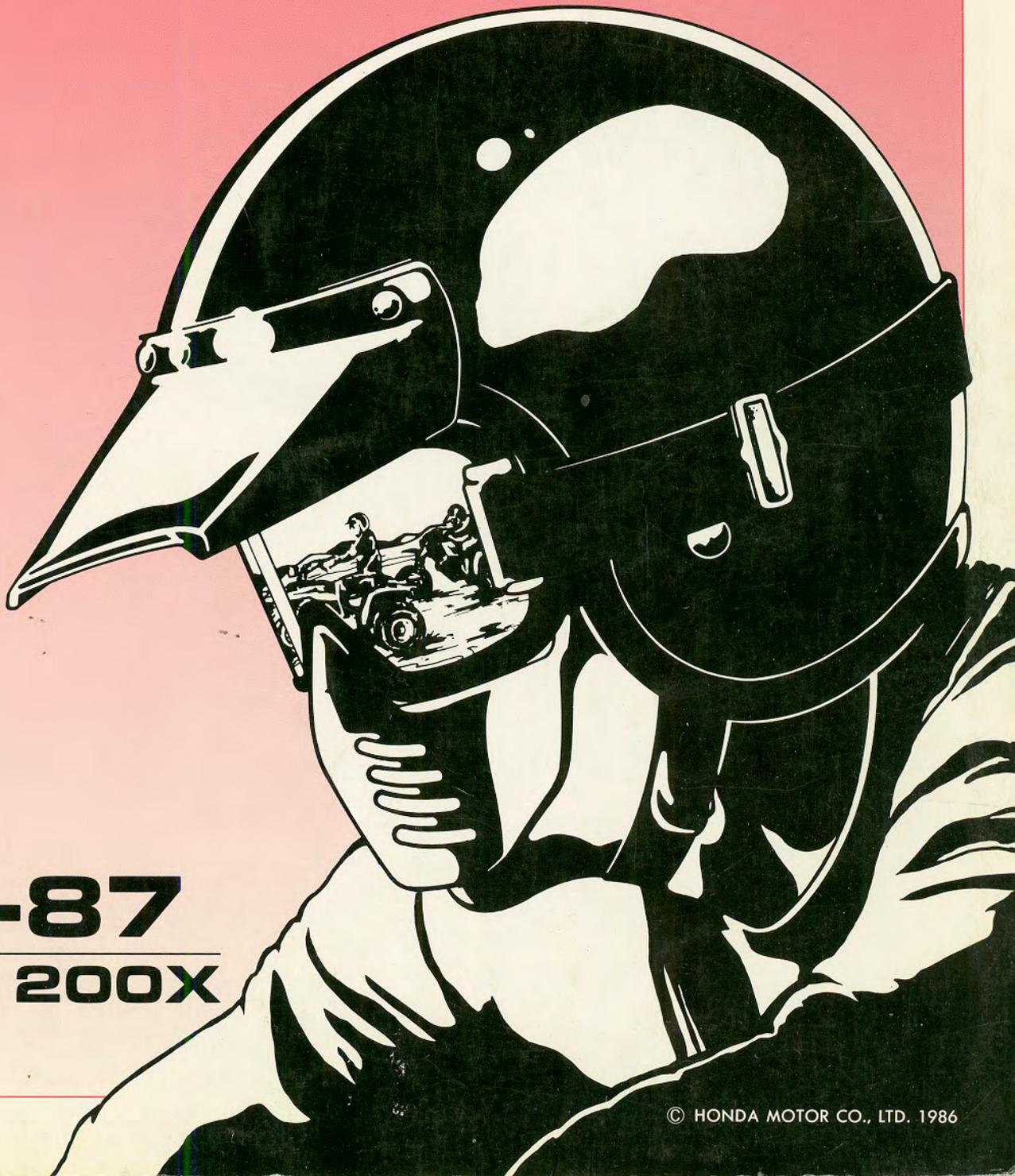


HONDA

SERVICE MANUAL



86-87
ATC[®] 200X

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IMPORTANT SAFETY NOTICE



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

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

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains some warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways.

Anyone using service procedures or tools, whether or not recommended by Honda *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service method or tools selected.

HOW TO USE THIS MANUAL

Sections 1 through 3 apply to the whole ATC, while sections 4 through 16 describe parts of the ATC, grouped according to location.

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

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

If you don't know what the source of a problem is, refer to section 17, TROUBLESHOOTING.

All information, illustrations, directions and specifications included in this publication are based on the latest product information available at the time of approval for printing.

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Honda Motor CO., LTD.
Service Publications Office

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1. GENERAL INFORMATION

1

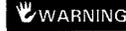
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GENERAL SAFETY



WARNING

If the engine must be running to do some work, make sure that area is well-ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.



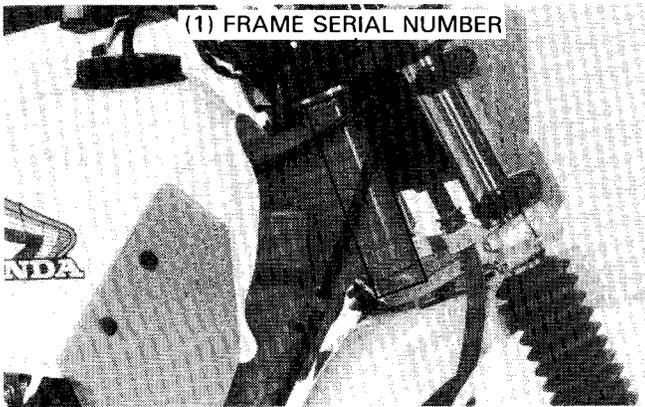
WARNING

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

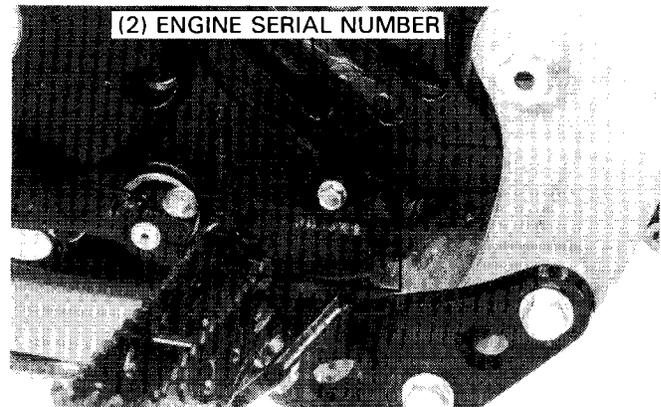
SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalent. Parts that don't meet HONDA's design specifications may cause damage to the ATC.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing this ATC. Metric bolts, nuts, and screws are not interchangeable with English fasteners.
4. Install new gasket, O-rings, cotter pins, lock plates, etc. when reassembling.
5. When tightening bolts or nuts, begin with the larger-diameter or inner bolt first. Then tighten to the specified torque diagonally in 2 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.

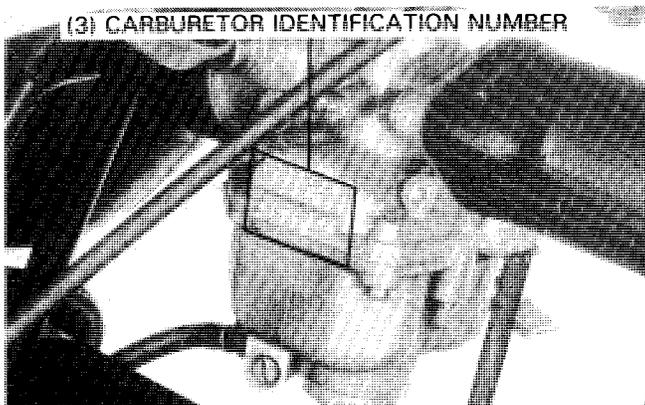
MODEL IDENTIFICATION



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



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



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

SPECIFICATIONS

<p>DIMENSIONS</p>	<p>Overall length Overall width Overall height Wheel base Rear tread Seat height Footpeg height Ground clearance Dry weight</p>	<p>1,860 mm (73.2 in) 1,080 mm (42.5 in) 1,050 mm (41.3 in) 1,210 mm (47.6 in) 830 mm (32.7 in) 730 mm (28.7 in) 320 mm (12.6 in) 120 mm (4.7 in) 126 kg (278 lb)</p>
<p>FRAME</p>	<p>Type Front suspension, travel Rear suspension, travel Rim size Front Rear Front tire size, pressure Rear tire size, pressure Front brake Rear brake Fuel tank capacity Fuel reserve capacity Caster Trail Front fork oil capacity</p>	<p>Semi-double cradle Telescopic air fork, 195 mm (7.7 in) Swingarm, 185 mm (7.3 in) 11 in 9 in 23.5 x 8—11, 25 kPa (0.25 kg/cm², 3.6 psi) '86: 22 x 10—9, 17 kPa (0.17 kg/cm², 2.5 psi) After '86: 22 x 10—9, 17.5 kPa (0.175 kg/cm², 2.5 psi) Single disc Single disc 10.5 lit (2.78 US gal, 2.31 Imp gal) 1.5 lit (0.40 US gal, 0.33 Imp gal) 21°30' 30 mm (1.2 in) '86: 216—221 cc (7.3—7.5 US oz) After '86: 226—231 cc (7.6—7.8 US oz)</p>
<p>ENGINE</p>	<p>Type Cylinder arrangement Bore x stroke Displacement Compression ratio Valve train Maximum horsepower Maximum torque Oil capacity Lubrication system Cylinder compression Intake valve Opens Closes Exhaust valve Opens Closes Valve clearance IN (cold) EX (cold)</p>	<p>Gasoline, air-cooled 4-stroke Single cylinder inclined 25° 65.0 x 60.0 mm (2.56 x 2.36 in) 199 cm³ (12.14 cu in) 9.5:1 Overhead camshaft chain drive 19 ps/7,500 rpm '86: 1.9 kg-m/6,000 rpm After '86: 1.9 kg-m/6,500 rpm 1.8 lit (1.90 US qt, 1.59 Imp qt) at disassembly 1.5 lit (1.59 US qt, 1.32 Imp qt) after draining Forced pressure and wet sump 1,300 ± 100 kPa (13.0 ± 1 kg/cm², 184.7 ± 14.2 psi) 8° BTDC 35° ABDC 40° BBDC 5° ATDC —at 1 mm lift 0.08 mm (0.003 in) 0.08 mm (0.003 in)</p>

GENERAL INFORMATION

CARBURETOR	Identification number Type Venturi diameter Main jet Pilot screw opening Jet needle Float level Idle speed	'86 PD64A A Piston valve 24 mm (0.94 in) #122 2 turns out 2nd groove 14.0 ± 0.5 mm (0.55 ± 0.02 in) 1,400 ± 100 rpm	PD64A B , C ← ← #112 ← 3rd groove ← ←	After '86 PD3AA A ← ← ← ← ← ←
DRIVE TRAIN	Clutch Transmission Primary reduction Gear ratio I Gear ratio II Gear ratio III Gear ratio IV Gear ratio V Gear ratio VI Final reduction Gearshift pattern Drive chain size/links	Wet multi-plate 6-speed constant mesh 3.087:1 3.455:1 2.333:1 '86: 1.778:1 After '86: 1.750:1 1.450 1.227 1.083 2.923 1-N-2-3-4-5-6 520/86		
ELECTRICAL	Ignition system Initial ignition timing ("F" mark) Full advance ("H" mark) Alternator Spark plug Spark plug gap Headlight Taillight	CDI 10° BTDC at 1,400 ± 100 rpm 28° BTDC at 3,500 ± 200 rpm AC generator 135W/5,000 rpm NGK: DR8ES-L ND: X24ESR-U 0.6–0.7 mm (0.024–0.028 in) 12V 60/55W '86: 12V 5W After '86: 12V 8W		

TORQUE VALUES

ENGINE

[]: '86

Item	Thread dia. (mm)	Torque		
		N·m	kg-m	ft-lb
Oil drain bolt	12	35-40	3.5-4.0	25-29
Fuel strainer cup	24	3-5	0.3-0.5	2.2-3.6
Valve adjuster lock bolt	6	10-14	1.0-1.4	7.2-10
Fuel valve lock nut	16	20-25	2.0-2.5	15-18
Carburetor mounting nut	6	6-9	0.6-0.9	4.3-6.5
Drive sprocket bolt	6	10-14	1.0-1.4	7.2-10
Exhaust pipe joint nut	6	10-14	1.0-1.4	7.2-10
Exhaust pipe clamp bolt	8	18-28	1.8-2.8	13-20
Exhaust muffler mounting bolt	[8] 10	[40-45] 60-70	[4.0-4.5] 6.0-7.0	[29-33] 43-51
Cylinder head cover bolt	6	10-14	1.0-1.4	7.2-10
Cylinder head cap nut	6	10-14	1.0-1.4	7.2-10
Cylinder head nut	8	28-30	2.8-3.0	20-22
Breather cover bolt	6	10-14	1.0-1.4	7.2-10
Kick starter arm pinch bolt	8	30-35	3.0-3.5	22-25
Clutch center lock nut	14	50-60	5.0-6.0	36-43
Oil filter rotor lock nut	16	50-60	5.0-6.0	36-43
Drum stopper bolt	6	10-14	1.0-1.4	7.2-10
Shifter plate bolt	6	10-14	1.0-1.4	7.2-10
Gearshift pedal bolt	6	14-18	1.4-1.8	10-13
Flywheel bolt	8	45-55	4.5-5.5	33-40
Camshaft bearing holder bolt	6	10-14	1.0-1.4	7.2-10
Crankcase bolt	6	10-14	1.0-1.4	7.2-10
Camshaft inspection hole cap	14	2.5-4.5	0.25-0.45	1.8-3.3

FRAME

Item	Thread dia. (mm)	Torque		
		N·m	kg-m	ft-lb
Drive chain adjuster lock bolts	8	18-24	1.8-2.4	13-17
Parking brake adjusting lock nut	8	15-20	1.5-2.0	11-15
Top engine hanger plate bolt	8	24-30	2.4-3.0	17-22
	10	60-70	6.0-7.0	43-51
Front engine hanger plate bolt	8	30-36	3.0-3.6	22-26
	10	60-70	6.0-7.0	43-51
Rear engine hanger plate bolt	8	30-36	3.0-3.6	22-26
	10	60-70	6.0-7.0	43-51
Engine lower mounting bolt	10	60-70	6.0-7.0	43-51
Footpeg bolt	10	60-70	6.0-7.0	43-51
Handlebar upper holder bolt	8	18-30	1.8-3.0	13-22
Brake disc nut (front, rear)	8	20-30	2.0-3.0	15-22
Engine guard plate bolt	8	30-35	3.0-3.5	22-25

GENERAL INFORMATION

Item	Thread dia. (mm)	Torque		
		N·m	kg·m	ft·lb
Front axle	14	70–110	7.0–11.0	51–80
Front axle holder nut	6	10–14	1.0–1.4	7.2–10
Wheel nut (front, rear)	10	60–70	6.0–7.0	43–51
Fork tube cap bolt	28	15–30	1.5–3.0	11–22
Fork socket bolt	8	15–25	1.5–2.5	11–18
Fork pinch bolt	8	18–25	1.8–2.5	13–18
Brake hose stay nut	8	24–30	2.4–3.0	17–22
Brake hose clamp bolt	6	10–14	1.0–1.4	7.2–10
Fork boot band screw	3	0.6–0.12	0.06–0.12	0.4–0.9
Steering bearing adjustment nut (initial)	26	25–35	2.5–3.5	18–25
(final)		7–8	0.7–0.8	5.1–5.8
Steering stem nut	24	90–120	9.0–12.0	65–87
Rear axle outer lock nut	40	80–100	8.0–10.0	58–72
Rear axle inner lock nut	40	100–120	10.0–12.0	72–87
Driven sprocket nut	8	30–40	3.0–4.0	22–29
Rear axle nut	18	120–170	12.0–17.0	87–123
Bearing holder stopper bolt	8	8–11	0.8–1.1	5.8–8.0
Shock absorber mounting bolt (upper, lower)	10	40–50	4.0–5.0	29–36
Swing arm pivot bolt	14	70–110	7.0–11.0	51–80
Shock absorber adjusting lock nut	54	80–100	8.0–10.0	58–72
Air bleed valve (front, rear)	8	4–7	0.4–0.7	3–5
Brake pad pin bolt (front, rear)	8	15–20	1.5–2.0	11–15
Caliper mounting bolt (front, rear)	8	20–30	2.0–3.0	15–22
Caliper socket bolt (front, rear)	8	15–20	1.5–2.0	11–15
Oil bolt	10	25–35	2.5–3.5	18–25
Shock absorber oil hose joint bolt	10	20–25	2.0–2.5	15–18
Parking brake base bolt	8	20–25	2.0–2.5	15–18
Rear master cylinder mounting bolt	6	10–14	1.0–1.4	7.2–10
Steering stop cover	4	1–2	0.1–0.2	0.7–2.9

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

STANDARD TORQUE VALUES

Type	Torque N·m (kg·m, ft·lb)	Type	Torque N·m (kg·m, ft·lb)
5 mm bolt, nut	4.5–6.0 (0.45–0.6, 3.3–4.3)	5 mm screw	3.5–5.0 (0.35–0.5, 2.5–3.6)
6 mm bolt, nut	8–12 (0.8–1.2, 6–9)	6 mm screw, SH bolt	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, 25–32)

TOOLS

SPECIAL

DESCRIPTION	NUMBER	ALTERNATIVE TOOL	NUMBER	REF. SEC.
Valve guide reamer, 5.5 mm	07984-2000000	Valve guide reamer	07984-200000A	6
Clutch center holder	07923-9580000			8
Universal bearing puller	07631-0010000	Commercially available in U.S.A.		10
Assembly collar	07965-VM00100			10
Assembly shaft	07965-VM00200	Assembly shaft	07931-ME4000A	10
Thread adaptor	07GMF-HB50100	Thread adapter	07965-HB3000A	10
Bearing remover set, 15 mm	07936-KC10000	Not available in U.S.A.		10
-Bearing remover, 15 mm	07936-KC10500			10
-Remover weight	07741-0010201	Remover weight	07936-3710200	10
Attachment	07946-6920100			10
Snap ring pliers	07914-3230001	Commercially available in U.S.A.		11, 14
Steering stem socket	07916-3710100			11
Ball race remover	07953-3330000			11
Ball race driver	07946-3290000			11
Steering stem driver	07946-4300101	Steering stem driver	07946-MB00000	11
Universal bead breaker	GN-AH-958-BB1	U.S.A. only	with GN-HT-54	11
Lock nut wrench, 45 mm (2 pieces)	07916-1870101	Commercially available in U.S.A.		12
Bearing remover set, 20 mm	07936-3710001	Not available in U.S.A.		13
-Spindle assy, 20 mm	07936-3710600			
-Remover handle	07936-3710100			
-Remover weight	07741-0010201	Remover weight	07936-3710200	
Sanwa Electric Tester	07308-0020000	Kowa Tester	TH-5H	16
Kowa Digital Multimeter	07411-0020000		KS-AHM-32-003	16

GENERAL INFORMATION

COMMON

DESCRIPTION	NUMBER	ALTERNATIVE TOOL	NUMBER	REF. SEC.
Float level gauge	07401-0010000			4
Valve guide remover, 5.5 mm	07742-0010100	Valve guide remover	07942-3290100	6
Valve spring compressor	07757-0010000	Valve spring compressor	07957-3290001	6
Inner driver	07746-0020100	] Not available in U.S.A.		6
Attachment, 15 mm (inner)	07746-0020200			6
Pin driver, 3 mm	07744-0010200] Commercially available in U.S.A.		8
Gear holder	07724-0010100	Not available in U.S.A.		8, 9
Rotor puller	07733-0020001	Rotor puller	07933-2160000	9
Driver	07749-0010000			
Attachment, 62 x 68 mm	07746-0010500			10, 12
Pilot, 28 mm	07746-0041100			10
Attachment, 42 x 47 mm	07746-0010300			10, 11
Pilot, 20 mm	07746-0040500			10, 13
Attachment, 32 x 35 mm	07746-0010100			10, 13
Pilot, 15 mm	07746-0040300			10, 11
Pilot, 22 mm	07746-0041000			10
Bearing remover shaft	00746-0050100	] Commercially available in U.S.A.		11
Bearing remover head, 15 mm	07746-0050400	] Not available in U.S.A.		11
Tire bead breaker set	07772-0050000			11
— Breaker arm compressor	07772-0050100			11
— Breaker arm	07772-0050200			11
Fork seal driver	07747-0010100	] Fork seal driver	07947-3330000	11
Fork seal driver attachment (D)	07747-0010501	] Commercially available in U.S.A.		11
Extension	07716-0020500			11
Lock nut wrench, 30 x 32 mm	07716-0020400			11
Pilot, 35 mm	07746-0040800			12

VALVE SEAT CUTTER

Valve seat cutters are commercially available in the U.S.A. Therefore in the U.S.A., the following cutters are not required and not available.

DESCRIPTION	TOOL NUMBER	REF. SEC.
Valve seat cutter, 27.5 mm (EX 45°)	07780-0010200	6
Valve seat cutter, 33 mm (IN 45°)	07780-0010800	6
Valve seat cutter, 28 mm (EX 32°)	07780-0012100	6
Valve seat cutter, 33 mm (IN 32°)	07780-0012900	6
Valve seat cutter, 30 mm (IN/EX 60°)	07780-0014000	6
Valve seat cutter holder, 5.5 mm	07781-0010101	6

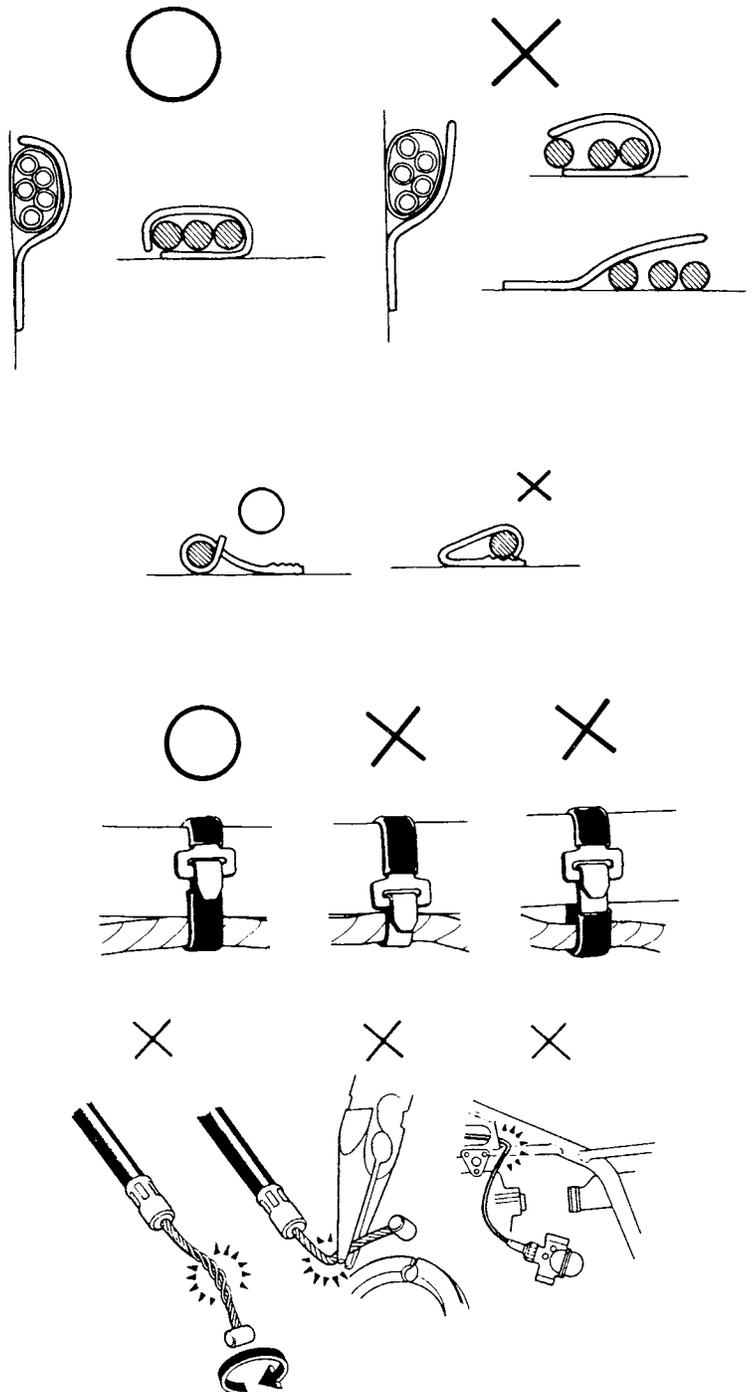
OPTIONAL TOOLS

DESCRIPTION	TOOL NUMBER	REF. SEC.
Pin spanner	89201-KA4-820	13
Pin spanner	89202-KA4-820	13

CABLE & HARNESS ROUTING

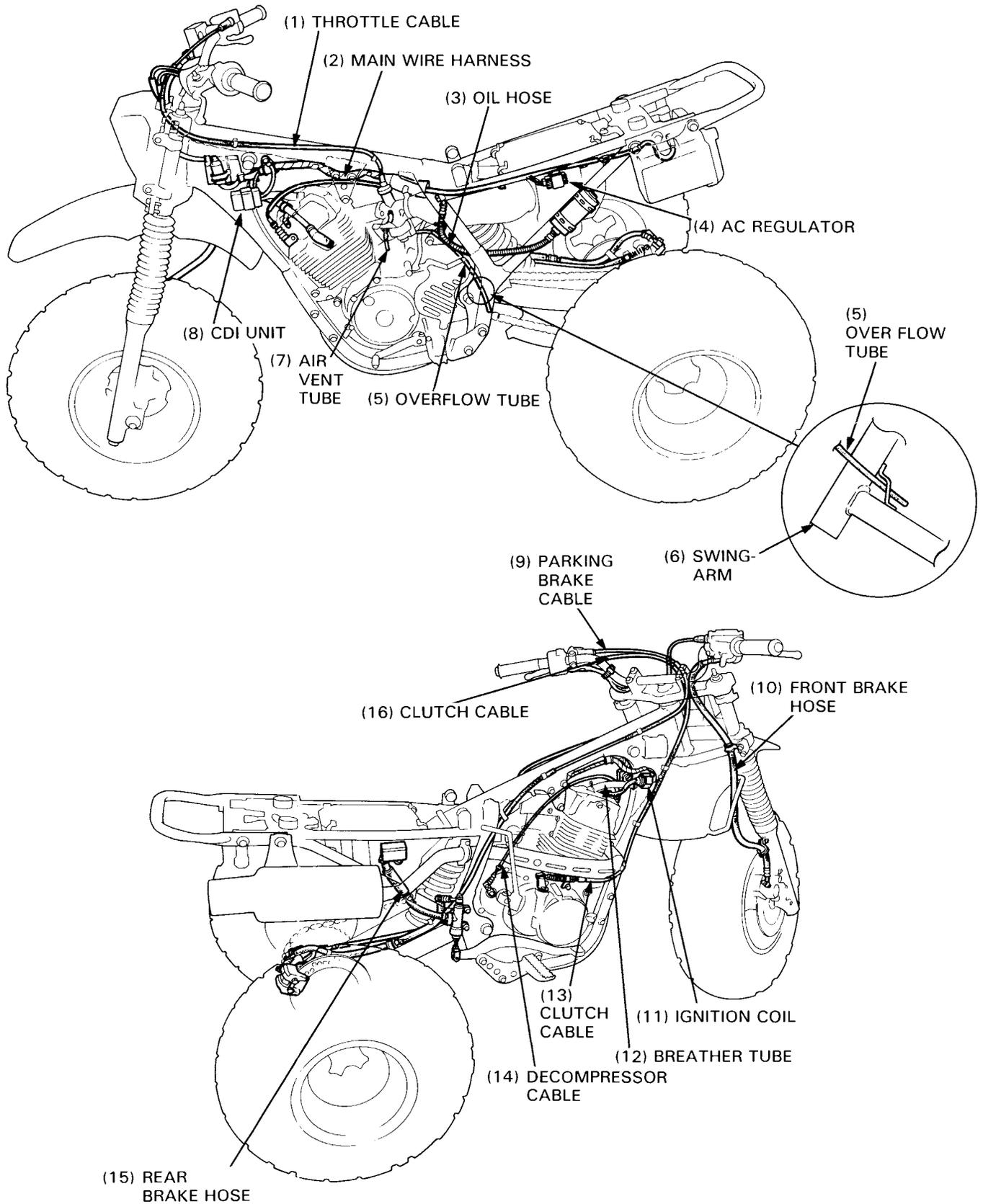
Note the following when routing cables and wire harnesses:

- 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 a 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 tubing if they are in contact with a sharp edge or corner. Clean the attaching surface thoroughly before applying tape.
- Do not use wires or harnesses with broken insulators. Repair by wrapping them with protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners. Also avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipes and other hot parts.
- 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 tight, 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.

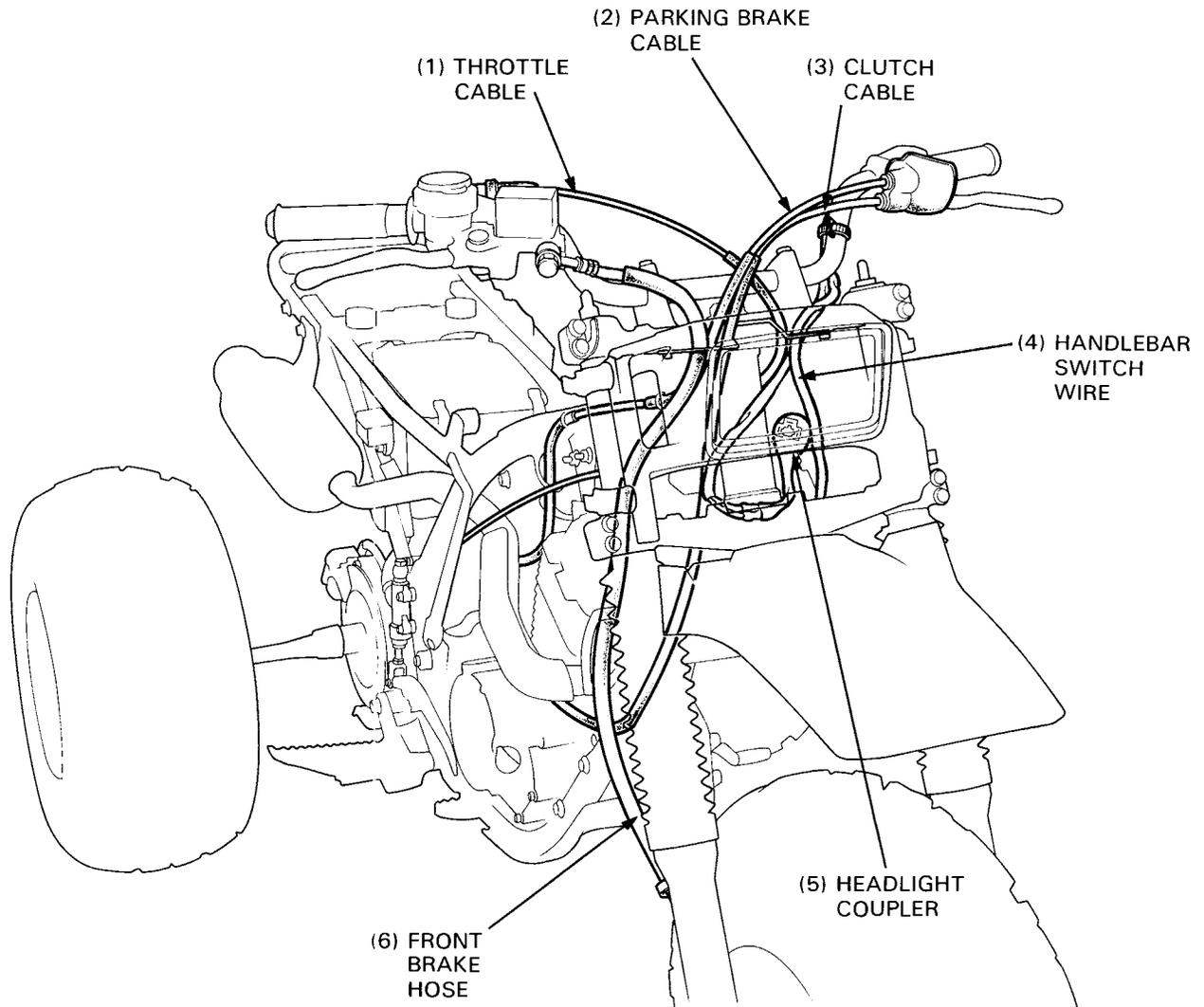


O: CORRECT
X: INCORRECT

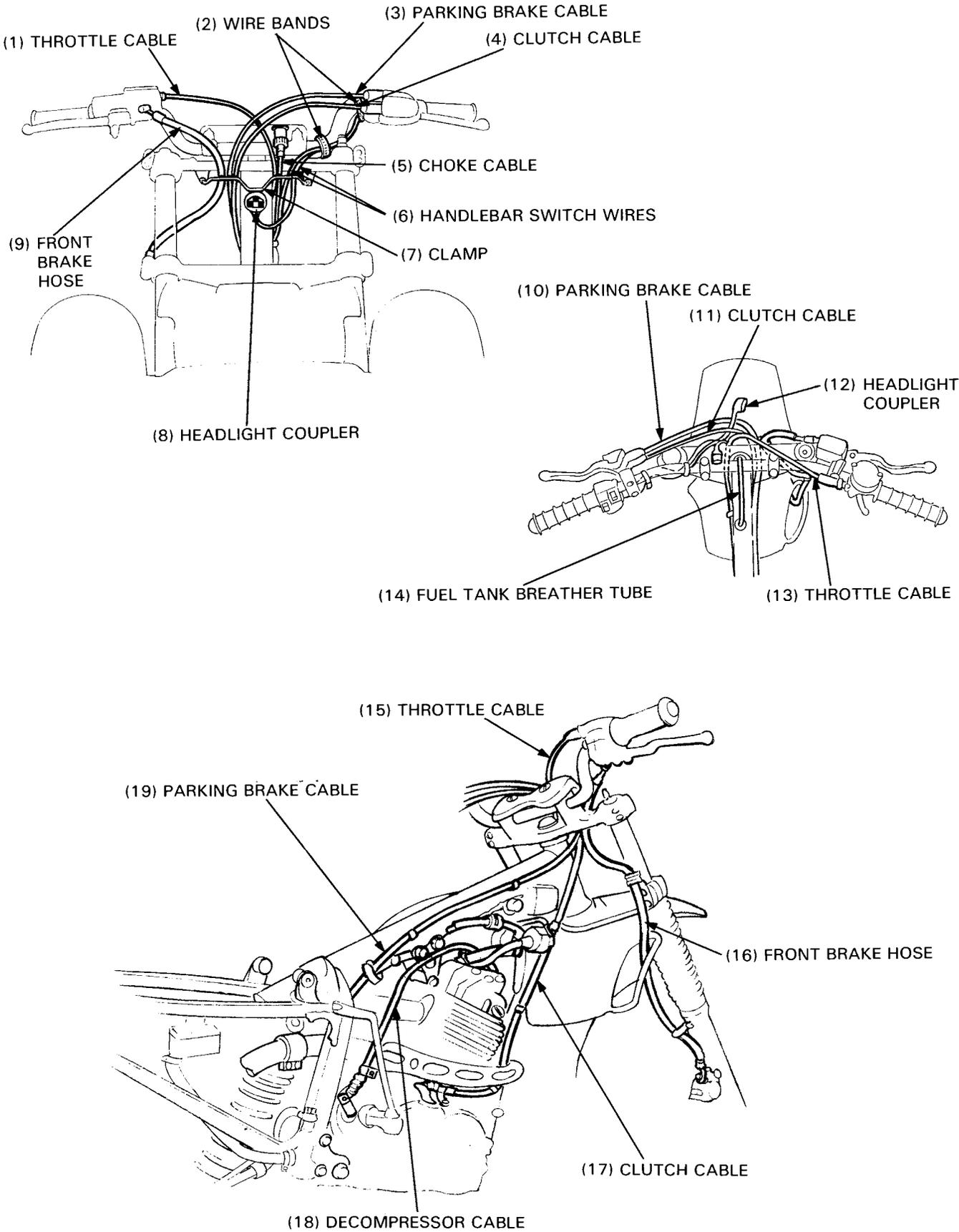
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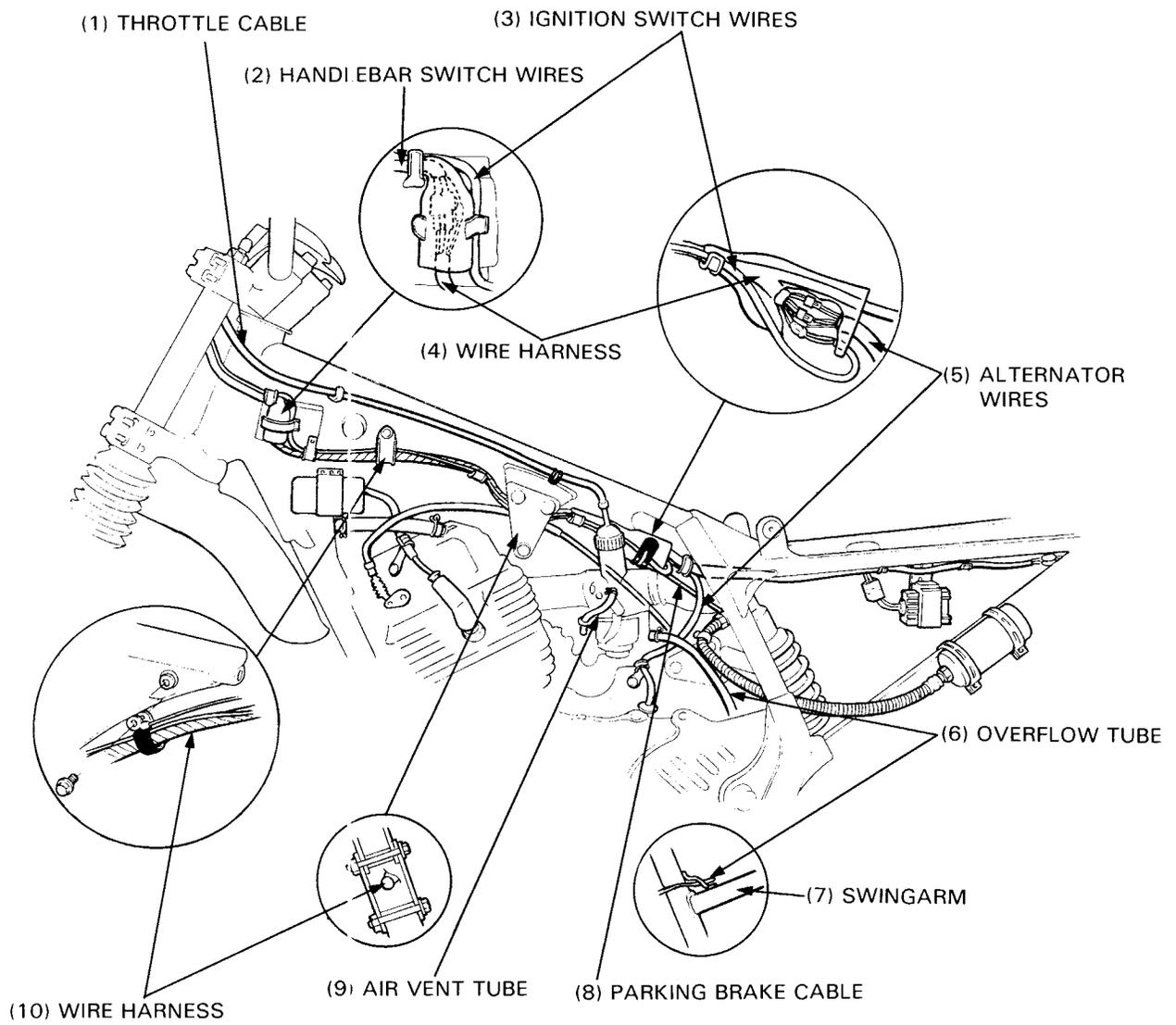


GENERAL INFORMATION



After '86





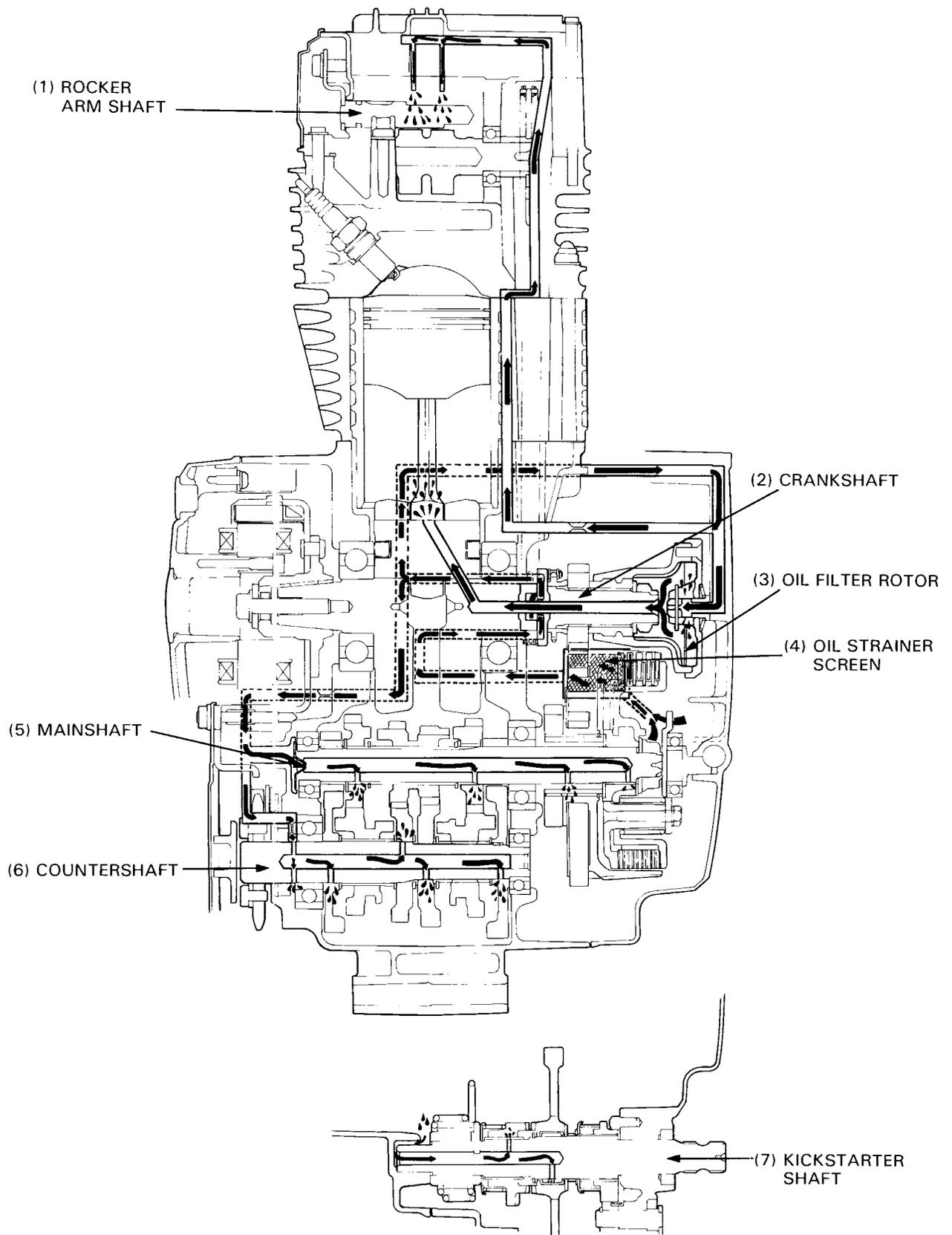
NOISE EMISSION CONTROL SYSTEM (U.S.A. only)

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

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

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

1. Removal of, or puncturing the muffler, baffle, header pipes or any other component which conducts exhaust gases.
2. Removal of, or puncturing of any parts 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.



2. LUBRICATION

SERVICE INFORMATION	2-1	ENGINE OIL STRAINER SCREEN	2-2
TROUBLESHOOTING	2-1	ENGINE OIL FILTER ROTOR	2-2
ENGINE OIL LEVEL	2-2	CONTROL CABLE LUBRICATION	2-3
ENGINE OIL CHANGE	2-2	LUBRICATION POINTS	2-3

SERVICE INFORMATION

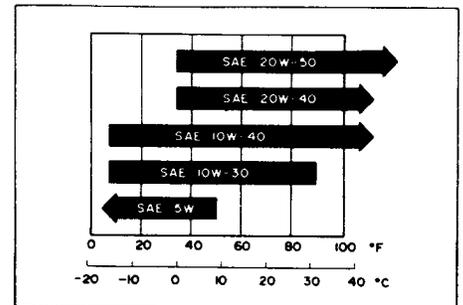
GENERAL

- Section 8 shows how to service the oil pump.

SPECIFICATIONS

Engine oil capacity 1.8 liter (1.90 US qt, 1.59 Imp qt) at disassembly
1.5 liter (1.59 US qt, 1.32 Imp qt) after draining

Engine oil recommendation Use Honda 4-stroke oil or equivalent.
API Service Classification: SE or SF
Viscosity: SAE 10W-40
Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.



TORQUE VALUE

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

TROUBLESHOOTING

Oil level too low — high oil consumption

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

Oil contamination

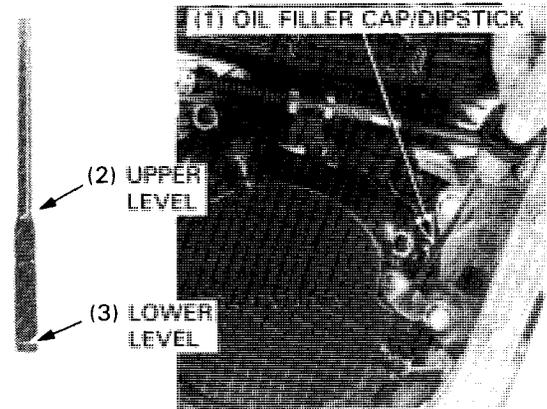
- Oil not changed often enough
- Head gasket faulty
- Worn piston rings

LUBRICATION

ENGINE OIL LEVEL

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

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



ENGINE OIL CHANGE

NOTE

- Drain the oil with the engine warm.

Remove the oil filler cap and drain bolt and drain the oil.

Operate the kick starter several times to completely drain any residual oil.

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

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

Fill the crankcase with the recommended oil.

ENGINE OIL CAPACITY:

1.5 liters (1.59 US qt, 1.32 Imp qt) after draining

Install the oil filler cap/dipstick.

Start the engine and let it idle for 2 or 3 minutes.
Stop the engine and check that the oil level is at the upper level line on the dipstick. Add more oil if necessary.
Make sure there are no oil leaks.

ENGINE OIL STRAINER SCREEN

Remove the right crankcase cover (page 8-3).
Remove the oil strainer screen and clean it.

Install the oil strainer screen with the thick end to the right crankcase cover side.

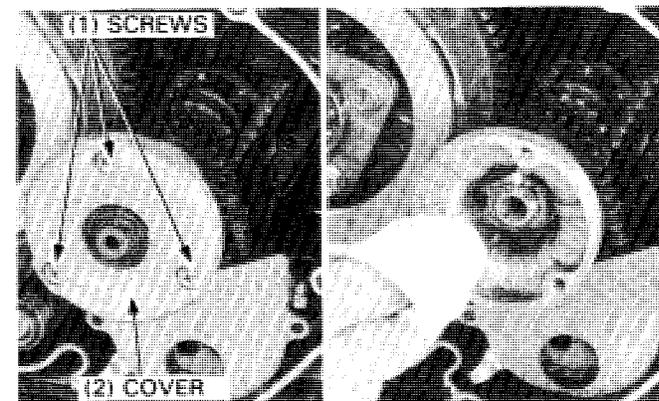
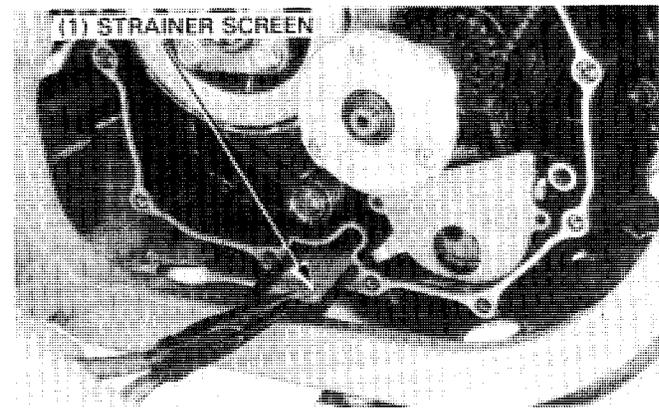
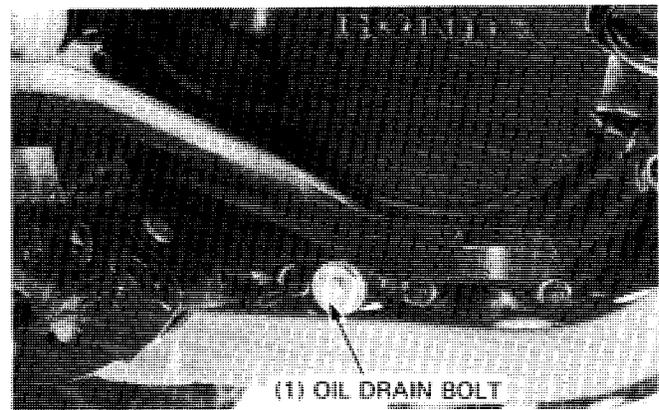
Install the right crankcase cover (page 8-5).

ENGINE OIL FILTER ROTOR

Remove the right crankcase cover (page 8-3).
Remove the oil filter rotor cover and clean the rotor.

Make sure that the rotor cover gasket is in good condition and install the oil filter rotor cover.

Install the right crankcase cover (page 8-5).



CONTROL CABLE LUBRICATION

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

LUBRICATION POINTS

Use general purpose grease when no other specification is given. Apply oil or grease to any 2 sliding surfaces.



MEMO

3. MAINTENANCE

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SERVICE INFORMATION

SPECIFICATIONS

ENGINE

Ignition timing	Initial	10° BTDC at 1,400 ±100 rpm
	Full advance	28° BTDC at 3,500 ±200 rpm
Spark plug	Spark plug gap	0.6–0.7 mm (0.024–0.028 in)
	Recommended spark plugs	NGK: DR8ES-L ND: X24ESR-U
Valve clearance	IN (cold)	0.08 mm (0.003 in)
	EX (cold)	0.08 mm (0.003 in)
Throttle lever free play		3–8 mm (1/8–5/16 in)
Idle speed		1,400 ± 100 rpm
Cylinder compression		1,300 ± 100 kPa (13.0 ± 1 kg/cm ² , 184.7 ± 14.2 psi)
Decompressor cam follower shaft arm free play		0.5–1.5 mm (0.02–0.06 in)

CHASSIS

Drive chain slack		25–35 mm (1.0–1.4 in)
Drive chain slider wear limit		6 mm (0.24 in)
Rear brake pedal height		20 mm (3/4 in)
Parking brake lever free play	'86:	31–39 mm (1-3/16–1-1/2 in)
	After '86:	25–30 mm (1–1-1/8 in)
Clutch lever free play		10–20 mm (3/8–3/4 in)
Front tire size, pressure		23.5 x 8–11, 25 kPa (0.25 kg/cm ² , 3.6 psi)
Rear tire size, pressure	'86:	17 kPa (0.17 kg/cm ² , 2.5 psi)
	After '86:	17.5 kPa (0.175 kg/cm ² , 2.5 psi)
Front tire circumference ('86 only)		1,890 mm (74.4 in)
Rear tire circumference ('86 only)		1,720 mm (67.7 in)
Front suspension air pressure		0 kPa (0 kg/cm ² , 0 psi)

TORQUE VALUES

Fuel strainer cup	3–5 N·m (0.3–0.5 kg-m, 2.2–3.6 ft-lb)
Drive chain adjuster lock bolts	18–24 N·m (1.8–2.4 kg-m, 13–17 ft-lb)
Valve adjuster lock bolts	10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Parking brake adjusting lock nut	15–20 N·m (1.5–2.0 kg-m, 11–15 ft-lb)
Camshaft inspection hole cap	2.5–4.5 N·m (0.25–0.45 kg-m, 1.8–3.3 ft-lb)

MAINTENANCE

MAINTENANCE SCHEDULE

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

'86:

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

I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace L: Lubricate A: Adjust		EVERY	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)		I	3-5
	AIR CLEANER CASE DRAIN TUBE	NOTE (2)		I	3-7
	SPARK PLUG			I	3-7
*	VALVE CLEARANCE		I	I	3-8
	ENGINE OIL		R	R	2-2
*	ENGINE OIL STRAINER SCREEN			C	2-2
*	ENGINE OIL CENTRIFUGAL FILTER			C	2-2
*	CARBURETOR IDLE SPEED		I	I	3-10
	DRIVE CHAIN	NOTE (1), (2)	I,L	I,L	3-10
	DRIVE CHAIN SLIDER AND ROLLER			I	3-12
	BRAKE FLUID	2 YEARS: R, I	I	I	3-12
*	BRAKE PAD WEAR	YEAR: I NOTE (1), (2)			3-13
	BRAKE SYSTEM		I	I	3-13
*	CLUTCH SYSTEM		I	I	3-15
*	SUSPENSION			I	3-15
*	SPARK ARRESTER	NOTE (3)		C	3-17
*	NUTS, BOLTS, FASTENERS		I	I	3-16
**	WHEELS/TIRES		I	I	3-16
**	STEERING HEAD BEARINGS	YEAR: I			3-17

* 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 authorized Honda dealer.

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

After '86:

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

I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust		EVERY	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
	AIR CLEANER CASE DRAIN TUBE	NOTE (2)		I	3-7
	SPARK PLUG			I	3-7
*	VALVE CLEARANCE		I	I	3-8
	ENGINE OIL		R	R	2-2
**	ENGINE OIL STRAINER SCREEN	NOTE (3)			2-2
**	ENGINE OIL CENTRIFUGAL FILTER	NOTE (3)			2-2
*	CARBURETOR IDLE SPEED		I	I	3-10
	DRIVE CHAIN	NOTE (1), (2)	I,L	I,L	3-10
	DRIVE CHAIN SLIDER			I	3-12
	BRAKE FLUID	2 YEARS: R		I	3-12
*	BRAKE PAD WEAR	YEAR: I NOTE (1), (2)			3-13
	BRAKE SYSTEM		I	I	3-13
	SKID PLATE, GUARD PLATE			I	3-15
*	CLUTCH SYSTEM		I	I	3-15
*	SUSPENSION			I	3-15
*	SPARK ARRESTER	NOTE (4)		C	3-17
*	NUTS, BOLTS, FASTENERS		I	I	3-16
**	WHEELS/TIRES		I	I	3-16
**	STEERING HEAD BEARINGS	YEAR: I			3-17

- * 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 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) Clean at first 30 days of operation and every year.
 (4) U.S.A. only.

MAINTENANCE

FUEL LINE

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

FUEL STRAINER SCREEN

Turn the fuel valve "OFF".

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

WARNING

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

Wash the cup and strainer screen in clean nonflammable or high flash point solvent.

Reinstall the screen, aligning the index marks on the fuel valve body and strainer screen.

Install a new O-ring into the fuel valve body.

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

Hand tighten the fuel cup and then torque it to specification.

TORQUE: 3–5 N·m (0.3–0.5 kg·m, 2.2–3.6 ft·lb)

CAUTION

- *Do not overtighten the fuel cup.*

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

FUEL STRAINER CLEANING

Disconnect the fuel tube.

Drain fuel from the fuel tank into a suitable container.

WARNING

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

Remove the fuel valve by loosening the valve lock nut.

Remove and clean the strainer.

Make sure the O-ring is in good condition.

Install the strainer and valve, and attach the fuel line.

TORQUE: FUEL VALVE LOCK NUT

20–25 N·m (2.0–2.5 kg·m, 15–18 ft·lb)

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

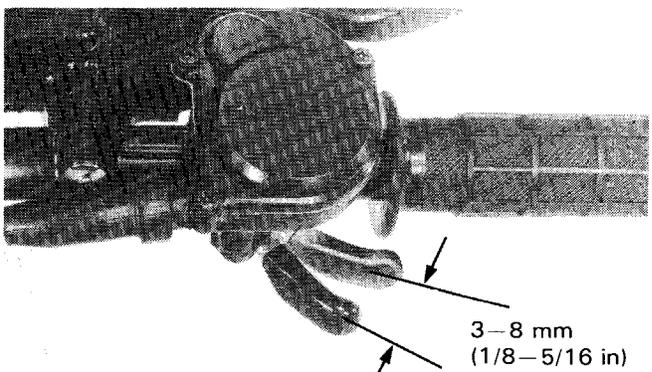
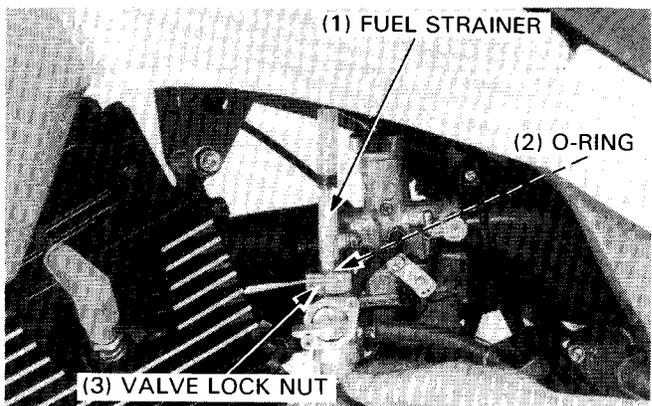
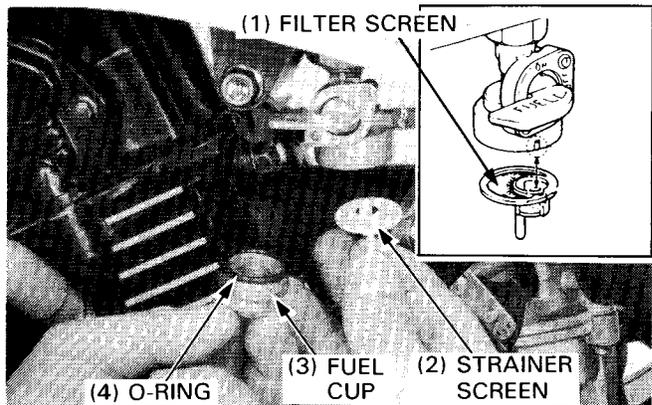
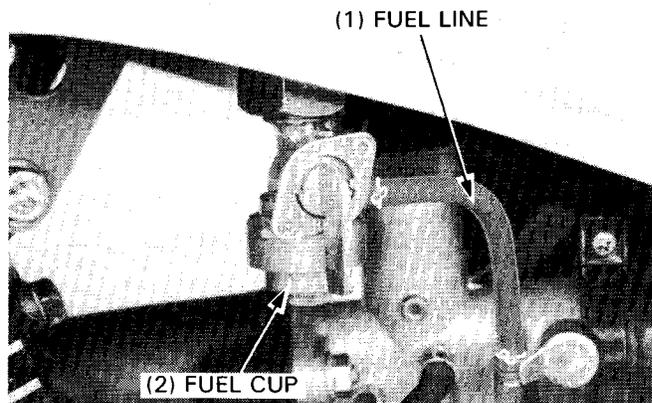
THROTTLE OPERATION

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

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

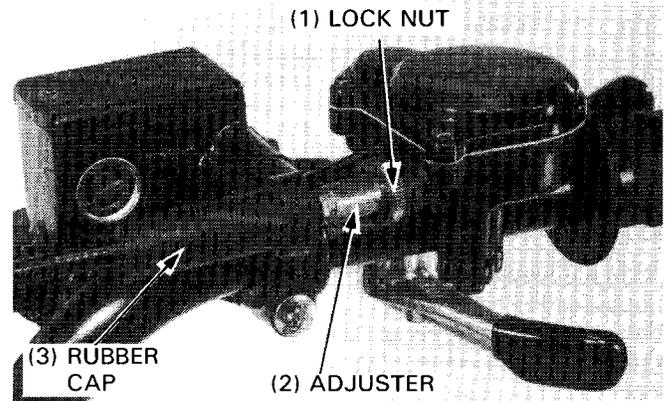
Make sure the throttle lever free play is 3–8 mm (1/8–5/16 in) at the tip of the throttle lever.

THROTTLE LEVER FREE PLAY: 3–8 mm (1/8–5/16 in)



To adjust the free play slide back the rubber cap, loosen the lock nut and turn the adjuster.
Tighten the lock nut and reinstall the rubber cap.

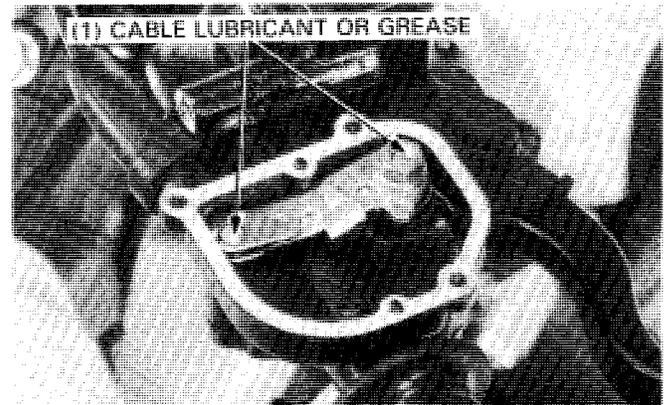
Check that the throttle lever moves smoothly and returns completely.



Remove the throttle housing cover.

Disconnect the throttle cable at the upper end. Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant or grease.

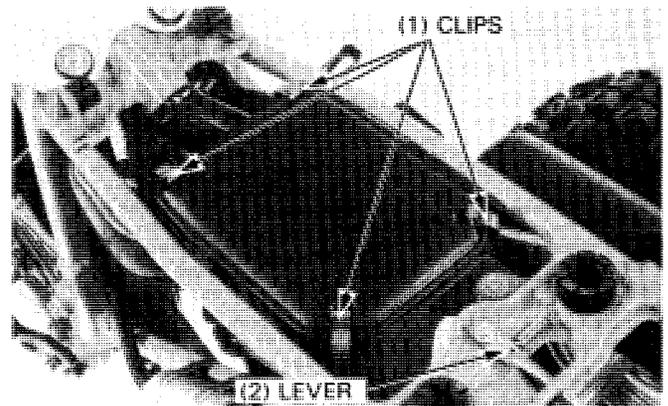
Install the throttle cable in the reverse order of removal.



AIR CLEANER

Slide the release lever to the left and remove the seat/rear fender.

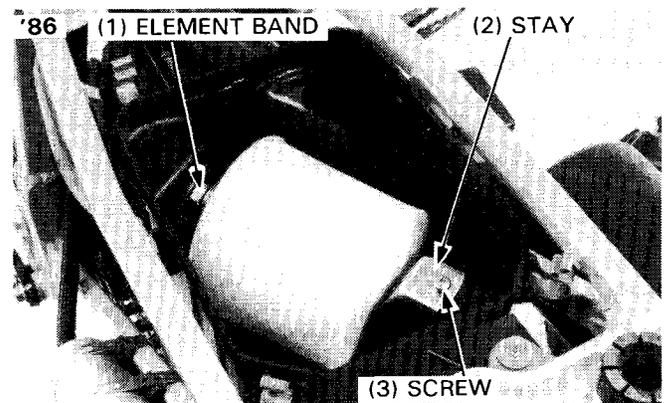
Release the four clips retaining the air cleaner cover. Remove the air cleaner cover.



'86:
Loosen the element band.

Remove the element holder stay attaching screw and element holder.

Remove the element holder stay from the holder, then remove the element from the holder.



MAINTENANCE

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

WARNING

- *Never use gasoline or low flash point solvents for cleaning the air cleaner element. A fire or explosion could result.*

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

Reinstall the air cleaner element on the element holder.

Install the element holder stay to the holder.

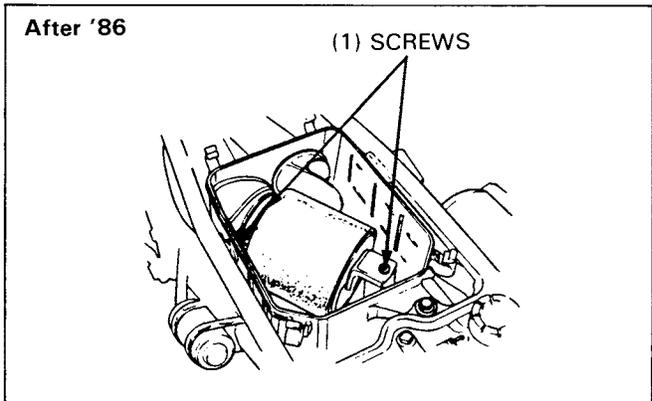
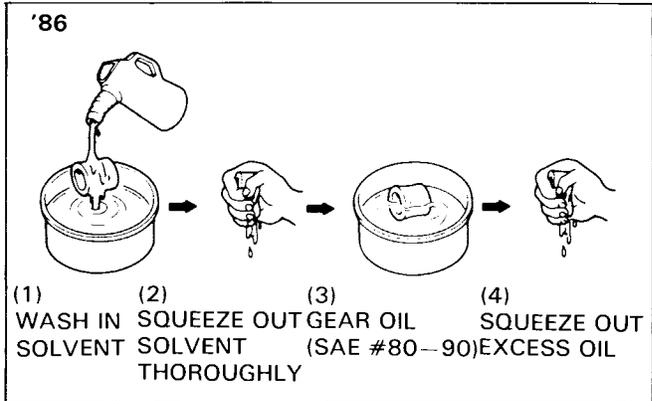
Apply a light coat of grease to the sealing edge (open side) of the holder.

Install the element holder into the case and tighten the element holder band.

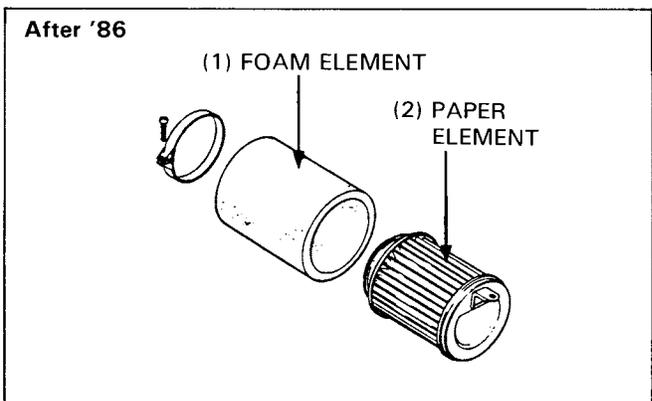
Install the air cleaner case cover and seat/rear fender.

After '86:

Remove the screws and the air cleaner assembly from the frame air cleaner case.



Remove the foam element from the paper element.



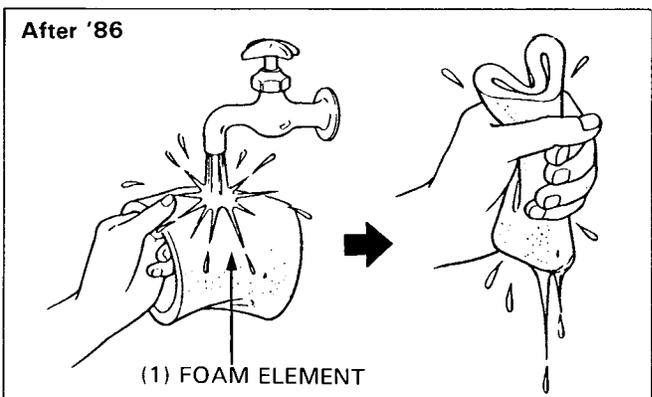
Wash the foam element in clean soapy water and squeeze out the excess water.

CAUTION

- *Do not twist or wring the foam element; the service life of the filter will be reduced.*
- *Do not apply oil to the foam element.*

NOTE

- Replace the foam element if there are any tears or holes in it.



Remove the dust from the paper element by blowing compressed air through the filter. Direct the air from the inside out as much as possible to prevent forcing dirt into the paper. If the paper element is excessively dirty or muddy, wash it with clean water. Shake out the excess water and allow the element to dry thoroughly.

CAUTION

- Use only clean water to wash and rinse the paper element. Using dirty water will allow dirt to get inside the paper element which may cause rapid piston and ring wear.
- Do not apply oil to the paper element.

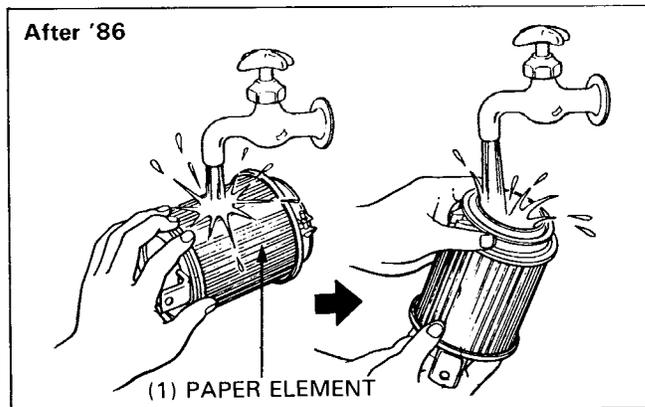
NOTE

- Engine performance will be reduced if the filter elements are wet or excessively dirty.
- If washing an excessively dirty paper element does not restore engine performance, replace the paper element with a new one.

Reinstall the foam element onto the paper element. Be sure that both open ends of the foam element seats fully against the outside edge of the paper element. Reinstall the air cleaner assembly in reverse order of removal.

CAUTION

- When installing the air cleaner elements, check that there is no dust or other foreign matter on the inside surface.



AIR CLEANER CASE DRAIN TUBE

Remove the drain tube and empty any accumulation. Install the drain tube.

NOTE

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

SPARK PLUG

Disconnect the spark plug cap and remove the spark plug. Visually inspect the spark plug electrodes for wear. The center electrode should have square edges and the side electrode should have a constant thickness. Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped. Measure the gap with a wire-type feeler gauge and adjust by carefully bending the side electrode.

SPARK PLUG GAP: 0.6–0.7 mm (0.024–0.028 in)

RECOMMENDED SPARK PLUG:

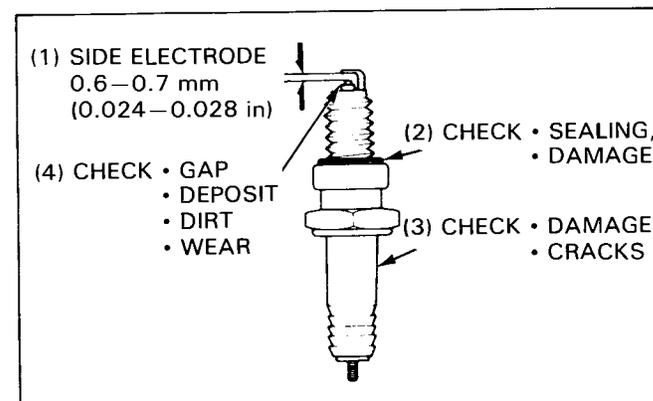
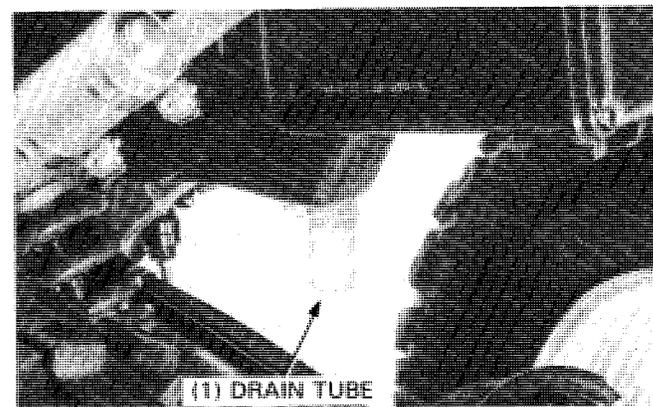
NGK	DR8ES-L
ND	X24ESR-U

Make sure the sealing washer is in good condition. Install the spark plug, tighten it by hand, then tighten with a spark plug wrench.

NOTE

- Tighten a new spark plug 1/2 turn to compress the washer. If reusing a spark plug, it should only take 1/8–1/4 turn after the plug seats.

Connect the spark plug cap.



IGNITION TIMING

NOTE

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

Remove the timing hole cap.

Connect a tachometer and timing light.

Start the engine and allow it to idle.

IDLE SPEED: 1,400 ± 100 rpm

Inspect the ignition timing.

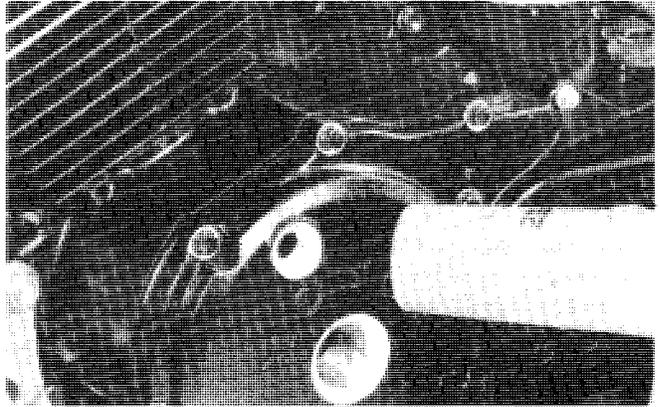
Timing is correct if the "F" mark on the flywheel is aligned with the index mark on the left crankcase cover at idle.

Raise the engine speed and check timing advance.

At 1,800 ± 200 rpm: Timing advance should start.

At 3,500 ± 200 rpm: Timing advance should cease. The index mark should be between the full advance marks.

If the ignition timing is incorrect, refer to page 16-3.



CYLINDER COMPRESSION

Warm up the engine.

Stop the engine and remove the spark plug.

Disconnect the decompressor cable at the cam follower shaft arm.

Insert a compression gauge in the spark plug hole.

Push the choke lever down fully.

Open the throttle lever fully and operate the kick starter pedal several times.

NOTE

- Be sure compression does not leak at the gauge connection.

COMPRESSION: 1,300 ± 100 kPa

(13.0 ± 1.0 kg/cm², 184.7 ± 14.2 psi)

Low compression can be caused by:

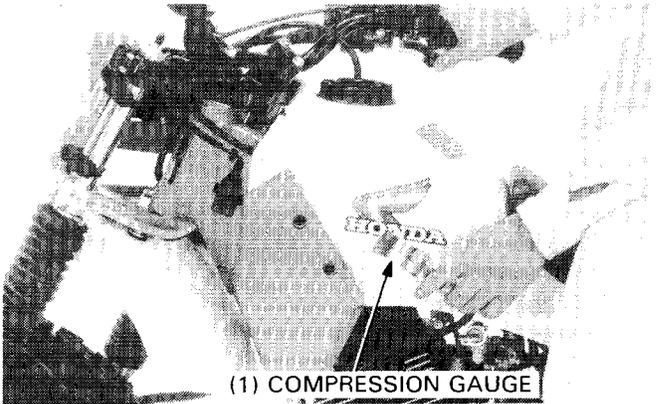
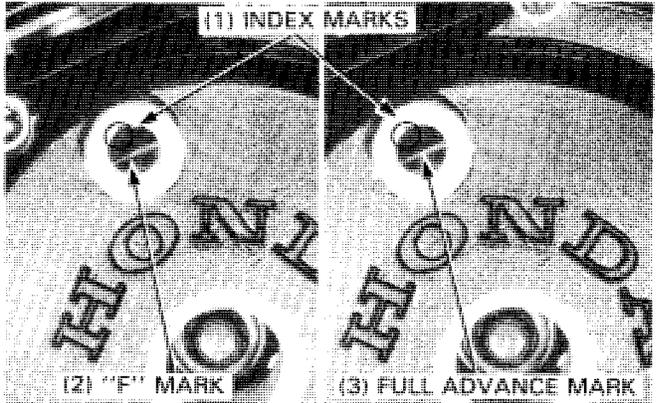
- Improper valve adjustment.
- Valve leakage.
- Blown cylinder head gasket.
- Worn piston ring or cylinder.

High compression can be caused by:

- Carbon deposits in combustion chamber or on piston head.

Connect and adjust the decompressor cable (page 3-9).

Install the spark plug.



VALVE CLEARANCE

NOTE

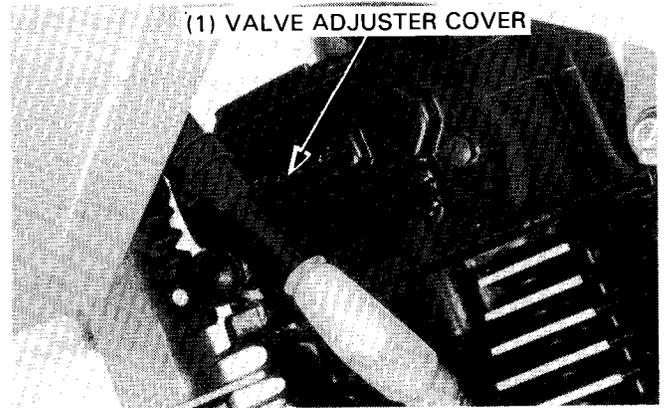
- Inspect and adjust valve clearance while the engine is cold (below 35°C/95°F).

Remove the crankshaft hole cap and timing hole cap.

Rotate the crankshaft counterclockwise and align the "T" mark on the flywheel with the index mark on the left crankcase cover.



Remove the valve adjuster cover.

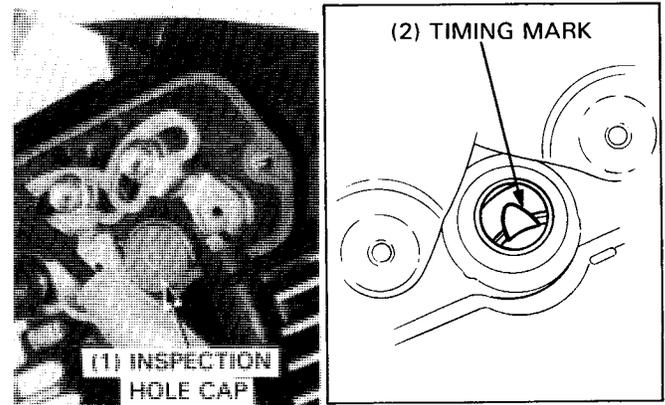


Remove the camshaft inspection hole cap from the cylinder head cover and check that timing mark on the camshaft is visible (facing up).

If the mark is not visible, turn the crankshaft 360° and re-align the "T" mark on the flywheel with the index mark on the left crankcase cover.

NOTE

- When the "T" mark is aligned with the index mark and the timing mark is visible (facing up), the piston is at top dead center on the compression stroke.

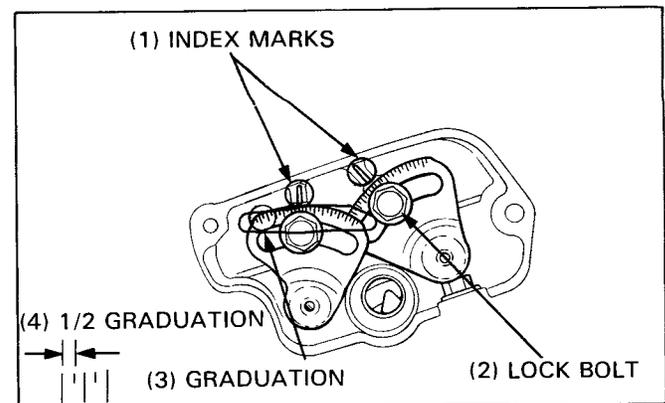


Loosen the valve adjuster lock bolts fully. Move the intake and exhaust valve adjusters counterclockwise fully, until resistance is felt. Then move them clockwise the equivalent of 1/2 graduation. Tighten the adjuster lock bolts.

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

NOTE

- Make sure that the adjusters do not move when tightening the lock bolts.
- 1/2 graduation on the adjusters equals 0.08 mm (0.003 in), which is specified clearance.



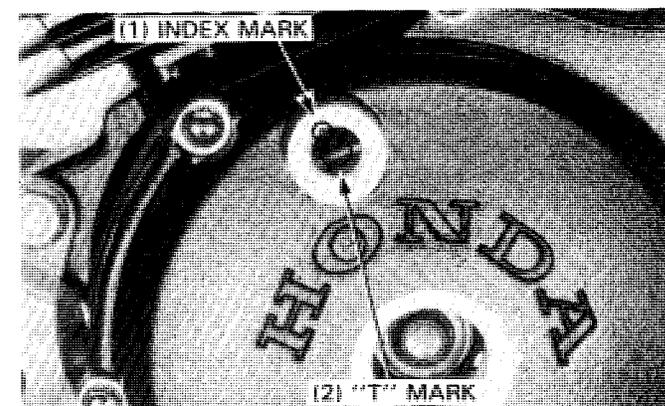
Adjust the decompression system.

DECOMPRESSOR ADJUSTMENT

NOTE

- Always adjust the decompressor cable after adjusting the valve clearance.

Rotate the flywheel counterclockwise and align the "T" mark with the index mark. Make sure the piston is at TDC on the compression stroke.



MAINTENANCE

Measure the free play at the tip of the cam follower shaft arm.

FREE PLAY: 0.5–1.5 mm (0.02–0.06 in)

Adjust by loosening the lock nut and turning the adjusting nut.

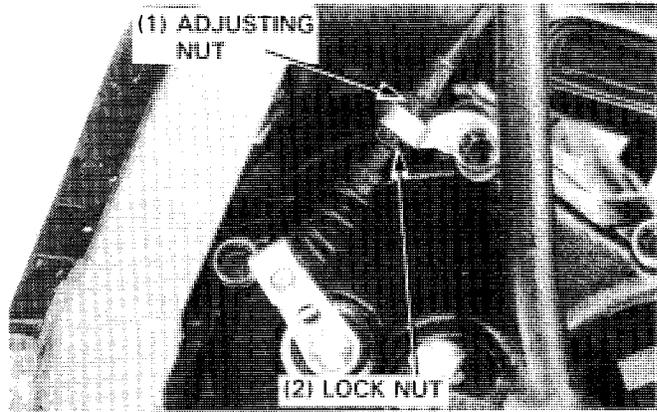
CAUTION

- Excessive free play causes hard starting.
- Insufficient free play may cause erratic engine idle and valve damage.

Install the timing and camshaft inspection hole caps and the valve adjuster cover.

TORQUE: CAMSHAFT INSPECTION HOLE CAP

2.5–4.5 N·m (0.25–0.45 kg·m, 1.8–3.3 ft·lb)



CARBURETOR IDLE SPEED

NOTE

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

After warming up the engine, shift the transmission into neutral and connect a tachometer.

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

IDLE SPEED: 1,400 ± 100 rpm



DRIVE CHAIN

CHAIN SLACK INSPECTION

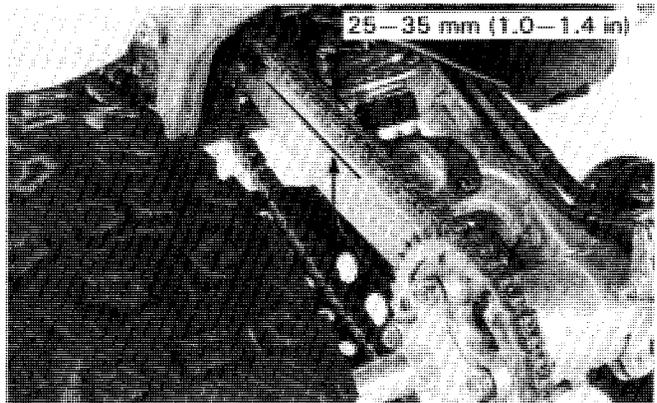
WARNING

- Never inspect or lubricate the drive chain while the engine is running.

With the engine off, shift the transmission into neutral.

Measure the drive chain slack at up side midway between the sprockets.

CHAIN SLACK: 25–35 mm (1.0–1.4 in)



CHAIN SLACK ADJUSTMENT

Loosen the two lock bolts.

Turn the adjuster to decrease or increase chain slack using the adjusting tool provided in the tool kit.

INCREASE: Turn the adjuster clockwise

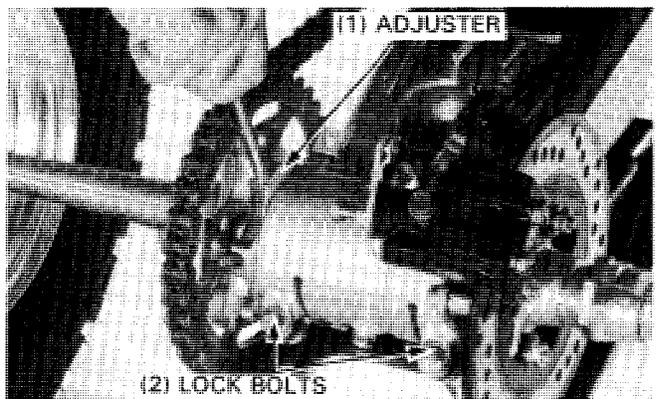
DECREASE: Turn the adjuster counterclockwise

Tighten the lock bolts.

TORQUE: 18–24 N·m (1.8–2.4 kg·m, 13–17 ft·lb)

NOTE

- If drive chain slack is excessive when the adjuster is moved to the limit of adjustment, the drive chain is worn out and must be replaced.

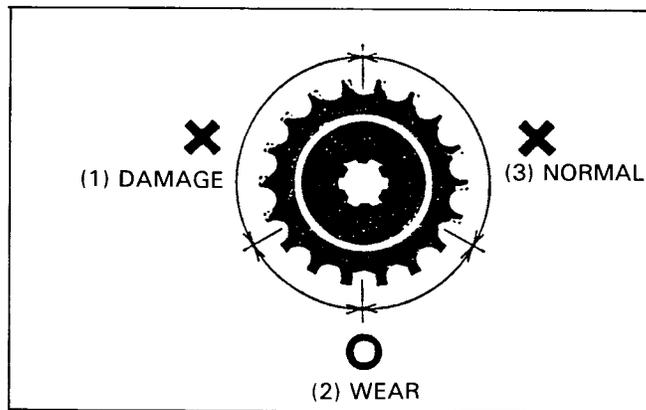


DRIVE CHAIN/SPROCKET INSPECTION/ LUBRICATION

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.



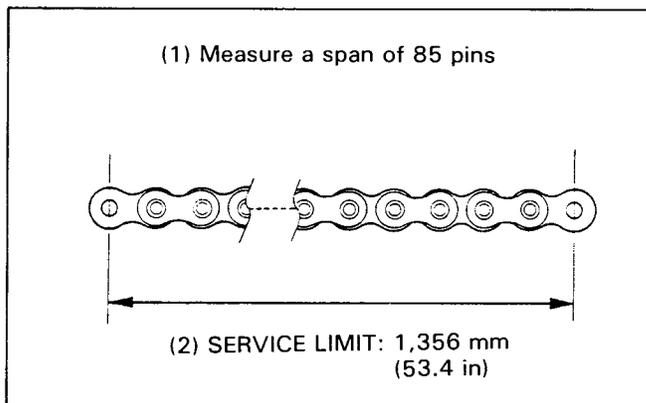
Visually inspect the drive chain for kinks or damage.

Measure a section of the drive chain to determine whether the chain is worn beyond its service limit.

Remove the drive chain and measure the distance between a span of 85 pins from pin center to pin center.

In a new chain, this distance 1,356 mm (53.4 in), the chain is worn out and should be replaced.

**REPLACEMENT DRIVE CHAIN:
DID520 V-6 or RK520SMOZ10**



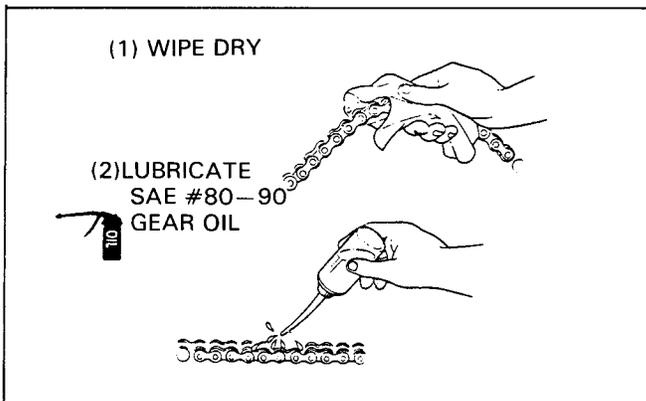
Clean the chain with kerosene. Wipe dry and lubricate only with SAE #80 or #90 gear oil. Commercial chain lubricants may contain solvents which could damage the rubber O-rings.

CAUTION

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

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

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



INSTALLATION

Install the drive chain.

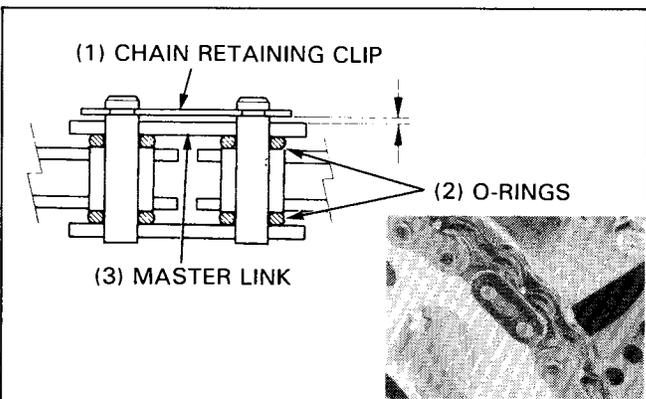
Install the master link with O-rings and chain retaining clip.

Note the installation direction of the chain retaining clip. Its open end should face in the opposite direction of the wheel rotation as shown.

Adjust the drive chain slack.

CAUTION

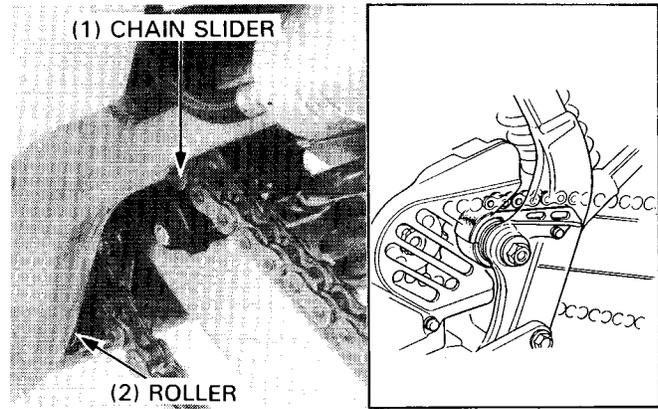
- Do not assemble the drive chain without the four O-rings. Be sure that there is no space between the master link and chain retaining clip.



MAINTENANCE

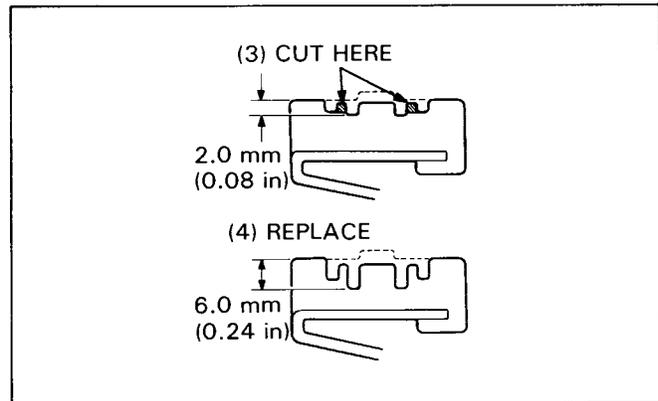
DRIVE CHAIN SLIDER AND ROLLER

Check the drive chain slider at the intervals specified in the Maintenance Schedule.



When the depth of the grooves in the slider reaches 2.0 mm (0.08 in), remove material to lower the height of the center ridge between the grooves to less than 2.0 mm (0.08 in).

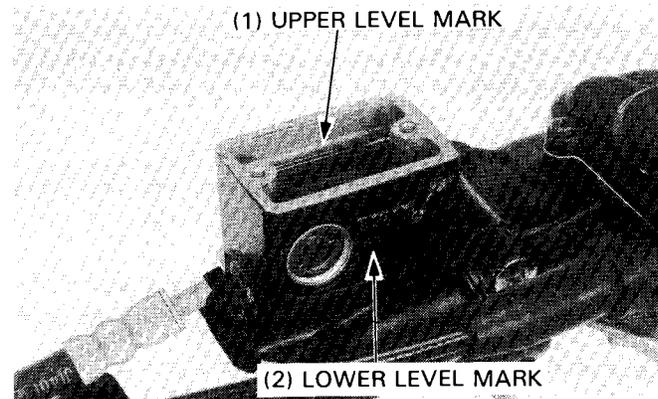
Replace the slider when the depth of the grooves reaches 6.0 mm (0.24 in).



BRAKE FLUID

CAUTION

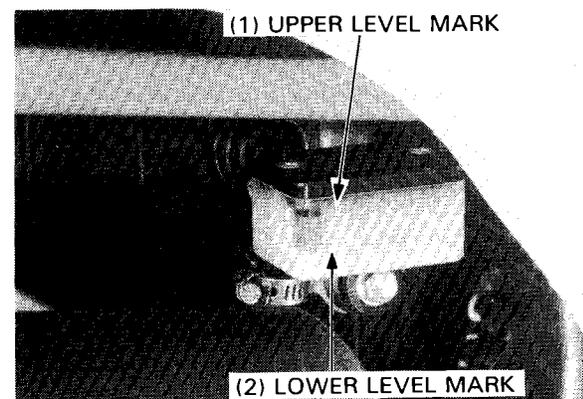
- Do not remove the cap until the handlebar has been turned so that the front reservoir is level.
- Do not mix DOT5 with DOT3 or 4 Brake Fluid.
- Avoid spilling fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.



Check the front and rear brake fluid reservoir levels.

If the level nears the lower level mark, remove the cap and fill the reservoir with DOT-3 or 4 brake fluid to the upper level mark.

Check the entire system for leaks, if either level is low.



