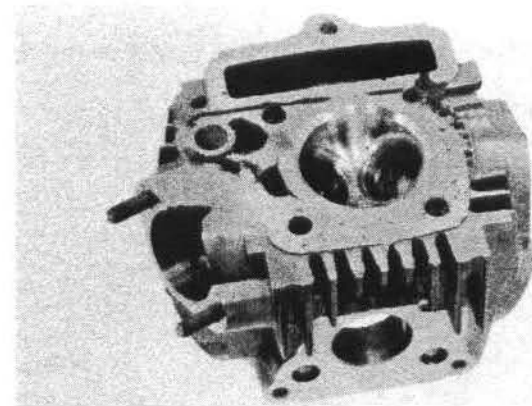


Remove carbon deposits from the combustion chamber.

Clean off the head gasket surface.

NOTE

- Avoid damaging the gasket surface.
- Gasket material will come off easier if soaked in solvent.



INSPECTION

ROCKER ARM

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

Measure the I.D. of the rocker arm.

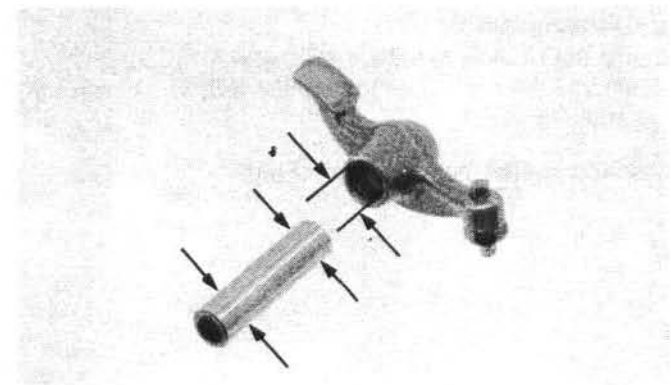
SERVICE LIMIT: 10.10 mm (0.398 in)

ROCKER ARM SHAFT

Inspect the rocker arm shafts for wear or damage.

Measure the O.D. of the rocker arm shaft.

SERVICE LIMIT: 9.91 mm (0.390 in)



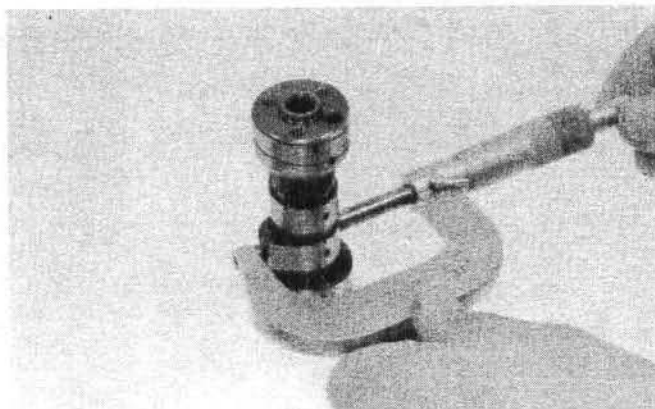
CYLINDER HEAD/VALVES

CAMSHAFT

Check for wear or damage.

Using a micrometer, measure the cam lobes height.

SERVICE LIMIT: 25.69 mm (1.011 in)

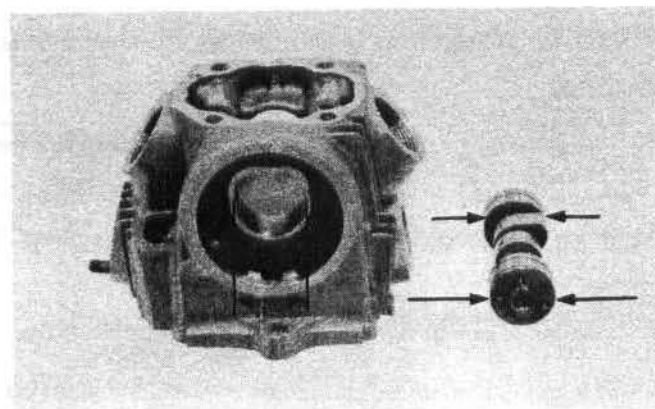


Measure and record the camshaft journal O.D.

Measure and record the camshaft journal I.D. in the cylinder head.

Determine the camshaft journal oil clearance.

SERVICE LIMIT: 0.05 mm (0.002 in)



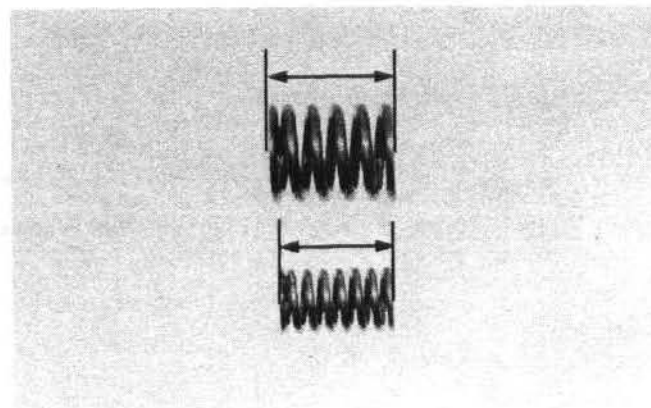
VALVE SPRING

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

SERVICE LIMIT:

Inner: 23.9 mm (0.94 in)

Outer: 26.9 mm (1.06 in)

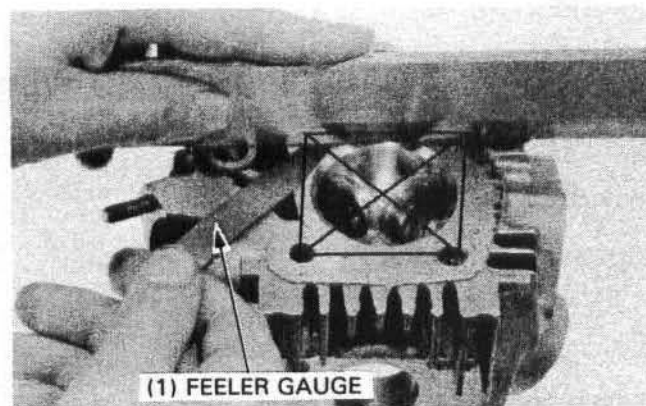


CYLINDER HEAD

Check the spark plug hole and valve area for cracks.

Check the cylinder head for warpage with a straight edge and feeler gauge.

SERVICE LIMIT: 0.05 mm (0.002 in)



VALVE STEM

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

Check valve movement in the guide.

Measure and record each valve stem O.D.

SERVICE LIMIT: IN/EX: 5.40 mm (0.213 in)

VALVE GUIDE

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

TOOL:

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

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

SERVICE LIMIT: IN/EX: 5.50 mm (0.217 in)

Determine the stem-to-guide clearance.

SERVICE LIMIT: IN: 0.08 mm (0.003 in)
EX: 0.10 mm (0.004 in)

NOTE

- If the stem-to-guide clearance exceeds the service limits determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace the guides as necessary and ream to fit.
- If the valve guide is replaced, the valve seat must be refaced.

VALVE GUIDE REPLACEMENT

Heat the cylinder head to 100–150°C (212–300°F) with a hot plate or oven.

WARNING

- *To avoid burns, wear heavy gloves when handling the heated cylinder head.*

CAUTION

- *Do not use a torch to heat the cylinder head; it may cause warping.*

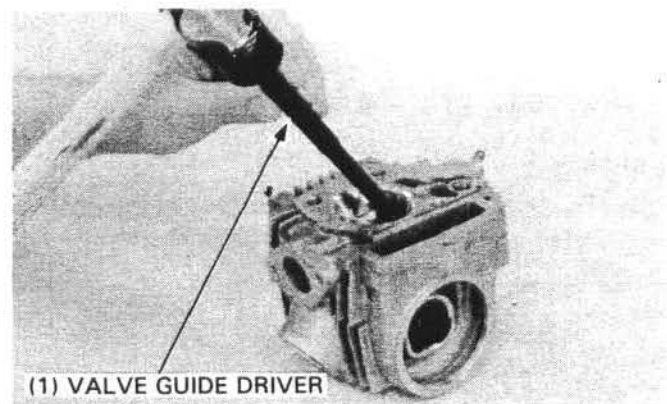
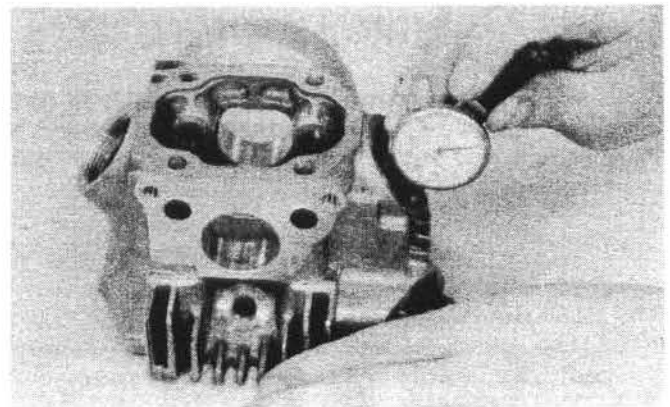
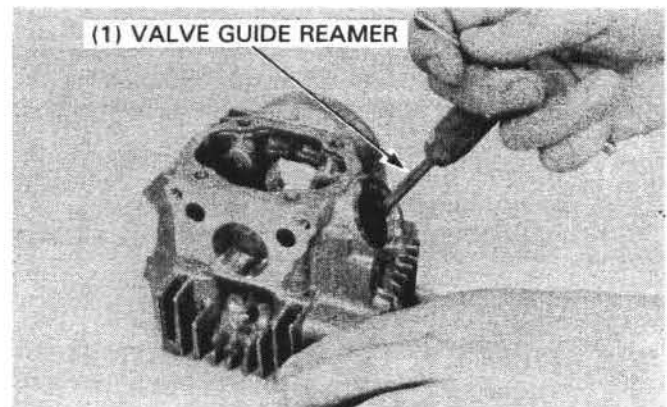
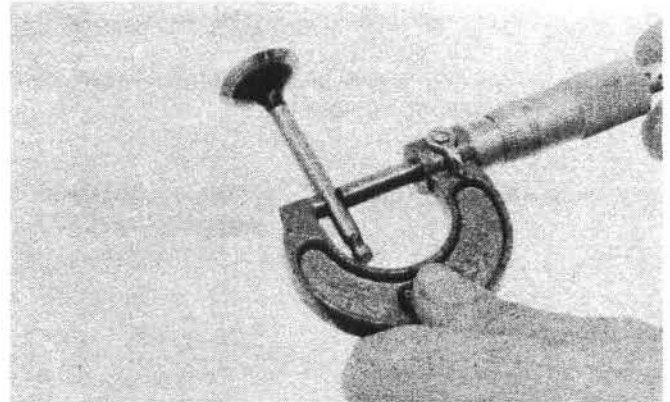
Support the cylinder head and drive out the old guides from the combustion chamber side of the cylinder head.

CAUTION

- *Avoid damaging the cylinder head.*

TOOL:

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



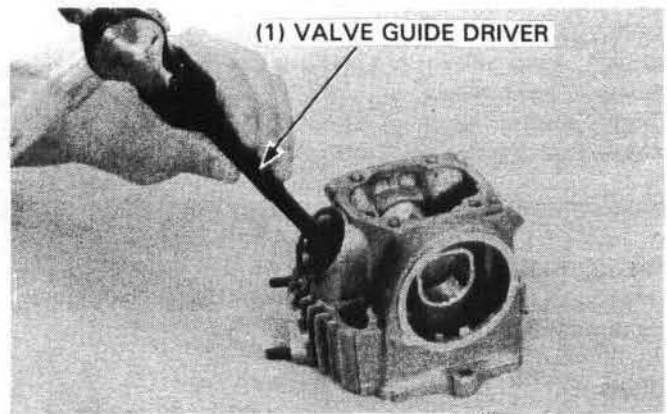
CYLINDER HEAD/VALVES

Drive in the new valve guide from the top of the head.

Check to be sure the new guide was not damaged during installation, then ream the guide.

TOOL:

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



Ream the new valve guide after installation.

NOTE

- Use cutting oil on the reamer during this operation.
- Rotate the reamer in the same direction when inserting and removing it.

Reface the valve seat.

Clean the cylinder head thoroughly to remove any metal particles.

TOOL:

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

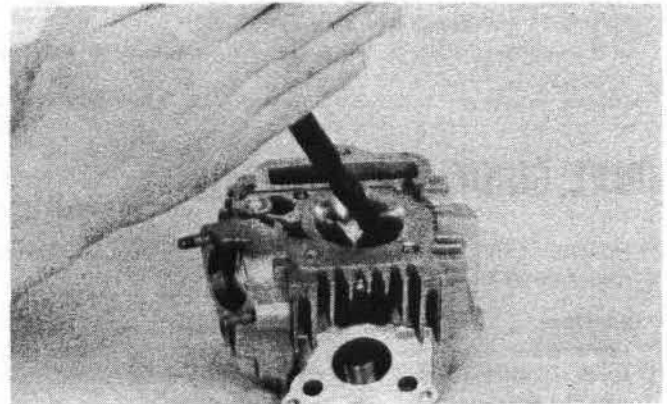


VALVE SEAT INSPECTION/REFACING

Clean both intake and exhaust valves thoroughly to remove carbon deposits. Apply a light coating of prussian blue to each valve face. Lap each valve and seat using a rubber hose or other hand-lapping tool.

NOTE

- Take care not to allow the compound to enter between the valve stem and guide.
- After lapping, wash out the compound completely and apply a coat of engine oil to the valve face and seat.

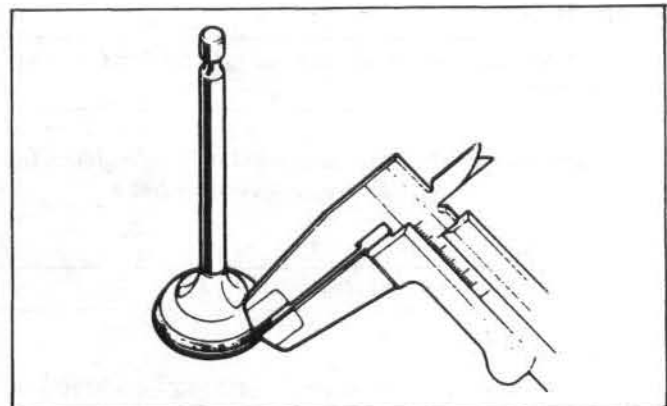


Measure the width of the each valve face.

SERVICE LIMIT: 1.6 mm (0.06 in)

CAUTION

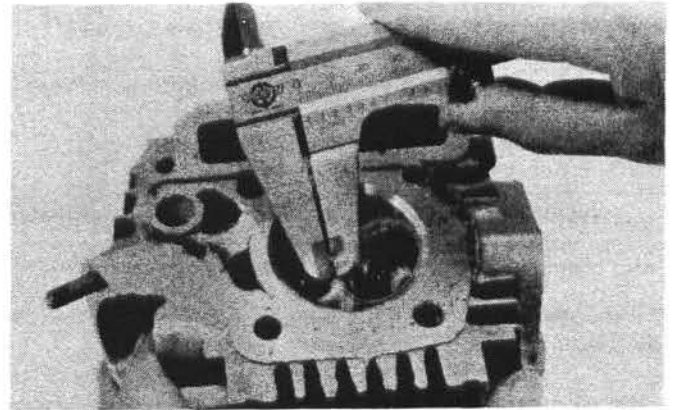
- The valves cannot be ground. If the valve face is rough, worn unevenly, or contacts the seat improperly, the valve must be replaced.



Measure the valve seat.

SERVICE LIMIT: 1.6 mm (0.06 in)

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



VALVE SEAT GRINDING

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

NOTE

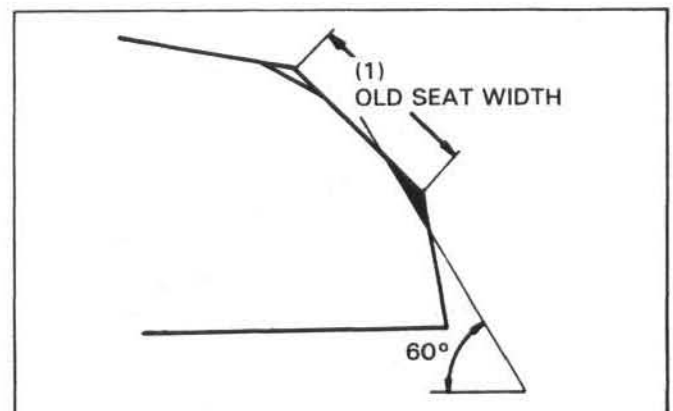
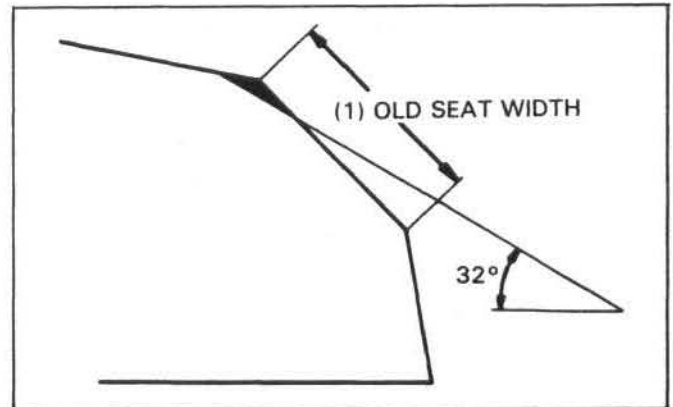
- Reface the seat with a 45° cutter when the valve guide is replaced.

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

NOTE

- Follow the instructions supplied with the Valve Seat Refacing Equipment.

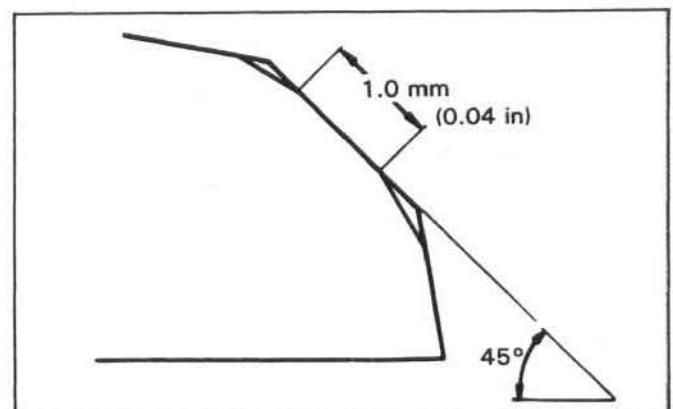
Use a 60° cutter to remove the lower 1/4 of the old seat. Remove the cutter and inspect the area you have just cut.



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

NOTE

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



CYLINDER HEAD/VALVES

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

Without rotating the valve, insert it through the valve guide and onto the seat to make a clear pattern.

NOTE

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

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

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

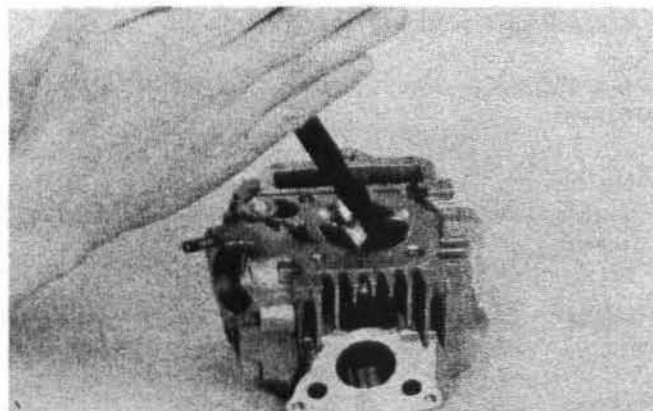
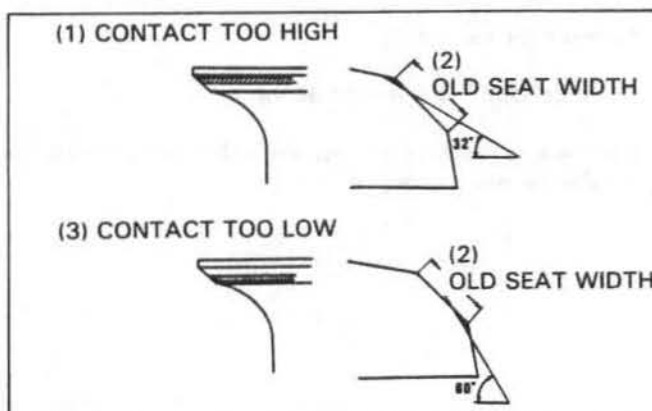
Refinish the seat to specifications using a 45° seat cutter.

After cutting the seat, apply lapping compound to the valve face and lap the valve using light pressure.

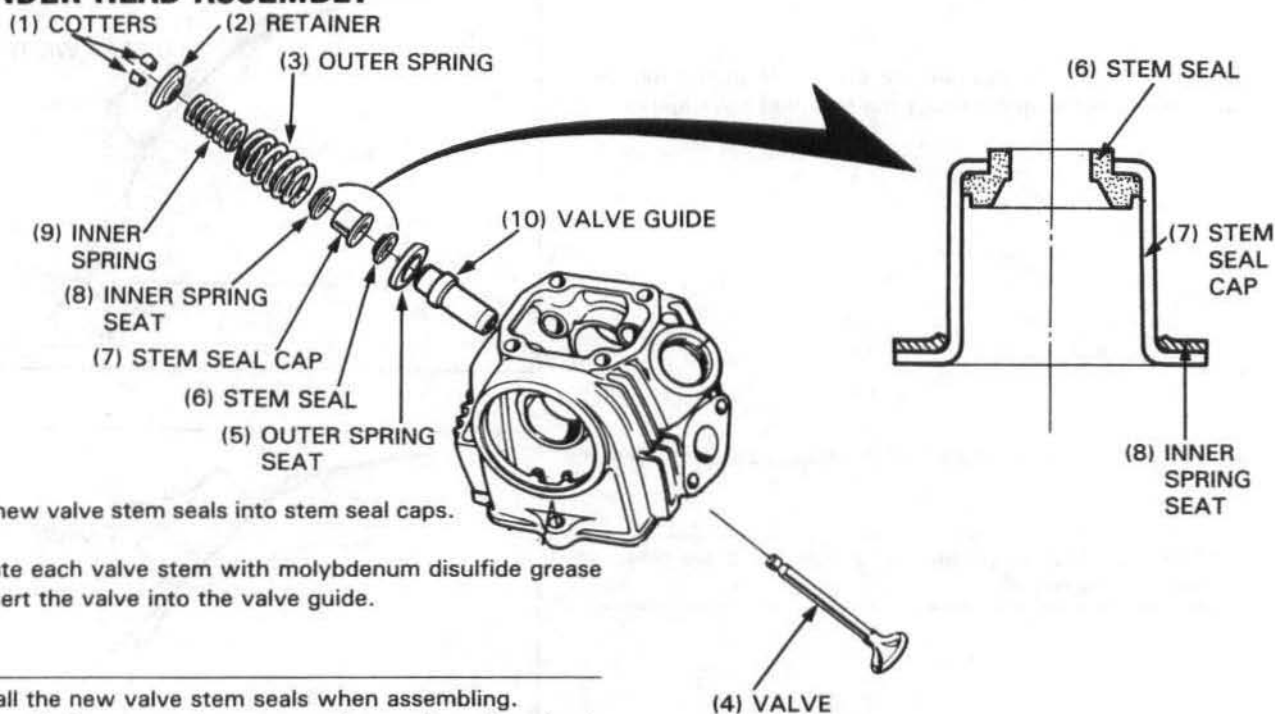
NOTE

- Take care not to allow the compound to enter between the valve stem and guide.

After lapping, wash all residual compound off the cylinder head and valve.



CYLINDER HEAD ASSEMBLY



Install new valve stem seals into stem seal caps.

Lubricate each valve stem with molybdenum disulfide grease and insert the valve into the valve guide.

NOTE

- Install the new valve stem seals when assembling.
- To avoid damage to the stem seal, turn the valve slowly when inserting.

Install the valve springs and retainers.

Install the valve cotters while compressing the valve springs with valve spring compressor.

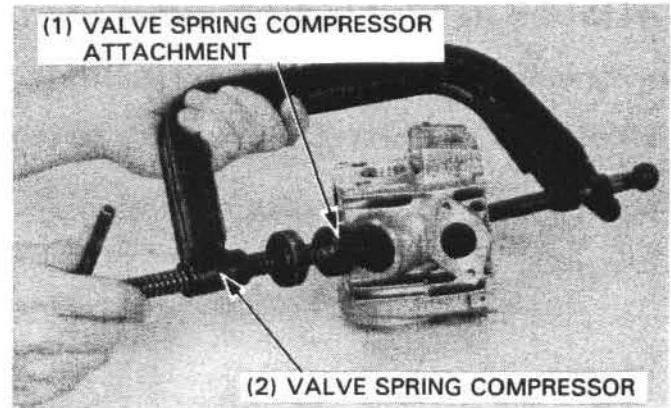
CAUTION

- *To prevent tension loss, do not compress the valve springs more than necessary to install the valve cotters.*

TOOL:

Valve spring compressor 07757-0010000 or
07957-3290001

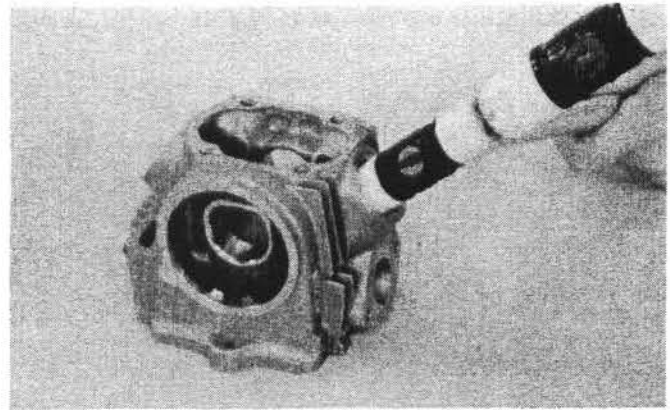
Valve spring compressor attachment 07959-KM30100



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

CAUTION

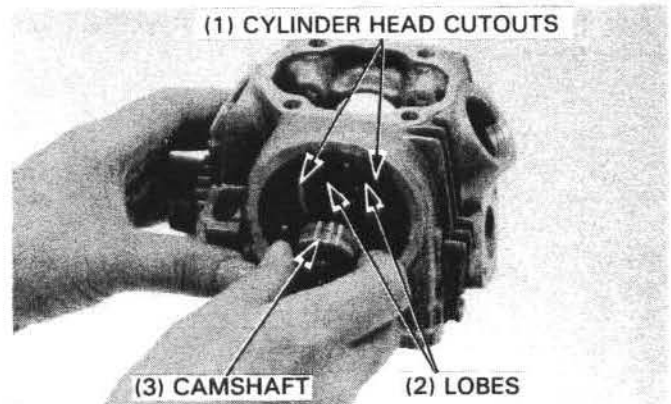
- *Support the cylinder head above the work bench surface to prevent possible valve damage.*



Install the camshaft aligning the cam lobes with the cylinder head cutouts.

Apply a thin coat of engine oil to the rocker arm shafts.

Install the rocker arms and shafts with the threaded ends facing out.

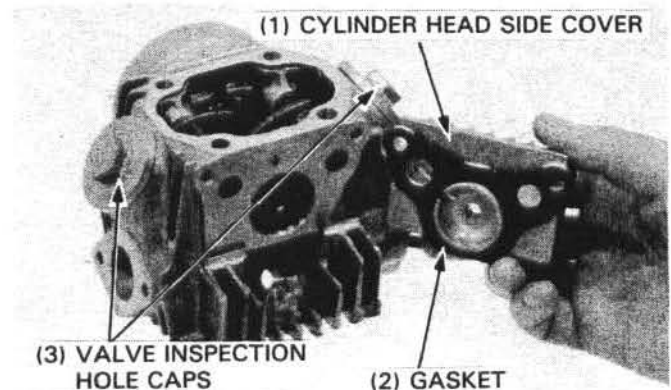


Make sure the O-rings are properly seated in the grooves of the valve inspection hole caps.

Install the valve inspection hole caps.

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

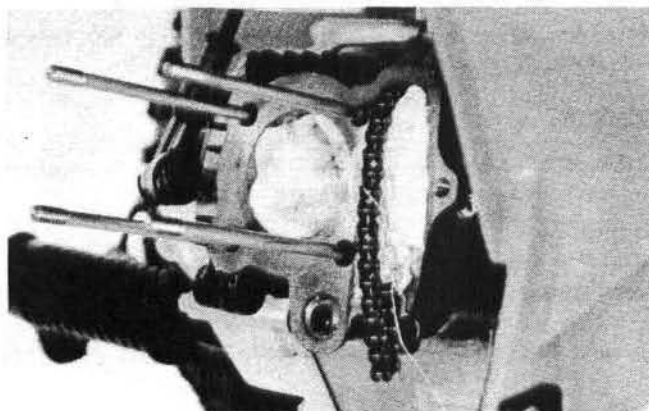
Install the cylinder head side cover with a new gasket.



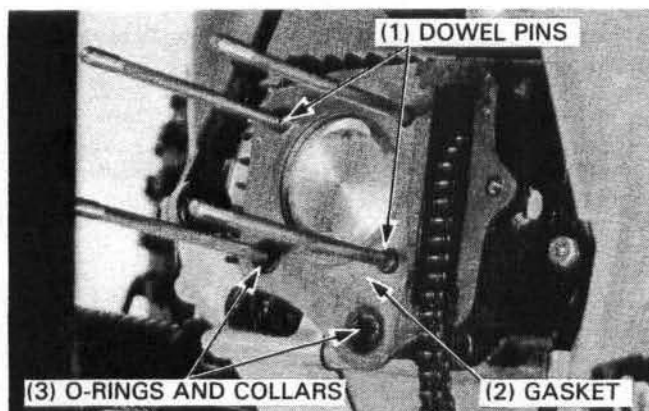
CYLINDER HEAD INSTALLATION

Turn the flywheel and place a shop towel in the cylinder and oil hole.

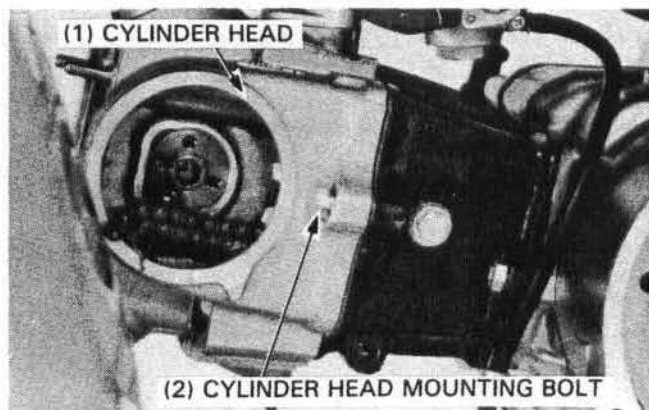
Remove the cylinder gasket and thoroughly clean the gasket surface.



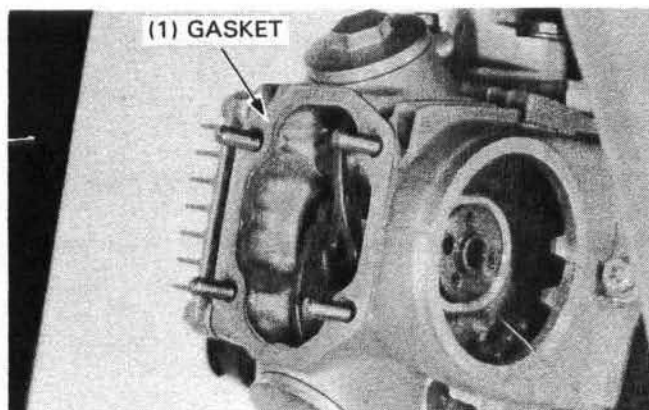
Install a new gasket and O-rings, collars and the dowel pins.



Install the cylinder head and cylinder head bolt, but do not tighten the mounting bolt at this time.



Install a new head cover gasket.



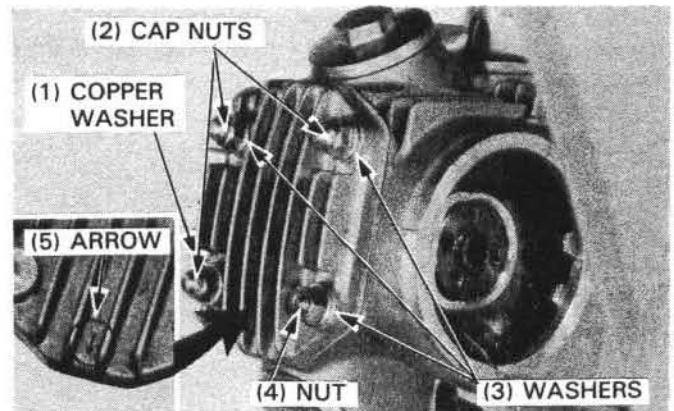
Install the cylinder head cover with the arrow facing down (exhaust pipe side).

NOTE

- Be sure to install the washers, copper washer, cap nuts and nut on the cylinder head cover as shown.

Tighten the cylinder head cover nuts in a criss-cross pattern in 2 or 3 steps.

TORQUE: 9–12 N·m (0.9–1.2 kg-m, 7–9 ft-lb)

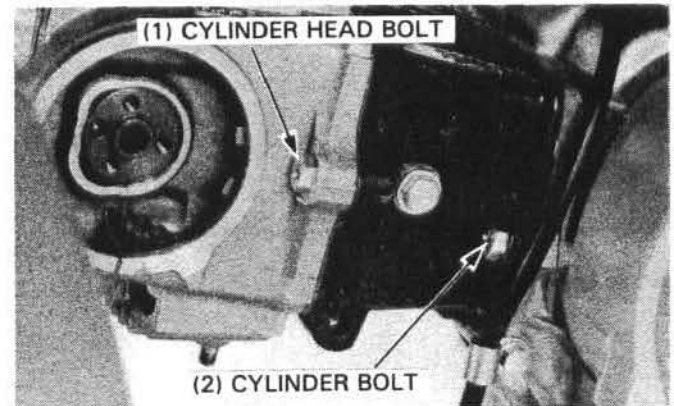


Tighten the cylinder head bolt.

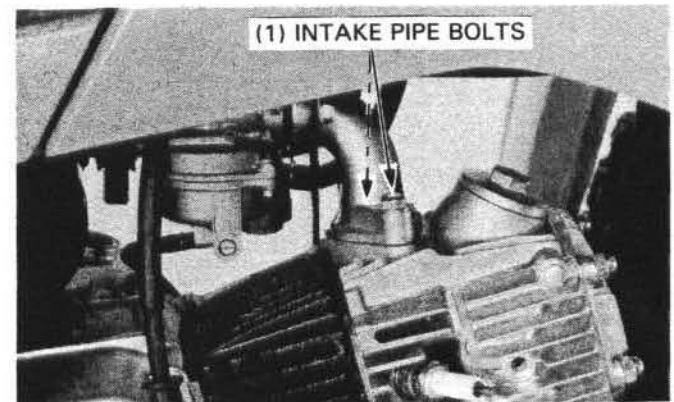
TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

Tighten the cylinder mounting bolt.

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



Install the intake pipe mounting bolts.

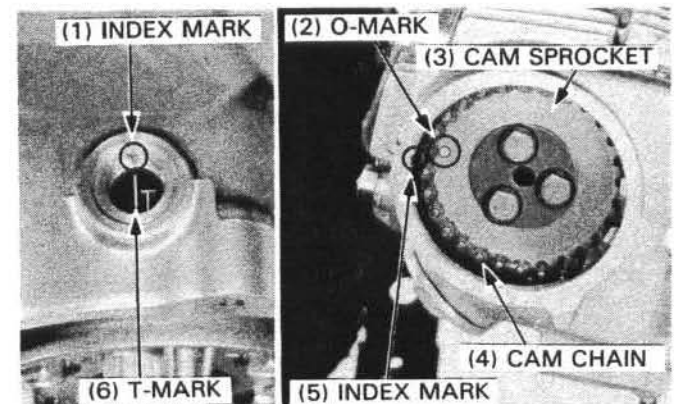


Turn the flywheel counterclockwise and align the T mark with the index mark.

Place the cam chain over the cam sprocket aligning the O-mark on the cam sprocket with the index mark on the cylinder head. Install the cam sprocket.

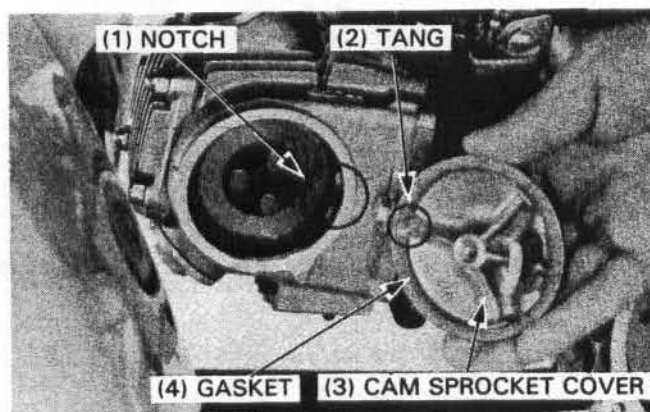
Hold the flywheel and tighten the cam sprocket bolts.

TORQUE: 5–9 N·m (0.5–0.9 kg-m, 4–7 ft-lb)



CYLINDER HEAD/VALVES

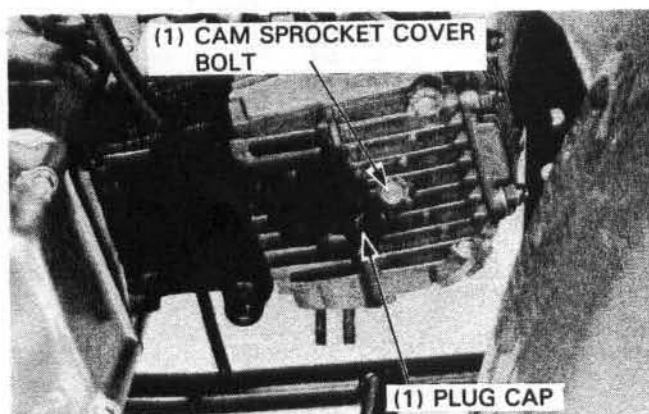
Install a new gasket onto the cam sprocket cover.
Install the cam sprocket cover aligning the tang with the cylinder head notch.



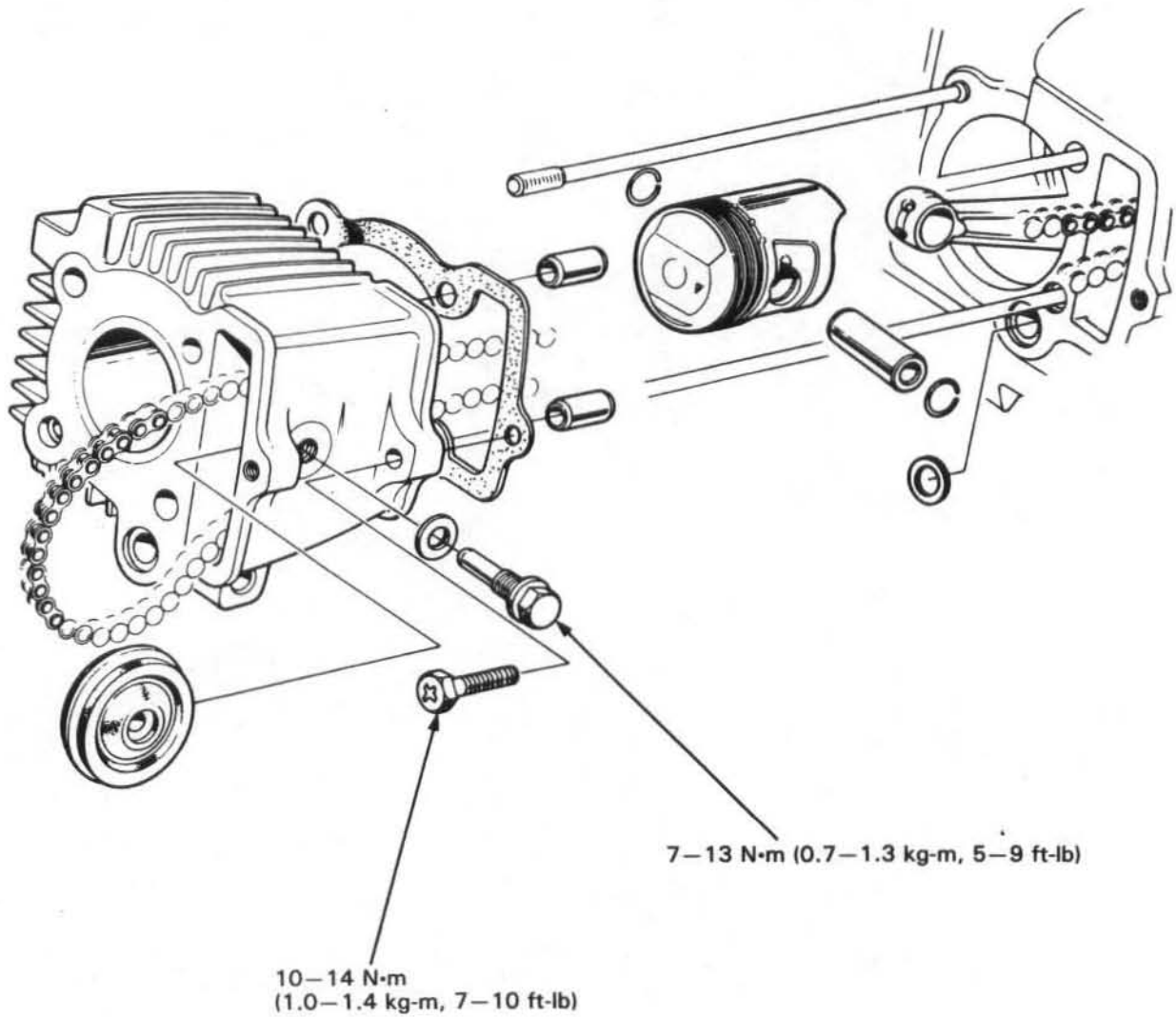
Tighten the cam sprocket cover bolt.
Install the spark plug cap.
Adjust the valve clearance (page 3-6).
Install the recoil starter and tighten the mounting bolts.
Install and tighten the cam chain tensioner sealing bolt (with washer).

TORQUE: 20–25 N·m (2.0–2.5 kg-m, 15–18 ft-lb)

Install the exhaust pipe (page 13-4).



MEMO



7. CYLINDER/PISTON

SERVICE INFORMATION	7-1	PISTON REMOVAL	7-2
TROUBLESHOOTING	7-1	PISTON INSTALLATION	7-5
CYLINDER REMOVAL	7-2	CYLINDER INSTALLATION	7-5

SERVICE INFORMATION

GENERAL

- Cylinder/piston maintenance and inspection can be performed with the engine installed.
- Camshaft and rocker arm lubricating oil is fed through cylinder oil passages. Be sure the passages are not clogged.

SPECIFICATIONS

mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		47.005—47.015 (1.8506—1.8510)	47.05 (1.852)
	Warpage across top		—	0.10 (0.004)
	Taper		—	0.10 (0.004)
	Out-of-round		—	0.10 (0.004)
Piston, piston rings and piston pin	Piston ring-to-ring groove clearance	TOP	0.015—0.045 (0.0006—0.0018)	0.12 (0.005)
		SECOND	0.015—0.045 (0.0006—0.0018)	0.12 (0.005)
	Ring end gap	TOP	0.15—0.35 (0.006—0.014)	0.5 (0.02)
		SECOND	0.15—0.35 (0.006—0.014)	0.5 (0.02)
		OIL	0.2—0.5 (0.008—0.019)	—
	Piston O.D.		46.980—47.000 (1.8469—1.8504)	46.90 (1.847)
	Piston pin bore		13.002—13.008 (0.5119—0.5121)	13.06 (0.514)
	Connecting rod small end I.D.		13.013—13.043 (0.5123—0.5135)	13.10 (0.516)
	Piston pin O.D.		12.994—13.000 (0.5116—0.5118)	12.98 (0.511)
	Piston-to-piston pin clearance		0.002—0.014 (0.0001—0.0006)	0.075 (0.0030)
	Cylinder-to-piston clearance		0.005—0.035 (0.0002—0.0014)	0.15 (0.006)

TORQUE VALUES

Cam chain guide roller bolt	7—13 N·m (0.7—1.3 kg-m, 5—9 ft-lb)
Cylinder mounting bolt	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

TROUBLESHOOTING

Compression low

- Worn cylinder or piston rings

Excessive smoke

- Worn cylinder or piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

Overheating

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

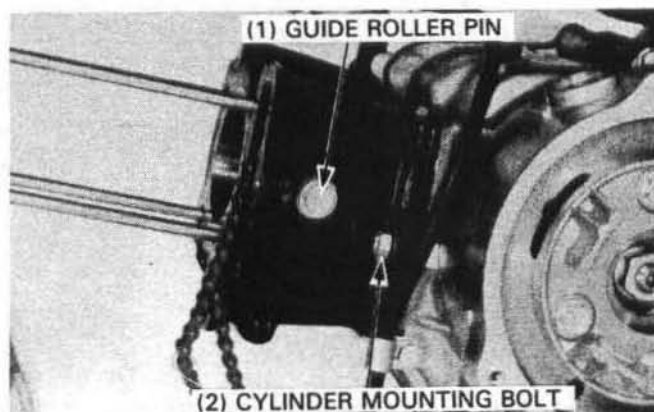
Knocking or abnormal noise

- Worn piston and cylinder
- Excessive carbon build-up

CYLINDER REMOVAL

Remove the cylinder head (Section 6).

Remove the guide roller pin and guide roller.
Remove the cylinder mounting bolt and the cylinder.
Remove the O-ring, gasket and dowel pins.



INSPECTION

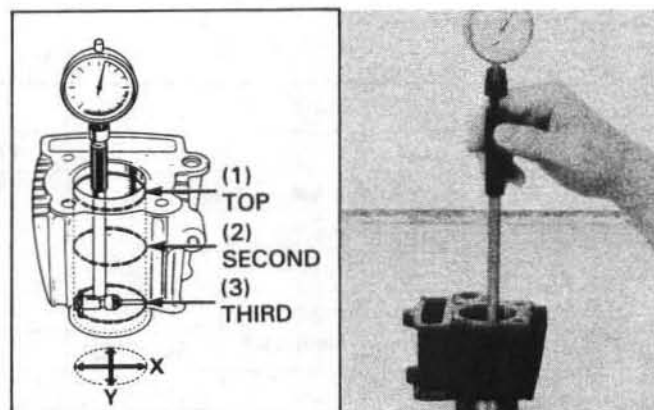
Inspect the cylinder bore for wear or damage.
Measure the cylinder I.D. at three levels in X and Y axis.

