HONDA

SERVICE MANUAL

86-95

XR250R

IMPORTANT SAFETY NOTICE

WARNING ***Indicates a strong possibility of severe personal injury or death 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 pernonnel 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 methods or tools selected.

HOW TO USE THIS MANUAL

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

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

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

If you don't know what the source of the trouble is, refer to section 18, Troubleshooting.

CONTENTS

1. GENERAL INFORMATION

GENERAL SAFETY

WARNING

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

WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in your working area or where gasoline is stored.

Brake dust may contain asbestos.

WARNING

Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by airborne asbestos fibers.

The shock absorber has a gas-filled reservoir.

WARNING

- ***Use only nitrogen to pressurize the shock absorber. The use of anstable gas can cause a fire or explosion resulting in serious injury.***
- ***The rear shock absorber contains nitrogen 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.***

CAUTION

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods.
Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

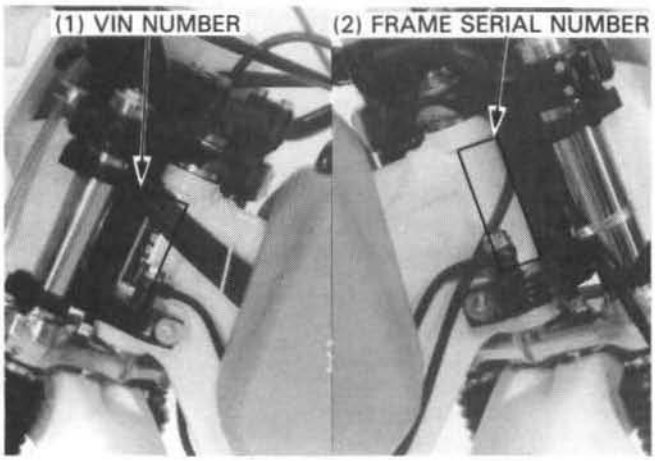
SERVICE RULES

- Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that do not meet HONDA's design specifications may damage the motorcycle.
- Use the special tools designed for this product.
- Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
- When torquing bolts or nuts, begin with the larger-diameter or inner bolts first, and tighten to the specified torque diagonally, unless a particular sequence is specified.
- Clean parts in non-flammable or high flash point solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
- After reassembly. check all parts for proper installation and operation.
- Use only metric tools when servicing this motorcycle. Metric bolts, nuts, and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the motorcycle.
- Route all electrical wires as shown on pages 1-9 through 1-12, Cable and Harness Routing, and away from sharp edges and areas where they might be pinched between moving parts.

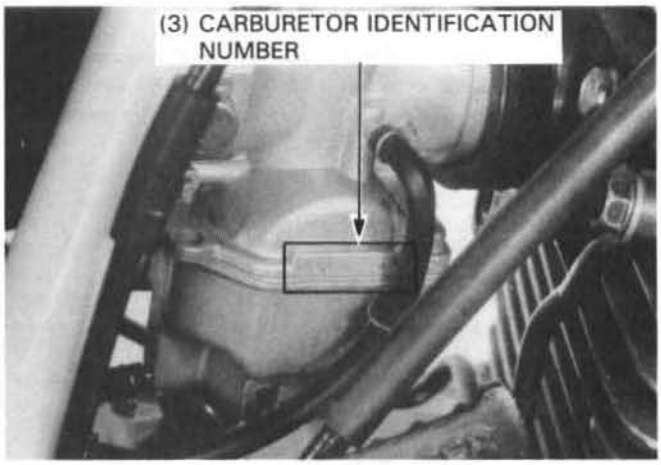
MODEL IDENTIFICATION

'86 shown: '87–'89 similar

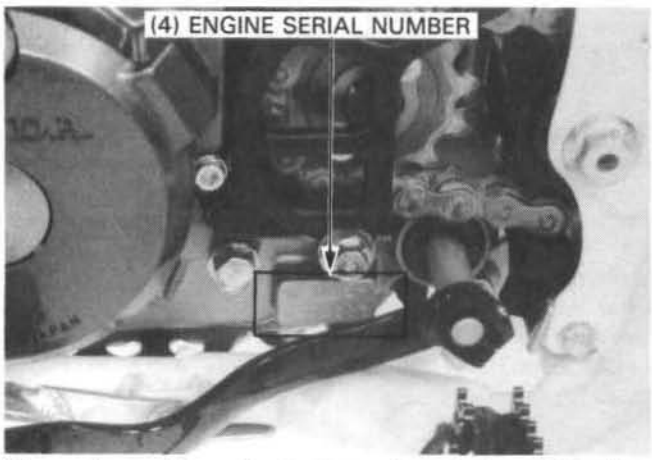
'90 shown:



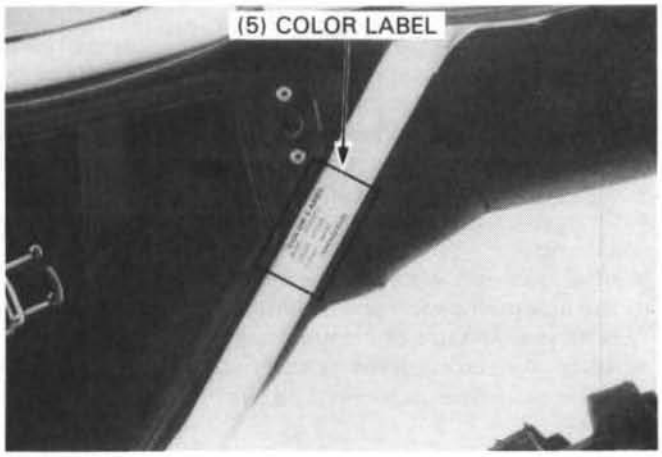
The vehicle identification number (VIN) is on the left side of the steering head.
The frame serial number is stamped on the right side of the steering head.



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



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



The color code label is attached on the left frame tube under the seat. When ordering a color coded part, always specify its designated color code.

SPECIFICATIONS

ITEM			SPECIFICATION
DIMENSIONS	Overall length	('86–'91:)	2,100 mm (82.7 in)
		(After '91:)	2,110 mm (83.1 in)
	Overall width	('86–'91:)	910 mm (35.8 in)
		(After '91:)	900 mm (35.4 in)
	Overall height	('86–'91:)	1,226 mm (48.3 in)
		(After '91:)	1,220 mm (48.0 in)
	Ground clearance	('86–'91:)	326 mm (12.8 in)
		(After '91:)	325 mm (12.8 in)
	Wheel base	('86–'91:)	1,424 mm (56.1 in)
		(After '91:)	1,415 mm (55.7 in)
	Seat height		925 mm (36.4 in)
	Foot peg height		420 mm (16.5 in)
	Dry weight	('86–'91:)	108.6 kg (239.4 lb)
		(After '91:)	108 kg (238.1 lb)
FRAME	Type		Semi double cradle
	Front suspension, travel		Telescopic 280 mm (11.0 in)
	Rear suspension, travel		Pro-link 280 mm (11.0 in)
	Front tire size, pressure		80/100–21 51M, 100 kPa (1.0 kg/cm², 15 psi)
	Rear tire size, pressure		110/100–18 64M, 100 kPa (1.0 kg/cm², 15 psi)
	Front brake, swept area		Disc, dual piston caliper, 342.8 cm² (53.13 sq.in)
	Rear brake, lining area ('86-'89:)		Internal expanding shoes, 86.3 cm² (13.38 sq.in)
	Rear brake, swept area (After '89)		Single disc, 303 cm² (47.0 sq. in)
	Fuel capacity		9.0 lit (2.38 U.S. gal, 1.98 Imp gal)
	Fuel reserve capacity		2.0 lit (0.53 U.S. gal, 0.44 Imp gal)
	Caster		64° 12'
	Trail		100 mm (3.9 in)
	Fork oil capacity (per leg; '86–'89)		535 cc (18.1 US oz, 18.8 Imp oz)
	(per leg; After '89)		492 cc (16.6 US oz, 17.3 Imp oz)
ENGINE	Type		Gasoline, air-cooled 4-stroke SOHC
	Cylinder arrangement		Single cylinder inclined 15°
	Bore and stroke		73.0 x 59.5 mm (2.87 x 2.34 in)
	Displacement		249 cc (15.2 cu in)
	Compression ratio		10.2 : 1
	Valve train		4-valve, single chain driven SOHC
	Maximum horsepower		24.9 PS/8,000 rpm
	Maximum torque		2.33 kg-m/7,000 rpm
	Oil capacity		1.6 lit (1.70 U.S. qt, 1.41 Imp qt)
	Lubrication system		Forced pressure and wet sump
	Air filtration system		Oiled polyurethane foam
	Cylinder compression	('86–'91:)	1300–1500 kPa (13.0–15.0 kg/cm², 184.9–213.3 psi)
		(After '91:)	1200–1300 kPa (12.0–13.0 kg/cm², 170.7–184.9 psi)
	Intake valve	Opens	10° (BTDC) at 1 mm lift
		Closes	40° (ABDC) at 1 mm lift
	Exhaust valve	Opens	40° (BBDC) at 1 mm lift
		Closes	10° (ATDC) at 1 mm lift
	Valve clearance	Intake	0.05 mm (0.002 in)
		Exhaust	0.08 mm (0.003 in)
CARBURETOR	Type		Piston valve
	I.D. number	('86–'91:)	PD05A
		(After '91:)	PD05B
	Main jet		#125
	Slow jet		#40
	Pilot screw initial opening		2-1/4 turns out
	Float level		12.5 mm (0.50 in)
	Idle speed		1,300 ± 100 rpm

ITEM			SPECFICATION
DRIVE TRAIN	Clutch		Wet multi-plate
	Transmission		6-speed constant mesh
	Primary reduction		3.100:1
	Gear ratio I		2.769:1
	Gear ratio II		1.941:1
	Gear ratio III		1.450:1
	Gear raio IV		1.174:1
	Gear ratio V		0.960:1
	Gear ratio VI		0.815:1
	Final reduction		3.692:1
	Gear shift pattern		Left foot operated return system 1−N−2−3−4−5−6
ELECTRICAL	Ignition		CDI
	Ignition timing	Initial	8° BTDC at 1,300 ± 100 rpm (F mark)
		Full advance	28° ± 2° BTDC at 4,300 rpm
	Alternator		AC generator 100W/5,000 rpm
	Spark plug		
		Standard	DPR9Z (NGK) X27GPR-U (NIPPONDENSO)
		For cold climate (below 5°C/41°F)	DPR8Z (NGK) X24GPR-U (NIPPONDENSO)
	Spark plug gap		0.6−0.7 mm (0.024−0.028 in)
	Headlight		12V/35W
	Taillight	('86−'91:)	3.4W
		(After '91:)	3.8W

TORQUE VALUES

ENGINE

Item	QTY	Thread dia. mm	TORQUE N·m	TORQUE kg-m	TORQUE ft-lb
Cylinder head bolt (10 mm)	4	10	37–43	3.7–4.3	27–31
(6 mm)	2	6	10–14	1.0–1.4	7–10
Cam sprocket bolt	2	7	18–22	1.8–2.2	13–16
Cylinder head cover bolt (6 mm)	12	6	10–14	1.0–1.4	7–10
(8 mm)	1	8	20–26	2.0–2.6	15–20
Rocker arm shaft	2	–	25–30	2.5–3.0	18–22
Sub-rocker arm shaft IN	2	–	25–30	2.5–3.0	18–22
Sub-rocker arm shaft EX	2	–	20–25	2.0–2.5	15–18
Valve adjusting screw lock nut	4	6	21–25	2.1–2.5	16–18
Cylinder bolt	4	10	37–43	3.7–4.3	27–31
Oil pass pipe bolt	3	6,7	8–12	0.8–1.2	6– 9
Clutch lock nut	1	16	55–65	5.5–6.5	42–49
Drive gear lock nut	1	18	55–65	5.5–6.5	42–49
Right crankcase cover bolt	10	6	10–14	1.0–1.4	7–10
Gearshift cam bolt	1	6	10–14	1.0–1.4	7–10
Shift drum stopper arm bolt	1	6	22–26	2.2–2.6	16–19
Flywheel bolt	1	12	100–110	10.0–11.0	72–80
Crankcase bolt	12	6	10–14	1.0–1.4	7–10
Oil drain plug	1	12	20–30	2.0–3.0	14–22
Oil filter cover	3	6	8–12	0.8–1.2	6–9
Left crankcase cover bolt	7	6	10–14	1.0–1.4	7–10
Spark plug	1	–	15–20	1.5–2.0	11–14

FRAME

Item	QTY	Thread dia. mm	TORQUE N·m	TORQUE kg-m	TORQUE ft-lb
Steering stem nut	1	24	95–140	9.5–14.0	69–101
Steering bearing adjustment nut	1	26	1–2	0.1–0.2	0.7–1.4
Handlebar upper holder	4	8	24–30	2.4–3.0	17–22
Handlebar lower holder	4	8	22–30	2.2–3.0	16–22
Fork upper pinch bolt	4	8	25–30	2.5–3.0	18–22
Fork lower pinch bolt	4	8	30–35	3.0–3.5	21–25
Front axle holder	4	6	10–14	1.0–1.4	7–10
Front axle nut	1	12	50–80	5.0–8.0	36–58
Rear axle nut	1	16	80–110	8.0–11.0	58–80
Final driven sprocket bolt ('86–'89:)	6	8	27–33	2.7–3.3	20–24
(AFTER '89:)	6	8	32–38	3.2–3.8	23–27
Swingarm pivot bolt	1	14	80–100	8.0–10.0	58–72
Rear shock absorber mounting bolt (upper)	1	10	40–50	4.0–5.0	29–36
(lower)	1	10	30–40	3.0–4.0	22–29
Swingarm-to-shock arm bolt	1	12	60–80	6.0–8.0	43–58
Shock link-to-flame bolt	1	10	40–50	4.0–5.0	29–36
Shock link-to-shock arm bolt	1	10	40–50	4.0–5.0	29–36
Brake caliper bolt	2	8	24–30	2.4–3.0	17–22
Front brake disc ('86–'89:)	4	6	14–16	1.4–1.6	10–12
(AFTER '89:)	4	6	18–22	1.8–2.2	13–16
Rear brake disc (AFTER '89:)	4	6	40–45	4.0–4.5	29–33
Brake hose bolt (master cylinder)	1	10	30–40	3.0–4.0	22–29
(caliper)	1	10	30–40	3.0–4.0	22–29
Spoke nipple	–	B.C.3.5	2.5–5.0	0.25–0.50	1.8–3.6
Caliper bleeder valve	1	8	4–7	0.4–0.7	3–5
Master cylinder bleeder valve ('86–'89:)	1	8	4–7	0.4–0.7	3–5
Caliper pad pin	2	10	15–20	1.5–2.0	11–14
Pad pin plug (AFTER '89:)	2	10	2–3	0.2–0.3	1.4–2.2
Damper rod end nut	1	12	24–29	2.4–2.9	17–21
Reservoir damping valve	1	24	25–35	2.5–3.5	18–25
Rim lock	2	8	10–15	1.0–1.5	7–11

FRAME

Item	QTY	Thread dia. mm	TORQUE N·m	TORQUE kg-m	TORQUE ft-lb
Gearshift pedal bolt ('86–'89:)	1	6	14–18	1.4–1.8	10–13
(AFTER '89:)	1	6	10–14	1.0–1.4	7–10
Brake caliper pin bolt (upper: '86–'88:)	1	8	20–25	2.0–2.5	14–18
(lower: '86–'88:)	1	8	15–20	1.5–2.0	11–14
Front brake lever adjuster lock nut	1	5	5–7	0.5–0.7	3.6–5.0
Rear brake arm bolt ('86–'89)	1	6	8–12	0.8–1.2	6–9
Fork cap bolt	2	38	25–35	2.5–3.5	18–25
Fork bottom bolt	2	18	60–84	6.0–8.4	43–61
Fork drain bolt	2	4	1.0–2.0	0.10–0.20	0.7–1.4
Rear shock absorber hose joint bolt	1	10	25–35	2.5–3.5	18–25
Swingarm chain adjuster holder nut	2	10	30–40	3.0–4.0	22–29
Swingarm brake spring hook bolt	1	5	4.5–6.0	0.45–0.60	3.3–4.3
Rear shock absorber spring adjuster lock nut	1	48	40–50	4.0–5.0	29–36
Right foot peg (10 mm)	1	10	50–60	5.0–6.0	36–43
(12 mm)	1	12	80–100	8.0–10.0	58–72
Kickstarter pedal	1	8	20–30	2.0–3.0	14–22
Fuel valve mounting screw ('86–'89:)	2	6	8–12	0.8–1.2	6–9
(AFTER '89:)	2	6	10–14	1.0–1.4	7–10
Side stand pivot nut	1	10	35–45	3.5–4.5	25–33
Exhaust pipe protector ('86–'91:)	2	6	10–14	1.0–1.4	7–10
(After '91:)	2	6	15–21	1.5–2.1	11–15
Exhaust pipe joint nut	2	6	8–12	0.8–1.2	6–9
Engine hanger bolt (8 mm)	6	8	24–30	2.4–3.0	17–22
(10 mm: '86–'89:)	5	10	35–45	3.5–4.5	25–33
(10 mm: AFTER '89:)	5	10	60–70	6.0–7.0	43–51
Oil pipe bolt ('86–'91:)	2	12	16–20	1.6–2.0	12–14
(After '91:)	2	12	32–40	3.2–4.0	23–29
Muffler mounting bolt (front)	1	8	30–35	3.0–3.5	22–25
(rear) ('86–'89:)	1	10	35–45	3.5–4.5	25–33
(rear) (After '89:)	1	10	60–70	6.0–7.0	43–51
Muffler clamp bolt	1	8	15–25	1.5–2.5	11–18

Torque specifications listed above are for specific tightening points. If a specification is not listed, follow the standards 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 (0.35–0.5, 2.5–3.6)
6 mm bolt, nut	8–12 (0.8–1.2, 6–9)	6 mm screw	7–11 (0.7–1.1, 5–8)
8 mm bolt, nut	18–25 (1.8–2.5, 13–18)	6 mm bolt with 8 mm head	7–11 (0.7–1.1, 5–8)
10 mm bolt, nut	30–40 (3.0–4.0, 22–29)	6 mm flange bolt, nut	10–14 (1.0–1.4, 7–10)
12 mm bolt, nut	50–60 (5.0–6.0, 36–43)	8 mm flange bolt, nut	24–30 (2.4–3.0, 17–22)
		10 mm flange bolt, nut	35–45 (3.5–4.5, 25–32)

TOOLS

SPECIAL

DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL/NUMBER	REF. TO PAGE
Compression gauge attachment	07908–KK60000	–or equivalent commercially	3-10
Clutch center holder	07923–KE10000	available in U.S.A.	8-5, 14
Crankcase assembly tool	07965–VM00000	–not available in U.S.A.	10-9
–assembly collar	07965–VM00100	–07964–MB00200 (U.S.A. only)	10-9
–thread shaft	07965–VM00200	–07931–ME4000A (U.S.A. only)	10-9
–thread adapter	07965–VM00300	–07931–KF00200 (U.S.A. only)	10-9
Universal bearing puller	07631–0010000	–or equivalent commercially available in U.S.A.	10-4
Bearing remover, 15 mm	07936–KC10000	–not available in U.S.A.	10-6
–remover assy, 15 mm	07936–KC10500		10-6
–remover head, 15 mm	07936–KC10200	–not available in U.S.A.	10-6
–remover shaft, 15 mm	07936–KC10100		10-6
–remover sliding weight	07741–0010201	–07934–3710200	10-6
Valve guide reamer	07984–2000000	–07984–200000A	6-10
Slider weight	07947–KA50100	–07936–3710200	12-16
Seal driver attachment	07947–KF00100		12-16
Fork tube holder	07930–KA50000	–not available in U.S.A.	12-13
–tube holder handle	07930–KA40200		12-13
–holder attachment	07930–KA50100	–equivalent commercially available in U.S.A.	12-13
Stem socket wrench	07916–KA50100		12-18, 20
Ball race remover	07953–4250002	–07953–MJ1000A	12-19
Steering stem driver	07946–4300101	–07946–MB00000 and GN-HT-54 (U.S.A. only)	12-20
Needle bearing remover	07931–MA70000		13-27
Spherical bearing driver	07946–KA30200	–not available in U.S.A.	13-24, 31
Driver shaft	07946–MJ00100		13-30
Slider guide, 14 mm	07974–KA40000		13-18
Slider guide attachment	07974–KA30100	–or 07946–MB00000 and GN-HT-54 (U.S.A. only)	13-14
Sleeve collar	07974–KA30201		13-14
Piston base	07958–3000000	–or equivalent commercially available in U.S.A	13-16
Snap ring pliers	07914–3230001		14-7

COMMON

DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL/NUMBER	REF. TO PAGE
Float level gauge	07401–0010000		4-12
Spanner C, 5.8 x 6.1 mm	07701–0020300	–or equivalent commercially available in U.S.A.	3-18
Wrench, 10 x 12 mm	07708–0030200		3-8
Retainer wrench A	07710–0010100		13-5, 7
Retainer wrench body	07710–0010401	–07910–3000000	13-5, 7
Wrench, 30 x 32 mm	07716–0020400		12-18, 21
Extension	07716–0020500	–or equivalent commercially available in U.S.A.	8-5, 14, 12-18, 21
Gear holder	07724–0010100		8-7, 8
Flywheel holder	07725–0040000		9-3
Wrench, 20 x 24 mm	07716–0020100		8-5, 14
Rotor puller	07733–0020001	–07933–3000000	9-3
Timing cap wrench	07709–0010001		3-7, 6-3, 16-7
Attachment, 24 x 26 mm	07746–0010700		13-30
Attachment, 32 x 35 mm	07746–0010100		10-6, 12-9, 13-28
Attachment, 37 x 40 mm	07746–0010200		10-7, 13-6, 13-7

COMMON

DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL/NUMBER	REF. TO PAGE
Attachment, 42 x 47 mm	07746–0010300		10-8, 12-19, 13-6
Attachment, 52 x 55 mm	07746–0010400		10-7
Attachment, 62 x 68 mm	07746–0010500		10-6
Pilot, 15 mm	07746–0040300		10-7, 12-9
Pilot, 17 mm	07746–0040400		10-8, 13-6
Pilot, 20 mm	07746–0040500		10-8, 13-6, 28
Pilot, 22 mm	07746–0041000		10-7
Pilot, 28 mm	07746–0041100		10-6
Driver	07749–0010000		10-6, 12-9, 19, 13-6, 7, 28, 30
Bearing remover head, 15 mm	07746–0050400	or equivalent commercially available in U.S.A.	12-8
Bearing remover shaft	07746–0050100		12-8, 13-5
Bearing remover head, 17 mm	07746–0050500		13-5
Bearing remover head, 20 mm	07746–0050600		13-5
Valve guide driver, 5.5 mm	07742–0010100		6-10
Valve spring compressor	07757–0010000	07957–3290001	6-8, 14

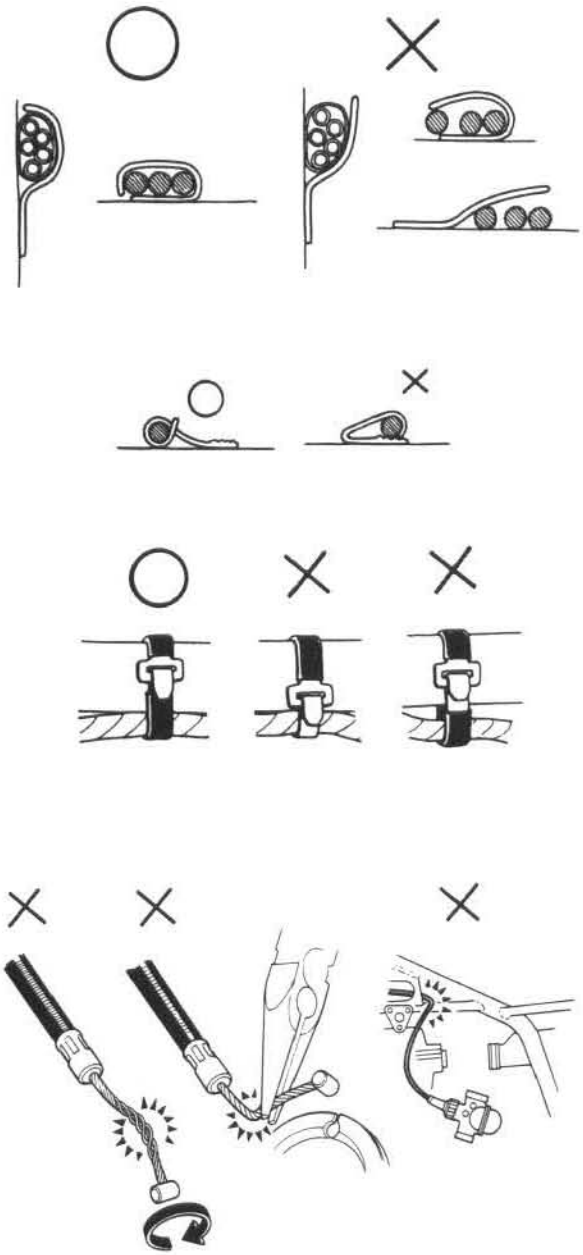
VALVE SEAT CUTTER

DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL/NUMBER	REF. TO PAGE
Seat cutter, 33 mm (45° IN)	07780–0010800	Not available in U.S.A. Equivalent commercially available in U.S.A.	6-12, 13
Seat cutter, 24.5 mm (45° EX)	07780–0010100		6-12, 13
Flat cutter, 33 mm (32° IN)	07780–0012900		6-12, 13
Flat cutter, 25 mm (32° EX)	07780–0012000		6-12, 13
Interior cutter, 30 mm (60° IN/EX)	07780–0014000		6-12, 13
Cutter holder, 5.5 mm	07781–0010101		6-11

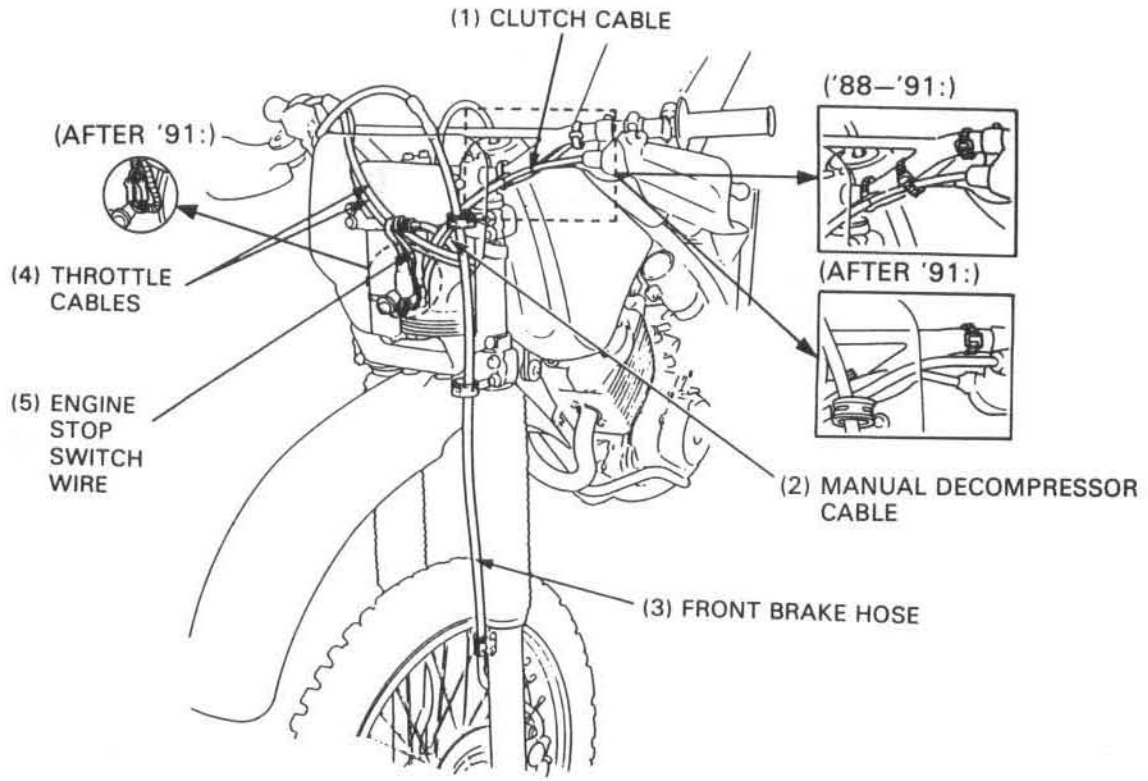
CABLE & HARNESS ROUTING

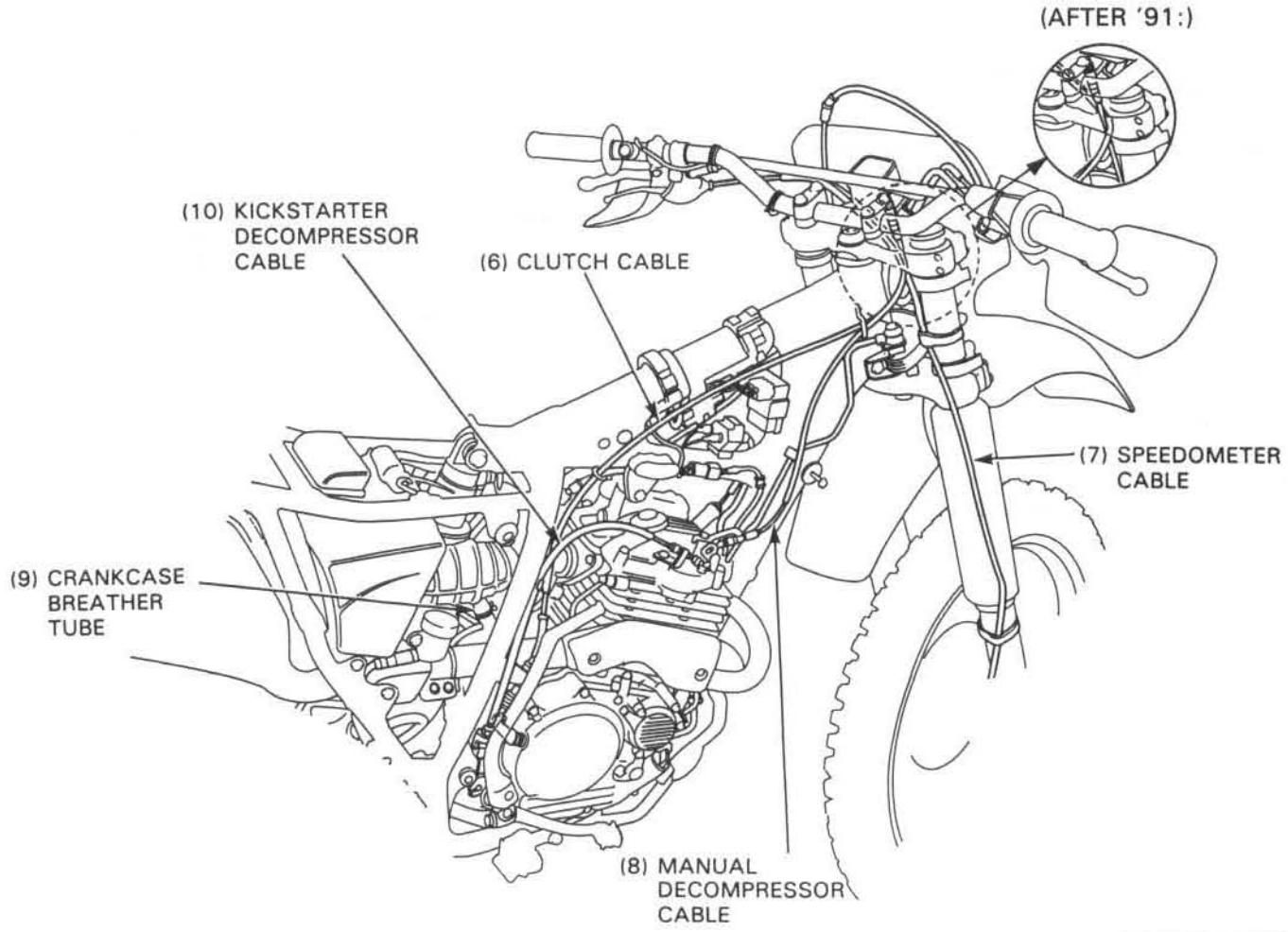
Note the following when routing cables and wire harnesses:

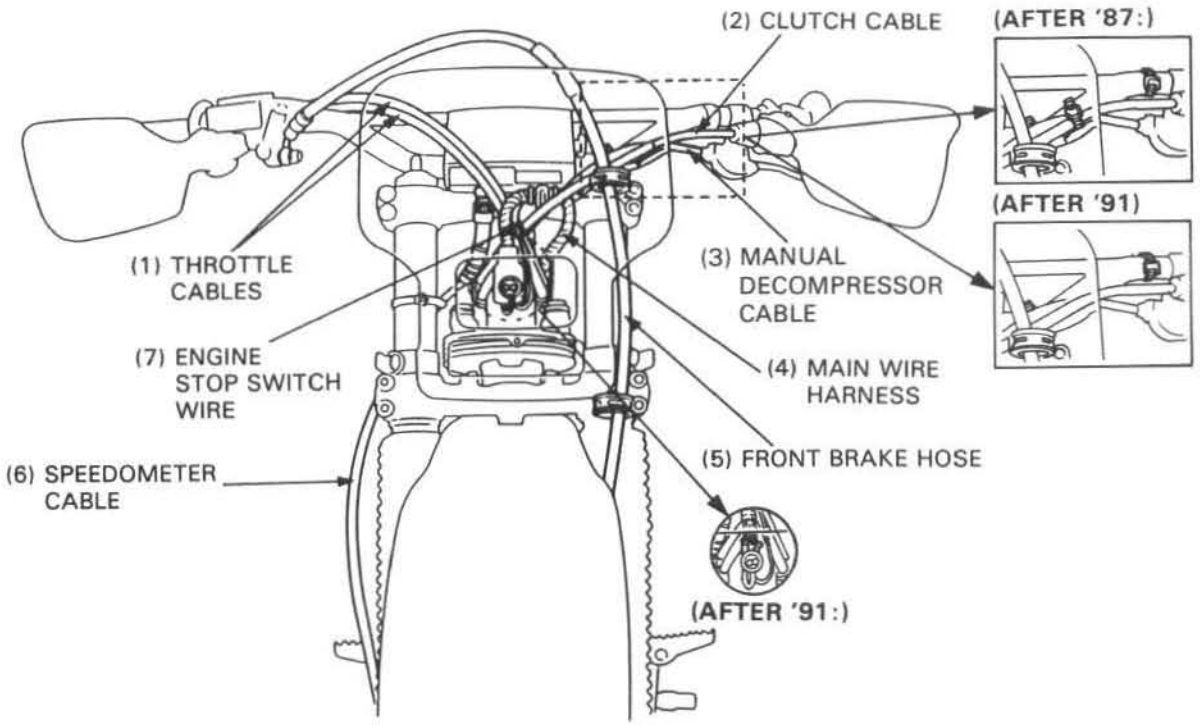
- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze a wire against a weld or the end of its clamp.
- Secure wires and wire harnesses to the frame with their respective bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harneses.
- Route harnesses so they are not pulled taut or have excessive slack.
- Protect wires and harnesses with electrical tape or tubing where they contact a sharp edge or corner. Clean all surfaces thoroughly before applying tape.
- Do not use wires or harnesses with damaged insulation. Repair the wires by wrapping them with protective tape, or replace them.
- Route wire harnesses to avoid sharp edges or corners.
- Avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipes and other hot parts.
- Be sure grommets are seated in their grooves properly.
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts.
- After routing, check that the wire harnesses are not twisted or kinked.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, or interfere with adjacent or surrounding parts in any steering position.
- Do not bend or twist control cables.
  Damaged control cables will not operate smoothly and may stick or bind.

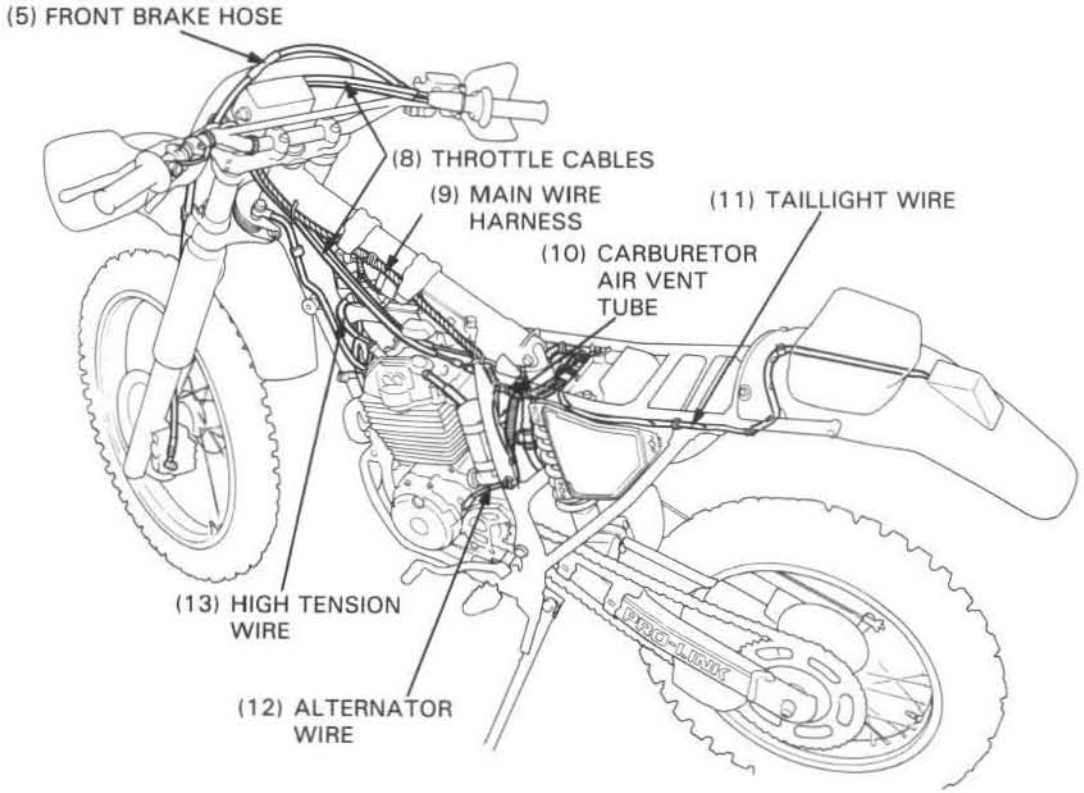


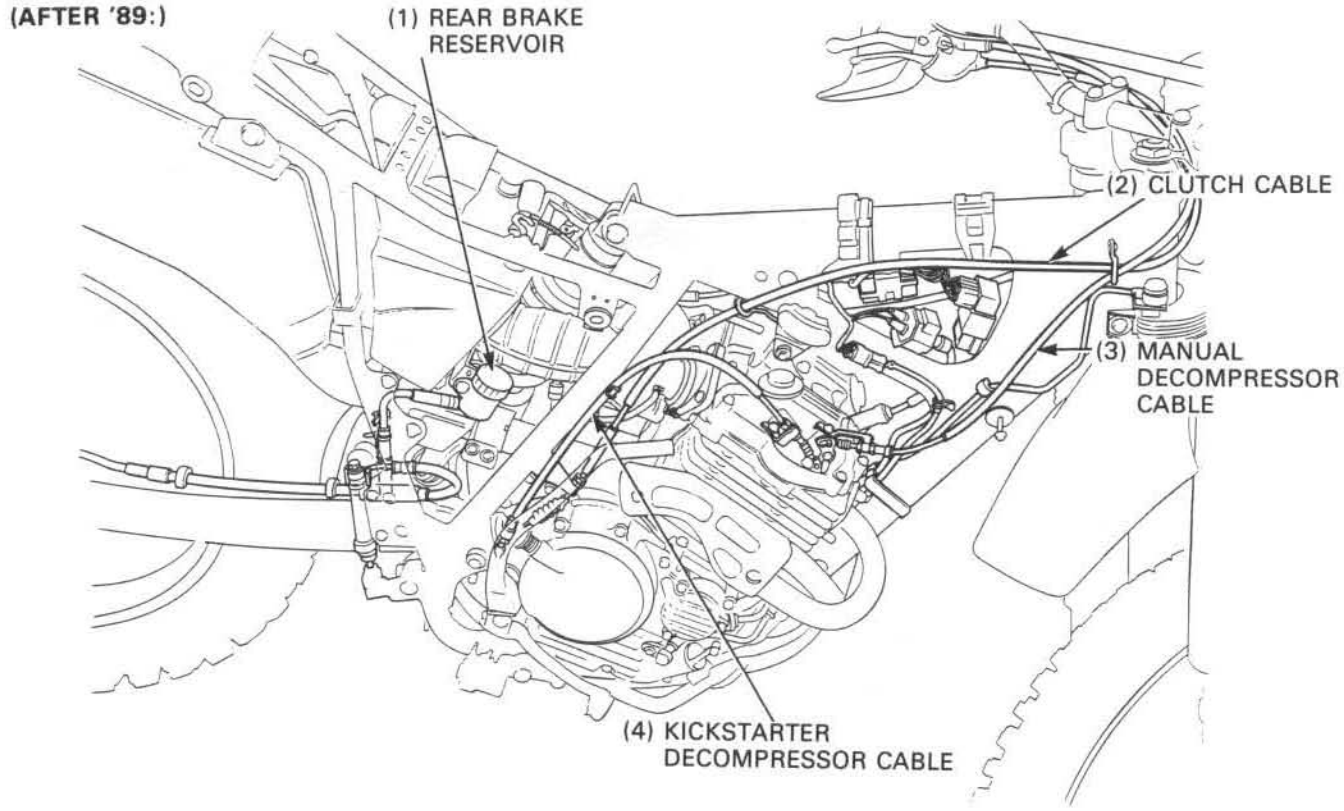
O : CORRECT
X : INCORRECT

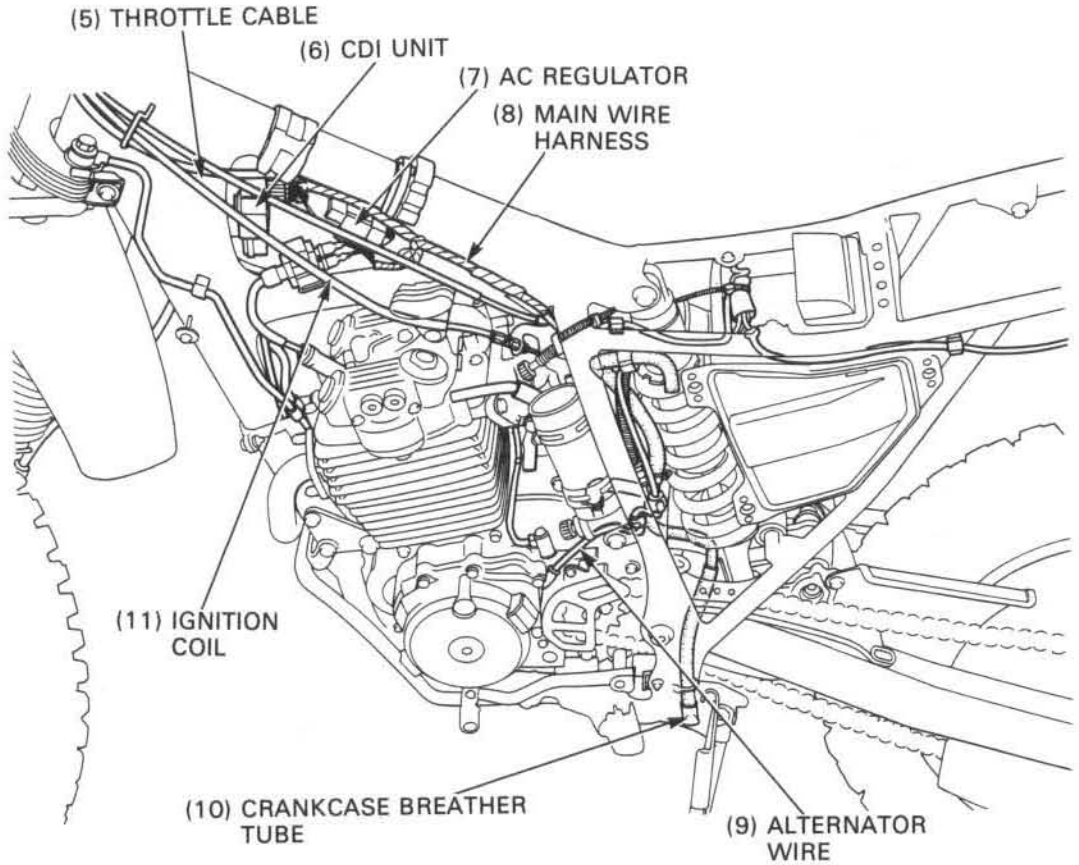

(1) CLUTCH CABLE
('88–'91:)
(AFTER '91:)
(AFTER '91:)
(4) THROTTLE CABLES
(5) ENGINE STOP SWITCH WIRE
(2) MANUAL DECOMPRESSOR CABLE
(3) FRONT BRAKE HOSE


(AFTER '91:)
(10) KICKSTARTER DECOMPRESSOR CABLE
(6) CLUTCH CABLE
(7) SPEEDOMETER CABLE
(9) CRANKCASE BREATHER TUBE
(8) MANUAL DECOMPRESSOR CABLE

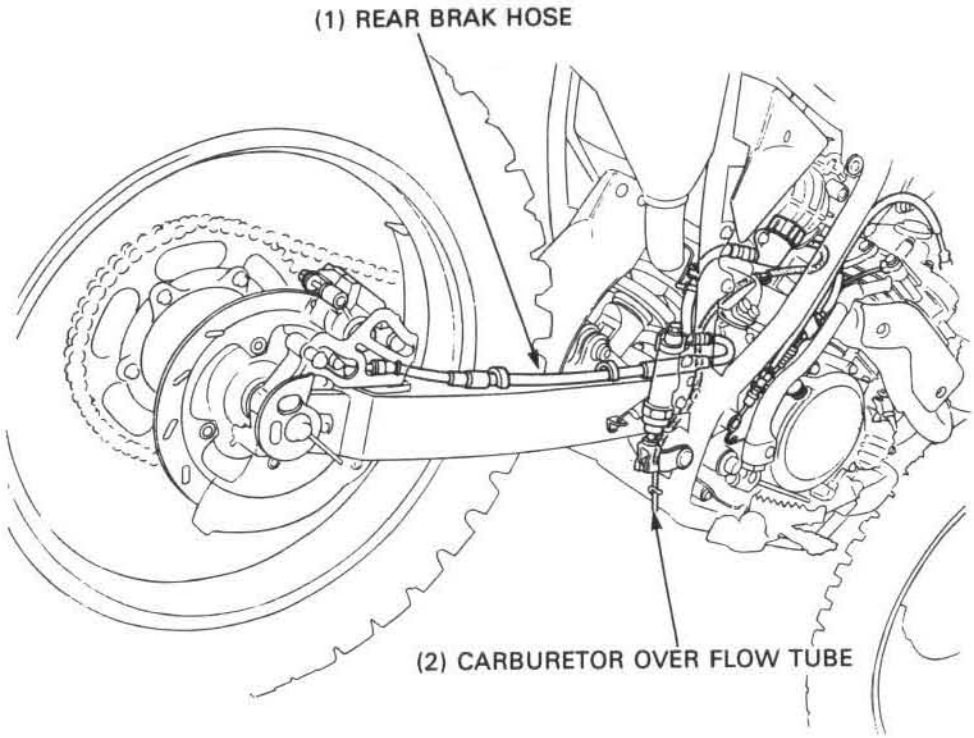

(2) CLUTCH CABLE
(AFTER '87:)
(AFTER '91)
(1) THROTTLE CABLES
(3) MANUAL DECOMPRESSOR CABLE
(7) ENGINE STOP SWITCH WIRE
(4) MAIN WIRE HARNESS
(6) SPEEDOMETER CABLE
(5) FRONT BRAKE HOSE
(AFTER '91:)


(5) FRONT BRAKE HOSE
(8) THROTTLE CABLES
(9) MAIN WIRE HARNESS
(11) TAILLIGHT WIRE
(10) CARBURETOR AIR VENT TUBE
(13) HIGH TENSION WIRE
(12) ALTERNATOR WIRE

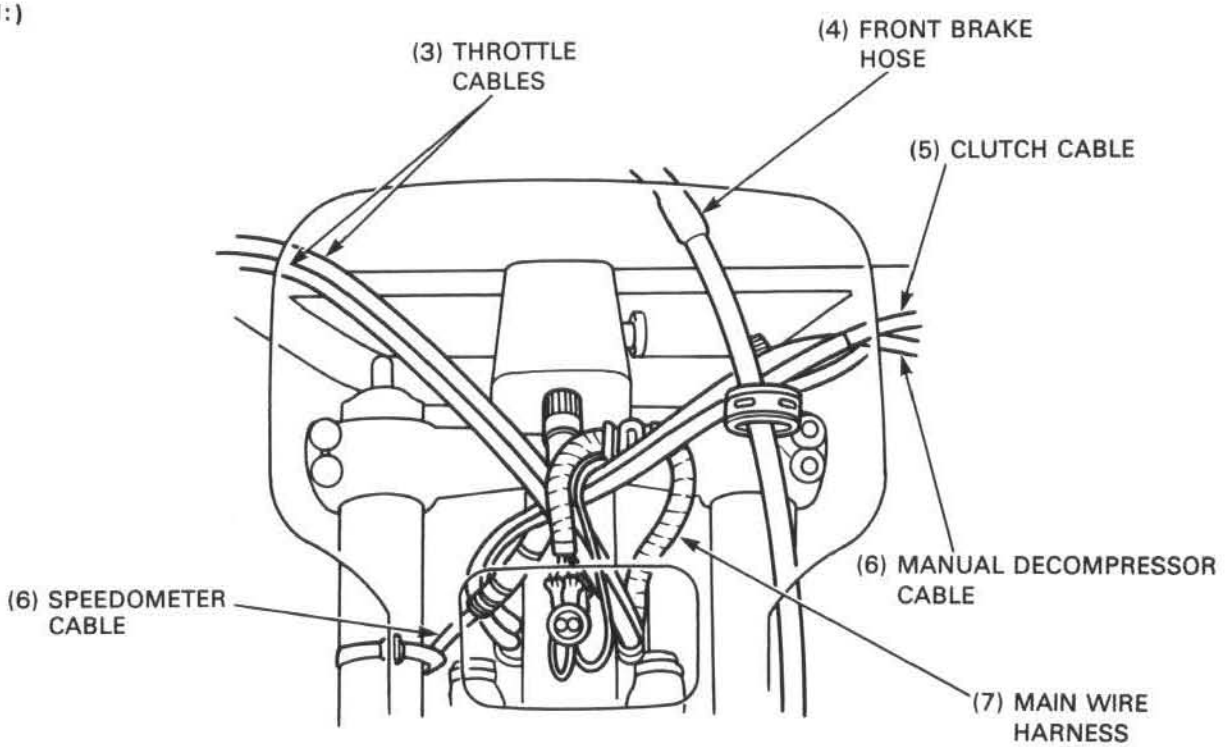

(AFTER '89:)
(1) REAR BRAKE RESERVOIR
(2) CLUTCH CABLE
(3) MANUAL DECOMPRESSOR CABLE
(4) KICKSTARTER DECOMPRESSOR CABLE


(5) THROTTLE CABLE
(6) CDI UNIT
(7) AC REGULATOR
(8) MAIN WIRE HARNESS
(11) IGNITION COIL
(10) CRANKCASE BREATHER TUBE
(9) ALTERNATOR WIRE

(AFTER '89:)



(AFTER '91:)



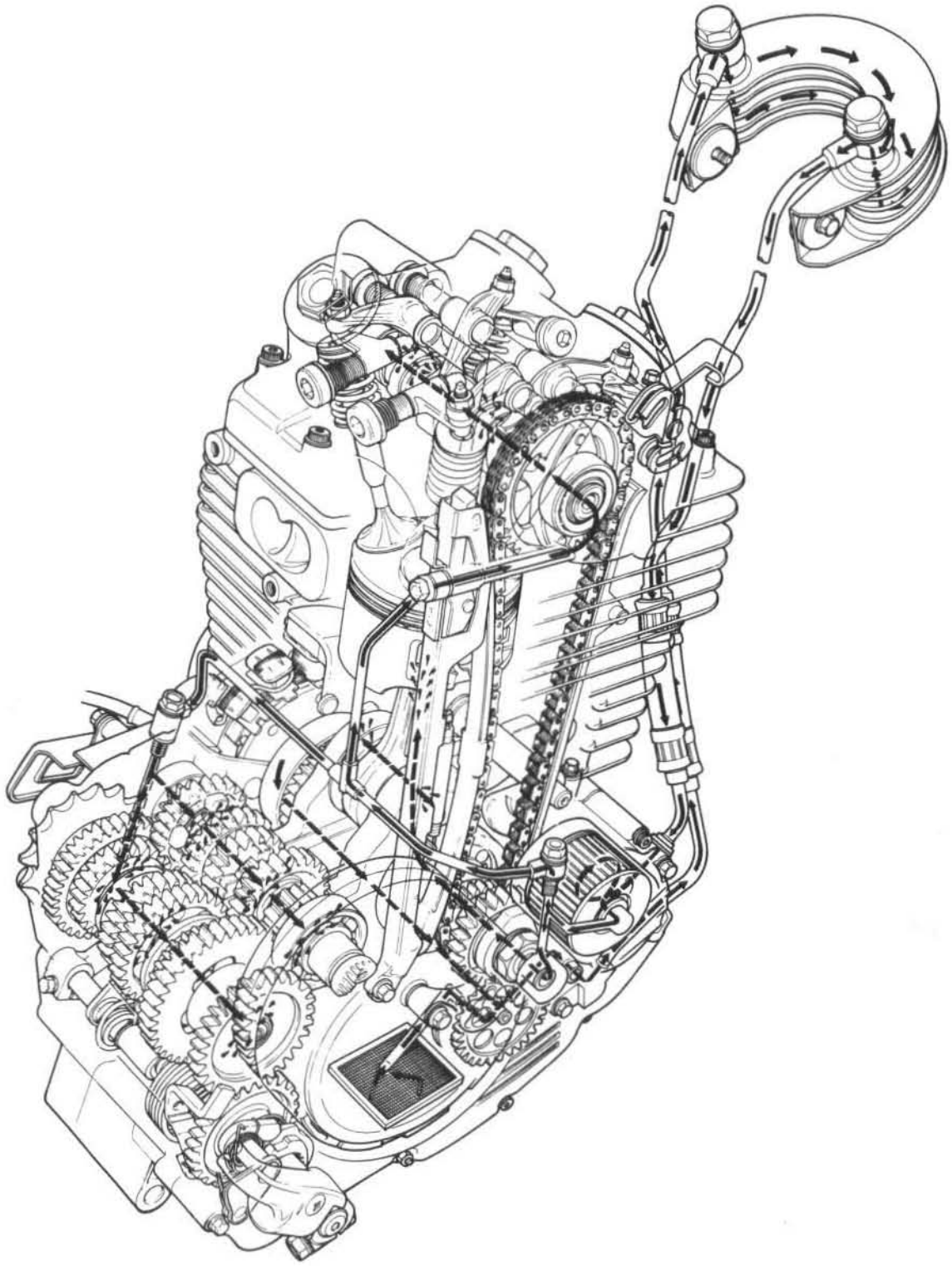
NOISE EMISSION CONTROL SYSTEM (U.S.A. ONLY)

- The U.S. Environmental Protection Agency requires manufacturers to certify that motorcycles 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 Motorcycle Noise Emission Control System is necessary in order to keep the noise emission control system warranty 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, baffles, header pipes or any other component which conducts exhaust gases.
  2. Removal of, or puncturing of any part of the intake system.
  3. Lack of proper maintenance.
  4. Replacing any moving parts of the vehicle, or parts of the exhaust or intake system, with parts other than those specified by the manufacturer.

MEMO



SERVICE INFORMATION

GENERAL

WARNING

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

CAUTION

- *Used engine oil may cause skin cancer if repeatedy left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily dasis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.*

- This section describes inspection and replacement of the engine oil and oil filter, oil strainer cleaning, and oil pump, oil pass pipe and oil cooling system service.

SPECIFICATIONS

Oil capacity: 1.6 lit (1.70 U.S. qt., 1.41 Imp qt) at engine assembly
1.3 lit (1.37 U.S. qt, 1.14 Imp qt) at oil change
1.4 lit (1.48 U.S. qt, 1.23 Imp qt) at oil and oil filter change

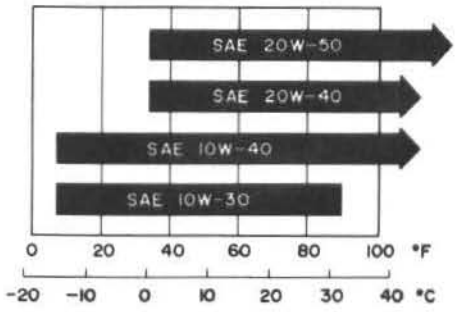
Recommended oil: Use Honda 4-Stroke Oil or equivalent.
API Service Classification: SF or SG
VISCOSITY: SAE 20W–50/10W–40

NOTE

- Use SAE 10W-40 oil when the outside temperature is below 0°C (32°F).

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

OIL VISCOSITIES



ITEM	STANDARD	SERVICE LIMIT
Oil pump body clearance	0.10–0.21 mm (0.004–0.008 in)	0.25 mm (0.010 in)
Oil pump tip clearance	0.15 mm (0.006 in)	0.20 mm (0.008 in)
Oil pump end clearance	0.02–0.09 mm (0.001–0.004 in)	0.12 mm (0.005 in)
Oil pump delivery	7.7 lit (8.14 U.S. qt, 6.78 Imp. qt) /5,000 rpm	—

TORQUE VALUES

Oil drain plug	20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb)
Oil filter cover	8–12 N·m (0.8–1.2 kg-m, 6– 9 ft-lb)
Oil pass pipe bolt	8–12 N·m (0.8–1.2 kg-m, 6– 9 ft-lb)
Oil pipe bolt ('86–'91:)	16–20 N·m (1.6–2.0 kg-m, 12–14 ft-lb)
(After '91:)	32–40 N·m (3.2–4.0 kg-m, 23–29 ft-lb)

TROUBLESHOOTING

Oil level too low:
- Normal oil consumption
- External oil leaks
- Worn piston rings

Oil contamination:
- Oil not changed often enough
- Faulty head gasket

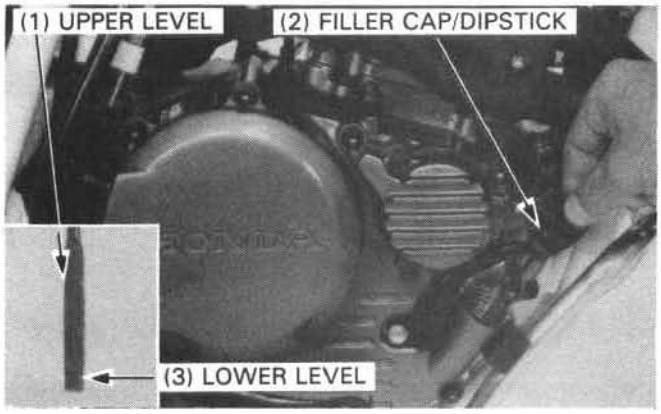
Low oil pressure:
- Faulty oil pump
- Oil pump drive gear broken

ENGINE OIL LEVEL CHECK

Support the motorcycle upright on level ground.
Start the engine and let it idle for a few minutes.

Stop the engine. Check the oil level with the oil filler cap/dipstick by inserting it in until the threads touch the filler neck. Do not screw the cap in when making this check.

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



ENGINE OIL CHANGE

NOTE

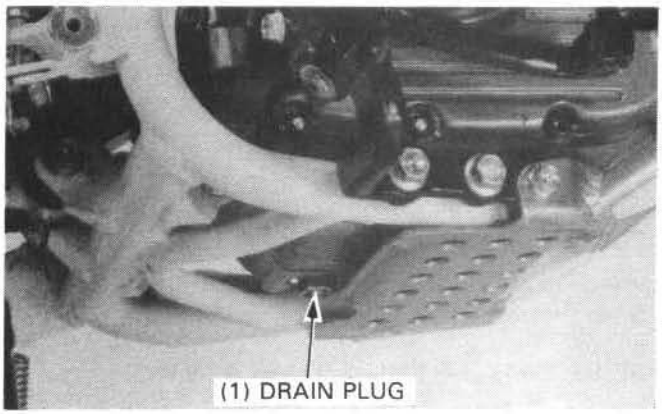
- Change engine oil with the engine warm and the motorcycle on its side stand to assure complete and rapid draining.

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

CAUTION

- *Used engine oil may cause skin cancer if repeatedy left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a dasis, it is still advisableto thoroughly wash your hands with soap and water as soon as possible after handling used oil.*

Operate the kickstarter several times while pushing in the engine stop button to drain any oil which may be left in the engine.
After the oil has drained, check that the drain plug sealing washer is in good condition, and install the plug. Replace the sealing washer if necessary.



TORQUE: 20—30 N·m (2.0—3.0 kg-m, 14—22 ft-lb)

NOTE

- Clean the engine oil strainer (see page 2-4), if required, before filling the crankcase.

Fill the crankcase with the correct quantity of the recommended oil.

OIL CAPACITY:
1.3 lit (1.37 U.S. qt, 1.14 Imp qt) at oil change
1.4 lit (1.48 U.S. qt, 1.23 Imp qt) at oil and oil filter change

RECOMMENDED OIL: Honda 4-stroke Oil or equivalent
API service classification : SF or SG
VISCOSITY : SAE 20W—50/10W—40

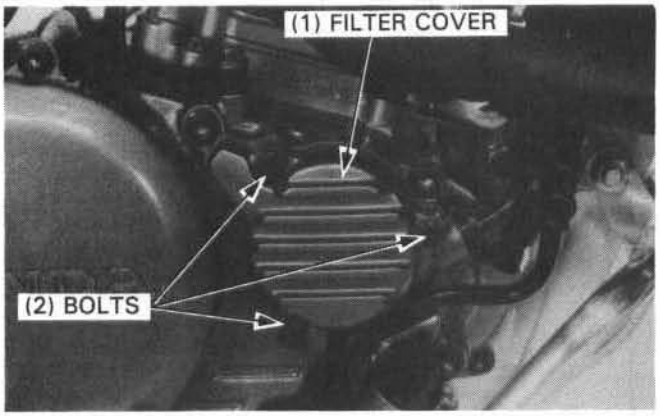
Install the oil filler cap/dipstick.
Start the engine and let it idle for 2—3 minutes.

Stop the engine and wait a few minutes then check that the oil level is at the upper level mark with the motorcycle upright. Check that there are no oil leaks.

ENGINE OIL FILTER REPLACEMENT

Remove the oil filter cover from the right crankcase then remove the oil filter and spring.

Discard the oil filter element.



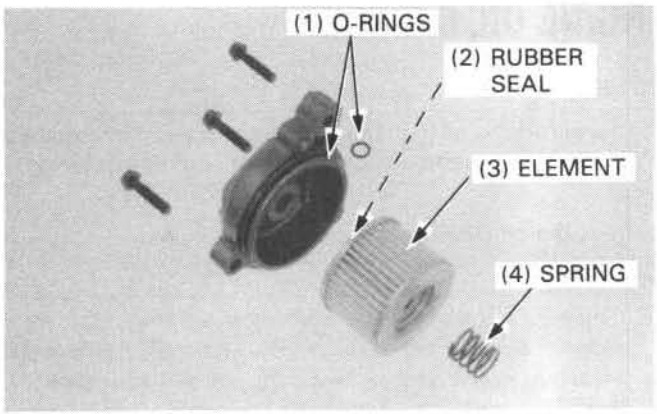
Check that the O-rings are in good condition.
Install the spring, a new oil filter element with the rubber seal facing the filter cover and oil filter cover.

CAUTION

- *Installing the oil filter backwards will result in severe engine damage.*

NOTE

- Install the oil filter into the crankcase cover so that the side with the rubber seal is facing out, toward the oil filter cover.



Apply oil to the cover bolt threads and O-rings.
Tighten the cover bolts to the specified torque.

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

Fill to the upper level with the recommended oil.

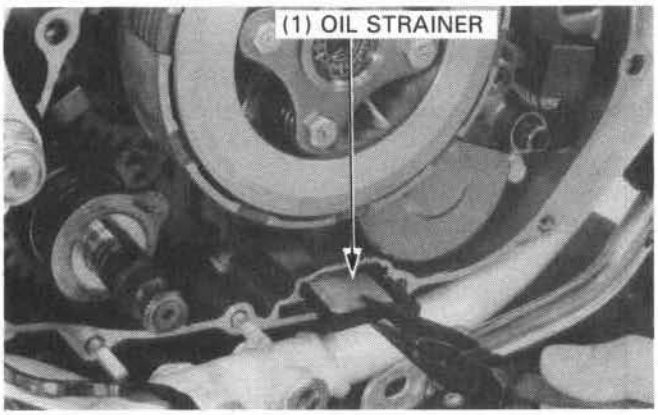
ENGINE OIL STRAINER CLEANING

NOTE

- Perform this maintenance before filling the engine with oil.

Remove the right crankcase cover (page 8-3).
Remove the oil strainer and clean it.
Install the oil strainer.
Install the right crankcase cover (page 8-14).

Fill the crankcase with the recommended oil up to the proper level.



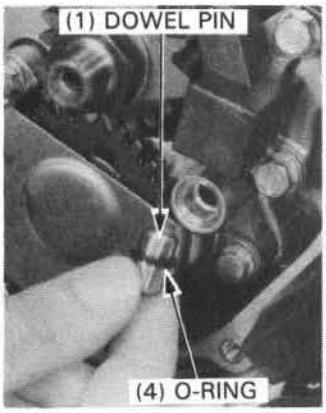
OIL PUMP

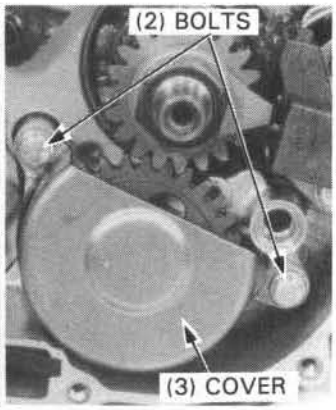
REMOVAL

Remove the right crankcase cover and clutch (section 8).

Remove the dowel pin with the O-ring.

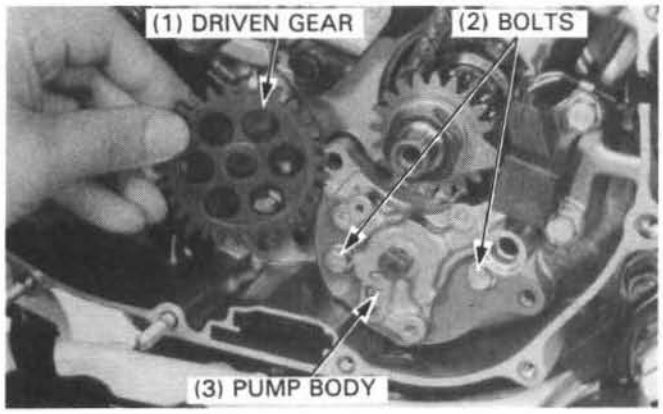
Remove the oil pump cover by removing two mounting bolts.



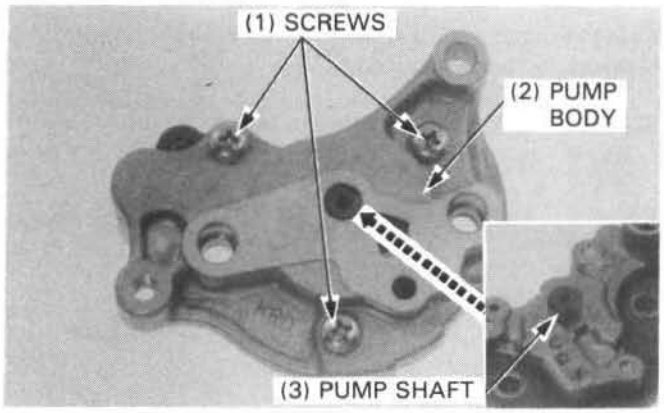


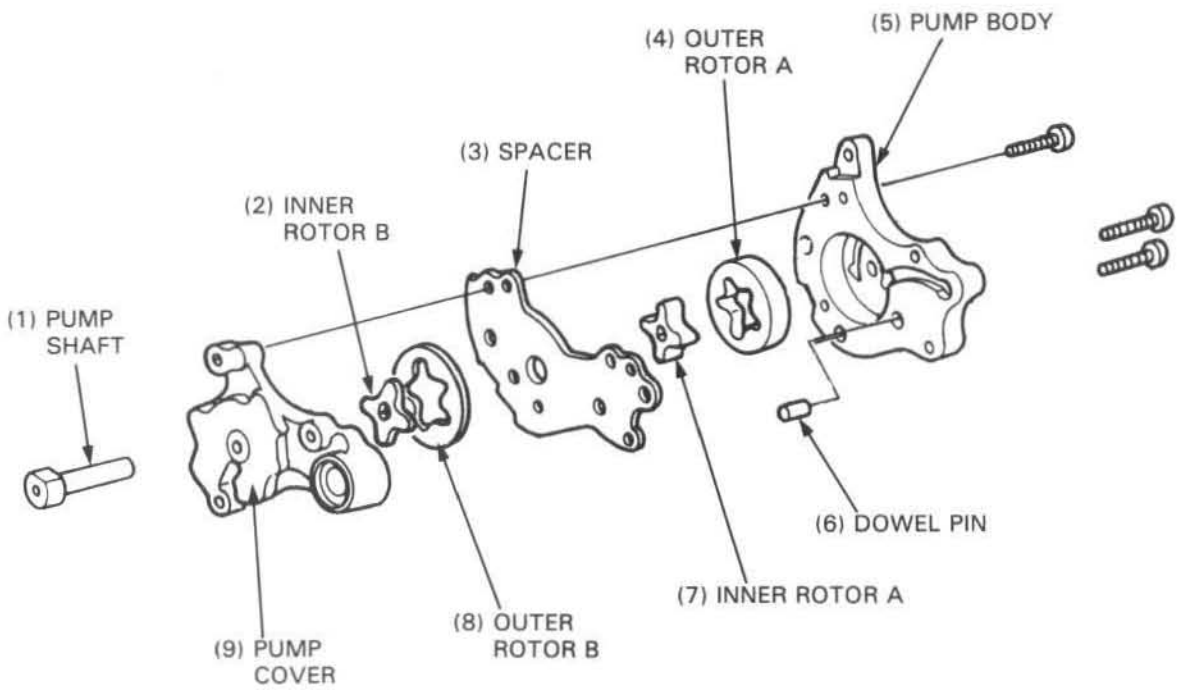
Remove the oil pump driven gear and oil pump mounting bolts then remove the oil pump body.

Remove the gasket and dowel pins.



Remove the oil pump body screws and pump shaft.
Disassemble the oil pump.
Clean disassembled parts with non-flammable or high flash point solvent.

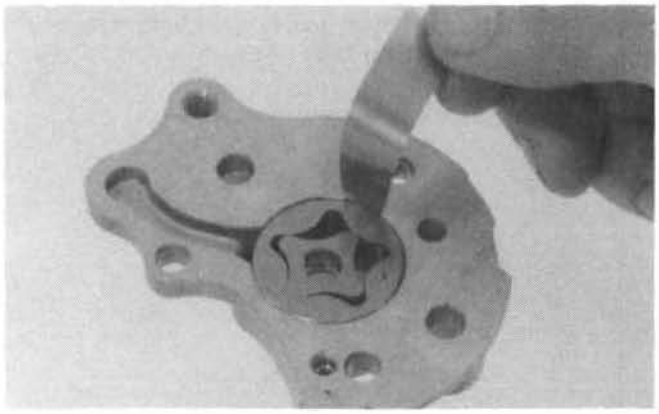




INSPECTION

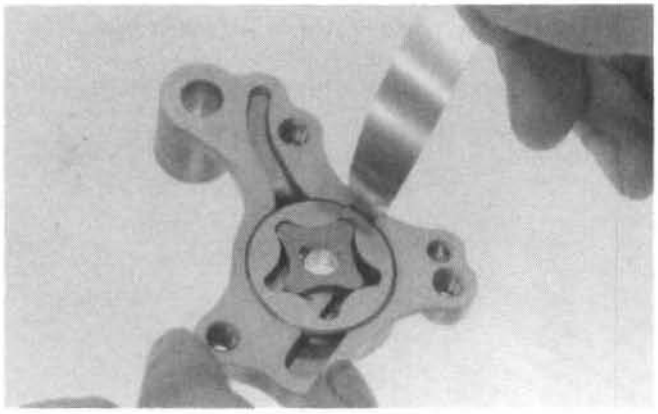
Body Clearance
Install the inner rotor A and outer rotor A on the oil pump body. Measure the body clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



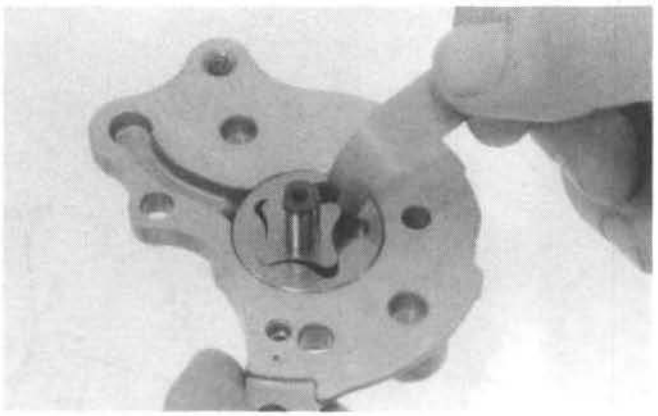
Install the inner rotor B and outer rotor B on the oil pump cover. Measure the body clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



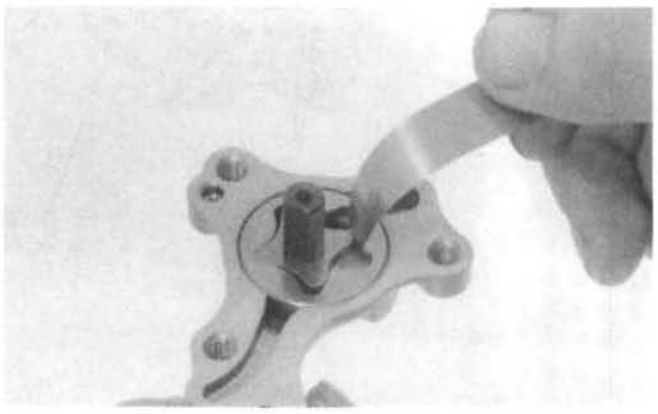
Tip Clearance
Temporarily install the pump shaft to the pump body and measure the tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



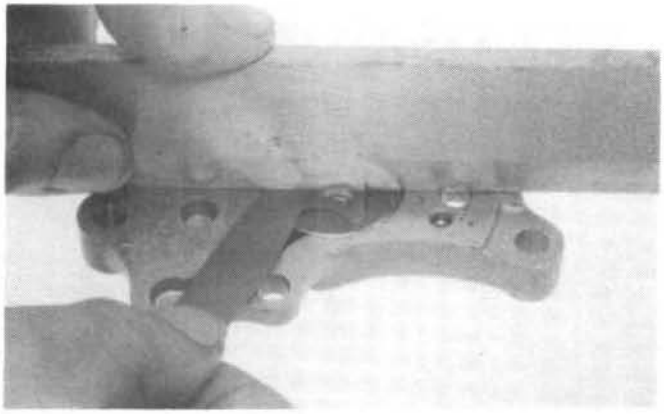
Temporarily install the pump shaft to the pump cover and measure the tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



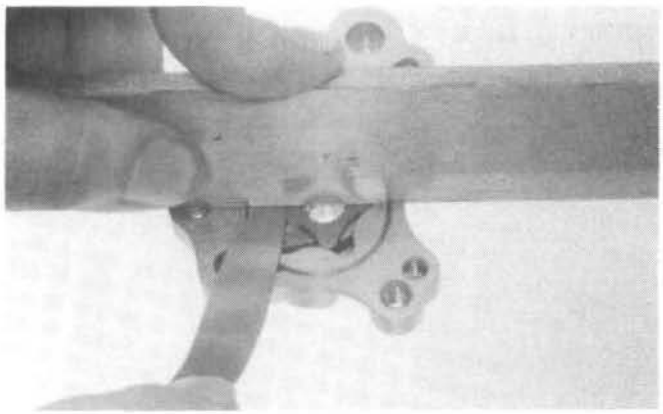
End Clearance
Measure the end clearance of rotor A.

SERVICE LIMIT: 0.12 mm (0.005 in)



Measure the end clearance of rotor B.

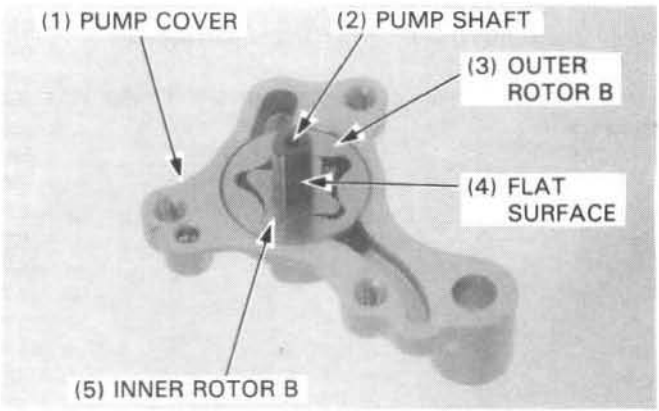
SERVICE LIMIT: 0.12 mm (0.005 in)



ASSEMBLY

Install inner rotor B and outer rotor B on the pump cover.

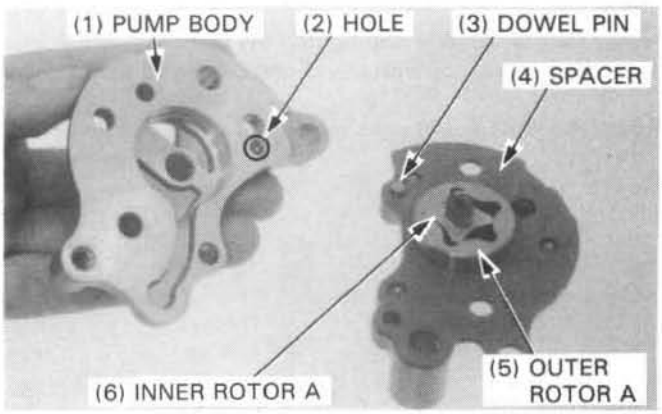
Install the pump shaft through inner rotor B aligning flat surfaces.



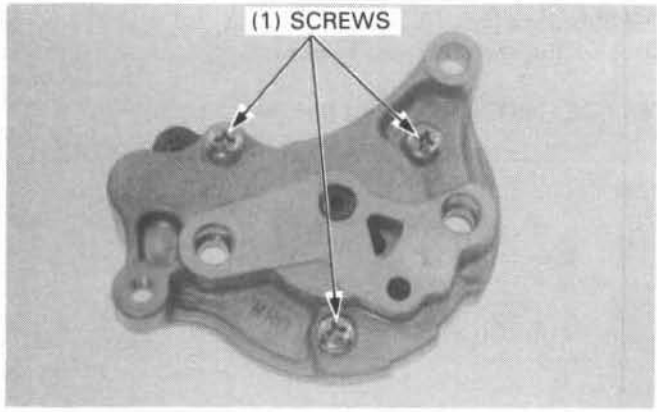
Install the dowel pin on the pump cover.
Install the spacer on the pump cover aligning its hole with the dowel pin on the cover.

Install inner rotor A onto the pump shaft aligning the flat surfaces.
Install the outer rotor A.

Install the pump body, aligning its hole with the dowel pin.

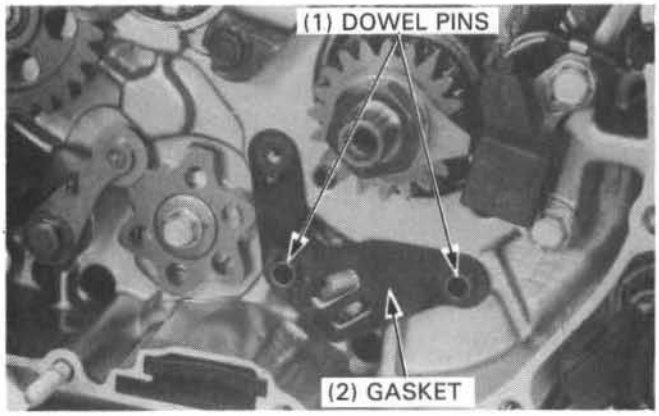


Tighten the pump body screws securely.



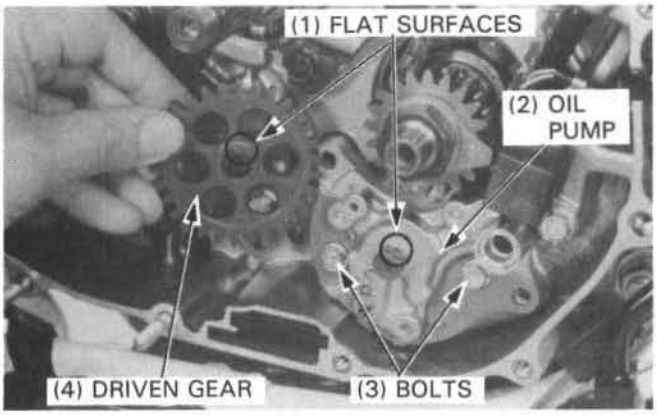
INSTALLATION

Install the dowel pins and a new gasket.



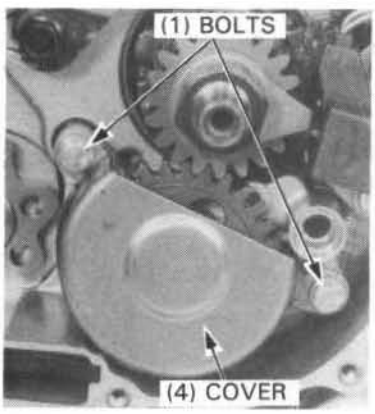
Install the oil pump and tighten the bolts securely.

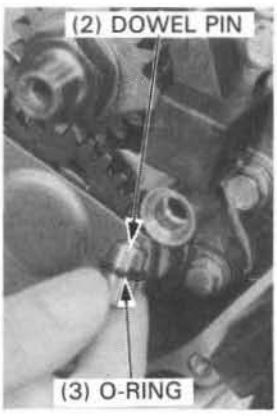
Install the pump driven gear on the pump shaft aligning the flat surfaces.



Install the pump cover and tighten the bolts securely.
Install the dowel pin with the O-ring on the oil pump.

Install the clutch, and right crankcase cover (section 8).





OIL PASS PIPE

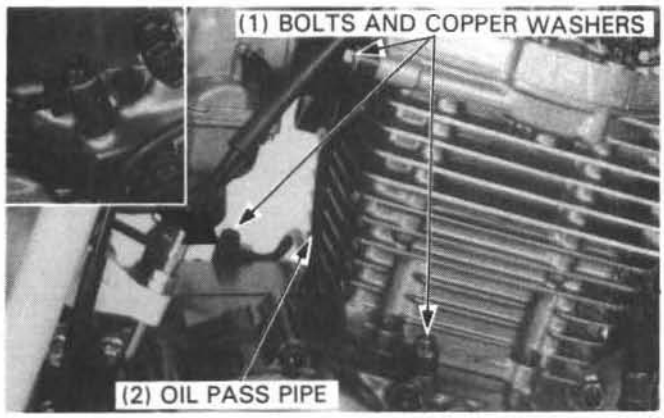
REMOVAL

Remove the exhaust pipe (page 15-2).

Remove the pipe bolts and copper washers.
Remove the oil pass pipe.

CAUTION

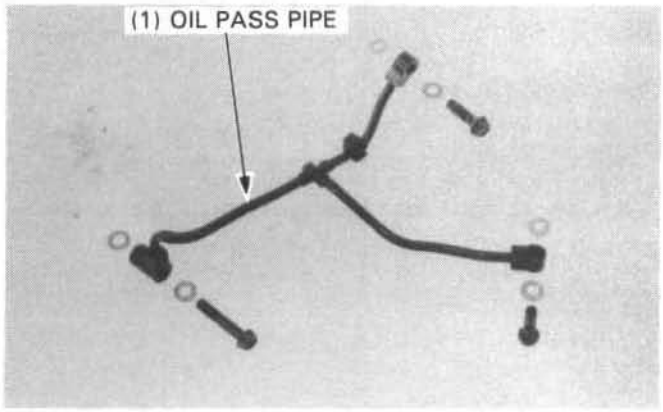
- *Do not bend the oil pass pipe.*



INSPECTION

Check the oil pass pipe and pipe bolts for damage, bends or clogging and replace if necessary.

If it is clogged, clean with non-flammable or high flash point solvent.

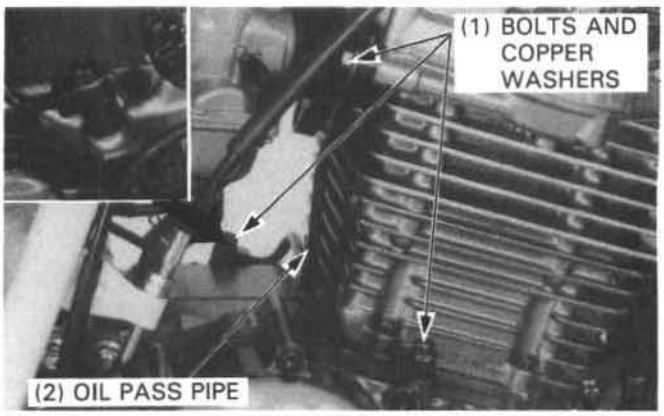


INSTALLATION

Install the oil pass pipe.
Install the pipe bolts with new copper sealing washers and tighten the bolts to the specified torque.

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

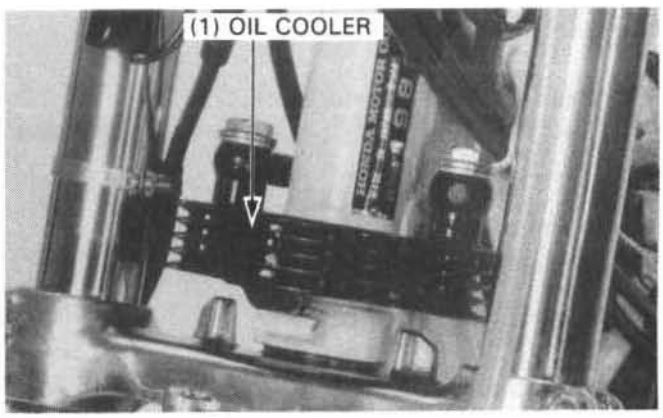
Install the exhaust pipe (page 15-3).



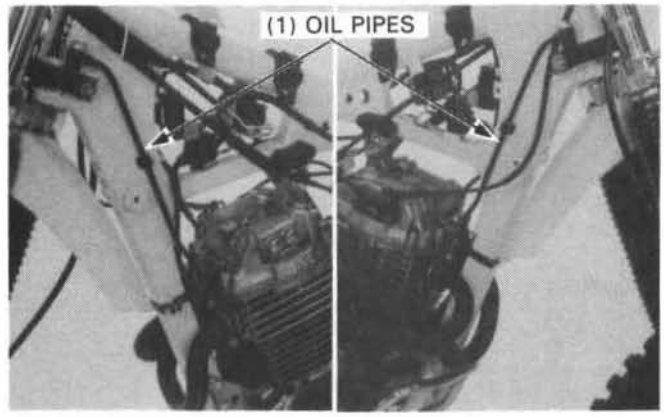
OIL COOLING SYSTEM

INSPECTION

Check the oil cooler for damage, leaks or any mud caked on the fins.

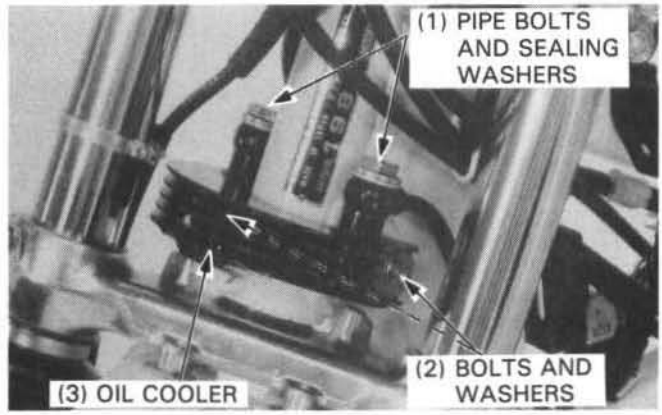


Check the oil pipes for damage or leaks.



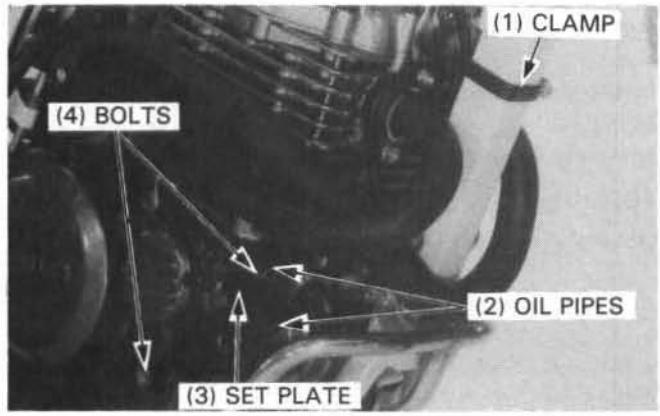
REMOVAL

Remove the following:
- the fuel tank (page 4-3).
- the headlight (page 16-7).
- the oil pipe bolts and sealing washers.
- the oil cooler mounting bolts washers and oil cooler.



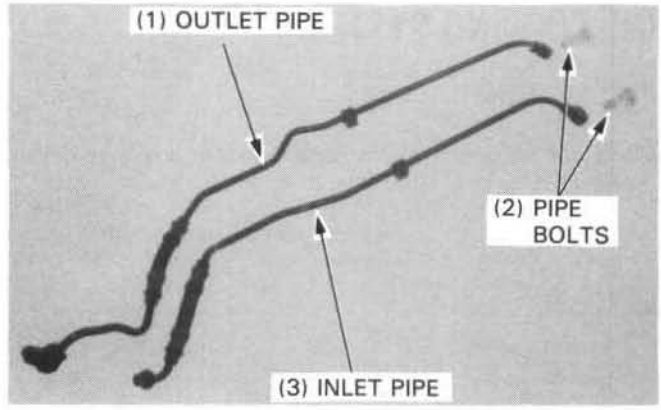
Remove the oil pipe/wire clamp.

Remove the bolts and set plate then remove the oil pipes and O-rings carefully.



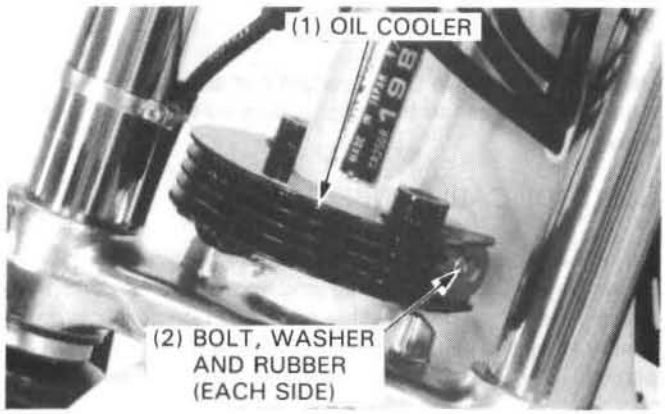
INSPECTION

Check the pipes and bolts for blockage.
If clogged, clean them with non-flammable or high flash point solvent.



INSTALLATION

Install the oil cooler on the steering head using the bolts, rubbers and washers.

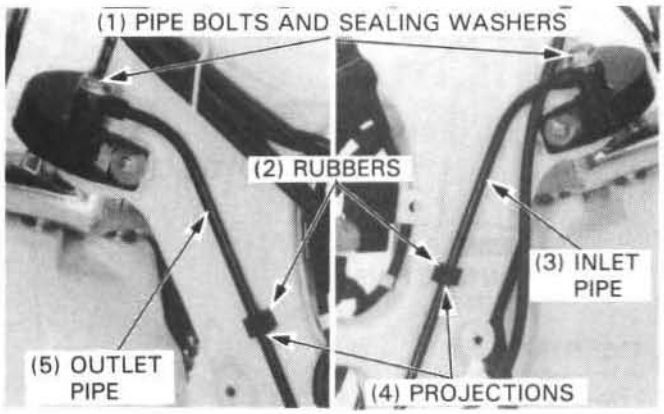


Install the oil pipes and pipe bolts with new sealing washers. Tighten the pipe bolts to specification:

TORQUE:

'86–'91: 16–20 N·m (1.6–2.0 kg-m, 12–14 ft-lb)
After '91: 32–40 N·m (3.2–4.0 kg-m, 23–29 ft-lb)

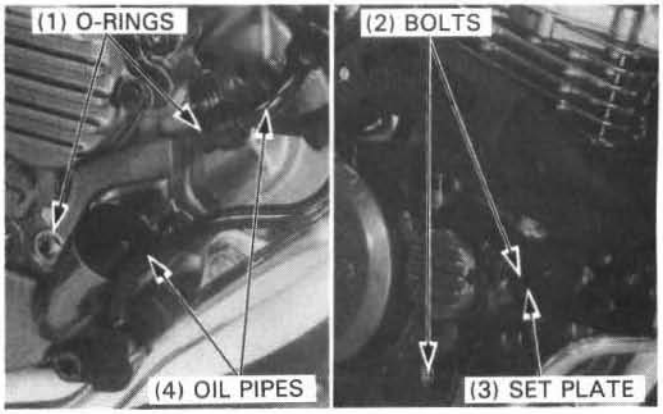
Set the rubbers on the frame projections.



Apply engine oil to the O-rings.

Install the new O-rings on the pipe and install the right crankcase cover.

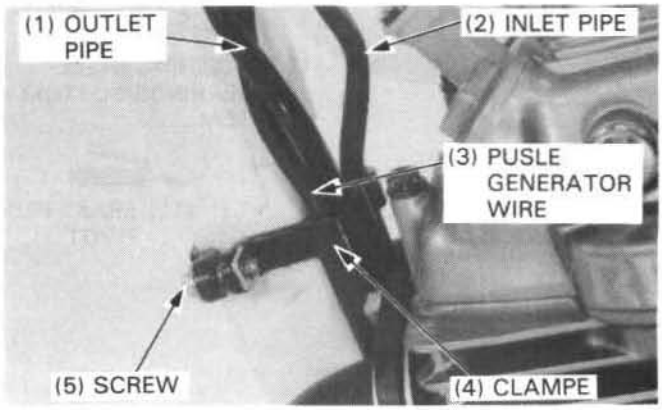
Connect the oil pipes to the right crankcase cover.
Install the set plate and tighten the bolts securely.



Secure the oil pipes and pulse generator wire with the clamp.

Tighten the screw securely.

Install the headlight and fuel tank.



LUBRICATION POINTS

Use general purpose grease when not specified here.
Apply oil or grease to the other sliding surfaces and cables not shown here.

CONTROL CABLE LUBRICATION

Periodically disconnect the throttle and clutch cables at their upper ends. Clean the cable end mount in the throttle and clutch lever, then oil the cable ends and reinstall. It is not necessary to oil the cables: if a cable begins to bind, it must be replaced.

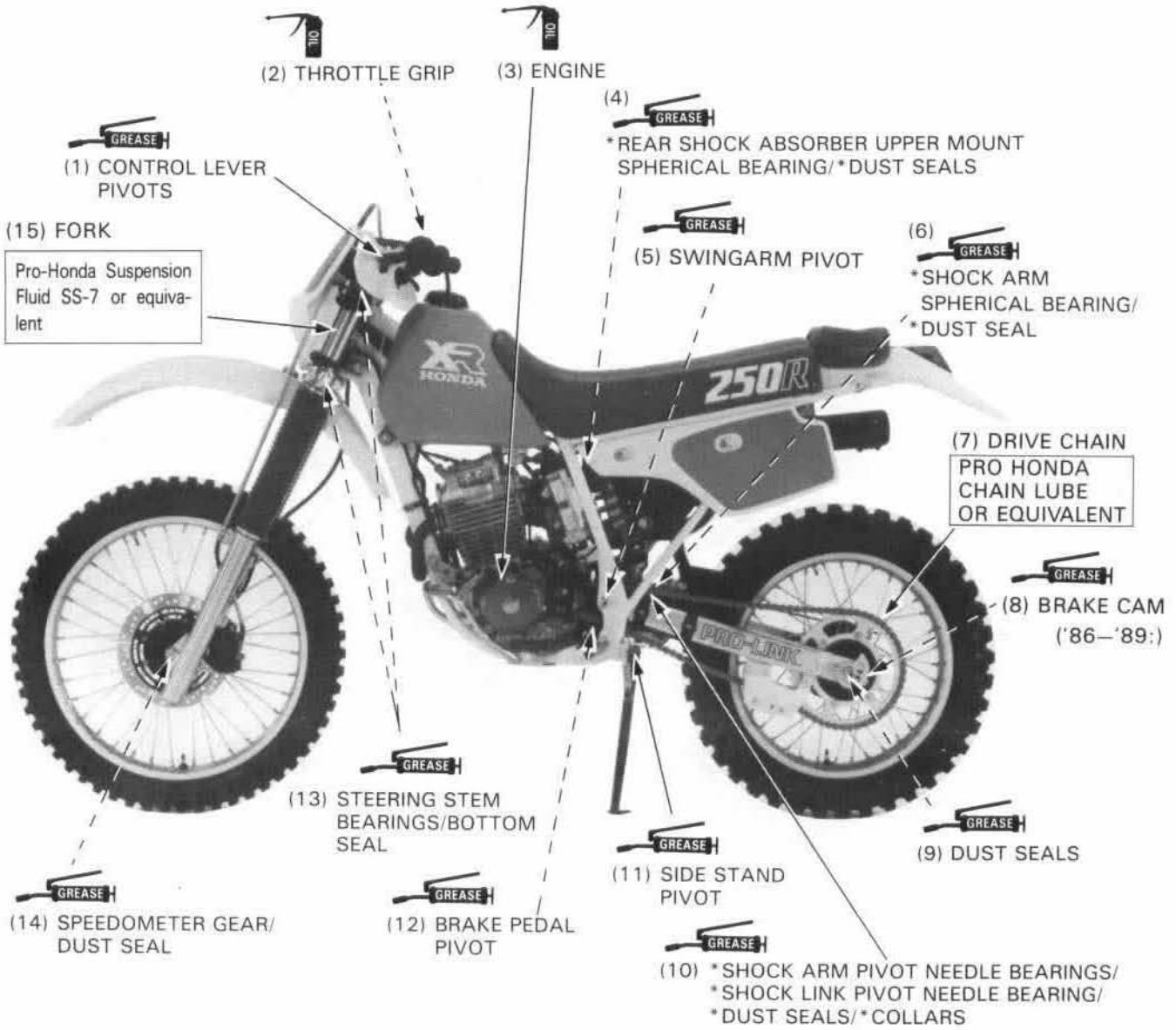
Apply paste grease with 40% or more molybdenum disulfide to the * mark components.

NOTE

Some sources of MoS_2 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. only)
- Rocol ASP manufactured by Rocol Limited, U.K.
- Rocol Paste manufactured by Sumico Lubricant, Japan

Any other manufacturer's paste grease equivalent to the above may also be used.



'86 shown: After '86 similar

SERVICE INFORMATION

GENERAL

- Engine oil level check..... page 2-3
- Engine oil change..... page 2-3
- Engine oil filter replacement..... page 2-4
- Engine oil strainer cleaning ..... page 2-4

SPECIFICATIONS

Ignition timing	Initial	8° BTDC at 1,300 ± 200 rpm (F mark)
	Full advance	28° ± 2° BTDC at 4,300 rpm
Spark plug		

Standard	(NGK) DPR9Z (NIPPONDENSO) X27GPR-U
For cold climate (below 5°C/41°F)	(NGK) DPR8Z (NIPPONDENSO) X24GPR-U

Spark plug gap		0.6–0.7 mm (0.024–0.028 in)
Valve clearance	IN	0.05 mm (0.002 in)
	EX	0.08 mm (0.003 in)
Idle speed		1,300 ± 100 rpm
Cylinder compression		130–150 kPa (13.0 ± 15.0 kg/cm², 184.9–213.3 psi)
Starter decompressor lever free play		1–2 mm (1/16–1/8 in)
Manual decompressor lever free play		5–8 mm (3/16–5/16 in)

Throttle grip free play		2–6 mm (1/8–1/4 in)
Front fork air pressure	standard	0 kPa (0 kg/cm², 0psi)
	Max.	100 kPa (1.0 kg/cm², 14 psi)
Rear brake pedal free play ('86–'89:)		20–30 mm (3/4–1-1/4 in)
Clutch lever free play		10–20 mm (3/8–3/4 in)
Drive chain slack		35–45 mm (1-3/8–1-3/4 in)
Drive chain length (107 pins)		standard 1,699 mm (66.9 in)
		service limit 1,716 mm (67.6 in)
Drive chain slipper		15 mm (0.6 in) Max.
Tire pressure	Front	100 kPa (1.0 kg/cm², 15 psi)
	Rear	100 kPa (1.0 kg/cm², 15 psi)
Tire size	Front	80/100–21 51M
	Rear	110/100–18 64M
Tire cleat depth		3 mm (1/8 in) Min.

TORQUE VALUES

Rear axle nut	80–110 N·m (8.0–11.0 kg-m, 58–80 ft-lb)
Spoke nipple	2.5–5.0 N·m (0.25–0.50 kg-m, 1.8–3.6 ft-lb)
Rim lock	10–15 N·m (1.0–1.5 kg-m, 7–11 ft-lb)
Valve adjusting screw lock nut	21–25 N·m (2.1–2.5 kg-m, 16–18 ft-lb)
Chain adjuster holder nut	30–40 N·m (3.0–4.0 kg-m, 21–29 ft-lb)
Side stand pivot nut	35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)
Fuel valve mounting screw ('86–'89:)	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
(AFTER '89:)	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

TOOLS

Common	
Wrench, 10 x 12 mm	07708–0030200 or equivalent commercially available in U.S.A.
Timing cap wrench	07709–0010001
Spanner C, 5.8 x 6.1 mm	07701–0020300 or equivalent commercially available in U.S.A.

MAINTENANCE SCHEDULE

REGULAR MAINTENANCE SCHEDULE

'86–'89:

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

I: INSPECT AND CLEAN, ADJUST, LUBRICATE, OR REPLACE IF NECESSARY

C: CLEAN, R: REPLACE, A: ADJUST, L: LUBRICATE

	FREQUENCY / ITEM	EVERY	BREAK-IN MAINTENANCE	REGULAR SERVICE INTERVAL	REFER TO PAGE
			First week of operation— about 200 mi (350 km)	Every 30 operating days— about 1,000 mi (1,600 km)	
*	FUEL LINE			I	3-6
*	FUEL STRAINER SCREEN			C	3-6
*	THROTTLE OPERATION			I	3-6
	AIR CLEANER	NOTE 1		C	3-7
	SPARK PLUG			I	3-8
*	VALVE CLEARANCE		I	I	3-8
	ENGINE OIL		R	R	2-3
	ENGINE OIL FILTER		R	R	2-4
*	DECOMPRESSOR SYSTEM		I	I	3-9
*	CARBURETOR-IDLE SPEED		I	I	3-10
	DRIVE CHAIN	NOTE 1	I, L	I, L Every 10 operating days — about 300 mi (500 km)	3-11
	DRIVE CHAIN SLIDER		I	I	3-13
	BRAKE SYSTEM		I	I	3-14
	BRAKE FLUID	2 YEARS *R		I	3-15
	BRAKE SHOE/PAD WEAR			I	3-16
*	HEADLIGHT AIM			I	3-16
	CLUTCH SYSTEM		I	I	3-17
	SIDE STAND			I	3-17
*	SUSPENSION			I, L	3-18
*	SPARK ARRESTER	NOTE 2		C	3-19
*	NUTS, BOLTS, FASTENERS		I	I	3-19
**	WHEELS/TIRES		I	I	3-19
**	STEERING HEAD BEARINGS		I	I	3-20

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

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

NOTE: 1. Service more frequently when ridden in wet or dusty conditions.

2. U.S.A. only

AFTER '89:

Perform the PRE-RIDE INSPECTION in the Owner's Manual at every maintenance period.
I: INSPECT AND CLEAN, ADJUST, LUBRICATE OR REPLACE IF NECESSARY.
C: CLEAN, R: REPLACE, A: ADJUST, L: LUBRICATE.

	ITEM / FREQUENCY	NOTE	BRAKE-IN MAINTENANCE	REGULAR SERVICE INTERVAL	REFER TO PAGE
			First week of operation- about 200 mi (350 km)	Every 30 operating days- about 1,000 mi (1,600 km)	
•	FUEL LINE			I	3-6
••	FUEL STRAINER SCREEN			C	3-6
•	THROTTLE OPERATION			I	3-6
	AIR CLEANER	NOTE 1		C	3-7
	SPARK PLUG			I	3-8
•	VALVE CLEARANCE		I	I	3-8
	ENGINE OIL		R	R	2-3
	ENGINE OIL FILTER		R	R	2-4
•	DECOMPRESSOR SYSTEM		I	I	3-9
•	CARBURETOR IDLE SPEED		I	I	3-10
	DRIVE CHAIN	NOTE 1	I,L	I,L Every 10 operating days — about 300 mi (500 km)	3-11
	DRIVE CHAIN SLIDER		I	I	3-13
	BRAKE FLUID	NOTE 2		I	3-15
	BRAKE PAD WEAR			I	3-16
	BRAKE SYSTEM		I	I	3-14
	HEADLIGHT AIM			I	3-16
	CLUTCH SYSTEM		I	I	3-17
	SIDE STAND			I	3-17
•	SUSPENSION			I	3-18
•	SPARK ARRESTER	NOTE 3		C	3-19
•	NUTS, BOLTS, FASTENERS		I	I	3-19
••	WHEELS/TIRES		I	I	3-19
••	STEERING HEAD BEARINGS		I	I	3-20

• SHOULD BE SERVICED BY AN AUTHORIZED DEALER, UNLESS THE OWNER HAS PROPER TOOLS AND SERVICE DATA AND IS MECHANICALLY QUALIFIED.
•• IN THE INTEREST OF SAFETY, WE RECOMMENDED THESE ITEMS BE SERVICED ONLY BY AND AUTHORIZED HONDA DEALER.

NOTES: 1. Service more frequently when ridden in wet or dusty conditions.
2. Replace every 2 years. Replacement requires mechanical skill.
3. U.S.A. only.

COMPETITION MAINTENANCE SCHEDULE

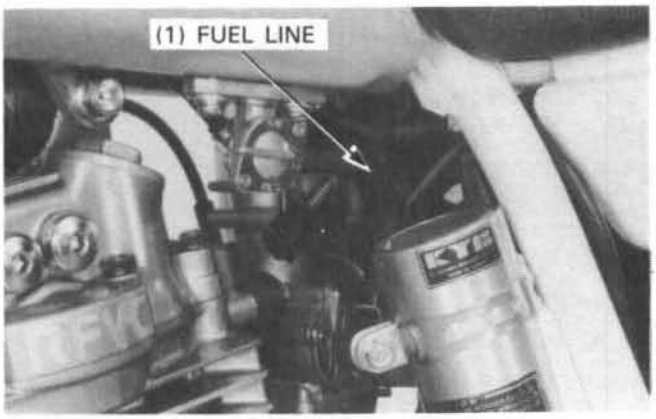
Check all items before each race.
Refer to the REGULAR MAINTENANCE SCHEDULE (page 3-3, 4) for regular (non-competition use) service intervals.

ITEMS	INSPECT FOR	ACTION AS REQUIRED	REFER TO PAGE
ALL PRE-RIDE INSPECTION ITEMS	——	——	NOTE 2
ENGINE OIL	Contamination	Change	2-3
FUEL LINE	Deterioration, damage or leakage	Replace	3-6
VALVE CLEARANCE	Correct clearance	Adjust	3-8
CARBURETOR IDLE SPEED	Correct idle speed	Adjust	3-10
CARBURETOR-CHOKE	Proper operation	——	——
DECOMPRESSION MECHANISM	Proper free play	Adjust	3-9
CLUTCH DISCS	Proper operation see (NOTE 1)	Replace	3-17
AIR CLEANER ELEMENT	Contamination or tears	Clean or replace	3-7
SPARK PLUG	Tightness, proper heat range, and high tension terminal security	Tighten, replace or secure	3-8
STEERING HEAD	Free rotation of handlebars and steering stem nut tightness	Adjust or tighten	3-20
FRONT SUSPENSION	Smooth operation, no oil leaks, good boot condition, proper oil volume and air pressure	Replace or adjust	3-18
REAR SUSPENSION	Smooth operation, oil leaks and spring height	Replace or adjust	3-18
SWINGARM BEARINGS	Smooth operation	Replace	3-18
REAR SUSPENSION LINKAGE BEARINGS	Wear	Replace	3-18
BRAKE SHOES/PADS	Wear beyond service limit	Replace	3-16
DRIVE CHAIN	Length: 1,765 mm (69.5 in)/109 pins max.	Replace	3-11
SPROCKETS	Wear and secure installation	Replace or tighten	3-12
SEAT	Security	Tighten	15-1
HEADLIGHT	Proper beam aim	Adjust	3-16
SPEEDOMETER/TRIP METER	Proper operation	Replace	——
CONTROL CABLES	Smooth operation, kinks and correct routing	Lubricate or replace	2-12 1-9 thru. 1-12
ENGINE MOUNTING BOLTS	Tightness	Tighten	5-4

NOTE 1. Competition use necessitates more frequent service.
2. Refer to the Owner's Manual PRE-RIDE INSPECTION.

FUEL LINE

Check the fuel line and replace any cracked, damaged or leaking parts.



FUEL STRAINER SCREEN

Turn the fuel valve OFF, disconnect the fuel line at the carburetor.
Turn the fuel valve to ON and RES and drain the fuel into an approved gasoline container.

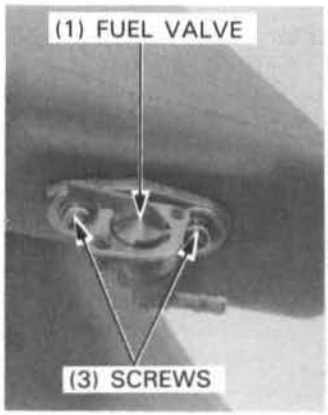
WARNING

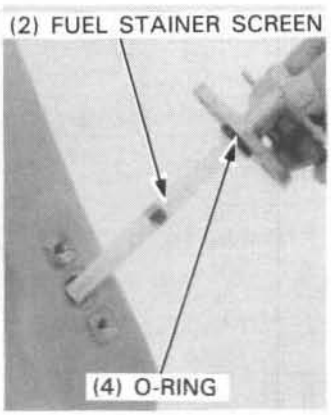
- ***Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stoped. Do not smoke or allow flames or sparks in the work area or where gasoline is stored.***
- ***Wipe up spilled gasoline at once.***

Remove the fuel tank (page 4-3).

Remove the two screws attaching the fuel valve to the fuel tank then remove the fuel valve with its strainer screen.
Clean the fuel strainer screen.
Make sure the O-ring is in good condition and install the fuel valve.
Tighten the screws to the specified torque.

TORQUE: ('86–'89)
8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
: (AFTER 89)
10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)



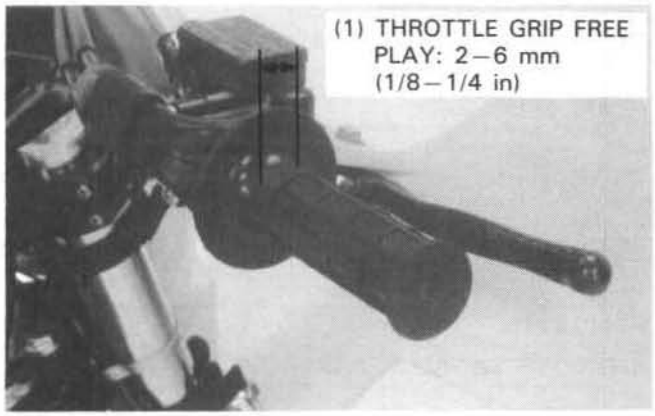


Install the fuel tank and connect the fuel line.
After filling the fuel tank, check for leaks.

THROTTLE OPERATION

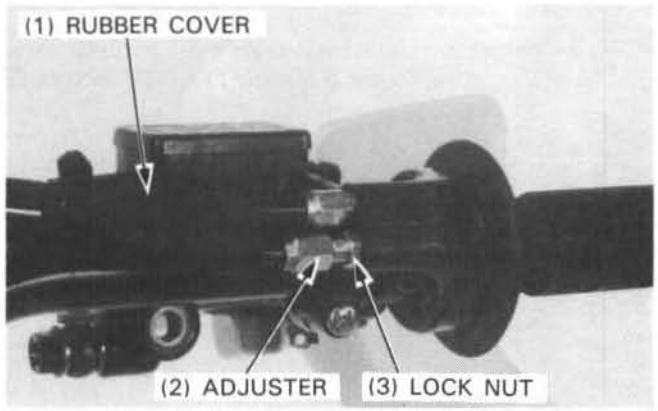
Check that the throttle grip opens smoothly to full throttle and fully closes, automatically, in all steering positions.

Make sure there is no deterioration, damage, or kinking in the throttle cables, and that the throttle grip free play is 2–6 mm (1/8–1/4 in) at the throttle grip flange.

