HONDA

SERVICE MANUAL

86

CT110

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IMPORTANT SAFETY NOTICE

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

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

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains *some* warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service methods or tools selected.

HOW TO USE THIS MANUAL

Follow the Maintenance Schedule (Section 3) recommendations to ensure that the vehicle is in peak operating condition and the emission levels are within the standards set by the U.S. Environmental Protection Agency. Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Sections 1 through 3 apply to the whole motorcycle, while sections 4 through 16 describe parts of the CT110, grouped according to location.

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

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

If you don't know what the source of the trouble is, refer to section 17 Troubleshooting.

HONDA MOTOR CO., LTD.
Service Publications Office

CONTENTS

Date of Issue: January, 1986

1. GENERAL INFORMATION

GENERAL SAFETY

WARNING

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

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.

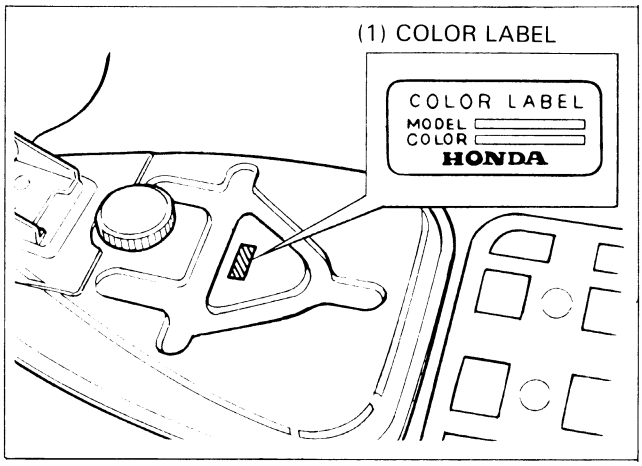
WARNING

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.

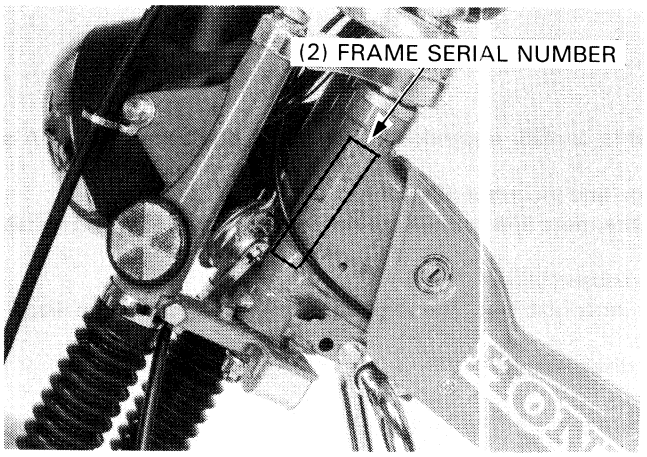
SERVICE RULES

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

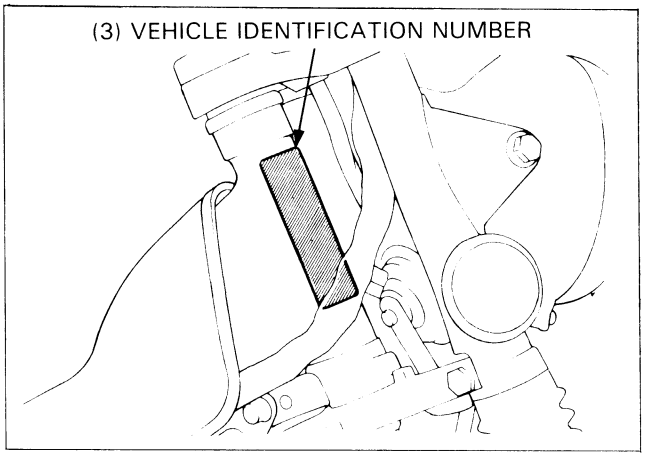
MODEL IDENTIFICATION



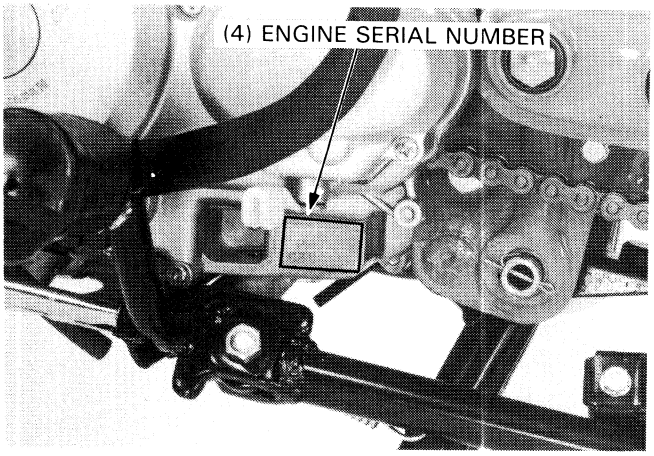
The color label is attached to the fuel tank below the seat.



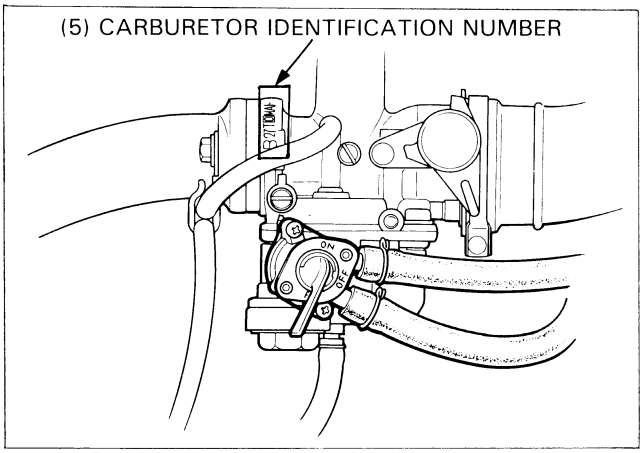
The frame serial number is stamped on the steering head's left side.



The vehicle identification number is on the steering head's right side.



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



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

SPECIFICATIONS

ITEM				SPECIFICATION
DIMENSIONS	Overall length			1,870 mm (73.6 in)
	Overall width			750 mm (29.5 in)
	Overall height			1,060 mm (41.7 in)
	Wheelbase			1,220 mm (48.0 in)
	Seat height			775 mm (30.5 in)
	Foot peg height			295 mm (11.6 in)
	Ground clearance			150 mm (5.9 in)
	Dry weight			94.2 kg (207.7 lb)
	Curb weight			100 kg (220.5 lb)
FRAME	Type			Back bone
	F. suspension, travel			Telescopic fork, 102 mm (4.0 in)
	R. suspension, travel			Swing arm, 77 mm (3.0 in)
	Gross vehicle weight rating			199 kg (438.7 lb)
	Vehicle capacity load			100 kg (220.5 lb)
	Front tire size			2,75-17-4PR
	Rear tire size			2,75-17-4PR
	Cold tire pressure	Up to 100 kg (220.5 lbs) load	Front	175 kPa (1.75 kg/cm², 24 psi)
			Rear	225 kPa (2.25 kg/cm², 32 psi)
	F. brake, lining swept area			Internal expanding shoe, 86.4 cm² (13.4 sq.in)
	R. brake, lining swept area			Internal expanding shoe, 86.4 cm² (13.4 sq. in)
	Fuel capacity [ ]: AC			4.6 [4.3] lit (1.22 [1.14] US gal, 1.01 [0.95] imp gal)
	Caster angle			22°
	Trail length			82 mm (3.2 in)
	Front fork oil capacity			135 cc (4.6 ozs)
ENGINE	Type			Air cooled 4 stroke OHC engine
	Cylinder arrangement			Single cylinder 75° inclined from vertical
	Bore and stroke			52.0 x 49.5 mm (2.05 x 1.95 in)
	Displacement			105.1 cc (6.39 cu in)
	Compression ratio			8.5 : 1
	Valve train			Chain driven over head camshaft
	Maximum horsepower			6.9 BHP/7,500 rpm
	Maximum torque			0.72 kg-m (5.209 ft-lb) /6,000 rpm
	Oil capacity	at assembly		1.1 lit (1.16 Us qt, 0.97 imp qt)
		at draining		0.9 lit (0.95 Us qt, 0.79 imp qt)
	Lubrication system			Forced pressure and wet sump
	Air filtration			Oiled polyurethane foam
	Cylinder compression			1,078—1,372 kPa (11.0—14.0 kg/cm², 156—199 psi)
	Intake valve	Opens		5° BTDC at 1 mm lift, 59° BTDC at 0 lift
		Closes		20° ABDC at 1 mm lift, 74° ABDC at 0 lift
	Exhaust valve	Opens		25°BBDC at 1 mm lift, 79° BBDC at 0 lift
		Closes		5° ATDC at 1 mm lift, 59° ATDC at 0 lift
	Valve clearance (cold)	Intake		0.05 mm (0.002 in)
		Exhaust		0.05 mm (0.002 in)
	Engine weight (dry)			24.9 kg (54.89 lb)
	Idle speed			1,500 ± 100 rpm

ITEM			SPECIFICATION	
CARBURETOR	Carburetor type/throttle bore		Piston valve/18 mm (0.7 in)	
	Identification number		PB10D	
	Air screw opening		1-1/2 turns out	
	Float level		10.7 mm (0.42 in)	
DRIVE TRAIN	Clutch		Wet multi-plate automatic	
	Transmission		4 speed constant-mesh	
	Primary reduction		3.722 : 1	
	Gear ratio		High	Low
		1st	2.538	4.692
		2nd	1.611	2.978
		3rd	1.190	2.200
		4th	0.958	1.771
	Final reduction		3.000 : 1 Drive sprocket 15T, Driven sprocket 45T	
	Gearshift pattern		Left foot operated return system, N-1-2-3-4	
ELECTRICAL	Ignition system		CDI	
	Ignition timing	"F" mark	10° ±2 BTDC at 1,500 rpm	
		Full advance	32° ±2 BTDC at 3,400 rpm	
	Alternator	Capacity	6V 83W/5,000 rpm	
	Battery	Capacity	6V–4A	
	Spark plug	NGK	DR8ES-L	
		ND	X24ESR-U	
	Spark plug gap		0.6–0.7 mm (0.02–0.03 in)	
	Fuse capacity		10A	
LIGHTS	Headlight (high/low)		6V 35/36.5W	
	Tail/brakelight		6V 3/32 cp	
	Turn signal light	Front	6V 21 cp	
		Rear	6V 21 cp	
	Instrument		6V 1 cp	
	Neutral indicator		6V 2 cp	
	Turn signal indicator		6V 1 cp	
	High beam indicator		6V 1 cp	

TORQUE VALUES

ENGINE

ITEM	Q'TY	THREAD DIA (mm)	TORQUE: N•m (kg-m, ft-lb)
Cylinder head nut	4	8	18–21 (1.8–2.1, 13–15)
Cam sprocket	2	6	9–12 (0.9–1.2, 7–9)
Valve hole cap	2	—	10–14 (1.0–1.4, 7–10)
Cam chain guide roller bolt	1	6	9–14 (0.9–1.4, 7–10)
Kick starter pedal bolt	1	6	10–14 (1.0–1.4, 7–10)
Clutch lock nut	1	16	40–50 (4.0–5.0, 29–36)
Gearshift pedal bolt	1	6	10–14 (1.0–1.4, 7–10)
Cam chain tensioner bolt	1	14	20–35 (2.0–3.5, 15–25)
Flywheel nut	1	14	60–70 (6.0–7.0, 43–51)
Oil drain plug	1	12	20–35 (2.0–3.5, 15–25)
Spark plug	1	12	15–20 (1.5–2.0, 10–15)
Drum stopper plate bolt	1	6	12–16 (1.2–1.6, 9–12)

FRAME

ITEM		Q'TY	THREAD DIA (mm)	TORQUE: N•m (kg-m, ft-lb)
Rear axle nut		1	12	50–60 (5.0–6.0, 36–43)
Wheel spoke nipple		36	—	1.5–3.5 (0.15–0.35, 1–3)
Fuel strainer cup		1	—	3–5 (0.3–0.5, 2–4)
Intake pipe mounting bolt		2	6	8–12 (0.8–1.2, 6–9)
Engine hanger bolt		2	10	30–40 (3.0–4.0, 22–29)
Front axle nut		1	12	50–60 (5.0–6.0, 36–43)
Handlebar holder bolt		4	6	8–12 (0.8–1.2, 6–9)
Front fork cap bolt		2	10	40–55 (4.0–5.5, 29–40)
Front fork bottom bridge pinch bolt		4	8	30–40 (3.0–4.0, 22–29)
Steering head top thread nut		1	22	1.5–2.5 (0.15–0.25, 1–2)
Steering stem nut		1	22	60–90 (6.0–9.0, 43–65)
Torque link nut	UPPER	1	8	24–30 (2.4–3.0, 17–22)
	LOWER	1	8	18–25 (1.8–2.5, 13–18)
Rear shock absorber mounting nut	UPPER	2	10	35–45 (3.5–4.5, 25–33)
	LOWER	2	10	24–30 (2.4–3.0, 18–22)
Brake pedal pivot bolt		1	8	18–25 (1.8–2.5, 13–18)
Swing arm pivot nut		1	10	30–40 (3.0–4.0, 22–29)
Foot peg bolt		4	8	18–25 (1.8–2.5, 13–18)
Pulse rotor bolt		1	6	8–12 (0.8–1.2, 6–9)

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

STANDARD TORQUE VALUES

Item	TORQUE N•m (kg-m, ft-lb)	Item	TORQUE N•m (kg-m, ft-lb)
5 mm bolt, nut	4.5–6 (0.45–0.60, 3–4)	5 mm screw	3.5–5 (0.35–0.50, 3–4)
6 mm bolt, nut	8–12 (0.8–1.2, 6–9)	6 mm screw and 6 mm bolt with 8 mm head	7–11 (0.7–1.1, 5–8)
8 mm bolt, nut	18–25 (1.8–2.5, 13–18)		
10 mm bolt, nut	30–40 (3.0–4.0, 22–29)	6 mm flange bolt, nut	10–14 (1.0–1.4, 7–10)
12 mm bolt, nut	50–60 (5.0–6.0, 36–43)	8 mm flange bolt, nut	24–30 (2.4–3.0, 17–22)
		10 mm flange bolt, nut	30–40 (3.0–4.0, 22–29)

TOOLS

SPECIAL

TOOL NAME	TOOL NUMBER	ALTERNATIVE TOOL	REF. PAGE
Snap ring pliers (in)	07914—3230001		12-11
Steering stem driver	07946—GC40000		12-18
Rear cushion attachment A	07967—GA70101		13-9, 13-11
Spring holder attachment	07967—1180100		13-9, 13-11
Needle bearing driver	07945—9430000		10-5
Valve guide reamer	07984—0980000		6-8
Boot slider	07974—1280000		6-13
Socket wrench	07916—3710100		12-17, 12-19
Ball race driver	07944—1150001		12-18

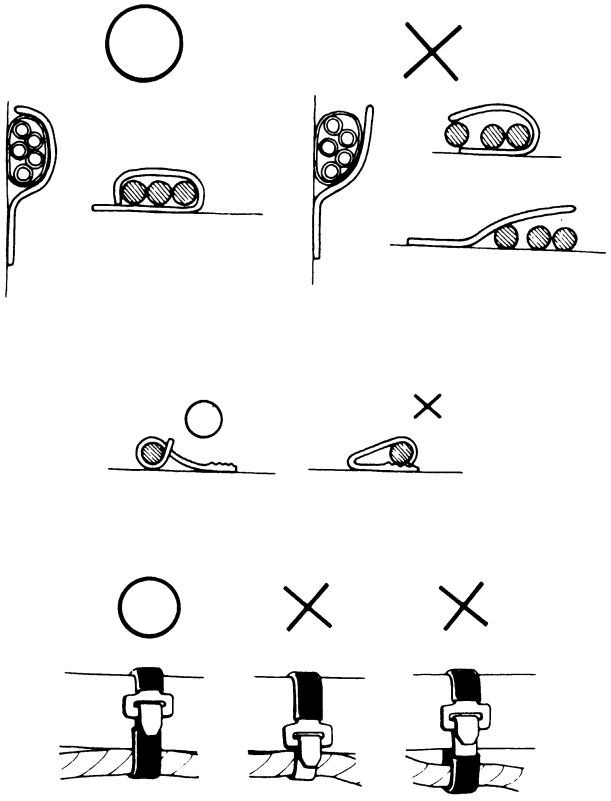
COMMON

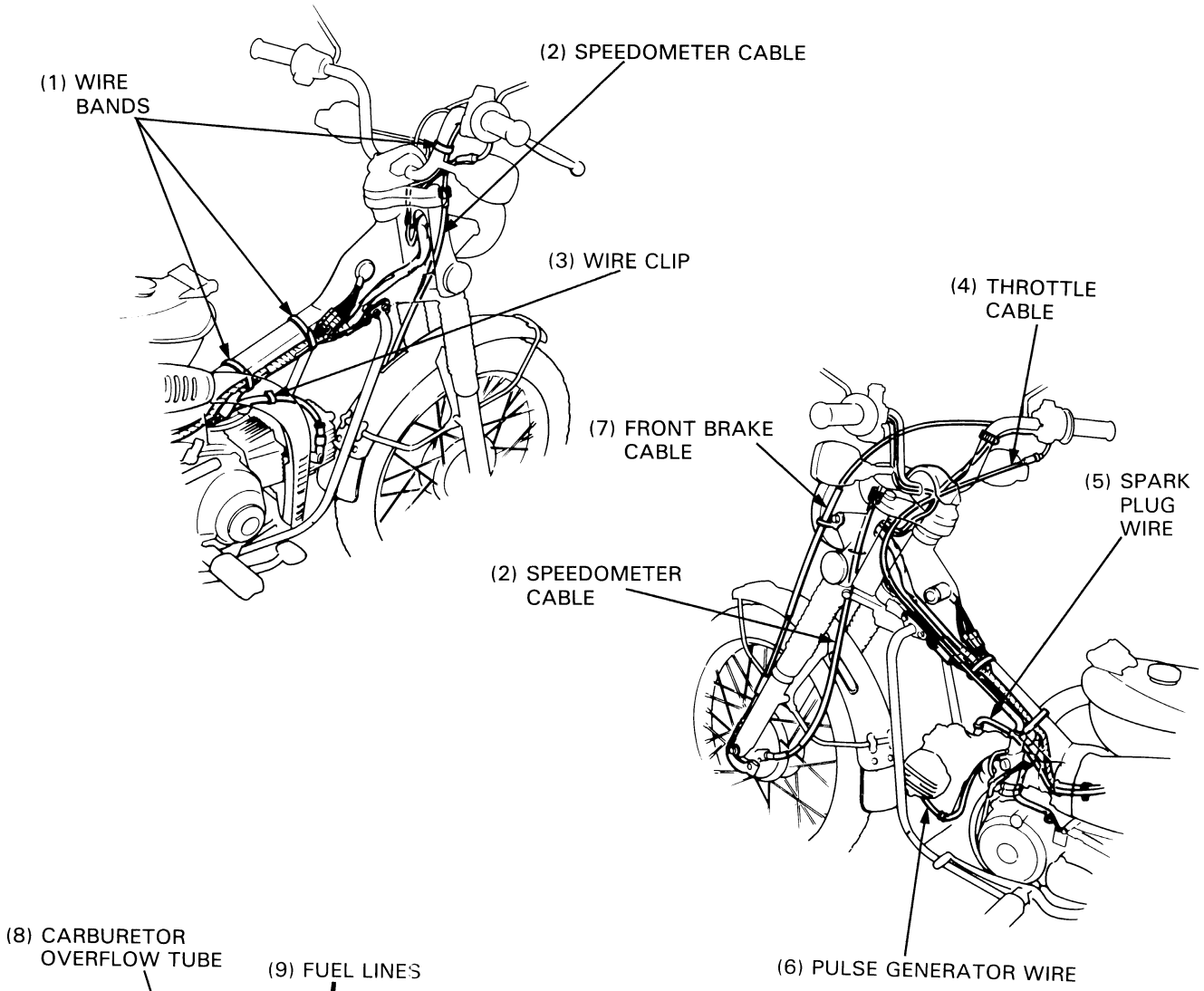
TOOL NAME	TOOL NUMBER	ALTERNATIVE TOOL	REF. PAGE
Float level gauge	07401—0010000		4-7
Wrench, 8 x 9 mm	07708—0030100		3-7
Valve adjusting wrench B	07708—0030400		3-7
Flywheel holder	07725—0040000	} or commercially available in U.S.A.	8-5, 8-12, 9-3
Flywheel puller	07733—0010000		9-3
Wrench, 20 x 24 mm	07716—0020100		8-5, 8-12
Extension	07716—0020500	or commercially available in U.S.A.	8-5, 8-12, 12-17, 12-18
Valve guide remover 5.5 mm	07742—0010100		6-8
Nipple spanner B, 4.5 x 5.1 mm	07701—0020200		3-13
Attachment, 37 x 40 mm	07746—0010200		12-7, 13-5
Attachment, 42 x 47 mm	07746—0010300		11-7, 12-18
Pilot, 12 mm	07746—0040200		12-7, 12-18, 13-5
Pilot, 20 mm	07746—0040500		11-7
Driver	07749—0010000		11-7, 12-7, 12-18, 13-5
Bearing remover shaft	07746—0050100	} or commercially available in U.S.A.	12-7, 13-4
Bearing remover head, 12 mm	07746—0050300		12-7, 13-4
Fork seal driver	07747—0010100		12-15
Attachment B	07747—0010300		12-15
Shock absorber compressor	07959—3290001		13-9, 13-11
Wrench, 26 x 30 mm	07716—0020203	or commercially available in U.S.A.	12-17, 12-19
Valve guide driver B	07742—0020200		6-8
Valve spring compressor	07757—0010000		6-6, 6-11

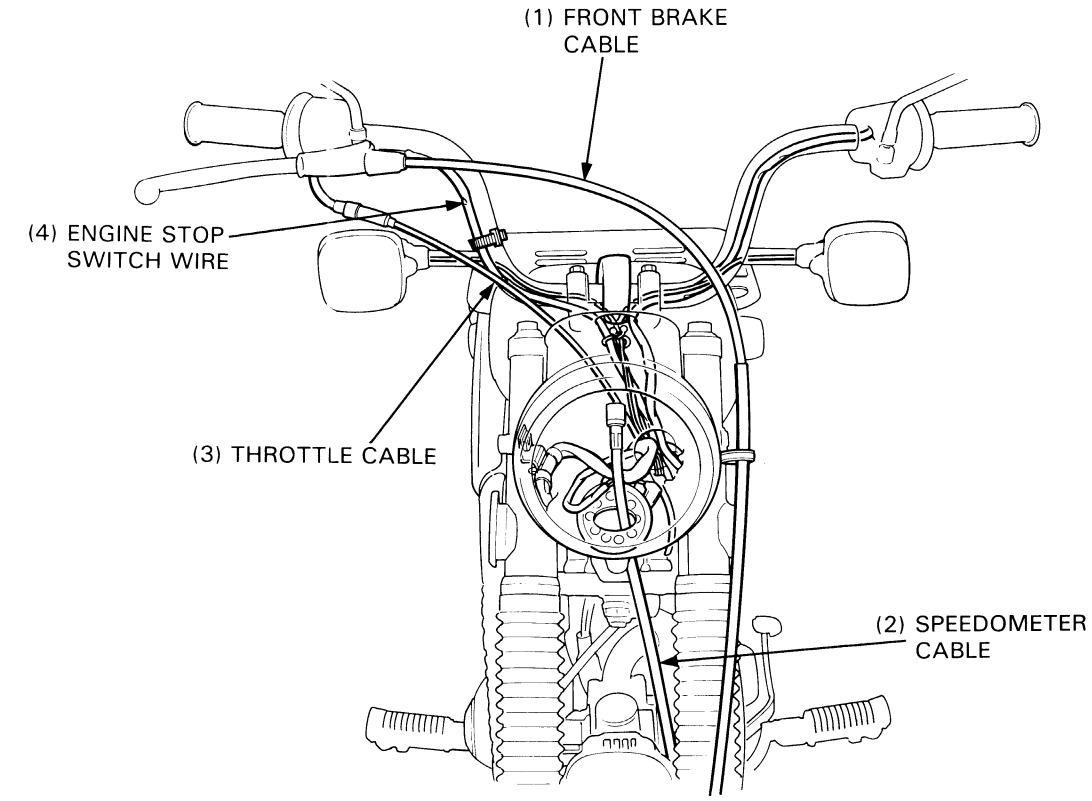
CABLE & HARNESS ROUTING

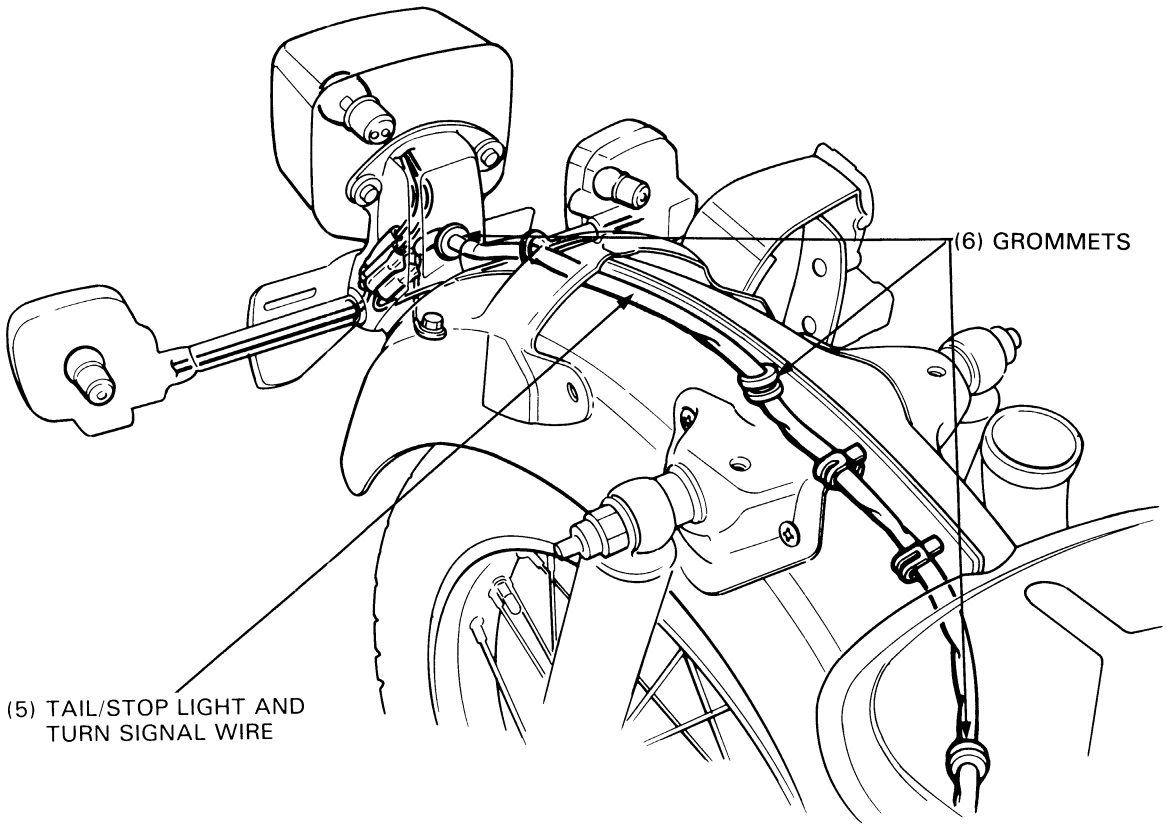
Note the following when routing cables and wire harnesses.

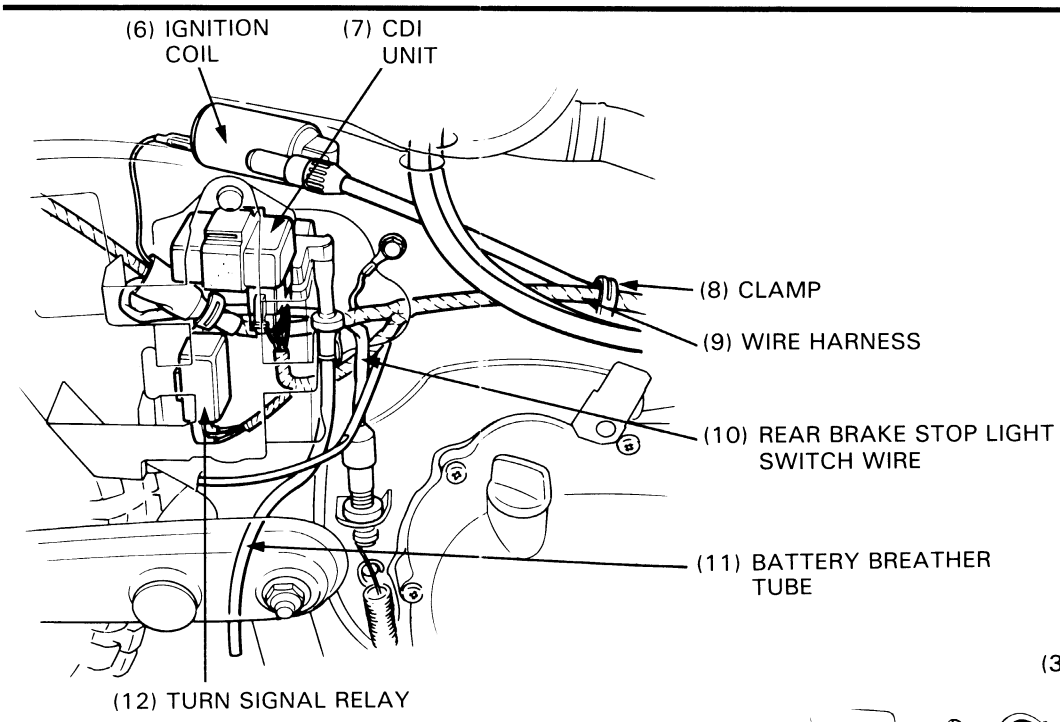
- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze wires against the weld or end of the clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated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

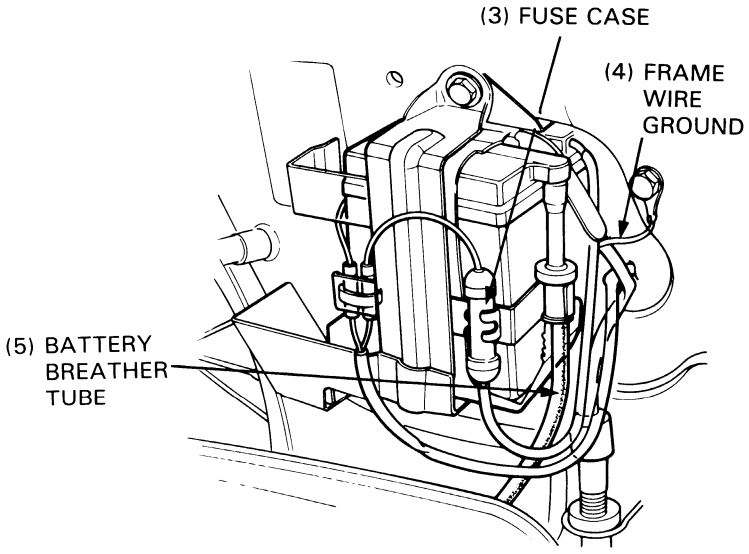


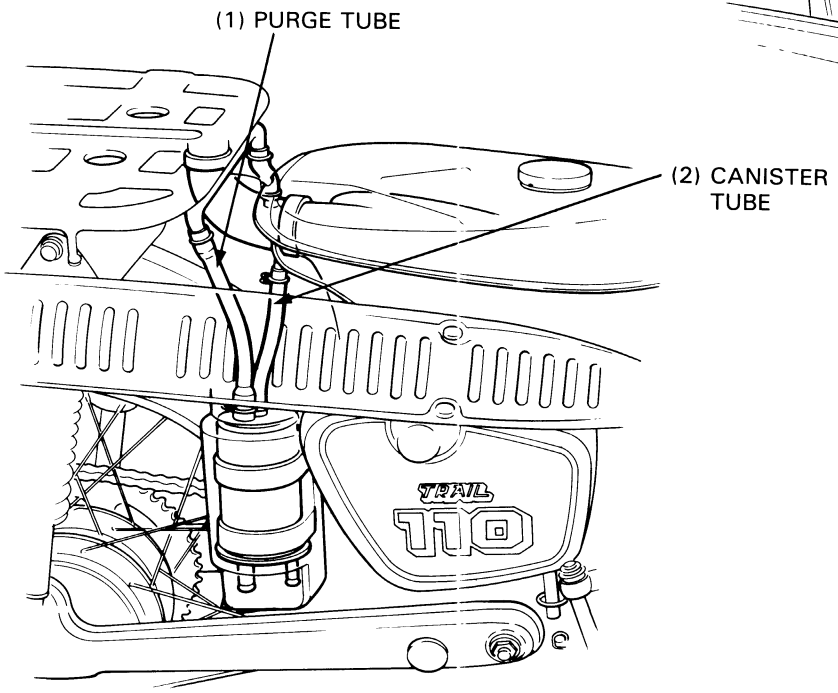

(1) WIRE BANDS
(2) SPEEDOMETER CABLE
(3) WIRE CLIP
(4) THROTTLE CABLE
(7) FRONT BRAKE CABLE
(5) SPARK PLUG WIRE
(2) SPEEDOMETER CABLE
(6) PULSE GENERATOR WIRE
(8) CARBURETOR OVERFLOW TUBE
(9) FUEL LINES
(10) CRANKCASE BREATHER TUBE
(12) CARBURETOR AIR VENT TUBE
(11) CLAMPS


(1) FRONT BRAKE CABLE
(4) ENGINE STOP SWITCH WIRE
(3) THROTTLE CABLE
(2) SPEEDOMETER CABLE


(6) GROMMETS
(5) TAIL/STOP LIGHT AND TURN SIGNAL WIRE







(California model only)

EMISSION CONTROL SYSTEMS

The U.S. Environmental Protection Agency and California Air Resources Board (CARB) require manufacturers to certify that their motorcycles comply with applicable exhaust emissions standards during their useful life, when operated and maintained according to the instructions provided, and that motorcycles built after January 1, 1983 comply with applicable noise emission standards for one year or 6,000 km (3,730 miles) 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 for Honda Motorcycle Emission Control Systems is necessary in order to keep the emissions system warranty in effect.

SOURCE OF EMISSIONS

The combustion process produces carbon monoxide and hydrocarbons. Control of hydrocarbons is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

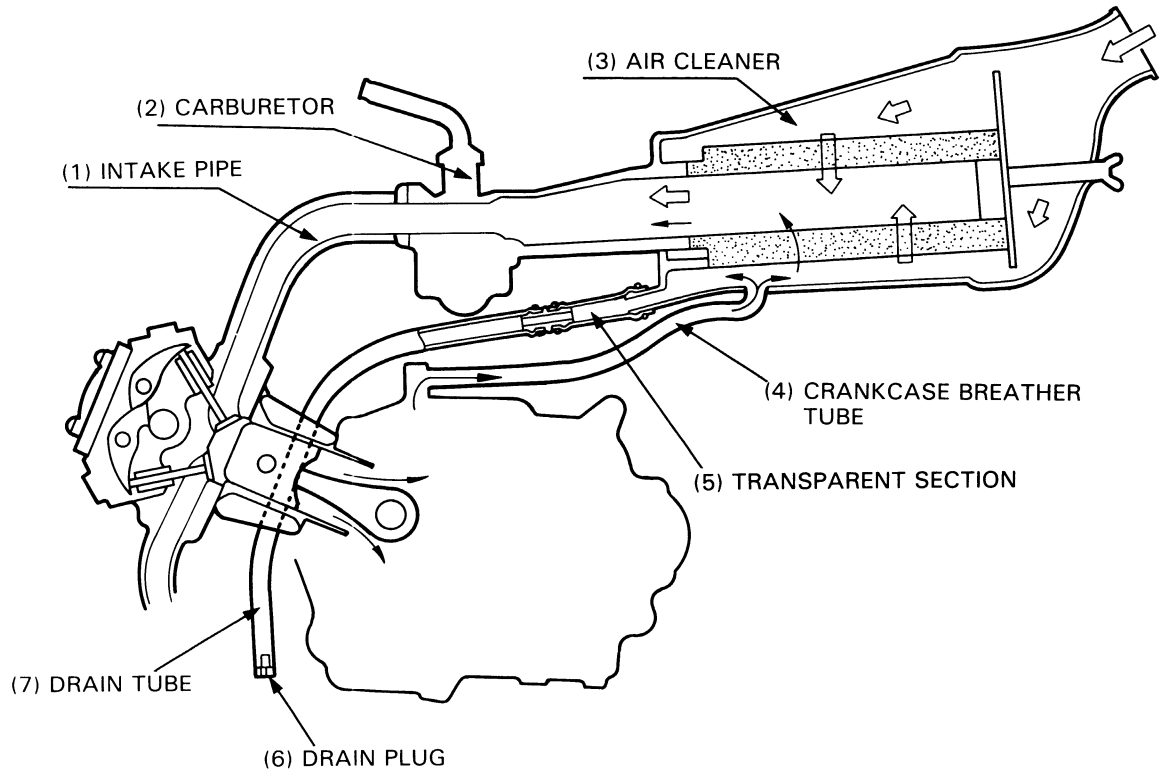
Honda Motor Co., Ltd. utilizes lean carburetor settings as well as other systems, to reduce carbon monoxide and hydrocarbons.

EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of lean carbutetor settings, and no adjustments should be made except idle speed adjustment with the throttle stop screw.

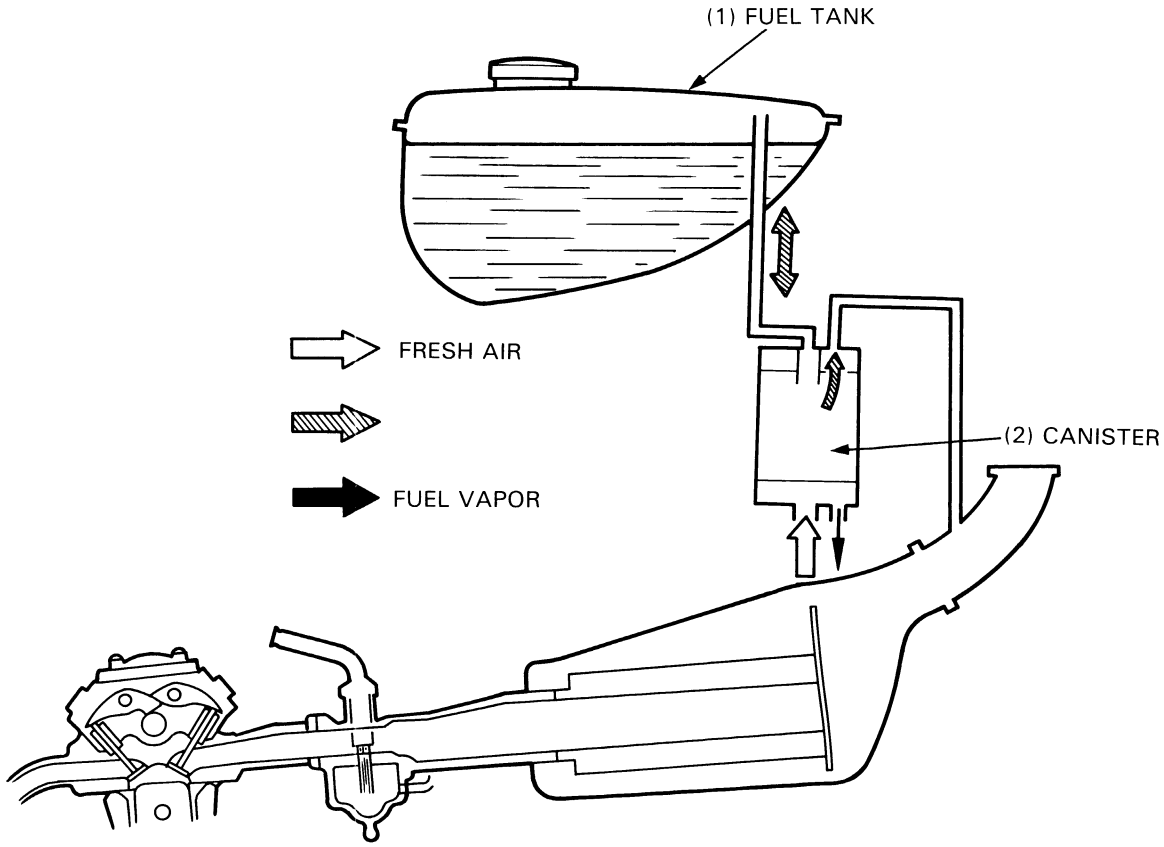
CRANKCASE EMISSION CONTROL SYSTEM

The engine is equipped with a closed crankcase emission control system which routes crankcase emissions through the air cleaner and into the combustion chamber. Condensed crankcase vapors are accumulated in a storage tank which must be emptied periodically.
See the Maintenance Schedule in section 3.



EVAPORATIVE EMISSION CONTROL SYSTEM (California model only)

This model complies with California Air Resources Board requirements for evaporative emission regulations.
Fuel vapor from the fuel tank is routed into a charcoal canister where it is absorbed and stored while the engine is stopped. When the engine is running and the purge control diaphragm valve is open, fuel vapor in the charcoal canister is drawn into the engine through the carburetor.



NOISE EMISSION CONTROL SYSTEM

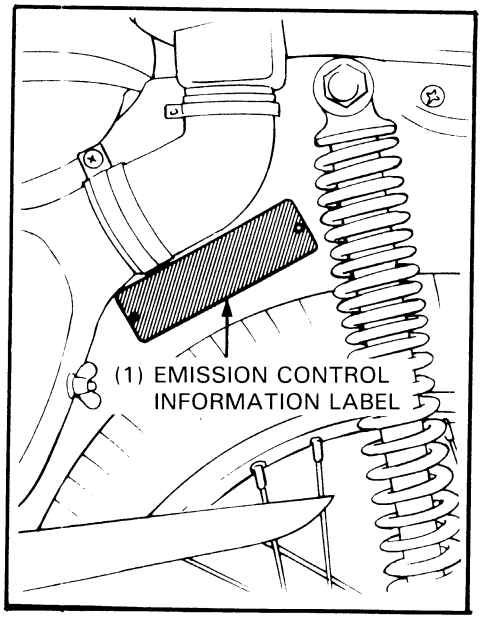
TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any new vehicle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

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

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

EMISSION CONTROL INFORMATION LABEL

An Emission Control Information Label is located on the left side as shown. It contains basic tune-up specifications.

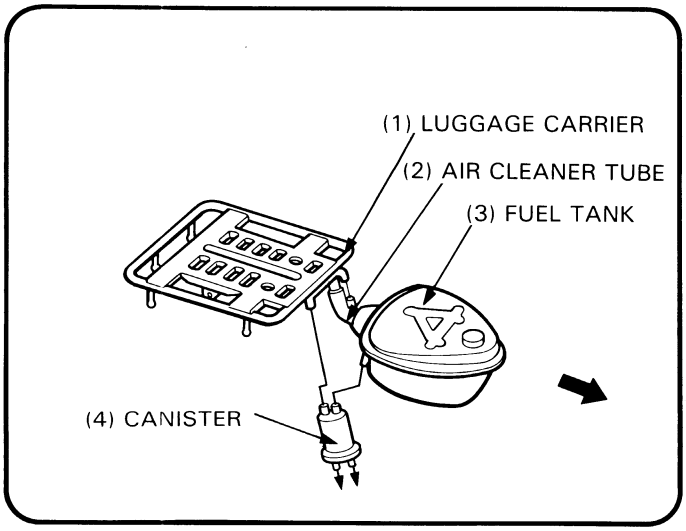


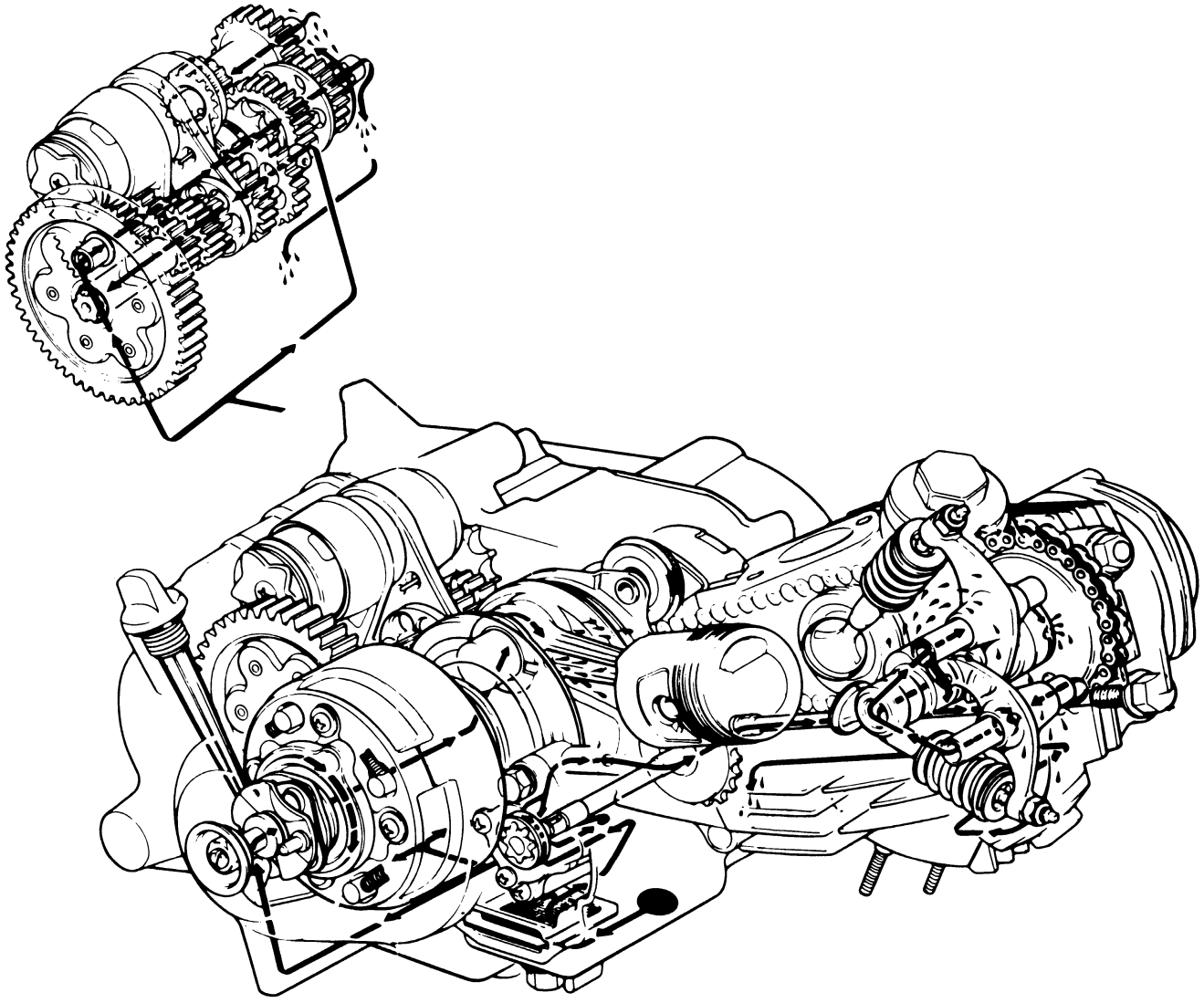
EMISSION CONTROL INFORMATION UPDATE LABEL

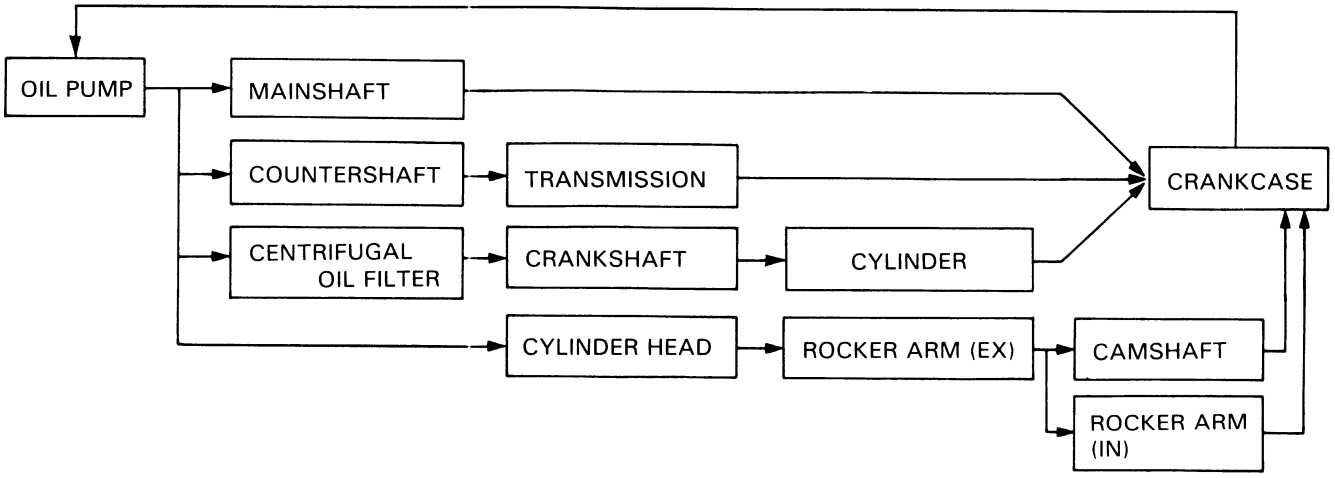
After making a high altitude carburetor adjustment (Page 4-9), attach an update label on the frame side cover as shown. Instructions for obtaining the update label are given in Service Letter No. 132.

VACUUM HOSE ROUTING DIAGRAM LABEL (Carifornia model only)

The Vacuum Hose Routing Diagram Label is attached to the canister cover. Route the vacuum hoses as shown on this label.






OIL PUMP
MAINSHAFT
COUNTERSHAFT
TRANSMISSION
CENTRIFUGAL OIL FILTER
CRANKSHAFT
CYLINDER
CRANKCASE
CYLINDER HEAD
ROCKER ARM (EX)
CAMSHAFT
ROCKER ARM (IN)

SERVICE INFORMATION

GENERAL

- This section describes how to inspect and replace the engine oil and clean the oil filter rotor and screen.
- For oil pump service, refer to page 8-14.

SPECIFICATIONS

Oil capacity 1.1 lit (1.16 US qt 0.97 Imp qt) at disassembly
0.9 lit (0.95 US qt 0.79 Imp qt) at draining

Recommended engine oil

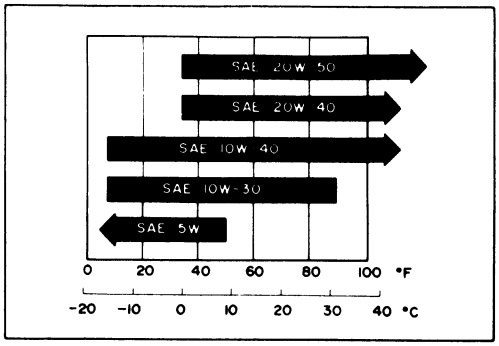
Use Honda 4-Stroke Oil SAE 10W—40 or equivalent API service classification: SE or SF

CAUTION

- *Do not use oils with graphite or molybdenum additives; the centrifugal clutch will slip.*

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

OIL VISCOSITY CHART



TORQUE VALUE

Oil drain plug:	20—35 N·m (2.0—3.5 kg-m, 15—25 ft-lb)

TROUBLESHOOTING

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

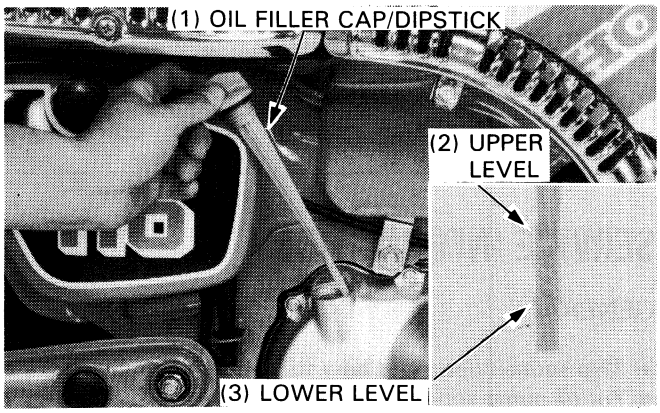
Oil contamination
- Oil not changed often enough
- Faulty head gasket
- Worn piston rings

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

ENGINE OIL LEVEL CHECK

Place the motorcycle on level ground and support it on its centerstand.
Start the engine and let it idle for a few minutes.
Check the oil with the oil filler cap/dipstick.
Do not screw in the oil filler cap when making this check.

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



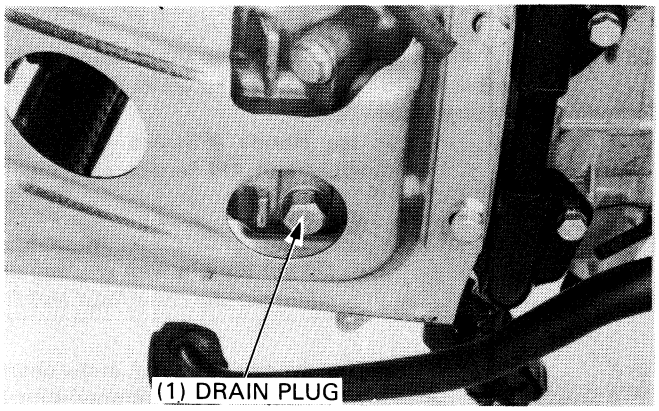
ENGINE OIL CHANGE

NOTE

- Drain the oil with the engine warm.

Place the motorcycle on level ground and support it on its centerstand.
Remove the oil filler cap/dipstick and drain plug, and drain the oil.

Operate the kick starter several times with ignition switch "OFF" to drain any oil which may be left in the engine.

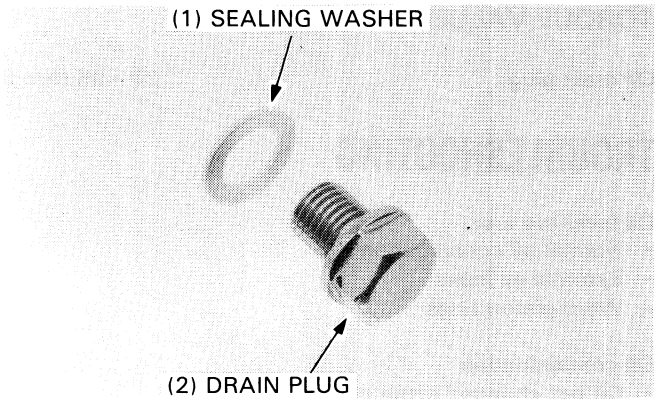


Install the drain plug.

TORQUE: 20—35 N·m (2.0—3.5 kg-m, 15—25 ft-lb)

NOTE

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



Clean the oil filter rotor and screen (Page 2-3).
Fill the crankcase with the recommended grade oil (Page 2-1).

ENGINE OIL CAPACITY:
0.9 lit (0.95 US qt, 0.79 Imp qt) after draining

Install the oil filler cap/dipstick
Start the engine and let it idle for a few minutes.
Stop the engine.

Make sure that oil level is at the upper level mark and that there are no oil leaks.

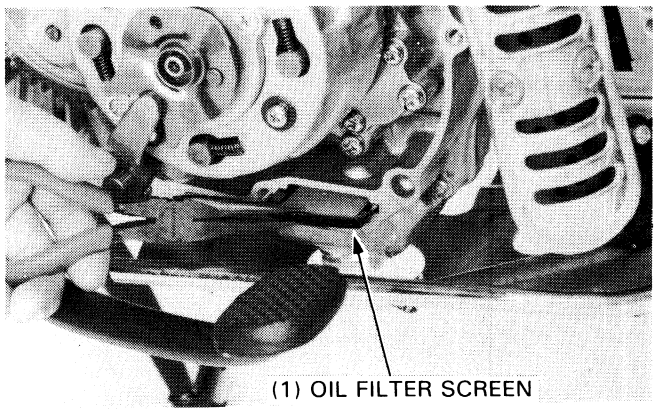
OIL FILTER ROTOR AND SCREEN

NOTE

- Clean the oil filter rotor and screen before adding oil.

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

Remove the oil filter screen from the right crankcase.
Clean the filter screen.

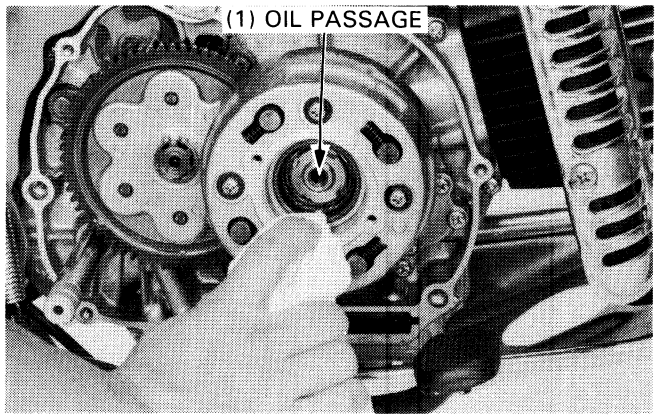


Remove the clutch outer cover (Page 8-4).
Clean the clutch outer cover and inside of the clutch outer using a clean lint-free cloth.

NOTE

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

Install the clutch outer cover, oil filter screen and right crankcase cover (Page 8-13).

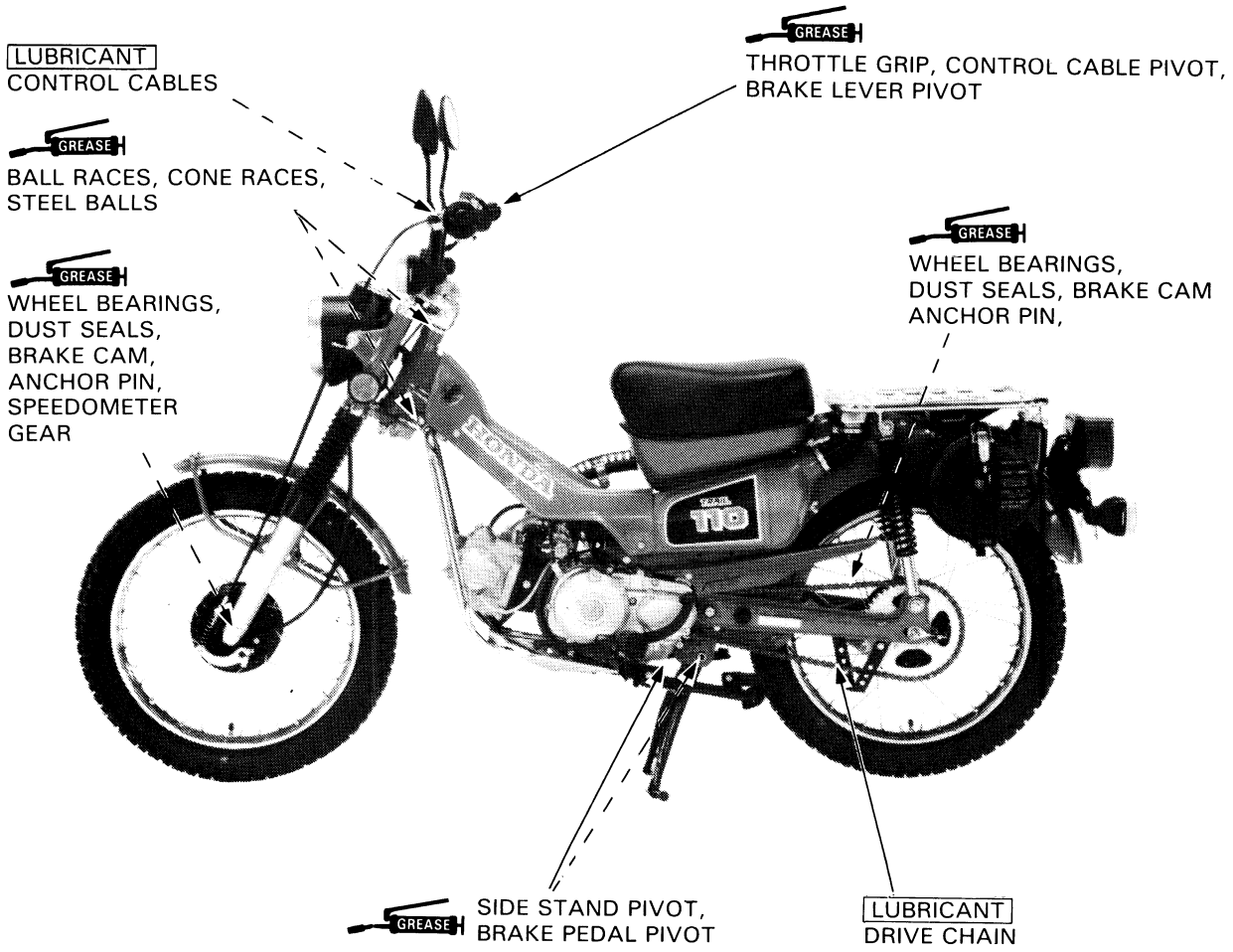


LUBRICATION POINTS

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

CONTROL CABLE LUBRICATION

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



MEMO

SERVICE INFORMATION

GENERAL

- Following inspection and adjustments are included in the lubrication section.
  - Engine oil — See page 2-2
  - Engine oil filter rotor and screen — See page 2-2

SPECIFICATIONS

Throttle grip free play	2—6 mm (1/8—1/4 in)
Spark plug	NGK: DR8ES-L ND: X24ESR-U
Spark plug gap	0.6—0.7 mm (0.02—0.03 in)
Valve clearance: cold	0.05 mm (0.002 in)
Idle speed	1,500 ± 100 rpm
Drive chain slack	10—20 mm (3/8—3/4 in)
Front brake lever free play	10—20 mm (3/8—3/4 in)
Rear brake pedal free play	20—30 mm (3/4—1-1/4 in)
Tire size	Front 2.75—17—4PR Rear 2.75—17—4PR
Cold tire pressure:	
Up to 100 kg (220.5 lbs) load	Front 175 kPa (1.75 kg/cm^2, 24 psi) Rear 225 kPa (2.25 kg/cm^2, 32 psi)
Cylinder compression	1,078—1,372 kPa (11.0—14.0 kg/cm^2, 156—199 psi)
Tire minimum tread depth	Front 0.8 mm (0.03 in) Rear 0.8 mm (0.03 in)

TORQUE VALUES

Spark plug	15—20 N·m (1.5—2.0 kg-m, 10—15 ft-lb)
Cam chain tensioner bolt	20—35 N·m (2.0—3.5 kg-m, 15—25 ft-lb)
Rear axle nut	50—60 N·m (5.0—6.0 kg-m, 36—43 ft-lb)
Wheel spoke nipple	1.5—3.5 N·m (0.15—0.35 kg-m, 1—3 ft-lb)
Fuel strainer cup	3—5 N·m (0.3—0.5 kg-m, 2—4 ft-lb)
Valve hole cap	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

TOOLS

Common

Wrench, 8 x 9 mm	07708—0030100
Valve adjusting wrench B	07708—0030400
Nipple spanner B, 4.5 x 5.1 mm	07701—0020200

MAINTENANCE SCHEDULE

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	WHICHEVER COMES FIRST ➡ EVERY ⬇	ODOMETER READING (NOTE 4) 1,000 km (600 mi)	4,000 km (2,500 mi)	8,000 km (5,000 mi)	12,000 km (7,500 mi)	REF. PAGE
EMISSION RELATED ITEMS	*	FUEL LINE			I	I	I	3-3
	*	FUEL STRAINER			C	C	C	3-3
	*	THROTTLE OPERATION			I	I	I	3-3
		AIR CLEANER	NOTE 1		C	C	C	3-5
		CRANKCASE BREATHER	NOTE 2		C	C	C	3-5
		SPARK PLUG			R	R	R	3-6
		VALVE CLEARANCE		I	I	I	I	3-6
		ENGINE OIL	YEAR	R	R	R	R	2-2
		ENGINE OIL FILTER ROTOR AND SCREEN	YEAR				C	2-2
		CAM CHAIN TENSIONER		A	A	A	A	3-7
	*	CARBURETOR IDLE SPEED		I	I	I	I	3-7
	*	EVAPORATIVE EMISSION CONTROL SYSTEM (California model only)	NOTE 5				I	3-7
NON-EMISSION RELATED ITEMS		DRIVE CHAIN	NOTE 3	Every 1,000 km (600 mi) I, L				3-8
		BATTERY			I	I	I	3-9
		BRAKE SHOE WEAR			I	I	I	3-10
		BRAKE SYSTEM		I	I	I	I	3-10
	*	BRAKE LIGHT SWITCH			I	I	I	3-11
	*	HEADLIGHT AIM			I	I	I	3-11
		CLUTCH SYSTEM		I	I	I	I	3-12
		SIDE STAND			I	I	I	3-12
	*	SUSPENSION			I	I	I	3-12
		SPARK ARRESTOR (USA ONLY)			C	C	C	3-13
	*	NUTS, BOLTS, FASTENERS	NOTE 3	I		I		3-13
	**	WHEELS/TIRES	NOTE 3	I	I	I	I	3-13
	**	STEERING HEAD BEARINGS		I			I	3-14

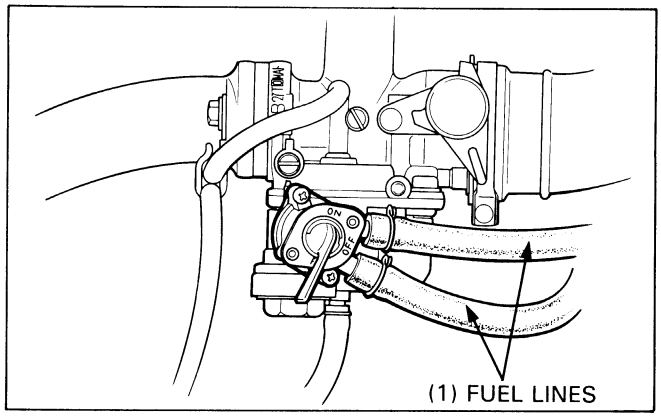
* SHOULD BE SERVICED BY AN AUTHORIZED HONDA DEALER, UNLESS THE OWNER HAS PROPER TOOLS AND SERVICE DATA AND IS MECHANICALLY QUALIFIED.

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

NOTES: 1. Service more frequently when riding in dusty areas.
2. Service more frequently when riding in rain or at full throttle.
3. Service more frequently when riding OFF-ROAD.
4. For higher odometer readings, repeat at the frequency interval established here.
5. California type only.

FUEL LINE

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

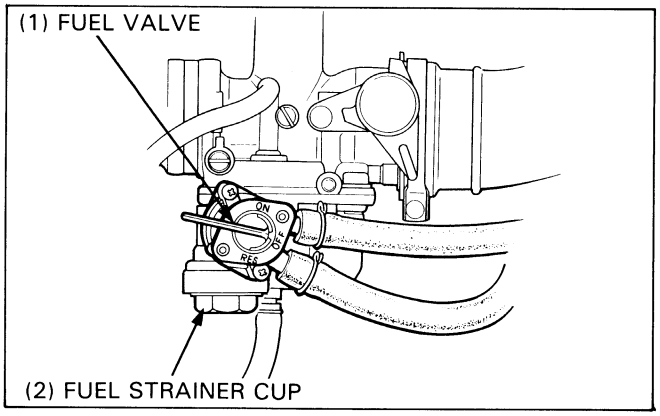


FUEL STRAINER

Turn the fuel valve "OFF"
Remove the fuel strainer cup, O-ring and strainer screen.

WARNING

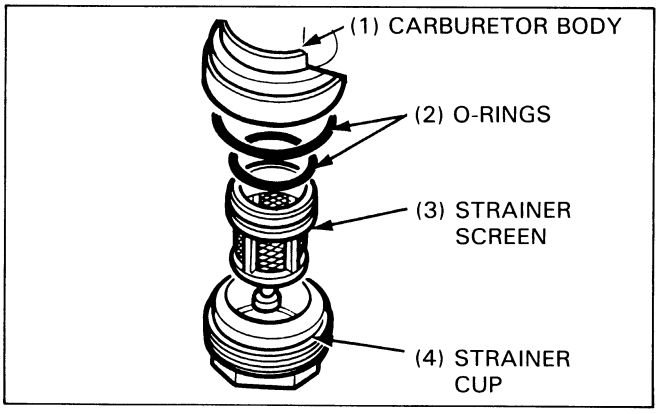
- ***Gasoline is flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks near the equipment while draining fuel.***



Wash the fuel strainer cup and strainer screen in clean non-flammable or high flash point solvent.
Reinstall the strainer screen and a new O-ring into the carburetor.
Reinstall the strainer cup making sure the O-ring is in place. Finger-tighten the cup first, then torque it to specification.

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

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



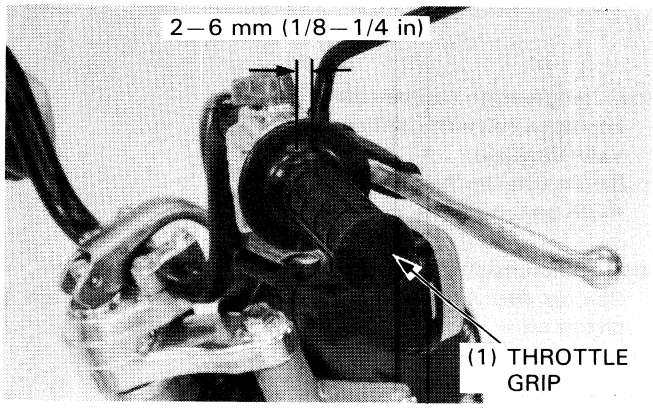
THROTTLE OPERATION

Check for smooth throttle grip full opening and automatic full closing in all steering positions. Check the throttle cable and replace it if it is deteriorated, kinked or damaged.

Lubricate the throttle cable (page 2-3) if throttle operation is not smooth.

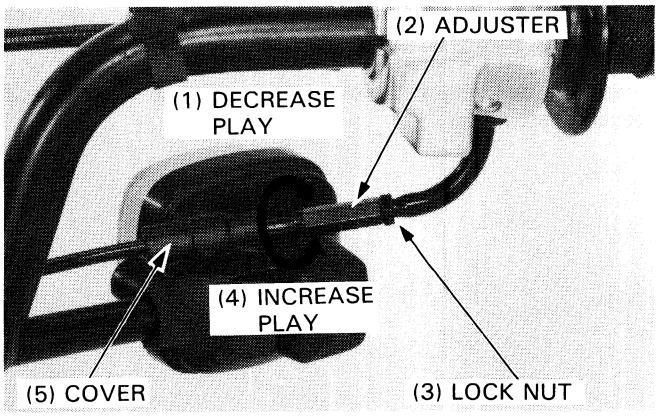
Measure throttle grip free play at the throttle grip flange.

FREE PLAY: 2—6 mm (1/8—1/4 in)

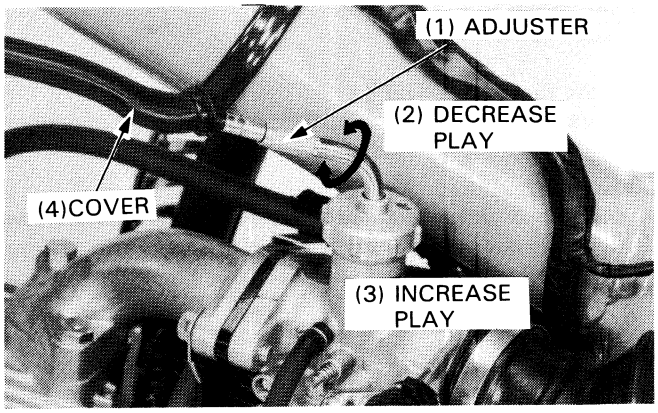


Adjust as follows:
Make minor adjustments with the upper adjuster.

Pull the cover off.
Loosen the lock nut and turn the adjuster to obtain the specified free play.
Tighten the lock nut and install the cover.



Make major adjustments with the adjuster at the carburetor top.
Pull the cover off.
Turn the adjuster to obtain the specified free play.
Install the cover.

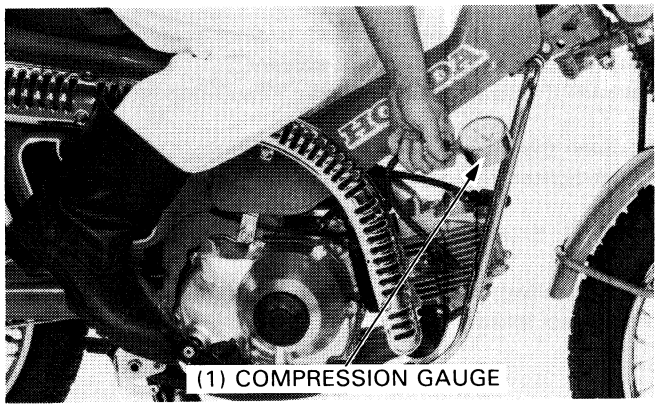


CYLINDER COMPRESSION

Warm up the engine.
Stop the engine and remove the spark plug.
Connect a compression gauge.
Open the choke valve and hold the throttle grip at the full open position.
Operate the kick starter pedal several times and check the gauge reading.

NOTE

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



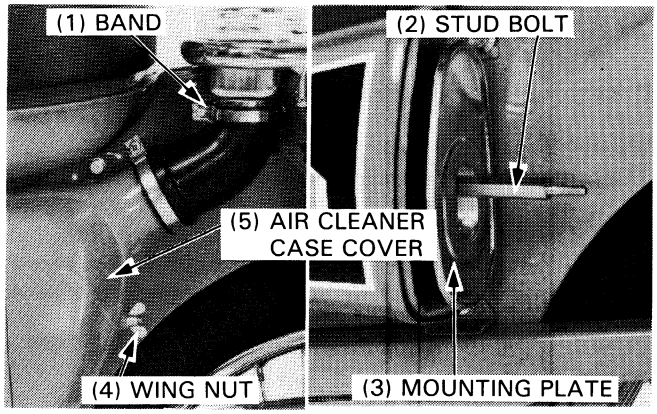
CYLINDER COMPRESSION:
1,078—1,372 kpa (11.0—14.0 kg/cm² 156—199 psi)

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

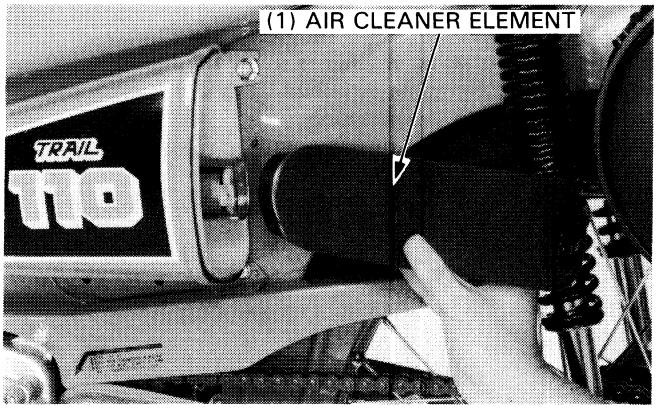
High compression can be caused by:
- Carbon deposits in the combustion chamber or on the piston crown.

