

1. GENERAL INFORMATION

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GENERAL SAFETY

⚠ WARNING

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

⚠ WARNING

The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially while charging it.

⚠ WARNING

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

⚠ WARNING

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

SERVICE RULES

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

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GENERAL INFORMATION

MODEL IDENTIFICATION



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



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



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

SPECIFICATIONS

	ITEM	SPECIFICATIONS
DIMENSIONS	Overall length	2,020 mm (79.5 in)
	Overall width	820 mm (32.3 in)
	Overall height	1,075 mm (42.3 in)
	Wheel base	1,365 mm (53.7 in)
	Seat height	755 mm (29.7 in)
	Foot peg height	310 mm (12.2 in)
	Ground clearance	230 mm (9.1 in)
	Dry weight	120 kg (264 lb)
FRAME	Type	Semi-double cradle
	Front suspension, travel	Telescopic, 150 mm (5.9 in)
	Rear suspension, travel	Swing arm, 120 mm (4.7 in)
	Tire size	24.5 x 8.00-11
	Front	23.5 x 8.00-11
	Rear	23.5 x 8.00-11
	Front tire standard pressure	4.3 psi (30 kPa, 0.3 kg/cm ²)
	Rear tire standard pressure	4.3 psi (30 kPa, 0.3 kg/cm ²)
	Front brake, lining swept area	Internal expanding shoes 24 cm ² (3.7 sq in) x 2
	Rear brake, lining swept area	Internal expanding shoes 24 cm ² (3.7 sq in) x 2
	Fuel tank capacity	7.0 liters (1.9 US gal, 1.5 Imp gal)
	Fuel reserve capacity	2.0 liters (0.5 US gal, 0.4 Imp gal)
	Caster angle	28°
ENGINE	Trail	95 mm (3.74 in)
	Vehicle capacity load	82 kg (180 lbs)
	Type	Air cooled 4-stroke
	Cylinder arrangement	Single cylinder inclined 25°
	Bore and stroke	65.0 x 60.0 mm (2.56 x 2.36 in)
	Displacement	199.1 cm ³ (12.1 cu in)
	Compression ratio	9.0:1
	Valve train	Single overhead camshaft, chain driven
	Oil capacity	1.8 liters (1.9 US qt, 1.6 Imp qt) after disassembly 1.5 liters (1.6 US qt, 1.3 Imp qt) after draining
	Lubrication system	Forced pressure and wet sump
	Air filtration	Oiled double urethane
	Cylinder compression	1,275 ± 98 kPa (13.0 ± 1.0 kg/cm ² , 184 ± 14 psi)
	Intake valve	Opens 8° BTDC Closes 35° ABDC
CARBURETOR	Exhaust valve	Opens 40° BBDC Closes 5° ATDC
	Valve clearance (cold)	Intake 0.08 mm (0.003 in) Exhaust 0.08 mm (0.003 in)
	Idle speed	1,400 ± 100 rpm
	Type	Single valve
	Identification number	PD69A
CARBURETOR	Venturi diameter	24 mm (0.94 in)
	Air screw initial opening	1-1/4 turns out
	Jet needle	3rd groove
	Float level	14 mm (0.55 in)

GENERAL INFORMATION

ITEM		SPECIFICATIONS
DRIVE TRAIN	Clutch	Wet multi-plate, semi-automatic
	Transmission	5-speed constant mesh
	Primary reduction	3.087 (71/23)
	Gear ratio	1st 3.667 (44/12)
		2nd 2.267 (34/15)
		3rd 1.632 (31/19)
		4th 1.273 (28/22)
		5th 1.042 (25/24)
	Final reduction	3.000 (39/13)
	Gearshift pattern	Left foot operated return system N-1-2-3-4-5
ELECTRICAL	Ignition	CDI
	Ignition timing	Initial $10^{\circ} \pm 2^{\circ}$ BTDC at idle
		Full advance $28^{\circ} \pm 2^{\circ}$ BTDC at $3,500 \pm 100$ rpm
	Alternator capacity	120W/5,000 rpm
	Battery	12V—9AH
	Spark plug	DR8ES—L (NGK) X24ESR—U (ND)
	Spark plug gap	0.6—0.7 mm (0.024—0.028 in)
	Fuse	10A
	Headlight	12V 45W/45W
	Taillight	12V 3.4W
	Neutral indicator	12V 3.4W

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TORQUE VALUES

ENGINE

Item	Q'ty	Thread Dia (mm)	Torque			Remarks
			N-m	kg-m	ft-lb	
Engine oil drain bolt	1	12	35-40	3.5-4.0	25-29	Apply oil to the threads.
Spark plug	1	12	12-19	1.2-1.9	9-14	
Clutch adjusting screw lock nut	1	8	19-25	1.9-2.5	14-18	
Cylinder head nut	4	8	28-30	2.8-3.0	20-22	
Camshaft bearing holder	2	6	10-14	1.0-1.4	7-10	
Valve adjuster lock bolt	2	6	10-14	1.0-1.4	7-10	
Centrifugal clutch lock nut	1	18	86-94	8.6-9.4	62-68	
Manual clutch lock nut	1	16	76-84	7.6-8.4	55-61	
Flywheel bolt	1	8	45-55	4.5-5.5	33-40	
Gear shifter bolt	1	6	10-14	1.0-1.4	7-10	
Starter clutch bolt	1	8	26-30	2.6-3.0	19-22	Apply a locking agent to the threads.
Pulse generator bolt	2	5	8-12	0.8-1.2	6-9	
Crankcase bolt	11	6	10-14	1.0-1.4	7-10	Apply oil to the threads.
Cam chain tensioner slipper nut	1	6	10-14	1.0-1.4	7-10	
Shift drum stopper bolt	1	6	10-14	1.0-1.4	7-10	
Centrifugal clutch cover	3	6	10-12	1.0-1.2	7-9	

FRAME

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Item	Q'ty	Thread Dia (mm)	Torque			Remarks
			N-m	kg-m	ft-lb	
Gearshift pedal adjuster lock nut	2	6	8-12	0.8-1.2	6-9	Refer to page 11-24
Engine hanger bolt	6	8	30-36	3.0-3.6	22-26	
	4	10	60-70	6.0-7.0	43-51	
Engine rear mounting bolt	1	10	60-70	6.0-7.0	43-51	
Steering stem nut	1	24	70-90	7.0-9.0	51-65	
Steering bearing adjustment nut						
Initial	1	24	25-35	2.5-3.5	18-25	
Final	—	—	5.5-6.5	0.55-0.65	4-4.7	
Handlebar upper holder bolt	4	8	18-30	1.8-3.0	13-22	
Handlebar lower holder nut	2	10	40-48	4.0-4.8	29-35	
Front fork upper bolt	2	12	50-60	5.0-6.0	36-43	Apply oil to the threads.
Front fork lower pinch bolt	4	8	30-40	3.0-4.0	22-29	
Front axle nut	1	14	55-65	5.5-6.5	40-47	
Rear axle nut	1	14	80-100	8.0-10.0	58-72	
Final driven sprocket nut	6	8	28-34	2.8-3.4	20-25	
Gearshift pedal pivot bolt	1	8	24-30	2.4-3.0	17-22	
						Apply a locking agent to the threads.

GENERAL INFORMATION

Item	Q'ty	Thread Dia (mm)	Torque			Remarks
			N·m	kg·m	ft·lb	
Gearshift pedal arm bolt	1	6	14–18	1.4–1.8	10–13	
Swing arm pivot nut	1	14	80–100	8.0–10.0	58–72	
Brake arm bolt Front/Rear	2	6	8–12	0.8–1.2	6–9	
Rear shock absorber mounting bolt	2	10	70–80	7.0–8.0	51–58	
Brake drum mounting bolt Front/Rear	8	8	25–35	2.5–3.5	18–25	
Front fork drain bolt	1	6	6–9	0.6–0.9	4.5–6.5	
Right and left footpeg bolts	4	10	70–80	7.0–8.0	51–58	
Kick starter bolt	1	8	20–35	2.0–3.5	14–25	
Exhaust muffler clamp bolt	1	8	15–25	1.5–2.5	11–18	
Exhaust muffler mounting bolt	2	8	20–30	2.0–3.0	14–22	
Exhaust pipe joint nut	2	6	8–12	0.8–1.2	6–9	
Side stand pivot bolt	1	10	10–20	1.0–2.0	7–14	
Side stand lock nut	1	10	35–45	3.5–4.5	25–33	
Side stand bracket bolt	1	8	30–36	3.0–3.6	22–26	
Wheel hub nut Front/Rear	8	10	60–70	6.0–7.0	43–51	

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

STANDARD TORQUE VALUES

Item	Torque N·m (kg·m, ft·lb)	Item	Torque N·m (kg·m, ft·lb)
5 mm bolt, nut	4.5–6 (0.45–0.6, 3–4)	5 mm screw	3.5–5 (0.35–0.5, 2–4)
6 mm bolt, nut	8–12 (0.8–1.2, 6–9)	6 mm screw, 6 mm flange bolt with 8 mm head	7–11 (0.7–1.1, 5–8)
8 mm bolt, nut	18–25 (1.8–2.5, 13–18)	6 mm flange bolt, nut	10–14 (1.0–1.4, 7–10)
10 mm bolt, nut	30–40 (3.0–4.0, 22–29)	8 mm flange bolt, nut	24–30 (2.4–3.0, 17–22)
12 mm bolt, nut	50–60 (5.0–6.0, 36–43)	10 mm flange bolt, nut	35–45 (3.5–4.5, 25–33)

TOOLS

SPECIAL

DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. PAGE
Clutch holder	07GMB-HB30100	- U.S.A. only	07923-HB3000A	8-6, 8
Clutch puller	07GMC-HB30100	- U.S.A. only	07923-HB3000A	8-6
Clutch center holder	07923-9580000			8-9, 12
Crankshaft assembly collar	07965-VM00100			10-11
Shaft puller	07931-ME40000		07931-ME4000A	10-11
Threaded adaptor	07GMF-HB50100	- U.S.A. only	07965-HB3000A	10-11
Universal bearing puller	07631-0010000	- or Equivalent commercially available in U.S.A.		10-10
Bearing remover set, 15 mm	07936-KC10000	- Not available in U.S.A.		10-7
Bearing remover, 15 mm	07936-KC10500			10-7
Remover weight	07741-0010201	- Remover weight	07936-3710200	10-7
Valve guide reamer, 5.5 mm	07984-2000000	- or Equivalent commercially available in U.S.A.		6-7, 9
Bearing remover shaft	07GGD-0010100			11-7
Steering stem socket	07916-4300000		07916-3710100	11-22, 24
Ball race remover	07953-3330000			11-22
Attachement	07946-3290000	- Use steering head outer races		11-23
Steering stem driver	07946-4300101		07946-MB00000	11-23
Universal bead breaker	GN-AH-958-BB1 (U.S.A. only)		with GN-HT-S4 (U.S.A. only)	11-8
CDI tester spark adaptor	07GGK-0010100	- Not available in U.S.A.		14-2
CDI tester inspection adaptor	07508-0012300	- Not available in U.S.A.		14-4

COMMON

DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. PAGE
Float level gauge	07401-0010000			4-9
Flywheel holder	07725-0040000	- or strap wrench, commercially available in U.S.A.		9-3, 6
Rotor puller	07733-0020001	- Rotor puller	07933-2160000	9-3
Lock nut wrench, 30 x 32 mm	07716-0020400	- or Equivalent commercially available in U.S.A.		11-22, 24
Attachment, 32 x 35 mm	07746-0010100			10-7, 10-8
Pilot, 15 mm	07746-0040300			10-7,
				11-7,
				12-5
Attachment, 42 x 47 mm	07746-0010300			10-7, 10,
				11-7,
				12-5,
				12-14
Pilot, 20mm	07746-0040500			10-7

GENERAL INFORMATION

DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. PAGE
Attachment, 52 x 55 mm	07746-0010400	— or Equivalent commercially available in U.S.A.	07749-0010000 (U.S.A. only) M9360-277-91775 (U.S.A. only)	10-8
Pilot, 22 mm	07746-0041000			10-8
Driver	07749-0010000			11-7, 12-5
Bearing remover head, 15 mm	07746-0050400			
Driver handle B	07746-0020100			6-5
Attachement, 15 mm	07746-0020200	— Valve guide remover — Valve spring compressor	07942-3290100 07957-3290001	6-5
Fork seal driver	07747-0010100			11-19
Fork seal driver attachment	07747-0010400			11-19
Valve guide remover, 5.5 mm	07742-0010100			6-8
Valve spring compressor	07757-0010000			6-6, 12
Attachment, 62 x 68 mm	07746-0010500] Not available in U.S.A.		10-11
Pilot, 28 mm	07746-0041100			10-11
Tire braker set	07772-0050000			11-9
Compressor breaker arm	07772-0050100			11-9
Breaker arm	07772-0050200			11-9

VALVE SEAT CUTTER

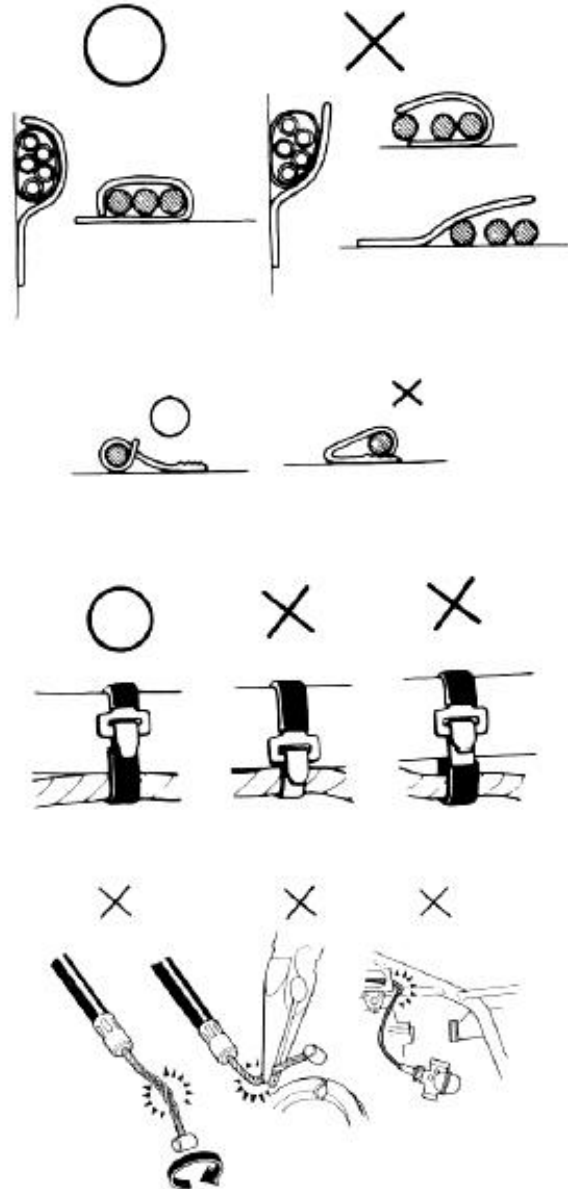
Valve seat cutters are commercially available in the U.S.A. Therefore, the following cutters are not required in the U.S.A.

DESCRIPTION	TOOL NUMBER	REF. PAGE
Valve seat cutter, 27.5 mm (EX 45°)	07780-0010200	6-9
Valve seat cutter, 33 mm (IN 45°)	07780-0010800	6-9
Valve seat cutter, 28 mm (EX 32°)	07780-0012100	6-9
Valve seat cutter, 33 mm (IN 32°)	07780-0012900	6-9
Valve seat cutter, 30 mm (IN/EX 60°)	07780-0014000	6-9
Valve seat cutter holder, 5.5 mm	07781-0010101	6-9

CABLE & HARNESS ROUTING

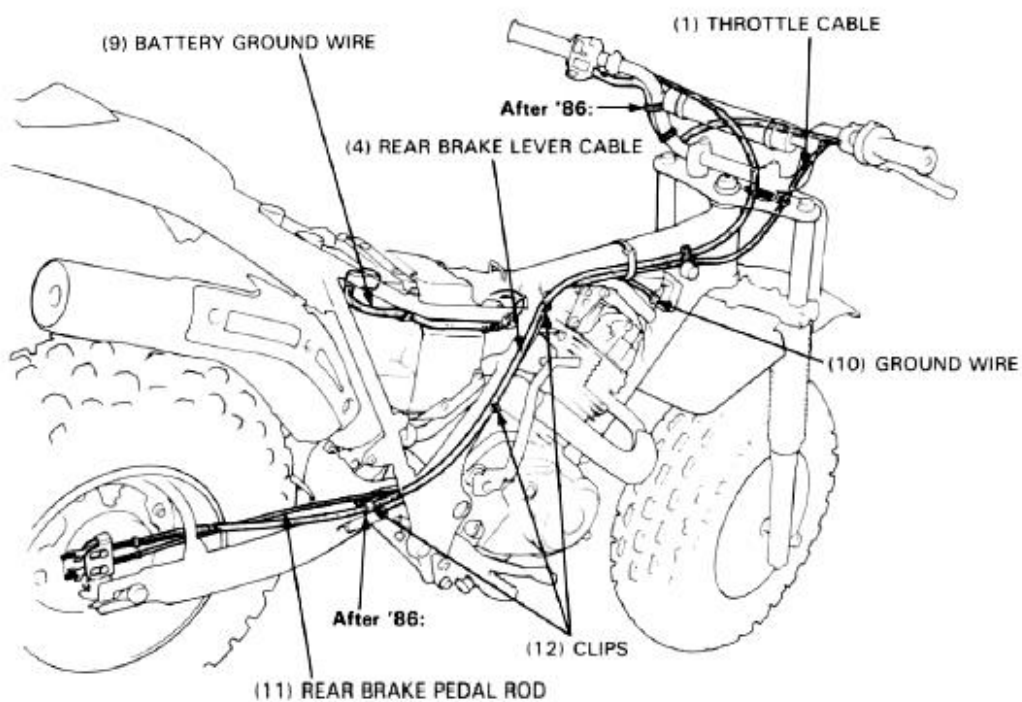
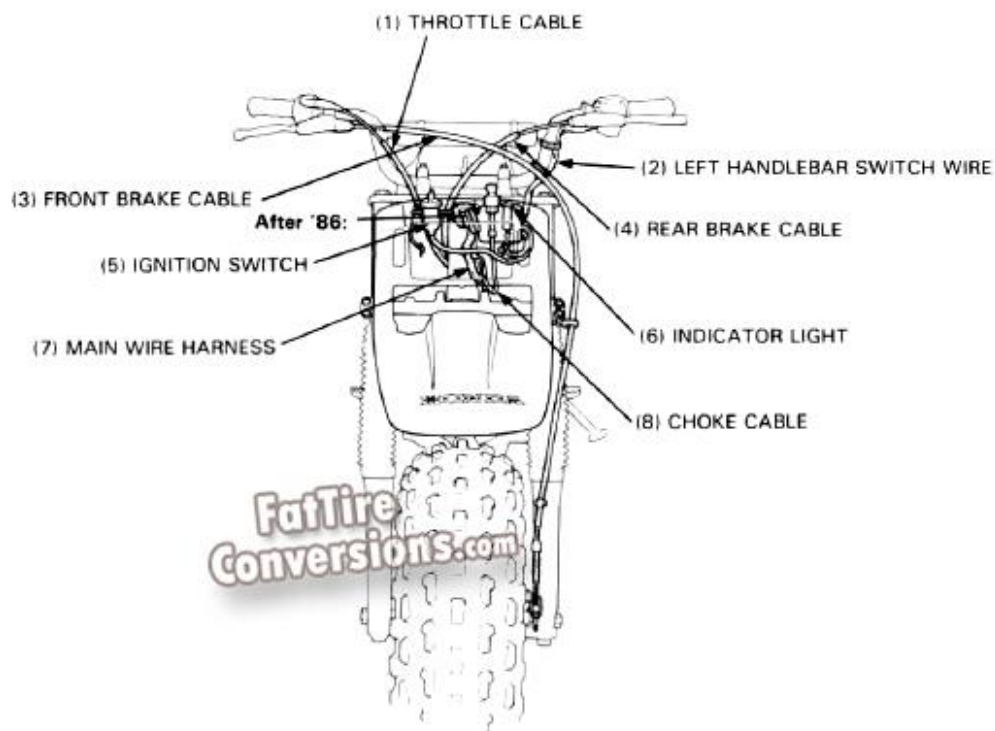
Note the following when routing cables and wire harnesses:

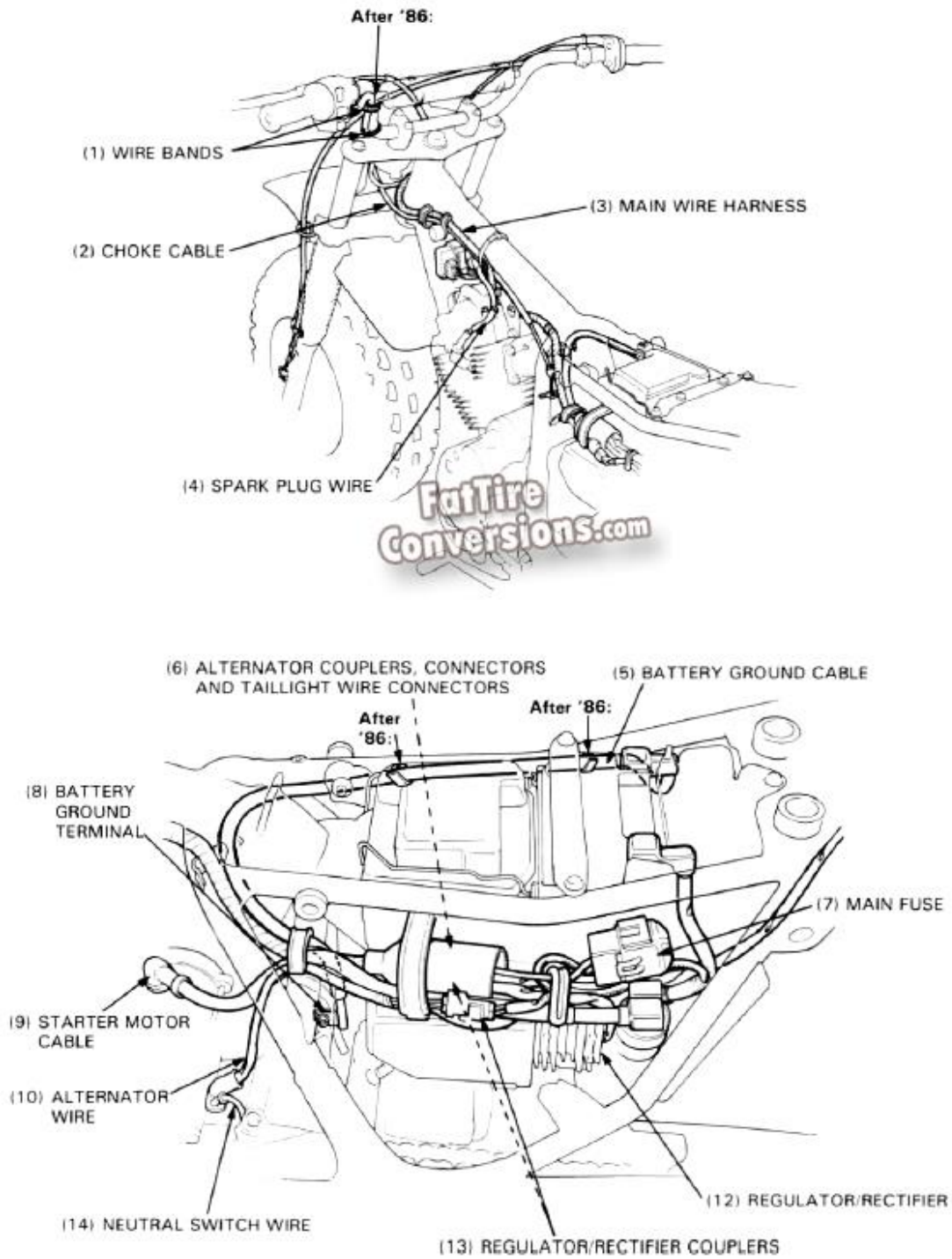
- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze a wire against a weld or end of its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated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



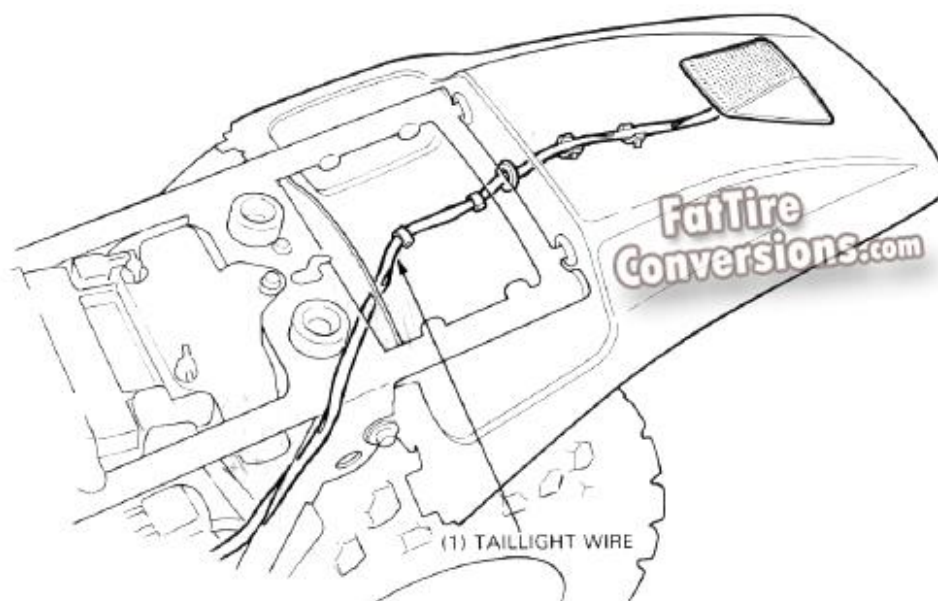
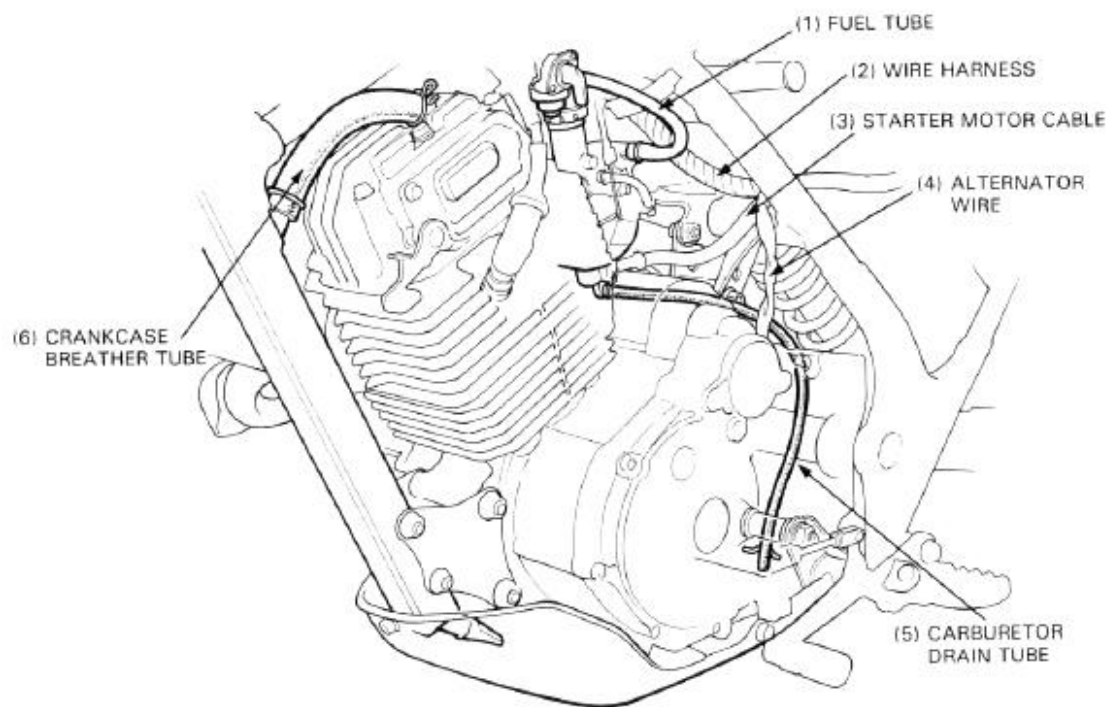
O: CORRECT
X: INCORRECT

GENERAL INFORMATION





GENERAL INFORMATION



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

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

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

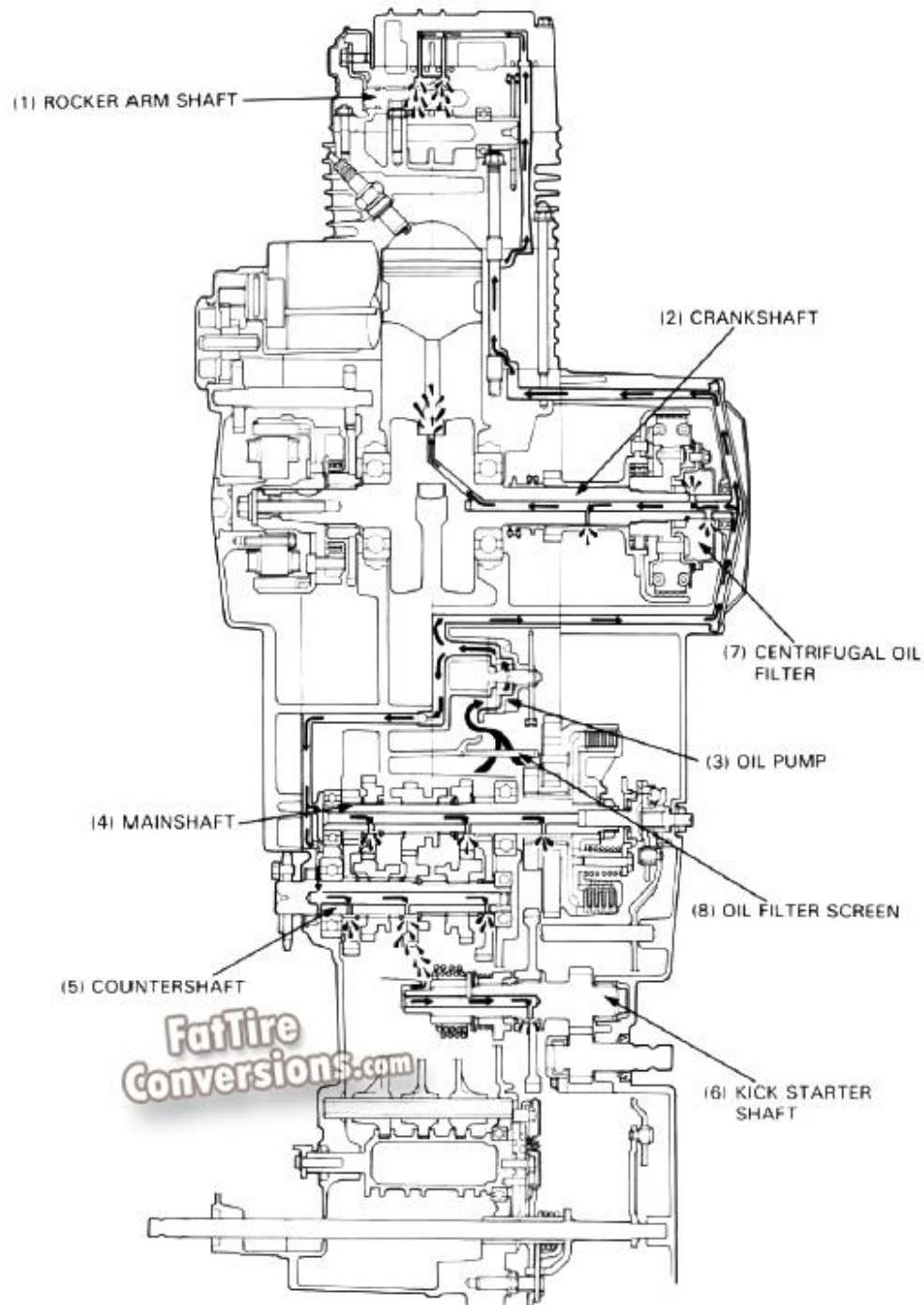
AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS LISTED BELOW:

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

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LUBRICATION

LUBRICATION DIAGRAM



2. LUBRICATION

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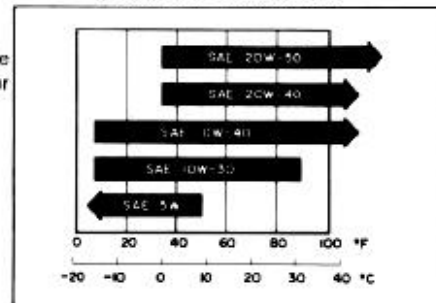
SERVICE INFORMATION

SPECIFICATIONS

Engine oil capacity	1.8 lit (1.9 US qt, 1.6 Imp qt) at disassembly 1.5 lit (1.6 US qt, 1.3 Imp qt) at draining
Engine oil recommendation	Use Honda 4-stroke oil or equivalent. API Service Classification: SE or SF Viscosity: SAE 10W-40

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

ENGINE OIL VISCOSITIES



CAUTION

- Do not use oils with graphite or molybdenum additives. They will adversely affect centrifugal clutch operation.

Oil pump

ITEM	STANDARD	SERVICE LIMIT
Rotor tip clearance	0.15 mm (0.006 in)	0.20 mm (0.008 in)
Rotor-to-body clearance	0.15-0.21 mm (0.006-0.008 in)	0.25 mm (0.010 in)
Pump end clearance	0.05-0.13 mm (0.002-0.005 in)	0.15 mm (0.006 in)

TORQUE VALUES

Engine oil drain bolt	35-40 N·m (3.5-4.0 kg-m, 25-29 ft-lb)
Centrifugal clutch cover	10-12 N·m (1.0-1.2 kg-m, 7-9 ft-lb)

TROUBLESHOOTING

Oil level too low - high oil consumption

- External oil leaks
- Worn or damaged piston rings
- Oil not changed often enough
- Faulty head gasket

Whitish exhaust gass

- Oil-up
 - Worn or damaged piston rings
 - Improperly installed piston rings
 - Worn cylinder
- Oil-down
 - Worn or damaged stem seals
 - Worn valve guide

Oil contamination

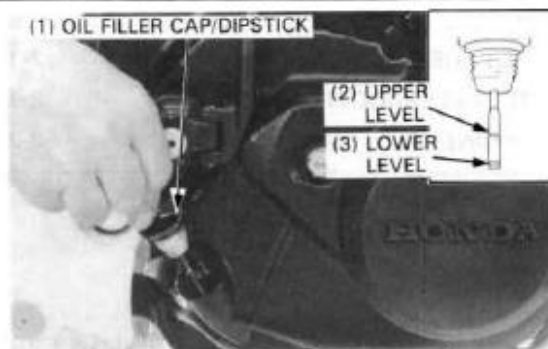
- Oil not changed or filter screen not cleaned often enough
- Head gasket faulty
- Worn piston rings
- Entry of water

LUBRICATION

ENGINE OIL

OIL LEVEL CHECK

Start the engine and allow it to idle for 2 or 3 minutes.
Stop the engine and place the motorcycle on a level surface.
Check the oil level with the oil filler cap/dipstick.
Do not screw it in when making this check.
If the oil level is below or near the lower level line on the dipstick, add the recommended oil (page 2-1) up to the upper level line.



OIL CHANGE

NOTE

- Change engine oil with the engine warm and the motorcycle on level ground to assure complete draining.

Remove the oil filler cap/dipstick and drain bolt, and drain the engine oil.



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

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

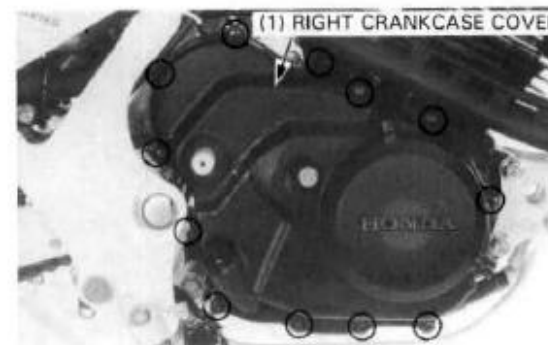
Fill the crankcase with 1.5 liters (1.6 US qt, 1.3 Imp qt) of the recommended oil (page 2-1).
Install the oil filler cap/dipstick.
Start the engine and let it idle for 2 or 3 minutes.

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

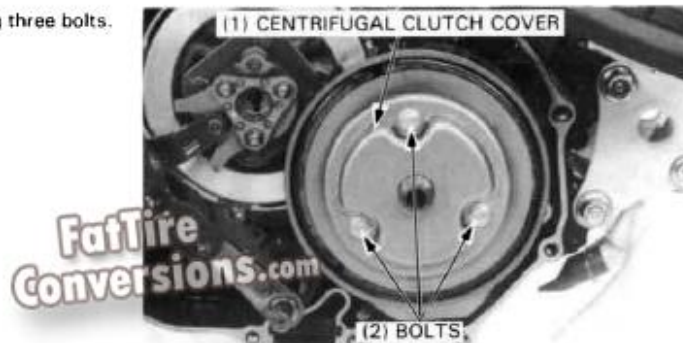


OIL FILTER ROTOR AND SCREEN

Drain the engine oil.
Remove the right crankcase cover and gasket (page 8-3).



Remove the centrifugal clutch cover by removing three bolts.



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

CAUTION

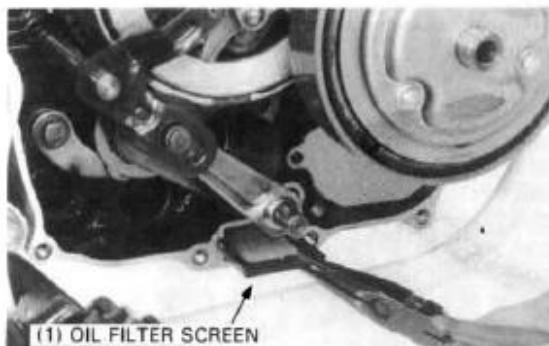
- Do not allow dust or dirt to enter the crankshaft oil passage.
- Do not use compressed air.

Reinstall the centrifugal clutch cover with a new gasket aligning the bolt holes in the cover and gasket.

TORQUE: 10 – 12 N·m (1.0 – 1.2 kg·m, 7 – 9 ft·lb)



Remove the oil filter screen from the right crankcase. Clean the oil filter screen by washing it in clean solvent and blowing it dry with compressed air. Reinstall the oil filter screen into the right crankcase.



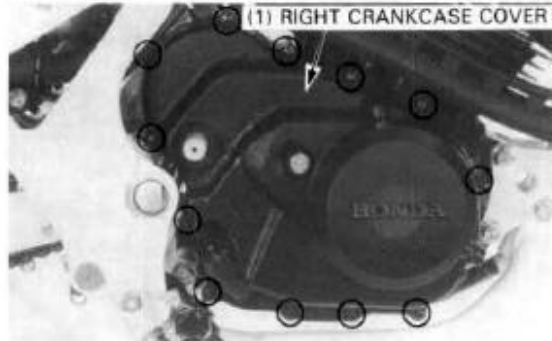
Install the dowel pins and a new gasket.



LUBRICATION

Install the right crankcase cover and disassembled parts (page 8-17).

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

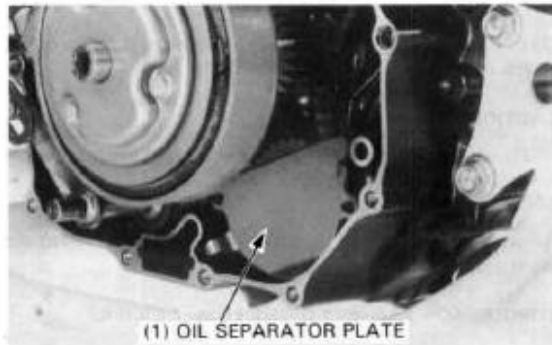


OIL PUMP

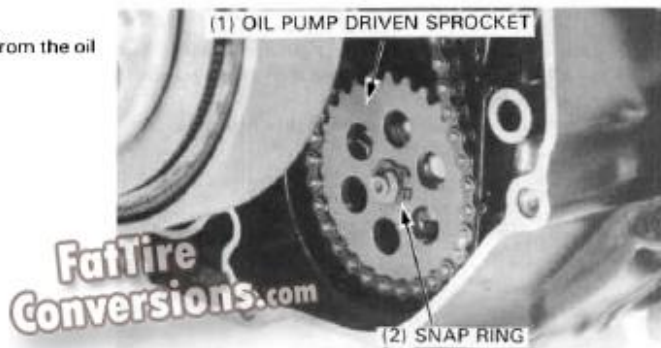
REMOVAL

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

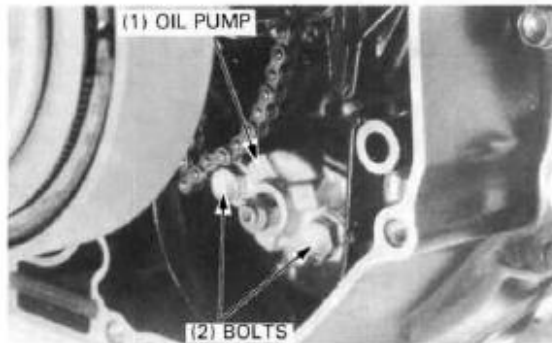
Remove the oil separator plate.



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

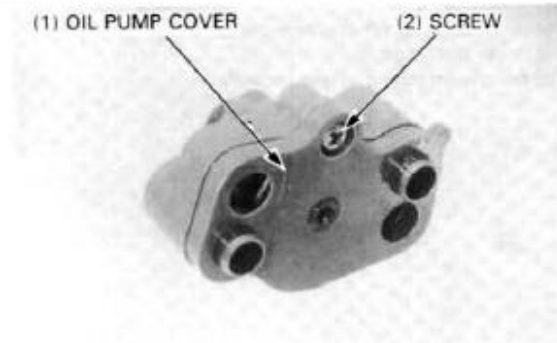


Remove the two mounting bolts and the oil pump from the right crankcase.



INSPECTION

Remove the oil pump cover attaching screw and cover.



Measure the oil pump body-to-rotor clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



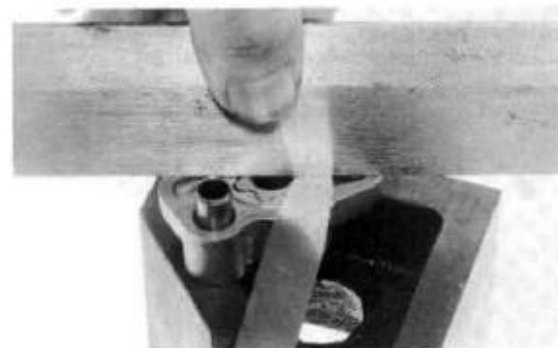
Measure the pump rotor tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



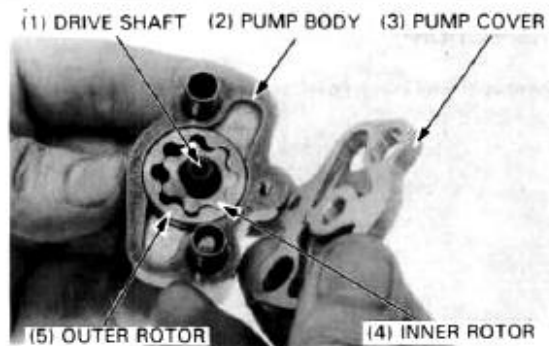
Remove the oil pump drive shaft and measure the pump end clearance.

SERVICE LIMIT: 0.15 mm (0.006 in)



LUBRICATION

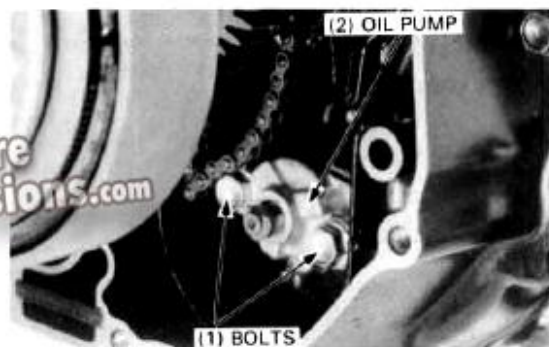
Check the all parts for scratches, wear or damage.
Assemble the oil pump.
Tighten the attaching screw securely.



INSTALLATION

Install the oil pump onto the right crankcase and tighten the bolts.

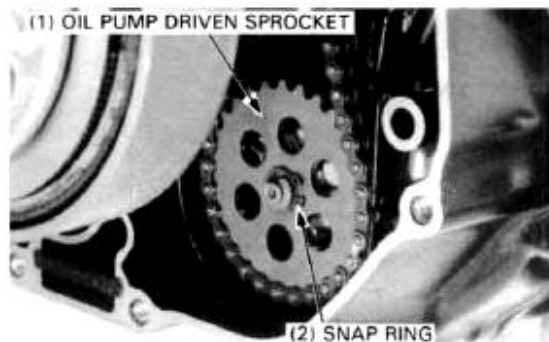
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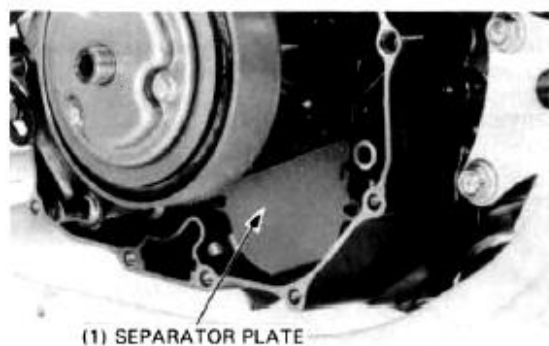
Install the oil pump driven sprocket with the drive chain and secure it with the snap ring.

CAUTION

- *Install the snap ring with sharp edge facing out.*



Install the separator plate.
Install the right crankcase cover (page 8-18).



LUBRICATION POINTS

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



3. MAINTENANCE

SERVICE INFORMATION	3-1	BRAKE SYSTEM	3-11
MAINTENANCE SCHEDULE	3-2	BRAKE LOCK LEVER	3-13
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CARBURETOR-CHOKE	3-5	SIDE STAND	3-14
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SERVICE INFORMATION

SPECIFICATIONS

Throttle grip free play	2–6 mm (1/8–1/4 in)
Recommended spark plug	DR8ES-L (NGK) X24ESR-U (ND)
Spark plug gap	0.6–0.7 mm (0.024–0.028 in)
Valve clearance Intake/Exhaust	0.08 mm (0.003 in)
Idle speed	1,400 ± 100 rpm
Cylinder compression	1,275 ± 98 kPa (13.0 ± 1.0 kg/cm ² , 184 ± 14 psi)
Drive chain slack	25–35 mm (1–1-3/8 in)
Front brake lever free play	25–30 mm (1–1-1/4 in)
Rear brake lever free play	25–30 mm (1–1-1/4 in)
Rear brake pedal free play	20–30 mm (3/4–1-1/4 in)
Recommended tire pressure (Cold) Front	4.3 ± 0.4 psi (30 ± 3 kPa, 0.3 ± 0.03 kg/cm ²)
Rear	4.3 ± 0.4 psi (30 ± 3 kPa, 0.3 ± 0.03 kg/cm ²)

TORQUE VALUES

Spark plug	12–19 N·m (1.2–1.9 kg·m, 9–14 ft·lb)
Rear axle nut	80–100 N·m (8.0–10.0 kg·m, 58–72 ft·lb)
Clutch adjusting screw lock nut	19–25 N·m (1.9–2.5 kg·m, 14–18 ft·lb)
Side stand pivot bolt	10–20 N·m (1.0–2.0 kg·m, 7–14 ft·lb)
Side stand pivot lock nut	35–45 N·m (3.5–4.5 kg·m, 25–33 ft·lb)
Gearshift pedal adjuster lock nut	8–12 N·m (0.8–1.2 kg·m, 6–9 ft·lb)
Rotor cap	10–20 N·m (1.0–2.0 kg·m, 7–14 ft·lb)

MAINTENANCE

MAINTENANCE SCHEDULE

*86:

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

I : Inspect and clean, adjust, lubricate, or replace if necessary.

C: Clean

R: Replace

A: Adjust

L: Lubricate

ITEM	FREQUENCY		BREAK-IN MAINTENANCE First month of operation-about 200 mi (350 km)	REGULAR MAINTENANCE INTERVAL Every 6 month operation-about 1000 mi (1600 km)	Refer to page
	EVERY				
* FUEL LINE				I	3-4
* FUEL STRAINER SCREEN				C	3-4
* THROTTLE OPERATION				I	3-4
* CARBURETOR-CHOKE				I	3-5
AIR CLEANER	NOTE 1			C	3-5
SPARK PLUG				I	3-6
* VALVE CLEARANCE			I	I	3-7
ENGINE OIL			R	R	2-2
* ENGINE OIL FILTER SCREEN				C	2-2
* ENGINE OIL CENTRIFUGAL FILTER				C	2-2
* CARBURETOR-IDLE SPEED			I	I	3-8
DRIVE CHAIN	NOTE 1		I, L	Every 2 months of operation I, L About 300 mi (500 km)	3-8
DRIVE CHAIN SLIDER			I	I	3-10
BRAKE SHOE WEAR				I	3-10
BRAKE SYSTEM			I	I	3-11
BRAKE LOCK LEVER				I	3-13
* HEADLIGHT AIM				I	3-13
CLUTCH SYSTEM			I	I	3-13
* GEARSHIFT PEDAL PIVOT				I, L	3-14
SIDE STAND				I	3-14
* SUSPENSION				I, L	3-14
* SPARK ARRESTER	NOTE 2			C	3-15
* NUT, BOLT, FASTENER			I	I	3-15
** WHEEL			I	I	3-16
** STEERING HEAD BEARING			I	I	3-16

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

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

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

2. U.S.A. only.

After '86:

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

I : Inspect and clean, adjust, lubricate, or replace if necessary.

C: Clean

R: Replace

A: Adjust

L: Lubricate

ITEM	FREQUENCY	EVERY	BREAK-IN MAINTENANCE First week of operation-about 200 mi (350 km)	REGULAR MAINTENANCE INTERVAL Every 30 operating day-about 1000 mi (1600 km)	Refer to page
* FUEL LINE				I	3-4
* FUEL STRAINER SCREEN				C	3-4
* THROTTLE OPERATION				I	3-4
* CARBURETOR-CHOKE				I	3-5
AIR CLEANER	NOTE 1			C	3-5
SPARK PLUG				I	3-6
* VALVE CLEARANCE			I	I	3-7
ENGINE OIL			R	R	2-2
* ENGINE OIL FILTER SCREEN				C	2-2
* ENGINE OIL CENTRIFUGAL FILTER				C	2-2
* CARBURETOR-IDLE SPEED			I	I	3-8
DRIVE CHAIN	NOTE 1		I, L	Every 10 operating day about 300 mi (500 km) I, L	3-8
DRIVE CHAIN SLIDER			I	I	3-10
BRAKE SHOE WEAR				I	3-10
BRAKE SYSTEM			I	I	3-11
* HEADLIGHT AIM				I	3-13
CLUTCH SYSTEM			I	I	3-13
* GEARSHIFT PEDAL PIVOT				I, L	3-14
SIDE STAND				I	3-14
* SUSPENSION				I, L	3-14
* SPARK ARRESTER	NOTE 2			C	3-15
* NUT, BOLT, FASTENER			I	I	3-15
** WHEEL/TIRES				I	3-16
** STEERING HEAD BEARING			I	I	3-16

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

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

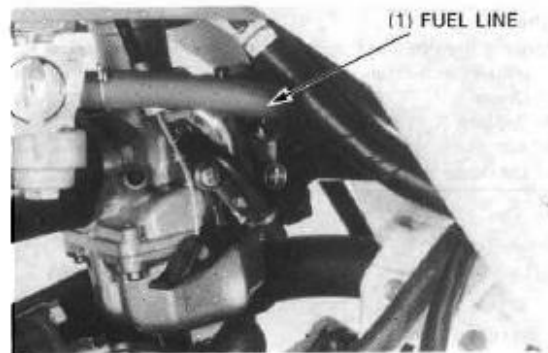
NOTES: 1. Service more frequently when ridden in wet or dusty conditions.

2. U.S.A. only.

MAINTENANCE

FUEL LINE

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

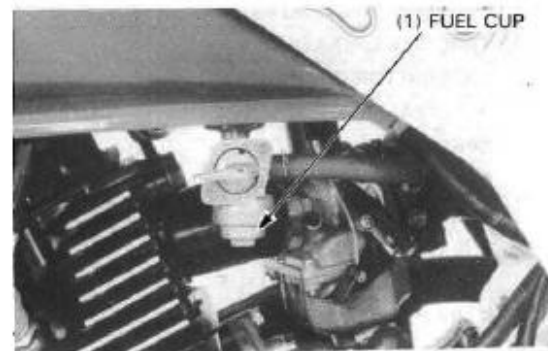


FUEL STRAINER SCREEN

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

WARNING

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



Wash the cup and strainer screen in clean, non-flammable or high flash-point solvent.

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

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

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

Hand tighten the fuel cup securely.

CAUTION

- *Do not overtighten the fuel cup.*

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



THROTTLE OPERATION

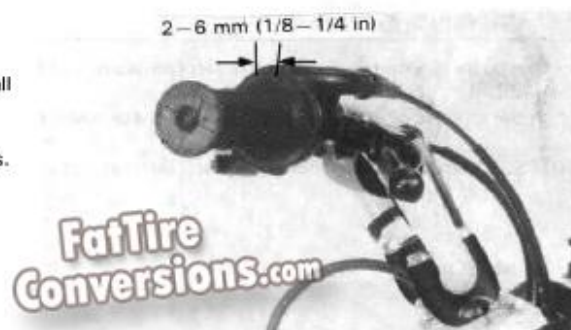
Check for smooth throttle grip full opening and automatic full closing in all steering positions.

Inspect the throttle cable for deterioration, damage, or kinks.

Replace the cable as required.

Measure throttle grip free play at the throttle grip flange.

THROTTLE GRIP FREE PLAY: 2–6 mm (1/8–1/4 in)

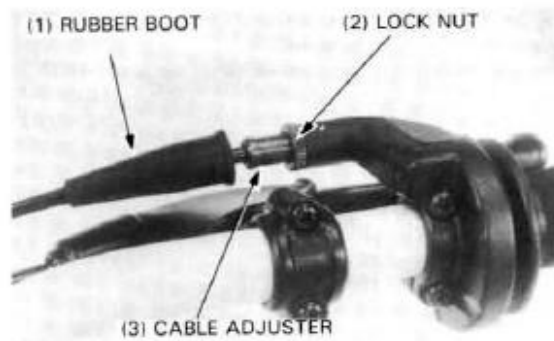


Adjust as follows:

Slide the rubber boot off the cable adjuster.

Loosen the lock nut and adjust the throttle cable free play by turning the cable adjuster.

Tighten the lock nut and install the rubber boot securely.

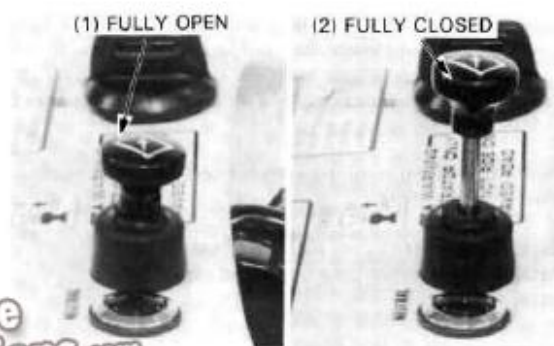


CARBURETOR-CHOKE

Check for smooth choke knob operation.

Lubricate the choke cable if necessary.

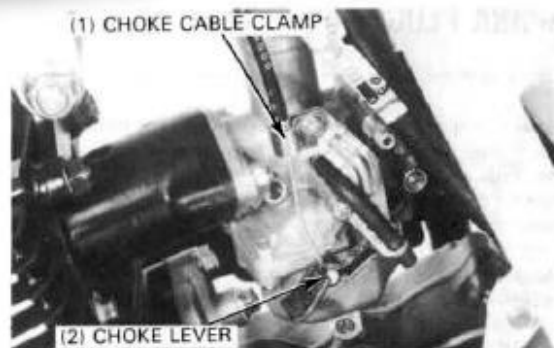
Pull the choke knob all the way up to the fully closed position and check that the choke valve is fully closed by moving the choke lever at the carburetor.



Adjust if necessary, by loosening the choke cable clamp on the carburetor and moving the choke cable casing so the choke valve is fully closed.

Tighten the clamp.

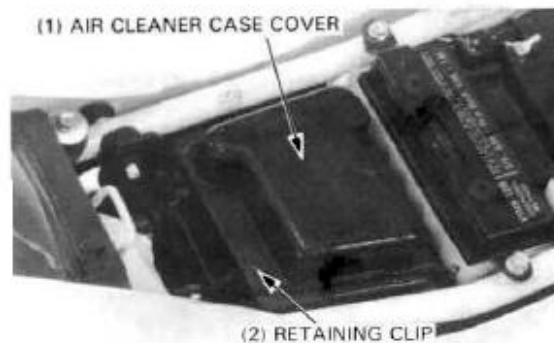
Push the choke knob all the way in to the fully open position. Make sure that the choke valve is fully open by checking for free play in the cable between the lever on the carburetor and cable casing.



AIR CLEANER

Remove the seat.

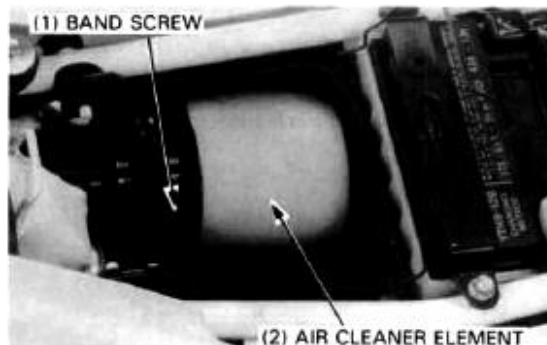
Release the retaining clip holding the air cleaner case cover, and remove the air cleaner case cover.



MAINTENANCE

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

Remove the element from the element core (page 4-5).



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

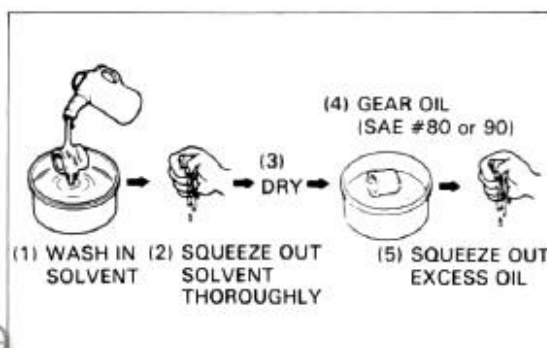
Soak the element in gear oil (SAE #80 or 90) and squeeze out excess.

Place the element onto the element core and replace the element band and holder.

Install the element in the air cleaner case.

Install the air cleaner case cover and clip.

Install the seat.



SPARK PLUG

Disconnect the spark plug cap and remove the spark plug.

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

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

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

**RECOMMENDED REPLACEMENT PLUG: DR8ES-L (NGK)
X24ESR-U (ND)**

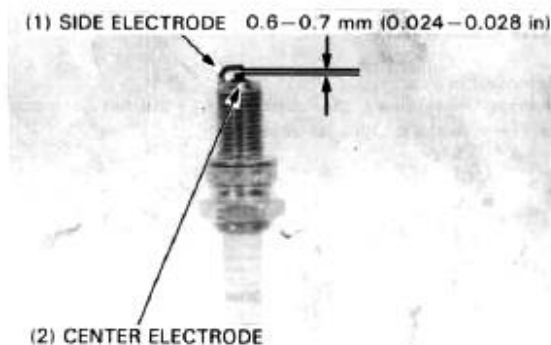
Check the sealing washer and replace with a new one if damaged.

With the sealing washer attached, thread the spark plug in by hand to prevent cross-threading.

Tighten the spark plug.

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

Install the spark plug cap.



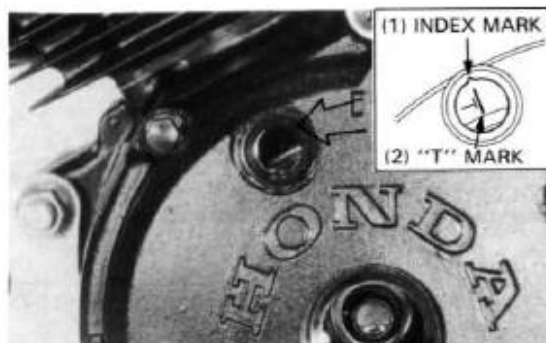
VALVE CLEARANCE

Remove the timing hole cap and rotor cap from the left crankcase cover.

NOTE

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

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



Disconnect the spark plug cap from the spark plug.
Remove the valve adjuster cover by removing the bolts.



Remove the timing hole cap from the cylinder head cover.

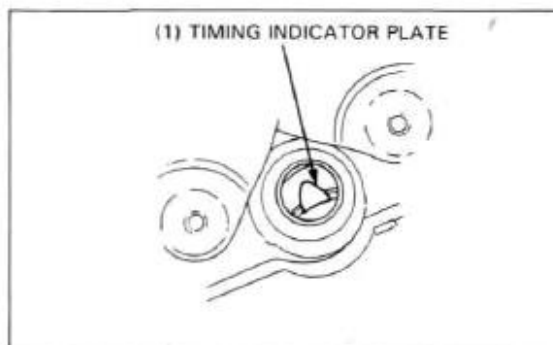


Check that the timing indicator plate on the cam shaft end is visible (facing up).

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

NOTE

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



MAINTENANCE

Loosen the valve adjuster lock bolts fully.
Move the intake and exhaust valve adjusters counterclockwise fully until resistance is felt.

Then move them clockwise correctly the equivalent of 1/2 graduation. Tighten the adjuster lock bolts.

NOTE

- 1/2 graduation on the adjusters equals 0.08 mm (0.003 in) which is the specified clearance.

Install the timing hole cap onto the cylinder head cover and valve adjuster cover.
Install the timing hole cap and rotor cap onto the left crankcase cover.

Tighten the rotor cap.

TORQUE: 10–20 N·m (1.0–2.0 kg·m, 7–14 ft·lb)

CARBURETOR-IDLE SPEED

NOTE

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

Shift the transmission into neutral.

Warm up the engine for about ten minutes and connect a tachometer.

Turn the throttle stop screw as required to obtain the specified idle speed with the motorcycle supported in an upright position.

IDLE SPEED: 1,400 ± 100 rpm

DRIVE CHAIN

WARNING

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

CHAIN SLACK INSPECTION

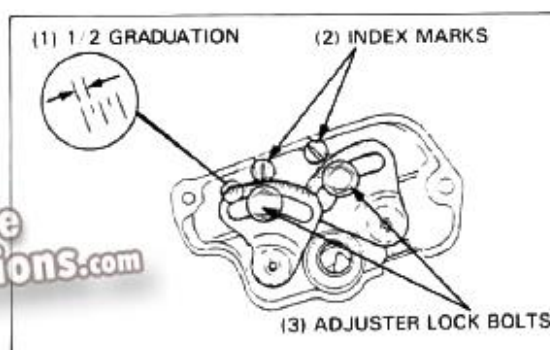
Stop the engine and shift the transmission into neutral.

Place the engine on a box or work stand.

Measure the slack in the lower drive chain run midway between the sprockets.

SLACK: 25–35 mm (1–1-3/8 in)

Adjust the drive chain slack (page 3-9) if necessary.



CHAIN SLACK ADJUSTMENT

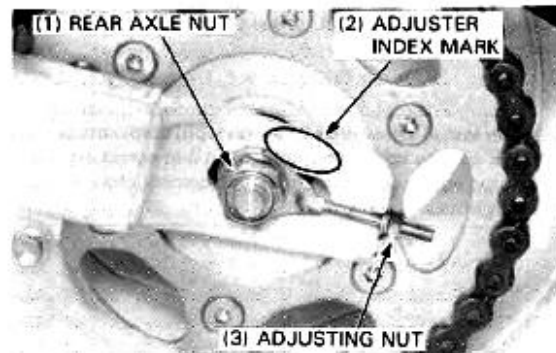
Loosen the rear axle nut, then turn the adjusting nuts on both sides of the swingarm equally until the correct chain slack is obtained.