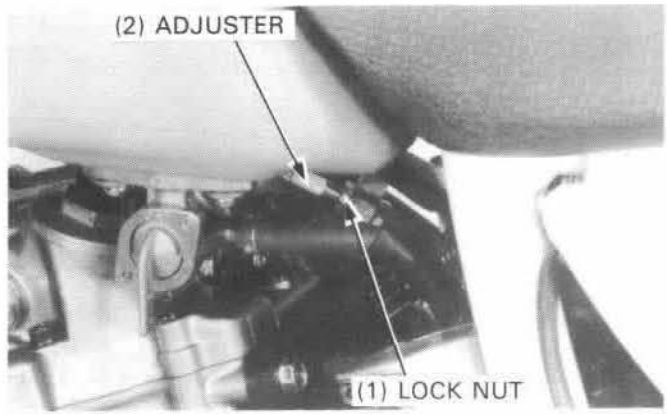


Throttle grip free play can be adjusted at either end of the throttle cable. Replace any damaged parts before beginning this adjustment.

Minor adjustments are made with the upper adjuster.
Adjust the free play by sliding the rubber cover off, loosening the lock nut and turning the adjuster.
Tighten the lock nut and put the rubber cover back.
Recheck for proper throttle operation.

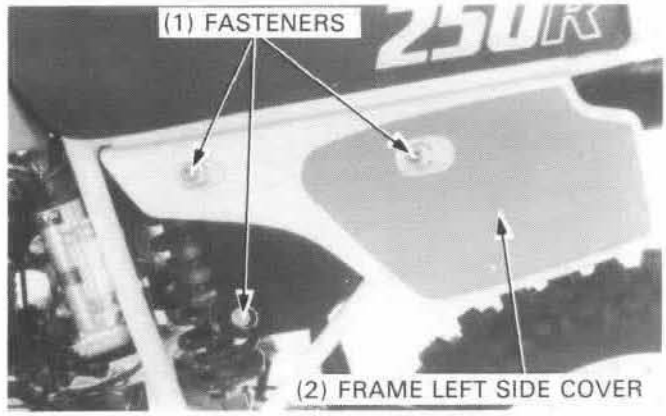


Major adjustments are made with the lower adjuster on the carburetor.
Adjust free play by loosening the lock nut and turning the adjuster.
Tighten the lock nut.
Recheck throttle operation. Replace any damaged parts.
Install the fuel tank and seat.



AIR CLEANER

Unhook the three fasteners and remove the left side cover.

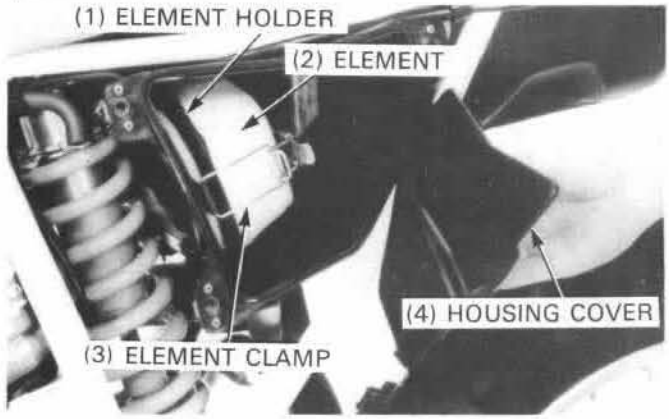


NOTE

- If the inlet dust cap is attached, remove the seat and inlet dust cap.

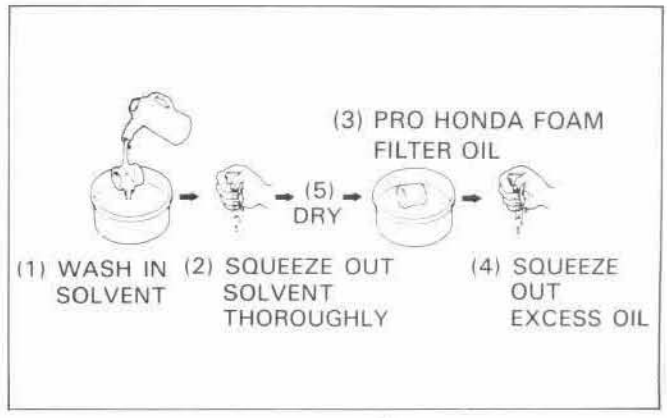
Remove the air cleaner housing cover (AFTER '89:).
Release the air cleaner element clamp and remove the element with the holder.
Separate the element from the holder.

(AFTER '89 SHOWN:)



Wash the element in non-flammable or high flash point solvent, squeeze out the solvent thoroughly, and allow the element to dry.
Soak the element in Pro Honda Foam Filter Oil or equivalent and squeeze out the excess oil thoroughly.

Install the removed parts in the reverse order of disassembly.



SPARK PLUG

Disconnect the spark plug cap and remove the spark plug.

Visually inspect the spark plug. Discard it if the insulator is cracked or chipped.

Measure the spark plug gap with a wire-type feeler gauge. Adjust the gap by bending the side electrode carefully.

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

RECOMMENDED SPARK PLUG:

Standard	**(NGK) DPR9Z (NIPPONDENSO) X27GPR-U**
For cold climate (below 5°C/41°F)	**(NGK) DPR8Z (NIPPONDENSO) X24GPR-U**

Make sure the sealing washer is in good condition.

Install the spark plug, tighten it by hand, then use a spark plug wrench for the final tightening.

Connect the spark plug cap.

VALVE CLEARANCE

NOTE

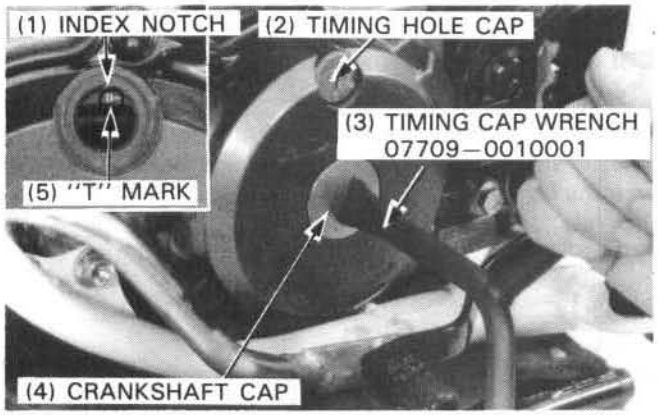
- Inspect and adjust valve clearance while the engine is cold (below 35 °C/95 ° F).
- Make sure the decompressor valve lifters have some free play during this maintenance.

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

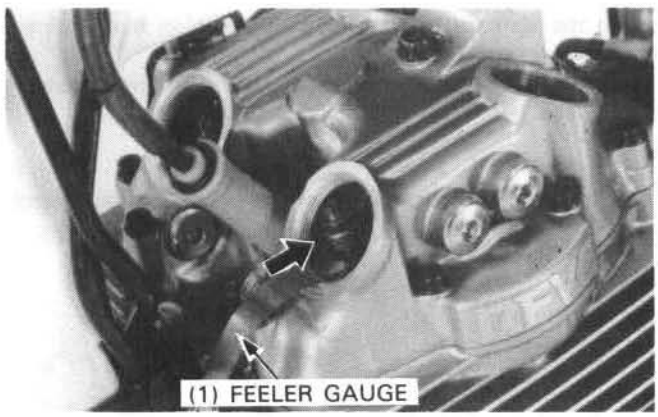
WARNING

- ***Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in your working area or where gasoline is stored.***
- ***Wipe up spilled gasoline at once.***

Remove the crankshaft and timing hole caps.
Remove the valve adjuster caps.



Rotate the flywheel counterclockwise to align the "T" mark with the index notch on the left crankcase cover.
Make sure the piston is at TDC (Top Dead Center) on the compression stroke.



Check the clearance of all four valves by inserting a feeler gauge between the adjusting screw and the sub-rocker arm.

NOTE

- When checking the clearance slide the feeler gauge from the inside out in the direction of the arrow.

VALVE CLEARANCE:
IN: 0.05 mm (0.002 in)
EX: 0.08 mm (0.003 in)

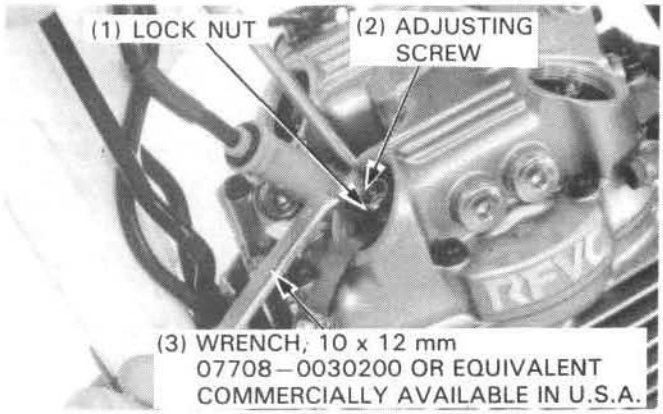
Adjust by loosening the lock nut and turning the adjusting screw until there is a slight drag on the feeler gauge.

After tightening the valve adjuster lock nut, recheck the valve clearance.

Hold the adjusting screw and tighten the lock nut.

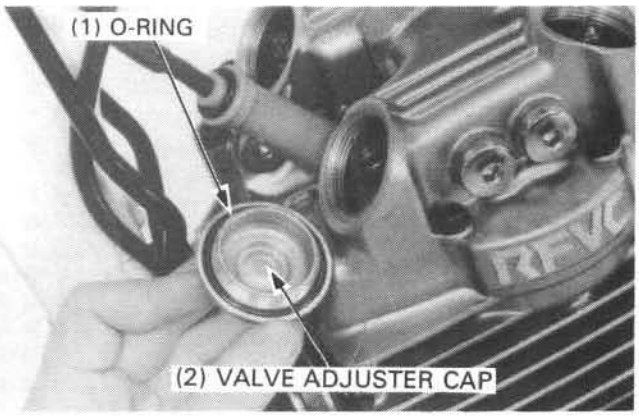
TORQUE: 21–25 N·m (2.1–2.5 kg-m, 15–20 ft-lb)

Adjust the starter and manual decompressor free play.



Check the O-rings for damage and tighten the valve adjuster caps securely.

Install the fuel tank and seat.



DECOMPRESSOR SYSTEM

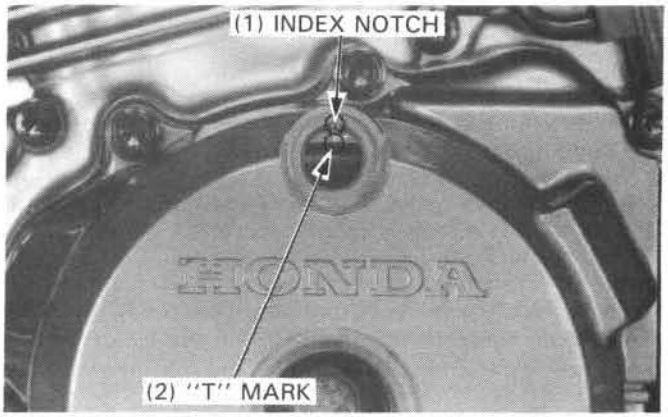
KICK STARTER

NOTE

- Always adjust the decompressor linkage (manual and kick-starter) after adjusting the valve clearance (page 3-8).

Remove the crankshaft and timing hole caps.

Rotate the flywheel counterclockwise to align the "T" mark with the index notch. Make sure that the piston is at TDC (Top Dead Center) on the compression stroke.



Measure the kickstarter decompressor cable free play at the tip of the decompressor valve lifter lever.

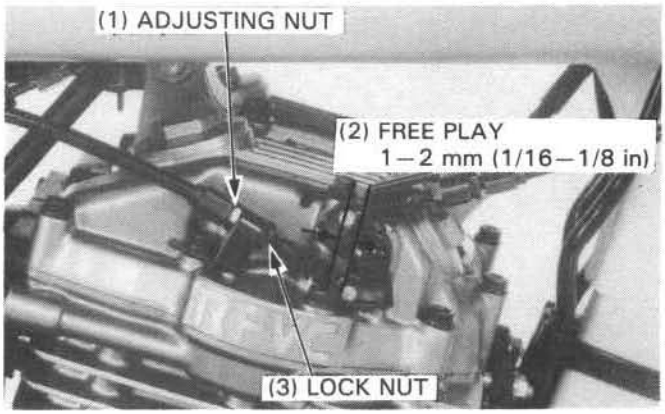
FREE PLAY: 1–2 mm (1/16–1/8 in)

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

CAUTION

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

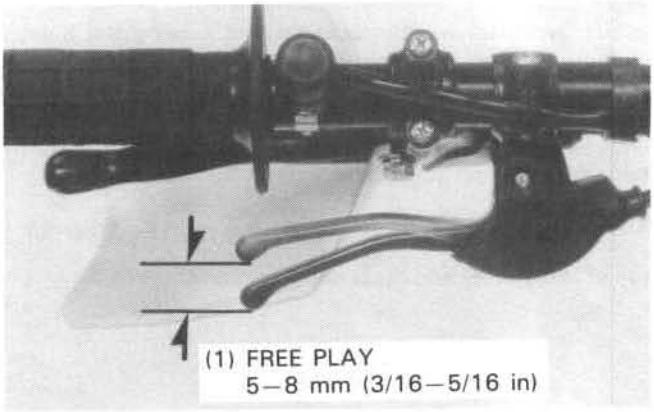
Tighten the lock nut.
Operate the kickstarter and check the operation of the decompressor mechanism.
Recheck free play.



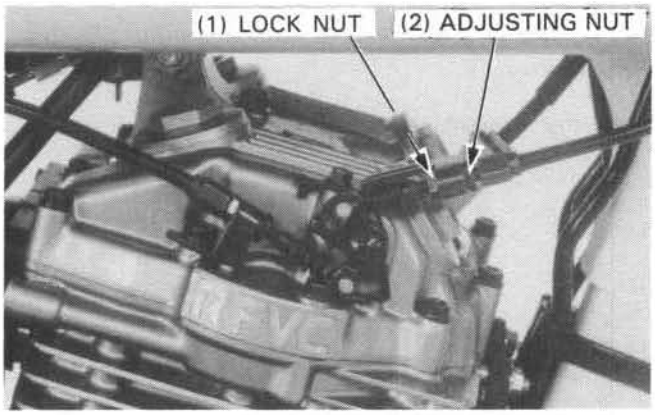
MANUAL

Measure the free play at the tip of the manual decompressor lever.

FREE PLAY: 5–8 mm (3/16–5/16 in)



Adjust by turning the manual decompressor adjusting nut at the engine.
After adjusting, tighten the lock nut.
Recheck the free play at the lever.



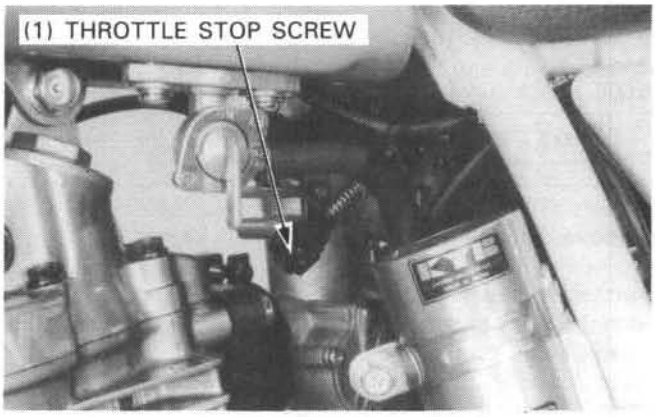
CARBURETOR-IDLE SPEED

NOTE

- Inspect and adjust the idle speed after all other engine adjustments are within specifications.
- The engine must be warm for an accurate idle inspection and adjustment. Ten minutes of stop and go riding is sufficient.

Warm up the engine, shift the transmission into NEUTRAL, and hold the motorcycle upright. Connect a tachometer.
Turn the throttle stop screw to obtain the specified idle speed.

IDLE SPEED: 1,300 ± 100 rpm



CYLINDER COMPRESSION

Warm up the engine.
Stop the engine and remove the spark plug.
Disconnect the kickstarter decompressor at the cylinder head.
Connect a compression gauge.
Open the throttle grip all the way.
Operate the kickstarter several times and check the gauge reading.

NOTE

- Check that there is no leakage at the gauge connection.

COMPRESSION:

'86–'91:
1300–1500kPa (13.0–15.0 kg/cm², 184.9–213.3 psi)
After '91:
1200–1300kPa (12.0–13.0 kg/cm², 170.7–184.9 psi)

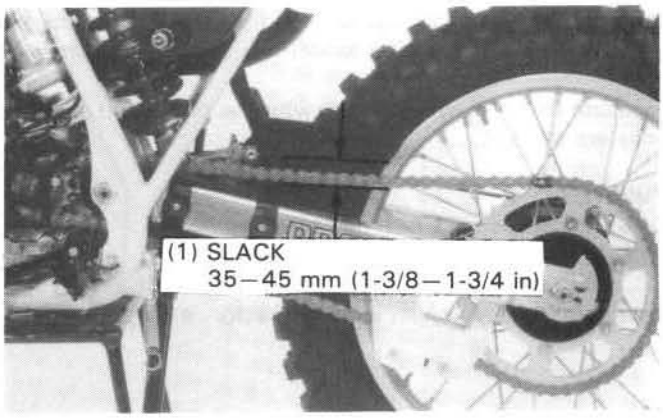
Low compression can be caused by:
- Improper valve adjustment
- Valve leakage
- Leaking cylinder head gasket
- Worn piston ring or cylinder
- Improper decompressor adjustment

High compression can be caused by:
- Carbon deposits in combustion chamber, or on the piston crown

Disconnect the compression gauge, then reinstall the kickstarter decompressor linkage.
Adjust the kickstarter decompressor free play, as required.
Reinstall the spark plug.

DRIVE CHAIN

Turn the engine off. Raise the rear wheel off the ground by placing a work stand or box under the engine. Shift the transmission into neutral.
Measure the slack in the higher drive chain run midway between the sprockets.

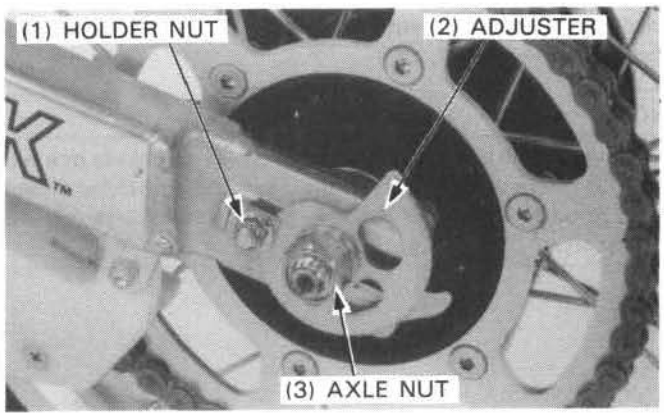


STANDARD SLACK: 35–45 mm (1-3/8–1-3/4 in)

Adjust as follows:
Loosen the rear axle nut and chain adjuster holder nuts ('86–'89:), then turn both adjusters equally until the chain slack is correct.

CAUTION

- *Be sure the same adjuster index marks align with the stopper pins on both sides of the swingarm.*



Tighten the axle nut.

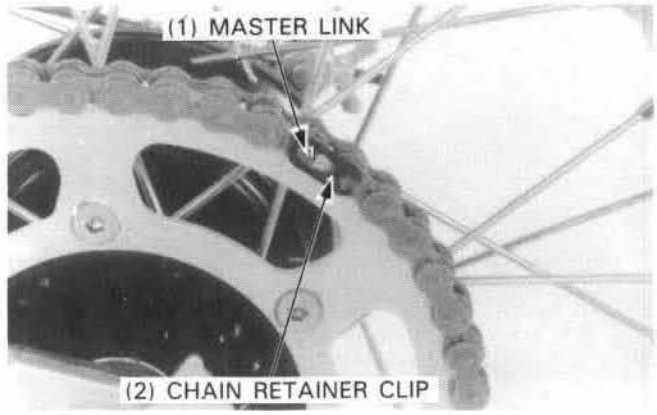
TORQUE: 80–110 N·m (8.0–11.0 kg-m, 58–80 ft-lb)

'86–'89:
Tighten the chain adjuster holder nuts on both sides.

TORQUE: 30–40 N·m (3.0–4.0 kg-m, 21–29 ft-lb)

Recheck chain slack and free wheel rotation.

When the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication.
Remove the drive sprocket cover.
Remove the chain retainer clip carefully.
Remove the master link and remove the drive chain.



CAUTION

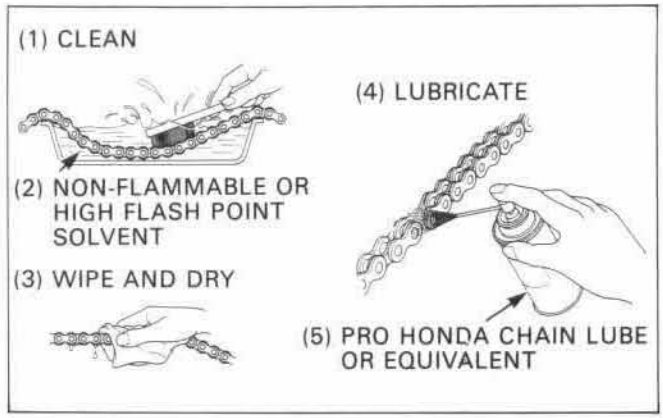
- *Be careful not to lose the O-rings when the clip and master link are removed.*

Clean the chain with non-flammable or high flash point solvent and wipe it dry. Be sure the chain has dried completely before lubricating.

CAUTION

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

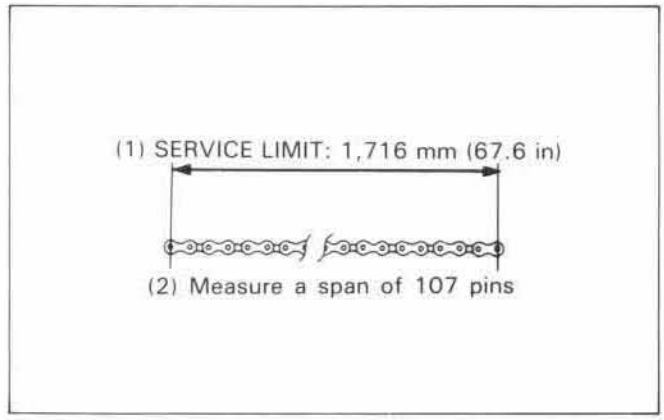
Lubricate the chain with Pro Honda Chain Lube or equivalent chain lubricant designed specifically for use on O-ring chains.



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

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

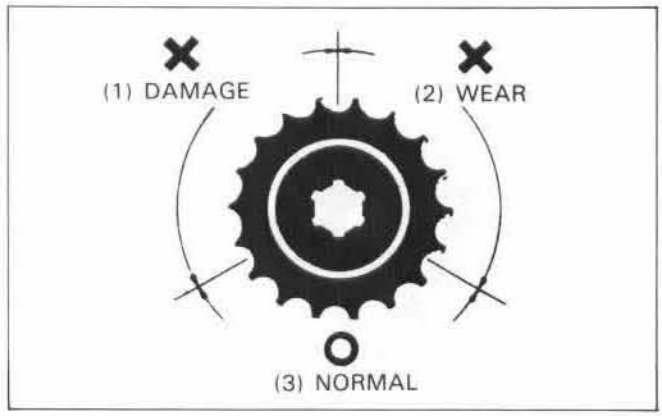
PINS LENGTH:
STANDARD: 1,699 mm (66.9 in)
SERVICE LIMIT: 1,716 mm (67.6 in)



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

NOTE

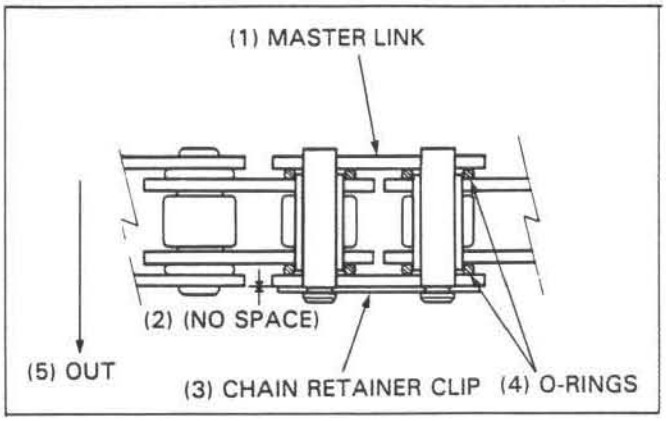
- Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprockets must be in good condition, or the new replacement parts will wear rapidly.



Install a new drive chain.
Install the master link with O-rings and a chain retaining clip.
Install the drive sprocket cover.
Adjust the drive chain (page 3-11).

CAUTION

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



DRIVE CHAIN SLIDER

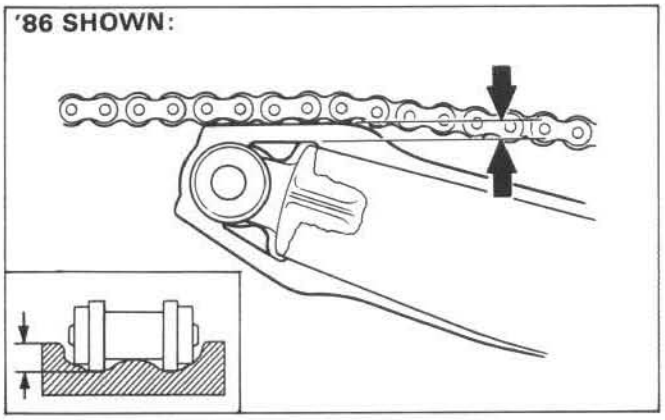
CHAIN SLIDER

Check the chain slider for wear.

SERVICE LIMIT:
CHAIN SLIDER (from upper surface):4.0 mm (0.15 in)

CAUTION

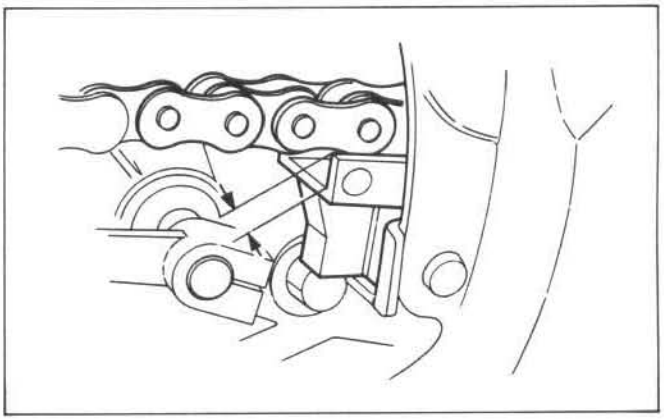
- *If the chain slider becomes worn down through to the swingarm, the chain will wear against the swingarm.*



CHAIN SLIPPER

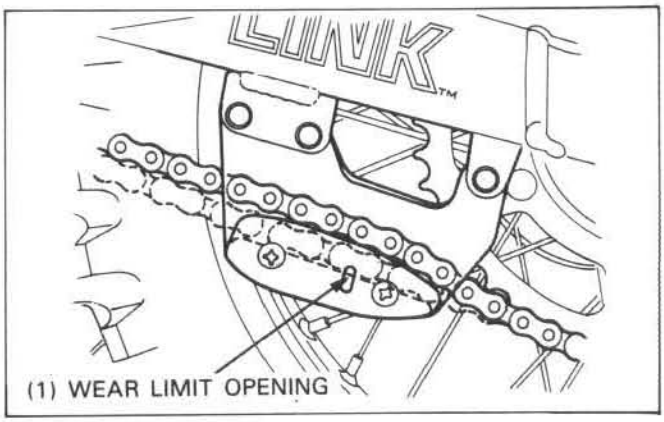
Inspect the chain slipper and replace it if the depth of the chain groove leaves less material than specified.

SERVICE LIMIT: 15 mm (0.6 in)



CHAIN GUIDE SLIDER

Inspect the chain guide slider for wear and replace it if you can see the chain through the wear limit opening.

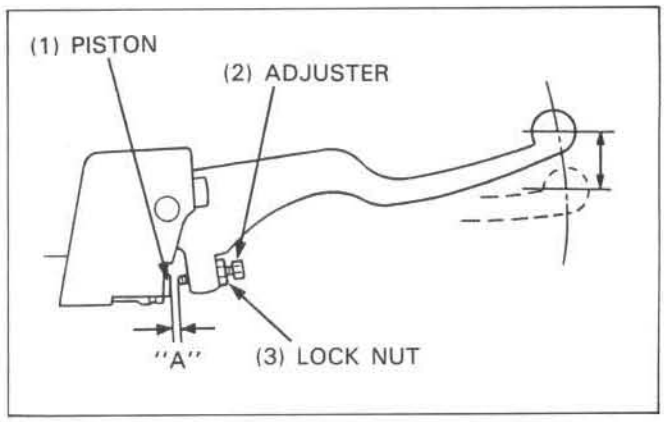


BRAKE SYSTEM

FRONT BRAKE LEVER FREE PLAY

The front brake lever is provided with a free play adjuster. Specified free play, measured at the tip of the lever, is 0.6–7.8 mm (1/14–5/8 in). To increase free play, loosen the lock nut and turn the adjuster counterclockwise. To decrease free play, turn the adjuster clockwise.

If the brake lever free play exceeds 7.8 mm (5/8 in) with the clearance between the adjuster and the front brake master cylinder piston below 1.4 mm (0.06 in), there is probably air in the brake system and it must be bled (page 14-4).

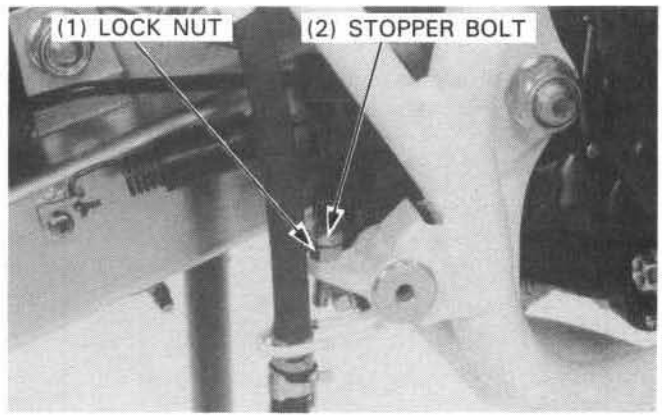


WARNING

- ***Never use any adjuster other than those designed for this motorcycle. Install a new adjuster from the lever side with the lock nut under the head of the adjuster.***

BRAKE PEDAL HEIGHT ('86–'89:)

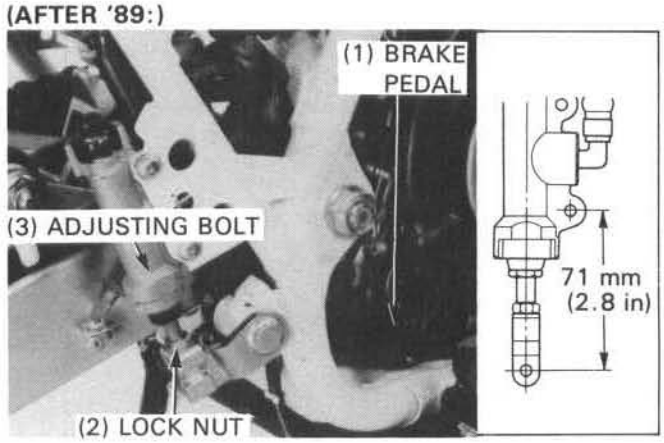
To adjust:
Loosen the lock nut and adjust the pedal height by turning the stopper bolt. Tighten the lock nut.
Adjust the brake pedal free play.



BRAKE PEDAL HEIGHT ADJUSTMENT (AFTER '89:)

Adjust the brake padal to the desired height by loosening the lock nut and turning the pedal height adjusting bolt.
Tighten the lock nut.

(AFTER '89:)



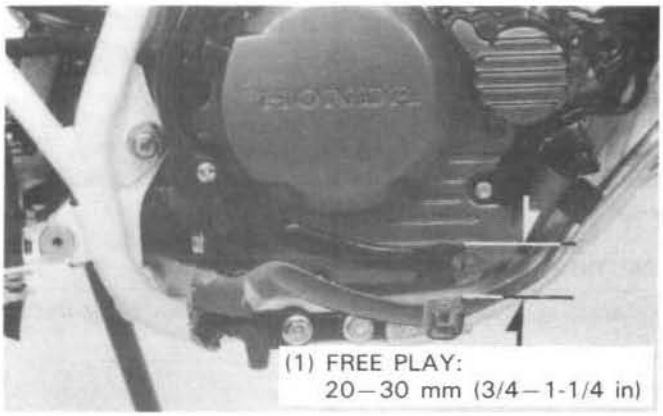
BRAKE PEDAL FREE PLAY ('86–'89:)

NOTE

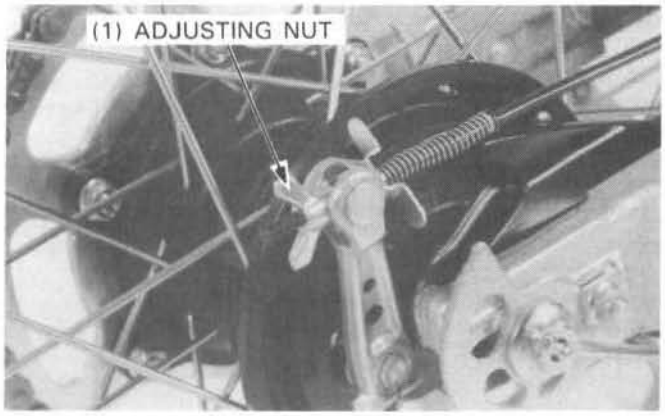
- Adjust the brake pedal free play after adjusting the brake pedal height.

Measure the brake pedal free play.

FREE PLAY: 20–30 mm (3/4–1-1/4 in)



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

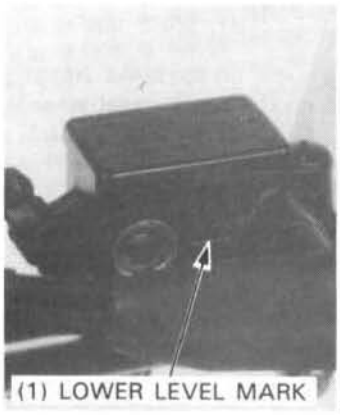


BRAKE FLUID

FRONT BRAKE

Check the front brake fluid reservoir level. If the level is near the lower level mark, remove the cover and diaphragm.
Fill the reservoir with DOT-4 Brake Fluid to the casting ledge.

If the level was low, check the entire system for leaks.



REAR BRAKE (AFTER '89:)

Check the rear brake fluid reservoir level. If the level is near the lower level mark, remove the cap and fill the reservoir with DOT 4 brake fluid to the upper level mark.

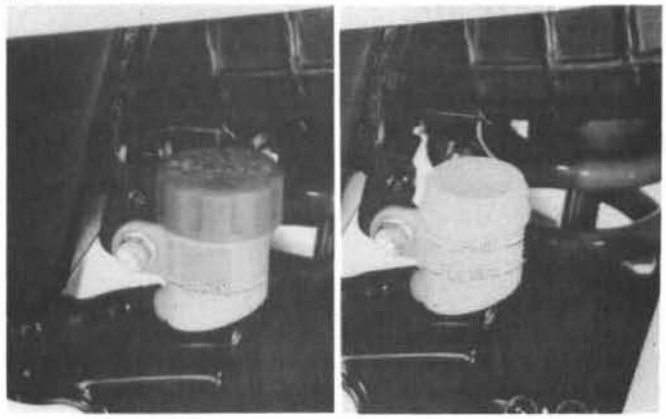
If the level was low, check brake pad wear and the entire system for leaks.

CAUTION

- *Do not remove the cover until the handlebar has been turned so that the reservoir is level.*
- *Avoid operating the brake lever with the cap removed. Brake fluid will squirt out if the lever is pulled.*
- *Do not mix different fluid types, as they are not compatible.*
- *Avoid spilling fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.*

Refer to section 14, for brake bleeding procedure.

(AFTER '89:)



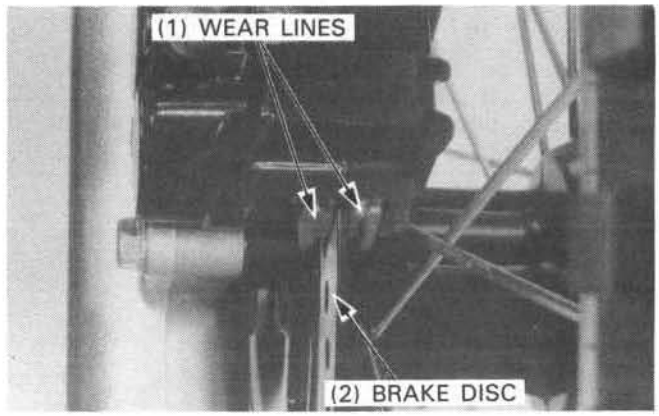
BRAKE SHOE/PAD WEAR

FRONT BRAKE PAD WEAR

Check the brake pads for wear.
Replace the brake pads if the wear line on the pads reaches the edge of the brake disc (page 14-5, 16).

CAUTION

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

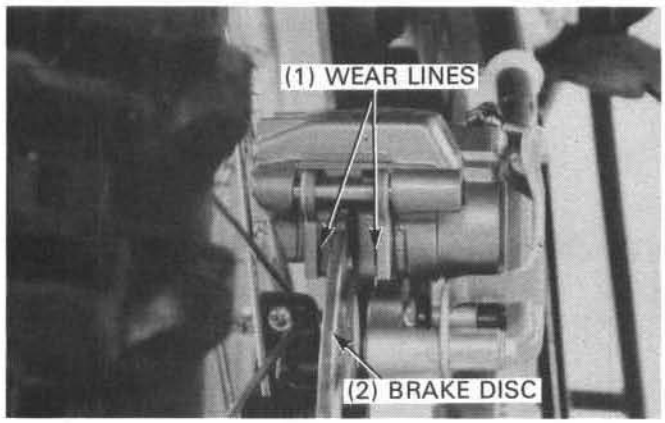


REAR BRAKE PAD WEAR (AFTER '89:)

Check the brake pad for wear.
Replace the brake pad if the wear line on the pads reaches the edge of the brake disc (page 14-5).

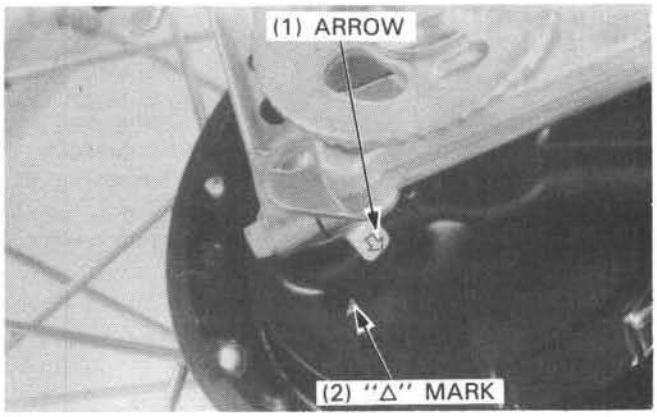
CAUTION

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



BRAKE SHOE WEAR ('86–'89:)

Replace the brake shoes if the arrow on the brake arm aligns with the reference mark "Δ" on the brake panel when the brake is applied.



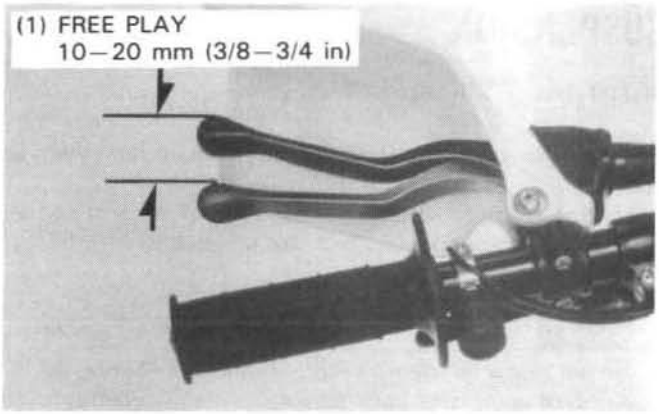
HEADLIGHT AIM

Adjust the headlight beam vertically by turning the adjusting screw on the headlight case.

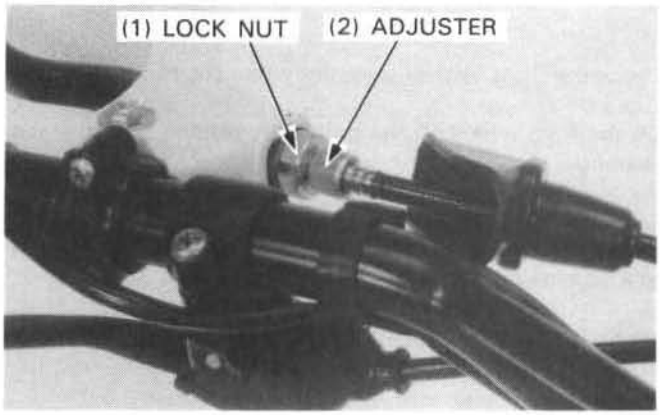
CLUTCH SYSTEM

Measure the clutch lever free play at the lever end.

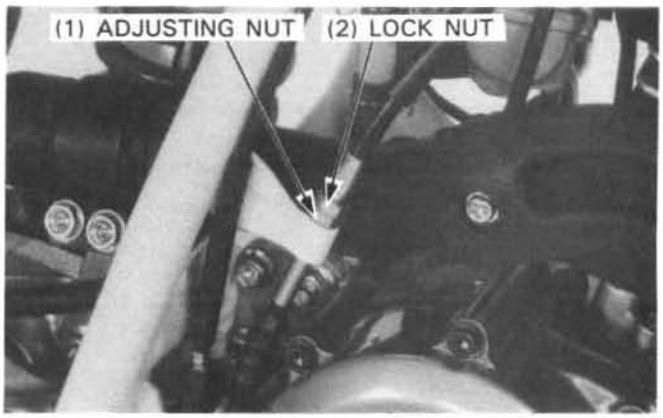
FREE PLAY: 10—20 mm (3/8—3/4 in)



Adjust as follows:
Minor adjustments are made with the upper adjuster.
Pull the cover back.
Loosen the lock nut and turn the adjuter.
Tighten the lock nut and install the cover.



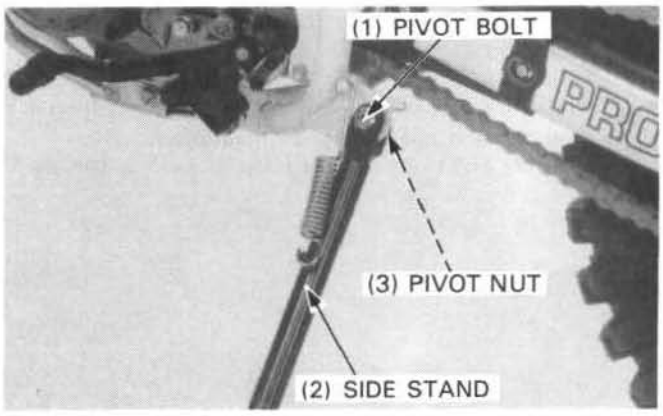
Major adjustments are made with the lower adjuster.
If major adjustment is required, turn the upper adjuster all the way in and back out 1 turn.
Loosen the lower lock nut and turn the adjusting nut.
Tighten the lock nuts.
Check the clutch operation.



SIDE STAND

Check the side stand spring for damage and/or loss of tension.
Check that the side stand assembly is not bent and that it moves freely.
Lublicate the side stand pivot or tighten the pivot nut if necessary.

TORQUE: 35—45 N·m (3.5—4.5 kg-m, 25—33 ft-lb)



SUSPENSION

FRONT

Check the action of the front forks by compressing them several times.
Check the entire fork assembly for signs of leaks or damage.
Replace any components which are unrepairable.
Torque all nuts and bolts.

WARNING

- ***Do not ride a vehicle with faulty suspension. Loose, worn, or damaged suspension parts may affect stability and rider control.***

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

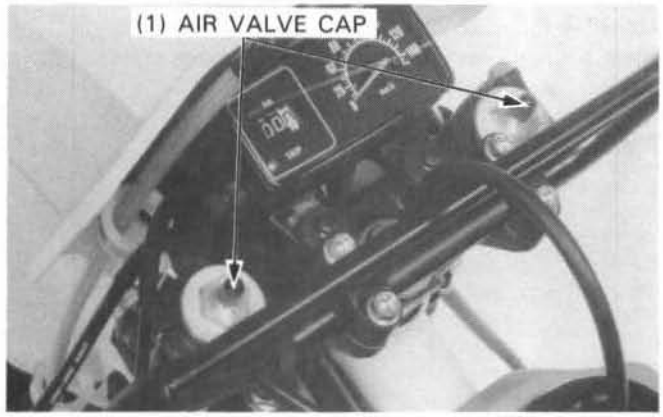
Lift the front wheel off the ground by placing a work stand or box under the engine.

Remove each air valve cap and measure the air pressure.

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

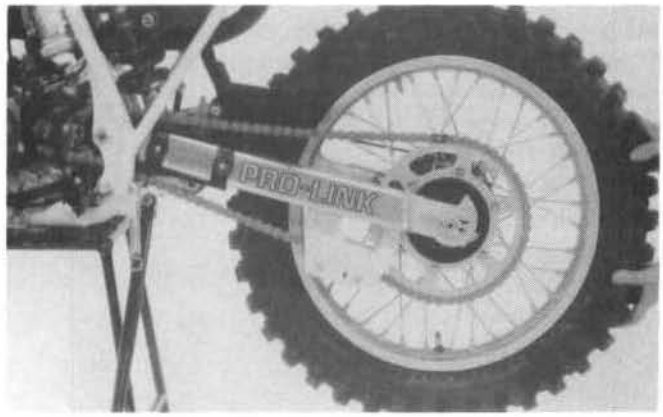
MAXIMUM AIR PRESSURE : 10 kPa (1.0 kg/cm², 14.2 psi)

For pressure adjustment, see Owner's manual.



REAR

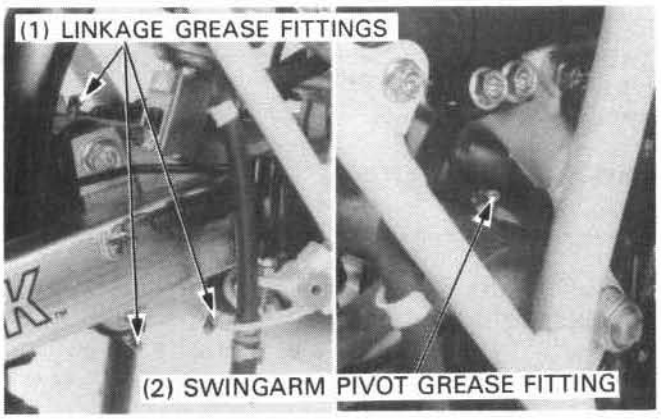
Place the motorcycle on a work stand or box to raise the rear wheel off the ground.
Move the rear wheel sideways with force to see if the swing arm bearings or wheel bearings are worn.
Replace if excessively worn.



Bounce the rear of the motorcycle up and down to check for proper operation.

Check the entire rear suspension being sure everything is securely mounted and not damaged or distorted.
Torque all nuts and bolts to their specified values (pages 1-5 and 3-2).

Pump grease into the swingarm pivot bearings through the grease fitting on the swingarm, and linkage bushings through the grease fittings on the linkage pivots.



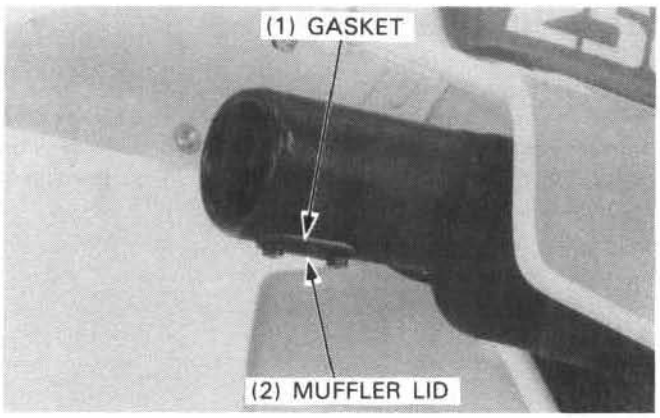
SPARK ARRESTER

Remove the muffler lid.

Start the engine and increase the rpm to blow carbon out of the exhaust pipe while momentarily creating an exhaust system back pressure by blocking the end of the muffler with a shop towel.
Repeat until carbon stops coming out.

WARNING

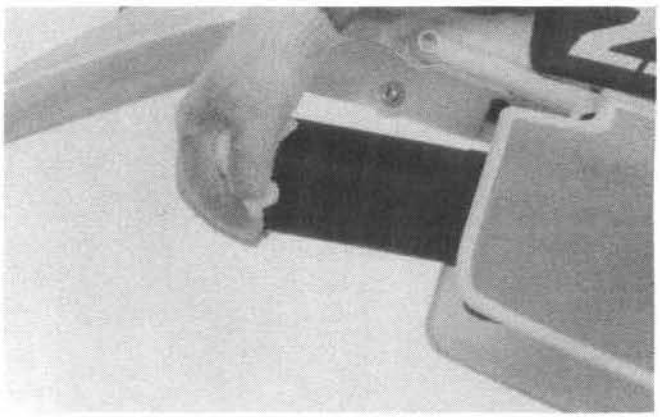
- ***Do not perform this operation while the exhaust system is hot. Perform this operation in a well-ventilated area, free from fire hazards.***
  Use adequate eye protection.



After cleaning the spark arrester, intall the muffler lid and gasket and tighten the bolts. Be sure that the muffler lid and gasket are in good condition.

CAUTION

- *Be sure that the spark arrester screws are securely in place.*



NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (section 1) at the intervals shown in the Maintenance Schedule (page 3-3, 4).

Check all cotter pins, safety clips, hose clamps and cable stays.

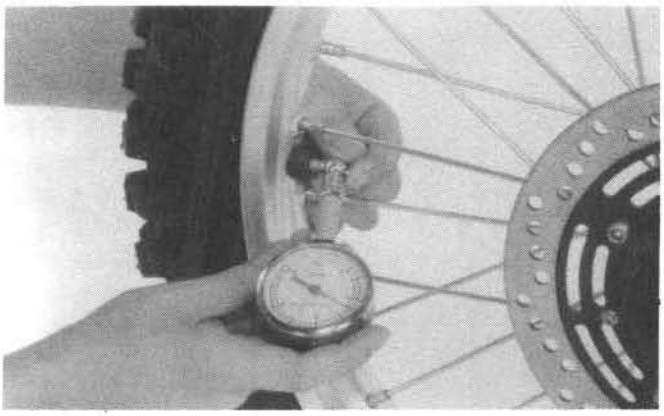
WHEELS/TIRES

TIRE PRESSURE

NOTE

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

Tire pressure:
Front: 100 kPa (1.0 kg/cm², 15 psi)
Rear: 100 kPa (1.0 kg/cm², 15 psi)
Tire size:
Front: 80/100–21 51M
Rear: 110/100–18 64M

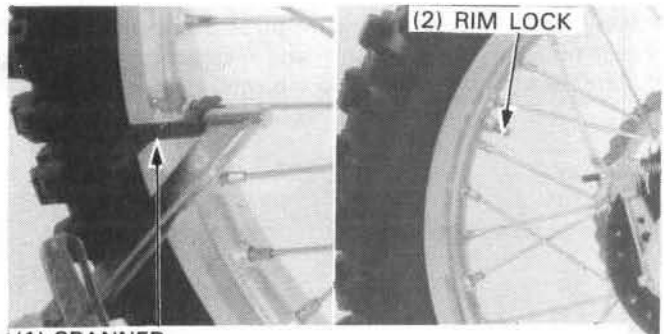


Check the tires for cuts, embedded nails or other sharp objects.
Check the tire cleat depth.

SERVICE LIMIT: 3 mm (1/8 in)

Tighten the wheel spokes and rim locks.

TORQUE VALUES:
SPOKE NIPPLE: 2.5–5.0 N·m
(0.25–0.50 kg-m, 1.8–3.6 ft-lb)
RIM LOCK: 10–15 N·m (1.0–1.5 kg-m, 7–11 ft-lb)



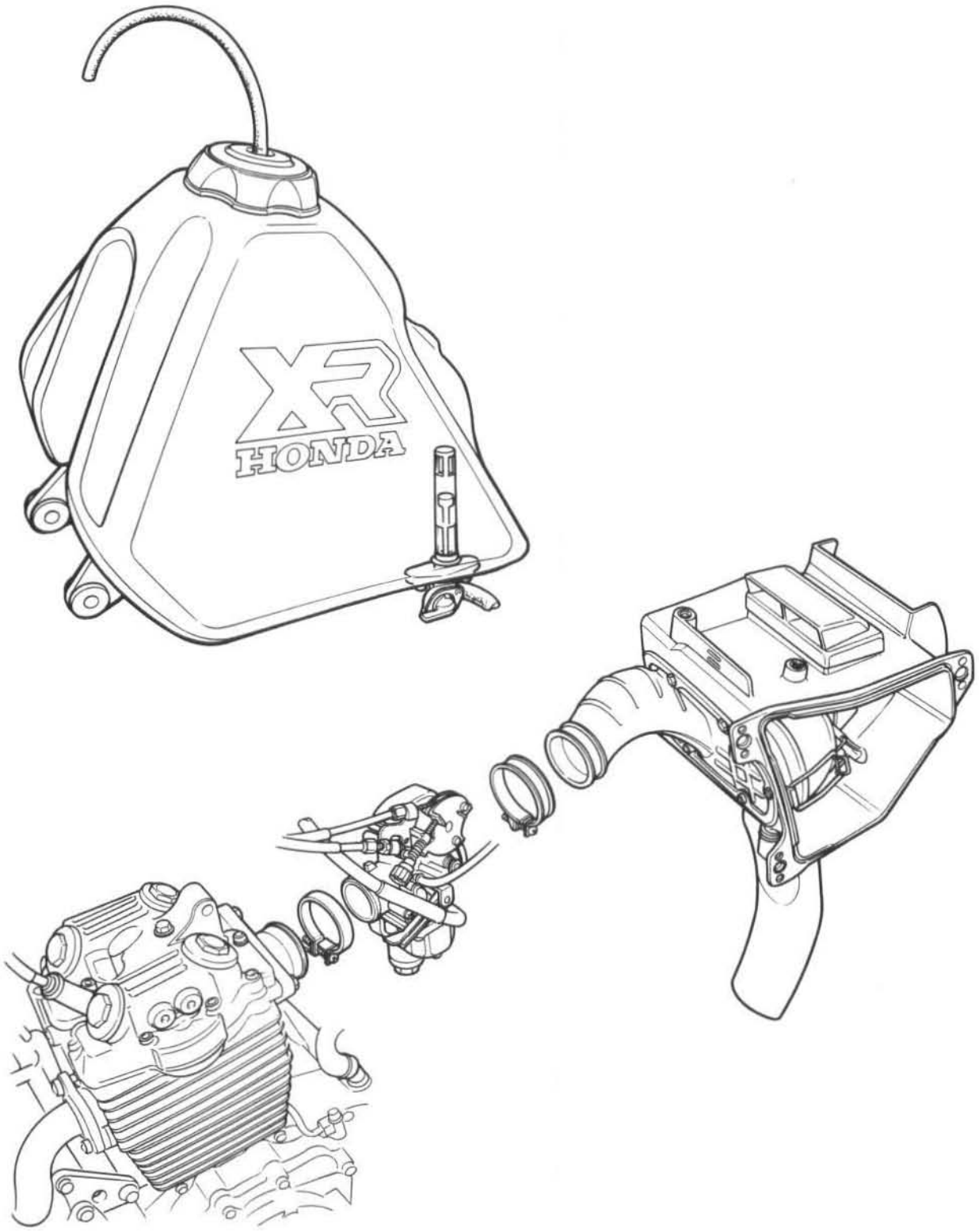
(1) SPANNER,
5.8 x 6.1 mm 07701–0020300 OR EQUIVALENT
COMMERCIALLY AVAILABLE IN U.S.A.

STEERING HEAD BEARINGS

Raise the front wheel off the ground and check that the handlebar rotates freely. Check that the control cables do not interfere with handlebar rotation. If the handlebar moves unevenly, binds, or has vertical movement, adjust the steering head bearing adjusting nut (page 12-22).

(1) STEERING HEAD BEARINGS

MEMO


XR
HONDA

SERVICE INFORMATION

GENERAL

- Use caution when working with gasoline. Always work in a well-ventilated area and away from sparks or flames.
- The float chamber has a drain plug that can be loosened to drain residual fuel.
- When disassembling fuel system parts, note the locations of the O-rings. Replace them during assembly.

WARNING

- ***Gasoline is extremely flamable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in your working area or where gasoline is stored.***
- ***If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause loss of consiousness and may lead to death.***

CAUTION

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

NOTE

- If the vehicle is to be stored for more than one month, drain the float chamber. Fuel left in the float chamber may cause clogged jets resulting in hard starting or poor driveability.

SPECIFICATIONS

Fuel tank capacity	9.0 lit (2.38 U.S. gal, 1.98 Imp gall)
Reserve capacity	2.0 lit (0.53 U.S. gal, 0.44 Imp gal)
Carburetor	
Type	Piston valve
Identification number '86–'91:	PD 05 A
After '91:	PD 05 B
Jet needle setting	3rd groove
Float level	12.5 mm (0.49 in)
Pilot screw opening	2-1/4 turns out
Main jet	# 125
Slow jet	# 40
Idle speed	1,300 ± 100 rpm
Air cut-off valve operating press.	390 mm Hg (15.4 in Hg)
Throttle grip free play	2–6 mm (1/8–1/4 in)

TORQUE VALUE

Fuel valve mounting screw ('86–'89:)	8–12 N·m (0.8–1.2 Kg-m, 6–9 ft-lb)
(AFTER '89:)	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

TOOL

Common

Float level gauge	07401–0010000

TROUBLESHOOTING

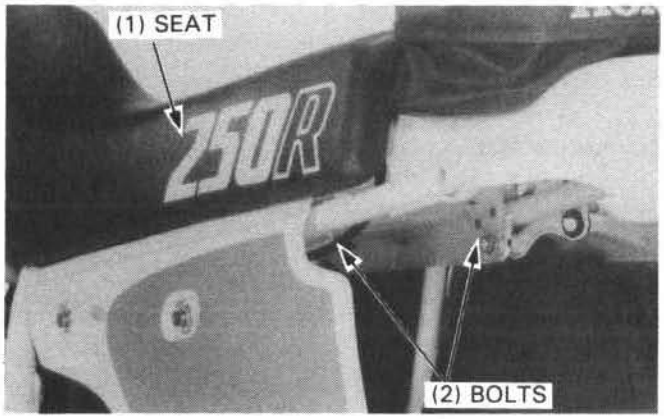
Engine cranks but won't start
- No fuel in tank
- No fuel to cylinder
- Too much fuel getting to cylinder
- No spark at plug (ignition malfunction)
- Air cleaner clogged

Engine idles roughly, stalls, or runs poorly
- Idle speed incorrect
- Ignition malfunction
- Low compression (Section 6)
- Rich mixture
- Lean mixture
- Air cleaner colgged
- Air leaking into manifold
- Fuel contaminated

Lean mixture
- Carburetor fuel jets clogged
- Fuel cap vent blocked
- Fuel strainer clogged
- Fuel line kinked or restricted
- Float valve faulty
- Float level too low

Rich mixture
- Choke stuck closed
- Float valve faulty
- Float level too high
- Carburetor air jets clogged
- Sticking float
- Dirty air cleaner

FUEL TANK



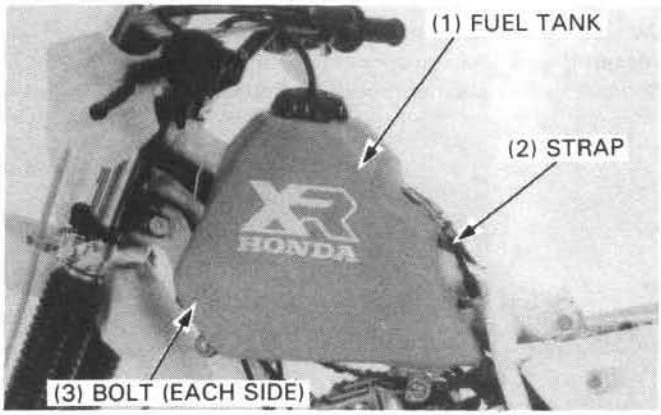
FUEL TANK REMOVAL

Remove the seat.
Turn the fuel valve OFF and disconnect the fuel line.
Remove the mounting strap, bolts and fuel tank.

WARNING

- ***Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in your working area or where gasoline is stored.***
- ***Wipe up spilled gasoline at once.***

Check that fuel flows out of the fuel valve freely.
If flow is restricted, clean the fuel strainer (page 3-6).

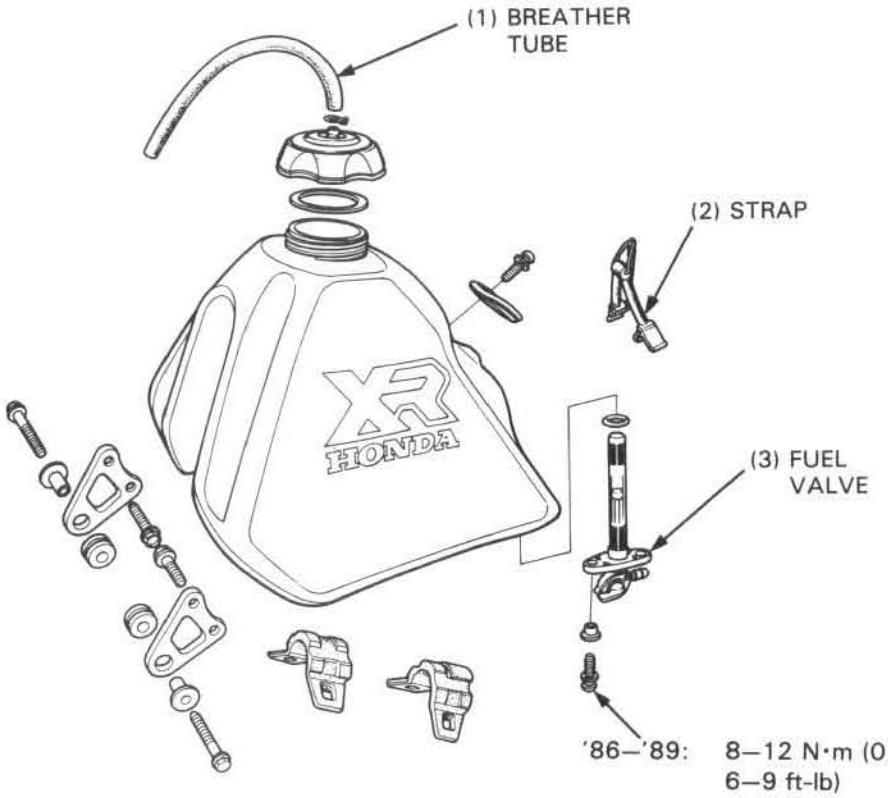


FUEL TANK INSTALLATION

Install the fuel tank with the two mounting bolts and strap.
Connect the fuel line.
Install the seat.

NOTE

- After assembling, make sure there are no fuel leaks.
- Do not overtighten the fuel valve screws.



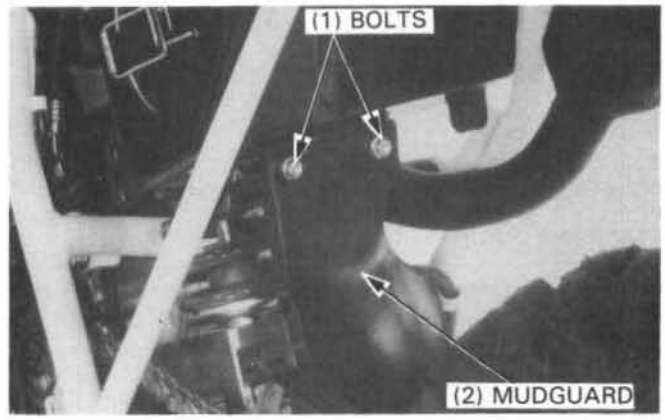
'86–'89: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
AFTER '89: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

AIR CLEANER CASE

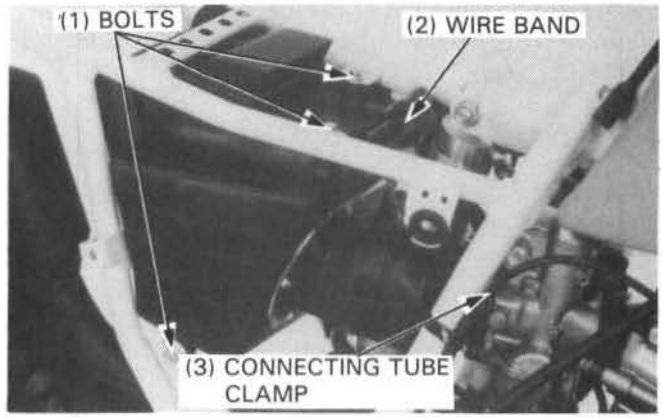
REMOVAL

Remove the seat and side covers.

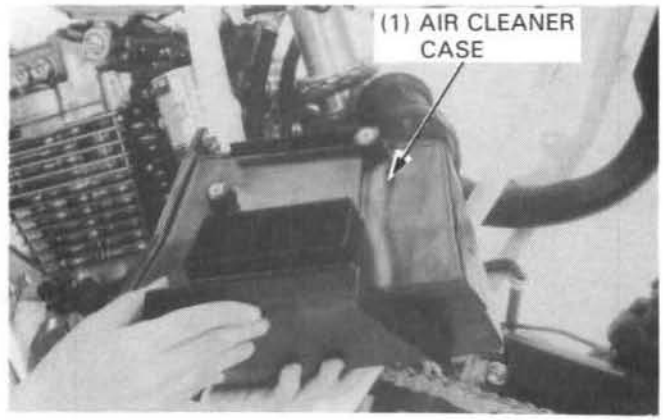
Remove the mudguard mounting bolts and mudguard.



Unfasten the wire band on the air cleaner case.
Loosen the air cleaner connecting tube clamp.
Remove the air cleaner mounting bolts.

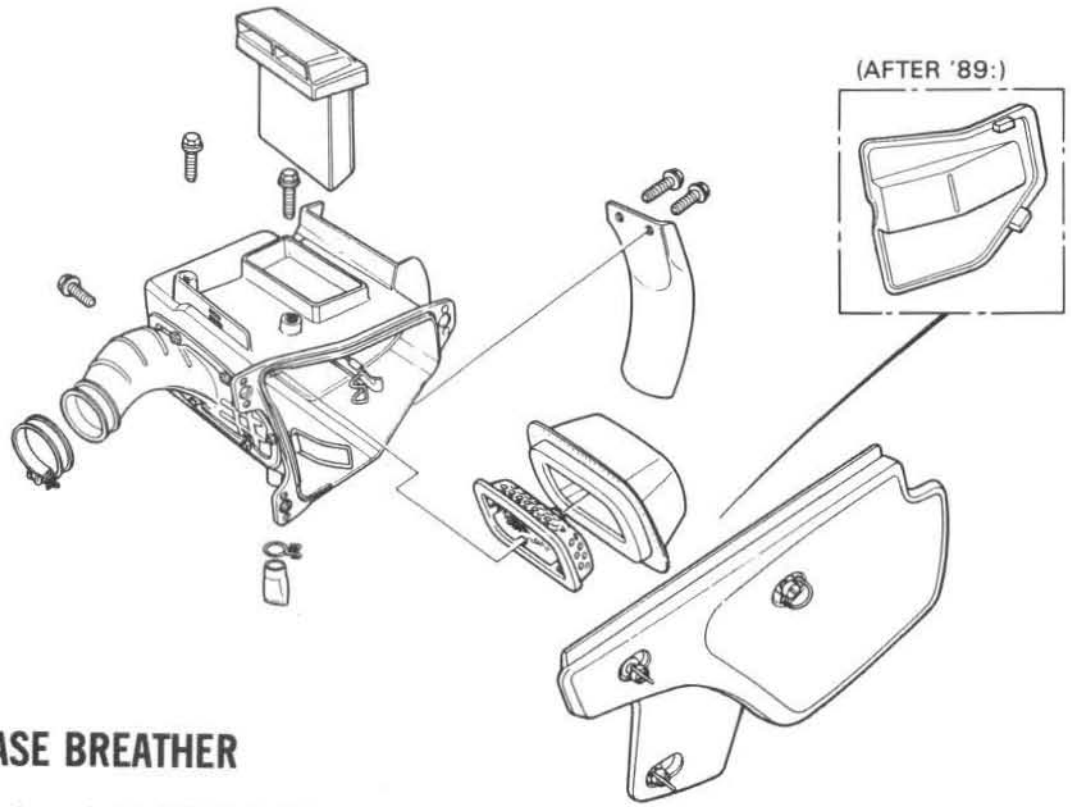


Remove the air cleaner case from the left side.



INSTALLATION

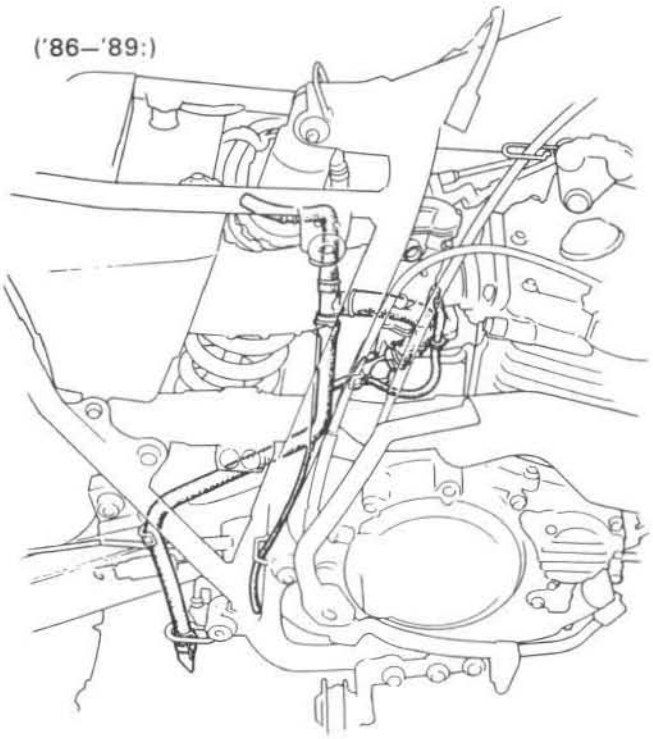
Install the air cleaner case in the reverse order of removal.



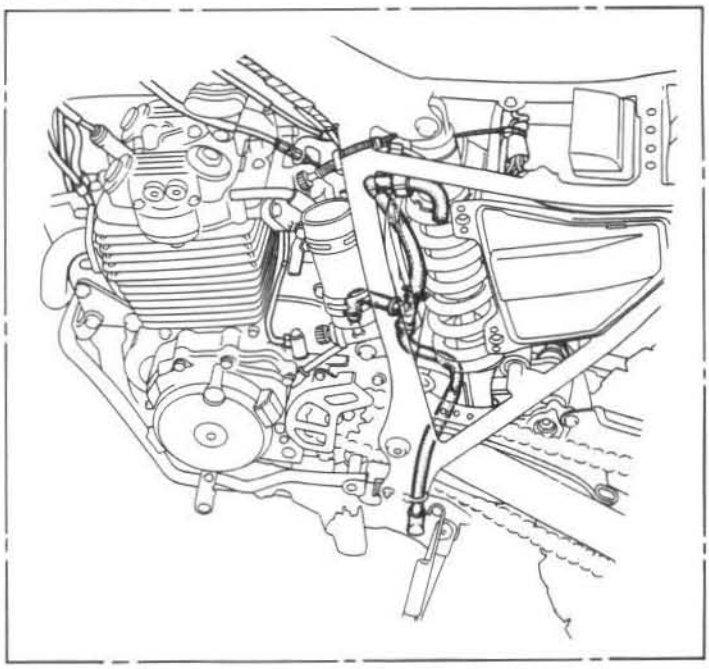
CRANKCASE BREATHER

Route the crankcase breather tube as shown.

('86–'89:)



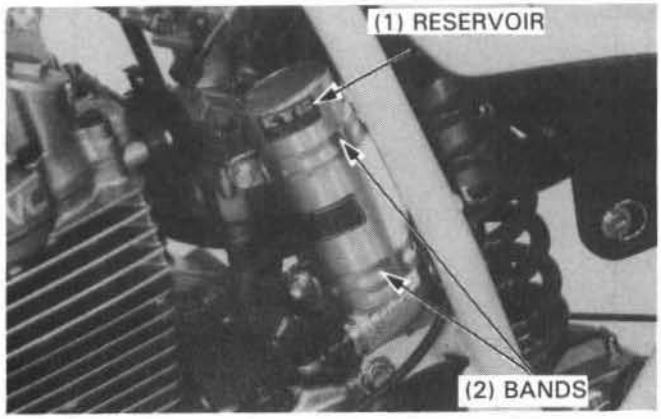
(AFTER '89:)



CARBURETOR REMOVAL

Remove the fuel tank (page 4-3).

Remove the reservoir mounting bands, and the reservoir from its mount bracket.

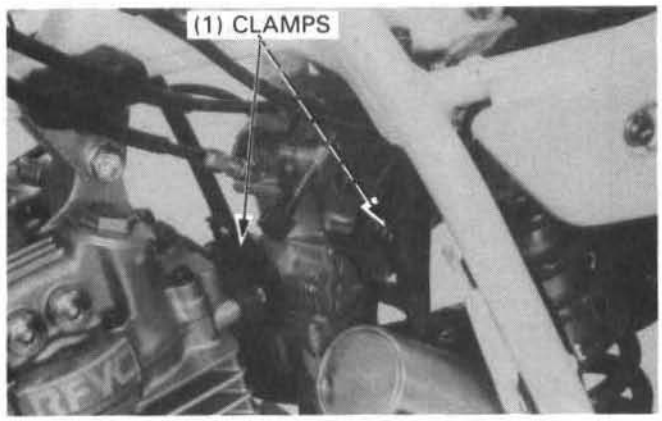


Loosen the drain screws and drain the fuel into an approved gasoline container.

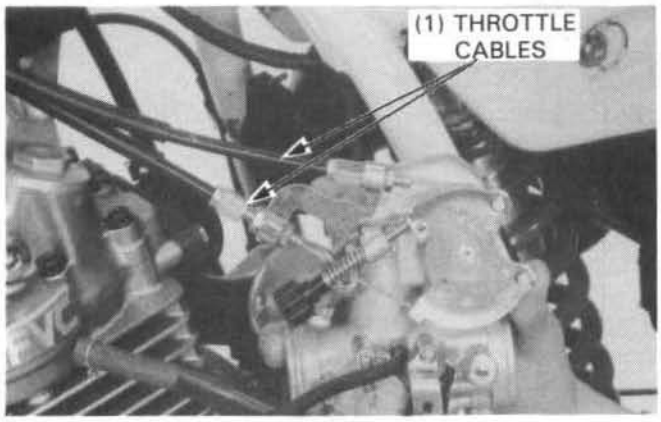
WARNING

- ***Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in your working area or where gasoline is stored.***
- ***Wipe up spilled gasoline at once.***

Loosen the carburetor clamps.
Pull the carburetors away from the right side of the engine.



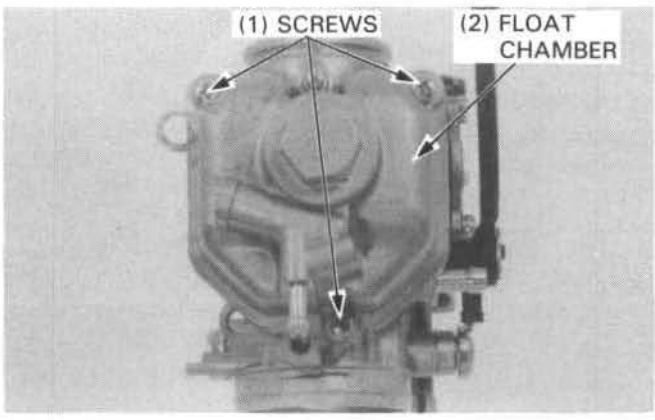
Disconnect the throttle cables and remove the carburetor.



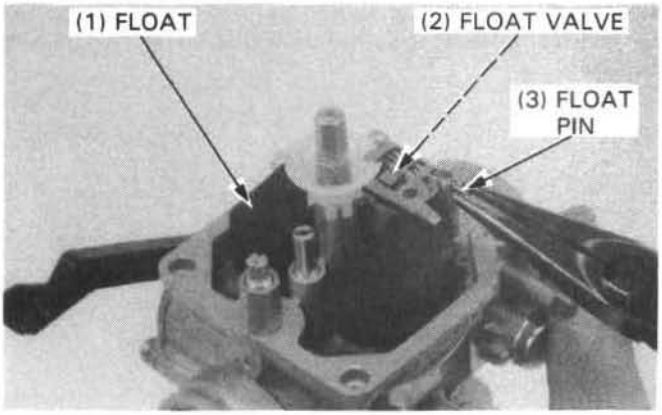
CARBURETOR DISASSEMBLY

FLOAT, FLOAT VALVE, AND JETS

Remove the over flow tube, drain tube and air vent tube.
Remove the three float chamber screws and the float chamber.



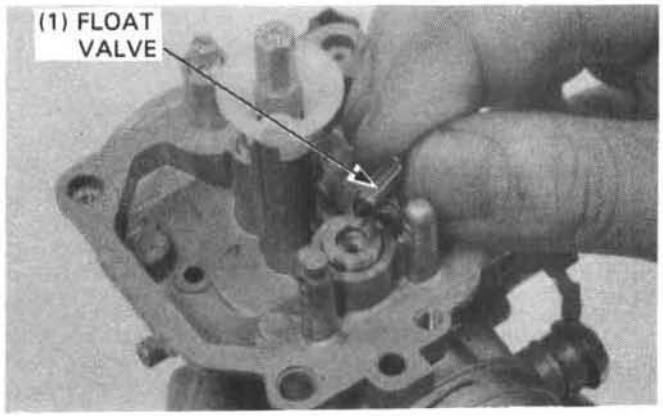
Remove the float pin, float and float valve.



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

Inspect the operation of the float valve.

Check the float for deformation or presence of fuel.



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

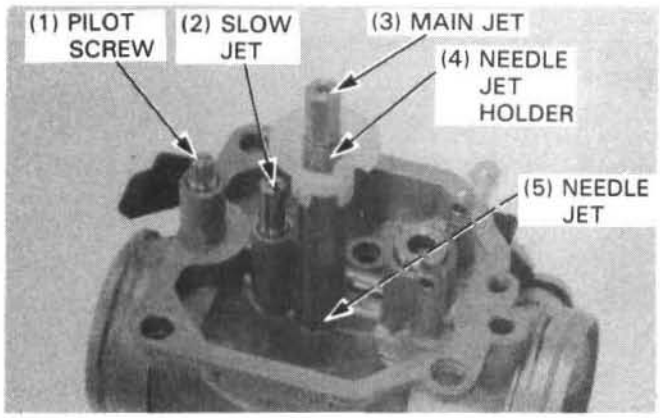
Turn the pilot screw in and carefully count the number of turns before it seats lightly. Make a note of this to use as a reference when reinstalling the pilot screw.

CAUTION

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

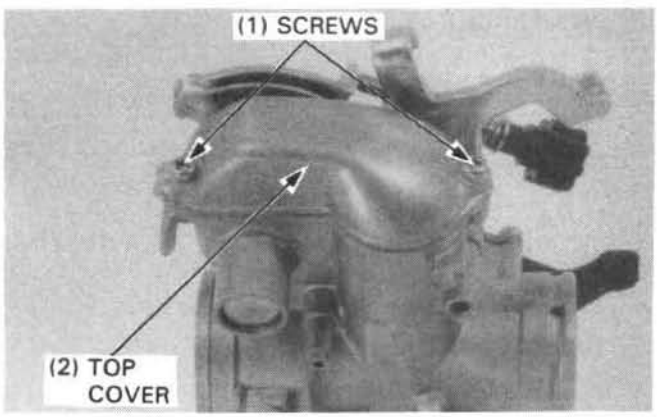
Remove the pilot screw and inspect it. Replace it if it is worn or damaged.

Check each part for wear or damage.
Blow open all jets with compressed air.

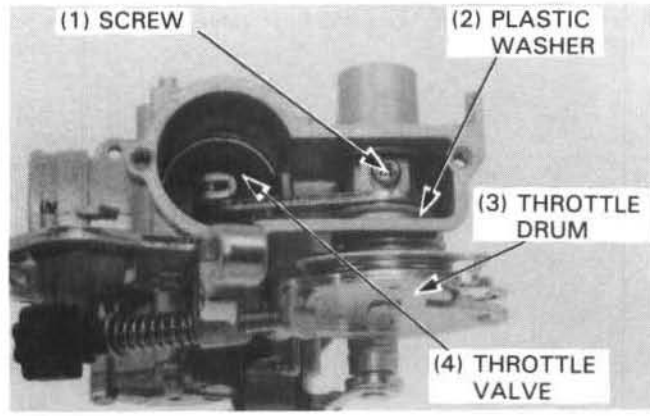


THROTTLE VALVE

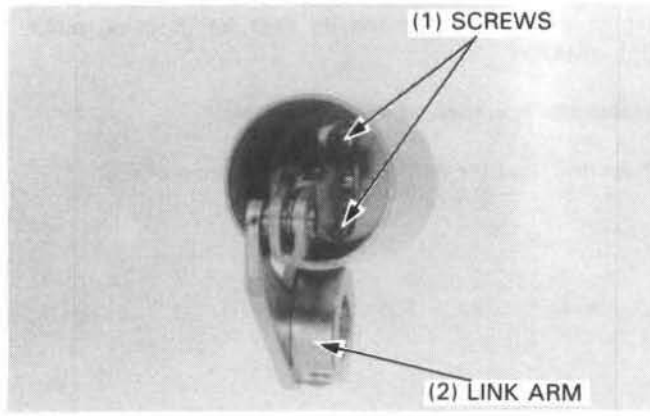
Remove the two screws attaching the carburetor top cover and the body.



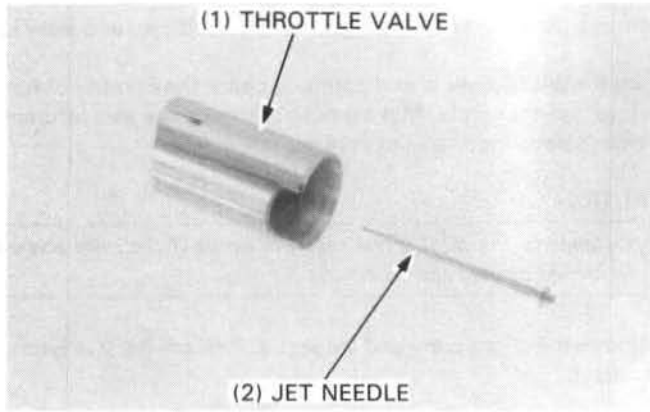
Remove the link arm set screw, the throttle drum assembly, the plastic washer and throttle valve assembly from the throttle bore.



Remove the two screws attaching the link arm to the throttle valve and separate the link arm from the throttle valve.

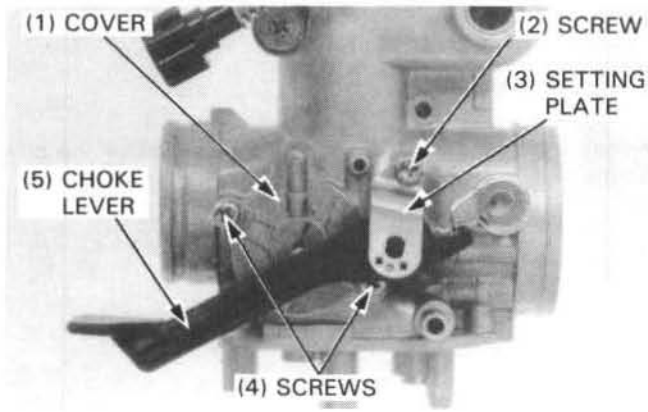


Remove the jet needle.
Check the throttle valve and jet needle for wear, nicks or other damage.

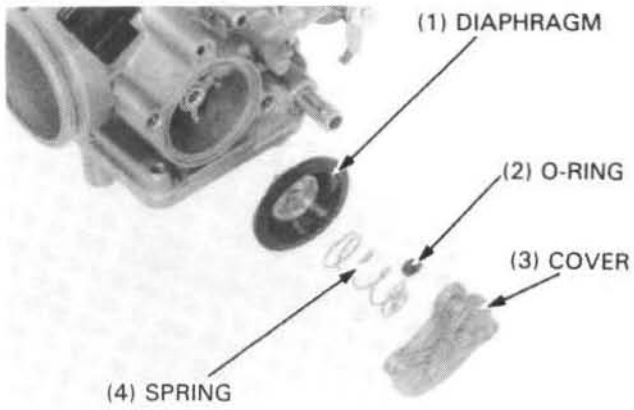


AIR CUT-OFF VALVE

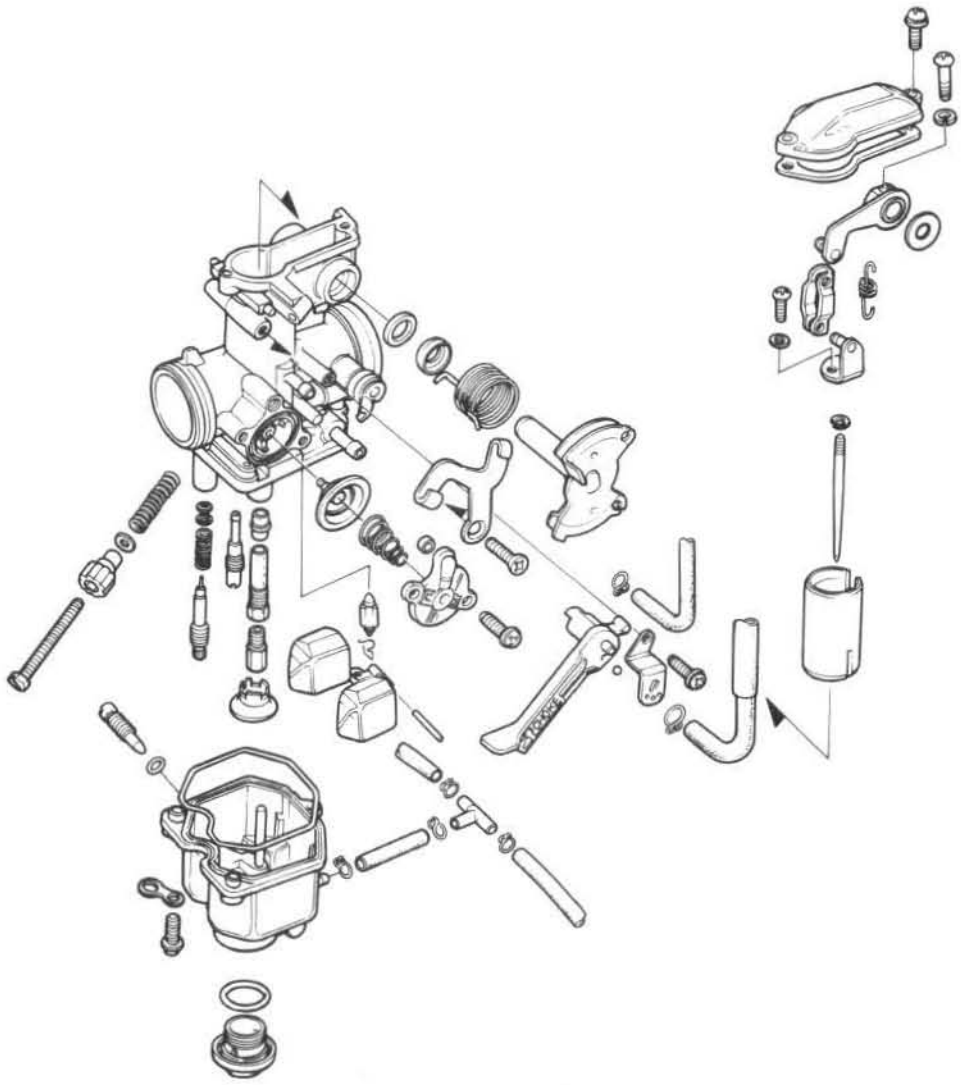
Remove the choke lever setting plate, and lever.
Remove the two screws attaching the air cut-off valve cover, and the cover.



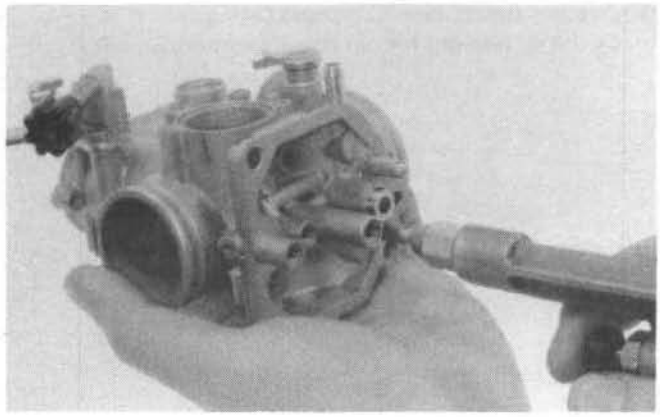
Remove the spring, diaphragm and O-ring.
Check the diaphragm for pin holes or other damage.



CARBURETOR ASSEMBLY



Blow open all passages with compressed air before installing jets and valves.



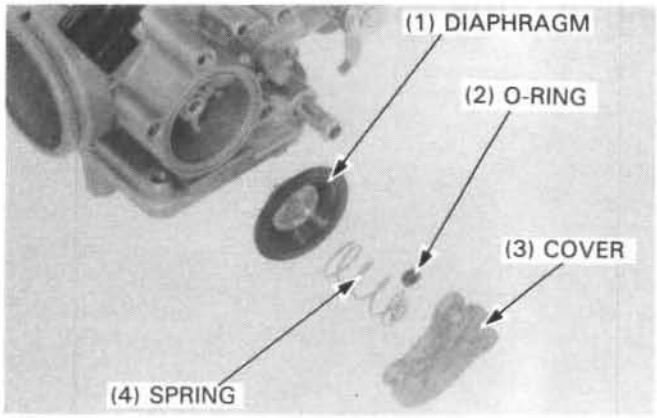
AIR CUT-OFF VALVE

Assemble the air cut-off valve in the reverse order of disassembly.

NOTE

- Install the O-ring with its flat side toward the carburetor body.

Tighten the screws securely.
Install the choke lever and setting plate.

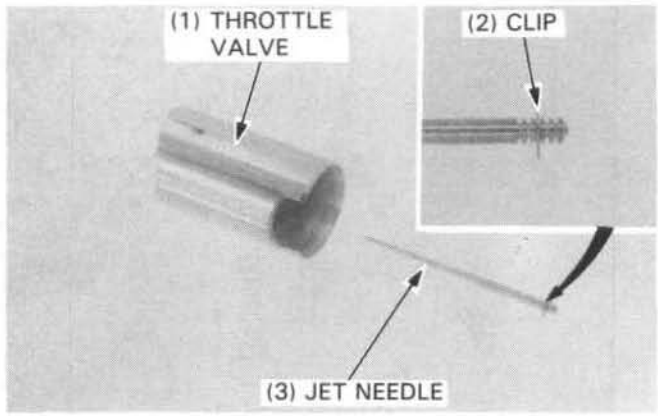


THROTTLE VALVE

Assemble the throttle valve in the reverse order of disassembly.

NOTE

- Install the 3rd groove clip on the jet needle.
  STANDARD:

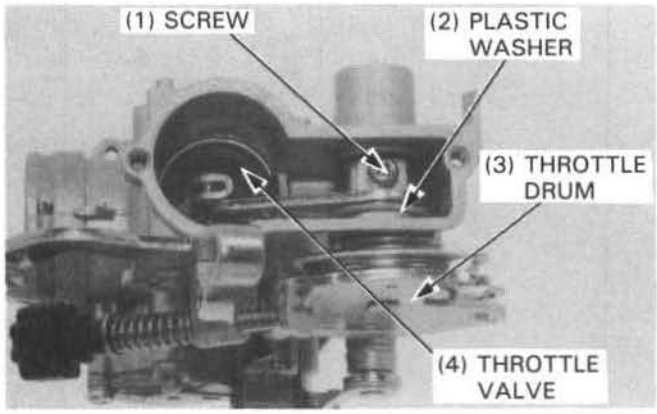


Install the throttle valve assembly into the throttle bore.
Install the throttle drum through the carburetor body, plastic washer and link arm.

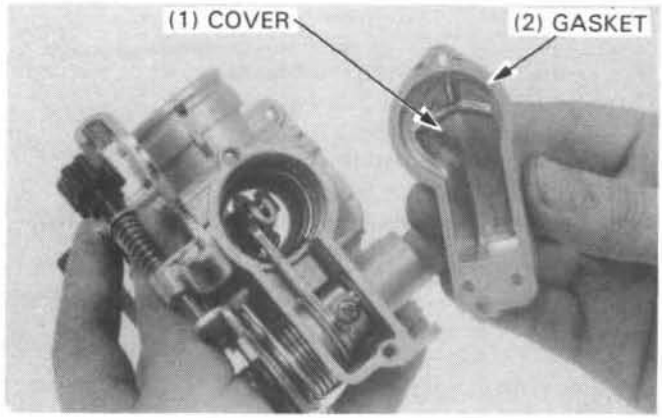
Tighten the set screw securely.

NOTE

- Align the hole in the link arm with the threaded hole in the link arm shaft and install the set screw.

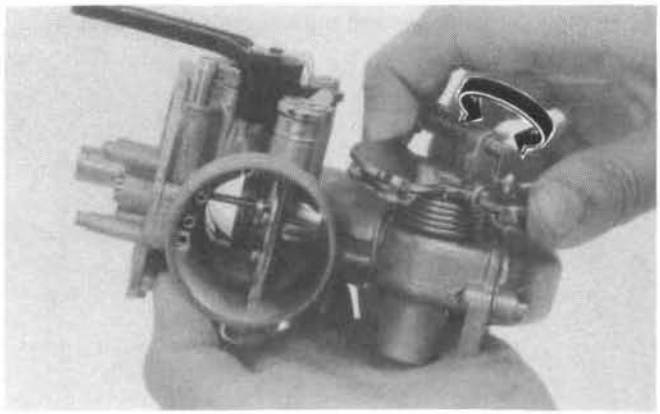


Install a new cover gasket and cover.
Tighten the screws securely.



Inspect throttle operation as described below:

- Open the throttle slightly by pressing on the throttle linkage. Then release the throttle.
- Make sure that there is no drag when opening and closing the throttle.



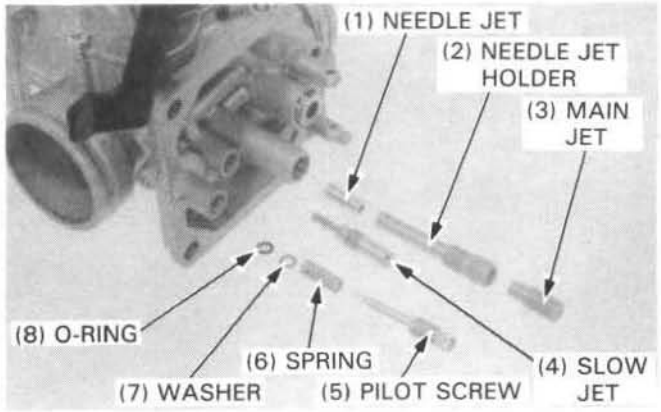
FLOAT, FLOAT VALVE AND JETS

Install the pilot screw and turn it in until it seats lightly.
Turn the pilot screw out the number of turns when it was removed.

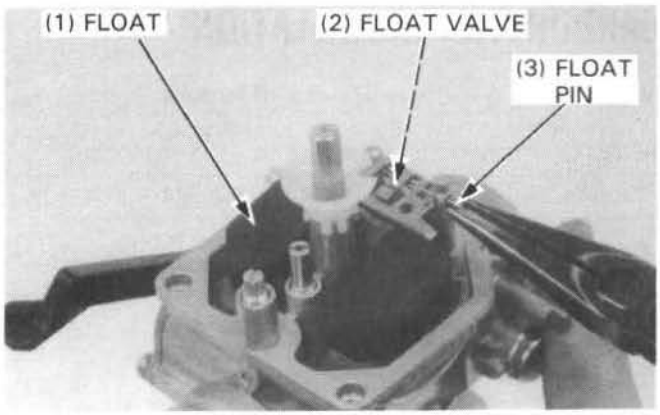
CAUTION

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

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



Install the float with float valve to the carburetor body and install the float arm pin through the body and float.

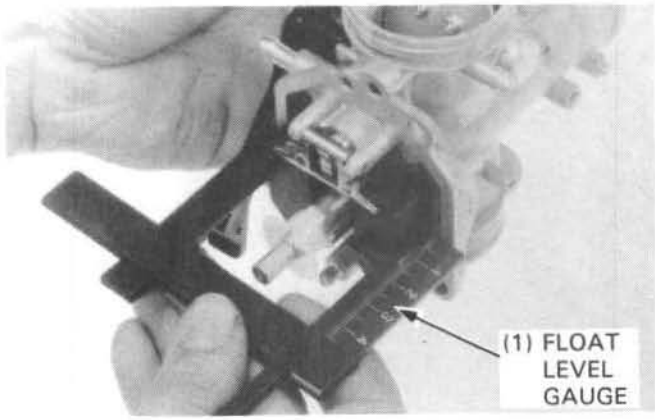


FLOAT LEVEL

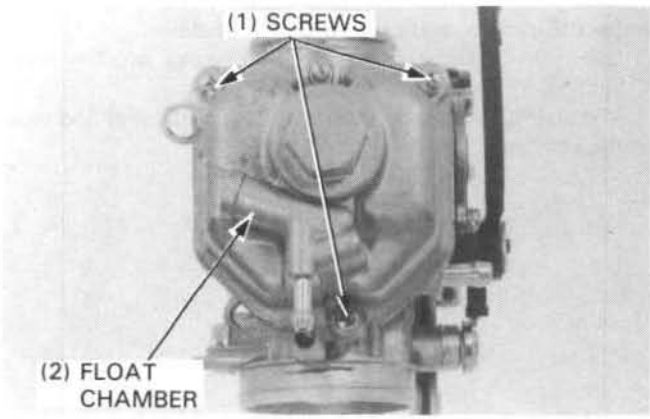
Measure the float level with the float tang just contacting the float valve.

SPECIFICATION: 12.5 mm (0.49 in)

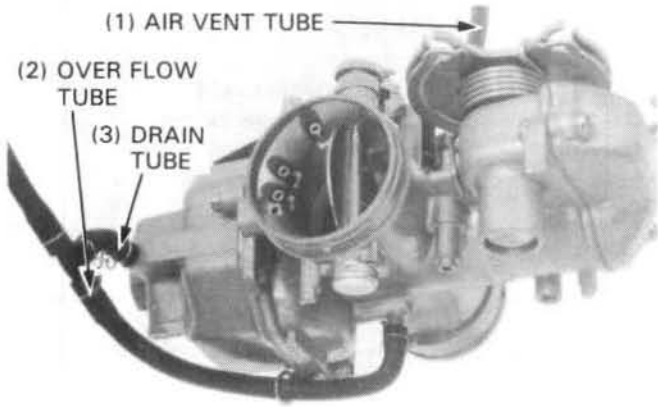
Adjust the float level by carefully bending the float tang.



Install the float chamber and tighten the screws securely.



Connect the tubes as shown.



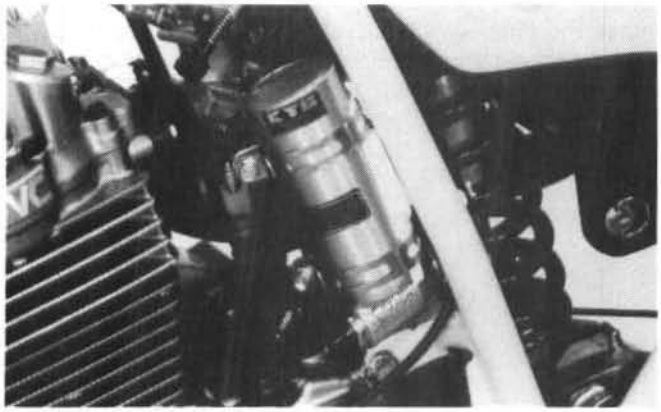
CARBURETOR INSTALLATION

Installation is in the reverse order of removal.

NOTE

- Route the throttle cables properly (page 1-9 to 1-12).

Perform the following inspections and adjustments.
- Throttle operation (page 3-6).
- Idle speed (page 3-10).



PILOT SCREW ADJUSTMENT

Turn the pilot screw clockwise until it seats lightly and then back it out to the specification.

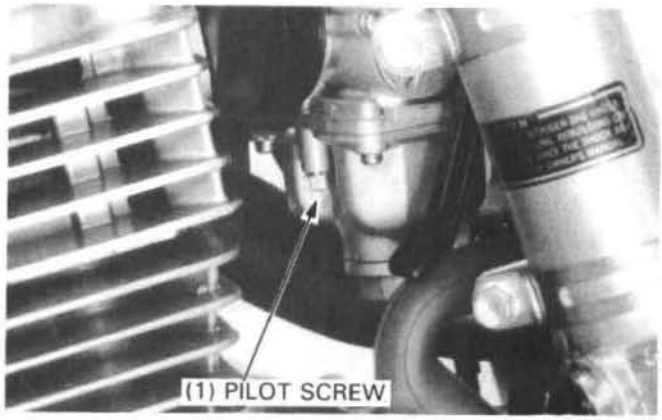
INITIAL OPENING: 2-1/4 turns out

CAUTION

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

Warm the engine up to operating temperature.
Stop the engine and connect a tachometer.
Start the engine and adjust the idle speed to 1,300 ± 100 rpm with the throttle stop screw.

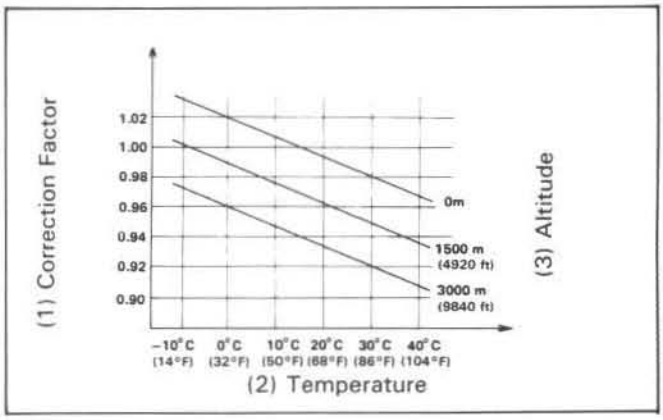
Check that the engine speed increases smoothly by turning the throttle grip.
Turn the pilot screw until the highest idle speed is obtained.
Reset the idle speed to 1,300 ± 100 rpm with the throttle stop screw.



TEMPERATURE AND ALTITUDE ADJUSTMENT

Use the chart on the right to determine if carburetor adjustments are necessary because of changes in temperature and altitude.
Draw a line straight up from your temperature to your altitude. Where those lines intersect, draw a horizontal line straight to the left. Where that line meets the left edge of the chart is your correction factor.

To adjust the main jet size, multiply the standard main jet size by your correction factor.
If the correction factor is 0.95, or below, raise the jet needle clip by one position and turn in the pilot screw 1/2 turn.
If the correction factor is above 0.95, adjustments to the jet needle and pilot screw are not necessary.

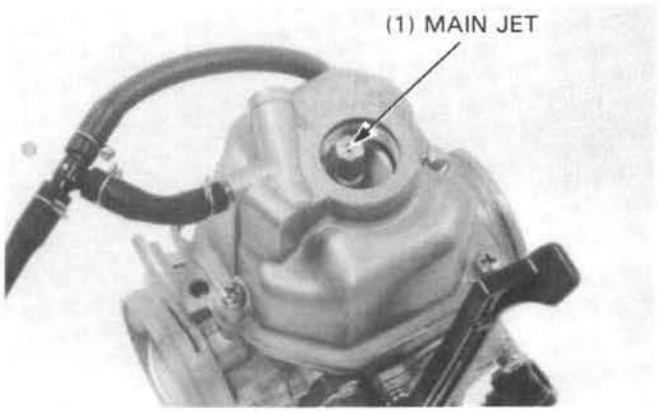


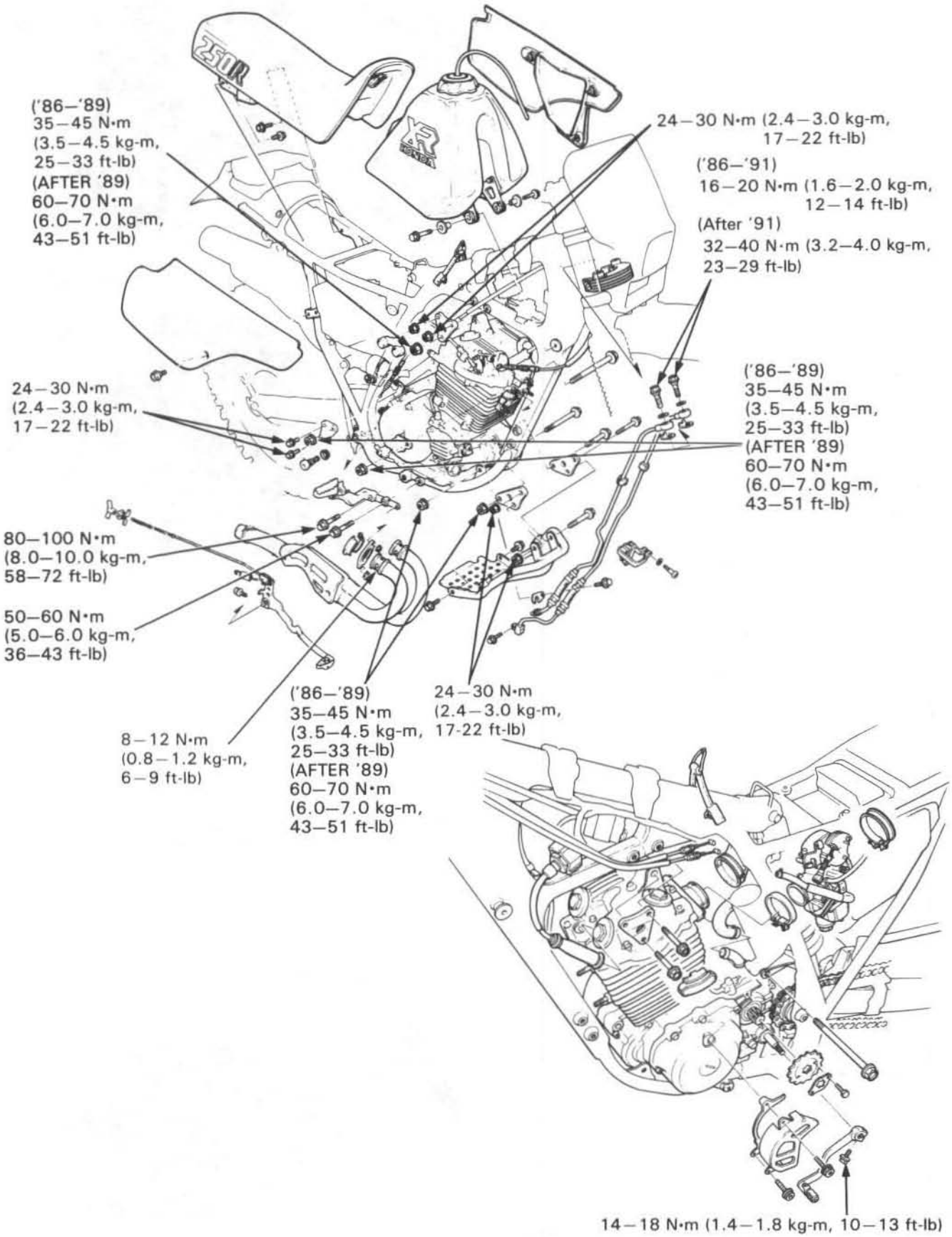
For example:
At a temperature of 30°C (86°F) and an altitude of 3,000 m (9840 ft), carburetor recommendations are as follows:

- **Main jet**
  125 x 0.92 = 115
- **Jet needle**
  3rd groove from top minus 1 = 2nd groove from top
- **Pilot screw opening**
  2-1/4-1/2 = 1-3/4 turn out

Standard Carburetor Setting

Main jet	#125
Jet needle setting	3rd groove
Pilot screw opening	2-1/4 turns out




('86–'89)
35–45 N·m
(3.5–4.5 kg-m,
25–33 ft-lb)
(AFTER '89)
60–70 N·m
(6.0–7.0 kg-m,
43–51 ft-lb)
24–30 N·m (2.4–3.0 kg-m,
17–22 ft-lb)
('86–'91)
16–20 N·m (1.6–2.0 kg-m,
12–14 ft-lb)
(After '91)
32–40 N·m (3.2–4.0 kg-m,
23–29 ft-lb)
24–30 N·m
(2.4–3.0 kg-m,
17–22 ft-lb)
('86–'89)
35–45 N·m
(3.5–4.5 kg-m,
25–33 ft-lb)
(AFTER '89)
60–70 N·m
(6.0–7.0 kg-m,
43–51 ft-lb)
80–100 N·m
(8.0–10.0 kg-m,
58–72 ft-lb)
50–60 N·m
(5.0–6.0 kg-m,
36–43 ft-lb)
8–12 N·m
(0.8–1.2 kg-m,
6–9 ft-lb)
('86–'89)
35–45 N·m
(3.5–4.5 kg-m,
25–33 ft-lb)
(AFTER '89)
60–70 N·m
(6.0–7.0 kg-m,
43–51 ft-lb)
24–30 N·m
(2.4–3.0 kg-m,
17-22 ft-lb)
14–18 N·m (1.4–1.8 kg-m, 10–13 ft-lb)

5. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION

GENERAL

- During removal and installation, support the motorcycle with a work stand or box.
- A jack or adjustable support is required to maneuver the engine.
- Parts requiring engine removal for servicing:

Crankshaft	Section 10
Crankcase	Section 10
Balancer	Section 10
Transmission	Section 11

SPECIFICATIONS

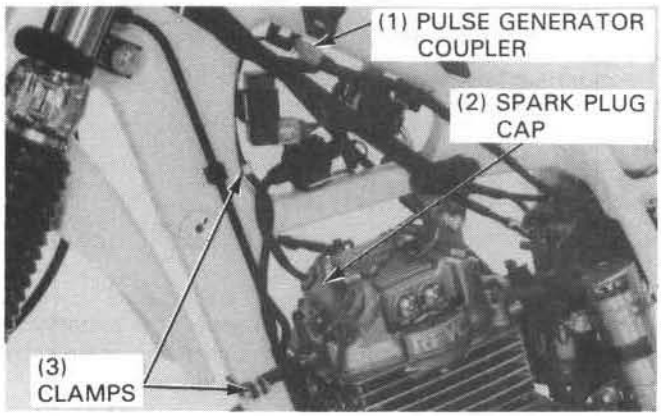
Engine dry weight	34.5 kg (76.06 lbs)
Engine oil capacity	1.6 lit. (1.70 US qt, 1.41 Imp qt) after engine disassembly

TORQUE VALUES

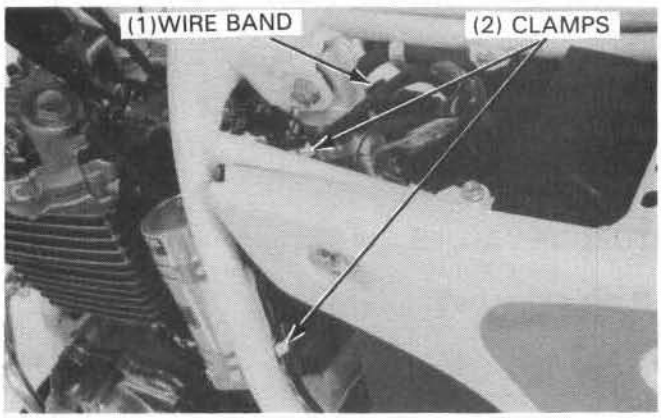
Engine hanger bolts:	
8 mm bolt	24—30 N·m (2.4—3.0 kg-m, 17—22 ft-lb)
10 mm bolt ('86—'89:)	35—45 N·m (3.5—4.5 kg-m, 25—33 ft-lb)
10 mm bolt (AFTER '89:)	60—70 N·m (6.0—7.0 kg-m, 43—51 ft-lb)
Right foot peg mounting bolt (10 mm)	50—60 N·m (5.0—6.0 kg-m, 36—43 ft-lb)
(12 mm)	80—100 N·m (8.0—10.0 kg-m, 58—72 ft-lb)
Exhaust pipe joint nut	8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)
Rear axle nut	80—110 N·m (8.0—11.0 kg-m, 58—80 ft-lb)
Oil pipe bolt ('86—'91:)	16—20 N·m (1.6—2.0 kg-m, 12—14 ft-lb)
Oil pipe bolt (After '91:)	32—40 N·m (3.2—4.0 kg-m, 23—29 ft-lb)
Gearshift pedal	14—18 N·m (1.4—1.8 kg-m, 10—13 ft-lb

ENGINE REMOVAL

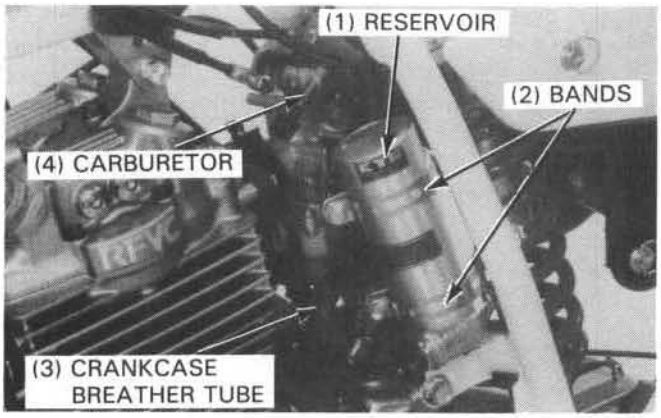
Drain the oil from the engine (page 2-2).
Remove the seat and fuel tank.
Disconnect the pulse generator coupler and remove the pulse generator wire from the clamps.
Remove the spark plug cap from the spark plug.