AIR CLEANER

Loosen the connecting tube band.
Remove the wing nut and the air cleaner case cover.
Remove the stud bolt and element mounting plate.

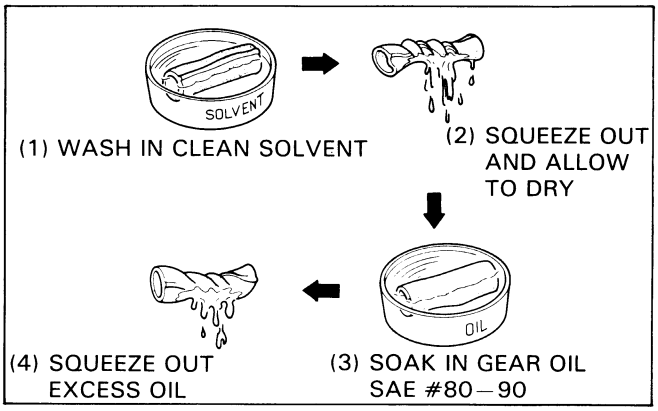


Pull the air cleaner element out of the air cleaner case.
Separate the element and element holder.



Wash the element in non-flammable or high flash point solvent and let it dry.
Soak the element in gear oil (SAE #80—90) and squeeze out the excess.

Install the removed parts in the reverse order of removal.



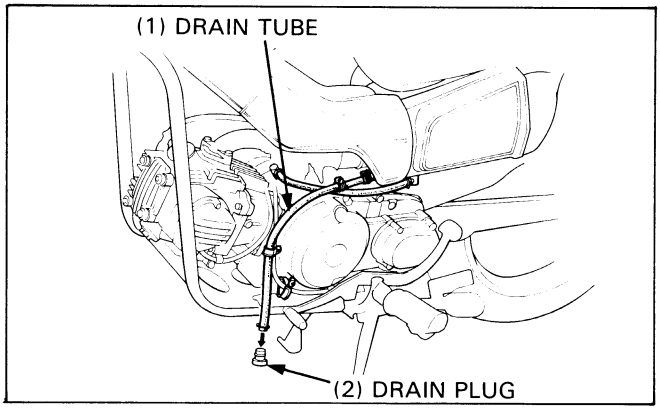
CRANKCASE BREATHER

Remove the plug from the drain tube to empty any deposits.

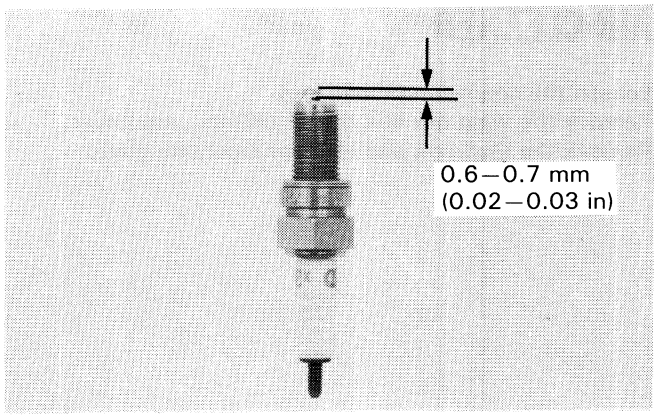
Install the drain plug.

NOTE

- Service more frequently when riding in rain or at full throttle, or if the deposit level can be seen in the transparent section of the drain tube.



SPARK PLUG



Disconnect the spark plug cap and remove the spark plug.

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

SPARK PLUG GAP: 0.6—0.7 mm (0.02—0.03 in)
RECOMMENDED REPLACEMENT PLUG:
NGK: DR8ES-L
ND: X24ESR-U

Make sure the sealing washer is good condition.
With the sealing washer attached, thread the spark plug in by hand to prevent crossthreading.
Tighten the spark plug to the specified torque.

TORQUE: 15—20 N·m (1.5—2.0 kg-m, 10—15 ft-lb)

Connect the spark plug cap.

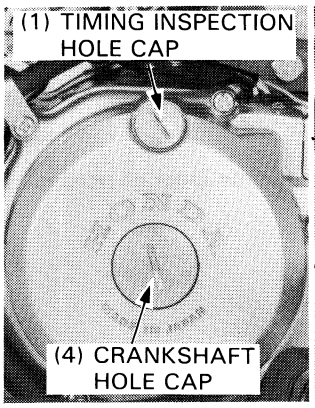
VALVE CLEARANCE

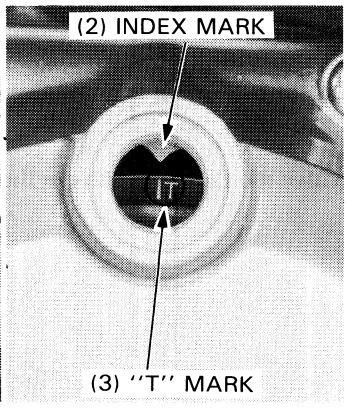
NOTE

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

Remove the timing inspection and crankshaft hole caps.
Rotate the crankshaft counterclockwise and align the "T" mark with the index mark on the left crankcase cover.

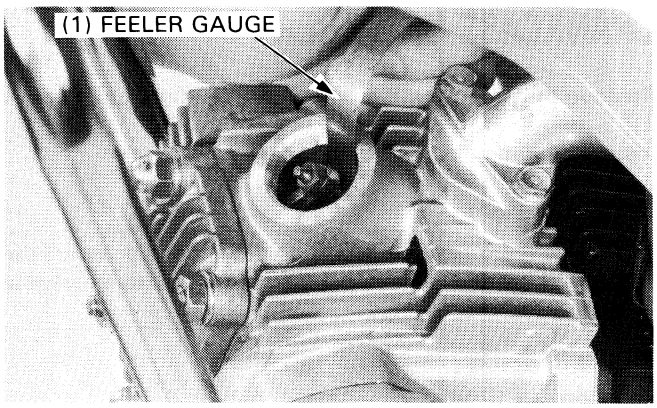
Make sure the piston is at T.D.C. on the compression stroke.





Remove the valve inspection hole caps.
Check the valve clearances by inserting a feeler gauge between the adjusting screw and valve stem.

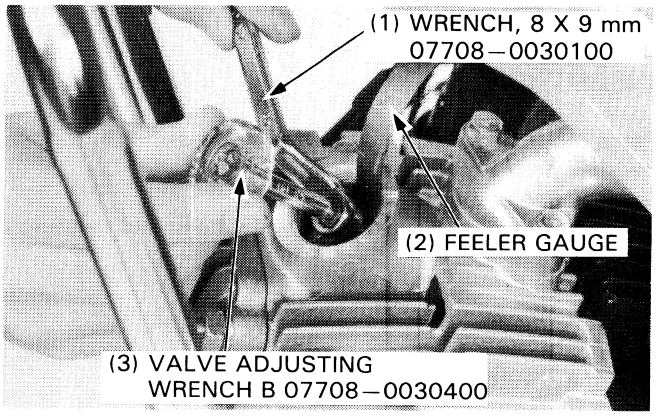
VALVE CLEARANCES:
INTAKE: 0.05 mm (0.002 in)
EXHAUST: 0.05 mm (0.002 in)



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

Hold the adjusting screw and tighten the lock nut.
Recheck the valve clearance.
Check the valve inspection hole caps' O-rings and install the valve inspection hole caps.
TORQUE: 10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

Install the timing inspection and crankshaft hole caps.



CAM CHAIN TENSIONER

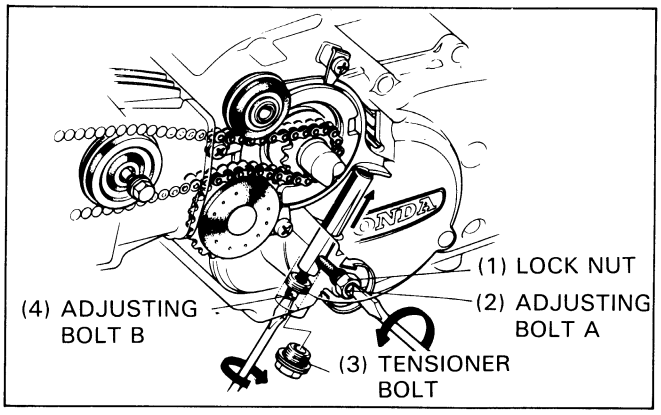
NOTE

- Perform this adjustment while the engine is idling.

Loosen the lock nut, then loosen adjusting bolt A approximately 1-1/2 turn.
The cam chain should automatically adjust by force of the tensioner springs.

If the chain is still noisy, remove the tensioner bolt and screw in adjusting bolt B gradually until the cam chain is no longer noisy.
After completing adjustment, tighten adjusting bolt A, the lock nut and the tensioner bolt.

TENSIONER BOLT TORQUE:
20—35 N·m (2.0—3.5 kg-m, 15—25 ft-lb)



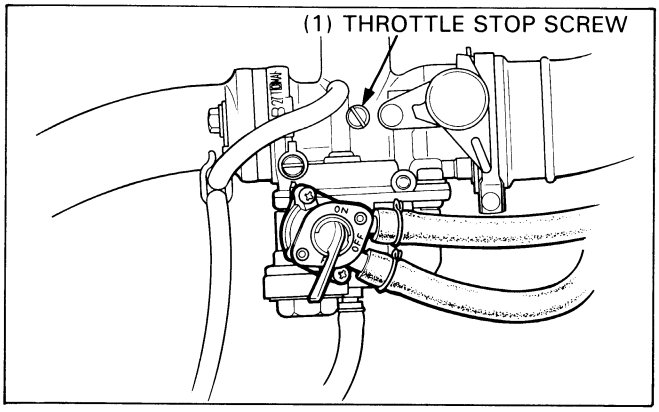
CARBURETOR IDLE SPEED

NOTE

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

Connect a tachometer.
Warm up the engine and shift the transmission into neutral.
Place the motorcycle on level ground and support it on its centerstand.
Inspect the idle speed and adjust with the throttle stop screw, if necessary.

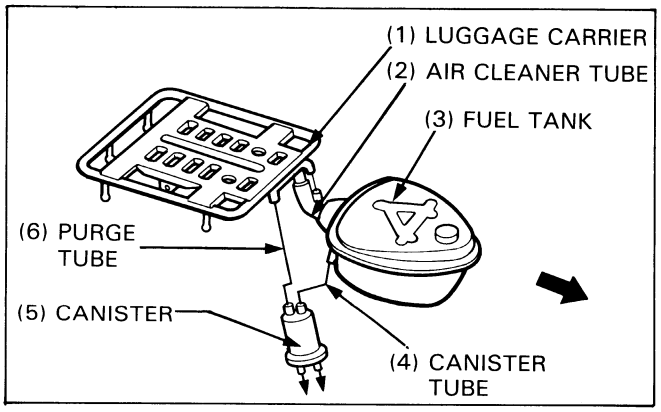
IDLE SPEED: 1,500 ± 100 rpm



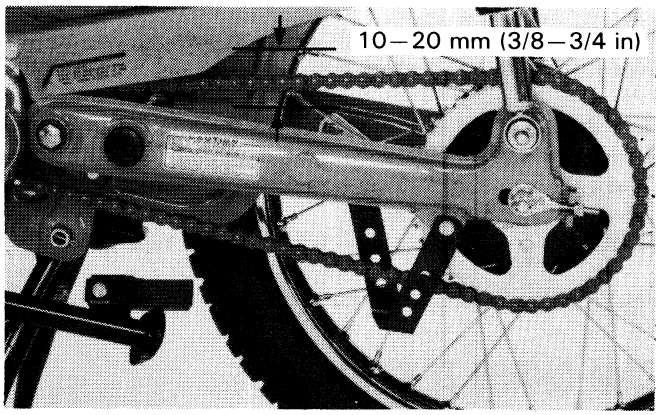
EVAPORATIVE EMISSION CONTROL SYSTEM
(California model only)

Check the canister tube, purge tubes, air cleaner tube and 4-way joint for deterioration, damage or loose joints or connections.
Also check the tubes for clogging due to bending or twisting.

Check the canister for cracks or damage.



DRIVE CHAIN



INSPECTION

Place the motorcycle on its center stand and shift the transmission into neutral.
Turn the ignition switch "OFF"
Move the drive chain up and down by hand and measure the amount of slack.

SLACK: 10—20 mm (3/8—3/4 in)

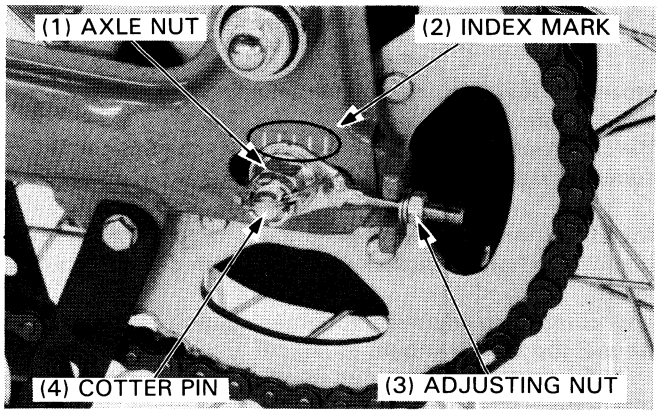
Adjust if necessary.

ADJUSTMENT

Remove the rear axle nut cotter pin and loosen the axle nut.
Turn the adjusting nuts on both sides an equal number of turns to obtain the specified chain slack.

CAUTION

- *Be sure that the index mark on the chain adjuster aligns with the same graduation on both sides of the swing arm.*



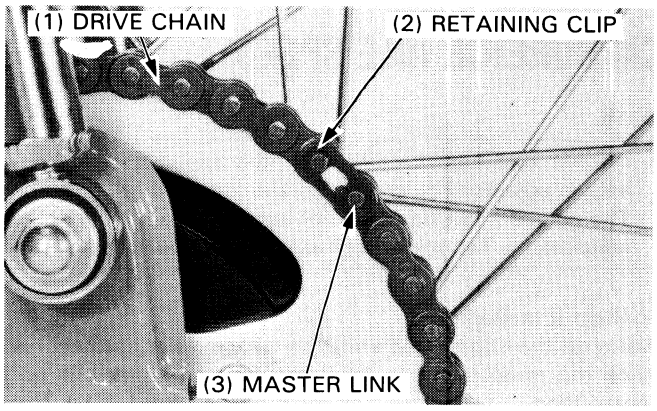
Tighten the axle nut to the specified torque.

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

Install a new cotter pin.
Tighten the adjusting nuts and recheck the drive chain slack and free wheel rotation.
Adjust the rear brake pedal free play (page 3-11).

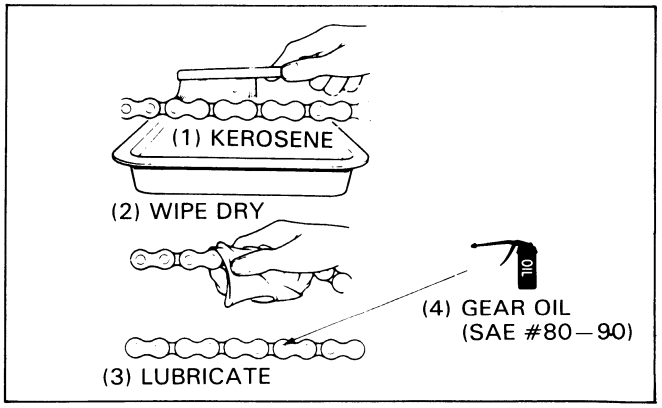
When the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication.

Remove the retaining clip, master link and drive chain.



Clean the drive chain with a non-flammable or high flash point solvent.

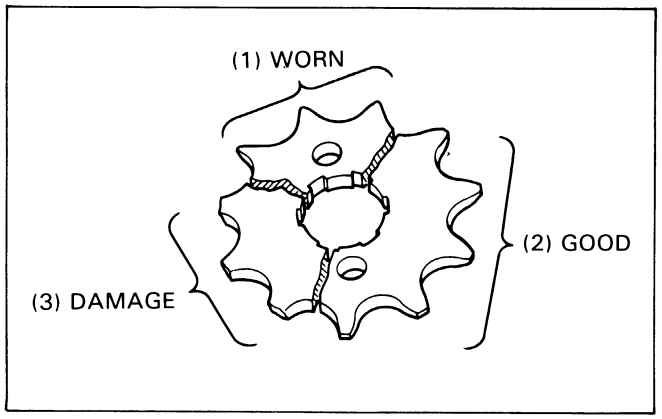
Lubricate the drive chain with gear oil (SAE #80—90).



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

NOTE

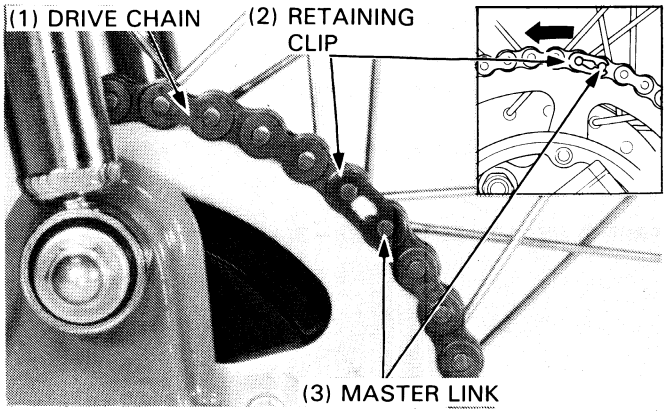
- Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprockets must be in good condition, or the new replacement chain or sprockets will wear rapidly.



Reinstall the drive chain.
Install the master link and retaining clip.

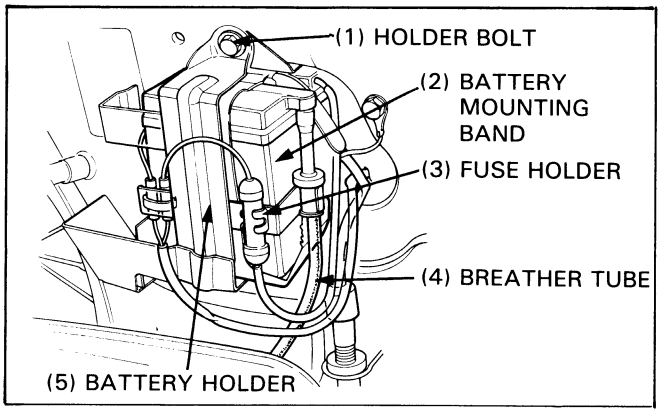
NOTE

- The retaining clip open end should face in the opposite direction of wheel rotation.



BATTERY

Remove the right side cover.
Inspect the battery fluid level.
When the fluid level nears the lower level, add distilled water to the upper level as follows:
Pull out the fuse holder and remove the battery holder bolt.
Disconnect the battery breather tube from the battery holder and open the battery holder.
Pull out the battery.
Remove the battery mounting band.



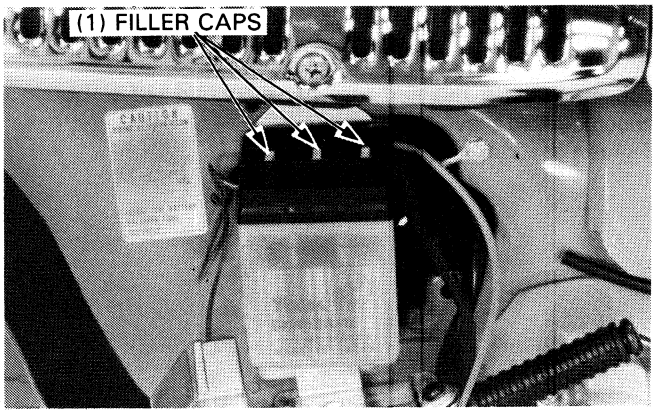
Remove the filler caps and add distilled water to the upper level.

NOTE

- Add only distilled water. Tap water will shorten the service life of the battery.

WARNING

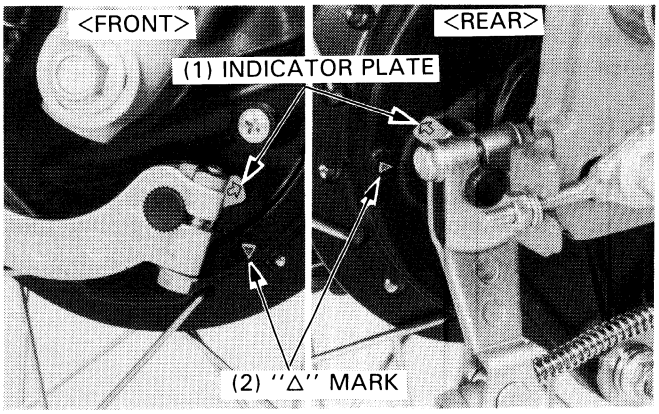
- ***The battery electrolyte contains sulfuric acid.***
- ***Protect your eyes, skin, and clothing.***
- ***In case of contact, flush thoroughly with water and contact a doctor if electrolyte gets in your eyes.***



Replace the battery, if sulfation forms or sediments accumulate on the bottom.
Install the battery in the reverse order of removal.

BRAKE SHOE WEAR

Replace the brake shoes if the arrow on the indicator plate aligns with the "△" mark on the brake panel when the brake is applied.

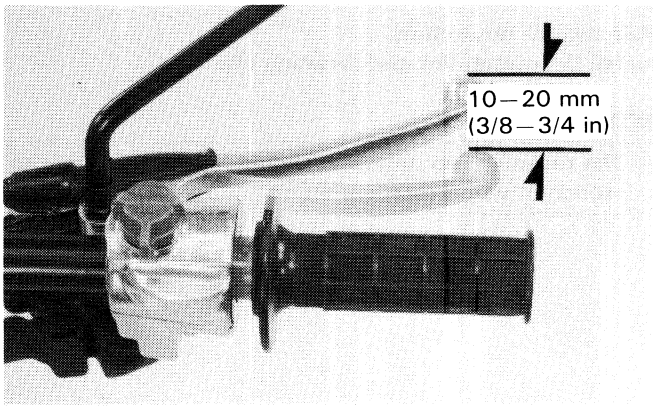


BRAKE SYSTEM

FRONT BRAKE LEVER FREE PLAY

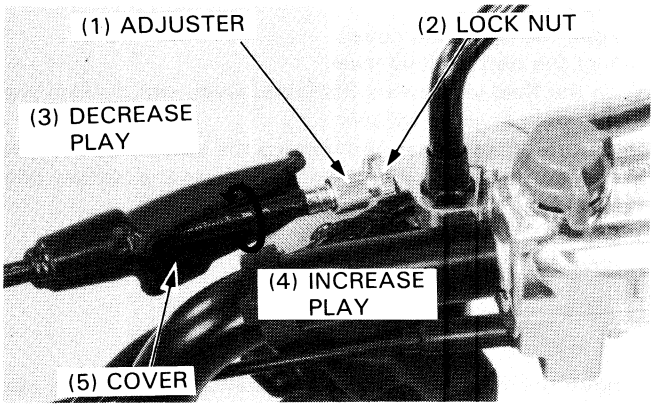
Measure the front brake lever free play at the tip of the brake lever.

FREE PLAY: 10—20 mm (3/8—3/4 in)



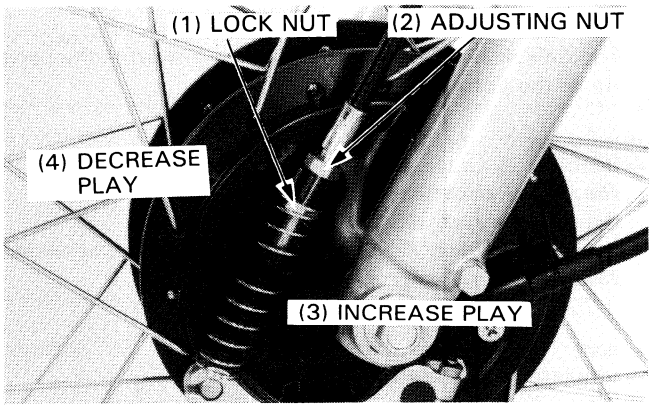
Adjust as follows:
Make minor adjustments with the upper adjuster.

Pull the cover off.
Loosen the lock nut and turn the adjuster to obtain the specified free play.
Tighten the lock nut and install the cover.



Make major adjustments with the lower adjuster.

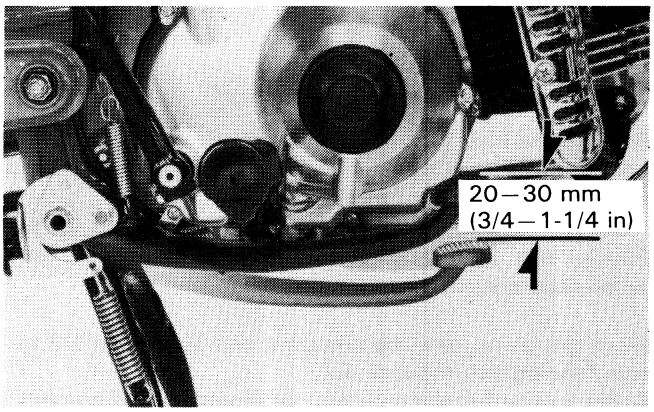
Loosen the lock nut and turn the adjusting nut to obtain the specified free play.
Tighten the lock nut.



REAR BRAKE PEDAL FREE PLAY

Check the brake pedal free play.

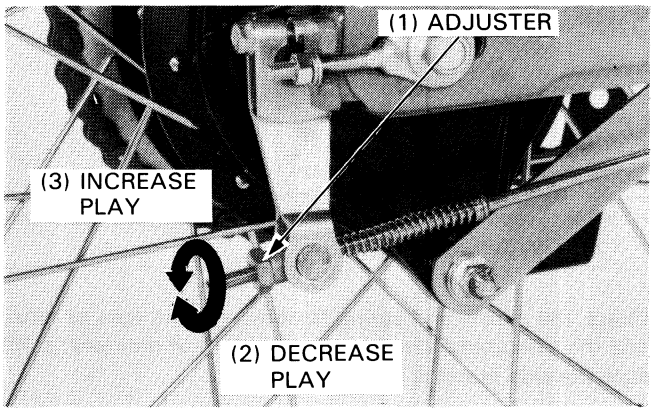
FREE PLAY: 20—30 mm (3/4—1—1/4 in)



Adjust by turning the nut to obtain the specified free play.

NOTE

- Make sure the cut-out on the adjusting nut is seated on the brake arm pin after making the final free play adjustment.



BRAKE LIGHT SWITCH

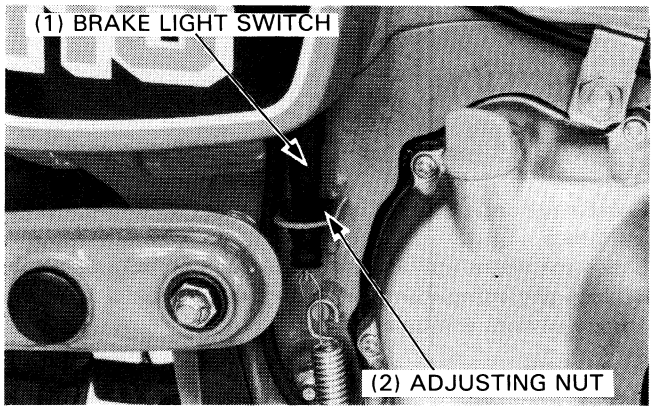
NOTE

- Perform this adjustment after adjusting brake pedal free play.

Adjust the brake light switch so that the light will come on when the brake pedal is depressed and the brake begins engagement.

NOTE

- Do not turn the switch body.
- The front brake light switch does not require adjustment.



HEADLIGHT AIM

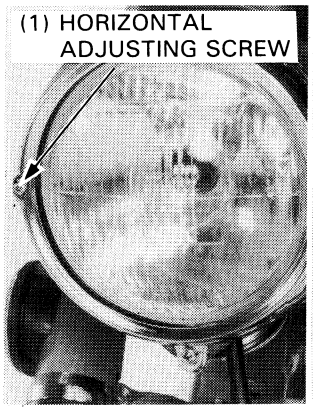
Make horizontal adjustments by turning the horizontal adjusting screw.
Turn the adjusting screw clockwise to direct the beam to the left.
Make vertical adjustments by loosening the headlight case mounting bolts and moving the case up or down as required.

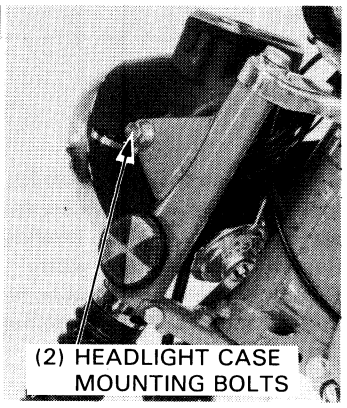
NOTE

- Adjust the headlight beam as specified by local laws and regulations.

WARNING

- ***An improperly adjusted headlight may blind oncoming drivers, or it may fail to light the road for a safe distance.***





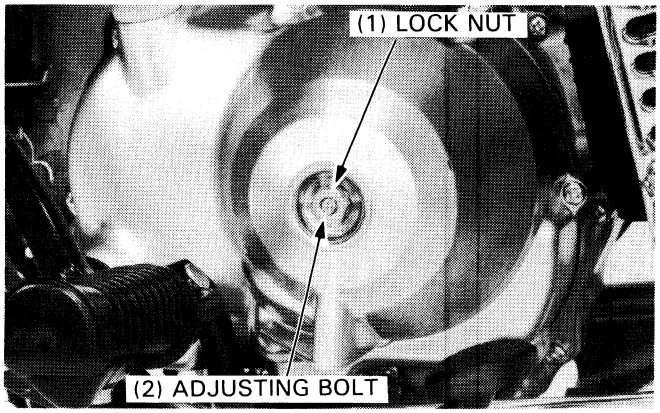
CLUTCH SYSTEM

Stop the engine.

Remove the lifter cap.
Loosen the clutch adjusting bolt lock nut and turn the bolt clockwise one turn; do not turn excessively.

Slowly turn the adjusting bolt counterclockwise and stop when resistance is felt.

From this point, turn the adjusting bolt clockwise 1/8 to 1/4 turn, and tighten the lock nut.
Check to see that the clutch is not slipping and is properly disengaging.



SIDE STAND

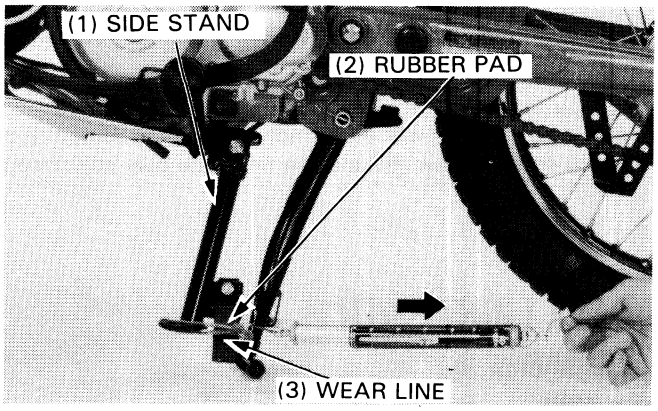
Check the rubber pad for deterioration or wear.
Replace if wear extends to wear line as shown.

NOTE

- When replacing the pad, use a replacement marked "BELOW 260 lbs (117 kg)".

Check the side stand spring for damage and loss of tension, and the side stand assembly for freedom of movement. Make sure the side stand is not bent.

Spring tension is correct if the measurements fall within 2—3 kg (4.4—6.6 lb), when pulling the side stand lower end with a spring scale.



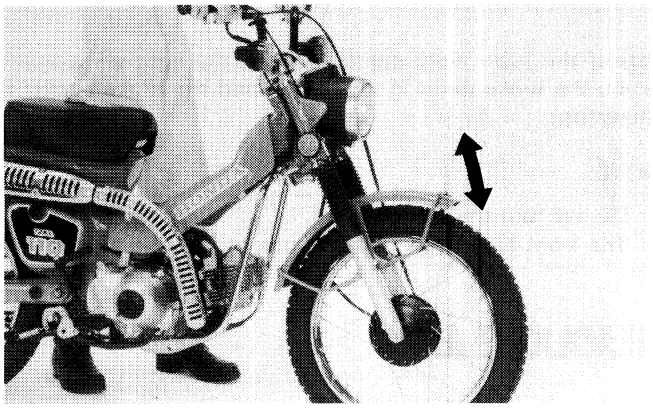
SUSPENSION

FRONT

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

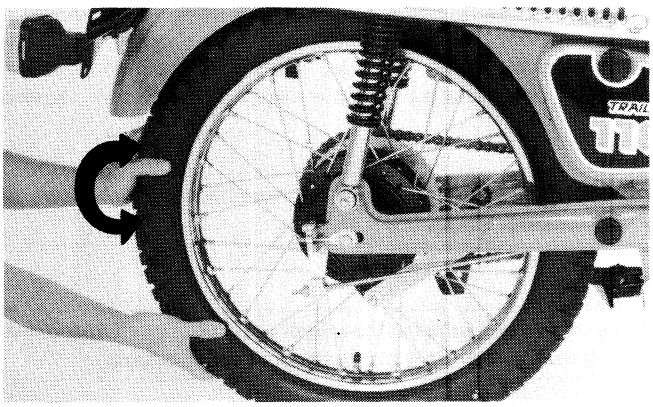
WARNING

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



REAR

Support the motorcycle on its centerstand.
Move the rear wheel sideways with force to see if the swing arm bushings or wheel bearings are worn.
Replace if excessively worn.
Check the entire rear suspension to be sure everything is securely mounted and not damaged or distorted.
Torque all nuts and bolts.



SPARK ARRESTER (USA ONLY)

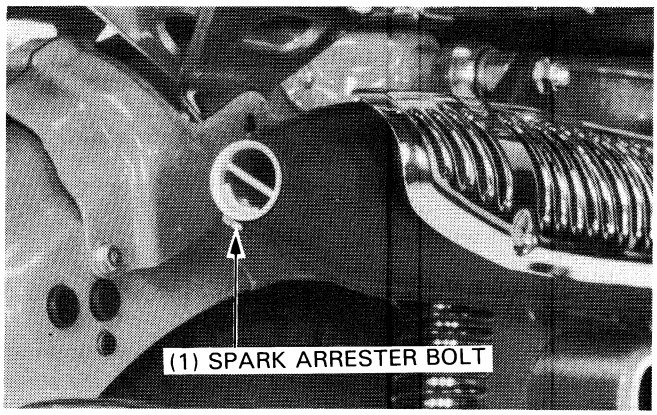
WARNING

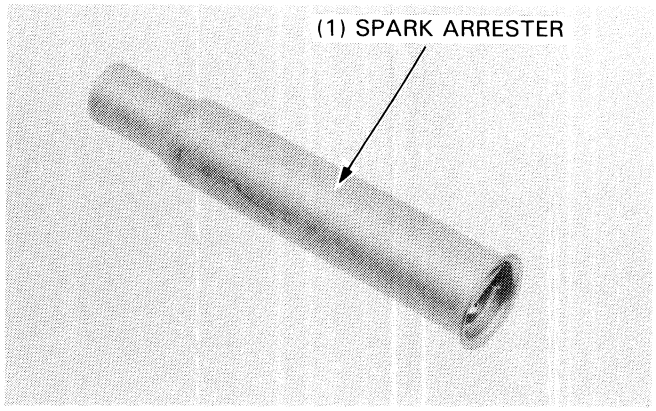
- *Do not remove and install the spark arrester while the exhaust pipe is hot.*
- *Perform this operation in a well ventilated area, free from fire hazard.*
- *Use adequate eye protection.*

Remove the spark arrester bolt and pull out the spark arrester.
Remove any accumulated carbon from the spark arrester.

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

Stop the engine and reinstall the spark arrester.





NUTS, BOLTS, FASTENERS

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

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

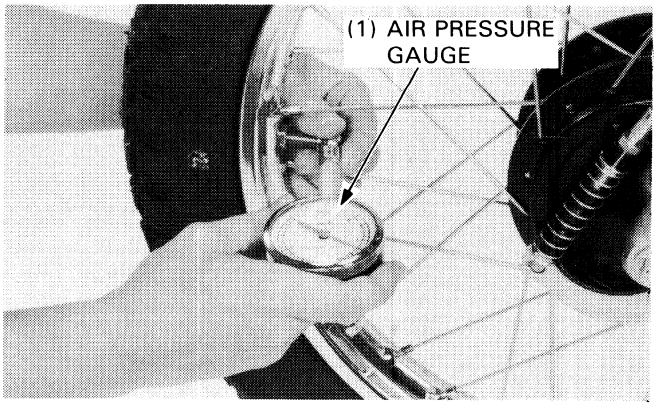
WHEELS/TIRES

NOTE

- Tire pressure should be checked when tires are COLD.

RECOMMENDED TIRE PRESSURE AND TIRE SIZE:

		Front	Rear
Tire size		2.75–17–4PR	2.75–17–4PR
Cold tire Pressure	Up to 100 kg (220.5 lbs) load	175 kPa (1.75 kg/cm², 24 psi)	225 kPa (2.25 kg/cm², 32 psi)

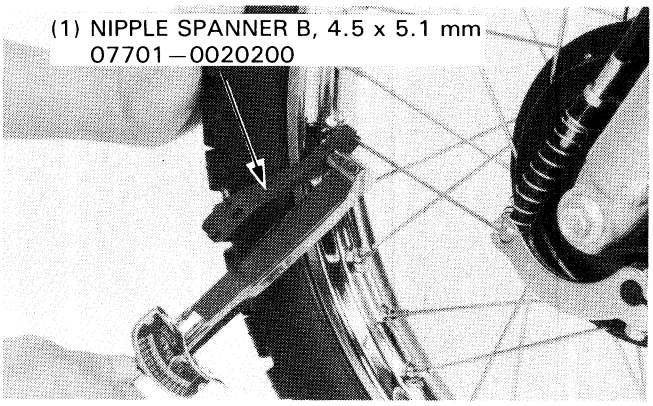


Check the tires for cuts, imbedded nails, or other sharp objects.
Check the front and rear wheels for trueness.
Measure the tread depth at the center of the tires.
Replace the tires if the tread depth reaches the following limit.

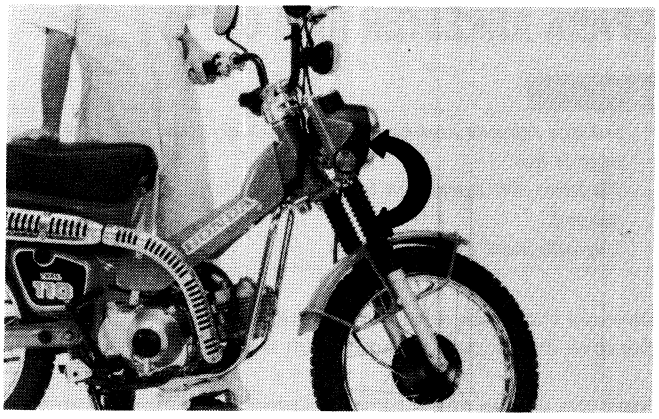
MINIMUM TREAD DEPTH:
FRONT: 0.8 mm (0.03 in)
REAR: 0.8 mm (0.03 in)

Retighten the wheel spokes periodically.

TORQUE: 1.5–3.5 N·m (0.15–0.35 kg-m, 1–3 ft-lb)



STEERING HEAD BEARINGS



NOTE

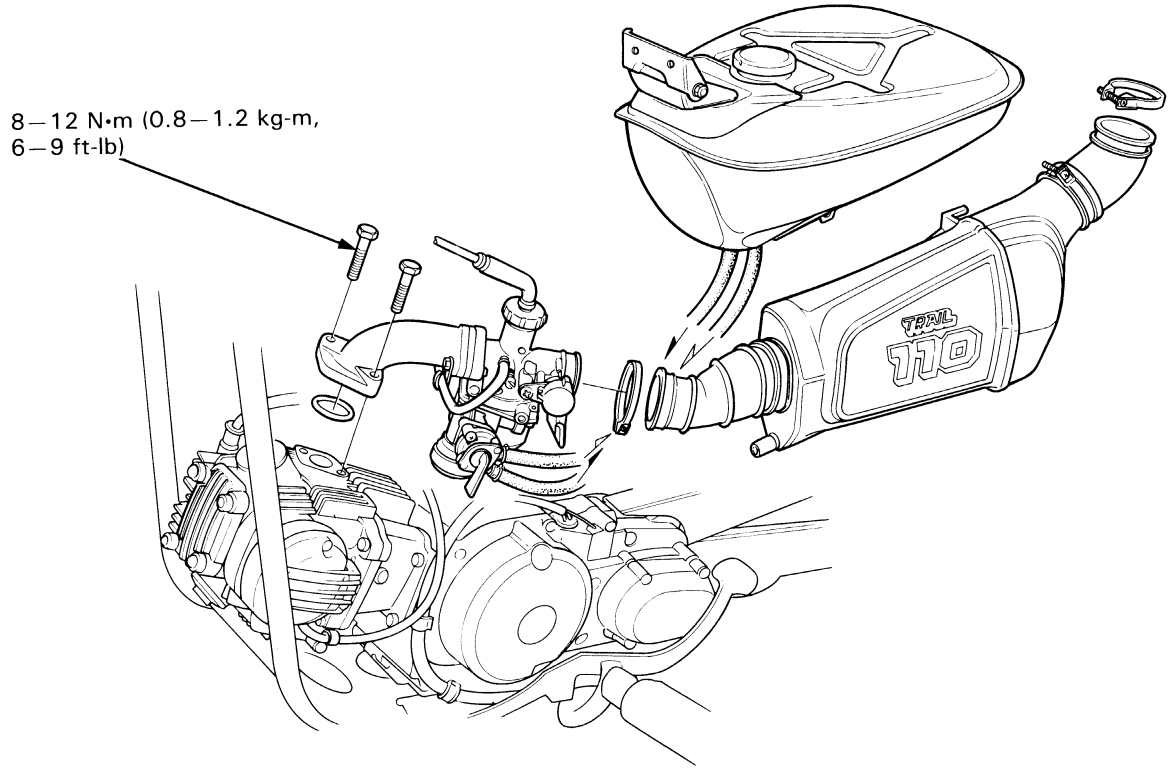
- Check that the control cables do not interfere with handlebar rotation.

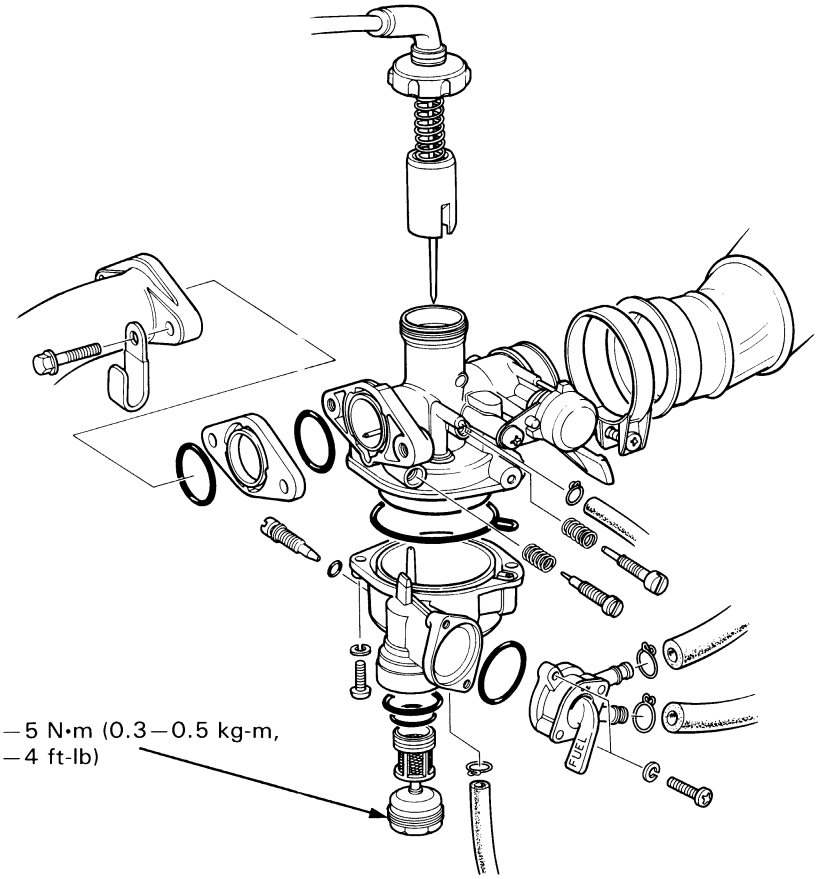
Raise the front wheel off the ground.

Check that the handlebar rotates freely.

If the handlebar moves unevenly, binds, or has vertical movement, adjust the steering head bearings by turning the steering head top thread nut (page 12-19).

MEMO


8—12 N•m (0.8—1.2 kg-m,
6—9 ft-lb)
TRAIL
110


3—5 N•m (0.3—0.5 kg-m,
2—4 ft-lb)
FUEL

SERVICE INFORMATION

GENERAL

WARNING

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

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

SPECIFICATIONS

<Fuel tank>

Fuel tank capacity [ ]: AC	4.6 [4.3] lit (1.22 [1.14] US gal, 1.01 [0.95] Imp gal)
Fuel reserve capacity	0.8 lit (0.21 US gal, 0.18 Imp gal)

<Carburetor>

Identification mark	PBIOD
Venturi bore	18 mm (0.71 in)
Main jet	#72
Slow jet	#38
Air screw opening	1-1/2 turns out
Float level	10.7 mm (0.43 in)
Idle speed	1,500 ± 100 rpm

TORQUE VALUES

Intake pipe mounting bolt	8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)
Fuel strainer cup	3—5 N·m (0.3—0.5 kg-m, 2—4 ft-lb)

TOOL

Common

Float Level Gauge	07401—0010000

TROUBLESHOOTING

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

Engine idles roughly, stalls, or runs poorly
- Idle speed incorrect
- Ignition malfunction
- Rich mixture
- Lean mixture
- Air cleaner clogged
- Insulator leaks
- Fuel contaminated

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

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

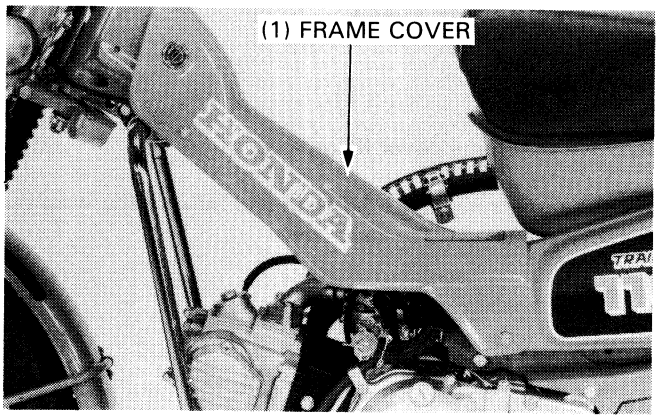
FUEL TANK

REMOVAL

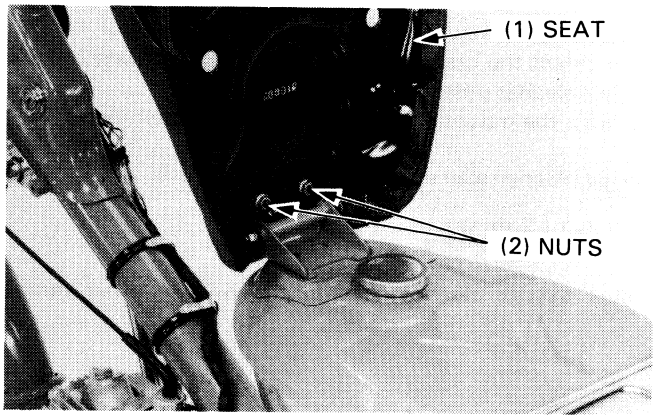
Remove the frame cover.
Drain the fuel from the fuel tank.

WARNING

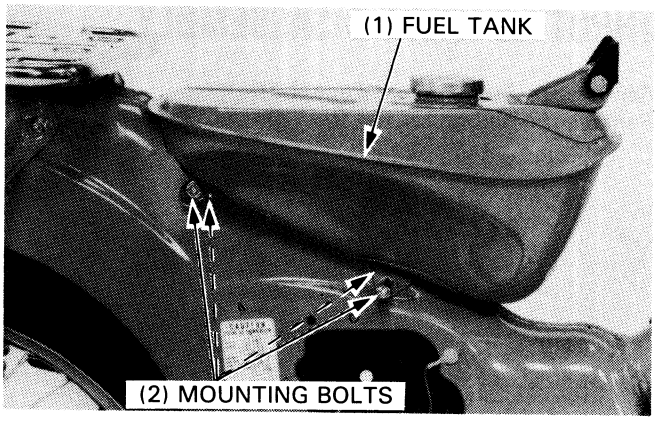
- ***Keep gasoline away from flames or sparks. Wipe up spilled gasoline at once.***



Remove the seat.



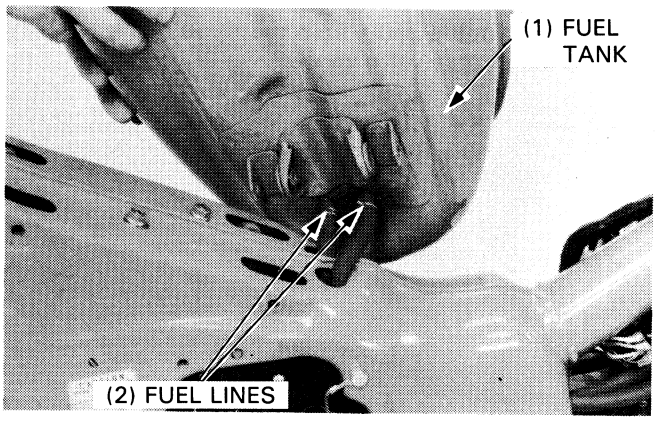
Remove the right side cover.
Remove the battery and battery holder (Page 14-2).
Remove the fuel tank mounting bolts.



Raise the fuel tank and disconnect the fuel lines.
Remove the fuel tank.

INSTALLATION

Install the fuel tank in the reverse order of removal.

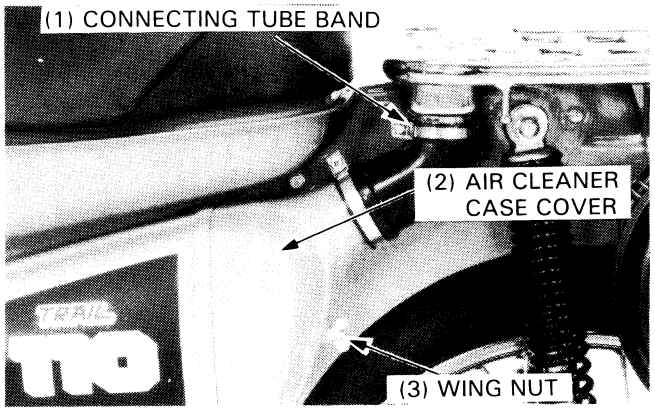


AIR CLEANER CASE

REMOVAL

Remove the frame cover (Page 4-3).

Loosen the connecting tube band and remove the wing nut.
Remove the air cleaner case cover.

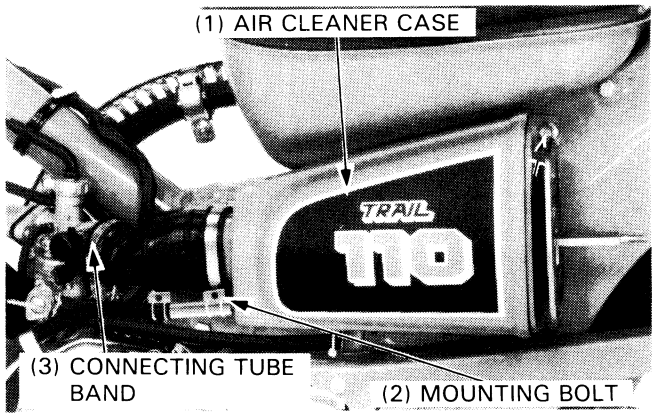


Loosen the connecting tube band at the carburetor.
Disconnect the crankcase breather tube and drain tube from the air cleaner case.
Remove the mounting bolts and the air cleaner case.

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

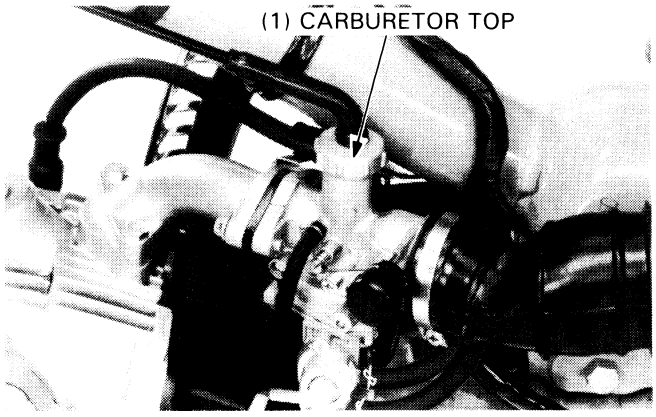
INSTALLATION

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



THROTTLE VALVE DISASSEMBLY

Remove the frame cover (Page 4-3).
Remove the carburetor top from the carburetor.



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

NEW

CAUTION

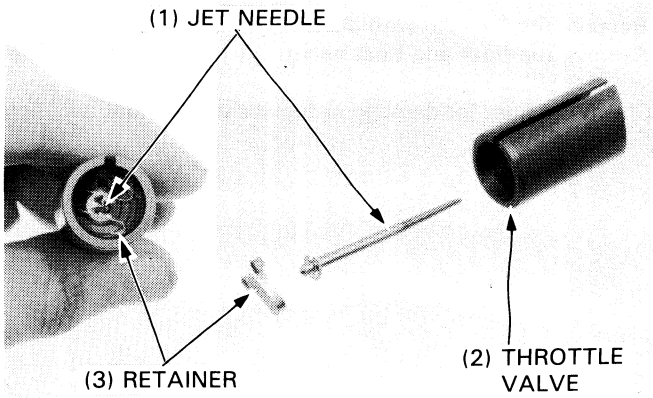
- *The carburetor top is an integral part of the throttle cable assembly. The top cannot be separated from the assembly without causing damage to the cable.*

Revised: March 1987

MSV 1409 (8704) '86 CT110

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

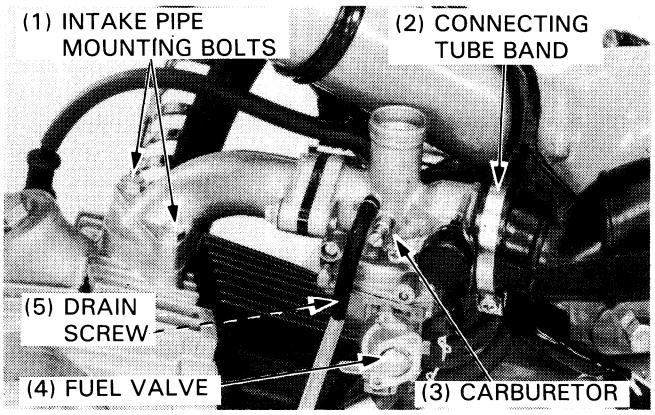
Inspect the throttle valve and jet needle surface for dirt, scratches or wear.



CARBURETOR

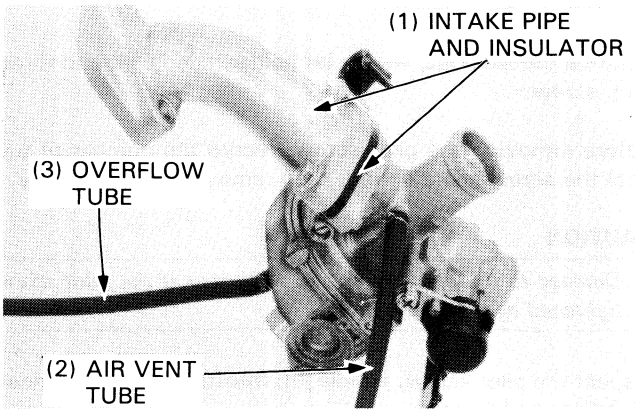
REMOVAL

Remove the throttle valve (Page 4-4).
Drain the fuel from the carburetor, by loosing the drain screw.
Remove the fuel valve and loosen the connecting tube band.
Remove the intake pipe mounting bolts and remove the carburetor with the intake pipe.

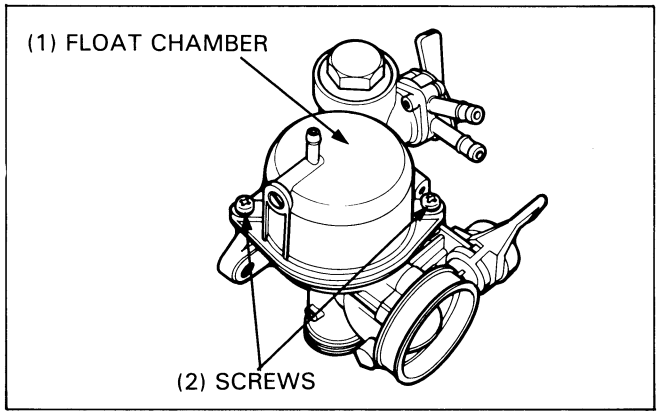


DISASSEMBLY

Disconnect the air vent tube and overflow tubes.
Remove the intake pipe and insulator from the carburetor.

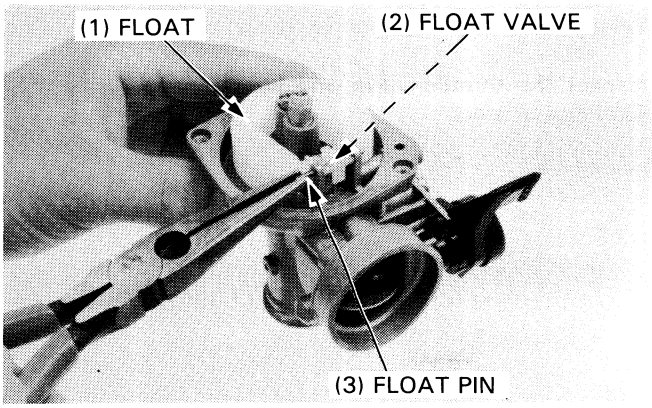


Remove the two screws and the float chamber.



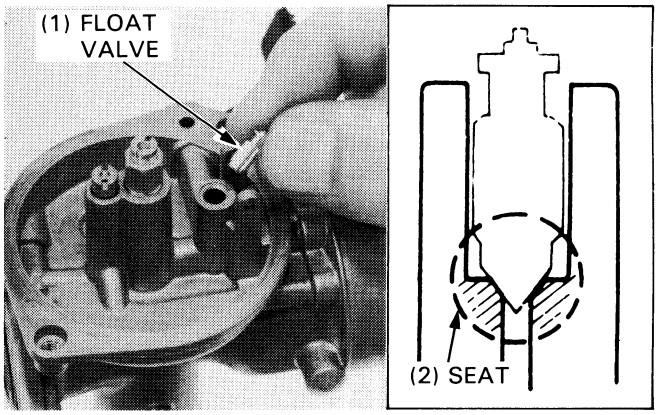
Remove the float pin with *pliers*.
Remove the float and float valve.

Check the float for damage or fuel inside the float and replace if necessary.



Inspect the float valve and seat for wear or damage.
Replace the float valve if it is damaged.

If the seat is damaged, replace the carburetor body.



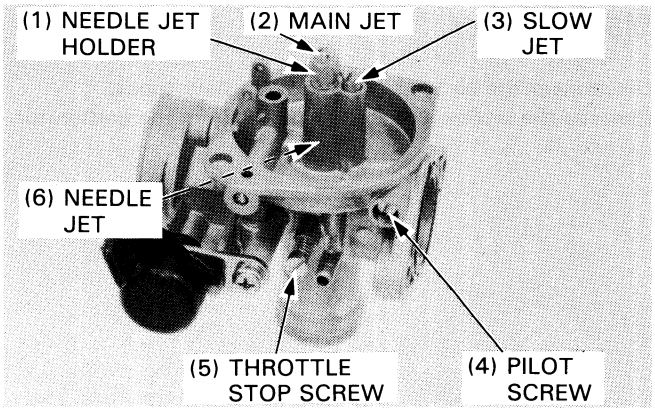
Remove the slow jet.
Remove the main jet, needle jet holder, needle jet and throttle stop screw.

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

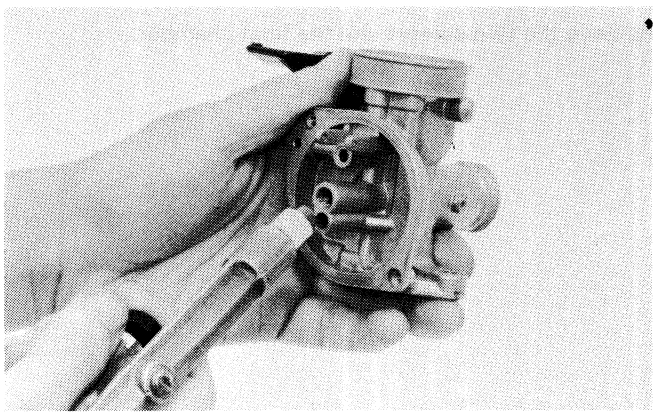
CAUTION

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

Inspect the pilot screw, needle jet, throttle stop screw, needle jet holder and main jet.
Check each part for wear or damage and replace them as necessary.



Clean the passages with compressed air.

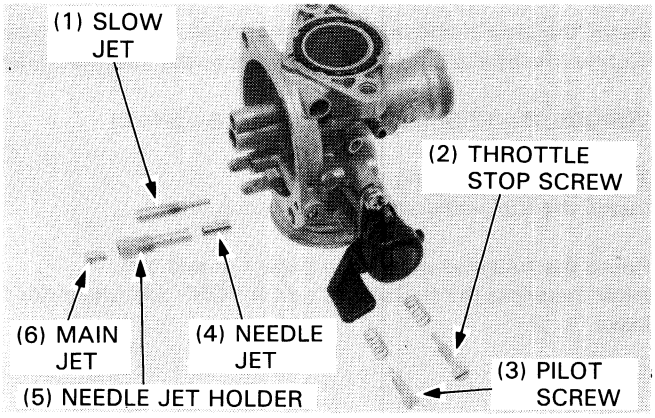


ASSEMBLY

Clean all parts in high flash point solvent and blow dry with compressed air.
Install the needle jet, needle jet holder, main jet.
Install the slow jet.
Install the throttle stop screw and pilot screw.

NOTE

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



After assembling the carburetor, measure the float level.

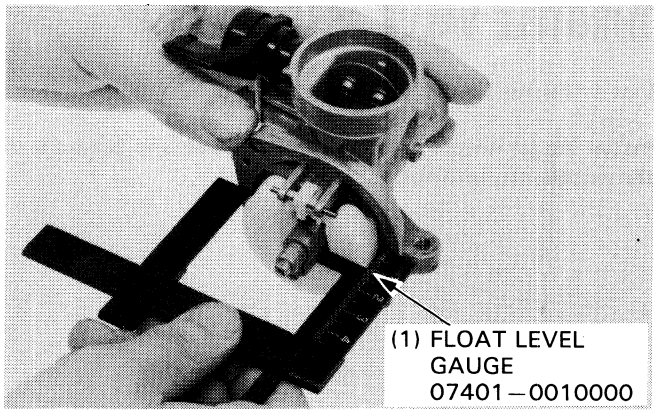
FLOAT LEVEL INSPECTION

Install the float valve and float with the float pin.
With the float valve seated, hold the carburetor so the float tab just touches the float valve.

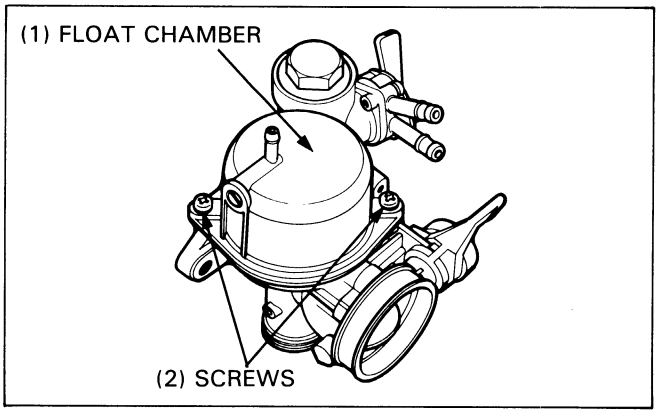
Measure the float level with a float level gauge as shown.

FLOAT LEVEL: 10.7 mm (0.42 in)

If the float level is not within specification, replace the float with a new one.



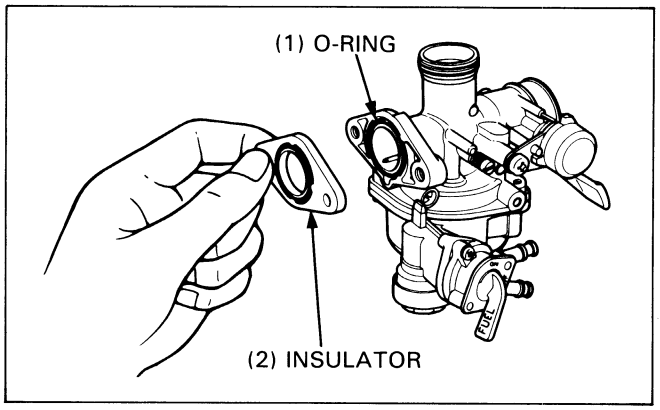
Install the float chamber with two screws.



CARBURETOR INSTALLATION

Install new O-rings on the carburetor body and the insulator.
Install the intake pipe with the insulator and the clamp on the carburetor.

Connect the air vent and overflow tubes.

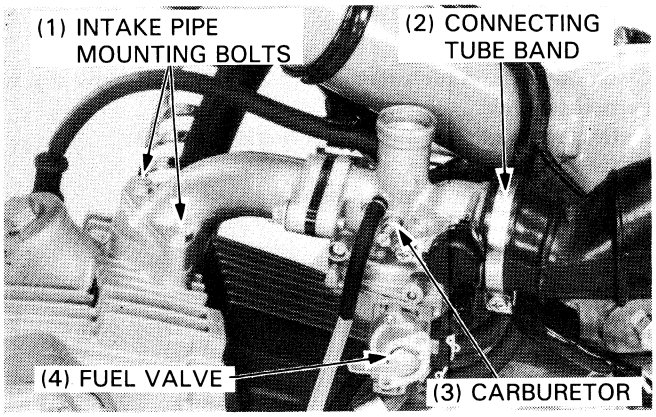


Install the intake pipe on the cylinder head with a new gasket. Tighten the intake pipe mounting bolts to the specified torque.

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

Tighten the connecting tube band.
Install the fuel valve with a new O-ring.

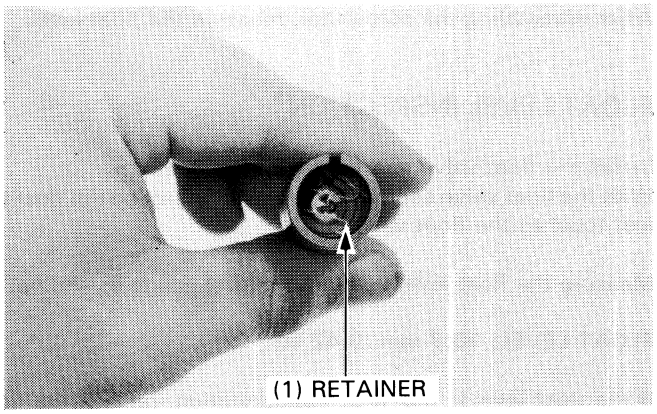
Route the tubes as shown on page 1-8 and 1-9.
After installing the fuel valve, turn it "ON" and check for fuel leaks.



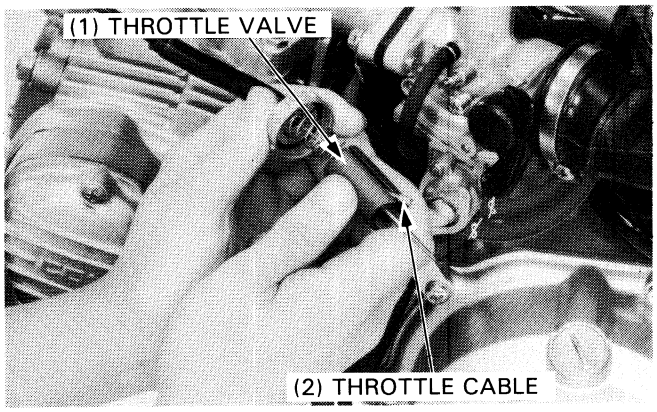
THROTTLE VALVE ASSEMBLY

Install the needle clip on the jet needle.

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



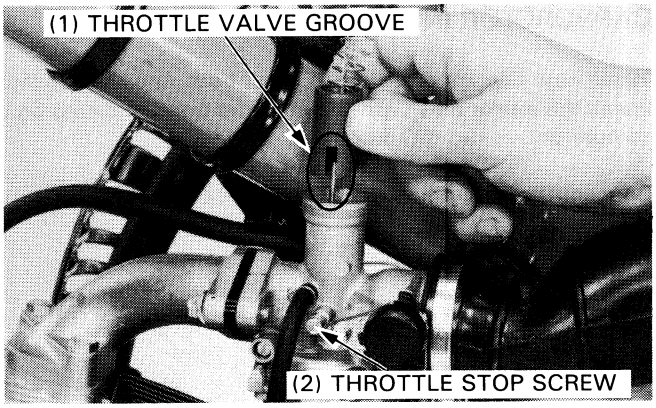
Connect the throttle cable to the throttle valve while depressing the valve spring.



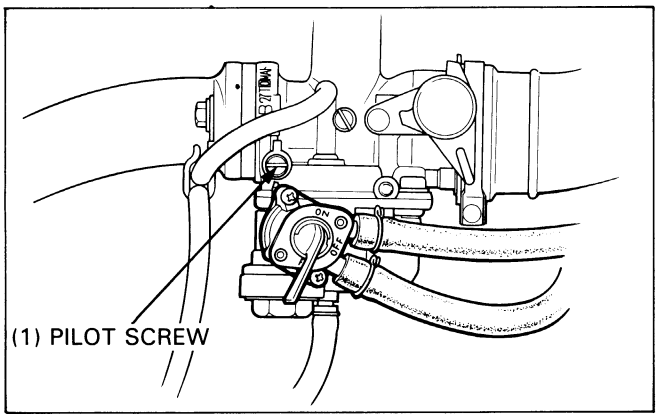
Insert the throttle valve into the carburetor, aligning the valve groove with the throttle stop screw, then install the carburetor top onto the carburetor.

NOTE

- After installing the carburetor and throttle valve, perform the following adjustments:
  - Throttle grip free play (Page 3-3).
  - Carburetor pilot screw adjustment (Page 4-9), if the carburetor was overhauled or cleaned.



PILOT SCREW ADJUSTMENT



NOTE

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

CAUTION

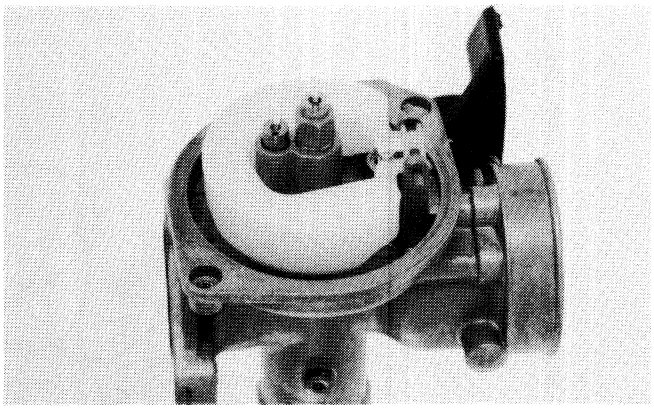
- *The pilot screw seat will be damaged if the pilot screw is tightened against the seat.*

Turn the pilot screw clockwise until it seats lightly and back it out 1-1/2 turns.
This is an initial setting prior to the final pilot screw adjustment.
Warm the engine up to operating temperature.
Stop the engine and connect a tachometer.
Start the engine and adjust the idle speed with the throttle stop screw.

IDLE SPEED: 1,500 ± 100 rpm

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

HIGH ALTITUDE ADJUSTMENT



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

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

The high altitude carburetor adjustment is performed as follows:

Remove and disassemble the carburetor (Page 4-5).