SERVICE LIMIT: 47.05 mm (1.852 in)

Calculate the taper and out of round.

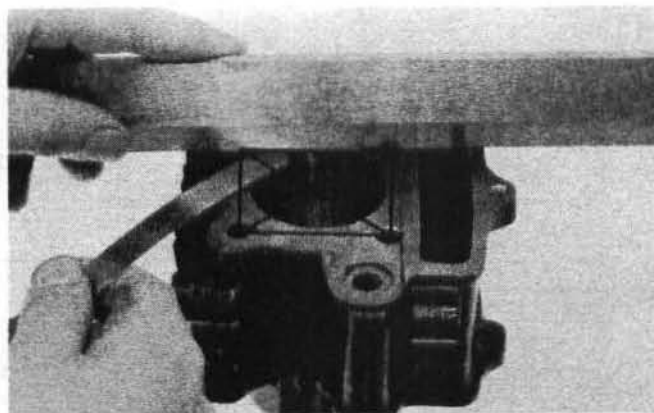
SERVICE LIMITS:

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



Check the cylinder head mating surface for warpage with a straight edge and feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)

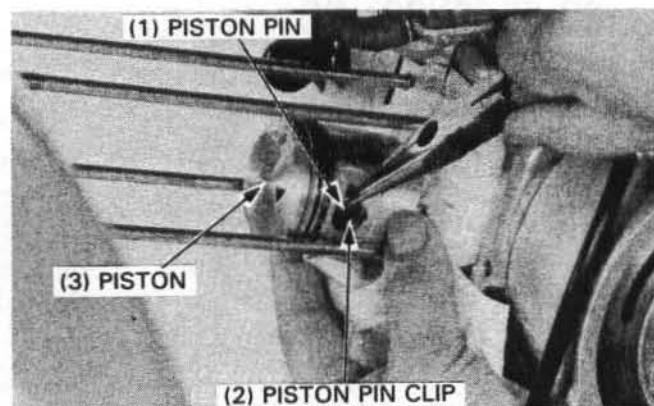


PISTON REMOVAL

Place a shop towel in the crankcase to keep dirt and parts out.

Remove the piston pin clip with needle nose pliers.

Press the piston pin out and remove the piston.



Spread each piston ring and remove it by lifting up at a point just opposite the gap.

CAUTION

- *Do not damage the piston rings by spreading the ends too far.*

Inspect the piston for damage and cracks, and the ring grooves for wear.

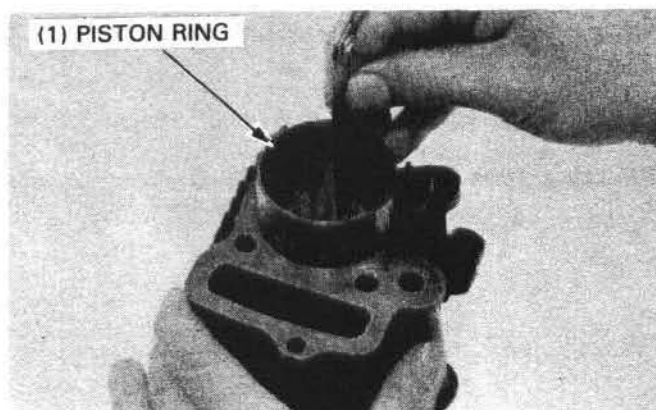


INSPECTION

PISTON RING

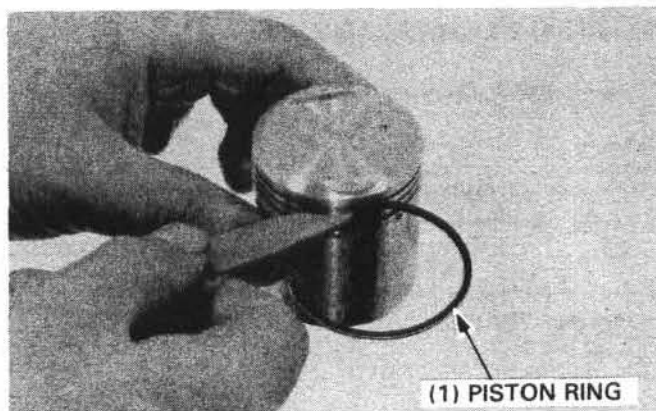
Insert each piston ring into the cylinder, and measure the end gap.

SERVICE LIMIT: TOP/SECOND: 0.5 mm (0.02 in)



Measure the piston ring-to-groove clearance.

SERVICE LIMIT: TOP/SECOND: 0.12 mm (0.005 in)



PISTON AND PISTON PIN

Measure the piston O.D. 10 mm (0.4 in) above the skirt's bottom.

SERVICE LIMIT: 46.90 mm (1.847 in)

Calculate the cylinder-to-piston clearance.

SERVICE LIMIT: 0.15 mm (0.006 in)



CYLINDER/PISTON

Measure the piston pin bore.

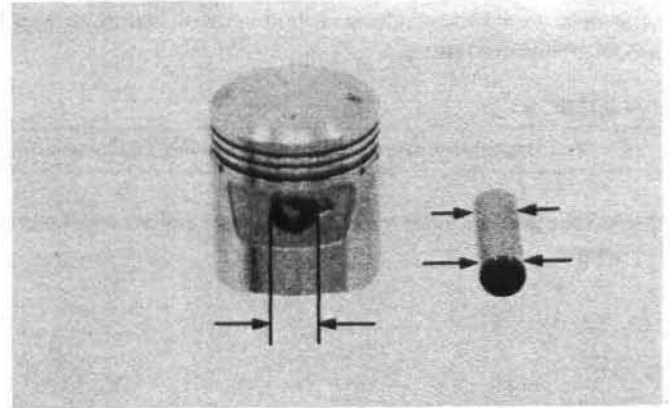
SERVICE LIMIT: 13.06 mm (0.514 in)

Measure the piston pin O.D.

SERVICE LIMIT: 12.98 mm (0.511 in)

Calculate the piston-to-piston pin clearance.

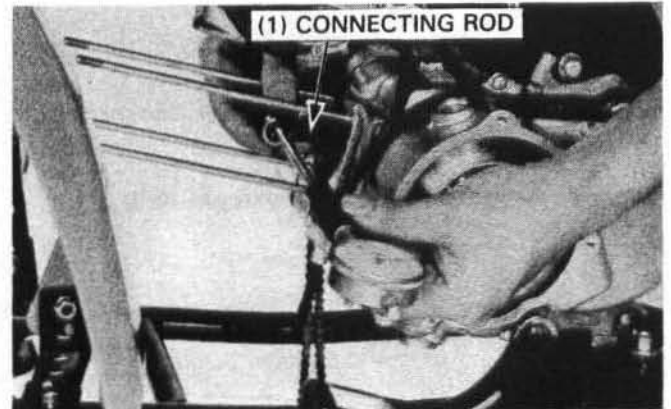
SERVICE LIMIT: 0.075 mm (0.0030 in)



Measure the connecting rod small end I.D. with a small hole gauge.

SERVICE LIMIT: 13.10 mm (0.516 in)

See section 10 for connecting rod replacement procedures.



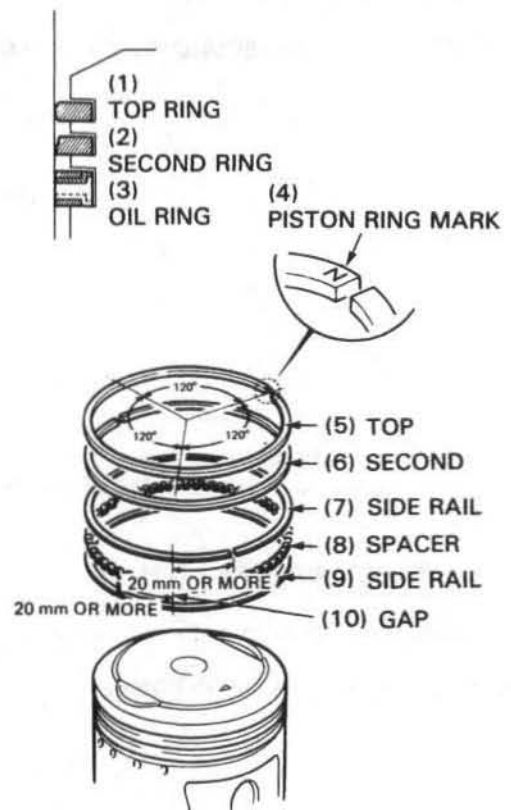
PISTON RING INSTALLATION

Install the piston rings with the marks facing up.

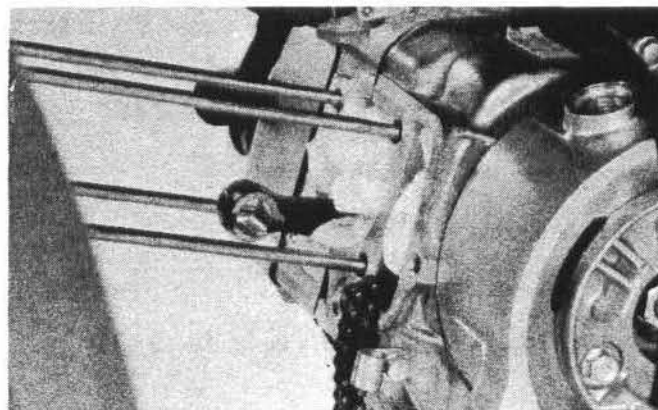
NOTE

- After installation, the rings should rotate freely.
- 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.



Clean the cylinder gasket surface being careful not to drop any gasket material into the crankcase.



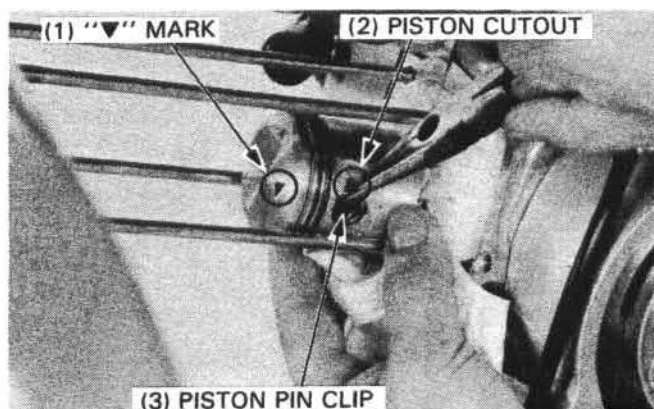
PISTON INSTALLATION

Apply molybdenum disulfide grease to inside of the connecting rod small end.

Install the piston, piston pin and clip.

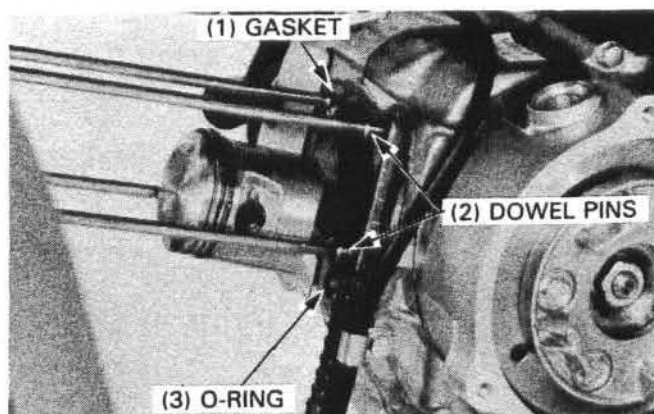
NOTE

- Install the piston with the "▼" mark facing the exhaust side.
- Do not align the piston pin clip end gap with the piston cut-out.



CYLINDER INSTALLATION

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

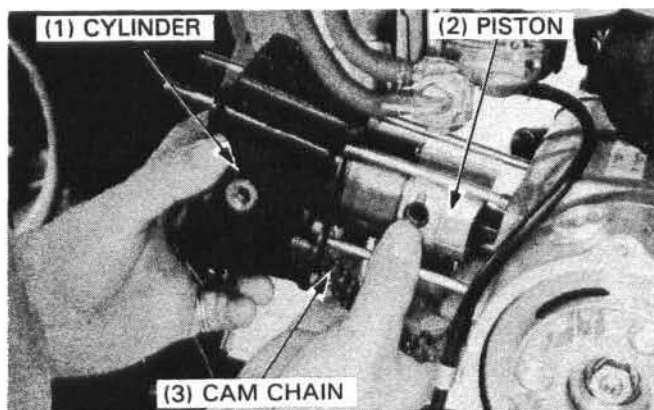


Apply a thin coat of engine oil to the piston rings and cylinder wall.

Install the cylinder, compressing the piston rings.

NOTE

- When the cylinder is halfway over the piston, route the cam chain through the cylinder.



CYLINDER/PISTON

Install the cam chain guide roller and tighten the guide roller bolt.

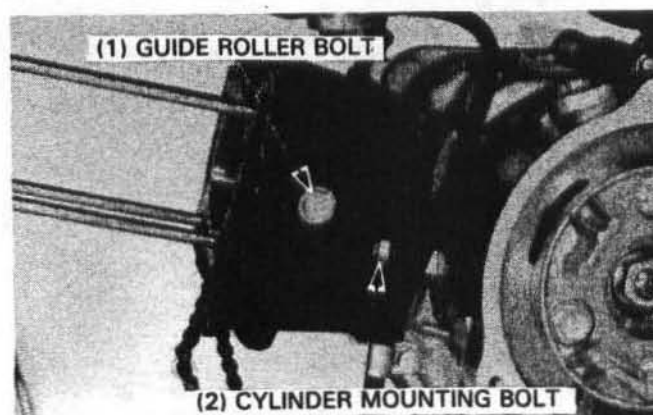
TORQUE: 7–13 N·m (0.7–1.3 kg-m, 5–9 ft-lb)

Loosely install the cylinder mounting bolt.

Install the cylinder head (section 6).

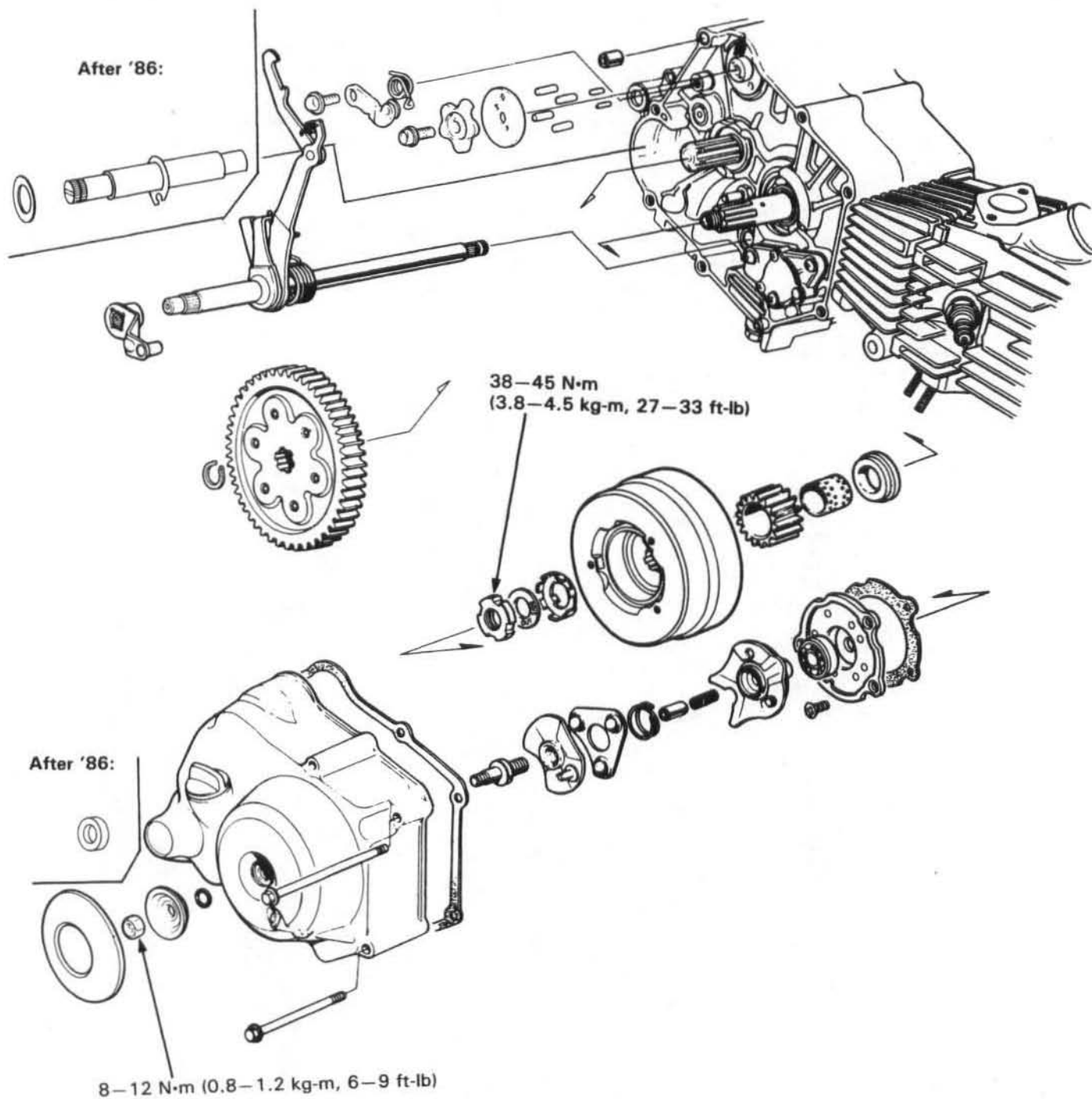
Tighten the cylinder mounting bolt.

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



MEMO

RIDE RED



8.CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

SERVICE INFORMATION	8-1	GEARSHIFT LINKAGE INSTALLATION	8-7
TROUBLESHOOTING	8-2	OIL PUMP	8-8
RIGHT CRANKCASE COVER REMOVAL	8-3	CLUTCH ASSEMBLY	8-10
CLUTCH REMOVAL	8-4	CLUTCH INSTALLATION	8-11
CLUTCH DISASSEMBLY	8-5	BRAKE PEDAL PIVOT (After '86)	8-13
GEARSHIFT LINKAGE REMOVAL	8-7	RIGHT CRANKCASE COVER INSTALLATION	8-14

SERVICE INFORMATION

GENERAL

- The clutch, gearshift linkage and oil pump can be serviced with the engine installed.
- If the shift forks, drum and transmission require servicing, remove the engine and separate crankcase (section 10).

SPECIFICATIONS

mm (in)

ITEM			STANDARD	SERVICE LIMIT
Clutch	Spring free length		25.08 (0.987)	23.1 (0.91)
	Disc thickness	A	2.55—2.65 (0.100—0.104)	2.3 (0.09)
		B	3.35—3.45 (0.132—0.136)	3.0 (0.12)
	Plate warpage		—	0.20 (0.008)
Clutch center guide O.D.			20.930—20.950 (0.8240—0.8248)	20.90 (0.823)
Drive gear I.D.			21.000—21.021 (0.8268—0.8276)	21.05 (0.829)
Oil pump	Tip clearance		0.15 (0.006)	0.25 (0.010)
	Body clearance		0.10—0.15 (0.004—0.006)	0.20 (0.008)
	End clearance		0.020—0.070 (0.0008—0.0028)	0.12 (0.005)

TORQUE VALUES

Clutch lock nut	38—45 N·m (3.8—4.5 kg-m, 27—33 ft-lb)
Gearshift pedal bolt	12—14 N·m (1.2—1.4 kg-m, 9—10 ft-lb)
Foot peg guard bolt A	24—30 N·m (2.4—3.0 kg-m, 17—22 ft-lb)
Foot peg guard bolt B	30—40 N·m (3.0—4.0 kg-m, 22—29 ft-lb)
Foot peg mounting bolt	18—25 N·m (1.8—2.5 kg-m, 13—18 ft-lb)
Clutch adjusting screw lock nut	8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)
Rear fender/foot peg guard bolt	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Brake pedal bolt (After '86:)	24—30 N·m (2.4—3.0 kg-m, 17—22 ft-lb)

TOOLS

Common

Lock nut wrench, 20 x 24 mm

07716—0020100 or 07916—3710000 or Equivalent commercially available in U.S.A.

Extension

Flywheel holder

07716—0020500 or Equivalent commercially available in U.S.A.
07725—0040000

TROUBLESHOOTING

Clutch slips

- No free play
- Discs worn
- Spring weak

Clutch does not disengage

- Plate warpage

Clutch drags when disengaged

- Lifter mechanism damaged

Hard shifting

- Improper clutch adjustment
- Shift forks bent
- Shift spindle bent
- Shift drum stopper bent
- Shift drum cam groove bent

Transmission jumps out of gear

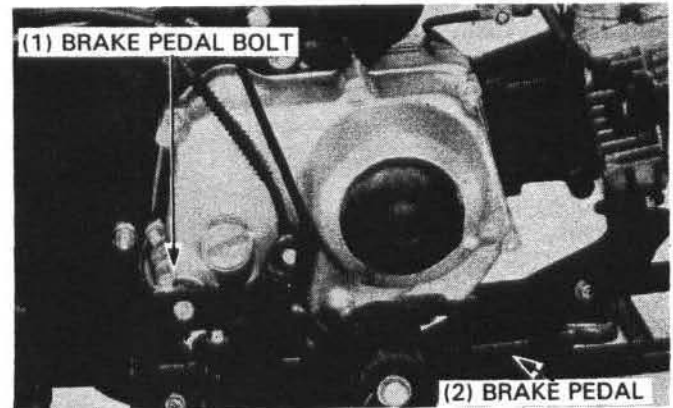
- Gear dogs worn
- Shift shaft bent
- Shift drum stopper broken
- Shift forks bent

RIGHT CRANKCASE COVER REMOVAL

Drain the engine oil (page 2-2).

After '86:

Remove the brake pedal guard and brake pedal bolt.

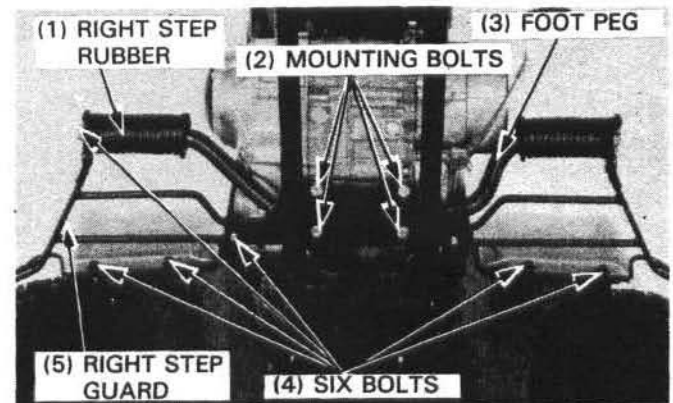


Remove the following parts:

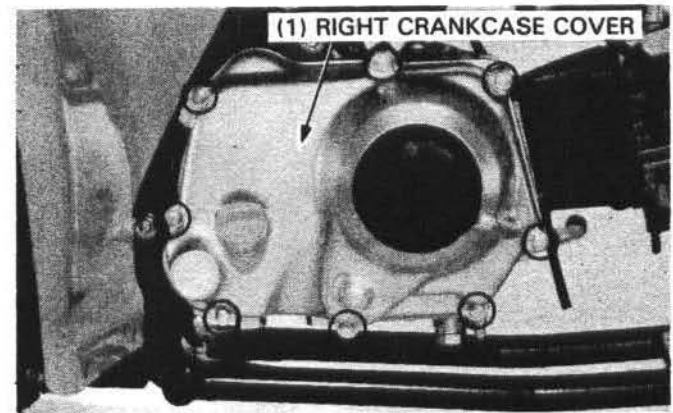
- the exhaust pipe (page 13-3).
- the six bolts shown.
- the right step guard and right step rubber.
- the four foot peg mounting bolts and pull the foot peg out of the frame from the left side.

After '86:

Remove the brake pedal (page 12-4).



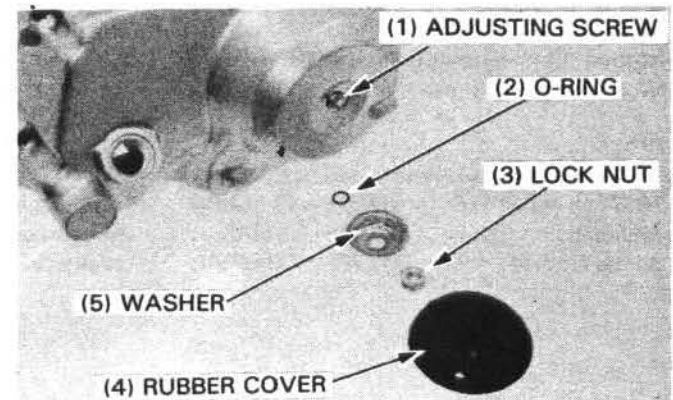
Remove the right crankcase cover bolts and the cover.
Remove the dowel pins and gasket.



CLUTCH LIFTER REMOVAL

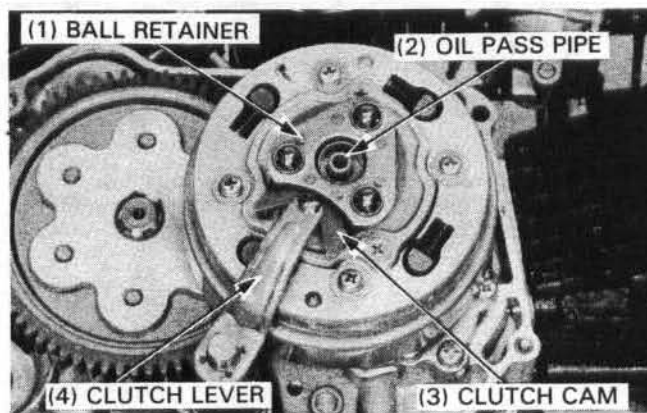
Remove the rubber cover.

Hold the clutch adjusting screw and remove the lock nut, washer and O-ring.

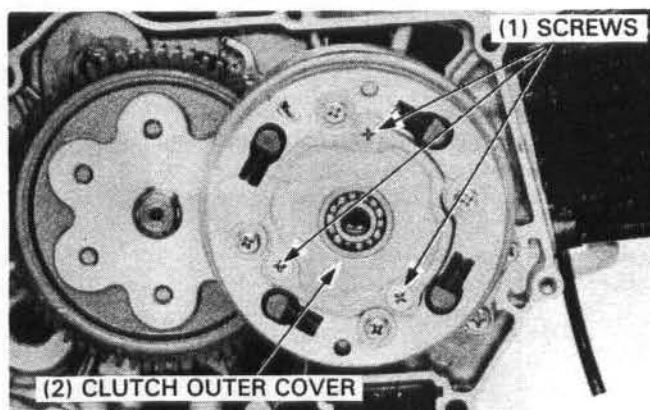


CLUTCH REMOVAL

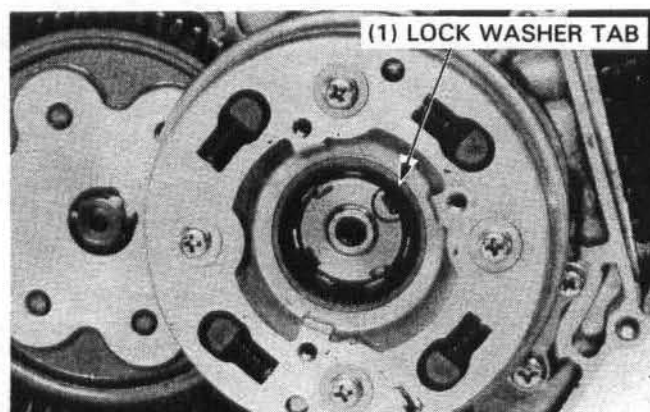
Remove the ball retainer, clutch lever, spring, clutch cam and oil pass pipe.



Remove the clutch outer cover by removing the three screws.



Straighten the lock washer tab.

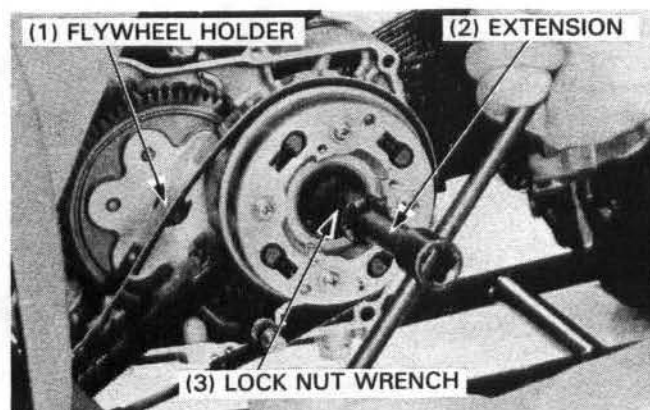


Remove the lock nut while holding the clutch outer as shown. Remove the washer and lock washer. Remove the clutch assembly.

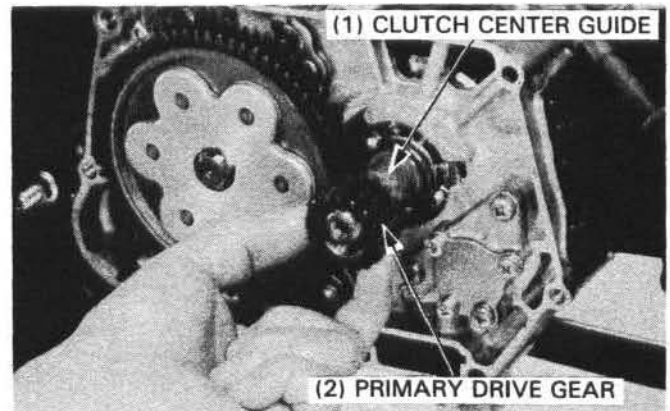
TOOLS:

Lock nut wrench, 20 x 24 mm

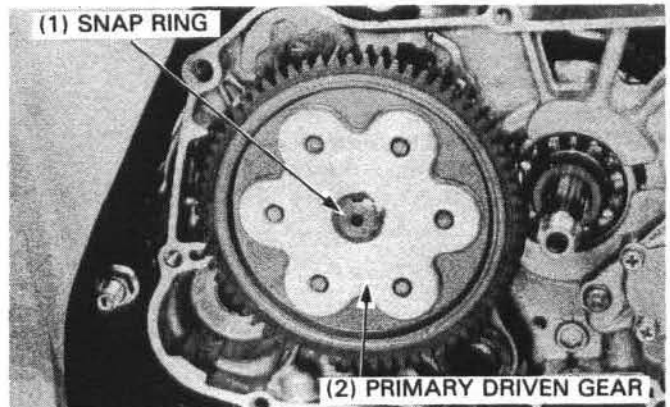
07716-0020100 or 07916-3710000	} or Equivalent commercially available in U.S.A.
Extension 07716-0020500	
Flywheel holder 07725-0040000	



Remove the primary drive gear and clutch center guide.



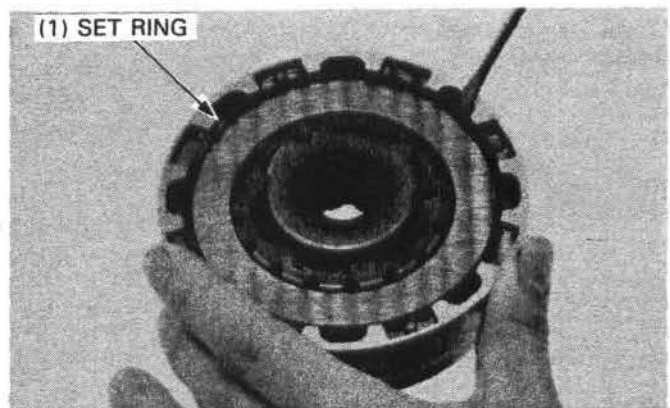
Remove the snap ring and primary driven gear.



CLUTCH DISASSEMBLY

Remove the set ring using a screwdriver.

Remove the clutch plates, discs, center, drive gear outer and rollers.

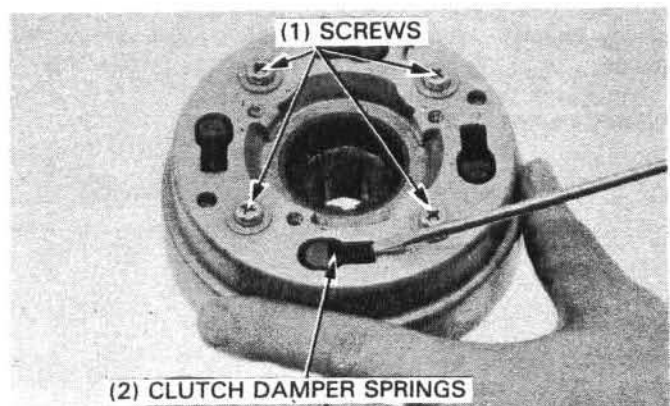


Remove the clutch damper springs:

Place a wood block under the drive plate.

Remove the screws, loosening 2 or 3 turns at a time while pushing down on the clutch outer.

Remove the clutch springs under the screws.

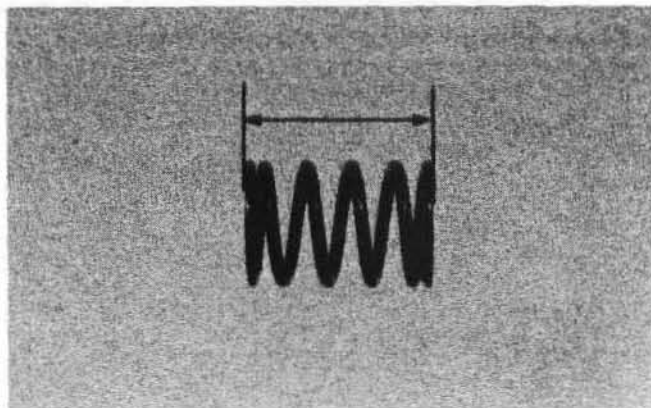


CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

INSPECTION

Measure the clutch spring free length.

SERVICE LIMIT: 23.1 mm (0.91 in)

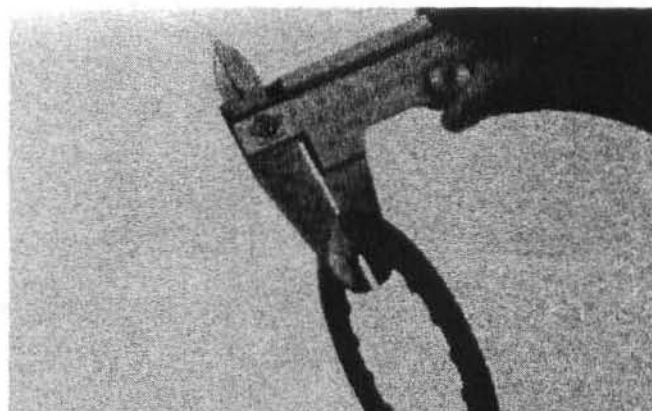


Replace the clutch discs if they show signs of scoring or discoloration.

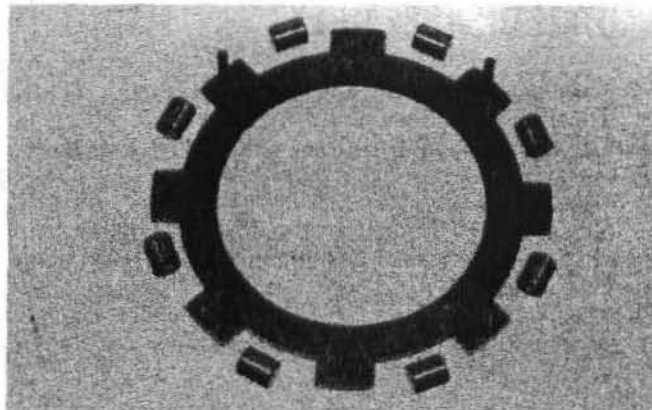
Measure the disc thickness.

SERVICE LIMIT: DISC A: 2.3 mm (0.09 in)

DISC B: 3.0 mm (0.12 in)

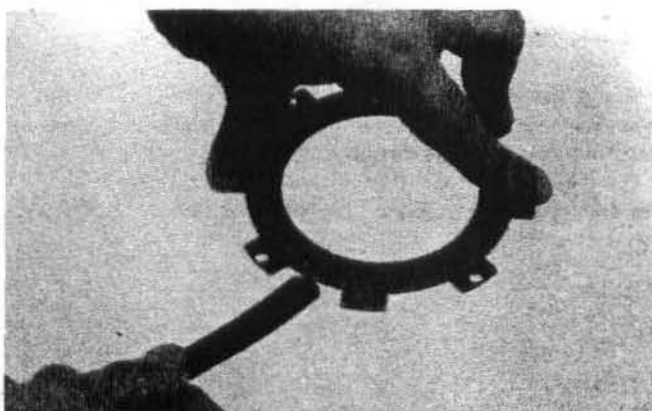


Check the rollers and plates for excessive wear or damage and replace if necessary.



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

SERVICE LIMIT: 0.20 mm (0.008 in)

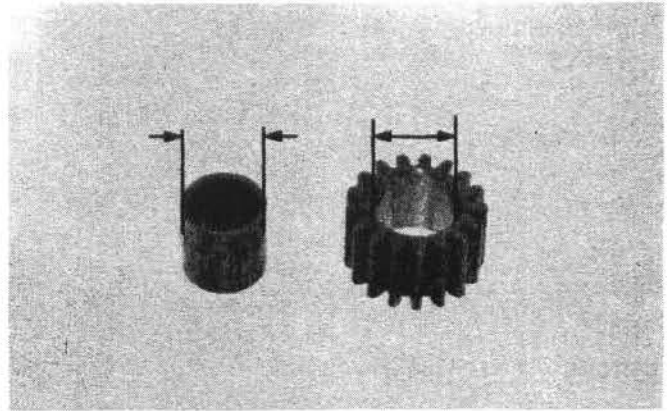


Check the clutch center guide for wear or damage.
Measure the clutch center guide O.D.

SERVICE LIMIT: 20.90 mm (0.823 in)

Check the drive gear for wear or damage.
Measure the drive gear I.D.

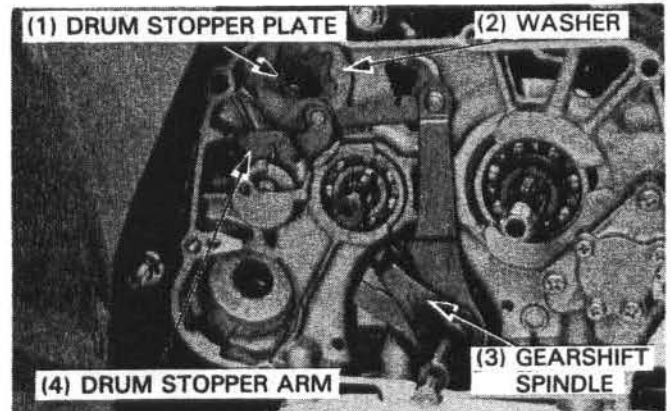
SERVICE LIMIT: 21.05 mm (0.829 in)



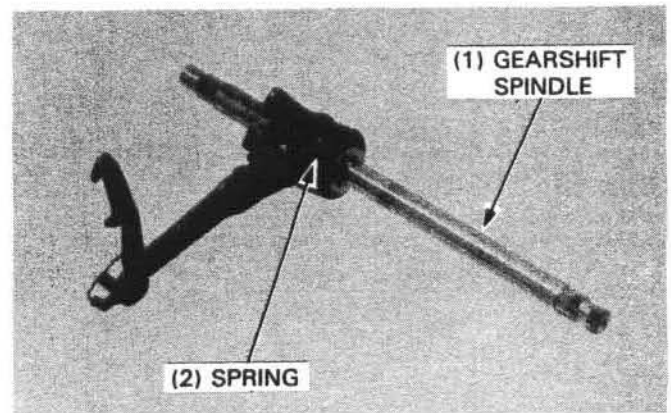
GEARSHIFT LINKAGE REMOVAL

Remove the following parts:

- gearshift pedal
- drum stopper arm
- drum stopper plate and washer
- gearshift spindle
- pins from the gearshift drum

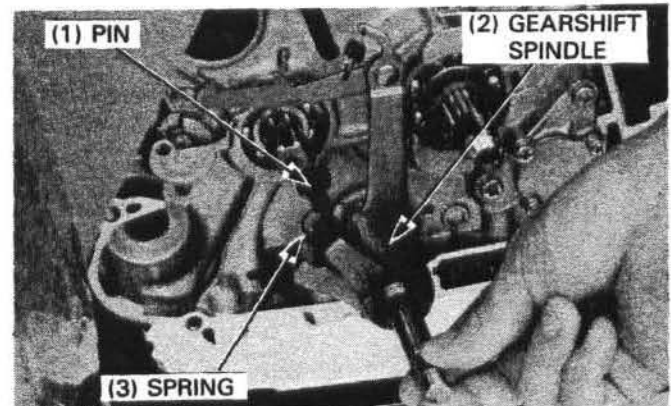


Check the gearshift spindle and spring for wear or damage.



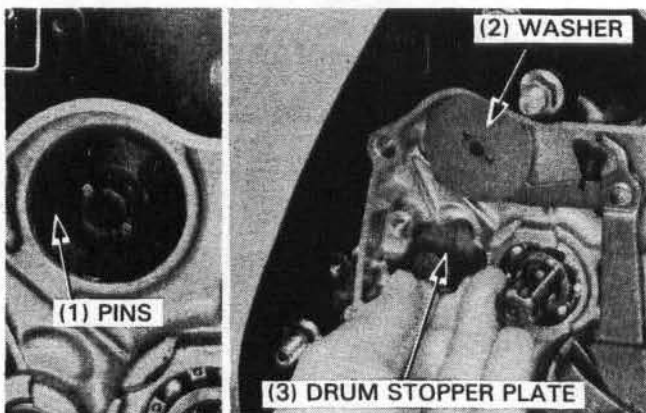
GEARSHIFT LINKAGE INSTALLATION

Install the gearshift spindle assembly and hook the spring on the pin.



CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

Install the pins onto the gearshift drum and install the washer and drum stopper plate as shown.

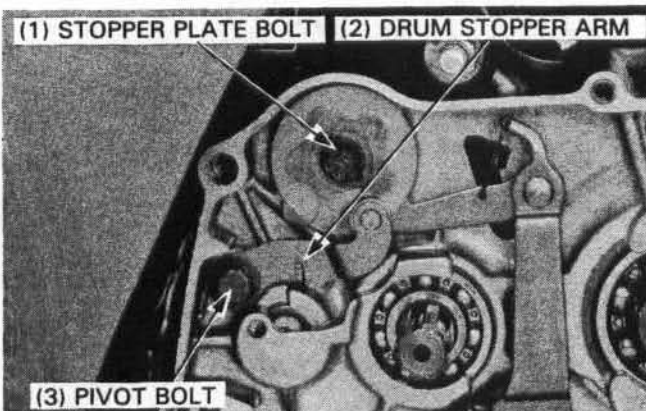


Tighten the drum stopper plate bolt.
Install the drum stopper arm as shown.
Tighten the pivot bolt.

Install the gearshift pedal and tighten the bolt.

TORQUE: 12–14 N·m (1.2–1.4 kg-m, 9–10 ft-lb)

Rotate the spindle and check the linkage for smooth operation.

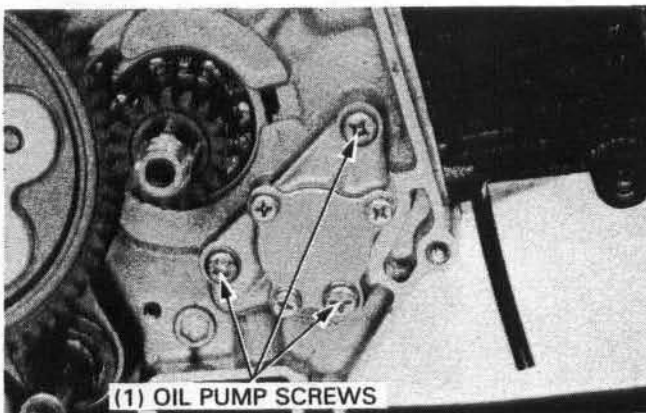


OIL PUMP

REMOVAL

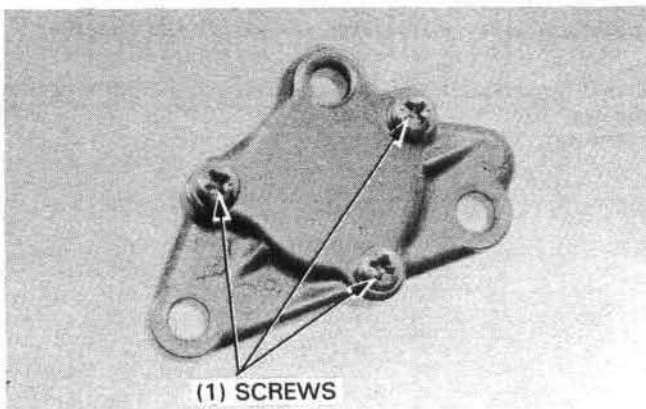
Remove the right crankcase cover and the clutch assembly (page 8-3).

Remove the three oil pump screws and the oil pump.



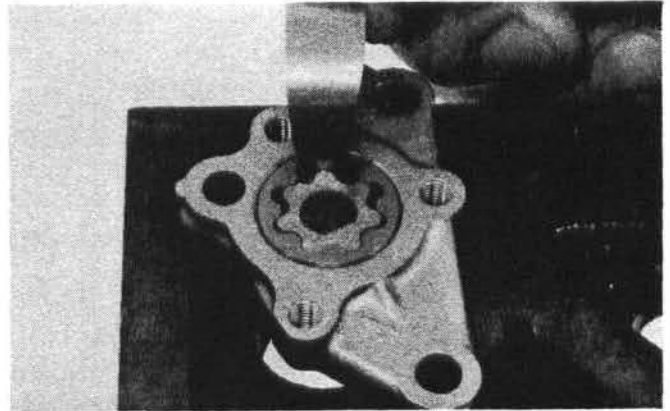
INSPECTION

Remove the oil pump body cover by removing the three screws.