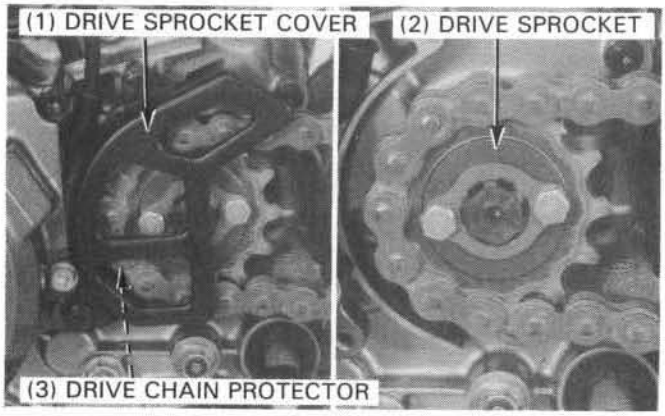
Remove the alternator connectors.
Remove the wire band and wire from the clamps.



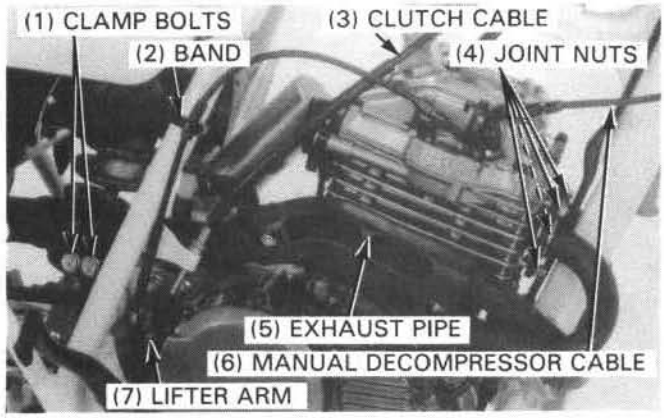
Remove the reservoir mounting bands and the reservoir from its mount bracket.
Remove the crankcase breather tube.
Remove the carburetor.



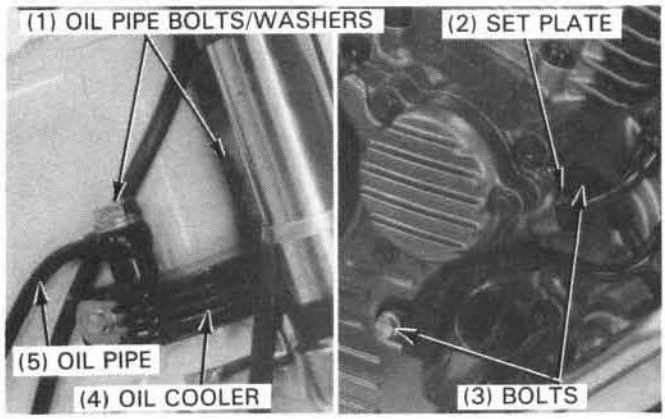
Remove the drive sprocket cover and drive chain protector.
Loosen the axle nut and turn the drive chain adjusters to loosen the chain.
Remove the drive sprocket and the drive chain.



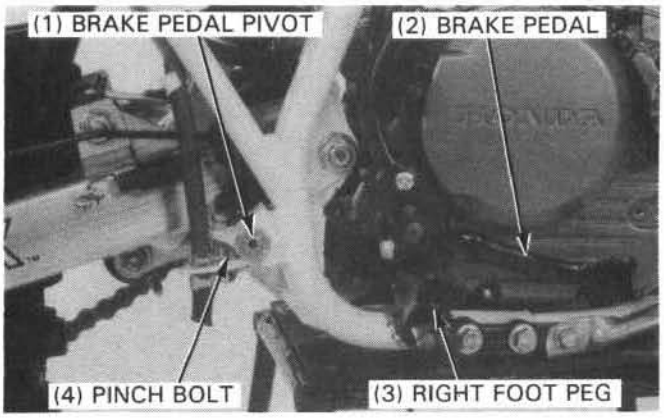
Loosen the exhaust pipe clamp bolts and remove the following:
- exhaust pipe joint nuts and the exhaust pipe
- clutch cable from the lifter arm
- manual decompressor cable from the cylinder head
- kick starter decompressor band



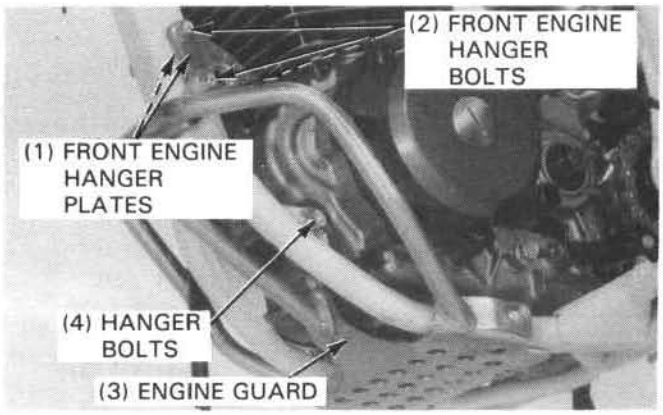
Remove the following:
- oil pipe bolts and sealing washers from the oil cooler
- bolts and set plate
- oil pipes from the right crankcase cover



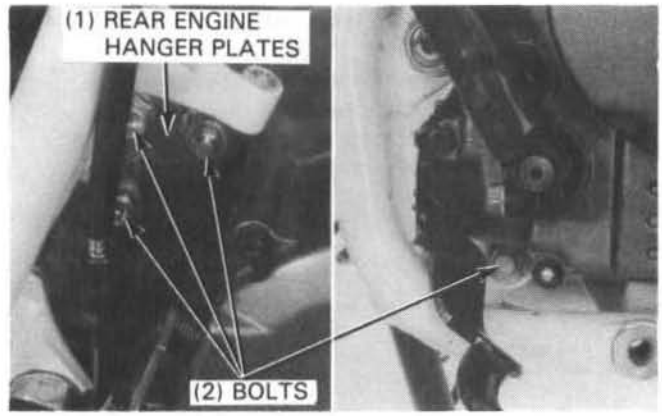
Remove the following:
- brake rod from the brake arm
- return spring from the swing arm
- brake pedal pinch bolt and brake pedal pivot
- brake pedal
- right foot peg



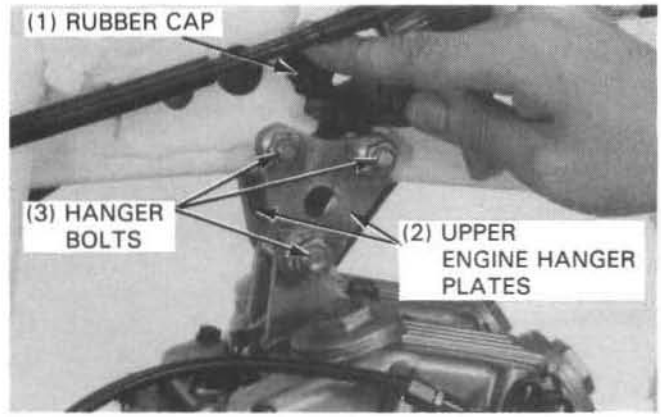
Remove the front engine hanger bolts and plates.
Remove the engine guard and engine hanger bolts.



Remove the rear engine hanger bolts and plates.

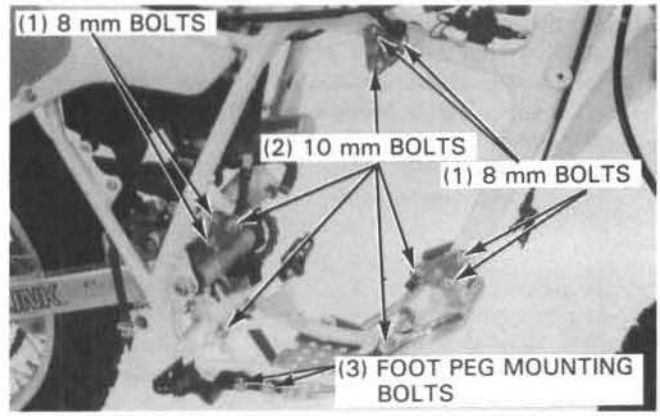


Remove the rubber caps and upper engine hanger bolts and plates.
Remove the engine from the right side of the frame.



ENGINE INSTALLATION

Install the engine in the reverse order of removal, noting the following:
Replace any damaged or leaking exhaust pipe gaskets.
Always replace the engine exhaust port gaskets with new one.
Tighten all bolts to proper torque specifications.



TORQUE VALUES:

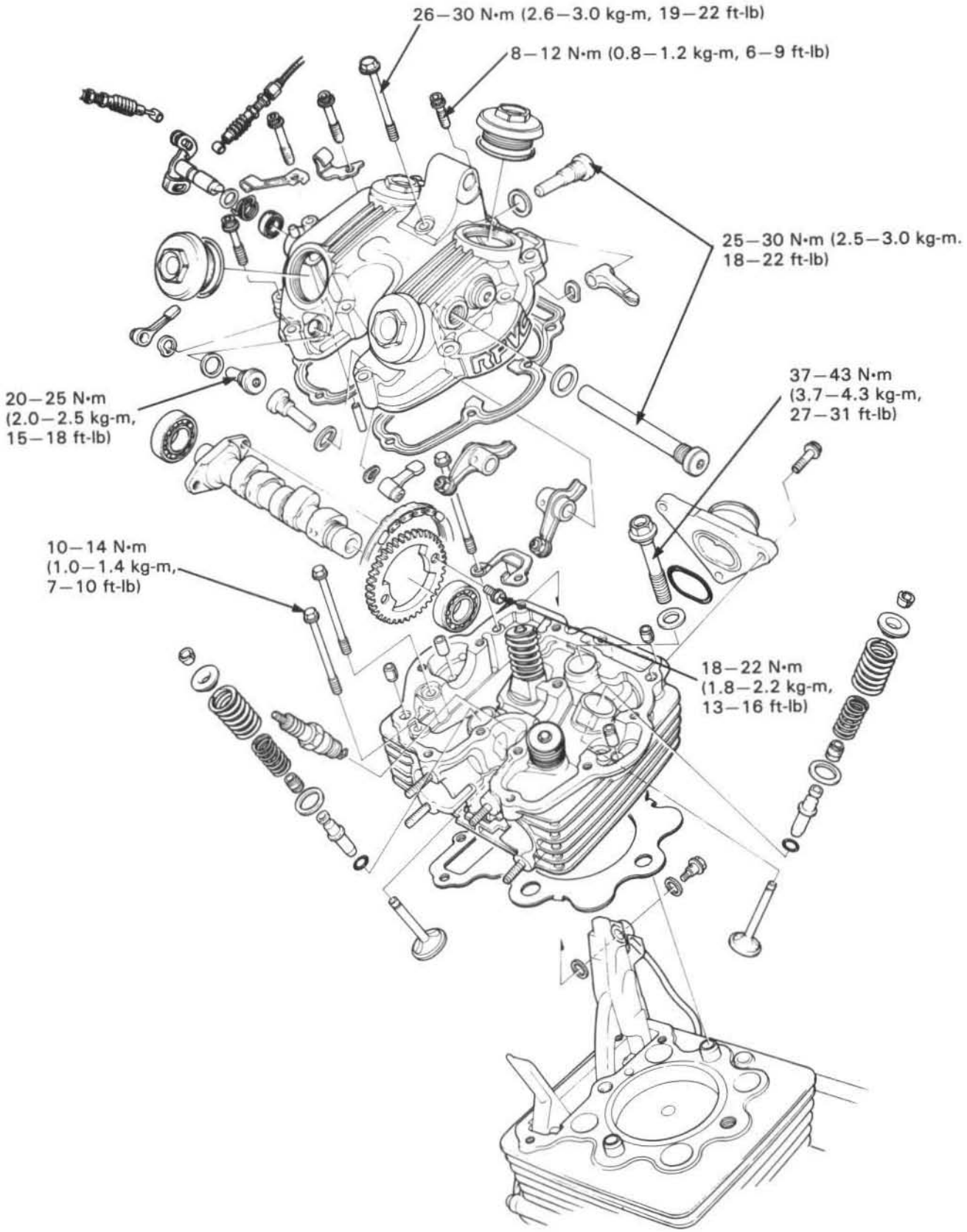
8 mm bolts:	**24–30 N·m (2.4–3.0 kg–m, 17–22 ft-lb)**
10 mm bolts:	**('86–'89:)**
	35–45 N·m (3.5–4.5 kg–m, 25–33 ft-lb)
10 mm bolts:	**(AFTER '89:)**
	60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Foot peg mounting bolts:	
10 mm:	**50–60 N·m (5.0–6.0 kg–m, 36–43 ft-lb)**
12 mm:	**80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)**
Oil pipe bolts:	**('86–'91:)**
	16–20 N·m (1.6–2.0 kg–m, 12–14 ft-lb)
Oil pipe bolts:	**(AFTER '91)**
	32–40 N·m (3.2–4.0 kg–m, 23–29 ft-lb)

Route all wire harnesses and cables properly (page 1-9 to 12).

Perform the following inspections and adjustments.

Engine oil	(page 2-3)
Throttle grip free play	(page 3-6)
Decompressor cable adjustment	(page 3-9)
Drive chain	(page 3-11)
Rear brake pedal free play	(page 3-14)
Clutch lever free play	(page 3-17)
Check all electrical equipment.	

MEMO


26–30 N·m (2.6–3.0 kg-m, 19–22 ft-lb)
8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
25–30 N·m (2.5–3.0 kg-m, 18–22 ft-lb)
37–43 N·m (3.7–4.3 kg-m, 27–31 ft-lb)
20–25 N·m (2.0–2.5 kg-m, 15–18 ft-lb)
10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
18–22 N·m (1.8–2.2 kg-m, 13–16 ft-lb)

6. CYLINDER HEAD/VALVES

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the cylinder head, valves, camshaft and rocker arms.
- Pour clean engine oil into the oil pockets in the cylinder head to lubricate the cam.

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Compression		'86–'91:	13.0–15.0 kg/cm² (184.9–213.3 psi)	—
		After '91:	12.0–13.0 kg/cm² (170.7–184.9 psi)	—
Camshaft	Cam lift	IN	29.529 mm (1.1626 in)	29.34 mm (1.155 in)
		EX	29.330 mm (1.1547 in)	29.14 mm (1.147 in)
	Run out		—	0.04 mm (0.002 in)
Sub-rocker arm	I.D.	IN	7.000–7.015 mm (0.2756–0.2762 in)	7.05 mm (0.278 in)
		EX	7.000–7.015 mm (0.2756–0.2762 in)	7.05 mm (0.278 in)
Sub-rocker arm shaft	O.D.	IN	6.972–6.987 mm (0.2745–0.2751 in)	6.92 mm (0.272 in)
		EX	6.972–6.987 mm (0.2745–0.2751 in)	6.92 mm (0.272 in)
Sub-rocker arm-to-shaft clearance			0.013–0.043 mm (0.0005–0.0017 in)	0.10 mm (0.004 in)
Rocker arm I.D.			11.500–11.518 mm (0.4528–0.4535 in)	11.53 mm (0.454 in)
Rocker arm shaft O.D.			11.466–11.484 mm (0.4514–0.4521 in)	11.41 mm (0.449 in)
Rocker arm-to-shaft clearance			0.016–0.052 mm (0.0006–0.0020 in)	0.10 mm (0.004 in)
Valve spring	Free length	Inner	38.83 mm (1.529 in)	37.9 mm (1.49 in)
		Outer	38.30 mm (1.508 in)	37.1 mm (1.46 in)
	Preload/length	Inner	15.0 ± 1.0 kg/22.5 mm (33.1 ± 2.2 lb/0.89 in)	—
		Outer	45.4 ± 3.0 kg/26.0 mm (100.1 ± 6.6 lb/1.02 in)	—
Valve	Stem O.D.	IN	5.475–5.490 mm (0.2156–0.2161 in)	5.46 mm (0.215 in)
		EX	5.467–5.477 mm (0.2152–0.2156 in)	5.45 mm (0.215 in)
	Guide I.D.	IN	5.500–5.512 mm (0.2165–0.2170 in)	5.53 mm (0.218 in)
		EX	5.500–5.512 mm (0.2165–0.2170 in)	5.53 mm (0.218 in)
	Stem-to-guide clearance	IN	0.010–0.037 mm (0.0004–0.0015 in)	0.07 mm (0.003 in)
		EX	0.023–0.045 mm (0.0009–0.0018 in)	0.08 mm (0.003 in)
	Valve face width	IN	1.2–1.4 mm (0.05–0.06 in)	2.0 mm (0.08 in)
		EX	1.2–1.4 mm (0.05–0.06 in)	2.0 mm (0.08 in)
Cylinder head	Warpage		—	0.10 mm (0.004 in)
	Valve seat width	IN/EX	1.2–1.4 mm (0.05–0.06 in)	2.0 mm (0.08 in)

TORQUE VALUES

Cylinder head bolt	**10 mm**	**37–43 N·m (3.7–4.3 kg-m, 27-31 ft-lb)**
	6 mm	**10–14 N·m (1.0–1.4 kg-m, 7–10ft-lb)**
Cam sprocket bolt		**18–22 N·m (1.8–2.2 kg-m, 13–16 ft-lb)**
Cylinder head cover	**6 mm bolt**	**8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)**
	8 mm bolt	**26–30 N·m (2.6–3.0 kg-m, 19–22 ft-lb)**
Rocker arm shaft		**25–30 N·m (2.5–3.0 kg-m, 18–22 ft-lb)**
Sub-rocker arm shaft IN		**25–30 N·m (2.5–3.0 kg-m, 18–22 ft-lb)**
Sub-rocker arm shaft EX		**20–25 N·m (2.0–2.5 kg-m, 15–18 ft-lb)**
Valve adjusting screw lock nut		**17–23 N·m (1.7–2.3 kg-m, 12–17 ft-lb)**
Upper engine hanger	**8 mm**	**24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)**
	10 mm('86–'89:)	**35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)**
	(AFTER '89:)	**60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)**

TOOLS

Special

Valve guide reamer	07984–2000000 (or 07984–200000A)

Common

Valve guide driver, 5.5 mm	07742–0010100
Valve spring compressor	07757–0010000 (or 07957–3290001)

TROUBLESHOOTING

Engine top-end problems are ususlly performance-related and can usually be diagnosed by a compression test. Engine noise can usually be traced to the top-end with a sounding rod or stethoscope.

Low compression

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

High compression

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

Excessive noise

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

Poor idling

- Compression too low
- Decompressor out or adjustment

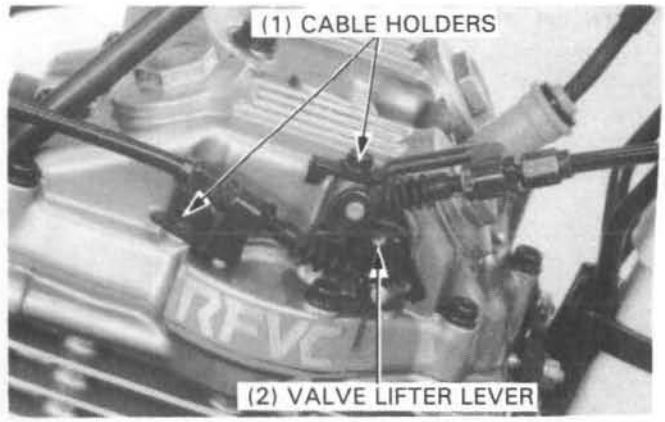
Kick starting difficult

- Decompressor out of adjustment

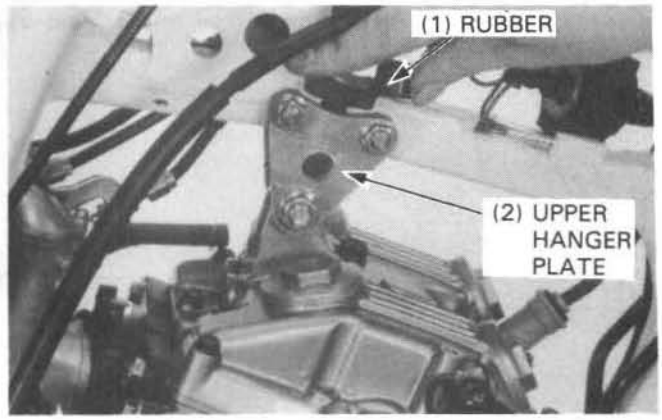
CYLINDER HEAD COVER REMOVAL

Remove the seat and fuel tank.

Remove the cable holders and disconnect the decompresssor cables from the valve lifter lever.



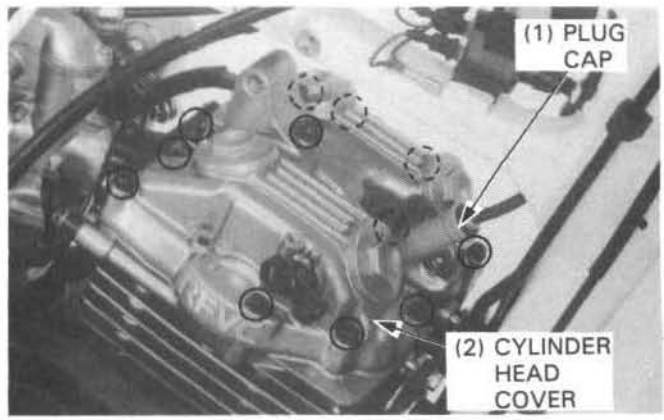
Remove the upper hanger plate rubber and upper hanger plates.



Remove the spark plug cap.

Turn the crankshaft counterclockwise and align the "T" mark on the flywheel with the index mark on the left crankcase cover. Verify that the engine is at T.D.C. on the compression stroke by removing all valve covers and checking for movement at both adjusters. If no movement is felt, rotate the crankshaft 360° and re-align the "T" mark.
Remove the cylinder head cover bolts and the cover.

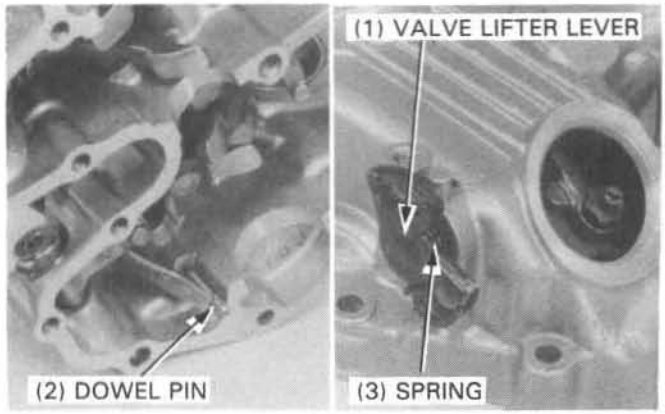
Remove the dowel pins and head cover gasket.



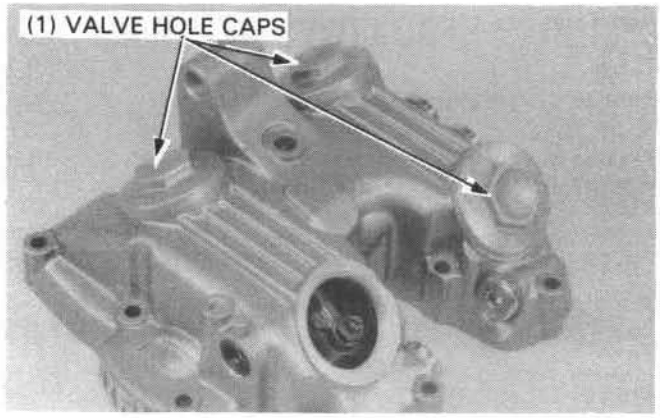
CYLINDER HEAD COVER DISASSEMBLY

Remove the front-right valve hole cap and drive out the dowel pin using a screw driver as shown.

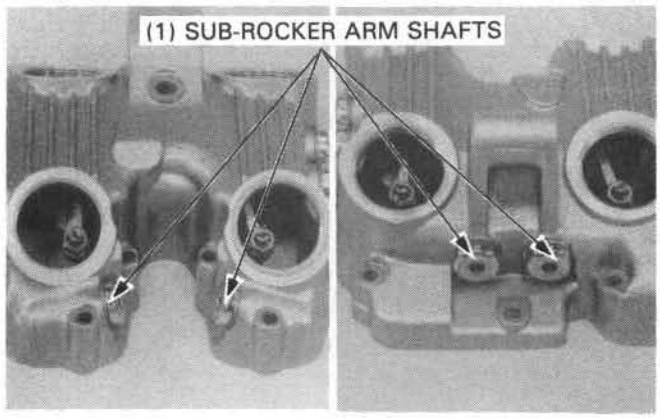
Remove the valve lifter lever and spring.



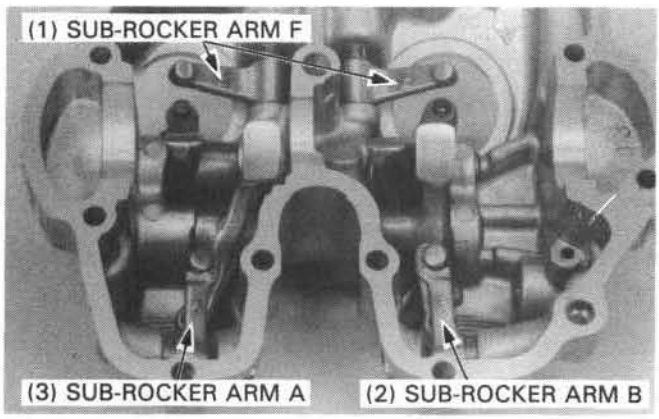
Remove the valve hole caps.



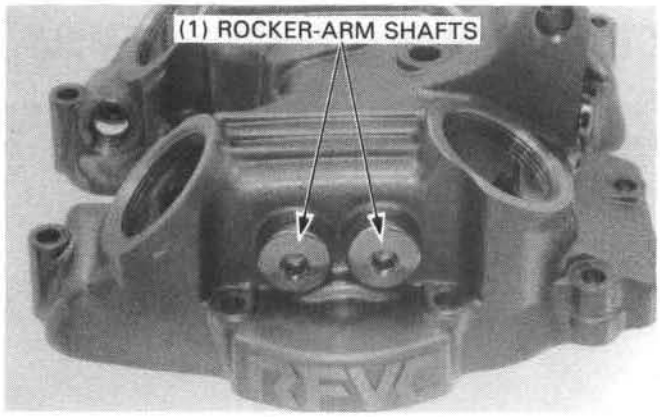
Remove the sub-rocker arm shafts, copper washers and wave washers from the cylinder head cover.



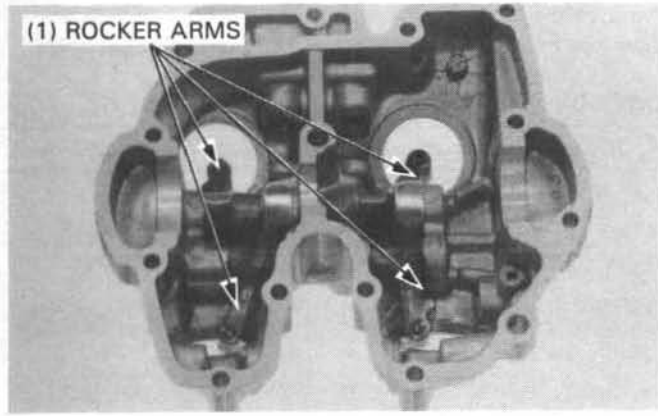
Remove the sub-rocker arms A, B and F from the cylinder head cover.



Remove the rocker arm shafts and copper washers from the cylinder head cover.



Remove the rocker arms from the cylinder head cover.

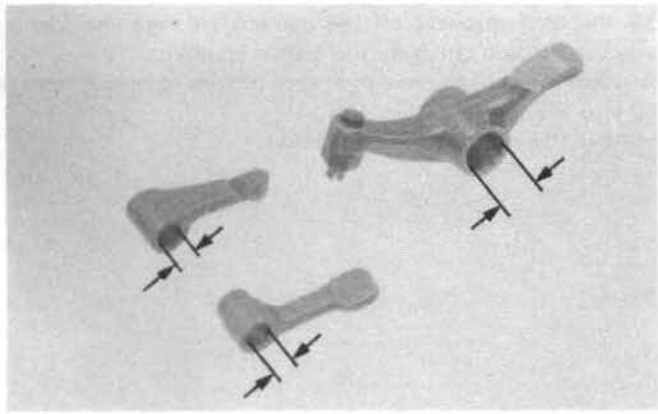


ROCKER ARM AND SUB-ROCKER ARM INSPECTION

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

NOTE

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

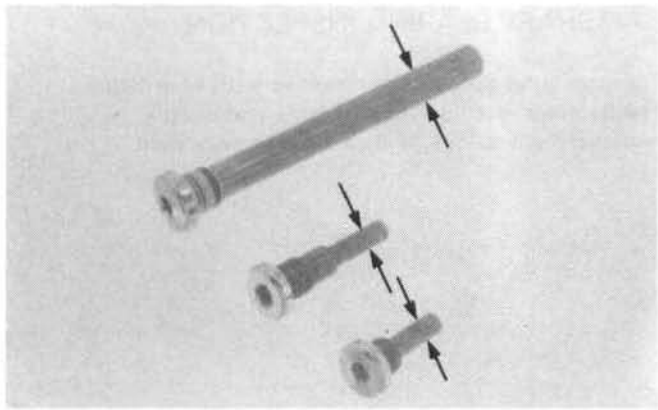


Measure the I.D. of each rocker arm and sub-rocker arm.

SERVICE LIMITS:
ROCKER ARM: 11.53 mm (0.454 in)
SUB-ROCKER ARM:
IN: 7.05 mm (0.278 in)
EX: 7.05 mm (0.278 in)

ROCKER ARM AND SUBROCKER ARM SHAFT INSPECTION

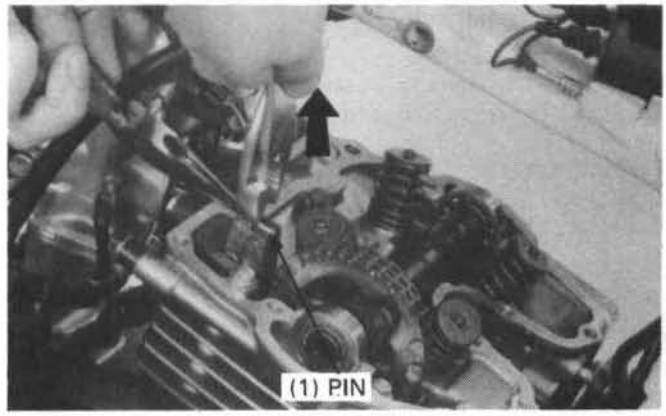
Inspect rocker arm shafts and sub-rocker arm shafts for wear or damage.
Measure the O.D. of the shaft.



SERVICE LIMITS:
ROCKER ARM: 11.41 mm (0.449 in)
SUB-ROCKER ARM:
IN: 6.92 mm (0.272 in)
EX: 6.92 mm (0.272 in)
Calculate the rocker arm-to-shaft clearance.
SERVICE LIMIT: 0.10 mm (0.004 in)
Calculate the sub-rocker arm-to-shaft clearance.
SERVICE LIMIT: 0.10 mm (0.004 in)

CAMSHAFT REMOVAL

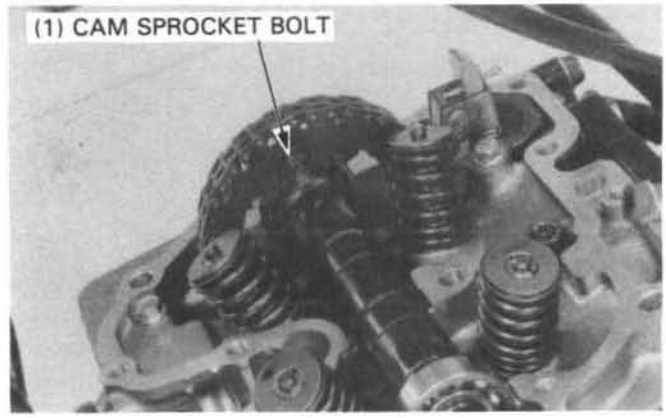
Pull the tip of the cam chain tensioner with the pliers and then insert the cotter pin into the hole in the tensioner, as shown.



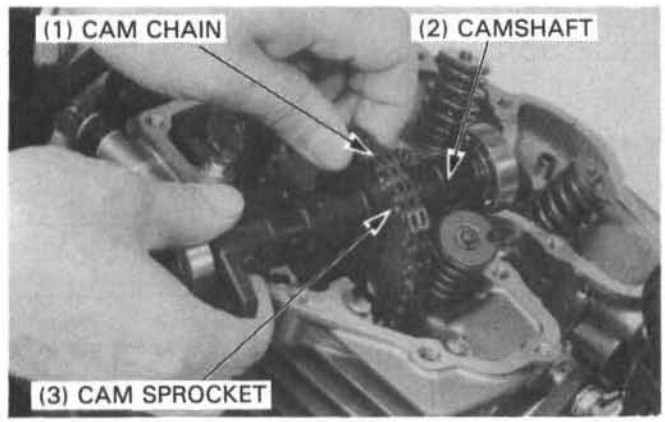
Remove the crankshaft hole cap and timing hole cap.
Turn the crankshaft and remove the cam sprocket bolts.

CAUTION

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

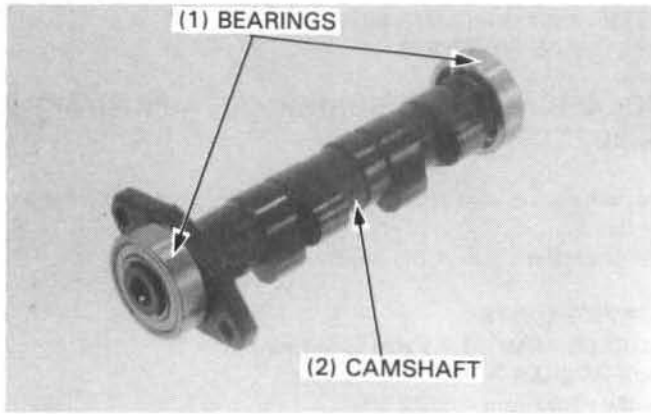


Pull the cam sprocket off the camshaft flange shoulder and remove the cam chain from the cam sprocket.
Suspend the cam chain with a piece of wire to keep it from falling into the crankcase.
Remove the camshaft and sprocket.



CAMSHAFT BEARING INSPECTION

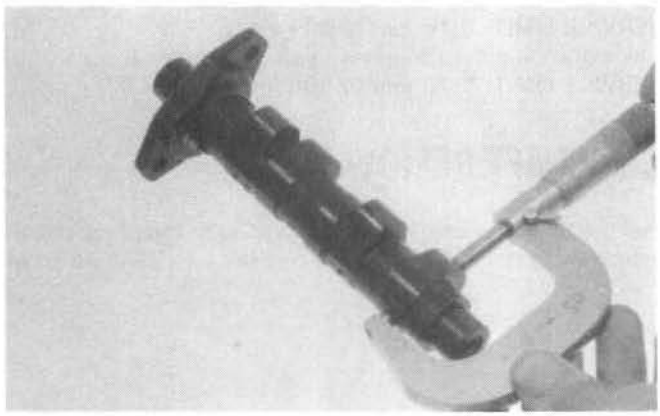
Turn the outer race of the bearings with your finger.
The bearings should turn smoothly and quietly.
Remove the bearings, if they need replacement.



CAMSHAFT INSPECTION

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

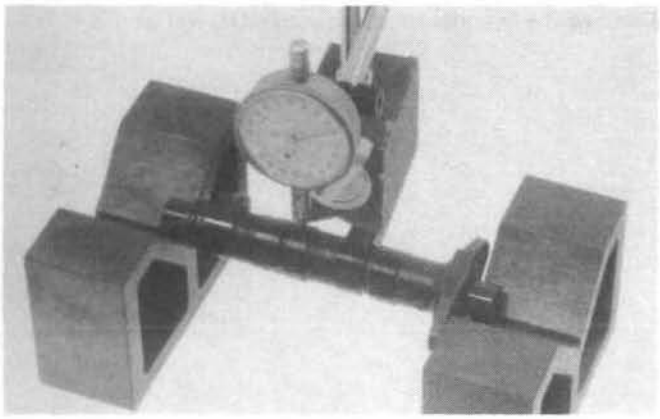
SERVICE LIMITS:
INTAKE: 29.34 mm (1.155 in)
EXHAUST: 29.14 mm (1.147 in)



CAMSHAFT RUNOUT

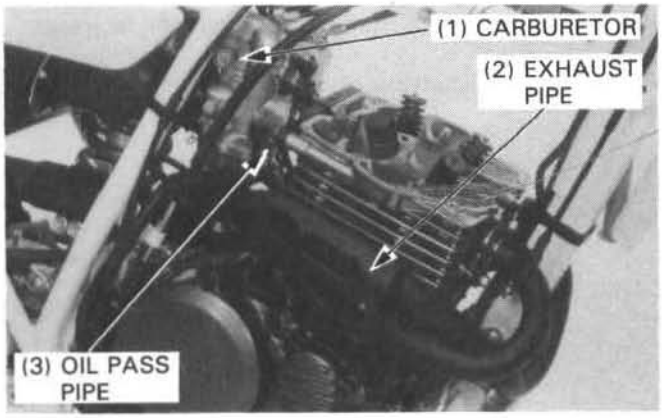
Check camshaft runout with a dial indicator.
Support both ends of the camshaft with V-blocks.
Actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.04 mm (0.002 in)



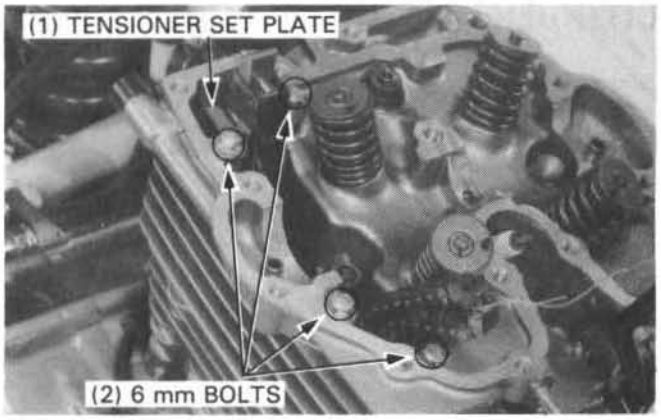
CYLINDER HEAD REMOVAL

Remove the cylinder head cover (page 6-3).
Remove the camshaft (page 6-5).
Remove the exhaust pipe (page 15-2).
Remove the carburetor (page 4-6).
Remove the oil pass pipe bolts, copper washers and oil pass pipe.



Remove the two cam chain tensioner bolts and tensioner set plate.

Remove the two 6 mm cylinder head bolts.



Remove four 10 mm cylinder head bolts.

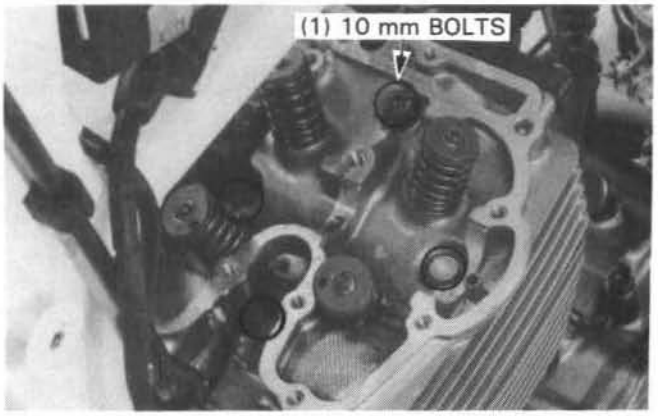
NOTE

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

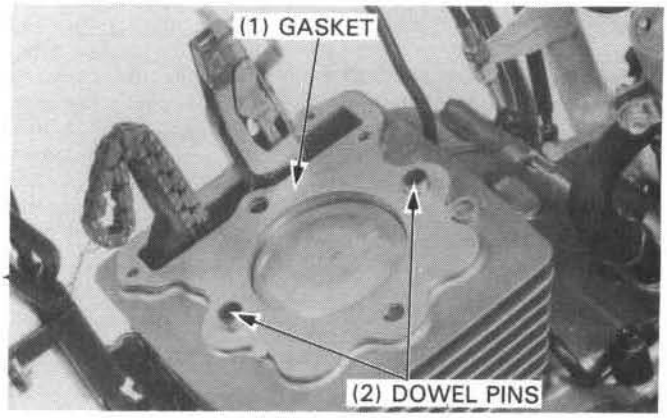
Remove the cylinder head.

CAUTION

- *Be careful not to damage the cylinder head mating sufaces.*

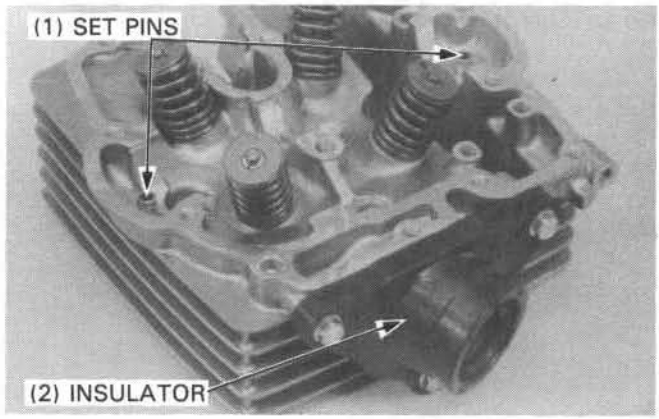


Remove the cylinder head gasket and dowel pins.



Remove the carburetor insulator from the cylinder head.

Remove the camshaft set pins.



CYLINDER HEAD DISASSEMBLY

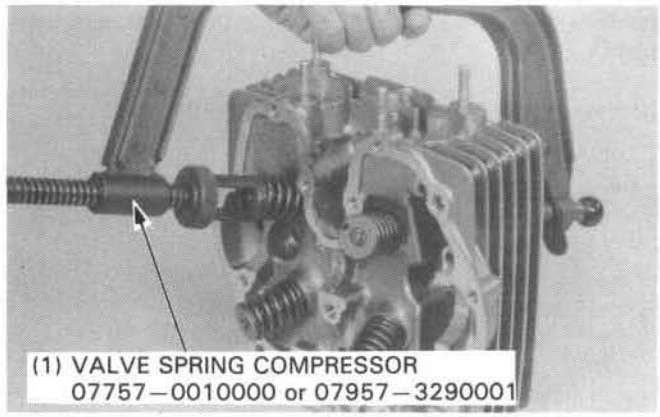
Remove the valve spring cotters, retainers, springs, and valves with a valve spring compressor.

CAUTION

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

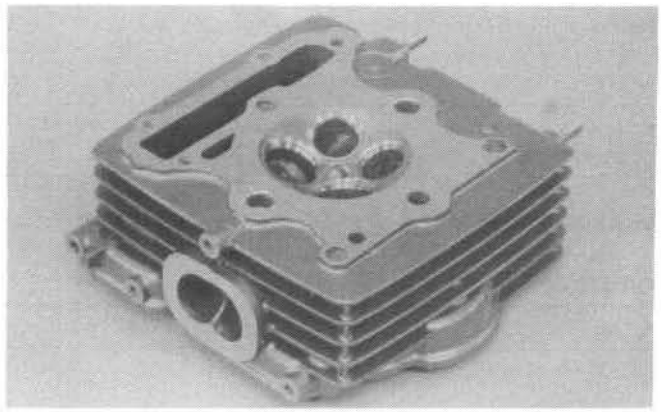
NOTE

- Mark all parts to ensure that they are reassembled in their original locations.



Remove the spring seats and valve stem seals.

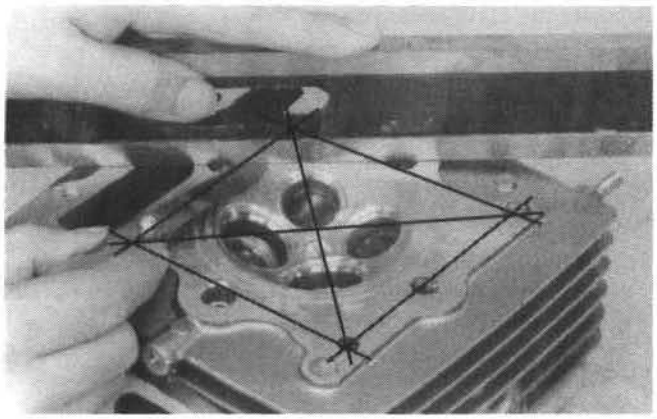
Remove the carbon deposits from the combustion chamber. Carefully clean any gasket material from the cylinder head.



CYLINDER HEAD INSPECTION

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

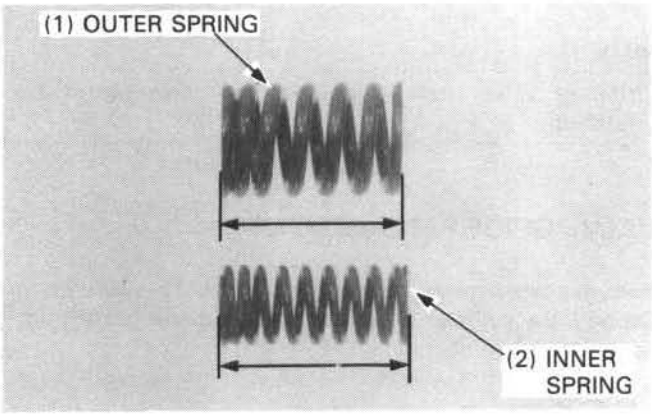
SERVICE LIMIT: 0.10 mm (0.004 in)



VALVE SPRING INSPECTION

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

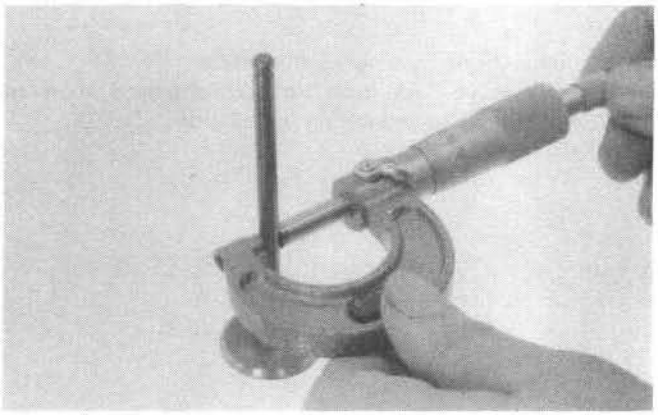
SERVICE LIMITS:
INNER: 37.9 mm (1.49 in)
OUTER: 37.1 mm (1.46 in)



VALVE/VALVE GUIDE INSPECTION

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

SERVICE LIMITS:
INTAKE: 5.46 mm (0.215 in)
EXHAUST: 5.45 mm (0.215 in)

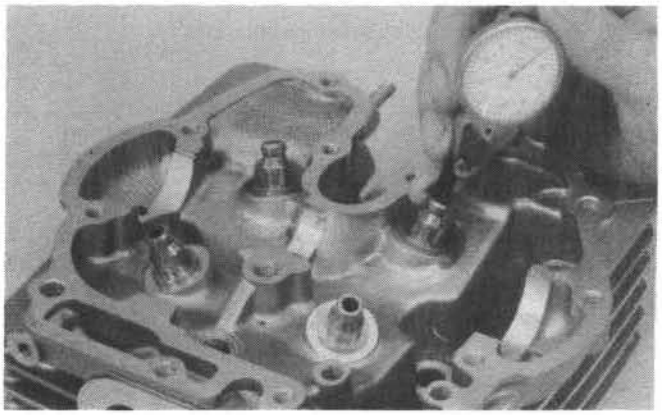


Measure and record each valve guide I.D. using a ball gauge or inside micrometer.

NOTE

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

SERVICE LIMITS:
INTAKE: 5.53 mm (0.218 in)
EXHAUST: 5.53 mm (0.218 in)



Calculate the stem-to-guide clearance.

VALVE STEM-TO-GUIDE CLEARANCE
SERVICE LIMITS:
INTAKE: 0.07 mm (0.003 in)
EXHAUST: 0.08 mm (0.003 in)

NOTE

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

If stem-to-guide clearance still exceeds the service limit when new the guides are installed, replace the valves.

NOTE

- Reface valve seats whenever new valve guides are installed.

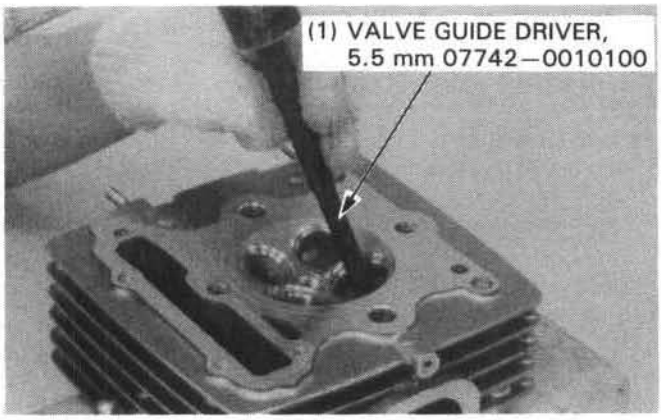
VALVE GUIDE REPLACEMENT

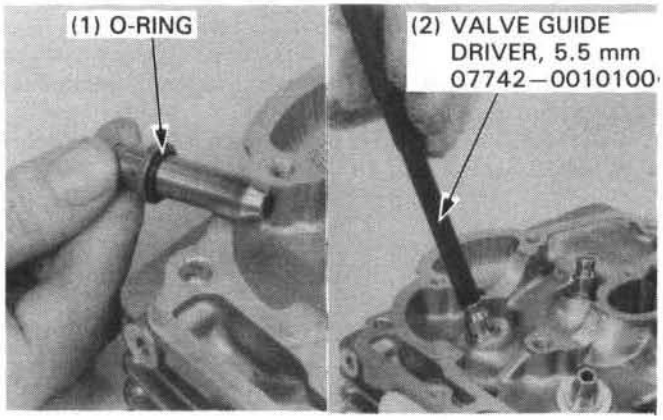
Heat the cylinder head to 100–150°C (212–300°F).
Support the cylinder head and drive out the guide from the combustion chamber side.

CAUTION

- *Do not damage the cylinder head during guide removal*

Install a new O-ring on a new valve guide.
Install a new valve guide from the top of the head, then check that it was not damaged during installation.



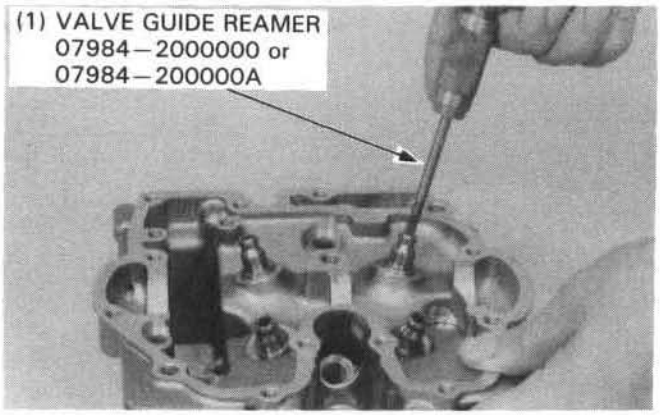


Ream a new valve guides after installation.

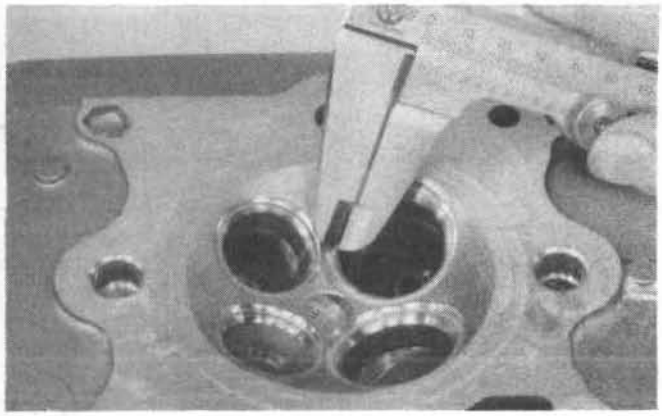
NOTE

- Use cutting oil on the reamer during this operation.
- Rotate the reamer while inserting and removing it.

Reface the valve seats (page 6-11).
Clean the cylinder head thoroughly to remove any metal particles.



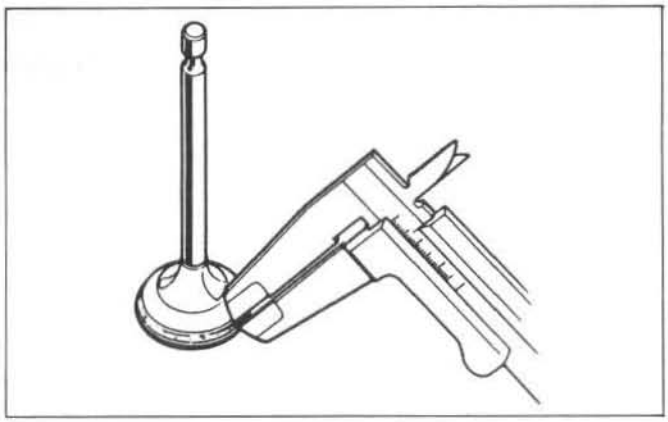
VALVE SEAT INSPECTION AND REFACING



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

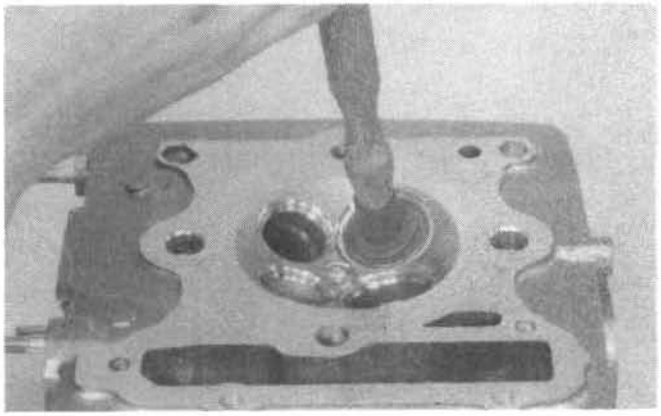
CAUTION

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



Remove the valve and inspect the face measure the valve width.

SERVICE LIMIT: 2.0 mm (0.08 in)



Measure each valve seat width.

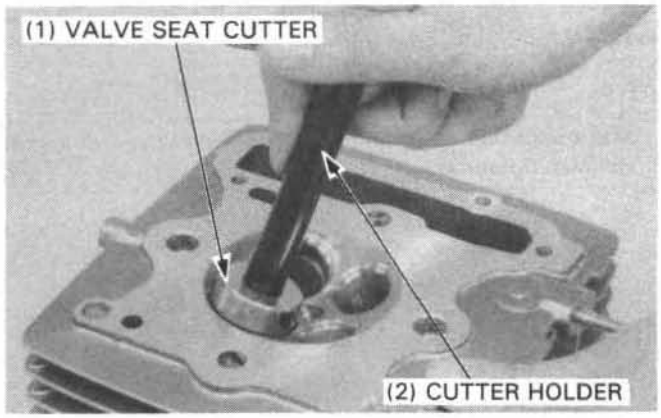
SERVICE LIMIT: 2.0 mm (0.08 in)

If the seat is too wide, too narrow, or has low spots, the seat must be refinished for good sealing.

NOTE

- Follow the refacer manufacture's operating instructions.

VALVE SEAT GRINDING

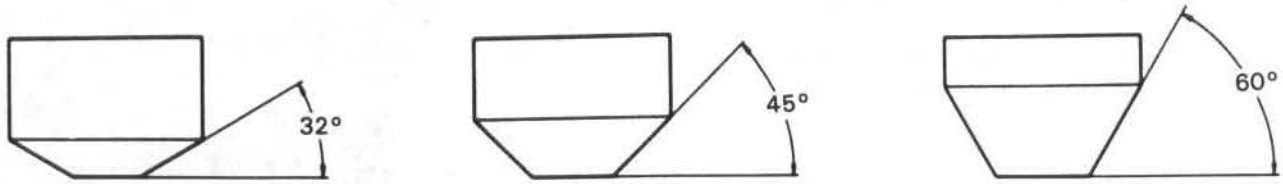


Using a 45 degree cutter, remove any roughness or irregularities from the seat.

NOTE

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

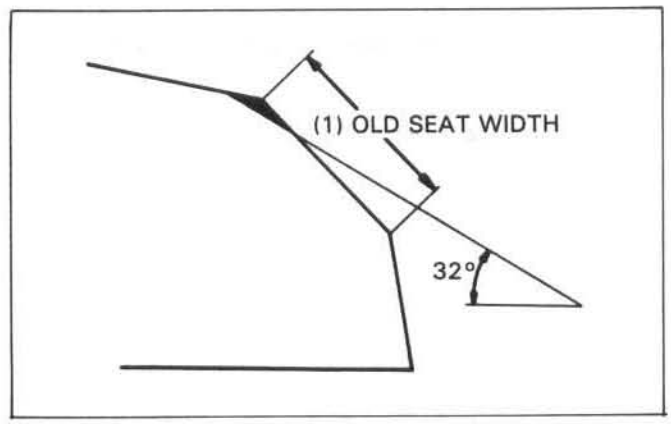
VALVE SEAT CUTTERS



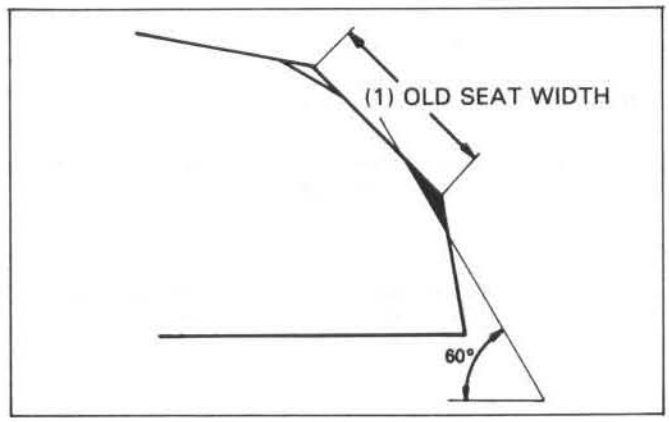
NOTE

- The above valve seat cutters or their equivalent are commercially available in U.S.A.

Using a 32 degree cutter, remove 1/4 of the existing valve seat material.



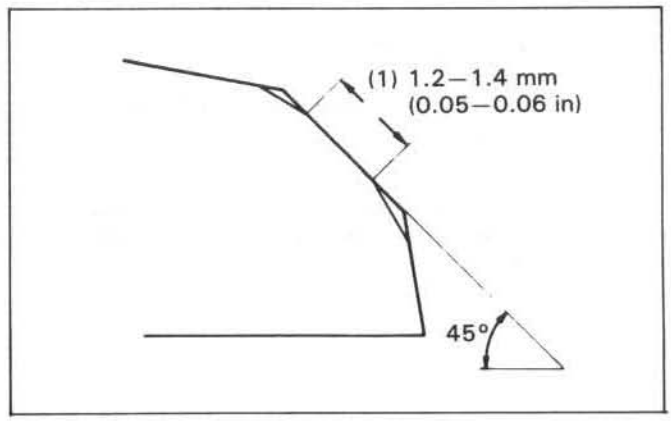
Use a 60 degree cutter and remove the bottom 1/4 of the old seat.



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

NOTE

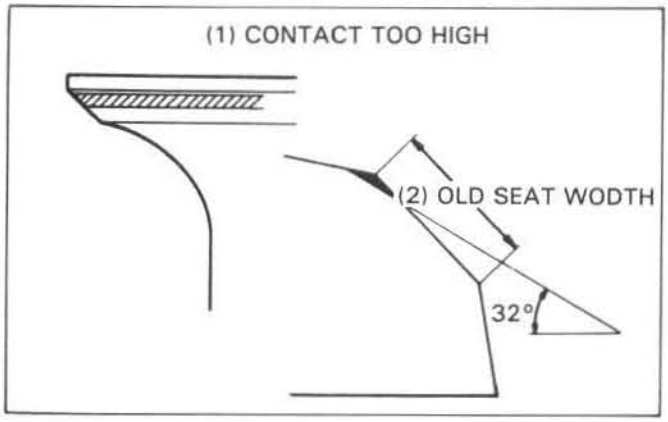
- Make sure that all pitting and irregularities are removed. Refinish if necessary.



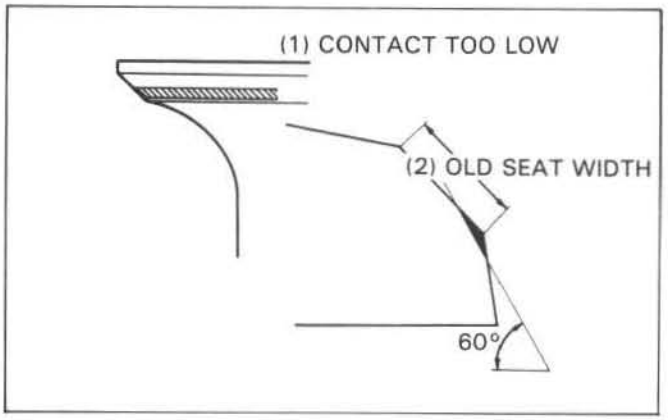
NOTE

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

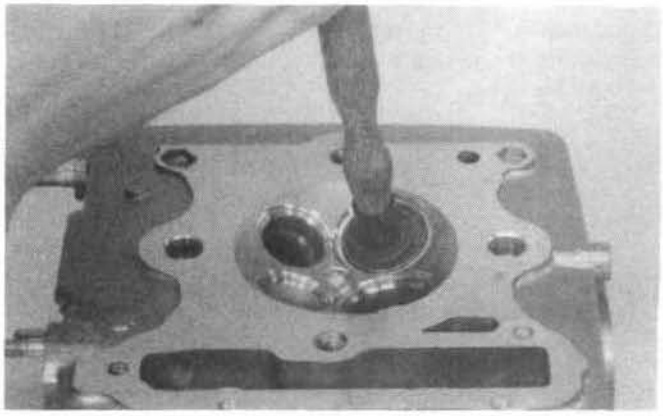
Apply a thin coating of Prussian Blue to the valve seat.
Press the valve through the valve guide and onto the seat to make a clear pattern.
Remove the valve and inspect it.
If the contact area is too high on the valve, the seat must be lowered using a 32 degree flat cutter.
Refinish the seat to the correct width using a 45 degree finish 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 correct width, using a 45 degree finish cutter.

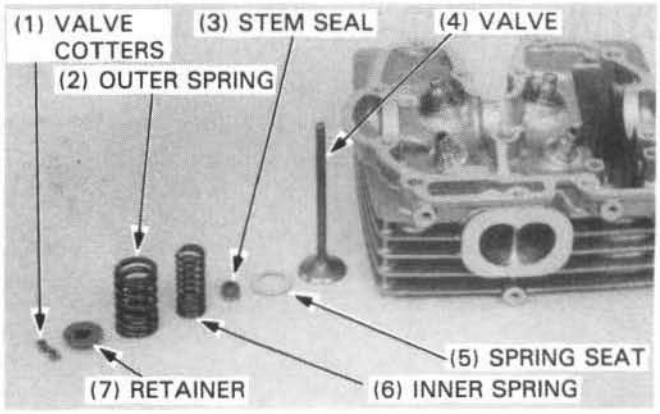


After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.
After lapping, wash all residual compound off the cylinder head, valve, and valve guide.



CYLINDER HEAD ASSEMBLY

Lubricate each valve stem with oil, then insert the valves into the guides.
Install new valve stem seals.
Install the valve spring seat, springs and retainers.
The spring's tightly wound coils should face in towards the combustion chamber.

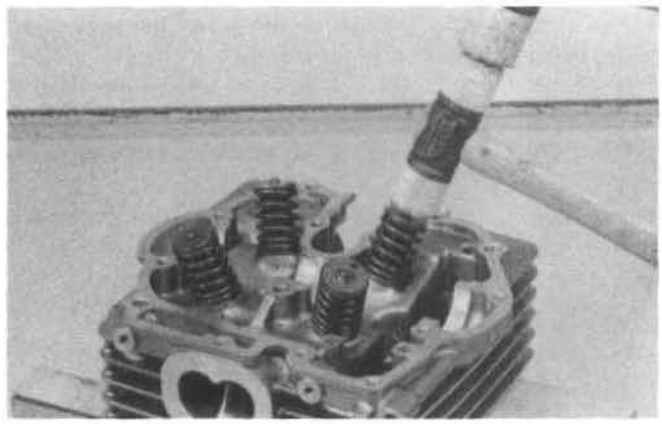


Compress the valve springs using the valve spring compressor, then install the valve cotters.

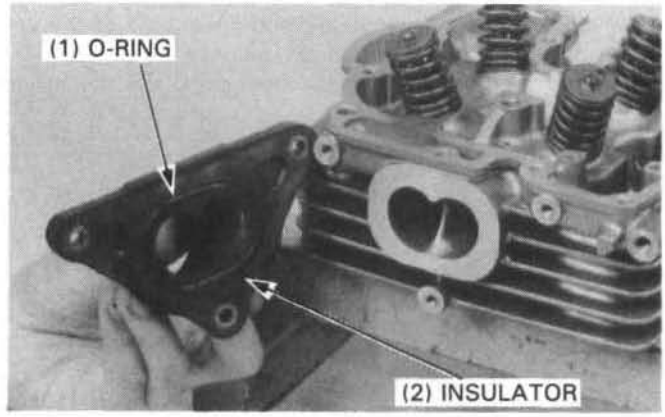
CAUTION

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

Support the cylinder head above the working bench surface to prevent possible valve damage, then gently tap the valve stems with a plastic hammer to seat the cotters.

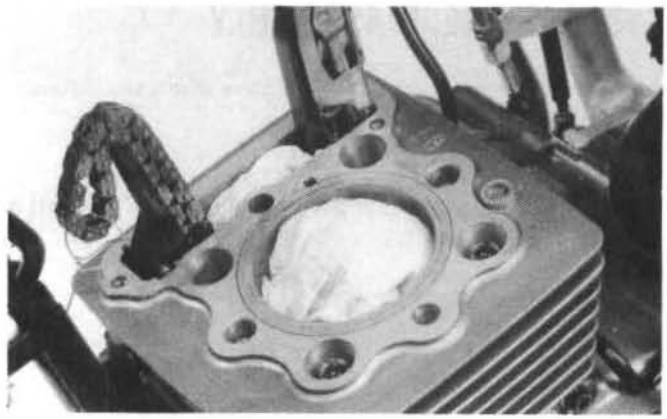


Check the O-ring of the insulator for wear or fatigue.
Apply oil to the O-ring and install the carburetor insulator to the cylinder head.

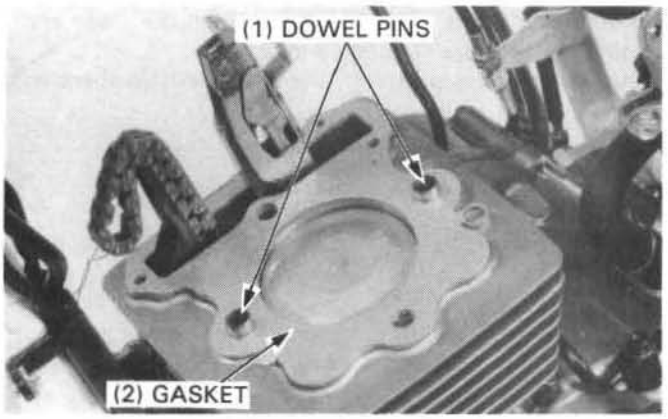


CYLINDER HEAD INSTALLATION

Place a shop towel in the cylinder and oil hole.
Remove the cylinder gasket and throughly clean the gasket surface.

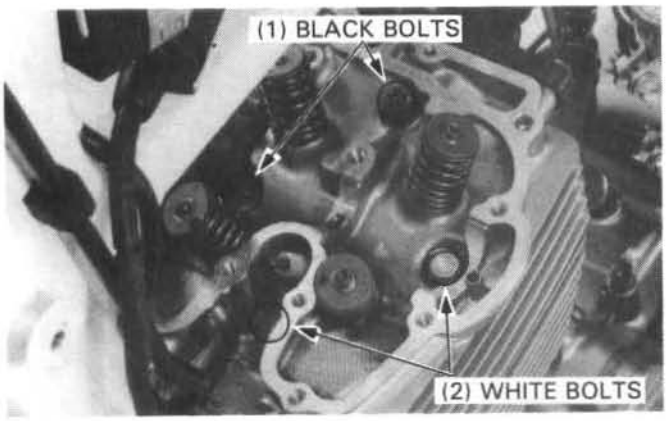


Install the dowel pins and a new gasket.

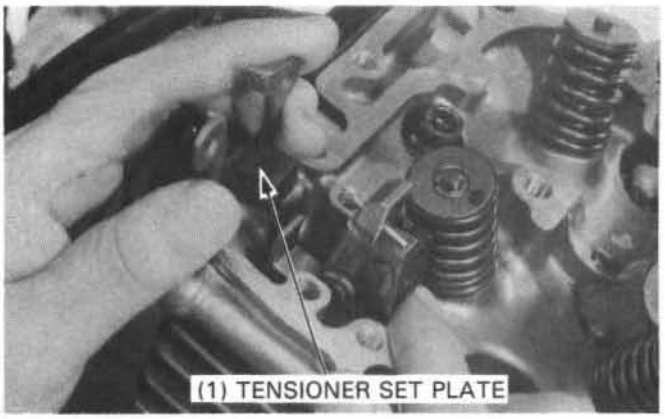


Install the cylinder head.
Apply engine oil to all cylinder head bolts and tighten the four 10 mm cylinder head bolts in a crisscross pattern in two or more steps.

TORQUE VALUE:
10 mm bolts: 37–43 N·m (3.7–4.3 kg-m, 27–31 ft-lb)

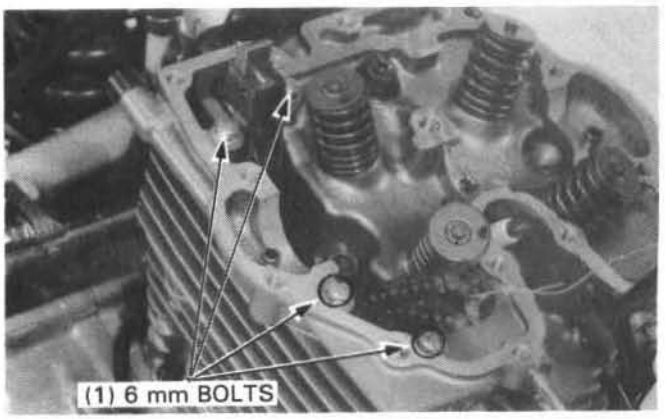


Install the tensioner set plate as shown.

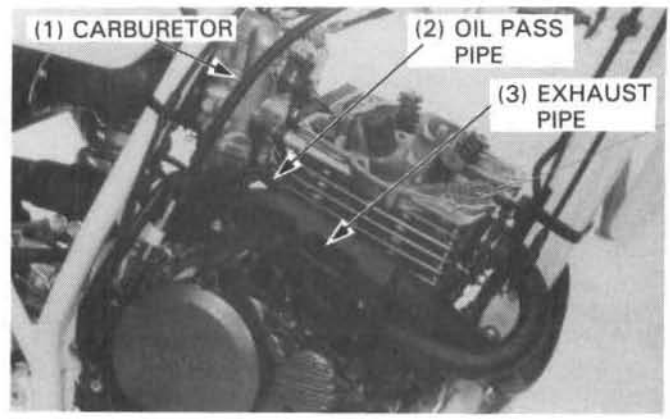


Tighten two 6 mm cylinder head bolts to the specified torque.

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

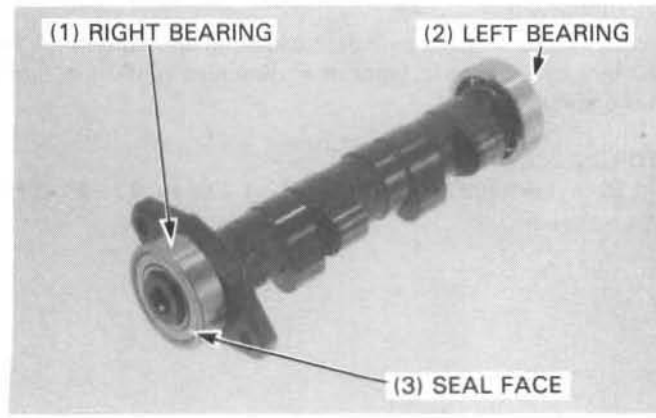


Make sure that the oil pass pipe and bolt are clean and the copper washers are in good condition.
Install the oil pass pipe with the two sealig washers and oil bolt.
Install the exhaust pipe (page 15-3).
Install the carburator (page 4-12).

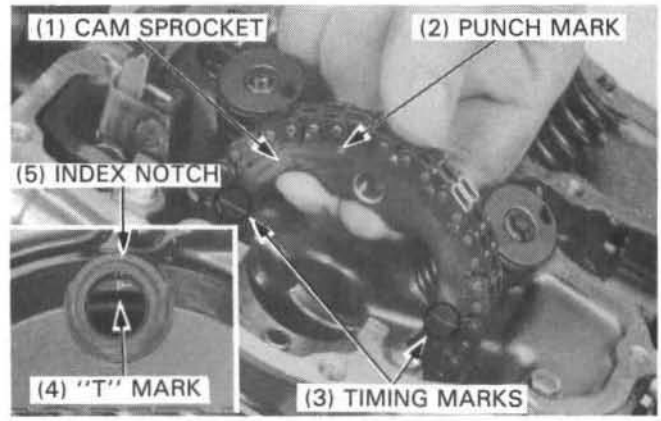


CAMSHAFT INSTALLATION

Apply engine oil to the camshaft bearings and install them onto the camshaft; the sealed bearing goes on the sprocket right side with the seal facing out.



Turn the crankshaft and align the "T" mark on the flywheel with the index notch on the left crankcase cover.
Place the cam sprocket with its punch mark facing the right side; align the timing marks on the cam sprocket with the upper surface of the cylinder head and install the cam chain over the sprocket without rotating the sprocket.

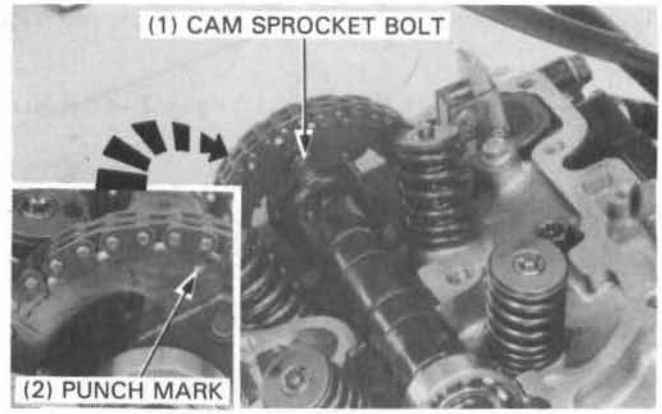


Install the camshaft through the sprocket.
Position the cam sprocket onto the shoulder of the camshaft and install the cam sprocket bolt.

Turn the crankshaft and install the other sprocket bolt.

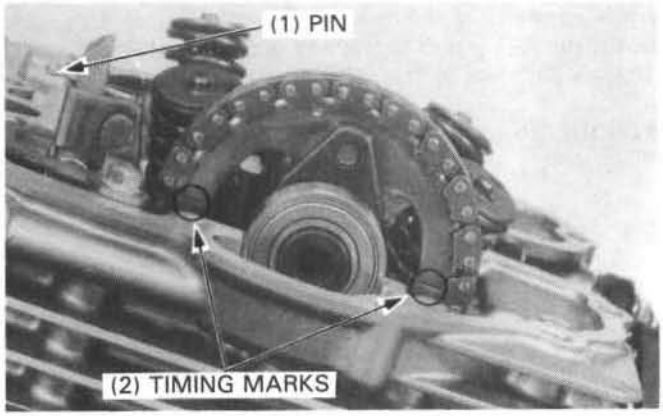
Tighten the cam sprocket bolt on the punch mark side, then tighten the other sprocket bolt, to the specified torque.

TORQUE: 18–22 N·m (1.8–2.2 kg-m, 13–16 ft-lb)

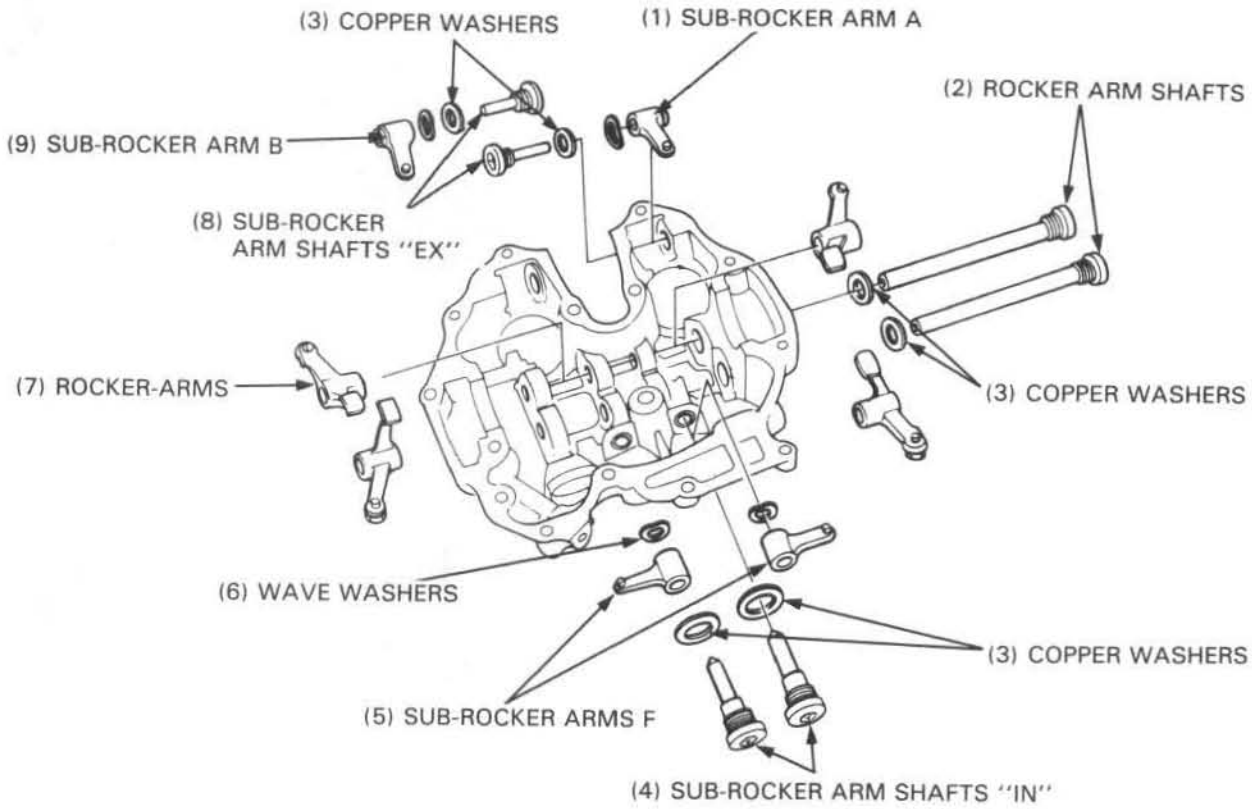


Turn the crankshaft and align the "T" mark with the index notch and make sure that the timing marks on the sprocket align with the upper surface of the cylinder head.

Remove the pin from the cam chain tensioner.



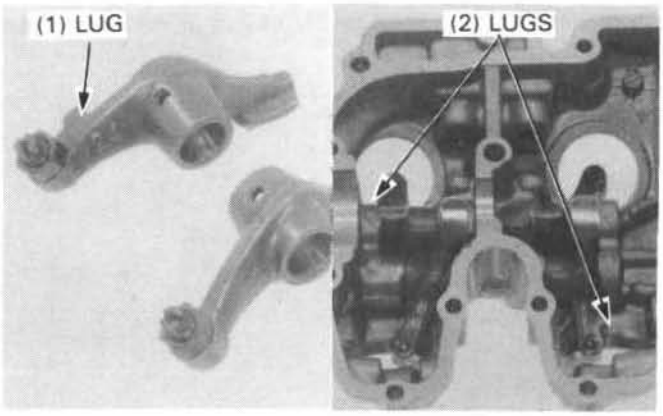
CYLINDER HEAD COVER ASSEMBLY



Install the rocker arms as shown.

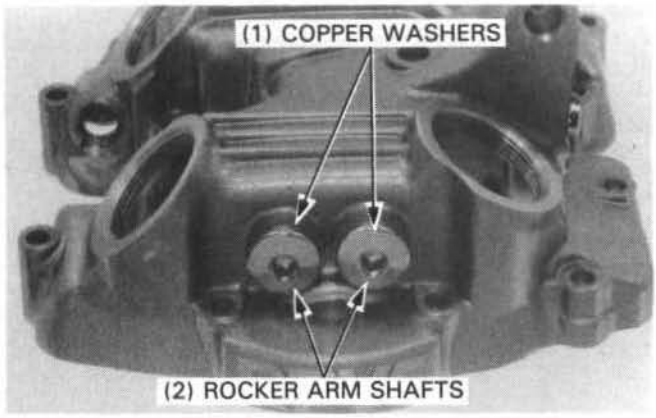
NOTE

- Note the location of the rocker arms having a decompression lug.

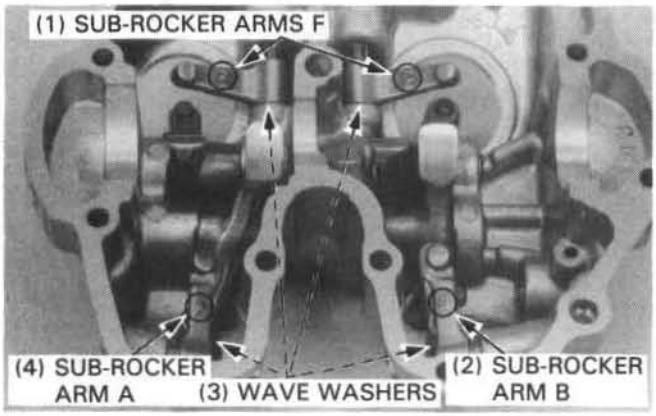


Apply engine oil to the rocker arm shafts.
Install the rocker arm shafts and copper washers.
Tighten the shaft to specification torque:

TORQUE: 25–30 N·m (2.5–3.0 kg-m, 18–22 ft-lb)

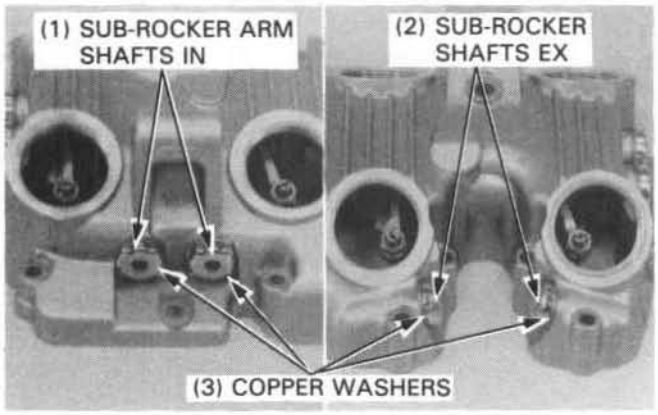


Install sub-rocker arms A, B and F, and the wave washers as shown.

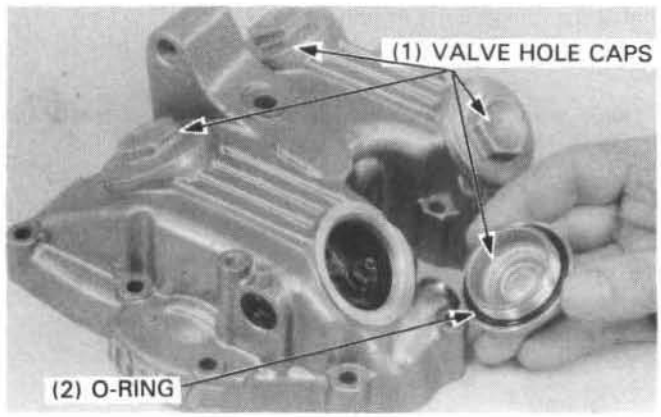


Apply engine oil to the sub-rocker arm shafts.
Install the sub-rocker arm shafts and copper washers and tighten the shafts.

TORQUE: IN: 25–30 N·m (2.5–3.0 kg-m, 18–22 ft-lb)
EX: 20–25 N·m (2.0–2.5 kg-m, 15–18 ft-lb)

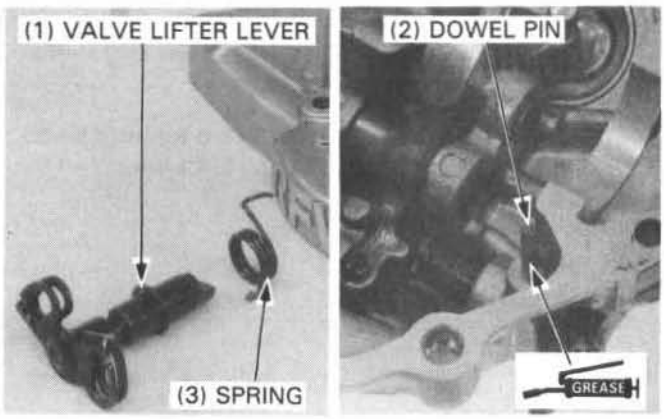


Make sure the O-ring is properly seated in the groove of the valve hole cap.
Install the valve hole caps.

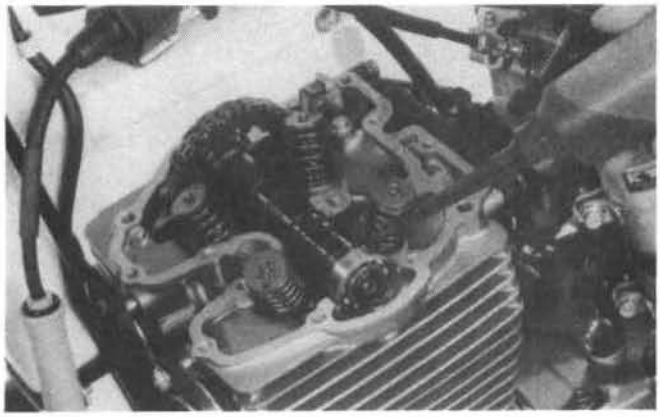


Install the valve lifter lever and spring as shown.

Align the cutout of the lever shaft with the hole in the cylinder head cover and press the dowel pin into the cylinder head cover.



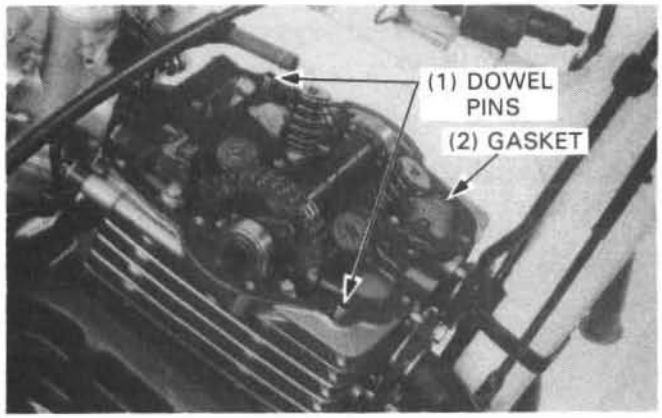
Pour clean engine oil into the oil pockets in the cylinder head so that the cam lobes are completely submerged.



Install a new cylinder head cover gasket and dowel pin.

NOTE

- Be careful not to damage the silicone coating on the gasket surfaces.

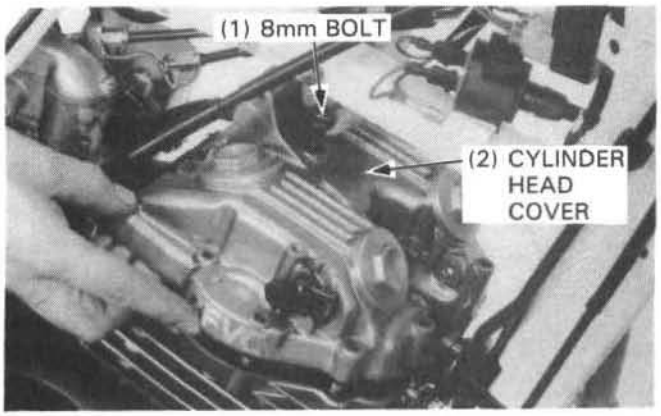


CYLINDER HEAD COVER INSTALLATION

Clean the cylinder head mating surface on the cylinder head cover.

Loosen all the valve adjusting screws and install the cylinder head cover.

Install all cylinder head cover bolts.



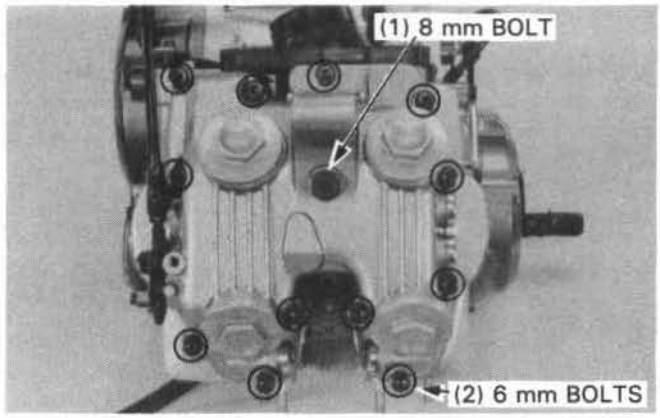
Tighten the 8 mm cylinder head cover bolt, then tighten the 6 mm cylinder head cover bolts, to the specified torque.

TORQUE:
8 mm bolt: 20–26 N·m (2.0–2.6 kg-m, 15–20 ft-lb)
6 mm bolts: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

NOTE

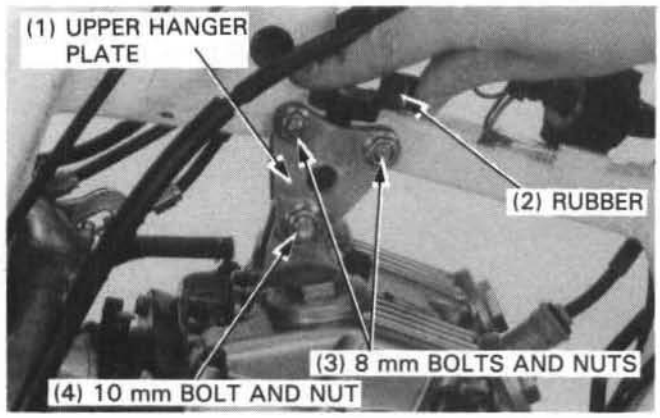
- Tighten the 6 mm head cover bolts in a crisscross pattern in two or more steps.

Adjust the valve clearance (page 3-8).



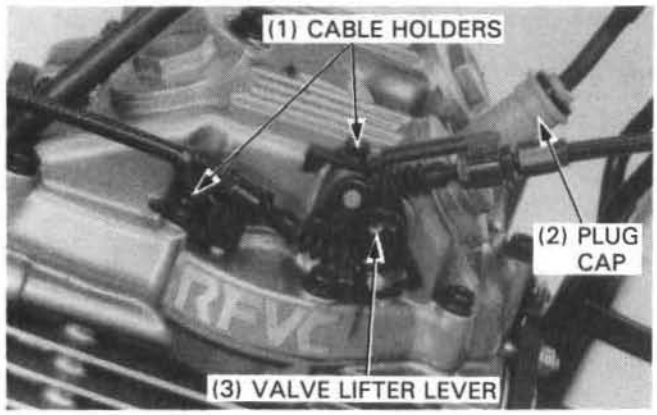
Install the upper hanger plate, tighten nuts to the specificed torque and install the upper hanger plate rubber.

TORQUE:
8 mm: 24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
10 mm: ('86–'89:)
35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)
10 mm: (AFTER '89:)
60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)

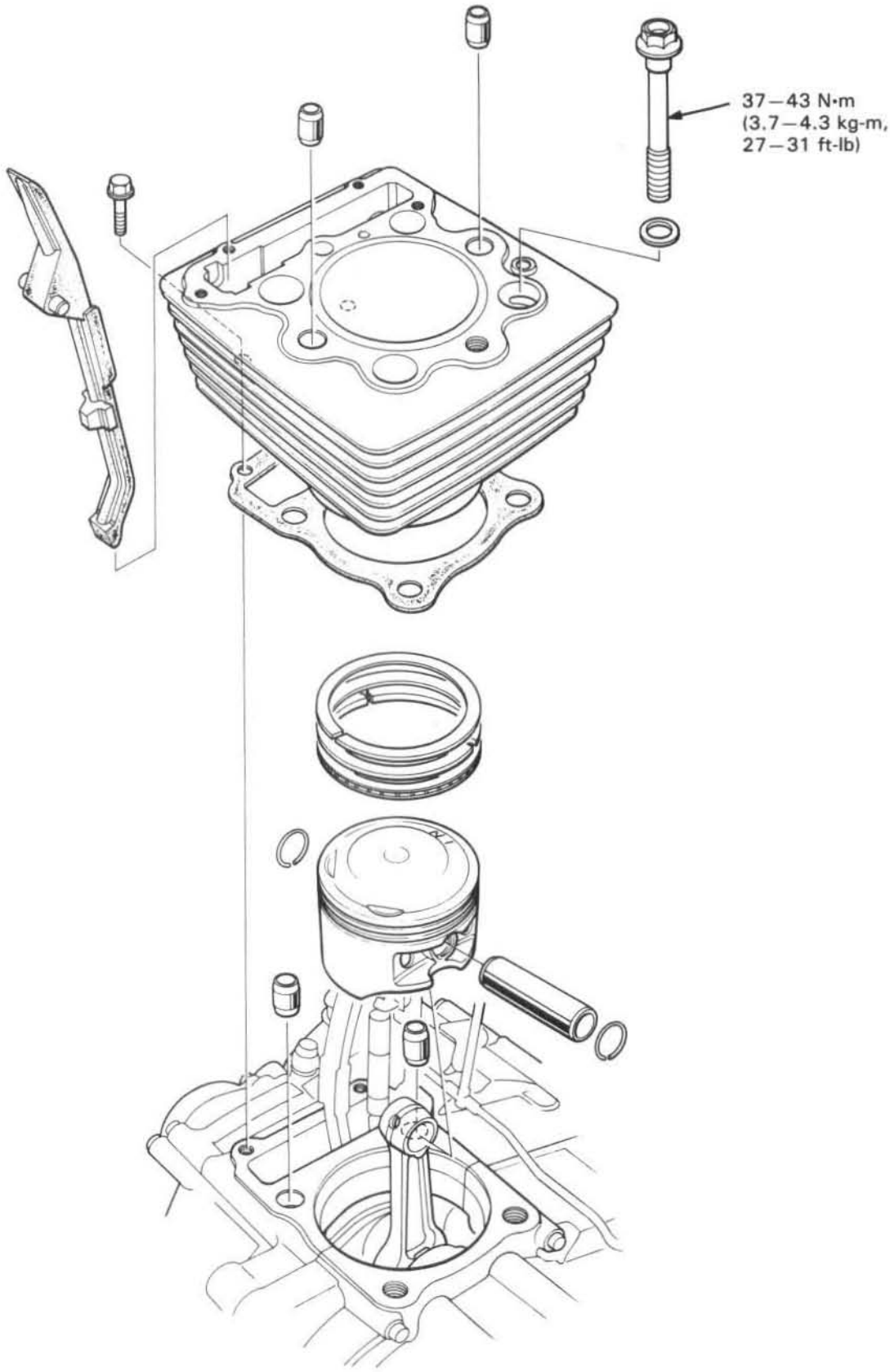


Install the cable holders and connect the decompressor cables to the valve lifter lever.
Install the spark plug cap.
Install the fuel tank and seat.

Perform the following inspections and adjustments.
Throttle grip free play (page 3-6).
Decompressor cable adjustment (page 3-9).



MEMO


37–43 N·m
(3.7–4.3 kg-m,
27–31 ft-lb)

SERVICE INFORMATION

SPECIFICATIONS

unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cylinder	I.D.	73.000–73.010 (2.8740–2.8744)	73.11 (2.878)
	Taper	—	0.05 (0.002)
	Out of round	—	0.05 (0.002)
	Warpage across top	—	0.10 (0.004)
Piston, piston rings and piston pin	Piston O.D. at skirt	72.960–72.985 (2.8724–2.8734)	72.88 (2.869)
	Piston pin bore	17.002–17.008 (0.6694–0.6696)	17.07 (0.672)
	Piston pin-to-piston clearance	0.002–0.004 (0.0001–0.0002)	0.07 (0.003)
Piston ring end gap	Top	0.25–0.45 (0.010–0.018)	0.56 (0.022)
	Second	0.25–0.45 (0.010–0.018)	0.56 (0.022)
	Oil (Side rail)	0.20–0.70 (0.008–0.028)	0.86 (0.034)
Piston ring-to-groove clearance	Top	0.015–0.045 (0.0006–0.0018)	0.12 (0.006)
	Second	0.015–0.045 (0.0006–0.0018)	0.12 (0.006)
Cylinder-to-piston clearance		0.015–0.050 (0.0006–0.0020)	0.10 (0.004)
Piston pin O.D.		17.000–17.006 (0.6693–0.6695)	16.97 (0.668)
Connecting rod small end I.D.		17.016–17.034 (0.6699–0.6706)	17.06 (0.672)

TORQUE VALUE

Cylinder bolt	37–43N·m (3.7–4.3 kg-m, 27–31 ft-lb)

TROUBLESHOOTING

Low conpression
- Worn cylinder or piston rings

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

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

Knocking or abnormal noise
- Worn piston and cylinder
- Excessive carbon build-up on piston crown or combustion chamber

CYLINDER REMOVAL

Remove the cylinder head (Section 6).

Remove the two cylinder base mounting blots.

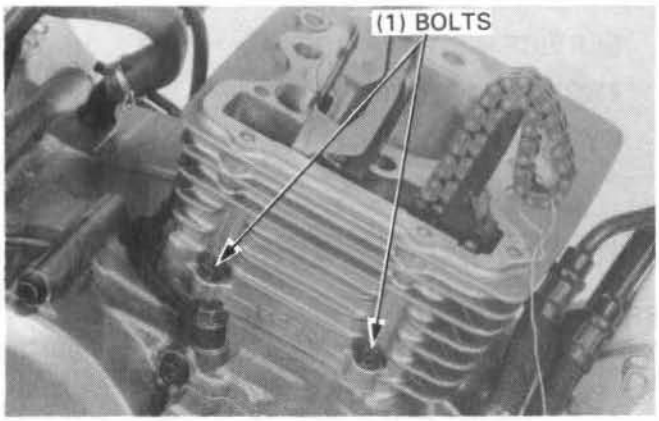
Remove the cam chain guide.

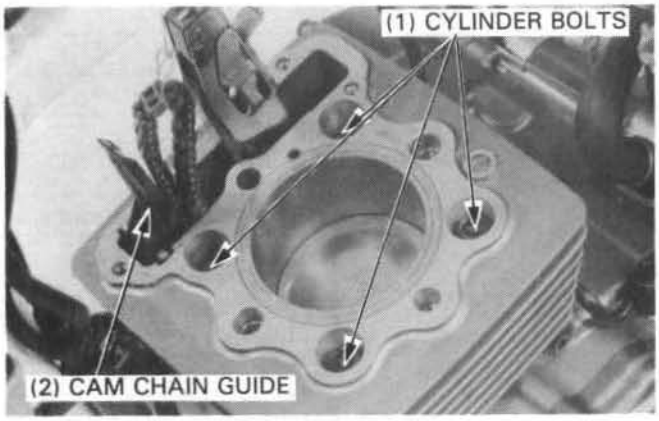
Remove the four cylinder mounting bolts.

NOTE

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

Remove the cylinder.
Remove the dowel pins and cylinder gasket.





CYLINDER 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. Take the maximum reading to determine the cylinder wear.

SERVICE LIMIT: 73.11 mm (2.878 in)

Calculate the piston-to-cylinder clearance. Take the maximum reading to determine the clearance.
Refer to page 7-4 for measurement of the piston O.D..

SERVICE LIMIT: 0.10 mm (0.004 in)

Calculate the cylinder for taper at three levels in an X and Y axis.
Take the maximum reading to determine the taper.

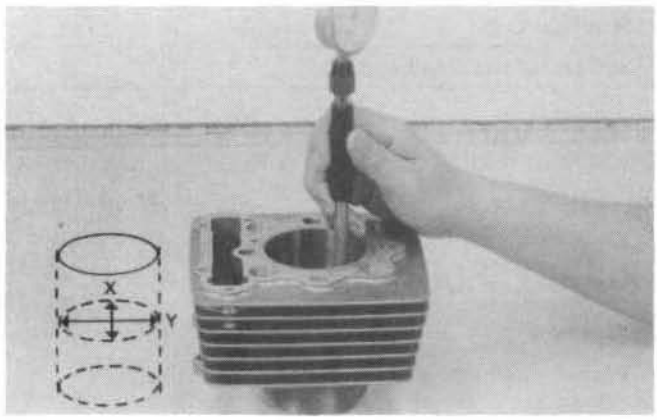
SERVICE LIMIT: 0.05 mm (0.002 in)

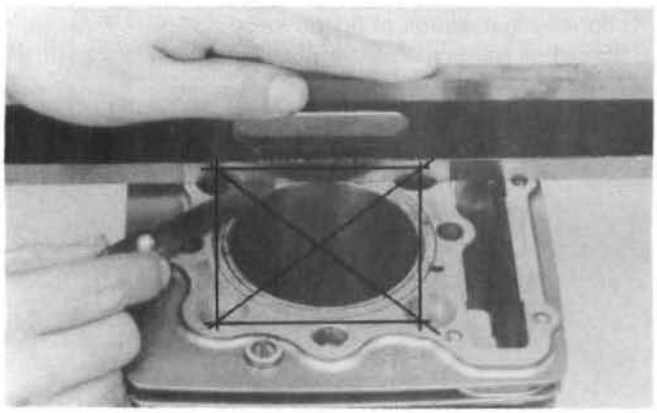
Calculate the cylinder for out-of-round at three levels in an X and Y axis.
Take the maximum reading to determine the out-of-round.

SERVICE LIMIT: 0.05 mm (0.002 in)

Inspect the top of the cylinder for warpage.

SERVICE LIMIT: 0.10 mm (0.004 in)





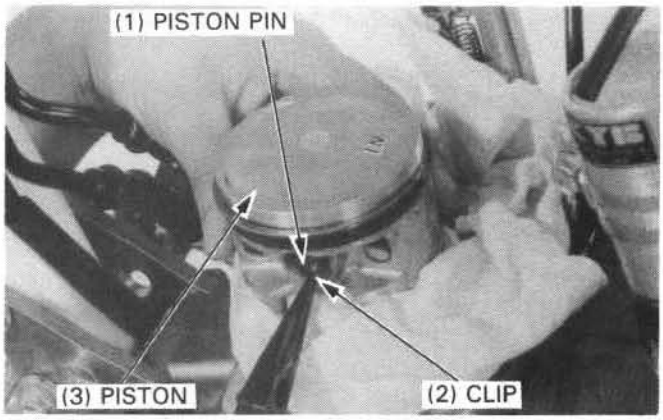
PISTON REMOVAL

Place clean shop towels in the crankcase to keep the piston pin clips, or other parts, from falling into the crankcase.

Remove the piston pin clips with pliers.

Press the piston pin out of the piston.

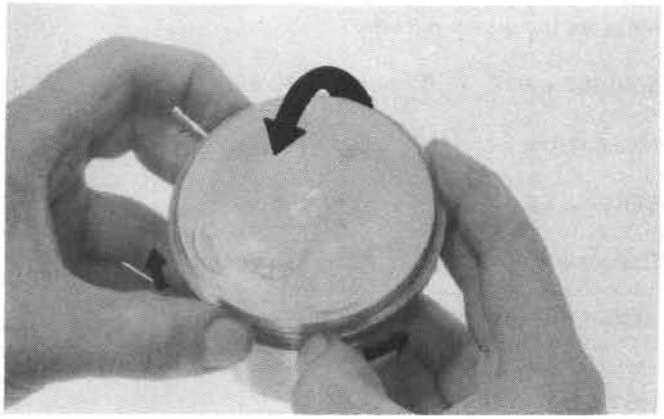
Remove the piston pin and piston.



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

CAUTION

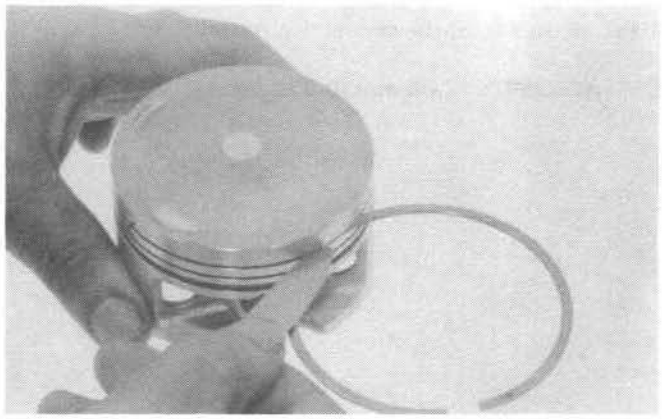
- *Piston rings are easily broken; take care not to damage them during removal.*



PISTON/PISTON RING INSPECTION

Measure the piston ring-to-groove clearance.

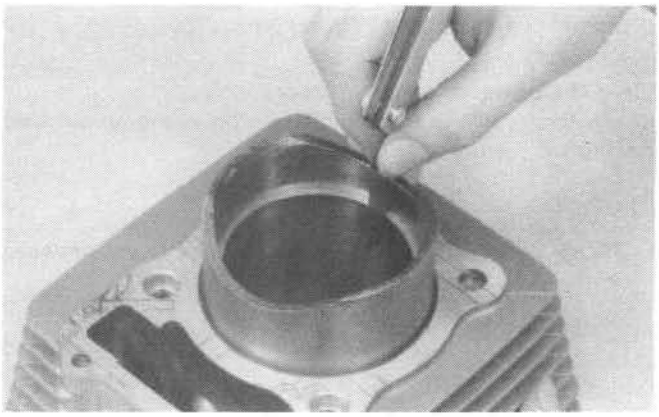
SERVICE LIMITS:
TOP: 0.12 mm (0.006 in)
2nd: 0.12 mm (0.006 in)



Insert each piston ring into the cylinder, about 20 mm (0.75 in) in from the bottom.
To ensure that it's square in the bore, use a piston to push it in.

Measure the ring end gap.

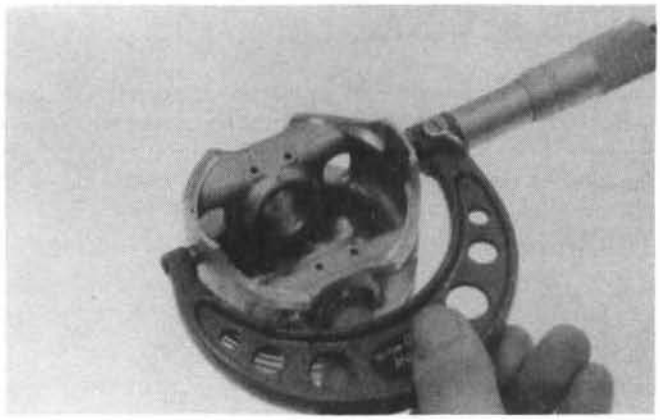
SERVICE LIMITS:
TOP: 0.56 mm (0.022 in)
2nd: 0.56 mm (0.022 in)
Oil: 0.86 mm (0.034 in)



Measure the piston diameter 10 mm from the bottom.

SERVICE LIMIT: 72.88 mm (2.869 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 bore.

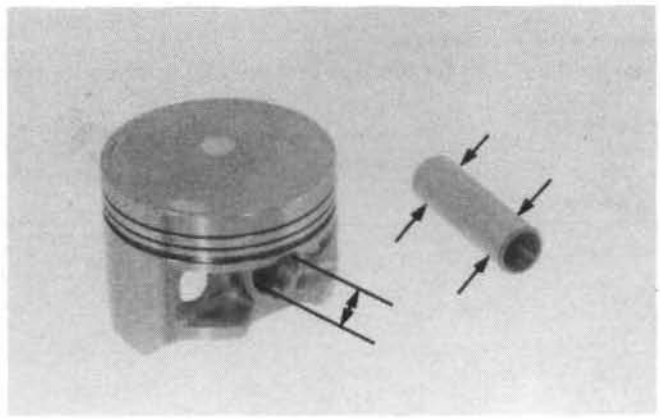
SERVICE LIMIT: 17.07 mm (0.672 in)

Measure the piston pin O.D..

SERVICE LIMIT: 16.97 mm (0.668 in)

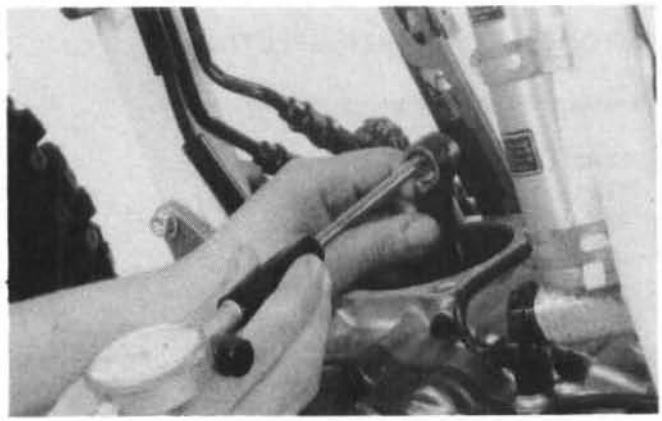
Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.07 mm (0.003 in)



Measure the I.D. of the connecting rod small end.

SERVICE LIMIT: 17.06 mm (0.672 in)

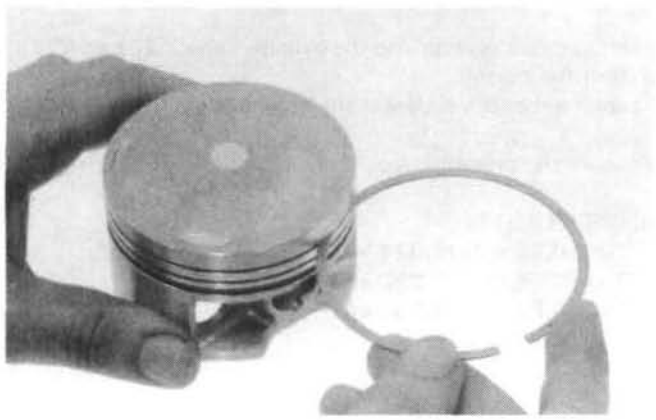


PISTON RING INSTALLATION

Clean the piston ring grooves thoroughly.
Check for cleanliness by holding a ring in the grooves while turning the piston.

CAUTION

- *Do not use a wire brush to clean ring lands, or cut lands deeper with a cleaning tool.*



Install the piston rings with the marks facing up.

CAUTION

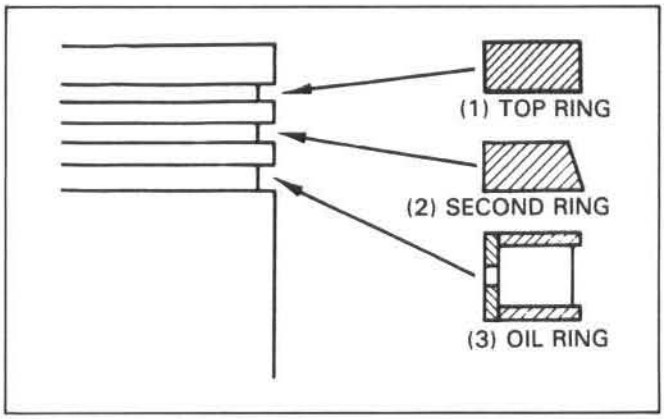
- *Avoid piston and piston ring damage during installation.*

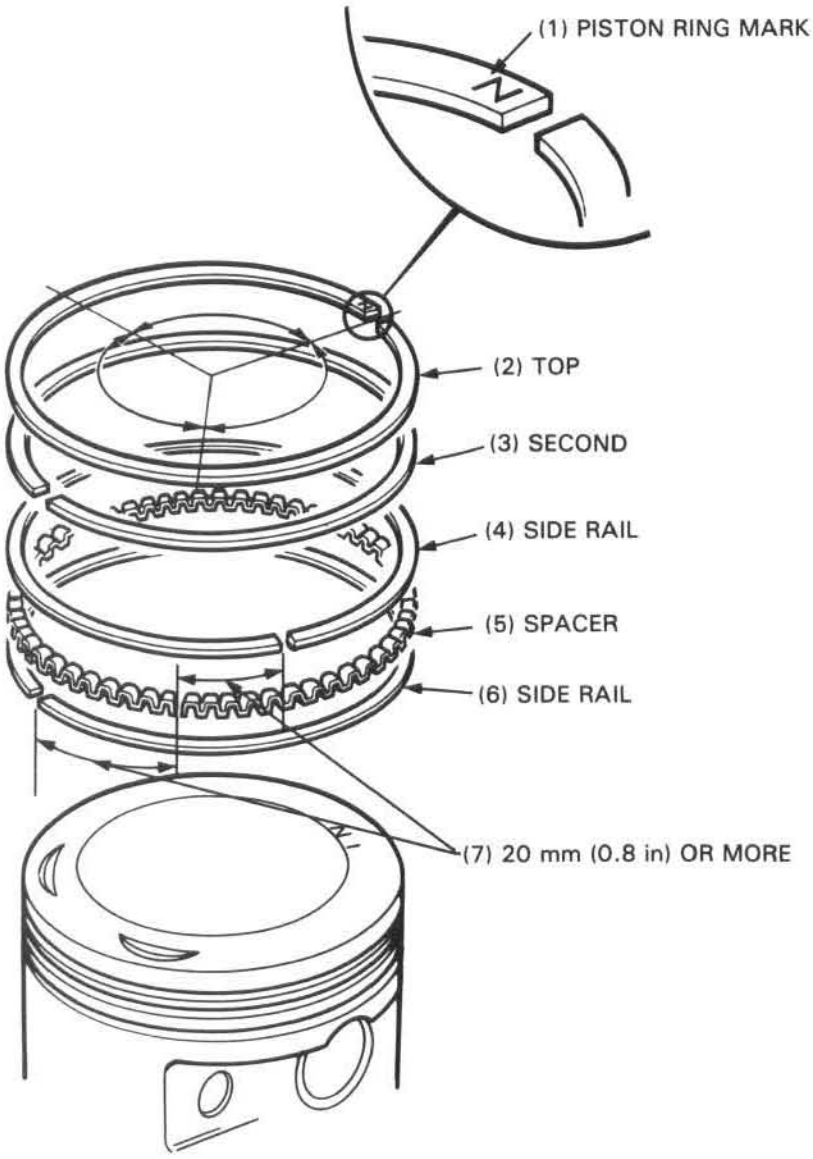
Stagger the compression (1st and 2nd) and oil rings (side rails) 180 degrees apart as shown.