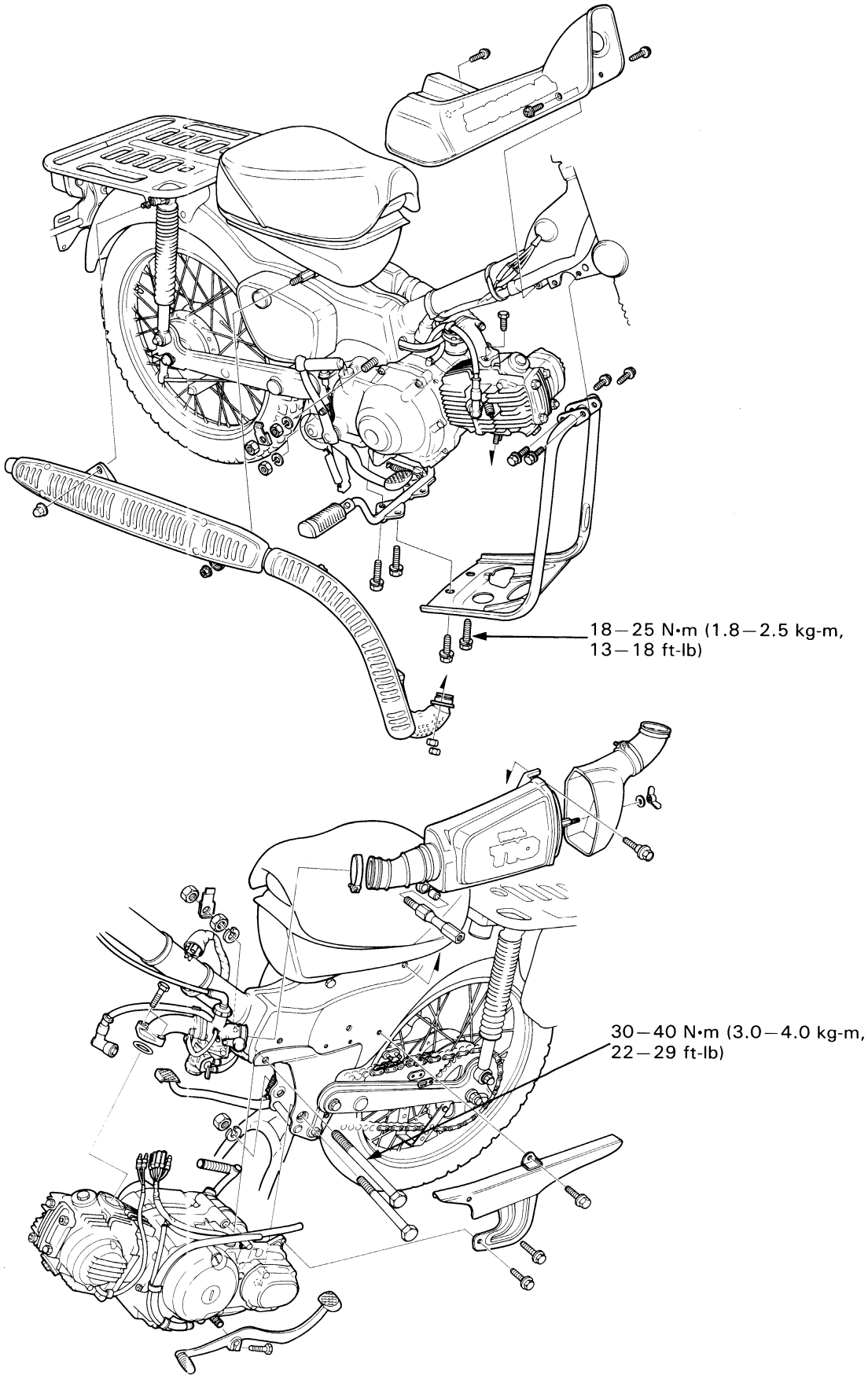
Replace the standard main jet with the high altitude type (#70).

Assemble and install the carburetor (Page 4-7).
Start the engine and adjust the idle speed at high altitude to ensure proper high altitude operation.

CAUTION

- *Sustained operation below 5,000 feet (1,500 m) with the high altitude settings may cause engine overheating and engine damage. Install the #72 main jet, when riding below 5,000 feet (1,500 m).*

Altitude	Main jet
Below 6,500 ft (2,000 m)	#72
Above 5,000 ft (1,500 m)	#70


18—25 N•m (1.8—2.5 kg-m,
13—18 ft-lb)
30—40 N•m (3.0—4.0 kg-m,
22—29 ft-lb)

5. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION

GENERAL

- During removal and installation, place the motorcycle on the centerstand.
- A jack or adjustable support is required to maneuver the engine.

SPECIFICATIONS

Engine dry weight	24.9 kg (54.89 lb)
Engine oil capacity	1.1 lit (1.16 US qt, 0.97 Imp qt) at disassembly. 0.9 lit (0.96 US qt, 0.79 Imp qt) at draining.

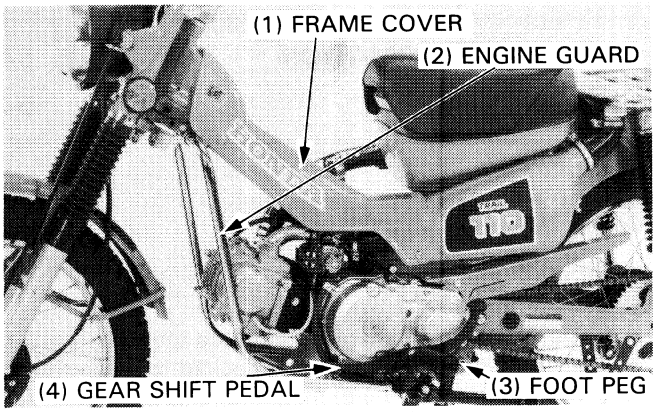
TORQUE VALUES

Engine hanger bolt	30—40 N•m (3.0—4.0 kg-m, 22—29 ft-lb)
Engine oil drain plug	20—35 N•m (2.0—3.5 kg-m, 15—25 ft-lb)
Foot peg bolt	18—25 N•m (1.8—2.5 kg-m, 13—18 ft-lb)

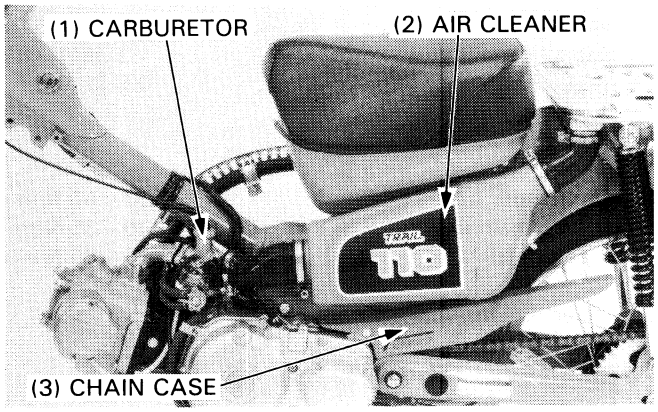
ENGINE REMOVAL

Drain the engine oil (Page 2-2).

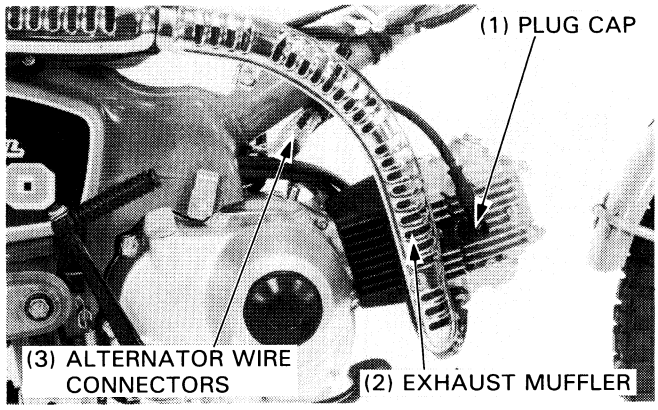
Remove the following parts:
— frame cover.
— engine guard.
— foot peg.
— gearshift pedal.



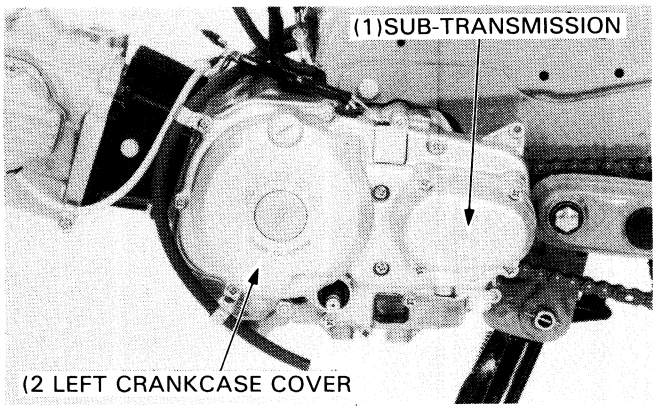
— carburetor with the intake pipe (Page 4-5).
— air cleaner (Page 4-4).
— chain case.



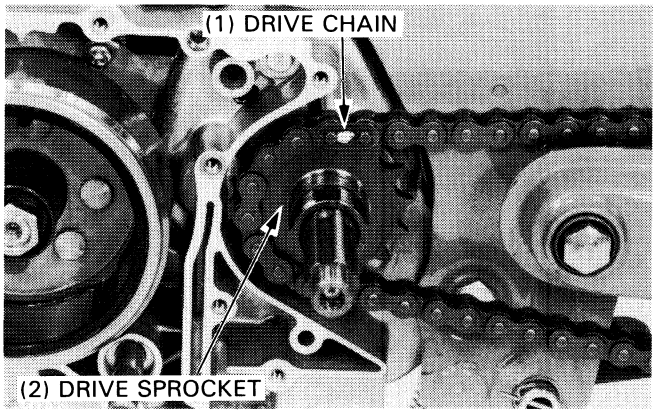
Remove the exhaust muffler.
Disconnect the alternator wire connectors, and the spark plug cap.



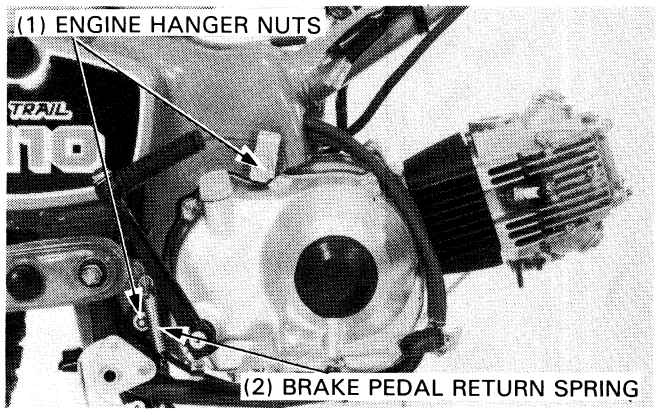
Remove the sub-transmission (Page 10-2).
Remove the left crankcase cover (Page 9-2).



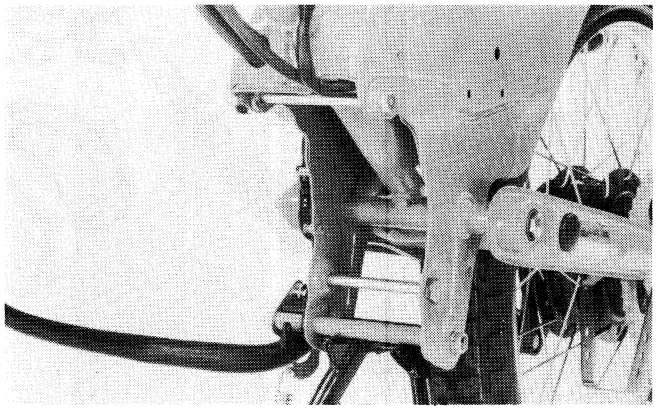
Remove the drive chain (Page 3-8).
Remove the drive sprocket bolts and the sprocket.



Remove the brake pedal return spring.
Remove the engine hanger nuts and bolts.
Remove the engine.



ENGINE INSTALLATION



Installation is essentially the reverse order of removal.
Tighten all the fasteners to the specified torque.

TORQUE:

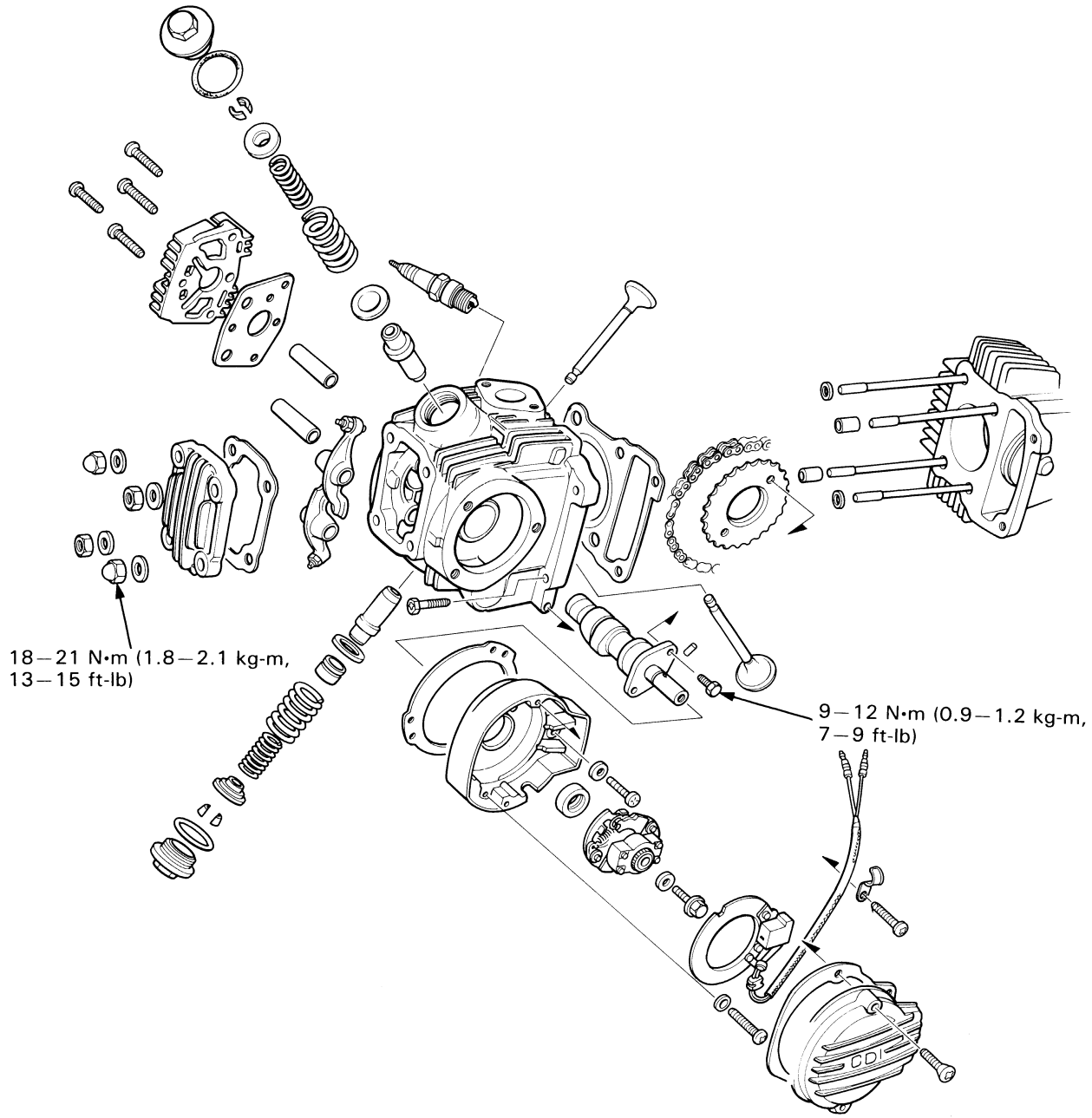
Engine hanger bolt
8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)
Foot peg bolt
18—25 N·m (1.8—2.5 kg-m, 13—18 ft-lb)
Engine oil drain plug
20—35 N·m (2.5—3.5 kg-m, 15—25 ft-lb)

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

NOTE

- Route all wire harnesses and cables properly (Page 1-8, 9, 10).
- Use the correct bolts in their proper positions.

After installing the engine, perform the following inspections and adjustments:
— Throttle grip free play (Page 3-3).
— Rear brake pedal free play (Page 3-11).
— Brake light switch (Page 3-11).
— Drive chain slack (Page 3-8).


18—21 N•m (1.8—2.1 kg-m,
13—15 ft-lb)
9—12 N•m (0.9—1.2 kg-m,
7—9 ft-lb)
CDI

6. CYLINDER HEAD/VALVES

SERVICE INFORMATION

GENERAL

- This section covers cylinder head, valves, camshaft and rocker arm maintenance.
- Camshaft lubrication oil is fed to the cylinder head through an oil control orifice in the crankcase. Be sure that this orifice is not clogged and that new O-rings and dowel pins are in place before installing the cylinder head.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Cylinder compression		1,078–1,372 kPa (11.0–14.0 kg/cm², 156–199 psi)	1,000 kPa (10 kg/cm², 140 psi)
Camshaft journal O.D.	R	17.93–17.95 mm (0.706–0.707 in)	17.90 mm (0.705 in)
	L	25.93–25.95 mm (1.021–1.022 in)	25.90 mm (1.020 in)
Cam lobe height	IN/EX	24.12–24.28 mm (0.950–0.976 in)	23.8 mm (0.94 in)
Rocker arm I.D.		10.00–10.02 mm (0.394–0.395 in)	10.1 mm (0.40 in)
Rocker arm shaft O.D.		9.972–9.987 mm (0.3926–0.3932 in)	9.92 mm (0.391 in)
Rocker arm-to-shaft clearance		0.013–0.043 mm (0.0005–0.0017 in)	0.08 mm (0.003 in)
Cylinder head warpage		0.05 mm (0.002 in)	0.10 mm (0.004 in)
Valve spring free length	INNER	31.1 mm (1.22 in)	29.9 mm (1.18 in)
	OUTER	35.0 mm (1.38 in)	33.7 mm (1.32 in)
Valve stem O.D.	IN	5.450–5.465 mm (0.2146–0.2152 in)	5.44 mm (0.214 in)
	EX	5.430–5.445 mm (0.2138–0.2144 in)	5.42 mm (0.213 in)
Valve guide I.D.	IN/EX	5.475–5.485 mm (0.2157–0.2161 in)	5.53 mm (0.218 in)
Stem-to-guide clearance	IN	0.010–0.035 mm (0.0004–0.0014 in)	0.08 mm (0.003 in)
	EX	0.030–0.055 mm (0.0012–0.0022 in)	0.10 mm (0.004 in)
Valve face width	IN/EX	1.2–1.5 mm (0.05–0.06 in)	1.8 mm (0.07 in)
Valve seat width	IN/EX	1.0 mm (0.04 in)	1.6 mm (0.06 in)
End hole I.D.	R	18.000–18.018 mm (0.7087–0.7094 in)	18.05 mm (0.711 in)
	L	26.000–26.020 mm (1.0236–1.0244 in)	26.05 mm (1.026 in)
Camshaft-to-end hole clearance	R	0.062–0.091 mm (0.0025–0.0036 in)	0.12 mm (0.005 in)
	L	0.070–0.103 mm (0.0028–0.0041 in)	0.16 mm (0.006 in)

TORQUE VALUES

Cylinder head nut	18—21 N·m (1.8—2.1 kg-m, 13—15 ft-lb)
Cam sprocket	9—12 N·m (0.9—1.2 kg-m, 7—9 ft-lb)

TOOLS

Special

Valve guide reamer	07984—0980000
Boot slider	07974—1280000

Common

Valve guide remover, 5.5 mm	07742—0010100
Valve guide driver B	07742—0020200
Valve spring compressor	07757—0010000

TROUBLESHOOTING

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

Low compression
- Valve
  - Incorrect valve adjustment
  - Burned or bent valve
  - Incorrect valve timing
  - Weak valve spring
- Cylinder head
  - Leaking or damaged head gasket
  - Warped or cracked cylinder head
- Cylinder and piston (Section 7)

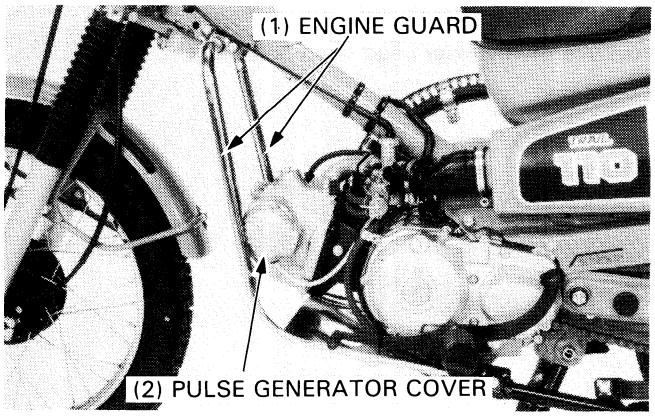
High compression
- Excessive carbon build-up on piston crown or in combustion chamber

Excessive noise
- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Damaged or worn rocker arm or camshaft
- Worn or damaged cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth

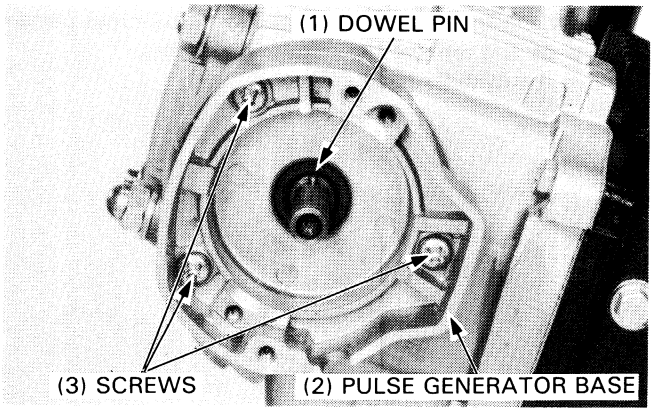
Poor idling
- Compression too low

CAMSHAFT/ROCKER ARM REMOVAL

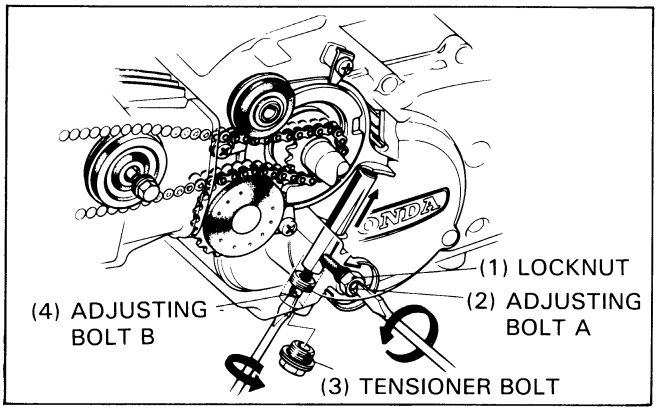
Remove the frame cover (Page 4-3).
Remove the engine guard.
Remove the pulse generator, base plate and pulse rotor (Page 15-2).



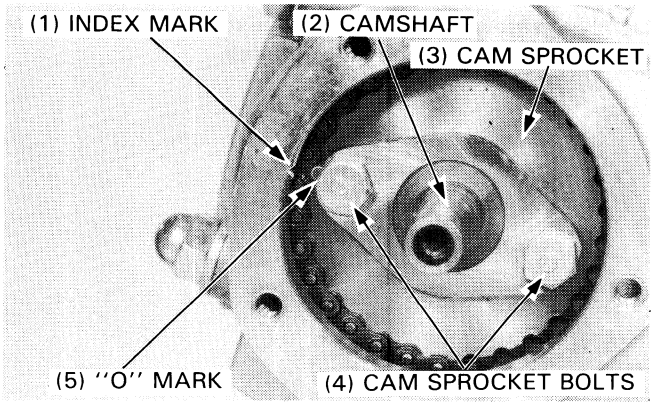
Remove gasket, and remove the dowel pin from the camshaft.
Remove the pulse generator base by removing the three screws.



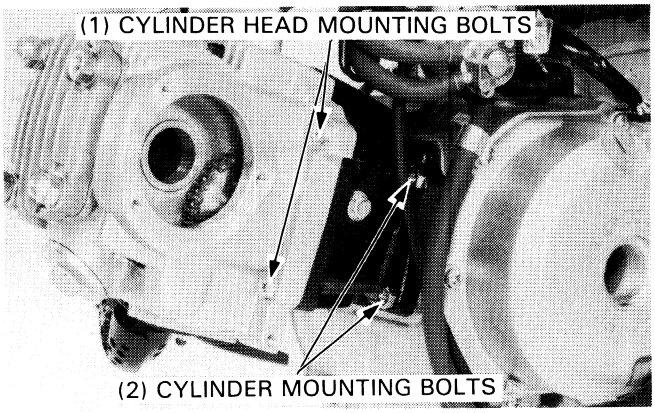
Remove the cam chain tensioner bolt and loosen the adjusting bolt B. Loosen the lock nut and turn the adjusting bolt A 1/2 turn out.



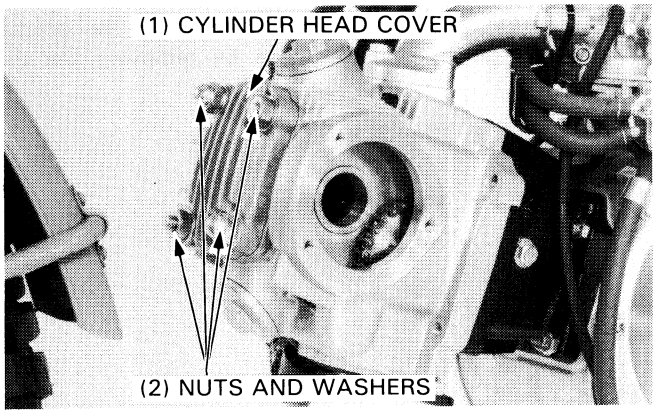
Remove the crankshaft hole cap.
Align the "O" mark on the cam sprocket with the index mark on the cylinder head by turning the crankshaft counter-clockwise.
Remove the cam sprocket bolts and the camshaft.



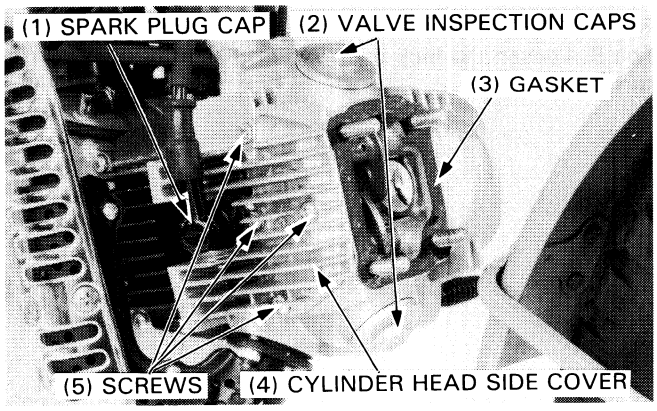
Loosen the cylinder mounting bolts.
Remove the cylinder head mounting bolts.



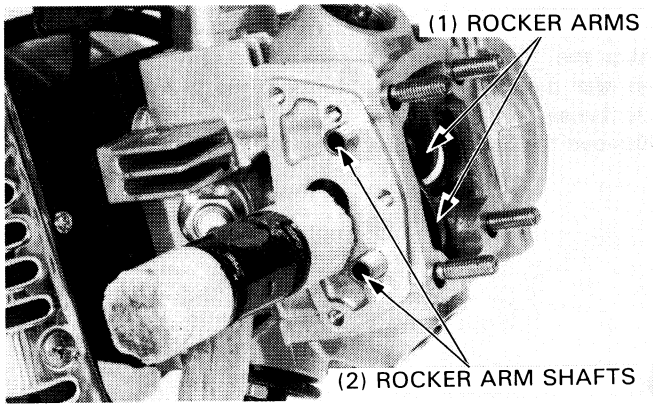
Loosen the cylinder head cover nuts in a criss-cross pattern in 2—3 steps and remove the nuts and washers.
Remove the cylinder head cover.



Remove the head cover gasket and the spark plug cap.
Remove the valve inspection hole caps.
Remove the four screws and remove the cylinder head side cover and gasket.



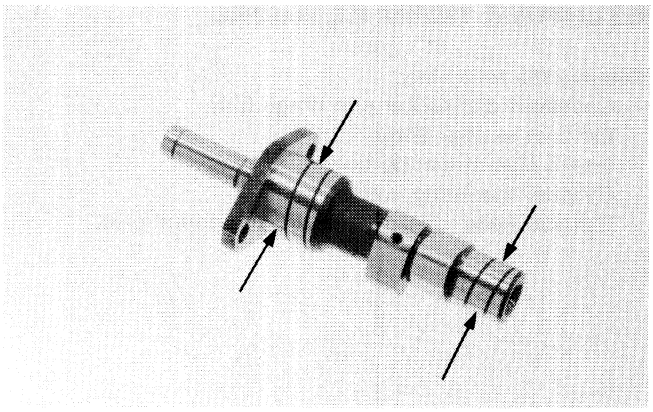
Lightly tap around the surface of the rocker arm, then remove the rocker arm shafts and rocker arms.



CAMSHAFT INSPECTION

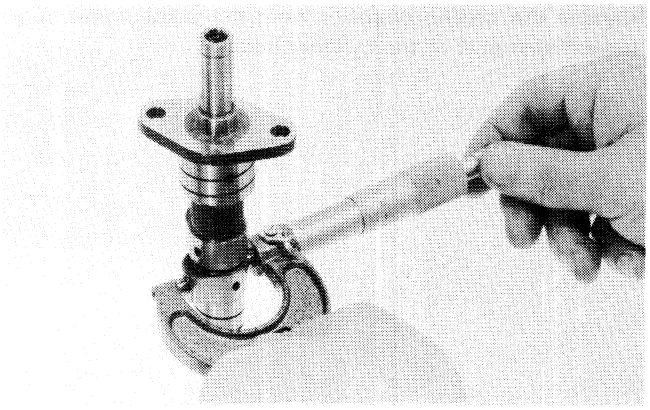
Measure and record the camshaft journal O.D. with a micrometer.

SERVICE LIMITS: R: 17.90 mm (0.705 in)
L: 25.90 mm (1.020 in)



Measure each cam lobe height and inspect it for wear or damage.

SERVICE LIMITS: IN/EX: 23.8 mm (0.94 in)



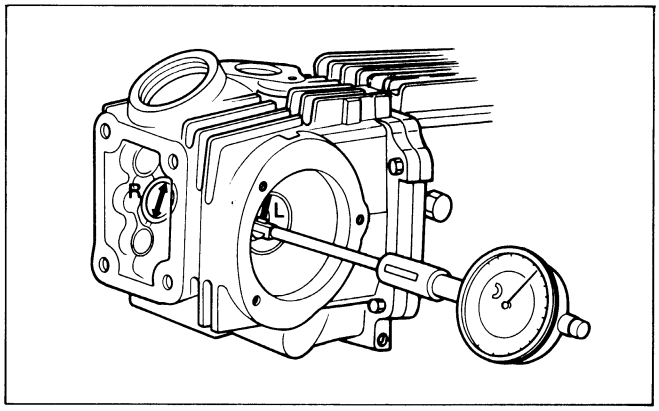
CAMSHAFT-TO-END HOLE INSPECTION

Measure and record the end hole I.D.

SERVICE LIMITS: R: 18.05 mm (0.711 in)
L: 26.05 mm (1.026 in)

Calculate the camshaft-to-end hole clearance.

SERVICE LIMITS: R: 0.12 mm (0.005 in)
L: 0.12 mm (0.006 in)



ROCKER ARM AND SHAFT INSPECTION

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

NOTE

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

Measure the I.D. of each rocker arm with a micrometer.

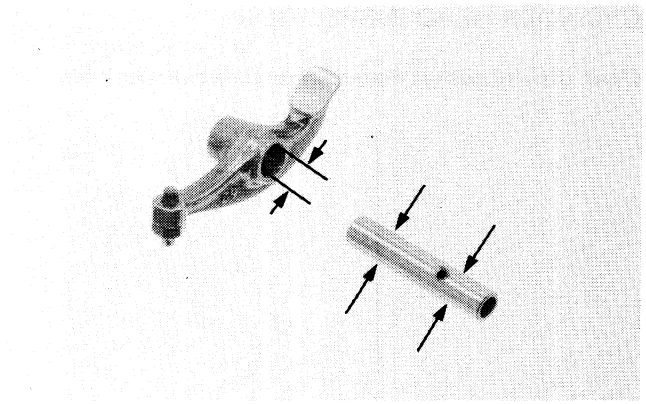
SERVICE LIMIT: 10.1 mm (0.40 in)

Measure the O.D. of each shaft with a micrometer.

SERVICE LIMIT: 9.92 mm (0.391 in)

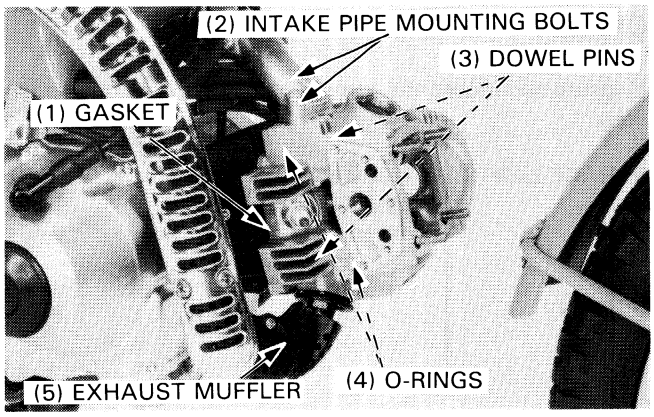
Calculated the rocker arm-to-shaft clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)

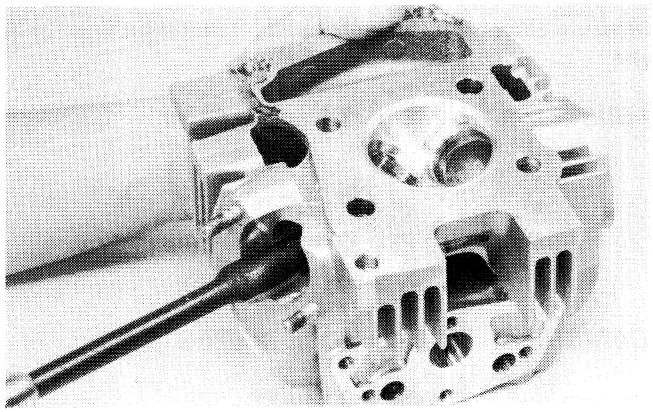


CYLINDER HEAD REMOVAL

Remove the following:
- Camshaft and rocker arm (Page 6-4).
- Exhoust muffler (Page 13-9).
- Intake pipe mounting bolts.
- Cylinder mounting bolts.
- Cylinder head, gasket, O-rings and dowel pins.



Remove the carbon deposits from the combustion chamber and exhaust port of the cylinder head.

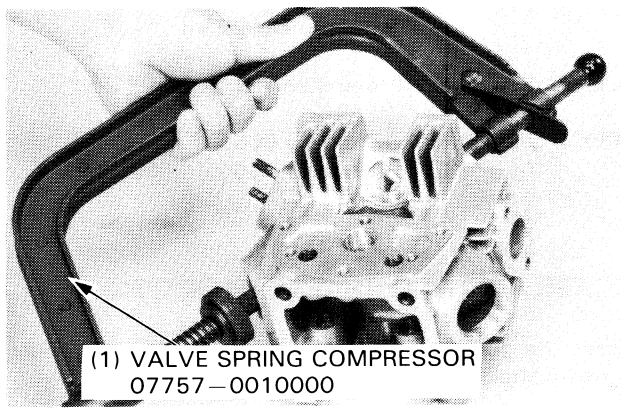


CYLINDER HEAD DISASSEMBLY

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

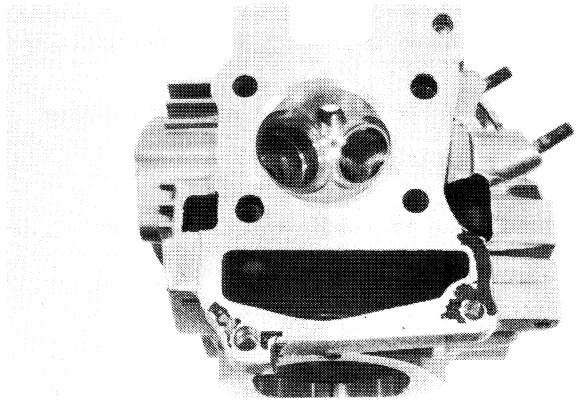
CAUTION

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



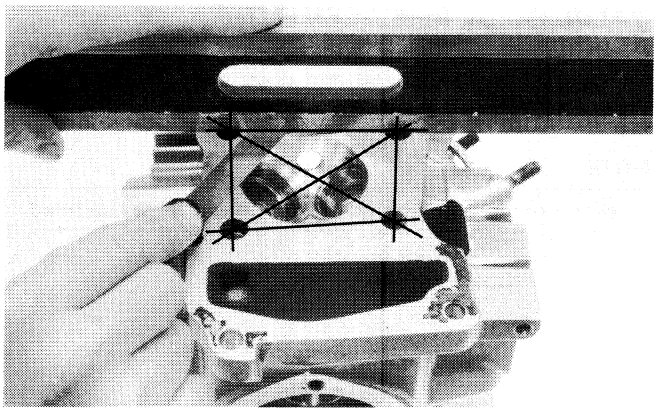
CYLINDER HEAD INSPECTION

Clean off any gasket material from the cylinder head surface.



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

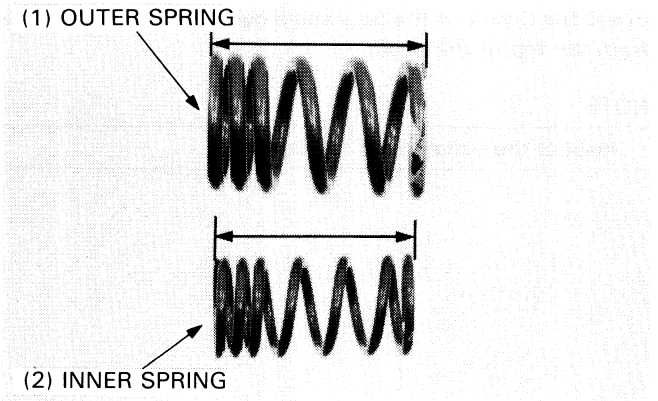
SERVICE LIMIT: 0.10 mm (0.004 in)



VALVE SPRING INSPECTION

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

SERVICE LIMITS: INNER: 29.9 mm (1.18 in)
OUTER: 33.7 mm (1.32 in)



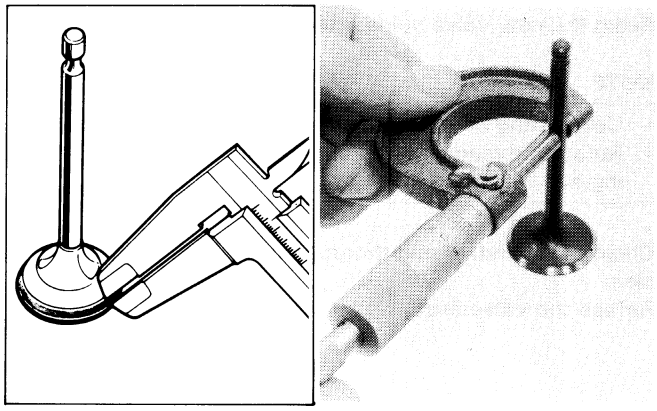
VALVE/VALVE GUIDE INSPECTION

Inspect each valve for truness, burning, scratches or abnormal stem wear.
Check the valve movement in the guide.
Measure the valve face width at several points.

SERVICE LIMIT: 1.8 mm (0.07 in)

Measure and record each valve stem O.D.

SERVICE LIMITS: IN: 5.44 mm (0.214 in)
EX: 5.42 mm (0.213 in)



Measure and record the valve guide I.D.

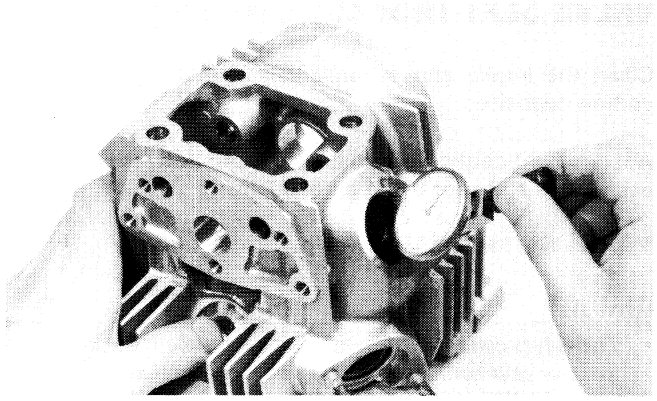
NOTE

- Ream the guides to remove any carbon deposits before checking the valve guide I.D.

SERVICE LIMIT: IN/EX: 5.53 mm (0.218 in)

Calculate the stem-to-guide clearance.

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



NOTE

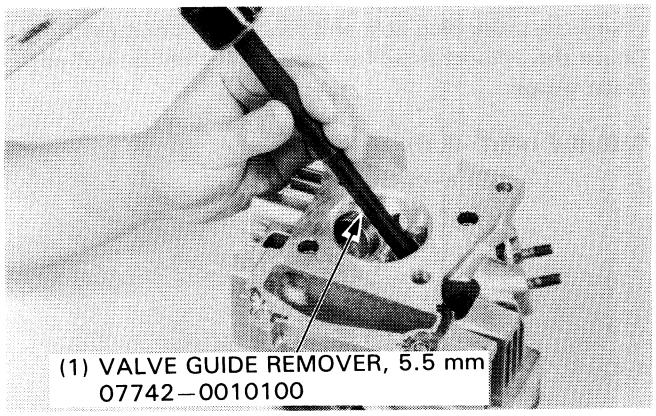
- If the stem-to-guide clearance exceeds the service limit, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace guides as necessary and ream to fit.
- If the valve guide is replaced, the valve seat must be refaced.

VALVE GUIDE REPLACEMENT

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

NOTE

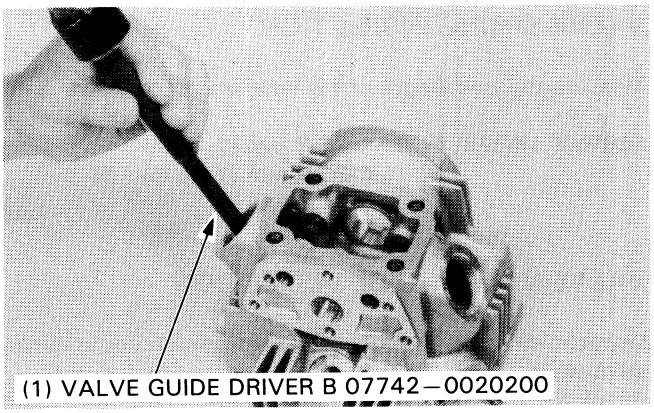
- When driving out the guide, do not damage the head.



Install the O-ring on the new valve guide and drive in the guide from the top of the head.

NOTE

- Inspect the valve guide for damage.

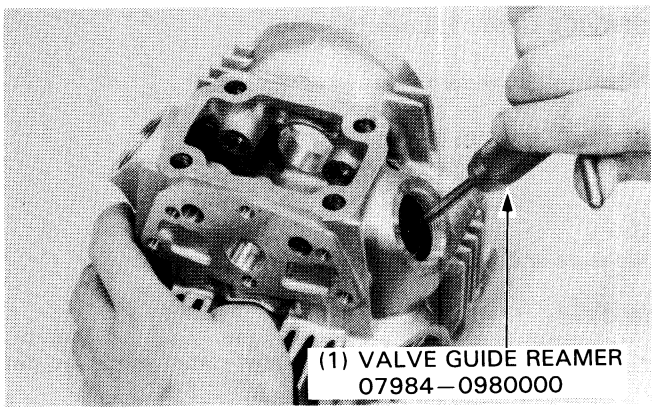


Ream the new valve guide after installation.

NOTE

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

Clean the cylinder head thoroughly to remove any metal particles.
Reface the valve seat.



VALVE SEAT INSPECTION/REFACING

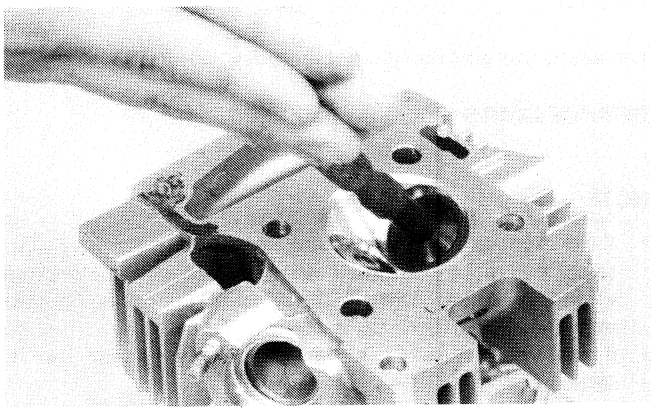
Clean the intake and exhaust valves thoroughly to remove carbon deposits.

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

Remove and inspect each valve.

CAUTION

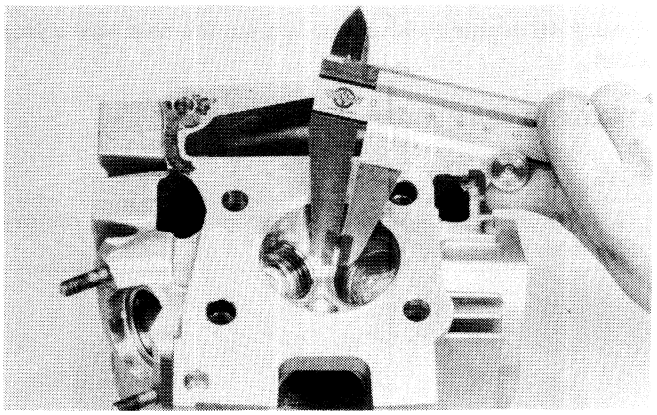
- *The valves cannot be ground. If a valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.*



Inpsect and measure each valve seat.

SERVICE LIMITS: IN/EX: 1.6 mm (0.06 in)

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



VALVE SEAT GRINDING

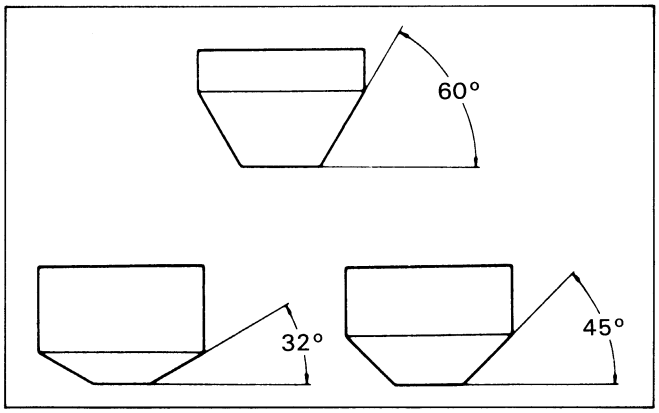
NOTE

- Follow the instructions supplied with the valve seat refacing equipment.

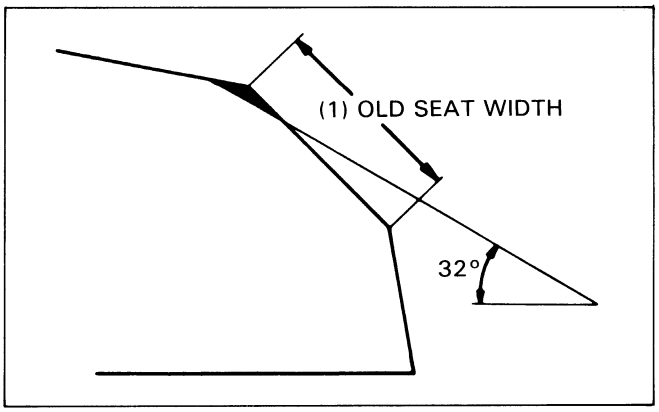
Use a 45 degree cutter to remove any roughness or irregularities from the seat.

NOTE

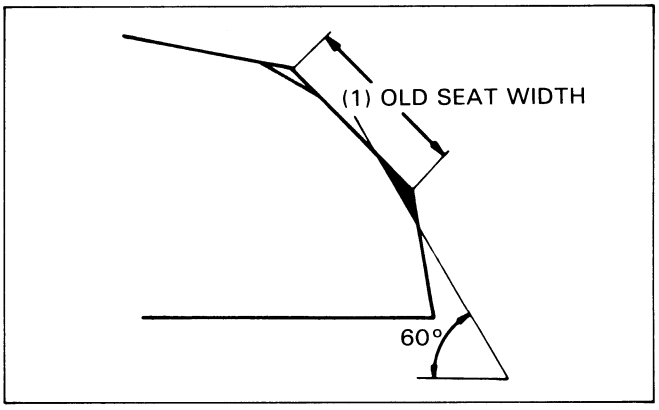
- Reface the seat with a 45 degree cutter when the valve guide is replaced.



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



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

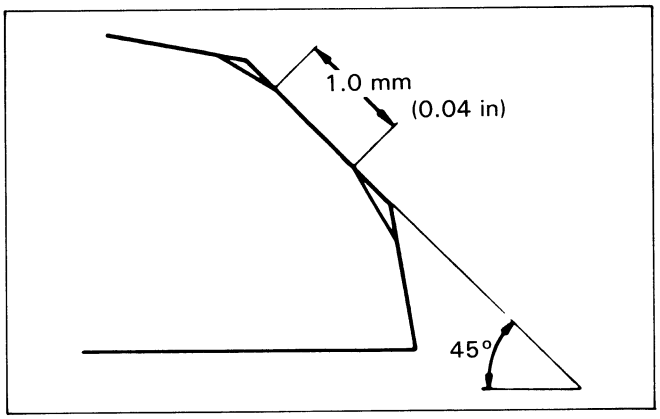


Install a 45 degree finish cutter and cut the seat to the proper width.

STANDARD SEAT WIDTH: 1.0 mm (0.04 in)

NOTE

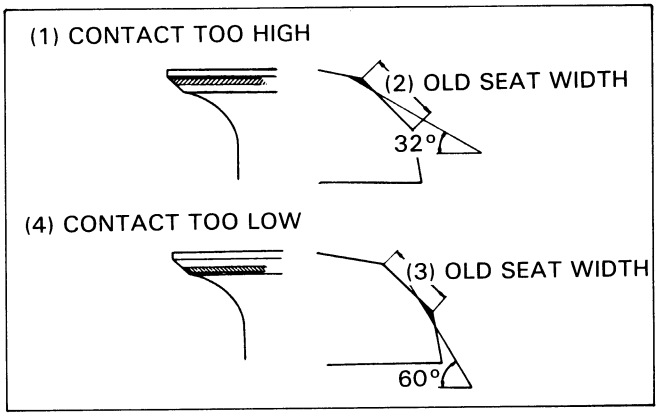
- Make sure that all pitting and irregularities are removed. Refinish if necessary.



Apply a thin coating of Prussian Blue to the valve seat.
Without rotating the valve, insert the valve through the valve guide and onto the seat to make a clear pattern.
If the contact surfaces is too high, cut the seat using the 32 degree cutter, then cut the seat to the proper width with 45 degree finish cutter.
If the contact surface is too low, cut the seat using the 60 degree cutter, then cut the seat to the proper width with 45 degree finish cutter.

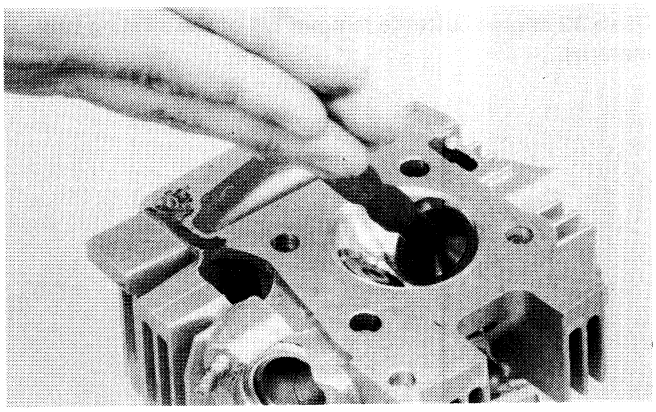
NOTE

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



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

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



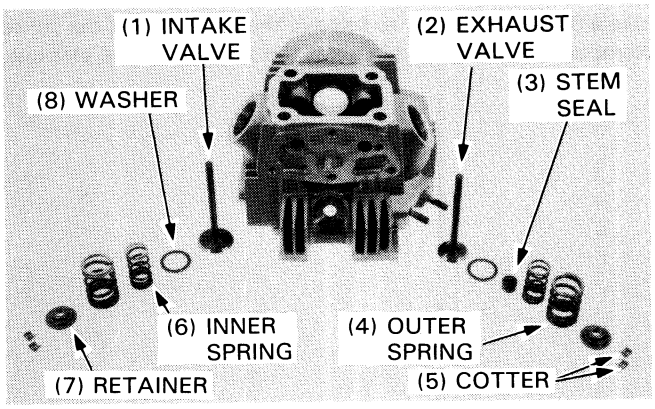
CYLINDER HEAD ASSEMBLY

NOTE

- Install a new valve stem seal after disassembling.

Lubricate each valve stem with oil.
Insert the valves into the guides.

Install the washers, stem seal and inner springs.
Install the outer springs and retainers.



Install the valve cotters using the valve spring compressor.

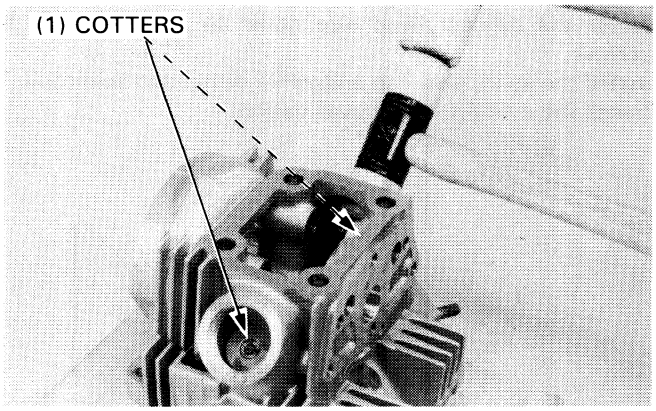
CAUTION

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

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

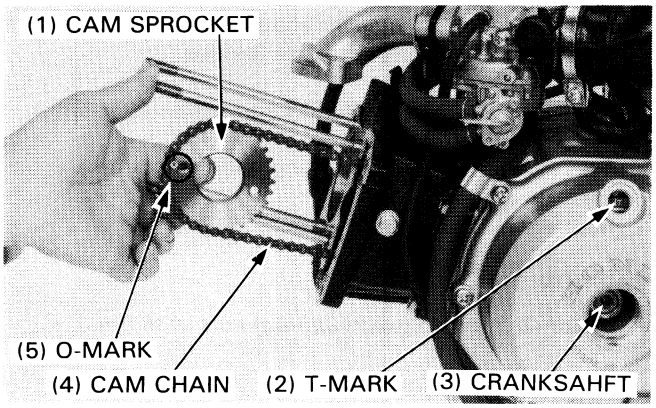
CAUTION

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



CYLINDER HEAD INSTALLATION

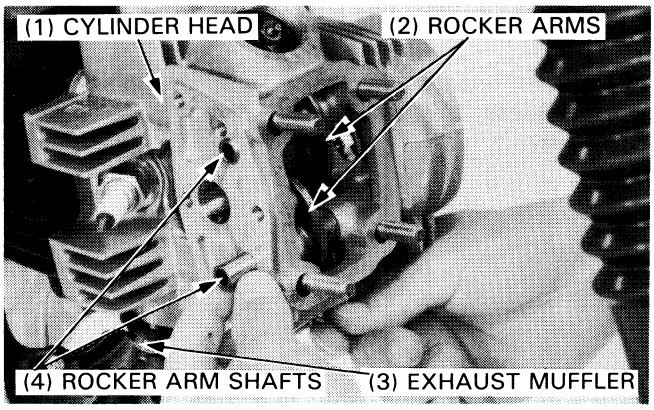
Align the T-mark on the flywheel with the index mark on the left crankcase cover by turning the crankshaft counterclockwise.
With the O-mark on the cam sprocket facing forward, install the cam chain over the sprocket.



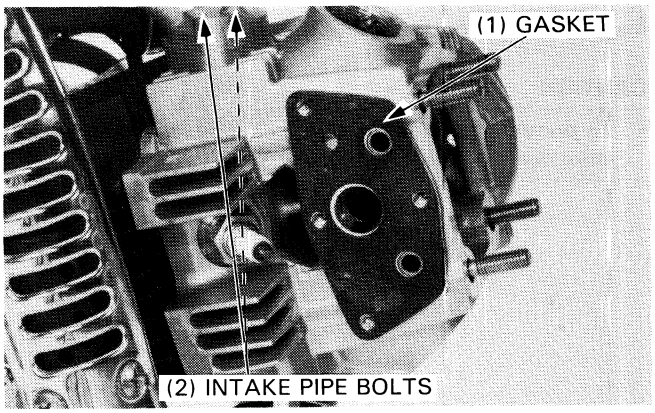
Install a new head gasket, the dowel pins, and the cylinder head.

Install the rocker arms and rocker arm shafts.

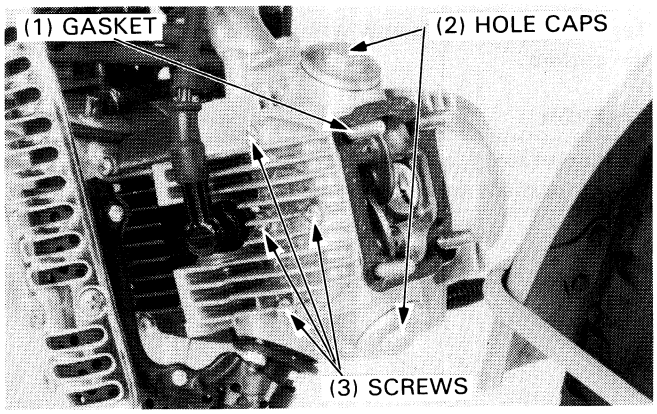
Install the exhaust muffler (Page 13-11).



Tighten the intake pipe mounting bolts.
Install the cylinder head side cover gasket.



Install the cylinder head side cover by tightening the four screws.
Install the spark plug cap and valve inspection hole caps.
Install the cylinder head cover gasket.



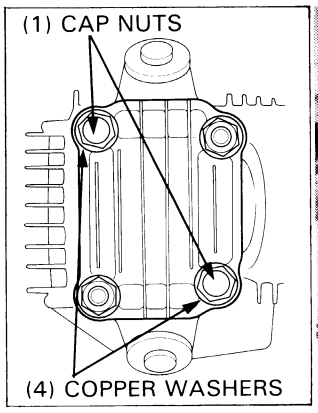
Install the cylinder head cover and tighten the nuts and washers in a criss-cross pattern in 2 or 3 steps.

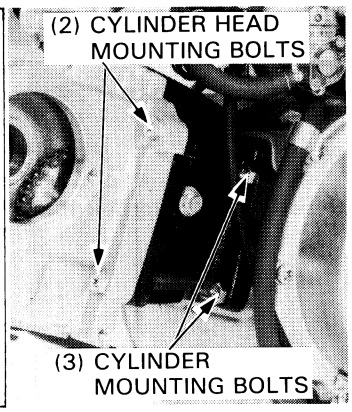
TORQUE: 18—21 N·m (1.8—2.1 kg-m, 13—15 ft-lb)

Install the cylinder head mounting bolts and tighten them securely.
Tighten the cylinder mounting bolts.

CAUTION

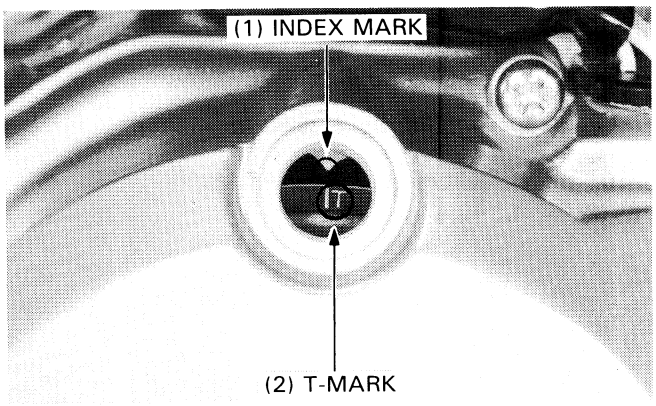
- *Install the copper washers and cap nuts as shown.*



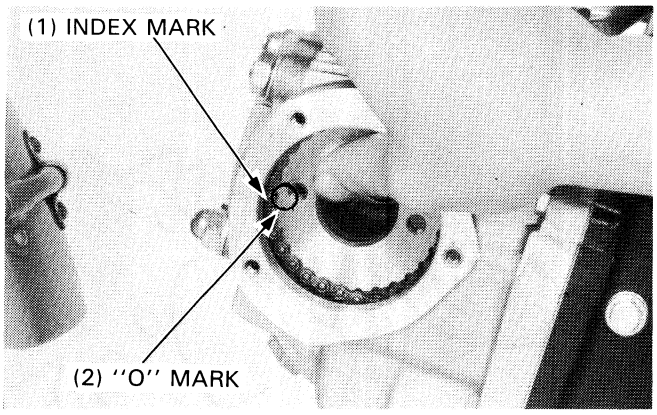


CAMSHAFT INSTALLATION

Align the "T" mark on the flywheel with the index mark on the left crankcase cover by turning the crankshaft counterclockwise.



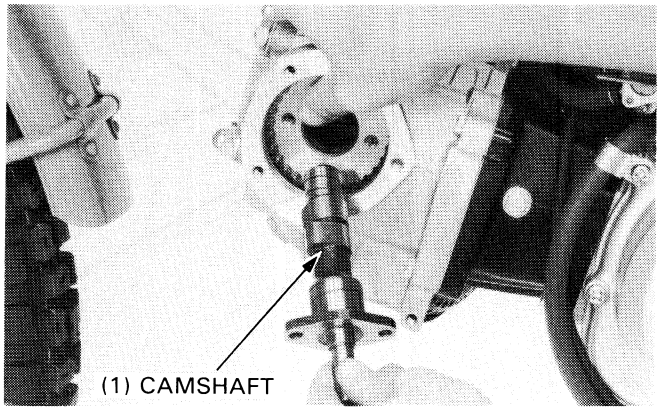
Align the ''O'' mark on the cam sprocket with the index mark on the cylinder head.



Coat the camshaft with molybdenum disulfide grease and install it in the cylinder head.

Tighten the cam sprocket bolts.

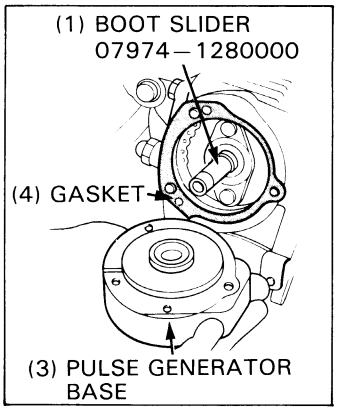
TORQUE: 9—12 N·m (0.9—1.2 kg-m, 7—9 ft-lb)

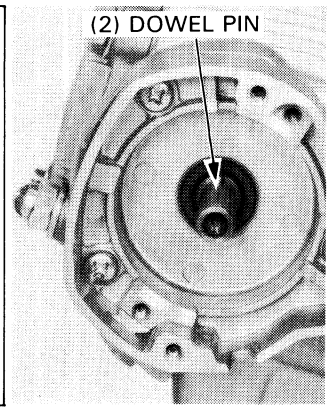


Insert the boot slider over the camshaft.

Install the gasket.
Install the pulse generator base with the three screws.

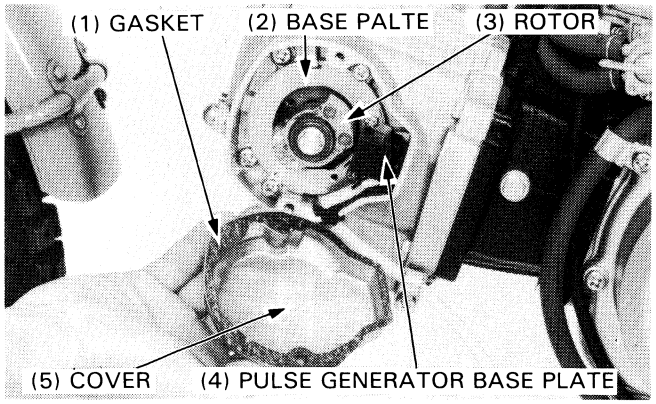
Remove the boot slider.
Install the dowel pin to the camshaft.

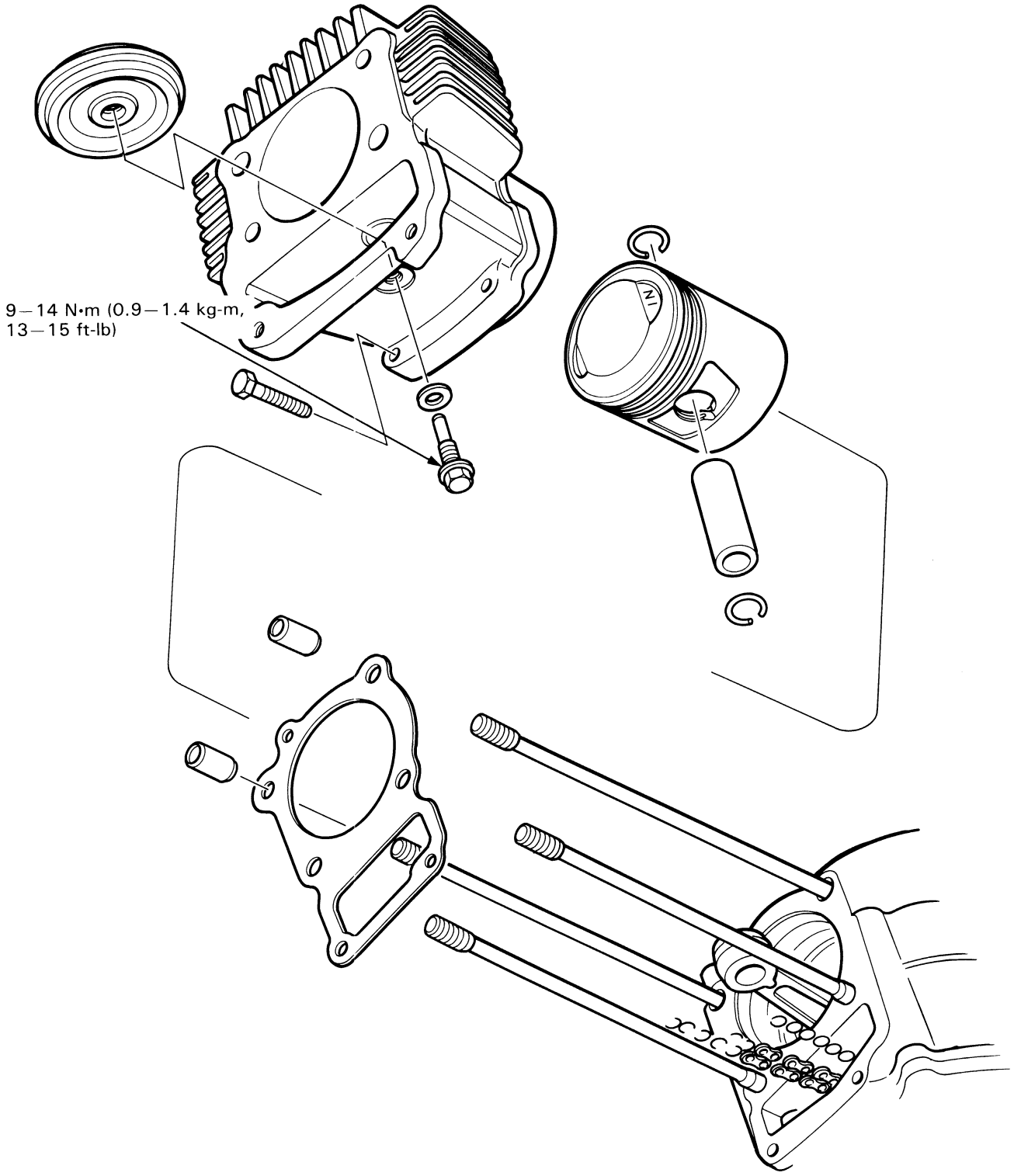




Install the pulse rotor, pulse generator base plate, pulse generator and cover (Page 15-3).

After installing, check and adjust the following:
— Valve clearance (Page 3-6).
— Ignition timing (Page 15-6).
— Cylinder compression (Page 3-4).




9—14 N•m (0.9—1.4 kg-m,
13—15 ft-lb)

SERVICE INFORMATION

GENERAL

- Camshaft lubrication oil is fed to the cylinder head through an orifice in the cylinder head and crankcase. Be sure that this orifice is not clogged and that the O-rings and dowel pins are in place before installing the cylinder head.

SPECIFICATION

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		52.020–52.030 mm (2.0480–2.0483 in)	52.10 mm (2.051 in)
	Taper		0–0.010 mm (0–0.0004 in)	0.05 mm (0.002 in)
	Outer of round		0–0.010 mm (0–0.0004 in)	0.05 mm (0.002 in)
	Warpage across top		0.05 mm (0.002 in)	0.10 mm (0.004 in)
Piston, piston pin, piston rings	Piston O.D.		51.970–51.990 mm (2.0461–2.0468 in)	51.80 mm (2.039 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	0.010–0.040 mm (0.0004–0.0016 in)	0.12 mm (0.005 in)
		SECOND	0.015–0.045 mm (0.0006–0.0018 in)	0.12 mm (0.005 in)
	Piston ring end gap	TOP	0.15–0.35 mm (0.006–0.014 in)	0.50 mm (0.020 in)
		SECOND	0.15–0.35 mm (0.006–0.014 in)	0.50 mm (0.020 in)
Cylinder-to-piston clearance			0.010–0.040 mm (0.0004–0.0016 in)	0.15 mm (0.006 in)
Connecting rod	Small end I.D.		15.016–15.034 mm (0.5912–0.5919 in)	15.05 mm (0.593 in)

TORQUE VALUE

Cam chain guide roller bolt	9–14 N·m (0.9–1.4 kg-m, 7–10 ft-lb)

TROUBLESHOOTING

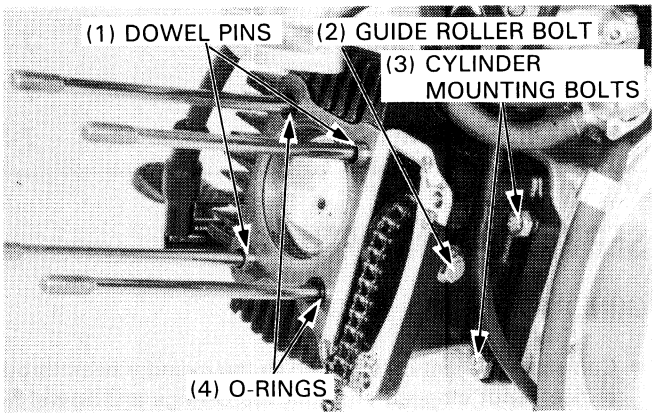
Low or unstable compression
- Worn cylinder or piston rings

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

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

Knocking or abnormal noise
- Worn piston and cylinder
- Excessive carbon build-up

CYLINDER REMOVAL



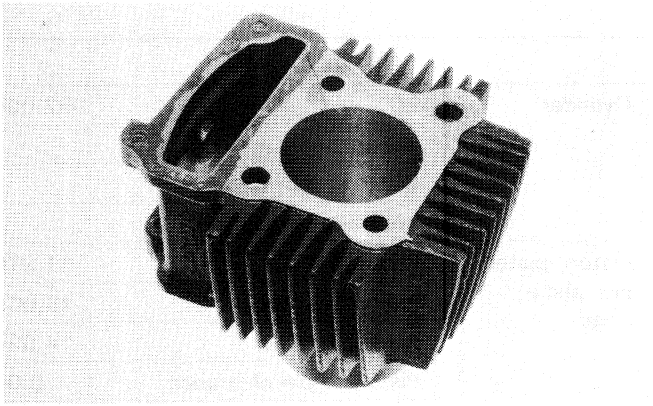
Remove the cylinder head (Section 6).
Remove the gasket, dowel pins and O-rings.
Remove the cylinder mounting bolts.
Remove the cam chain guide roller bolt and guide roller.
Remove the cylinder.

NOTE

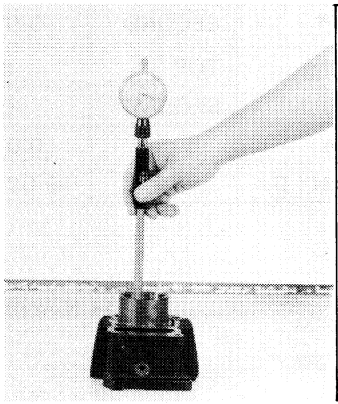
- Keep the cam chain from falling into the crankcase when removing the cylinder.

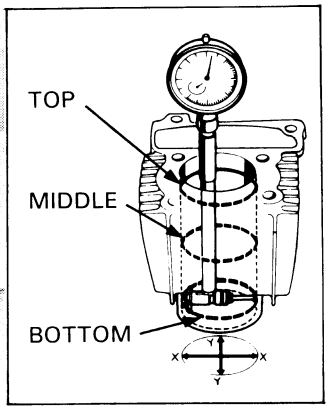
Clean off any gasket material from the cylinder surface.

Be careful not to remove any metal.



CYLINDER INSPECTION





Inspect the cylinder bore for wear or damage.
Measure the cylinder I.D. at X and Y axis at the top, middle and bottom.

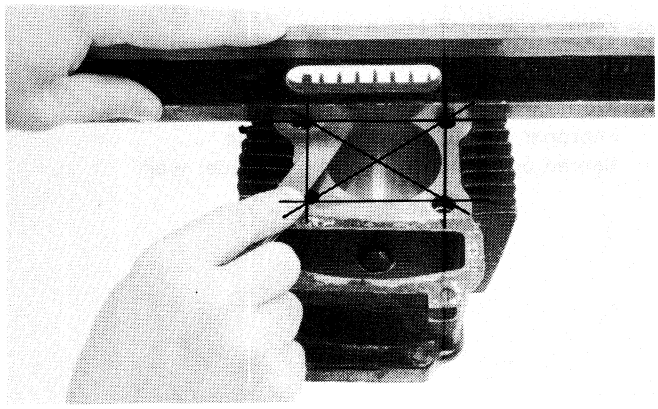
SERVICE LIMIT: 52.10 mm (2.051 in)

Calculate the taper and out-of-round.

SERVICE LIMITS:
TAPER: 0.05 mm (0.002 in)
OUT OF ROUND: 0.05 mm (0.002 in)

Inspect the top of the cylinder for warpage with a feeler gauge and a straight edge.

SERVICE LIMIT: 0.10 mm (0.004 in)



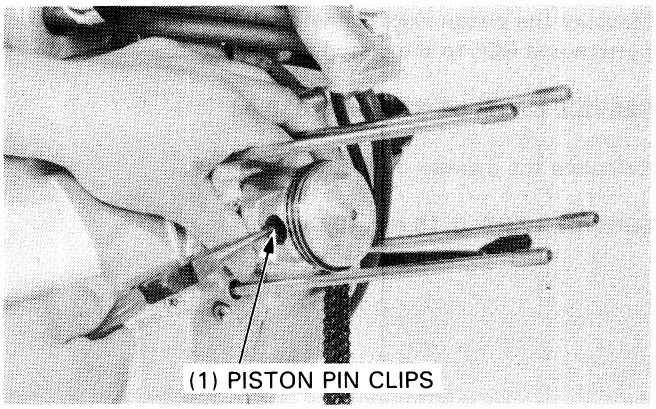
PISTON REMOVAL

Stuff a shop towel into the crankcase.
Remove the piston pin clips with needle nose pliers.