BRAKE PADS

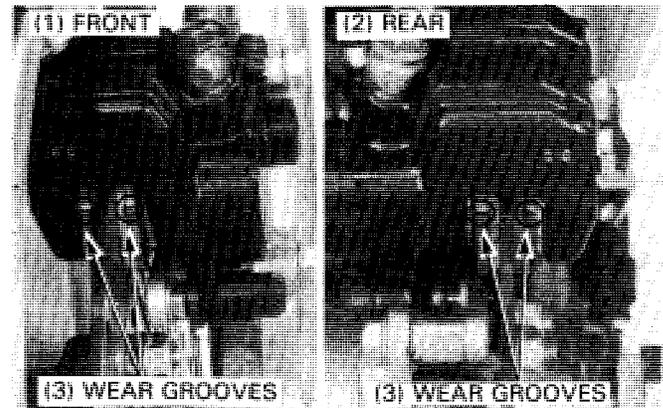
Inspect the front and rear brake pads for wear.

Replace the brake pads if the wear groove on the pads reaches the edge of the brake disc.

CAUTION

- *Always replace the brake pads as a set to assure even disc pressure.*

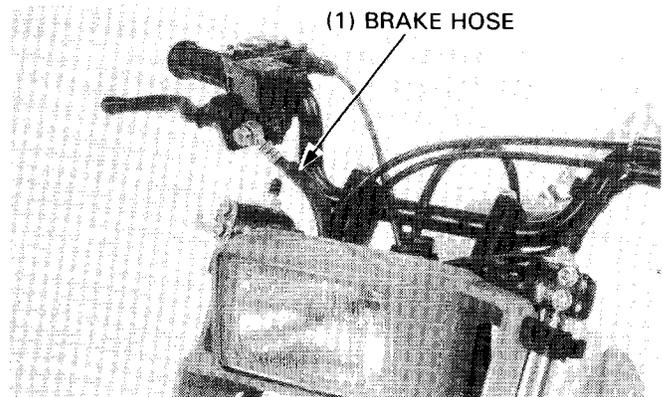
Refer to page 14-5 for brake pad replacement.



BRAKE SYSTEM

Inspect the brake hoses and fittings for deterioration, cracks and signs of leakage. Tighten any loose fittings.

Replace hoses and fittings as required.



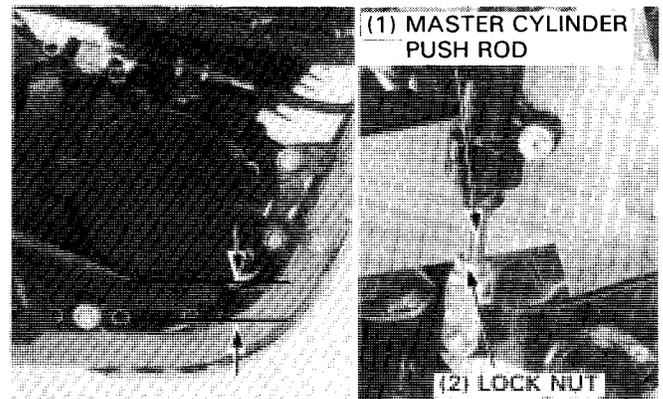
REAR BRAKE PEDAL HEIGHT

Check that the distance between the pedal and upper face of the footpeg is 20 mm (3/4 in).

CAUTION

- *Incorrect brake pedal height can cause brake drag.*

To adjust the height, loosen the lock nut and turn the master cylinder push rod. Tighten the lock nut.

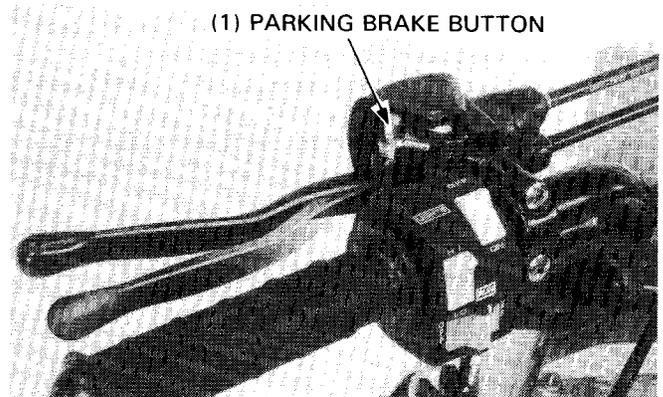


PARKING BRAKE

A parking brake adjustment may be required if the parking brake does not hold the rear wheels properly:
 Disconnect the clutch cable at the lower end.
 Press the parking brake button and pull in the clutch/parking brake lever.

Measure the free play at the tip of the lever.

FREE PLAY: '86: 31–39 mm (1-3/16–1-1/2 in)
 After '86: 25–30 mm (1–1-1/8 in)



MAINTENANCE

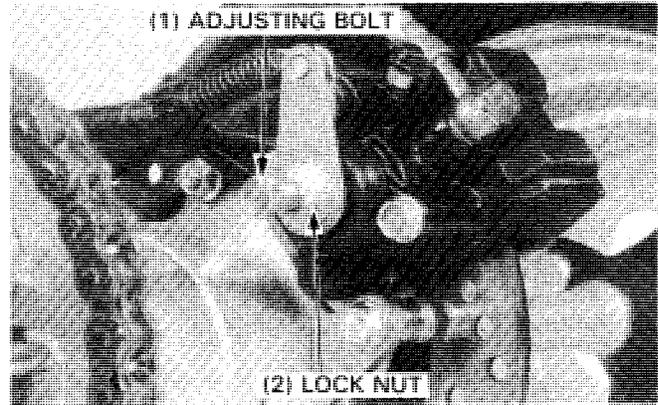
'86:

Adjust as follows:

Loosen the lock nut on the rear caliper.

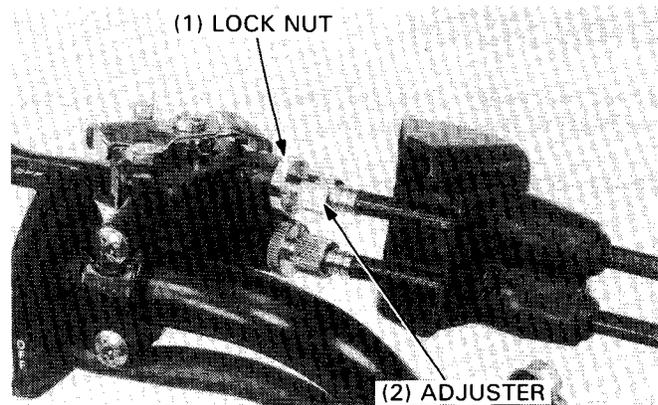
Screw in the adjusting bolt until you feel resistance without applying the clutch/parking brake lever, and tighten the lock nut.

TORQUE: 15–20 N·m (1.5–2.0 kg-m, 11–15 ft-lb)



Recheck the lever free play and adjust, if necessary, by loosening the lock nut and turning the adjuster.

Tighten the lock nut, and reconnect the clutch cable.



After '86:

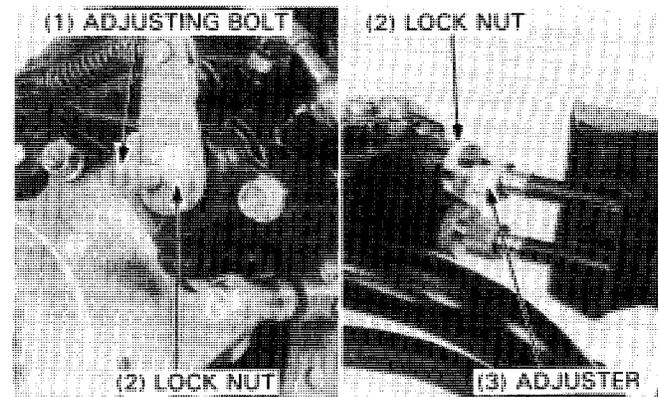
Adjust as follows:

Temporarily adjust the clutch lever free play to more than 30 mm (1-1/8 in) (page 3-15).

Loosen the lock nut on the parking brake lever and screw in the adjuster completely.

Loosen the lock nut on the rear caliper and turn the adjusting bolt clockwise until you feel resistance.

Then turn the adjusting bolt 1/8 counterclockwise and tighten the lock nut.

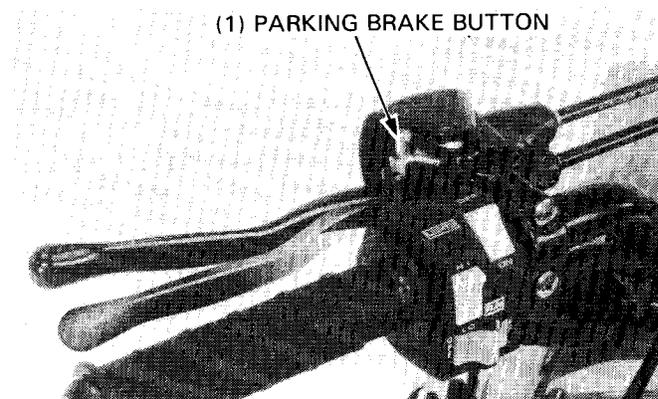


Push down the parking brake button and then squeeze the parking brake lever until firm resistance is felt.

Measure the distance the parking brake lever has moved; the distance should be 25–30 mm (1–1-1/8 in).

If necessary, turn the adjuster and tighten the lock nut.

Adjust the clutch lever free play to 10–20 mm (3/8–3/4 in) (page 3-15).



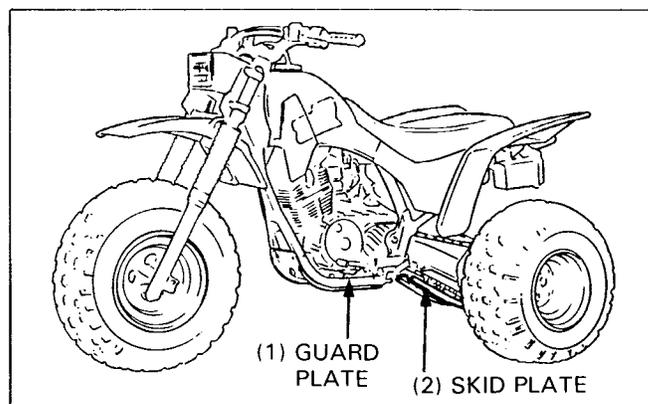
SKID PLATE, GUARD PLATE

The engine under guard and skid plate protect the engine and rear axle holder from rocks.

Check the under guard and plate for cracks, damage or looseness at intervals shown in the Maintenance Schedule.

Replace the under guard and plate with new ones if they are cracked or damaged.

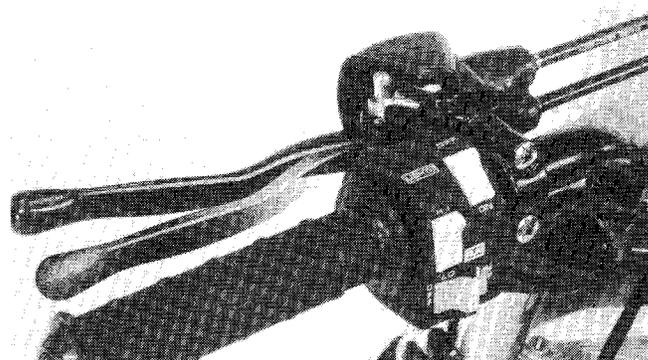
If the under guard and plate bolts are loose, tighten them securely.



CLUTCH SYSTEM

Measure the clutch lever free play.

FREE PLAY: 10–20 mm (3/8–3/4 in)



Adjust as follows:

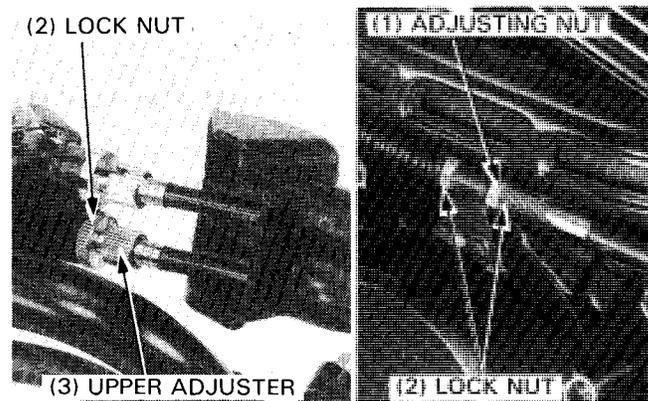
Perform minor adjustments with the upper adjuster.
Pull the cover back.

Loosen the lock nut and turn the adjuster.
Tighten the lock nut.

Perform major adjustments with the lower adjusting nut.

Loosen the lock nut and turn the adjusting nut.
Tighten the lock nut.

Check the clutch operation.



SUSPENSION

FRONT SUSPENSION

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

Check the entire fork assembly for signs of leaks or damage.
Replace damaged components which are unreparable.

NOTE

- Do not repair bent fork tubes. They must be replaced.

Tighten all nuts and bolts to the specified torque values.



MAINTENANCE

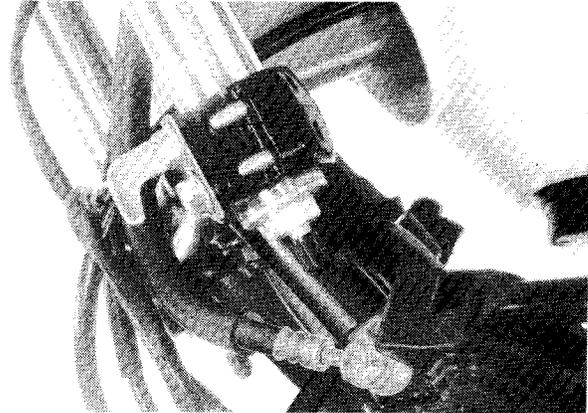
Raise the front of the vehicle so that there is no weight on the front wheel.

Check air pressure in each fork tube.

STANDARD AIR PRESSURE: 0 kPa (0 kg/cm², 0 psi)

NOTE

- Use of more than 70 kPa (0.7 kg/cm², 10 psi) is not recommended because fork action becomes very stiff.



REAR SUSPENSION

Check the shock absorber for a leak or damage.

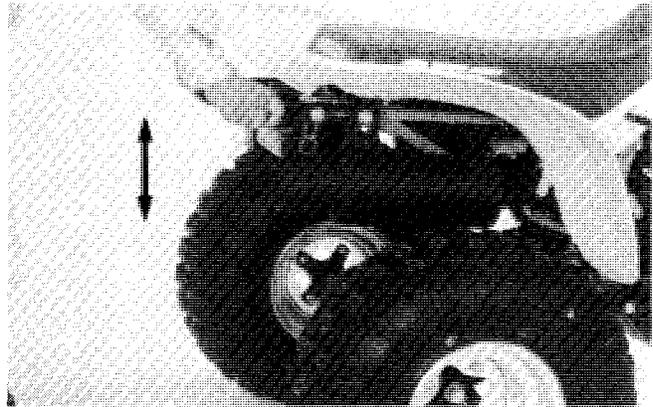
Check the suspension operation.

Adjust the spring preload if necessary (page 13-7).

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

Move the rear axle sideways with force to see if the wheel and swingarm bearings are worn.

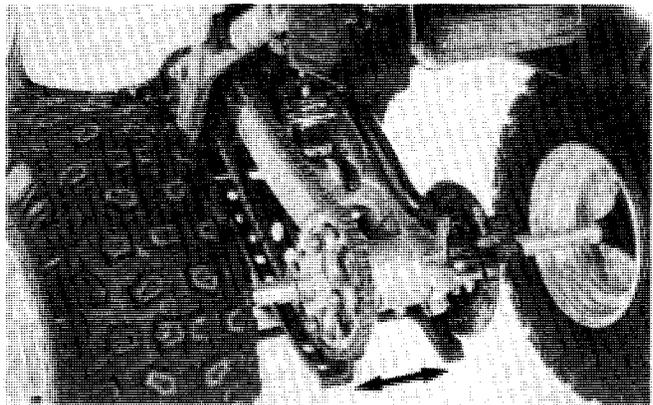
Replace the bearings if there is any play (section 13).



NUTS, BOLTS, FASTENERS

Tighten bolts, nuts and fasteners at regular intervals as shown in the Maintenance Schedule.

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

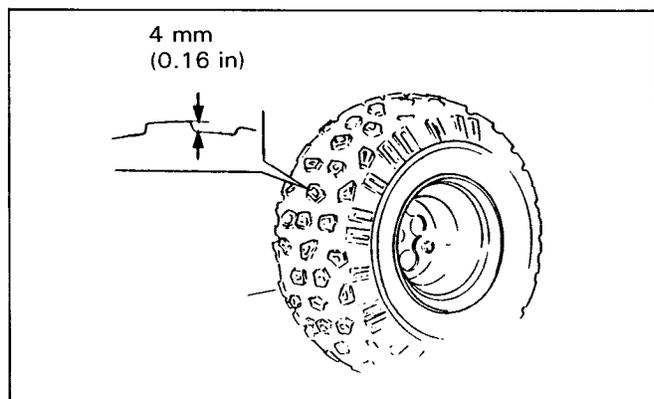
Check the tire for cuts, imbedded nails, or other damage.

Measure the groove depth of tires at the center as shown. Operating the vehicle with excessively worn tires will decrease traction and increase skidding.

WARNING

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

Minimum tread depth: 4 mm (0.16 in)



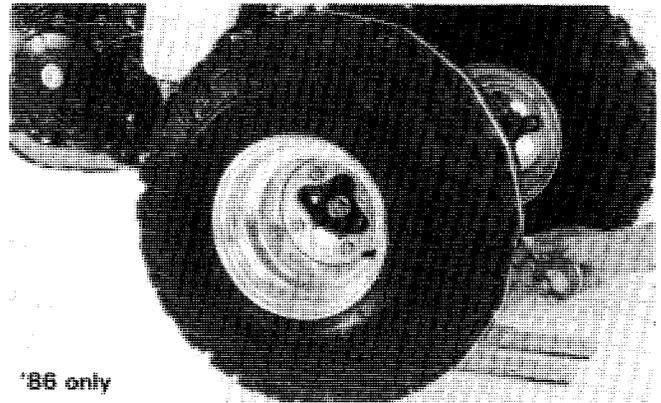
NOTE

- Tire pressure should be checked when the tires are COLD.
- '86: Raise the wheels off the ground when measuring tire circumferences.

'86:

Check the tire pressure and measure the tire circumference. Adjust accordingly.

	Front	Rear
Recommended pressure	3.6 psi (25 kPa, 0.25 kg/cm ²)	2.5 psi (17 kPa, 0.17 kg/cm ²)
Standard tire circumference	1,890 mm (74.4 in)	1,720 mm (67.7 in)
Max. pressure	4.1 psi (28 kPa, 0.28 kg/cm ²)	2.9 psi (20 kPa, 0.20 kg/cm ²)
Min. pressure	3.2 psi (22 kPa, 0.22 kg/cm ²)	2.0 psi (14 kPa, 0.14 kg/cm ²)



After '86:

Check the tire pressure and adjust accordingly.

	Front	Rear
Recommended pressure	3.6 psi (25 kPa, 0.25 kg/cm ²)	2.5 psi (17.5 kPa, 0.175 kg/cm ²)
Max. pressure	4.1 psi (28 kPa, 0.28 kg/cm ²)	2.9 psi (20.5 kPa, 0.205 kg/cm ²)
Min. pressure	3.2 psi (22 kPa, 0.22 kg/cm ²)	2.1 psi (14.5 kPa, 0.145 kg/cm ²)

STEERING HEAD BEARINGS

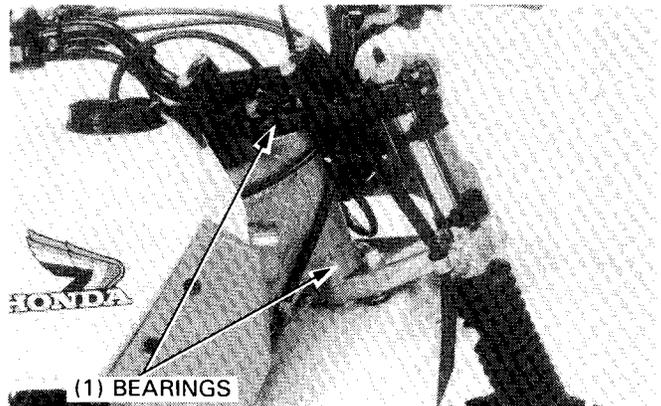
NOTE

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

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

If the handlebar moves unevenly, binds or has vertical play adjust the steering head bearings (page 11-25).

If the handlebar still moves unevenly binds or has vertical play after adjustment, inspect the steering head bearings and replace if necessary (page 11-23).

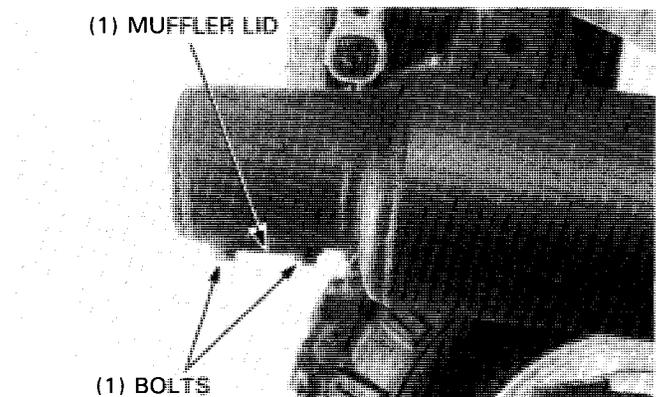


SPARK ARRESTER

WARNING

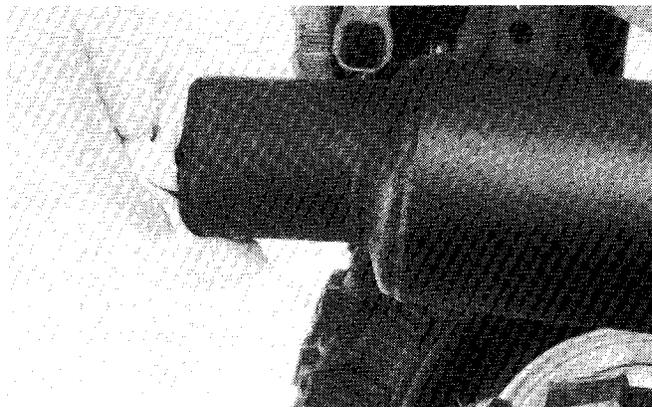
- Do not remove or install the muffler lid while the exhaust pipe is hot.
- Perform this operation in a well-ventilated area, free from fire hazard.
- Use adequate eye protection.

Remove the muffler lid. Block the end of the muffler with a shop towel.



MAINTENANCE

Start the engine and rev it up to blow accumulated carbon deposits out the muffler.

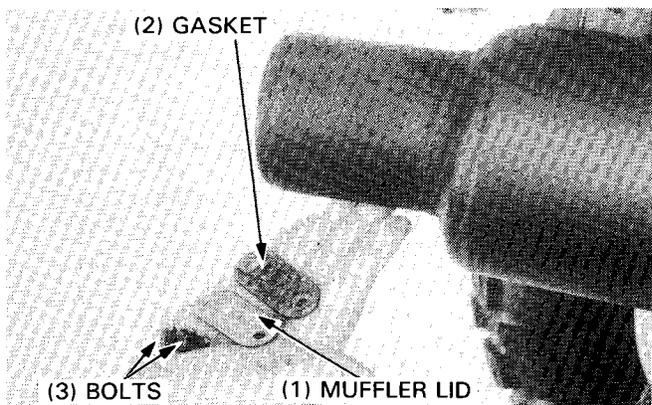


Be sure that the muffler lid bolts and gasket are in good condition. Replace the bolts and gasket if necessary.

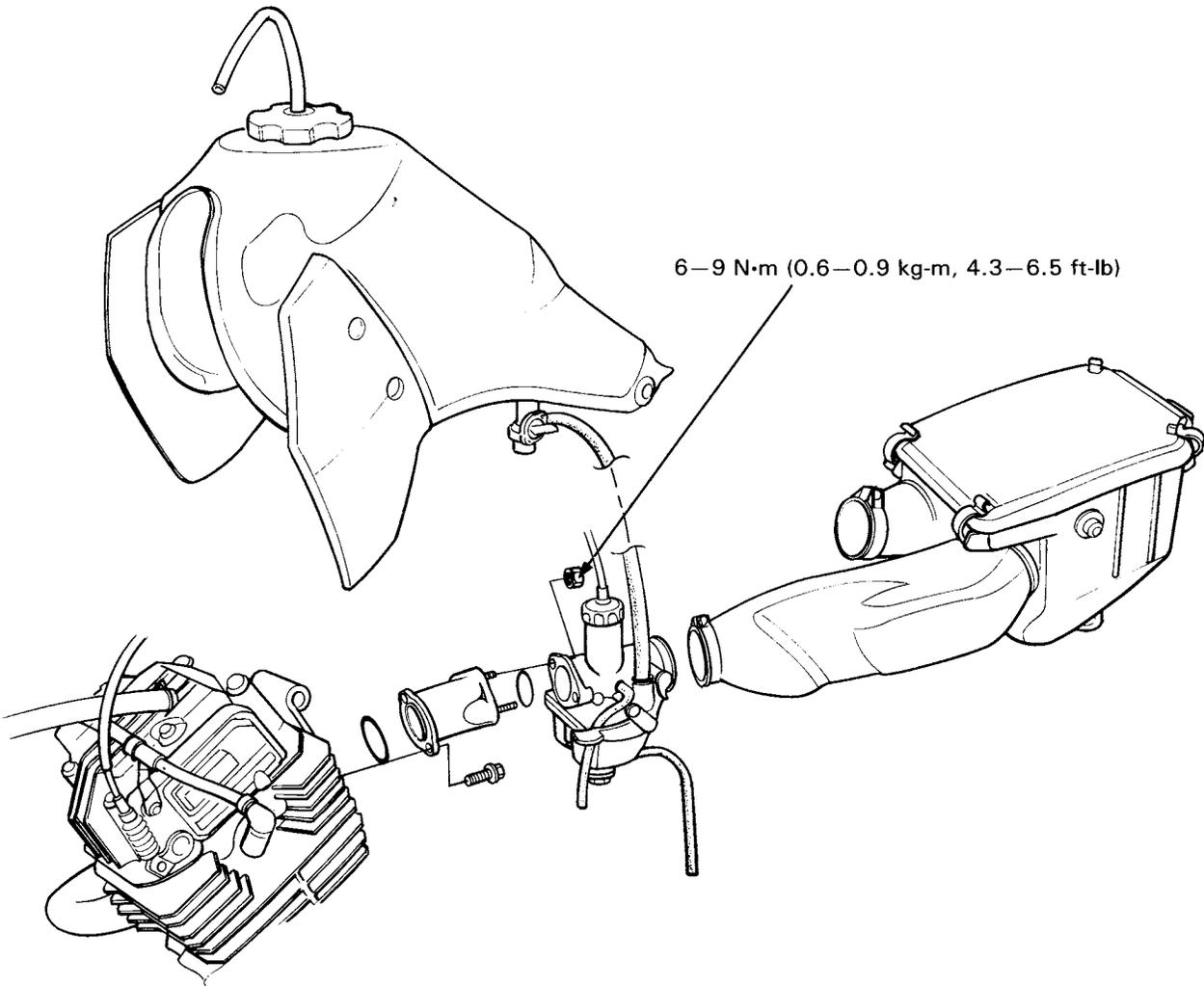
Install the muffler lid and gasket and tighten the bolts securely.

CAUTION

- *Do not remove the two screws from the end of the spark arrester.*
- *The two mounting screws must be installed in the spark arrester body at all times for the spark arrester to be effective.*



MEMO



TROUBLESHOOTING

Engine cranks but won't start

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

Engine idles roughly, stalls, or runs poorly

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

Lean mixture

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

Rich mixture

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

FUEL TANK

Slide the release lever to the left and remove the seat/rear fender.

Turn the fuel valve "OFF" and disconnect the fuel line at the fuel valve. Remove the fuel tank mounting bolts and the fuel tank.

WARNING

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

Use a drain pan and check that fuel flows freely out of the fuel valve by turning the fuel valve "ON".

If flow is restricted, clean the fuel strainer screen and fuel strainer.

Check the vent hole in the filler cap for blockage.

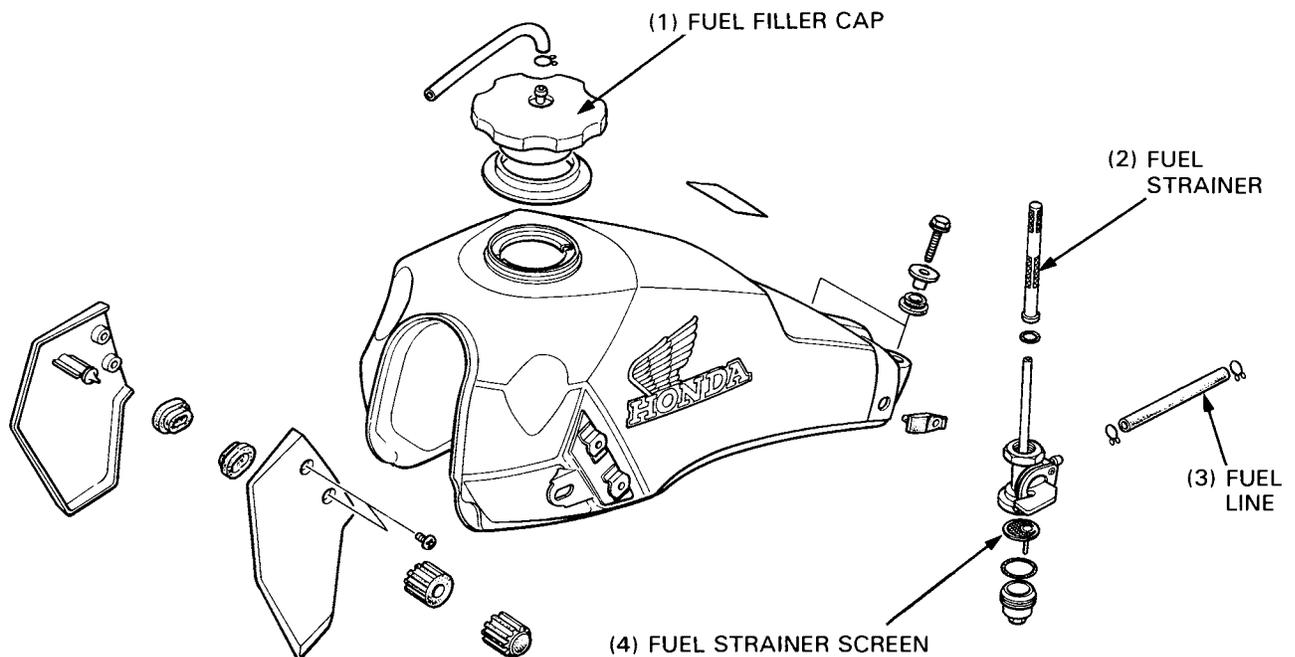
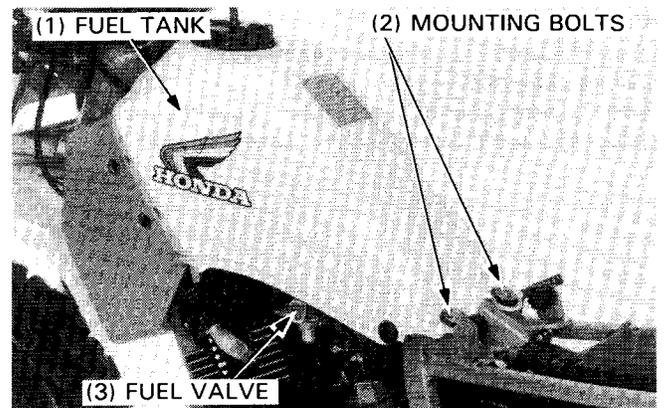
Install the fuel tank in the reverse order of removal. Grease the seat latch and install the seat/rear fender. Tighten the fuel valve lock nut.

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

CAUTION

- *Do not over-tighten the fuel valve lock nut.*

Turn the fuel valve "ON" and make sure that there are no fuel leaks.

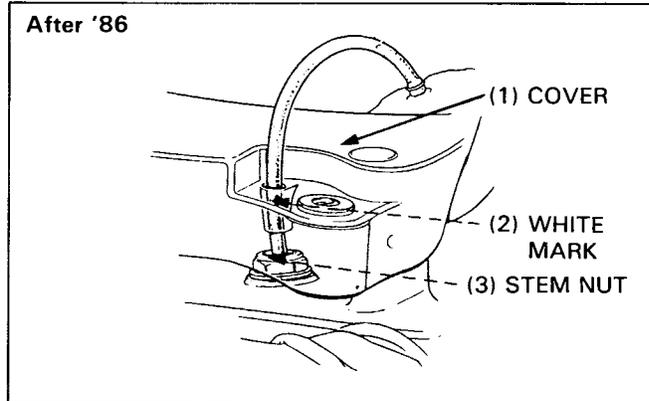


FUEL SYSTEM

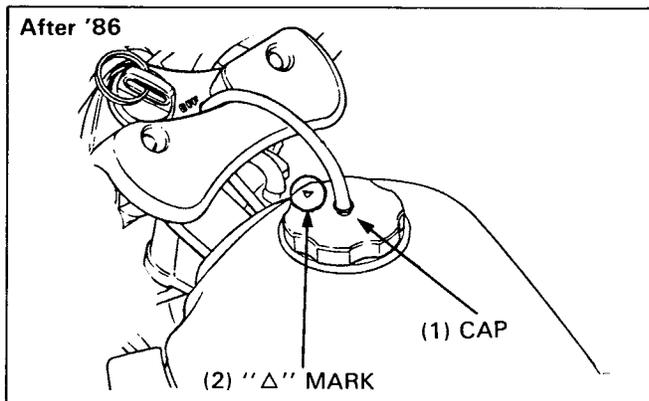
After '86:

Insert the breather tube into the hole of the handlebar cover and steering stem nut.

Push the tube in far enough so that the white mark on it is not visible above the surface of the handlebar cover.



After refilling the fuel tank, be sure to tighten the fuel filler cap firmly by turning it clockwise until the "Δ" mark on the cap faces forward.



AIR CLEANER CASE

Slide the release lever to the left and remove the seat/rear fender.

Loosen the connecting tube bands.

Remove the connecting tube (air cleaner case-to-carburetor).

Loosen the inlet tube band.

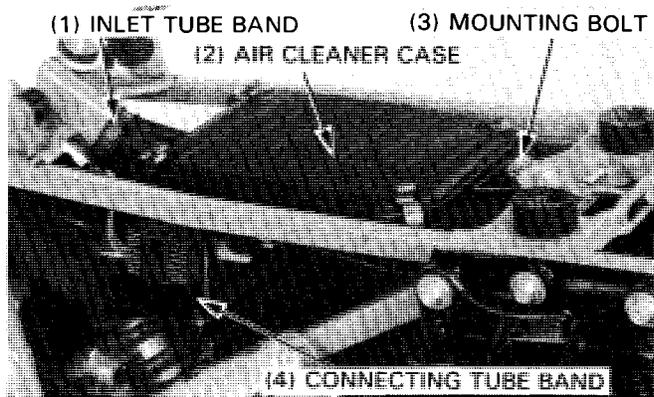
Remove the air cleaner case mounting bolt and the case.

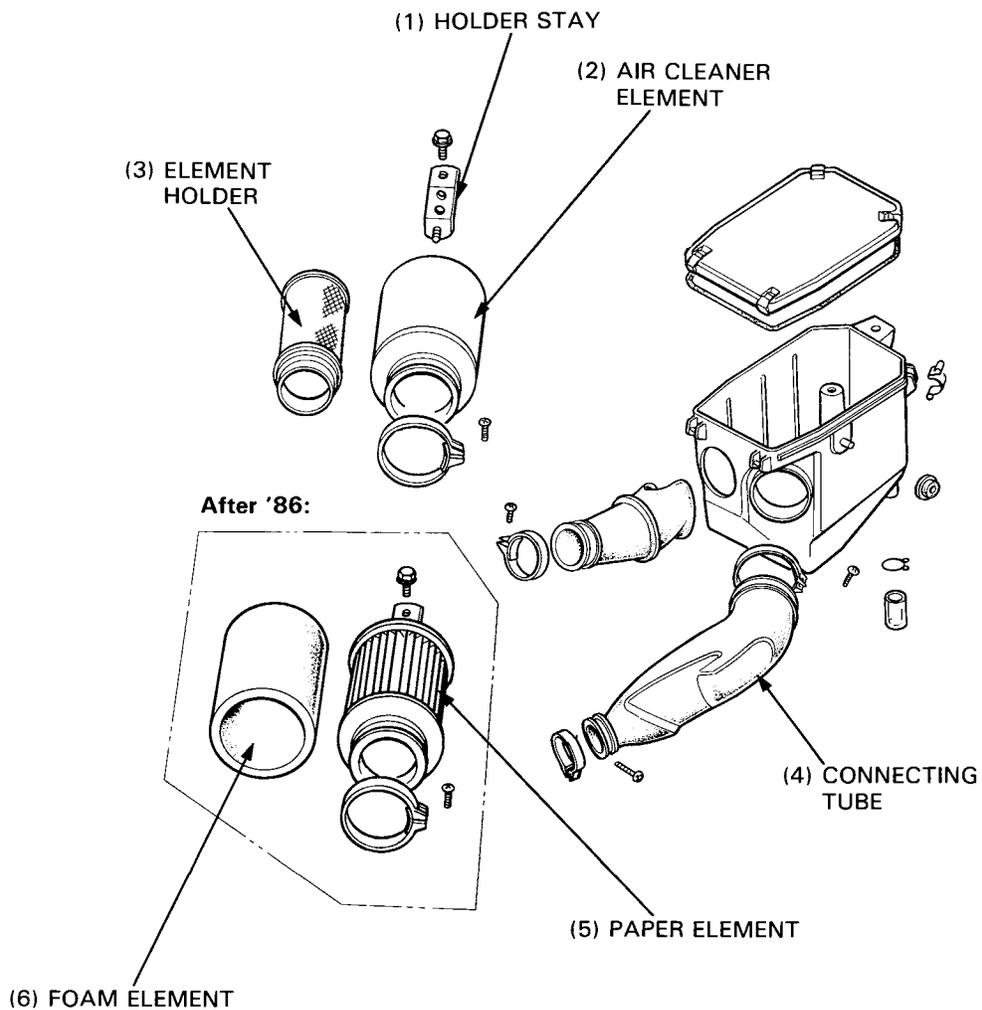
For air cleaner element service, see page 3-5.

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

NOTE

- Be sure that the connecting and inlet tube bands are tightened securely.





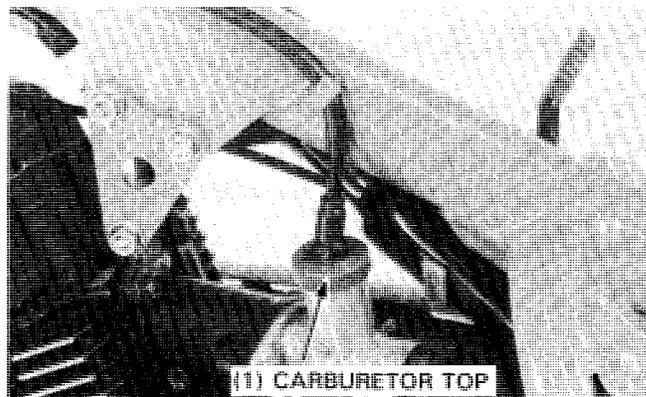
THROTTLE VALVE

REMOVAL/DISASSEMBLY

Slide the release lever to the left and remove the seat/rear fender.

Remove the fuel tank (page 4-3).

Remove the carburetor top and pull out the throttle valve.



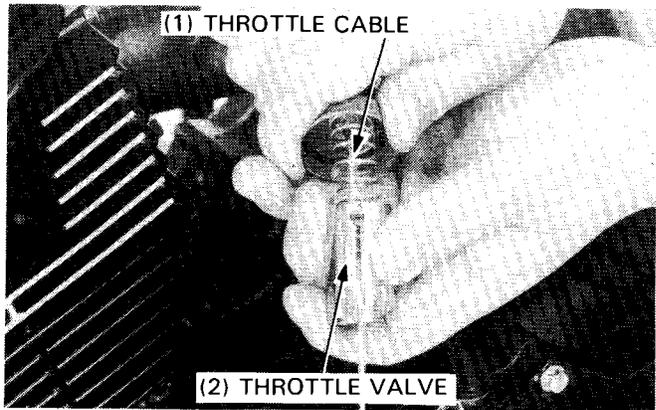
FUEL SYSTEM

Disconnect the throttle cable from the throttle valve.

Pry out the retainer and remove the jet needle from the throttle valve.

CAUTION

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



INSPECTION

Check the throttle valve and jet needle for wear or damage.

ASSEMBLY/INSTALLATION

Install the needle clip on the jet needle.

STANDARD SETTING:

'86:

PD64A **A**: 2nd groove

PD64A **B**, **C**: 3rd groove

After '86: 3rd groove

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

Connect the throttle cable to the throttle valve.

Align the lug on carburetor body with the groove in the throttle valve.

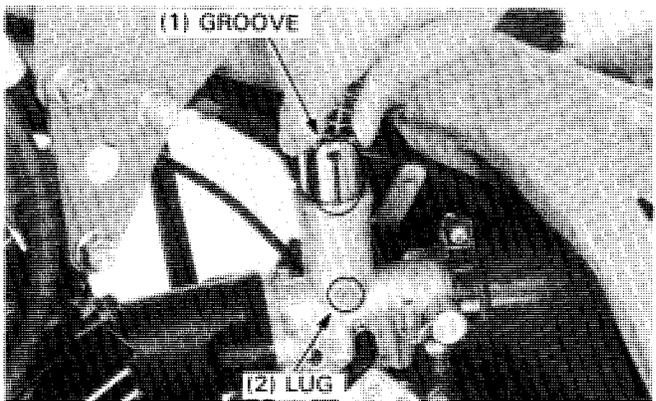
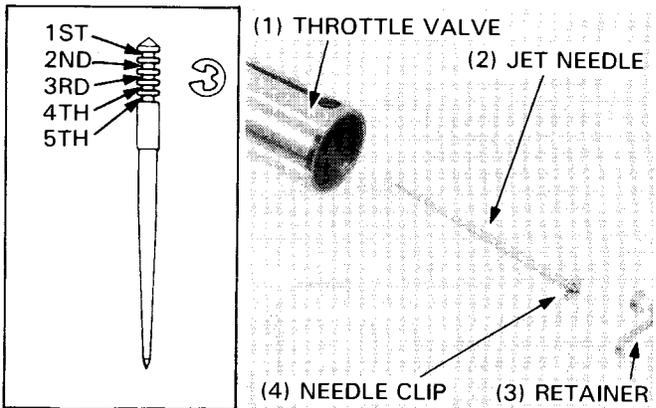
Slide the throttle valve into the carburetor body and tighten the carburetor top.

Install the fuel tank.

Grease the seat latch and install the seat/rear fender.

Perform the following adjustments.

- Throttle lever free play (page 3-4).
- Idle speed adjustment (page 3-10).



CARBURETOR REMOVAL

Slide the release lever to the left and remove the seat/rear fender.

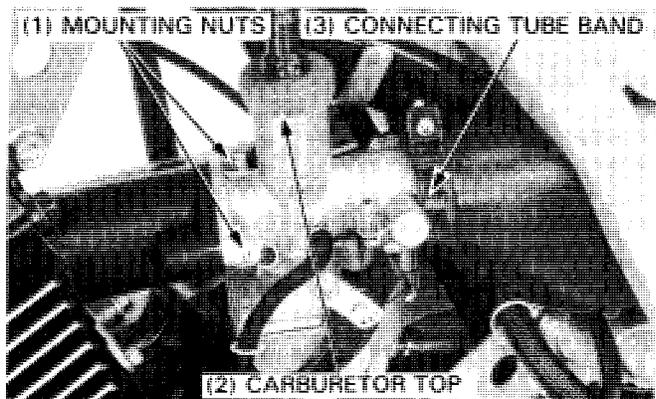
Remove the fuel tank (page 4-3).

Loosen the drain screw and drain the carburetor.

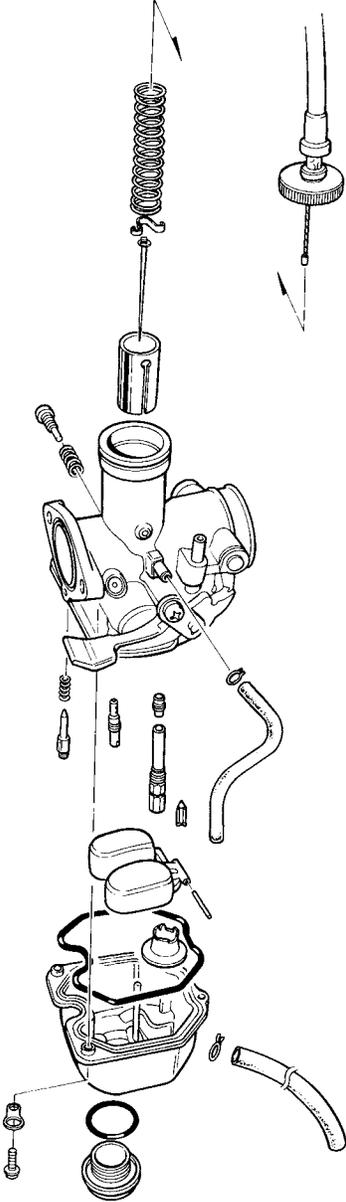
Remove the carburetor top.

Loosen the connecting tube band.

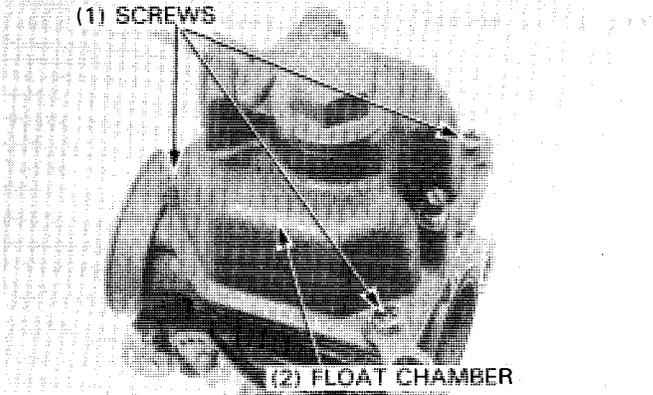
Remove the carburetor mounting nuts and remove the carburetor.



CARBURETOR DISASSEMBLY

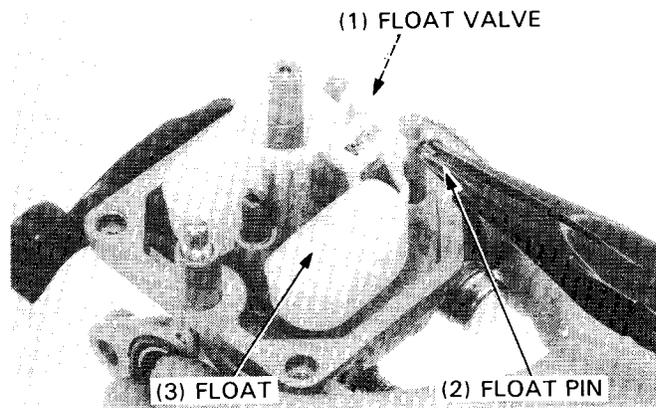


Remove the float chamber from the carburetor body.

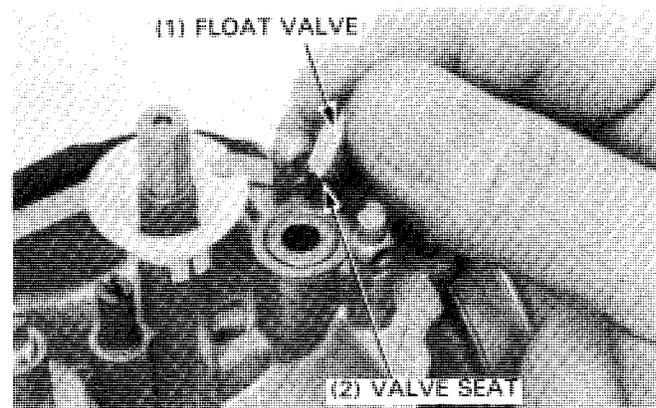


FUEL SYSTEM

Remove the float pin, float and float valve.



Inspect the float valve and valve seat for grooves, nicks or contamination.
Inspect the operation of the float valve.

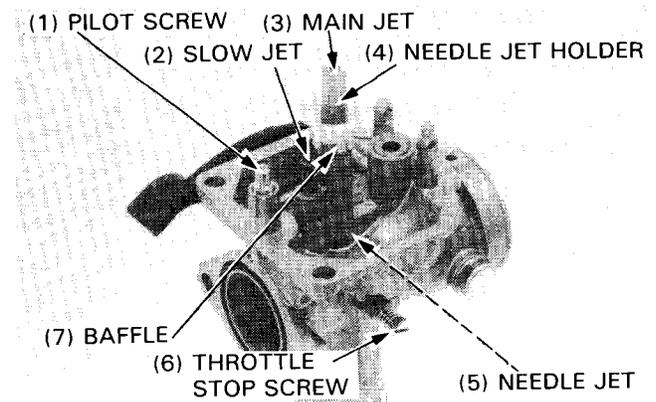


Remove the baffle, main jet, needle jet holder and needle jet.
Remove the slow jet and the throttle stop screw.
Turn the pilot screw in and record the number of turns before it seats lightly. Use this as a reference for reinstallation.

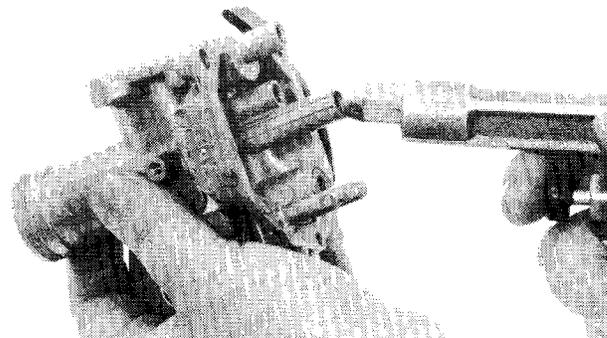
CAUTION

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

Remove the pilot screw.
Inspect the pilot screw and each jet and replace them if they are worn or damaged.



Blow open all jets and body openings with compressed air.



CARBURETOR ASSEMBLY

Clean the main jet, needle jet holder, slow jet and pilot screw in cleaning solvent and blow them open with compressed air. Install the needle jet, needle jet holder and main jet.

Install the slow jet.

Install the spring and throttle stop screw.

Install the O-ring (After '86: O-rings), spring seat, spring and pilot screw.

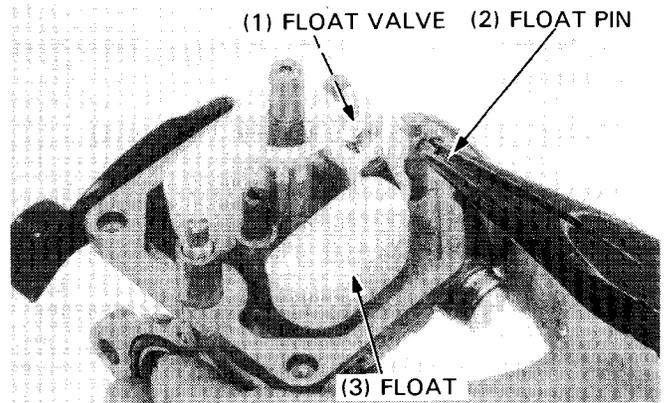
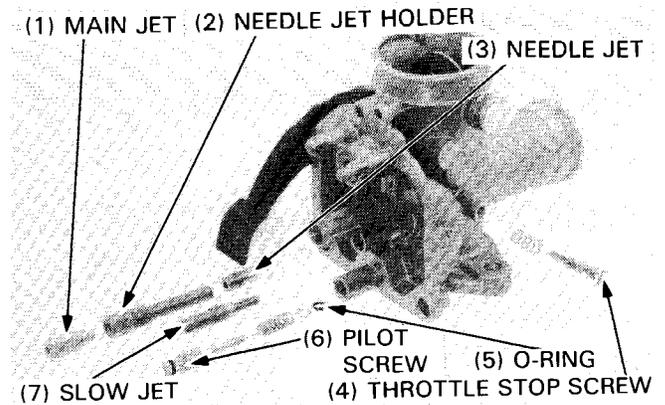
Turn the pilot screw to the original position as noted during removal.

NOTE

- Use new-O-rings whenever the carburetor is reassembled.
- Handle all jets with care. They can easily be scored or scratched.

Install the baffle.

Install the float, float valve and float pin.



FLOAT LEVEL INSPECTION

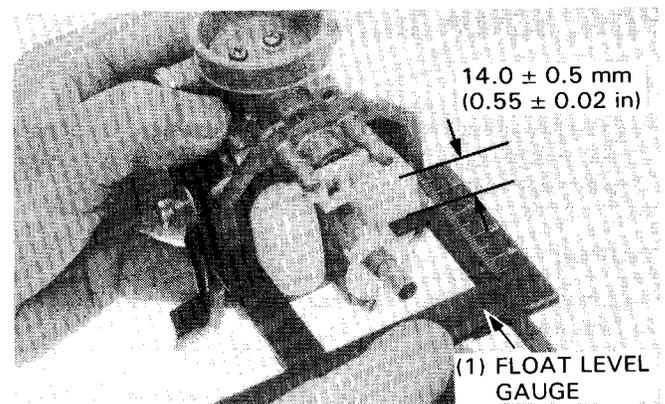
Measure the float level with the float tang just touching the float valve.

FLOAT LEVEL: 14.0 ± 0.5 mm (0.55 ± 0.02 in)

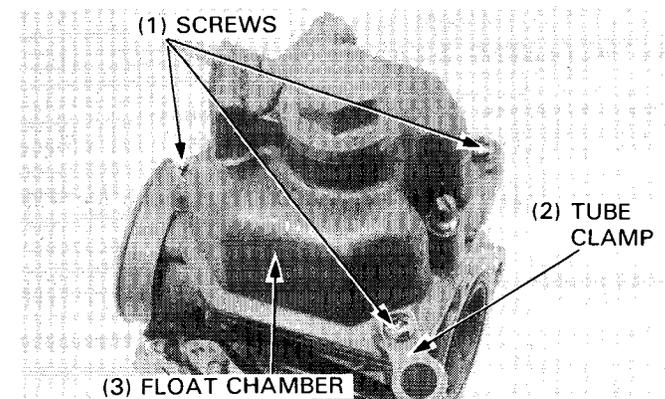
Replace the float, if the level does not meet the specification.

TOOL:

Float level gauge **07401-0010000**

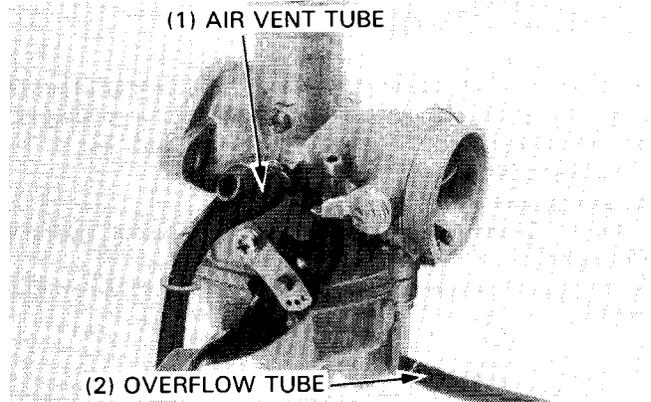


Install the tube clamp and float chamber as shown.



FUEL SYSTEM

Install the air vent tube and overflow tube as shown.



CARBURETOR INSTALLATION

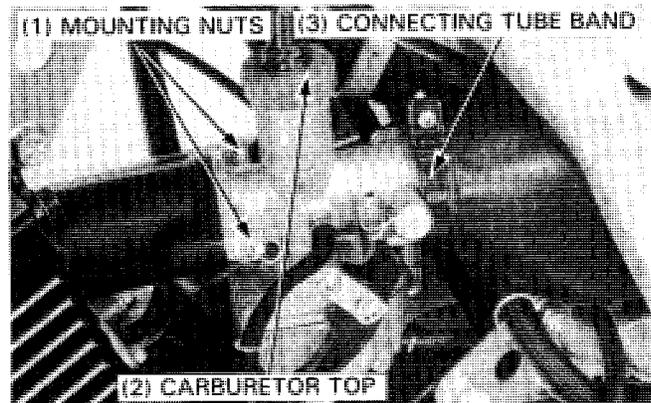
Install the carburetor in the frame and tighten the carburetor mounting nuts.

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

Tighten the connecting tube band securely.
Install the carburetor top (page 4-6).
Install the fuel tank (page 4-3), and the seat/rear fender.

After installing the carburetor, make the following adjustments:

- Throttle lever free play (page 3-4).
- Idle speed adjustment (page 3-10).



PILOT SCREW ADJUSTMENT

NOTE

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

CAUTION

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

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

INITIAL OPENING: 2 turns out

Warm the engine up to operating temperature.
Stop the engine and connect a tachometer.

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

IDLE SPEED: 1,400 ± 100 rpm

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



HIGH ALTITUDE ADJUSTMENT

NOTE

- The standard jetting can be used up to 6,500 ft (2,000 m) and the high altitude jetting can be used down to 5,000 ft (1,500 m). It is not recommended to exceed these limits. See CAUTION below.

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

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

The high altitude carburetor adjustment is performed as follows:
 Remove the carburetor (page 4-7), then remove drain plug. Replace the standard main jet with the high altitude type. Assemble and install the carburetor.

Adjust the pilot screw to the specifications.
 Start the engine and adjust the idle speed at high altitude to ensure proper high altitude operation.

CAUTION

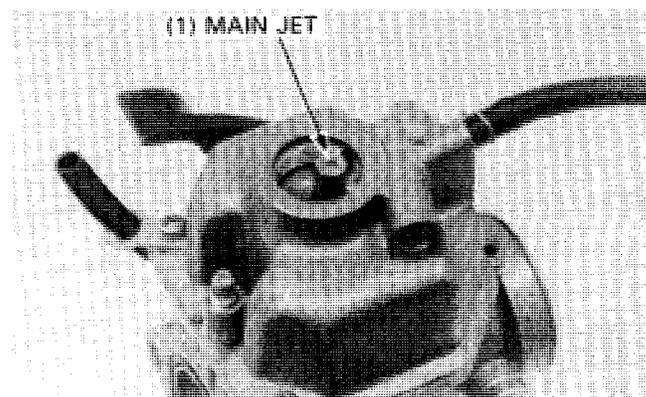
- Sustained operation below 5,000 feet (1,500 m) with the high altitude settings may cause engine overheating and engine damage. Install the standard main jet and return the pilot screw to the factory pre-set position when riding below 5,000 feet (1,500 m).*

SPECIFICATIONS '86:

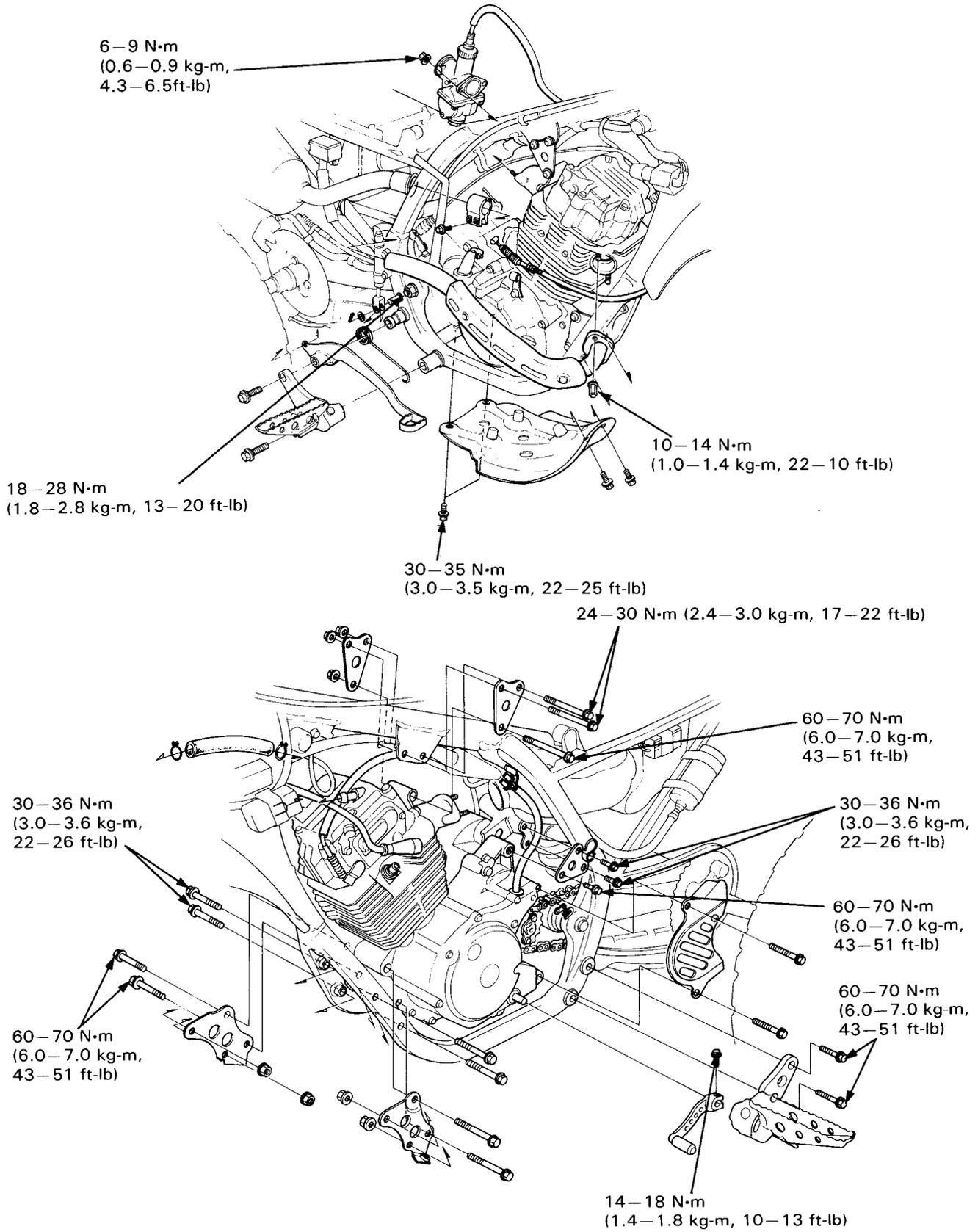
		Below 6,500 ft (2,000 m)	Above 5,000 ft (1,500 m)
		#122	#115
Main jet	PD64A A	#122	#115
	PD64A B, C	#112	#108
Pilot screw opening		Factory pre-set	1/4 turn in from original position

After '86:

		Below 6,500 ft (2,000 m)	Above 5,000 ft (1,500 m)
		#112	#108
Main jet		#112	#108
Pilot screw opening		Factory pre-set	1/4 turn in from original position



ENGINE REMOVAL/INSTALLATION



5. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION

5-1 ENGINE INSTALLATION

5-4

ENGINE REMOVAL

5-2

SERVICE INFORMATION

GENERAL

- A floor jack or other adjustable support is required to support and maneuver the engine.
- The following parts or components can be serviced with the engine installed in the frame.

Cylinder head	Section 6
Cylinder/piston	Section 7
Clutch/oil pump/kick starter/ gearshift linkage	Section 8
Alternator	Section 9

SPECIFICATIONS

Engine dry weight	29 kg (64 lb)
Engine oil capacity	1.8 liter (1.90 US qt, 1.59 Imp qt) at disassembly 1.5 liter (1.59 US qt, 1.32 Imp qt) after draining

TORQUE VALUES

Top engine hanger plate bolt	8 mm	24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
	10 mm	60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Front engine hanger plate bolt	8 mm	30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)
	10 mm	60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Rear engine hanger plate bolt	8 mm	30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)
	10 mm	60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Engine lower mounting bolt	10 mm	60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Drive sprocket bolt		10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Gearshift pedal bolt		14–18 N·m (1.4–1.8 kg-m, 10–13 ft-lb)
Footpeg bolt		60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Exhaust pipe joint nut		10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Exhaust pipe clamp bolt		18–28 N·m (1.8–2.8 kg-m, 13–20 ft-lb)
Carburetor mounting nut		6–9 N·m (0.6–0.9 kg-m, 4.3–6.5 ft-lb)
Engine guard plate bolt		30–35 N·m (3.0–3.5 kg-m, 22–25 ft-lb)

5

ENGINE REMOVAL/INSTALLATION

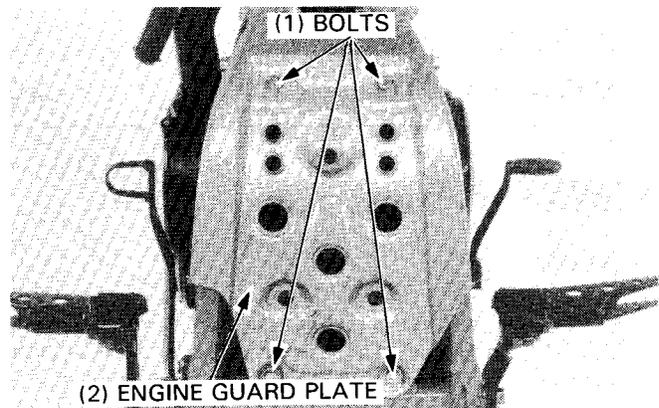
ENGINE REMOVAL

Slide the release lever to the left and remove the seat/rear fender.

Remove the fuel tank (page 4-3).

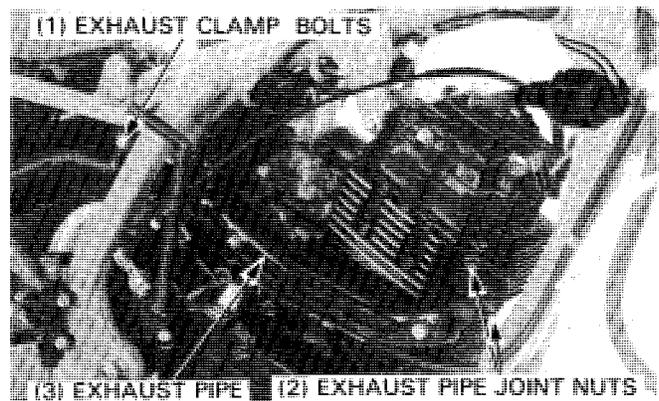
Drain the engine oil (page 2-2).

Remove the engine guard plate by removing the four bolts.

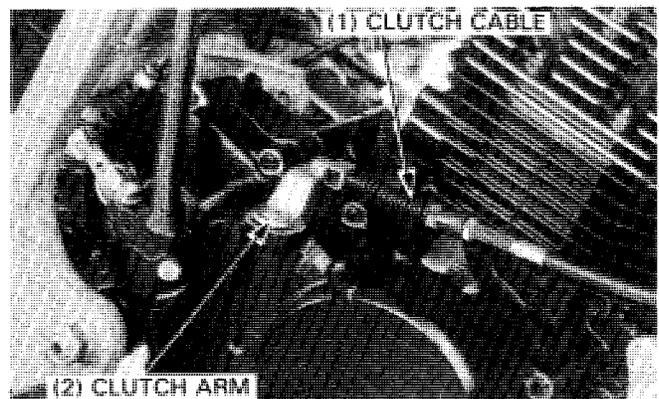


Remove the exhaust pipe joint nuts and loosen the exhaust clamp bolts.

Remove the exhaust pipe.



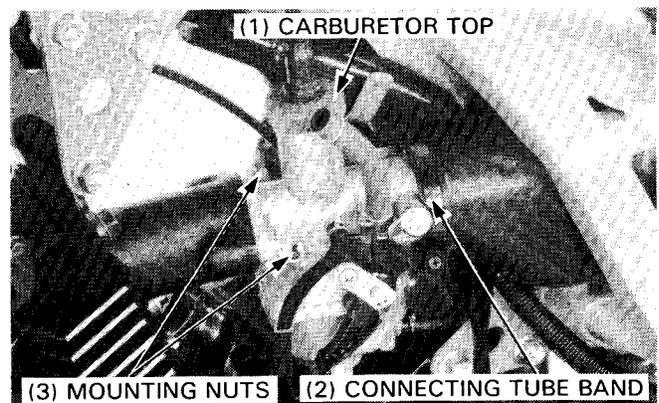
Disconnect the clutch cable from the clutch arm.



Loosen the drain screw and drain the carburetor.

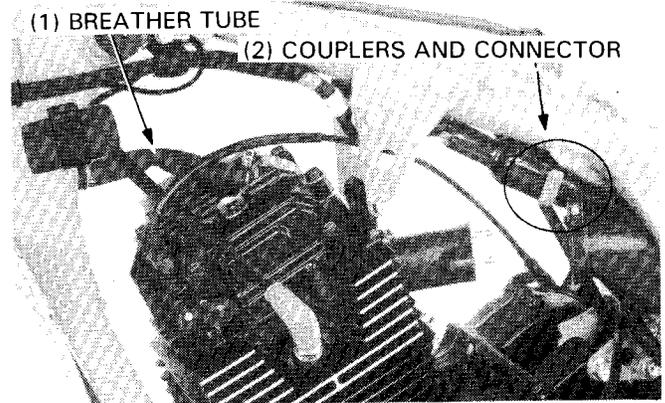
Remove the carburetor top.

Loosen the connecting tube band, remove the carburetor mounting nuts, then remove the carburetor.

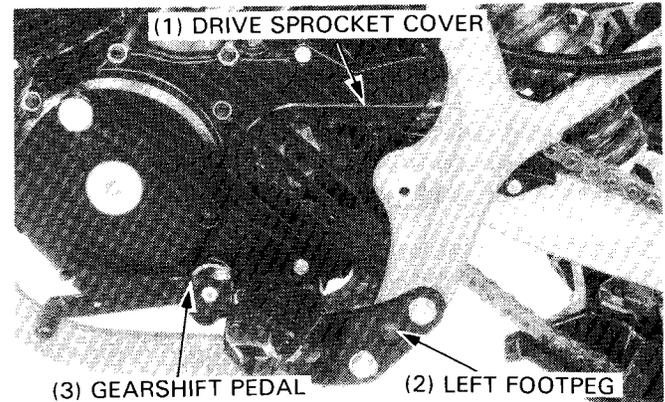


ENGINE REMOVAL/INSTALLATION

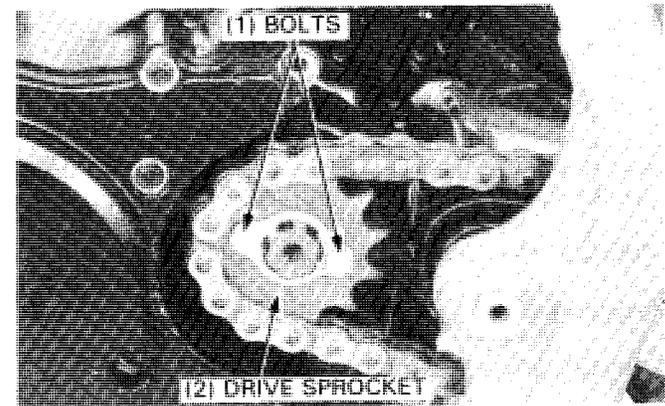
Remove the spark plug cap from the spark plug.
Disconnect the crankcase breather tube from the breather cover.
Disconnect the alternator and pulse generator wire couplers and connector.



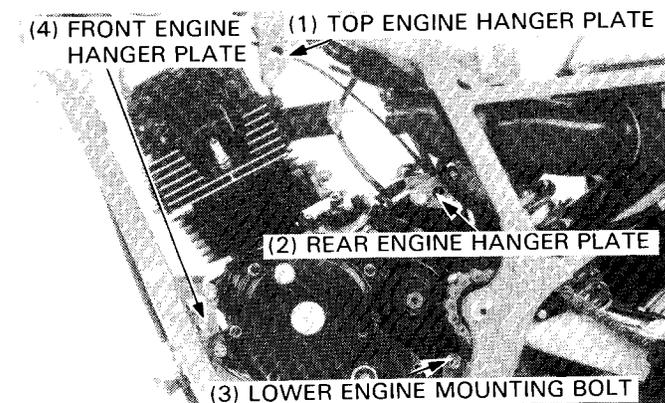
Remove the left footpeg bolts, the footpeg, the gearshift pedal and the drive sprocket cover.



Loosen the drive chain (page 3-10).
Remove the two drive sprocket bolts and the drive sprocket.
Remove the right footpeg and rear brake pedal (page 14-20).



Place a floor jack or other adjustable support under the engine.
Remove the top, front and rear engine hanger plates and the lower engine mounting bolt.
Remove the engine from the right side.



ENGINE REMOVAL/INSTALLATION

NOTE

- See page 5-0 for the correct location of the hanger plates and mounting bolts.

ENGINE INSTALLATION

Install the engine in the frame and tighten the bolts.

TORQUE VALUES:

TOP ENGINE HANGER PLATE BOLT

- 8 mm bolt 24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
- 10 mm bolt 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)

FRONT ENGINE HANGER PLATE BOLT

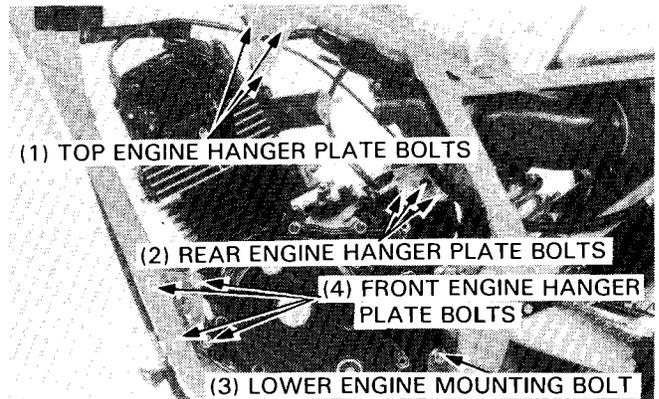
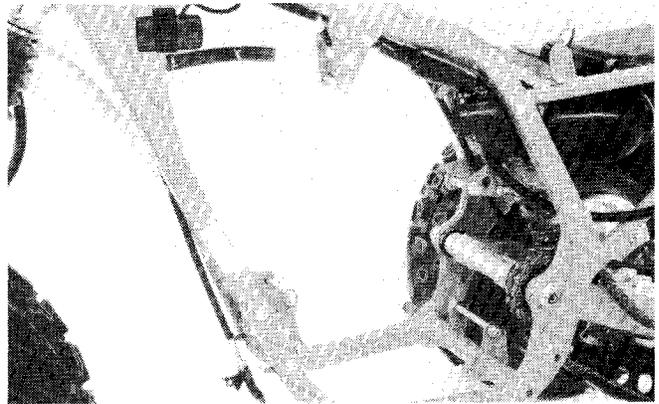
- 8 mm bolt 30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)
- 10 mm bolt 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)

REAR ENGINE HANGER PLATE BOLT

- 8 mm bolt 30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)
- 10 mm bolt 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)

ENGINE LOWER MOUNTING BOLT

- 10 mm bolt 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)



Install the set plate and drive sprocket onto the countershaft and tighten the bolts.

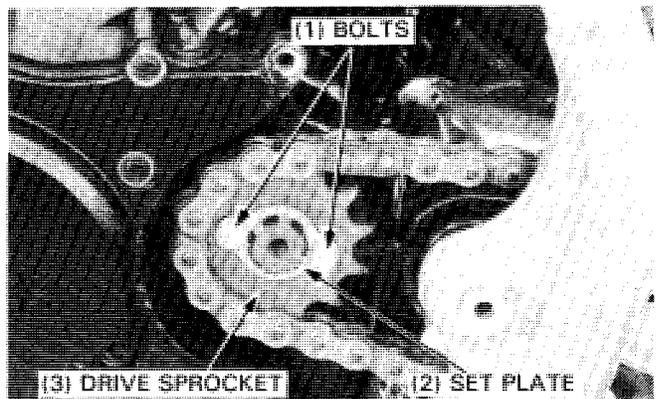
TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)

Align the punch marks, install the gearshift pedal onto the gearshift spindle and tighten the bolt.

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

Install the left footpeg and tighten the bolts.

TORQUE: 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)



Install the rear brake pedal and right footpeg (page 14-20).
Install the exhaust pipe (page 15-3).

Install the engine guard plate and tighten the bolts.

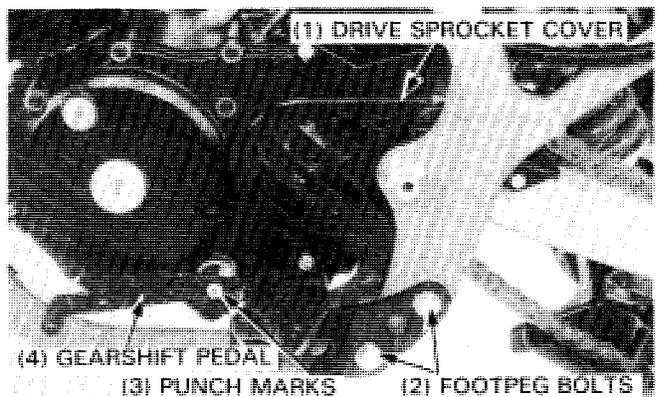
TORQUE: 30–35 N·m (3.0–3.5 kg-m, 22–25 ft-lb)

Install the removed parts in the reverse order of removal.

Route the cables and wires properly (page 1-10).

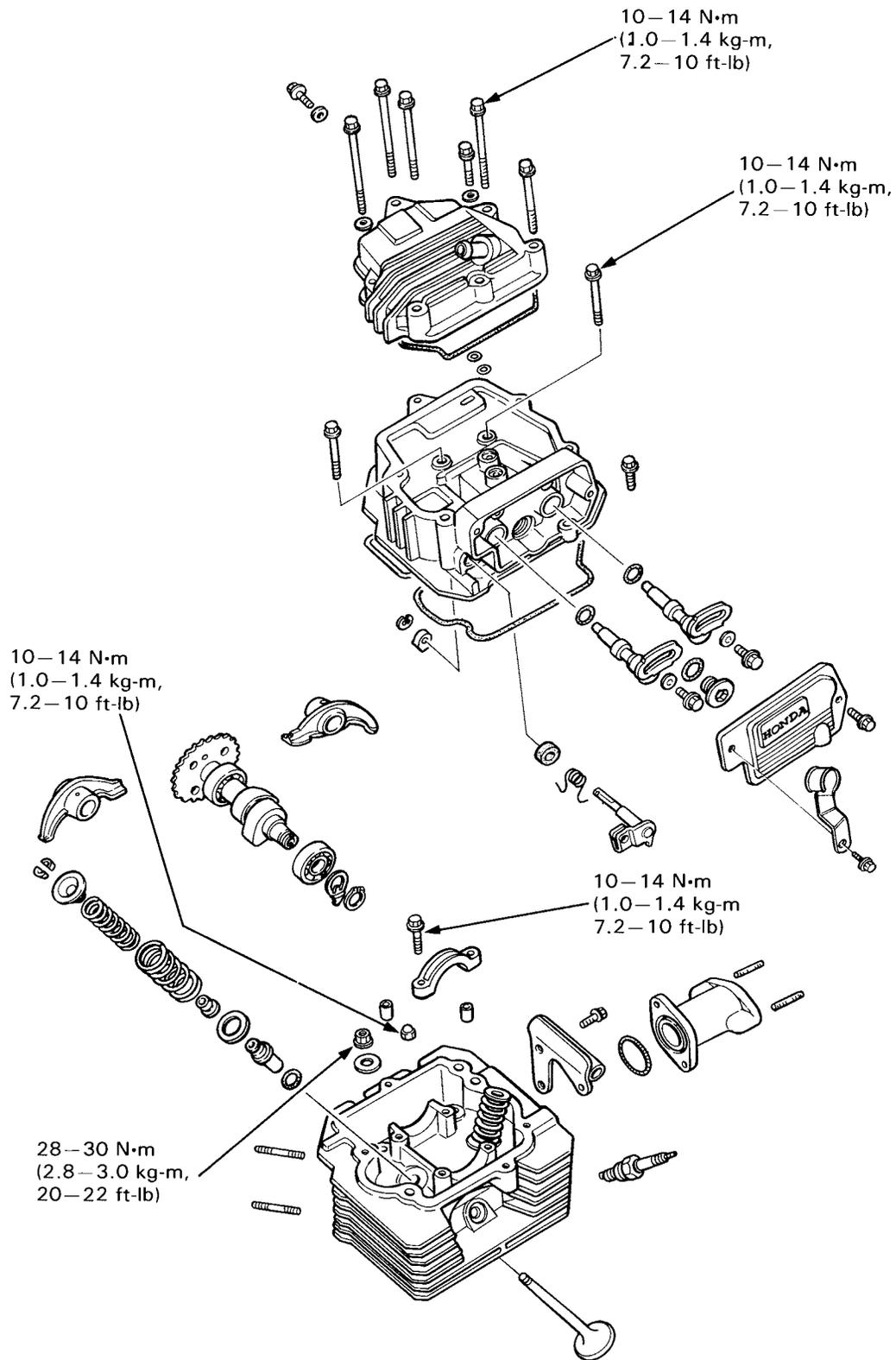
Adjust the clutch lever (page 3-15), the throttle lever (page 3-4) and the drive chain (page 3-10).

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



MEMO

CYLINDER HEAD/VALVES



6. CYLINDER HEAD/VALVES

SERVICE INFORMATION	6-1	VALVE SEAT INSPECTION AND REFACING	6-9
TROUBLESHOOTING	6-2	CYLINDER HEAD ASSEMBLY	6-11
CYLINDER HEAD COVER REMOVAL	6-3	CYLINDER HEAD INSTALLATION	6-12
CYLINDER HEAD COVER DISASSEMBLY	6-3	CAMSHAFT INSTALLATION	6-13
CAMSHAFT REMOVAL	6-5	CYLINDER HEAD COVER ASSEMBLY	6-15
CYLINDER HEAD REMOVAL	6-5	CYLINDER HEAD COVER INSTALLATION	6-15
CYLINDER HEAD DISASSEMBLY	6-6		
VALVE GUIDE REPLACEMENT	6-8		

SERVICE INFORMATION

REMOVAL

- This section covers maintenance of the cylinder head, valves, camshaft and rocker arms.
- The cylinder head can be serviced with the engine installed in the frame.
- Camshaft and rocker arm lubrication oil is fed through oil passages. Be sure the passages are not clogged.

SPECIFICATIONS

ITEM			STANDARD mm (in)	SERVICE LIMIT mm (in)	
Compression pressure			1,300 ± 100 kPa (13.0 ± 1.0 kg/cm ² , 184 ± 14 psi)	—	
Camshaft	Cam height	IN	34.683 (1.3655)	34.503 (1.3584)	
		EX	34.557 (1.3605)	34.377 (1.3534)	
Rocker arm	Rocker arm I.D.		12.000–12.018 (0.4724–0.4731)	12.05 (0.474)	
	Shaft O.D.		11.966–11.984 (0.4711–0.4718)	11.93 (0.470)	
Valve	Valve stem O.D.	IN	5.475–5.490 (0.2156–0.2161)	5.45 (0.215)	
		EX	5.455–5.470 (0.2148–0.2154)	5.43 (0.214)	
	Valve guide I.D.		5.500–5.512 (0.2165–0.2170)	5.52 (0.217)	
	Stem-to-guide clearance	IN	0.010–0.037 (0.0004–0.0015)	0.12 (0.005)	
		EX	0.030–0.057 (0.0012–0.0022)	0.14 (0.006)	
	Valve spring free length	Inner	Yellow	31.69 (1.248)	29.5 (1.16)
			White	32.50 (1.280)	30.5 (1.20)
		Outer	Yellow	38.54 (1.517)	36.5 (1.44)
White			36.90 (1.453)	35.0 (1.38)	
Valve seat width		1.1 (0.043)	1.4 (0.055)		
Cylinder head warpage			—	0.10 (0.004)	

TORQUE VALUES

Cylinder head 6 mm cap nut	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
8 mm nut	28–30 N·m (2.8–3.0 kg-m, 20–22 ft-lb)
Camshaft bearing holder bolt	10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Cylinder head cover bolt	10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Breather cover bolt	10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Top engine hanger plate bolt	24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

CYLINDER HEAD/VALVES

TOOLS

Special

Valve guide reamer, 5.5 mm 07984–2000000 or 07984–200000A (U.S.A. only)

Common

Valve guide remover, 5.5 mm 07742–0010100 or 07942–3290100

Valve spring compressor 07757–0010000 or 07957–3290001

Inner driver 07746–0020100

Attachment, 15 mm 07746–0020200 } Not available in U.S.A.

Valve seat cutters (Valve seat cutters are commercially available in the U.S.A.)

Valve seat cutter, 27.5 mm (EX 45°) 07780–0010200

Valve seat cutter, 33 mm (IN 45°) 07780–0010800

Valve seat cutter, 28 mm (EX 32°) 07780–0012100

Valve seat cutter, 33 mm (IN 32°) 07780–0012900

Valve seat cutter, 30 mm (IN/EX 60°) 07780–0014000

Valve seat cutter holder, 5.5 mm 07781–0010101

TROUBLESHOOTING

Engine top-end problems usually affect engine performance. These can 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 (section 7)
- Decompressor out of adjustment

Compression too high

- Excessive carbon build-up on piston or 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
- Worn rocker arm and/or shaft

CYLINDER HEAD COVER REMOVAL

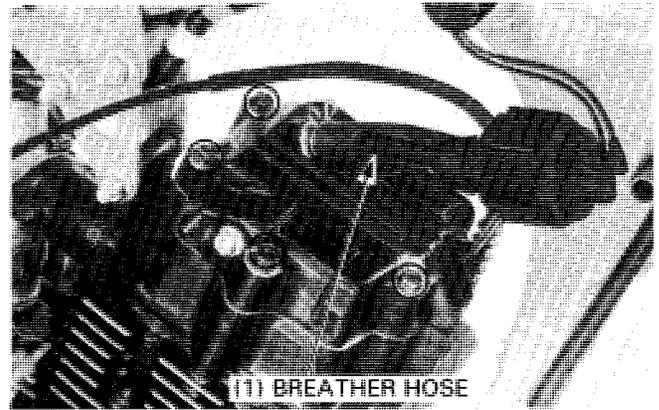
Slide the release lever to the left and remove the seat/rear fender.

Remove the fuel tank (page 4-3).

Disconnect the crankcase breather hose from the breather cover.

Remove the bolts and breather cover.

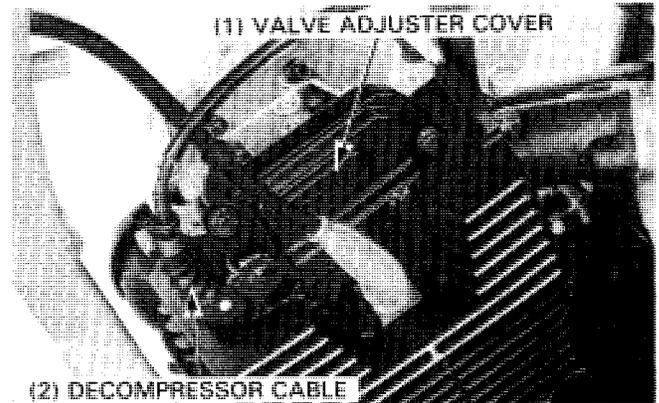
Remove the O-rings from the oil orifice bosses on the cylinder head cover.



Remove the spark plug cap.

Disconnect the decompressor cable from the decompressor arm.

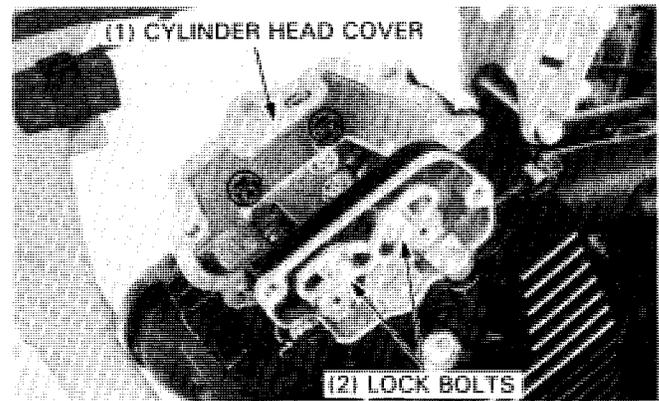
Remove the valve adjuster cover.



Loosen the valve adjuster lock bolts.

Remove the bolts and the cylinder head cover.

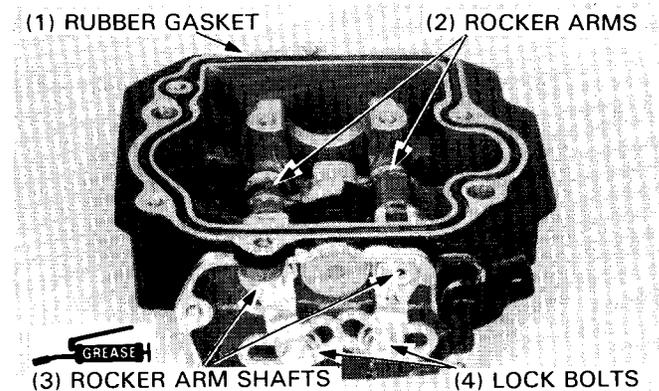
Remove the dowel pins.



CYLINDER HEAD COVER DISASSEMBLY

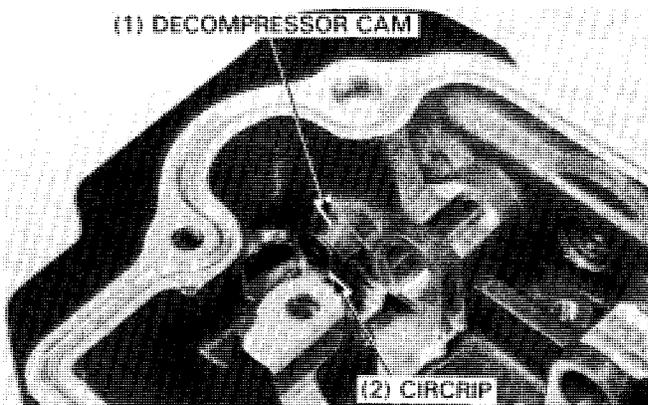
Remove the rubber gasket from the cylinder head cover.

Remove the valve adjuster lock bolts, the rocker arm shafts and rocker arms from the head cover.

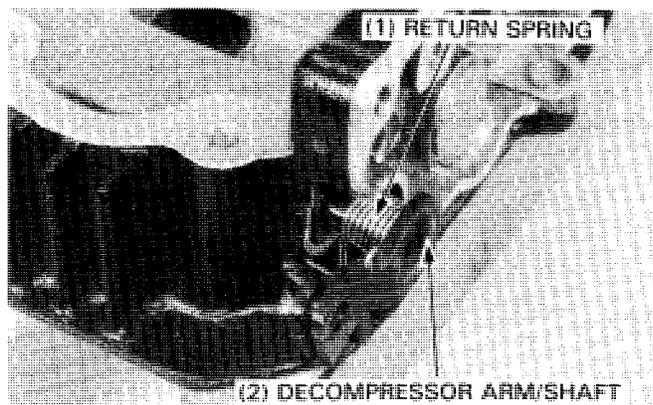


CYLINDER HEAD/VALVES

Remove the circlip and decompressor cam from the decompressor shaft.



Remove the decompressor arm/shaft and return spring from the cylinder head cover.



INSPECTION

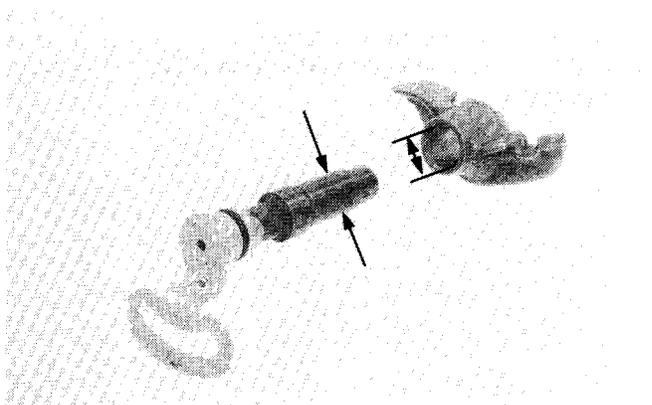
Inspect the rocker arms for wear or damage to the camshaft contact surface or for a clogged oil hole.

Measure the I.D. of each rocker arm.

SERVICE LIMIT: 12.05 mm (0.474 in)

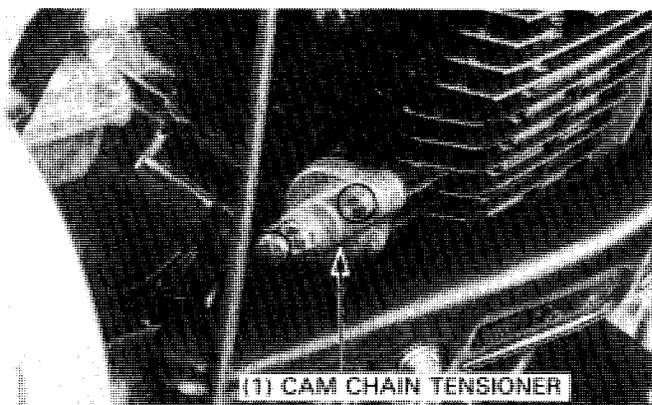
Inspect the shaft for wear or damage.
Measure each rocker arm shaft O.D.

SERVICE LIMIT: 11.93 mm (0.470 in)



CAMSHAFT REMOVAL

Remove the two cam chain tensioner mounting bolts and the tensioner.



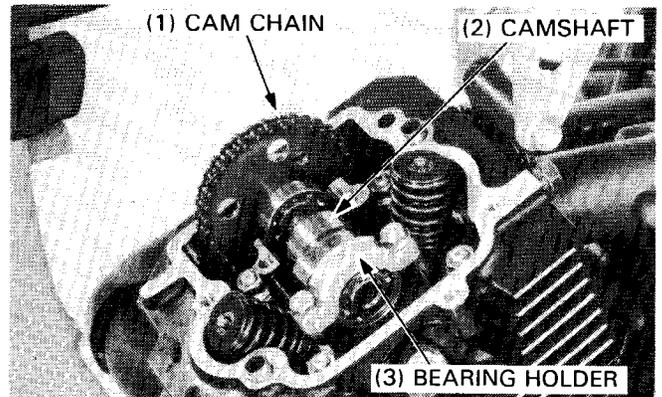
Remove the two camshaft bearing holder bolts and the bearing holder.

