Official

HONDA

SHOP MANUAL

TG50M Gyro S

'85-'86

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 al conceivable ways in which service, whether or not recommended by Honda might be done or of the possible hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service method or tools selected.

HOW TO USE THIS MANUAL

Follow the Maintenance Schedule 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 motor scooter, while sections 4 through 15 describe parts of the motor scooter, 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 section 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 16 Troubleshooting.

HONDA MOTOR CO., LTD.
Service Publications Office

CONTENTS

Date of Issue: September, 1985

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GENERAL SAFETY

WARNING

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

WARNING

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

WARNING

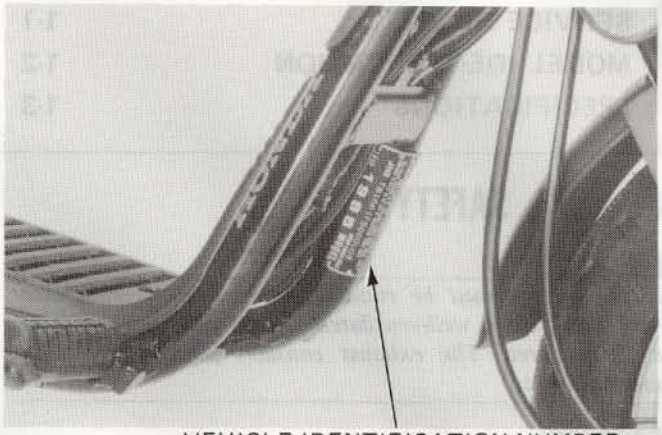
The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially while charging it.

SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that do not meet HONDA's design specifications may damage the scooter.
2. Use the special tools designed for this scooter.
3. Use only metric tools when servicing this scooter. Metric bolts, nuts, and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the scooter.
4. Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
5. When tightening bolts or nuts, begin with larger-diameter or inner bolts first, and tighten to the specified torque diagonally in 2–3 steps, unless a particular sequence is specified.
6. Clean parts in non-flammable or high flash point solvent upon disassembly. Lubricate any sliding surfaces before assembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown on page 1-7, Calbe and Harness Routing and always keep them away from sharp edges and areas where they might be pinched between moving parts.

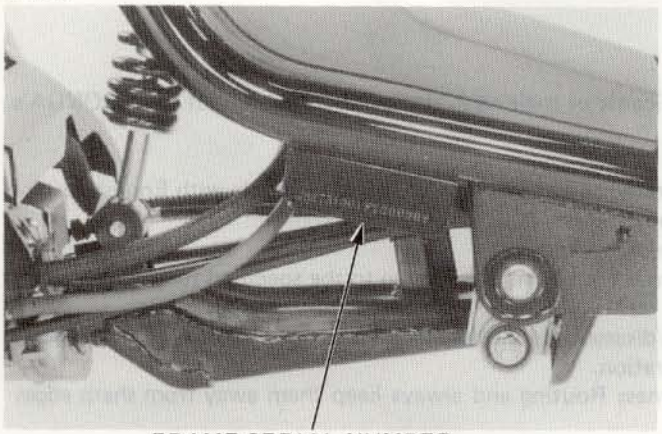
MODEL IDENTIFICATION

The vehicle identification number is on the frame tube in front of the floor board.



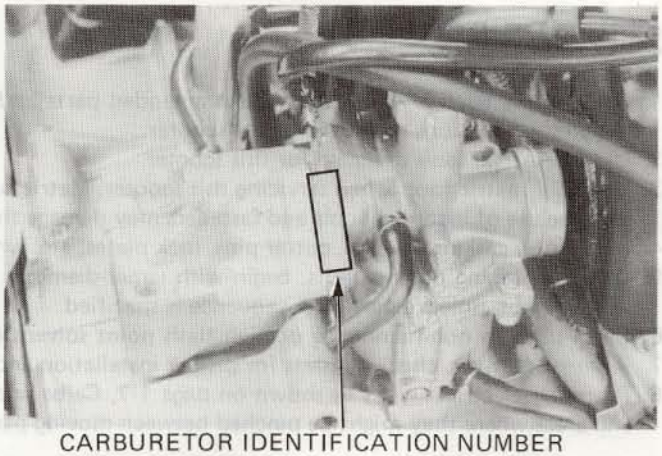
VEHICLE IDENTIFICATION NUMBER

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



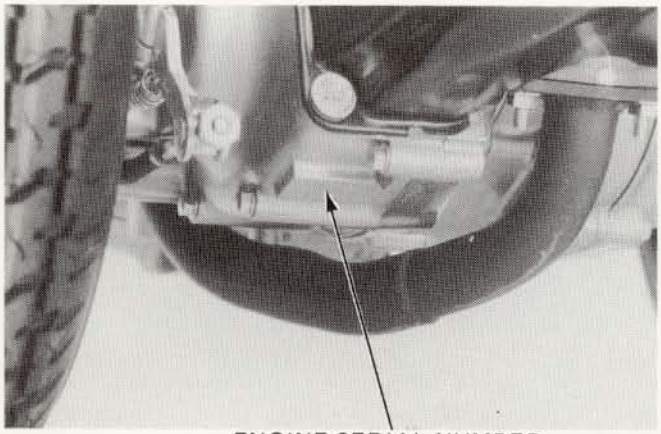
FRAME SERIAL NUMBER

The carburetor identification number is on the carburetor body.



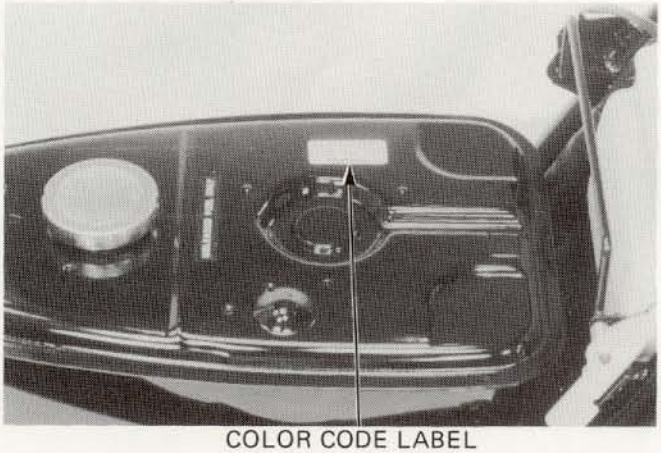
CARBURETOR IDENTIFICATION NUMBER

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



ENGINE SERIAL NUMBER

The color code label is attached to the fuel tank under the seat. When ordering a color coded part, always specify its designated color.



COLOR CODE LABEL

SPECIFICATIONS

ITEM			SPECIFICATION
DIMENSIONS	Overall length		1,710 mm (67.3 in)
	Overall width		605 mm (23.8 in)
	Overall height		1,010 mm (39.8 in)
	Wheel base		1,285 mm (50.6 in)
	Ground clearance		70 mm (2.8 in)
	Dry weight		64 kg (141.1 lb)
FRAME	Type		Back bone
	Front suspension, travel		Telescopic fork, 65 mm (2.6 in)
	Rear suspension, travel		Unit swing, 60 mm (2.4 in)
	Vehicle capacity load		82 kg (180 lb)
	Front tire size, pressure		3.00–10–2PR, 150 kPa (1.50 kg/cm^2, 21 psi)
	Rear tire size, pressure		4.50–6–2PR, 75 kPa (0.75 kg/cm^2, 11 psi)
	Front brake		Internal expanding shoe
	Rear brake		Internal expanding shoe
	Fuel capacity		3.7ℓ (1.0 US gal, 0.81 Imp gal)
	Caster angle		27°
	Trail		62 mm (2.4 in)
	Front fork grease		5 cc (0.17 US oz, 0.18 Imp oz)
ENGINE	Type		Air cooled 2-stroke
	Cylinder arrangement		Single cylinder
	Bore and stroke		41.0 x 37.4 mm (1.61 x 1.47 in)
	Displacement		49.3 cm^3 (3.0 cu in)
	Compression ratio		6.9 : 1
	Transmission oil capacity		210 cc (7.1 US oz, 7.4 Imp oz)
	Oil tank capacity		1.2 lit. (1.3 US qt, 1.06 Imp qt)
	Lubrication system		Lubricated by the fuel and oil mixture
	Port timing		
	Intake	Open	Reed valve controlled
		Close	Reed valve controlled
	Exhaust	Open	73.5° BBDC
		Close	73.5° ABDC
	Scavenge	Open	53° BBDC
		Close	53° ABDC
	Engine dry weight		12.0 kg (26.5 lb)
	Idle speed		1,800 ± 100 rpm
CARBURETOR	Carburetor type		Piston valve
	Identification number		'85: PA27E After '85: PA27F
	Air screw initial setting		2-1/4 turns out
	Float level		12.2 mm (0.48 in)

ITEM		SPECIFICATION		
DRIVE TRAIN	Clutch type	Automatic centrifugal, wet clutch		
	Transmission	2-speed automatic		
	Primary reduction	2.636		
	Gear ratio	1st: 1.623, 2nd: 1.000		
	Final reduction	3.928		
ELECTRICAL	Ignition	Condenser capacitive discharge ignition (CDI)		
	Starting system	Starting motor		
	Alternator	91W/5,000 rpm		
	Spark plug		NGK	ND
	Standard		BPR6HSA	W20FPR-L
	For cold climate		BPR4HSA	W14FPR-L
	For extended high speed riding		BPR8HSA	W24FPR-L
	Spark plug gap	0.6–0.7 mm (0.024–0.028 in)		
	Ignition timing "F" mark	14.5° BTDC		
	Battery capacity	12V 3AH		
	Fuse capacity	10A		
LIGHTS	Headlight Low/High	12V–25/25W		
	Tail/stoplight	12V–8/23W	3/32 cp	
	Turn signal	12V–23W	32 cp	
	Speedometer light	12V–3.4W	2 cp	
	High beam indicator	12V–3.4W	2 cp	
	Turn signal indicator	12V–3.4W	2 cp	

TORQUE VALUES

ENGINE

Item	Q'ty	Thread Dia. (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Cylinder head bolt	4	6	8–12 (0.8–1.2, 6–9)	While the engine is cold. (Below 35°C, 95°F)
Flywheel nut	1	10	35–40 (3.5–4.0, 25–29)	
Crankcase bolt	5	6	8–12 (0.8–1.2, 6–9)	
Intake pipe bolt	3	6	8–12 (0.8–1.2, 6–9)	While the engine is cold. (Below 35°C, 95°F)
Low drive plate nut	1	17	38–42 (3.8–4.2, 27–31)	Left hand threads
Carburetor bolt	2	6	9–12 (0.9–1.2, 6–9)	While the engine is cold. (Below 35°C, 95°F)
Ratchet plate bolt	3	6	10–12 (1.0–1.2, 7–9)	
Transmission oil level check bolt	1	12	50–60 (5.0–6.0, 36–43)	

CHASSIS

Item	Q'ty	Thread Dia. (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Rear axle nut	2	12	65–80 (6.5–8.0, 48–58)	Apply oil
Front axle nut	1	10	40–50 (4.0–5.0, 29–36)	
Joint shaft pivot bolt	2	10	40–55 (4.0–5.5, 29–40)	
Steering stem lock nut	1	25.4	5–13 (0.5–1.3, 3.6–9)	
Steering stem nut	1	25.4	60–80 (6.0–8.0, 43–58)	
Speedometer cable set screw	1	4	1.5–2 (0.15–0.2, 1.1–1.5)	
Brake arm bolt	2	5	4–7 (0.4–0.7, 3–5)	
Rear brake cable primary adjuster lock nut	1	7	3.5–5 (0.35–0.5, 2.5–3.6)	
Joint case bolt	2	8	24–30 (2.4–3.0, 17–22)	
	4	6	10–14 (1.0–1.4, 7–10)	
Joint shaft nut	1	12	55–65 (5.5–6.5, 40–48)	
Swing lock arm A	1	5	4–7 (0.4–0.7, 3–5)	
Rear shock absorber damper rod lock nut	1	10	30–45 (3.0–4.5, 22–32)	Apply locking agent
Rear shock absorber mounting bolt	2	10	30–45 (3.0–4.5, 22–32)	
Rear brake equalizer cover screw	3	5	2.5–4 (0.25–0.4, 1.8–3)	
Front fork bridge bolt	2	10	40–50 (4.0–5.0, 29–36)	
Rear wheel disc bolt	3	8	24–30 (2.4–3.0, 17–22)	
Rear wheel hub bolt	3	10	45–50 (4.5–5.0, 32–36)	Apply oil
Fuel strainer cup	1	–	3–5 (0.3–0.5, 2.2–3.6)	
Engine mounting bolt	3	8	24–30 (2.4–3.0, 17–22)	
Exhaust pipe, muffler joint nut	4	6	10–14 (1.0–1.4, 7–10)	

Torque specifications listed above are for important fasteners. Others should be tightened to the standard torque values listed below.

STANDARD TORQUE VALUES

Item	Torque N·m (kg-m, ft-lb)	Item	Torque N·m (kg-m, ft-lb)
5 mm bolt and nut	4.5–6 (0.45–0.6, 3–4)	5 mm screw	3.5–5.0 (0.35–0.5, 2.5–3.6)
6 mm bolt and nut	8–12 (0.8–1.2, 6–9)	6 mm screw, SH bolt	7–11 (0.7–1.1, 5–8)
8 mm bolt and nut	18–25 (1.8–2.5, 13–18)	6 mm flange bolt and nut	10–14 (1.0–1.4, 7–10)
10 mm bolt and nut	30–40 (3.0–4.0, 22–29)	8 mm flange bolt and nut	24–30 (2.4–3.0, 17–22)
12 mm bolt and nut	50–60 (5.0–6.0, 36–43)	10 mm flange bolt and nut	35–45 (3.5–4.5, 25–32)

TOOLS

SPECIAL

Description	Tool Number	Alternate Tool	Tool Number	Ref. Page
Universal bearing puller	07631–0010000	Commercially available in U.S.A.		9-2
Snap ring pliers	07914–3230001	Commercially avaialble in U.S.A.		11-15, 11-16
Lock nut wrench	07916–1870101			11-17, 11-18
Lock nut wrench	07916–KM10000			11-18
Shaft protector	07931–1870000			9-2
Crankcase puller	07935–GJ50000	Crankcase puller	07937–4300000	9-2
Bearing remover set, 12 mm	07936–1660001			8-7
– Bearing remover shaft, 12 mm	(07936–1660100)			8-7
– Remover weight	(07741–0010201)	Remover weight	07936–3710200	8-7
Crankcase assembly tool	07965–1480010			9-4, 9-5
– Collar	(07965–1480100)			9-4, 9-5
– Shaft	(07965–GM00300)			9-4, 9-5
Attachment, 28 x 30 mm	07946–1870100			11-10
Rear shock absorber attachment A	07967–GA70101			13-2, 13-3
Rear shock absorber attachment B	07967–GA70200			13-2, 13-3
Steering stem driver	07946–4300101			11-17
Ball race remover	07946–GA70000	Not available in U.S.A.		11-17
Hand vacuum pump	A937X–041–XXXXX	U.S.A. only	ST–AH–260–MC7 (U.S.A. only)	4-5
Digital multimeter	07411–0020000		KS–AHM–32–003 (U.S.A. only)	14-4

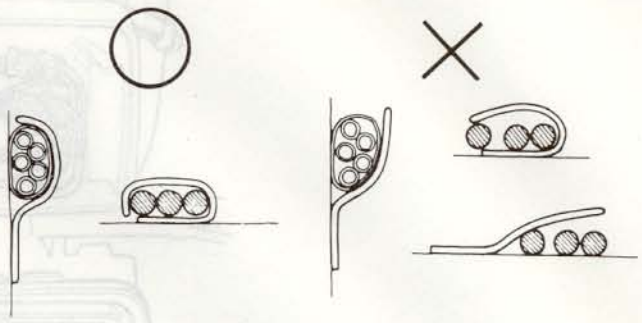
COMMON

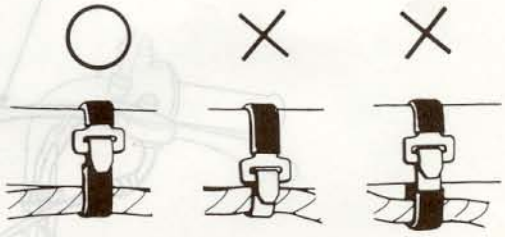
Description	Tool Number	Alternate Tool	Tool Number	Ref. Page
Float level gauge	07401–0010000			4-8
Lock nut wrench, 30 x 32 mm	07716–0020400	Commercially available in U.S.A.		11-16, 11-18
Extension	07716–0020500	Commercially available in U.S.A.		11-16, 11-18
Universal holder	07725–0030000			7-3, 7-5
Clutch center holder	07724–0050000	Commercially available in U.S.A.		8-8, 9-5
Flywheel puller	07733–0010000	Flywheel puller	07933–0010000	7-4
Attachment, 24 x 26 mm	07746–0010700			7-6
Pilot, 10 mm	07746–0040100			7-6, 11-10
Attachment, 32 x 35 mm	07746–0010100			8-13
Pilot, 15 mm	07746–0040300			8-13
Attachment, 37 x 40 mm	07746–0010200			9-4
Pilot, 17 mm	07746–0040400			9-4
Attachment, 42 x 47 mm	07746–0010300			9-4, 11-17
Pilot, 20 mm	07746–0040500			9-4
Driver	07749–0010000			7-6, 8-13
Driver	07746–0020100			7-6
Bearing remover expander	07746–0050100			11-10
Bearing remover collet, 10 mm	07746–0050200			11-10
Shock absorber compressor	07959–3290001			13-2, 13-3

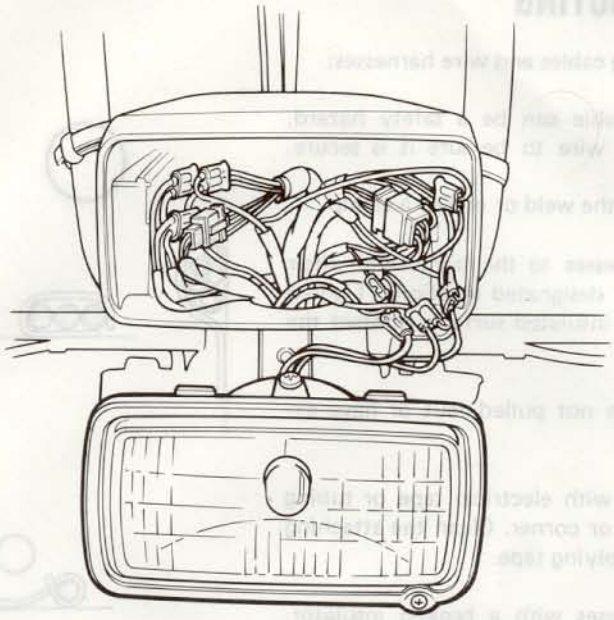
CABLE & HARNESS ROUTING

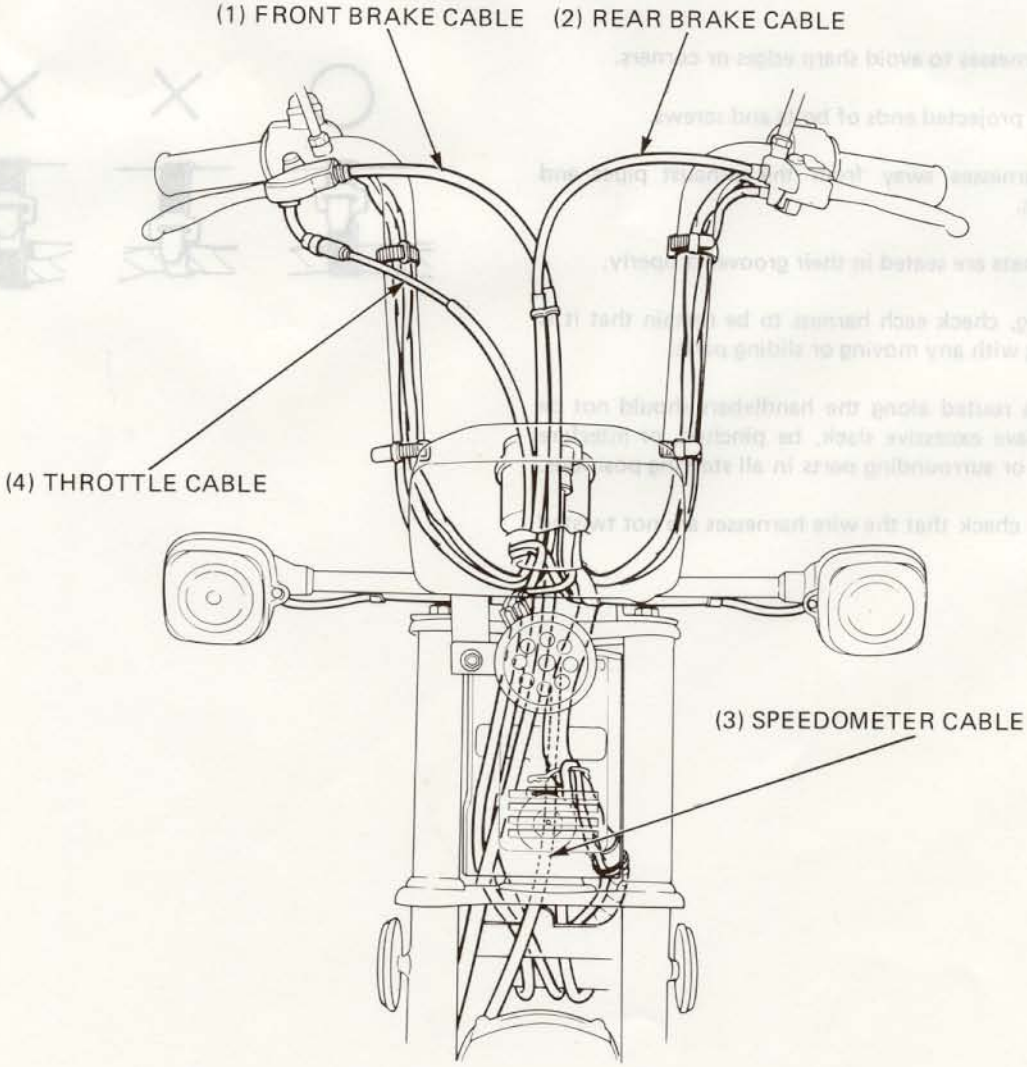
Note the following when routing cables and wire harnesses:

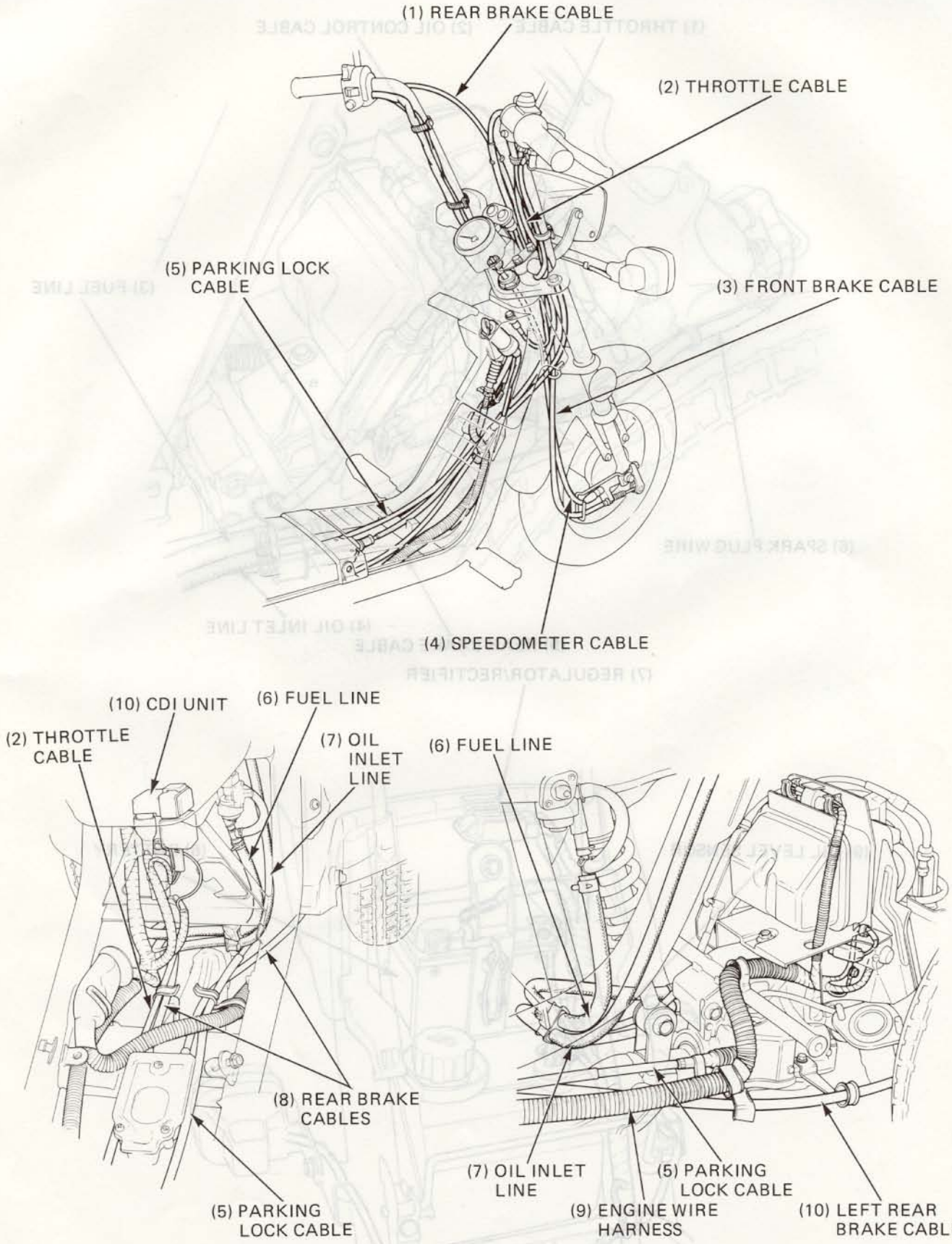
- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze wires against the weld or end of a clamp.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so 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 a broken insulator. Repair by wrapping them with protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners.
- Also avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust 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.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.

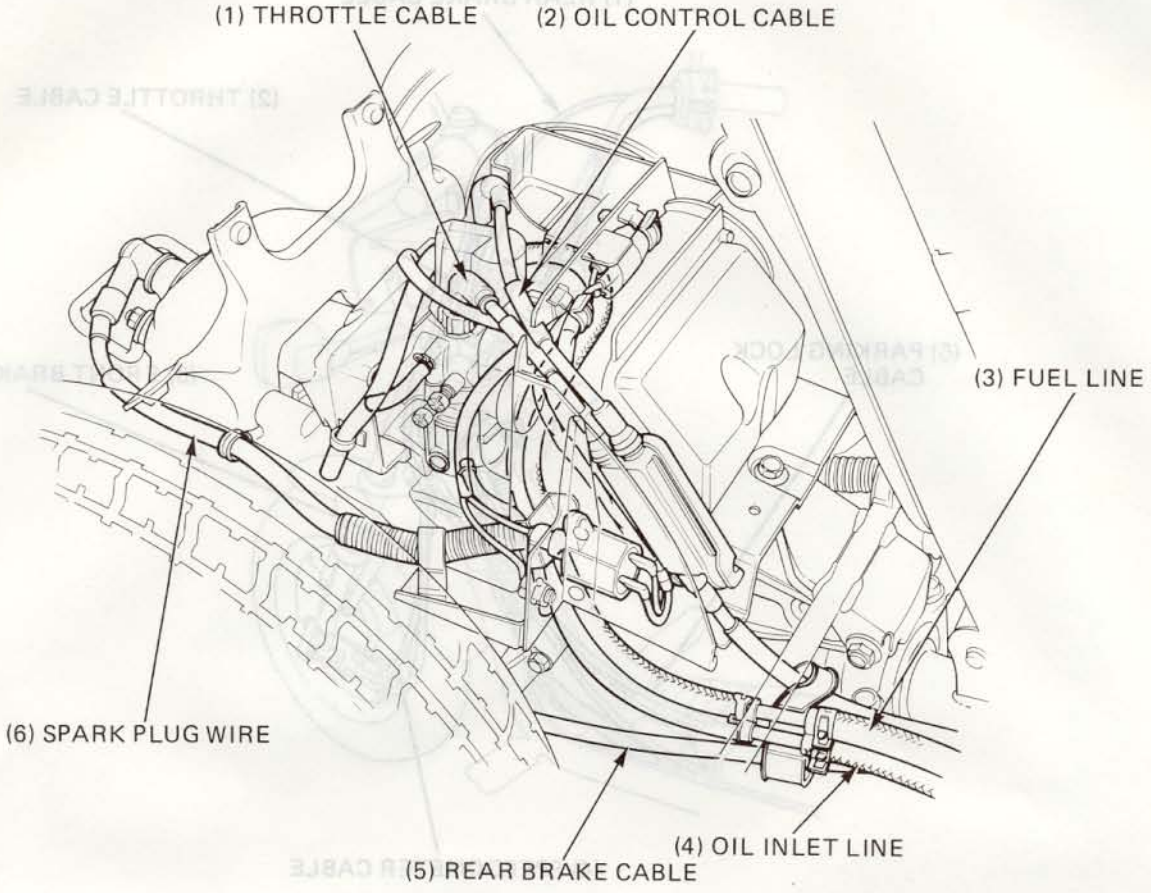


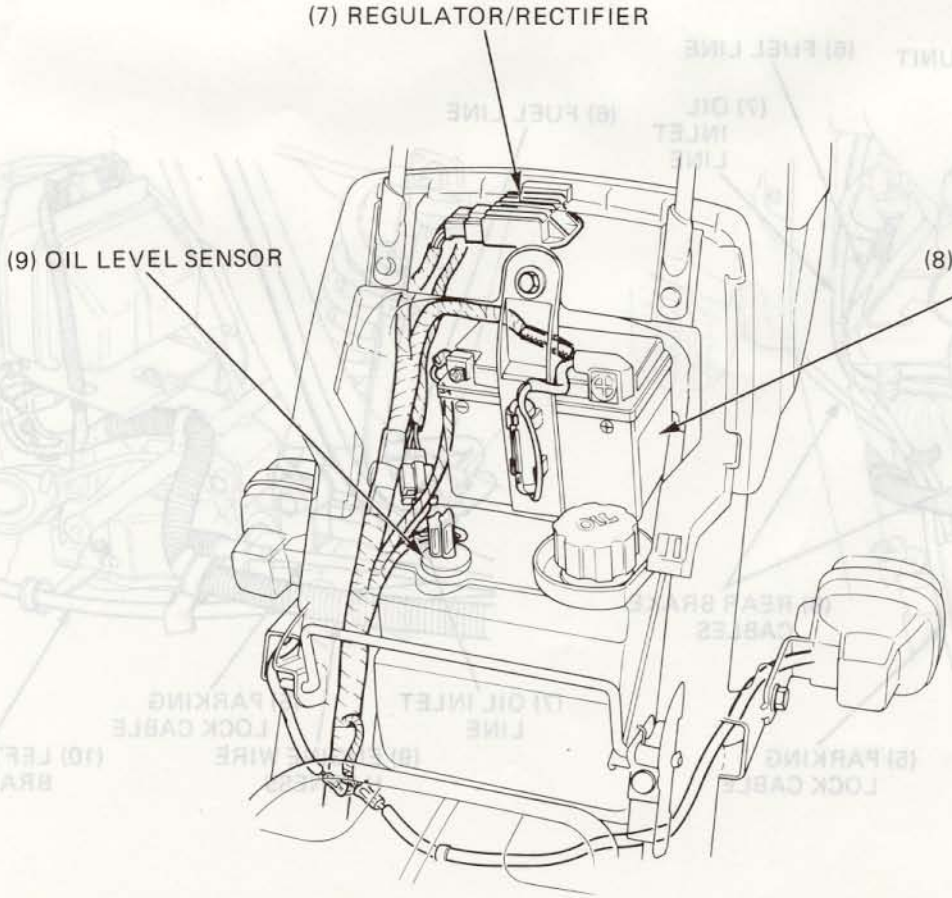





(1) FRONT BRAKE CABLE
(2) REAR BRAKE CABLE
(4) THROTTLE CABLE
(3) SPEEDOMETER CABLE


(1) REAR BRAKE CABLE
(2) THROTTLE CABLE
(5) PARKING LOCK CABLE
(3) FRONT BRAKE CABLE
(4) SPEEDOMETER CABLE
(10) CDI UNIT
(6) FUEL LINE
(2) THROTTLE CABLE
(7) OIL INLET LINE
(8) REAR BRAKE CABLES
(5) PARKING LOCK CABLE
(6) FUEL LINE
(7) OIL INLET LINE
(5) PARKING LOCK CABLE
(9) ENGINE WIRE HARNESS
(10) LEFT REAR BRAKE CABLE


(1) THROTTLE CABLE
(2) OIL CONTROL CABLE
(3) FUEL LINE
(6) SPARK PLUG WIRE
(4) OIL INLET LINE
(5) REAR BRAKE CABLE

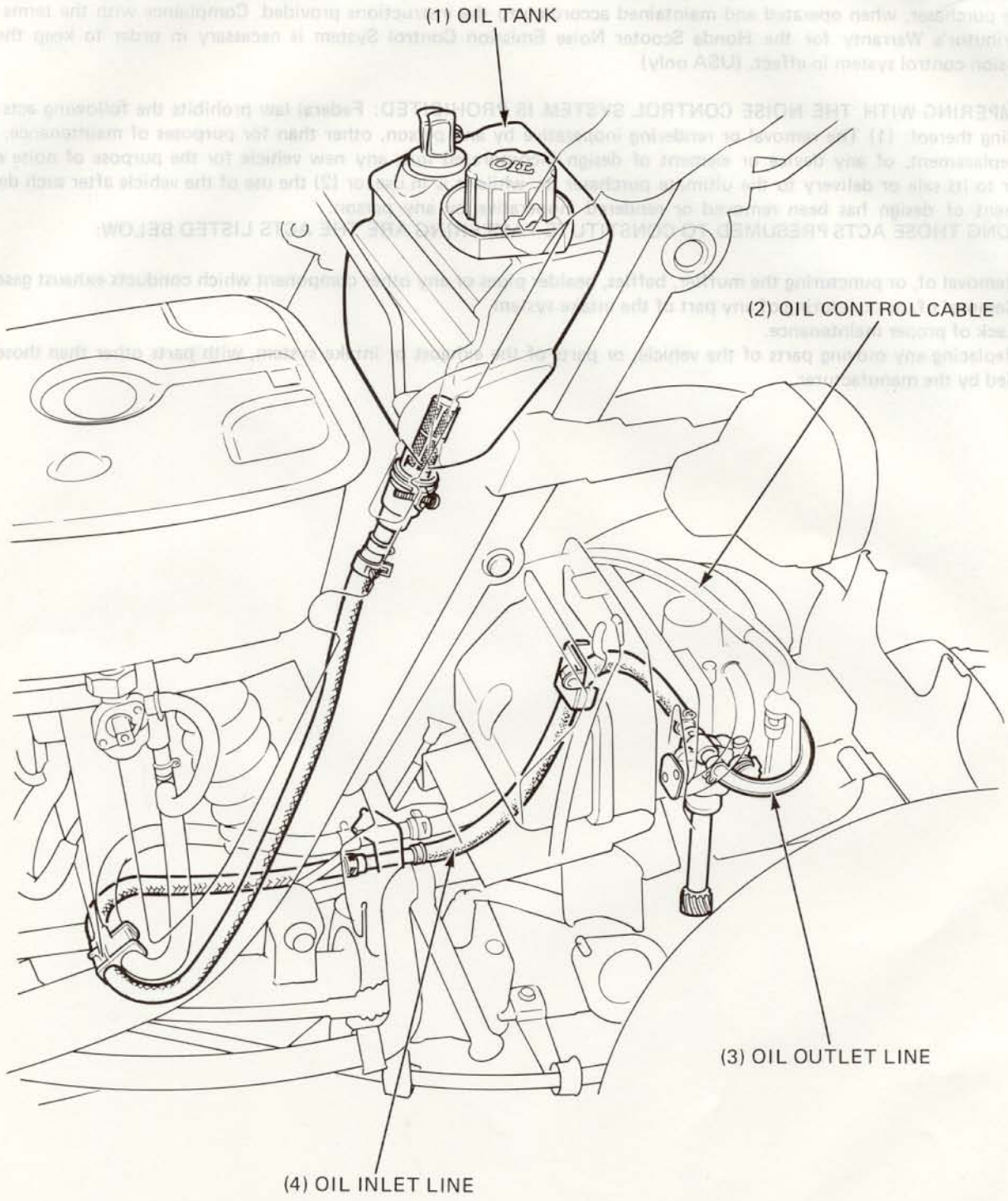

(7) REGULATOR/RECTIFIER
(9) OIL LEVEL SENSOR
(8) BATTERY

NOISE EMISSION CONTROL SYSTEM (USA ONLY)

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

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, healder 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.