NOTE

- Install the oil ring spacer first, then install the side rails.

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



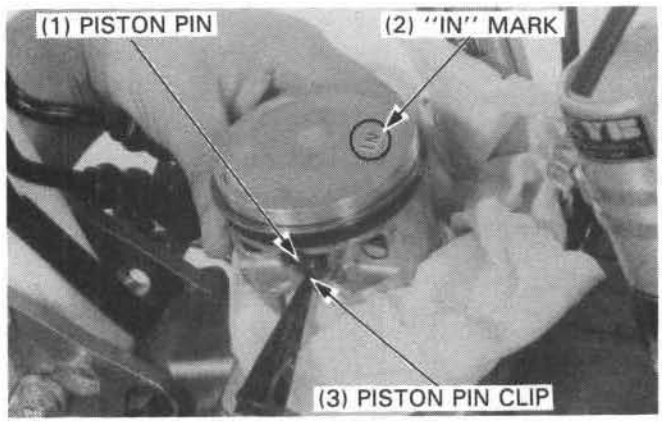


PISTON INSTALLATION

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

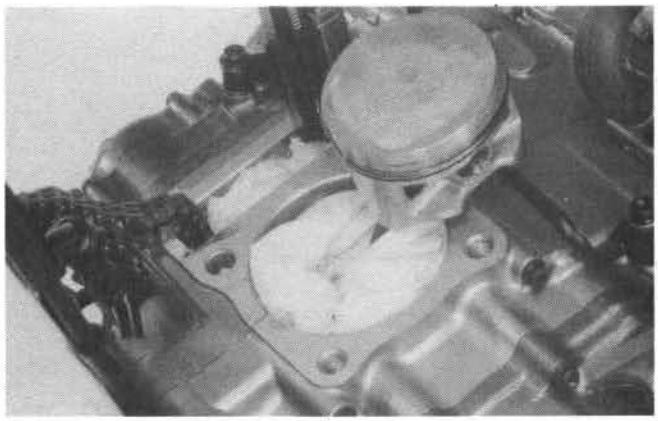
NOTE

- Do not align the piston pin clip end gap with the piston cut-out.
- Place a shop towel around the piston skirt and in the crankcase to prevent the piston pin clips from falling into the crankcase.



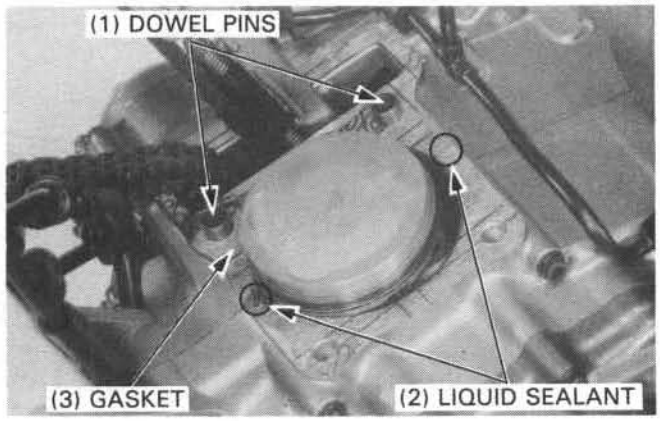
CYLINDER INSTALLATION

Carefully clean any gasket material from the crankcase mating surface.



Apply a liquid sealant to the crankcase mating area to prevent oil leaks.

Install a new cylinder base gasket and dowel pins.

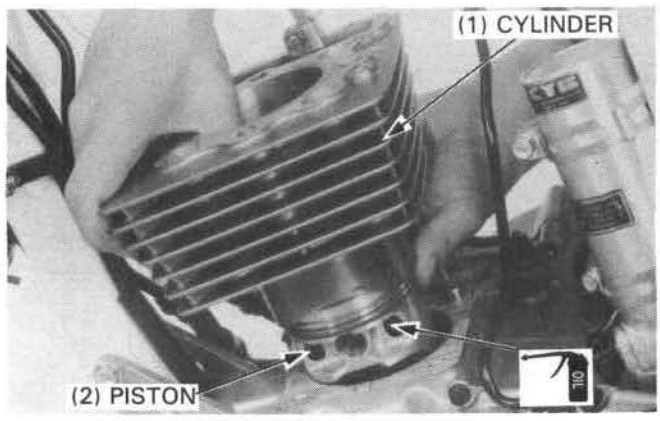


Coat the cylinder bore, piston and piston rings with fresh engine oil.

Carefully lower the cylinder over the piston by compressing the piston rings, one at a time.

CAUTION

- *Do not force the cylinder over a ring; you may damage the piston and piston ring.*



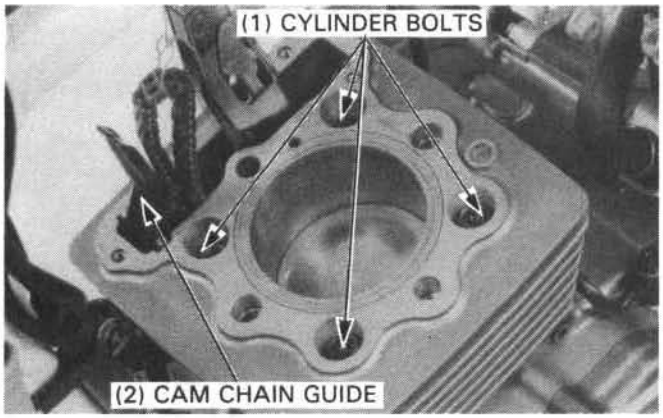
Apply engine oil to the cylinder bolts and tighten them in a crisscross pattern in two or more steps.

TORQUE: 37–43 N·m (3.7–4.3 kg-m, 27–31 ft-lb)

Install the cam chain guide.

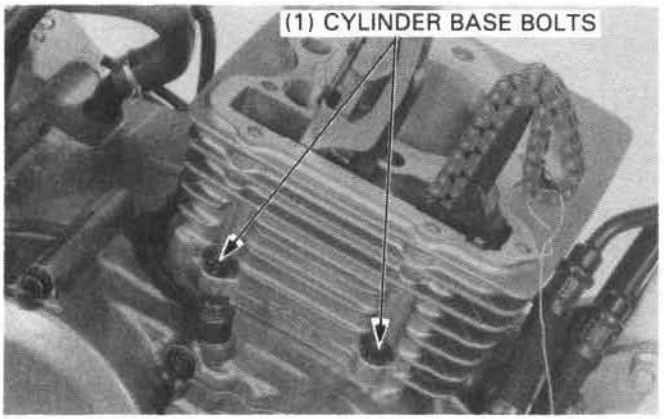
NOTE

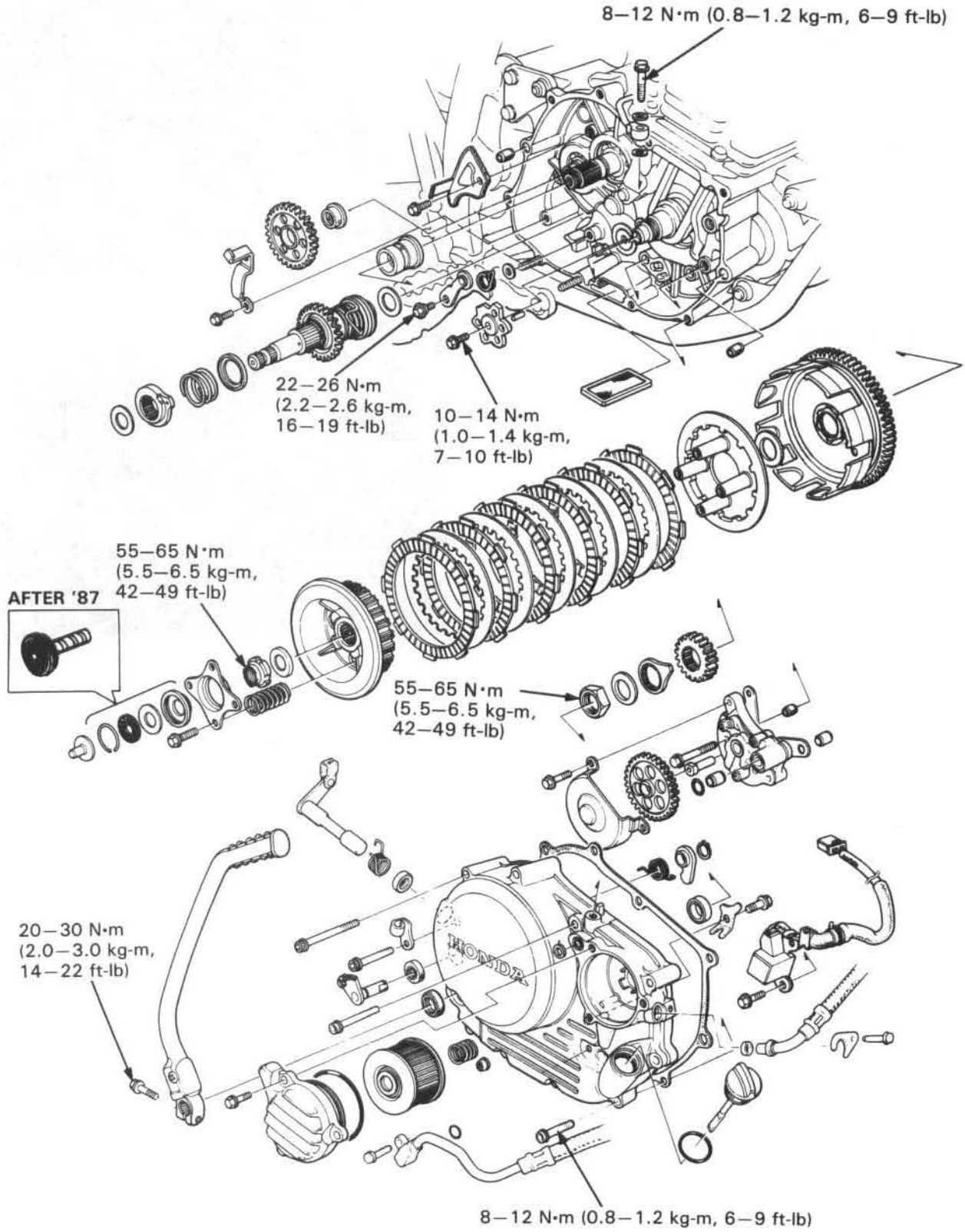
- Push the guide in until it bottoms in the crankcase guide hole.



Tighten the cylinder base bolts.

Install the cylinder head (page 6-14).




8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
22–26 N·m
(2.2–2.6 kg-m,
16–19 ft-lb)
10–14 N·m
(1.0–1.4 kg-m,
7–10 ft-lb)
55–65 N·m
(5.5–6.5 kg-m,
42–49 ft-lb)
AFTER '87
55–65 N·m
(5.5–6.5 kg-m,
42–49 ft-lb)
20–30 N·m
(2.0–3.0 kg-m,
14–22 ft-lb)
HONDA
8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the clutch, kickstarter and right crankcase cover. All these operations can be accomplished with the engine installed in the frame.
- When the existing clutch discs are replaced, coat the new discs with engine oil prior to assembly.

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Clutch	Lever free play (at lever end)		10–20 mm (3/8–3/4 in)	—
	Spring free length		33.7 mm (1.33 in)	32.2 mm (1.27 in)
	Spring preload/length		29.7 kg/21.0 mm (65.48 lb/0.83 in)	—
	Disc thickness		2.92–3.08 mm (0.115–0.121 in)	2.69 mm (0.106 in)
	Plate warpage		—	0.30 mm (0.012 in)
	Clutch outer I.D.		25.000–25.021 mm (0.9843–0.9851 in)	25.04 mm (0.986 in)
	Outer guide	O.D.	24.959–24.980 mm (0.9826–0.9835 in)	24.17 mm (0.952 in)
		I.D.	20.010–20.035 mm (0.7878–0.7888 in)	20.05 mm (0.789 in)
	Mainshaft O.D. (outer guide)		19.959–19.980 mm (0.7858–0.7866 in)	19.91 mm (0.784 in)
Kickstarter	Starter idle gear I.D.		19.010–19.034 mm (0.7484–0.7494 in)	19.13 mm (0.753 in)
	Starter idle gear bushing I.D.		15.000–15.018 mm (0.5906–0.5913 in)	14.97 mm (0.589 in)
	Starter idle gear bushing O.D.		18.959–18.980 mm (0.7464–0.7472 in)	18.92 mm (0.745 in)
	Kickstarter gear I.D.		22.020–22.041 mm (0.8669–0.8678 in)	22.12 mm (0.871 in)
	Kickstarter spindle O.D.		21.959–21.980 mm (0.8645–0.8654 in)	21.91 mm (0.863 in)
	Countershaft O.D. (starter idle)		14.966–14.984 mm (0.5892–0.5899 in)	14.91 mm (0.587 in)

TORQUE VALUES

Oil pass pipe bolt	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Clutch lock nut	55–65 N·m (5.5–6.5 kg-m, 42–49 ft-lb)
Drive gear lock nut	55–65 N·m (5.5–6.5 kg-m, 42–49 ft-lb)
Right crankcase cover	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Gearshift cam bolt	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Shift drum stopper arm bolt	22–26 N·m (2.2–2.6 kg-m, 16–19 ft-lb)
Foot peg (10 mm)	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
(12 mm)	80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Kickstarter pedal	20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb)

TOOLS

Special

Clutch center holder	07923–KE10000 or equivalent commercially available in U.S.A.

Common

Wrench, 20 x 24 mm	07716–0020100
Extension	07716–0020500 — or equivalent commercially available in U.S.A.
Gear holder	07724–0010100 — or equivalent commercially available in U.S.A.

TROUBLESHOOTING

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

Clutch slips when accelerating
- No free play
- Discs worn
- Springs weak

Clutch will not disengage
- Too much free play
- Plates warped

Motorcycle creeps with clutch disengaged
- Too much free play
- Plates warped

Excessive lever pressure
- Clutch cable kinked, damaged, or dirty
- Lifter mechanism damaged

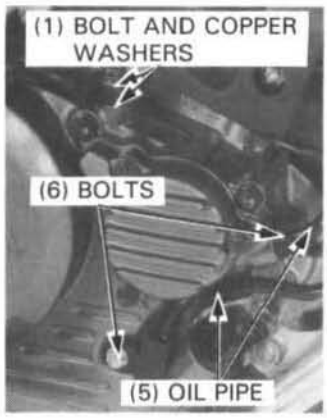
Clutch operation feels rough
- Outer drum slots rough
- Dirty clutch cable

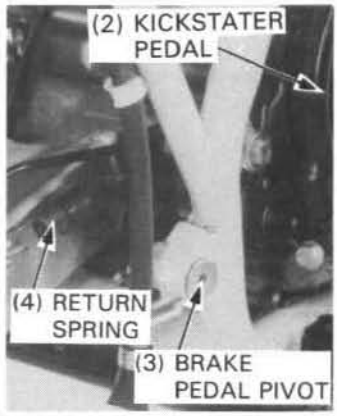
RIGHT CRANKCASE COVER REMOVAL

Drain the oil from the engine (page 2-3).
Remove the oil pipe bolts and set plate.
Disconnect the oil pipe from the right crankcase cover.
Remove the oil pass pipe bolt and copper washers.

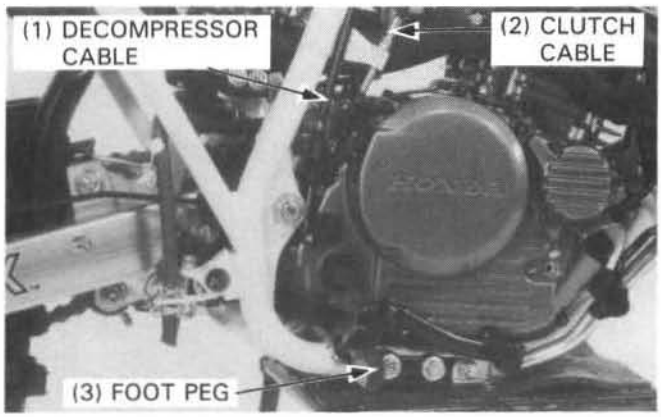
Disconnect the brake rod from the brake arm ('86–'89:).
Remove the brake pedal joint pin (page 13-30 AFTER '89:).
Disconnect the return spring from the swingarm.
Remove the brake pedal bolt and pivot.

Remove the kickstarter pedal.



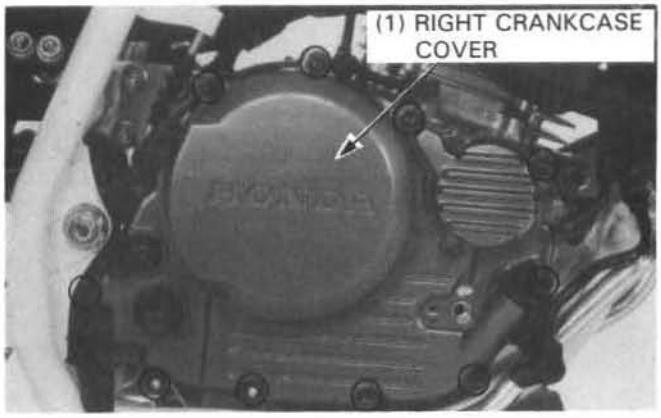


Disconnect the clutch cable from the clutch arm.
Disconnect the decompressor cable at the kickstarter lever.
Remove the right foot peg.



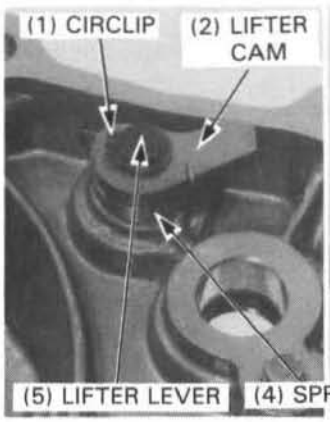
Remove the bolts and nuts holding the right crankcase cover and remove the cover.

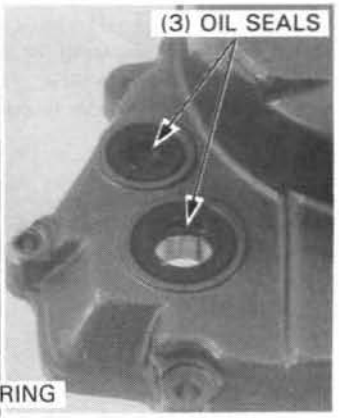
Remove the dowel pins and gasket.



DISASSEMBLY

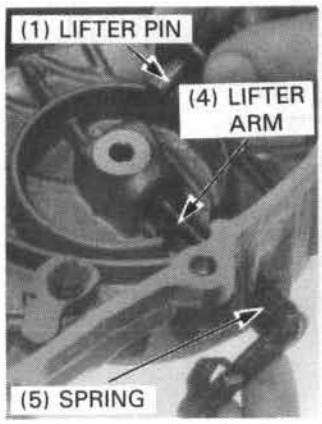
Remove the circlip, decompressor lifter cam, spring and lifter lever.
Inspect the oil seals and replace if necessary.

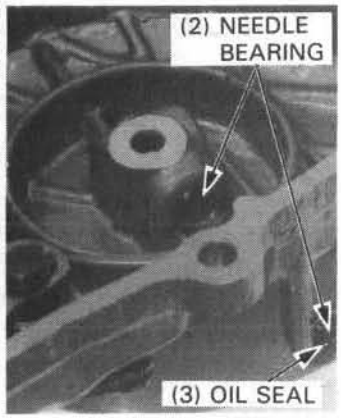




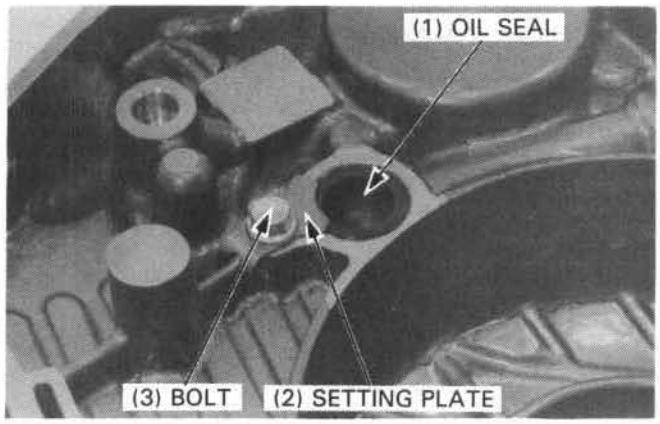
Remove the clutch lifter pin, spring and clutch lifter arm.

Check the oil seal and needle bearing.





Check the oil seal and replace if necessary.
Remove the bolt and oil seal setting plate.
Remove the oil seal.

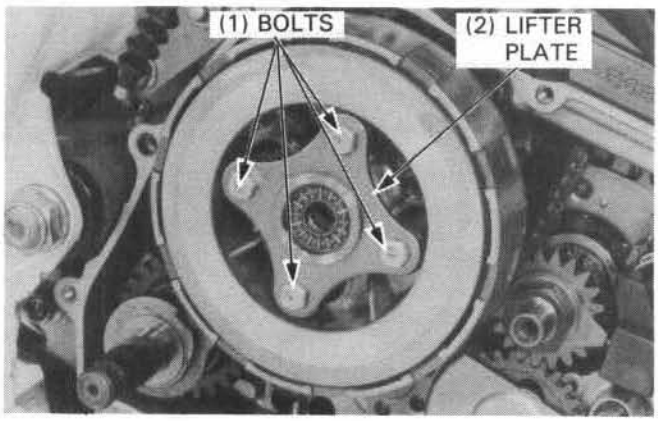


CLUTCH REMOVAL

Remove the clutch bolts, lifter plate, and clutch spring.

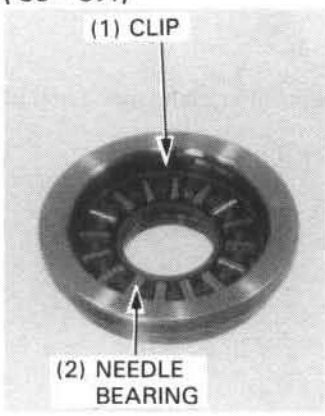
NOTE

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



('86–'87:)
Check the needle bearing for wear, excessive play or damage and replace it if necessary.
Remove the clip, needle bearing and washer from the clutch lifter collar.

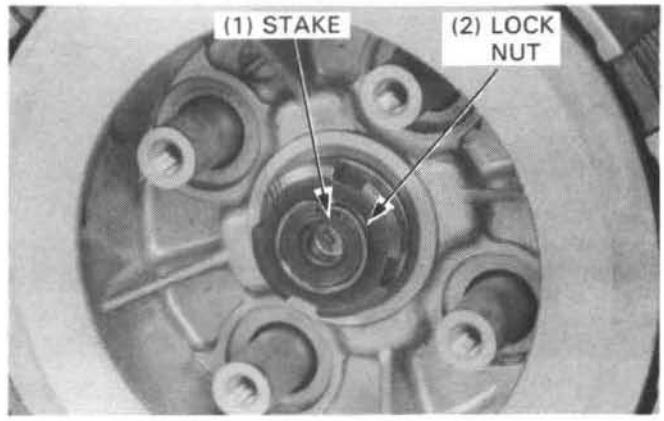
('86–'87:)



(AFTER '87:)
Check the needle bearing for wear, excessive play or damage and replace the lifter rod assembly if necessary.

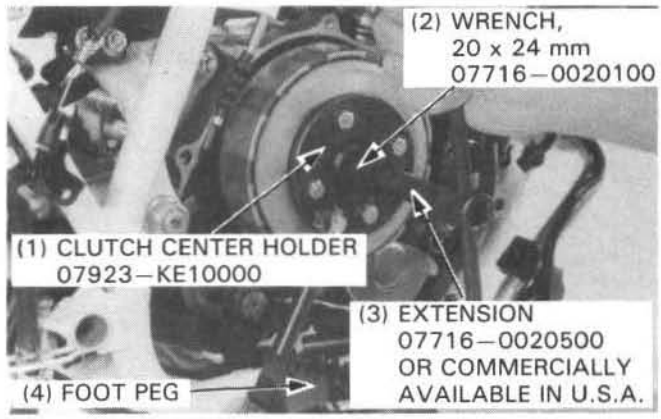
(AFTER '87:)

Unstake the lock nut with a drill or grinder.
Be careful that the threads on the mainshaft are not damaged.



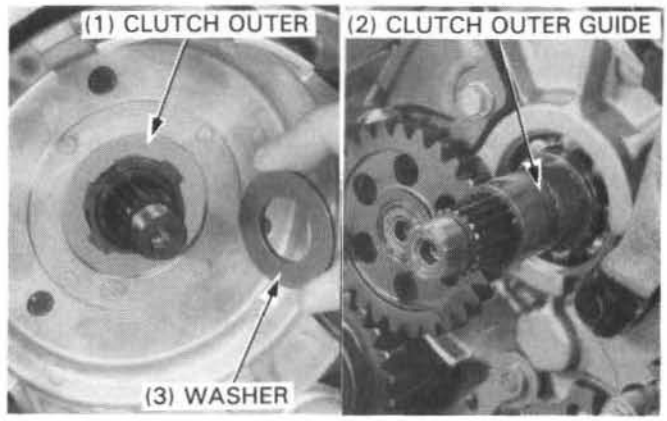
Temporarily install the foot peg.
Attach the clutch center holder to the pressure plate with four clutch bolts and remove the lock nut.
Remove the clutch center holder.

Remove the following from the clutch outer:
- lock washer
- clutch discs and plates
- pressure plate



Remove the washer and clutch outer.

Remove the clutch outer guide from the mainshaft.



INSPECTION

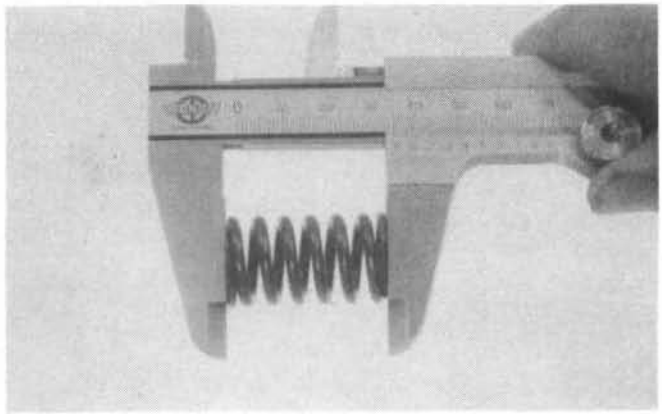
Clutch spring
Measure the free length of each spring.

SERVICE LIMIT: 32.2 mm (1.27 in)

Replace if shorter than the service limit.

NOTE

- Clutch springs should be replaced as a set if one or more is beyond the service limit.

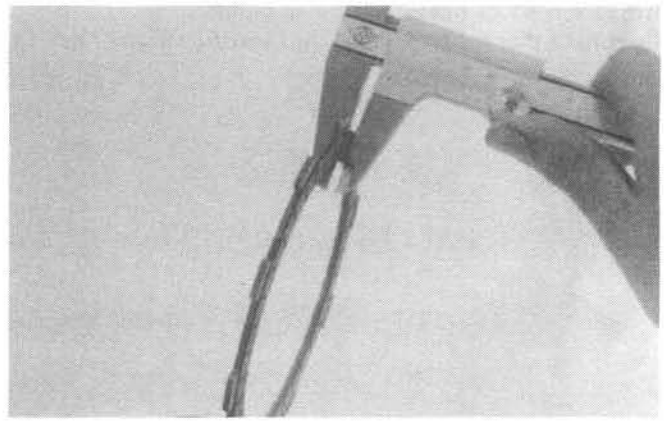


Clutch disc
Replace the discs if they show signs of scoring or discoloration.
Measure the disc thickness.

SERVICE LIMIT: 2.69 mm (0.106 in)

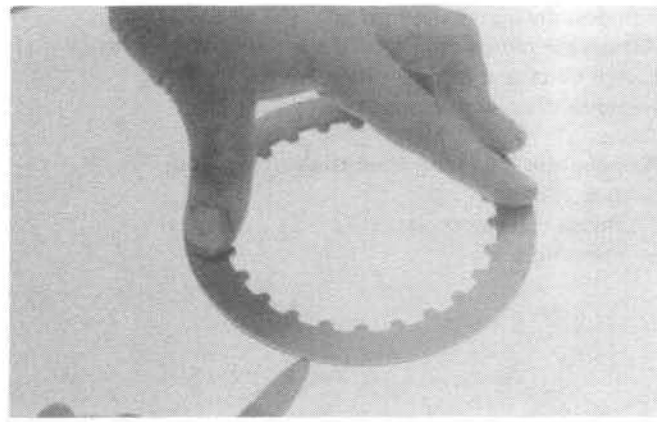
NOTE

- Clutch discs and plates should be replaced as a set if any one is beyond the service limit.



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

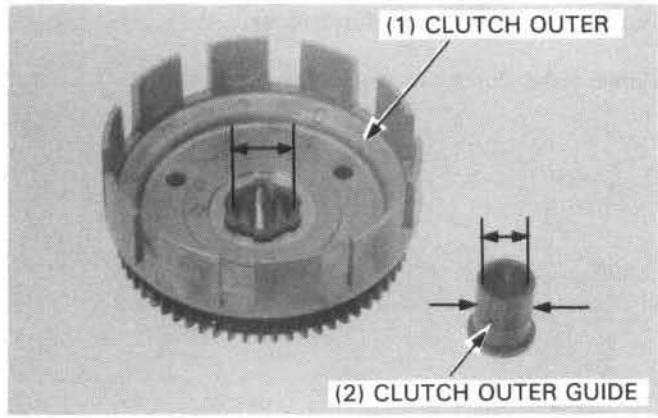
SERVICE LIMIT: 0.30 mm (0.012 in)



Clutch outer and outer guide
Check the slots in the outer drum for nicks, cuts or indentations made by the friction discs.

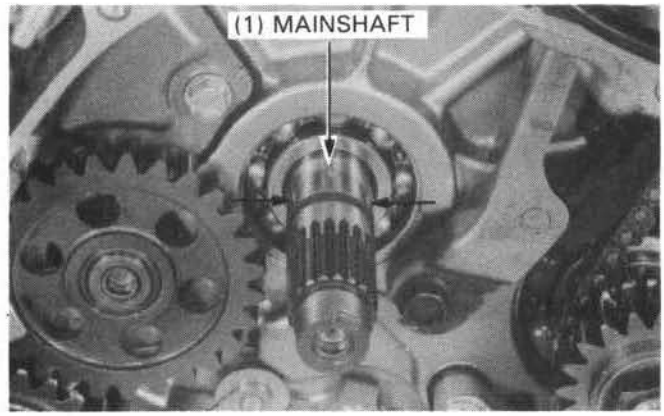
Measure the I.D. and O.D. of the clutch outer and the O.D. of the outer guide.

SERVICE LIMITS:
Clutch outer I.D.: 25.04 mm (0.986 in)
Clutch outer guide O.D.: 24.17 mm (0.952 in)
I.D.: 20.05 mm (0.789 iin)



Measure the mainshaft O.D. at the clutch outer guide area.

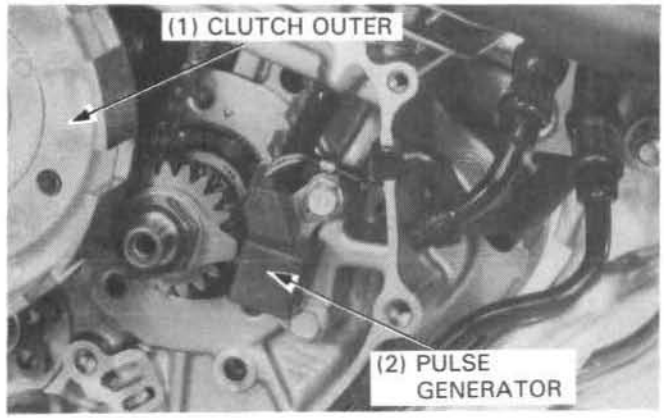
SERVICE LIMIT: 19.91 mm (0.784 in)



PRIMARY DRIVE GEAR

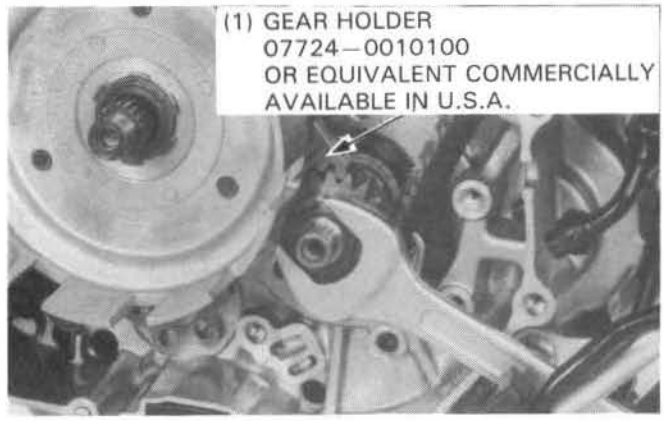
REMOVAL

Remove the clutch (page 8-4).
Remove the oil pump (page 2-4).
Temporarily install the clutch outer guide and clutch outer.
Remove the pulse generator.



Install the gear holder on the primary drive gear and driven gear.

Remove the drive gear lock nut, lock washer and pulse generator rotor.
Remove the clutch outer and gear holder.
Remove the primary drive gear.

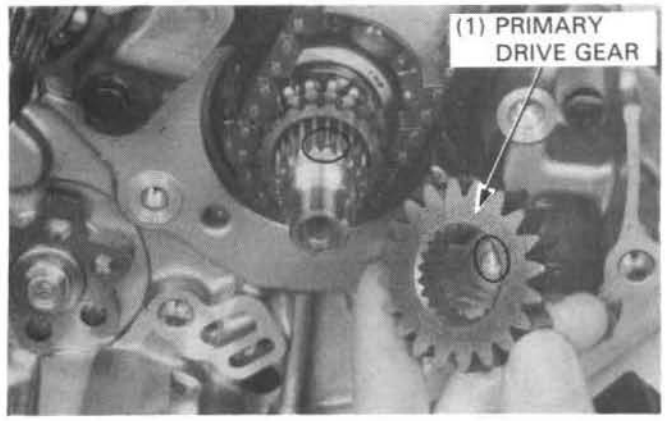


INSTALLATION

NOTE

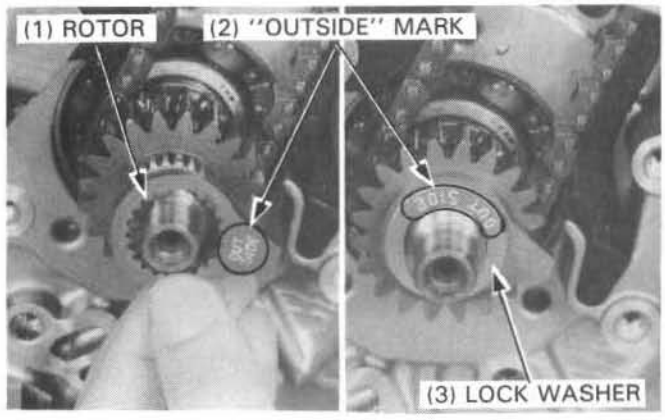
- The primary drive gear, pulse generator rotor, and oil pump drive gear will only go on in one position because of the extra wide aligning spindle.

Install primary drive gear over the crankshaft.



Install the pulse generator rotor with the "OUTSIDE" mark facing outward.

Install the lock washer with the "OUTSIDE" mark facing outward.



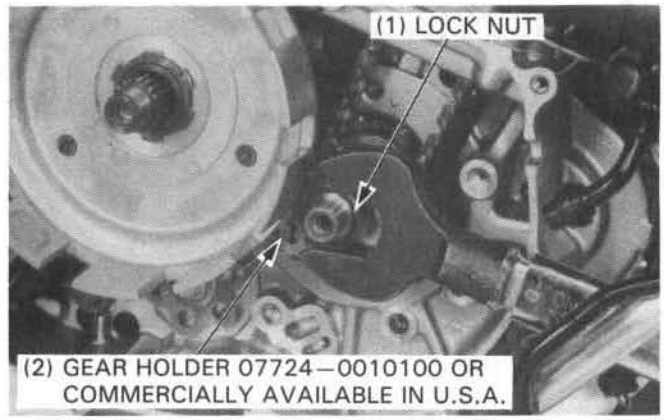
Temporarily install the clutch outer guide and clutch outer on the mainshaft.
Install the gear holder on the drive gear and driven gear.

Install the lock nut and tighten it to specification.

TORQUE: 55–65 N·m (5.5–6.5 kg-m, 42–49 ft-lb)

Remove the gear holder, clutch outer and outer guide.

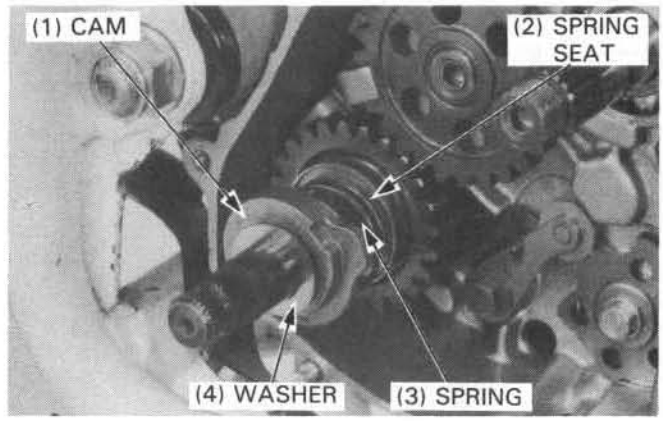
Install the pulse generator and check the rotor air gap (page 16-6).
Install the oil pump (page 2-8).



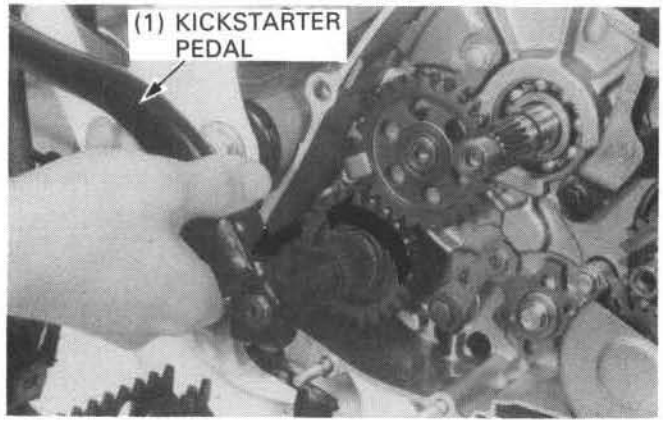
KICKSTARTER

REMOVAL

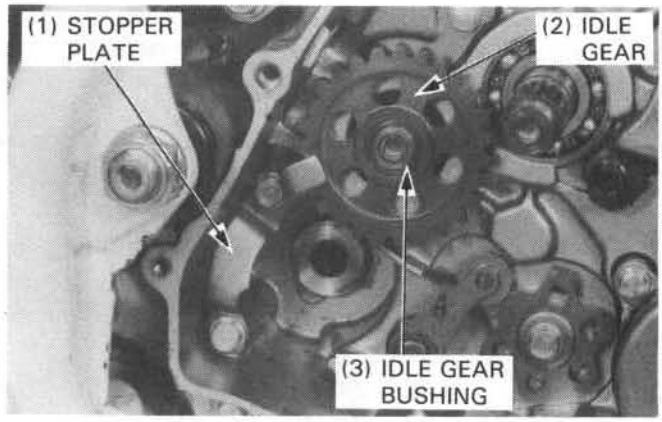
Remove the clutch (page 8-4).
Remove the thrust washer, kickstarter cam, spring and spring seat from the spindle.



Install the kickstarter pedal on the kickstarter spindle.
Pull the pedal out while rotating it counterclockwise until the kickstarter ratchet is released from the stopper plate. Turn the spindle clockwise until it will no longer go.
Release the hook end of the return spring from the crankcase groove; remove the kickstarter spindle.

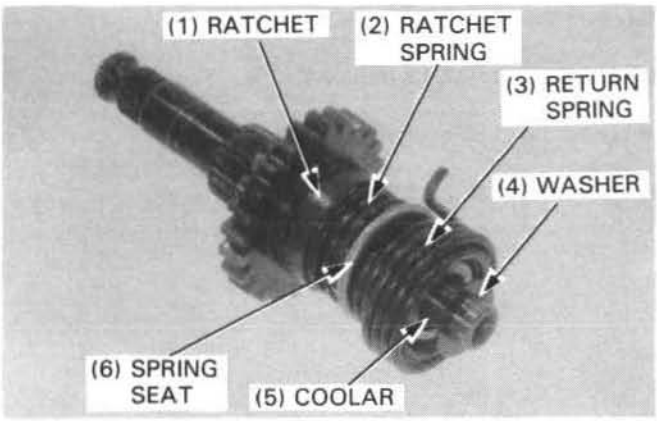


Remove the stopper plate, starter idle gear and bushing.

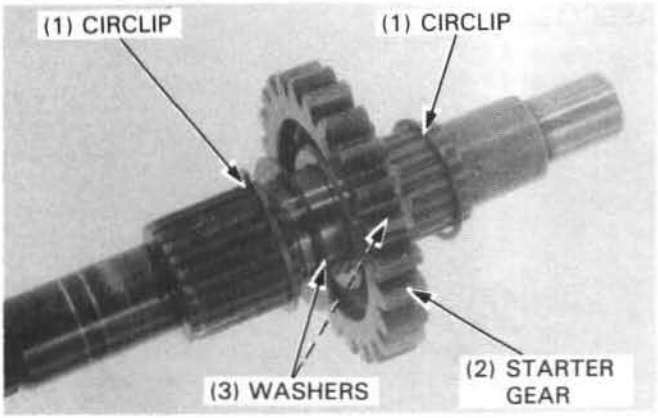


DISASSEMBLY

Remove the washer, collar, return spring, spring seat, ratchet spring and ratchet from the spindle.



Remove the circlips, washers and starter gear from the spindle.



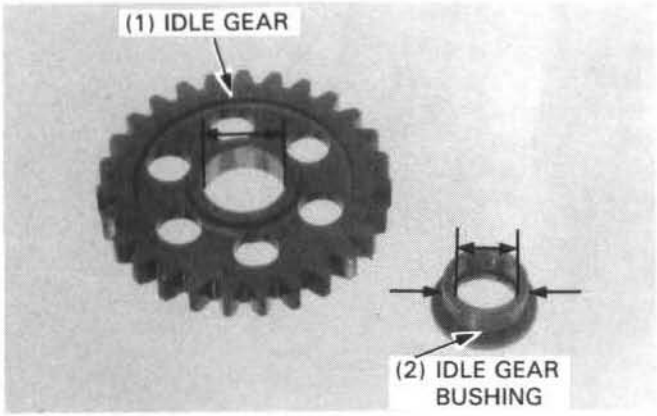
INSPECTION

Measure the I.D. of the kickstarter idle gear.

SERVICE LIMIT: 19.13 mm (0.753 in)

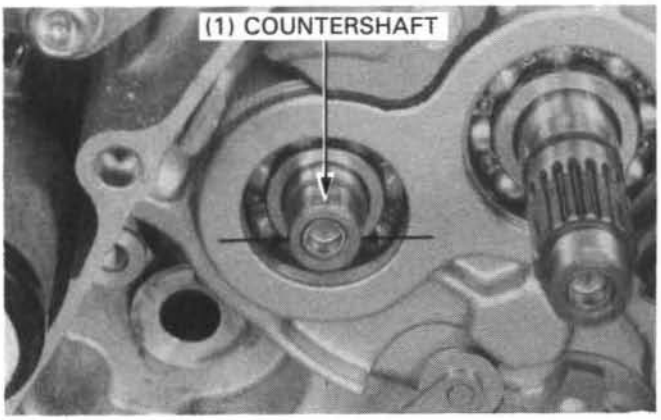
Measure the I.D. and O.D. of the idle gear bushing.

SERVICE LIMITS:
I.D.: 14.97 mm (0.589 in)
O.D.: 18.92 mm (0.745 in)



Measure the O.D. of the countershaft.

SERVICE LIMIT: 14.91 mm (0.587 in)

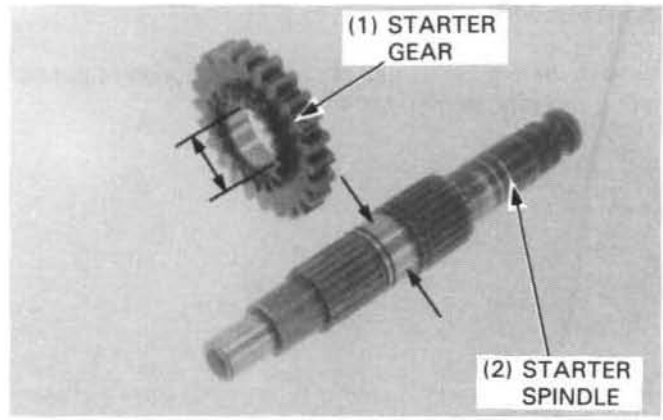


Measure the I.D. of the kickstarter gear.

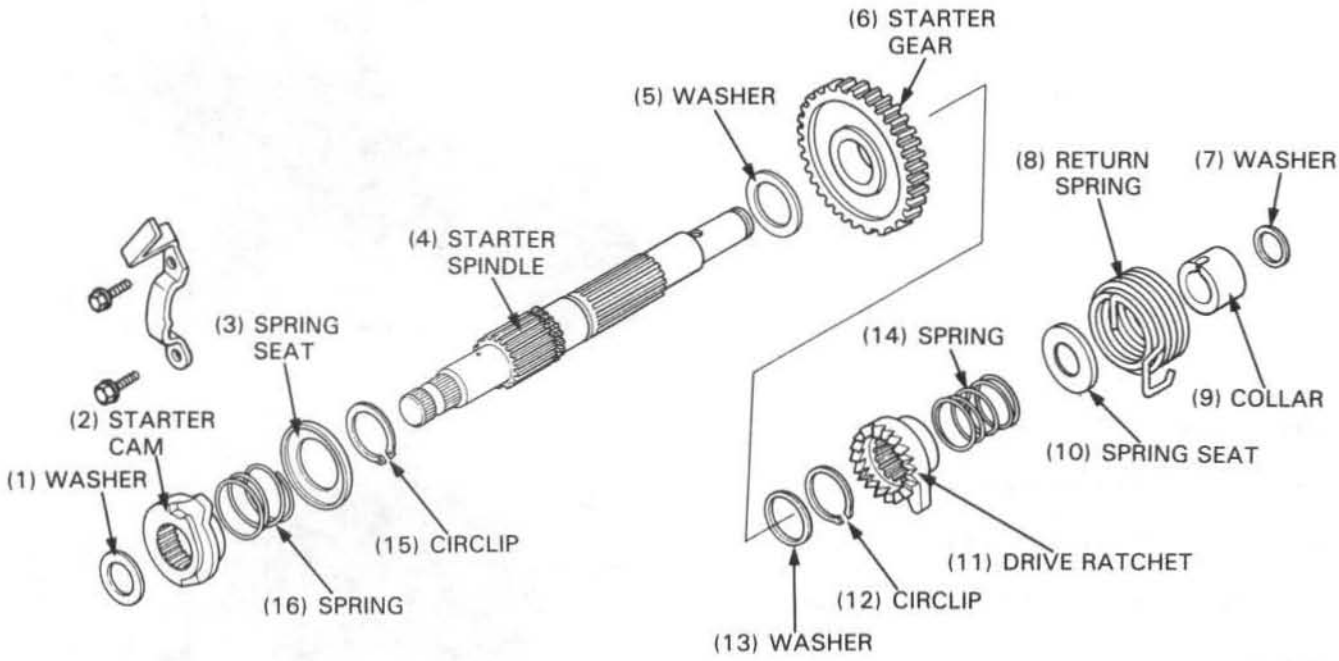
SERVICE LIMIT: 22.12 mm (0.871 in)

Measure the O.D. of the kickstarter spindle.

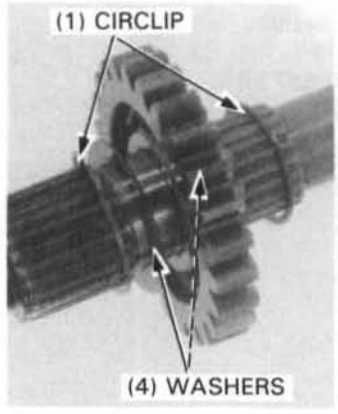
SERVICE LIMITS: 21.91 mm (0.863 in)

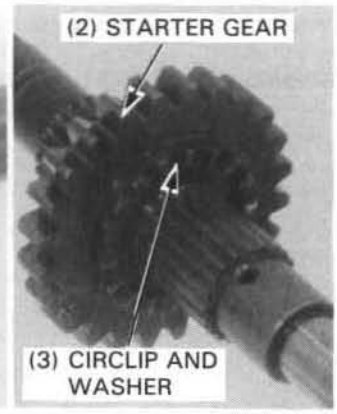


ASSEMBLY

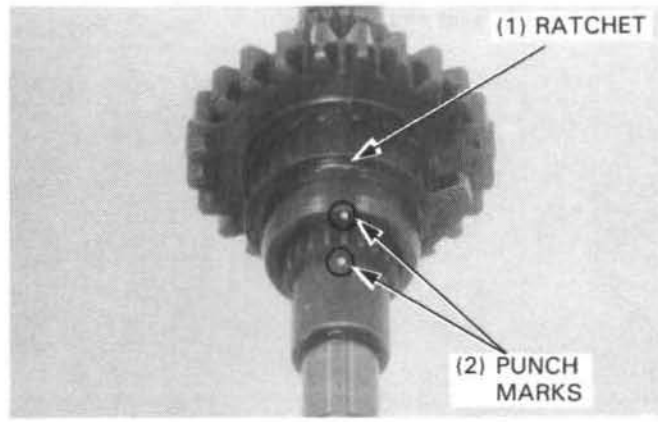


Install the thrust washer, kickstarter gear, thrust washer and circlips over the spindle.



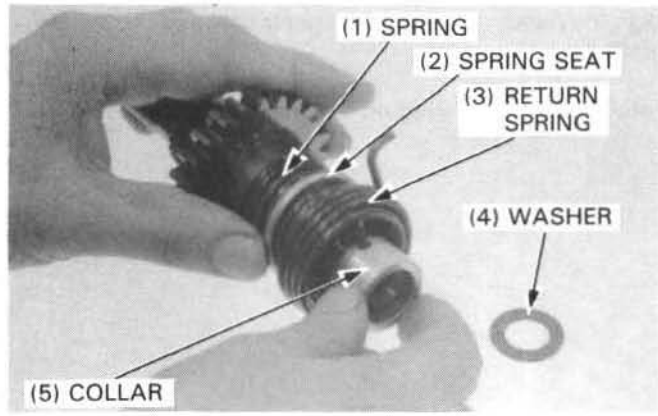


Align the punch marks on the ratchet and the spindle and install the ratchet over the spindle.



Install the ratchet spring and spring seat.

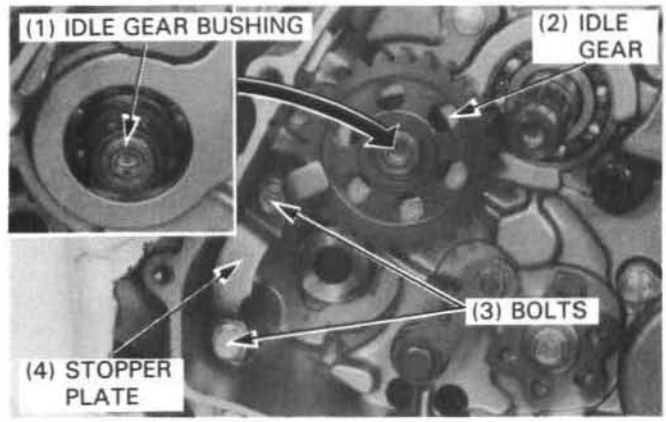
Install the return spring and insert its end into the hole in the spindle.
Install the collar aligning its groove with the spring end inserted into the hole in the spindle.
Install the washer.



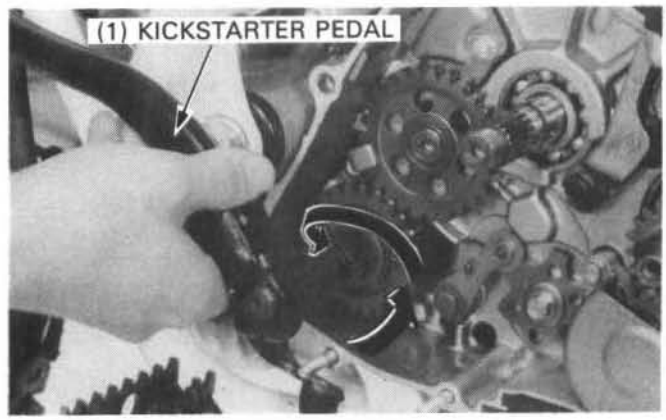
INSTALLATION

Install the starter idle gear bushing with its flange facing in.

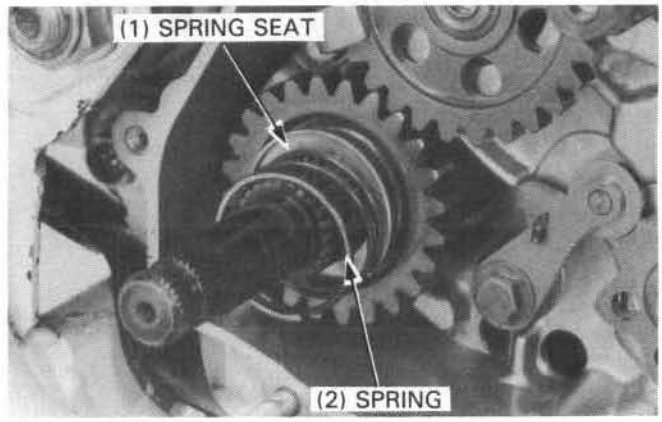
Install the starter idle gear and stopper plate.



Hook the kickstarter return spring on the crankcase.
Temporarily install the kickstarter pedal on the kick shaft and rotate the shaft couterclockwise until the ratchet stub is clear of the stopper plate.
Push the kickstarter assembly into the crankcase.

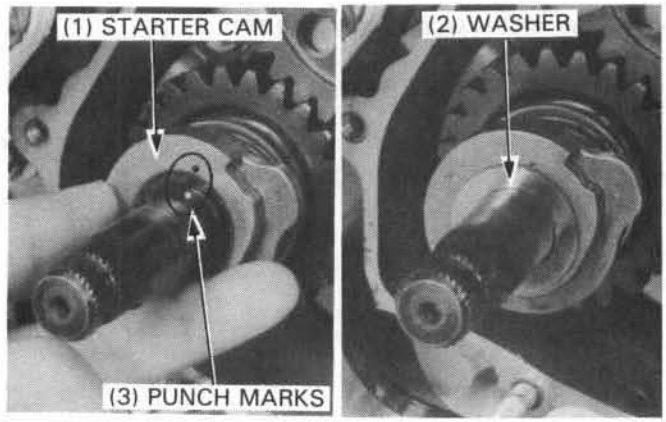


Install the spring seat and cam spring.



Align the punch marks on the starter cam and the spindle and install the starter cam.

Install the thrust washer on the spindle.

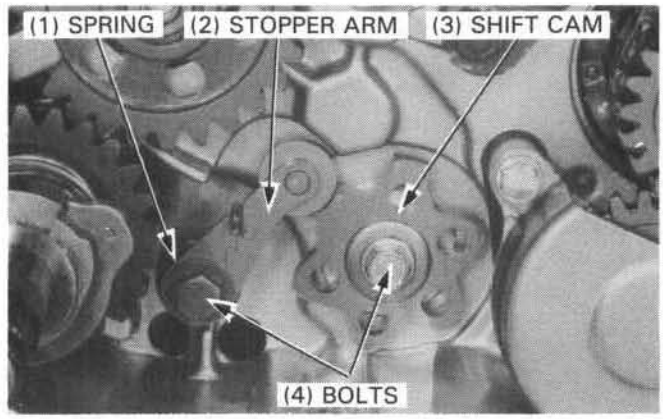


GEAR SHIFT CAM PLATE

REMOVAL

Remove the clutch (page 8-4).
Remove the stopper arm pivot, stopper arm, washer and spring.

Remove the bolt and gear shift cam.
Remove the dowel pin on the gear shift drum.



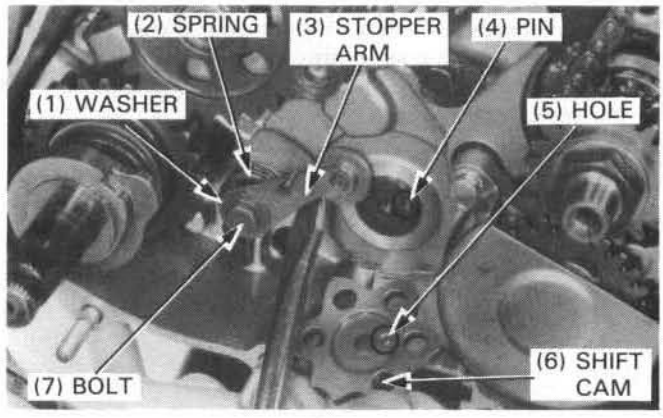
INSTALLATION

Install the spring, washer, stopper arm, and pivot.

Tighten the stopper arm bolt.

TORQUE: 22–26 N·m (2.2–2.6 kg-m, 16–19 ft-lb)

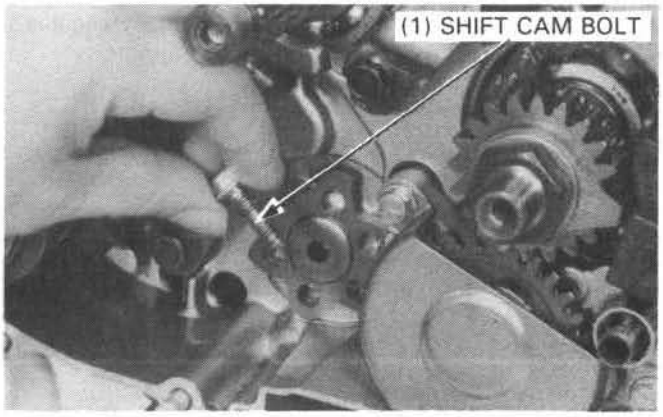
Install the dowel pin onto the hole of the shift drum.
Align the hole in the gear shift cam with the dowel pin on the shift drum and install the cam plate while holding the stopper arm with a screwdriver.



Apply locking agent to the threads of the gear shift cam bolt and tighten it to the specified torque.

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

Install the clutch.

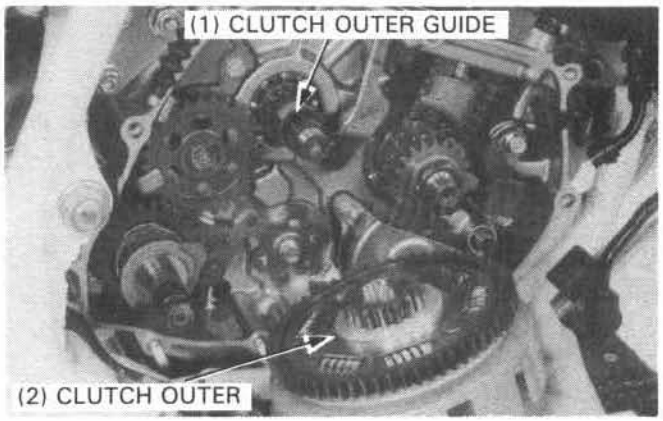


CLUTCH INSTALLATION

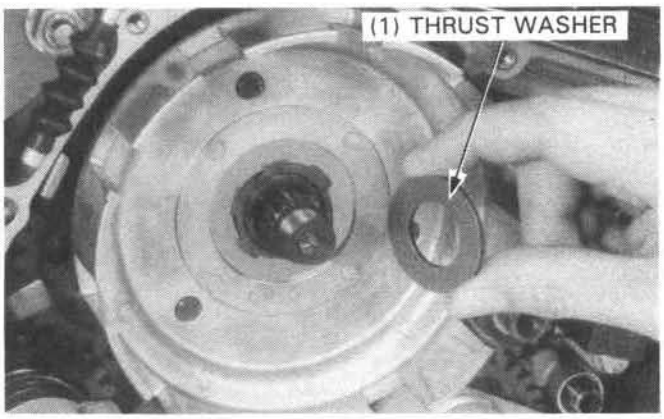
Apply molybdenum disulfide grease to the inner and outer surfaces of the clutch outer guide.

Install the clutch outer guide.

Install the clutch outer over the outer guide.



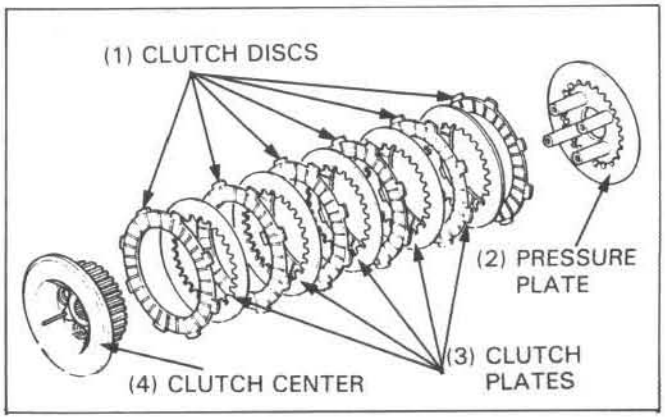
Install the thrust washer onto the clutch outer.



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

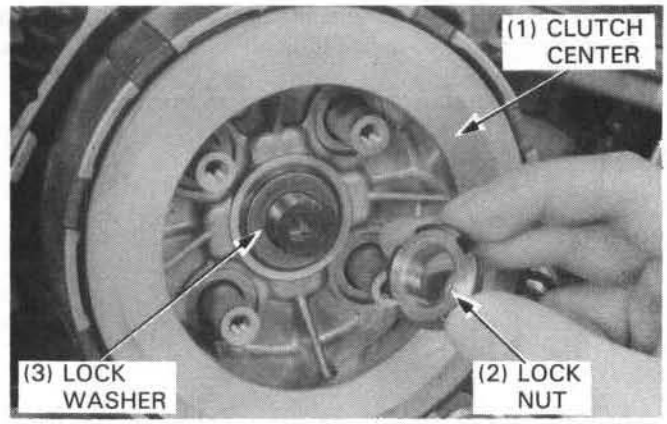
NOTE

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



Install the clutch center into the clutch outer by aligning the tabs on the discs with the slots of the clutch outer.

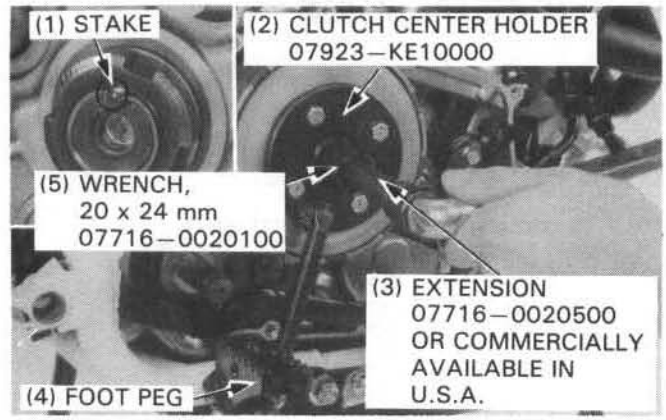
Install the washer and the lock nut.



Install the clutch center holder to the clutch center.
Tighten the lock nut to the specified torque.

TORQUE: 55–65 N·m (5.5–6.5 kg-m, 42–49 ft-lb)

Remove the clutch center holder.
Stake the lock nut.
Remove the foot peg.

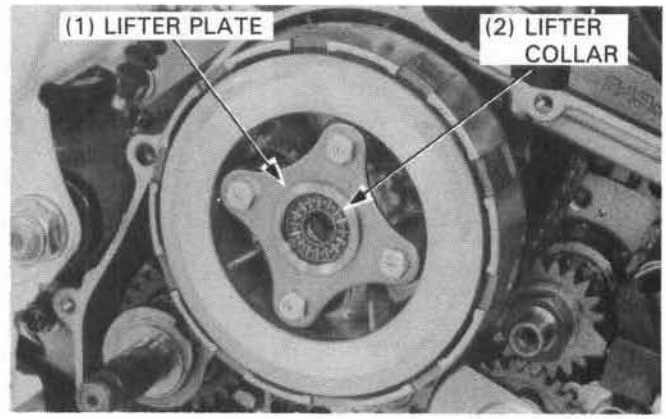


Install the clutch springs.
Install the clutch lifter plate.
Install the clutch bolts in a crisscross pattern in 2-3 steps.

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

('86–'87:)
Install the clutch lifter collar.

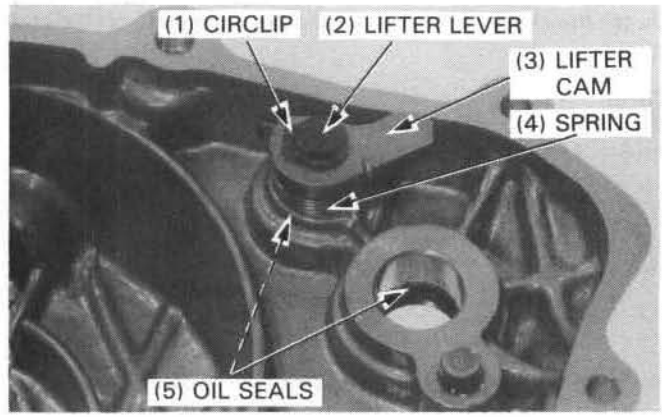
(AFTER '87:)
Install the clutch lifter rod.



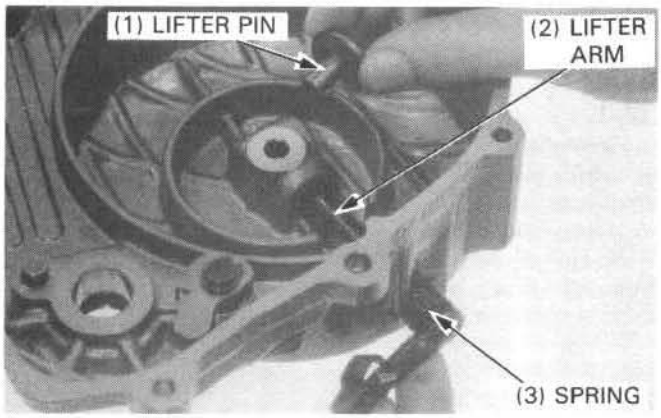
RIGHT CRANKCASE COVER INSTALLATION

Apply grease to the oil seal lips.

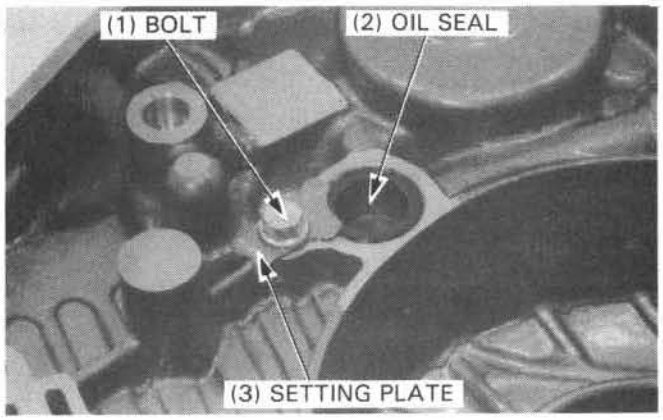
Install the decompressor lifter lever, spring and lifter cam.
Install the circlip securely.



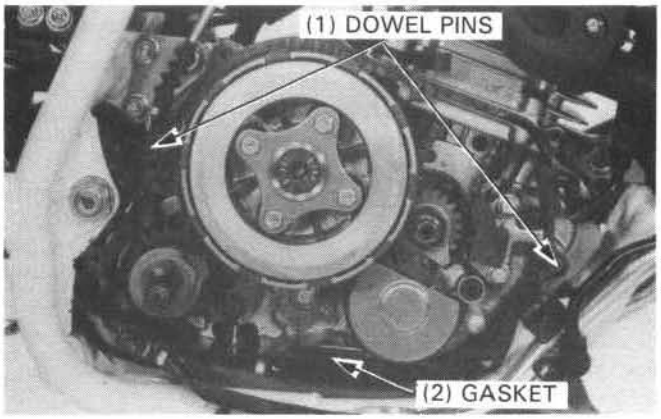
Install the clutch lifter arm and spring.
Install the lifter pin.



Install the oil seal.
Install the setting plate and tighten the bolt securely.



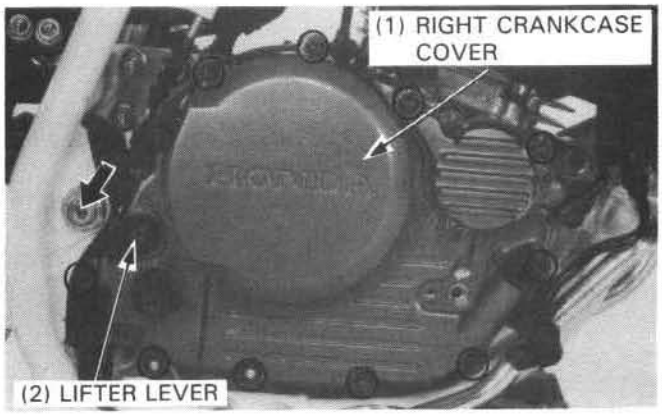
Clean the oil strainer (page 2-4).
Install the dowel pins and a new gasket.



Install the cover while holding the cam lifter lever down.

Tighten the bolts and nuts to the specified torque.

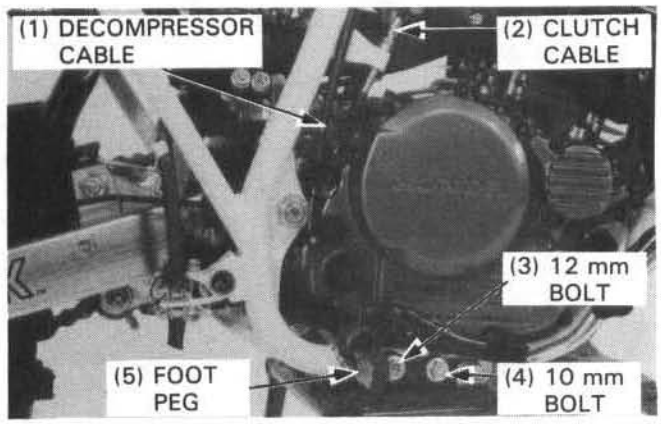
TORQUE: 10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)



Install the foot peg and tighten the bolts to the specified torque.

TORQUE:
10 mm BOLT:
50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
12 mm BOLT:
80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)

Connect the clutch cable and decompressor cable.



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

TORQUE: 20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb)

Install the brake arm pivot through the frame to the brake pedal and tighten the bolt.
Install the brake pedal joint pin (page 13-30 AFTER '89:).
Connect the return spring to the swingarm.
Connect the brake rod to the brake arm. ('86–'89:)

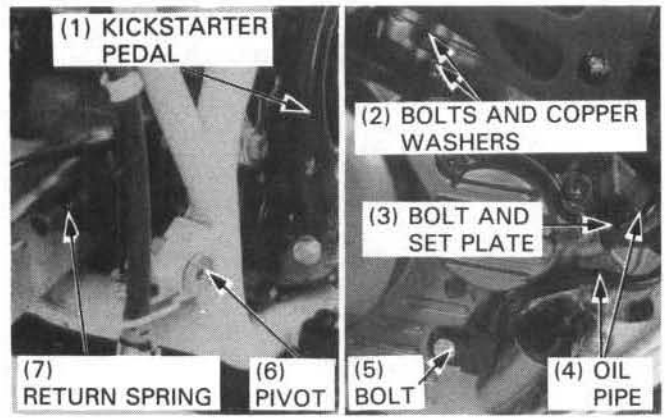
Install the oil pass pipe bolt with copper washers to the right crankcase cover.

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

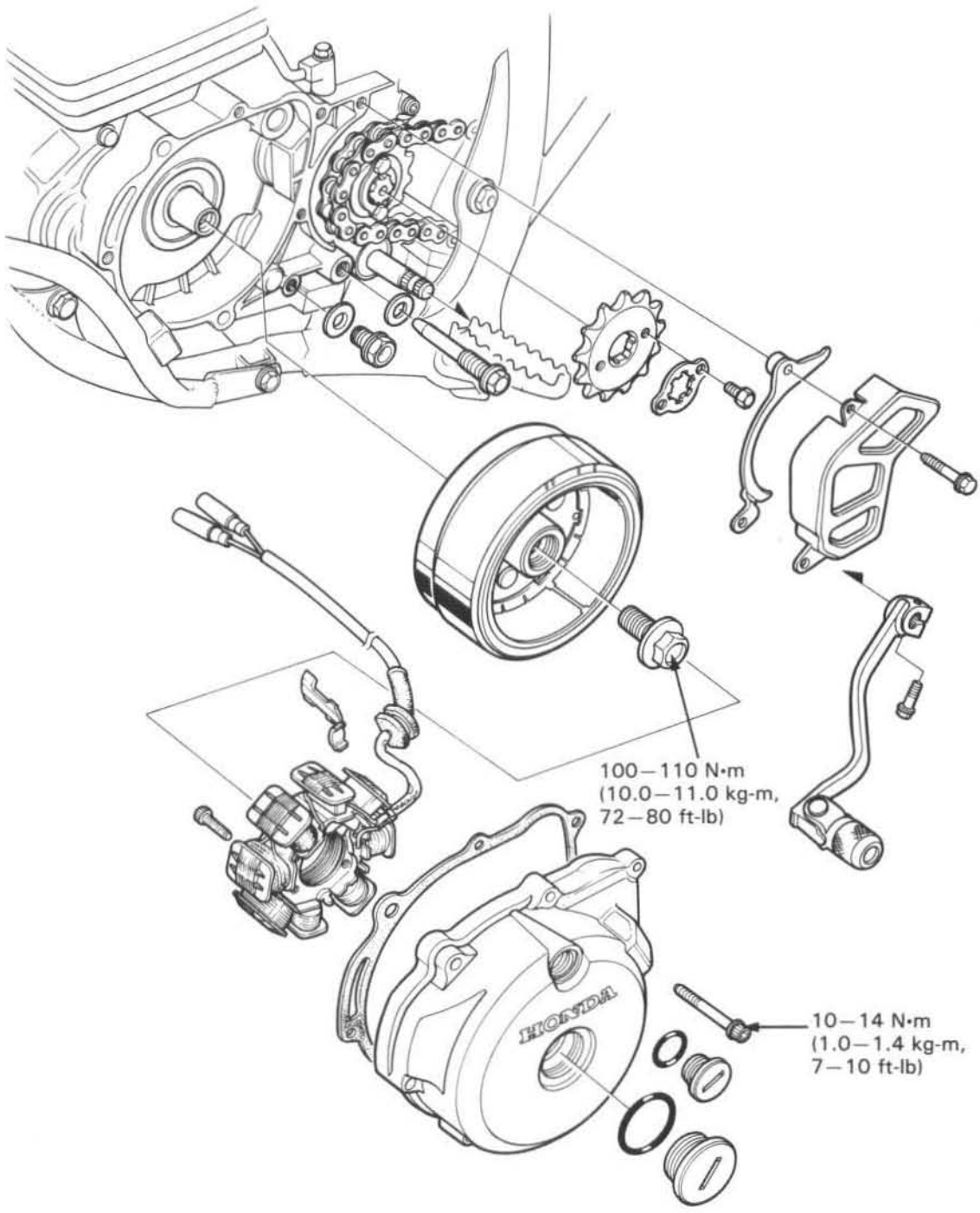
Connect the oil pipe to the right crankcase with the set plate and bolts.

Check the operation of the clutch, starter decompressor, and kickstarter.

Fill the engine with the recommended oil (Page 2-3).
Adjust the starter decompressor (Page 3-9).
Adjust the clutch lever free play (Page 3-17).
Adjust the rear brake pedal (Page 3-14).



MEMO


100–110 N·m
(10.0–11.0 kg-m,
72–80 ft-lb)
10–14 N·m
(1.0–1.4 kg-m,
7–10 ft-lb)
HONDA

SERVICE INFORMATION

GENERAL

- This section pertains to removal and installation of the alternator. These operations can be accomplished with the engine in the frame.
- For alternator inspection, refer to section 16.

TORQUE VALUE

Flywheel	100—110 N·m (10.0—11.0 kg-m, 72—80 ft-lb)
Left crankcase cover	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

TOOLS

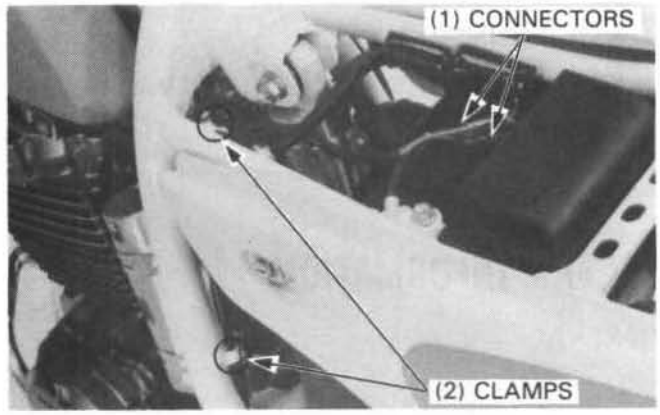
Common

Flywheel holder	07725—0040000 or commercially available in U.S.A.
Rotor puller	07733—0020001 or 07933—3000000

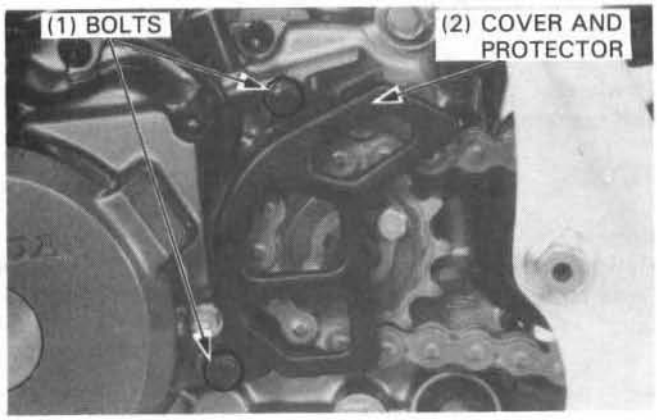
LEFT CRANKCASE COVER REMOVAL

Remove the seat and disconnect the alternator wire connectors.

Remove the wire from the frame clamp.

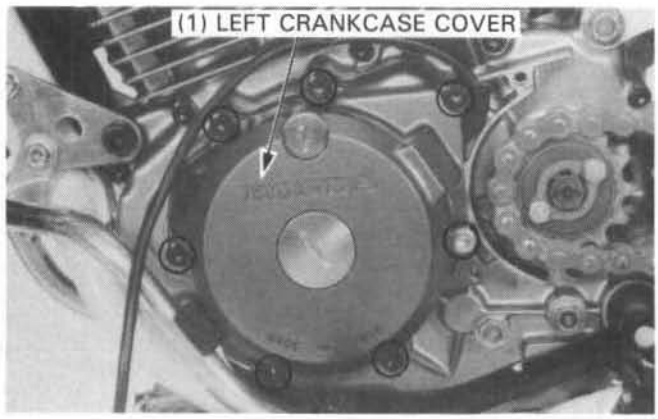


Remove the drive sprocket cover and drive chain protector.



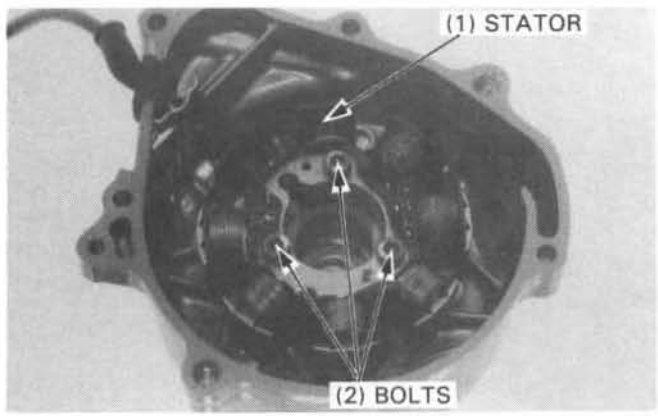
Remove the left crankcase cover bolts and the left crankcase cover.

Remove the dowel pin and the crankcase cover gasket.



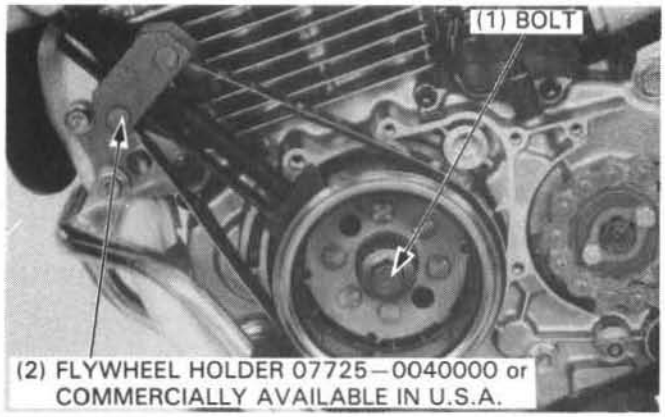
ALTERNATOR STATOR REMOVAL

Remove the three bolts attaching the alternator stator to the left crankcase cover and then remove the stator.

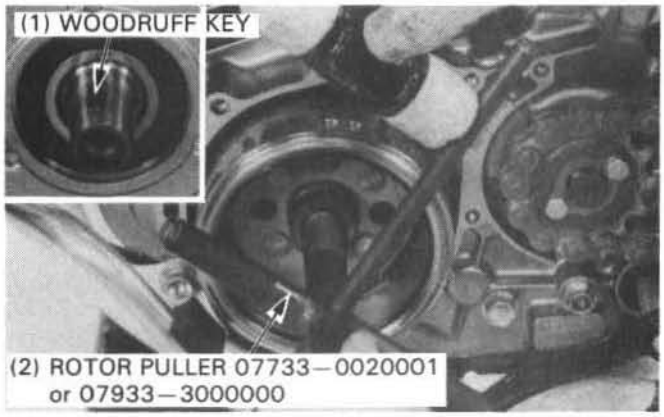


FLYWHEEL REMOVAL

Hold the flywheel with the flywheel holder.
Remove the flywheel bolt.



Remove the flywheel using the rotor puller.
Remove the woodruff key from the crankshaft.



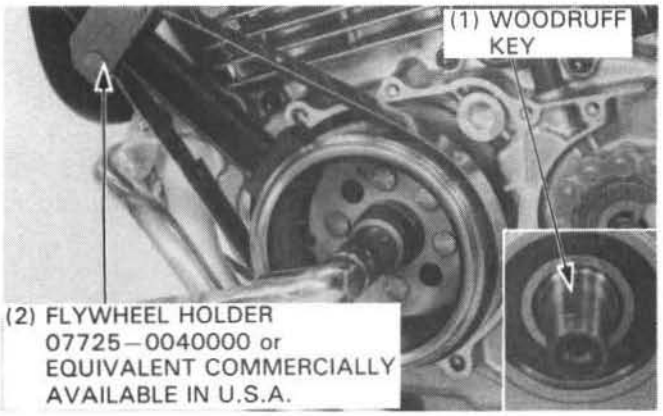
FLYWHEEL INSTALLATION

Install the woodruff key on the crankshaft.

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

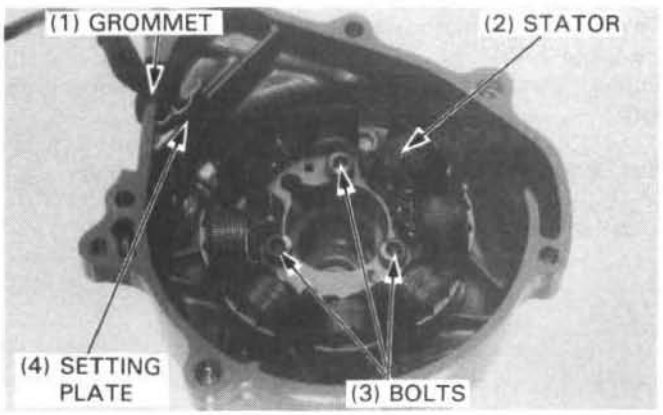
Hold the flywheel with the flywheel holder and tighten the flywheel bolt.

TORQUE: 100–110 N·m (10.0–11.0 kg-m, 72–80 ft-lb)

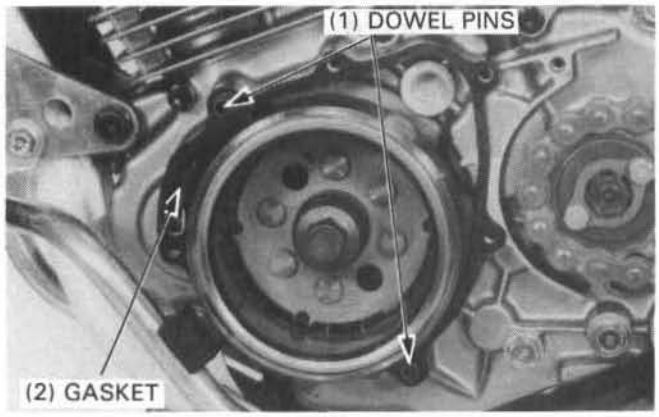


LEFT CRANKCASE COVER INSTALLATION

Install the stator onto the left crankcase cover and tighten the three bolts.
Route the stator wire and install the wire grommet into the groove in the cover as shown.
Install the wire setting plate on the left crankcase cover.



Install the two dowel pins and a new gasket.

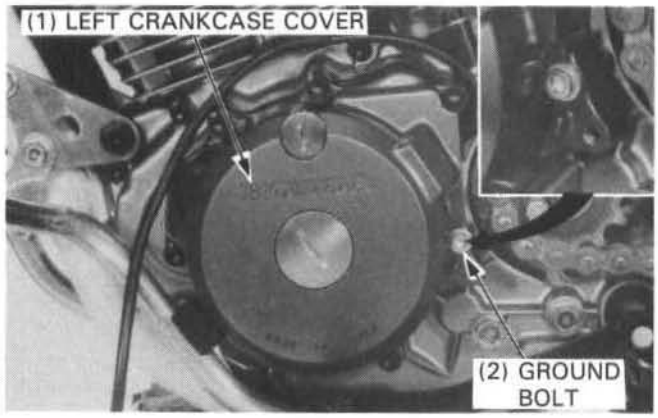


Install the left crankcase cover and tighten the cover bolts.

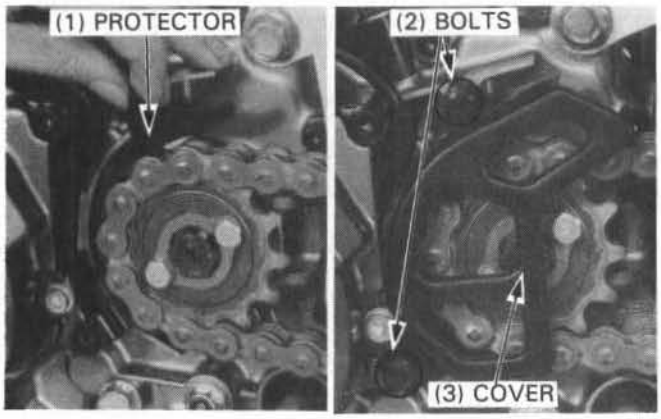
TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

NOTE

- Note the location of the ground bolt.



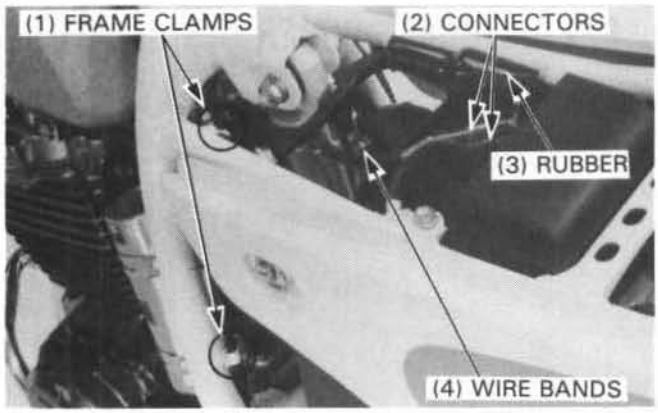
Install the drive chain protector.
Install the drive sprocket cover.



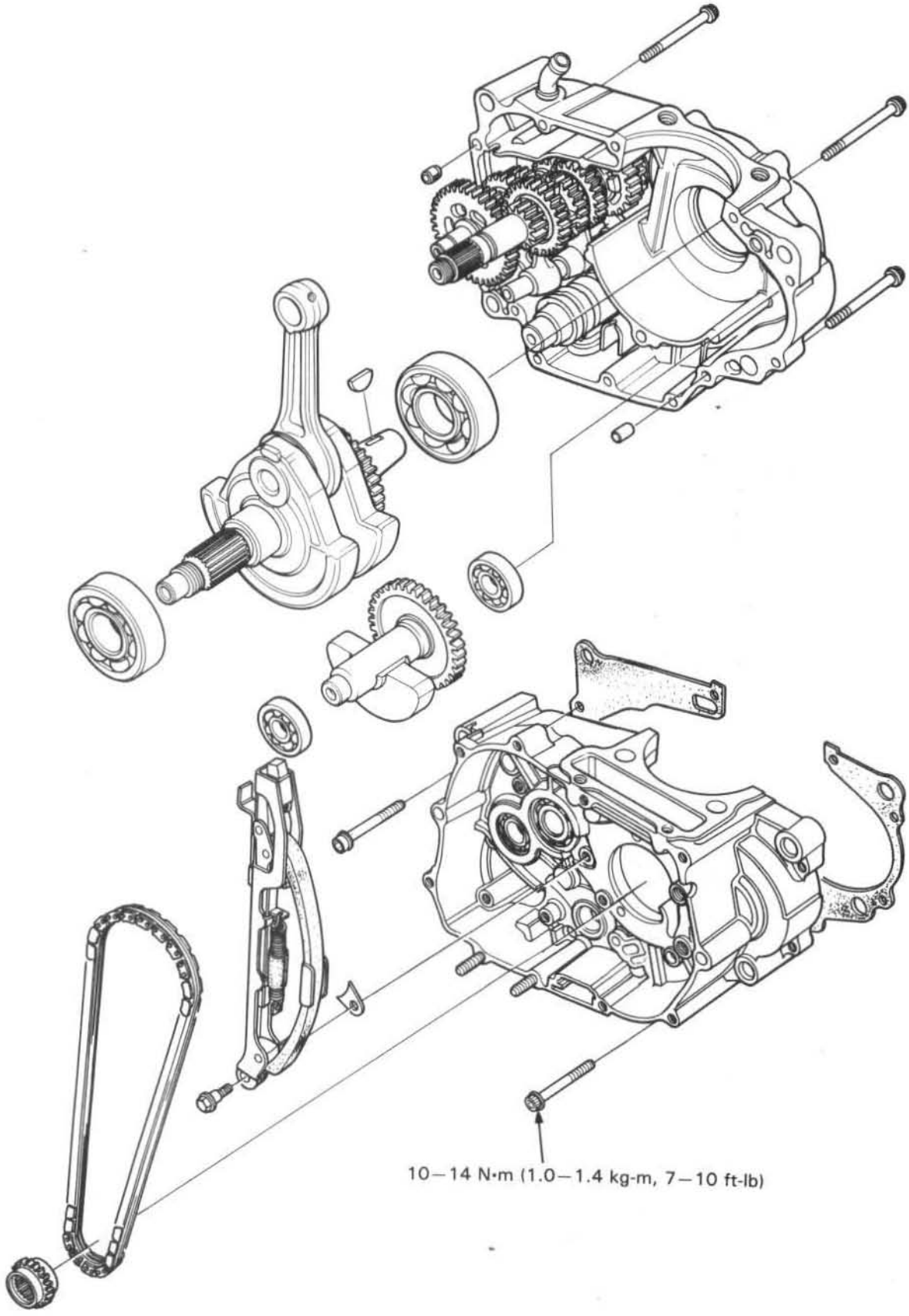
To route the alternator wires, refer to cable and harness routing (page 1-11).
Connect the alternator wire and cover with the rubber protector.

Secure the wire by the frame clamps and wire bands.

Install the seat and torque the bolts.



MEMO


10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

10. CRANKCASE/CRANKSHAFT/BALANCER

SERVICE INFORMATION

GENERAL

- The crankcase must be separated to repair the crankshaft, connecting rod, transmission and balancer.
- Remove the following parts before separating the crankcase.

ENGINE REMOVAL ..... Section 5
CYLINDER HEAD ..... Section 6
CYLINDER/PISTON ..... Section 7
CLUTCH/KICK STARTER ..... Section 8
OIL PUMP ..... Section 2
ALTERNATOR ..... Section 9

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod big end side clearance	0.050—0.650 mm (0.0020—0.0256 in)	0.80 mm (0.031 in)
	Connecting rod big end radial clearance	0.006—0.018 mm (0.0002—0.0007 in)	0.05 mm (0.002 in)
	Connecting rod small end I.D.	17.016—17.034 mm (0.6699—0.6706 in)	17.06 mm (0.672 in)
	Crankshaft runout	—	0.10 mm (0.004 in)

TORQUE VALUE

Crankcase bolt	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

TOOLS

Special

Universal bearing puller	07631—0010000 or equivalent commercially available in U.S.A.
Bearing remover, 15 mm	07936—KC10000—not available in U.S.A.
— remover aasy, 15 mm	07936—KC10500
— remover head, 15 mm	07936—KC10200 ┐
— remover shaft, 15 mm	07936—KC10100 ┘ —not available in U.S.A.
— remover sliding weight	07741—0010201 — 07934—3710200
Crankcase assembly tool	07965—VM00000—not available in U.S.A.
— assembly collar	07965—VM00100—07964—MB00200 (U.S.A. only)
— thread shaft	07965—VM00200—07931—ME4000A (U.S.A. only)
— thread adapter	07965—VM00300—07931—KF00200 (U.S.A. only)

Common

Driver	07749–0010000
Attachment, 32 x 35 mm	07746–0010100
Attachment, 37 x 40 mm	07746–0010200
Attachment, 42 x 47 mm	07746–0010300
Attachment, 52 x 55 mm	07746–0010400
Attachment, 62 x 68 mm	07746–0010500
Pilot, 15 mm	07746–0040300
Pilot, 17 mm	07746–0040400
Pilot, 20 mm	07746–0040500
Pilot, 22 mm	07746–0041000
Pilot, 28 mm	07746–0041100

TROUBLESHOOTING

Excessive noise

- Crankshaft
  - Worn connecting rod bearings.
  - Bent connecting rod.
  - Worn crankshaft bearings.

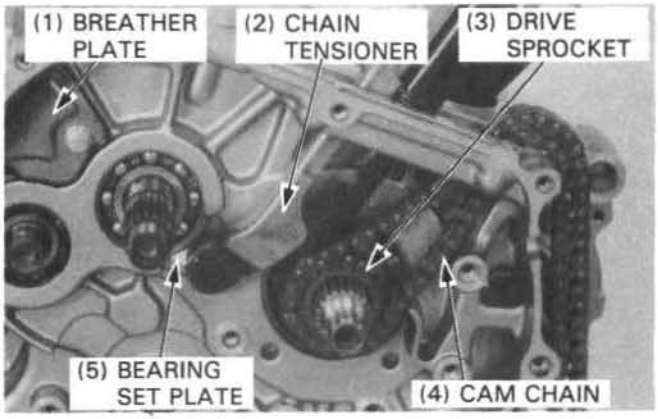
- Balancer
  - Improper installation.

Abnormal vibration

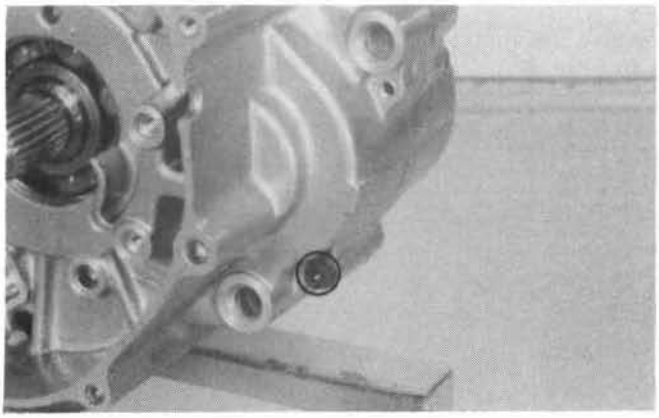
- Improper balancer timing

CRANKCASE SEPARATION

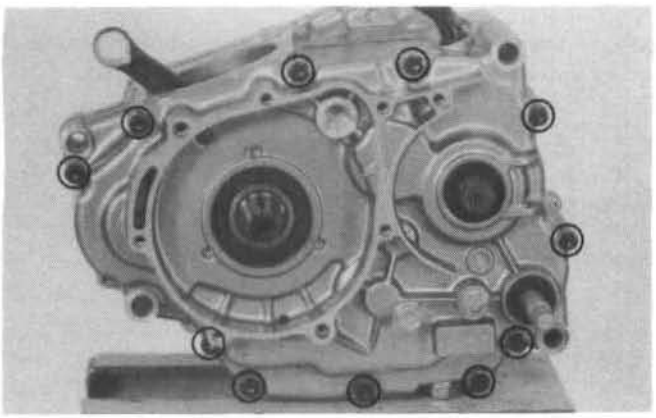
Remove the bolt attaching the cam chain tensioner.
Remove the tensioner and bearing set plate.
Remove the cam chain and cam chain drive sprocket.
Remove the breather plate from the right crankcase.



Remove the right crankcase bolt.



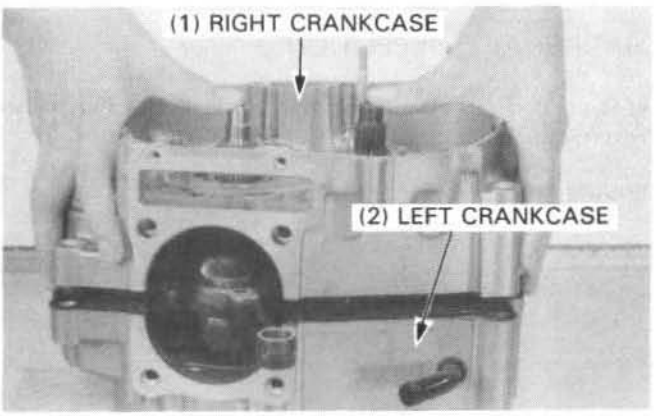
Remove the left crankcase bolts.



Place the left crankcase side down and separate the right crankcase from the left crankcase while tapping them at several locations with a soft hammer.

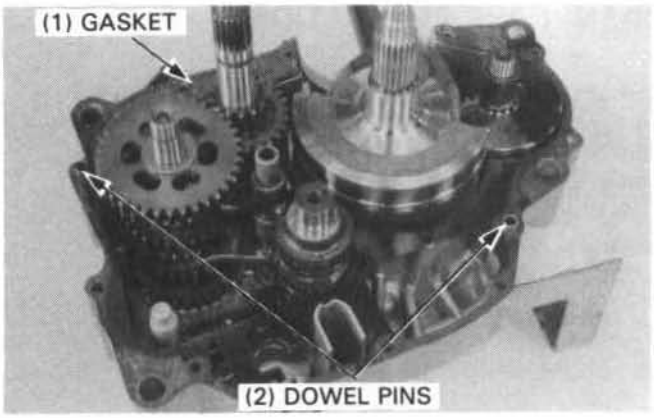
CAUTION

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



BALANCER/CRANKSHAFT REMOVAL

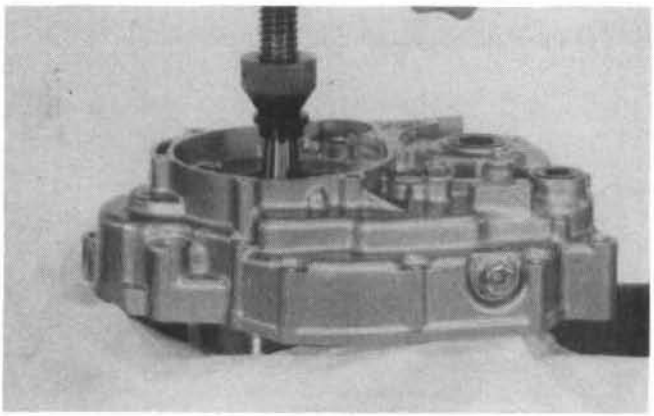
Remove the gasket and dowel pins.
Remove the transmission (Section 11).



Remove the crankshaft and balancer from the left crankcase with a press.

CAUTION

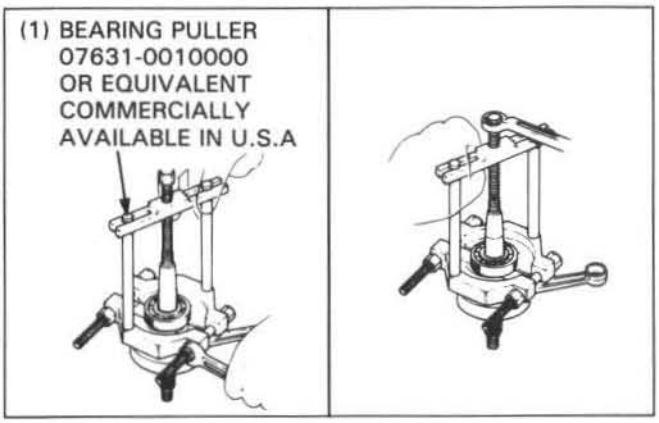
- *Be careful not to damage the crankcase gasket surface.*



Remove the left crankshaft bearing with a bearing puller if it comes out with the crankshaft. Discard the bearing.

CAUTION

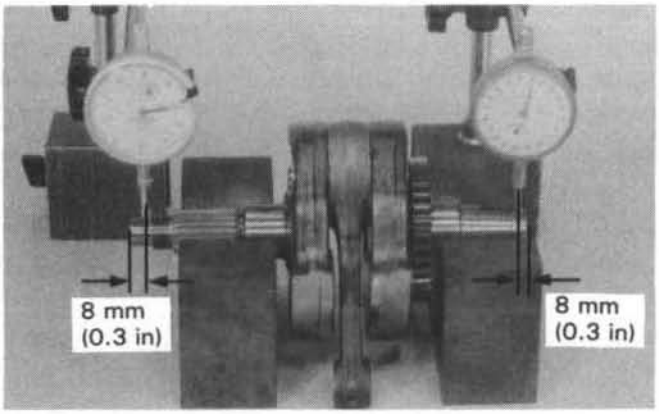
- *Always replace the left bearing with a new one if it comes out with the crankshaft.*



CRANKSHAFT INSPECTION

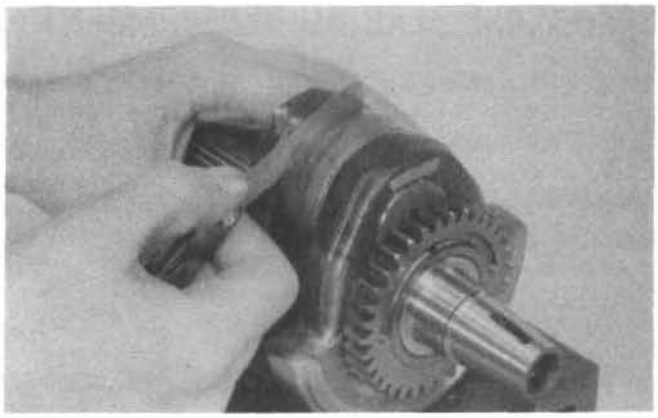
Set the crankshaft on a truing stand or V blocks and measure the runout using a dial indicator.

SERVICE LIMIT: 0.10 mm (0.004 in)



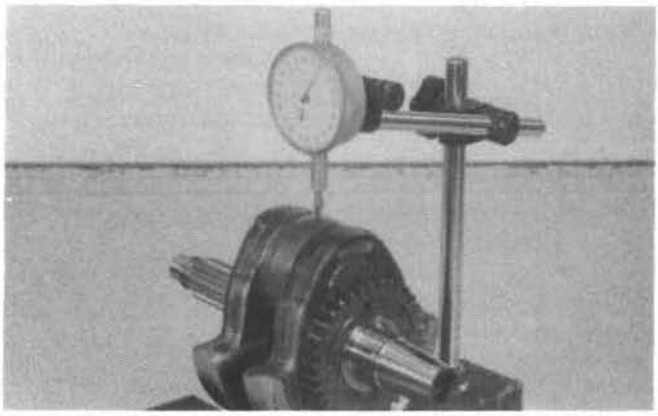
Measure the connecting rod big end side clearance with a feeler gauge.

SERVICE LIMIT: 0.80 mm (0.031 in)



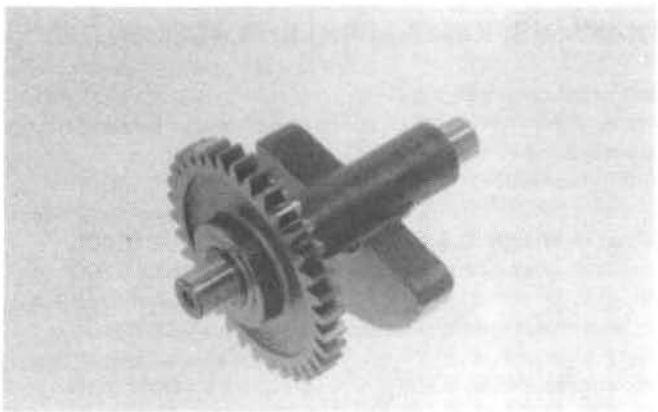
Measure the connecting rod big end radial clearance.

SERVICE LIMIT: 0.05 mm (0.002 in)



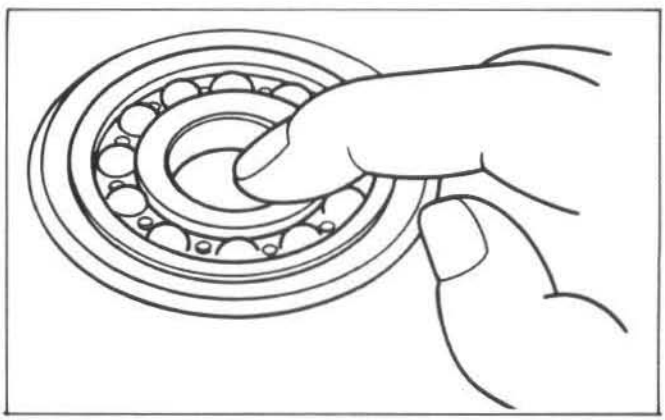
BALANCER GEAR INSPECTION

Check the balancer gear for wear or damage.



CRANKSHAFT BEARING/TRANSMISSIOIN BEARING INSPECTION

Turn the inner race of bearings with your finger.
The bearings should turn smoothly and quietly.
Also check that bearing outer races fit tightly in the crankcase.

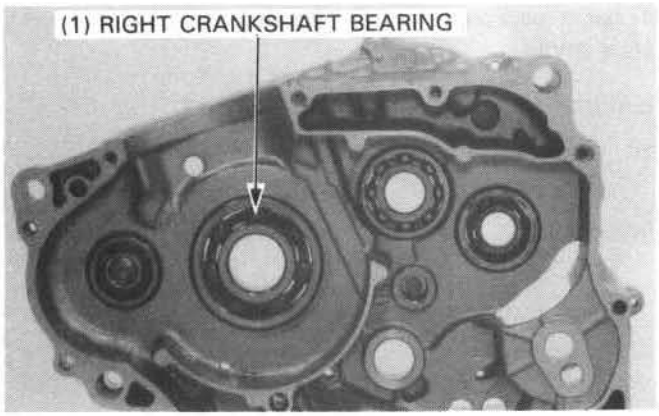


CRANKCASE BEARING REPLACEMENT

CRANKSHAFT BEARING REPLACEMENT

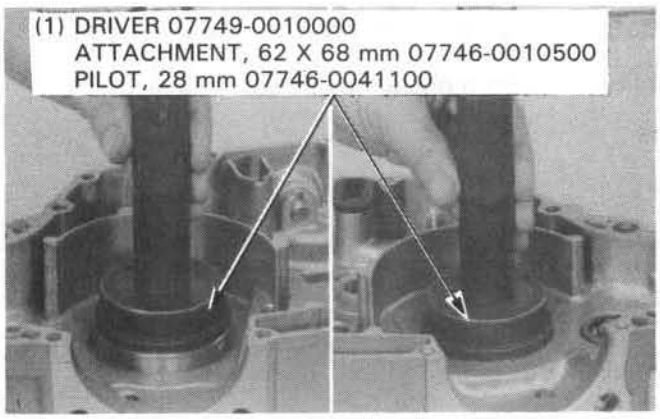
Remove the crankshaft bearing from the right crankcase.

Remove the left crankshaft bearing if it is left on the crankcase.



Drive new crankshaft bearings into both cases.

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

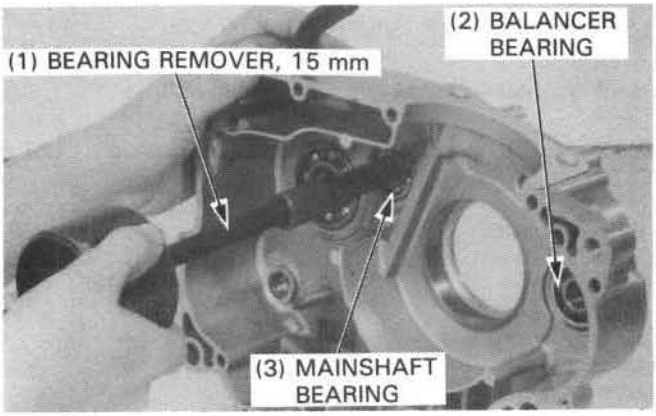


TRANSMISSION BEARING REPLACEMENT

Left crankcase bearings

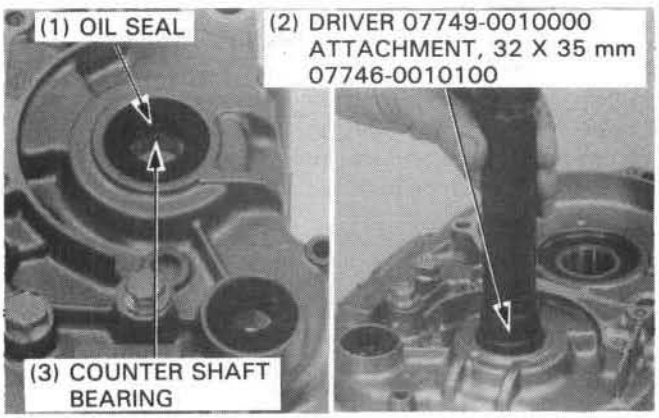
Remove the mainshaft bearing, and balancer bearing from the left crankcase.

Bearing remover, 15 mm	07936—KC10000 (not available in U.S.A.)
— remover assy, 15 mm	07936—KC10500
— remover head, 15 mm	07936—KC10200 (not available in U.S.A.)
— remover shaft, 15 mm	07936—KC10100 (not available in U.S.A.)
— remover sliding weight	07741—0010201- 07934—3710200



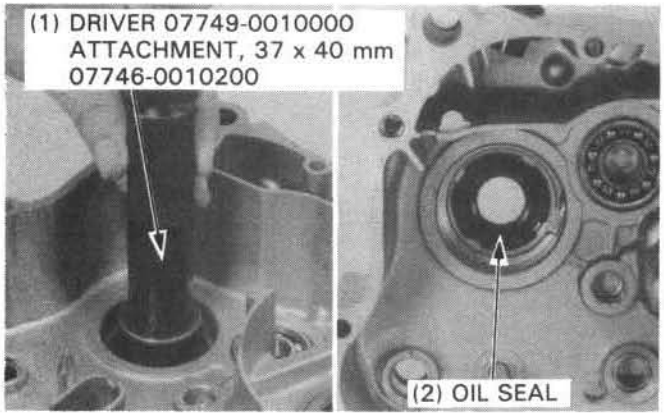
Remove the countershaft oil seal and countershaft bearing from the left crankcase.

Driver	07749—0010000
Attachment, 32 x 35 mm	07746—0010100



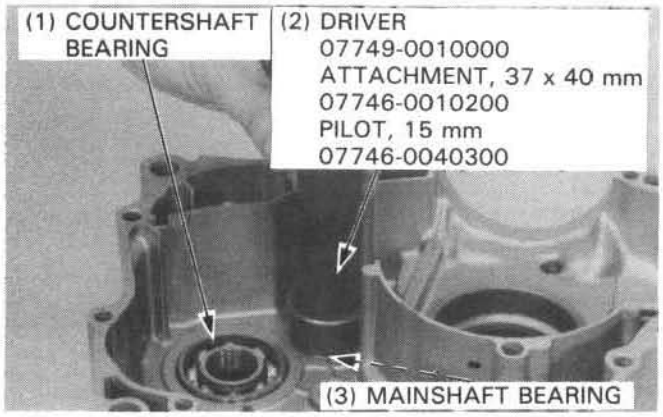
Drive in the new countershaft oil seal.