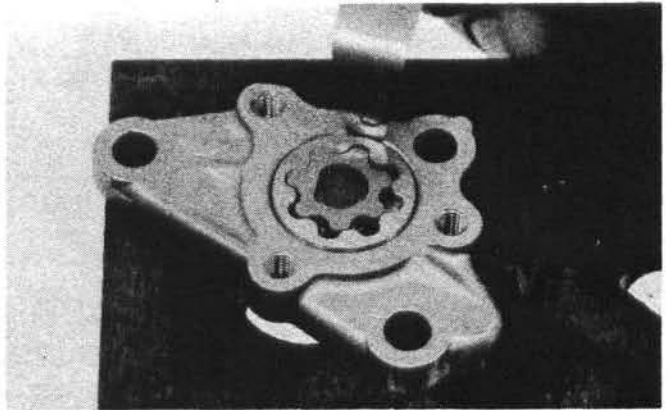
Measure the rotor tip clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



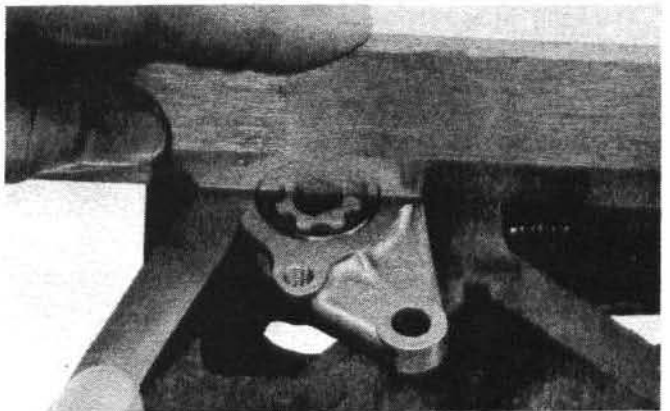
Measure the pump body clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



With the oil pump cover gasket in place, measure the rotor end clearance.

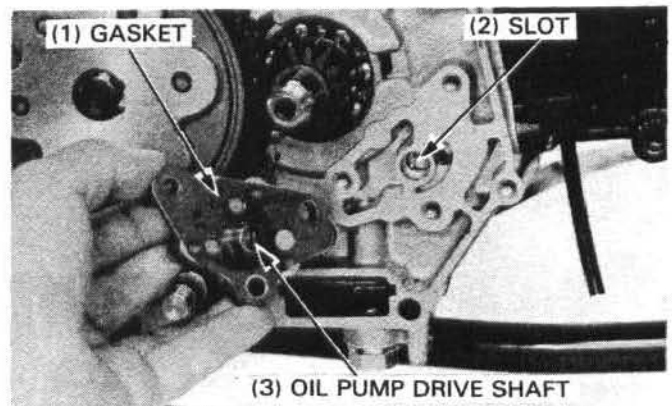
SERVICE LIMIT: 0.12 mm (0.005 in)



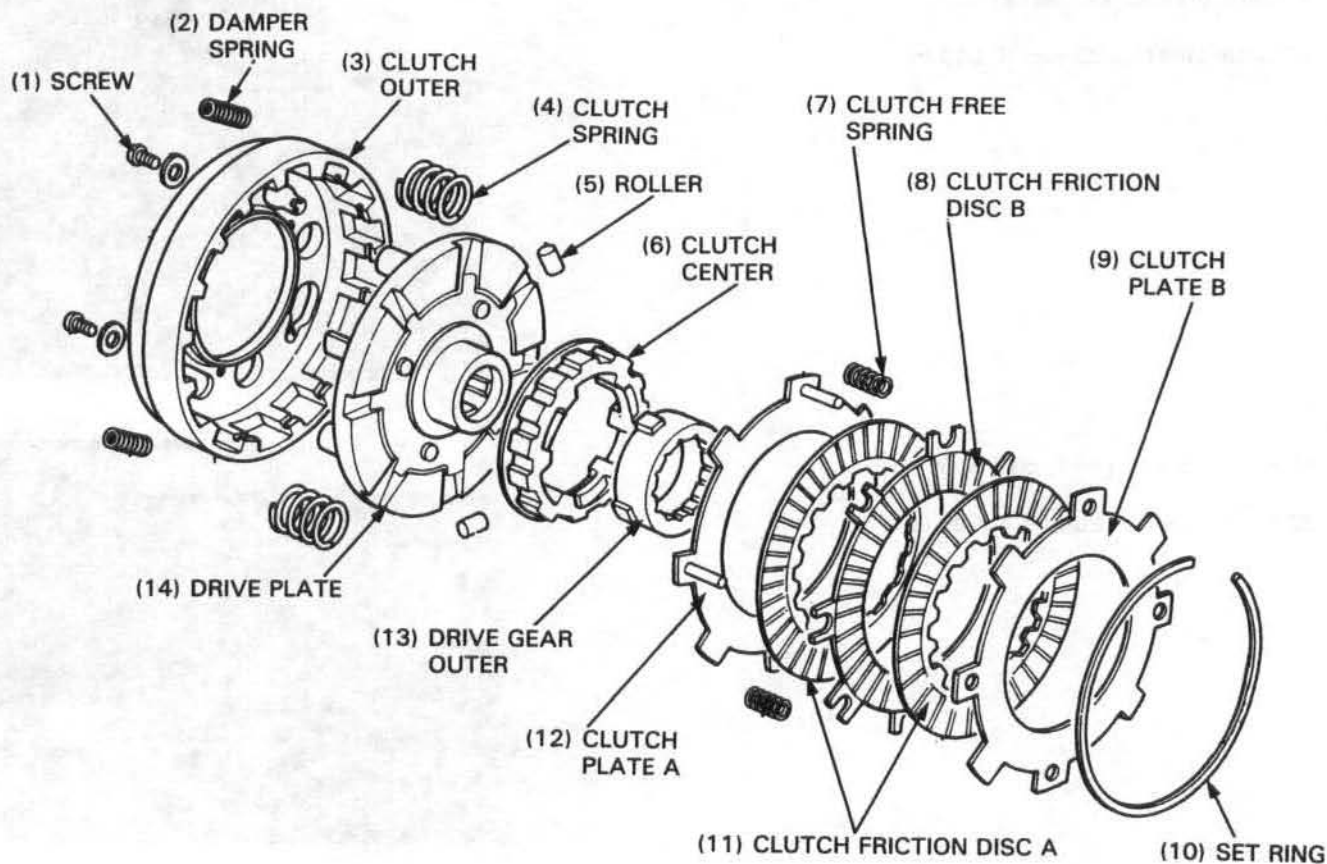
INSTALLATION

Install the oil pump cover with a new gasket and tighten the cover screws.

Install the oil pump with its gasket by aligning the pump drive shaft with the slot in the cam chain guide spindle.



CLUTCH ASSEMBLY

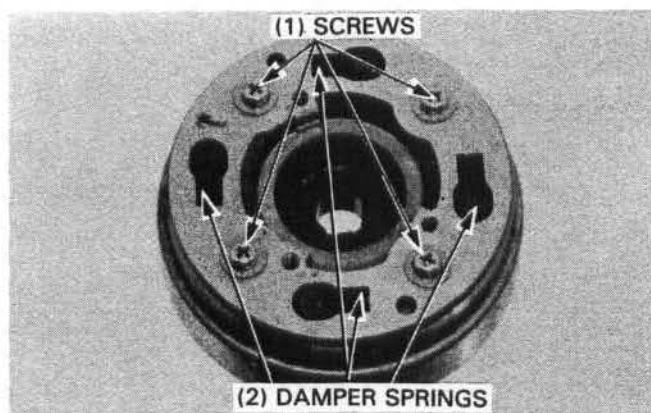


Place the clutch springs on the drive plate and install the drive plate in the clutch outer. Tighten the screws.

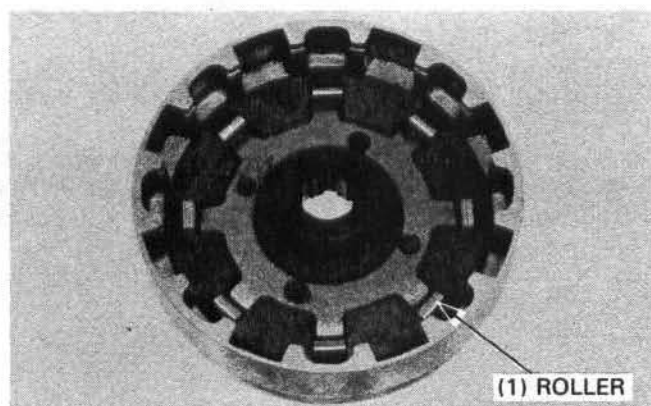
NOTE

- Tighten the screws in 2 or 3 steps in a crisscross pattern.

Install the clutch damper springs.

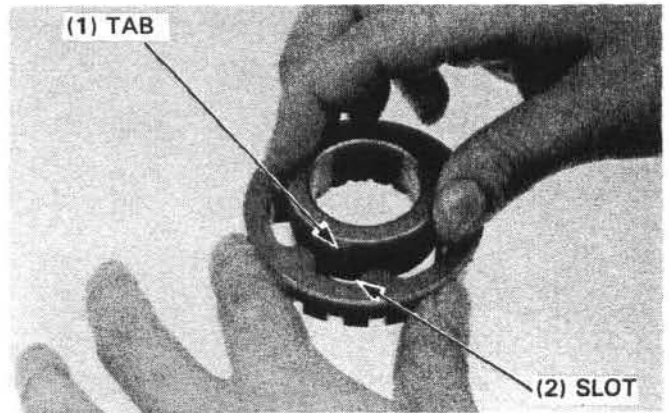


Install the rollers.

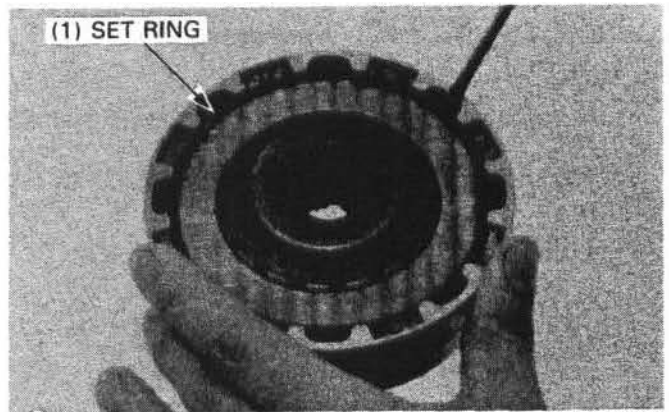


Assemble the drive gear outer and clutch center, aligning the tabs and slots.

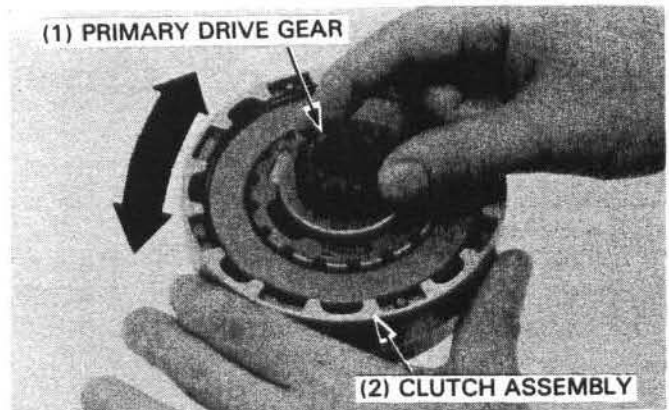
Install the discs, plates and clutch center with drive gear outer into the drive plate.



Install the set ring.

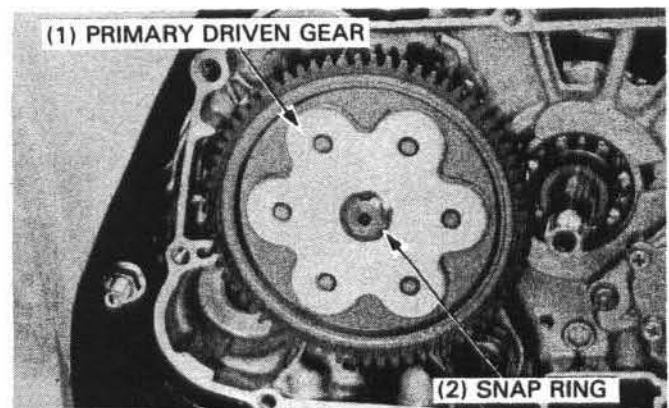


Install the primary drive gear.
Make sure the one way clutch assembly is installed correctly by turning the primary drive gear.
The primary drive gear should turn clockwise freely and should not turn counterclockwise.



CLUTCH INSTALLATION

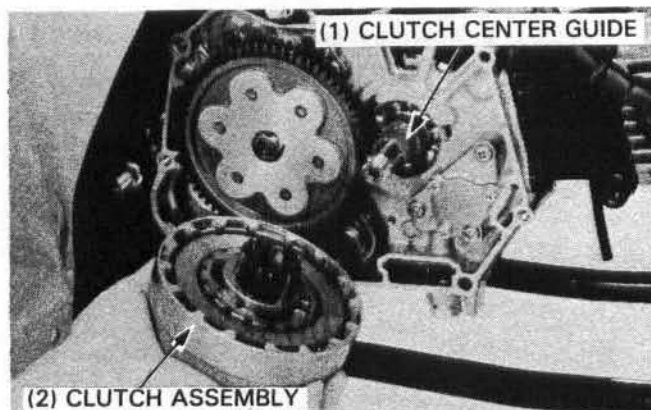
Install the primary driven gear and secure with it the snap ring.



CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

Install the clutch center guide onto the crankshaft.

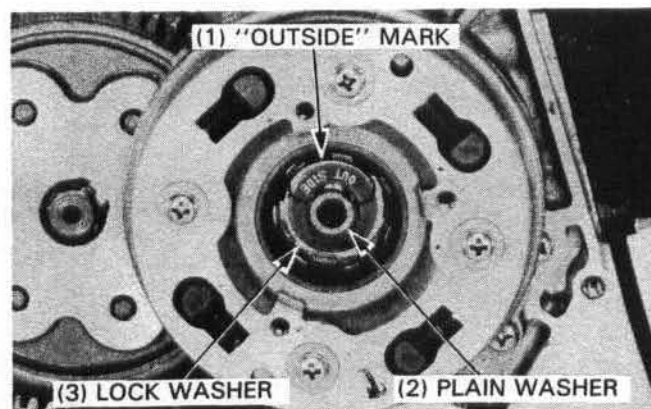
Install the clutch assembly.



Install the lock washer and plain washer.

NOTE

- Install the plain washer with the "OUTSIDE" mark facing out.



Install and tighten the lock nut.

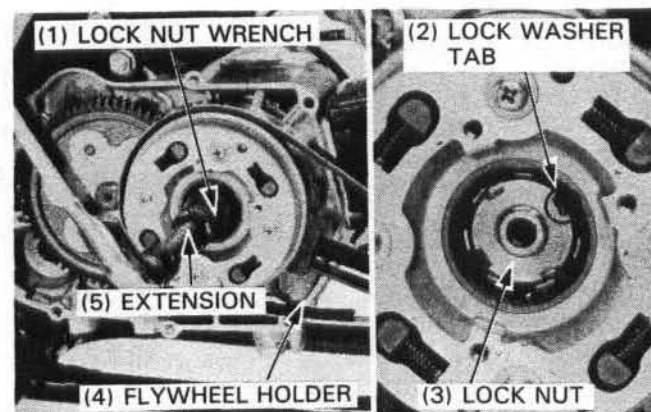
TORQUE: 38–45 N·m (3.8–4.5 kg-m, 27–33 ft-lb)

Bend the lock washer up into the lock nut.

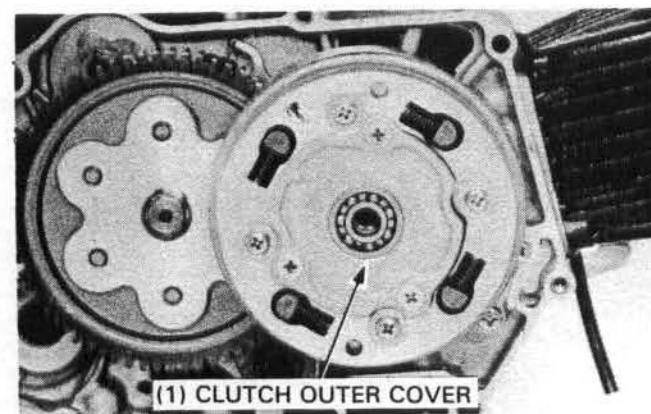
TOOLS:

Lock nut wrench, 20 x 24 mm

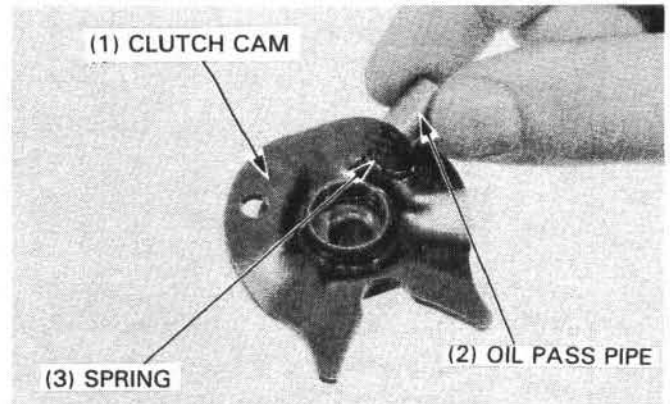
07716-0020100 or 07916-3710000	} or Equivalent commercially available in U.S.A.
Extension 07716-0020500	
Flywheel holder 07725-0040000	



Install the clutch outer cover.



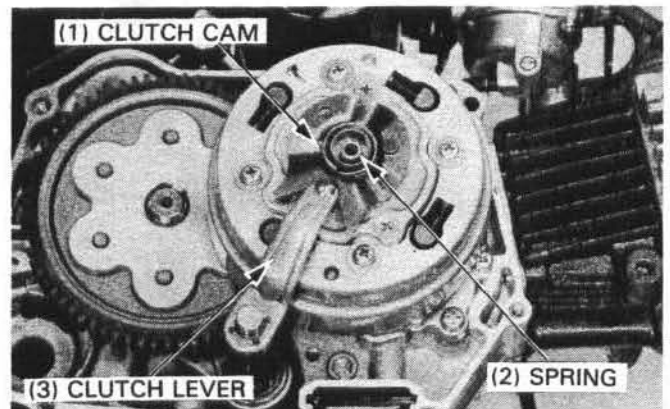
Install the oil pass pipe and spring into the clutch cam.



Install the clutch cam and lever.
Install the spring.

NOTE

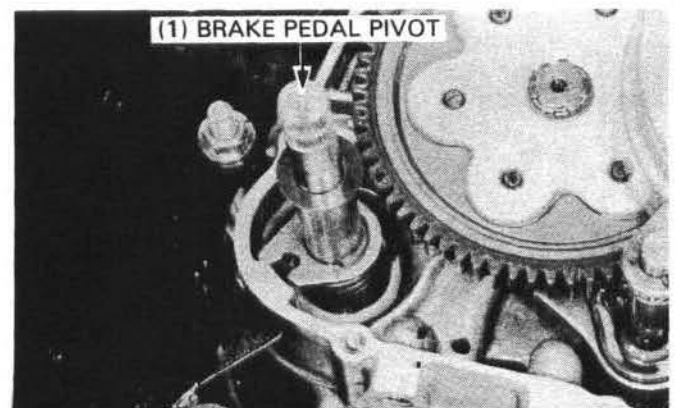
- When installing the clutch lever, make sure the clutch lever is aligned with the oil pass pipe (crankshaft).



BRAKE PEDAL PIVOT (After '86)

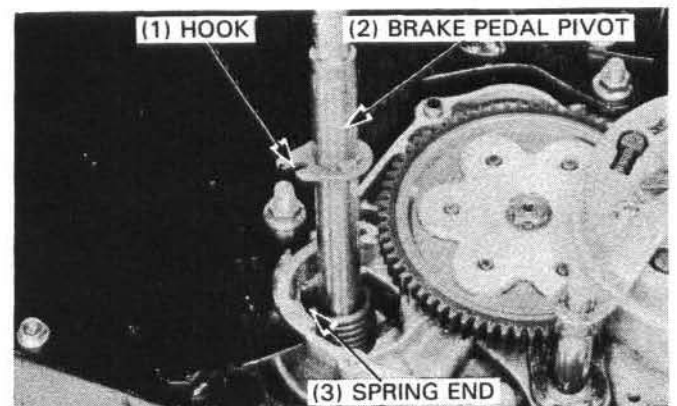
REMOVAL

Remove the brake pedal pivot assembly.



INSTALLATION

Install the spring.
Check the pivot to see if it has been bent or damaged.
Install the brake pedal pivot, aligning the spring end with the pivot hook.



CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

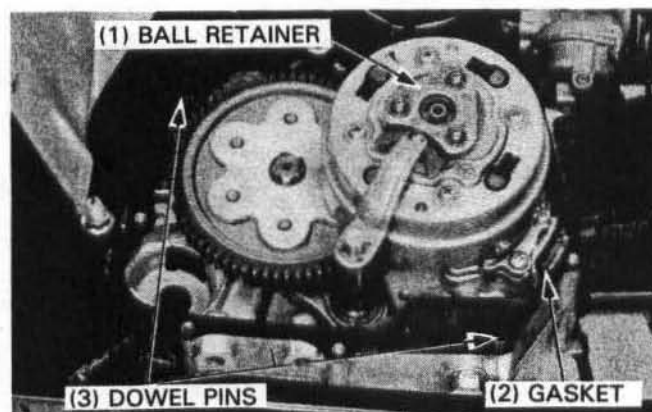
Install the washer on the pivot.



RIGHT CRANKCASE COVER INSTALLATION

Install the ball retainer.

Install the dowel pins and a new gasket.

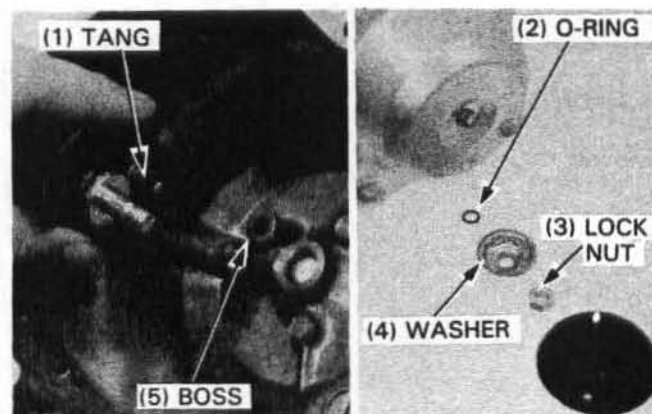


Install the adjusting screw in the clutch lifter.

Install the lifter assembly in the crankcase cover by fitting the tang in the boss.

Install the O-ring, washer and lock nut onto the adjusting screw and tighten the lock nut.

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

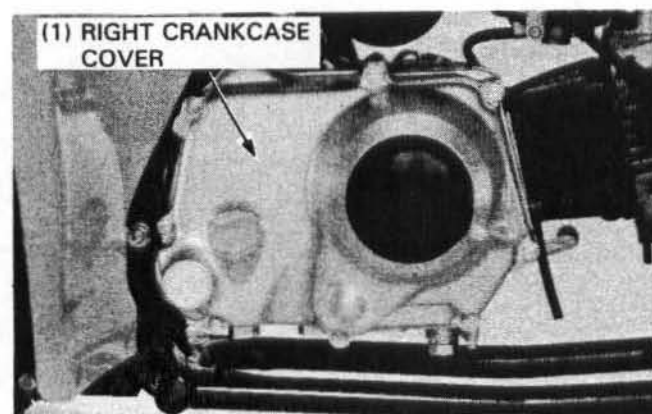


'86:

Install the right crankcase cover and tighten the bolts, in a crisscross pattern in 2 or 3 steps.

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

Adjust the clutch (page 3-12).



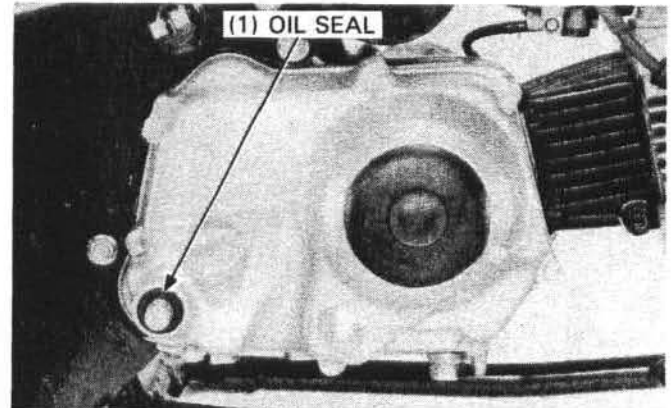
After '86:

Install the right crankcase cover and tighten the bolts, in a crisscross pattern in 2 or 3 steps.

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

Adjust the clutch (page 3-12).

Check the oil seal for wear or fatigue.



Install the foot peg, right step rubber and right step guard. Tighten the foot peg guard bolt A and B.

TORQUE VALUES:

Foot peg guard bolt A:

24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

Foot peg guard bolt B:

30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)

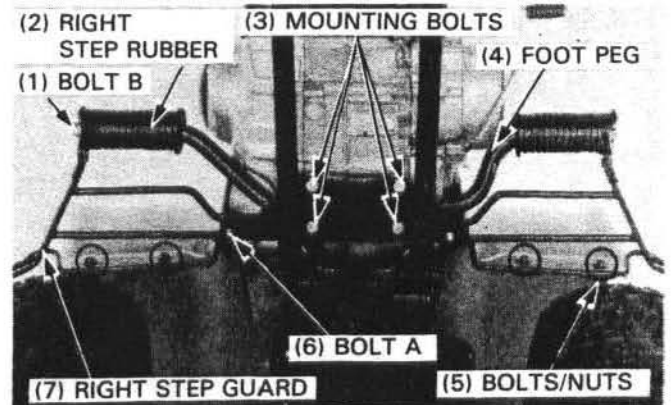
Tighten the four rear fender/foot peg guard bolts and nuts.

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

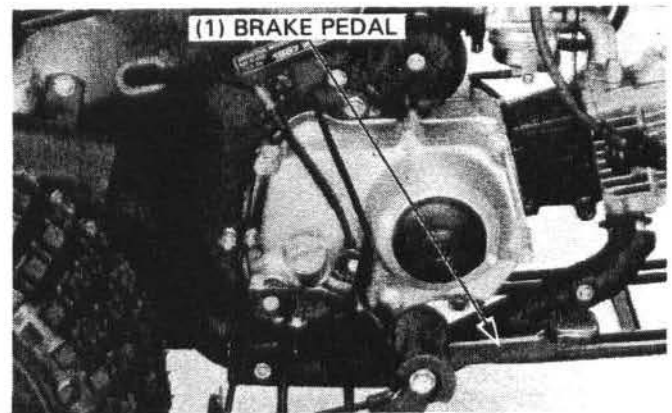
Tighten the foot peg mounting bolts.

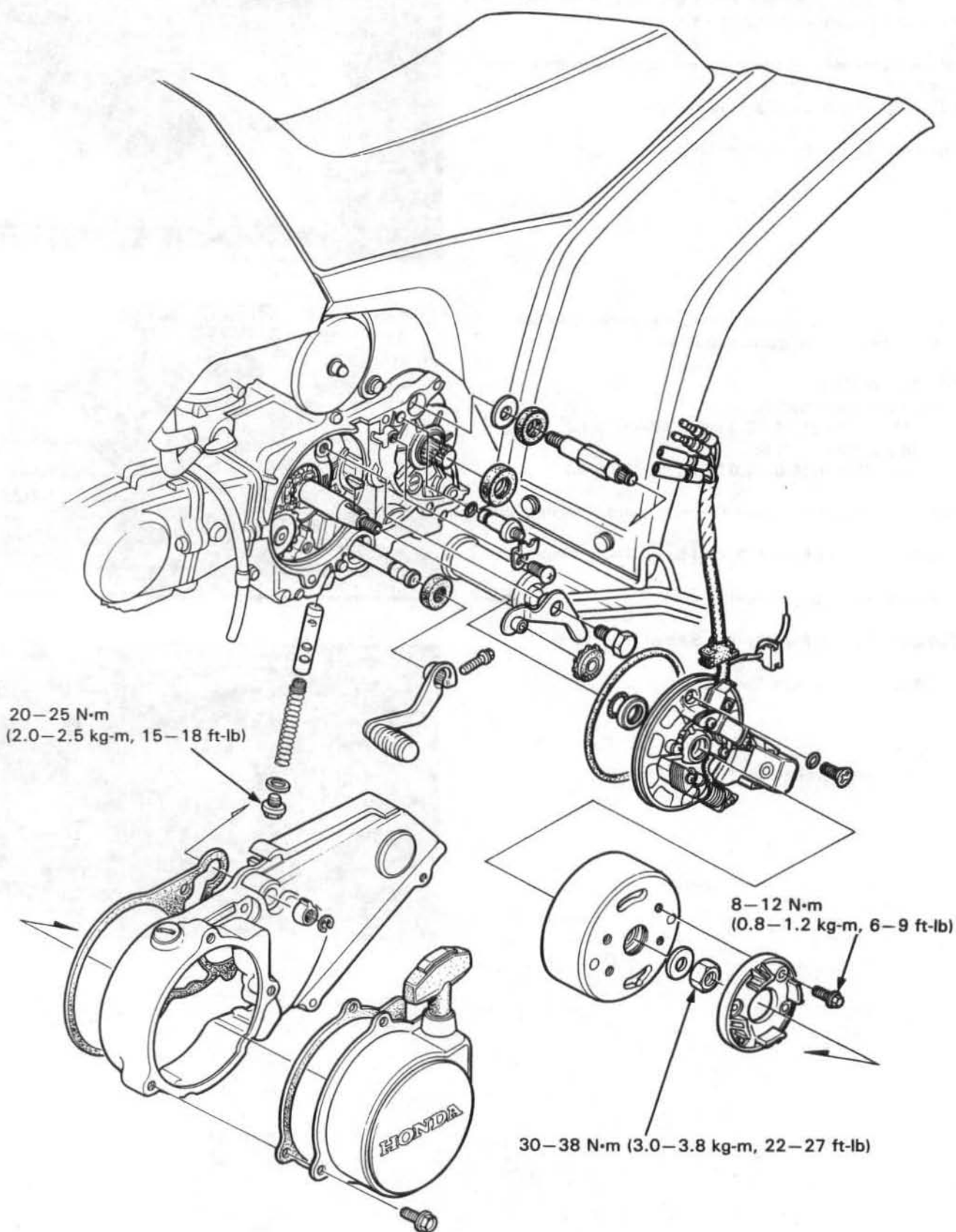
TORQUE: 18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)

Install the exhaust pipe (page 13-4).

**After '86:**

Install the brake pedal (page 12-4).





9. RECOIL STARTER/ALTERNATOR/CAM CHAIN TENSIONER

SERVICE INFORMATION	9-1	CAM CHAIN TENSIONER	9-4
TROUBLESHOOTING	9-1	ALTERNATOR INSTALLATION	9-5
RECOIL STARTER REMOVAL	9-2	RECOIL STARTER INSTALLATION	9-5
ALTERNATOR REMOVAL	9-3		

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the recoil starter, alternator and cam chain tensioner.
- For alternator inspection and troubleshooting, refer to sections 14 and 16.

SPECIFICATIONS

mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cam chain tensioner	Spring free length	82.8 (3.26)	77 (3.0)
	Push rod O.D.	11.985–12.000 (0.4718–0.4724)	11.94 (0.470)

9

TORQUE VALUES

Starter driven pulley bolt	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Flywheel nut	30–38 N·m (3.0–3.8 kg-m, 22–27 ft-lb)
Cam chain tensioner sealing bolt	20–25 N·m (2.0–2.5 kg-m, 15–18 ft-lb)
Friction plate bolt	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

TOOLS

Common

Flywheel puller	07733–0010000 or 07933–0010000
Universal holder	07725–0030000 or Equivalent commercially available in U.S.A.

TROUBLESHOOTING

Engine does not turn when operating recoil starter

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

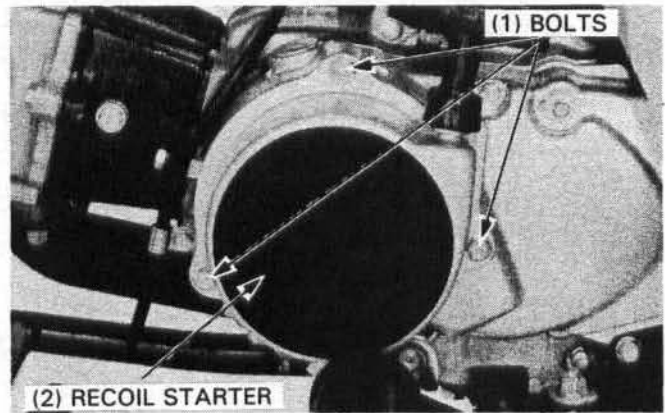
Starter rope does not recoil

- Faulty recoil spring

RECOIL STARTER REMOVAL

Shift the transmission into neutral.

Remove the mounting bolts and the recoil starter.
Remove the gasket.



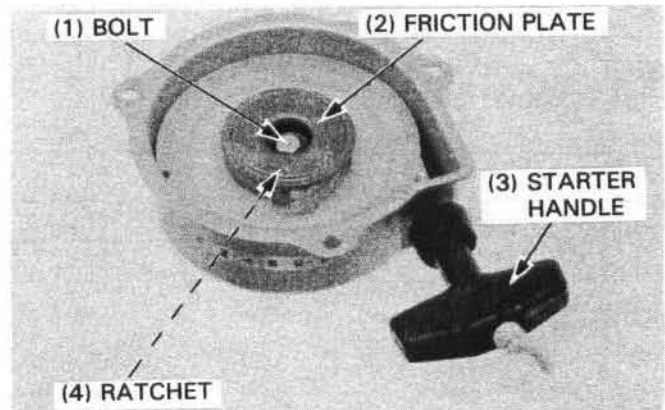
DISASSEMBLY

Remove the following parts:

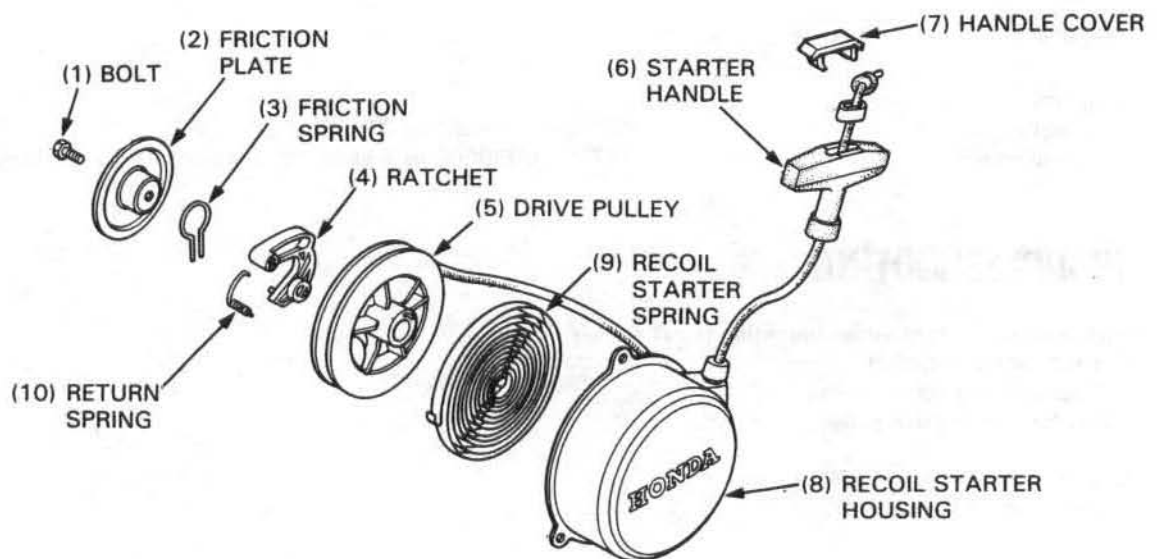
- bolt and friction plate
- friction spring, set spring and ratchet
- starter handle cover

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.*



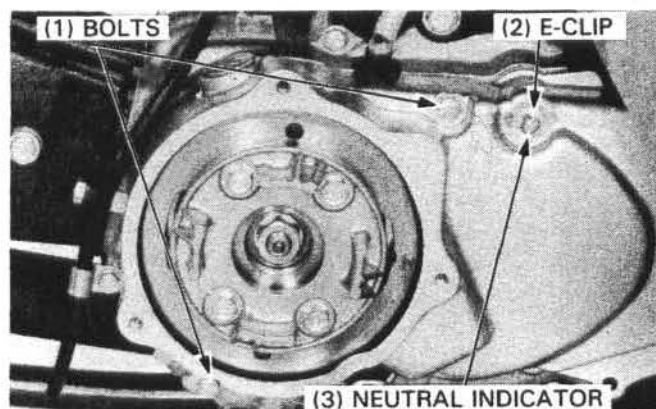
Untie the starter rope and remove the starter handle.
Release the starter rope slowly.
Remove the drive pulley.



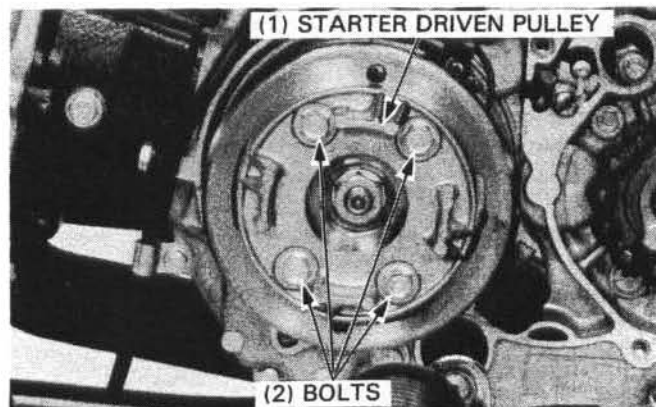
Remove the starter rope from the drive pulley.
Check the starter rope for wear or damage.
Check the recoil starter spring.
Replace the spring if it is broken.
Check the recoil starter housing for wear; replace if necessary.

ALTERNATOR REMOVAL

Remove the drive chain cover (page 12-5).
Remove the neutral indicator by removing the E-clip.
Remove the two bolts and remove the left crankcase cover and cover gasket.



Drain the engine oil (page 2-2).
Remove the starter driven pulley by removing the four attaching bolts.

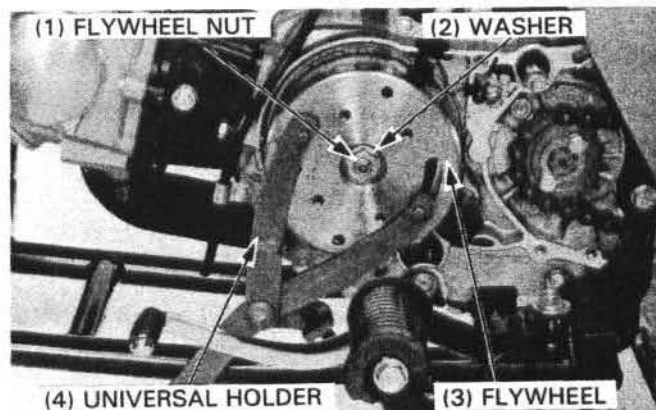


Hold the flywheel and remove the flywheel nut and washer.

TOOL:

Universal holder

07725-0030000



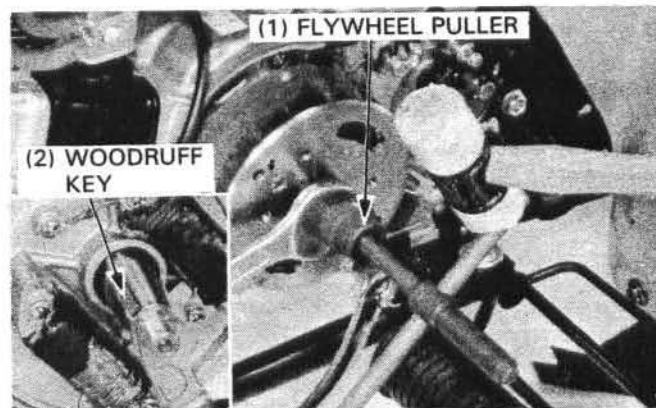
Install the flywheel puller and remove the flywheel from the crankshaft.

Remove the woodruff key.

TOOL:

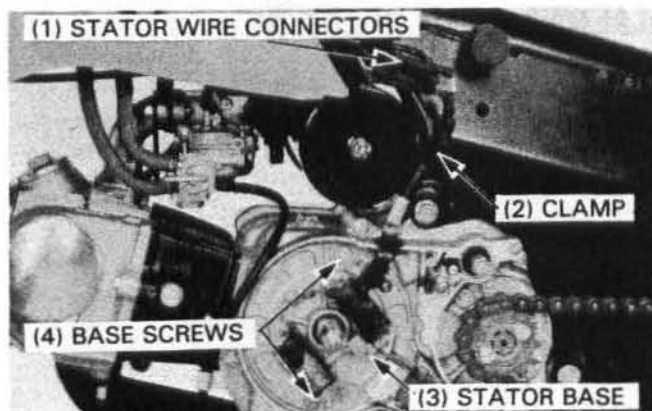
Flywheel puller

07733-0010000 or
07933-0010000



RECOIL STARTER/ALTERNATOR/CAM CHAIN TENSIONER

Disconnect the stator wire connectors and remove the wire from the frame clamp.
Remove the stator base screws and the stator base.
Remove the O-rings.



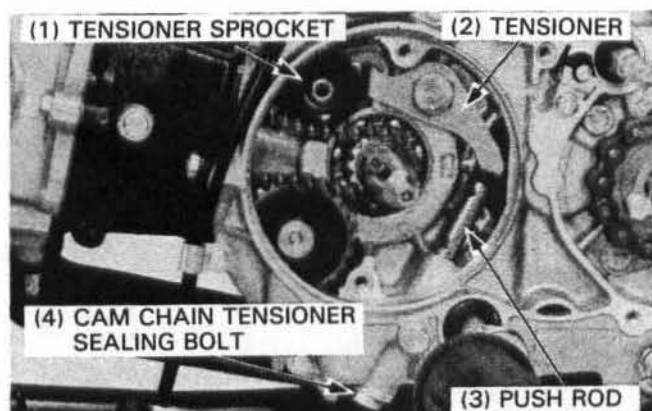
CAM CHAIN TENSIONER

REMOVAL

Remove the cam chain tensioner sealing bolt, washer, spring and push rod.

Remove the cam chain tensioner.

Check the tensioner sprocket for wear or damage.



INSPECTION

Measure the spring free length.

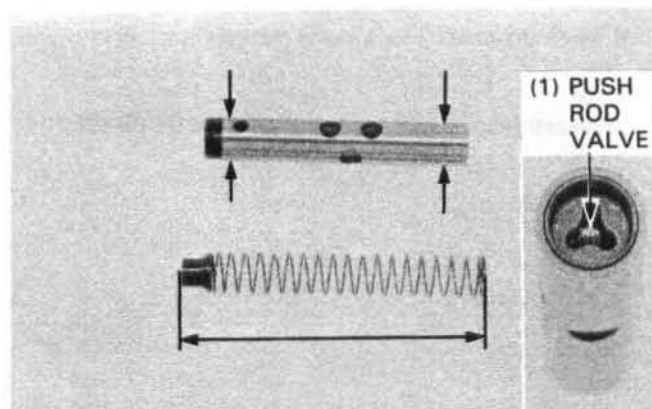
SERVICE LIMIT: 77 mm (3.0 in)

Check the push rod for wear or damage, and measure the push rod O.D.

SERVICE LIMIT: 11.94 mm (0.470 in)

Replace either part if its measurement does not fall within service limit.

Check the operation of the push rod valve before installation.



INSTALLATION

Install the push rod, spring, washer and sealing bolt.
Tighten the sealing bolt.

TORQUE: 20–25 N·m (2.0–2.5 kg-m, 15–18 ft-lb)

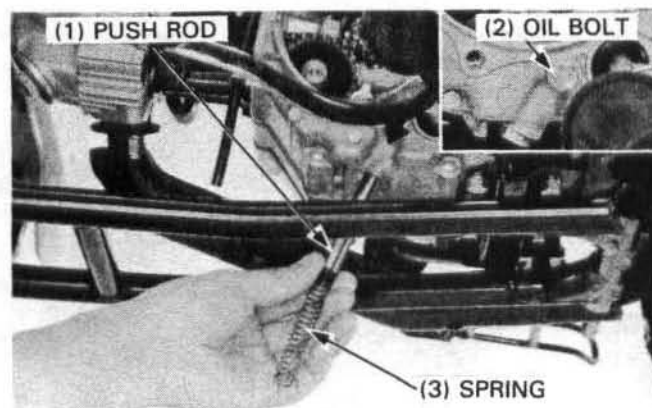
Pour clean engine oil through the oil bolt hole until oil flows out of the hole.

Install the oil bolt.

NOTE

- Use the proper length bolt. A longer bolt may interfere with the push rod.

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



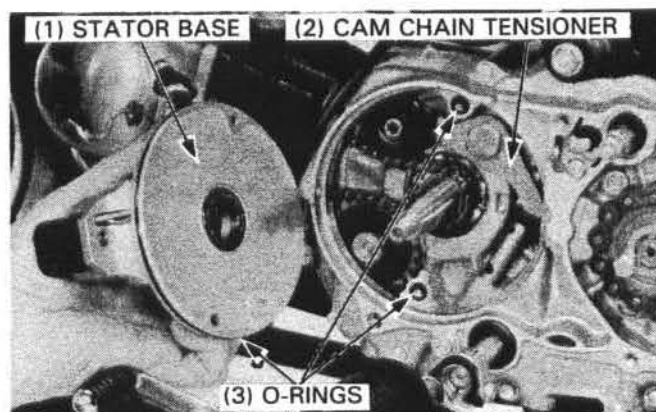
Install the cam chain tensioner.

ALTERNATOR INSTALLATION

Install the O-rings on the stator base and stator base screw holes.

Install the stator base and tighten the screws.

Connect the wire connectors and clamp the wire.



Install the woodruff key and the flywheel.

Tighten the flywheel nut.

TORQUE: 30–38 N·m (3.0–3.8 kg-m, 22–27 ft-lb)

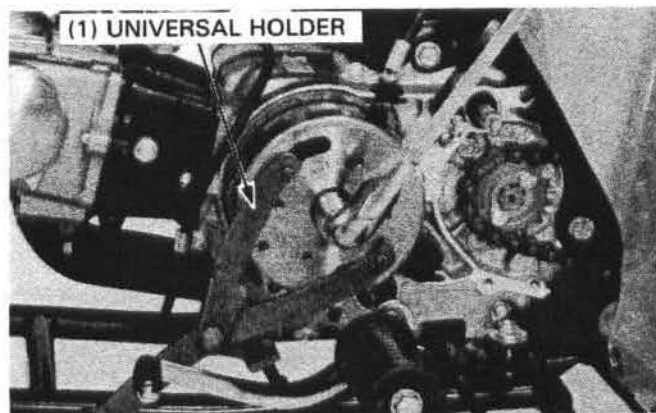
TOOL:

Universal holder

07725–0030000

NOTE

- Route the stator wire correctly (page 1-9).