NOTE

- Do not let the clips fall into the crankcase.

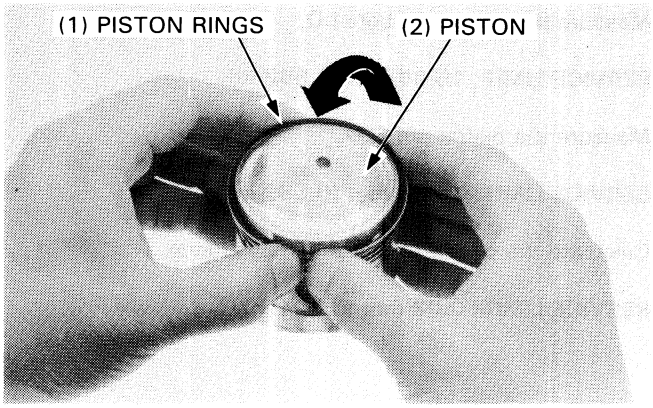
Press the piston pin out of the piston and remove the piston.



Remove the piston rings, being careful not to damage them.

NOTE

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

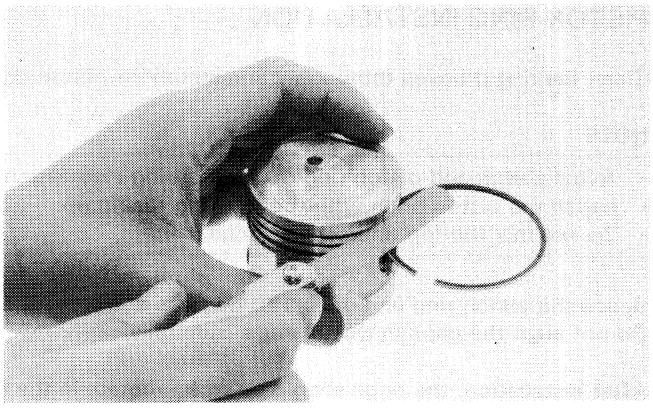


PISTON/PISTON RING INSPECTION

Measure the piston ring-to-groove clearance.

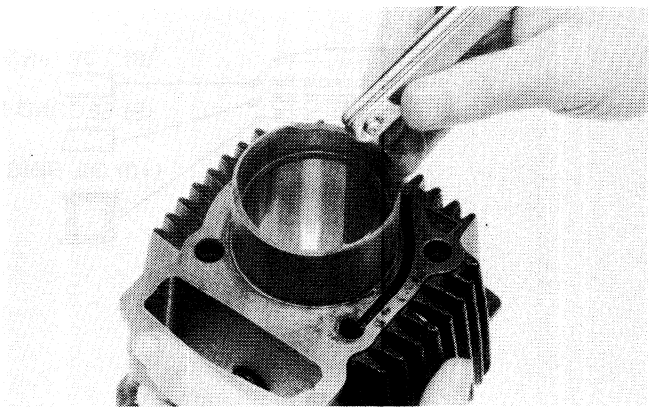
SERVICE LIMITS:
TOP: 0.12 mm (0.005 in)
SECOND: 0.12 mm (0.005 in)

Inspect the piston for wear or damage.



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

SERVICE LIMITS:
TOP: 0.50 mm (0.020 in)
SECOND: 0.50 mm (0.020 in)

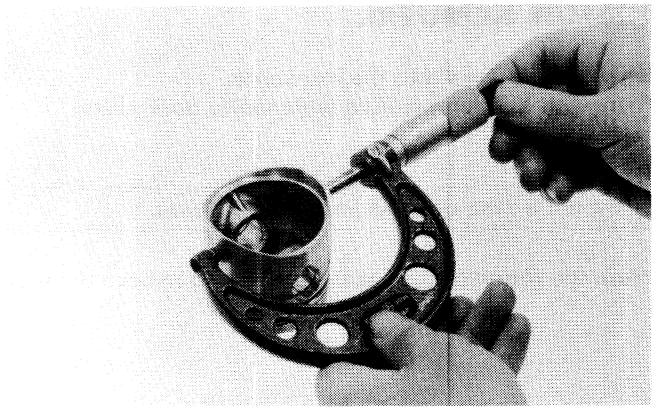


Measure the piston skirt diameter at 10 mm (0.4 in) from the bottom and 90° to the piston pin bore.

SERVICE LIMIT: 51.80 mm (2.039 in)

Calculate the cylinder-to-piston clearance.

SERVICE LIMIT: 0.15 mm (0.006 in)



Measure the piston pin bore I.D.

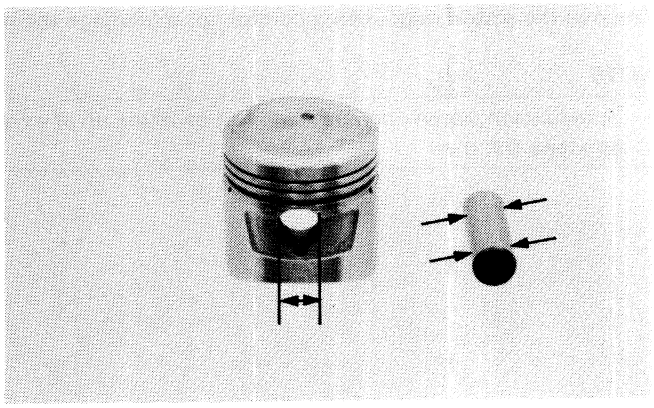
SERVICE LIMIT: 15.04 mm (0.592 in)

Measure the piston pin O.D.

SERVICE LIMIT: 14.96 mm (0.589 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)



PISTON RING INSTALLATION

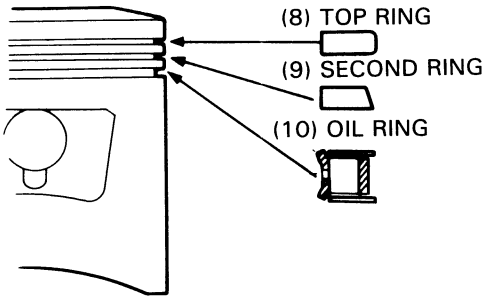
Clean the ring grooves thoroughly and install the piston rings.

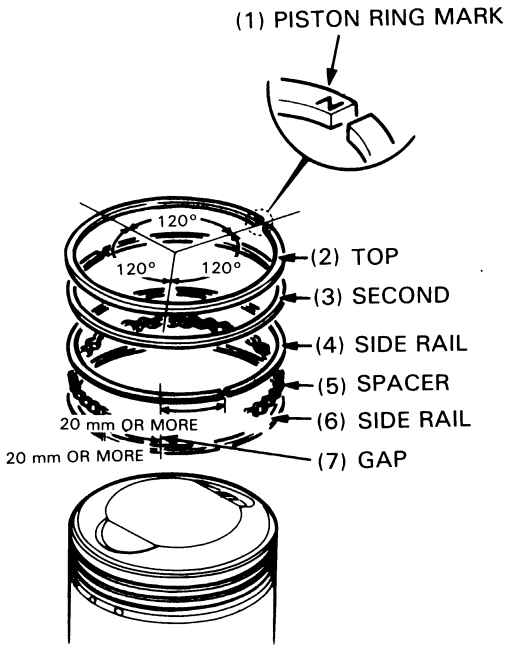
NOTE

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

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

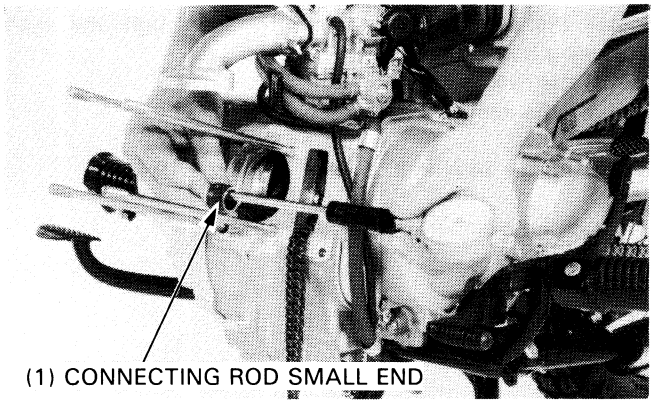
After installation, the rings should be free to rotate in the ring grooves.





Measure the connecting rod small end I.D.

SERVICE LIMIT: 15.05 mm (0.593 in)

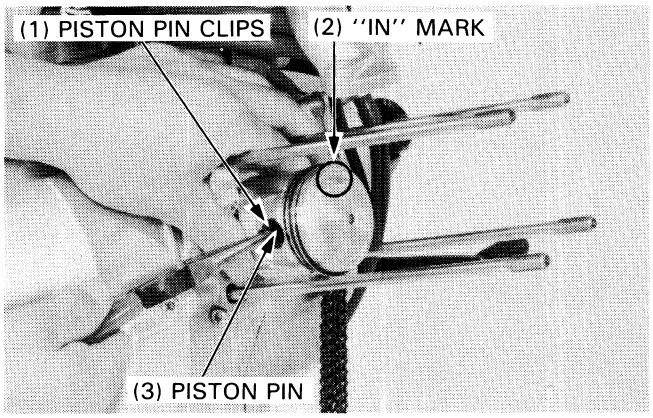


PISTON INSTALLATION

Install the piston with its "IN" mark on the intake valve side. Install the piston pin with new pin clips.

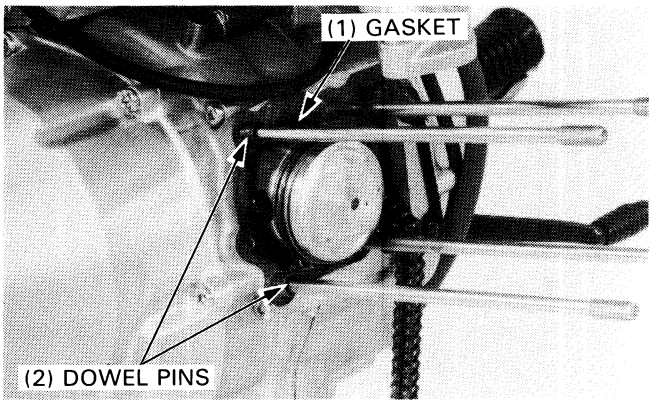
NOTE

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



CYLINDER INSTALLATION

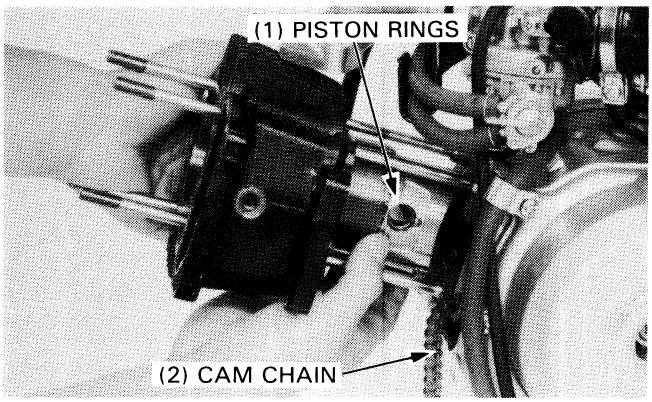
Clean off any gasket material from the crankcase surface. Install a new gasket and the dowel pins.



Coat the cylinder bore, piston and piston ring with engine oil and install the cylinder.

NOTE

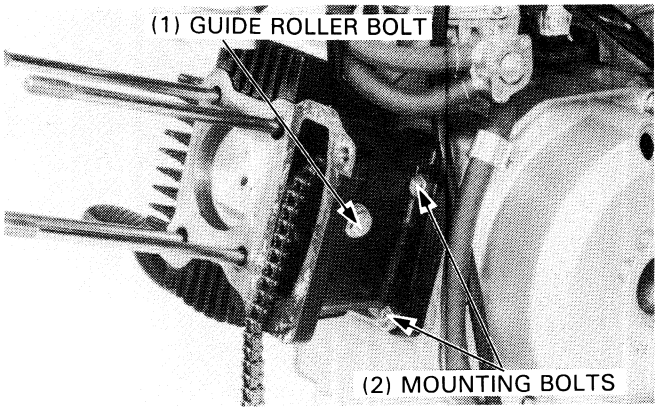
- Avoid piston ring damage during installation.
- Do not let the cam chain fall into the crankcase.



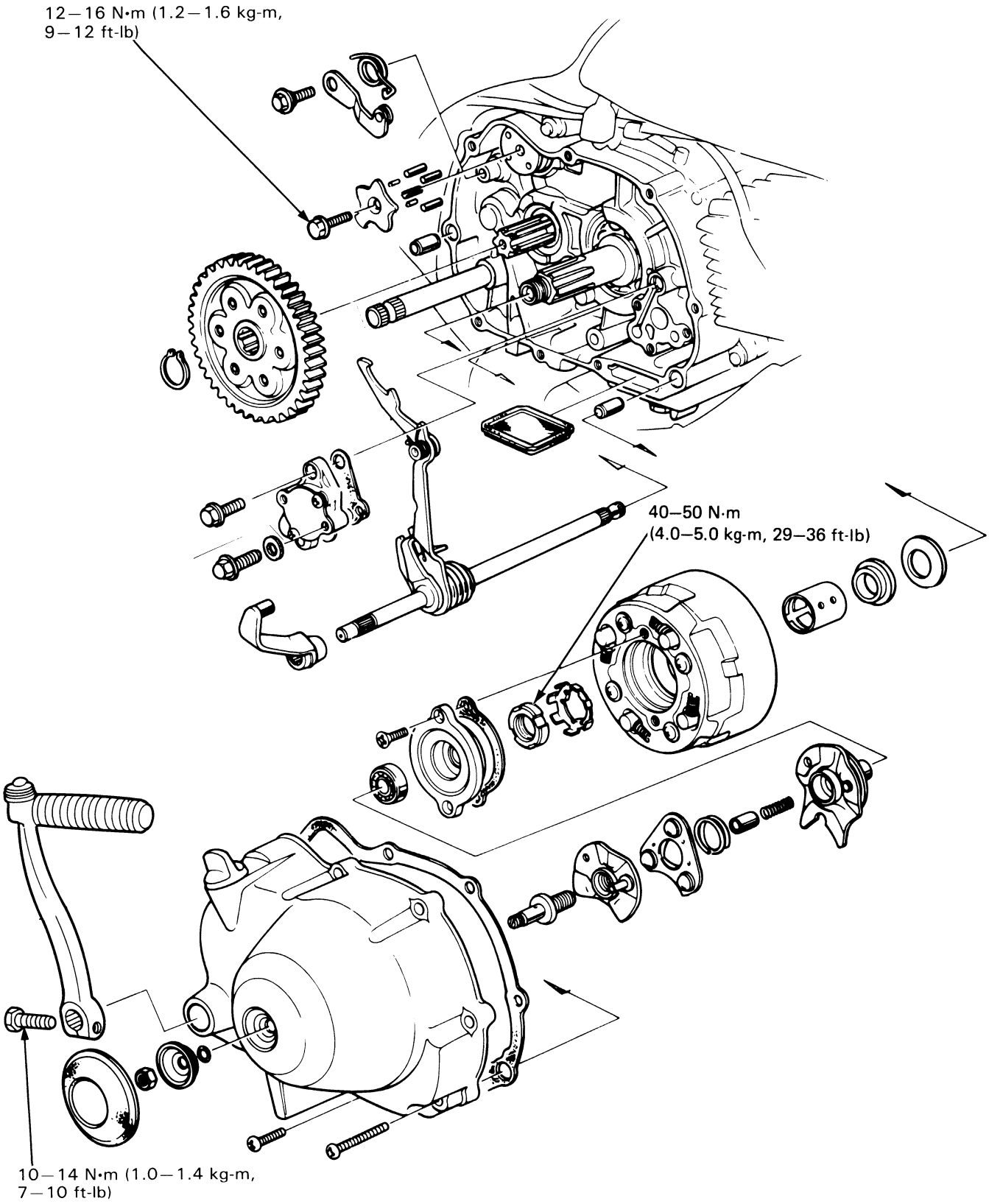
Install the cam chain guide roller, guide bolt and cylinder mounting bolts.
Install the cylinder head (Section 6).
Tighten the cam chain guide roller bolt.

TORQUE: 9—14 N·m (0.9—1.4 kg-m, 7—10 ft-lb)

Tighten the cylinder mounting bolts.



MEMO


12—16 N·m (1.2—1.6 kg-m,
9—12 ft-lb)
40—50 N·m
(4.0—5.0 kg-m, 29—36 ft-lb)
10—14 N·m (1.0—1.4 kg-m,
7—10 ft-lb)

8. CLUTCH/OIL PUMP/GEARSHIFT LINKAGE

SERVICE INFORMATION

GENERAL

The clutch, oil pump and gearshift linkage can be serviced with the engine in the frame.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Clutch	Spring free length	27.0 mm (1.06 in)	26.0 mm (1.02 in)
	Disc thickness	2.80—2.90 mm (0.110—0.114 in)	2.4 mm (0.09 in)
	Plate and disc warpage	0.2 mm (0.01 in)	0.5 mm (0.02 in)
	Drive gear I.D.	24.00—24.02 mm (0.945—0.946 in)	24.15 mm (0.951 in)
	Center guide I.D	19.985—20.006 mm (0.7868—0.7876 in)	20.08 mm (0.791 in)
	Center guide O.D.	22.00—22.10 mm (0.866—0.870 in)	21.85 mm (0.860 in)
	Crankshaft O.D.	19.959—19.980 mm (0.7858—0.7866 in)	19.93 mm (0.785 in)
Oil pump	Body clearance	0.15—0.20 mm (0.006—0.008 in)	0.25 mm (0.010 in)
	Tip clearance	0.15 mm (0.006 in)	0.2 mm (0.01 in)
	Side clearance	0.02—0.07 mm (0.001—0.003 in)	0.12 mm (0.005 in)

TORQUE VALUES

Clutch lock nut	40—50 N·m (4.0—5.0 kg-m, 29—36 ft-lb)
Gearshift pedal bolt	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Foot peg bolt	18—25 N·m (1.8—2.5 kg-m, 13—18 ft-lb)
Kick starter pedal bolt	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Drum stopper plate bolt	12—16 N·m (1.2—1.6 kg-m, 9—12 ft-lb)

Common

Flywheel Holder	07725—0040000	or equivalent commercially available in U.S.A.
Extension	07716—0020500	
Wrench, 20 x 24 mm	07716—0020100	

TROUBLESHOOTING

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

Clutch slips when accelerating
- Faulty clutch lifter
- Discs worn
- Springs weak

Clutch will not disengage
- Faulty clutch lifter
- Plates warped

Motorcycle creeps with clutch disengaged
- Faulty clutch
- Plates warped

Clutch operation feels rough
- Outer drum slots rough

Hard to shift
- Stopper plate damaged
- Incorrect clutch adjustment
- Faulty clutch lifter

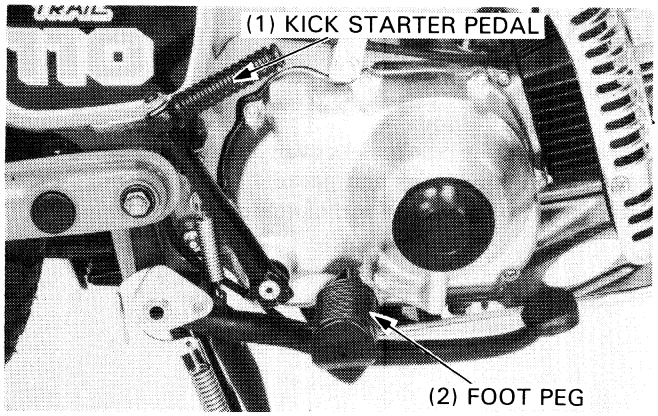
Gearshift pedal will not return
- Weak or broken shift return spring
- Shift spindle binding with case

Transmission jumps out of gear
- Weak or broken stopper spring

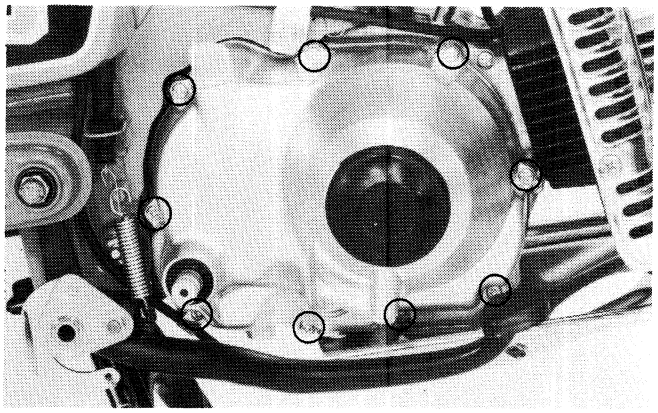
Low oil pressure
- Faulty oil pump
- Oil pump drive gear broken

RIGHT CRANKCASE COVER REMOVAL

Shift the transmission into neutral and drain the oil from the engine (Page 2-2).
Remove the kick starter pedal and foot peg.

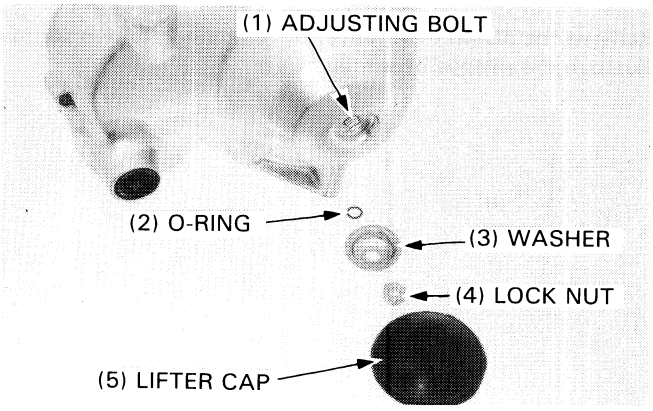


Remove the right crankcase cover by removing the nine screws.

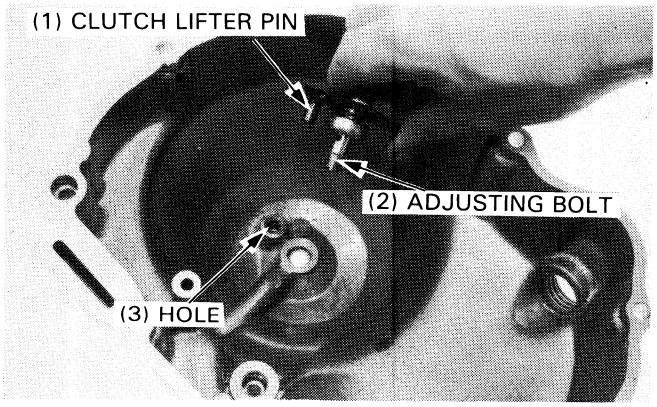


CLUTCH LIFTER REMOVAL/INSTALLATION

Remove the lifter cap.
Hold the clutch adjusting bolt and remove the lock nut, washer and O-ring.
Remove the clutch lifter from the right crankcase cover.



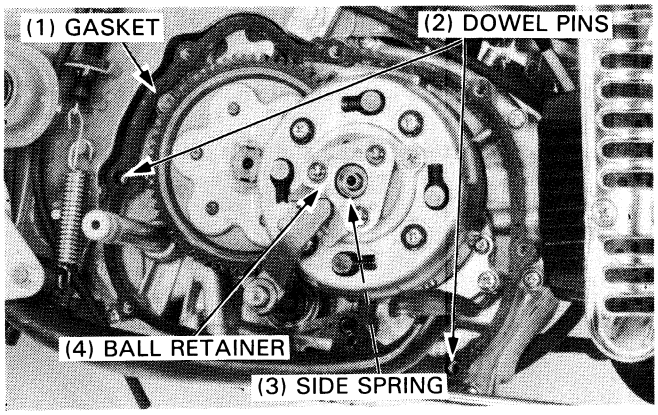
Install the clutch adjusting bolt/lifter by installing the lifter pin in the hole in the right crankcase cover.
Install the O-ring, washer and lock nut onto the adjusting bolt and tighten the lock nut.
Install the lifter cap.



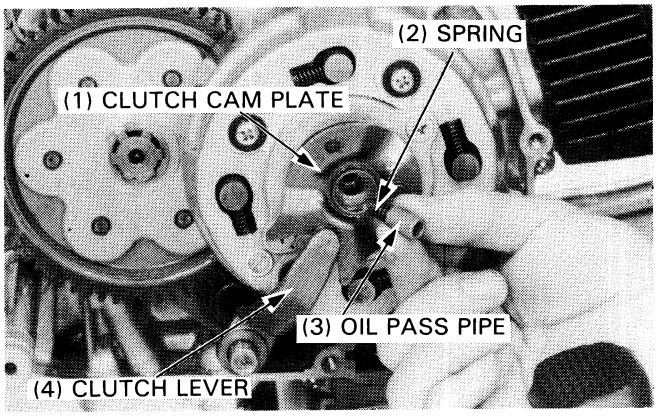
CLUTCH

REMOVAL

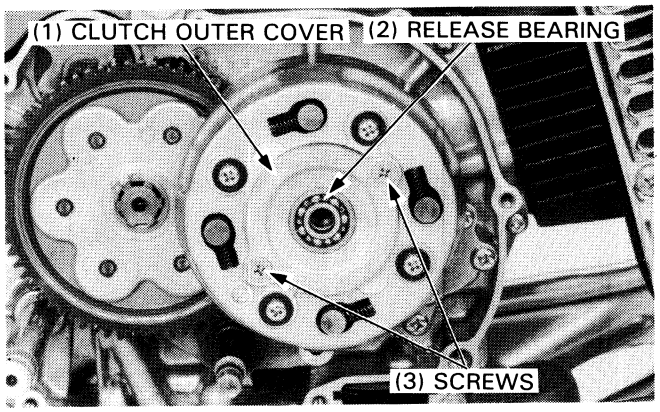
Remove the right crankcase cover (Page 8-3).
Remove the dowel pins and gasket.
Remove the ball retainer and clutch plate side spring.



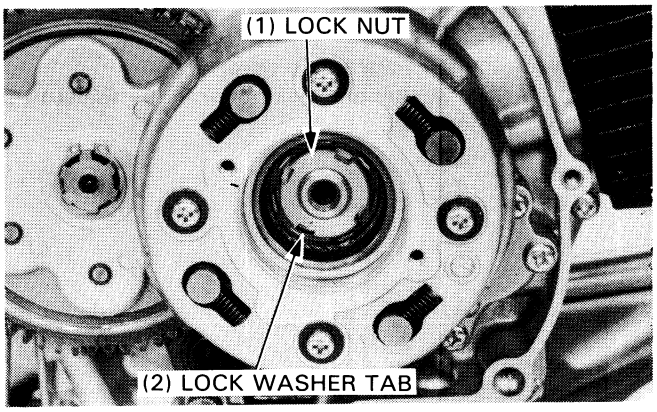
Remove the oil pass pipe and spring.
Remove the clutch cam plate and clutch lever.



Remove the clutch outer cover by removing the two screws.
Remove the release bearing.

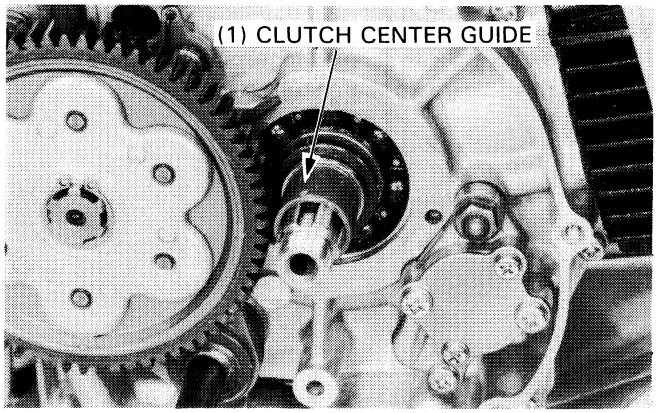


Bend down the lock washer tab.

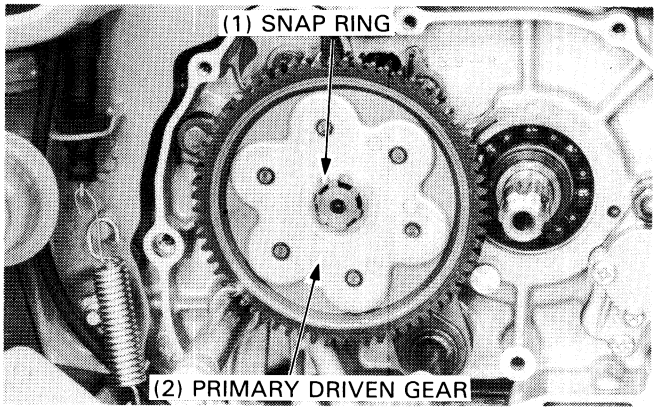


Hold the clutch outer and remove the lock nut.
Remove the lock washer and the clutch assembly.

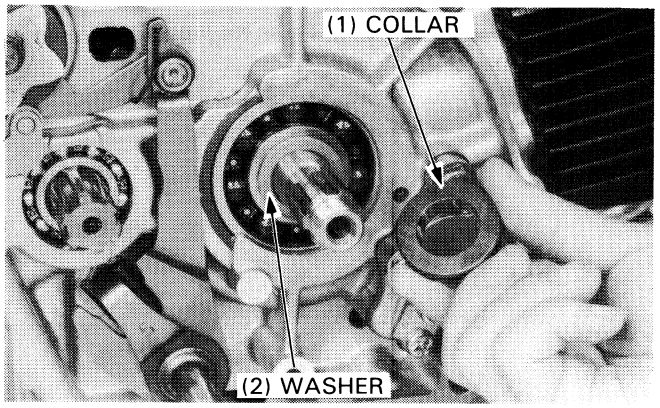
Remove the clutch center guide.



Remove the snap ring and primary driven gear.

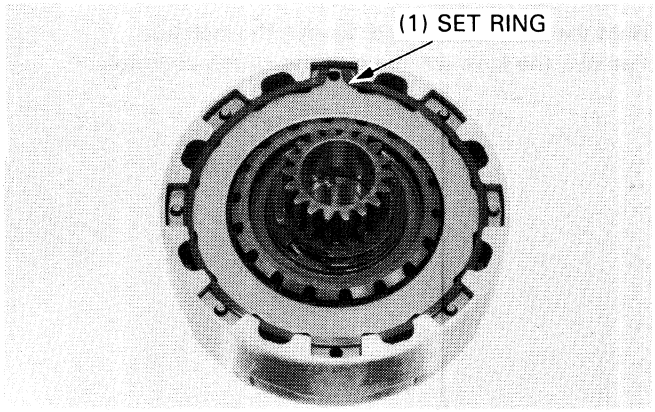


Remove the collar and washer from crankshaft.

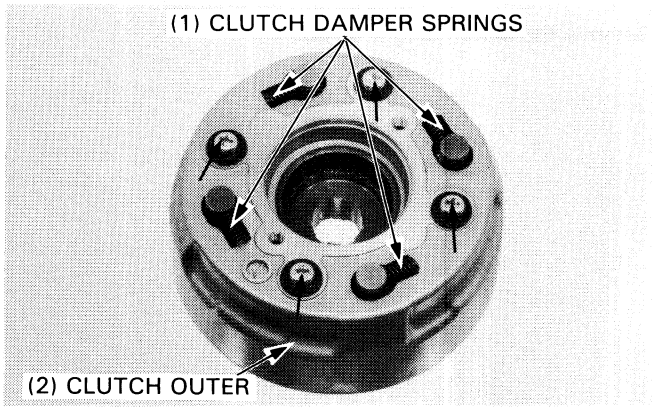


DISASSEMBLY

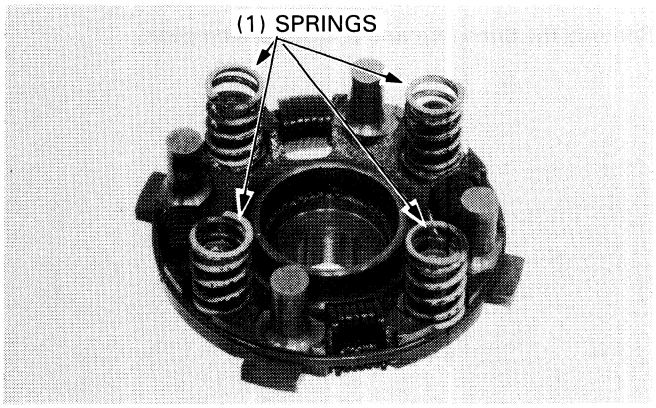
Pry the set ring out of the groove with a screwdriver.
Remove the clutch plates, discs and center.



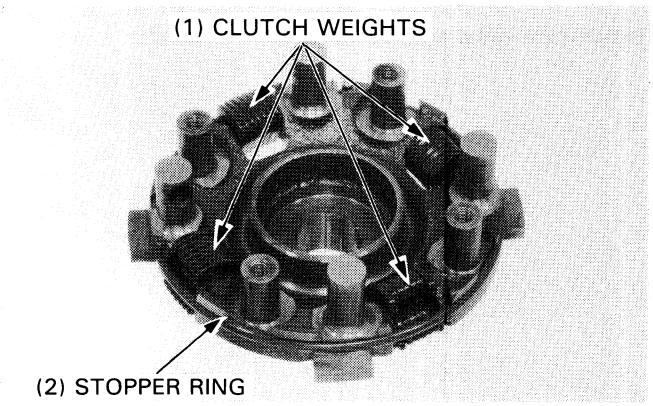
Remove the clutch damper springs.
Remove the four 5 mm screws, loosening them in 2 or 3 steps while pushing down on the clutch outer.



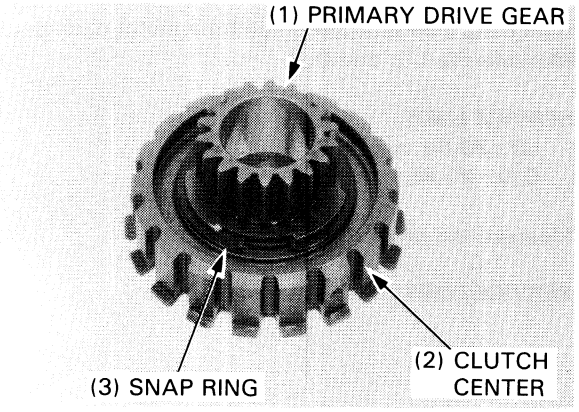
Remove the clutch springs.



Remove the clutch weight stopper ring with a screwdriver, then remove the clutch weights.



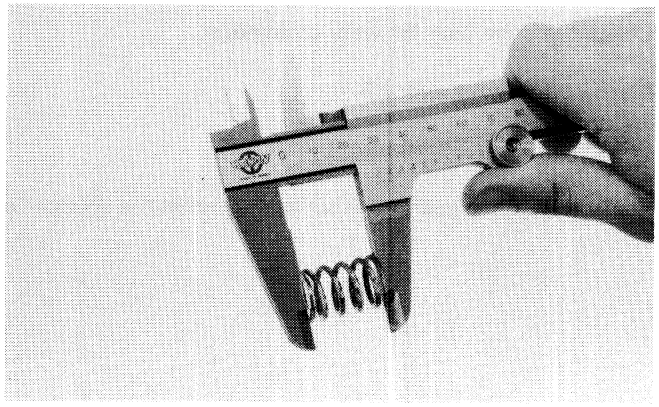
Remove the snap ring and separate the primary drive gear and clutch center.



INSPECTION

Measure the spring free length.

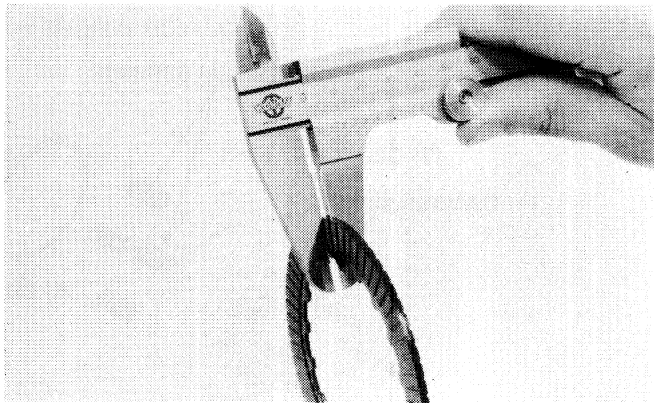
SERVICE LIMIT: 26.0 mm (1.02 in)



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

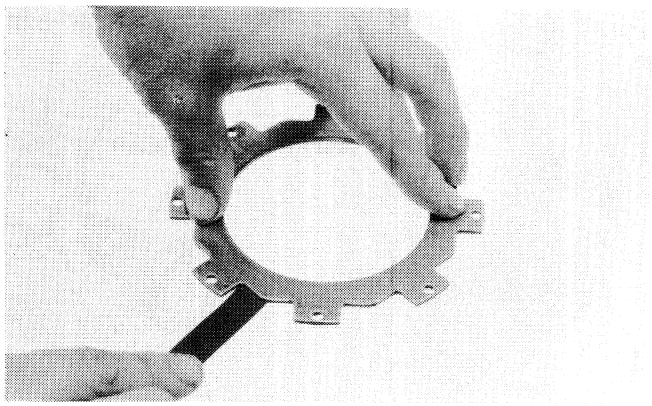
Measure the disc thickness.

SERVICE LIMIT: 2.4 mm (0.09 in)



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

SERVICE LIMITS:
PLATE: 0.5 mm (0.02 in)
DISC: 0.5 mm (0.02 in)

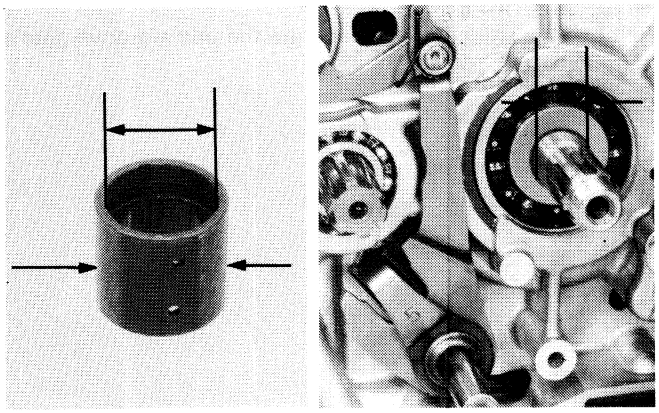


Check the clutch center guide for wear or damage.
Measure the I.D. and O.D.

SERVICE LIMIT:
I.D.: 20.08 mm (0.791 in)
O.D.: 21.85 mm (0.860 in)

Measure the crankshaft O.D.

SERVICE LIMIT: 19.93 mm (0.785 in)

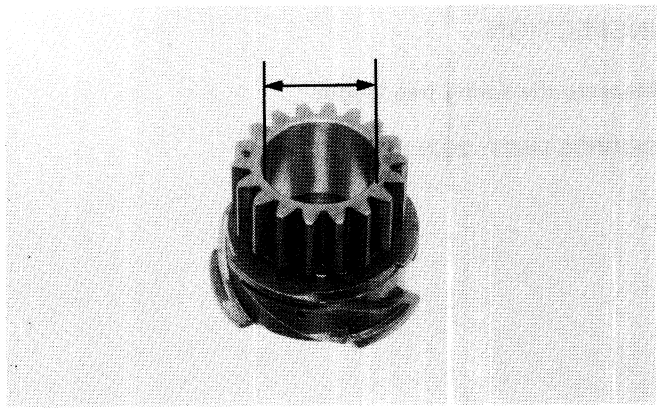


Check the drive gear for wear or damage.

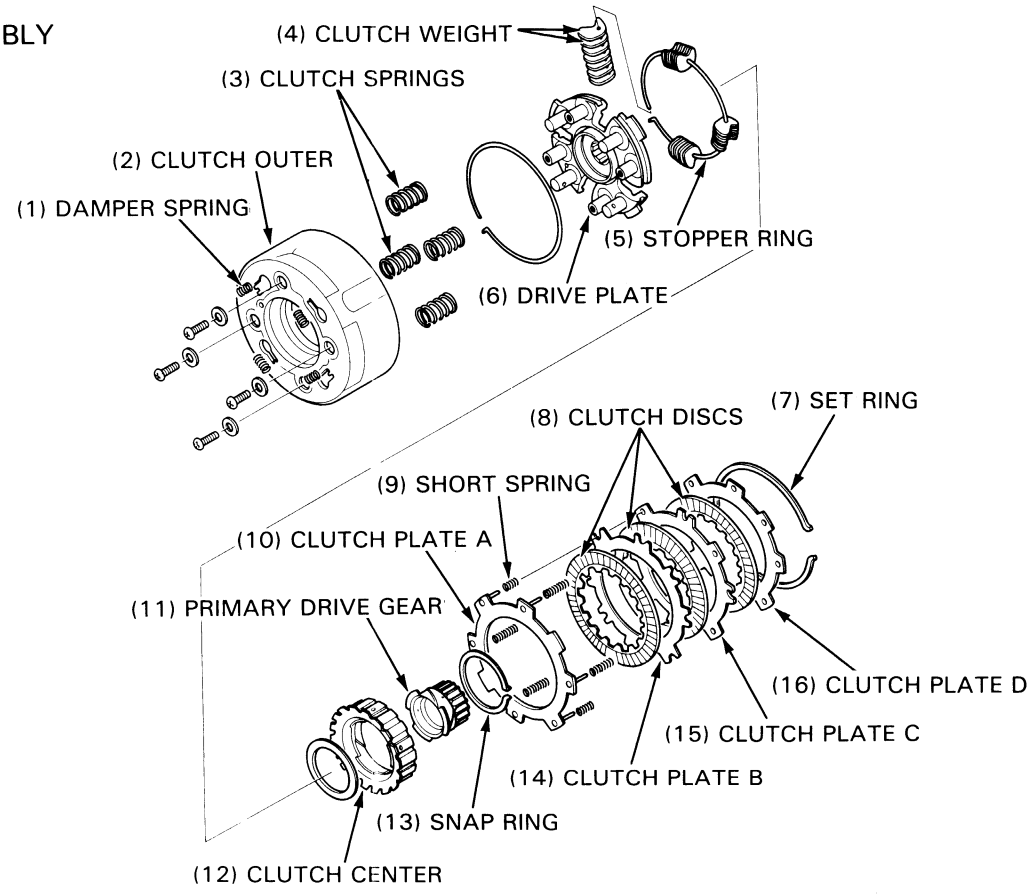
Measure the drive gear I.D.

SERVICE LIMIT: 24.15 mm (0.951 in)

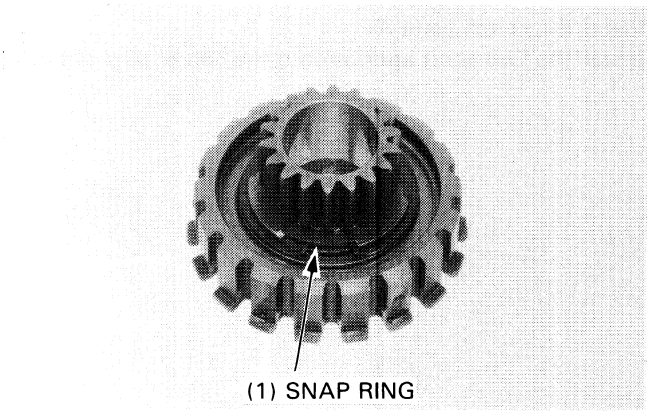
Replace the drive gear if the I.D. is not within the service limit.



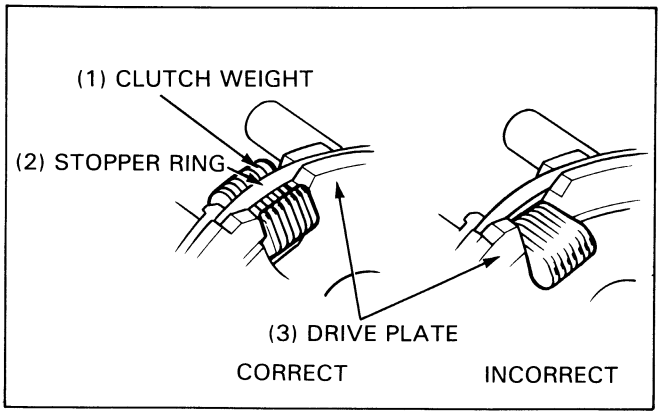
ASSEMBLY



Install the primary drive gear into the clutch center and secure it with the snap ring.



Install the clutch weights.

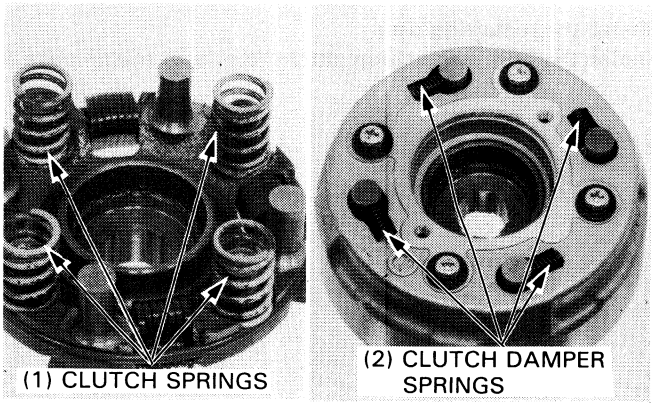


Place the clutch springs on the drive plate and install the drive plate on the clutch outer with four screws.

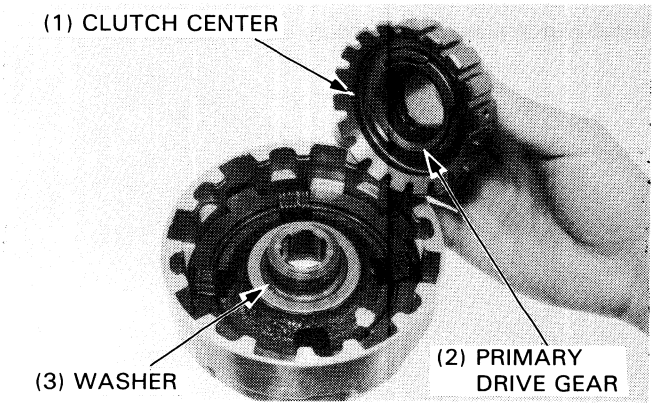
NOTE

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

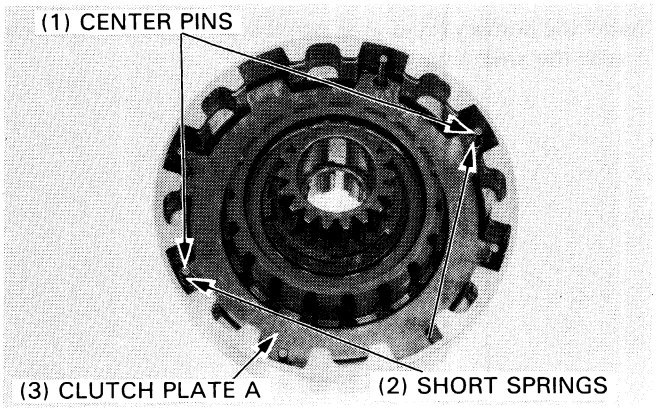
Install the clutch damper springs.



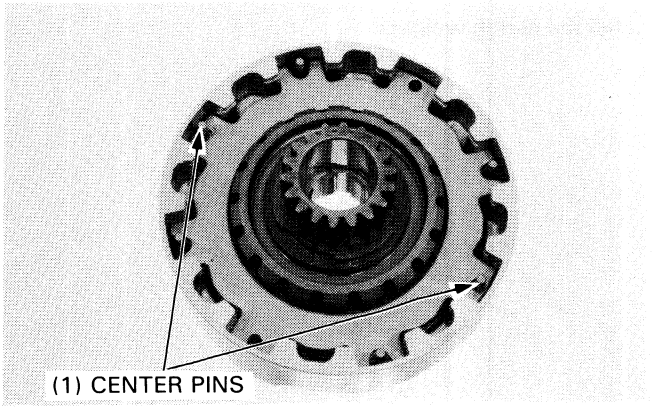
Place the washer, primary drive gear, and clutch center on the drive plate.



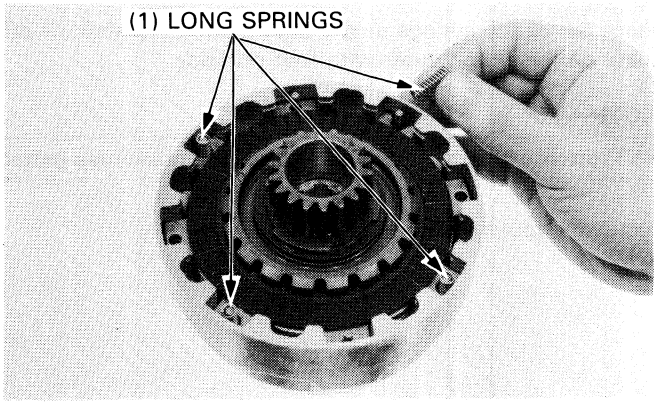
Install the clutch plate A.
Install the two short springs onto the canter pins of the plate.



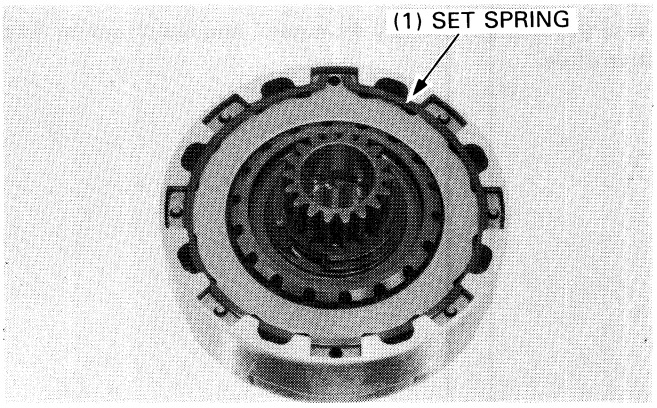
Install a disc and clutch plate B.
Install a disc and clutch plate C, aligning the holes in clutch plate C with the center pins of clutch plate A.



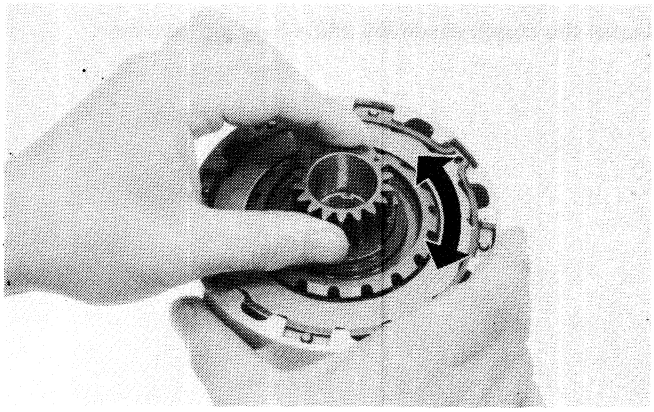
Install the remaining disc.
Install the four long springs onto the pins of clutch plate A.



Install clutch plate D and secure with the set ring.

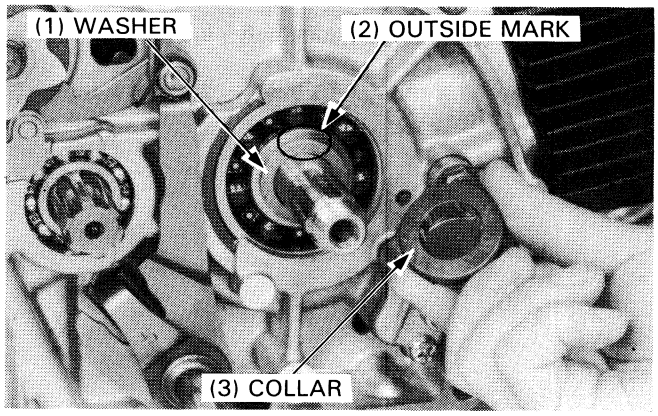


Check that the clutch assembly is assembled correctly by turning the primary drive gear.
It should turn clockwise, but not counterclockwise.

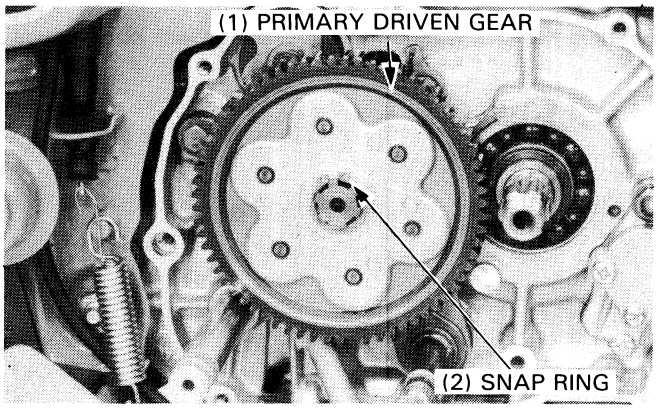


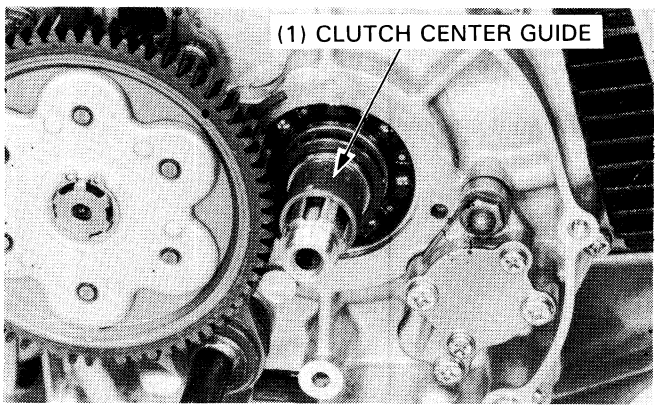
INSTALLATION

Install the washer with the ''outside'' mark facing out, then install the collar.

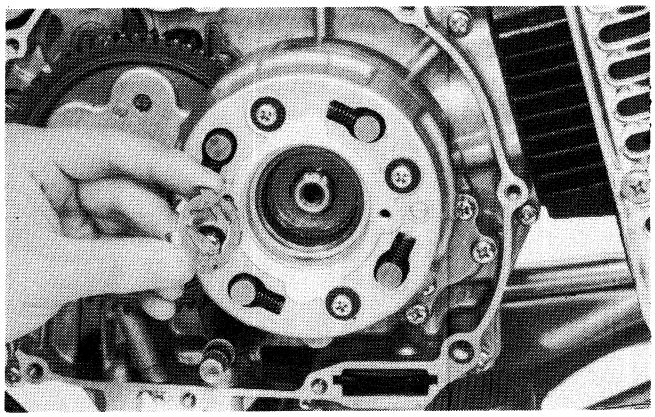


Install the primary driven gear and secure it with the snap ring.





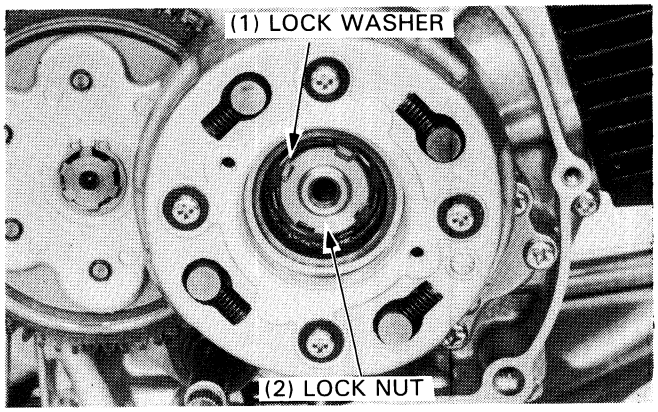
Install the clutch assemlby and a new lock washer.



Install and tighten the clutch lock nut.

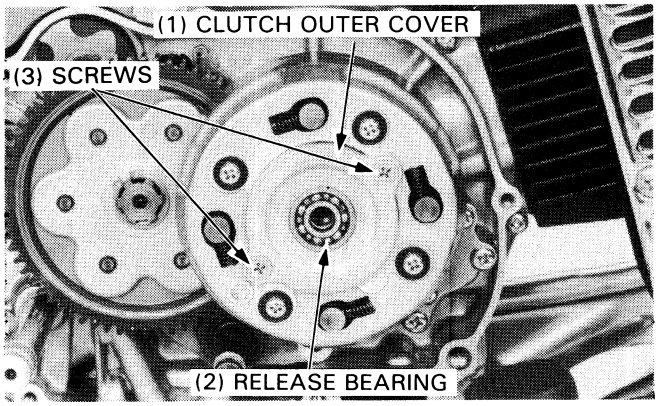
TORQUE: 40—50 N·m (4.0—5.0 kg-m, 29—36 ft-lb)

Bend up the lock washer tabs against the lock nut grooves.



Use a new gasket and install the clutch outer cover and release bearing with the two screws.

Install the right crankcase cover (Page 8-13).

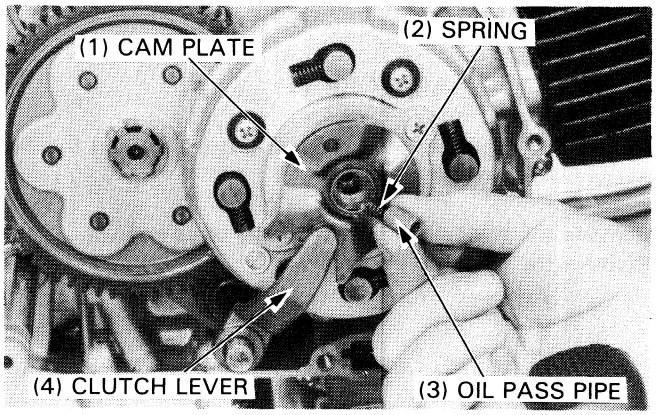


RIGHT CRANKCASE COVER INSTALLATION

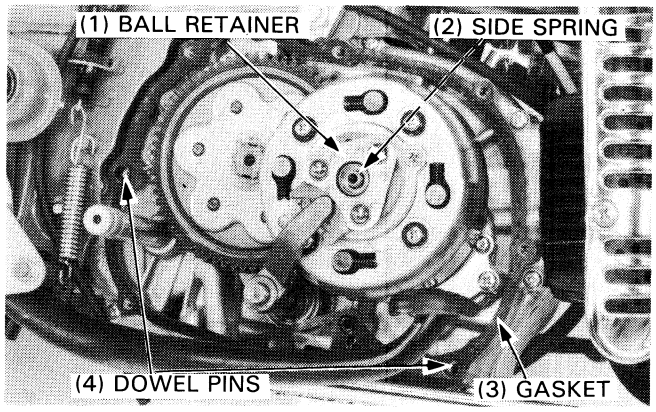
Install the clutch lever, cam plate, oil pass pipe and spring.

NOTE

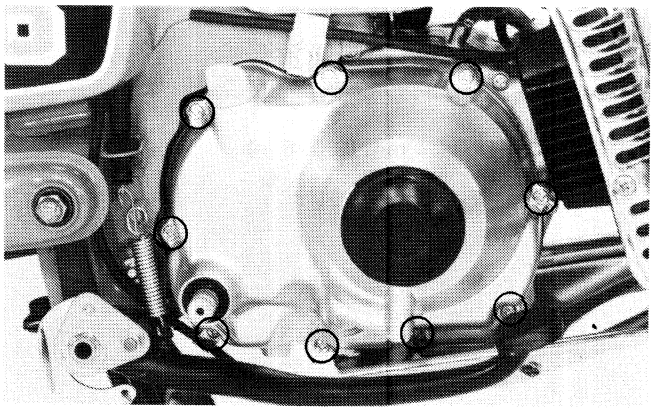
- When installing the clutch lever, make sure it is aligned with the oil pass pipe center.



Position the cam plate side spring and ball retainer on to the cam plate.
Install the two dowel pins and a new gasket.



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



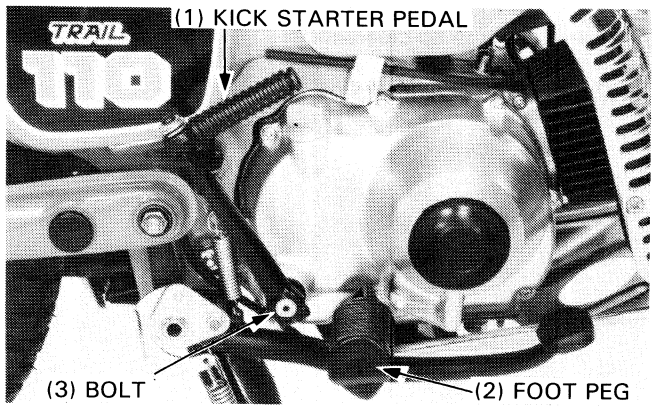
Install the kick starter pedal and foot peg.
Fill the crankcase with the recommended oil (Page 2-2).
Adjust the clutch (Page 3-12).

Tighten the foot peg bolt.

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

Tighten the kick starter pedal bolt.

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

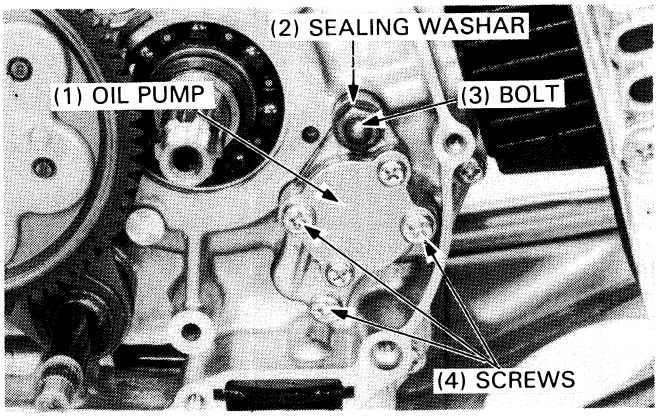


OIL PUMP

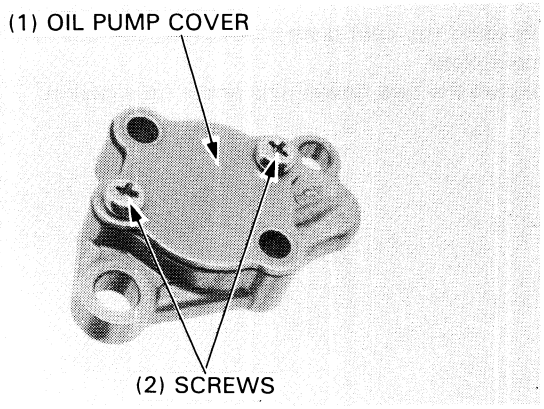
REMOVAL/DISASSEMBLY

Remove the right crankcase cover (Page 8-3) and the clutch assembly (Page 8-4).

Remove the bolt, sealing washer and three screws.
Remove the oil pump and gasket.



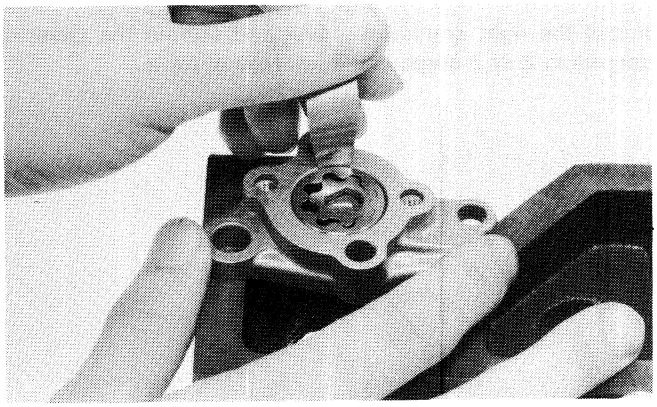
Remove the oil pump cover and gasket by removing the two screws.



INSPECTION

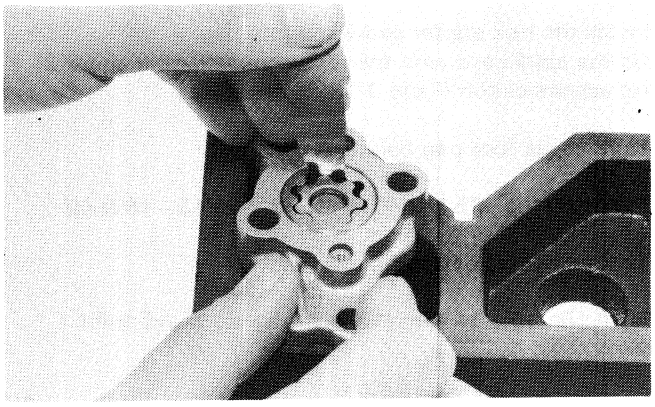
Measure the pump body clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



Measure the pump tip clearance.

SERVICE LIMIT: 0.2 mm (0.01 in)

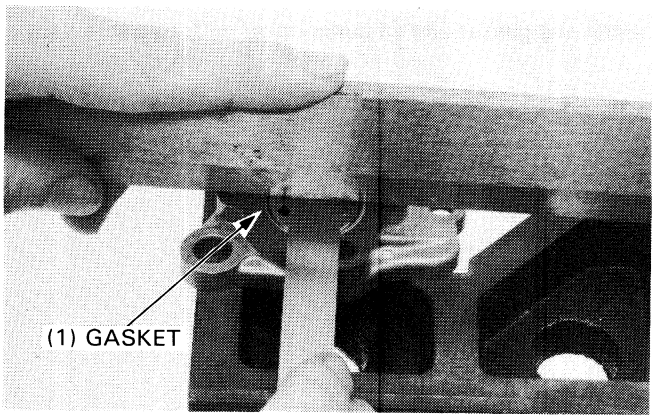


Measure the oil pump side clearance.

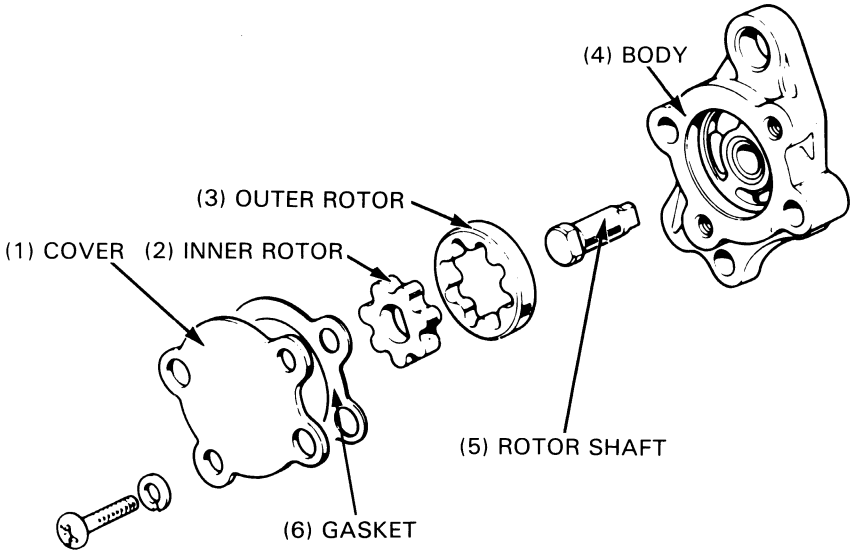
NOTE

- Measure the side clearance with the gasket.

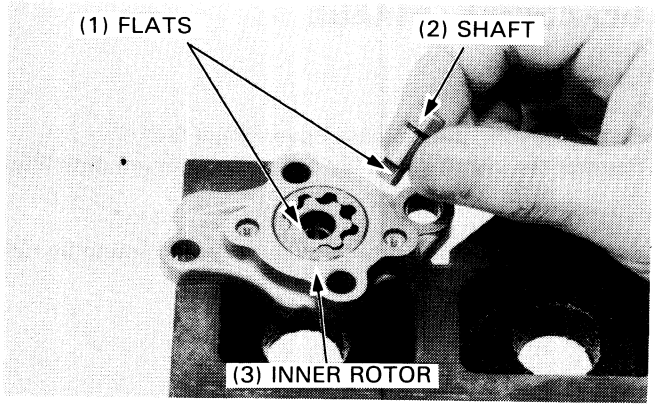
SERVICE LIMIT: 0.12 mm (0.005 in)



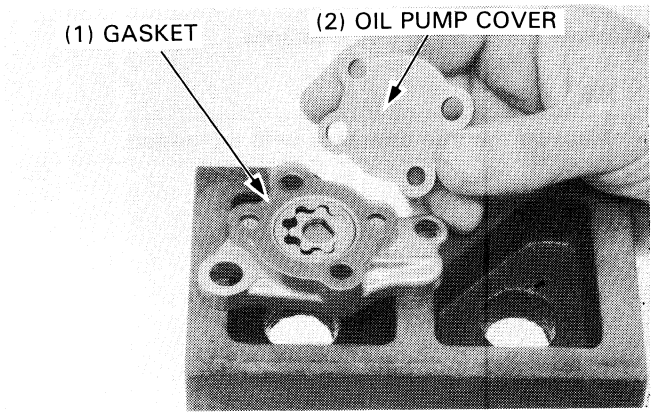
ASSEMBLY



Insert the shaft into the inner rotor aligning the flat on the shaft head with that of the hole.

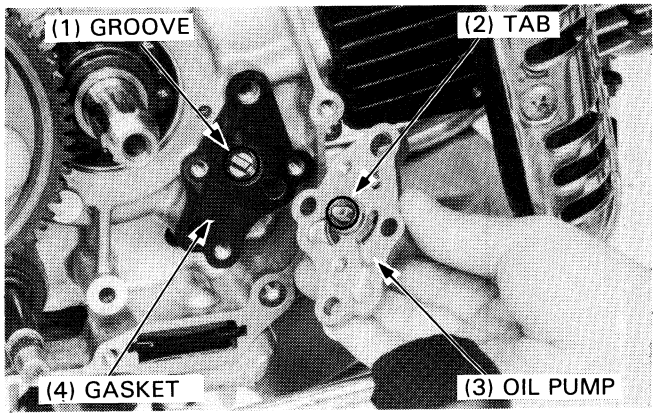


Install the gasket and oil pump cover with two screws.



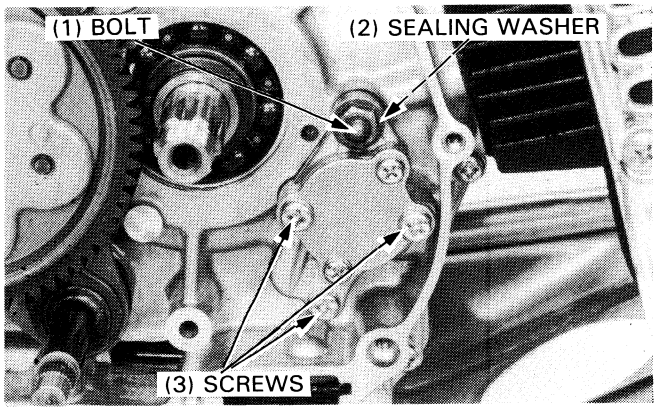
INSTALLTION

Install the gasket.
Properly fit the tab of the oil pump rotor shaft into the groove in the guide roller shaft.



Install the oil pump with the sealing washer, bolt and the three screws.

Install the clutch assembly (Page 8-11).
Install the right crankcase cover (Page 8-13).

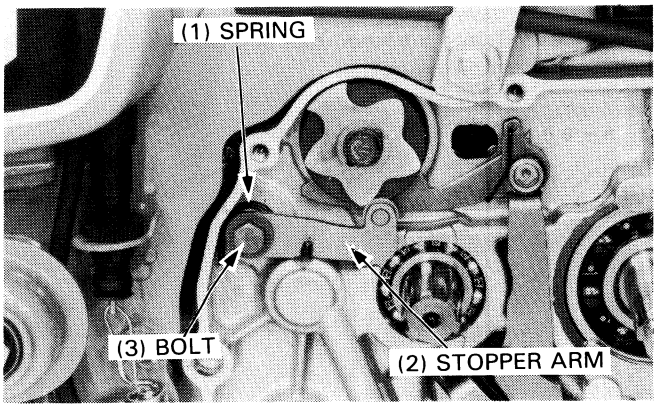


GEARSHIFT LINKAGE

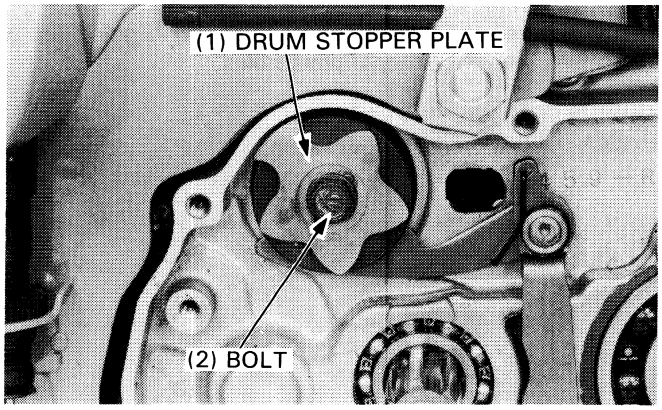
DISASSEMBLY

Remove the right crankcase cover (Page 8-3)
Remove the clutch assembly and primary driven gear (Page 8-4).

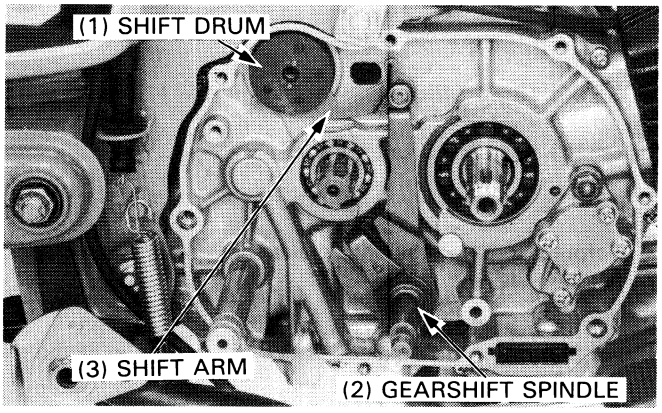
Remove the gearshift drum stopper arm and spring by removing the bolt.