Remove the camshaft.

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

NOTE

- Be careful not to drop the bolts into the crankcase.

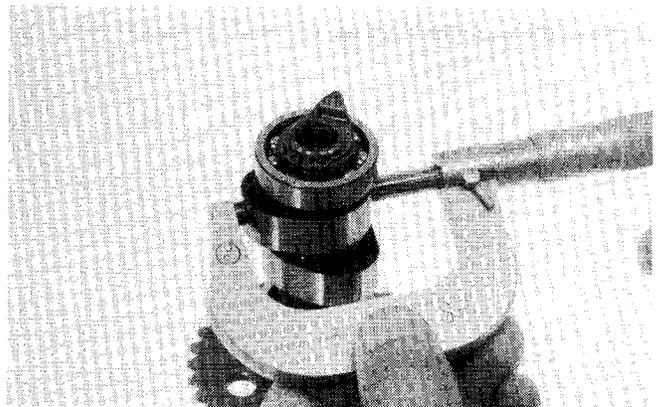


INSPECTION

Check each cam lobe for wear or damage. Measure the cam lobe height.

SERVICE LIMITS:

- INTAKE: 34.503 mm (1.3584 in)
- EXHAUST: 34.377 mm (1.3534 in)



Turn the left and right camshaft bearings by hand and check for noise, damage or excessive play.

For left camshaft bearing replacement, remove the snap ring and timing indicator plate, then remove the bearing using a bearing puller.

Drive a new left camshaft bearing onto the camshaft.

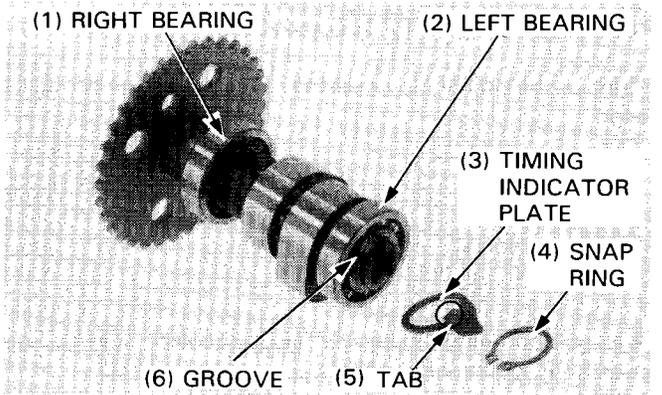
TOOLS:

- Inner driver 07746-0020100
- Attachment, 15 mm 07746-0020200

Install the timing indicator plate onto the camshaft aligning the tab with the groove on the camshaft.

Install the snap ring in the groove in the camshaft securely.

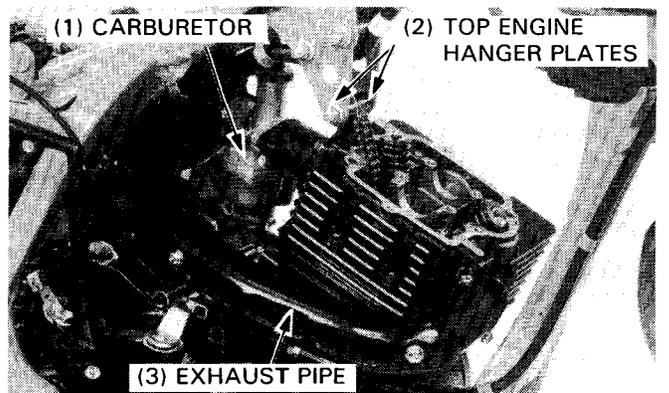
If the right bearing is lousy, replace the camshaft.



CYLINDER HEAD REMOVAL

Remove the following:

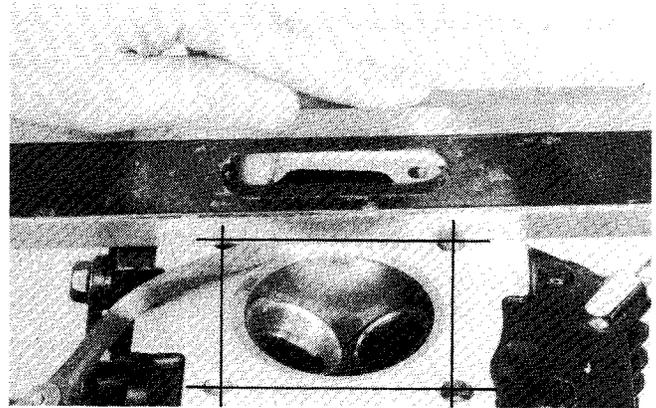
- carburetor (page 4-6)
- exhaust pipe (page 15-2)
- spark plug cap
- top engine hanger plates



INSPECTION

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

SERVICE LIMIT: 0.10 mm (0.004 in)



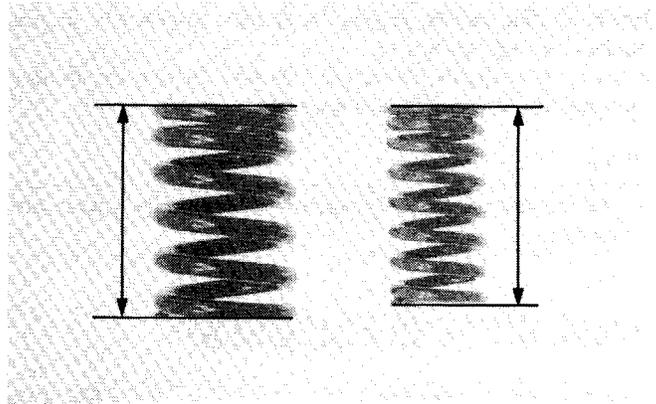
Measure the free length of the inner and outer valve springs.

SERVICE LIMITS:

- INNER (IN, EX):** Yellow: 29.5 mm (1.16 in)
White: 30.5 mm (1.20 in)
- OUTER (IN, EX):** Yellow: 36.5 mm (1.44 in)
White: 35.0 mm (1.38 in)

NOTE

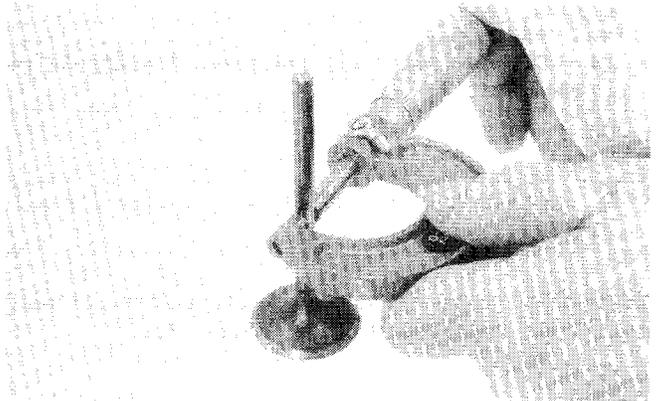
- The valve springs are marked with either white or yellow paint. When replacing the valve spring, use the one with same paint mark.



Inspect each valve for bending, burning, scratches or abnormal stem wear.
Check valve movement in the guide and measure and record each valve stem O.D.

SERVICE LIMITS:

- IN: 5.45 mm (0.215 in)**
- EX: 5.43 mm (0.214 in)**



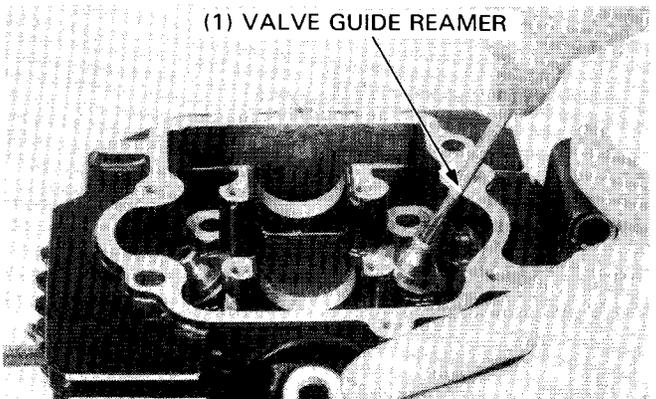
NOTE

- Ream the guides to remove any carbon build-up before checking clearances.
- Always rotate the reamer clockwise, never counter-clockwise.

TOOL:

Valve guide reamer

07984-2000000 or
07984-200000A
(U.S.A. only)



Ream the new valve guide after installation.

TOOL:

Valve guide reamer **07984-2000000** or
07984-200000A
 (U.S.A. only)

NOTE

- Use cutting oil on the reamer during this operation.
- Always rotate the reamer clockwise, never counter-clockwise.

Clean the cylinder head thoroughly to remove any metal particles.

Reface the valve seat.

VALVE SEAT INSPECTION/REFACING

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

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

Remove and inspect the valves.

CAUTION

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

Inspect the width of each valve seat.

STANDARD: 1.1 mm (0.043 in)
SERVICE LIMIT: 1.4 mm (0.055 in)

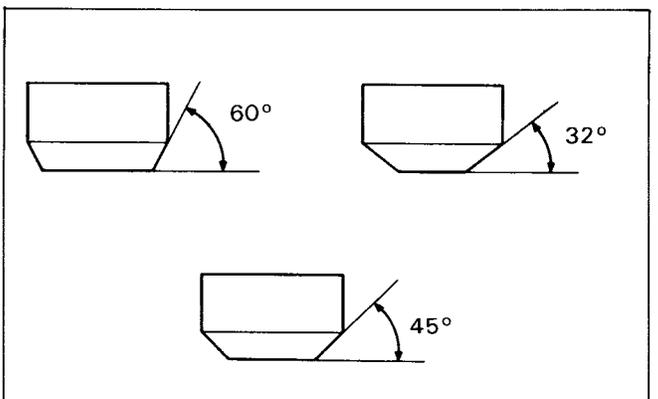
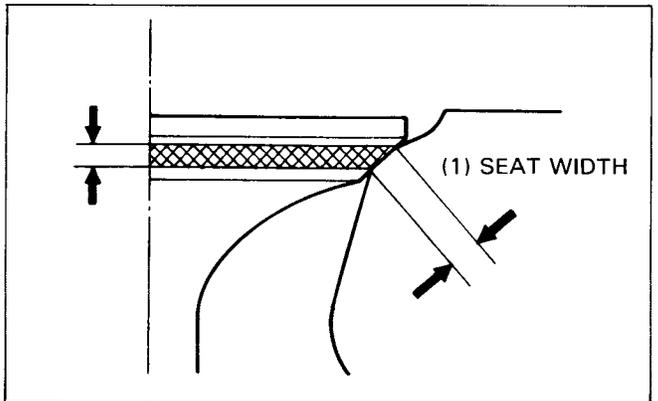
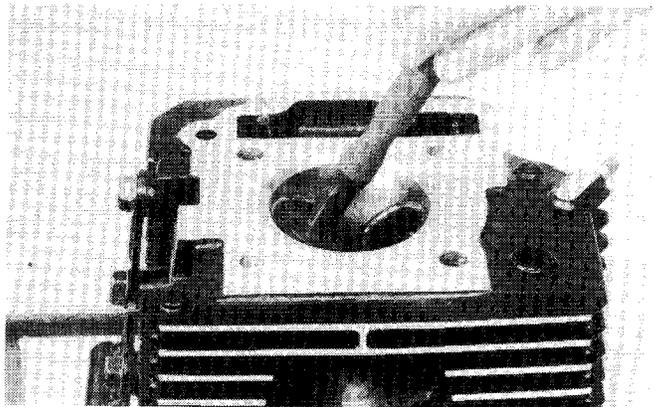
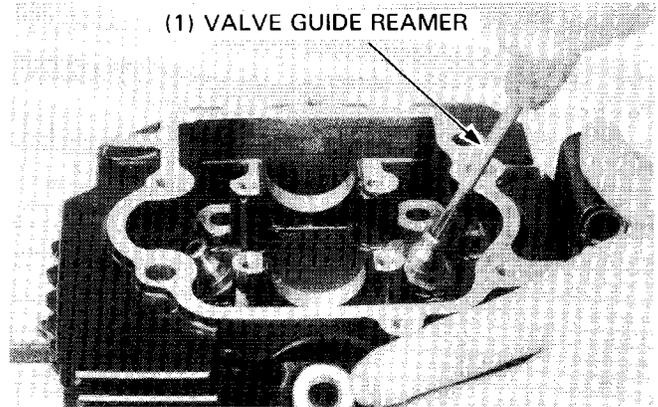
If the seat is too wide, too narrow or has low spots, the seat must be ground.

VALVE SEAT CUTTERS

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

NOTE

- Follow the refacer manufacturer's operating instructions.



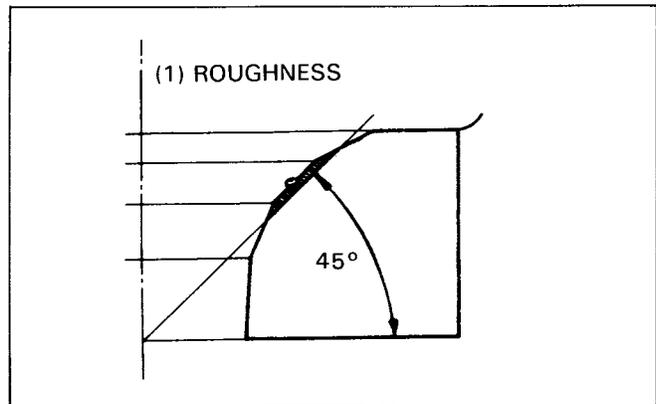
CYLINDER HEAD/VALVES

VALVE SEAT REFACING

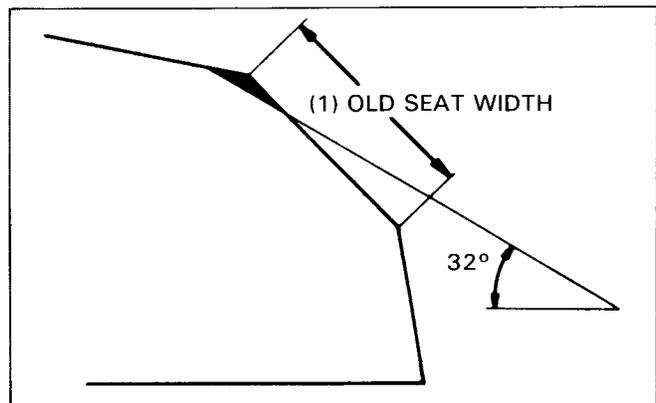
Use a 45 degree cutter to remove any roughness or irregularities from the seat.

NOTE

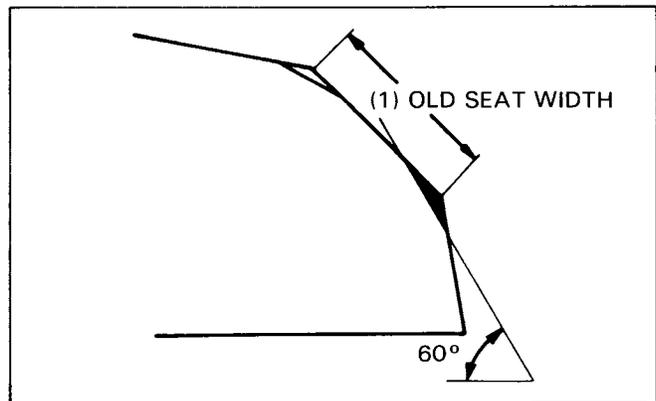
- Reface the seat with a 45 degree cutter when a valve guide is replaced.



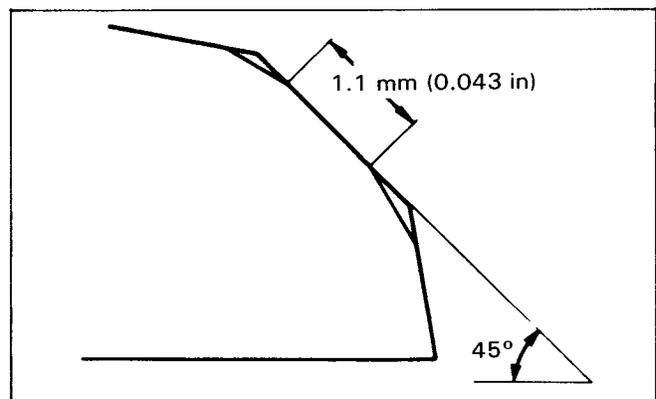
Use a 32 degree cutter to remove the top 1/4 of the existing valve seat material.



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



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

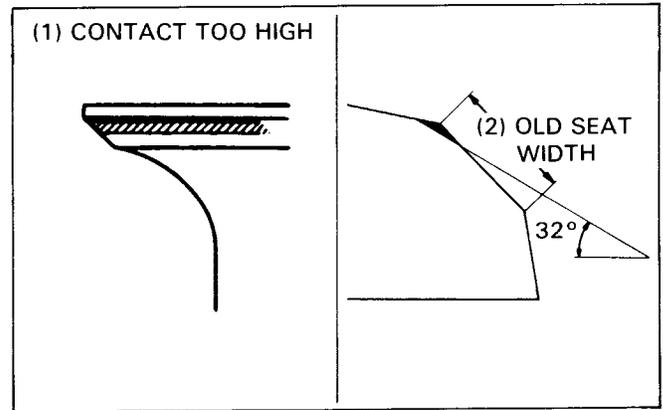


Apply a thin coating of Prussian Blue to the valve seat. Press the valve through the valve guide and onto the seat to make a clear pattern.

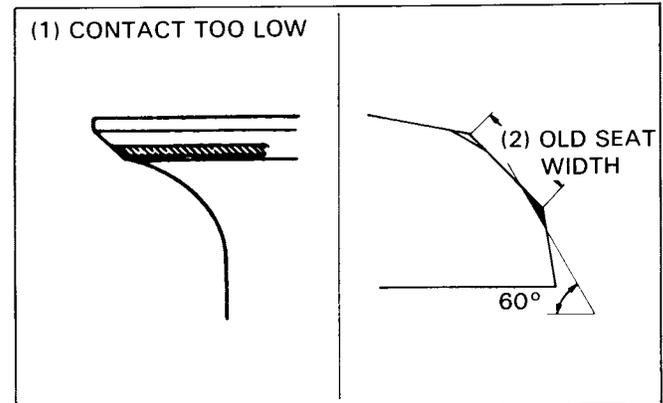
NOTE

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

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



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



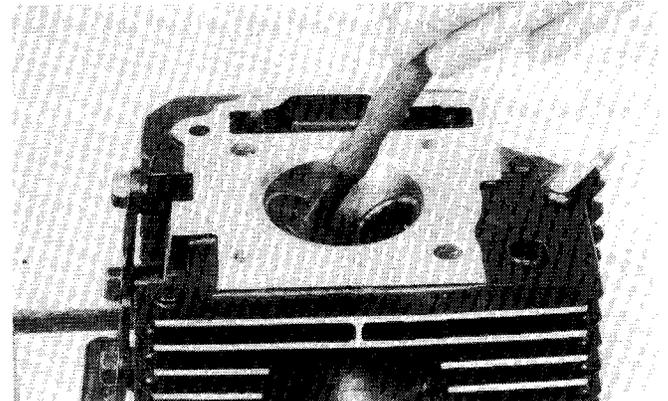
Refinish the seat to specifications, using a 45 degree finish cutter.

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

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

NOTE

- Do not allow lapping compound to enter the guides.



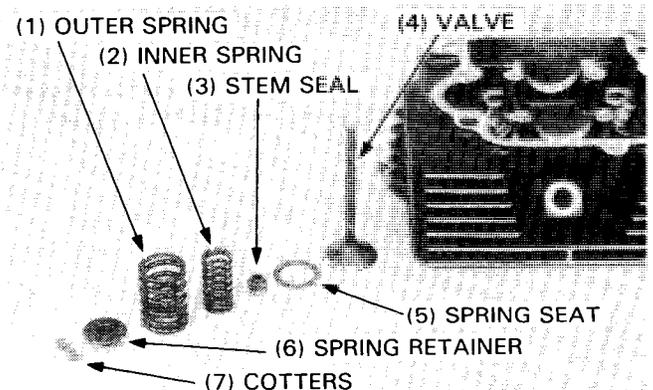
CYLINDER HEAD ASSEMBLY

Install the valve spring seat and a new stem seal.

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

To avoid damage to the stem seal, turn the valve slowly when inserting.

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



CYLINDER HEAD/VALVES

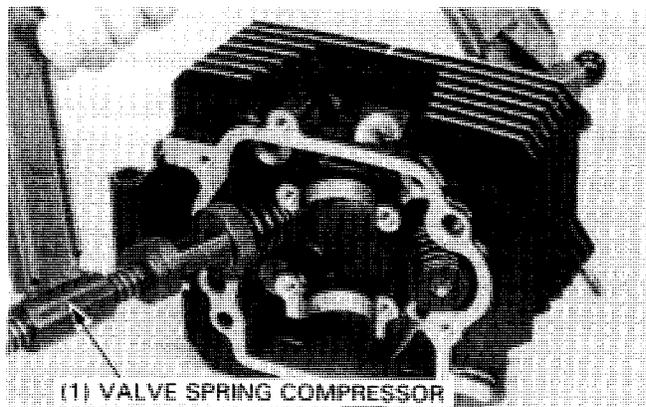
Install the valve spring retainers and compress the valve springs using the valve spring compressor, then install the valve cotters.

TOOL:

Valve spring compressor 07757 – 0010000 or
07957 – 3290001

CAUTION

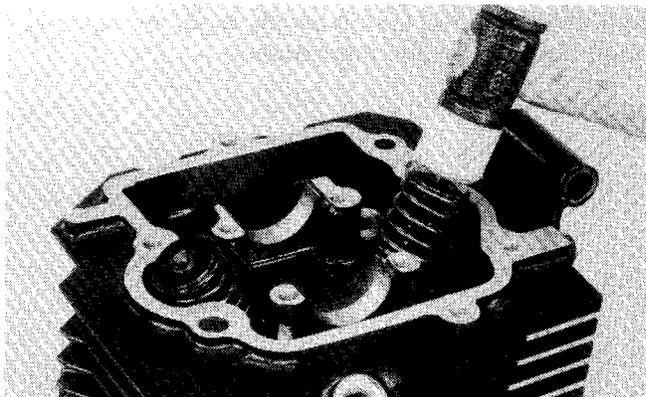
- *To prevent loss of tension, do not compress the valve spring more than necessary.*



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

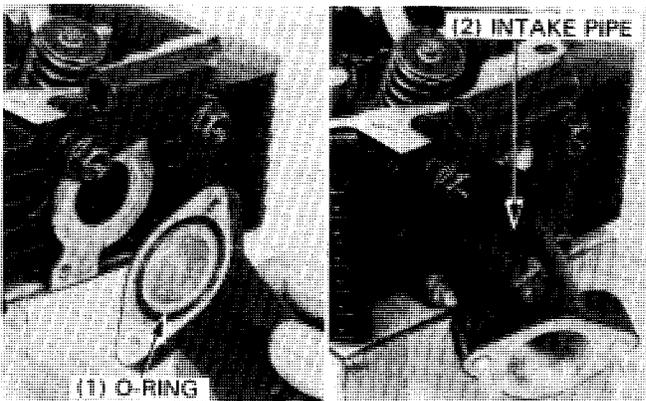
CAUTION

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



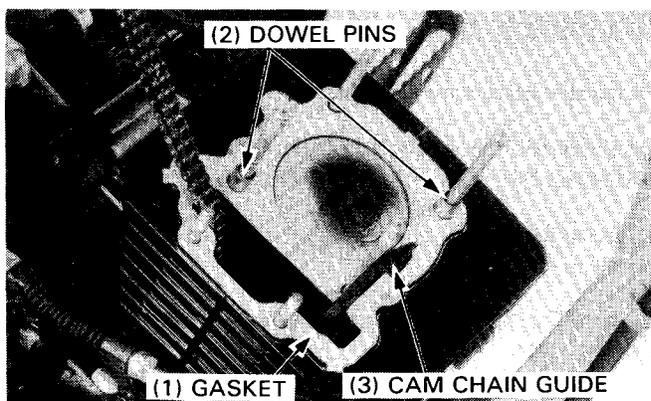
Install a new O-ring in the intake pipe groove and install the intake pipe with two bolts.

Install the spark plug.



CYLINDER HEAD INSTALLATION

Make sure that the cam chain guide is positioned properly. Install the dowel pins and a new cylinder head gasket.



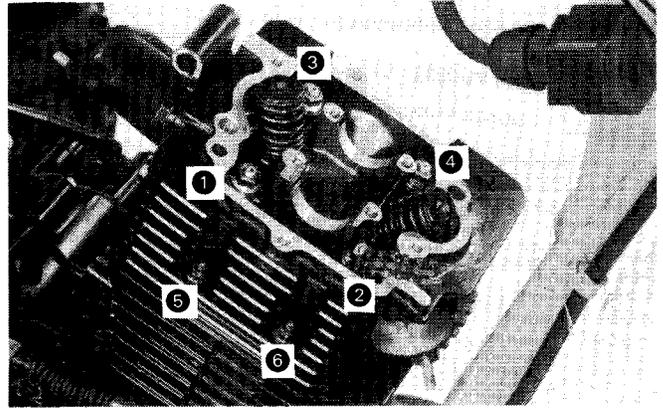
Install the cylinder head.

Install the two 6 mm cap nuts, four washers and 8 mm nuts, and tighten them in the sequence shown in 2 or 3 steps.

TORQUE VALUES:

6 mm cap nut: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

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



Install the top engine hanger plates and bolts.

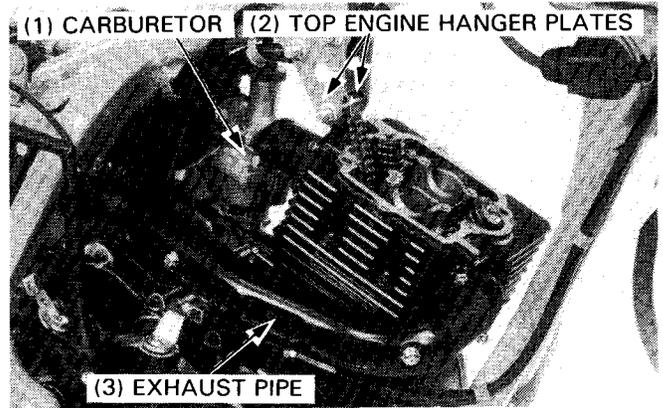
Tighten the bolts

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

Install the spark plug cap.

Install the exhaust pipe (page 15-3).

Install the carburetor (page 4-10).



CAMSHAFT INSTALLATION

Remove the timing hole cap.

Turn the crankshaft and align the "T" mark on the flywheel with the index mark on the left crankcase cover.

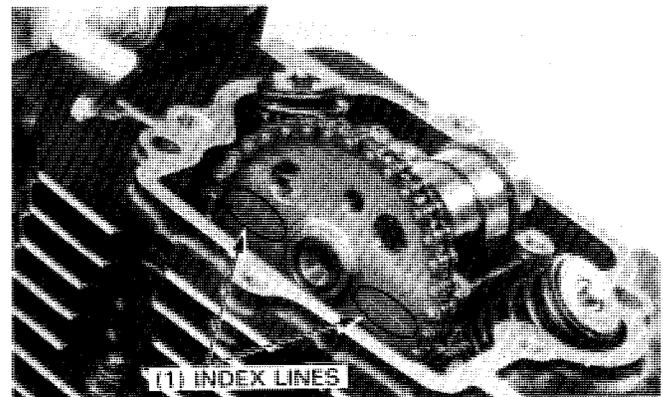
CAUTION

- *When turning the crankshaft, make sure the cam chain does not jam at the cam chain tensioner or crankshaft.*



Apply a thin coating of molybdenum disulfide grease to the cam lobes.

Lubricate the camshaft bearings with clean engine oil. Place the camshaft in the cylinder head. Align the index lines on the cam sprocket with the top of the cylinder head and install the cam chain over the sprocket.



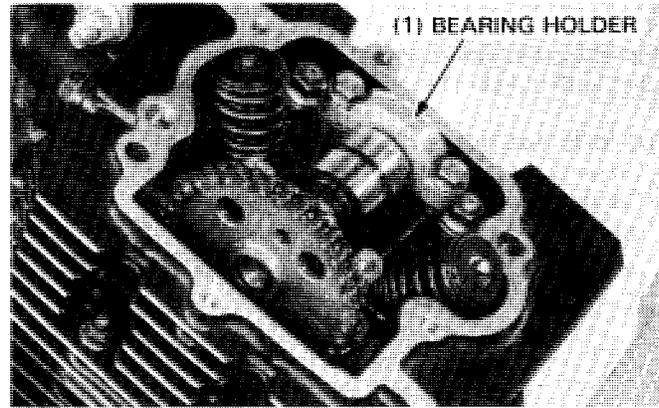
CYLINDER HEAD/VALVES

Install the camshaft bearing holder and tighten the holder.

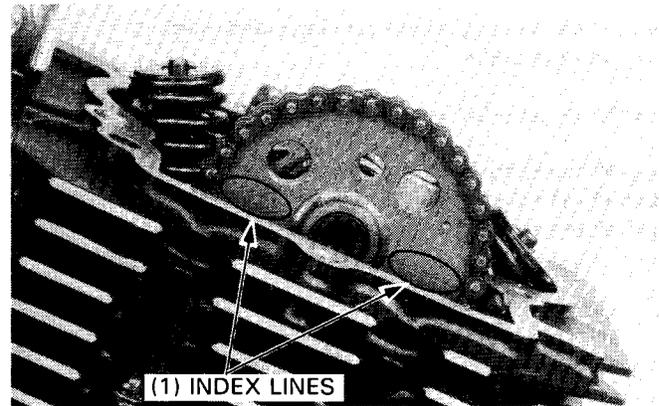
TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)

NOTE

- Be careful not to drop the bolts into the crankcase.



Turn the crankshaft 360° and align the "T" mark on the flywheel with the index mark on the left crankcase cover. Make sure that the index lines on the cam sprocket align with the top of the cylinder head.

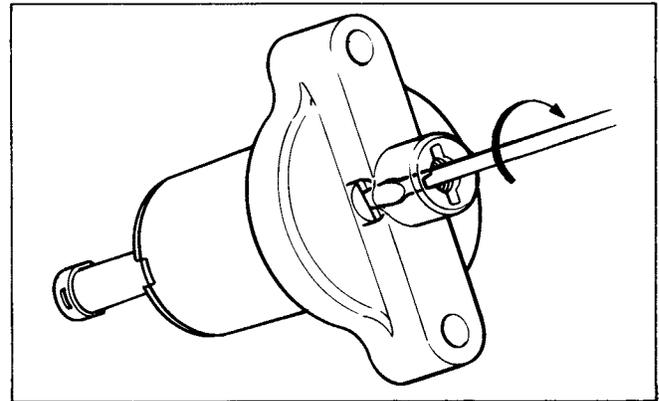


Remove the sealing bolt and washer from the cam chain tensioner.

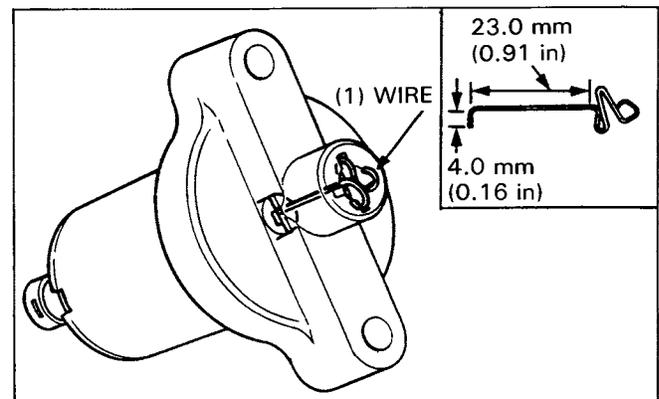
Check the cam chain tensioner for smooth operation. Turn the tensioner shaft clockwise with a small screwdriver to retract the tensioner, and hold it in the fully retracted position.

NOTE

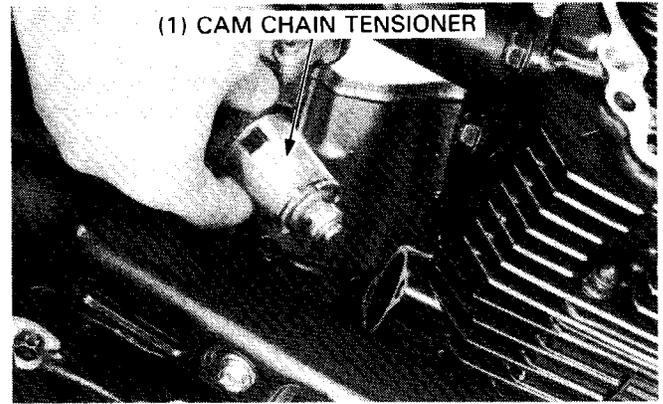
- The tensioner shaft will be projected by spring force when it is released.



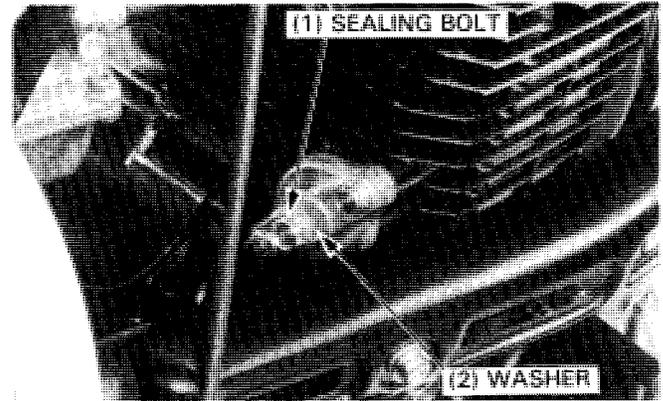
Wedge the tensioner shaft with a piece of wire as shown to hold it in place.



Install the cam chain tensioner and tighten the mounting bolts securely.
Remove the holder piece to release the shaft.

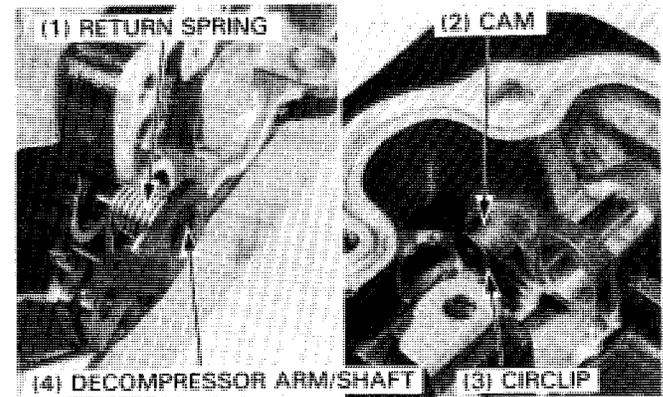


Install the sealing washer and bolt, and tighten the bolt securely.



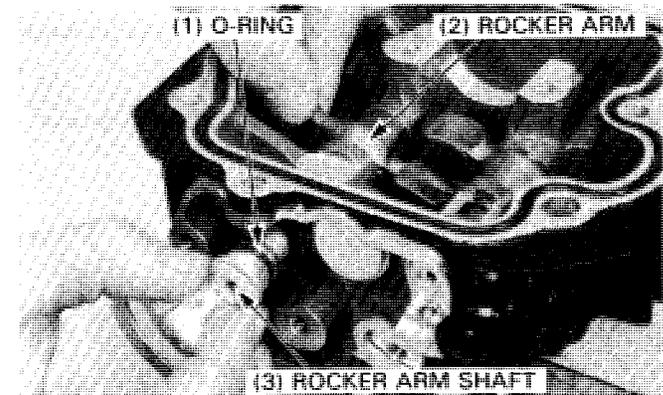
CYLINDER HEAD COVER ASSEMBLY

Install the return spring onto the decompressor arm/shaft and install the shaft into the cylinder head cover.
Install the decompressor cam on the shaft and secure it with the circlip.



Apply a thin coating of molybdenum disulfide grease to the rocker arm's contact surface on the camshaft.

Install new O-rings on the rocker arm shafts and coat the rocker arm shafts with engine oil.
Install the rocker arms and shafts into the cylinder head cover.
Install the valve adjuster lock bolts loosely.

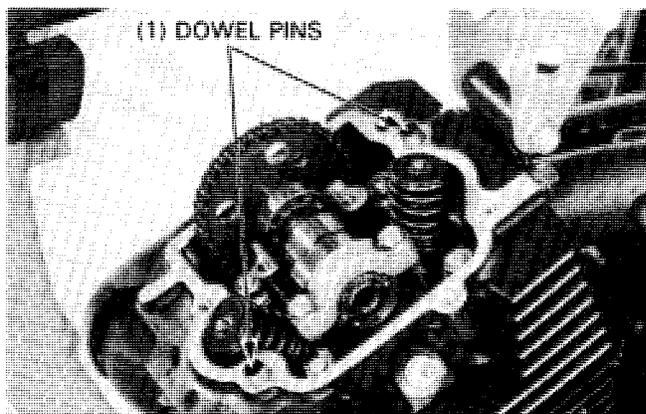


CYLINDER HEAD/VALVES

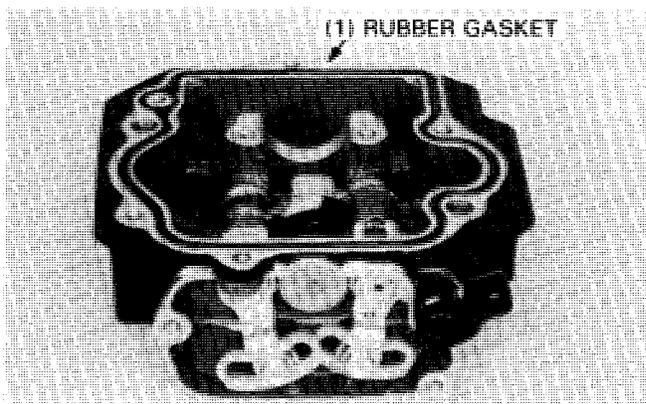
CYLINDER HEAD COVER INSTALLATION

Fill the oil pocket in the cylinder head with clean engine oil to provide initial lubrication for the camshaft when the engine is started.

Install the dowel pins.



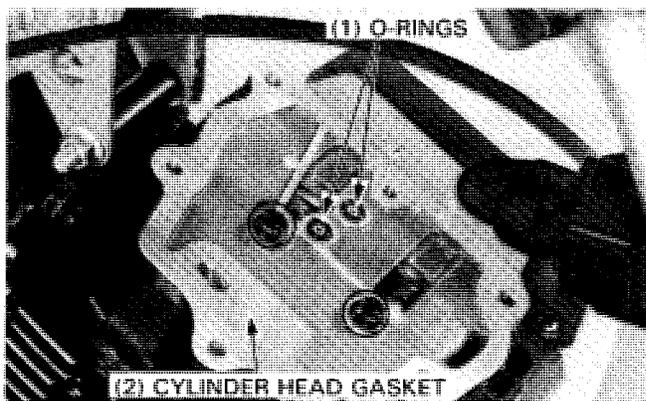
Install a new rubber gasket in the cylinder head cover groove.



Install the cylinder head cover and tighten the bolts.

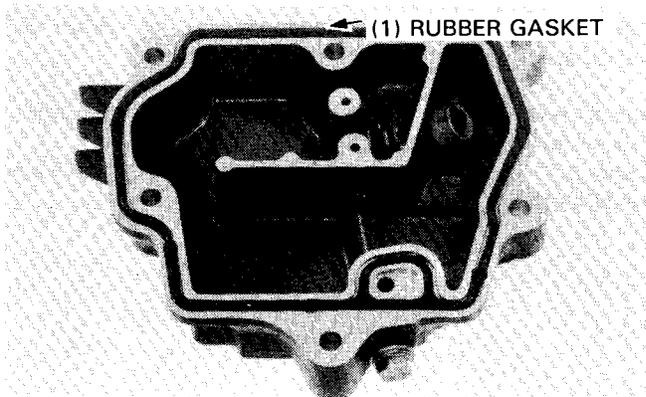
TORQUE: 10–14 N·m (1.0–1.4 kg·m, 7.2–10 ft·lb)

Install new O-rings into the oil orifice bosses of the cylinder head cover.



Blow compressed air through the oil passage in the breather cover.

Install a new rubber gasket in the breather cover groove.



Install the breather cover and valve adjuster cover, and tighten the bolts.

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

Connect the crankcase breather hose to the cover.

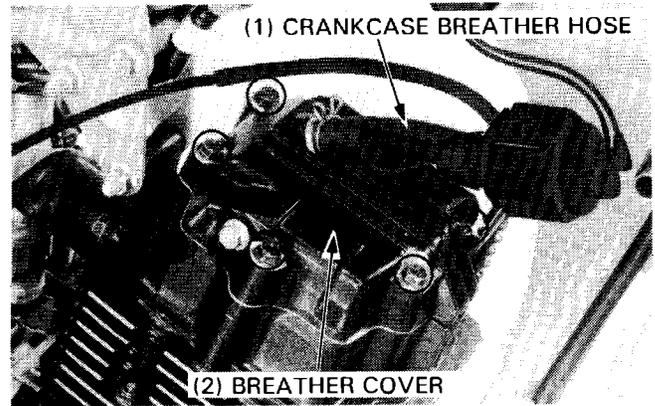
Connect the decompressor cable to the decompressor arm.

Adjust the valve clearance (page 3-8).

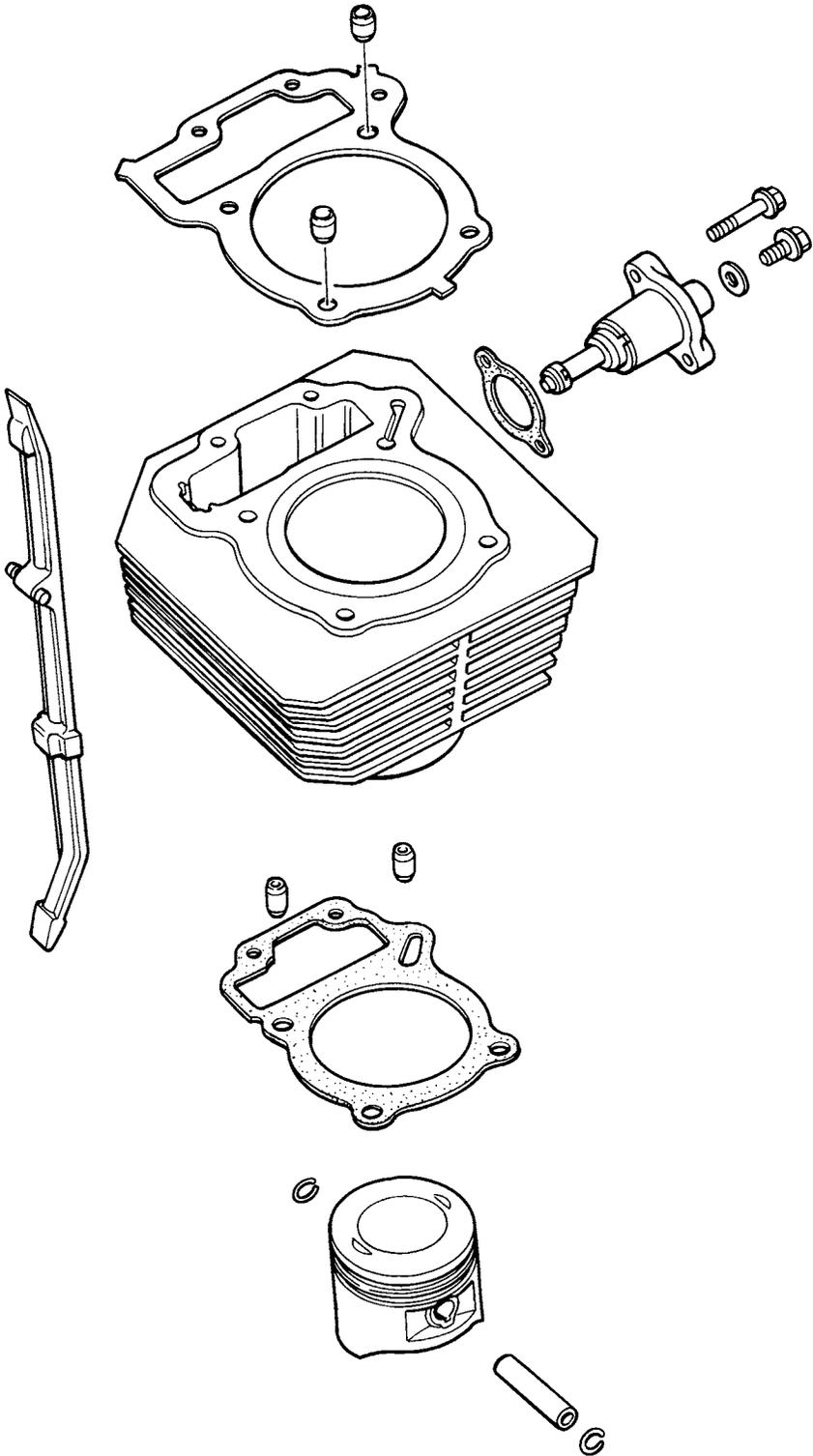
Adjust the decompressor cable (page 3-9).

Install the fuel tank (page 4-3).

Grease the seat latch and install the seat/rear fender.



CYLINDER/PISTON



7. CYLINDER/PISTON

SERVICE INFORMATION	7-1	PISTON	7-3
TROUBLESHOOTING	7-1	PISTON/CYLINDER INSTALLATION	7-5
CYLINDER	7-2		

SERVICE INFORMATION

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)	
Cylinder	I.D.	65.000–65.010 (2.5590–2.5594)	65.10 (2.563)	
	Taper	—	0.10 (0.004)	
	Out-of-round	—	0.10 (0.004)	
	Warpage across top	—	0.10 (0.004)	
Piston, piston pin, piston rings	Piston O.D.	64.962–64.982 (2.5576–2.5583)	64.90 (2.555)	
	Piston pin bore	15.002–15.008 (0.5906–0.5909)	15.04 (0.592)	
	Piston pin O.D.	14.994–15.000 (0.5903–0.5906)	14.96 (0.589)	
	Piston-to-pin clearance	0.002–0.014 (0.0001–0.0006)	0.02 (0.001)	
	Piston ring-to-ring groove clearance	TOP	0.005–0.045 (0.0002–0.0018)	0.09 (0.004)
		SECOND	0.015–0.045 (0.0006–0.0018)	0.09 (0.004)
	Piston ring end gap	TOP/SECOND	0.20–0.40 (0.008–0.016)	0.50 (0.020)
OIL		0.20–0.80 (0.008–0.031)	—	
Cylinder-to-piston clearance		0.018–0.048 (0.0007–0.0019)	0.10 (0.004)	
Connecting rod small end I.D.		15.010–15.028 (0.5909–0.5917)	15.06 (0.593)	
Connecting rod-to-piston pin clearance		0.010–0.034 (0.0004–0.0013)	0.05 (0.002)	

TROUBLESHOOTING

Low or unstable compression

- Worn cylinder or piston rings
- Cylinder head and valves (section 6)

Excessive smoke

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

Overheating

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

Knocking or abnormal noise

- Worn piston and cylinder
- Excessive carbon build-up

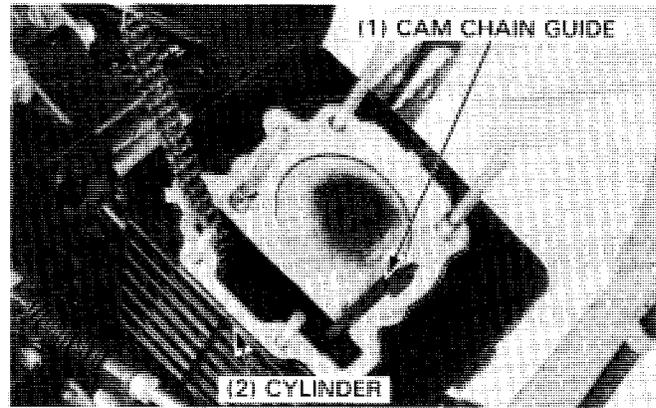
CYLINDER/PISTON

CYLINDER

REMOVAL

Remove the cylinder head (section 6).

Remove the cam chain guide and the cylinder.

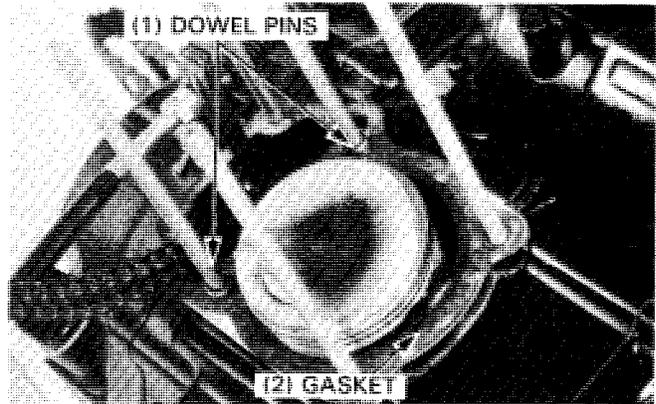


Remove the cylinder gasket and dowel pins.

Clean off any gasket material from the cylinder surface.

NOTE

- Be careful not to damage the gasket surface.



INSPECTION

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

SERVICE LIMIT: 65.10 mm (2.563 in)

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

SERVICE LIMIT: 0.10 mm (0.004 in)

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

SERVICE LIMIT: 0.10 mm (0.004 in)

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

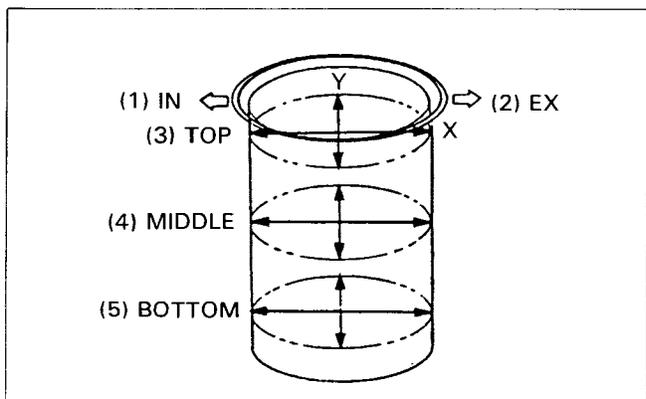
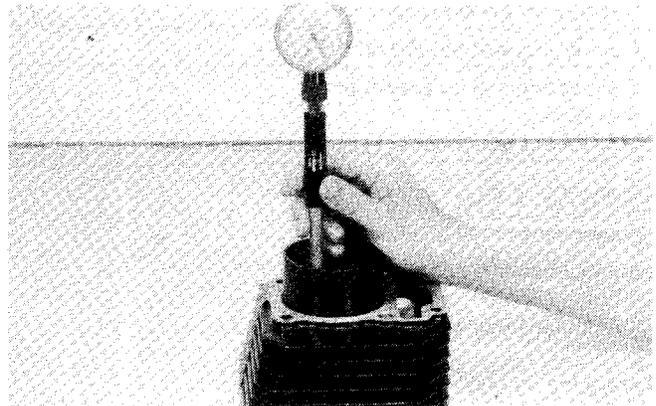
SERVICE LIMIT: 0.10 mm (0.004 in)

The cylinder must be rebored and oversize piston fitted if the service limits are exceeded.

The following oversize pistons are available:

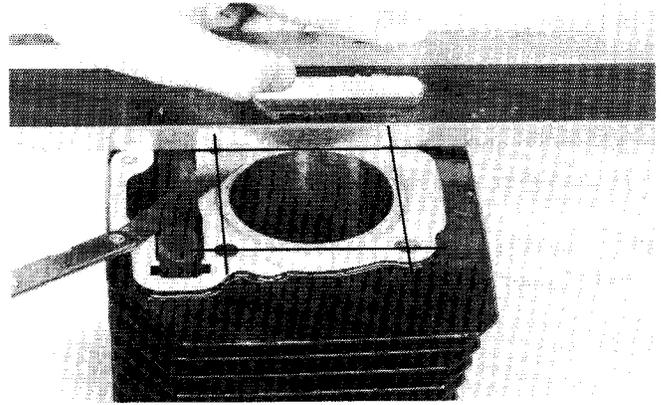
0.25 mm (0.010 in), 0.50 mm (0.020 in) and 0.75 mm (0.030 in), 1.00 mm (0.039 in)

The cylinder must be rebored so that the clearance to an oversize piston is 0.018–0.048 mm (0.0007–0.0019 in).



Inspect the top of the cylinder for warpage.

SERVICE LIMIT: 0.10 mm (0.004 in)



PISTON

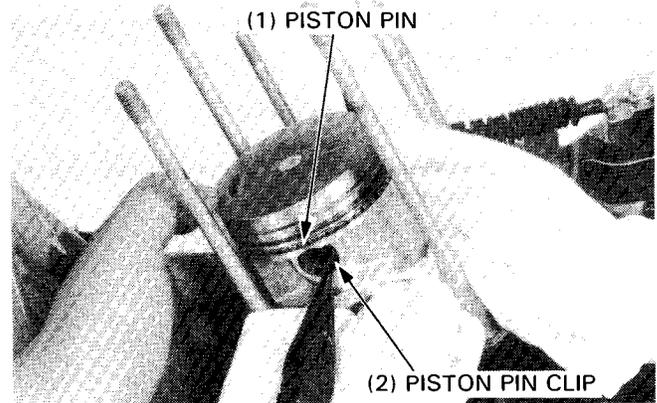
REMOVAL

Remove the piston pin clips with pliers.

NOTE

- Do not let the clips fall into the crankcase.

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

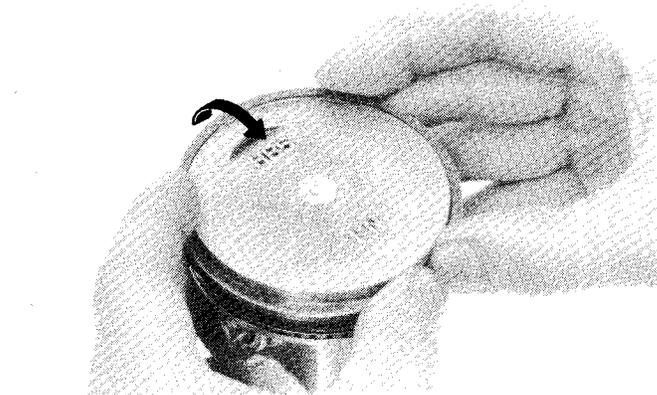


Remove the piston rings.

NOTE

- Do not damage the piston rings during removal.

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



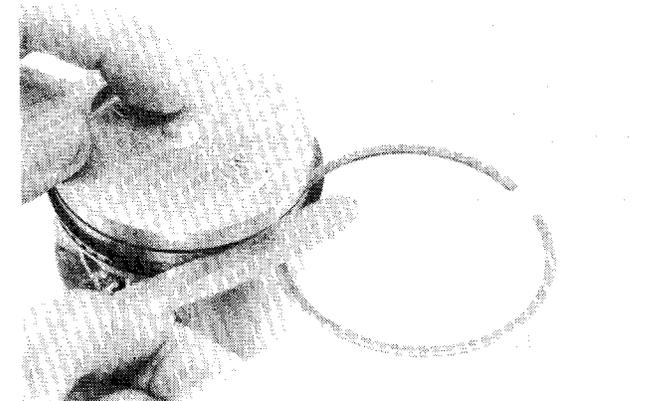
INSPECTION

Measure the piston ring-to-groove clearance.

SERVICE LIMITS:

Top/Second: 0.09 mm (0.004 in)

Inspect the piston for wear or damage.



CYLINDER/PISTON

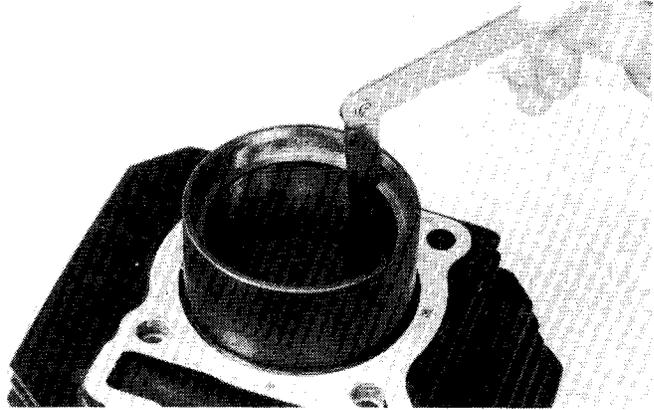
Insert each piston ring squarely into the cylinder and measure the ring end gap.

NOTE

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

SERVICE LIMIT:

Top/Second: 0.50 mm (0.020 in)



Measure the O.D. of the piston 10 mm from the bottom and 90° to the piston pin hole.

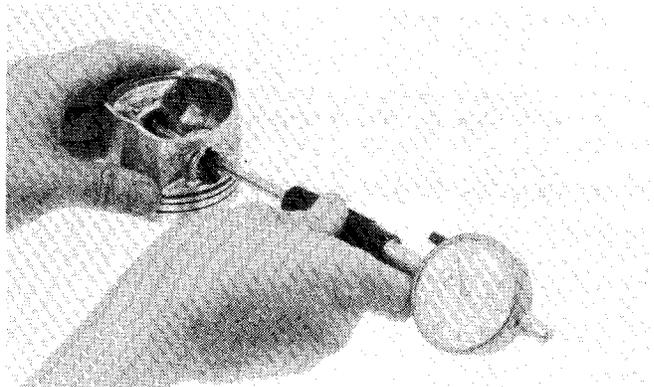
SERVICE LIMIT: 64.90 mm (2.555 in)

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



Measure the piston pin hole I.D.

SERVICE LIMIT: 15.04 mm (0.592 in)

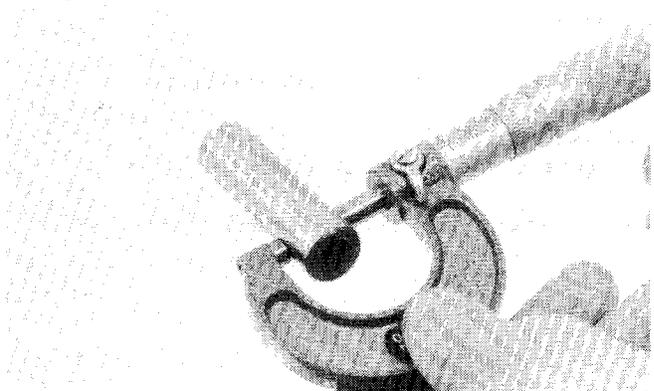


Measure the O.D. of the piston pin.

SERVICE LIMIT: 14.96 mm (0.589 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)

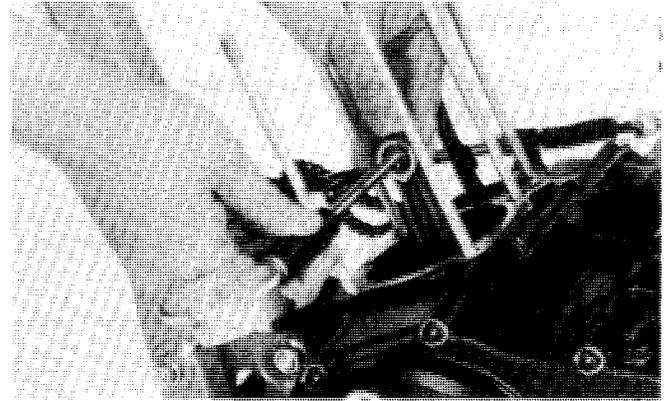


Measure the connecting rod small end I.D.

SERVICE LIMIT: 15.06 mm (0.593 in)

Calculate the connecting rod-to-piston pin clearance.

SERVICE LIMIT: 0.05 mm (0.002 in)



PISTON/CYLINDER INSTALLATION

PISTON RING INSTALLATION

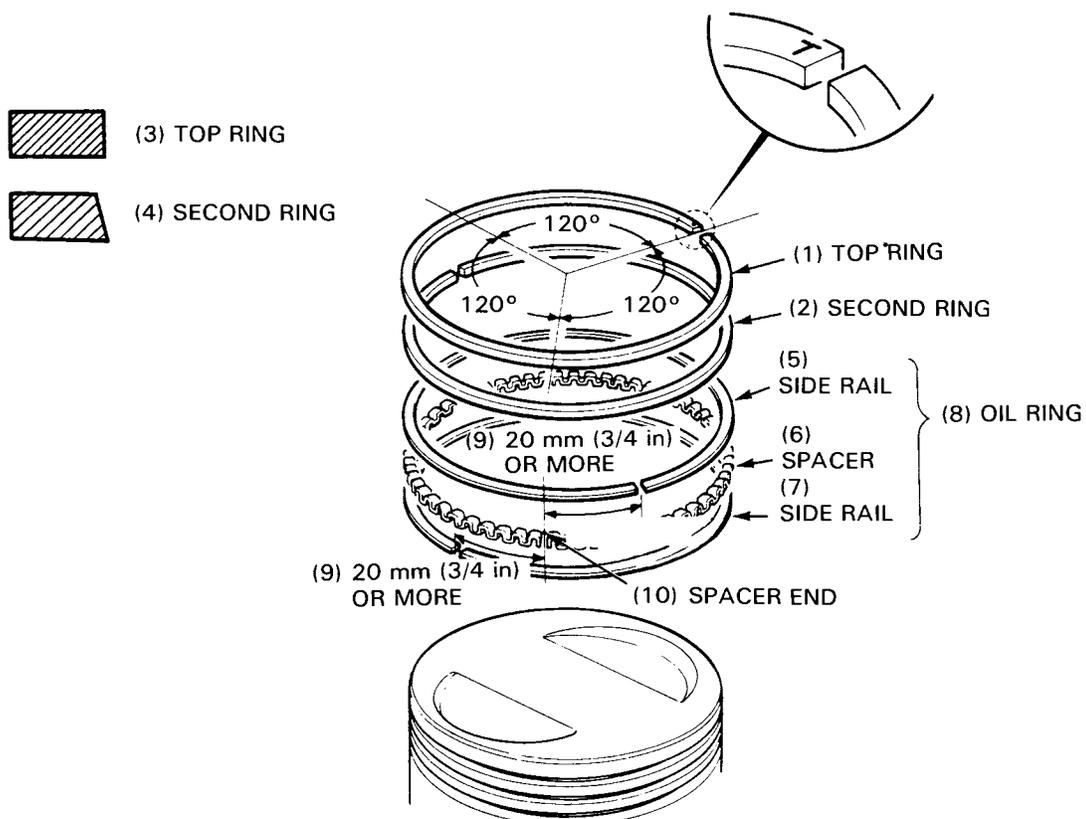
Clean the piston ring grooves thoroughly and install the piston rings.

NOTE

- Avoid piston and piston ring damage during installation.
- Install the piston rings with the markings facing up.
- Do not mix the top and second rings.

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

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



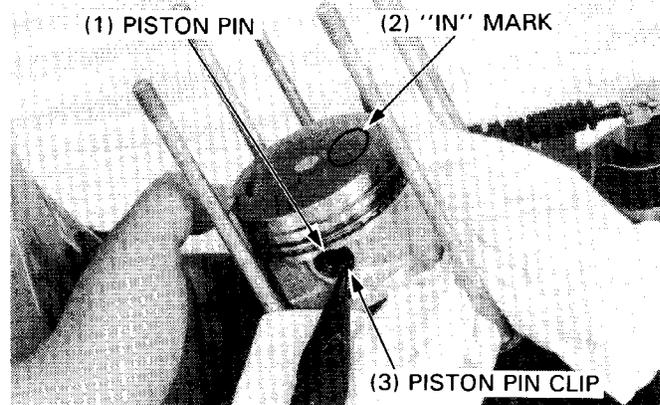
CYLINDER/PISTON

PISTON INSTALLATION

Position the piston "IN" mark on the intake valve side, and install the piston and piston pin. Install new piston pin clips.

NOTE

- Do not align the piston pin clip end gap with the piston cut-out.
- Do not let the clips fall into the crankcase.

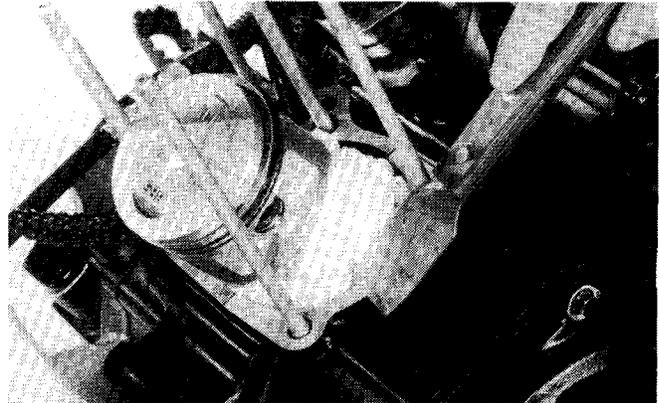


CYLINDER INSTALLATION

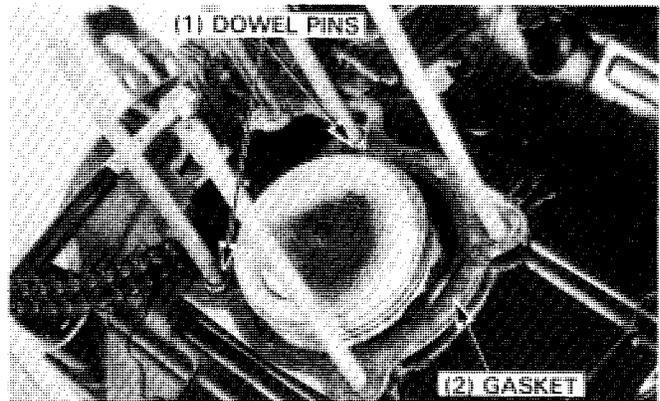
Clean off any gasket material from the crankcase surface.

NOTE

- Be careful not to damage the gasket surface.



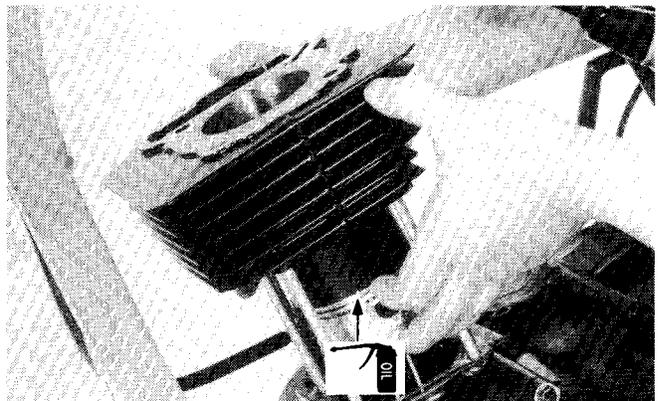
Install the dowel pins and a new gasket.



Stagger the piston ring end gaps 120° a part. Coat the cylinder bore and piston rings with engine oil and install the cylinder.

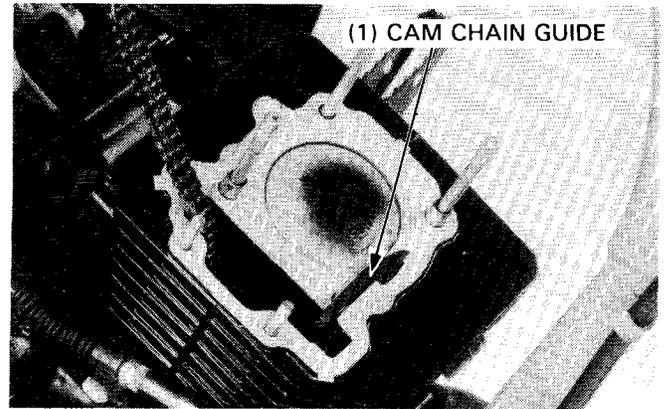
NOTE

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

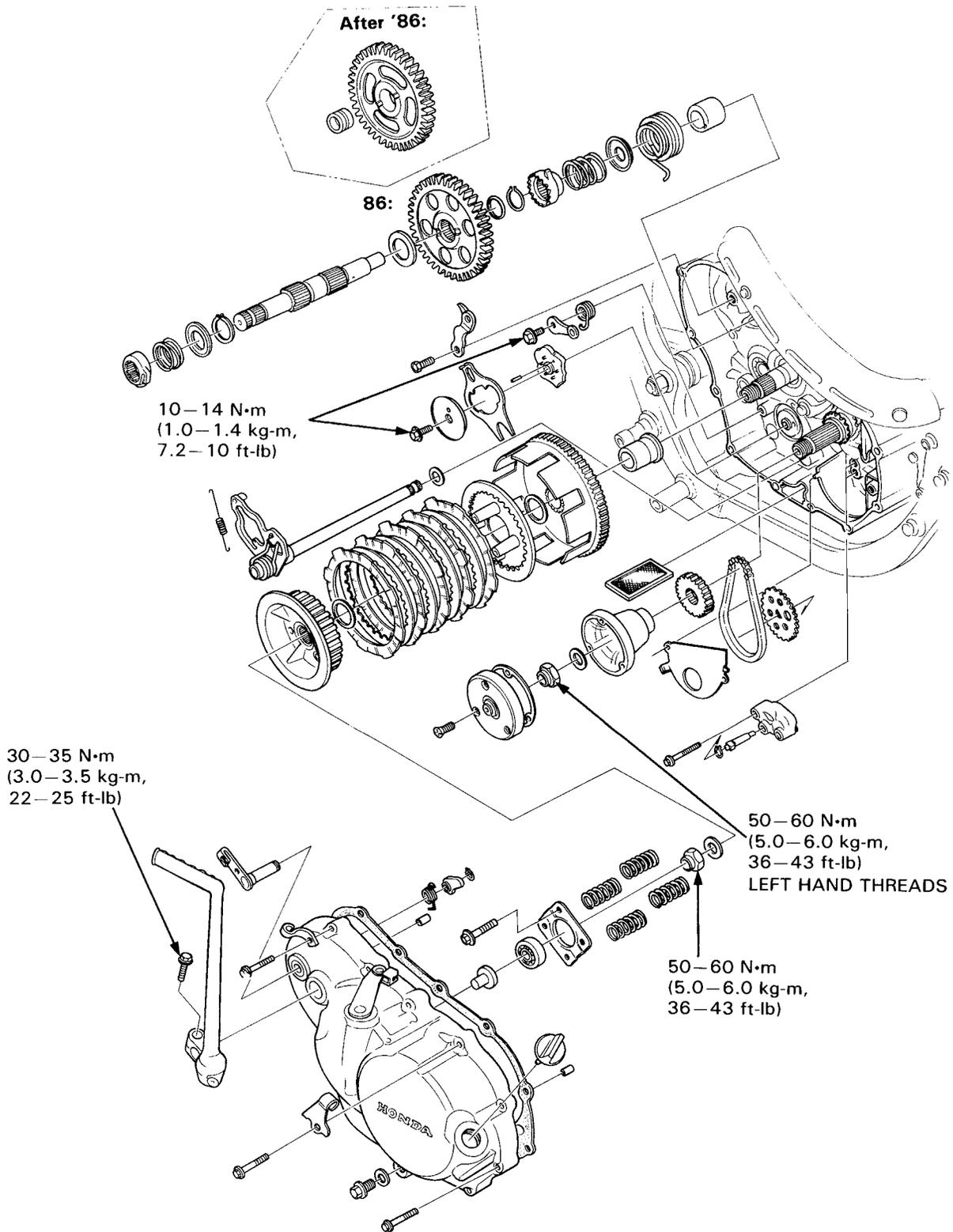


Install the cam chain guide.

Install the cylinder head (page 6-12).



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE



8. CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

SERVICE INFORMATION	8-1	CLUTCH	8-9
TROUBLESHOOTING	8-2	KICK STARTER	8-15
RIGHT CRANKCASE COVER	8-3	GEARSHIFT LINKAGE	8-19
OIL PUMP	8-6		

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the right crankcase cover, clutch, oil pump, kick starter and gearshift linkage. These services can be performed with the engine in the frame.

SPECIFICATIONS

ITEM			STANDARD mm (in)	SERVICE LIMIT mm (in)
Clutch	Spring free length	'86	37.2 (1.45)	35.0 (1.38)
		After '86	32.7 (1.29)	31.0 (1.22)
	Disc thickness		2.93–3.08 (0.115–0.121)	2.60 (0.102)
	Plate warpage		—	0.20 (0.008)
	Clutch outer I.D.		25.000–25.021 (0.9842–0.9851)	25.070 (0.9870)
	Clutch outer guide	I.D.	20.000–20.020 (0.7874–0.7882)	20.070 (0.7902)
		O.D.	24.959–24.980 (0.9826–0.9835)	24.900 (0.9803)
Length		30.05–30.15 (1.183–1.187)	30.00 (1.181)	
Oil pump	Pump end clearance		—	0.20 (0.008)
	Rotor tip clearance		—	0.40 (0.02)
	Rotor-to-body clearance		—	0.25 (0.010)
Kick starter (After '86)	Kick starter spindle	O.D.	21.995–22.018 (0.8660–0.8668)	21.95 (0.864)
	Kick starter pinion gear collar	O.D.	27.934–27.955 (1.1000–1.1006)	27.89 (1.098)
		I.D.	22.035–22.065 (0.8675–0.8687)	22.10 (0.870)
	Kick starter pinion gear	I.D.	27.976–27.989 (1.1014–1.1019)	28.03 (1.104)

TORQUE VALUES

Kick starter arm pinch bolt	30–35 N·m (3.0–3.5 kg-m, 22–25 ft-lb)
Clutch center lock nut	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Oil filter rotor lock nut	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb): Left hand threads
Drum stopper bolt	10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Shifter plate bolt	10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Gearshift pedal bolt	14–18 N·m (1.4–1.8 kg-m, 10–13 ft-lb)

TOOLS

Special

Clutch center holder 07923–9580000

Common

Pin driver, 3 mm 07744–0010200 or equivalent commercially available in U.S.A.
 Gear holder 07724–0010100 Not available in U.S.A.

TROUBLESHOOTING

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

Clutch slips when accelerating

- Faulty clutch lifter
- Discs worn
- Weak spring

Clutch will not disengage

- Faulty clutch lifter
- Plates warped

ATC creeps with clutch disengaged

- Plates warped

Clutch operation feels rough

- Outer drum slots rough

Hard to shift

- Incorrect clutch adjustment
- Faulty clutch lifter

Low oil pressure

- Faulty oil pump
- Oil pump drive gear broken

Hard shifting

- Damaged gearshift plate or drum shifter
- Shift spindle bent
- Faulty stopper

Kick starter slips

- Worn or damaged starter ratchet and/or pinion gear
- Kick starter ratchet out of ratchet guide

Kick starter pedal does not return

- Weak or damaged kick return spring
- Return spring hook out of place

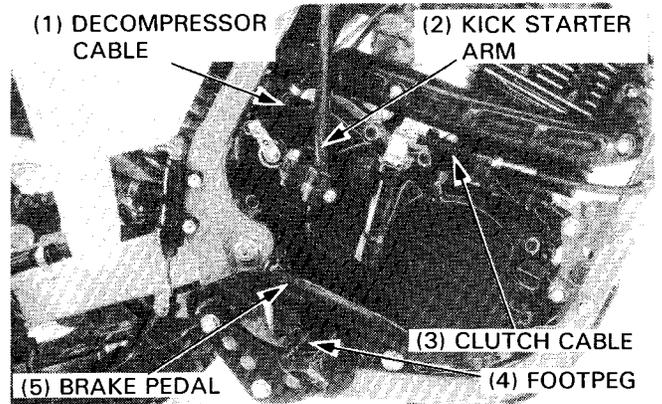
Gearshift pedal does not return

- Bent gearshift spindle
- Broken shift spindle return spring

RIGHT CRANKCASE COVER

REMOVAL

Drain the engine oil (page 2-2).
 Remove the right footpeg and brake pedal (page 14-20).
 Disconnect the decompressor cable from the cam follower shaft arm.
 Disconnect the clutch cable from the clutch lifter arm.
 Remove the kick starter pinch bolt and the arm.

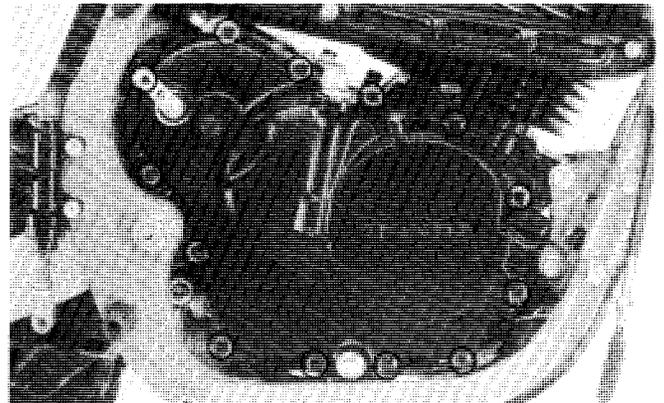


Remove the right crankcase cover bolts and the cover.

NOTE

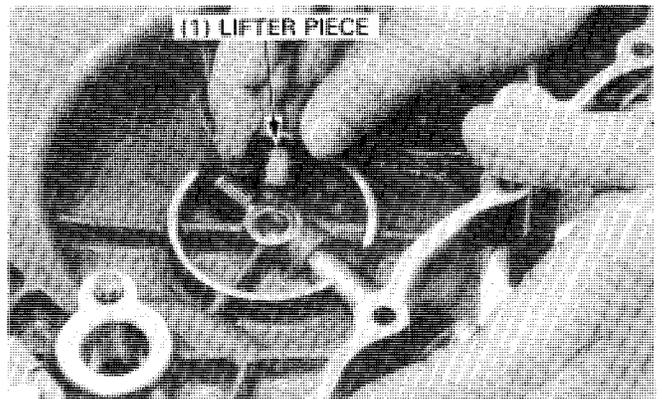
- Loosen the bolts in a criss-cross pattern in 2 or 3 progressive steps.

Remove the gasket and dowel pins.



CLUTCH LIFTER REMOVAL

Remove the clutch lifter piece.

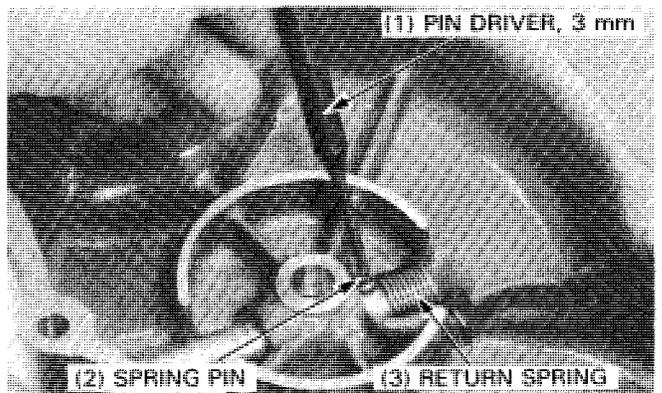


Drive in the spring pin until it is flush with the lifter shaft surface and remove the lifter arm shaft and return spring.

TOOL:

Pin driver, 3 mm

07744-0010200 or equivalent commercially available in U.S.A.



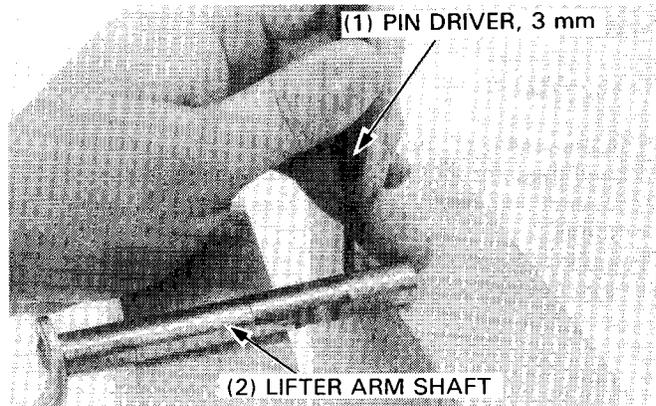
CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

Drive out the spring pin from the lifter arm shaft and discard it.

TOOL:

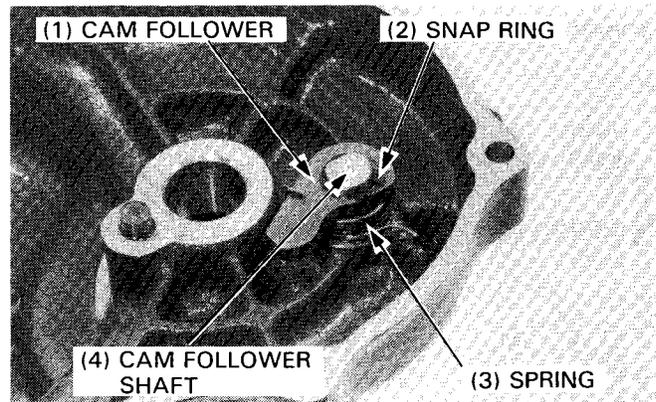
Pin driver, 3 mm

07744-0010200 or
equivalent commercially
available in U.S.A.



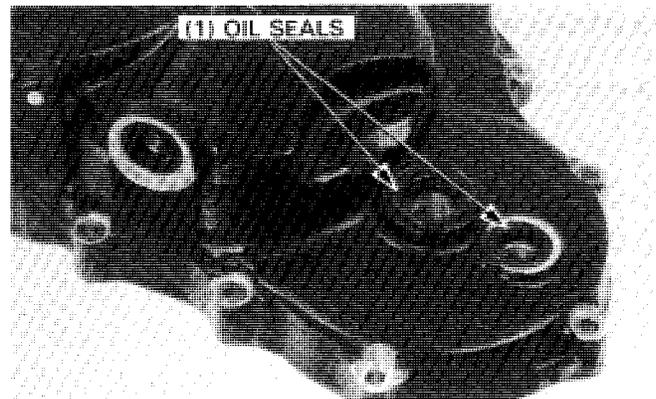
DECOMPRESSOR CAM FOLLOWER SHAFT DISASSEMBLY

Remove the snap ring, cam follower, spring and cam follower shaft.

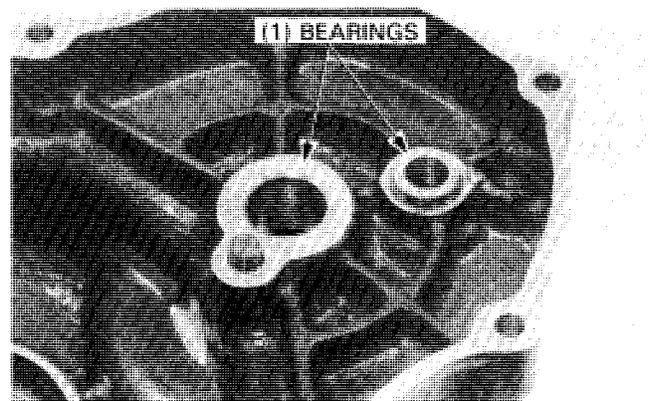


RIGHT CRANKCASE COVER INSPECTION

Check the oil seals for wear or damage and replace if necessary.

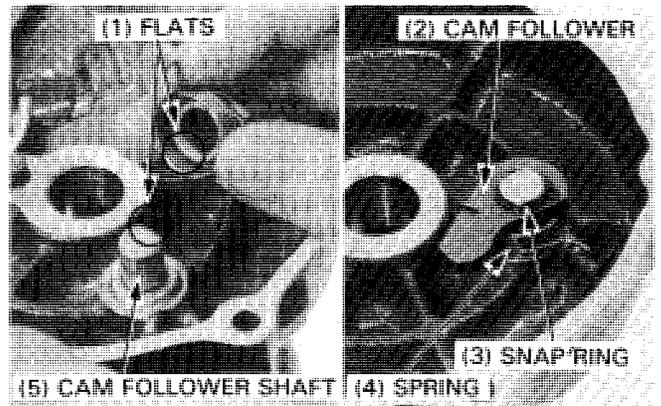


Check the kick starter spindle and cam follower shaft bearings for wear or damage.



DECOMPRESSOR CAM FOLLOWER SHAFT ASSEMBLY

Hook the spring to the cam follower.
Install the cam follower by aligning the flats on the shaft and cam follower.
Hook the spring end to the right crankcase cover as shown.
Install the snap ring in the groove in the shaft securely.



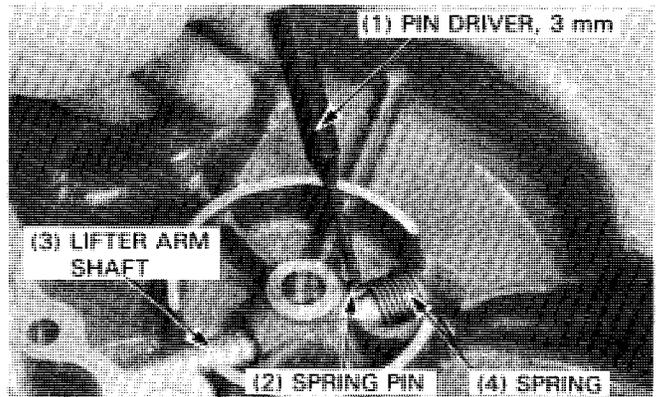
CLUTCH LIFTER INSTALLATION

Install the spring and lifter arm shaft.
Drive a new spring pin into the arm shaft hole.

TOOL:

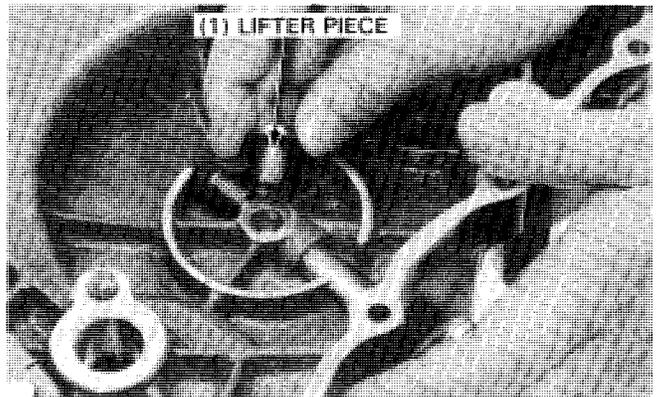
Pin driver, 3 mm

07744-0010200 or
equivalent commercially
available in U.S.A.



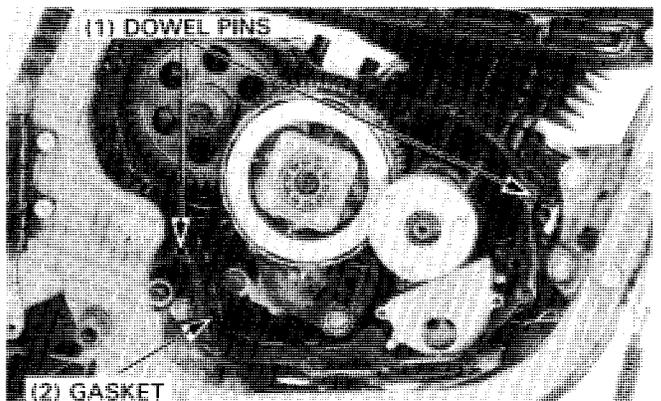
Hook the end of the spring to the spring pin.

Align the cut-out in the lifter arm shaft with the lifter piece hole in the cover and install the lifter piece into the hole.



INSTALLATION

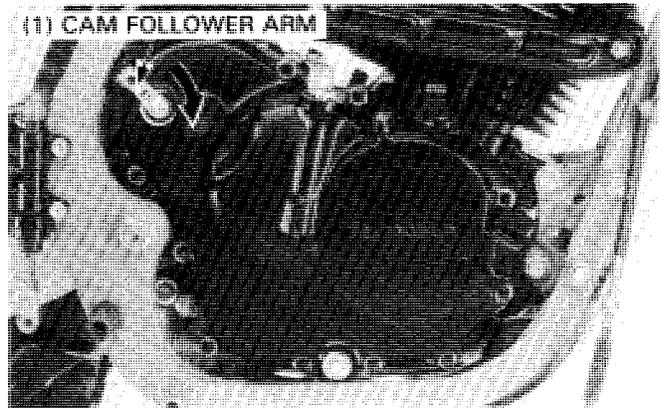
Install the dowel pins and a new gasket.



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

Turn the cam follower shaft arm clockwise to align the cam follower with the cam and install the right crankcase cover.

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



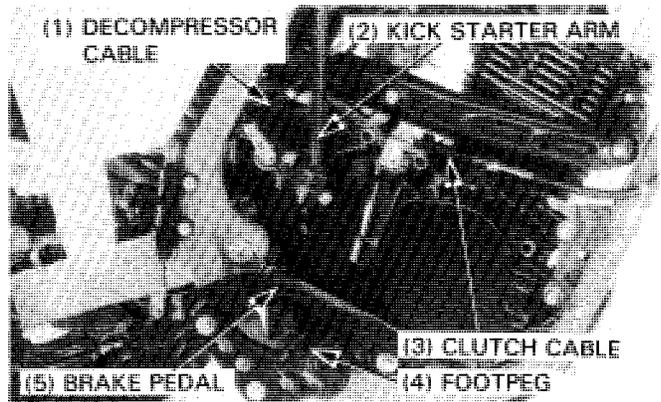
Connect the clutch cable to the clutch lifter arm. Connect the decompressor cable to the cam follower shaft arm.

Align the punch marks and install the kick starter arm onto the kick starter spindle.

Tighten the kick starter pinch bolt.

TORQUE: 30–35 N·m (3.0–3.5 kg·m, 22–25 ft·lb)

Install the rear brake pedal and right footpeg (page 14-20). Fill the crankcase with the recommended oil (page 2-2). Adjust the clutch cable (page 3-15) and the decompressor cable (page 3-9).



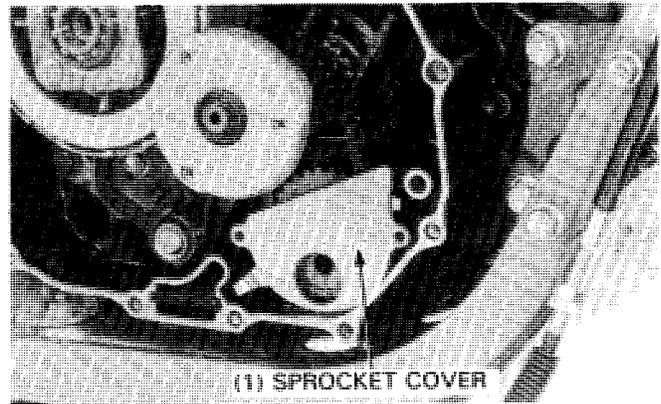
OIL PUMP

REMOVAL

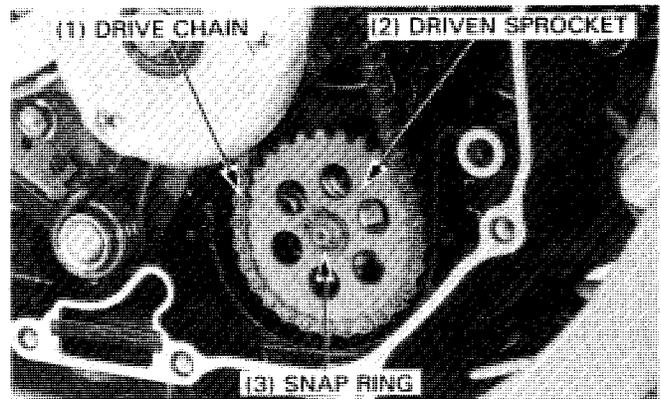
Drain the engine oil (page 2-2).

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

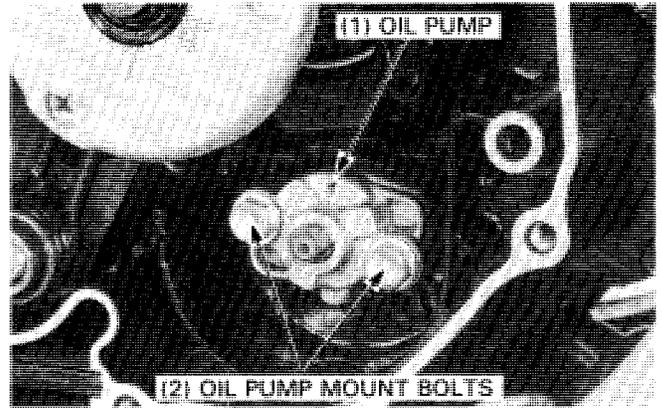
Remove the oil pump driven sprocket cover.



Remove the snap ring and the oil pump driven sprocket from the shaft.

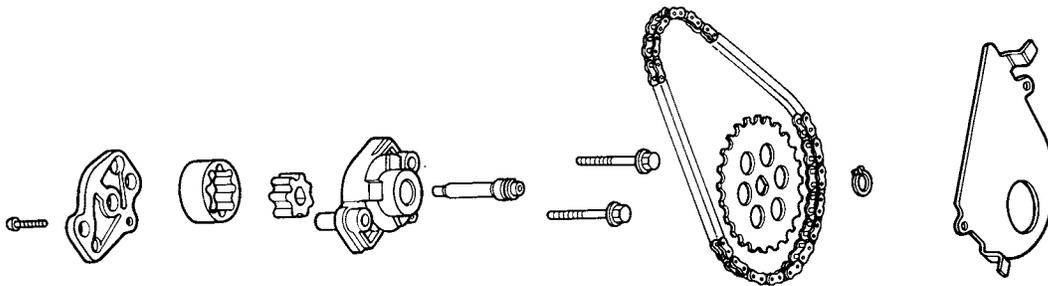
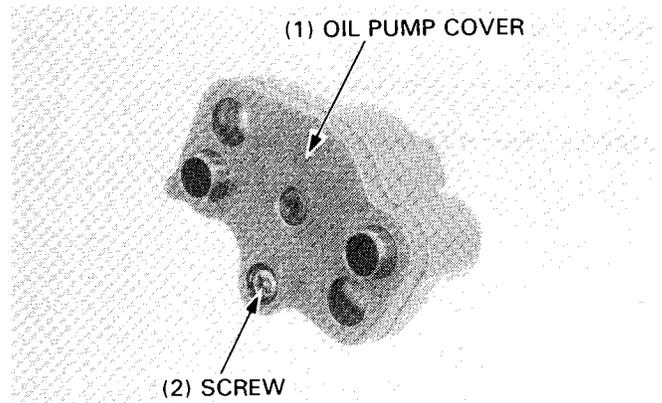


Remove the oil pump mount bolts and the pump.