(1) OIL TANK
(2) OIL CONTROL CABLE
(3) OIL OUTLET LINE
(4) OIL INLET LINE

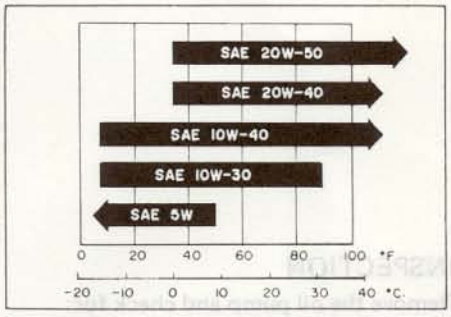
SERVICE INFORMATION

GENERAL

- The oil pump can be serviced without removing the engine from the frame.
- When removing and installing the oil pump do not allow dust or dirt to enter the engine and all oil line.
- Do not attempt to disassemble the oil pump.
- Bleed the oil pump if there is air in the oil inlet line (from the oil tank to the oil pump) or if the oil line has been disconnected.

SPECIFICATIONS

Engine oil recommendation	Honda 2-stroke injector oil or equivalent
Engine oil tank capacity	1.2 liters (1.27 US qt, 1.06 Imp qt)
Transmission oil recommendation	Use Honda 4-stroke oil or equivalent. API Service Classification: SE or SF Viscosity: SAE 10W–40 Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.
Transmission oil capacity	190 cc (6.4 US oz, 6.7 Imp oz) after draining 210 cc (7.1 US oz, 7.4 Imp oz) after disassembly



TORQUE VALUE

Transmission oil level check bolt	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)

TROUBLESHOOTING

Excessive engine smoke and/or carbon on spark plug
- Pump not properly synchronized (excessive oil).
- Low quality engine oil.

Overheating
- Oil pump not adjusted properly (insufficient oiling).
- Low quality oil.

Seized piston
- No oil in tank or clogged oil line.
- Pump not properly adjusted (insufficient oiling).
- Air in oil lines.
- Faulty oil pump.
- Clogged oil strainer.

Oil not flowing out of tank
- Clogged oil tank cap breather hole.
- Clogged oil strainer.

OIL PUMP

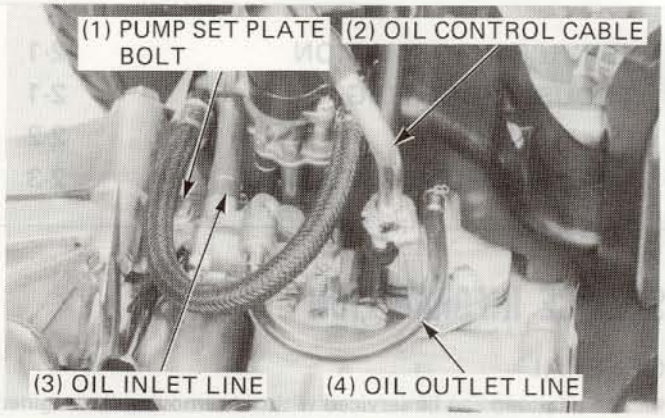
REMOVAL

NOTE

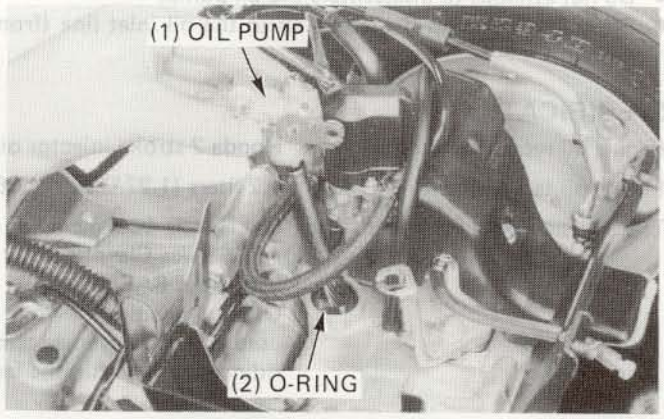
- Clean the oil pump and its surrounding area throughly before removing the pump.

Remove the following parts:
- engine cover (page 10-5).
- air cleaner case (page 4-3).

Disconnect the oil inlet line at the oil pump and clamp the end.
Disconnect the oil outlet line and the oil pump control cable.
Remove the bolts attaching the oil pump set plate.



Remove the oil pump by pulling it straight up.
Remove the O-ring.

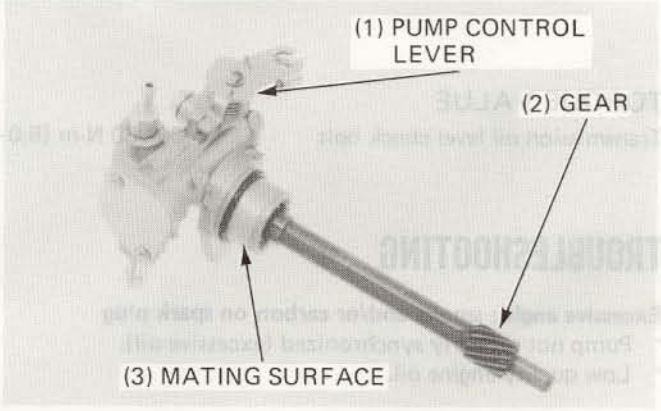


INSPECTION

Remove the oil pump and check for:
- deteriorated O-ring.
- damage to the crankcase mating surface.
- damage to the pump body.
- pump control lever operation.
- worn or damaged pump gear.
- oil leaks.

CAUTION

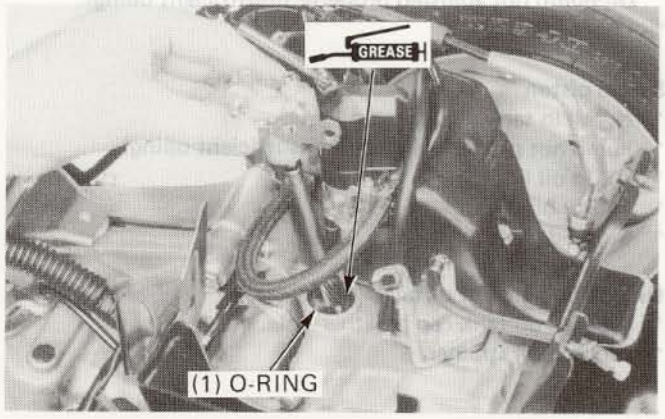
- *Do not disassemble the oil pump.*



INSTALLATION

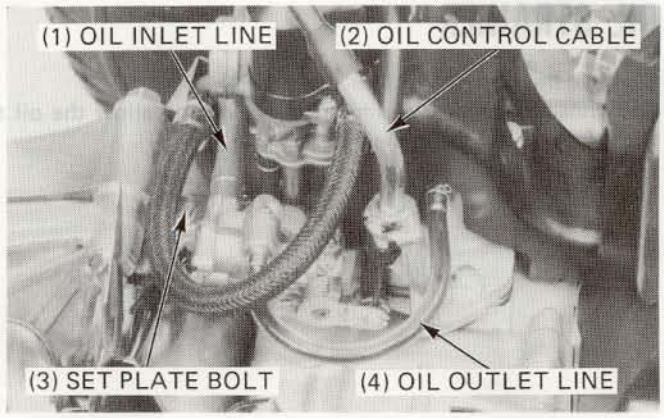
Coat a new O-ring with grease and install it into the oil pump mounting hole.

Apply molybdenum disulfide grease to the oil pump driven gear and install the oil pump onto the crankcase.



Install the pump set plate and tighten the bolt.

Connect the inlet and outlet lines to the oil pump.
Connect and adjust the oil control cable (page 3-5).
Bleed air from the oil pump and oil outlet line.



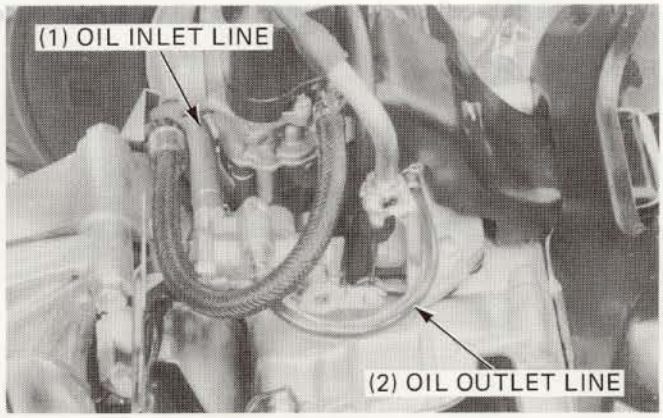
OIL LINES/PUMP BLEEDING

Remove the air cleaner case (page 4-3).

Fill the oil tank with the recommended oil.
Place a shop towel around the oil pump.
Disconnect the oil inlet line from the oil pump.
Fill the oil pump with oil by squirting about 4cc (0.14 US oz) of clean engine oil through the oil pump inlet opening.

Fill the oil inlet line with oil and connect it to the oil pump.

Disconnect the oil outlet line from the intake pipe, fill it with oil and reconnect to the intake pipe.

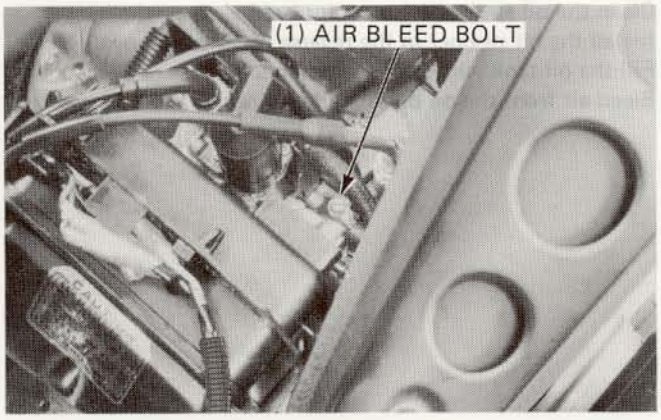


Install the air cleaner case (page 4-3).
Temporarily install the exhaust muffler.

Start the engine and allow it idle.
Bleed air from the oil pump by loosening the bleed bolt on the oil pump.

WARNING

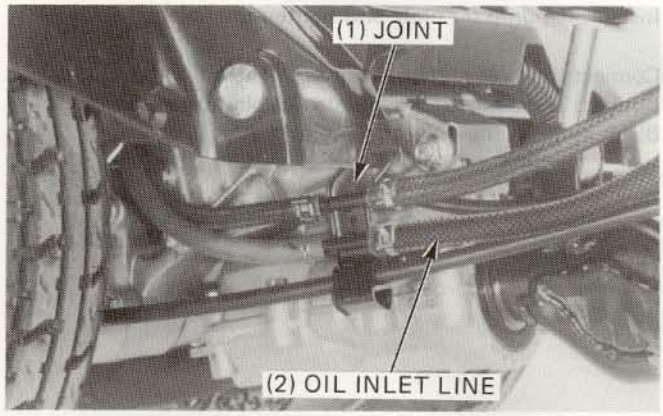
- *Perform this operation in a well ventilated area.*
- *Do not race the engine while bleeding air from the oil pump.*



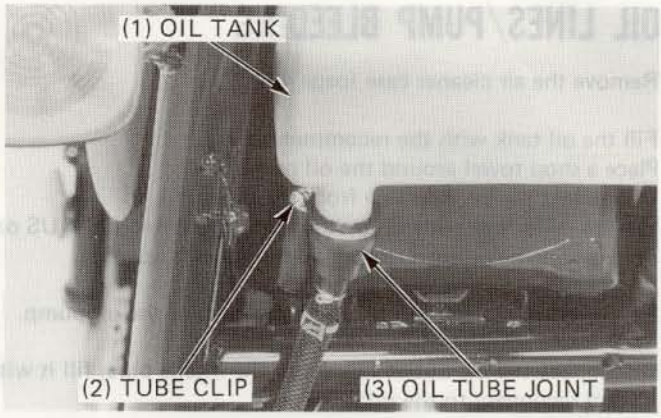
Remove the exhaust muffler.
Install the engine cover (page 10-5).

OIL STRAINER

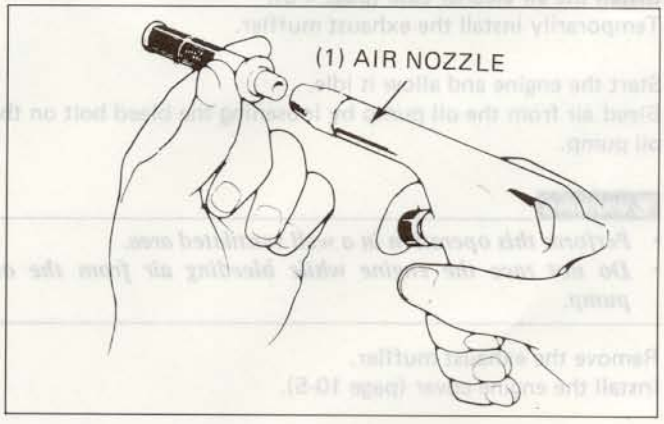
Remove the frame rear cover (page 10-4).
Disconnect the oil inlet line at the joint and allow the oil to drain into a clean container.



Loosen the tube clip and disconnect the oil tube joint under the oil tank.
Remove the oil strainer.



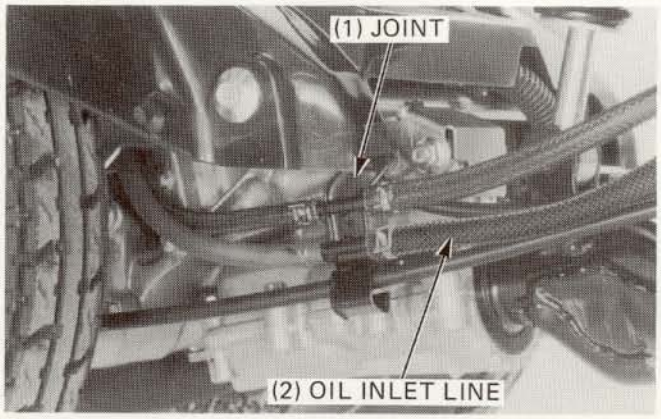
Clean the oil strainer with compressed air.
Install the oil strainer in the reverse order of removal.
Fill the oil tank with the recommended oil.
Bleed air from the oil pump and oil lines.



OIL TANK

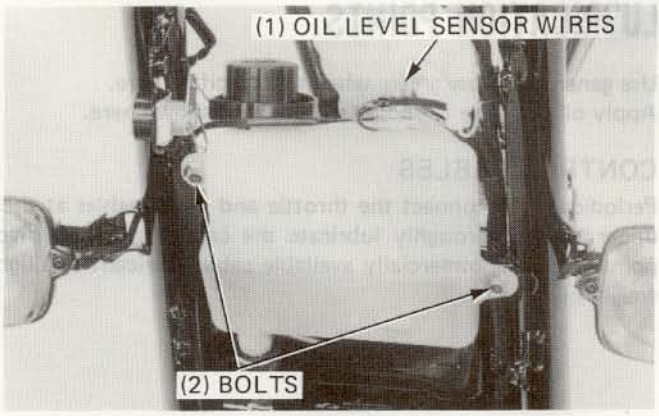
REMOVAL/INSTALLATION

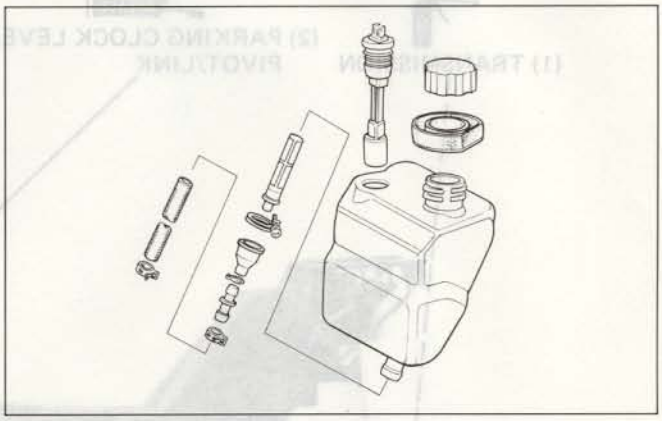
Remove the body rear cover (page 10-4).
Disconnect the oil inlet line at the joint and drain and oil into a clean container.



Disconnect the wires from the oil level sensor.
Remove the two oil tank mounting bolts and the oil tank from the frame.

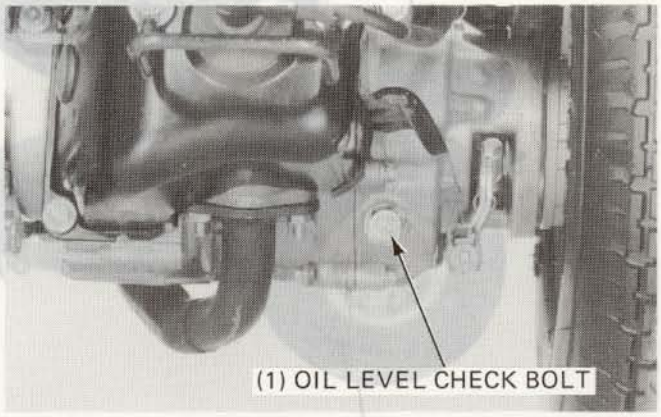
Install the oil tank in the reverse order of removal.
Bleed air from oil pump and oil lines (page 2-3).





TRANSMISSION OIL

Place the scooter on the level ground.
Remove the oil level check bolt.
Remove the drain bolt and drain oil thoroughly.
Make sure that the sealing washer on the drain bolt is in good condition and install the drain bolt.



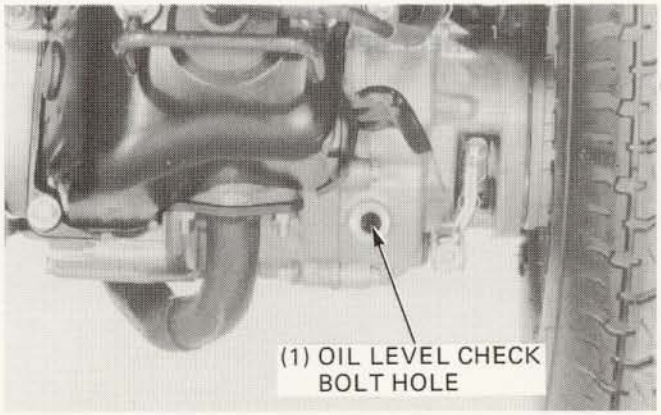
Fill the transmission with the recommended oil (page 2-1) up to the bottom edge of the oil level check bolt hole.

OIL CAPACITY:
190 cc (6.4 US oz, 6.7 Imp oz) after draining
210 cc (7.1 US oz, 7.4 Imp oz) after disassembly

Install and tighten the oil level check bolt.

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

Check the transmission case for oil leaks.

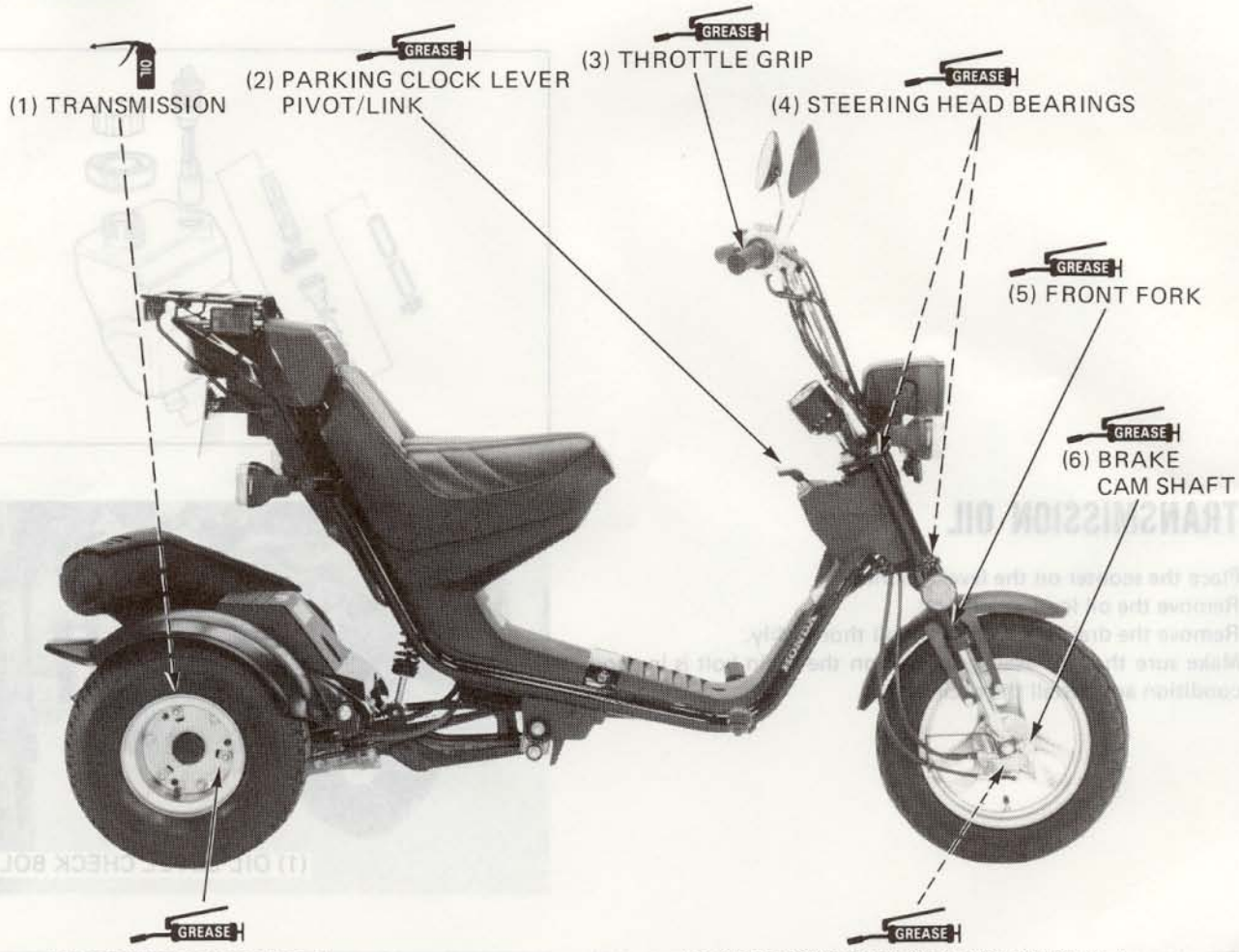


LUBRICATION POINTS

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

CONTROL CABLES

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



SERVICE INFORMATION

SPECIFICATIONS

Idle speed		1,800 ± 100 rpm
Throttle grip free play		2–6 mm (1/8–1/4 in)
Recommended spark plugs		

	NGK	ND
Standard	BPR6HSA	W20FPR-L
For cold climate	BPR4HSA	W14FPR-L
For extended high speed riding	BPR8HSA	W24FPR-L

Spark plug gap		0.6–0.7 mm (0.024–0.028 in)
Tire size	Front	3.00–10–2PR
	Rear	4.50–6–2PR
Tire pressure	Front	150 kPa (1.5 kg/cm^2, 21 psi)
	Rear	75 kPa (0.75 kg/cm^2, 11 psi)
Front brake lever free play		10–20 mm (3/8–3/4 in)
Rear brake lever free play		10–20 mm (3/8–3/4 in)
Parking lock lever free play		10–15 mm (3/8–5/8 in)
Cylinder compression		1,100 kPa (11.0 kg/cm^2, 156 psi)

TORQUE VALUE

Fuel cup	3–5 N·m (0.3–0.5 kg-m, 2.2–3.6 ft-lb)

MAINTENANCE SCHEDULES

'85 :

I — Inspect and clean, adjust, lubricate or replace if necessary
R — Replace
C — Clean

	This maintenance schedule is based upon average riding condition. Scooters subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.	PRE-RIDE INSPECTION	INITIAL SAFETY INSPECTION	REGULAR SERVICE PERIOD Perform at indicated mileage interval		Refer to page
			600 miles (1,000 km)	1,000 miles (1,500 km)	2,000 miles (3,000 km)	
	AIR CLEANER ELEMENT			(EVERY 6 MONTHS) C		3-4
	CARBURETOR		I	I	I	3-5
*	THROTTLE OPERATION	I		I	I	3-5
	OIL PUMP			I	I	3-5
	FUEL FILTER SCREEN			C	C	3-6
	OIL LINE			I	I	3-6
	FUEL LINE		I	I	I	3-6
				(EVERY 2 YEARS) R		
*	OIL AND FUEL LEVEL	I				
	DECARBONIZE CYLINDER HEAD, CYLINDER, PISTON AND MUFFLER				C	3-7,6-3,6-4
	TRANSMISSION OIL				R	2-5
*	TRANSMISSION CASE FOR LEAKS	I				2-5
	CLUTCH SHOE WEAR				I	8-6,8-9
	TIRE: PRESSURES AND CONDITION	I				3-7
	WHEEL TRUENESS			I	I	3-7
*	BRAKE OPERATION AND FREE PLAY	I	I	I	I	3-7
	BRAKE LININGS			I	I	3-7
	PARKING LOCK LEVER OPERATION AND FREE PLAY		I			3-8
	STEERING HEAD BEARINGS		I		I	3-9
	SUSPENSION OPERATION			I	I	3-9
	NUTS, BOLTS (TIGHTEN)		I		I	3-10
*	SPARK PLUG			R	R	3-10
	ALL LIGHTS AND HORN	I				3-10

Items marked* are simple to perform and may be serviced by the owner.
Other maintenance items should be serviced by an authorized Honda motor scooter dealer.

After '85 :

Perform the pre-ride inspection a 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 3] 600 mi (1,000 km)	2,500 mi (4,000 km)	5,000 mi (8,000 km)	7,500 mi (12,000 km)	Refer to page
*	FUEL LINE	2 YEARS *R	–	I	I	I	3-6
*	FUEL STRAINER SCREEN		–	C	C	C	3-6
*	THROTTLE OPERATION		–	I	I	I	3-5, 3-7
**	OIL PUMP AND OIL LINE		–	I	I	I	3-5
	AIR CLEANER	NOTE 1	–	C	C	C	3-4
	SPARK PLUG	NOTE 2	EVERY 1,000 mi (1,600 km) R				3-10
**	DECARBONIZING	NOTE 2	EVERY 2,000 mi (3,200 km) C				6-2
*	CARBURETOR IDLE SPEED		I	I	I	I	3-5
	TRANSMISSION OIL		–	–	–	R	2-5
	BRAKE SHOE WEAR		–	I	I	I	3-7
	BRAKE SYSTEM		I	I	I	I	3-7
*	BRAKE LIGHT SWITCH		–	I	I	I	3-9
*	PARKING BRAKE OPERATION AND FREE PLAY		I	–	–	–	3-8
*	HEADLIGHT AIM		–	I	I	I	3-10
**	CLUTCH SHOE WEAR		–	–	I	–	8-6, 8-9
*	SUSPENSION		–	I	I	I	3-9
*	NUT, BOLT, FASTNER		I	–	I	–	3-10
**	WHEEL		–	I	I	I	3-7
**	STEERING HEAD BEARING		I	–	–	I	3-9

* 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.

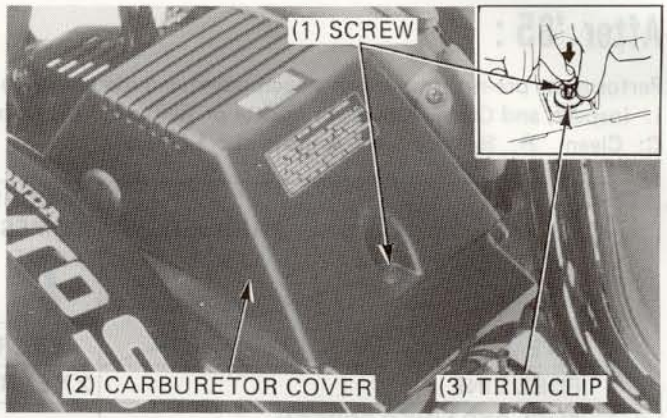
NOTES: 1. Service more frequently when riding in dusty areas.
2. HONDA 2 STROKE MOTORCYCLE OIL has been specifically tested in and is recommended for his engine. The use of other oils may cause excessive carbon build-up in the engine and exhaust system, resulting in loss of power and possible engine damage.
3. For higher odometer reading, repeat at the frequency interval established here.

AIR CLEANER

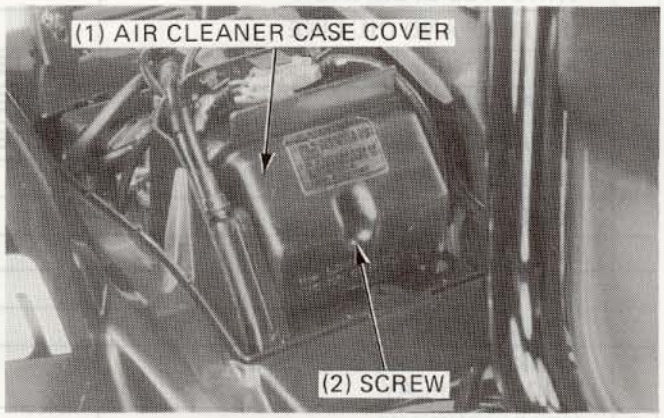
Remove the carburetor cover by removing the attaching screw.

NOTE

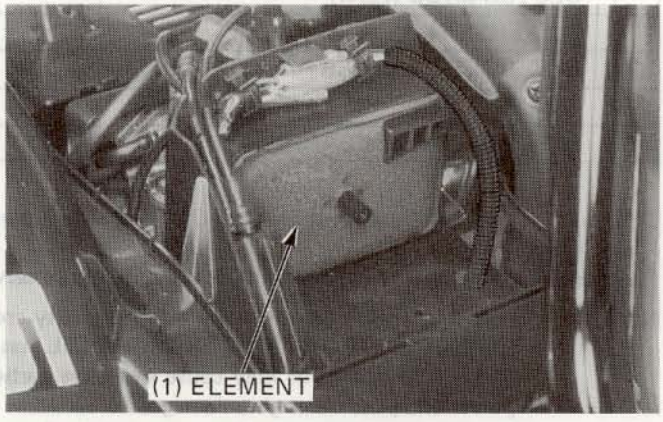
- To install the carburetor cover, press in the trim clip screw while holding the trim clip down on the cover.



Remove the air cleaner case cover screw and the cover.



Remove the air cleaner element.



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

WARNING

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

Soak the element in clean motor oil (SAE 10W-30) and squeeze out the excess.

Reinstall the element, air cleaner case, and carburetor cover.