Driver	07749–0010000
Attachment, 37 x 40 mm	07746–0010200



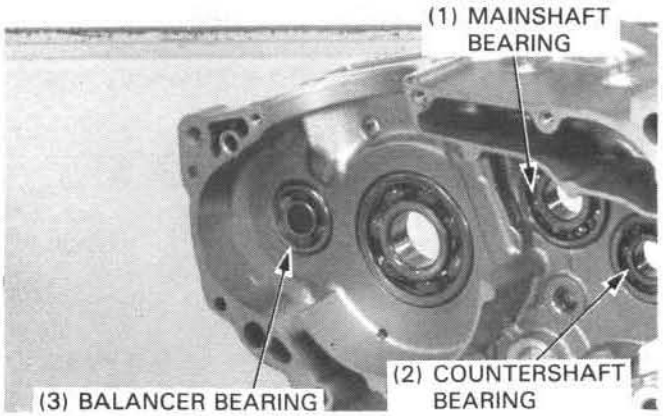
Install the new bearings with the following tools.

Left countershaft bearing	
Driver	07749–0010000
Attachment, 52 x 55 mm	07746–0010400
Pilot, 22 mm	07746–0041000
Left mainshaft bearing	
Driver	07749–0010000
Attachment, 37 x 40 mm	07746–0010200
Pilot, 15 mm	07746–0040300
Left balancer bearing	
Driver	07749–0010000
Attachment, 37 x 40 mm	07746–0010200



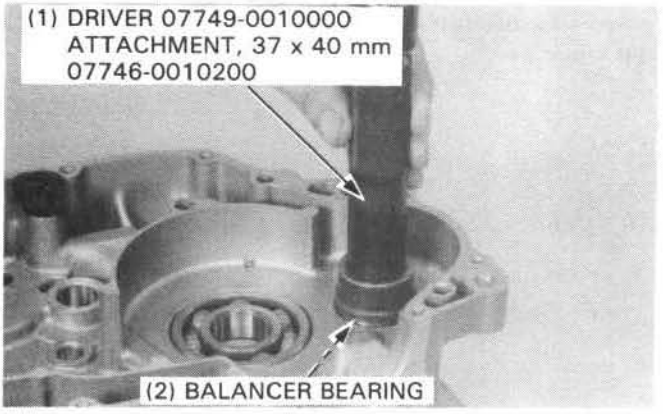
Right crankcase bearing

Remove the balancer bearing, mainshaft bearing and countershaft bearing from the right crankcase.

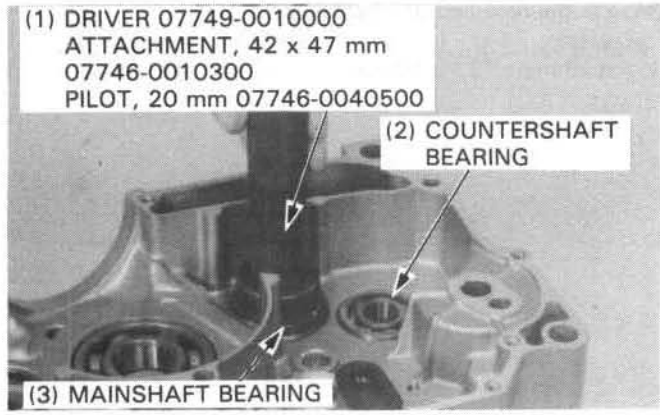


Install the new bearings with the following tools.

Right balancer bearing	
Driver	07749–0010000
Attachment, 37 x 40 mm	07746–0010200



Right countershaft bearing	
Driver	07749–0010000
Attachment, 42 x 47 mm	07746–0010300
Pilot, 17 mm	07746–0040400
Right mainshaft bearing	
Driver	07749–0010000
Attachment, 42 x 47 mm	07746–0010300
Pilot, 20 mm	07746–0040500

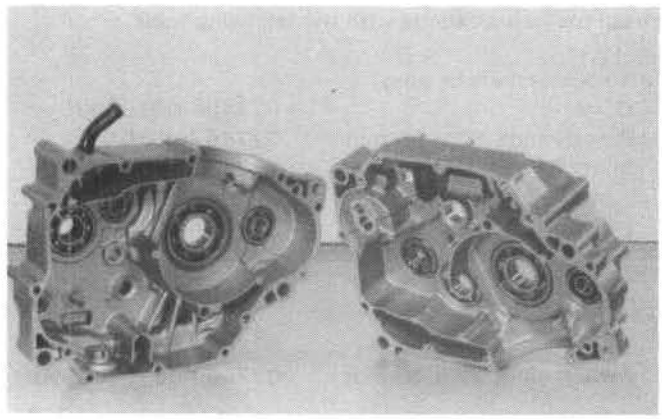


CRANKSHAFT/BALANCER INSTALLATION

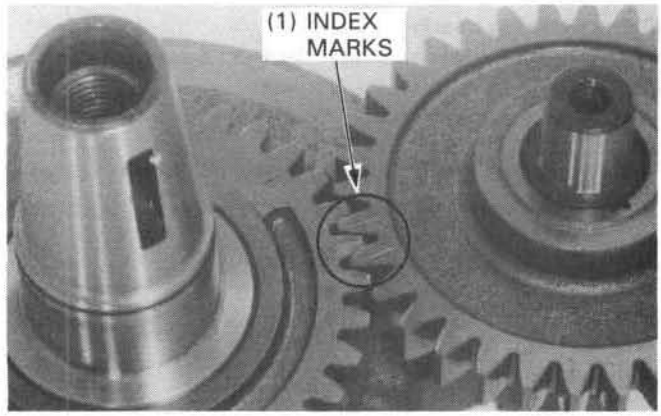
Clean the crankcase mating surfaces before assembling and check for wear or damage.

NOTE

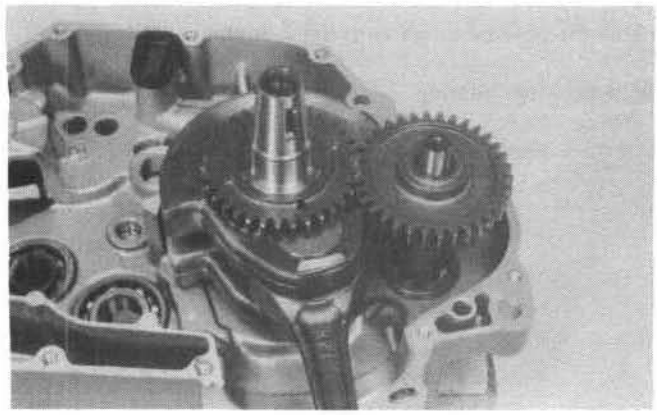
- If there is minor roughness or irregularities on the crankcase mating surfaces, dress them with an oil stone.
- After cleaning, lubricate the crankshaft bearings and other contacting surfaces with clean engine oil.



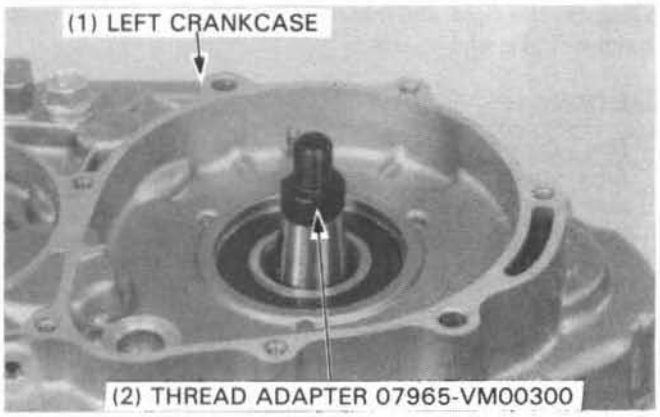
Align the index mark on the crankshaft gear with the index marks on the balancer gear as shown.



Temporarily install the crankshaft with the balancer into the right crankcase.

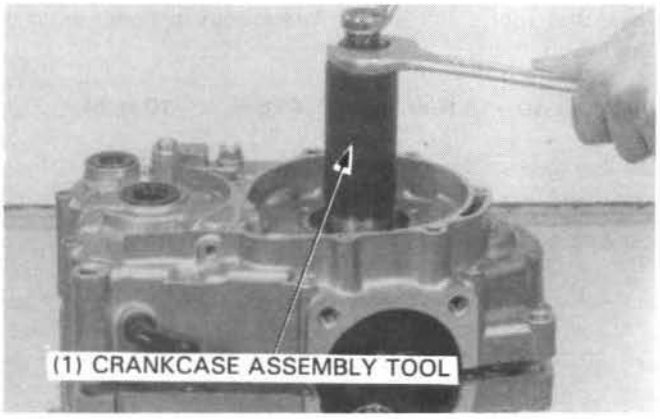


Place the left crankcase onto the right crankcase and install the thread adapter onto the crankshaft.



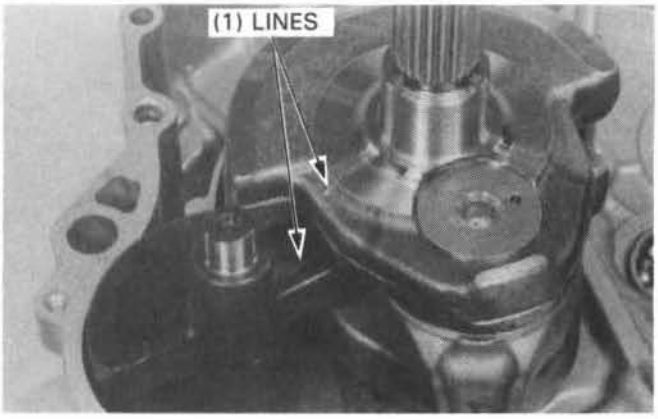
Temporarily assemble the crankcase halves using the crankcase assembly tool to draw the crankshaft into the left crankcase.

Crankcase assembly tool	07965—VM00000 (not available in U.S.A.)
— assembly collar	07965—VM00100 (or 07964—MB00200)
— thread shaft	07965—VM00200 (or 07931—ME4000A)
— thread adapter	07965—VM00300 (or 07931—KF00200)



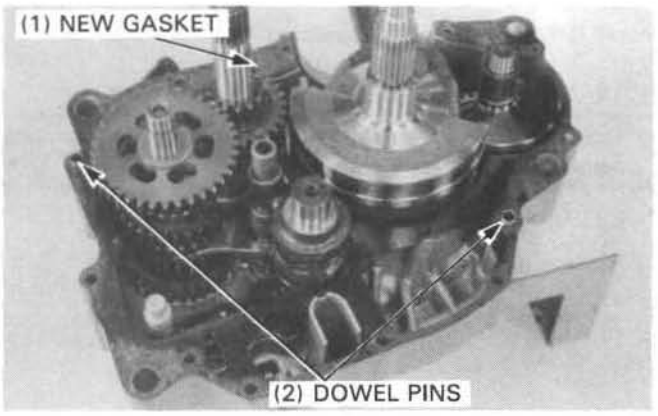
Remove the tool and attachment.
Remove the right crankcase.

Make sure that the line on the crankshaft weight is aligned with the balancer shaft weight line.



CRANKCASE ASSEMBLY

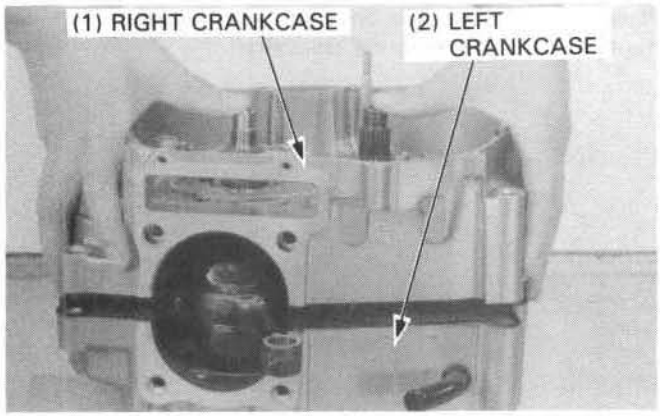
Install the transmission (page 11-5).
Install the two dowel pins and a new gasket.



Assemble the right and left crankcases being careful to align the dowel pins and shafts.

CAUTION

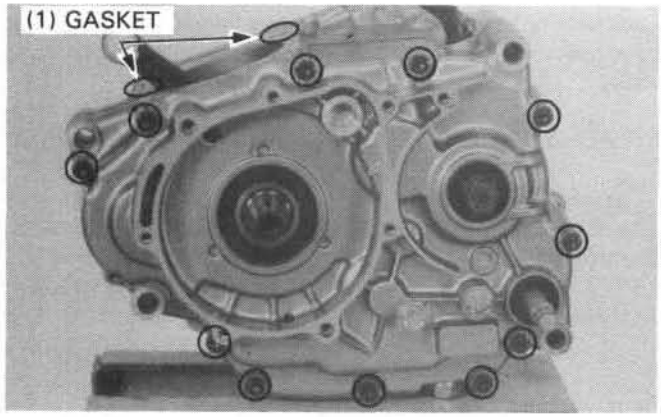
- *Don't force the crankcase halves together; if there is excessive force required, something is wrong. Remove the right crankcase and check for misaligned parts.*



Install and tighten the left crankcase bolts in a criss-cross pattern in 2-3 steps.

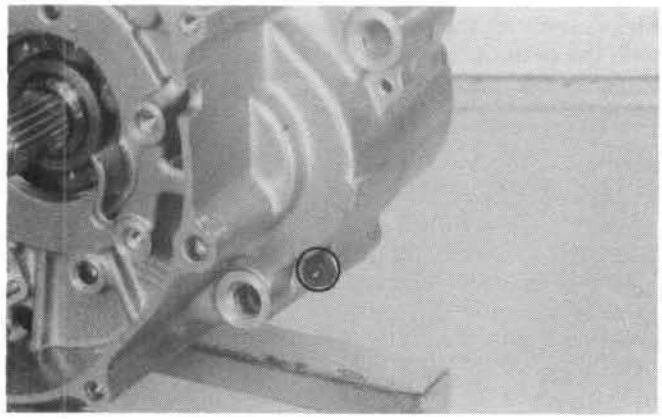
TORQUE: 10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

Cut the gaskets along the cylinder mating surfaces.



Install and tighten the right crankcase bolt.

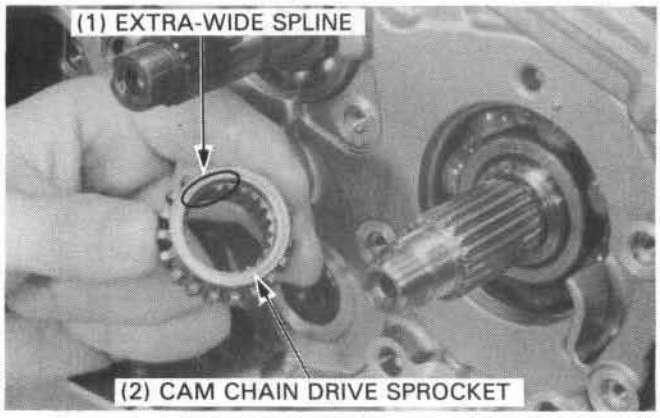
TORQUE: 10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)



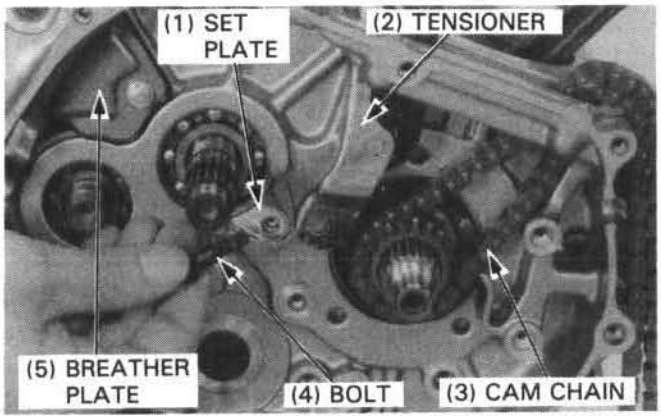
Install the cam chain drive sprocket.

NOTE

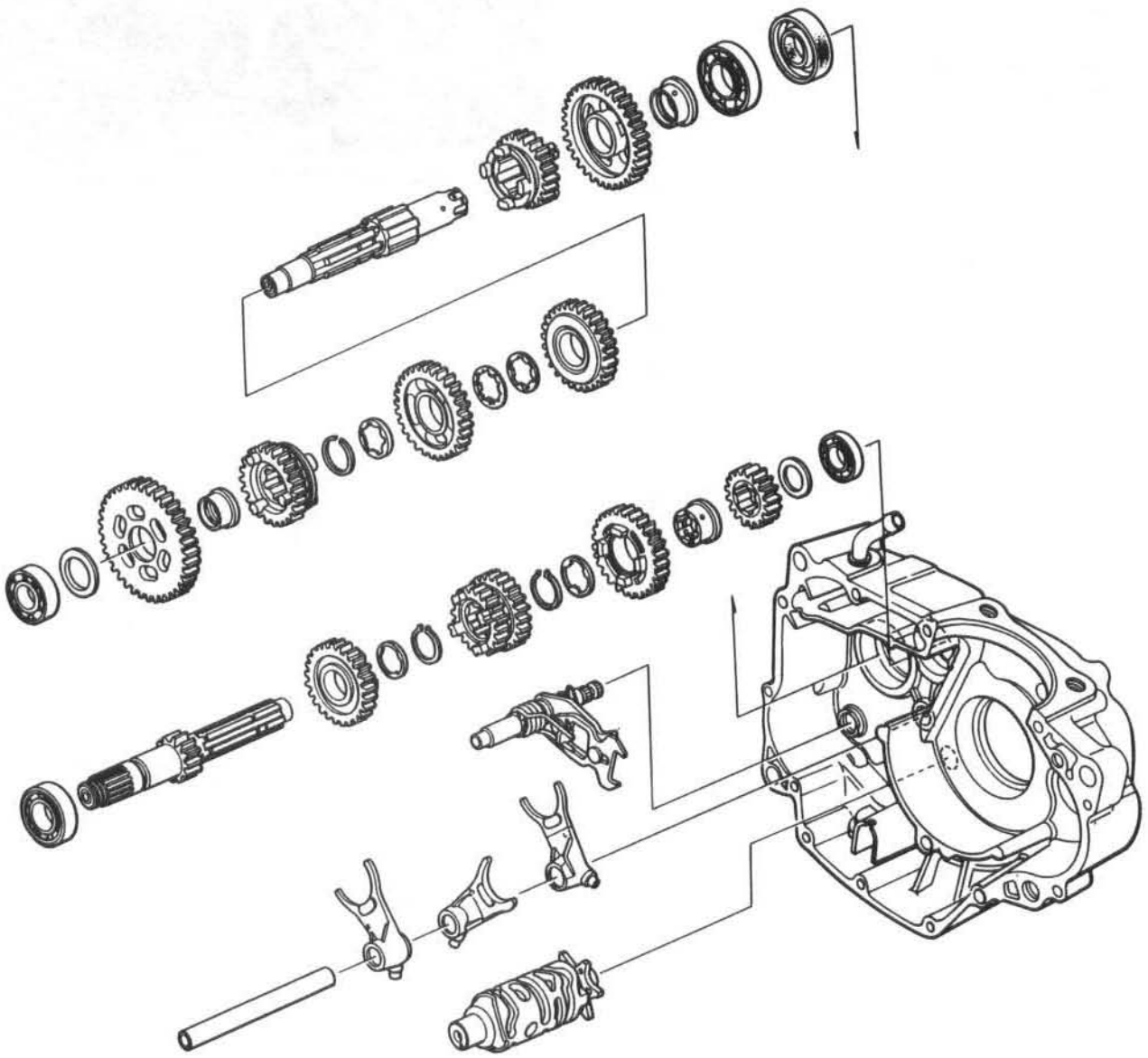
- The cam chain drive sprocket goes on only one position because of an extra-wide aligning spline.



Install the breather plate and cam chain.
Install the bearing set plate on the mainshaft bearing, cam chain tensioner, and bolt as shown.



Install the following:
- alternator (Section 9).
- clutch/kick starter (Section 8).
- oil pump (Section 2).
- cylinder/piston(Section 7).
- cylinder head (Section 6).
- engine (Sectioin 5).



SERVICE INFORMATION

GENERAL

- The crankcase must be separated to service the transmission.
- The gear shift cam plate can be serviced with the engine installed in the frame (section 8).

SPECIFICATIONS

Unit : mm (in)

ITEM		STANDARD	SERVICE LIMIT
Gear I.D.	M5	20.020–20.041 (0.7882–0.7890)	20.08 (0.791)
	M6	23.020–23.041 (0.9063–0.9071)	23.09 (0.909)
	C1	23.000–23.021 (0.9055–0.9063)	23.07 (0.908)
	C2	25.020–25.041 (0.9850–0.9859)	25.09 (0.988)
	C3	22.020–22.041 (0.8669–0.8678)	22.08 (0.869)
	C4	22.014–22.020 (0.8667–0.8669)	22.08 (0.869)
Gear bushing	M6 O.D.	22.959–22.980 (0.9039–0.9047)	22.92 (0.902)
	C1 I.D.	18.000–18.018 (0.7087–0.7094)	18.08 (0.712)
	C1 O.D.	22.951–22.980 (0.9036–0.9047)	22.90 (0.902)
	C2 I.D.	22.020–22.041 (0.8669–0.8678)	22.12 (0.871)
	C2 O.D.	24.972–24.993 (0.9831–0.9840)	24.90 (0.980)
Mainshaft O.D.	M5	19.959–19.980 (0.7858–0.7866)	19.91 (0.784)
	Clutch outer guide	19.959–19.980 (0.7858–0.7866)	19.91 (0.784)
Counter shaft O.D.	C2	21.959–21.980 (0.8645–0.8654)	21.91 (0.863)
	C4	21.959–21.980 (0.8645–0.8654)	21.91 (0.863)
Shaft-to-gear clearance	M5	0.040–0.082 (0.0016–0.0032)	0.15 (0.006)
	C4	0.040–0.082 (0.0016–0.0032)	0.15 (0.006)
Gear to bushing clearance	M6	0.040–0.082 (0.0016–0.0032)	0.10 (0.004)
	C1	0.020–0.070 (0.0008–0.0028)	0.10 (0.004)
	C2	0.027–0.069 (0.0011–0.0027)	0.10 (0.004)
Shaft-to-bushing clearance	C2	0.040–0.080 (0.0016–0.0031)	0.15 (0.006)
Shift fork	I.D.	13.000–13.021 (0.5118–0.5126)	13.05 (0.514)
Shift fork shaft	O.D.	12.966–12.983 (0.5105–0.5111)	12.90 (0.508)
Shift fork claw thickness		4.930–5.000 (0.1941–0.1969)	4.5 (0.18)

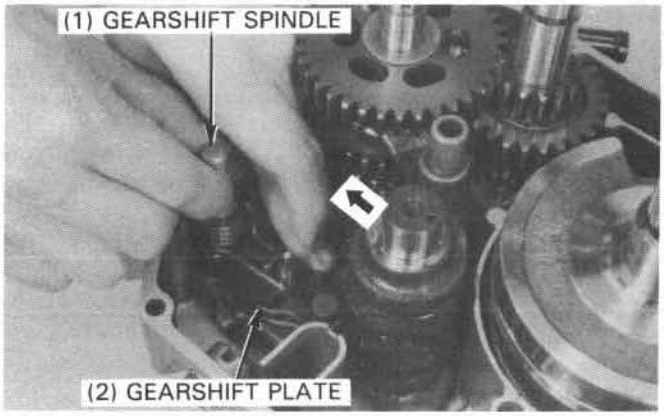
TROUBLESHOOTING

Hard to shift
- Improper clutch adjustment; too much free play
- Shift forks bent
- Shift shaft bent
- Shift drum cam groove damaged

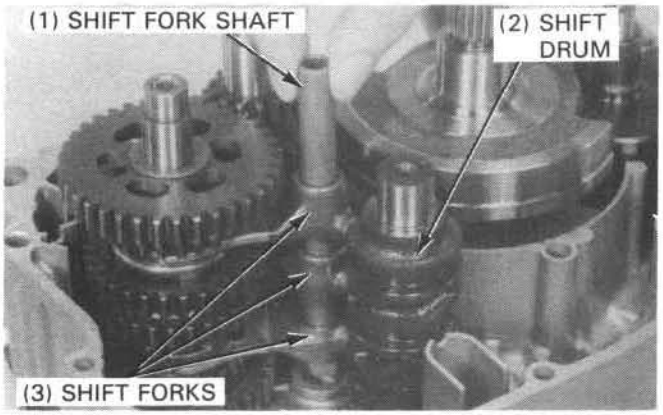
Transmission jumps out of gear
- Gear dogs worn
- Shift shaft bent
- Shift drum stopper broken
- Shift forks bent

TRANSMISSION DISASSEMBLY

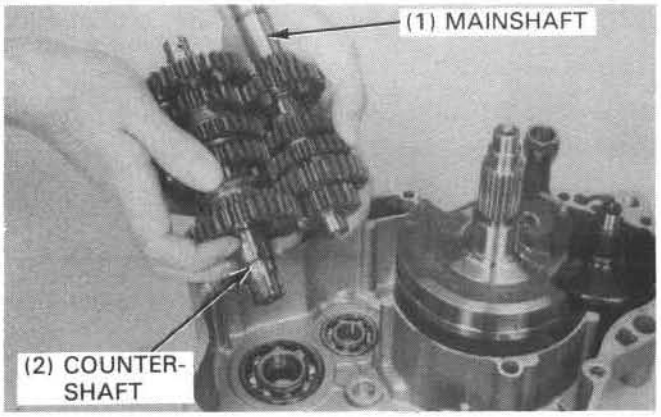
Separate the crankcase (Section 10)
Pull the gearshift plate and remove the gearshift spindle.



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

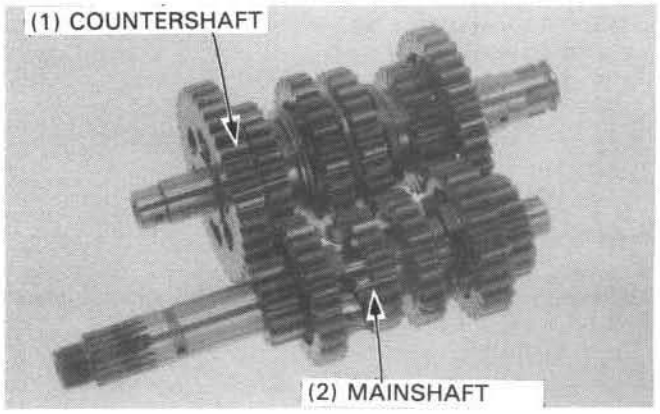


Remove the mainshaft and countershaft as an assembly.



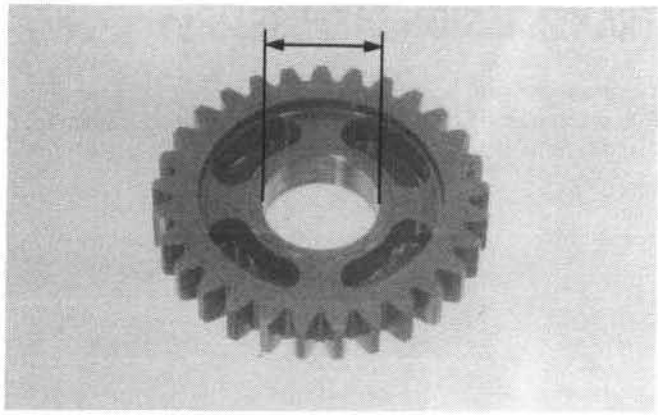
TRANSMISSION GEAR/SHAFT INSPECTION

Disassemble the mainshaft and countershaft.
Inspect each gear for wear or damage and replace if necessary. Check the gear teeth and engagement dogs for wear or damage. Check the mainshaft and countershaft splines and sliding surfaces for wear or damage.



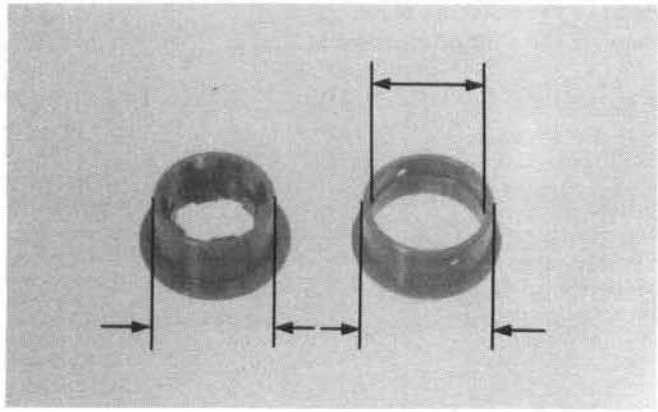
Measure the I.D. of each spinning gear.

SERVICE LIMIT:
M5: 20.08 mm (0.791 in)
M6: 23.09 mm (0.909 in)
C1: 23.07 mm (0.908 in)
C2: 25.09 mm (0.988 in)
C3: 22.08 mm (0.869 in)
C4: 22.08 mm (0.869 in)



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

SERVICE LIMIT:
Bushing I.D.
C1: 18.08 mm (0.712 in)
C2: 22.12 mm (0.871 in)
Bushing O.D.
C1: 22.90 mm (0.902 in)
C2: 24.90 mm (0.980 in)
M6: 22.92 mm (0.902 in)

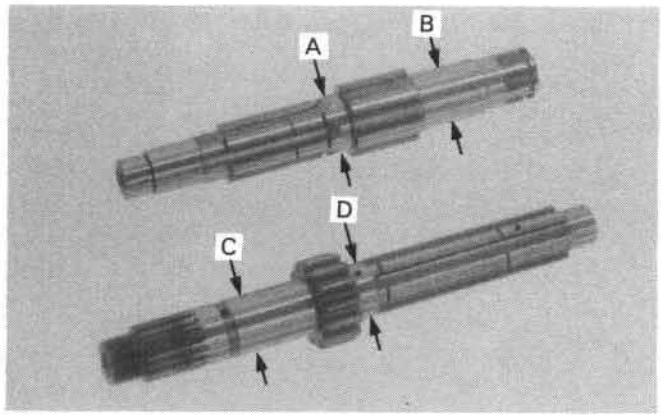


Caluculate the clearance between the gear and bushing.

SERVICE LIMIT:
M6: 0.10 mm (0.004 in)
C1: 0.10 mm (0.004 in)
C2: 0.10 mm (0.004 in)

Measure the O.D. of the mainshaft and countershaft in the location as shown.

SERVICE LIMIT:
A (C4 Gear): 21.91 mm (0.863 in)
B (C2 Bushing): 21.91 mm (0.863 in)
C (Clutch outer guide): 19.91 mm (0.784 in)
D (M5 Gear): 19.91 mm (0.784 in)



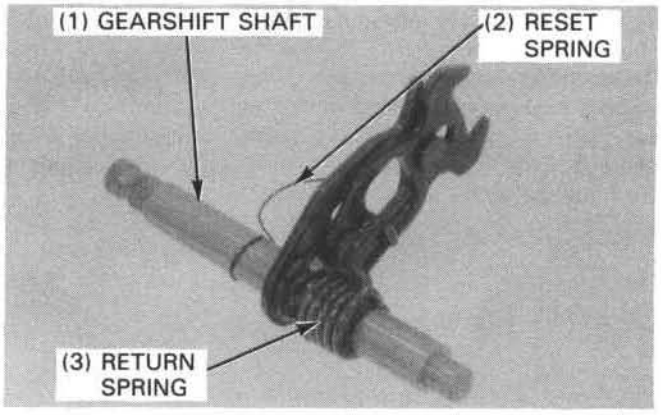
Caluculate the clearance between the shaft and gear or bushing.

SERVICE LIMIT:
M5: 0.15 mm (0.006 in)
C4: 0.15 mm (0.006 in)
C2: 0.15 mm (0.006 in)

GEARSHIFT SPINDLE INSPECTION

Disassemble the gearshift spindle.

Inspect the return spring for damage and inspect the gearshift shaft for wear or bending.



SHIFT FORK/SHAFT INSPECTION

Measure the I.D. of the shift fork.

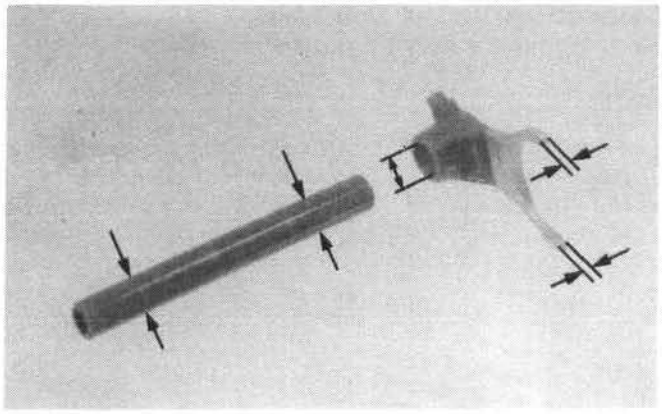
SERVICE LIMIT: 13.05 mm (0.514 in)

Measure the thickness of the shift fork claw.

SERVICE LIMIT: 4.5 mm (0.18 in)

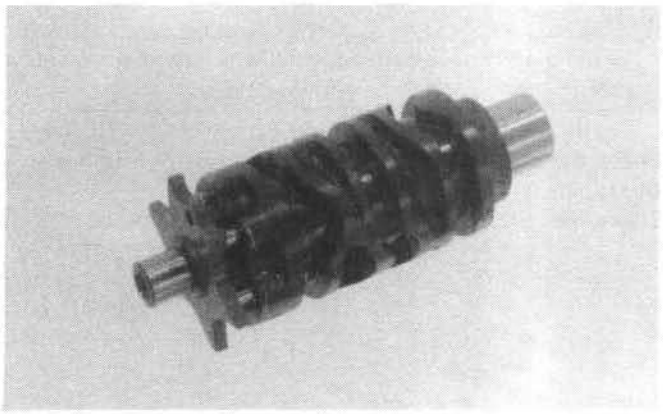
Measure the O.D. of the shift fork shaft.

SERVICE LIMIT: 12.90 mm (0.508 in)

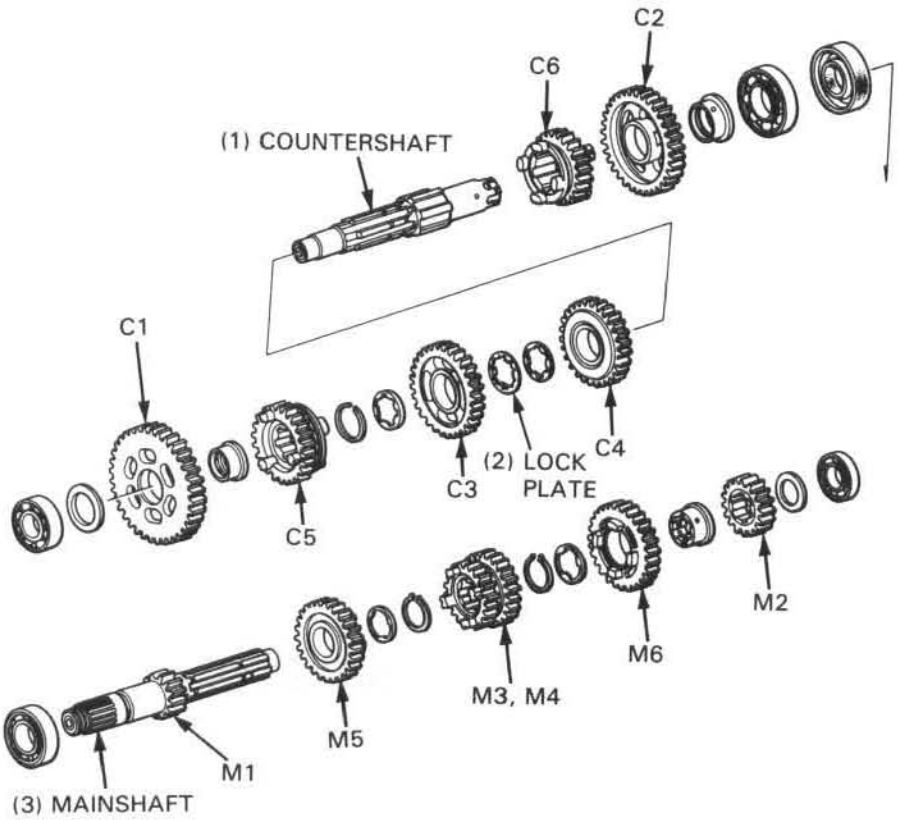


SHIFT DRUM INSPECTION

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



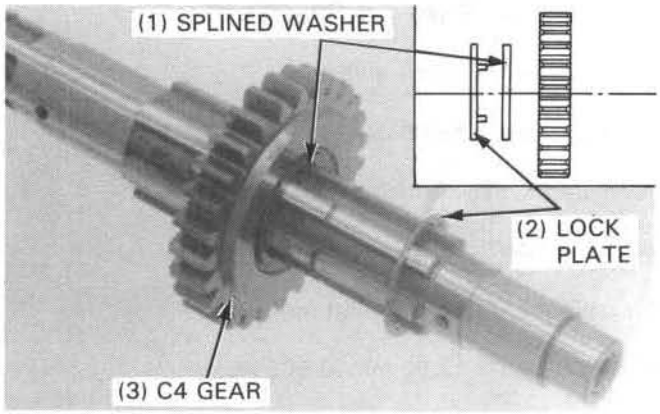
TRANSMISSION ASSEMBLY



Coat each gear with transmission oil.
Assemble the transmission gears and shafts.

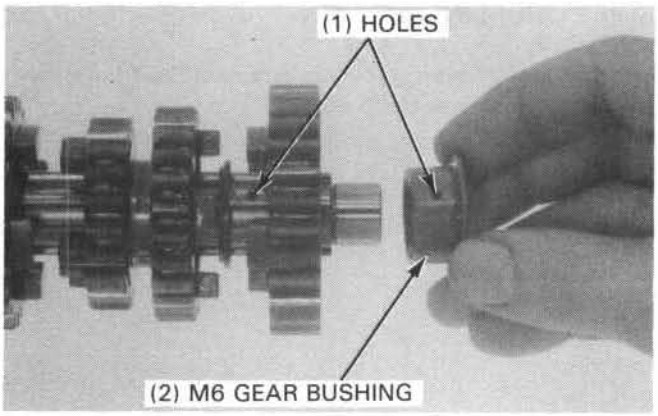
NOTE

- Align the cutouts of the C4 gear splined washer with the tabs of the C4 gear thrust washer lock plate.
- Note the direction of the C4 gear thrust washer lock plate as shown.



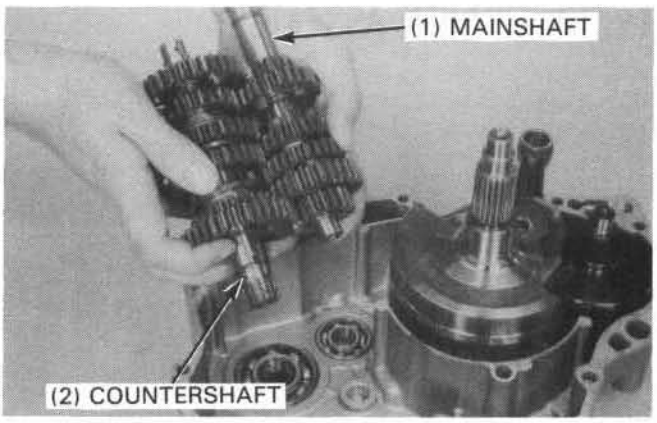
NOTE

- Install the M6 gear bushing with its oil hole aligning with the hole in the mainshaft as shown.



Check the gears for freedom of movement or rotation on the shaft.
Check that the snap rings are seated in the grooves.

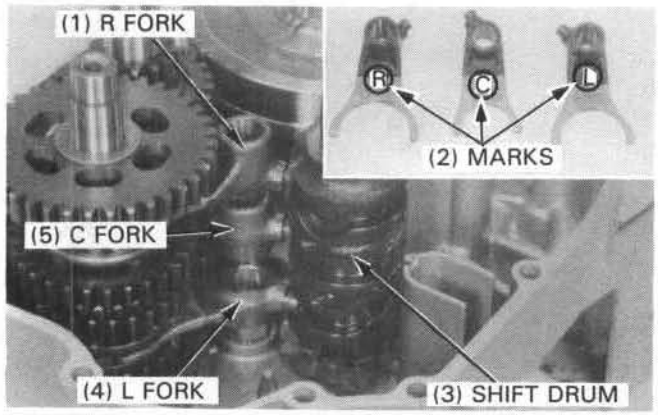
Install the mainshaft and countershaft into the left crankcase as an assembly.



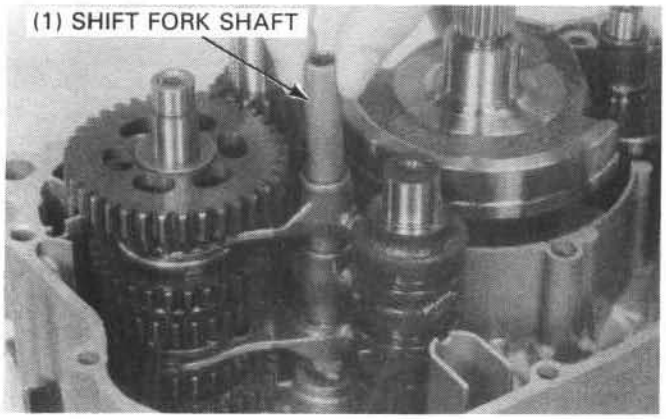
Install the shift drum and shift forks.

NOTE

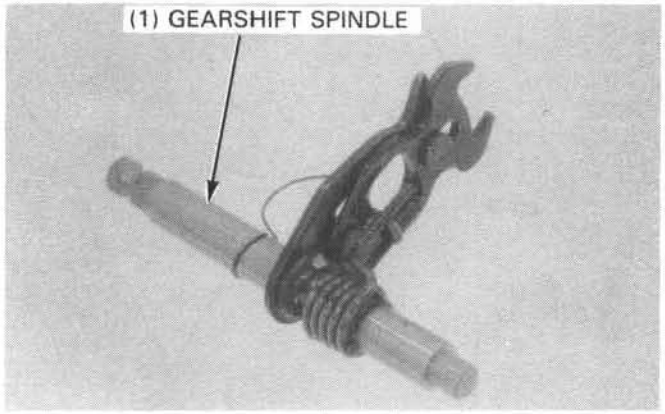
- Install the installation positions of the shift forks.
- Install the left shift fork with the marking facing down.



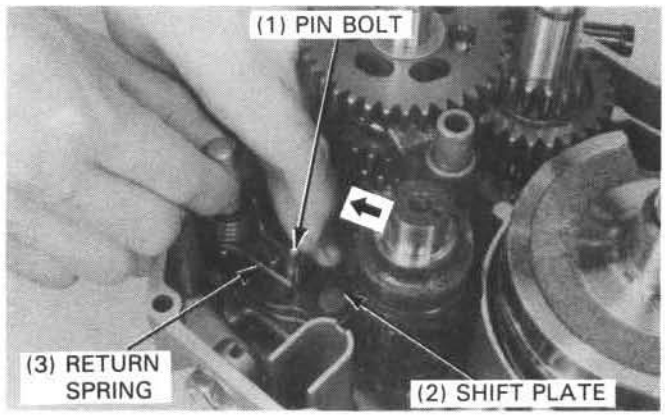
Insert the shift fork shaft into the shift forks.

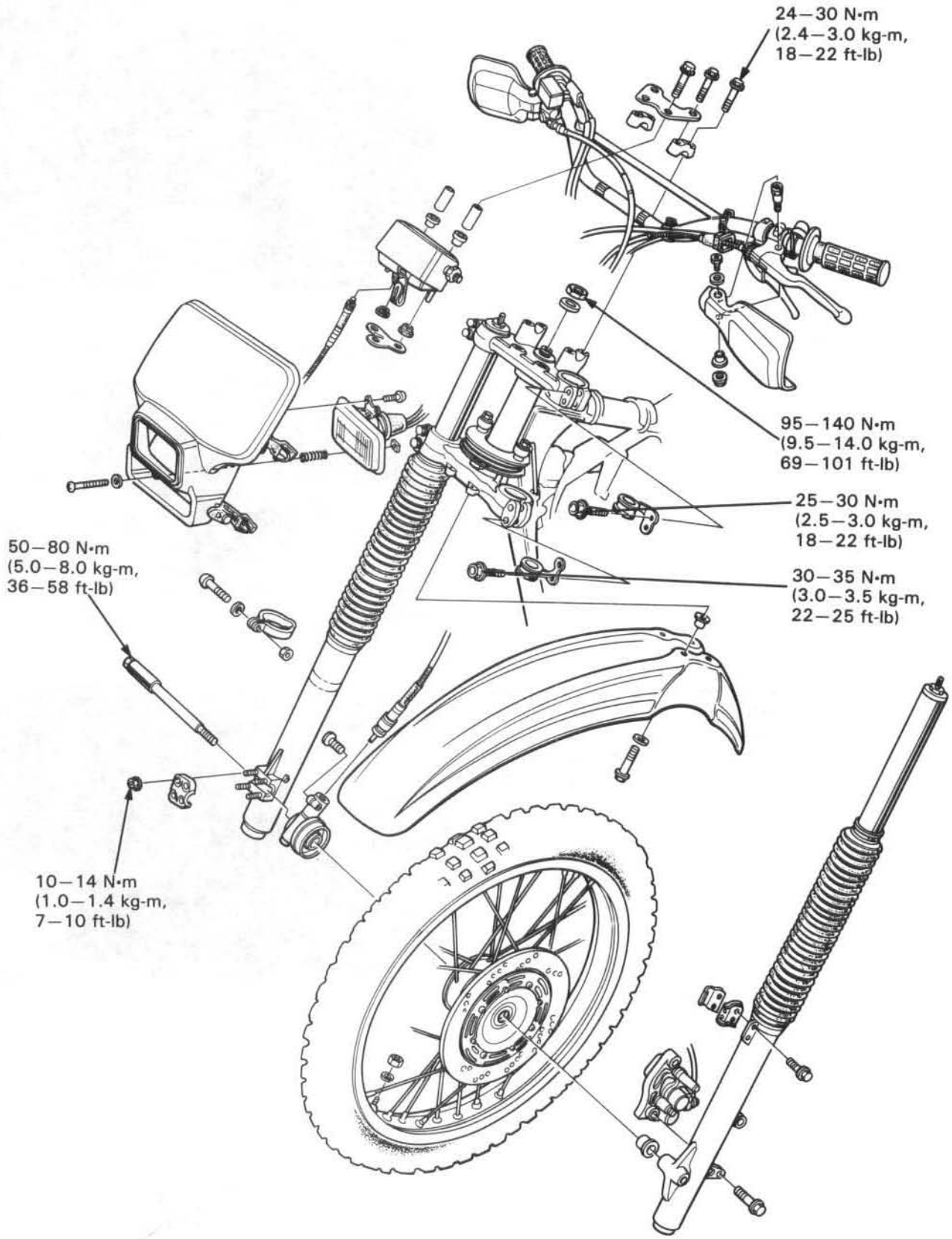


Assemble the gearshift spindle as shown.



Align the return spring with the pin bolt and install the shift spindle while pulling the shift plate.
Assemble the crankcase (Section 10).
Install the shift cam plate, stopper arm (page 8-12) and gear shift pedal and check the transmission for smooth shifting.




24–30 N·m
(2.4–3.0 kg-m,
18–22 ft-lb)
95–140 N·m
(9.5–14.0 kg-m,
69–101 ft-lb)
25–30 N·m
(2.5–3.0 kg-m,
18–22 ft-lb)
30–35 N·m
(3.0–3.5 kg-m,
22–25 ft-lb)
50–80 N·m
(5.0–8.0 kg-m,
36–58 ft-lb)
10–14 N·m
(1.0–1.4 kg-m,
7–10 ft-lb)

12. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION

GENERAL

- A work stand or box is required to support to support the motorcycle.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Rear wheel runout	Radial	—	2.0 mm (0.10 in)
	Axial	—	2.0 mm (0.10 in)
Rear axle runout		—	0.2 mm (0.01 in)
Fork spring free length	('86–'89:)	604.4 mm (23.80 in)	598.4 mm (23.56 in)
	A (AFTER '89:)	79 mm (3.1 in)	78.2 mm (3.08 in)
	B (AFTER '89:)	442 mm (17.4 in)	438.6 mm (17.27 in)
Fork tube runout		—	0.2 mm (0.01 in)
Fork oil level	('86–'89:)	135 mm (5.3 in)	125–165 mm (4.9–6.5 in)
	(AFTER '89:)	128 mm (5.0 in)	124–150 mm (4.9–5.9 in)
Fork oil capacity	('86–'89:)	535 cc (18.1 US oz, 18.8 Imp oz)	531–539 cc (17.9–18.2 US oz, 18.6–18.9 Imp oz)
	(AFTER '89:)	492 cc (16.6 US oz, 17.3 Imp oz)	472–496 cc (16.0–16.8 US oz, 17.1–17.4 Imp oz)
Fork air pressure		0 kPa (0 kg/cm², 0 psi)	0–100 kPa (0–1.0 kg/cm², 0–15 psi)

TORQUE VALUES

Steering bearing adjustment nut	1–2 N·m (0.1–0.2 kg-m, 0.7–1.4 ft-lb)
Steering stem nut	95–140 N·m (9.5–14.0 kg-m, 69–101 ft-lb)
Fork upper pinch bolt	25–30 N·m (2.5–3.0 kg-m, 18–22 ft-lb)
Fork lower pinch bolt	30–35 N·m (3.0–3.5 kg-m, 22–25 ft-lb)
Handlebar holder	24–30 N·m (2.4–3.0 kg-m, 18–22 ft-lb)
Front axle	50–80 N·m (5.0–8.0 kg-m, 36–58 ft-lb)
Front axle holder	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Fork cap	25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)
Fork buttom bolt ('86–'89:)	60–84 N·m (6.0–8.4 kg-m, 43–61 ft-lb)
(AFTER '89:)	34–46 N·m (3.4–4.6 kg-m, 25–33 ft-lb)
Spoke	2.5–5.0 N·m (0.25–0.50 kg-m, 1.8–3.6 ft-lb)
Rim lock	10–15 N·m (1.0–1.5 kg-m, 7–11 ft-lb)
Brake disc ('86–'89:)	14–16 N·m (1.4–1.6 kg-m, 10–12 ft-lb)
(AFTER '89:)	18–22 N·m (1.8–2.2 kg-m, 13–16 ft-lb)
Front fork drain bolt	1.0–2.0 N·m (0.10–0.20 kg-m, 0.7–1.4 ft-lb)

TOOLS

Special

Fork tube holder	07930–KA50000	not available in U.S.A.
– tube holder handle	07930–KA40200	not available in U.S.A.
– holder attachment	07930–KA50100	equivalent commercially available in U.S.A.
Slider weight	07947–KA50100	07936–3710200
Seal driver attachment	07947–KF00100	
Stem socket wrench	07916–KA50100	
Ball race remover	07953–4250002	07953–MJ1000A
Steering stem driver	07946–4300101	07946–MB00000 and GN-HT-54 (U.S.A. only)

Common

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.
Pilot, 15 mm	07746–0040300	
Attachment, 32 x 35 mm	07746–0010100	
Driver	07749–0010000	
Wrench, 30 x 32 mm	07716–0020400	or equivalent commercially available in U.S.A.
Extension	07716–0020500	or equivalent commercially available in U.S.A.
Attachment, 42 x 47 mm	07746–0010300	

TROUBLESHOOTING

Hard steering
- Steering stem nut too tight
- Faulty steering stem bearings
- Insufficient air in front tire

steers to one side or does not track straight
- Bent front forks
- Bent front axle, wheel installed incorrectly
- Wheel installed incorrectly

Front wheel wobbling
- Distorted rim
- Worn front wheel bearings
- Loose or broken spokes
- Faulty tire
- Axle not tightened properly

Soft suspension
- Weak fork springs
- Insufficient fluid in front forks
- Incorrect fork air pressure

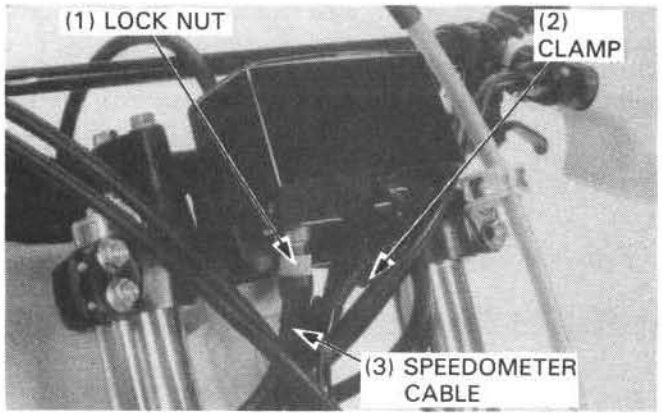
Hard suspension
- Incorrect fluid weight in front forks
- Incorrect fork air pressure
- Fork tube bent

Front suspension noise
- Slider binding
- Insufficient fluid in forks
- Loose front fork fasteners

SPEEDOMETER

REMOVAL

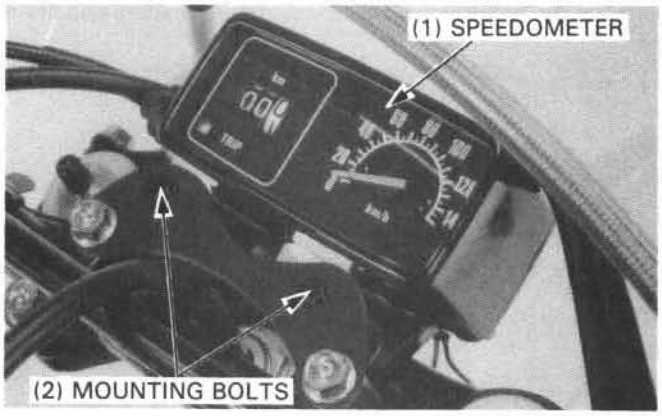
Remove the headlight (page 16-7).
Disconnect the speedometer cable from the speedometer by loosening the lock nut.
Remove the wire harnesses from the clamp.



Remove the speedometer by removing the two mounting bolts.

INSTALLATION

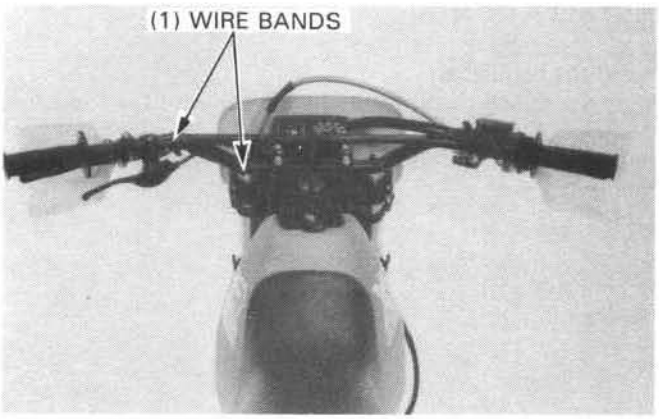
Install the speedometer in the reverse order of removal.



HANDLEBAR

REMOVAL

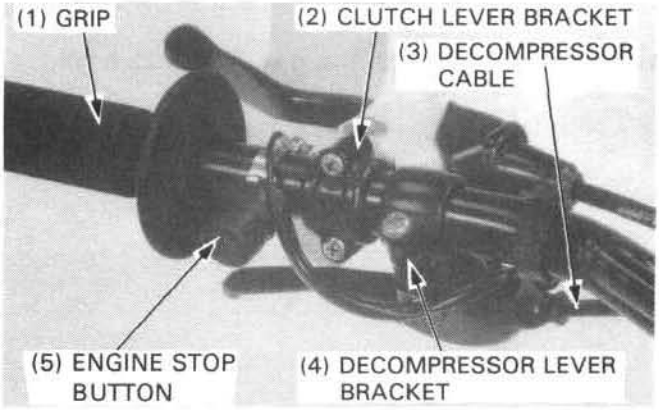
Remove the wire bands securing the engine stop switch wire.



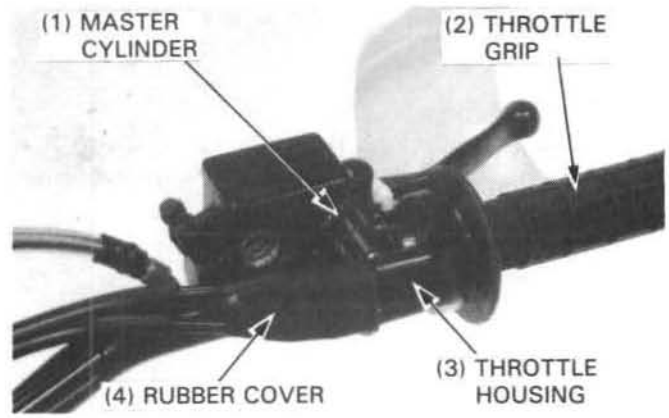
Remove the engine stop button.

Remove the two screws and clutch lever bracket.

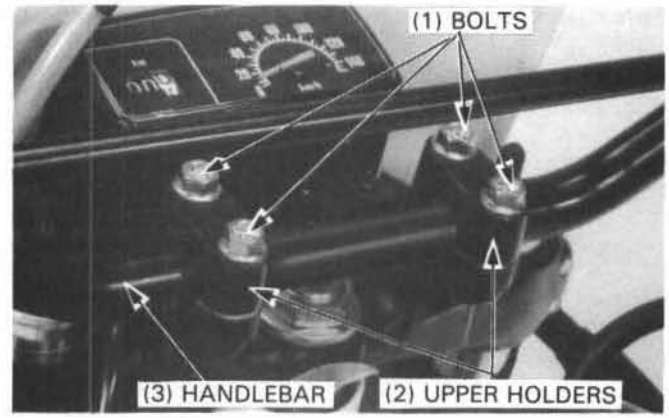
Loosen the pinch screw and slide the manual decompressor lever bracket inside, then pull out the rubber cover and disconnect the decompressor cable.
Remove the left grip and manual decompressor lever bracket if necessary.



Pull the rubber cover out, then remove the two screws and separate the throttle body.
Disconnect the throttle cable, then remove the throttle grip.
Remove the two screws and brake master cylinder bracket.

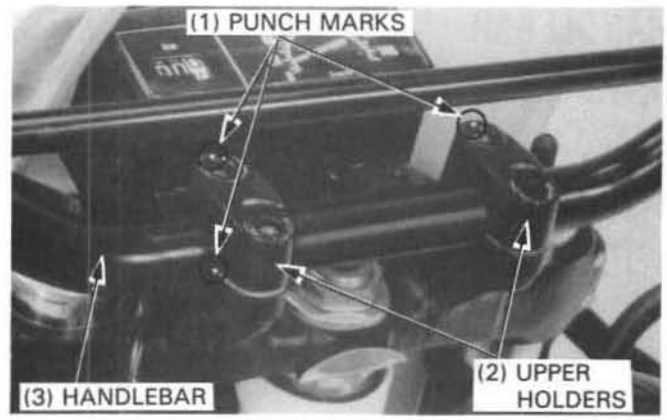


Remove the handlebar holder bolts, upper holders and handlebar.



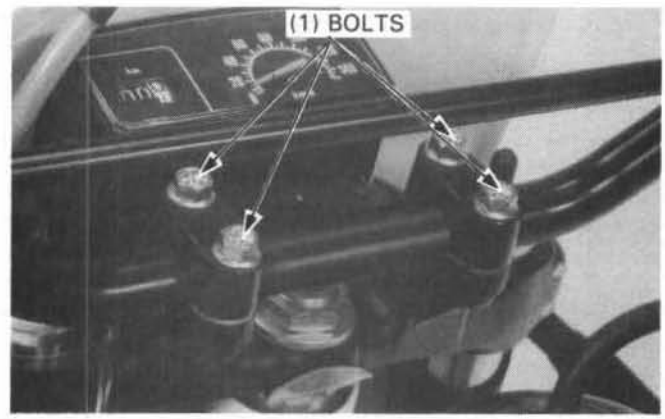
INSTALLATION

Install the handlebar.
Align the punch mark on the handlebar with the top edge of the lower holders.
Place the upper holders on the handlebar with the punch marks facing forward.

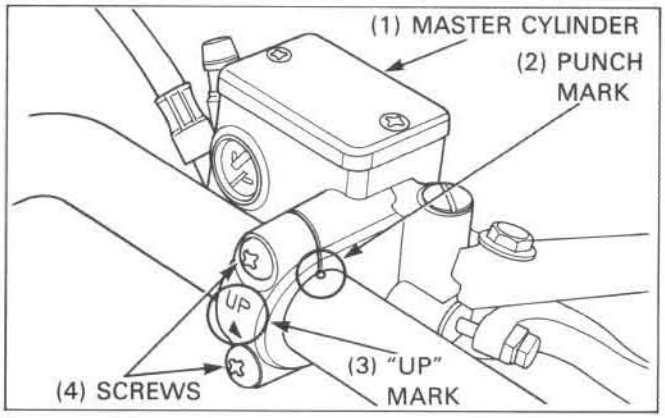


Tighten the forward bolts first, then tighten the rear bolts.

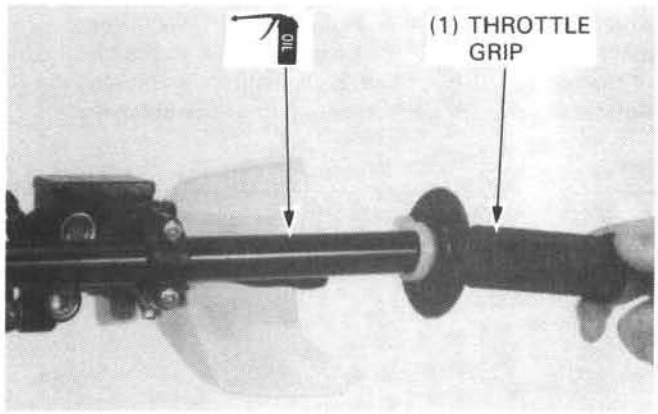
TORQUE: 24–30 N·m (2.4–3.0 kg-m, 18–22 ft-lb)



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



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

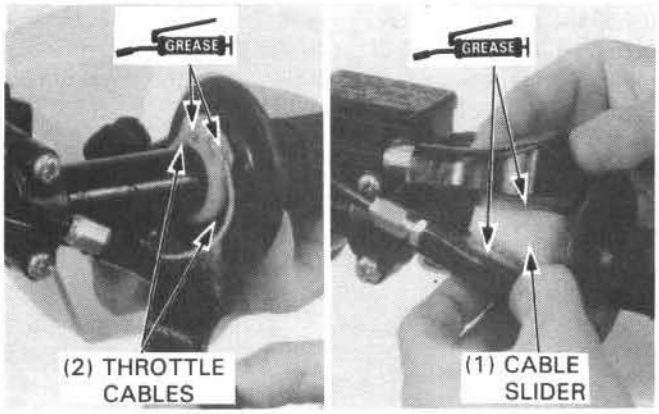


Apply grease to the throttle cable ends and cable slider.

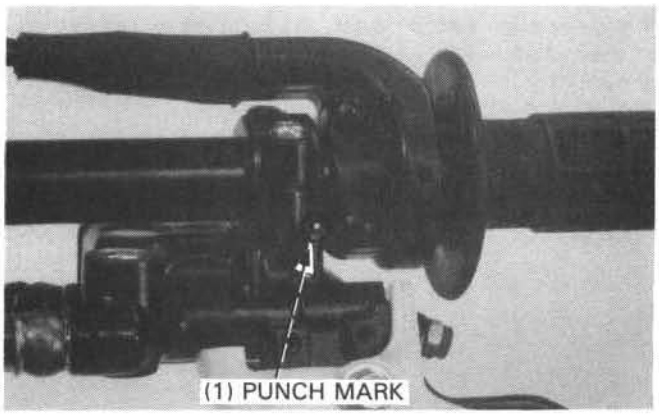
Connect the throttle cables to the grip.

NOTE

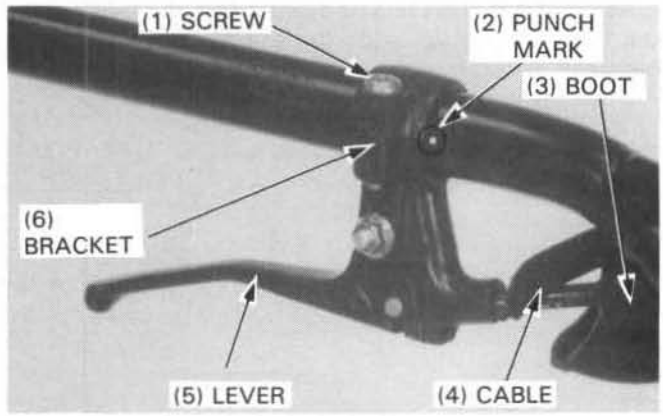
- Make sure that the cable slider is in place.



Align the split line of the throttle grip with the punch mark on the handlebar.
Tighten the forward screw first, then the rear screw.



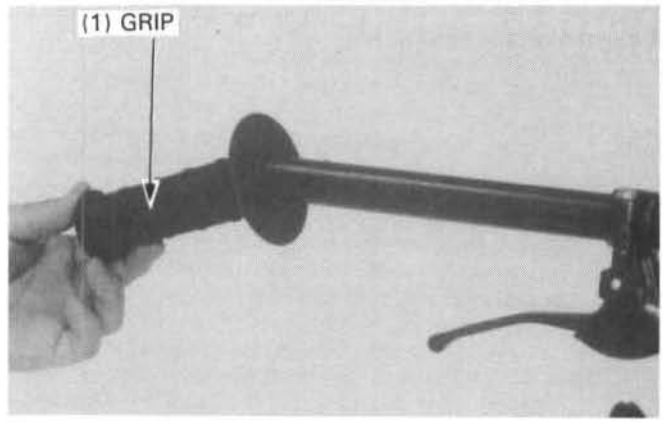
Install the manual decompressor lever bracket.
Connect the decompressor cable and install the boot.
Align the split line of the manual decompressor bracket with the punch mark on the handlebar and tighten the pinch screw securely.



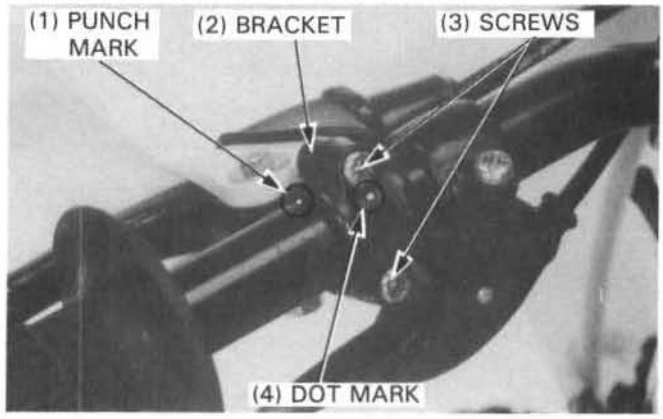
Apply Honda Bond A or Honda Hand Grip Cement (U.S.A. only) to the inside surface of the grip and to the clean surface of the left handlebar. Wait 3—5 minutes and install the grip. Rotate the grip for even application of the adhesive.

NOTE

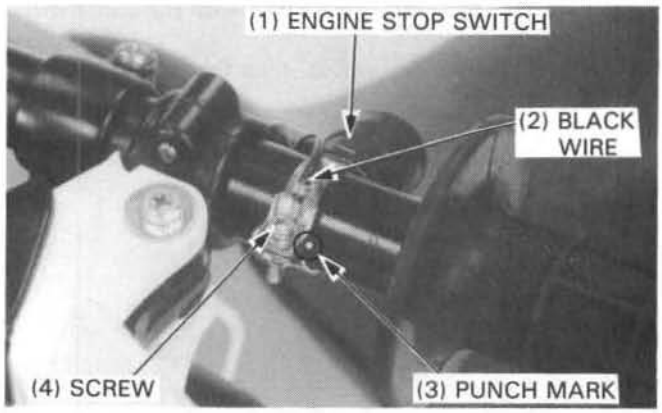
- Allow the adhesive to dry for an hour before using.



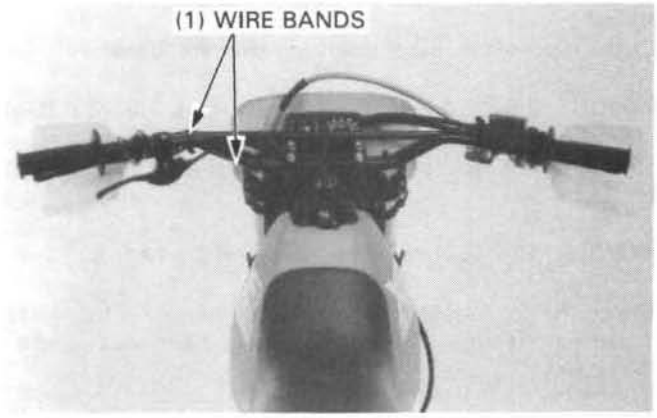
Install the clutch lever bracket with the dot mark on the holder facing up. Align the end of the holder with the handlebar punch mark. Tighten the upper screw first, then the lower screw.



Install the engine stop switch and terminal by aligning the slit of the switch holder with the punch mark on the handlebar as shown.
Tighten the screw with the black wire.



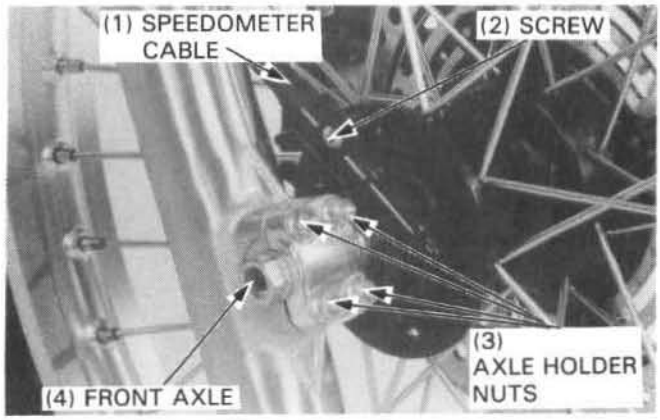
Install the wire bands.
Adjust the manual decompressor cable (page 3-9).
Adjust the throttle cable (page 3-6).



FRONT WHEEL

REMOVAL

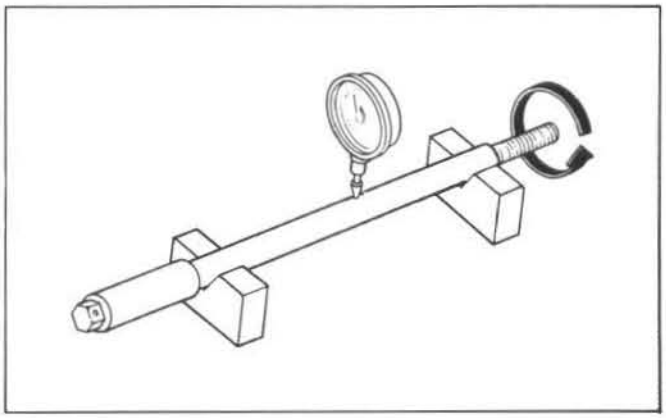
Raise the front wheel off the ground by placing a box or work stand under the engine.
Disconnect the speedometer cable from the speedometer gearbox at the front wheel.
Loosen the axle holder nuts and then remove the front axle.
Remove the front wheel.



INSPECTION

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

SERVICE LIMIT: 0.2 mm (0.01 in)



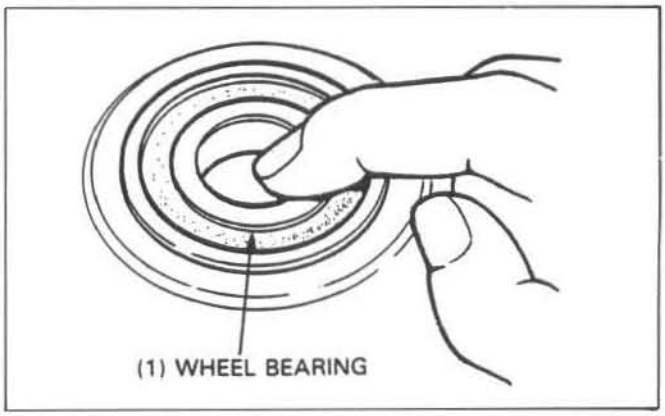
Wheel bearing
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

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

NOTE

- Replace the wheel bearings in pairs.

For bearing replacement, see next page.



Wheel
Check the spokes and tighten any that are loose.

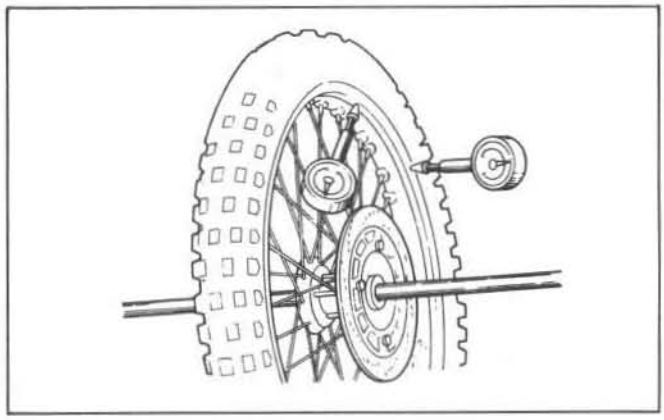
TORQUE: 2.5–5.0 N·m (0.25–0.50 kg-m, 1.8–3.6 ft-lb)

Check the rim lock for loosening and tighten it to the specified torque.

TORQUE: 10–15 N·m (1.0–1.5 kg-m, 7–11 ft-lb)

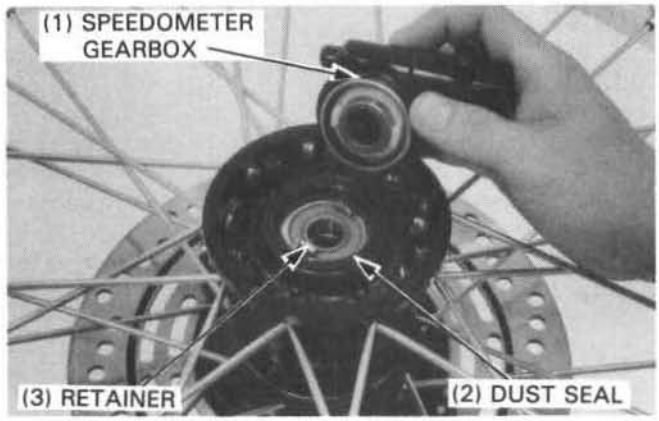
Check the rim runout by placing the wheel on a truing stand. Then spin the wheel by hand, and read the runout using a dial indicator.

SERVICE LIMITS:
Radial:2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)

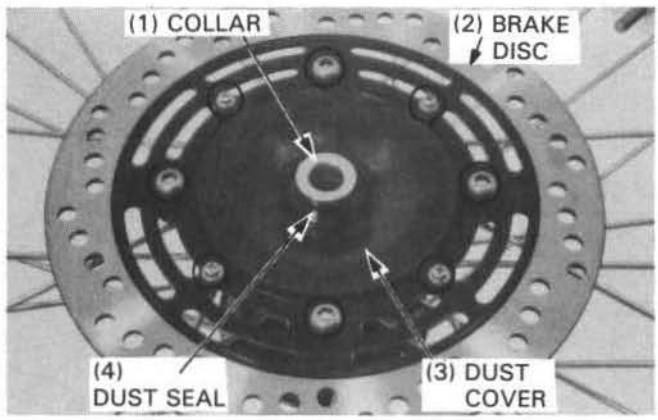


DISASSEMBLY

Remove the following parts from the hub:
– speedometer gear box.
– dust seal.
– speedometer gear retainer.



– collar.
– mounting screws and dust cover.
– mounting bolts and brake disc.
– dust seal.



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

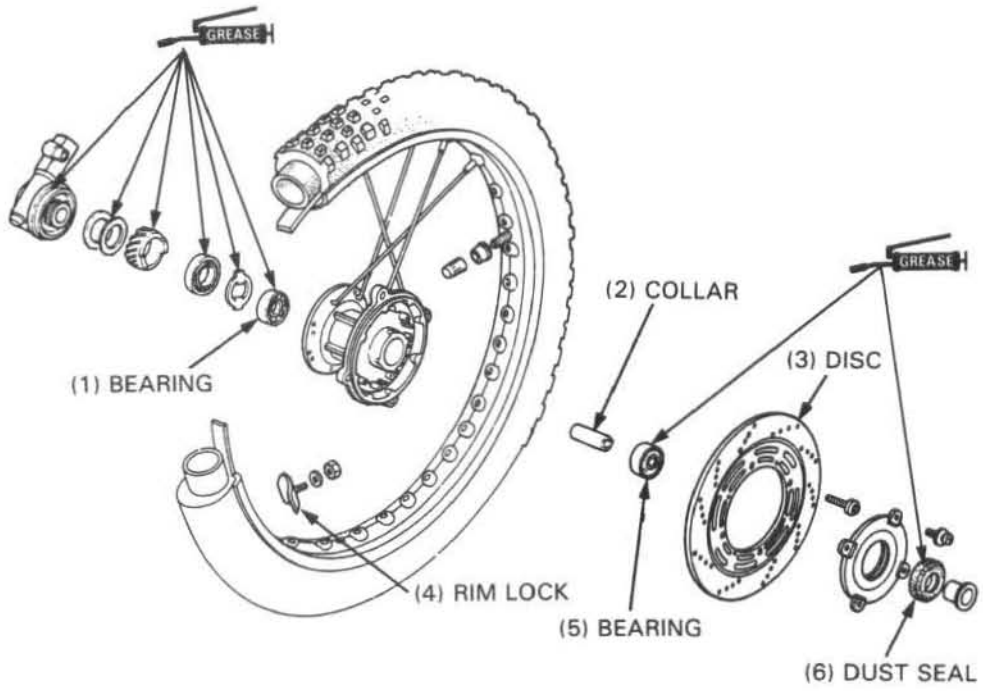
NOTE

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

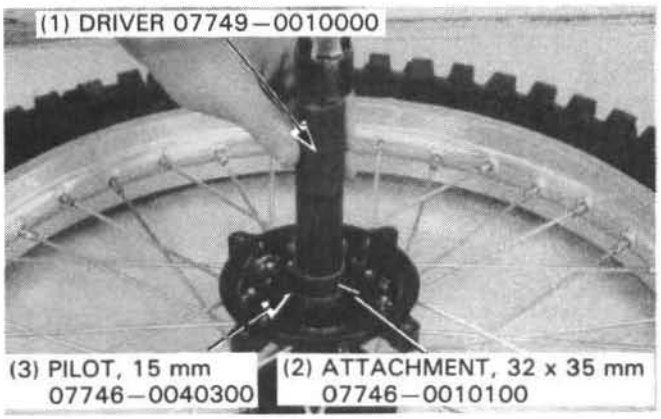
ASSEMBLY

WARNING

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



Drive in the right bearing first making sure that it is fully seated and that the sealed side is facing out.
Install the distance collar.
Drive the left bearing in squarely, making sure that it is fully seated and that the sealed side is facing out.

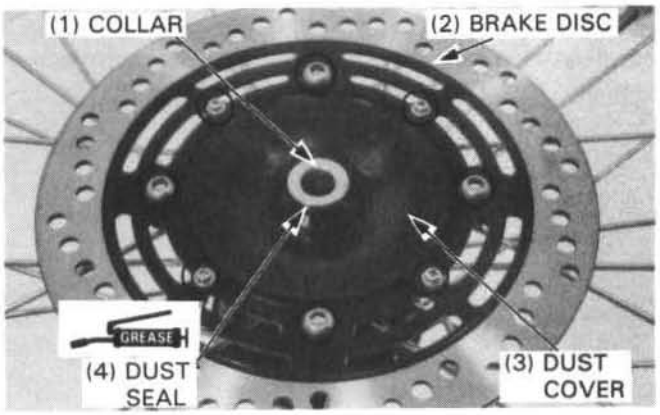


Install the brake disc onto the wheel hub.
Tighten the brake disc bolts.

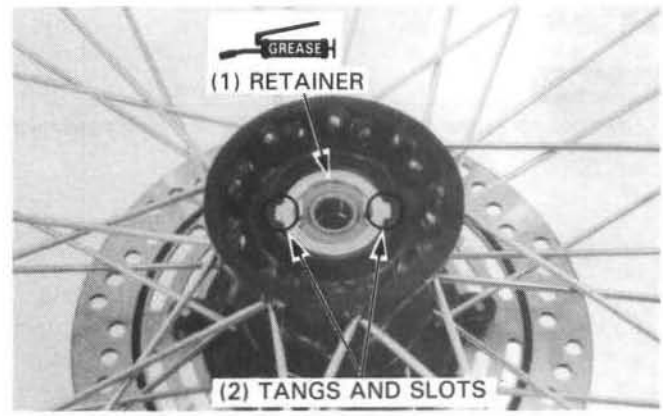
TORQUE:
'86–'89: 14–16 N·m (1.4–1.6 kg-m, 10–12 ft-lb)
AFTER '89: 18–22 N·m (1.8–2.2 kg-m, 13–16 ft-lb)

Apply grease to the dust seal lip and install the dust seal.

Install the dust cover.
Install the collar.

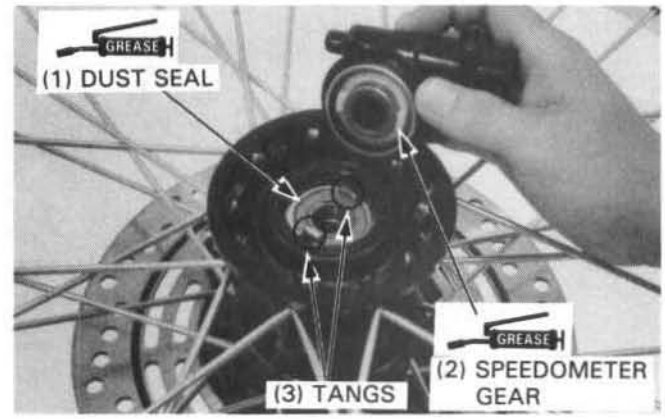


Apply grease to the speedometer gear retainer.
Install the speedometer gear retainer into the wheel hub, aligning the tangs with the slots.



Apply grease to the dust seal lip.
Install the dust seal.
Apply grease to the speedometer gear.
Install the speedometer gearbox into the wheel hub, aligning the tangs with the slots.

Clean the brake disc with a high quality degreasing agent.



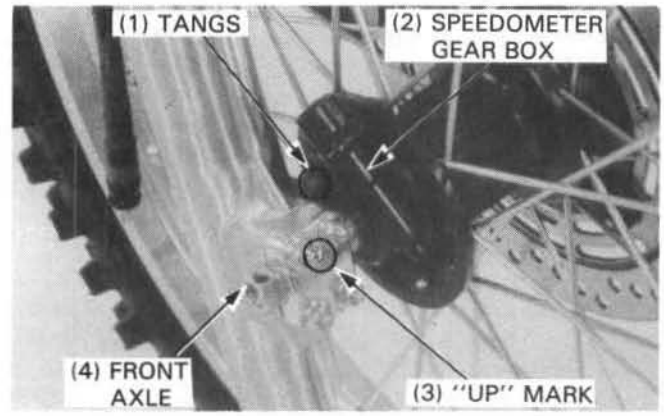
INSTALLATION

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

Clean the front axle and holder.
Install the holder with the "UP" facing upwards.
Install the axle holder nuts but do not tighten them at this time.

Align the speedometer gearbox with the tang on the right fork leg as shown.
Tighten the axle to the specified torque.

TORQUE: 50–80 N·m (5.0–8.0 kg-m, 36–58 ft-lb)

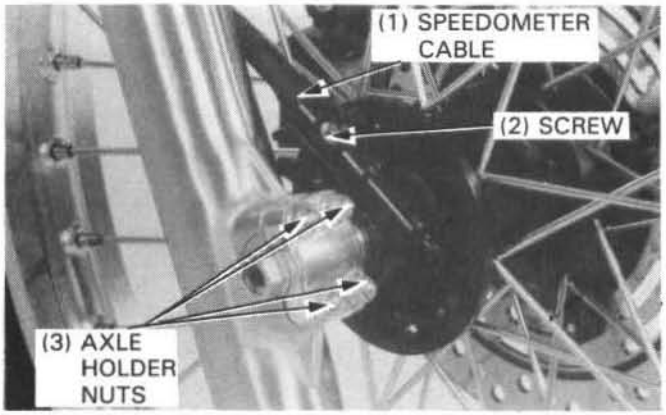


With the front brake applied, pump the front forks up and down several times to seat the axle and check front brake operation.

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

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

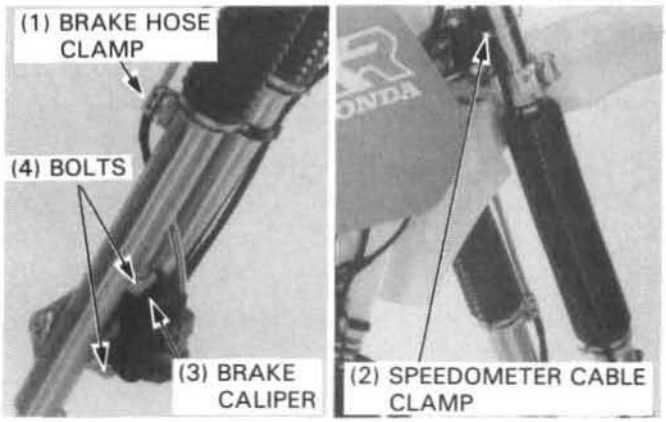
Connect the speedometer cable to the gearbox.



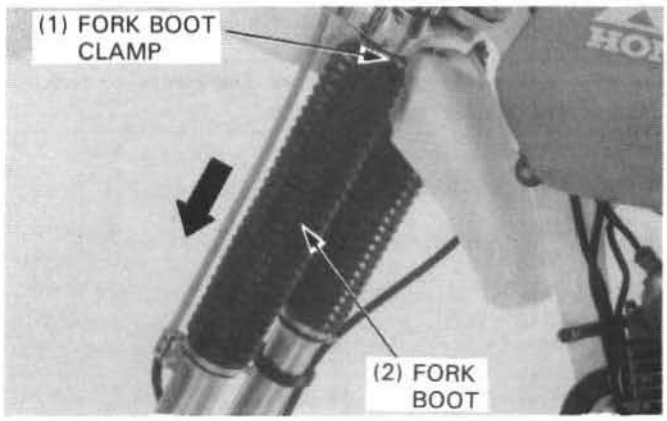
FORKS

REMOVAL

Remove the following:
- the headlight (page 16-7).
- the front wheel (page 12-7).
- the brake hose clamp bolts.
- the caliper mounting bolts and caliper from the left fork leg.
- the speedometer cable clamps from the right fork leg.



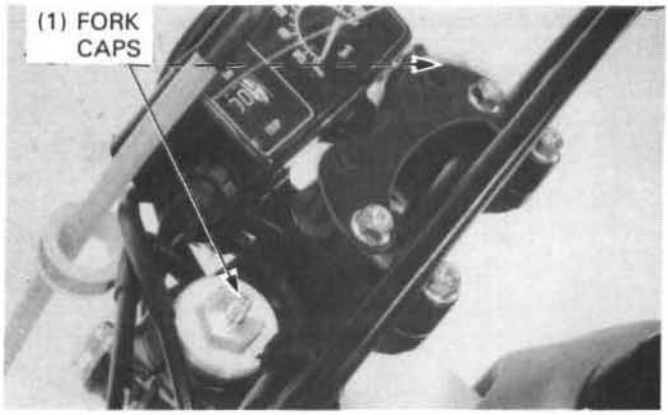
Loosen the upper fork boot clamp screw and pull the boots down on the fork tubes.



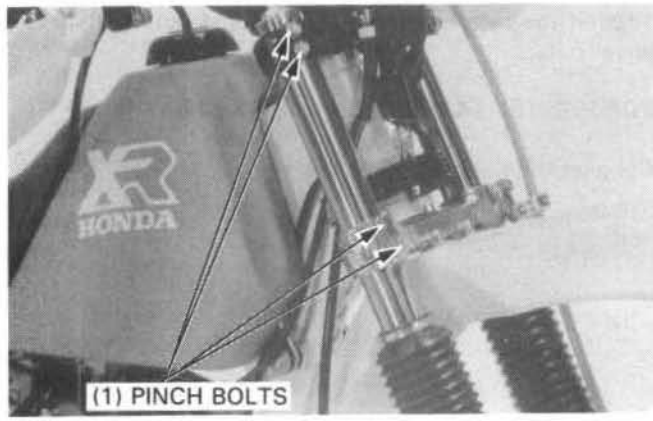
Remove the fork air valve caps and depress the air valve to release fork air pressure.

AFTER '89:
Loosen the fork bottom bolt but do not remove them.

Loosen the fork caps but do not remove them.

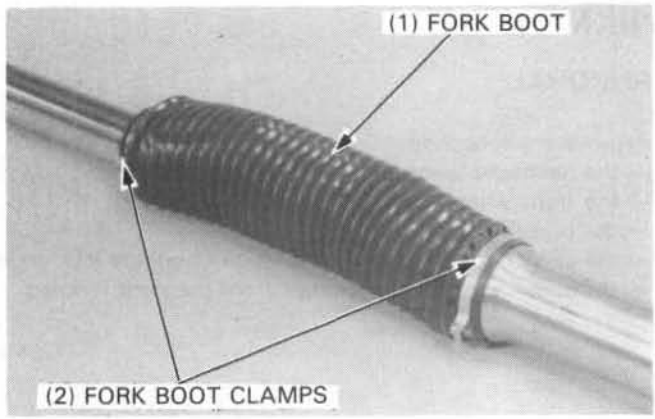


Loosen the upper and lower fork pinch bolts.
Remove the fork legs.



DISASSEMBLY

Remove the fork boot clamp screw and the boot.



('86–'89:)

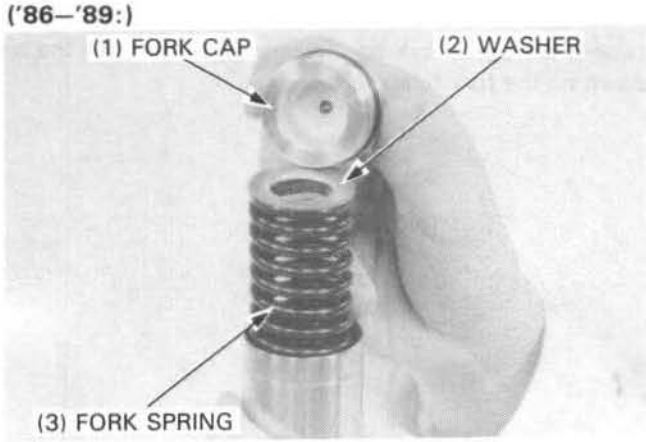
CAUTION

- *The cap is under spring pressure. Use care when removing it and wear eye and face protection.*

Remove the fork cap.

Remove the fork spring and washer.

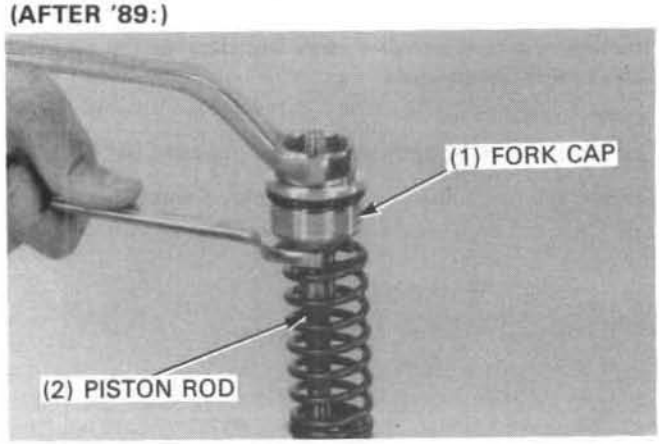
('86–'89:)



(AFTER '89:)
Remove the fork cap from the piston rod by holding the lock nut.

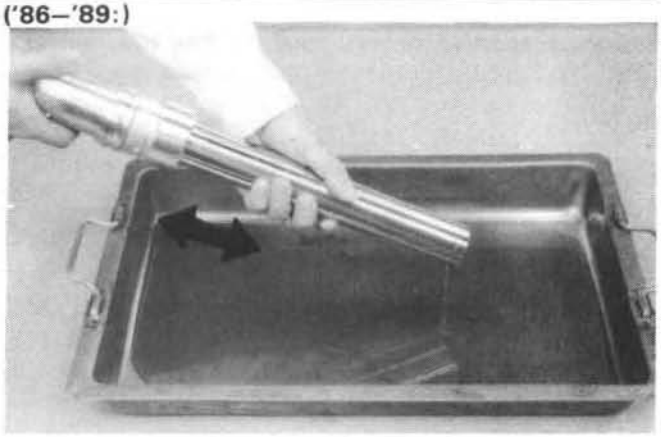
Remove the fork springs and washers.

(AFTER '89:)



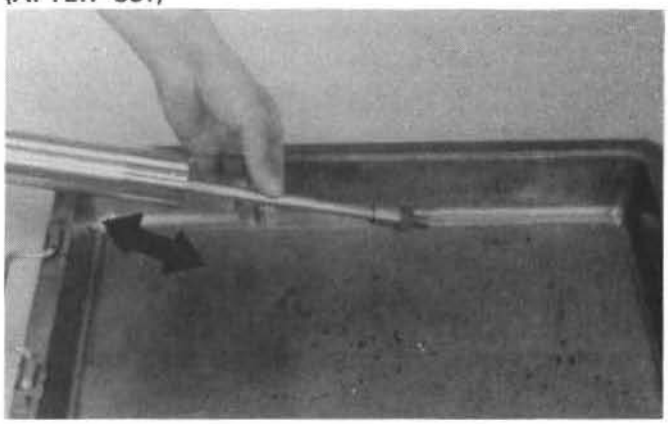
('86–'89:)
Pour out the fork fluid by pumping the fork up and down several times.

('86–'89:)



(AFTER '89:)
Pour out the fork fluid by pumping fork inner tube and piston rod several times.

(AFTER '89:)



('86–'89:)
Hold the fork slider in a vise with soft jaws or a shop towel.

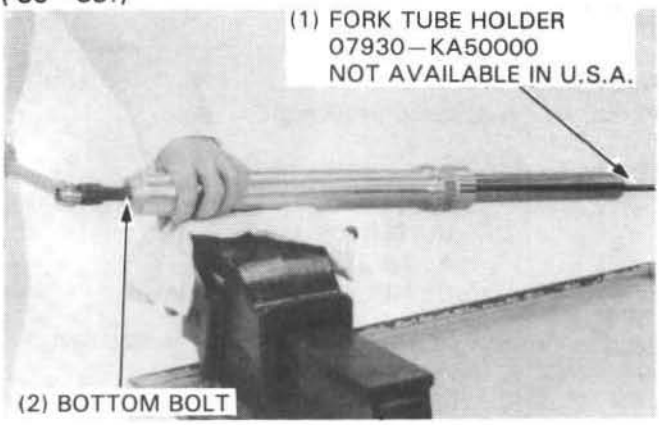
CAUTION

- *Do not distort the fork slider in the vise.*

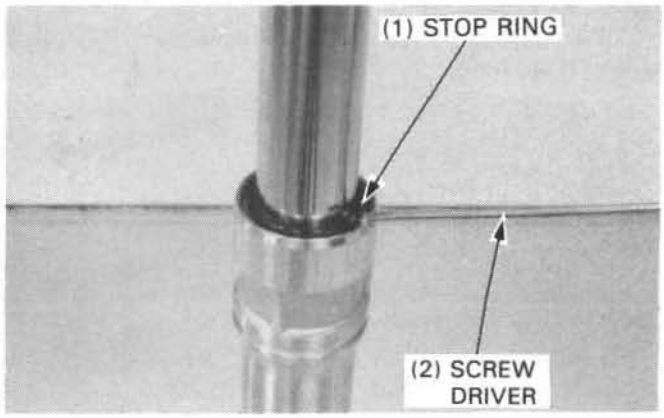
Remove the bottom bolt holding the fork piston with a fork tube holder.

(AFTER '89:)
Remove the bottom bolt.

('86–'89:)



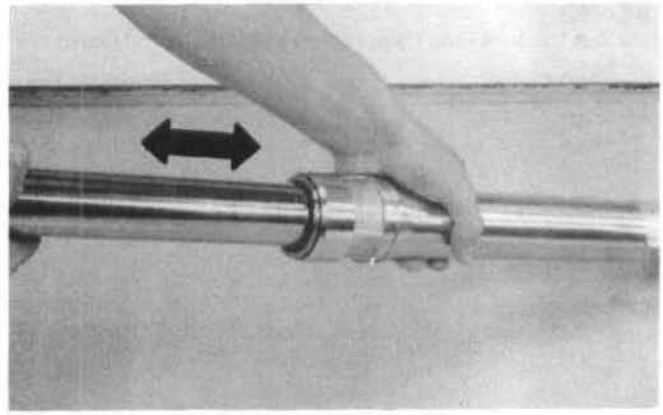
Remove the stop ring with screw driver to prevent scratching the fork tube.



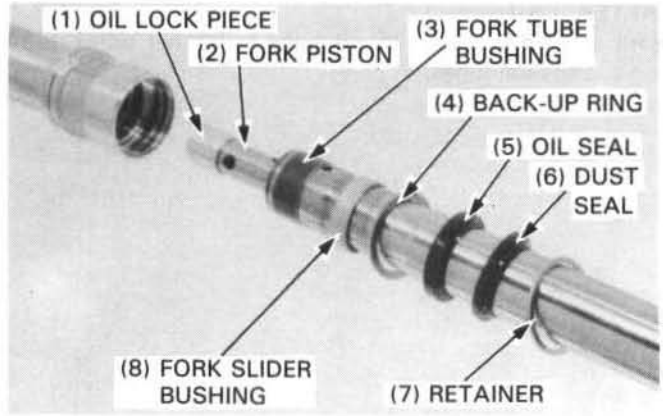
In quick successive motions, pull the fork tube out of the slider.

NOTE

- The slider bushing is pressed into the slider and the fork tube bushing, on the end of the fork tube, so you must force it out.



Remove the oil lock piece from the fork slider.
Remove the fork piston from the fork tube.
Remove the following parts from the fork tube:
– retainer.
– dust seal.
– oil seal.
– back-up ring and fork slider bushing.



Check the bushings for excessive wear or scratches.
If copper appears on more than 3/4 of the entire surface, replace the bushings.
Replace the back-up ring if there is distortion.

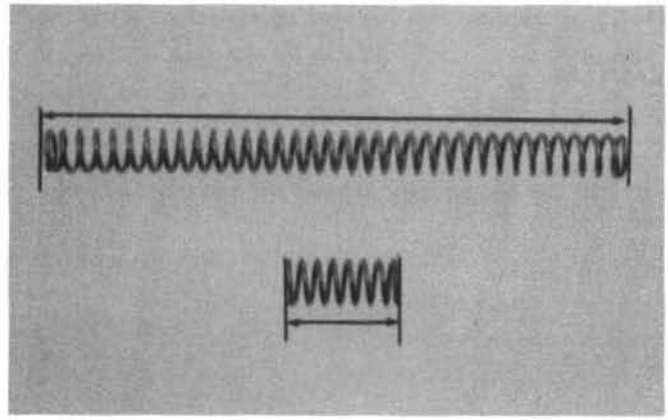
INSPECTION

Fork springs
Measure the fork spring free length.

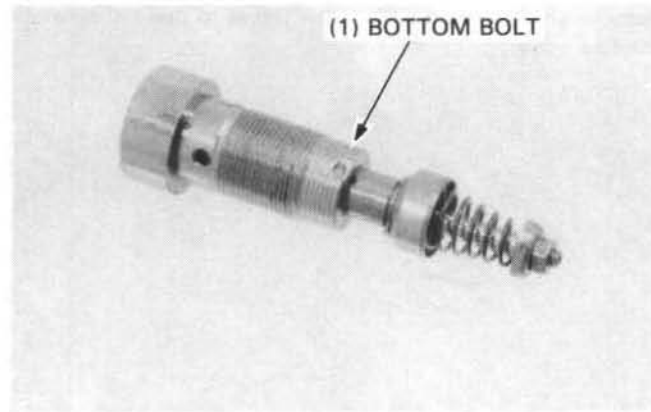
SERVICE LIMIT: ('86–'89:)
598.4 mm (23.56 in)
: (AFTER '89:)
A: 78.2 mm (3.08 in)
B: 438.6 mm (17.27 in)

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

(AFTER '89 SHOWN:)

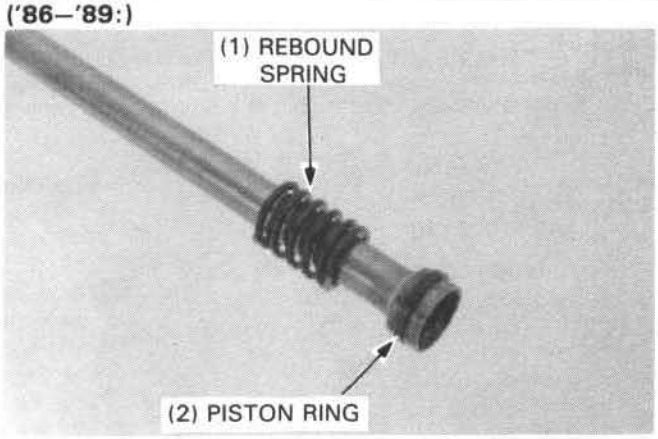


Bottom bolt ('86–'89)
Check the bottom bolt assembly for damage.
Replace it assembly.



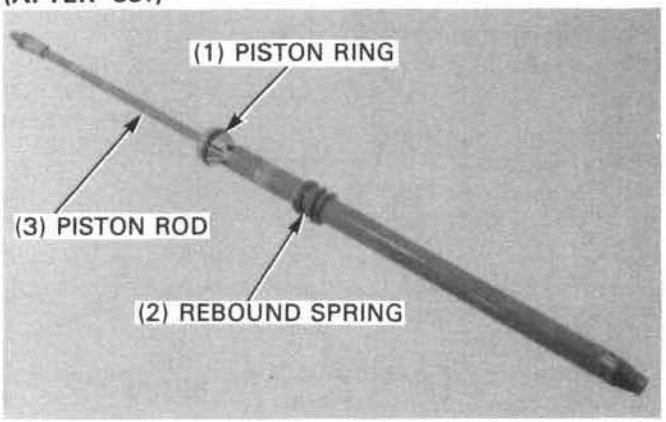
Fork piston ring/rebound spring ('86—'89:)
Check the fork piston ring for wear or damage.
Check the rebound spring for fatigue or damage.

('86—'89:)



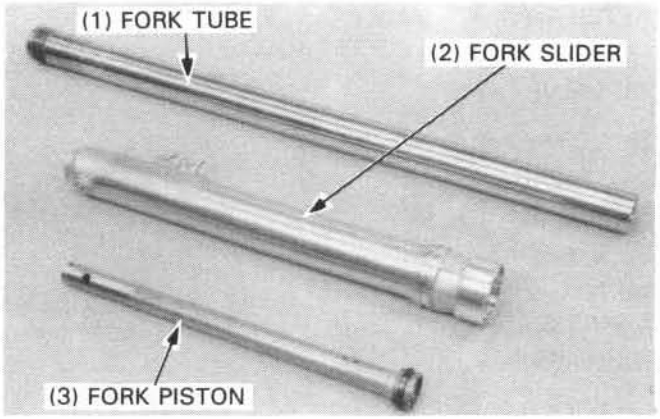
Fork piston ring/rebound spring/fork piston rod (AFTER'89:)
Check the fork piston ring for wear or damage.
Check the rebound spring for fatigue or damage.
Check the piston rod slides smoothly in the fork piston.

(AFTER '89:)



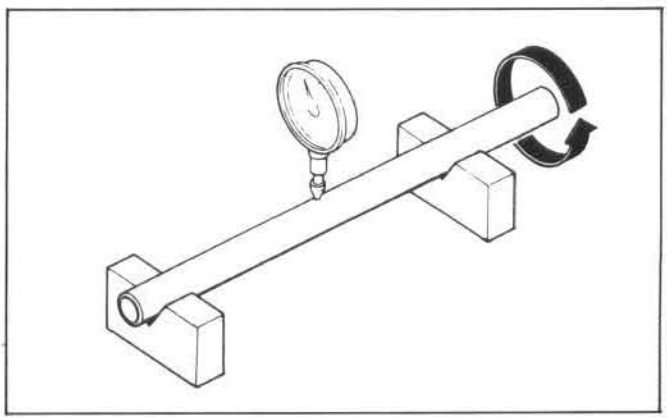
Fork tube/fork slider/fork piston
Check the fork tube, fork slider and piston for score marks, scratches, or excessive or abnormal wear.
Replace any components which are worn or damaged.

Check the fork piston for wear or damage.



Fork tube
Set the fork tube in V-blocks and read the runout.
The actual runout is 1/2 the total indicator reading.

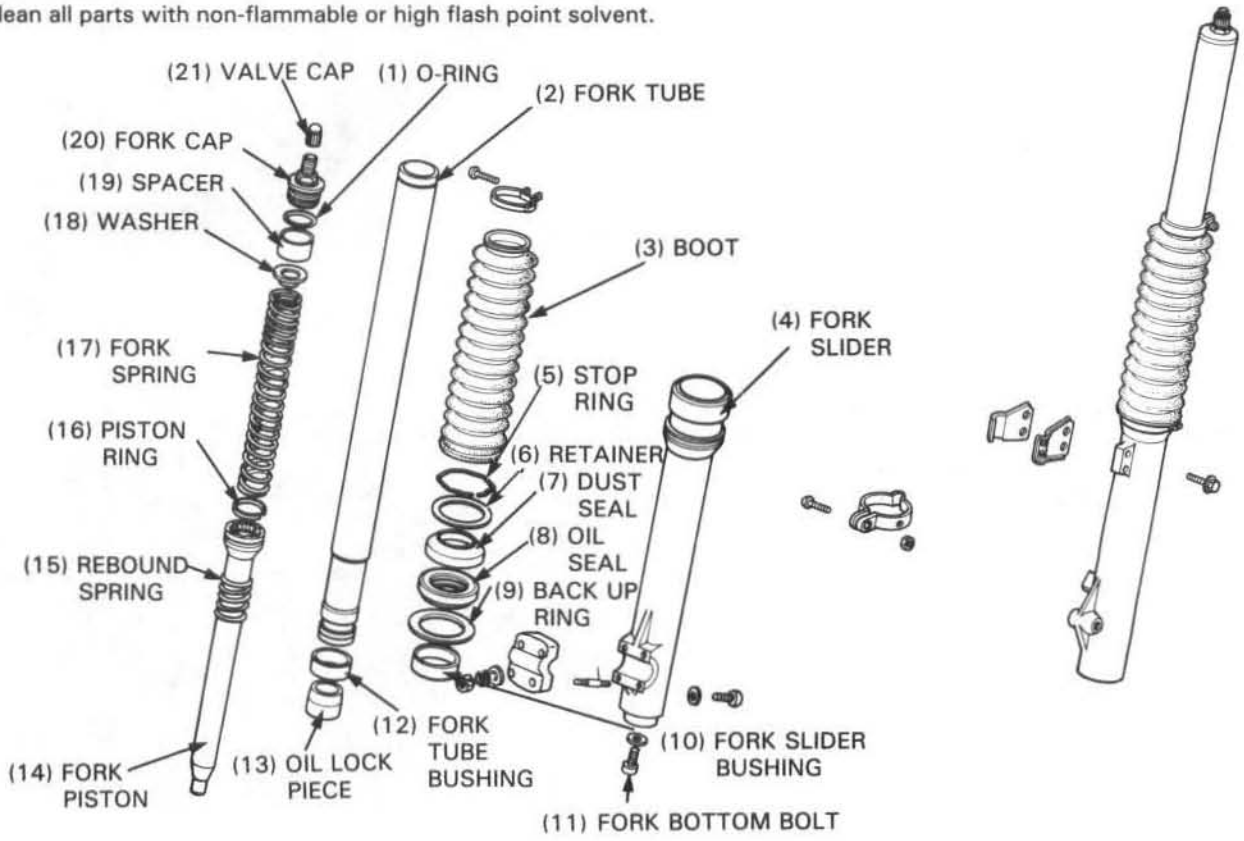
SERVICE LIMIT: 0.2 mm (0.01 in)



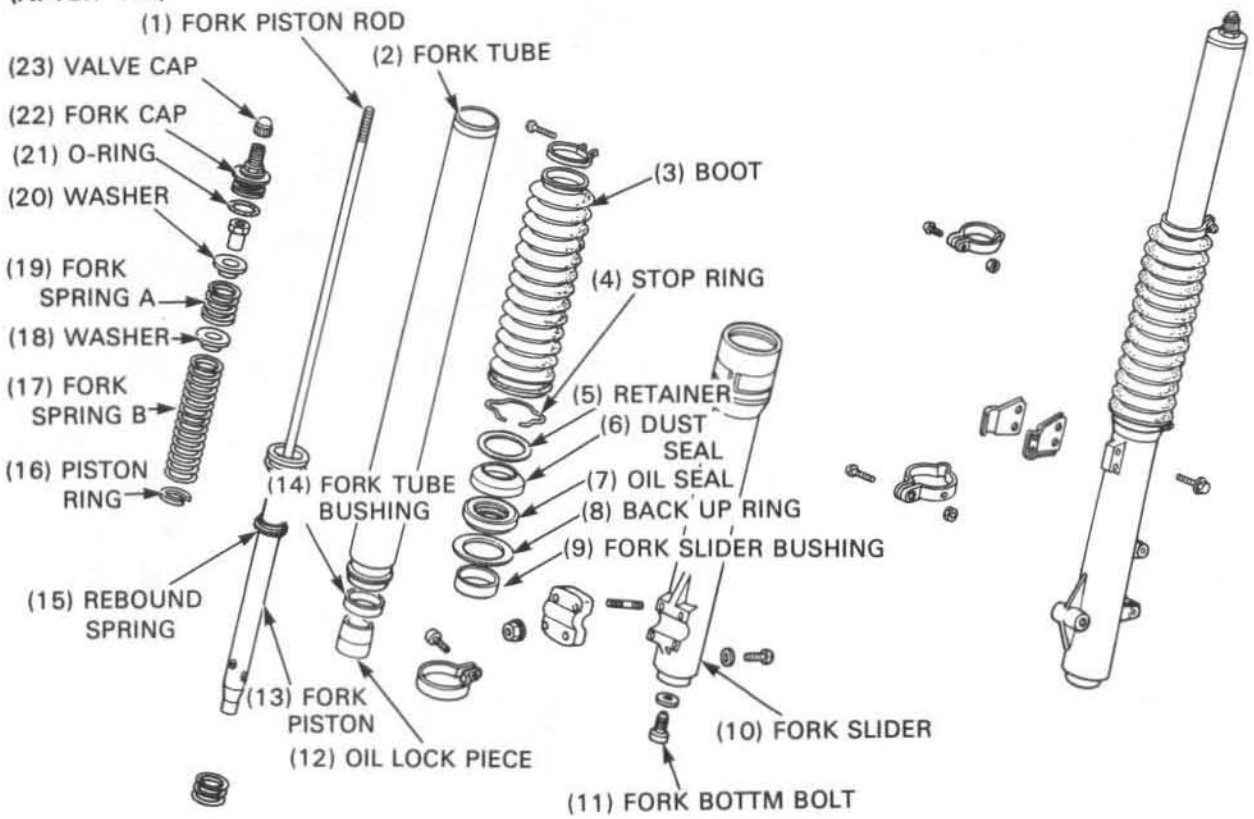
ASSEMBLY

('86–'89:)

Clean all parts with non-flammable or high flash point solvent.



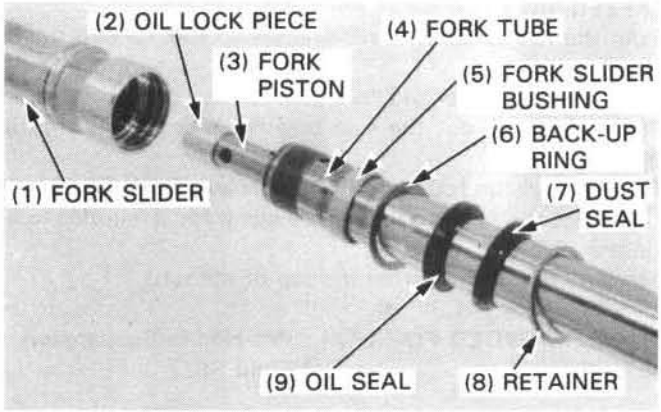
(AFTER '89:)



Install the following parts to the fork tube:
- fork piston with piston ring and rebound spring.
- fork slider bushing and back-up ring.
- new oil seal applying the fork oil to its lip.
- dust seal.
- retainer.

Install the oil lock piece to the fork piston.

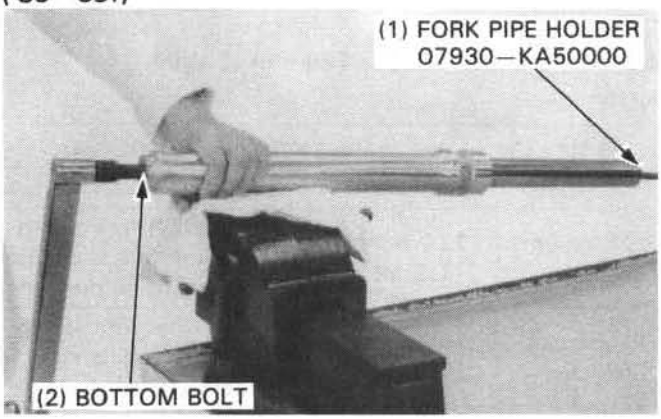
Install the fork tube to the slider.