DISASSEMBLY

Remove the screw and oil pump cover.

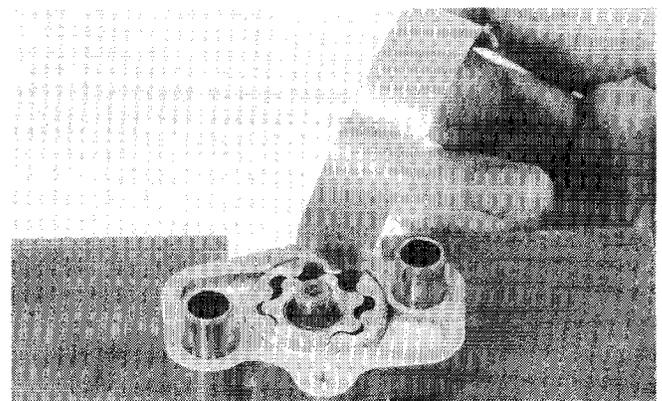


INSPECTION

Install the outer and inner rotors into the oil pump body and insert the oil pump driven gear shaft.

Measure the pump rotor tip clearance.

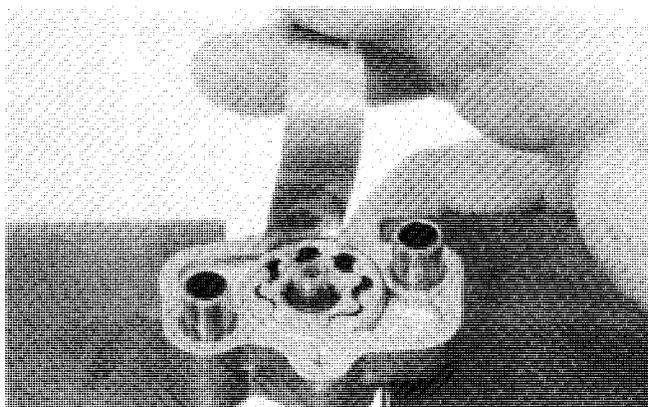
SERVICE LIMIT: 0.20 mm (0.008 in)



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

Measure the pump body-to-rotor clearance.

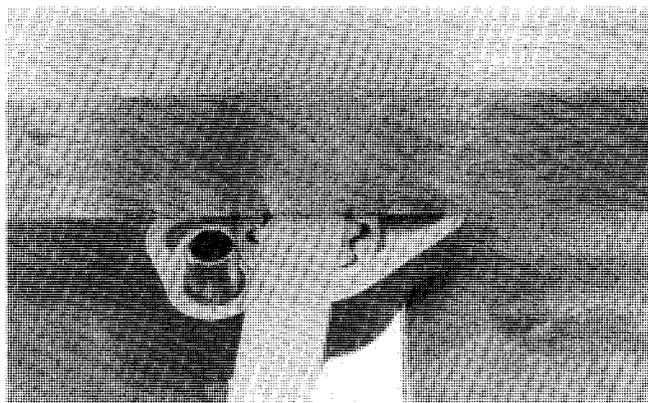
SERVICE LIMIT: 0.40 mm (0.02 in)



Remove the oil pump shaft.

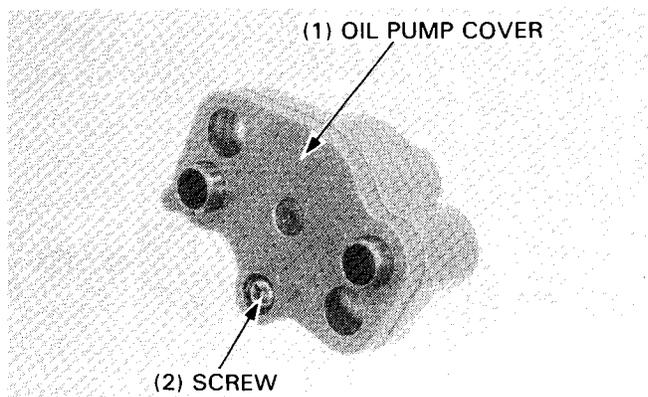
Measure the pump end clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



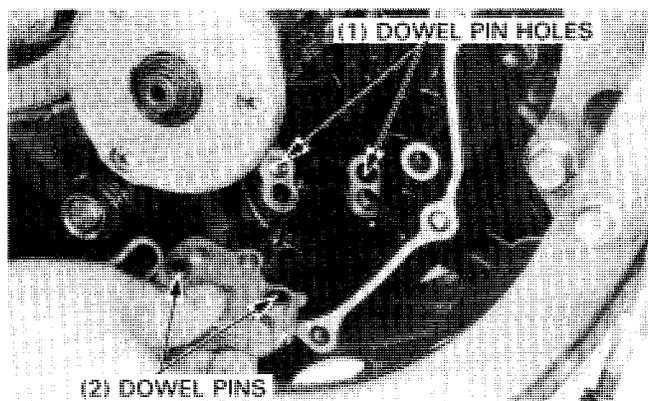
ASSEMBLY

Install the outer and inner rotors into the pump body.
Align the flats on the oil pump shaft and inner rotor, and install the shaft into the rotor.
Install the oil pump cover and tighten the screw securely.
Check the oil pump for smooth operation.

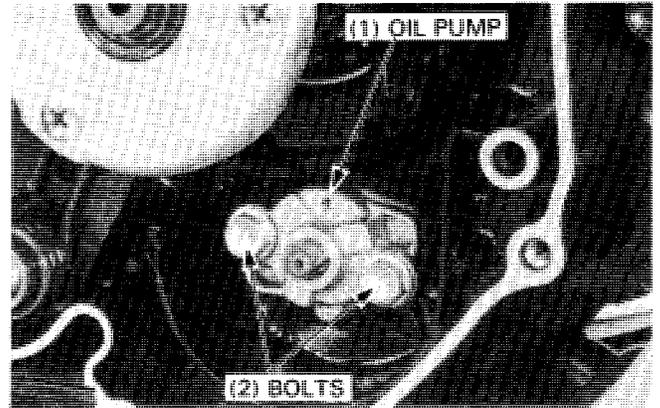


INSTALLATION

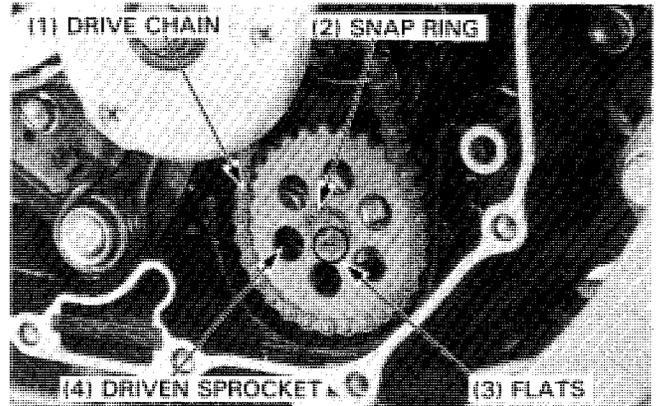
Align the dowel pins on the oil pump with the dowel pin holes on the crankcase and install the oil pump onto the crankcase.



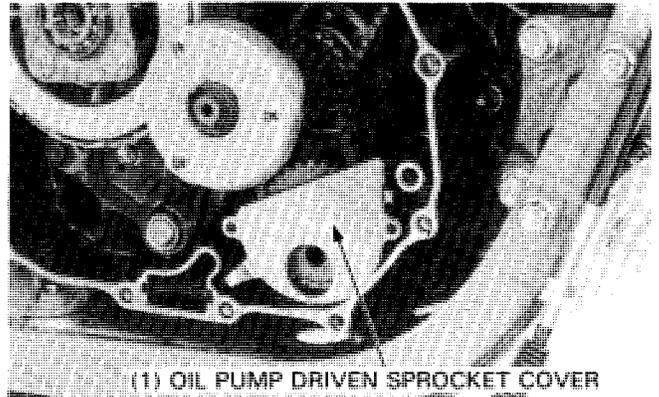
Install the oil pump mount bolts and tighten them.



Install the drive chain on the driven sprocket.
Install the driven sprocket by aligning the flats on the shaft with the sprocket.
Install the snap ring in the oil pump shaft groove.



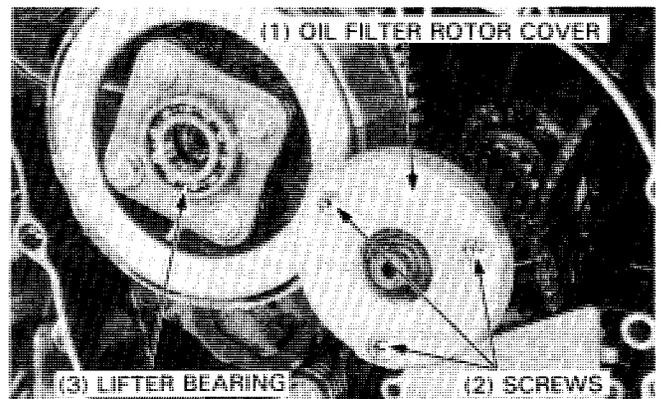
Install the oil pump driven sprocket cover.
Install the right crankcase cover (page 8-5).
Fill the engine with the recommended oil (page 2-2).



CLUTCH

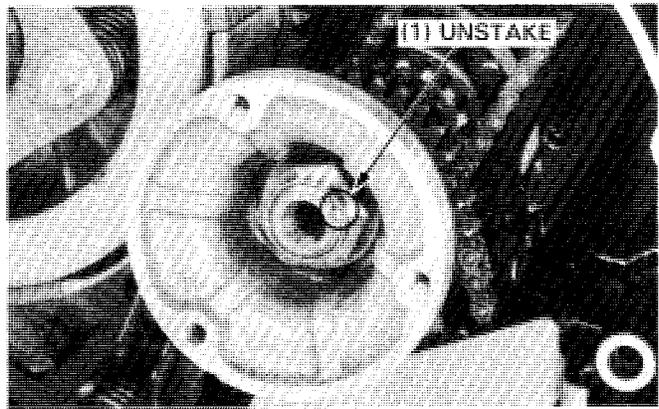
REMOVAL

Drain the engine oil (page 2-2).
Remove the right crankcase cover (page 8-3).
Remove the screws, oil filter rotor cover and the lifter bearing.
Check the lifter bearing for excessive play, wear or damage.



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

Unstake the oil filter rotor lock nut with a drill or grinder. Be careful not to damage the crankshaft threads.



Hold the primary drive gear with the gear holder as shown.

TOOL:

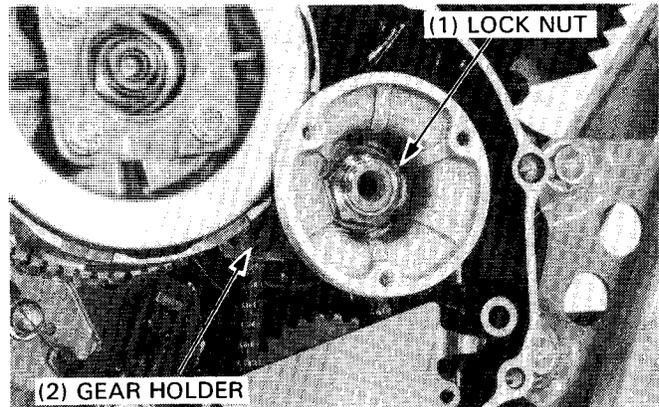
Gear holder

07724-0010100
(Not available in U.S.A.)

Remove the oil filter rotor lock nut.

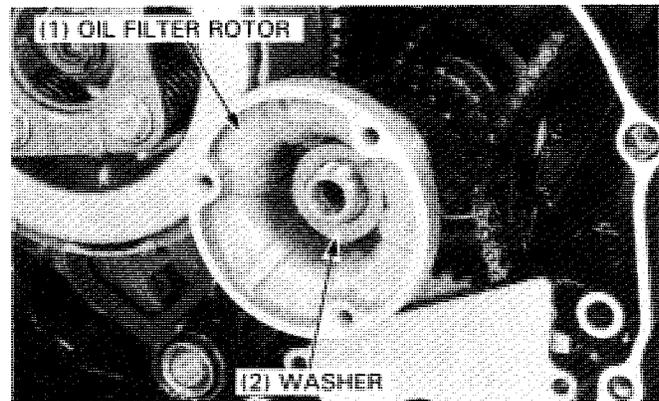
NOTE

- The rotor lock nut has left-hand threads.



Remove the gear holder.

Remove the washer and oil filter rotor from the crankshaft.



Hold the primary drive gear with the gear holder as shown.

TOOL:

Gear holder

07724-0010100
(Not available in U.S.A.)

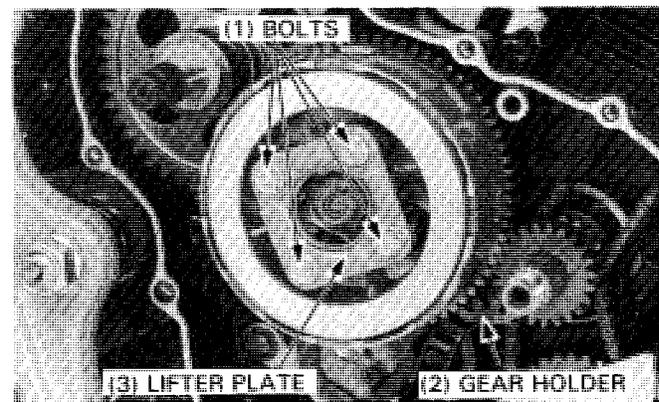
Remove the bolts, lifter plate and clutch springs.

NOTE

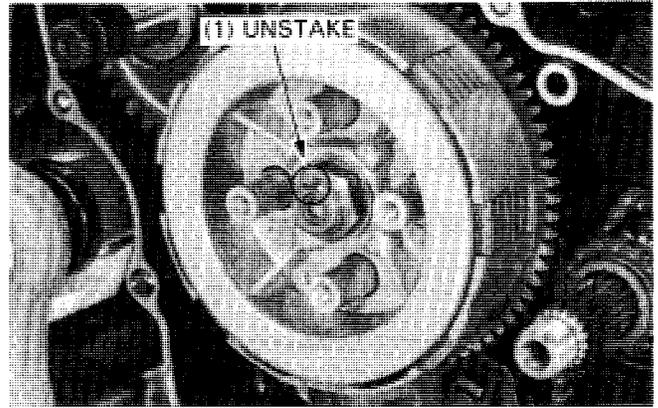
- Loosen the bolts in a crisscross pattern in 2 or 3 steps.

Remove the gear holder.

Turn the clutch outer so the cut-out faces the crankshaft, then remove the primary drive gear.

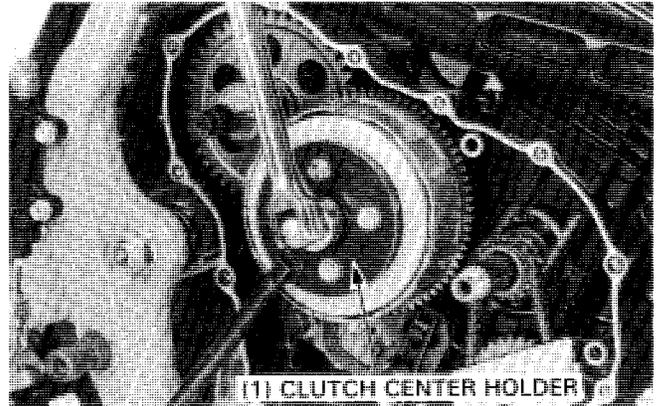


Unstake the clutch lock nut with a drill or grinder. Be careful not to damage the shaft threads.

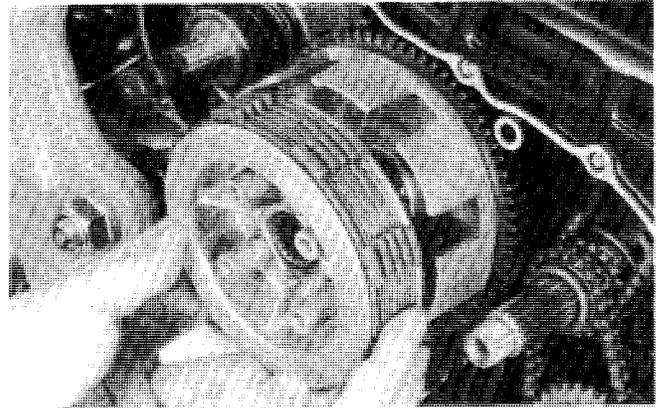


Hold the clutch center with the clutch center holder and remove the clutch lock nut.

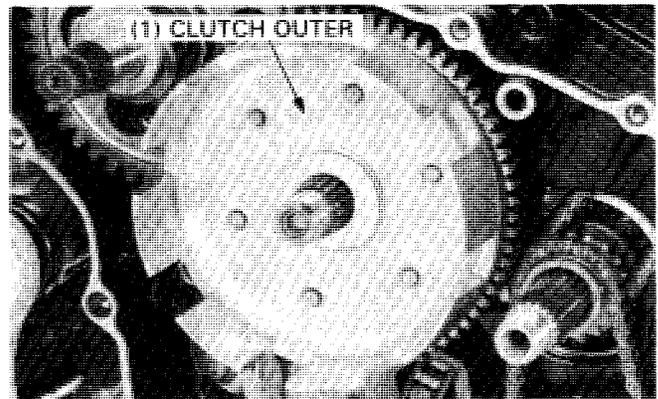
TOOL:
Clutch center holder **07923-9580000**



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



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



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

INSPECTION

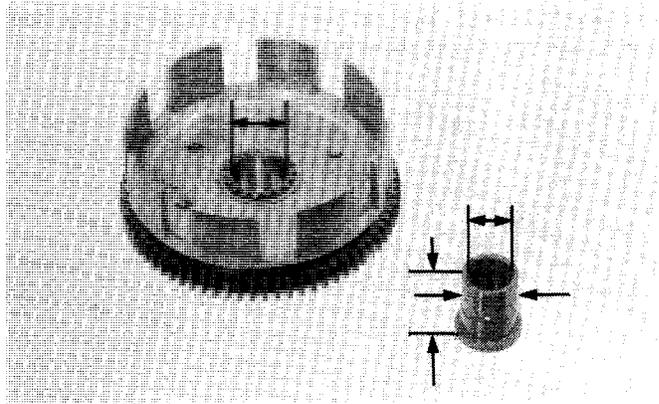
Check the slots of the clutch outer for damage or wear made by the clutch discs. Replace the outer if necessary.

Measure the I.D. of the clutch outer.

SERVICE LIMIT: 25.070 mm (0.9870 in)

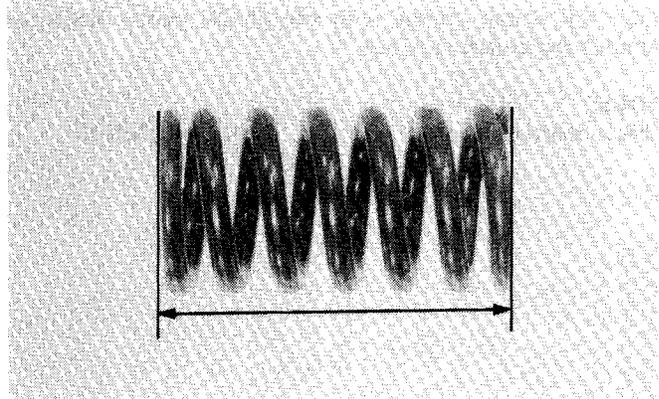
Measure the O.D., I.D. and length of the clutch outer guide.

**SERVICE LIMIT: I.D. 20.070 mm (0.7902 in)
O.D. 24.900 mm (0.9803 in)
length 30.000 mm(1.181 in)**



Measure the clutch spring free length.

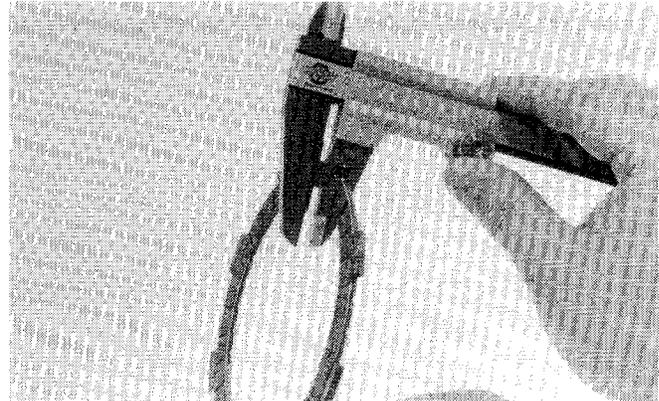
**SERVICE LIMIT: '86: 35.0 mm (1.38 in)
After '86: 31.0 mm (1.22 in)**



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

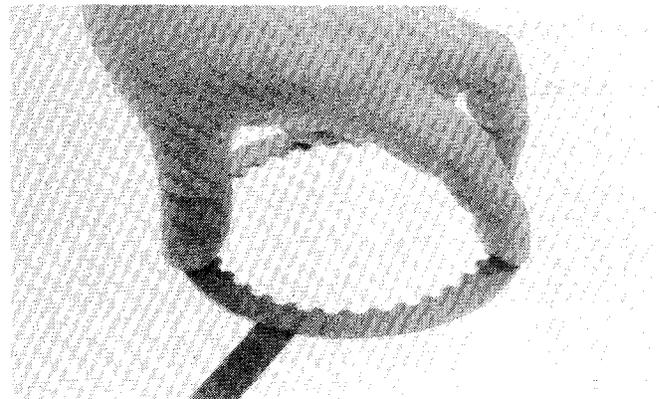
Measure the disc thickness.

SERVICE LIMIT: 2.60 mm (0.102 in)



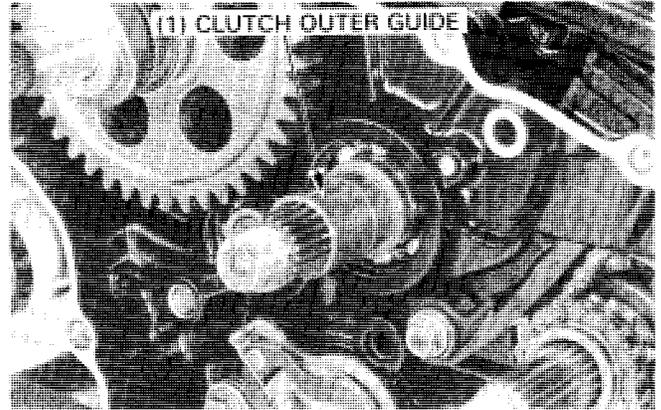
Check for plate warpage on a surface plate using a feeler gauge.

SERVICE LIMIT: 0.20 mm (0.008 in)

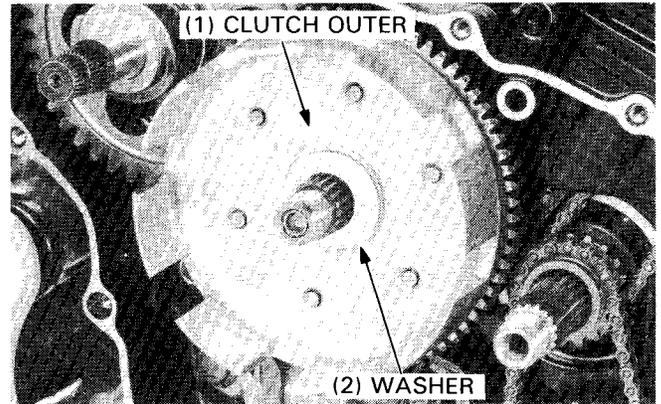


INSTALLATION

Install the clutch outer guide.



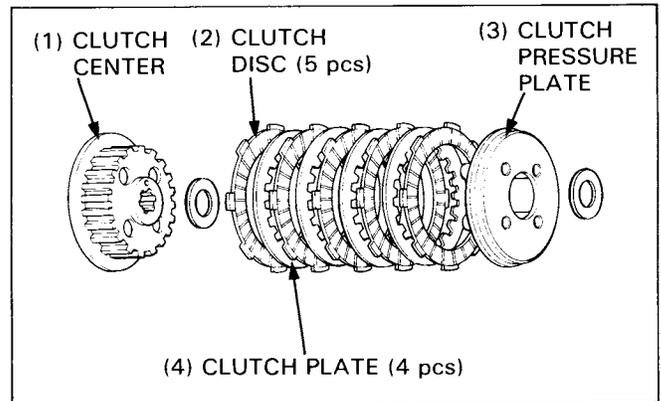
Install the clutch outer and washer.



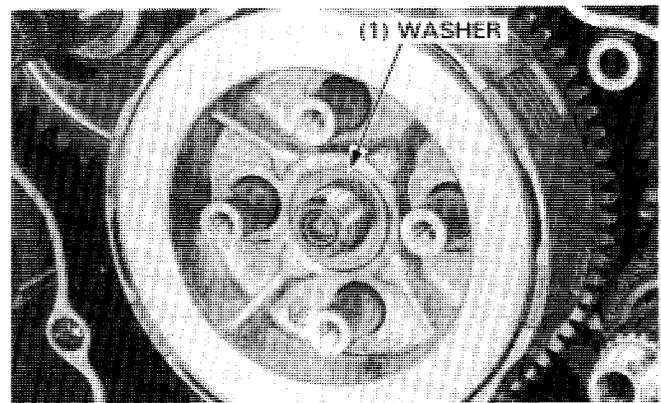
Install the pressure plate, discs, plates and clutch center.

NOTE

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



Install the washer.



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

Hold the clutch center with the clutch center holder.

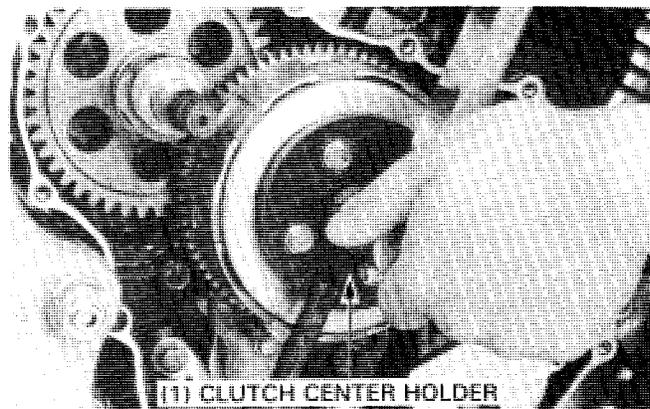
TOOL:

Clutch center holder **07923-9580000**

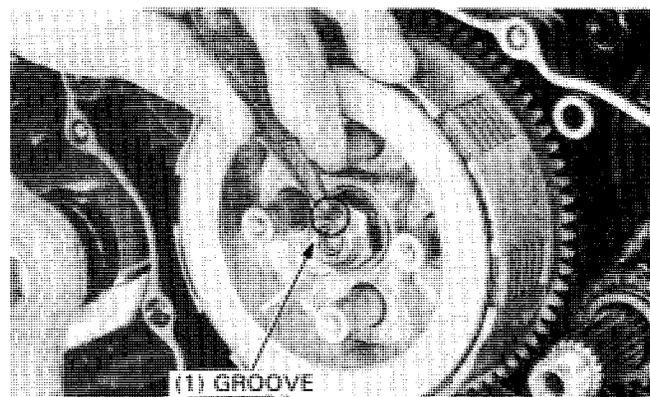
Install a new lock nut and tighten it.

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

Remove the clutch center holder.



Stake the end of the lock nut into the groove in the mainshaft with a punch. Be careful not to damage the shaft threads.



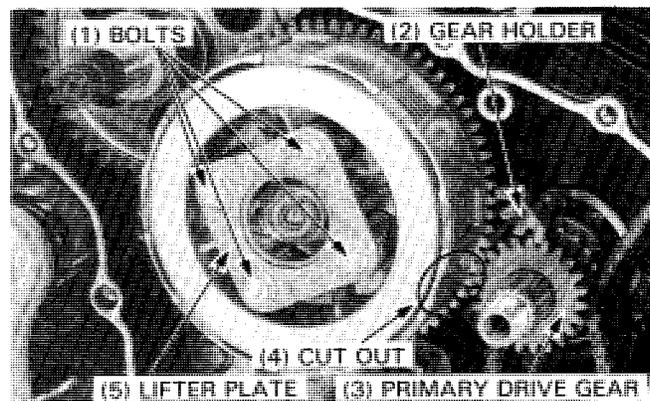
Turn the clutch outer so the cut-out faces the crankshaft, then install the primary drive gear. Hold the primary drive gear with the gear holder as shown.

TOOL:

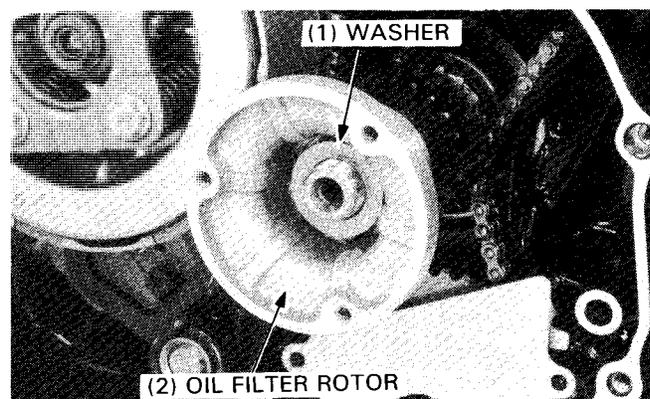
Gear holder **07724-0010100**
(Not available in U.S.A.)

Install the spring, lifter plate and bolts.

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



Install the oil filter rotor and washer onto the crankshaft.



Hold the primary drive gear with the gear holder as shown.

TOOL:

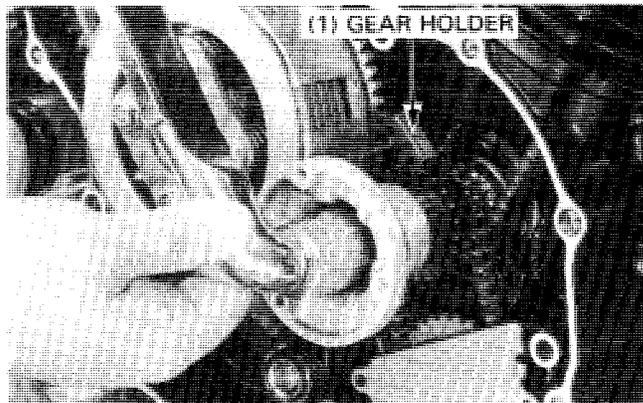
Gear holder 07724-0010100
(Not available in U.S.A.)

Install a new lock nut and tighten it.

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

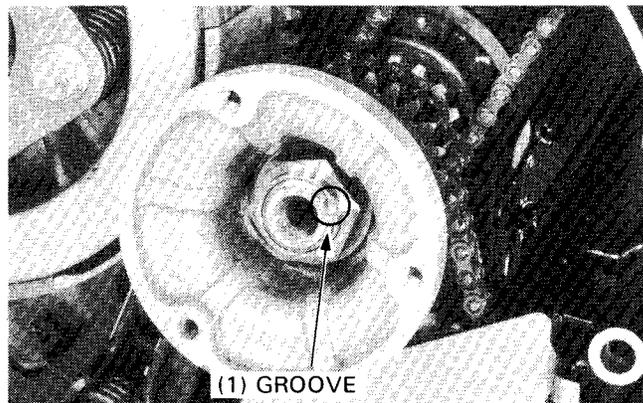
NOTE

- The oil filter rotor lock nut has left-hand threads.

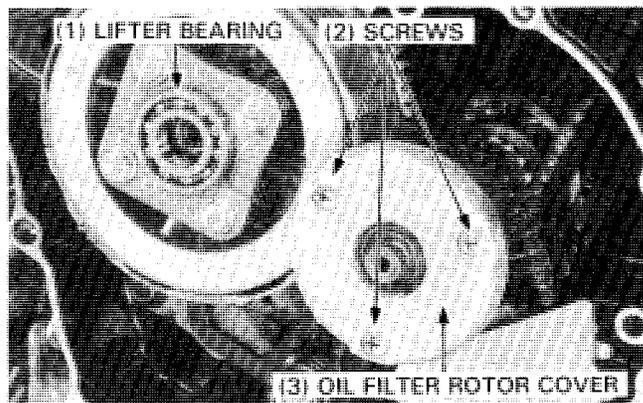


Remove the gear holder.

Stake the end of lock nut into the groove of the crankshaft with a punch. Be careful not to damage the shaft threads.



Install a new bearing into the clutch lifter plate.
Install the oil filter rotor cover using the three screws.
Install the right crankcase cover (page 8-5).
Fill the engine with the recommended oil (page 2-2).

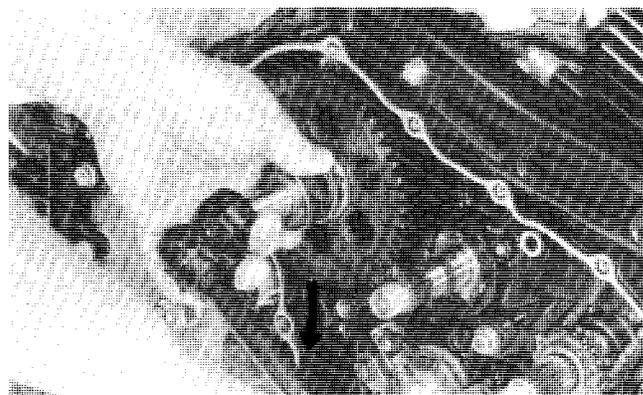


KICK STARTER

REMOVAL

Drain the engine oil (page 2-2).
Remove the right crankcase cover (page 8-3).
Remove the clutch (page 8-9).

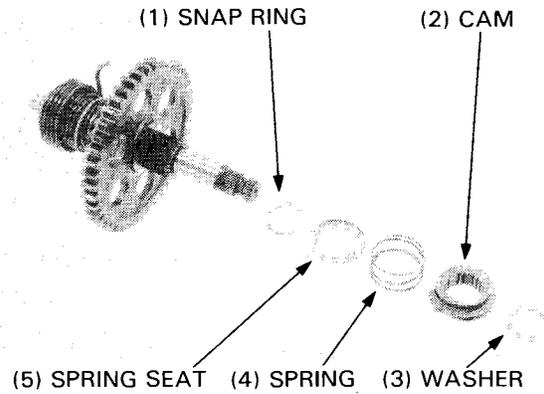
Temporarily install the kick starter arm on the kick starter shaft and remove the shaft assembly by turning the arm clockwise to free the ratchet from the ratchet guide.



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

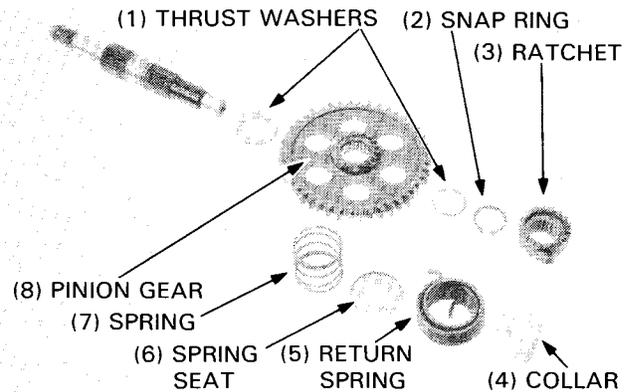
DISASSEMBLY

Remove the washer, decompressor cam, spring, spring seat and snap ring from the kick starter shaft.



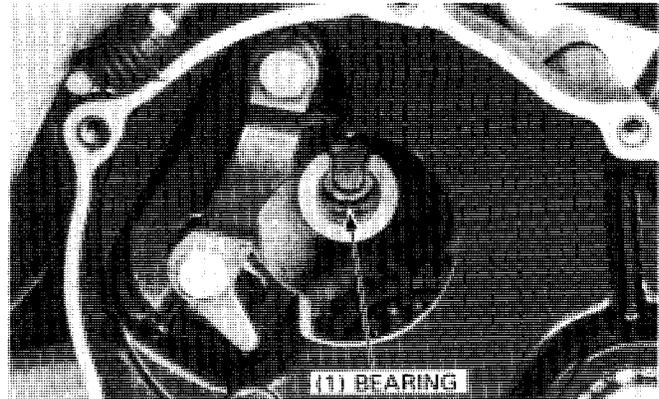
Remove the collar, return spring, spring seat, spring and ratchet.

Remove the snap ring, thrust washers and starter pinion gear from the kick starter shaft.



INSPECTION

Check the kick starter shaft bearing in the right crankcase for wear or damage.

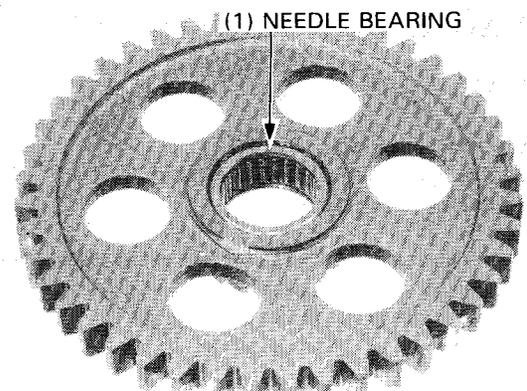


'86:

Check the starter pinion gear ratchet surface for wear or damage.

Check the starter pinion needle bearing for excessive play, wear or damage.

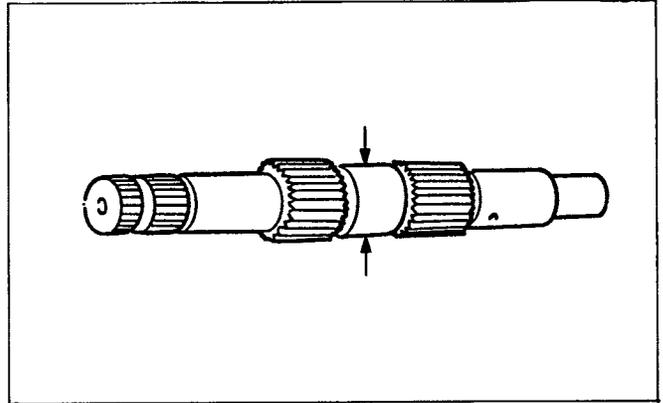
'86



After '86:

Measure the kick stater spindle O.D.

SERVICE LIMIT: 21.95 mm (0.864 in)



Check the starter pinion gear ratchet surface for wear or damage.

Measure the pinion gear I.D.

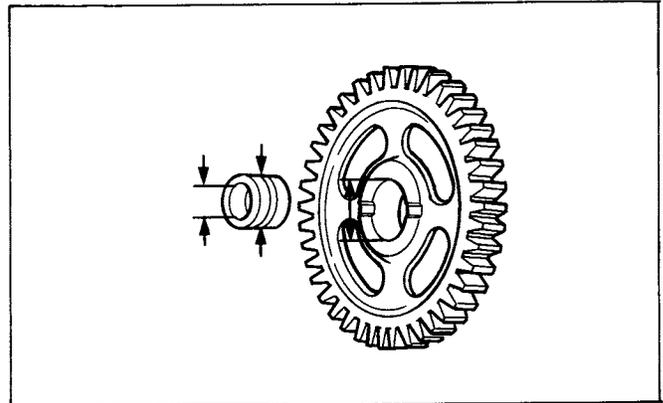
SERVICE LIMIT: 28.03 mm (1.104 in)

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

SERVICE LIMIT:

O.D.: 27.89 mm (1.098 in)

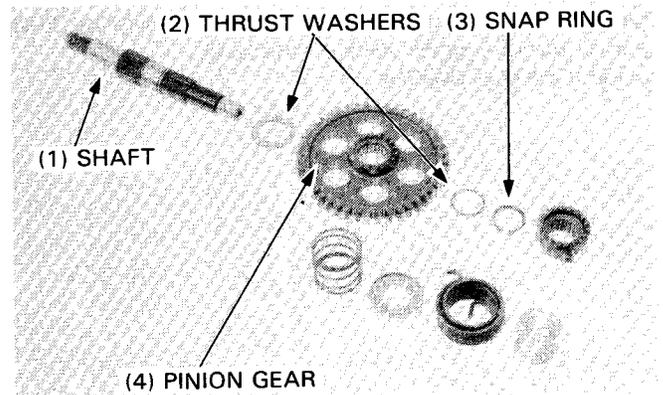
I.D. : 22.10 mm (0.870 in)



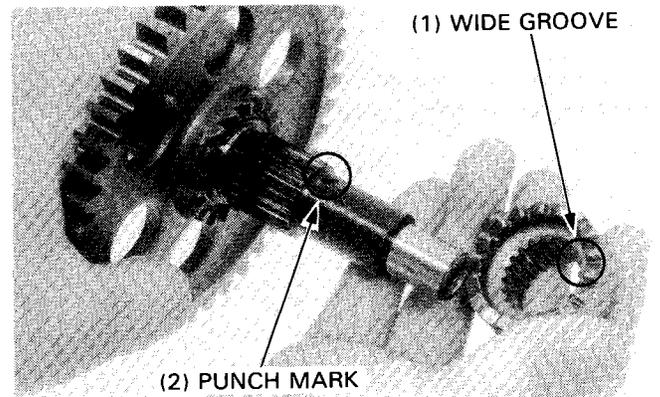
ASSEMBLY

Install the snap ring in the groove in the shaft.

Install the thrust washer, pinion gear, thrust washer and snap ring onto the shaft.



Install the ratchet over the shaft aligning its wide groove with the punch mark on the shaft.

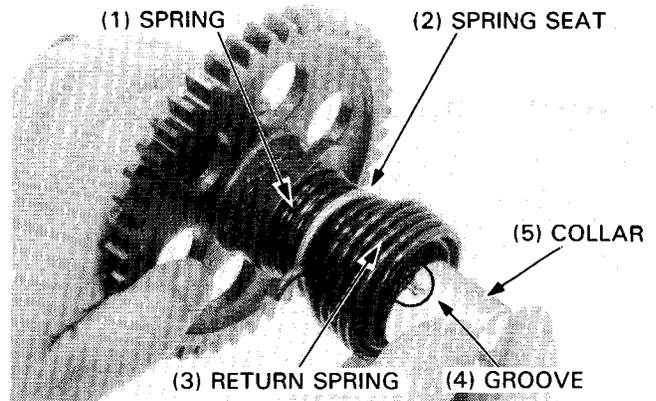


CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

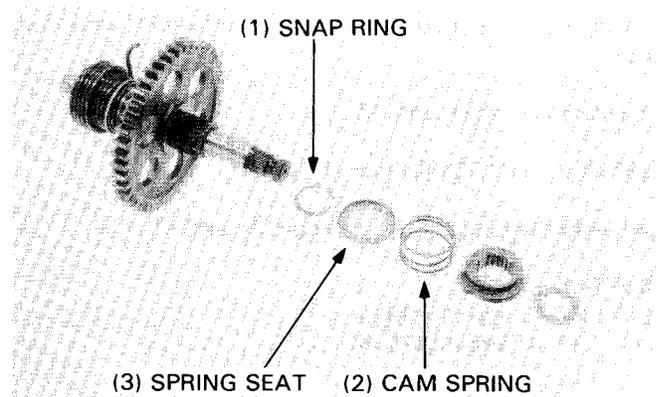
Install the spring and spring seat.

Install the return spring and insert its end into the hole in the shaft.

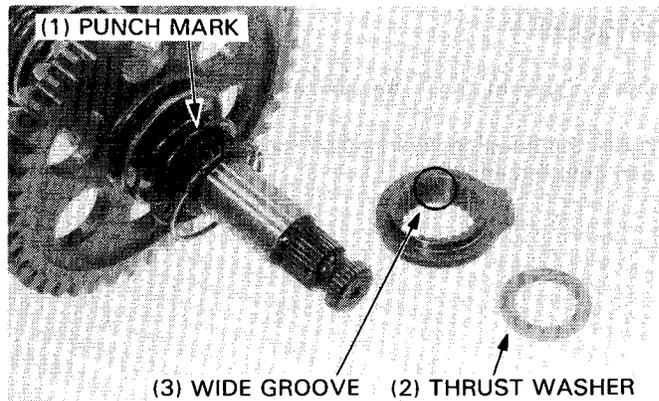
Install the collar, aligning its groove with the end of the return spring.



Install the snap ring in the groove in the shaft.
Install the spring seat and spring onto the shaft.

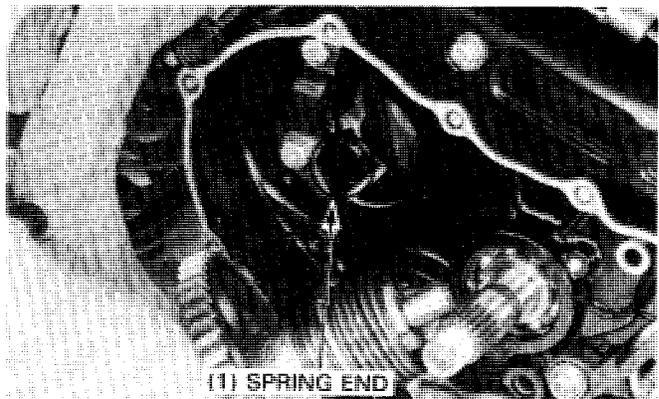


Install the decompressor cam over the shaft aligning its wide groove with the punch mark on the shaft.
Install the thrust washer.



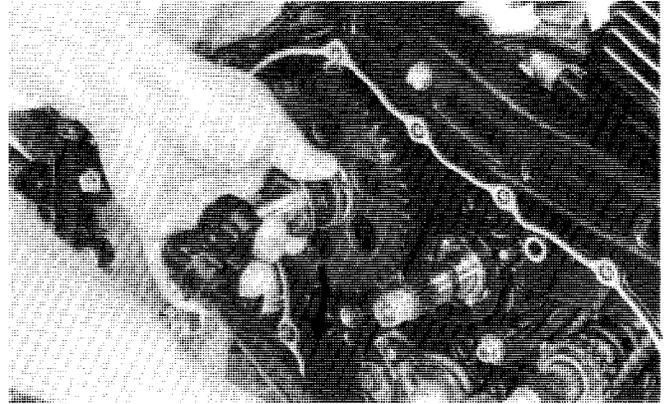
INSTALLATION

Temporarily install the kick starter arm onto the shaft.
Hook the return spring in the crankcase.



Install the kick starter shaft assembly by turning it clockwise and aligning its ratchet with the ratchet guide.

Remove the kick starter arm.

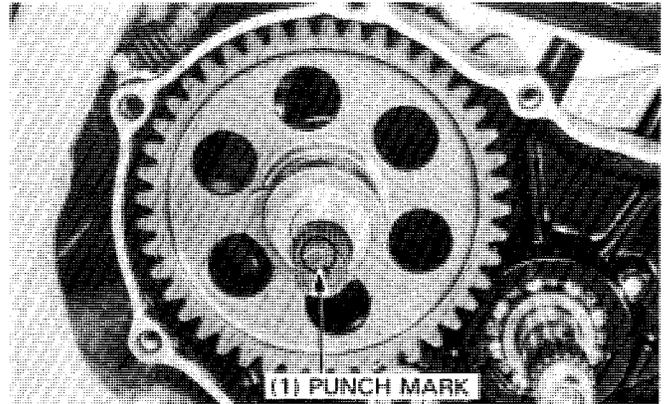


Make sure that the punch mark on the shaft faces up.

Install the clutch (page 8-13).

Install the right crankcase cover (page 8-5).

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



GEARSHIFT LINKAGE

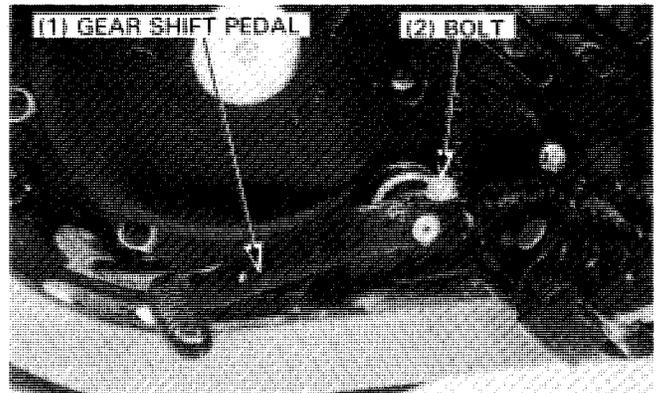
REMOVAL

Drain the engine oil (page 2-2).

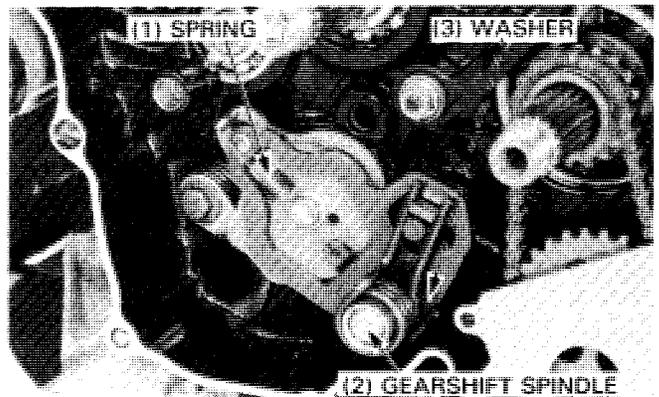
Remove the right crankcase cover (page 8-3).

Remove the clutch (page 8-9).

Remove the bolt and the gearshift pedal.

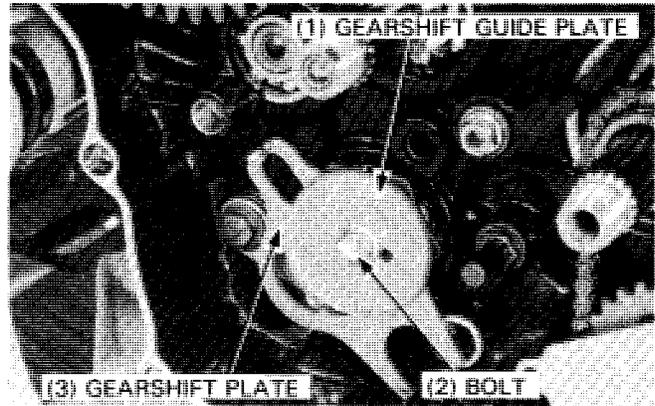


Unhook the spring and remove the gearshift spindle and washer.

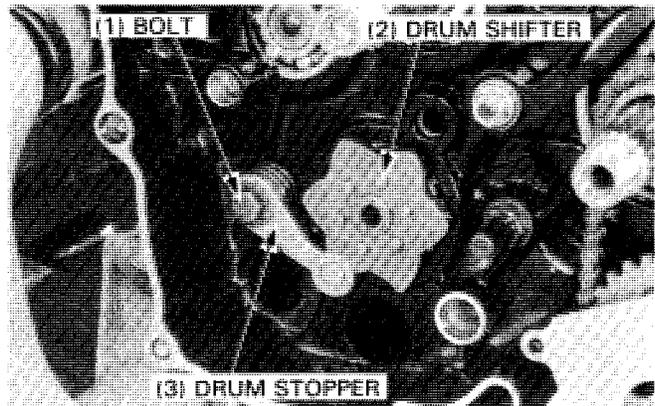


CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

Remove the gearshift guide plate and gearshift plate.

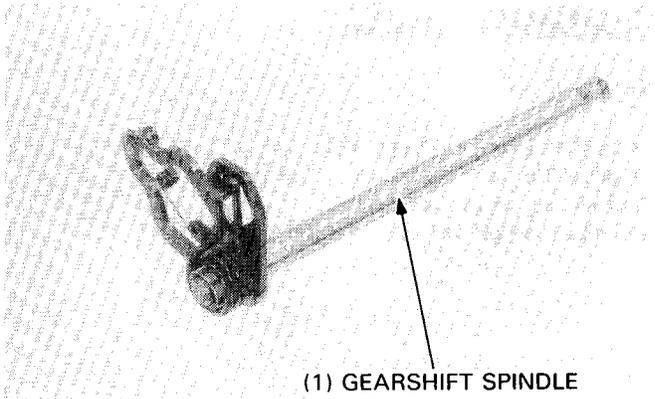


Remove the drum stopper, drum shifter and dowel pin.



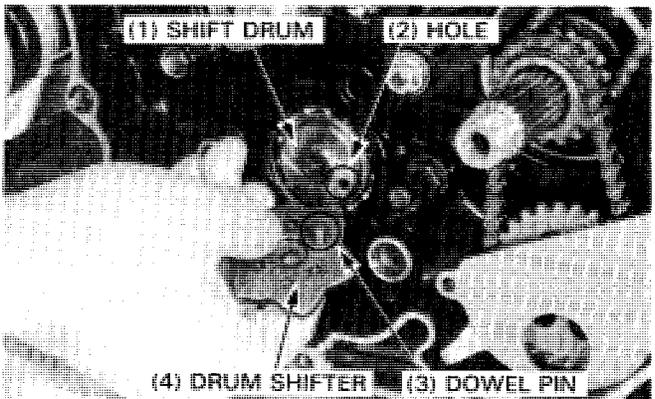
INSPECTION

Check the gearshift spindle for bent, damage or wear.



INSTALLATION

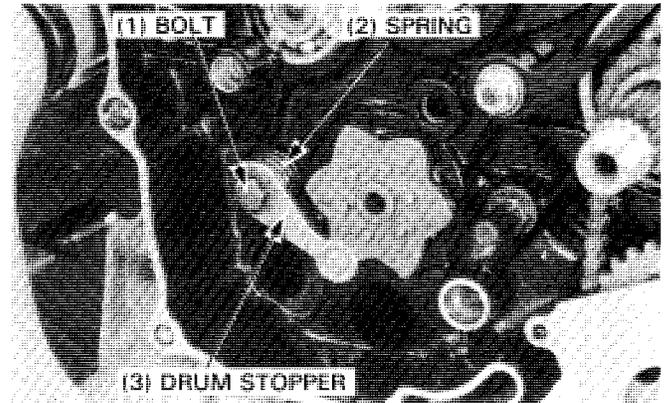
Install the dowel pin into the drum shifter.
Install the drum shifter aligning the dowel pin with the hole on the shift drum.



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

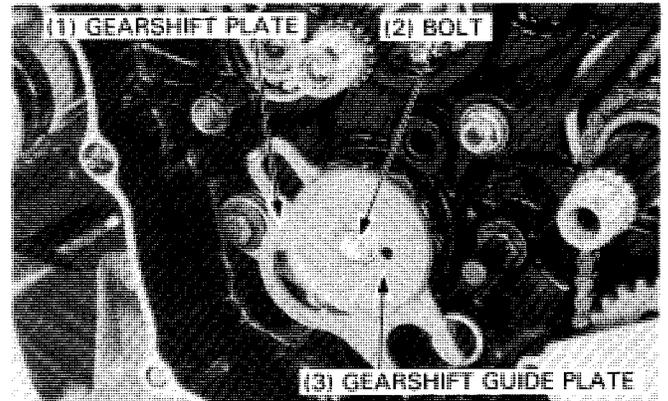
Install the drum stopper, spring and bolt.
Tighten the bolt.

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

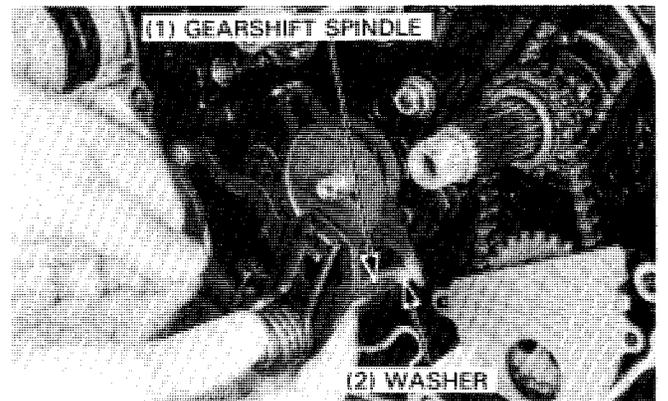


Install the gearshift plate, gearshift guide plate and bolt.
Tighten the bolt.

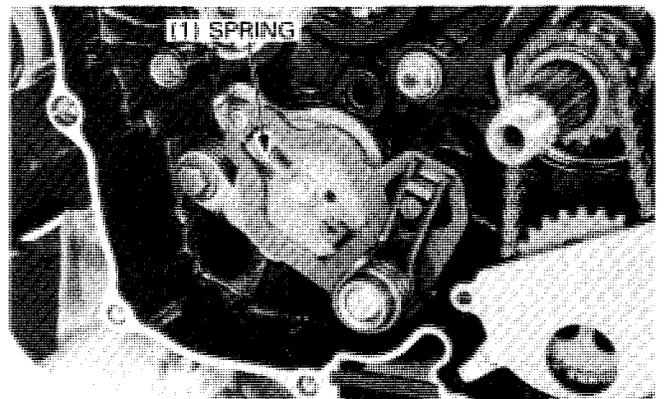
TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)



Install the washer over the gearshift spindle.
Install the gearshift spindle into the crankcase.



Hook the spring to the gearshift plate.



CLUTCH/OIL PUMP/KICK STARTER/GEARSHIFT LINKAGE

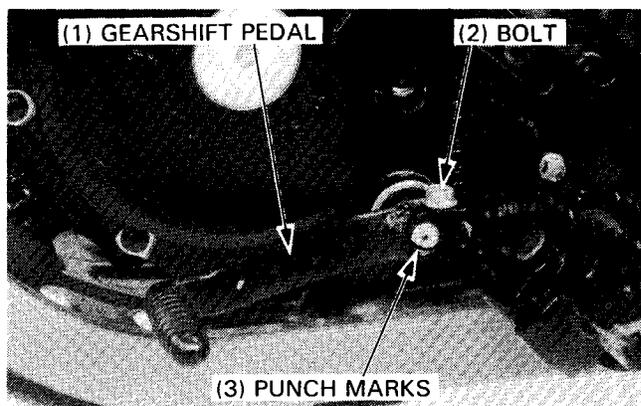
Align the punch marks and install the gearshift pedal onto the spindle, then tighten the bolt.

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

Install the clutch (page 8-13).

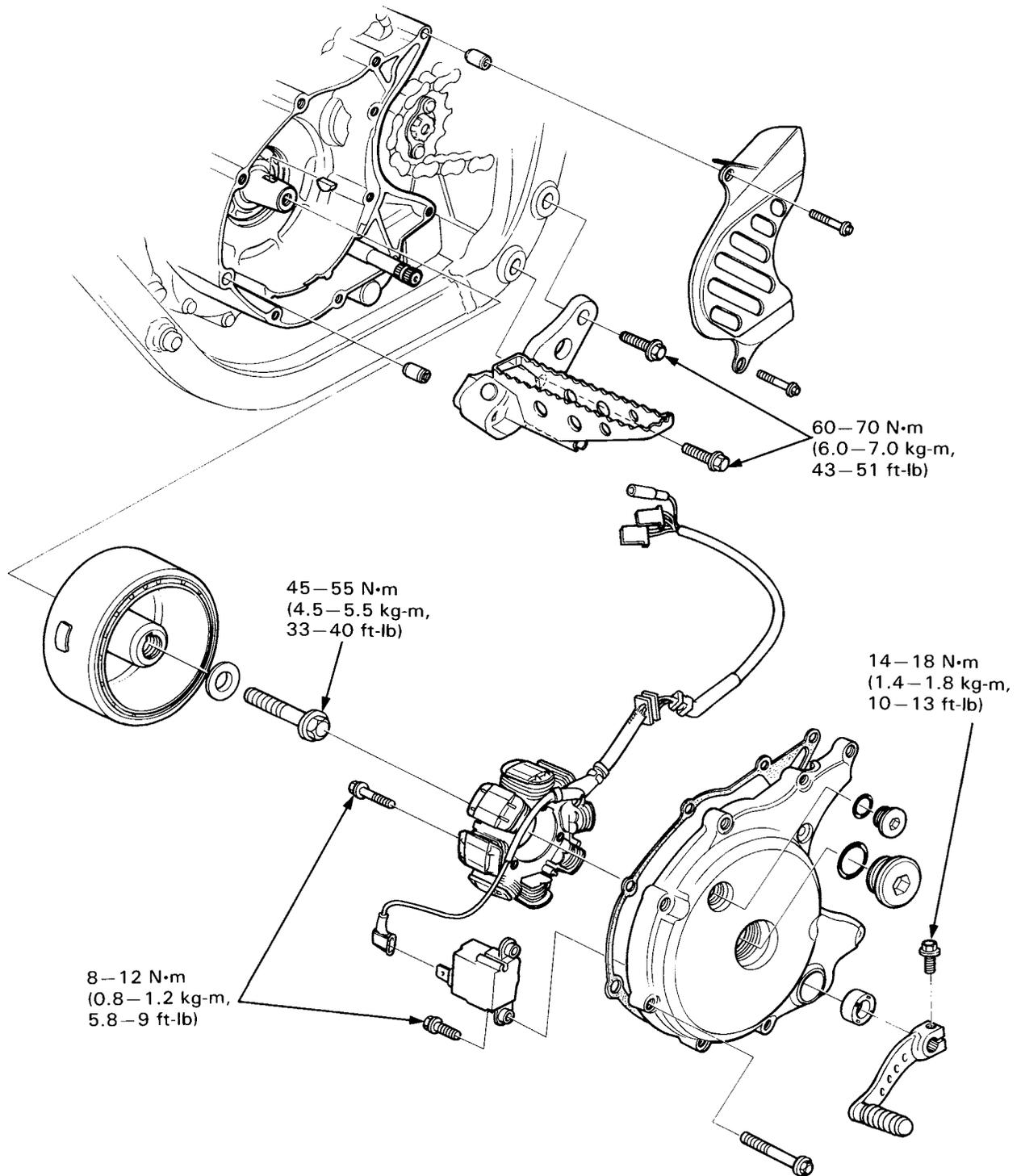
Install the right crankcase cover (page 8-5).

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



MEMO

ALTERNATOR



9. ALTERNATOR

SERVICE INFORMATION	9-1	LEFT CRANKCASE COVER	9-4
LEFT CRANKCASE COVER REMOVAL	9-2	INSTALLATION	
ALTERNATOR	9-2		

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the alternator. Refer to Section 16 for alternator inspection.
- The right crankcase cover must be removed to remove the flywheel.

TORQUE VALUES

Flywheel bolt	45–55 N·m (4.5–5.5 kg-m, 33–40 ft-lb)
Gearshift pedal bolt	14–18 N·m (1.4–1.8 kg-m, 10–13 ft-lb)
Footpeg bolt	60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Pulse generator screw	8–12 N·m (0.8–1.2 kg-m, 5.8–9 ft-lb)
Stator mounting bolt	8–12 N·m (0.8–1.2 kg-m, 5.8–9 ft-lb)

TOOLS

Common

Gear holder	07724–0010100
Rotor puller	07733–0020001 or 07933–2160000

ALTERNATOR

LEFT CRANKCASE COVER REMOVAL

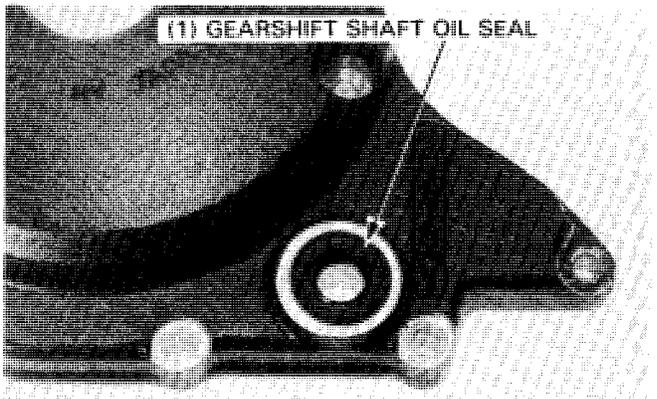
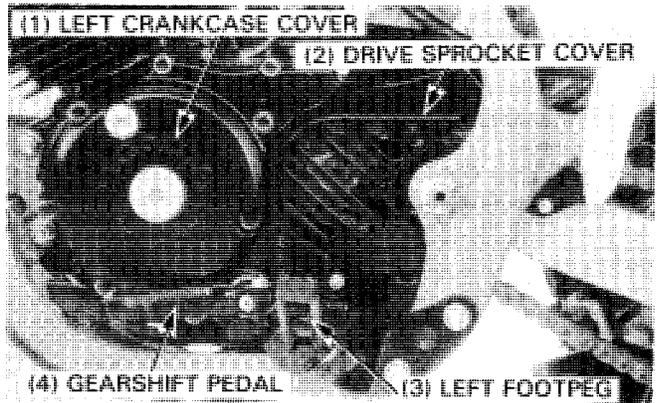
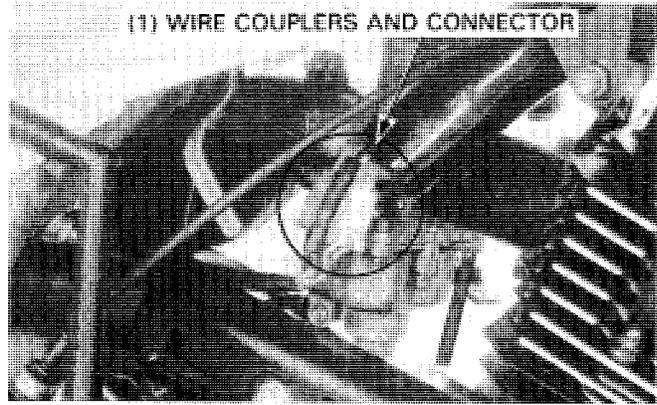
Drain the engine oil (page 2-2).

Disconnect the alternator and pulse generator wire couplers and the connector.

Remove the following parts:

- gearshift pedal bolt and pedal
- left footpeg bolts and footpeg
- drive sprocket cover bolts and cover
- left crankcase cover bolts, cover, cover gasket and dowel pins.

Check the gearshift shaft oil seal on the left crankcase cover for wear or damage; replace if necessary.

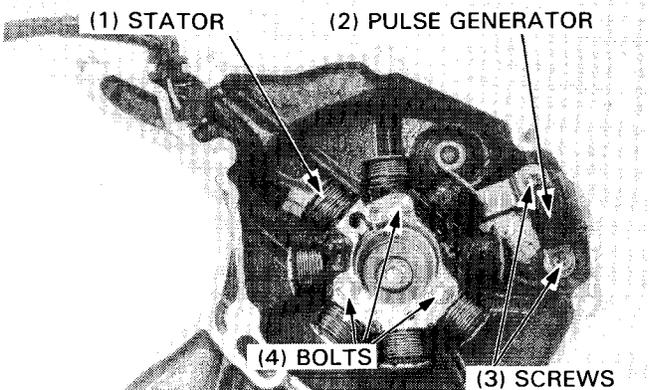


ALTERNATOR

STATOR/PULSE GENERATOR REMOVAL

Remove the pulse generator mounting screws and remove the pulse generator.

Remove the three stator bolts and the stator.

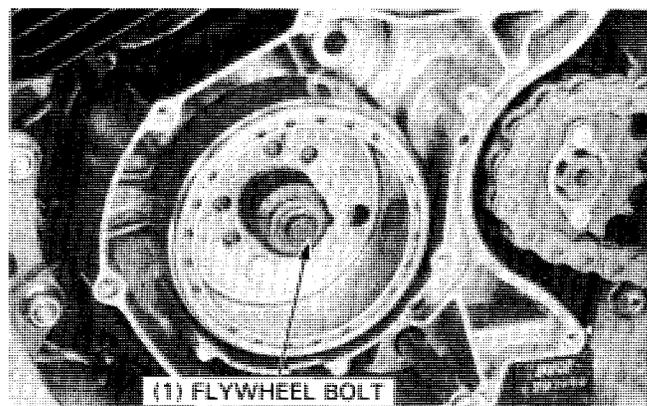


FLYWHEEL REMOVAL

Remove the right crankcase cover (page 8-3).
Hold the primary drive gear with the gear holder and remove the flywheel bolt and washer.

TOOL:

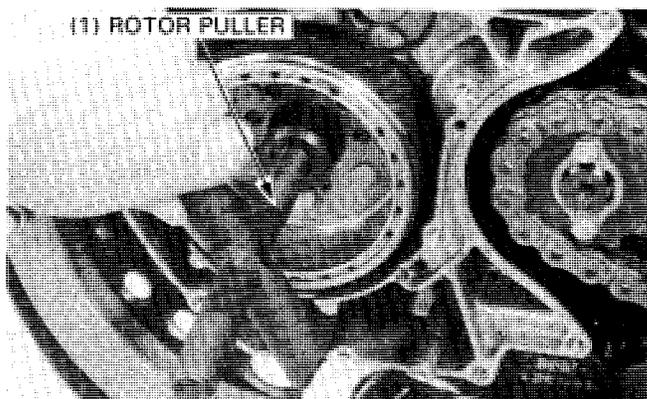
Gear holder 07724-0010100



Remove the flywheel with the puller, then remove the woodruff key from the crankshaft.

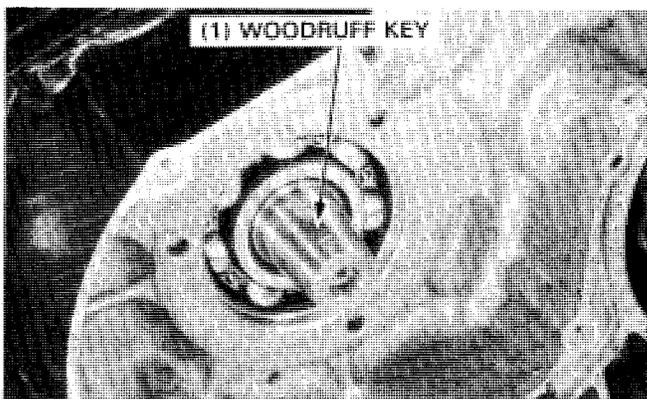
TOOL:

Rotor puller 07733-0020001 or
07933-2160000



FLYWHEEL INSTALLATION

Install the woodruff key aligning it with the key way in the crankshaft.



Clean the tapered hole in the flywheel of any burrs and other faults; repair if necessary.

Install the flywheel by aligning the keyway in the flywheel with the key on the crankshaft.

NOTE

- Check for debris inside the flywheel before installation. The magnets tend to attract steel filings and other ferrous debris.

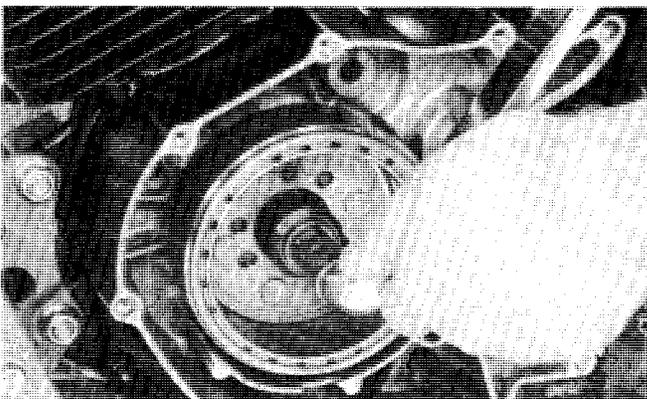
Install the washer and the flywheel bolt.

Hold the primary drive gear with the gear holder and tighten the flywheel bolt.

TORQUE: 45–55 N·m (4.5–5.5 kg-m, 33–40 ft-lb)

TOOL:

Gear holder 07724-0010100



Install the right crankcase cover (page 8-5).

ALTERNATOR

STATOR/PULSE GENERATOR INSTALLATION

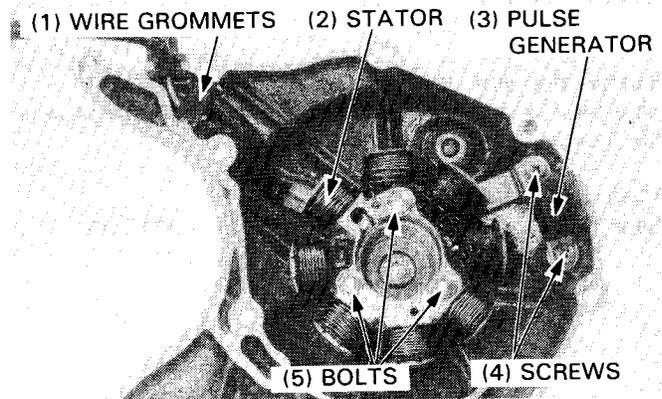
Install the pulse generator using the two screws and place its wire grommet in the groove.

TORQUE: 8–12 N·m (0.8–1.2 kg-m, 5.8–9 ft-lb)

Install the stator in the left crankcase cover and place the wire grommet in the groove.

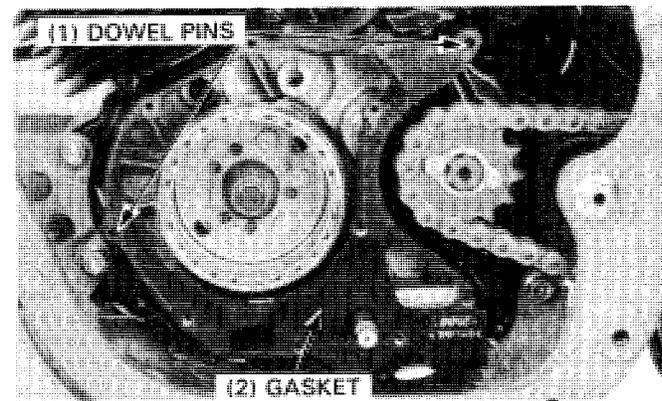
Tighten the three stator mounting bolts.

TORQUE: 8–12 N·m (0.8–1.2 kg-m, 5.8–9 ft-lb)



LEFT CRANKCASE COVER INSTALLATION

Install the dowel pins and a new gasket.



Install the left crankcase cover and tighten the cover bolts.

NOTE

- Use copper washers where indicated by the “▲” marks on the left crankcase cover.

Install the drive sprocket cover and tighten the cover bolts. Align the punch marks and install the gearshift pedal onto the gearshift shaft, then tighten the bolt.

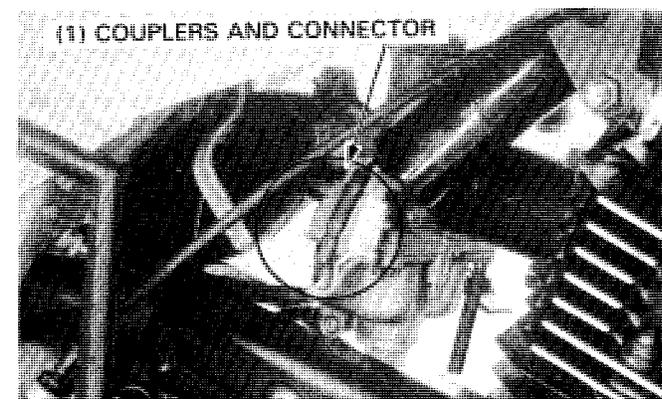
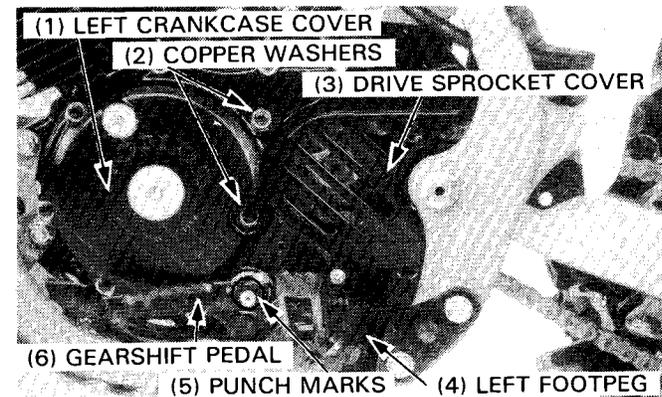
TORQUE: 14–18 N·m (1.4–1.8 kg-m, 10–13 ft-lb).

Install the left footpeg and tighten the bolts.

TORQUE: 40–50 N·m (4.0–5.0 kg-m, 29–33 ft-lb)

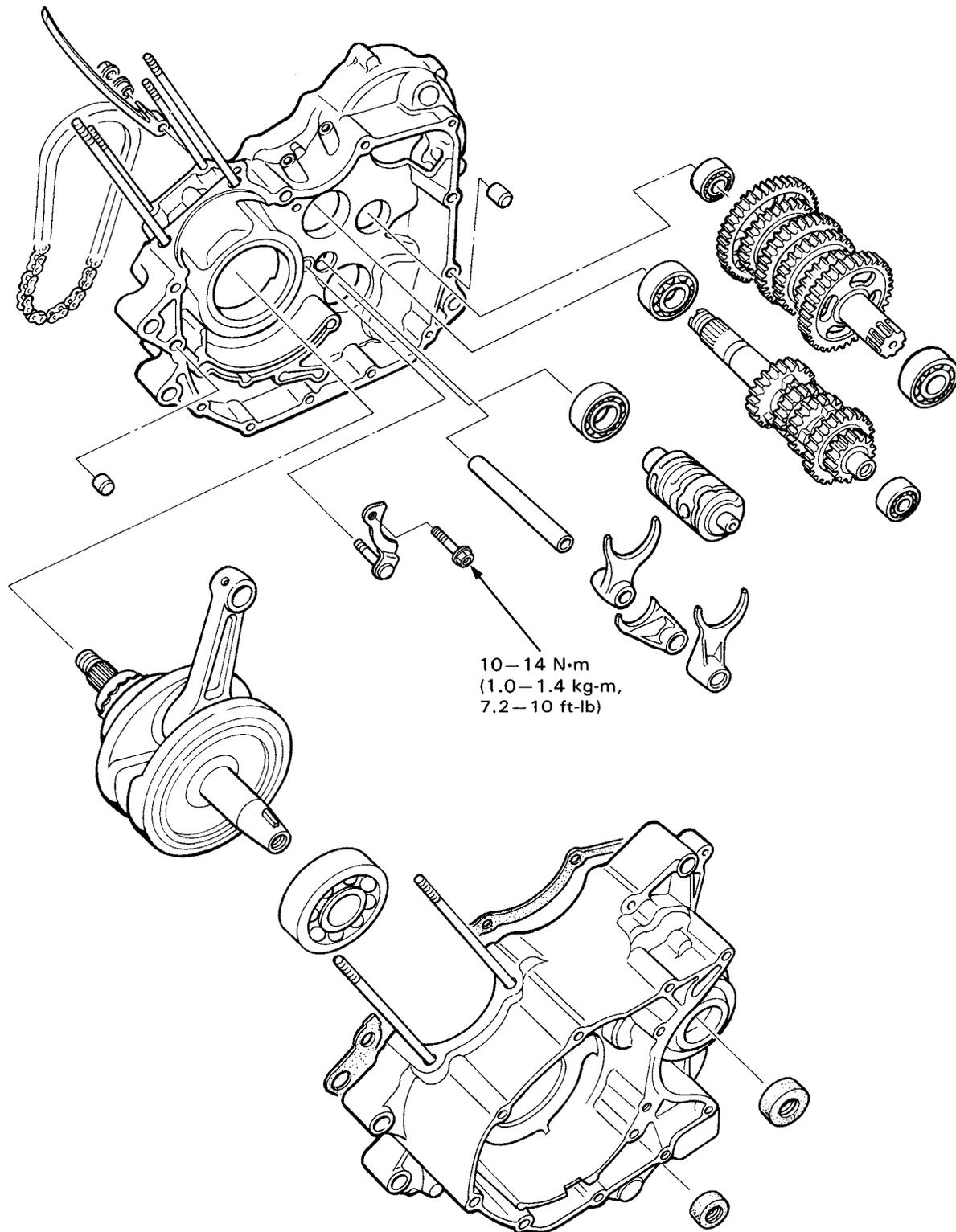
Connect the pulse generator and stator wire couplers and connector.

Fill the engine with the recommended oil (page 2-2).
Check the ignition timing (page 3-8).



MEMO

CRANKCASE/TRANSMISSION/CRANKSHAFT



10. CRANKCASE/TRANSMISSION/CRANKSHAFT

SERVICE INFORMATION	10-1	CRANKSHAFT	10-10
TROUBLESHOOTING	10-3	BEARING REPLACEMENT	10-12
CRANKCASE SEPARATION	10-4	CRANKCASE ASSEMBLY	10-15
TRANSMISSION	10-5		

SERVICE INFORMATION

GENERAL

- Remove the following parts before separating the crankcase:
 - Cylinder head Section 6
 - Cylinder/piston Section 7
 - Clutch/oil pump/kick starter/gearshift linkage Section 8
 - Alternator Section 9
- For crankshaft and transmission repair, the crankcase must be separated.

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)	
Shift fork, Shift fork shaft	Shift fork I.D.	13.000–13.021 (0.5118–0.51264)	13.05 (0.514)	
	Shift fork claw thickness	4.93–5.00 (0.194–0.197)	4.88 (0.192)	
	Shift fork shaft O.D.	12.966–12.984 (0.5105–0.5112)	12.94 (0.509)	
Transmission	Gear I.D.	M5, M6	23.000–23.021 (0.9055–0.9063)	23.04 (0.907)
		C1	20.500–20.521 (0.8071–0.8079)	20.54 (0.809)
		C2, C3, C4	26.000–26.021 (1.0236–1.0244)	26.04 (1.025)
	Bushing I.D.	M5	20.000–20.021 (0.7874–0.7882)	20.04 (0.789)
		C1	18.000–18.018 (0.7087–0.7094)	18.04 (0.710)
		C2, C4	22.000–22.021 (0.8662–0.8670)	22.04 (0.868)
	Bushing O.D.	M5, M6	22.959–22.980 (0.9039–0.9047)	22.94 (0.903)
		C1	20.459–20.480 (0.8055–0.8063)	20.44 (0.805)
		C2, C3, C4	25.959–25.980 (1.0220–1.0228)	25.94 (1.021)
	Gear-to-bushing clearance	M5, M6	0.020–0.062 (0.0008–0.0024)	0.10 (0.004)
		C1, C2, C3, C4	0.020–0.062 (0.0008–0.0024)	0.10 (0.004)

CRANKCASE/TRANSMISSION/CRANKSHAFT

ITEM			STANDARD mm (in)	SERVICE LIMIT mm (in)
Transmission	Mainshaft O.D.	M5, clutch outer guide	19.959–19.980 (0.7858–0.7866)	19.94 (0.785)
	Countershaft O.D.	C1	17.966–17.984 (0.7073–0.7080)	17.94 (0.706)
		C2, C4	21.959–21.980 (0.8645–0.8654)	21.94 (0.864)
	Bushing-to-shaft clearance	M5	0.020–0.062 (0.0008–0.0024)	0.10 (0.004)
C1, C2, C4		0.020–0.062 (0.0008–0.0024)	0.10 (0.004)	
Crankshaft	Runout		—	0.03 (0.0012)
	Connecting rod big end axial clearance		0.05–0.50 (0.002–0.02)	0.8 (0.03)
	Connecting rod big end radial clearance		0.004–0.012 (0.0002–0.0005)	0.05 (0.002)

TORQUE VALUES

Bearing holder plate bolt 10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
 Crankcase bolt 10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)

TOOLS

Special

Universal bearing puller 07631–0010000 or equivalent commercially available in U.S.A.
 Assembly collar 07965–VM00100
 Assembly shaft 07965–VM00200 or 07931–ME4000A (U.S.A. only)
 Thread adaptor 07GMF–HB50100 or 07965–HB3000A (U.S.A. only)
 Bearing remover set, 15 mm 07936–KC10000 not available in U.S.A.
 – Bearing remover, 15 mm 07936–KC10500
 – Remover weight 07741–0010201 or 07936–3710200

Common

Driver 07749–0010000
 Attachment, 62 X 68 mm 07746–0010500
 Pilot, 28 mm 07746–0041100
 Attachment, 42 X 47 mm 07746–0010300
 Pilot, 20 mm 07746–0040500
 Attachment, 32 X 35 mm 07746–0010100
 Pilot, 15 mm 07746–0040300
 Pilot, 22 mm 07746–0041000

TROUBLESHOOTING

Crankshaft noisy

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

Jumps out of gear

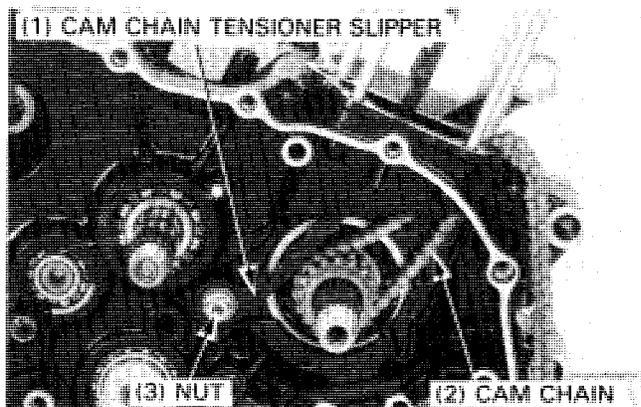
- Shift fork bent or damaged
- Shift fork shaft bent
- Shift claw bent
- Gear engagement dogs or slots worn
- Shift drum cam grooves damaged

Hard to shift

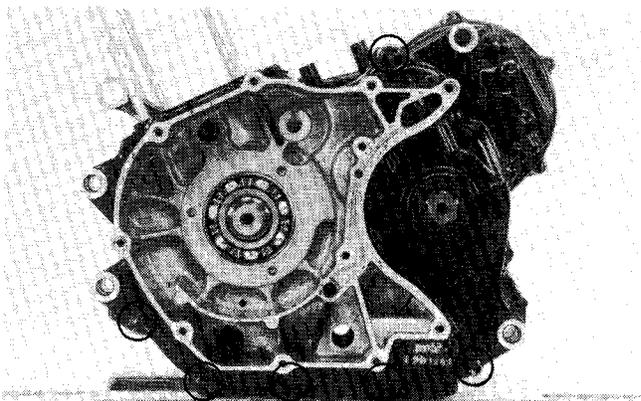
- Incorrect clutch adjustment
- Shift fork bent or damaged
- Shift fork shaft bent

CRANKCASE SEPARATION

Remove the cam chain and cam chain tensioner slipper.



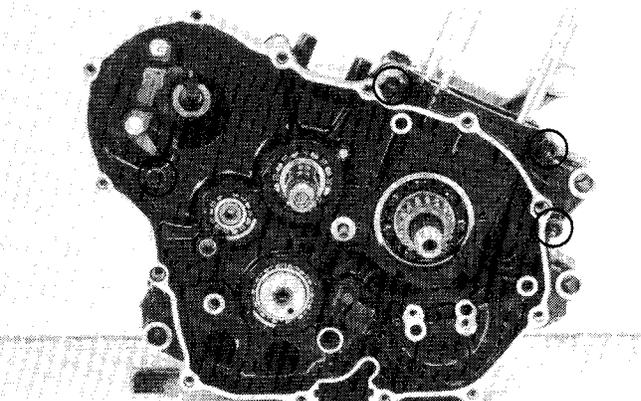
Remove the left crankcase bolts.



Remove the right crankcase bolts.

NOTE

- Loosen the bolts in a crisscross pattern in 2 or 3 steps to prevent crankcase distortion.

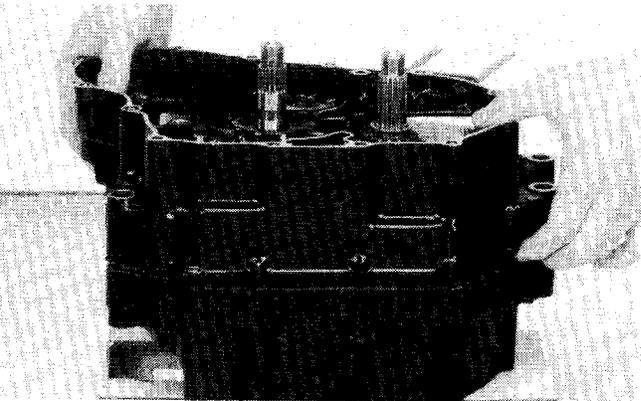


Place the engine with the left crankcase down and remove the right crankcase while tapping the cases at several locations with a soft hammer.

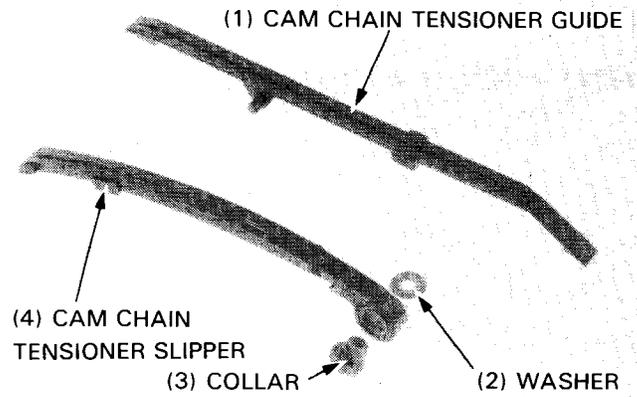
CAUTION

- Do not pry the crankcase halves apart with the end of a screwdriver.

Remove the gasket and dowel pins.



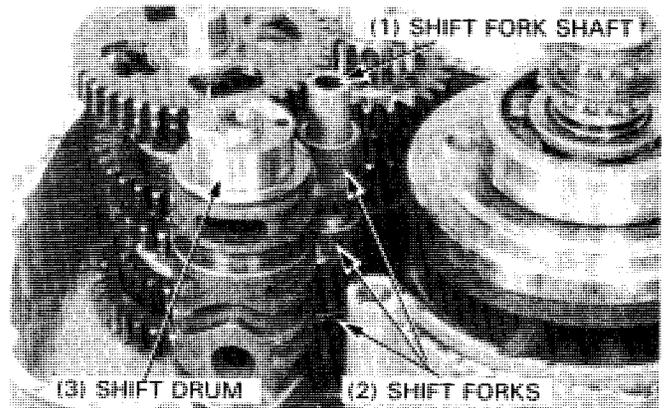
Check the cam chain tensioner slipper and guide for wear or damage.
Replace them if they are excessively worn or damaged.



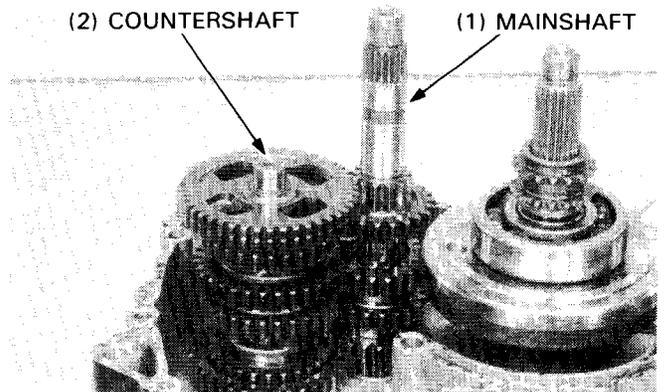
TRANSMISSION

REMOVAL

Separate the crankcase halves (page 10-4).
Pull the shift fork shaft out and remove the shift forks and shift drum.



Remove the mainshaft and countershaft.

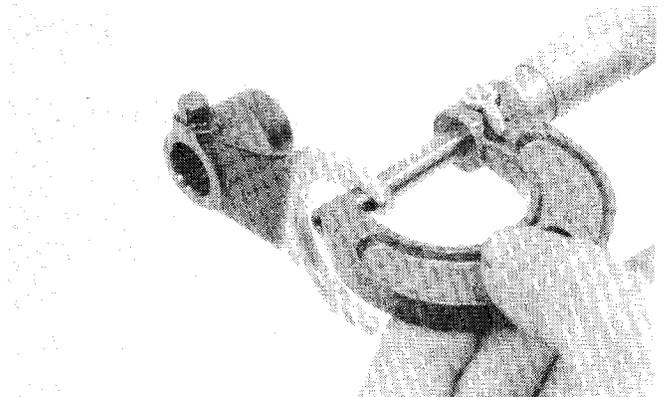


INSPECTION

Check that the shift forks are not bent, worn or damaged.

Measure the shift fork claw thickness.

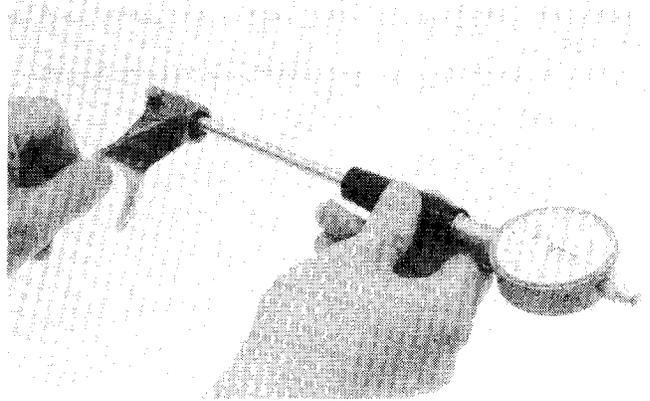
SERVICE LIMIT: 4.88 mm (0.192 in)



CRANKCASE/TRANSMISSION/CRANKSHAFT

Measure the I.D. of the shift fork.

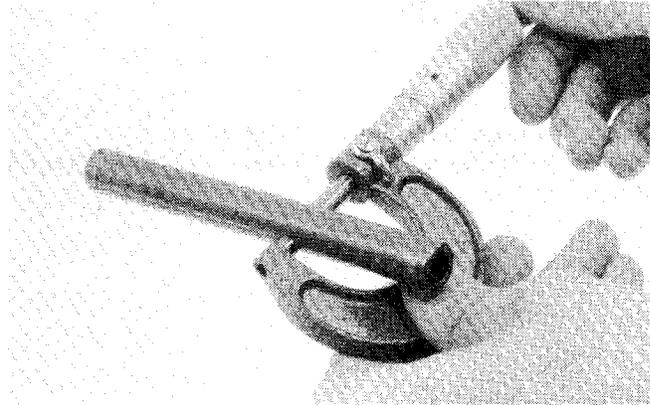
SERVICE LIMIT: 13.05 mm (0.514 in)



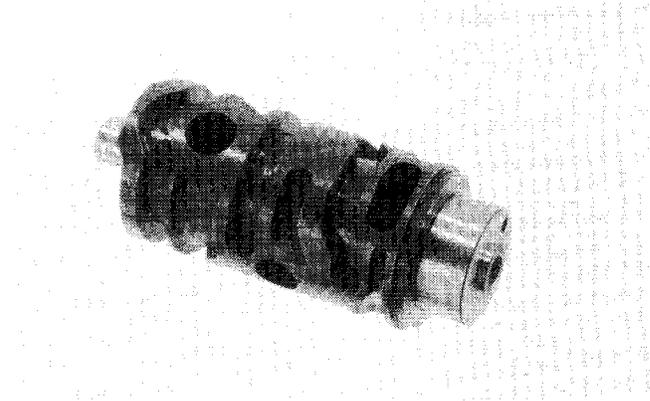
Check that the fork shaft is not bent, worn or damaged.