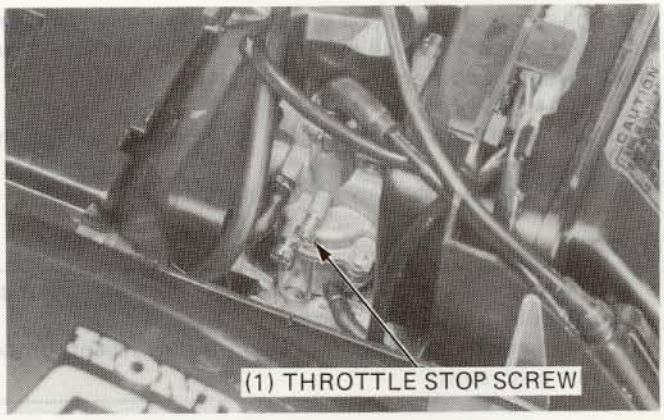
(1) WASH (2) SQUEEZE OUT AND DRY (3) OIL (4) SQUEEZE OUT EXCESS OIL

CARBURETOR IDLE SPEED

Remove the carburetor cover (page 3-4).
Place the scooter on level ground.
Warm up the engine and attach a tachometer.
Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 1,800 ± 100 rpm

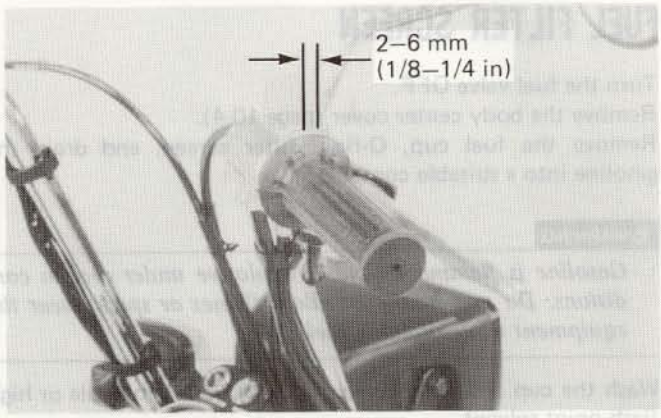
Install the carburetor cover.



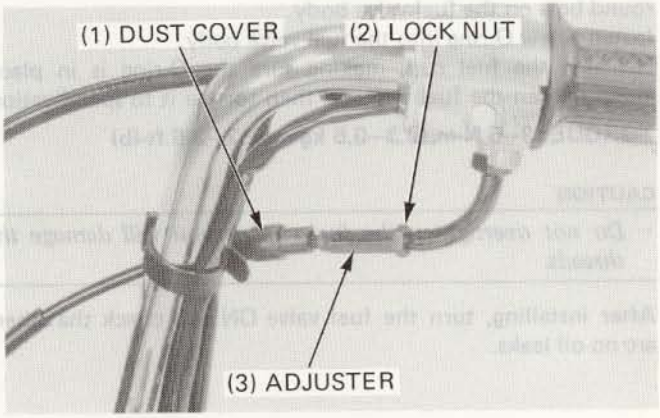
THROTTLE OPERATION

Check for smooth throttle grip operation with full opening and complete automatic closing in all steering positions.
Make sure there is no damage or kinking in the throttle cable. Replace any damaged parts.
Remove the right handlebar switch housing and disconnect the throttle cable upper end. Thoroughly lubricate the cable with a commercially available cable lubricant or grease.
Install the throttle cable in the reverse order of removal.
Measure the throttle grip free play at the throttle grip flange.

FREE PLAY: 2–6 mm (1/8–1/4 in)



Adjustment can be made by loosening the lock nut and turning the adjuster.
Replace the throttle cable if it can not be adjusted using the above procedure (page 11-6).
Check the oil control cable adjustment.



OIL PUMP

OIL CONTROL CABLE ADJUSTMENT

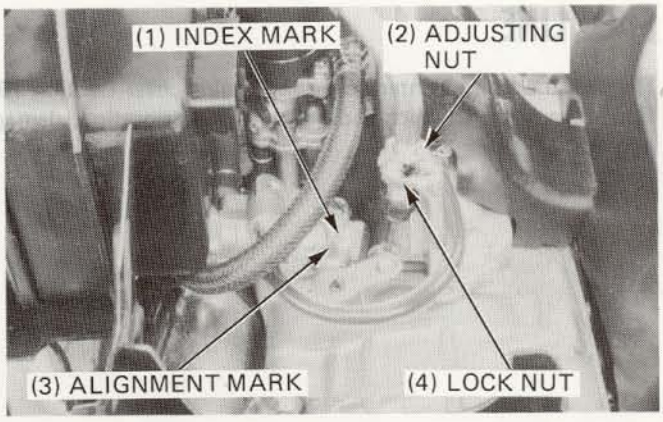
NOTE

- The oil control cable should be adjusted after throttle grip free play adjustment.

Remove the engine cover (page 10-5).
Open the throttle grip completely and make sure that the alignment mark on the oil pump control lever aligns with the index mark on the pump body.

CAUTION

- *Over stroke up to 1 mm (0.04 in) is acceptable. However, the alignment mark should never be short of the index mark, otherwise engine damage will occur because of insufficient lubrication.*



Start the engine and open the throttle slightly above idle speed and make sure that the oil pump control lever starts to move simultaneously as the engine speed incrases.

Adjust if necessary by loosening the lock nut and turning the adjusting nut.
Tighten the lock nut securely after adjustment.

NOTE

- If the pump control level is opened excessively, white smoke or hard starting will occur.
- If the pump control lever movement is insufficient, piston seizure may result.

FUEL FILTER SCREEN

Turn the fuel valve OFF.
Remove the body center cover (page 10-4).
Remove the fuel cup, O-ring, filter screen, and drain the gasoline into a suitable container.

WARNING

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

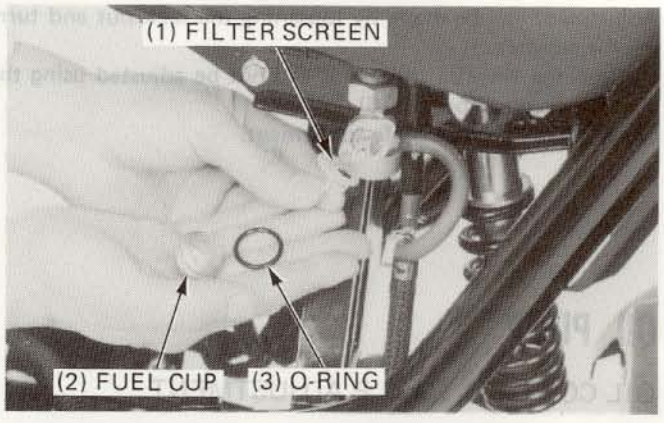
Wash the cup and filter screen in clean non-flammable or high flash point solvent.
Reinstall the screen, aligning the hole in the screen with the round boss on the fuel valve body.
Install a new O-ring into the fuel valve body.
Reinstall the fuel cup, making sure the O-ring is in place.
Hand tighten the fuel cup and then torque it to specification.

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

CAUTION

- *Do not overtighten the fuel cup or you will damage the threads.*

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

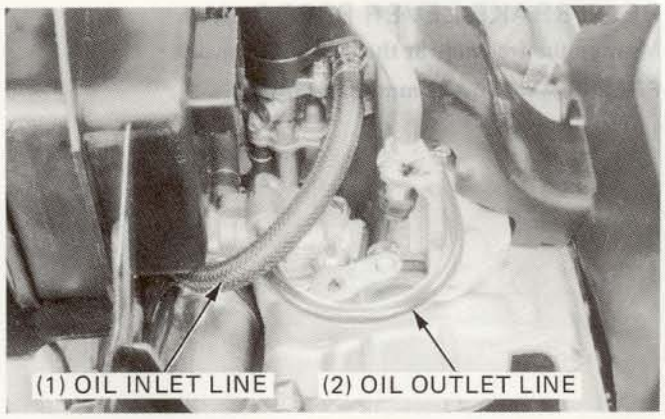


FUEL LINE

Remove the frame center cover and engine cover (section 10).
Replace any parts which show signs of deterioration, damage or leaks.

OIL LINE

Remove the engine cover and frame rear cover (section 10).
Replace any oil line parts which shows signs of deterioration, damage or leaking.



MUFFLER DECARBONIZATION

Remove the muffler (page 10-5).
Remove carbon deposits from the inside of the muffler.
Install the muffler (page 10-5).

WHEELS

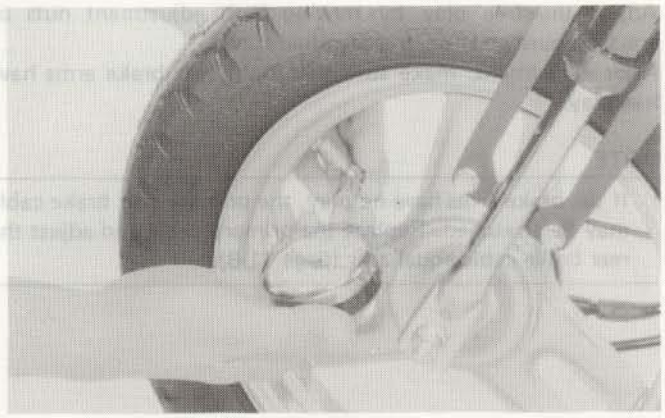
Check the tires for cuts, imbedded nails, or other damage.
Check the tire pressures.

NOTE

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

TIRE PRESSURE: FRONT 150 kPa (1.5 kg/cm^2, 21 psi)
REAR 75 kPa (0.75 kg/cm^2, 11 psi)

TIRE SIZE: FRONT 3.00–10–2PR
REAR 4.50–6–2PR

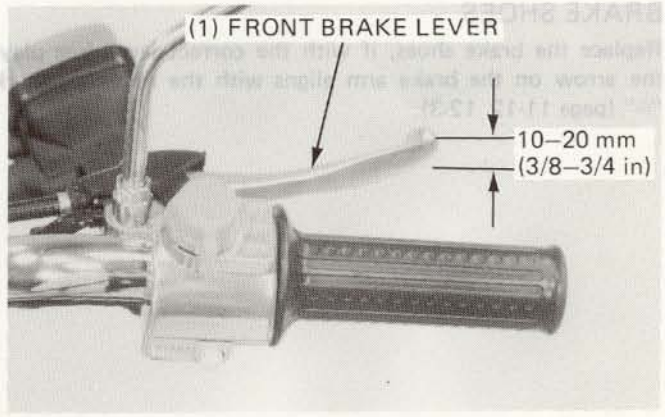


BRAKES

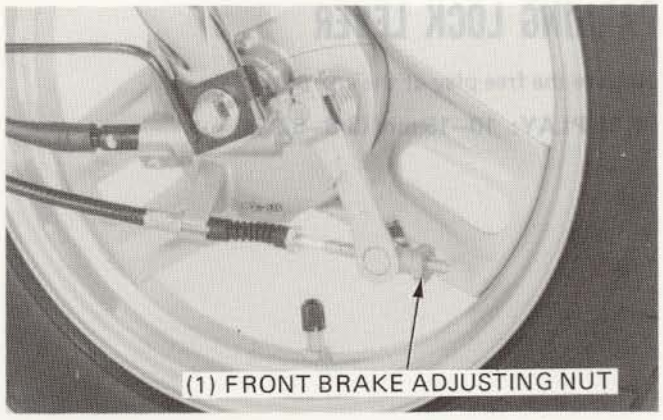
FRONT BRAKE LEVER FREE PLAY

Measure the free play at the end of the lever.

FREE PLAY: 10–20 mm (3/8–3/4 in)



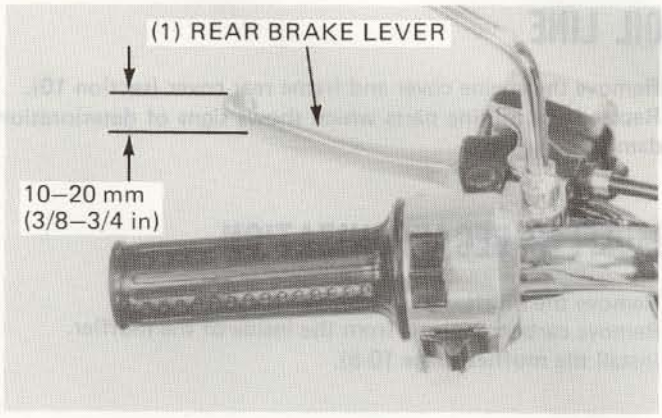
Turn the brake adjusting nut to obtain specified free play.



REAR BRAKE LEVER FREE PLAY

Measure the free play at the end of the lever.

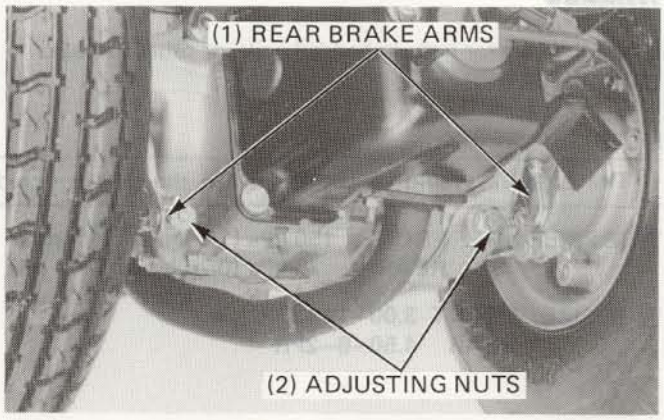
FREE PLAY: 10–20 mm (3/8–3/4 in)



Adjust the free play by moving both adjustment nuts an equal amount to allow the specified travel.
After adjustment, make sure that both rear brake arms have free play.

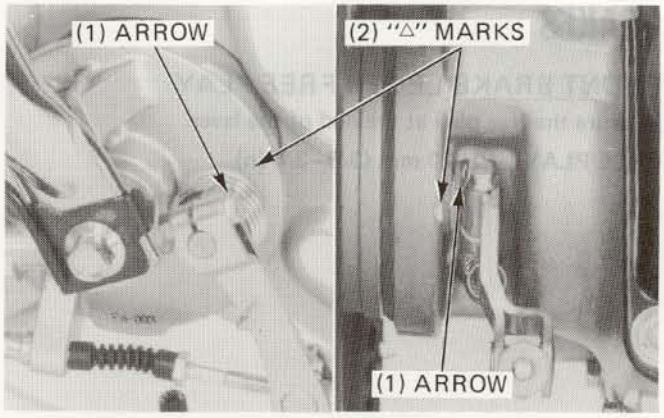
NOTE

- If the brake arms have no play, the primary rear brake cable may be stretched. Replace the primary cable and adjust the rear brake cable equalizaer (page 11-8).



BRAKE SHOES

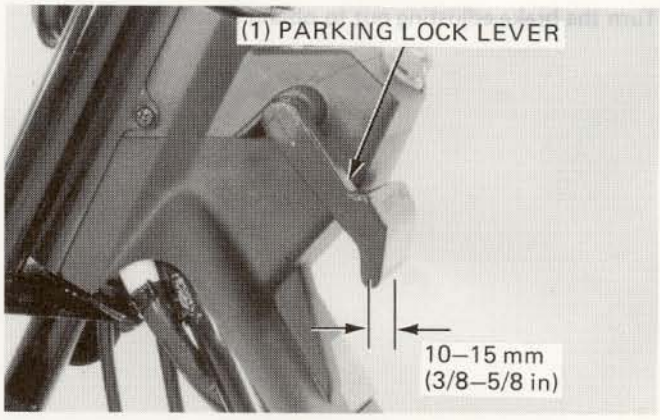
Replace the brake shoes, if with the correct lever free play, the arrow on the brake arm aligns with the reference mark "△" (page 11-12, 12-3).



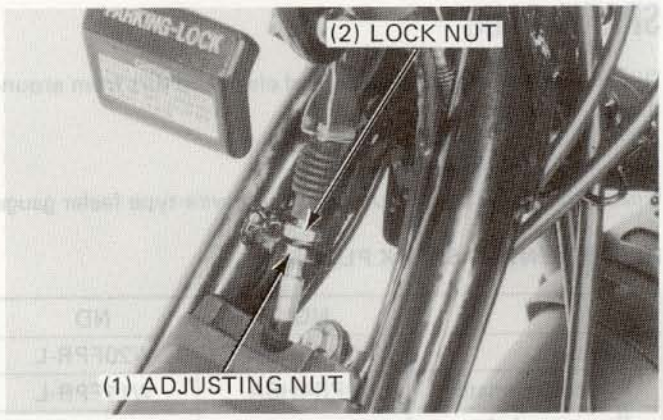
PARKING LOCK LEVER

Measure the free play at the end of the lever.

FREE PLAY: 10–15 mm (3/8–5/8 in)



If adjustment is necessary, proceed as follows:
Remove the head pipe cover (page 10-2).
Loosen the lock nut and turn the adjusting nut until obtaining the specified free play.
Tighten the lock nut securely.
Install the head pipe cover (page 10-2).

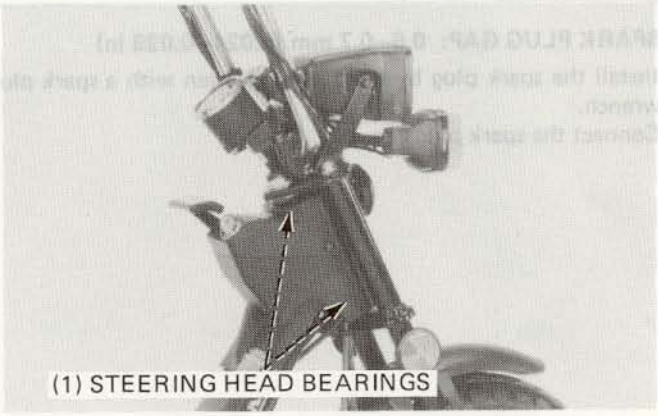


STEERING HEAD BEARINGS

NOTE

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

Raise the front wheel off the ground and make sure that the handlebar moves freely. If the handleber moves unevenly, binds or has vertical play, adjust the steering head bearings (page 11-18).
If the handlebar still move unevenly, binds or has vertical play after adjustment, inspect the steering head bearings and replace if necessary (page 11-17).



SUSPENSION

FRONT

Check the action of the front fork by compressing it several times.
Check the entire fork assembly for damage. Replace or repair any damaged components.

REAR SUSPENSION

Check the shock absorber for leakage or damage.
Check the suspension operation.
Tighten all bolts and nuts to the specified torque values.

SPARK PLUG

Disconnect the spark plug cap and clean and dirt from around the spark plug base.

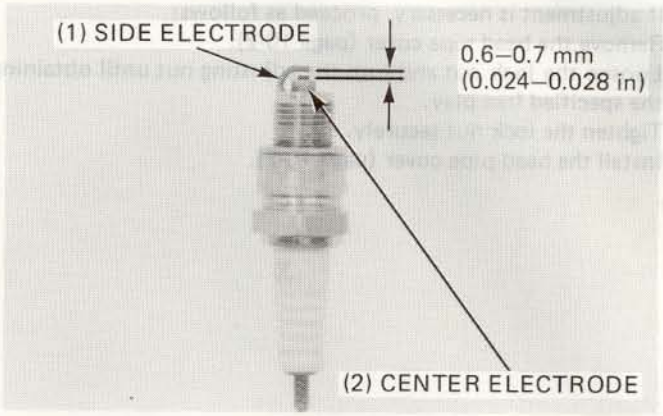
Remove and discard the spark plug.
Measure the new spark plug gap using a wire-type feeler gauge.

RECOMMENDED SPARK PLUGS:

	NGK	ND
Standard	BPR6HSA	W20FPR-L
For cold climate	BPR4HSA	W14FPR-L
For extended high speed riding	BPR8HSA	W24FPR-L

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

Install the spark plug by hand, then tighten with a spark plug wrench.
Connect the spark plug cap.



LIGHTS AND HORN

Start the engine and allow it to idle.
Check all lights and horn for proper operation.

HEADLIGHT BEAM ADJUSTMENT

Adjust vertically by loosening the headlight case mounting bolts and moving the case.
Adjust horizontally by turning the adjusting screw.

IGNITION TIMING

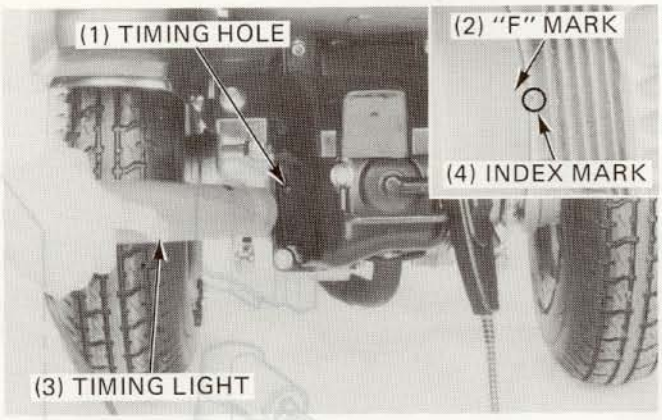
NOTE

- The Capacitive Discharge Ignition (CDI) system is factory pre-set and does not require adjustment.
- Use the procedures below to check the CDI function and ignition timing.

Remove the timing hole cap.
Connect a tachometer and timing light.
Start the engine and allow it to idle.

IDLE SPEED: 1,800 ± 100 rpm

Timing is correct if the "F" mark on the flywheel is aligned with the index mark on the left crankcase at idle.
If the ignition timing is incorrect, refer to page 14-7.



CYLINDER COMPRESSION

Warm up the engine.
Stop the engine and remove the spark plug.
Connect a compression gauge to the engine.
Open the throttle completely and operate the starter motor for several seconds.

NOTE

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

SERVICE LIMIT: 800 kPa (8.0 kg/cm^2, 114 psi)

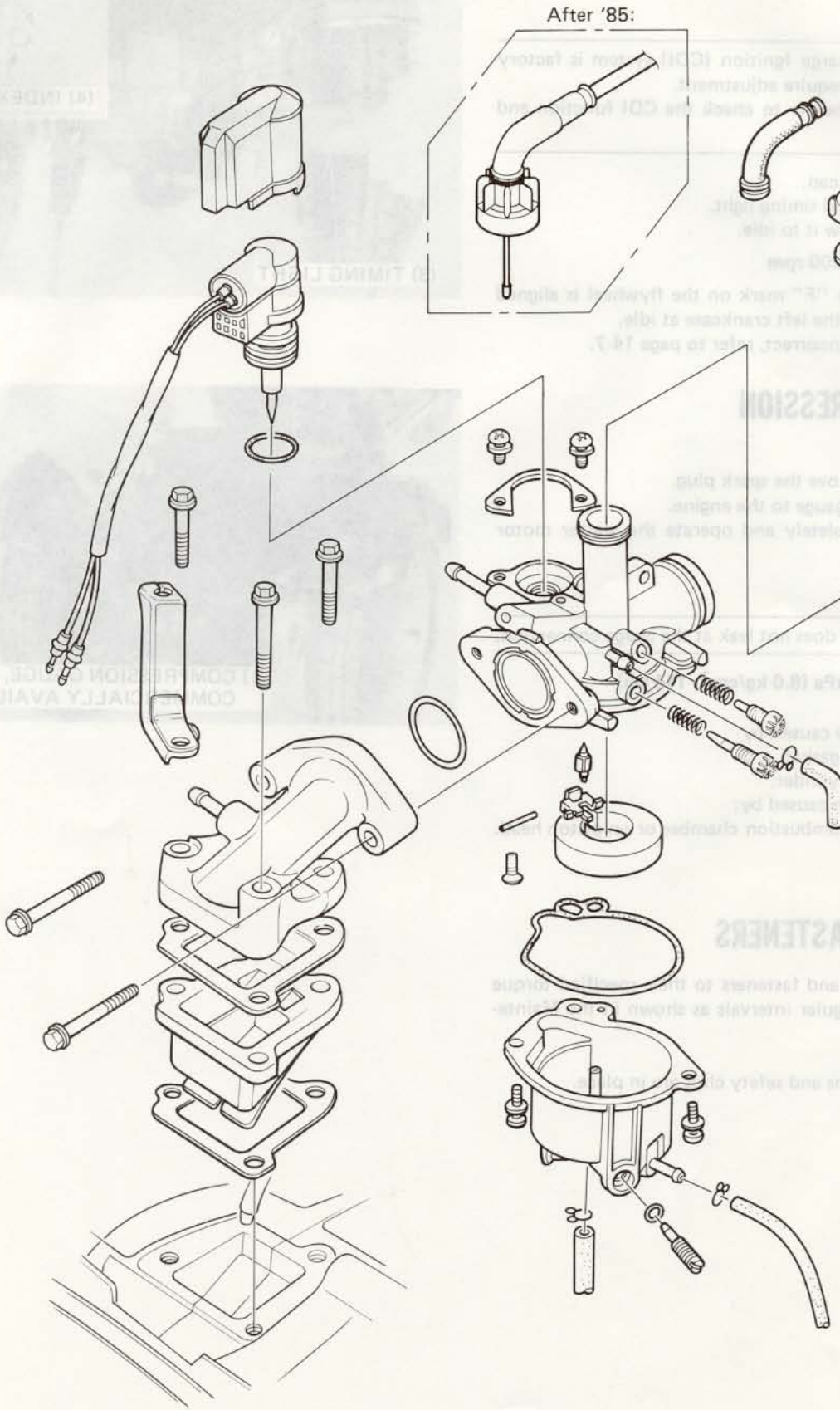
Low compression can be caused by:
- Blown cylinder head gasket.
- Worn piston ring or cylinder.

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

NUTS, BOLTS, FASTENERS

Tighten all bolts, nuts and fasteners to their specified torque values (page 1-5) at regular intervals as shown in the Maintenance Schedule.

Check that all cotter pins and sefety clips are in place.


After '85:

SERVICE INFORMATION

GENERAL

- Use caution when working with gasoline. Always work in a well-ventilated area and away from sparks or flames.
- When disassembling fuel system parts, note the location of the O-rings. Replace them with new ones during assembly.
- Bleed air from the oil outlet line whenever it is disconnected.
- Route all tubes and cables properly.

SPECIFICATIONS

Venturi dia.	14 mm (0.59 in)
Identification number	'85: PA27E After '85: PA27F
Float level	12.2 mm (0.48 in)
Air screw opening	2-1/4 turns out
Idle speed	1,800 ± 100 rpm
Throttle grip free play	2–6 mm (1/8–1/4 in)

TORQUE VALUES

Carburetor bolt	9–12 N·m (0.9–1.2 kg-m, 6–9 ft-lb)
Fuel strainer cup	3–5 N·m (0.3–0.5 kg-m, 2.2–3.6 ft-lb)

TOOLS

Special

Vacuum pump	A937X–041–XXXXX or ST–AH–260–MC7 (U.S.A. only)

Common

Float level gauge	07401–0010000

TROUBLESHOOTING

Engine cranks but won't start
- No fuel in tank.
- Too much fuel getting to cylinder.
- Clogged air cleaner.
- Faulty auto bystarter.

Engine idles roughly, stalls or runs poorly
- Incorrect idle speed.
- Rich mixture.
- Lean mixture.
- Clogged air cleaner.
- Leaking intake pipe.
- Contaminated fuel.
- Faulty ignition system.
- Low compression.
- Water in fuel strainer cup.

Lean mixture
- Clogged carburetor fuel jets.
- Clogged fuel cap vent.
- Clogged fuel filter.
- Kinked or restricted fuel line.
- Faulty float valve.
- Float level too low.
- Clogged air vent tube.

Rich mixture
- Faulty float valve.
- Float level too high.
- Clogged carburetor air jets.
- Disconnected auto bystarter wires.
- Auto bystarter valve set plate not set properly.

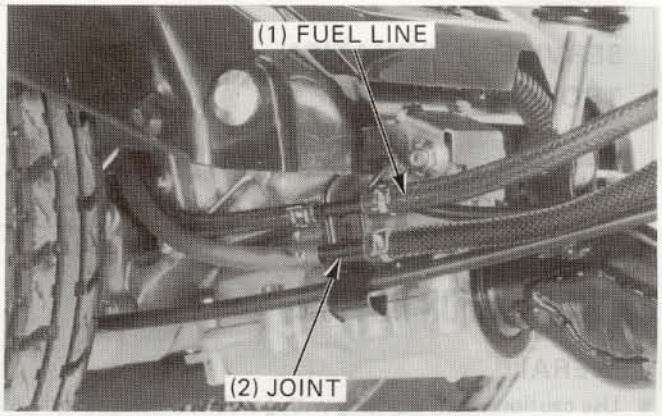
FUEL TANK

WARNING

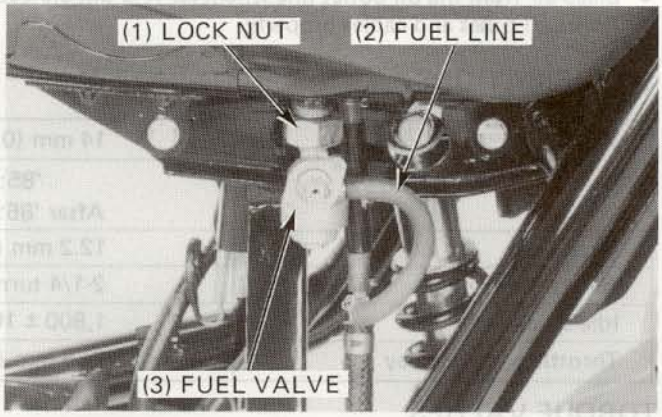
- *Gasoline is extremely flammable and is explosive under cartain conditions. Perform this operation in a well-ventilated area and do not smoke or allow sparks in the area.*

FUEL FILTER CLEANING

Remove the body center cover (page 10-4).
Turn the fuel valve OFF.
Disconnect the fuel line at the joint, turn the valve ON and drain the fuel into a clean container.
Reconnect the fuel line to the joint.

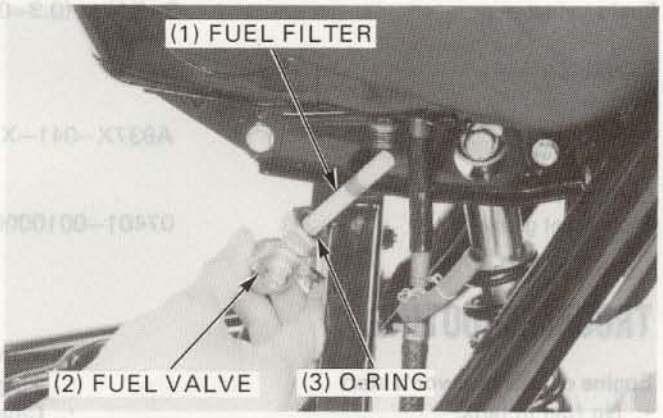


Disconnect the fuel line from the fuel valve.
Loosen the fuel valve lock nut and remove the valve and filter from the tank.



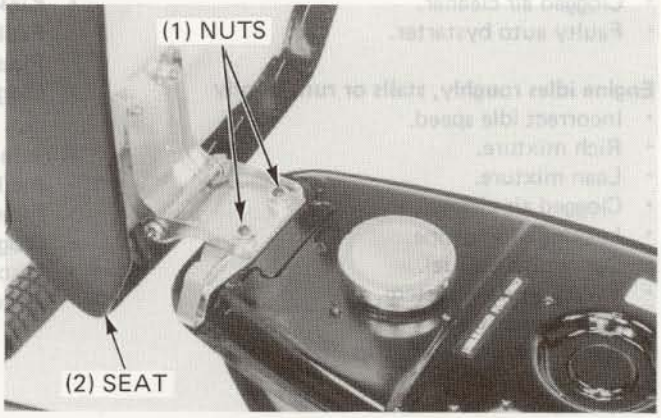
Clean the filter with compressed air.
Install the filter and a new O-ring onto the valve.
Install the valve onto the tank and tighten the lock nut. Do not over-tighten the lock nut.

Connect the fuel line to the valve.
Fill the tank with gasoline.
Turn the valve ON and make sure that there are not leaks.
Install the body center cover (page 10-4).



FUEL TANK REMOVAL

Remove the body center cover (page 10-4).
Remove the seat attaching nuts and the seat from the fuel tank.

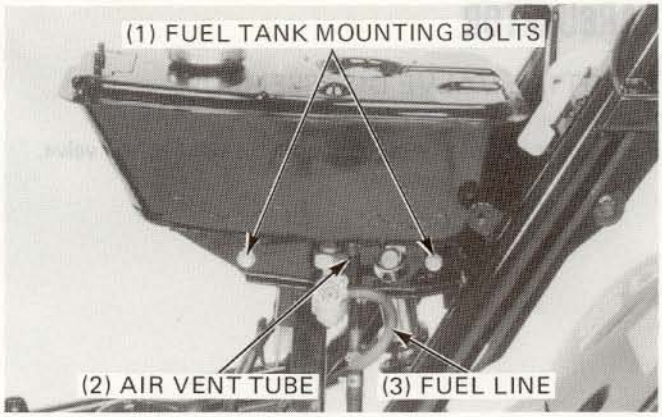


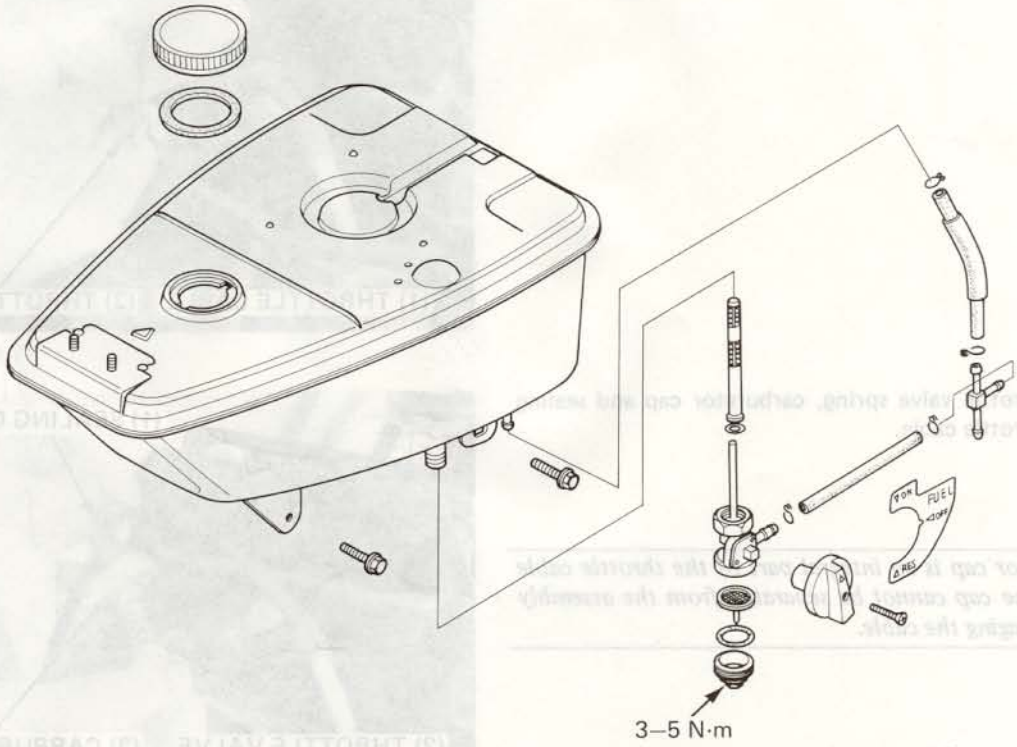
Turn the fuel valve OFF and disconnect the fuel line from the valve.
Disconnect the air vent tube from the tank.
Remove the four tank mounting bolts and the tank.