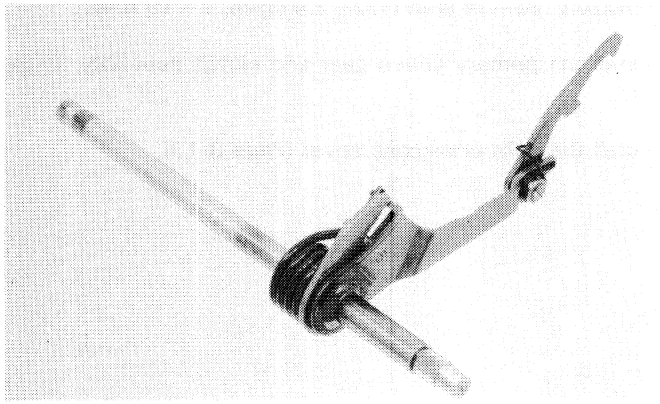
Remove the drum stopper plate bolt and plate.



Remove the gearshift pedal.
Disengage the shift arm from the shift drum and pull the gearshift spindle out of the crankcase.



Check for gearshift linkage for wear or damage.



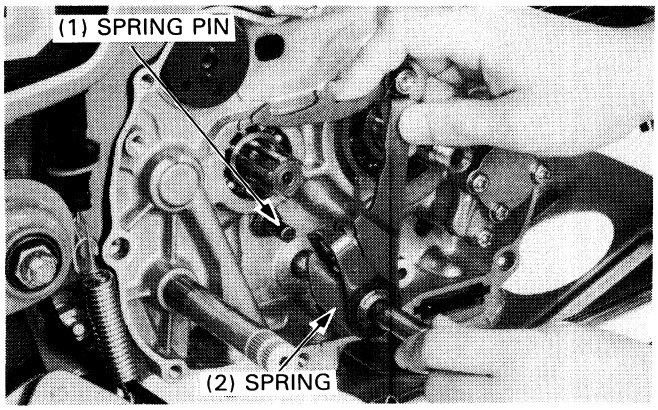
ASSEMBLY

Install the gearshift spindle.

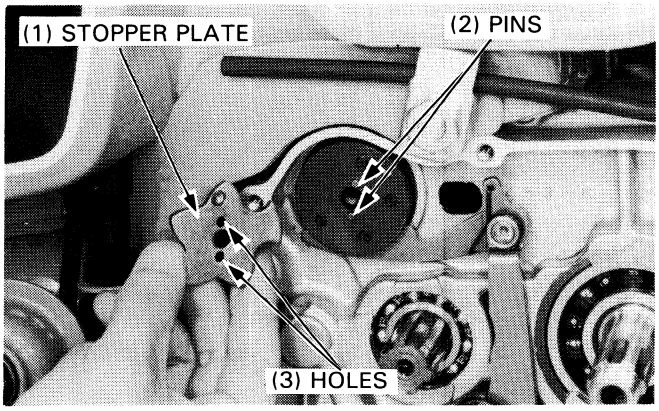
NOTE

- The shift spindle hole in the left crankcase cover has an oil seal. Use care when installing the spindle to avoid damaging the seal.
- Insert the end of the spring into the shift return spring pin.

Check the gearshift spindle operation.



Install the gearshift drum stopper plate by aligning the shift drum pins with the stopper plate holes.



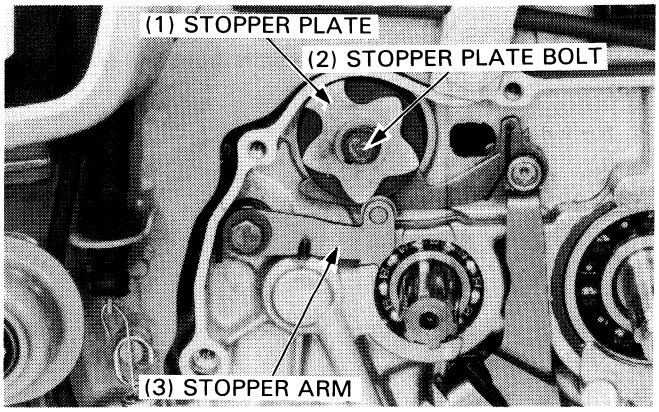
Tighten the drum stopper plate bolt.

TORQUE: 12—16 N·m (1.2—1.6 kg-m, 9—12 ft-lb)

Install the gearshift drum stopper arm.

NOTE

- Before tightening the bolt, make sure that the stopper is positioned properly.



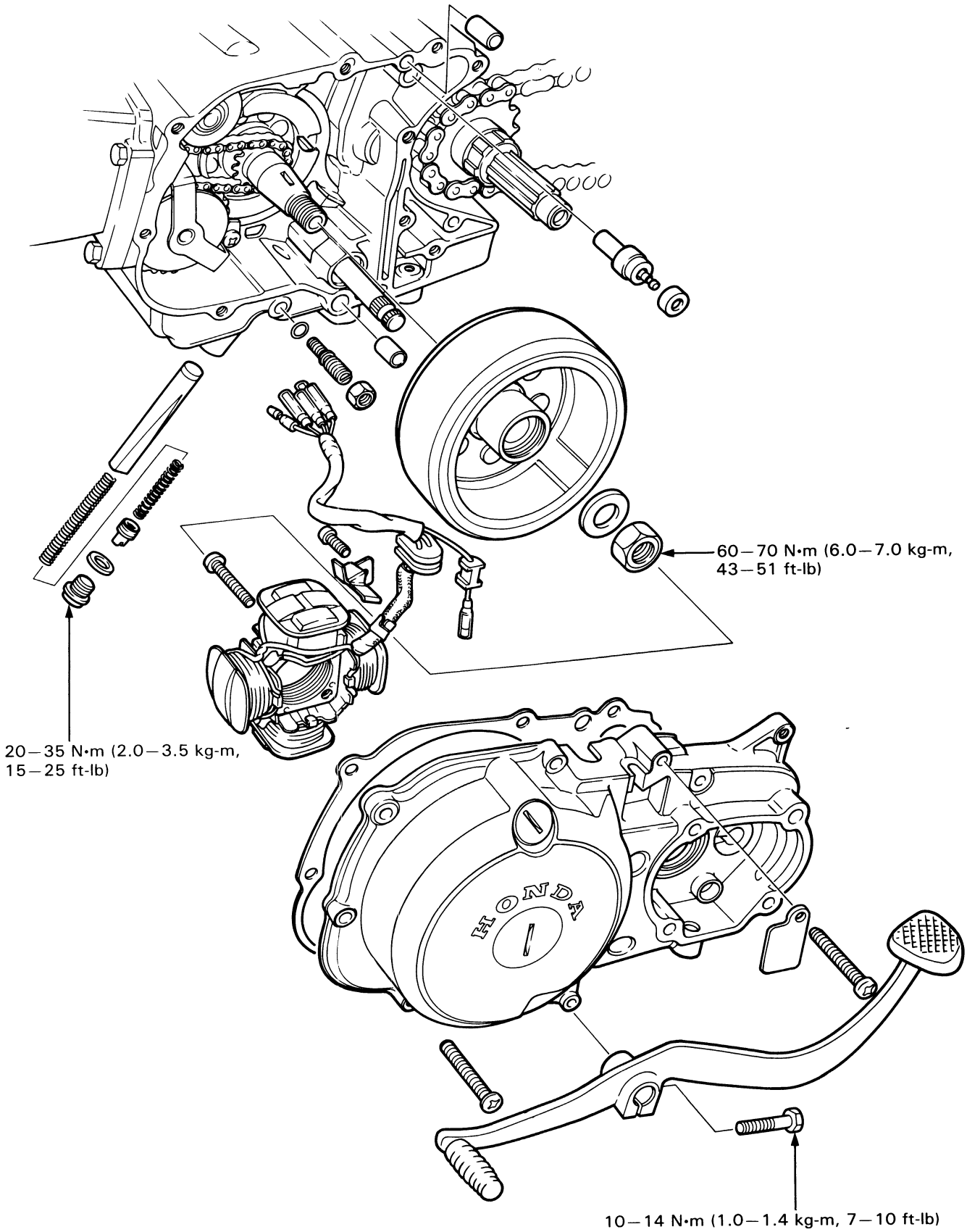
Install the gearshift pedal and check the operation of the gearshift linkage.
Tighten the gearshift pedal bolt.

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

Install the primary driven gear and clutch assembly (Page 8-11).

Install the right crankcase cover (Page 8-13).

MEMO


60—70 N•m (6.0—7.0 kg-m, 43—51 ft-lb)
20—35 N•m (2.0—3.5 kg-m, 15—25 ft-lb)
HONDA
10—14 N•m (1.0—1.4 kg-m, 7—10 ft-lb)

9. ALTERNATOR/CAM CHAIN TENSIONER

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the alternator.
- Refer to Sections 14 and 15 for alternator inspection.

SPECIFICATION

ITEM		STANDARD	SERVICE LIMIT
Cam chain tensioner push rod O.D.		11.8—11.9 mm (0.47—0.48 in)	11.70 mm (0.465 in)
Cam chain tensioner spring free length	A	65.0 mm (2.60 in)	60 mm (2.4 in)
	B	49.8 mm (1.92 in)	40 mm (1.6 in)

TORQUE VALUES

Cam chain tensioner bolt	20—35 N·m (2.0—3.5 kg-m, 15—25 ft-lb)
Flywheel nut	60—70 N·m (6.0—7.0 kg-m, 43—51 ft-lb)
Foot peg bolt	18—25 N·m (1.8—2.5 kg-m, 13—18 ft-lb)
Gearshift pedal bolt	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

TOOLS

Common

Flywheel Holder 07725—0040000
Flywheel Puller 07733—0010000
} or equivalent commercially available in U.S.A.

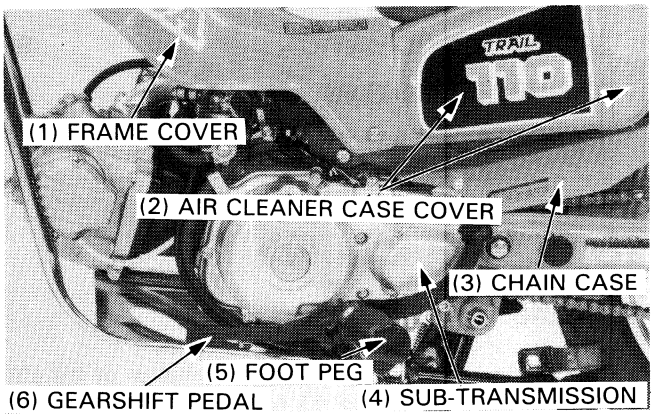
TROUBLESHOOTING

Cam chain noise
- Worn or damaged spring
- Damaged tensioner

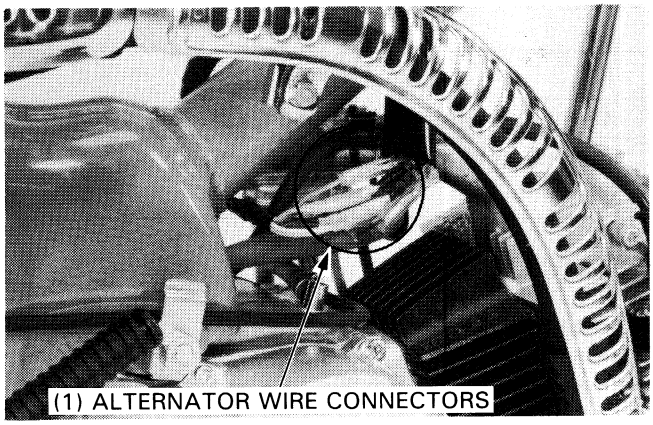
Cam chain slack excessively
- Worn or damaged spring
- Faulty push rod

ALTERNATOR REMOVAL

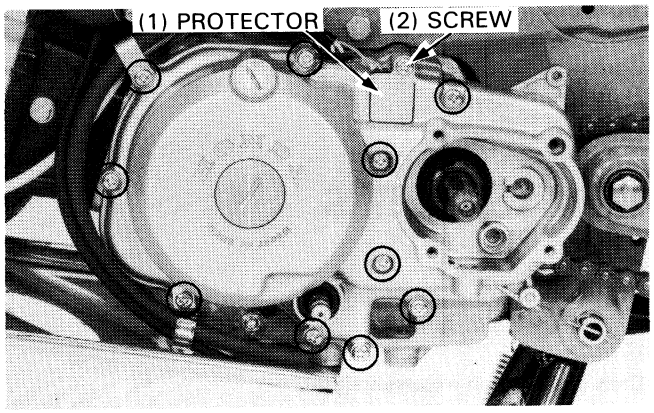
Shift the transmission into neutral.
Drain the oil from engine (Page 2-2).
Remove the foot peg and gearshift pedal.
Remove the frame cover, air cleaner case cover and chain case (Page 4-3, 4-4 and 5-2).
Remove the sub-transmission (Page 10-2).



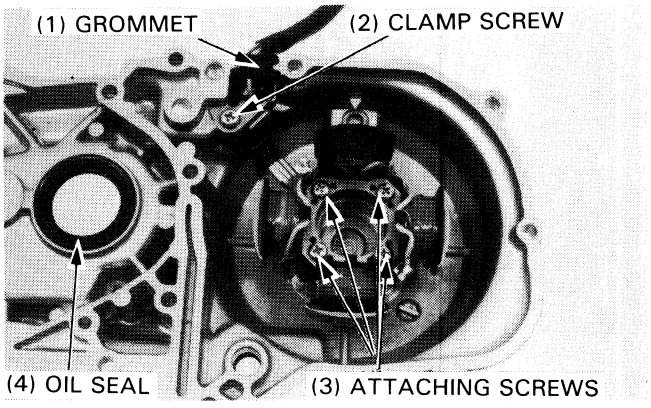
Disconnect the alternator wire connectors.



Remove the neutral switch wire screw and protector, then disconnect the neutral switch connector and grommet.
Remove the left crankcase cover by removing the ten attaching screws.



Remove the four stator attaching screws.
Remove the alternator wire clamp screw, then pull the grommet out of the left crankcase cover.
Remove the stator.

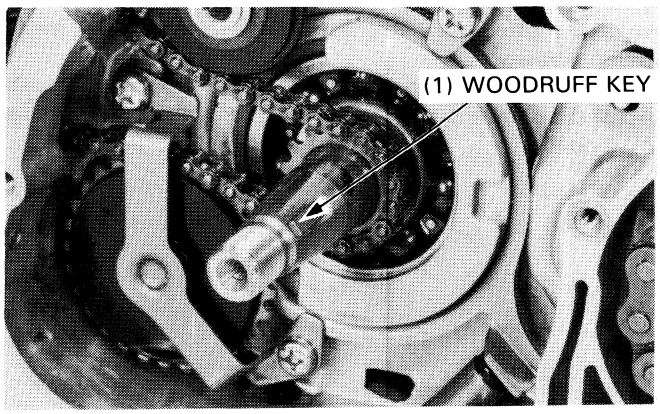


Hold the flywheel with a flywheel holder and remove the flywheel nut and washer.

Remove the flywheel using the flywheel puller.

ALTERNATOR INSTALLATION

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



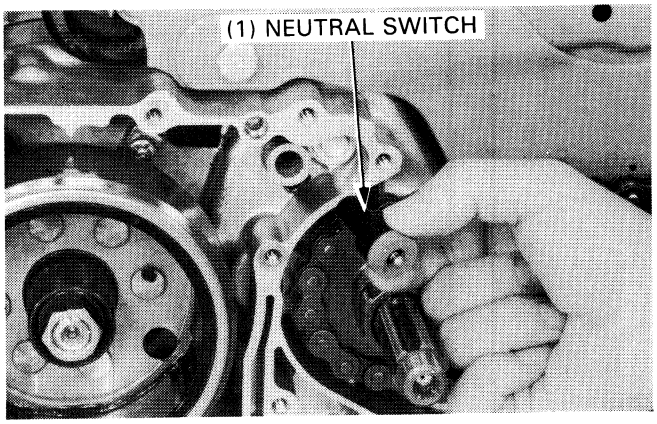
Hold the flywheel with a flywheel holder, and tighten the flywheel nut and washer.

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

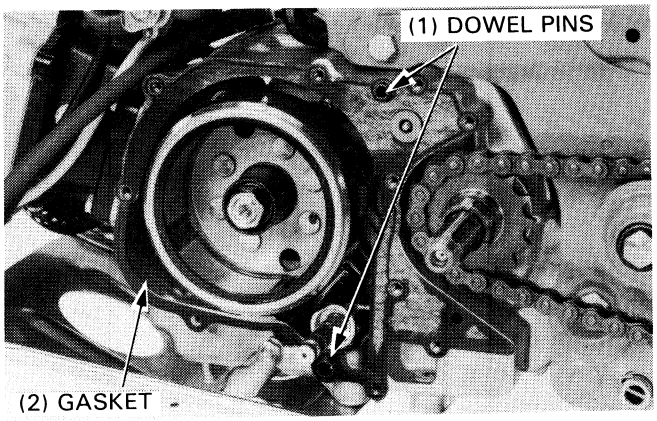
Install the neutral switch with the spacer.

NOTE

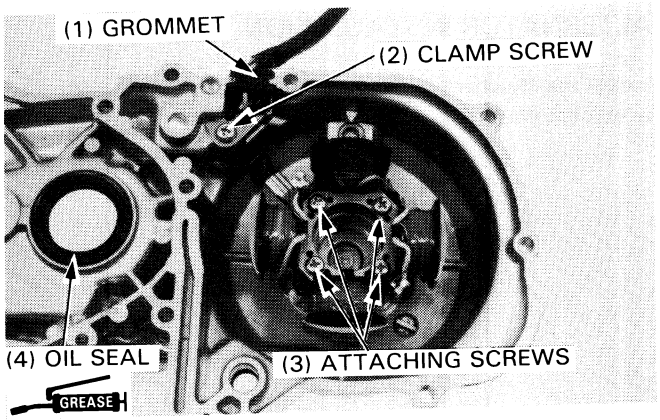
- See page 16-5 for switch inspection.



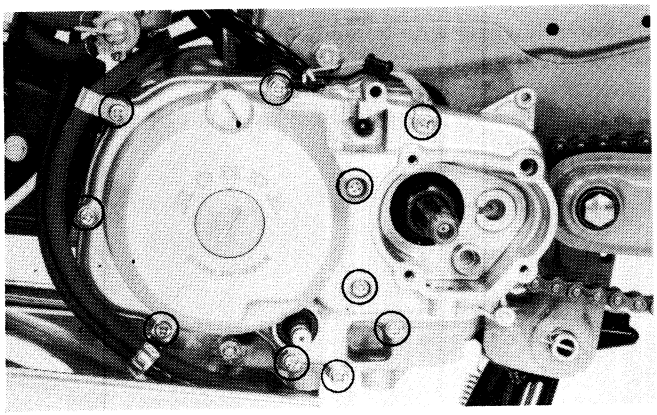
Install the dowel pins and a new gasket.



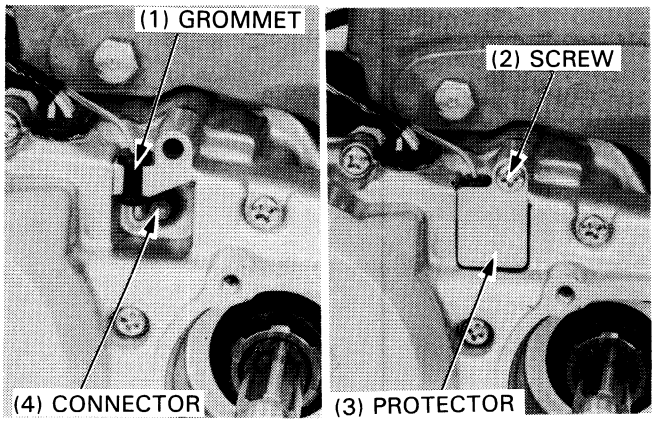
Install the stator and tighten the four attaching screws.
Install the alternator wire grommet and clamp, then tighten the clamp screw.
Check the oil seal for wear or damage and replace if necessary.
Apply the grease to the oil seal lip and install it in the left crankcase cover.



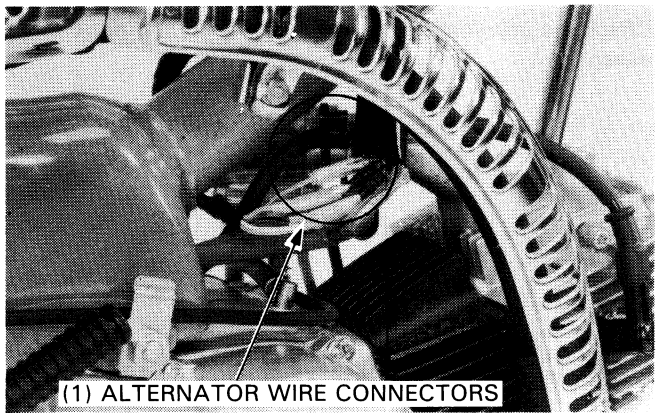
Install the left crankcase cover and tighten the ten screws.



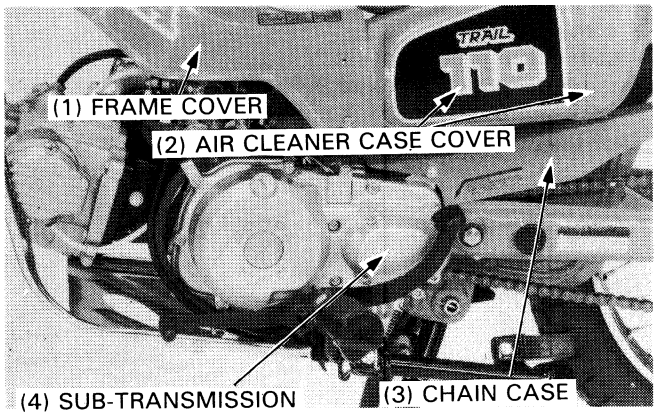
Install the neutral switch grommet and connector.
Install the neutral switch protector and tighten the screw.



Connect the alternator wire connectors.



Install the sub-transmission (Page 10-5).
Install the chain case, air cleaner case and frame cover (Page 4-3, 4-4 and 5-3).
Fill the crankcase with the recommended oil (Page 2-2).

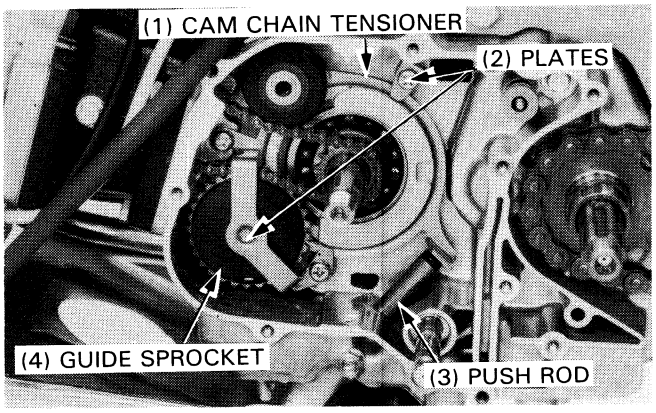


CAM CHAIN TENSIONER REMOVAL

Remove the following parts.
- Cylinder head (Page 6-6).
- Guide roller bolt and guide roller (Page 7-2).
- Alternator (Page 9-2).
- Tensioner bolt, adjusting bolt B, washer, tensioner spring A, B, lock nut, adjusting bolt A and push rod.
- Tensioner set plates A and B.
- Cam chain guide sprocket, cam chain and tensioner.

NOTE

- Record the number of rotations removing the adjusting bolt B.

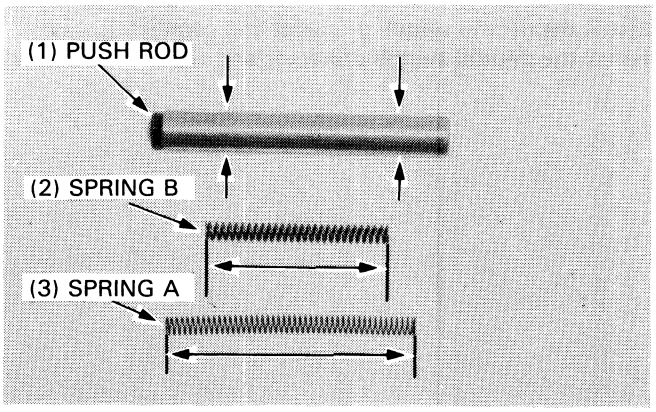


Measure the cam chain tensioner springs free length.

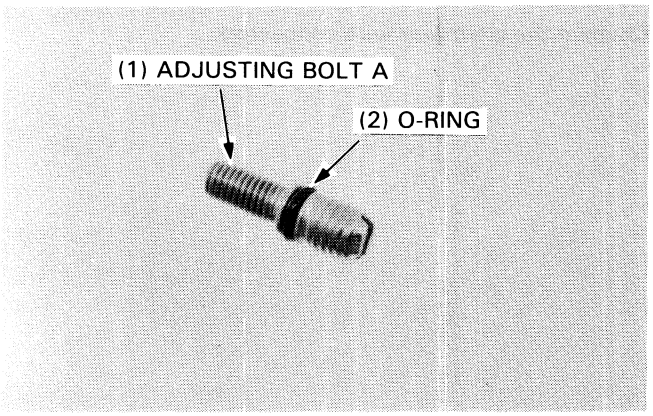
SERVICE LIMITS:
SPRING A: 60 mm (2.4 in)
SPRING B: 40 mm (1.6 in)

Measure the push rod O.D.

SERVICE LIMIT: 11.70 mm (0.465 in)

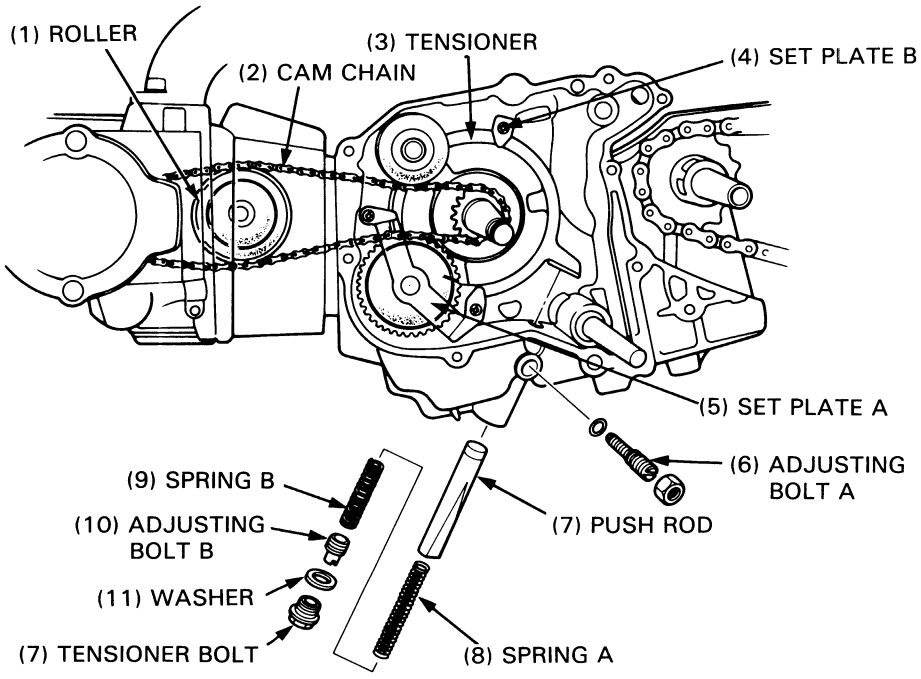


Check the adjusting bolt A O-ring for wear and replace if necessary.



CAM CHAIN TENSIONER INSTALLATION

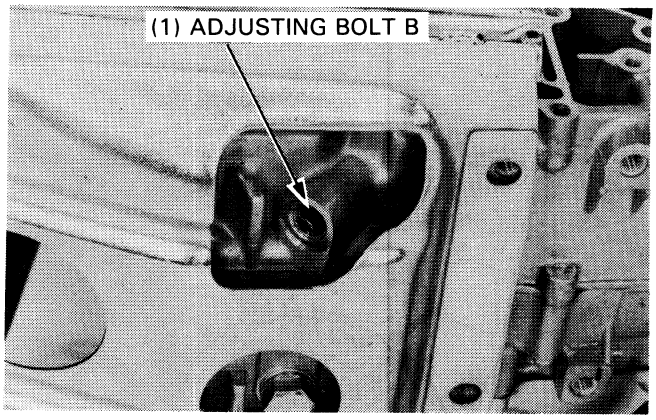
Install the following parts:
— tensioner
— cam chain
— cam chain guide sprocket
— tensioner set plate A and B
— adjusting bolt A and lock nut
Place the push rod cut out towards adjusting bolt A.



Install the push rod, tensioner springs A and B, adjusting bolt B washer, and tensioner bolt.

Tighten the tensioner bolt.

TORQUE: 20—35 N·m (2.0—3.5 kg-m, 15—25 ft-lb)



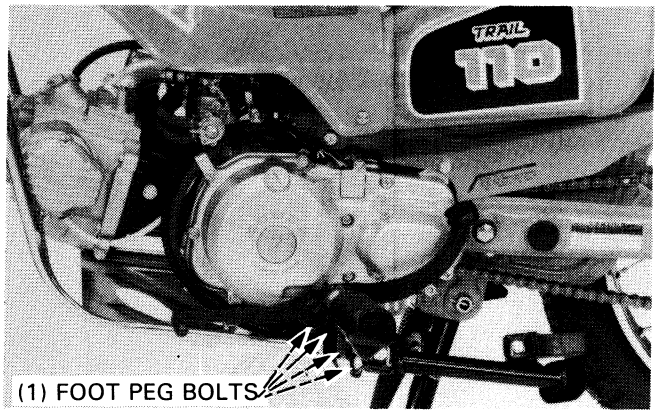
Install the following:
- Alternator (Page 9-3).
- Guide roller and guide roller bolt (Page 7-6).
- Cylinder head (Page 6-11).
- Foot peg and gearshift pedal.

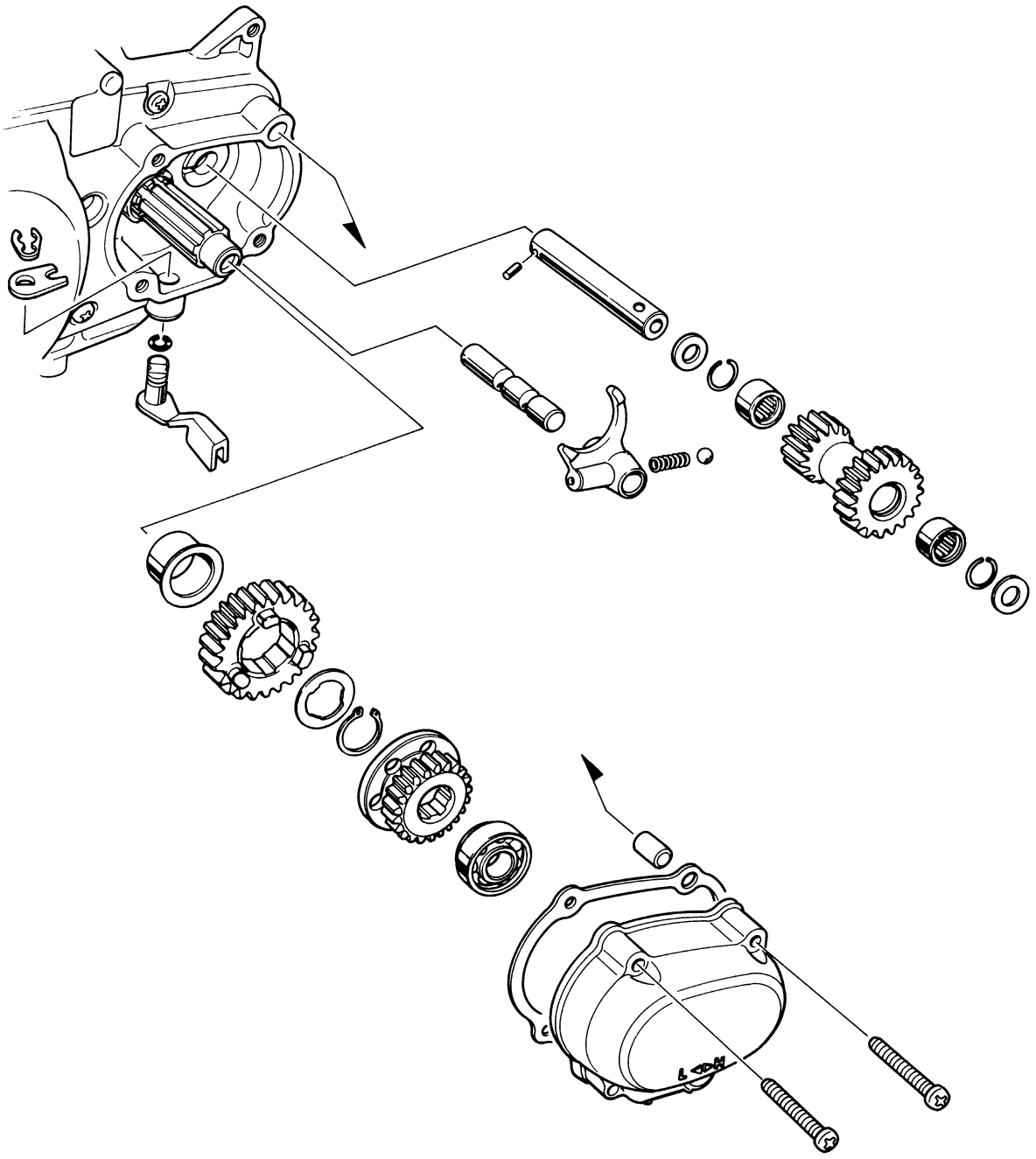
Tighten the foot peg bolts.

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

Tighten the gearshift pedal bolt.

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





10. SUB-TRANSMISSION

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the sub-transmission.
- Inspect drive sprocket bushing B (Section 11) if bushing A wear exceeds the service limit.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Shift fork claw thickness		3.95—4.05 mm (0.156—0.159 in)	3.90 mm (0.153 in)
Idle gear shaft O.D.		13.000—13.011 mm (0.5118—0.5122 in)	12.95 mm (0.510 in)
Drive sprocket bushing A	I.D.	19.992—20.008 mm (0.7871—0.7877 in)	19.94 mm (0.785 in)
	O.D.	21.960—21.993 mm (0.8646—0.8659 in)	21.90 mm (0.862 in)

TORQUE VALUE

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

TOOL

Needle Bearing Driver — 07945—9430000

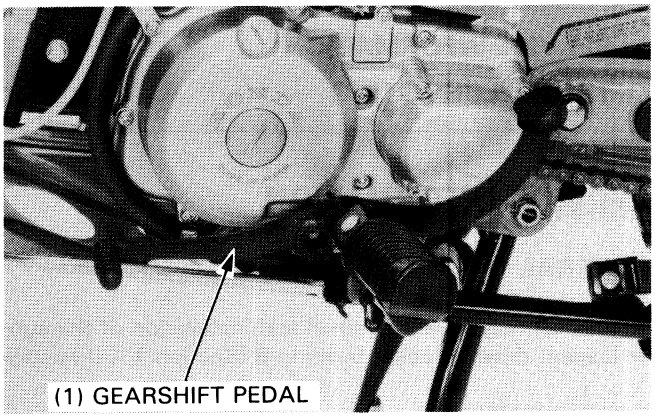
TROUBLESHOOTING

Gears noisy
- Worn sub-transmission gear
- Worn sub-transmission bearing

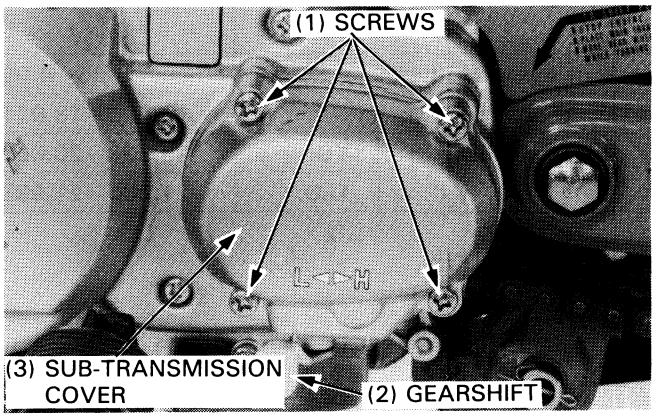
Hard to shift
- Shift fork bent or damage
- Shift fork shaft bent

SUB-TRANSMISSION REMOVAL

Remove the gearshift pedal.

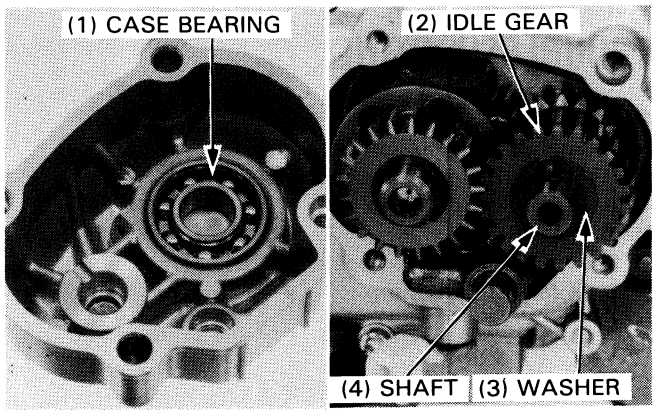


Shift the sub-transmission into low.
Remove the sub-transmission cover by removing the four attaching screws.
Remove the dowel pin and gasket.

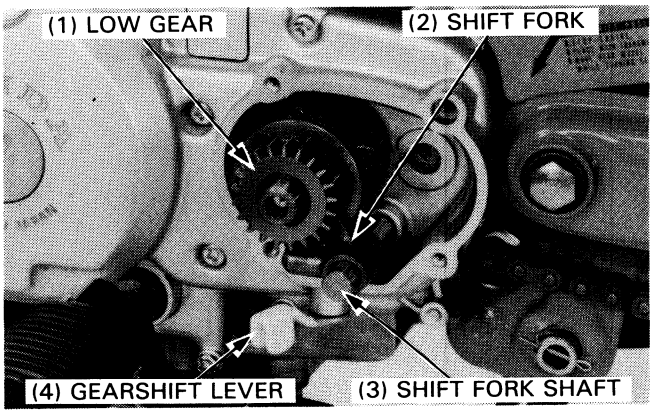


Check the sub-transmission case bearing and replace it with new one if it is noisy or has excessive play.

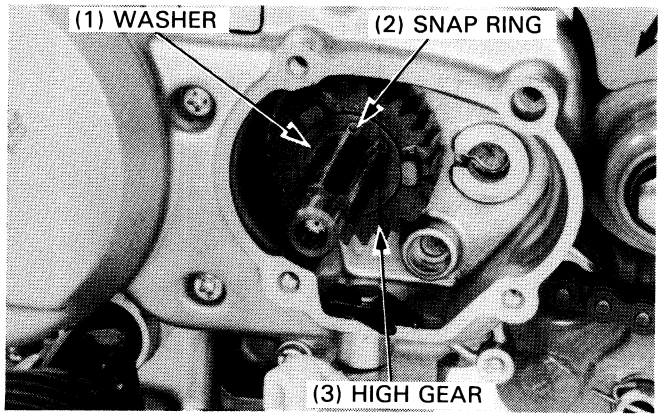
Remove the washer and idle gear.



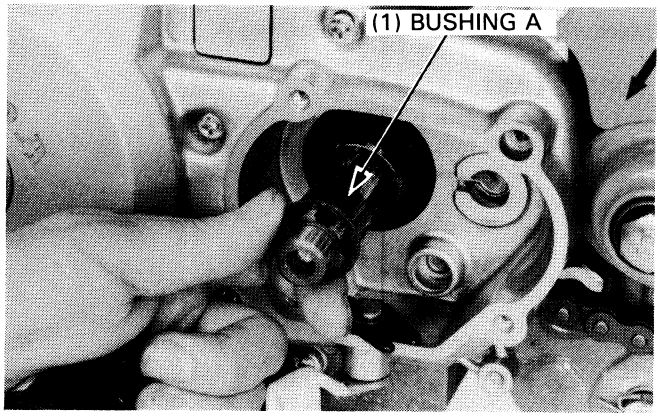
Remove the low gear with the shift fork and shaft by pulling the gearshift lever to the left.



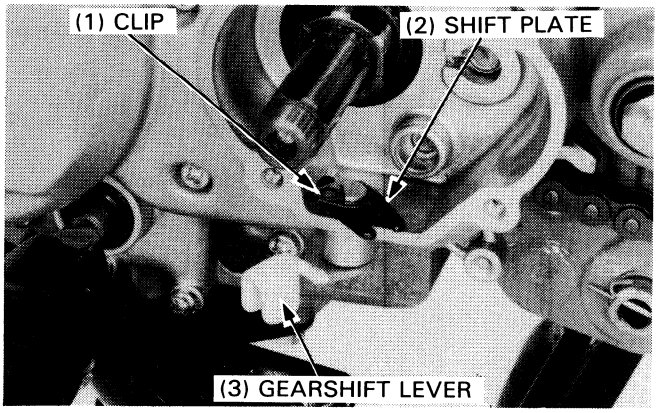
Remove the snap ring, then remove the high gear with the washer.



Remove bushing A.



Remove the clip securing the gearshift lever, then remove the shift plate and lever from the left crankcase cover.

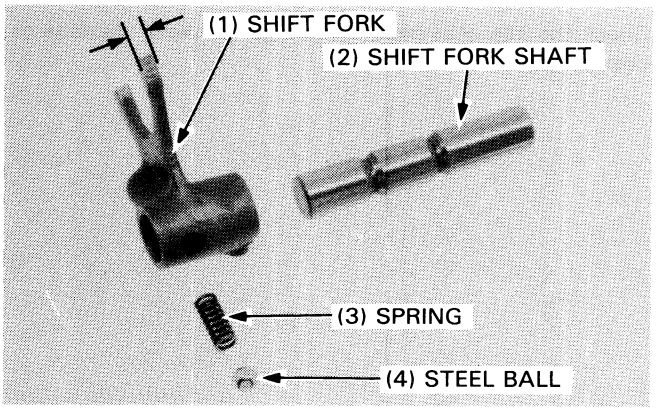


INSPECTION

Check the shift fork for damage. Inspect the spring for weakness or breakage.

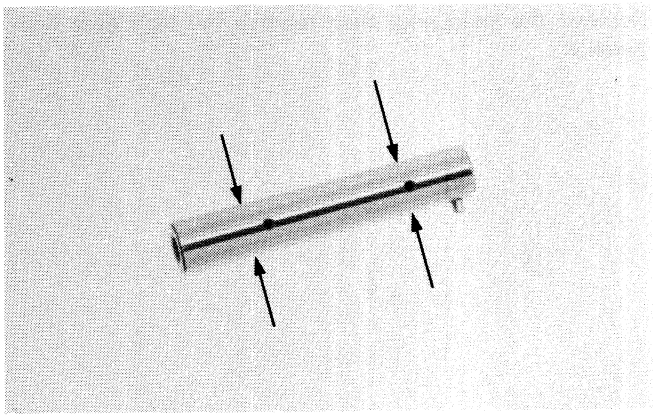
Check the low and high gears for excessive wear.
Check the shift fork shaft for wear and straightness
Measure the shift fork claw thickness.

SERVICE LIMIT: 3.90 mm (0.153 in)



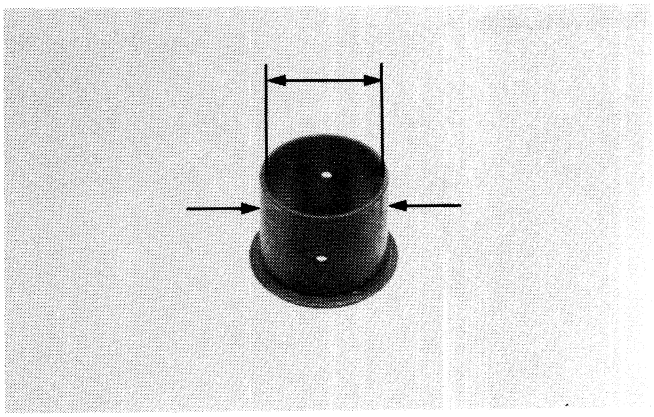
Measure the idle gear shaft O.D.

SERVICE LIMIT: 12.95 mm (0.510 in)

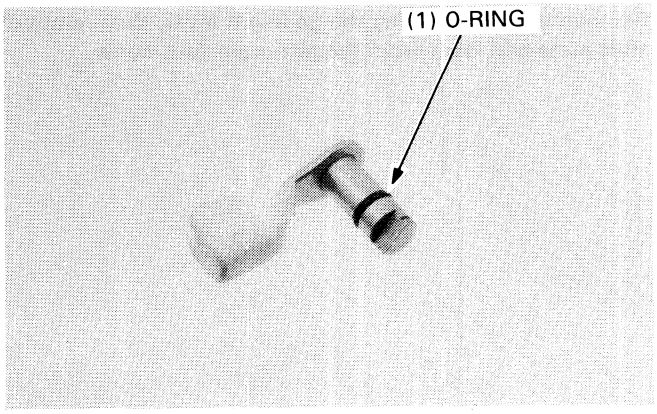


Measure the I.D. and O.D. of bushing A.

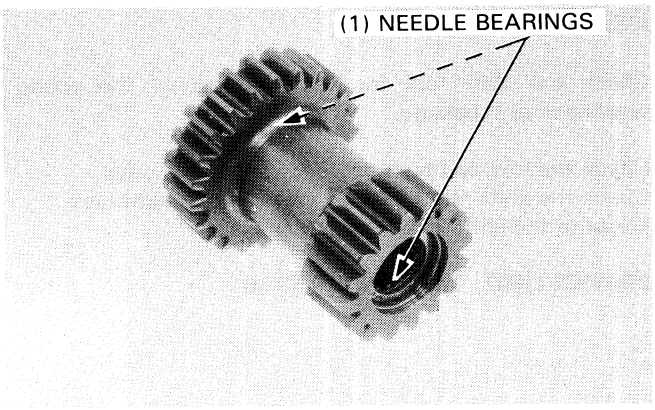
SERVICE LIMIT:
I.D.: 19.94 mm (0.785 in)
O.D.: 21.90 mm (0.862 in)



Check the gearshift lever O-ring for fatigue or wear and replace if necessary.



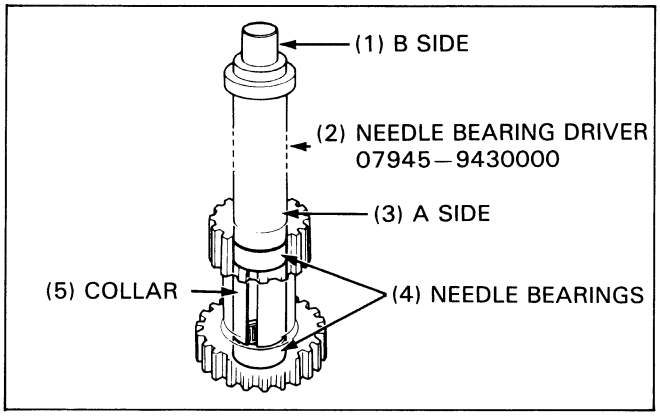
Check the idle gear needle bearings for wear, damage or excessive play.



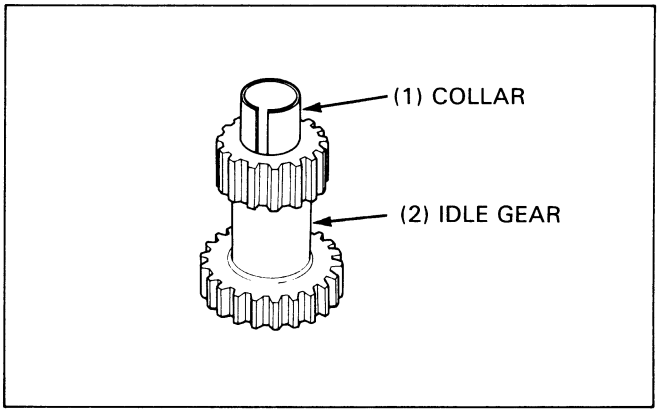
NEEDLE BEARING REPLACEMENT

Remove the snap rings.

Press out the needle bearings with the collar using the needle bearing driver A side.

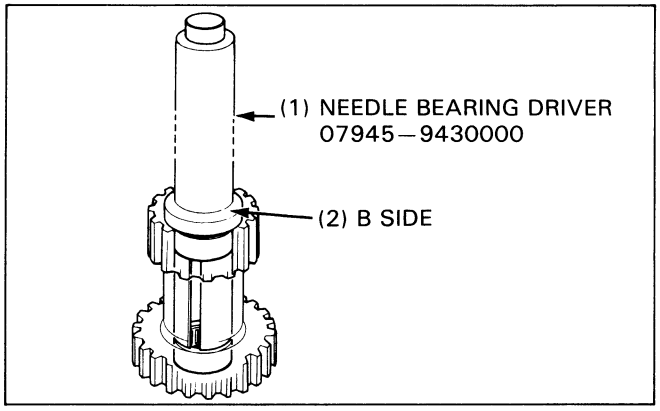


Install the collar into the center of the idler gear.



Press in the new needle bearing into the one side using the needle bearing driver B side.

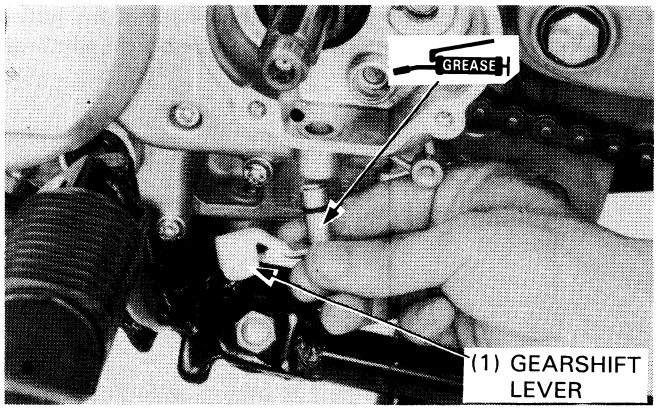
Press in the new needle bearing into opposite side using remover B side.
Install the snap rings.



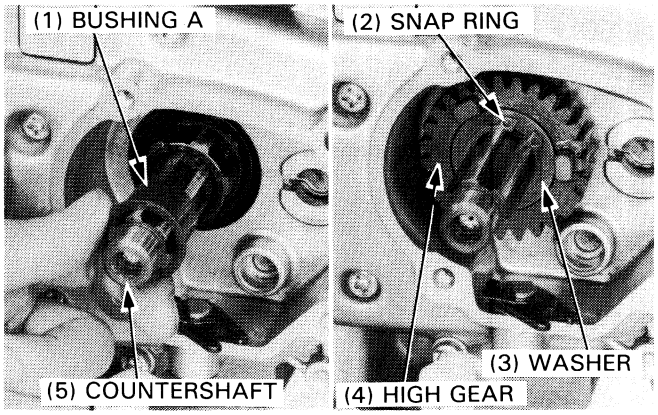
SUB-TRANSMISSION INSTALLATION

Apply grease to the gearshift lever sliding surface and install the lever in the left crankcase cover.

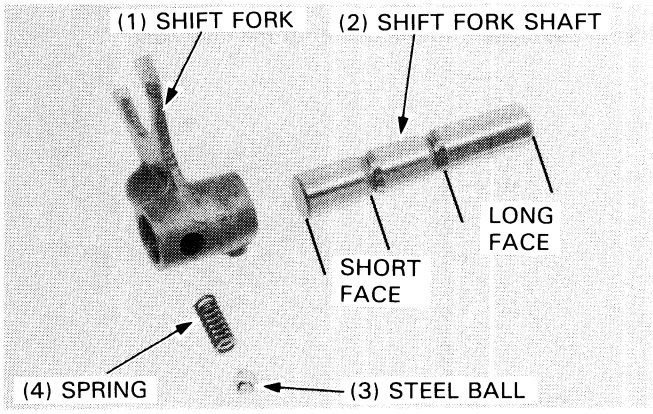
Install the clip.



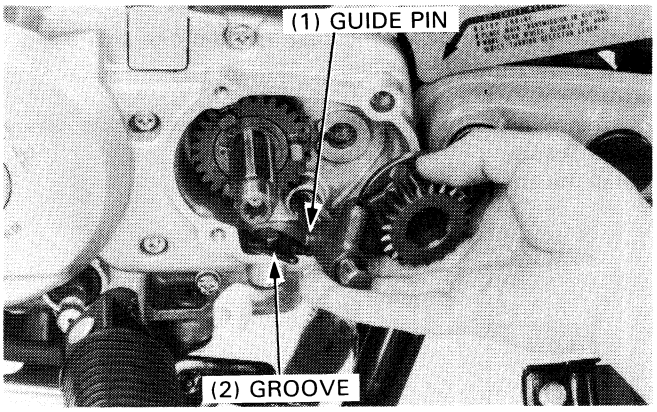
Install bushing A over the countershaft, then install the high gear.
Install the washer with the sharp edge facing out.
Install the snap ring.



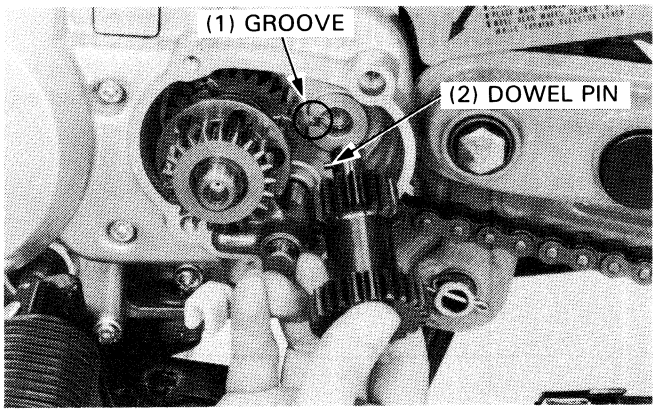
Install the spring and steel ball into the hole in the shift fork.
Push the steel ball in and insert the shift fork shaft into the fork so the long section faces the left crankcase cover when installed.



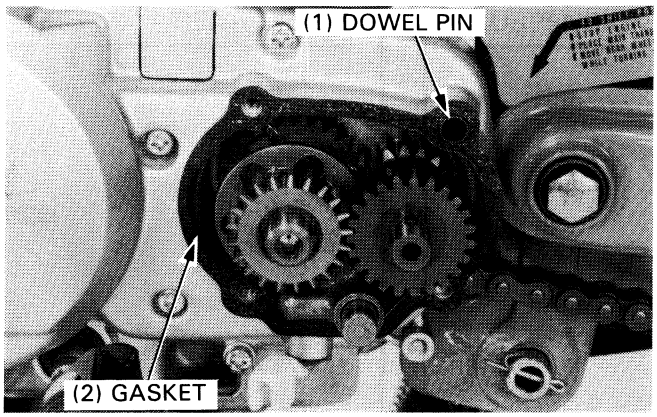
Install the shift fork assembly and low gear aligning the guide pin with the groove on the shift plate.



Insert the idle gear shaft into the gear and install them, aligning the dowel pin on the gear with the groove on the left crankcase cover.

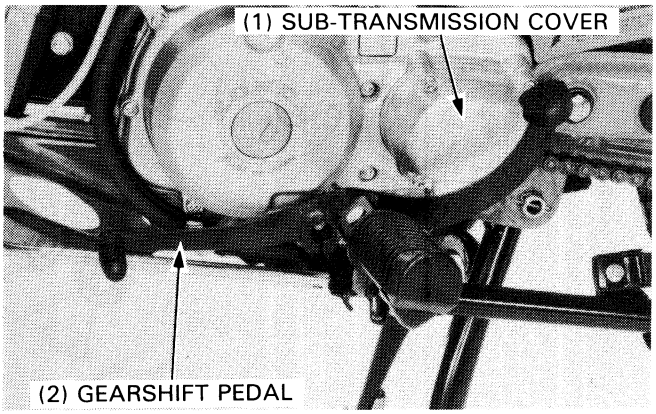


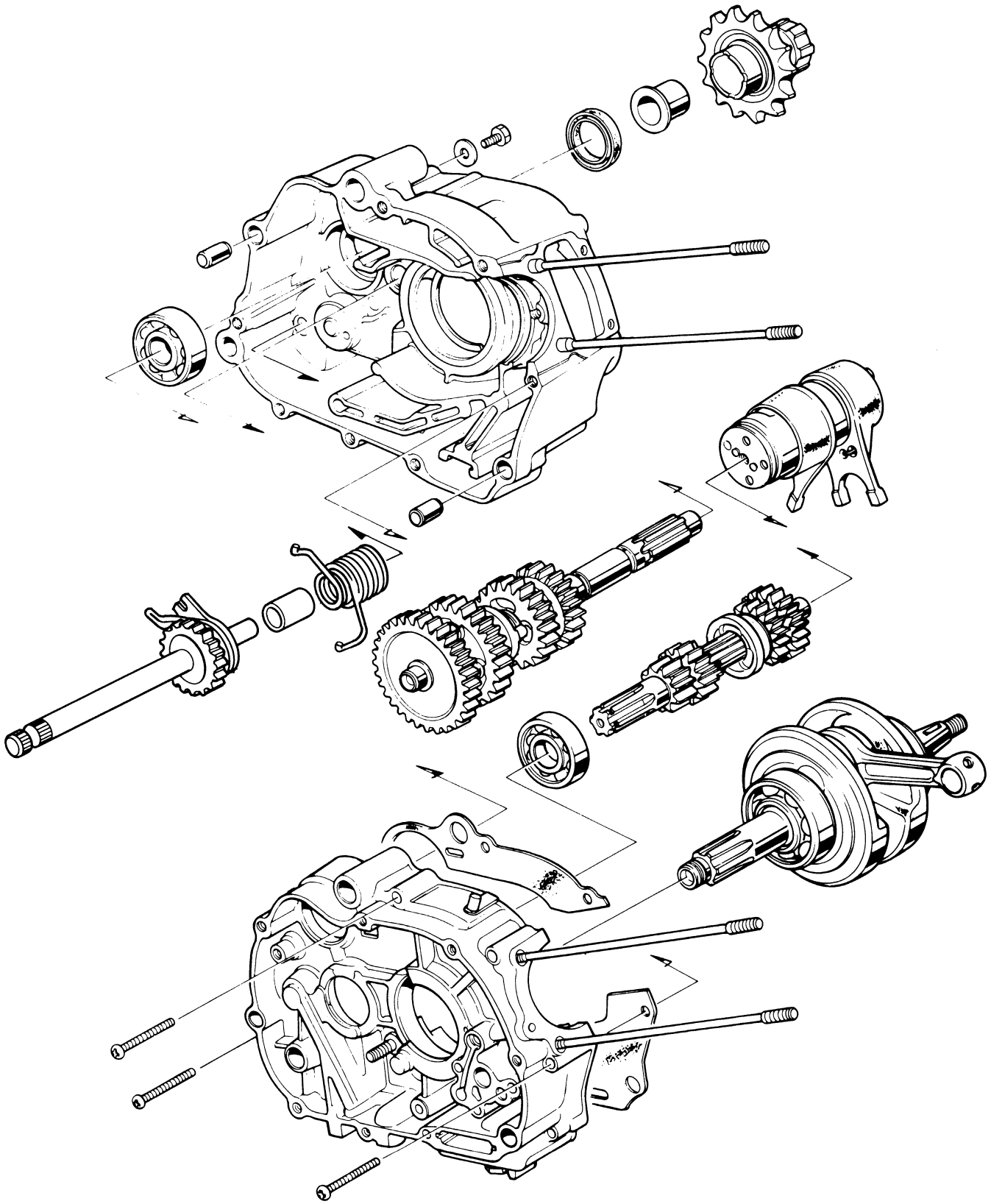
Install the gasket and dowel pin.



Install the sub-transmission cover with four screws.
Install the gearshift pedal.
Check the shift fork operation by shifting the sub-transmission lever into high and low positions.
Tighten the gearshift pedal bolt.

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





11. TRANSMISSION/CRANKSHAFT/KICK STARTER

SERVICE INFORMATION

GENERAL

- Use care not to damage the oil pressure pad on the crankshaft right end.
- The crankcase must be separated to service the crankshaft and transmission.
- Remove the engine, and then remove the following parts before separating the crankcase.
  - Cylinder head — Section 6
  - Cylinder and piston — Section 7
  - Clutch and gearshift linkage — Section 8
  - Left crankcase cover — Section 9
  - Sub-transmission — Section 10
  - Alternator and cam chain tensioner — Section 9

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Runout (right/left)		0—0.025 mm (0—0.0010 in)	0.10 mm (0.004 in)
	Connecting rod big end side clearance		0.10—0.35 mm (0.004—0.019 in)	0.8 mm (0.03 in)
	Connecting rod big end radial clearance		0—0.01 mm (0—0.0004 in)	0.05 mm (0.002 in)
Transmission	Shift fork I.D.		42.00 mm (1.654 in)	42.1 mm (1.66 in)
	Gearshift drum O.D.		41.950—41.975 mm (1.6516—1.6526 in)	41.80 mm (1.646 in)
	Shift fork-to-shift drum clearance		0.05 mm (0.002 in)	0.2 mm (0.01 in)
	Drum groove width		6.1—6.2 mm (0.240—0.244 in)	6.4 mm (0.25 in)
	Shift fork claw thickness		5.96—6.04 mm (0.235—0.238 in)	5.70 mm (0.224 in)
	Transmission gear I.D.	C1	14.000—14.027 mm (0.5516—0.5527 in)	14.10 mm (0.555 in)
		C3	20.000—20.021 mm (0.7880—0.7889 in)	20.10 mm (0.792 in)
		M2	18.000—18.018 mm (0.7092—0.7099 in)	18.08 mm (0.712 in)
		M4	14.000—14.027 mm (0.5516—0.5527 in)	14.10 mm (0.555 in)
	Countershaft and mainshaft O.D.	C1	13.966—13.984 mm (0.5503—0.5509 in)	13.93 mm (0.549 in)
		M4	13.966—13.984 mm (0.5503—0.5509 in)	13.93 mm (0.549 in)
		M2	17.966—17.984 mm (0.7079—0.7086 in)	17.93 mm (0.706 in)
		C3	19.966—19.984 mm (0.7867—0.7874 in)	19.93 mm (0.785 in)
Drive sprocket I.D.			22.000—22.021 mm (0.8668—0.8676 in)	22.10 mm (0.871 in)
Drive sprocket bushing B		I.D.	19.992—20.008 mm (0.7877—0.7883 in)	19.94 mm (0.786 in)
		O.D.	21.960—21.993 mm (0.8652—0.8665 in)	21.90 mm (0.863 in)

TOOLS

Common

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

TROUBLESHOOTING

Hard to shift
- Shift fork bent
- Shift fork shaft bent

Transmission jumps out of gear
- Gear dogs worn
- Shift fork bent or damaged

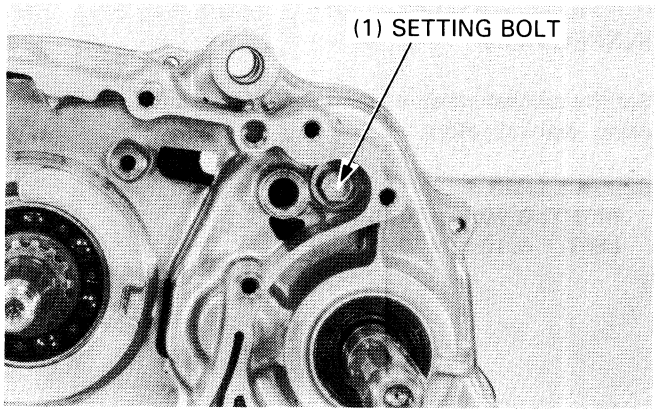
Crankshaft noisy
- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft bearing

Gears noisy
- Worn transmission gear

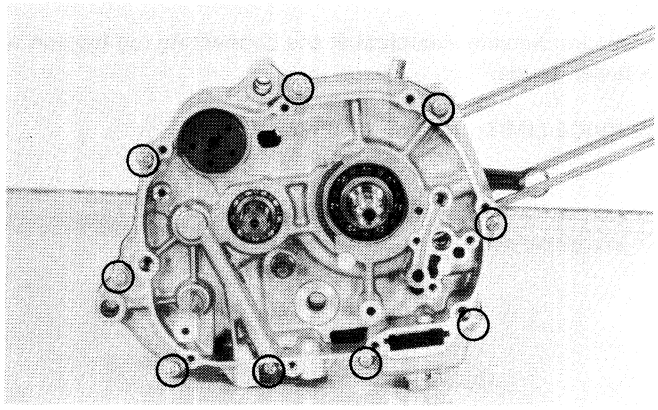
CRANKCASE SEPARATION

Remove the parts listed on page 11-1.

Remove the gearshift drum setting bolt.



Remove the nine crankcase mounting screws.

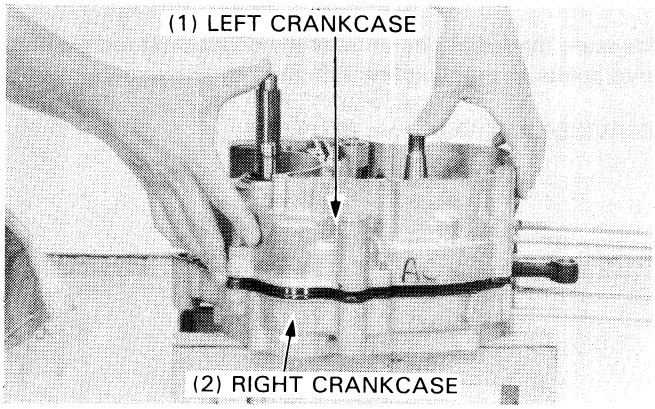


Place the engine with the right crankcase side down and separate the crankcase halves while tapping them at several locations with a soft hammer.

CAUTION

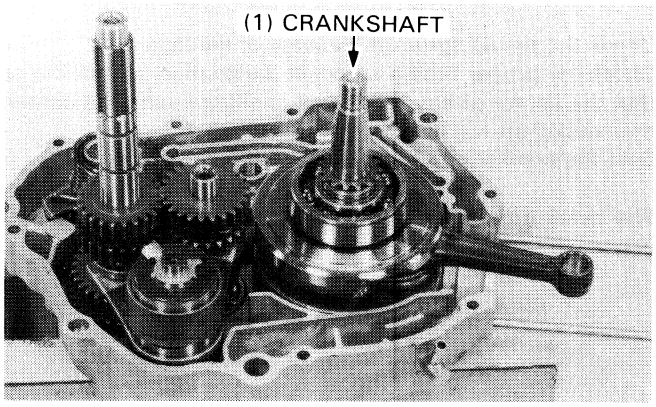
- *Do not pry between the left and right carnkcases.*

Remove the dowel pins and gasket.



CRANKSHAFT REMOVAL

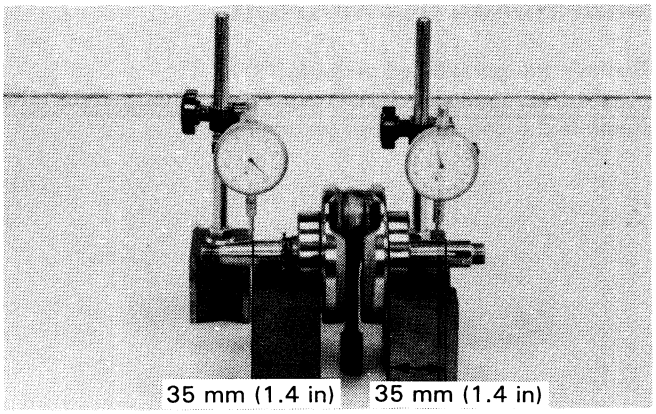
Remove the crankshaft.



INSPECTION

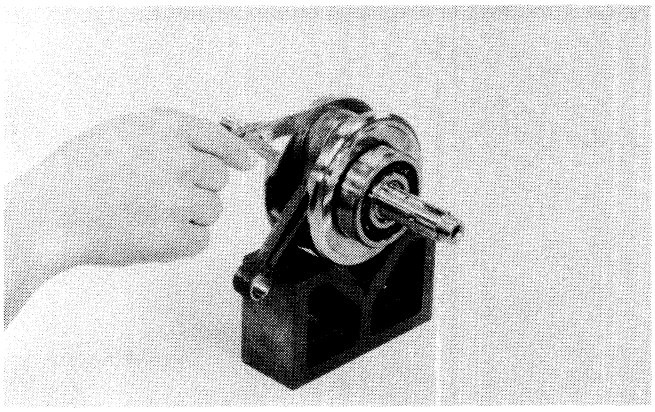
Set the crankshaft on a stand or V-blocks and read the runout using dial indicators.

SERVICE LIMITS:
RIGHT: 0.10 mm (0.004 in)
LEFT: 0.10 mm (0.004 in)



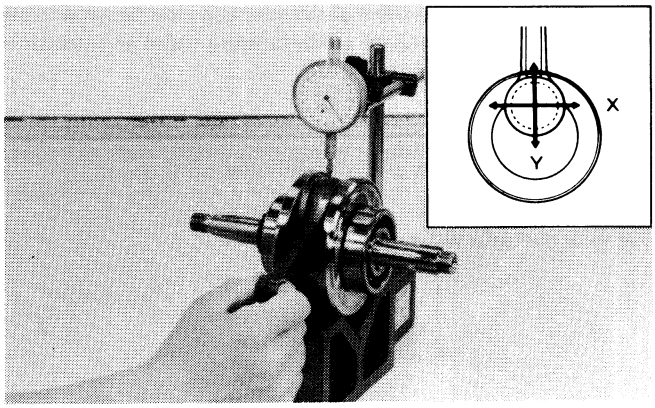
Measure the side clearance at the connecting rod big end with a feeler gauge.

SERVICE LIMIT: 0.8 mm (0.03 in)



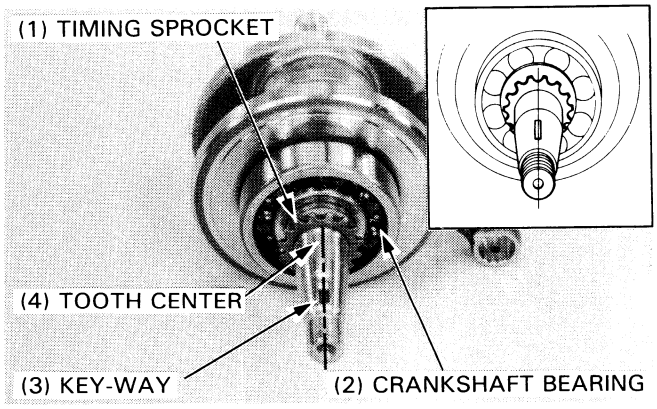
Measure the radial clearance at the connecting rod big end, at two points in the direction indicated by the arrows.

SERVICE LIMIT: 0.05 mm (0.002 in)



Check the timing sprocket for wear or damage.
Check for proper timing sprocket installation by making sure that the center of any tooth root is allgned with the center of the crankshaft key-way.
Spin the crankshaft bearing by hand and check for play.

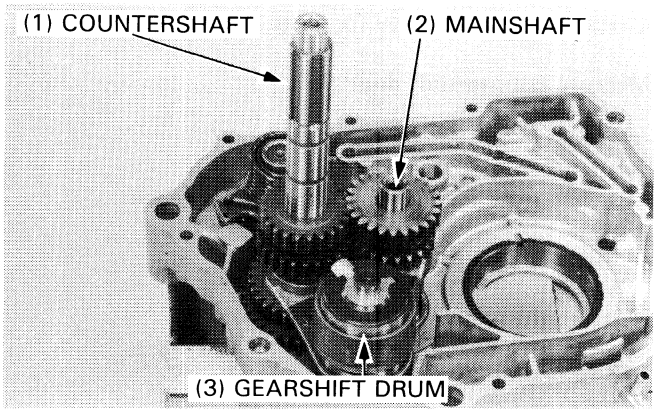
The bearing must be replaced if it is noisy or has excessive play.



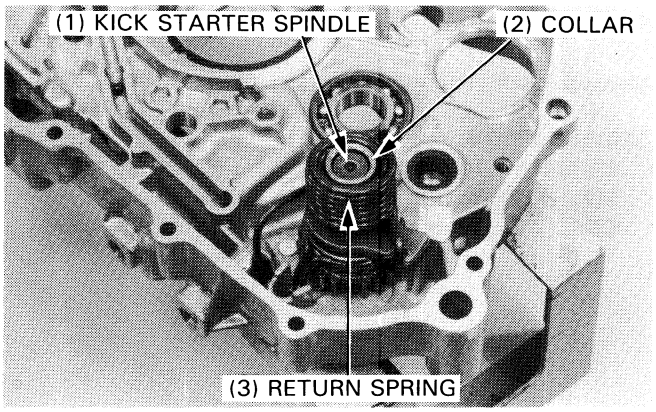
TRANSMISSION/KICK STARTER

DISASSEMBLY

Remove the transmission and gearshift drum as an assembly.



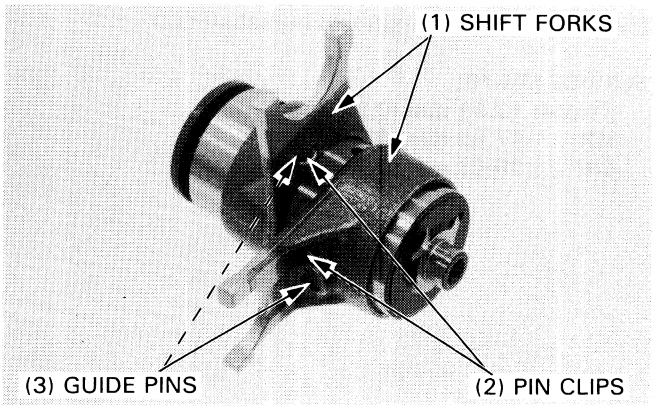
Remove the collar and return spring.
Remove the kick starter spindle.



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

NOTE

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



INSPECTION

Check the shift forks for wear, bending or damage.

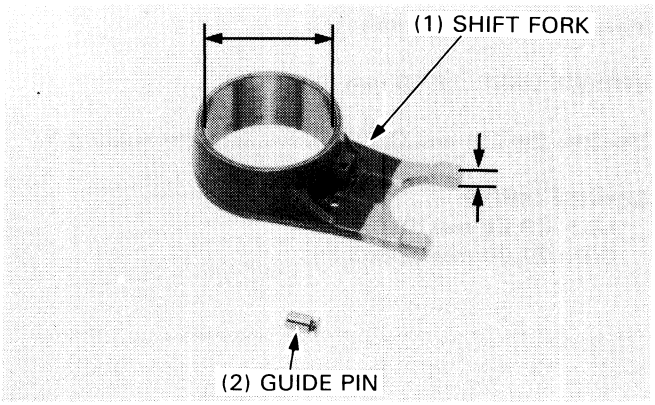
Measure the I.D. of the shift fork.