Measure the fork shaft O.D.

SERVICE LIMIT: 12.92 mm (0.509 in)



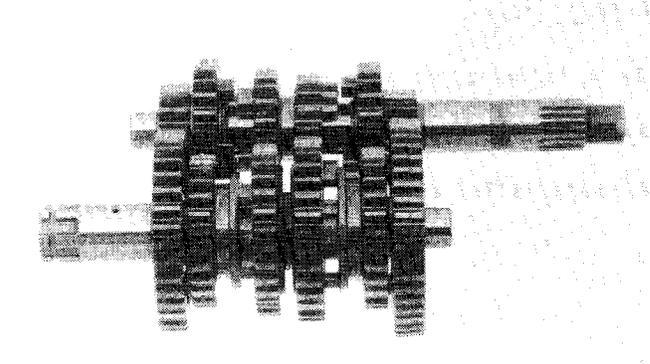
Inspect the shift drum grooves and replace the drum if they are damaged or show excessive wear.



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

Check the gear teeth for wear or damage.

Check the gear engagement dogs for wear or damage.

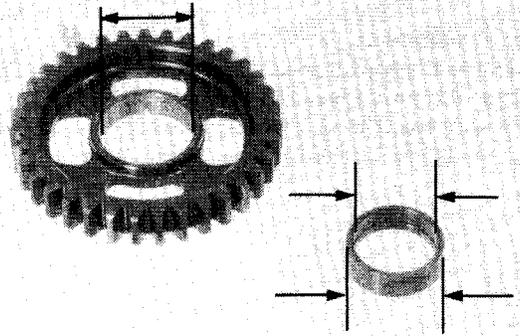


Measure the I.D. of each gear.

SERVICE LIMIT: M5, M6	23.04 mm (0.907 in)
C1	20.54 mm (0.809 in)
C2, C3, C4	26.04 mm (1.025 in)

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

SERVICE LIMIT: I.D.	
M5	20.04 mm (0.789 in)
C1	18.04 mm (0.710 in)
C2, C4	22.04 mm (0.868 in)
O.D.	
M5, M6	22.94 mm (0.903 in)
C1	20.44 mm (0.805 in)
C2, C3, C4	25.94 mm (1.021 in)



Calculate the gear-to-bushing clearance.

SERVICE LIMIT: M5, M6	0.10 mm (0.004 in)
C1, C2, C3, C4	0.10 mm (0.004 in)

Measure the O.D. of the mainshaft.

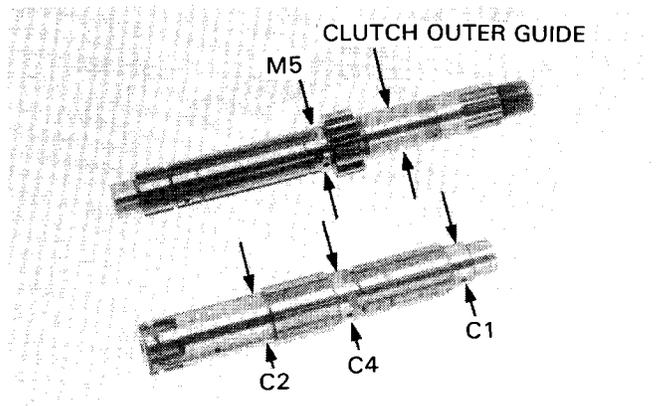
SERVICE LIMIT: M5, clutch outer guide	19.94 mm (0.785 in)
----------------------------------------------	----------------------------

Measure the O.D. of the countershaft.

SERVICE LIMIT: C1	17.94 mm (0.706 in)
C2, C4	21.94 mm (0.864 in)

Calculate the bushing-to-shaft clearance.

SERVICE LIMIT: M5	0.10 mm (0.004 in)
C1, C2, C4	0.10 mm (0.004 in)



CRANKCASE/TRANSMISSION/CRANKSHAFT

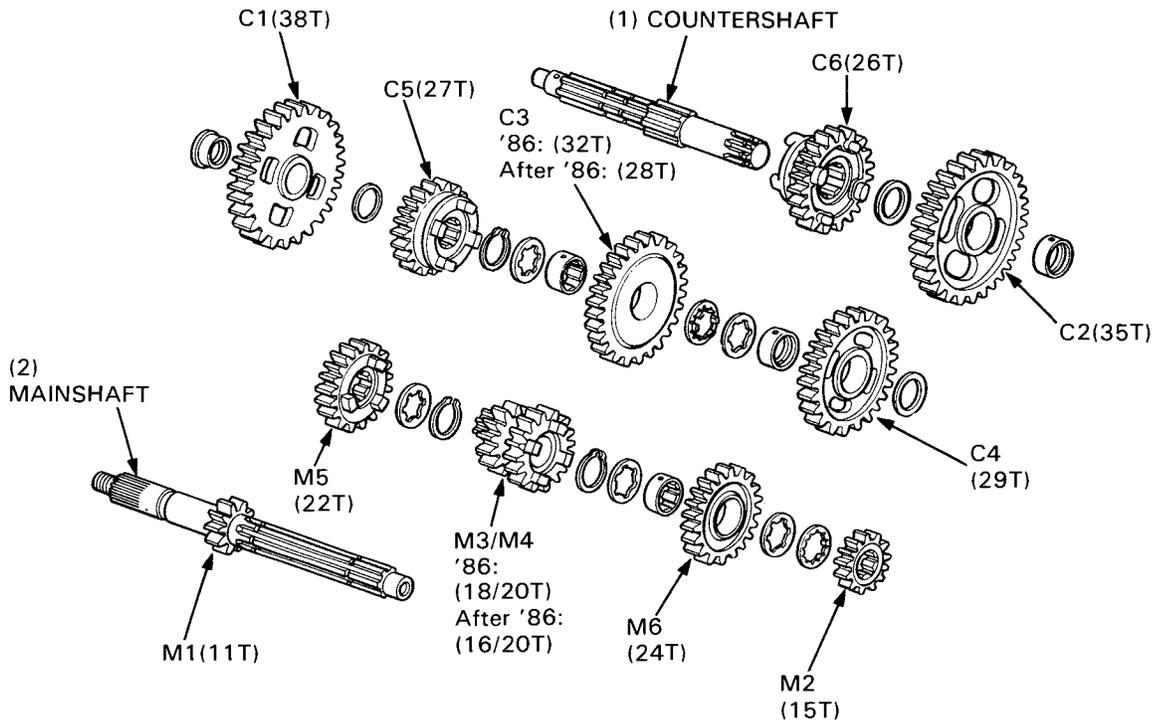
INSTALLATION

Coat all parts with oil.

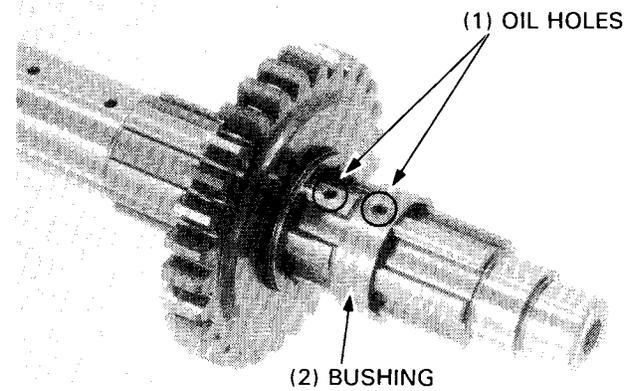
Assemble the transmission shafts and gears, noting the locations of the thrust washers and snap rings.

Make sure that the snap rings are seated properly.

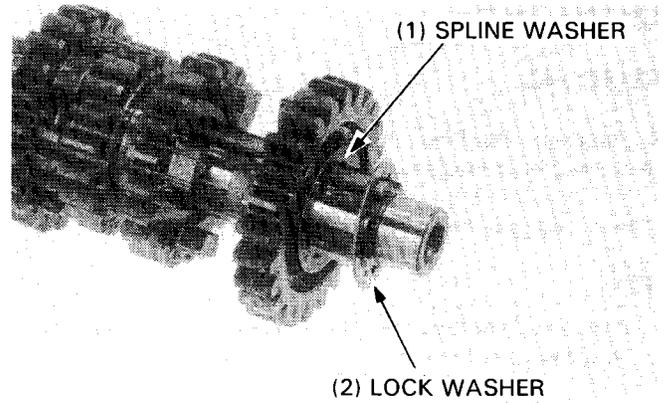
After installing, check for smooth movement.



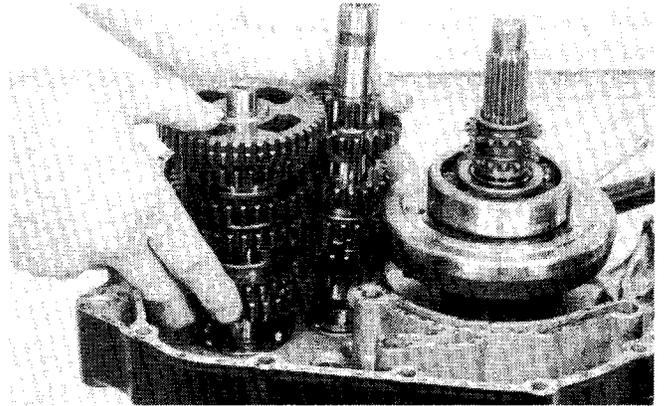
Align the bushing oil hole with the oil hole in the shaft as shown.



Align the lock washer tabs with the grooves in the spline washer as shown.



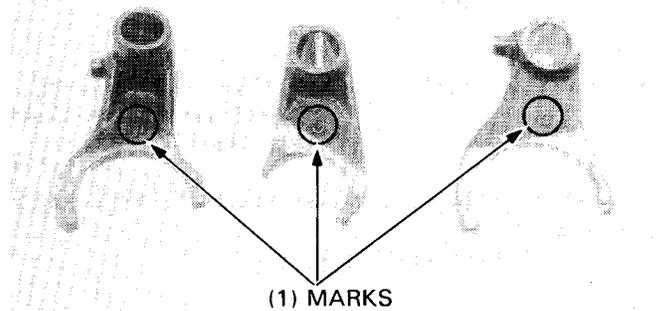
Install the mainshaft and countershaft together into the left crankcase.



Install the shift forks with their marks facing down.

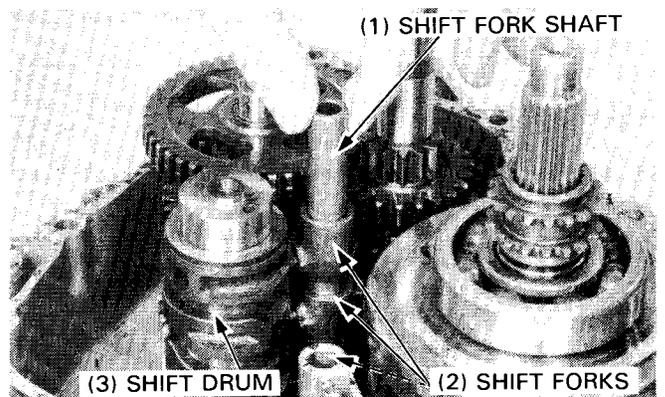
NOTE

- The shift forks are marked L for left, C for center and R for right.



Install the shift drum and align each shift fork guide pin with its guide groove in the drum.

Insert the shift fork shaft through the forks into the hole in the left crankcase.
After installing, check for smooth operation.
Assemble the crankcase (page 10-15).



CRANKSHAFT

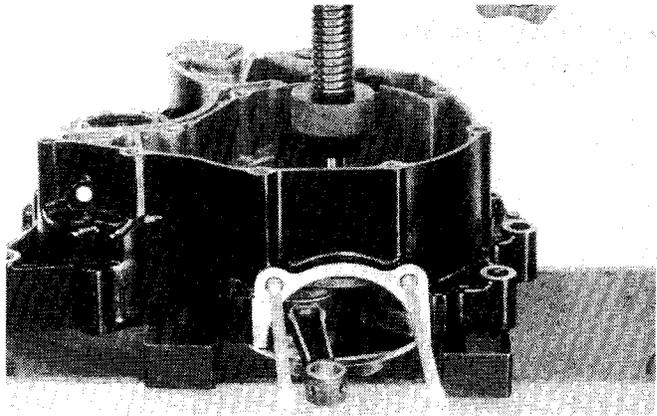
REMOVAL

Separate the crankcase halves (page 10-4).
Remove the transmission (page 10-5).

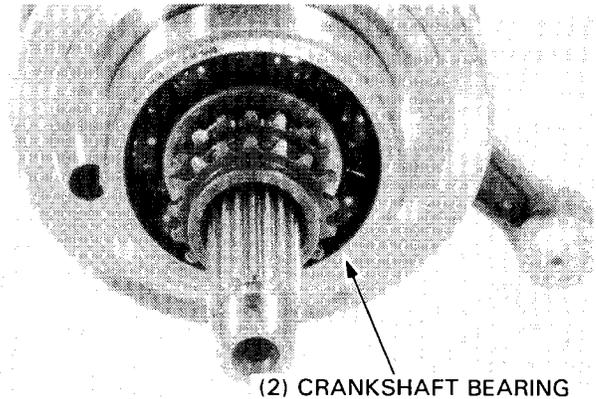
Remove the crankshaft from the left crankcase.

NOTE

- If the crankshaft cannot be removed by hand, use a hydraulic press to remove it.



Turn the right bearing by hand and check that it moves smoothly and quietly.
The bearing must be replaced if it is noisy or has excessive play.



If the left crankshaft bearing remains on the crankshaft, thread the flywheel bolt into the crankshaft and remove the bearing with the bearing puller.

TOOLS:

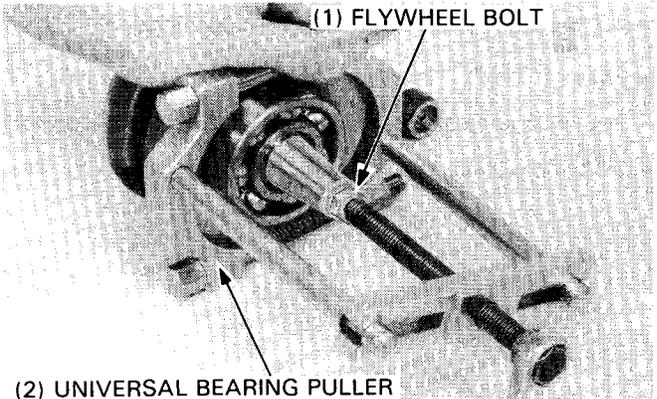
Universal bearing puller

07631-0010000 or equivalent commercially available in U.S.A.

If the left crankshaft bearing remains in the left crankcase, remove it.
Discard the left crankshaft bearing.

NOTE

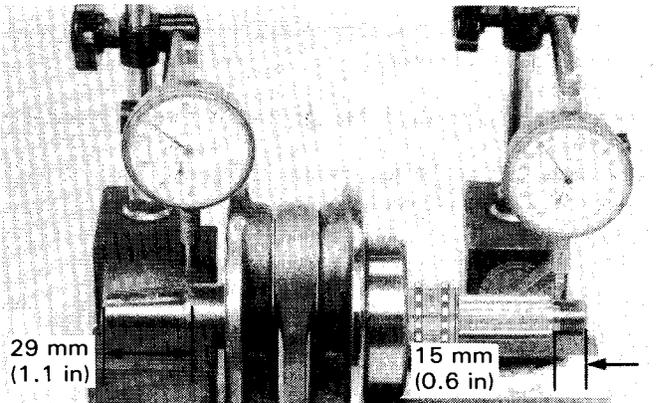
- Always replace the left crankshaft bearing with a new one whenever the crankshaft is removed from the left crankcase.



INSPECTION

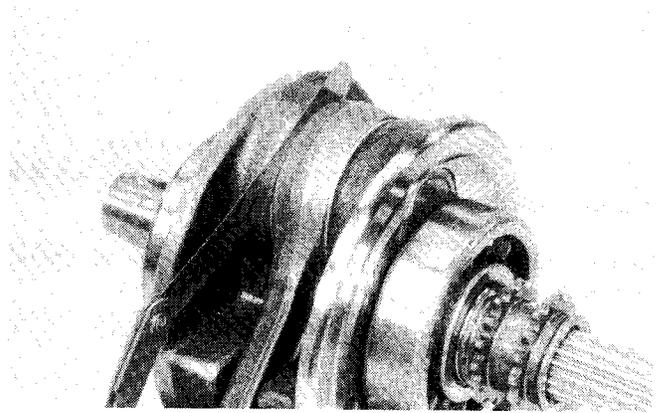
Set the crankshaft on a stand or V-blocks and read the runout using dial indicators.

SERVICE LIMIT: 0.03 mm (0.0012 in)



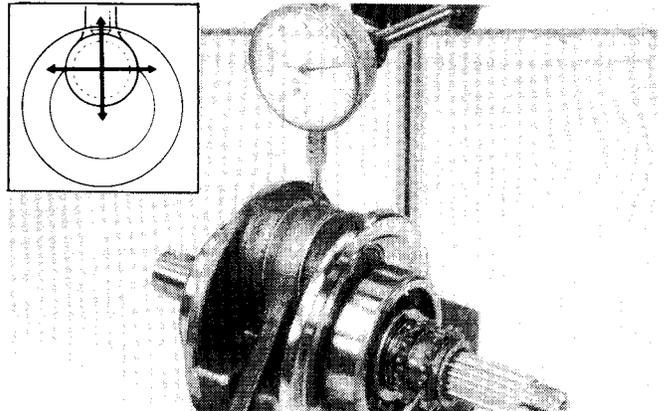
Measure the axial clearance of the connecting rod big end.

SERVICE LIMIT: 0.8 mm (0.03 in)



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

SERVICE LIMIT: 0.05 mm (0.002 in)

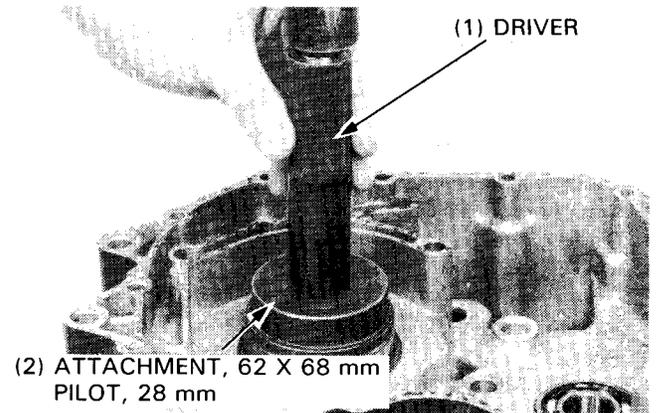


INSTALLATION

Drive a new left crankshaft bearing into the left crankcase.

TOOLS:

Driver	07749-0010000
Attachment, 62 x 68 mm	07746-0010500
Pilot, 28 mm	07746-0041100

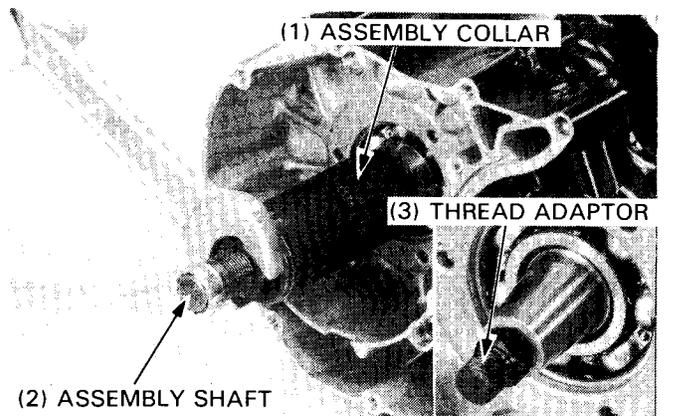


Install the crankshaft into the left crankcase using the special tools.

Install the transmission and assemble the crankcase.

TOOLS:

Assembly collar	07965-VM00100
Assembly shaft	07965-VM00200 or 07931-ME4000A (U.S.A. only)
Thread adaptor	07GMF-HB50100 or 07965-HB3000A (U.S.A. only)

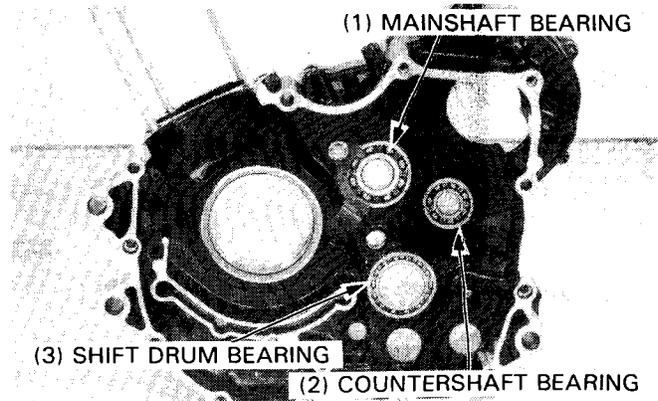


BEARING REPLACEMENT

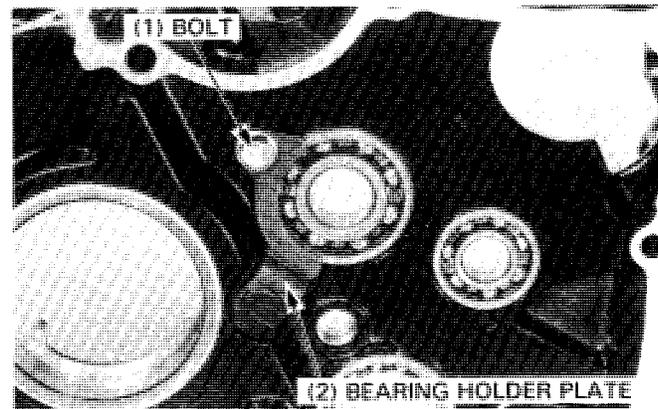
RIGHT CRANKCASE

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

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



Remove the bearing holder plate and the mainshaft bearing. Drive out the countershaft and shift drum bearings.



Drive new bearings into the right crankcase using the following tools:

TOOLS:

MAINSHAFT BEARING

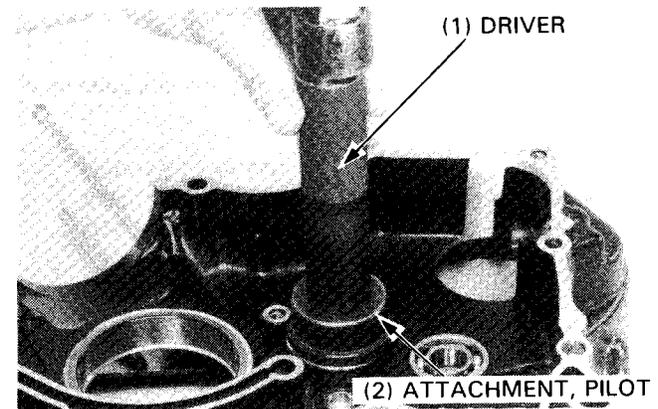
Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500

COUNTERSHAFT

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

SHIFT DRUM BEARING

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



Install the mainshaft bearing holder plate and tighten the holder bolt.

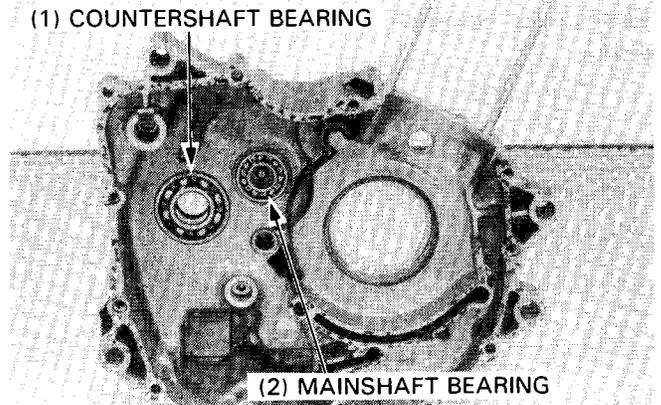
TORQUE: 10–14 N·m (1.0–1.4 kg·m, 7.2–10 ft·lb)

LEFT CRANKCASE

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

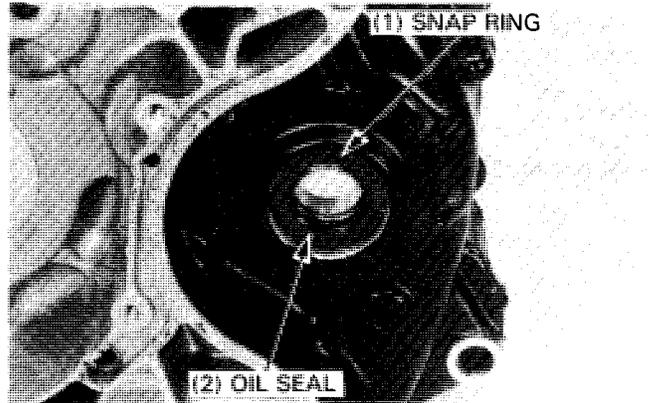
Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the case.

(1) COUNTERSHAFT BEARING



(2) MAINSHAFT BEARING

Remove the snap ring, countershaft oil seal and drive out the bearing.



(1) SNAP RING

(2) OIL SEAL

Remove the mainshaft bearing with the bearing remover.

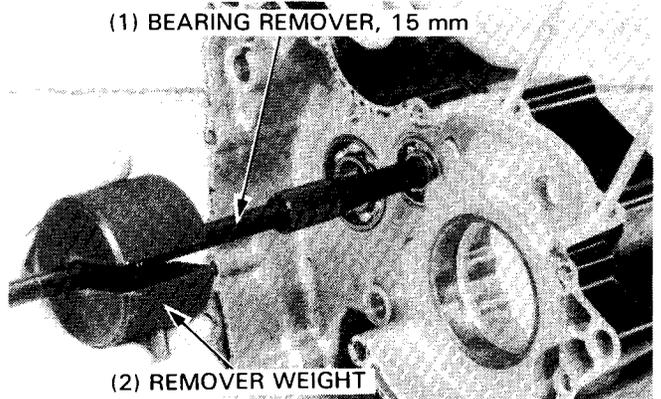
TOOLS:

Bearing remover set, 15 mm

- Bearing remover, 15 mm
- Remover weight

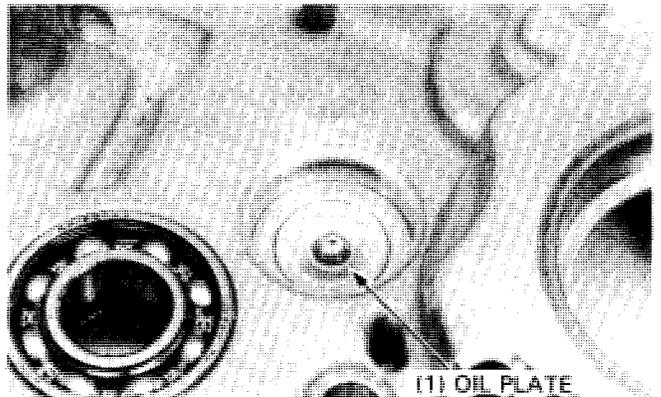
07936-KC10000 not available in U.S.A.
07936-KC10500
07741-0010201 or
07936-3710200

(1) BEARING REMOVER, 15 mm



(2) REMOVER WEIGHT

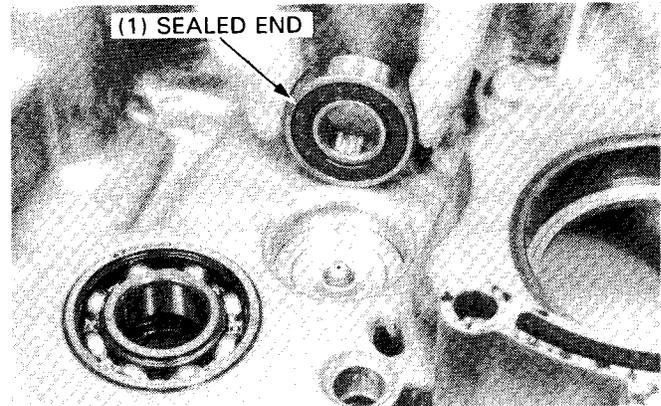
Remove the oil plate and check that it is not clogged and damaged. Replace the oil plate with a new one if necessary.



(1) OIL PLATE

CRANKCASE/TRANSMISSION/CRANKSHAFT

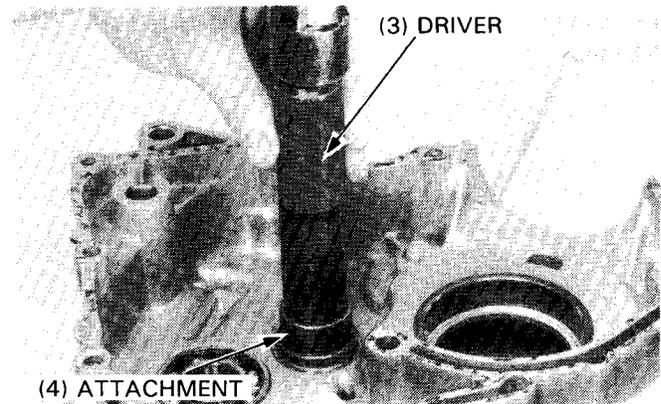
Place a new mainshaft bearing with the sealed end facing down.



Drive in a new mainshaft bearing with the sealed end facing down.

TOOLS:

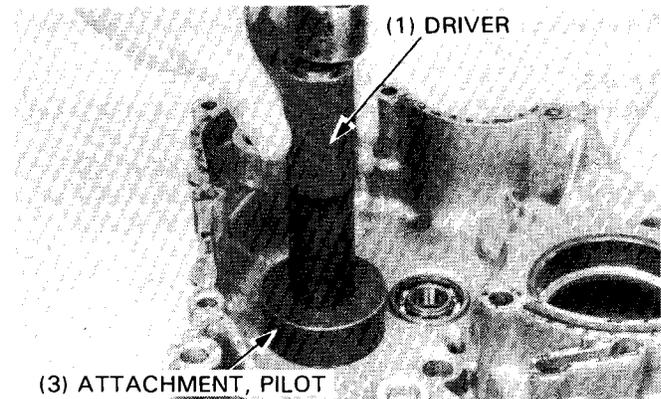
Driver 07749-001000
Attachment, 32 X 35 mm 07746-0010100



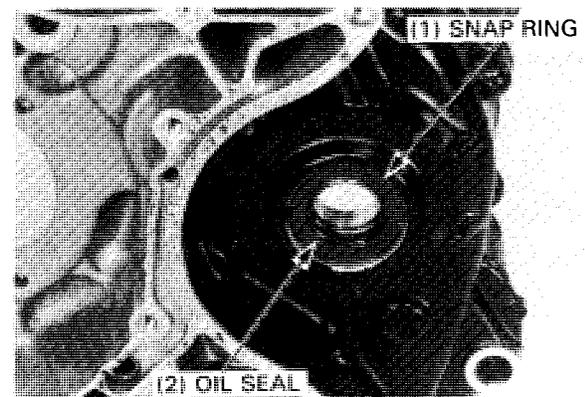
Drive in a new countershaft bearing.

TOOLS:

Driver 07749-001000
Attachment, 42 x 47 mm 07746-0010300
Pilot, 22 mm 07746-0041000



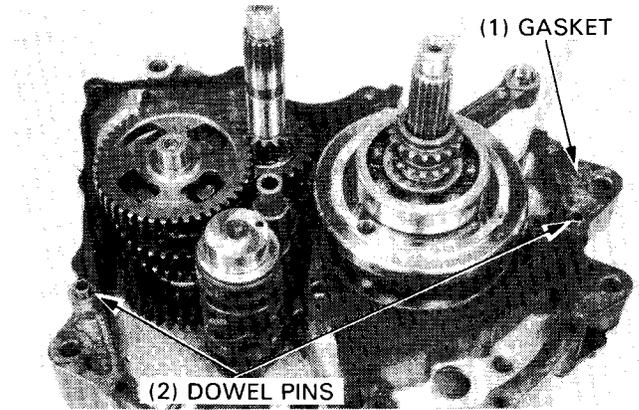
Install a new countershaft oil seal and snap ring.



CRANKCASE ASSEMBLY

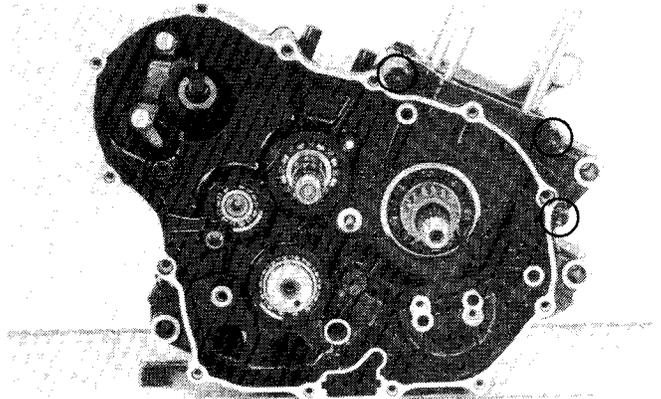
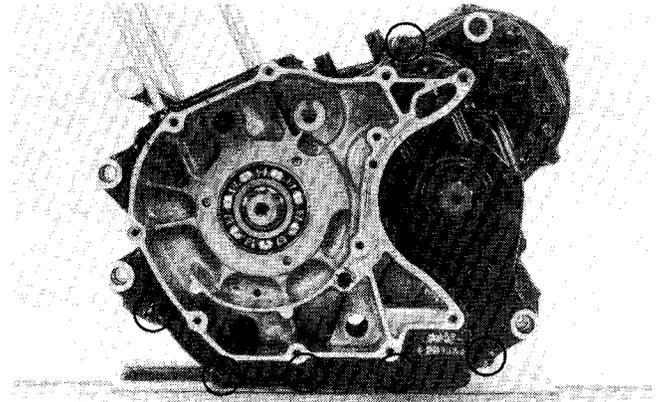
Install a new gasket and dowel pins.

Install the right crankcase onto the left crankcase.



Tighten the crankcase bolts.

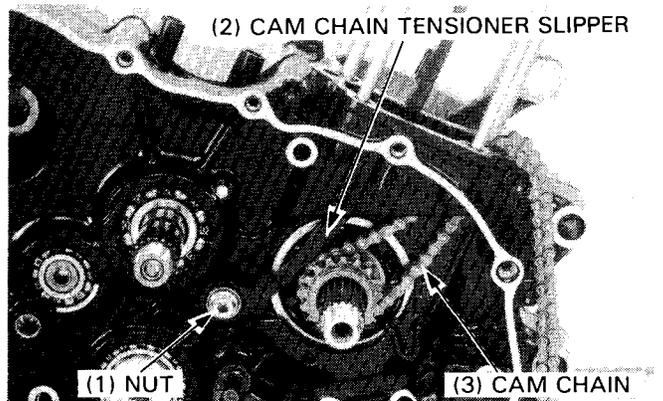
TORQUE: 10–14 N·m (1.0–1.4 kg·m, 7.2–10 ft·lb)



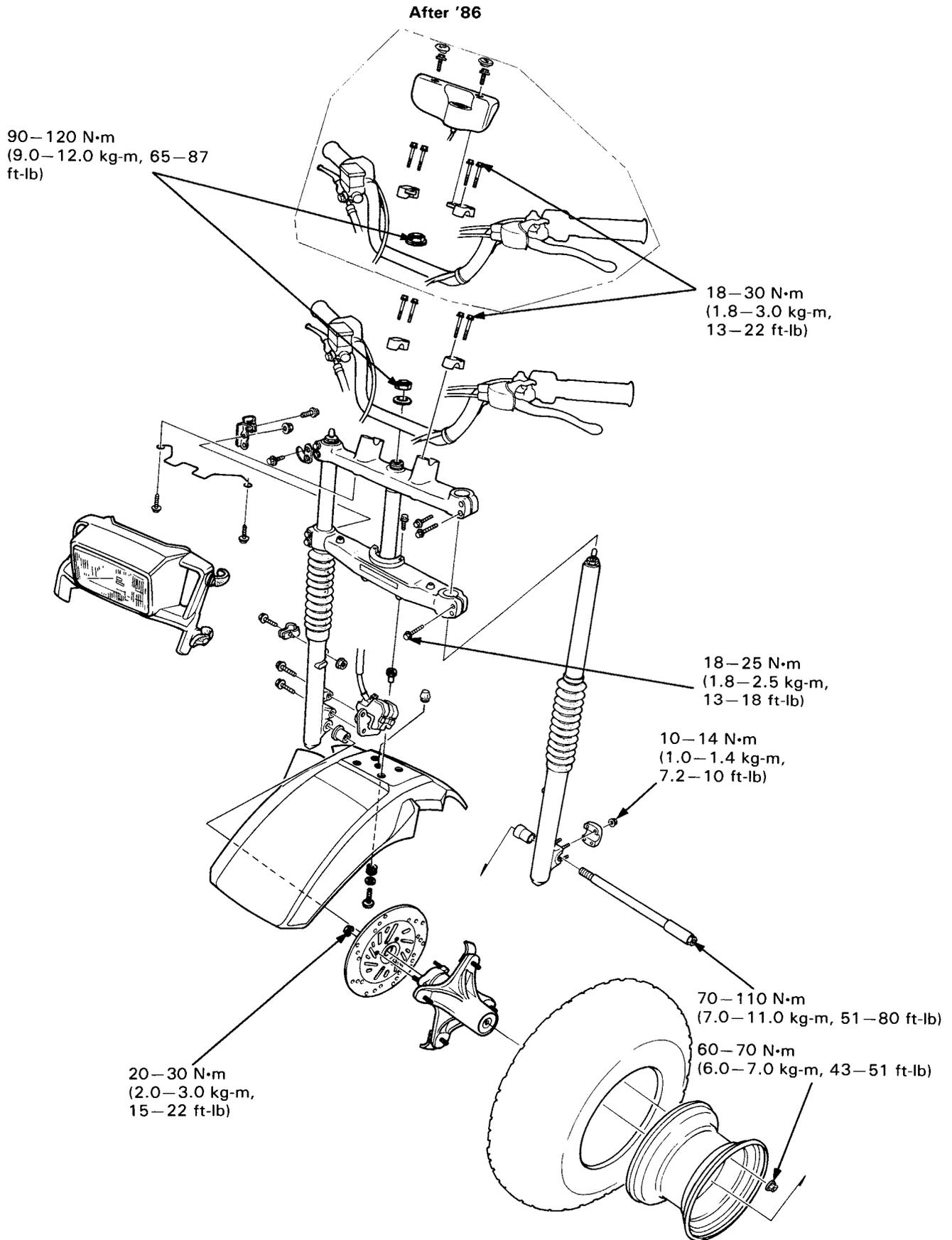
Install the cam chain.

Install the washer, cam chain tensioner slipper, collar and nut; tighten the nut.

Install the removed parts in the reverse order of removal (page 10-1).



FRONT WHEEL/SUSPENSION/STEERING



11. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION	11-1	FRONT WHEEL	11-7
TROUBLESHOOTING	11-2	FRONT FORK	11-15
HANDLEBAR	11-3	STEERING STEM	11-21
THROTTLE HOUSING	11-6		

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the front wheel, front fork, steering system and tire removal/repair.
- A jack or other support is required to support the ATC.

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)
Axle runout		—	0.5 (0.02)
Fork spring free length	Upper	71.0 (2.80)	67.3 (2.65)
	Lower	465.9 (18.34)	456.6 (17.98)
Fork tube runout		—	0.2 (0.008)
Wheel rim runout	Radial	—	4.0 (0.16)
	Axial	—	4.0 (0.16)
Fork oil capacity	'86:	216–221 cc (7.3–7.5 US oz)	—
	After '86:	226–231 cc (7.6–7.8 US oz)	—
Fork oil level	'86:	178 mm (7.0 in)	—
	After '86:	160 mm (6-1/4 in)	—

TORQUE VALUES

Handlebar upper holder bolt		18–30 N·m (1.8–3.0 kg-m, 13–22 ft-lb)
Brake disc nut		20–30 N·m (2.0–3.0 kg-m, 15–22 ft-lb)
Front axle		70–110 N·m (7.0–11.0 kg-m, 51–80 ft-lb)
Front axle holder nut		10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Wheel nut		60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Fork tube cap bolt		15–30 N·m (1.5–3.0 kg-m, 11–22 ft-lb)
Fork socket bolt		15–25 N·m (1.5–2.5 kg-m, 11–18 ft-lb)
Fork pinch bolt		18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)
Fork boot band screw		0.6–1.2 N·m (0.06–0.12 kg-m, 0.4–0.9 ft-lb)
Steering bearing adjustment nut	Initial	25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)
	Final	7–8 N·m (0.7–0.8 kg-m, 5.1–5.8 ft-lb)
Steering stem nut		90–120 N·m (9.0–12.0 kg-m, 65–87 ft-lb)
Brake hose stay nut		24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
Brake hose clamp bolt		10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Steering stem cover		1–2 N·m (0.1–0.2 kg-m, 0.7–1.4 ft-lb)

11

FRONT WHEEL/SUSPENSION/STEERING

TOOLS

Special

Snap ring pliers	07914—3230001 or equivalent commercially available in U.S.A.
Steering stem socket	07916—3710100
Ball race remover	07953—3330000
Ball race driver	07946—3290000
Steering stem driver	07946—4300101 or 07946—MB00000 with GN-HT-54
Universal bead breaker	GN-AH-958-BB1 (U.S.A. only)

Common

Bearing remover shaft	07746—0050100 or equivalents commercially available in U.S.A.
Bearing remover head, 15 mm	07746—0050400
Driver	07749—0010000
Attachment, 42 X 47 mm	07746—0010300
Pilot, 15 mm	07746—0040300
Tire bead breaker set	07772—0050000 or GN-AH-958-BB1 Universal bead breaker
—Breaker arm compressor	07772—0050100
—Breaker arm	07772—0050200
Fork seal driver	07747—0010100 or 07947—3330000
Fork seal driver attachment (D)	07747—0010501
Extension	07716—0020500 or equivalent commercially available in U.S.A.
Lock nut wrench, 30 X 32 mm	07716—0020400 or equivalent commercially available in U.S.A.

TROUBLESHOOTING

Hard steering

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

Steers to one side or does not track straight

- Bent front forks.
- Bent front axle, wheel installed incorrectly.
- Unequal rear tire pressure or circumference.

Front wheel wobbling

- Bent rim.
- Worn front wheel bearing.
- Faulty tire.
- Axle not tightened properly.

Soft suspension

- Weak fork springs.
- Insufficient fluid/air in front forks.

Hard suspension

- Incorrect fluid/air in front forks.
- Fork damaged.

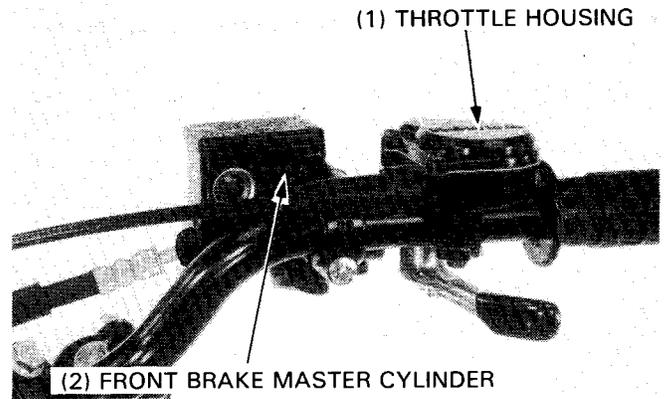
Front suspension noise

- Slider binding.
- Loose front fork fasteners.
- Insufficient fluid in forks.

HANDLEBAR

REMOVAL

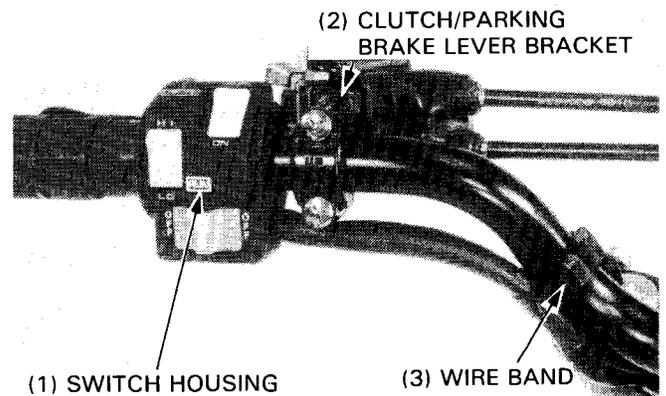
Remove the throttle housing and front brake master cylinder from the handlebar.



Remove the clutch/parking brake lever bracket and switch housing from the handlebar.

Remove the switch wire bands.

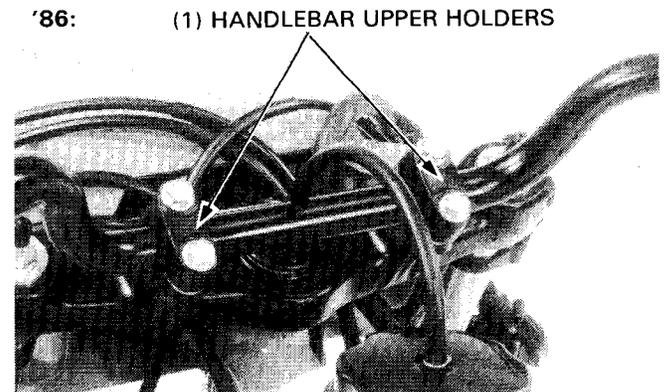
Remove the left and right grips.



'86:

Remove the handlebar upper holders and the handlebar.

'86:



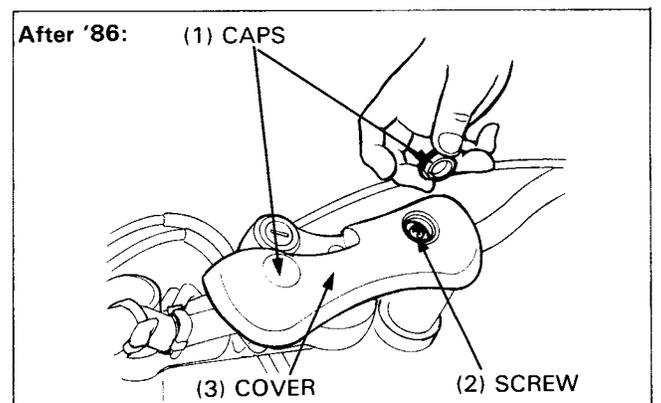
After '86:

Release lugs on the handlebar cover cap by turning the cap with a coin or equivalent tool which fits into the groove in the cap, and remove the cap by inserting the same coin or tool in the clearance between the cap and cover.

NOTE

- Do not use the screwdriver because it will scratch the cap.
- The cap is not screw type. Do not push down on the cap or it will damage the cap.

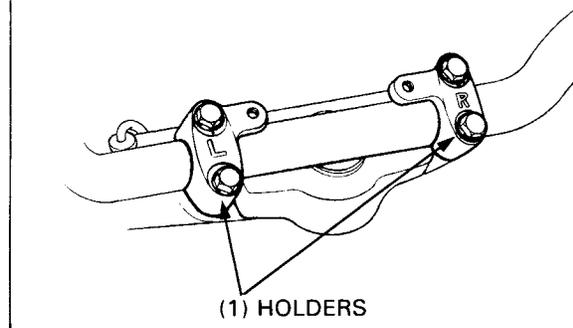
Remove the handlebar cover attaching screws and the cover.



FRONT WHEEL/SUSPENSION/STEERING

Remove the handlebar upper holders and the handlebar.

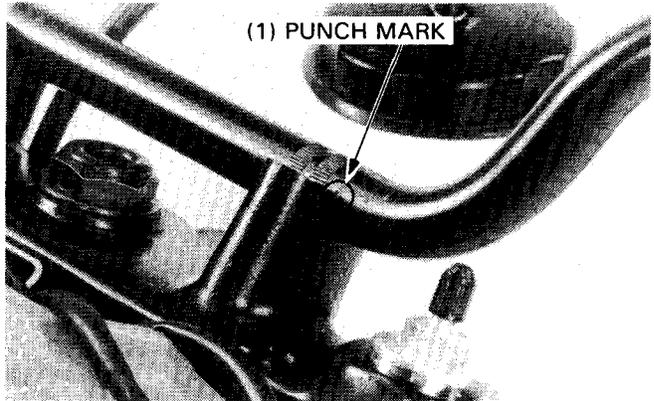
After '86:



INSTALLATION

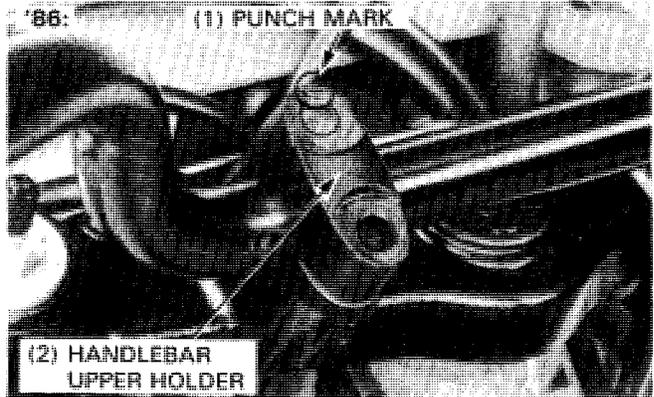
Place the handlebar onto the lower holders, aligning the punch mark on the handlebar with the top of the lower holder.

(1) PUNCH MARK



'86:
Install the handlebar upper holders with the punch marks facing forward.

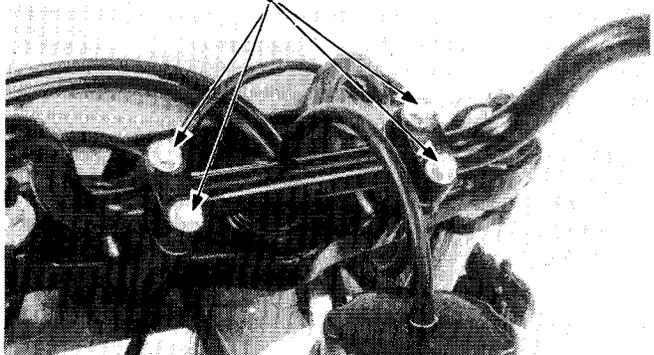
'86: (1) PUNCH MARK



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

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

'86: (1) BOLTS



After '86:

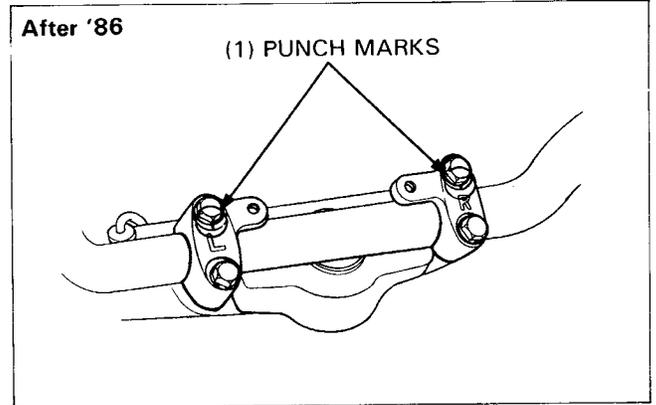
Install the handlebar upper holders with the punch marks facing forward.

NOTE

- The handlebar upper holders have marks: L for left side and R for right side.

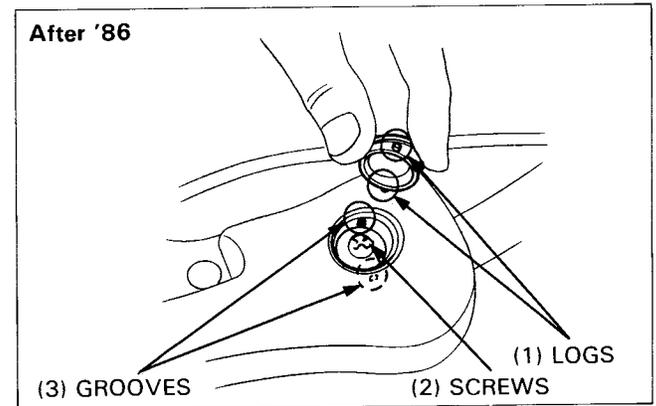
Tighten the front bolts first, then tighten the rear bolts.

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



Install the handlebar cover onto the upper holders. Tighten the attaching screws securely. Align the lugs on the handlebar cover cap with the grooves in the cover, and install the caps.

Insert the fuel tank breather tube into the hole of the handlebar cover and steering stem nut. Push the tube in far enough so that the white mark on it is not visible above the surface of the handlebar cover.



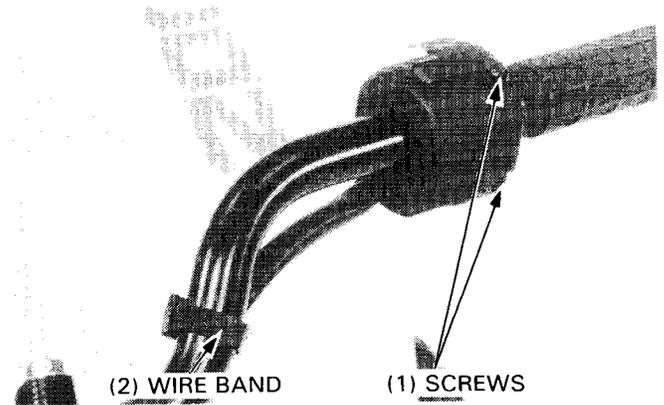
Apply Honda Bond A or Honda Grip Cement (U.S.A. only) to the inside surface of the left and right grips and to the clean surface of the handlebar. Wait 3–5 minutes and install the grips. Rotate the grips for even application of the adhesive.

NOTE

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

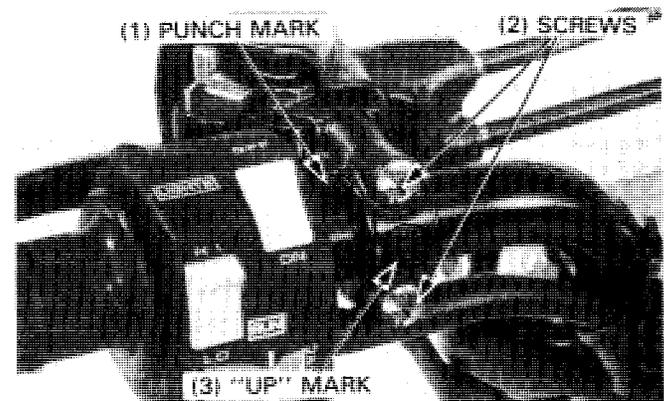
Align the switch housing locating pin with the hole in the handlebar and install the switch housing. Tighten the upper screw first, then tighten the lower screw.

Install the handlebar switch wire bands.



Place the clutch/parking brake lever bracket on the handlebar and install the holder with the "UP" mark facing up.

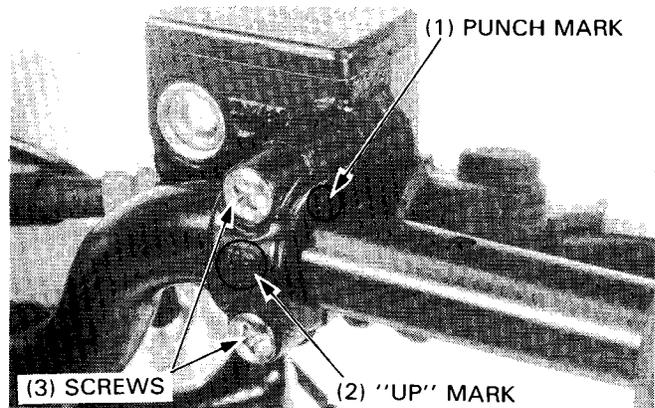
Align the bracket holder end with the punch mark on the handlebar and tighten the upper screw first, then tighten the lower screw.



FRONT WHEEL/SUSPENSION/STEERING

Place the front brake master cylinder on the handlebar and install the holder with the "UP" mark facing up.

Align the master cylinder holder end with the punch mark on the handlebar and tighten the upper screw first, then tighten the lower screw.

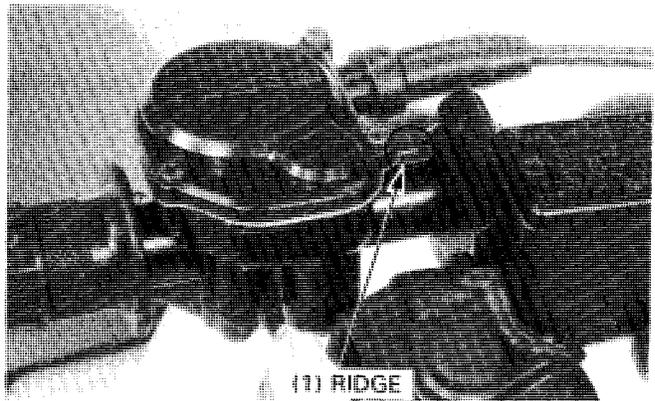


Position the throttle housing on the handlebar and install it using the throttle housing holder and two screws.

Align the ridge of the housing with the mating surface of the master cylinder and holder, and tighten the forward screw first, then tighten the rear screw.

Inspect the following after installing the handlebar:

- Clutch lever free play (page 3-15).
- Throttle lever free play and return (page 3-4).
- Operation of parking brake lever (page 3-13).
- Function of handlebar switch.
- Operation of front brake lever.



THROTTLE HOUSING

DISASSEMBLY

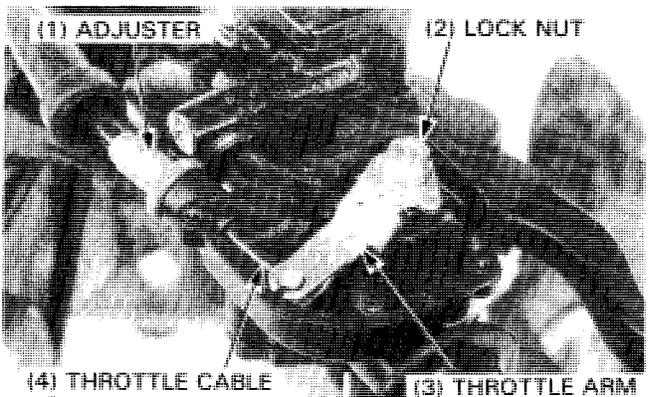
Remove the three throttle housing cover screws and the cover. Remove the gasket.



Loosen the throttle cable adjuster and remove the lock nut.

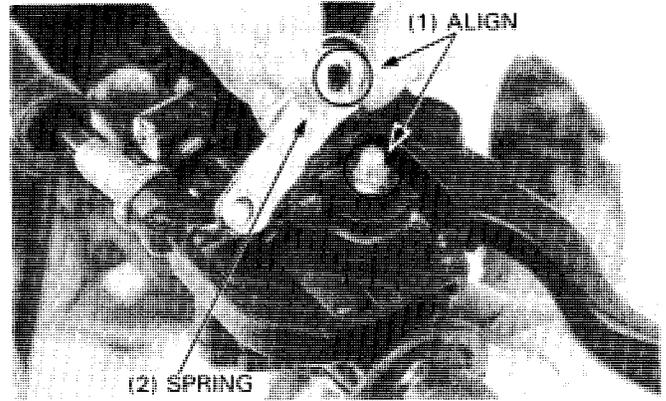
Disconnect the throttle cable from the throttle arm.

Remove the throttle arm, spring and throttle lever from the throttle housing.

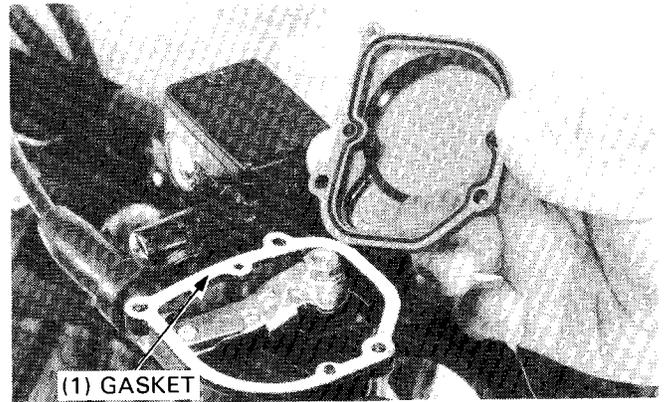


ASSEMBLY

Connect the throttle cable to the throttle arm and install the spring.
Install the throttle lever in the housing.
Install the arm onto the lever by aligning their flats.



Install the lock nut and tighten it.
Install a new cover gasket and secure the throttle housing cover using the three screws.
Adjust throttle lever free play (page 3-4).



FRONT WHEEL

REMOVAL

Loosen the axle holder nut, axle and wheel nuts.

Raise the front wheel off the ground by placing a block or safety stand under the skid plate.

Remove the wheel nuts and slide the wheel away from the brake disc.

Place a small wooden wedge between the brake pads to keep them from being forced out at the caliper.

NOTE

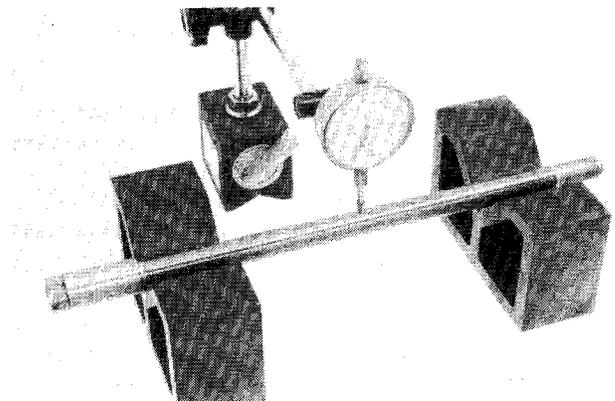
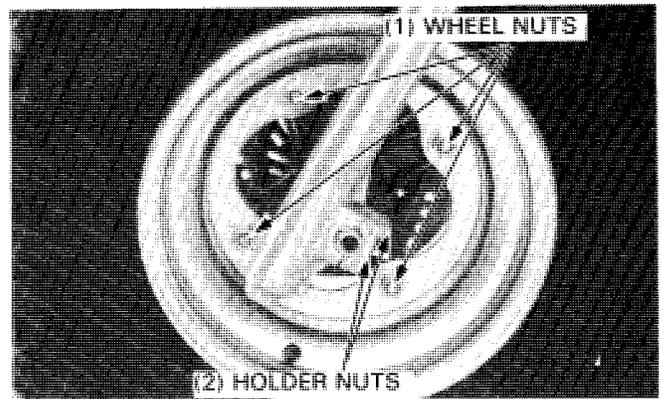
- Do not loosen the brake hose. Whenever the brake hose is loosened, it is necessary to bleed air from the brake. Refer to page 14-3 for bleeding procedures.

Remove the axle and the front wheel.

INSPECTION

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

SERVICE LIMIT: 0.5 mm (0.02 in)

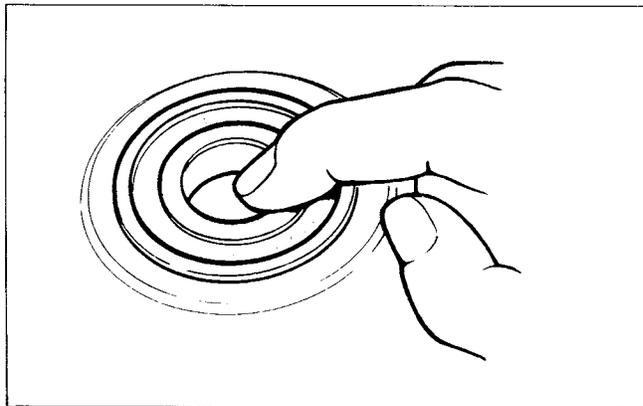


FRONT WHEEL/SUSPENSION/STEERING

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

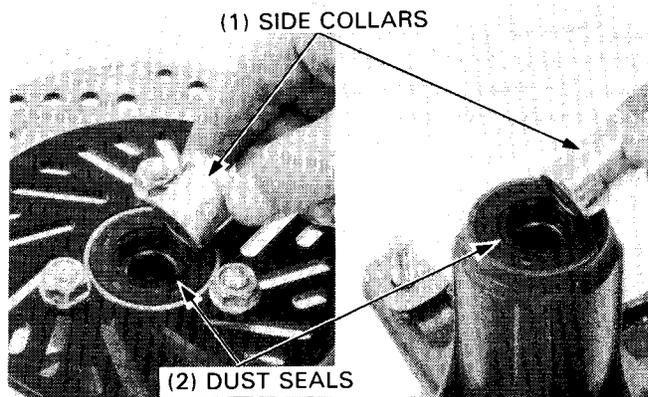
NOTE

- Replace the wheel hub bearings in pairs.

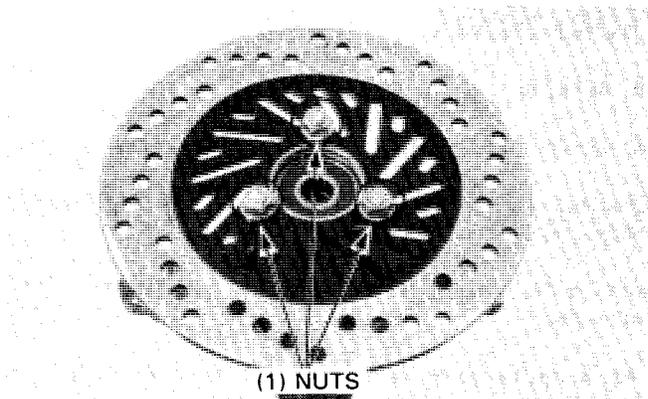


WHEEL BEARING REPLACEMENT

Remove the side collars and dust seals from the wheel hub.



Remove the front brake disc from the wheel hub.



Remove the wheel bearings with a bearing remover.

TOOLS:

Bearing remover shaft

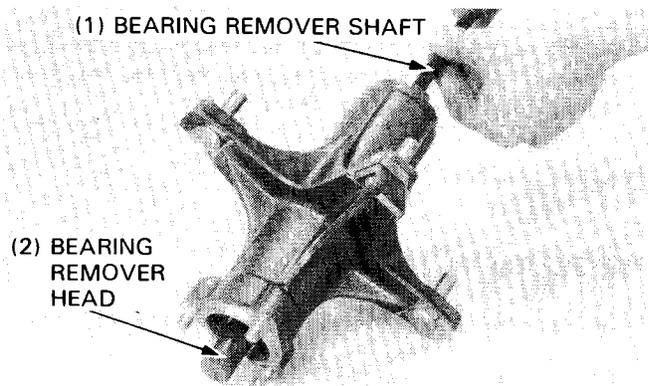
07746-0050100 or
equivalent commercially
available in U.S.A.

Bearing remover head, 15 mm

07746-0050400 or
equivalent commercially
available in U.S.A.

NOTE

- Never reinstall old bearings; once the bearings have been removed, they must be replaced with new ones.

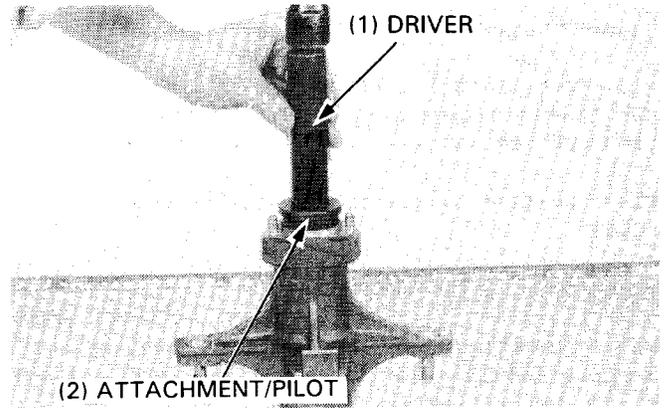


Pack the new bearings with grease.

First, drive a new left bearing in squarely until it is fully seated, install the spacer, then drive a new right bearing in squarely.

TOOLS:

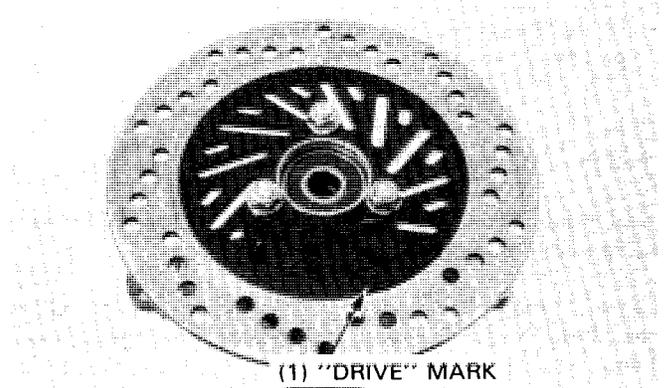
Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 15 mm	07746-0040300



Install the front brake disc with the "DRIVE" mark facing out (arrow points the normal rotating direction).

Tighten the brake disc nuts.

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

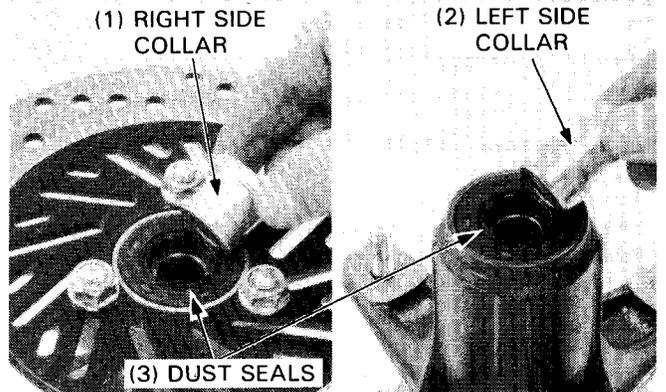


Apply grease to the dust seal lips and install the seals into the hub.

Install the side collars into the hub.

NOTE

- The longer collar is for the left side.



TIRE REPAIR

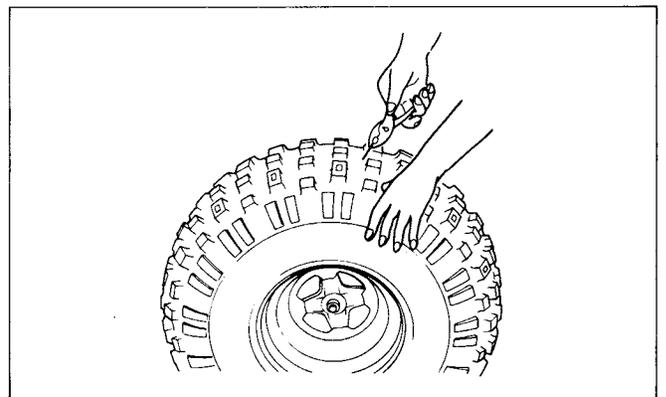
NOTE

- 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.



FRONT WHEEL/SUSPENSION/STEERING

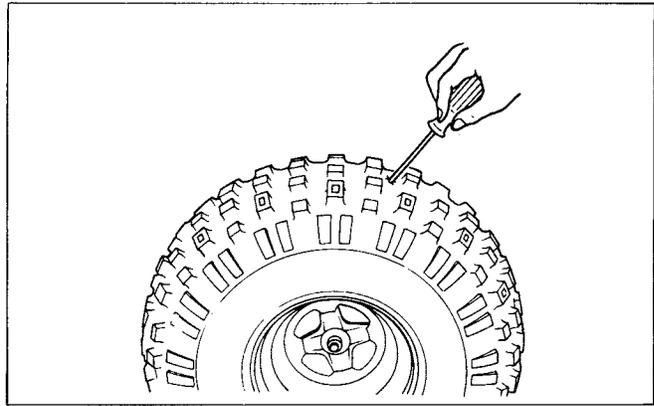
Install a rubber plug into the injury as follows:

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.

Trim the plug to 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 11-11) 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.

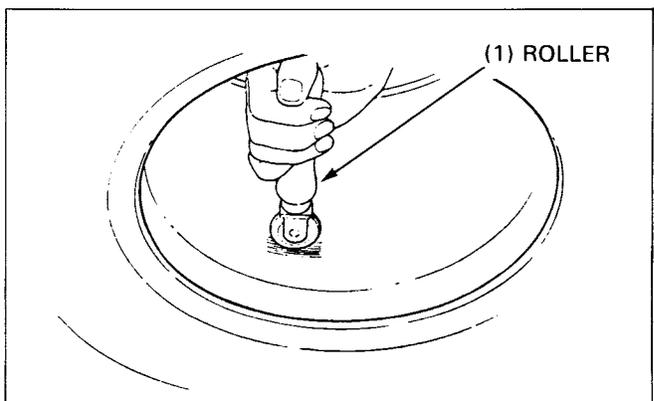
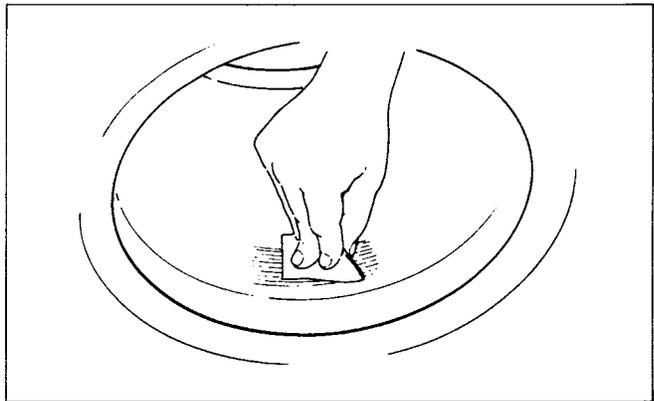
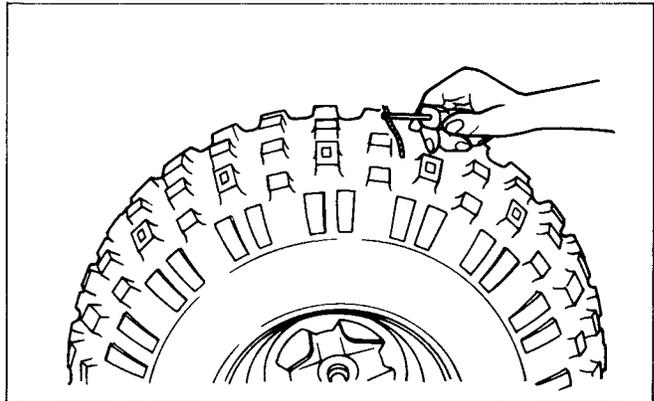
Temporarily place a rubber patch that is at least twice the size of the puncture over the injury. Make a mark around the patch, slightly larger than the patch itself. Remove the patch.

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.



TIRE REMOVAL

NOTE

- This service requires the Universal Bead Breaker (GN—AH—958—BB1) available in U.S.A. only.

Remove the core from the valve stem.

CAUTION

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

Install the proper size blade onto the breaker arm assembly.

Short blade — 7"/8" rims.
 Long blade — 9"/11" rims.

CAUTION

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

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

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

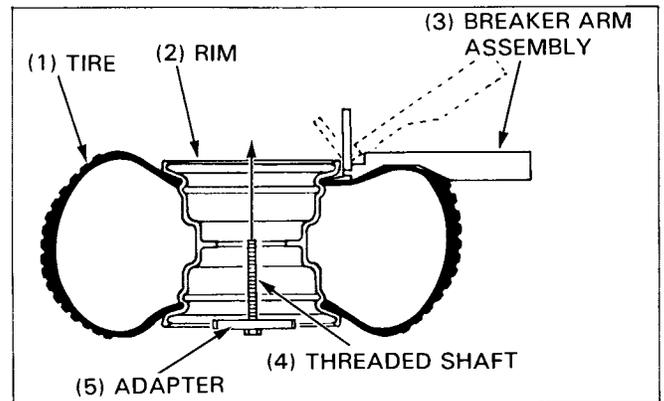
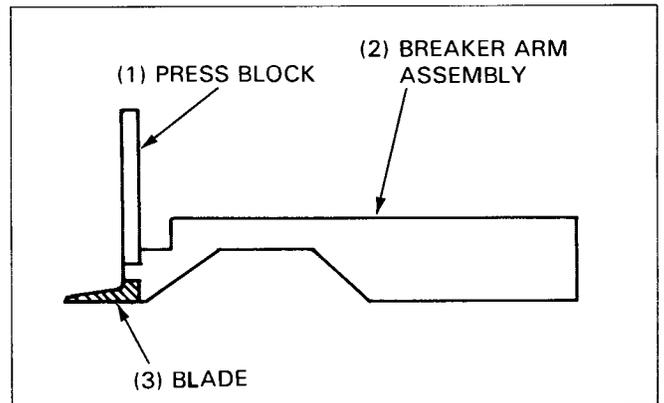
WARNING

- 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.

NOTE

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



FRONT WHEEL/SUSPENSION/STEERING

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

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

NOTE

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

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

If the rest of the bead cannot be pushed down into the center of the rim by hand, loosen the press head bolt and the lever nut. Rotate the breaker arm assembly and breaker press head assembly $1/8$ to $1/4$ the circumference of the rim. Tighten the lever nut and then tighten the press head bolt as described. Repeat this procedure as necessary until the remainder of the bead can be pushed down into the center of the rim.

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

Remove the tire from the rim using a tire changer machine or tire irons and rim protectors.

Remove the front tire from the valve stem side and the rear tires from the side opposite the valve stem.

TIRE REMOVAL (EXCEPT U.S.A.)

NOTE

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

CAUTION

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

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

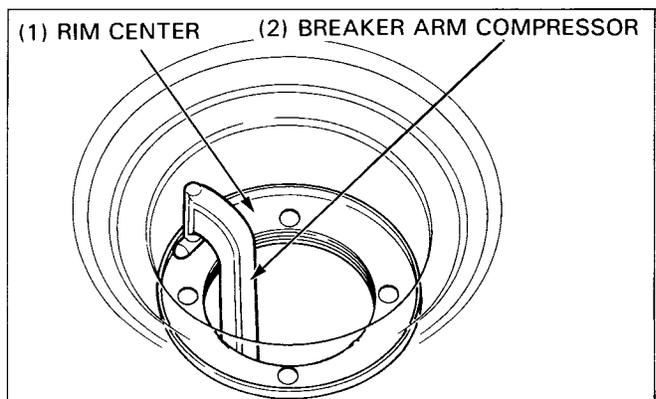
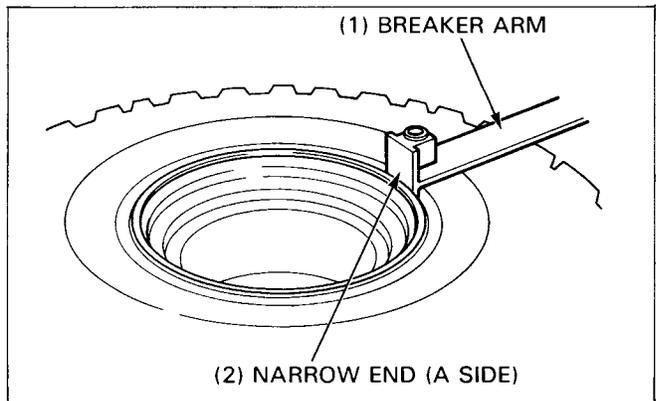
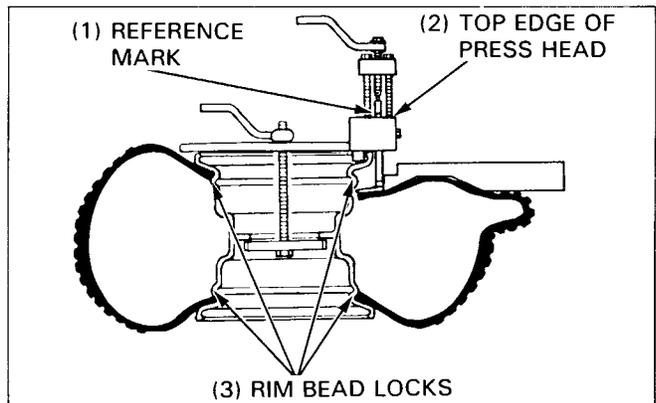
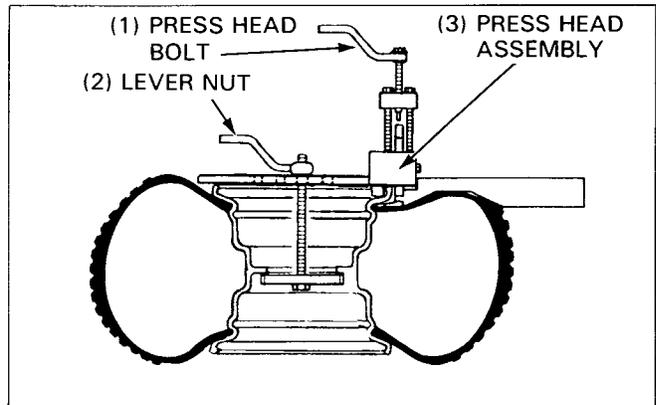
Position the breaker arm compressor onto the rim center as shown.

TOOLS:

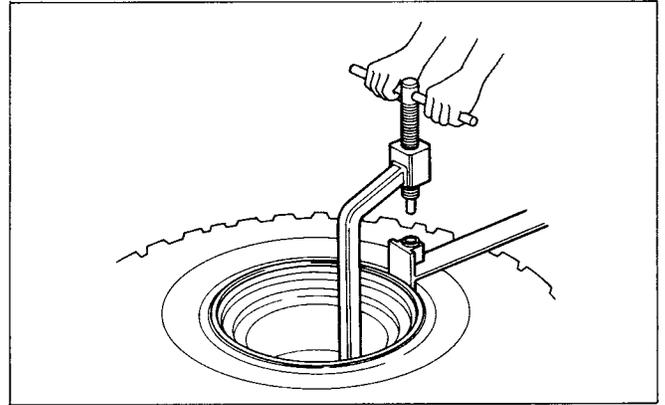
Tire bead breaker set

- Breaker arm
- Breaker arm compressor

07772-0050000
not available in U.S.A.
07772-0050200
07772-0050100

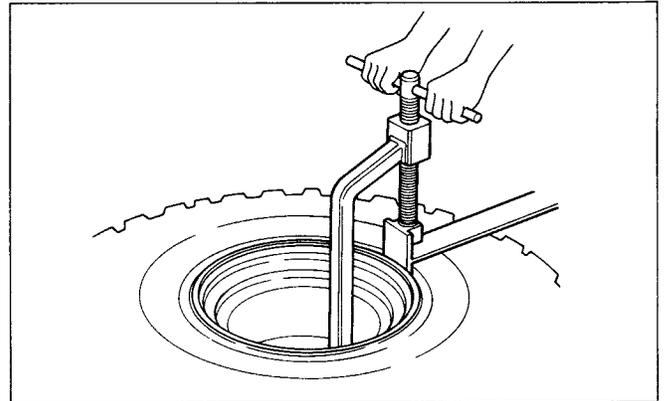


Keep the breaker arm horizontal and align the end of the compressor bolt with the arm hole.

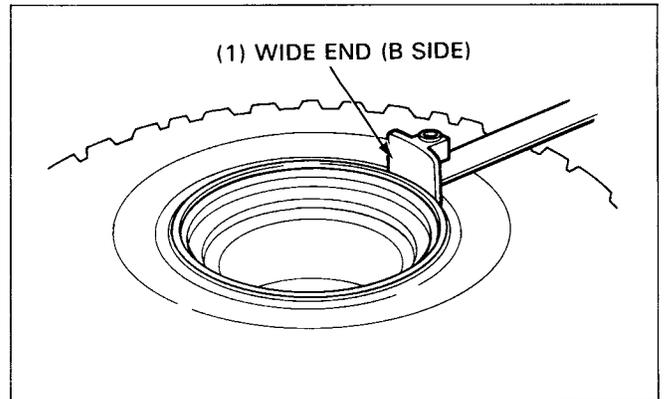


Screw in the breaker arm compressor bolt to break the bead from the tire.

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.



TIRE ASSEMBLY

After removing the tire from the rim, cut the valve off the rim. Install a new valve into the valve hole in the rim securely.

NOTE

- Be careful not to damage the valve hole.
- Be sure to replace the valve with a new one whenever the tire is removed from the rim.

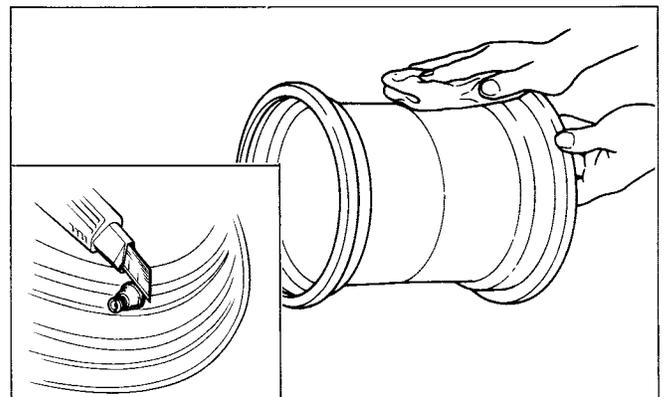
Clean the rim bead seat and flanges.

Apply clean water to the rim flanges, bead seat and base. Install the tire on the rim.

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.*

Inflate the tire to seat the tire bead.



FRONT WHEEL/SUSPENSION/STEERING

CAUTION

- Do not inflate the tire with more than 150 kPa (1.5 kg/cm², 22 psi) of air.

If the tire does not seat on the rim with 150 kPa (1.5 kg/cm², 22 psi) of air pressure, release the air from the tire and apply water to the tire bead and bead seating surface of the rim.

Then, inflate the tire with air again.

Deflate the tire. Wait 1 hour, install the valve core in the valve stem and inflate the tire to the specified pressure.

'86

	Recommended pressure	Standard tire circumference
Front	25 kPa (0.25 kg/cm ² , 3.6 psi)	1,890 mm (74.4 in)
Rear	17 kPa (0.17 kg/cm ² , 2.5 psi)	1,720 mm (67.7 in)

NOTE

- The rear tires must have the same circumference for proper handling.

After '86

	Recommended pressure
Front	25 kPa (0.25 kg/cm ² , 3.6 psi)
Rear	17.5 kPa (0.175 kg/cm ² , 2.5 psi)

Check for air leaks and install the valve cap.

FRONT WHEEL INSTALLATION

Install the hub on the wheel.

Install the front brake caliper over the disc, being careful not to damage the pads.

Loosely install the wheel nuts with the tapered side facing in.

If the axle holder has been removed, loosely install the holder with the "UP" mark facing up.

Insert the axle into the fork slider leg and hub loosely tighten the axle.

Lower the front wheel on the ground and tighten the wheel nuts.

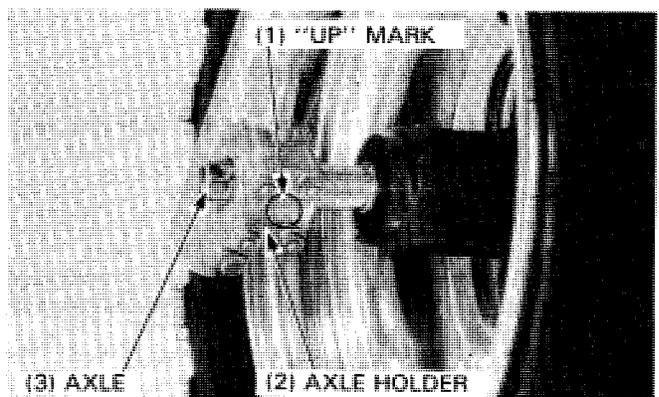
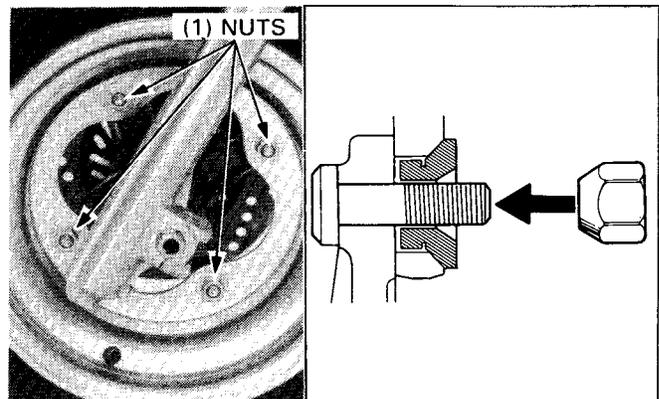
TORQUE: 60–70 N·m (6.0–7.0 kg·m, 43–51 ft·lb)

Tighten the axle.

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

Tighten the upper axle holder nuts first, then tighten the lower nuts.

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

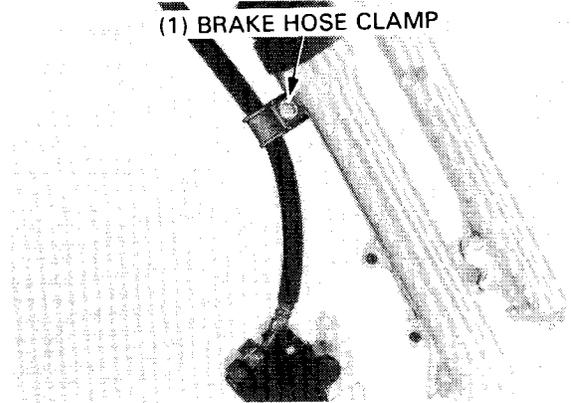


FRONT FORK

REMOVAL

Remove the front wheel (page 11-7).

Remove the front brake hose clamp from the right fork slider.



Remove the headlight case retaining bands and headlight case (page 16-5).

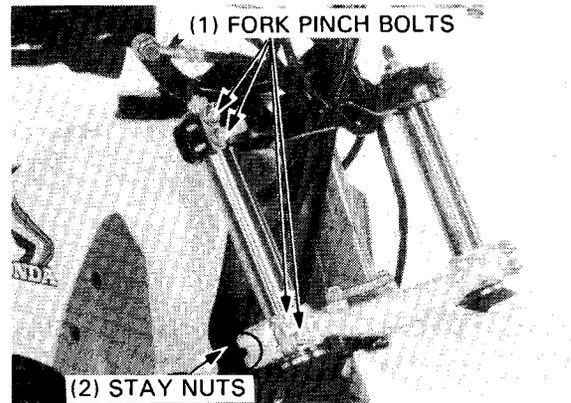
Remove the air valve caps and release the air from each fork tube.

WARNING

- *Be sure to release front fork air pressure before disassembling to prevent parts from becoming projectiles.*

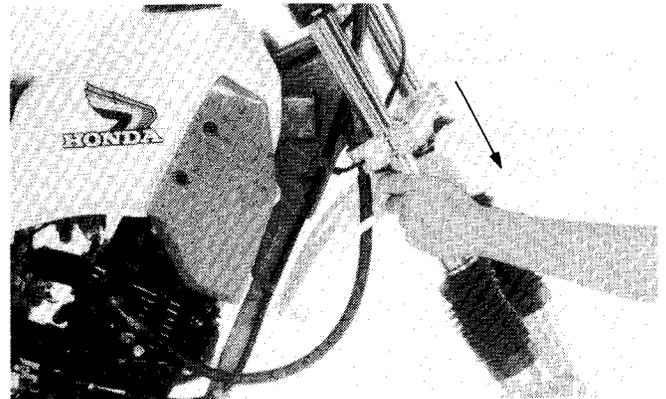
Loosen the fork tube caps.

Loosen the brake hose stay nuts and fork top and bottom pinch bolts.



Loosen the fork boot band and slide the boot down.

Pull the fork tube out of the bridge and steering stem.



DISASSEMBLY

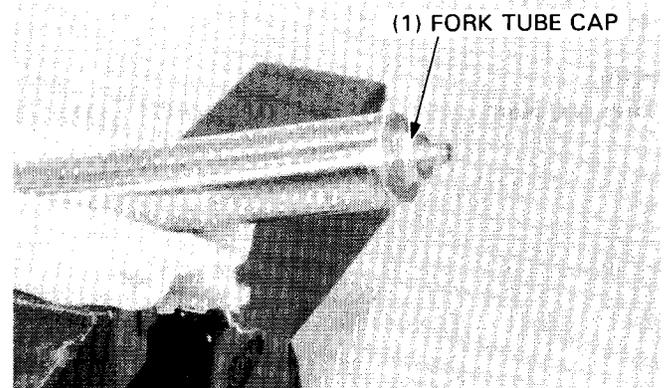
Hold the fork tube in a vise with soft jaws or a shop towel and remove the fork tube cap.

CAUTION

- *Do not damage the fork tube sliding surface.*

WARNING

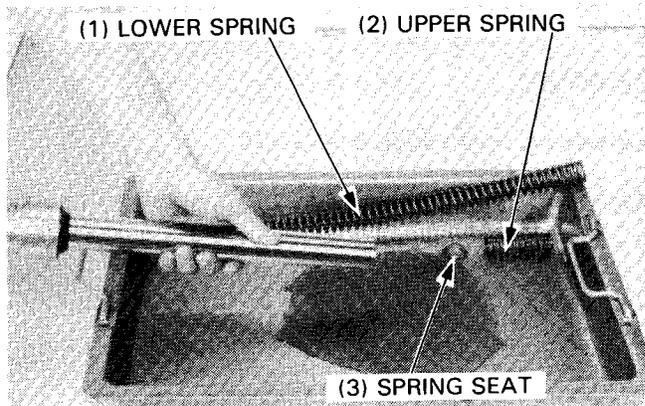
- *The fork cap is under spring pressure. Use care when removing the cap to keep it from causing injury.*



Remove the spring seat and fork springs.

FRONT WHEEL/SUSPENSION/STEERING

Drain the fork oil by pumping the fork up and down several times.



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

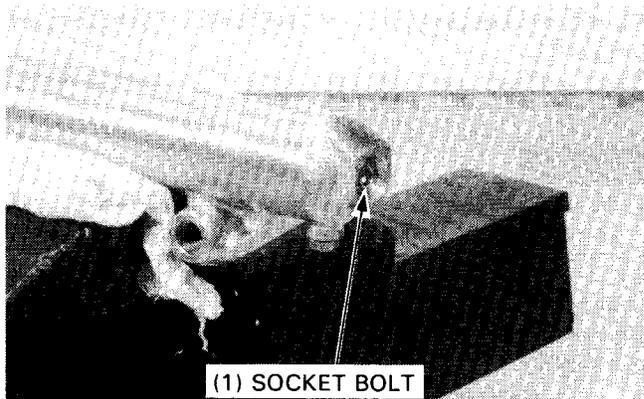
CAUTION

- *Do not overtighten the slider in the vise. Overtightening will damage the slider.*

Remove the socket bolt.