FUEL TANK INSTALLATION

Install the fuel tank in the reverse order of removal.

Make sure that there are no leaks after installation.

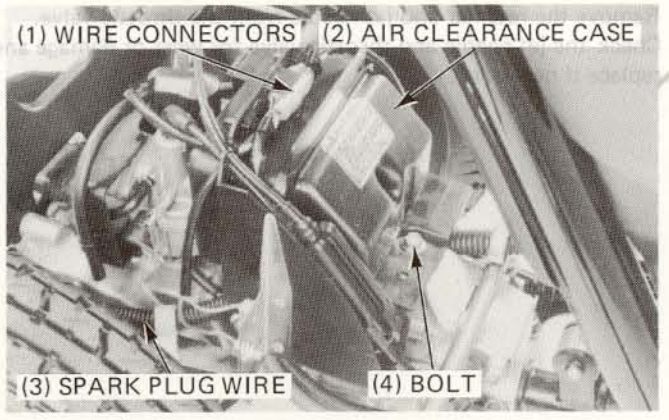




AIR CLEANER CASE

REMOVAL/INSTALLATION

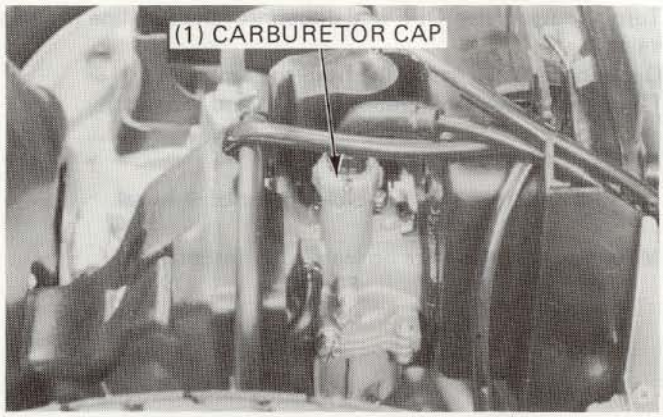
Remove the engine cover (page 10-5).
Remove the spark plug wire from the plug and clamp.
Disconnect the wire connectors above the air cleaner case.
Remove the air cleaner case mounting bolt and the case.
Install the air cleaner case in the reverse order of removal.



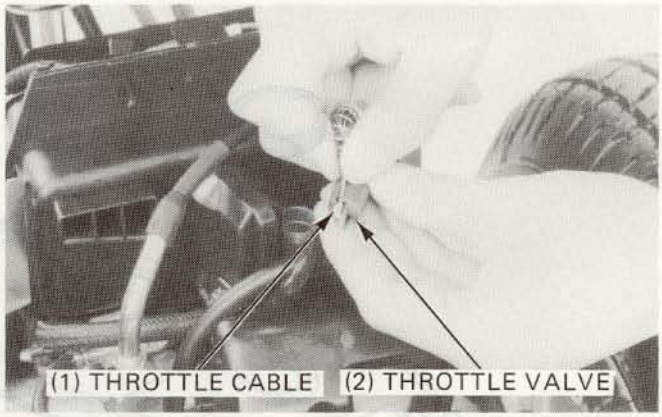
CARBURETOR

THROTTLE VALVE DISASSEMBLY

Remove the carburetor cover.
Remove the carburetor cap and pull out the throttle valve.



Disconnect the throttle cable from the throttle valve.

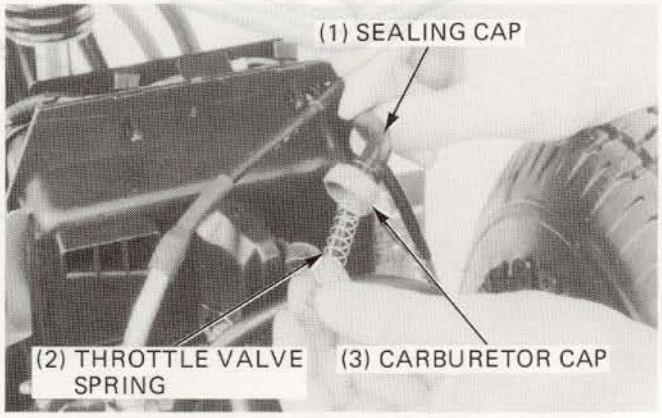


Remove the throttle valve spring, carburetor cap and sealing cap from the throttle cable.

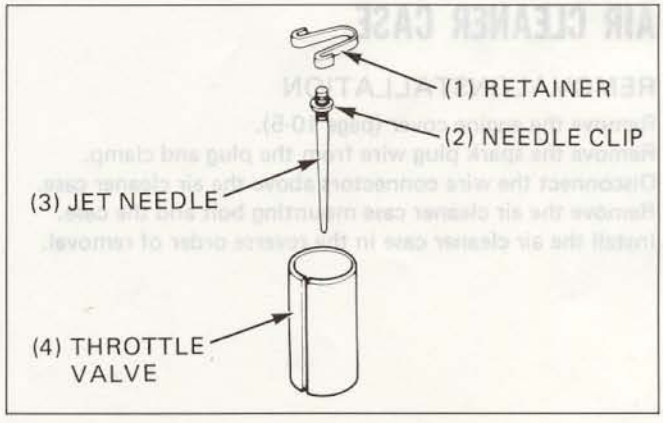
After '85:

CAUTION:

- *The carburetor cap is an integral part of the throttle cable assembly. The cap cannot be separated from the assembly without damaging the cable.*

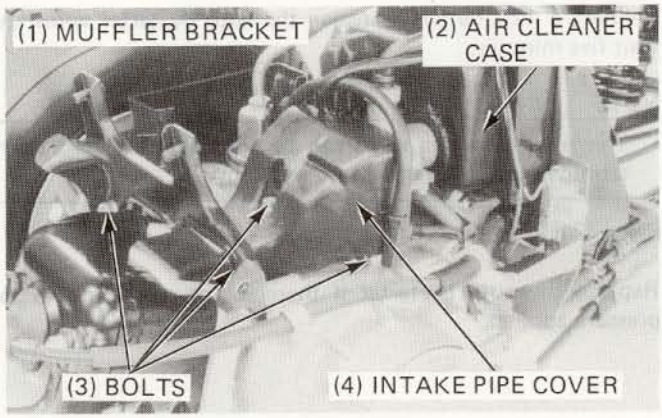


Remove the retainer and jet needle from the throttle valve.
Check the jet needle and throttle valve for wear or damage and replace if necessary.

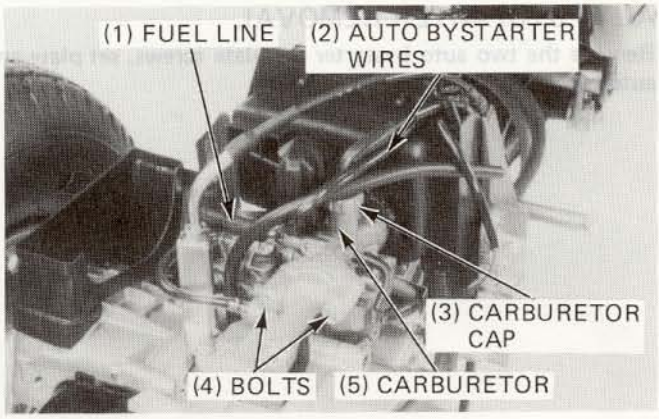


CARBURETOR REMOVAL

Remove the engine cover (page 10-5).
Remove the right rear wheel (page 12-2).
Remove the air cleaner case mounting bolt (page 4-3) and pull the air cleaner case away from the carburetor.
Remove the two muffler bracket bolts and the bracket.
Remove the two intake pipe cover bolts and the cover.



Disconnect the auto bystarter wires.
Remove the carburetor cap from the carburetor.
Turn the fuel valve OFF and disconnect the fuel line from the carburetor.
Remove the two carburetor mounting bolts and the carburetor from the intake pipe.

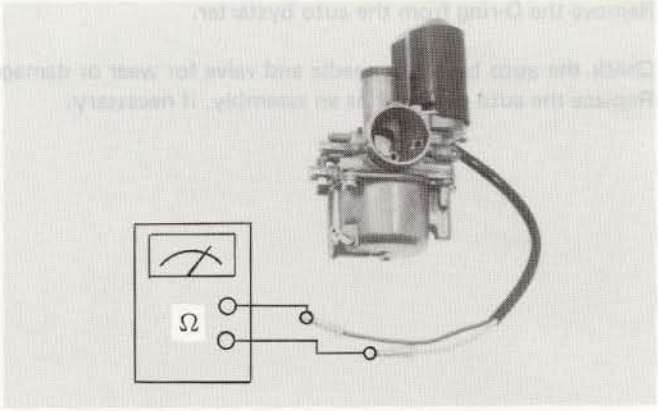


AUTO BYSTARTER INSPECTION

Stop the engine and allow it to cool for at least 10 minutes.

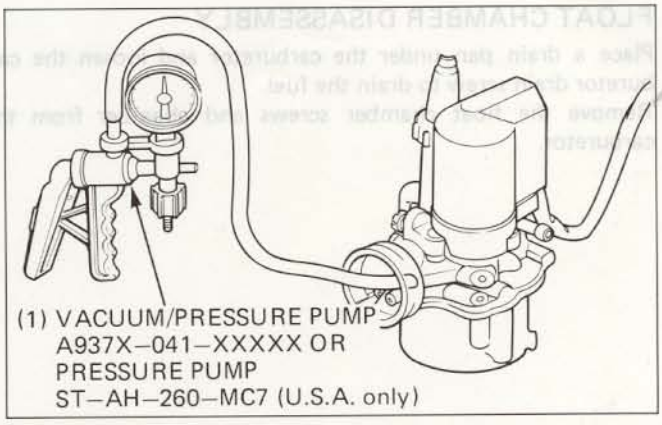
RESISATNCE: 10 ohms max.

Replace the auto bystarter if it is out of specification or if there is no continuity.



Allow the carburetor to cool for at least 30 minutes and then pressurize the enriching circuit.

If the passage is blocked, replace the auto bystarter.



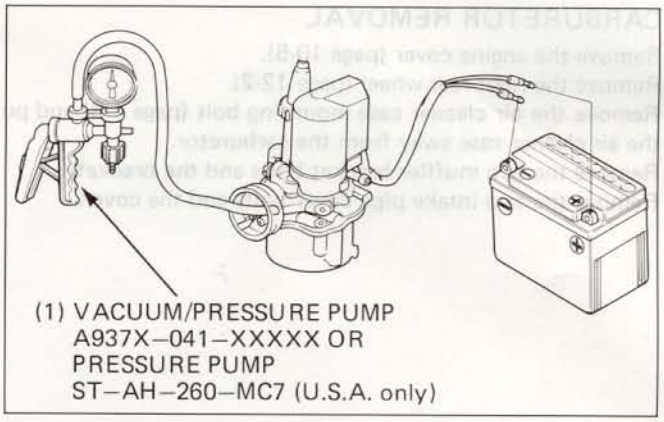
Connect a 12V battery between the auto bystarter wires and wait five minutes.

NOTE

- The auto bystarter wires can be connected to the battery terminals without regard to the porality.

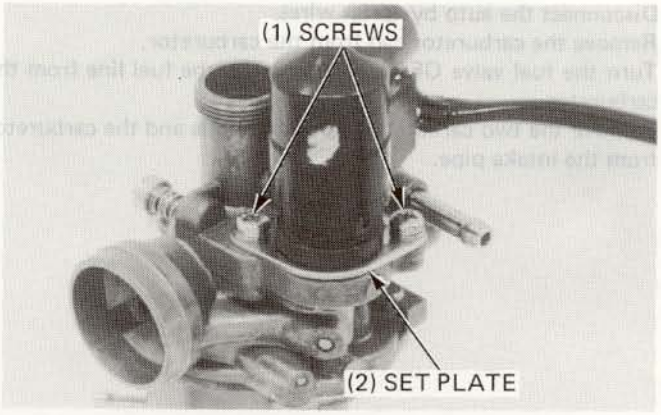
Pressurize the fuel enriching circuit.

Replace the auto bystarter if there is not restriction to the pressure applied.



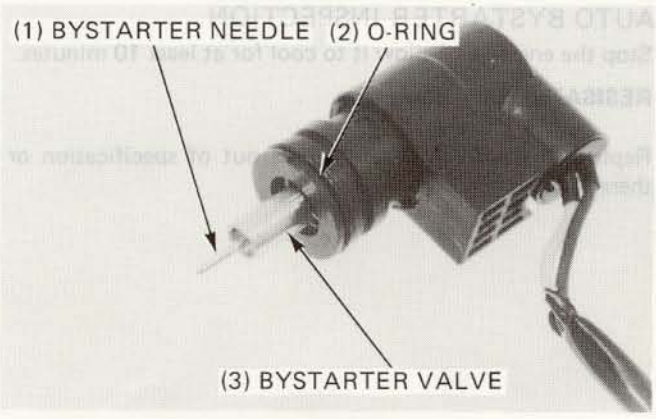
AUTO BYSTARTER REMOVAL

Remove the two auto bystarter set plate screws, set plate and auto bystarter.



Remove the O-ring from the auto bystarter.

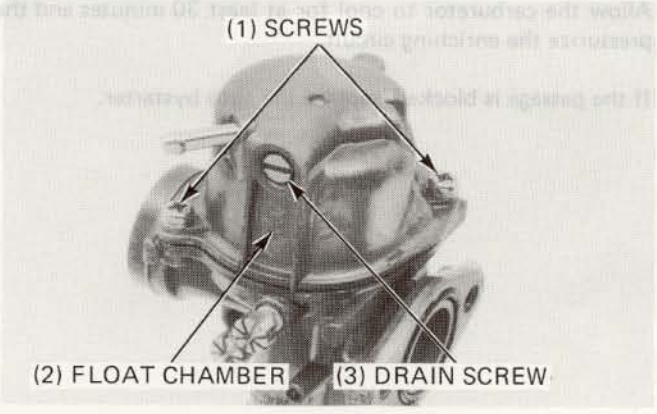
Check the auto bystarter needle and valve for wear or damage. Replace the auto bystarter as an assembly, if necessary.



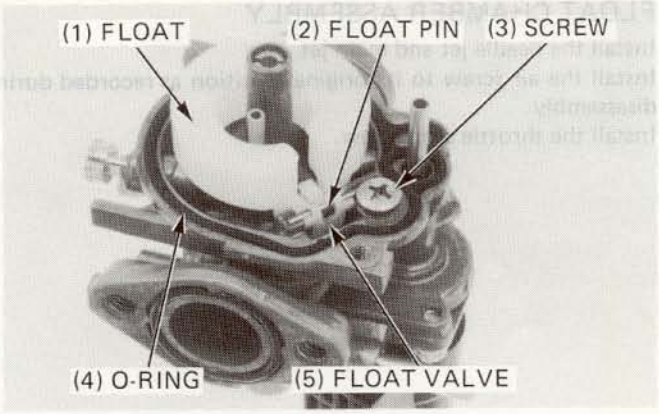
FLOAT CHAMBER DISASSEMBLY

Place a drain pan under the carburetor and loosen the carburetor drain screw to drain the fuel.

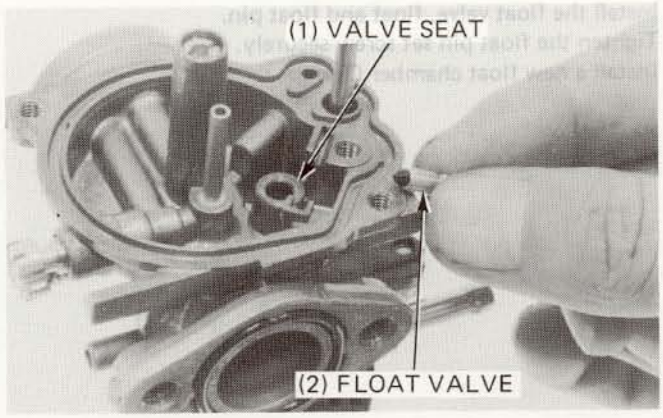
Remove the float chamber screws and chamber from the carburetor.



Remove the float pin set screw, float pin, float and float valve.
Remove the O-ring.



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

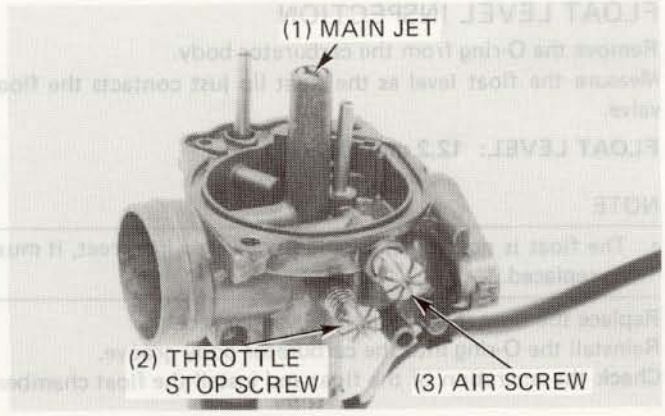


Turn the air screw in until it seats lightly and record the number of turns. Use this as a reference for reinstallation.

CAUTION

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

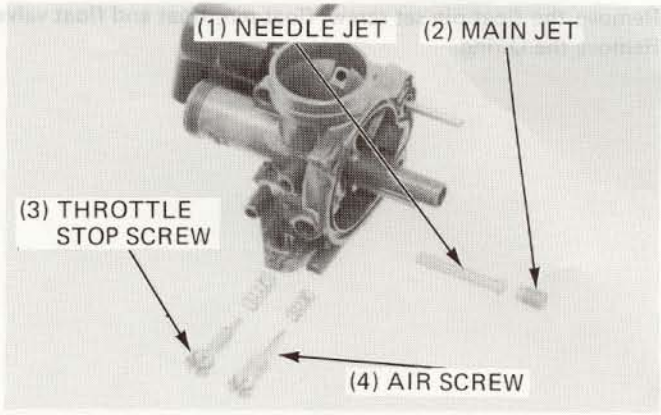
Remove the air screw.
Remove the throttle stop screw.
Remove the main jet and needle jet.



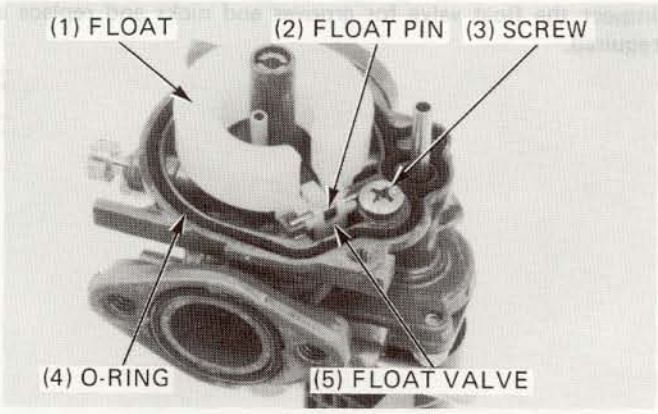
Blow compressed air through all carburetor body openings.

FLOAT CHAMBER ASSEMBLY

Install the needle jet and main jet.
Install the air screw to its original position as recorded during disassembly.
Install the throttle stop screw.



Install the float valve, float and float pin.
Tighten the float pin set screw securely.
Install a new float chamber O-ring.



FLOAT LEVEL INSPECTION

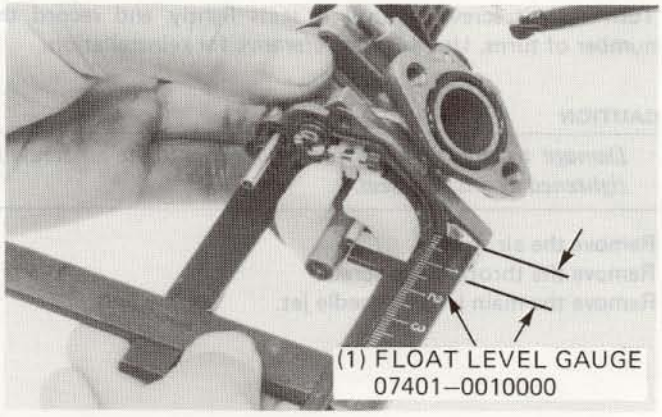
Remove the O-ring from the carburetor body.
Measure the float level as the float lip just contacts the float valve.

FLOAT LEVEL: 12.2 mm (0.48 in)

NOTE

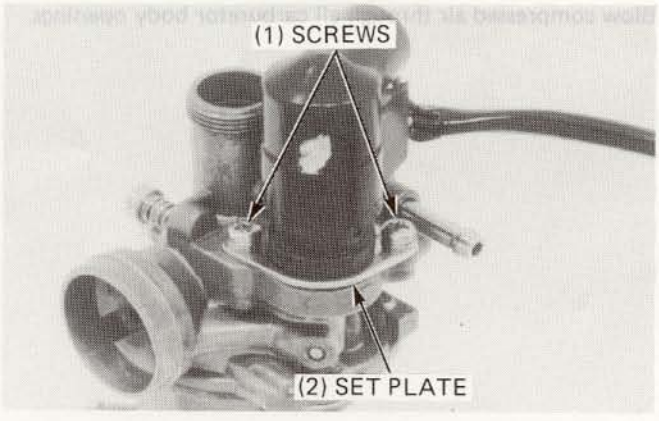
- The float is not adjustable; if the level is incorrect, it must be replaced.

Replace the float if the float level is incorrect.
Reinstall the O-ring into the carburetor body groove.
Check the operation of the float and install the float chamber.



AUTO BYSTARTER INSTALLATION

Install a new O-ring onto the auto bystarter.
Install the auto bystarter onto the carburetor.
Install the set plate onto the auto bystarter (in the second groove from the top) and tighten the two screws.



CARBURETOR INSTALLATION

CAUTION

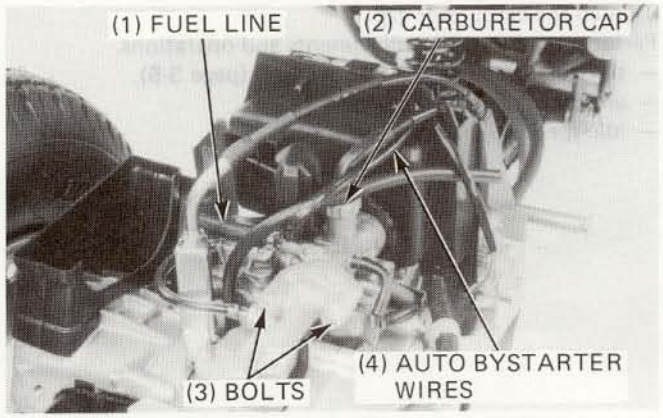
- *Do not allow any debris into the carburetor.*

Be sure the O-ring is in place on the carburetor. Install the heat insulator and carburetor mounting bolts.

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

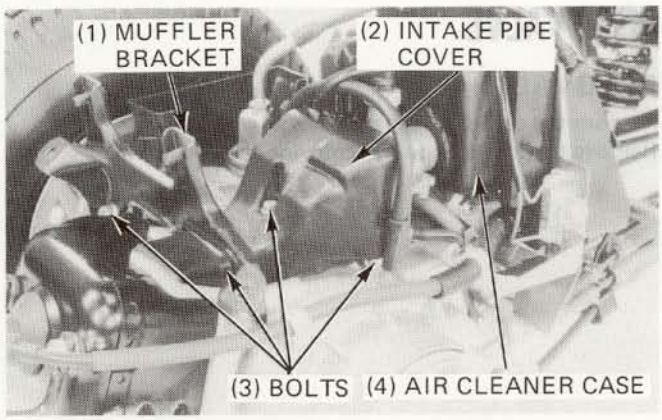
Install the carburetor cap.

Connect the fuel line and auto bystarter wires.



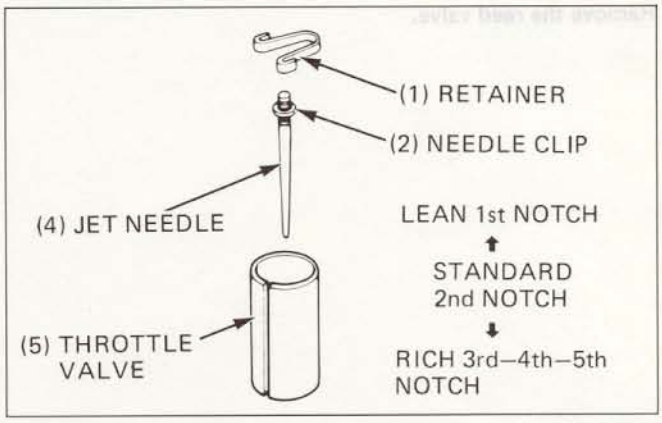
Install the air cleaner case (page 4-3).

Install the intake pipe cover using the two bolts.
Install the muffler bracket with the two bolts.

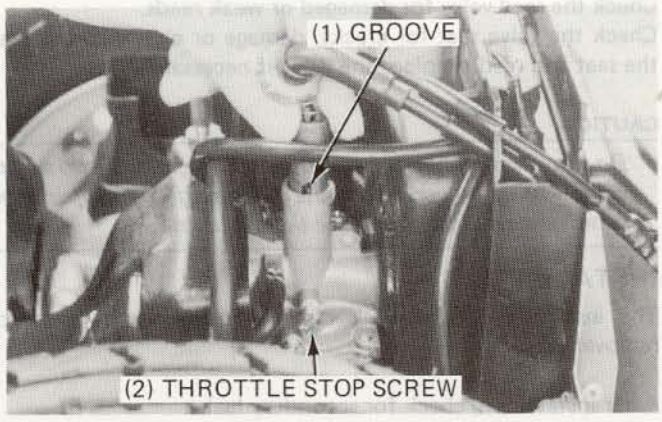


THROTTLE VALVE ASSEMBLY

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



Install the sealing cap, carburetor cap, throttle valve spring and valve onto the throttle cable.
Slide the throttle valve into the carburetor body by aligning its groove with the throttle stop screw.

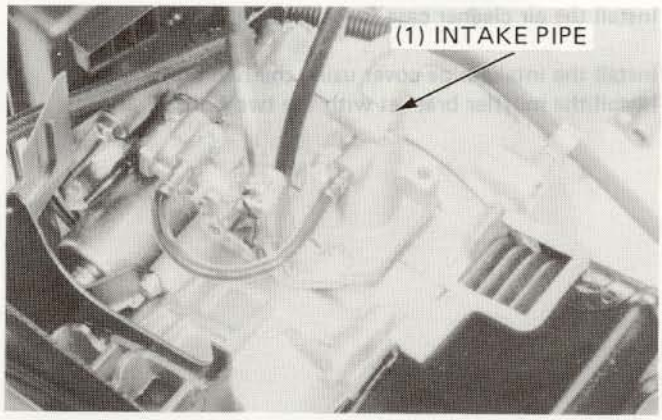


Tighten the carburetor cap.
Perform the following adjustments and operations.
– throttle cable free play adjustment (page 3-5).
– air screw adjustment (page 4-11).
– idle speed adjustment (page 3-5).

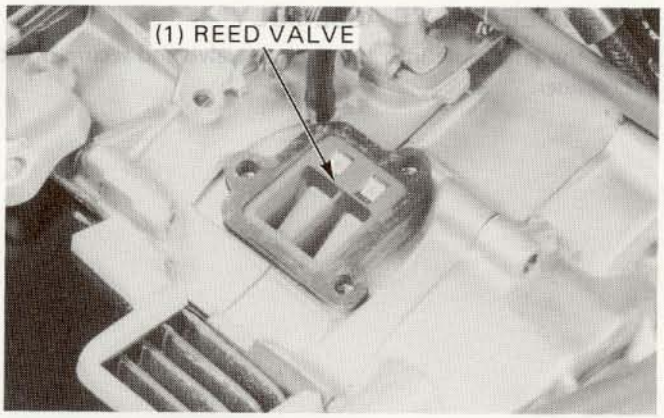
REED VALVE

REMOVAL

Remove the carburetor (page 4-5).
Remove the intake pipe by removing the two bolts.



Remove the reed valve.



INSPECTION

Check the reed valve for damaged or weak reeds.
Check the valve seat for cracks, damage or clearance between the seat and reed. Replace the valve if necessary.

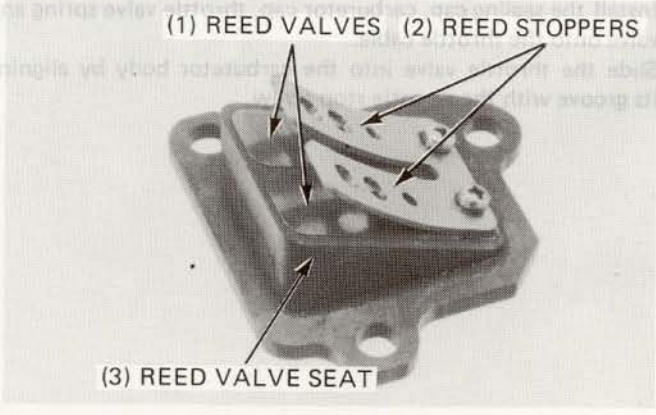
CAUTION

- *Do not disassemble or bend the reed stopper. To do so can cause loss of power and engine damage. If the stopper, reed or valve seat is faulty, replace them as a unit.*

INSTALLATION

The installation sequence is essentially the reverse order of removal.

After installation, check for secondary leaks.



AIR SCREW ADJUSTMENT

NOTE

- The engine must be warm for accurate air screw adjustment.

If the engine misses or runs erratically, proceed as follows: Screw in the air screw until it lightly seats, then turn it out as specified.

AIR SCREW OPENING: 2-1/4 turns out

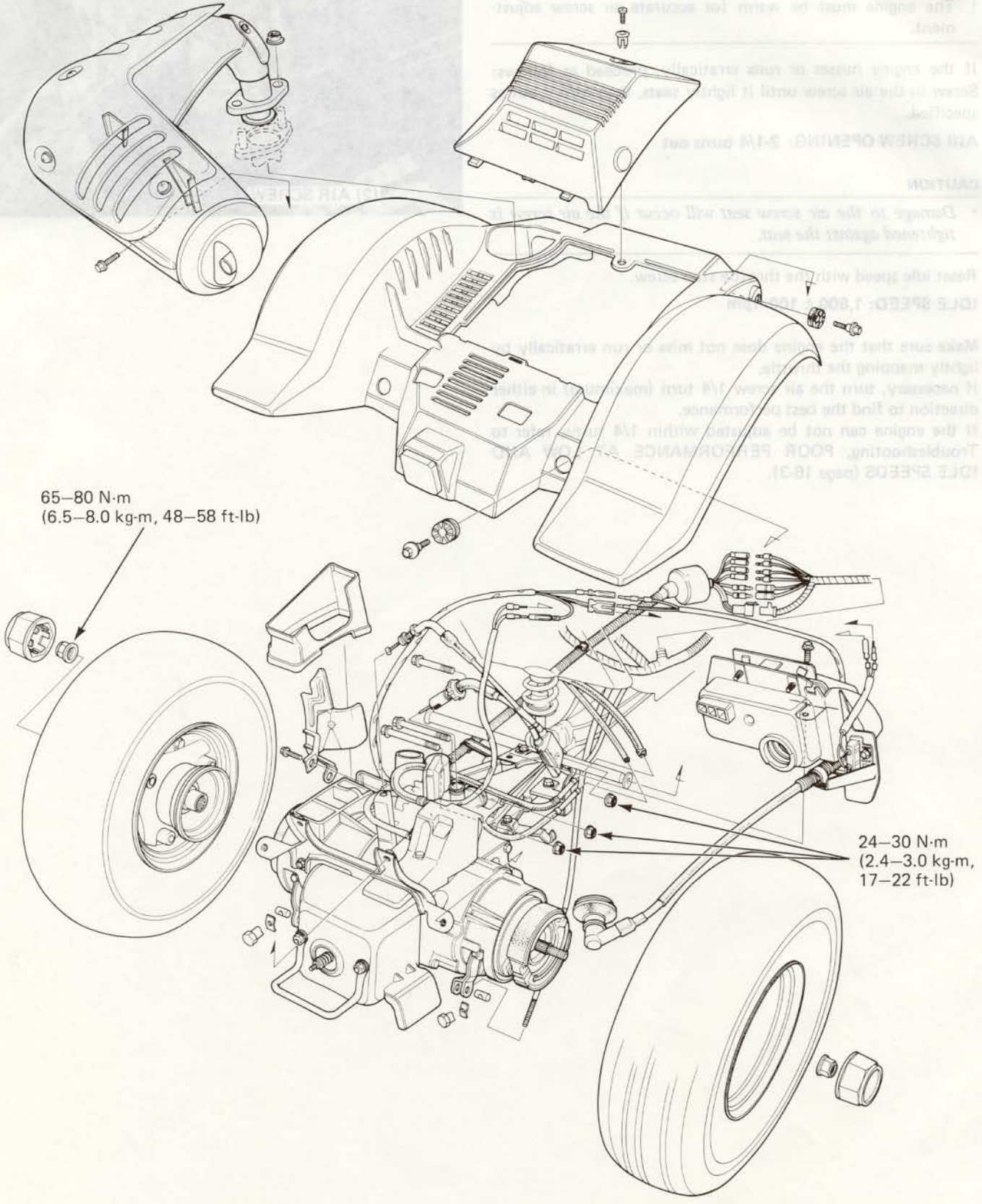
CAUTION

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

Reset idle speed with the throttle stop screw.