CAUTION

- Be sure the same adjuster index marks align with the index marks on both sides of the swing arm.

Tighten the axle nut.

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



REMOVAL AND INSPECTION

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

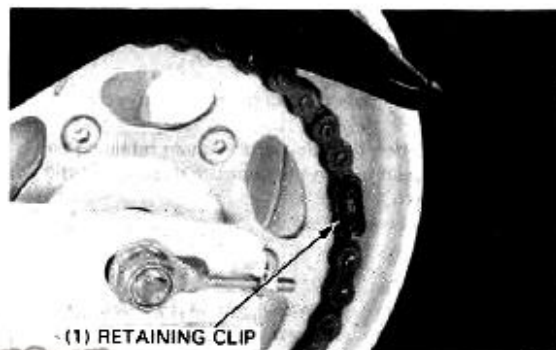
Remove the drive sprocket cover.

Remove the chain retaining clip carefully.

Remove the master link, O-rings and the drive chain.

CAUTION

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



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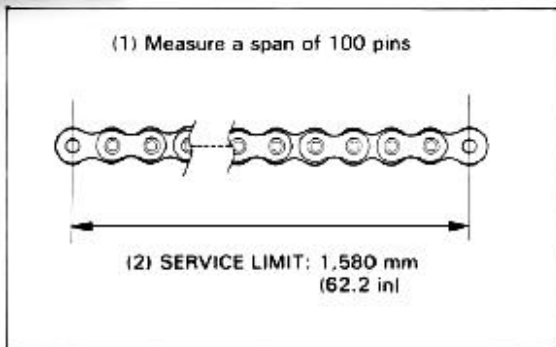
Visually inspect the drive chain for kinks or damage.

Measure a section of the drive chain to determine whether the drive chain is worn beyond its service limit. Remove the drive chain and measure the distance between a span of 100 pins from pin center to pin center.

In a new chain, this distance will measure 1,571.6 mm (61.9 in). If the distance exceeds 1,580 mm (62.2 in), the drive chain is worn out and should be replaced.

REPLACEMENT DRIVE CHAIN:

DID 520 VC-3 or RK 520 MO



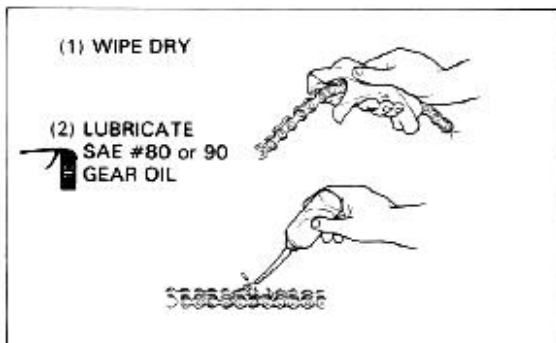
Clean the drive chain with a small amount of non-flammable solvent and wipe dry.

CAUTION

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

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

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

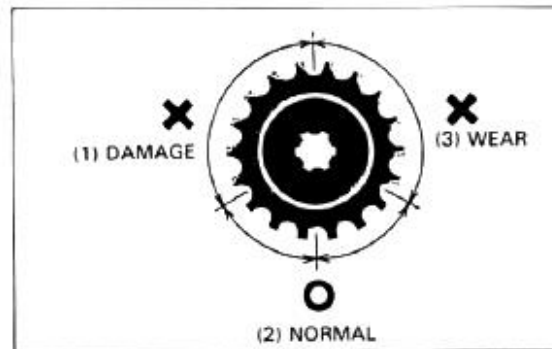


MAINTENANCE

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

NOTE

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



INSTALLATION

Install the drive chain.

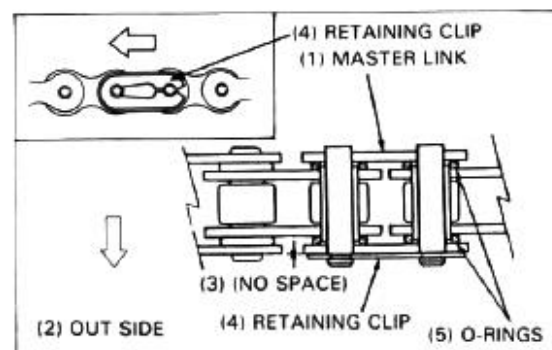
Install the master link with O-rings and chain retaining clip.

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

Adjust the drive chain slack.

CAUTION

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



DRIVE CHAIN SLIDER

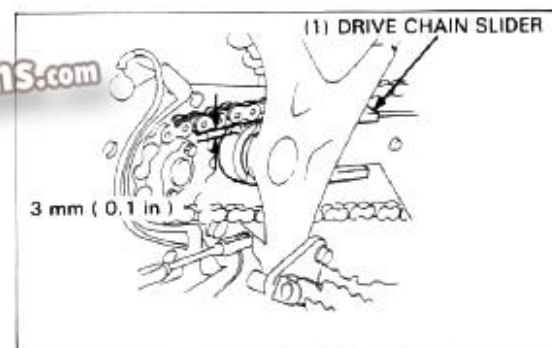
Remove the drive sprocket cover.

Inspect the chain slider for excessive wear.

SERVICE LIMIT: (from upper surface): 3 mm (0.1 in)

Install the drive sprocket cover.

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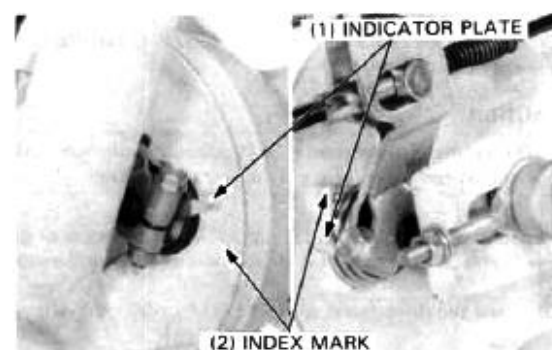
BRAKE SHOE WEAR

FRONT BRAKE

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

REAR BRAKE

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

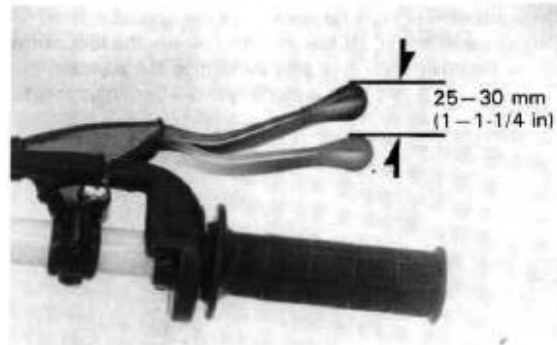


BRAKE SYSTEM

FRONT BRAKE

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

Disconnect the brake cable at the upper end. Inspect the brake cable for kinks or damage, and thoroughly lubricate the cable and pivot point with a commercially available cable lubricant to prevent premature wear. Install the brake cable.



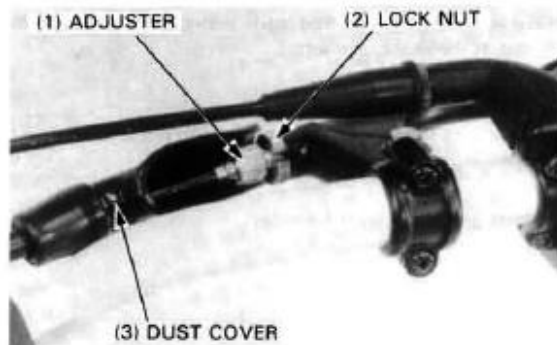
FRONT BRAKE LEVER FREE PLAY

At the tip of the brake lever, measure the distance the lever moves before the brake starts to take hold.

FREE PLAY: 25–30 mm (1 – 1-1/4 in)

Minor adjustments can be made with the upper adjuster. Slide the dust cover off the adjuster, loosen the lock nut and adjust the free play by turning the adjuster. Tighten the lock nut with a pair of pliers after adjustment.

Major adjustments should be made with the lower adjusting nut at the front brake arm.



NOTE

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

Recheck the brake lever free play.

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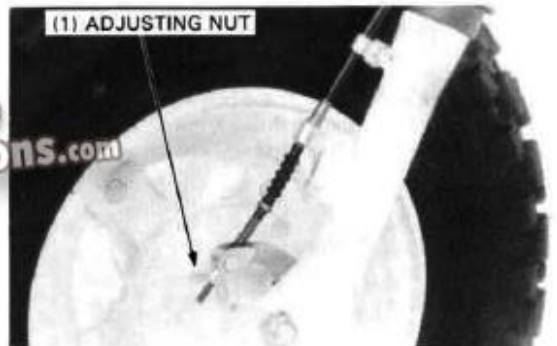
REAR BRAKE

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

Replace or repair if necessary.

Disconnect the brake cables at the brake lever or pedal end.

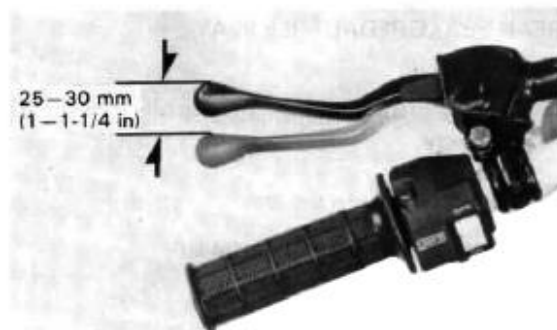
Inspect the brake cable for kinks or damage, and thoroughly lubricate the cables and their pivot point with a commercially available cable lubricant to prevent premature wear. Install the cables.



REAR BRAKE LEVER FREE PLAY

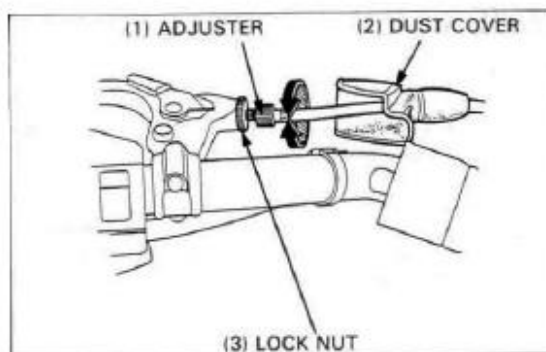
Measure the rear brake (parking brake) lever free play at the end of the brake lever.

FREE PLAY: 25–30 mm (1 – 1-1/4 in)



MAINTENANCE

Minor adjustments can be made with the upper adjuster. Slide the dust cover off the adjuster, loosen the lock nut and adjust the brake lever free play by turning the adjuster. Tighten the lock nut with a pair of pliers after adjustment.

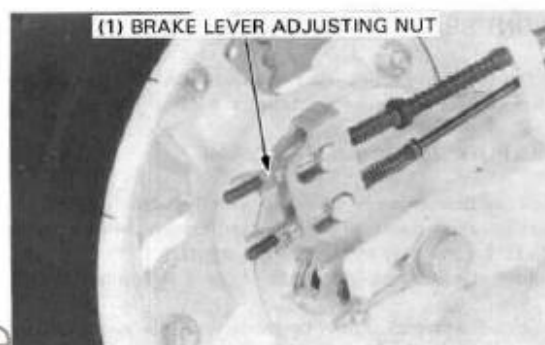


Major adjustments should be made with the brake lever adjusting nut at the rear brake arm.

NOTE

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

Recheck the brake lever free play.



REAR BRAKE PEDAL HEIGHT

To adjust:

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



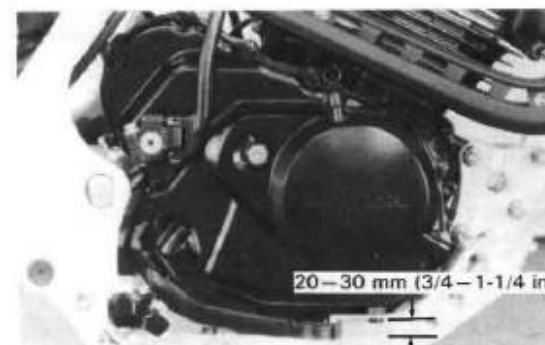
REAR BRAKE PEDAL FREE PLAY

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)

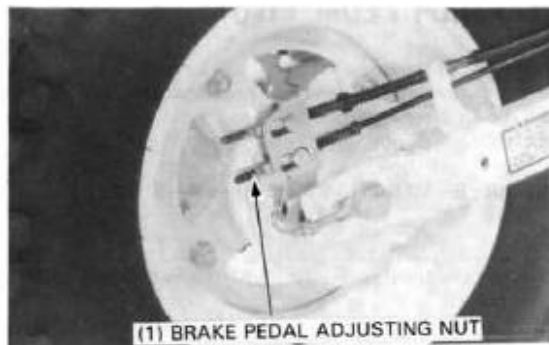


If adjustment is necessary, turn the brake pedal adjusting nut at the rear brake arm.

NOTE

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

Recheck the brake pedal free play.



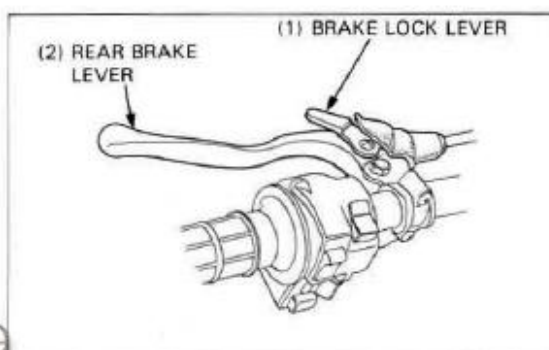
BRAKE LOCK LEVER

'86:

A brake lock adjustment may be required if the brake lock does not hold the rear wheel.

Check the rear brake lever free play and adjust the rear brake by turning the adjusting nut.

Pull the rear brake lever back and lock it.



HEADLIGHT AIM

Adjust the vertical beam by turning the adjusting screw on the headlight cover.



CLUTCH SYSTEM

With the engine off, loosen the clutch adjusting screw lock nut.

Slowly turn the adjusting screw counterclockwise until resistance is felt. Then turn the adjusting screw clockwise 1/4 turn, and tighten the lock nut.

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

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



MAINTENANCE

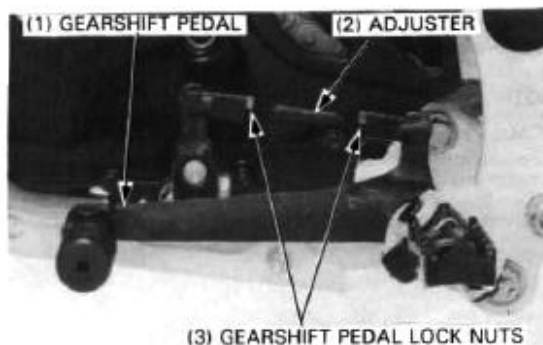
GEARSHIFT PEDAL PIVOT

The height of the gearshift pedal can be adjusted. To adjust, loosen the gearshift pedal adjuster lock nuts and turn the adjuster as necessary. Tighten the lock nut.

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

NOTE

- Adjust the pedal so it will not interfere with proper pedal operation.
- The adjuster should be threaded into the joints on both ends by at least half its entire length.



SIDE STAND

Check the side stand spring for damage and loss of tension. Spring tension is correct if the measurements fall within 2–3 kg (4.4–6.6 lb) with the side stand lower end pulled with a spring scale.

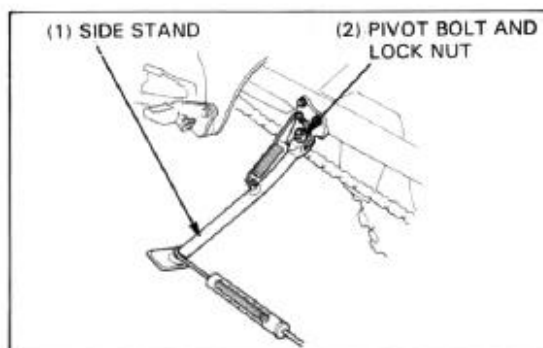
Check that the side stand pivot is not bent and that it moves freely.

Tighten the pivot bolt and lock nut if necessary.

TORQUE:

PIVOT BOLT: 10–20 N·m (1.0–2.0 kg·m, 7–14 ft·lb)

LOCK NUT: 35–45 N·m (3.5–4.5 kg·m, 25–33 ft·lb)



Lubricate the pivot with grease.

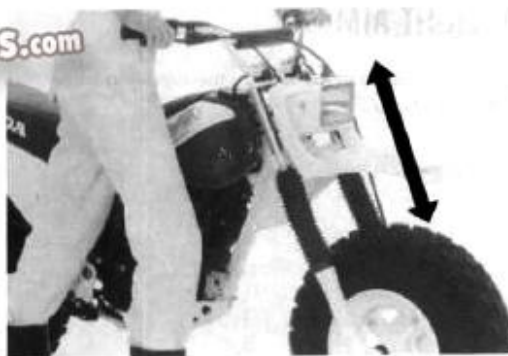
SUSPENSION

WARNING

- *Do not ride a motorcycle with faulty suspension. Loose, worn or damaged suspension parts impair motorcycle stability and control.*

Check the action of the front/rear shock absorber by compressing them several times.

Check the entire shock absorber assembly for leaks or damage. Replace damaged components which cannot be repaired.



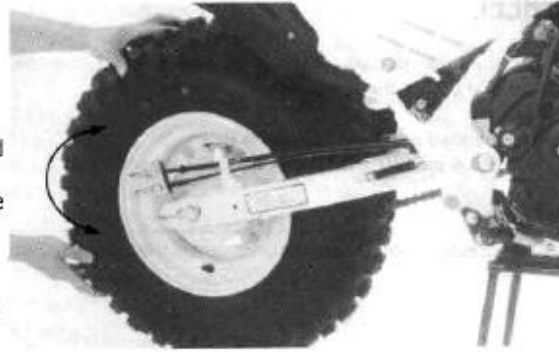
Raise the rear wheel using the box or workstand. Move the rear wheel sideways with force to see if the swingarm bushings are worn.

NOTE

If rear wheel has excessive free play, remove the wheel and move the swing arm sideways with force to determine whether the swingarm pivot bushings or wheel bearings are worn.

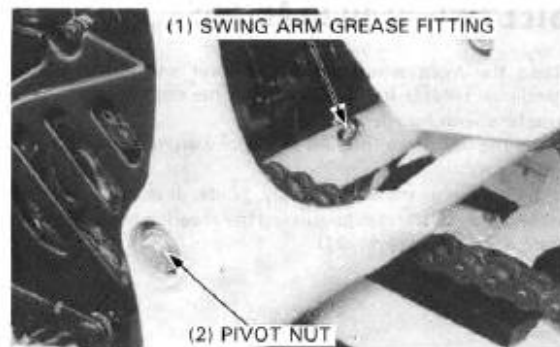
Replace them if they are excessively worn.

Refer to page 12-4 for rear wheel hub bearing replacement and page 12-12 for swing arm pivot bushing replacement.



Check the entire rear suspension being sure everything is securely mounted and not damaged or distorted. Torque all nuts and bolts.

Loosen the swing arm pivot nut and pump grease into the swing arm pivot bearings through the grease fitting on the swing arm.



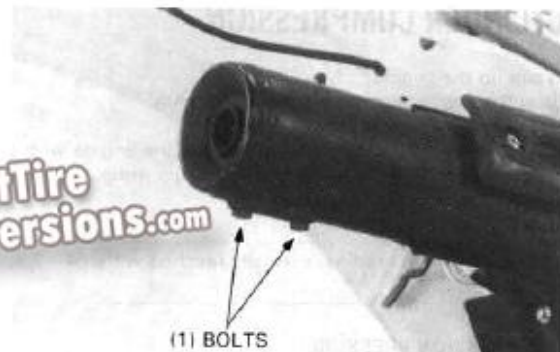
SPARK ARRESTER

WARNING

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

Remove the bolts, gasket and spark arrester lid. Block the end of the muffler with a shop towel. Start the engine with the transmission in neutral, and purge accumulated carbon from the muffler by momentarily revving up the engine several times. Stop the engine and allow the exhaust system to cool.

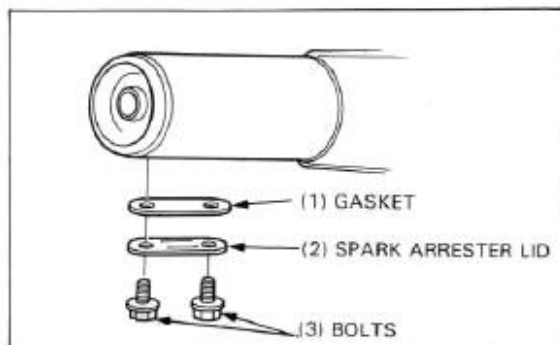
Make sure that the bolts and gasket are in good condition. Replace the bolts and gasket if necessary. Install the gasket and spark arrester lid, and tighten the bolts securely.



NUT, BOLT, FASTENER

Tighten bolts, nuts and fasteners at regular intervals shown in the Maintenance Schedule (page 3-2).

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



MAINTENANCE

WHEEL

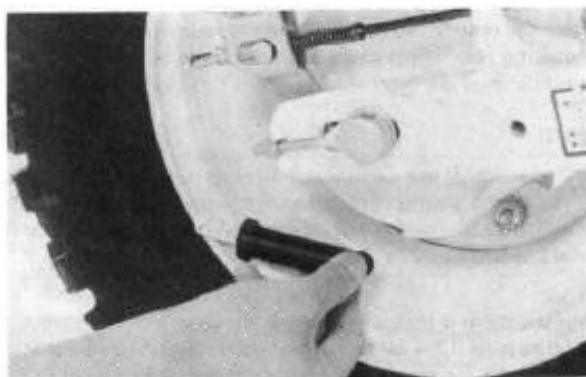
Check the tires for cuts, embedded nails, or other damage. Check and adjust the tire pressure.

Recommended pressure Front and Rear:

4.3 ± 0.4 psi (30 ± 3 kPa, 0.3 ± 0.03 kg/cm²)

NOTE

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



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.

Move the front fork forward and backward and check that it is not loose.

If the handlebar moves unevenly, binds, or is loose, adjust the steering head bearings by turning the steering head bearing adjustment nut (page 11-21).



CYLINDER COMPRESSION

Warm up the engine.

Stop the engine and remove the spark plug.

Install a compression gauge.

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

NOTE

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

COMPRESSION PRESSURE:

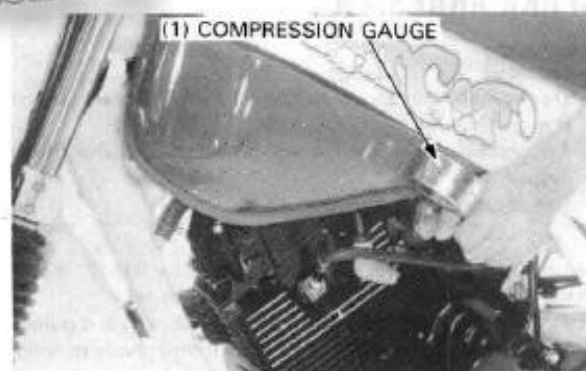
$1,275 \pm 98$ kPa (13.0 ± 1.0 kg/cm², 184 ± 14 psi)

Low compression can be caused by:

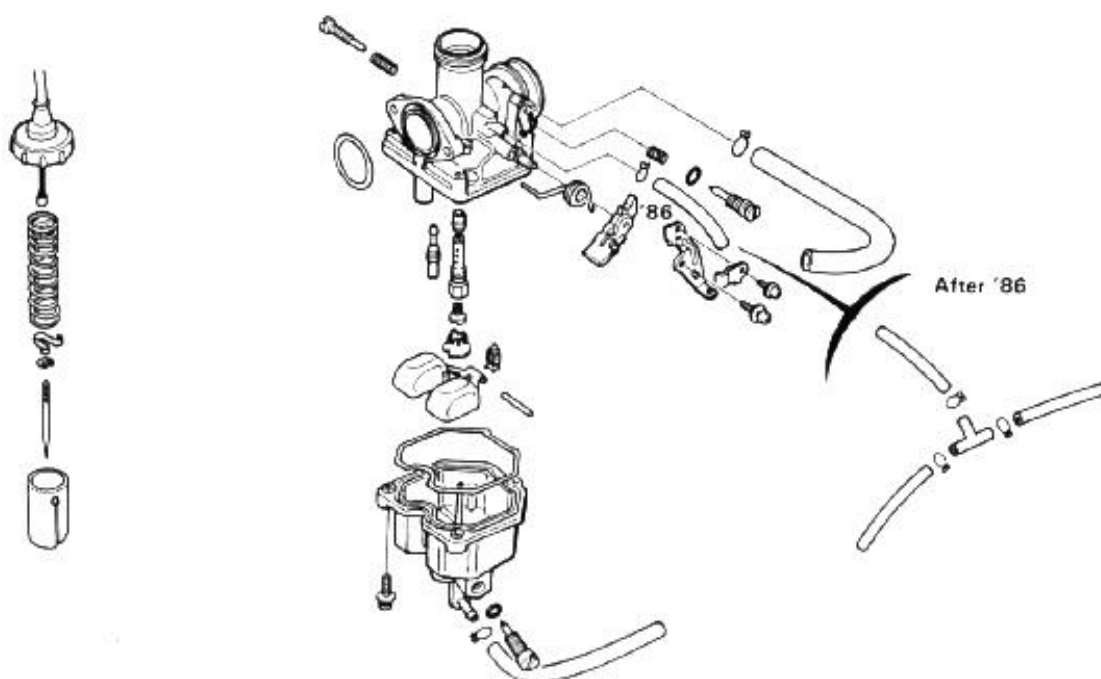
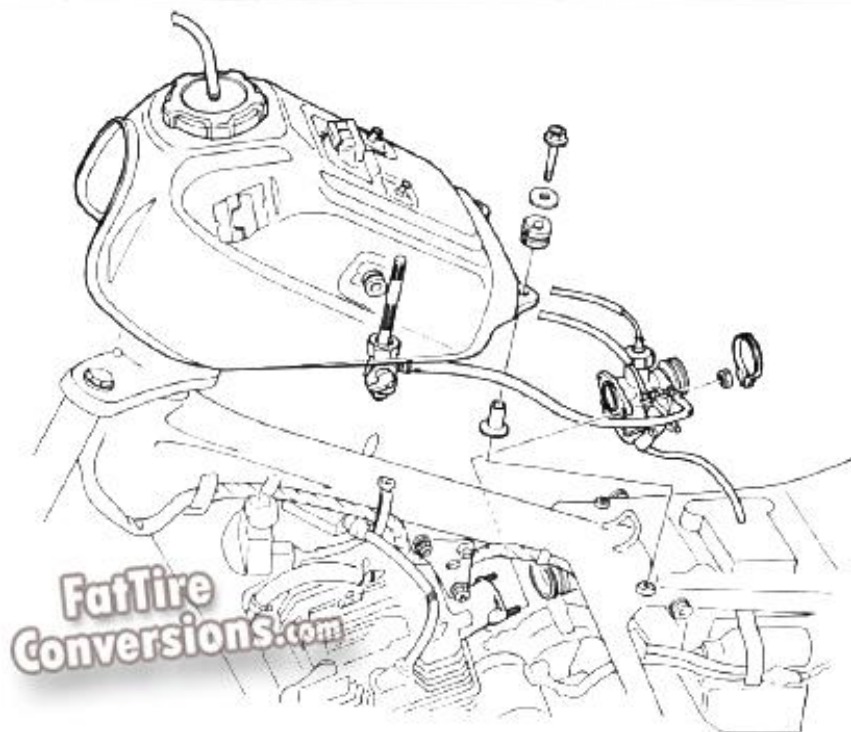
- Blown cylinder head gasket
- Improper valve adjustment
- Valve leakage
- Worn piston ring or cylinder

High compression can be caused by:

- Carbon deposits in combustion chamber or on piston head



FUEL SYSTEM



4. FUEL SYSTEM

SERVICE INFORMATION	4-1	CARBURETOR DISASSEMBLY	4-6
TROUBLESHOOTING	4-2	CARBURETOR ASSEMBLY	4-8
FUEL TANK	4-3	THROTTLE VALVE	4-9
AIR CLEANER CASE	4-4	CARBURETOR INSTALLATION	4-10
THROTTLE VALVE DISASSEMBLY	4-6	AIR SCREW ADJUSTMENT	4-10
CARBURETOR REMOVAL	4-6	HIGH ALTITUDE ADJUSTMENT	4-11

SERVICE INFORMATION

GENERAL

WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Do not smoke or allow flames or sparks in the work area.

- When disassembling the fuel system parts, note the location of the O-rings. Replace them with new ones on reassembly.
- Before disassembling the carburetor drain the fuel in the float chamber by opening the drain screw.

CAUTION

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

SPECIFICATIONS

Fuel tank capacity	7.0 lit (1.9 US gal, 1.5 Imp gal)
Fuel reserve capacity	2.0 lit (0.5 US gal, 0.4 Imp gal)

Carburetor

Identification number	PD 69A
Type	Single valve
Venturi diameter	24 mm (0.94 in)
Float level	14 mm (0.55 in)
Air screw opening	– 1-1/4 turns out
Idle speed	1,400 ± 100 rpm
Main jet	#95
Slow jet	#50
Throttle lever free play	2–6 mm (1/8–1/4 in)
Jet needle	3rd groove

TOOL

Common	
Float level gauge	07401–0010000

FUEL SYSTEM

TROUBLESHOOTING

Engine cranks but won't start

- No fuel in tank
- Restricted fuel line
 - Clogged fuel line or fuel strainer screen
 - Pinched fuel tank vent tube
- Engine flooded with fuel
- No spark at plug (faulty ignition system)
- Low cylinder compression
- Intake air leak
- Improper choke operation
- Incorrect choke cable adjustment
- Improper throttle operation

Hard starting or stalling after starting

- Improper choke operation
- Incorrect choke cable adjustment
- Ignition malfunction
- Restricted fuel line
 - Clogged fuel line or fuel strainer screen
 - Pinched fuel tank vent tube
- Lean or rich mixture
- Contaminated fuel
- Intake air leak
- Incorrect idle speed
- Low cylinder compression

Rough idle

- Improper choke operation
- Incorrect choke cable adjustment
- Ignition malfunction
- Restricted fuel line
 - Clogged fuel line or fuel strainer screen
 - Pinched fuel tank vent tube
- Lean or rich mixture
- Contaminated fuel
- Intake air leak
- Incorrect idle speed
- Low cylinder compression

Misfiring during acceleration

- Faulty ignition system
- Lean mixture
- Intake air leak

Back firing during deceleration

- Faulty ignition system
- Lean mixture

Poor performance (driveability) and poor fuel economy

- Clogged fuel system
- Faulty ignition system
- Air cleaner clogged
- Rich mixture

Lean mixture

- Clogged fuel jets
- Faulty float valve
- Low float level
- Blocked fuel cap vent tube
- Clogged fuel strainer screen
- Intake air leak
- Clogged air vent tube

Rich mixture

- Clogged air jets
- Faulty float valve
- Float level too high
- Carburetor choke stuck closed
- Clogged air cleaner
- Incorrect choke cable adjustment

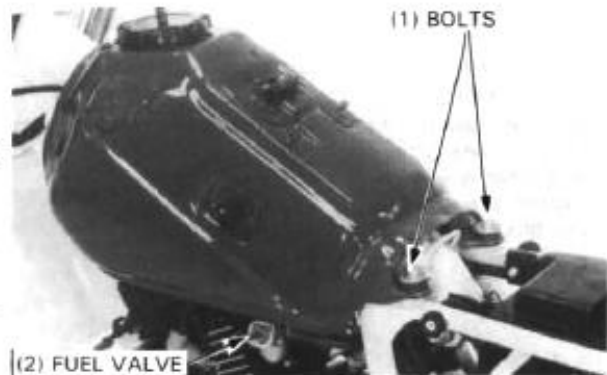
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FUEL TANK

Remove the seat, right and left side covers.
Turn the fuel valve OFF.
Disconnect the fuel line from the fuel valve.
Remove the two fuel tank mounting bolts and pull the fuel tank back and remove it from the frame.

WARNING

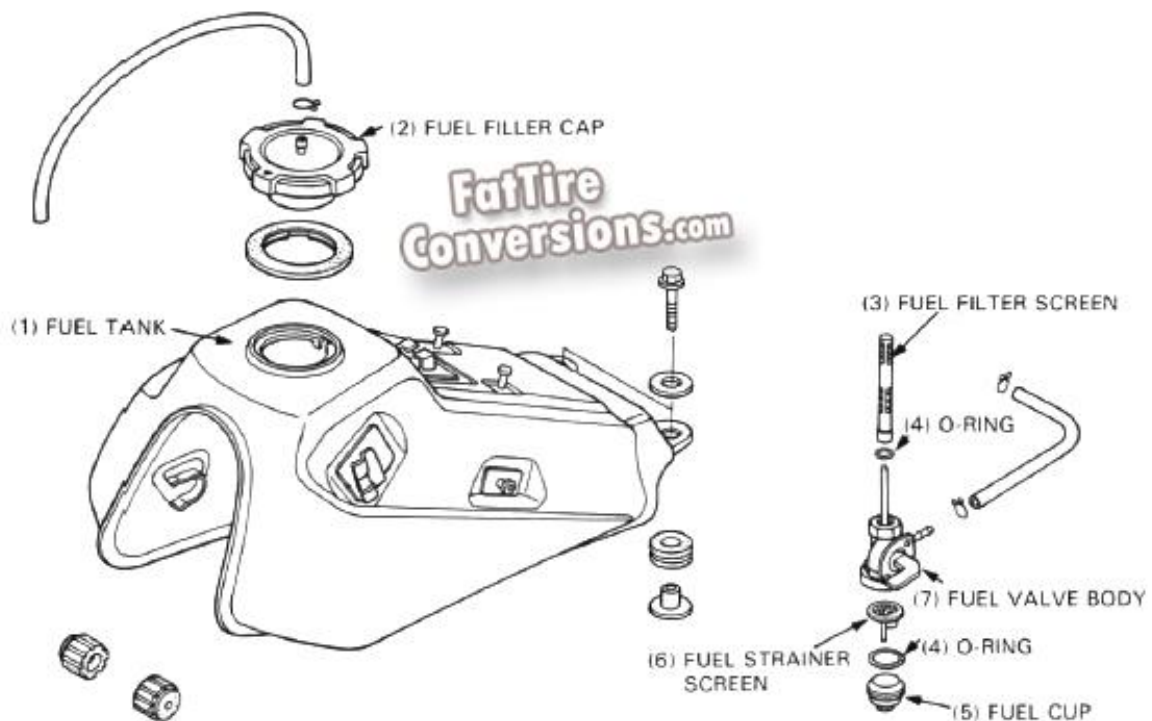
- *Keep gasoline away from flames or sparks.*
- *Wipe up spilled gasoline at once.*



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

If flow is restricted, clean the fuel strainer and fuel filter screen (page 3-4).

Check the vent tube of the filler cap for blockage.
Installation is the reverse order of removal.
After installation, make sure there are no fuel leaks.

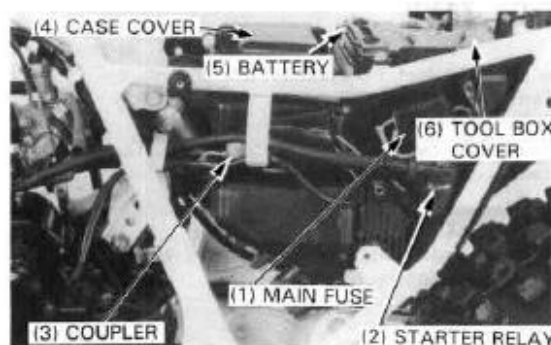


FUEL SYSTEM

AIR CLEANER CASE

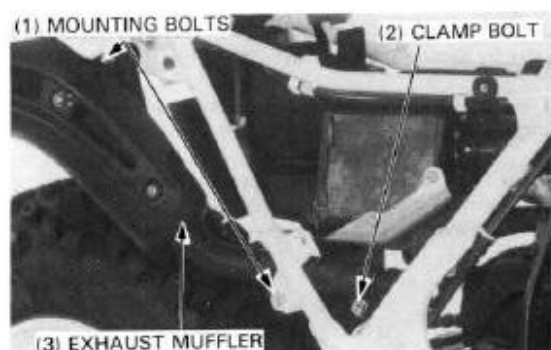
Remove the following:

- seat and side covers.
- main fuse, starter relay and alternator couplers/wires from the air cleaner case.
- air cleaner case cover.
- battery (page 15-2).
- tool box cover.



Loosen the exhaust muffler clamp bolt and remove the two mounting bolts and exhaust muffler.

Loosen the air cleaner case-to-carburetor connecting band screw.



Remove the rear fender B by removing the four mounting bolts.

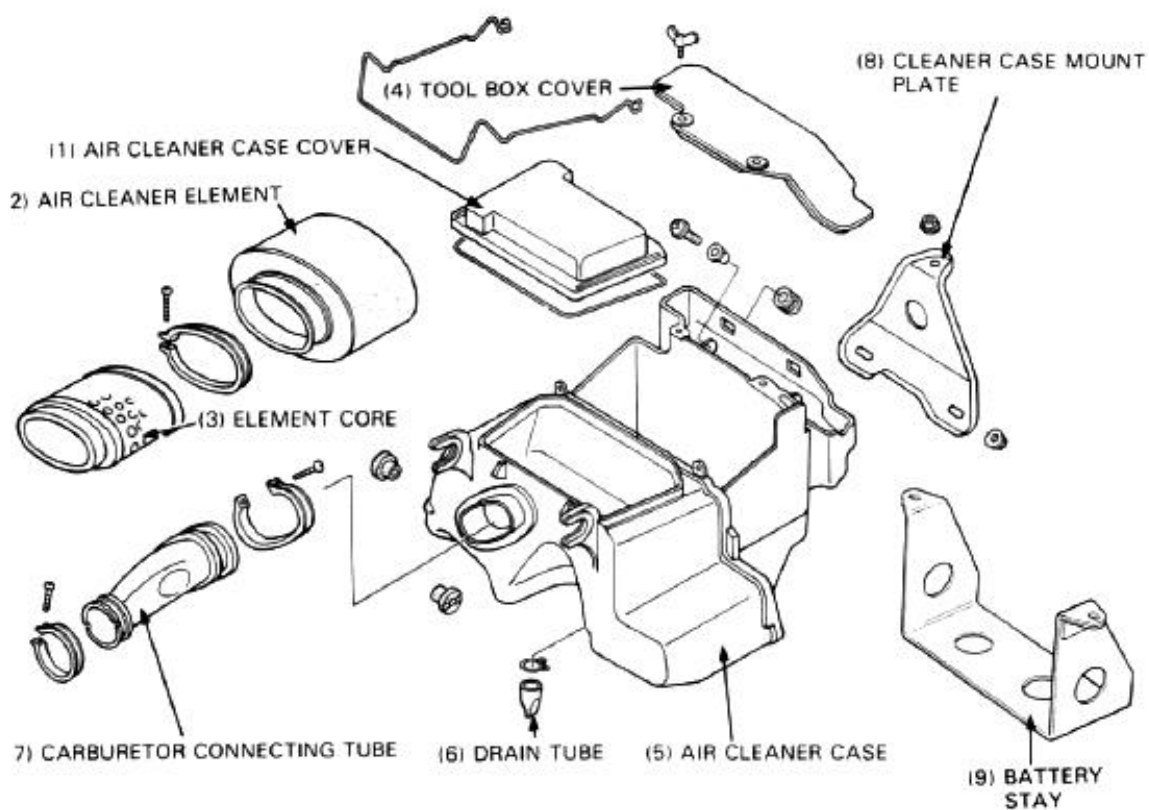


Remove the regulator/rectifier mounting bolt.
Remove the air cleaner case mount plate bolts and nut, then remove the plate.



Slide the air cleaner case backward and remove it from the frame.

Install the removed parts in the reverse order of removal.



FUEL SYSTEM

CARBURETOR REMOVAL

Remove the fuel tank (page 4-3).

Remove the carburetor top from the carburetor.

Drain the fuel from the carburetor by loosening the drain screws.

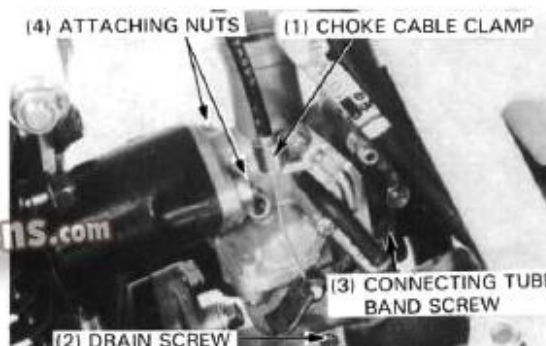
Disconnect the air vent and drain tube from the carburetor.

Loosen the choke cable clamp and disconnect the choke cable from the lever.



Remove the carburetor attaching nuts and loosen the air cleaner connecting tube band screw.

Remove the carburetor.



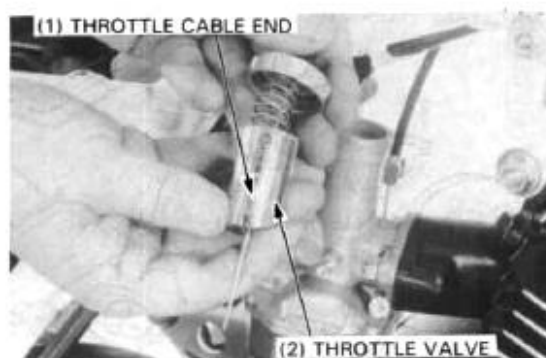
CARBURETOR DISASSEMBLY

THROTTLE VALVE REMOVAL

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

CAUTION

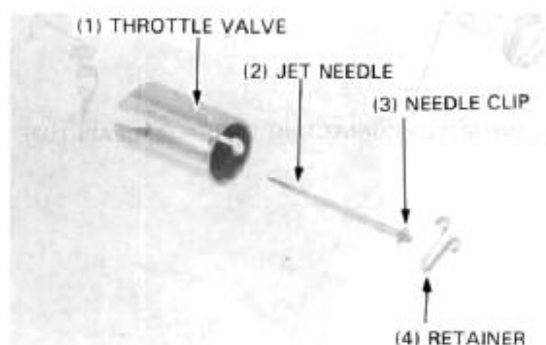
- The carburetor top is an integral part of the throttle cable assembly. The carburetor top can not be separated from the assembly without causing damage to the cable.



Remove the needle clip retainer.

Remove the jet needle and needle clip.

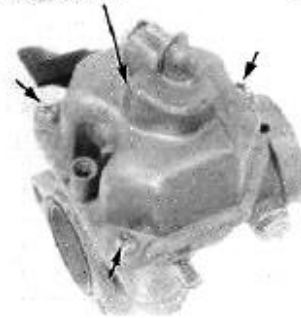
Inspect the throttle valve and jet needle surfaces for dirt scratches or wear.



FLOAT AND JETS

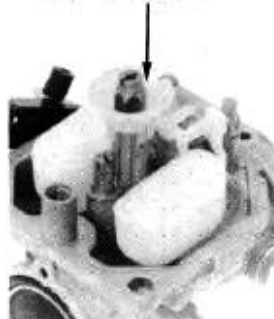
Remove the three float chamber screws and the float chamber.

(1) FLOAT CHAMBER

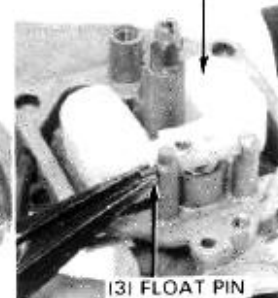


Remove the float pin, baffle plate, float and float valve.

(1) BAFFLE PLATE



(2) FLOAT



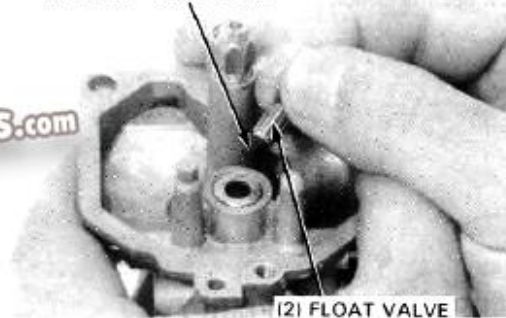
(3) FLOAT PIN

Inspect the float valve for grooves and nicks, and replace as required.

Inspect the operation of the float valve.

(1) FLOAT VALVE SEAT

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(2) FLOAT VALVE

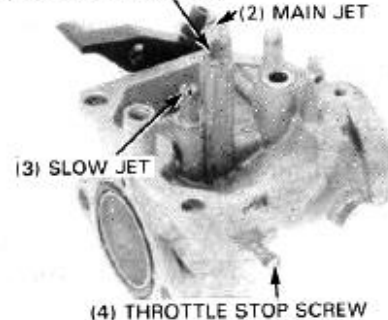
Remove the main jet, needle jet holder and needle jet.
Remove the slow jet.
Remove the throttle stop screw.

(1) NEEDLE JET HOLDER

(2) MAIN JET

(3) SLOW JET

(4) THROTTLE STOP SCREW



FUEL SYSTEM

Turn the air screw in and record the number of turns before it seats lightly. Use this as a reference for reinstallation.

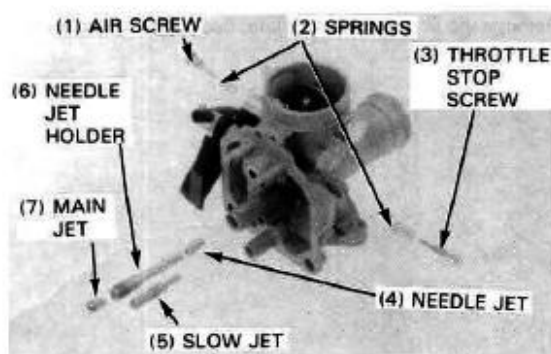
CAUTION

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

Remove the air screw.

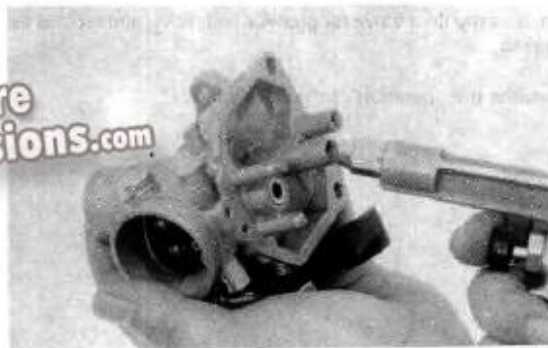


Inspect the air screw and each jet and replace them if they are worn or damaged.
Blow open all jets with compressed air.



Blow open all carburetor body openings with compressed air.

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CARBURETOR ASSEMBLY

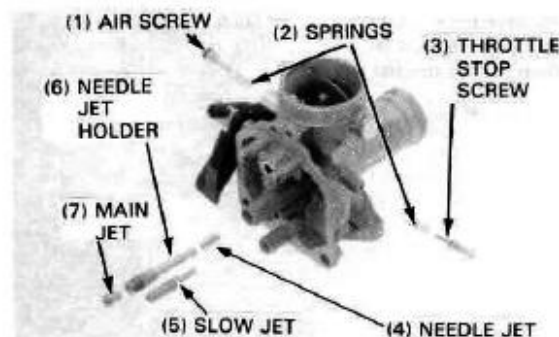
FLOAT AND JETS

Install the air screw and return it to its original position as noted during removal.
Perform an air screw adjustment if a new air screw is installed (page 4-10).

Install the throttle stop screw.
Install the needle jet, needle jet holder and main jet.
Install the slow jet.

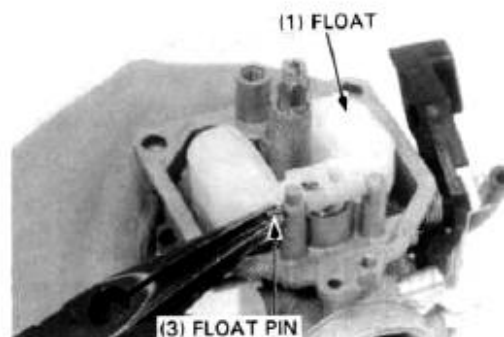
CAUTION

- *Handle all jets with care. They can easily be scored or scratched.*



Install the float valve, float, float pin into the carburetor body.

Check the float valve operation.



FLOAT LEVEL INSPECTION

With the float valve seated and the float arm just touching the valve, measure the float level with the float level gauge as shown.

SPECIFICATIONS: 14 mm (0.55 in)

TOOL:

Float level gauge 07401 - 0010000

NOTE

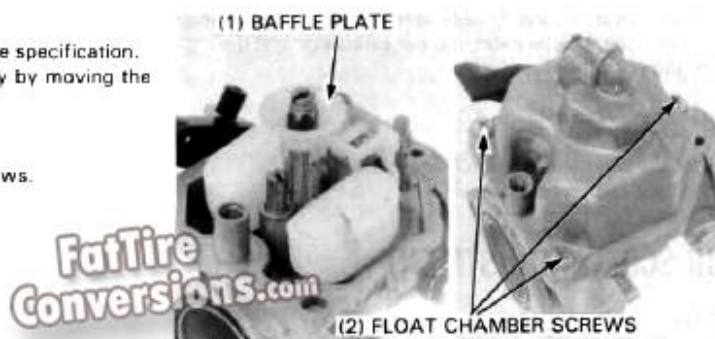
- Incline the carburetor body to set the float level gauge. Do not allow the choke lever to hit the gauge.



Replace the float if the level does not meet the specification. Check that the choke valve operates properly by moving the choke lever.

Install the baffle plate.

Install the float chamber and tighten the screws.

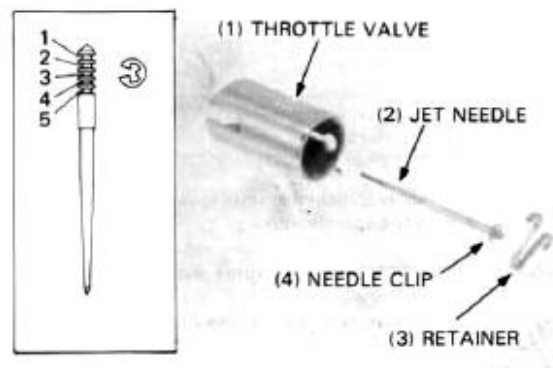


THROTTLE VALVE

Install the needle clip on the jet needle.

STANDARD SETTING: 3rd groove

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



FUEL SYSTEM

Assemble the carburetor top, throttle valve spring and throttle valve, and connect the throttle cable to the throttle valve.

CARBURETOR INSTALLATION

Install the carburetor between the intake manifold.

Reconnect the connecting tube to the carburetor and tighten the nuts and tube band screw securely. Connect the drain and air vent tubes to the carburetor body.

Connect the choke cable to the choke arm, adjust the choke cable and check the choke valve operation by pulling the choke knob (page 3-5).

NOTE

- Route the throttle and choke cables and overflow and air vent tubes properly.

Make sure that the drain screw on the float chamber is tightened.

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

Install the fuel tank (page 4-3).

Check the throttle operation (page 3-4).
Adjust the carburetor idle speed (page 3-8).

AIR SCREW ADJUSTMENT

NOTE

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

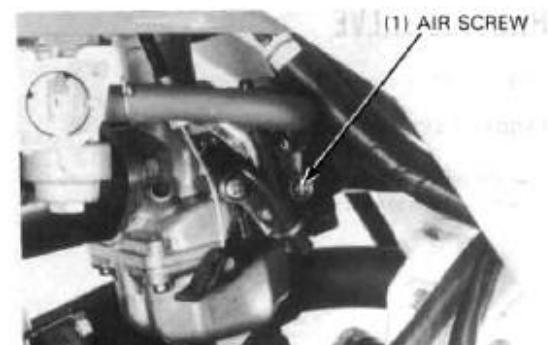
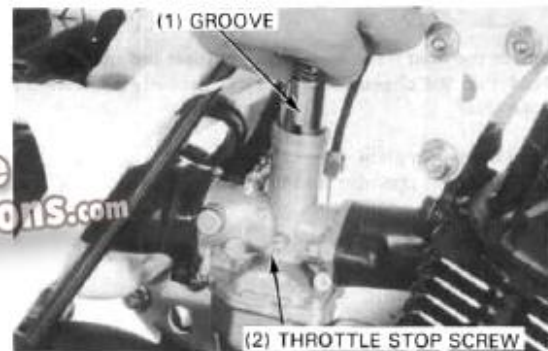
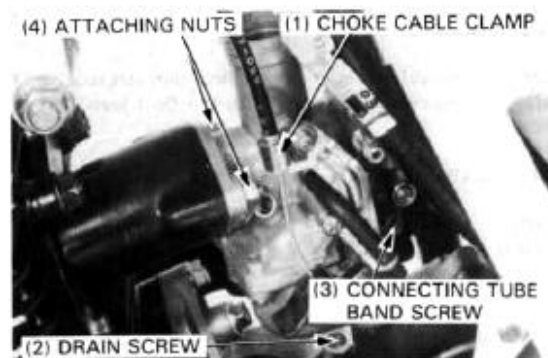
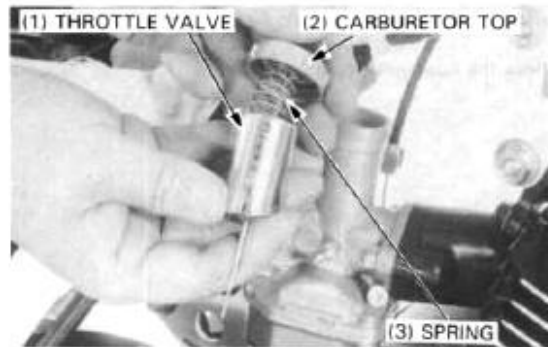
CAUTION

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

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

AIR SCREW OPENING: 1-1/4 turns out

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



2. Warm the engine up to operating temperature.
3. Stop the engine and connect a tachometer.
4. Start the engine and adjust the idle speed with the throttle stop screw.

IDLE SPEED: 1,400 \pm 100 rpm

5. Turn the air screw in or out slowly to obtain the highest engine speed.
6. Readjust the idle speed to the specified value with the throttle stop screw.
7. Make sure that the engine does not miss or run erratically. Repeat steps 5 and 6 until engine speed increases smoothly.
8. readjust the idle speed with the throttle stop screw.



HIGH ALTITUDE ADJUSTMENT

SPECIFICATIONS

	Below 6,000 ft (1,800 m)	Above 5,000 ft (1,500 m)
Main jet	#95	#88

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

STANDARD SETTING: 6,000 ft (1,800 m) max.

HIGH ALTITUDE SETTING: 5,000 ft (1,500 m) min.

The high altitude carburetor adjustment is performed as follows:

- Remove the seat and side covers.
- Turn the fuel valve off and disconnect the fuel line from the carburetor.
- Remove the carburetor (page 4-6).
- Remove the three attaching screws and float chamber.

Replace the standard main jet with the high altitude size (#88). Assemble and install the carburetor.

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

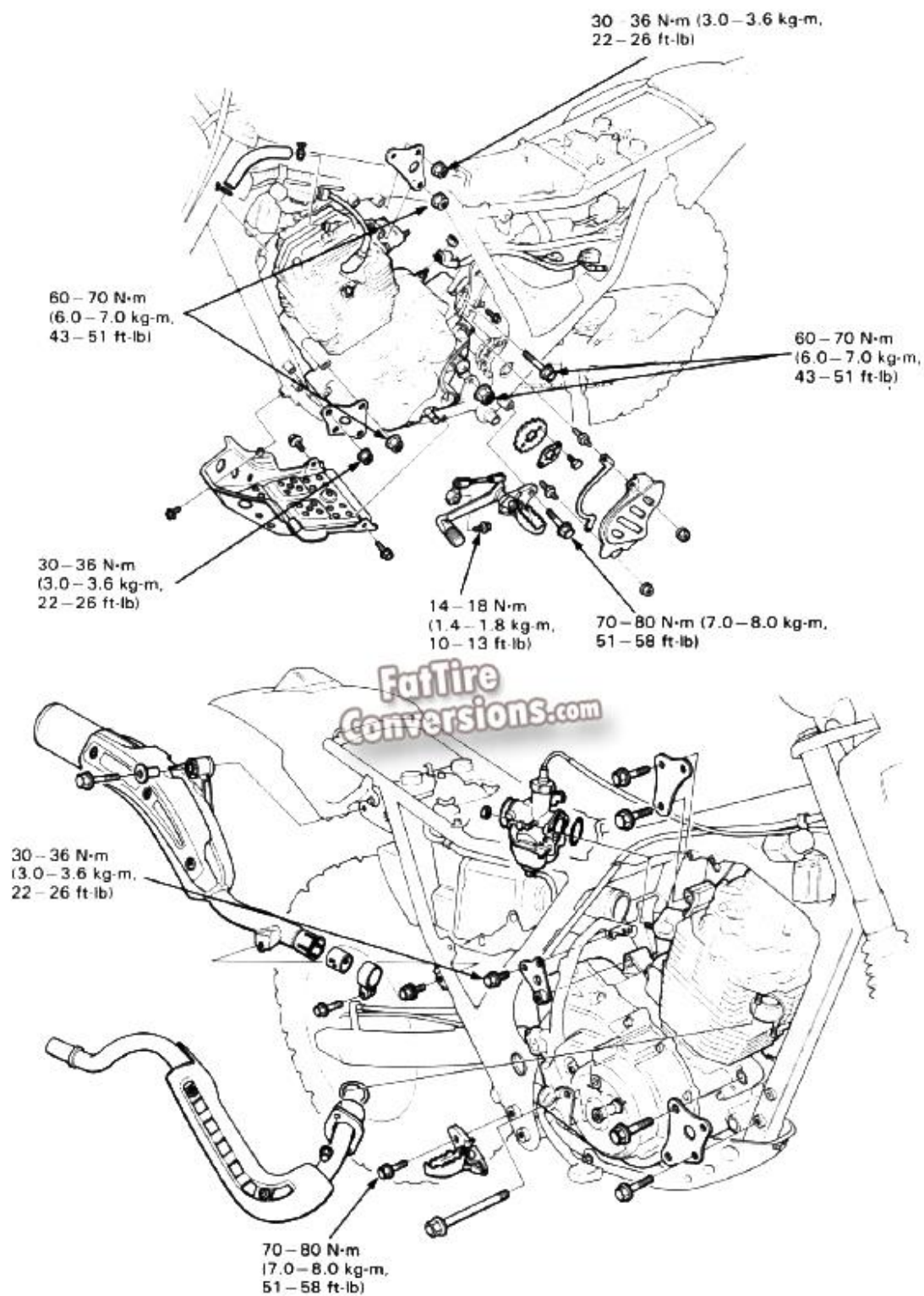
CAUTION

- Sustained operation below 5,000 ft (1,500 m) with the high altitude settings may cause engine overheating and engine damage. Install the #98 main jet when riding below 5,000 ft (1,500 m).

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ENGINE REMOVAL/INSTALLATION



5. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION	5-1	ENGINE INSTALLATION	5-4
ENGINE REMOVAL	5-2		

SERVICE INFORMATION

GENERAL

- Parts requiring engine removal for servicing:
 - Transmission (page 10-4)
 - Shift drum and shift forks (page 10-4)
 - Crankshaft (page 10-10)

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SPECIFICATIONS

Engine oil capacity	1.8 lit (1.9 US qt, 1.6 Imp qt) after disassembly
	1.5 lit (1.6 US qt, 1.3 Imp qt) after draining
Engine dry weight	36 kg (79 lbs)

TORQUE VALUES

Engine hanger bolt and nut 8 mm	30–36 N·m (3.0–3.6 kg·m, 22–26 ft-lb)
10 mm	60–70 N·m (6.0–7.0 kg·m, 43–51 ft-lb)
Engine mounting bolt and nut 10 mm	60–70 N·m (6.0–7.0 kg·m, 43–51 ft-lb)
Right and left footpeg bolt	70–80 N·m (7.0–8.0 kg·m, 51–58 ft-lb)
Gearshift pedal arm bolt	14–18 N·m (1.4–1.8 kg·m, 10–13 ft-lb)

ENGINE REMOVAL/INSTALLATION

ENGINE REMOVAL

Remove the following:

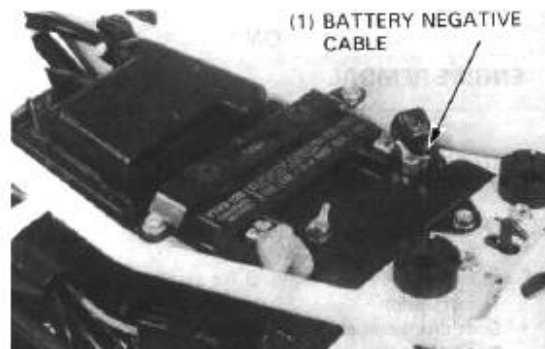
- seat and side covers.
- fuel tank (page 4-3).
- exhaust pipe and muffler (page 13-3).
- skid plate.

Shift the transmission into neutral.

Drain the engine oil (page 2-2).

Disconnect the battery negative cable from the battery.

Place a workstand or other support under the engine.



Disconnect the engine breather tube at the cylinder head cover.

Remove the carburetor (page 4-6).

Disconnect the spark plug cap from the spark plug.

(1) BREATHER TUBE (2) SPARK PLUG CAP



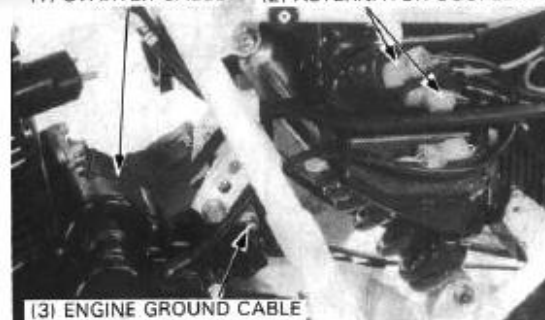
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Remove the starter cable from the starter motor.

Remove the engine ground cable from the engine.

Disconnect the alternator couplers and wires.

(1) STARTER CABLE (2) ALTERNATOR COUPLERS



Remove the gearshift pedal and left footpeg.

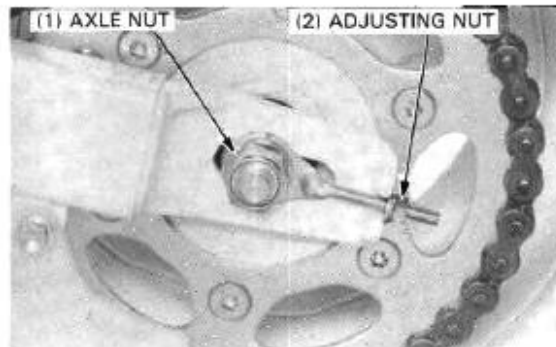
Remove the drive sprocket cover.

(1) GEARSHIFT PEDAL (2) DRIVE SPROCKET COVER

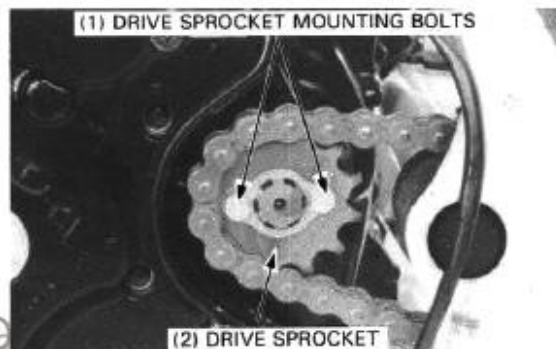


ENGINE REMOVAL/INSTALLATION

Loosen the rear axle nut and both drive chain adjusting nuts. Push the rear wheel forward.