SERVICE LIMIT: 42.1 mm (1.66 in)

Measure the shift fork claw thickness.

SERVICE LIMIT: 5.70 mm (0.224 in)

Inspect the guide pins for wear or damage.



Check the gearshift drum for wear or damage.

Measure the gearshift drum O.D.

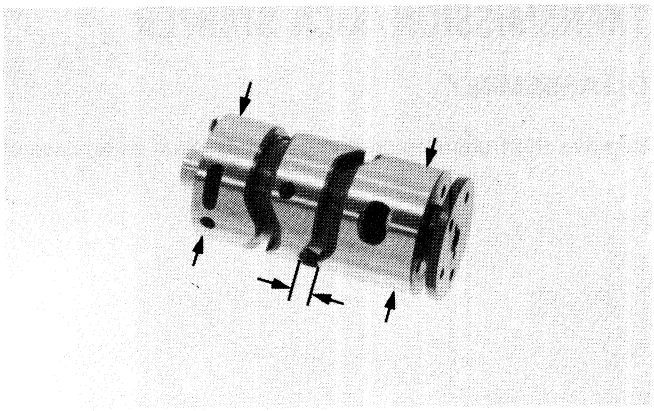
SERVICE LIMIT: 41.80 mm (1.646 in)

Calculate the shift fork-to-shift drum clearance.

SERVICE LIMIT: 0.2 mm (0.01 in)

Measure the gearshift drum groove width.

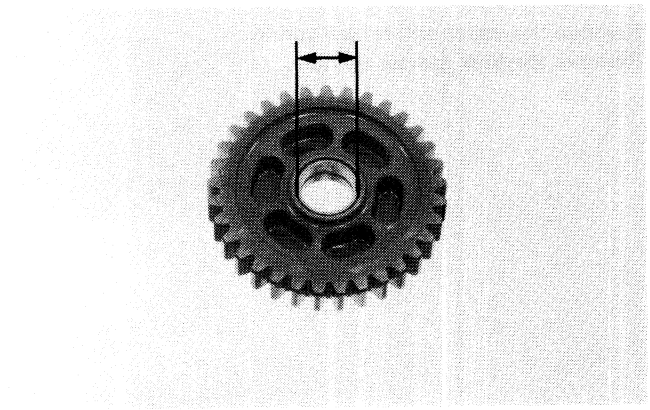
SERVICE LIMIT: 6.4 mm (0.25 in)



Remove the transmission gears.

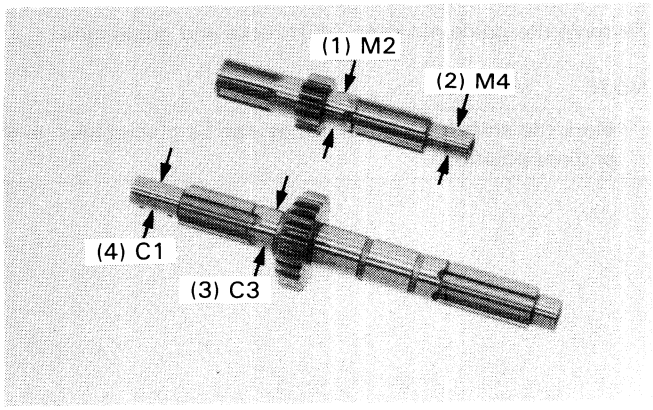
Measure each gear's I.D.

SERVICE LIMITS:
C1/M4: 14.10 mm (0.555 in)
M2: 18.08 mm (0.712 in)
C3: 20.10 mm (0.792 in)



Measure the countershaft and mainshaft O.D.

SERVICE LIMITS:
C1/M4: 13.93 mm (0.549 in)
M2: 17.93 mm (0.706 in)
C3: 19.93 mm (0.785 in)

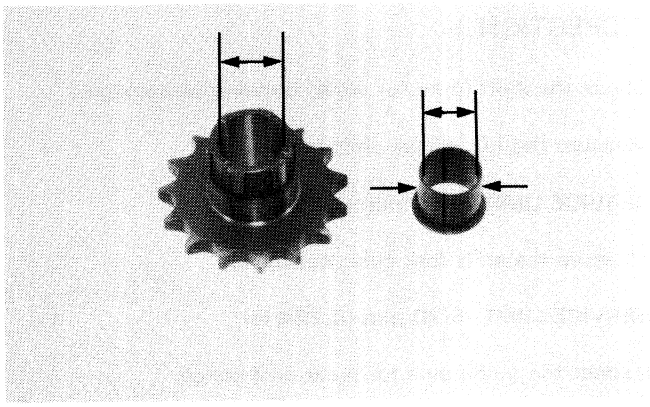


Measure the drive sprocket I.D.

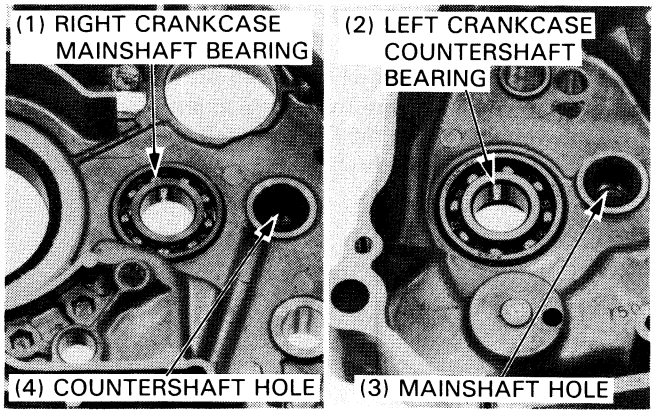
SERVICE LIMIT: 22.10 mm (0.871 in)

Measure the I.D. and O.D. of drive sprocket bushing B.

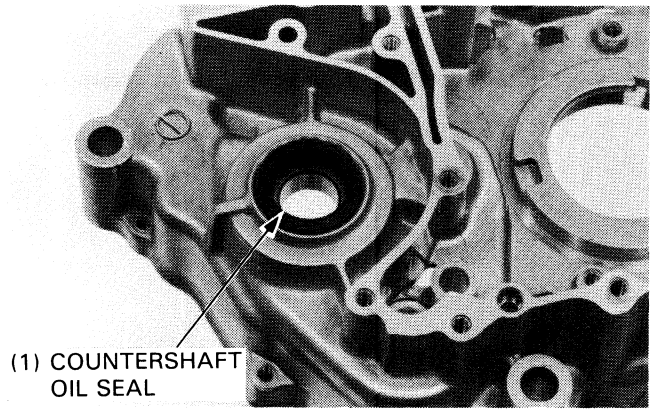
SERVICE LIMITS:
I.D.: 19.94 mm (0.786 in)
O.D.: 21.90 mm (0.863 in)



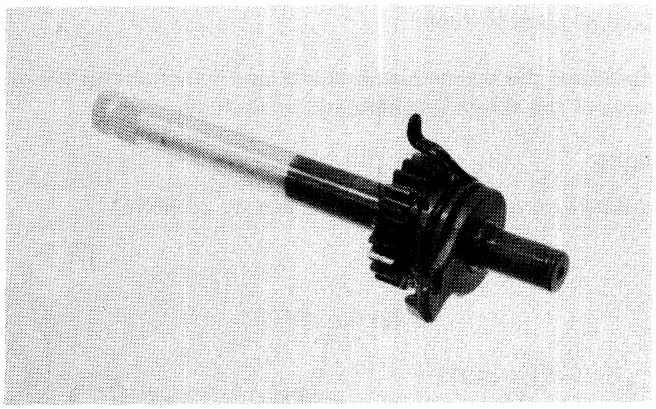
Check the bearings for excessive play or damage.
Check the shaft holes in the right and left crankcase for wear or damage.



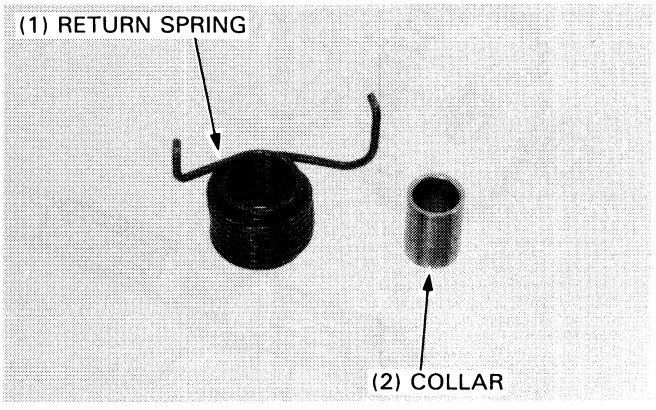
Check the countershaft oil seal for wear or damage and replace if necessary.



Check the kick starter spindle for wear or damage.

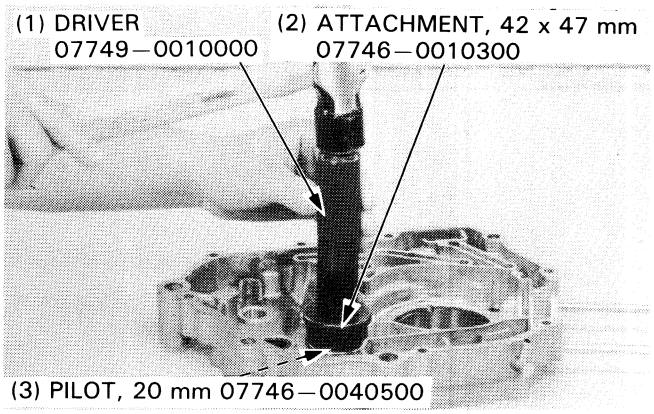


Check the return spring for bending or spread.
Check the collar for wear or damage.



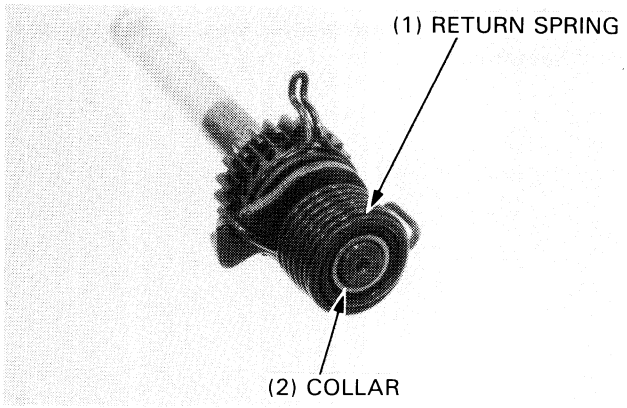
BEARING REPLACEMENT

Remove the countershaft oil seal from the left crankcase.
Remove the bearings from the right and left crankcases.
Drive new bearings into the right and left crankcase.
Install a new countershaft oil seal.



ASSEMBLY

Install the return spring and collar on the kick starter spindle.

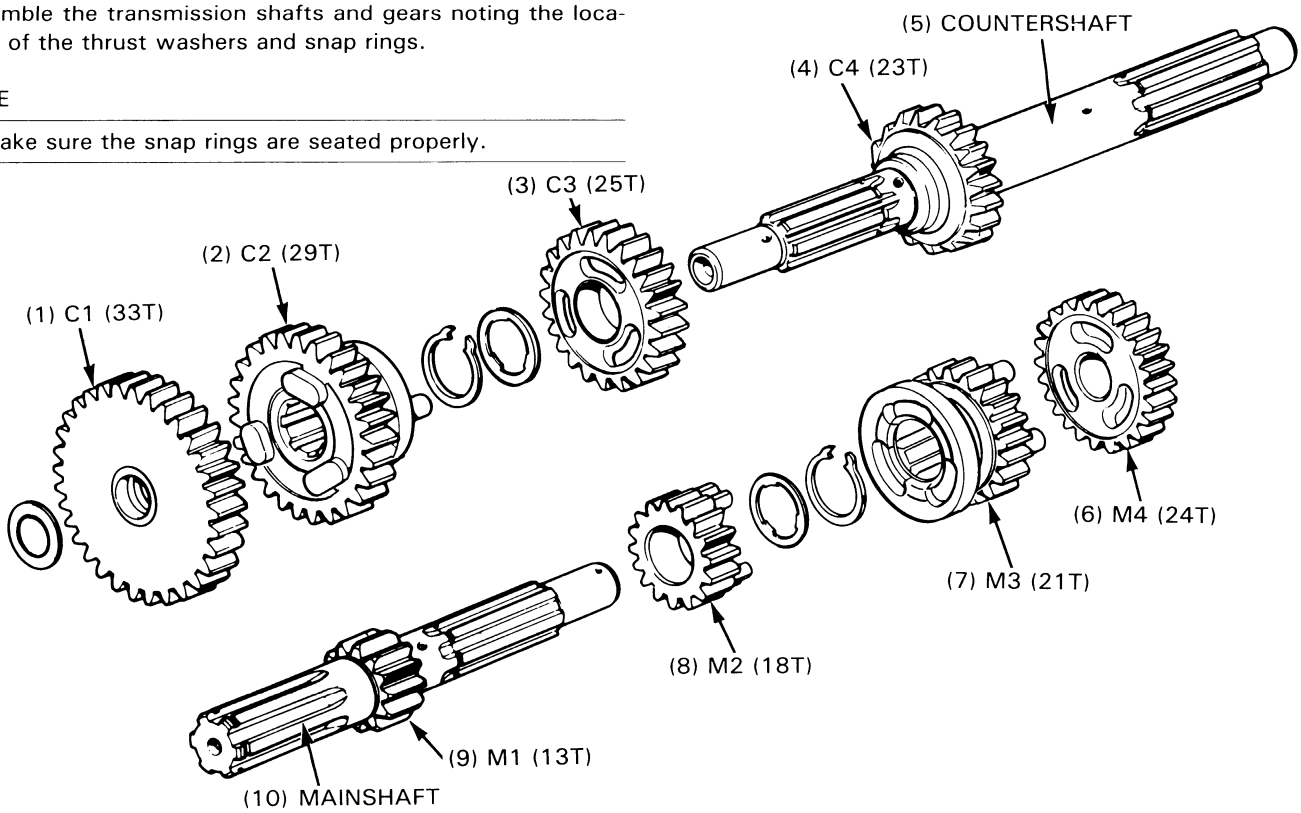


Coat all parts with oil.

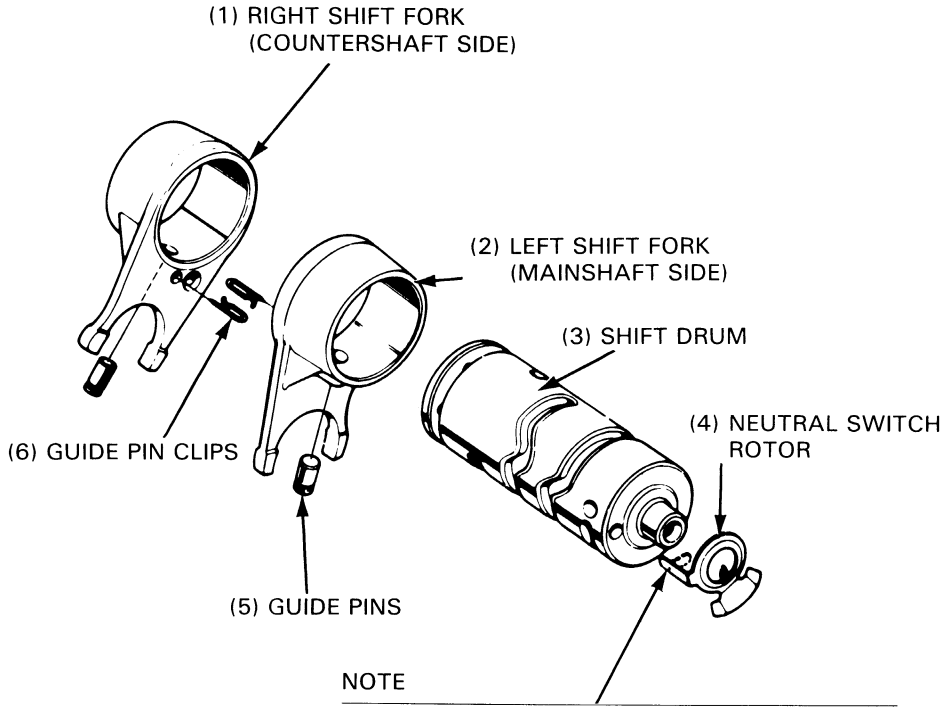
Assemble the transmission shafts and gears noting the locations of the thrust washers and snap rings.

NOTE

- Make sure the snap rings are seated properly.



Install the shift forks onto the shift drum.
Install the guide pins into the hole on the shift forks and secure with the guide pin clips.



NOTE

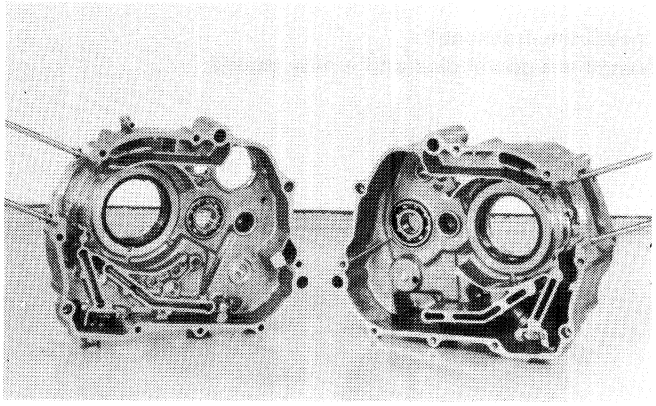
- Bend the tab of the rotor into the drum.

CRANKCASE ASSEMBLY

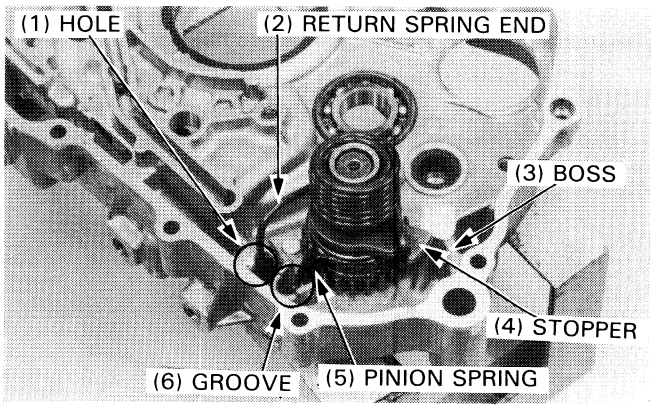
Clean the crankcase mating surfaces before assembling.

NOTE

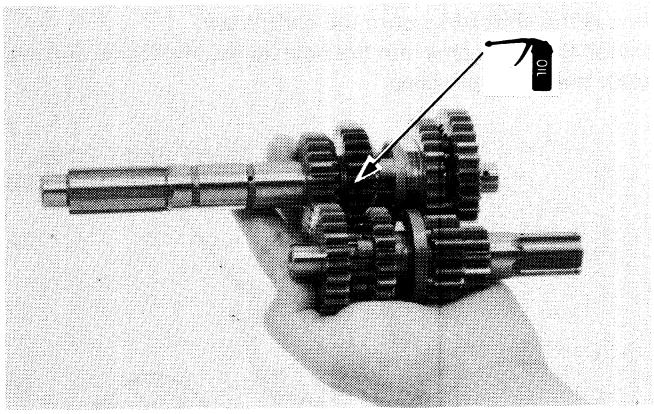
- Dress the surfaces with an oil stone if necessary to correct any minor roughness or irregularities.
- After cleaning, lubricate the crankshaft bearings and other contacting surfaces with clean engine oil.



Install the kick starter:
— Line up the pinion spring with the groove in the right crankcase.
— Align the stopper with the boss.
— Place the return spring end into the cut out in the right crankcase as shown.

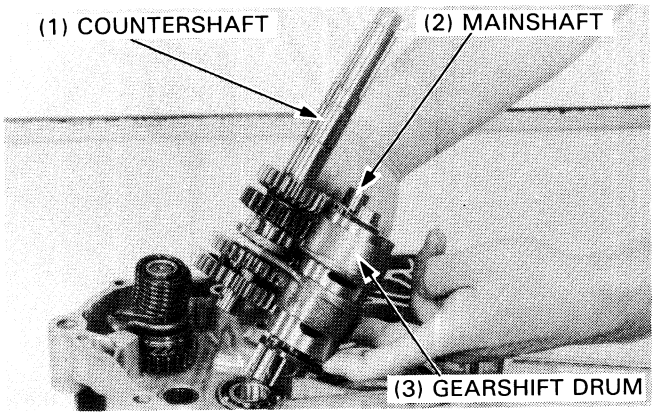


Assemble the gearshift drum, countershaft and mainshaft. Apply clean engine oil before installation.

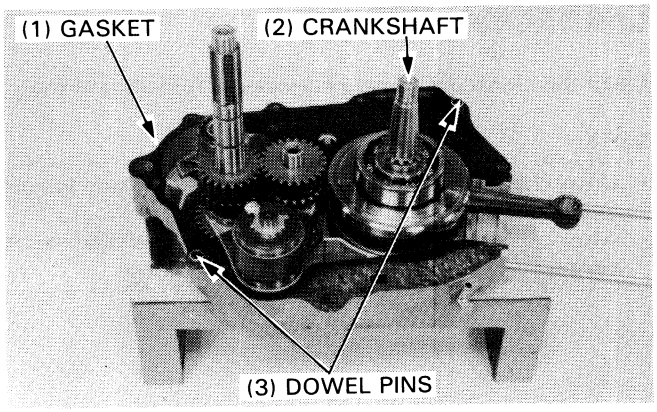


Install the gearshift drum, countershaft and mainshaft assemblies together in the left crankcase.

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



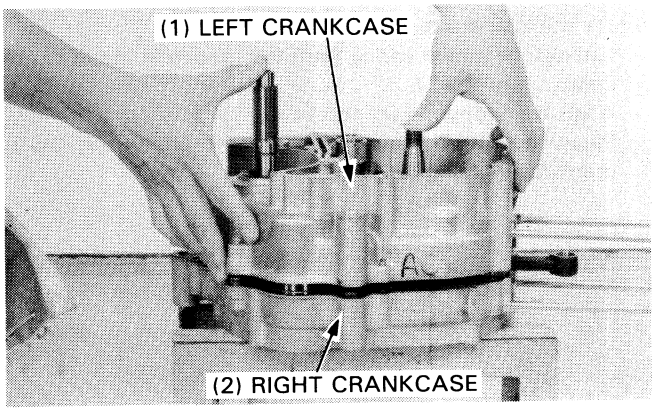
Install the crankshaft.
Install the dowel pins and a new gasket.



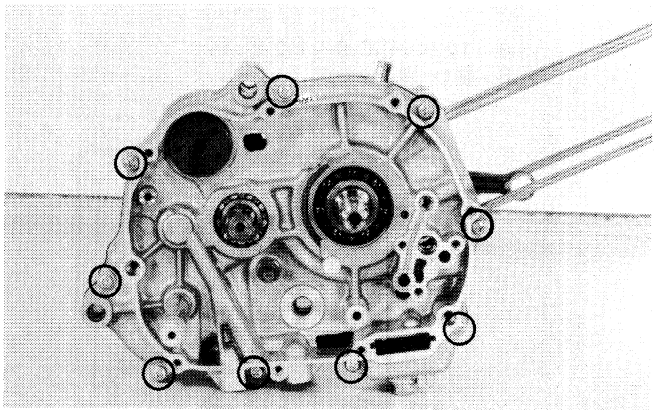
Assemble the right and left crankcase halves.

NOTE

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

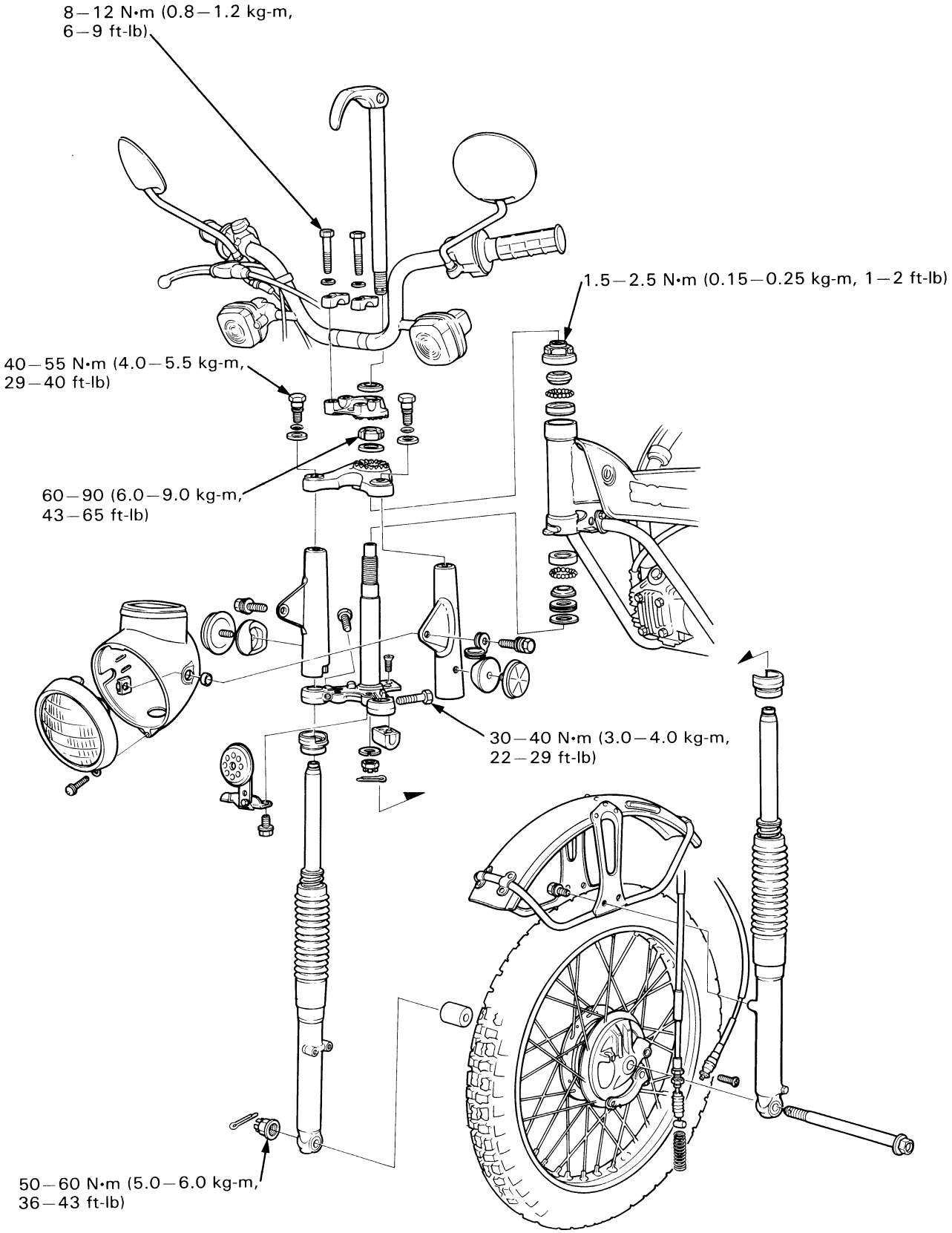


Tighten the nine 6 mm mounting screws in a crisscross pattern in 2 or 3 steps.



Install the gearshift drum setting bolt.
Install the following:
- Alternator, cam chain tensioner and left crankcase cover (Section 9).
- Sub-transmission (Section 10).
- Clutch and gearshift linkage (Section 8).
- Cylinder and piston (Section 7).
- Cylinder head (Section 6).

Install the engine (Section 5).


8—12 N•m (0.8—1.2 kg-m,
6—9 ft-lb)
1.5—2.5 N•m (0.15—0.25 kg-m, 1—2 ft-lb)
40—55 N•m (4.0—5.5 kg-m,
29—40 ft-lb)
60—90 (6.0—9.0 kg-m,
43—65 ft-lb)
30—40 N•m (3.0—4.0 kg-m,
22—29 ft-lb)
50—60 N•m (5.0—6.0 kg-m,
36—43 ft-lb)

12. FRONT WHEEL/BRAKE/SUSPENSION/STEERING

SERVICE INFORMATION

GENERAL

WARNING

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

- This section describes removal, installation and servicing of the front wheel, brake, front fork and steering stem.
- Support the engine with a jack or a block to raise the front wheel off the ground before servicing them.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Front axle runout		—	0.2 mm (0.01 in)
Front wheel rim runout	Radial	—	2.0 mm (0.08 in)
	Axial	—	2.0 mm (0.08 in)
Front brake drum I.D.		110.0 mm (4.33 in)	111.0 mm (4.37 in)
Front brake lining thickness		4.0 mm (0.16 in)	2.0 mm (0.08 in)
Front fork spring free length		203 mm (8.0 in)	185 mm (7.3 in)
Front fork bushing I.D.		27.000–27.033 mm (1.0630–1.0643 in)	27.04 mm (1.065 in)
Front fork piston O.D.		30.95–30.97 mm (1.219–1.220 in)	30.85 mm (1.215 in)
Front fork tube sliding surface O.D.		26.939–26.960 mm (1.0606–1.0614 in)	26.93 mm (1.060 in)
Front fork tube runout		—	0.12 mm (0.005 in)
Front fork slider I.D.		31.000–31.039 mm (1.221–1.223 in)	31.10 mm (1.225 in)
Front fork oil capacity		135 cc (4.6 ozs)	—

TORQUE VALUES

Handlebar holder bolt	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Front axle nut	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Front fork cap bolt	40–55 N·m (4.0–5.5 kg-m, 29–40 ft-lb)
Front fork bottom bridge pinch bolt	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)
Steering head top thread nut	1.5–2.5 N·m (0.15–0.25 kg-m, 1–2 ft-lb)
Steering stem nut	60–90 N·m (6.0–9.0 kg-m, 43–65 ft-lb)

TOOLS

Special

Socket wrench	07916–3710100
Ball race driver	07944–1150001
Steering stem driver	07946–GC40000
Snap ring pliers	07914–3230001

Common

Bearing remover shaft	07746—0050100	or commercially available in U.S.A.
Bearing remover head, 12 mm	07746—0050300	
Driver	07749—0010000	
Attachment, 37 x 40 mm	07746—0010200	
Attachment, 42 x 47 mm	07746—0010300	
Pilot, 12 mm	07746—0040200	
Fork seal driver	07747—0010100	
Attachment B	07747—0010300	
Extension	07716—0020500	or commercially available in U.S.A
Wrench, 26 x 30 mm	07716—0020203	

TROUBLESHOOTING

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

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

Front wheel wobbling
- Distorted rim
- Worn front wheel bearing
- Distorted spokes
- Faulty tire
- Axle not tightened properly

Soft suspension
- Weak fork spring

Hard suspension
- Bent front fork

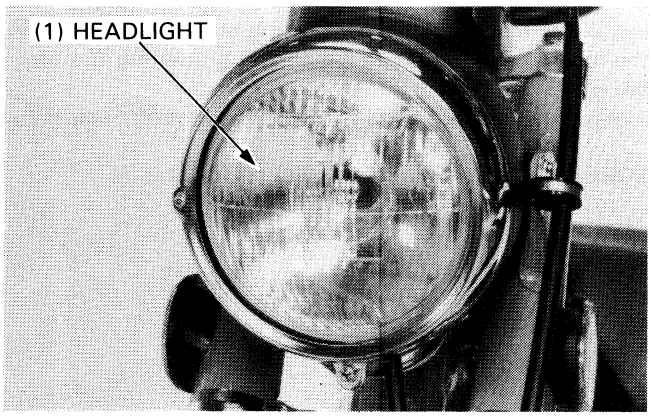
Front suspension noise
- Loose suspension fasteners
- Damaged front shock absorber
- Bent front fork

Improper brake performance
- Incorrect adjustment of lever
- Contaminated brake shoes
- Worn brake shoes
- Worn brake cam
- Worn brake drum
- Improperly engaged brake arm serrations

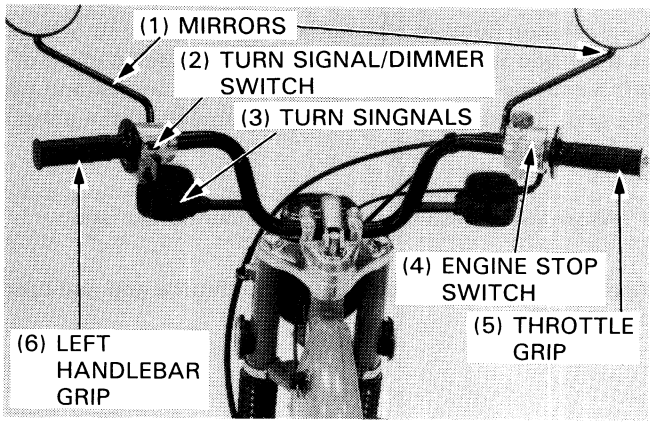
HANDLEBAR

REMOVAL

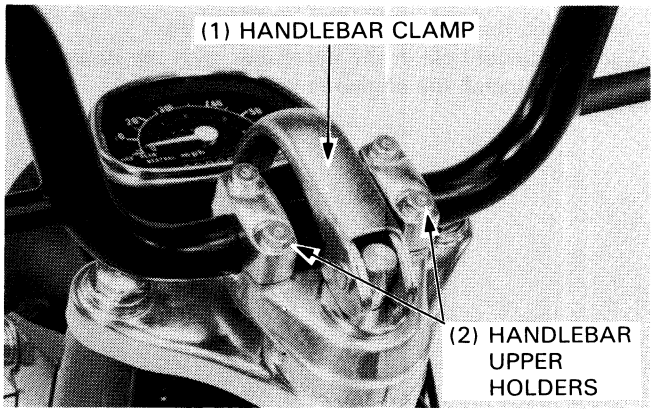
Remove the headlight.
Disconnect the wire connectors in the headlight case.



Remove the following parts:
– rear view mirrors and wire harness band.
– engine stop switch and throttle grip.
– turn signal/dimmer switch assembly and left hardlebar grip.
– front turn signals.

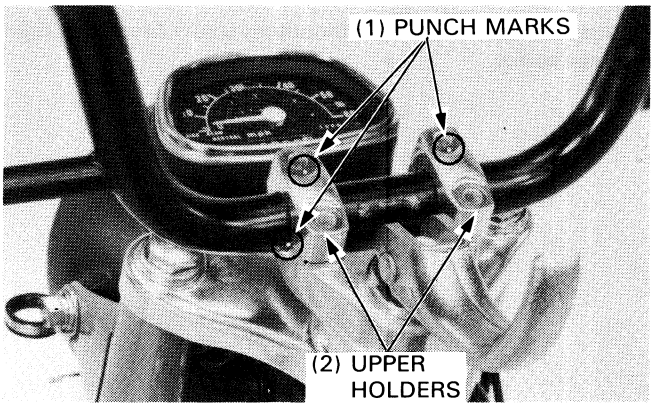


Release the handlebar clamp.
Remove the handlebar upper holder bolts, handlebar upper holders and handlebar.



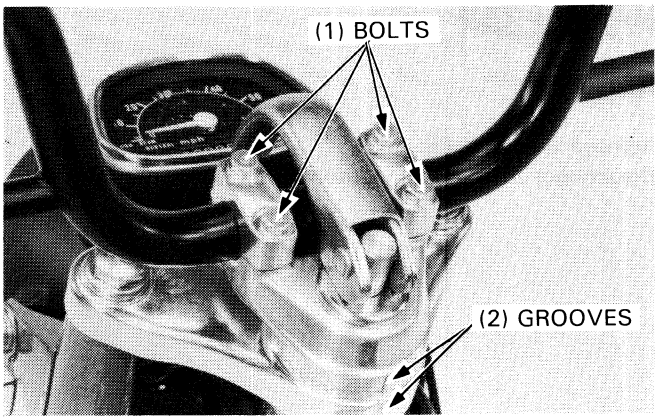
INSTALLATION

Install the handlebar, aligning the punch mark on the handlebar with the top of the lower holder.
Place the upper holders on the handlebar with the punch marks facing forward.



Install the handlebar clamp, making sure that the groove on the lower holder is aligned with the groove on the fork top bridge.
Tighten the forward bolts first, then tighten the rear bolts.

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

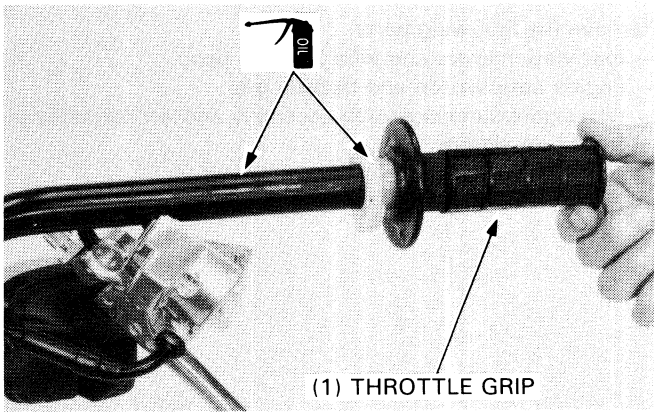


Apply Honda Bond A, Honda Hand Grip Cement (U.S.A. only) to the inside surface of the grip and to the clean surface of the left handlebar and throttle pipe. Wait 3-5 minutes and install the grip. Rotate the grip for even application of the adhesive.

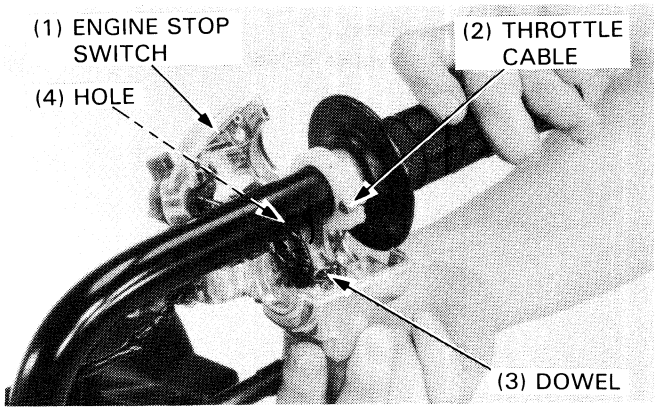
NOTE

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

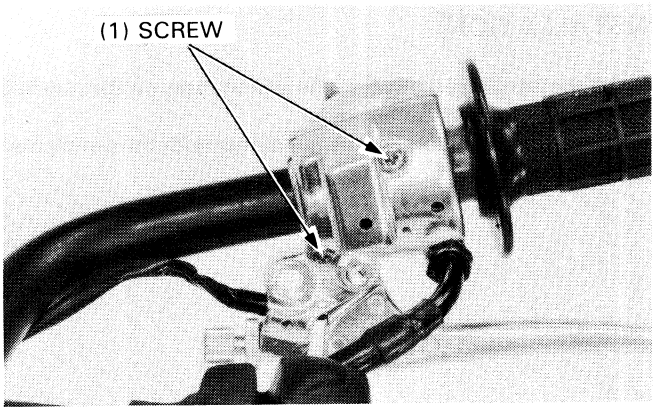
Apply oil to the sliding surface of the throttle grip and handlebar.



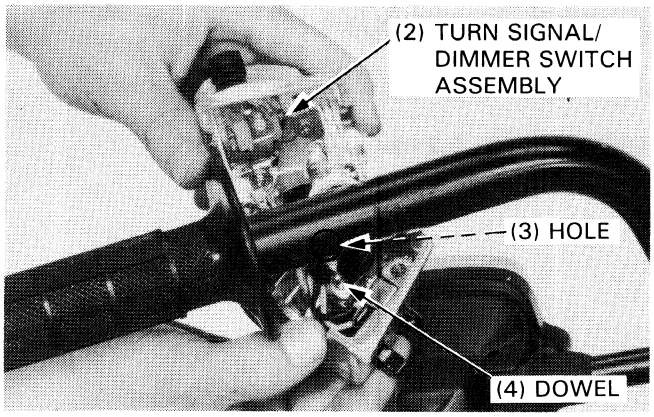
Connect the throttle cable to the throttle grip.
Align the dowel hole in the handlebar with the dowel on the switch and install the engine stop switch.



Tighten the forward switch mounting screw first, then tighten the rear screw.

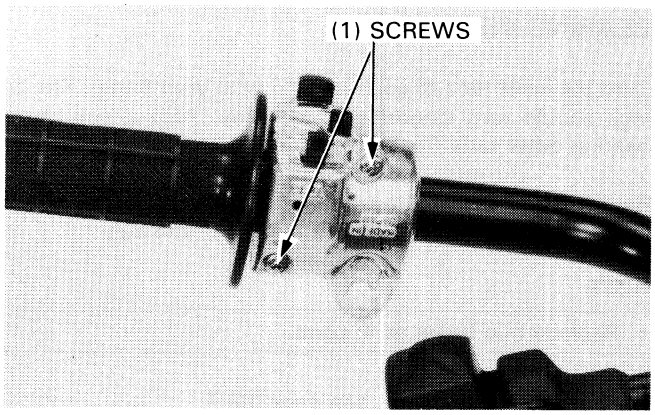


Align the dowel hole in the handlebar with the dowel on the switch and install the turn signal/dimmer switch assembly.



Tighten the forward switch mounting screw first, then tighten the rear screw.

Install the front turn signals, rear view mirrors and wire harness band.
Connect the wire connectors in the headlight case and install the headlight.

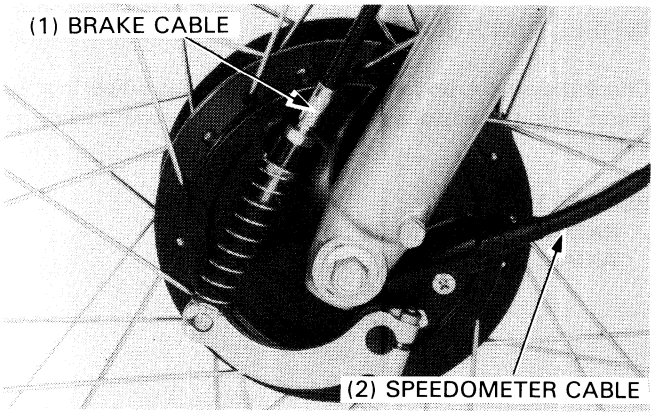


FRONT WHEEL

REMOVAL

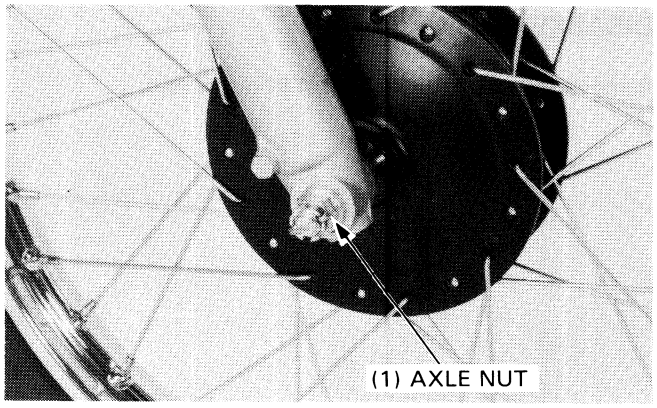
Raise the front wheel off the ground by placing a box or workstand under the engine.

Disconnect the brake cable from the brake arm.
Disconnect the speedometer cable from the speedometer gearbox.



Remove the axle nut.
Pull the axle out and remove the front wheel.

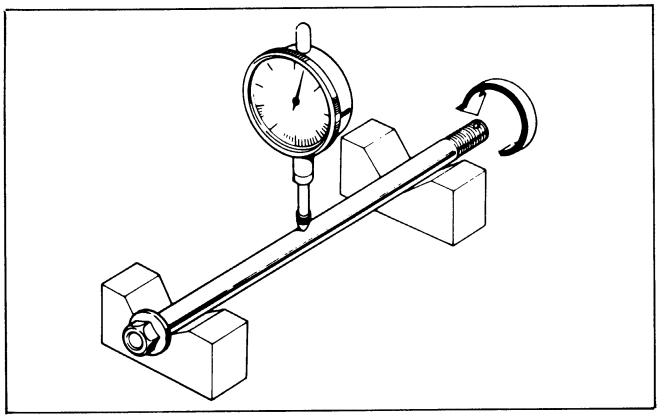
Remove the brake panel.



FRONT AXLE RUNOUT

Set the axle in V blocks and measure the runout.

SERVICE LIMIT: 0.2 mm (0.01 in)



BEARING INSPECTION

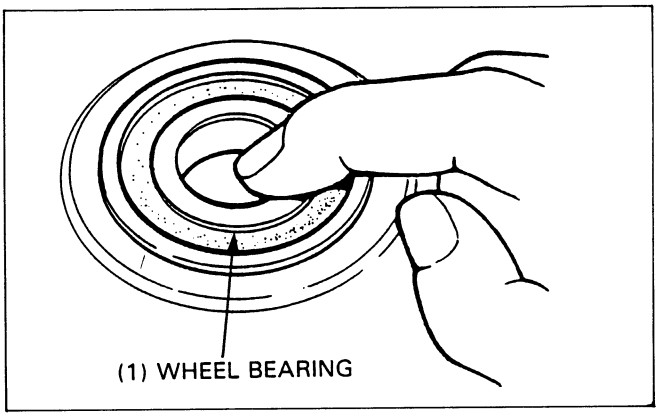
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

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.

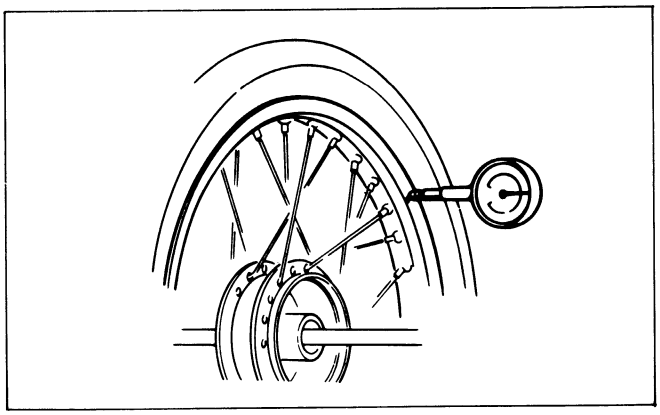
For bearing replacement, see page 12-7.



WHEEL RIM RUNOUT

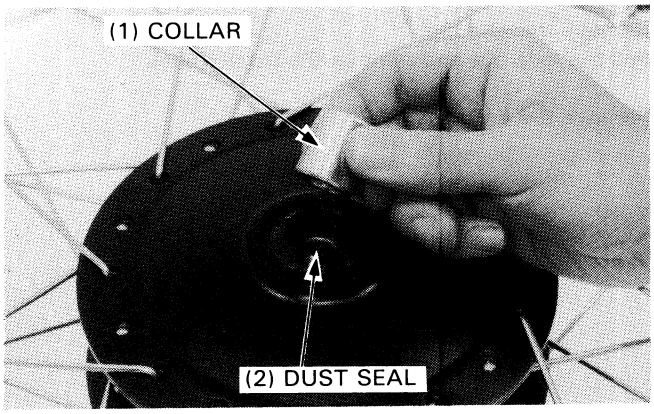
Check the wheel rim for runout by placing the wheel in a truing stand. Spin the wheel by hand and read the runout using a dial indicator.

SERVICE LIMIT
RADIAL: 2.0 mm (0.08 in)
AXIAL: 2.0 mm (0.08 in)



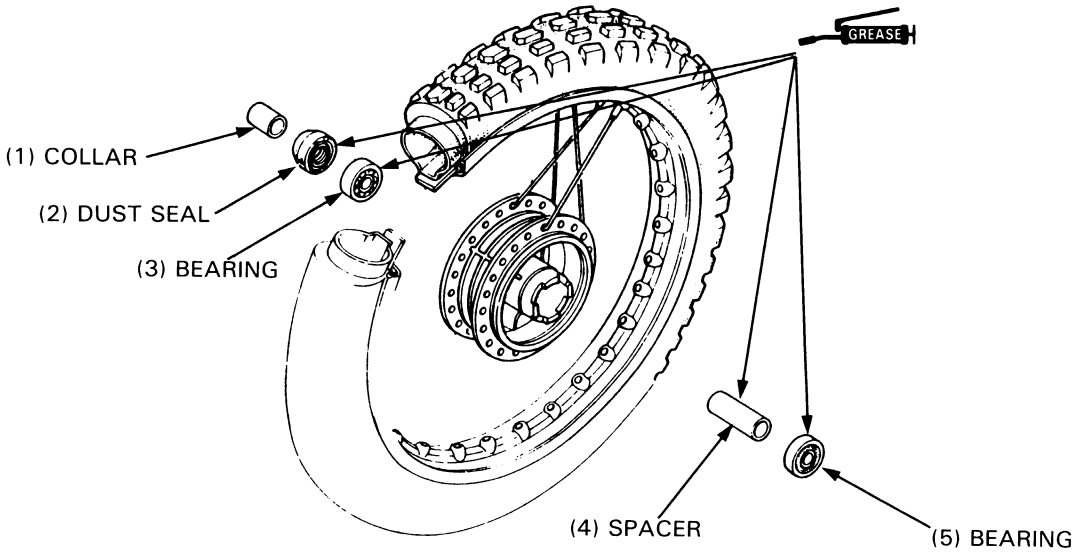
DISASSEMBLY

Remove the collar and dust seal from the hub.



Remove the wheel bearings and spacer.

ASSEMBLY



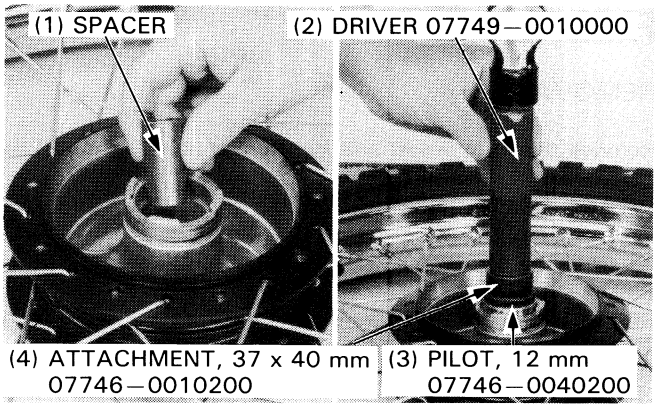
Pack the front bearing cavities with grease.
Drive the right wheel bearing into the hub.
Place the spacer into the hub and drive the left bearing into the hub.

WARNING

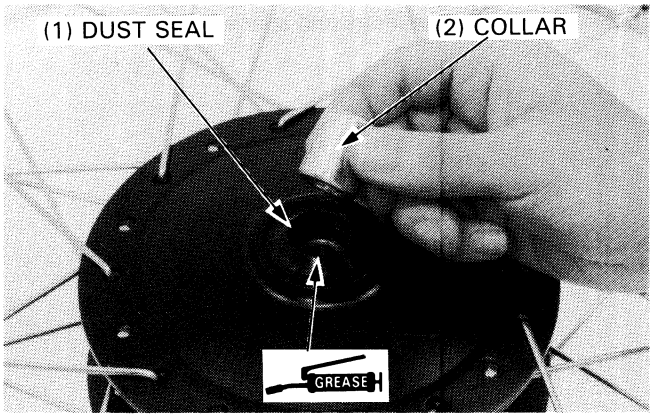
- ***Do not get grease on the brake drum or stopping power will be reduced.***

NOTE

- Make sure that the sealed side of the bearing is facing out.



Apply grease to the lip of a new dust seal.
Install the dust seal and collar into wheel hub.



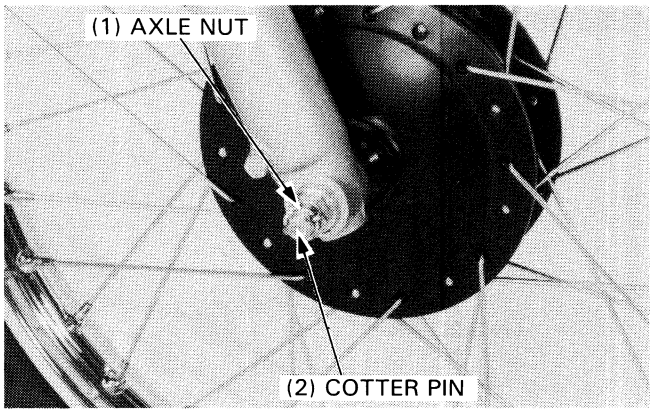
INSTALLATION

Install the brake panel onto the front wheel hub.
Install the axle from the left side, through the left fork leg, wheel hub and right fork leg.

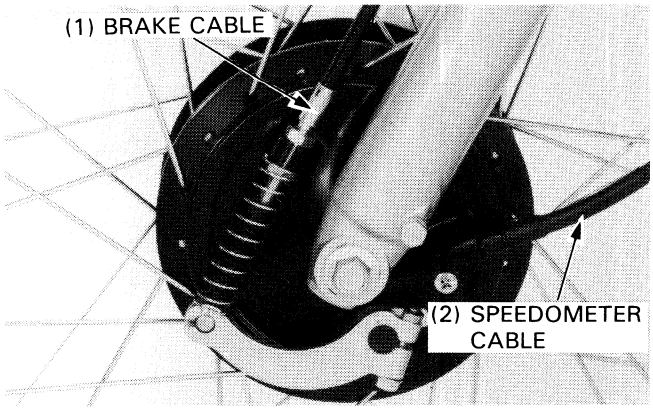
Install the axle nut and tighten to the specified torque.

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

Install a new cotter pin.



Connect the speedometer and brake cables.
Adjust the brake lever free play (Page 3-10).



FRONT BRAKE

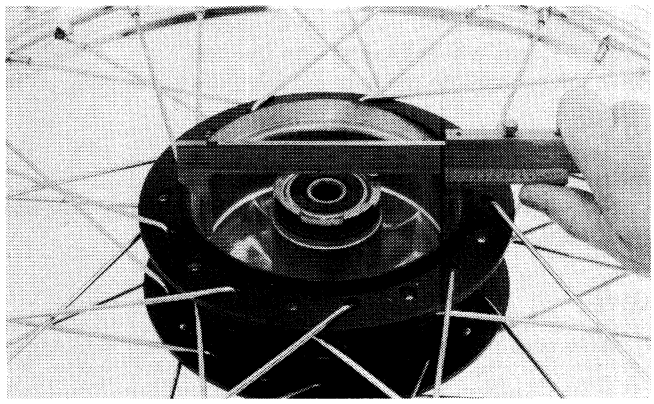
REMOVAL

Remove the front wheel and front brake panel (page 12-5).

BRAKE DRUM INSPECTION

Measure the I.D. of the brake drum.

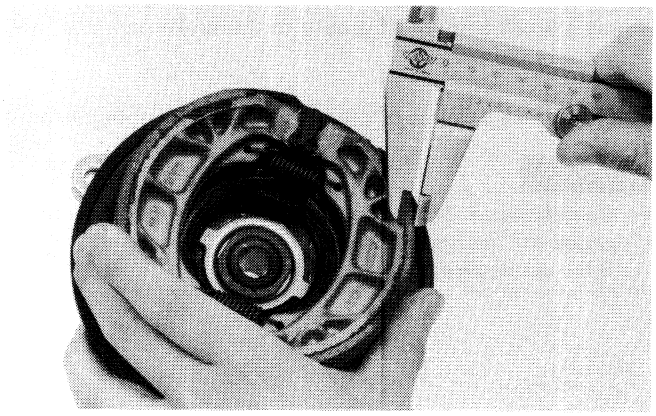
SERVICE LIMIT: 111.0 mm (4.37 in)



BRAKE LINING INSPECTION

Check the brake shoe springs for fatigue or damage and check the brake cam for wear or cracks.
Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)

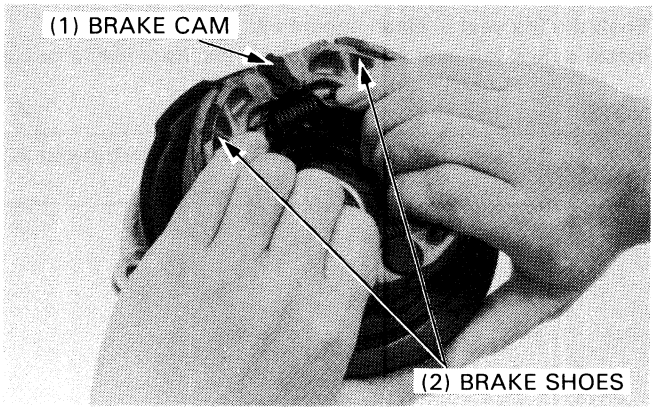


BRAKE PANEL DISASSEMBLY

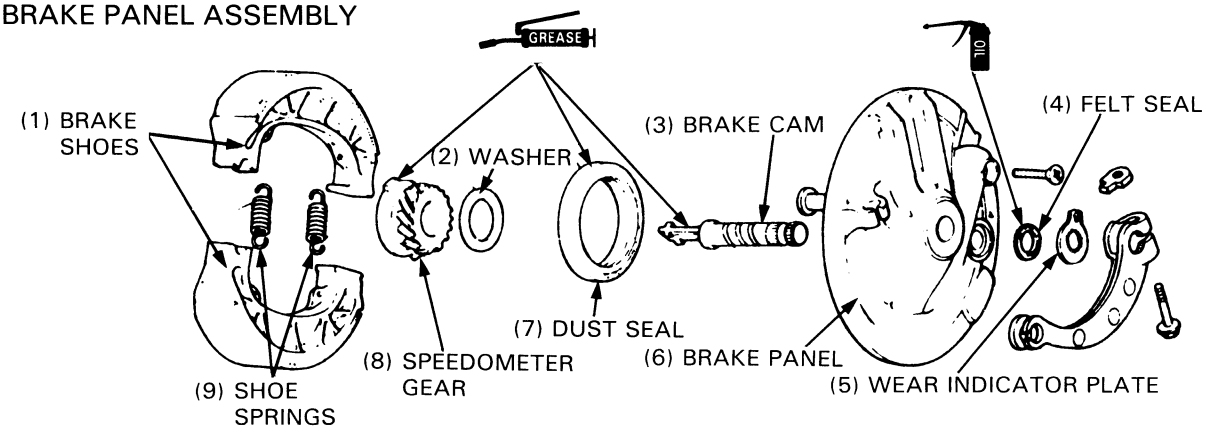
Force the brake shoes out and remove them by hand.

Remove the brake arm, wear indicator plate and felt seal and pull the brake cam out.

Remove the speedometer gear and dust seal.

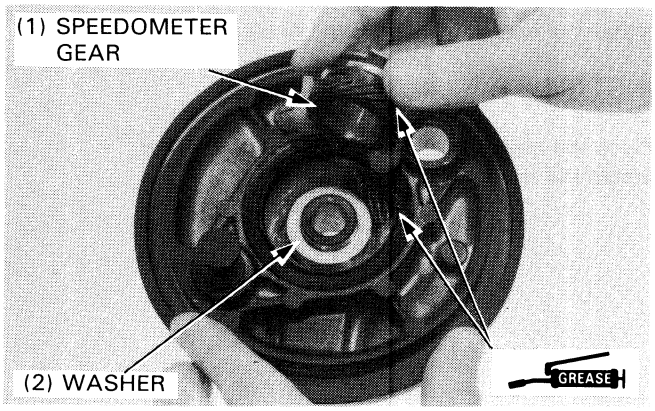


BRAKE PANEL ASSEMBLY



Install the dust seal into brake panel.

Apply grease to the speedometer gear.
Install the washer and speedometer gear in the brake panel.

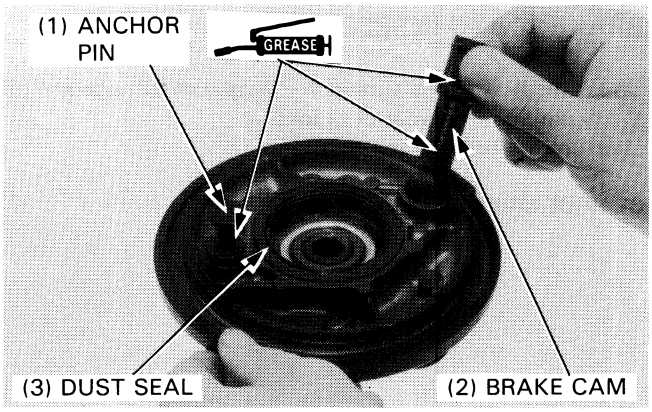


Apply a small amount of grease to the brake cam and insert it into the brake panel.

Apply a small amount of grease to the brake shoe anchor pin.

WARNING

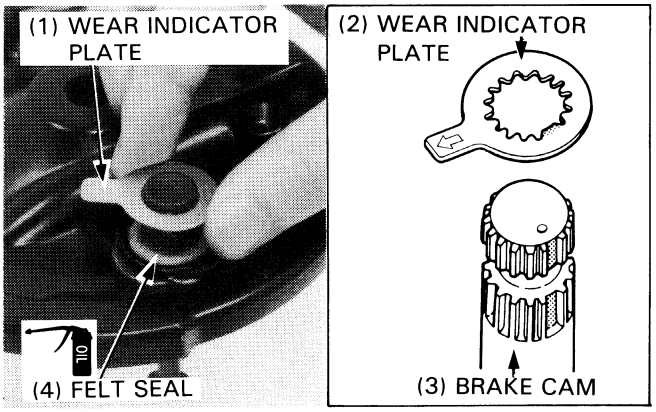
- ***Contaminated brake linings reduce stopping power. Keep grease off the brake linings.***
  Wipe excess grease off the brake cam.



Soak the felt seal in clean engine oil.
Install a new felt seal and the brake shoe wear indicator plate.

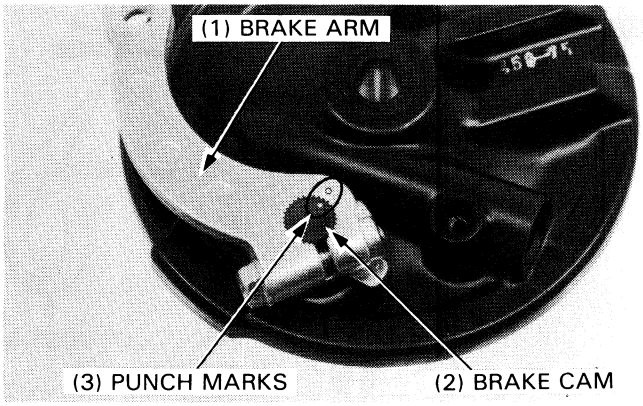
NOTE

- Align the boss on the indicator plate with the cut-out in the brake cam.



Align the punch marks and install the brake arm onto the brake cam.

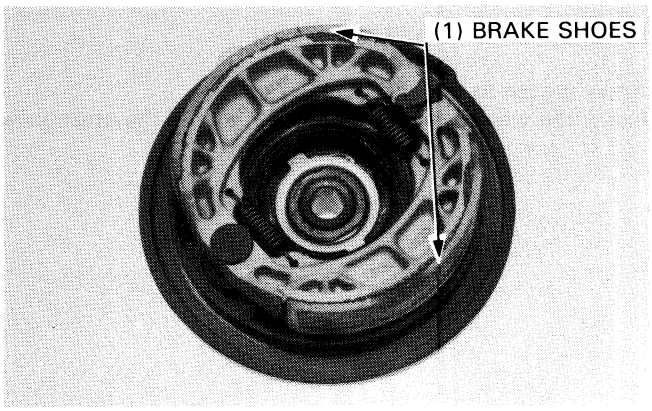
Tighten the brake arm bolt.



Install the brake shoes onto the brake panel.

INSTALLATION

Place the brake panel assembly into the wheel.
Install the front wheel (Page 12-8).

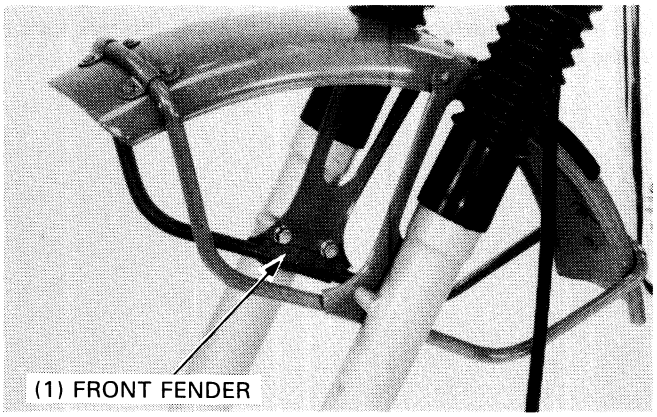


FRONT FORK

REMOVAL

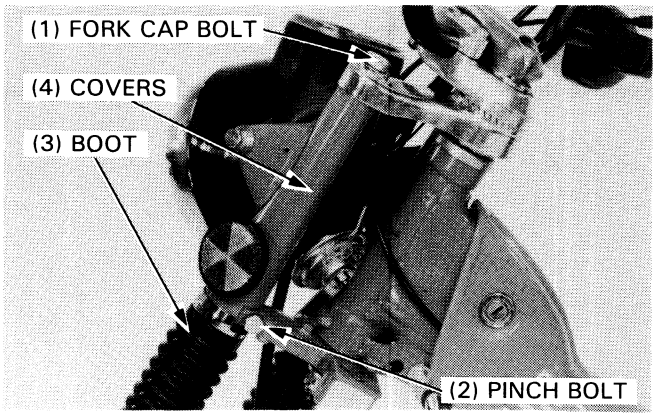
Remove the front wheel (Page 12-5).

Remove the front fender bolts and the fender.



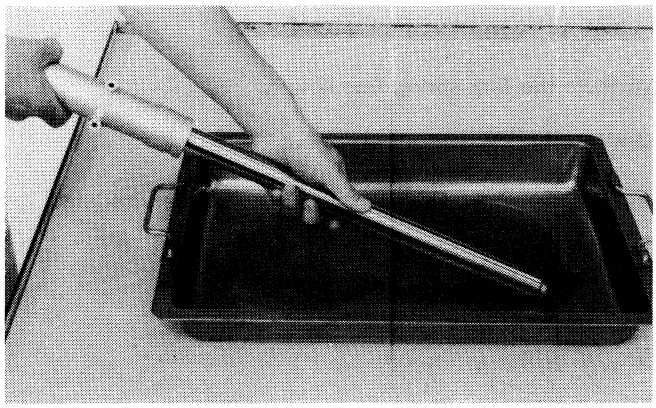
Remove the fork cap bolts and loosen the fork pinch bolts. Remove the front forks by pulling them down and out of the covers.

Remove the fork boots.

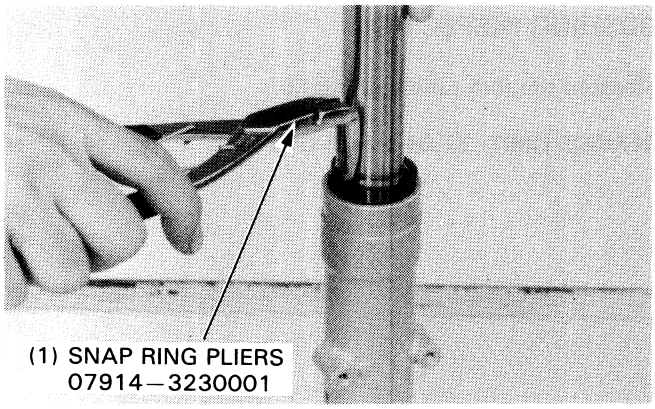


DISASSEMBLY

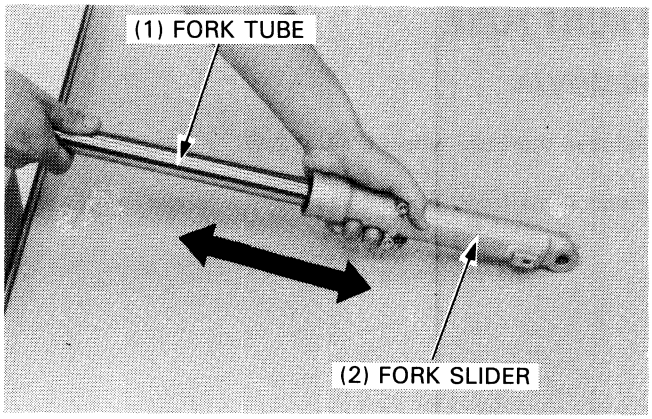
Empty the fork fluid by pumping the fork slowly several times.



Remove the snap ring.

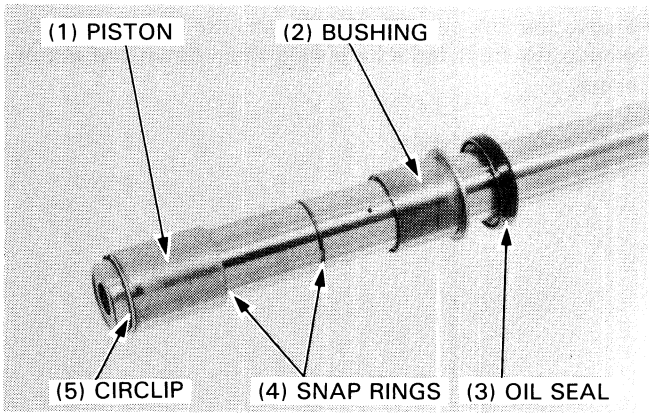


Use repeated push-pull movements to work the fork tube out of the slider.



Remove the circlip and fork piston.

Remove the oil seal, busing and snap rings from the fork tube.

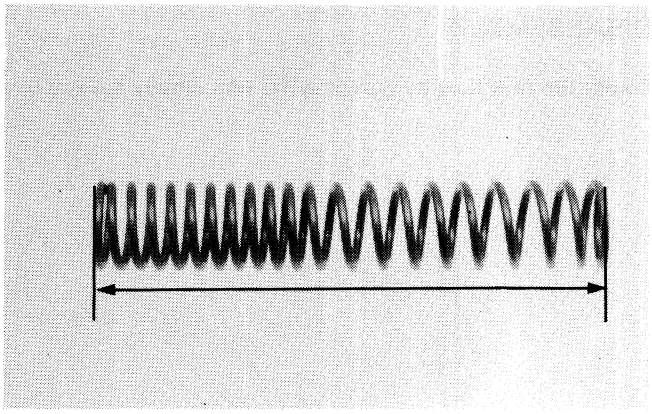


FORK SPRING INSPECTION

Measure the fork spring free length.

SERVICE LIMIT: 185 mm (7.3 in)

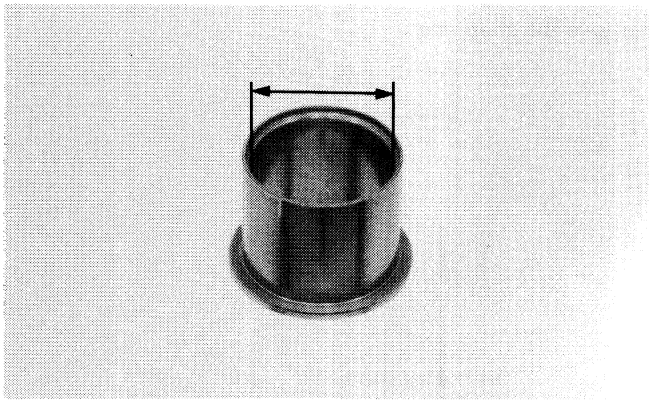
Replace the spring if it is shorter than the service limit.



BUSHING INSPECTION

Measure the fork tube bushing I.D.

SERVICE LIMIT: 27.04 mm (1.065 in)

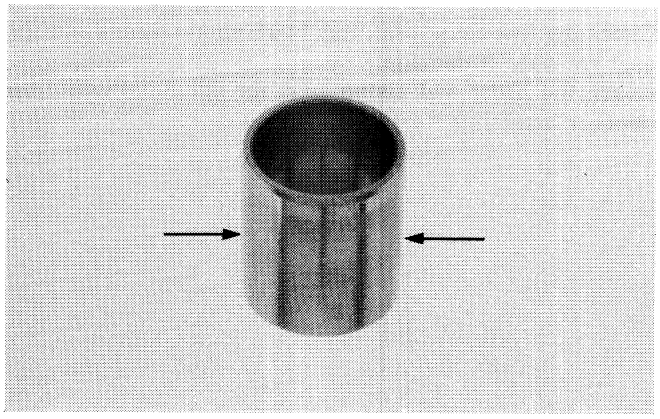


FORK PISTON/FORK TUBE/ FORK SLIDER INSPECTION

Check the piston for wear or damage.

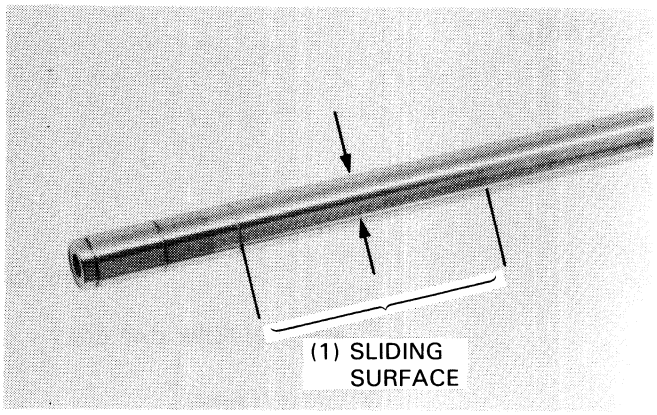
Measure the piston O.D.

SERVICE LIMIT: 30.85 mm (1.215 in)



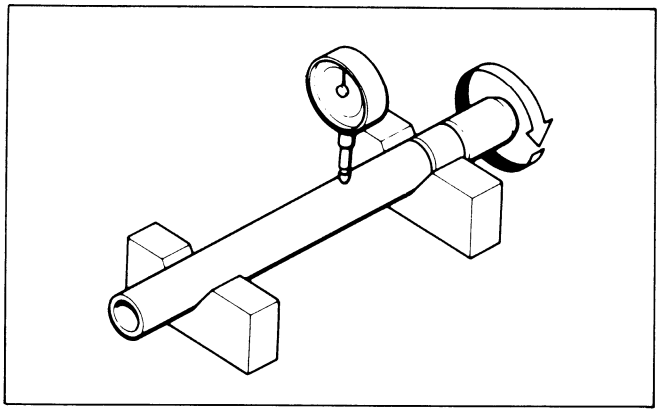
Measure the fork tube sliding surface O.D.