IDLE SPEED: 1,800 ± 100 rpm

Make sure that the engine dose not miss or run erratically by lightly snapping the throttle.
If necessary, turn the air screw 1/4 turn (maximum) in either direction to find the best performance.
If the engine can not be adjusted within 1/4 turns, refer to Troubleshooting, POOR PERFORMANCE AT LOW AND IDLE SPEEDS (page 16-3).


65–80 N·m
(6.5–8.0 kg-m, 48–58 ft-lb)
24–30 N·m
(2.4–3.0 kg-m,
17–22 ft-lb)

SERVICE INFORMATION

GENERAL

- The engine must be removed to service the crankshaft.

SPECIFICATIONS

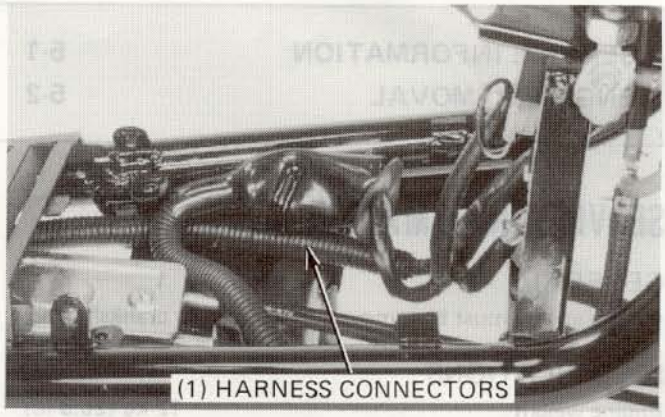
Engine weight	12 kg (26.5 lb)

TORQUE VALUES

Engine mounting bolts	24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
Rear axle nut	65–80 N·m (6.5–8.0 kg-m, 48–58 ft-lb)

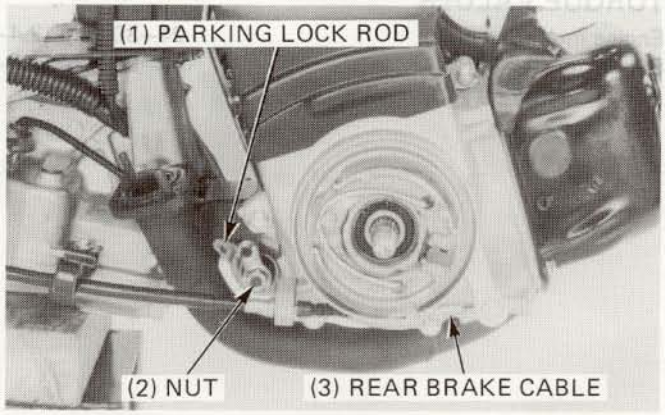
ENGINE REMOVAL

Remove the engine cover (page 10-5).
Remove the body center cover (page 10-4).
Place jacks or other supports under the swing joint and both sides of the frame.
Remove both rear wheels with the hubs (page 12-2).
Disconnect the ground cable from the battery negative terminal.
Disconnect the engine harness connectors from the main harness.

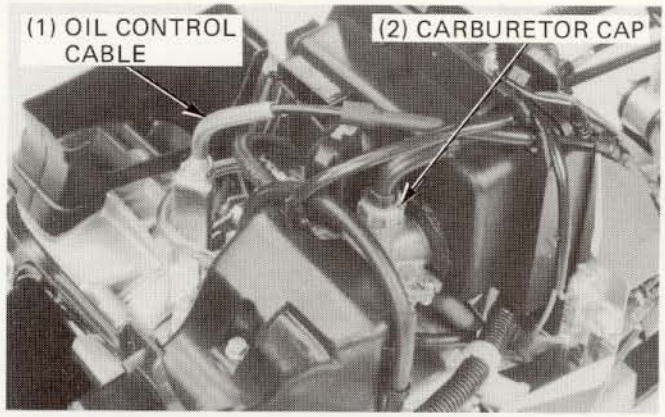


Make sure that the parking lock lever is released and disconnect the parking lock rod by removing the nut.

Disconnect the right and left rear brake cables from the brake arms.



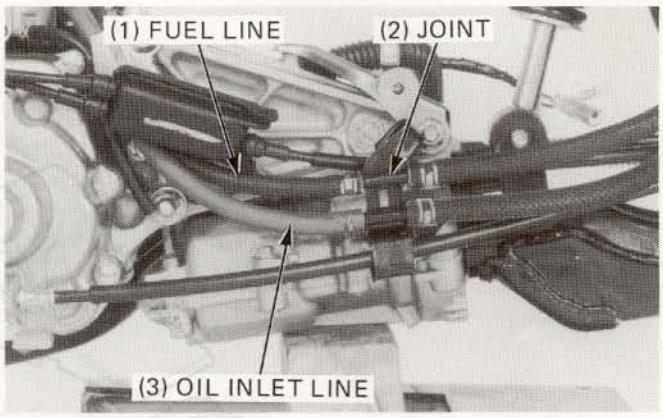
Disconnect the oil control cable from the oil pump and cable holder.
Remove the carburetor cap.



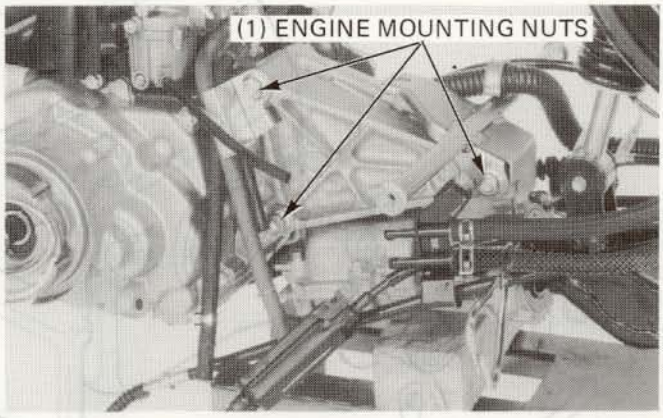
Remove the air cleaner case (page 4-3).

Turn the fuel valve OFF and disconnect the fuel line at the joint.

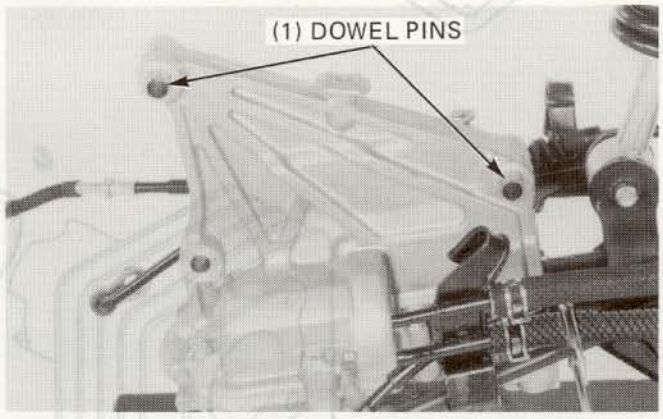
Disconnect the oil inlet line at the joint and drain the oil into a clean container.



Remove the three engine mounting nuts and the engine from the swing joint.



Remove the two dowel pins from the swing joint.



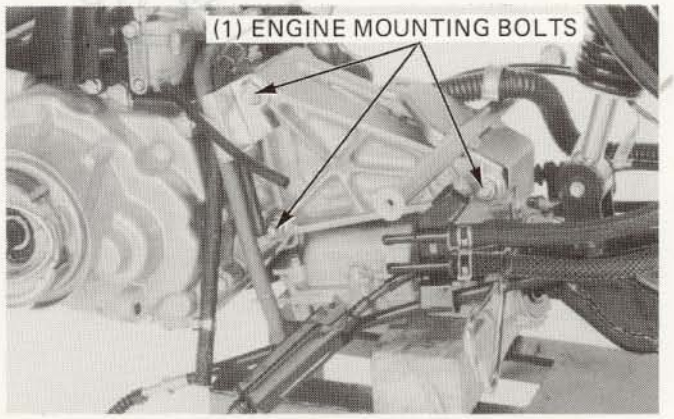
ENGINE INSTALLATION

Installation sequence is essentially the reverse order of removal.

TORQUE:

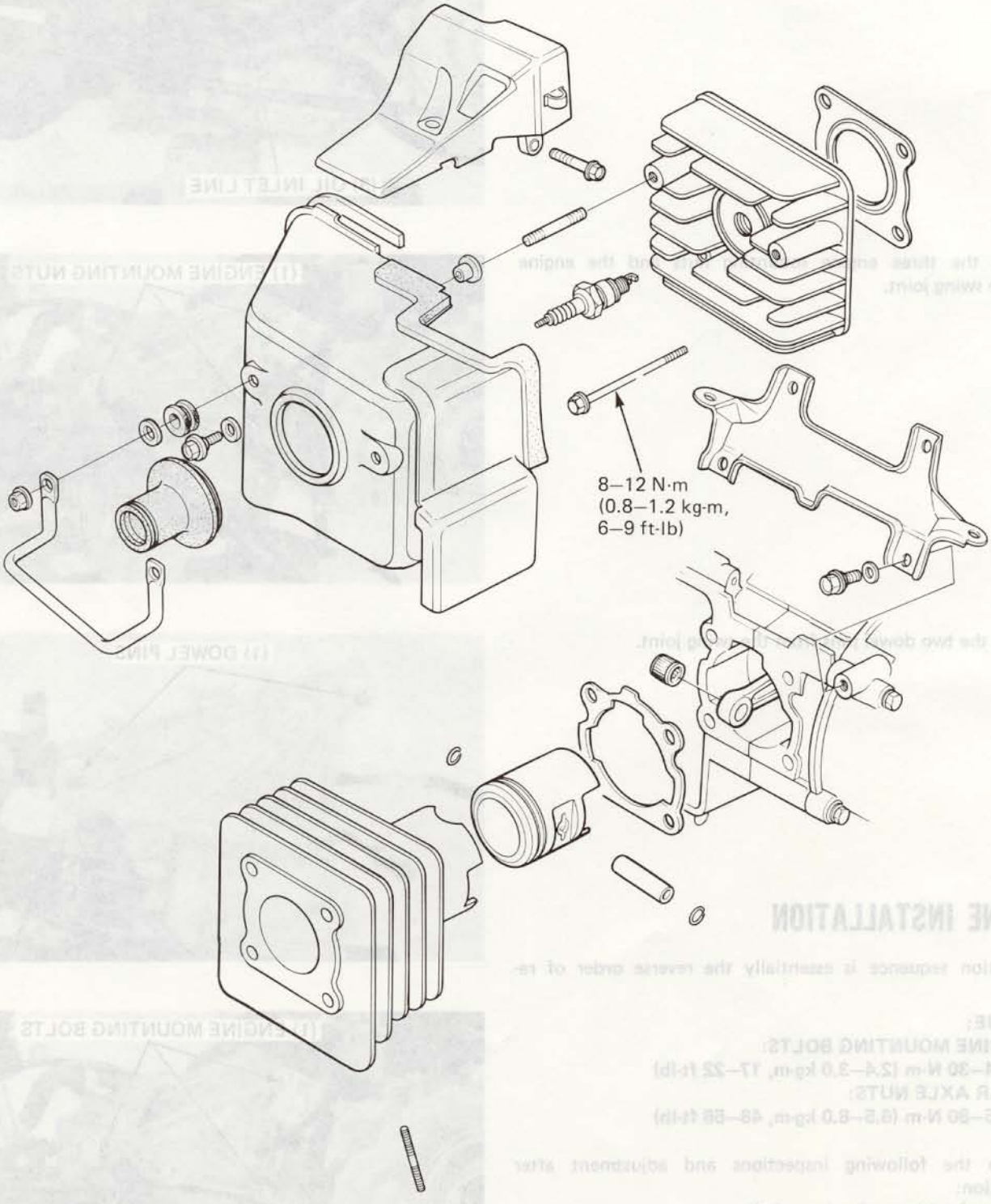
ENGINE MOUNTING BOLTS:
24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)

REAR AXLE NUTS:
65–80 N·m (6.5–8.0 kg-m, 48–58 ft-lb)



Perform the following inspections and adjustment after installation:

- wire and cable routing (page 1-7).
- throttle grip free play adjustment (page 3-5).
- oil control cable adjustment (page 3-5).
- oil pump and line bleeding (page 2-3).
- rear brake adjustment (page 3-8).
- parking lock adjustment (page 3-8).


8–12 N·m
(0.8–1.2 kg-m,
6–9 ft-lb)

SERVICE INFORMATION

GENERAL

- All cylinder head, cylinder and piston service can be done with the engine installed in the frame.
- Before disassembly, clean the engine to prevent dirt and dust from entering the cylinder and crankcase.
- Remove all gasket material from the mating surfaces of the cylinder head, cylinder and crankcase.
- Use caution when disassembling and assembling the cylinder head, cylinder and piston to avoid damaging them.
- Clean all disassembled parts thoroughly before inspection. Coat all sliding surfaces with clean 2-stroke injector oil before assembly.

SPECIFICATIONS

ITEM	STANDARD mm (in)	SERVICE LIMIT mm (in)
Cylinder head warpage	—	0.10 (0.004)
Cylinder bore	41.000–41.020 (1.6142–1.6150)	41.050 (1.6161)
Piston O.D. (4 mm from bottom of piston skirt)	40.955–40.970 (1.6124–1.6130)	40.900 (1.6102)
Cylinder-to-piston clearance	0.035–0.050 (0.0013–0.0019)	0.10 (0.004)
Piston pin hole I.D.	10.002–10.008 (0.3938–0.3940)	10.025 (0.3947)
Piston pin O.D.	9.994–10.000 (0.3935–0.3937)	9.980 (0.3929)
Piston-to-piston pin clearance	0.002–0.014 (0.0001–0.0006)	0.030 (0.0012)
Piston ring end gap (top, second)	0.10–0.25 (0.004–0.01)	0.50 (0.02)

TORQUE VALUE

Cylinder head bolt	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

TROUBLESHOOTING

Compression to low, hard starting or poor performance at low speed

- Leaking cylinder head gasket.
- Loose spark plug.
- Worn, stuck or broken piston rings.
- Worn or damaged cylinder and piston.
- Faulty reed valve.

Compression too high, overheating or knocking

- Excessive carbon build-up in cylinder head or on top of piston.

Abnormal noise-piston

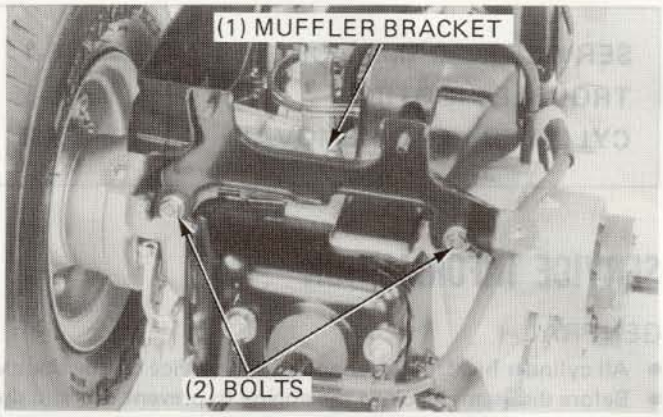
- Worn cylinder and piston.
- Worn piston pin or piston pin hole.
- Worn connecting rod small end bearing.

Abnormal noise

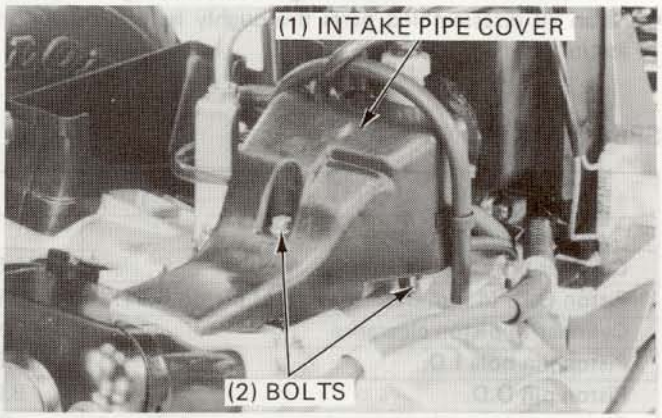
- Worn, stuck or broken piston rings.
- Worn or damaged cylinder.

CYLINDER HEAD REMOVAL

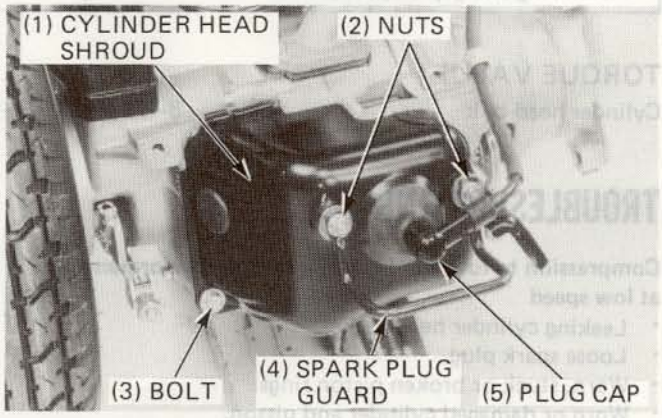
Remove the engine cover (page 10-5).
Remove the right rear wheel (page 12-2).
Remove the muffler bracket by removing the two bolts.



Remove the intake pipe cover by removing the two bolts.



Remove the spark plug cap.
Remove the two nuts attaching the spark plug guard and the guard.
Remove the cylinder head shroud by removing the bolt.

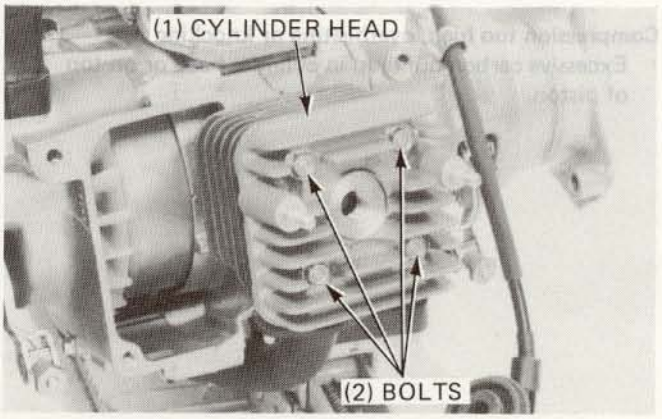


Remove the four cylinder head bolts and the cylinder head.

NOTE

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

Remove the cylinder head gasket.



COMBUSTION CHAMBER DECARBONIZING

Remove the carbon deposits from the combustion chamber, and the piston head.
Clean the head gasket surface.

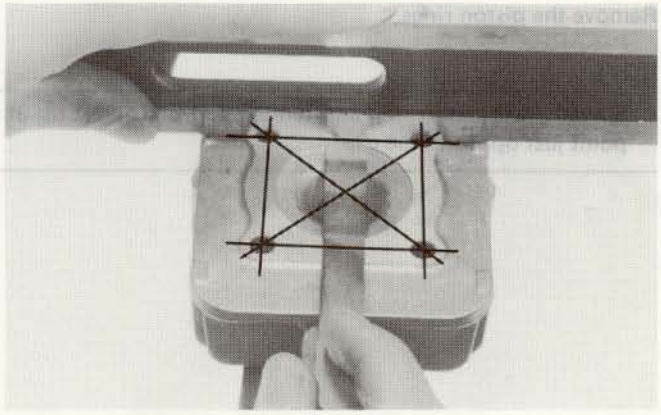
CAUTION

- *Avoid damaging the combustion chamber wall and gasket surfaces.*

CYLINDER HEAD WARPAGE INSPECTION

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

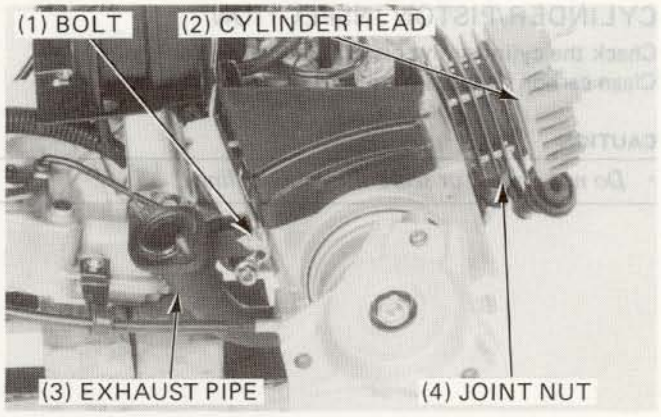
SERVICE LIMIT: 0.10 mm (0.004 in)



CYLINDER/PISTON REMOVAL

Remove the cylinder head (page 6-2).
Remove the left rear wheel (page 12-2).

Remove the exhaust pipe joint nuts, mounting bolt and the pipe.

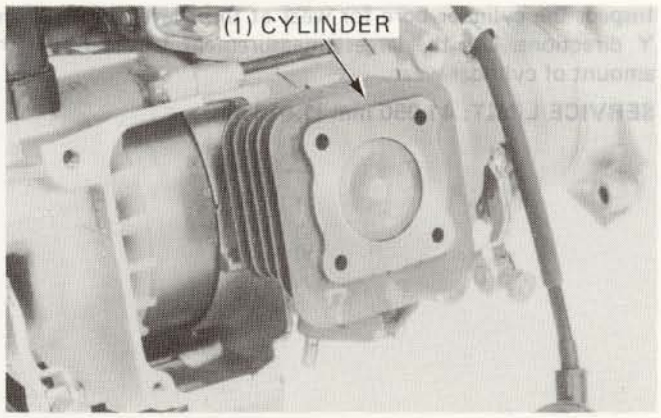


Remove the cylinder being careful not to damage the piston.

CAUTION

- *Do not pry between the cylinder and crankcase or strike the fins.*

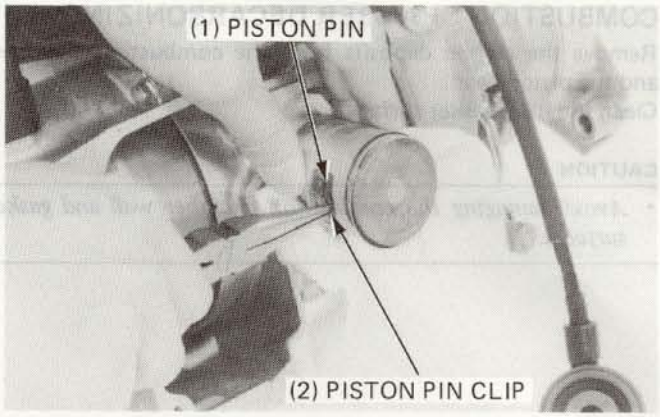
Place a shop towel into the crankcase around the connecting rod.



Remove the piston pin clip with needle nose pliers.
Press the piston pin out of the piston.

NOTE

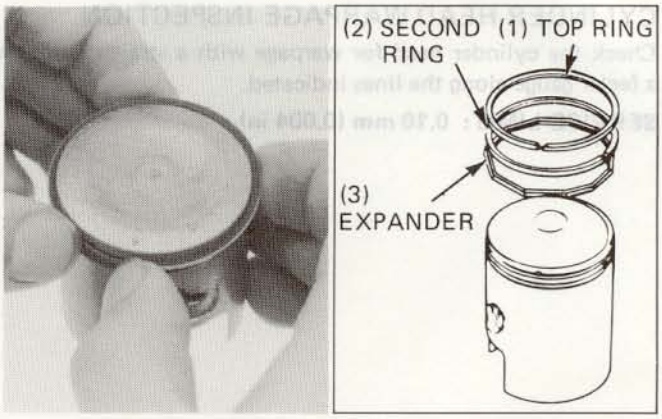
- Do not damage or scratch the piston.
- Do not apply side force to the connecting rod.
- Do not let the clip fall into the crankcase.



Remove the piston rings.

NOTE

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



CYLINDER/PISTON INSPECTION

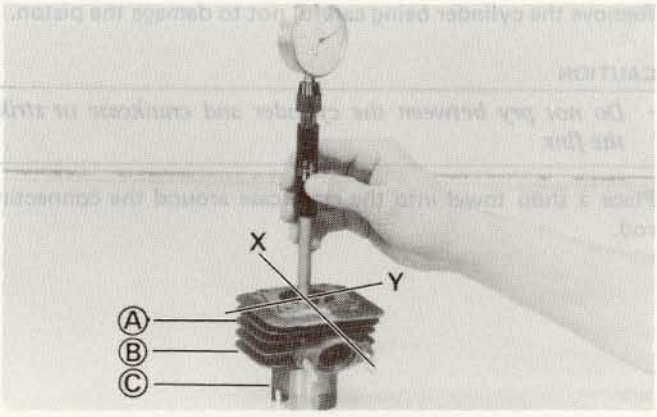
Check the cylinder and piston for wear or damage.
Clean carbon deposits from the exhaust port area.

CAUTION

- *Do not scratch or score the cylinder liner.*

Inspect the cylinder bore for wear at three levels in the X and Y directions. Use the largest measurement to determine the amount of cylinder wear.

SERVICE LIMIT: 41.050 mm (1.6161 in)



CAUTION

- *The cylinder is identified with either a "A" or no mark in the location shown. When the cylinder is replaced, use a new cylinder with the same mark as the old one.*


(1) MARK A OR NO MARK

Measure the piston O.D. at a point 4 mm from the bottom of the skirt.

SERVICE LIMIT: 40.900 mm (1.6102 in)

Calculate the piston-to-cylinder clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

Measure the piston pin hole I.D.

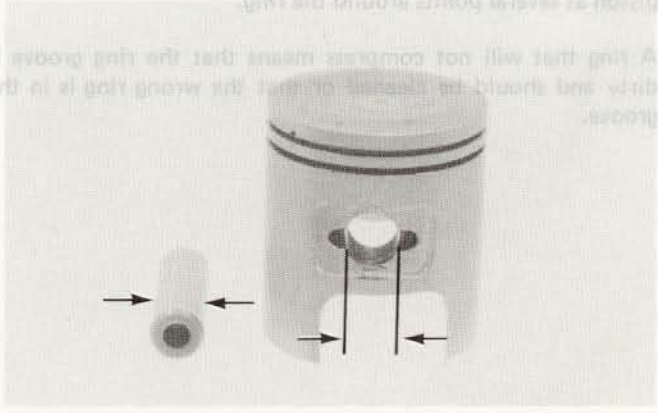
SERVICE LIMIT: 10.025 mm (0.3947 in)

Measure the piston pin O.D.

SERVICE LIMIT: 9.980 mm (0.3929 in)

Calculate the piston-to-piston pin clearance

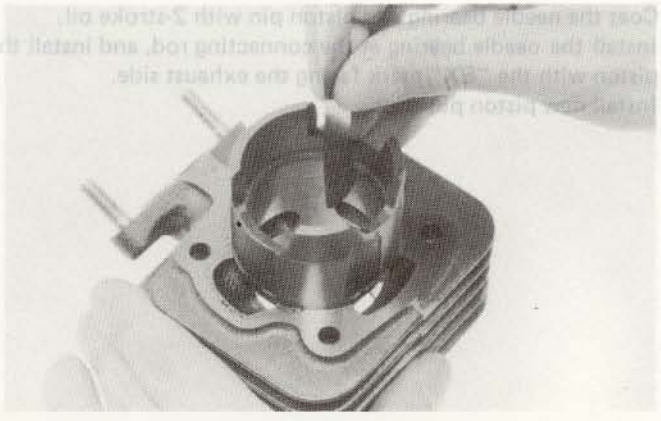
SERVICE LIMIT: 0.030 mm (0.0012 in)



PISTON RING INSPECTION

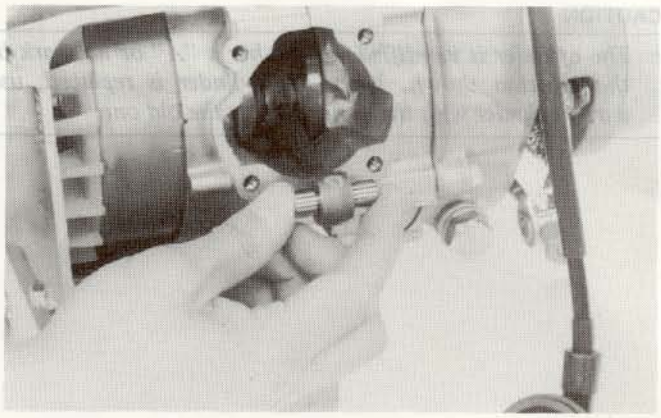
Set each piston ring squarely into the cylinder 30 mm (1-1/4 in) from the bottom using the piston and measure the end gap with a feeler gauge.

SERVICE LIMIT: 0.50 mm (0.0197 in)



CONNECTING ROD INSPECTION

Install the bearing and piston pin in the connecting rod small end and check for excessive play.

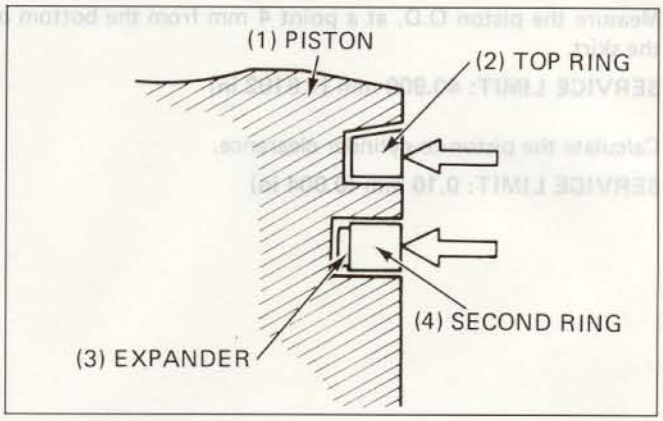


PISTON/CYLINDER INSTALLATION

Clean the piston ring grooves.
Lubricate the piston rings and piston ring grooves with clean 2-stroke oil.
Install the piston rings on the piston, with the marks facing up.

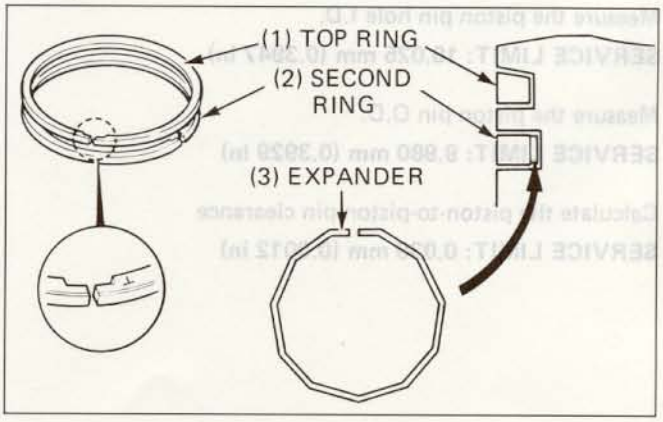
NOTE

- After installation, check that the rings move freely in the ring grooves.
- The top ring is a keystone ring and is not interchangeable with the square second ring.

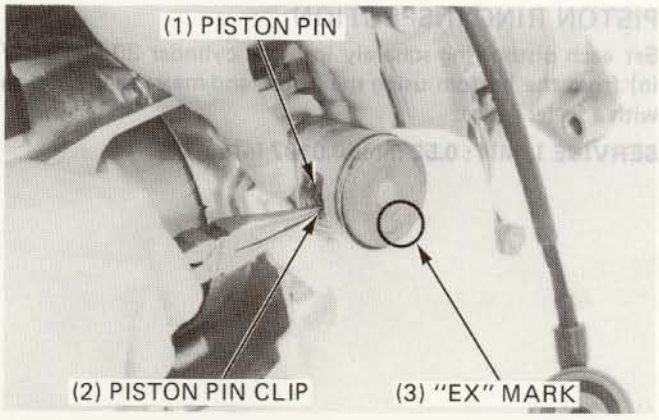


Check the fit of each ring in the ring groove by pressing the ring into the groove to make sure that it is flush with the piston at several points around the ring.

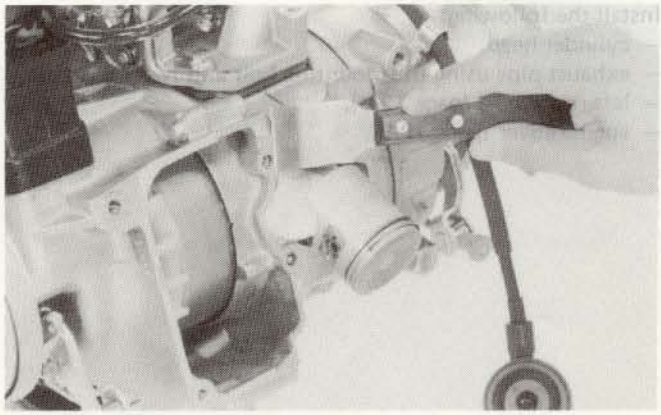
A ring that will not compress means that the ring groove is dirty and should be cleaned or that the wrong ring is in the groove.



Coat the needle bearing and piston pin with 2-stroke oil.
Install the needle bearing at the connecting rod, and install the piston with the "EX" mark facing the exhaust side.
Install new piston pin clips.



Remove all gasket material from the cylinder and crankcase mating surfaces.