('86–'89:)
Hold the fork slider in a vise with soft jaws or a shop towel.
Install a new sealing washer on the bottom bolt.
Apply a locking agent to the bottom bolt threads and torque the bolt while holding the fork piston with the holder.

TORQUE: 60–84 N·m (6.0–8.4 kg-m, 43–61 ft-lb)

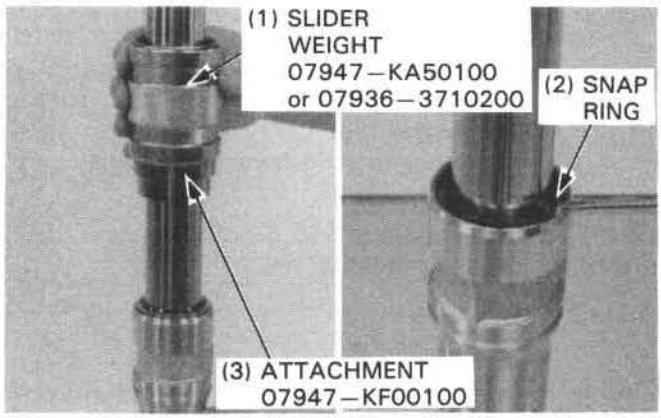
('86–'89:)



(AFTER '89:)
Temporaly install the fork spring, collar and fork cap.
Apply a locking agent to the bottom bolt threads and tighten the bolt to the specified torque.

TORQUE: 34–46 N·m (3.4–4.6 kg-m, 25–33 ft-lb)

Drive the oil seal, dust seal and retainer in with the fork seal driver.
Install the snap ring into the groove of the slider.



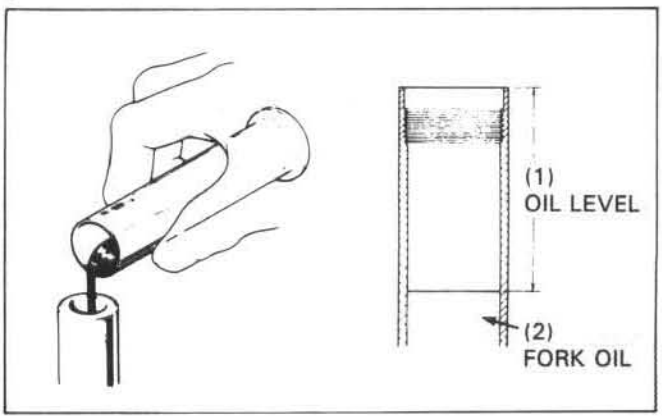
('86–'89:)
Pour in the specified amount of fork oil.
RECOMMENDED FORK OIL: Pro-Honda Suspension Fluid SS-7
STANDARD OIL CAPACITY: (Pen fork leg): 535 cc (18.1 ozs)

Compress the front fork all the way and measure the oil level from the top of the tube.

NOTE

- Be sure the oil level is the same in both fork tubes.

('86–'89:)



STANDARD OIL LEVEL: 135 mm (5.3 in)

Maximum oil level	125 mm (4.9 in)	Slightly stiffer fork spring effect when fork is charged with standard air pressure.
Minimum oil level	165 mm (6.5 in)	Slightly softer fork spring effect when fork is charged with standard air pressure.

(AFTER '89:)
Pour the half amount of recommended fork oil into the fork pipe.
Pour the recommended fork oil into the piston rod until a little fluid flows out the side breather hole at leveling minimum stroke.
Pump the piston rod and fork tube slowly 8-10 times.
Compress the fork leg fully and leave it for 5 minutes to settle the oil level.
Measure the oil level from the top of the tube.

RECOMMENDED FORK OIL: Pro-Honda Suspension Fluid SS-7

STANDARD OIL CAPACITY: (Per fork leg): 492 cc (16.6 ozs)

STANDARD OIL LEVEL: 128 mm (5.0 in)

NOTE

- Be sure the oil level is the same in both fork legs.

Maximum oil level	124 mm (4.9 in)	Slightly stiffer fork spring effect when fork is charged with standard air pressure.
Minimum oil level	150 mm (5.9 in)	Slightly softer fork spring effect when fork is charged with standard air pressure.

('86–'89:)
Wipe all oil from the fork spring and install it into the fork tube with the narrow coils toward the fork cap.
Install the seat washer and spacer.

Install the O-ring on fork cap.
Install the fork cap but do not tighten it at this time.

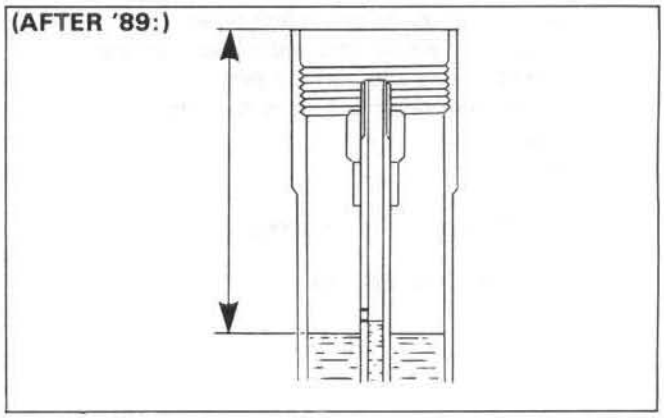
CAUTION

- *Be careful not to cross-thread the fork cap.*

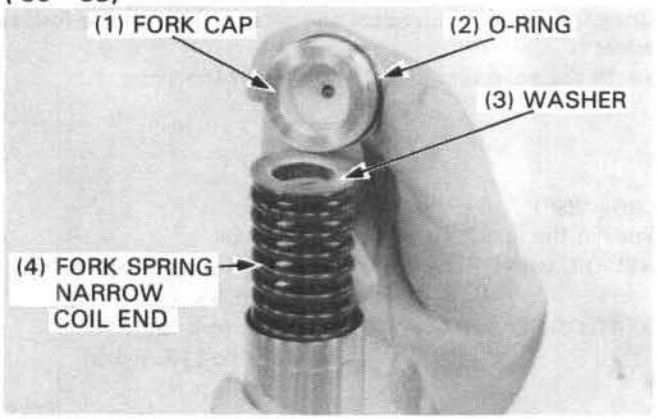
(AFTER '89:)
Screw the lock nut onto the piston rod by hand, to the end of the threads.
Install the fork spring B and seat washer.
Install the fork spring A with tapered side facing down.
Install the seat washer.
Apply recommended fork oil to a new O-ring and install it onto the fork cap.
Screw the fork cap on the piston rod.
Tighten the lock nut.

TORQUE: 15 N·m (1.5 kg-m, 11 ft-lb)

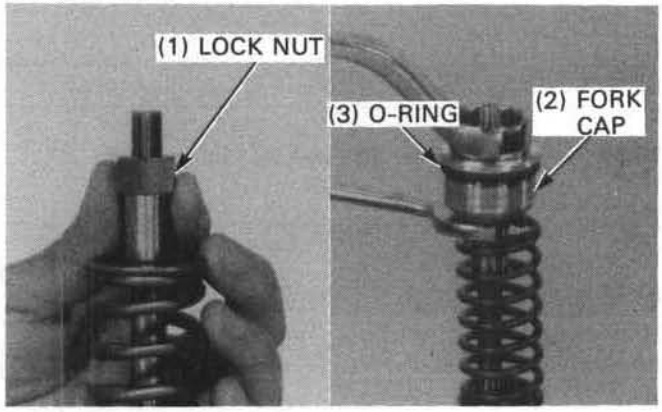
(AFTER '89:)



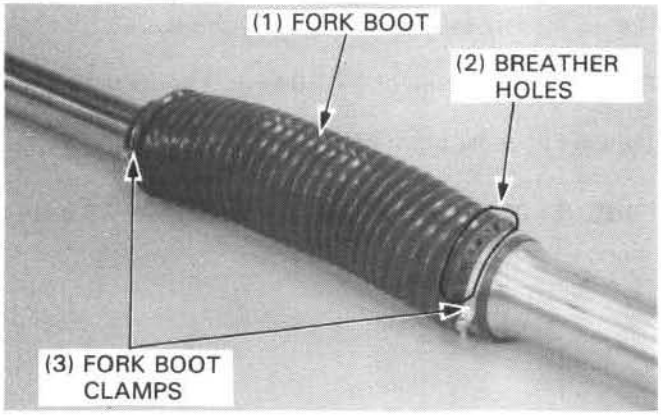
('86–'89)



(AFTER '89)



Install the fork boot with its many breather holes towards the outside.



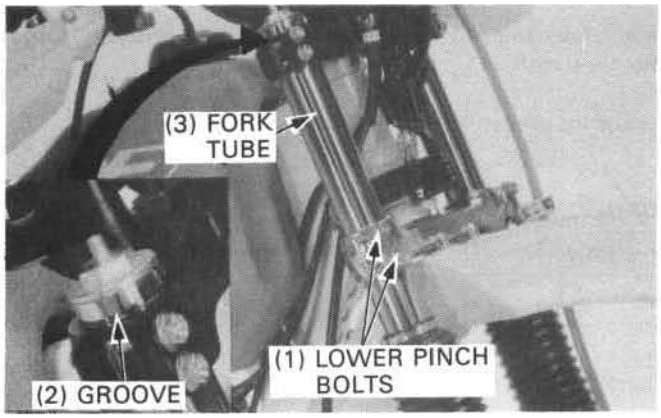
INSTALLATION

Slip the fork tubes through the fork bridge and steering stem, while rotating them by hand.

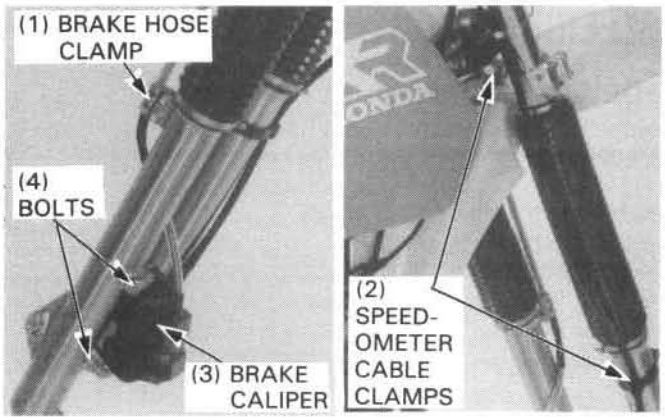
Align the top of the fork tube with the top surface of the fork bridge.

Tighten the lower pinch bolts to the specified torque.

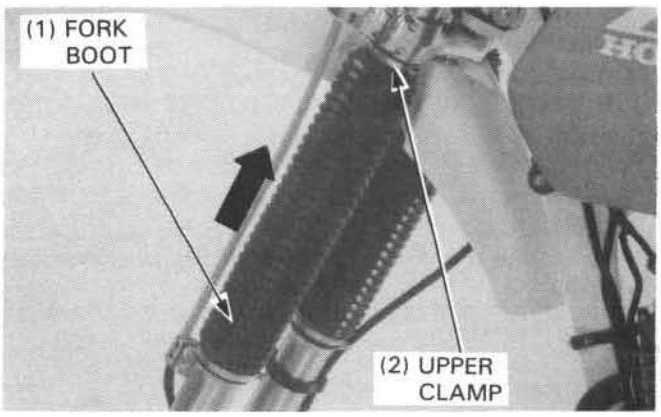
TORQUE: 30–35 N·m (3.0–3.5 kg-m, 22–25 ft-lb)



Install the speedometer cable clamps and brake hose clamps. Install the brake caliper (page 14-11)



Push the fork boots up until they just touch the steering stem and tighten the boot clamps, with the clamp screws toward the rear.

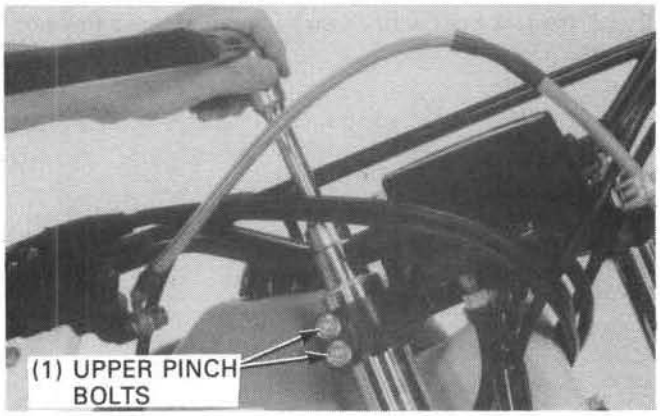


Tighten the fork caps to the specified torque.

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

Tighten the upper pinch bolts to the specified torque.

TORQUE: 25–30 N·m (2.5–3.5 kg-m, 18–22 ft-lb)



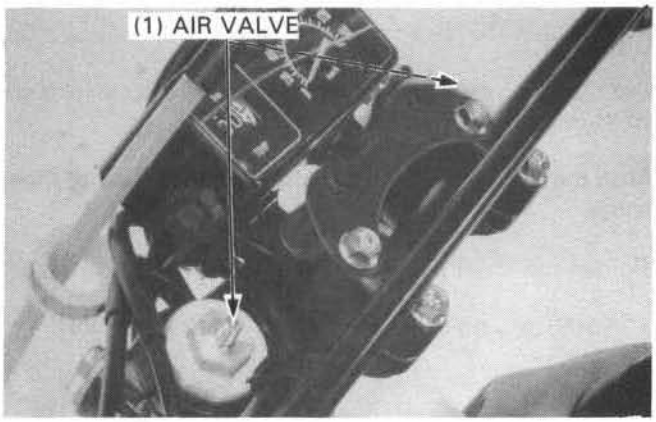
Make sure there is no weight on the front wheel and charge the fork with air.

Standard pressure: 0 kPa (0 kg/cm², 0 psi)

CAUTION

- *Use a low-volume, low-pressure pump to charge the fork.*

Install the air valve caps.
Install the front wheel (page 12-10).
Install the headlight (page 16-7).

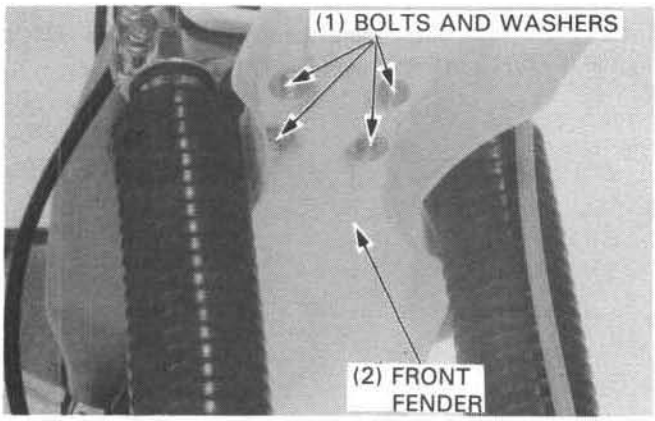


STEERING STEM

FORK BRIDGE REMOVAL

Remove the following components:

- headlight (page 16-7).
- speedometer (page 12-3).
- handlebar (page 12-3).
- front wheel (page 12-7).
- front fender.

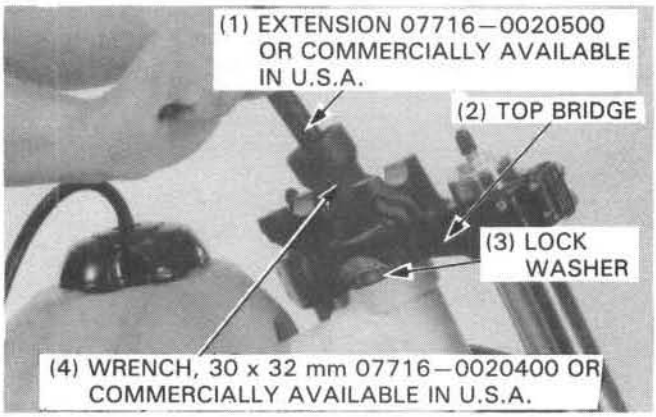


Remove the steering stem nut.
Remove the fork legs (page 12-11).
Remove the fork bridge.

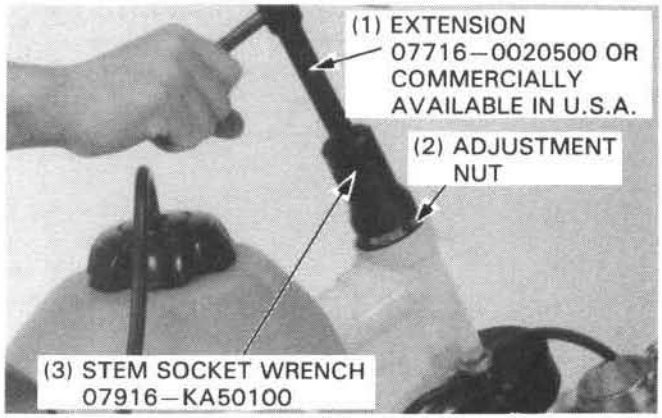
Remove the lock washer and discard it.

NOTE

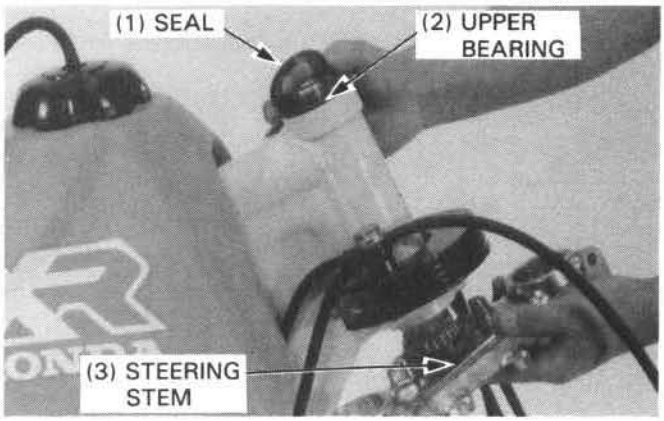
- Replace the lock washer with a new one whenever it is removed.



Remove the steering bearing adjustment nut.



Remove the seal, upper bearing and steering stem from the steering head.

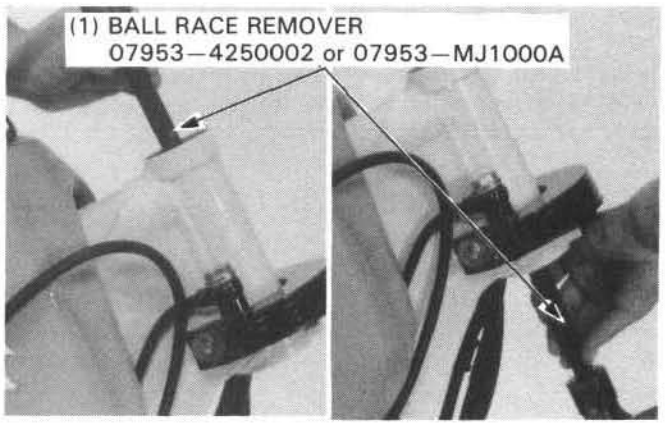


BEARING REPLACEMENT

NOTE

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

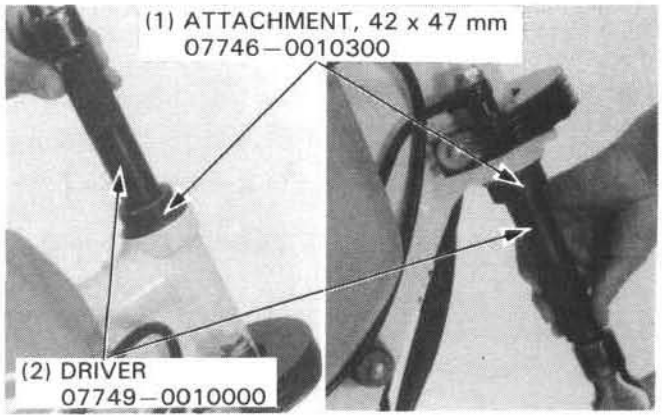
Remove the upper and lower bearing races from the steering head.



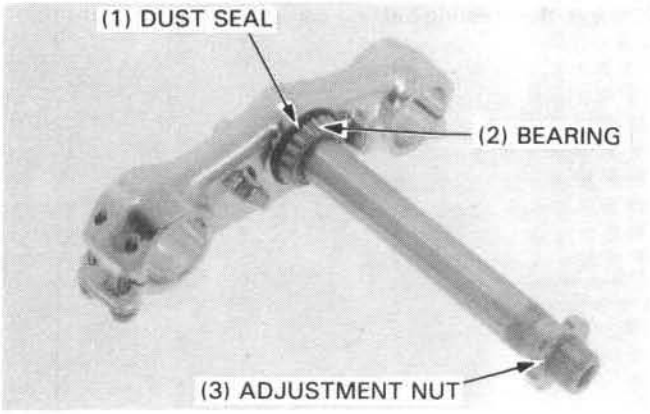
Install new bearing races.

NOTE

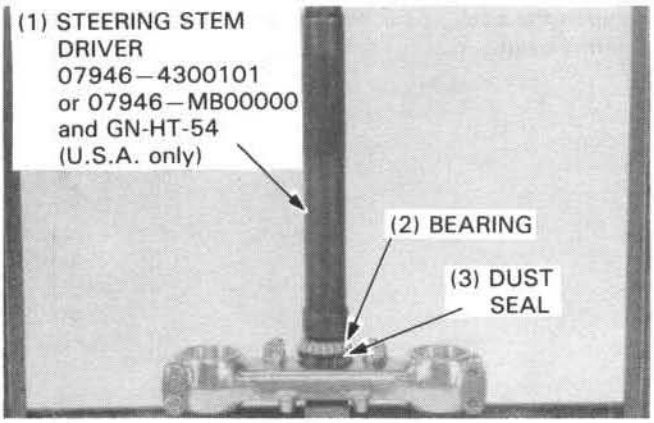
- If the motorcycle has been involved in an accident, examine the area around the steering head for cracks.



Install the bearing adjustment nut on the top end of the steering stem to prevent damage to the threads.
Remove the lower bearing from the steering stem.
Replace the dust seal with a new one whenever it is removed.

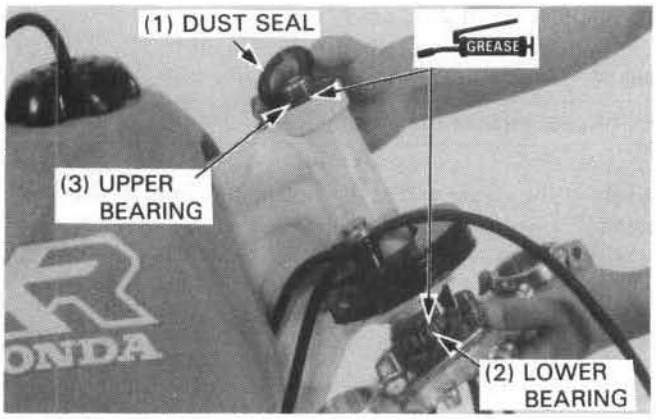


Install a new dust seal.
Install the lower bearing using a hydraulic press and steering stem driver.



INSTALLATION

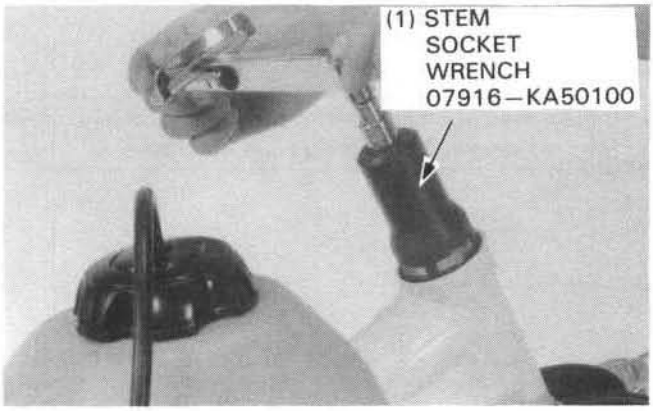
Pack the bearing cavities with bearing grease.
Install the steering stem into the steering head and install the upper bearing and seal.



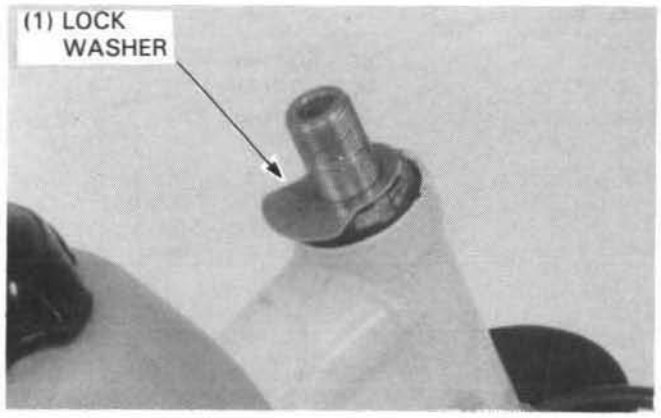
Tighten the bearing adjustment nut to 20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb) once.

Turn the steering stem lock-to-lock 5 times to seat the bearing and tighten the adjusting nut again.
Loosen the bearing adjusting nut.
Torque the bearing adjusting nut to specified torque.

TORQUE: 1.0–2.0 N·m (0.1–0.2 kg-m, 0.7–1.5 ft-lb)



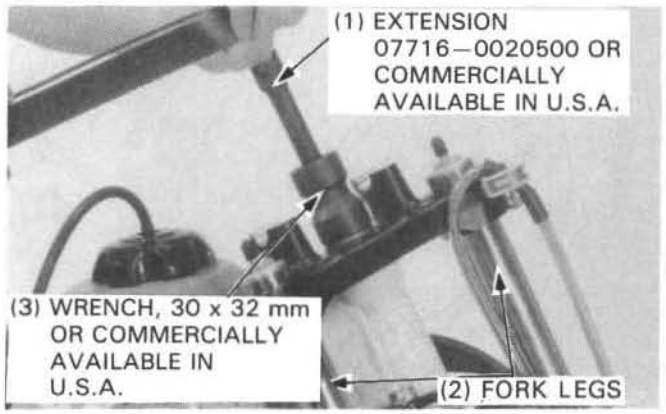
Install a new lock washer with the locking tab rearward.



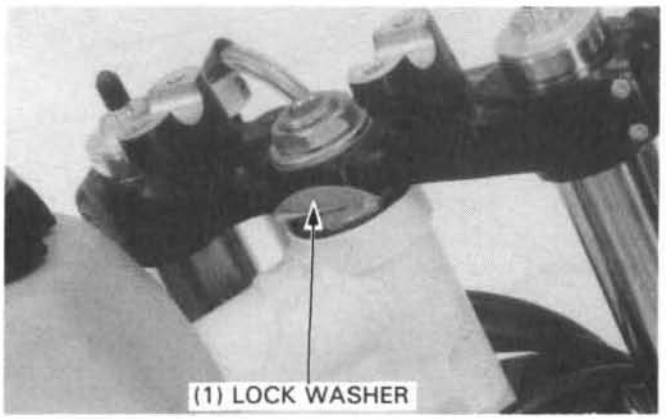
Temporarily install the fork legs.
Install the fork bridge and tighten the stem nut.

TORQUE: 95–140 N·m (9.5–14.0 kg-m, 69–101 ft-lb)

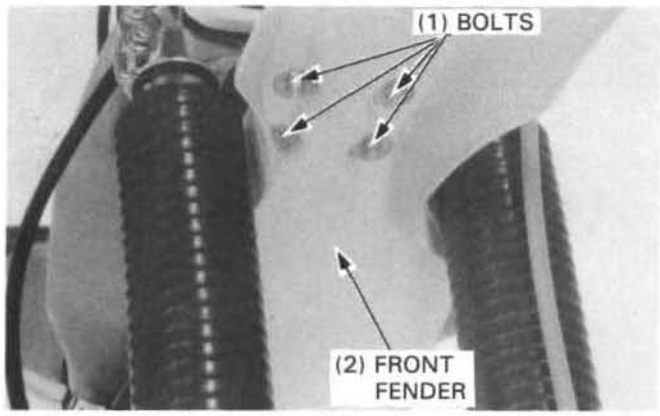
Recheck the steering stem adjustment.
Install the fork correctly (page 12-19).



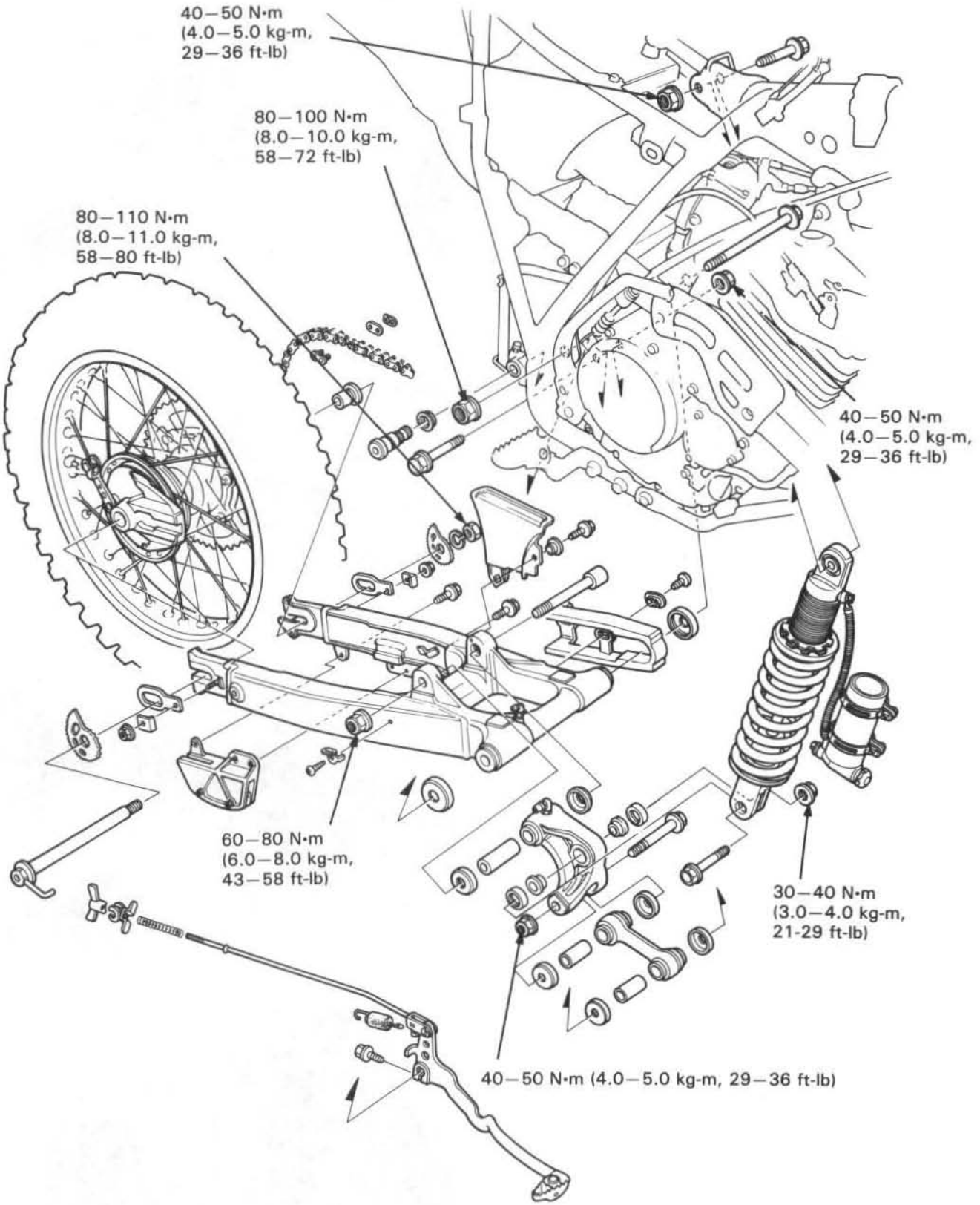
Bend the lock washer along the steering stem.



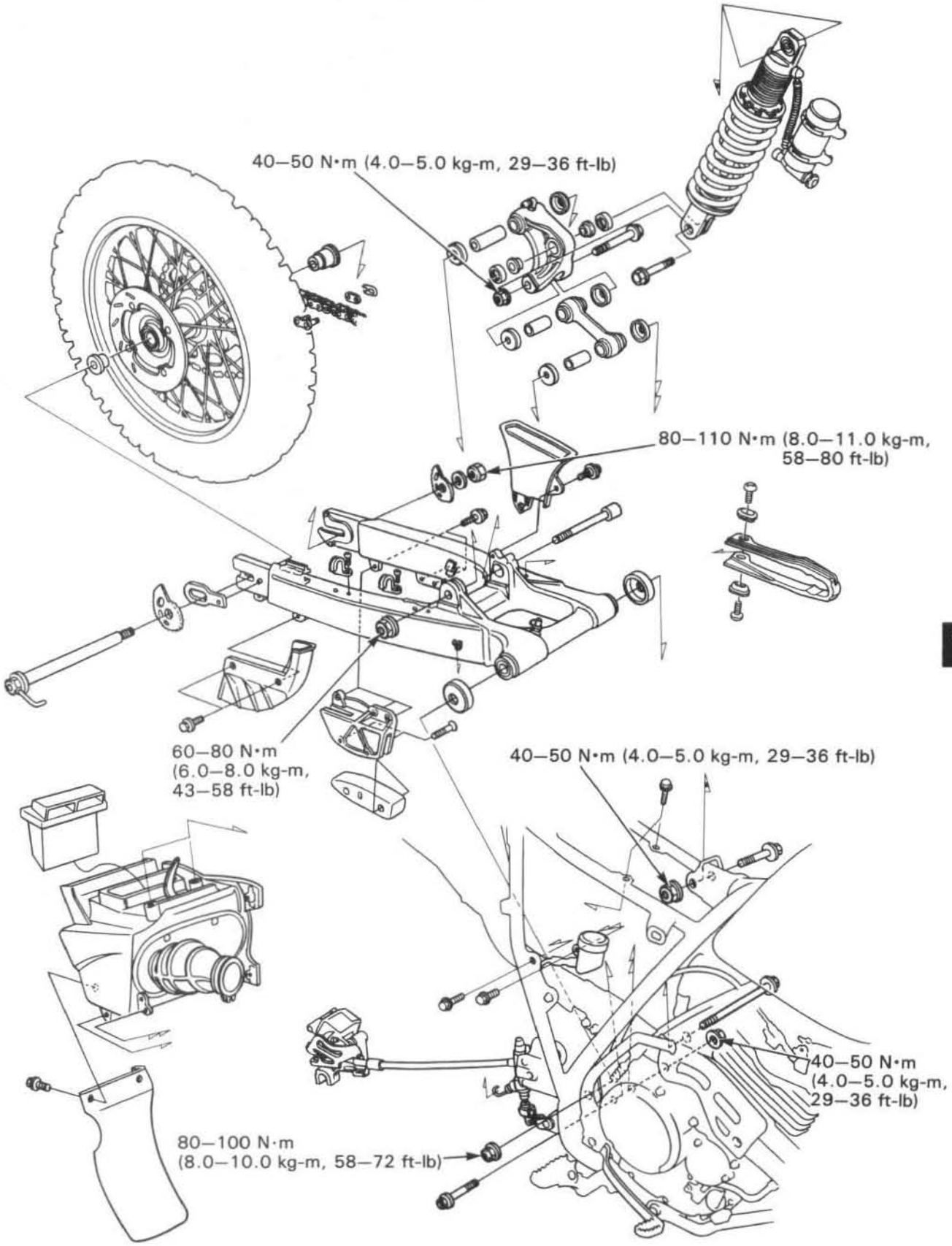
Install the following parts:
- front fender
- front wheel (page 12-10).
- handlebar (page 12-4).
- speedometer (page 12-3).
- headlight (page 16-7).



('86–'89:)


40–50 N·m
(4.0–5.0 kg-m,
29–36 ft-lb)
80–100 N·m
(8.0–10.0 kg-m,
58–72 ft-lb)
80–110 N·m
(8.0–11.0 kg-m,
58–80 ft-lb)
40–50 N·m
(4.0–5.0 kg-m,
29–36 ft-lb)
60–80 N·m
(6.0–8.0 kg-m,
43–58 ft-lb)
30–40 N·m
(3.0–4.0 kg-m,
21-29 ft-lb)
40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)

(AFTER '89:)


40—50 N·m (4.0—5.0 kg-m, 29—36 ft-lb)
80—110 N·m (8.0—11.0 kg-m, 58—80 ft-lb)
60—80 N·m (6.0—8.0 kg-m, 43—58 ft-lb)
40—50 N·m (4.0—5.0 kg-m, 29—36 ft-lb)
40—50 N·m (4.0—5.0 kg-m, 29—36 ft-lb)
80—100 N·m (8.0—10.0 kg-m, 58—72 ft-lb)

SERVICE INFORMATION

GENERAL

- A work stand or box is required to support the motorcycle.
- Use genuine Honda bolts for the rear suspension linkage and 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.***
- ***Brake dust may contain asbestos. Inhaled asbestos fibers have been found to cause respiratory disease and cancer.***
  Never use an air hose or dry brush to clean brake or clutch assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by airborne asbestos fibers.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Rear wheel runout	Radial	—	2.0 mm (0.10 in)
	Axial	—	2.0 mm (0.10 in)
Rear axle runout		—	0.2 mm (0.01 in)
Rear brake drum I.D. ('86–'89:)		110.0 mm (4.33 in)	111.0 mm (4.37 in)
Rear brake shoe lining thickness ('86–'89:)		4.0 mm (0.16 in)	2.0 mm (0.10 in)
Rear shock absorber spring free length	('86–'89:)	215.0 mm (8.46 in)	212.0 mm (8.35 in)
	(AFTER '89:)	220.0 mm (8.66 in)	215.6 mm (8.49 in)
Rear suspension damper compression		—	15.4 kg (33.95 lb)

TORQUE VALUES

Rim lock		10–15 N·m (1.0–1.5 kg-m, 7–11 ft-lb)
Spokes		2.5–5.0 N·m (0.25–0.50 kg-m, 1.8–3.6 ft-lb)
Rear axle nut		80–110 N·m (8.0–11.0 kg-m, 58–80 ft-lb)
Final driven sprocket		27–33 N·m (2.7–3.3 kg-m, 20–24 ft-lb) Apply oil
Rear shock absorber:	Upper mount	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
	Lower mount	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)
	Hose joint bolt	25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)
	Spring adjuster lock nut	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Swingarm:	Pivot bolt	80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
	Chain adjuster nut	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb) Apply locking agent
Suspension linkage:	Swingarm-to-shock arm	60–80 N·m (6.0–8.0 kg-m, 43–58 ft-lb)
	Shock link-to-shock arm	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
	Shock link-to-frame	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Brake arm bolt ('86–'89:)		8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Damper rod end nut		24–29 N·m (2.4–2.9 kg-m, 17–21 ft-lb)
Reservoir damping valve		25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)

TOOLS

Special

Needle bearing remover	07931–MA70000
Spherical bearing driver	07946–KA30200 not available in U.S.A.
Driver shaft	07946–MJ00100
Slider guide, 14 mm	07974–KA40000
Slider guide attachment	07974–KA30101 ┐
Sleeve collar	07974–KA30201 ┘ –or 07946–MB00000 and GN-HT-54(U.S.A. only)
Piston base	07958–3000000

Common

Retainer wrench A	07710–0010100
Retainer wrench body	07710–0010401 or 07910–3000000
Attachment, 32 x 35 mm	07746–0010100
Attachment, 24 x 26 mm	07746–0010700
Attachment, 37 x 40 mm	07746–0010200
Attachment, 42 x 47 mm	07746–0010300
Pilot, 17 mm	07746–0040400
Pilot, 20 mm	07746–0040500
Driver	07749–0010000
Bearing remover shaft	07746–0050100 ┐
Bearing remover head, 17 mm	07746–0050500 ┼ –or commercially available in U.S.A.
Bearing remover head, 20 mm	07746–0050600 ┘

TROUBLESHOOTING

Wobble or vibration in motorcycle
- Bent rim
- Loose wheel bearings
- Loose or bent spokes
- Damaged tire
- Axle not tightened properly
- Swingarm pivot bearing worn
- Chain adjusters not adjusted equally
- Bent frame or swingarm

Soft suspension
- Weak spring
- Improper rear suspension damping or spring preload adjustment — see Owner's manual

Hard suspension
- Improper rear suspension damping or spring preload adjustment — see Owner's manual
- Bent shock absorber rod
- Swingarm pivot bearings damaged
- Bent frame or swingarm

Suspension noise
- Faulty rear damper
- Loose fasteners
- Worn suspension linkage pivot bearings

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

REAR WHEEL

REAR WHEEL REMOVAL

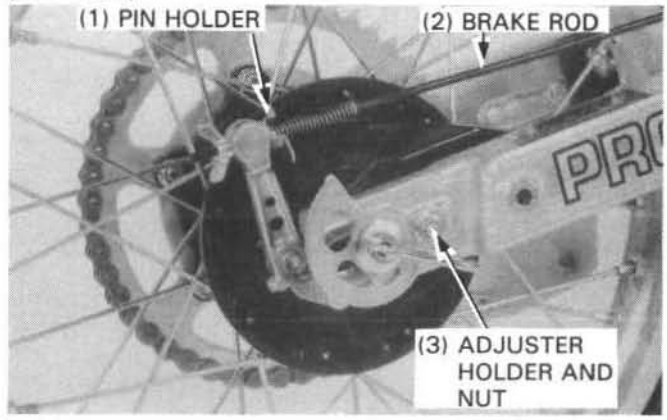
('86–'89:)

Raise the rear wheel off the ground by placing a work stand or box under the engine.

Pull the brake arm pin holder forward and disconnect the brake rod from the brake arm.

Remove the adjuster holder nut and holder.

('86–'89:)



Loosen the rear axle nut and adjuster holder nuts.

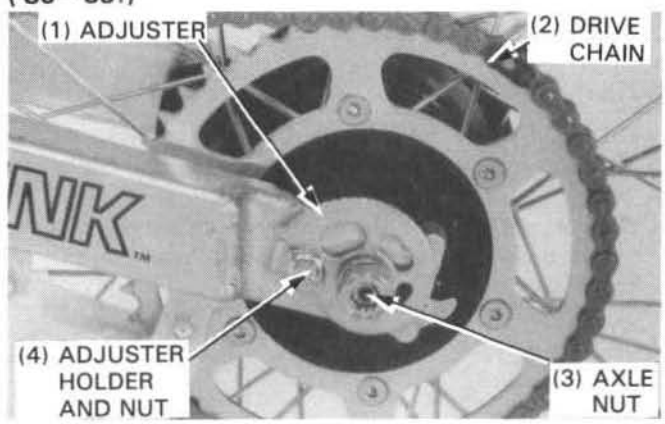
Turn both adjusters so the rear wheel can be moved all the way forward for maximum drive chain slack.

Move the rear wheel forward.

Derail the drive chain from the driven sprocket.

Remove the rear axle nut, left chain adjuster holder and adjuster.

('86–'89:)

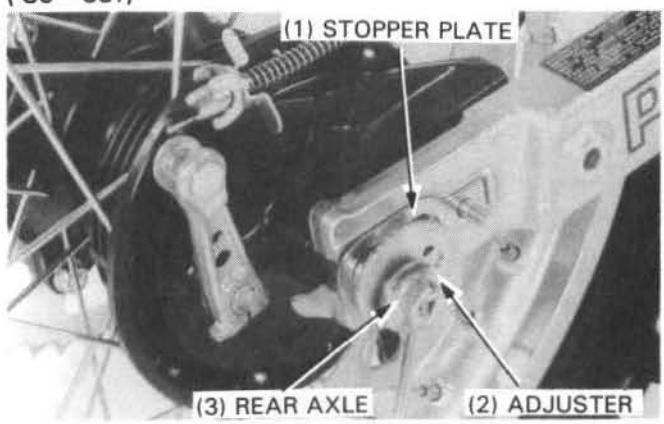


Pull the axle and adjuster even lift the stopper plate clear of the pin on the swingarm's right side.

Remove the rear wheel with the rear axle.

Remove the rear axle and rear brake panel.

('86–'89:)



(AFTER '89:)

Raise the rear wheel off the ground by placing a work stand or box under the engine.

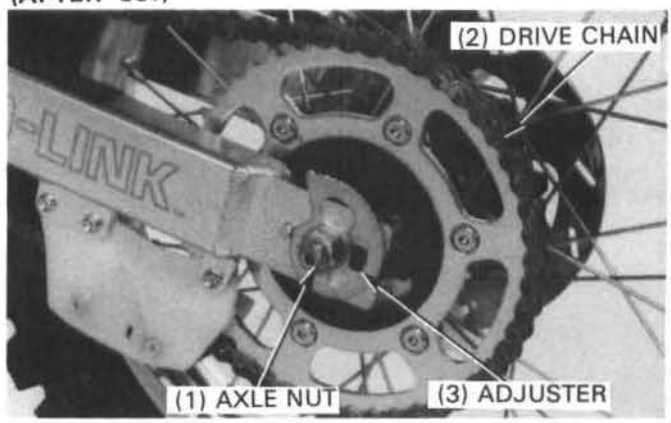
Loosen the rear axle nut.

Turn the adjusters so the rear wheel cam be moved all the way foward for maximum drive chain slack.

Move the rear wheel forward.

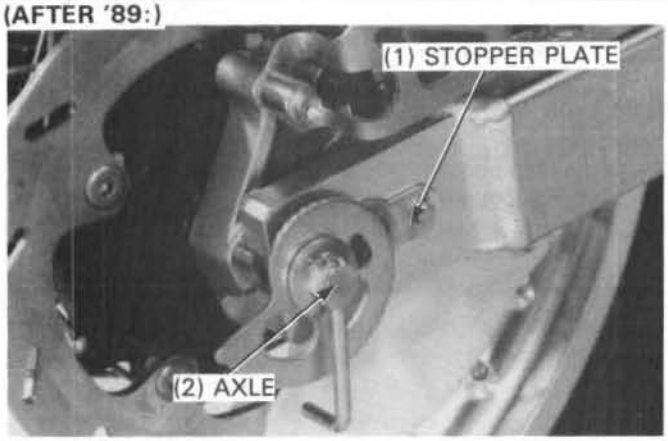
Derail the drive chain from the driven sproket.

(AFTER '89:)



Pull the axle and adjuster even lift the stopper plate clear of the pin on the swingarm's right side.

(AFTER '89:)

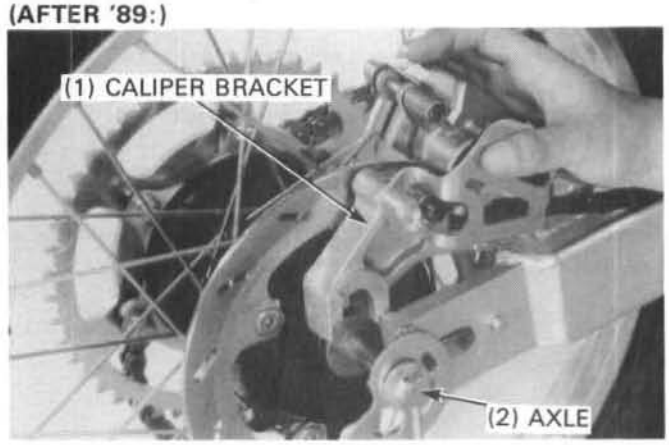


Remove the brake caliper and caliper bracket as an assembly from the rear axle.

NOTE

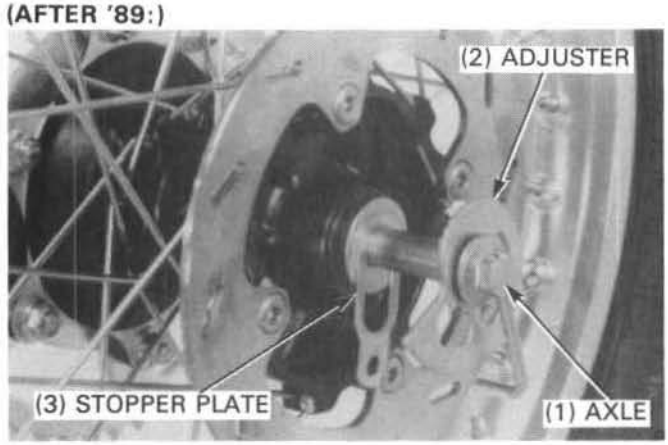
- Do not depress the brake pedal after the brake caliper is removed, or it will be difficult to refit the disc between the brake pads.
- Support the removed brake caliper with a piece of wire so that it does not hang from the brake hose. Do not twist the brake hose.

(AFTER '89:)



Remove the rear wheel with the rear axle.

(AFTER '89:)

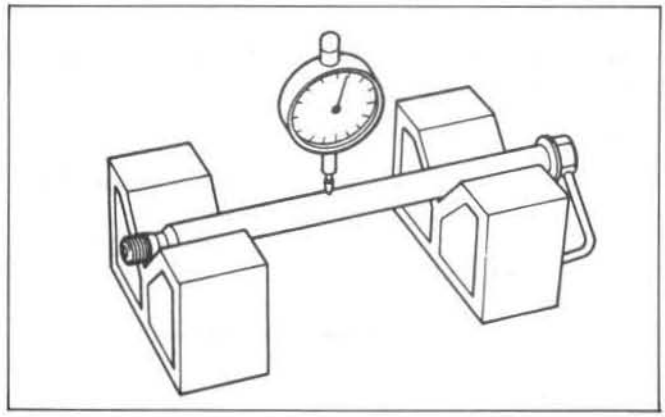


INSPECTION

Axle

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

SERVICE LIMIT: 0.2 mm (0.01 in)



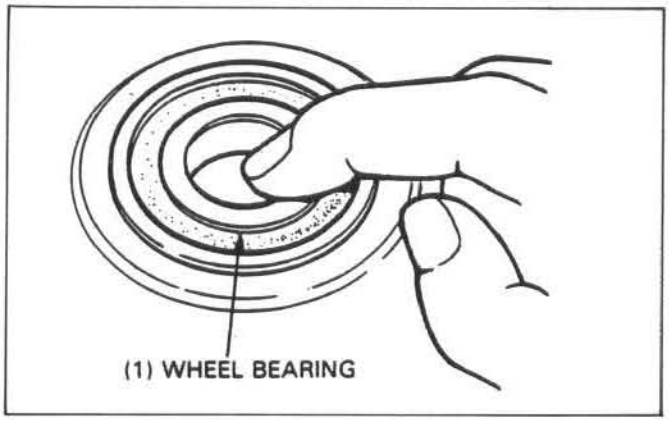
Wheel bearings
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly.

Remove and discard the bearings if the races do not turn smoothly.

NOTE

- Replace wheel bearings in pairs.

For bearing replacement, see page 13-8.



Wheels
Check the spokes and tighten any that are loose.

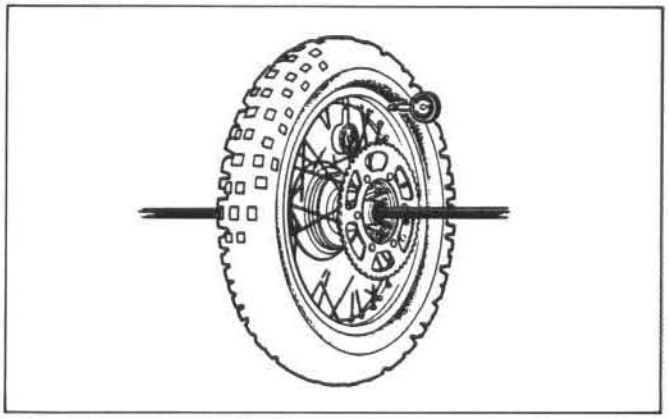
TORQUE: 2.5—5.0 N·m (0.25—0.50 kg-m, 1.8—3.6 ft-lb)

Check the rim lock for loosening and tighten it to the specified torque.

TORQUE: 10—15 N·m (1.0—1.5 kg-m, 7—11 ft-lb)

Check the rim runout by placing the wheel on a truing stand. Turn the wheel by hand and measure the runout using a dial indicator.

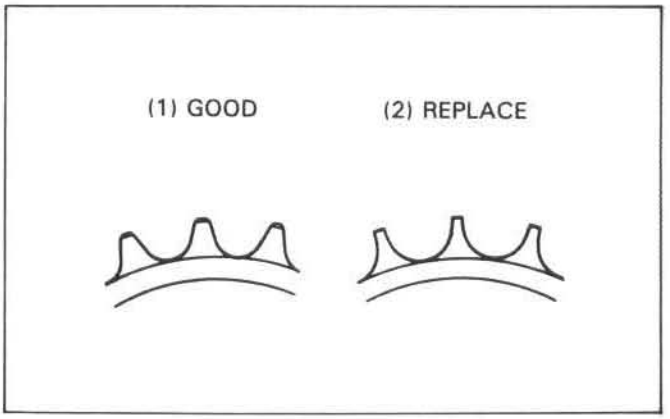
SERVICE LIMITS:
Radial: 2.0 mm (0.01 in)
Axial: 2.0 mm (0.01 in)



Driven sprocket
Check the condition of the driven sprocket teeth.
Replace the sprocket if worn or damaged.

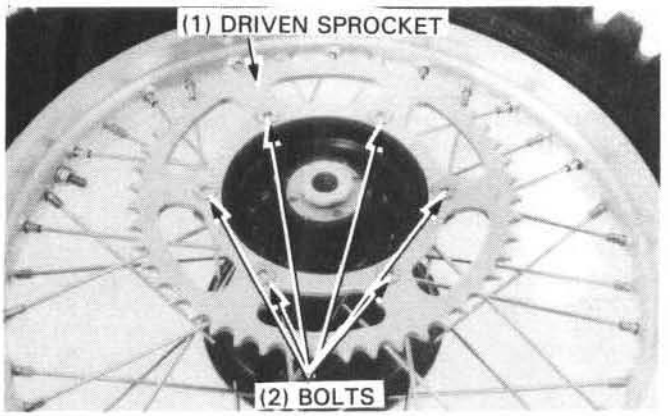
NOTE

- The drive chain and drive sprocket must also be inspected if the driven sprocket is worn or damaged.



DISASSEMBLY

Remove the driven sprocket bolts and the sprocket.

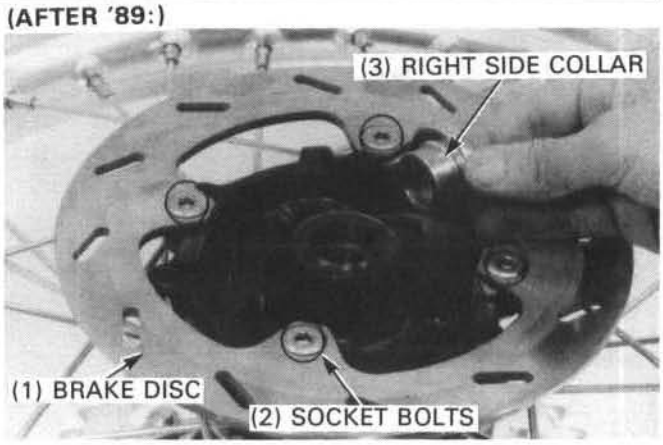


(AFTER '89:)

Remove the rear brake disc mounting bolts and disc.

Remove the right side coller.

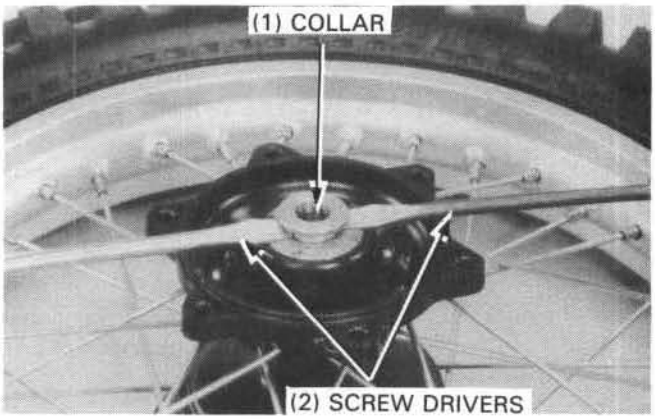
(AFTER '89:)



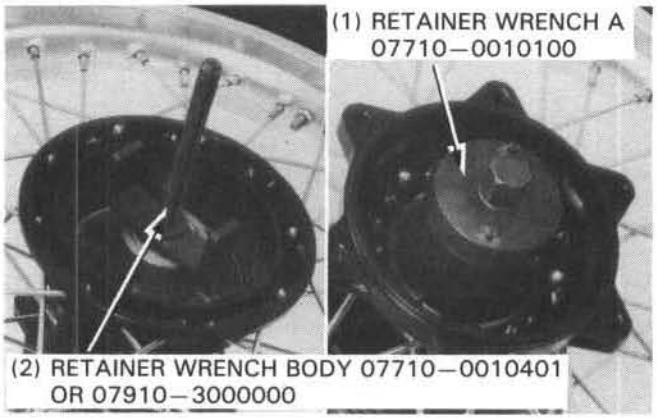
Remove the left axle collar with two screwdrivers as shown.

NOTE

- If it is hard to remove the axle collar, remove it using a 17 mm bearing remover.



Remove the bearing retainer using a retainer wrench and body.



Remove the wheel bearings and distance collar, if necessary.

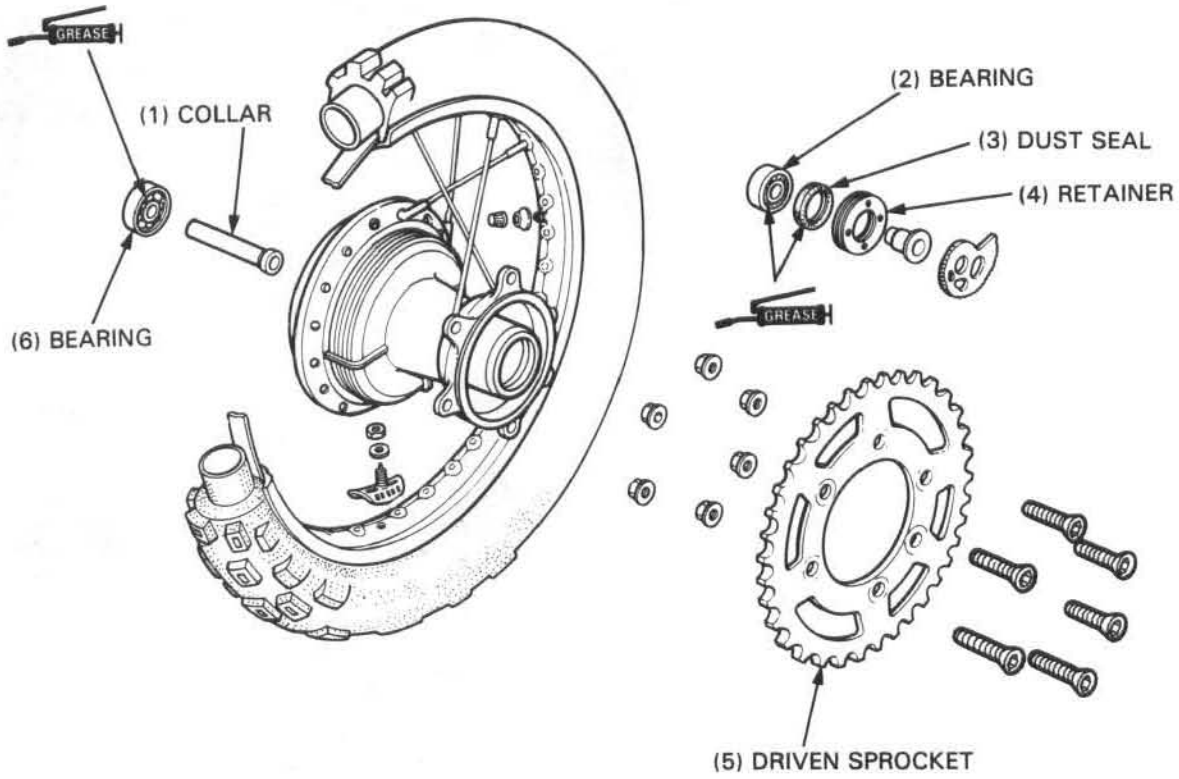
NOTE

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

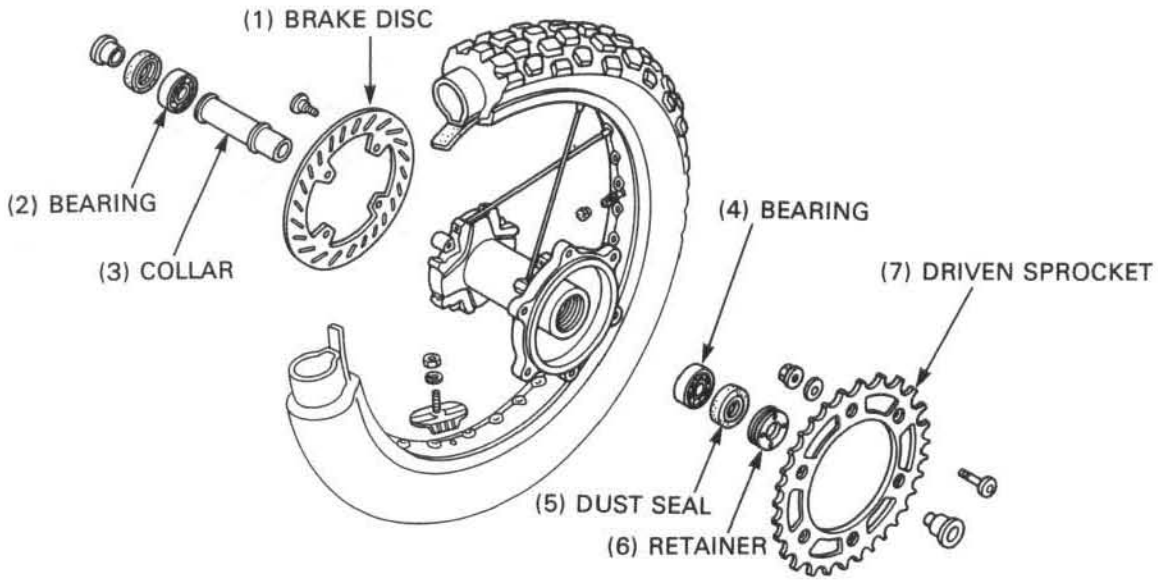
Bearing remover head, 17 mm (right side) 07746—0050500
Bearing remover head, 20 mm (left side) 07746—0050600
} or commercially available in U.S.A.

ASSEMBLY

('86–'89:)

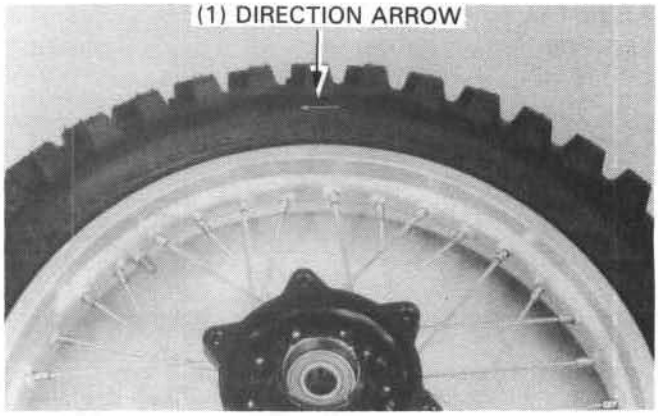


(AFTER '89:)

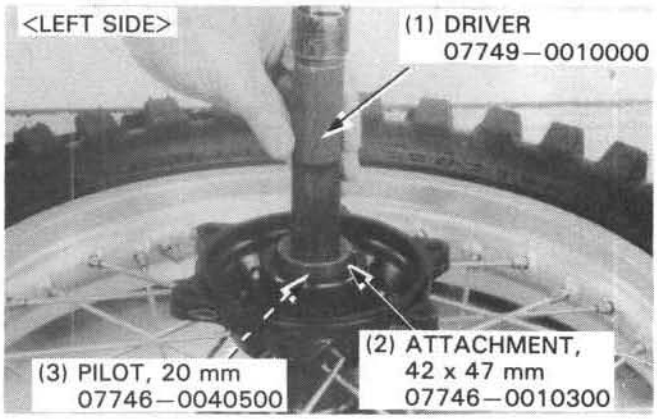


NOTE

- Mount the tire so that the arrows (if any) on the sidewalls point in the direction of rotation.



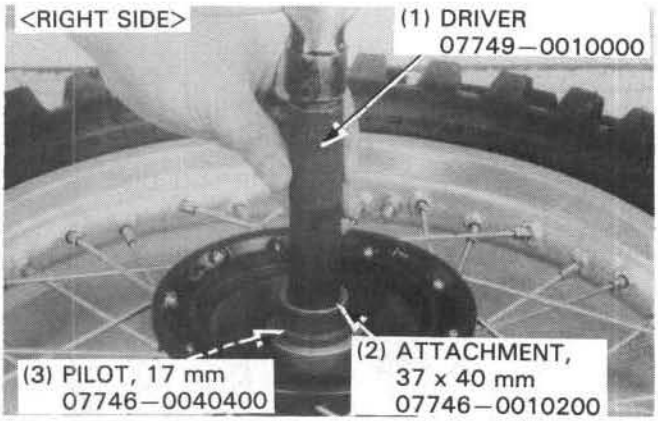
Drive the left bearing in first.



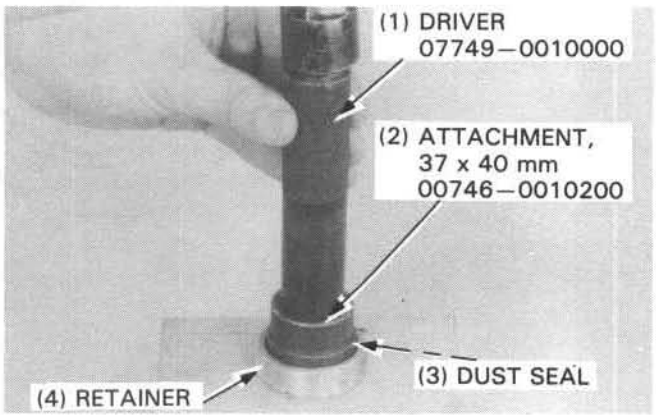
Insert the distance collar into place with the "LH" mark to the left.
Drive the right bearing in.

CAUTION

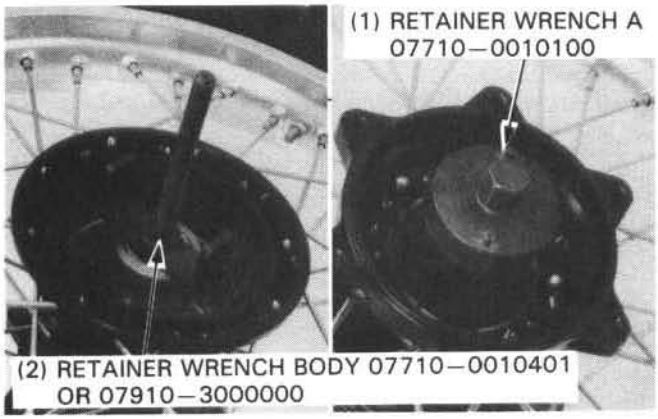
- *Drive the bearings in squarely, with the sealed sides facing out, making sure the left bearing is fully seated.*



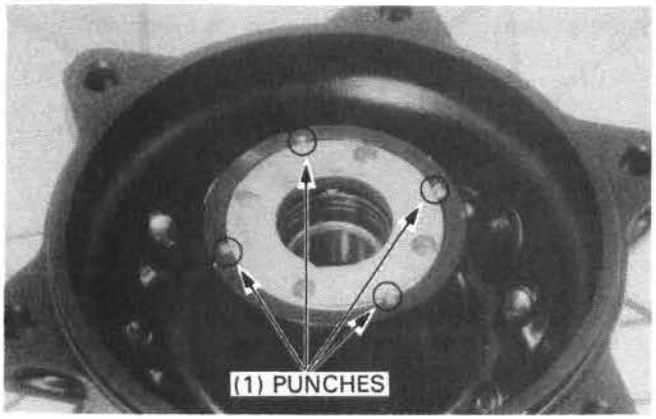
Use the driver and attachment to drive a new dust seal into the bearing retainer.
Apply grease to the dust seal lip.



Install the bearing retainer into the hub with the rear retainer wrench and attachment.



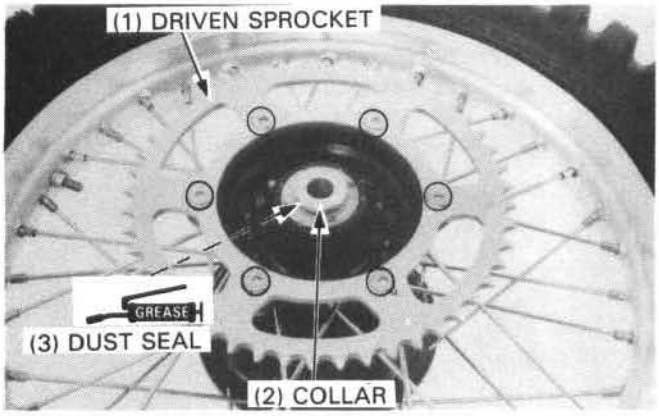
Peen the bearing retainer in four places with a center punch.



Apply engine oil to the threads of the sprocket bolts.
Install the driven sprocket onto the hub and tighten the bolts to the specified torque.

TORQUE: 27—33 N·m (2.7—3.3 kg-m, 20—24 ft-lb)

Grease the dust seal and install the collar.

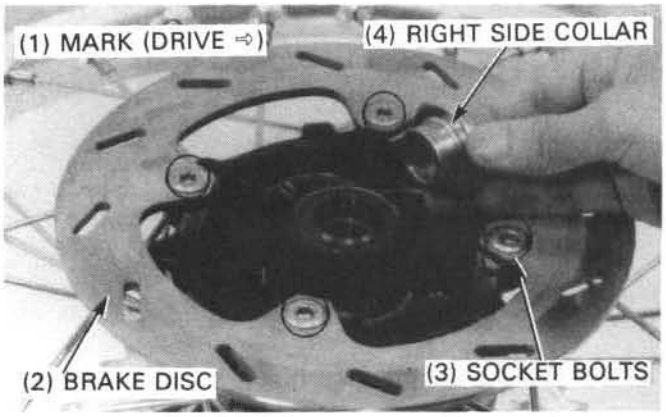


(AFTER '89:)

Install the brake disc with the mark (DRIVE ⇨) facing up.
Install and tighten the socket bolts to the specified torque.

TORQUE: 40—45 N·m (4.0—4.5 kg-m, 29—33 ft-lb)

Install the right side coller.



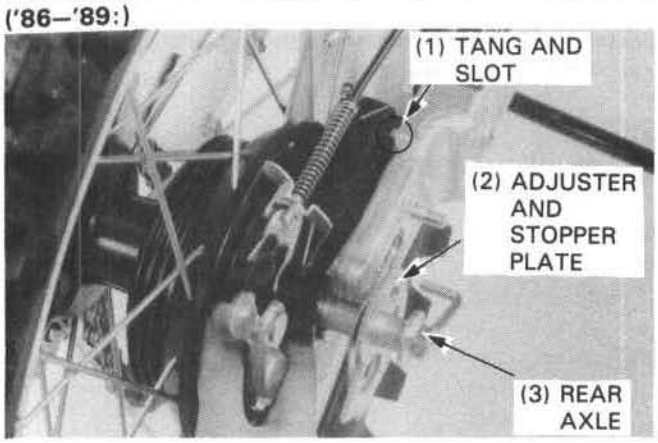
REAR WHEEL INSTALLATION

('86–'89:)

Install the brake panel in the brake drum.
Insert the rear axle through the stopper plate and right chain adjuster.

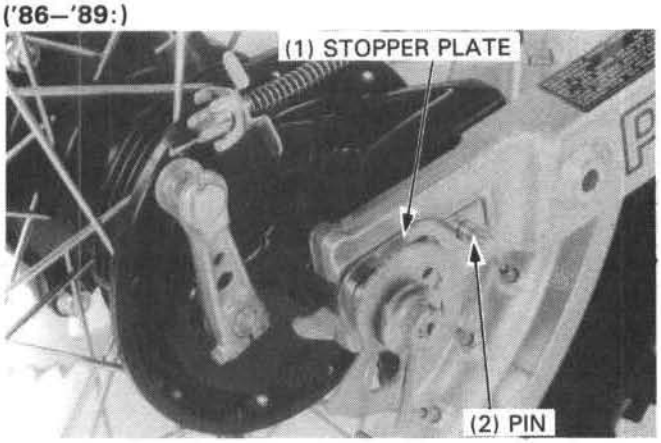
Place the rear wheel into the swingarm, aligning the brake panel slot with the tang on the swingarm.

('86–'89:)



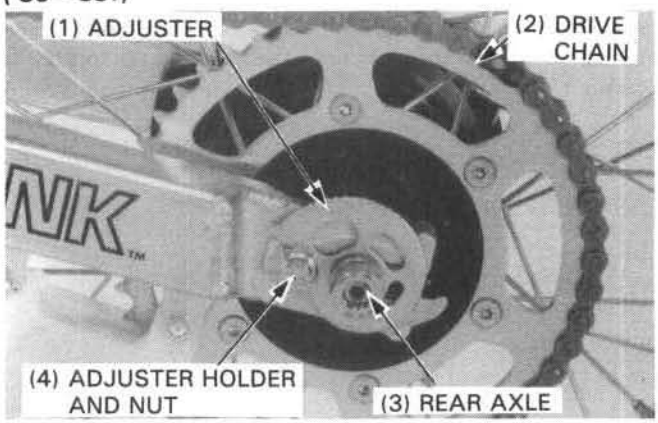
Slip the stopper plate over the pin on the swingarm.

('86–'89:)



Install the drive chain.
Install the left chain adjuster, adjuster holder, nut and axle nut.
Adjust the drive chain slack (page 3-11)

('86–'89:)



Tighten the axle nut.

TORQUE: 80–110 N·m (8.0–11.0 kg-m, 58–80 ft-lb)

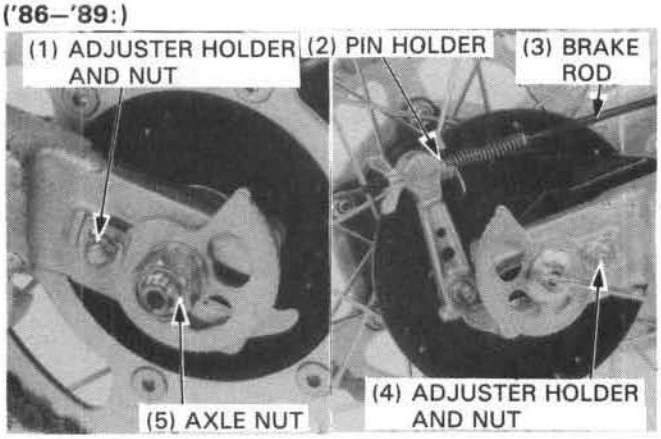
CAUTION

- *Hold the axle shaft securely to avoid damaging the puller lever with a wrench.*

Connect the brake rod to the brake arm.
Tighten the chain adjuster holder nuts securely.

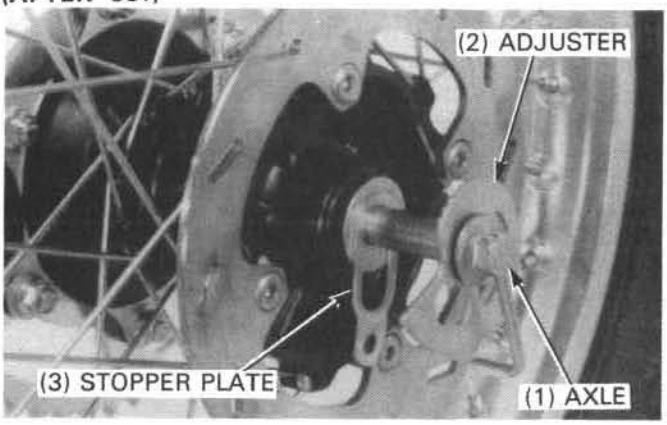
Adjust the rear brake pedal free play (page 3-14).

('86–'89:)



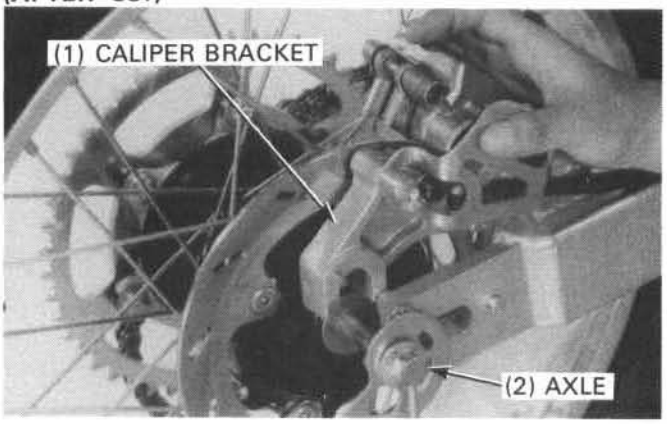
Insert the rear axle through the stopper plate and adjusters as shown.

(AFTER '89:)



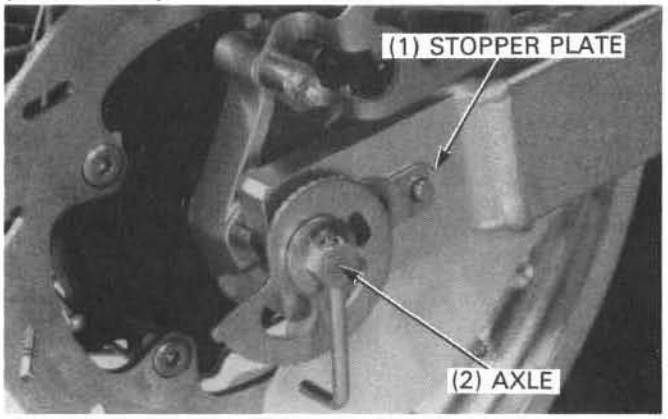
Place the rear wheel into the swingarm.
Install the brake caliper over the brake disc, taking care not to damage the brake pads.
Install the caliper bracket with its cut-out into the rear axle.

(AFTER '89:)



Align the caliper bracket slot with the tang on the swingarm.
Push the rear wheel, then slip the stopper plate over the pin on the swingarm.

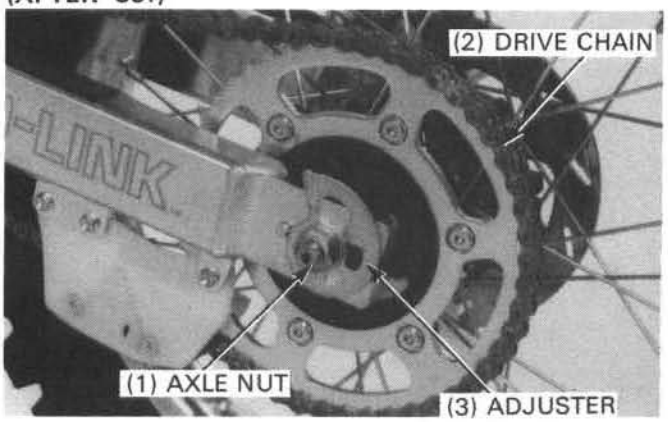
(AFTER '89:)



Install the drive chain on the driven sprocket.
Adjust the drive chain slack, tighten the rear axle nut to the specified torque.

TORQUE: 80–110 N·m (8.0–11.0 kg-m, 58–80 ft-lb)

(AFTER '89:)

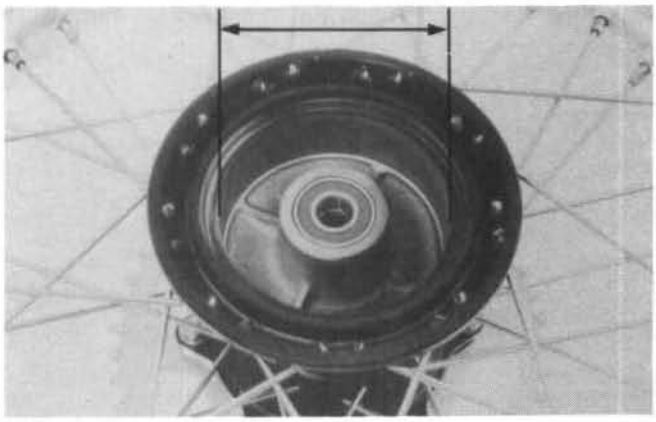


REAR BRAKE ('86—'89:)

Remove the rear wheel. (page 13-5).
Remove the brake panel from the brake drum.

WARNING

- ***Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA, designed to minimize the hazard caused by airborne asbestos fibers.***



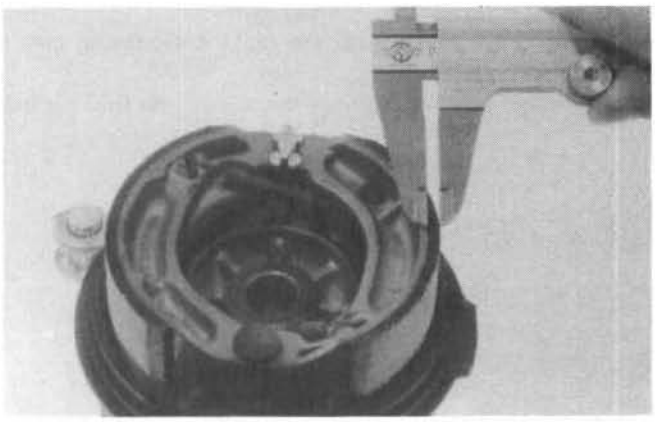
INSPECTION

Brake drum
Measure the rear brake drum I.D.

SERVICE LIMIT: 111.0 mm (4.37 in)

Brake lining
Measure the rear brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.10 in)

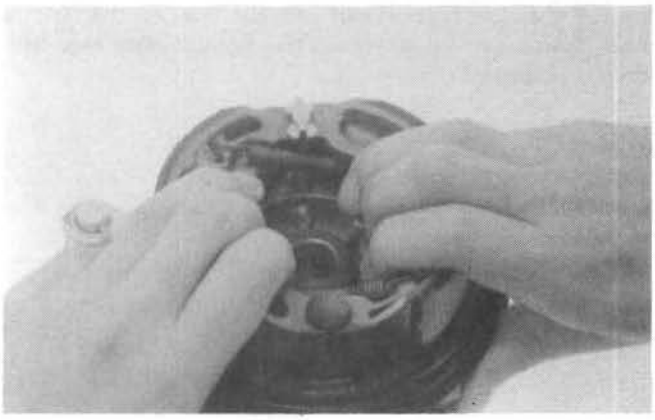


BRAKE PANEL DISASSEMBLY

Spread the brake shoes apart and lift them off the anchor pivot and brake cam.

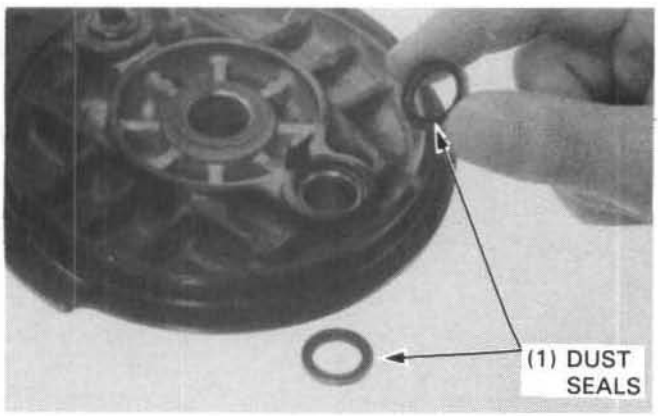
NOTE

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

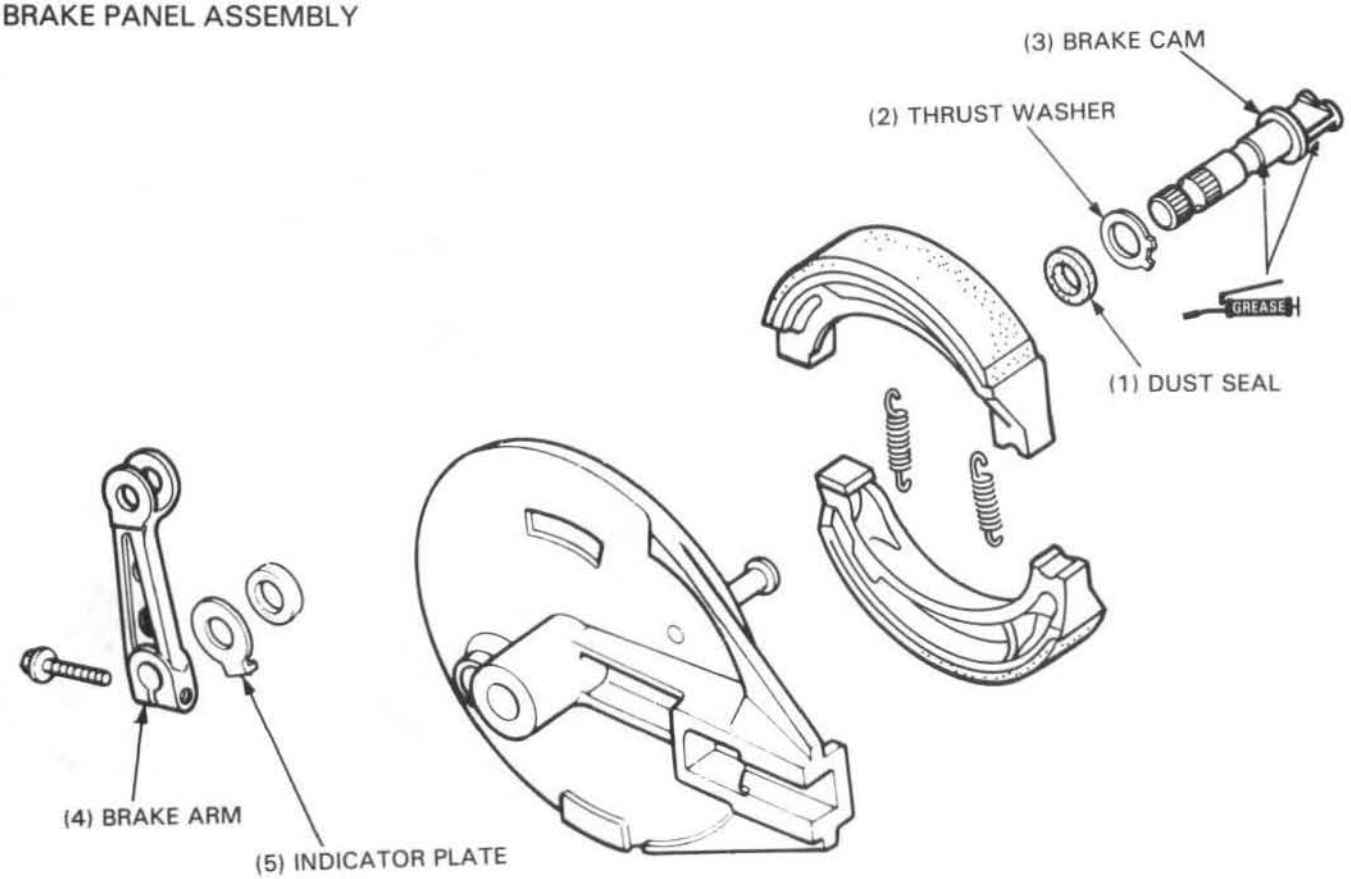


Remove the brake arm and brake cam.

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



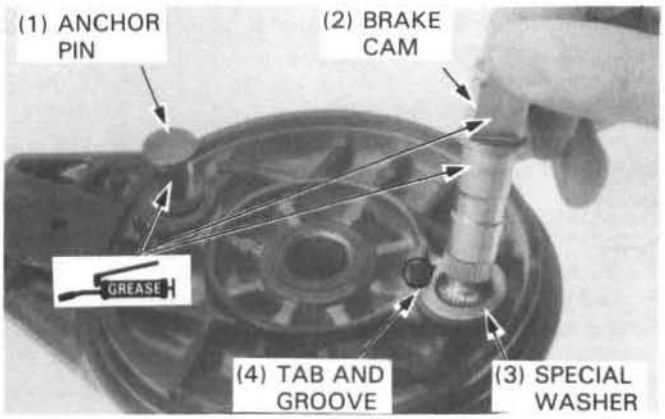
BRAKE PANEL ASSEMBLY



Install the special washer by aligning its groove with the tab on the brake panel.
Apply grease to the anchor pins and brake cam and install it.

WARNING

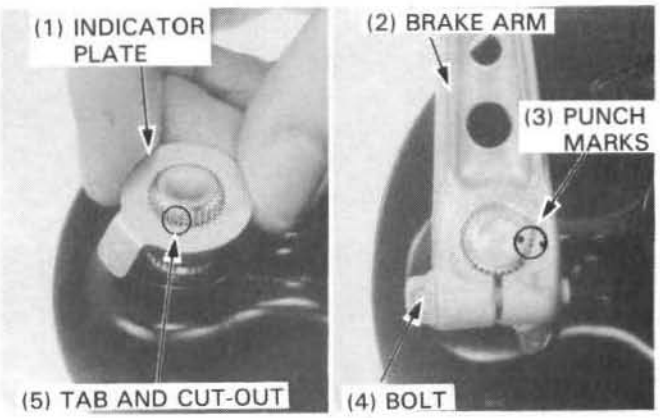
- ***Contaminated brake linings reduce stopping power. Keep grease off the brake linings. Wipe any excess grease off the cam.***



Align the wear indicator tab with the cutout in the brake cam and install the indicator over the cam.

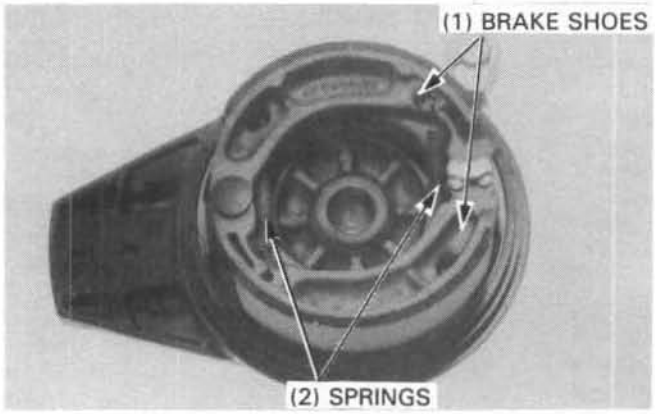
Install the brake arm aligning the punch mark with the cam punch mark.
Tighten the brake arm bolt.

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



Install the brake shoes back to their original position.
Install the springs.

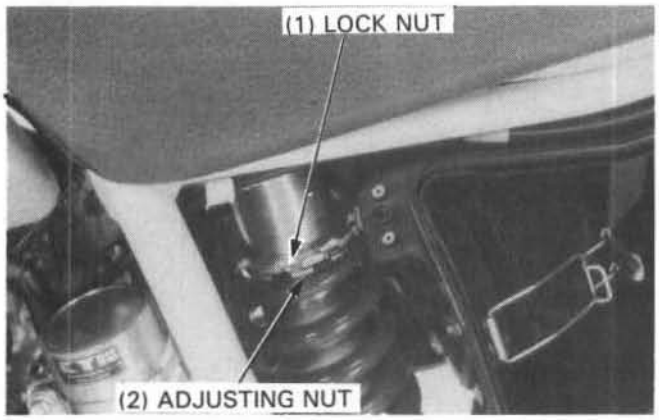
Install the brake panel on the rear wheel and then install the rear wheel (paage 13-12).



SHOCK ABSORBER

REMOVAL

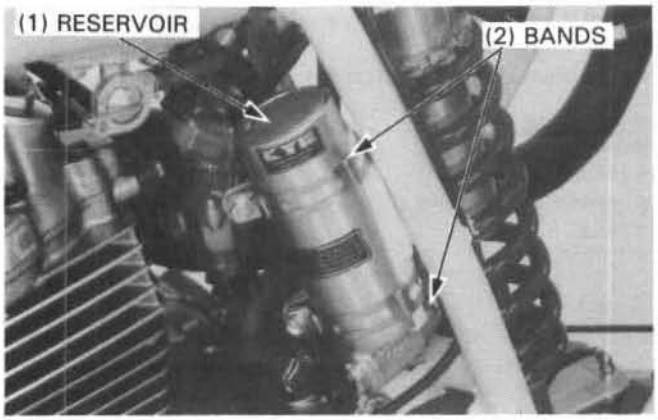
Before removing the rear shock absorber, loosen its lock nut and adjusting nut.



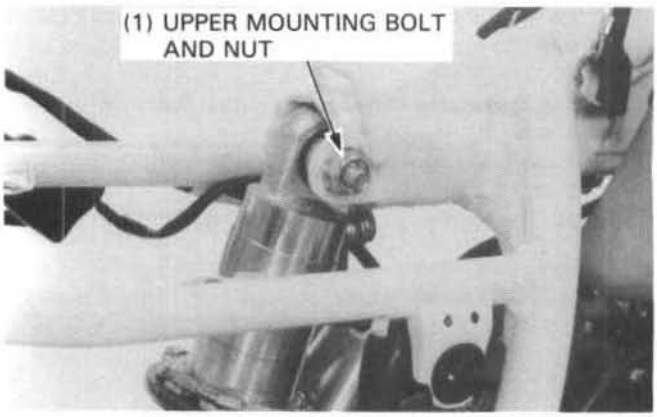
Raise the rear wheel off the ground by placing a work stand or box under the engine.
Remove the seat.
Remove the side covers.
Remove the air cleaner (page 4-4).
Loosen the reservoir mounting bands and remove the reservoir.

NOTE

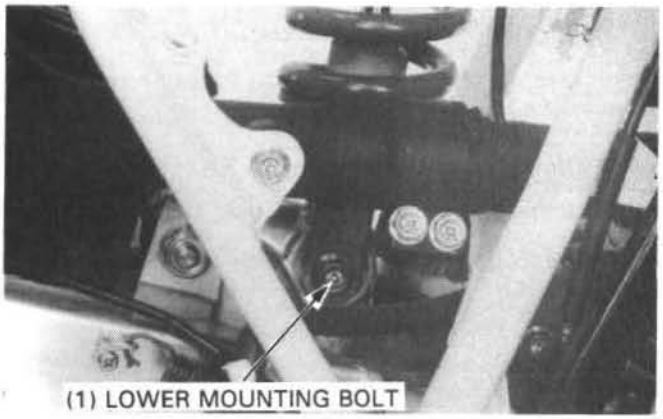
- Seal the carburetor inlet with tape or clean cloth to keep dirt and debris from entering the intake tract.



Remove the upper mount.

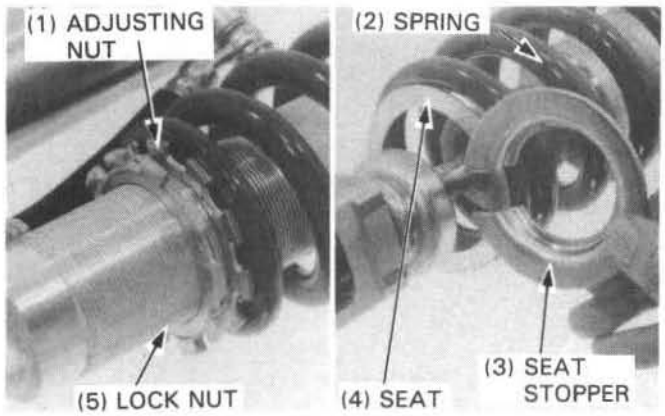


Raise the rear wheel until the rear shock absorber lower mount can be removed and then remove the lower mount bolt. Remove the rear shock absorber.



Loosen the lock nut and adjusting nut then remove the spring seat stopper and lower spring seat.

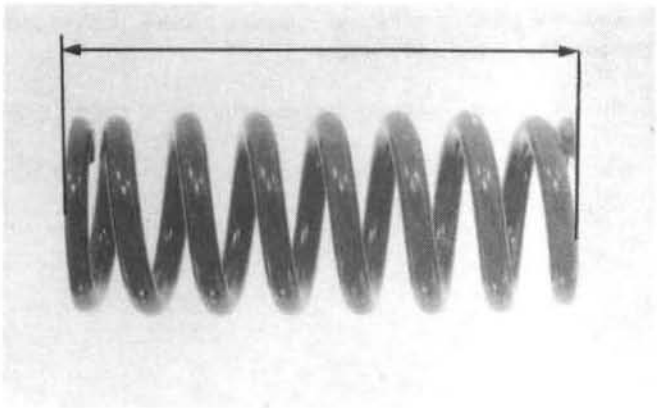
Remove the spring.



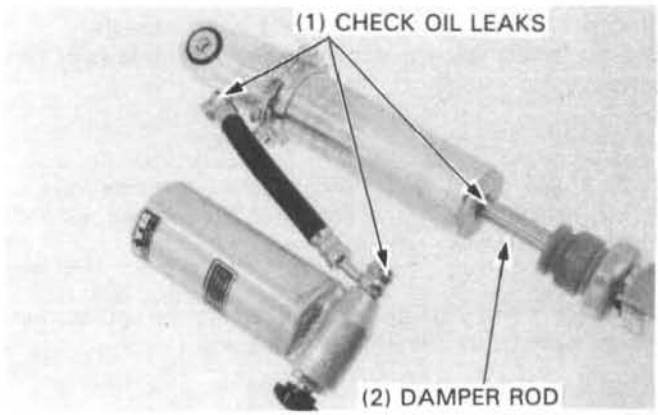
INSPECTION

Shock absorber spring
Measure the spring free length.

SERVICE LIMIT: '86–'89: 212.0 mm (8.35 in)
AFTER '89: 215.6 mm (8.49 in)

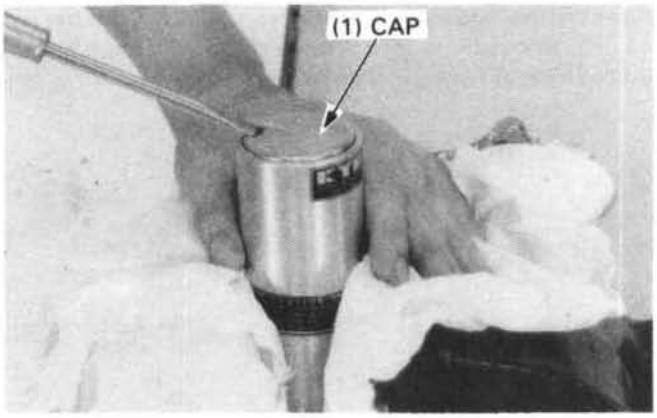


Damper
Visually inspect the damper unit for dents, oil leaks or other damage. Be sure the damper rod is not bent. Replace the damper unit if necessary.



DAMPER DISASSEMBLY

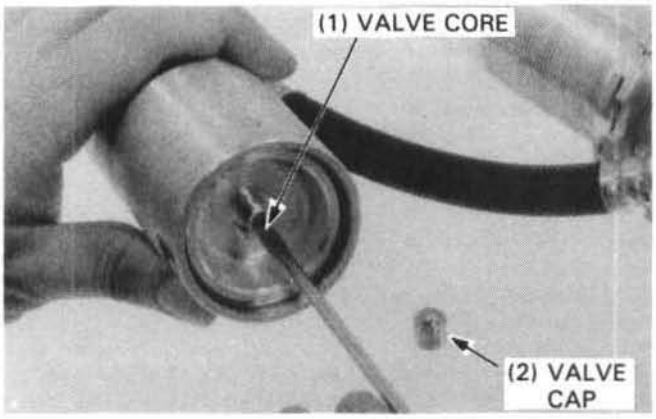
Hold the reservoir in a vise with soft jaws or a shop towel.
Remove the cap from the reservoir.



CAUTION

- *Be careful not to damage the reservoir by over-tightening the vise.*

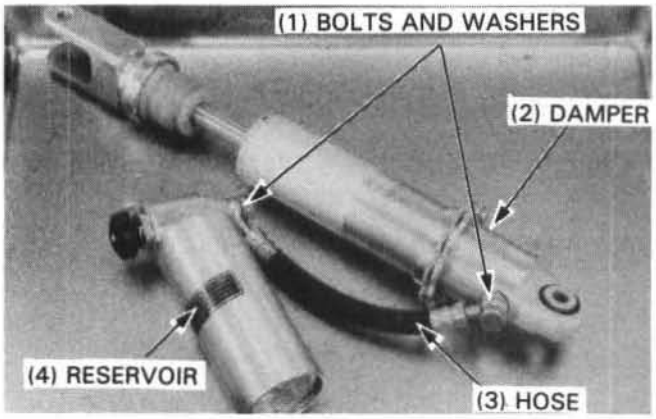
Remove the valve cap.
Release the nitrogen from the reservoir by depressing the valve core. Do not remove the valve until pressure is released.



WARNING

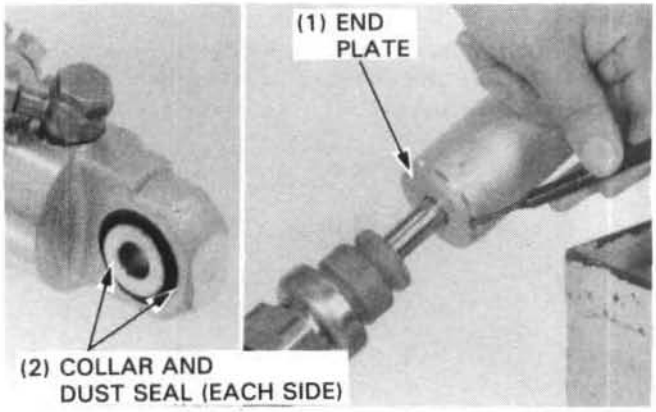
- ***Point the valve away from you to prevent debris from getting in your eyes.***
- ***Before disposal of the shock absorber, release the nitrogen gas from the reservoir and then remove the valve.***

Remove the oil hose bolts and sealing washers, then separate the reservoir, hose and damper.



To drain the shock oil from the reservoir, go to page 13-27.

Remove the spherical bearing collars and dust seals.
Set the damper upper mount in a vise with soft jaws or a shop towel.



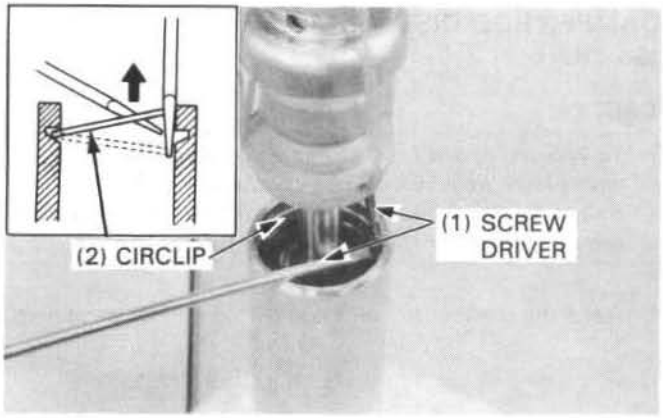
CAUTION

- *To protect the spherical bearing and damper case from damage, remove the spherical bearing collars and dust seal and do not set the damper case in a vise.*

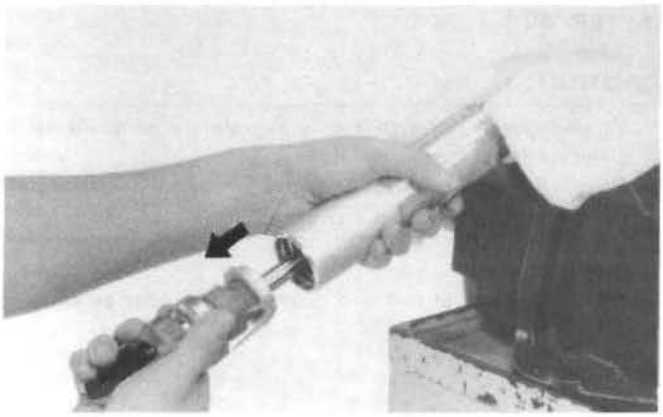
Remove the end plate and tape or tie it to the anti-bottoming rubber bumper, so it won't get in the way.

Push in the seal holder until you have good access to the circlip.
You'll need two small screwdrivers to remove the circlip.

The circlip groove in the damper case is ramped towards the inside to give the circlips a square shoulder on which to seat securely.
To remove the circlip, first push one end of the circlip out of its groove, then slip the second screwdriver between the circlip and the damper case to act as a ramp. Now, use the other screwdriver to pull the circlip completely out.



Pull the damper rod assembly out of the damper case.

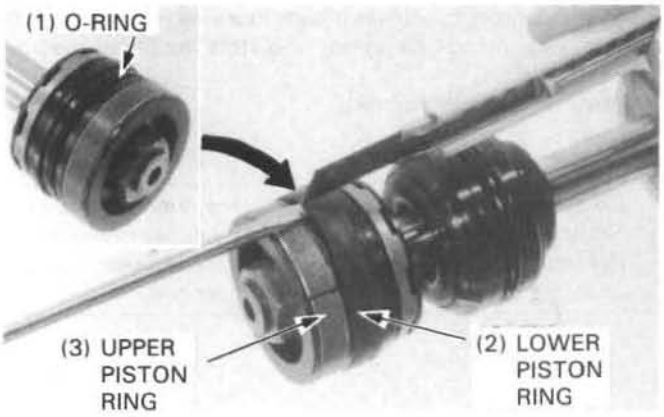


PISTON RING REPLACEMENT

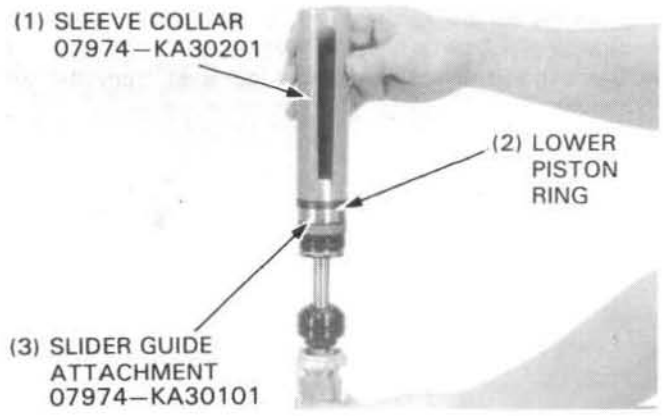
Check the upper piston ring for excessive wear or scratches. If copper appears on more than 3/4 of the entire surface, replace it.

Check the lower piston ring for damage.
If the piston ring is damaged, cut the piston ring and remove it from the piston.

Replace the O-ring under the piston ring with a new one.



Place the slider guide attachment over the piston and drive a new piston ring into place with the slider sleeve.



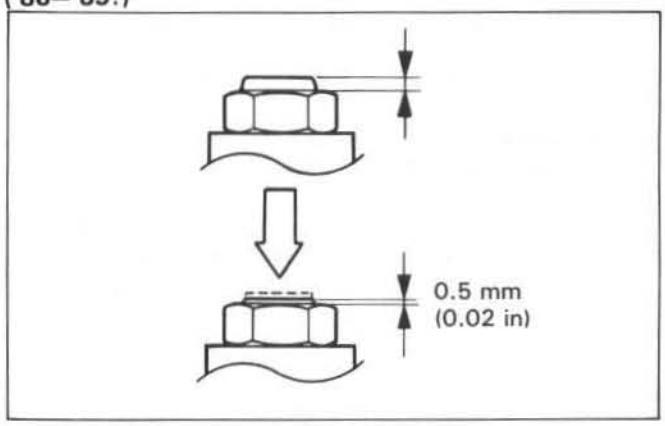
DAMPER ROD DISASSEMBLY
('86–'89:)

CAUTION

- *To keep lint or dirt from getting onto damper rod parts, do not wear gloves while working on the damper rod.*
- *Be careful not to grind more than 0.5 mm (0.02 in) from the end of the damper rod end nut described below.*

Unstake the damper rod end nut with a grinder as shown.

('86–'89:)



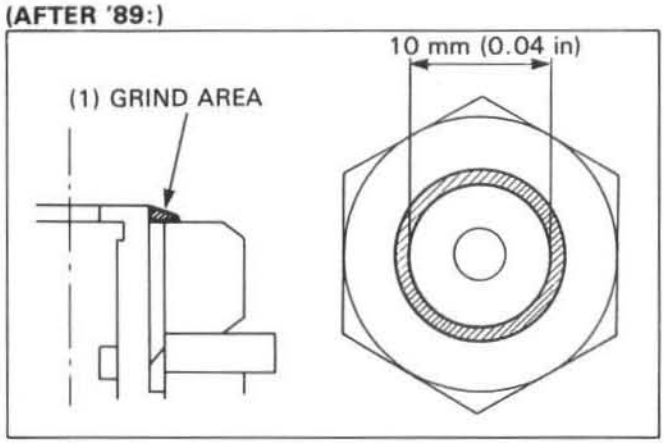
(AFTER '89:)

CAUTION

- *To keep lint or dirt getting onto damper rod parts, do not wear gloves while working on the damper rod.*
- *Be careful to grind so that the O.D. of the rod end is about 10 mm (0.04 in) and not to over grind.*

Unstake the damper rod end nut with a grinder as shown.

(AFTER '89:)

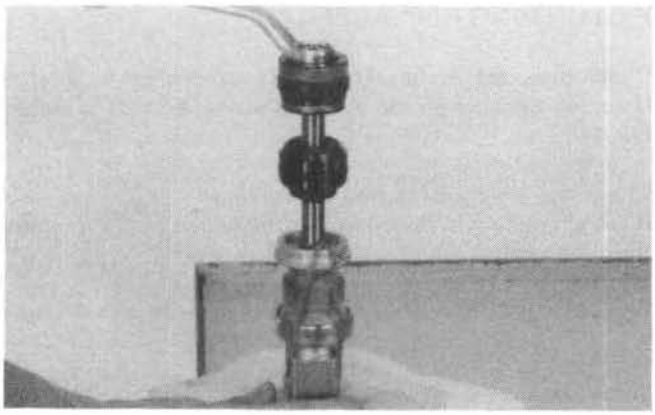


Place the damper rod lower mount in a vise with a shop towel or soft jaws, being careful not to distort the lower mount.

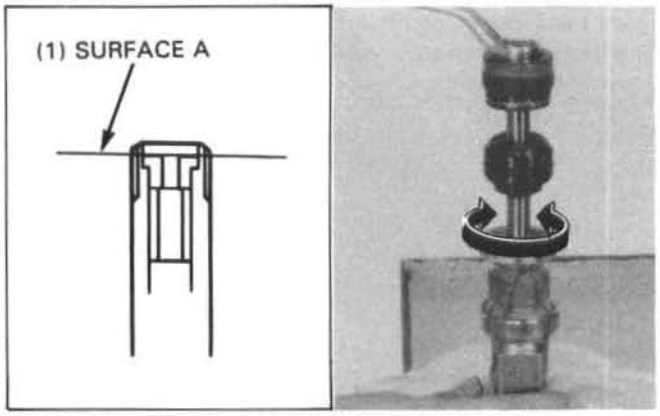
Remove the damper rod nut.

CAUTION

- *Do not overstress the damper rod when removing the nut.*
- *Never reuse a damper rod nut after it has been removed.*
- *Remove all burrs from the end of the damper rod before removing anything else from the damper rod.*



Replace the damper rod as a unit if found with:
- Cracking or breakage below surface A.
- Damper rod which has been loosened from the lower mount.

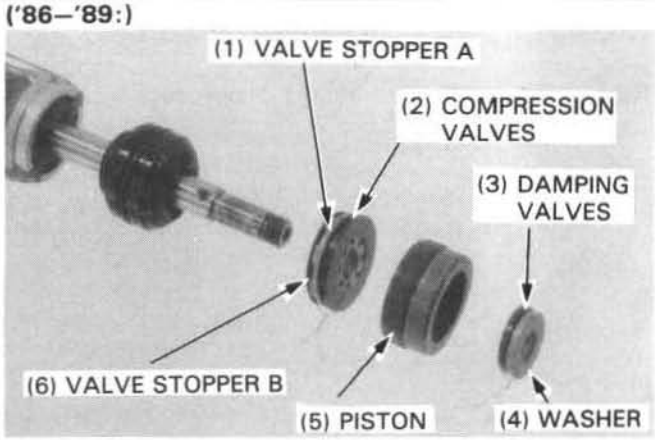


Remove the washer, and damping valves, piston, compression valves and valve stoppers from the damper rod.

NOTE

- Pass a piece of thin wire through the removed valves to ensure correct reassembly.
- Keep dust and abrasives away from all damper rod parts.
- Throughly clean the valves in solvent, if they have been disassembled and separated.
- Be careful not to get solvent on the O-ring and seals.

('86–'89:)



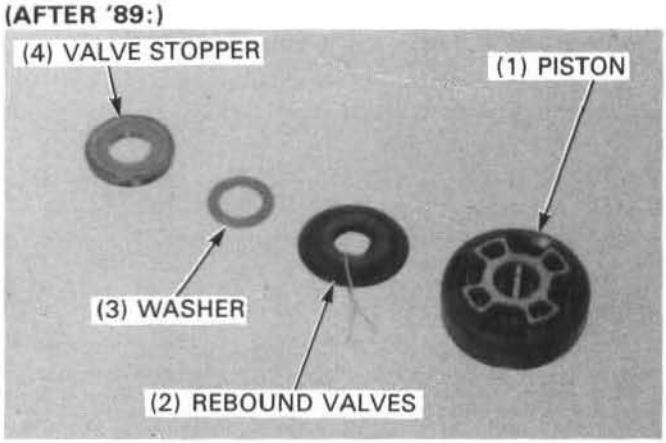
(AFTER '89:)

Remove the washers, valve stopper, rebound valves and piston from the damper rod.