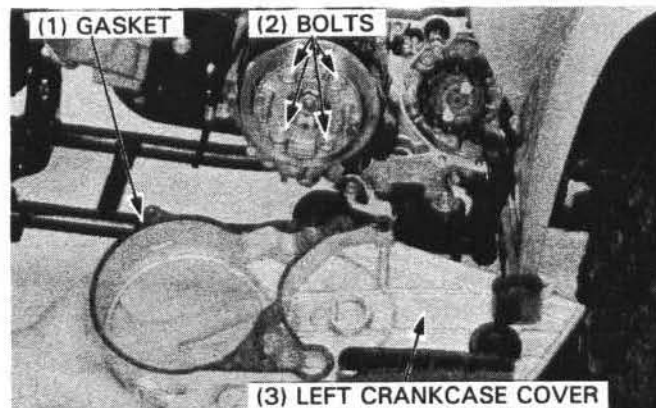
LEFT CRANKCASE COVER INSTALLATION

Install the starter driven pulley and tighten the four mounting bolts.

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

Install the left crankcase in the reverse order of removal.

Install the drive chain cover (page 12-8).

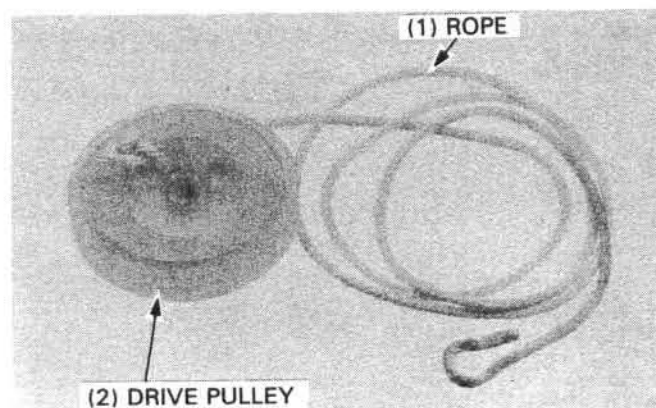


RECOIL STARTER INSTALLATION

ASSEMBLY

Tie the starter rope to the driven pulley with a square knot.

Wrap the rope around the drive pulley in a clockwise direction as viewed from the ratchet side.

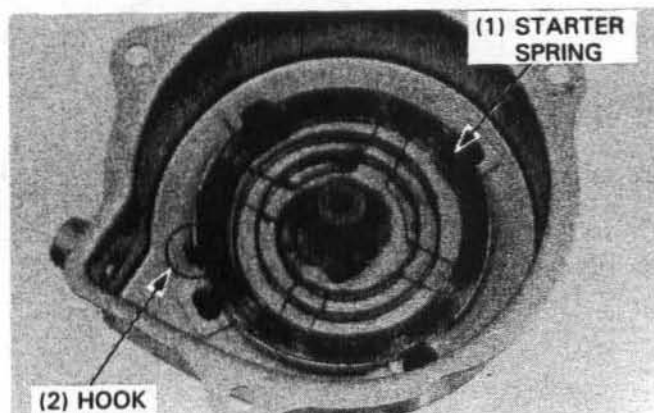


RECOIL STARTER/ALTERNATOR/CAM CHAIN TENSIONER

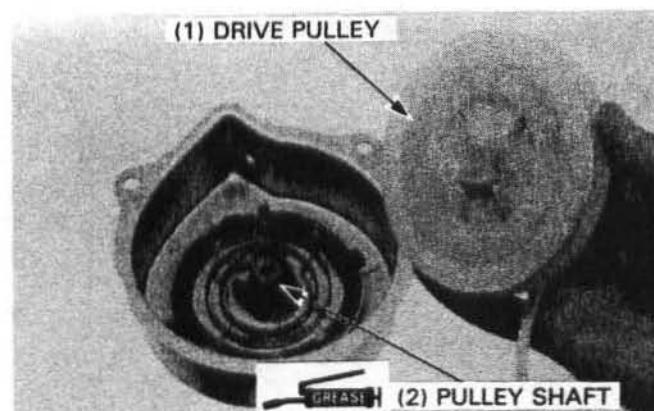
Install the spring by hooking the end on the recoil starter housing hook.

CAUTION

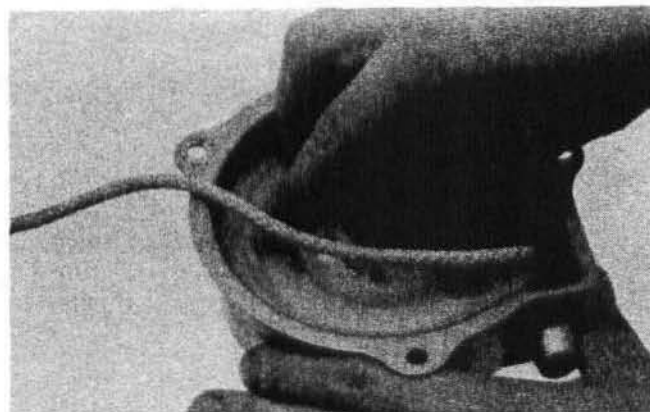
- *Wear eye protection and use care when installing the starter spring. The spring can pop out of the housing if care is not used.*



Apply grease to the pulley shaft and install the pulley in the housing.

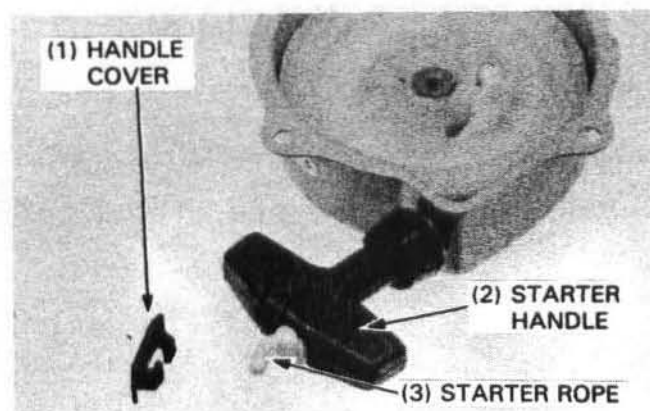


Preload the starter spring by turning the pulley 2 turns clockwise.



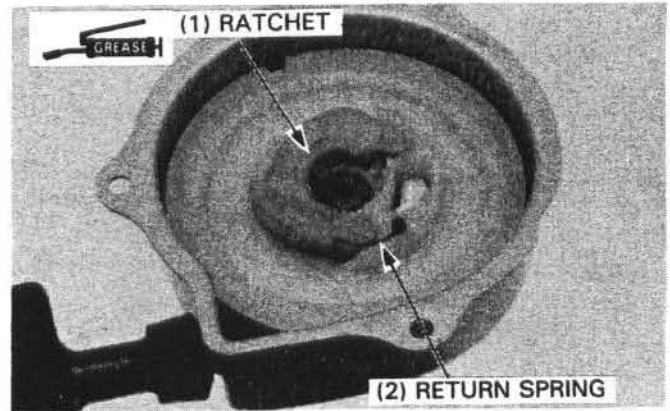
Route the rope end through the starter housing hole and install the handle.

Tie the rope end and install the handle cover.



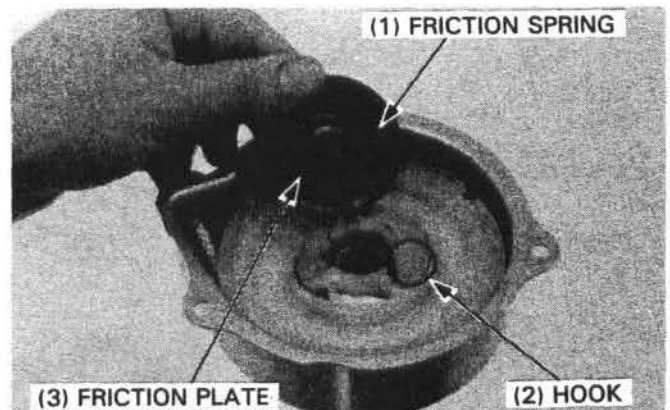
Grease the ratchet and install it onto the drive pulley.

Install the return spring.



Install the friction spring onto the friction plate.

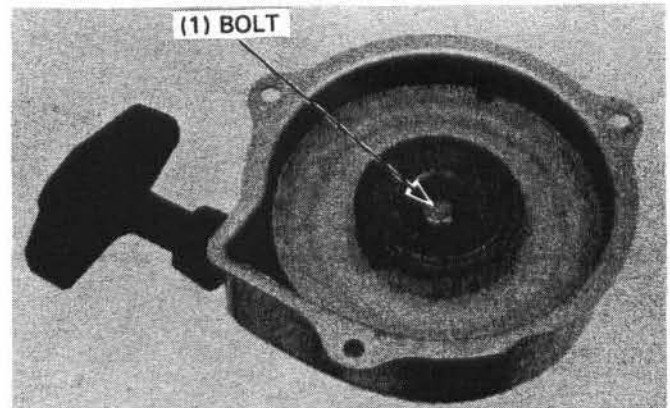
Install the plate by hooking the friction spring on the ratchet hook.



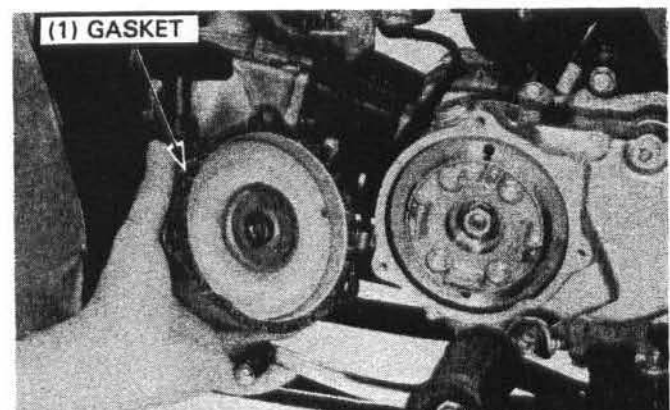
Tighten the friction plate bolt to the specified torque.

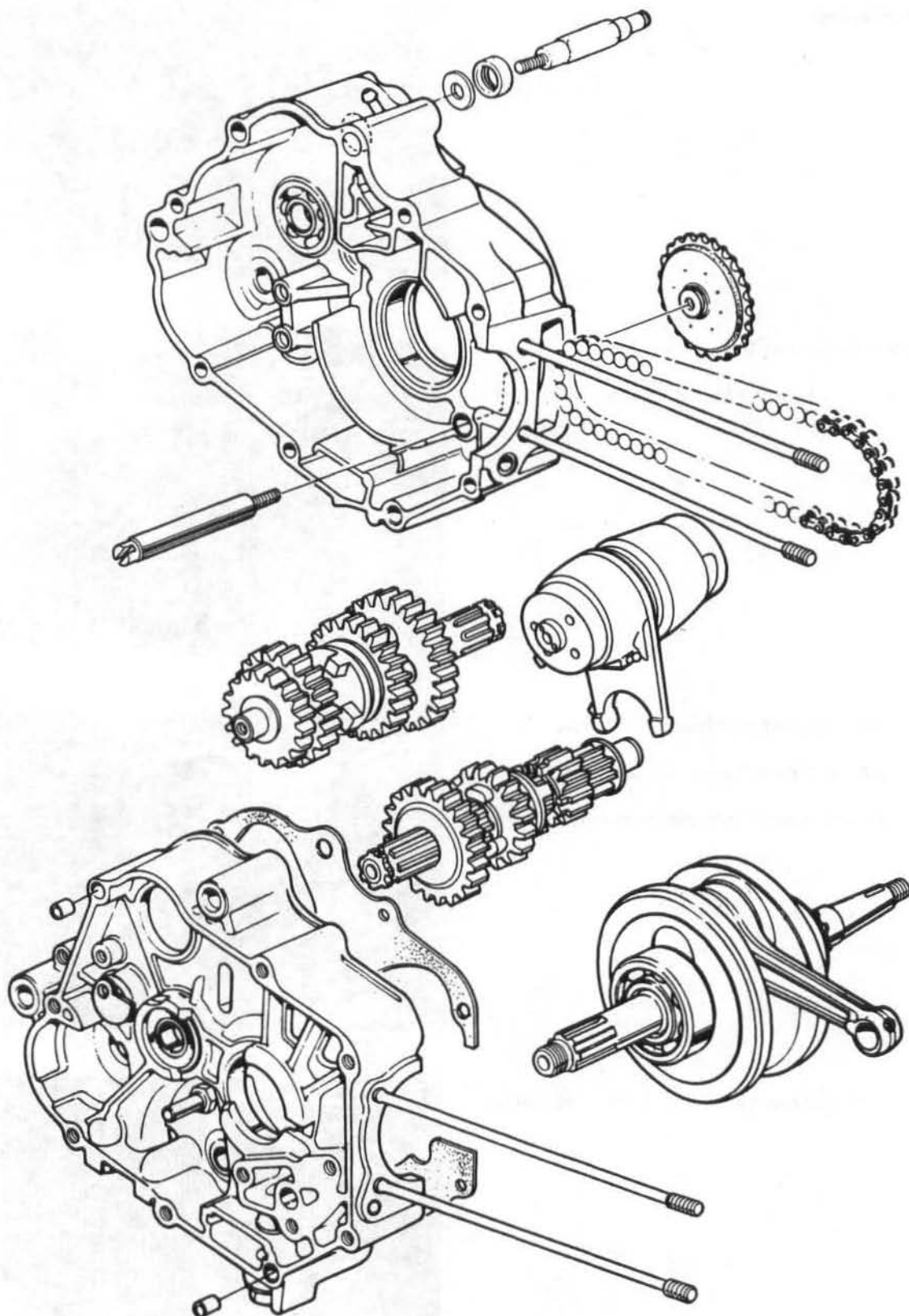
TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

Check the recoil starter operation by pulling the starter handle.



Install a new gasket and recoil starter with the three bolts.





10. TRANSMISSION/CRANKSHAFT

SERVICE INFORMATION	10-1	CRANKSHAFT	10-2
TROUBLESHOOTING	10-1	TRANSMISSION	10-4
CRANKCASE SEPARATION	10-2	CRANKCASE ASSEMBLY	10-7

SERVICE INFORMATION

GENERAL

- Transmission/crankshaft maintenance and inspection must be performed after engine removing from frame (Section 5).
- The crankcase must be separated to service the crankshaft and transmission components.
- The following parts must be removed before separating the crankcase.
 - Cylinder head Section 6
 - Cylinder and piston Section 7
 - Clutch Section 8
 - Gearshift linkage Section 8
 - Recoil starter Section 9
 - Alternator Section 9
 - Cam chain tensioner Section 9

SPECIFICATIONS

mm (in)

ITEM			STANDARD	SERVICE LIMIT
Transmission	Gear I.D.	M2, M4, C3	17.016–17.043 (0.6699–0.6710)	17.10 (0.673)
		C1	20.020–20.053 (0.7882–0.7895)	20.10 (0.791)
	C1 bushing I.D.		17.000–17.018 (0.6693–0.6700)	17.04 (0.671)
	C1 bushing O.D.		19.979–20.000 (0.7866–0.7874)	19.63 (0.773)
	Mainshaft O.D.		16.983–16.994 (0.6686–0.6691)	16.95 (0.667)
	Countershaft O.D.		16.966–16.984 (0.6680–0.6687)	16.95 (0.667)
	Shift drum O.D.		33.950–33.975 (1.3366–1.3376)	33.93 (1.336)
	Shift fork I.D.		34.000–34.025 (1.3386–1.3396)	34.07 (1.341)
	Shift fork crow thickness		4.86–4.94 (0.191–0.195)	4.6 (0.18)
Crankshaft	Connecting rod big end side clearance		0.10–0.35 (0.004–0.014)	0.6 (0.02)
	Connecting rod big end radial clearance		0–0.012 (0–0.0005)	0.05 (0.002)
	Runout		—	0.10 (0.004)

10

TOOLS

Common

Attachment, 37 x 40 mm

07746–0010200

Driver, 22 mm I.D.

07746–0020100

Pilot, 17 mm

07746–0040400

Attachment, 20 mm I.D.

07746–0020400

Driver

07749–0010000

TROUBLESHOOTING

Hard to shift

- Improper clutch adjustment
- Bent shift fork
- Bent shift drum stopper arm

Transmission jumps out of gear

- Worn gear dogs
- Bent shift forks
- Broken shift drum stopper

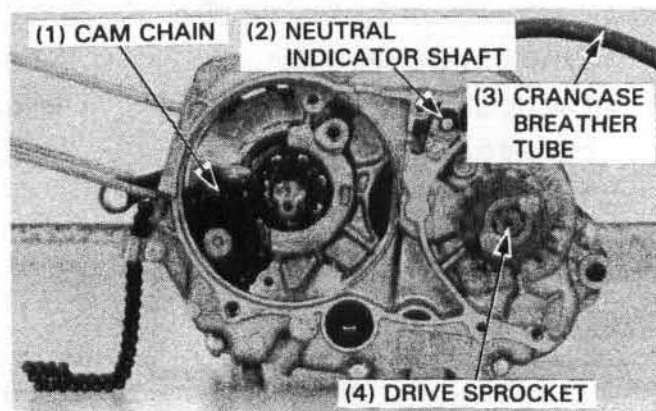
Excessive noise

- Excessive crankshaft bearing play
- Excessive connecting rod big end bearing play

TRANSMISSION/CRANKSHAFT

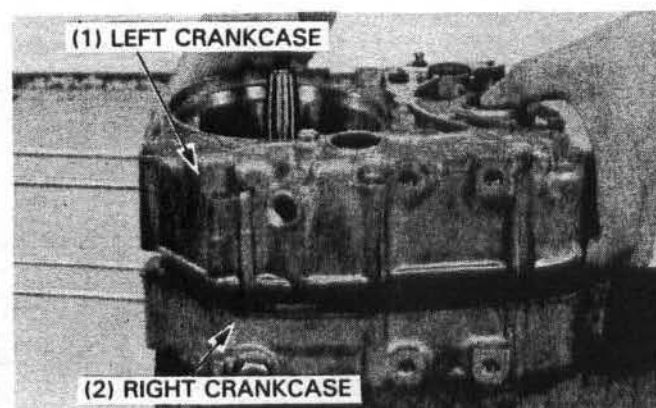
CRANKCASE SEPARATION

Disconnect the crankcase breather tube.
Remove the cam chain, drive sprocket, neutral indicator shaft, and the crankcase bolts.



Place the engine with the left side facing up and separate the left and right crankcase halves.

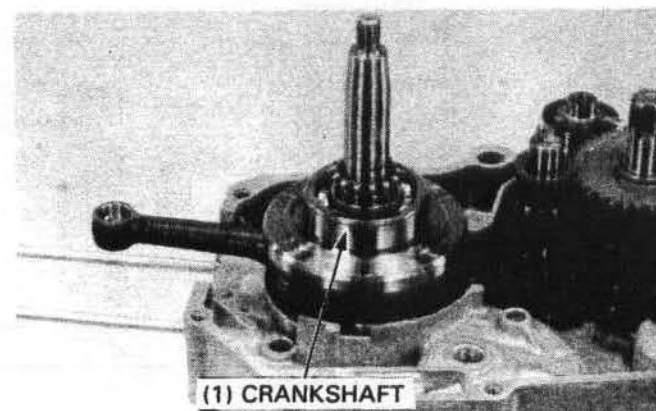
Remove the dowel pins and gasket.



CRANKSHAFT

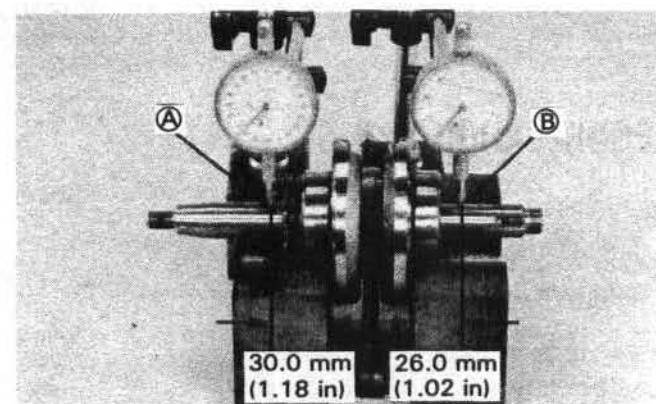
REMOVAL/INSPECTION

Remove the crankshaft from right crankcase.



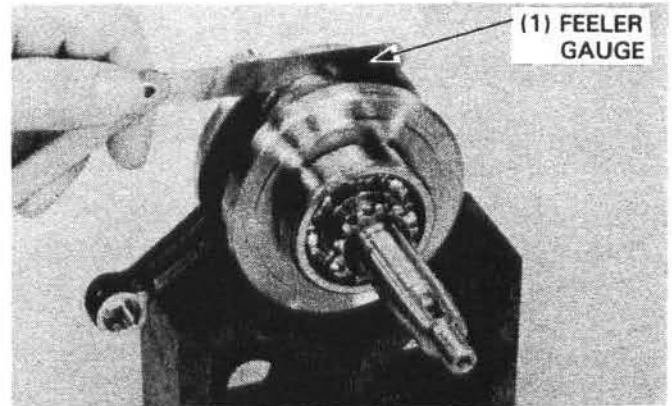
Support the crankshaft on its bearings in a stand or V-blocks and measure the runout of points A and B.

SERVICE LIMIT: 0.10 mm (0.004 in)



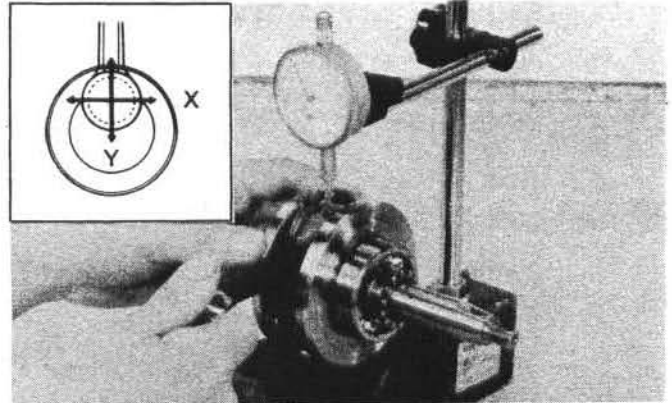
Measure the side clearance at the connecting rod big end with a feeler gauge.

SERVICE LIMIT: 0.6 mm (0.02 in)



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

SERVICE LIMIT: 0.05 mm (0.002 in)

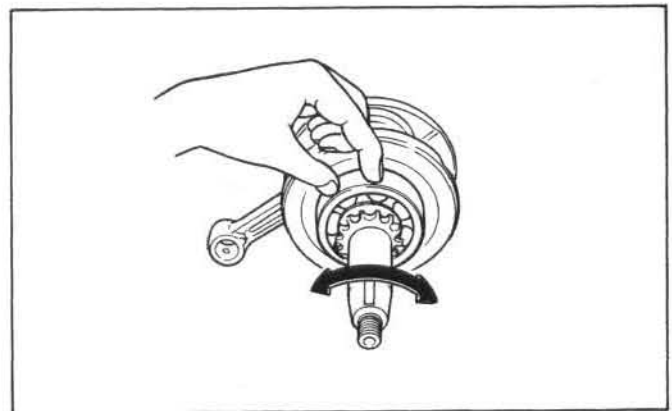


Turn the outer race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing inner race fits tightly on the crankshaft.

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

NOTE

- Replace crankshaft bearings in pairs.



TIMING SPROCKET INSPECTION

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

Install the sprocket so that the valley between any two teeth is aligned with the center line of the keyway. Use the special tools to install:

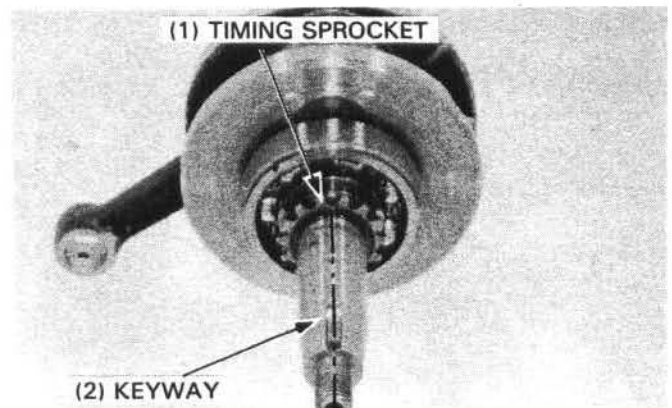
TOOLS:

Driver, 22 mm I.D.

07746-0020100

Attachment, 20 mm I.D.

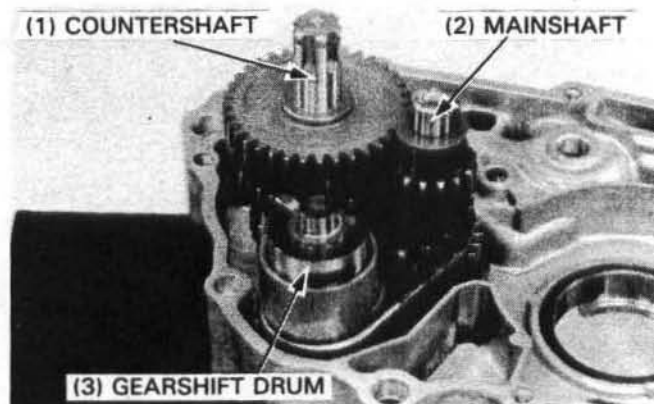
07746-0020400



TRANSMISSION

DISASSEMBLY

Remove the mainshaft, countershaft and gearshift drum as an assembly and disassemble them.

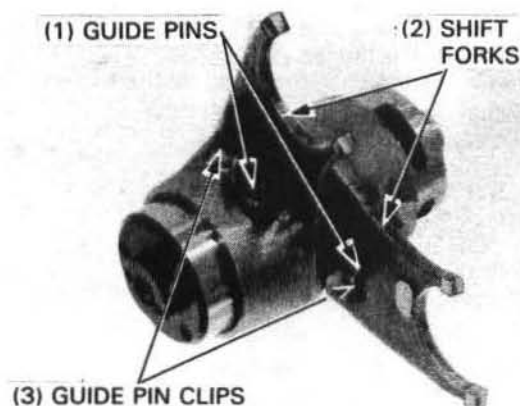


Remove the guide pin clips, shift forks and guide pins.

NOTE

- Mark the shift forks so that they can be placed back in their original positions.

Inspect the guide pins for wear or damage.



INSPECTION

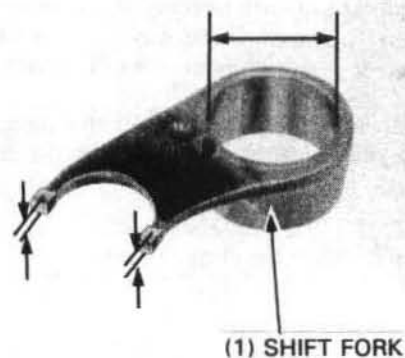
Check the shift forks for wear, bending or damage.

Measure the I.D. of the shift forks.

SERVICE LIMIT: 34.07 mm (1.341 in)

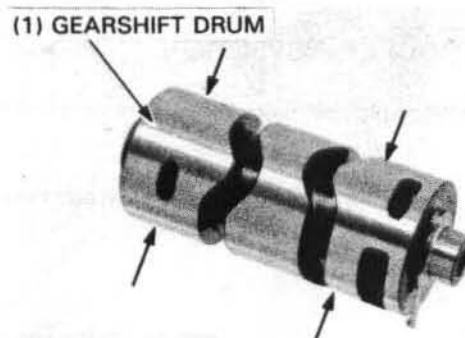
Measure the shift fork crow thickness.

SERVICE LIMIT: 4.6 mm (0.18 in)



Measure the gearshift drum O.D.

SERVICE LIMIT: 33.93 mm (1.336 in)



Remove the transmission gears and bushing. Inspect each gear for wear or damage and replace if necessary. Check the gear teeth and engagement dogs for wear or damage.

Measure the I.D. of each spinning gear and I.D. and O.D. of the gear bushing.

SERVICE LIMITS:

Gear I.D. C1: 20.10 mm (0.791 in)
M2, M4, C3: 17.10 mm (0.673 in)
Bushing I.D. C1: 17.04 mm (0.671 in)
Bushing O.D. C1: 19.63 mm (0.773 in)

Check the mainshaft and countershaft splines and sliding surfaces for wear or damage.

Measure the countershaft and mainshaft O.D.

SERVICE LIMITS:

Mainshaft: 16.95 mm (0.667 in)
Countershaft: 16.95 mm (0.667 in)

Check the gearshift drum hole for wear or damage. Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the crankcase. Remove and discard the bearings if they do not turn smoothly, quietly, or if they fit loosely in the case.

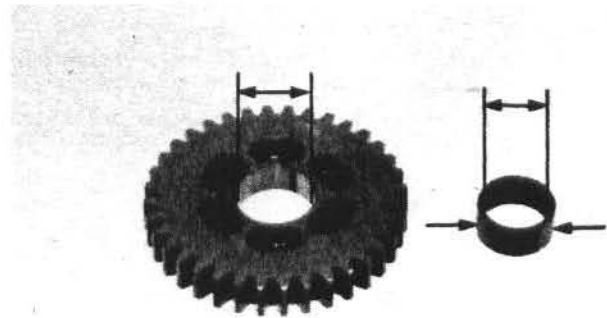
BEARING REPLACEMENT

Remove the countershaft oil seal. Remove the ball bearings from the right and left crankcases by drive the inner race from outside of the crankcase. Drive new bearings into the right and left crankcase.

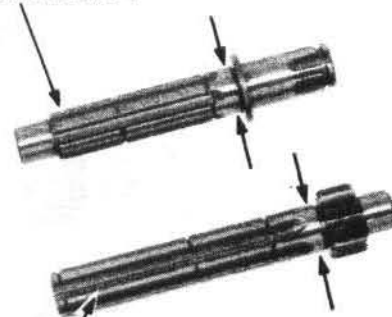
TOOLS:

Right crankcase mainshaft bearing and left crankcase countershaft bearing;

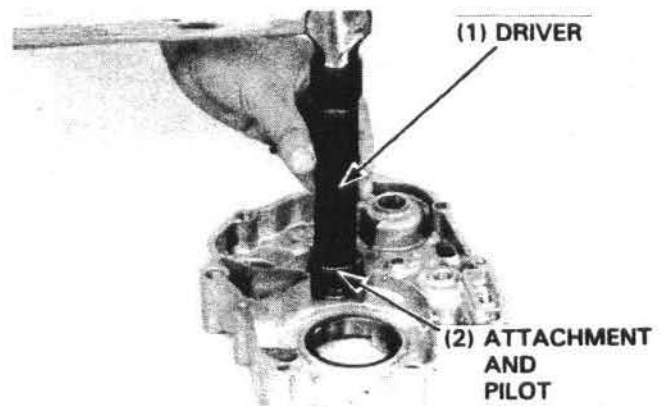
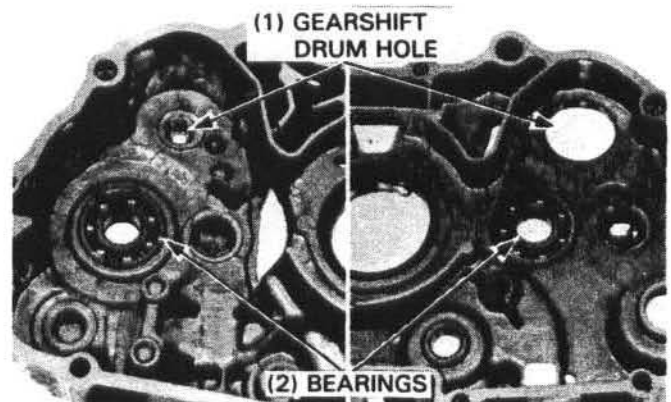
Driver	07749-0010000
Attachment, 37 x 40 mm	07746-0010200
Pilot, 17 mm	07746-0040400



(1) COUNTERSHAFT



(2) MAINSHAFT



TRANSMISSION/CRANKSHAFT

Install a new countershaft oil seal.

Check the neutral indicator shaft oil seal.

If it is damaged, or if it was removed during disassembly, install a new seal and washer.

Check the gearshift spindle oil seal and replace if it is necessary.

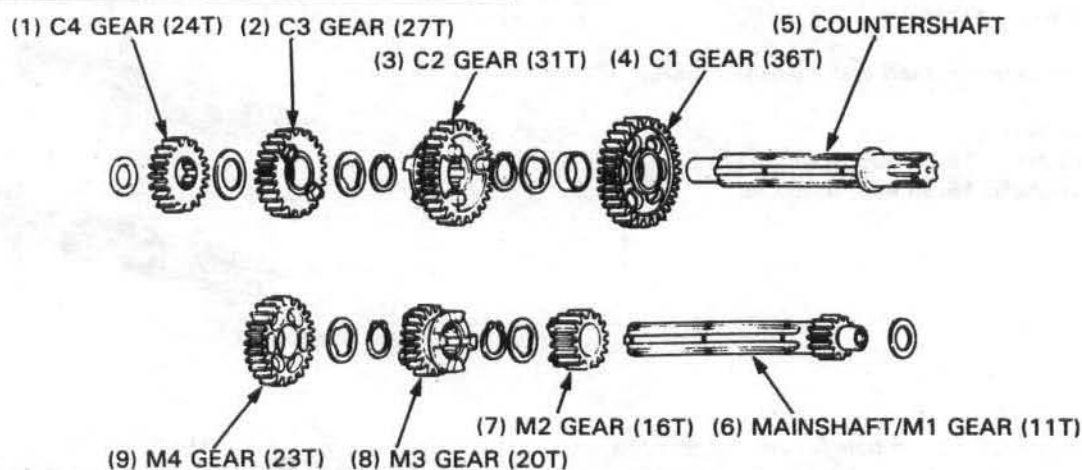
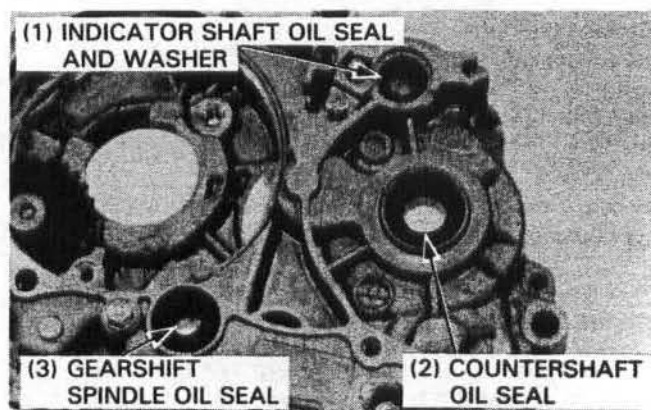
ASSEMBLY

Coat all parts with clean engine oil.

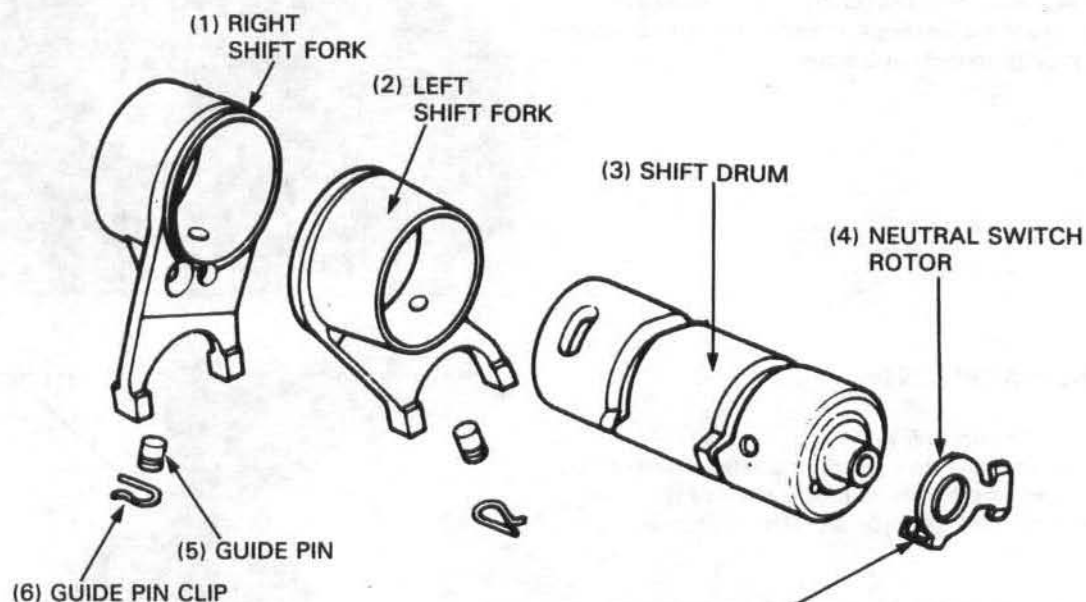
Assemble the transmission shafts and gears noting the locations of the thrust washers and snap rings.

NOTE

- Make sure the snap rings are seated properly.



Install the shift forks in the original positions from which they were removed.

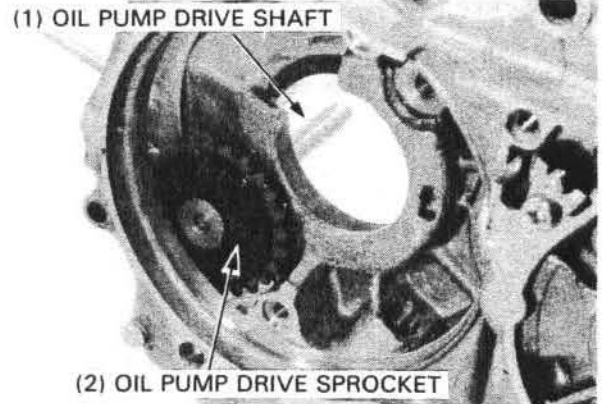


NOTE

- Bend the tab of the rotor into the drum.

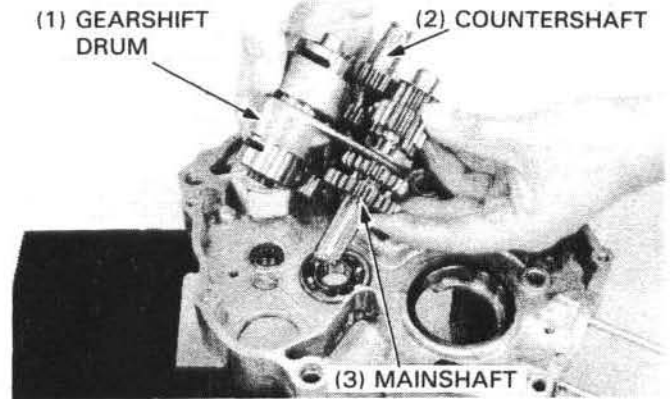
CRANKCASE ASSEMBLY

Before installing the transmission parts, inspect the oil pump drive sprocket for wear or damage. Replace if necessary.



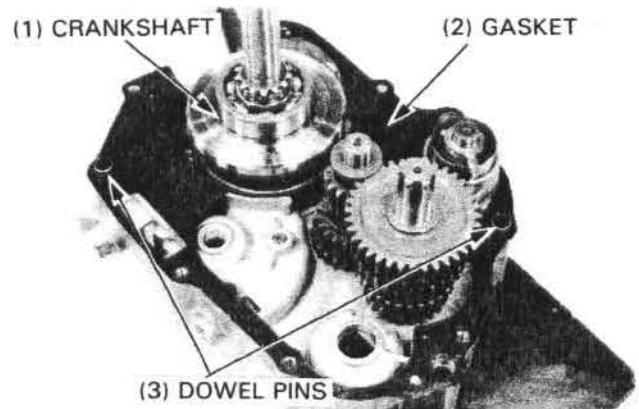
Assemble the gearshift drum, countershaft and mainshaft and install them together in the right crankcase.

Turn the mainshaft by hand to make sure the gears rotate freely.



Apply clean engine oil to the crankshaft and install it in the crankcase.

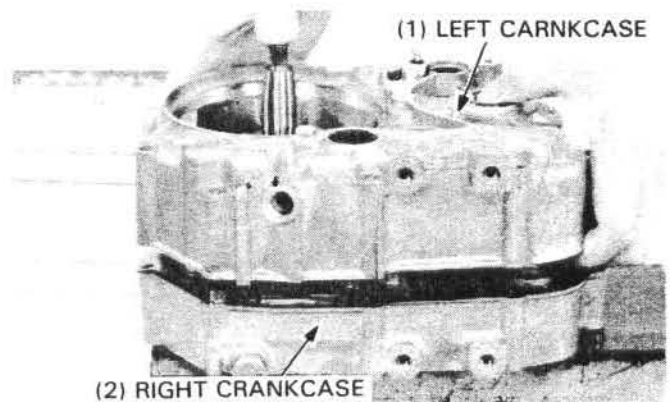
Install the dowel pins and a new gasket.



Assemble the right and left crankcase halves while turning the countershaft so as not to damage the countershaft oil seal lips.

NOTE

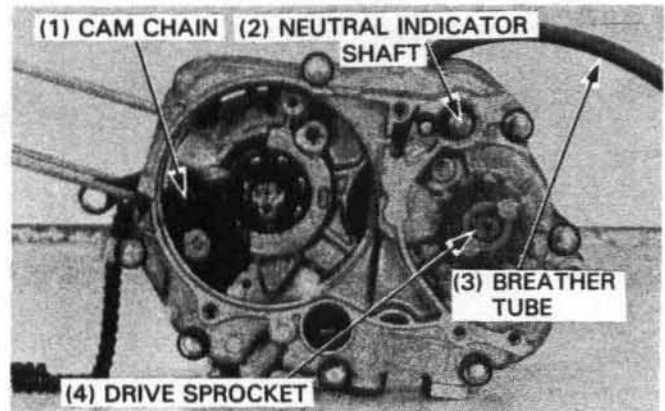
- Make sure that the gasket stays in place during this operation.



TRANSMISSION/CRANKSHAFT

Tighten the crankcase bolts.
Install and tighten the neutral indicator shaft.
Install the drive sprocket and cam chain.
Connect the crankcase breather tube.
Trim the protruding gasket material from the cylinder base gasket surface.

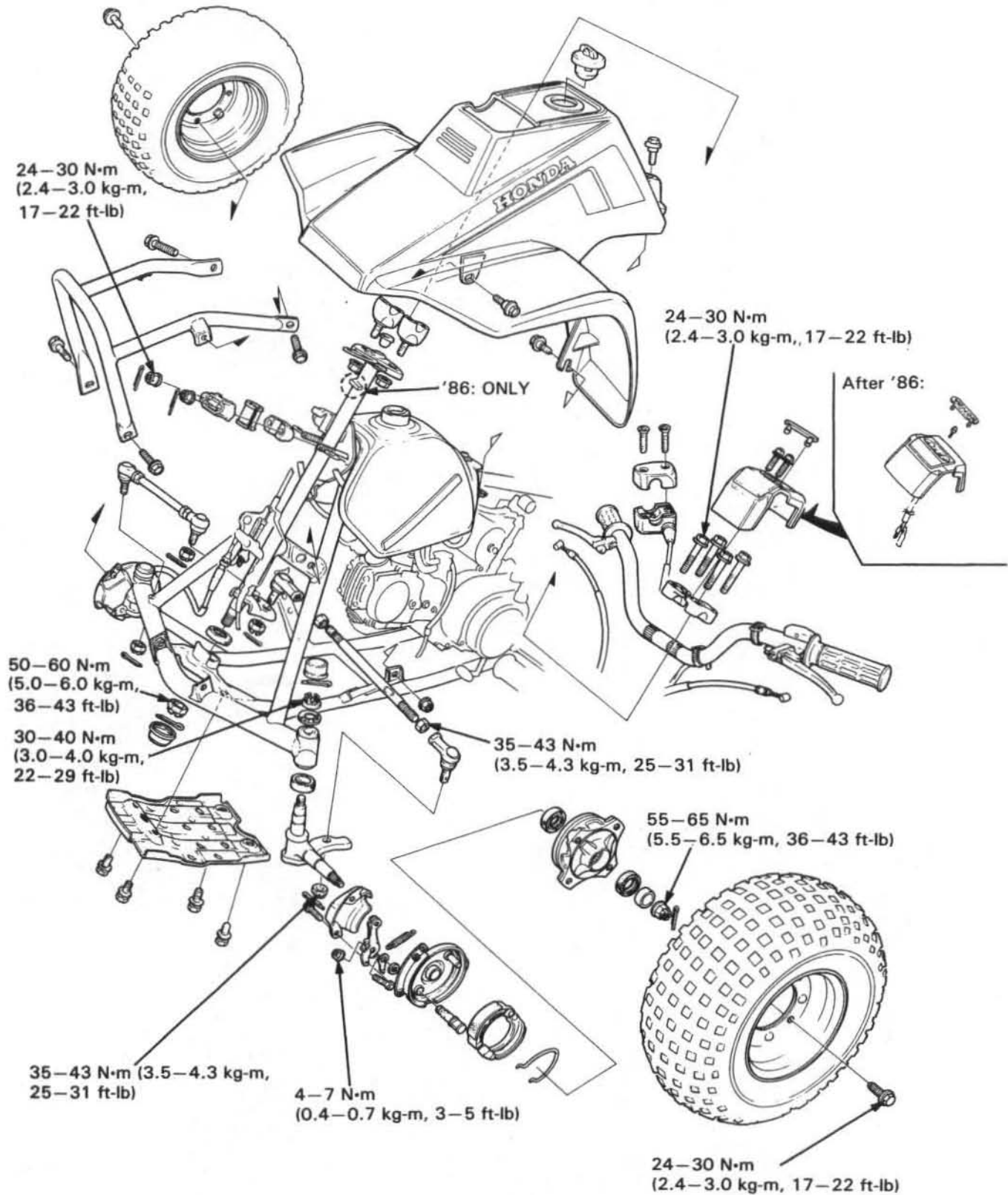
Install the removed parts in the reverse order of removal.



MEMO

RIDE RED

FRONT WHEEL/BRAKE/STEERING SYSTEM



11. FRONT WHEEL/BRAKE/STEERING SYSTEM

SERVICE INFORMATION	11-1	TIRES	11-7
TROUBLESHOOTING	11-2	FRONT BRAKE	11-11
HANDLEBAR	11-3	STEERING SYSTEM	11-17
FRONT WHEEL	11-6		

SERVICE INFORMATION

GENERAL

WARNING

- Brake dust may contain asbestos which can be harmful to your health. Do not use compressed air to clean brake drums or brake panels. Use a vacuum with a sealed dust collector. Wear a protective face mask and thoroughly wash your hands when finished.