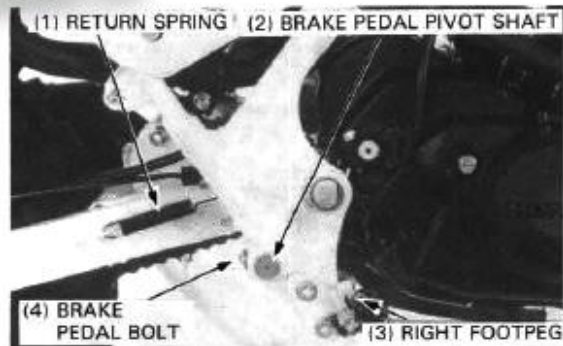


Remove the drive sprocket mounting bolts and drive sprocket.

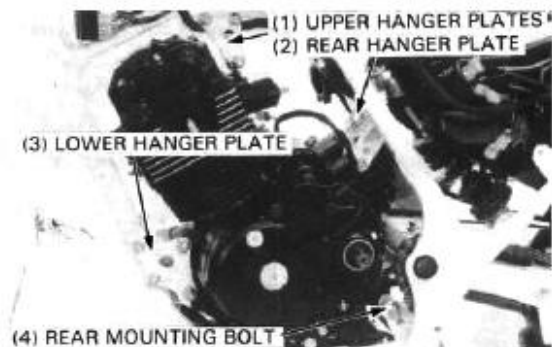


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Remove the right footpeg. Unhook the brake pedal return spring from the swing arm. Remove the brake pedal pivot shaft by removing the brake pedal.



Remove the front upper and lower hanger bolts, nuts and plates. Remove the rear hanger bolts and plate. Remove the rear mounting bolt, nut and collar.



ENGINE REMOVAL/INSTALLATION

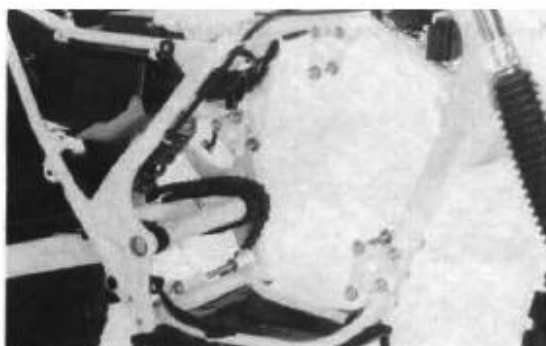
Remove the engine from the right side.



ENGINE INSTALLATION

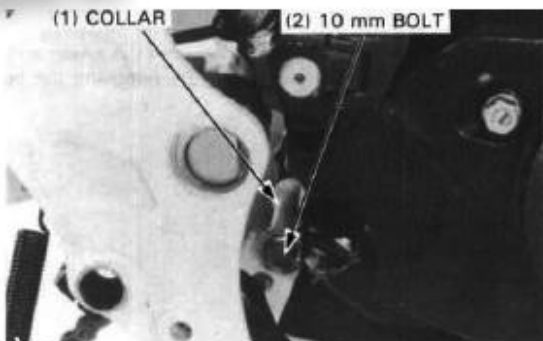
NOTE

- Be sure to use the engine mounting bolts in their correct positions.

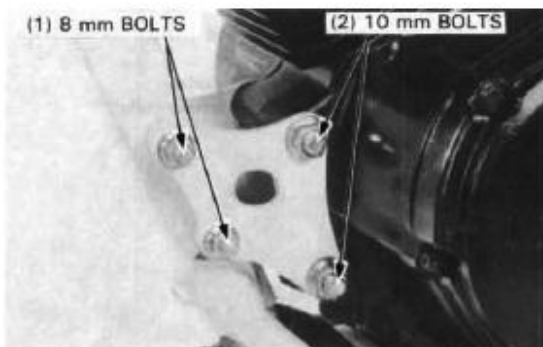


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Install the engine onto the frame.
Install the 10 mm rear mounting bolt, collar and nut.
Tighten the nut lightly.

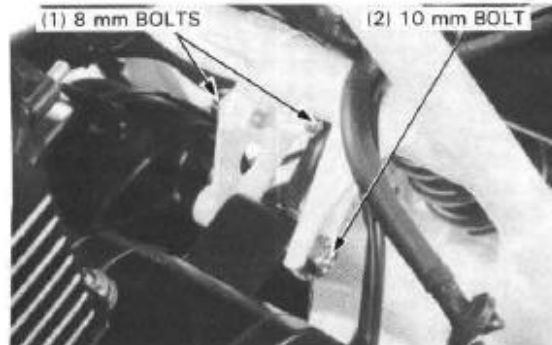


Install the front lower hanger plates, 8 mm and 10 mm bolts and nuts.
Tighten the nuts lightly.

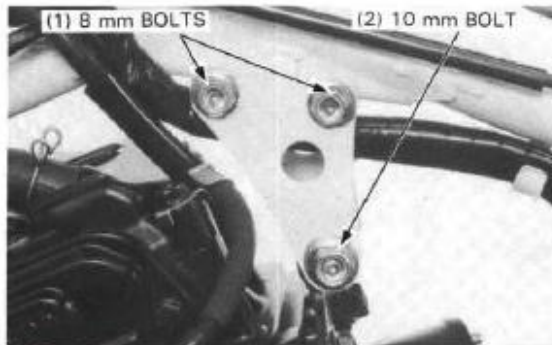


ENGINE REMOVAL/INSTALLATION

Install the rear hanger plate, 8 mm and 10 mm bolts
Tighten the bolts lightly.



Install the front upper hanger plates, 8 mm and 10 mm bolts
and nuts.
Tighten the nuts lightly.



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Tighten the all fasteners to the specified torque.

TORQUE:

Engine hanger plates/mounting bolts and nuts:

8 mm bolt and nut:

30–36 N·m (3.0–3.6 kg·m, 22–26 ft·lb)

10 mm bolt and nut:

60–70 N·m (6.0–7.0 kg·m, 43–51 ft·lb)

Right and left footpeg bolts:

70–80 N·m (7.0–8.0 kg·m, 51–58 ft·lb)

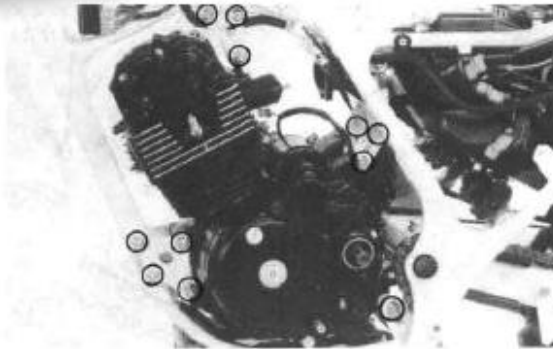
Engine installation is essentially the reverse of removal.

NOTE

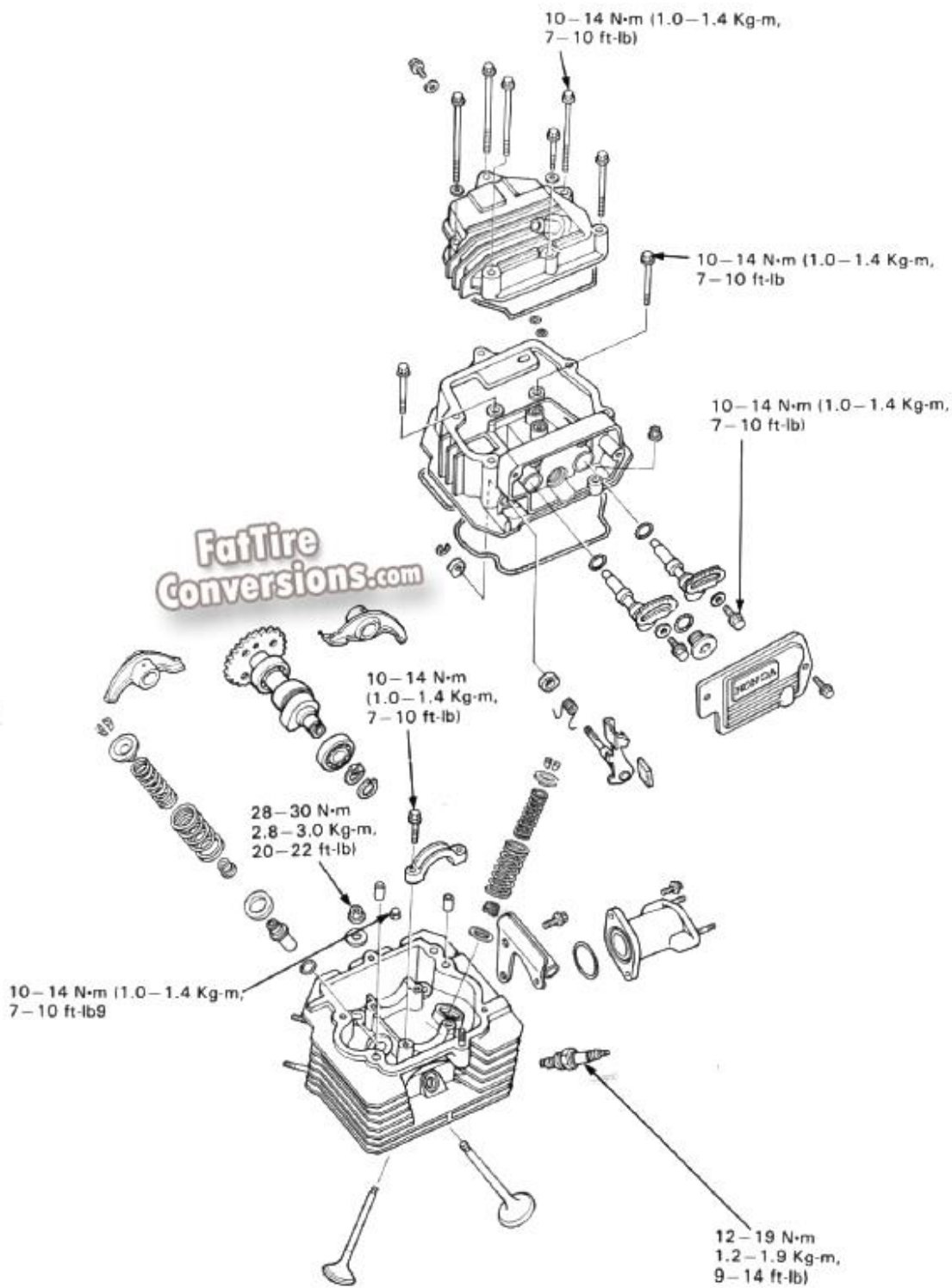
- Route the wires and cables properly (page 1-9).
- Fill the crankcase to proper level with recommended oil (page 2-2).

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

- Throttle grip free play (page 3-4).
- Rear brake pedal free play (page 3-12)
- Drive chain slack (page 3-8).
- Electric operation.
- Exhaust gas leaks.



CYLINDER HEAD/VALVES



6. CYLINDER HEAD/VALVES

SERVICE INFORMATION	6-1	VALVE SEAT INSPECTION AND	
TROUBLESHOOTING	6-2	REFACING	6-9
CYLINDER HEAD COVER REMOVAL	6-3	CYLINDER HEAD ASSEMBLY	6-11
CYLINDER HEAD COVER DISASSEMBLY	6-4	CYLINDER HEAD INSTALLATION	6-12
CAMSHAFT REMOVAL	6-5	CAMSHAFT INSTALLATION	6-13
CYLINDER HEAD REMOVAL	6-6	CYLINDER HEAD COVER ASSEMBLY	6-15
CYLINDER HEAD DISASSEMBLY	6-6	CYLINDER HEAD COVER INSTALLATION	6-15
VALVE GUIDE REPLACEMENT	6-8		

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the cylinder head, valves, camshaft and rocker arms.
- Camshaft and rocker arm lubrication oil is fed through oil passages. Be sure the passages are not clogged.
- Valve spring colors are used to identify the manufacturers.
The valve springs are marked with either white or yellow paint. When replacing the valve spring, use the one with same paint mark.

SPECIFICATIONS

ITEM			STANDARD		SERVICE LIMIT
Cylinder compression pressure			1,275 ± 98 kPa (13.0 ± 1.0 kg/cm ² , 184 ± 14 psi)		—
Camshaft Cam lobe height		IN	34.371 mm (1.3532 in)		34.191 mm (1.3461 in)
		EX	34.242 mm (1.3481 in)		34.062 mm (1.3410 in)
Rocker arm	Rocker arm I.D.		12.000—12.018 mm (0.4724—0.4731 in)		12.05 mm (0.474 in)
	Shaft O.D.		11.966—11.984 mm (0.4711—0.4718 in)		11.93 mm (0.470 in)
Valve	Valve stem O.D.		IN	5.475—5.490 mm (0.2156—0.2161 in)	5.45 mm (0.215 in)
			EX	5.455—5.470 mm (0.2148—0.2154 in)	5.43 mm (0.214 in)
	Valve guide I.D.		5.500—5.512 mm (0.2165—0.2170 in)		5.52 mm (0.217 in)
	Stem-to-guide clearance		IN	0.010—0.037 mm (0.0004—0.0015 in)	0.12 mm (0.005 in)
			EX	0.030—0.057 mm (0.0012—0.0022 in)	0.14 mm (0.006 in)
	Valve spring free length	Inner	Yellow	31.69 mm (1.248 in)	29.5 mm (1.16 in)
			White	32.50 mm (1.280 in)	30.5 mm (1.20 in)
		Outer	Yellow	38.54 mm (1.517 in)	36.5 mm (1.44 in)
			White	36.90 mm (1.453 in)	35.0 mm (1.38 in)
Valve seat width		1.1 mm (0.043 in)		1.4 mm (0.055 in)	
Cylinder head warpage			—		0.10 mm (0.004 in)

TORQUE VALUES

Cylinder head 8 mm nut	28–30 N·m (2.8–3.0 kg-m, 20–22 ft-lb)
Spark plug	12–19 N·m (1.2–1.9 kg-m, 9–14 ft-lb)
Camshaft bearing holder	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Valve adjuster lock bolt	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Rotor cap	10–20 N·m (1.0–2.0 kg-m, 7–14 ft-lb)

CYLINDER HEAD/VALVES

TOOLS

Special

Valve guide reamer, 5.5 mm 07984—2000000

Common

Valve guide remover, 5.5 mm 07742—0010100 or 07942—3290100
Valve spring compressor 07757—0010000 or 07957—3290001
Driver handle B 07746—0020100 or 07749—0010000 (U.S.A. only)
Attachment, 15 mm 07746—0020200 or M9360—277—91775 (U.S.A. only)
Valve seat cutters: (Not available in U.S.A.)
Valve seat cutter, 27.5 mm (EX 45°) 07780—0010200
Valve seat cutter, 33 mm (IN 45°) 07780—0010800
Valve seat cutter, 28 mm (EX 32°) 07780—0012100
Valve seat cutter, 33 mm (IN 32°) 07780—0012900
Valve seat cutter, 30 mm (IN/EX 60°) 07780—0014000
Valve seat cutter holder, 5.5 mm 07781—0010101

TROUBLESHOOTING

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

Low compression

- Valves
 - Incorrect valve adjustment
 - Worn or damaged valve seats
 - Burnt or bent valves
 - Incorrect valve timing
 - Broken valve spring
- Cylinder head
 - Leaking or damaged head gasket
 - Warped or cracked cylinder head
- Faulty cylinder or piston (Section 7)

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Compression too high

- Excessive carbon build-up on piston or combustion chamber

Excessive noise

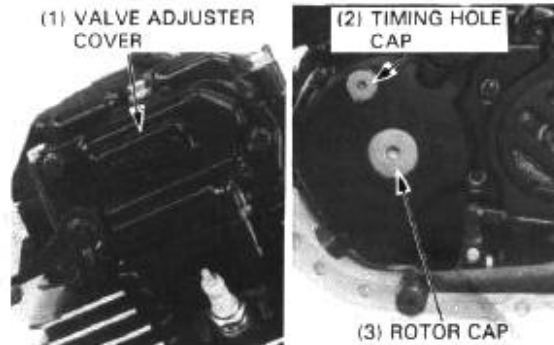
- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Damaged or worn camshaft
- Loose or worn cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth
- Worn rocker arm and/or shaft

Excessive smoke

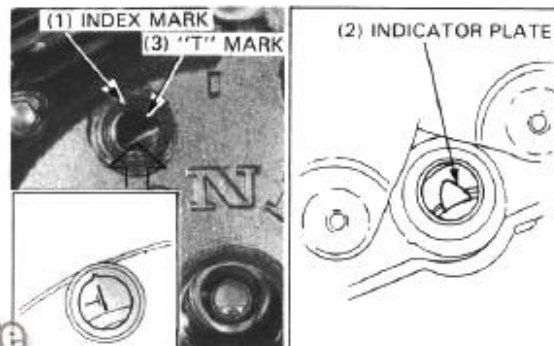
- Damaged valve stem seal
- Faulty cylinder or piston rings (Section 7)

CYLINDER HEAD COVER REMOVAL

Remove the engine from the frame (Section 5).
Remove the valve adjuster cover.
Remove the rotor cap and timing hole cap from the left crankcase cover.

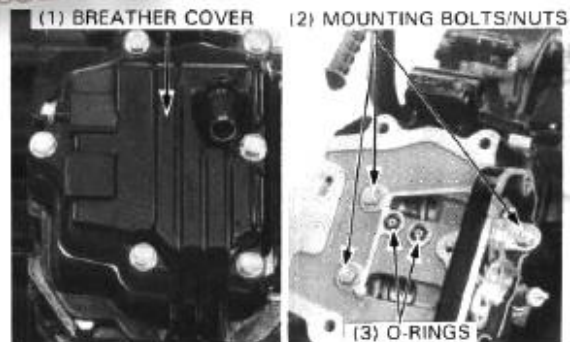


Remove the timing hole cap from the cylinder head cover.
Align the "T" mark on the flywheel with the index mark on the left crankcase cover.
Turn the crankshaft slowly until timing indicator plate faces up to position the cam lobes down.

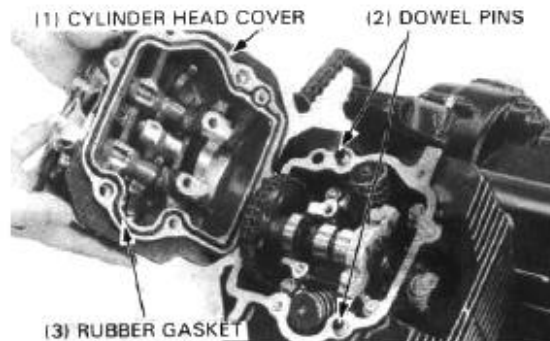


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Remove the six bolts and breather cover.
Remove the O-rings from the cylinder head cover.
Remove the cylinder head cover mounting bolts and nut.



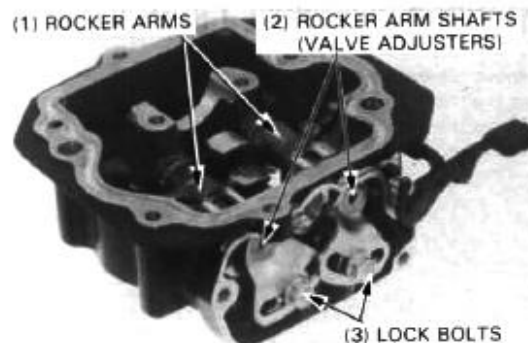
Remove the cylinder head cover and dowel pins.
Remove the rubber gasket from the cylinder head cover.



CYLINDER HEAD/VALVES

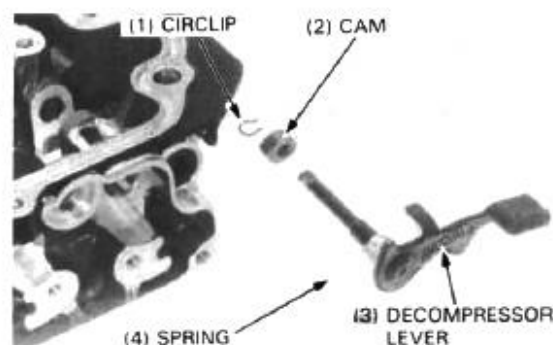
CYLINDER HEAD COVER DISASSEMBLY

Remove the rubber gasket from the cylinder head.
Remove the valve adjuster lock bolts.
Remove the rocker arm shafts (valve adjusters) and rocker arms from the head cover.



Remove the circlip and decompressor cam from the shaft of decompressor lever.

Remove the decompressor lever and return spring from the cylinder head cover.



INSPECTION

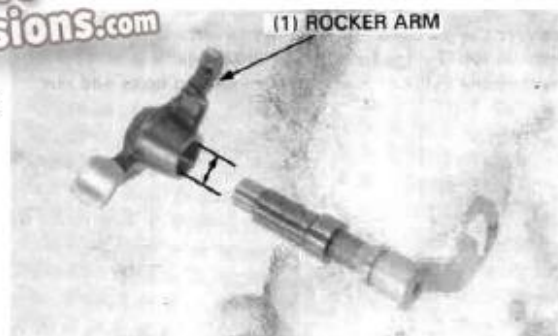
Rocker arm

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

Measure the I.D. of each rocker arm.

SERVICE LIMIT: 12.05 mm (0.474 in)

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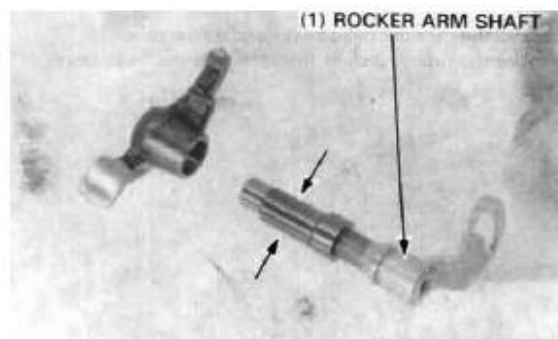


Rocker arm shaft

Inspect the sliding surface of the rocker arm shaft for wear or damage.

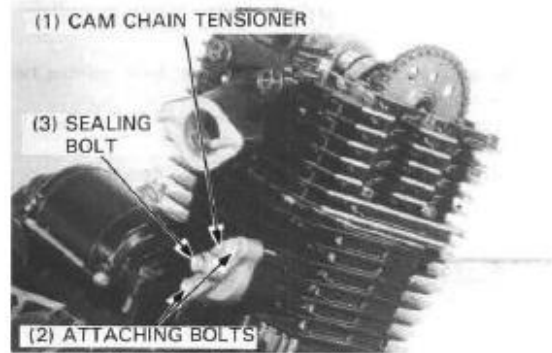
Measure each rocker arm shaft O.D.

SERVICE LIMIT: 11.93 mm (0.470 in)



CAMSHAFT REMOVAL

Loosen the sealing bolt of the cam chain tensioner.
Remove the two cam chain tensioner attaching bolts and the tensioner.



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

NOTE

- Be careful not to drop foreign material into the crankcase.

INSPECTION

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

SERVICE LIMITS:

INTAKE: 34.191 mm (1.3461 in)
EXHAUST: 34.062 mm (1.3410 in)

Check each camshaft bearing for play or damage.

Turn the outer race of each bearing with your finger.
The bearings should turn smoothly and quietly.
Replace the camshaft assembly with a new one if the right camshaft bearing does not turn smoothly and quietly.

NOTE

- The right camshaft bearing cannot be removed.

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

TOOLS:

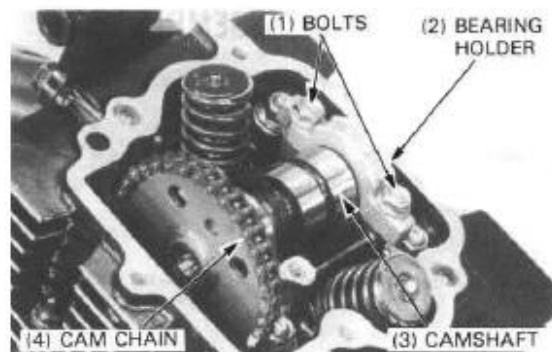
Driver handle B

07746-0020100 or
07749-0010000
(U.S.A. only)

Attachment, 15 mm

07746-0020200 or
M9360-277-91775
(U.S.A. only)

Install the timing indicator plate and snap ring.



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(1) SNAP RING (2) INDICATOR PLATE

(3) LEFT
CAMSHAFT
BEARING

CYLINDER HEAD/VALVES

CYLINDER HEAD REMOVAL

Remove the two cylinder head cap nuts, four cylinder head nuts and washers.

Remove the cylinder head.

Remove the cylinder head gasket and two dowel pins.

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CYLINDER HEAD DISASSEMBLY

Remove the engine mount bracket and intake pipe from the cylinder head.

Remove the spark plug.

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

TOOL:

Valve spring compressor

07757-0010000 or
07957-3290001

CAUTION

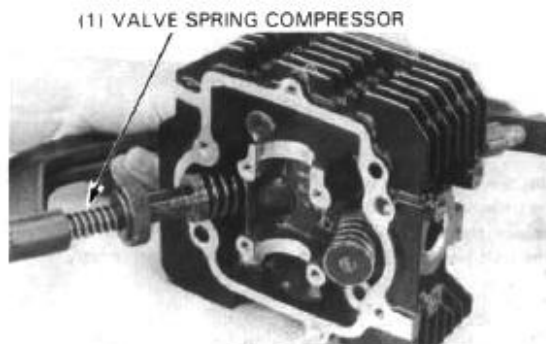
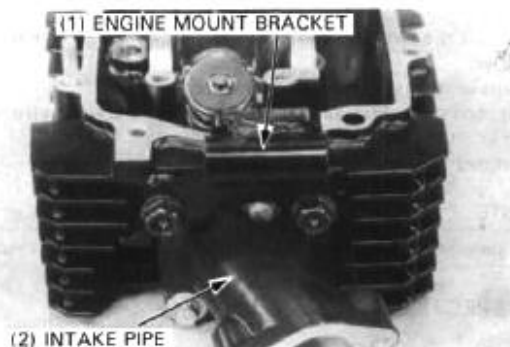
- To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.

NOTE

- Mark all disassembled parts to ensure correct reassembly.

Remove the valve stem seals.

Remove carbon deposits from the combustion chamber.



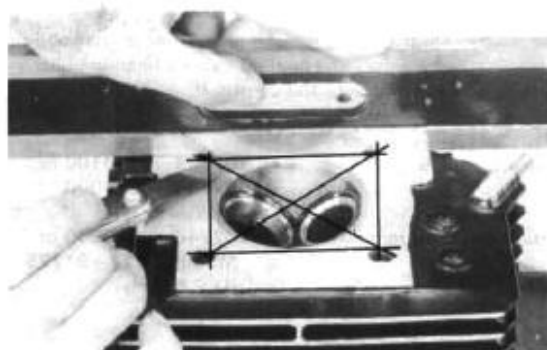
INSPECTION

Cylinder head

Check the spark plug hole and valve areas for cracks.

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

SERVICE LIMIT: 0.10 mm (0.004 in)



Valve spring

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

SERVICE LIMITS:

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

NOTE

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

**Valve stem-to-guide clearance**

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

Check valve movement in the guide and measure and record each valve stem O.D.

SERVICE LIMITS:

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



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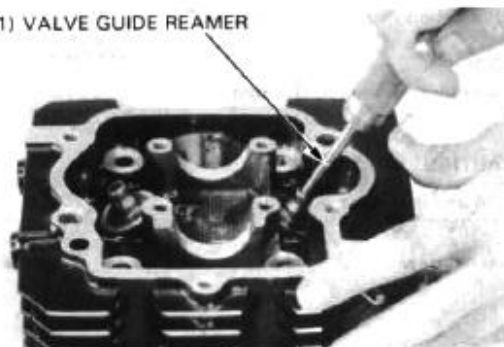
NOTE

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

TOOL:

Valve guide reamer 07984 – 2000000

(1) VALVE GUIDE REAMER



Measure and record each valve guide I.D.

SERVICE LIMIT: 5.52 mm (0.217 in)

Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem-to-guide clearance.

SERVICE LIMITS: IN: 0.12 mm (0.005 in)
EX: 0.14 mm (0.006 in)



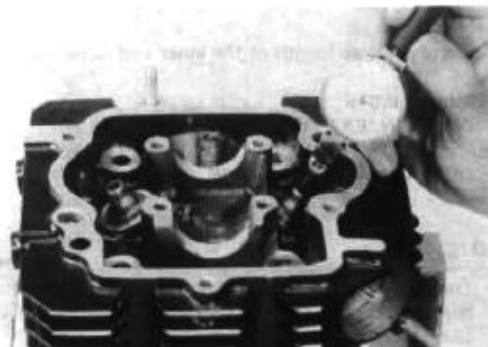
CYLINDER HEAD/VALVES

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

If the stem-to-guide clearance exceeds the service limits with new guides also, replace the valves.

NOTE

- Reface the valve seats whenever the valve guides are replaced.



VALVE GUIDE REPLACEMENT

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

WARNING

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

CAUTION

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

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

TOOL:

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

CAUTION

- Avoid damaging the cylinder head.

Place a new O-ring on the new valve guide.

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(1) VALVE GUIDE

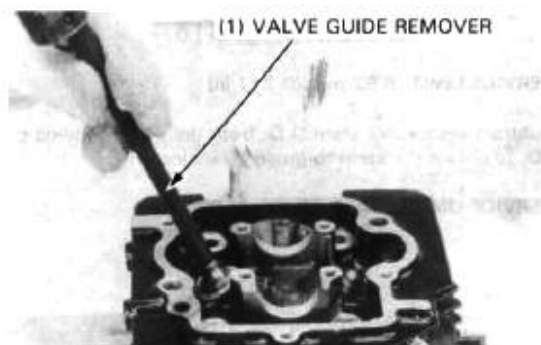
(2) O-RING

Drive in the guide from the top of the head.

TOOL:

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

Inspect the valve guide for damage.



Ream the new valve guide after installation.

TOOL:

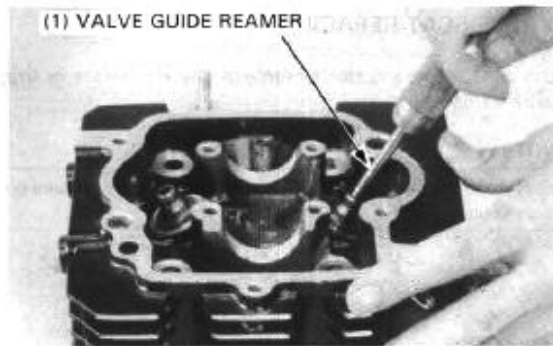
Valve guide reamer 07984-2000000

NOTE

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

Clean the cylinder head thoroughly to remove any metal particles.

Reface the valve seat.



VALVE SEAT INSPECTION/REFACING

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

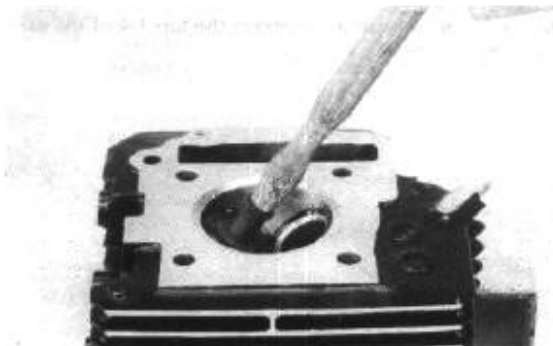
Apply a light coating of Prussian Blue to the valve seats. Lap the valves and seats using a rubber hose or other hand-lapping tool.

Remove the tool and inspect the width of each valve seat.

STANDARD: 1.1 mm (0.043 in)

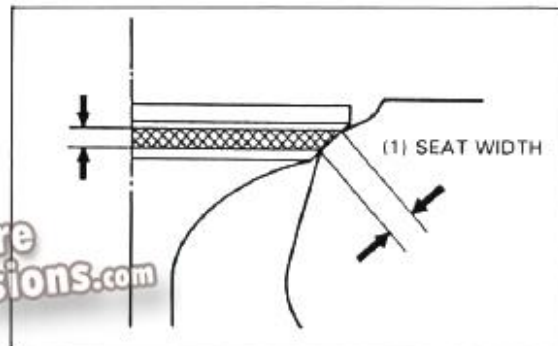
SERVICE LIMIT: 1.4 mm (0.055 in)

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



CAUTION

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

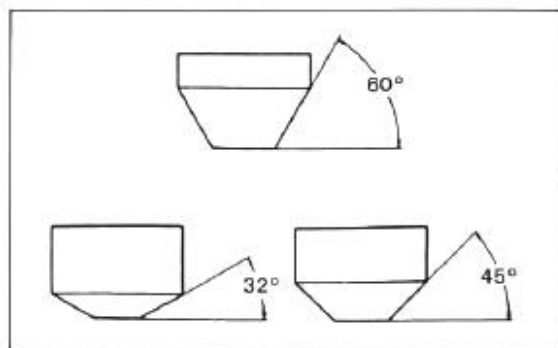


VALVE SEAT CUTTERS

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

NOTE

- Follow the refacer manufacturer's operating instructions.



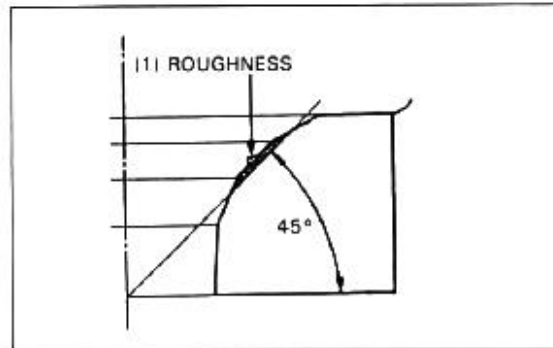
CYLINDER HEAD/VALVES

VALVE SEAT REFACING

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

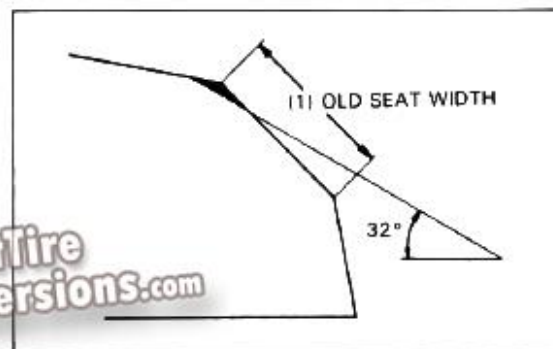
NOTE

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

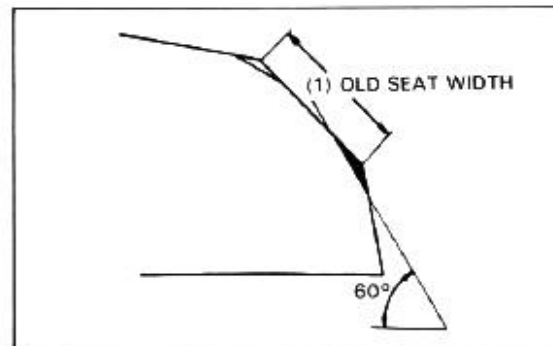


Use a 32 degree cutter to remove the top 1/4 of the existing valve seat material.

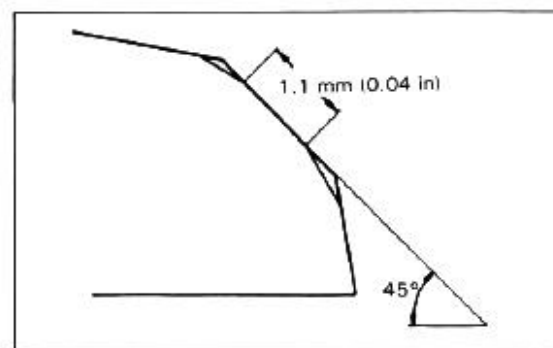
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Use a 60 degree cutter to remove the bottom 1/4 of the old seat. Remove the cutter and inspect the area you have refaced.



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



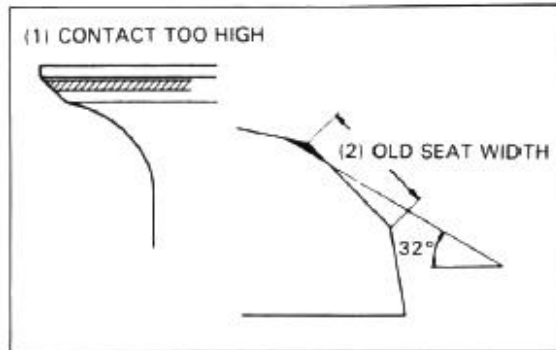
CYLINDER HEAD/VALVES

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

NOTE

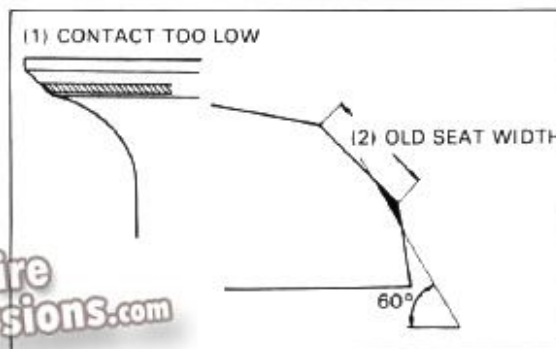
- The location of the valve seat in relation to the valve face is very important for good sealing.

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



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

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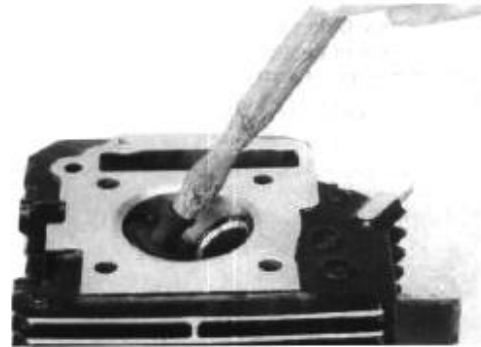
Refinish the seat to specifications, using a 45 degree finish cutter.

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

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

NOTE

- Do not allow lapping compound to enter the guides.



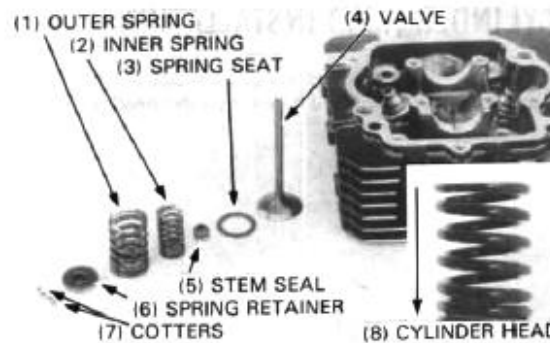
CYLINDER HEAD ASSEMBLY

Install the valve spring seat and a new stem seal.

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

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

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



CYLINDER HEAD/VALVES

Install the valve spring retainers and install the valve cotters.

TOOL:

Valve spring compressor 07757-0010000 or
07957-3290001

CAUTION

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



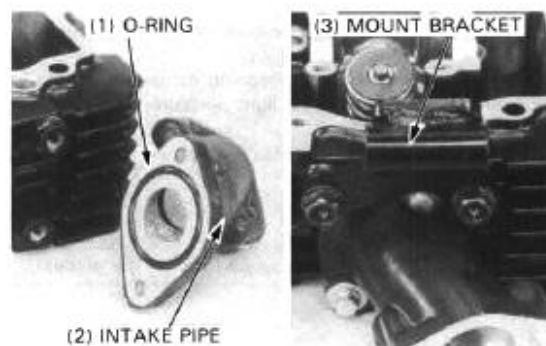
Tap the valve stems gently with a plastic hammer to firmly seat the cotters.

CAUTION

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

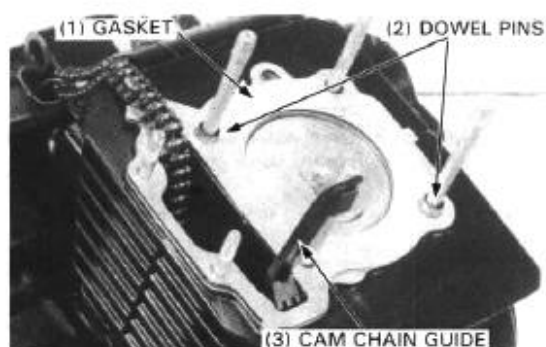


Install a new O-ring in the intake pipe groove and install the intake pipe with two bolts. Install the engine mount bracket and tighten the bolts securely.



CYLINDER HEAD INSTALLATION

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



CYLINDER HEAD/VALVES

Install the cylinder head.

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

TORQUE:

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

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

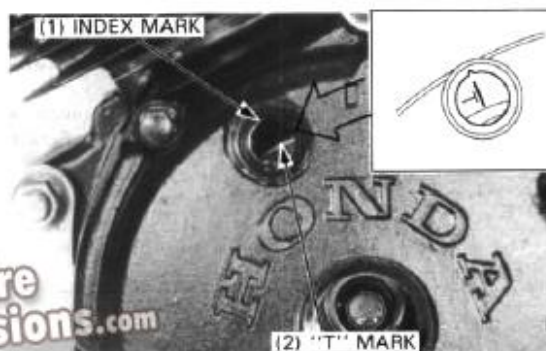


CAMSHAFT INSTALLATION

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

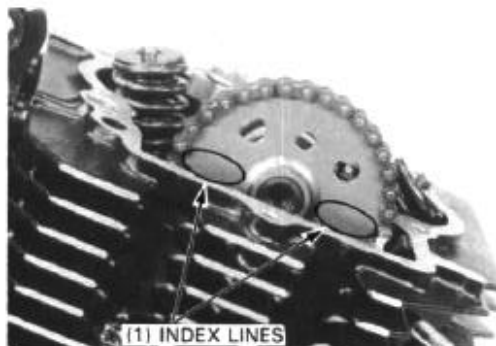
CAUTION

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



Lubricate the camshaft bearings with clean engine oil.

Place the camshaft on the cylinder head, align the index lines on the cam sprocket with the top of the cylinder head and install the cam chain over the cam sprocket.

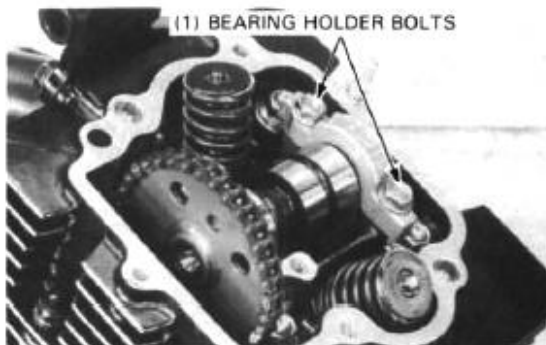


Install the camshaft bearing and tighten the holder bolts.

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

NOTE

- Be careful not to drop foreign material into the crankcase.



CYLINDER HEAD/VALVES

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

NOTE

- If the cam lobe on the camshaft is facing up, turn the crankshaft counterclockwise 360° again and align the "T" mark with the index mark so that the cam lobe faces down.

Install the spark plug.

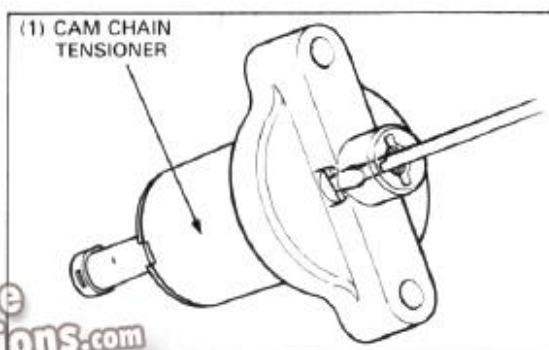
TORQUE: 12 – 19 N·m (1.2 – 1.9 kg·m, 9 – 14 ft·lb)

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

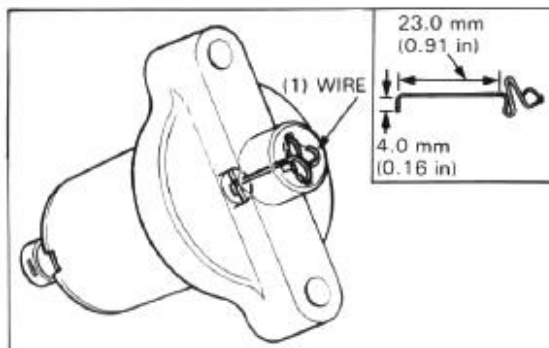
Turn the tensioner shaft clockwise with a small screwdriver to retract the tensioner and hold the tensioner in the fully retracted position.

NOTE

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



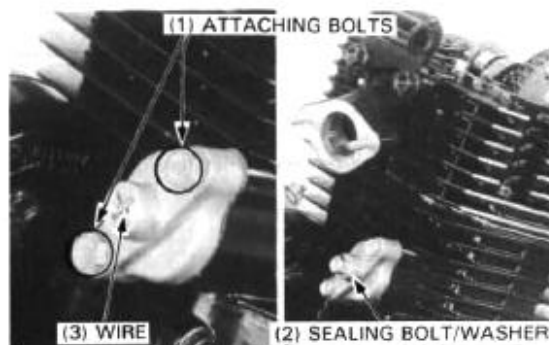
Hold the tensioner shaft with a piece of wire as shown to secure the tensioner.



Install the cam chain tensioner and tighten the attaching bolts securely.

Remove the wire from the cam chain tensioner.

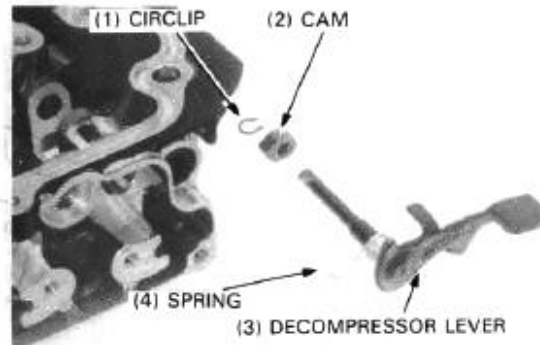
Install the sealing washer and bolt, and tighten the sealing bolt securely.



CYLINDER HEAD COVER ASSEMBLY

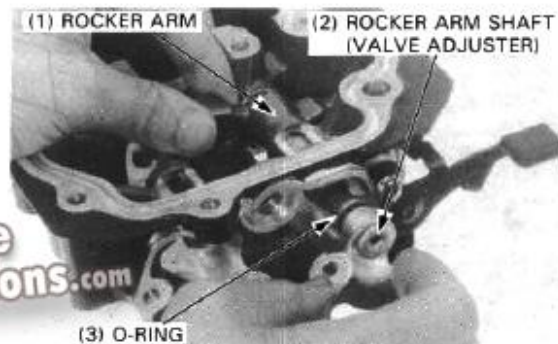
Install the return spring onto the decompressor lever/shaft and install the shaft into the cylinder head cover.

Install the decompressor cam onto the shaft and secure it with the circlip.



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

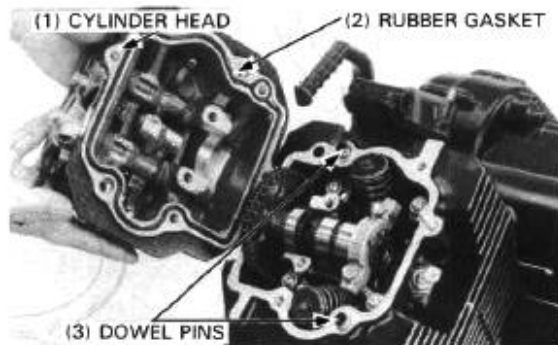
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CYLINDER HEAD COVER INSTALLATION

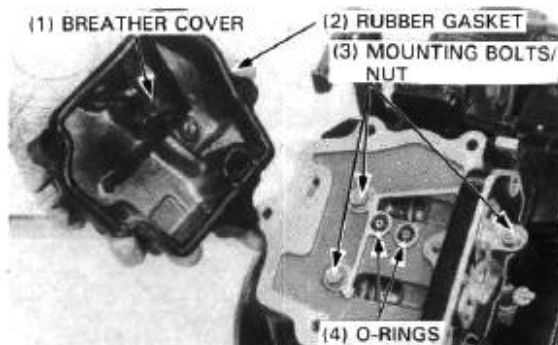
Fill the camshaft with clean engine oil to provide initial lubrication for camshaft when the engine is started. Install the dowel pins. Install a new rubber gasket into the groove in the cylinder head cover.

Install the cylinder head cover.

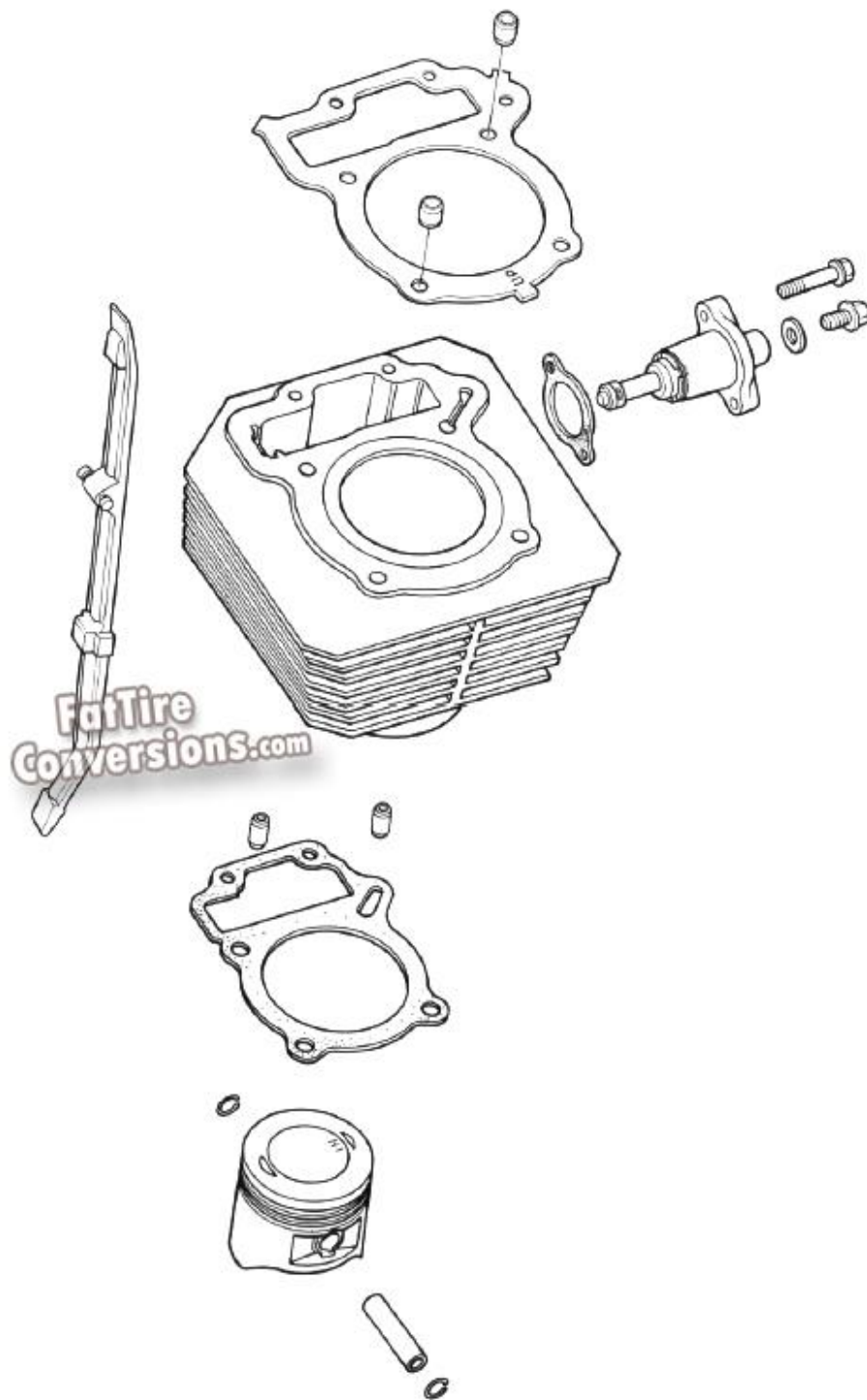


Install new O-rings onto the oil orifice bosses of the cylinder head cover.

Blow compressed air through the oil passage in the breather cover. Install a new rubber gasket into the groove in the breather cover. Install the breather cover and tighten the bolts. Adjust the valve clearance (page 3-7). Install the valve adjuster cover.



CYLINDER/PISTON



7. CYLINDER/PISTON

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

SERVICE INFORMATION

GENERAL

- All cylinder/piston maintenance and inspection can be serviced with the engine in the frame. Refer to Section 5 for engine removal and installation.

SPECIFICATIONS

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

TROUBLESHOOTING

Low or unstable compression

- Worn cylinder or piston rings
- Faulty cylinder head or valves (Section 6)

Excessive smoke

- Worn or damaged cylinder, piston, or piston rings
- Improper installation of piston rings
- Damaged valve stem seal

Overheating

- Excessive carbon build-up on piston or combustion chamber wall
- Fuel-air mixture too lean (Section 4)

Knocking or abnormal noise

- Worn piston and cylinder
- Excessive carbon build-up

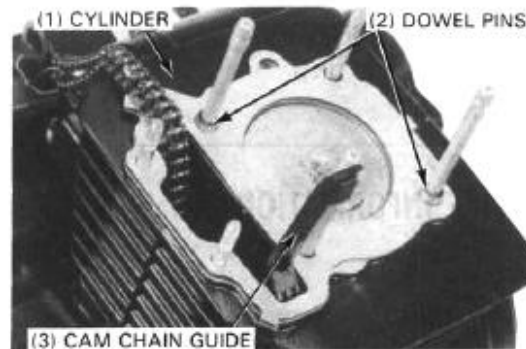
CYLINDER/PISTON

CYLINDER

REMOVAL

Remove the cylinder head (Section 6).

Remove the gasket, dowel pins, cam chain guide and cylinder.



Remove the cylinder gasket and dowel pins.

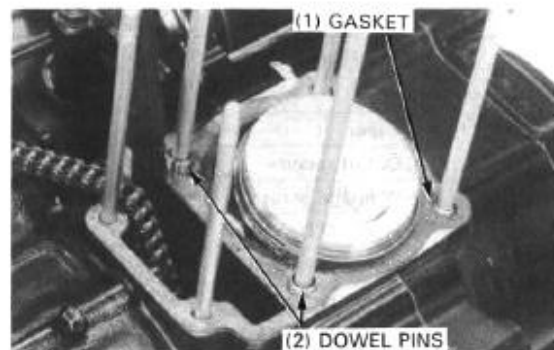
Clean off any gasket material from the cylinder surface.

NOTE

- Be careful not to damage the gasket surface.

INSPECTION

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



SERVICE LIMIT: 65.10 mm (2.563 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 LIMITS: 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: 0.10 mm (0.004 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.

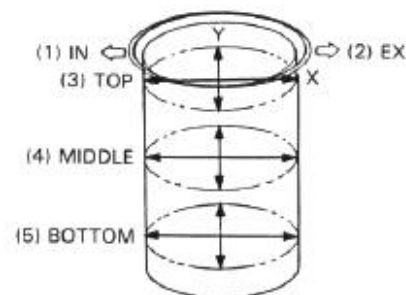
SERVICE LIMIT: 0.10 mm (0.004 in)

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

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

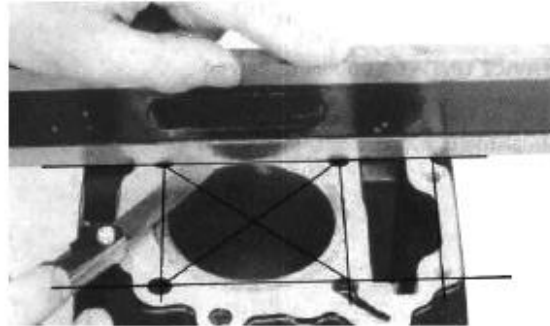
The cylinder must be rebored so that the clearance to an oversize piston is 0.018 – 0.048 mm (0.0007 – 0.0019 in).

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Inspect the top of the cylinder for warpage.

SERVICE LIMIT: 0.10 mm (0.004 in)



PISTON

Remove the piston pin clip with pliers.

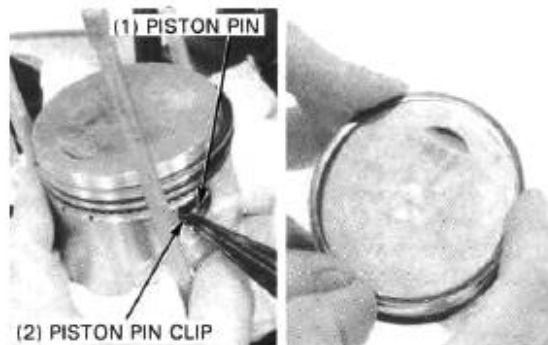
NOTE

- Do not let the clips fall into the crankcase.

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

NOTE

- Do not damage the piston rings during removal.



INSPECTION

Measure the piston ring-to-groove clearance.

SERVICE LIMITS:

Top/Second: 0.09 mm (0.004 in)

Inspect the piston for wear or damage.



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

NOTE

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

SERVICE LIMIT:

Top/Second: 0.50 mm (0.020 in)



CYLINDER/PISTON

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

SERVICE LIMIT: 64.90 mm (2.555 in)

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



Measure the piston pin hole I.D.

SERVICE LIMIT: 15.04 mm (0.592 in)



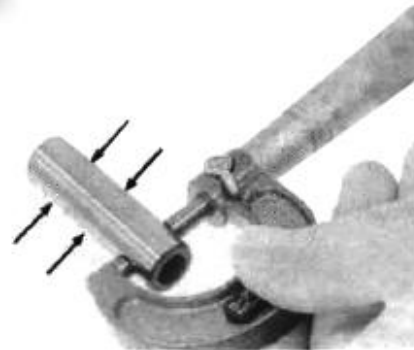
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Measure the O.D. of the piston pin.

SERVICE LIMIT: 14.96 mm (0.589 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)

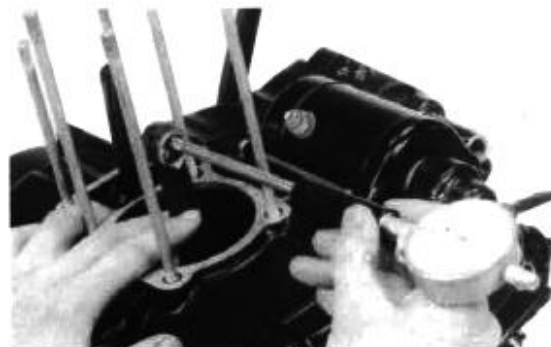


Measure the connecting rod small end I.D.

SERVICE LIMIT: 15.06 mm (0.593 in)

Measure the connecting rod-to-piston pin clearance.

SERVICE LIMIT: 0.05 mm (0.002 in)



PISTON/CYLINDER INSTALLATION

PISTON RING INSTALLATION

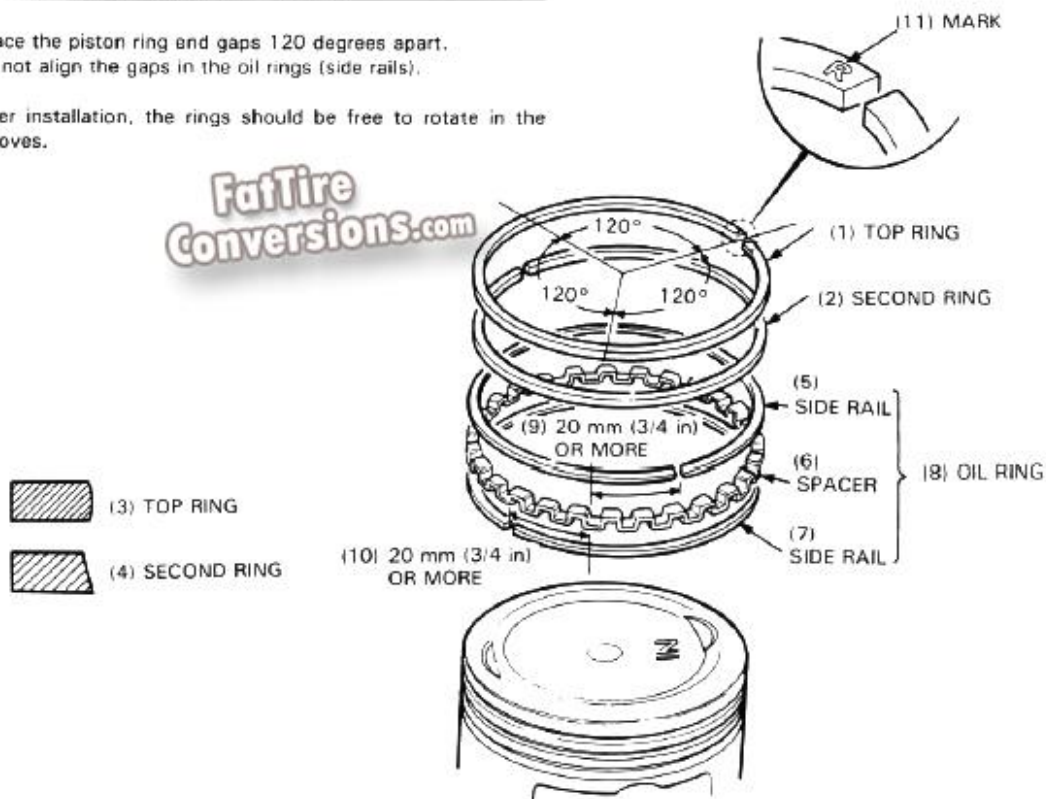
Clean the piston ring grooves thoroughly and install the piston rings.

NOTE

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

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

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

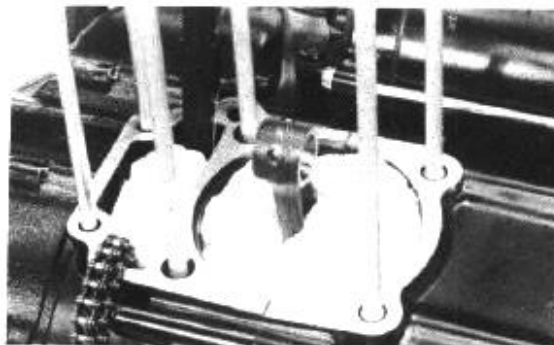


PISTON INSTALLATION

Clean off any gasket material from the crankcase surface.

NOTE

- Be careful not to damage the gasket surface.
- Be careful not to drop the gasket into the crankcase.

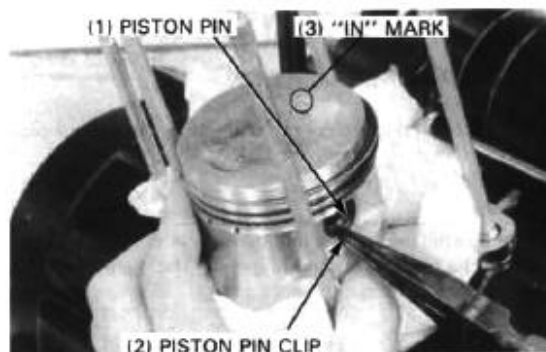


CYLINDER/PISTON

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

NOTE

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



CYLINDER INSTALLATION

Install the dowel pins and a new gasket.

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Make sure the piston rings are installed correctly (page 7-5).