NOTE

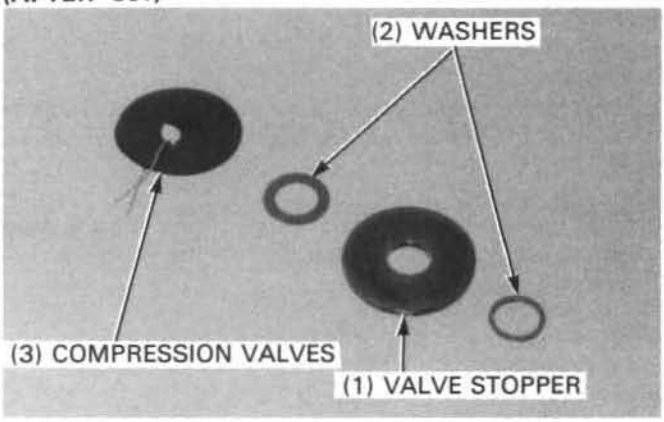
- Pass a piece of thin wire through the removed valves to ensure correct reassembly.
- Keep dust and abrasives away from all damper rod parts.
- Thoroughly clean the valves in solvent, if they have been disassembled and separated.
- Be careful not to get solvent on the O-ring, piston ring.
- The valve arrangement and number of valves shown is typical.

(AFTER '89:)



Remove the compression valves, washers and valve stopper.

(AFTER '89:)



('86–'89:)

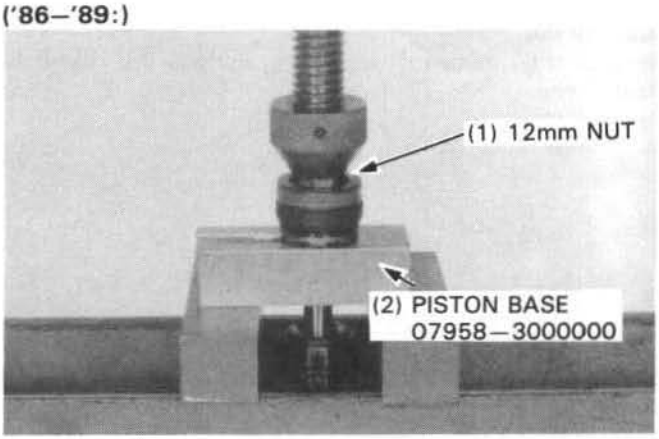
If the valve stopper is stuck on the damper rod, thread a 12 mm nut onto the rod end.

With the special tool placed under the stopper, press on the 12 mm nut until the stopper is loose on the damper rod; remove the stopper and nut.

NOTE

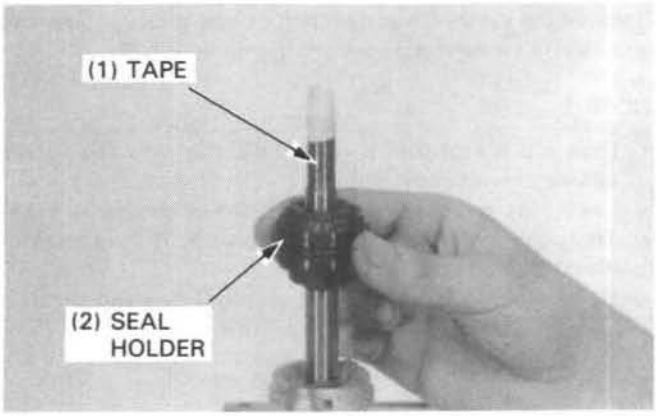
- Replace the damper rod as an assembly if valve stopper has dents or is distorted.

('86–'89:)

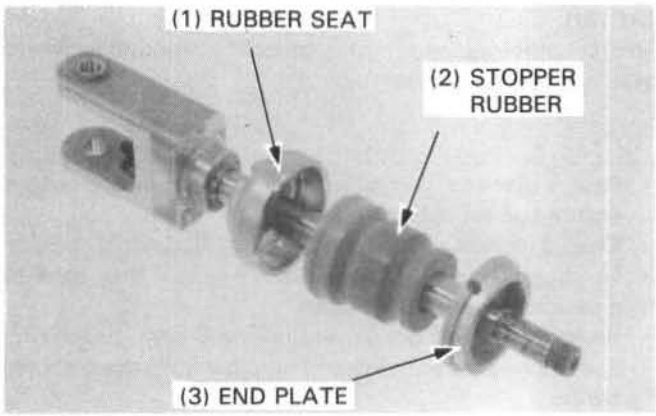


Wrap the top threads of the damper rod with tape.

Remove the seal holder from the damper rod.



Remove the end plate, stopper rubber and rubber seat from the damper rod.

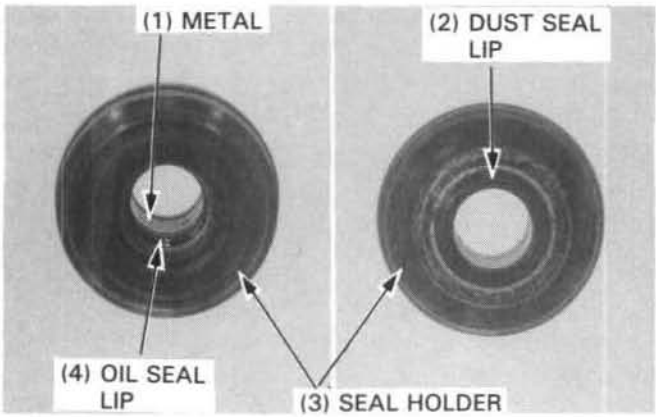


INSPECTION

Seal holder

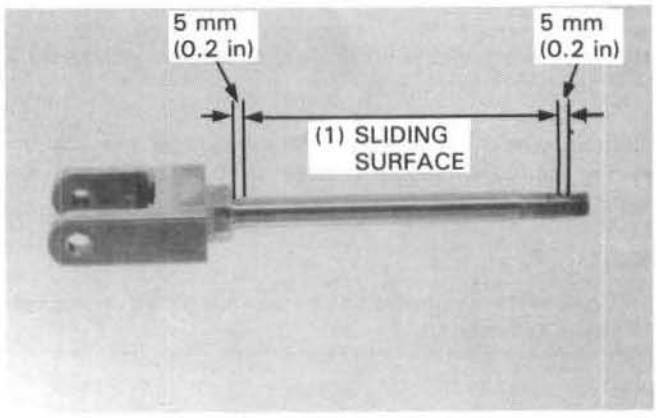
Inspect the oil and dust seal lips for excessive wear, scratches or damage and replace the seal holder with a new one if necessary.

Inspect the seal holder metal for wear. If the metal is worn so that the copper surface appears, replace the seal holder with a new one.



Damper rod

Inspect the damper rod sliding surface for damage or distortion.



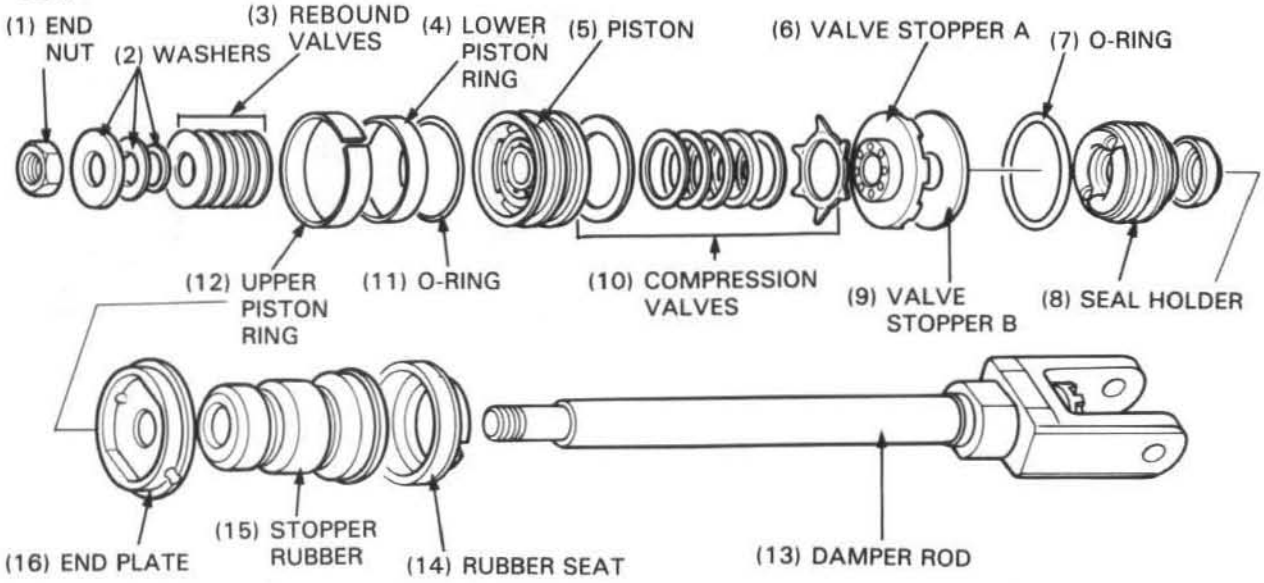
DAMPER ROD ASSEMBLY

Before assembly, wash all parts with solvent and blow dry with compressed air.
Check that there is no dust or lint on any of the parts.

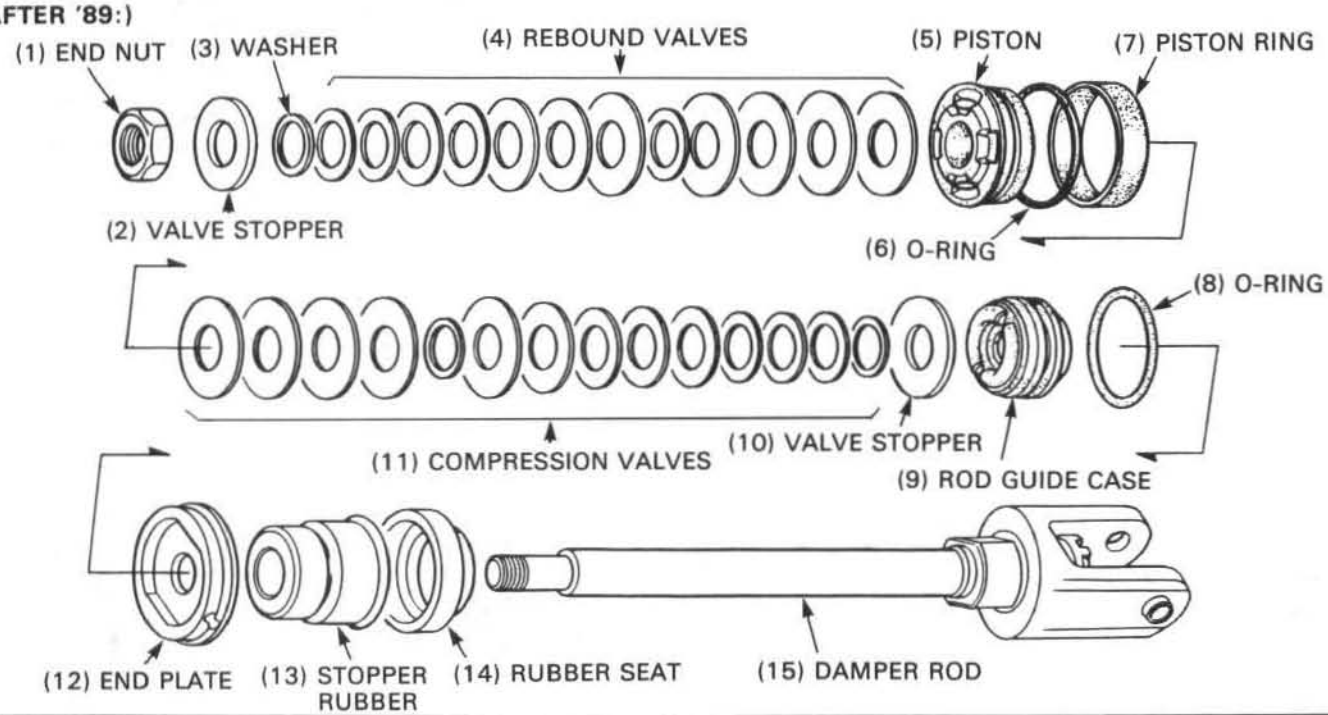
NOTE

- Never assemble valves which might have gotten dusty or otherwise contaminated during the reassembly process. Disassemble them, thoroughly clean with solvent, and reassemble.
  Use added care to avoid getting solvent on the O-rings and seals.
- The valve arrangement and number of valves may differ from those shown.

('86–'89:)



(AFTER '89:)

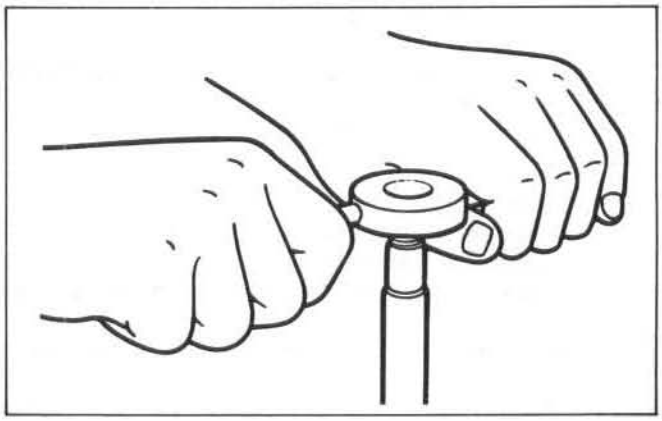


Remove burrs from the damper rod end with a file and correct the threads with a die.

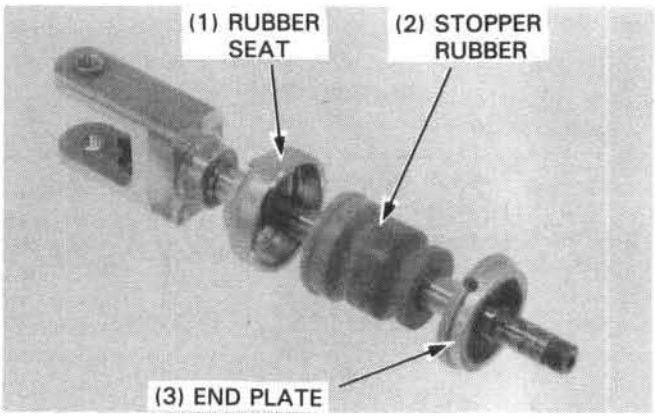
Clean the damper rod with solvent after correcting the threads.

NOTE

- Make sure that burrs are not stuck in the damper rod I.D.



Install the rubber seat, stopper rubber and end plate onto the damper rod.

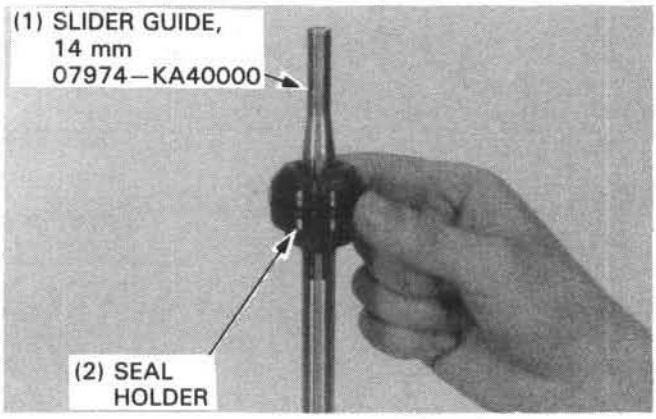


Install the special tool onto the damper rod.
Install the seal holder carefully over the damper rod.

NOTE

- The seal holder oil seal and dust seals are filled with grease. Be careful not to remove grease from the seals.
- Be careful not to damage the dust seal lip.

Remove the special tool.



('86–'89:)

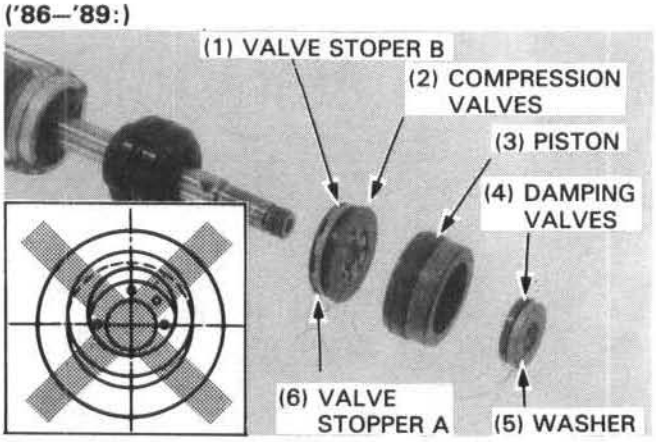
Assemble the compression valves and valve stoppers A and B and install them onto the damper rod.

Install the piston onto the damper rod and assemble the damping valves, noting the installation sequence.

NOTE

- Note the installation direction of the piston and valves.
- Be careful not to bind the valves when installing the piston onto the damper rod. Also check that they are concentric with the damper rod.

('86–'89:)



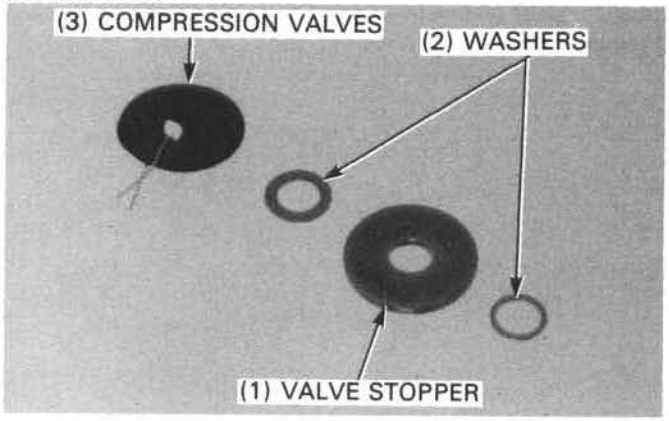
(AFTER '89:)

Install the washers, valve stopper and compression valves onto the damper rod.

NOTE

- The valve arrangement and number of valves may differ from those shown.

(AFTER '89:)

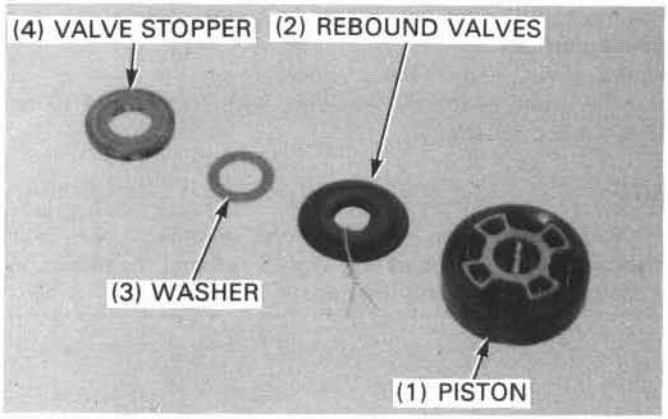


Install the piston onto the damper rod.
Install the rebound valves and washers with their polished surface down.
Install the valve stopper.

NOTE

- Note the installation direction of the piston and valves.
- Be careful not to bind the valves when installing the piston onto the damper rod. Also, check that they are concenctric with the damper rod.

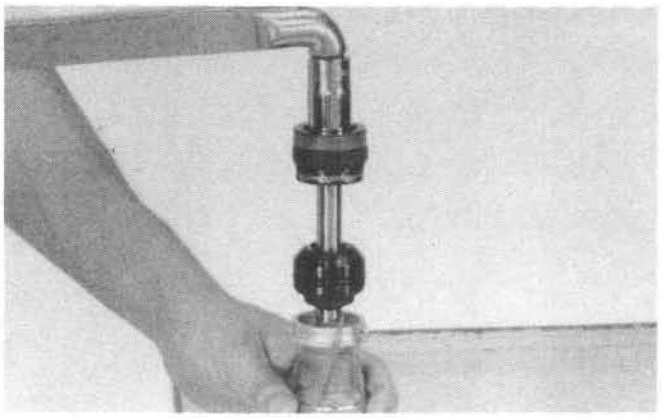
(AFTER '89:)



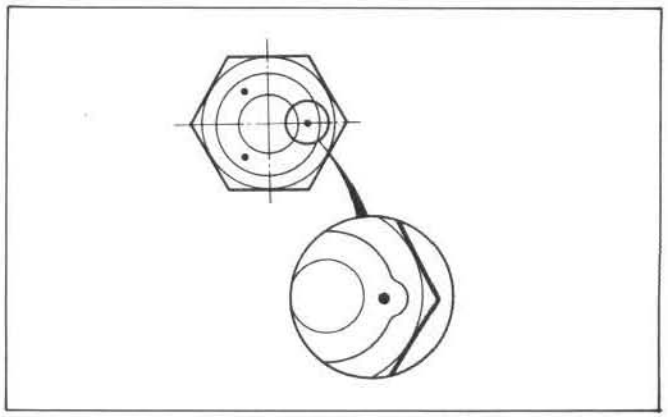
Install the washers onto the damper rod with its polished surface down.
Screw a new end nut on the damper rod while pressing the piston down.
Place the damper rod in a vise with soft jaws or a shop towel, being careful not to damage the lower mount.

Make sure that the valves are not binding and tighten the end nut.

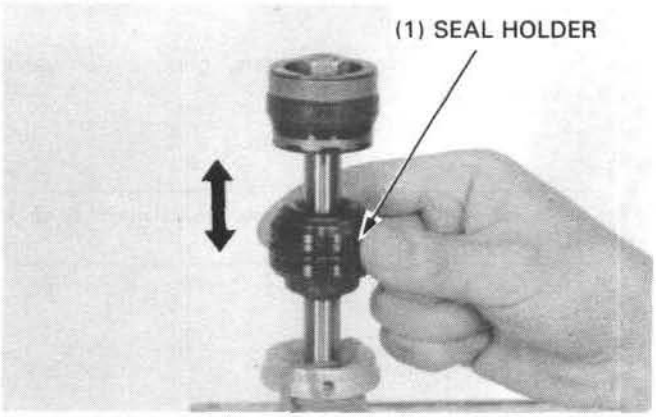
TORQUE: 24—29 N·m (2.4—2.9 kg-m, 17—21 ft-lb)



Stake the end of the damper rod in three places as shown to secure the end nut.



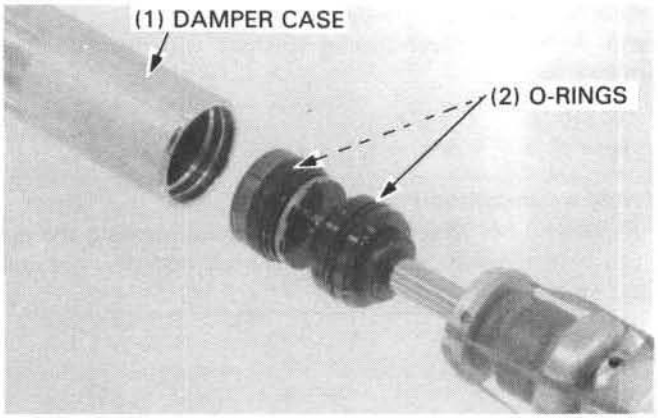
Check the seal holder by sliding it up and down fully, make sure it is not binding or sticking.



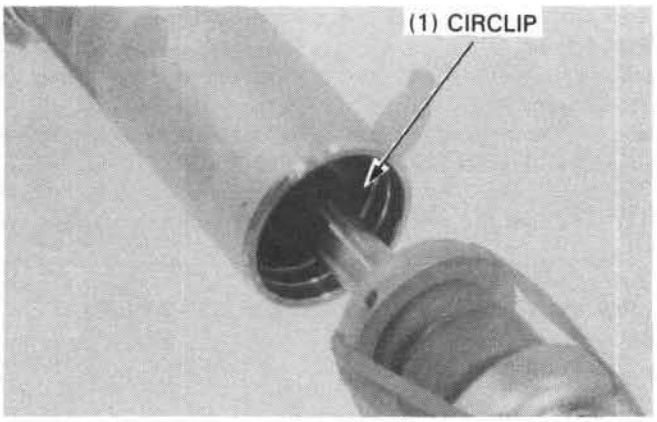
Coat the new O-rings and piston rings with clean shock oil or silicone grease.
Install a new O-ring on the seal holder.
Coat the inside of the damper case with clean shock oil and insert the rod assembly.

NOTE

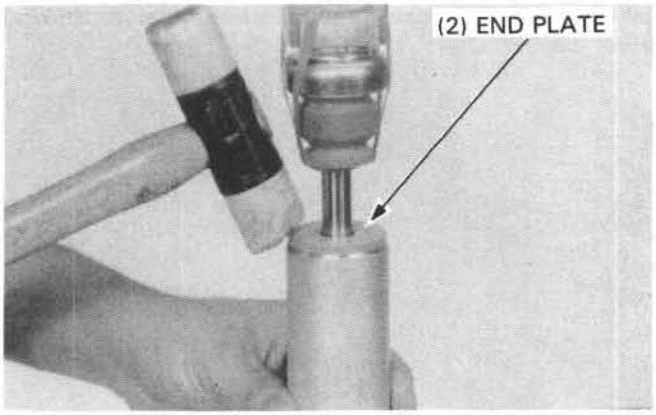
- Install the piston rod into the damper case while compressing the piston ring slightly, so that the piston ring will not interfere with the case.



Install the circlip into the groove of the damper case.

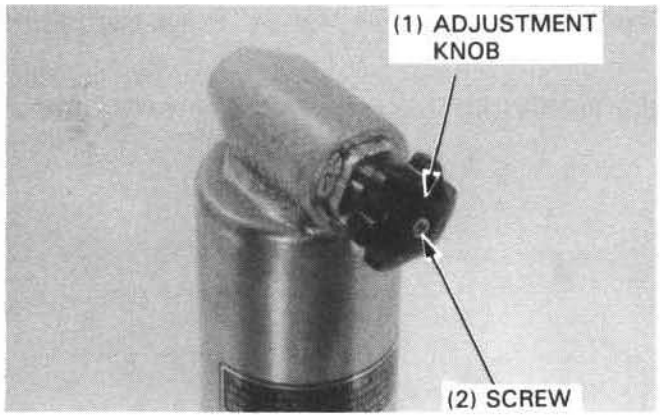


Drive the end plate into the damper case.



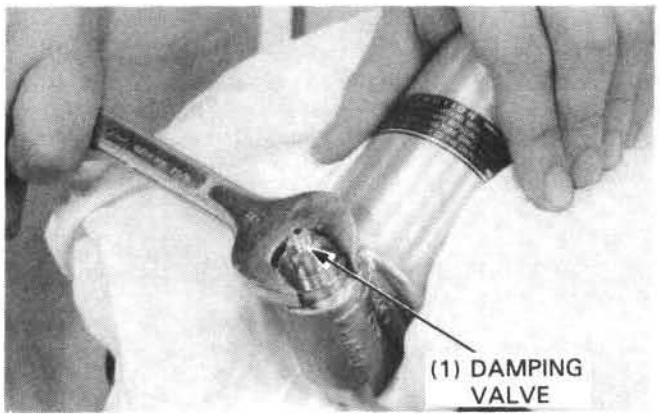
SERVICING THE RESERVOIR

Remove the screw from the center of the compression damping adjustment knob, then remove the knob.

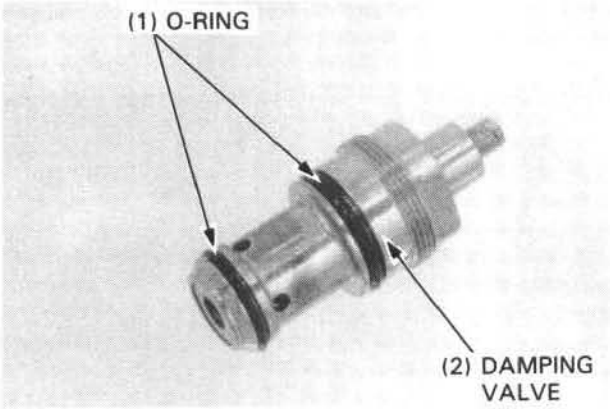


Remove the compression damping valve from the reservoir.

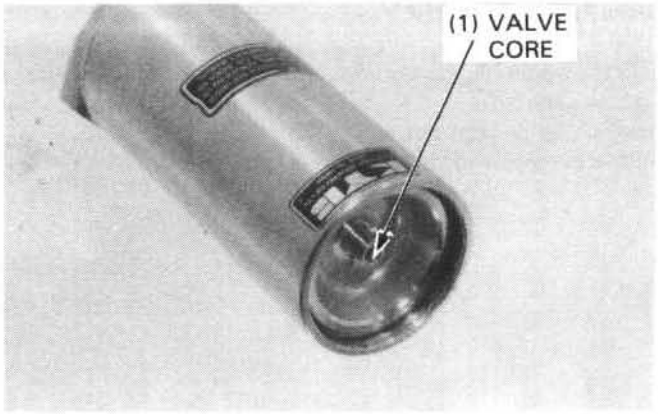
Turn the reservoir upside down to allow all the shock oil to drain. Then, flush out the reservoir using clean shock oil. Allow all the oil to drain.



Remove the O-rings from the valve.
Clean the valve using clean shock oil.

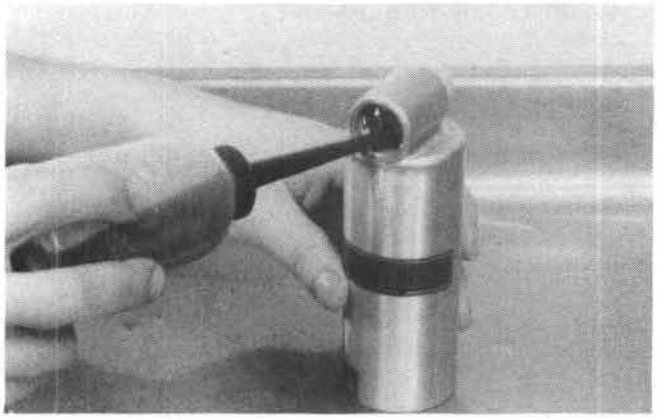


Install the valve core into the reservoir.
Charge the reservoir slowly with 100 kPa (1 kg/cm², 15 psi) of nitrogen to inflate the diaphragm inside of the reservoir.
Apply grease to a new O-ring and install it to the valve.



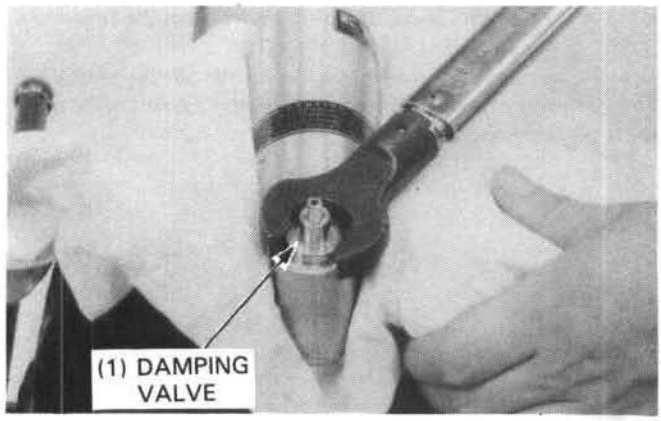
Cover the hose connecting hole and fill the reservoir with shock oil.

RECOMMENDED OIL: Pro-Honda Suspension Fluid SS-7 or equivalent



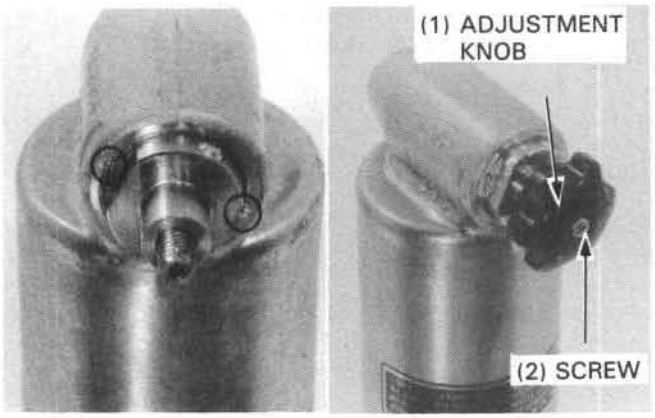
Install the new O-rings on the vlave.
Install the damping valve to the reservoir.
Tighten the valve to the specified torque.

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



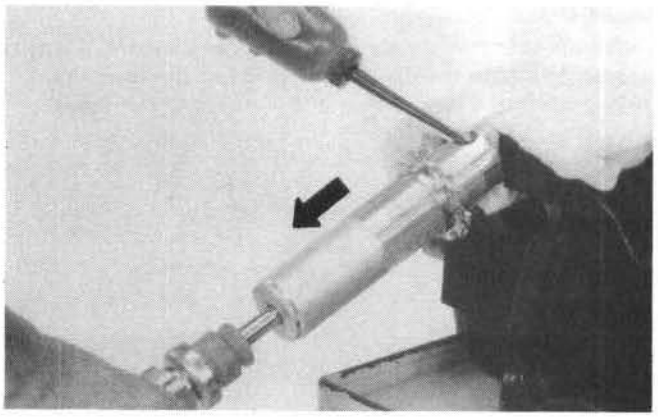
Stake the damping valve and reservoir body in two places as shown to secure the damping valve.

Install the compression damping adjustment knob and screw.



DAMPER ASSEMBLY

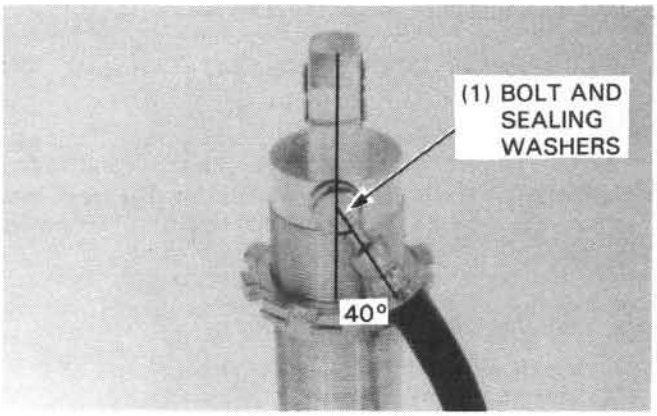
Hold the upper shock mount in a vise with soft jaws or a shop towel as shown.
Pull the damper rod out all the way.
Fill the damper with shock oil.



Connect the hose to the shock, as shown, using new sealing washers. Align the marks on the damper case and hose joint.

Tighten the hose bolt.

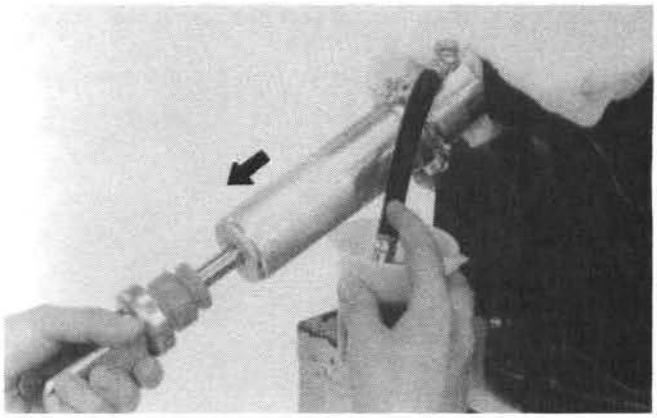
TORQUE: 25—35 N·m (2.5—3.5 kg-m, 18—25 ft-lb)



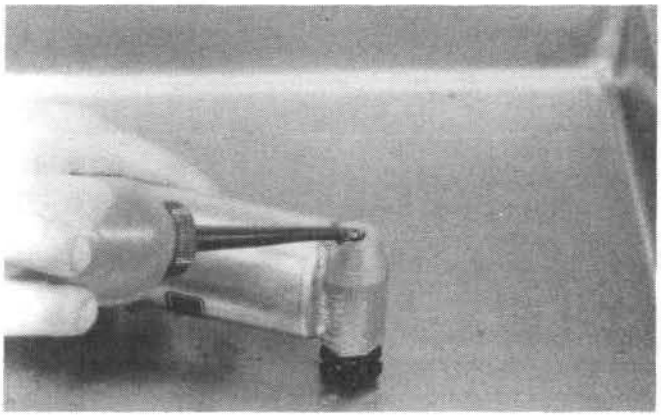
Dip the reservoir end of the hose into a container filled with shock oil.

Very slowly compress the damper rod until bubbles disappear, then slowly pull the rod out. Repeat this until all air has been bled from the hose and shock.

Remove the hose from the oil and keep the shock upright and the open hose end elevated to avoid losing any shock oil.



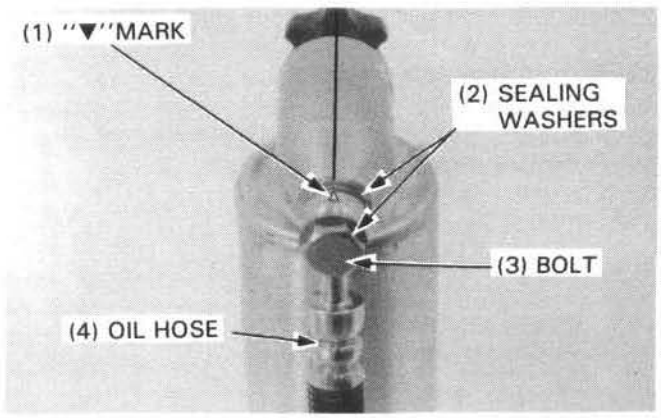
Top off the reservoir with shock oil to the top of the threads; this excess oil will be forced out when you install the hose fitting.



Connect the hose to the reservoir as shown, using new sealing washers. Align the marks on the reservoir and hose joint. Tighten the banjo bolt.

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

Wipe off any excess oil and check for oil leaks.



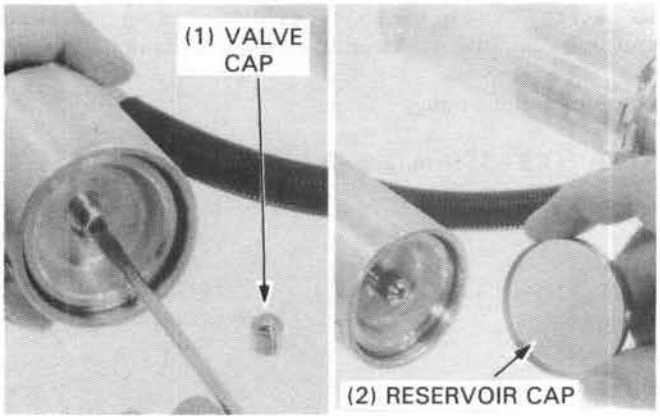
Release the 14 psi that was in the reservoir.

Fill the reservoir with 20 kg/cm² (284 psi) of nitrogen.

WARNING

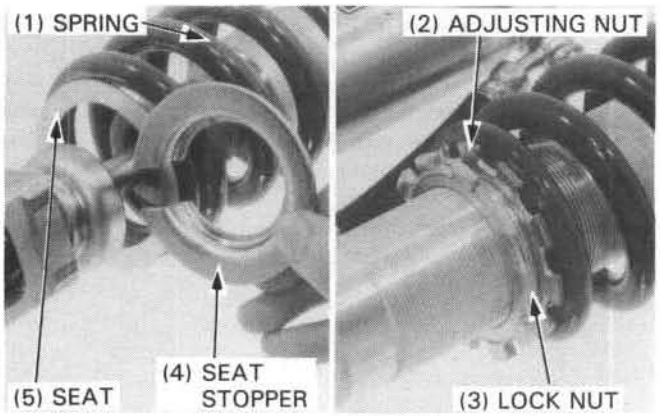
- ***The shock absorber is fitted with a gas-filled reservoir. Use only nitrogen gas to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.***

Install the valve cap and reservoir cap.

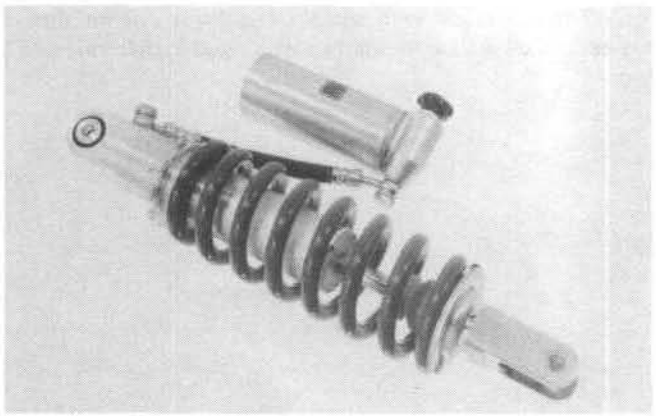


Install the spring, lower spring seat and spring seat stopper.

Tighten the adjusting nut evenly to prevent the spring from coming off the spring seat.

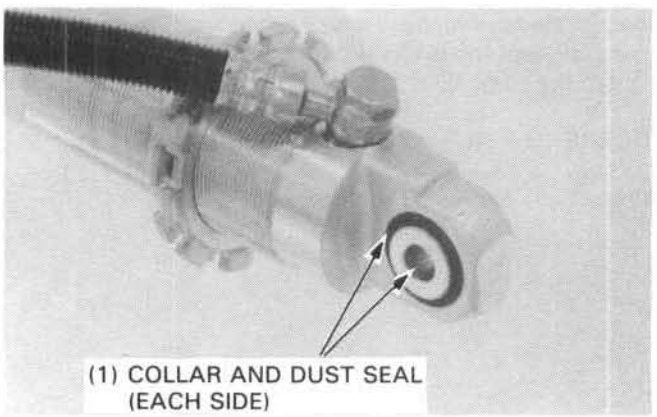


Set the lower mount as shown by turning it.



Install the dust seals and collars to the upper mount.

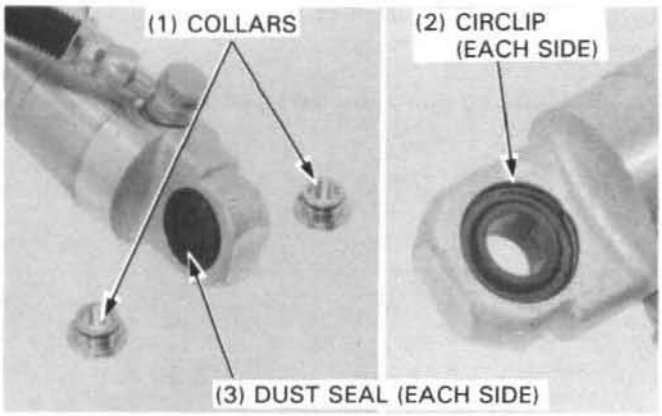
Adjust the spring length (page 13-32).



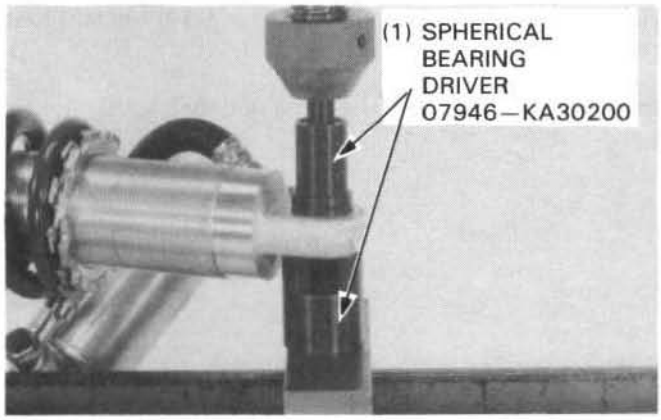
SPHERICAL BEARING REPLACEMENT

Remove the upper collars and dust seals.

Check the spherical bearing for wear or damage.
If it is worn or damaged, it must be replaced.
Remove the circlips.



Press out the spherical bearing from the shock absorber.
Set one of the circlips into the lower groove.
Press a new spherical bearing into the shock absorber.
Install the other circlip.



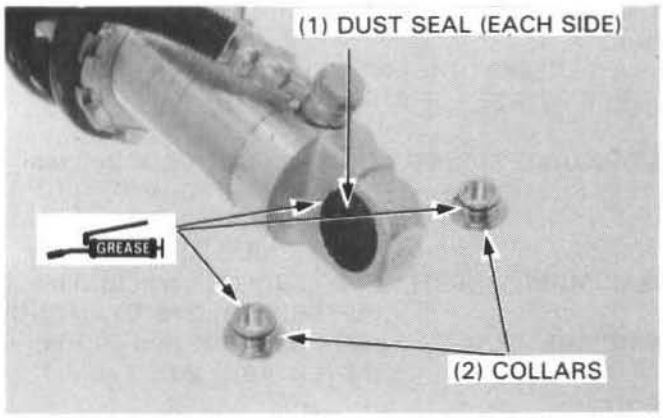
Apply a paste grease with 40% or more molybdenum disulfide to the dust seals and upper collars, then install them as shown.

NOTE

Some sources of MoS_2 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. only)
- Rocol Paste manufactured by Sumico Lubricant, Japan.
- Rocol ASP manufactured by Rocol Limited, U.K.

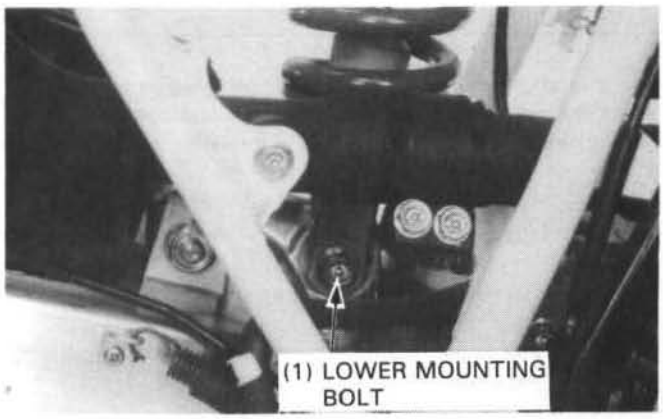
Any other manufacturer's paste grease equivalent to the above may also be used.



INSTALLATION

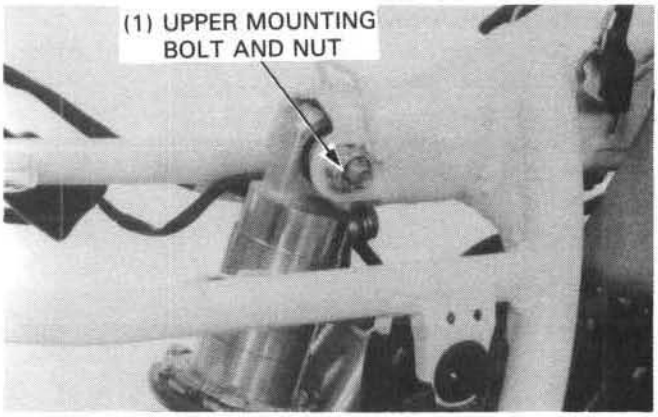
Raise the rear wheel until the lower mount bolt can be installed and hold the rear wheel.
Set the shock absorber into the frame and tighten the lower mount bolt.

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



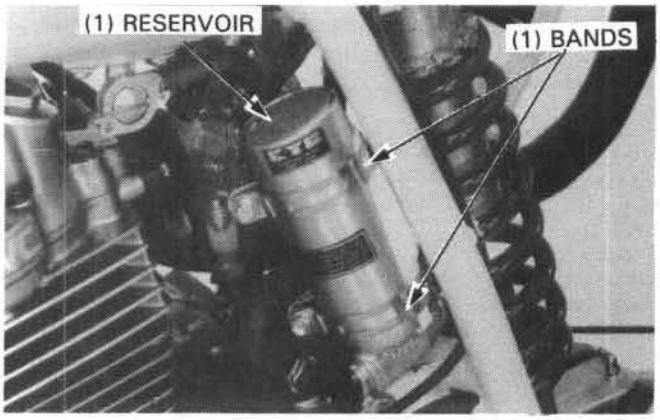
Lower the rear wheel and attach the upper mount to the frame, then tighten the upper mount.

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



Route the reservoir hose properly (page 1-10) and position the reservoir on the bracket as shown.

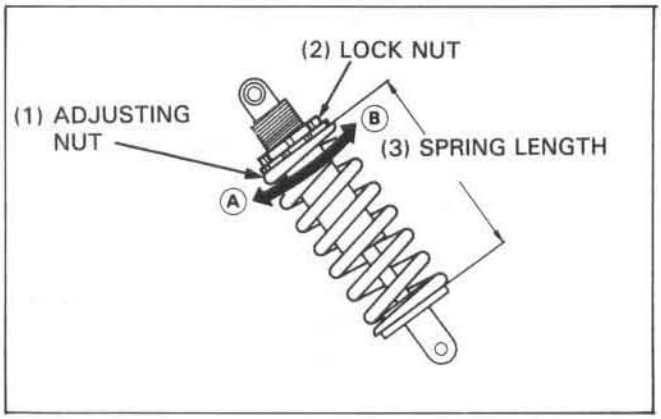
Install the reservoir clamps and tighten their bolts.



Turn the spring adjusting nut until the spring length is as specified.

A: DECREASE THE SPRING LENGTH
B: INCREASE THE SPRING LENGTH

STANDARD SPRING LENGTH: ('86—'89:): 203 mm (8.0 in)
(AFTER '89:): 211 mm (8.3 in)
MAXIMUM LENGTH : ('86—'89:): 211 mm (8.3 in)
: (AFTER '89:): 218.5 mm (8.6 in)
MINIMUM LENGTH : ('86—'89:): 195 mm (7.7 in)
: (AFTER '89:): 201.5 mm (7.9 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 just as a baseline. See the Owner's Manual for detailed instruction on adjusting preload for riding conditions and rider skill.

Tighten the lock nut.

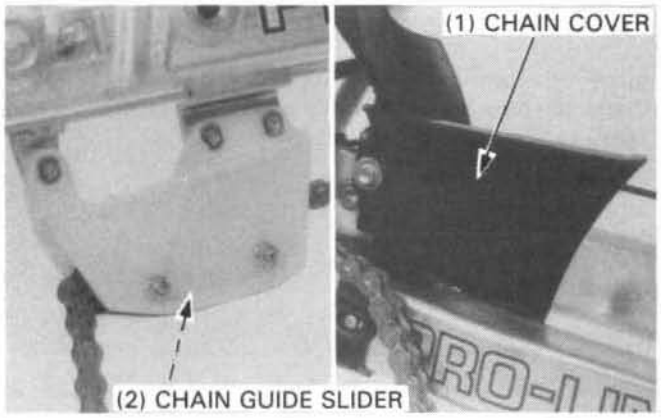
TORQUE: 40—50 N·m (4.0—5.0 kg-m, 29—36 ft-lb)

Install the air cleaner case (page 4-4).
Install the side covers.
Check the operation of the shock absorber.

SWINGARM

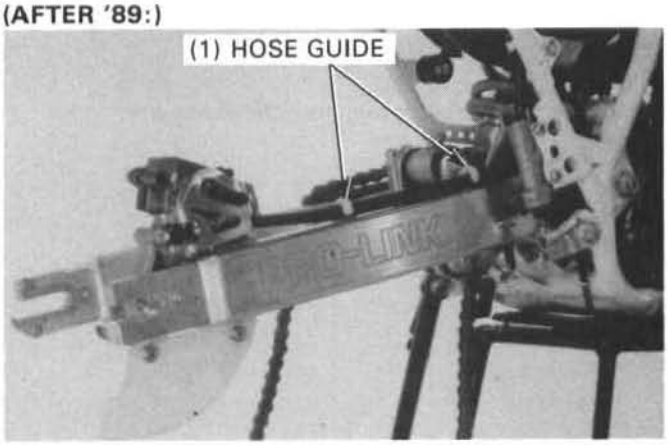
REMOVAL

Remove the rear wheel (page 13-5).
Remove the chain guide slider and chain cover.



(AFTER '89:)
Remove the rear brake hose guide and hose.

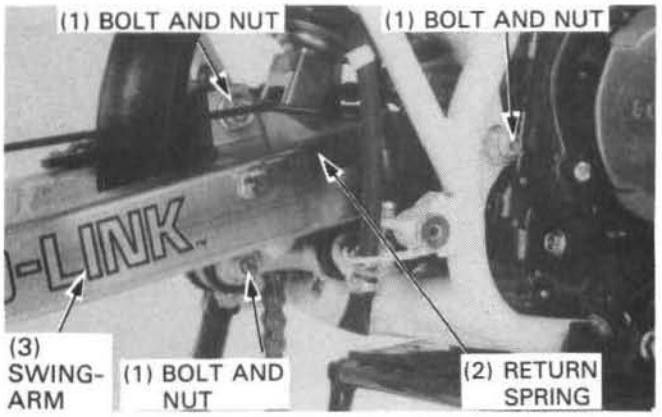
(AFTER '89:)



Disconnect the brake pedal return spring from the swingarm.
Remove the swingarm-to-shock arm pivot bolt.

Remove the swingarm pivot nut.
Pull out the o

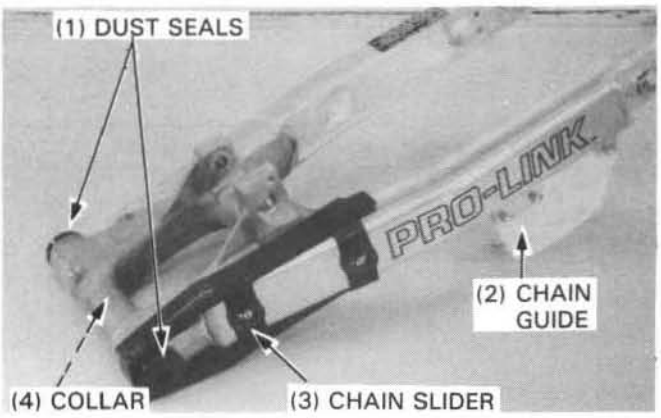
Pull out the pivot bolt and remove the swingarm.



DISASSEMBLY

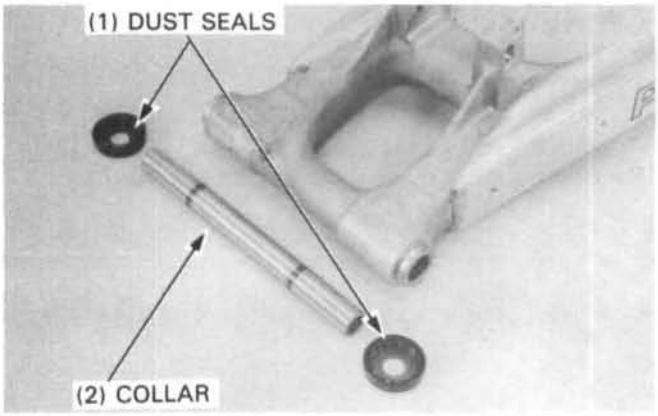
Remove the chain slider and chain guide.

Remove the dust seal and pivot collar.



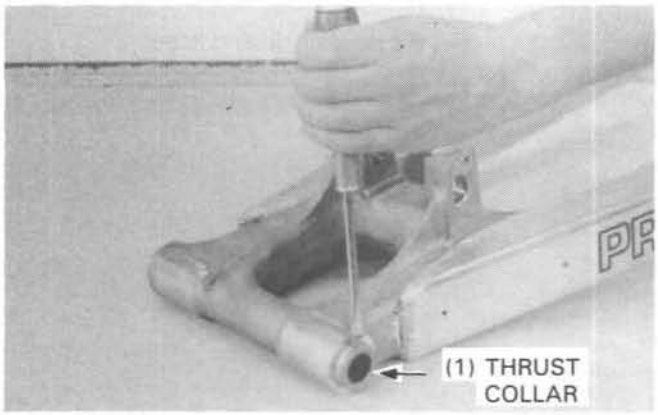
INSPECTION

Inspect the swingarm for deformation or cracks.
Check the pivot bearings, collar and dust seal for wear or damage.

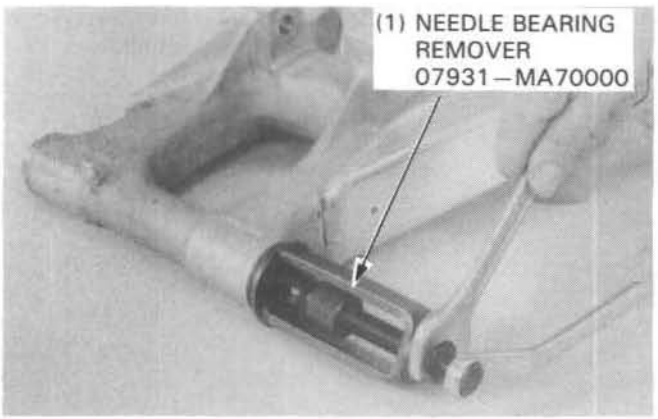


PIVOT BEARING REPLACEMENT

Drive the thrust collars out from the swingarm.



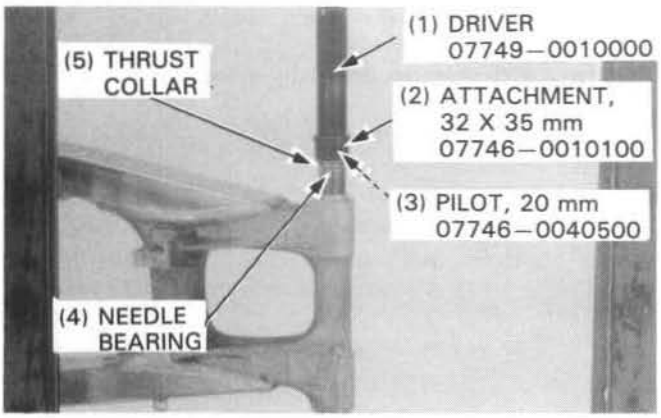
Set the needle bearing remover, screw out the pivot bearings and discard them.



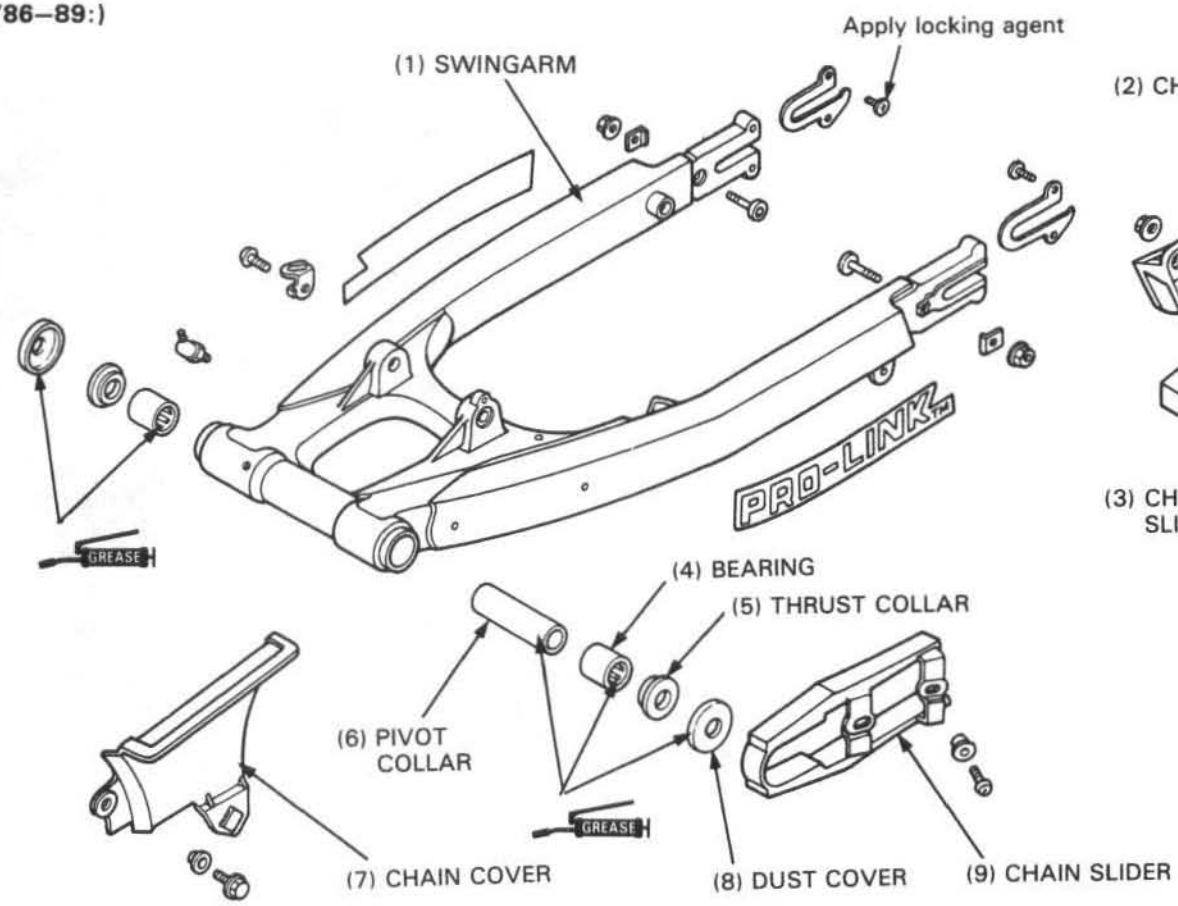
Carefully press the needle bearings with thrust collars into swingarm pivot.

NOTE

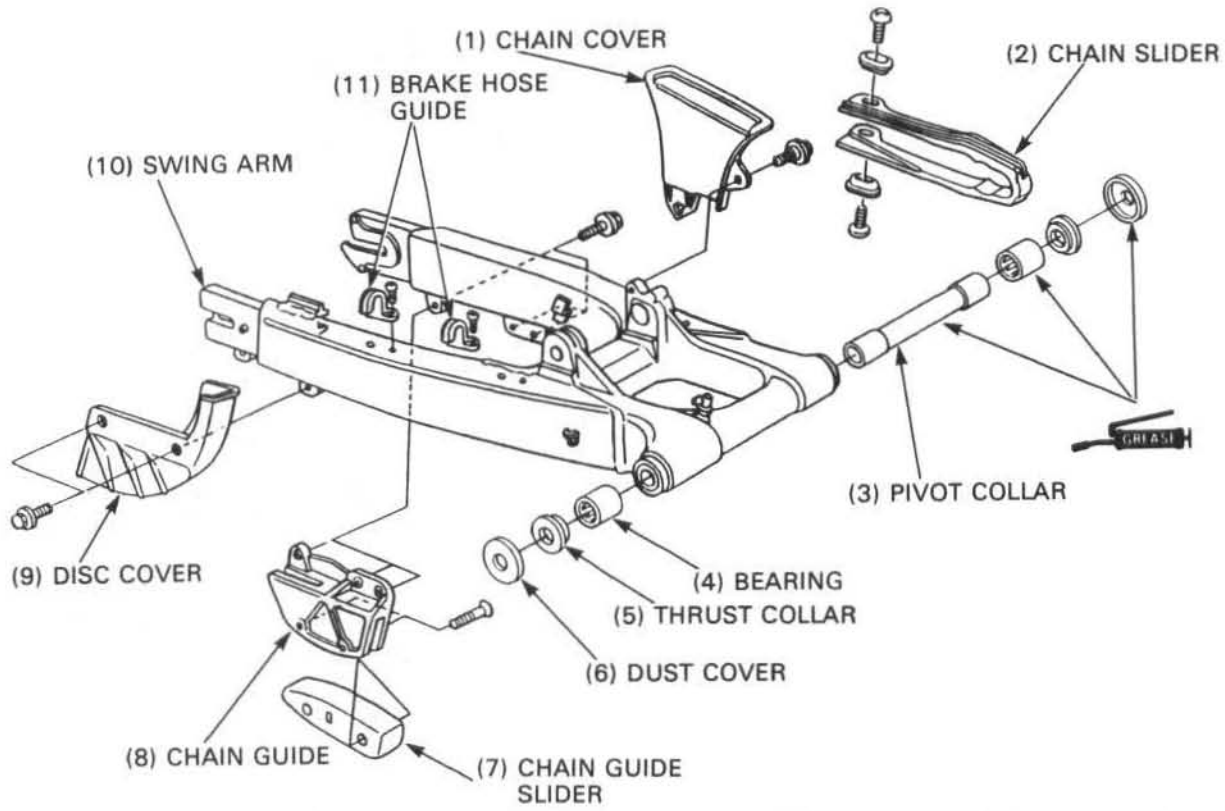
- Install the bearings with the marks facing out.



('86–89:)



(AFTER '89:)



INSTALLATION

Install the swingarm to the frame and tighten the pivot bolt.

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

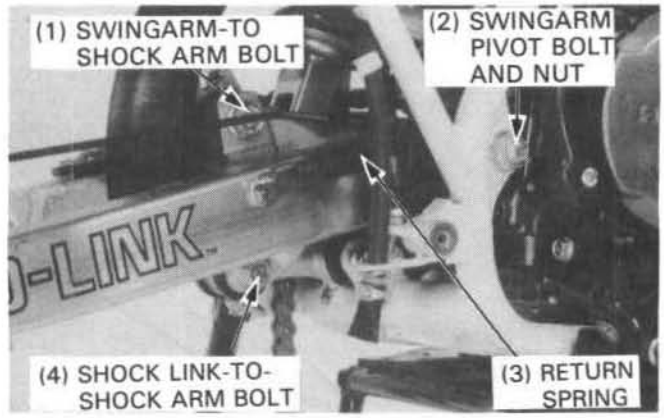
Tighten the swingarm-to-shock arm pivot bolt.

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

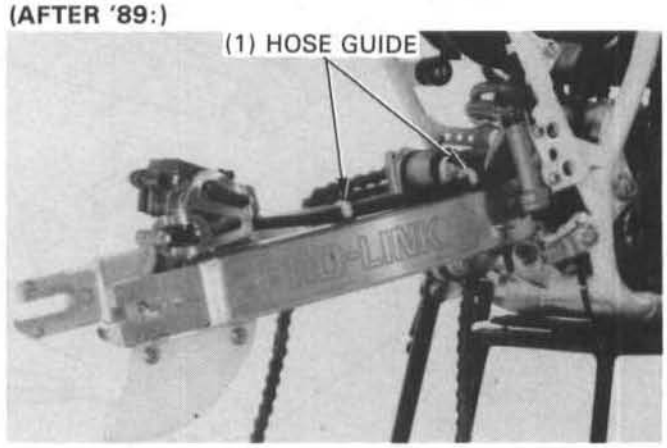
Tighten the shock link-to-shock arm pivot bolt.

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

Connect the brake pedal return spring to the swingarm.

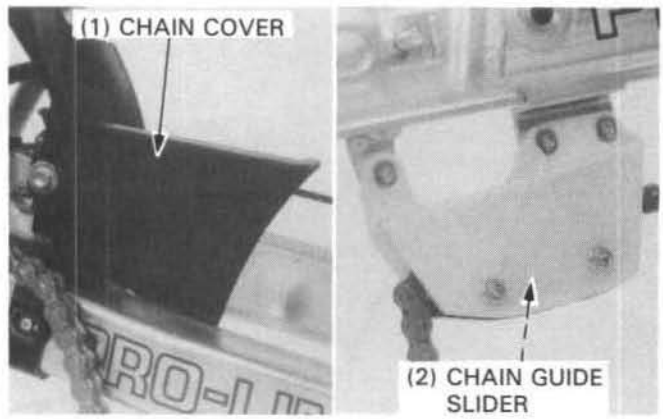


(AFTER '89:)
Install the brake hose and hose guide.



Install the drive chain cover and drive chain guide slider.

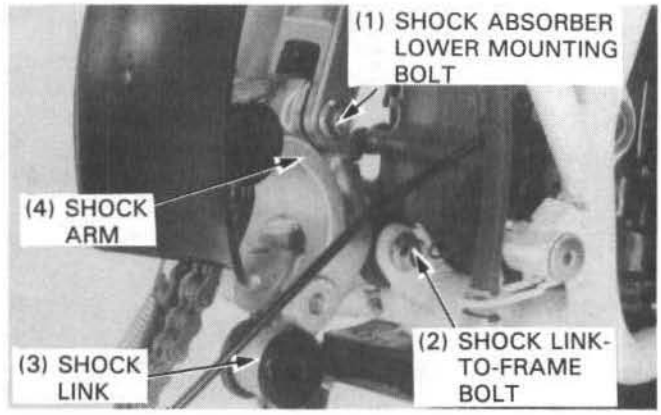
Install the rear wheel (page 13-12).



SHOCK LINKAGE

REMOVAL

Remove the following:
- rear wheel (page 13-3).
- swingarm (page 13-33).
- shock absorber lower mounting bolt and shock arm.
- shock link-to-frame pivot bolt and shock link.



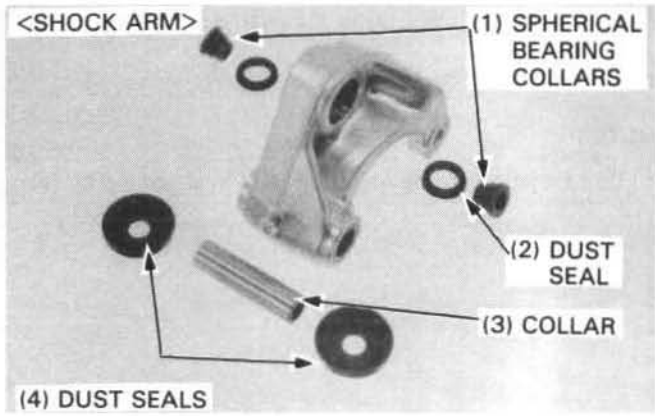
INSPECTION

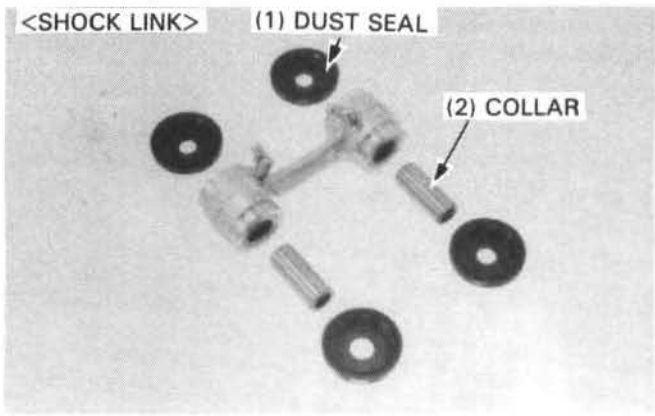
Inspect the shock linkage dust seals, collars, needle bearings and spherical bearing.

Replace them if they have score marks, scratches, or excessive or abnormal wear.

NOTE

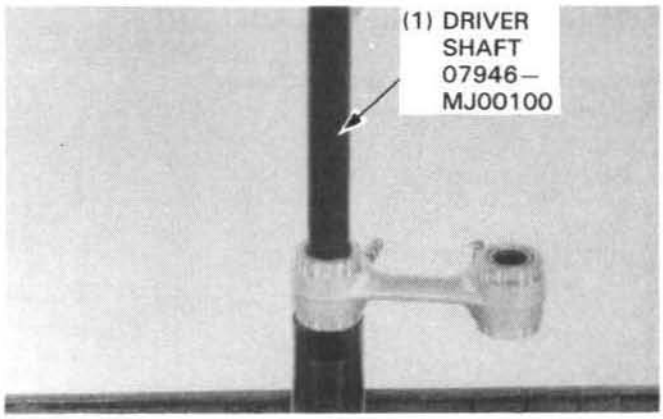
- Be careful not to loosen the needle rollers of the shock arm and link pivot needle bearings.
- If the needle rollers are out of place, inspect them for wear or damage and install into place using molybdenum disulfide grease.



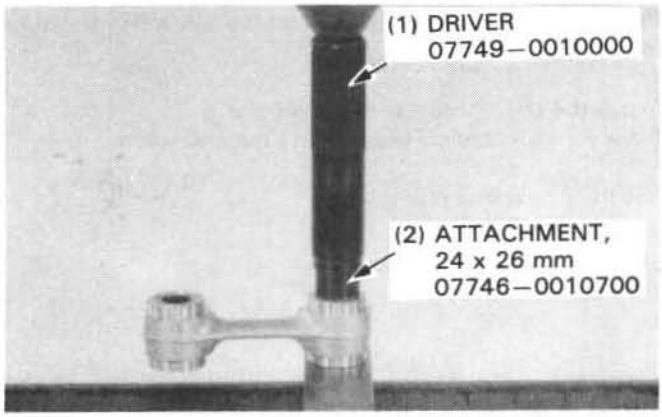


SHOCK LINK NEEDLE BEARING REPLACEMENT

Press out the needle bearings.



Press two new needle bearings into the shock link with their markings facing out.

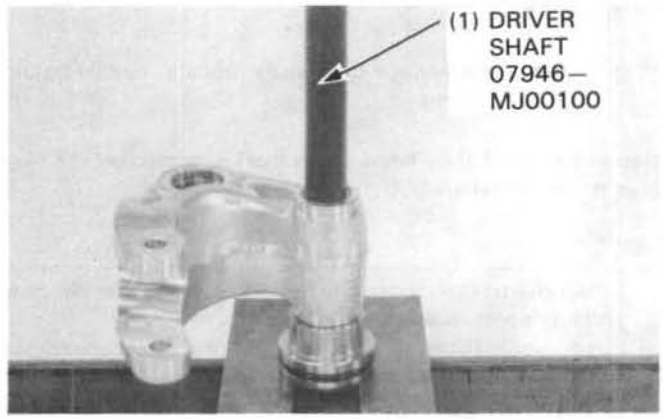


SHOCK ARM NEEDLE BEARING REPLACEMENT

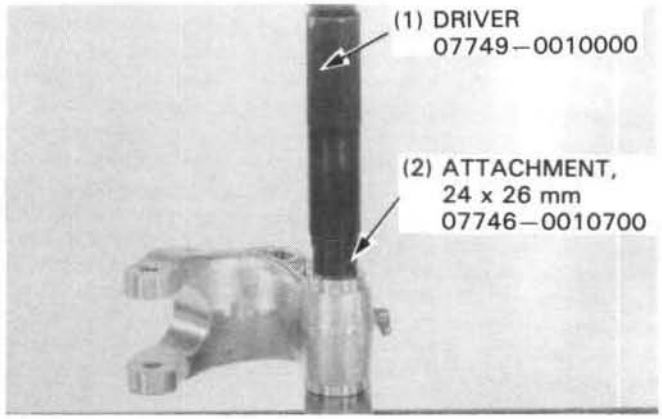
Drive out the needle bearings.

NOTE

- Be careful not to damage the dust seal sealing surface.

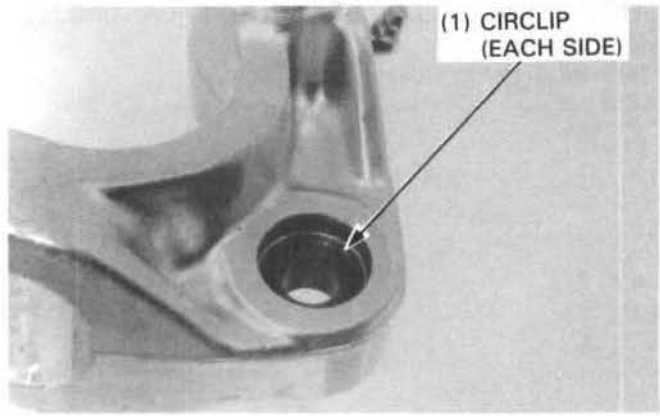


Press the new needle bearings into shock arm with their marking facing out.



SPHERICAL BEARING REPLACEMENT

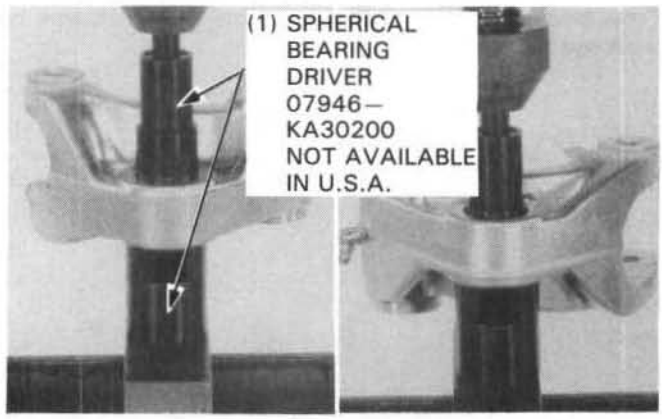
Remove the side collars and dust seals.
Remove the circlips.



Press out the spherical bearing from the shock arm and discard it.

Install the circlip into the lower groove.
Press a new spherical bearing into the shock arm.

Set the circlip into place.



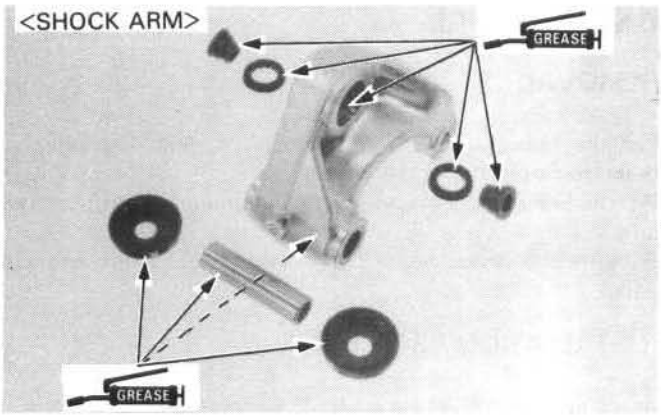
INSTALLATION

Apply a paste grease with 40% or more molybdenum disulfide to the spherical bearing, collars and dust seals.

NOTE

Some sources of MoS_2 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. only)
- Rocol Paste manufactured by Sumico Lubricant, Japan.
- Rocol ASP manufactured by Rocol Limited, U.K.

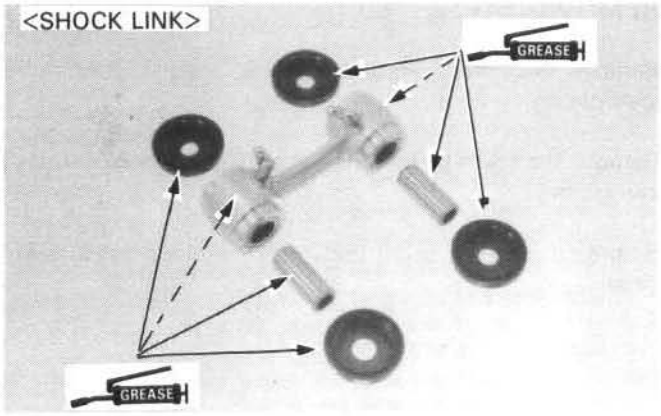
Any other manufacturer's paste grease equivalent to the above may also be used.



Apply grease to the shock linkage collars, bearings and dust seal lips.

NOTE

- Make sure that the needle bearing rollers are in position before installing the pivot collars.



Install the shock arm and tighten the shock absorber lower mounting bolt.

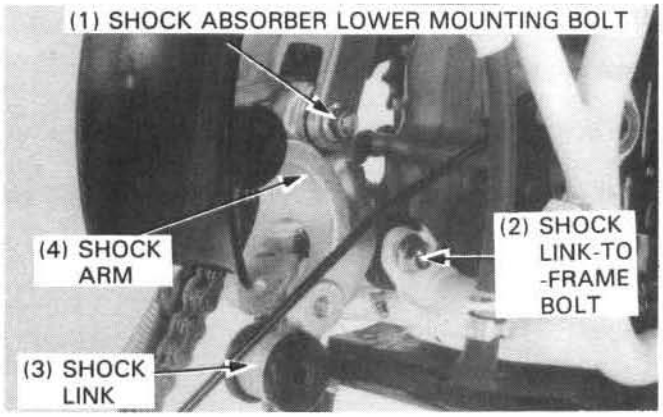
TORQUE: 30—40 N·m (3.0—4.0 kg-m, 22—29 ft-lb)

Install the shock link and tighten the shock link-to-frame pivot bolt.

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

NOTE

- Install the shock linkage with the grease fittings facing the right side.



Install the following:
— swingarm (page 13-36)
— rear wheel (page 13-12)

BRAKE PEDAL

REMOVAL ('86—'89:)

Pull the brake arm pin holder forward, and disconnect the brake rod from the brake arm.
Pull the brake pedal return spring and unhook it from the swing arm.
Remove the brake pedal bolt, brake pedal pivot and brake pedal.

INSTALLATION ('86—'89:)

Apply grease to the brake pedal pivot and install the removed parts in the reverse order of removal.

REMOVAL (AFTER '89:)

Remove the cotter pin and the rear brake master cylinder joint pin.

Remove the brake pedal return spring and unhook it from the swingarm.

Remove the brake pedal bolt, brake pedal pivot and brake pedal.

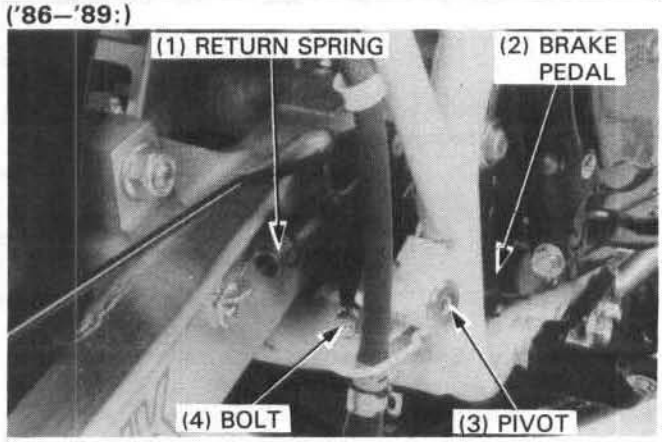
INSTALLATION (AFTER '89)

Install the brake pedal into the frame.

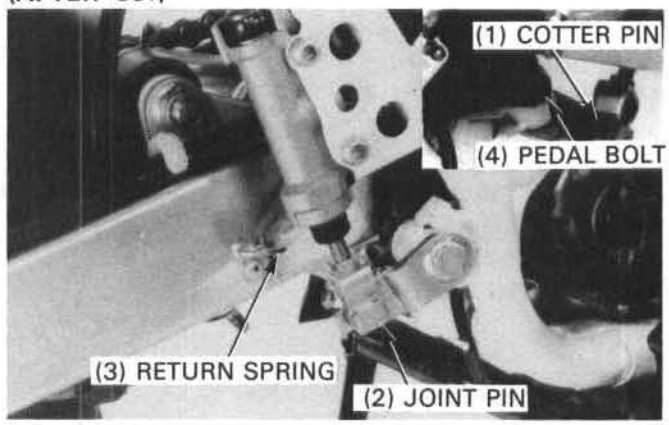
Apply grease to the brake pedal pivot and install the new O-rings.
Install the pedal pivot aligning the serration with the brake pedal.

Install the removed parts in the reverse order of removal.

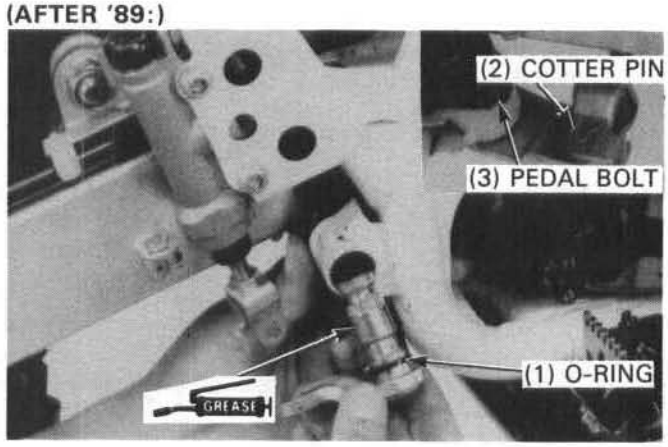
('86—'89:)



(AFTER '89:)

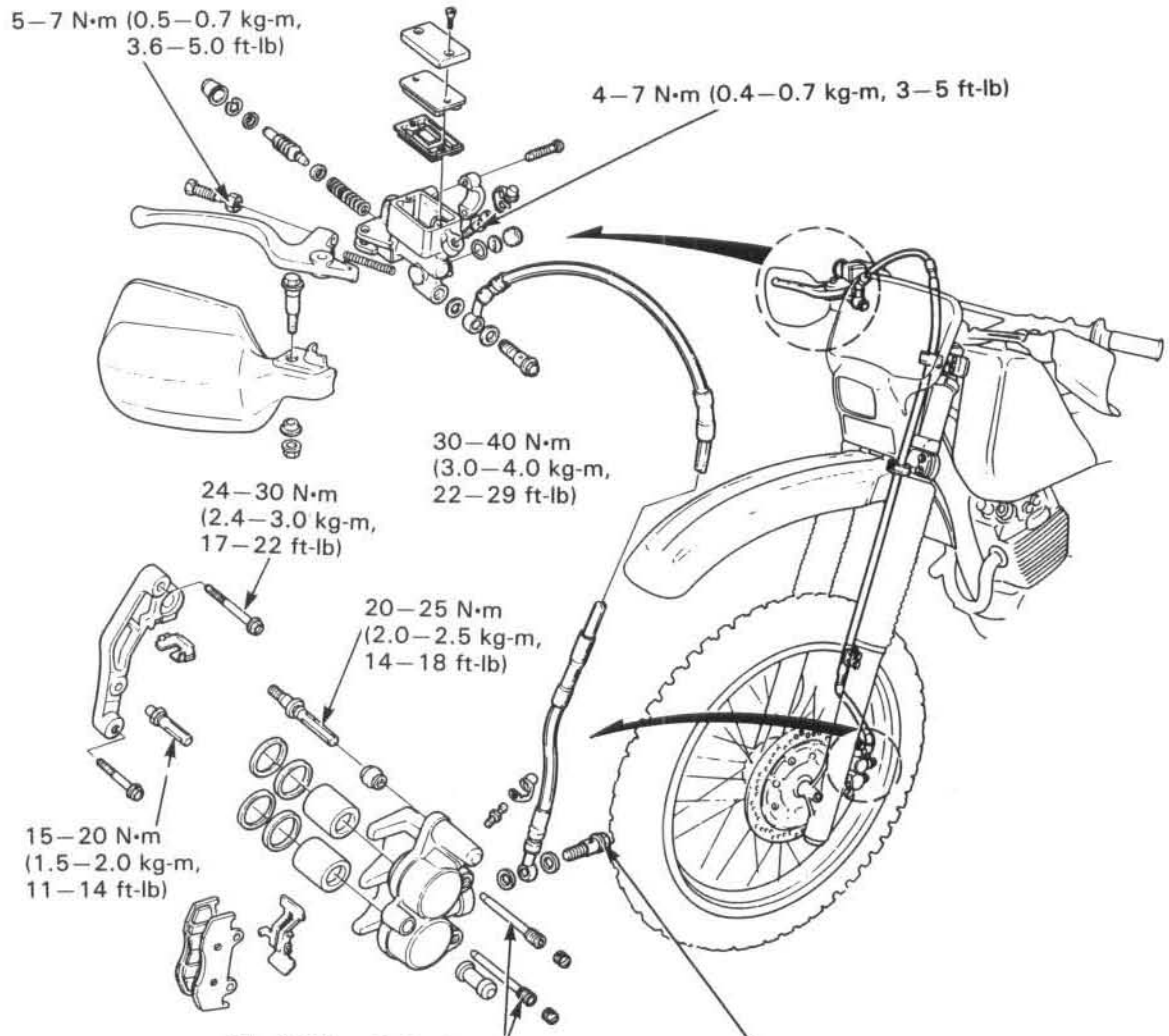


(AFTER '89:)

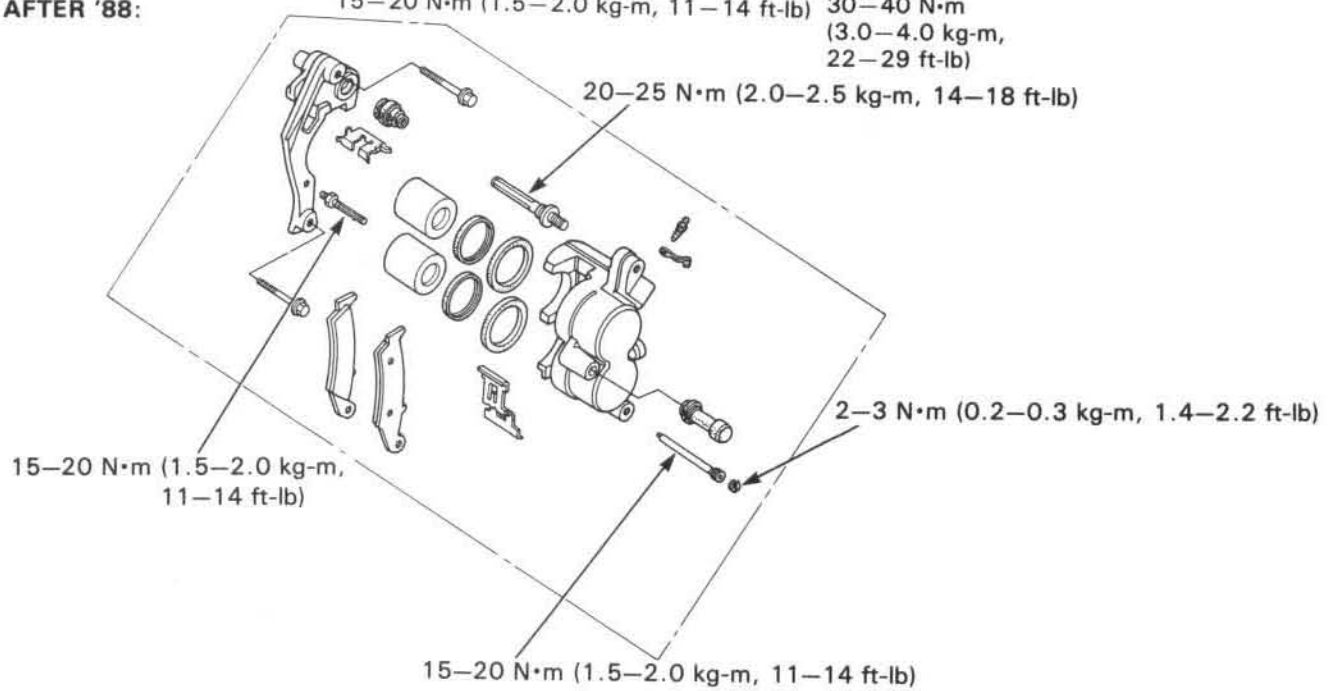


MEMO

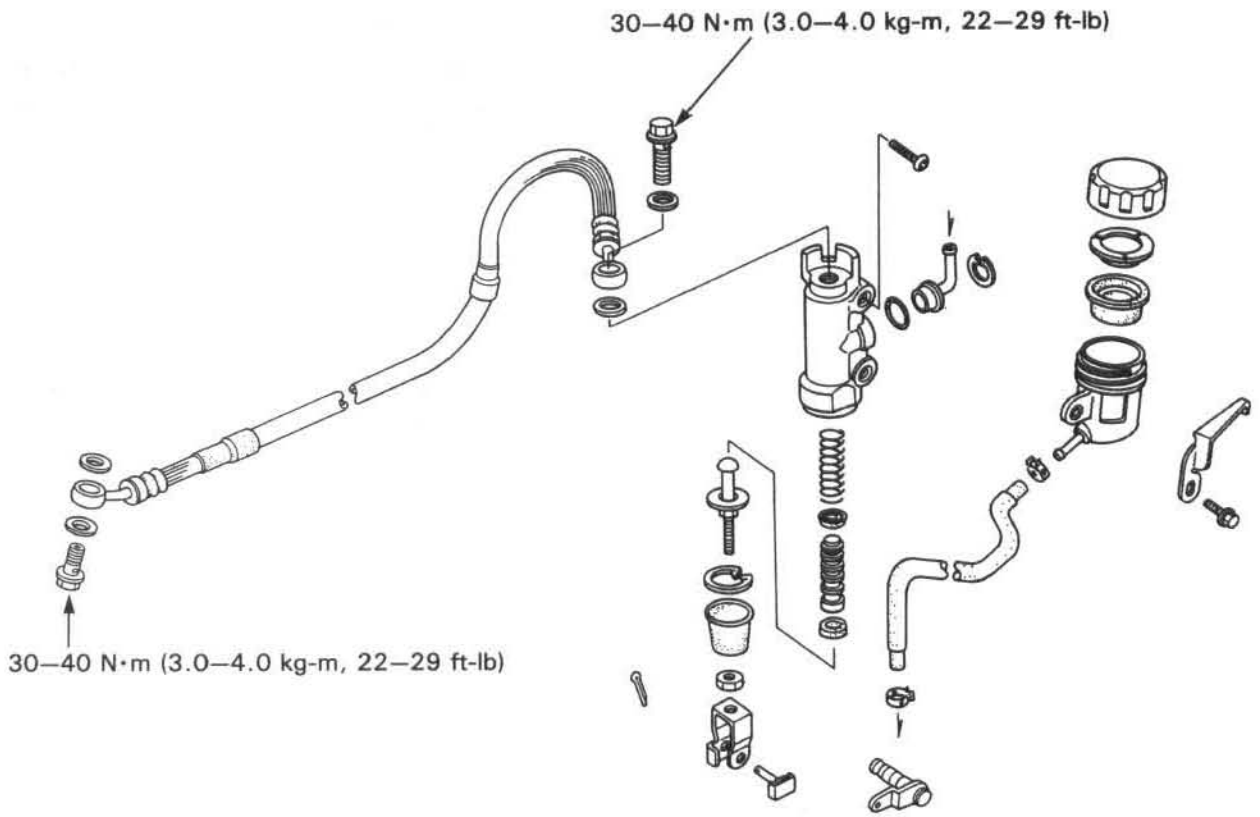
'86–'88:

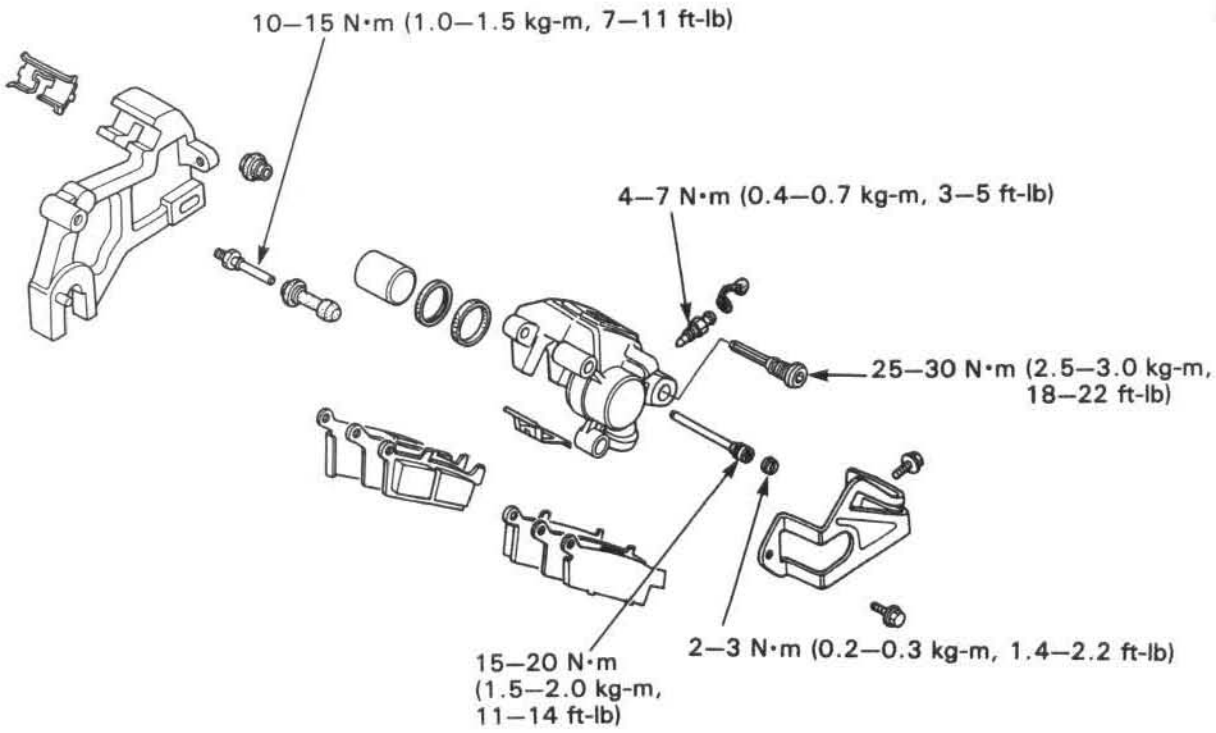


AFTER '88:



(REAR BRAKE: AFTER '89:)





SERVICE INFORMATION

GENERAL

WARNING

- ***Brake dust may contain asbestos. Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by air-borne asbestos fibers.***

- Use DOT-4 brake fluid from a sealed container.
- Bleed the hydraulic system if it is disassembled or if the brake feels spongy.
- Do not allow foreign material to enter the system when filling the reservoir.
- 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 shop towel. If fluid does get on these parts, wipe it off immediately with a clean cloth.
- Always check brake operation before riding the motorcycle.

SPECIFICATIONS

FRONT:

Unit : mm (in)

ITEM	STANDARD	SERVICE LIMT
Brake disc thickness	3.0 (0.12)	2.5 (0.10)
Brake pad thickness	4.4 (0.17)	3.4 (0.13)
Brake disc runout	—	0.15 (0.006)
Master cylinder I.D.	11.00–11.04 (0.433–0.435)	11.05 (0.435)
Master piston O.D.	10.85–10.91 (0.427–0.430)	10.84 (0.427)
Caliper cylinder I.D.	27.00–27.05 (1.063–1.065)	27.06 (1.065)
Caliper piston O.D.	26.90–26.95 (1.059–1.061)	26.89 (1.059)

REAR (AFTER '89)

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Brake disc thickness	4.5 (0.18)	4.0 (0.16)
Brake pad thickness	6.4 (0.25)	1.0 (0.04)
Brake disc runout	———	0.15 (0.006)
Master cylinder I.D.	12.700–12.743 (0.5000–0.5016)	12.76 (0.502)
Master piston O.D.	12.657–12.684 (0.4983–0.4993)	12.64 (0.498)
Caliper cylinder I.D.	27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
Caliper piston O.D.	26.935–26.968 (1.0604–1.0617)	26.89 (1.059)

TORQUE VALVES

Front brake caliper bolt	24—30 N·m (2.4—3.0 kg-m, 17—22 ft-lb)
Pad pin	15—20 N·m (1.5—2.0 kg-m, 11—14 ft-lb)
Pad pin plug	2—3 N·m (0.2—0.3 kg-m, 1.4—2.2 ft-lb)
Front brake caliper pin bolt (lower)	15—20 N·m (1.5—2.0 kg-m, 11—14 ft-lb)
(upper)	20—25 N·m (2.0—2.5 kg-m, 14—18 ft-lb)
Rear brake caliper pin bolt (caliper side)	25—30 N·m (2.5—3.5 kg-m, 18—22 ft-lb)
(bracket side)	10—15 N·m (1.0—1.5 kg-m, 7—11 ft-lb)
	Apply a locking agent to the threads.
Bleeder valve	4—7 N·m (0.4—0.7 kg-m, 3—5 ft-lb)
Front brake lever adjuster lock nut	5—7 N·m (0.5—0.7 kg-m, 3.6—5.0 ft-lb)
Brake hose bolt	30—40 N·m (3.0—4.0 kg-m, 22—29 ft-lb)

TROUBLESHOOTING

Brake lever soft or spongy
- Air in hydraulic system
- Low fluid level
- Hydraulic system leaking
- Fluid has deteriorated

Brake lever (pedal) too hard
- Sticking piston(s)
- Clogged hydraulic system
- Pads glazed or worn excessively

Brake drag
- Hydraulic system sticking
- Sticking piston(s)
- Incorrect pedal adjustment (AFTER '89:)
- Disc or wheel misaligned

Brakes grab or pull to one side
- Pads contaminated
- Disc or wheel misaligned

Brake chatter or squeal
- Pads contaminated
- Excessive disc runout
- Caliper installed incorrectly
- Disc or wheel misaligned

BRAKE FLUID REPLACEMENT/ AIR BLEEDING

Check the fluid level with the master cylinder parallel to the ground.

CAUTION

- *Install the master cylinder cover when operating the brake lever or brake fluid will squirt out of the reservoir.*
- *Avoid spilling fluid on painted, plastic, or rubber parts. Place a shop towel over these parts whenever the system is serviced.*

BRAKE FLUID DRAINING

Connect a bleed hose to the bleeder valve.

Loosen the caliper bleeder valve and pump the brake lever. Stop operating the lever when fluid stops flowing out of the bleeder valve.

WARNING

- ***A contaminated brake disc or pad reduces stopping power.***
- ***Discard contaminated pads and clean a contaminated disc with a high quality brake cleaning agent.***

BRAKE FLUID FILLING/AIR BLEEDING

Close the bleed valve and fill the brake fluid reservoir with DOT 4 fluid from a sealed container.

FRONT

Fill the master cylinder with DOT 4 brake fluid to the casting ledge.

If the master cylinder is equipped with a bleeder valve, bleed the air from this bleeder valve using the same procedure as the caliper bleeder valve before bleeding air at the calipar.

REAR (AFTER '89:)

Fill the master cylinder and reservoir to upper line with DOT 4 brake fluid.

Connect the Mityvac Brake Bleeder No. 6860 or equivalent to the bleed valve.

NOTE

- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- Use only reserved brake fluid from a sealed container.
- Do not mix brake fluid types and never reuse the contaminated fluid which has been pumped out during brake bleeding, because this will impair the efficiency of the brake system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.

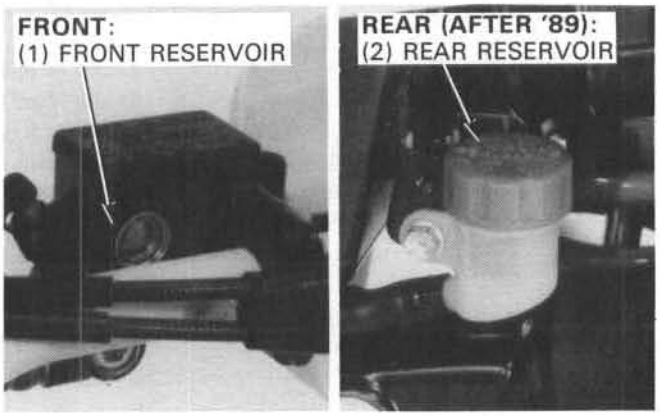
Pump the brake bleeder and loosen the bleed valve.

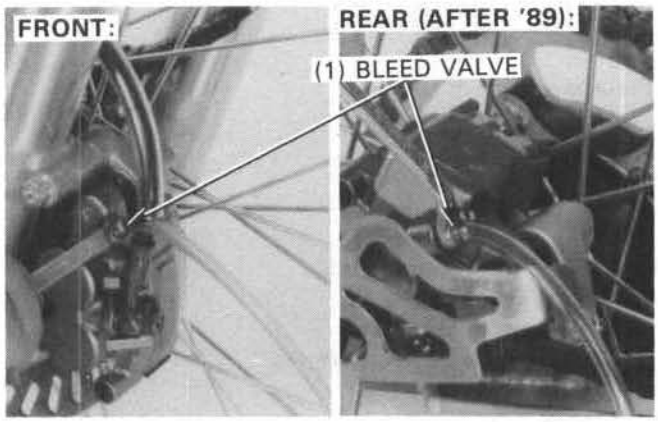
Add fluid when the fluid level in the master cylinder is low.

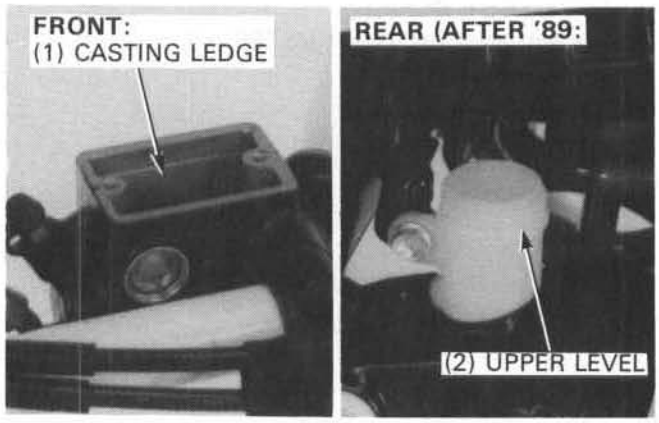
Repeat the above procedures until no air bubbles appear in the plastic hose.

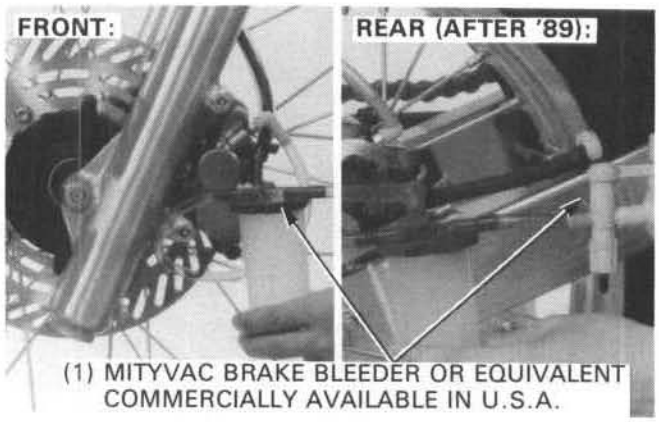
NOTE

- If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.









(1) MITYVAC BRAKE BLEEDER OR EQUIVALENT COMMERCIALLY AVAILABLE IN U.S.A.

If a brake bleeder is not available, perform the following precedure:

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, then open the bleed valve 1/2 turn and close the valve.

NOTE

- Do not release the brake lever until the bleed valve has been closed.

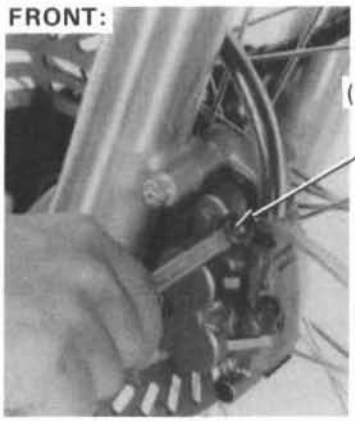
2) Release the brake slowly and wait several seconds after it reaches the end of its travel.

Repeat steps 1 and 2 until bubbles cease to appear in the fluid at the end of the hose.

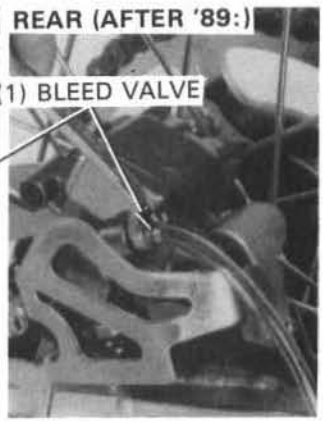
Tighten the bleed valve.

TORQUE: 4–7 N·m (0.7 kg-m, 3–5 ft-lb)

FRONT:



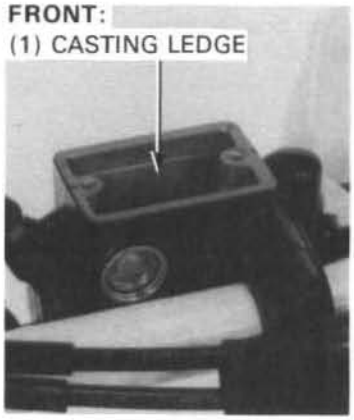
REAR (AFTER '89:)



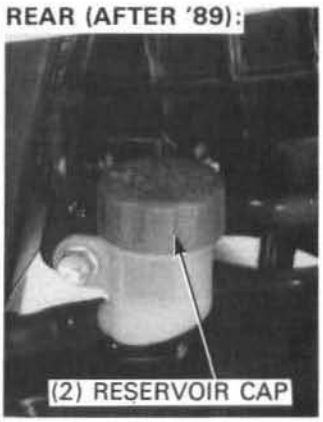
FRONT
Reinstall the diaphragm and master cylinder cover.

REAR (AFTER '89:)
Reinstall the reservoir cap securely.

FRONT:



REAR (AFTER '89):



WARNING

- ***A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a quality brake degreasing agent.***

BRAKE PAD/DISC

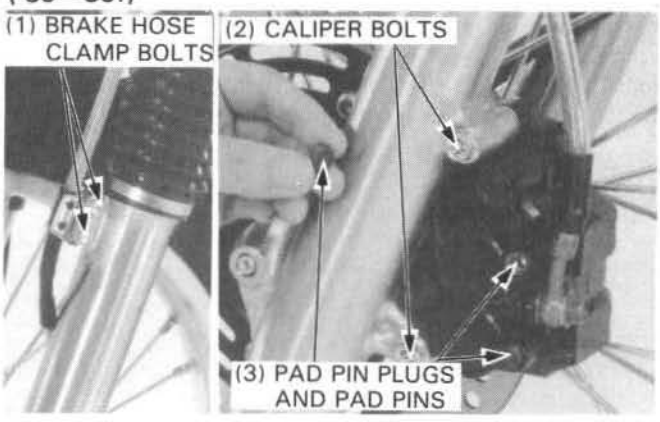
PAD REPLACEMENT
('86–'88:)

NOTE

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

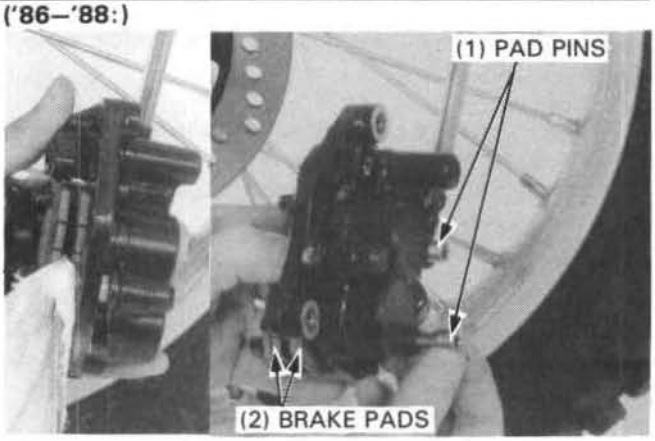
Remove the brake hose clamp bolts.
Remove the pad pin plugs and loosen the pad pins.
Remove the caliper bolts, caliper and bracket from the left fork leg.

('86–'88:)



Pry one old pad against the caliper with a screwdriver to push the pistons into the caliper.
Pull the pad pins out of the caliper.
Remove the brake pads.

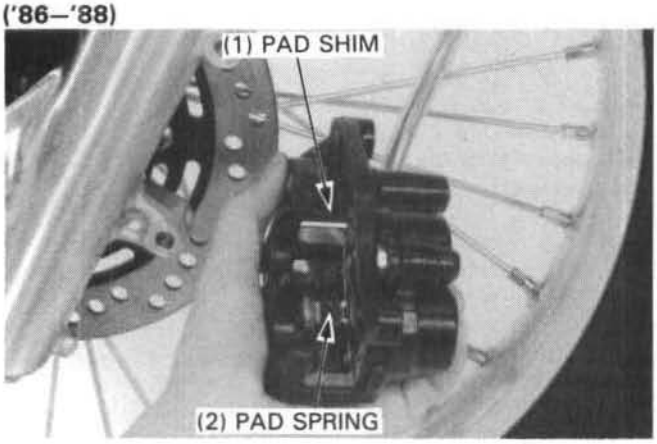
('86–'88:)



Position the pad spring in the caliper as shown.

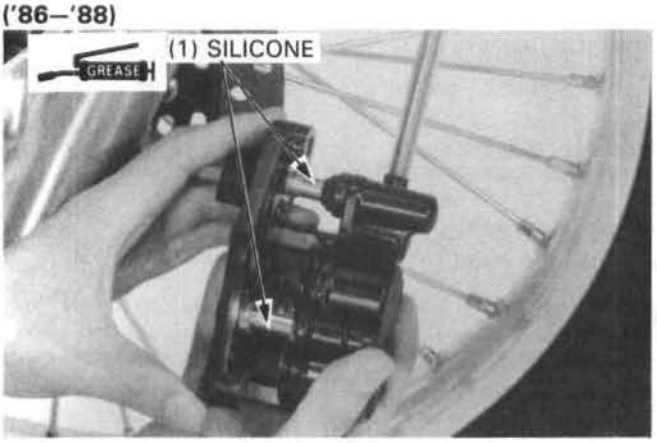
Make sure the pad shim on the caliper bracket is in place.

('86–'88)



Apply silicone grease to the caliper bracket pins.

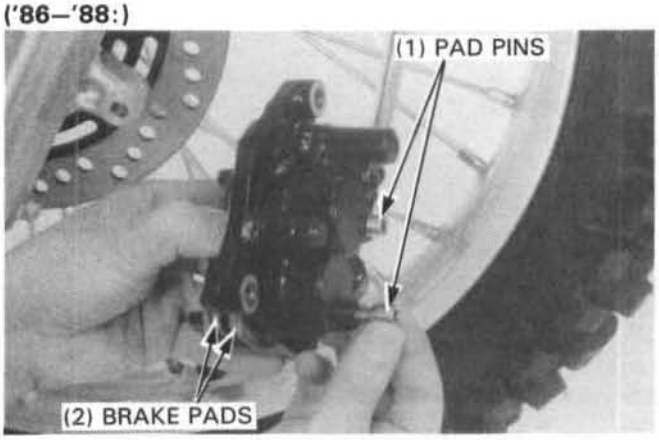
('86–'88)



Install new pads in the caliper.

Install the pad pins, first one pin, then the other, by pushing the pads against the caliper to depress the pad spring.

('86–'88:)



Install the caliper so that the brake disc is positioned between the pads, making sure not to damage the pads, then tighten the caliper bolts.

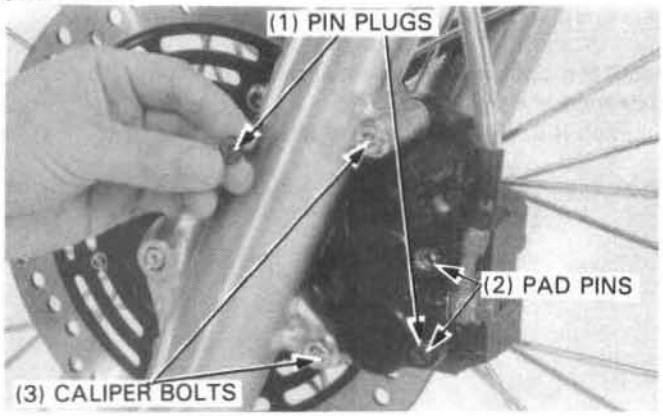
TORQUE: 24—30 N·m (2.4—3.0 kg-m, 17—22 ft-lb)

Tighten the pad pins.