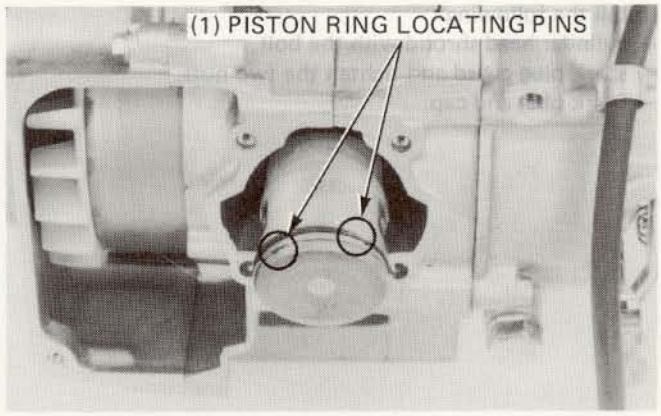


Install a new cylinder gasket onto the cylinder.

Be sure the ring end gaps are aligned with the piston ring locating pins in the ring grooves.

CAUTION

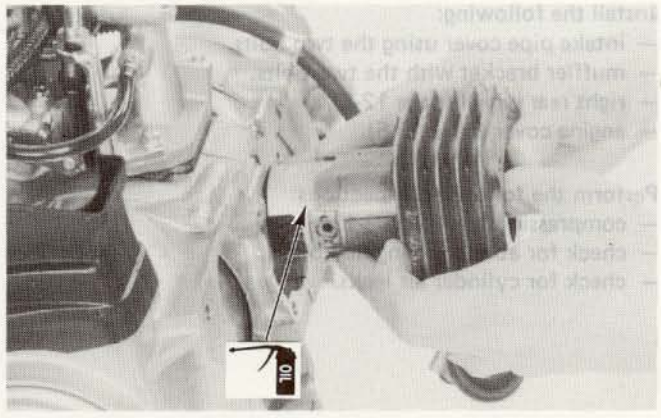
- *Be sure the rings do not rotate in the their grooves over the locating pins to prevent ring breakage and piston and cylinder damage.*



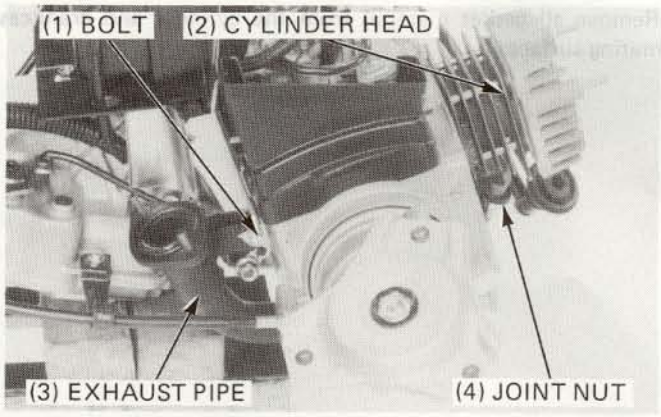
Lubricate the piston and cylinder with 2-stroke oil, compress the rings and slide the cylinder onto the piston.

CAUTION

- *Avoid damaging the sliding surface of the piston.*



Install the following:
- cylinder head.
- exhaust pipe using the mounting bolt and two joint nuts.
- left rear wheel (page 12-3).
- engine cover (page 10-5).

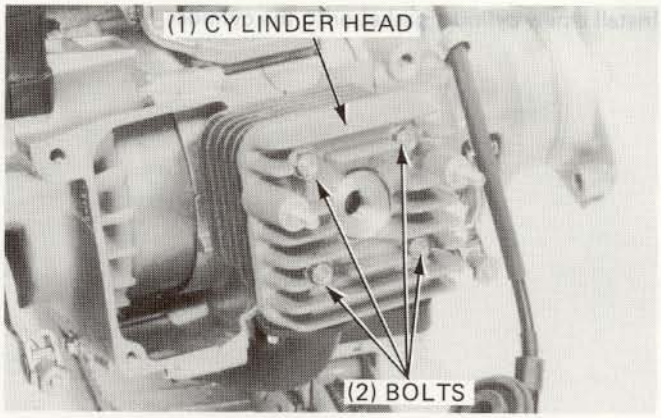


CYLINDER HEAD INSTALLATION

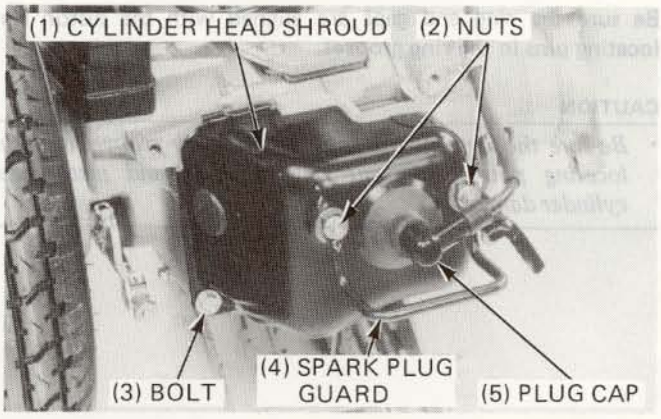
Install a new cylinder head gasket.

Install the cylinder head.
Install and tighten the four cylinder head bolts in a crisscross pattern, in 2 to 3 steps.

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

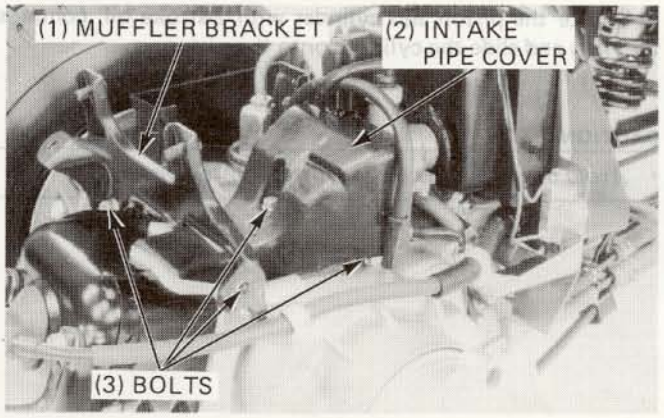


Install the following:
- cylinder head shroud with the bolt.
- spark plug guard and tighten the two nuts.
- spark plug and cap.

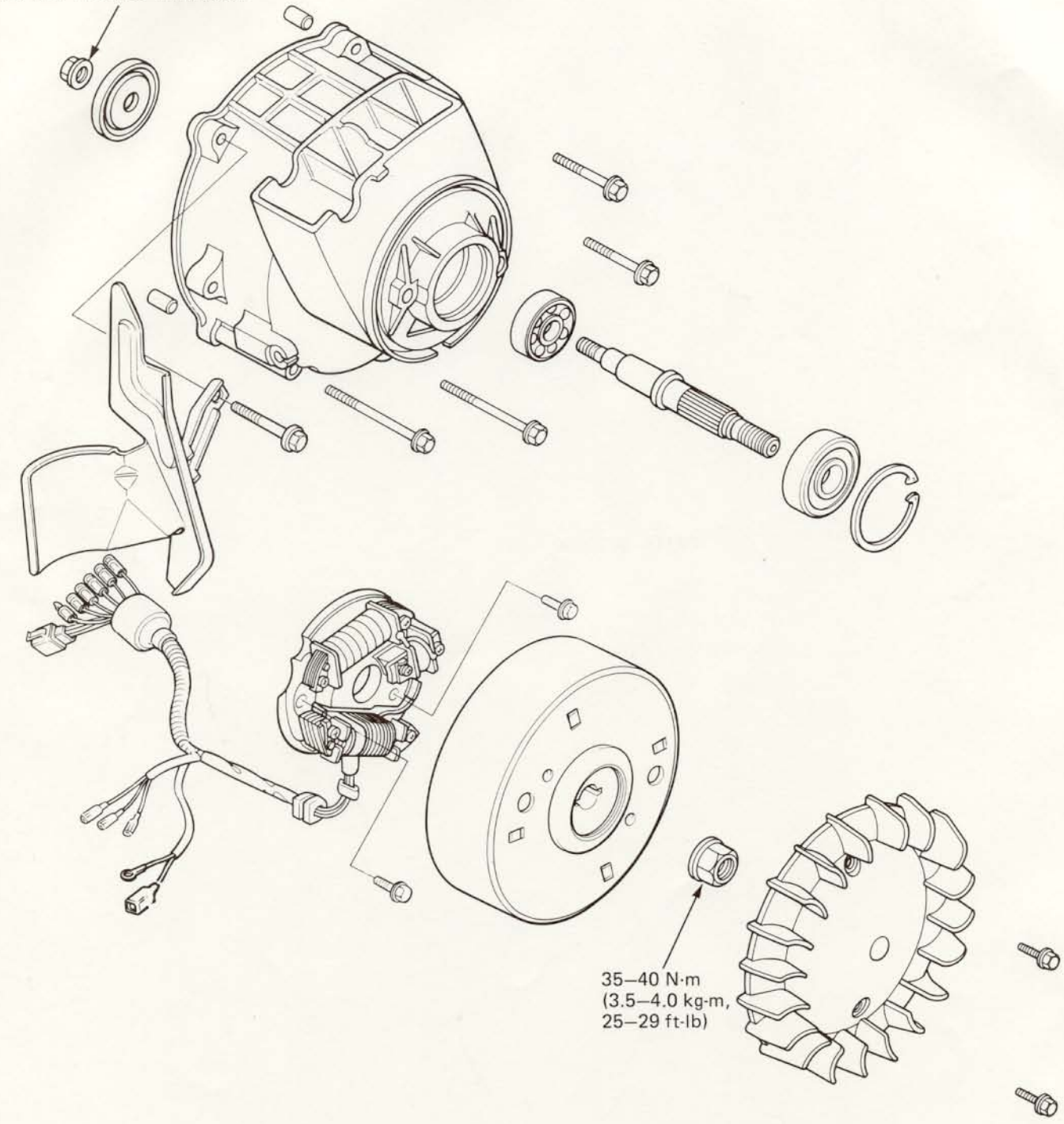


Install the following:
- intake pipe cover using the two bolts.
- muffler bracket with the two bolts.
- right rear wheel (page 12-3).
- engine cover (page 10-5).

Perform the following inspections:
- compression test (page 3-11).
- check for abnormal engine noise.
- check for cylinder air leaks.



MEMO


(1) LEFT-HAND THREADS
35–40 N·m
(3.5–4.0 kg-m,
25–29 ft-lb)

SERVICE INFORMATION

GENERAL

- Do not remove the pulse generator from the stator base.
- See Chapter 14 for alternator inspection.

TORQUE VALUE

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

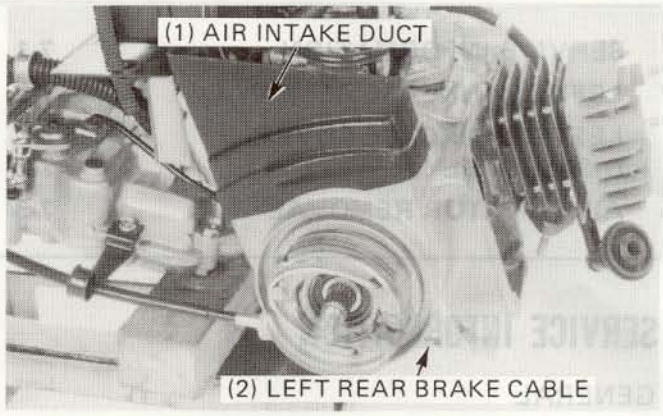
TOOLS

Common

Flywheel puller	07733–0010000 or 07933–0010000
Universal holder	07725–0030000
Driver	07749–0010000
Attachment, 24 x 26 mm	07746–0010700
Pilot, 10 mm	07746–0040100
Driver	07746–0020100

LEFT CRANKCASE REMOVAL

Remove the following:
- engine cover (page 10-5).
- rear wheels (page 12-2).
- cylinder head shroud (page 6-2) and exhaust pipe (page 6-3).
- left rear brake cable from the brake arm.
- air intake duct.



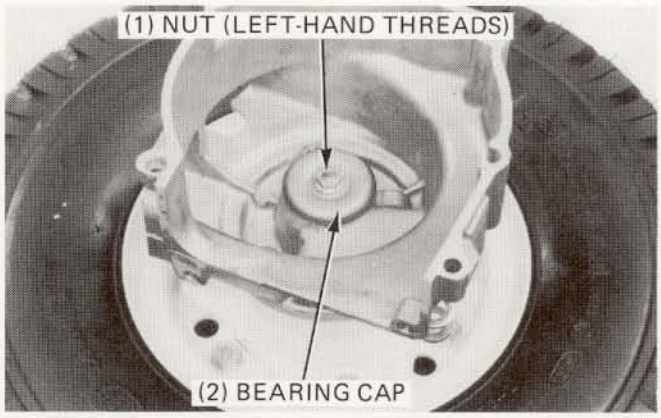
Remove the left crankcase cover bolts and the cover.

LEFT CRANKCASE COVER DISASSEMBLY

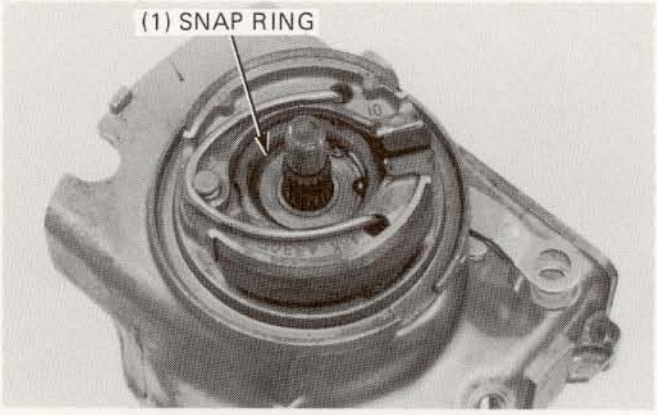
For ease of disassembly, temporarily reinstall the left crankcase cover onto the rear wheel and remove the final shaft nut and bearing cap.

NOTE:

- The nut has left-hand threads.



Remove the snap ring.

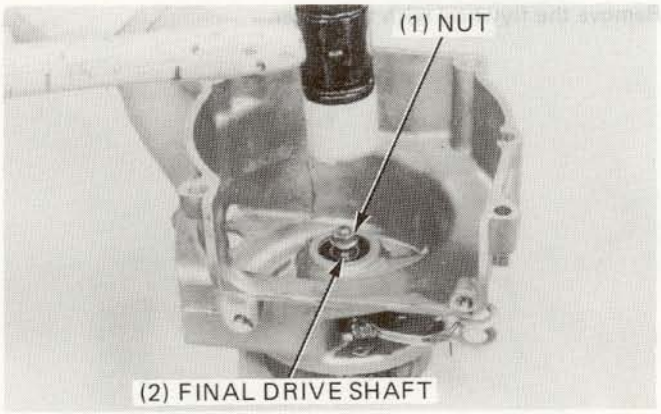


Heat the crankcase cover around the bearing.

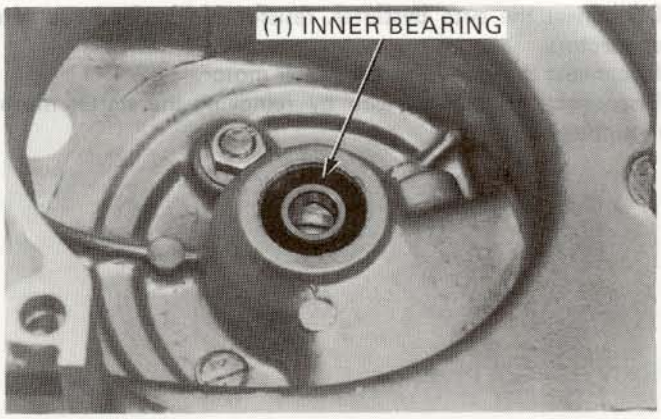
CAUTION

- *Wear gloves to protect your hands when handling the heated cover.*

Thread the nut onto the final drive shaft just enough to cover the end of the shaft, and carefully drive the shaft and bearing out of the crankcase cover using a plastic hammer.

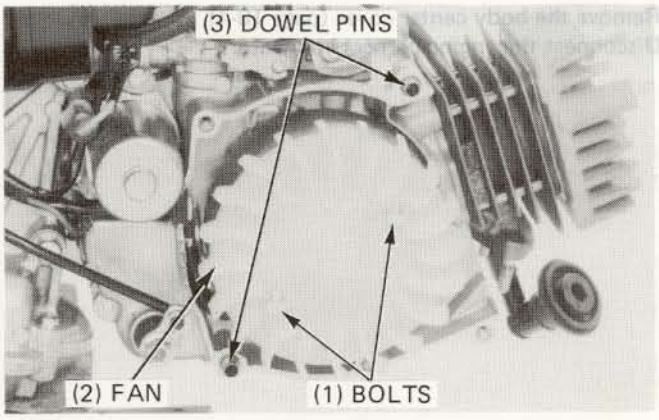


Remove the inner bearing.



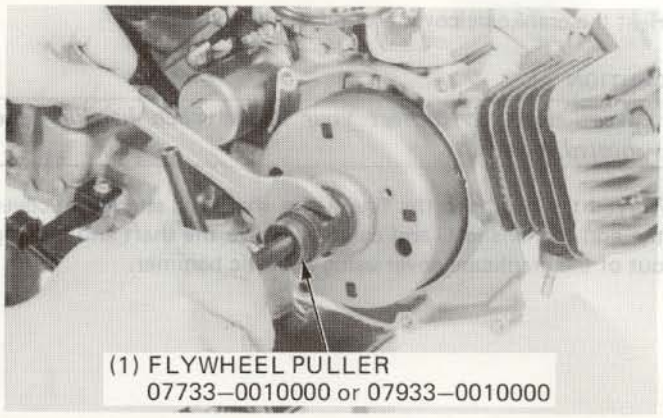
ALTERNATOR REMOVAL

Remove the following:
- left crankcase cover (page 7-2).
- cooling fan bolts and the fan.
- two dowel pins.

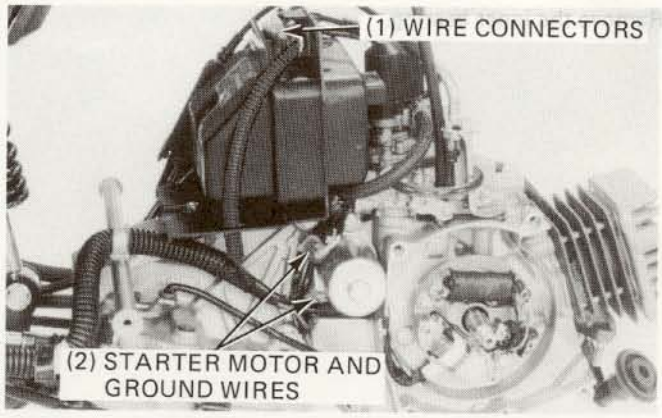


Hold the flywheel with the universal holder and remove the flywheel nut.

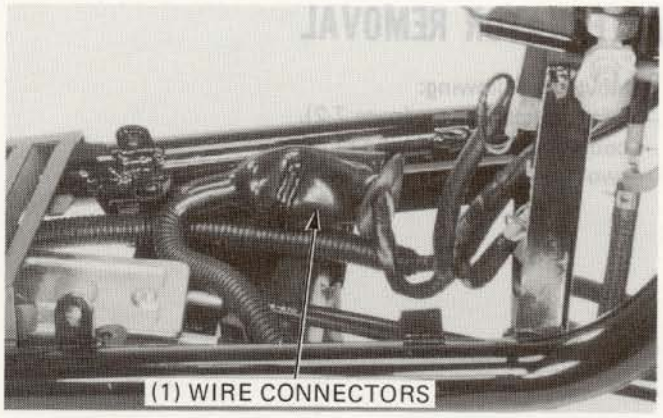
Remove the flywheel with the puller.



Disconnect the auto bystarter, resistor and ignition coil wire connectors.
Disconnect the wire from the starter motor.
Disconnect the ground wire by removing the starter motor mounting bolt.



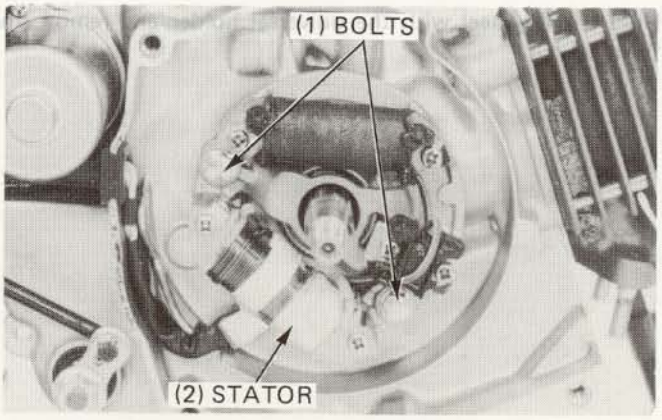
Remove the body center cover (page 10-4).
Disconnect the engine harness connectors.



Remove the stator mounting bolts and the stator.

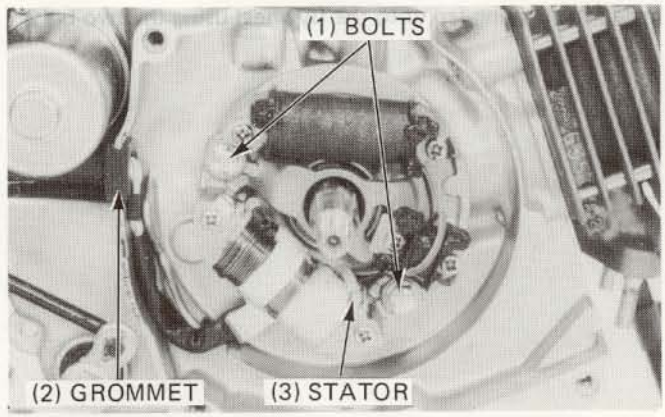
NOTE

- Do not try to remove the pulse generator from the stator base.
- Be careful not to damage the stator coils.

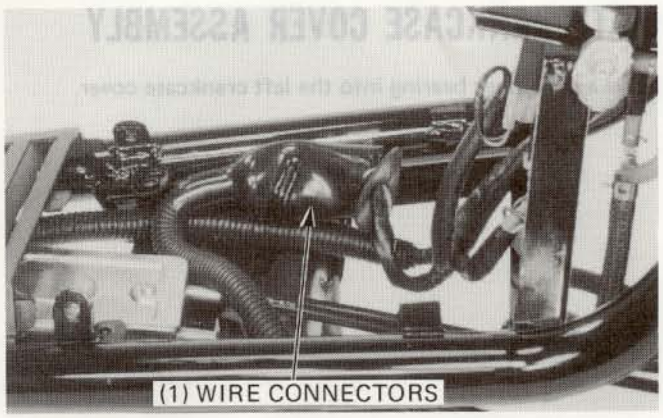


ALTERNATOR INSTALLATION

Install the stator onto the crankcase aligning its wire grommet with the groove in the crankcase.
Tighten the two stator mounting bolts.



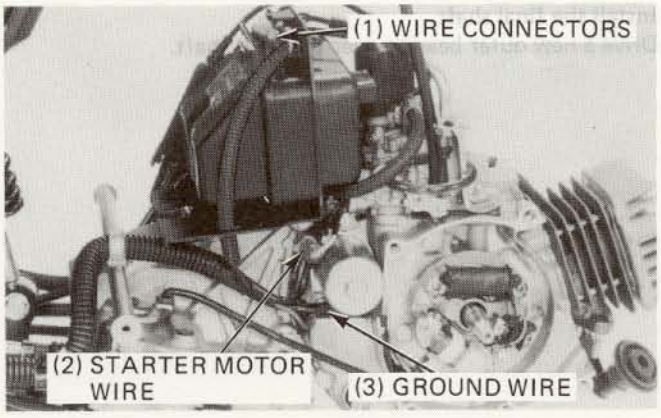
Connect the engine wire harness connectors to the main harness.



Connect the ground wire using the starter motor mounting bolt.
Connect the starter wire to the starter motor.

NOTE

- Route the wires properly (page 1-7).



Install the woodruff key in the keyway in the crankshaft.

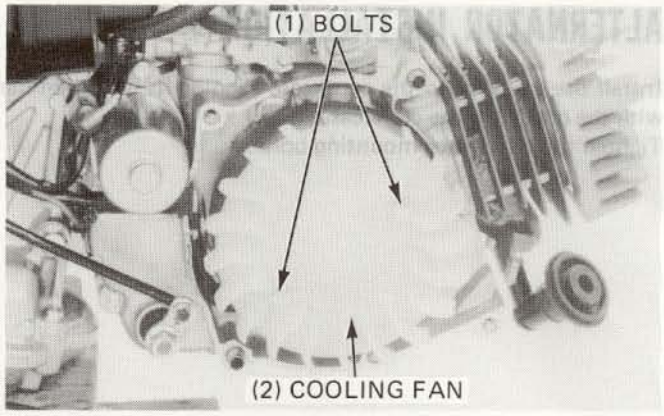
NOTE

- Clean the tapered hole in the flywheel of any burrs and dirt.

Install the flywheel onto the crankshaft aligning its keyway with the woodruff key on the crankshaft.
Hold the flywheel with the universal holder and tighten the flywheel nut.

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

Install the cooling fan onto the flywheel using the two bolts.

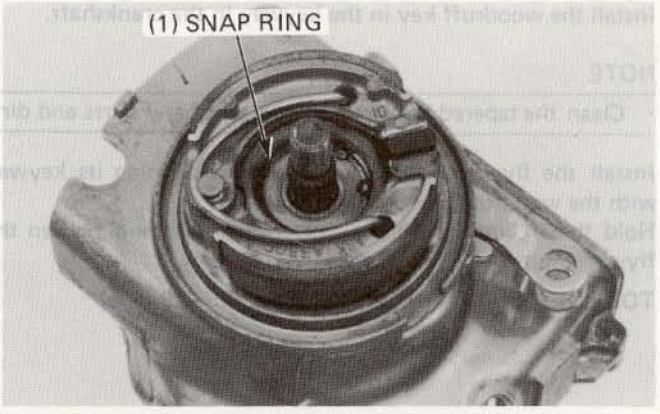


LEFT CRANKCASE COVER ASSEMBLY

Drive a new inner bearing into the left crankcase cover.

Install the final shaft.
Drive a new outer bearing over the final shaft.

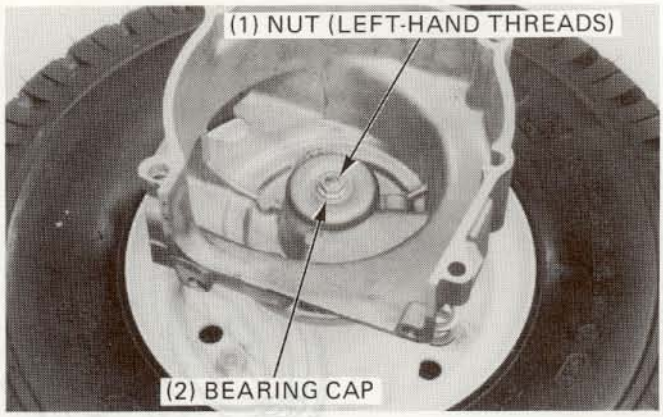
Install the snap ring in the groove in the left crankcase cover.



Temporarily install the left crankcase cover onto the rear wheel.
Install the bearing cap and tighten the final shaft nut.

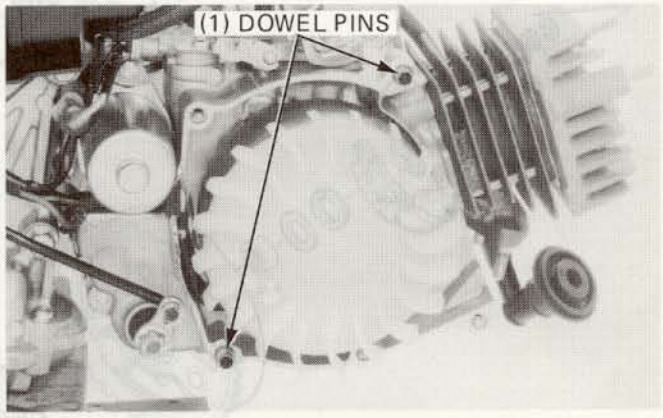
NOTE:

- The final shaft nut has left-hand threads.

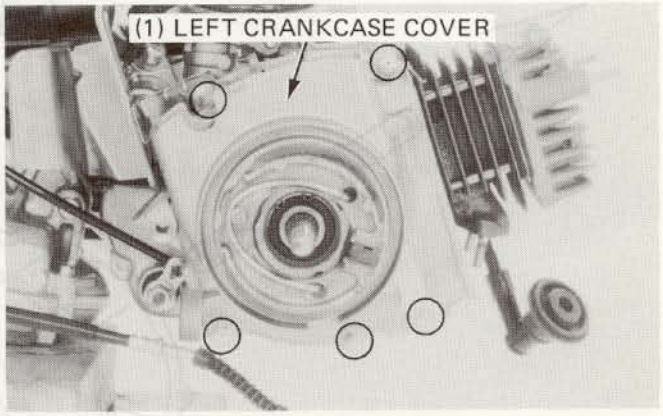


LEFT CRANKCASE COVER INSTALLATION

Install the two dowel pins onto the crankcase.

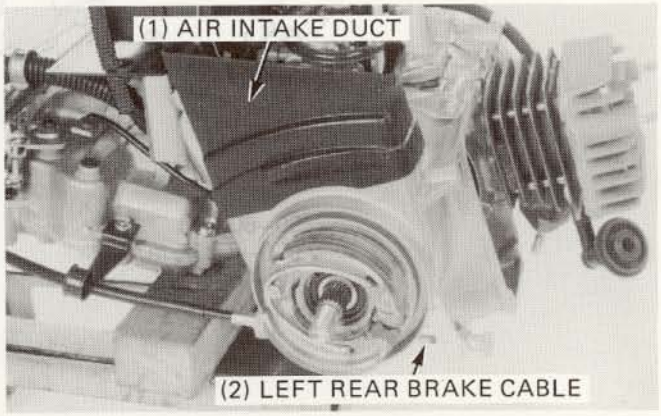


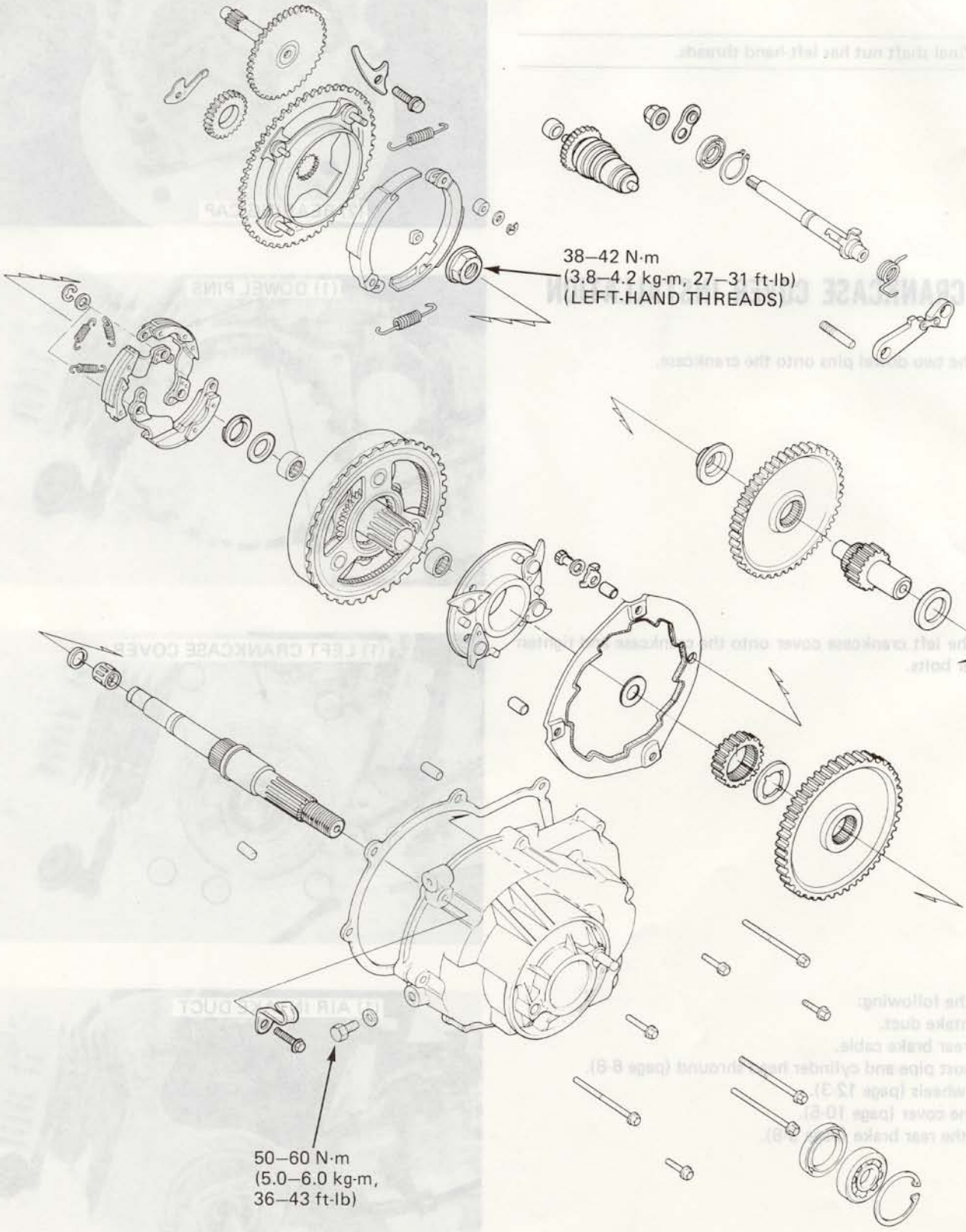
Install the left crankcase cover onto the crankcase and tighten the cover bolts.



Install the following:
- air intake duct.
- left rear brake cable.
- exhaust pipe and cylinder head shround (page 6-8).
- rear wheels (page 12-3).
- engine cover (page 10-5).

Adjust the rear brake (page 3-8).




38–42 N·m
(3.8–4.2 kg-m, 27–31 ft-lb)
(LEFT-HAND THREADS)
50–60 N·m
(5.0–6.0 kg-m,
36–43 ft-lb)

SERVICE INFORMATION

GENERAL

- All clutch/transmission service can be done with the engine installed.