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

SPECIFICATIONS

mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front brake drum I.D.		85.0 (3.35)	86.0 (3.38)
Front brake lining thickness		3.0 (0.12)	1.5 (0.06)
Steering shaft O.D.		22.1–22.3 (0.87–0.88)	22.0 (0.87)
Steering bushing I.D.		21.6–22.6 (0.85–0.89)	22.8 (0.90)
Kingpin O.D.	Upper	15.466–15.484 (0.6088–0.6096)	15.40 (0.606)
	Lower	16.966–16.984 (0.6680–0.6687)	16.90 (0.665)
Kingpin bushing I.D.	Upper	15.558–15.588 (0.6125–0.6137)	15.69 (0.618)
	Lower	17.058–17.088 (0.6716–0.6728)	17.19 (0.677)
Tie-rod ball joint-to-ball joint distance		167.2 (6.58)	—

11

TORQUE VALUES

Handlebar upper holder bolt	24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
Steering shaft nut	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Front axle nut	55–65 N·m (5.5–6.5 kg-m, 40–47 ft-lb)
Front wheel bolt	24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
Wheel rim bolt	18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)
Tie rod lock nut	35–43 N·m (3.5–4.3 kg-m, 25–31 ft-lb)
Ball joint castle nut	35–43 N·m (3.5–4.3 kg-m, 25–31 ft-lb)
King pin nut	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)
Steering shaft bushing holder nut	24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
Front brake arm nut	4–7 N·m (0.4–0.7 kg-m, 3–5 ft-lb)

TOOLS

Common

Driver	07749–0010000	
Attachment, 24x26mm	07746–0010700	
Attachment, 32x35mm	07746–0010100	
Pilot, 15mm	07746–0040300	
Pilot, 17mm	07746–0040400	
Bearing remover shaft	07746–0050100	
Bearing remover head, 15mm	07746–0050400	or equivalents commercially available in U.S.A.
Bearing remover head, 17mm	07746–0050500	
Universal bead breaker	GN-AH-958-BB1 (U.S.A. only)	
Tire bead breaker set	07772–0050001 or 07772–0050000	Not available in U.S.A.

TROUBLESHOOTING

Hard steering

- Steering shaft nut too tight
- Faulty steering shaft lower bearing
- Insufficient tire pressure

Steers to one side or does not track straight

- Bent tie rods
- Wheel installed incorrectly

Front wheel wobbling

- Bent rim
- Worn front brake drum bearing
- Faulty tire
- Axle nut not tightened properly

Poor brake performance

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

HANDLEBAR

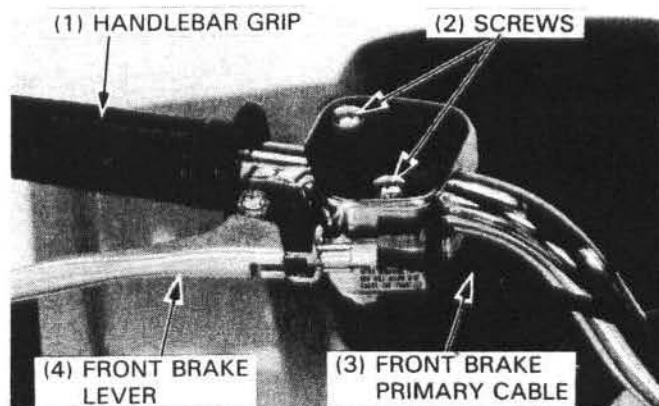
REMOVAL

Remove the front brake lever and disconnect the front brake primary cable.

Remove the throttle housing cover screws and the housing.

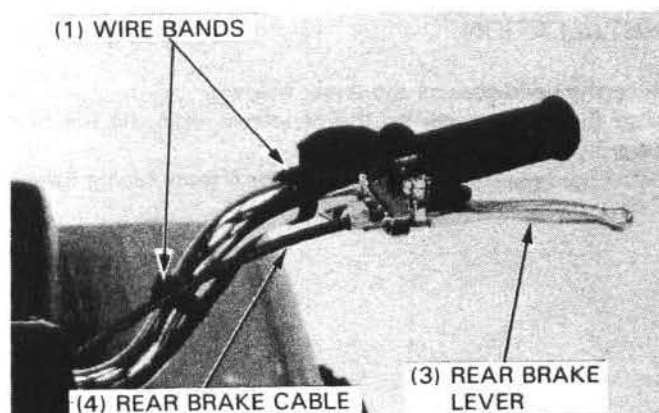
Remove the handlebar grip from the handlebar.

Disconnect the throttle cable by removing the throttle lever if necessary.



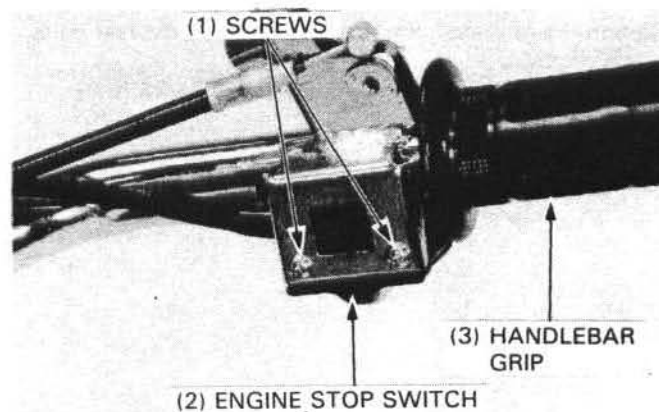
Remove the rear brake lever and disconnect the rear brake cable.

Free the handlebar switch wire from the handlebar by removing the wire bands.



Remove the engine stop switch by removing the two screws.

Remove the handlebar grip.

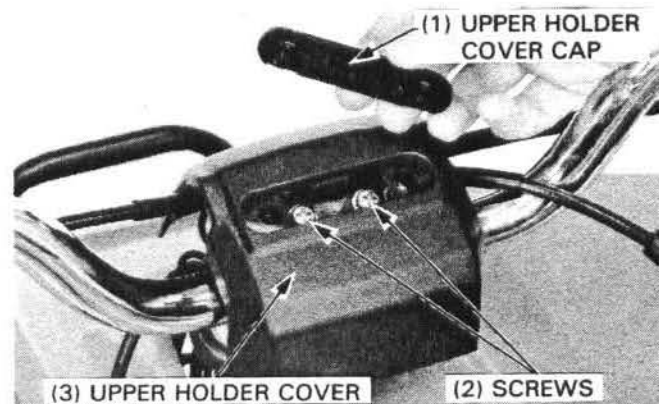


Remove the handlebar upper holder cover cap.

Remove the screws attaching the upper holder cover and the cover.

After '86:

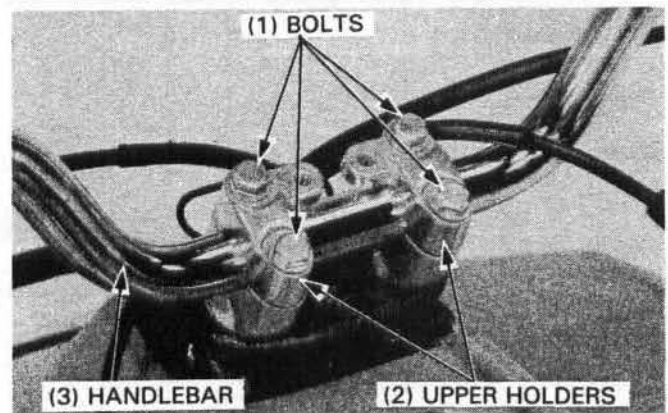
Disconnect the ignition switch connectors.



FRONT WHEEL/BRAKE/STEERING SYSTEM

Remove the handlebar upper holder bolts and remove the handlebar upper holders.

Remove the handlebar.

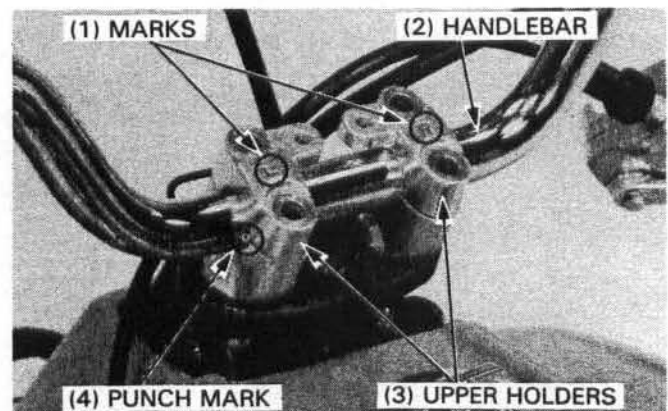


INSTALLATION

Place the handlebar on the lower holder.

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

Install the upper holders with the L or R mark facing forward.

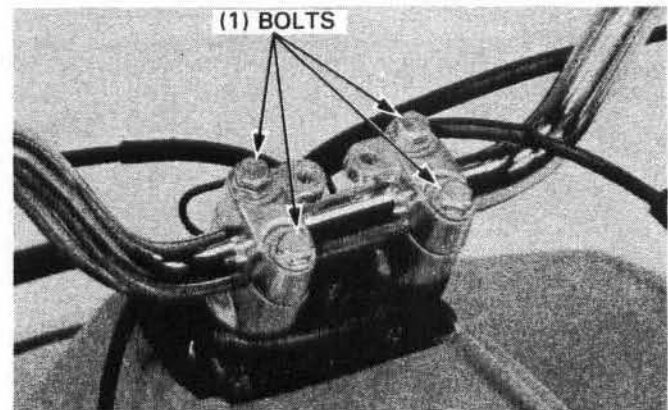


Tighten the forward bolts first, then tighten the rear bolts.

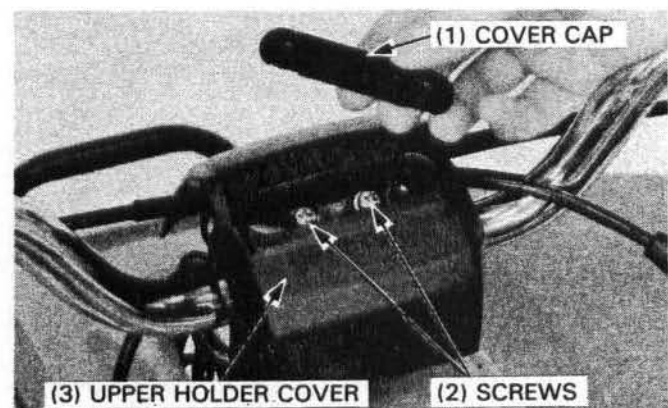
TORQUE: 24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

After '86:

Connect the ignition switch connectors.



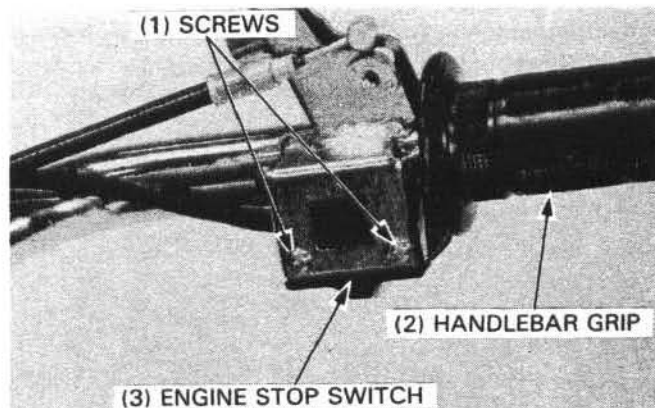
Install the upper holder cover and tighten the screws.
Install the cover cap.



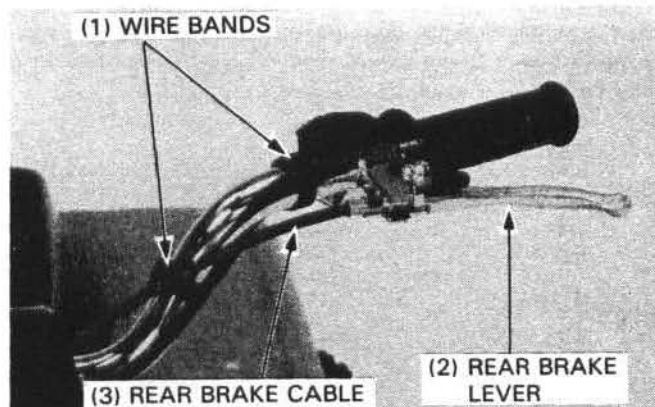
Install the engine stop switch and tighten the screws.
If handlebar grips was removed, apply Honda Bond A or Honda Hand Grip Cement (U.S.A. only) to the inside surface of the grip and to the clean surfaces of the right and left handlebar. Wait 3-5 minutes and install the grip.
Rotate the grip for even application of the adhesive.

NOTE

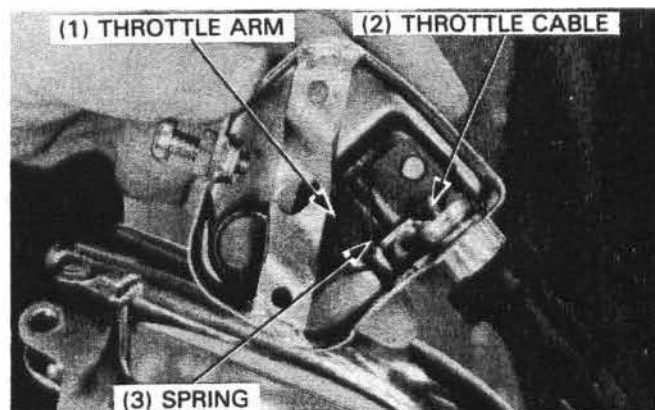
- Allow the adhesive to dry for an hour before using.



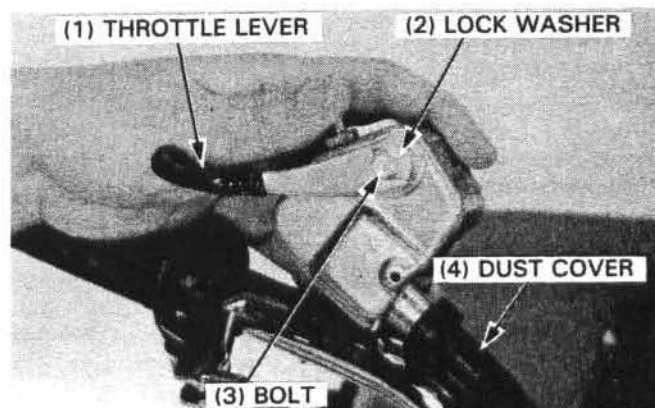
Install the rear brake lever and connect the rear brake cable to the lever.
Install the wire bands.



If the throttle cable was disconnected from the throttle housing, connect the cable as follows:
Install the spring and throttle arm into the throttle housing.

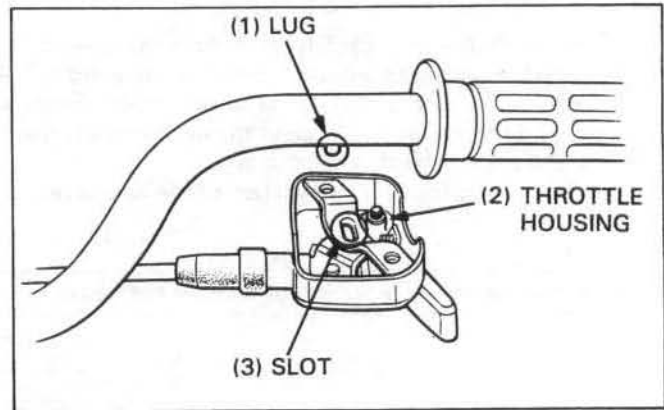


Install the throttle lever using the bolt and new lock washer.
Install the dust cover to the throttle housing securely.

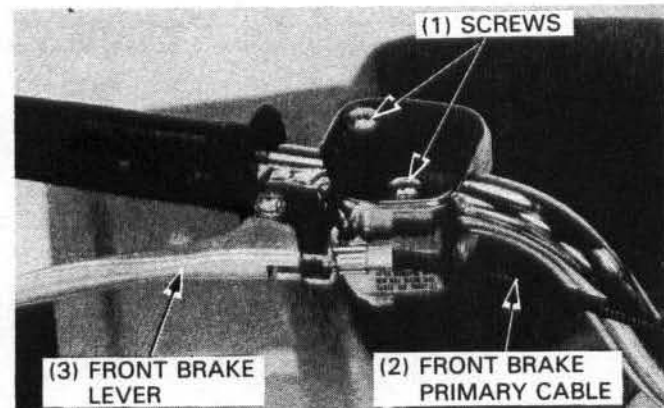


FRONT WHEEL/BRAKE/STEERING SYSTEM

Apply grease to the throttle cable and connect the cable to the throttle arm.
Install the throttle housing onto the handlebar aligning the slot with the lug.



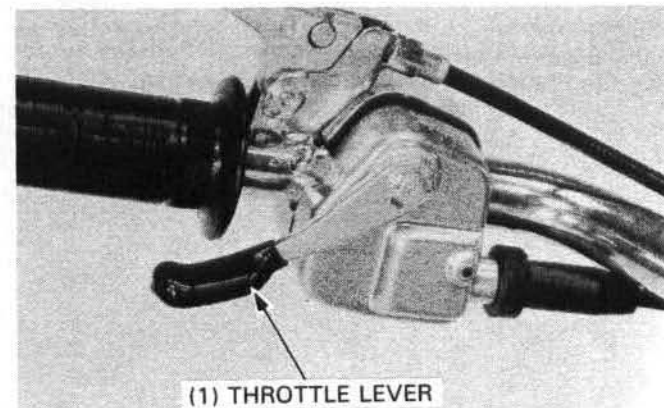
Install the throttle housing cover and tighten the screws.
Install the front brake lever and connect the front brake primary cable to the lever.



Check the throttle lever for smooth operation.

Adjust as follows:

- Throttle lever free play (page 3-4).
- Brake lever free play (page 3-10).



FRONT WHEEL

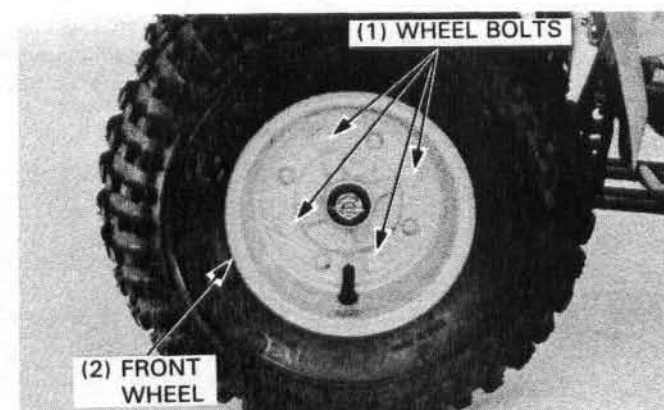
REMOVAL

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

INSTALLATION

Install the front wheel and tighten the four front wheel bolts.

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



TIRES

REMOVAL (U.S.A. ONLY)

NOTE

- This service requires the Universal Bead Breaker (GN-AH-958-BB1) available in U.S.A. only.
- Remove and install tires from the rim side opposite the valve stem.

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.

Install the blade for 7"/8" rims onto the breaker arm assembly.

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 water, pressing down on the tire side-wall/bead area in several places, to allow the water to run into and around the bead. Also lube the area where the breaker arm will contact the side wall of the tire.

WARNING

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

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

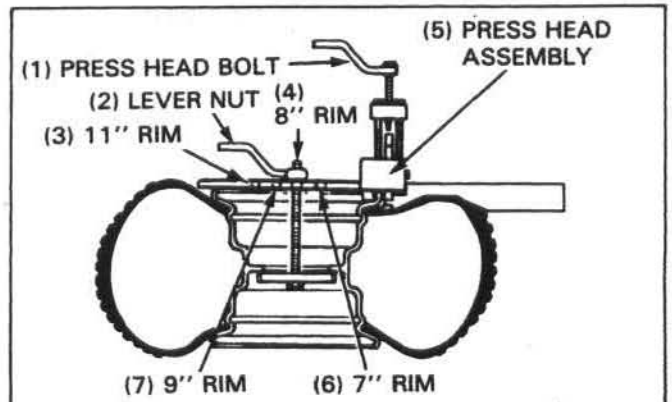
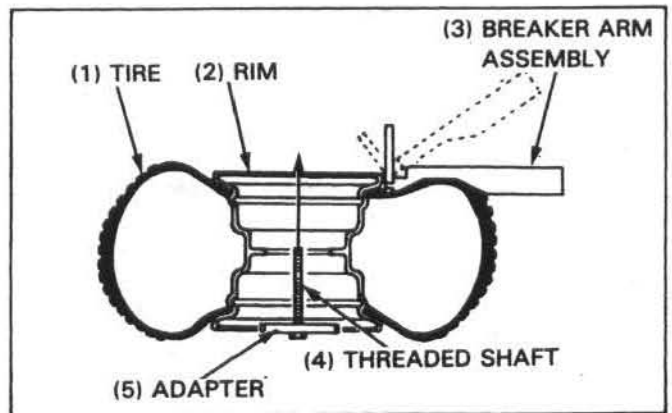
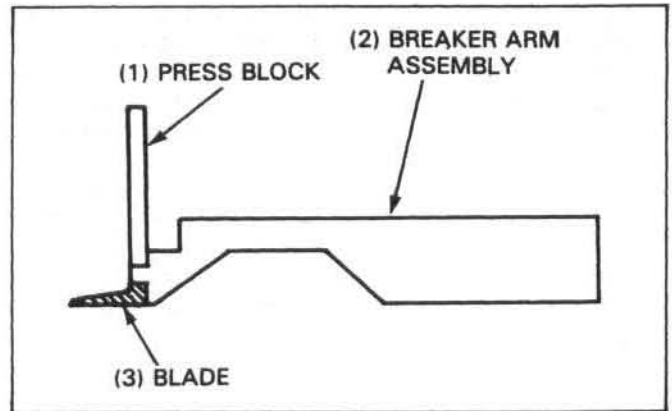
With the breaker arm in the horizontal position, place the breaker press head assembly over the breaker arm press block. Make sure the press head bolt is backed out all the way and then position the nylon buttons on the press head against the inside edge of the rim.

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

NOTE

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

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



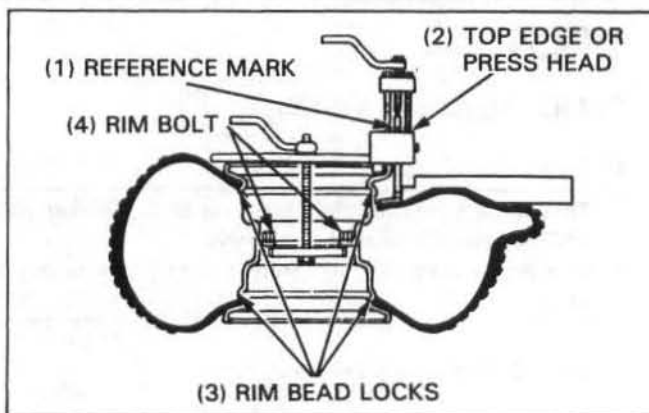
FRONT WHEEL/BRAKE/STEERING SYSTEM

If the rest of the bead cannot be pushed down into the center of the rim by hand, loosen the press head bolt and the lever nut. Rotate the breaker arm assembly and breaker press head assembly $\frac{1}{8}$ to $\frac{1}{4}$ the circumference of the rim. Tighten the lever nut and then tighten the press head bolt as described.

Repeat this procedure as necessary until the remainder of the bead can be pushed down into the center of the rim.

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

Remove the four rim bolts and separate the rim halves from the tire.



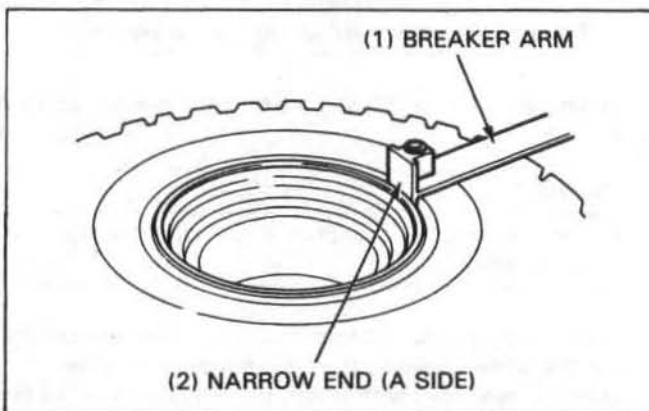
REMOVAL (EXCEPT U.S.A.)

NOTE

- This service requires the Tire Bead Breaker Set, 07772-0050000 or 07772-0050001 (not available in U.S.A.).

CAUTION

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



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

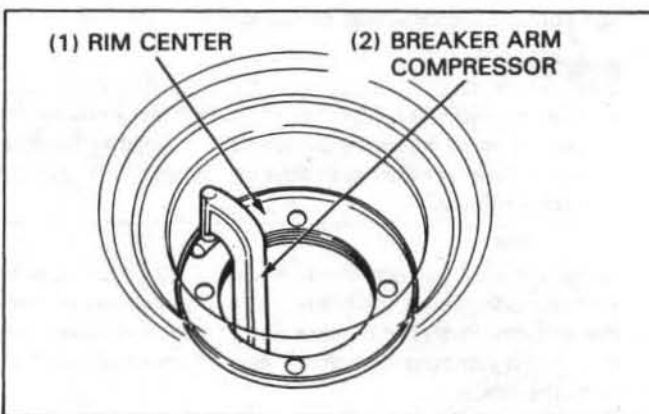
TOOL:

Breaker arm 07772-0050200

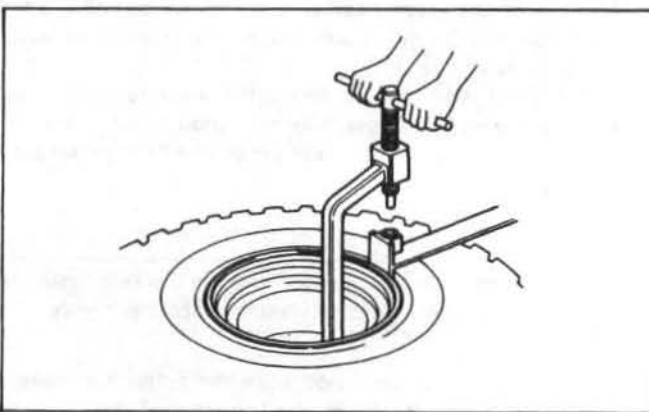
Position the breaker arm compressor onto the rim center as shown.

TOOL:

Breaker arm compressor 07772-0050101 or 07772-0050100

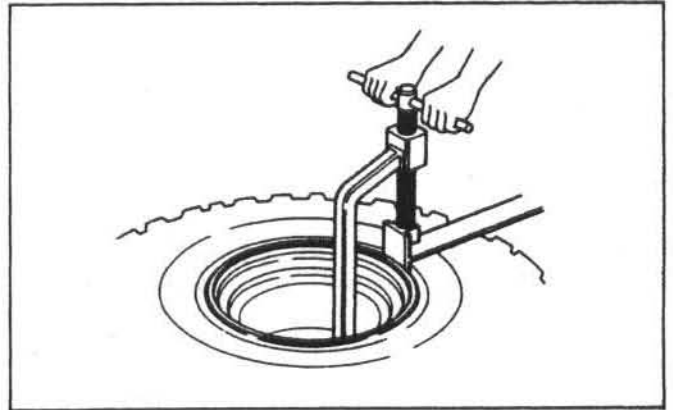


Keep the breaker arm horizontal and align the end of the compressor bolt with the arm hole.



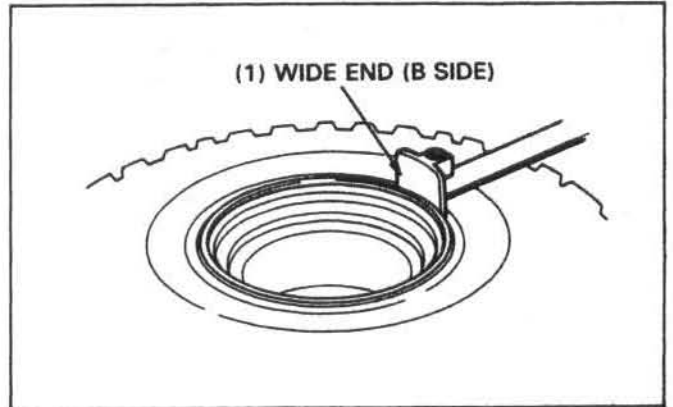
Screw in the breaker arm compressor bolt to break the bead from the tire.

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



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

Remove the four rim bolts and separate the rim halves from the tire.

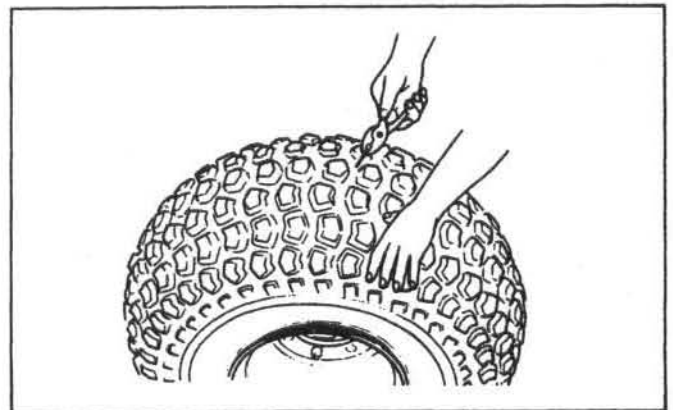


TIRE REPAIR

NOTE

- Use the manufacturer's instructions for the tire repair kit you are using. If your kit does not have instructions, use the procedures provided here.

Check the tire for puncturing objects. Chalk mark the punctured area and remove the puncturing object. Inspect and measure the injury. Tire repairs for injuries larger than 15 mm ($5/8$ in) should be a section repair. Section repairs should be done by a professional tire repair shop. If the injury is smaller than 15 mm ($5/8$ in), proceed with the repair as described here.



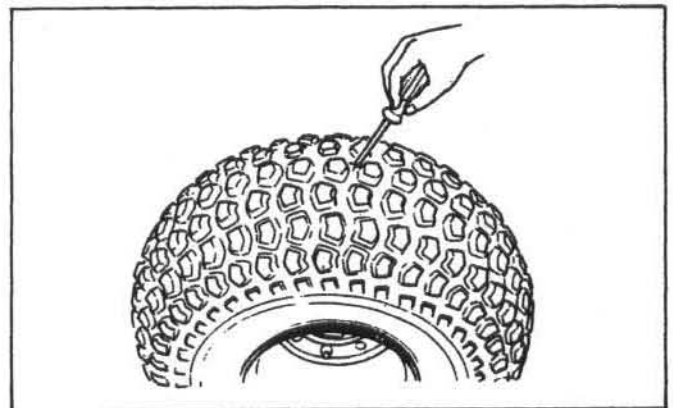
Install a rubber plug into the injury as follows:
Apply cement to a plug inserting needle and work the needle into the injury to clean and lubricate it. Do this three times. Do not let the cement dry.

Insert and center a rubber plug through the eye of the inserting needle.

Apply cement to the rubber plug.
Push the inserting needle with plug into the injury until the plug is slightly above the tire. Twist the needle and remove it from the tire, the plug will stay in the tire.

NOTE

- Be careful not to push the plug all the way into the tire to prevent it from falling inside.



FRONT WHEEL/BRAKE/STEERING SYSTEM

Trim the plug 6 mm (1/4 in) above the tire surface.
Repeat the above procedure if the puncture is large.
Do not use more than two plugs per injury.
Allow the repair to dry. Drying time will vary with air temperature. Refer to the tire repair kit manufacturer's recommendations.

Inflate the tire and test the seal by dabbing a small amount of cement around the plug. Escaping air will cause a bubble in the cement. If there is leakage, remove the tire (page 11-7) and apply a cold patch to the inside of the tire as described.
If a plug has been inserted, trim it even with the inner tire surface.

Temporarily place a rubber patch that is at least twice the size of the puncture over the injury. Make a mark around the patch, slightly larger than the patch itself.

Remove the patch.

Roughen the area marked inside the tire with a tire buffer or a wire brush. Clean the rubber dust from the buffed area.

Apply cement over the area marked 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 the cement with dirty or greasy hands.

ASSEMBLY

Clean the rim bead seat, flange and O-ring grooves.
Replace the O-ring with new one.

WARNING

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

Apply small amount of grease to O-ring.

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

Install and tighten the four rim bolts.

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

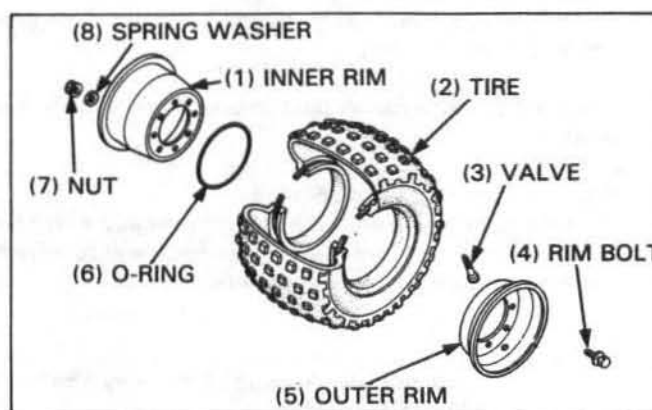
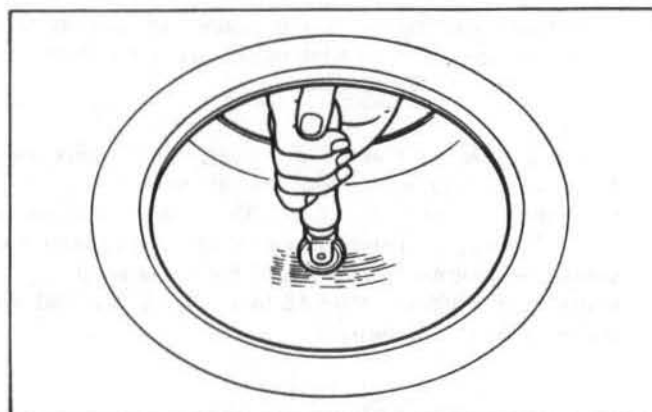
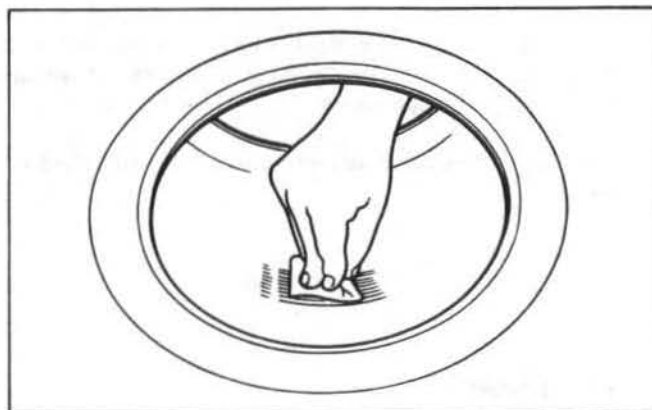
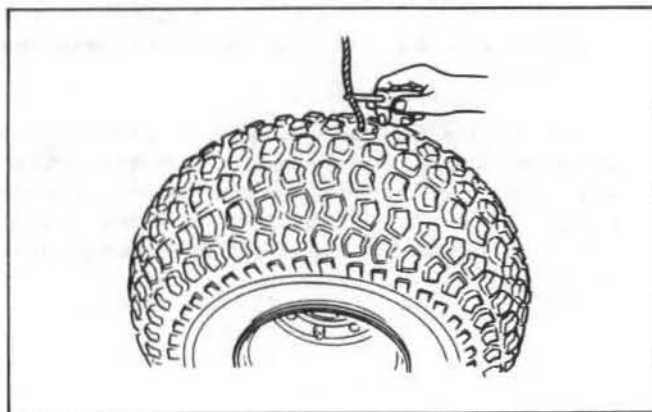
Install the valve core and inflate the tire to seat the bead.
Deflate the tire. Wait 1 hour and inflate the tire to the specified pressure.

TIRE PRESSURE: 2.2 psi (0.15 kg/cm², 15 kPa)
Min. Pressure: '86: 1.9 psi (0.13 kg/cm², 13 kPa)
After '86: 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: 1,285 mm (50.6 in)

Check for air leaks and install the valve cap.



FRONT BRAKE

WARNING

- Grease on the brake linings reduces stopping power. Keep grease off the linings.

FRONT BRAKE INSPECTION

Remove the front wheel (page 11-6).

Remove the cotter pin and axle nut.

Pull the brake drum off the brake panel.

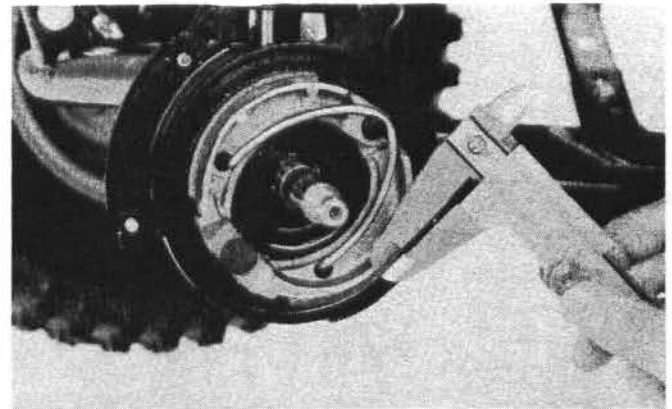
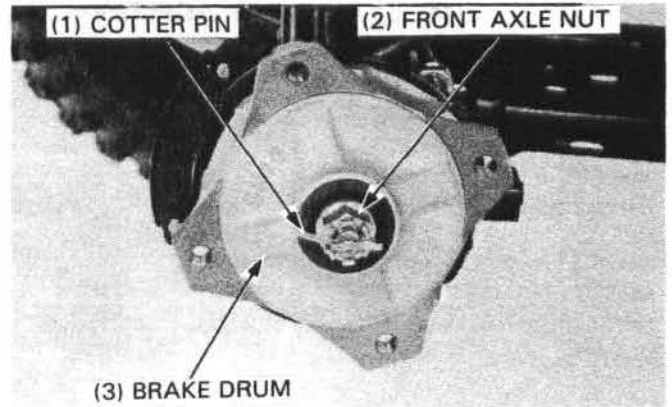
Measure the brake lining thickness.

SERVICE LIMIT: 1.5 mm (0.06 in)

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

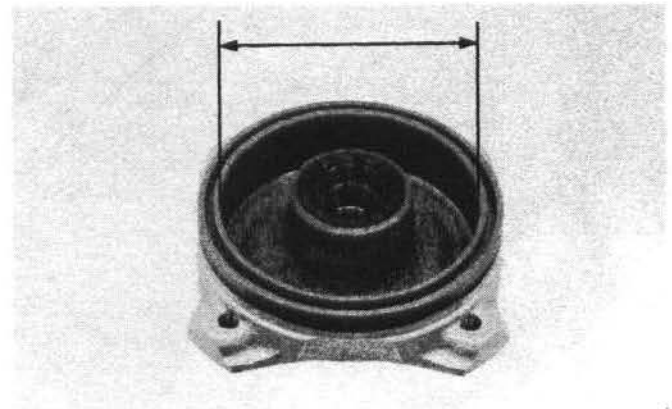
NOTE

- Always replace the front brake linings in pairs to assure even operation.



Measure the brake drum i.D.

SERVICE LIMIT: 86.0 mm (3.38 in)



BRAKE DRUM BEARING INSPECTION

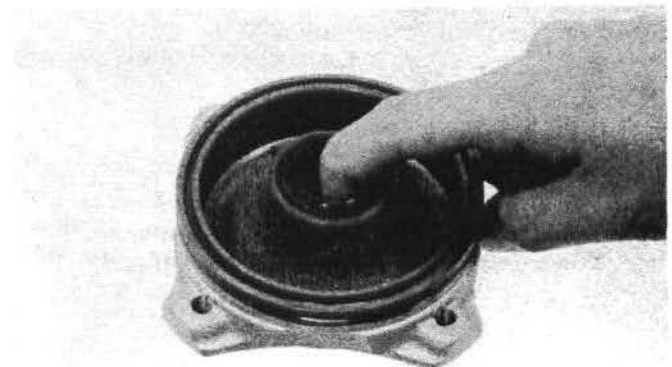
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the drum.

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

NOTE

- Replace brake drum bearings in pairs.

For replacement of bearings, see next page.



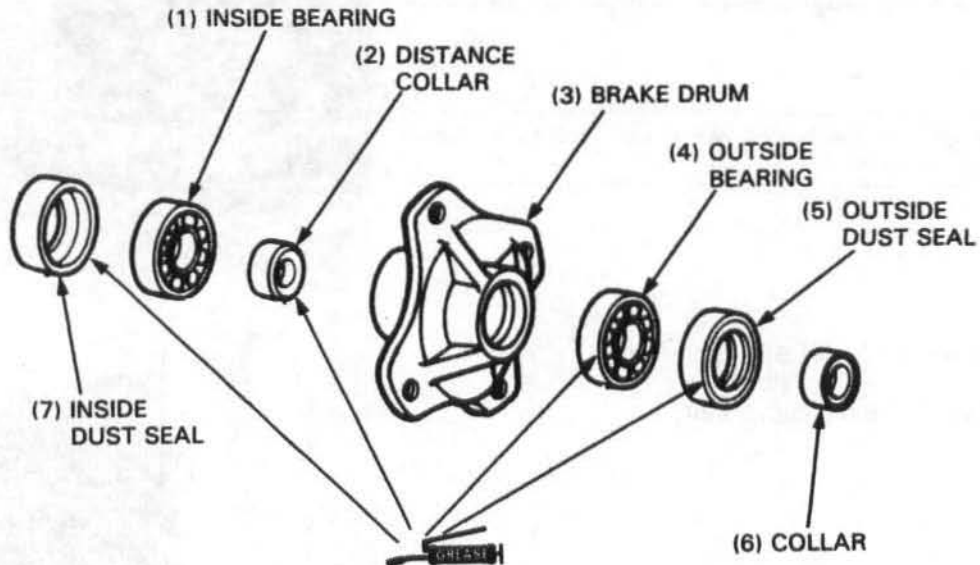
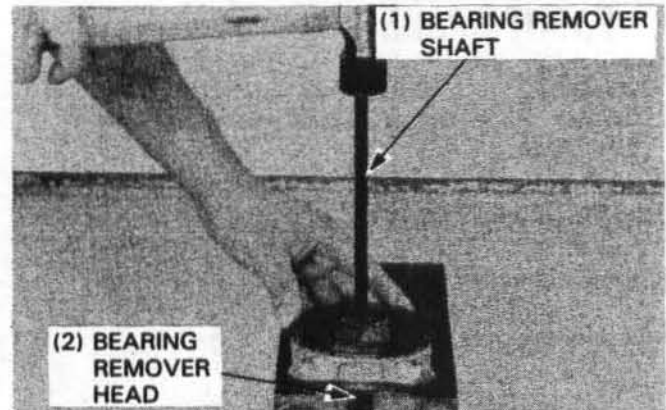
FRONT WHEEL/BRAKE/STEERING SYSTEM

BRAKE DRUM BEARING REPLACEMENT

Remove the collar and dust seals.
Remove the bearings and distance collar.

TOOLS:

Bearing remover shaft or equivalent commercially available in U.S.A. 07746-0050100
Bearing remover head, 15mm or equivalent commercially available in U.S.A. (outside) 07746-0050400
Bearing remover head, 17mm or equivalent commercially available in U.S.A. (inside) 07746-0050500



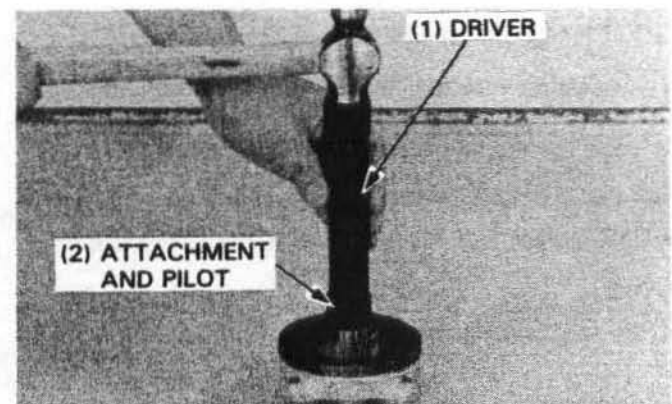
Pack all bearing cavities with grease.
Drive in new one bearing, install the distance collar and drive in new other bearing.

TOOLS:

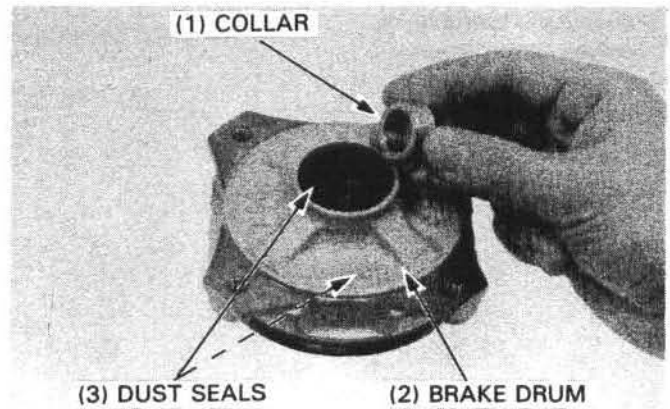
Driver 07749-0010000
Attachment, 32x35mm 07746-0010100
Pilot, 15mm (outside) 07746-0040300
Pilot, 17mm (inside) 07746-0040400

NOTE

- Drive in the bearing squarely.



Apply grease to the dust seal lips and install the dust seals and collar.

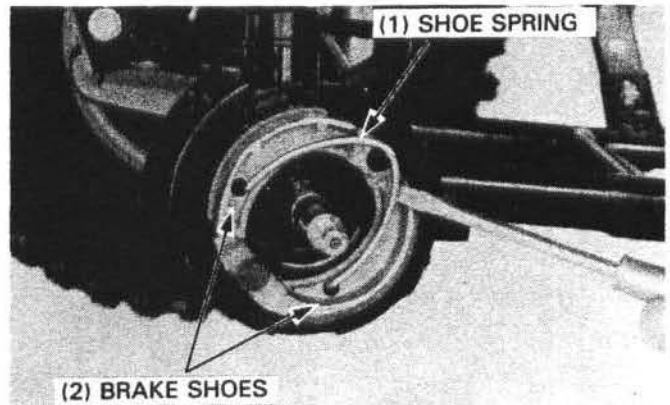


BRAKE PANEL REMOVAL

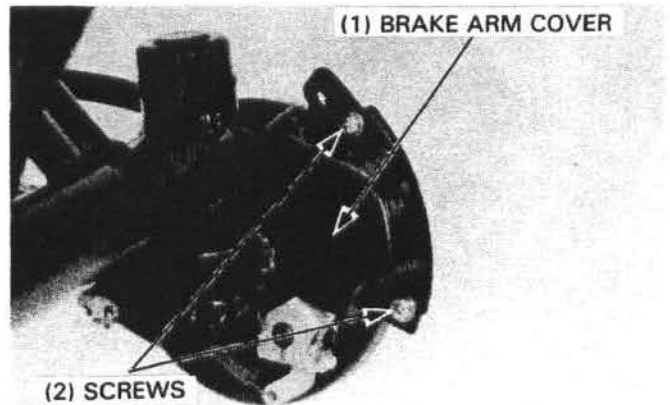
Pry the shoe spring off the brake shoe anchor pin and remove the spring and brake shoes.