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

Install the pad pin plugs.

('86—'88:)



AFTER '88: FRONT; AFTER '89: REAR

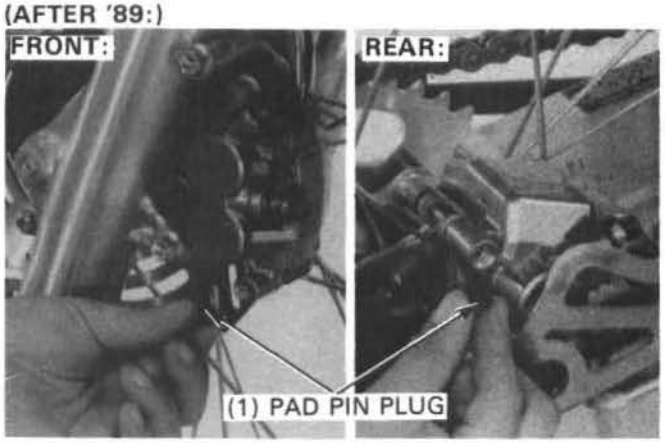
The brake pads can be replaced with the caliper installed.

NOTE

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

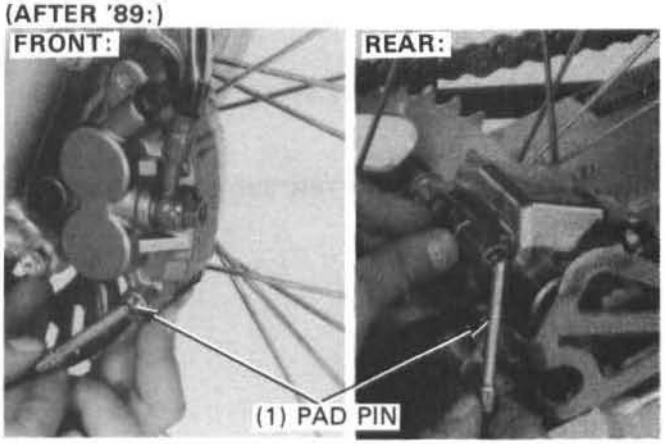
Remove the pad pin plug and loosen the pad pin (5 mm HEX).
Pull the pad pin out of the caliper.

(AFTER '89:)



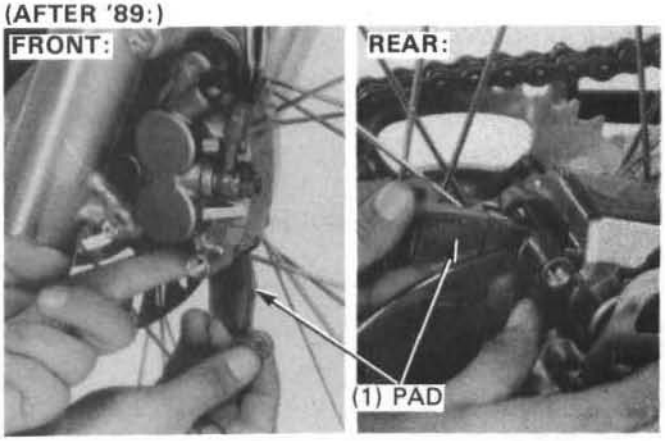
Remove the brake pads.

(AFTER '89:)



Insert new right side pad and push the caliper piston to clear that installation of the new pad left side.

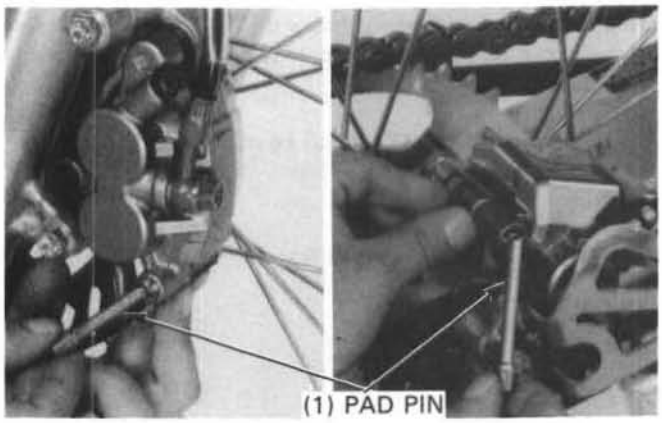
(AFTER '89:)



Install new left side pad.

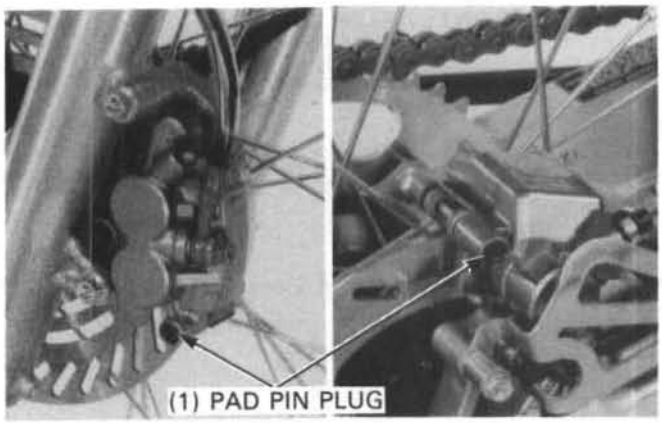
Install the pad pin by pushing the pads against the caliper to depress the pad spring.
Thighten it to the specified torque.

TORQUE: 15–20 N·m (1.5–2.0 kg-m, 11–14 ft-lb)



Install the pad pin plug.
Tighten it to the specified torque.

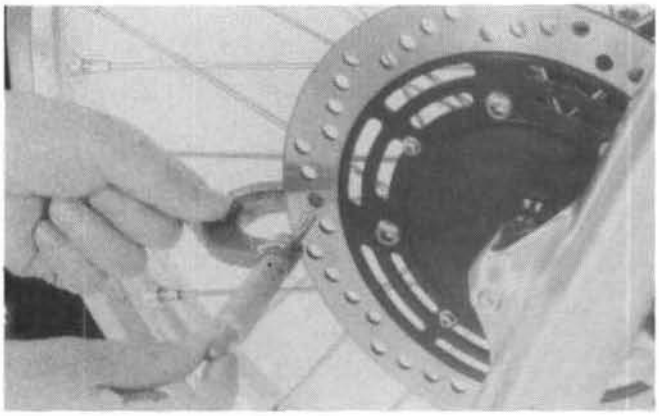
TORQUE: 2–3 N·m (0.2–0.3 kg-m, 1.4–2.2 ft-lb)



DISC THICKNESS

Measure the thickness of the disc.

SERVICE LIMIT: FRONT: 2.5 mm (0.10 in)
: REAR (AFTER '89): 4.0 mm (0.16 in)

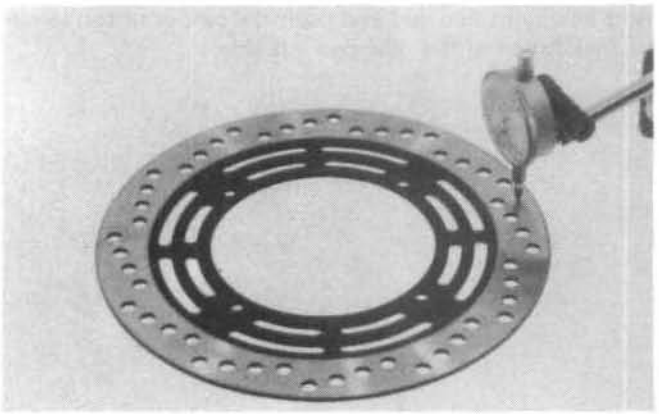


BRAKE DISC WARPAGE

Remove the brake disc.
FRONT: (page 12-8)
REAR (AFTER '89): (page 13-8)

Measure the brake disc for warpage on a surface plate.

SERVICE LIMIT: 0.15 (0.006 in)

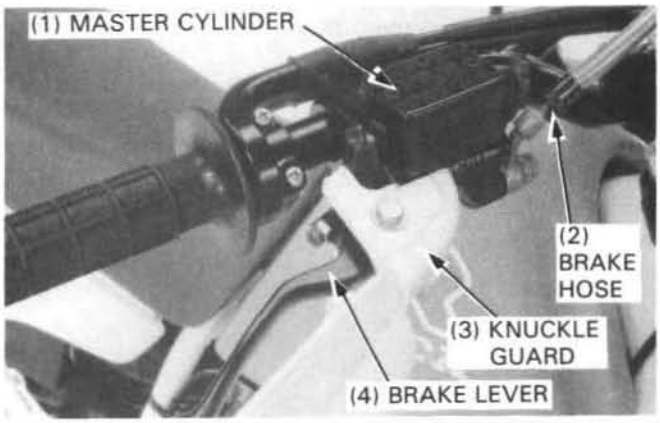


FRONT MASTER CYLINDER

DISASSEMBLY

Drain brake fluid from the hydraulic system.

Remove the brake lever, spring and knuckle guard from the master cylinder.
Disconnect the brake hose.



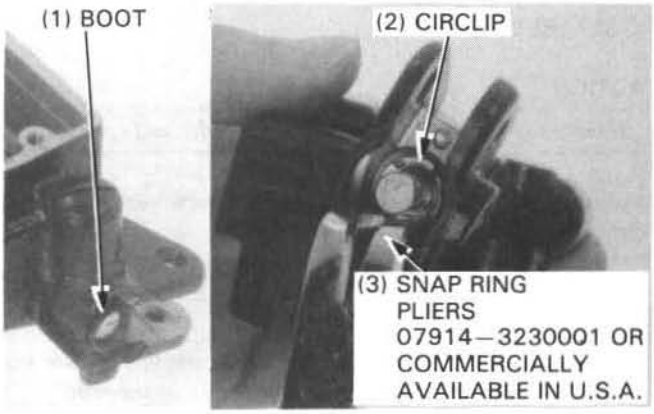
CAUTION

- *Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.*

NOTE

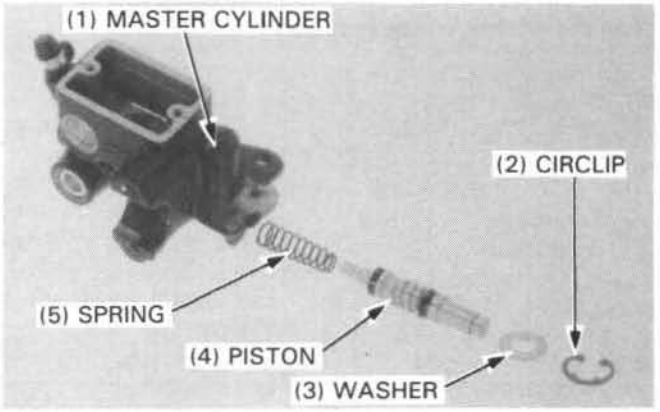
- Do not lose the brake lever return spring.
- When removing the brake hose, cover the end of the hose to prevent contamination. Secure the hose to prevent fluid from leaking out.

Remove the master cylinder.
Remove the piston boot and the circlip from the master cylinder body.



Remove the washer, piston and spring.

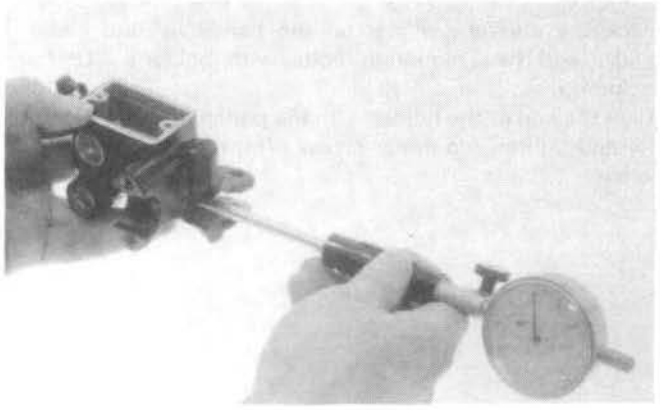
Clean the inside of the master cylinder and reservoir with brake fluid.



INSPECTION

Check the master cylinder for scores, scratches or nicks.
Measure the master cylinder I.D.

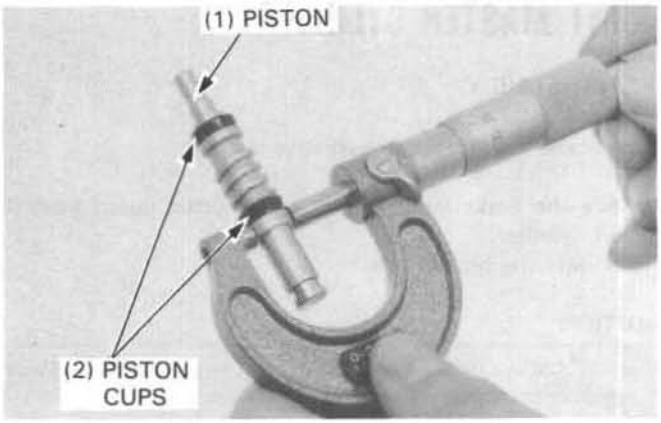
SERVICE LIMIT: 11.05 mm (0.435 in)



Measure the master piston O.D.

SERVICE LIMIT: 10.84 mm (0.427 in)

Check the primary and secondary cups for damage before assembly.



ASSEMBLY

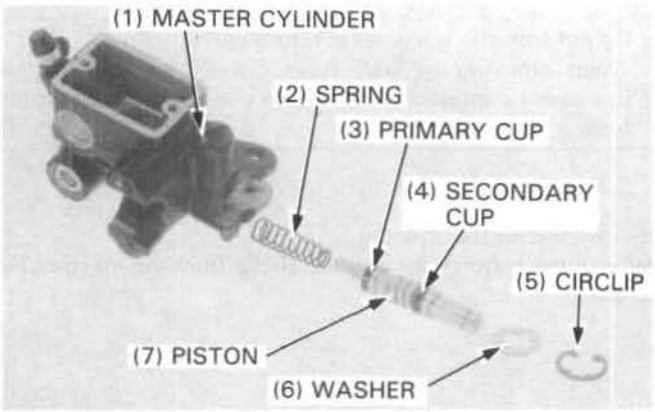
CAUTION

- *Handle the master cylinder piston, cylinder and spring as a set.*

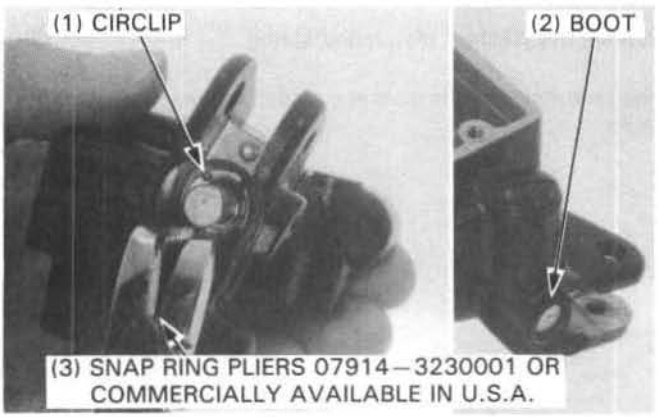
Assemble the master cylinder. Coat all parts with clean brake fluid before assembly.
Dip the piston cups in brake fluid before assembly.

CAUTION

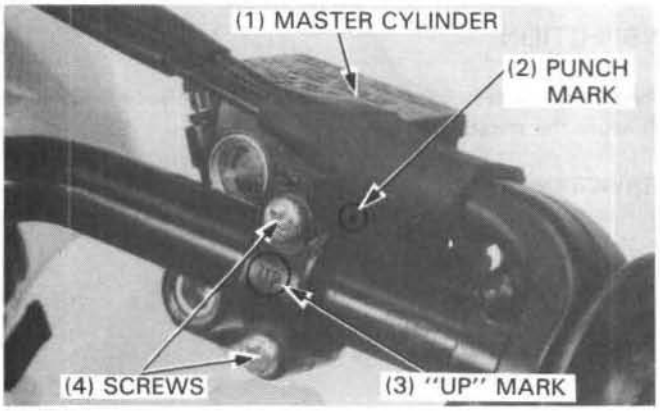
- *When installing the cups, do not allow the lips to turn inside out. Be certain the circlip is seated firmly in the groove.*



Install the washer, circlip and boot.



Place the master cylinder on the handlebar and install the holder and two mounting bolts with holder's "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.

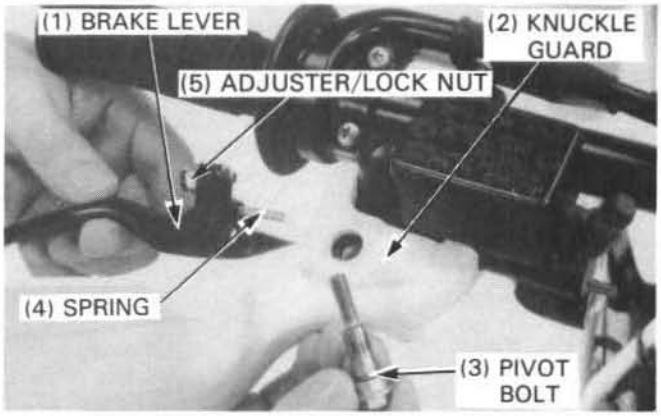


NOTE

- Make sure that the brake lever adjuster and lock nut are in place as shown.

Set the knuckle guard on the master cylinder.
Apply grease to the spring and set it to the brake lever. Hold the spring by setting the brake lever to the master cylinder.

Install the brake lever pivot bolt and nut.
Tighten the nut.



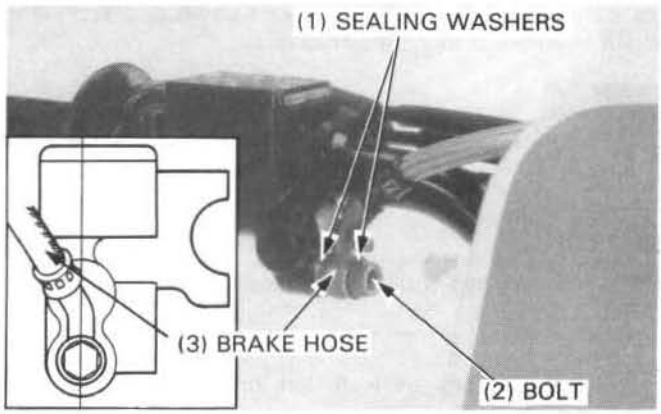
Connect the brake hose to the master cylinder with the new sealing washer and bolt.
Tighten the brake hose bolt to the specified torque.

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

NOTE

- Connect the brake hose to the master cylinder as shown.

Fill the master cylinder to casting ledge and bleed the brake system according to page 14-4.



FRONT BRAKE CALIPER

REMOVAL

('86—'89:)

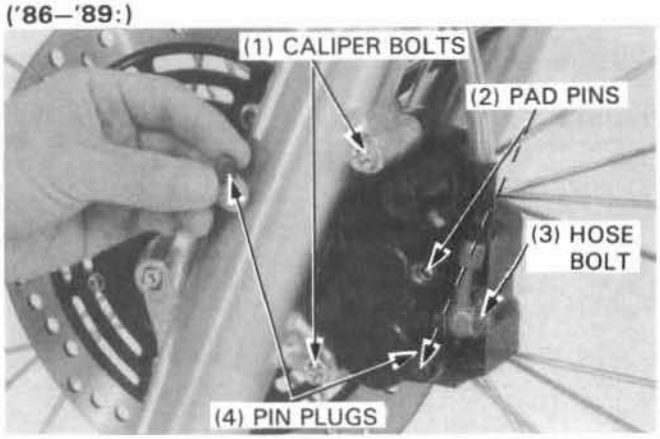
Place a clean container under the caliper and disconnect the brake hose from the caliper.

CAUTION

- *Avoid spilling brake fluid on painted surfaces.*

Remove the pad pin plugs, and loosen the pad pin.
Remove the caliper bolts and caliper.

('86—'89:)



(AFTER '89:)

Remove the brake pads (page 14-5).

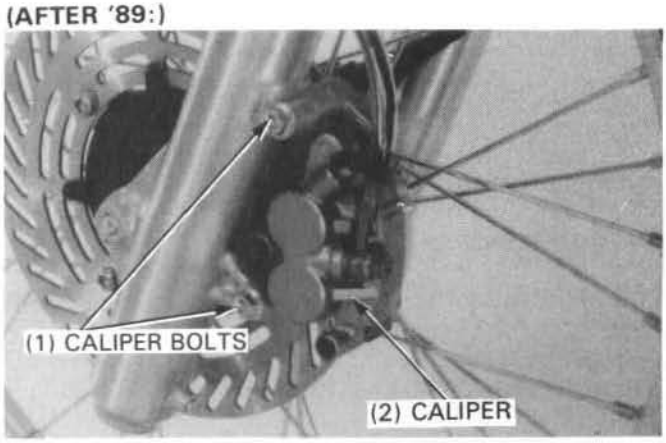
Place a clean container under the caliper and disconnect the brake hose from the caliper.

CAUTION

- *Avoid spilling brake fluid on painted surface.*

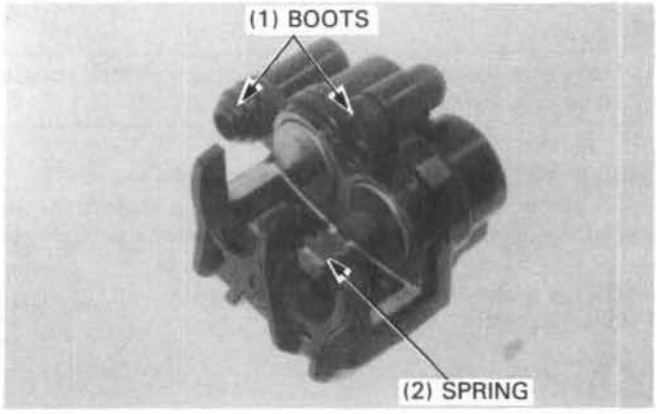
Remove the calipar bolts and caliper.

(AFTER '89:)



DISASSEMBLY

Remove the following:
- pad pins and pads (page 14-5).
- caliper bracket.
- pad spring.
- pivot boots.



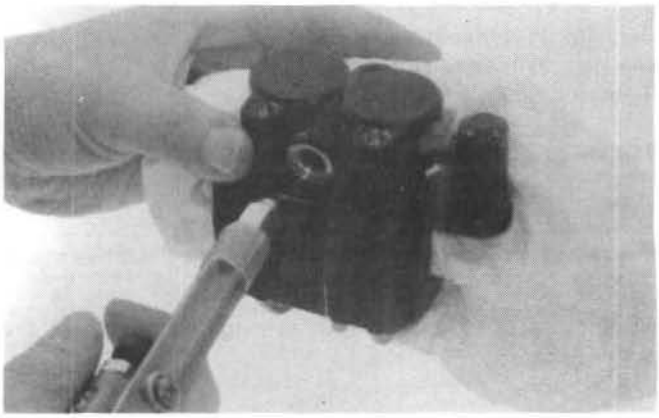
Position the caliper with the pistons down and apply short bursts of air pressure to the fluid inlet.

WARNING

- ***Do not use high pressure air or bring the nozzle too close to the inlet.***

NOTE

- Place a shop towel over the pistons to prevent them from flying out.

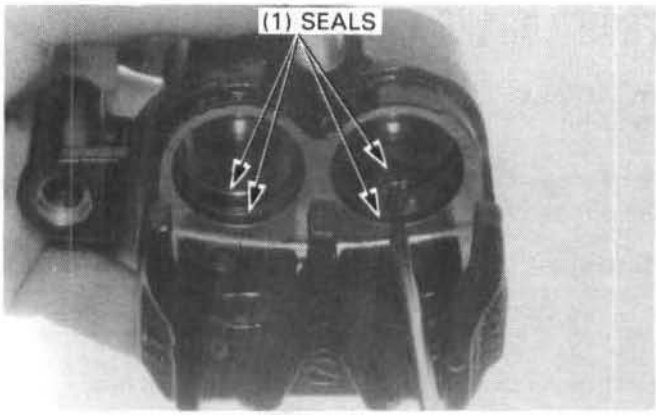


Examine the pistons and cylinders for scoring, scratches or other damage and replace if necessary.

Push the piston seals in, lift them out and discard them.

CAUTION

- *Be careful not to damage the piston sliding surfaces when removing the seals.*



Clean the brake piston seal grooves with brake fluid.

PISTON INSPECTION

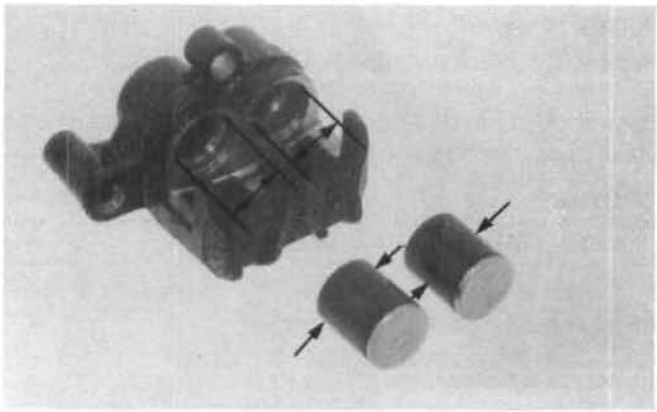
Check the pistons for scoring, scratches or other damage. Measure the piston diameter with a micrometer.

SERVICE LIMIT: 26.89 mm (1.059 in)

CYLINDER INSPECTION

Check the caliper cylinder bores for scoring, scratches or other faults. Measure the caliper cylinder bores.

SERVICE LIMIT: 27.06 mm (1.065 in)



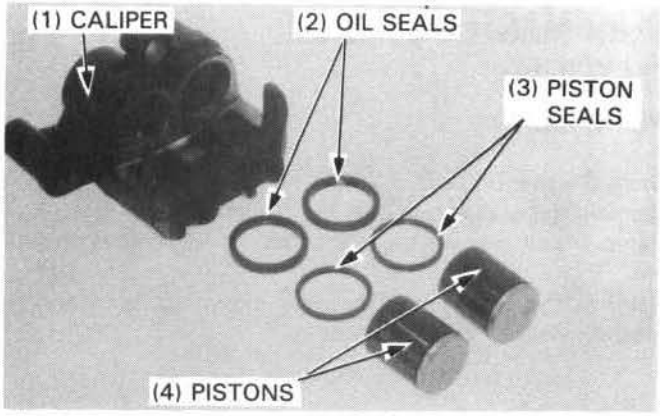
ASSEMBLY

If the piston boots are hardened or deteriorated, replace them with new ones. The piston seals must be replaced with new ones whenever they are removed.
Coat the seals with silicone grease or brake fluid before assembly.

Install new oil seals and piston boots.

Install the pistons with the insulated ends toward the pads.

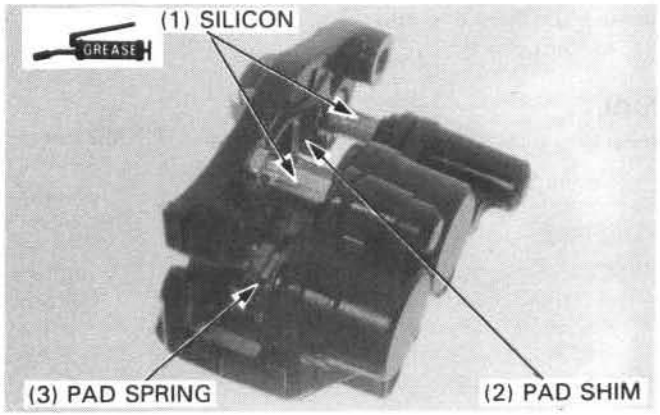
Install the boots, making sure that they are seated in the caliper grooves properly.



Install the pad spring and caliper bracket.

Make sure that the pad shim is in place.
Apply silicone grease to the caliper bracket pins.

('86–'89:)
Install the pad and pad pins.



INSTALLATION

Install the caliper on the fork leg and tighten the caliper bracket bolts.

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

Tighten the pad pin(s).

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

Install the pad pin plug(s).

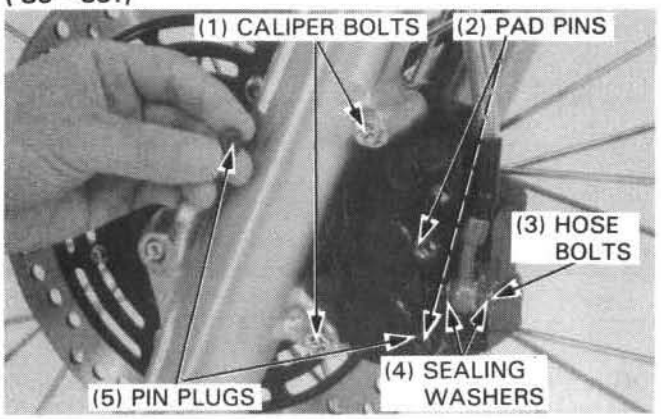
TORQUE: 1–2 N·m (0.1–0.2 kg-m, 0.7–1.4 ft-lb)

Connect the brake hose and tighten the hose bolt with new sealing washers.

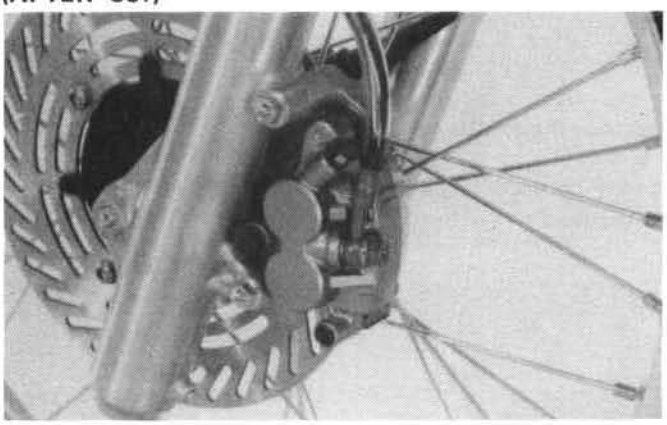
TORQUE: 30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)

Fill the master cylinder with DOT 4 brake fluid and bleed the brake system (page 14-4).

('86–'89:)



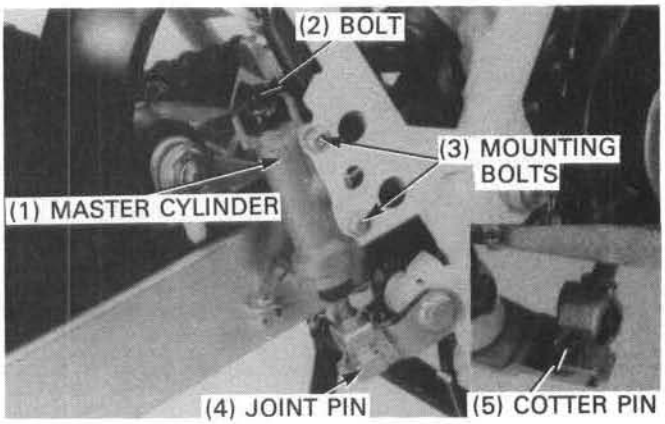
(AFTER '89:)



REAR MASTER CYLINDER (AFTER '89)

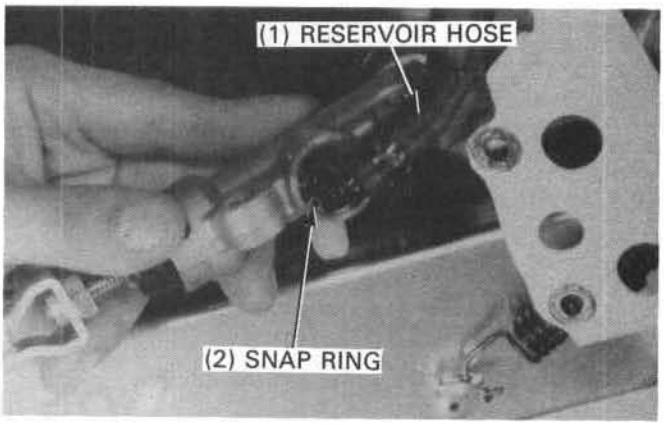
REMOVAL

Drain the rear brake hydraulic system (page 14-4).
Remove the brake hose bolt and disconnect the brake hose.
Remove and discard the cotter pin, then remove the joint pin.
Remove the rear master cylinder mounting bolts and rear master cylinder from the frame.



Remove the snap ring and disconnect the reservoir hose from the master cylinder.

TOOL:
Snap ring pliers — **07914—3230001 or Equivalent tool commercially available in U.S.A.**



DISASSEMBLY

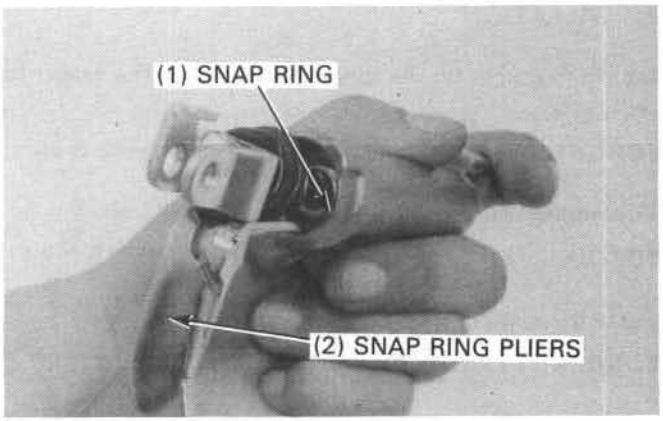
Remove the rubber boot.

Remove the snap ring and push rod from the master cylinder body.

CAUTION

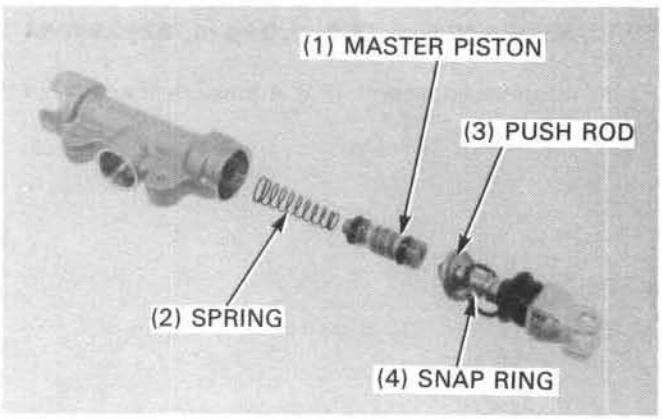
- *Beware that the piston rod will pop out when removing the snap ring.*

TOOL:
Snap ring pliers — **07914—3230001 or Equivalent tool commercially available in U.S.A.**



Remove the master piston and spring.

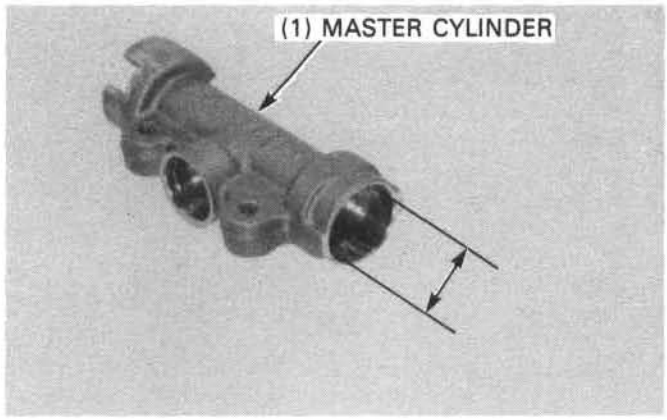
It may be necessary to apply a small amount of air pressure to the fluid outlet to remove the master piston and spring.



INSPECTION

Check the inside of the master cylinder for scores, scratches or nics.
Measure the inside diameter of the master cylinder bore.

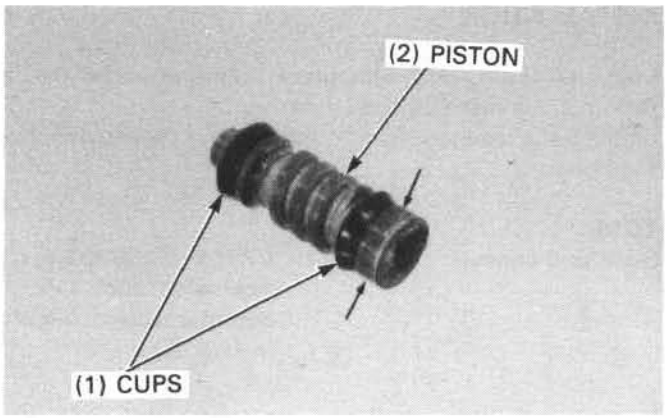
SERVICE LIMIT: 12.76 mm (0.502 in)



Measure the master piston O.D.

SERVICE LIMIT: 12.65 mm (0.498 in)

Check the primary and secondary cups for damage before assembly.



ASSEMBLY

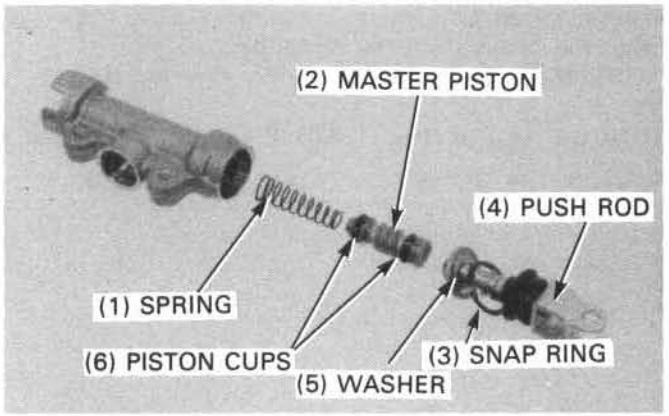
Clean the master cylinder with compressed air.
Dip the piston cups in clean brake fluid before assembly.
Install the spring and master piston together.

NOTE

- The master cylinder piston, cups and spring must be installed as a set.

CAUTION

- *When installing the cups, do not allow the lips to turn inside out.*



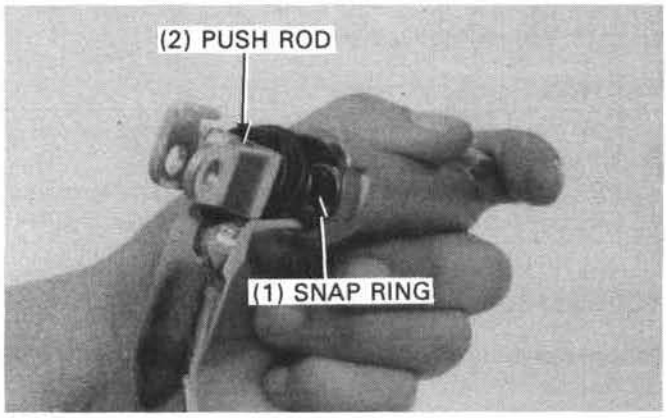
Install the push rod and washer into the master cylinder.
Install the snap ring.

TOOL:

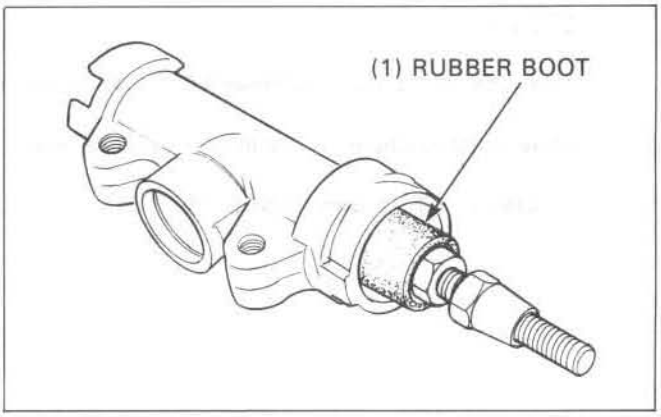
Snap ring pliers	**07914–3230001 or Equivalent tool commercially available in U.S.A.**

CAUTION

- *When installing the snap ring, be certain the snap ring seated firmly in the groove.*



Install the rubber boot.

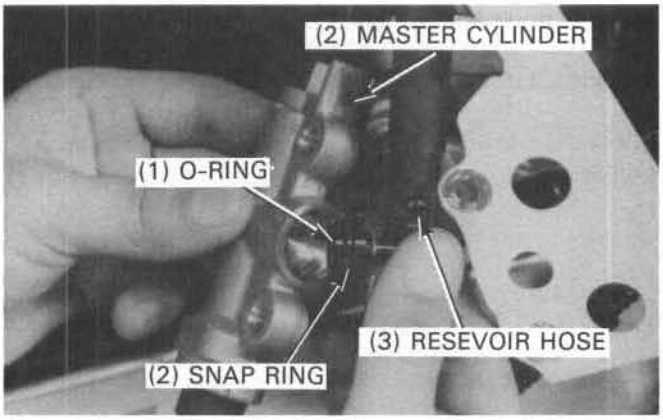


INSTALLATION

Coat the new O-ring with brake fluid and install the new O-ring to the reservoir hose joint cap.
Connect the reservoir hose to the master cylinder with a new snap ring.

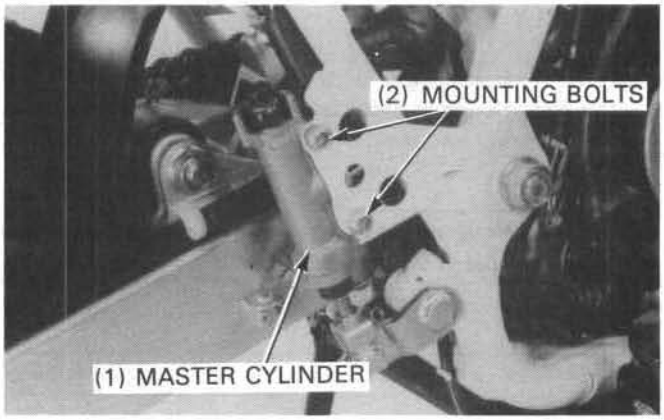
TOOL:

Snap ring pliers	**07914–3230001 or Equivalent tool commercailly available in U.S.A.**



Install the master cylinder to the frame.
Install the joint pin and new cotter pin.
Tighten therear brake master cylinder mounting bolts.

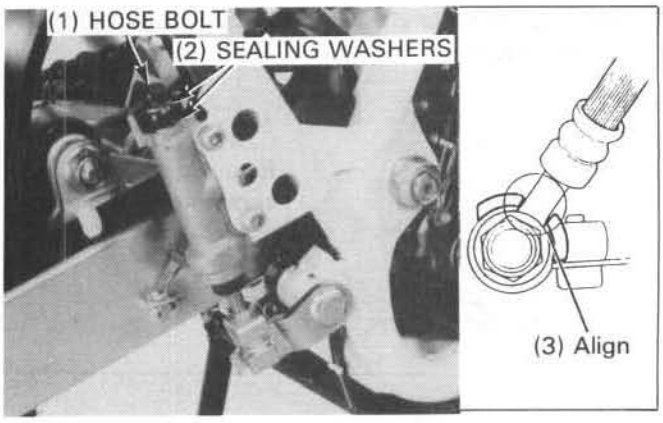
TORQUE: 14–16 N·m (1.4–1.6 kg-m, 10–12 ft-lb)



Connect the rear brake hose eyelet joint with the hose bolt and two new sealing washers.

CAUTION

- *Align the eyelet joint with the notch in the master cylinder first, then tighten the bolt.*
- *After installing the brake hose to the master cylinder, make sure it does not interfere with the movement of the shock absorber.*



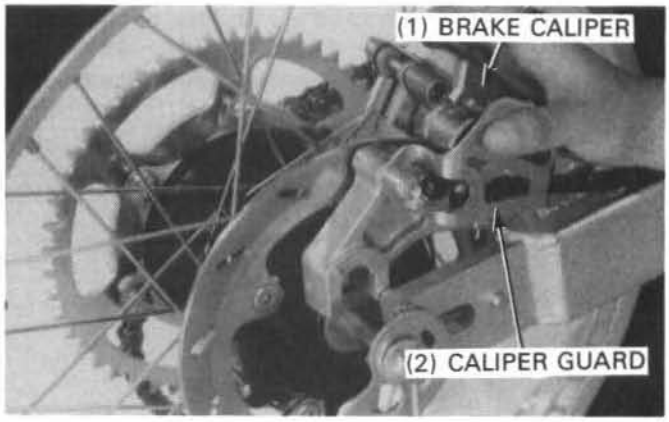
TORQUE: 30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)

Fill and bleed the rear brake hydraulic system (page 14-4).

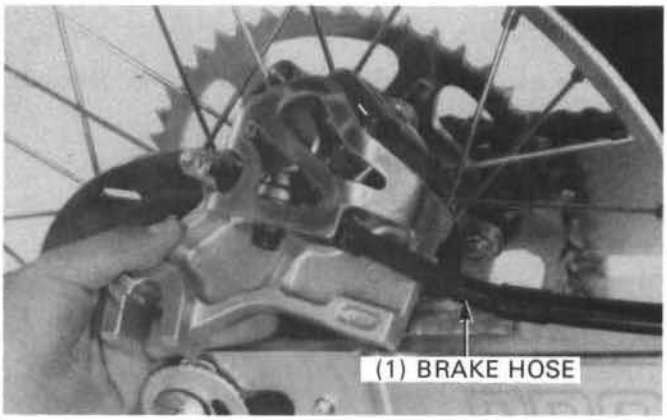
REAR BRAKE CALPER (AFTER '89)

REMOVAL

Drain the rear brake fluid from the hydraulic system (page 13-4).
Loosen the rear axle nut and remove the drive chain (page 13-5).
If the caliper is to be disassembled, remove the caliper guard plate and rear brake pads (page 13-9).

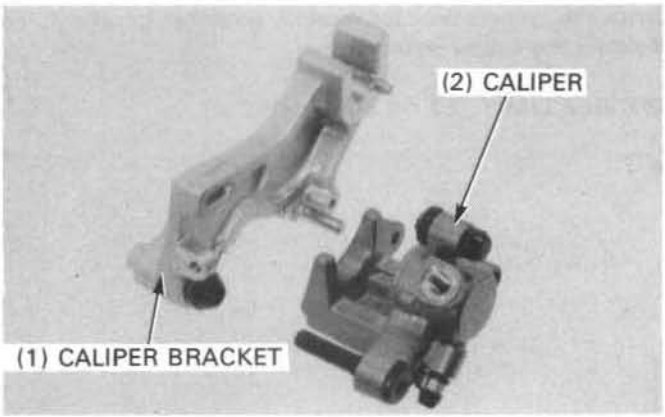


Place a clean container under the caliper and disconnect the brake hose from the caliper.



DISASSEMBLY

Separates the caliper and caliper bracket.
Remove the pivot boots and piston.

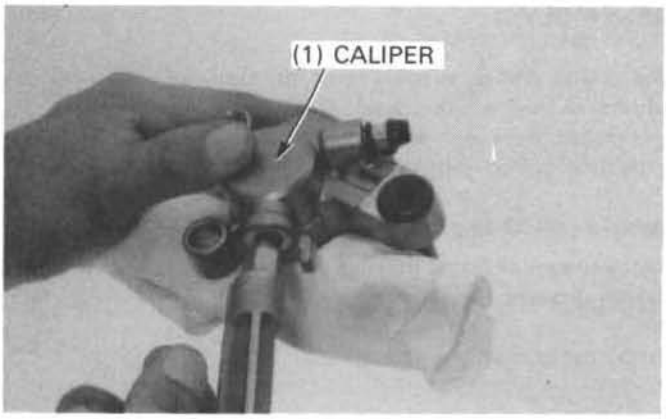


If necessary, apply compressed air to the caliper fluid inlet to get the piston out. Place a shop rag under the caliper to cushion the piston when it is expelled. Use the air in short spurts.

WARNING

- ***Do not bring the nozzle too close to the inlet.***

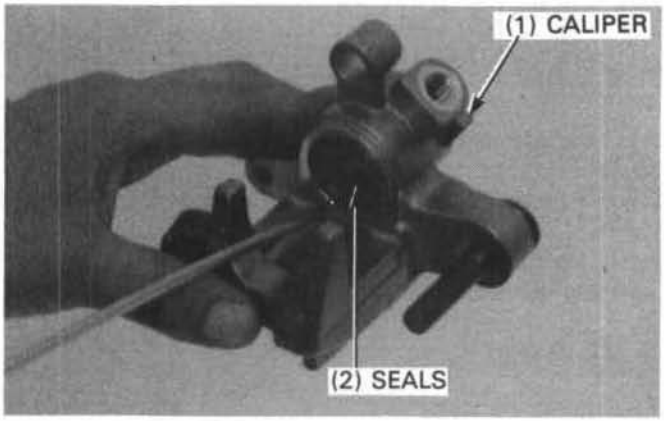
Examine the piston and caliper for scoring, scratches or other damage and replace if necessary.



Push the piston and dust seals in, lift them out and discard them.
Clean the piston and dust seal grooves with brake fluid.

CAUTION

- *Be careful not to damage the piston sliding surfaces when removing the seals.*

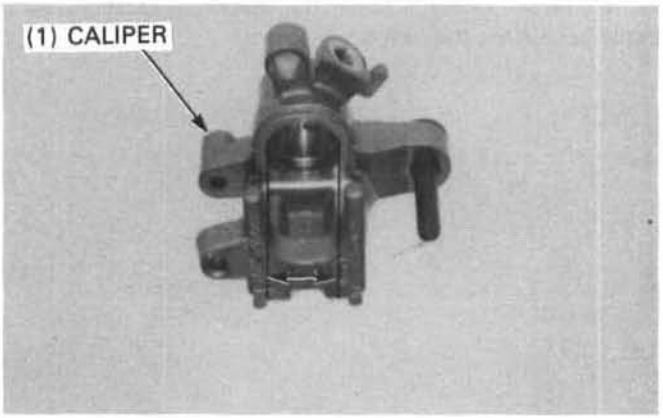


INSPECTION

Check the piston for scoring, scratches or other damage.

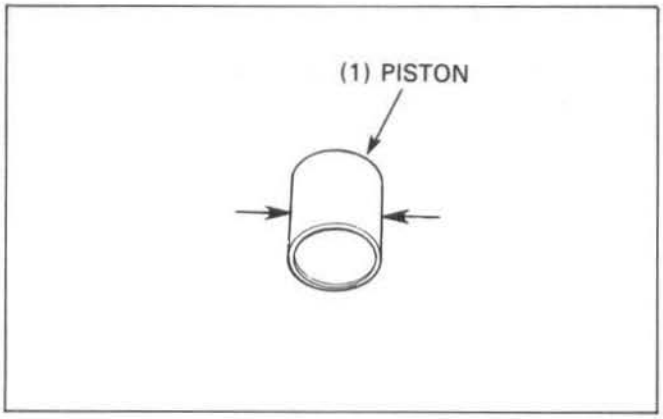
Measure the piston diameter with a micrometer.

SERVICE LIMIT:26.89 mm (1.059 in)



Check the cylinder bore for scoring, scratches or other faults.
Measure the caliper cylinder bore.

SERVICE LIMIT: 27.06 mm (1.065 in)



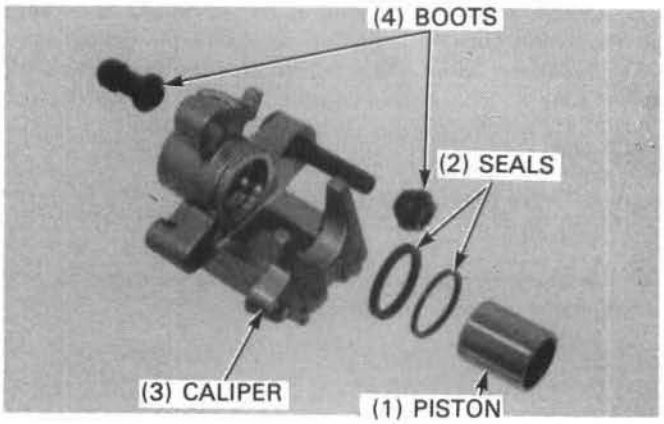
ASSEMBLY

The piston and dust seals must be replaced with new ones whenever they are removed. Coat the seals with brake fluid and install them with small diameters facing in.
Install the piston with the dished ends toward the pads.

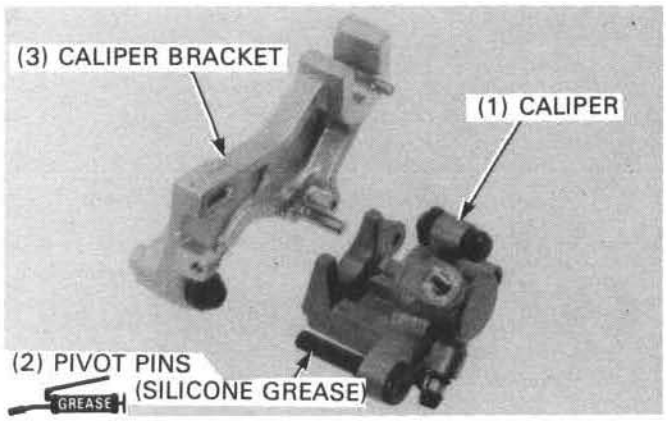
Install a new O-ring into the fluid passage on the caliper.

Install the pivot boots making sure the they are seated in the caliper grooves properly.

Install the pad spring.



Apply silicone grease to the caliper pivot pins and assemble the caliper and bracket.



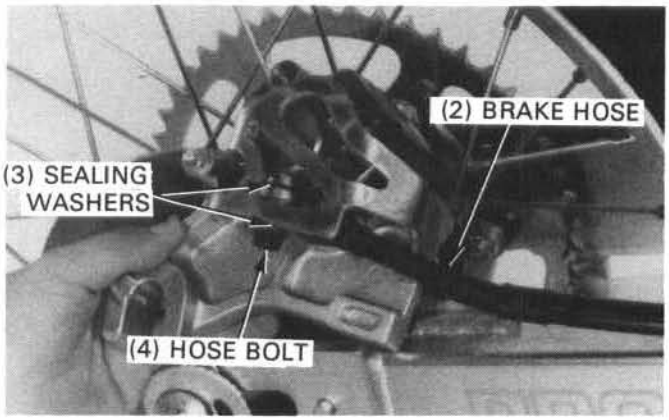
INSTALLATION

Install the disc guard and tighten with two screws to the specified torque.

TORQUE:6–8 N·m (0.6–0.8 kg-m, 4.3–5.8 ft-lb)

Connect the brake hose with the new two sealing washers and the brake hose bolt.

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



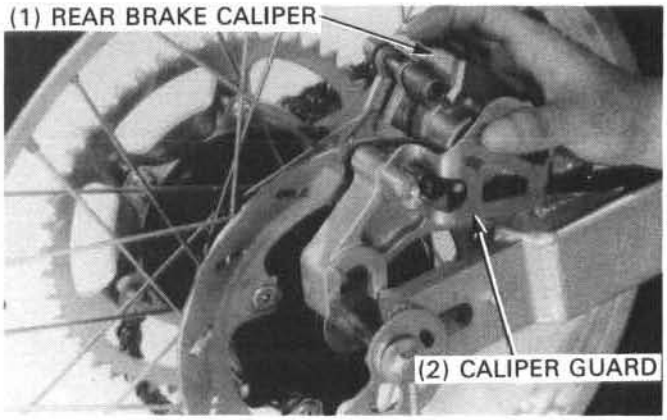
Install the rear brake caliper onto the swingarm slide rail.

Install the caliper guard plate.

Install the rear wheel (page 13-5).

Install the rear brake pads (page 14-7).

Fill the rear brake hydraulic system and bleed it (page 14-4).



MEMO

15. REAR FENDER/EXHAUST PIPE

SERVICE INFORMATION

GENERAL

- This section describes removal/installation of rear fender and exhaust pipe.

WARNING

- ***Serious burns may result if the exhaust system is not allowed to cool before components are removed or serviced.***

TORQUE VALUES

Exhaust pipe joint nut		8—12N·m (0.8—1.2 kg-m, 6—9 ft-lb)
Muffler mounting bolt	front	30—35 N·m (3.0—3.5 kg-m, 22—25 ft-lb)
	rear ('86—'89:)	35—45 N·m (3.5—4.5 kg-m, 25—33 ft-lb)
	rear (After '89:)	60—70 N·m (6.0—7.0 kg-m, 43—51 ft-lb)
Exhaust pipe protector ('86—'91:)		10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb) Apply locking agent
Exhaust pipe protector (After '91:)		15—21 N·m (1.5—2.1 kg-m, 11—15 ft-lb) Apply locking agent
Muffler clamp bolt (AFTER '89:)		15—25 N·m (1.5—2.5 kg-m, 11—18 ft-lb)

15

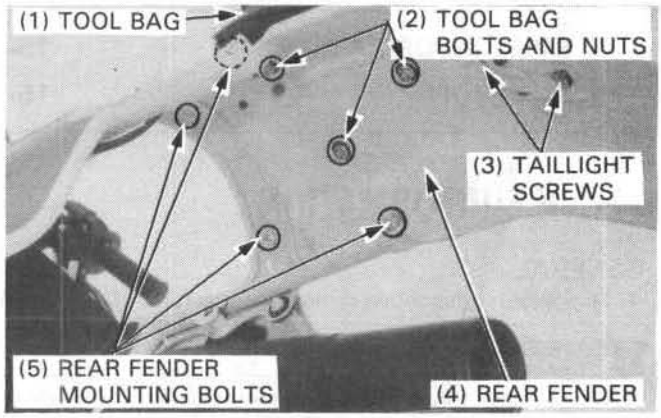
REAR FENDER

REMOVAL

Remove the seat by removing the mounting bolts.

Remove the taillight mounting screws and taillight from the rear fender.
Remove the tool bag mounting bolts and nuts and tool bag from the rear fender.

Remove the rear fender mounting bolts and rear fender from the frame.



INSTALLATION

Install the rear fender in the reverse order of removal.

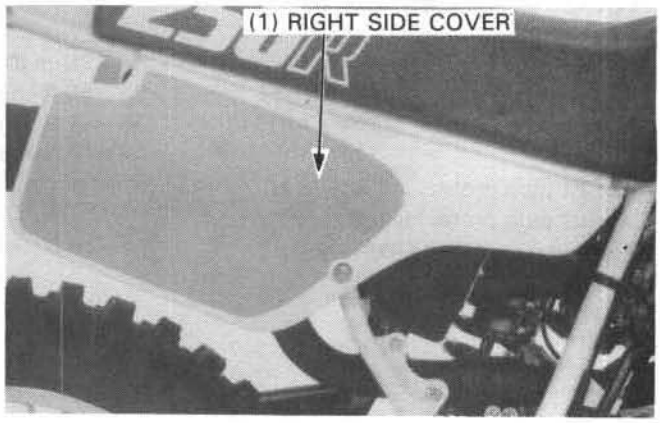
EXHAUST PIPE

WARNING

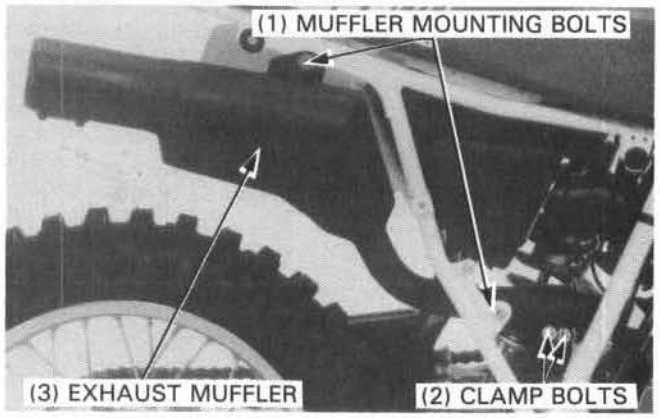
- ***Do not service the exhaust pipe or muffler while they are hot.***

REMOVAL

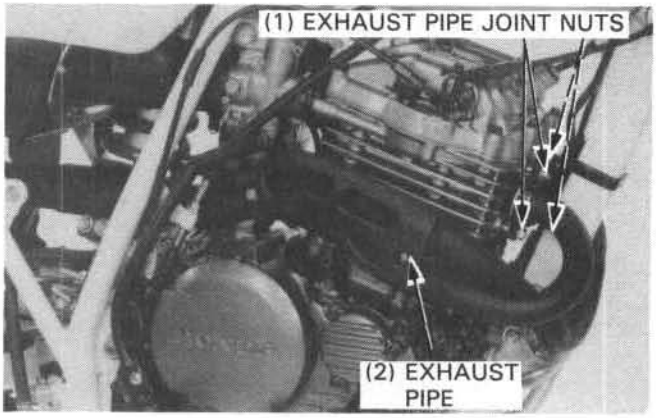
Remove the right side cover.



Remove the muffler mounting bolts.
Loosen the exhaust pipe clamp bolts and remove the muffler.



Remove the exhaust pipe joint nuts and then remove the exhaust pipe.



INSTALLATION

Install the exhaust pipe and muffler in the reverse order of removal.

TORQUE VALUES:

EXHAUST PIPE JOINT NUTS:
8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)

EXHAUST MUFFLER MOUNTING BOLTS:

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

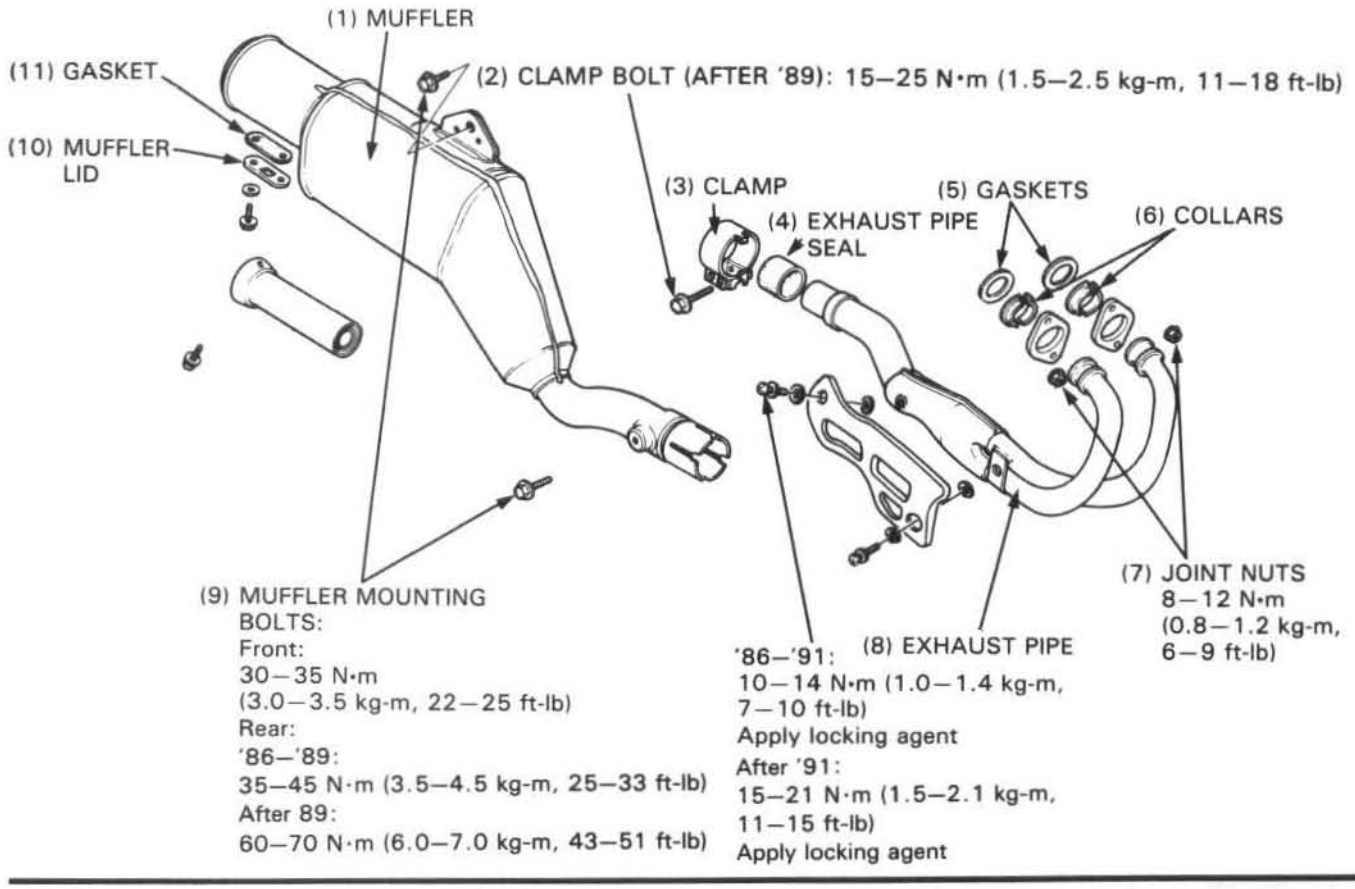
Rear:
'86—'89: 35—45 N·m (3.5—4.5 kg-m, 25—33 ft-lb)
After '89: 60—70 N·m (6.0—7.0 kg-m, 43—51 ft-lb)

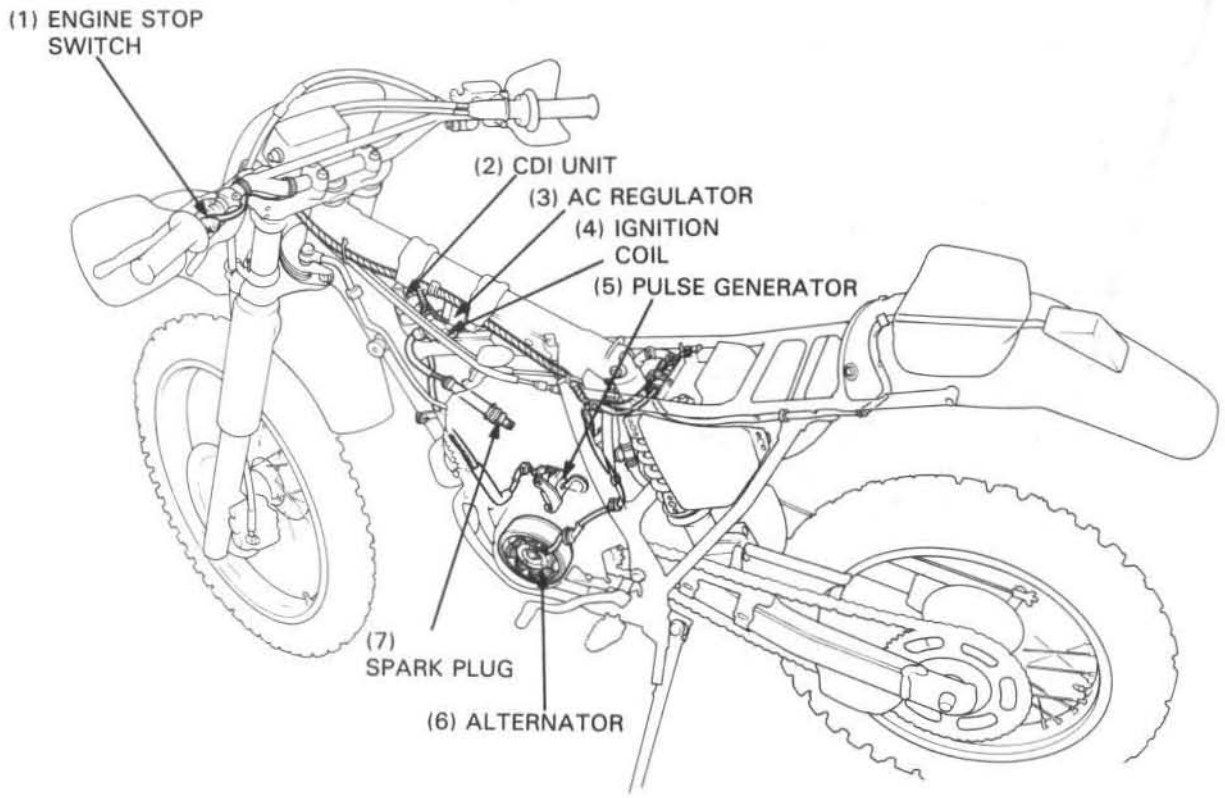
EXHAUST PIPE PROTECTOR:
'86—'91: 10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
After '91: 15—21 N·m (1.5—2.1 kg-m, 11—15 ft-lb)

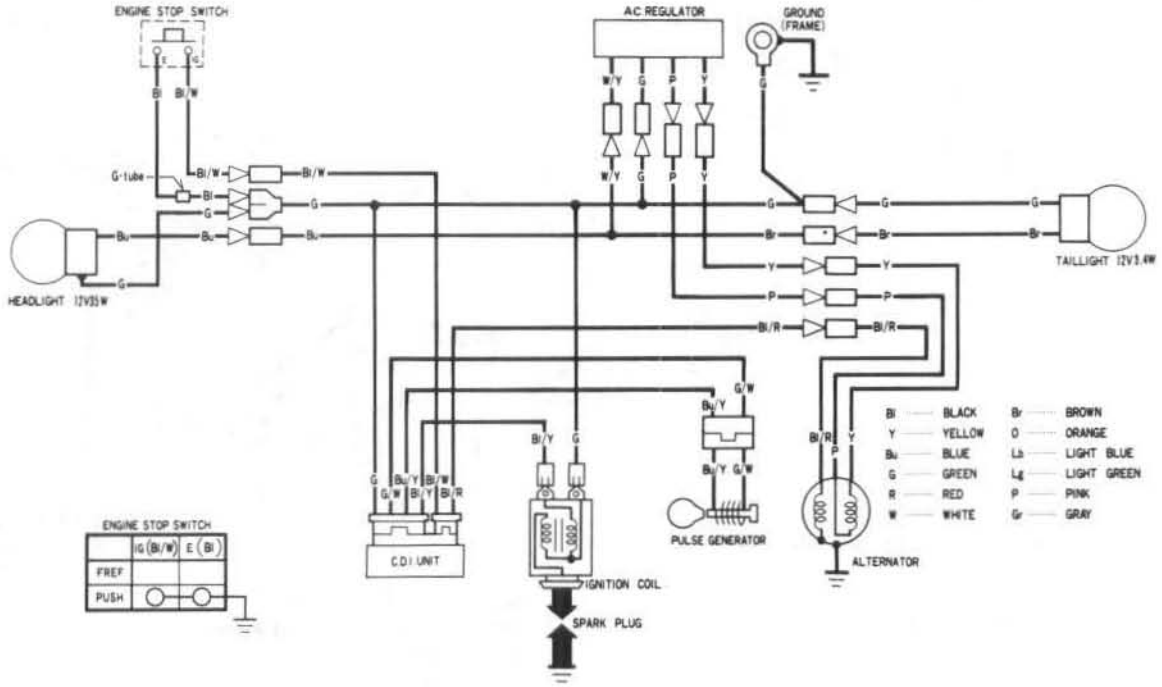
MUFFLER CLAMP BOLT (AFTER '89:)
15—25 N·m (1.5—2.5 kg-m, 11—18 ft-lb)

NOTE

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




(1) ENGINE STOP SWITCH
(2) CDI UNIT
(3) AC REGULATOR
(4) IGNITION COIL
(5) PULSE GENERATOR
(7) SPARK PLUG
(6) ALTERNATOR


ENGINE STOP SWITCH
AC REGULATOR
GROUND (FRAME)
HEADLIGHT 12V35W
TAILLIGHT 12V3.4W
CDI UNIT
PULSE GENERATOR
ALTERNATOR
IGNITION COIL
SPARK PLUG
BLACK
YELLOW
BLUE
GREEN
RED
WHITE
BROWN
ORANGE
LIGHT BLUE
LIGHT GREEN
PINK
GRAY

SERVICE INFORMATION

GENERAL

WARNING

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

- Ignition timing cannot be adjusted since the CDI (Capacitive Discharge Ignition) unit is non-adjustable. If ignition timing is incorrect, check the CDI unit, pulse generator and alternator and replace the faulty parts.
- For spark plug gap inspection and adjustment procedure, see page 3-8.
- For alternator removal and installation, see section 9.

SPECIFICATIONS

ITEM			STANDARD	
Spark plug			NGK	NIPPONDENSO
	Standard		DPR9Z	X27GPR-U
	For cold climate (Below 5°C/41°F)		DPR8Z	X24GPR-U
Spark plug gap			0.6–0.7 mm (0.024–0.028 in)	
Ignition timing	Initial		8° BTDC at 1,300± 100 rpm	
	Full advance		28°±2° BTDC at 4,300 rpm	
Ignition coil resistance (20°C/68°F)	Primary coil		0.1–0.3 Ω	
	Secondary coil	with spark plug cap	7.4 k–11 k Ω	
		without spark plug cap	3.7 k–4.5 k Ω	
Exciter coil resistance (20°C/68°F)			50–200 Ω	
Lighting coil resistance (20°C/68°F)			0.2–1.2 Ω	
Pulse generator resistance (20°C/68°F)			460–580 Ω	
Pulse generator rotor air gap			0.7 mm (0.03 in)	
Headlight			12V35W	
Taillight		'86–'91:	12V3.4W	
		After '91:	12V3.8W	
Alternator/out put			AC generator/0.100 kw/5,000 rpm	
AC regulator specific voltage			12.0–14.0 V at 3,000 rpm	

TOOLS

Circuit testor (SANWA) or	07308–0020000
Circuit tester (KOWA) or	TH-5H
Digital multimeter (KOWA)	07411–0020000 (Not available in U.S.A.)
	KS-AHM-32-003 (U.S.A. only)

16

TROUBLESHOOTING

No spark at plug
- Engine stop switch "OFF"
- Poorly connected, broken or shorted wires
  - Between exciter coil and CDI unit
  - Between CDI unit and engine stop switch
  - Between ignition coil and plug
  - Between pulse generator and CDI unit
  - Between CDI unit and ignition coil
- Faulty ignition coil
- Faulty CDI unit
- Faulty exciter coil
- Faulty pulse generator
- Faulty alternator
- Improper pulse generator coil air gap
- Faulty engine stop switch

Engine starts but runs poorly
- Faulty following parts:
  - Ignition coil
  - Pulse generator
  - CDI unit
  - Exciter coil
  - Spark plug wire or Spark plug
- Loose or bare wires
- Loose connectors
- Faulty ignition timing
  - Loose or improperly installed flywheel/or pulse generator
  - Faulty CDI unit

Light does not come on when engine is running
- Bulb burned out
- Wiring to that component has an open circuit
- Faulty lighting coil

SYSTEM INSPECTION

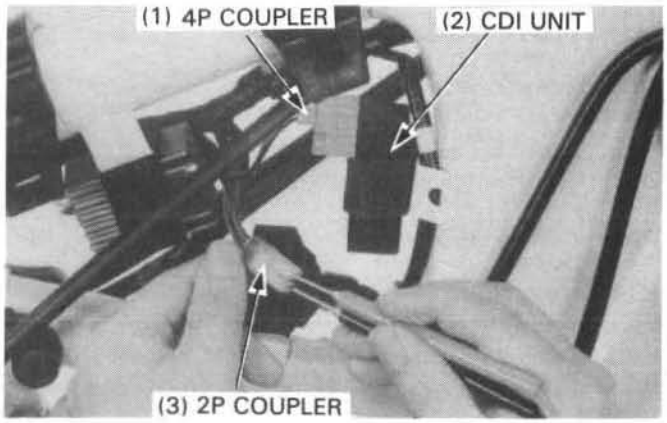
If the spark is weak, or if there is no spark at all, inspect as follows:

NOTE

- This method does not include an inspection of the ignition timing advance system at the CDI unit.

Inspect the spark plug before inspecting the system (page 3-8).

Remove the fuel tank (page 4-3).
Disconnect the 2P and 4P couplers from the CDI unit couplers, and check them for a loose connection or corrosion.

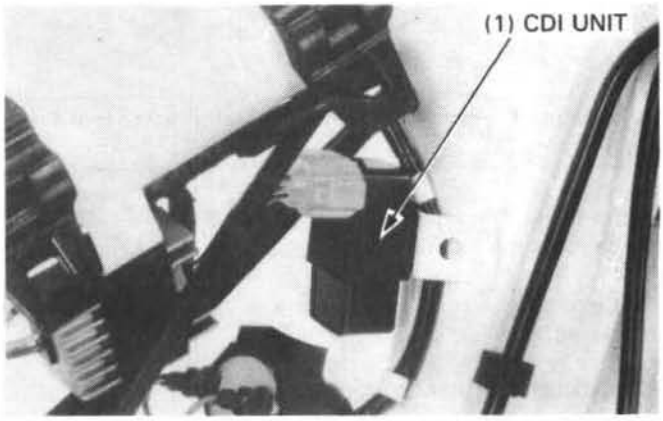


Measure the resistance between coupler terminals using the following chart:

ITEM		TERMINALS	SPECIFICATIONS (20°C/68°F)
Ignition coil primary coil		black/yellow and green	0.1—0.3 Ω
Ignition coil secondary coil	with spark plug cap	green and high tension cord	7.4 k—11 k Ω
	without spark plug cap		3.7 k—4.5 k Ω
Alternator exciter coil		black/red and green	50—200 Ω
Pulse generator		blue/yellow and green/white	460—580 Ω
Engine stop switch	FREE	black/white and green	No continuity
	PUSHED		Continuity

If there is no problem, replace the CDI unit.
If there is indication of abnormality, inspect the related circuit as follows:
— Ignition coil primary coil (page 16-4)
— Ignition coil secondary coil (page 16-4)
— Alternator exciter coil (page 16-4)
— Pulse generator (page 16-5)
— Engine stop switch (page 16-5)

If the related circuit is normal, check the wire harnesses for bare or open circuits. Replace or repair the harnesses if necessary.



IGNITION COIL

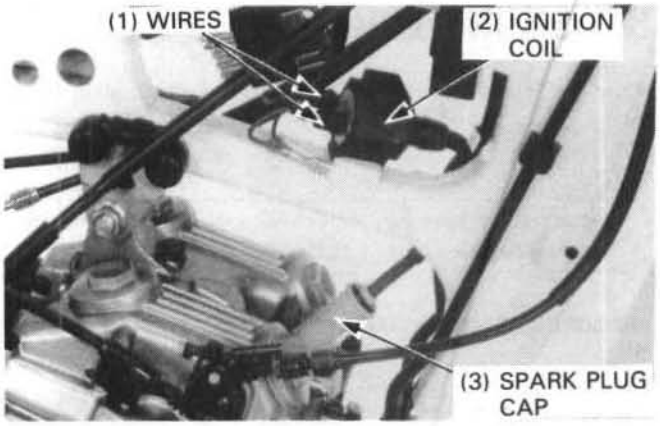
REMOVAL

Remove the seat and fuel tank.
Disconnect the primary coil wires and the spark plug cap.

Remove the ignition coil.

INSTALLATION

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

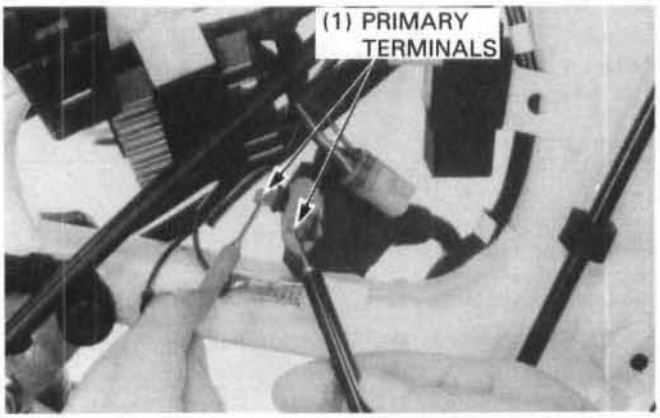


INSPECTION

Continuity test
Perform the system inspection (page 16-3)
Disconnect the wires from ignition coil wire terminals.
Measure the primary coil resistance between the terminals.

STANDARD: 0.1—0.3 Ω (20°C/68°F)

If there is no continuity, replace the ignition coil.

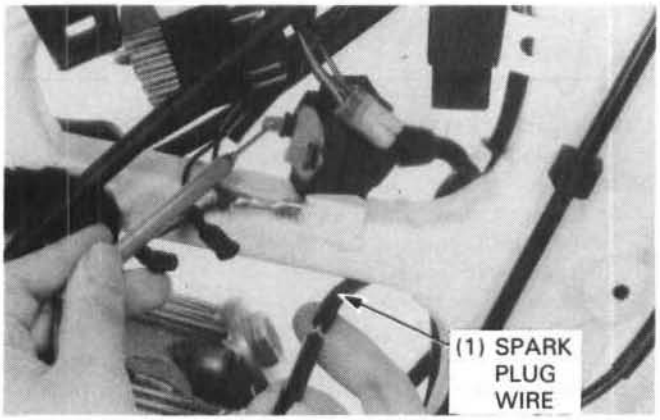


Measure the secondary coil resistance with the spark plug cap in place.

STANDARD: 7.4 k—11 k Ω (20°C/68°F)

If the resistance is out of range, remove the spark plug cap and measure the resistance between the wire terminal and spark plug wire without the spark plug cap.

STANDARD: 3.7 k—4.5 k Ω (20°C/68°F)



ALTERNATOR EXCITER COIL

INSPECTION

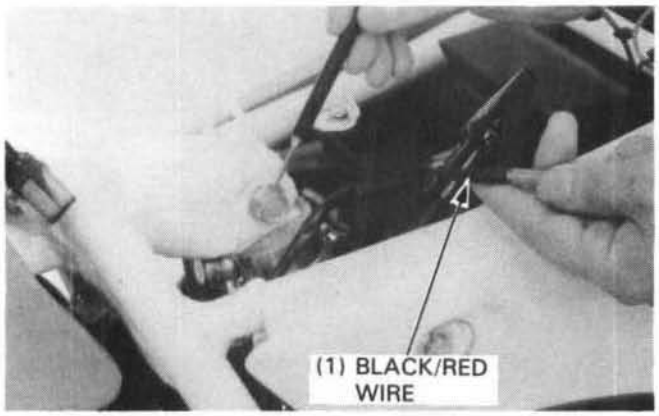
NOTE

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

Perform the system inspection (page 16-3).
Disconnect the exciter coil wire connector.

The exciter coil is normal if there is continuity between the black/red wire and ground.

STANDARD: 50—200 Ω (20°C/68°F)



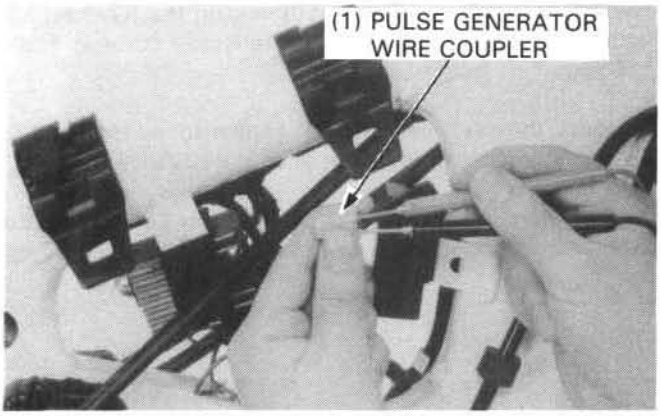
PULSE GENERATOR

INSPECTION

Perform the system inspection (page 16-3).

Disconnect the pulse generator wire coupler.
Measure the resistance between the green/white and blue/yellow wires.

STANDARD: 460–580 Ω (20°C/68°F)



REPLACEMENT

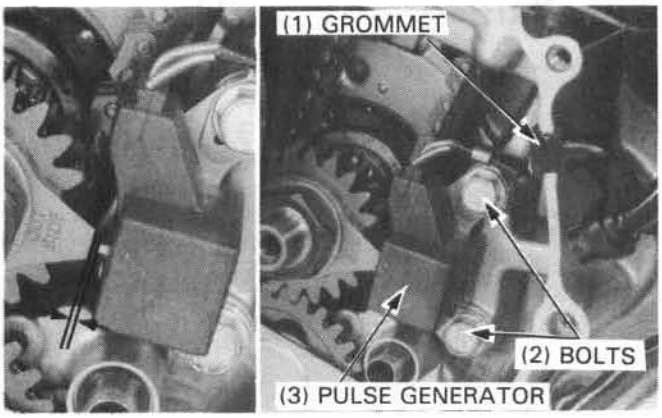
Remove the right crankcase cover (page 8-3).
Disconnect the pulse generator coupler.
Remove the two bolts attaching the pulse generator and the generator.

Install a new pulse generator.
Install the wire grommet in the groove of the right crankcase securely.

Turn the crankshaft clockwise and align the pulse generator rotor teeth with the pulse generator pick-up.
Make sure the air gap is correct.

AIR GAP: 0.7 mm (0.03 in)

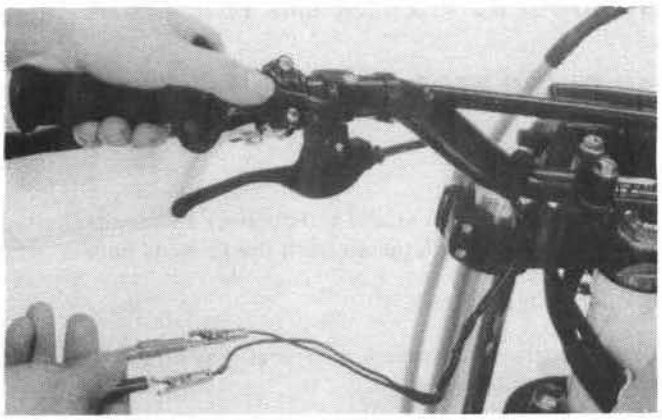
Install the right crankcase cover (page 8-14).



ENGINE STOP SWITCH

Unhook the headlight straps and disconnect the engine stop switch terminals.
Check the switch for continuity between the black/white and black terminals.

	Bl/W	Bl
PUSH	O——	——O
FREE		

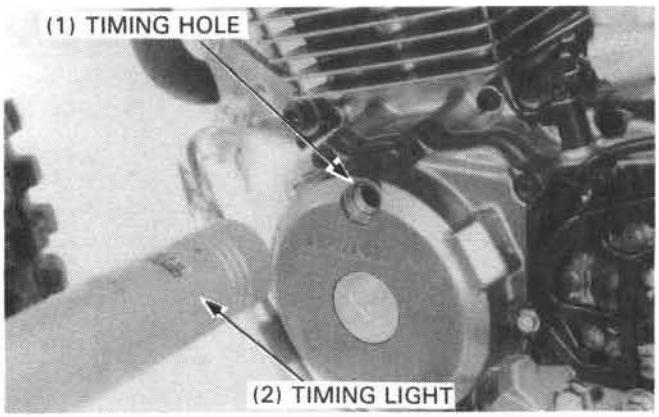


IGNITION TIMING

NOTE

- The capacitor discharge Ignition system is factory pre-set and cannot be adjusted. Ignition timing inspection procedures are given to inspect the function of the CDI components.

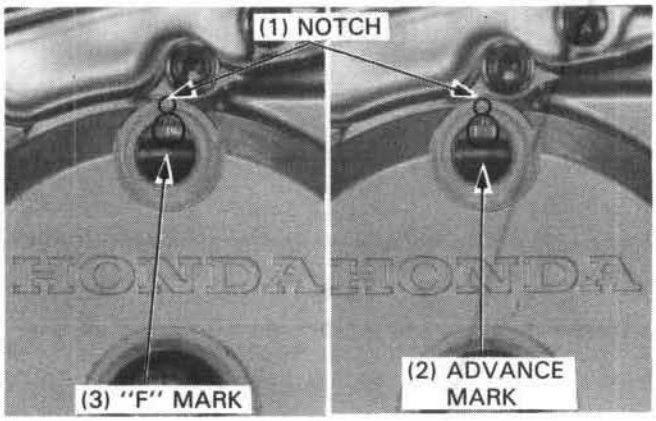
Warm up the engine and remove the timing hole cap.
Connect a timing light and tachometer.



The timing is correct if the "F" mark on the flywheel aligns with the index notch on the left crankcase cover at 1,300 ± 100 rpm.

To check the advance, raise the engine speed to 4,300 rpm; the index notch should be between the advance marks.

If the ignition timing is incorrect, inspect the CDI unit and pulse generator.



ALTERNATOR LIGHTING COIL

INSPECTION

Remove the seat.

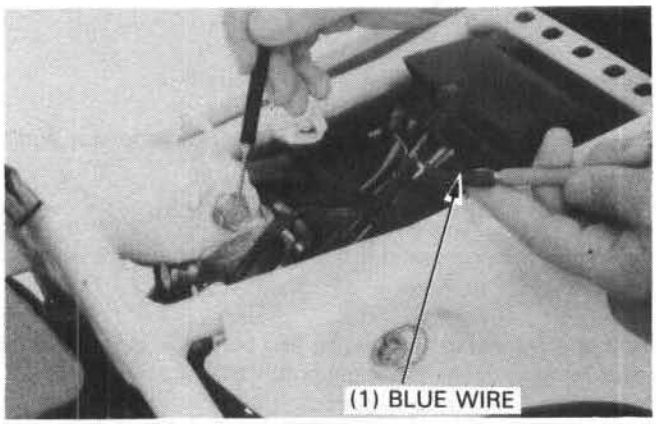
NOTE

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

Disconnect the lighting coil wire connector.

The lighting coil is good if there is continuity between the blue wire and ground.

STANDARD: 0.2–1.2 Ω (20°C/68°F)



AC REGULATOR

VOLTAGE TEST

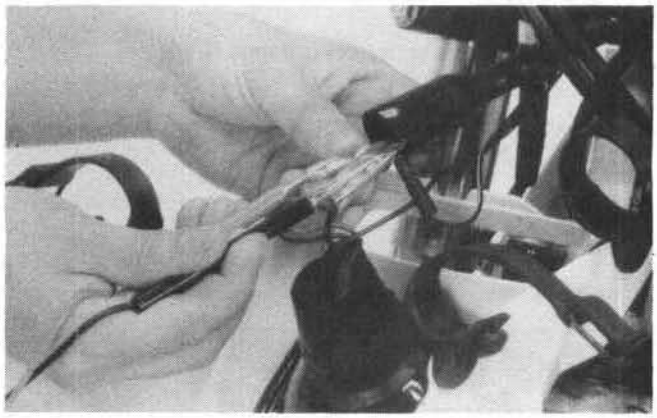
Unhook the headlight straps and connect a voltmeter between the blue and green terminals with the termials connected.

Connect a tachometer.

Start the engine and check the meter reading while increasing engine speed slowly.

SPECIFIC VOLTAGE: 12.0–14.0 V at 3,000 rpm

If the regulated voltage is out of the specifications, check the wire harness and the AC regulator unit.



UNIT INSPECTION

Provided the circuit on the wire harness side is normal and there are no loose connections at the connector, inspect the AC regulator unit by measuring the resistance between the terminals.

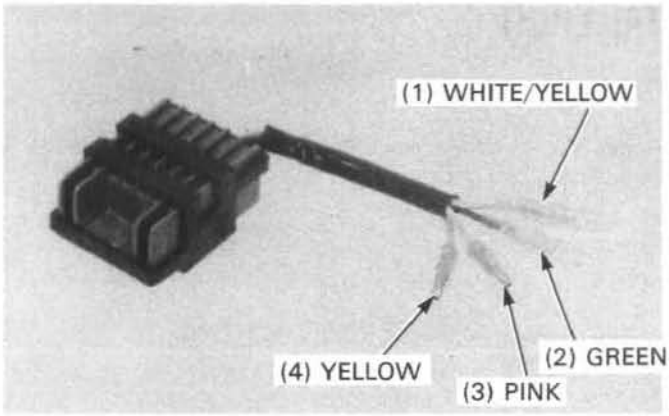
NOTE

- You'll get false readings if the probes touch your fingers.
- Use the specified multimeters. Using other equipment may not allow you to obtain the correct results.
  This is due to the characteristic of semiconductors, which have different resistance values depending on the applied

Specific Multimeter:
–07411–0020000 (KOWA Digital type)
–KS–AHM–32–003 (KOWA Digital type; U.S.A. only)
–07308–0020001 (SANWA Analogue type)
–TH–5H (KOWA Analogue type)

- Select the following range:
  SANWA: KΩ
  KOWA: X100
- An old battery stored in the multimeter could cause inaccurate readings. Check the battery if the multimeter resistance incorrectly.
- When using the KOWA multimeter, remember that all readings should be multiplied by 100.

Replace the AC regulator unit if the resistance value between the terminals is abnormal.



Unit: kΩ

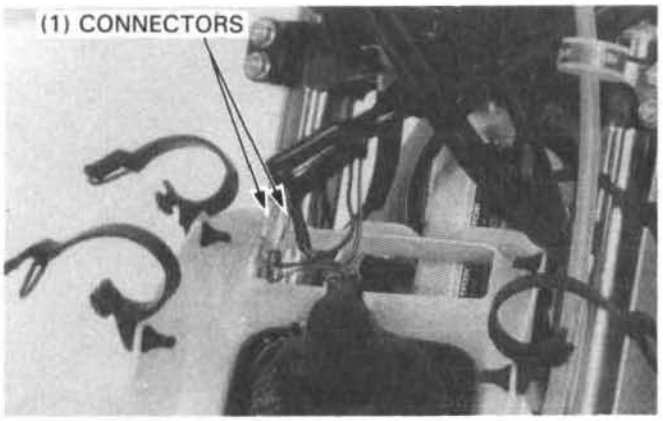
⊖ \ ⊕	W/Y	G	P	Y
W/Y		100~∞	100~∞	0
G	100~∞		0	100~∞
P	100~∞	0		100~∞
Y	0	100~∞	100~∞	

HEADLIGHT

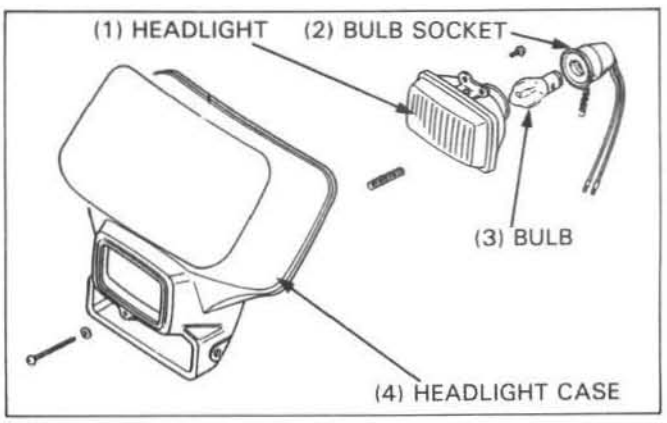
REMOVAL

Remove the four rubber bands that secure the headlight case.

Disconnect the headlight wire connectors.



Remove the spring securing the headlight bulb socket.
Then remove the socket, and replace the headlight bulb, if necessary.
Remove the headlight adjusting screw and the two mounting screws.
Remove the headlight.



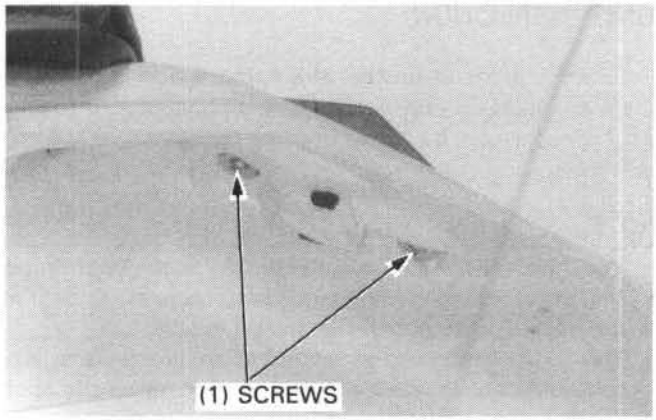
INSTALLATION

Install the headlight in the reverse order of removal.
Adjust the headlight beam vertically (page 3-16).

TAILLIGHT

REMOVAL

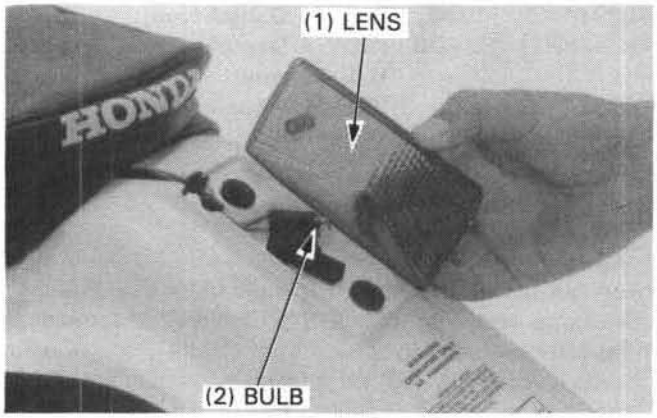
Remove the two screws attaching the taillight and then remove the taillight.

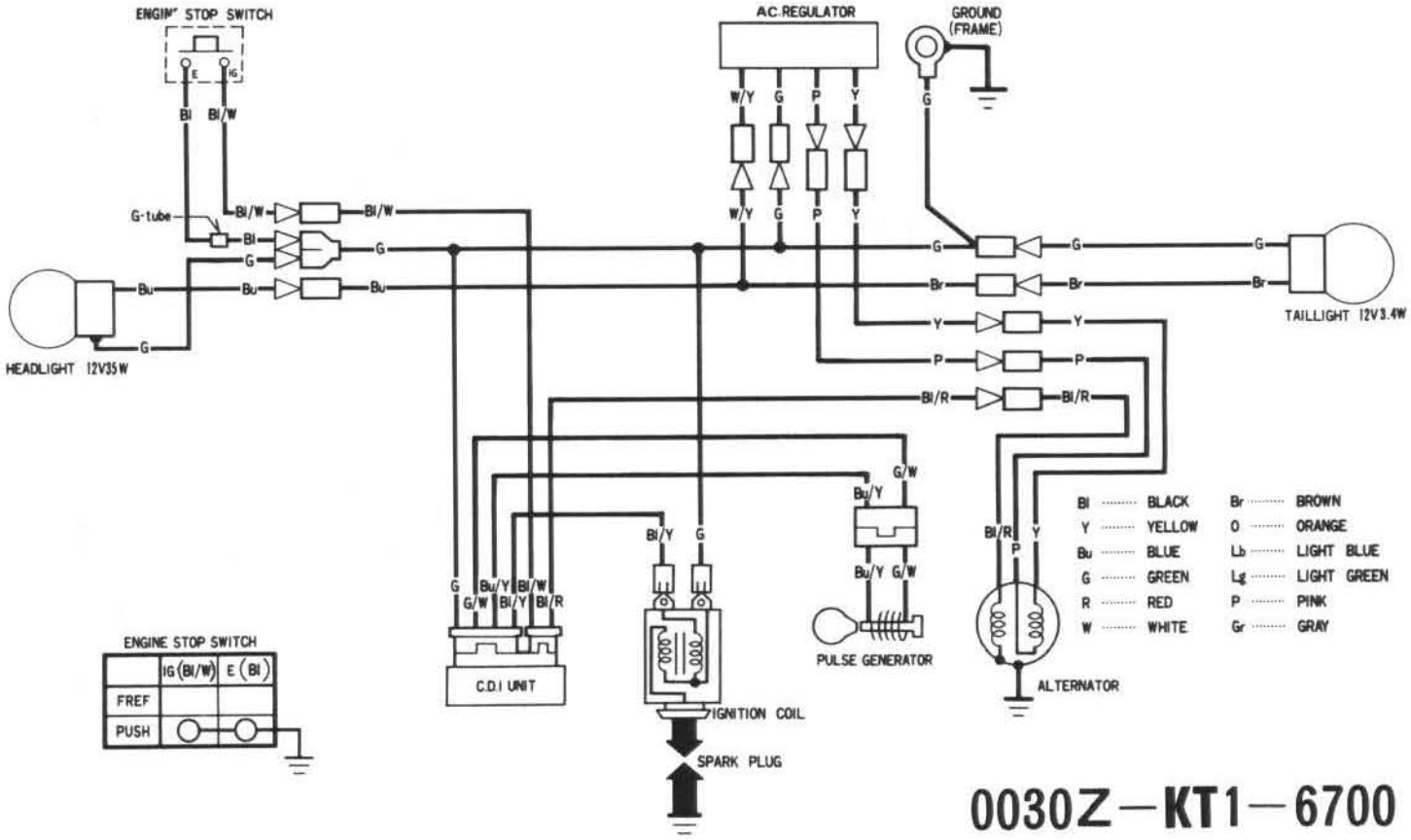


Disconnect the taillight bulb.

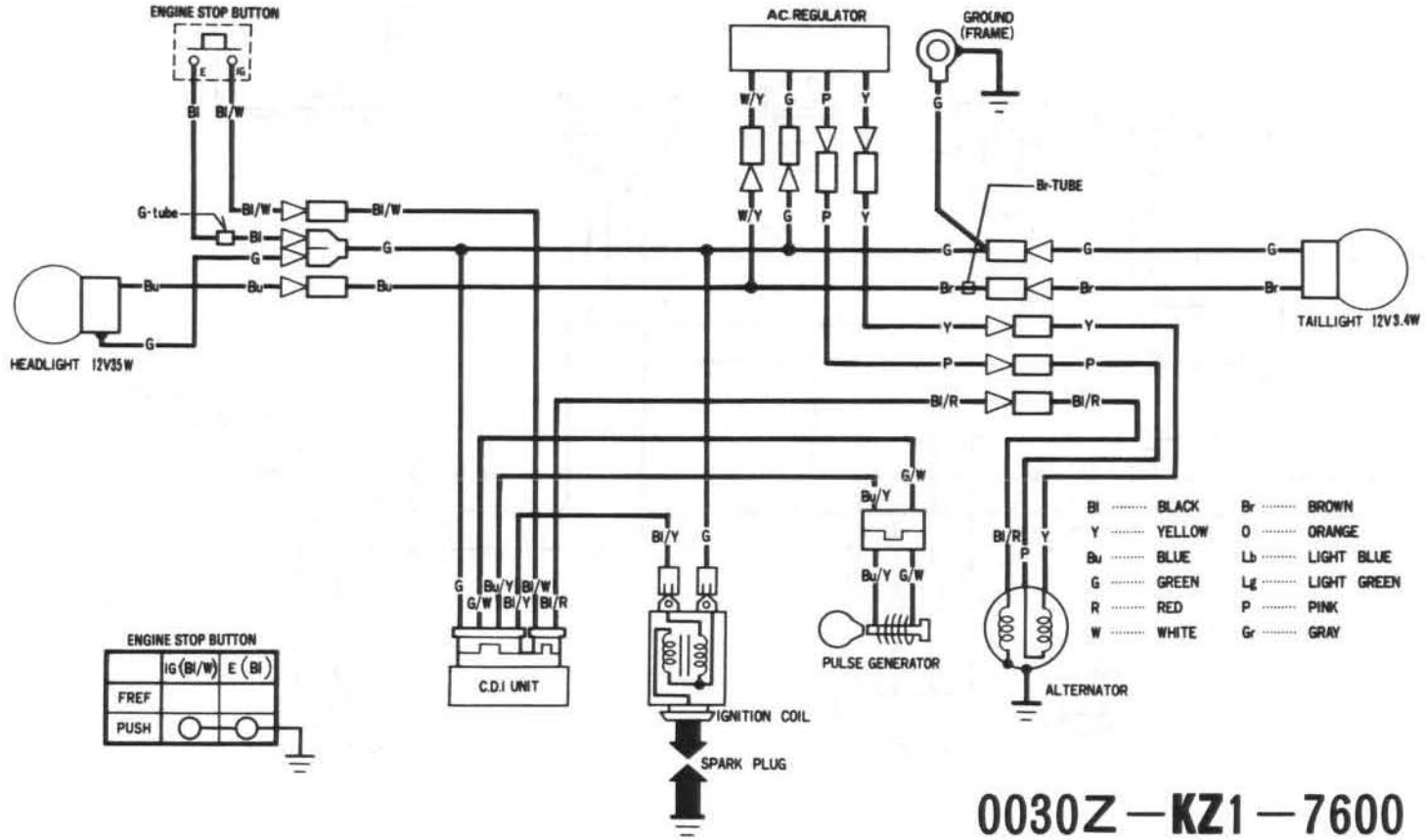
INSTALLATION

Install the taillight in the reverse order of removal.

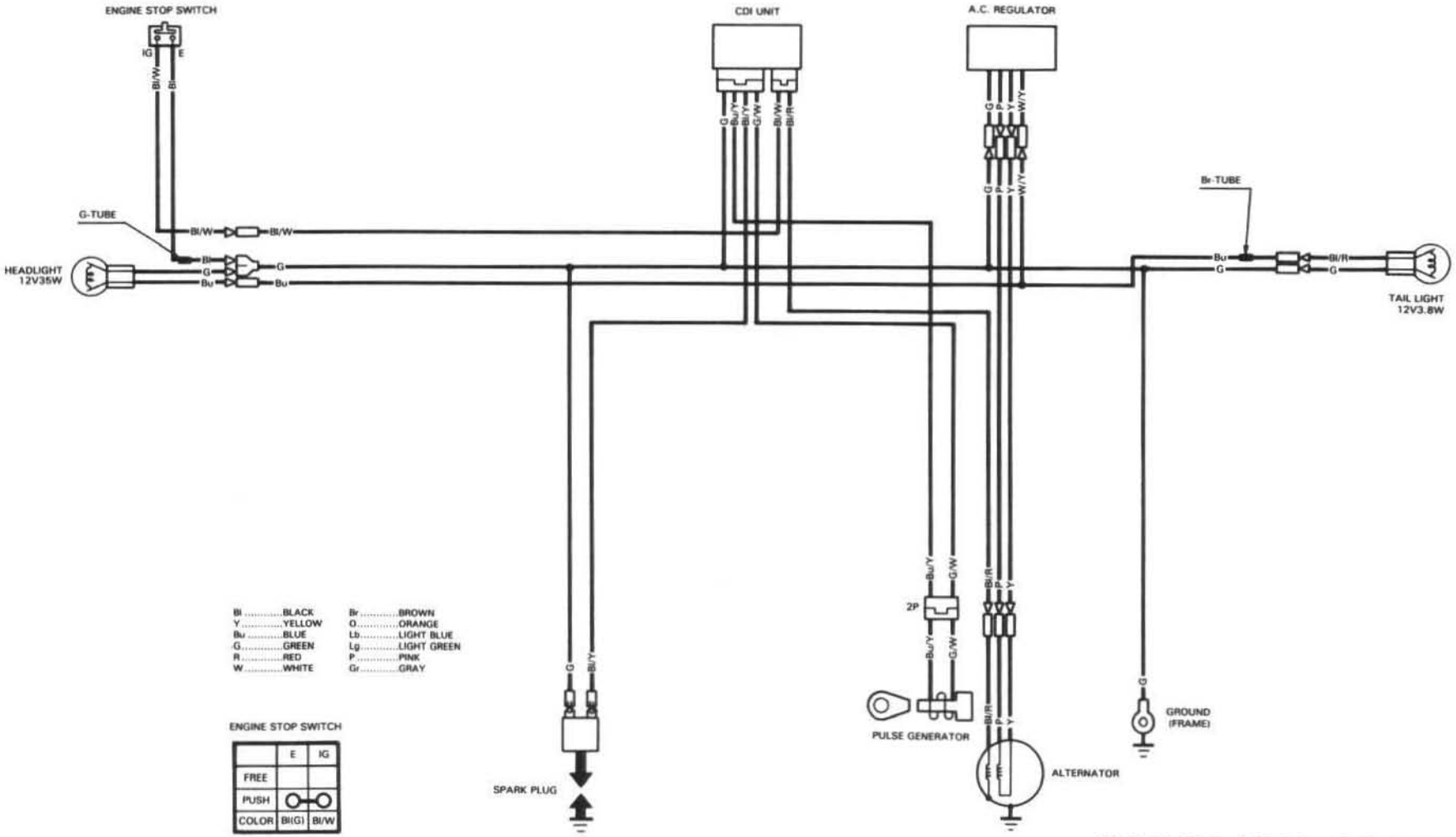




0030Z-KT1-6700



0030Z—KZ1—7600



0030Z-**KZ**1-9200

MEMO

ENGINE DOES NOT START OR IS HARD TO START

		Probable Cause
1. Check to see if fuel is getting to the carburetor.	NOT GETTING TO CARBURETOR →	• No fuel in fuel tank • Clogged fuel tube or fuel strainer • Clogged float valve • Clogged fuel tank cap breather tube
GETTING TO CARBURETOR ↓		
2. Try spark test.	WEAK OR NO SPARK →	• Faulty spark plug • Fouled spark plug • Faulty CDI unit • Broken or shorted spark plug wire • Faulty exciter coil • Broken or shorted ignition coil • Faulty engine stop switch • Faulty pulse generator • Poorly connected, broken or shorted wires
SPARKS JUMP ↓		
3. Test cylinder compression	LOW COMPRESSION →	• Insufficient valve clearance • Valve stuck open • Worn cylinder and piston • Damaged cylinder head gasket • Improper valve timing • Improperly adjusted decompression mechanism • Seized valve
COMPRESSION NORMAL ↓		
4. Start by following normal starting procedure.	ENGINE FIRES BUT SOON STOPS →	• Choke open excessively • Carburetor pilot screw excessively closed • Air leaking past intake pipe • Improper ignition timing (CDI unit or pulse generator faulty)
ENGINE DOES NOT FIRE ↓		
5. Remove spark plug.	WET PLUG →	• Carburetor flooded • Carburetor choke excessively closed • Throttle valve exessively open • Clogged air cleaner element
DRY ↓		
6. Start with choke applied.		

ENGINE LACKS POWER

		Probable Cause
1. Raise wheels off ground and spin by hand. WHEEL SPINS FREELY	WHEEL DOES NOT SPIN FREELY →	• Brake dragging • Worn or damaged wheel bearing • Wheel bearing needs lubrication • Drive chain too tight • Rear axle nut excessively tightened
2. Check tire pressure with tire gauge. PRESSURE NORMAL	PRESSURE TOO LOW →	• Punctured tire • Faulty tire valve
3. Try rapid acceleration from low to second. ENGINE SPEED LOWERED WHEN CLUTCH IS RELEASED	ENGINE SPEED DOES NOT CHANGE WHEN CLUTCH IS RELEASED →	• Clutch slipping • Worn clutch disc/plate • Warped clutch disc/plate
4. Lightly accelerate engine ENGINE SPEED INCREASES	ENGINE SPEED DOES NOT INCREASE SUFFICIENTLY →	• Carburetor choke closed • Clogged air cleaner • Restricted fuel flow • Clogged fuel tank breather tube • Clogged muffler
5. Check ignition timing. CORRECT	INCORRECT →	• Faulty CDI unit • Faulty pulse generator
6. Check valve clearance. CORRECT	INCORRECT →	• Improper valve adjustment • Worn valve seat
7. Test cylinder compression using compression gauge. NORMAL	TOO LOW →	• Valve stuck open • Worn cylinder and piston rings • Leaking head gasket • Improper valve timing • Improperly adjusted decompression mechanism
8. Check carburetor for clogging. NOT CLOGGED	CLOGGED →	• Carburetor or air cleaner not serviced frequently enough
9. Remove spark plug. NOT FOULED OR DISCOLORED	FOULED OR DISCOLORED →	• Plug not serviced frequently enough • Use of plug with improper heat range

10. Remove oil level gauge and check oil level. CORRECT ↓	OIL LEVEL INCORRECT →	• Oil level too high • Oil level too low
11. Remove valve hole cap and inspect lubrication. VALVE TRAIN LUBRICATED PROPERLY ↓	VALVE TRAIN NOT LUBRICATED PROPERLY →	• Clogged oil passage • Clogged oil control orifice • Contaminated oil • Faulty oil pump
12. Check if engine overheats. NORMAL ↓	OVERHEATED →	• Excessive carbon build-up in combustion chamber • Improper quality fuel • Clutch slipping • Fuel air mixture too lean
13. Accelerate or run at high speed. ENGINE DOES NOT KNOCK	ENGINE KNOCKS →	• Worn piston and cylinder • Fuel/air mixture too lean • Use of improper grade of fuel • Excessive carbon build-up in combustion chamber • Ignition timing too advanced (Faulty CDI unit)

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

		Probable Cause
1. Check ignition timing and valve clearance. CORRECT ↓	INCORRECT →	• Improper valve clearance • Improper ignition timing (Faulty CDI unit or pulse generator)
2. Check carburetor pilot screw adjustment. CORRECT ↓	INCORRECT →	• Fuel-air mixture too lean (To correct, screw out) • Fuel-air mixture too rich (To correct, screw in)
3. Check if air is leaking past manifold. NOT LEAKING ↓	LEAKING →	• Deteriorated insulator O-ring • Loose carburetor
4. Try spark test. GOOD SPARK	WEAK OR INTERMITTENT SPARK →	• Faulty, carbon or wet fouled spark plug • Faulty CDI unit • Alternator faulty • Faulty ignition coil • Faulty pulse generator • Loose or bare wires

POOR PERFORMANCE AT HIGH SPEED

		Probable Cause
1. Check ignition timing and valve clearance.	INCORRECT →	• Improper valve clearance • Faulty CDI unit • Faulty pulse generator
CORRECT ↓		
2. Disconnect fuel line at carburetor.	FUEL FLOW RESTRICTED →	• Lack of fuel in fuel tank • Clogged fuel line • Clogged fuel tank breather tube • Clogged fuel valve • Clogged fuel strainer
FUEL FLOWS FREELY ↓		
3. Remove carburetor and check for clogged jet(s).	CLOGGED →	• Clean
NOT CLOGGED ↓		
4. Check valve timing.	INCORRECT →	• Cam sprocket not installed properly
CORRECT ↓		
5. Check valve spring tension.	WEAK →	• Faulty spring
NOT WEAKENED ↓		
6. Check muffler plate for clogging.	CLOGGED →	• Remove and clean

POOR HANDLING → Check tire pressure.

	Probable Cause
1. If steering is heavy →	• Steering bearing adjustment too tight • Damaged steering bearing(s)
2. If either wheel is wobbling →	• Excessive wheel bearing play • Bent rim • Improperly installed wheel hub • Swingarm pivot bearing excessive play • Bent frame • Loose swingarm pivot bolt
3. If the motorcycle pulls to one side →	• Front and rear wheels not aligned • Bent front suspension or axle • Bent swingarm • Bent frame

19. INDEX

MEMO

MEMO