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

NOTE

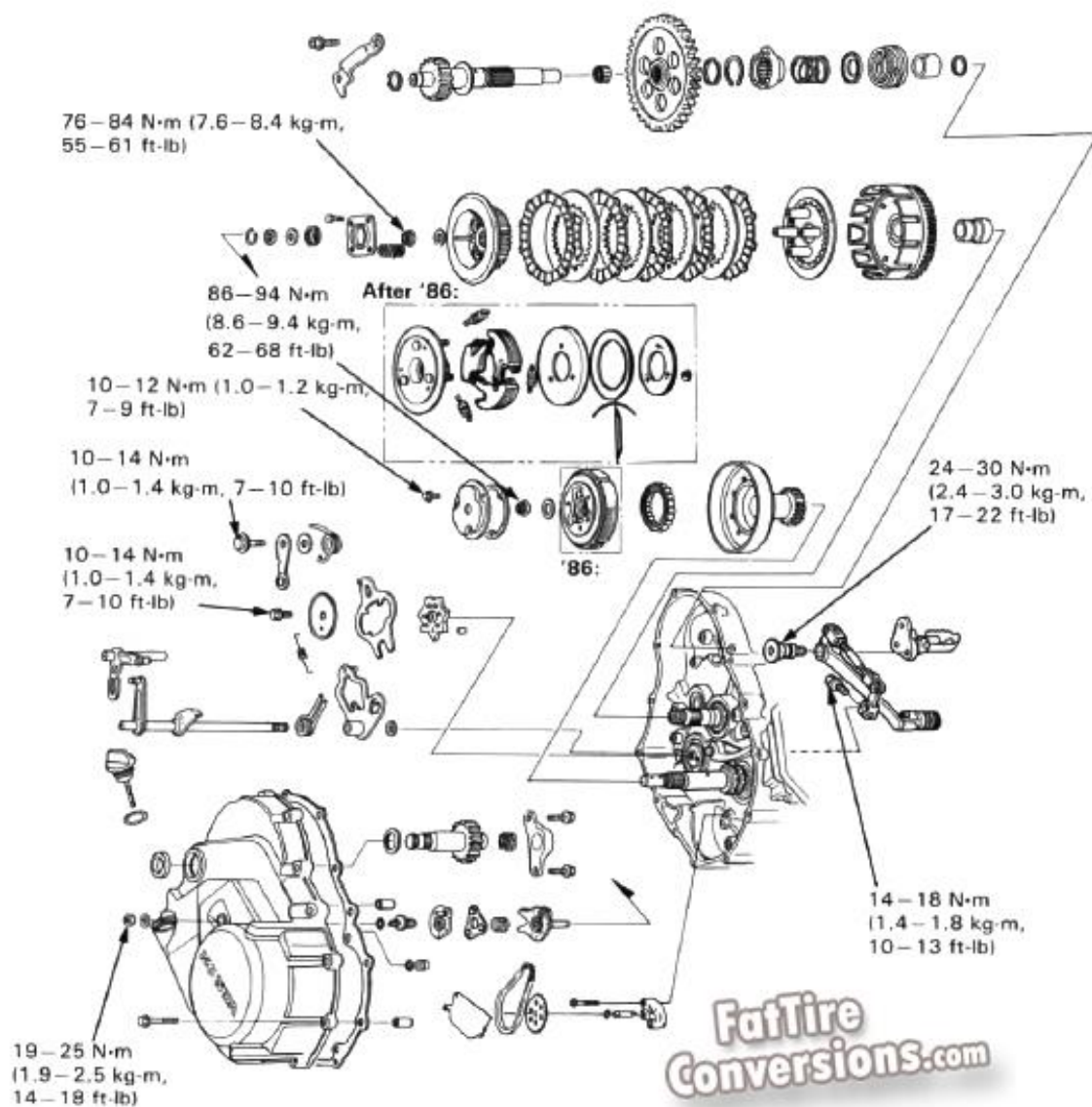
- Avoid piston ring damage during installation.
- Do not let the cam chain fall into the crankcase.



Install the cam chain guide.
Install the cylinder head (page 6-12).



CLUTCH/KICK STARTER/GEARSHIFT LINKAGE



8. CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

SERVICE INFORMATION	8-1	GEARSHIFT LINKAGE	8-14
TROUBLESHOOTING	8-2	KICK STARTER	8-16
RIGHT CRANKCASE COVER REMOVAL	8-3	RIGHT CRANKCASE COVER	
CENTRIFUGAL CLUTCH	8-5	INSTALLATION	8-19
MANUAL CLUTCH	8-10		

SERVICE INFORMATION

GENERAL

- This section covers the centrifugal clutch, manual clutch and gearshift linkage service. These parts can be serviced with the engine installed in the frame.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Centrifugal clutch	Drum I.D.	116.0–116.2 mm (4.567–4.575 in)	116.5 mm (4.59 in)
	Weight lining thickness	'86 1.5 mm (0.06 in) After '86 2.0 mm (0.08 in)	1.2 mm (0.05 in)
	Drum bushing I.D.	24.000–24.021 mm (0.9449–0.9457 in)	24.05 mm (0.947 in)
	Clutch spring free height After '86	—	2.65 mm (0.104 in)
Manual clutch	Spring free length	35.2 mm (1.39 in)	34.5 mm (1.36 in)
	Disc thickness	2.9–3.0 mm (0.11–0.12 in)	2.6 mm (0.10 in)
	Disc warpage	—	0.20 mm (0.008 in)
	Plate warpage	—	0.20 mm (0.008 in)
	Clutch outer guide O.D.	27.959–27.979 mm (1.1007–1.1015 in)	27.92 mm (1.099 in)
Kick starter	Shaft end hole (at right crankcase)	14.000–14.018 mm (0.5512–0.5519 in)	14.040 mm (0.5528 in)

TORQUE VALUES

Centrifugal clutch lock nut	86–94 N·m (8.6–9.4 kg·m, 62–68 ft·lb)
Manual clutch lock nut	76–84 N·m (7.6–8.4 kg·m, 55–61 ft·lb)
Gear shifter bolt	10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)
Shift drum stopper bolt	10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)
Gearshift pedal pivot bolt	24–30 N·m (2.4–3.0 kg·m, 17–22 ft·lb) — Apply a locking agent to the threads.
Gearshift arm bolt	14–18 N·m (1.4–1.8 kg·m, 10–13 ft·lb)
Footpeg bolt	70–80 N·m (7.0–8.0 kg·m, 51–58 ft·lb)
Centrifugal clutch cover	10–12 N·m (1.0–1.2 kg·m, 7–9 ft·lb)

TOOLS

Special

Clutch holder	07GMB–HB70100
Clutch puller	07GMC–HB30100
Clutch center holder	07923–9580000 (not available in U.S.A.)

CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

TROUBLESHOOTING

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

Clutch slips when accelerating

- Incorrect clutch adjustment
- Faulty clutch lifter mechanism
- Worn discs and/or linings
- Weak clutch springs
- Engine oil mixed with molybdenum or graphite additive

Clutch will not disengage

- Faulty clutch adjustment
- Incorrect clutch adjustment
- Warped plates
- Incorrect engine oil weight

Motorcycle creeps with the engine idling

- Faulty centrifugal clutch
- Incorrect engine oil weight

Clutch operation feels rough

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

Hard to shift

- Clutch does not disengage
- Bent gearshift spindle
- Damaged drum shifter
- Damaged gearshift plate

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Transmission jumps out of gear

- Weak or broken shift drum stopper spring
- Worn shift drum stopper
- Worn or damaged shift arm pawl
- Weak or broken shift arm spring

Gear shift pedal will not return

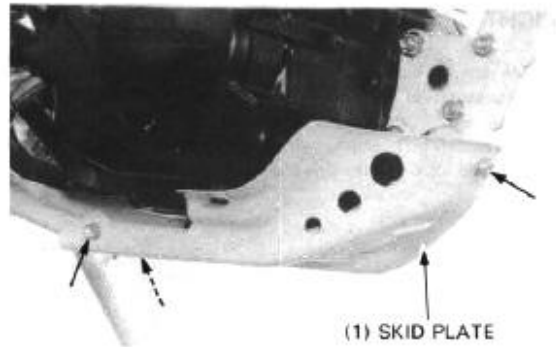
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

Faulty kick starter operation

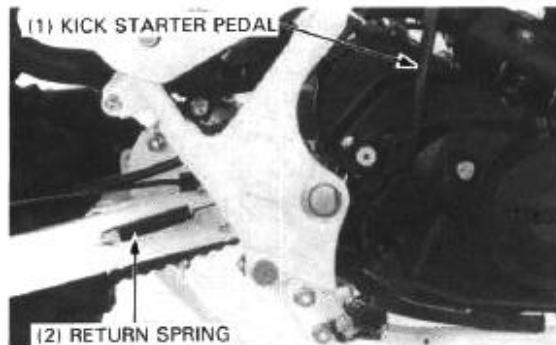
- Worn or damaged kick starter ratchet pawl
- Faulty one-way clutch operation at centrifugal clutch outer
- Damaged kick starter gear
- Worn or damaged ratchet guide
- Ratchet installed incorrectly

RIGHT CRANKCASE COVER REMOVAL

Drain the engine oil (Page 2-2)
Remove the skid plate.



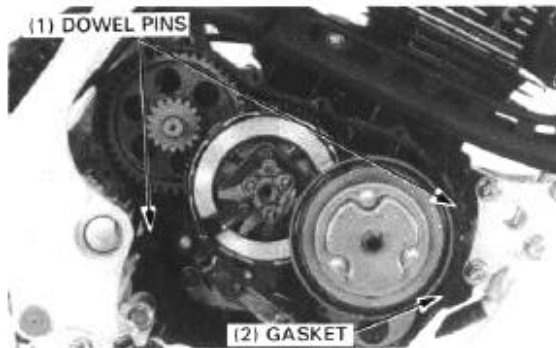
Loosen the rear brake adjusting nut and unhook the brake pedal return spring from the swing arm.
Remove the kick starter pedal.



Remove the right crankcase cover bolts and cover.



Remove the gasket and dowel pins.

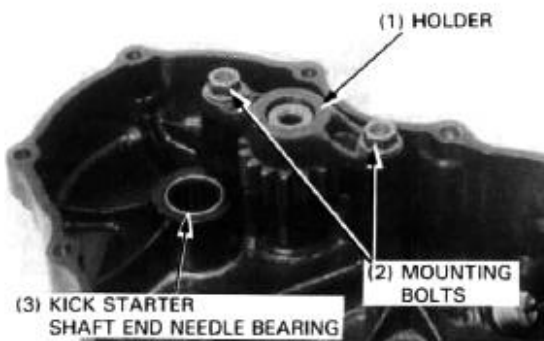


CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

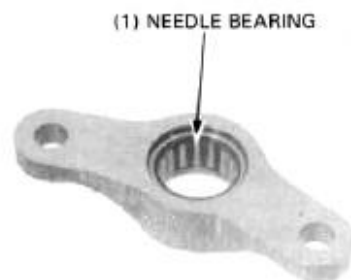
RIGHT CRANKCASE COVER DISASSEMBLY

Check the kick starter shaft end needle bearing on the right crankcase cover for damage and replace if necessary.

Remove the kick starter drive gear holder mounting bolts, holder and kick starter drive gear.



Check the kick starter drive gear needle bearing for damage and replace if necessary.



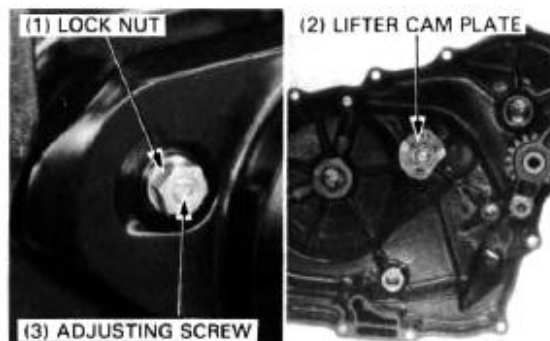
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Check the dust seal for wear or damage and replace if necessary.

(1) DUST SEAL

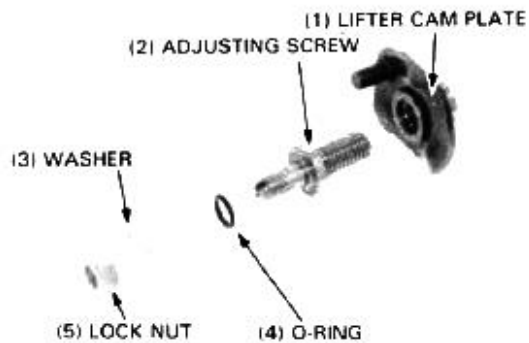


Remove the lock nut, washer, clutch adjusting screw and lifter cam plate.

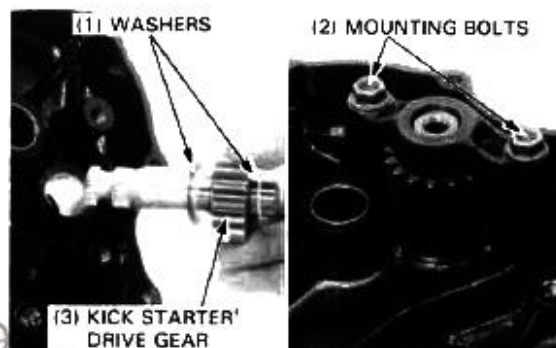


CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

Check the lifter cam plate for wear or damage.
Remove the O-ring from the adjusting screw if necessary.

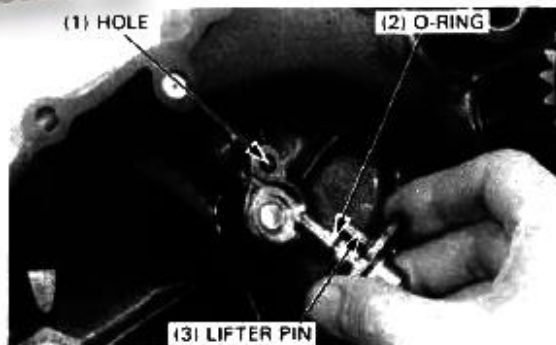


Install the washers onto the kick starter drive gear and drive gear shaft into the cover.
Install the holder with the needle bearing and tighten the bolts securely.



Screw the clutch adjusting screw into the lifter cam plate and install the O-ring onto the screw.

Install the clutch adjusting screw and lifter cam plate aligning the lifter pin with the hole in the right crankcase cover.
Install the washer and lock nut.
Tighten the lock nut after installing the right crankcase cover and adjusting the clutch system.



CENTRIFUGAL CLUTCH

REMOVAL

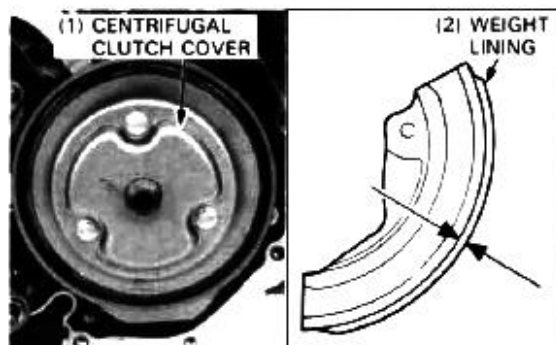
Remove the centrifugal clutch cover.

WEIGHT LINING INSPECTION

Measure the weight lining thickness.

SERVICE LIMIT: '86 1.2 mm (0.05 in)
After '86 2.0 mm (0.08 in)

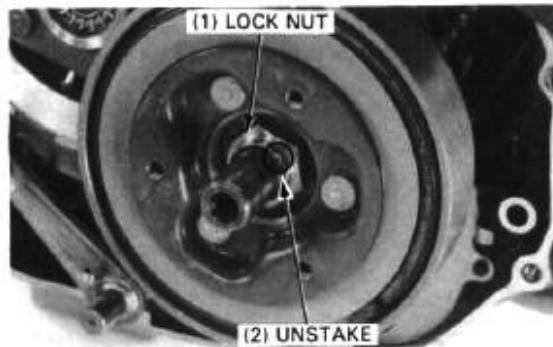
Replace the centrifugal weight assembly if the lining thickness is worn beyond the service limit.



CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

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

Unstake the centrifugal clutch lock nut.



Hold the centrifugal clutch weight assembly with a clutch holder and remove the lock nut with a long size 24 mm socket wrench by turning the nut clockwise.

TOOL:

Clutch holder

07HMB-HB70100

NOTE

- The lock nut has left hand threads.

Remove the plain washer.

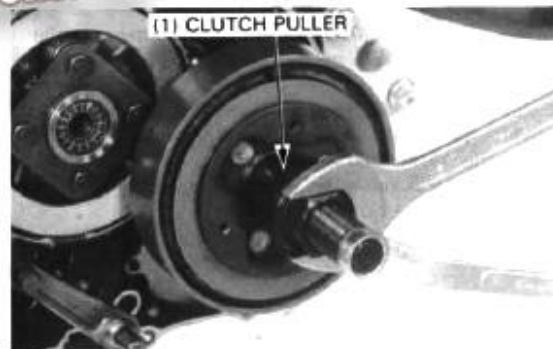


Remove the clutch weight assembly with a clutch puller.

TOOL:

Clutch puller

07GMC-HB30100



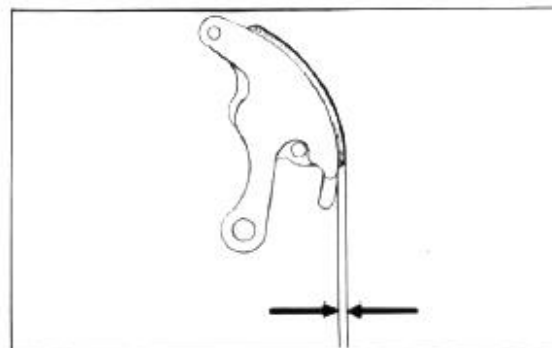
AFTER '86

INSPECTION

Weight Lining

Measure the weight lining thickness.

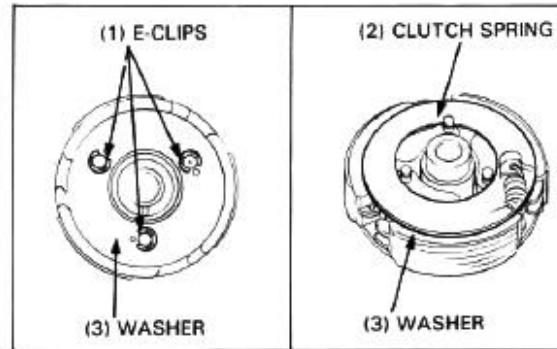
SERVICE LIMIT: 1.0 mm (0.04 in)



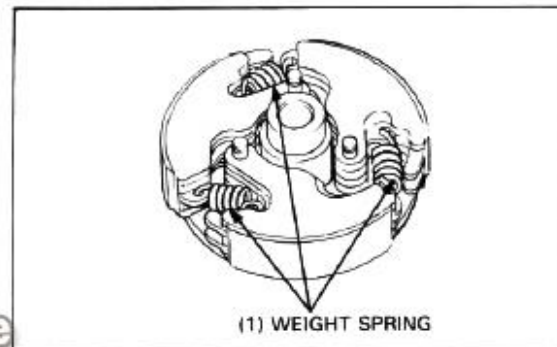
CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

Weight Spring/Clutch Spring

Remove the E-clips, washer, clutch spring and washer.



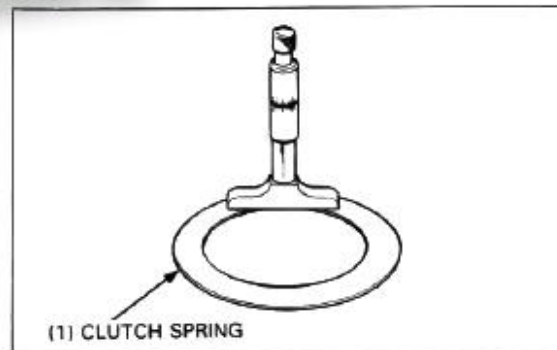
Check the weight springs for wear or damage, and replace if necessary.



Measure the height of the clutch spring.

SERVICE LIMIT: 2.65 mm (0.104 in)

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

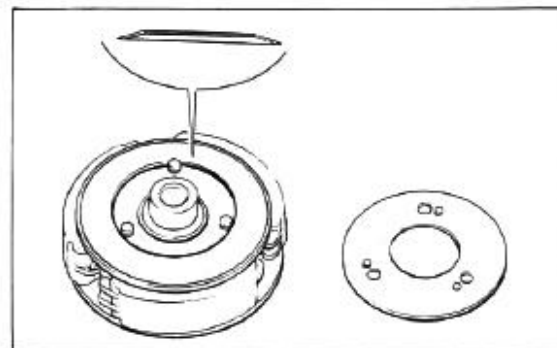


Install the washer and clutch spring.

NOTE

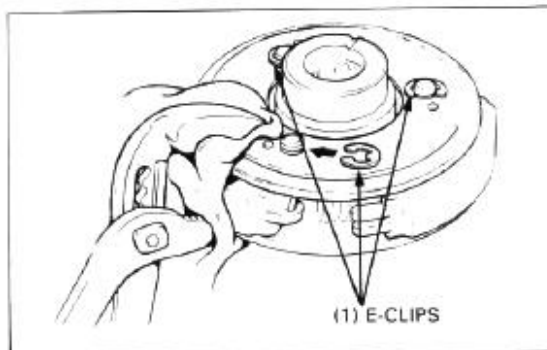
- Install the spring with the dished face towards the inside.

Install the outside washer with the locating pins facing out.

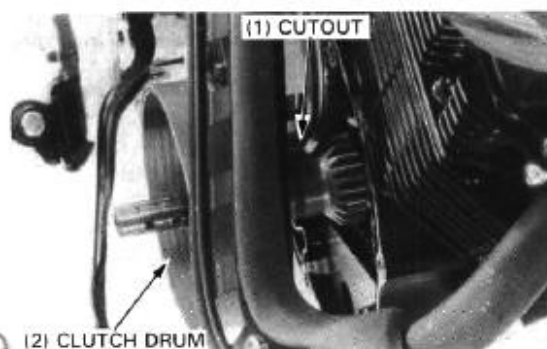


CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

Install the E-clips aligning their gaps with the locating pins on the washer.



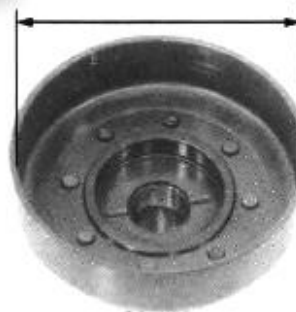
Remove the clutch drum by aligning the drum gear with the cutout on the manual clutch outer.



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Conversions.com**

Clutch drum/one-way clutch
Remove the one-way clutch from the clutch drum.
Check the inside of the centrifugal clutch drum for scratches or excessive wear. Replace if necessary.
Measure the I.D. of the clutch drum.

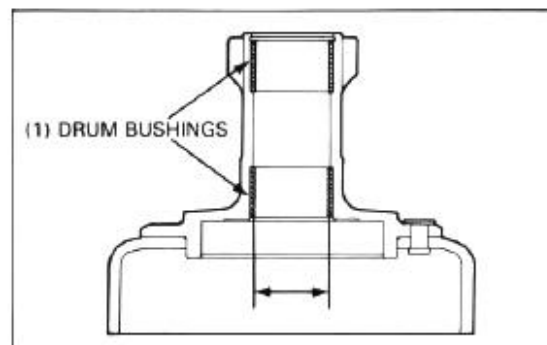
SERVICE LIMIT: 116.5 mm (4.59 in)



Measure the drum bushing I.D.'s.

SERVICE LIMIT: 24.05 mm (0.947 in)

Replace the clutch drum assembly if the drum bushing I.D. is greater than the service limit.



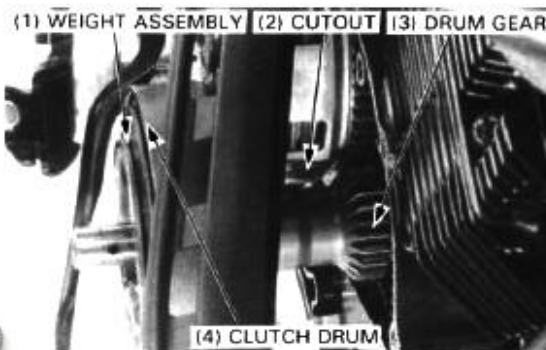
CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

Check the one way clutch rollers for excessive wear or damage.
Install the one-way clutch into the clutch drum with the tab on the one-way clutch facing down.
Install the one way clutch weight onto the clutch drum.
Turn the clutch weight for smooth operation.
The clutch weight should turn clockwise and not turn counter-clockwise.



INSTALLATION

Install the centrifugal clutch weight assembly into the clutch drum while turning the weight assembly clockwise.
Install the centrifugal clutch weight assembly and drum onto the crankshaft, aligning the drum gear with the cutout on the manual clutch outer.



**FatTire
Conversions.com**

Install the plain washer.



Install a new lock nut, hold the centrifugal clutch weight assembly with a clutch holder and tighten the lock nut with a 24 mm deep socket wrench.

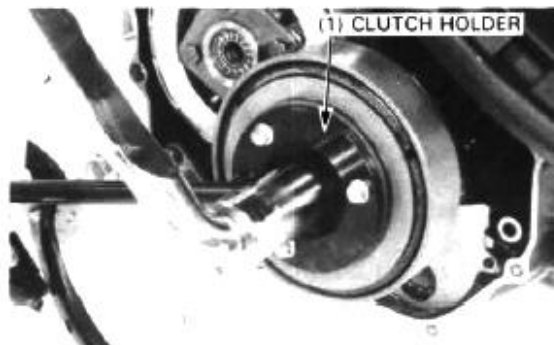
TORQUE: 86–94 N·m (8.6–9.4 kg·m, 62–68 ft·lb)

TOOL:

Clutch holder 07GMB–HB30100

NOTE

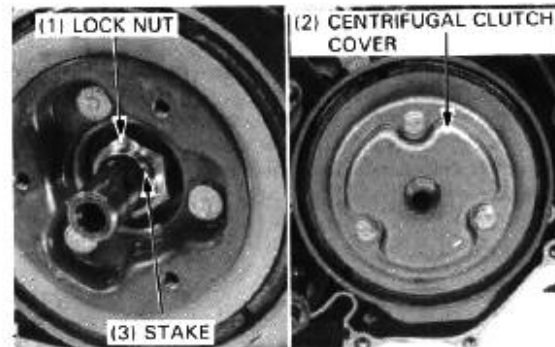
- The lock nut has left hand threads.



CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

Stake the lock nut into the crankshaft.
Install the centrifugal clutch cover.

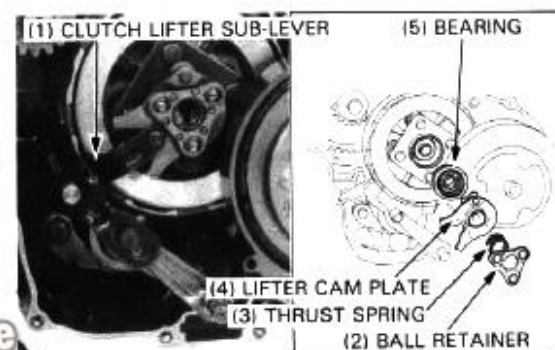
TORQUE: 10–12 N·m (1.0–1.2 kg·m, 7–9 ft·lb)



MANUAL CLUTCH

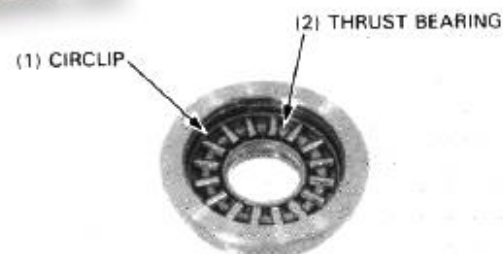
REMOVAL

Remove the clutch lifter sub-lever.
Remove the ball retainer, thrust spring, lifter cam plate and bearing.



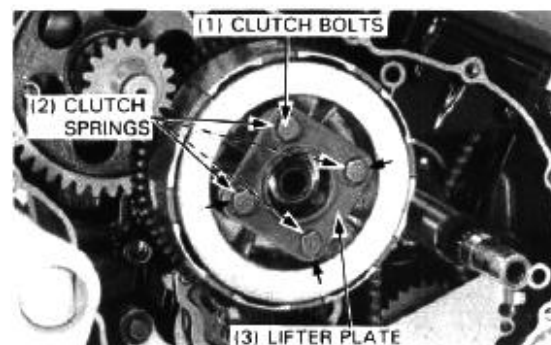
*FatTire
Conversions.com*

Check the ball retainer and spring cam plate for wear or damage.
Check the thrust bearing and replace it with a new one if it is damaged or has excessive wear.
Remove the circlip and bearing.
Install the bearing and circlip securely.



Remove the following:

- centrifugal clutch (page 8-5)
- clutch bolts
- lifter plate
- clutch springs.

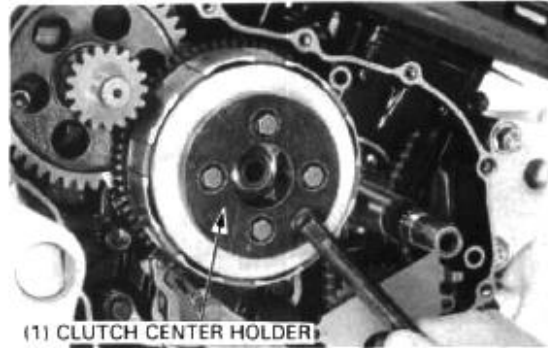


CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

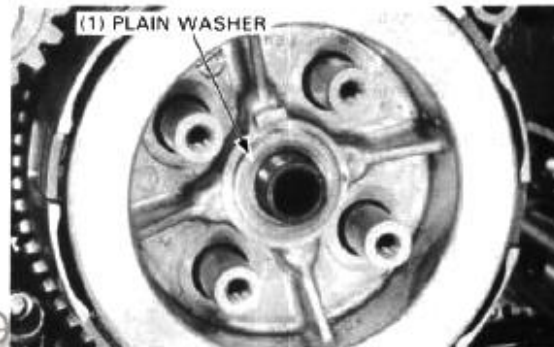
Unstake the manual clutch lock nut.
Install the clutch center holder as shown, and remove the clutch lock nut.

TOOL:

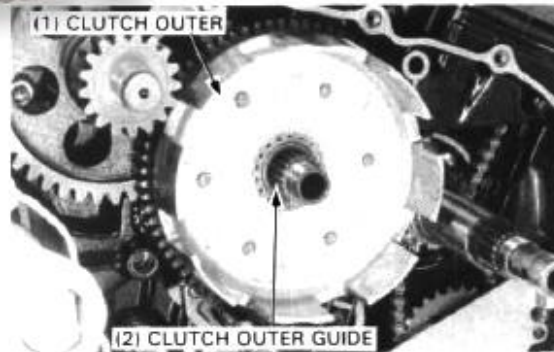
Clutch center holder 07923-9580000



Remove the plain washer.
Remove the clutch outer, discs, plates and pressure plate.



Remove the clutch outer and outer guide.

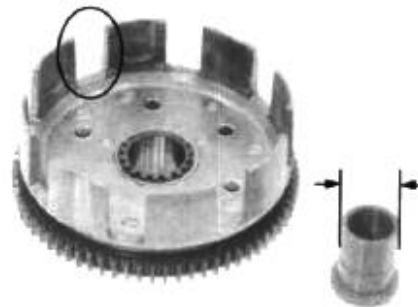


INSPECTION

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

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

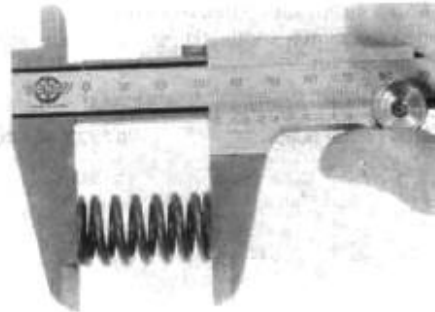
SERVICE LIMIT: 27.92 mm (1.099 in)



CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

Measure the spring free length.

SERVICE LIMIT: 34.5 mm (1.36 in)



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

Measure the disc thickness.

SERVICE LIMIT: 2.6 mm (0.10 in)



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

SERVICE LIMIT: 0.20 mm (0.008 in)



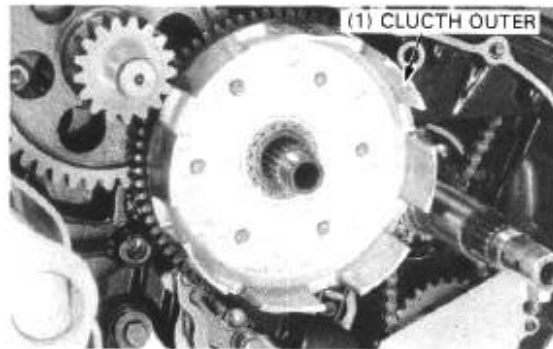
INSTALLATION

Install the clutch outer guide onto the mainshaft.



CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

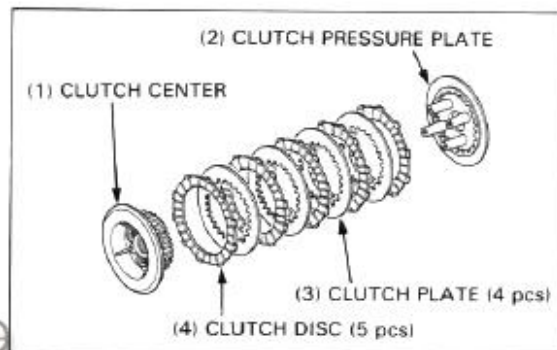
Install the clutch outer.



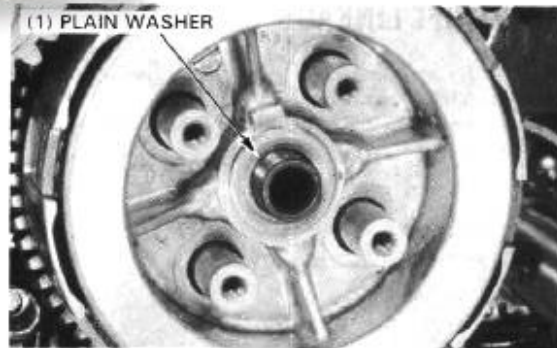
Assemble the clutch pressure plate, discs, plates and clutch center.

NOTE

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



Install the plain washer and a new lock nut.



Install the clutch center holder as shown, and tighten the lock nut.

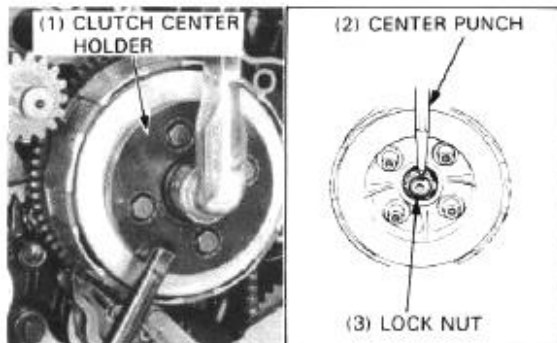
TORQUE: 76–84 N·m (7.6–8.4 kg-m, 55–61 ft-lb)

TOOL:

Clutch center holder

07923–9580000
(not available in U.S.A.)

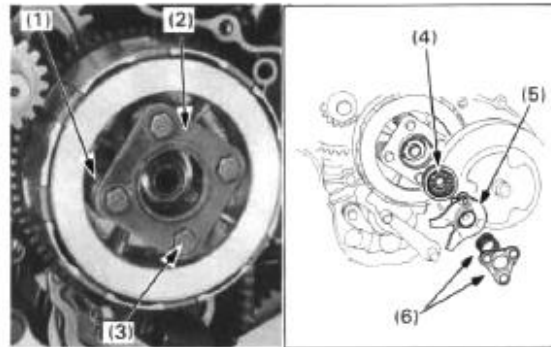
Remove the clutch center holder and stake the lock nut into the mainshaft.



CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

Install the following:

- (1) clutch springs
- (2) lifter plate
- (3) clutch bolts
- (4) bearing
- (5) lifter cam plate
- (6) ball retainer with thrust spring



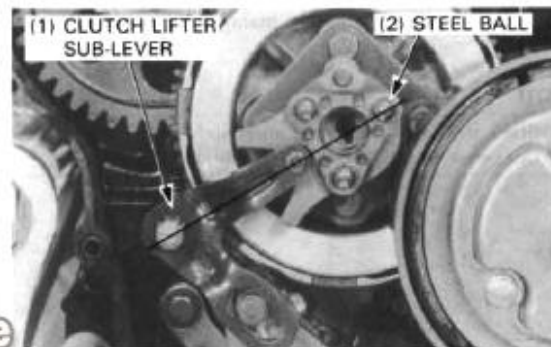
Install the centrifugal clutch (page 8-9).

Install the clutch lifter sub-lever.

Make sure that the position the clutch lifter sub-lever at the groove in the lifter cam.

Align the steel ball in the ball retainer with the clutch lifter sub-lever.

Install the right crankcase cover (page 8-18).

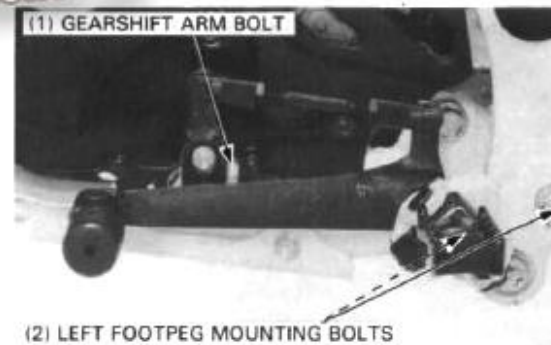


GEARSHIFT LINKAGE

Remove the left footpeg mounting bolts, gearshift arm bolt and gearshift/left footpeg.

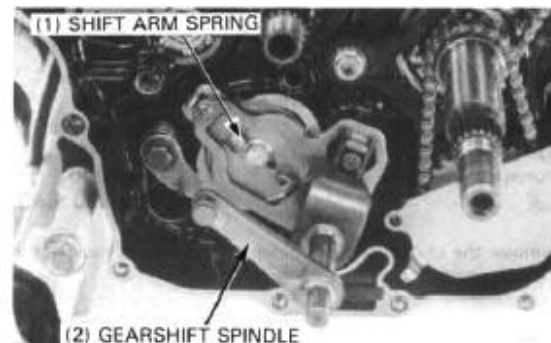
Remove the centrifugal clutch (page 8-5) and manual clutch (page 8-10).

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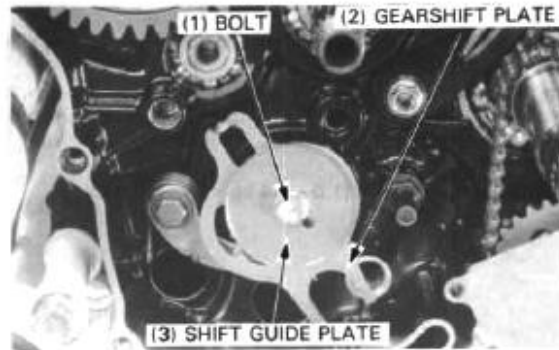


Unhook the shift arm spring from the gearshift plate.

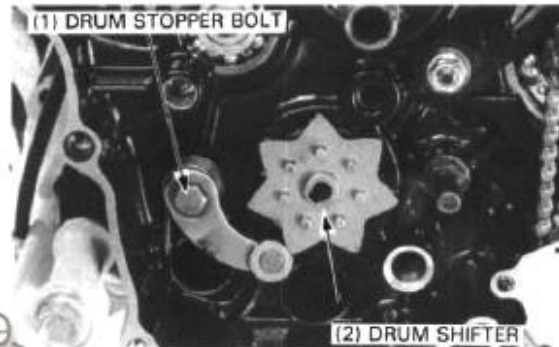
Pull out gearshift spindle assembly from the crankcase.



Remove the shift guide plate and gearshift plate by removing the gear shifter bolt.



Remove the drum stopper bolt, drum stopper, washer and spring.
Remove the drum shifter.
Remove the shift drum pin from the shift drum.



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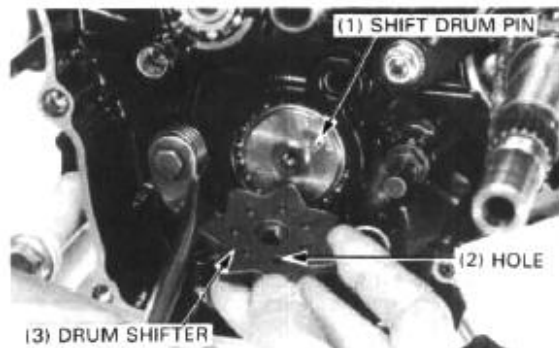
INSTALLATION

Assemble the drum stopper spring, washer, stopper and bolt, and install them onto the crankcase.
Tighten the drum stopper bolt.

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



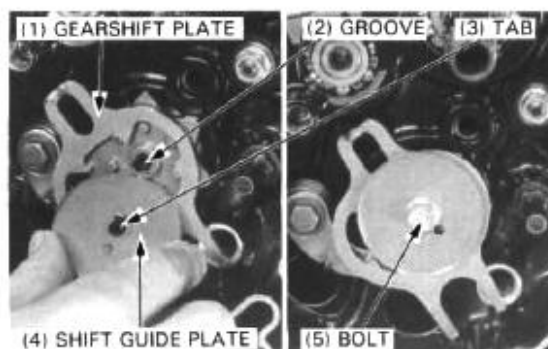
Install the shift drum pin into the shift drum.
Lower the drum stopper using a screwdriver and install the drum shifter with aligning the hole on the drum shifter and shift drum pin.



CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

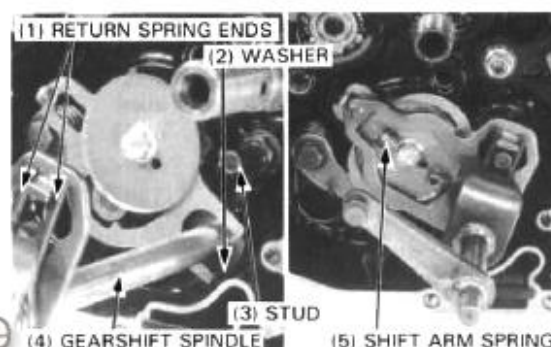
Install the gearshift plate onto the drum shifter.
Install the shift guide plate with aligning the tab on the plate and the groove on the drum shifter.
Apply thread locking agent to the gear shifter bolt threads, install the shift guide plate onto the drum shifter and tighten the gear shifter bolt.

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



Place the thrust washer between the crankcase and gearshift plate and install the gearshift spindle through the gearshift plate and washer into the crankcase, aligning the return spring ends with the stud.

Hook the shift arm spring to the gearshift plate as shown.



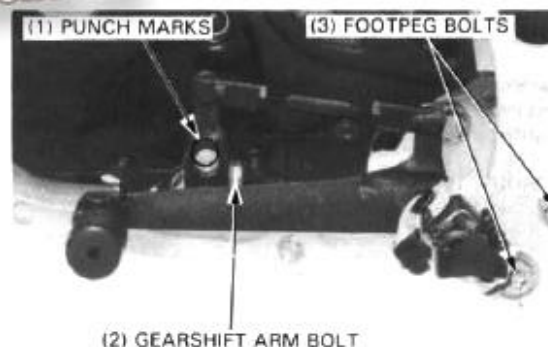
**FatTire
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Install the manual clutch (page 8-12).
Install the centrifugal clutch (page 8-9).
Install the gearshift pedal onto the gearshift shaft aligning the punch marks on the spindle and pedal.
Tighten the footpeg mounting bolts and gearshift arm bolt.

TORQUE:

Footpeg bolts: 70–80 N·m (7.0–8.0 kg·m, 51–58 ft·lb)
Gearshift arm bolt: 14–18 N·m (1.4–1.8 kg·m, 10–13 ft·lb)

Check the gearshift operation.



KICK STARTER

REMOVAL

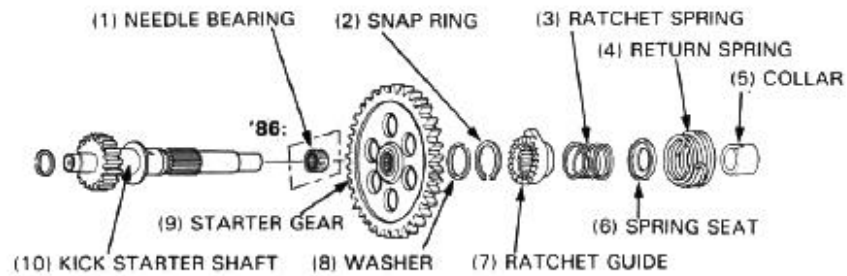
Remove the centrifugal clutch (page 8-5).
Remove the manual clutch (page 8-10).
Remove the kick starter shaft by turning the shaft clockwise to free the ratchet from the ratchet guide plate.

NOTE

- Refer to page 8-4 for kick starter drive gear removal.

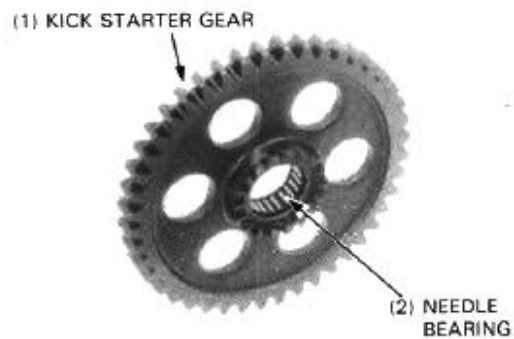


DISASSEMBLY



INSPECTION

Inspect the kick starter gear needle bearing for damage and/or excessive play.



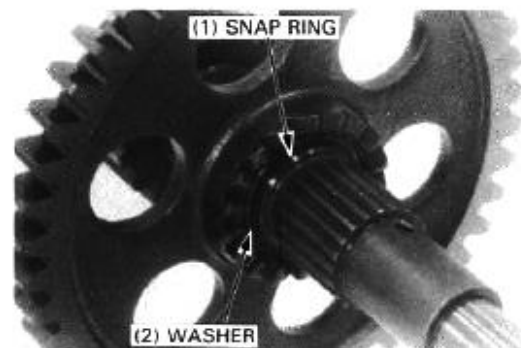
Measure the kick starter shaft end hole I.D.

SERVICE LIMIT: 14.040 mm (0.5528 in)



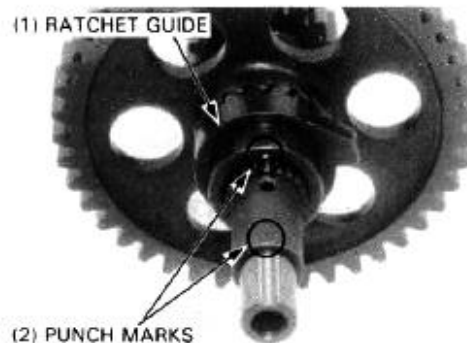
ASSEMBLY

Install the starter gear onto the shaft, washer and snap ring.



CLUTCH/KICK STARTER/GEARSHIFT LINKAGE

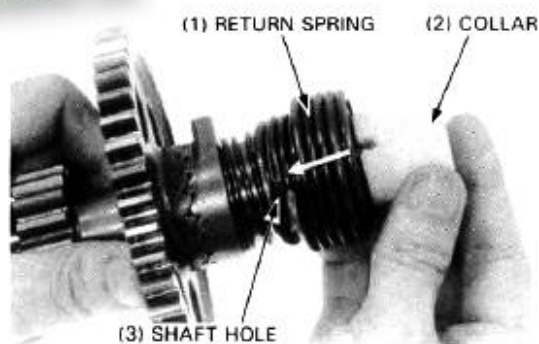
Align the punch marks and install the ratchet over the shaft.



Install the ratchet spring and spring seat.

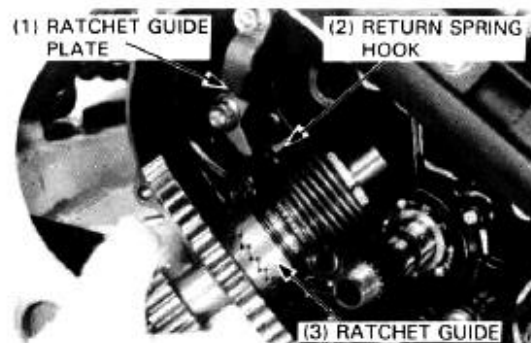


Compress the ratchet spring and install the return spring with insert its end into the hole in the shaft. Install the collar, aligning its groove with the end of the return spring.



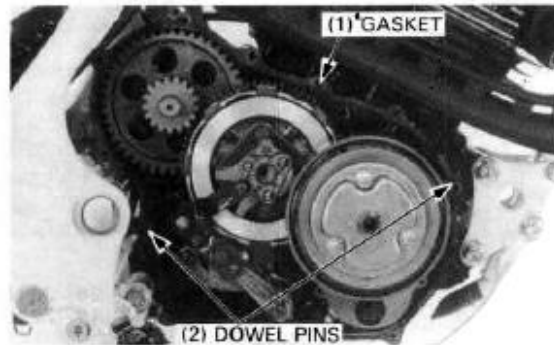
INSTALLATION

Align the return spring hook with the crankcase boss under the ratchet guide plate. Turn the kick starter shaft clockwise by hand and insert the boss of ratchet into the ratchet guide plate and crankcase.



RIGHT CRANKCASE COVER INSTALLATION

Install the dowel pins and a new gasket.



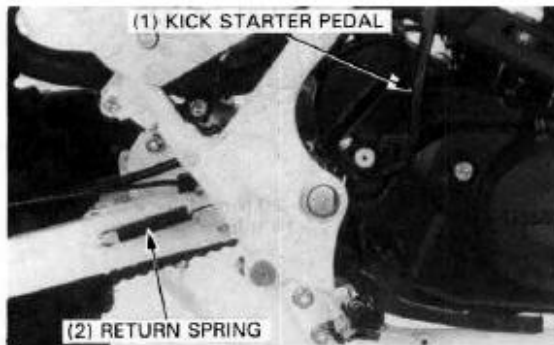
Install the right crankcase cover and tighten the bolts.

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Install the kick starter pedal.

Install the brake pedal return spring onto the swing arm.



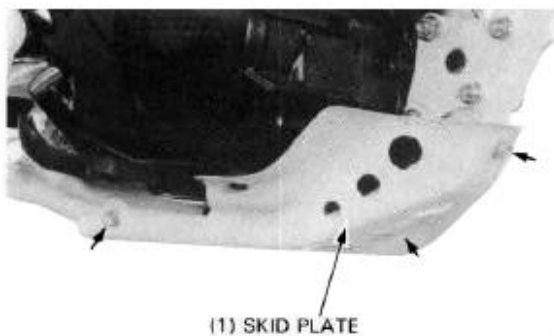
Install the skid plate.

Adjust the rear brake pedal free play (Page 3-12).

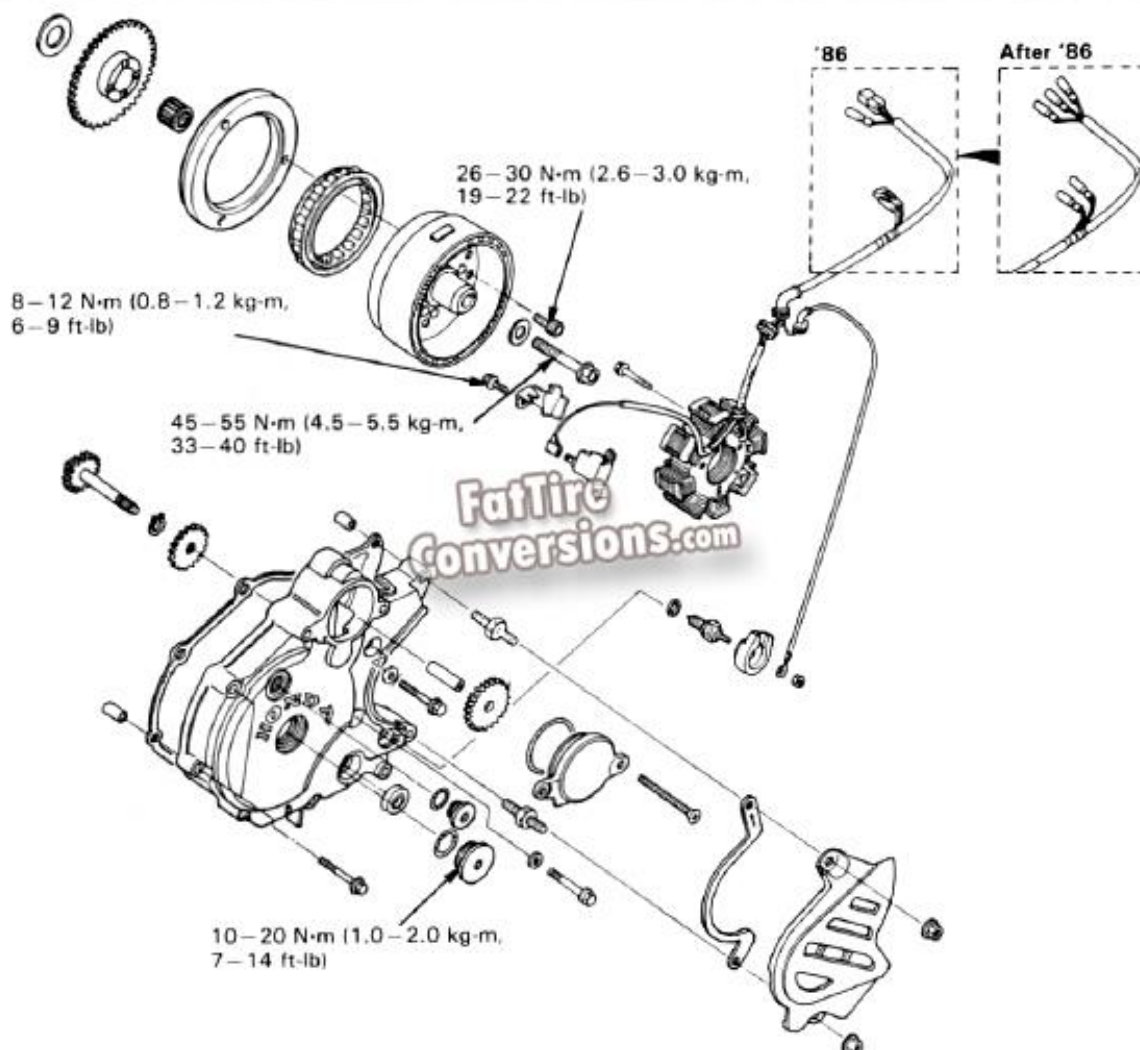
Fill the crankcase with the recommended engine oil (Page 2-2).

Inspect or adjust the following.

- clutch system (Page 3-13).
- oil leaks
- gearshift operation



ALTERNATOR/STARTER CLUTCH



9. ALTERNATOR/STARTER CLUTCH

SERVICE INFORMATION	9-1	ALTERNATOR/STARTER CLUTCH	9-3
TROUBLESHOOTING	9-1	LEFT CRANKCASE COVER	
LEFT CRANKCASE COVER REMOVAL	9-2	INSTALLATION	9-6

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the alternator/starter clutch and starter gears.
- Refer to Section 15 for alternator inspection.

TORQUE VALUES

Flywheel bolt	45–55 N·m (4.5–5.5 kg·m, 33–40 ft·lb)
Starter clutch bolt	26–30 N·m (2.6–3.0 kg·m, 19–22 ft·lb)
Pulse generator bolt	8–12 N·m (0.8–1.2 kg·m, 6–9 ft·lb)
Footpeg bolt	70–80 N·m (7.0–8.0 kg·m, 51–58 ft·lb)
Gearshift arm bolt	14–18 N·m (1.4–1.8 kg·m, 10–13 ft·lb)

TOOLS

Common

Flywheel holder	07725–0040000 or strap wrench, commercially available in U.S.A.
Rotor puller	07733–0020001 or 07933–2160000

TROUBLESHOOTING

Engine does not turn when operating starter motor

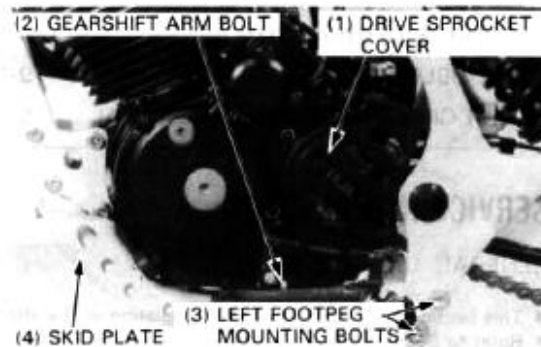
- Faulty one-way starter clutch
- Starter reduction gear broken

ALTERNATOR/STARTER CLUTCH

LEFT CRANKCASE COVER REMOVAL

Remove the following:

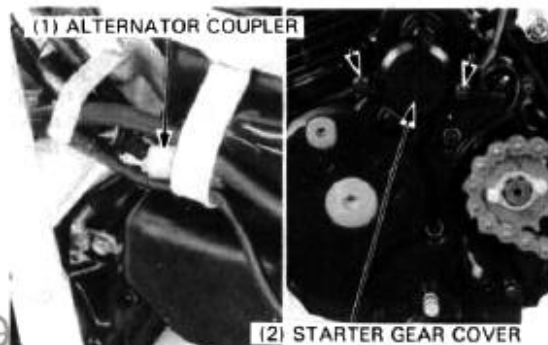
- skid plate
- gearshift arm bolt and left footpeg mounting bolts.
- gearshift pedal and left footpeg
- drive sprocket cover by removing the nuts.



Remove the left side cover.

Disconnect the alternator coupler and wire connector.

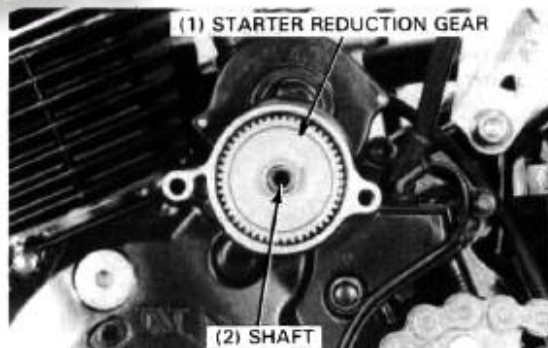
Remove the starter gear cover.



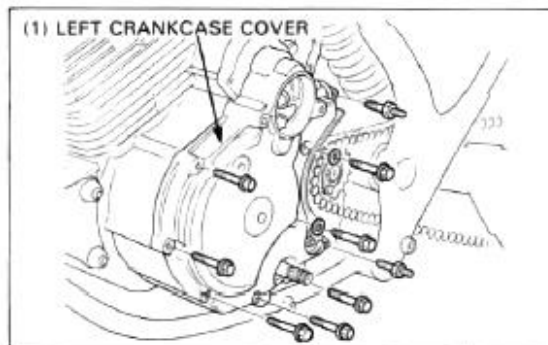
**FatTire
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Remove the starter reduction gear shaft and gear.

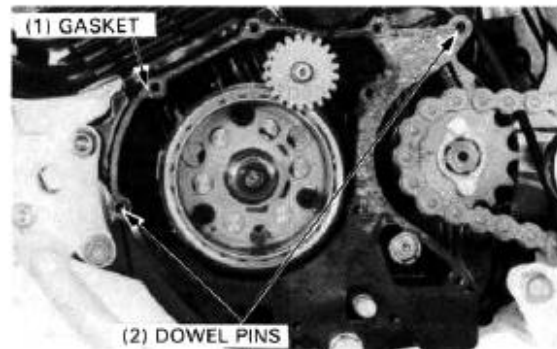
Check the teeth of the starter reduction gear for wear or damage.



Remove the nine left crankcase cover mounting bolts and cover.



Remove the gasket and two dowel pins.

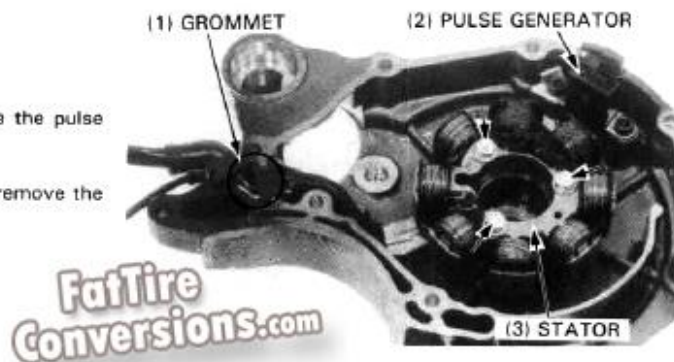


ALTERNATOR/STARTER CLUTCH

STATOR REPLACEMENT

Disconnect the pulse generator wire, and remove the pulse generator and wire clamp.

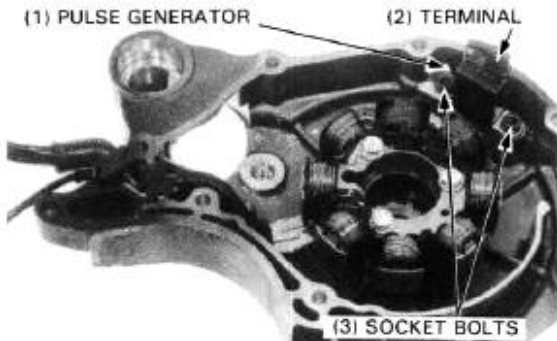
Remove the wire grommets and three bolts, and remove the stator from the left crankcase cover.



Install the stator onto the left crankcase cover properly. Apply locking agent to the stator bolts threads and tighten the bolt. Install the wire grommets into the groove in the cover securely.

Install the pulse generator and wire clamp with the socket bolts.

Clamp the pulse generator wire onto the pulse generator and connect it to the terminal.

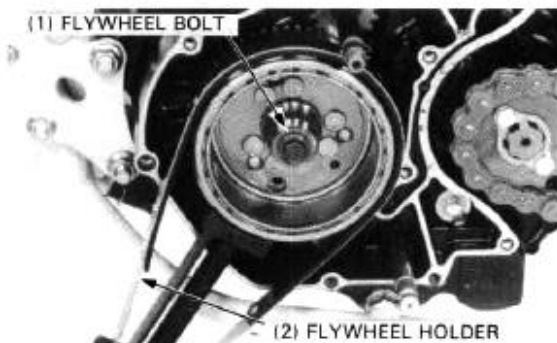


FLYWHEEL REMOVAL

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

TOOL:

Flywheel holder 07725-0040000 or strap wrench commercially available in U.S.A.

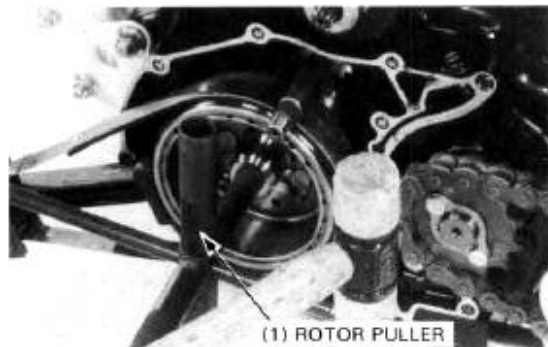


ALTERNATOR/STARTER CLUTCH

Remove the flywheel with the rotor puller.

TOOL:

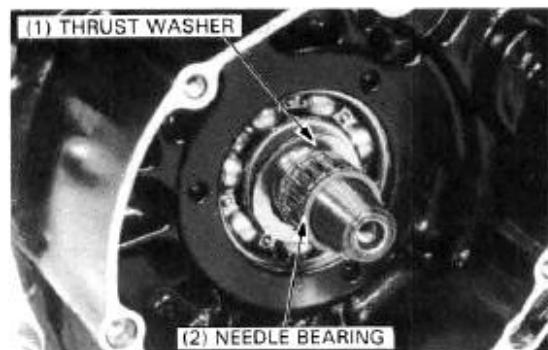
Rotor puller 07733-0020001 or 07933-2160000



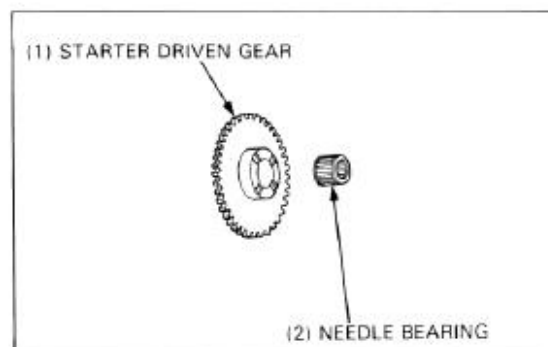
Remove the starter idle gear shaft and starter driven gear.



Remove the needle bearing and thrust washer from the crankshaft.



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

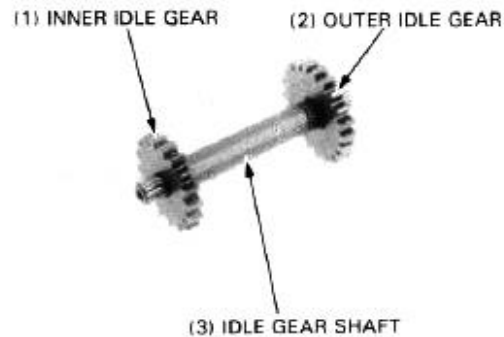


ALTERNATOR/STARTER CLUTCH

Check the inner and outer idle gear for wear or damage.