SERVICE LIMIT: 26.93 mm (1.060 in)



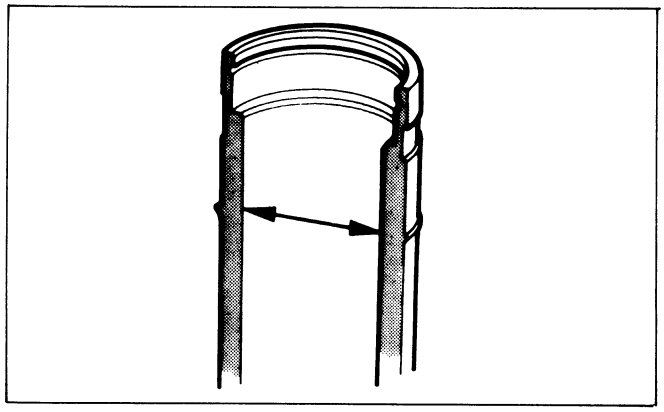
Set the fork tube in V blocks and read the runout.

SERVICE LIMIT: 0.12 mm (0.005 in)

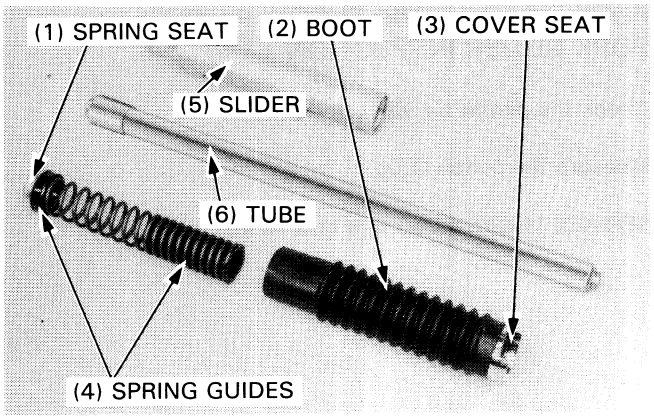


Measure the fork slider I.D.

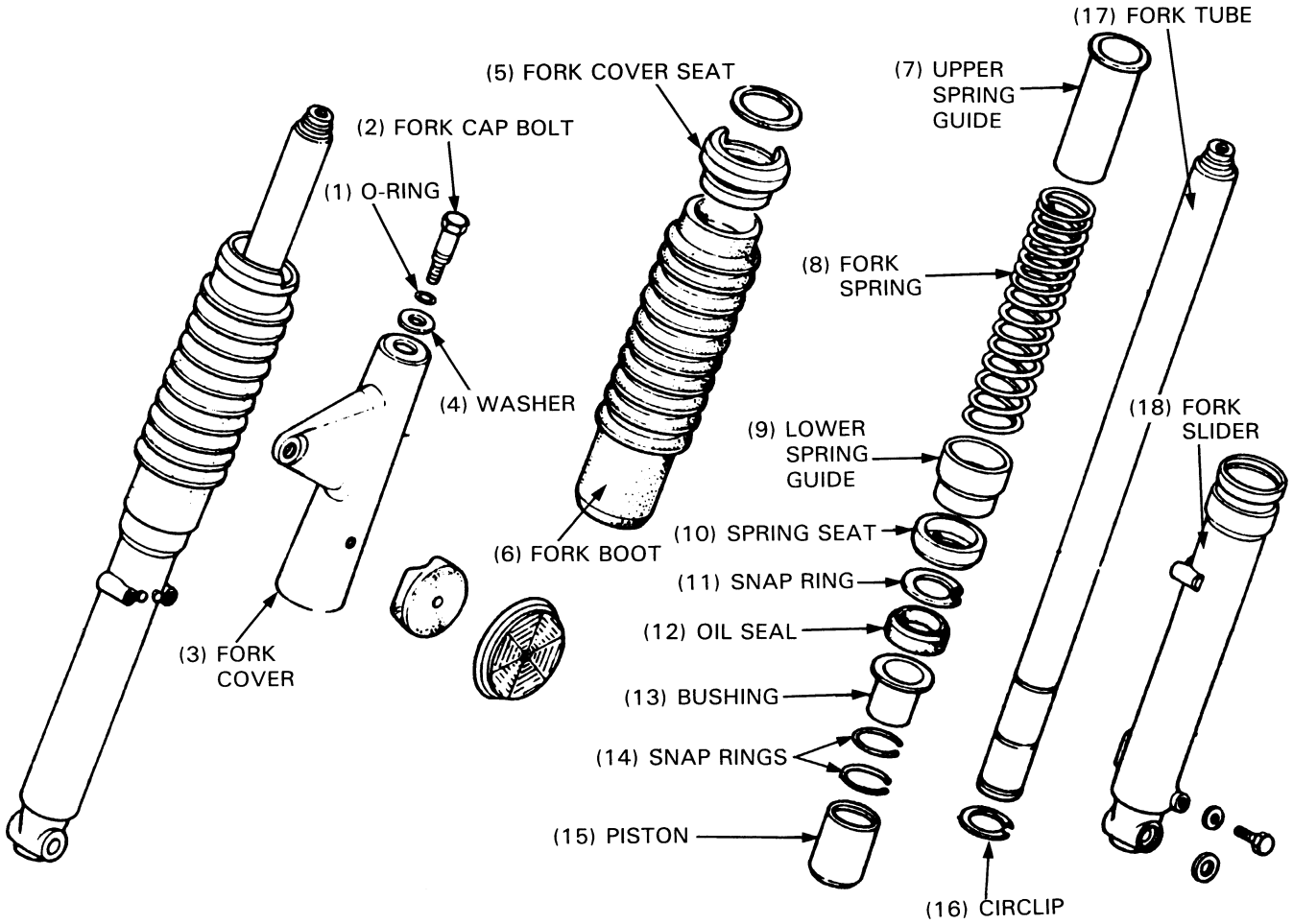
SERVICE LIMIT: 31.10 mm (1.225 in)



Check the fork cover seat, fork boot, spring guides and spring seat for wear or damage.
Check the slider and piston tube for abnormal wear, bend, dents or scratches.



ASSEMBLY

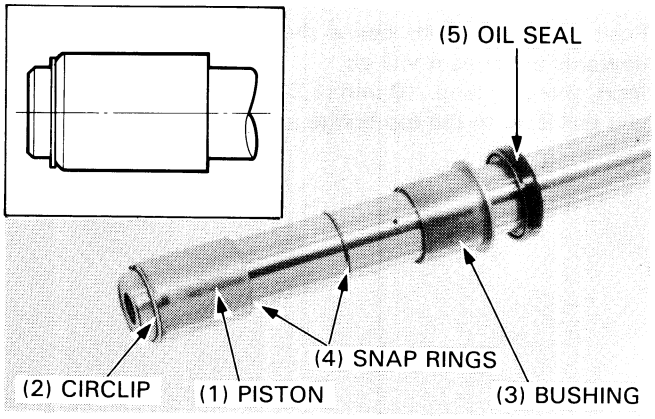


Install the snap rings, piston, circlip and bushing on the fork tube.

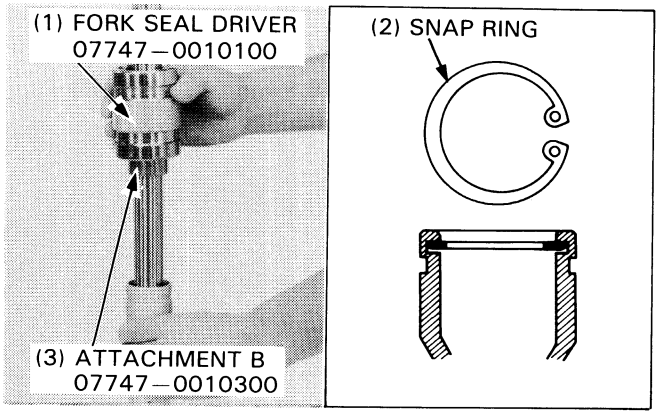
NOTE

- Be careful of the decided direction of fork piston as shown.

Coat the lip of a new oil seal with the recommended fork oil (see below) and place it over the fork tube with its marking facing up.



Position the fork tube in the slider.
Drive the oil seal into place using the fork seal driver and attachment until the snap ring groove is visible.
Install the snap ring with the sharp edge end facing up.

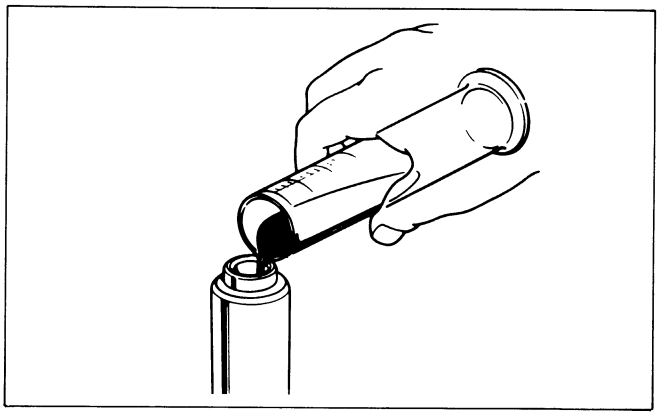


Pour in the specified amount of fork oil.

RECOMMENDED OIL: ATF
CAPACITY: 135 cc (4.6 ozs)

NOTE

- Wipe away any excess fluid from each fork.

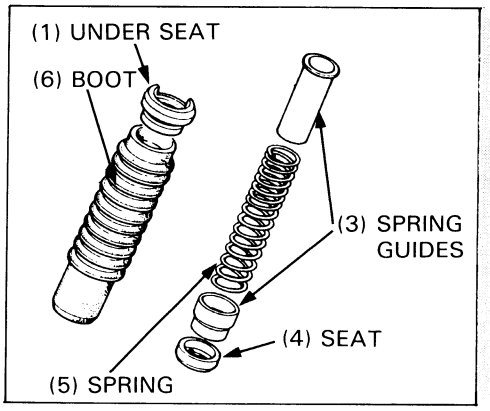


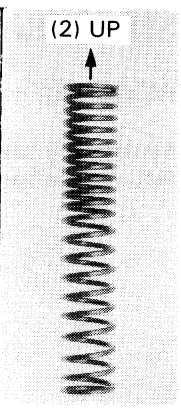
INSTALLATION

Install the spring seat, lower spring guide, spring, upper spring guide, boot and fork cover seat on the fork pipe.

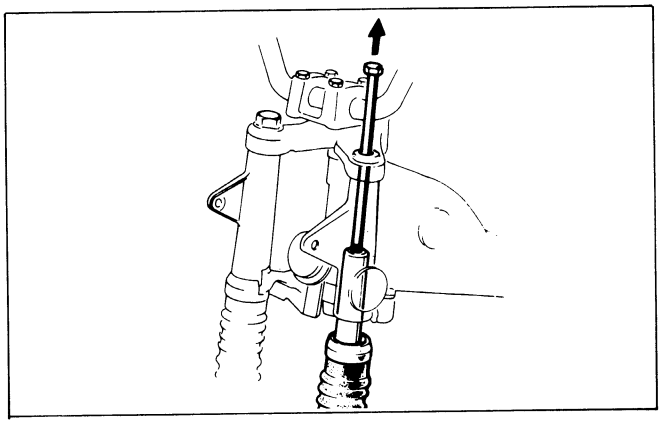
NOTE

- Install the spring with its small coil end facing up.



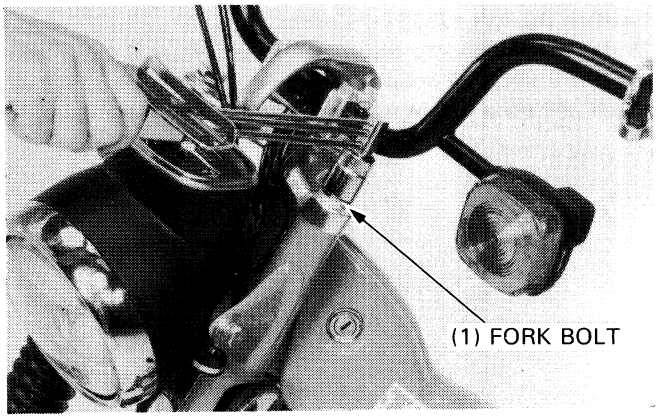


Position the fork tube below the cover and carefully work it upwards as far as it will go.
Next, thread a long, 10 mm (1.5 pitch) bolt into the fork tube and pull it up to the top bridge as shown.



Tighten the fork cap bolt.

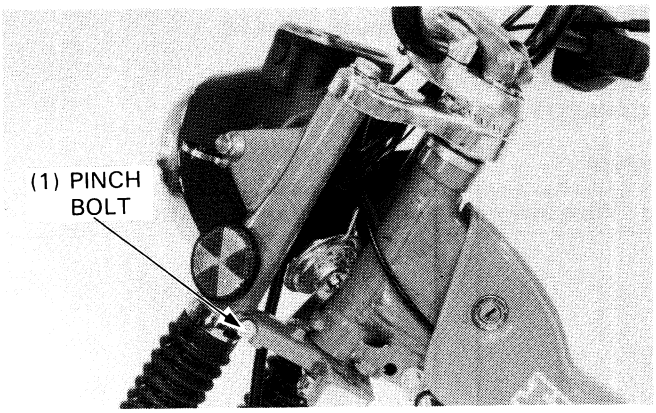
TORQUE: 40—55 N·m (4.0—5.5 kg-m 29—40 ft-lb)



Adjust the fork height.
Tighten the bottom bridge pinch bolt.

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

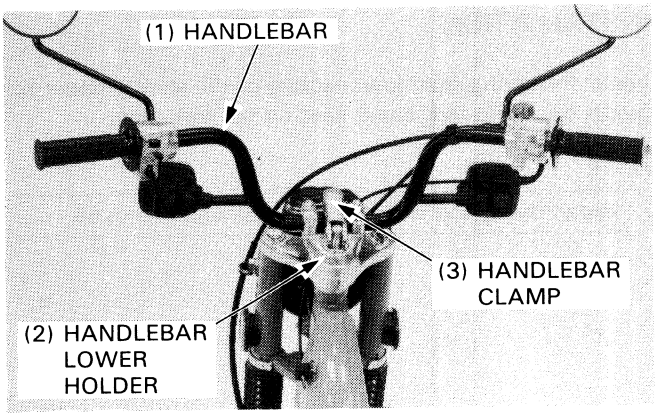
Install the front fender and the wheel (Page 12-8).
Check the operation of the forks and make sure there are no leaks.



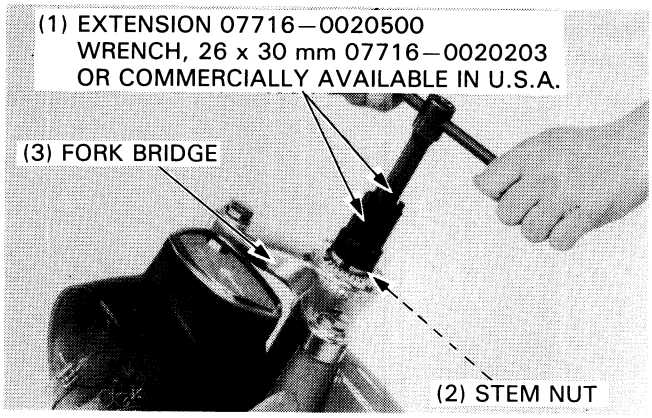
STEERING STEM

REMOVAL

Remove the handlebar (Page 12-3).
Remove the handlebar clamp and handlebar lower holder.



Remove the steering stem nut.
Remove the front forks (Page 12-11) and the fork bridge.



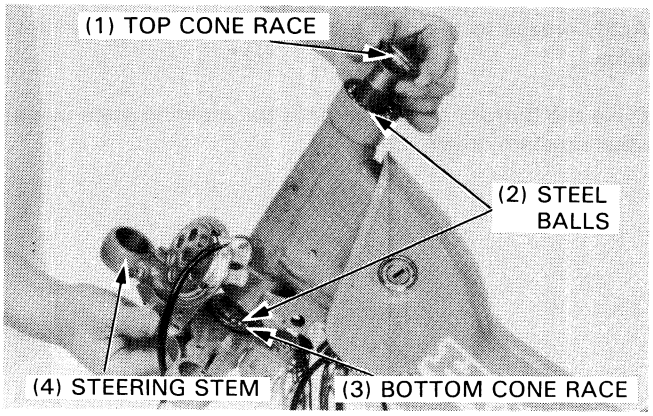
Remove the steering head top thread nut.

Remove the steering stem, top cone race and steel balls (21 x 2 pcs).

NOTE

- The steel balls are loose; be careful not to drop them.

Inspect the steel balls, cone races and ball races for wear or damage.
Replace if necessary.

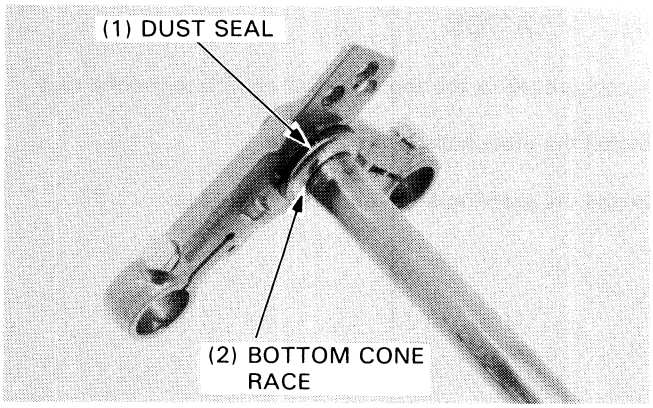


RACE REPLACEMENT

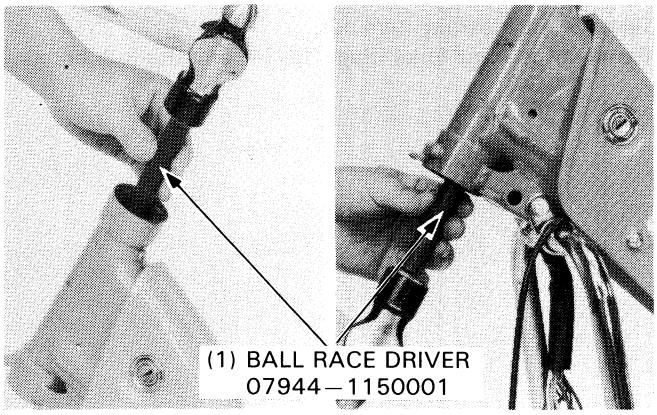
Remove the bottom cone race and dust seal using a punch or driver.

NOTE

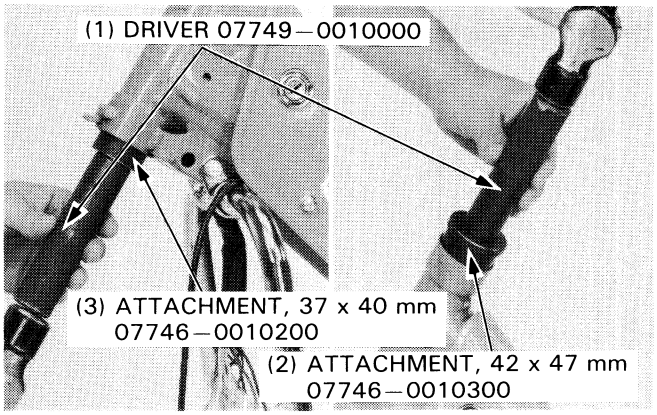
- Replace the dust seal with a new one whenever it is removed.



Remove the top and bottom ball races using the special tool as shown.

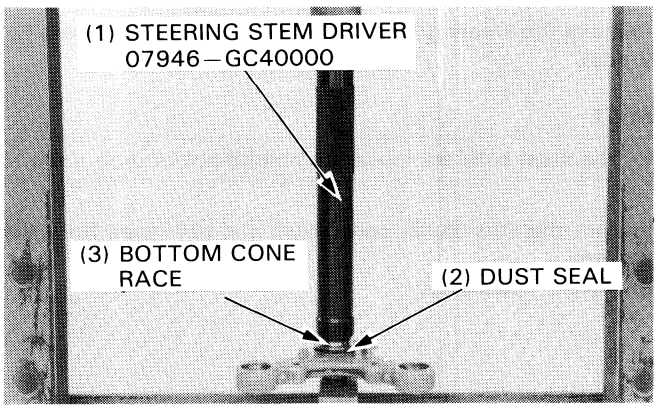


Drive new top and bottom ball races into the steering head.



Apply grease to the dust seal and install it onto the steering stem.

Drive the bottom cone race onto the steering stem using the steering stem driver.

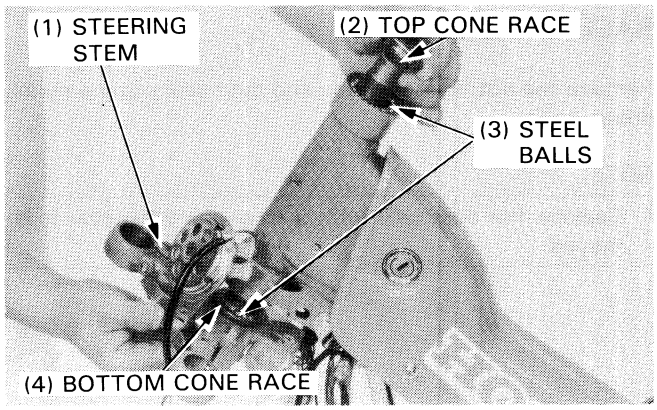


INSTALLATION

Apply grease to the top ball race and bottom cone race.

Install the steel balls (21 x 2 pcs).

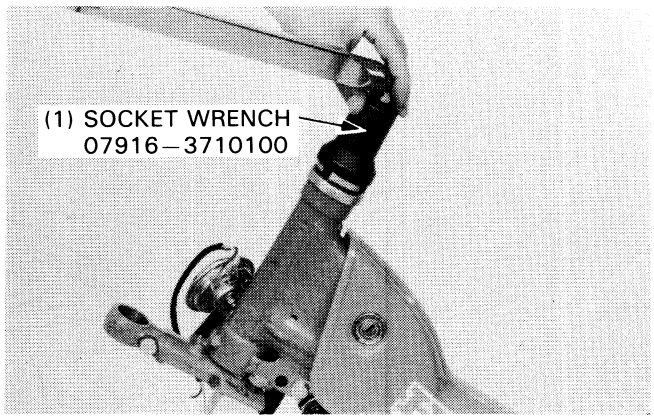
Install the steering stem and top cone race.



Install the steering head top thread nut and torque with the socket wrench.

TORQUE: 1.5—2.5 N·m (0.15—0.25 kg-m, 1—2 ft-lb)

Turn the steering stem lock-to-lock 5 times to seat the bearings and tighten the top thread nut again.



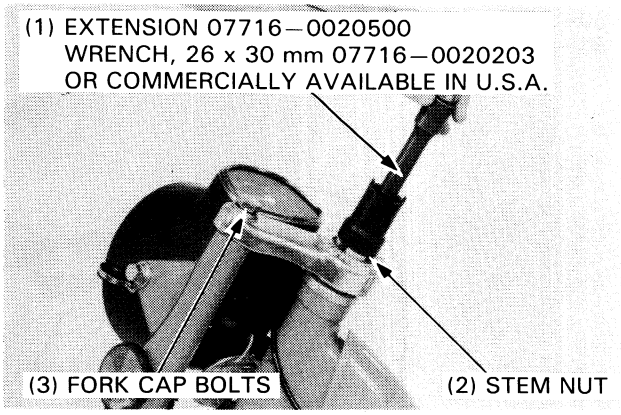
Install the fork bridge and front forks (Page 12-15).

Temporarily install the fork cap bolts.

Tighten the steering stem nut.

TORQUE: 60—90 N·m (6.0—9.0 kg-m, 43—65 ft-lb)

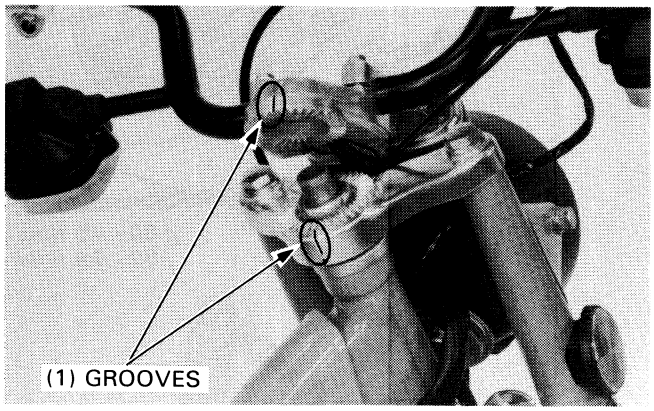
Tighten the fork cap bolts and recheck the steering stem adjustment.



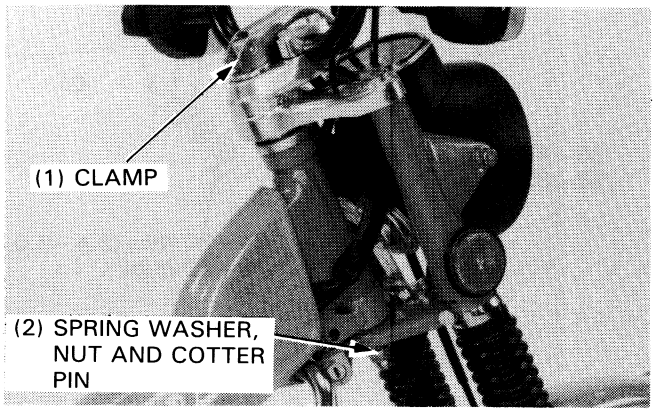
Install the handlebar (Page 12-3).

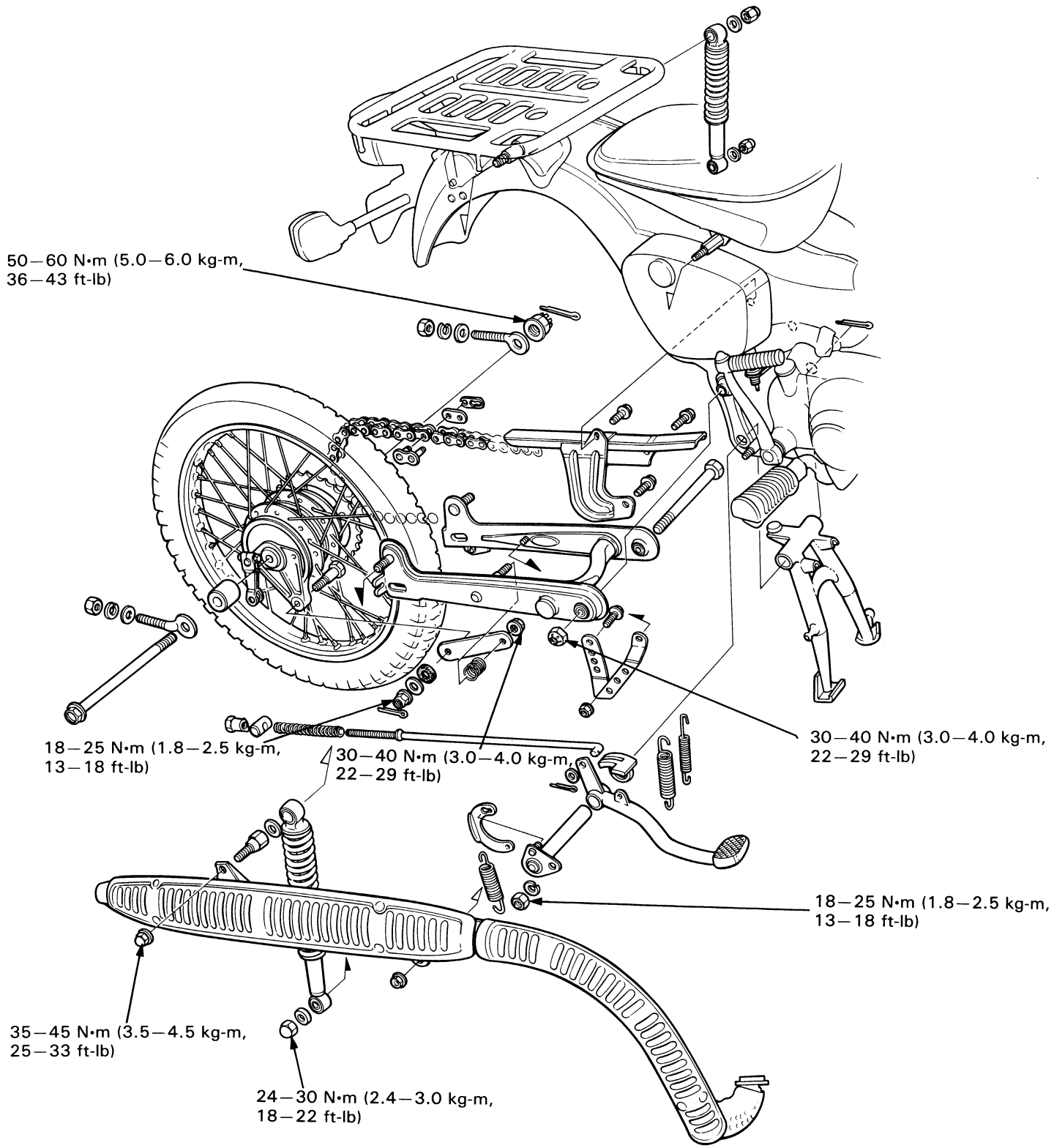
NOTE

- Align the grooves on the handlebar lower holder and fork bridge.



Install the handlebar clamp.




50—60 N•m (5.0—6.0 kg-m, 36—43 ft-lb)
18—25 N•m (1.8—2.5 kg-m, 13—18 ft-lb)
30—40 N•m (3.0—4.0 kg-m, 22—29 ft-lb)
30—40 N•m (3.0—4.0 kg-m, 22—29 ft-lb)
18—25 N•m (1.8—2.5 kg-m, 13—18 ft-lb)
35—45 N•m (3.5—4.5 kg-m, 25—33 ft-lb)
24—30 N•m (2.4—3.0 kg-m, 18—22 ft-lb)

13. REAR WHEEL/BRAKE/SUSPENSION

SERVICE INFORMATION

GENERAL

WARNING

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

- This section describes the removal, installation and servicing of the rear wheel, brake, shock absorbers and swing arm.
- Support the engine with the center stand to raise the rear wheel.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Rear axle runout		—	0.2 mm (0.01 in)
Rear wheel rim runout	Radial	—	2.0 mm (0.08 in)
	Axial	—	2.0 mm (0.08 in)
Rear brake drum I.D.		110.0 mm (4.33 in)	111.0 mm (4.37 in)
Rear brake lining thickness		4.0 mm (0.16 in)	2.0 mm (0.08 in)
Rear shock absorber spring free length		227.3 mm (8.96 in)	222 mm (8.7 in)

13

TORQUE VALUES

Torque link nut	UPPER	30—40 N•m (3.0—4.0 kg-m, 22—29 ft-lb)
	LOWER	18—25 N•m (1.8—2.5 kg-m, 13—18 ft-lb)
Brake pedal pivot bolt		18—25 N•m (1.8—2.5 kg-m, 13—18 ft-lb)
Rear shock absorber mounting nut	UPPER	35—45 N•m (3.5—4.5 kg-m, 25—33 ft-lb)
	LOWER	24—30 N•m (2.4—3.0 kg-m, 18—22 ft-lb)
Rear axle nut		50—60 N•m (5.0—6.0 kg-m, 36—43 ft-lb)
Swing arm pivot nut		30—40 N•m (3.0—4.0 kg-m, 22—29 ft-lb)

TOOLS

Special

Shock absorber compressor	07959—3290001
Spring holder attachment	07967—1180100
Rear cushion attachment A	07967—GA70101

Common

Bearing remover shaft	07746—0050100	or equivalent commercially available in U.S.A.
Bearing remover head, 12 mm	07746—0050300	
Driver	07749—0010000	
Attachment, 37 x 40 mm	07746—0010200	
Pilot, 12 mm	07746—0040200	

TROUBLESHOOTING

Wobble or vibration in motorcycle
- Loose wheel bearing
- Distorted rim
- Loose or distorted spokes
- Tire pressure incorrect
- Loose axle nut

Soft suspension
- Weak spring
- Rear damper weakened

Hard suspension
- Loose fasteners
- Faulty shock absorber cushion rubber
- Bent damper shaft

Suspension noise
- Loose fasteners
- Faulty shock absorber cushion rubber
- Damper leaking
- Damper and spring binding

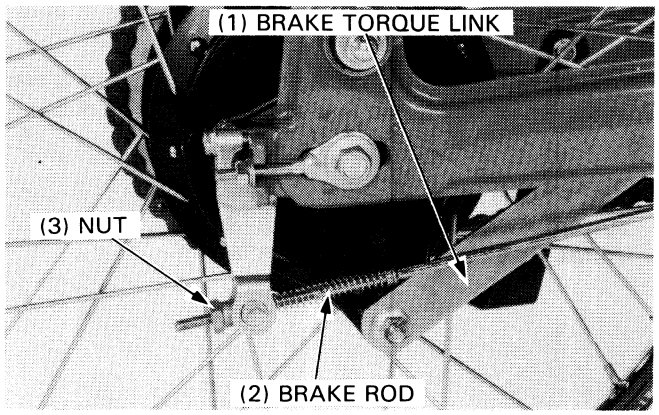
Poor brake performance
- Improper brake adjustment
- Worn brake linings
- Dirty brake linings
- Worn brake drum
- Brake arm serrations improperly engaged

REAR WHEEL

REMOVAL

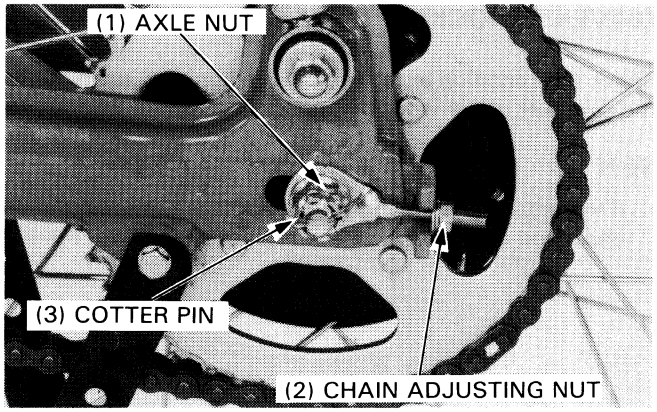
Place the motorcycle on its center stand.
Remove the rear brake adjusting nut and disconnect the brake rod from the brake arm.

Disconnect the brake torque link from the brake panel.



Remove the cotter pin form the rear axle nut.
Loosen the drive chain adjusting nuts.
Remove the axle nut, axle and wheel.

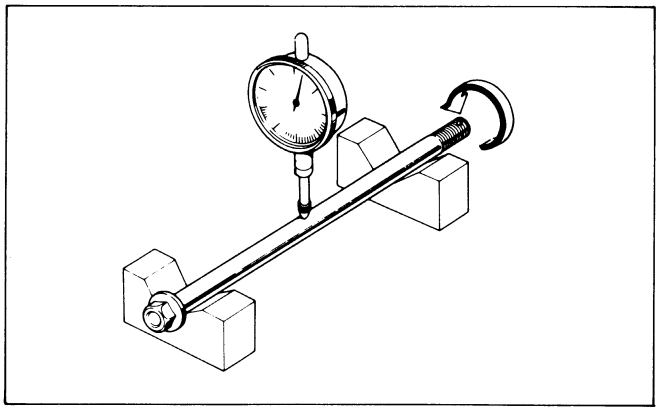
Remove the brake panel from the wheel hub.



REAR AXLE RUNOUT

Set the axle in V blocks and read the axle runout.

SERVICE LIMIT: 0.2 mm (0.01 in)



BEARING INSPECTION

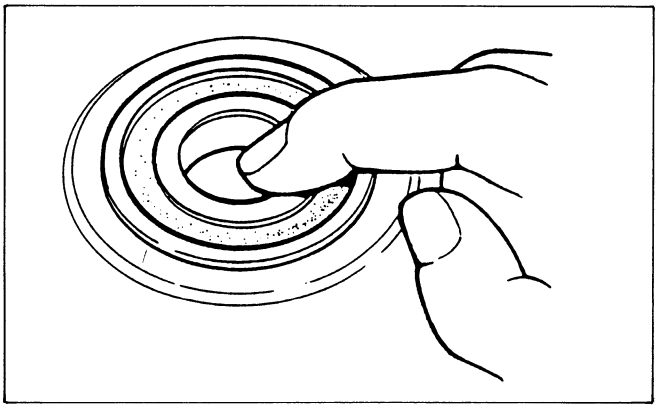
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

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.

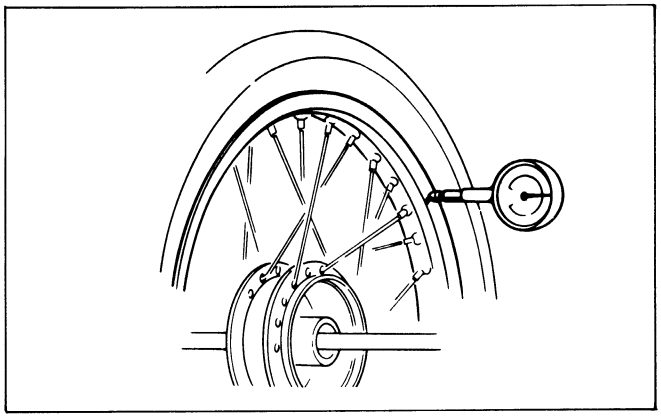
For bearing replacement, see page 13-4.



WHEEL RIM RUNOUT

Check the rim runout by placing the wheel in a truing stand. Spin the wheel slowly and read the runout using a dial indicator.

SERVICE LIMIT:
RADIAL RUNOUT: 2.0 mm (0.08 in)
AXIAL RUNOUT: 2.0 mm (0.08 in)

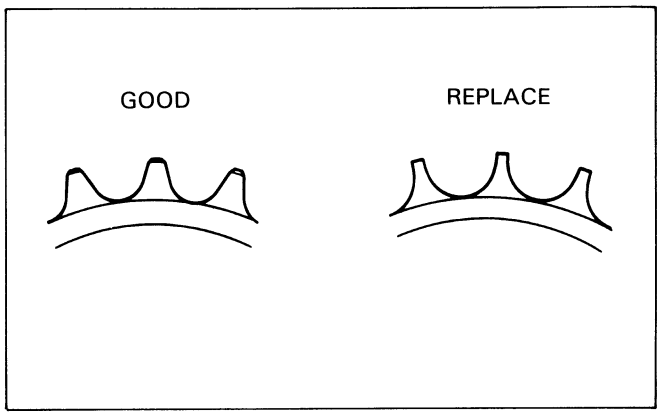


DRIVEN SPROCKET

Check the condition of the final driven sprocket teeth. Replace the sprocket if it is worn or damaged.

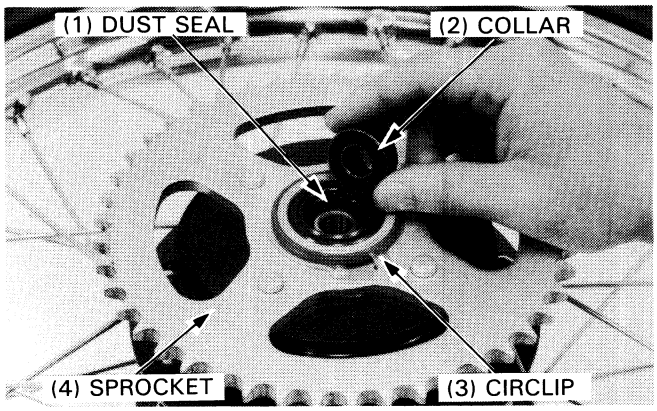
NOTE

- If the driven sprocket is worn or damaged, inspect the drive chain and drive sprocket and replace them if necessary.



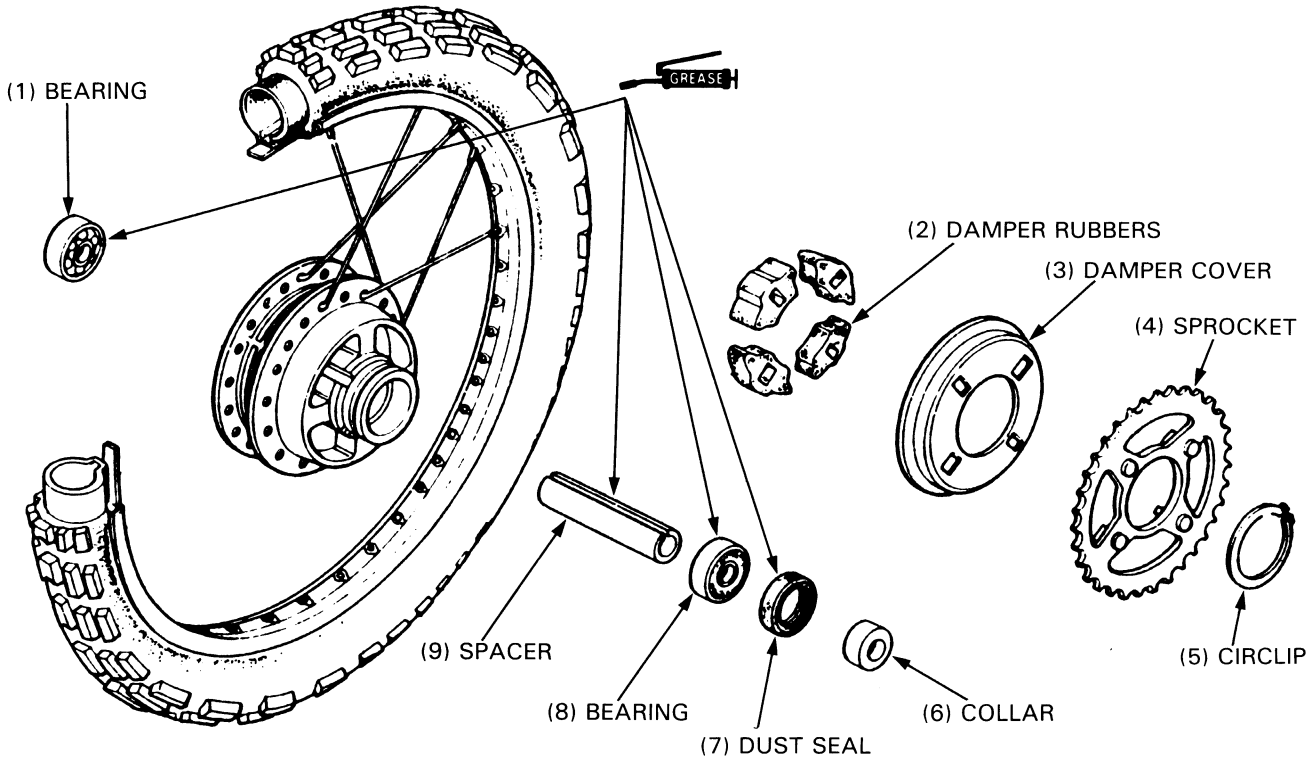
DISASSEMBLY

Remove the collar, dust seal, circlip and final diven sprocket.



Remove the wheel bearings and spacer from the wheel hub with the bearing remover.

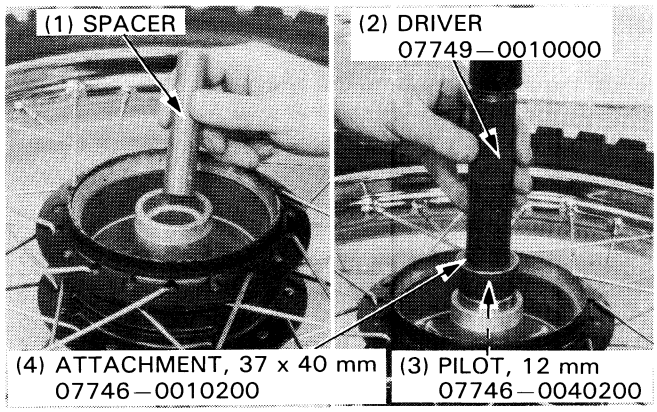
ASSEMBLY



Pack all bearing cavities with grease.
Drive in the left bearing.
Place the spacer into the wheel hub and drive in the right bearing.

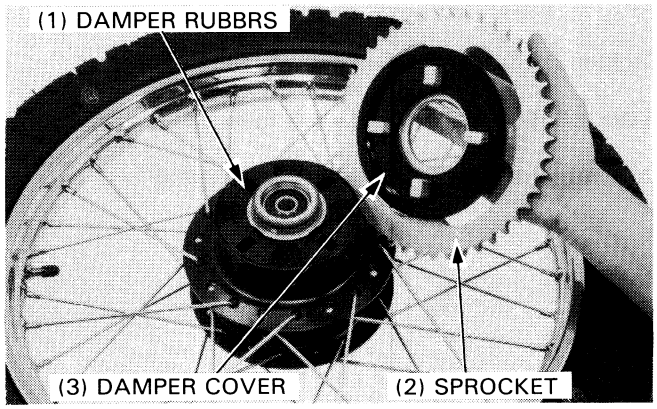
NOTE

- Install the bearings with the sealed ends facing out.
- Drive the bearings squarely.

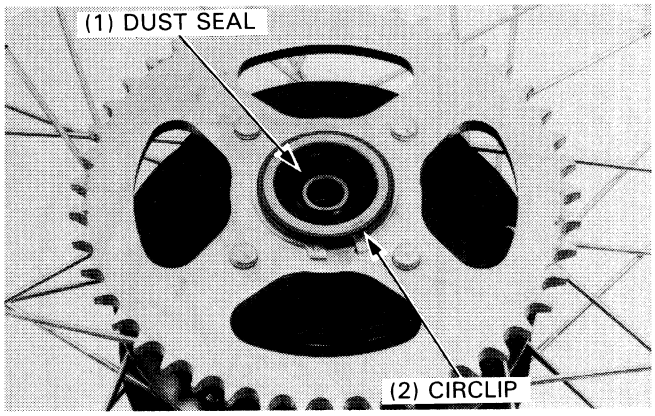


Replace the damper rubbers if they are damaged or deteriorated.

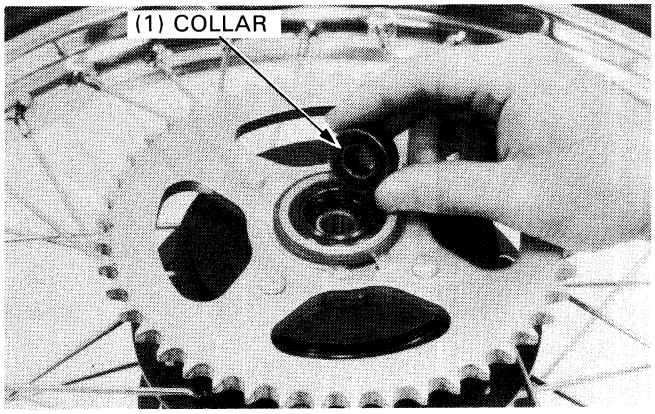
Install the driven sprocket with the damper cover on the wheel hub.



Apply grease to the lip of a new dust seal.
Install the dust seal and circlip.

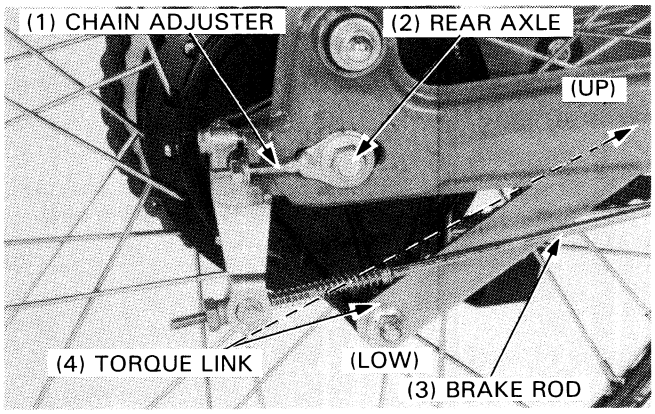


Install the collar.



INSTALLATION

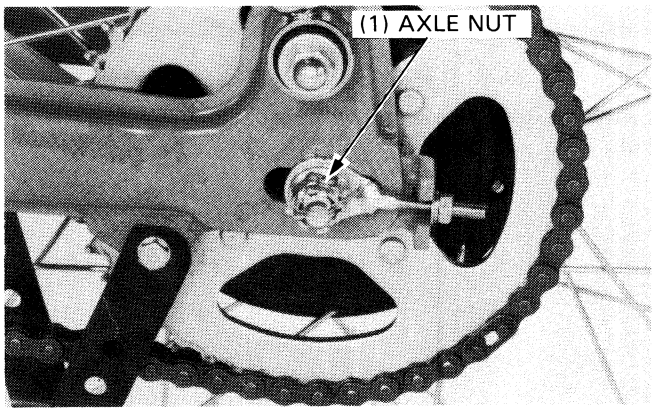
Install the brake panel into the wheel hub.
Position the wheel inside the swing arm.
Insert the rear axle through right chain adjuster, brake panel, wheel hub and left chain adjuster.
Loosely install the axle nut.
Connect the brake rod to the brake arm.
Connect the brake torque link to the brake panel, tighten the torque link nut and install a new cotter pin.



TORQUE: Upper: 30—40 N·m (3.0—4.0 kg-m, 22—29 ft-lb)
Lower: 18—25 N·m (1.8—2.5 kg-m, 13—18 ft-lb)

Adjust the drive chain slack (Page 3-8).

Tighten the axle nut, and install a new cotter pin.



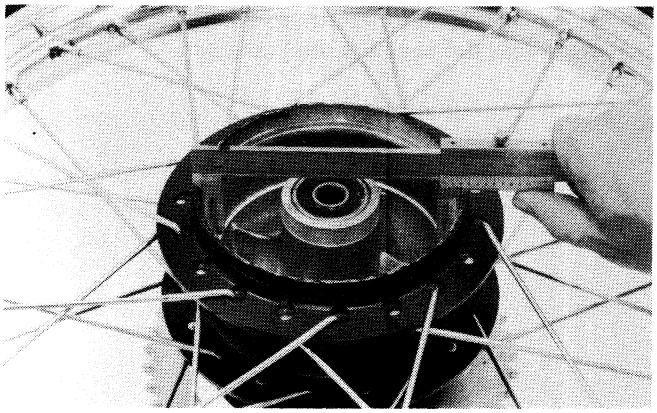
TORQUE: 50—60 N·m (5.0—6.0 kg-m, 36—43 ft-lb)

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

REAR BRAKE

REMOVAL

Remove the rear wheel and the brake panel (Page 13-3).



BRAKE DRUM INSPECTION

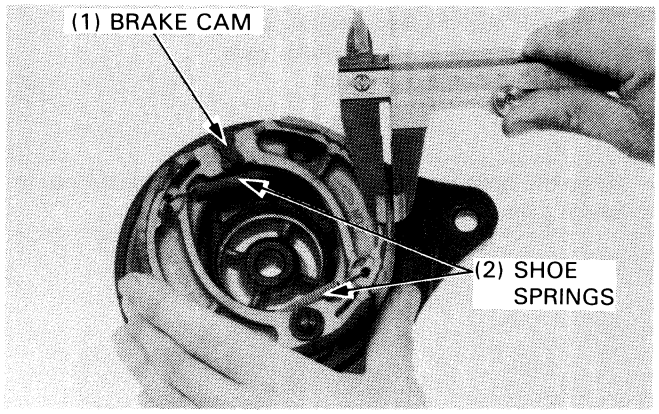
Measure I.D. of the brake drum.

SERVICE LIMIT: 111.0 mm (4.37 in)

BRAKE LINING INSPECTION

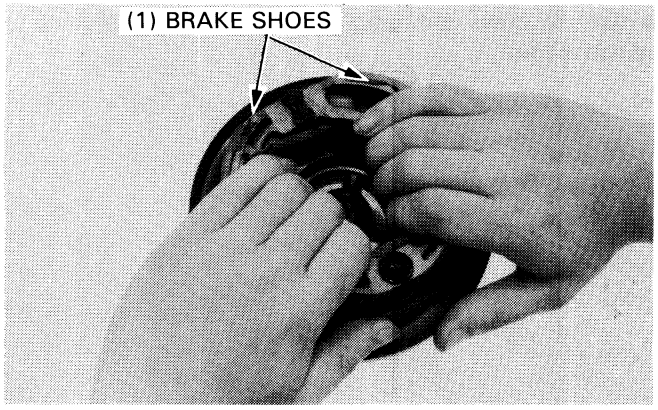
Check the brake shoe springs for fatigue or damage and the brake cam for wear or cracks.
Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)

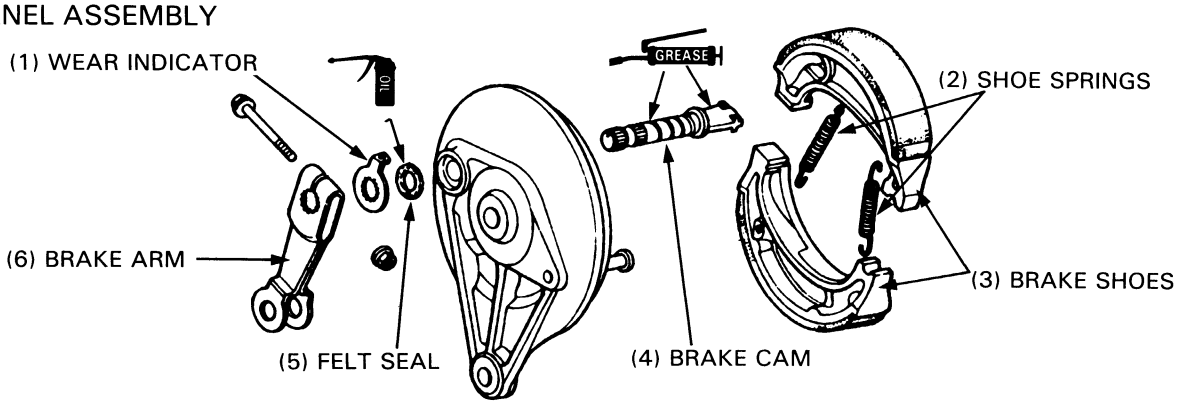


BRAKE PANEL DISASSEMBLY

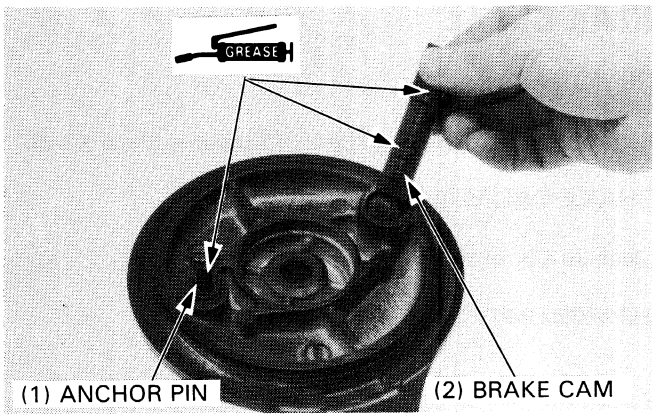
Force the brake shoes out and remove them by hand.
Remove the brake arm and brake cam.



BRAKE PANEL ASSEMBLY



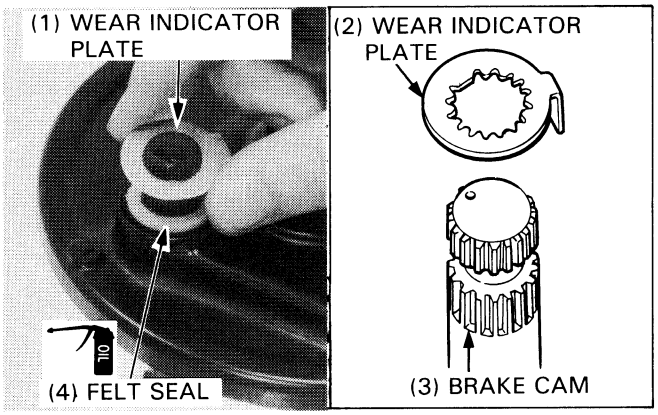
Apply a small amount of grease to the brake cam and anchor pin, and install the cam into the brake panel.



Soak the felt seal in clean engine oil.
Install the felt seal onto the brake cam.
Install the wear indicator plate.

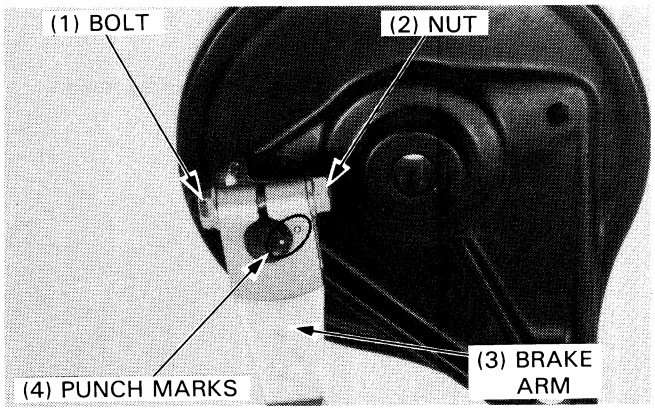
NOTE

- Align the boss on the indicator plate with the cut-out in the brake cam.



Install the brake arm onto the brake cam by aligning their punch marks.

Tighten the brake arm bolt and nut.



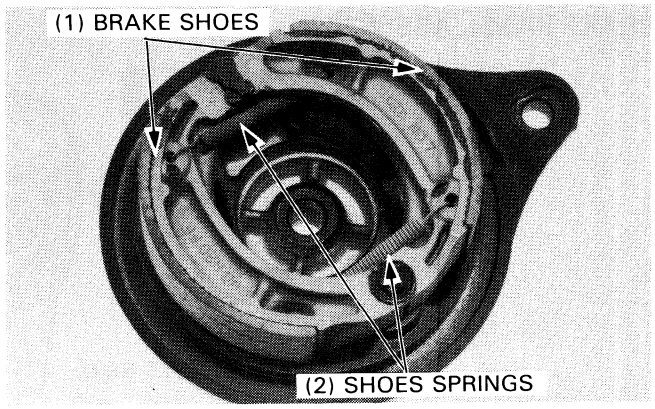
Install the brake shoes and shoes springs.

WARNING

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

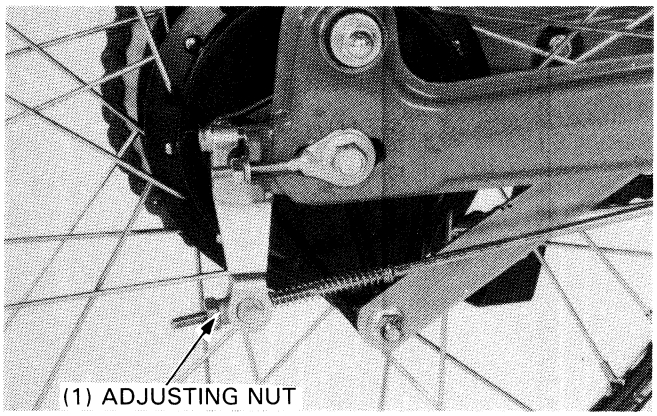
INSTALLATION

Install the brake panel on the hub and install the rear wheel (Page 13-6).



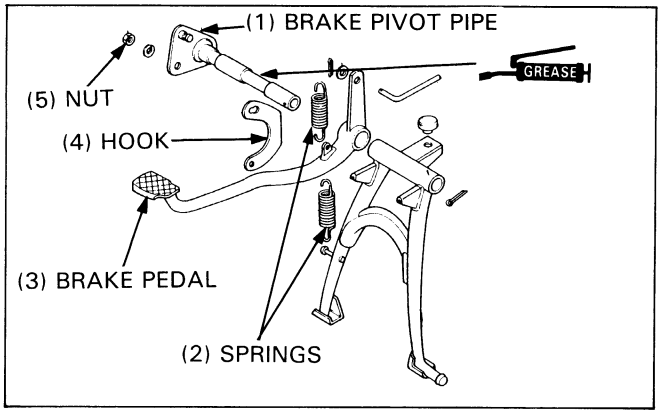
BRAKE PEDAL REMOVAL/INSTALLATION

Place the motorcycle on its side stand.
Remove the rear brake adjusting nut, center stand spring, spring hook and brake pivot pipe.
Remove the brake pedal.



Apply grease to the brake pivot pipe.
Install the removed parts in the reverse order of removal.
Tighten the nut.

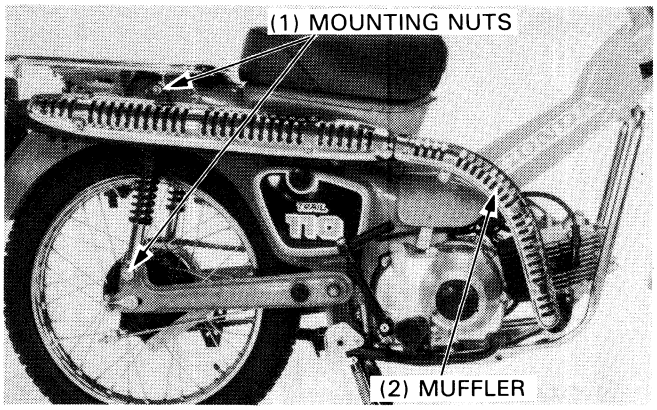
TORQUE: 18—25 N·m (1.8—2.5 kg-m, 13—18 ft-lb)



SHOCK ABSORBERS

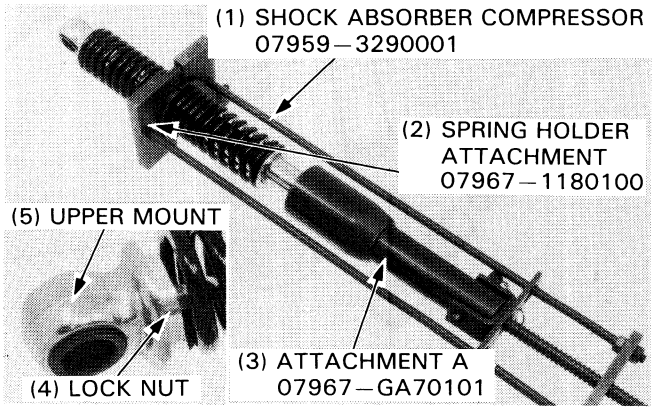
REMOVAL/DISASSEMBLY

Remove the exhaust muffler.
Remove the rear shock absorber mounting nuts and shock absorbers from the frame.



Compress the spring enough to loosen the lock nut.

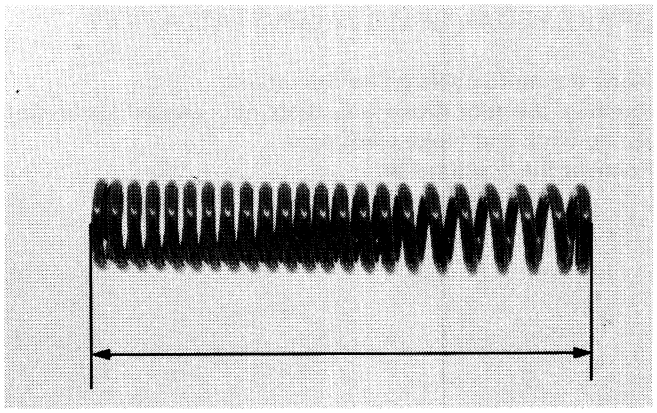
Loosen the lock nut and remove the upper mount.
Disassemble the unit.



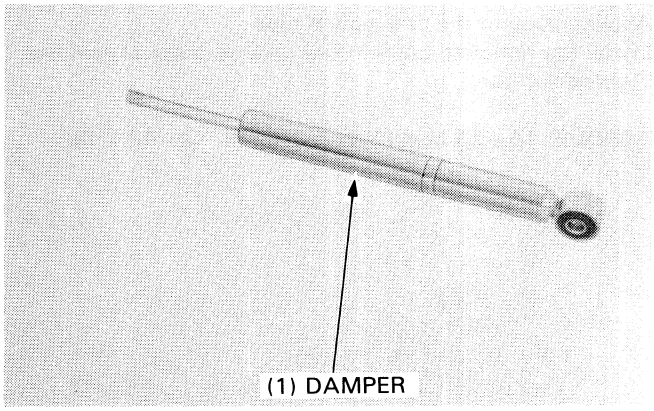
SPRING/SHOCK ABSORBER INSPECTION

Measure the free length of the spring.

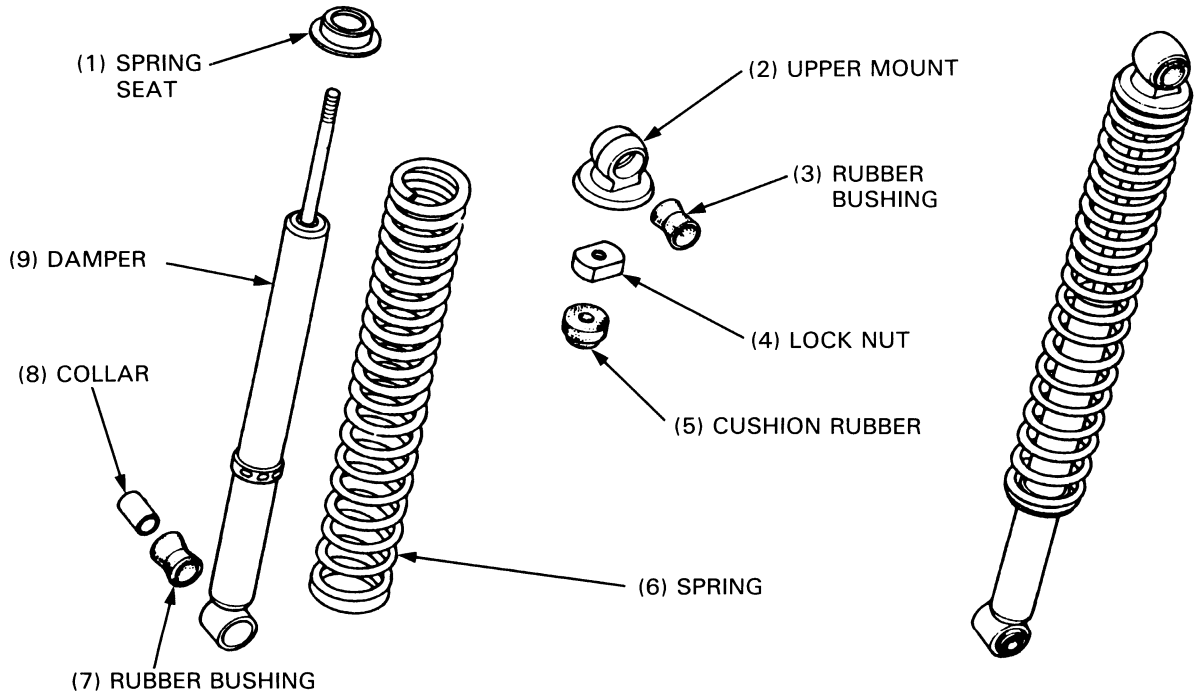
SERVICE LIMIT: 222 mm (8.7 in)



Check operation of the damper by moving the damper rod up and down. Resistance should be felt only when the rod is moved up.
Check the damper for bending, damage or oil leaks.



ASSEMBLY



Assemble the shock absorber.
Apply locking agent to the damper rod threads and install the lock nut.
Compress the spring with the compressor, install the upper mount and tighten the lock nut securely.

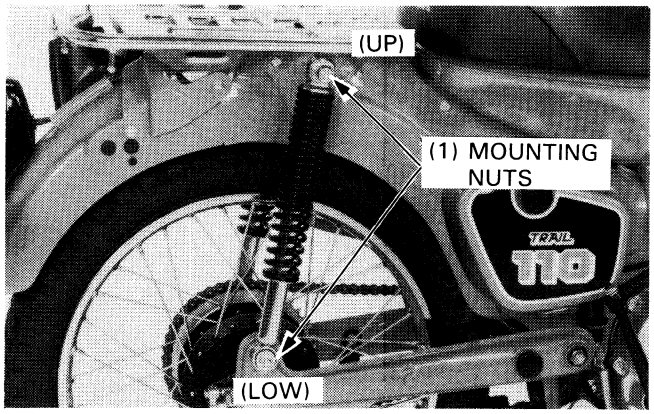
NOTE

- Install the spring with its small coil end facing up.

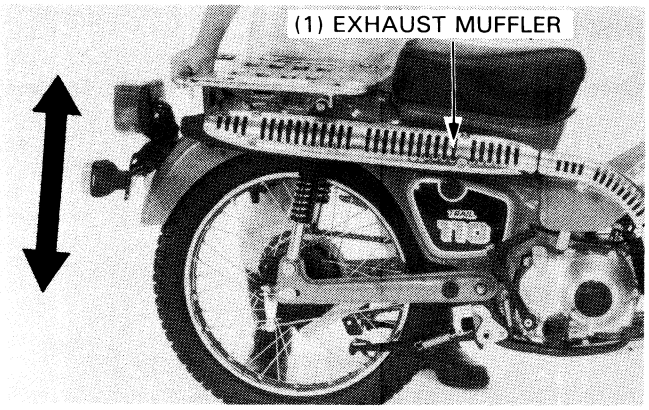
INSTALLATION

Install the rear shock absorber and tighten the mounting nuts.

TORQUE: Upper: 35—45 N·m
(3.5—4.5 kg-m, 25—33 ft-lb)
Lower: 24—30 N·m
(2.4—3.0 kg-m, 17.4—21.7 ft-lb)



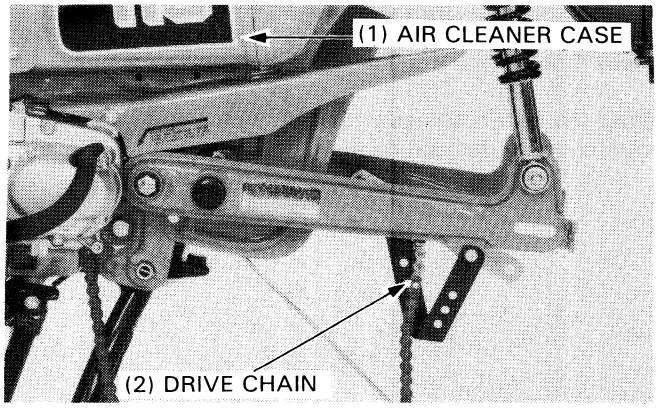
Install the exhaust muffler.
Check the operation of the shock absorbers by pressing down on the end of the frame several times by hand.



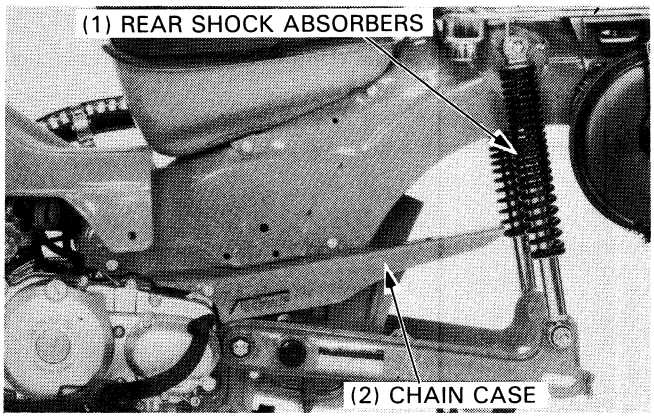
SWING ARM

REMOVAL

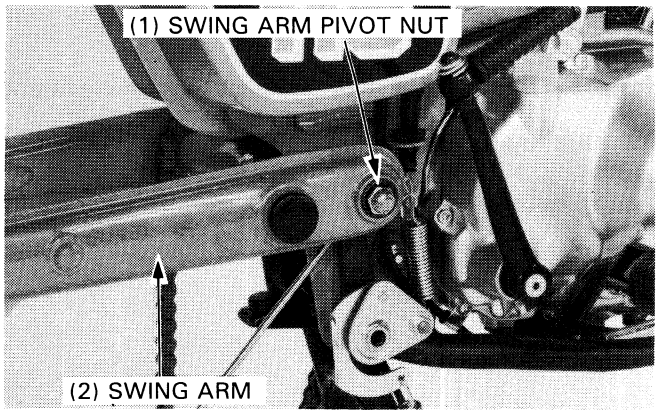
Remove the rear wheel (Page 13-3).
Remove the air cleaner case (Page 4-4).
Remove the drive chain.



Remove the rear shock absorbers (Page 13-9).
Remove the chain case.

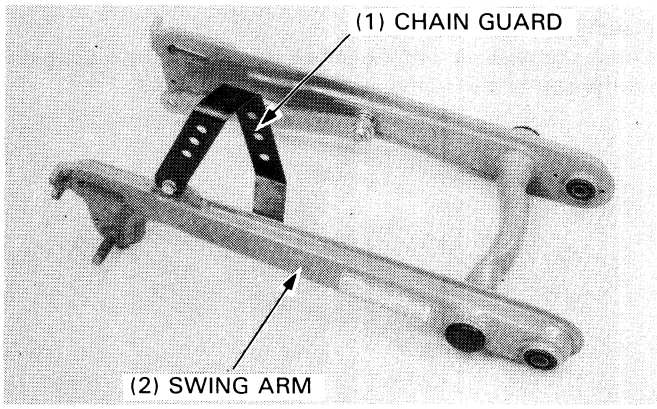


Remove the swing arm pivot nut and bolt, and the swing arm.



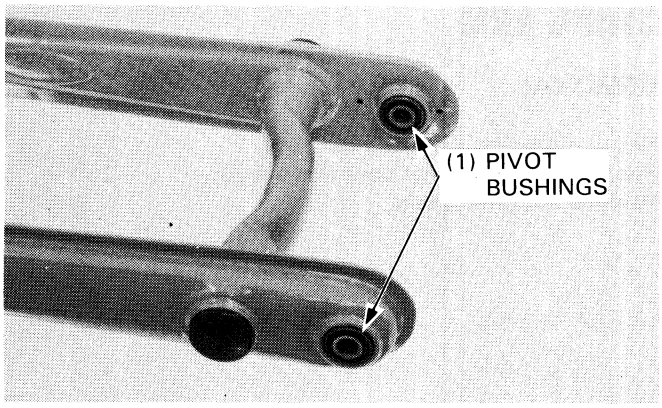
INSPECTION

Check the swing arm and chain guard for cracks or damage.



Check the pivot bushings and pivot bolt for excessive wear; replace if necessary.

Drive the new bushings into place with a soft hammer, being careful not to damage them.



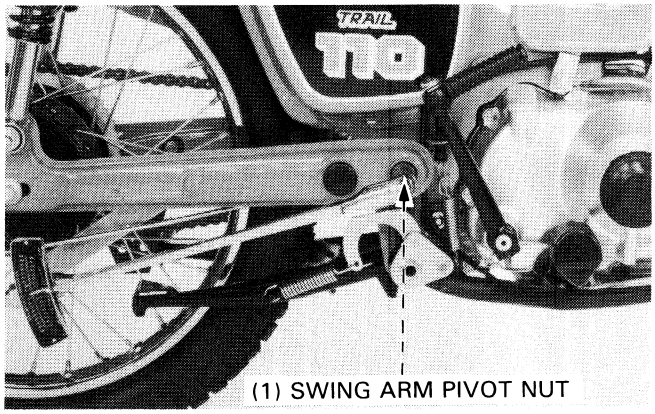
INSTALLATION

Apply the grease to the swing arm bushings.
Loosely install the swing arm pivot bolt and nut.