NOTE

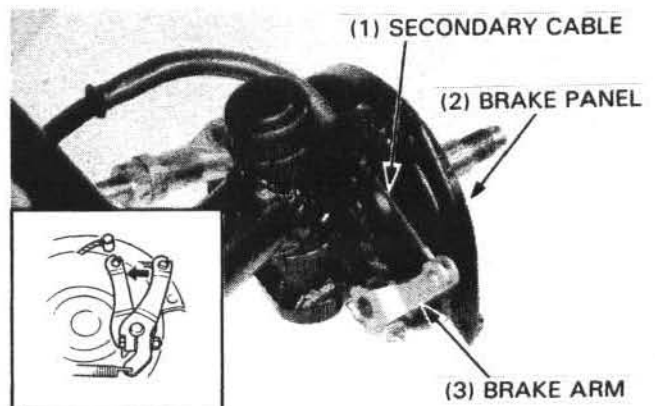
- Mark the shoes to indicate their original positions before removing them.



Remove the screws and the brake arm cover.



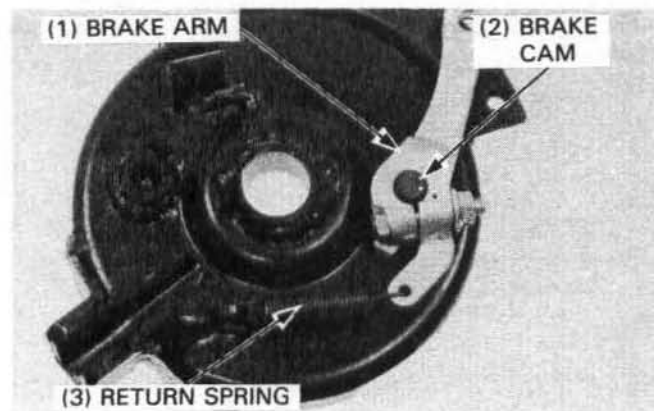
Disconnect the brake secondary cable from the brake arm. Remove the brake panel from the knuckle.



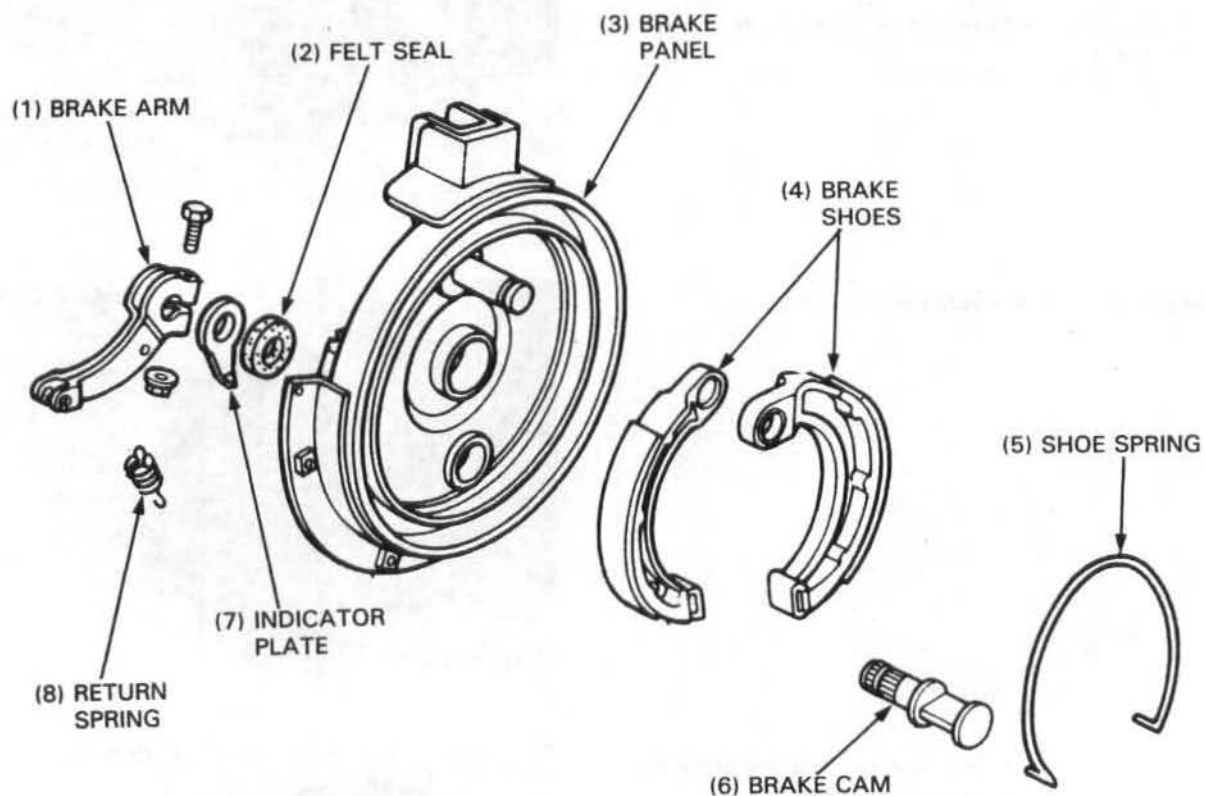
FRONT WHEEL/BRAKE/STEERING SYSTEM

Remove the following parts:

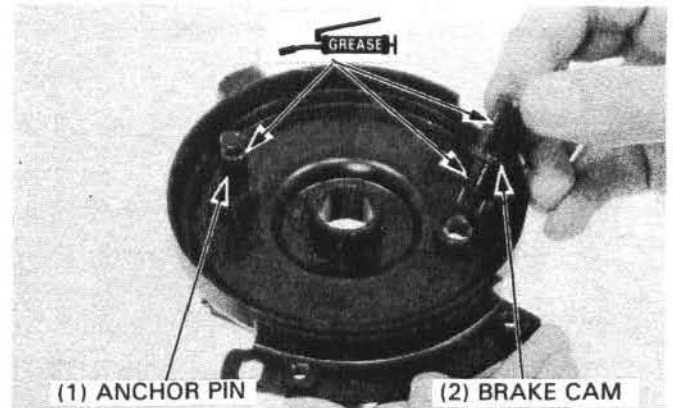
- brake arm and cam.
- return spring.
- indicator plate and felt seal.



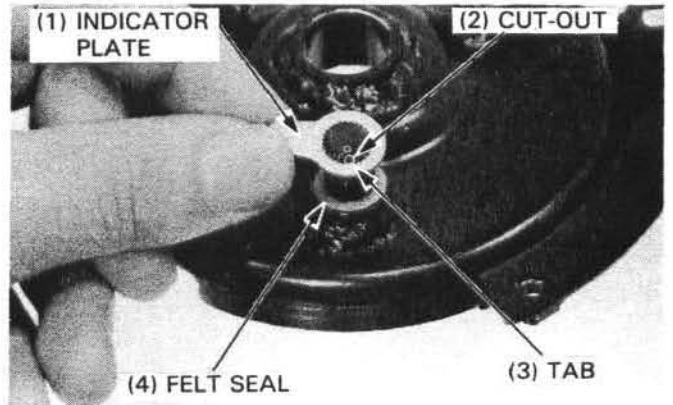
BRAKE PANEL ASSEMBLY



Apply a small amount of grease to the brake cam and anchor pin and install the cam in the brake panel.



Soak the felt seal in clean engine oil and install the seal on the brake cam. Install the indicator plate by aligning the tab or the plate with the slot on the brake cam.



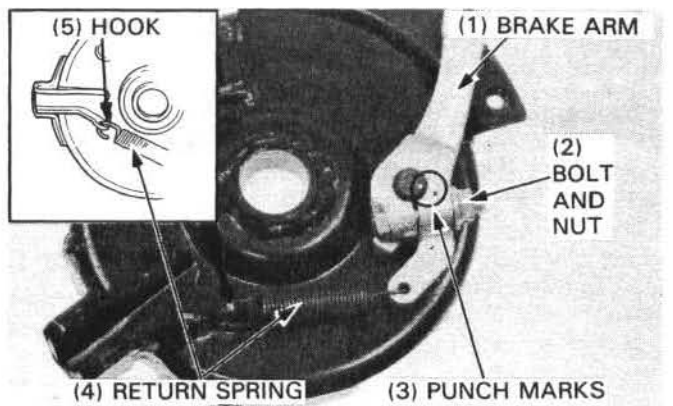
Install the brake arm on the cam by aligning the punch marks. Tighten the brake arm bolt and nut to the specified torque.

TORQUE: 4–7 N·m (0.4–0.7 kg-m, 3–5 ft-lb)

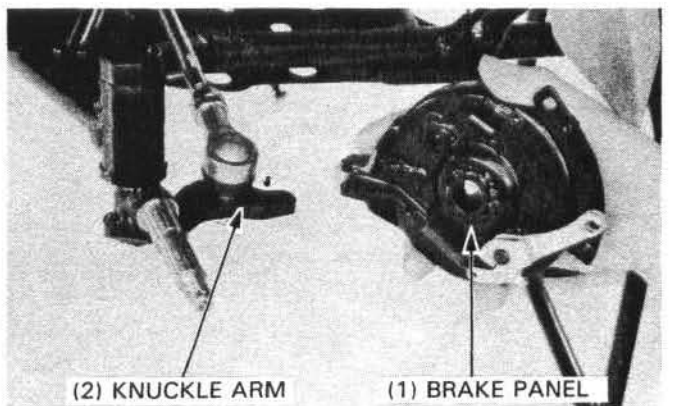
Install the return spring.

NOTE

- Note the return spring installation direction.

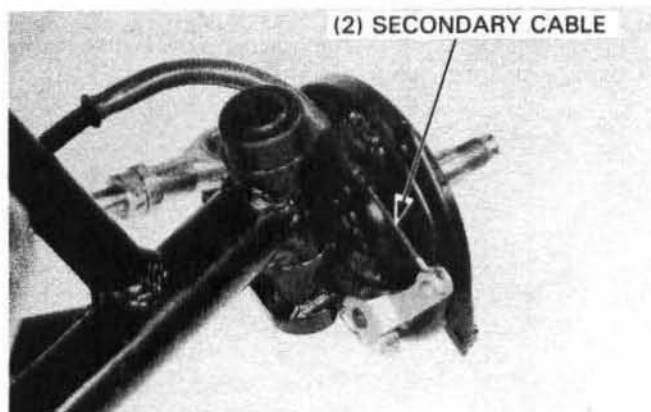


Install the brake panel on the knuckle.

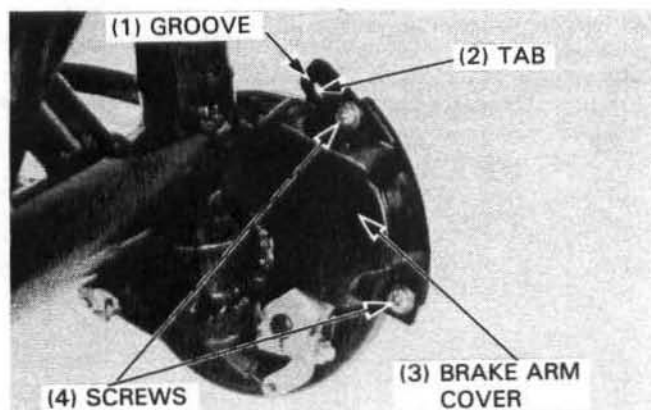


FRONT WHEEL/BRAKE/STEERING SYSTEM

Connect the secondary cable to the brake arm.



Install the brake arm cover by fitting the tab of the cover in the brake panel groove.
Tighten the screws securely.



Position the brake shoes in their original locations and install the brake shoe spring.

WARNING

- Grease on the brake linings reduces stopping power. Keep grease off the linings.



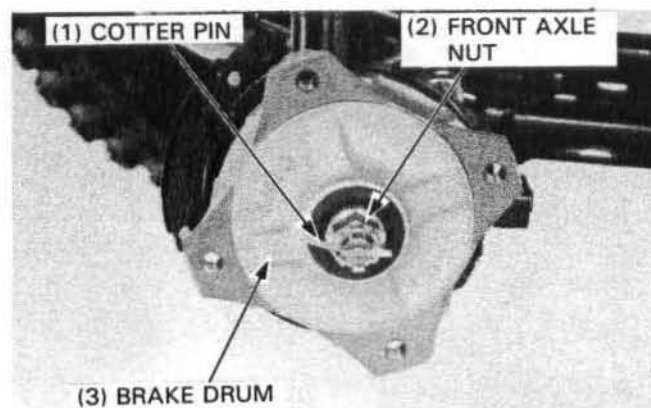
Install the brake drum and tighten the front axle nut to the specified torque.

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

Install the cotter pin.

Install the front wheel (page 11-6).

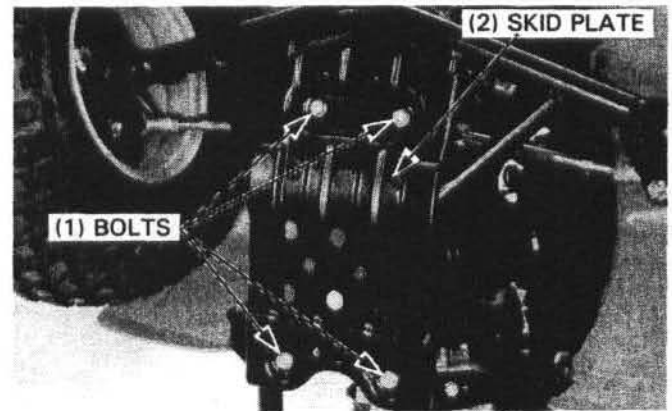
Adjust the front brake lever free play and the equalizer arm function (pages 3-10, 11).



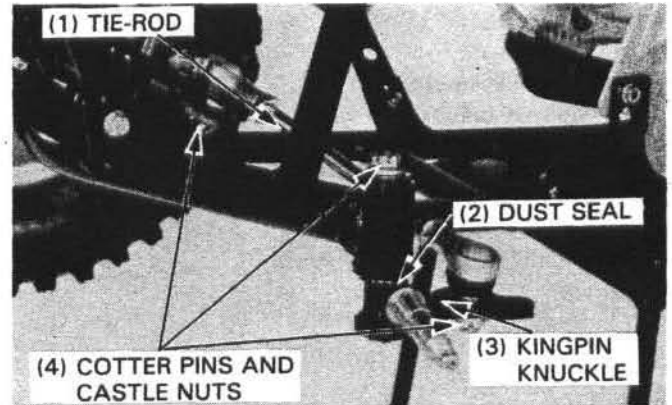
STEERING SYSTEM

KINGPIN/KNUCKLE AND TIE-ROD REMOVAL

Remove the front wheels and brakes.
Remove the four bolts and the skid plate.

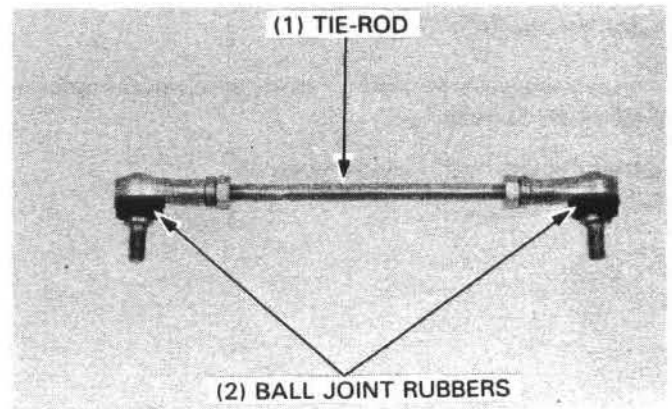


Remove the kingpin nut boot and all cotter pins.
Remove the castle nuts from the tie-rod ball joints and remove the tie-rods.
Remove the kingpin nut and washer and the kingpin/knuckle.
Remove the dust seal.



TIE-ROD INSPECTION

Inspect the tie-rod for damage.
Inspect the ball joint rubbers for damage, wear or deterioration.



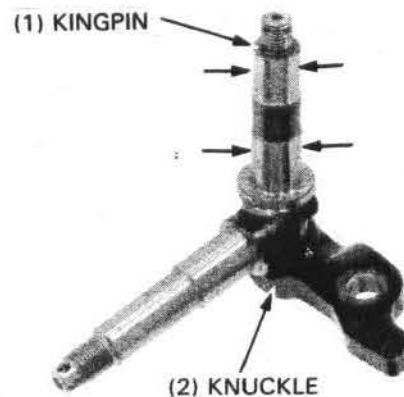
KINGPIN/KNUCKLE INSPECTION

Inspect the kingpin/knuckle for damage or cracks.
Measure the kingpin O.D.

SERVICE LIMIT:

Upper: 15.40 mm (0.606 in)

Lower: 16.90 mm (0.665 in)



FRONT WHEEL/BRAKE/STEERING SYSTEM

KINGPIN BUSHING INSPECTION

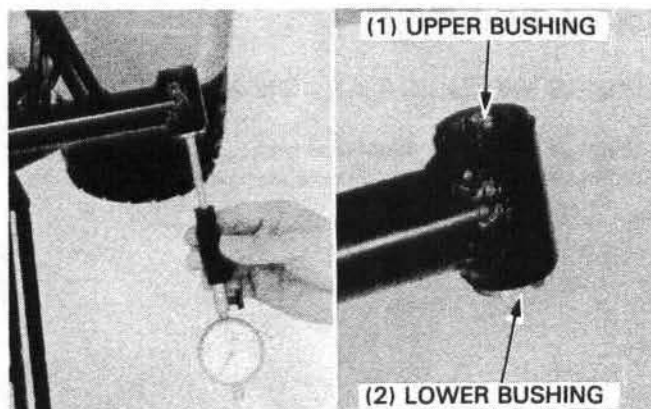
Check the kingpin bushings for wear or damage.

Measure the I.D. of the bushings.

SERVICE LIMIT:

Upper: 15.69 mm (0.618 in)

Lower: 17.19 mm (0.677 in)

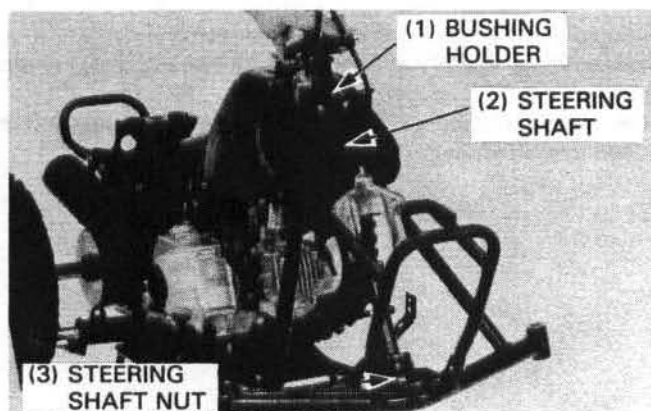


STEERING SHAFT REMOVAL

Remove the following parts:

- handlebar (page 11-3).
- front fender (page 13-1).
- steering shaft nut boot, cotter pin and nut.
- cotter pins and bushing holder nuts and bushing holder.
- steering shaft with bushing.

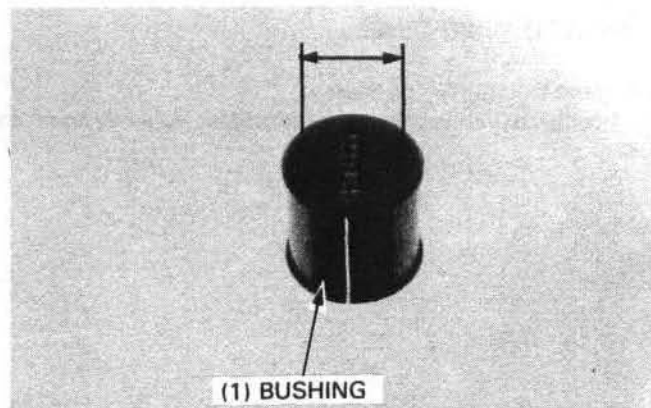
Remove the bushing from the shaft.



BUSHING INSPECTION

Inspect the bushing for wear or damage, replace if necessary.
Measure the bushing I.D.

SERVICE LIMIT : 22.8 mm (0.90 in)

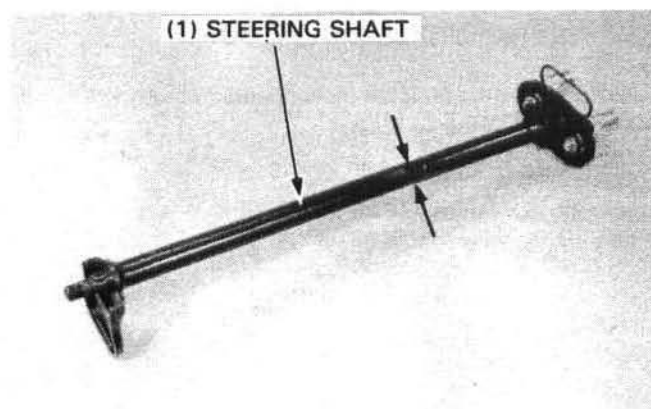


STEERING SHAFT INSPECTION

Inspect the steering shaft for damage or cracks, and replace if necessary.

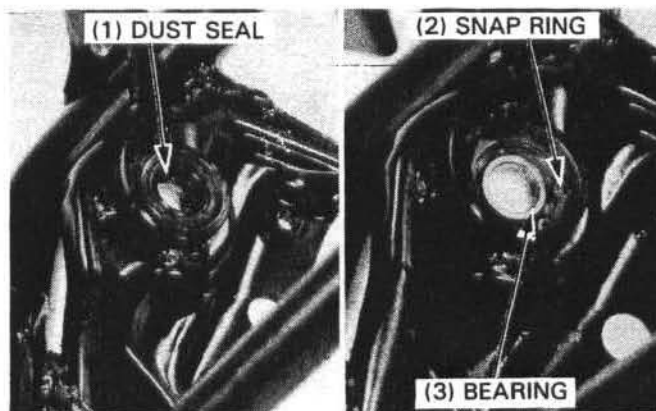
Measure the steering shaft O.D. in the location of the bushing.

SERVICE LIMIT : 22.0 mm (0.87 in)



STEERING SHAFT BEARING REPLACEMENT

Remove the dust seal and snap ring.
Drive out the bearing.

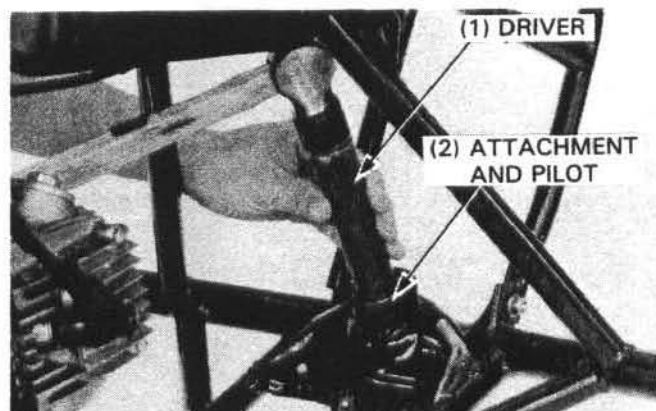


Pack grease into the bearing cavities.
Drive a new bearing into the frame.

TOOLS:

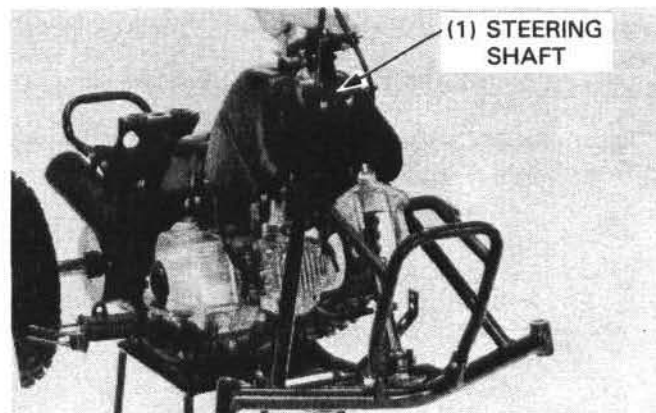
Driver	07749-0010000
Attachment, 32x35mm	07746-0010100
Pilot, 15mm	07746-0040300

Install the snap ring.
Apply grease to the dust seal lips and install the dust seal.



INSTALLATION

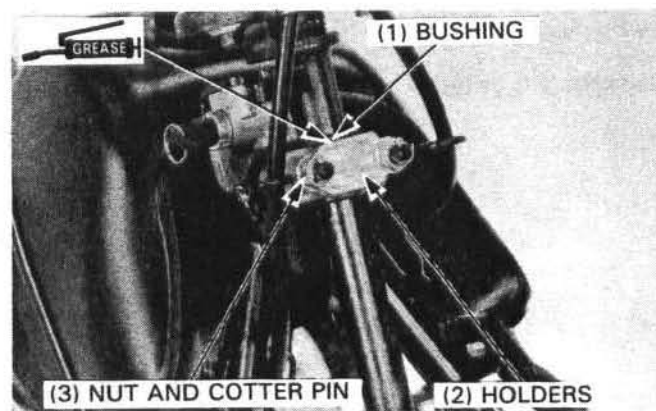
Install the steering shaft with the bushing.



Apply grease to the bushing.
Install the bushing holder and tighten the nuts to the specified torque.

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

Install new cotter pins.



FRONT WHEEL/BRAKE/STEERING SYSTEM

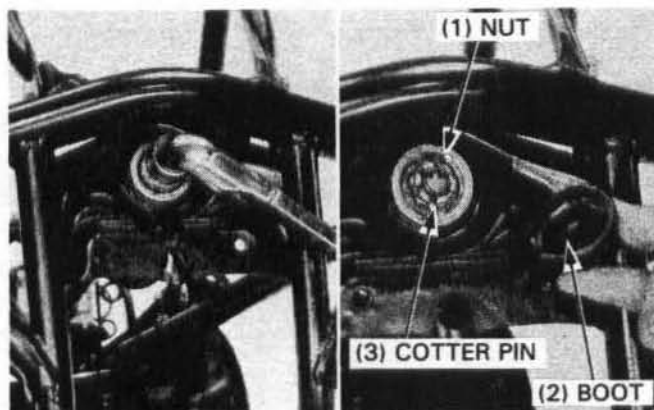
Install the steering shaft nut and tighten it to the specified torque.

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

Install a new cotter pin and the boot.

Install the front fender (page 13-2).

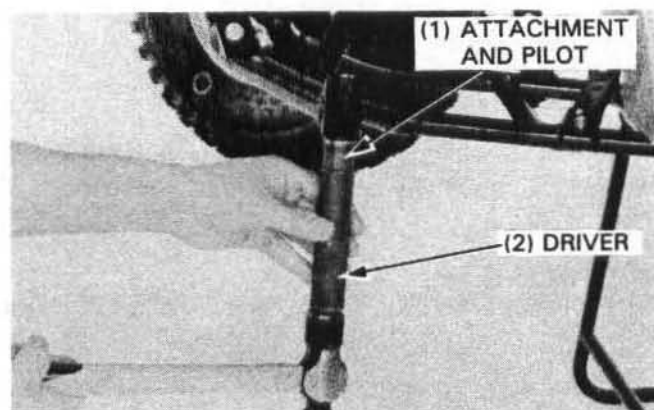
Install the handlebar (page 11-4).



If the kingpin bushings were removed, drive in new bushings.

TOOLS:

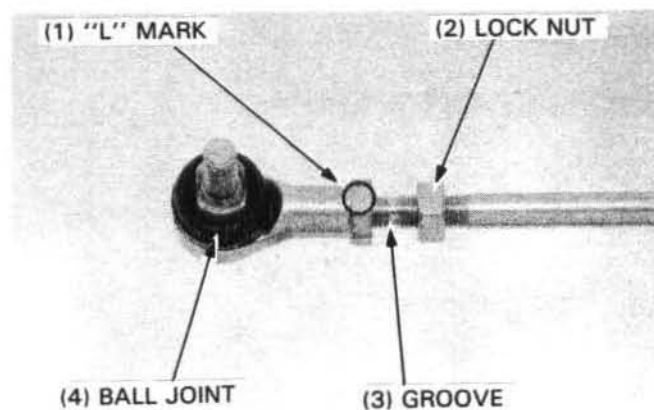
Driver	07749—0010000
Attachment, 24x26mm	07746—0010700
Pilot, 15mm (upper)	07746—0040300
Pilot, 17mm (lower)	07746—0040400



Install the ball joint with the "L" mark on the steering shaft side.

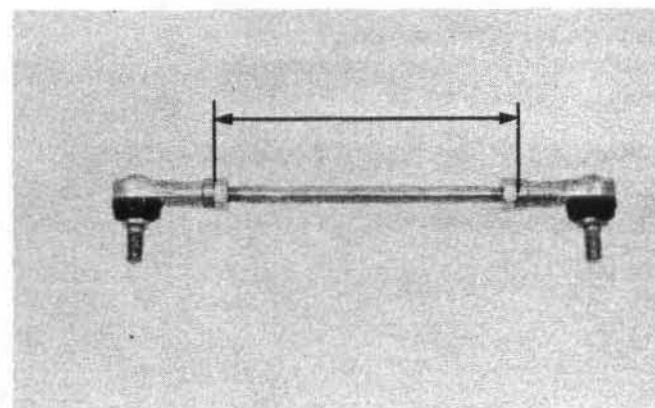
Install the tie-rod with the groove on the wheel side.

Thread the ball joint until the groove in the tie-rod enters the ball joint completely.

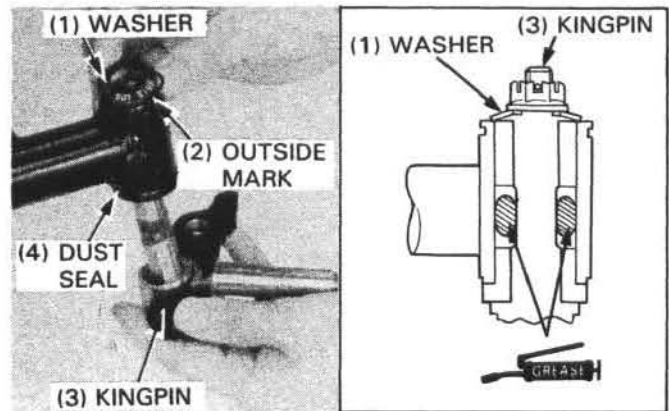


Set the temporary distance between the ball joints.

STANDARD SETTING : 167.2 mm (6.58 in)



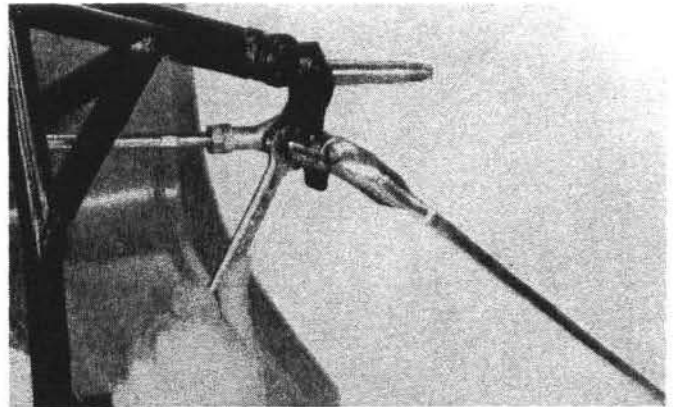
Apply grease to the kingpin lower dust seal lips and install it. Apply grease to between the bushings as shown and install the kingpin. Install the washer with the "OUTSIDE" mark upward. Install the kingpin nut.



Install the tie-rod and tighten the castle nuts to the specified torque while holding the ball joint.

TORQUE : 35—43 N·m (3.5—4.3 kg-m, 25—31 ft-lb)

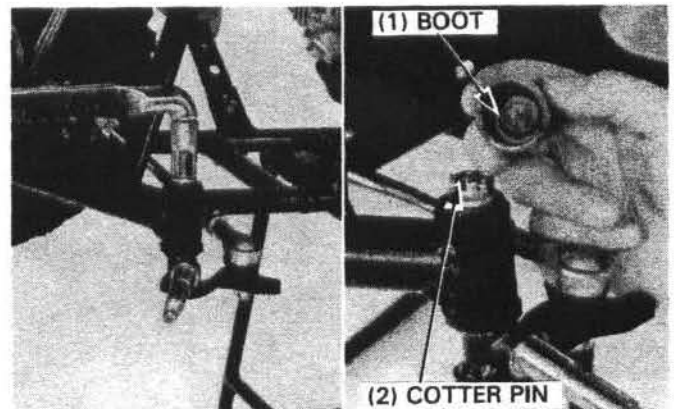
Install the cotter pins.



Tighten the kingpin nut to the specified torque.

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

Install a new cotter pin and the kingpin nut boot.



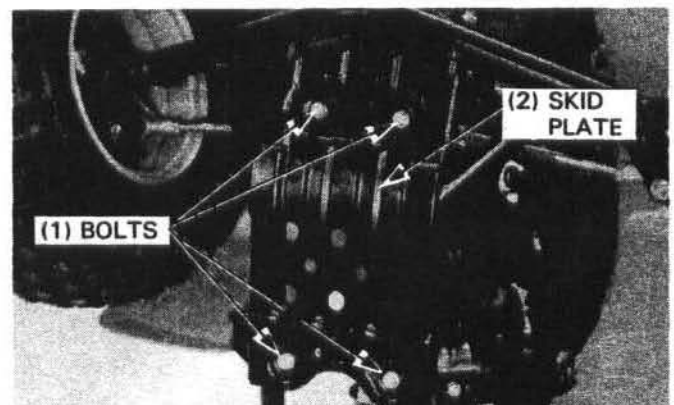
Install the skid plate while aligning the tab on the skid plate with hole.

Tighten the skid plate bolts.

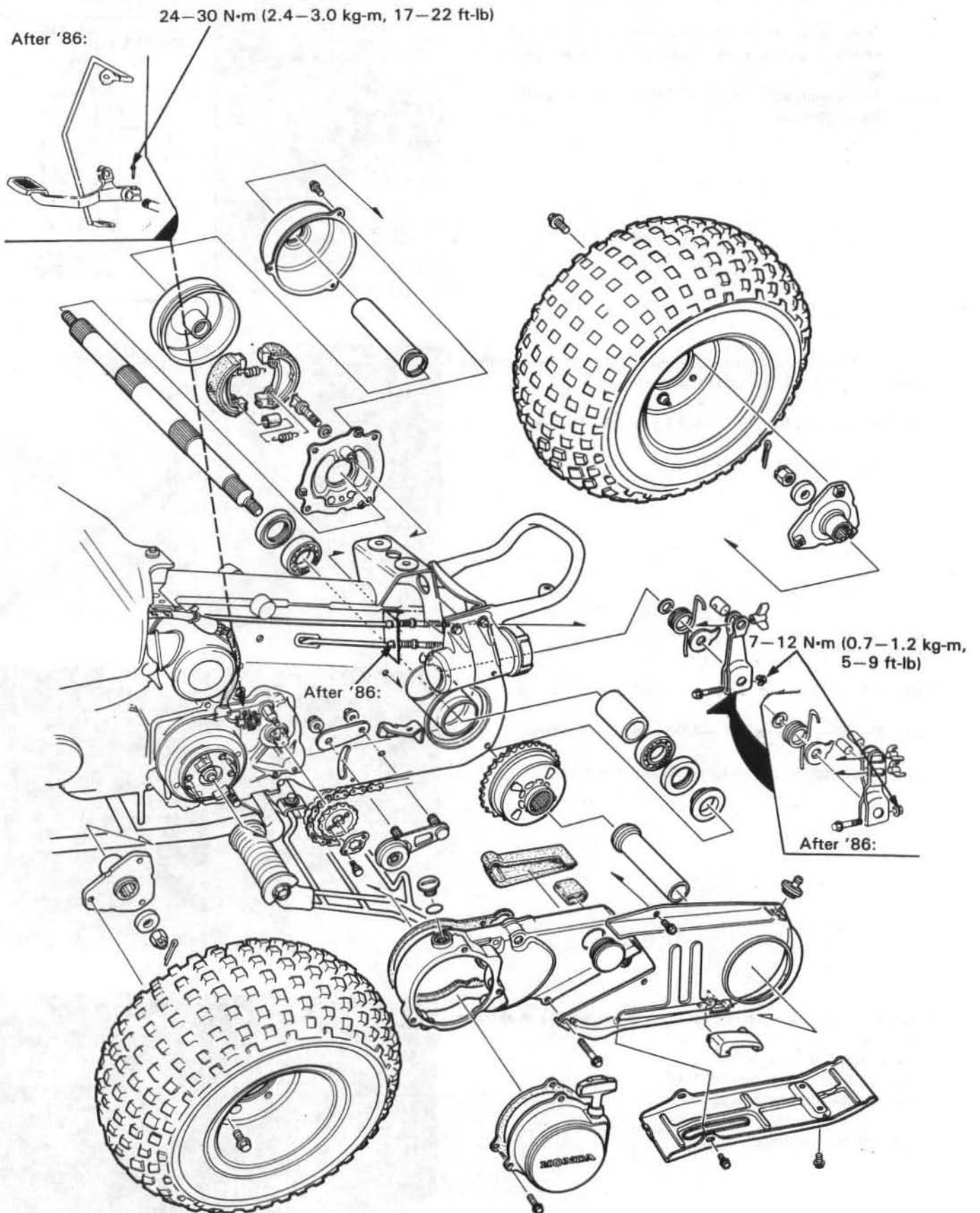
Install the front brake (page 11-15).

Install the front wheel (page 11-6).

Adjust the toe-in (page 3-14).



REAR WHEEL/BRAKE/DRIVE MECHANISM



12. REAR WHEEL/BRAKE/DRIVE MECHANISM

SERVICE INFORMATION	12-1	REAR BRAKE PEDAL (After '86)	12-4
TROUBLESHOOTING	12-1	DRIVE MECHANISM	12-5
REAR WHEEL REMOVAL	12-2	REAR BRAKE INSTALLATION	12-8
REAR BRAKE REMOVAL	12-2	REAR WHEEL INSTALLATION	12-10

SERVICE INFORMATION

GENERAL

WARNING

- *Brake dust may contain asbestos which can be harmful to your health. Do not use compressed air to clean brake drums or brake panels. Use a vacuum with a sealed dust collector. Wear a protective face mask and thoroughly wash your hands when finished.*

- This section covers maintenance of the rear wheel, rear brake and drive mechanism.
- A jack or other support is required to support the Fourtrax.
- Refer to section 11 for tire servicing.

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT	mm (in)
Rear axle runout	—	0.5 (0.02)	
Rear brake drum I.D.	130.0 (5.12)	131.0 (5.15)	
Rear brake lining thickness	4.0 (0.16)	2.0 (0.08)	

12

TORQUE VALUES

Rear wheel bolt	24—30 N·m (2.4—3.0 kg-m, 17—22 ft-lb)
Rear axle nut	60—80 N·m (6.0—8.0 kg-m, 43—58 ft-lb)
Rear brake arm nut	7—12 N·m (0.7—1.2 kg-m, 5—9 ft-lb)
Rear brake pedal (After '86:)	24—30 N·m (2.4—3.0 kg-m, 17—22 ft-lb)

TOOLS

Common

Driver	07749—0010000
Attachment, 52 x 55 mm	07746—0010400
Pilot, 30 mm	07746—0040700

TROUBLESHOOTING

Wobble or vibration

- Bent rim
- Worn axle bearings
- Faulty rear axle bearing holder
- Faulty tire
- Axle not tightened properly

Poor brake performance

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

REAR WHEEL/BRAKE/DRIVE MECHANISM

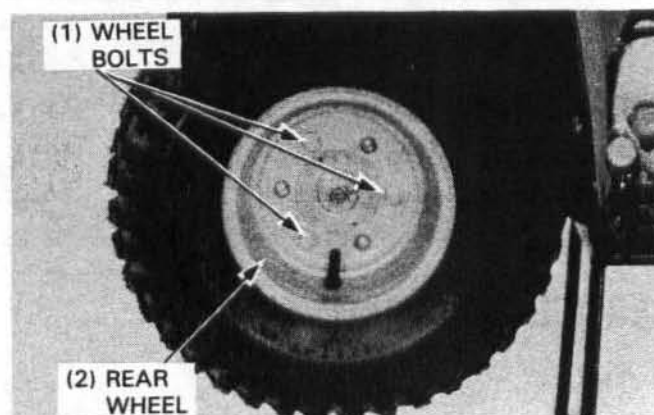
REAR WHEEL REMOVAL

Raise the rear wheels off the ground and place a jack or other support under the engine.

Remove the three wheel bolts and the wheel.

REAR TIRE DISASSEMBLY/ASSEMBLY

For tire removal, repair and mounting, refer to pages 11-7 through 11-10.



REAR BRAKE REMOVAL

WARNING

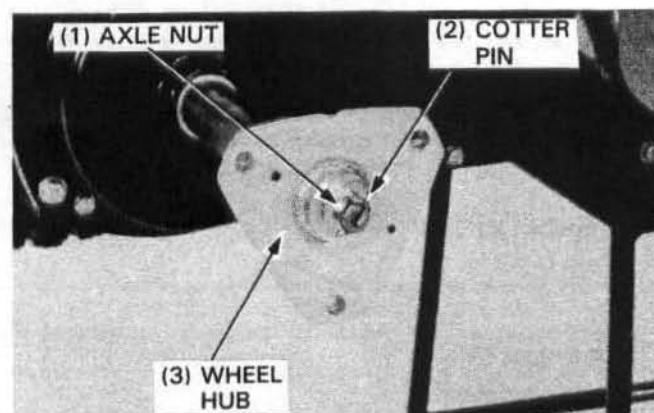
- Grease on the brake linings reduces stopping power, keep grease off the linings.

Remove the rear wheel.

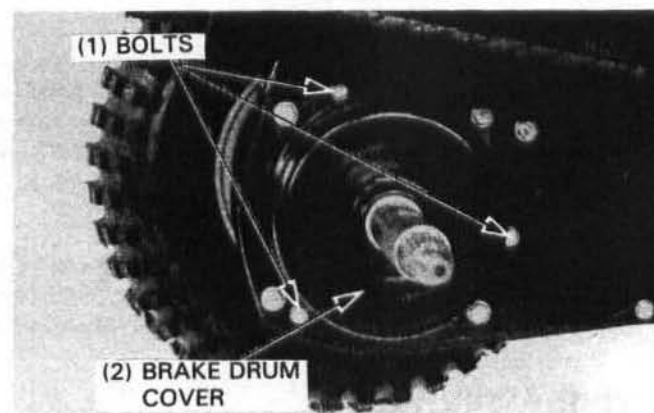
NOTE

- The brake shoe can be inspected and replaced with the rear wheel installed.

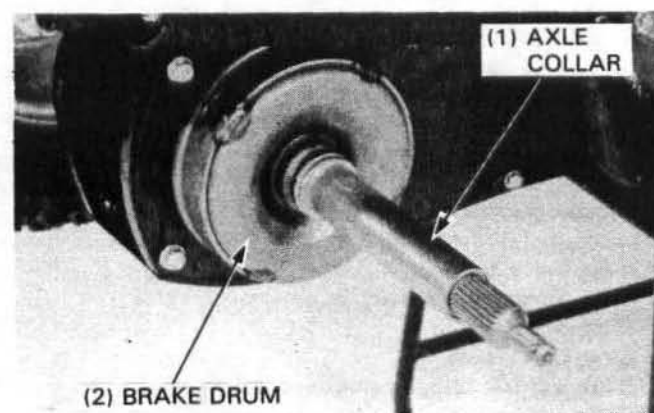
Remove the cotter pin, axle nut and washer.
Remove the wheel hub.



Remove the brake drum cover by removing the three bolts.



Remove the axle collar and brake drum.



INSPECTION

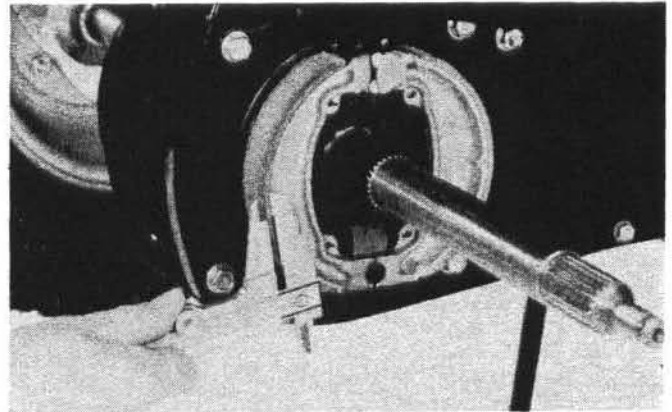
Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)

Replace the brake linings as set if either lining is thinner than the service limit.

NOTE

- Contaminated brake linings reduce stopping power.
- Keep oil or grease off the linings.

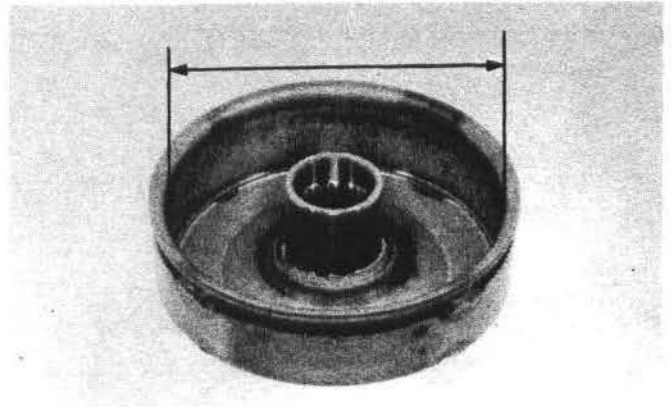


Inspect the brake drum for wear or damage.
Replace if necessary.

Measure the brake drum I.D.

SERVICE LIMIT: 131.0 mm (5.15 in)

Replace if necessary.

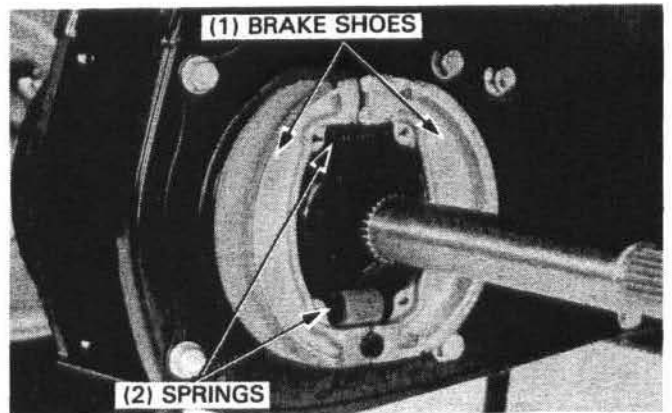


DISASSEMBLY

Expand and remove the brake shoes and springs.