NOTE

- The inner starter idle gear is welded to the shaft.



STARTER CLUTCH INSPECTION

Check the rollers for excessive wear or other damage. Temporarily install the starter driven gear and check its operation; the driven gear should turn counterclockwise and not turn clockwise.

Replace the one-way clutch and outer, if necessary.

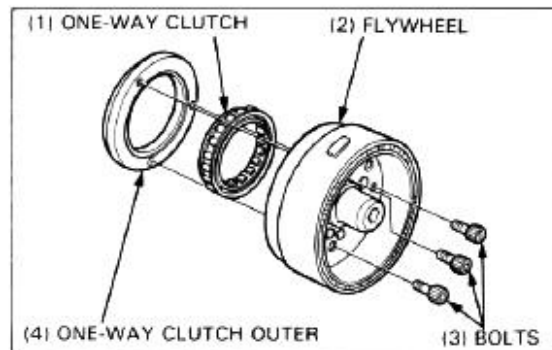


STARTER CLUTCH DISASSEMBLY/ASSEMBLY

Remove the bolts from the flywheel. Remove the one-way clutch outer and one-way clutch. Install a new one-way clutch and outer onto the flywheel. Apply locking agent to the bolt threads and tighten the bolts.

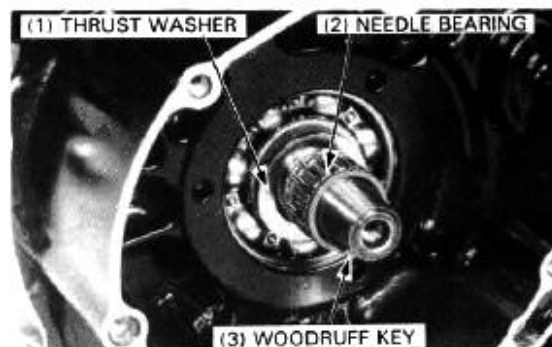
TORQUE: 26 – 30 N·m (2.6 – 3.0 kg·m, 19 – 22 ft·lb)

Recheck the one-way clutch operation using the driven gear.



FLYWHEEL INSTALLATION

Install the thrust washer and needle bearing. If the woodruff key has been removed, install it into the crankshaft end groove.



ALTERNATOR/STARTER CLUTCH

Install the starter driven gear and starter idle gear shaft.

NOTE

- Install the inner starter idle gear (17T) and the outer starter idle gear (21T) correctly. Incorrect engagement could damage the gears.
- Engage the inner gear teeth and the starter driven gear teeth correctly at installation.



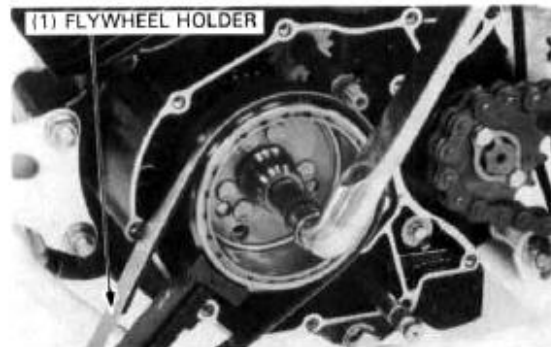
Make sure that the inside of the flywheel and crankshaft are not contaminated. Clean if necessary. Install the flywheel onto the crankshaft, aligning the key way in the flywheel with the key on the crankshaft. Install the flywheel bolt and hold the flywheel with the flywheel holder.

TOOL:

Flywheel holder 07725-0040000 or strap wrench commercially available in U.S.A.

Tighten the flywheel bolt.

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

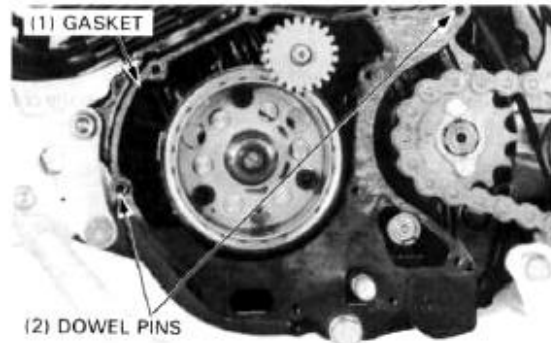


LEFT CRANKCASE COVER INSTALLATION

Install the outer starter idle gear (21 teeth).

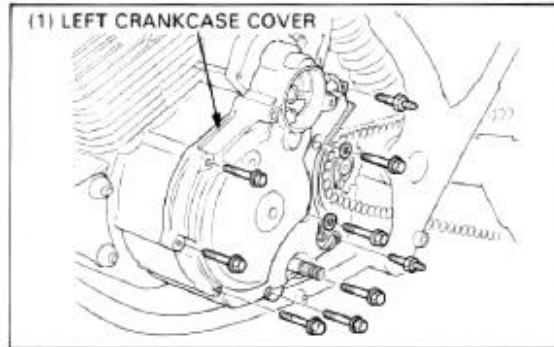


Install the dowel pins and a new gasket.



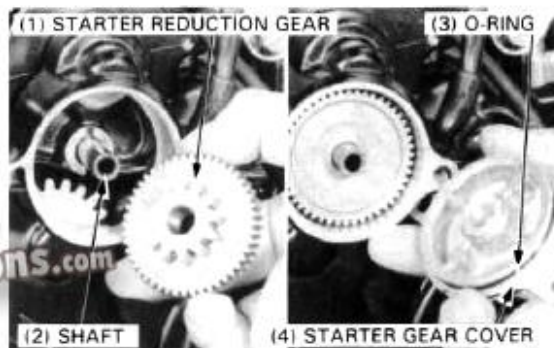
ALTERNATOR/STARTER CLUTCH

Install the left crankcase cover and cover mounting bolts. Tighten the nine bolts in a crisscross pattern in 2 to 3 steps.



Install the starter reduction gear shaft and reduction gear. Make sure that the O-ring is in good condition. Install the starter gear cover and tighten the bolts.

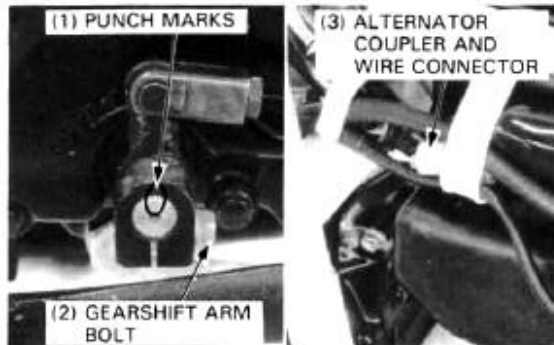
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Install the gearshift pedal onto the gearshift shaft, aligning the punch marks on the spindle and pedal. Tighten the gearshift arm bolt.

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

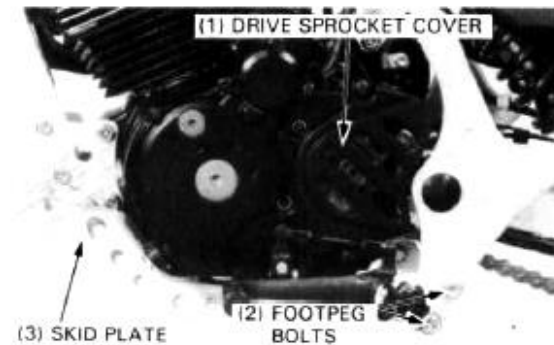
Connect the alternator coupler and wire connector. Install the left side cover.

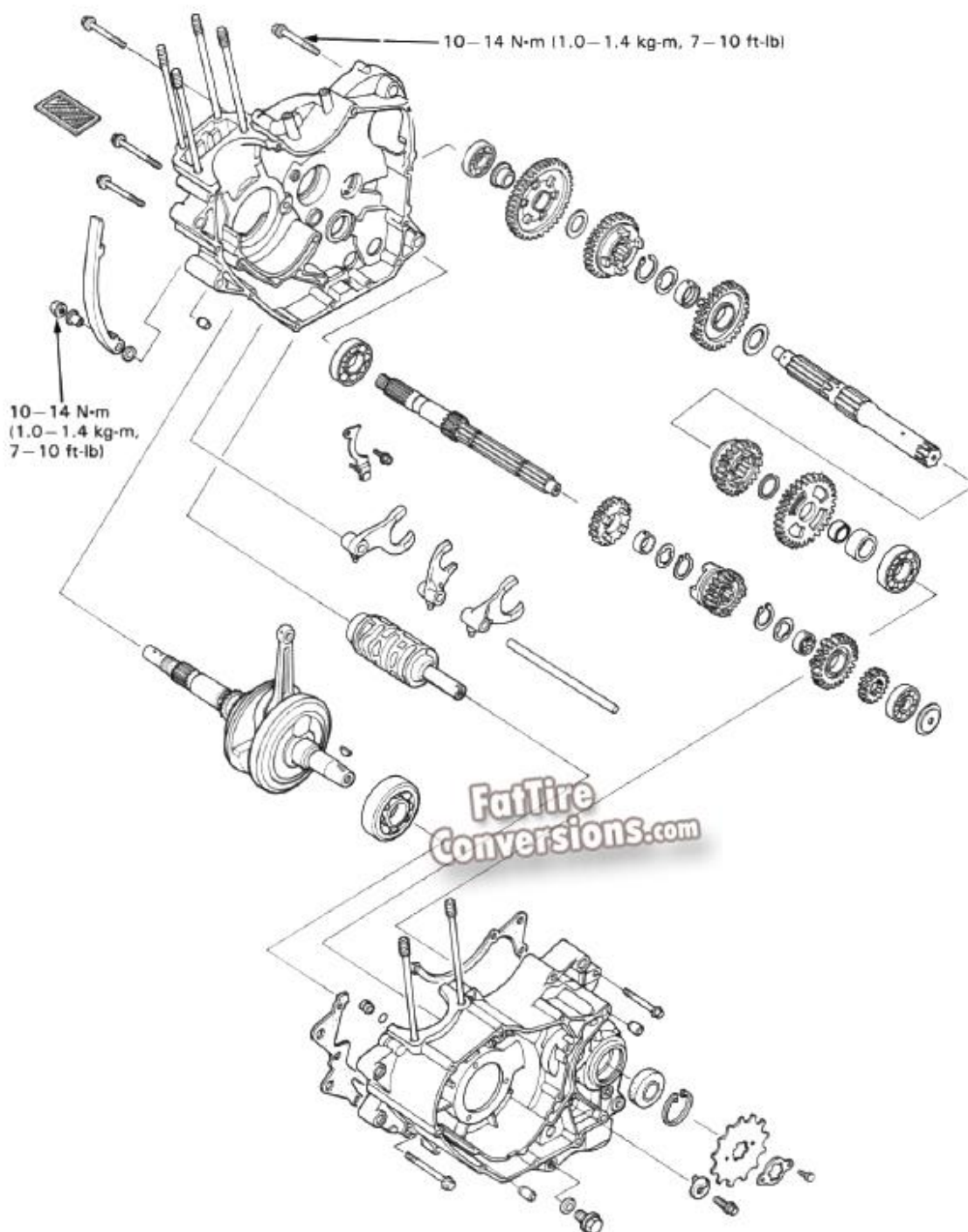


Install the left footpeg bracket to the frame and tighten the footpeg bolts.

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

Install the drive sprocket cover. Install the skid plate.





10. CRANKCASE/CRANKSHAFT/TRANSMISSION

SERVICE INFORMATION	10-1	TRANSMISSION	10-4
TROUBLESHOOTING	10-2	CRANKSHAFT	10-10
CRANKCASE SEPARATION	10-3	CRANKCASE ASSEMBLY	10-12

SERVICE INFORMATION

GENERAL

- For crankshaft and transmission repair, the crankcase must be separated.
- Remove the following parts before separating the crankcase.
 - Cylinder head (Section 6)
 - Cylinder and piston (Section 7)
 - Clutch and gearshift linkage (Section 8)
 - Oil pump (Section 2)
 - Starter clutch and alternator (Section 9)
 - Starter motor (Section 16)

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod small end I.D.		15.010–15.028 mm (0.5909–0.5917 in)	15.06 mm (0.593 in)
	Connecting rod big end axial clearance		0.05–0.50 mm (0.002–0.019 in)	0.8 mm (0.03 in)
	Connecting rod big end radial clearance		0.004–0.012 mm (0.0002–0.0005 in)	0.05 mm (0.002 in)
	Runout	Right	—	0.06 mm (0.002 in)
		Left	—	0.03 mm (0.001 in)
Shift fork, shaft	Fork	I.D.	13.000–13.021 mm (0.5118–0.5126 in)	13.04 mm (0.513 in)
		Claw thickness	4.93–5.00 mm (0.194–0.197 in)	4.60 mm (0.181 in)
	Shaft O.D.		12.966–12.984 mm (0.5105–0.5112 in)	12.96 mm (0.510 in)
Trans- mission	Gear I.D.	M4, M5	23.000–23.021 mm (0.9055–0.9063 in)	23.04 mm (0.907 in)
		C1	21.000–21.021 mm (0.8268–0.8276 in)	21.04 mm (0.828 in)
		C2, C3	25.000–25.021 mm (0.9843–0.9851 in)	25.04 mm (0.986 in)
	Shaft O.D.	at M4	19.959–19.980 mm (0.7858–0.7866 in)	19.94 mm (0.785 in)
		at C1	17.966–17.984 mm (0.7073–0.7080 in)	17.95 mm (0.707 in)
		at C2, C3 and C collar	21.959–21.980 mm (0.8645–0.8654 in)	21.94 mm (0.864 in)
	Gear bushing	C1 I.D.	18.000–18.018 mm (0.7087–0.7094 in)	18.04 mm (0.710 in)
		C1 O.D.	20.980–20.959 mm (0.8259–0.8252 in)	20.94 mm (0.824 in)
		C2, C3 I.D.	22.000–22.021 mm (0.8665–0.8669 in)	22.04 mm (0.868 in)
		C2, C3 O.D.	24.959–24.980 mm (0.9826–0.9835 in)	24.94 mm (0.982 in)
		M4 I.D.	20.000–20.021 mm (0.7874–0.7882 in)	20.04 mm (0.789 in)
		M4, M5 O.D.	22.980–22.959 mm (0.9047–0.9039 in)	22.94 mm (0.903 in)
		C collar I.D.	22.000–22.021 mm (0.8661–0.8669 in)	22.04 mm (0.868 in)
	Gear-to-bushing clearance	M4, M5	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
		C1	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
		C2, C3	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)

CRANKCASE/CRANKSHAFT/TRANSMISSION

ITEM			STANDARD	SERVICE LIMIT
Trans- mission	Bushing-to- shaft clearance	C1	0.016–0.052 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
		C2, C3	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
		M4	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)

TORQUE VALUES

Crankcase bolt	10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)
Cam chain tensioner slipper nut	10–14 N·m (1.0–1.4 kg·m, 7–10 ft·lb)

TOOLS

Special

Bearing remover set, 15 mm	07936–KC10000	(Not available in U.S.A.)
Bearing remover, 15 mm	07936–KC10500	
Bearing remover, weight	07741–0010201	or 07936–3710200
Universal bearing puller	07631–0010000	or Equivalent commercially available in U.S.A.
Threaded adaptor	07GMF–HB50100	(Not available in U.S.A.)
	07965–HB3000A	U.S.A. only
Shaft puller	07931–ME40000	or 07931–ME4000A
Crankshaft assembly collar	07965–VM00100	

Common

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

TROUBLESHOOTING

Crankshaft noisy

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

Jumps out of gear

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

Hard to shift

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

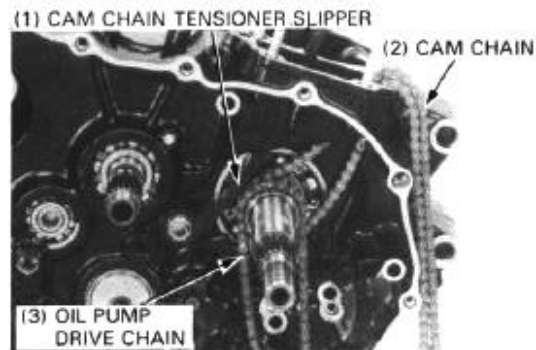
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CRANKCASE SEPARATION

NOTE

- Put the transmission in neutral before separating the crankcase.

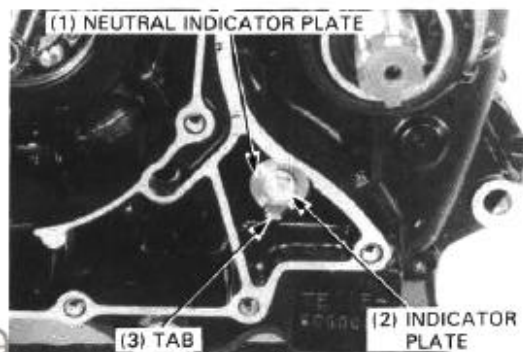
Remove the oil pump drive chain and cam chain.
Remove the cam chain tensioner slipper.



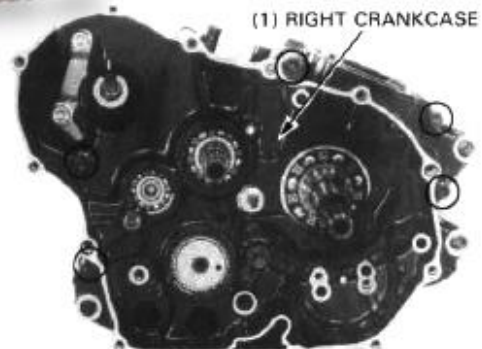
Remove the neutral indicator plate from the shift drum.

NOTE

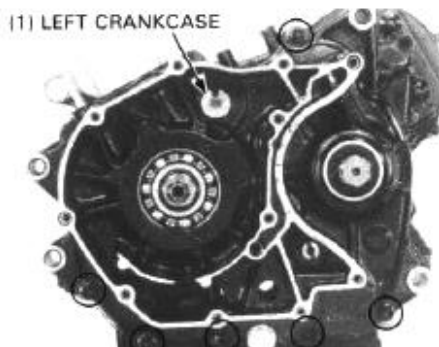
- Make sure that the tab in the neutral indicator plate is installed facing down.



Remove the right crankcase bolts.



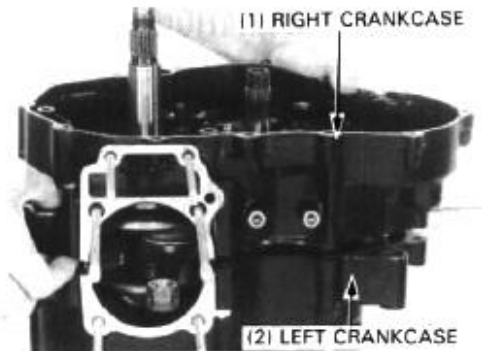
Remove the left crankcase bolts.



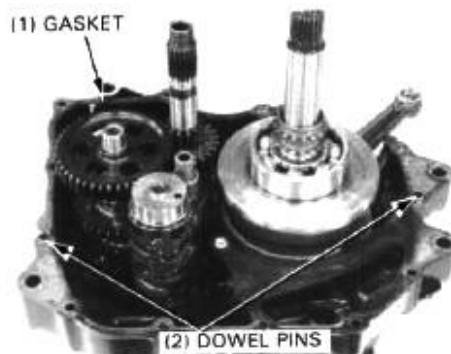
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CRANKCASE/CRANKSHAFT/TRANSMISSION

Place the crankcase assembly with the left crankcase down and remove the right crankcase from the left crankcase.



Remove the gasket and dowel pins.

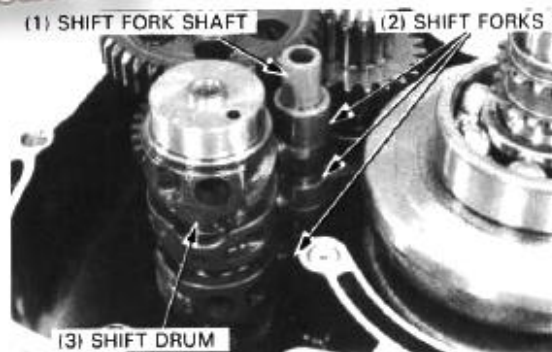


*FatTire
Conversions.com*

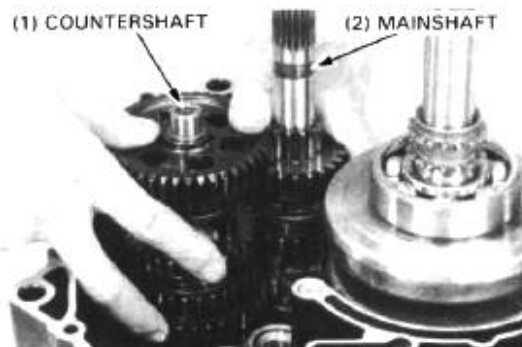
TRANSMISSION

DISASSEMBLY

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



Remove the mainshaft and countershaft as an assembly.



INSPECTION

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

SERVICE LIMIT: 13.04 mm (0.513 in)



Inspect the shift fork guide pin for wear or damage.
Measure the shift fork claw thickness.

SERVICE LIMIT: 4.60 mm (0.181 in)



Measure the shift fork shaft O.D. at the shift fork sliding surfaces.

SERVICE LIMIT: 12.96 mm (0.510 in)



Inspect the shift drum left journal for scoring, scratches, or lack of lubrication.
Check the shift drum groove for damage.

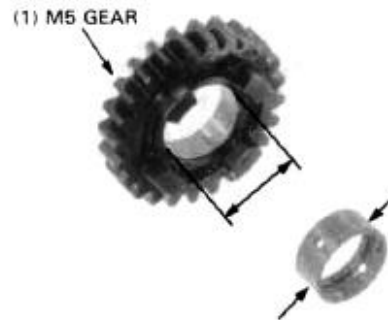


CRANKCASE/CRANKSHAFT/TRANSMISSION

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

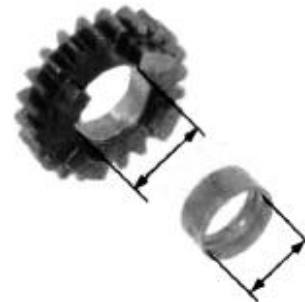
Measure the I.D. of each gear.

SERVICE LIMITS: M4, M5 23.04 mm (0.907 in)
C2, C3 25.04 mm (0.986 in)
C1 21.04 mm (0.828 in)



Measure the I.D. and O.D. of each gear bushing and the countershaft collar.

SERVICE LIMITS: C1 I.D. 18.04 mm (0.710 in)
C1 O.D. 20.94 mm (0.824 in)
C2, C3 I.D. 22.04 mm (0.868 in)
C2, C3 O.D. 24.94 mm (0.982 in)
M4 I.D. 20.04 mm (0.789 in)
M4, M5 O.D. 22.94 mm (0.903 in)
Countershaft collar I.D. 22.04 mm (0.868 in)



Calculate the gear-to-bushing clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

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

SERVICE LIMITS: at M4 19.94 mm (0.785 in)
at C1 17.95 mm (0.707 in)
at C2, C3 21.94 mm (0.864 in)
Countershaft collar 21.94 mm (0.864 in)

Calculate the gear bushing-to-shaft clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

Calculate the gear-to-shaft clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

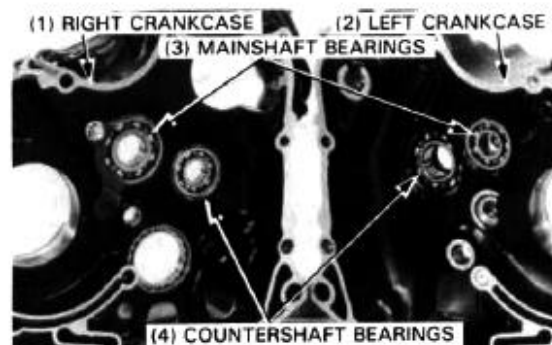
Check the transmission bearings for excessive play or damage and replace necessary.

BEARING REPLACEMENT

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

NOTE

- Replace the transmission bearings in pairs.



Right crankcase:

Remove the mainshaft bearing set plate.

Drive the mainshaft and countershaft bearings out of the right crankcase.



Drive new bearings in the crankcase with the following tools.

TOOLS:

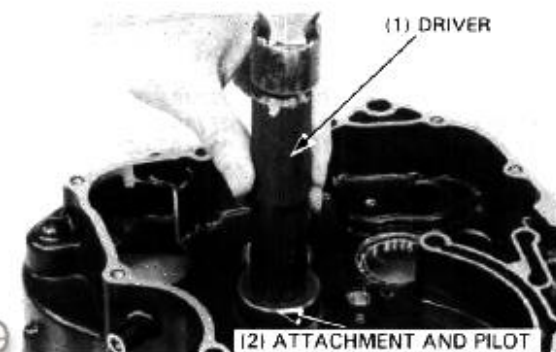
Mainshaft bearing:

Driver 07749-0010000

Attachment, 42 x 47 mm 07746-0010300

Pilot, 20 mm 07746-0040500

Install the mainshaft bearing set plate.



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TOOLS:

Countershaft bearing:

Driver 07749-0010000

Attachment, 32 x 35 mm 07746-0010100

Pilot, 15 mm 07746-0040300



Left crankcase:

Remove the crankshaft (page 10-10).

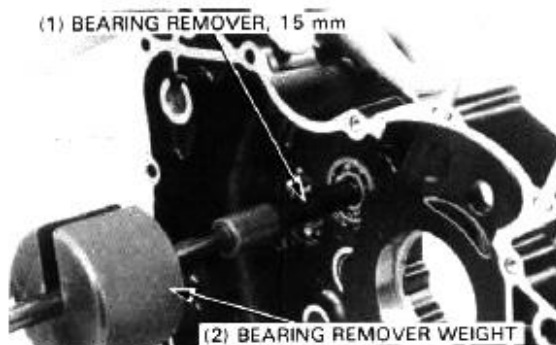
Remove the mainshaft bearing with special tools.

TOOLS:

Bearing remover set, 15 mm 07936-KC10000
(Not available in U.S.A.)

Bearing remover, 15 mm 07936-KC10500

Bearing remover weight 07741-0010201 or
07936-3710200

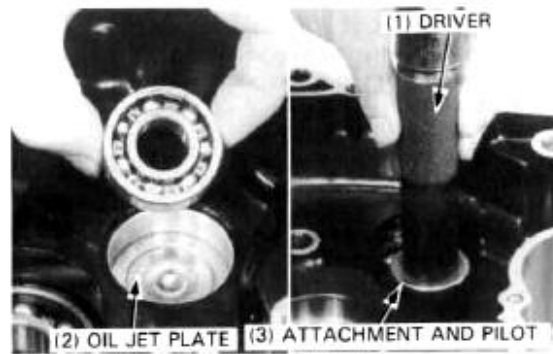


CRANKCASE/CRANKSHAFT/TRANSMISSION

Install the oil jet plate with the convex surface on the plate facing up.
Install a new mainshaft bearing by driving it into the crankcase.

TOOLS:

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

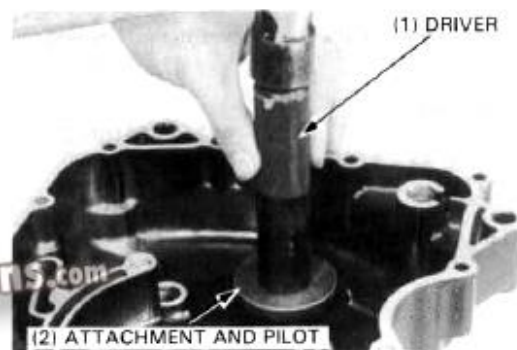


Drive in a new countershaft bearing.

TOOL:

Driver 07749-0010000
Attachment, 52 x 55 mm 07746-0010400
Pilot, 22 mm 07746-0041000

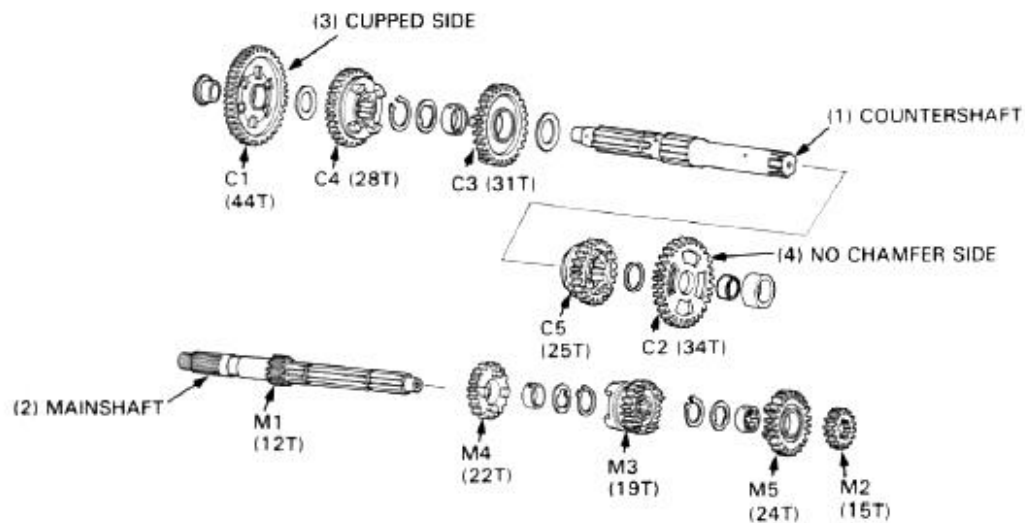
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ASSEMBLY

Assemble the mainshaft and countershaft.

Coat each gear and bushing with clean engine oil, and check for smooth movement.



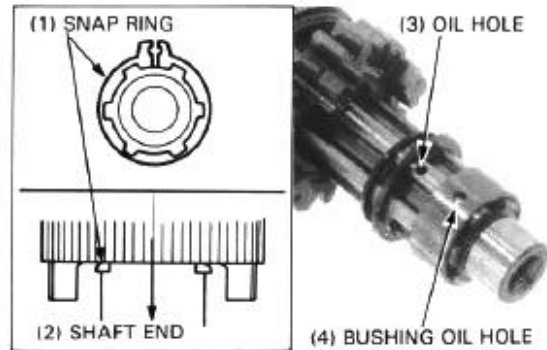
CRANKCASE/CRANKSHAFT/TRANSMISSION

Install the snap rings into the grooves and align their end gaps with the lands of the spline.

Align the oil holes in the gear bushings with the oil holes in the mainshaft and countershaft.

NOTE

- Install the snap rings with their sharp edges facing the opposite direction of load.



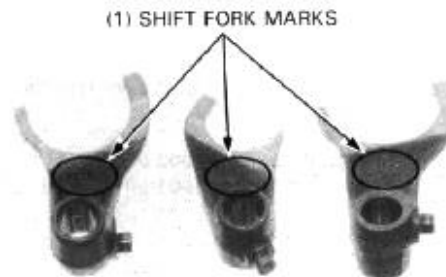
Install the mainshaft and countershaft as an assembly into the left crankcase.



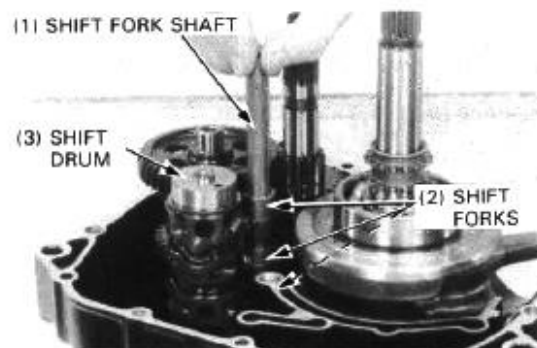
NOTE

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

Install the shift forks with their marks facing down (left crankcase).



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



CRANKCASE/CRANKSHAFT/TRANSMISSION

CRANKSHAFT

REMOVAL

Remove the transmission (page 10-4).

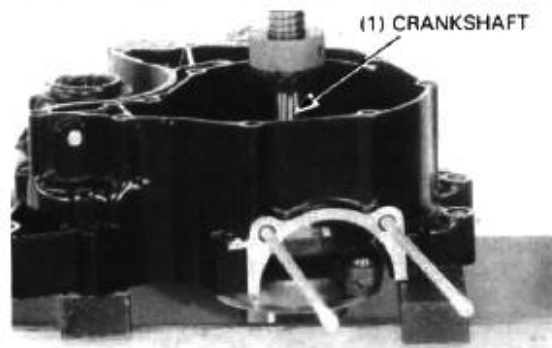
Remove the crankshaft from the left crankcase using a hydraulic press.

If the left crankshaft bearing remains on the crankshaft, remove it with bearing puller.

TOOL:

Universal bearing puller

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



If the bearing remains in the left crankcase, remove it with the driver and attachment.

TOOLS:

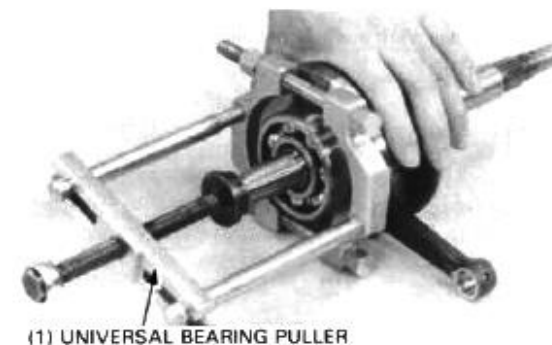
Driver 07749-0010000

Attachment, 42 x 47 mm 07746-0010300

Discard the left crankshaft bearing.

NOTE

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

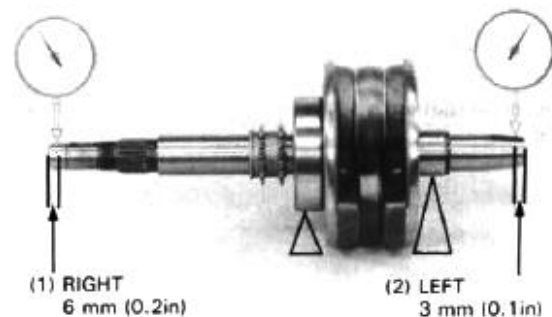


INSPECTION

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

SERVICE LIMIT: Right 0.06 mm (0.002 in)

Left 0.03 mm (0.001 in)



Measure the side clearance between the connecting rod big end and the crankshaft flyweight with a feeler gauge.

SERVICE LIMIT: 0.8 mm (0.03 in)

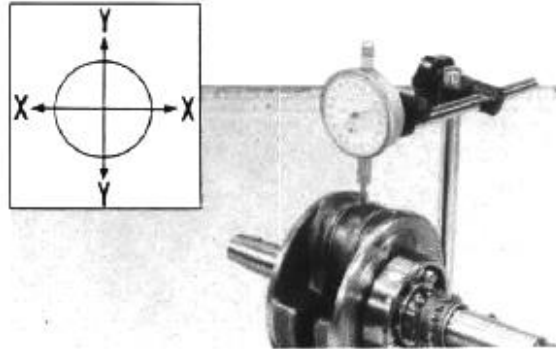
(1) FEELER GAUGE



CRANKCASE/CRANKSHAFT/TRANSMISSION

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

SERVICE LIMIT: 0.05 mm (0.002 in)



Turn the outer race of the right crankshaft bearing with your finger. The outer race should turn smoothly and quietly. Also check that the bearing inner race fits tightly in the crankshaft. Replace the crankshaft bearing if the outer race does not turn smoothly, quietly, or if it fits loosely on the crankshaft.

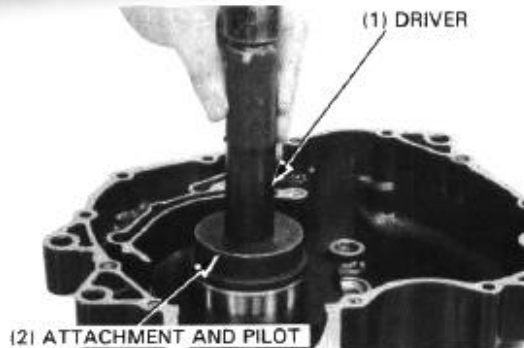


INSTALLATION

Drive a new left crankshaft bearing into the left crankcase.

TOOLS:

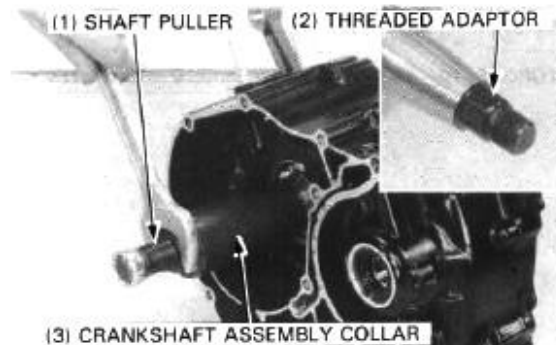
Driver	07749-0010000
Attachment, 62 x 68 mm	07746-0010500
Pilot, 28 mm	07746-0041100



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

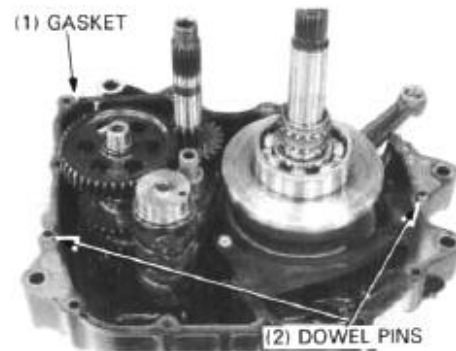
TOOLS:

Threaded adaptor	07GMF-HB50100 (not available in U.S.A.) 07965-HB3000A (U.S.A only)
Shaft puller	07931-ME40000 or 07931-ME4000A
Crankshaft assembly collar	07965-VM00100



CRANKCASE ASSEMBLY

Install the dowel pins and new gasket.



Install the right crankcase onto the left crankcase.

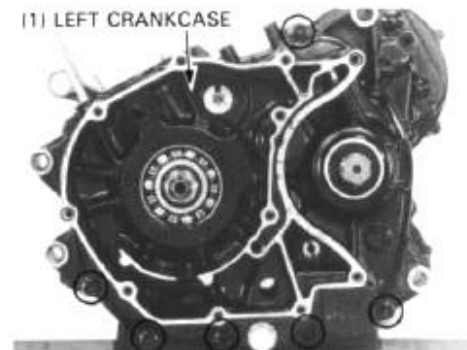
NOTE

- Make sure that the gasket stays in place.



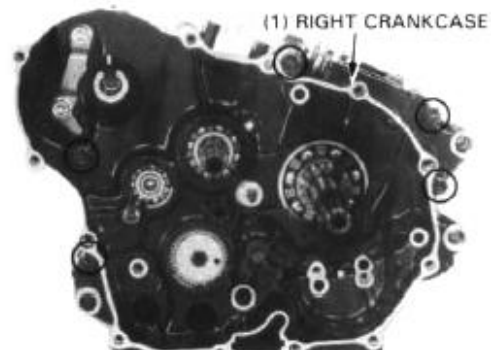
Install the left crankcase bolts and tighten the bolts.

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



Install the right crankcase bolts and tighten the bolts.

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

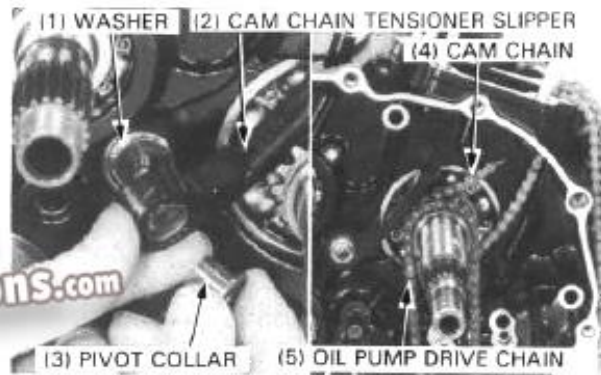


CRANKCASE/CRANKSHAFT/TRANSMISSION

Install the cam and oil pump drive chain.
Install the tensioner slipper, pivot collar and nut.
Tighten the nut.

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

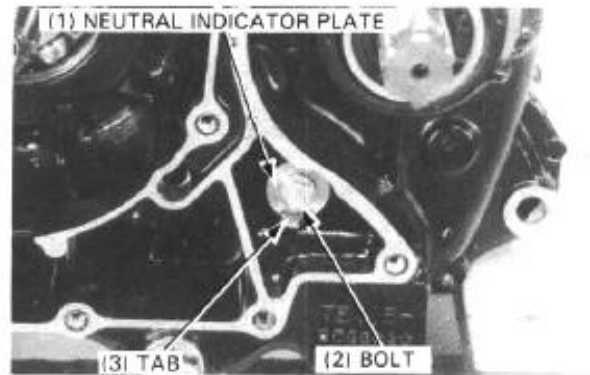
**FatTire
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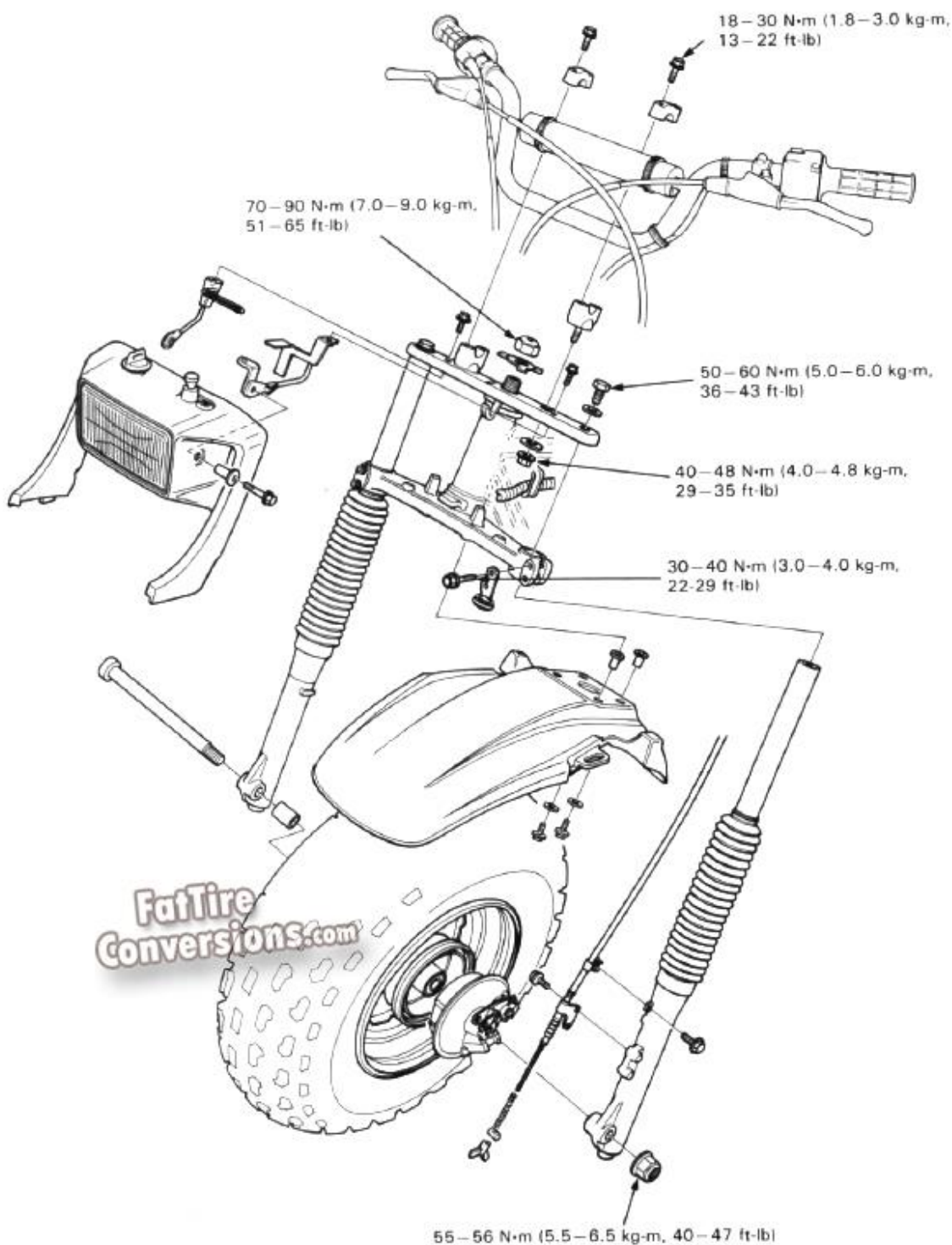
Install the neutral indicator plate and tighten the bolt.

NOTE

- Make sure that the tab in the neutral position indicator plate is installed facing down.



FRONT WHEEL/BRAKE/SUSPENSION/STEERING



11. FRONT WHEEL/BRAKE/SUSPENSION/STEERING

SERVICE INFORMATION	11-1	TIRES	11-8
TROUBLESHOOTING	11-2	FRONT BRAKE	11-13
HANDLEBAR	11-3	FRONT FORK	11-15
FRONT WHEEL	11-5	STEERING STEM	11-21

SERVICE INFORMATION

GENERAL

WARNING

- Brake dust may contain asbestos which can be harmful to your health.
- A contaminated brake lining reduces stopping power. Keep grease off the linings.

- This section covers maintenance of the handlebar grips, front wheel, brake panel and drum, front forks, steering stem and tire removal/repair.
- A jack or other support is required to support the front of the motorcycle except when working on the handlebar in this section.

SPECIFICATIONS

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ITEM			STANDARD	SERVICE LIMIT
Axle runout			—	0.2 mm (0.008 in)
Wheel rim runout	Radial		—	2.0 mm (0.08 in)
	Axial		—	2.0 mm (0.08 in)
Front brake drum I.D.			110 mm (4.3 in)	111 mm (4.4 in)
Front brake lining thickness			4.0 mm (0.16 in)	2.0 mm (0.08 in)
Fork oil capacity			195.5–200.5 cc (6.6–6.8 US oz, 6.8–7.0 Imp oz)	
Fork oil level			'86 161 mm (6.3 in) After '86 182 mm (7.2 in)	
Fork spring free length	'86:		558.6 mm (21.99 in)	547.4 mm (21.55 in)
	After '86:	A	120.4 mm (4.74 in)	118.0 mm (4.65 in)
		B	437.1 mm (17.21 in)	428.3 mm (16.86 in)
Fork tube runout			—	0.20 mm (0.008 in)

TORQUE VALUES

Wheel hub nut	60–70 N·m (6.0–7.0 kg·m, 43–51 ft·lb)
Axle nut	55–65 N·m (5.5–6.5 kg·m, 40–47 ft·lb)
Fork upper bolt	50–60 N·m (5.0–6.0 kg·m, 36–43 ft·lb)
Fork lower pinch bolt	30–40 N·m (3.0–4.0 kg·m, 22–29 ft·lb)
Fork socket bolt	15–30 N·m (1.5–3.0 kg·m, 11–22 ft·lb)
Steering stem nut	70–90 N·m (7.0–9.0 kg·m, 51–65 ft·lb)
Steering bearing adjustment nut, Initial	25–35 N·m (2.5–3.5 kg·m, 18–25 ft·lb)
	Final 5.5–6.5 N·m (0.55–0.65 kg·m, 4.0–4.7 ft·lb)
Brake arm bolt	8–12 N·m (0.8–1.2 kg·m, 6–9 ft·lb)
Handlebar lower holder mounting nut	40–48 N·m (4.0–4.8 kg·m, 29–35 ft·lb)
Handlebar upper holder bolt	18–30 N·m (1.8–3.0 kg·m, 13–22 ft·lb)
Fork tube bolt	15–30 N·m (1.5–3.0 kg·m, 11–22 ft·lb)
Front brake drum mounting bolt	25–35 N·m (2.5–3.5 kg·m, 18–25 ft·lb)

FRONT WHEEL/BRAKE/SUSPENSION/STEERING

TOOLS

Special

Universal bead breaker	GN-AH-958-BB1 (U.S.A. only)
Steering stem socket	07916-4300000
Ball race remover	07953-3330000
Attachment	07946-3290000 Use a steering head races
Steering stem driver	07946-4300101
Bearing remover shaft	07GGD-0010100 or Equivalent commercially available in U.S.A.

Common

Fork seal driver	07747-0010100
Fork seal driver attachment	07747-0010400
Bearing remover head, 15 mm	07746-0050400 or Equivalent commercially available in U.S.A.
Driver	07749-0010000
Lock nut wrench, 30 × 32 mm	07716-0020400 or Equivalent commercially available in U.S.A.
Attachment, 42 × 47 mm	07746-0010300
Pilot, 15 mm	07746-0040300
Tire bead breaker set	07772-0050000
Breaker arm	07772-0050200 not available in U.S.A.
Breaker arm compressor	07772-0050100

TROUBLESHOOTING

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Hard steering

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

Steers to one side or does not track straight

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

Front wheel wobbling

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

Soft suspension

- Weak fork springs
- Insufficient fluid in front forks
- Incorrect fork oil weight

Hard suspension

- Incorrect fluid in front forks
- Fork damaged
- Incorrect fork oil weight

Front suspension noise

- Loose steering stem bearing
- Loose front fork fasteners
- Insufficient fluid in forks

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 drags

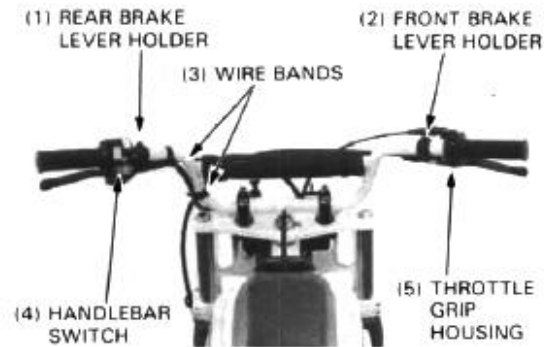
- Incorrect brake adjustment
- Sticking brake cam
- Sticking brake cable

HANDLEBAR

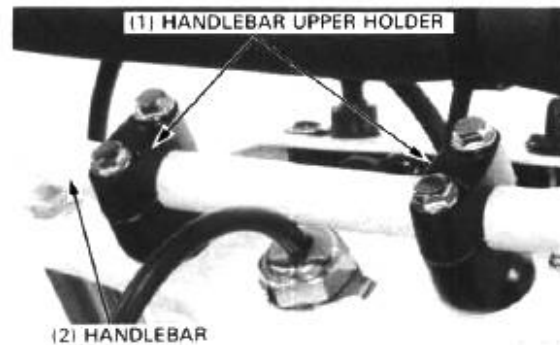
REMOVAL

Remove the following:

- wire bands
- throttle grip housing and disconnect the throttle cable from the throttle pipe.
- front and rear brake lever holders and brackets.
- handlebar switch



- handlebar upper holders
- handlebar



INSTALLATION

If the left handlebar grip or throttle pipe from the right handlebar grip has been removed:

Apply Honda Bond A or Honda Hand Grip Cement (U.S.A. only) to the inside surface of the grips and to the clean surface of the left handlebar and throttle pipe.

Wait 3–5 minutes and install the grips. Rotate the grips for even application of adhesive.

(1) LEFT HANDLEBAR GRIP



NOTE

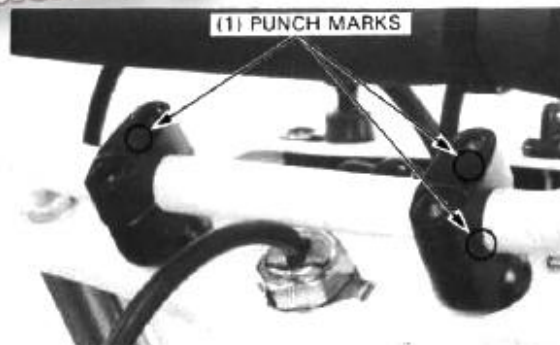
- Allow the adhesive to dry for an hour before using.

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Place the handlebar on the lower holders.

Align the handlebar punch mark with the top of the right handlebar lower holders.

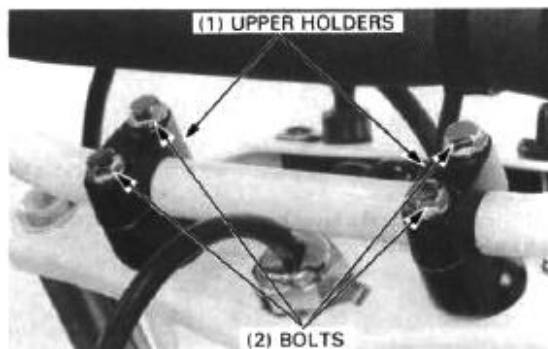
Install the handlebar upper holders on the handlebar.



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

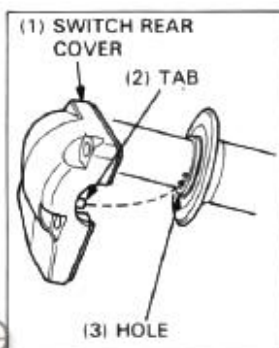
Tighten the forward bolts first, then tighten the rear bolts.

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



Align the handlebar switch locating tab with the hole in the handlebar and install the handlebar switch.

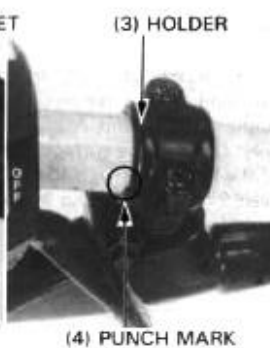
Tighten the upper screw first, then tighten the lower screw.



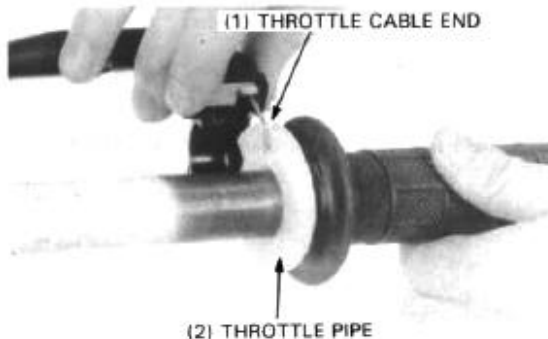
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Install the rear brake bracket and holder on the handlebar with the dot mark up.

Align the end of the holder with handlebar punch mark. Tighten the upper screw first, then tighten the lower screw.



Apply grease to the throttle cable and connect the cable to the throttle pipe.



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Align the end of the throttle cover with the handlebar punch mark and install the throttle grip housing.

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

Install the front brake bracket and holder on the handlebar with the dot mark up.

Align the end of holder with the handlebar punch mark. Tighten the upper screw first, and tighten the lower screw.

Install the wire bands securely.

NOTE

- After installing the handlebar, check that the throttle grip rotates freely in all steering positions.

Perform the following inspections and adjustments:

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

FRONT WHEEL

REMOVAL

Raise the front wheel off the ground by placing a box or workstand under the engine.

Move the front wheel sideways with force to see if the front wheel bearings are worn.

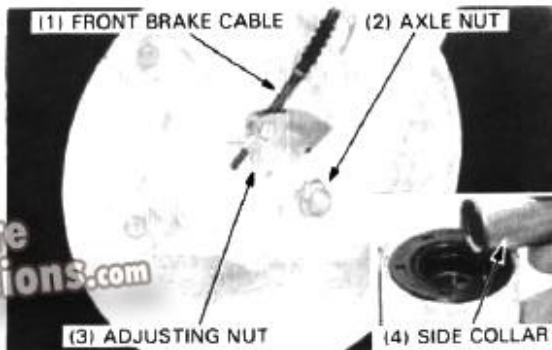
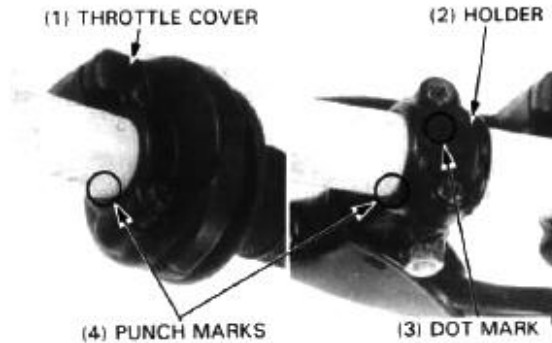
Refer to page 11-6 for front wheel bearing inspection and replacement.

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

Remove the axle nut, axle and front wheel.

Remove the brake panel from the front wheel.

Remove the axle side collar from the wheel hub.

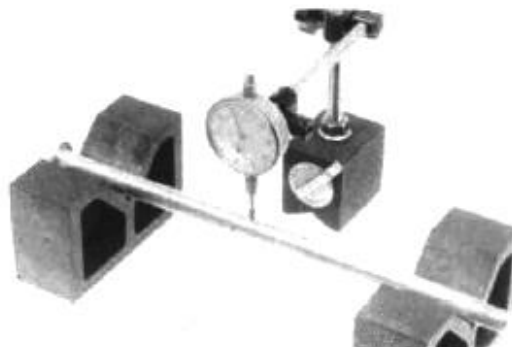


INSPECTION

Axle

Set the axle in V blocks and measure the runout.

SERVICE LIMIT: 0.2 mm (0.01 in)



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

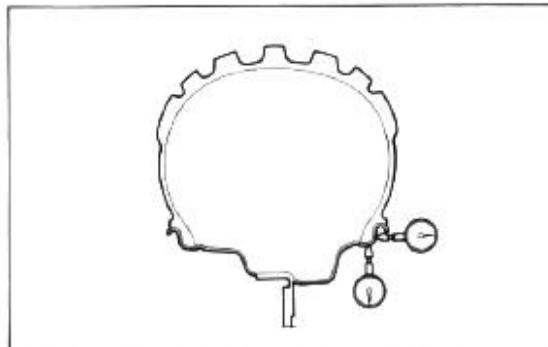
WHEEL

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

SERVICE LIMIT:

Radial: 2.0 mm (0.08 in)

Axial: 2.0 mm (0.08 in)



Wheel bearing

Remove the dust seal.

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 wheel bearings in pairs.

Install the dust seal.

For replacement of bearings, see page 11-7.



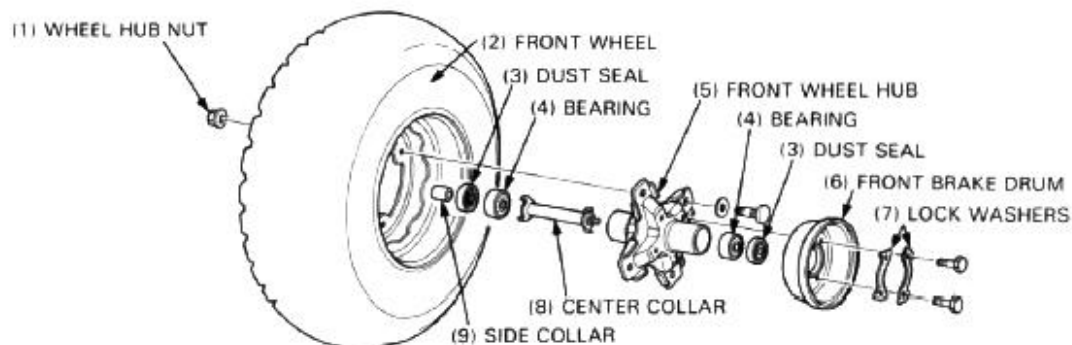
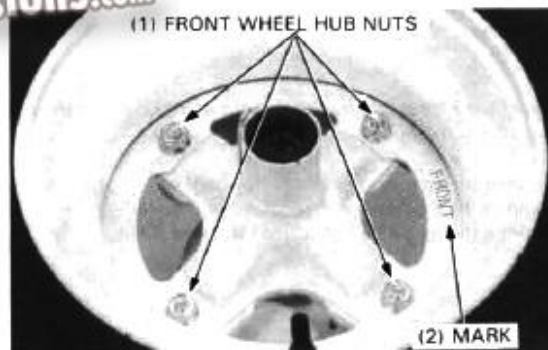
DISASSEMBLY/ASSEMBLY

Remove the front wheel hub nuts and hub from the front wheel.

Remove the front brake drum (page 11-13).

NOTE

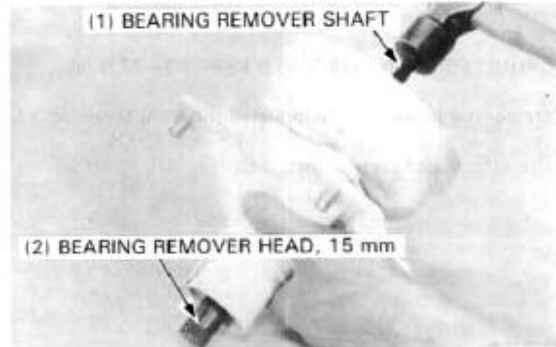
- Only the front wheel can be installed on the front wheel hub.
- Assemble the front wheel with the FRONT mark and front hub.



Insert the bearing remover head into the bearing.
From the opposite side install the bearing remover shaft and drive the bearing out of the wheel.
Remove the center collar and drive out the other bearing.

TOOLS:

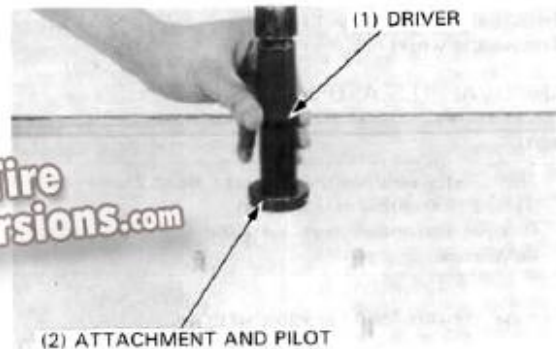
Bearing remover head, 15 mm 07746-0050400
or Equivalent commercially
available in U.S.A.
Bearing remover shaft 07GGD-0010100
or Equivalent commercially
available in U.S.A.



Drive in the bearing squarely until seated.
Install the center collar and drive in the other bearing squarely until seated.

TOOLS:

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



NOTE

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

CAUTION

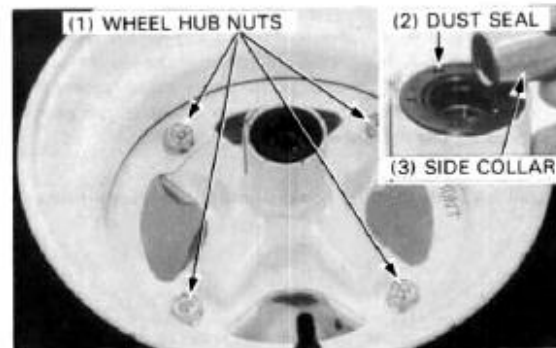
- Never install the old bearing. Once the bearing is removed, the bearing must be replaced with a new one.

Apply grease to the inside of the dust seal.
Install the dust seal onto the right side hub.
Install the front wheel hub onto the front wheel.

Tighten the hub nuts.

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

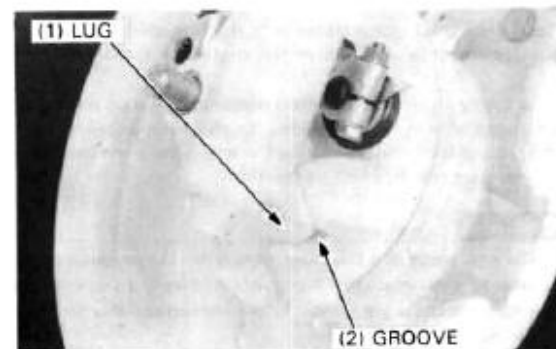
Install the front brake drum.
Refer to page 11-13 for the brake drum installation.
Install the side collar.



INSTALLATION

Install the brake panel.

Align the groove on the brake panel with the lug on the front fork. Apply a thin coat of grease to the axle. Install the front wheel by inserting the axle from the right side.



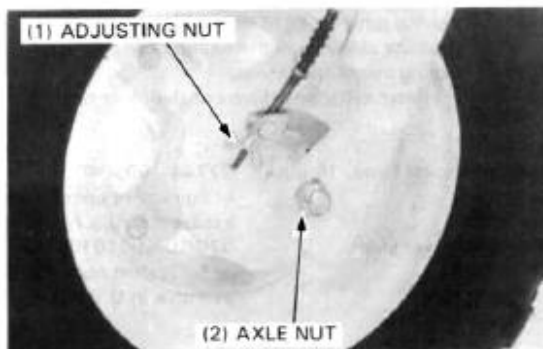
FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Install the axle nut and tighten the axle nut.