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)
Low clutch	Clutch outer I.D.	110.00–110.20 (4.331–4.339)	110.5 (4.35)
	Sun gear plate I.D.	23.00–23.03 (0.906–0.907)	23.1 (0.91)
	Clutch lining thickness	1.5 (0.06)	1.0 (0.04)
	Clutch spring free length	38.5 (1.52)	39.5 (1.56)
Second clutch	Clutch lining thickness	1.5 (0.06)	1.0 (0.04)
	Clutch spring free length	19.5 (0.77)	20.5 (0.81)
	Cltuch outer I.D.	76.00–76.10 (2.992–2.996)	76.2 (3.00)
	Second drive plate I.D.	22.93–22.98 (0.903–0.905)	22.80 (0.898)

Specified oil	Honda 4-stroke oil SAE 10W-40 or equivalent
Transmission oil capacity	190 cc (6.4 US oz, 6.7 Imp oz) after draining 210 cc (7.1 US oz, 7.4 Imp oz) after disassembly

TORQUE VALUES

Oil level check bolt	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Low drive plate nut	38–42 N·m (3.8–4.2 kg-m, 27–31 ft-lb)
Ratchet guide plate bolt	10–12 N·m (1.0–1.2 kg-m, 7–9 ft-lb)

TOOLS

Special

Bearing remover set, 12 mm	07936–1660001	Bearing remover, 12 mm	07936–1660100
		Remover weight	07741–0010201 or 07936–3710200

Common

Clutch center holder	07724–0050000 or commercially available in U.S.A.
Driver	07749–0010000
Attachment, 32 x 35 mm	07746–0010100
Pilot, 15 mm	07746–0040300

TROUBLESHOOTING

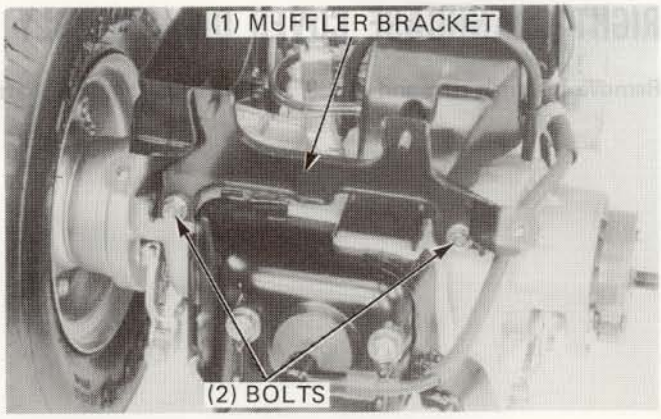
Engine starts, but scooter won't move
- Worn clutch lining.
- Worn clutch outer.
- Damaged clutch.
- Damaged or seized gear.

Abnormal noise
- Worn or seized gear.
- Worn bearing.

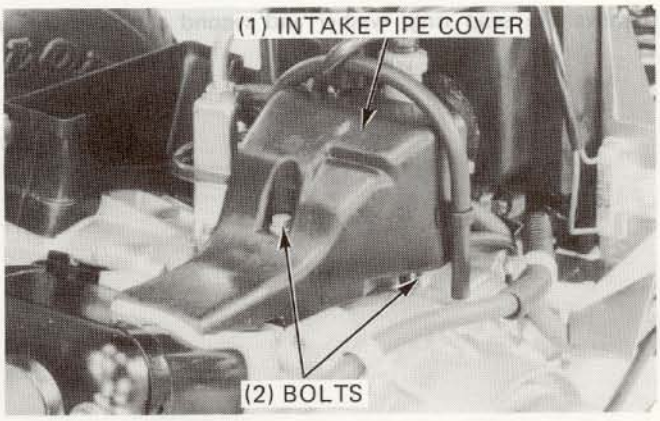
Oil leaks
- Oil level too high.
- Worn or damaged oil seal.

RIGHT CRANKCASE COVER REMOVAL

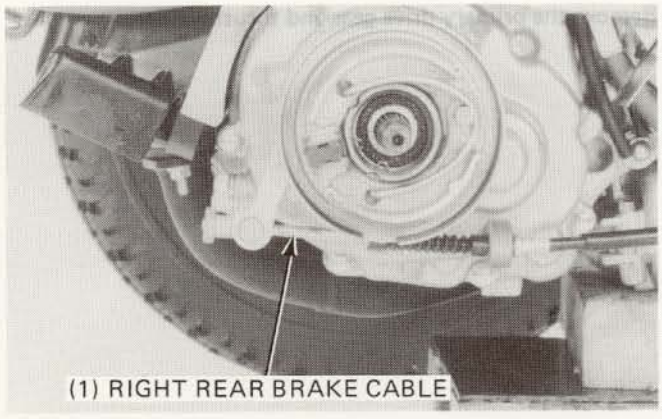
Drain the transmission oil (page 2-5).
Remove the engine cover (page 10-5).
Place jacks or supports under the engine and right and left sides of the frame.
Remove the right rear wheel (page 12-2).
Remove the two muffler bracket mounting bolts and the bracket.



Remove the intake pipe cover by removing the two bolts.

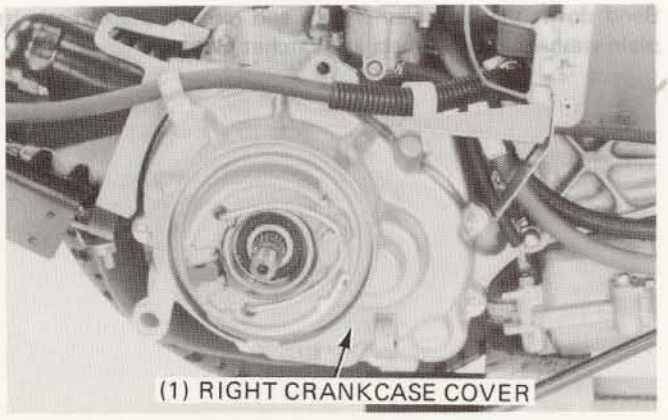


Disonnect the right rear brake cable from the brake arm and right crankcase cover.



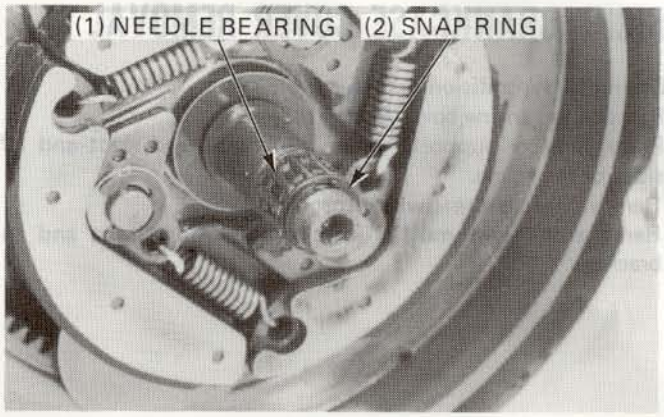
Release the parking lock lever.
Remove the right crankcase cover bolts and the cover.

Remove the dowel pins and gasket.

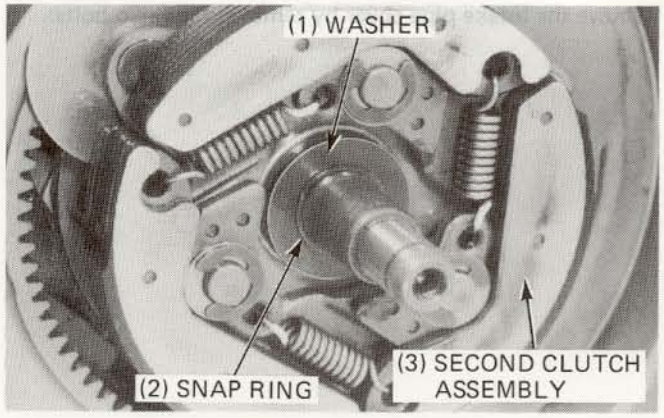


RIGHT CRANKCASE COVER DISASSEMBLY

Remove the snap ring and needle bearing from the final shaft.

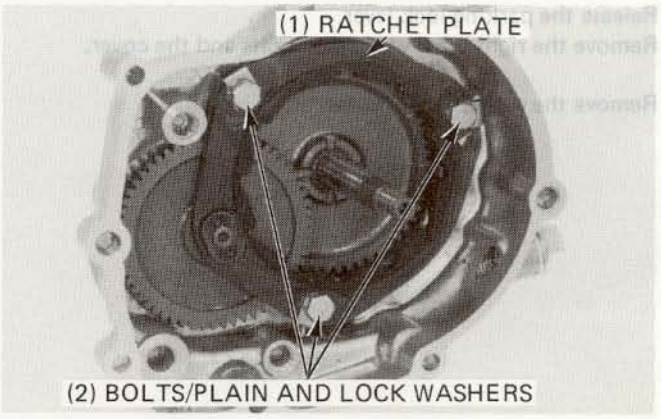


Remove the snap ring, washer and second clutch assembly.

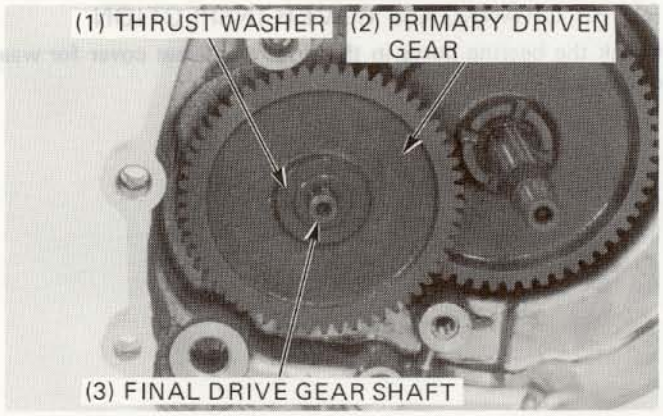


Remove the primary drive gear and thrust washer.

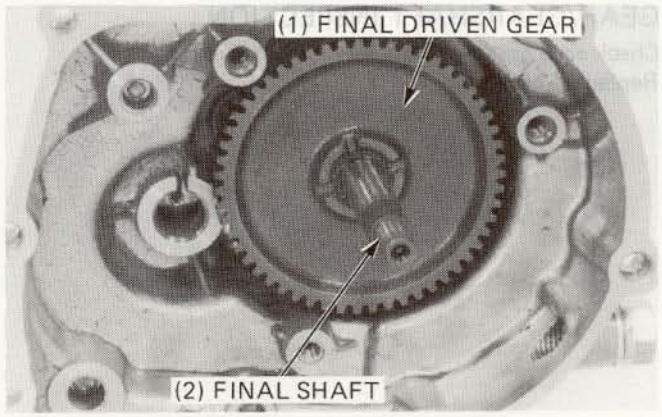
Bend down the lock washer tabs and remove the three bolts, plain washers, lock washers and ratchet plate.



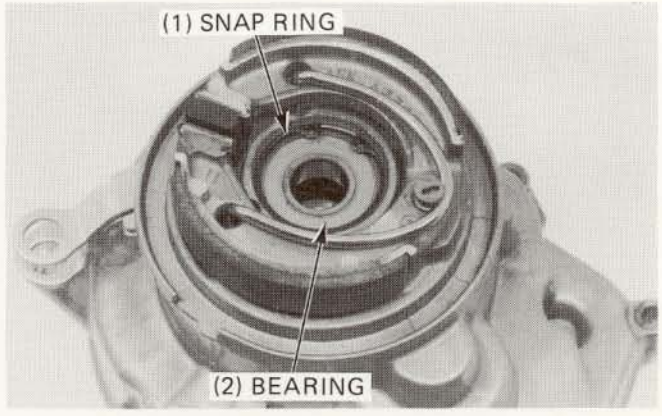
Remove the thrust washer and primary driven gear.
Remove the final drive gear shaft and thrust washer.



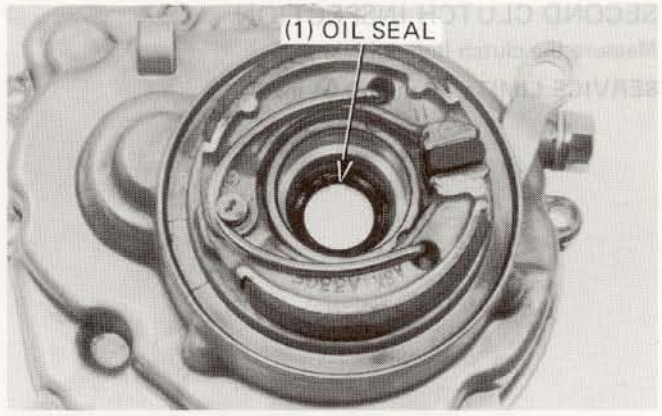
Remove the final driven gear and shaft.



Remove the snap ring and bearing from the right crankcase cover.

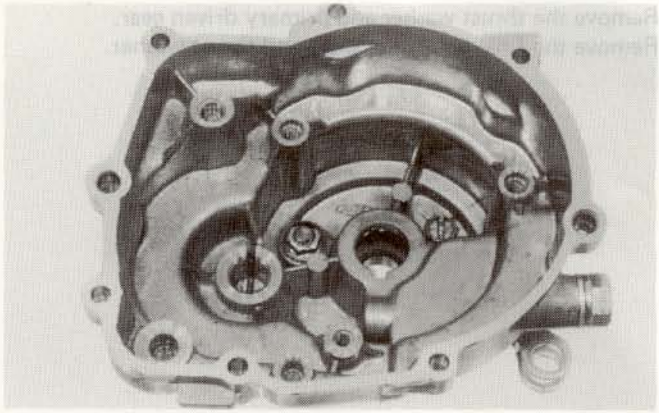


Remove the oil seal.



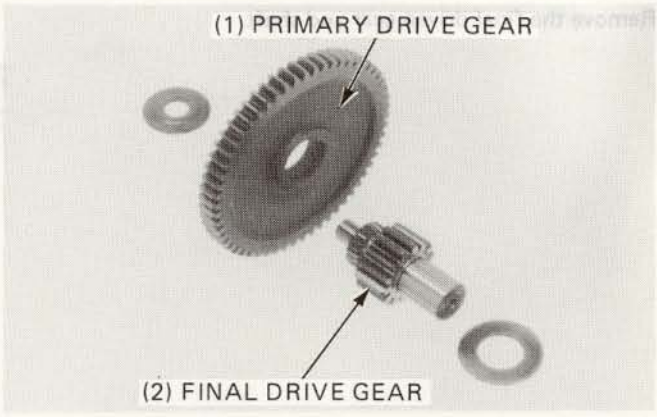
RIGHT CRANKCASE COVER INSPECTION

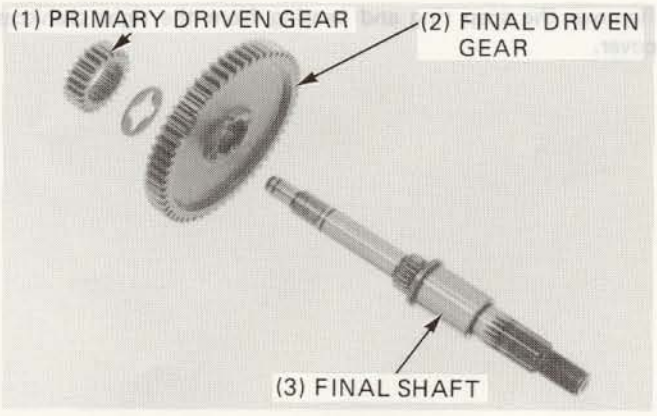
Check the bearing bores in the right crankcase cover for wear or damage.



GEAR/GEARSHAFT INSPECTION

Check each gear and shaft for wear or damage.
Replace if necessary.

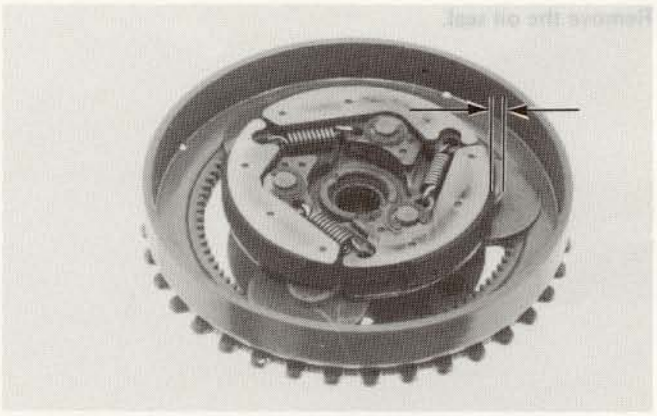




SECOND CLUTCH INSPECTION

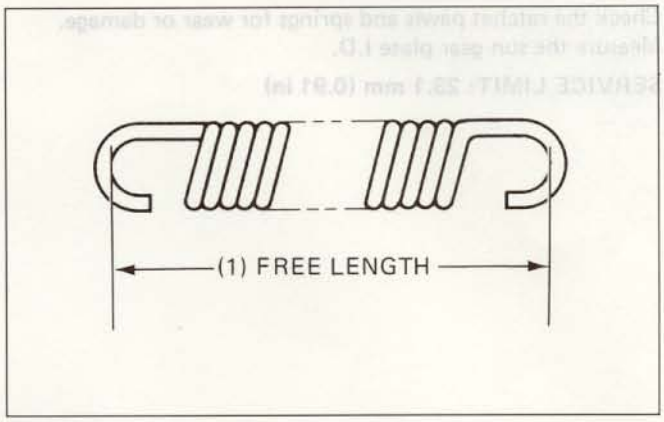
Measure the clutch lining thickness.

SERVICE LIMIT: 1.0 mm (0.04 in)



Remove the E-clips, washers, clutch shoes and springs.
Check the clutch shoe springs for damage.
Measure the cluch shoe spring free length.

SERVICE LIMIT: 20.5 mm (0.81 in)

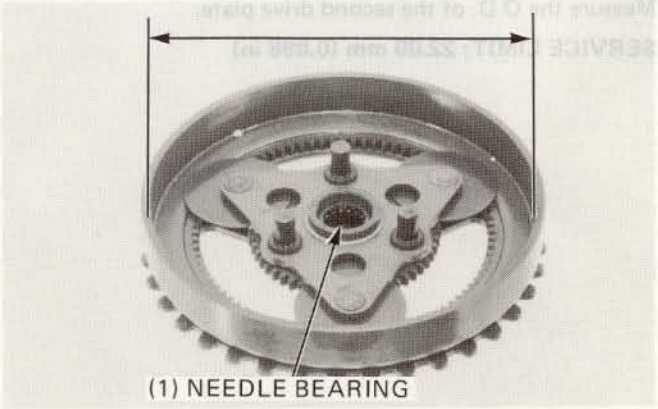


LOW CLUTCH OUTER INSPECTION

Check the clutch outer for wear or damage.
Measure the I.D. of the clutch outer.

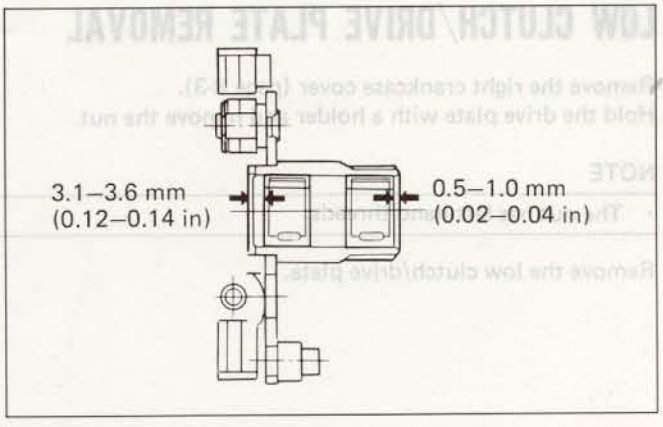
SERVICE LIMIT: 110.50 mm (4.35 in)

Check the needle bearings for wear or damage and replace if necessary.



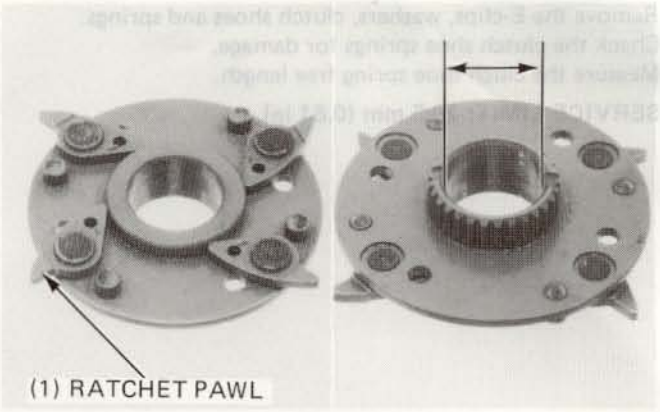
Remove the needle bearings using the speical tools.

Press new needle bearings into the low clutch outer as shown.



Check the ratchet pawls and springs for wear or damage.
Measure the sun gear plate I.D.

SERVICE LIMIT: 23.1 mm (0.91 in)



Measure the O.D. of the second drive plate.

SERVICE LIMIT: 22.80 mm (0.898 in)

Check the pranetary gear for wear or damage and replace if necessary.

LOW CLUTCH/DRIVE PLATE REMOVAL

Remove the right crankcase cover (page 8-3).
Hold the drive plate with a holder and remove the nut.

NOTE

- The nut has left-hand threads.

Remove the low clutch/drive plate.

LOW CLUTCH INSPECTION

Measure the clutch lining thickness.

SERVICE LIMIT: 1.0 mm (0.04 in)

Inspect the clutch springs for wear or damage.
Remove the E-clips, washers, and clutch shoes.

Measure each clutch shoe spring free length.

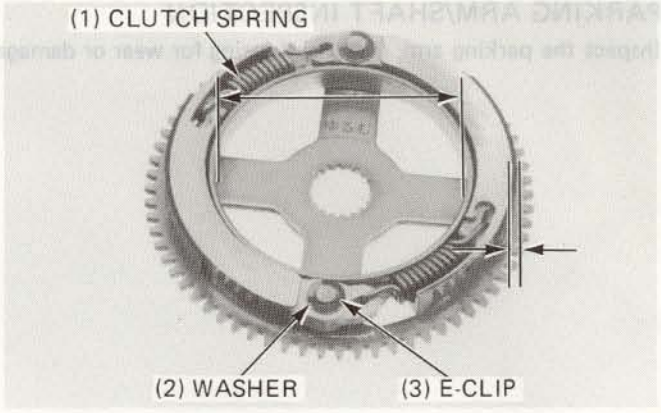
SERVICE LIMIT: 39.5 mm (1.56 in)

Replace any worn or damaged parts.

SECOND CLUTCH OUTER INSPECTION

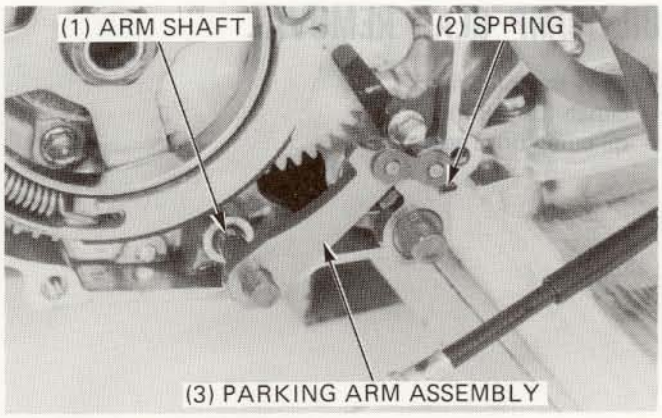
Check the second clutch outer for wear or damage.
Measure the I.D.

SERVICE LIMIT: 76.2 mm (3.00 in)

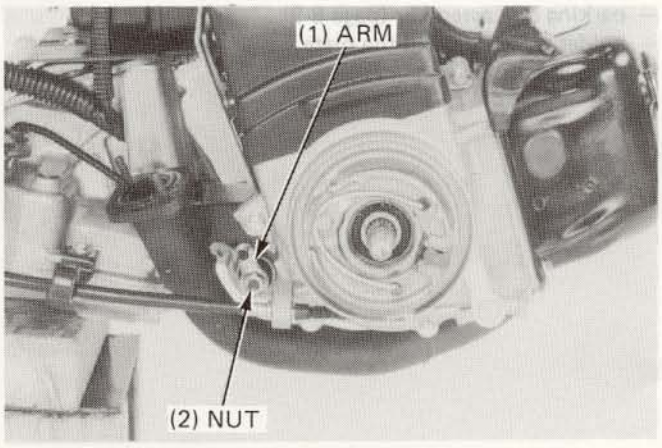


PARKING ARM REMOVAL

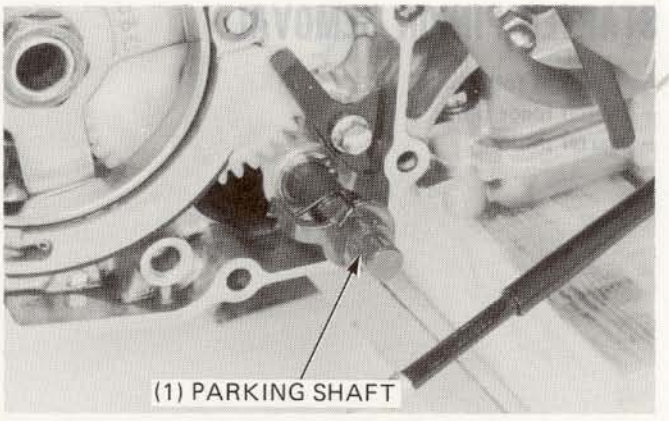
Remove the right crankcase cover (page 8-3).
Unhook the spring and remove the parking arm assembly and arm shaft.



Remove the left rear wheel (page 12-2).
Remove the nut and parking arm from the left end of the parking shaft.

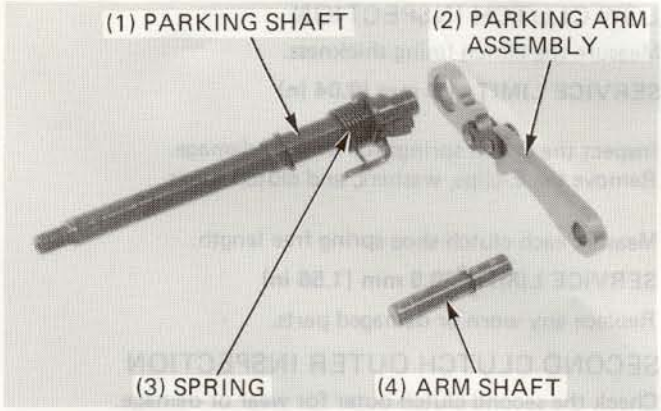


Remove the parking shaft from the crankcase.



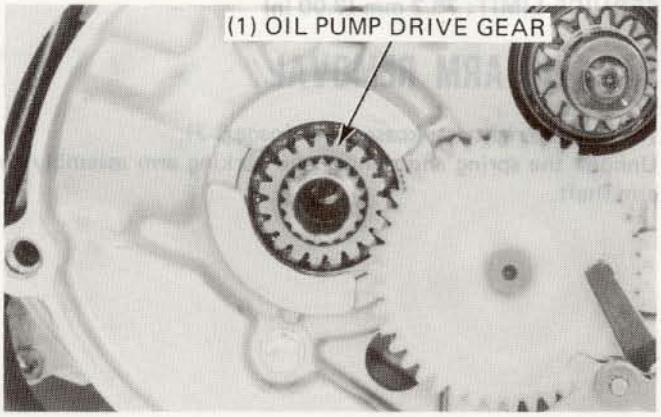
PARKING ARM/SHAFT INSPECTION

Inspect the parking arm, shafts and spring for wear or damage.

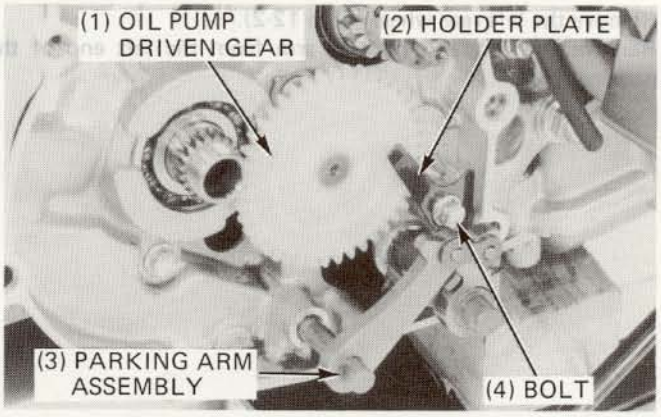


OIL PUMP GEAR REMOVAL

Remove the following:
- clutch (page 8-8).
- oil pump drive gear.

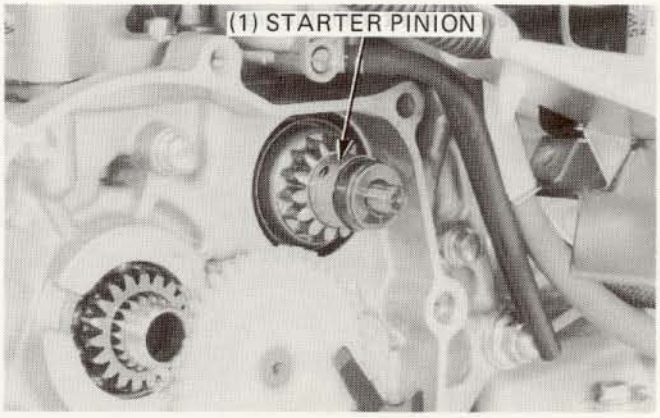


- parking arm assembly (page 8-9).
- holder plate bolt and the plate.
- oil pump driven gear.



STARTER PINION REMOVAL

Remove the following:
- clutch (page 8-8).
- starter pinion.

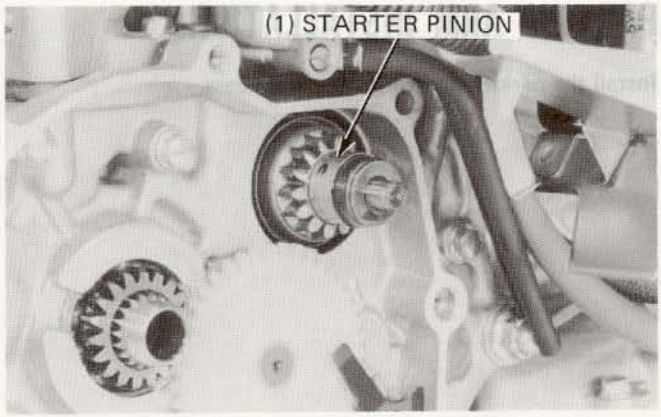


STARTER PINION INSPECTION

Check that the starter pinion rotates only in one direction. Also check that the gear returns freely.

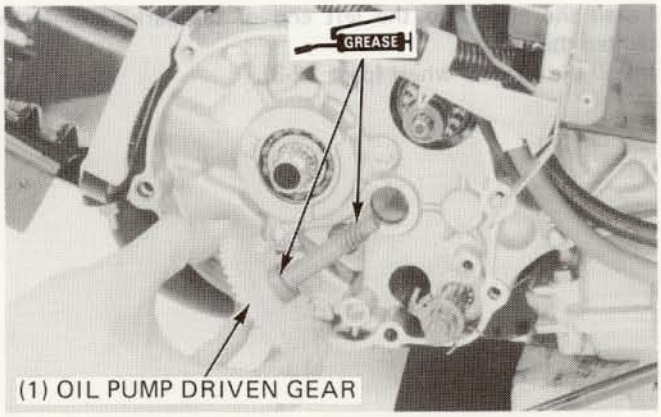
STARTER PINION INSTALLATION

Install the starter pinion onto the crankcase.

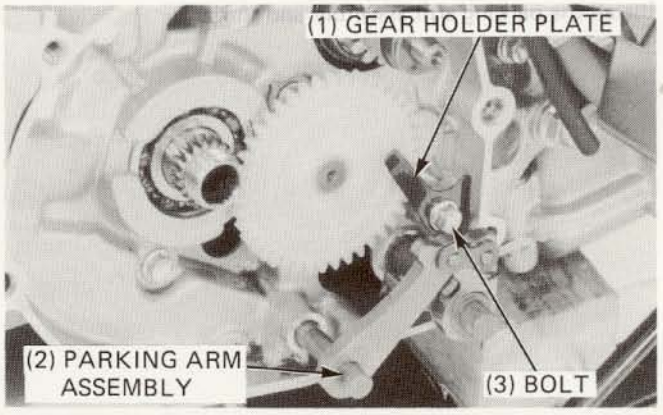


OIL PUMP GEAR INSTALLATION

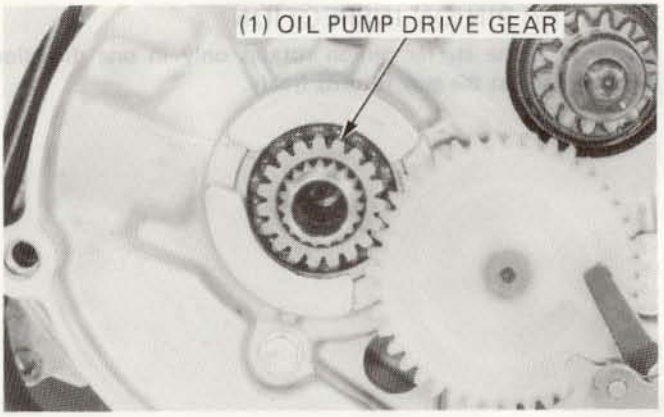
Apply grease to the oil pump drive gear and journal.
Install the oil pump driven gear into the crankcase.



Install the gear holder plate with the bolt.
Install the parking arm assembly (page 8-12).