NOTE

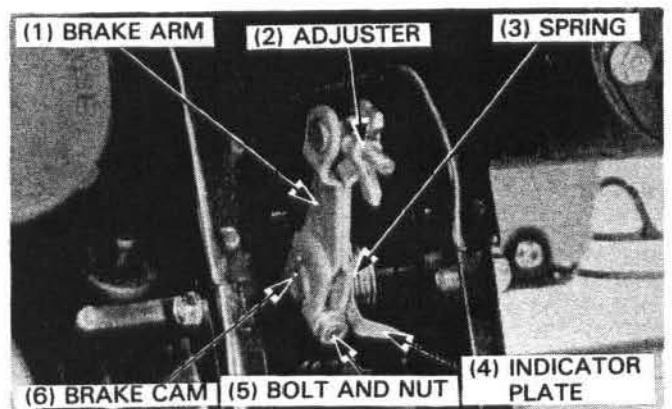
- Mark the brake shoes to indicate their original positions before removing them.



'86:

Remove the adjuster, nut, bolt, brake arm, wear indicator plate, felt seals and spring.

Remove the brake cam.

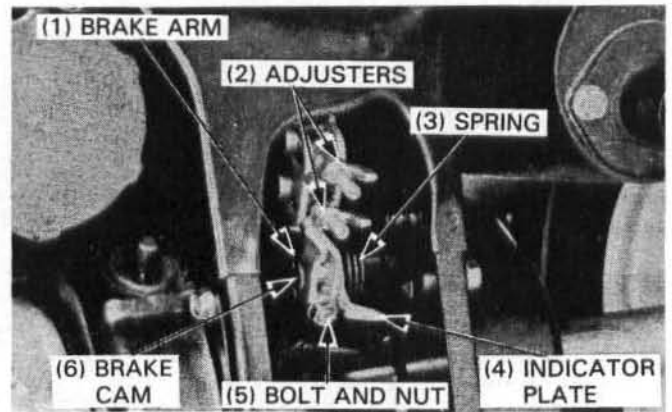


REAR WHEEL/BRAKE/DRIVE MECHANISM

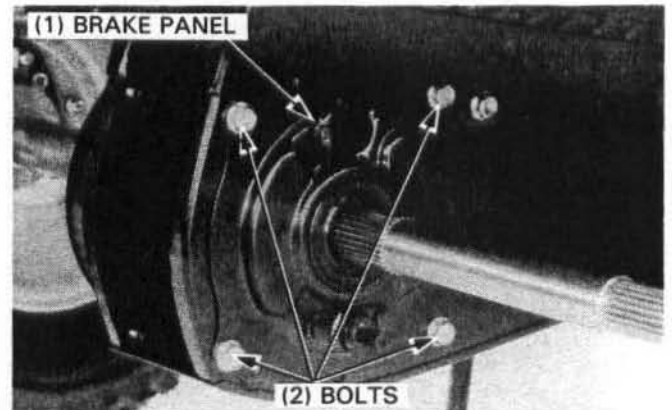
After '86:

Remove the adjusters, nut, bolt, brake arm, wear indicator plate, felt seals and spring.

Remove the brake cam.



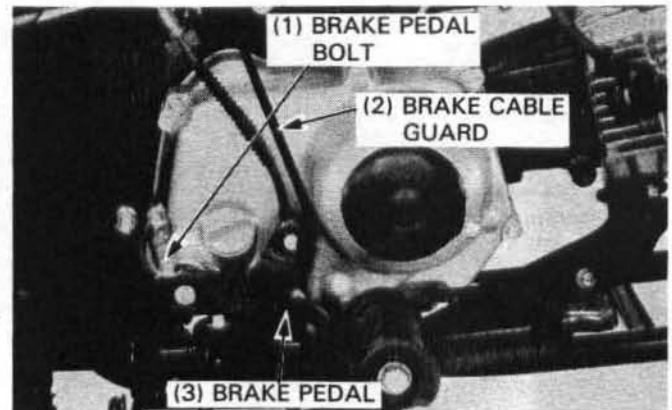
Remove the four bolts and the brake panel.



REAR BRAKE PEDAL (After '86)

REMOVAL

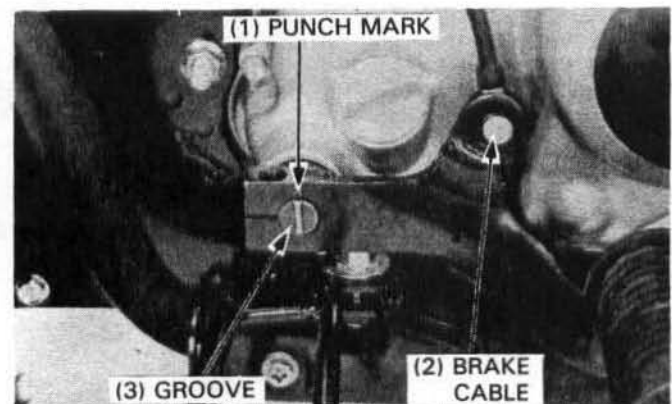
Remove the brake cable guard.
Loosen the rear brake pedal adjuster.
Remove the rear brake pedal bolt and brake pedal.



INSTALLATION

Install the brake pedal, aligning the punch mark on the brake pedal with the groove on the brake pedal pivot.

Connect the rear brake cable to the brake pedal.

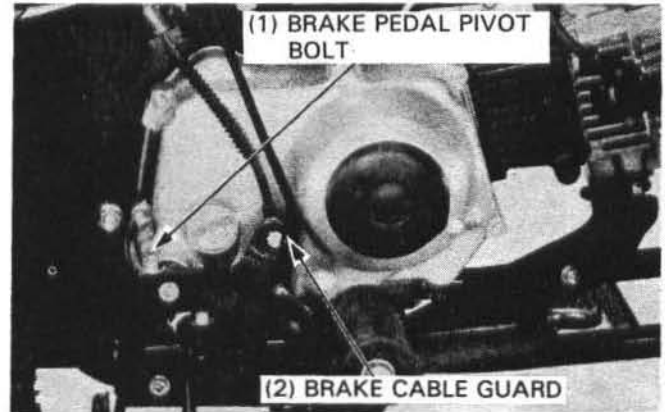


Install and tighten the brake pedal bolt to the specified torque.

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

Install the brake cable guard.

Adjust the rear brake pedal free play (page 3-11).

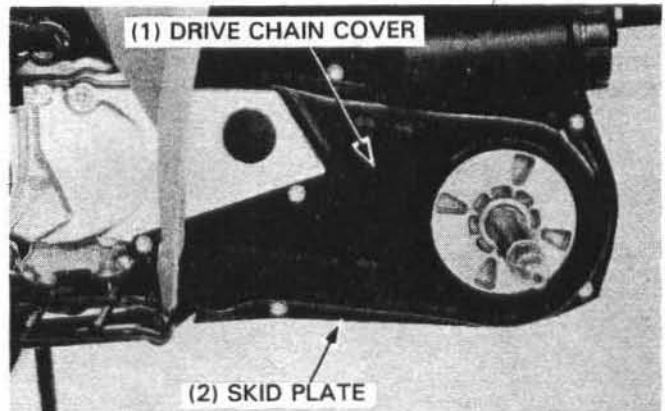


DRIVE MECHANISM

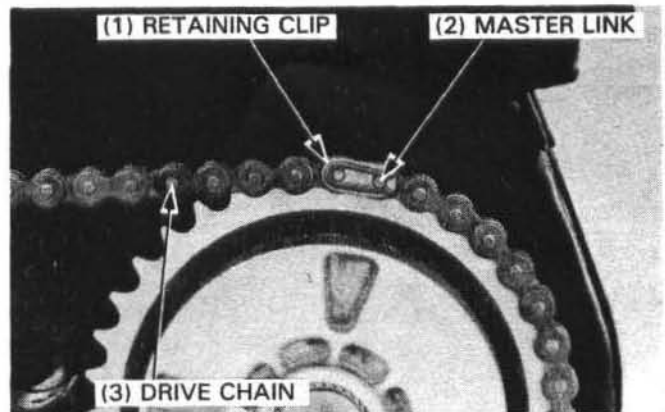
REMOVAL

Remove the rear wheel and the rear brake (page 12-2).

Remove the skid plate and the drive chain cover.



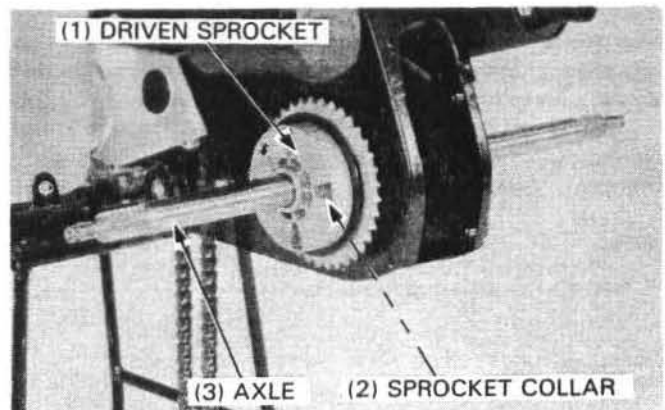
Remove the drive chain retaining clip and master link.



Remove the driven sprocket, axle and sprocket collar.

NOTE

- The axle can be removed from either side.

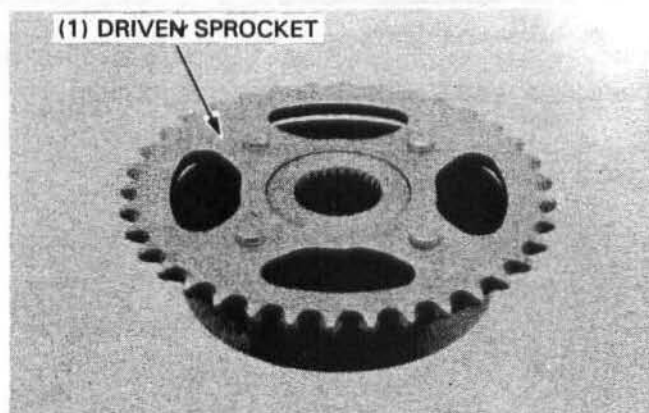


REAR WHEEL/BRAKE/DRIVE MECHANISM

INSPECTION

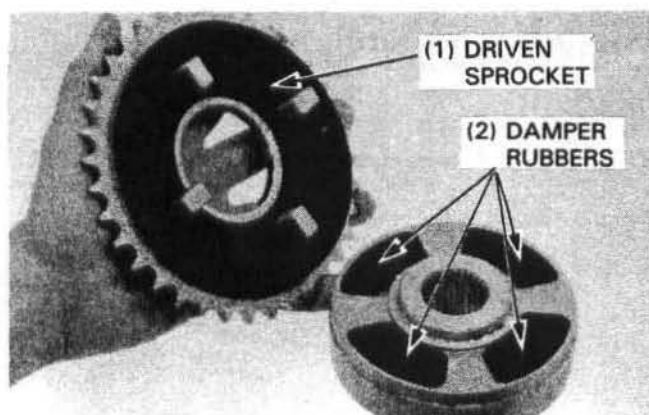
Inspect the driven sprocket for wear, or damage.

Replace if necessary.



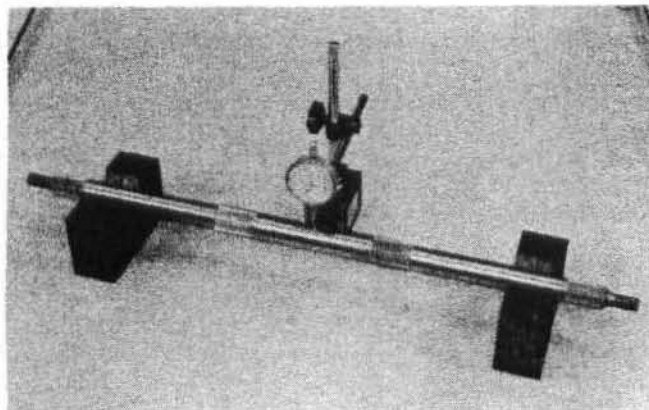
Separate the driven sprocket from the housing and inspect the damper rubbers for damage or deteriorations.

Replace if necessary.



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

SERVICE LIMIT: 0.5 mm (0.02 in)



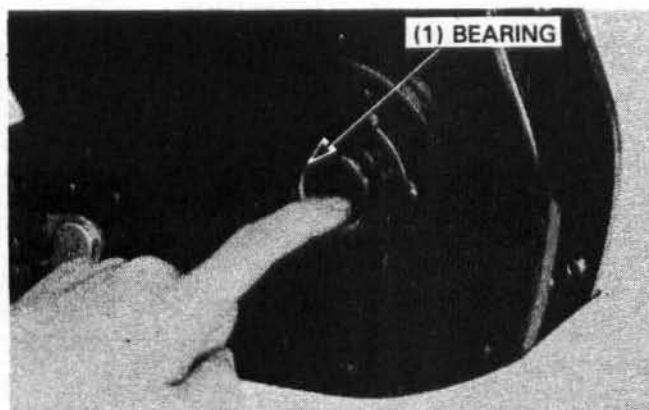
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the axle holder.

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

NOTE

- Replace the bearings in pairs.

For replacement of bearings, see the next page.



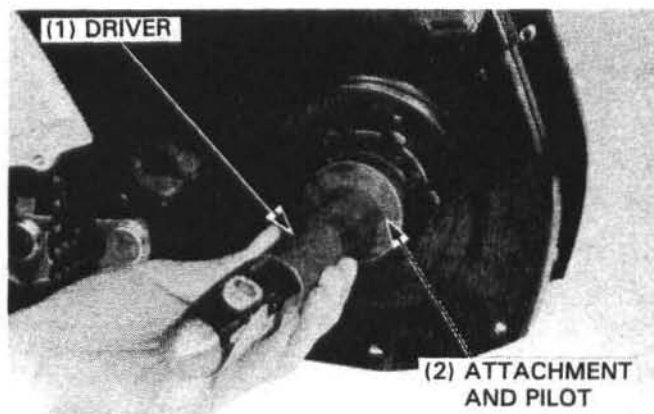
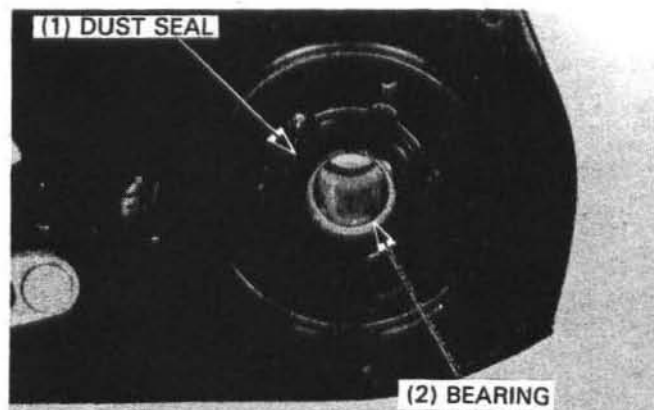
BEARING REPLACEMENT

Remove the dust seals and drive out the bearings.

Pack all bearing cavities with grease.
Drive in the new bearings squarely.

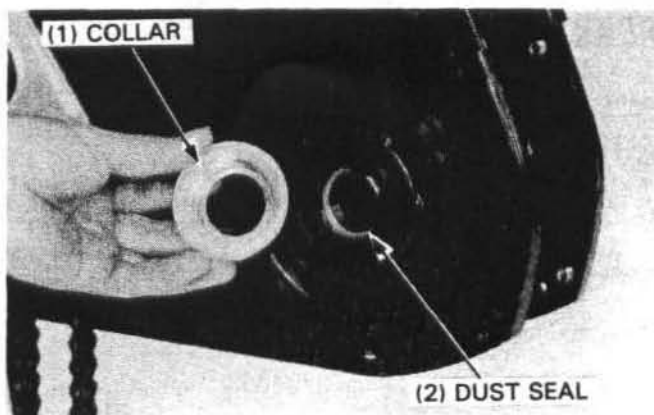
TOOLS:

Driver	07749-0010000
Attachment, 52 x 55 mm	07746-0010400
Pilot, 30 mm	07746-0040700

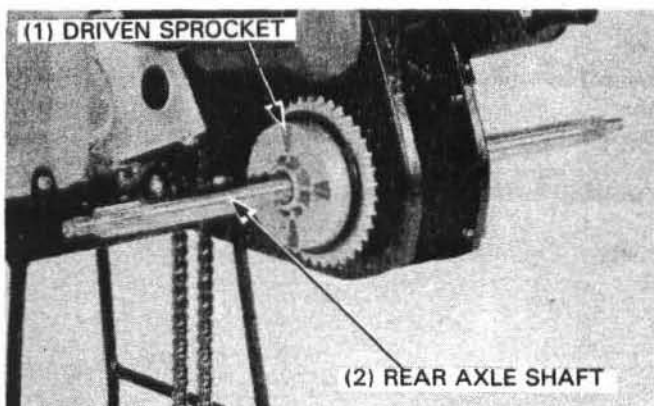


INSTALLATION

Apply grease to the dust seal lips and install dust seals.
Install the collar.



Install the rear axle and the driven sprocket.

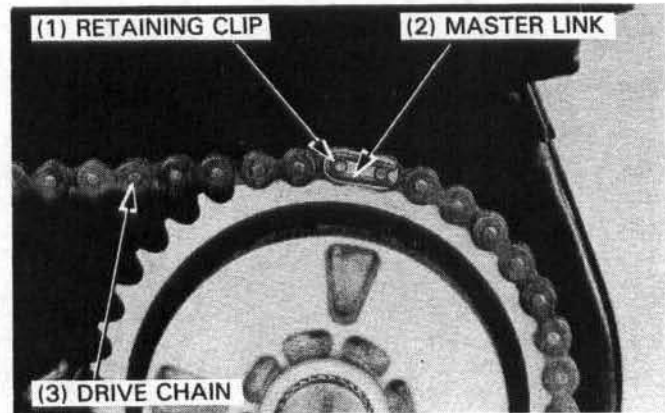


REAR WHEEL/BRAKE/DRIVE MECHANISM

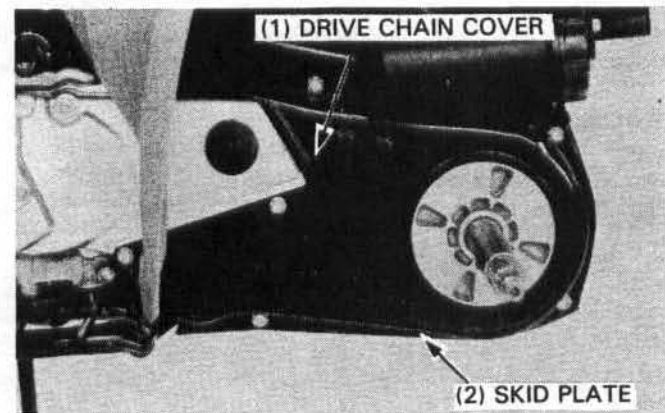
Install the drive chain on the driven sprocket.
Install the master link and retaining clip.

NOTE

- Note the retaining clip direction.



Install the drive chain cover.
Install the skid plate.



REAR BRAKE INSTALLATION

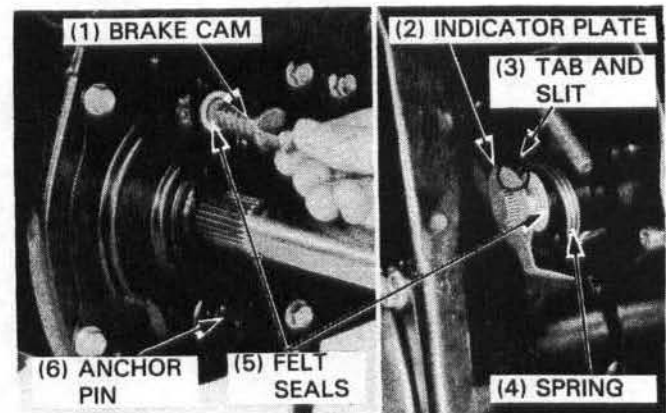
Install the brake panel.

NOTE

- Soak the felt seals in clean engine oil before installing.

Apply grease to the brake cam and anchor pin.
Install the brake cam with felt seal.
Install the brake arm spring and felt seal.

Install the wear indicator plate aligning the tab on the plate with the slit on the brake cam.

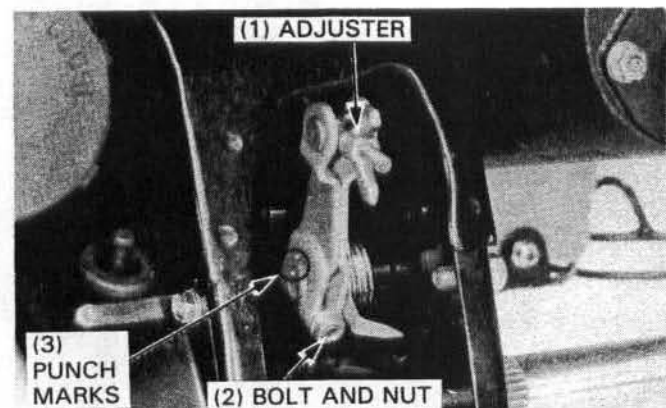


'86:

Install the brake arm aligning punch marks on the cam and the arm.
Tighten the brake arm bolt and nut to the specified torque.

TORQUE: 7–12 N·m (0.7–1.2 kg·m, 5–9 ft-lb)

Install the adjuster.



After '86:

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

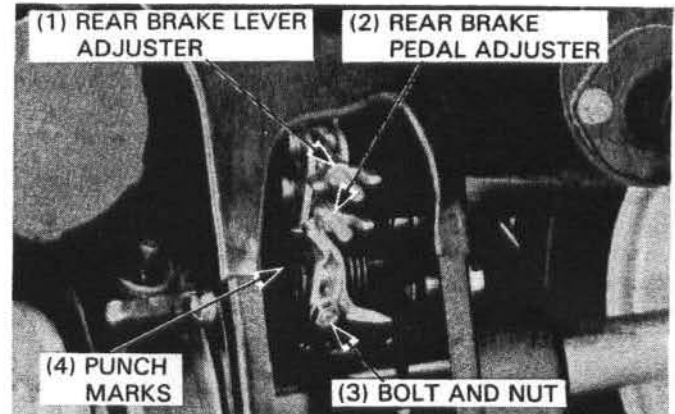
Tighten the brake arm bolt and nut to the specified torque.

TORQUE: 7–12 N·m (0.7–1.2 kg-m, 5–9 ft-lb)

Install the adjusters.

NOTE

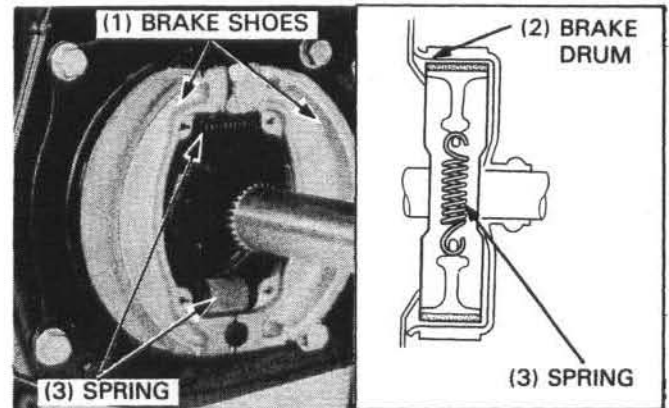
- Make sure the rear brake lever and pedal have the proper amount of free play (pages 3-11, 12).



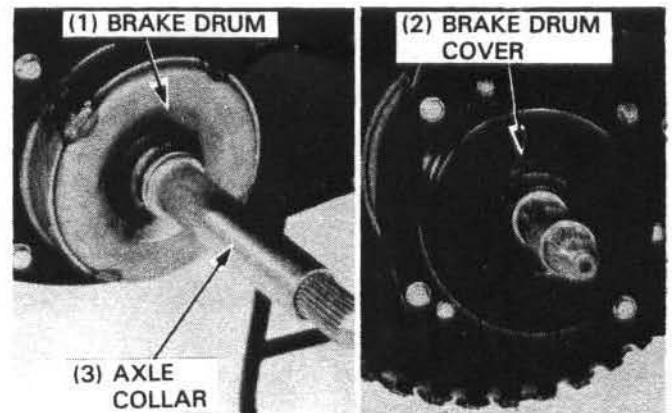
Install the brake shoes and springs.

NOTE

- Install the brake shoes to their original positions.
- Spring hook's direction is as shown.

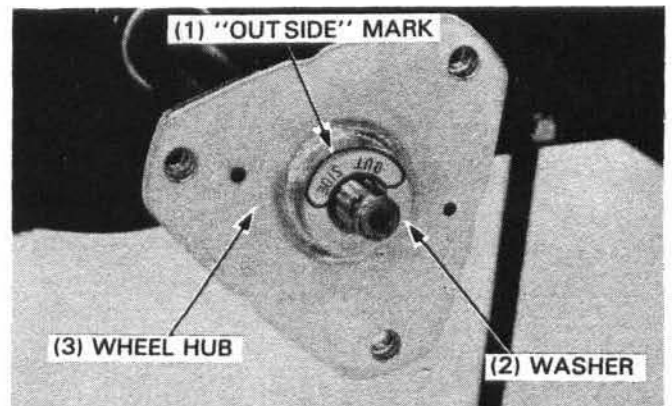


Install the brake drum, axle collar and brake drum cover.



Install the wheel hub.

Install the washer with the "OUTSIDE" mark facing outside.



REAR WHEEL/BRAKE/DRIVE MECHANISM

REAR WHEEL INSTALLATION

Install the rear axle nut and tighten it to the specified torque.

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

Install a new cotter pin.

Install the rear wheel and tighten the wheel bolts to the specified torque.

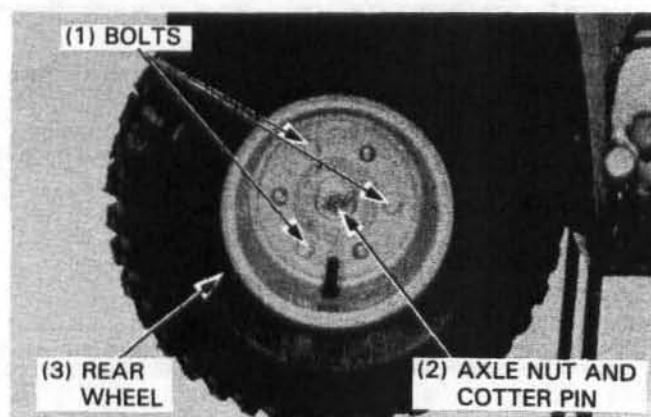
TORQUE: 24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

Adjust the following:

- Rear brake lever free play (page 3-11).
- Drive chain slack (page 3-8).

After '86:

- Rear brake pedal free play (page 3-12).



13. FENDERS/EXHAUST PIPE

FENDERS

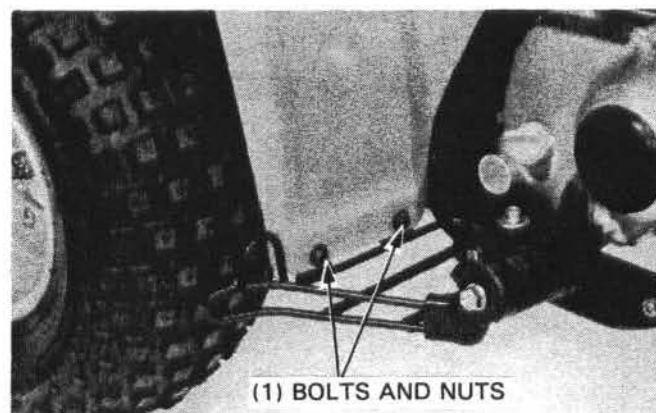
13-1 EXHAUST PIPE

13-3

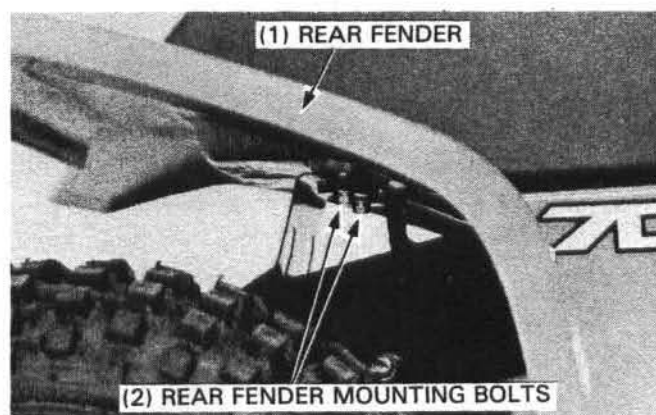
FENDERS

REMOVAL

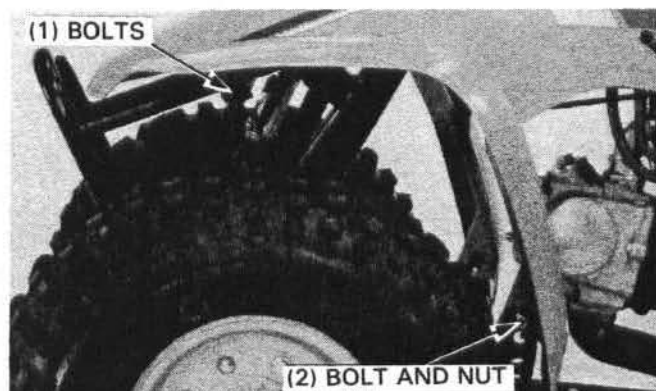
Remove the forward seat/rear fender mounting bolts and nuts from the rear fender and foot peg guard.



Remove the underside seat/rear fender mounting bolts. Pull the seat/rear fender up and remove it backward.

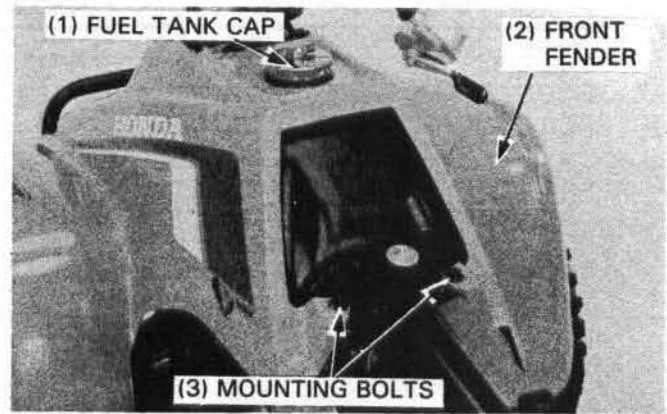


Remove the handlebar (page 11-3). Remove the front fender mounting bolts and nuts from the frame.



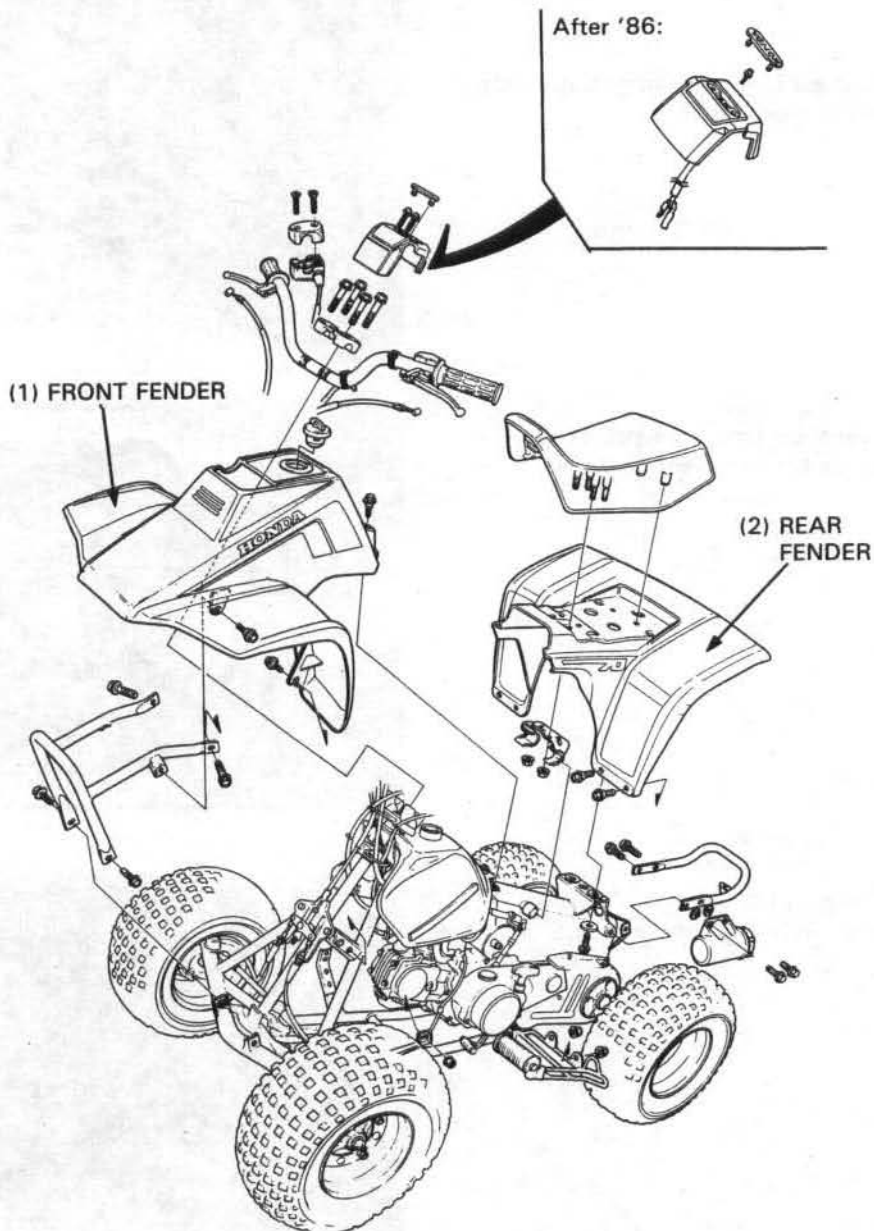
FENDERS/EXHAUST PIPE

Remove the fender mounting bolts and fuel tank cap.
Pull the front fender upward.



INSTALLATION

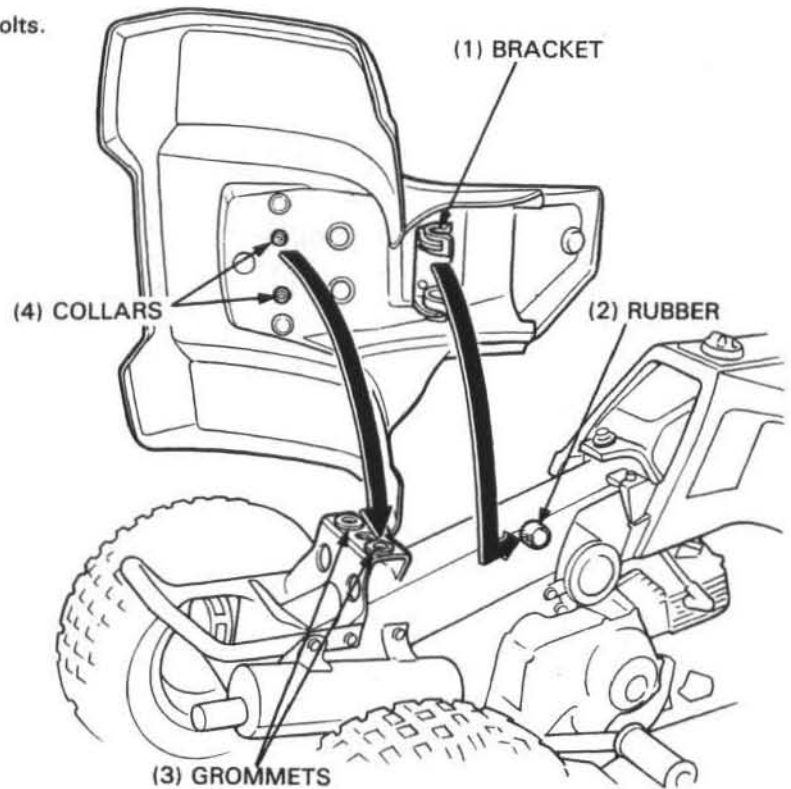
Install the front fender in the reverse order of removal.



Install the seat/rear fender by positioning the bracket against the rubber stops, and installing the collars through the grommets.

Install the mounting bolts and washers; tighten the bolts.

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

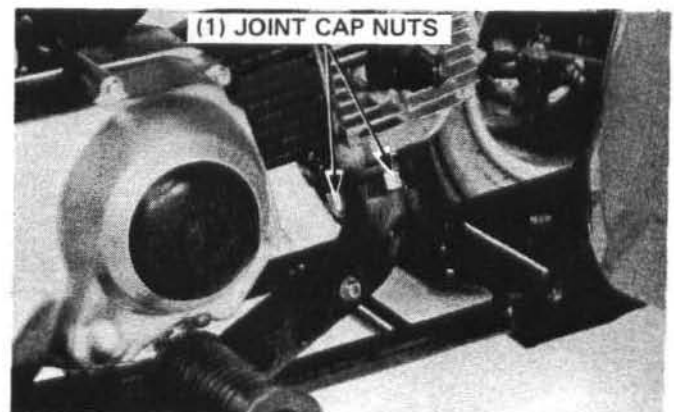


EXHAUST PIPE

REMOVAL

'86:

Remove the exhaust pipe joint cap nuts.

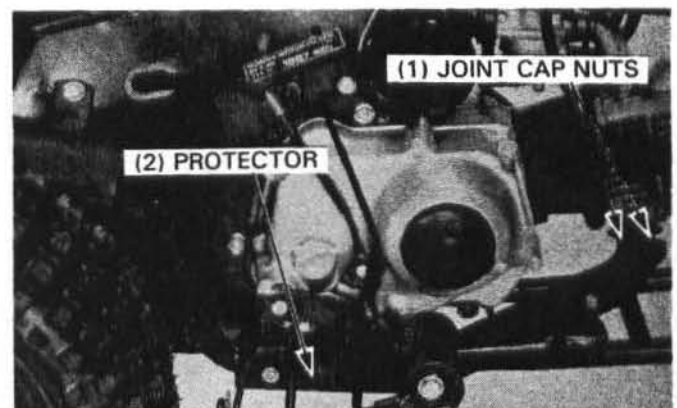


After '86:

Remove the brake cable guard.

Remove the exhaust pipe protector mounting screws and protector.

Remove the exhaust pipe joint cap nuts.



FENDERS/EXHAUST PIPE

Remove the exhaust muffler mounting bolts and the exhaust pipe assembly.

INSTALLATION

After '86:

Apply locking agent to the protector mounting screws.

Install the exhaust pipe in the reverse order of removal.

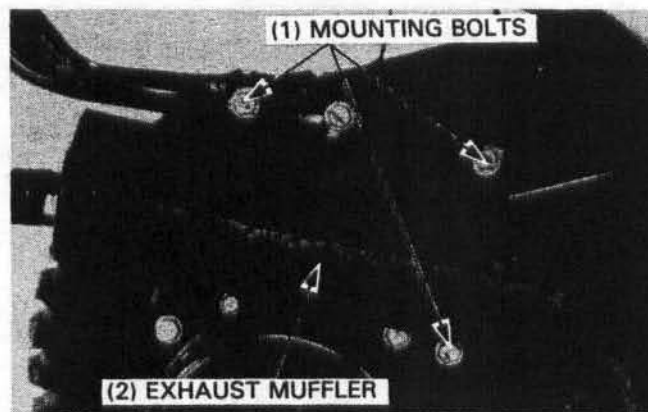
TORQUE:

EXHAUST MUFFLER MOUNTING BOLTS:

30–35 N·m (3.0–3.5 kg-m, 22–25 ft-lb)

NOTE

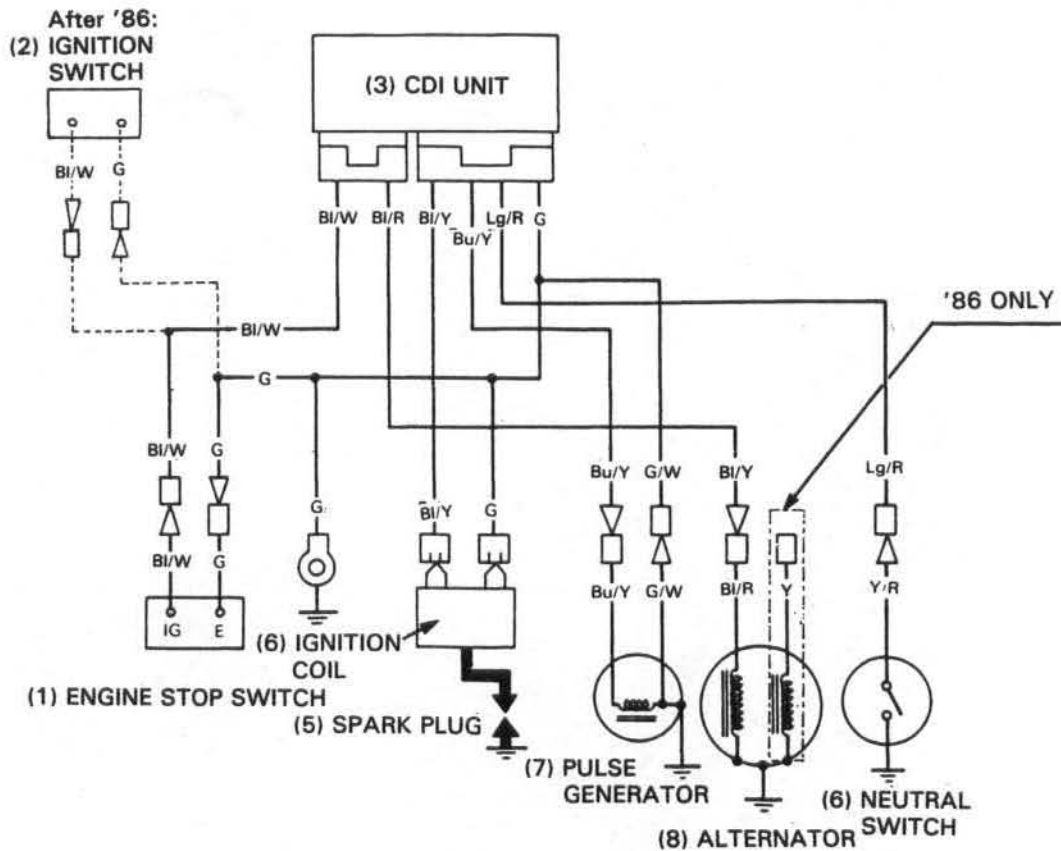
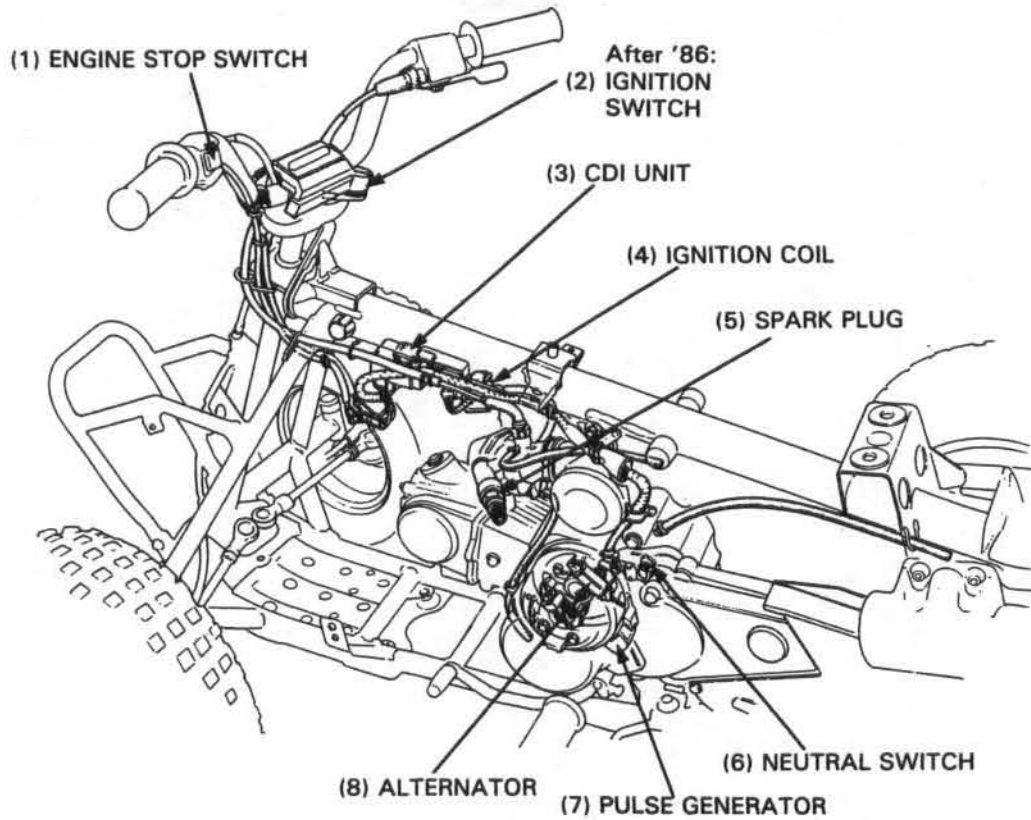
- After installation, make sure that there are no exhaust leaks.



MEMO

RIDE RED

IGNITION SYSTEM



14. IGNITION SYSTEM

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ALTERNATOR EXCITER COIL	14-3	ENGINE STOP SWITCH	14-5
CDI UNIT	14-3	NEUTRAL SWITCH	14-6

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 3-6.
- For stator removal refer to section 9.
- The following color codes are indicated throughout this section and on the wiring diagram.