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

Connect the brake cable and install the front brake adjusting nut.

Adjust the front brake (page 3-11).



TIRES

Remove the wheel (page 11-5).

Remove the wheel hub from the rim.

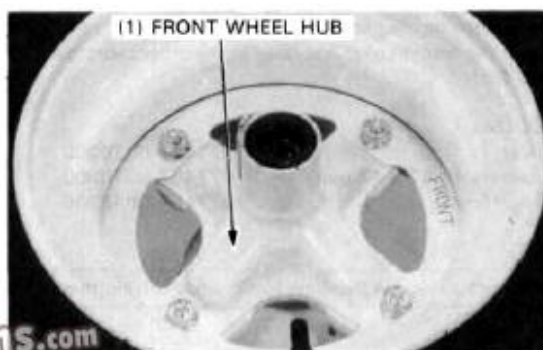
REMOVAL (U.S.A. ONLY)

NOTE

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

Remove the core from the valve stem.

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CAUTION

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

Install the blade for 9"/11" rims onto the breaker arm assembly.

CAUTION

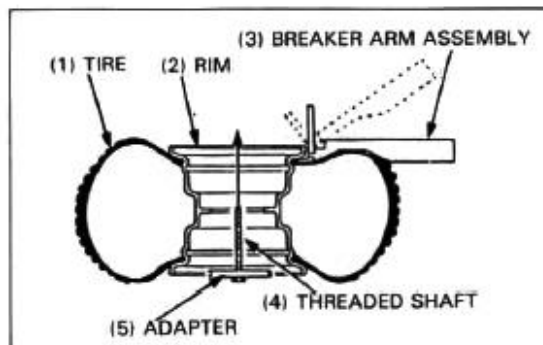
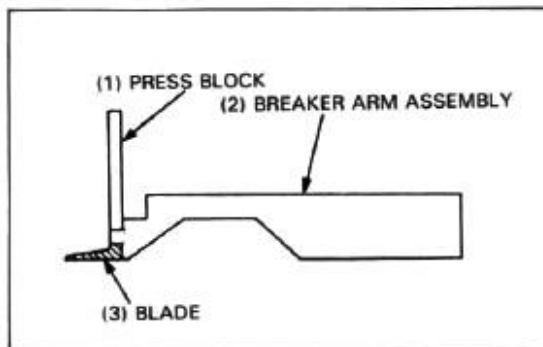
- Use of an improper size blade may result in damage to the rim, tire or blade.

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

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

WARNING

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



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

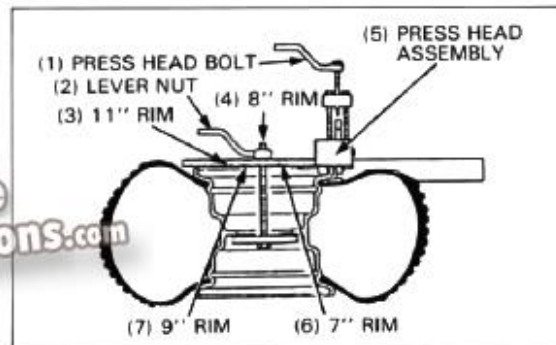
With the breaker arm in the horizontal position, place the breaker press head assembly over the breaker arm press block.

Make sure the press head bolt is backed out all the way and then position the nylon buttons on the press head against the inside edge of the rim.

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

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

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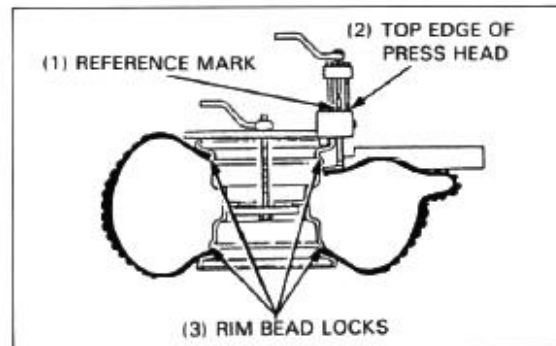
If the rest of the bead cannot be pushed down into the center of the rim by hand, loosen the press head bolt and the lever nut. Rotate the breaker arm assembly and breaker press head assembly 1/8 to 1/4 the circumference of the rim. Tighten the lever nut and then tighten the press head bolt as described.

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

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

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

Remove tire from rim that has the smallest shoulder area to simplify removal.



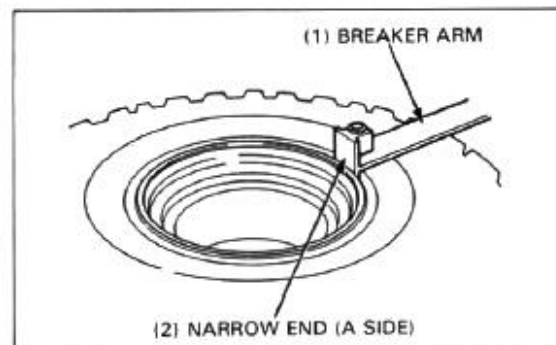
REMOVAL (EXCEPT U.S.A.)

NOTE

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

CAUTION

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



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

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

TOOL:

Breaker arm

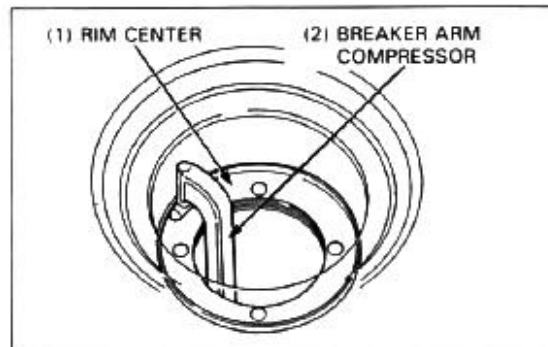
07772-0050200

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

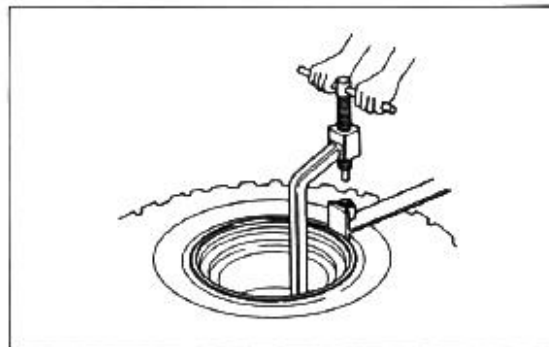
TOOL:

Breaker arm compressor

07772-0050100



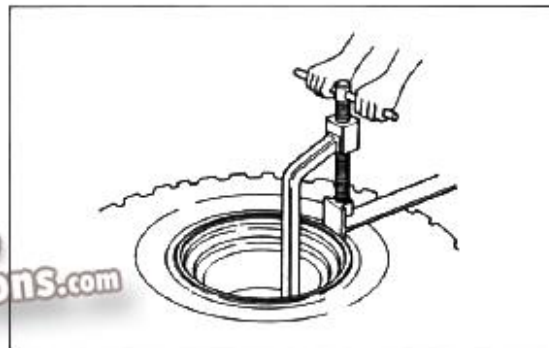
Keep the breaker arm horizontal and align the end of the compressor bolt with the arm hole.



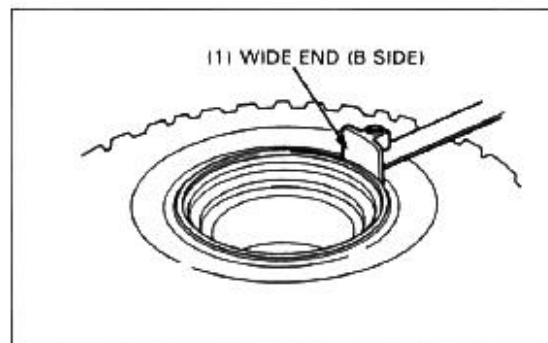
Screw in the breaker arm compressor bolt to break the bead from the tire.

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

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

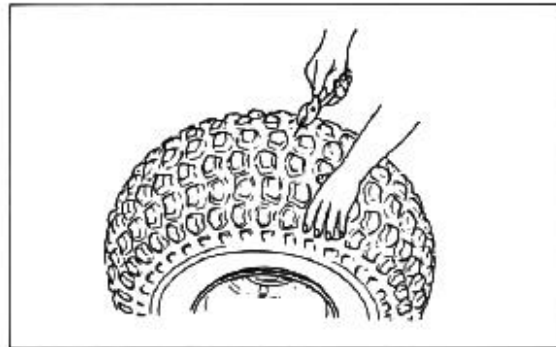


TIRE REPAIR

NOTE

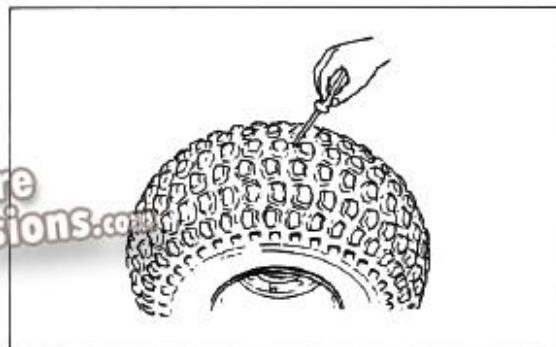
- Use the manufacturer's instructions for the tire repair kit you are using. If your kit does not have instructions, use the procedures provided here.

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



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

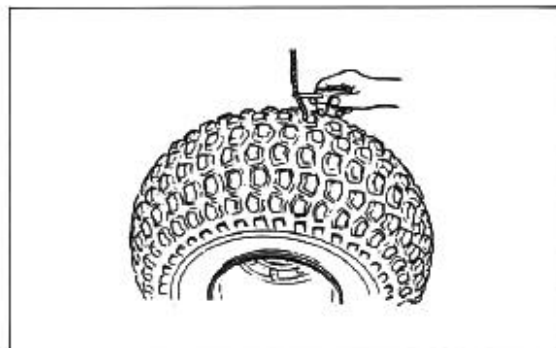
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Insert and center a rubber plug through the eye of the inserting needle.

Apply cement to the rubber plug.

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



NOTE

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

Trim the plug 6 mm (1/4 in) above the tire surface. Repeat the above procedure if the puncture is large. Do not use more than two plugs per injury.

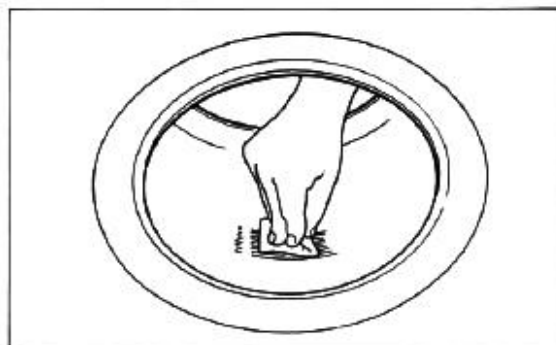
Allow the repair to dry. Drying time will vary with air temperature. Refer to the tire repair kit manufacturer's recommendations.

Inflate the tire and test the seal by dabbing a small amount of cement around the plug. Escaping air will cause a bubble in the cement. If there is leakage, remove the tire (page 11-8) and apply a cold patch to the inside of the tire as described. If a plug has been inserted, trim it even with the inner tire surface.

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

Remove the patch.

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



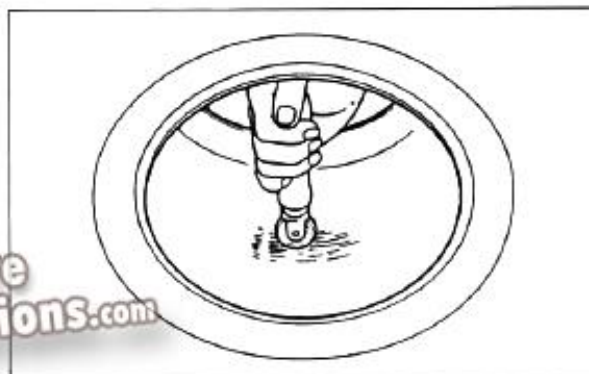
FRONT WHEEL/BRAKE/SUSPENSION/STEERING

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

NOTE

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

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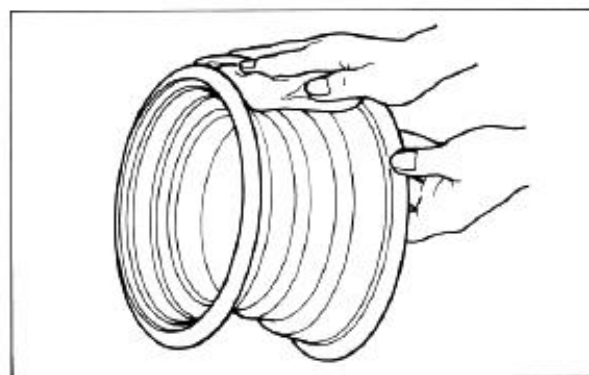
ASSEMBLY

Install the tire onto the rim, where the rim shoulder width is the most narrow, to simplify installation.

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

WARNING

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



Install the tire and inflate it to seat the tire bead.
Install the valve core in the valve stem.

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

TIRE PRESSURE (Front and Rear):

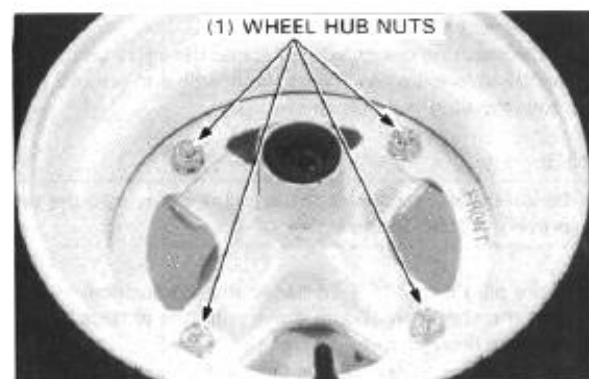
4.3 ± 0.4 psi (30 ± 3 kPa, 0.3 ± 0.03 kg/cm²)

Check for air leaks and install the valve cap.

Install the wheel hub into the wheel rim.
Tighten the hub nuts.

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

Install the front wheel (page 11-7).



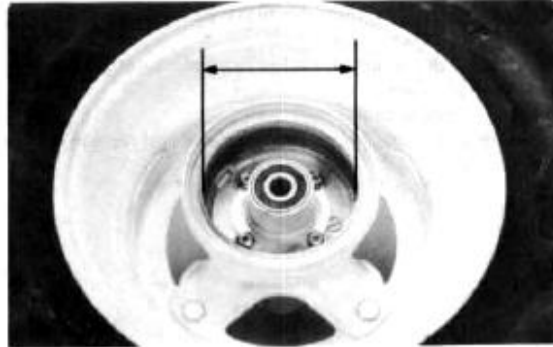
FRONT BRAKE

Remove the front wheel (page 11-5).
Remove the front brake panel.

BRAKE DRUM

Measure the brake drum I.D.

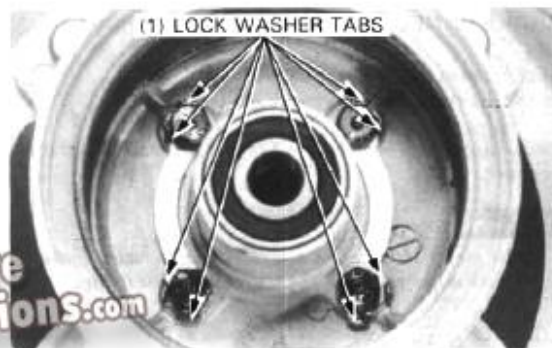
SERVICE LIMIT: 111 mm (4.4 in)



Bend down the lock washer tabs.
Remove the drum mounting bolts and lock washer.
Remove the brake drum from the front hub.
Install the brake drum in the reverse order of removal.
Install a new lock washer and tighten the bolts.

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

Bend up the lock washer tabs against the bolt head.



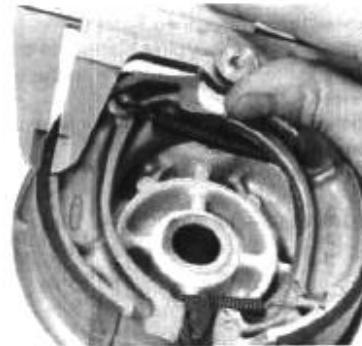
BRAKE LINING

Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)

⚠ WARNING

- Contaminated brake linings reduce stopping power. Keep grease off the linings.
- Brake dust contains asbestos which can be harmful to your health. Do not use compressed air to clean brake parts. Use vacuum with a sealed dust collector. Wear a protective face mask and wash your hands when finished.



BRAKE PANEL DISASSEMBLY

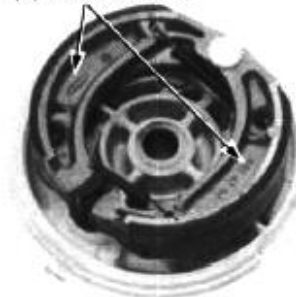
Put marks on the brake shoes before removing them so that they can be installed in their original positions.
Remove the brake shoes.

NOTE

- Replace brake shoes in pairs.

Remove the brake shoes.

(1) BRAKE SHOES



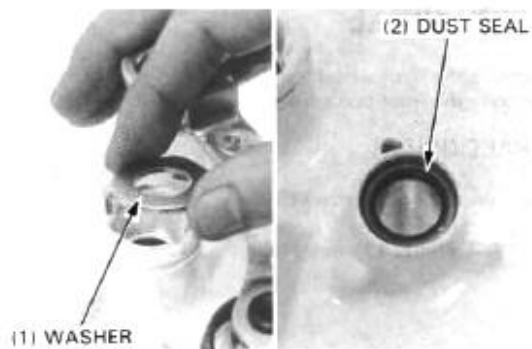
FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Remove the washer from the brake panel by bending up the washer tab, if necessary.

Remove the brake arm, wear indicator plate, return spring and brake cam.

Remove the dust seal.

Check the dust seal for wear or damage and replace if necessary.



BRAKE PANEL ASSEMBLY

Apply grease to the dust seal.

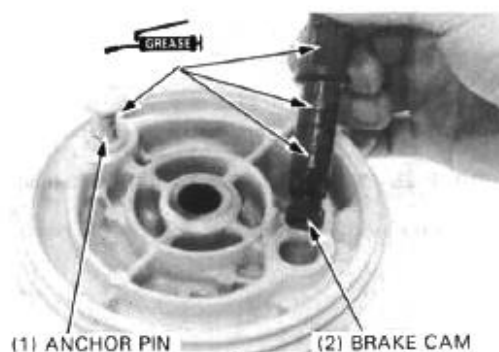
Install the dust seal onto the brake panel.

Apply silicone grease to the brake cam sliding surface and anchor pin.

⚠ WARNING

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

Install the brake cam.



Install the return spring.

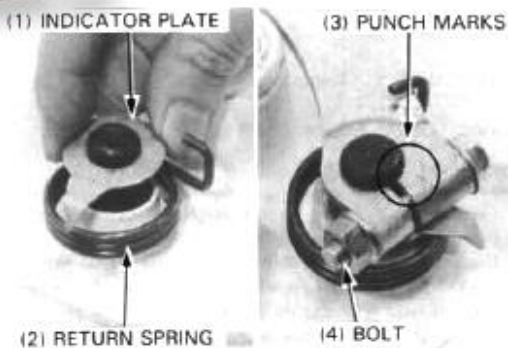
Place the wear indicator plate onto the brake cam by aligning the wide tooth on the plate with the wide groove on the brake cam.

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

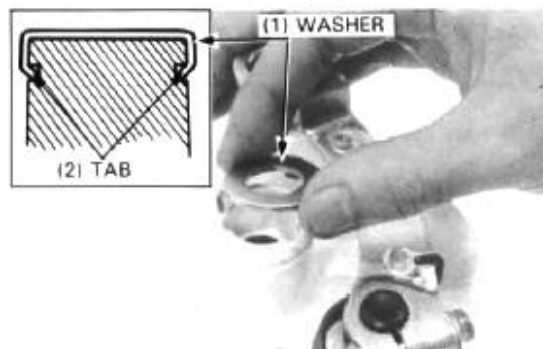
Torque the bolt.

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

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Install the washer and bend down the washer tabs.



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Align the end of the throttle cover with the handlebar punch mark and install the throttle grip housing.

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

Install the front brake bracket and holder on the handlebar with the dot mark up.

Align the end of holder with the handlebar punch mark. Tighten the upper screw first, and tighten the lower screw.

Install the wire bands securely.

NOTE

- After installing the handlebar, check that the throttle grip rotates freely in all steering positions.

Perform the following inspections and adjustments:

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

FRONT WHEEL

REMOVAL

Raise the front wheel off the ground by placing a box or workstand under the engine.

Move the front wheel sideways with force to see if the front wheel bearings are worn.

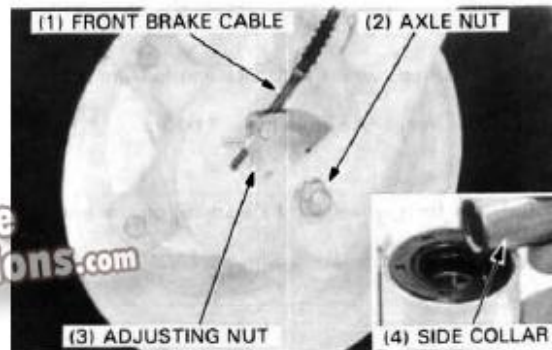
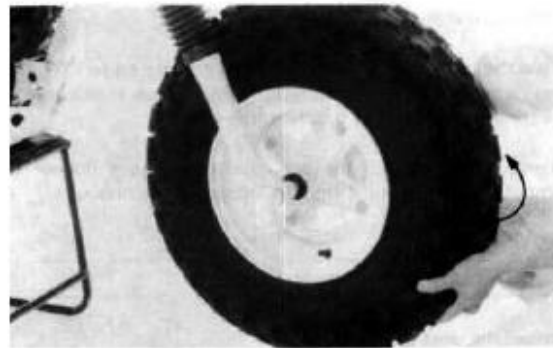
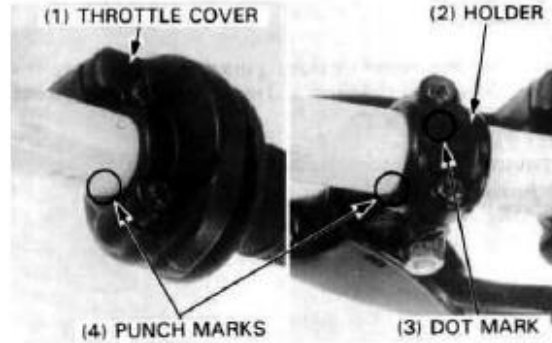
Refer to page 11-6 for front wheel bearing inspection and replacement.

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

Remove the axle nut, axle and front wheel.

Remove the brake panel from the front wheel.

Remove the axle side collar from the wheel hub.

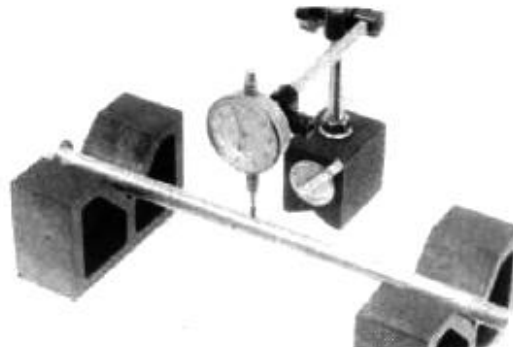


INSPECTION

Axle

Set the axle in V blocks and measure the runout.

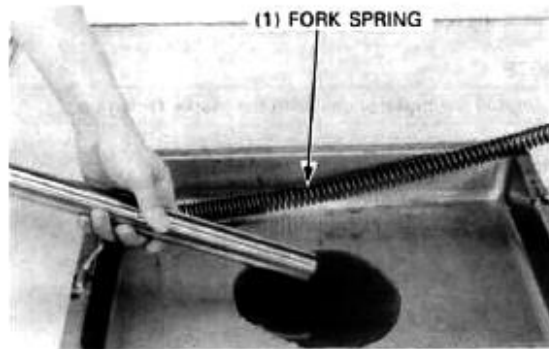
SERVICE LIMIT: 0.2 mm (0.01 in)



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Remove the fork spring.

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

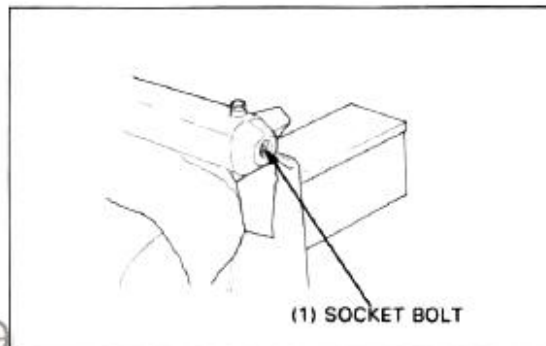


Hold the lug of the fork slider in a vise with soft jaws or a shop towel.

Remove the socket bolt.

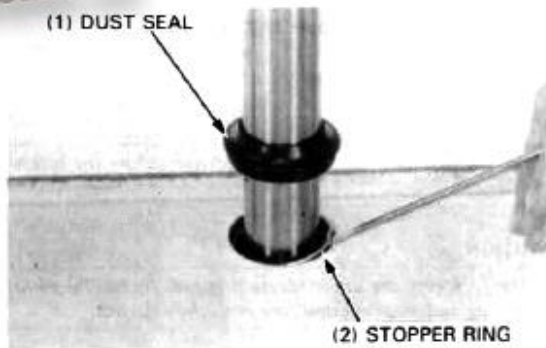
NOTE

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

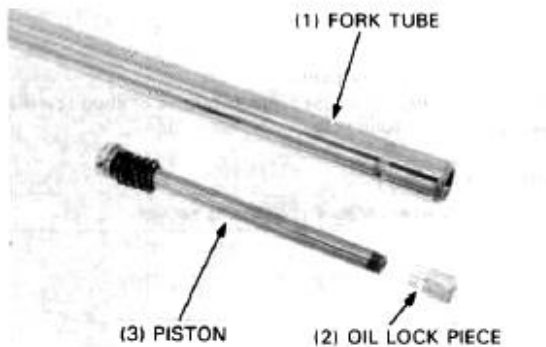


Remove the dust seal and stopper ring.

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Remove the fork tube and oil lock piece from the fork slider.
Remove the piston from the fork tube.

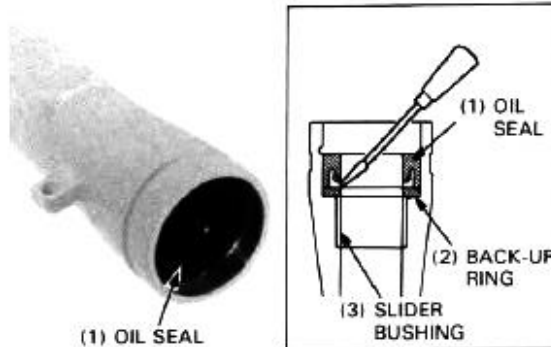


FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Remove the oil seal and back-up ring from the fork slider with a screwdriver.

NOTE

- Be careful not to damage the inside of the slider bushing or fork slider during removal.



INSPECTION

Fork spring free length

Measure the fork spring free length.

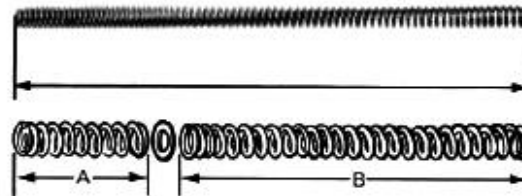
SERVICE LIMIT: '86: 547.4 mm (21.55 in)

After '86:

A: 118.0 mm (4.65 in)

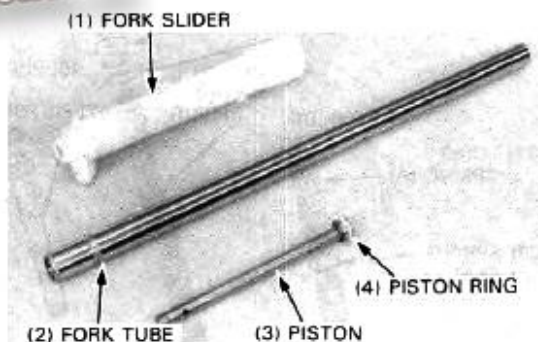
B: 428.3 mm (16.86 in)

'86:



Fork tube/fork slider/piston

Check the fork tube, slider and piston for score marks, scratches or excessive or abnormal wear. Replace if necessary.



Bushing/back-up ring

Check the bushing for excessive wear or scratches.

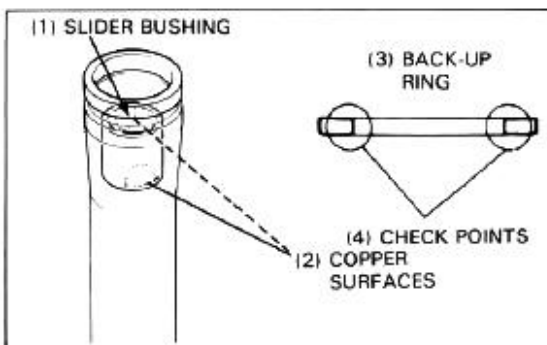
If copper appears on more than 3/4 of the entire surface, replace the bushing.

NOTE

- The slider bushing cannot be removed from the slider.
- If the slider bushing requires replacement, replace the slider.

Replace the back-up ring if it is distorted at the check points shown.

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



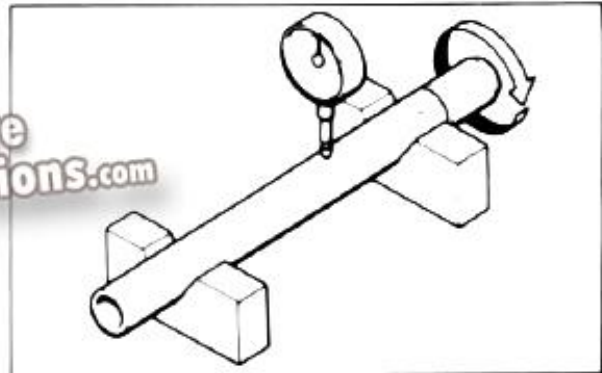
FRONT WHEEL/BRAKE/SUSPENSION/STEERING

FORK TUBE

Set the fork tube in V blocks and check its runout.

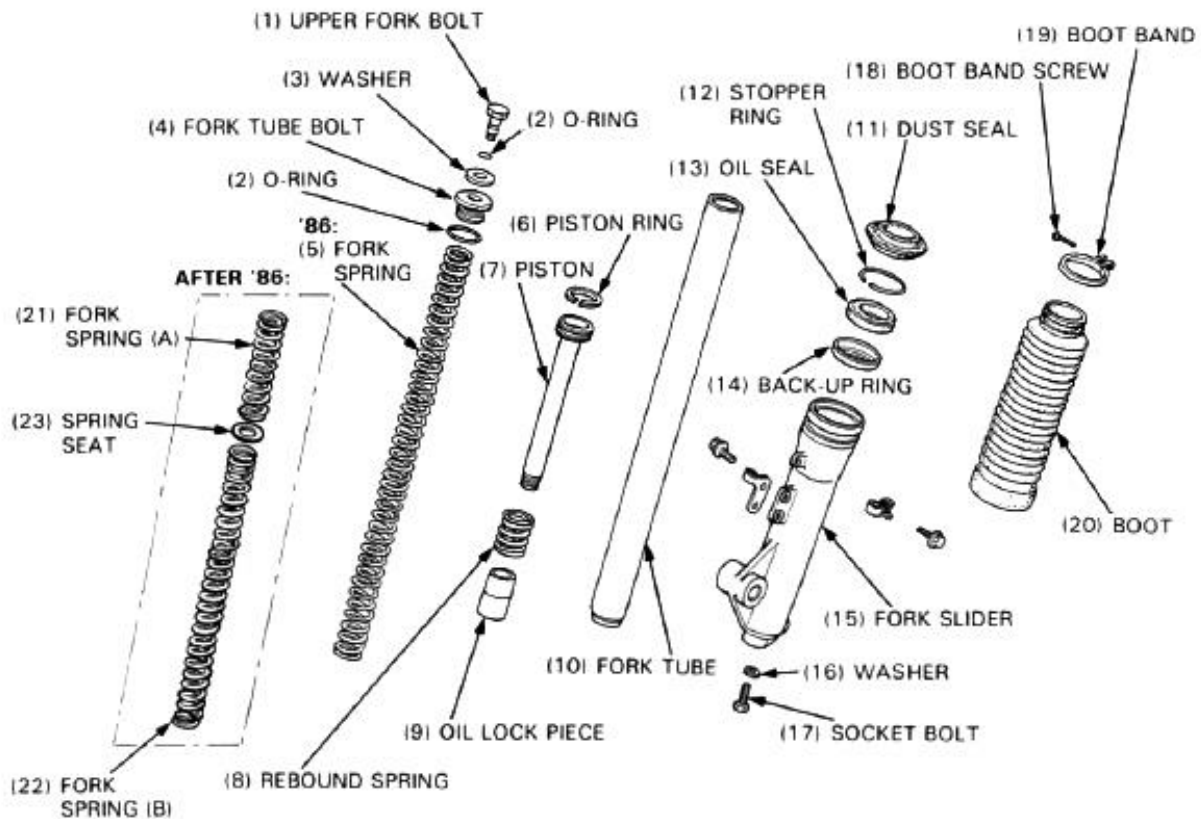
SERVICE LIMIT: 0.20 mm (0.008 in)

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ASSEMBLY

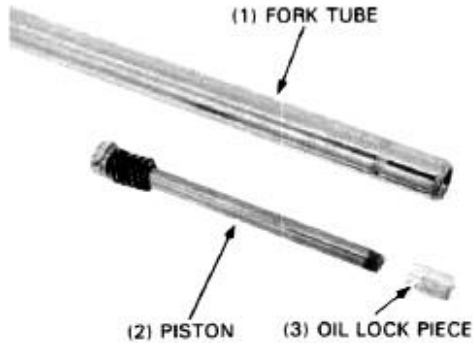
Before assembly, wash all parts with a high flash point or non-flammable solvent and wipe them off completely.



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Install the rebound spring on the fork piston, then slip the piston into the fork tube.

Install the oil lock piece onto the piston.



Insert the fork tube into the slider.

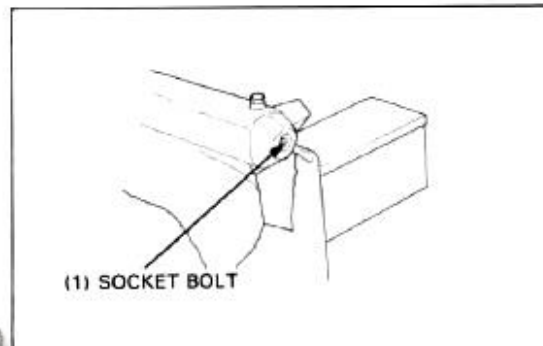
Hold the lug of the fork slider in a vise with soft jaws or a shop towel.

Apply a locking agent to the socket bolt and thread it into the piston. Tighten the socket bolt.

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

NOTE

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



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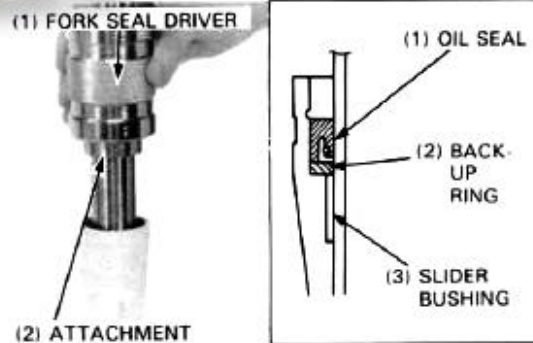
Install the back-up ring.

Wrap a piece of tape around the groove at the top of the fork tube. This will protect the oil seal from damage when it is installed.

Coat a new oil seal with ATF and install it with the seal markings facing up. Drive the seal in with the seal driver.

TOOL:

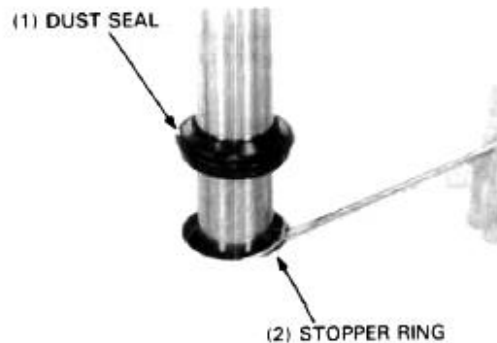
Fork seal driver	07747-0010100
Fork seal driver attachment	07747-0010400



Install the stopper ring into the groove in the slider.

Be sure the stopper ring is seated in the groove all the way around.

Install the dust seal.



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

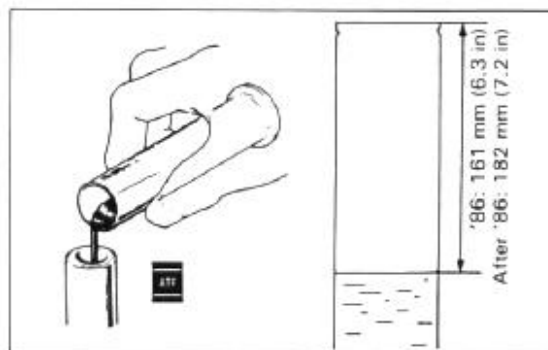
Pour the specified amount of ATF into the fork tubes.

RECOMMENDED OIL: ATF or equivalent

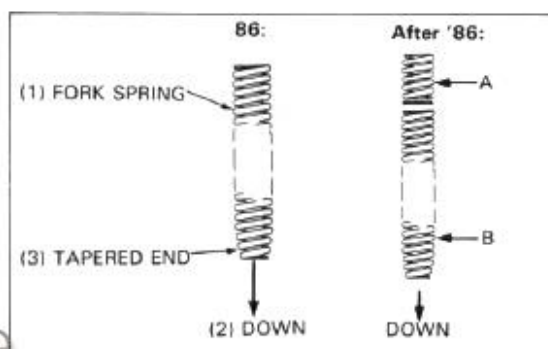
CAPACITY: 195.5–200.5 cc
(6.6–6.8 US oz, 6.8–7.0 Imp oz)

Pump the front fork several times to stabilize the oil level.
Compress the front fork and measure the oil level from the top of the tubes.

SPECIFIED LEVEL: '86 161 mm (6.3 in)
After '86 182 mm (7.2 in)

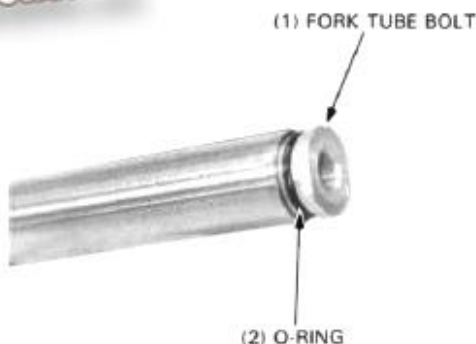


Wipe off any excess oil from the fork spring.
Install the fork spring with the tapered end facing down.

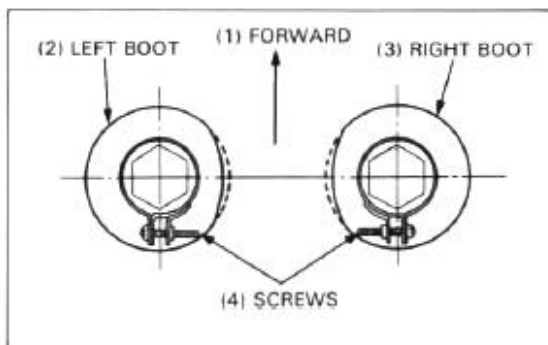


Install the O-ring onto the fork tube bolt.
Hold the fork tube in a vise, with soft jaws or shop towel and
install the fork tube bolt.
Tighten the fork tube bolt.

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



Install the fork boot and the boot band with the band screw
facing rear, and the screw head facing outside as shown.



INSTALLATION

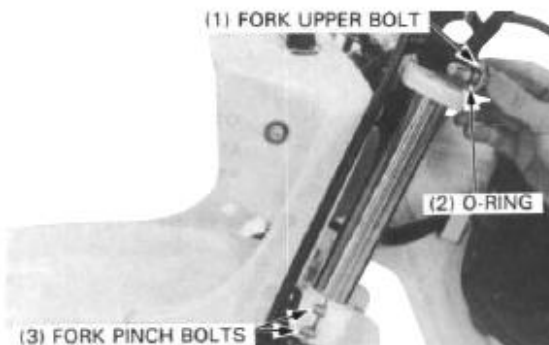
Install the fork and temporarily tighten the lower pinch bolts.

Install the fork upper bolt with the O-ring and loosen the lower pinch bolts, then tighten the fork upper bolt.

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

Tighten the lower pinch bolt.

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



Push up the fork boot until it just touches the bottom of the steering stem then tighten its clamp.

Install the front wheel (page 11-7).

Connect the front brake cable to the cable clamps and install them onto the fork tub. Tighten the clamp bolts.

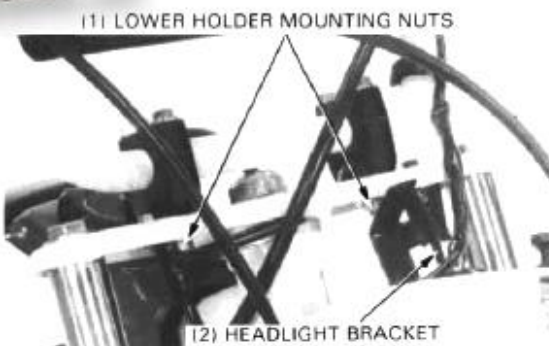


STEERING STEM

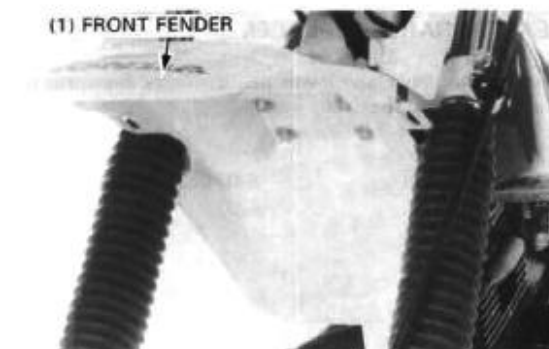
REMOVAL

Remove the headlight case from the headlight bracket (page 17-2).

Remove the headlight bracket by removing two bolts. Remove the handlebar lower holder mounting nuts and handlebar from the fork top bridge.



Remove the front fender (page 13-2).



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

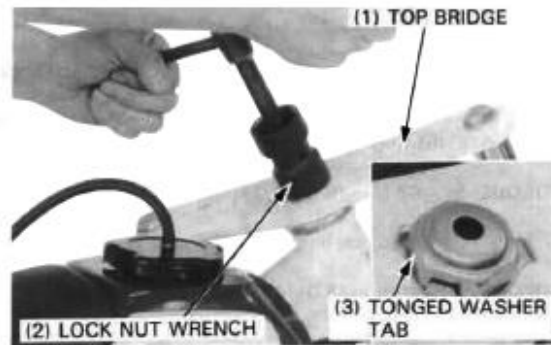
Bend down the tonged washer tab.
Remove the steering stem nut.

TOOL:

Lock nut wrench

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

Remove the front fork tube assemblies (page 11-15) and the fork top bridge.

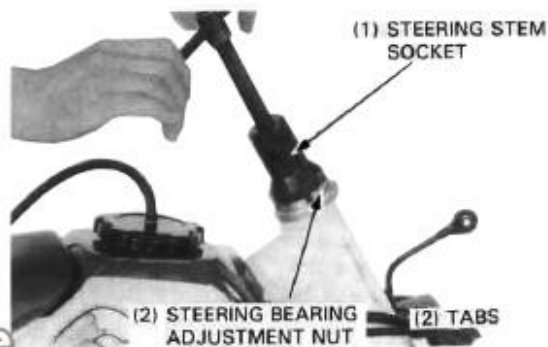


Loosen the steering bearing adjustment nut and remove the nut, dust seal and upper bearing inner race. Then remove the steering stem, being careful not to drop the steel balls.

TOOL:

Steering stem socket

07916-4300000 or
07916-3710100

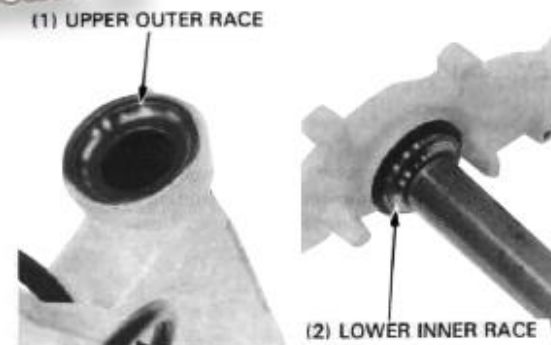


BEARING RACES INSPECTION

Check the steering stem inner and outer races for wear or damage.

NOTE

- Replace the steel ball bearings and races as a set.



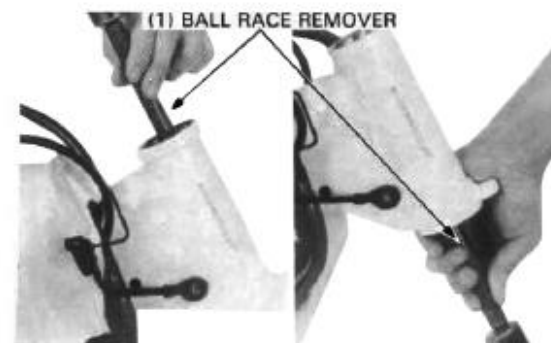
BEARING RACES REPLACEMENT

Remove the upper and lower bearing races from the frame using the special tool:

TOOL:

Ball race remover

07953-3330000

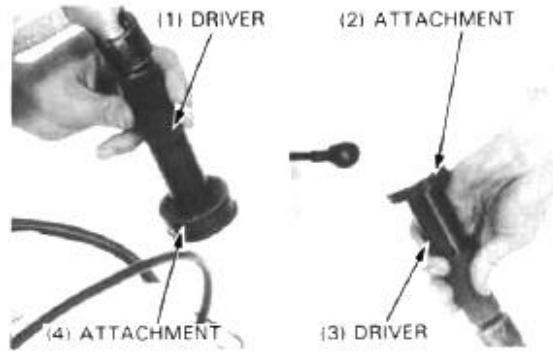


FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Drive new upper and lower outer races into the steering head.

TOOLS:

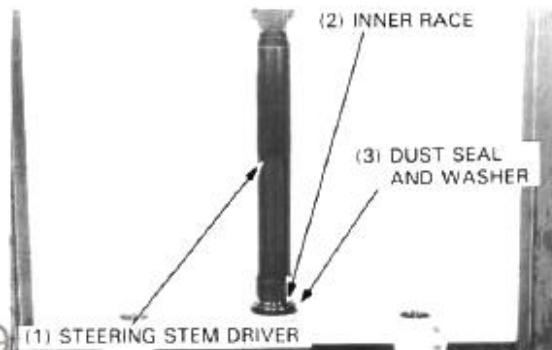
Driver 07749-0010000
Attachment 07946-3290000



Install the washer and dust seal onto the steering stem and press a new lower inner race over the stem with the special tool:

TOOL:

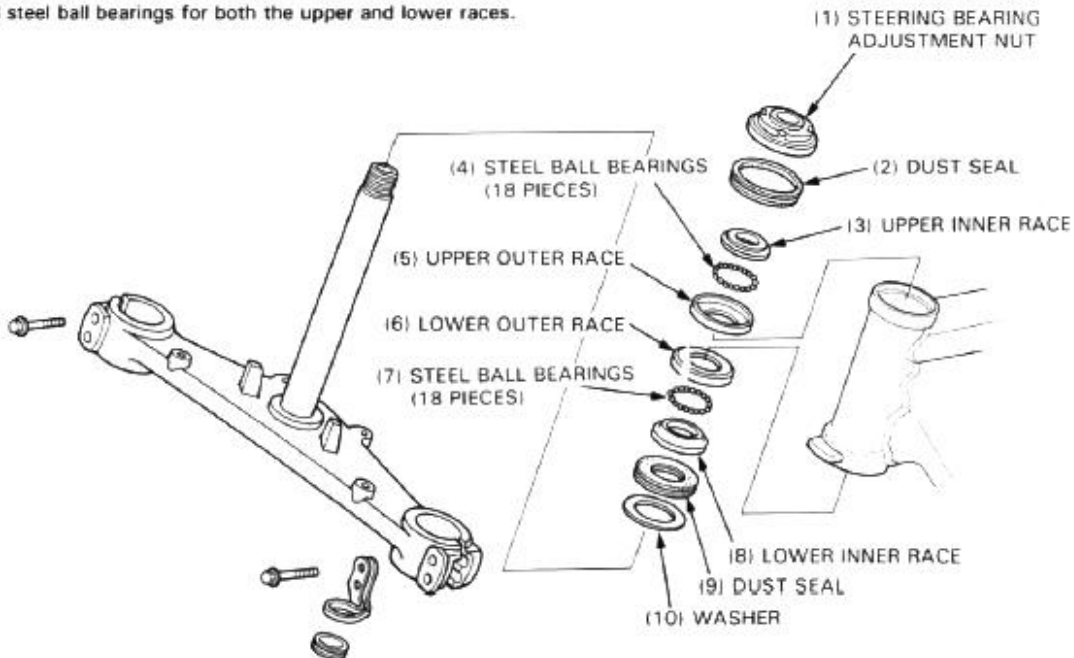
Steering stem driver 07946-4300101
or
Attachment 07946-MB00000 with
6N-HT-54 (U.S.A. only)



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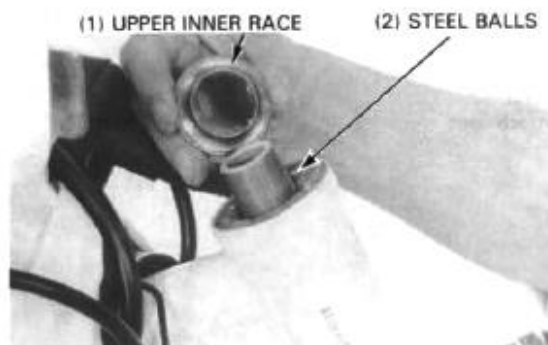
INSTALLATION

Apply grease to the upper and lower outer races and install the 18 steel ball bearings for both the upper and lower races.



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

Slide the steering stem through the steering head from the bottom. Install the upper inner race and steering head bearing adjustment nut.



Tighten the steering head bearing adjustment nut to the initial torque.

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

TOOL:

Steering stem socket

07916-4300000

or

07916-3710100

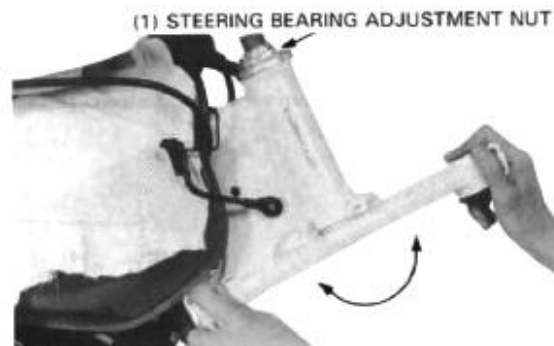


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Turn the steering stem all the way to right and left 2 or 3 times to seat the bearings.

Retighten the steering bearing adjustment nut to the final torque.

TORQUE: 5.5 – 6.5 N·m (0.55 – 0.65 kg·m, 4.0 – 4.7 ft·lb)



Install the fork top bridge.

Temporarily install the tonged washer by filling the hook on the washer in the hole on the top bridge, then install the steering stem nut.

Install the front forks (page 11-21).

Tighten the steering stem nut.

TORQUE: 70 – 90 N·m (7.0 – 9.0 kg·m, 51 – 65 ft·lb)

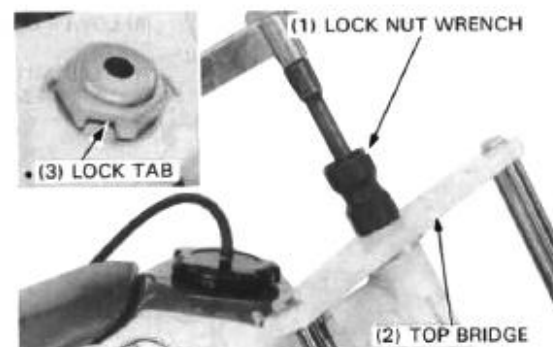
TOOL:

Lock nut wrench

07716-0020400

or Equivalent commercially available in U.S.A.

Bend up one lock tab of the tonged washer.



FRONT WHEEL/BRAKE/SUSPENSION/STEERING

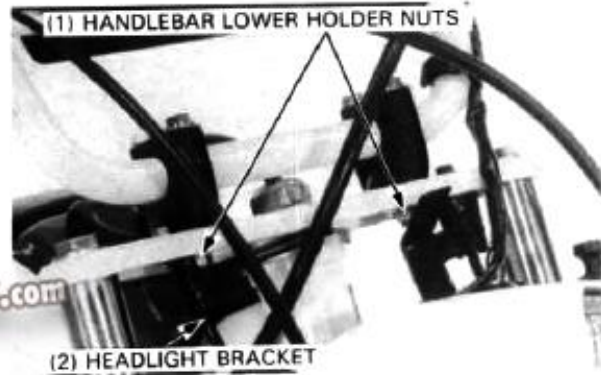
Install the handlebar onto the fork top bridge.
Install the washer and handlebar lower holder nut.
Tighten the nut.

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

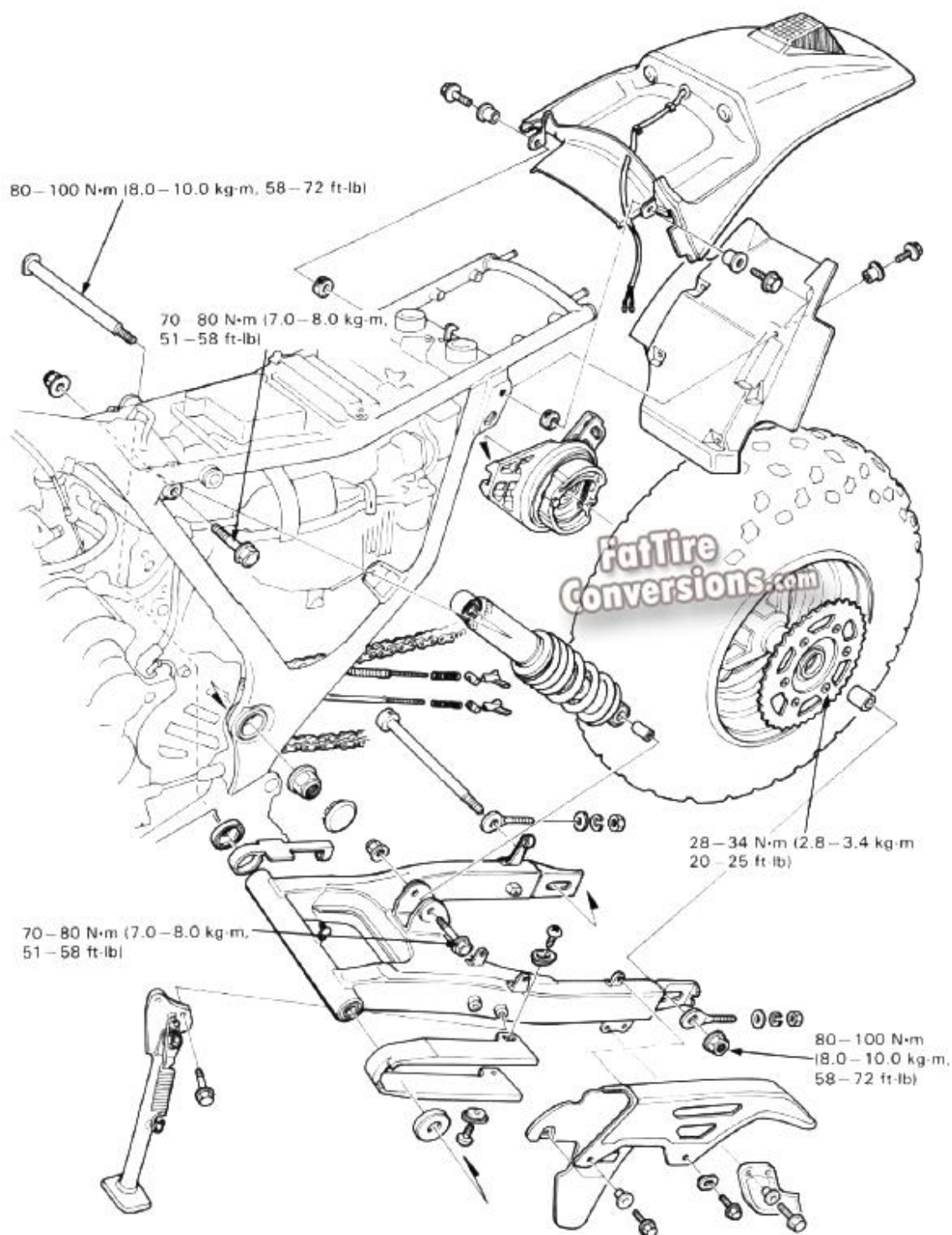
Install the following:

- headlight bracket
- headlight
- front fender
- front wheel

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REAR WHEEL/BRAKE/SUSPENSION



12. REAR WHEEL/BRAKE/SUSPENSION

SERVICE INFORMATION	12-1	REAR BRAKE	12-7
TROUBLESHOOTING	12-2	REAR SHOCK ABSORBER	12-10
REAR WHEEL	12-3	SWINGARM	12-13

SERVICE INFORMATION

GENERAL

WARNING

- Brake dust may contain asbestos which can be harmful to your health. Do not use compressed air to clean brake drums or brake panels. Use a vacuum with a sealed dust collector. Wear a protective face mask and thoroughly wash your hands when finished.
- A contaminated brake lining reduces stopping power. Keep grease off the linings.
- 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. (see page 12-11).

- This section covers maintenance of rear wheel, rear brake panel and drum, rear shock absorber and swingarm.
- A workstand or block is required to support the motorcycle.
- Refer to Section 11 for tire removal and repair.

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Axle runout	—	0.2 mm (0.008 in)
Wheel rim runout	Radial	2.0 mm (0.08 in)
	Axial	2.0 mm (0.08 in)
Rear brake drum I.D.	110 mm (4.3 in)	111 mm (4.4 in)
Rear brake lining thickness	4 mm (0.2 in)	2 mm (0.1 in)
Rear shock absorber spring free length	147.8 mm (5.8 in)	144.8 mm (5.70 in)

TORQUE VALUES

Wheel hub nut		60–70 N·m (6.0–7.0 kg-m, 43–51 ft-lb)
Driven sprocket nut		28–34 N·m (2.8–3.4 kg-m, 20–25 ft-lb) – Apply oil to the threads
Axle nut		80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Brake arm bolt		8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Damper rod lock nut		38–60 N·m (3.8–6.0 kg-m, 27–43 ft-lb)
Shock absorber mounting bolt	upper	70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)
	lower	70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)
Swingarm pivot nut		80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Rear brake drum mounting bolt		25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)

REAR WHEEL/BRAKE/SUSPENSION

TOOLS

Special

Bearing remover shaft

07GGD-0010100 or Equivalent commercially available in U.S.A.

Common

Driver

07749-0010000

Attachment, 42 x 47 mm

07746-0010300

Bearing remover head, 15 mm

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

Pilot, 15 mm

07746-0040300

TROUBLESHOOTING

Wobble or vibration in motorcycle

- Bent rim
- Worn wheel bearing
- Faulty tire
- Axle not tightened properly
- Swingarm bushing worn
- Incorrect tire installation

Soft suspension

- Weak spring
- Faulty shock absorber

Hard suspension

- Bent shock absorber rod
- Improperly adjusted rear shock absorber
- Faulty swingarm bushing

Suspension noise

- Shock case binding
- Loose fasteners

Poor brake performance

- Improper brake adjustment
- Worn brake shoes
- Brake lining oily, greasy, dirty
- Worn brake cam
- Worn brake drum
- Brake arm serrations improperly engaged

Brake drag

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

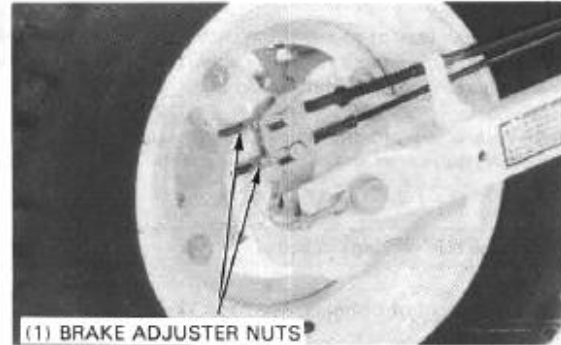
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REAR WHEEL

REMOVAL

Raise the rear wheel off the ground with workstand or block under the engine.

Remove the rear brake adjuster nuts and disconnect the brake cables from the brake arms.

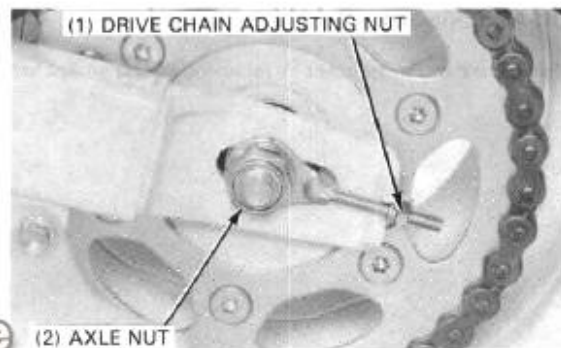


Remove the axle nut.

Loosen the drive chain adjusting nuts and remove the axle nut and rear axle.

Push the wheel forward and remove the drive chain from the driven sprocket. Remove the rear wheel.

Remove the axle side collar from the wheel hub.



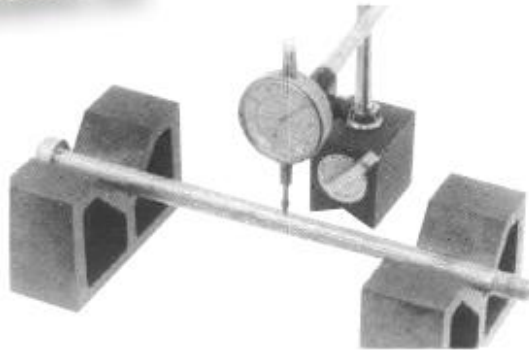
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INSPECTION

Axle

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

SERVICE LIMIT: 0.2 mm (0.08 in)



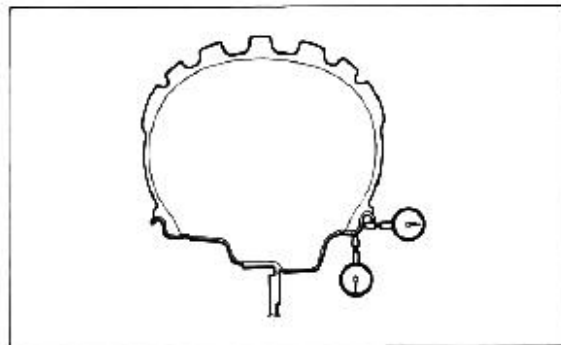
Rear wheel rim runout

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 LIMIT:

Radial: 2.0 mm (0.008 in)

Axial: 2.0 mm (0.008 in)



REAR WHEEL/BRAKE/SUSPENSION

Wheel bearings

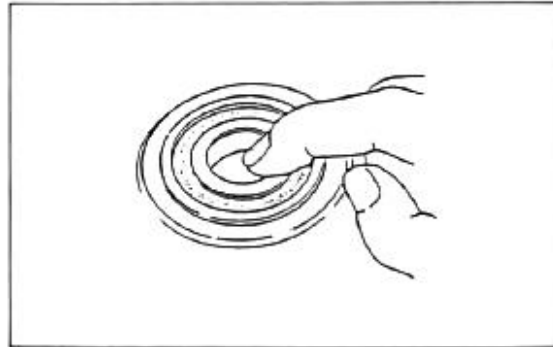
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

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

NOTE

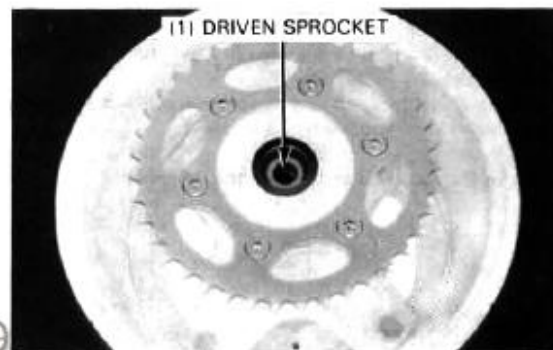
- Replace hub bearings in pairs.