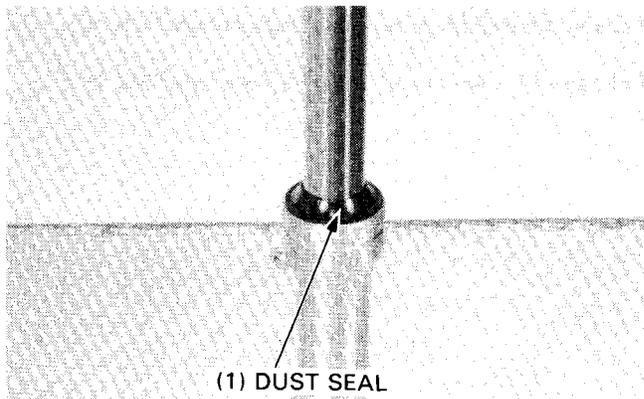
NOTE

- Temporarily install the springs and fork tube cap if difficulty is encountered in removing the socket bolt.



Remove the fork piston and rebound spring.

Remove the dust seal.

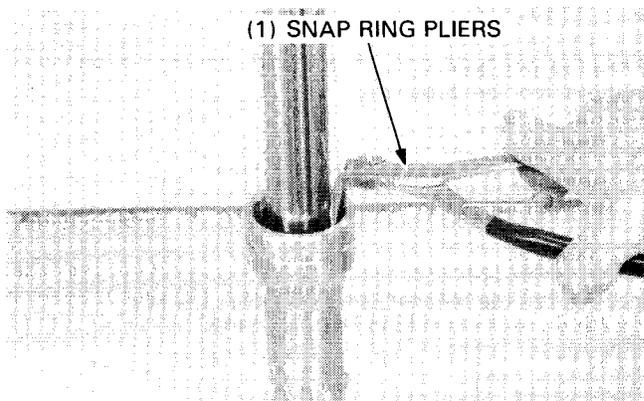


Remove the snap ring.

TOOL:

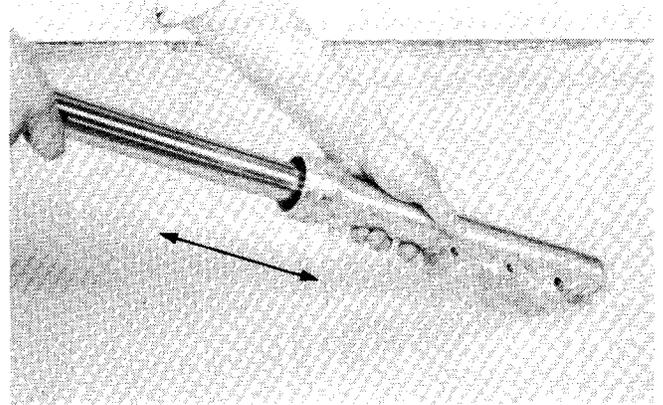
Snap ring pliers

07914-3230001



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

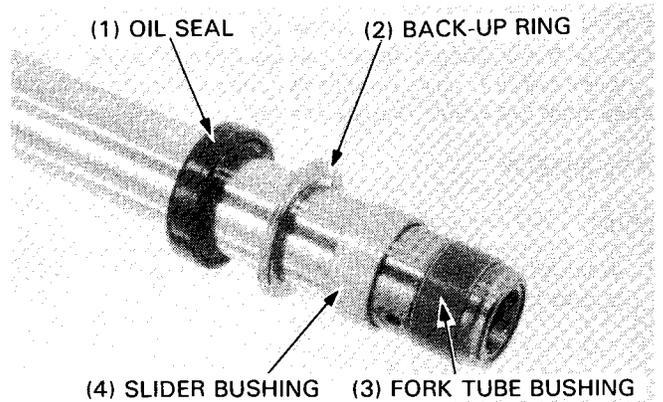
Remove the oil lock piece.



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

NOTE

- Do not remove the fork tube bushing unless it is necessary to replace it with a new one.



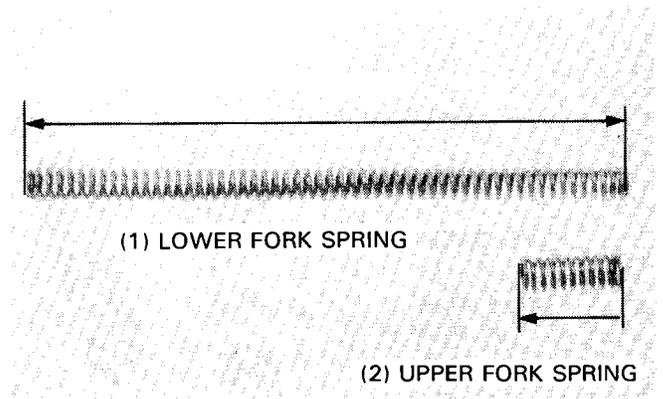
INSPECTION

Measure the fork springs free length.

SERVICE LIMITS:

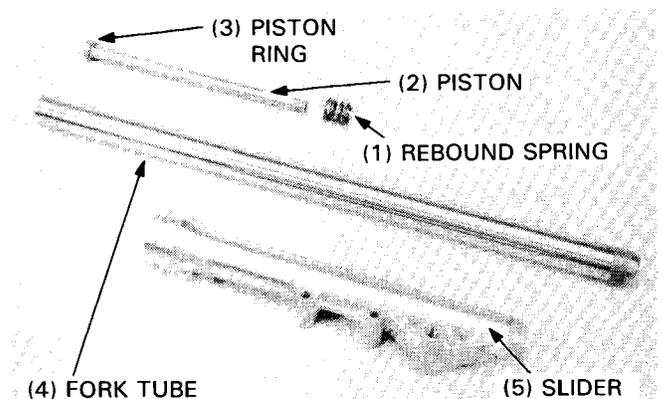
UPPER FORK SPRING: 67.3 mm (2.65 in)

LOWER FORK SPRING: 456.6 mm (17.98 in)



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

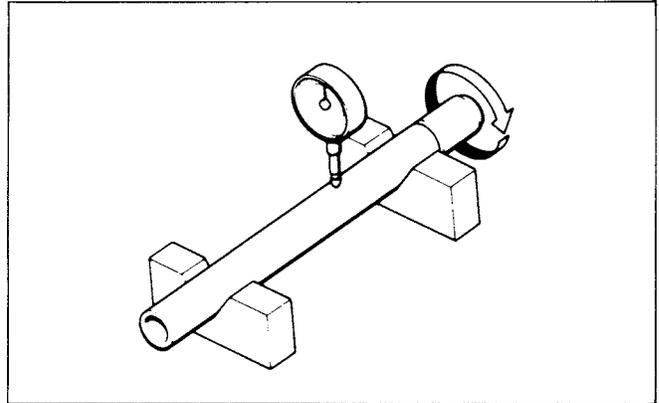
Check the fork piston ring for wear or damage. Check the rebound spring for fatigue or damage.



FRONT WHEEL/SUSPENSION/STEERING

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

SERVICE LIMIT: 0.20 mm (0.008 in)

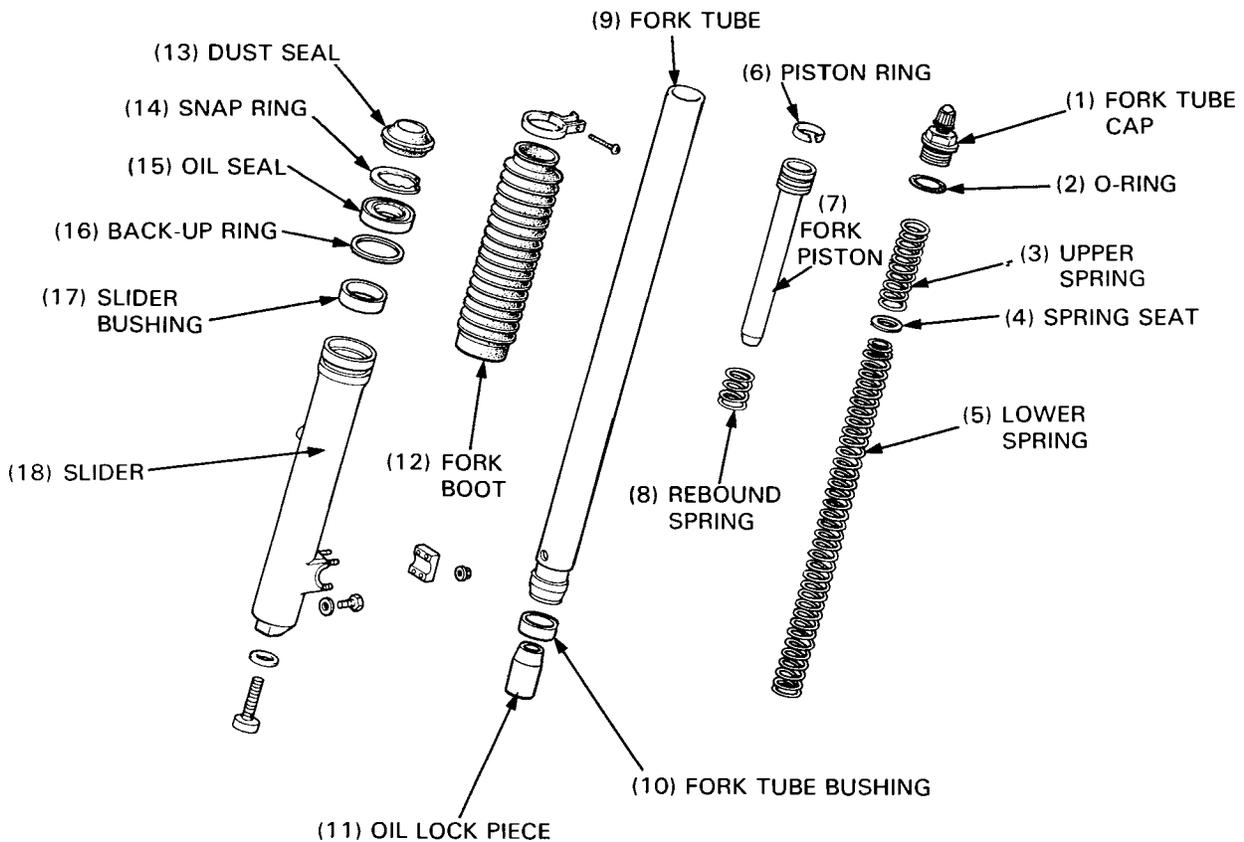
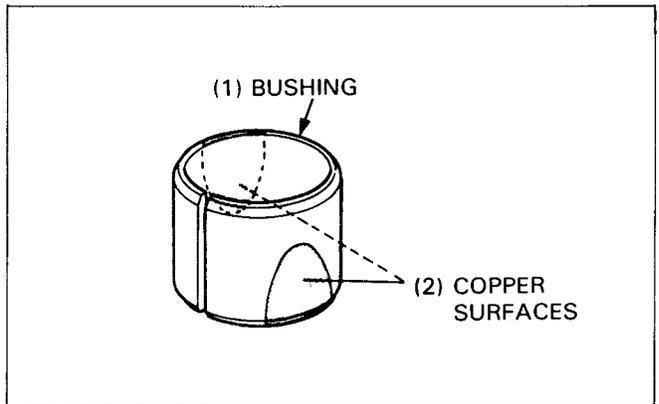


Visually inspect the slider and fork tube bushing. Replace the bushing if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface appears on more than 3/4 of the entire surface.

ASSEMBLY

NOTE

- Wash all removed parts in solvent and wipe them off thoroughly before assembly.

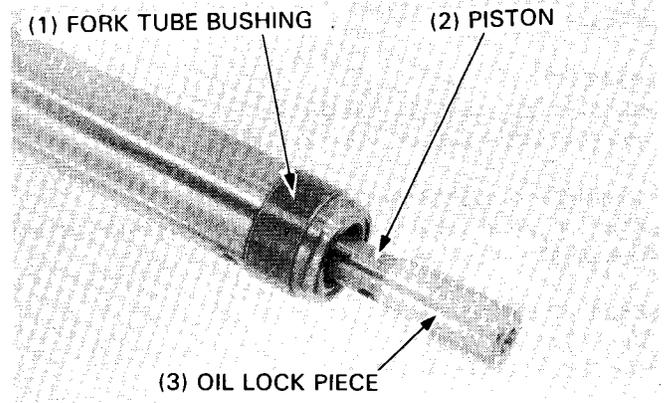


Install the piston ring on the piston.

Install the fork tube bushing if a new one is being installed.

Install the rebound spring and piston into the fork tube.

Place the oil lock piece on the end of the piston and insert the fork tube into the slider.

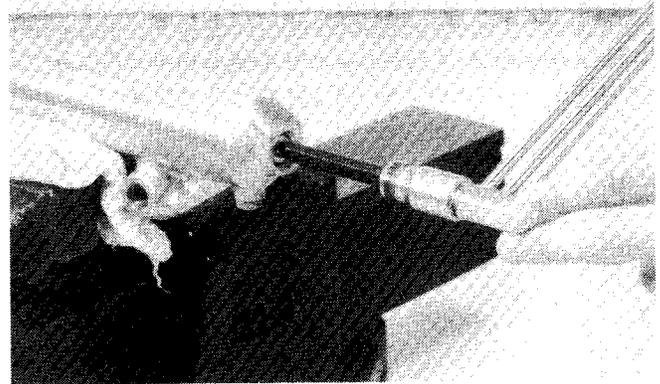


Place the fork slider in a vise with soft jaws or a shop towel.

Clean the socket bolt threads and apply thread lock agent to the threads. Screw the socket bolt into the piston and tighten it.

NOTE

- Temporarily install the fork springs and fork tube cap to tighten the socket bolt.



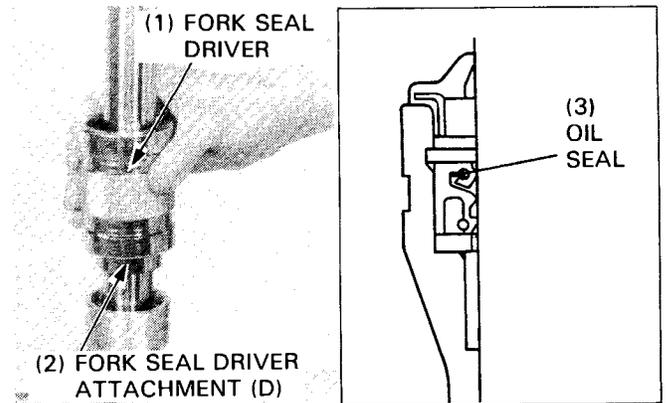
TORQUE: 15–25 N·m (1.5–2.5 kg-m, 11–18 ft-lb)

Place the slider bushing over the fork tube and rest it on the slider. Put the back-up ring and an old bushing or equivalent tool on the top.

Drive the bushing into place with the fork seal driver and remove the old bushing or equivalent tool.

Wrap tape around the top of the fork tube to prevent damage to the new oil seal.

Coat the new seal with ATF and install it with the seal markings facing up. Drive the seal in, until the snap ring groove is visible, with the fork seal driver.



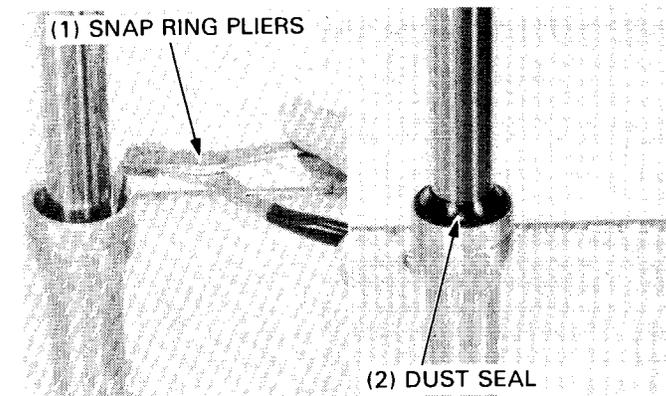
TOOLS:

- | | |
|-----------------------------------------------------|--------------------------------|
| Fork seal driver | 07747–0010100 |
| Fork seal driver attachment (D) or fork seal driver | 07747–0010501
07947–3330000 |

Install the snap ring and dust seal.

TOOL:

- | | |
|------------------|---------------|
| Snap ring pliers | 07914–3230001 |
|------------------|---------------|



FRONT WHEEL/SUSPENSION/STEERING

Fill the fork with ATF.

CAPACITY:

'86: 216–221 cc (7.3–7.5 US oz)

After '86: 226–231 cc (7.6–7.8 US oz)

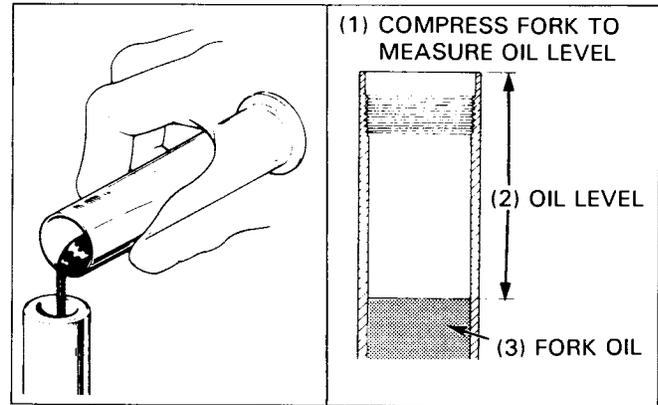
Pump the fork several times.

Compress the fork and measure the ATF level from the top of the tube after the level stabilizes.

SPECIFIED LEVEL:

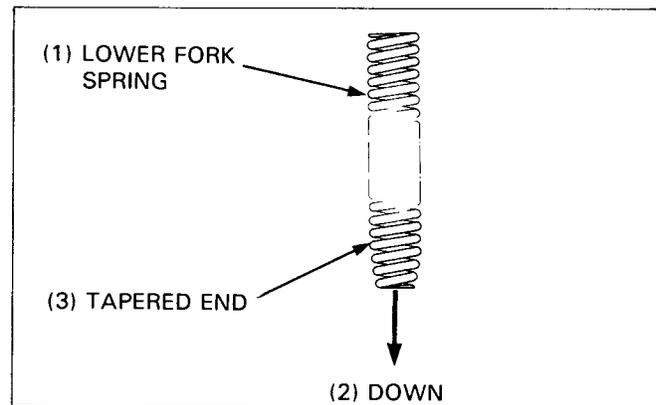
'86: 178 mm (7.0 in)

After '86: 160 mm (6-1/4 in)

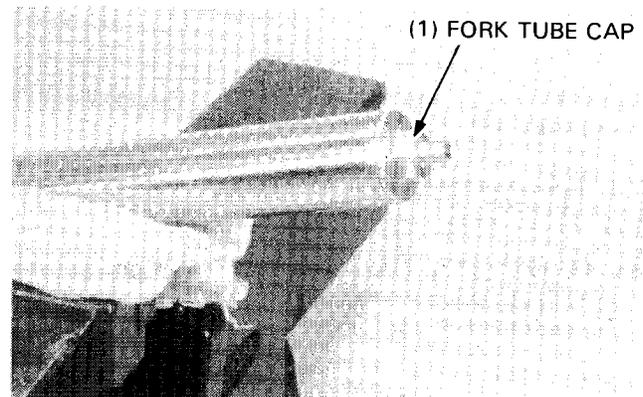


Wipe ATF off the springs thoroughly using a clean cloth.

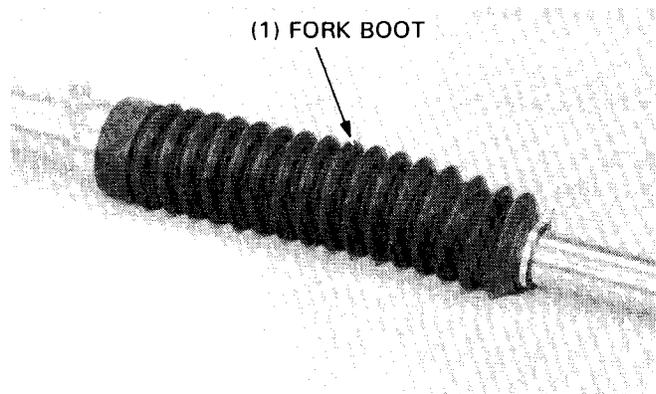
Install the lower fork spring with the tapered end facing down.
Install the spring seat and the upper fork spring.



Loosely install the fork tube cap.

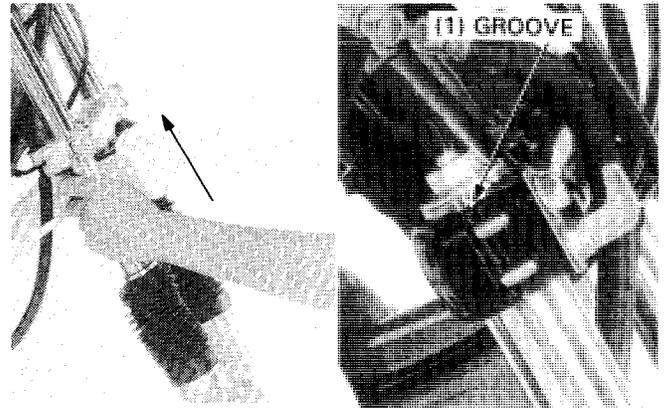


Install the fork boot on the fork tube and slider.



INSTALLATION

Install the front fork into the steering stem and fork bridge, and align the groove of the fork tube with the top of the fork bridge.



Tighten the fork top and bottom pinch bolts.

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

Tighten the fork tube cap.

TORQUE: 15–30 N·m (1.5–3.0 kg-m, 11–22 ft-lb)

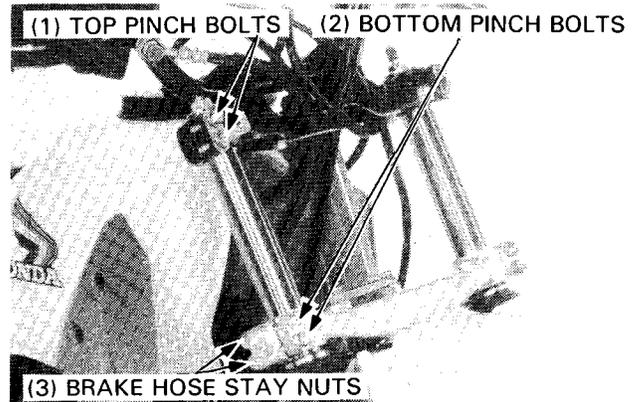
Tighten the brake hose stay nuts.

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

Slide the fork boot up to the steering stem and tighten the boot band.

TORQUE: 0.6–0.12 N·m (0.06–0.012 kg-m, 0.4–0.9 ft-lb)

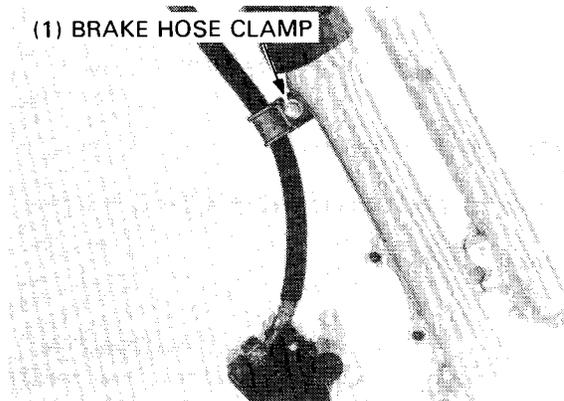
Install the headlight case retaining bands.



Install the front brake hose clamp onto the right fork slider and tighten the bolt.

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

Install the front wheel (page 11-14).



STEERING STEM

REMOVAL

Remove the following parts:

- headlight case (page 16-5)
- handlebar (page 11-3)
- front wheel (page 11-7)

Remove the brake hose clamp bolt then remove the brake hose clamp from the right fork slider.

Remove the brake hose stay nuts then remove the brake hose clamp from the steering stem.

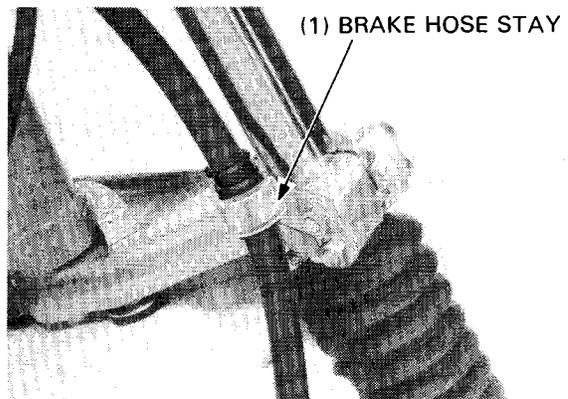
'86:

Remove the brake hose guide screw and nut from the front fender right side.

After '86:

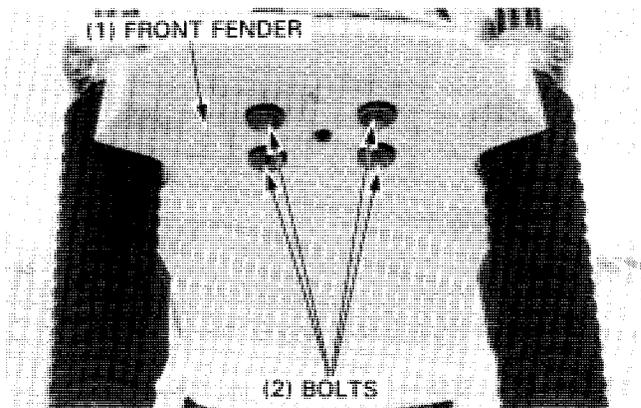
Remove the brake hose guide screw, nut and collar from the front fender right side.

Remove the brake hose from the brake hose guide.

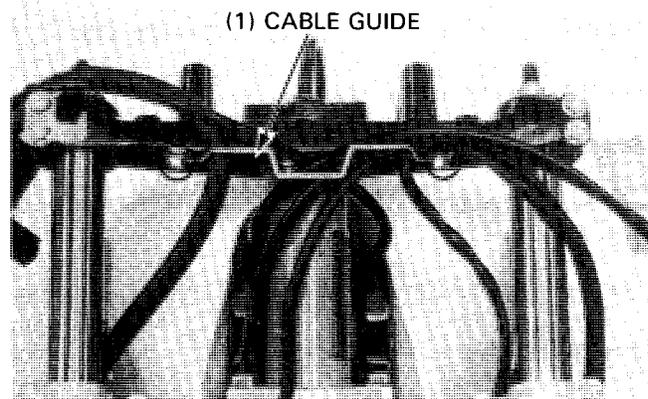


FRONT WHEEL/SUSPENSION/STEERING

Remove the front fender.



Remove the cable guide from the fork bridge.



'86:
Remove the steering stem nut and washer.

After '86:
Remove the steering stem nut.

Loosen the fork pinch bolts, and remove the front forks.

Remove the fork bridge.

TOOLS:

Extension

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

Lock nut wrench, 30 x 32 mm

07716-0020400 or
equivalent commercially
available in U.S.A.

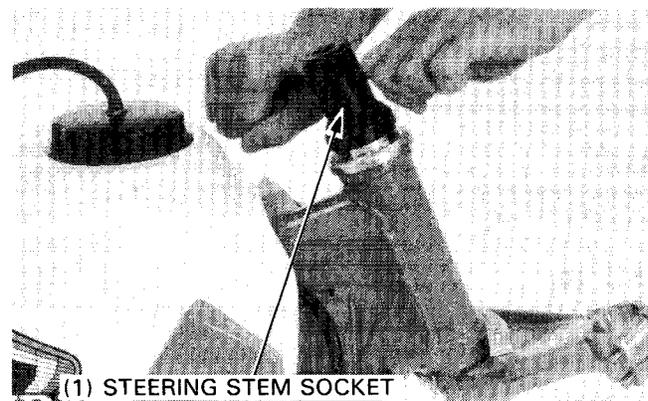
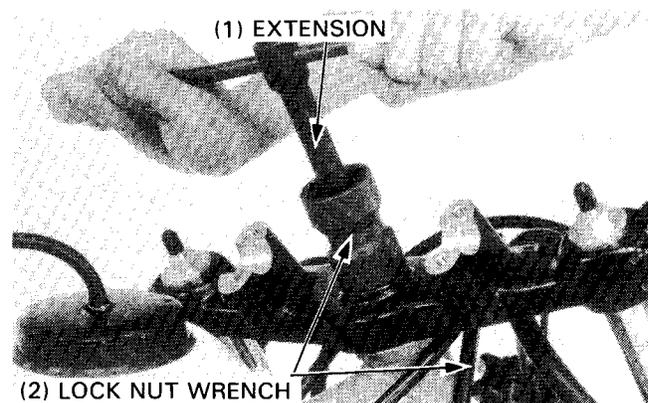
Remove the steering stem cover from the steering stem.

Loosen the steering bearing adjustment nut.

TOOL:

Steering stem socket

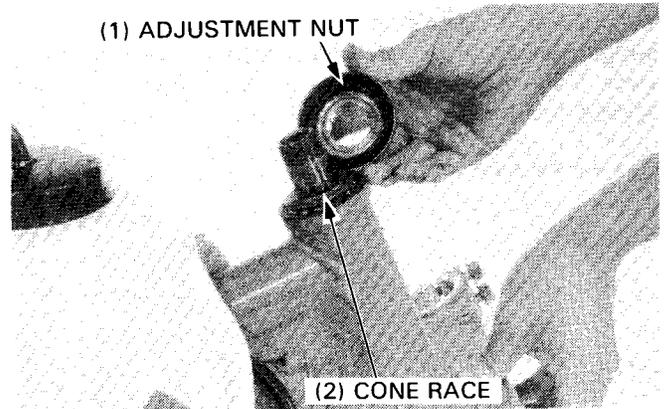
07916-3710100



Remove the steering bearing adjustment nut, steering stem, upper cone race and steel balls.

NOTE

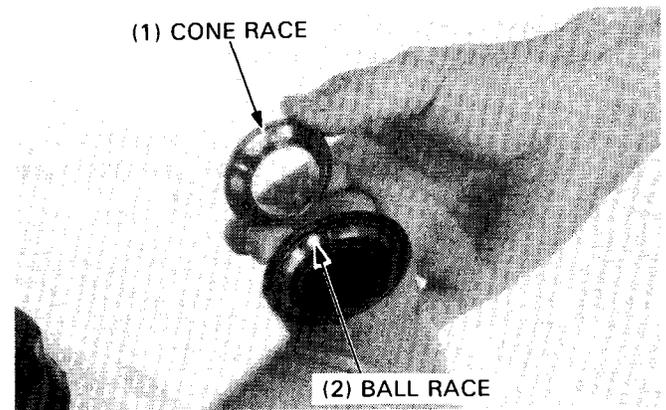
- The steel ball bearings are loose and easily dropped. Place shop towels on the floor to catch any that do drop.



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

NOTE

- Replace the balls and races as a set when any component is damaged.



STEERING BEARING REPLACEMENT

Drive out the upper and lower ball races from the steering head pipe.

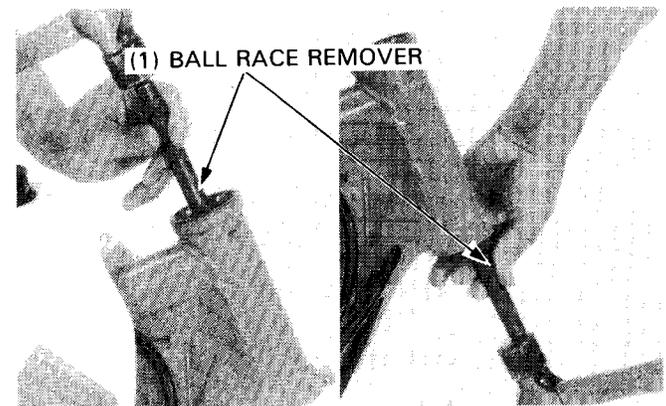
NOTE

- If the ATC has been involved in an accident, examine the area around the steering head pipe for cracks.

TOOL:

Ball race remover

07953-3330000



Drive new upper and lower ball races into the steering head pipe.

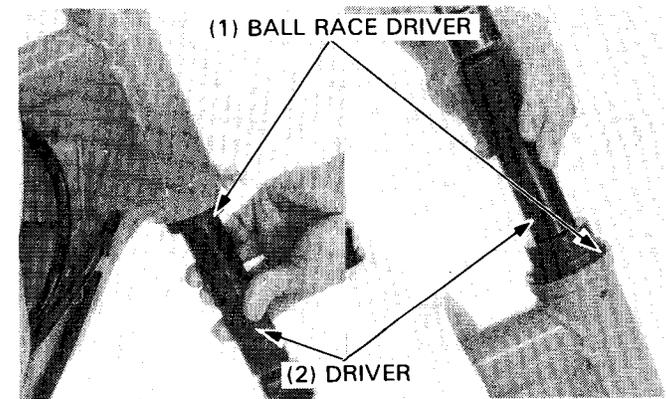
TOOLS:

Driver

07749-0010000

Ball race driver

07946-3290000



FRONT WHEEL/SUSPENSION/STEERING

Install the stem nut onto the stem to prevent the threads from being damaged when removing the lower cone race from the stem. Remove the race with a chisel, being careful not to damage the stem.

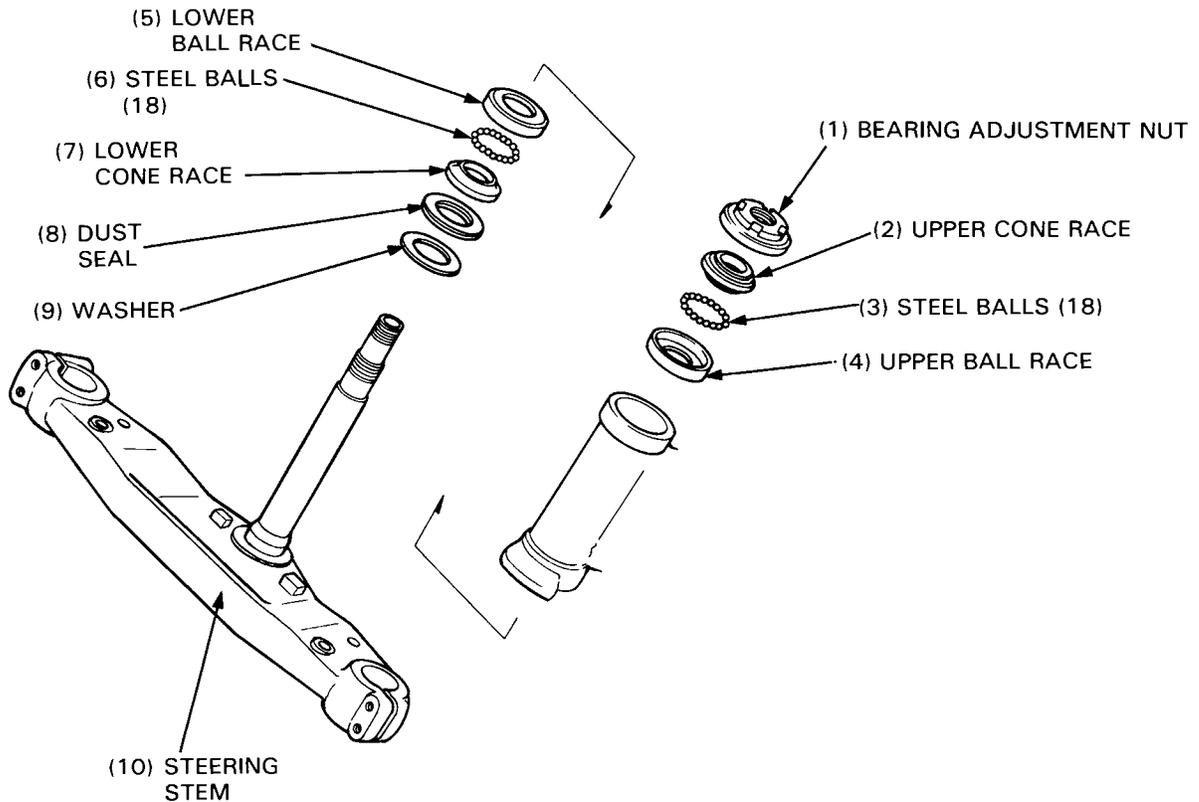
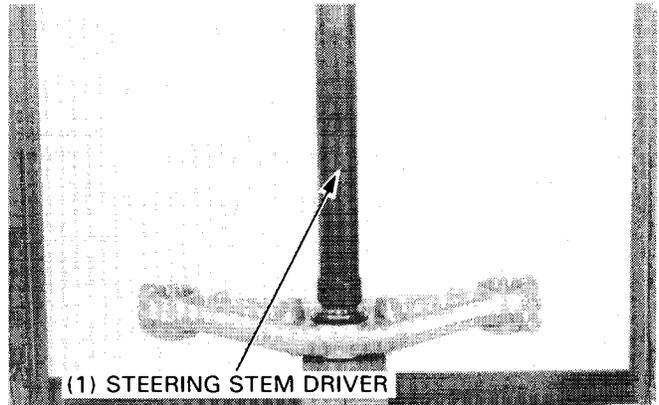
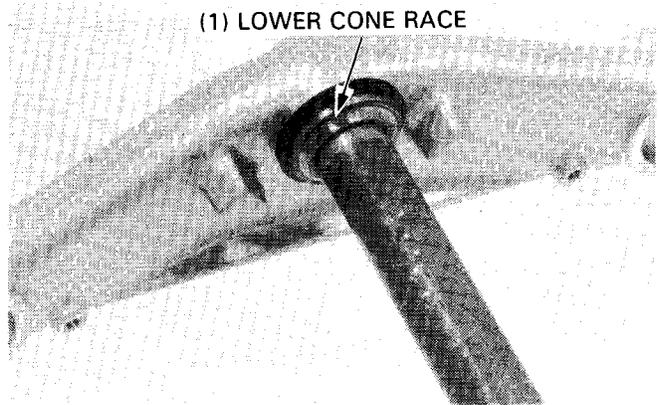
Remove the dust seal and washer.

Install the washer and dust seal onto the steering stem and press a new lower cone race over the stem with the tool.

TOOL:

Steering stem driver

07946-4300101 or
07946-MB00000 with
GN-HT-54



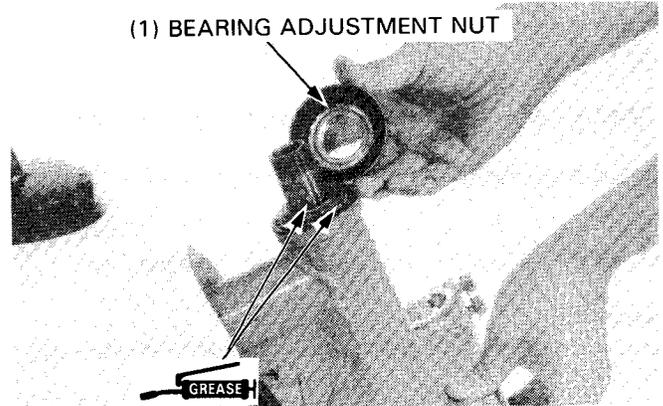
INSTALLATION

Apply grease to the ball and cone races and install the steel balls in the ball races.

NOTE

- Eighteen (18) steel balls are used for both the upper and lower stem bearings.

Insert the steering stem into the steering head pipe, and install the upper cone race and steering bearing adjustment nut.



Tighten the steering bearing adjustment nut to the initial torque.

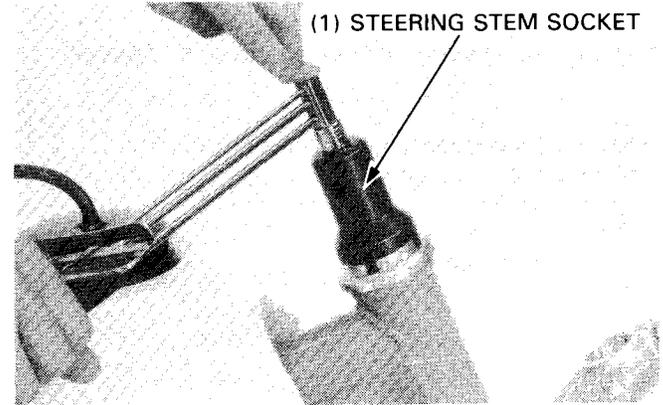
TORQUE: 25 – 35 N·m (2.5 – 3.5 kg·m, 18 – 25 ft·lb)

TOOL:

Steering stem socket 07916–3710100

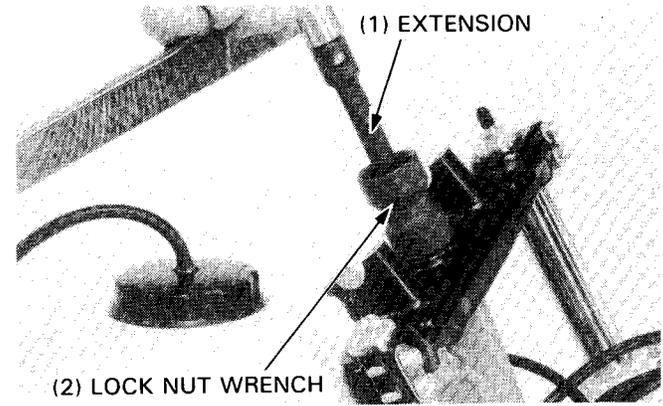
Turn the steering stem all the way to the the right and left 2 or 3 times to seat the bearings, loosen the adjustment nut and re-tighten it to the final specified torque.

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



Install the steering stem cover onto the steering stem and tighten the bolts.

TORQUE: 1 – 2 N·m (0.1 – 0.2 kg·m, 0.7 – 1.4 ft·lb)



'86:

Install the fork bridge, washer and stem nut.

After '86:

Install the fork bridge and stem nut.

Temporarily install the front forks.

Tighten the steering stem nut.

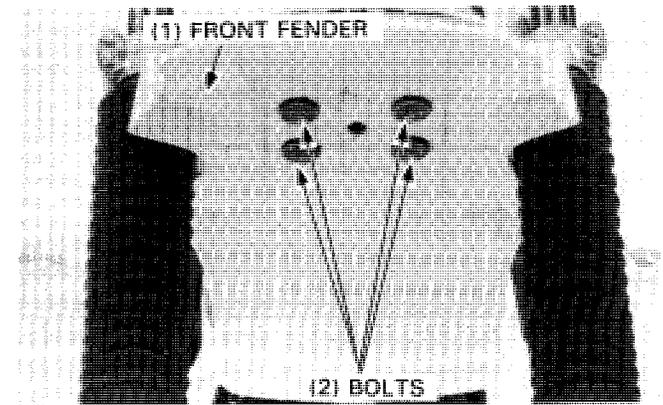
TORQUE: 90 – 120 N·m (9.0 – 12.0 kg·m, 65 – 87 ft·lb)

TOOLS:

- Extension 07716–0020500 or equivalent commercially available in U.S.A.**
- Lock nut wrench, 30 x 32 mm 07716–0020400 or equivalent commercially available in U.S.A.**

Install the front forks (page 11-21).

Install the front fender.



FRONT WHEEL/SUSPENSION/STEERING

Install the brake hose stay onto the steering stem and tighten the nuts.

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

Route the brake hose to the front fender brake hose stay.

'86:

Install the screw and nut, and tighten the screw securely.

After '86:

Install the collar, screw and nut, and tighten the screw securely.

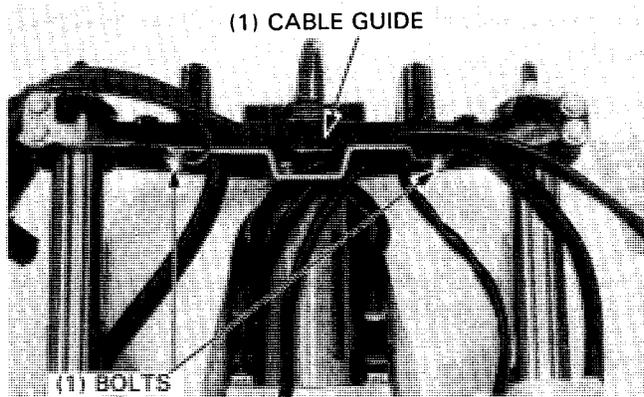
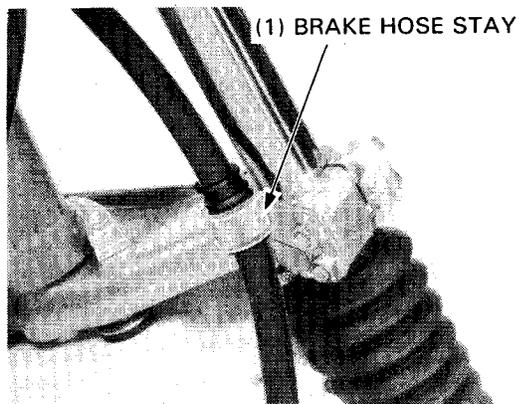
Install the brake hose clamp onto the right fork slider and tighten the bolt.

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

Install the cable guide onto the fork bridge.

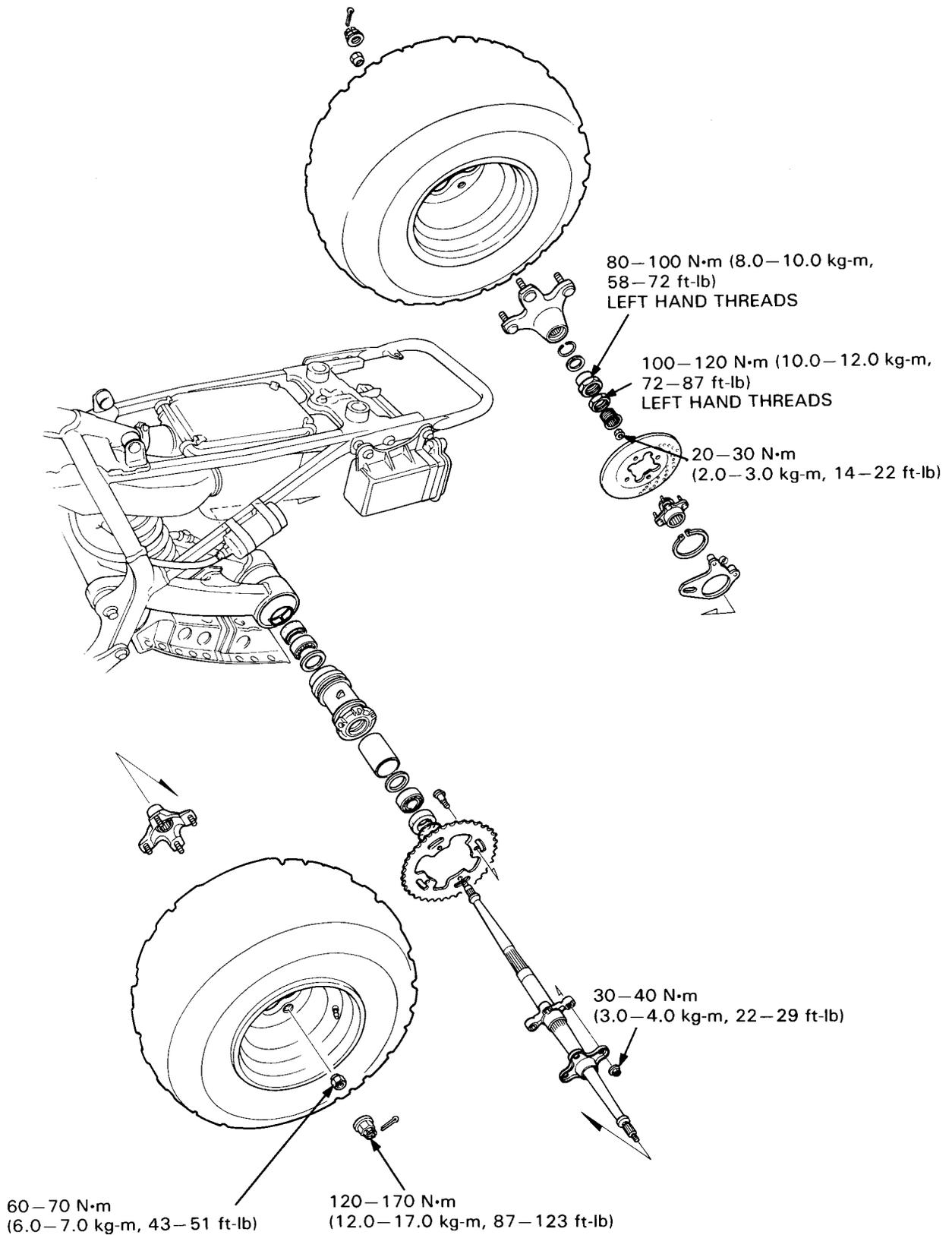
Install the following parts:

- headlight case.
- handlebar (page 11-4).
- front wheel (page 11-14).



MEMO

REAR WHEELS



12. REAR WHEELS

SERVICE INFORMATION	12-1	REAR AXLE	12-2
TROUBLESHOOTING	12-1	REAR AXLE BEARINGS	12-8
REAR WHEEL	12-2		

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the rear wheel and drive mechanism.
- A jack or block is required to support the ATC.
- When using the lock nut wrench tool, use a deflecting beam type torque wrench 20 inches long. The lock nut wrench increases the torque wrench's leverage, so the wrench reading will be less than the torque actually applied. The torque scale reading is given with the actual torque specifications.
- For tire repair and removal, see pages 11-9, 11.

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)
Axle runout		—	3.0 (0.12)
Wheel rim runout	Radial	—	4.0 (0.16)
	Axial	—	4.0 (0.16)

TORQUE VALUES

Wheel nut	60–70 N•m (6.0–7.0 kg-m, 43–51 ft-lb)
Brake disc nut	20–30 N•m (2.0–3.0 kg-m, 15–22 ft-lb)
Axle outer lock nut	80–100 N•m (8.0–10.0 kg-m, 58–72 ft-lb)
Axle inner lock nut	100–120 N•m (10.0–12.0 kg-m, 72–87 ft-lb)
Brake caliper mounting bolt	20–30 N•m (2.0–3.0 kg-m, 14–22 ft-lb)
Driven sprocket nut	30–40 N•m (3.0–4.0 kg-m, 22–29 ft-lb)
Bearing holder stopper bolt	8–11 N•m (0.8–1.1 kg-m, 5.8–8 ft-lb)
Drive chain adjuster lock bolt	18–24 N•m (1.8–2.4 kg-m, 13–17 ft-lb)
Rear axle nut	120–170 N•m (12.0–17.0 kg-m, 87–123 ft-lb)

TOOLS

Special

Lock nut wrench, 45 mm 07916–1870101 (2 piece) or equivalent commercially available in U.S.A.

Common

Driver	07749–0010000
Attachment, 62 x 68 mm	07746–0010500
Pilot, 35 mm	07746–0040800

TROUBLESHOOTING

Wheel wobble or vibration in vehicle

- Bent rim.
- Loose axle bearings.
- Faulty axle bearing holder.
- Faulty tire.
- Loose axle.
- Worn or damaged swingarm pivot bearings.

REAR WHEELS

REAR WHEEL

REMOVAL

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

Remove the rear wheel nuts and the wheels.

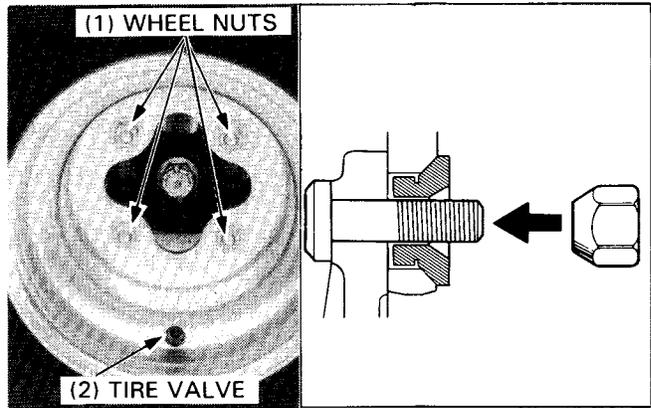
DISASSEMBLY

For tire disassembly, assembly and repair, refer to Pages 11-9 to 11-14.

INSTALLATION

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

TORQUE: 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)



REAR AXLE

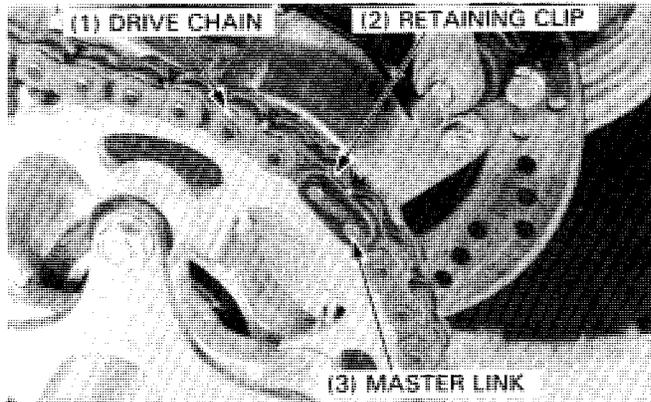
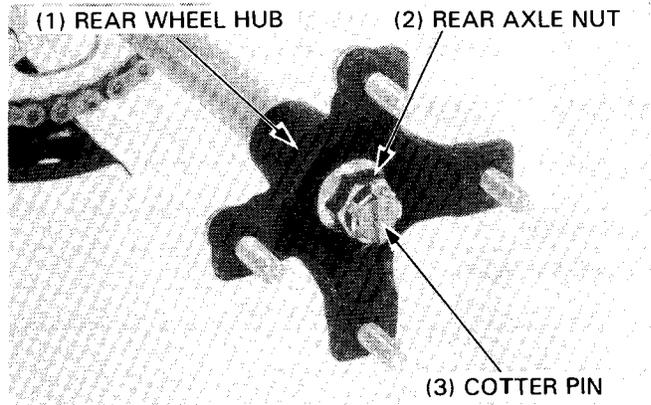
REMOVAL

Remove the rear wheels.

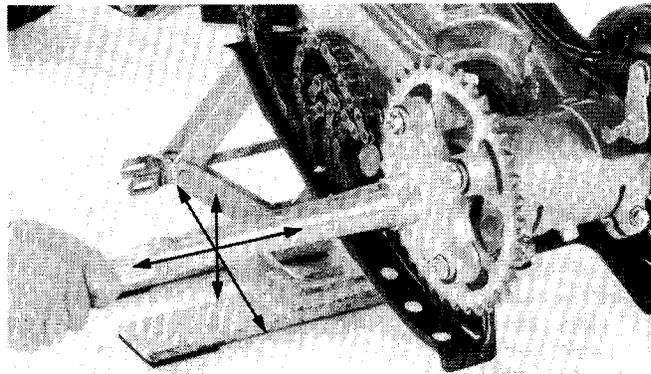
Remove the cotter pins, axle nuts and wheel hubs from the axle.

Loosen the drive chain adjuster (page 3-10).

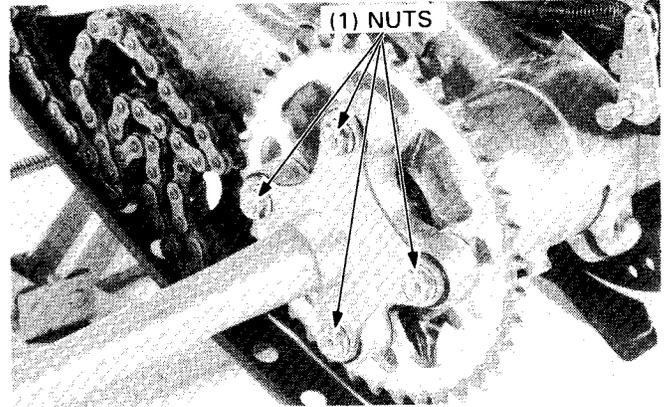
Remove the drive chain retaining clip, master link and drive chain.



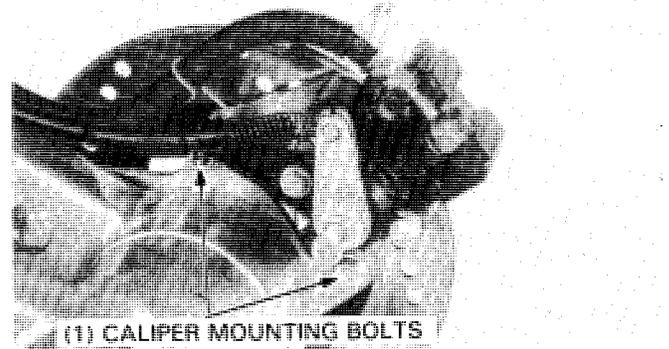
Move the ends of the axle back and forth, and up and down to check the wheel bearing play. If the play is excessive replace the wheel bearings (page 12-9).



Remove the nuts, chain guide plate, bolts and sprocket from the sprocket hub.



Remove the brake caliper mounting bolts and remove the caliper from the brake disc.



Loosen the axle inner lock nut while holding the outer lock nut.

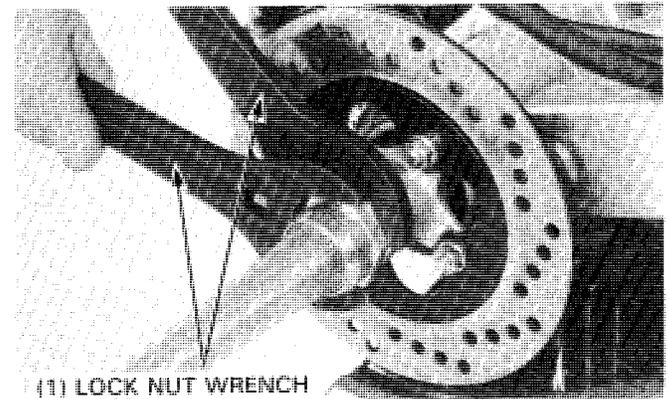
NOTE

- The lock nut has left-hand threads.

TOOL:

Lock nut wrench, 45 mm

07916–1870101
(2 piece) or equivalent
commercially available in
U.S.A.



Temporarily install the left wheel hub and wheel.

Loosen the outer lock nut until the snap ring can be removed.

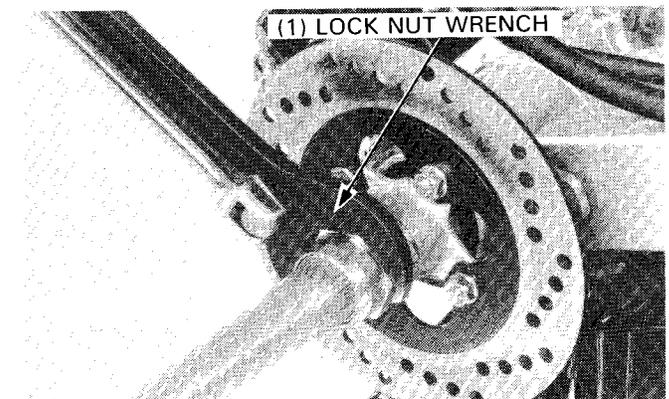
NOTE

- The lock nut has left-hand threads.

TOOL:

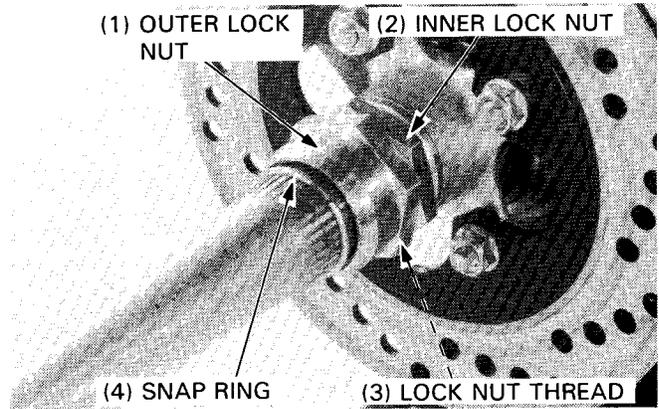
Lock nut wrench, 45 mm

07916–1870101 or
equivalent commercially
available in U.S.A.

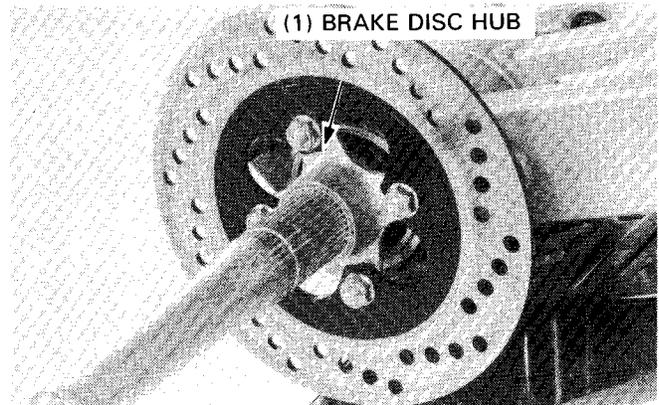


REAR WHEELS

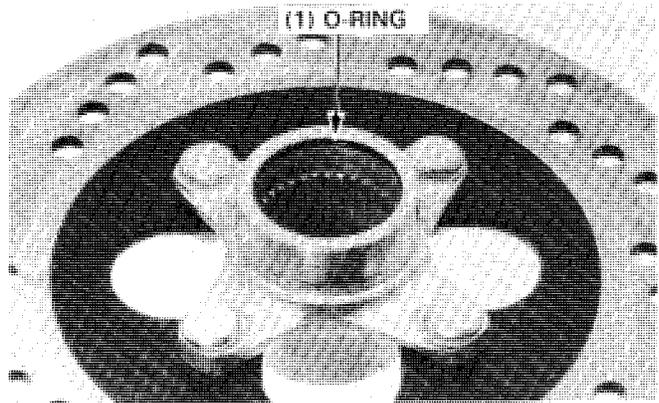
Remove the snap ring, collar, outer lock nut, lock nut thread and inner lock nut from the axle.



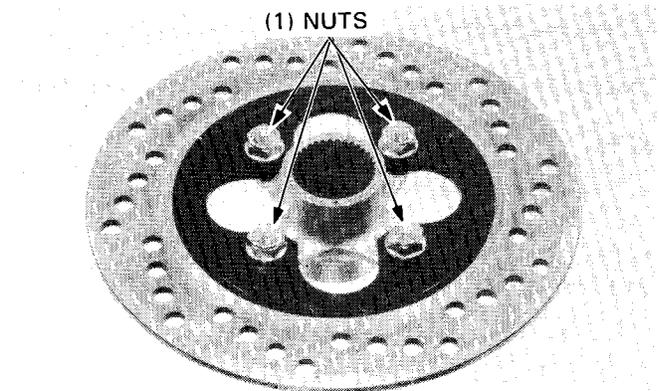
Remove the left wheel and hub.
Remove the brake disc with the hub from the axle.



Remove the O-ring from the groove in the disc hub.

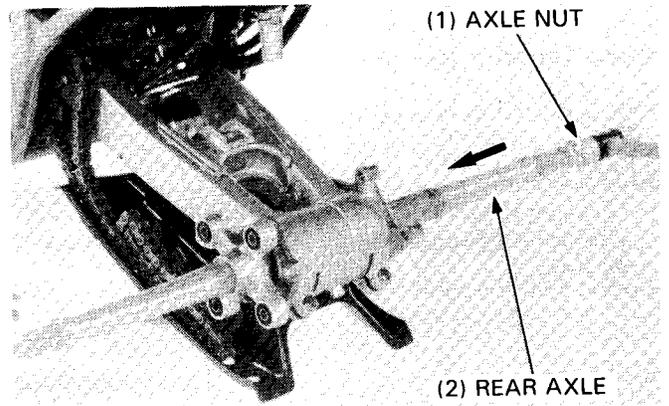


Remove the brake disc nuts and disc from the disc hub.

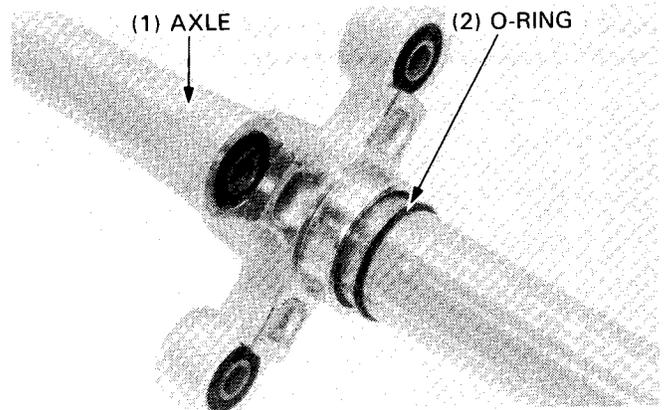


Install the axle nut onto the right axle end.

Drive the axle out of the axle bearings from the right side with a plastic hammer.



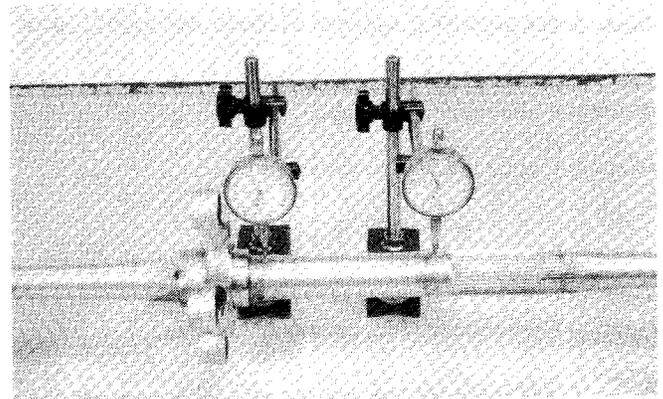
Remove the O-ring from the axle.



INSPECTION

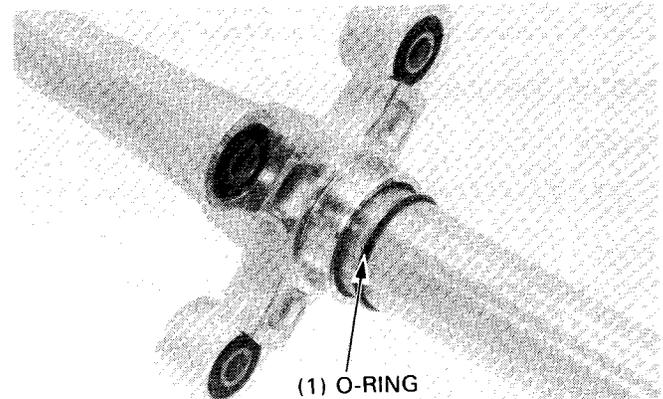
Place the axle in V-blocks and measure the runout.

SERVICE LIMIT: 3.0 mm (0.12 in)



INSTALLATION

Place a new O-ring on the axle and install the axle from the left side.



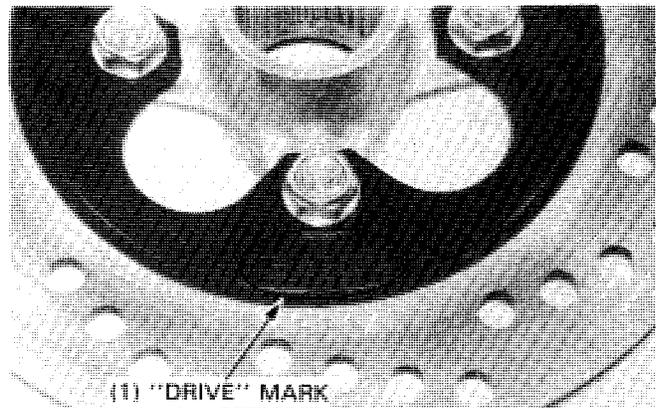
REAR WHEELS

Install the disc on the hub with its "DRIVE" mark facing out. Tighten the brake disc nuts.

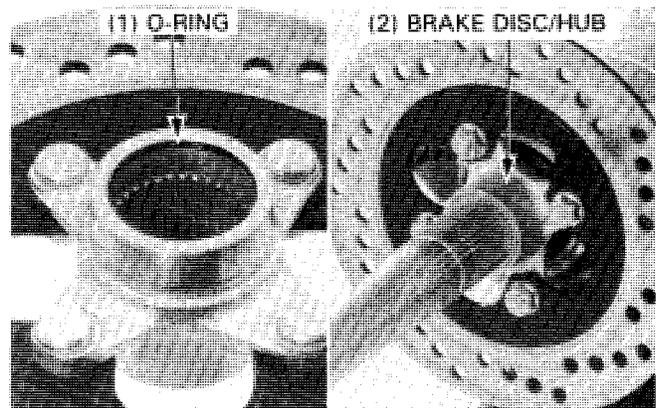
TORQUE: 20–30 N·m (2.0–3.0 kg-m, 15–22 ft-lb)

WARNING

- Grease or oil on the disc will reduce stopping power. Clean the disc with a high quality brake degreaser if oil or grease gets on the disc.



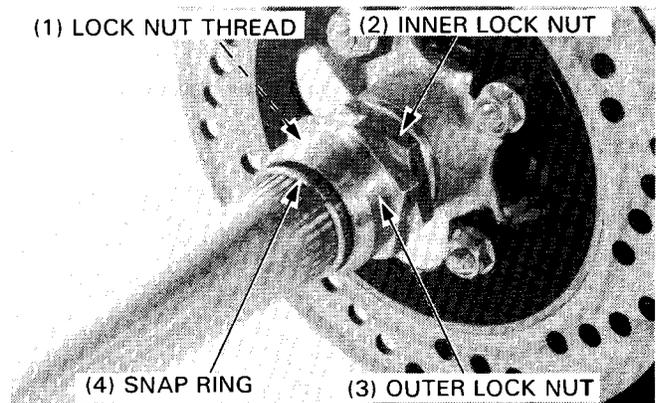
Install a new O-ring in the groove in the brake disc hub. Install the brake disc hub on the axle.



Apply a thread locking agent to the inner lock nut threads.

Thread the inner and outer lock nuts over the lock nut thread and install them onto the axle.

Install the snap ring collar and snap ring.



Temporarily install the left rear wheel hub and wheel.

Tighten the outer lock nut to the specified torque against the snap ring collar while holding the left rear wheel.

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

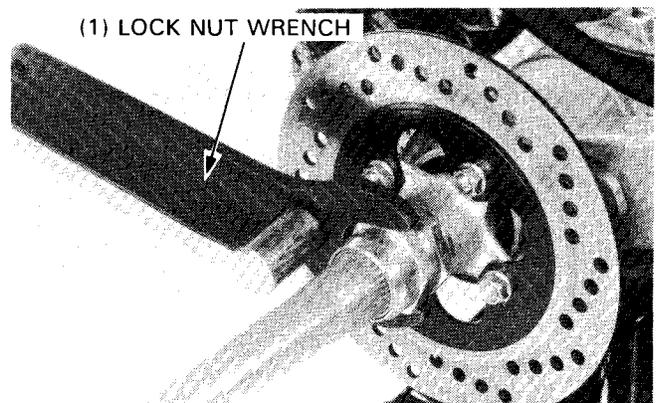
NOTE

- The inner and outer lock nuts have left-hand threads.

TOOL:

Lock nut wrench, 45 mm

07916–1870101 or
equivalent commercially
available in U.S.A.



Remove the left rear wheel and wheel hub.

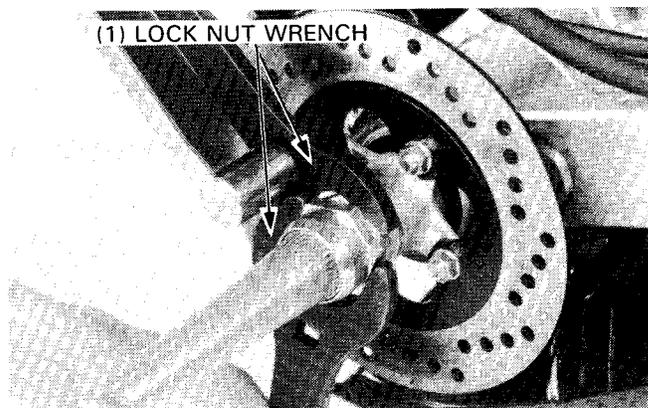
Tighten the inner lock nut against the outer lock nut.

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

TOOL:

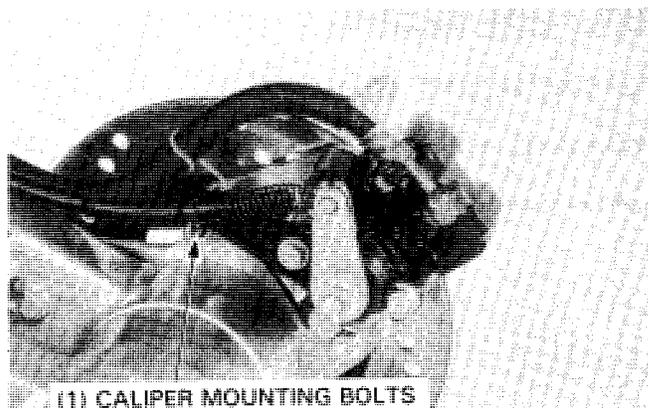
Lock nut wrench, 45 mm

07916–1870101
(2 piece) or equivalent
commercially available in
U.S.A.



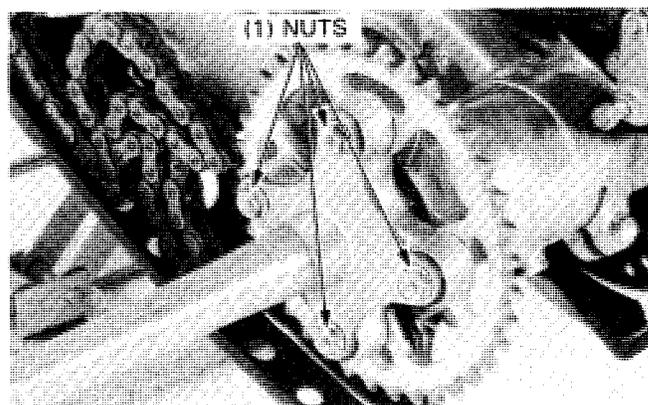
Install the brake caliper over the disc and tighten the caliper mounting bolts.

TORQUE: 20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb)

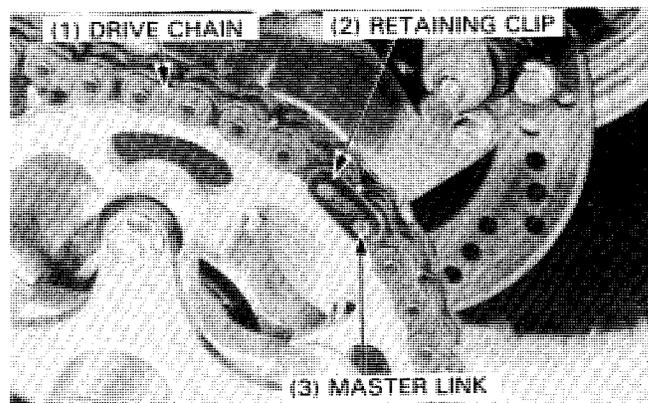


Install the driven sprocket onto the hub with its teeth number mark facing out.
Install the bolts into the driven sprocket and align the grooves of the driven sprocket with the flats of the bolt heads.
Install the chain guide plate and nuts.
Tighten the nuts.

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



Install the drive chain with the master link and retaining clip.
Face the closed end of the retaining clip in the rotating direction of the chain.



REAR WHEELS

Apply grease to the splines on both ends of the axle.

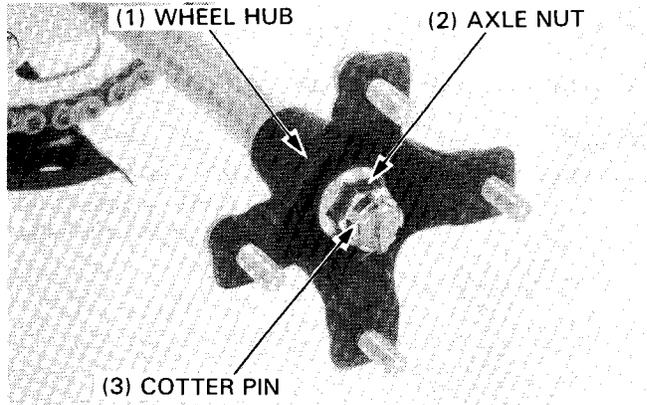
Install the wheel hubs and axle nuts. Tighten the axle nuts.

TORQUE: 120–170 N·m (12.0–17.0 kg·m, 87–123 ft·lb)

Install new cotter pins and spread the ends.

Install the rear wheels (page 12-2).

Adjust drive chain slack (page 3-10).

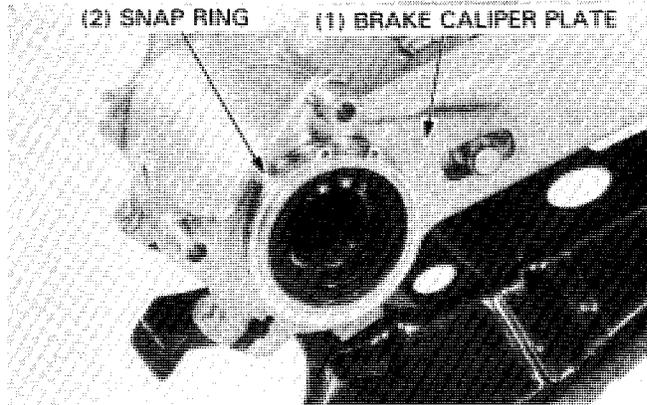


REAR AXLE BEARINGS

BEARING HOLDER REMOVAL

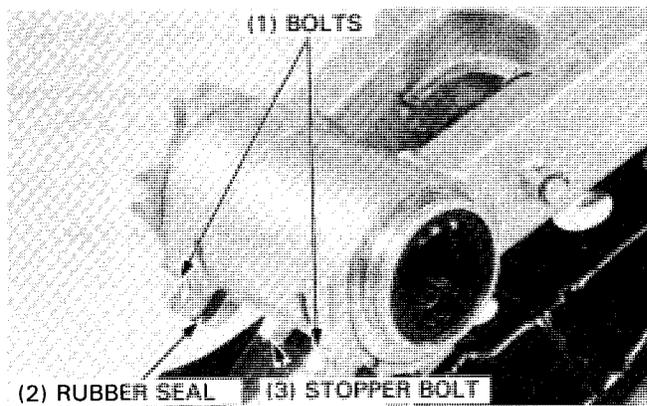
Remove the rear wheels and axle (page 12-2).

Remove the snap ring and the brake caliper mounting plate.



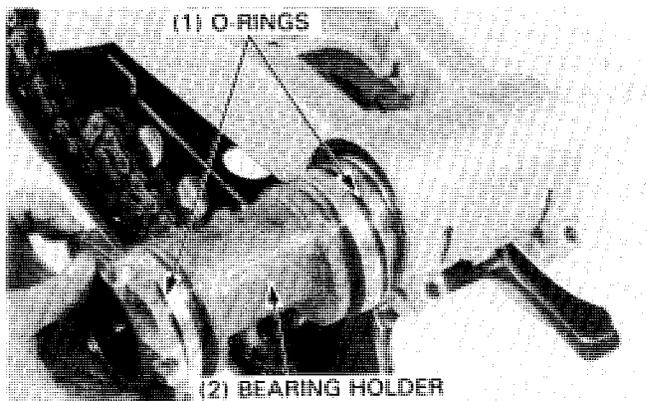
Remove the two bolts and rubber seals from the swingarm.

Remove the stopper bolt.



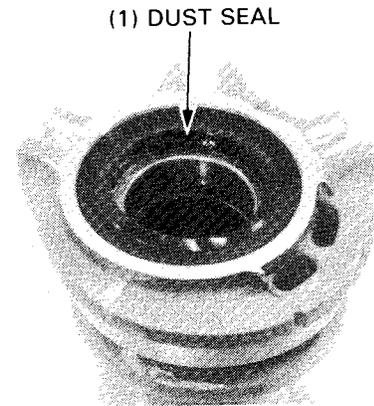
Remove the bearing holder from the swingarm.

Remove the O-rings from the bearing holder.



BEARING REPLACEMENT

Remove the dust seals from the bearing holder.

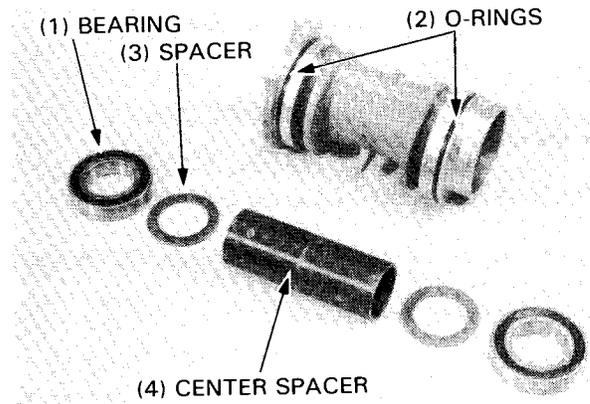


Remove the bearings, spacers and center spacer from the bearing holder.

TOOLS:

Adjustable bearing puller

07736-A01000A
(U.S.A. only) with commercially available slide hammer

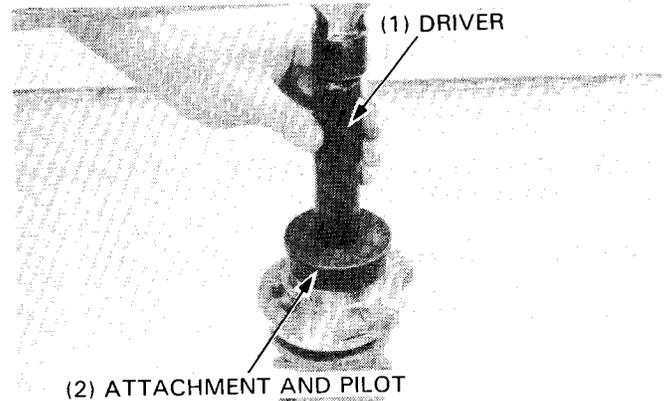


Install the spacer into the bearing holder.
Drive a new right bearing into the bearing holder with common tools.
Install the center spacer.
Install the spacer into the bearing holder.
Drive a new left bearing into place with the same tools.

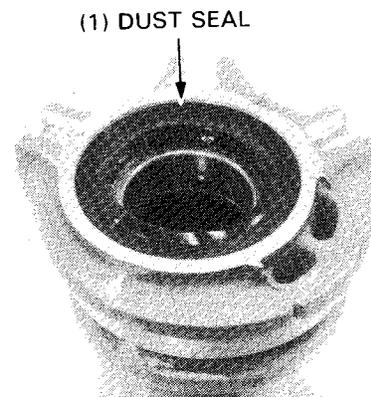
TOOLS:

Driver
Attachment, 62 x 68 mm
Pilot, 35 mm

07749-0010000
07746-0010500
07746-0040800



Apply grease to the lip of new dust seals and drive the dust seals into the bearing holder until their outside surfaces are flush with the end surfaces of the holder.

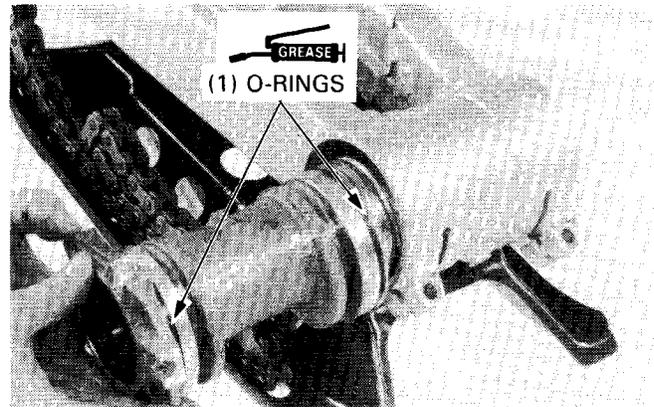


REAR WHEELS

BEARING HOLDER INSTALLATION

Install new O-rings in the grooves of the bearing holder.

Apply grease to the outside surfaces of the bearing holder and install it in the swingarm.



Install the bearing holder into the swingarm as shown in the figure.

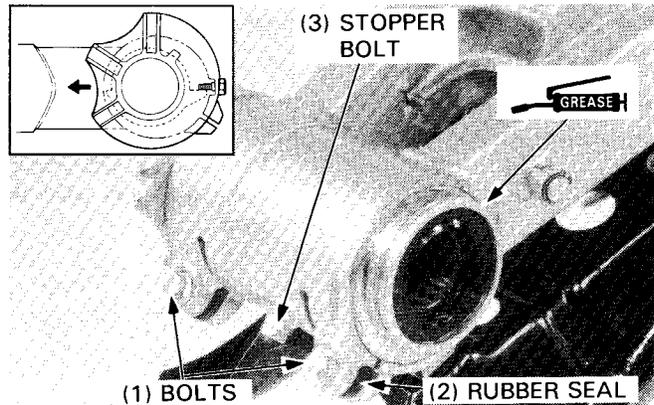
Install the rubber seals and stopper bolt. Tighten the stopper bolt.

TORQUE: 8–11 N·m (0.8–1.1 kg-m, 5.8–8 ft-lb)

Apply grease to the caliper mount plate installation surface of the bearing holder. Temporarily install the lock bolts.

NOTE

- Tighten the lock bolts to the specified torque after adjusting the drive chain.



TORQUE: 18–24 N·m (1.8–2.4 kg-m, 13–17 ft-lb)

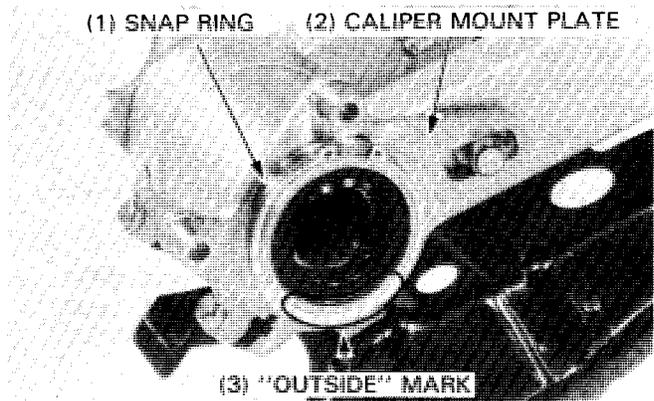
Install the caliper mount plate.

Install the snap ring with its "OUTSIDE" mark facing out and with its ends positioned as shown.

Install the rear axle (page 12-5).

Install the rear wheels (page 12-2).

Adjust the drive chain (page 3-10).

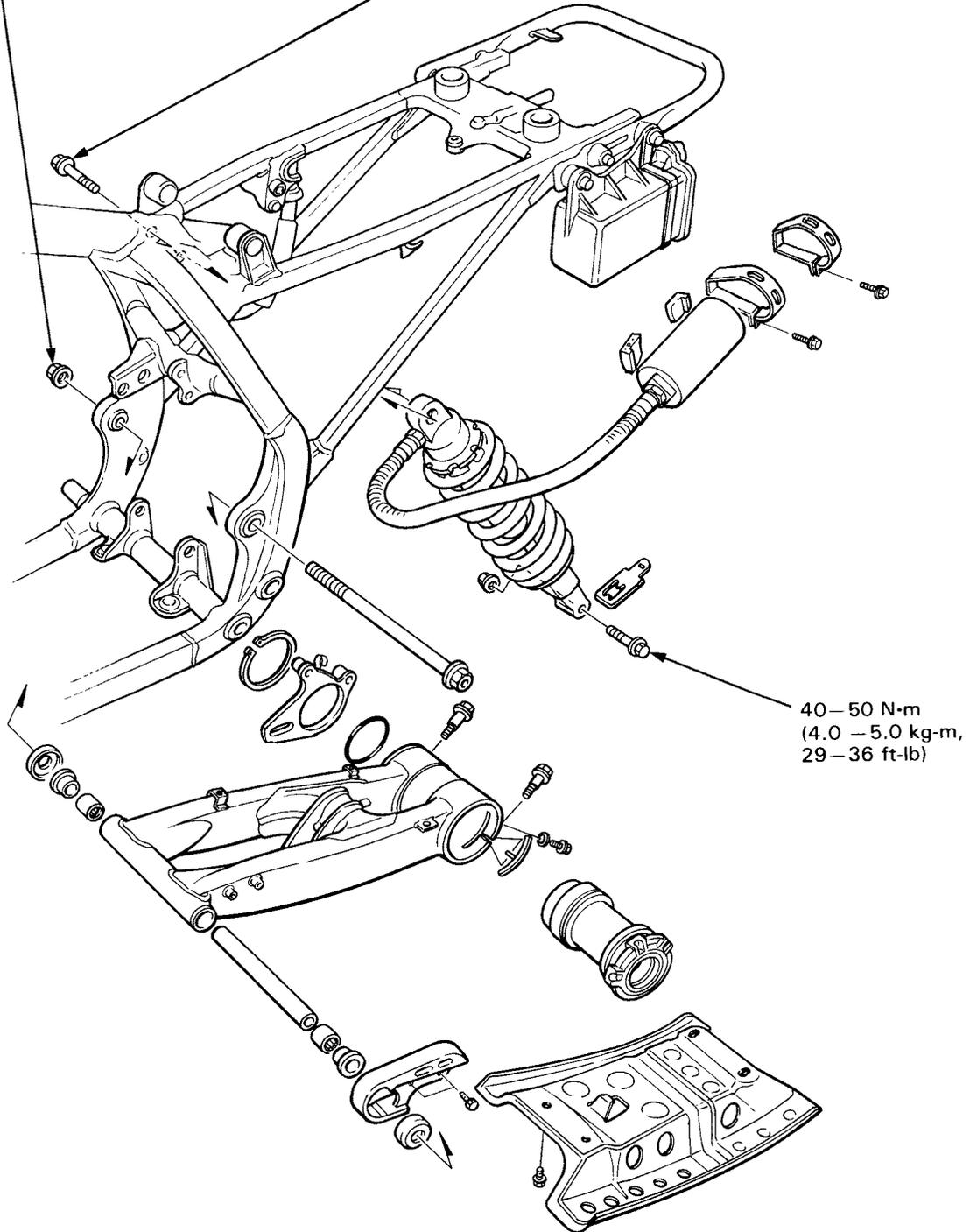


MEMO

REAR SUSPENSION

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

40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)



13. REAR SUSPENSION

SERVICE INFORMATION	13-1	SHOCK ABSORBER	13-3
TROUBLESHOOTING	13-2	SWINGARM	13-9

SERVICE INFORMATION

GENERAL

- This section deals with rear shock absorber and swingarm repairs.
- A jack or block is required to support the ATC.
- Use only genuine Honda bolts for the shock absorber pivot and mounting; ordinary bolts lack adequate strength for these applications. Also take note of the installation direction of these bolts since they must be installed correctly.

WARNING

- *The shock absorber contains nitrogen gas under high pressure. Do not allow fire or heat near the shock absorber.*
- *Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve from the shock absorber.*
- *The shock absorber has a gas-filled reservoir. Use only nitrogen to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.*

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)
Rear suspension	Rear shock absorber spring free length	194.0 (7.64)	190.0 (7.48)
	Spring installation load length	standard length 190.0 (7.48)	—
		min-max length 185.5–191.5 (7.30–7.54)	—
	Damper rod compression force, 10 mm (0.4 in)	26–36 kg (57.3–79.4 lb)	—
	Nitrogen pressure	2,000–2,300 kPa (20–23 kg/cm ² , 284–327 psi)	—

13

TORQUE VALUES

Shock absorber upper mount bolt	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Shock absorber lower mount bolt	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Swingarm pivot bolt	70–110 N·m (7.0–11.0 kg-m, 51–80 ft-lb)
Shock absorber adjusting lock nut	80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Oil hose joint	20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)

TOOLS

Special

Bearing remover set, 20 mm	07936–3710001 not available in U.S.A.
– Spindle assy, 20 mm	07936–3710600
– Remover handle	07936–3710100
– Remover weight	07741–0010201 or 07936–3710200

Common

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

Optional

Pin spanner	89201–KA4–820
Pin spanner	89202–KA4–820

TROUBLESHOOTING

Wobble or vibration in ATC

- Bent rim.
- Loose axle bearing(s).
- Damaged tire.
- Axle not tightened properly.
- Swingarm pivot bearing worn.
- Bent frame or swingarm.

Soft suspension

- Spring preload adjustment is improper for rider's weight-See Owner's Manual.
- Compression damping adjustment improper-See Owner's Manual.
- Weak shock spring.

Hard suspension

- Spring preload is improper for rider's weight-See Owner's Manual.
- Compression or rebound damping is misadjusted-See Owner's Manual.
- Bent shock damper rod.
- Swingarm pivot bearings damaged.
- Frame or swingarm bent.

Suspension noise

- Faulty rear damper.
- Loose fasteners.

SHOCK ABSORBER

REMOVAL

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

Remove the seat/rear fender.

Loosen the connecting tube band screws and remove the connecting tube (air cleaner-to-carburetor).

Remove the following:

- reservoir from the frame by removing the two mount bolts.
- oil hose from the rear engine hanger plate clamp.
- rear wheels (page 12-2).
- shock absorber cover from the swingarm.
- shock absorber upper and lower mount bolts and remove the shock absorber.
- upper and lower mount collars from the shock absorber.

MOUNT BUSHING INSPECTION

Check the upper and lower mount collars and the upper mount bushing for wear or damage.

Check the lower mount bushing for wear, deterioration or damage.

Replace the parts as required.

Apply a paste grease with 40% or more molybdenum disulfide to the inside of the bushing and dust seal lips when replacing the upper and lower mount bushings.

NOTE

Some sources of MoS₂ paste grease with 40% or more molybdenum are:

- Molykote® G-n Paste manufactured by Dow Corning, U.S.A.
- Honda Moly 45 (U.S.A.).
- Rocol Paste manufactured by Sumico Lubricant, Japan.
- Rocol ASP manufactured by Rocol Limited, U.K.

Any other manufacturer's paste grease equivalent to the above may also be used.

SPRING REMOVAL

Hold the lower shock mount in a vise with soft jaws or a shop towel and loosen the lock and adjusting nuts.