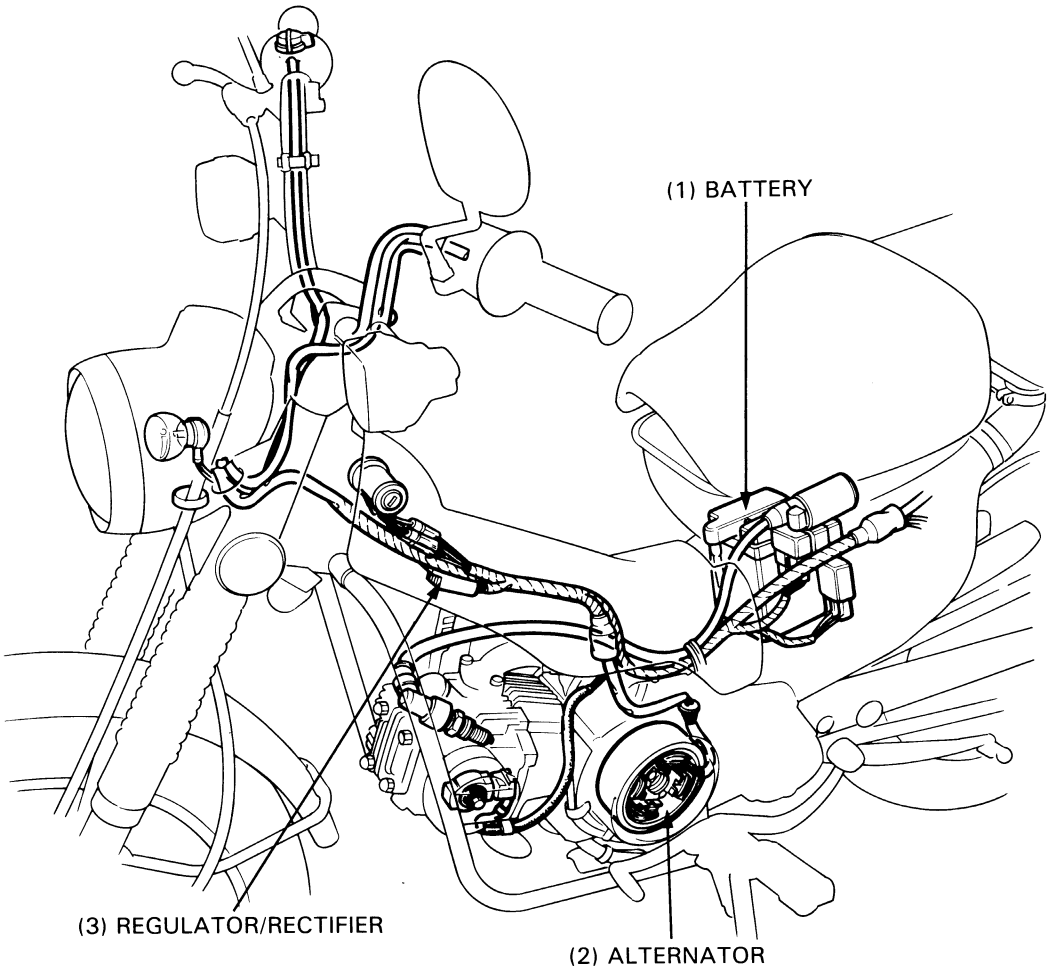
Install the following parts:
— rear shock absorbers (Page 13-11).
— chain case.
— drive chain (Page 3-8).
— air cleaner (Page 4-4).
— rear wheel (Page 13-6).

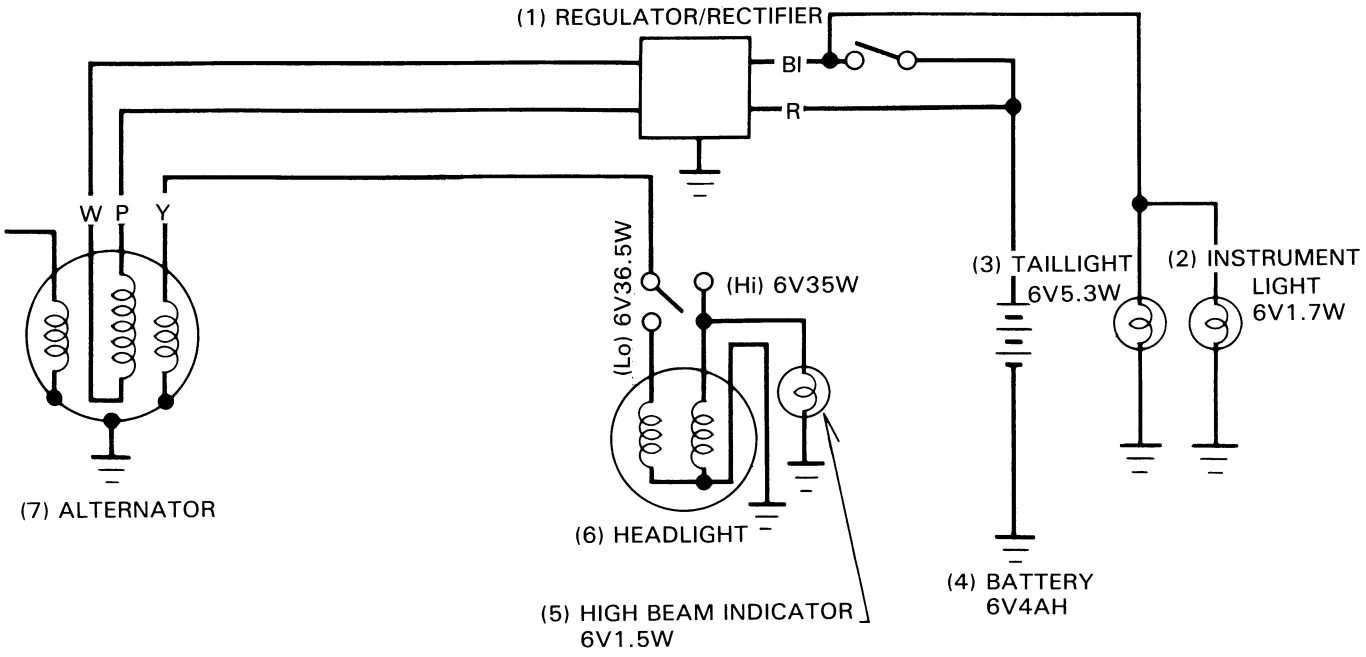
Push down on the rear frame to compress the shocks, then tighten the swing arm pivot nut.

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



(1) SWING ARM PIVOT NUT


(1) BATTERY
(3) REGULATOR/RECTIFIER
(2) ALTERNATOR


(1) REGULATOR/RECTIFIER
BI
R
W P Y
(7) ALTERNATOR
(Lo) 6V36.5W
(Hi) 6V35W
(6) HEADLIGHT
(5) HIGH BEAM INDICATOR
6V1.5W
(3) TAILLIGHT
6V5.3W
(4) BATTERY
6V4AH
(2) INSTRUMENT
LIGHT
6V1.7W

14. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION

GENERAL

- Battery acid level should be checked regularly and filled with distilled water added when necessary.
- Remove the battery from the motorcycle for charging whenever possible. If the battery must be charged on the motorcycle, keep flames and sparks away from a charging battery because it produces hydrogen gas which is explosive.
- All charging system components can be tested on the motorcycle.
- For alternator removal, see page 9-2.
- Quick-charging should only be done in an emergency; slow-charging is preferred.

SPECIFICATIONS

Alternator	
Charging rpm	2,600 min^{-1} (rpm) maximum
Charging output	5.5 amperes maximum at 1,000 min^{-1} (rpm)
	2 amperes minimum at 5,000 min^{-1} (rpm)
Charging coil resistance	0.3—0.7 Ω
Lamp coil resistance	0.2—0.5 Ω
Battery	
Capacity	6V4AH
Fuse	
Rating	Main 10A

TROUBLESHOOTING

No Power—Key Turned On
- Dead battery
  - — Battery not charged
  - — Battery electrolyte evaporated
  - — Charging system failure
- Disconnected battery coupler
- Main fuse burned out
- Faulty ignition switch

Lower Power—Key Turned On
- Weak battery
  - — Low battery electrolyte level
  - — Battery run down
  - — Charging system failure
- Loose battery connection

Low Power—Engine Running
- Battery undercharged
  - — Low battery electrolyte level
  - — One or more dead cells
- Charging system failure

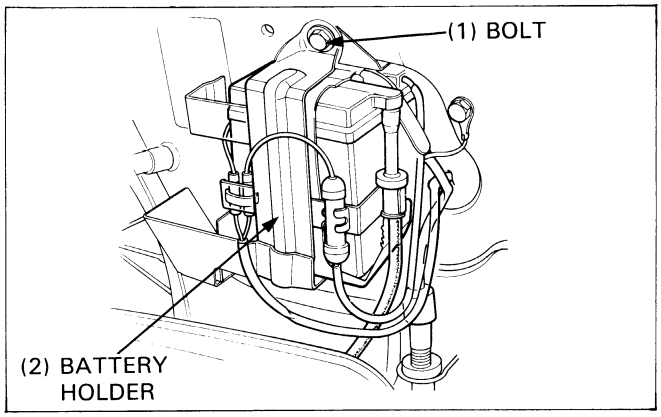
Intermittent Power
- Loose battery connection
- Loose charging system connection
- Loose connection or short circuit in ignition system
- Loose connection or short circuit in lighting system

Charging System Failure
- Loose, broken, or shorted wire or connection
- Faulty regulator/rectifier
- Faulty alternator

BATTERY

REMOVAL

Remove the right side cover.
Remove the bolt and open the battery holder.
Tilt the battery and disconnect the negative/positive coupler.
Remove the battery.



SPECIFIC GRAVITY TEST

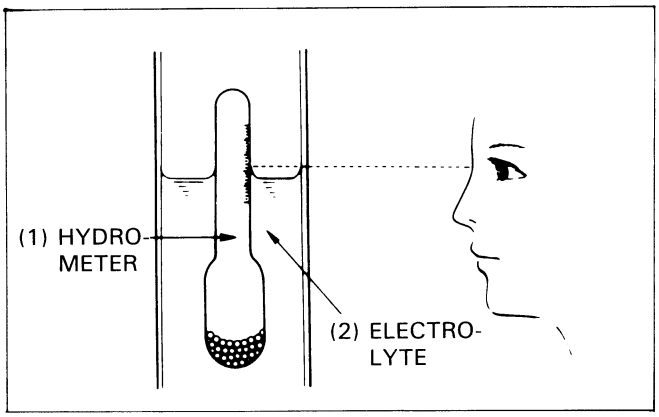
Test each cell by drawing electrolyte into a hydrometer.

SPECIFIC GRAVITY (20°C/68°F)

1.260–1.280 Fully charged
1,250 or below Undercharged

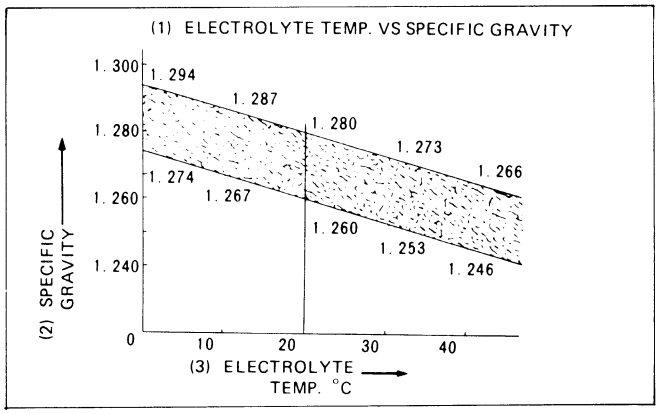
NOTE

- The battery must be recharged if the specific gravity is below 1.23.
- The specific gravity varies with the temperature as shown.
- Replace the battery if sulfation is evident.
  The battery must be replaced if there is sediment on the bottom of the cell.



WARNING

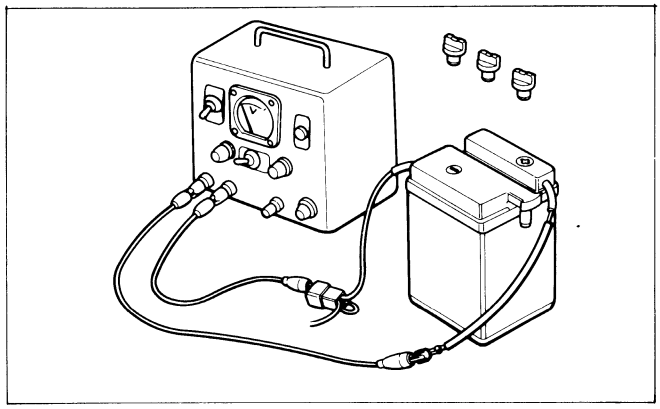
- ***The battery contains sulfuric acid. Avoid contact with skin, eyes, or clothing.***
  Antidote: Flush with water and get prompt medical attention.



BATTERY CHARGING

WARNING

- ***Before charging a battery, remove the cap from each cell.***
- ***Keep fire and sparks away from a charging battery.***
- ***Turn power ON/OFF at the charger, not at the battery terminals.***
- ***Discontinue charging if the electrolyte termperature exceeds 45°C (117°F).***



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

Charging current:
0.4 amperes maximum
Charging:
Charge the battery until specific gravity is 1.26−1.28 at 20°C (68°F).

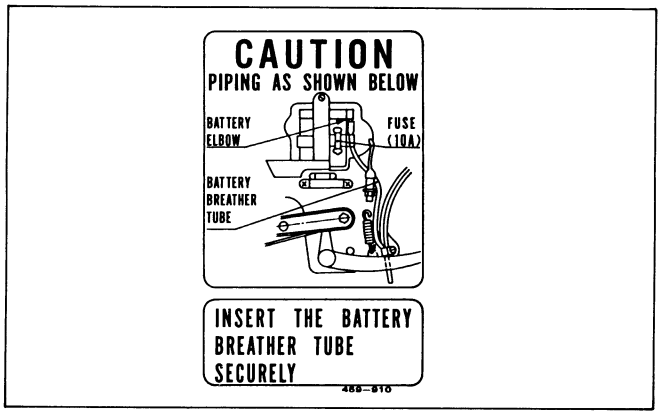
CAUTION

- *Quick-charging should only be done in an emergency; slow-charging is preferred.*

Reconnect the coupler and reinstall the battery holder with the bolt.

CAUTION

- *Route the breather tube as shown on the battery caution lable.*



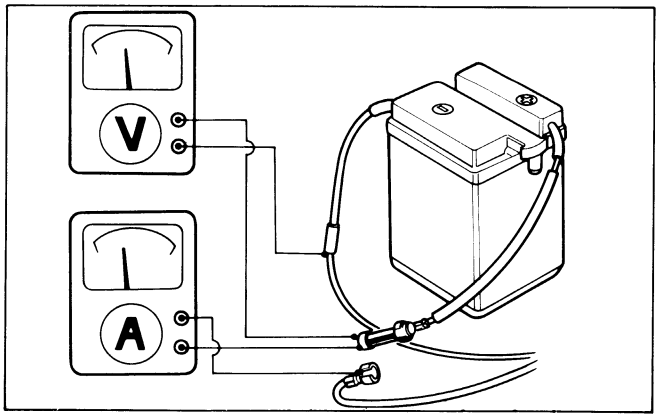
CHARGING SYSTEM

CHARGING OUTPUT TEST

NOTE

- Use a fully charged battery to check the charging system.

Warm up the engine.
Remove the right side cover.
Connect the tester as shown.
Connect a tachometer.



CAUTION

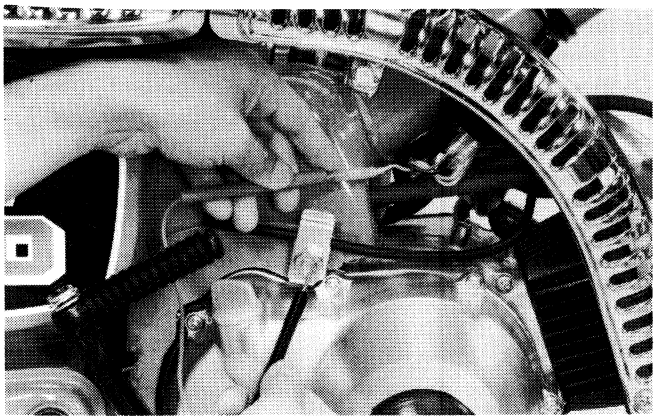
- *Avoid touching the battery wire to the frame.*

Start the engine and check the meter readings while increasing engine speed slowly.

Charging start should begin at 1,500 rpm MAX/6.5 V MIN
4,000 rpm−1.8 A MIN/8.0 V
8,000 rpm−2.3 A MIN/8.0 V

If the readings do not meat the specifications, check the wires for a loose connection and repair if necessary. If the wires are in good condition, replace the regulator/rectifier with a new one and retest.

ALTERNATOR



INSPECTION

NOTE

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

CHARGING COIL:

Check the resistance between the white and the pink wires.

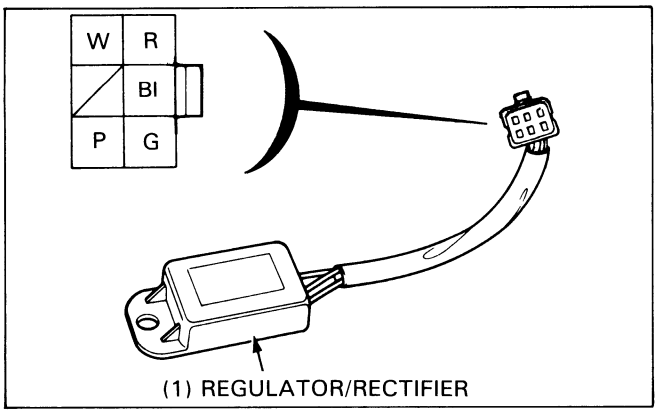
Resistance 0.3—0.7 Ω

LAMP COIL:

Check the resistance between the yellow wire and ground.

Resistance: 0.2—0.5 Ω

REGULATOR/RECTIFIER



INSPECTION

Disconnect the regulator/rectifier coupler.
Check the resistances between the leads with an ohmmeter. If the resistances are outside the specifications, replace the regulator rectifier.

NOTE

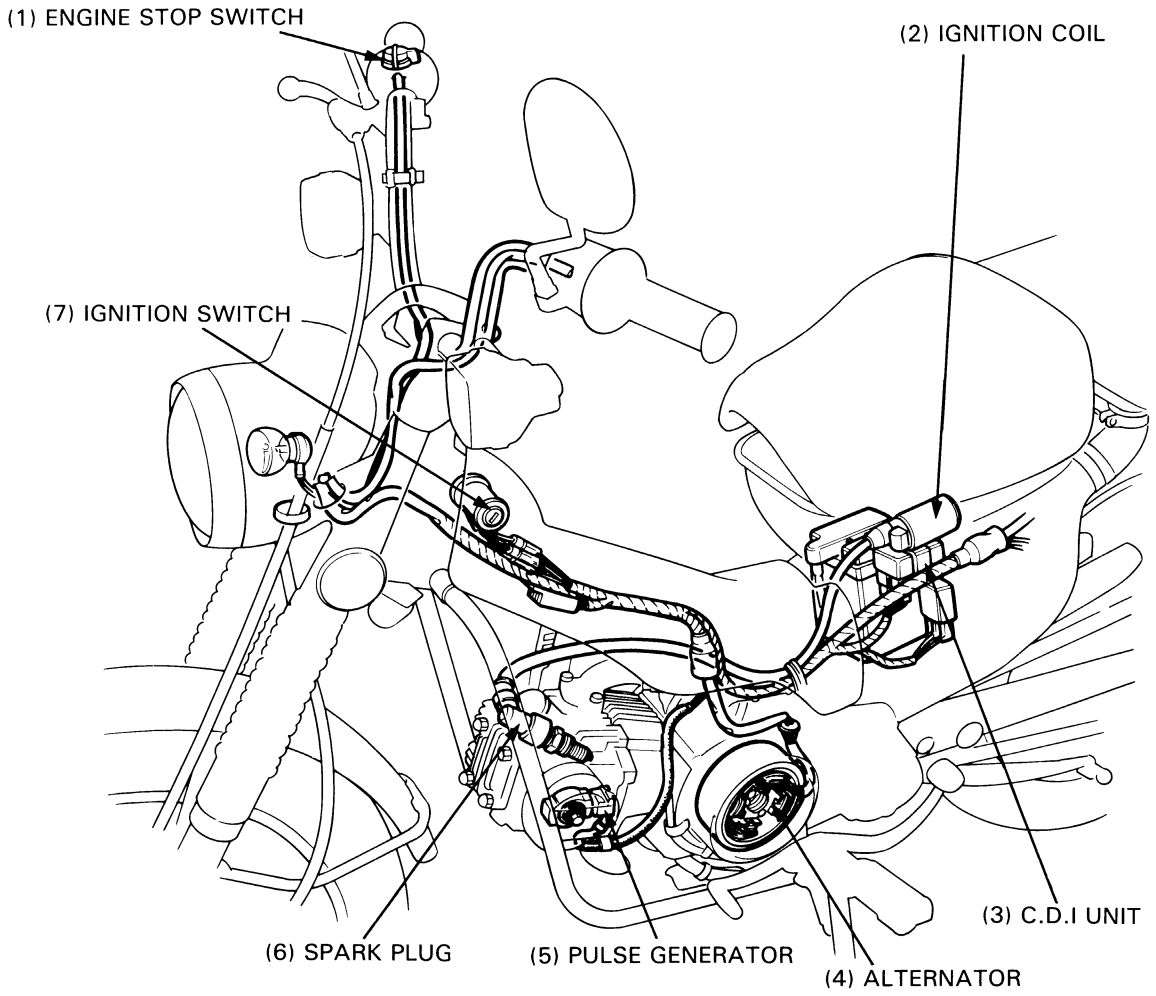
- Use a Sanwa SP 10 D or Kowa TH-5H electrical tester with the test table.
- The regulator/rectifier has a semiconductor, and if different tester is used, the test results will be out of specification.

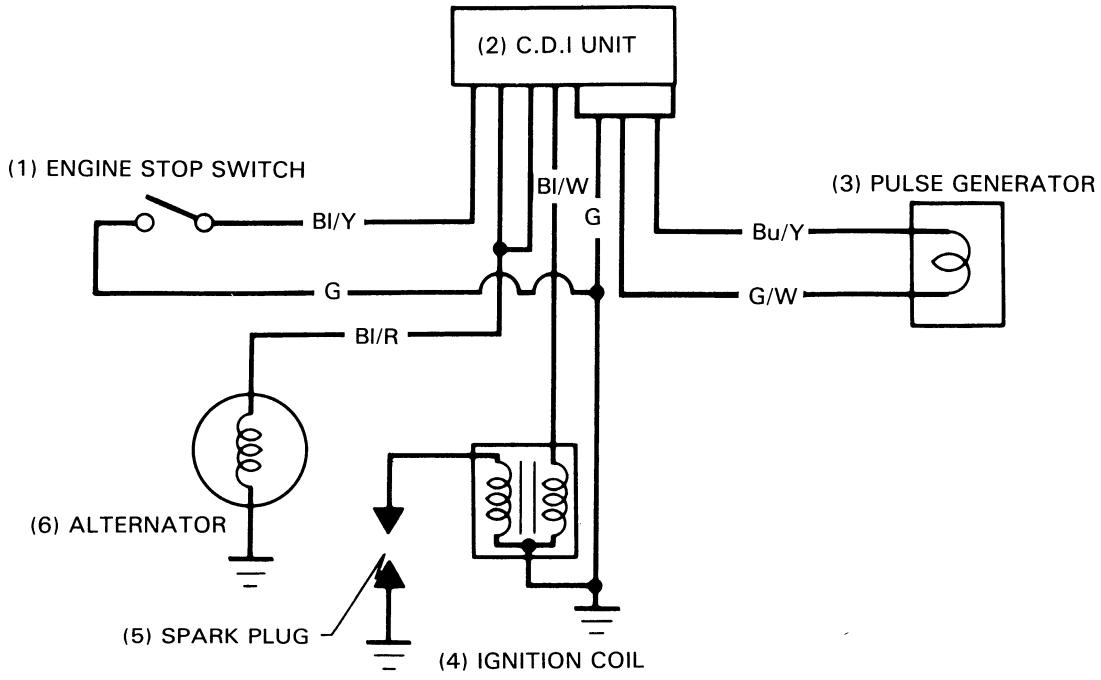
Tester range: KOWA X 100Ω, SANWA X KΩ

: KΩ

+Probe / −Probe	W	P	G	R	Bl
W		∞	∞	1—20	∞
P	∞		∞	1—20	∞
G	1—20	1—20		3—100	0.5—10
R	∞	∞	∞		∞
Bl	10—100	10—100	5—50	5—200	

MEMO


(1) ENGINE STOP SWITCH
(2) IGNITION COIL
(7) IGNITION SWITCH
(3) C.D.I UNIT
(6) SPARK PLUG
(5) PULSE GENERATOR
(4) ALTERNATOR


(2) C.D.I UNIT
(1) ENGINE STOP SWITCH
Bl/W
G
(3) PULSE GENERATOR
Bl/Y
Bu/Y
G
G/W
Bl/R
(6) ALTERNATOR
(5) SPARK PLUG
(4) IGNITION COIL

15. IGNITION SYSTEM

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.
- The following color codes used are indicated throughout this and the next section.

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

SPECIFICATIONS

Spark plug	DR8ES-L (NGK), X24ESR-U (ND)
Spark plug gap	0.6—0.7 mm (0.02—0.03 in)
Pulse generator gap	0.3—0.7 mm (0.01—0.03 in)
Ignition timing:	
— Initial	10°±2°BTDC/1,500 rpm
— Advance start	1,950 rpm ±150 rpm
— Full advance	32°±2°BTDC/ 3,400 rpm
Alternator exciter coil resistance	150—280 Ω
Pulse generator resistance	90—110 Ω
Ignition primary coil resistance	0.2—0.8 Ω
Ignition secondary coil resistance	8—15 kΩ

TORQUE VALUE

Pulse rotor bolt	8—12 N•m (0.8—1.2 kg-m, 6—9 ft-lb)

TOOL

Sanwa electric tester (SP-10D) Kowa electric tester (TH-5H)	07308—0020000
Digital Multi-tester	KS—AHM—32—003 (U.S.A. only)

TROUBLESHOOTING

Engine starts but stops

- No spark at plug
- Improper ignition timing
- Faulty spark plug

No spark at plug

- Engine stop switch "OFF"
- Poorly connected, broken or shorted wires
  - Between alternator and CDI unit
  - Between CDI unit and engine stop switch
  - Between CDI unit and ignition coil
  - Between ignition coil and spark plug
  - Between pulse generator and CDI unit
- Faulty ignition coil
- Faulty CDI unit
- Faulty pulse generator
- Faulty alternator

Engine starts but runs poorly

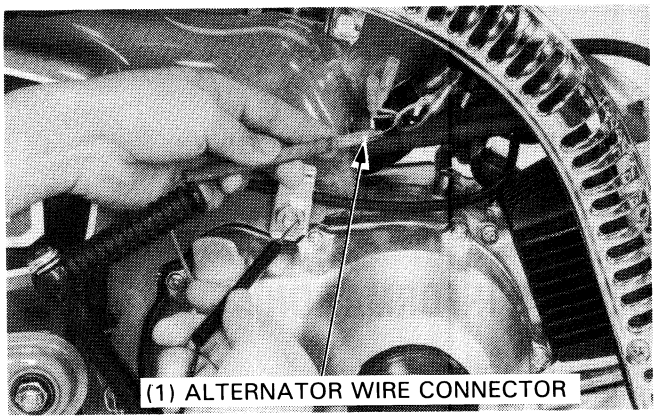
- Ignition primary circuit
  - Faulty ignition coil
  - Loose or bare wire
  - Faulty alternator
  - Faulty CDI unit
- Ignition secondary circuit
  - Faulty plug
  - Faulty pulse generator
  - Faulty spark plug wire
- Improper ignition timing
  - Faulty advancer rotor
  - Faulty pulse generator
  - Faulty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

ALTERNATOR

EXCITER COIL INSPECTION

Disconnect the alternator wire connector.
Measure the resistance between the black/red wire and ground.

Resistance: 150—280Ω



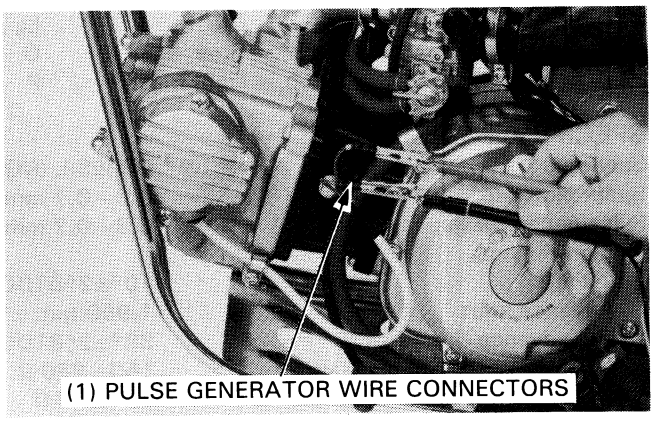
PULSE GENERATOR

INSPECTION

Disconnect the pulse generator wire connectors and measure the resistance between the blue/yellow wire and the green/white wire.

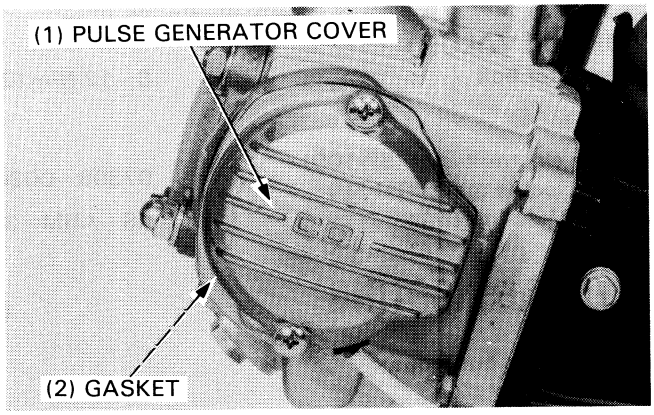
Resistance: 90—110Ω

Replace the pulse generator if the resistance reading is not as specified.

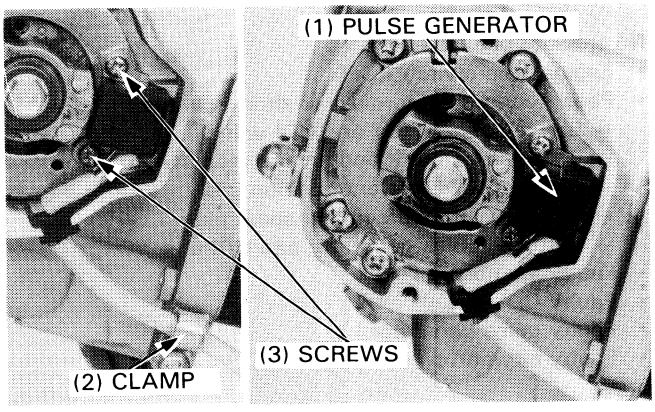


REMOVAL

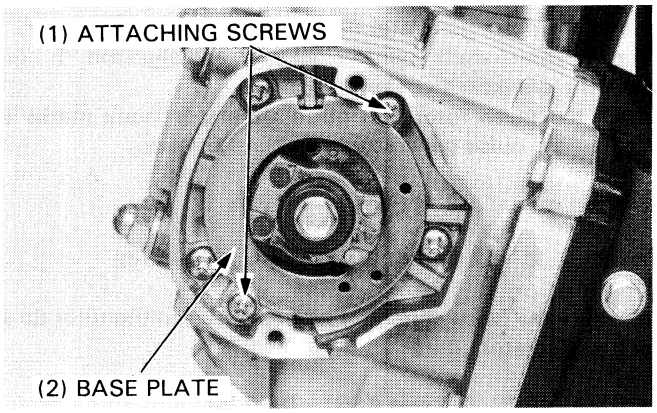
Remove the pulse generator cover and gasket.



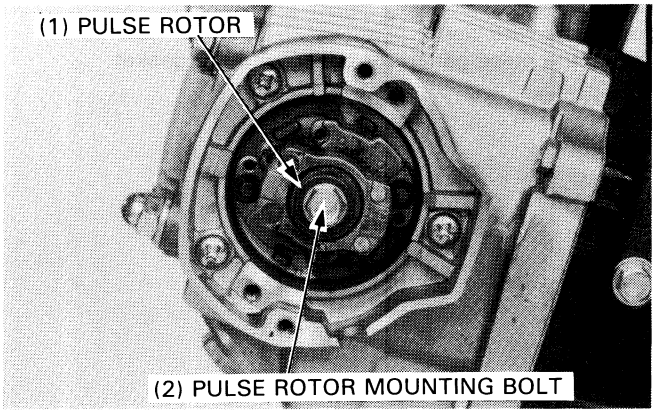
Remove the pulse generator wire clamp.
Remove the mounting screws and the pulse generator.



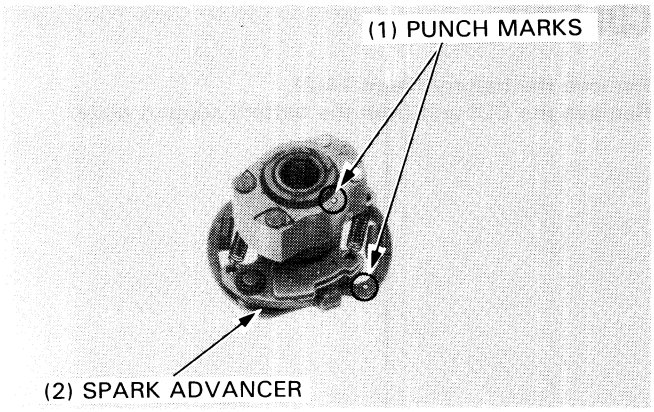
Remove the base plate by removing the two attaching screws.



Remove the pulse rotor mounting bolt and the pulse rotor.

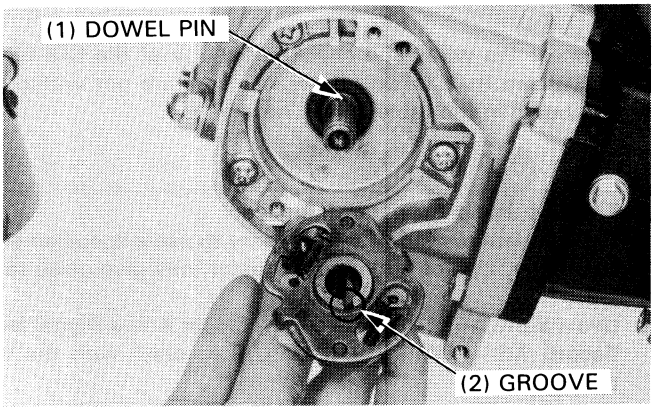


Check the pulse rotor/spark advancer for wear or damage, and replace the assembly if necessary.
Before installing, be sure the rotor/advancer punch marks are aligned.

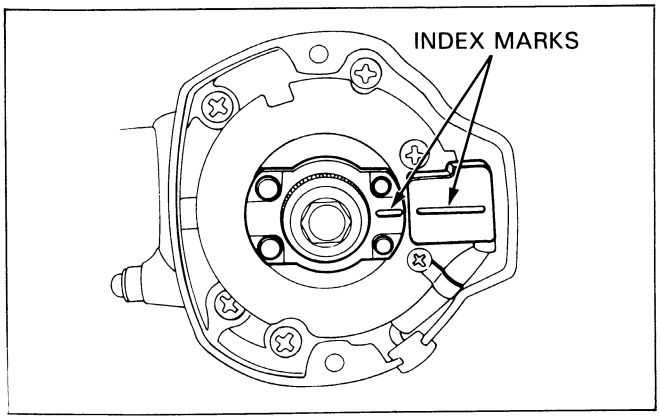


INSTALLATION

Apply grease to the sliding surface of the advancer.
Install the pulse generator rotor onto the camshaft aligning the dowel pin on the camshaft with the groove on the rotor.
Install the rotor bolt.



Install the pulse generator base plate and pulse generator.
Turn the crankshaft counterclockwise and align the "F" mark with the crankcase cover index mark.
Align the pulse rotor and pulse generator index marks and tighten the pulse generator base plate screws.



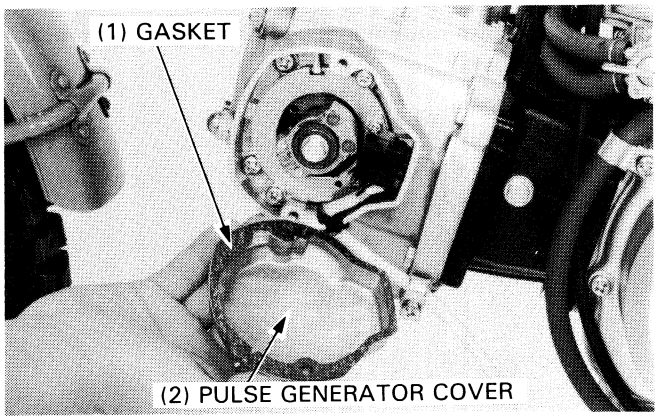
Tighten the pulse rotor bolt.

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

Measure the pulse generator air gap between the rotor tip and pulse generator.

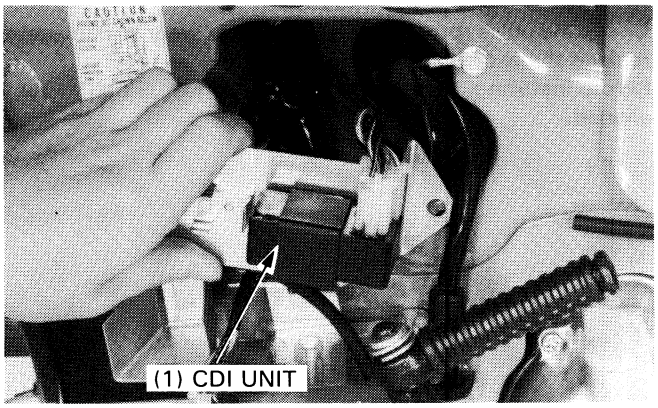
AIR GAP: 0.3—0.7 mm (0.01—0.03 in)

Install the wire clamp.
Install the pulse generator cover with the gasket.



CDI UNIT

Remove the battery (Page 14-2).
Remove the CDI unit from the battery support plate.

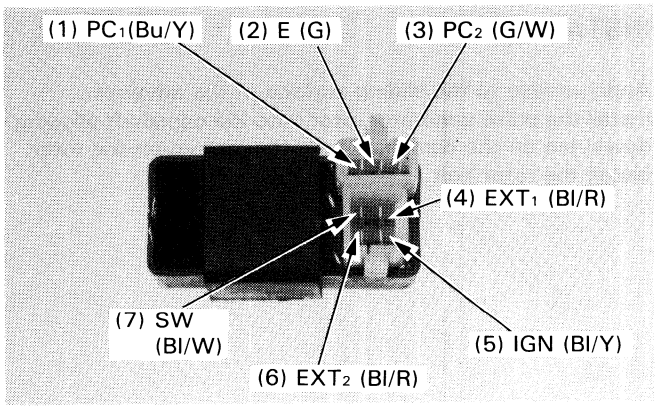


INSPECTION

Disconnect the wires and check continuity of the CDI terminals. Replace the CDI unit if the readings are not within the limits shown in the table on the next page.

NOTE

- The CDI unit is fully transistorized.
- For accurate testing, it is necessary to use a specified electric tester. Use of an improper tester may give galse readings.
- Use a Sanwa SP10D, Kowa TH—5H, or Kowa Digital Multi Tester KS—AHM—32—003 (U.S.A. only) with the test table.



(+) / (−)	IGN (Bl/Y)	EXT1 (Bl/R)	EXT2 (Bl/R)	PC1 (Bu/Y)	PC2 (G/W)	E (G)	SW (Bl/W)
IGN (Bl/Y)		∞	∞	∞	∞	∞	∞
EXT1 (Bl/R)	∞		∞	∞	∞	∞	∞
EXT2 (Bl/R)	∞	∞		∞	∞	∞	5–100
PC1 (Bu/Y)	∞	2–60	∞		2–60	2–60	∞
PC2 (G/W)	∞	1–50	∞	∞		0	∞
E (G)	∞	1–50	∞	∞	0		∞
SW (Bl/W)	∞	∞	∞	∞	∞	∞	

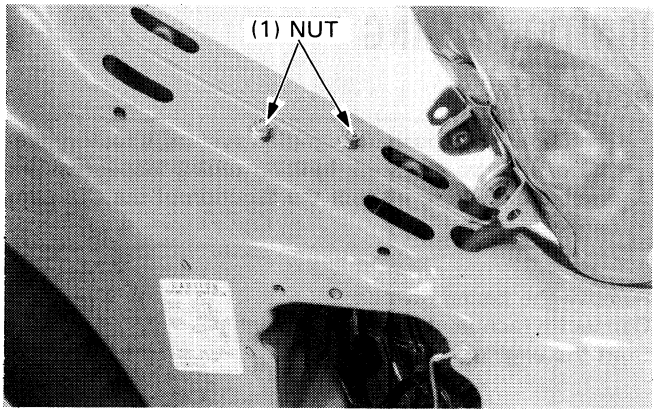
IGN: Ignition coil
EXT: Exciter coil
PC: Pulse generator coil
E: Ground
SW: Engine stop switch

Sanwa Tester: Use the X kΩ range
Kowa Tester: Use the X100 Ω range

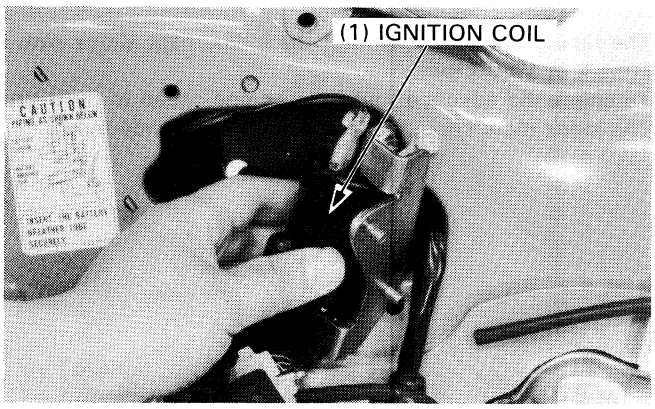
IGNITION COIL

REMOVAL

Remove the following parts:
— fuel tank (Page 4-3).
— battery (Page 14-2).
— ignition coil mounting nuts.



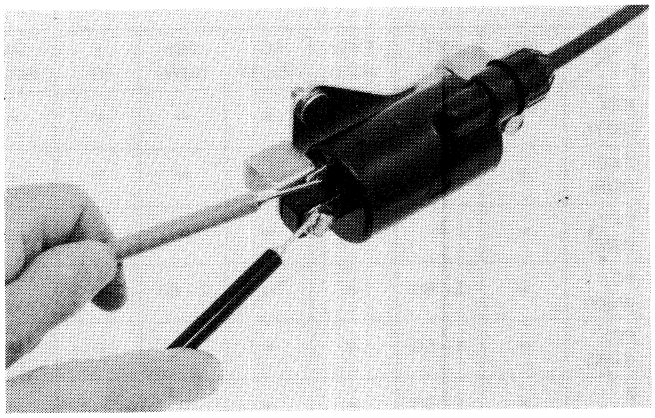
Disconnect the black/yellow wire connector.
Remove the spark plug cap by turning it counterclockwise and remove the ignition coil.



CONTINUITY TEST

Check for continuity between the primary and ground terminals.

PRIMARY COIL RESISTANCE: 0.2—0.8 Ω

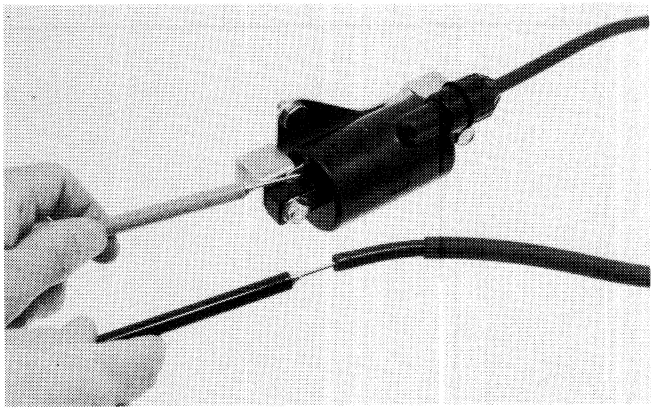


Measure the secondary coil resistance.

SECONDARY COIL RESISTANCE: 8—15 kΩ

INSTALLATION

Install the ignition coil in the reverse order of removal.

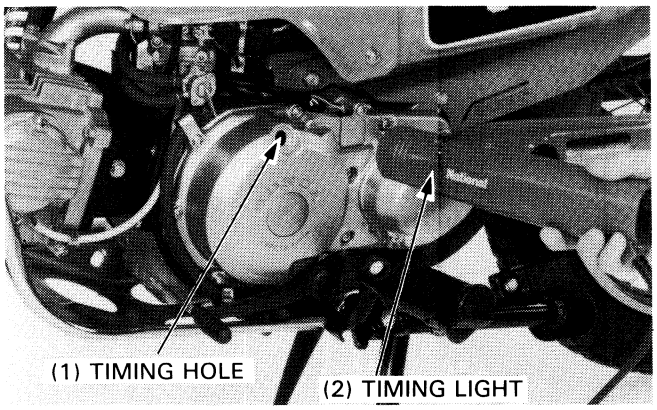


IGNITION TIMING

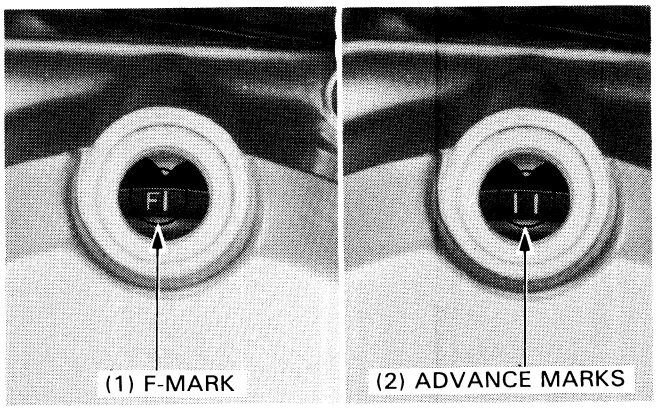
NOTE

- 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.

Remove the timing hole cap.
Connect a tachometer and timing light.
Start the engine.



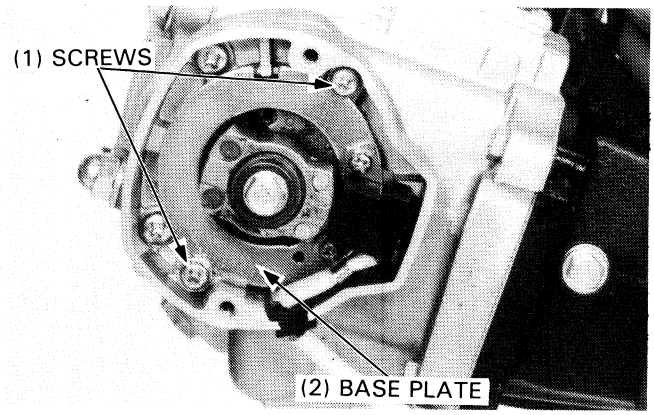
The timing at idle is correct if the index mark aligns with the F-mark at 1,500 rpm.
To check the advance, raise the engine speed to 3,400 rpm. The index mark should be between the advance marks.



To adjust, remove the pulse generator cover.
Loosen the base plate attaching screws and turn the plate left or right as required.

If the ignition timing cannot be corrected, inspect the CDI unit and pulse generator.
Replace any faulty components.

Maintain a pulse rotor-to-generator air gap of 0.3—0.7 mm (0.01—0.03 in).



MEMO

SERVICE INFORMATION

GENERAL

- All electrical wires and connectors are color-coded. When two or more different colored wires are connected, a colored tube that matches the major color of the other wire appears on the wire near the connector. Observe the color codes before disconnecting any wires. All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.
- In order to isolate an electrical failure, check the continuity of the electrical path through the part. A continuity check can usually be made without removing the part from the motorcycle—by simply disconnecting the wires and connecting a continuity tester or ohmmeter to the terminals or connections.

SPECIFICATIONS

Headlight	6V 36.5/35 W
Tail/brake light	6V 3/32 cp
Turn signal light	6V 21cp x 2
Instrument light	6V 1cp
Neutral indicator	6V 2cp
Turn signal indicator	6V 1cp
High beam indicator	6V 1cp

TROUBLESHOOTING

No lights come on when ignition switch is turned ON
- Faulty bulb
- Faulty switch
- Wiring to that component has open circuit
- Fuse blown
- Wiring loose, broken, or at fault
- Battery dead or disconnected

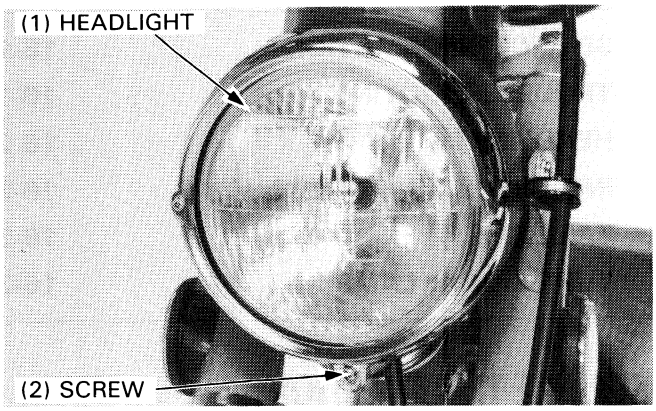
All lights come on, but dimly, when ignition switch is turned ON
- Battery voltage low
- Wiring or switch has excessive resistance

Headlight beam does not shift when HI-LO switch is operated
- Beam filament burned out
- Faulty dimmer switch

HEADLIGHT

REMOVAL

Remove the headlight mounting screw and the headlight.
Disconnect the headlight wires.

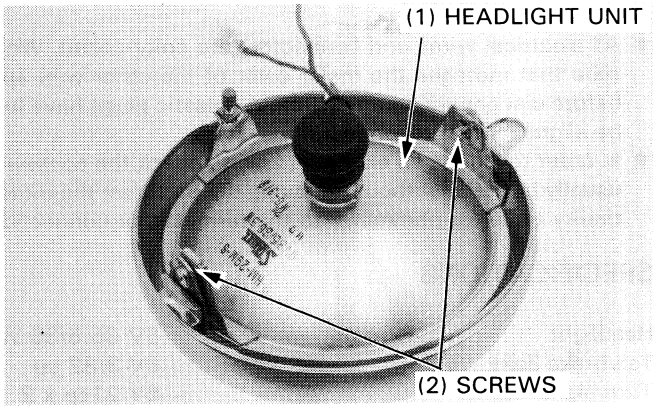


REPLACEMENT

Remove the screws to release the headlight unit and replace it with a new one.

INSTALLATION

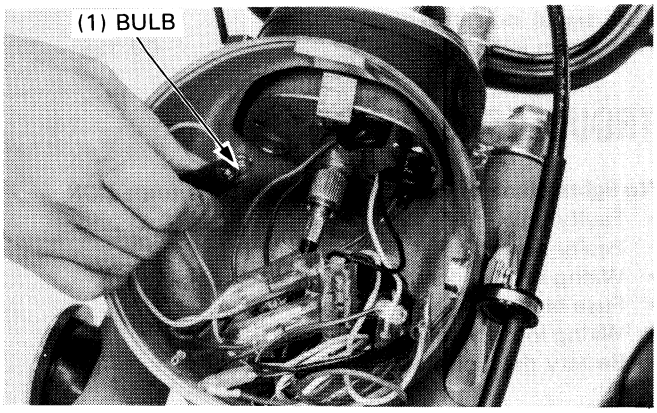
Install the headlight in the reverse order of removal.



INSTRUMENTS

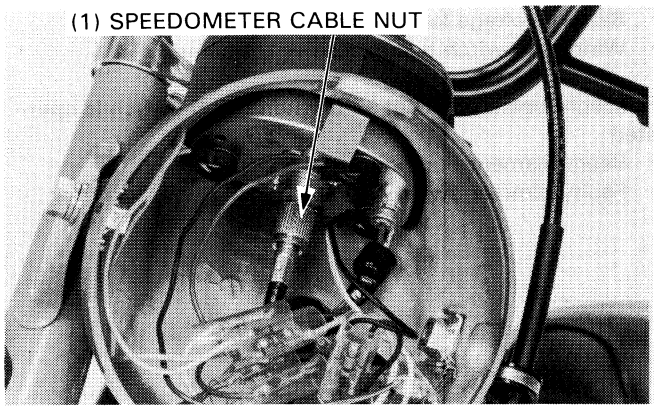
BULB REPLACEMENT

Remove the headlight.
Remove the bulb socket and replace the bulb with a new one.

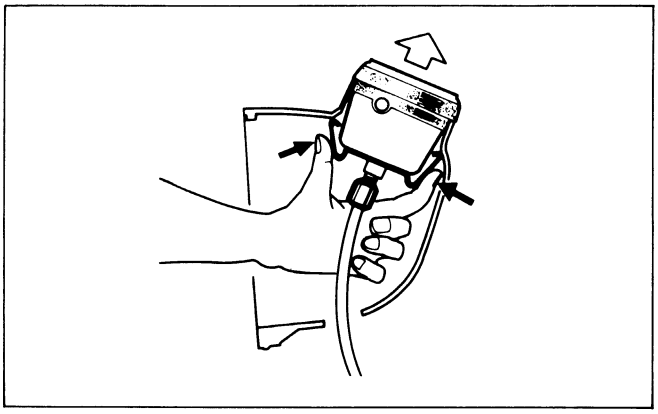


REMOVAL

Remove the headlight.
Disconnect the instrument wire connectors.
Loosen the speedometer cable nut and disconnect the cable from the speedometer.



Squeeze the instrument set spring and push the instrument upward as shown.



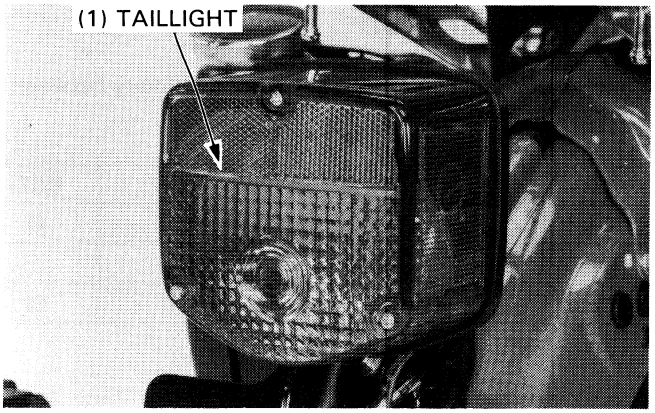
INSTALLATION

Install the instrument in the reverse order of removal.

TAILLIGHT

BULB REPLACEMENT

Remove the screws and lens from the taillight.

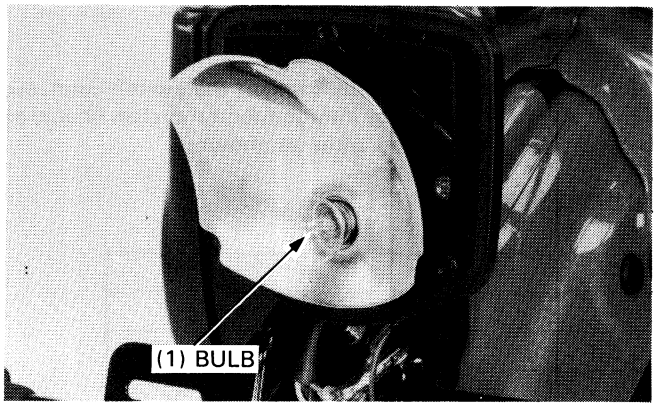


Remove the bulb from the taillight socket and replace it with a new one.

Install the taillight lens.

NOTE

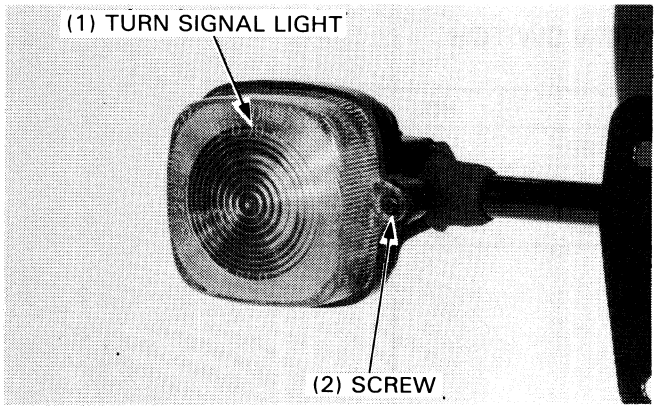
- Do not over-tighten the screws, as over-tightening may damage the lens.



TURN SIGNAL LIGHT

BULB REPLACEMENT

Remove the screw and lens from the turn signal light.

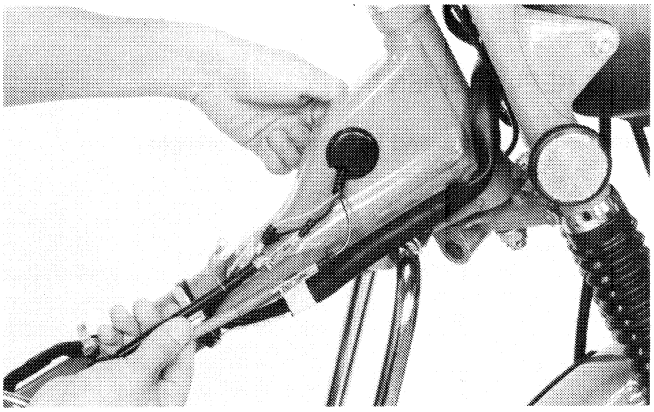


Replace the bulb with a new one.

Install the turn signal lens.

IGNITION SWITCH

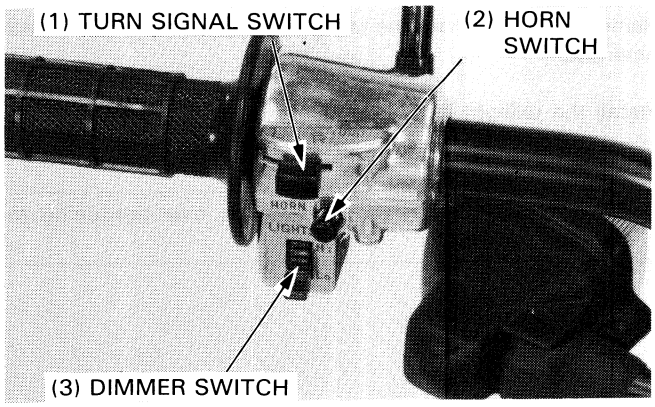
Remove the frame cover and check for continuity between the color coded wires.



	E	IG	BAT_1	BAT_2
ON			○——○	
OFF	○——○			
Color	G	Bl/W	R	Bl

HANDLEBAR SWITCHES

Remove the headlight and disconnect the switch connectors. Continuity (represented by interconnected circles) should exist between the color coded wires as shown.



TURN SIGNAL SWITCH

	W	R	L
R	○——○		
(N)			
L	○————	————○	
Color	Gr	Lb	O

HORN SWITCH

	HO	BAT
FREE		
PUSH	○——○	
Color	Lg	Bl

DIMMER SWITCH

	HL	HI	LO
HI	O	O	
(N)	O	O	O
LO	O		O
Color	Y	Bu	W

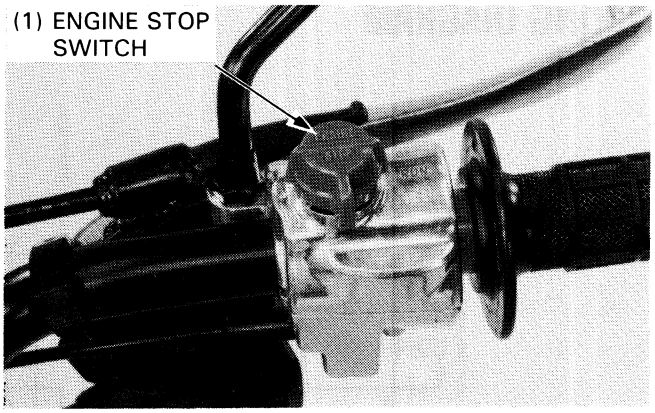
ENGINE STOP SWITCH

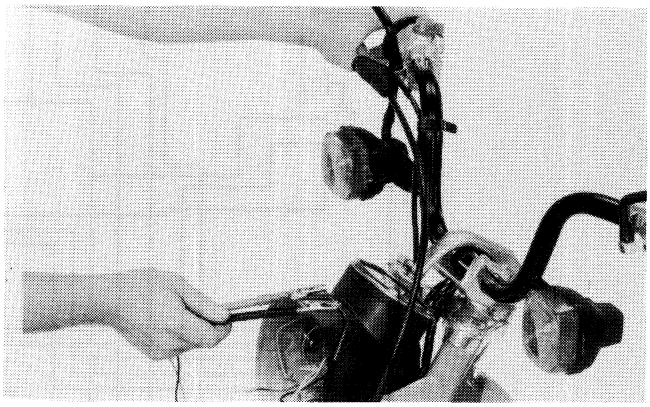
	IG	E
OFF	O	O
RUN		
OFF	O	O
Color	Bl/W	G

FRONT BRAKE LIGHT SWITCH

Check the green/yellow and black wires for continuity with the front brake applied.

The switch is normal if there is continuity with the brake applied.

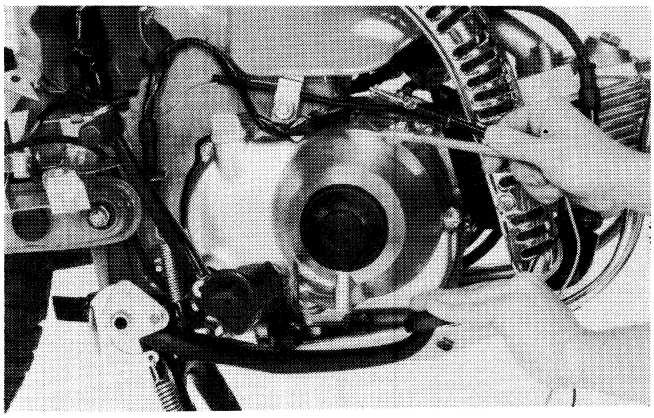




REAR BRAKE LIGHT SWITCH

Check the green/yellow and black wires for continuity with the rear brake applied. (G/Y—B wires)

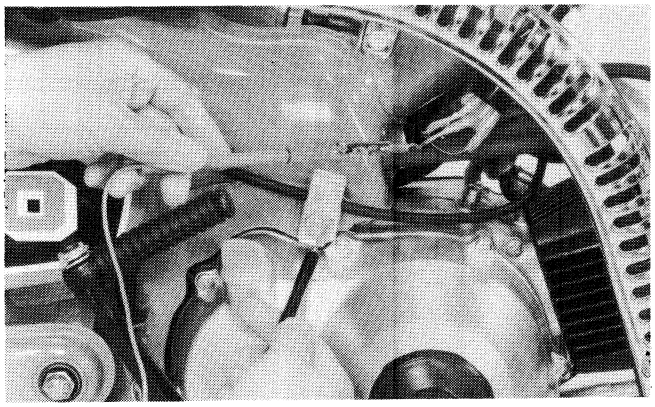
The switch is normal if there is continuity with the brake applied.



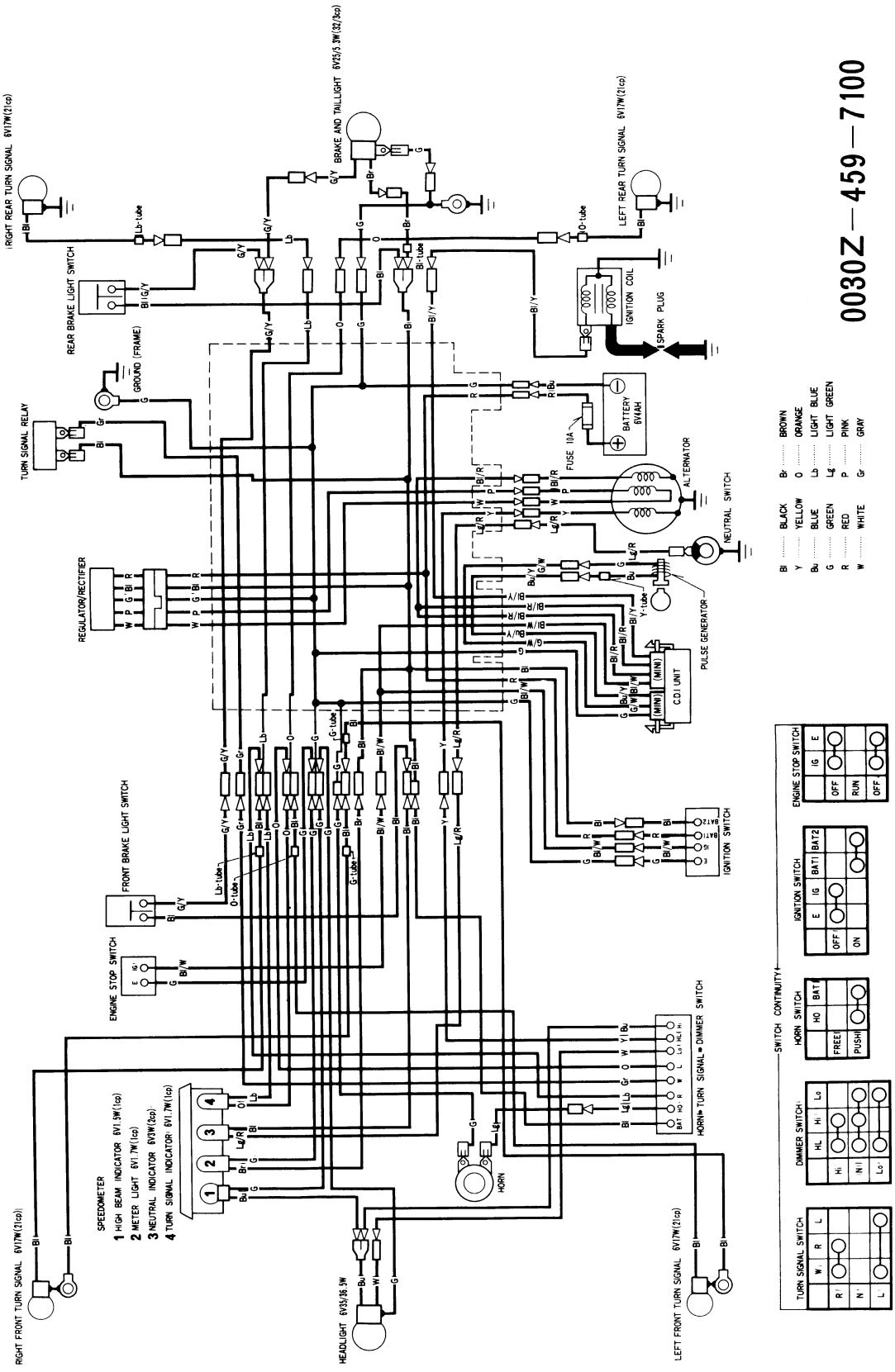
NEUTRAL SWITCH

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

The switch is normal if there is continuity.



WIRING DIAGRAM



ENGINE DOES NOT START OR IS HARD TO START

		Probable Cause:
1. Check if fuel is getting to carburetor.	NOT GETTING TO CARBURETOR →	(1) No fuel in fuel tank (2) Clogged fuel lines or fuel filter (3) Clogged float valve (4) Clogged fuel tank cap breather hole
GETTING TO CARBURETOR ↓		
2. Try spark test.	WEAK OR NO SPARK →	(1) Faulty spark plug (2) Fouled spark plug (3) Faulty CDI unit (4) Broken or shorted high tension wire (5) Faulty alternator (6) Broken or shorted ignition coil (7) Faulty pulse generator (8) Poorly connected, broken or shorted wires (9) Pulse generator rotor air gap incorrect
GOOD SPARK ↓		
3. Test cylinder compression.	LOW COMPRESSION →	(1) Valve clearance too small (2) Valve stuck open (3) Worn cylinder and piston rings (4) Damaged cylinder head gasket (5) Seized valve (6) Improper valve timing
COMPRESSION NORMAL ↓		
4. Start by following normal starting procedure.	ENGINE FIRES BUT SOON STOPS →	(1) Choke excessively open (2) Carburetor pilot screw excessively closed (3) Air leaking past carburetor insulator (4) Improper ignition timing (CDI unit or pulse generator faulty)
ENGINE DOES NOT FIRE ↓		
5. Remove spark plug.	WET PLUG →	(1) Carburetor flooded (2) Carburetor choke excessively closed (3) Throttle valve excessively open (4) Air cleaner dirty
DRY ↓		
6. Start with choke applied.		

ENGINE LACKS POWER

		Probable Cause:
1. Raise wheels off the ground and spin by hand. WHEEL SPINS FREELY ↓	WHEEL DOES NOT SPIN FREELY →	(1) Brake dragging (2) Worn or damaged wheel bearings (3) Wheel bearing needs lubrication (4) Drive chain too tight (5) Rear axle nut too tight
2. Check tire pressure with tire gauge. PRESSURE NORMAL ↓	PRESSURE TOO LOW →	(1) Punctured tire (2) Faulty tire valve
3. Try rapid acceleration from low to second. ENGINE SPEED DECREASES WHEN CLUTCH IS RELEASED ↓	ENGINE SPEED DOES NOT CHANGE WHEN CLUTCH IS RELEASED →	(1) Clutch slipping (2) Worn clutch disc/plate (3) Warped clutch disc/plate
4. Lightly accelerate engine. ENGINE SPEED INCREASES ↓	ENGINE SPEED DOES NOT INCREASE SUFFICIENTLY →	(1) Carburetor choke closed (2) Clogged air cleaner (3) Restricted air vent tube (4) Clogged fuel tank cap breather hole (5) Clogged exhaust muffler
5. Check ignition timing. CORRECT ↓	INCORRECT →	(1) Faulty CDI unit (2) Faulty pulse gererator (3) Faulty ignition advancer
6. Check valve clearance. CORRECT ↓	INCORRECT →	(1) Improper valve adjustment (2) Worn valve seat
7. Test cylinder compression using a compression gauge. NORMAL ↓	TOO LOW →	(1) Valve stuck open (2) Worn cylinder and piston rings (3) Leaking head gasket (4) Improper valve timing
8. Check carburetor for clogging. NOT CLOGGED ↓	CLOGGED →	(1) Carburetor not serviced frequently enough
9. Remove spark plug. NOT FOULED OR DISCOLORED ↓	FOULED OR DISCOLORED →	(1) Plug not serviced frequently enough (2) Use of plug with improper heat range

10. Remove oil level gauge and check oil level. CORRECT ↓	OIL LEVEL INCORRECT →	(1) Oil level too high (2) Oil level too low (3) Contaminated oil
11. Remove the valve hole cap and inspect lubrication. VALVE TRAIN LUBRICATED PROPERLY ↓	VALVE TRAIN NOT LUBRICATED PROPERLY →	(1) Clogged oil passage (2) Clogged oil control orifice
12. Check if engine overheats. NOT OVERHEATED ↓	OVERHEATED →	(1) Excessive carbon build-up in combustion chamber (2) Use of improper quality of fuel (3) Clutch slipping (4) Fuel-air mixture too lean
13. Accelerate or run at high speed. ENGINE DOES NOT KNOCK	ENGINE KNOCKS →	(1) Worn piston and cylinder. (2) Fuel-air mixture too lean. (3) Use of improper grade of fuel (4) Excessive carbon build-up in combustion chamber (5) Ignition timing too advanced (Faulty CDI unit or advancer).

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

		Probable Cause:
1. Check ignition timing and valve clearance. CORRECT ↓	INCORRECT →	(1) Improper valve clearance (2) Improper ignition timing (Faulty CDI unit or spark advancer)
2. Check carburetor pilot screw adjustment. CORRECT ↓	INCORRECT →	(1) Fuel-air mixture too lean (2) Fuel-air mixture too rich
3. Check if air is leaking past carburetor insulator. NOT LEAKING ↓	LEAKING →	(1) Deteriorated insulator O-ring (2) Loose carburetor
4. Try spark test. GOOD SPARK	WEAK OR INTERMITTENT SPARK →	(1) Faulty, carbon or wet fouled spark plug (2) Faulty CDI unit (3) Alternator faulty (4) Faulty ignition coil (5) Faulty pulse generator

POOR PERFORMANCE AT HIGH SPEEDS

		Probable Cause:
1. Check ignition timing and valve clearance.	INCORRECT →	(1) Improper valve clearance (2) Faulty CDI unit (3) Faulty pulse generator (4) Faulty advancer
CORRECT ↓		
2. Disconnect fuel tube at carburetor.	FUEL FLOW RESTRICTED →	(1) Lack of fuel in tank (2) Clogged fuel line (3) Clogged fuel tank breather hole (4) Clogged fuel valve
FUEL FLOWS FREELY ↓		
3. Remove carburetor and check for a clogged jet.	CLOGGED (clean)	
NO CLOGS ↓		
4. Check valve timing.	INCORRECT →	Cam sprocket not installed properly
CORRECT ↓		
5. Check valve spring tension.	WEAK →	Faulty spring
NOT WEAKENED		

POOR HANDLING

	Probable Cause:
1. Check tire pressure.	
2. If steering is heavy. →	(1) Steering head top thread nut too tight (2) Damaged steering bearing races or steel balls
3. If either wheel is wobbling. →	(1) Excessive wheel bearing play (2) Bent rim (3) Improperly installed wheel hub (4) Bent frame (5) Improper drive chain tension or adjustment (6) Swing arm pivot bushing excessively worn (7) Loose swing arm pivot nut
4. If the motorcycle pulls to one side. →	(1) Front and rear wheels not aligned (2) Bent front fork (3) Bent swing arm

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