For replacement of bearings, see page 12-5.

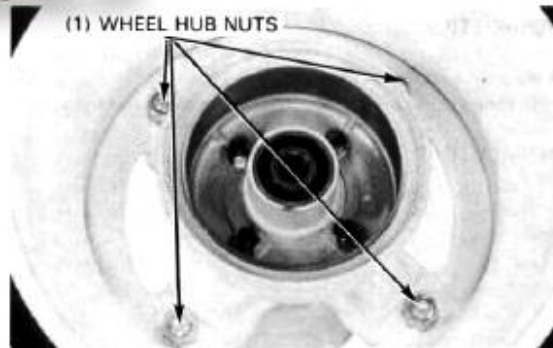


DISASSEMBLY

Remove the driven sprocket by removing the six socket bolts.

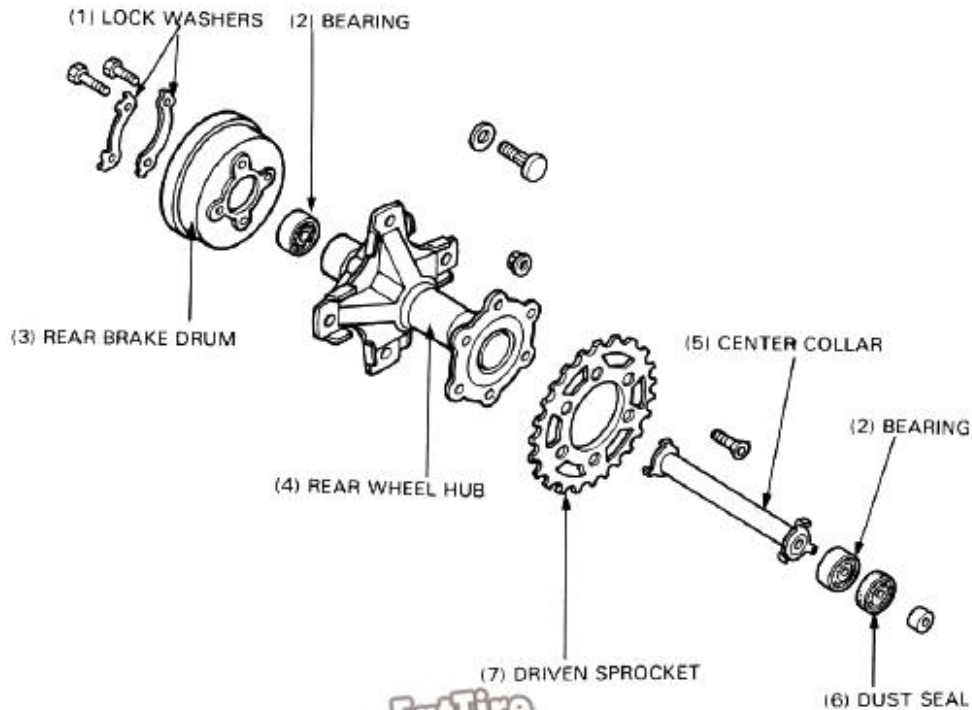


Remove the four wheel hub nuts and remove the wheel hub from the rim.



Bend down the lock washer tabs.
Remove the drum mounting bolts and lock washer.
Remove the brake drum from the rear hub.





Insert the bearing remover head into the bearing.
From the opposite side install the bearing remover shaft and drive the bearing out of the wheel.
Remove the center collar and drive out the other bearing.

TOOLS:

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

Drive in the bearing squarely until seated.
Install the center collar and drive in the other bearing squarely until seated.

TOOL:

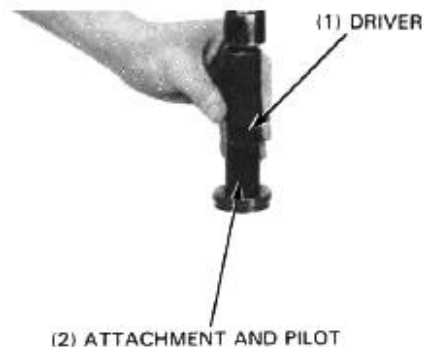
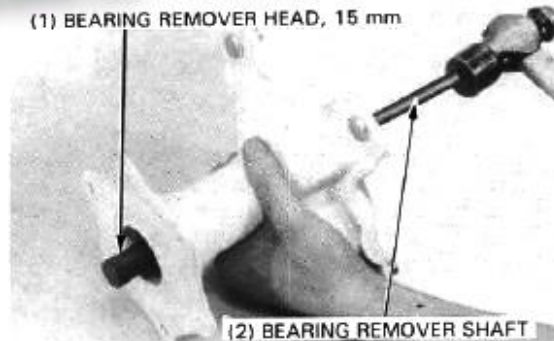
Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 15 mm	07746-0040300

NOTE

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

CAUTION

- Never install the old bearing. Once the bearing is removed, the bearing must be replaced with a new one.



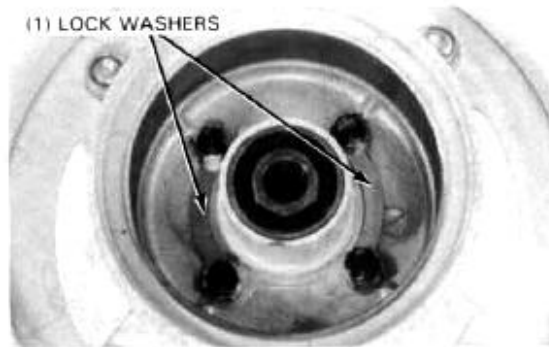
REAR WHEEL/BRAKE/SUSPENSION

ASSEMBLY

Install the brake drum in the reverse order of removal.
Install new lock washers and tighten the bolts.

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

Bend up the lock washer tabs against the bolt head.



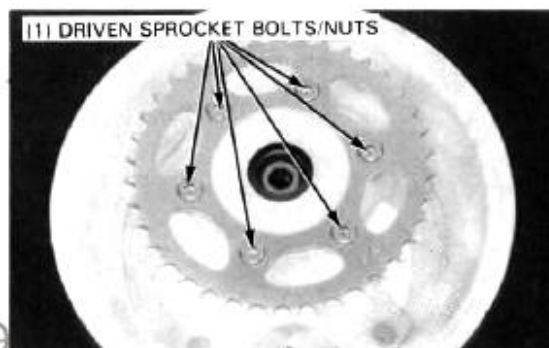
Install the rear wheel hub onto the rear wheel.
Tighten the wheel hub nuts.

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

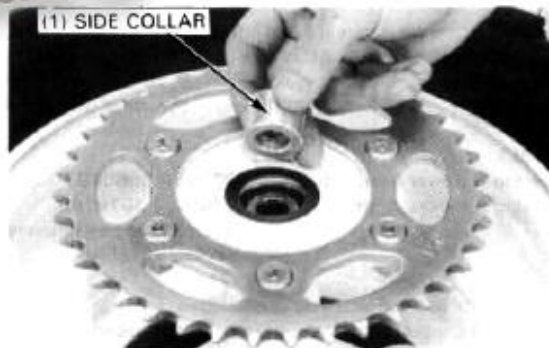
Install the driven sprocket onto the hub.

Tighten the driven sprocket nut.

TORQUE: 28 – 34 N·m (2.8 – 3.4 kg·m, 20 – 25 ft·lb)



Apply grease to the inside of the dust seal and install it into the hub.
Install the side collar.



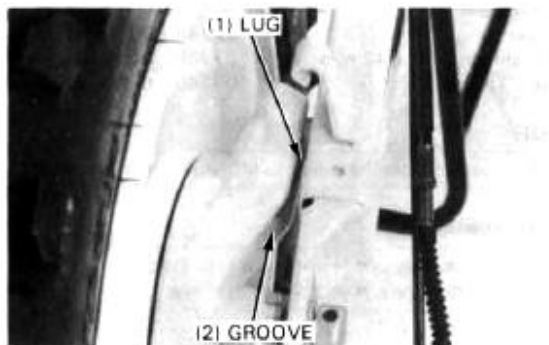
INSTALLATION

Install the rear brake panel.

NOTE

- Refer to Section 11 for the rear tire removal/repair.

Align the groove on the brake panel with the lug on the swing arm. Install the drive chain on the driven sprocket.
Apply thin coat of grease to the axle.
Install the rear wheel by inserting the axle with chain adjuster through from the right side.

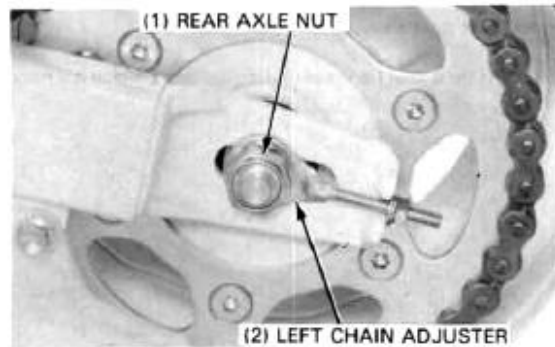


Install the left chain adjuster and tighten the axle nut lightly. Adjust the drive chain slack (page 3-7).

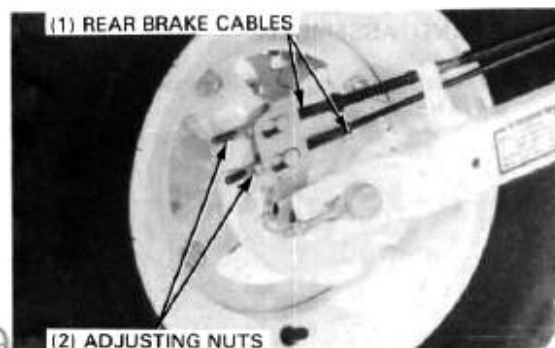
STANDARD: 25–35 mm (1–1-3/8 in)

Tighten the axle nut.

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



Connect the brake cables and install the rear brake adjusting nuts. Adjust the rear brake (page 3-11).



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REAR BRAKE

Remove the rear wheel (page 12-3).
Remove the brake panel.

BRAKE DRUM INSPECTION

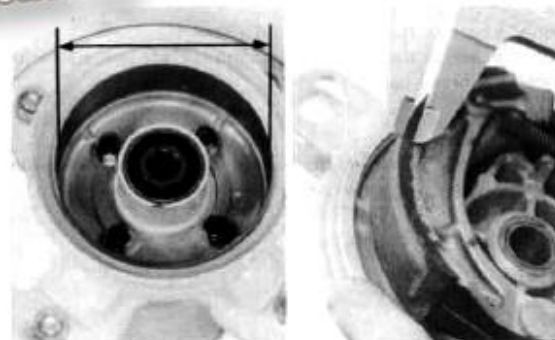
Measure the brake drum I.D.

SERVICE LIMIT: 111 mm (4.4 in)

BRAKE LINING INSPECTION

Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)

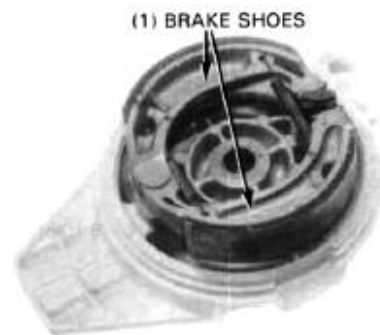


BRAKE PANEL DISASSEMBLY

Put marks on the brake shoes before removing them so that they can be installed in their original positions.
Remove the brake shoes.

NOTE

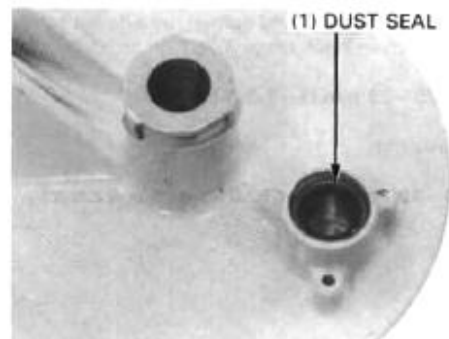
- Replace brake shoes in pairs.



REAR WHEEL/BRAKE/SUSPENSION

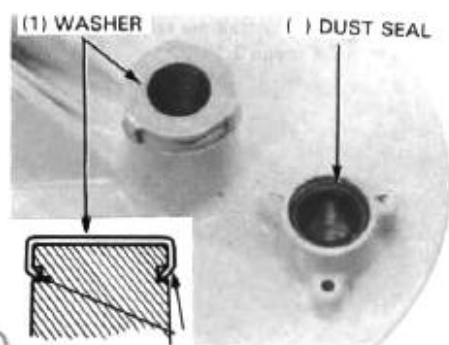
Remove the dust seal.

Check the dust seal for wear or damage and replace it if necessary.



BRAKE PANEL ASSEMBLY

Install the washer and bend down the washer tabs.
Install the dust seal.

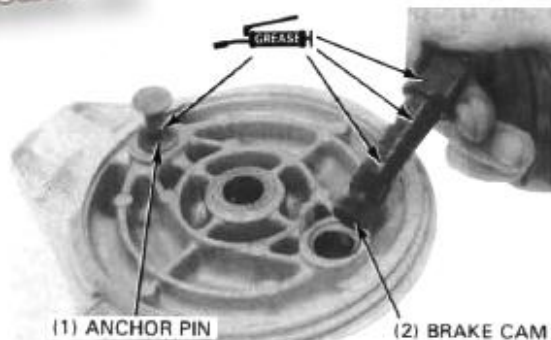


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Apply grease to the dust seal and install it.
Apply grease to the brake cam sliding surface and anchor pin.
Install the brake cam.

WARNING

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



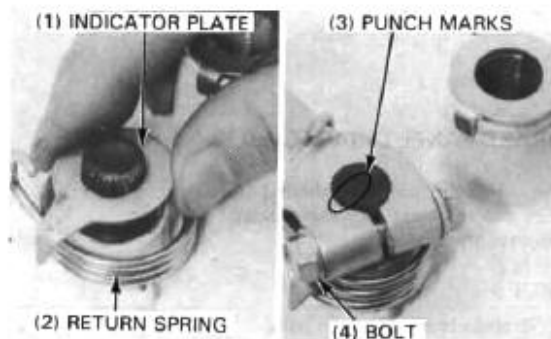
Install the return spring.

Place the wear indicator plate onto the brake cam by aligning the wide tooth on the plate with the wide groove on the brake cam.

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

Torque the bolt.

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

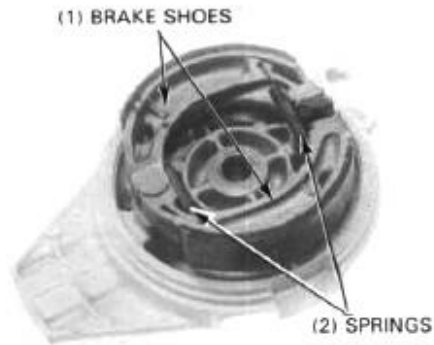


Install the brake shoes and springs.

NOTE

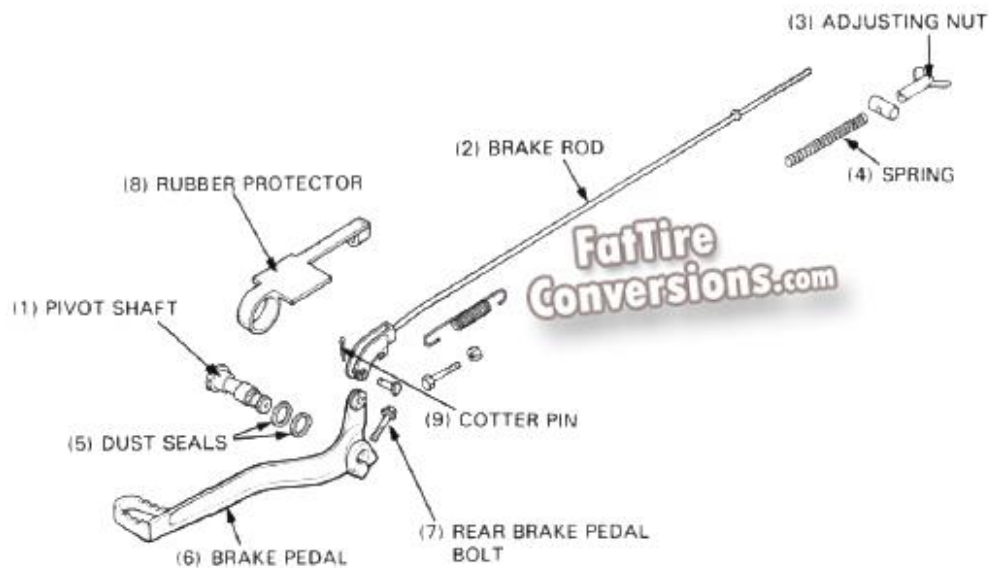
- Install the brake shoes with the marks facing up.

Place the brake panel in the rear wheel.
Install the rear wheel (page 12-6).



REAR BRAKE PEDAL REMOVAL

Remove the brake pedal adjusting nut and unhook the return spring from the swing arm.
Remove the rear brake pedal bolt and pivot shaft.
Remove the brake pedal and brake rod by removing the cotter pin.



REAR BRAKE PEDAL INSTALLATION

Install the brake pedal in the reverse order of removal.
Apply grease to sliding surface of the pivot shaft, then install the pivot shaft with dust seals.
Adjust the rear brake lever play (page 3-11).

NOTE

- Do not forget to install the inner dust seal.



REAR WHEEL/BRAKE/SUSPENSION

REAR SHOCK ABSORBER

REMOVAL

Remove the seat and side covers.

Remove the rear shock absorber upper mounting nut and bolt.



Remove the rear shock absorber lower mounting nut and bolt and remove the shock absorber downward through the opening of the swingarm.

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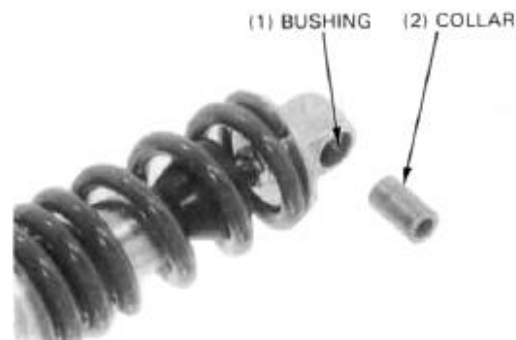


DISASSEMBLY

⚠ WARNING

- *The damper unit is filled with nitrogen gas under high pressure, do not try to disassemble.*

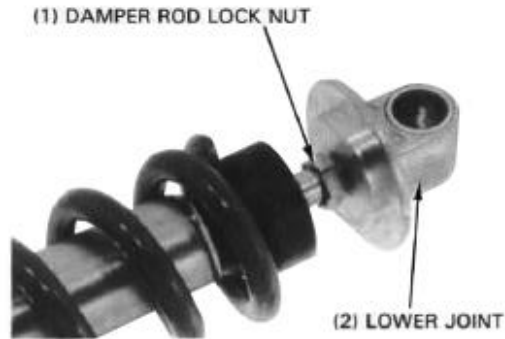
Remove the collar from rear shock absorber lower mount.



Set the rear shock absorber in a hydraulic press as shown and press the shock absorber to remove the stopper ring. Remove the shock absorber from the hydraulic press.



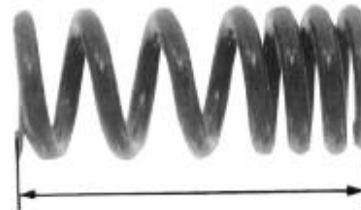
Loosen the damper rod lock nut and remove the lower joint. Remove the spring, damper rubber, spring seat and spring seat stopper.



SPRING INSPECTION

Measure the spring free length.

SERVICE LIMIT: 144.8 mm (5.70 in)



SHOCK ABSORBER DISPOSAL PROCEDURE

Center punch the damper case to mark the drilling point, approximately 10 mm (0.4 in) from the top surface. Wrap the damper unit inside a plastic bag. Support the damper unit upright in a vise as shown.

Through the open end of the bag, insert a drill motor with a sharp 2–3 mm (5/64–1/8 in) drill bit.

WARNING

- Do not use a dull drill bit which could cause a build-up of excessive heat and pressure inside the damper, leading to explosion and severe personal injury.
- The shock absorber contains nitrogen gas and oil under high pressure. Do not drill any farther down the damper case than the measurement given above, or you may drill into the oil chamber; oil escaping under high pressure may cause serious personal injury.
- Always wear eye protection to avoid getting metal shavings in your eyes when the gas pressure is released. The plastic bag is only intended to shield you from the escaping gas.

Hold the bag around the drill motor and briefly run the drill motor inside the bag; this will inflate the bag with air from the motor and help keep the bag from getting caught in the bit when you start.

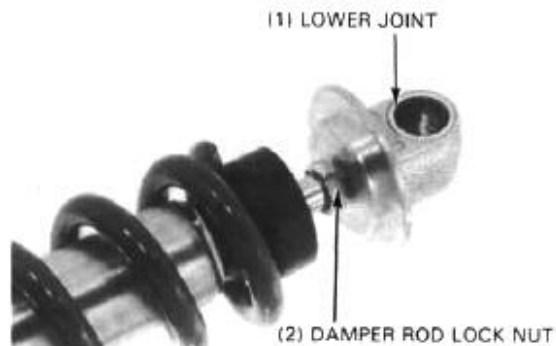


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REAR WHEEL/BRAKE/SUSPENSION

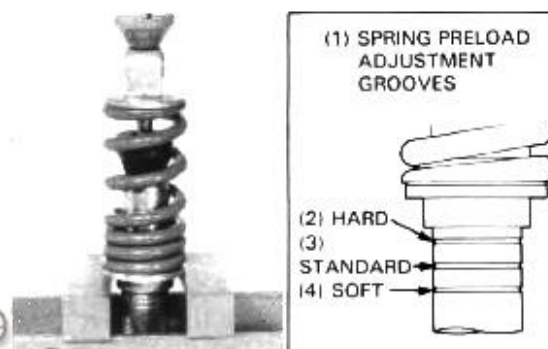
Apply locking agent to the damper rod threads, and install the lock nut and lower joint.
Tighten the damper rod lock nut.

TORQUE: 38–60 N·m (3.8–6.0 kg·m, 27–43 ft·lb)

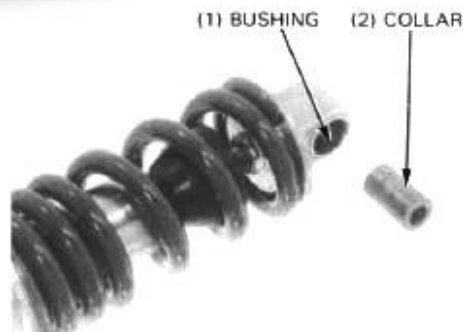


Set the rear shock absorber in a hydraulic press in the same manner as during disassembly.
Install the stopper ring into the spring preload adjustment groove.
Remove the rear shock absorber from the hydraulic press.

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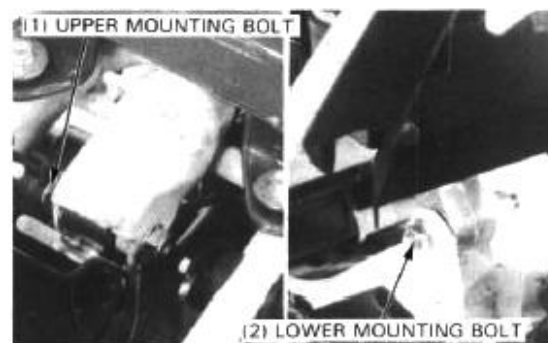
Apply grease to the lower mount bushing and collar and install the collar into the lower mount.



INSTALLATION

Install the rear shock absorber onto the frame.
Install the upper and lower mounting bolts and nuts.
Torque the nuts.

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

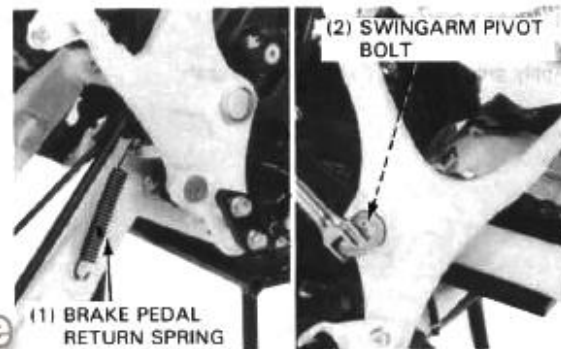
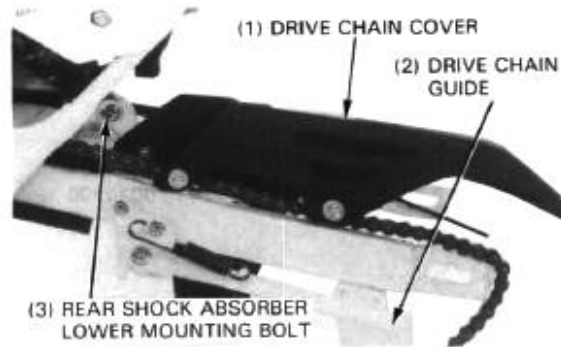


SWINGARM

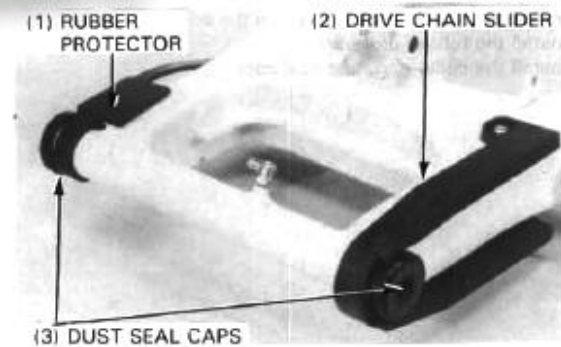
REMOVAL

Remove the following:

- rear wheel (Page 12.3).
- drive chain cover.
- drive chain guide.
- rear shock absorber lower mounting bolt and nut.
- brake pedal return spring and unhook the rear brake cable from the swing arm.
- swingarm pivot nut and bolt.
- swingarm from the frame.

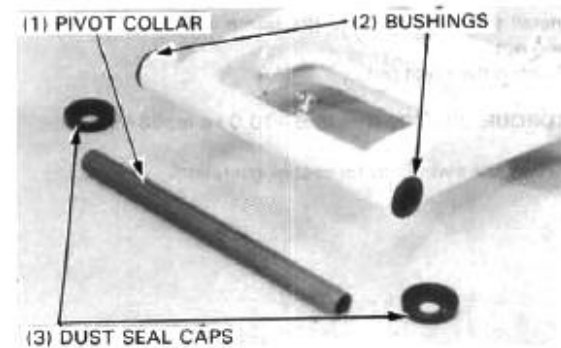


- drive chain slider and rubber protector.
- dust seal caps and pivot collar.



INSPECTION

Check the swingarm for damage and replace if necessary. Check the swingarm pivot collar, bushings and dust seals for wear or damage.



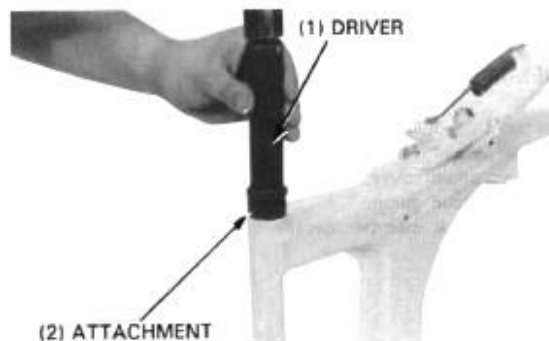
REAR WHEEL/BRAKE/SUSPENSION

PIVOT BUSHING REPLACEMENT

Drive out the swingarm pivot bushings.
Drive in new pivot bushings.

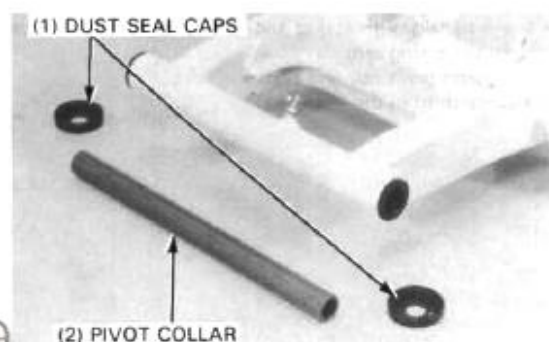
TOOLS:

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



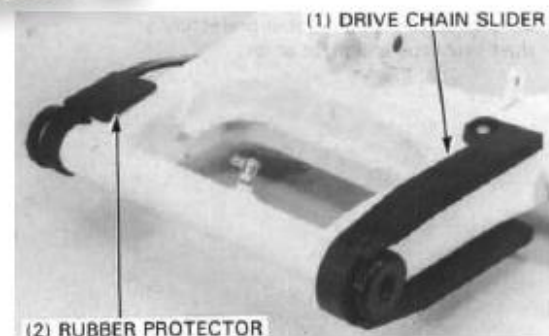
INSTALLATION

Apply grease to the collar and dust seals.



Install the drive chain slider using the bolts.
Install the rubber protector.
Install the collar and dust seal caps.

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Install the swingarm into the frame and install the pivot bolt and nut.
Tighten the pivot nut.

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

Check the swingarm for proper operation.

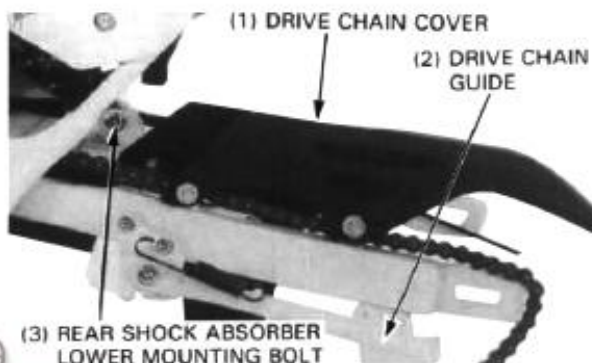


REAR WHEEL/BRAKE/SUSPENSION

Install the rear shock absorber mounting bolt and nut.
Tighten the nut.

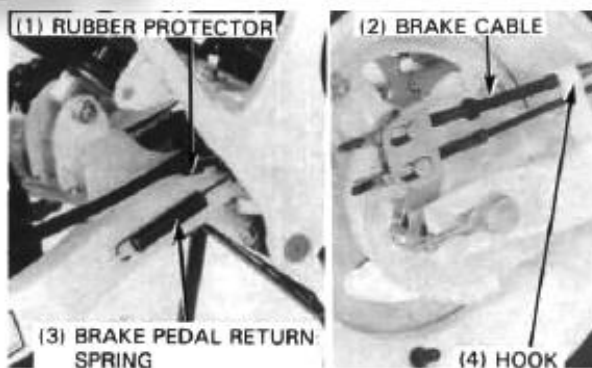
TORQUE: 70 – 80 N·m (7.0 – 8.0 kg-m, 51 – 58 ft-lb)

Install the drive chain cover using the bolts.
Install the drive chain guide to the swingarm.



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Install the brake pedal return spring.
Hook the rubber protector end to the rear brake rod.
Install the rear brake cable to the hook of the swingarm.
Install the rear wheel (Page 12-6).



13. FENDERS/EXHAUST MUFFLER

SERVICE INFORMATION	13-1	FRONT AND REAR FENDER	13-2
SEAT	13-1	EXHAUST MUFFLER	13-3
SIDE COVERS	13-1		

SERVICE INFORMATION

GENERAL

- Refer to Section 3 for spark arrester cleaning.

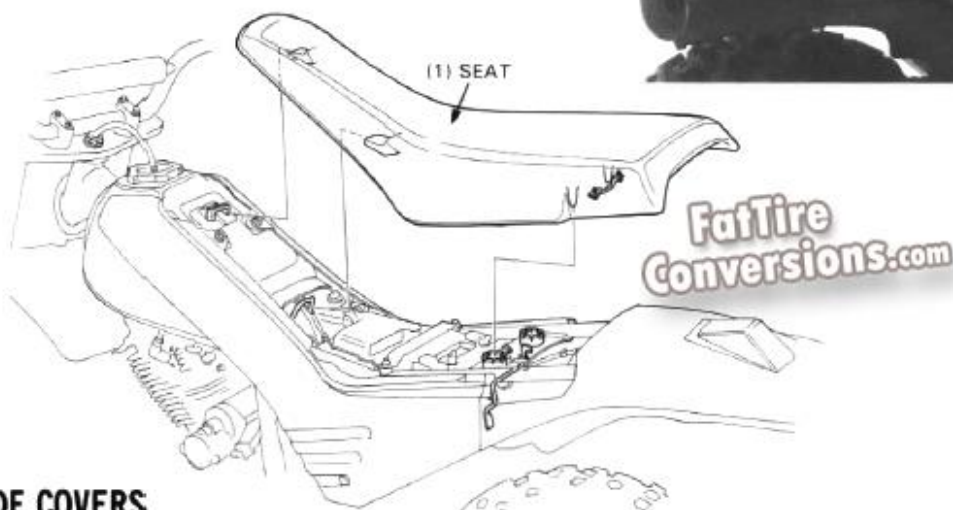
WARNING

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

SEAT

REMOVAL/INSTALLATION

Release the seat lock by moving the lever in the direction shown, unhook the seat and remove it. Install in the reverse order of removal.



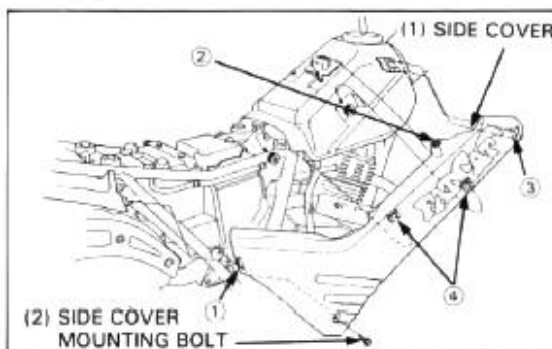
SIDE COVERS

REMOVAL/INSTALLATION

Remove the seat.
Remove the side cover mounting bolts.
Disconnect the tang (1) by slightly bending the side cover.
Disconnect the pin (2) from the side cover.
Remove both right and left side covers by turning the side covers clockwise, centering around the hook (3).
Install the side covers in the reverse order of removal.

CAUTION

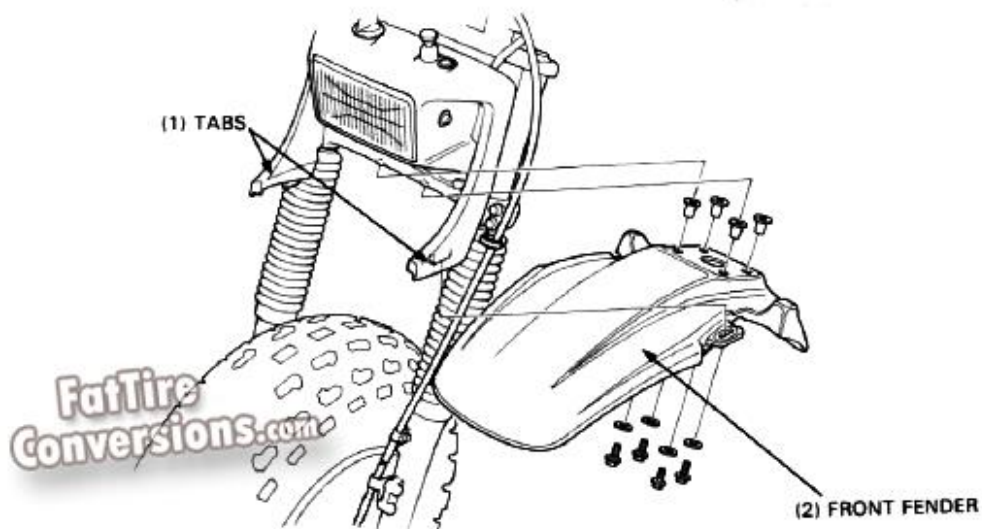
- *Be careful not to damage the hooks on the covers during removal and installation.*



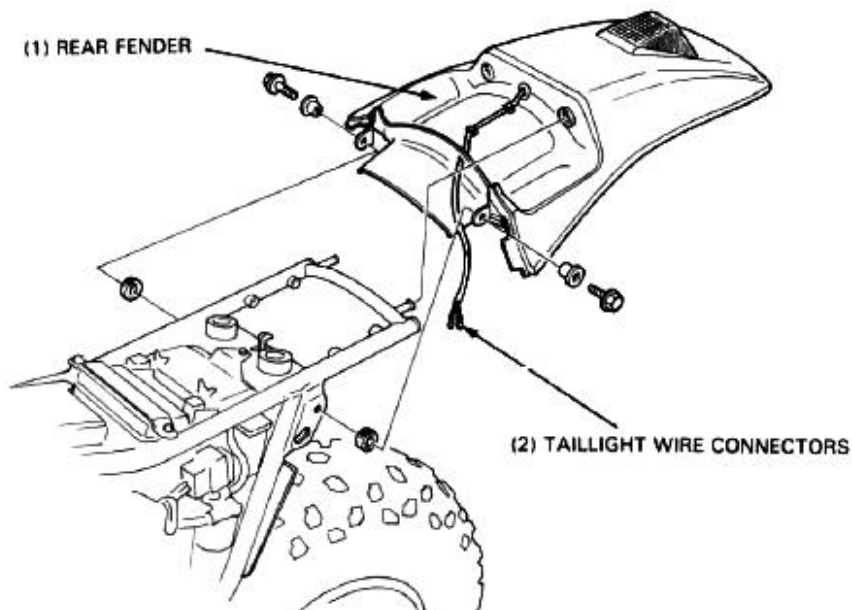
FRONT AND REAR FENDER

REMOVAL/INSTALLATION

Remove the front fender mounting bolts. Remove the front fender by releasing it from the tabs on the headlight case. Install the front fender in the reverse order of removal.



Remove the seat and side covers.
Disconnect the taillight wire connectors.
Remove the rear fender from the frame.



EXHAUST PIPE/MUFFLER**WARNING**

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

REMOVAL/INSTALLATION

Remove the exhaust pipe joint nuts.



Loosen the exhaust clamp bolt and remove the exhaust muffler mounting bolts.
Remove the exhaust muffler and pipe.

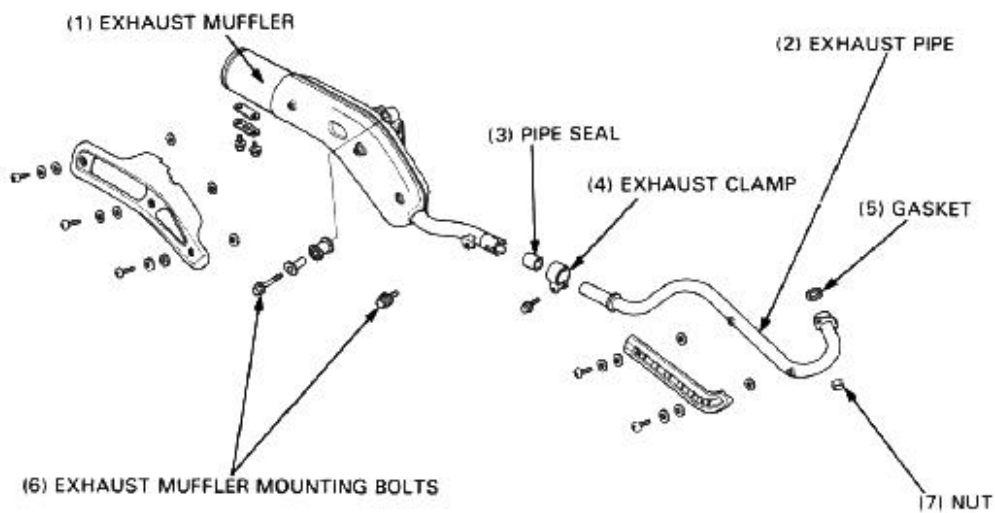
Check the gasket and pipe seal for wear and replace them if necessary.



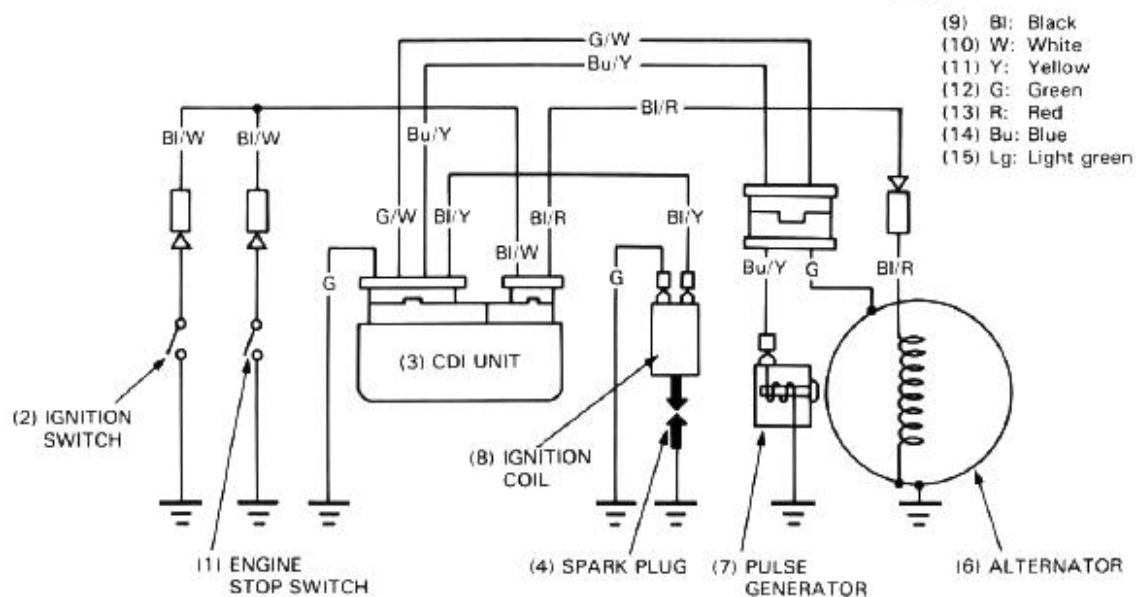
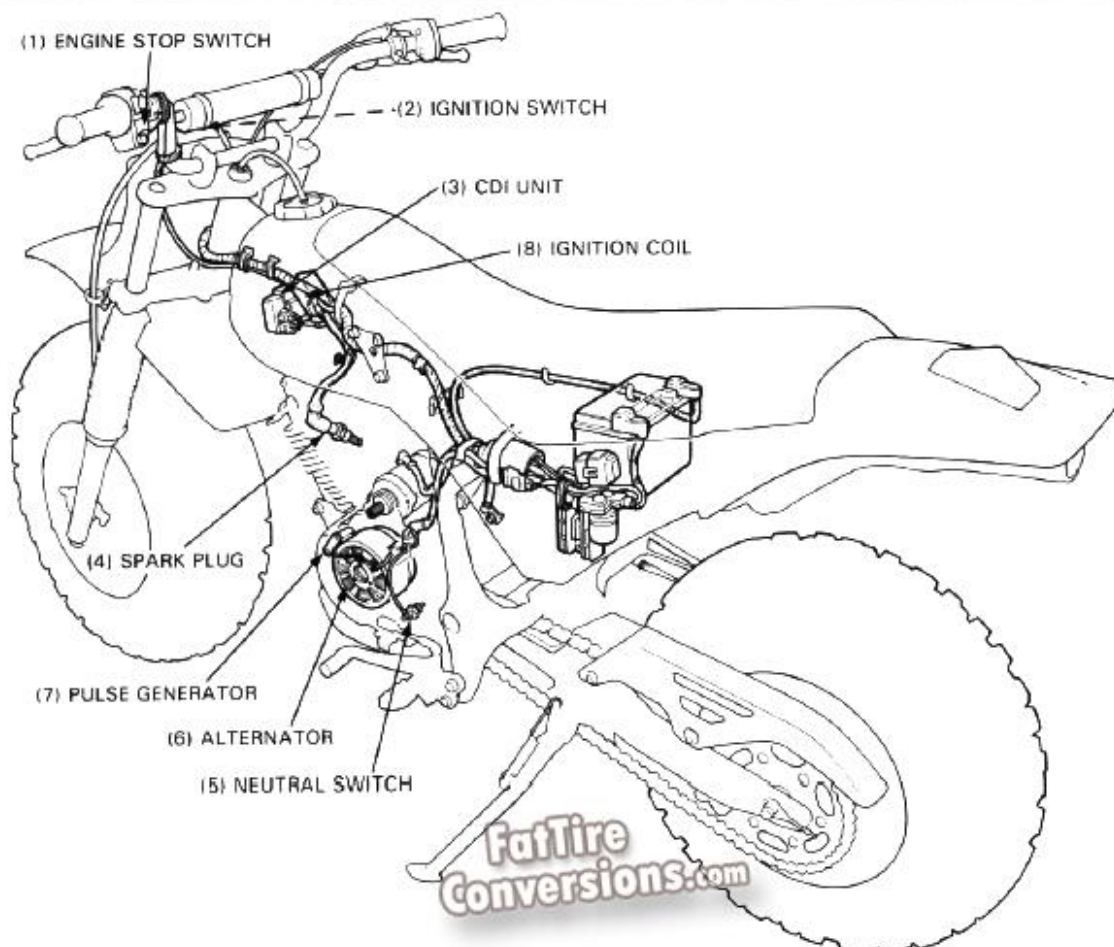
Install the exhaust pipe and muffler in the reverse order of removal.

NOTE

- Make sure there are no exhaust leaks after installation.



IGNITION SYSTEM



14. IGNITION SYSTEM

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

SERVICE INFORMATION

GENERAL

- Ignition timing does not normally need to be adjusted since the CDI (Capacitive Discharge Ignition) unit is factory preset.
- For spark plug inspection, refer to page 3-6.
- For pulse generator and stator coil removal, refer to Section 9.
- Inspection should be made in sequence referring to page 19-6 for troubleshooting of the system.

SPECIFICATIONS

ITEM		STANDARD
Ignition timing	At idle	$10^{\circ} \pm 2^{\circ}$ BTDC at $1,400 \pm 100$ rpm
	Full advance	$28^{\circ} \pm 2^{\circ}$ BTDC at $3,500 \pm 100$ rpm
Ignition coil (20°C, 68°F)	Primary coil resistance	0.1–0.3 Ω
	Secondary coil resistance (Without spark plug cap)	3.7–4.5 k Ω
Exciter coil resistance (20°C, 68°F)		100–300 Ω
Pulse generator resistance (20°C, 68°F)		290–360 Ω

TOOLS

CDI tester inspection adaptor (KKO)

07508–0012300 (Not available in U.S.A.)

CDI tester spark adaptor

07GGK–0010100 (Not available in U.S.A.)

TROUBLESHOOTING

Engine starts but stops

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

No spark at plug

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

Engine starts but runs poorly

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

IGNITION SYSTEM

CDI UNIT

Remove the fuel tank (page 4-3).

Check the spark plug condition before system inspection (page 3-5).

Disconnect and test the 2P and 4P couplers from the CDI unit couplers according to the following chart:

ITEM	TERMINAL	STANDARD
Ignition coil primary coil	Bl/Y and G	0.1—0.3 Ω (at 20°C/68°F)
Ignition coil secondary coil	Bl/Y and spark plug wire	3.7—4.5 Ω (at 20°C/68°F)
Alternator exciter coil	Bl/R and G	100—300 Ω (at 20°C/68°F)
Pulse generator	Bu/Y and G	290—360 Ω (at 20°C/68°F)
Ignition and engine stop switches (Set the ignition switch ON, and engine stop switch RUN positions)	Bl/W and G	No continuity (∞)

If there is no problem, replace the CDI unit.

If there is indication of abnormality, inspect the related circuit:

- Ignition coil primary coil (page 14-3).
- Ignition coil secondary coil (page 14-3).
- Alternator exciter coil (page 14-3).
- Pulse generator (page 14-4).
- Ignition and engine stop switches (page 17-4).

PERFORMANCE TEST (Except U.S.A.)

Inspect the CDI unit with CDI tester.

NOTE

- Follow the CDI tester manufacturer's instructions.

TOOL:

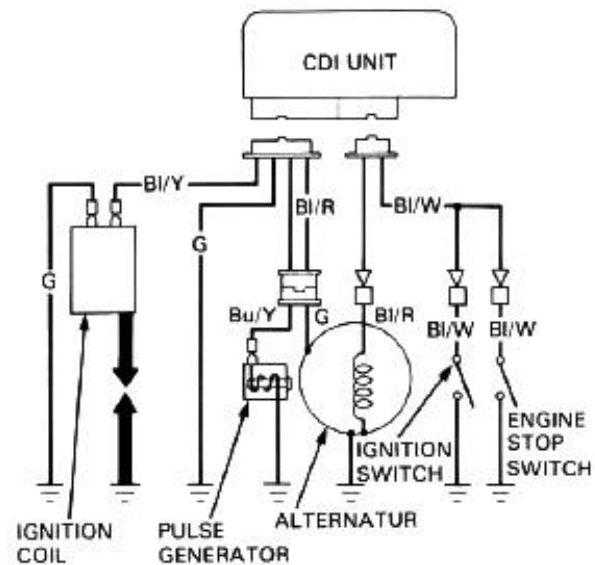
Inspection adaptor (KKO)

07508—0012300
(not available in U.S.A.)

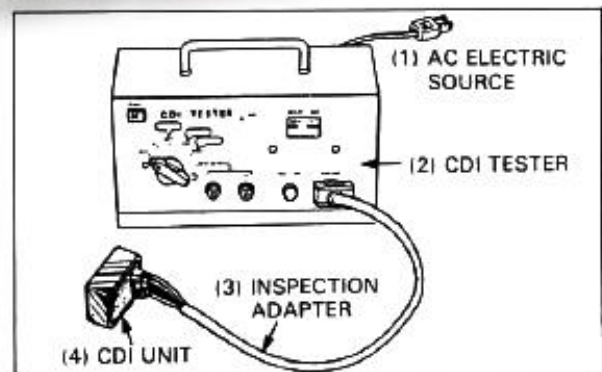
Connect the special adaptor to the CDI unit and CDI tester.

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

Replace the CDI unit with a new one if necessary.



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IGNITION COIL

PRIMARY CIRCUIT INSPECTION

Remove the seat and side covers.
Remove the fuel tank (page 4-3).
Disconnect the 4P coupler from the CDI unit.
Check the CDI unit couplers for loose connections or rusted terminals.
Measure the resistance of the Black/Yellow and Green wire terminals of the CDI unit 4P coupler.

STANDARD: 0.1—0.3 Ω (20°C/68°F)

If standard resistance is not obtained, remove the ignition coil as follows:

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

Measure the primary coil resistance at the ignition coil wire terminals.

STANDARD: 7.4—11.0 Ω (20°C/68°F)

If the resistance is within range, check the primary wire terminals of the ignition coil for loose wires, poor connections or an open circuit in the wire harness.

If there is no continuity, replace the ignition coil.

SECONDARY CIRCUIT INSPECTION

Remove the spark plug cap from the wire and measure the secondary coil resistance.

STANDARD: 3.7—4.5 k Ω (20°C/68°F)

PERFORMANCE TEST (Except U.S.A.)

Install the spark plug cap to the ignition coil.
Check the ignition coil with a CDI tester.

NOTE

- Follow the tester manufacturer's instructions.

TOOL:

Spark adaptor

07GGK—0010100 Not available in U.S.A.

Inspection adaptor

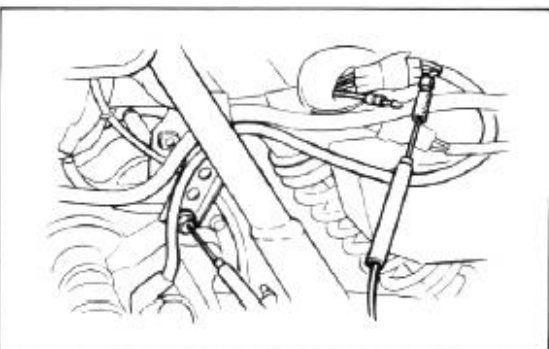
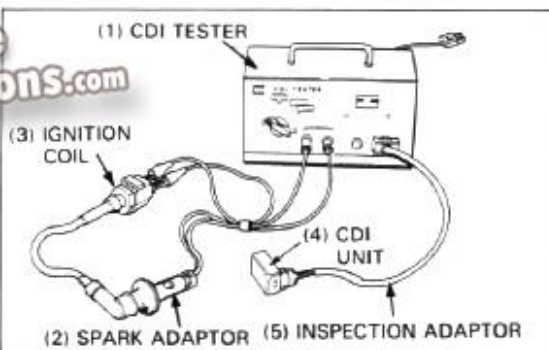
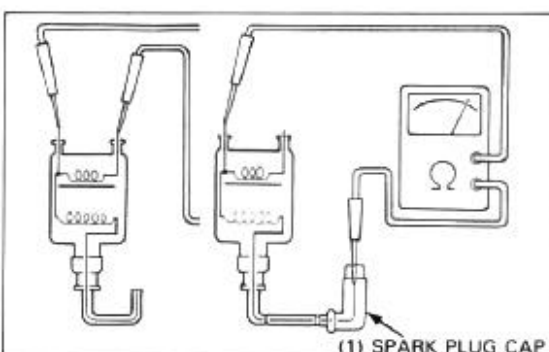
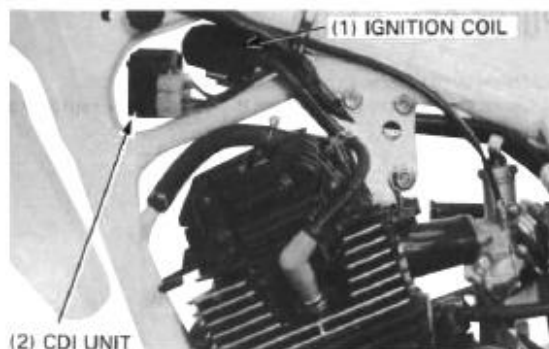
07508—0012304 Not available in U.S.A.

If sparks fail to jump across the electrodes in the tester inspection window, replace the ignition coil with a new one.

ALTERNATOR EXCITER COIL

Disconnect the alternator wire terminals.
Measure the resistance between the black/red wire and ground.

RESISTANCE: 100—300 Ω (20°C/68°F)

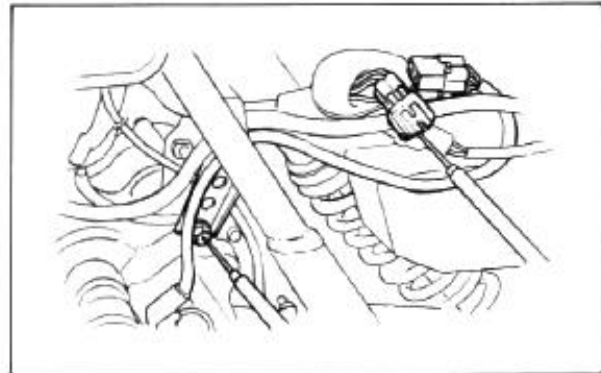


IGNITION SYSTEM

PULSE GENERATOR

Disconnect the alternator coupler.
Measure the resistance between the blue/yellow terminal and ground.

RESISTANCE: 290–360 Ω (20°C/68°F)

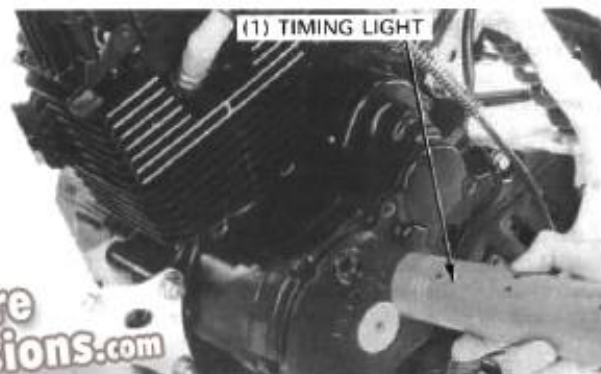


IGNITION TIMING

NOTE

- The Capacitive 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.

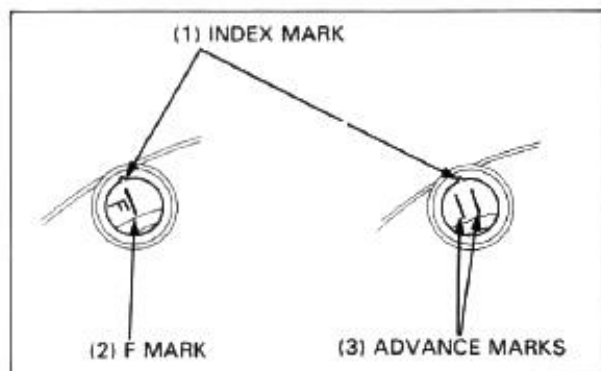
Warm up the engine and remove the timing hole cap.
Connect the timing light and tachometer.



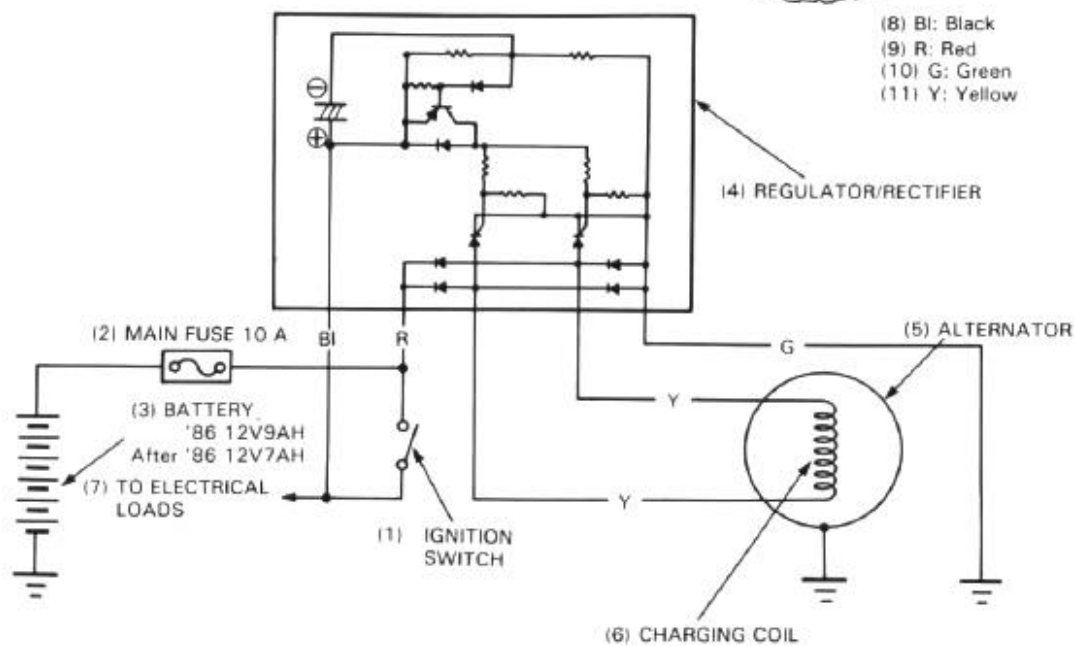
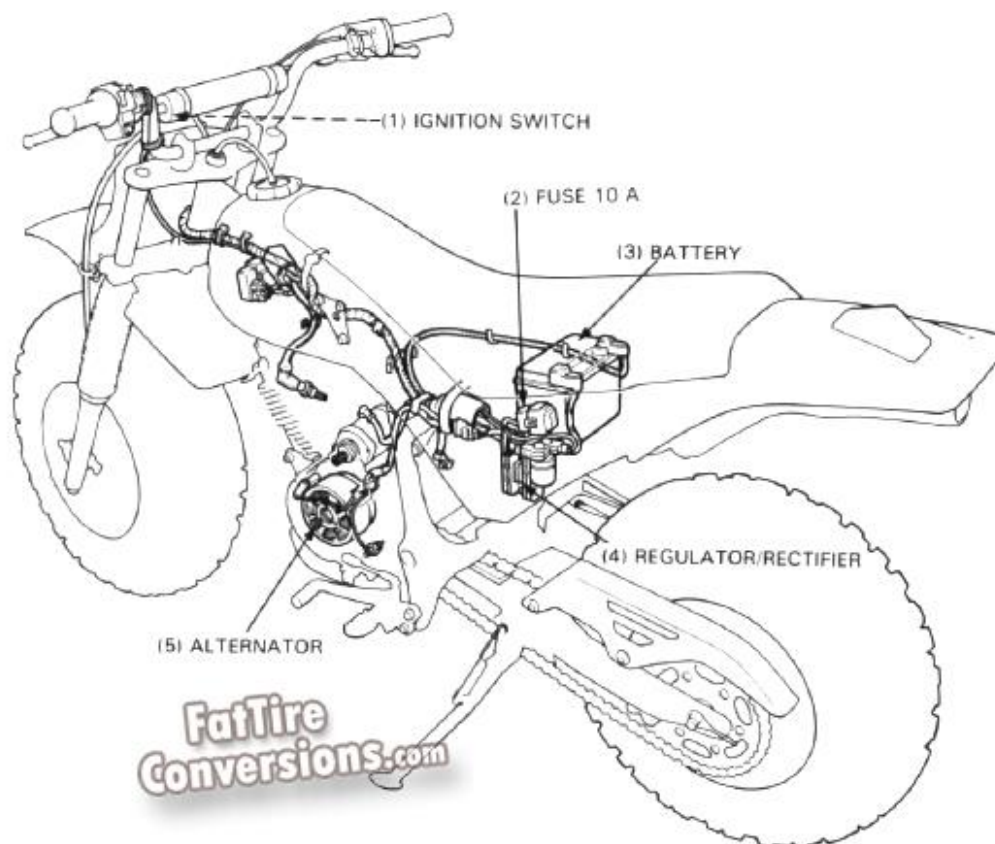
The timing is correct if the "F" mark on the flywheel aligns with the index mark on the left crankcase cover at 1,400 \pm 100 rpm.

To check the advance, raise the engine speed to 3,500 \pm 100 rpm; the index notch should be between the advance marks.

If the ignition timing is not correct, check the CDI unit with a continuity test and test the pulse generator.



BATTERY/CHARGING SYSTEM



15. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION	15-1	CHARGING SYSTEM	15-2
TROUBLESHOOTING	15-1	REGULATOR/RECTIFIER	15-3
BATTERY	15-2	CHARGING COIL	15-3

SERVICE INFORMATION

GENERAL

- Quick charging should be restricted to emergencies only. Slow charging is preferred.
- Remove the battery from the motorcycle for charging. If the battery must be charged on the motorcycle, disconnect the battery cables.
- The battery on this motorcycle is permanently sealed type. Never remove the filler hole caps even when the battery is being charged.
- Be sure to charge the battery with the amount of current and for the time indicated on the battery label and as given below. Charging with excessive current and/or too fast may cause battery failure.