TOOLS:

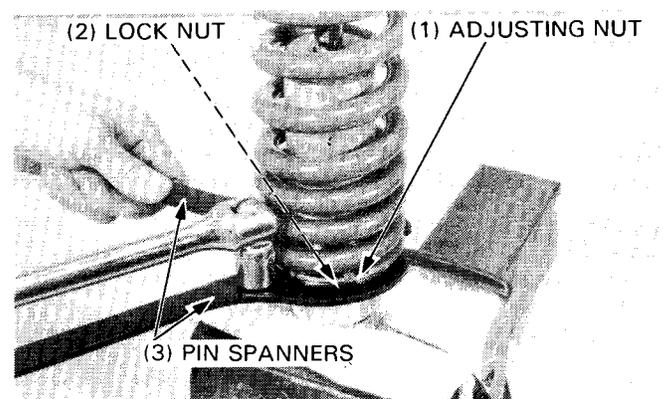
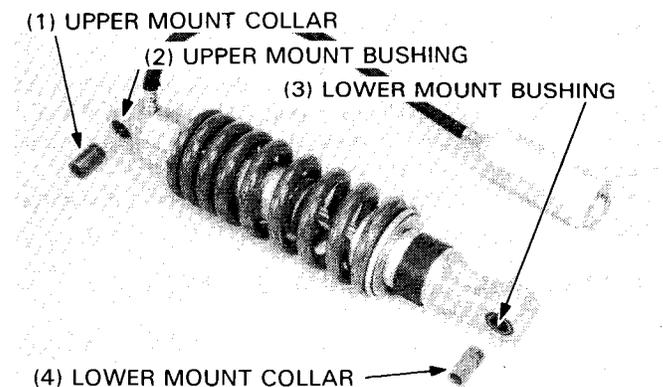
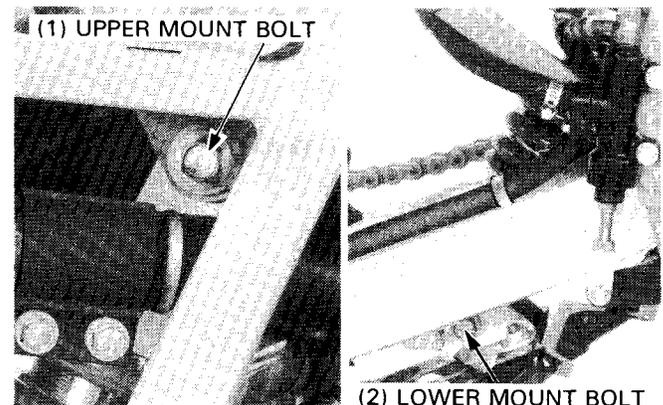
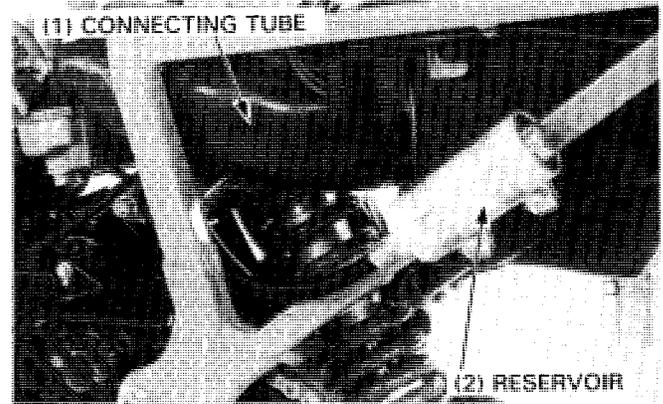
Pin spanners 89201 – KA4 – 820 and 89202 – KA4 – 820

CAUTION

- *Be careful not to damage the hose connection with the vise.*

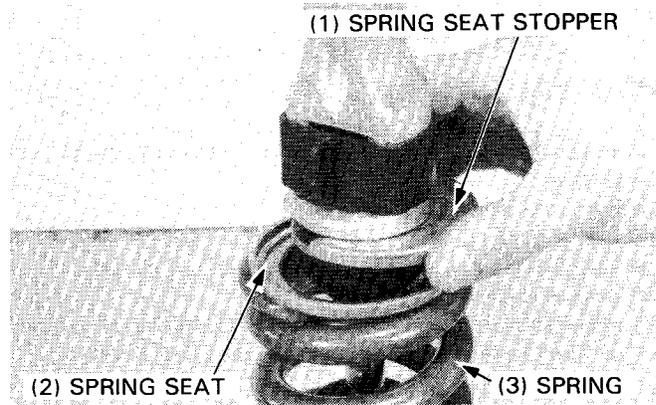
NOTE

- The pin spanners are optional tools.



REAR SUSPENSION

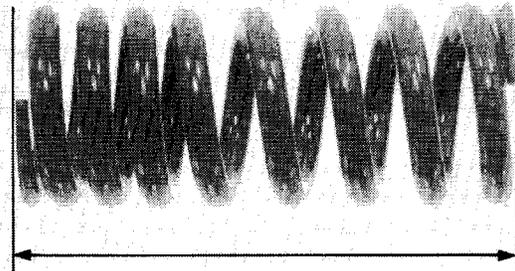
Remove the spring seat stopper, spring seat and spring.



SPRING INSPECTION

Measure the spring free length.

SERVICE LIMIT: 190.0 mm (7.48 in)



DAMPER UNIT INSPECTION

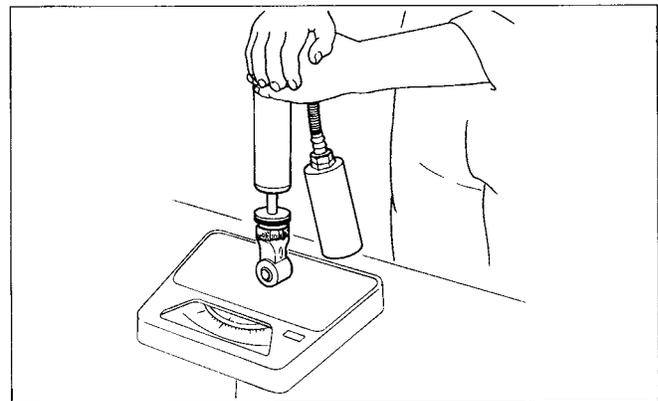
Visually inspect the damper unit for dents, oil leaks or other damage. Replace the damper unit if necessary. Place the damper rod on a scale and measure the force required to compress the damper unit 10 mm (0.14 in).

Remember to subtract the weight of the damper unit from your reading.

SPECIFIED FORCE: 26–36 kg (57.3–79.4 lb)

If the force required is less than the applicable range shown here, gas is leaking.

Examine the damper rod and replace the damper if the rod is bent or scored.



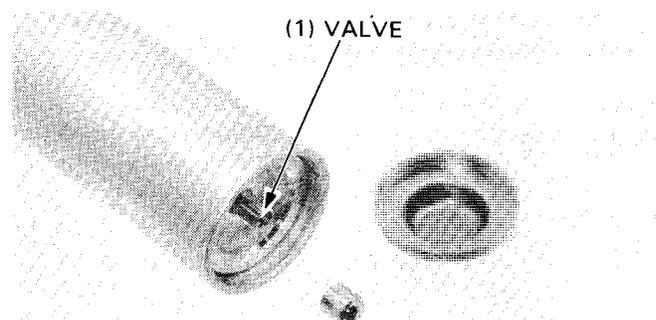
DISASSEMBLY

Remove the reservoir valve cap.

Release the nitrogen from the reservoir by depressing the valve core. Do not remove the valve until pressure is released.

WARNING

- *Point the valve away from you to prevent debris getting in your eyes.*
- *Before disposal of the shock absorber, release the nitrogen from the reservoir and then remove the valve.*

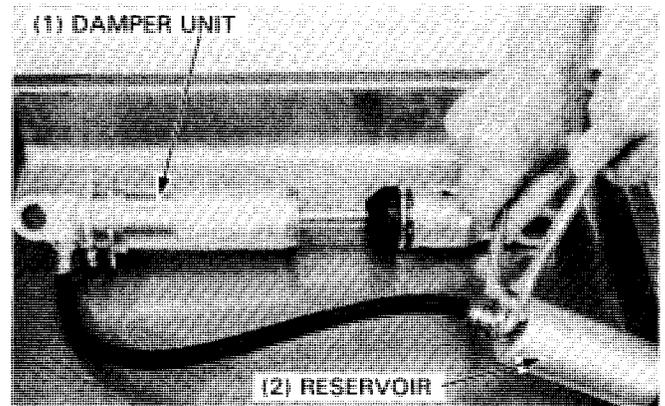


Disconnect the oil hose from the reservoir and damper unit.

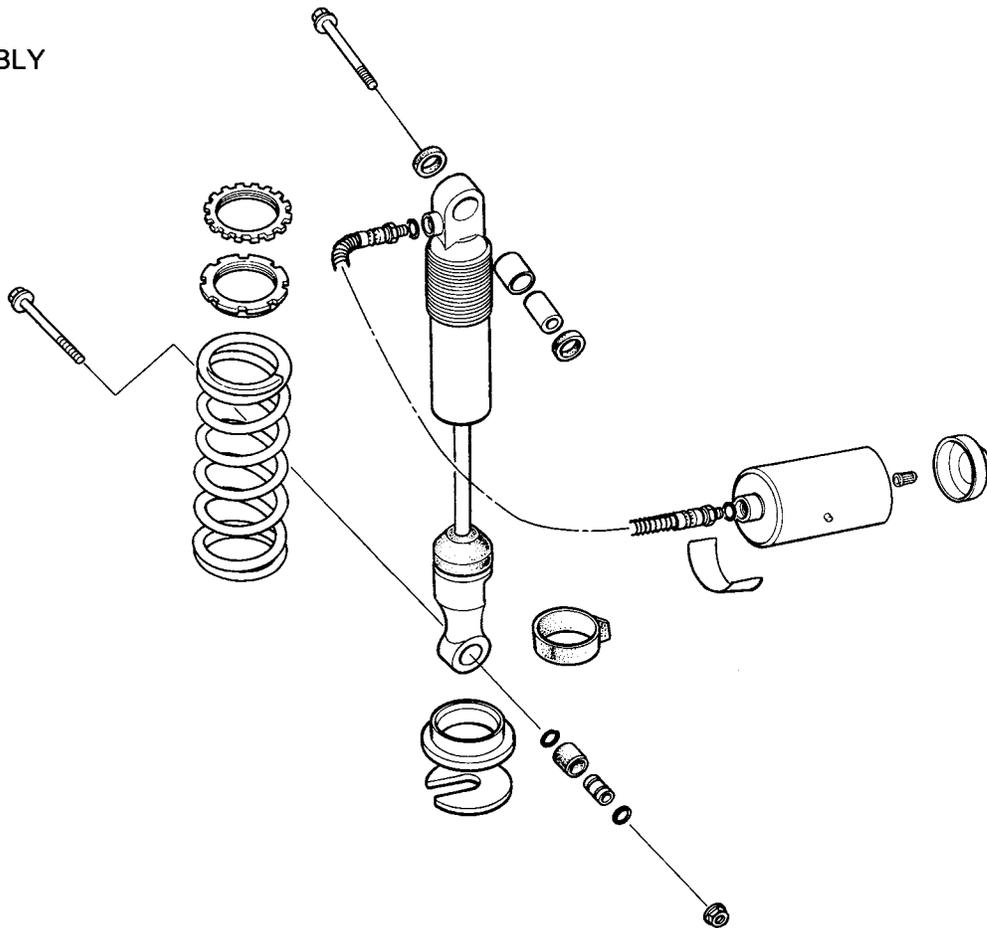
CAUTION

- *Do not disassemble the damper unit.*

Drain the oil from the reservoir, hose and damper unit.

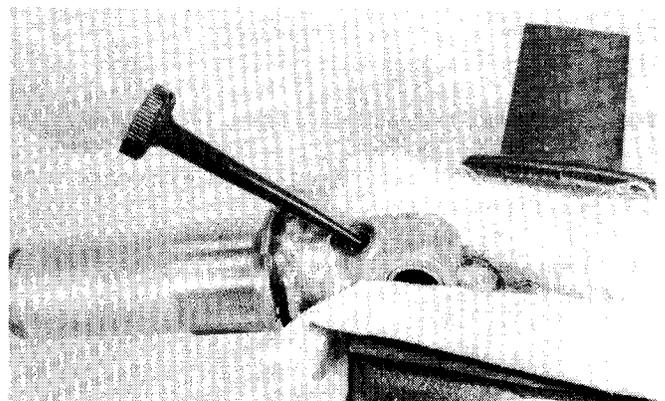


ASSEMBLY



Hold the upper shock mount in a vise with soft jaws or a shop towel. Point the hole straight up.

Pull out the damper rod all the way and fill the damper with ATF.



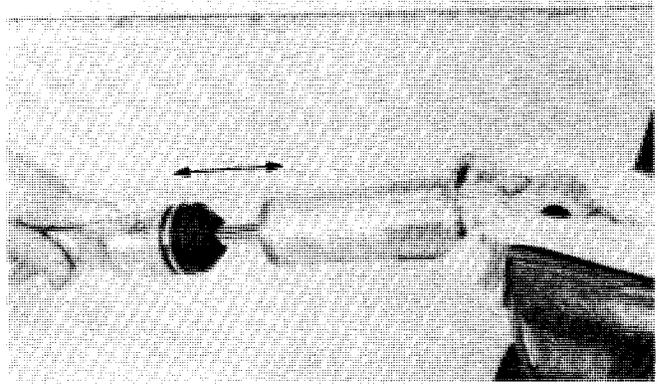
REAR SUSPENSION

Bleed air from the damper by moving the damper rod with short strokes, in and out several times slowly.

Fill the damper with ATF as required.

NOTE

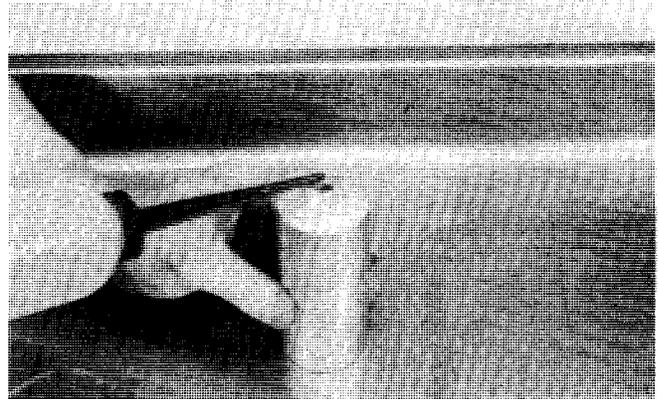
- The damper should be as free of air as possible.



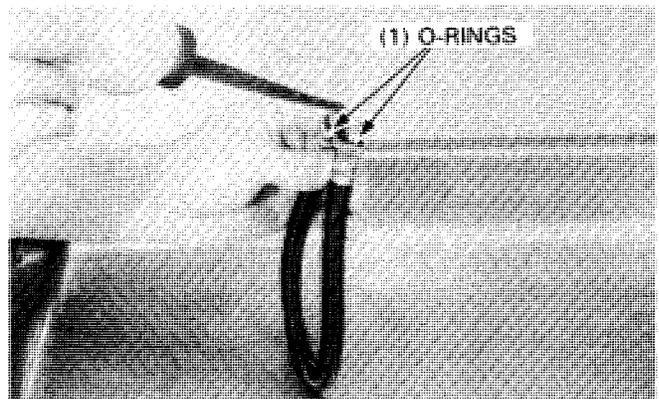
Fill the reservoir with ATF.

NOTE

- Make sure that there is no gas pressure in the reservoir.



Install the O-rings onto the hose joint.
Fill the hose with ATF.

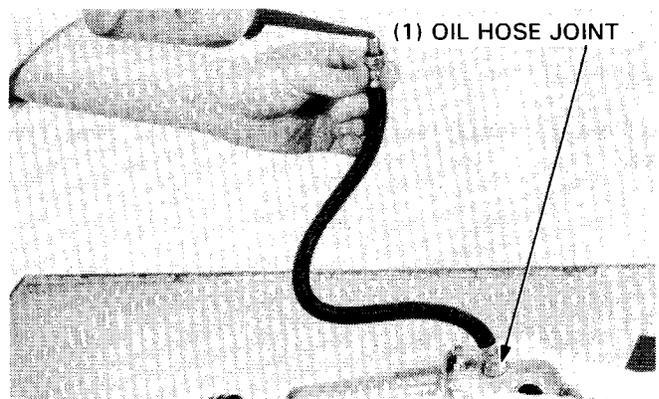


Connect the oil hose to the damper unit.
Tighten the oil hose joint.

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

Very slowly push the damper rod in until ATF begins to overflow from the hose.

Pull the damper rod out all the way and fill the hose with ATF.



Connect the oil hose to the reservoir.

NOTE

- Do not allow air to enter the reservoir.

Tighten the oil hose joint.

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

Make sure that there is no air in the damper by operating the damper before charging the reservoir with gas.

If damper force is uneven, bleed air from the damper.

Fill the reservoir with 2,000–2,300 kPa (20–23 kg/cm², 284–327 psi) of nitrogen.

WARNING

- *The shock absorber is fitted with a gas-filled reservoir. Use only nitrogen gas to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.*

Check the damper compression force is within specification (page 12-4).

SPECIFIED FORCE: 26–36 kg (57.3–79.4 lb)

Install the valve cap.

SPRING INSTALLATION

Install the spring, spring seat and spring seat stopper.

Turn the adjusting nut to obtain the correct spring length.

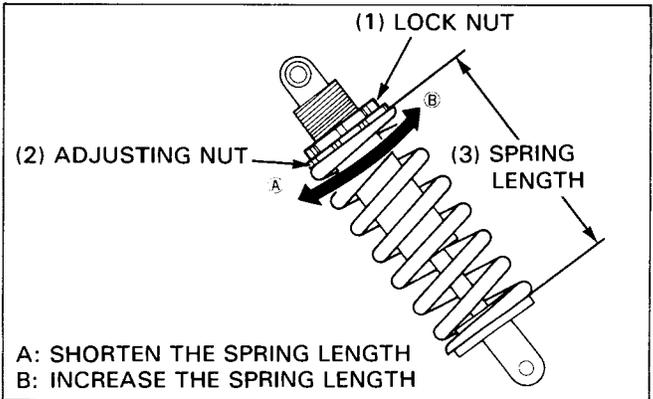
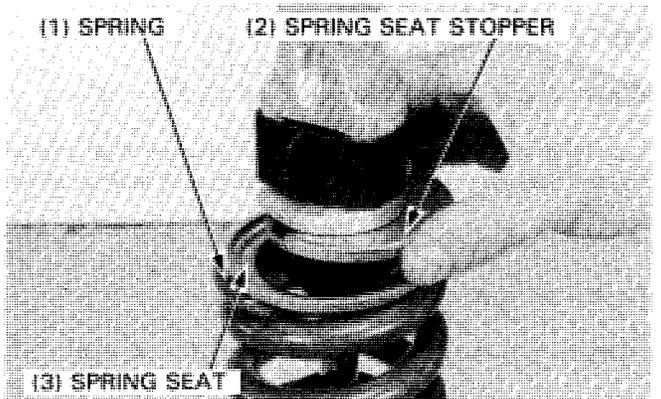
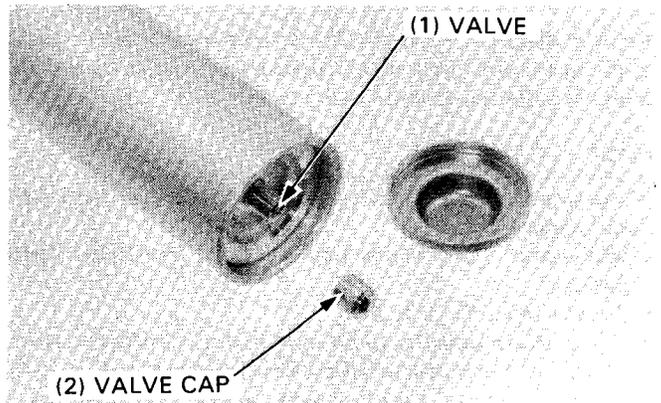
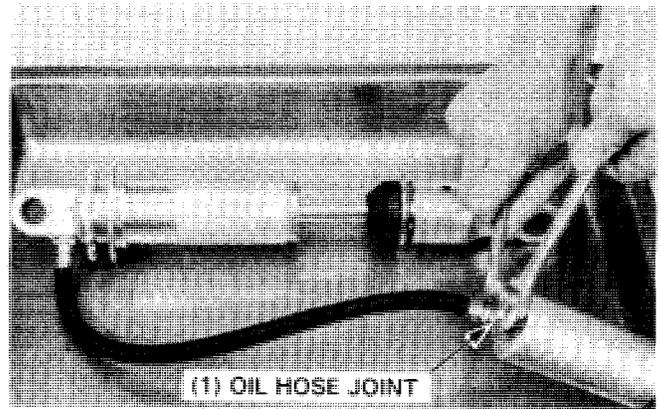
Measure the spring length.

STANDARD SPRING LENGTH: 190.0 mm (7.48 in)
MINIMUM SPRING LENGTH: 185.5 mm (7.30 in)
MAXIMUM SPRING LENGTH: 191.5 mm (7.54 in)

NOTE

- One turn of the adjusting nut changes the spring length by 1.5 mm (0.06 in).

Use this standard spring preload length as a baseline. See the Owner's Manual for detailed instructions on adjusting preload for rider weight and setting damping for riding conditions and rider skill.



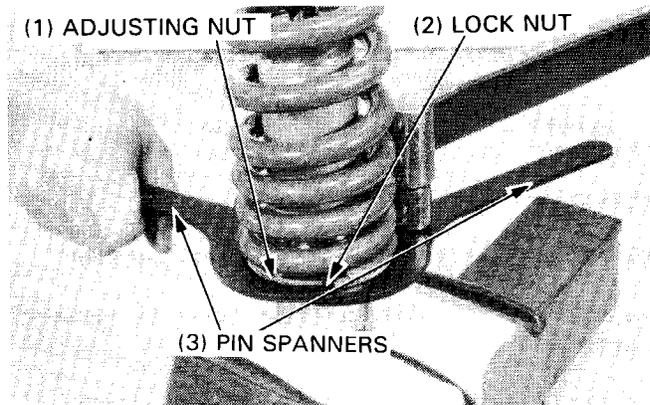
REAR SUSPENSION

Tighten the lock nut while holding the adjusting nut.

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

TOOLS:

Pin spanners **89201 – KA4 – 820 and
89202 – KA4 – 820**



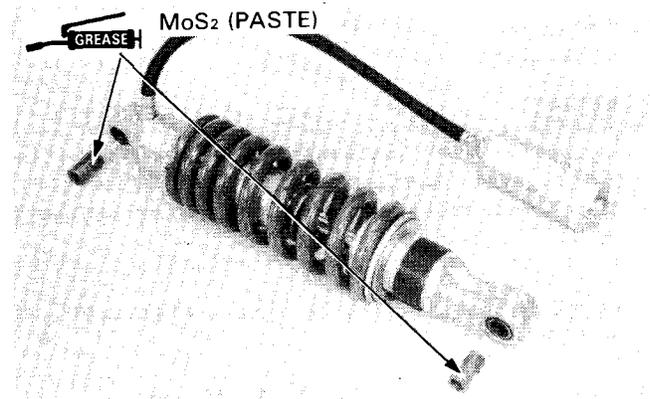
Apply a paste grease with 40% or more molybdenum disulfide to the upper and lower mount collars and dust seals and install them into the upper and lower mounts.

NOTE

Some sources of MoS₂ paste grease with 40% or more molybdenum are:

- Molykote® G-n Paste manufactured by Dow Corning, U.S.A.
- Honda Moly 45 (U.S.A.)
- Rocol Paste manufactured by Sumico Lubricant, Japan.
- Rocol ASP manufactured by Rocol Limited, U.K.

Any other manufacturer's paste grease equivalent to the above may also be used.



INSTALLATION

Install the shock absorber cover onto the lower mount.

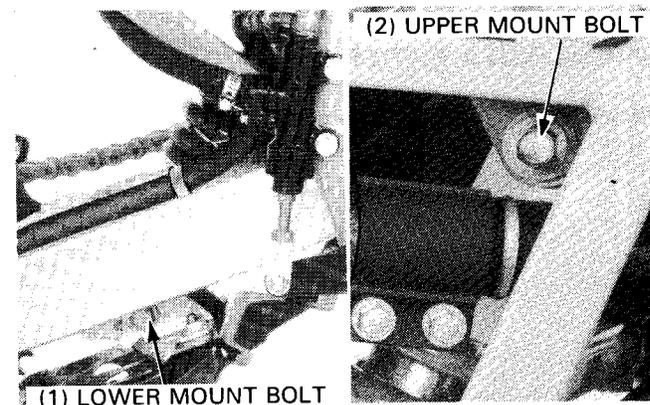
Install the shock absorber with its oil hose joint facing forward and the damping adjuster at the lower mount facing rearward.

Install the upper and lower mount bolts from the right side.

Tighten the upper and lower mount bolts.

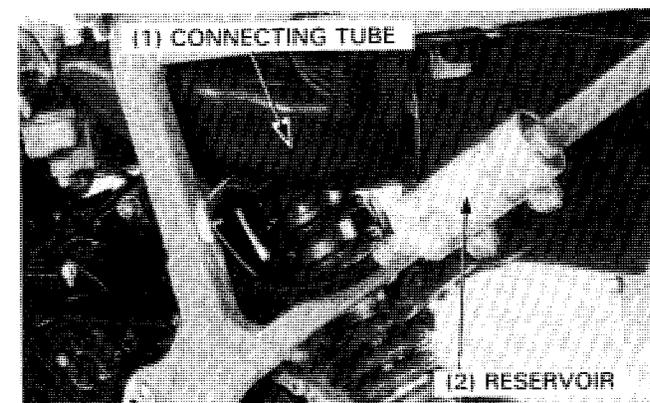
TORQUE: 40 – 50 N·m (4.0 – 5.0 kg·m, 29 – 36 ft·lb)

Route the oil hose to the rear engine hanger plate clamp.



Install the following:

- reservoir on the frame using the band and two bolts.
- connecting tube (air cleaner case-to-carburetor).
- rear wheels (page 12-2).
- seat/rear fender.

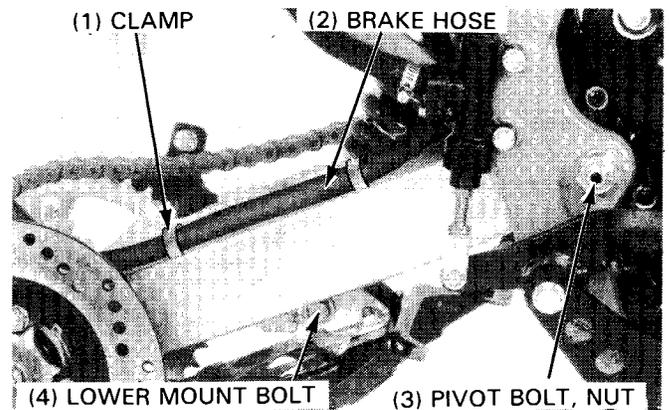


SWINGARM

REMOVAL

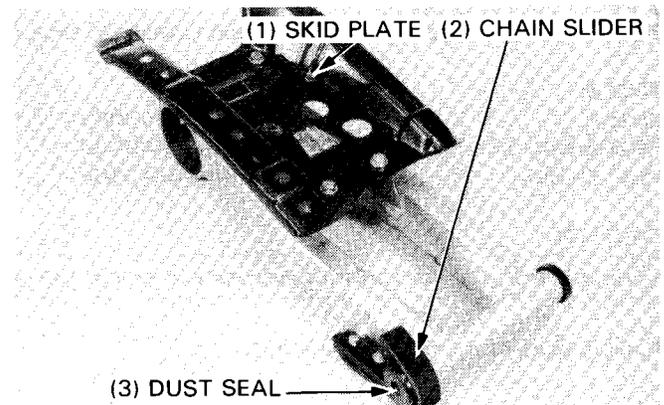
Remove the following:

- rear wheels and axle (page 12-2).
- rear axle bearing holder (page 12-8).
- the brake hose (from the clamps).
- the shock absorber lower mount bolt.
- the swingarm pivot nut, bolt and swingarm.



Remove the following:

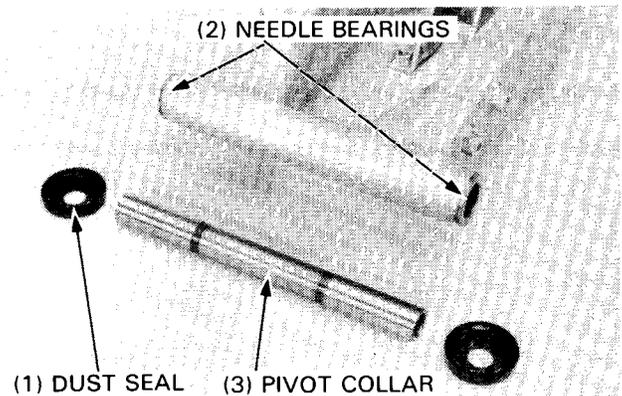
- skid plate bolts and skid plate.
- chain slider.
- dust seals and pivot collar.



INSPECTION

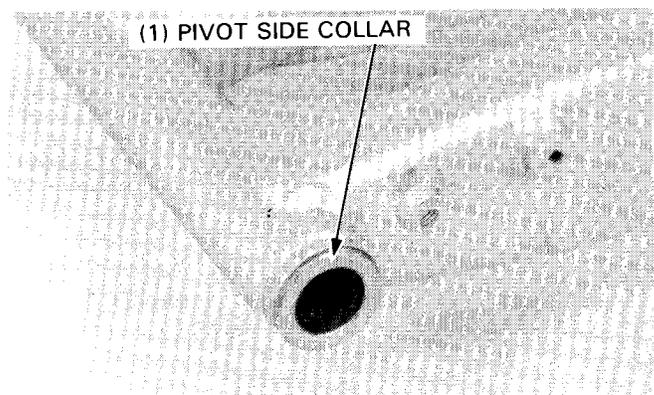
Check the swingarm for damage and replace if necessary.

Check the swingarm pivot needle bearings, collars, and dust seals for wear or damage.



PIVOT BEARING REPLACEMENT

Remove the pivot side collars with a drift.

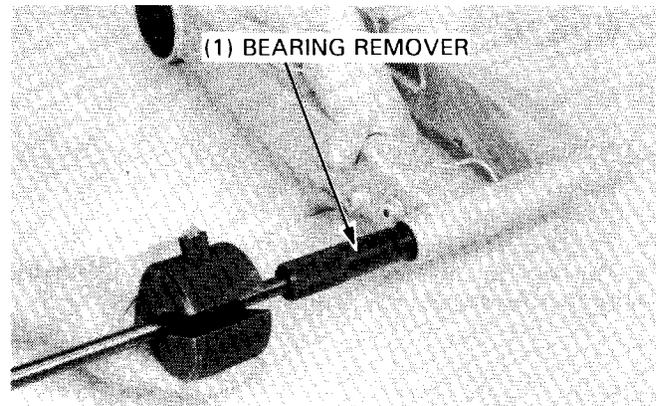


REAR SUSPENSION

Remove the needle bearings using the special tool.

TOOLS:

Bearing remover set, 20 mm	07936-3710001 not available in U.S.A.
- Spindle assy, 20 mm	07936-3710600
- Remover handle	07936-3710100
- Remover weight	07741-0010201 or 07936-3710200



Press new needle bearings in with the side collars as shown.

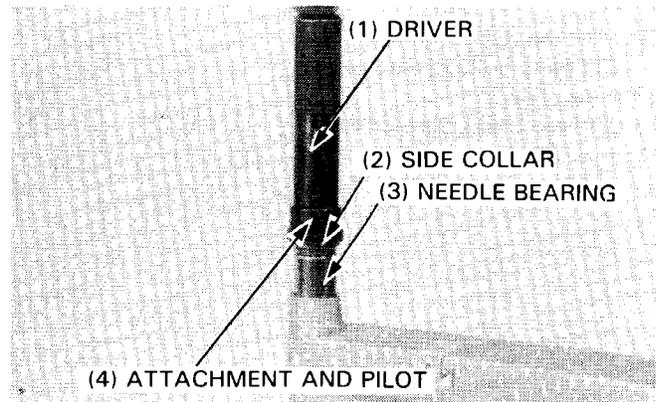
TOOLS:

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

CAUTION

- *Install the needle bearings with their marked ends facing out.*

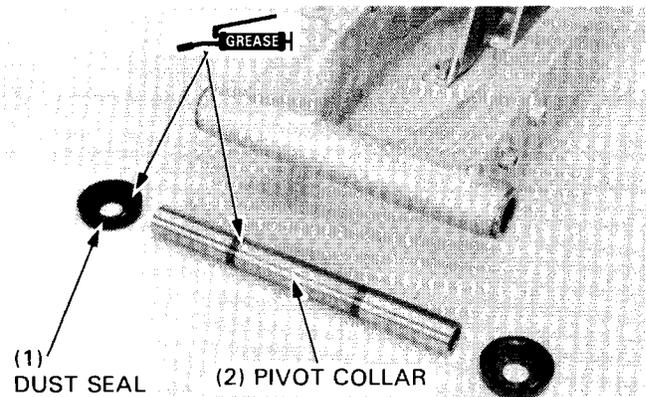
Apply grease to the needle bearings.



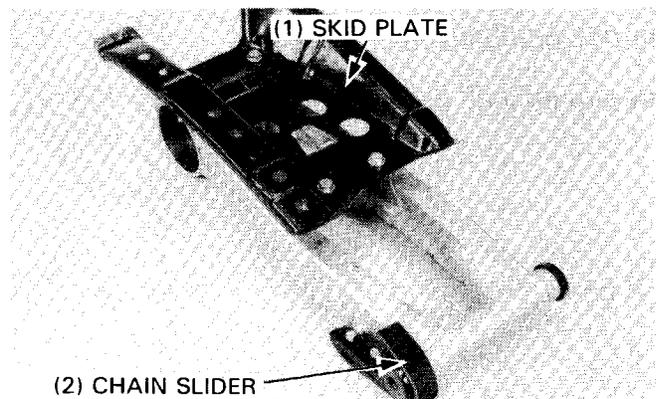
INSTALLATION

Apply grease to the pivot collar and lips of the dust seals.

Install the pivot collar and dust seals onto the swingarm pivot.



Install the chain slider onto the swingarm.
Install the skid plate with the bolts.



Place the swingarm into the frame and install the pivot bolt and nut. Tighten the pivot nut.

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

Install the shock absorber lower mount bolt and tighten it.

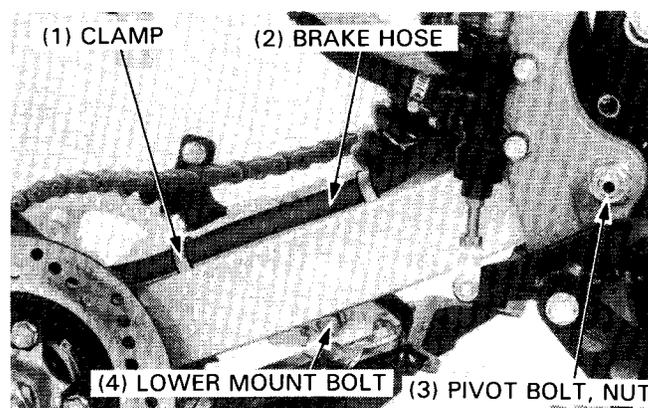
TORQUE: 40–50 N·m (4.0–5.0 kg·m, 29–36 ft-lb)

Install the brake hose onto the clamps and tighten the bolts.

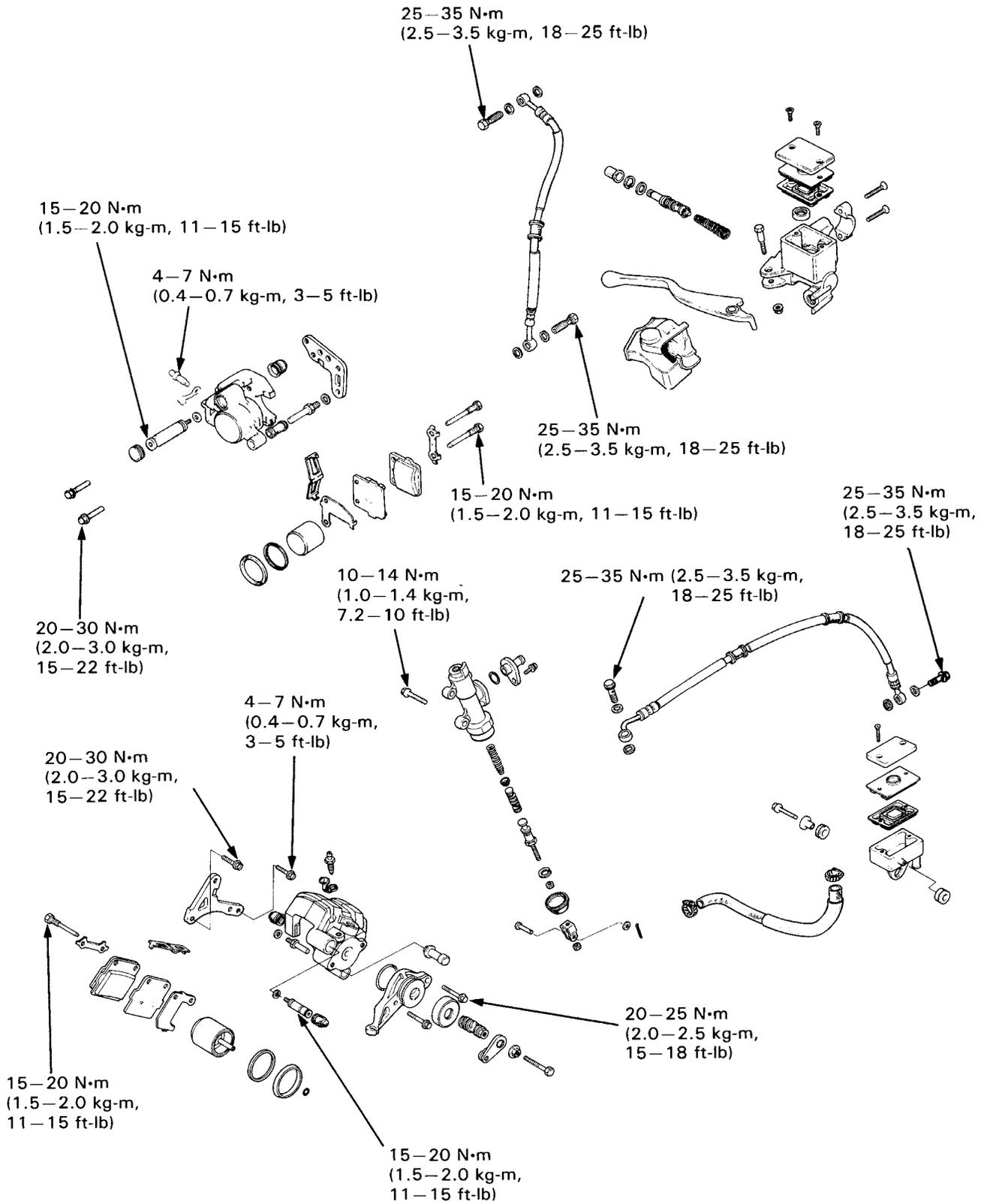
TORQUE: 10–14 N·m (1.0–1.4 kg·m, 7.2–10 ft-lb)

Install the following:

- rear axle bearing holder (page 12-10).
- rear axle (page 12-5).
- rear wheels (page 12-2).



HYDRAULIC BRAKES



14. HYDRAULIC BRAKES

SERVICE INFORMATION	14-1	REAR CALIPER	14-12
TROUBLESHOOTING	14-2	PARKING BRAKE	14-15
BRAKE FLUID REPLACEMENT/ BLEEDING	14-3	FRONT MASTER CYLINDER	14-17
BRAKE PAD REPLACEMENT	14-5	REAR MASTER CYLINDER	14-19
BRAKE DISC	14-9	REAR BRAKE PEDAL	14-20
FRONT CALIPER	14-10		

SERVICE INFORMATION

GENERAL

- The front and rear brakes can be removed without disconnecting the hydraulic system.
- Once the hydraulic systems have been opened, or if the brakes feel spongy, the system must be bled.
- Do not allow foreign material to enter the system when filling the reservoir.
- Brake fluid will damage painted, plastic, and rubber parts. Whenever handling brake fluid, protect the painted, plastic, and rubber parts by covering them with a rag. If fluid does get on these parts, wipe it off with a clean cloth.
- Always check brake operation before riding the ATC.

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)
Front disc	Thickness	3.8–4.2 (0.15–0.17)	3.0 (0.12)
	Runout	—	0.3 (0.012)
Front master cylinder	Cylinder I.D.	12.700–17.743 (0.5000–0.5017)	12.755 (0.5022)
	Piston O.D.	12.657–12.684 (0.4983–0.4994)	12.645 (0.4978)
Front caliper	Piston O.D.	33.878–33.928 (1.3338–1.3357)	33.870 (1.3335)
	Cylinder I.D.	33.960–34.010 (1.3370–1.3390)	34.020 (1.3394)
Rear disc	Thickness	3.8–4.2 (0.15–0.17)	3.0 (0.12)
	Runout	—	0.3 (0.012)
Rear master cylinder	Cylinder I.D.	14.000–14.043 (0.5512–0.5529)	14.055 (0.5533)
	Piston O.D.	13.957–13.984 (0.5495–0.5506)	13.945 (0.5490)
Rear caliper	Cylinder I.D.	33.960–34.010 (1.3370–1.3390)	34.020 (1.3394)
	Piston O.D.	33.878–33.928 (1.3338–1.3357)	33.870 (1.3335)

HYDRAULIC BRAKES

TORQUE VALUES

Air bleed valve	4–7 N•m (0.4–0.7 kg-m, 3–5 ft-lb)
Brake pad pin bolt	15–20 N•m (1.5–2.0 kg-m, 11–15 ft-lb)
Caliper mounting bolt	20–30 N•m (2.0–3.0 kg-m, 15–22 ft-lb)
Front, rear caliper socket bolt	15–20 N•m (1.5–2.0 kg-m, 11–15 ft-lb)
Oil bolt	25–35 N•m (2.5–3.5 kg-m, 18–25 ft-lb)
Parking brake base bolt	20–25 N•m (2.0–2.5 kg-m, 15–18 ft-lb)
Rear master cylinder mounting bolt	10–14 N•m (1.0–1.4 kg-m, 72–10 ft-lb)
Front wheel nut	60–70 N•m (6.0–7.0 kg-m, 43–51 ft-lb)

TOOL

Special

Snap ring pliers 07914–3230001

TROUBLESHOOTING

Brake lever/pedal soft or spongy

- Air bubbles in hydraulic system
- Low fluid level
- Hydraulic system leaking

Brake lever/pedal too hard

- Sticking piston(s)
- Clogged hydraulic system
- Pads glazed or worn excessively

Brake drags

- Hydraulic system sticking
- Sticking piston(s)

Brakes grab

- Pads contaminated
- Disc or wheel misaligned

Brake chatter or squeal

- Pads contaminated
- Excessive disc runout
- Caliper installed incorrectly
- Disc or wheel misaligned

BRAKE FLUID REPLACEMENT/BLEEDING

BRAKE FLUID DRAINING

WARNING

- *A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.*

CAUTION

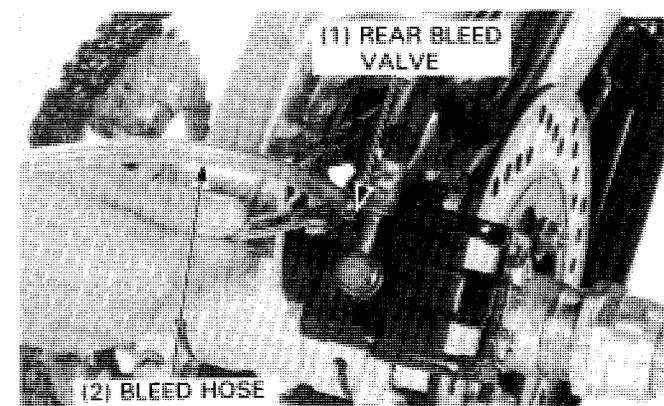
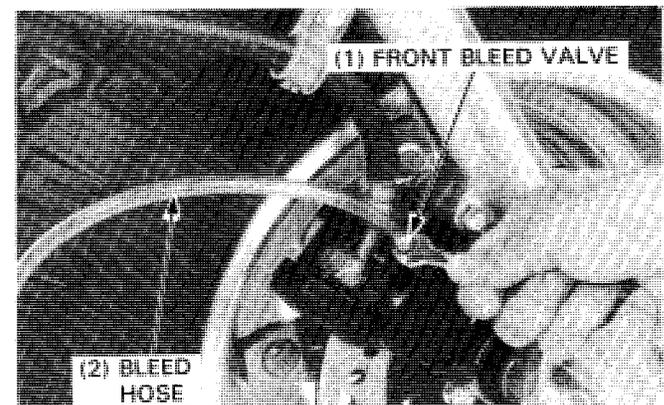
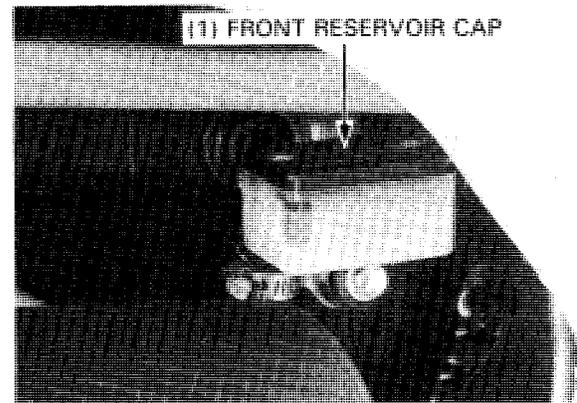
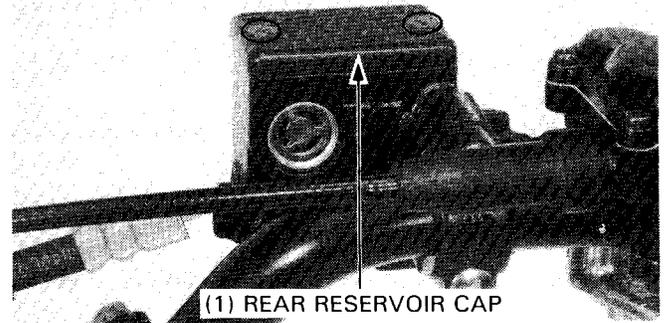
- *Do not allow foreign material to enter the system when filling the reservoir.*
- *Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.*

With the fluid reservoir parallel to the ground, remove the reservoir cap and diaphragm.

Connect a hose to the bleed valve.

Loosen the caliper bleed valve and pump the brake lever (or pedal) until no more fluid flows out of the bleed valve.

Close the bleed valve.



HYDRAULIC BRAKES

BRAKE FLUID FILLING/BLEEDING

Fill the reservoir with DOT 3 or 4 brake fluid from a sealed container.

CAUTION

- *Do not mix different types of fluid. They are not compatible.*

Connect the commercially available brake bleeder to the bleed valve.

Pump the brake bleeder and loosen the bleed valve. Add fluid when the fluid level in the master cylinder reservoir is low.

NOTE

- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.

Repeat the above procedures until air bubbles do not appear in the plastic hose.

NOTE

- If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Close the bleed valve and operate the brake lever or pedal. If it feels spongy, repeat the BLEEDING procedure.

If a brake bleeder is not available, perform the following procedure:

Pump up the system pressure with the lever (or pedal) until there are no air bubbles in the fluid flowing out of the reservoir small hole and lever resistance is felt.

1. Squeeze the brake lever (or depress the brake pedal), open the bleed valve 1/2 turn and then close the valve.

NOTE

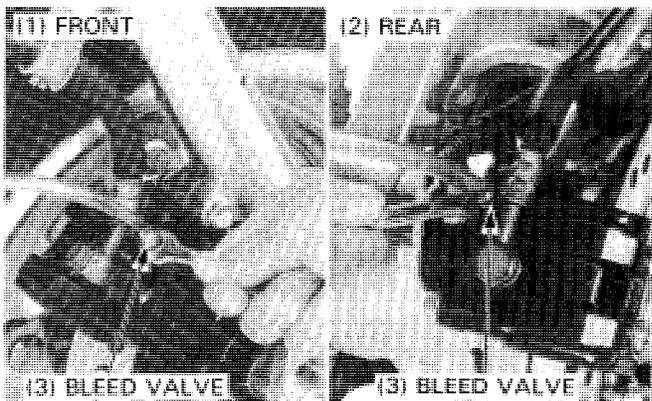
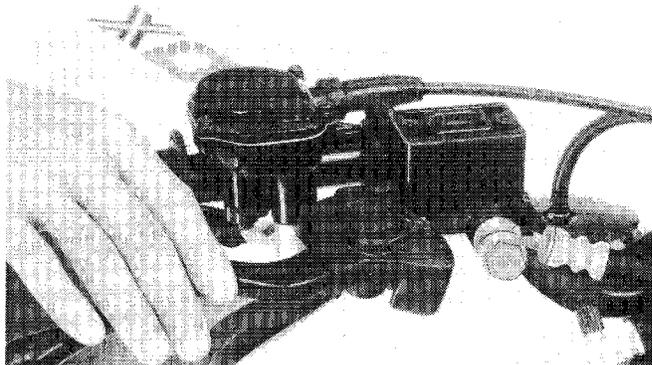
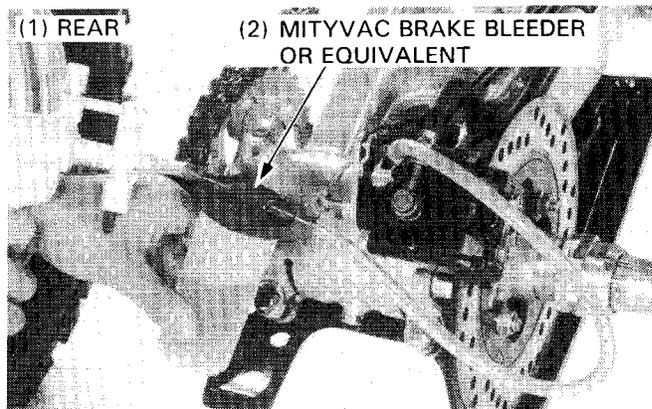
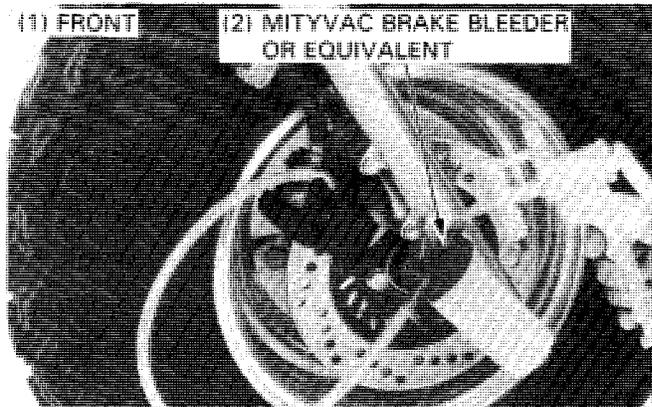
- Do not release the brake lever (or pedal) until the bleed valve has been closed.

2. Release the brake lever (or pedal) slowly and wait several seconds after it reaches the end of its travel.

Repeat steps 1 and 2 until bubbles cease to appear in the fluid coming out of the bleed valve.

Tighten the bleed valve.

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

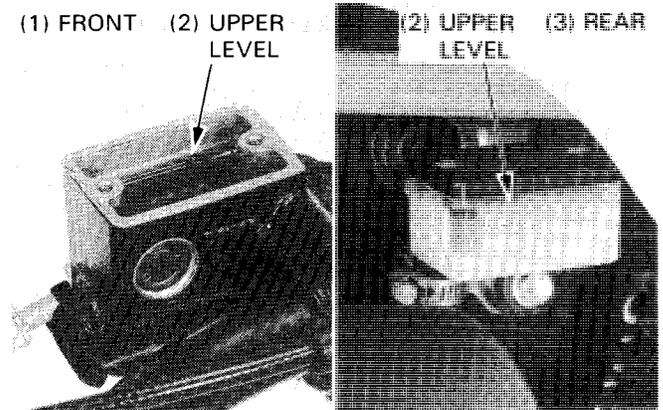


Fill the fluid reservoir to the upper level mark.

Reinstall the diaphragm and reservoir cap.

WARNING

- *A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.*



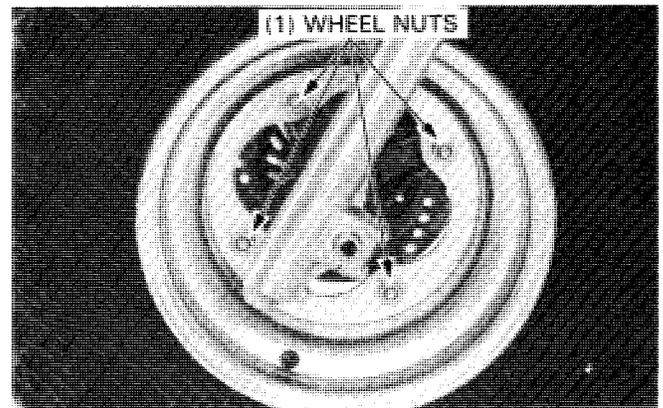
BRAKE PAD REPLACEMENT

NOTE

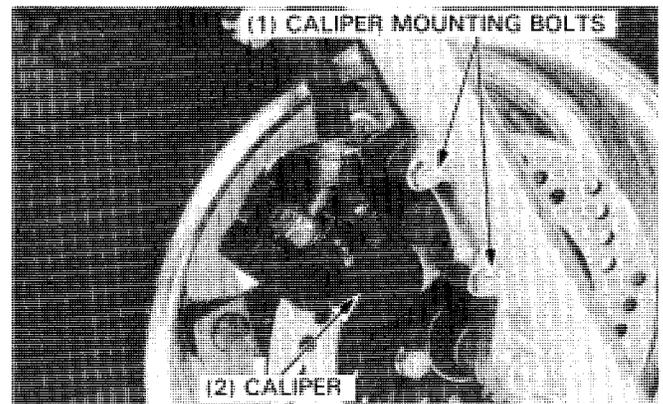
- Always replace the brake pads in pairs to assure even disc pressure.
- Always use new pads marked "N18FF" (FRONT and REAR).

FRONT BRAKE

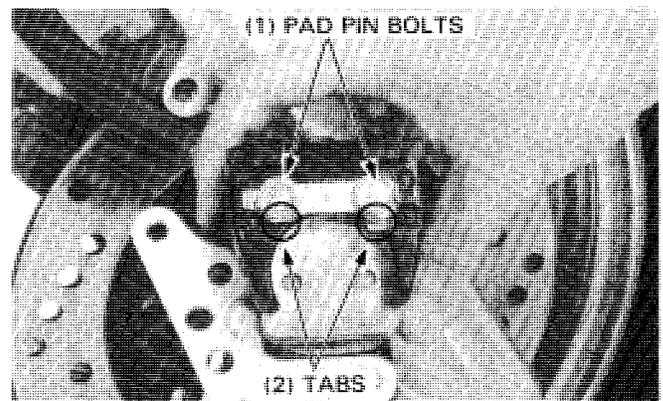
Raise the front wheel off the ground by placing a block or safety stand under the skid plate.
Remove the wheel nuts.



Remove the caliper mounting bolts.



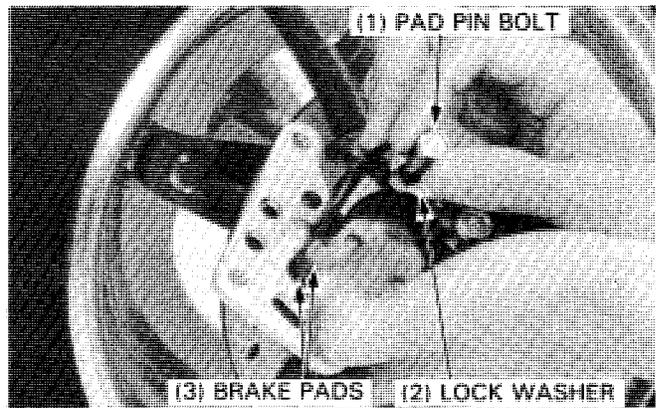
Bend down the lock washer tabs and loosen the pad pin bolts.



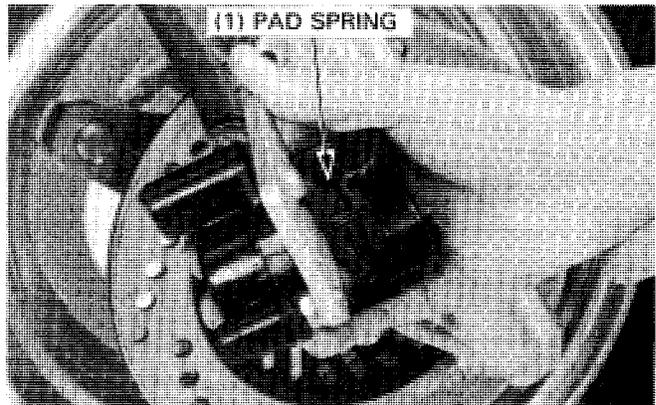
HYDRAULIC BRAKES

Remove the pad pin bolts, lock washer and brake pads.

Clean the brake caliper.



Position the pad spring in the caliper as shown.

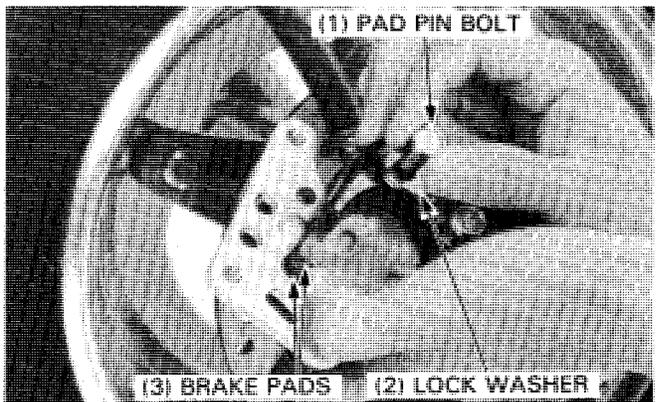


Install new brake pads, a new lock washer and the pad pin bolts.

Install the shim onto the inner pad.

NOTE

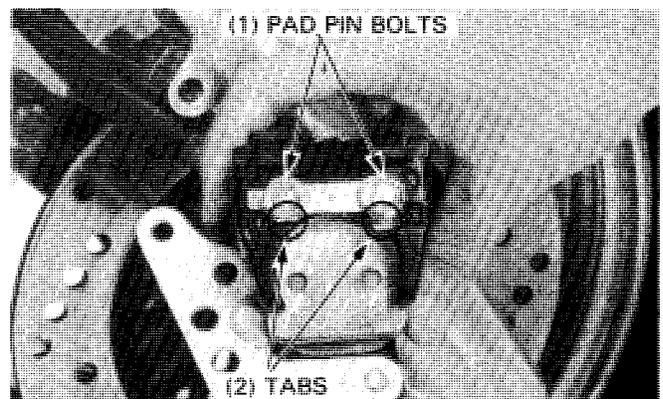
- Always use pads marked "N18FF".



Tighten the pad pin bolts.

TORQUE: 15–20 N·m (1.5–2.0 kg·m, 11–15 ft·lb)

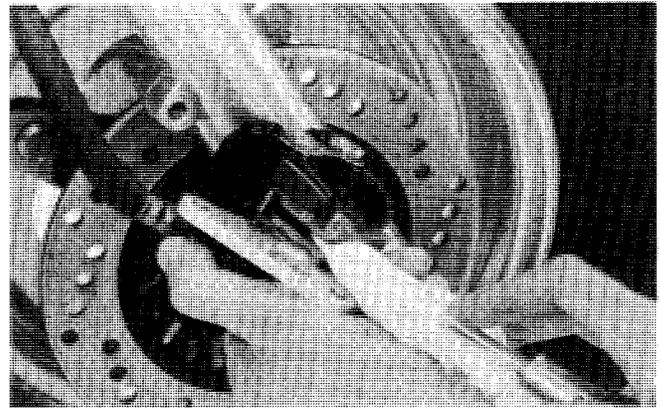
Bent up the lock washer tabs against the bolt heads.



Push the caliper piston in all the way.

CAUTION

- *Be careful that the master cylinder does not overflow when the caliper piston is compressed.*
- *Brake fluid can cause damage to painted, plastic, or rubber surfaces.*

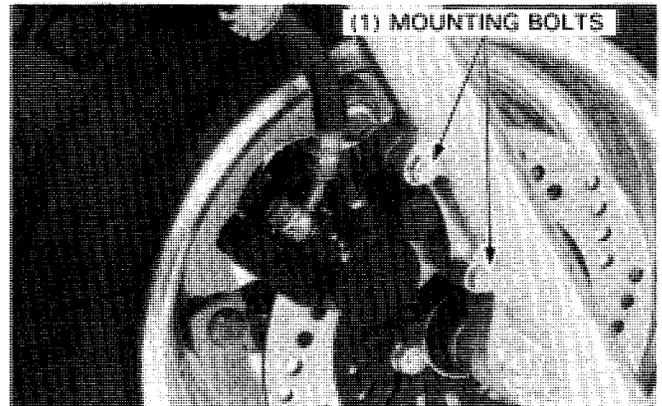


Install the caliper to the front fork so the disc is positioned between the pads, being careful not to damage the pads. Tighten the caliper mounting bolts.

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

Install the front wheel nuts.

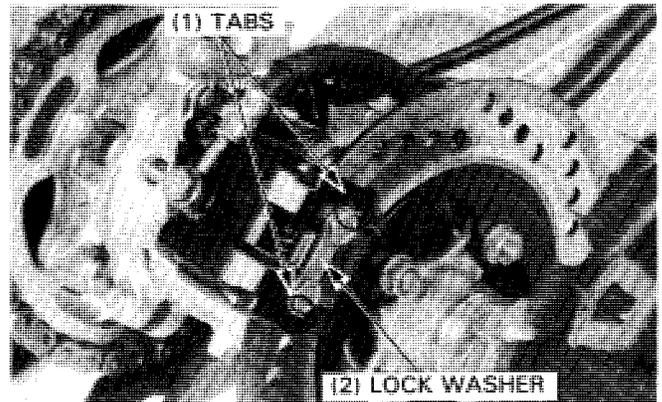
TORQUE: 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)



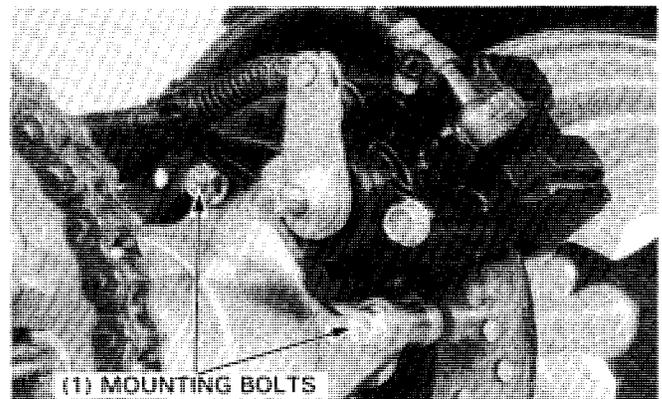
REAR BRAKE

Slide the release lever to the left and remove the seat/rear fender.

Bend down the lock washer tabs and loosen the pad pin bolts.

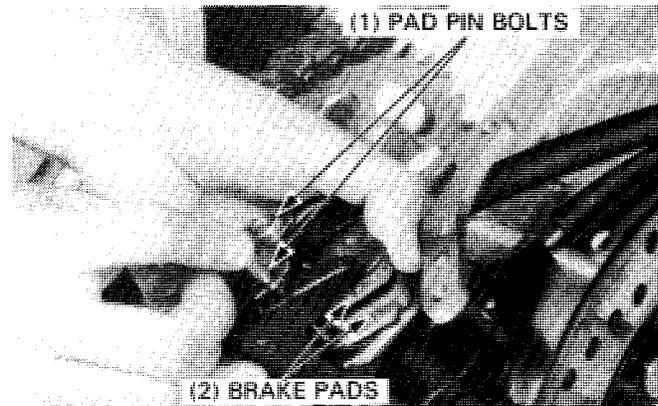


Remove the caliper mounting bolts.

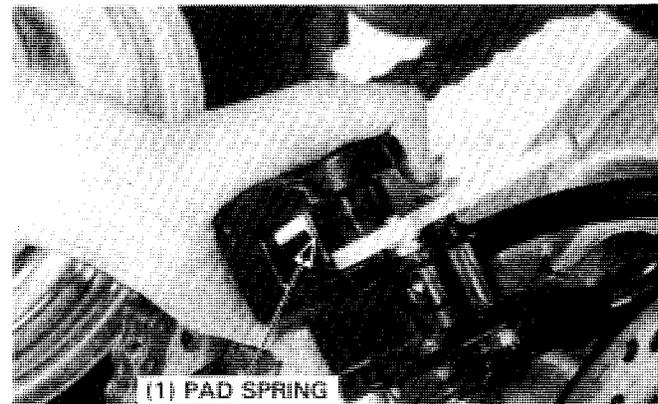


HYDRAULIC BRAKES

Remove the pad pin bolts, lock washer and brake pads.



Position the pad spring in the caliper as shown.



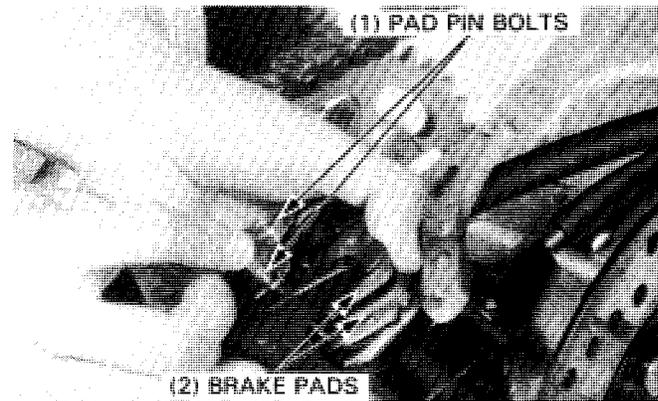
Install new brake pads, a new lock washer and the pad pin bolts.

Install the shim onto the inner pad.

Align the pad pin bolt holes by depressing the pads against the caliper, and install the pad pin bolts.

NOTE

- Always use pads marked "N18FF".



Push the caliper piston in all the way, being careful not to damage the pads.

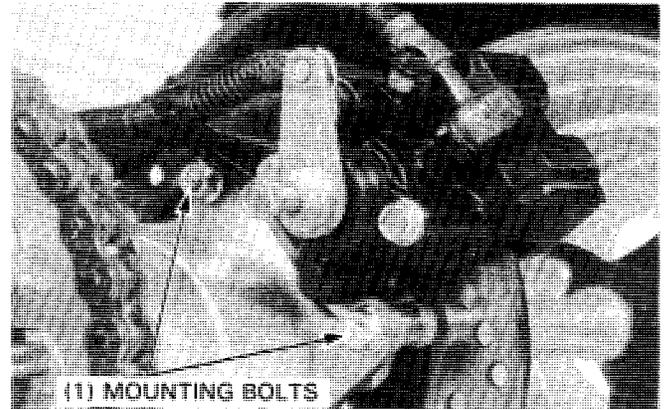
CAUTION

- *Be careful that the master cylinder does not overflow when the caliper piston is compressed.*
- *Brake fluid can cause damage to painted, plastic, or rubber surfaces.*



Lower the caliper so the disc is positioned between the pads, being careful not to damage the pads.
Install and tighten the caliper mounting bolts.

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

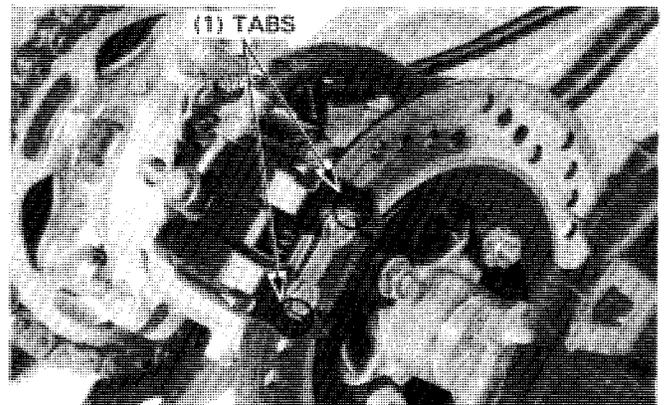


Tighten the pad pin bolts.

TORQUE: 15–20 N·m (1.5–2.0 kg-m, 11–15 ft-lb)

Bend up the lock washer tabs against the bolt heads.

Adjust the parking brake (page 3-11).
Install the seat/rear fender.



BRAKE DISC

THICKNESS INSPECTION

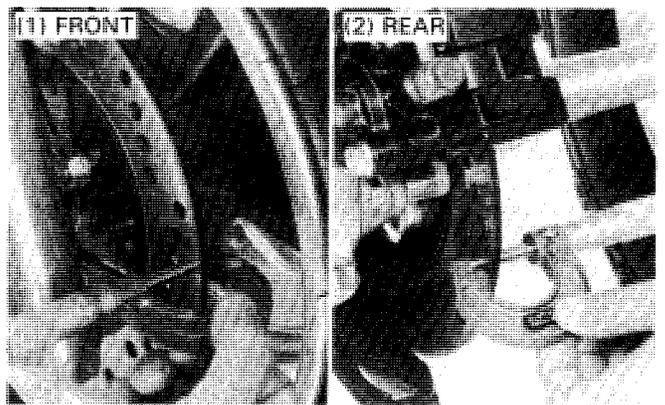
Measure the brake disc thickness with a micrometer.

SERVICE LIMITS:

FRONT: 3.0 mm (0.12 in)

REAR: 3.0 mm (0.12 in)

Replace the disc that is worn beyond the service limit.

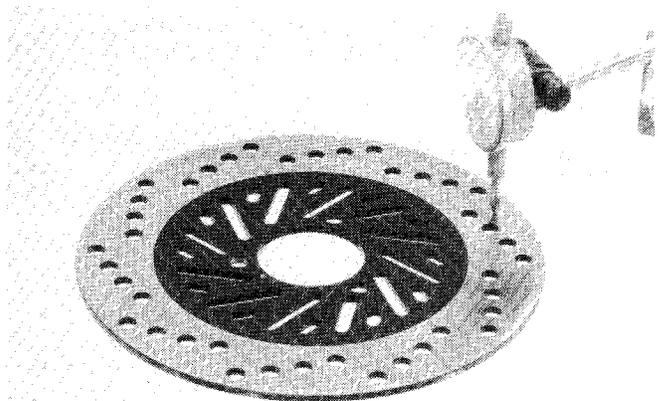


WARPAGE INSPECTION

Remove the front brake disc (page 11-7).
Remove the rear brake disc (page 12-4).

Measure the each disc for warpage.

SERVICE LIMIT: 0.30 mm (0.012 in)



HYDRAULIC BRAKES

FRONT CALIPER

REMOVAL

Drain the brake fluid from the front hydraulic system.
Remove the oil bolt and the brake hose from the caliper.
Remove the rubber cap and loosen the socket bolt.

CAUTION

- *Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.*

Remove the caliper mounting bolts and the caliper from the fork leg.

DISASSEMBLY

Remove the socket bolt, washer and caliper bracket.
Remove the pivot boots.
Remove the brake pads (page 14-5).

Position the caliper with the piston down and apply small spurts of air pressure to the fluid inlet to remove the piston.

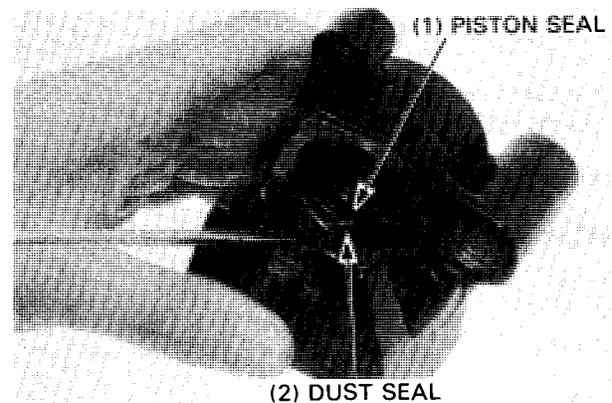
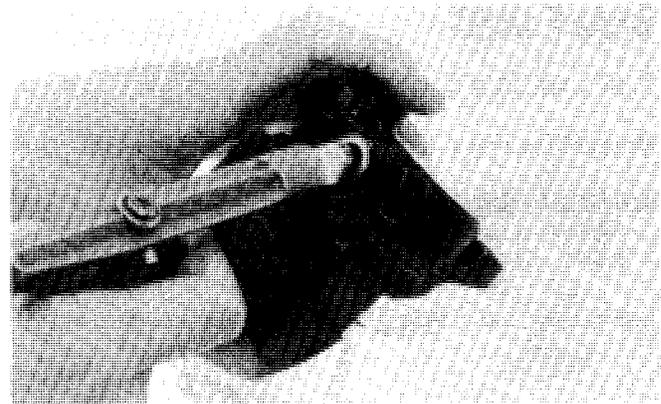
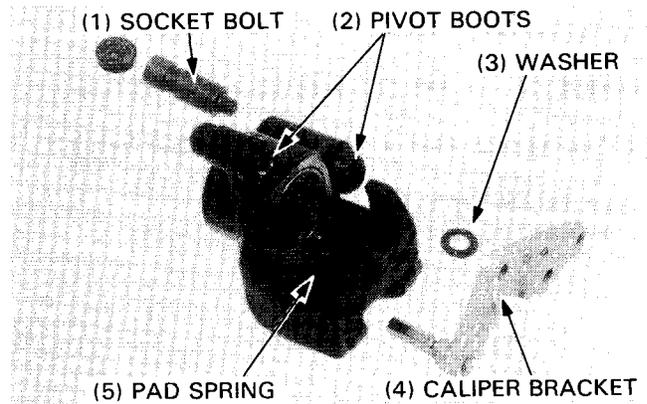
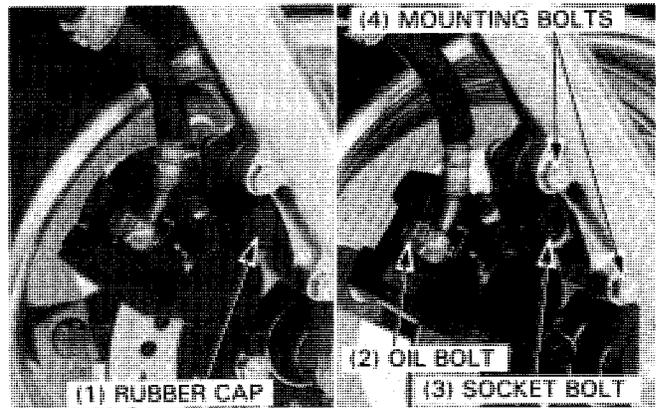
WARNING

- *Do not use high pressure air or bring the nozzle too close to the inlet.*
- *Place a shop towel over the piston to prevent the piston from becoming a projectile.*

Push the dust and piston seals in and lift them out.
Clean the seal grooves with clean brake fluid.

CAUTION

- *Be careful not to damage the piston sliding surfaces.*

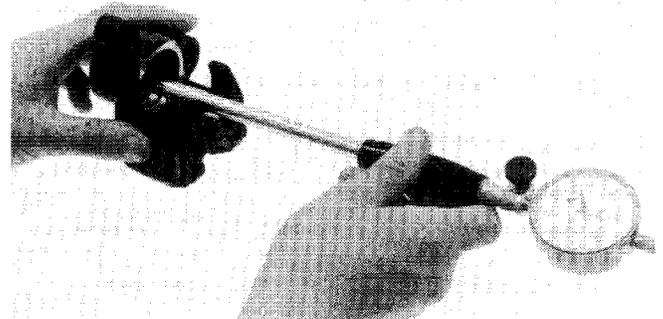


INSPECTION

Check the caliper cylinder for scratches, scoring or other damage.

Measure the cylinder inside diameter.

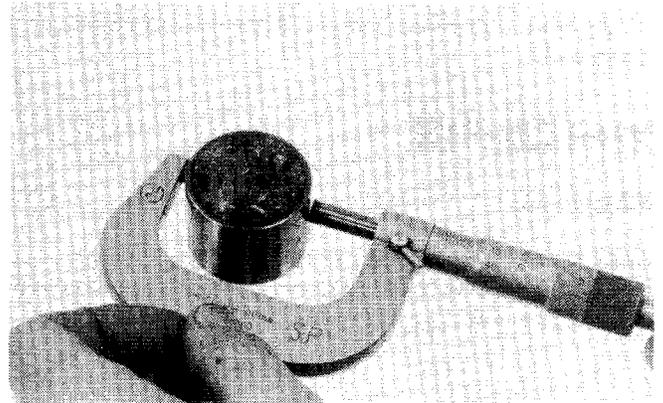
SERVICE LIMIT: 34.020 mm (1.3394 in)



Check the piston for scratches, scoring or other damage.

Measure the piston outside diameter.

SERVICE LIMIT: 33.870 mm (1.3335 in)



ASSEMBLY

Coat new dust and piston seals with clean brake fluid and install them in the seal grooves in the caliper with their smaller diameter ends facing in.

Lubricate the cylinder and piston with clean brake fluid and install the piston into the cylinder with the piston pad end facing the pad side.

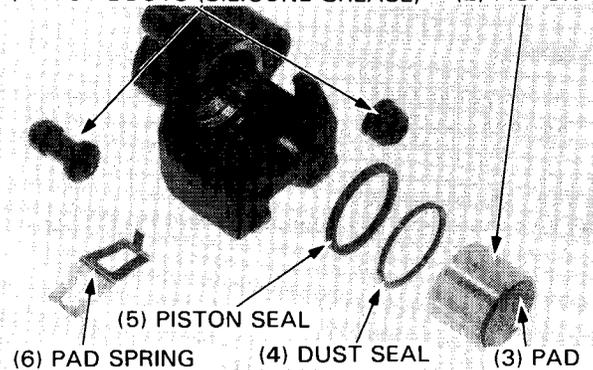
Apply silicone grease to the pivot boots and install the boots making sure that they are seated in the caliper grooves properly.

Install the pad spring.

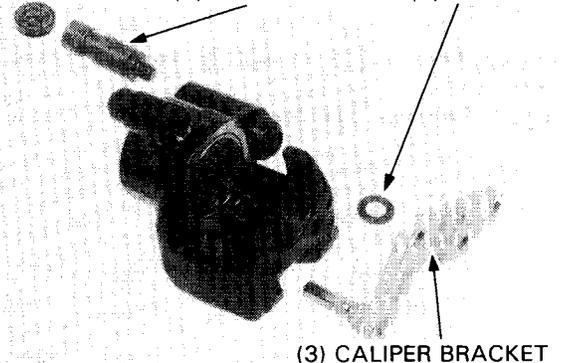
Install the caliper bracket, washer and socket bolt.

Install the brake pads (page 14-6).

(1) PIVOT BOOTS (SILICONE GREASE) (2) PISTON



(1) SOCKET BOLT (2) WASHER



HYDRAULIC BRAKES

INSTALLATION

Install the caliper onto the right fork leg and tighten the caliper mounting bolts.

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

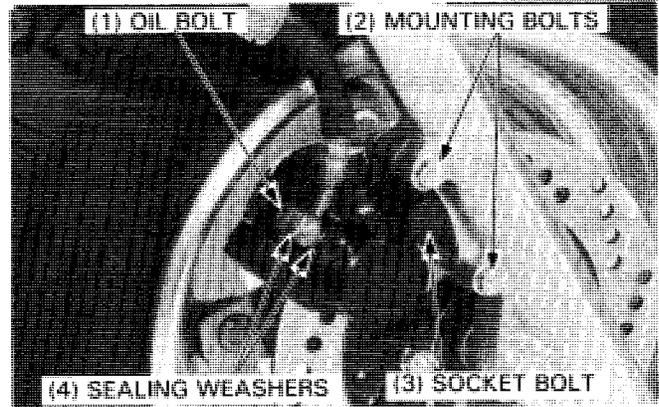
Connect the front brake hose to the caliper with the oil bolt and two new sealing washers, and tighten the oil bolt.

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

Tighten the socket bolt and install the rubber cap.

TORQUE: 15–20 N·m (1.5–2.0 kg-m, 11–15 ft-lb)

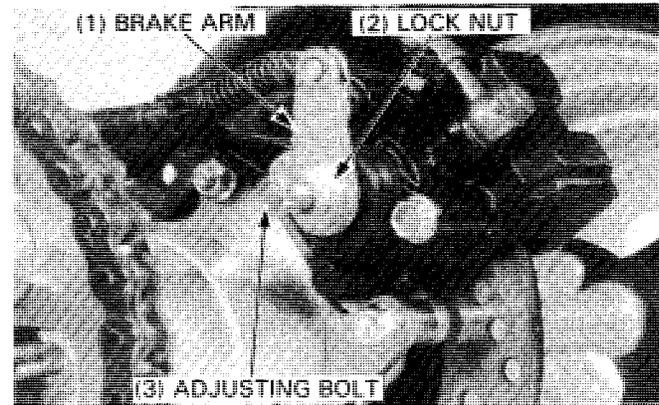
Fill the front brake reservoir and bleed the front brake system (page 14-4).



REAR CALIPER

REMOVAL

Drain the brake fluid from the rear hydraulic system. Loosen the parking brake adjusting bolt lock nut, and remove the bolt and arm.

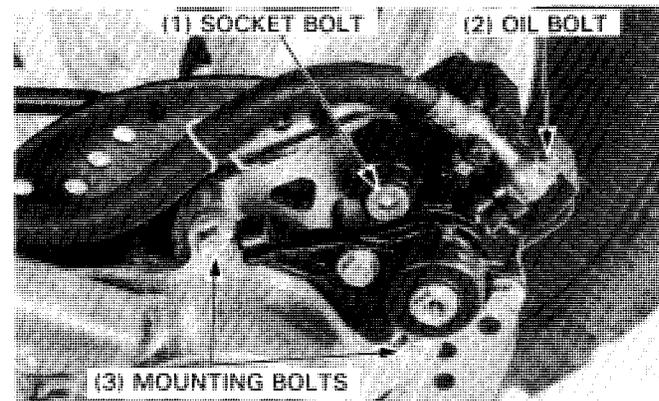


Remove the oil bolt and brake hose from the rear caliper.

CAUTION

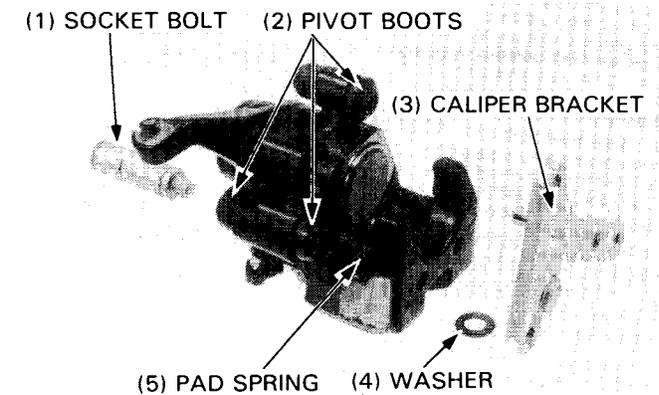
- *Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.*

Loosen the socket bolt.
Remove the caliper mounting bolts and the caliper.



DISASSEMBLY

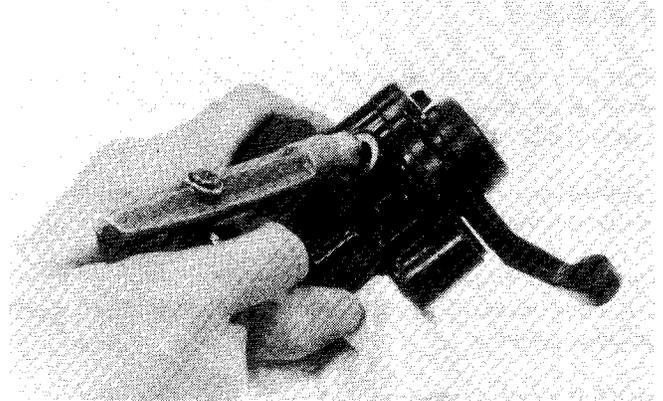
Remove the socket bolt, washer, caliper bracket and pivot boots.
Remove the brake pads (page 14-7).



Position the caliper with the piston down and apply small spurts of air pressure to the fluid inlet to remove the piston.

WARNING

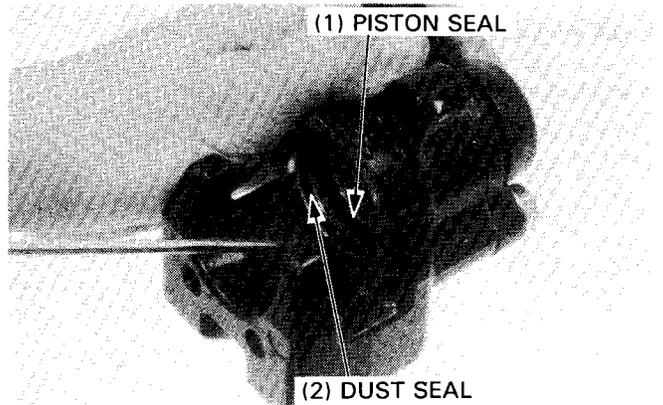
- Do not use high pressure air or bring the nozzle too close to the inlet.
- Place a shop towel over the piston to prevent the piston from becoming a projectile.



Push the dust and piston seals in and lift them out. Clean the seal grooves with clean brake fluid.

CAUTION

- Be careful not to damage the piston sliding surface.

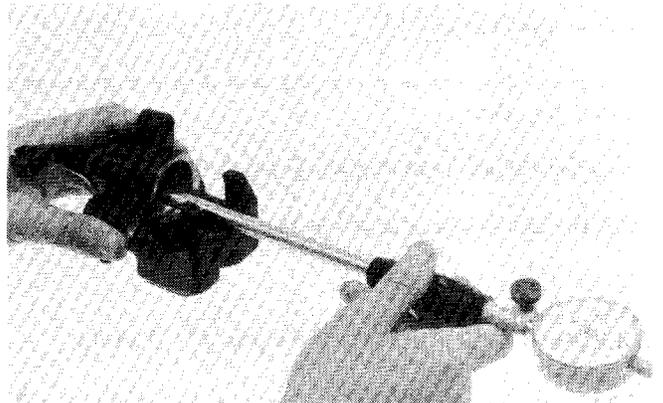


INSPECTION

Check the caliper cylinder for scratches, scoring or other damage.

Measure the cylinder inside diameter.

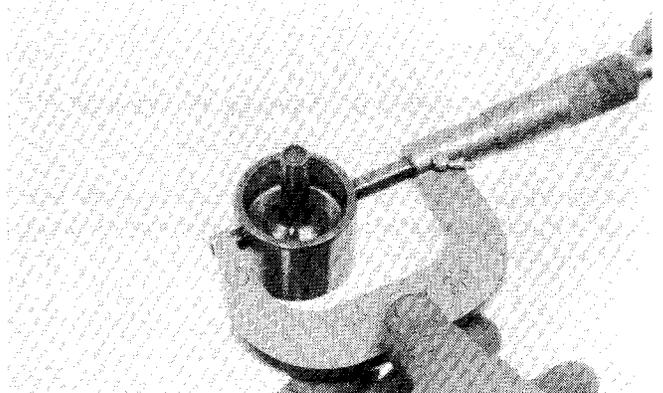
SERVICE LIMIT: 34.020 mm (1.3394 in)



Check the piston for scratches, scoring or other damage.

Measure the outside diameter.

SERVICE LIMIT: 33.870 mm (1.3335 in)



HYDRAULIC BRAKES

ASSEMBLY

Coat new dust and piston seals with clean brake fluid and install them in the seal grooves in the caliper with their small diameter ends facing in.

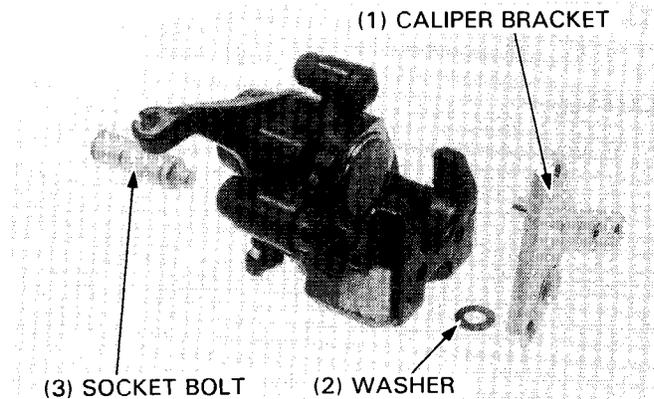
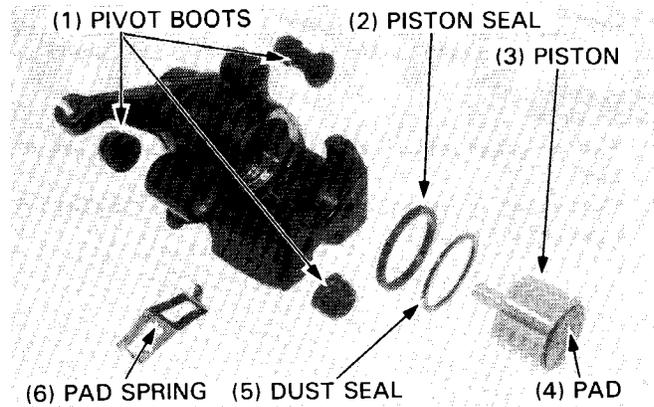
Lubricate the cylinder and piston with brake fluid, and install the piston with the piston pad end facing the pad.

Apply silicone grease to the boots.
Install the boots making sure that they are seated in the caliper grooves properly.

Install the pad spring.

Install the caliper bracket, washer and socket bolt.

Install the brake pads (page 14-8).



INSTALLATION

Place the caliper over the brake disc being careful not to damage the pads.

Install the caliper mounting bolts and tighten them.

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

Tighten the socket bolt.

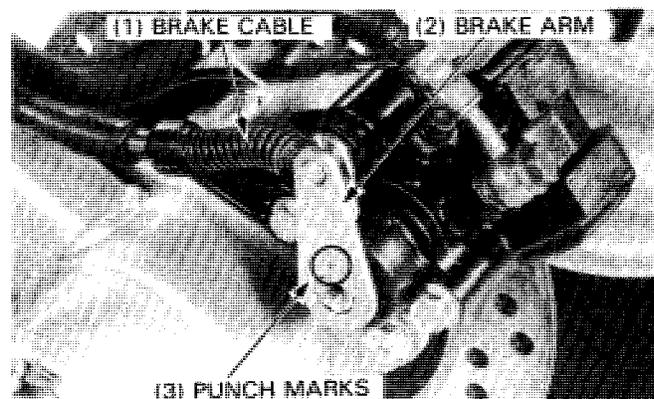
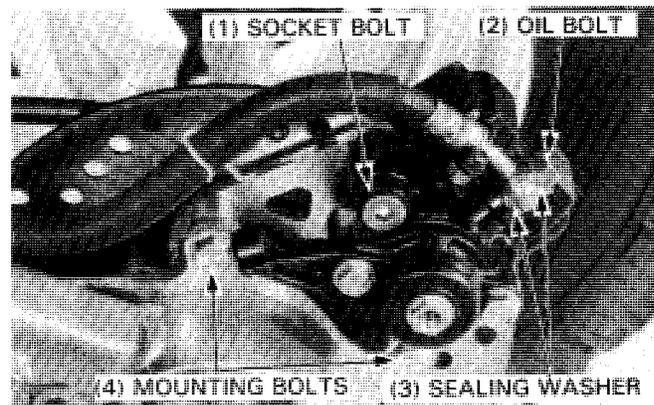
TORQUE: 15–20 N·m (1.5–2.0 kg·m, 11–15 ft·lb)

Connect the rear brake hose using the oil bolt and two sealing washers after making sure that the sealing washers are in good condition.

Tighten the oil bolt.

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

Connect the parking brake cable to the parking brake arm and install the arm on the shaft by aligning the punch marks on the shaft and arm.



Install the lock nut and parking brake adjusting bolt.

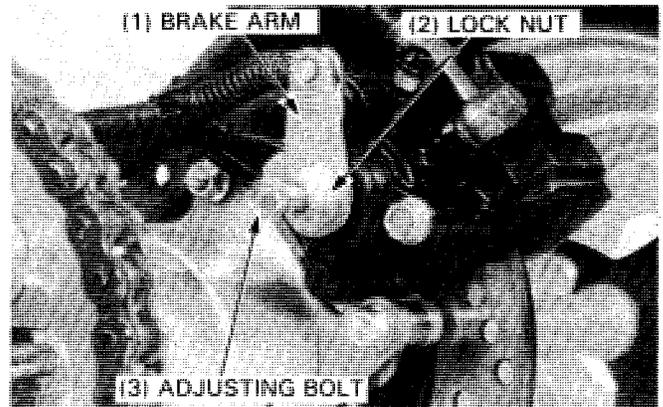
Fill and bleed the rear brake system (page 14-4).

Adjust the parking brake (page 3-11).

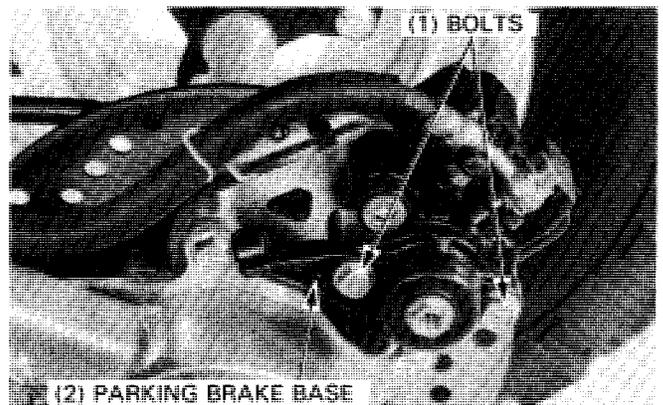
PARKING BRAKE

REMOVAL

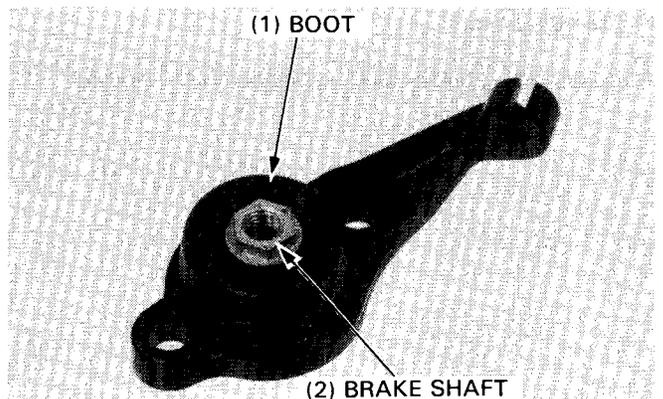
Loosen the parking brake adjusting bolt lock nut and remove the bolt and brake arm.