Bu = Blue	G = Green	Lg = Light Green	R = Red
Bl = Black	Gr = Grey	O = Orange	W = White
Br = Brown	Lb = Light Blue	P = Pink	Y = Yellow

SPECIFICATIONS

ITEM		STANDARD
Spark plug	NGK	CR7HS (CR6HS, CR8HS)
	ND	U22FSR-U (U20FSR-U, U24FSR-U)
Spark plug gap		0.6—0.7 mm (0.024—0.028 in)
Ignition timing		25° ± 2° BTDC at 1,700 ± 100 rpm
Ignition coil	Primary coil resistance	0.1—0.2 Ω (at 20°C, 68°F)
	Secondary coil resistance (Without spark plug cap)	3.69—4.51 kΩ (at 20°C, 68°F)
Exciter coil resistance		464—696 Ω (at 20°C, 68°F)
Pulse generator resistance		80—120 Ω (at 20°C, 68°F)

14

TOOLS

Inspection adaptor (C1)	07508—0012500 (Not available in U.S.A.)
Spark adaptor	07GGK—0010100 (Not available in U.S.A.)
Digital multimeter or	07411—0020000 or KS-AHM-32-003 (U.S.A. only)
Circuit tester (SANWA) or	07308—0020000
Circuit tester (KOWA)	TH-5H-1

TROUBLESHOOTING

Engine starts but stops

- Improper ignition timing
- Faulty spark plug

No spark at plug

- Faulty ignition switch (After '86)
- Engine stop switch "OFF"
- Poorly connected, broken or shorted wires
 - Between alternator and CDI unit
 - Between CDI unit and engine stop switch
 - Between CDI unit and ignition coil
 - Between ignition coil and spark plug
 - Between pulse generator and CDI unit
 - Between CDI unit and neutral switch
- Faulty ignition coil
- Faulty CDI unit
- Faulty pulse generator
- Faulty alternator exciter coil
- Faulty neutral switch

Engine starts but runs poorly

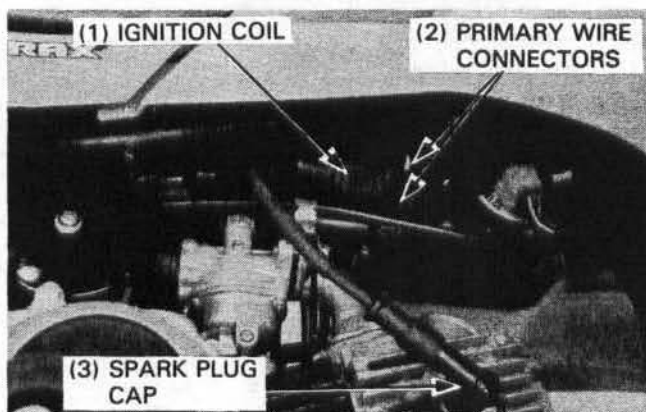
- Ignition primary circuit
 - Faulty ignition coil
 - Loose or poorly contacted terminals
 - Faulty alternator exciter coil
 - Faulty CDI unit
 - Faulty pulse generator
- Ignition secondary circuit
 - Faulty plug or plug wire
 - Loose or poorly contacted spark plug wire
- Improper ignition timing
 - Faulty pulse generator
 - Faulty CDI unit

IGNITION SYSTEM

IGNITION COIL

REMOVAL

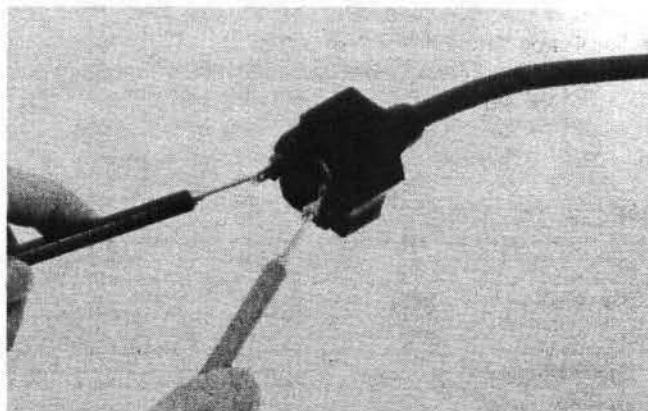
Remove the spark plug cap from the spark plug.
Disconnect the ignition coil primary wire and remove the ignition coil.



INSPECTION CONTINUITY TEST

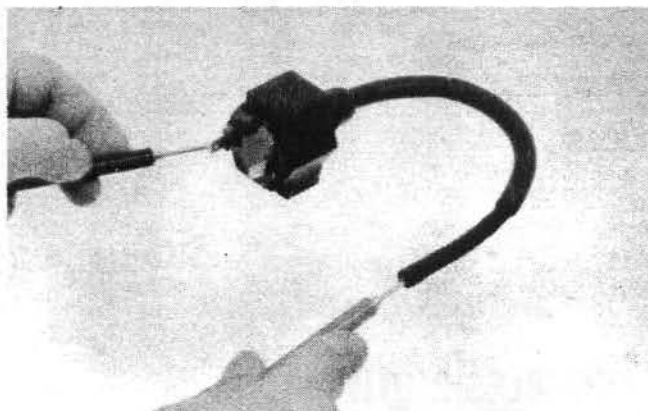
Measure the primary coil resistance.

STANDARD: 0.1–0.2 Ω (at 20°C, 68°F)



Remove the spark plug cap from the high tension cord and measure the secondary coil resistance.

STANDARD: 3.69–4.51 k Ω (at 20°C, 68°F)



PERFORMANCE TEST (Except U.S.A.)

Check the ignition coil with CDI tester.

NOTE

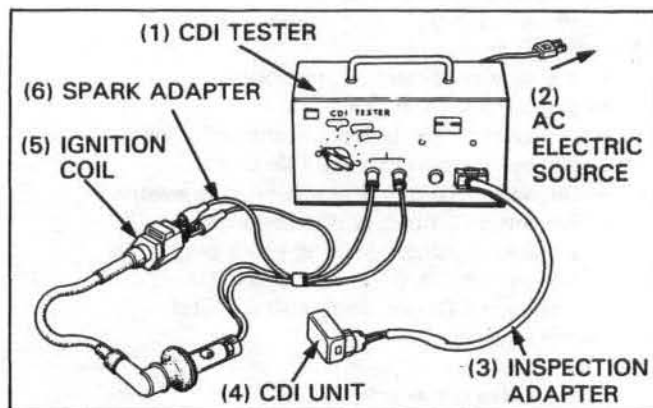
- Follow the CDI tester manufacturer's instruction.

TOOLS:

Inspection adapter (C1) 07508–0012500
Spark adapter 07GGK–0010100

INSTALLATION

Install the ignition coil and connect the black/yellow wire connector to the black terminal of the ignition coil and the green wire connector to the green terminal. Install the spark plug cap to the plug.



ALTERNATOR EXCITER COIL

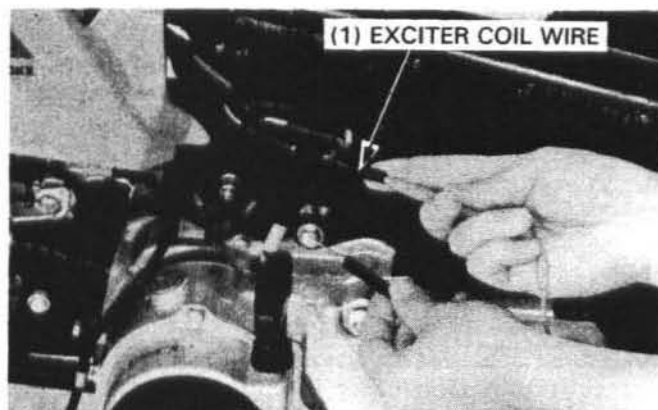
NOTE

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

Remove the seat/rear fender (page 13-1).
Disconnect the exciter coil wire.

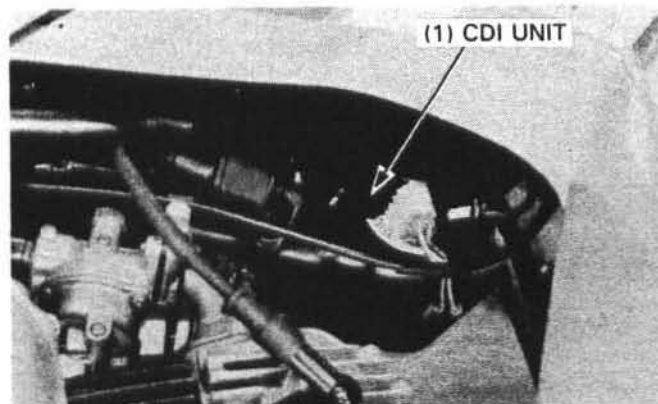
Measure the resistance between the black/red wire and ground.

STANDARD: 464—696 Ω (at 20°C, 68°F)



CDI UNIT

Disconnect the CDI unit coupler and remove the CDI unit.

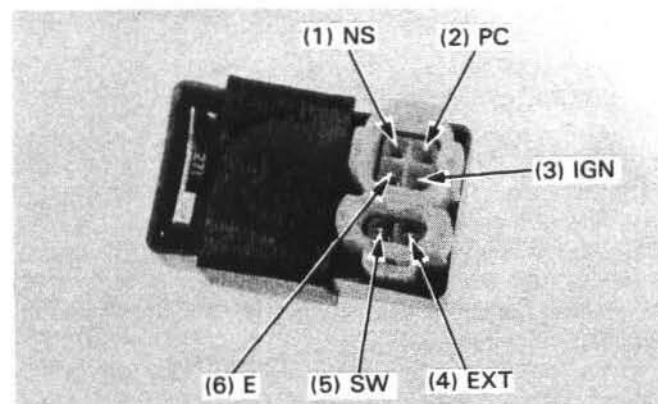


INSPECTION CONTINUITY TEST

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 Sanwa Circuit Tester (07308—0020000), Kowa Circuit Tester (TH-5H-1) or Kowa Digital Multitester (07411—0020000 or KS-AHM-32-003: U.S.A. only).



RANGE:

SANWA: Xk Ω

KOWA: X100 Ω

Unit:k Ω

(-)	(+)	SW (Black/White)	EXT (Black/Red)	PC (Blue/Yellow)	E (Green)	IGN (Black/Yellow)	NS (Light green/Red)
SW (Black/White)			50— ∞	50— ∞	50— ∞	50— ∞	50— ∞
EXT (Black/Red)		0.5—10		50— ∞	50— ∞	50— ∞	30—200
PC (Blue/Yellow)		50— ∞	10— ∞		10— ∞	50— ∞	50— ∞
E (Green)		1—30	0.5—10	1—15		50— ∞	1—30
IGN (Black/Yellow)		50— ∞	50— ∞	50— ∞	50— ∞		50— ∞
NS (Light green/Red)		50— ∞	50— ∞	50— ∞	50— ∞	50— ∞	

IGNITION SYSTEM

PERFORMANCE TEST (Except U.S.A.)

Inspect the CDI unit with CDI tester.

NOTE

- Follow the CDI tester manufacturer's instructions.

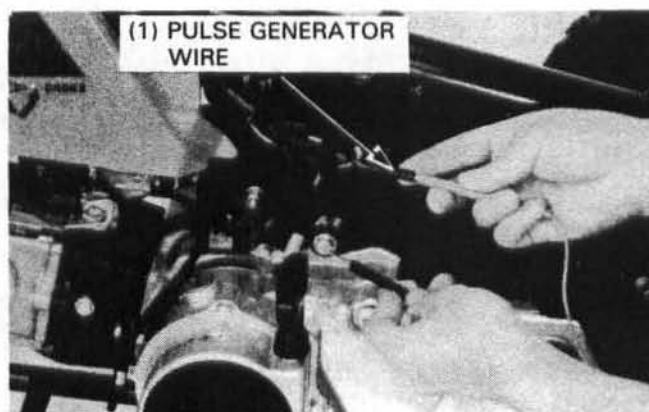
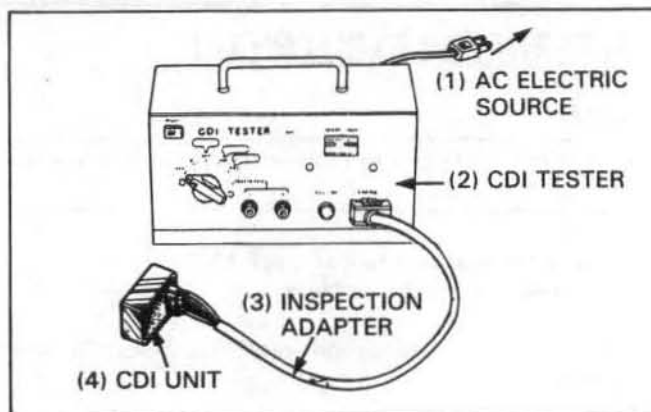
TOOL

Inspection adapter (C1)

07508-0012500

Connect the inspection adapter to the CDI unit and CDI tester.

TESTER SWITCH POSITION	CDI UNIT GOOD	CDI UNIT FAULTY
1. OFF	No spark	—
2. P	—	—
3. EXT	—	Sparks jump
4. ON1	Sparks jump	No Spark
5. ON2	—	—



PULSE GENERATOR

INSPECTION

Remove the rear fender (page 13-1).

Disconnect the pulse generator wire connectors.

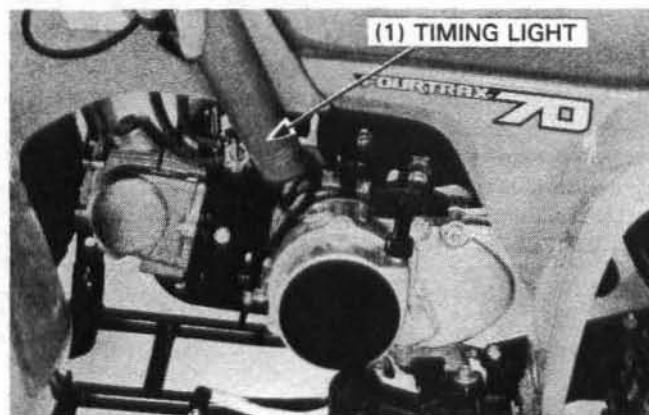
Measure the resistance between the blue/yellow wire and ground.

STANDARD: 80–120 Ω (at 20°C, 68°F)

IGNITION TIMING

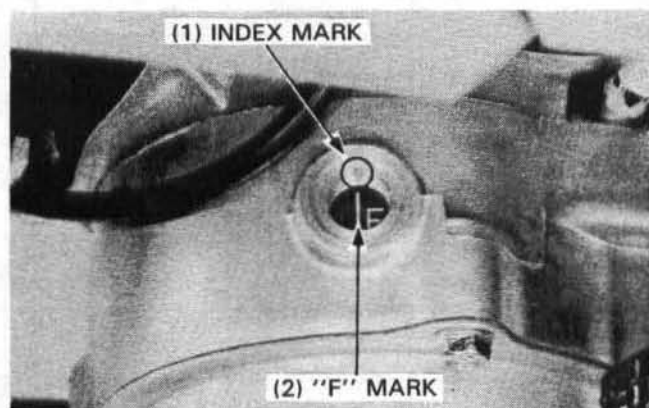
Warm up the engine.

Remove the timing inspection hole cap and connect a timing light and tachometer.



The timing is correct if the "F" mark on the flywheel aligns with the index mark on the left crankcase cover at 1,700 \pm 100 rpm.

If the ignition timing is not correct, inspect the CDI unit and pulse generator.

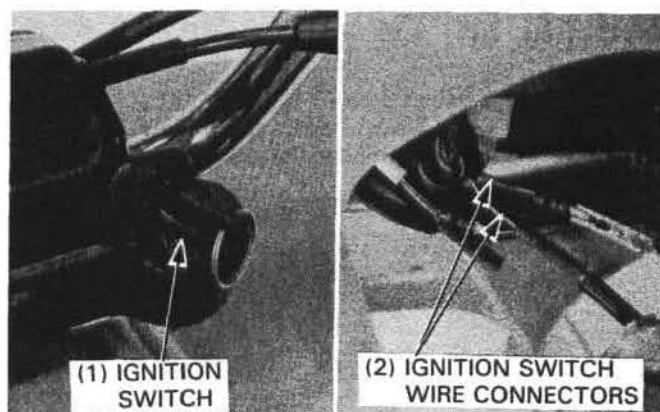


IGNITION SWITCH (After '86)

INSPECTION

Disconnect the ignition switch connectors (Black/white and green connectors).
Check for continuity between connectors.

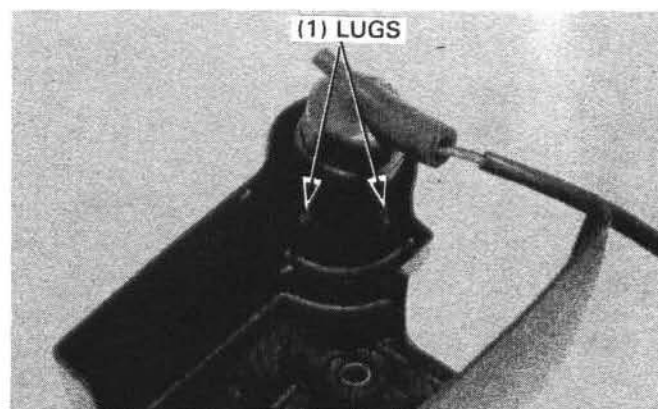
	IG	E
OFF	○	○
ON		
COLOR	Black/White	Green



REPLACEMENT

Disconnect the ignition switch connectors.
Remove the upper holder cover.
Push in the locking lugs, then remove the switch from the cover.

Install the new ignition switch in the reverse order of removal.

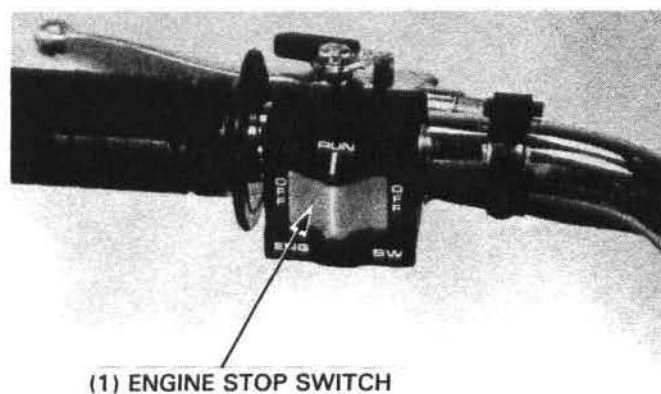
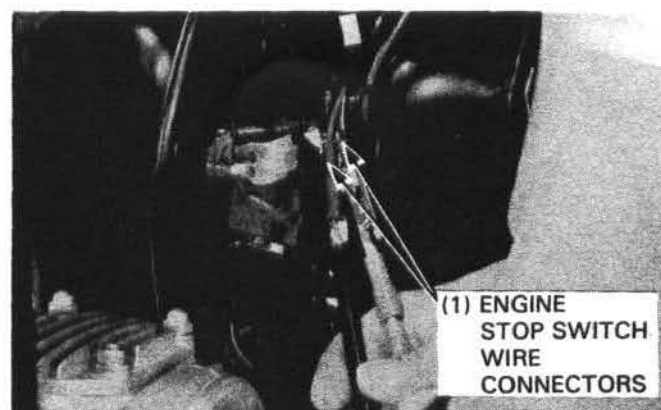


ENGINE STOP SWITCH

Disconnect the engine stop switch wire connectors.

Check for continuity in each switch position.

	IG	E
OFF	○	○
RUN		
OFF	○	○
COLOR	Black/White	Green



IGNITION SYSTEM

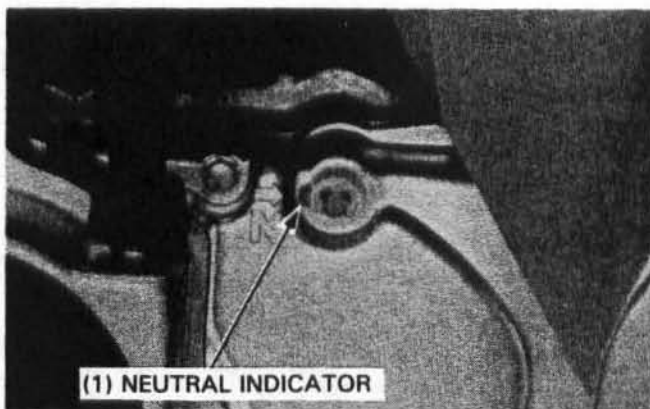
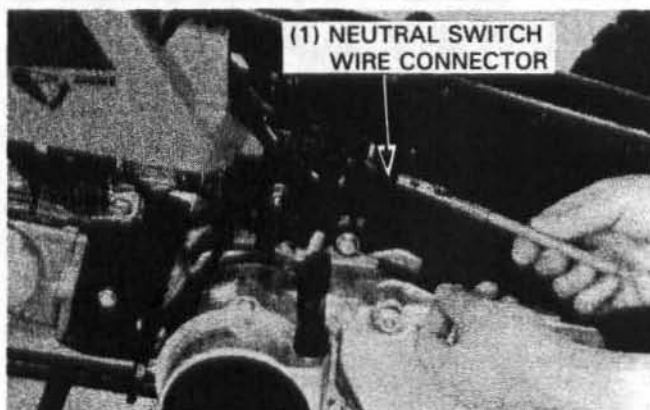
NEUTRAL SWITCH

Remove the rear fender (page 13-1).

Disconnect the neutral switch wire connector.

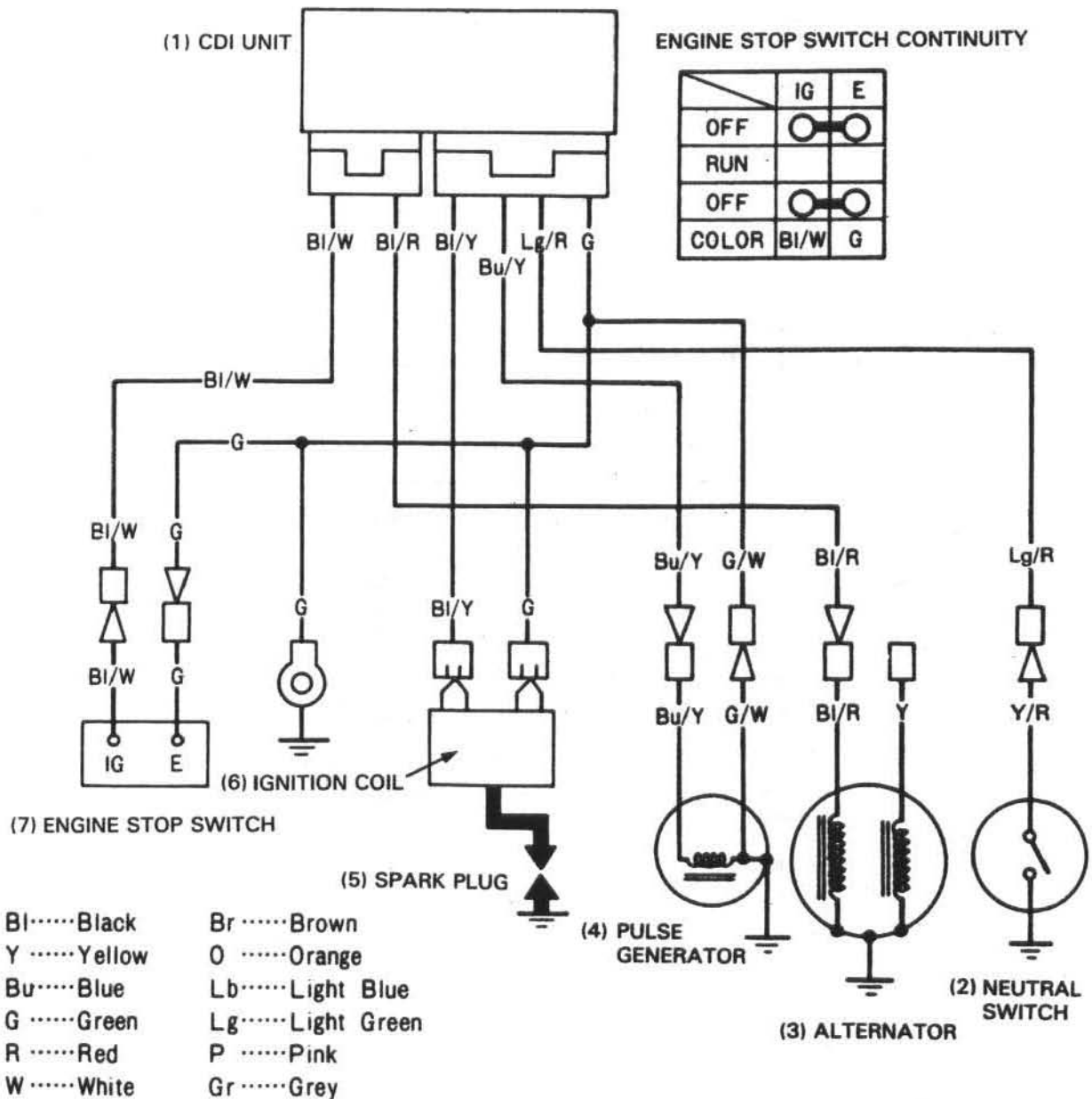
Check for continuity between the light green/red wire and ground.

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



15. WIRING DIAGRAMS

'86:

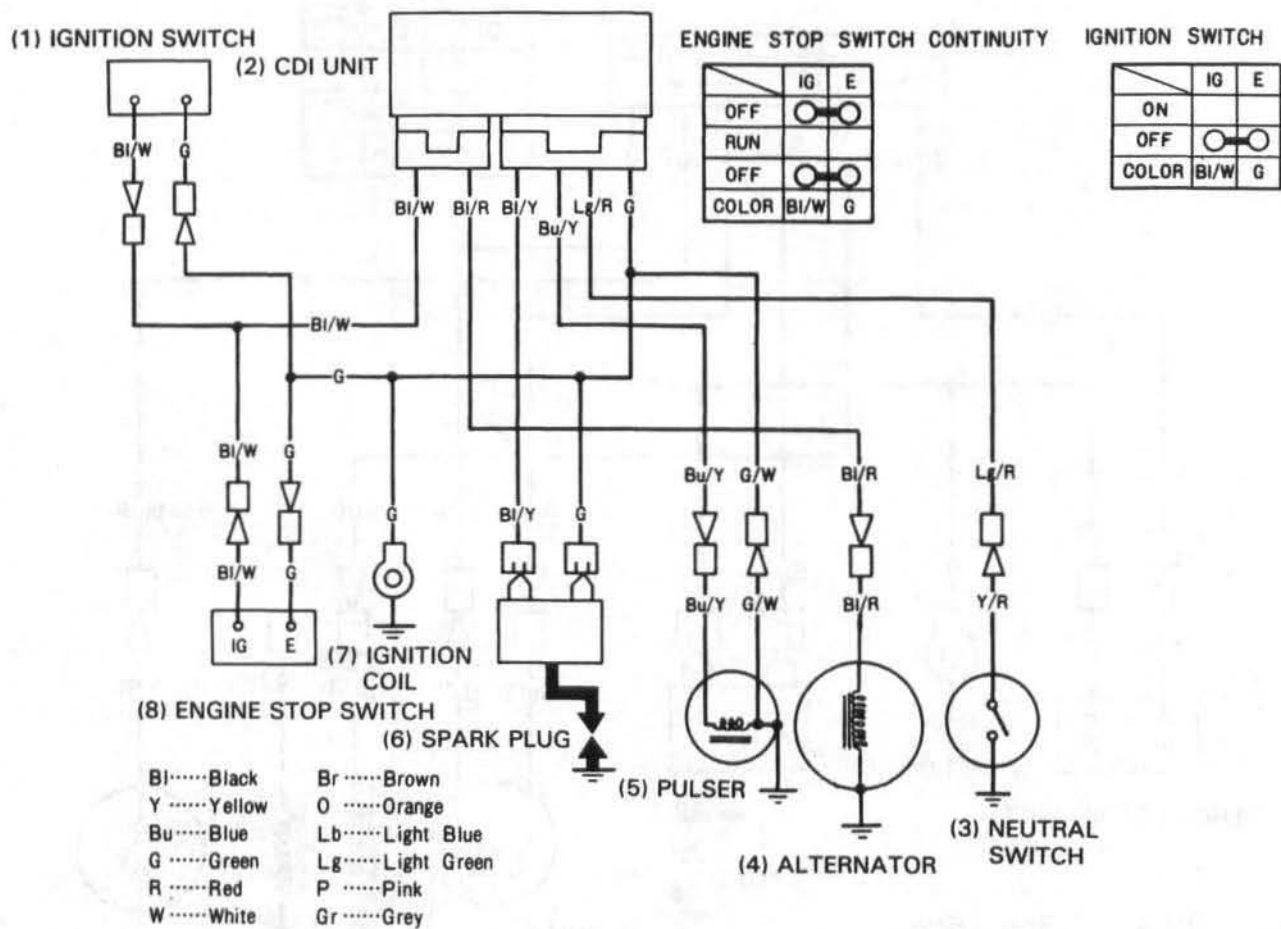


15

0030Z-HB2-0000

WIRING DIAGRAMS

After '86:



0030Z-HB2-7700

16. TROUBLESHOOTING

ENGINE DOES NOT START OR IS
HARD TO START

16-1

ENGINE LACKS POWER

16-2

POOR PERFORMANCE AT LOW
AND IDLE SPEEDS

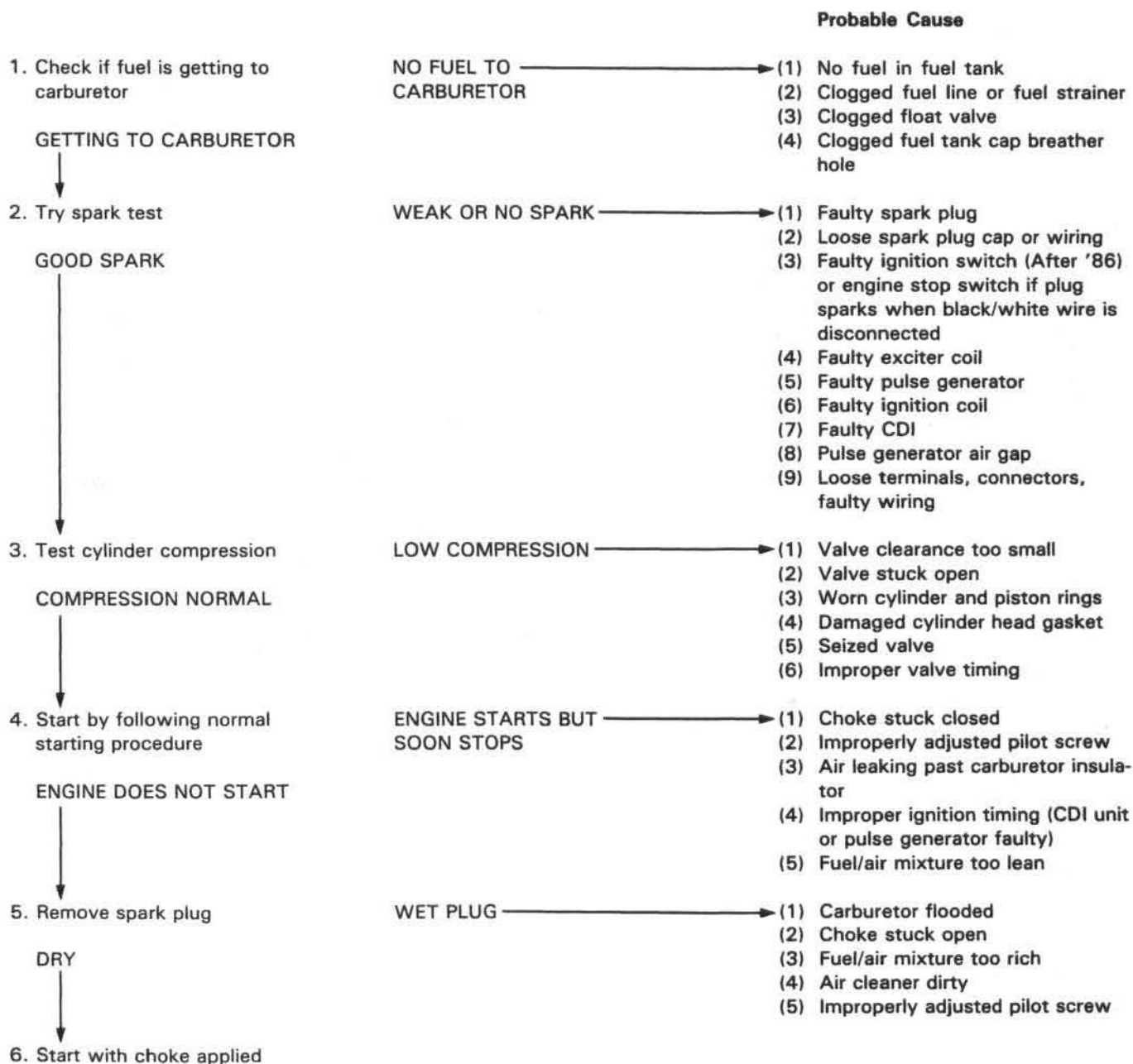
16-3

POOR PERFORMANCE AT HIGH SPEEDS 16-4

POOR HANDLING

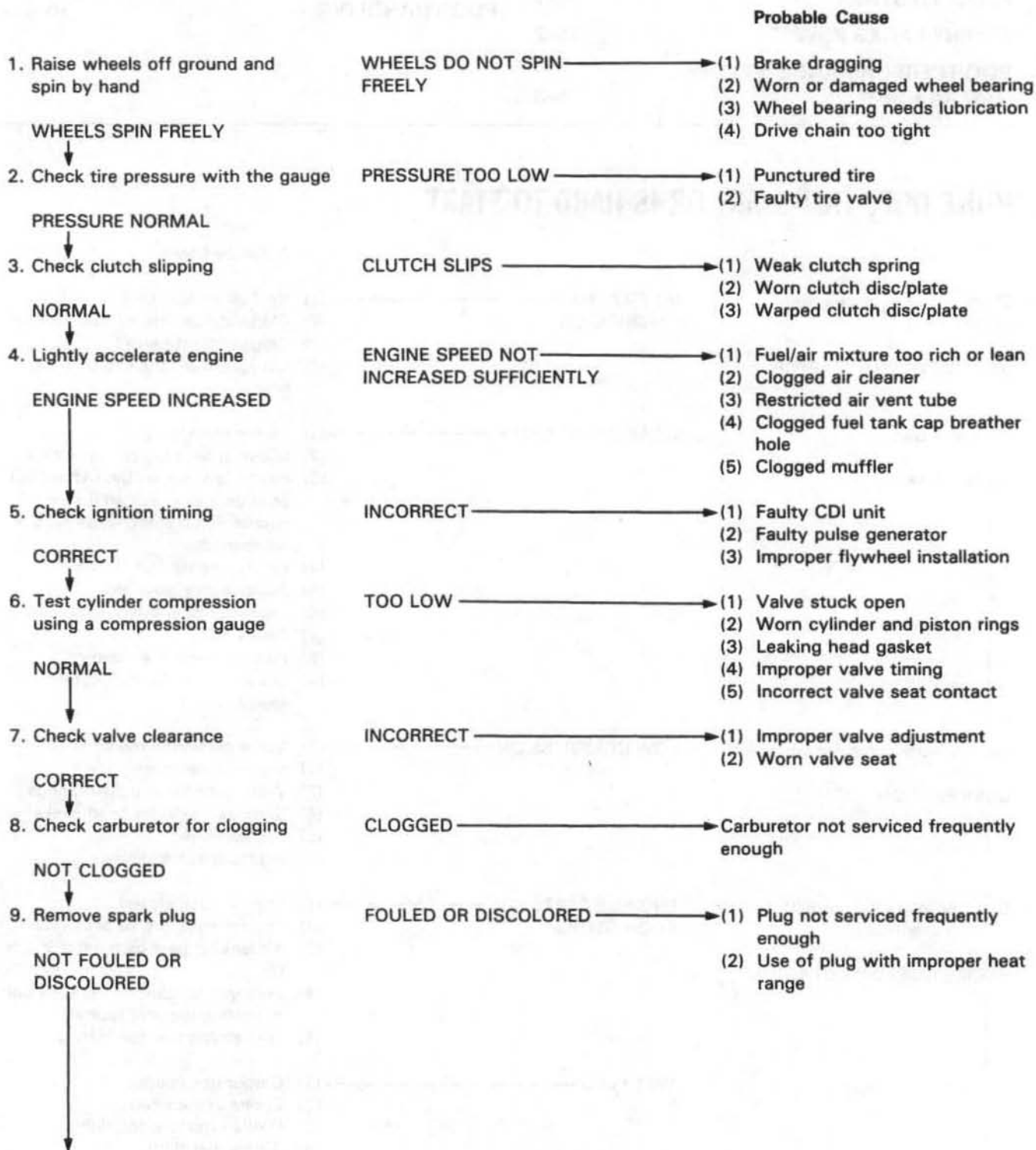
16-4

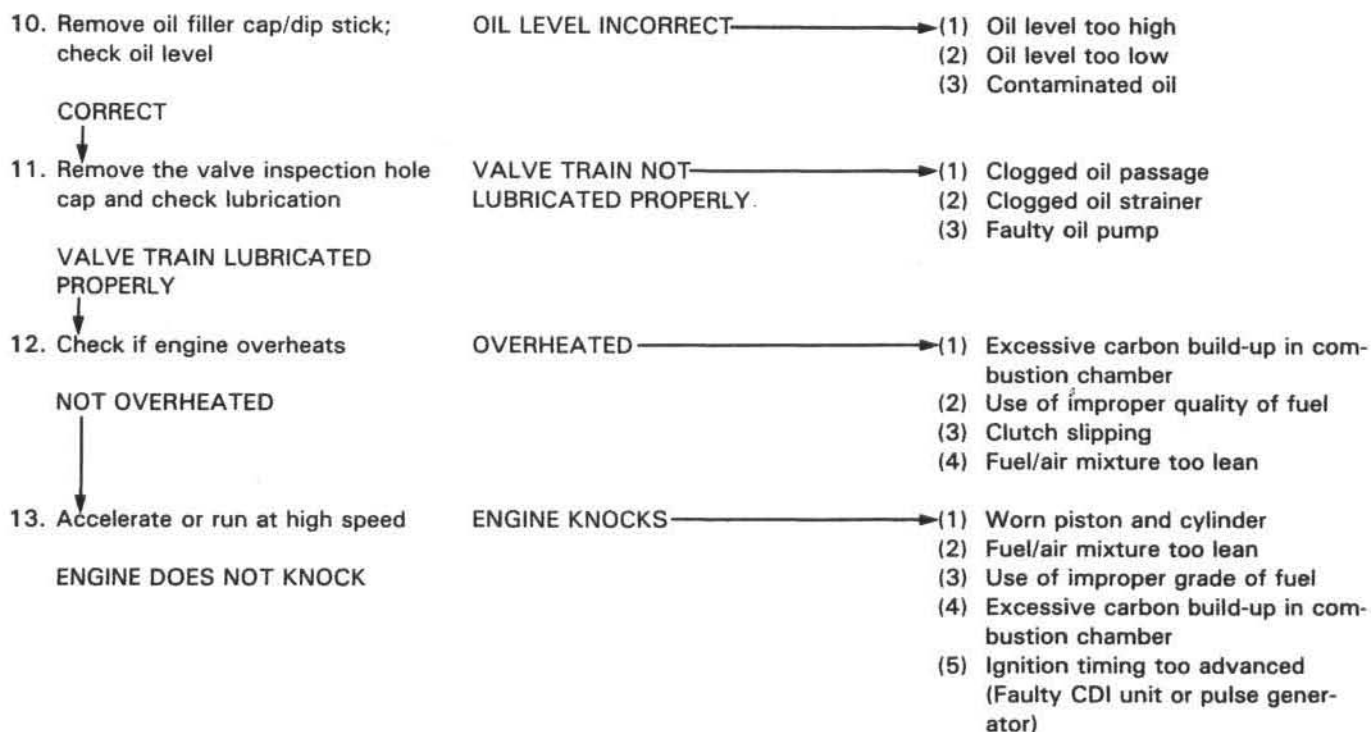
ENGINE DOES NOT START OR IS HARD TO START



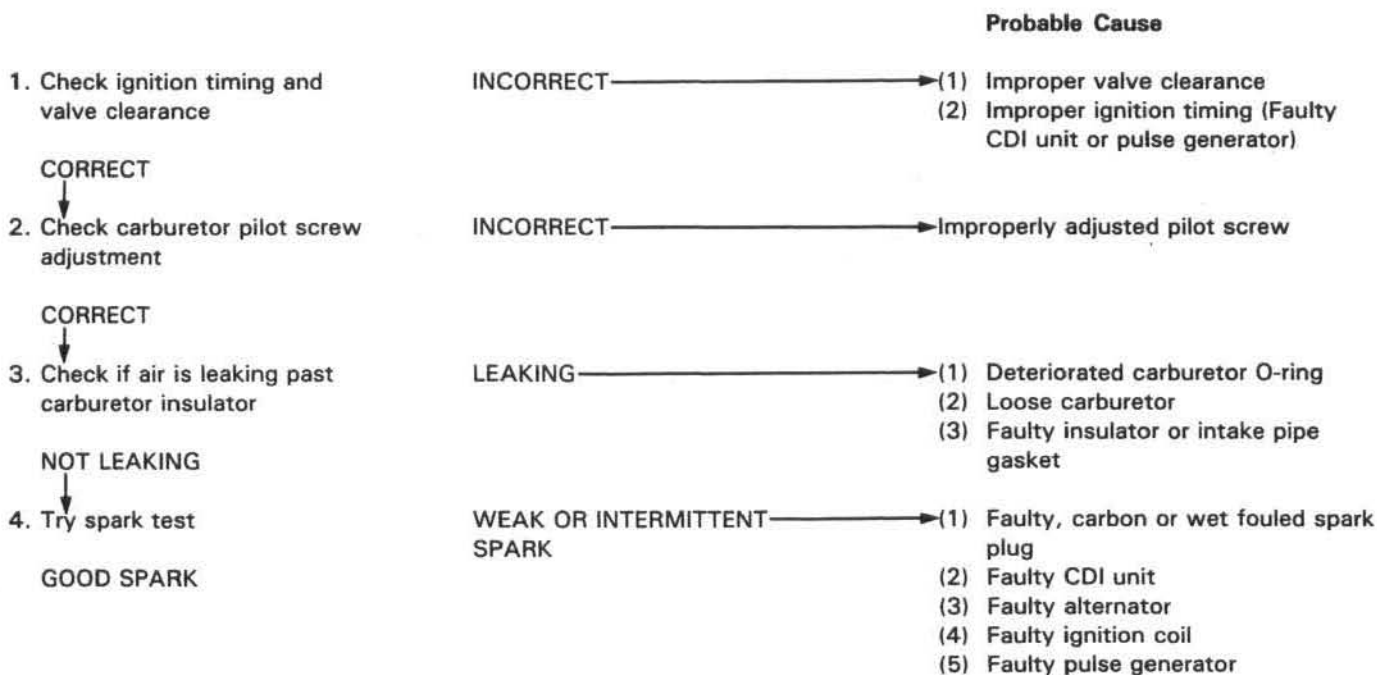
16

ENGINE LACKS POWER

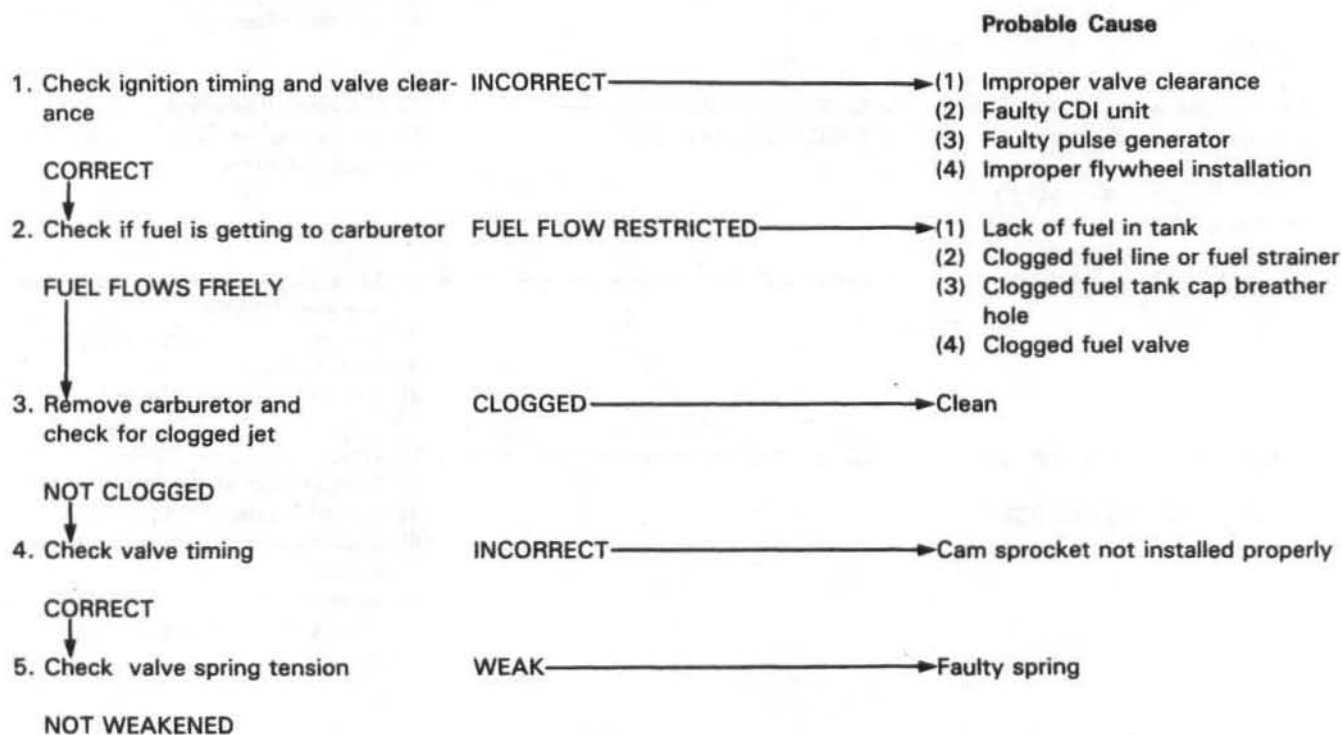




POOR PERFORMANCE AT LOW AND IDLE SPEED

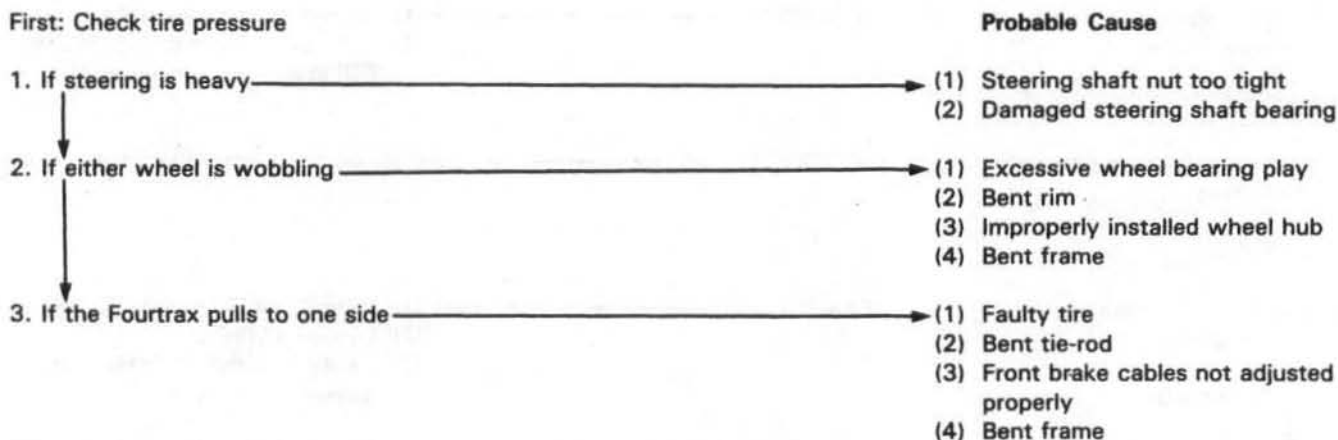


POOR PERFORMANCE AT HIGH SPEEDS



POOR HANDLING

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