WARNING

- *Do not smoke around a battery being charged. Always keep sparks away from a battery. The gas produced by a battery will explode if flames or sparks are brought near.*

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

SPECIFICATIONS

ITEM		STANDARD	
Battery	Capacity	'86 12 V—9 AH After '86 12 V—7 AH	
	Charging current	Standard: '86 0.9 A/5 hours	Maximum: 4 A/1 hour
	Charging time	At Standard: '86 5.0 hours	At Maximum: 1.0 hour
Alternator capacity		120 W/5,000 rpm	
Voltage regulator	Type	Transistorized non-adjustable regulator	
	Charging voltage	14.3 V—15.1 V	
Charging coil resistance		0.1—1.0 Ω	

TROUBLESHOOTING

No power—key turned on

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

Low power—key turned on

- Weak battery
- Loose battery connection

Low power—engine running

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

Intermittent power

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

Charging system failure

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

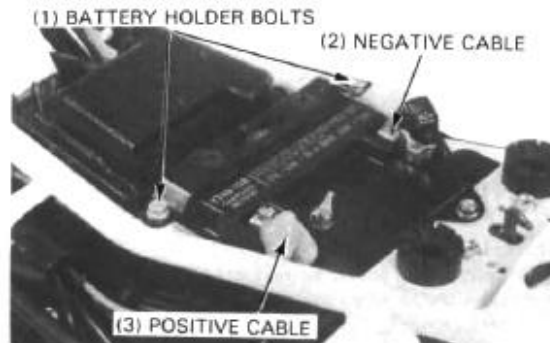
BATTERY/CHARGING SYSTEM

BATTERY

REMOVAL/INSPECTION

Remove the seat and side covers.
Remove the battery holder bolts.
Disconnect the negative cable and then the positive cable and remove the battery.
Measure the battery voltage using the digital voltmeter.

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



CHARGING

Connect the charger positive (+) cable to the battery positive (+) terminal, and charger negative (-) cable to the battery negative (-) terminal.

* After '86:

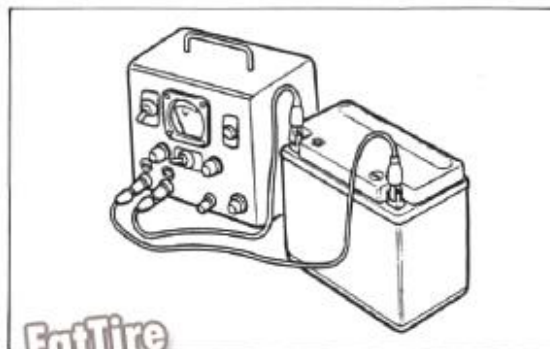
	Standard	Maximum
Charging current	0.9 A, *0.6 A	4 A
Charging time	5 hours *3 hours	1 hour

WARNING

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

CAUTION

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



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INSTALLATION

Install the battery in the reverse order of removal.

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

CHARGING SYSTEM

LEAKING TEST

If undercharged, disconnect the negative (-) cable from the battery and connect the voltmeter to the battery terminal and battery ground cable.

There should be no voltage with the ignition switch turned OFF.

If there is voltage, check the wire harnesses, couplers and connectors for short circuit and the main switch for function.



CHARGING VOLTAGE INSPECTION

NOTE

- Be sure that the battery is fully charged before performing this test.

Warm up the engine.

Stop the engine and remove the seat.

Connect the voltmeter across the battery terminals.

Start the engine, gradually raise the engine speed and measure the voltage.

NOTE

- Avoid short circuiting to the tester during the test.

VOLTAGE: 14.3–15.1 V/5000 rpm

REGULATOR/RECTIFIER

Disconnect the regulator/rectifier coupler.

Make following inspections at each terminal of the harness side coupler.

Make sure that the battery voltage appears between the Red (+) and Green (–) terminals of the regulator/rectifier couplers. Check the Red and Green wires for open circuit if voltage does not appear.

Make sure that the battery voltage appears between the Black (+) and Green (–) wires of the regulator/rectifier coupler. Check the Black and Green wires for open circuit if voltage does not appear with ignition switch turned ON.

Check the resistance between the coupler terminals (stator side).

STANDARD: 0.1–1.0 Ω (20°C/68°F)

If the above items are abnormal, check the wire harness of abnormal line for an open circuit and the coupler for loose or poorly contact.

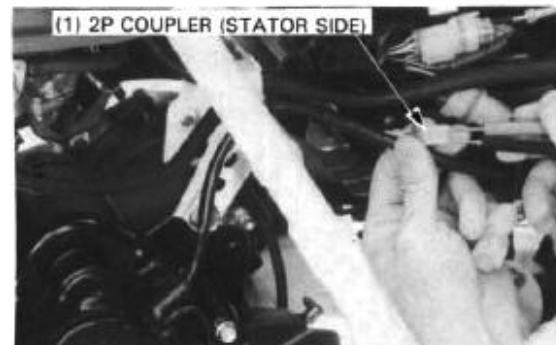
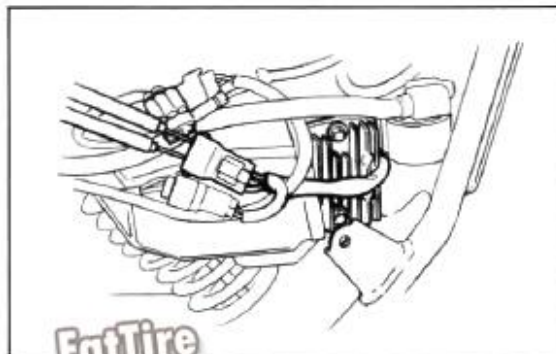
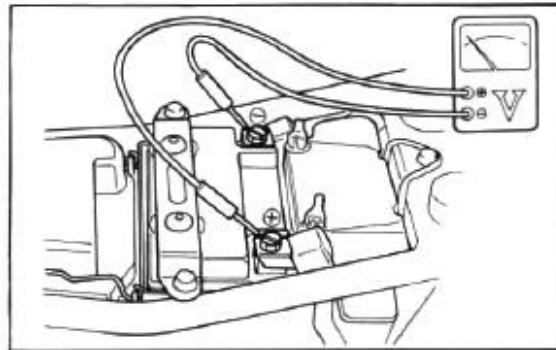
If the wire harness is normal, check the part of abnormal line. Replace the regulator/rectifier if the above items are satisfied.

CHARGING COIL INSPECTION

Disconnect the 2P regulator/rectifier coupler.

Measure the resistance between the coupler terminals (stator side).

STANDARD: 0.1–1.0 Ω (20°C/68°F)



BATTERY/CHARGING SYSTEM

Replace the alternator stator if there is no continuity or if any lead has continuity to ground.

Refer to Section 9 for stator removal.

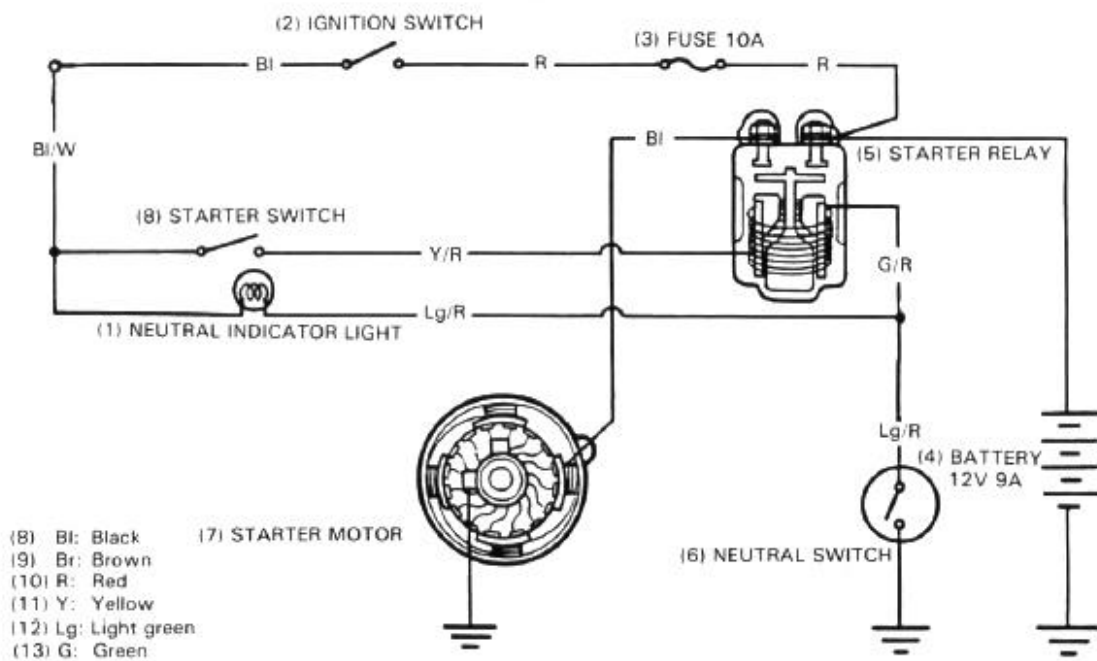
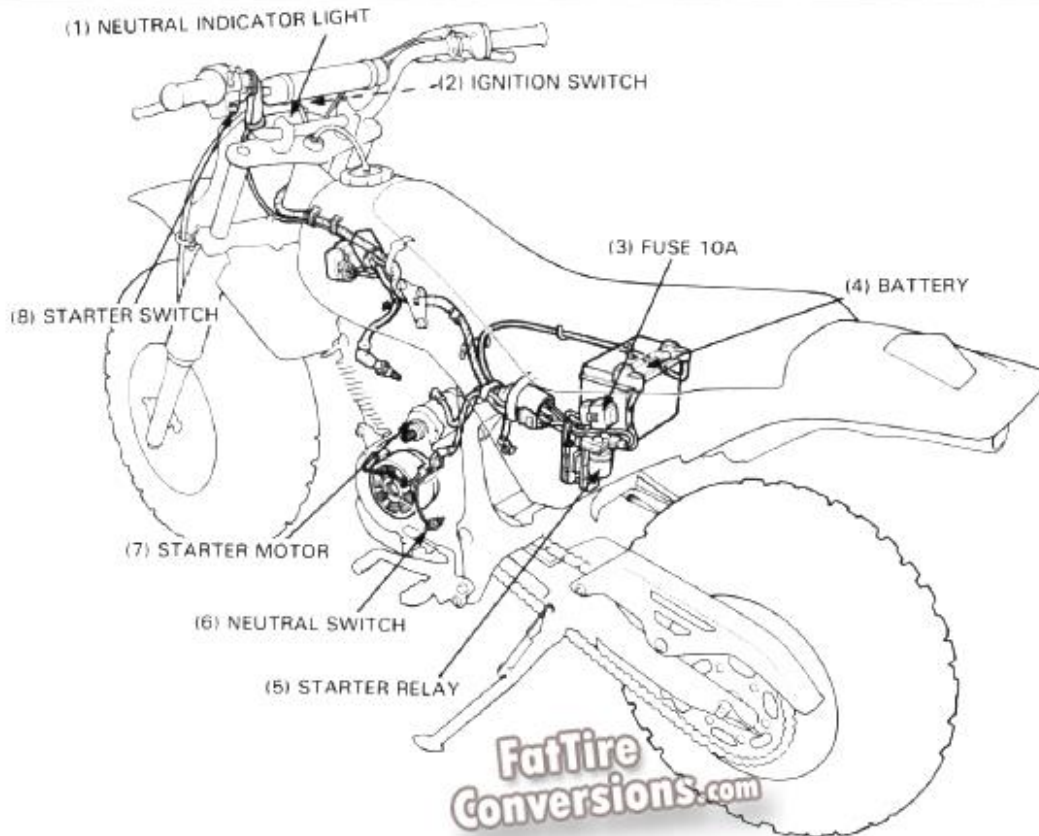
If there is no problem, check the wiring.

If OK, disconnect the 3P regulator/rectifier coupler.

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STARTER SYSTEM



16. STARTER SYSTEM

SERVICE INFORMATION	16-1	STARTER MOTOR	16-2
TROUBLESHOOTING	16-1	STARTER RELAY	16-4

SERVICE INFORMATION

GENERAL

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

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Starter motor	Brush spring tension	680 g (24.0 oz)	545 g (19.2 oz)
	Brush length	12.5 mm (0.49 in)	6.5 mm (0.26 in)

TROUBLESHOOTING

Starter motor will not turn

- Dead battery
- Faulty ignition switch
- Faulty starter switch
- Faulty neutral switch
- Faulty starter relay switch
- Loose or disconnected wire or cable

Starter motor turns engine slowly

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

Starter motor turns, but engine does not turn

- Faulty starter clutch
- Faulty starter motor gears
- Faulty starter motor or idle gears

Starter motor and engine turn, but engine does not start

- Ignition system problems
- Engine problems
- Fuel system problems

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STARTER SYSTEM

STARTER MOTOR

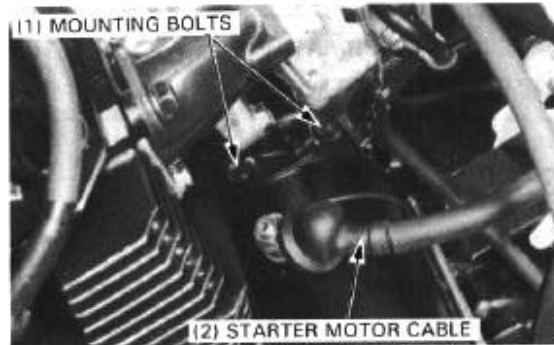
REMOVAL

WARNING

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

Remove the fuel tank (page 4-3), carburetor (page 4-6) and left crankcase cover (page 9-2).

Disconnect the starter motor cable from the starter motor. Remove the two mounting bolts and starter motor.



BRUSH INSPECTION

Remove the two starter motor case screws and the front and rear covers. Remove the armature and the brushes.

NOTE

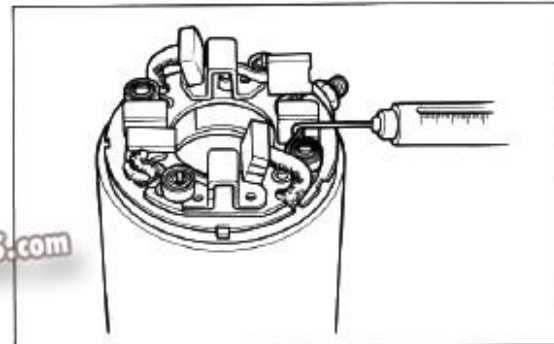
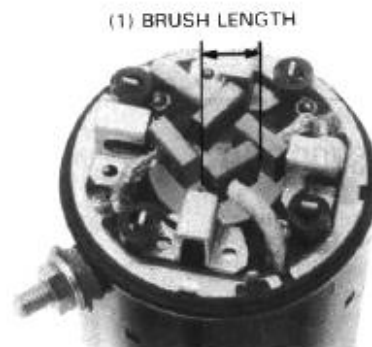
- Record the location and number of thrust washers for correct assembly.

Inspect the brushes and measure the brush length.

SERVICE LIMITS: 6.5 mm (0.26 in)

Measure the each brush spring tension with a spring scale.

SERVICE LIMIT: 545 g (19.2 oz)



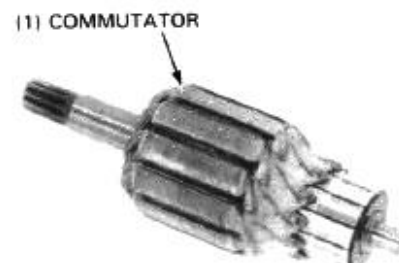
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COMMUTATOR INSPECTION

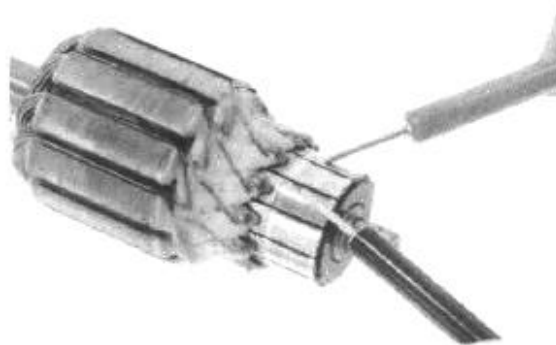
Inspect the commutator bars for discoloration. Bars discolored in pairs indicate grounded armature coils, in which case the starter motor must be replaced.

NOTE

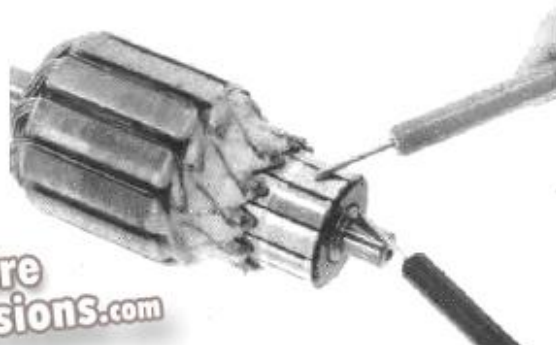
- Do not use emery or sand paper on the commutator.



Check for continuity between pairs of commutator bars; there should be continuity.



Also, check for continuity between individual commutator bars and the armature shaft; there should be no continuity.

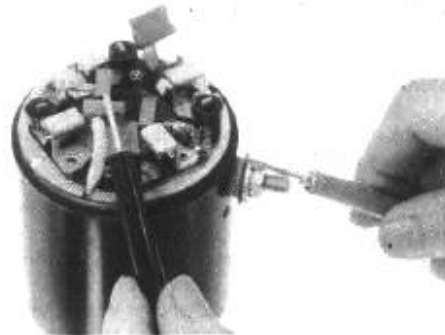


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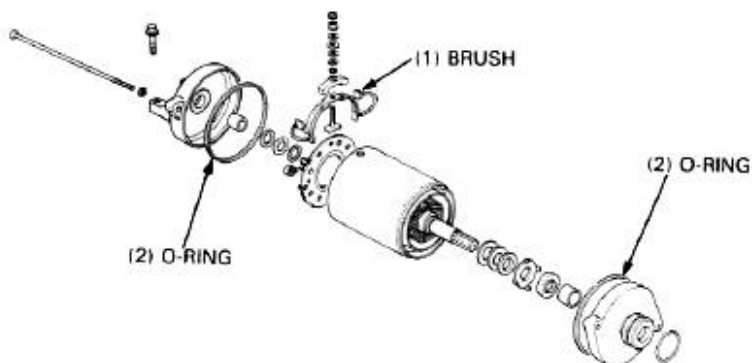
CASE INSPECTION

Check for continuity between the cable terminal and the motor case.
There should be no continuity.

Also, make a continuity check between the cable terminal and the insulated brush terminal.
There should be continuity.



ASSEMBLY



STARTER SYSTEM

Install a new O-ring onto the case.
Insert the commutator into the starter motor case.
Install the brushes into the brush holder.

Compress the brushes into their holders and slip the brush holder over the commutator while aligning the case notch with the brush holder tab.
Install the thrust washers onto the commutator shaft.

NOTE

- Be sure the proper number and location of the thrust washers, as previously noted, have been placed on the shaft.

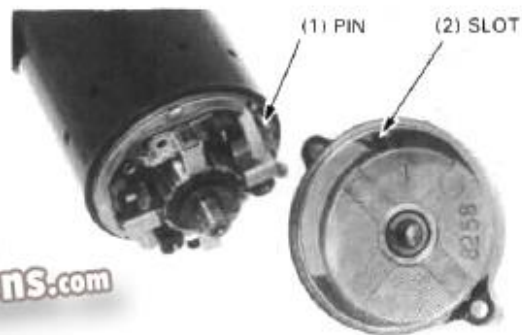


Install the front cover.

Install the rear cover while aligning the slot on the rear cover with the pin on the brush holder.

Install and tighten the starter motor screws.

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STARTER RELAY

Depress the starter relay switch button with the ignition switch ON. The coil is normal if the starter relay clicks.

Check the battery starter motor cables and starter relay switch couplers for loose or poor connections.

Disconnect the starter relay switch coupler from the wire harness.

Measure the voltage between the Yellow/Red (+) and Green/Red (-) of the wire harness side coupler.

The battery voltage should appear when the ignition switch is ON, starter switch is pushed and the transmission is shifted into neutral.

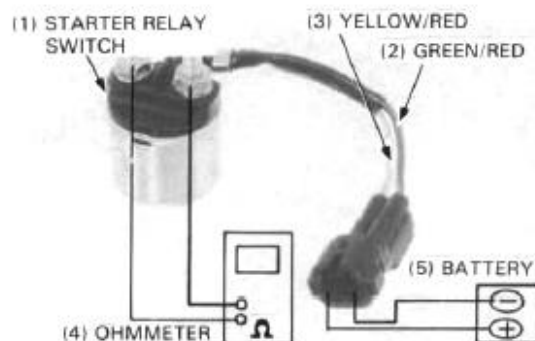
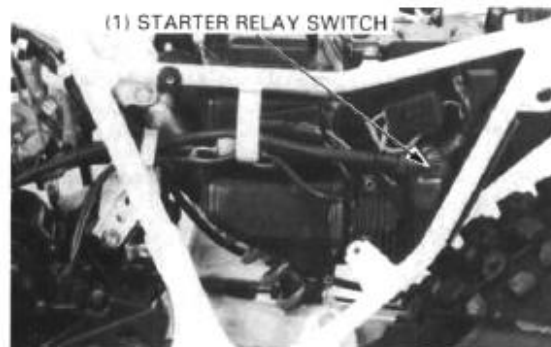
If the battery voltage does not appear, check the ignition switch, starter switch, neutral switch or open circuit in wire harness.

If it is OK, check the starter relay switch as follows:

Connect an ohmmeter to the starter cable terminal.

Connect the Yellow/Red wire to a 12 V battery positive (+) terminal and Green/Red wire to the negative (-) terminal.

The relay switch is normal if there is continuity with the battery connected and no continuity with the battery disconnected.



17. LIGHTS/SWITCHES

SERVICE INFORMATION	17-1	NEUTRAL SWITCH	17-3
TROUBLESHOOTING	17-1	IGNITION SWITCH	17-4
HEADLIGHT	17-2	HANDLEBAR SWITCH	17-4
TAILLIGHT	17-3	WIRING DIAGRAM	17-5
NEUTRAL INDICATOR LAMP	17-3		

SERVICE INFORMATION

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GENERAL

- Some wires will have different colored bands around them near the connector. These are connected to other wires which correspond with the band color.
- All plastic plugs have locking tabs that must be released before disconnecting and must be aligned when reconnecting.
- The following color codes used are indicated throughout this section and on the wiring diagram.

Bl = Black
Bu = Blue

G = Green
Gr = Gray

Lg = Light green
O = Orange

R = Red
W = White

- To isolate an electrical failure, check the continuity of the circuit or part. A continuity check can usually be made without removing the part from the motorcycle. Simply disconnect the wires and connect a continuity tester or volt-ohmmeter to the terminal or connector.
- A continuity tester is useful when checking to find out whether or not there is an electrical connection between two points. An ohmmeter is needed to measure the resistance of a circuit, such as when there is a specific coil resistance involved, or when checking for high resistance caused by corroded connections.

Headlight	12 V 45/45 W
Taillight	12 V 3.4 W
Neutral indicator	12 V 3.4 W

TROUBLESHOOTING

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

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

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

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

LIGHTS/SWITCHES

HEADLIGHT

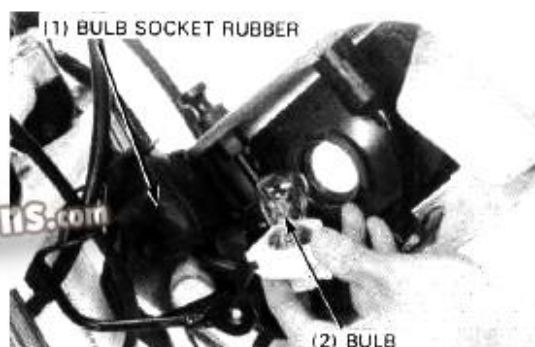
BULB REPLACEMENT

Remove the two headlight case mounting bolts.

Loosen the two headlight bracket flange bolts on the top bridge.



Pull out the bulb socket rubber and turn the bulb socket.
Replace the bulb with a new one.
Install the headlight bulb in the reverse order of removal.



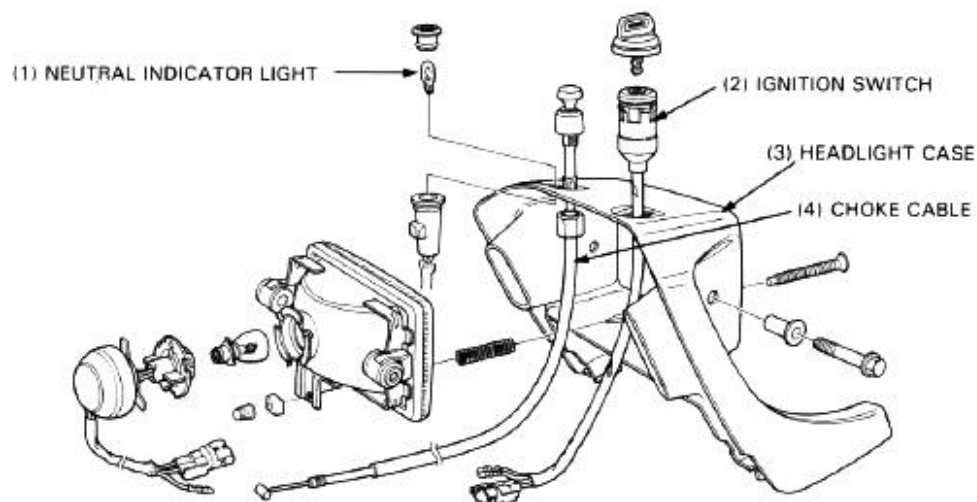
HEADLIGHT CASE REMOVAL/INSTALLATION

Remove the headlight bulb and disconnect the ignition switch wires and coupler (page 17-4), handlebar switch coupler and wires, and the neutral indicator coupler.

Disconnect the choke cable at the carburetor and free the choke cable from the frame.

Remove the headlight case.

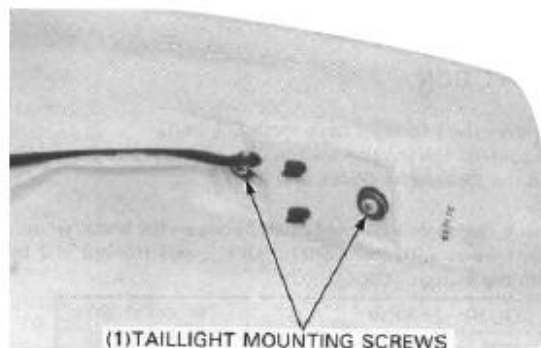
Install the headlight case in the reverse order of removal.



TAILLIGHT

BULB REPLACEMENT

Remove the taillight lens mounting screws from the rear fender.
Remove the taillight lens.

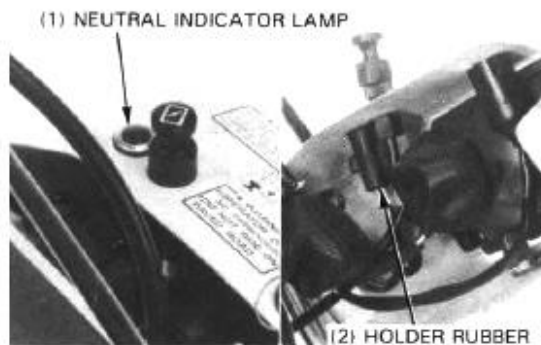


Replace the taillight bulb with a new one.
Installation is the reverse order of removal.



NEUTRAL INDICATOR LAMP

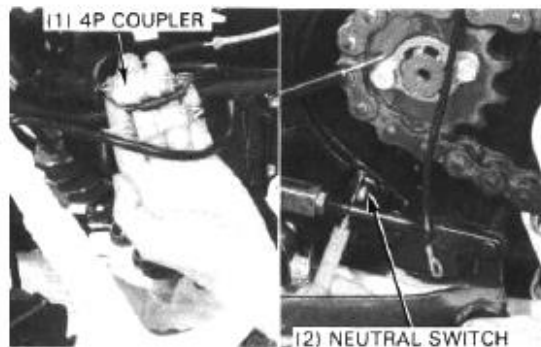
Remove the headlight case mounting bolts.
Remove the neutral indicator lens and holder rubber.
Replace the indicator bulb with a new one.
Installation is the reverse order of removal.



NEUTRAL SWITCH

Remove the seat and side covers.
Disconnect the alternator 4P coupler.
Check the continuity between the Light Green/Red terminal of the alternator 4P coupler and body ground. The neutral switch is functional if continuity exists with the transmission in neutral.
Check the neutral switch before replacement as described below:

Remove the drive sprocket cover and disconnect the neutral switch wire.
Check for continuity between the switch terminal and ground. The neutral switch is functional if continuity exists with the transmission in neutral.



LIGHTS/SWITCHES

IGNITION SWITCH

INSPECTION

Remove the headlight case mounting bolts.
Disconnect the ignition switch wires (Green and Black/White) and the 2P coupler (Black and Red).

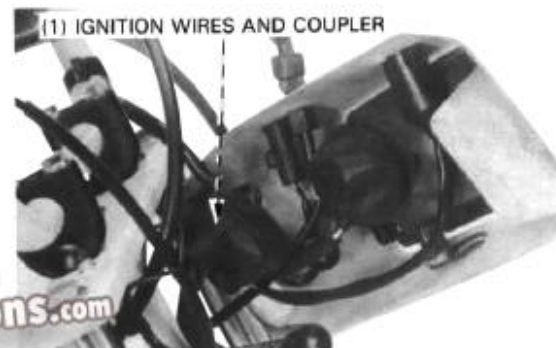
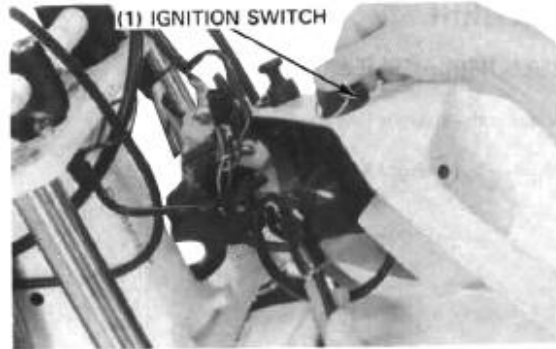
Check the switch for continuity between the black/white and green wires with the switch "OFF", and the red and black with the switch "ON".

COLOR	Bl/W	G	R	Bl
OFF	○	○		
ON			○	○

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

REMOVAL

Disconnect the Green and Black/White wire connectors and the 2P coupler.
Push the lugs on the ignition switch in and remove the ignition switch from the headlight case.



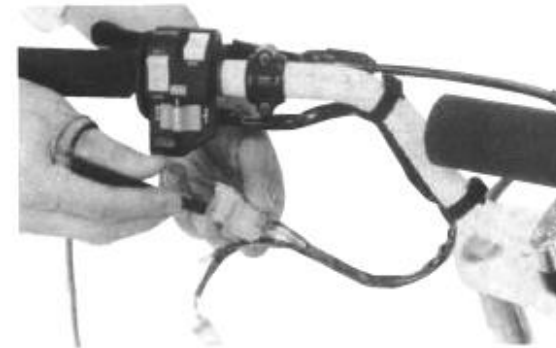
HANDLEBAR SWITCH

NOTE

- The handlebar switch (lighting, dimmer, engine stop, and starter switches) must be replaced as an assembly.

Remove the headlight case mounting bolts and disconnect the 4P coupler and the Black/White wire.

Check for continuity between the terminals.
Continuity should exist between the color coded wire terminals in each chart.



ENGINE STOP SWITCH

COLOR	G	Bl/W
OFF	○	○
RUN		

LIGHTING/DIMMER SWITCHES

SWITCH	LIGHTING			DIMMER			
COLOR	Bl	Br				Bu	W
OFF				Hi	○	○	
ON	○	○	○	(N)	○	○	○
				Lo	○	○	○

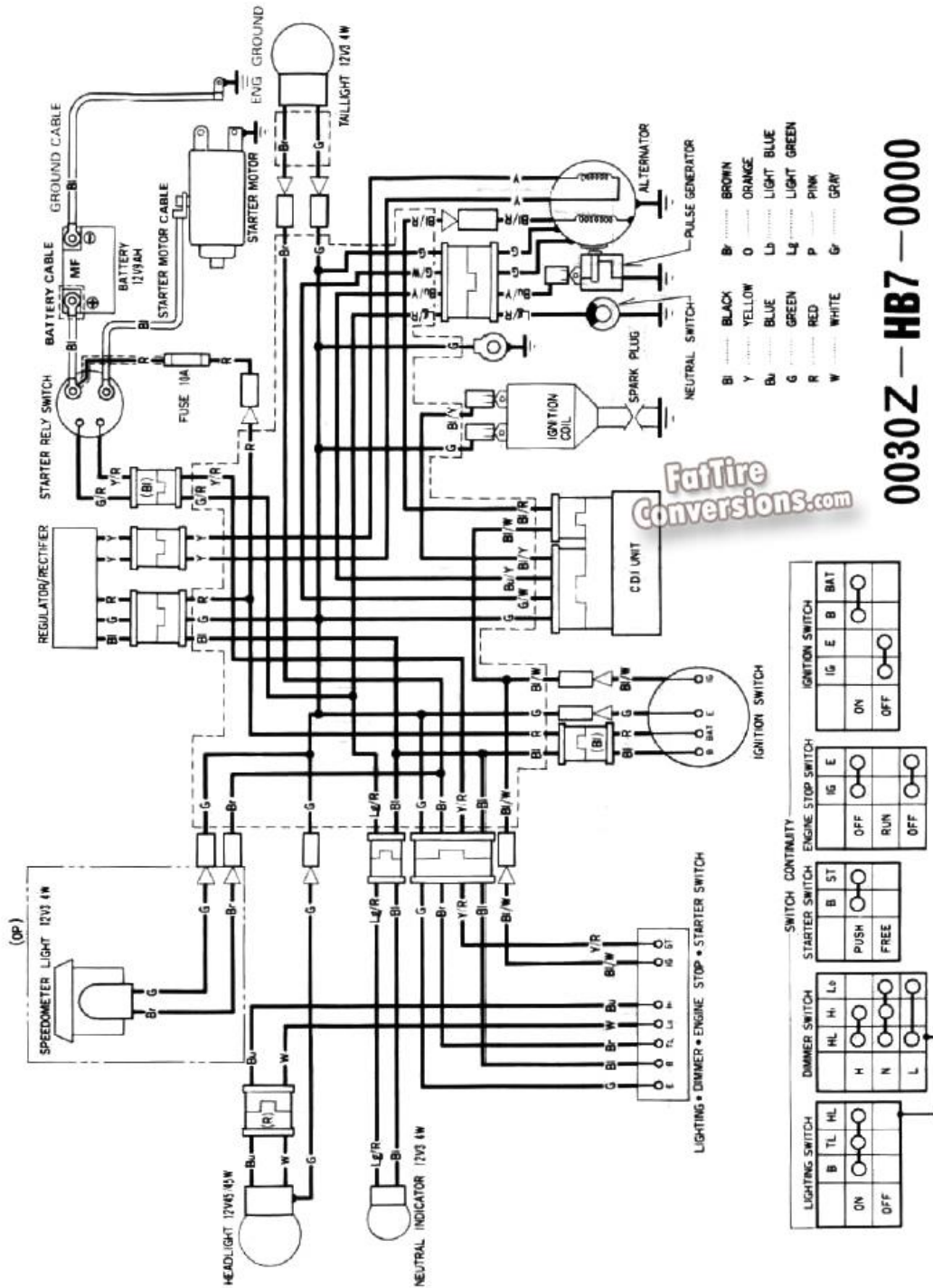
INTERCONNECTIONS

STARTER SWITCH

COLOR	Bl	Y/R
RELEASED		
PUSHED	○	○

WIRING DIAGRAM

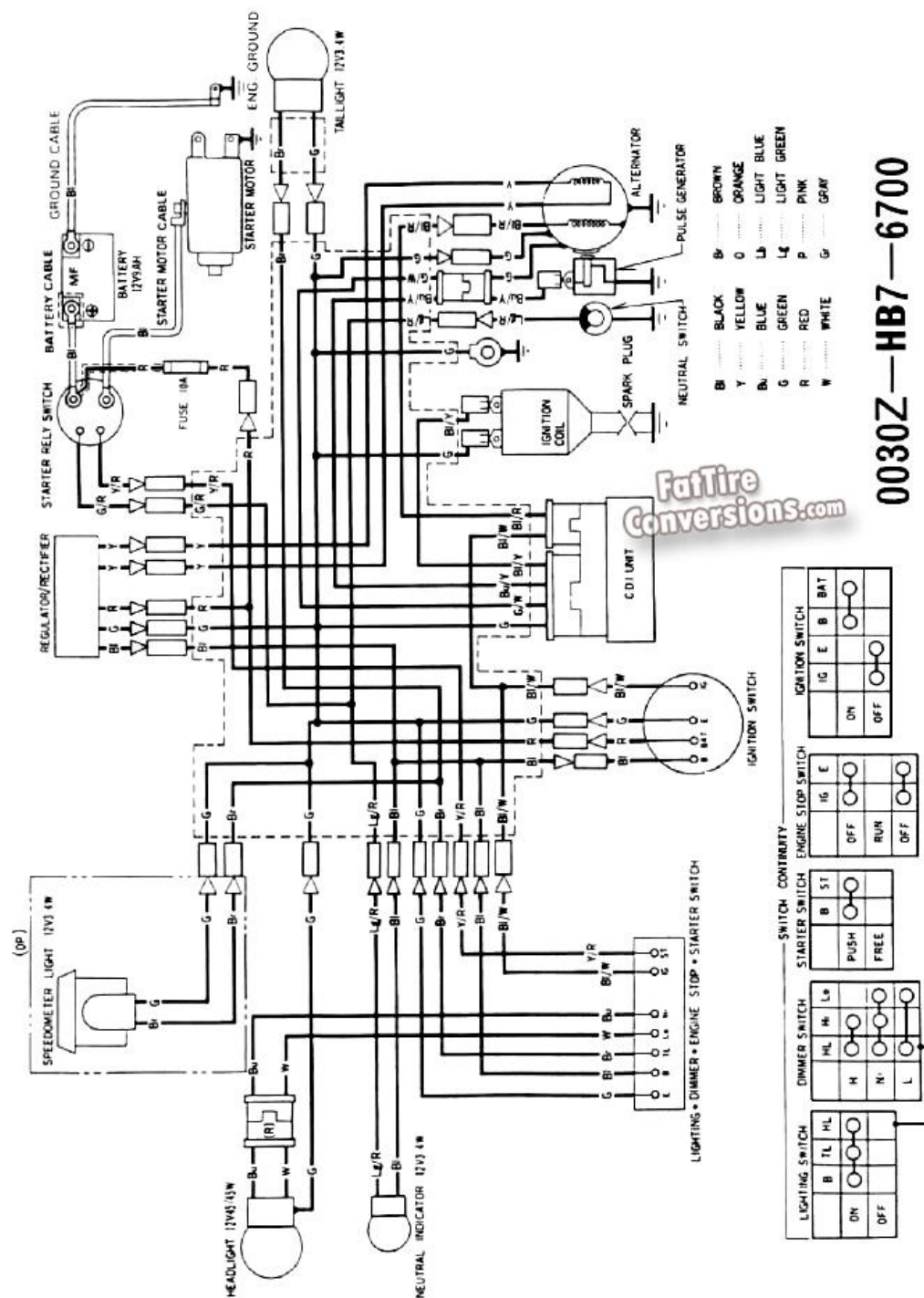
'86:



0030Z—HB7—0000

LIGHTS/SWITCHES

After '86:



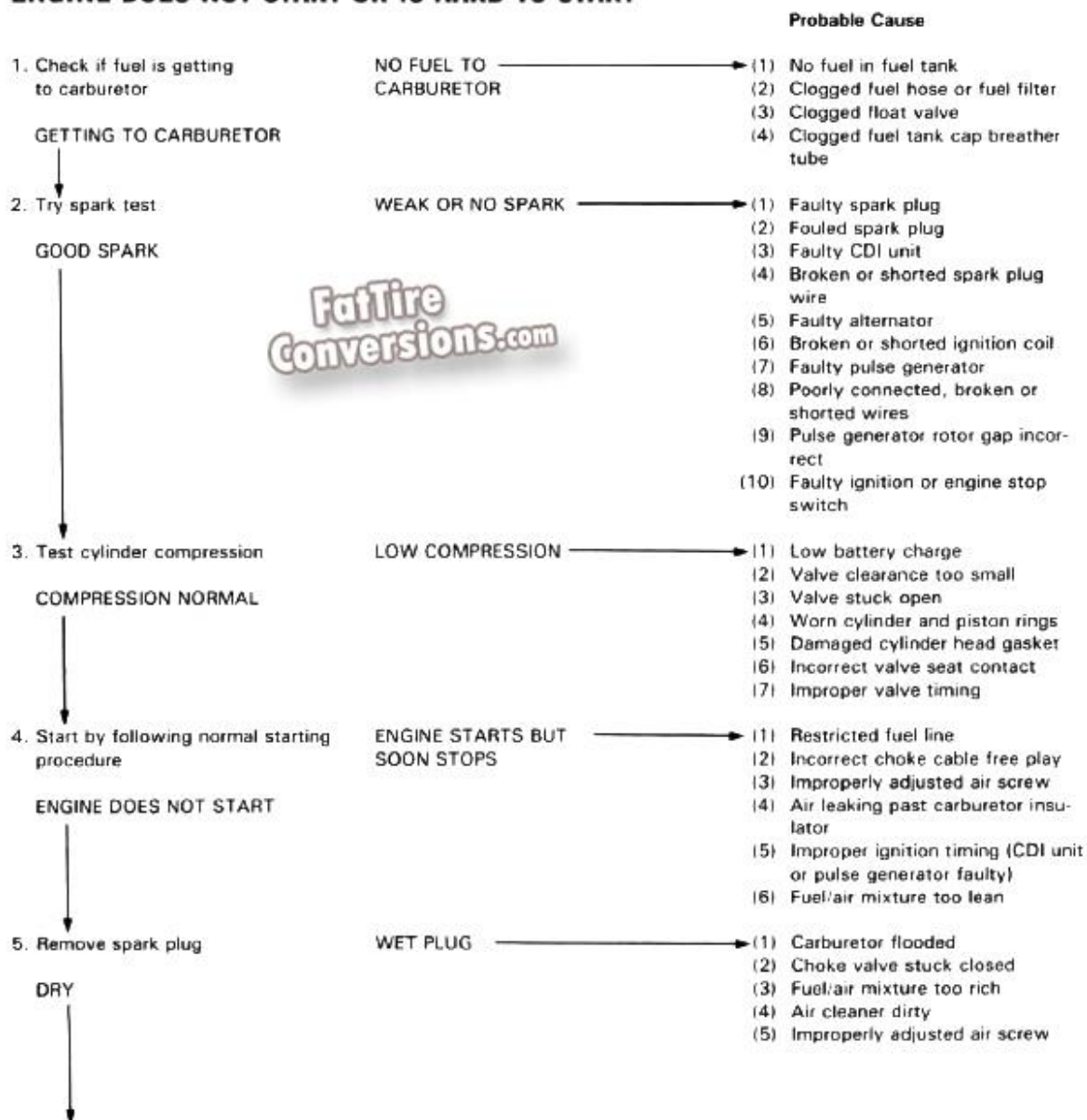
0030Z—HB7—6700

FatTire
Conversions.com

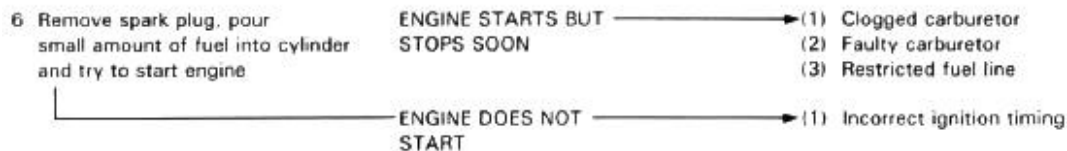
18. TROUBLESHOOTING

ENGINE DOES NOT START OR IS HARD TO START	18-1	POOR HANDLING	18-4
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POOR PERFORMANCE AT LOW AND IDLE SPEEDS	18-3	WEAK OR NO SPARK	18-6
POOR PERFORMANCE AT HIGH SPEEDS	18-4		

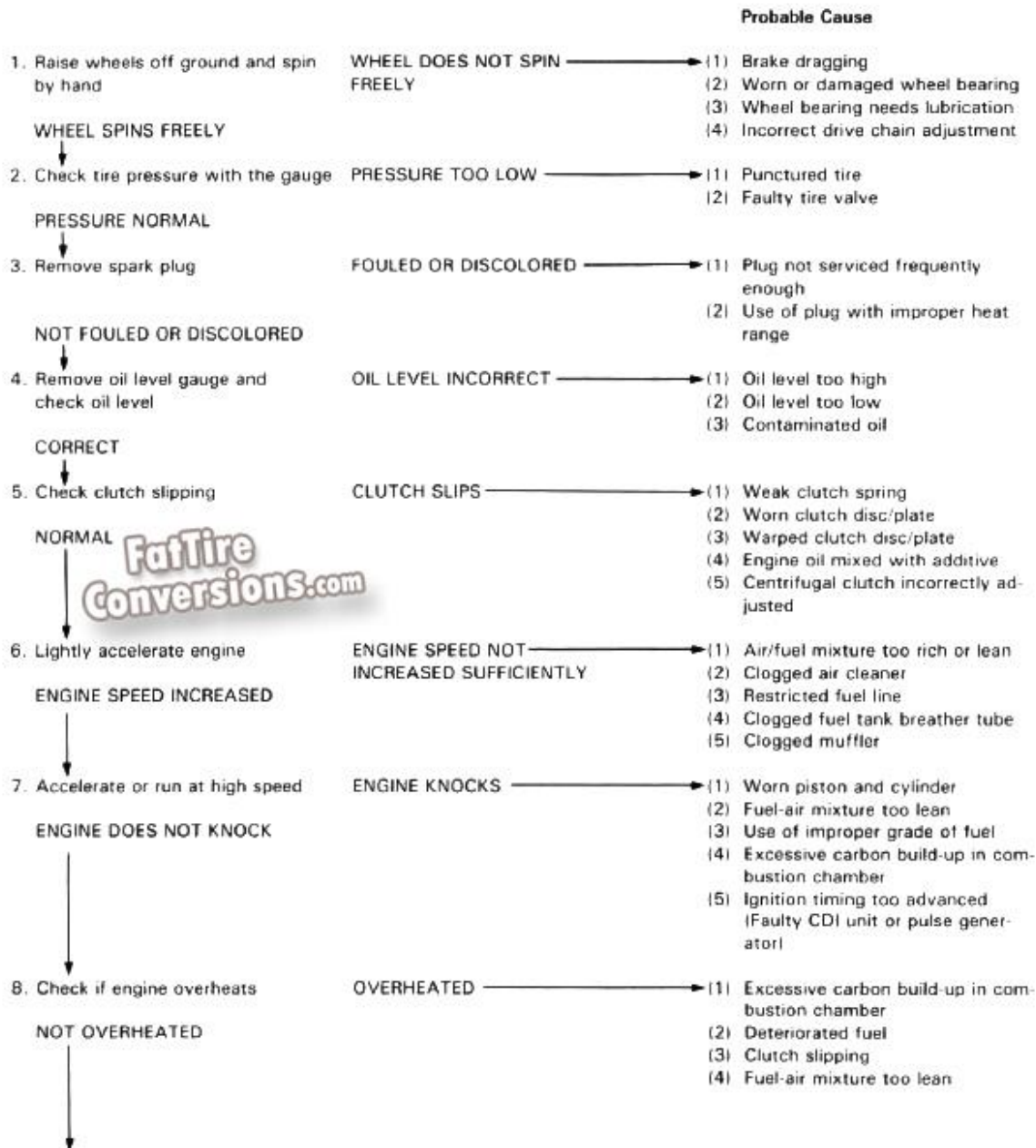
ENGINE DOES NOT START OR IS HARD TO START

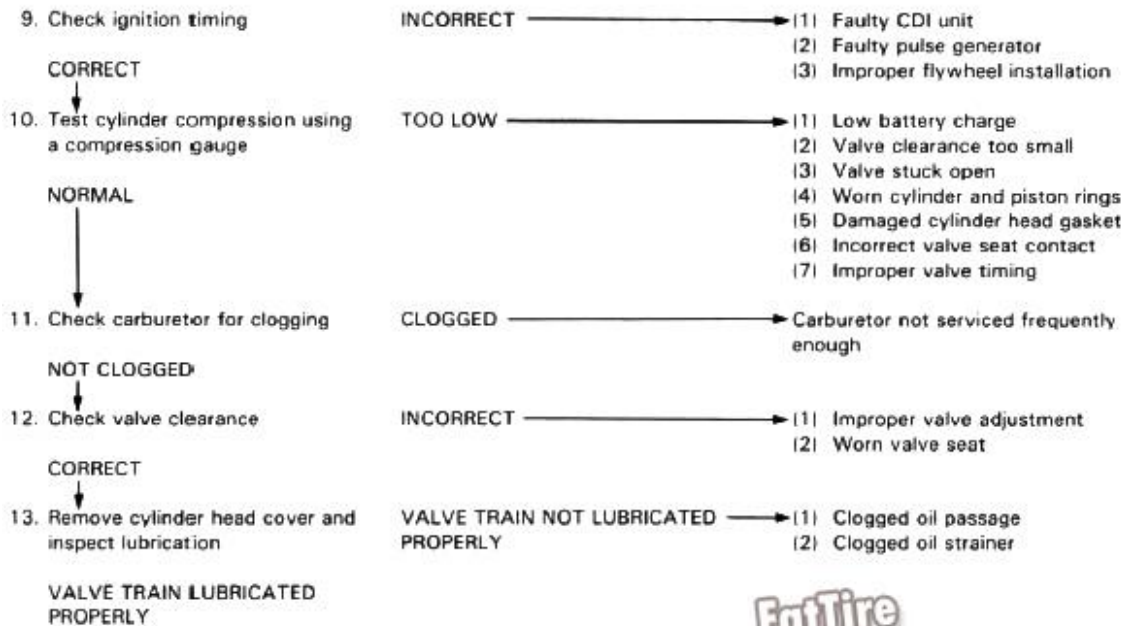


TROUBLESHOOTING



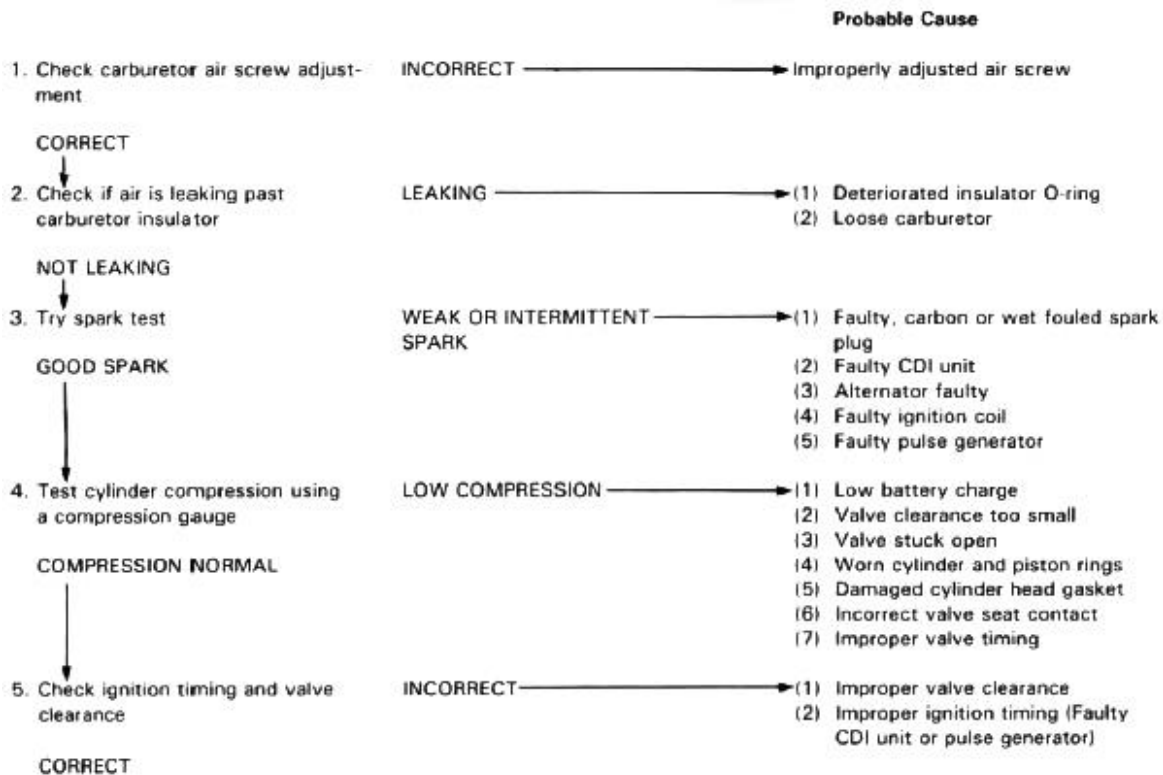
ENGINE LACKS POWER





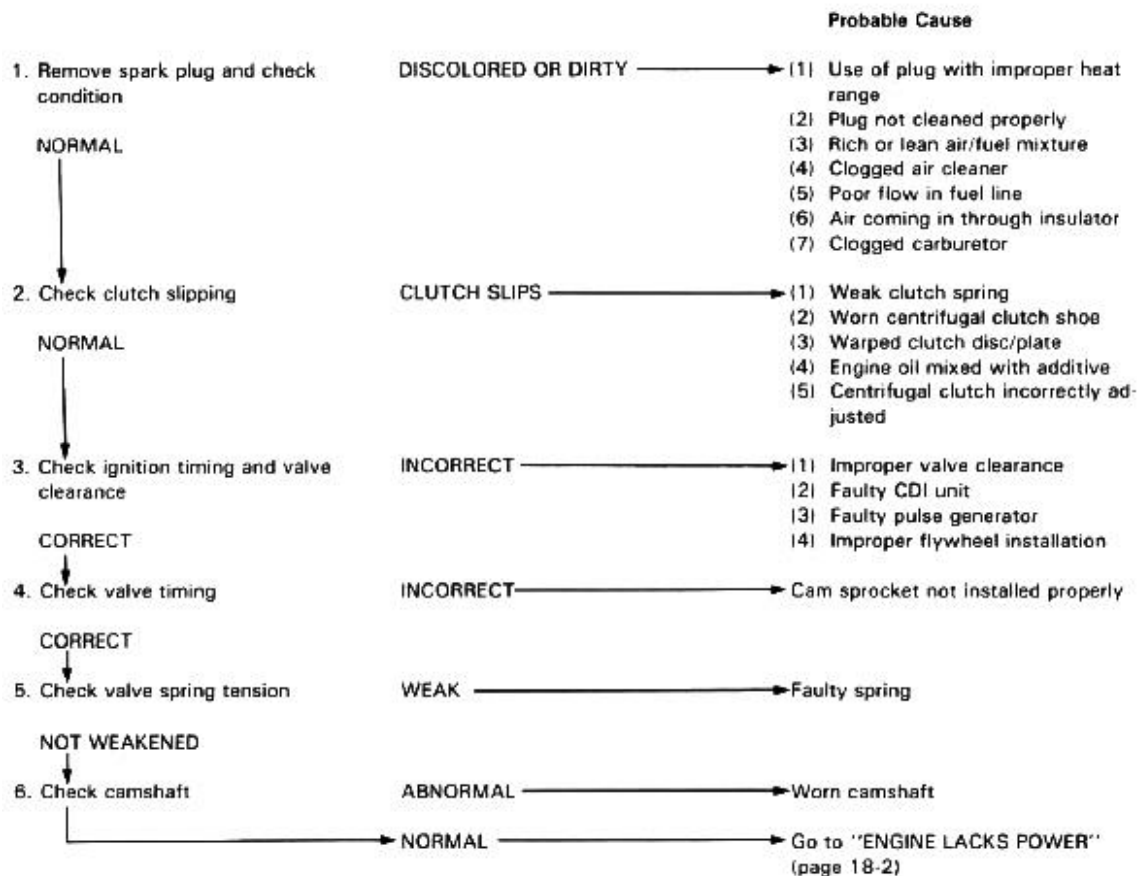
**FatTire
Conversions.com**

POOR PERFORMANCE AT LOW AND IDLE SPEEDS



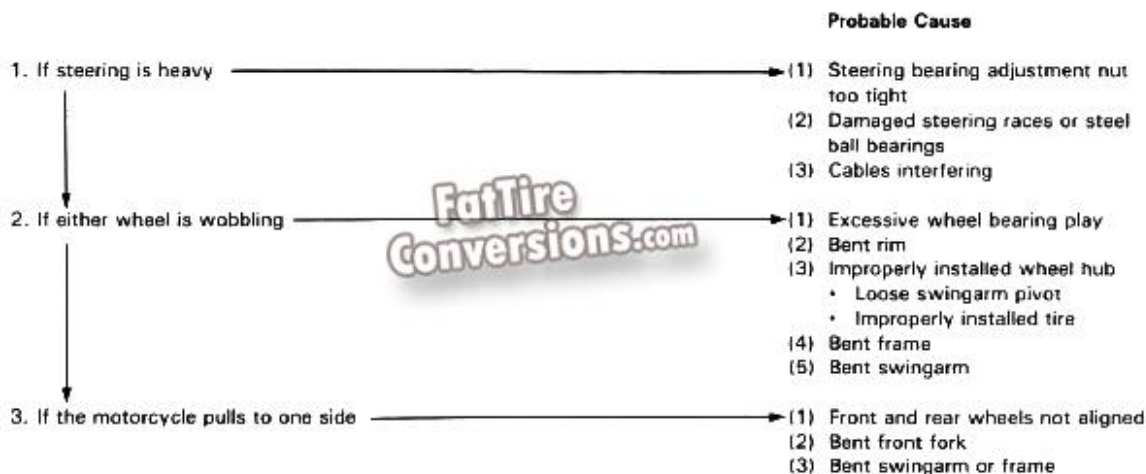
TROUBLESHOOTING

POOR PERFORMANCE AT HIGH SPEEDS



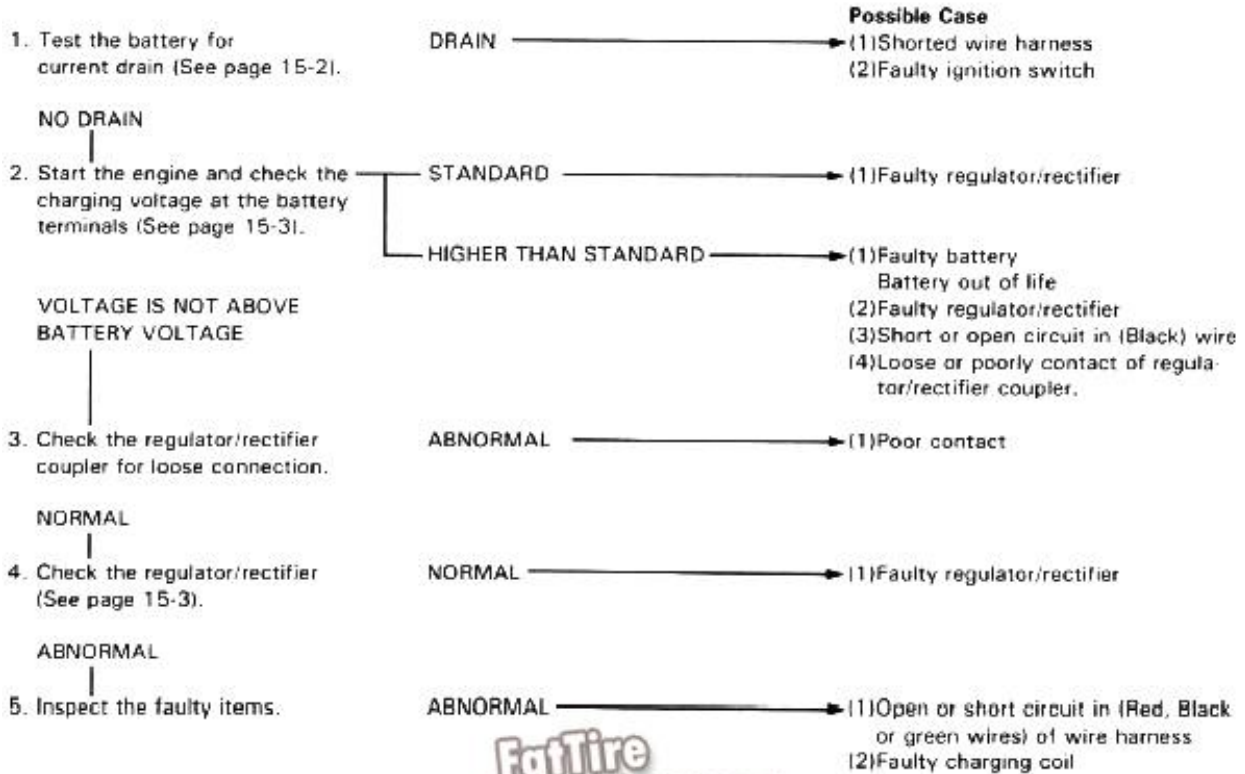
POOR HANDLING

Check tire pressure



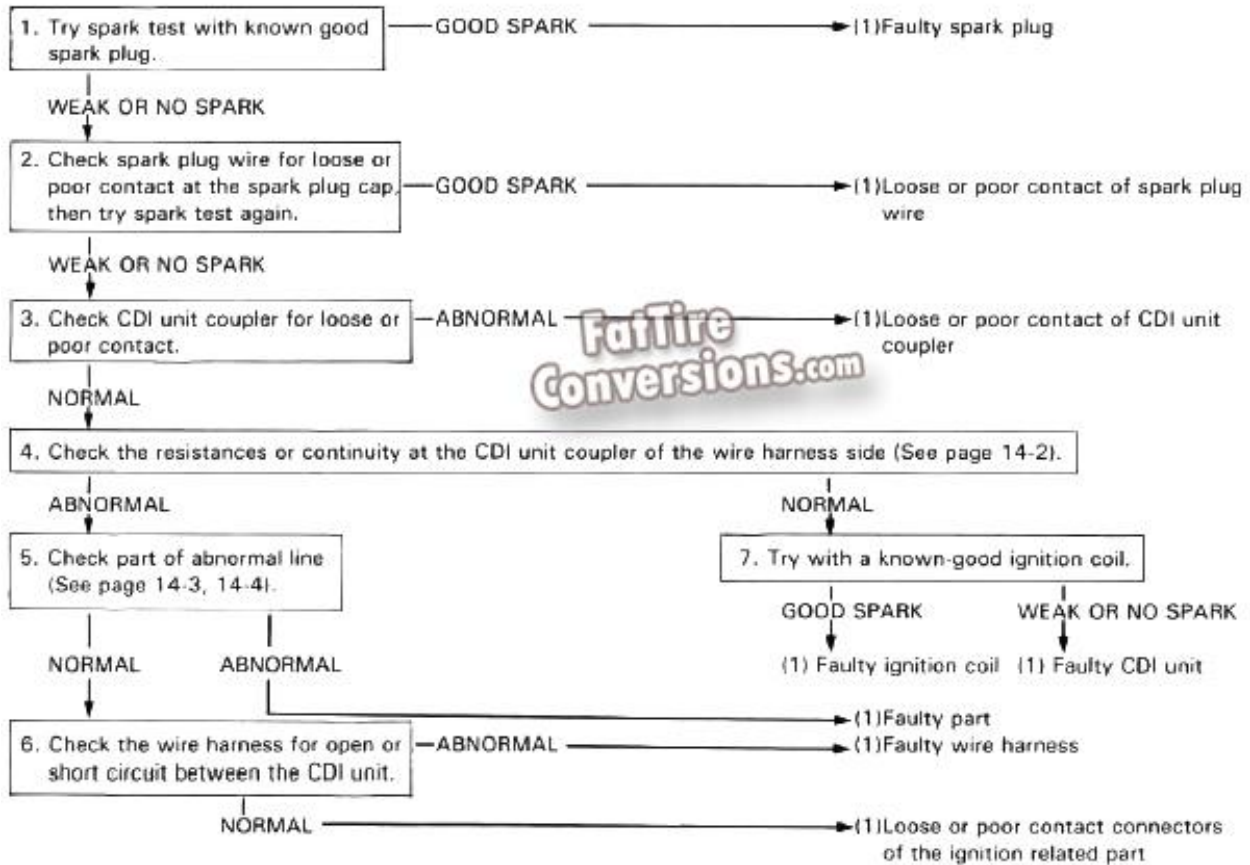
UNDER CHARGE/OVER CHARGE OF THE BATTERY

NOTE: Make sure that the battery is in good condition, use a known-good battery if necessary.



TROUBLESHOOTING

WEAK OR NO SPARK



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