Remove the parking brake base bolts and the base.

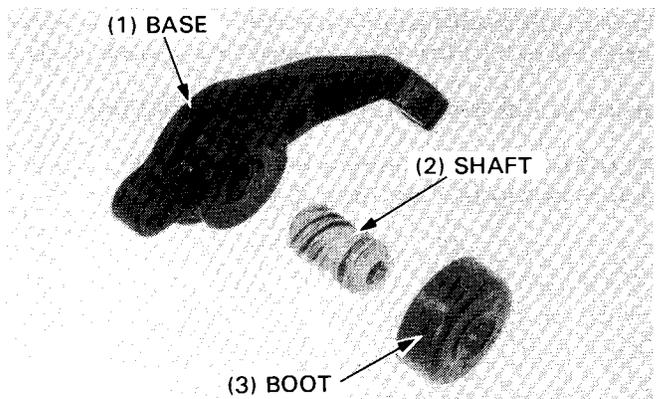


Remove the boot and parking brake shaft from the brake base.



INSPECTION

Check the boot for deterioration or damage.
Check the shaft and base threads for wear or damage.



HYDRAULIC BRAKES

INSTALLATION

Apply grease to the parking brake shaft, position the shaft so that the punch mark is within the index marks on the parking brake base and thread the shaft into the parking brake base.

NOTE

- The parking brake shaft has left hand threads.

Screw the parking brake shaft in fully, back it about 1/8 turn and make sure that the punch mark on the shaft is within the index marks on the base.

Install the boot over the shaft and base, making sure that the boot is seated in the groove in the shaft and base properly.

Install the boot over the shaft and base, making sure that the boot is seated in the groove in the shaft and base properly.

Install a new O-ring in the groove in the base and install the base onto the caliper.

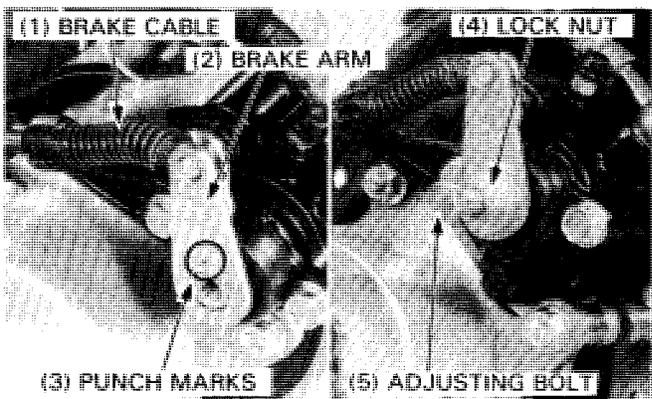
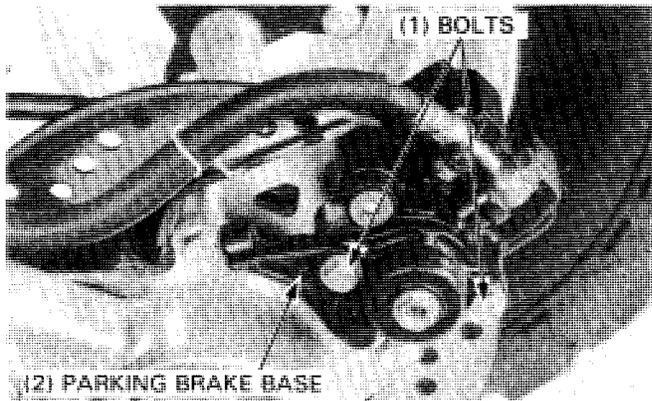
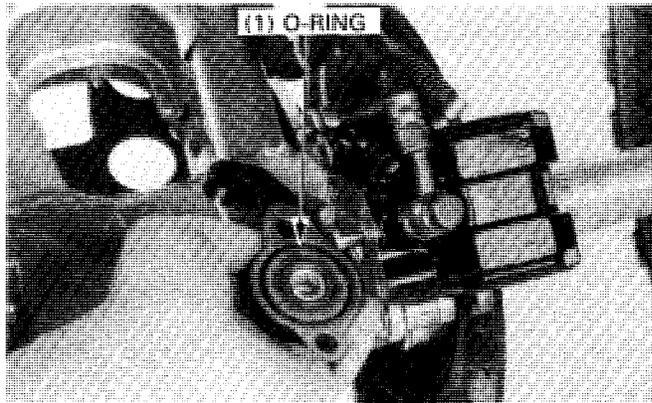
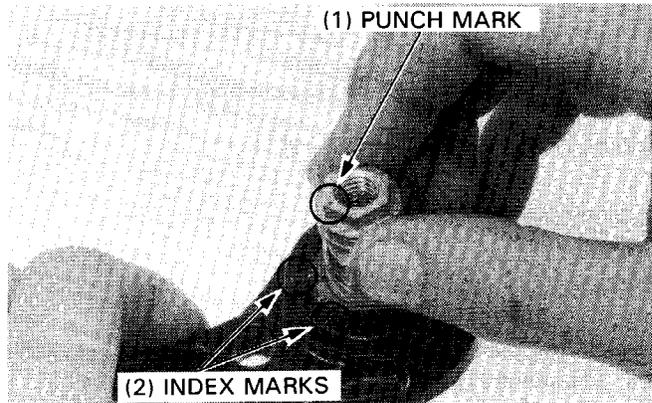
Tighten the bolts.

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

Connect the parking brake cable to the parking brake arm and install the arm on the shaft, by aligning the punch marks.

Install the lock nut and parking brake adjusting bolt.

Fill and bleed the rear brake system (page 14-4).
Adjust the parking brake (page 3-11).



FRONT MASTER CYLINDER

REMOVAL

Drain brake fluid from the front hydraulic system.

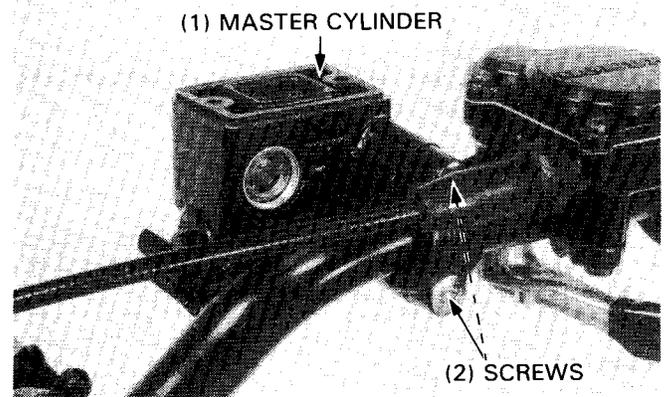
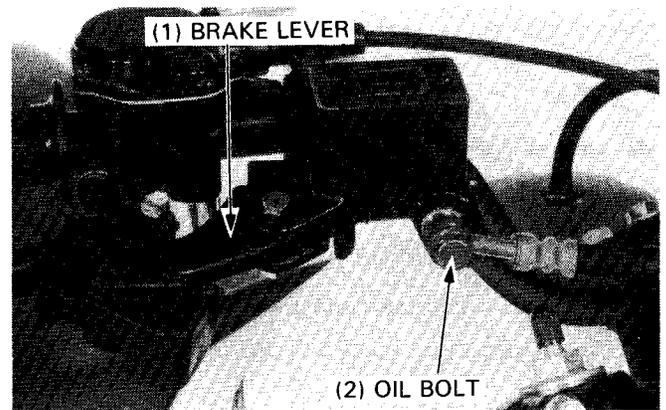
Remove the front brake lever and disconnect the brake hose from the master cylinder.

CAUTION

- *Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.*
- *When removing the oil bolt, cover the end of the hose to prevent contamination.*

Loosen the throttle housing holder screws and remove the housing.

Remove the master cylinder holder screws and the master cylinder.



DISASSEMBLY

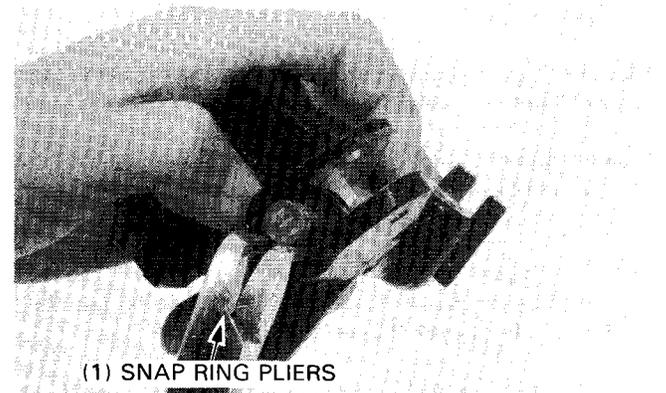
Remove the piston boot and the snap ring from the master cylinder body.

TOOL:

Snap ring pliers: 07914—3230001

Remove the piston and spring from the master cylinder.

Clean the master cylinder, reservoir and piston in clean brake fluid.

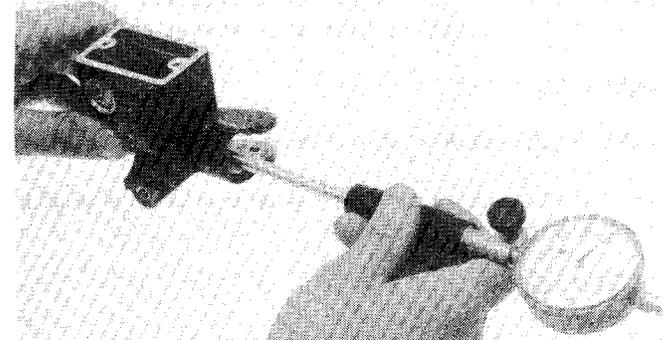


INSPECTION

Check the master cylinder for scratches, scoring or other damage.

Measure the master cylinder inside diameter.

SERVICE LIMIT: 12.755 mm (0.5022 in)



HYDRAULIC BRAKES

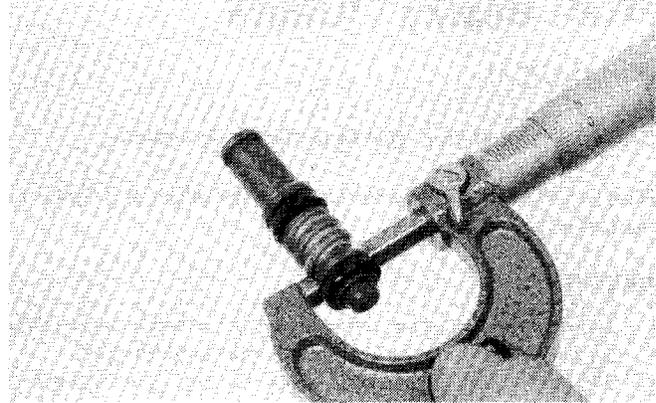
Check the piston for scratches, scoring or other damage.
Check the primary and secondary cups for wear, deterioration or damage.

Measure the piston outside diameter.

SERVICE LIMIT: 12.645 mm (0.4978 in)

NOTE

- The piston, piston cups and spring must be replaced as a set.



ASSEMBLY

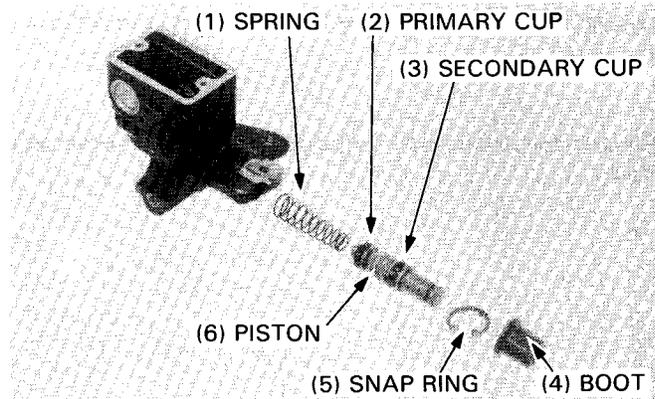
Coat the piston, primary and secondary cups with clean brake fluid, then install the piston spring and piston.

Install the snap ring.

CAUTION

- Do not allow the lips of the cups to turn inside out and be certain the snap ring is firmly seated in the groove.

Install the boot.



INSTALLATION

Place the front brake master cylinder on the handlebar and install its holder with the "UP" mark facing up.

Align the end of the holder with the punch mark on the handlebar and tighten the upper screw first, then tighten the lower screw.

Align the ridge of the throttle lever housing with the mating surface of the master cylinder and holder, and tighten the forward screw first, then tighten the rear screw.

Make sure that the oil bolt sealing washers are in good condition.

Connect the brake hose to the master cylinder using the oil bolt and two sealing washers so the hose joint neck is positioned in the stoppers on the master cylinder body.

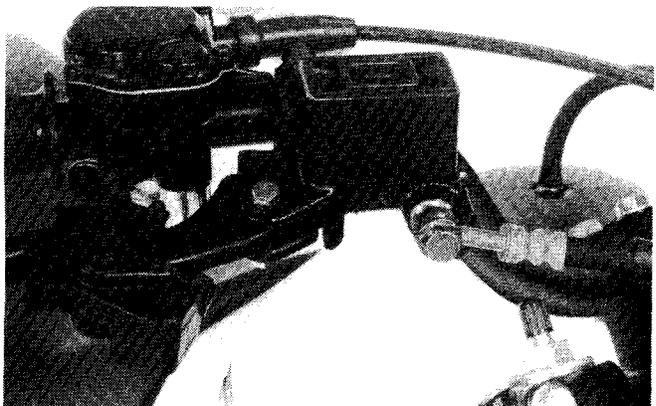
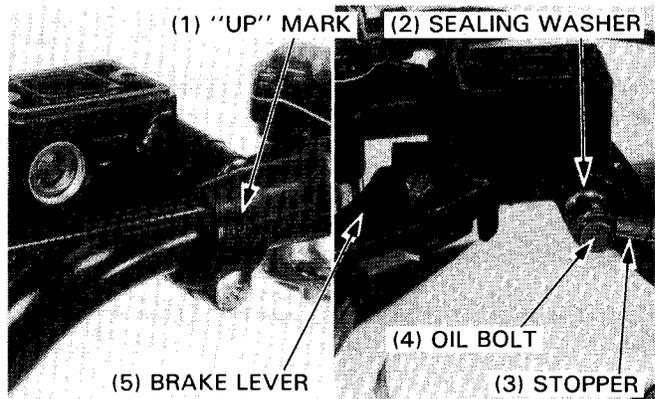
Tighten the oil bolt.

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

Install the brake lever onto the master cylinder and tighten the pivot bolt and nut.

Install the rubber cover.

Fill and bleed the front hydraulic system (page 14-4).



REAR MASTER CYLINDER

REMOVAL

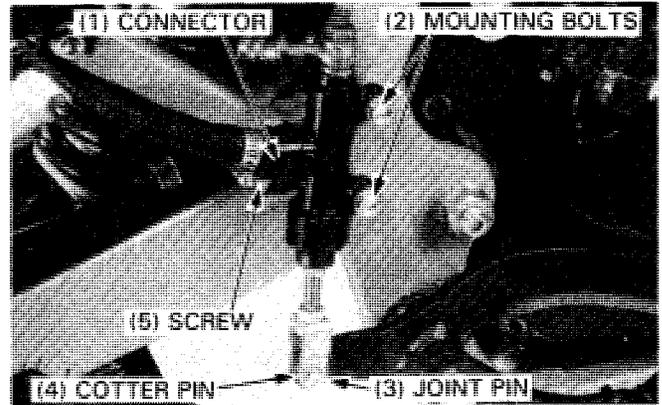
Drain the brake fluid from the rear hydraulic system.

Disconnect the master cylinder push rod from the rear brake pedal by removing the cotter pin and joint pin.

Disconnect the brake hose from the master cylinder.

Remove the hose connector screws and disconnect the reservoir hose.

Remove the rear master cylinder mounting bolts.



DISASSEMBLY

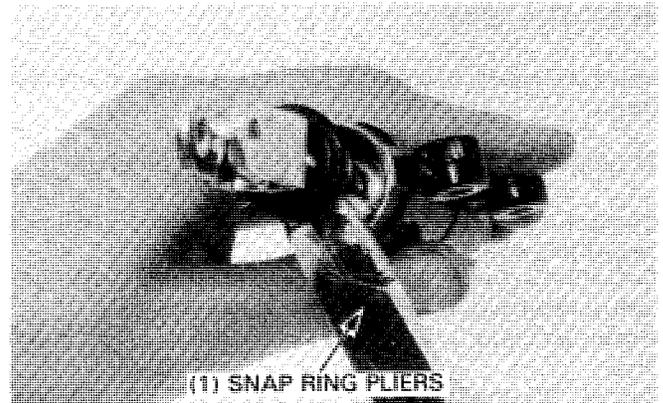
Remove the rubber boot, snap ring and push rod.

TOOL:

Snap ring pliers: 07914-3230001

Remove the piston and spring.

Clean the piston and the inside of the master cylinder with brake fluid.

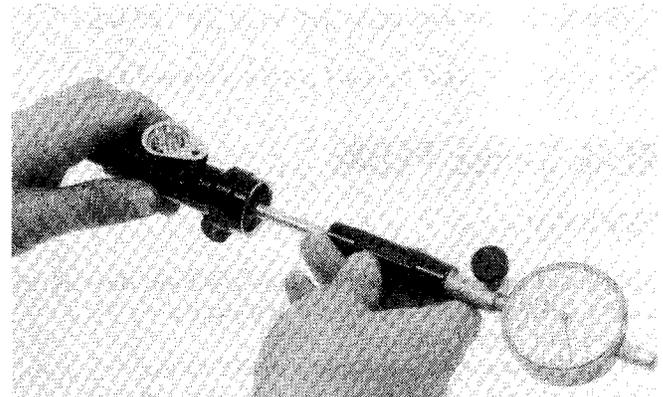


INSPECTION

Check the master cylinder for scratches, scoring or damage.

Measure the master cylinder inside diameter.

SERVICE LIMIT: 14.055 mm (0.5533 in)



Check the primary and secondary cups for wear, deterioration or damage.

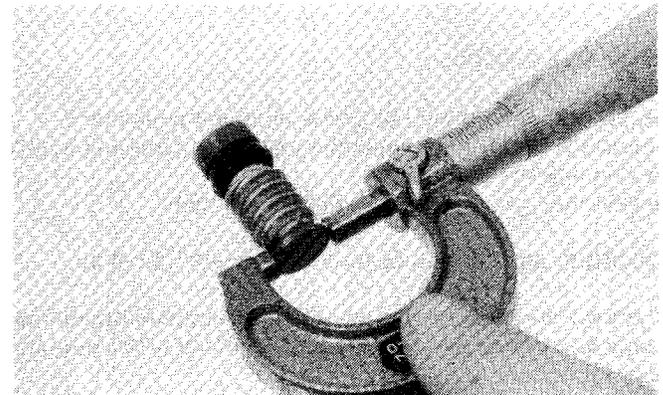
Check the piston for scratches, scoring or damage.

Measure the piston outside diameter.

SERVICE LIMIT: 13.945 mm (0.5490 in)

NOTE

- The piston, piston cups and spring must be replaced as a set.



HYDRAULIC BRAKES

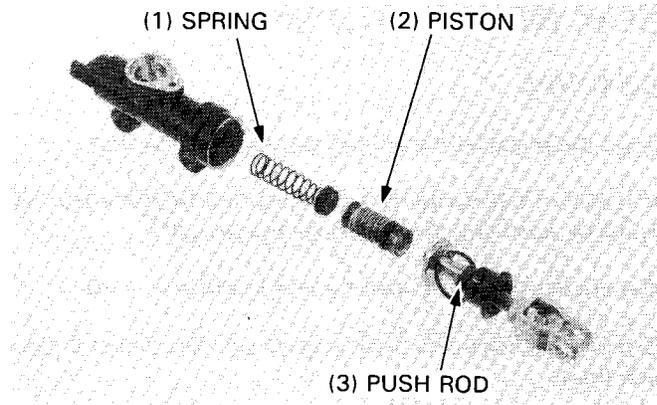
ASSEMBLY

Coat the piston, primary and secondary the cups with clean brake fluid, then install the spring and piston with the cups. Install the push rod and snap ring.

CAUTION

- Do not allow the lips of the cups to turn inside out and be certain the snap ring is seated in the groove.

Install the rubber boot.



INSTALLATION

Install the master cylinder in the frame and tighten the mount bolts.

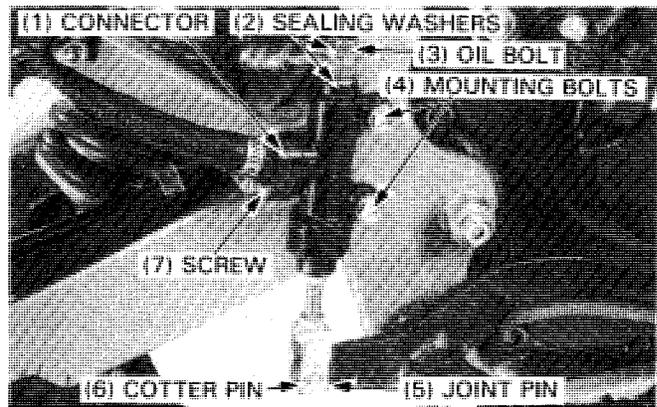
TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)

Connect the reservoir hose joint to the master cylinder with a new O-ring and the screws.

Connect the master cylinder push rod and brake pedal with the joint pin and secure it with a new cotter pin.

Make sure that the oil bolt sealing washers are in good condition.

Connect the rear brake hose with the oil bolt and two sealing washers, and tighten the oil bolt.



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

Fill and bleed the rear hydraulic system (page 14-4).

REAR BRAKE PEDAL

REMOVAL

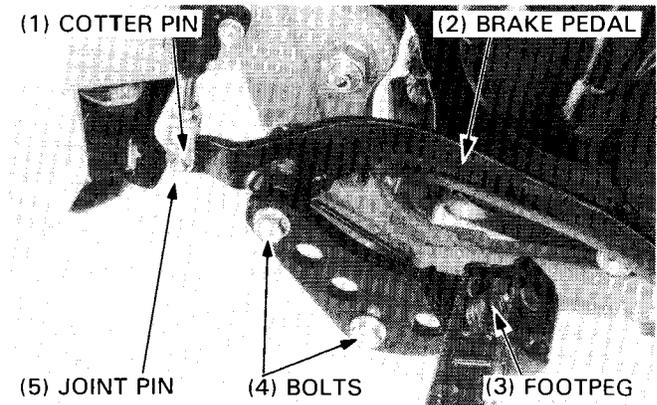
Disconnect the master cylinder push rod from the rear brake pedal by removing the cotter pin and joint pin.

Remove the right footpeg.

Remove the rear brake pedal and return spring.

Check the inside of the pedal pivot for dirt and dust.

Check the dust seal and pivot bearing for wear or damage.



INSTALLATION

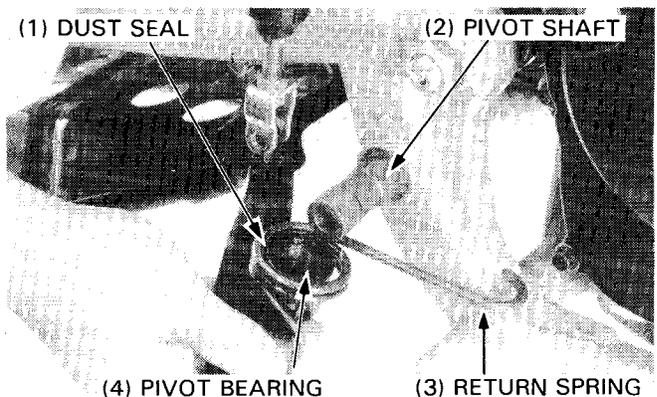
Apply grease to the brake pedal pivot and pivot shaft.

Install the return spring over the rear brake pedal and hook the spring end to the frame.

Install the right footpeg and tighten the bolts.

TORQUE: 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)

Connect the rear brake pedal to the rear master cylinder push rod with the joint pin and secure the joint pin with a new cotter pin.



15. REAR FENDER/SEAT/EXHAUST SYSTEM

SERVICE INFORMATION

15-1 EXHAUST SYSTEM

15-2

REAR FENDER/SEAT

15-1

SERVICE INFORMATION

GENERAL

- Refer to section 3 for spark arrester cleaning.

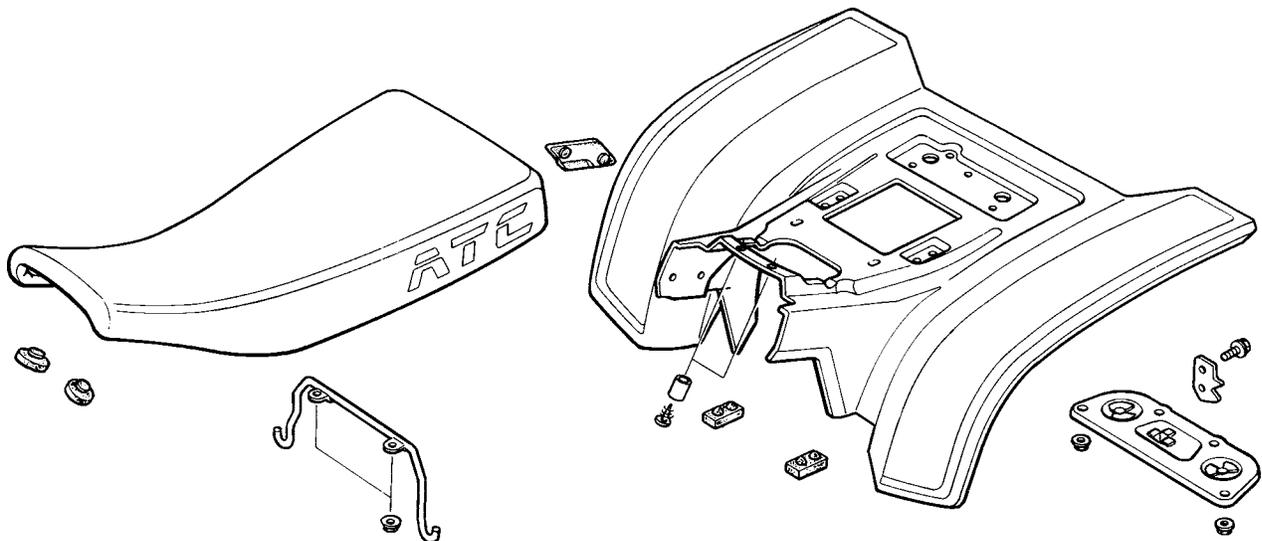
WARNING

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

TORQUE VALUES

Exhaust pipe joint nut		10–14 N·m (1.0–1.4 kg-m, 7.2–10 ft-lb)
Exhaust muffler clamp bolt		18–28 N·m (1.8–2.8 kg-m, 13–20 ft-lb)
Exhaust muffler mounting bolt	'86: 8 mm bolt	40–50 N·m (4.0–5.0 kg-m, 29–33 ft-lb)
	10 mm bolt	60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
	After '86:	60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)

REAR FENDER/SEAT



15

REAR FENDER/SEAT/EXHAUST SYSTEM

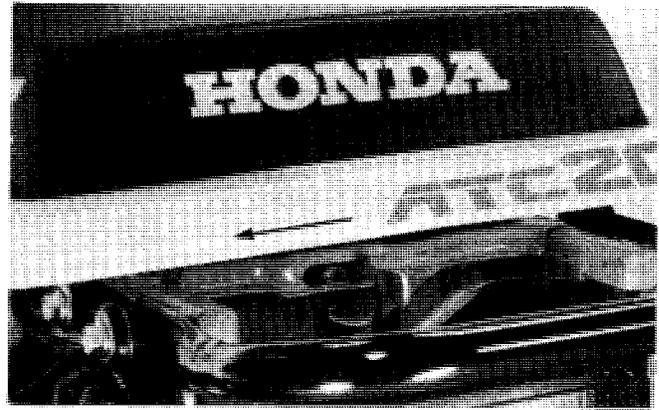
REMOVAL

Release the seat lock by moving the lever in the direction shown and remove the seat/rear fender.

INSTALLATION

Apply grease to the seat catch.

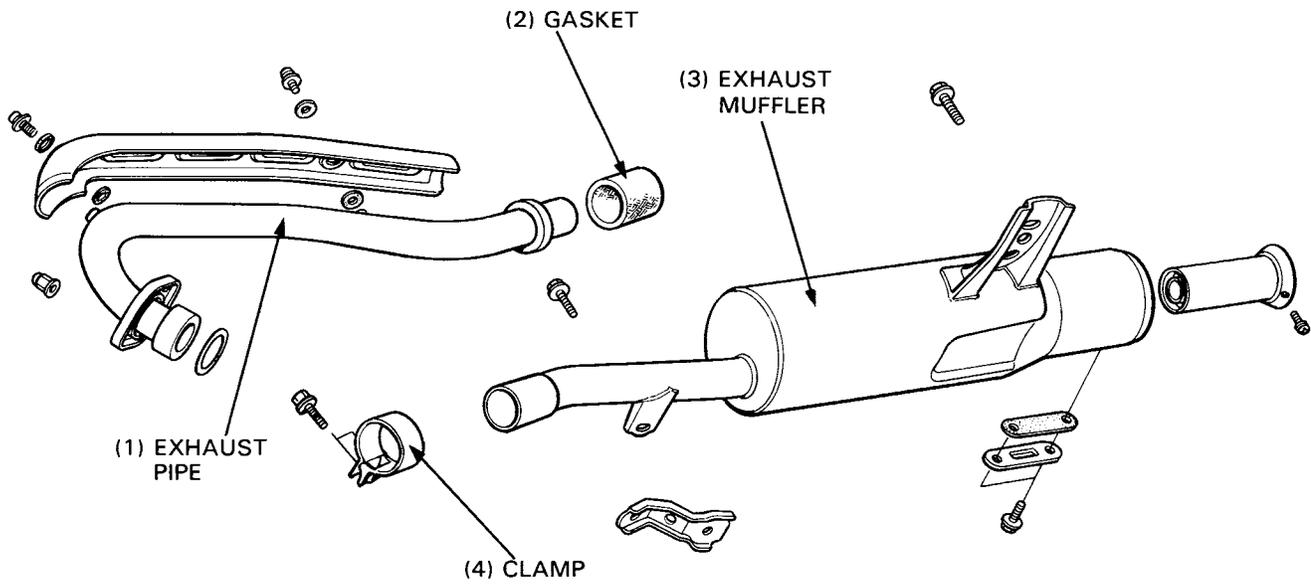
Install the seat and fender in the reverse order of removal.



EXHAUST SYSTEM

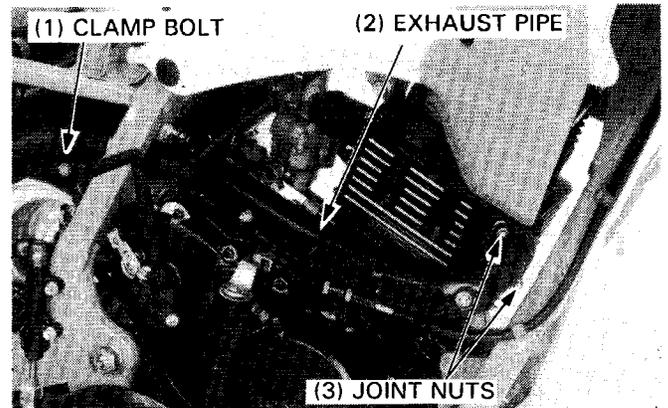
WARNING

- *Do not service the exhaust pipe or muffler while they are hot.*



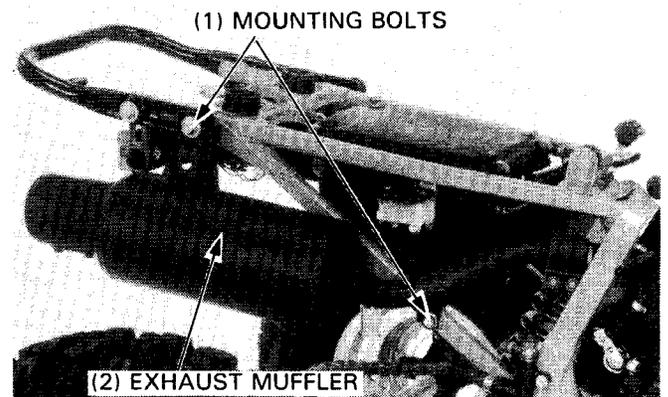
REMOVAL

Remove the seat/rear fender.
Remove the exhaust pipe joint nuts.
Loosen the exhaust pipe clamp bolt and remove the exhaust pipe.



Remove the exhaust muffler mounting bolts and the exhaust muffler.

Check the gasket and pipe seal for wear or damage and replace them if necessary.



INSTALLATION

Install the exhaust muffler and loosely install the mounting bolts.

Install the exhaust pipe and loosely install the joint nuts and clamp bolt.

Tighten the exhaust pipe joint nuts.

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

Tighten the exhaust pipe clamp bolt.

TORQUE: 18–28 N·m (1.8–2.8 kg-m, 13–20 ft-lb)

Tighten the exhaust muffler mounting bolts.

TORQUE VALUES:

'86:

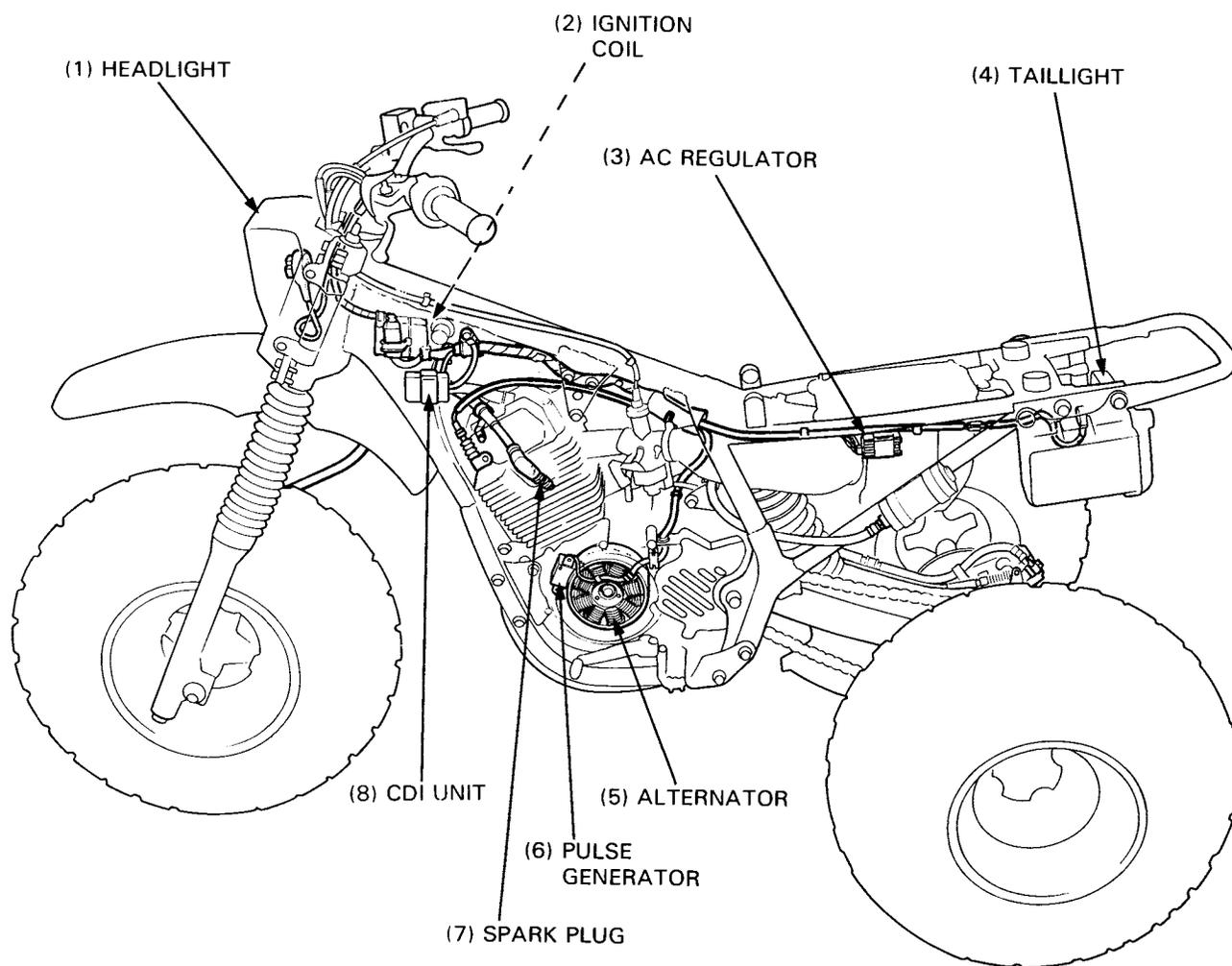
8 mm bolt: 40–45 N·m (4.0–4.5 kg-m, 29–33 ft-lb)

10 mm bolt: 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)

After '86: 60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)

After installing, make sure that there are no exhaust leaks.
Install the seat/rear fender.

ELECTRICAL SYSTEM



16. ELECTRICAL SYSTEM

SERVICE INFORMATION	16-1	PULSE GENERATOR	16-5
TROUBLESHOOTING	16-2	LIGHTS	16-6
IGNITION SYSTEM	16-3	AC REGULATOR	16-8
CDI UNIT	16-3	IGNITION SWITCH (After '86:)	16-9
IGNITION COIL	16-4	SWITCHES	16-9
ALTERNATOR EXCITER COIL	16-5	WIRING DIAGRAMS	16-10

SERVICE INFORMATION

GENERAL

- Ignition timing does not need to be adjusted since the CDI (Capacitive Discharge Ignition) unit is factory pre-set.
- For spark plug inspection and ignition timing check, refer to section 3.
- For pulse generator, stator coil removal, refer to section 9.
- All plastic connectors have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.
- A continuity check can usually be made without removing the part from the ATC by simply disconnecting the wires and connecting a continuity tester or ohmmeter to the terminals or connections.

SPECIFICATIONS

ITEM		STANDARD	
Spark plug	Gap	0.6–0.7 mm (0.024–0.028 in)	
	Recommended plug	DR8ES-L (NGK), X24ESR-U (ND)	
Ignition coil	Primary coil resistance	0.1–0.3 Ω	
	Secondary coil resistance	With plug cap	7.4–11.0 k Ω
		Without plug cap	3.7–4.5 k Ω
Exciter coil resistance		100–300 Ω	
Pulse generator coil resistance		290–360 Ω	
Ignition timing	Initial ("F" mark)	10° BTDC/1,400 \pm 100 rpm	
	Full advance	28° BTDC/3,500 \pm 200 rpm	
Lighting coil resistance		0.1–1.0 Ω	
AC regulator	Regulating voltage	13.5–14.5 V	After '86: 12.5–13.5 V
	Resistance	100 k Ω – ∞	
Alternator		135W/5,000 rpm	
Headlight		12V 60/55 W	
Taillight		12V 5 W	After '86: 12 V 8 W

TOOL

Special

Sanwa Electric Tester
Kowa Tester
Kowa Digital Multi-Tester

07308–0020000 or
TH-5H
07411–0020000 or KS-AHM-32-003 (U.S.A. only)

TROUBLESHOOTING

No spark at plug

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

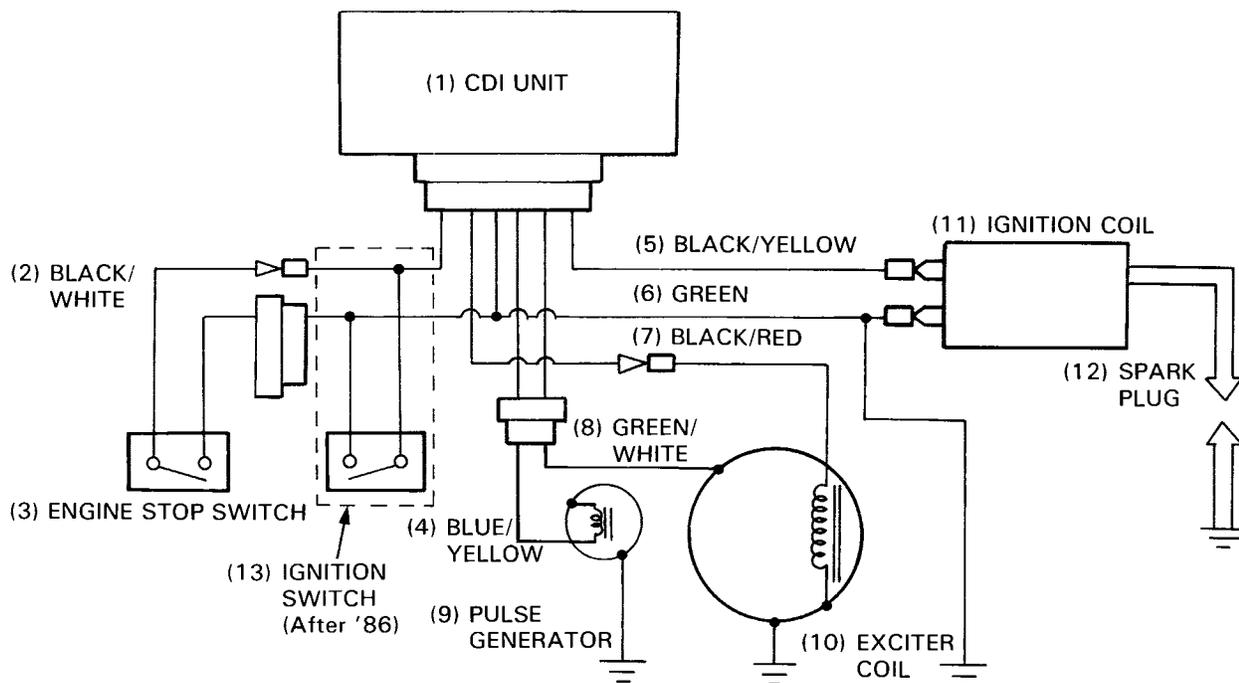
Engine starts but runs poorly

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

No lights when engine is running

- Faulty bulb
- Poorly connected or loose connectors
- Faulty alternator

IGNITION SYSTEM



CDI UNIT

SYSTEM INSPECTION

NOTE

- If the ignition timing is incorrect, perform the following inspection.
- The ignition switch is equipped the after '86 model.

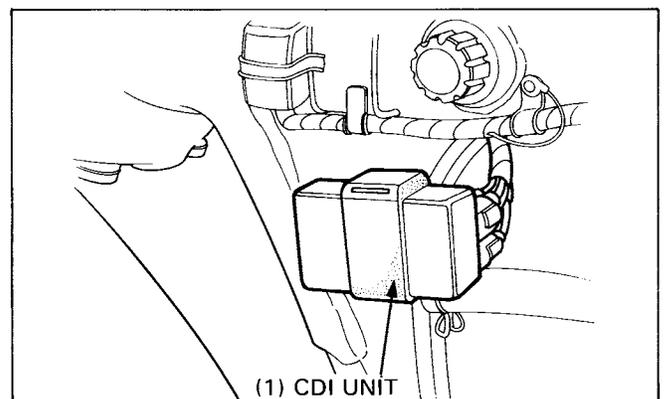
Remove the seat and disconnect the CDI unit coupler.

Check the continuity between the BI/W and G wires with the ignition switch and engine stop switch in each position.

- continuity with the ignition switch and engine stop switch OFF.
- continuity with the ignition switch OFF and engine stop switch to RUN.
- continuity with the ignition switch ON and engine stop switch OFF.
- no continuity with the ignition switch ON and engine stop switch to RUN.

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

- wiring between the CDI unit and engine stop switch and/or ignition switch for open or short circuit, or loose connection.
- ignition switch (page 16-8).
- engine stop switch (page 16-9).



ELECTRICAL SYSTEM

Measure the resistance between the BI/Y and G wire terminals.

STANDARD: 0.1 – 0.3 Ω

If the resistance is not within the standard, check the ignition coil and retest.

Measure the resistance between the Bu/Y and G/W wire terminals.

STANDARD: 290 – 360 Ω

If the resistance is not within the standard, check the pulse generator (page 16-5) and retest.

Measure the resistance between the BI/R and ground.

STANDARD: 50 – 200 Ω

If the resistance is not within the standard, check the alternator exciter coil (page 3-8) and retest.

If all related systems are in good condition but the ignition timing is incorrect, replace the CDI unit with a new one and recheck the ignition timing (page 3-8).

IGNITION COIL

Disconnect the CDI unit coupler and measure the ignition coil primary coil resistance between the BI/Y and G wire terminals.

STANDARD: 0.1 – 0.3 Ω

If the resistance is not within standard, disconnect the ignition coil primary wires from the ignition coil and measure the resistance.

STANDARD: 0.1 – 0.3 Ω

If the resistance is still not within standard, replace the ignition coil.

If the resistance is within the standard, check the wire harness between the CDI unit and ignition coil (BI/Y and G) and repair or replace the wire harness.

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

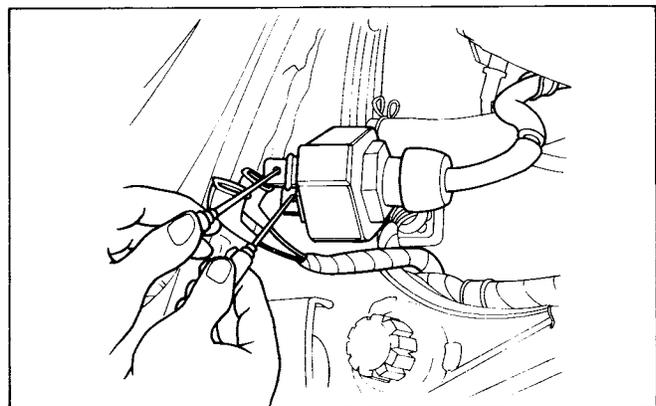
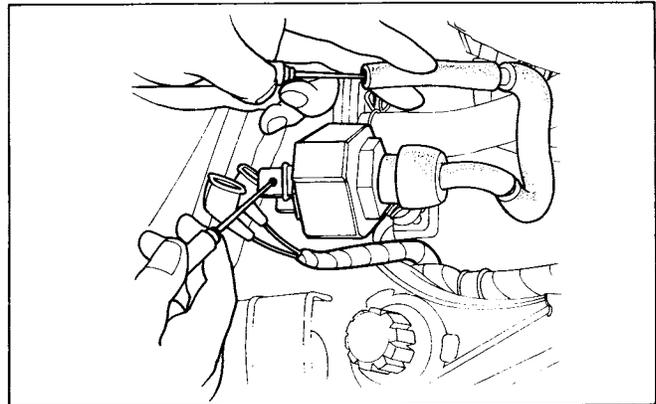
STANDARD: 7.4 – 1.1 k Ω

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

STANDARD: 3.7 – 4.5 k Ω

If the resistance is still not within the standard, replace the ignition coil.

If the resistance is within the standard, replace the spark plug cap and retest.



ALTERNATOR EXCITER COIL

Remove the seat.

Disconnect the CDI unit coupler and measure the resistance between the BI/R wire terminal and ground.

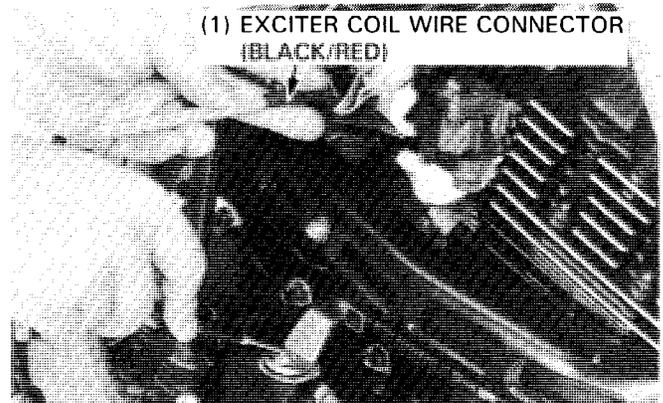
STANDARD: 50–200 Ω

If the resistance is not within the standard, disconnect the exciter coil wire terminal and measure the resistance.

STANDARD: 50–200 Ω

If the resistance is still not within the standard, replace the alternator.

If the resistance is within the standard, check the wire harness between the CDI unit and alternator (BI/R) for open or shorted circuit, and repair or replace the wire harness.



PULSE GENERATOR

Remove the seat.

Disconnect the CDI unit coupler and measure the pulse generator resistance between the Bu/Y and G/W wire terminals.

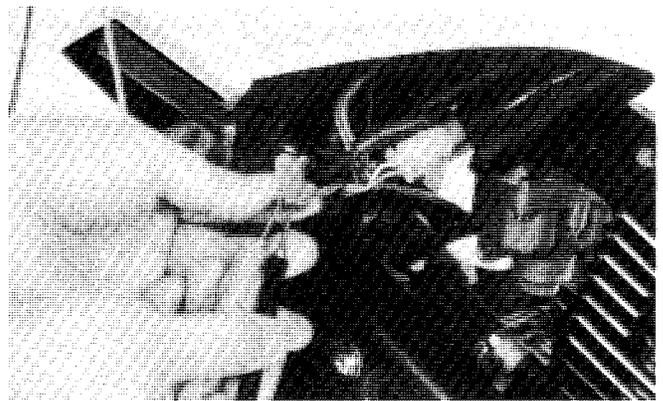
STANDARD: 290–360 Ω

If the resistance is not within standard, disconnect the pulse generator wire coupler and measure the resistance between the Bu/Y and G/W wire terminals.

STANDARD: 290–360 Ω

If the resistance is still not within the standard, replace the pulse generator.

If the resistance is within the standard, check the wire harness between the CDI unit and pulse generator (Bu/Y and G/W) for open or shorted circuit and repair or replace the wire harness.



ELECTRICAL SYSTEM

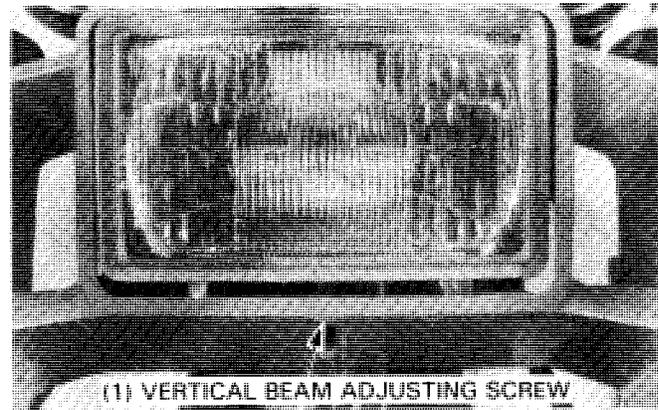
LIGHTS

Apply the parking brake and start the engine.

Check the headlight and taillight by operating the headlight ON-OFF switch.

Operate the dimmer switch and check the headlight vertical beam.

Adjust the vertical beam by turning the adjusting screw.



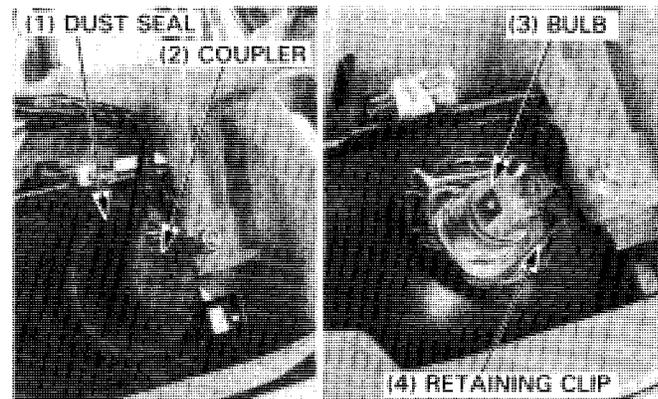
HEADLIGHT BULB REPLACEMENT

Remove the headlight case from the front fork tubes by releasing the four retaining bands.



Disconnect the headlight coupler and remove the dust cover from the headlight.

Release the retaining clip and remove the headlight bulb.

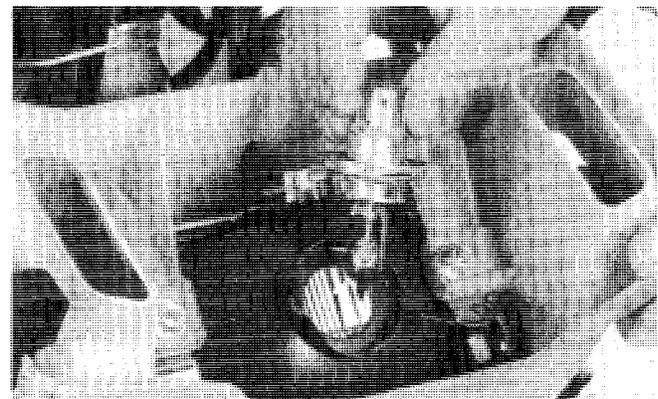


Replace the faulty bulb with a new one.

CAUTION

- Do not put finger prints on the headlight bulb, they may create hot spots on the bulb.
- If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.
- Do not try to replace the bulb with the light ON.
- After replacing the bulb, install the rubber boot tightly against the unit.

Install the removed parts in the reverse order of removal.

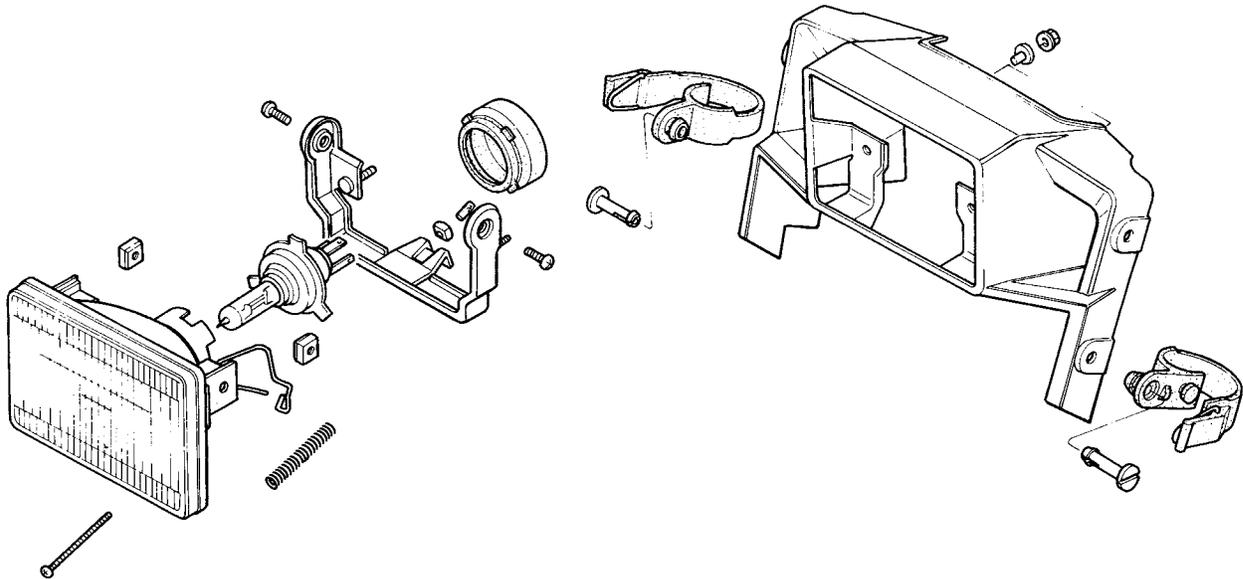


HEADLIGHT DISASSEMBLY/ASSEMBLY

Remove the headlight.

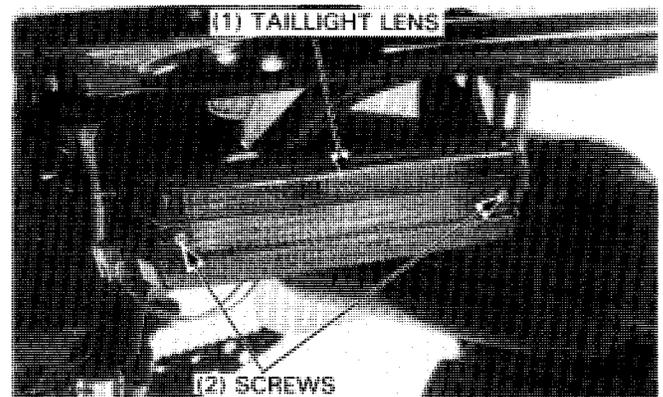
Remove the adjusting screw and headlight mounting nuts and remove the headlight from the cover.

Assemble the headlight in the reverse order of disassembly.



TAILLIGHT BULB REPLACEMENT

Remove the taillight lens by removing the two screws and nuts.

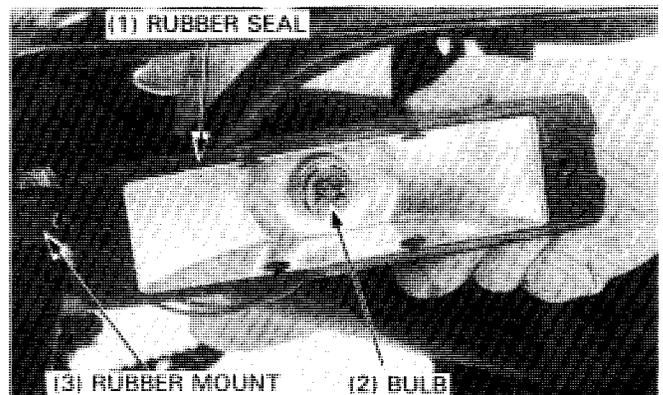


Remove the taillight bulb by pushing it in and turning it counterclockwise. Replace the faulty bulb with a new one.

Install the removed parts in the reverse order of removal.

NOTE

- Make sure that the taillight lens rubber seal is in good condition.
- Be sure to install the washers on both sides of the rubber mounts.



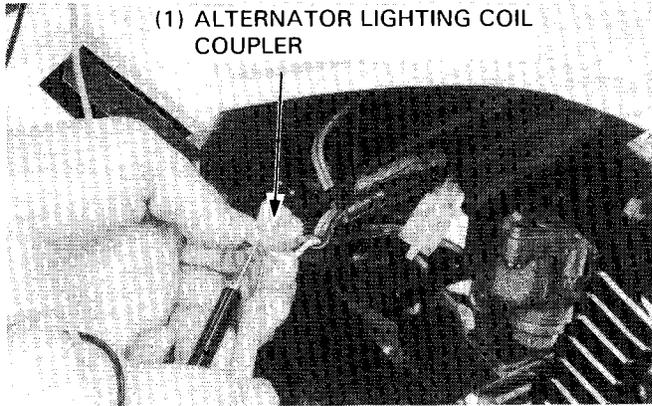
ELECTRICAL SYSTEM

ALTERNATOR LIGHTING COIL

Disconnect the alternator lighting coil coupler (white). Measure the lighting coil resistance between the coupler terminals.

STANDARD: 0.1 – 1.0 Ω

If the resistance is not within the standard, check the wire harness between the lighting switch-to-AC regulator and AC regulator-to-alternator, and replace or repair if necessary. If the wire harness is in good condition, and the resistance still not within standard, replace the alternator.



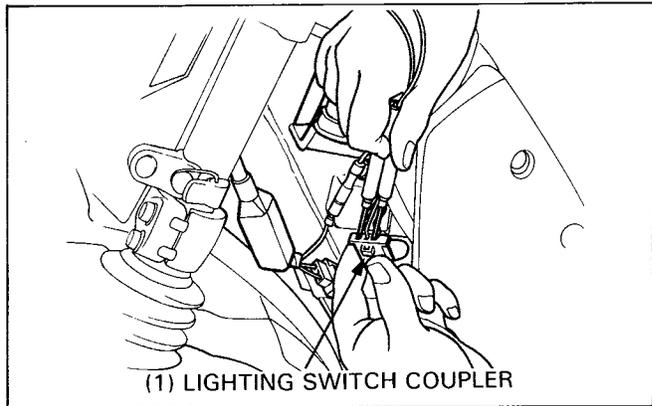
AC REGULATOR

Disconnect the engine stop switch/lighting switch coupler

Start the engine and measure the voltage between the white/yellow and green wire terminals at the main harness side of the coupler.

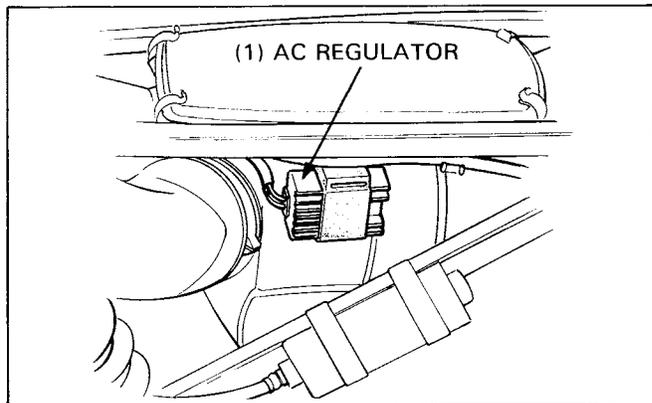
VOLTAGE: '86: 13.5 – 14.5 V
After '86: 12.5 – 13.5 V

If the voltage is not within specifications, check the AC regulator.



Remove the seat/rear fender.

Disconnect the AC regulator, and remove it.

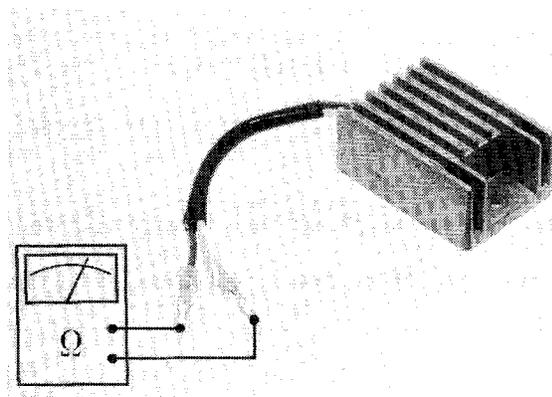


Measure the resistance between the wire terminals.

RESISTANCE: 100 k Ω – ∞

Replace the AC regulator with a new one if the resistance is not within the specifications.

Install the regulator in the reverse order of removal.



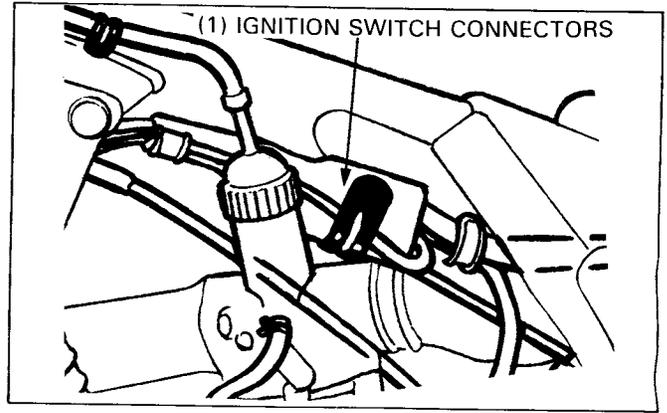
IGNITION SWITCH

After '86:

Remove the seat/rear fender.
 Remove the fuel tank (page 4-3).
 Disconnect the ignition switch wire connectors.
 Check the switch for continuity between the BI/W and G wires.

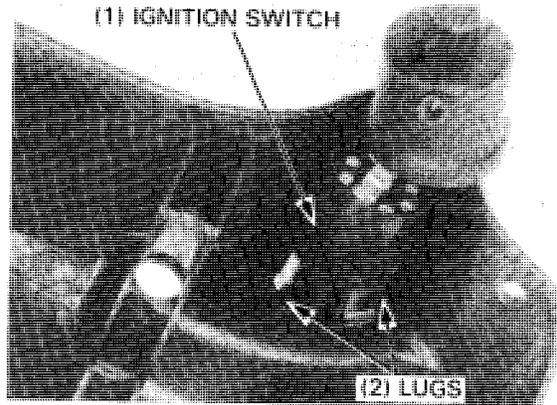
COLOR CODE	BI	G
SWITCH POSITION		
OFF	○	○
•		

The switch is normal if there is continuity with the switch OFF.



REMOVAL

Remove the handlebar cover.
 Remove the fuel tank (page 4-3).
 Disconnect the ignition switch wire connectors.
 Push the lugs on the ignition switch in and remove the switch from the upper cover.



SWITCHES

NOTE

- The engine stop switch, lighting switch and dimmer switch must be replaced as an assembly.

Remove the headlight case and disconnect the headlight coupler and the engine stop switch/lighting switch wire coupler and connector.
 Continuity should exist between the color coded wires in each chart.

ENGINE STOP SWITCH

COLOR CODE	BLACK/WHITE	GREEN
SWITCH POSITION		
OFF	○	○
RUN		

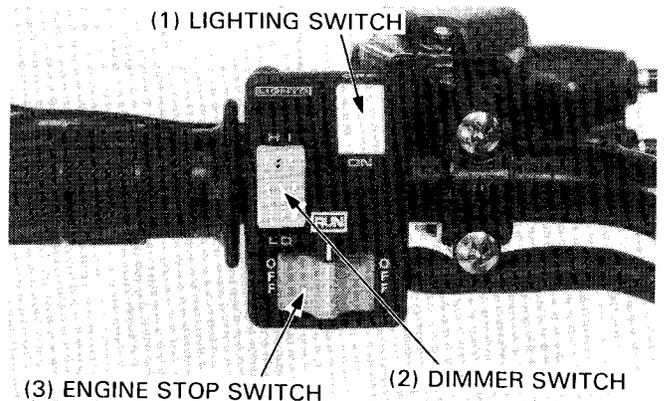
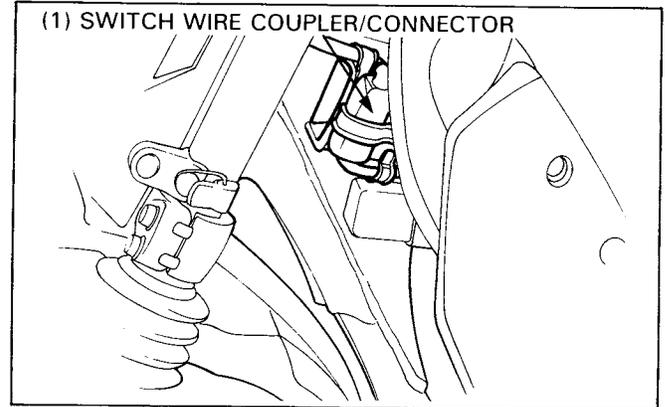
LIGHTING SWITCH

COLOR CODE	WHITE/YELLOW	BROWN
SWITCH POSITION		
OFF		
ON	○	○

DIMMER SWITCH

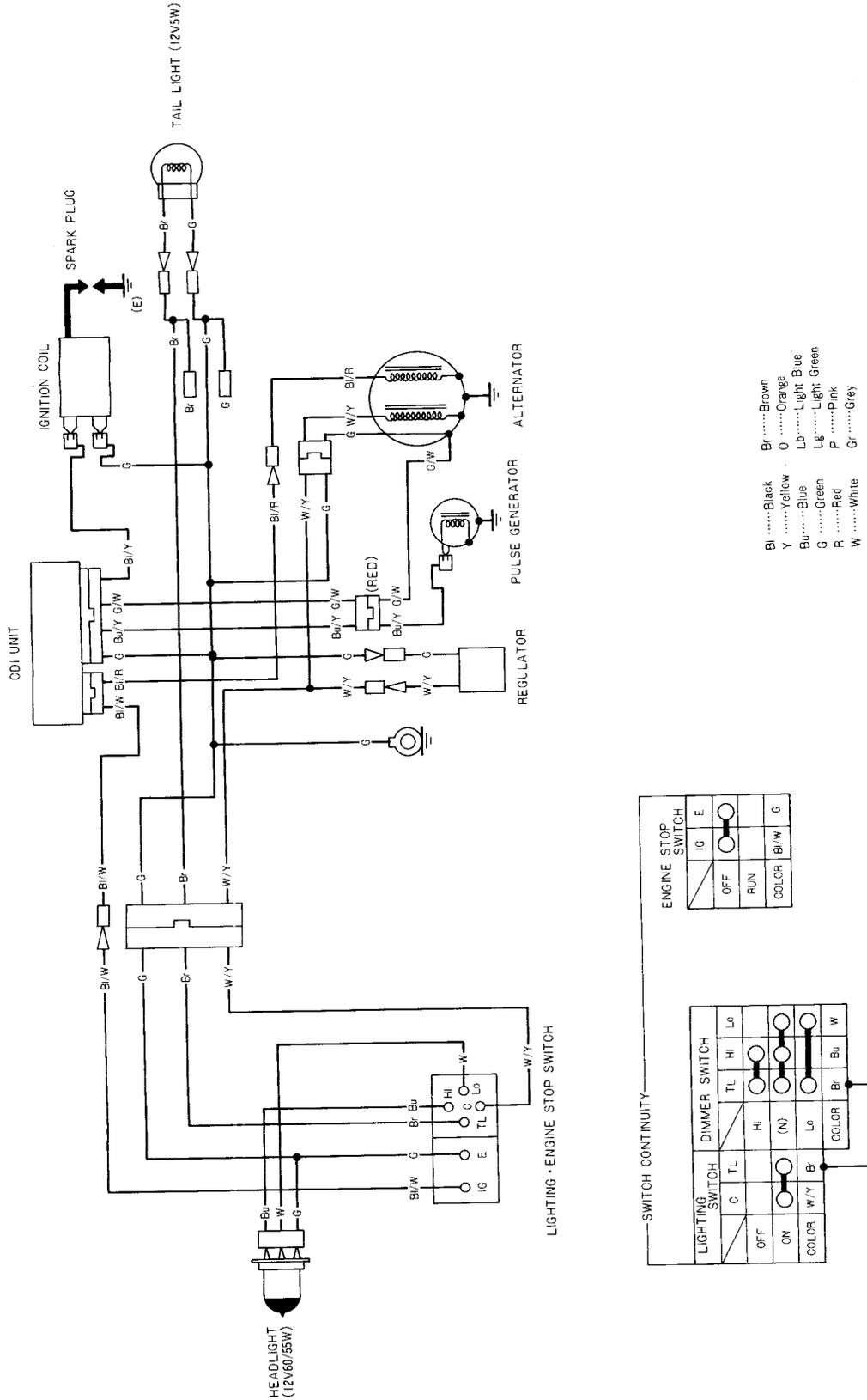
COLOR CODE	BROWN	BLUE	WHITE
SWITCH POSITION			
HI	○	○	
(N)	○	○	○
Lo	○		○

(1) INTERNAL CONNECTION

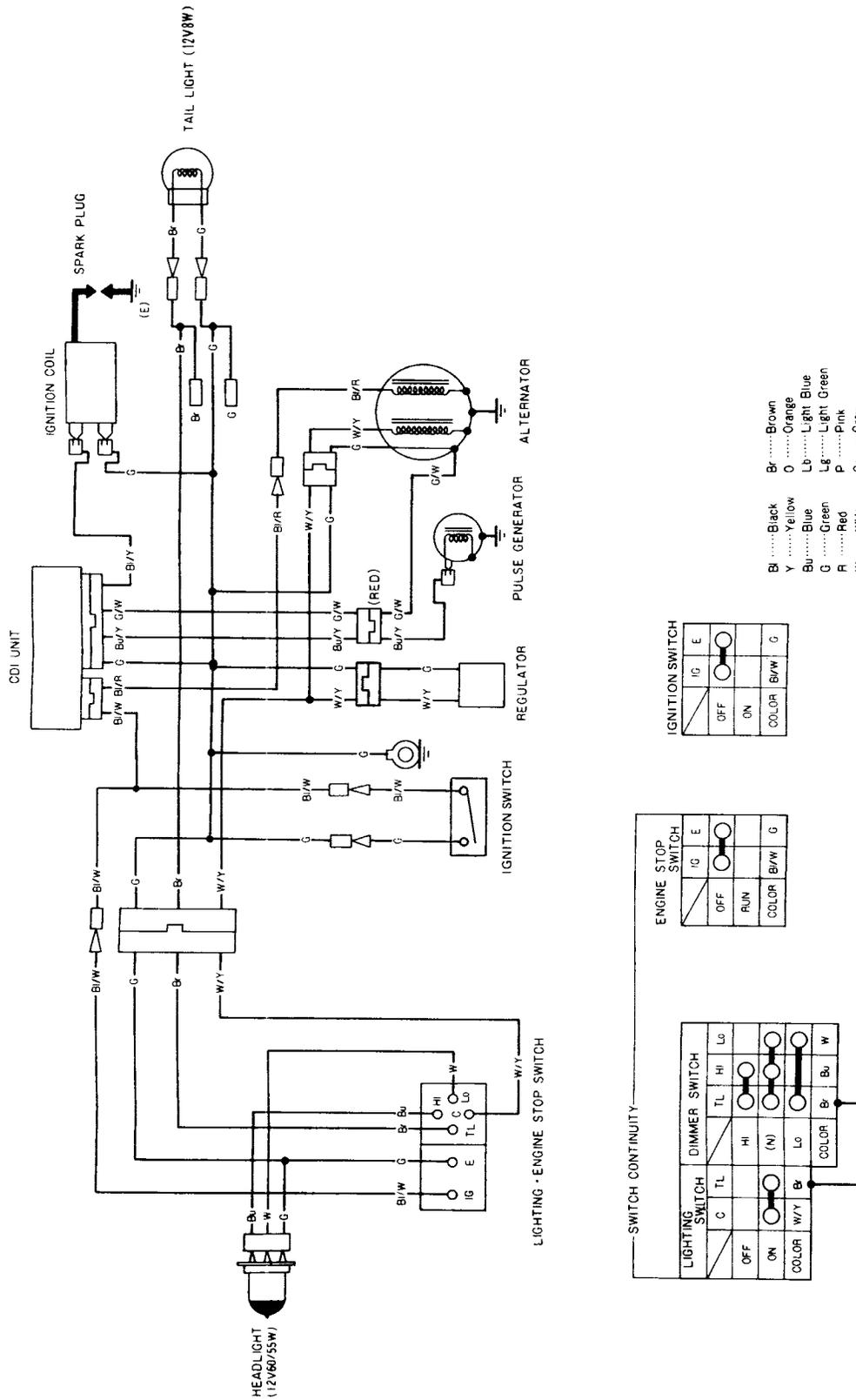


WIRING DIAGRAMS

'86:



After '86:



- BlBlack
- YYellow
- BuBlue
- GGreen
- RRed
- WWhite
- BrBrown
- OOrange
- LbLight Blue
- LgLight Green
- PPink
- GrGrey

IGNITION SWITCH

	IG	E
OFF	ON	
	COLOR	B/W G

ENGINE STOP SWITCH

	IG	E
OFF	RUN	
	COLOR	B/W G

SWITCH CONTINUITY

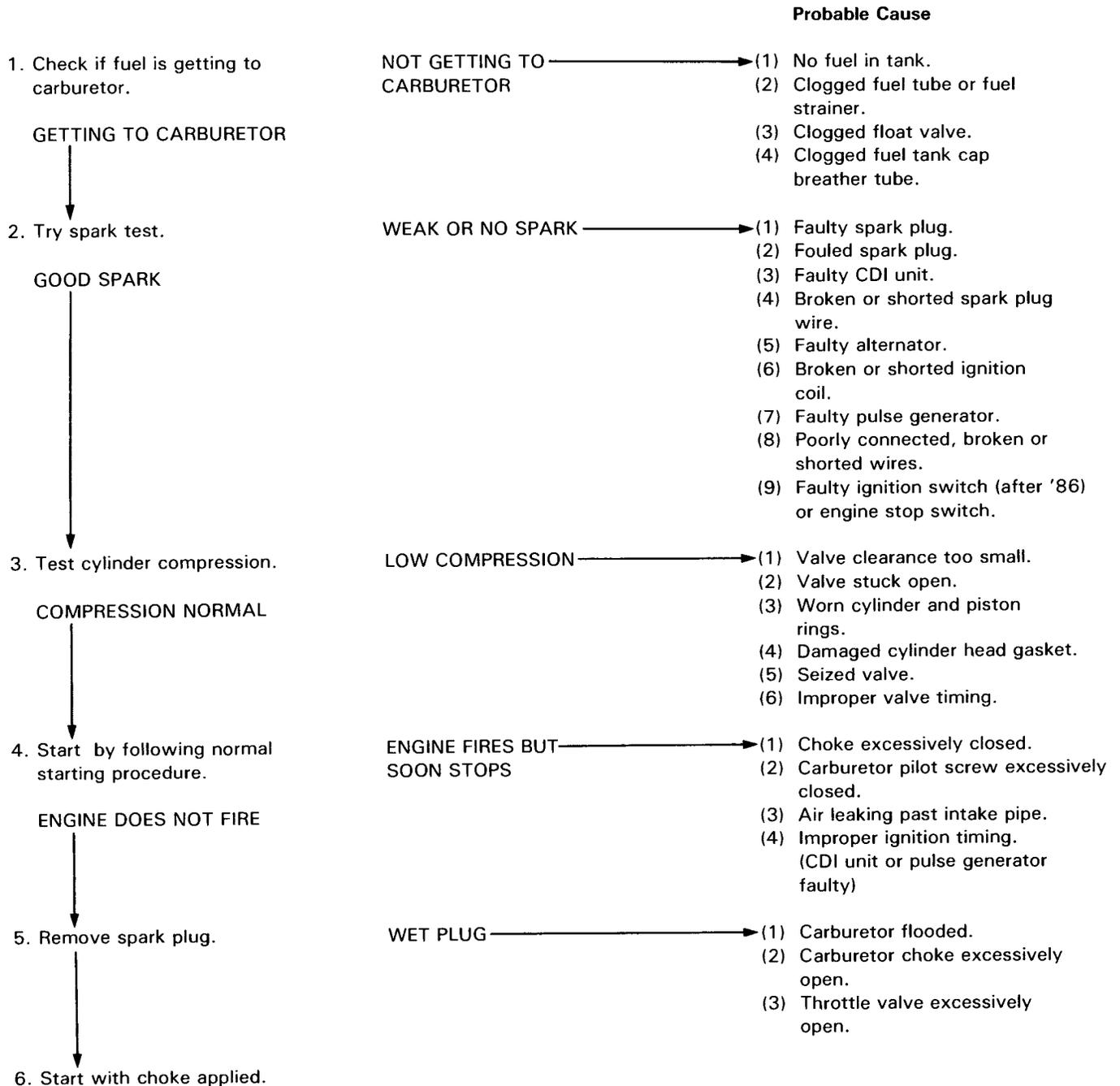
LIGHTING SWITCH	C	TL			
	OFF	ON	(N)	Lo	
	COLOR	W/Y	Br		
DIMMER SWITCH	TL	Hi	Lo		
	Hi	(N)	Lo		
	COLOR	W/Y	Br	Bu	W

00307-HB5-6700

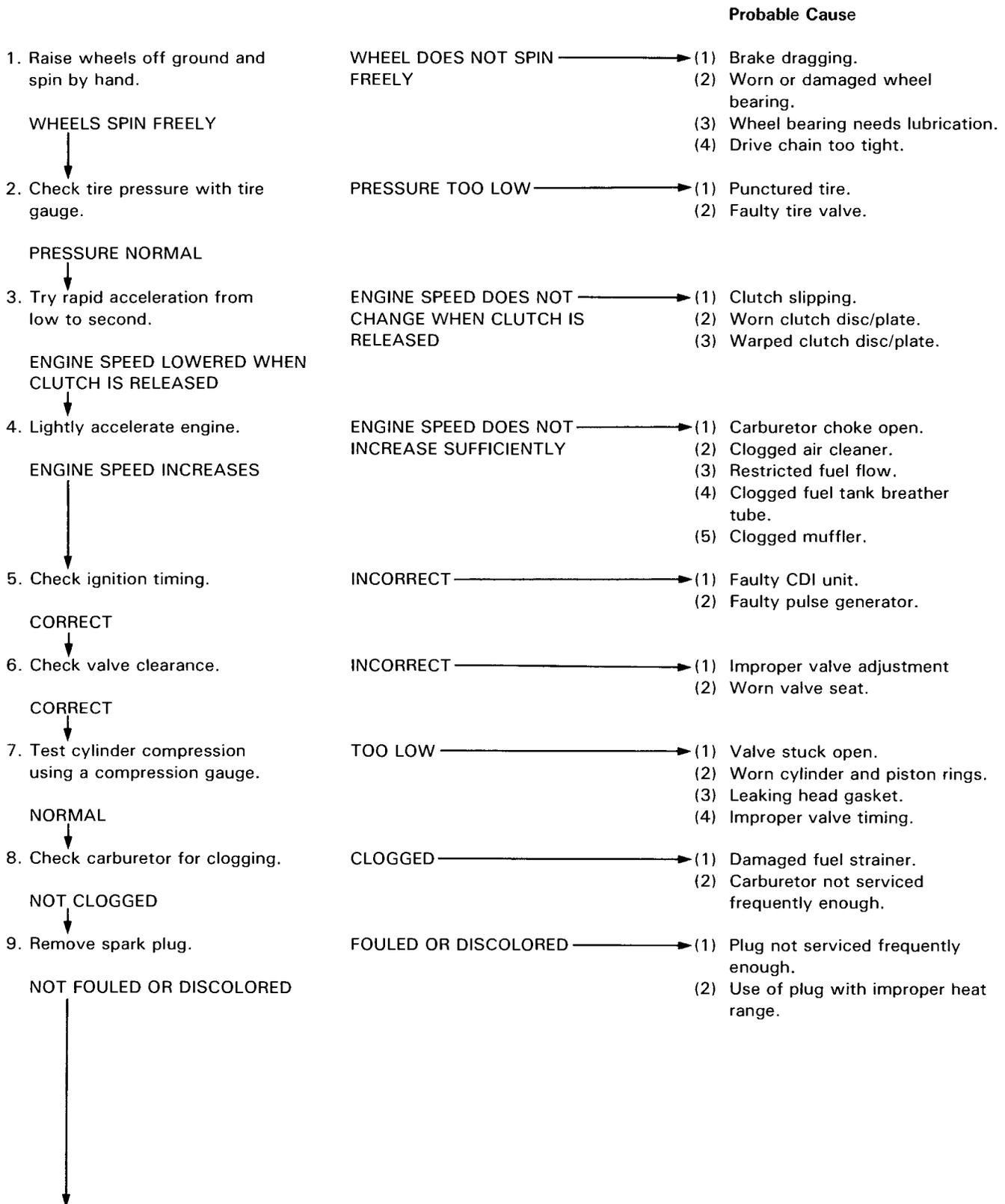
17. TROUBLESHOOTING

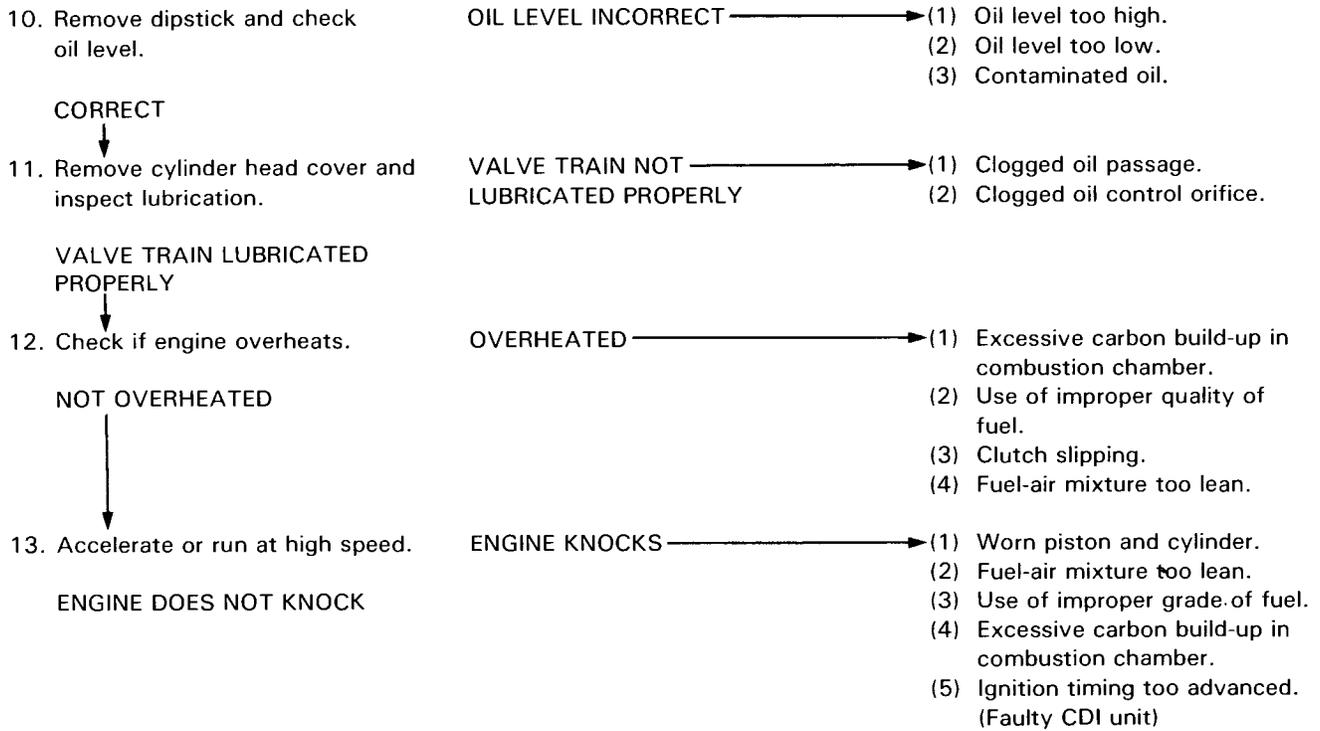
ENGINE DOES NOT START OR IS HARD TO START	17-1	POOR PERFORMANCE AT HIGH SPEEDS	17-4
ENGINE LACKS POWER	17-2	POOR HANDLING	17-4
POOR PERFORMANCE AT LOW AND IDLE SPEEDS	17-3		

ENGINE DOES NOT START OR IS HARD TO START

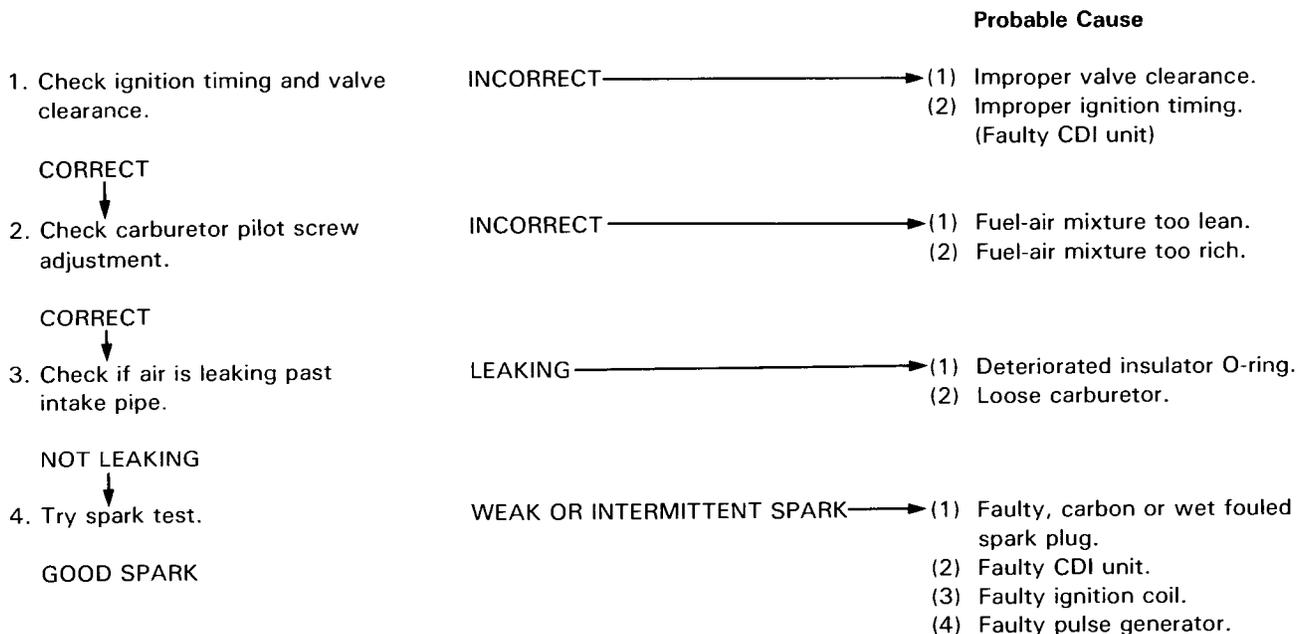


ENGINE LACKS POWER

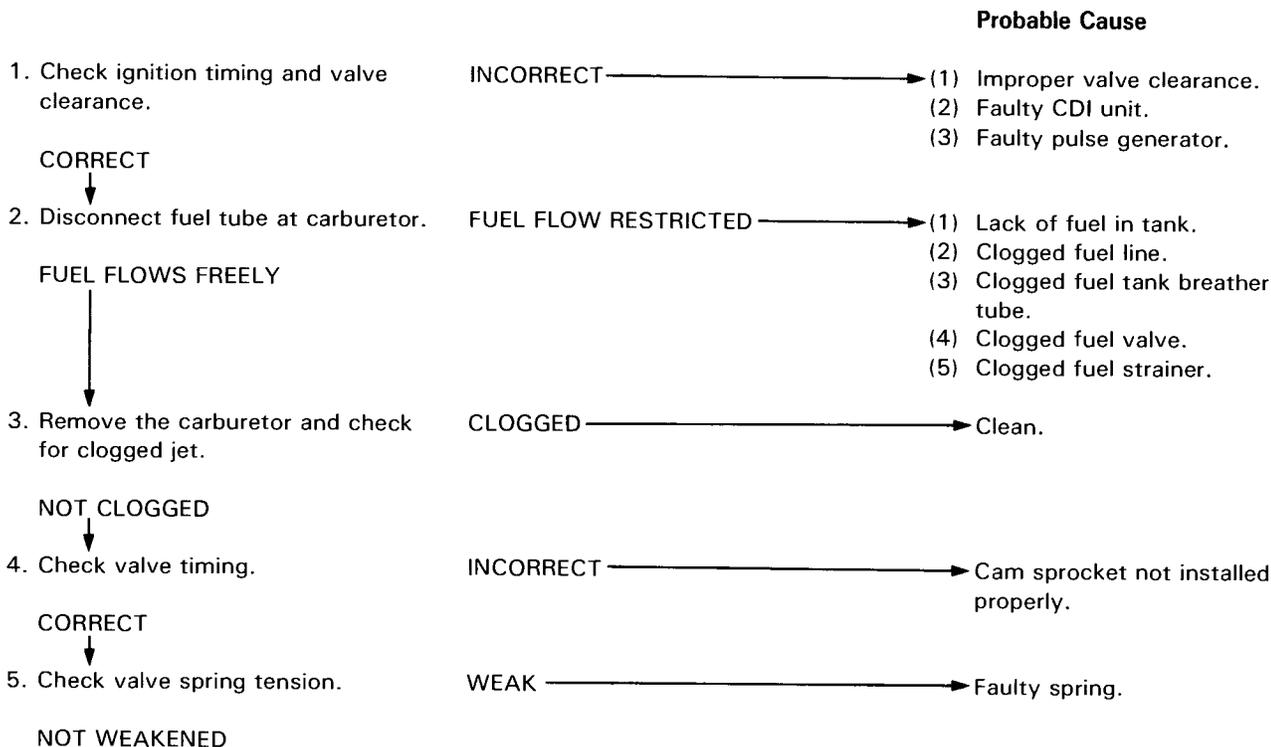




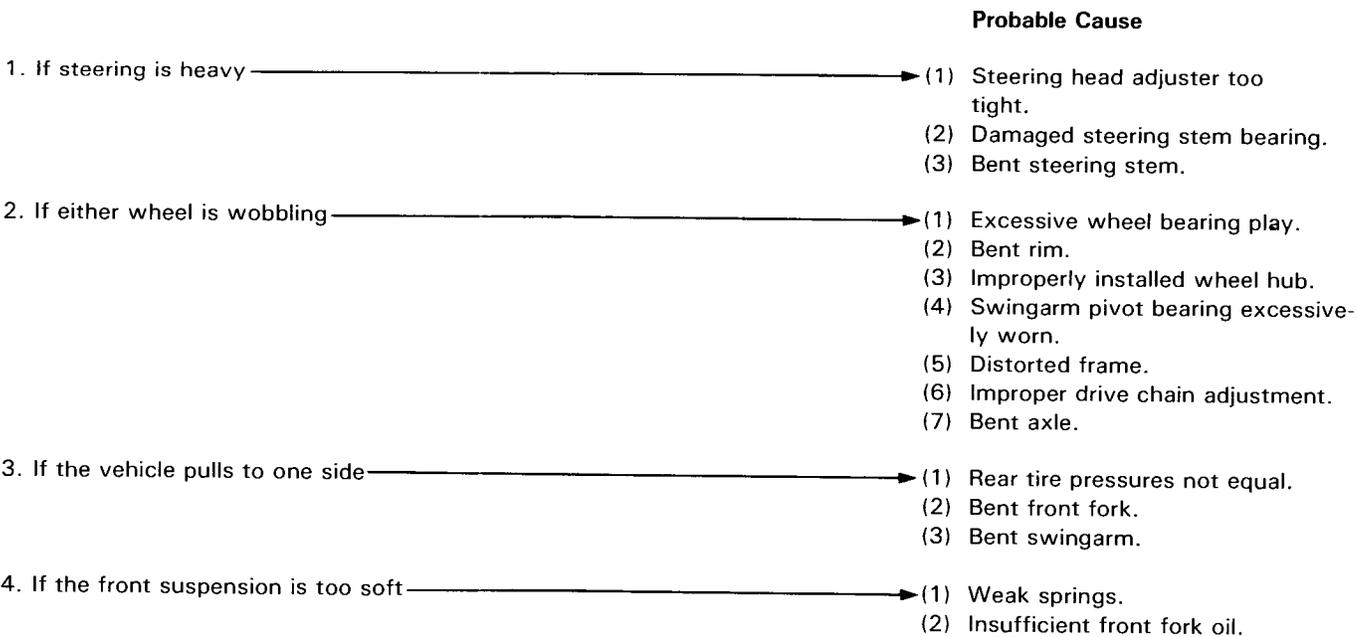
POOR PERFORMANCE AT LOW AND IDLE SPEEDS



POOR PERFORMANCE AT HIGH SPEEDS



POOR HANDLING ————— Check tire pressure



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