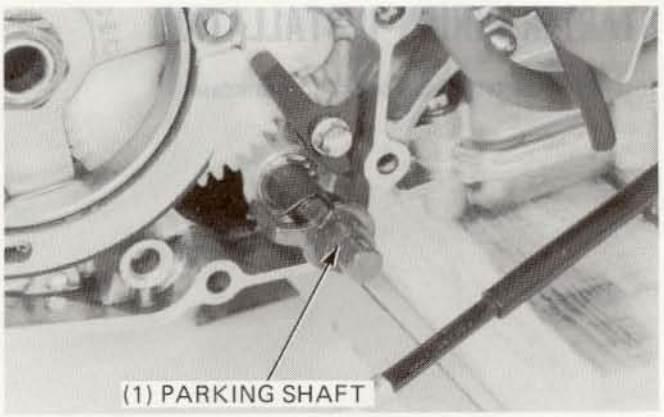


Install the oil pump drive gear onto the crankshaft.

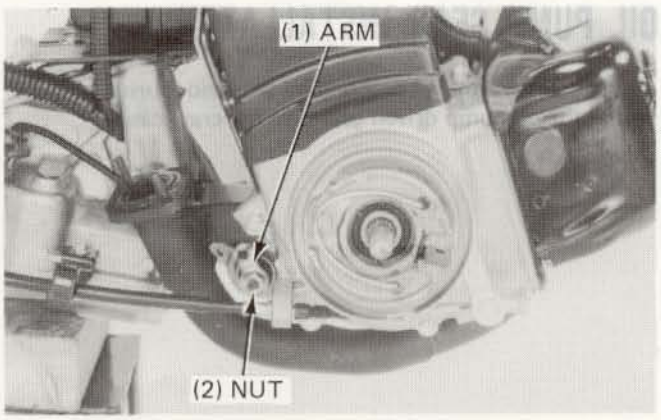


PARKING ARM INSTALLATION

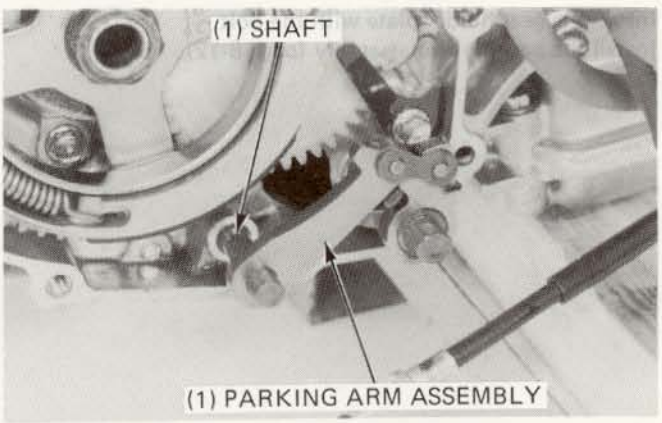
Install the parking shaft into the crankcase.



Install the arm onto the left end of the parking shaft and tighten the nut.
Install the left rear wheel (page 12-3).



Install the parking arm assembly and shaft.



LOW CLUTCH/DRIVE PLATE INSTALLATION

Install the low clutch/drive plate onto the crankshaft.
Hold the drive plate with a holder and tighten the nut.

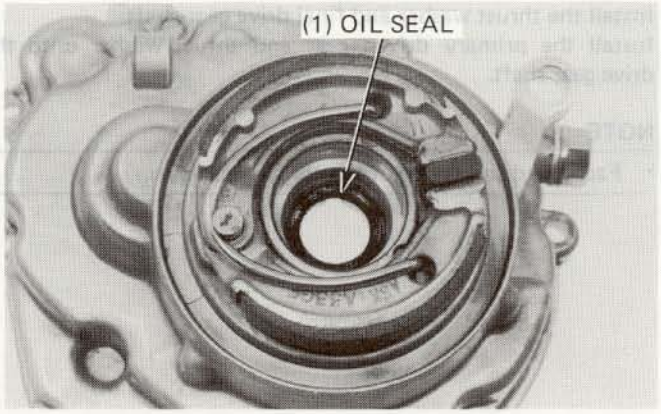
TORQUE: 38–42 N·m (3.8–4.2 kg-m, 27–31 ft-lb)

NOTE

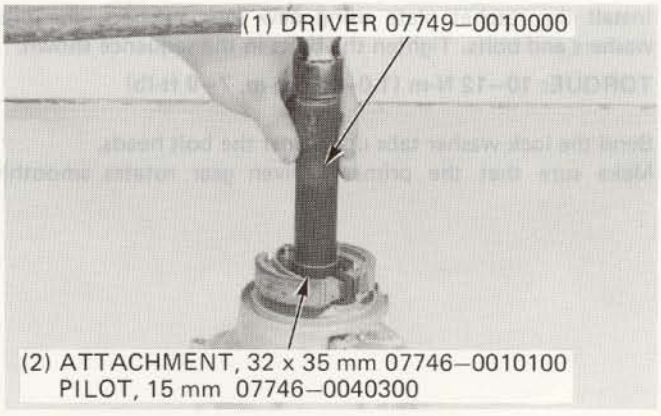
- The nut has left-hand threads.

RIGHT CRANKCASE COVER ASSEMBLY

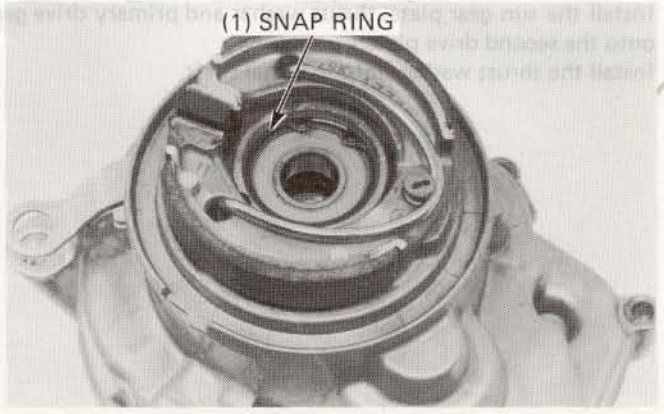
Install a new oil seal onto the right crankcase cover.



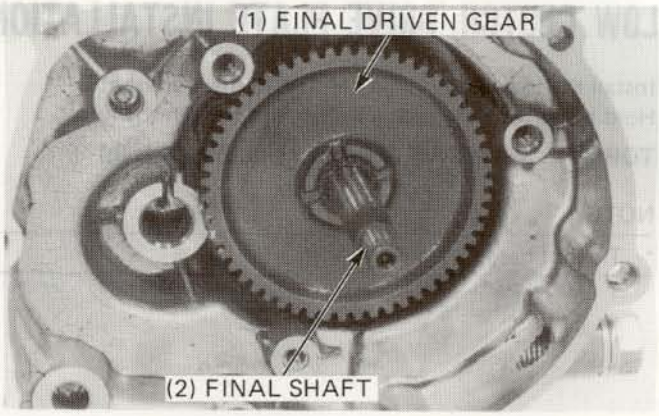
Drive a new bearing into the right crankcase cover.



Install the snap ring.



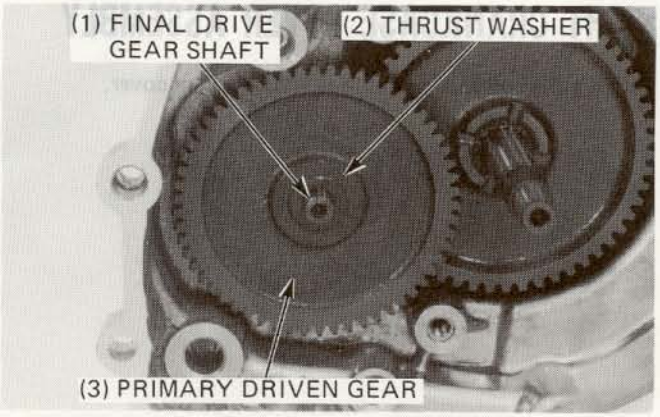
Install the final shaft and final driven gear onto the right crankcase cover.



Install the thrust washer and final drive gear shaft.
Install the primary driven gear and thrust washer onto the drive gear shaft.

NOTE

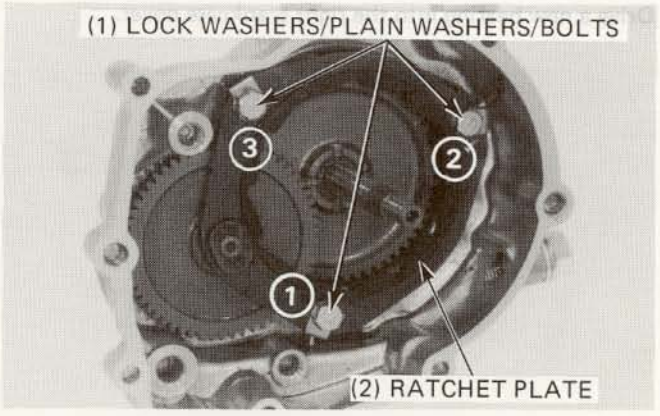
- Face the dishead end of the thrust washer in.



Install the ratchet plate using new lock washers, the plain washers and bolts. Tighten the bolts in the sequence shown.

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

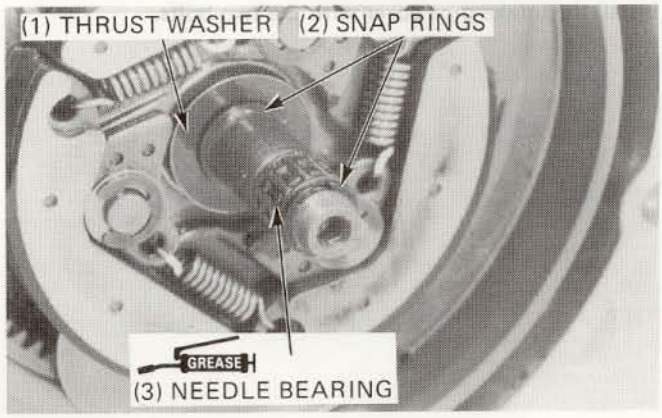
Bend the lock washer tabs up against the bolt heads.
Make sure that the primary driven gear rotates smoothly.



Install the sun gear plate, thrust washer and primary drive gear onto the second drive plate.
Install the thrust washer onto the final shaft.

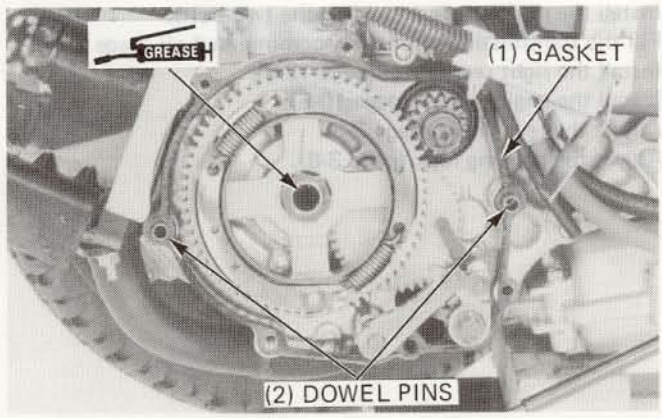
Install the following:
- second clutch assembly onto the final shaft.
- thrust washer and a new snap ring.
- needle bearing and a new snap ring.

Apply grease to the needle bearing.

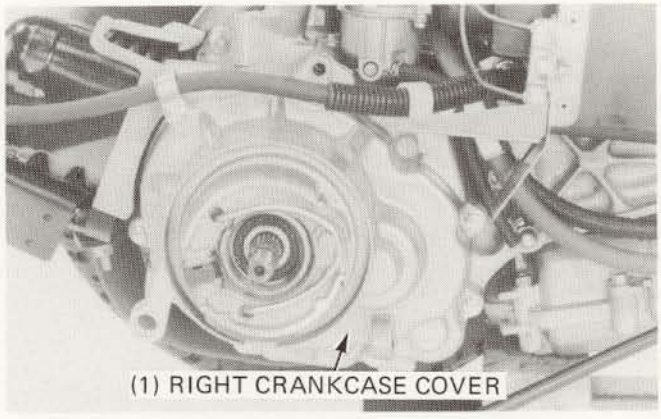


RIGHT CRANKCASE COVER INSTALLATION

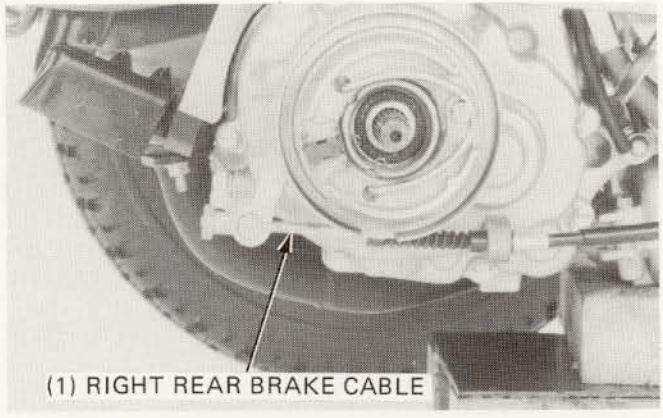
Install the two dowel pins and a new gasket.
Apply grease to the crankshaft bore.



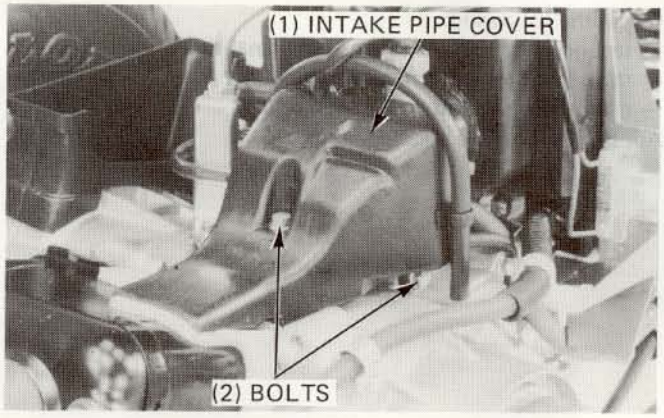
Install the right crankcase cover and tighten the bolts in a crisscross pattern in 2 to 3 steps.



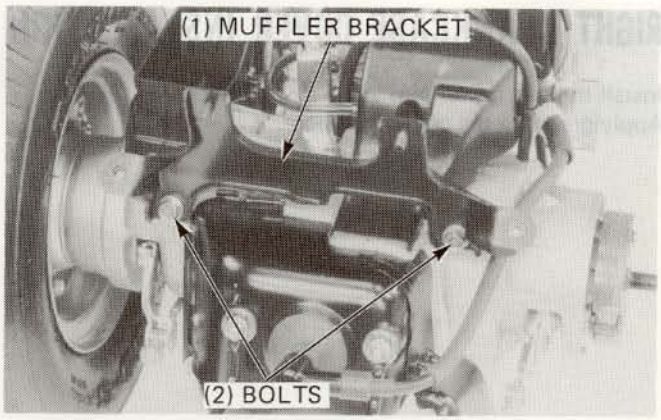
Connect the right rear brake cable to the brake arm.



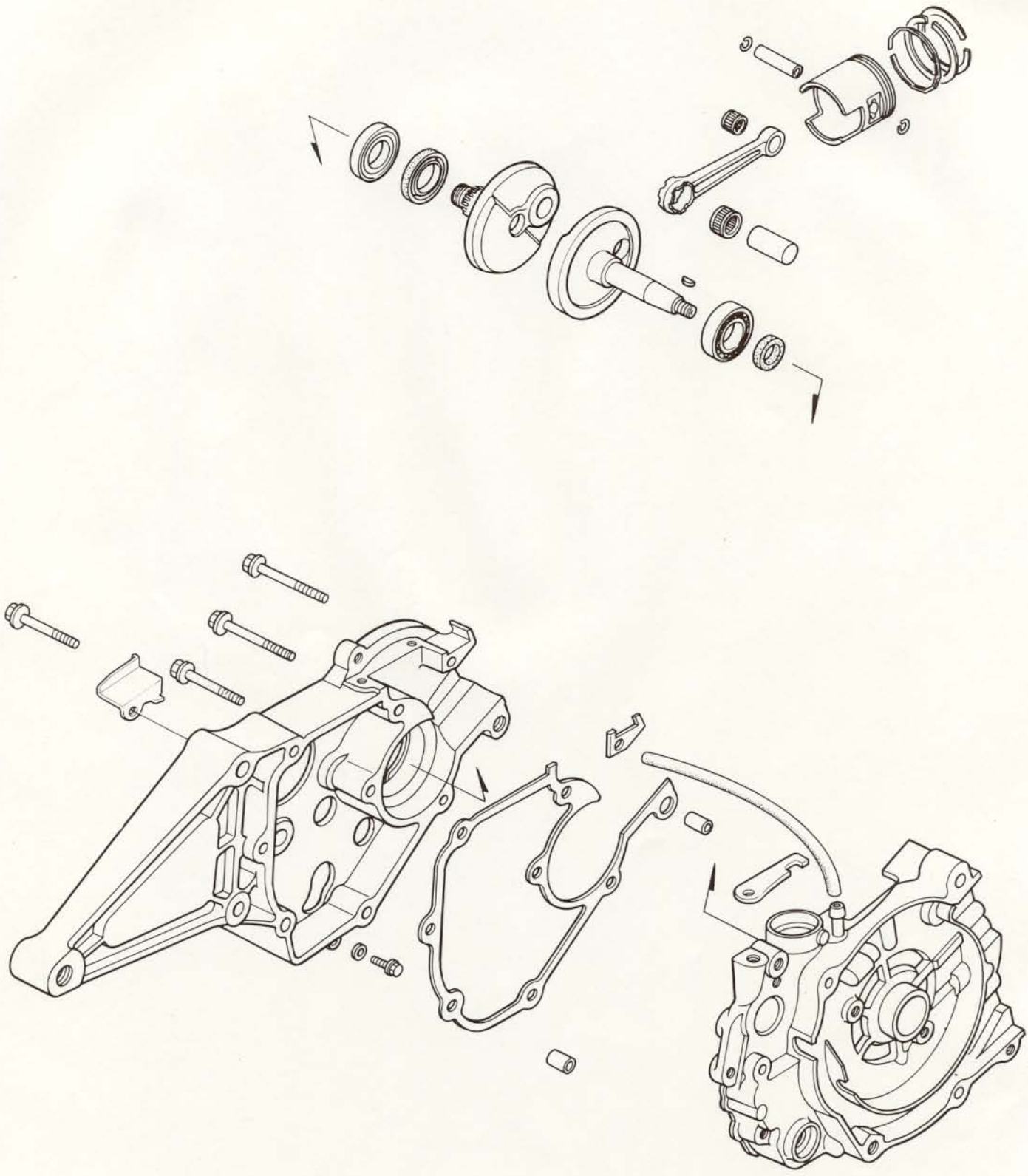
Install the intake pipe cover with the two bolts.



Install the muffler bracket using the two bolts.
Fill the transmission with the recommended oil (page 2-5).
Install the right rear wheel (page 12-3).
Install the engine cover (page 10-5).
Adjust the rear brake (page 3-8).
Adjust the parking lock (page 3-8).



MEMO



SERVICE INFORMATION

GENERAL

- This section covers crankcase separation to service the crankshaft.
- The following parts must be removed before separating the crankcase.
  - Engine — Section 5
  - Carburetor — Section 4
  - Oil pump — Section 2
  - Reed valve — Section 4
  - Starter motor — Section 14
  - Alternator — Section 7
  - Cylinder head and cylinder — Section 6
  - Clutch — Section 8

SPECIFICATIONS

ITEM	STANDARD mm (in)	SERVICE LIMIT mm (in)
Connecting rod big end side clearance	—	0.5 (0.02)
Connecting rod big end radial clearance	—	0.04 (0.002)
Crankshaft runout	—	0.15 (0.006)

TOOLS

Special

Crankshaft assembly tool	07965–1480010	Collar	07965–1480100
Universal bearing puller	07631–0010000	Shaft	07965–GM00300
Shaft protector	07931–1870000		
Crankcase puller	07935–GJ50000 (Not available in U.S.A.) or 07937–4300000		

Common

Driver	07749–0010000
Attachment, 42 x 47 mm	07746–0010300
Pilot, 20 mm	07746–0040500
Attachment, 37 x 40 mm	07746–0010200
Pilot, 17 mm	07746–0040400
Clutch center holder	07724–0050000

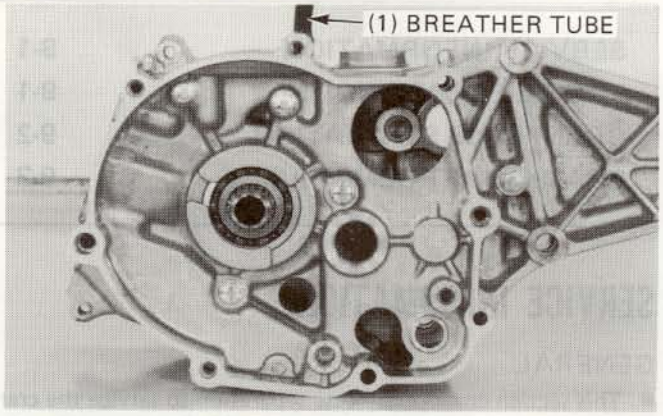
TROUBLESHOOTING

Abnormal engine noise

- Worn main journal bearing.
- Worn crank pin bearing.
- Worn transmission bearing.

CRANKCASE SEPARATION

Remove the breather tube from the crankcase.
Remove the crankcase assembly bolts.



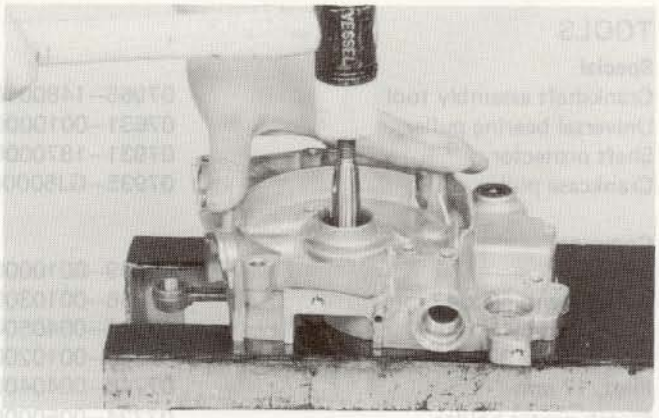
Remove the right crankcase from the left crankcase.

NOTE

- Use the crankcase puller if difficulty is encountered in separating the crankcases.

CRANKSHAFT REMOVAL

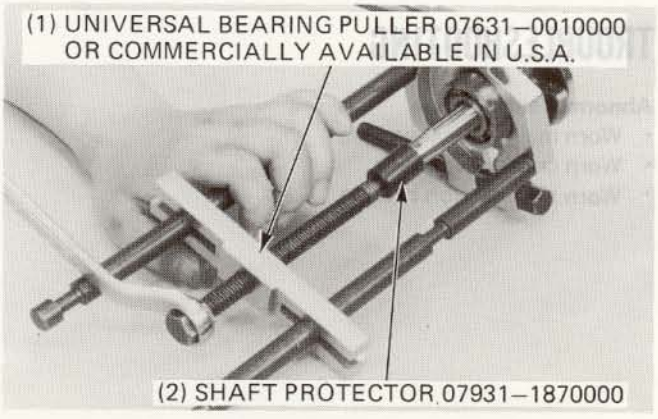
Drive out the crankshaft from the left crankcase using a plastic hammer.



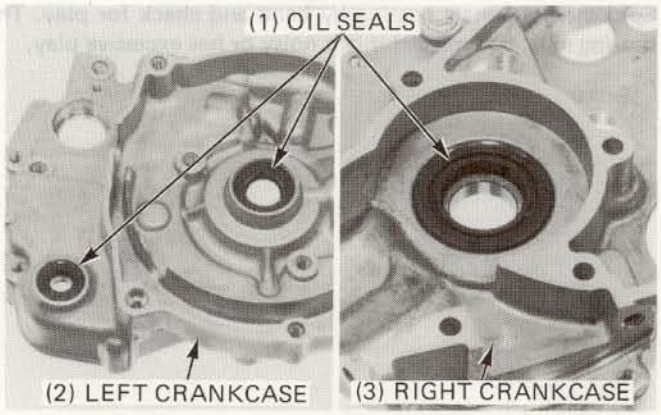
Remove the left crankshaft bearing from the crankshaft.

NOTE

- Do not reuse the old bearing.



Remove the oil seals from the both crankcases.



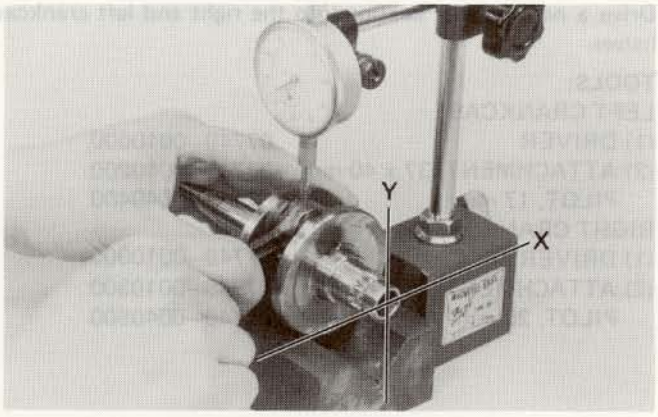
CRANKSHAFT INSPECTION

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

SERVICE LIMIT: 0.5 mm (0.02 in)

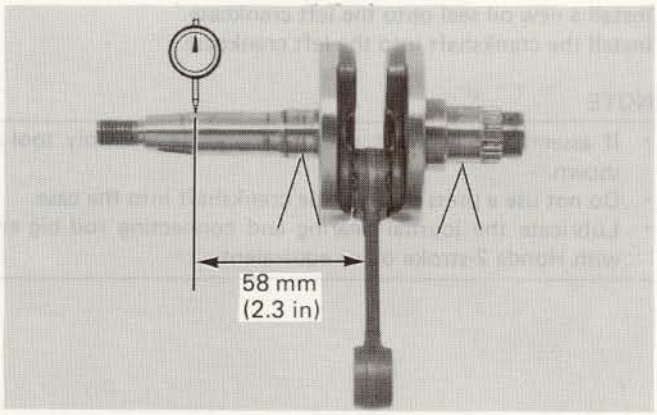
Measure the connecting rod big end radial clearance at two points in the X and Y directions.

SERVICE LIMIT: 0.04 mm (0.002 in)

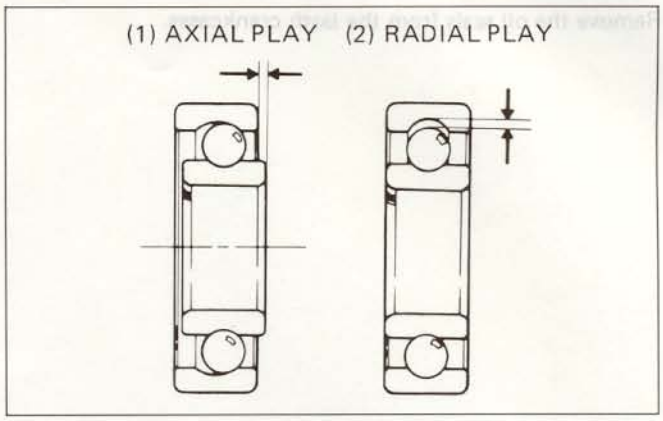


Set the crankshaft on a stand or V-blocks and read runout using a dial gauge.

SERVICE LIMIT: 0.15 mm (0.006 in)



Spin the crankshaft bearing by hand and check for play. The bearing must be replaced if it is noisy or has excessive play.

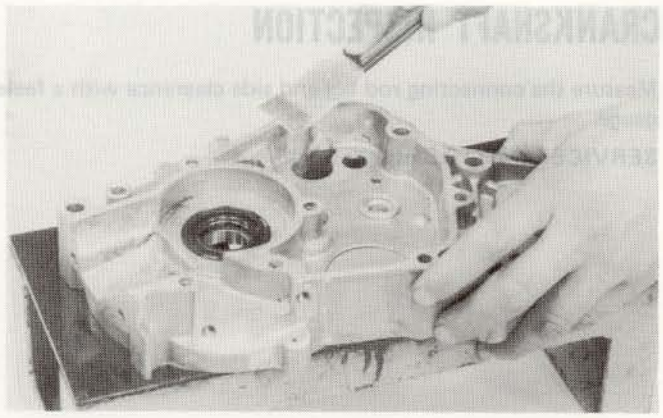


CRANKSHAFT INSTALLATION

Wash the crankcase and crankshaft in solvent and blow dry with compressed air. Check for cracks or other faults.

NOTE

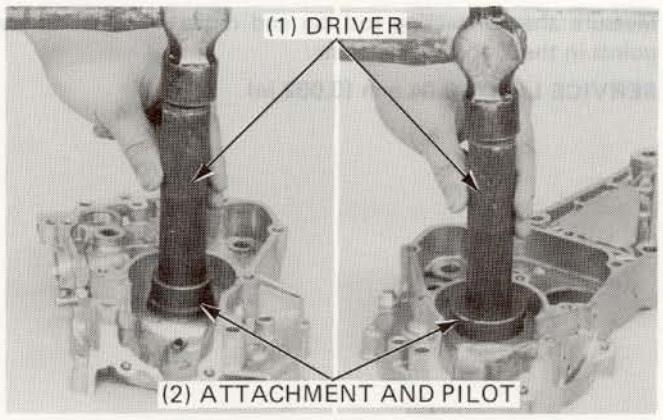
- Apply clean 2-stroke injector oil to all moving and sliding faces of the crankcase.
- Remove all gasket material from the crankcase mating surfaces. Dress any roughness or irregularities with an oil stone.



Drive a new journal bearing into the right and left crankcase halves.

TOOLS:

LEFT CRANKCASE	
(1) DRIVER	07749–0010000
(2) ATTACHMENT, 37 x 40 mm	07746–0010200
PILOT, 17 mm	07746–0040400
RIGHT CRANKCASE	
(1) DRIVER	07749–0010000
(2) ATTACHMENT, 42 x 47 mm	07746–0010300
PILOT, 20 mm	07746–0040500

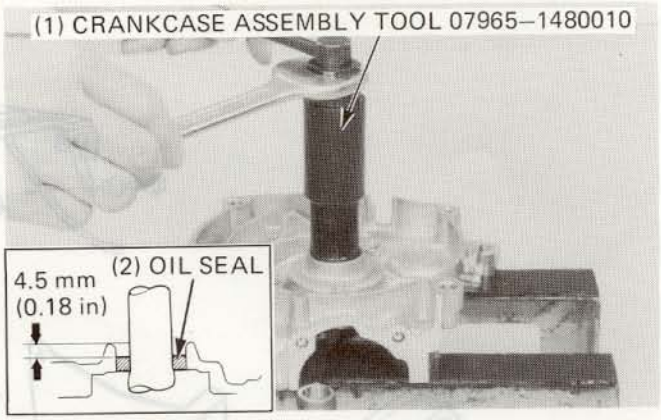


Install a new oil seal onto the left crankcase.
Install the crankshaft into the left crankcase.

NOTE

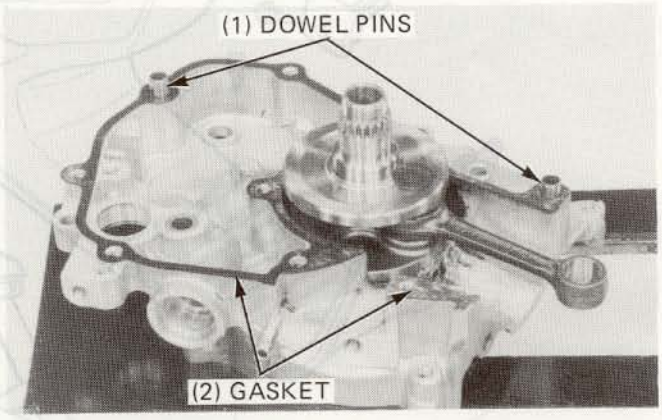
- If assembly is difficult, use the crankcase assembly tool as shown.
- Do not use a press or drive the crankshaft into the case.
- Lubricate the journal bearing and connecting rod big end with Honda 2-stroke oil or equivalent.

Install the oil seal into the left crankcase using the special tool as shown.



CRANKCASE ASSEMBLY

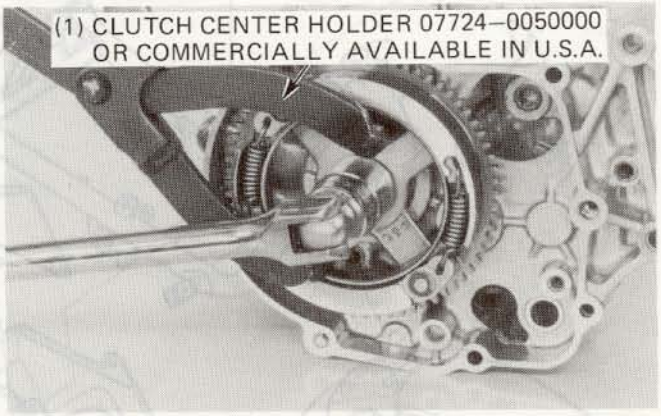
Install the two dowel pins and a new gasket.



Assembly the crankcase halves.

NOTE

- To draw the crankshaft into the right crankcase, temporarily install the oil pump drive gear and clutch, and thread the low drive plate nut onto the crankshaft (the nut has left-hand threads).

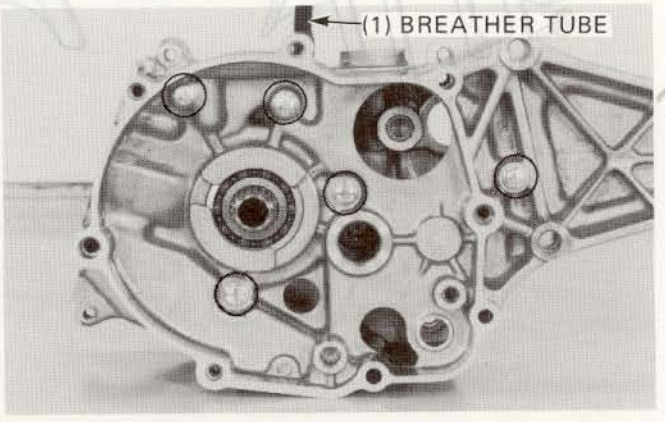


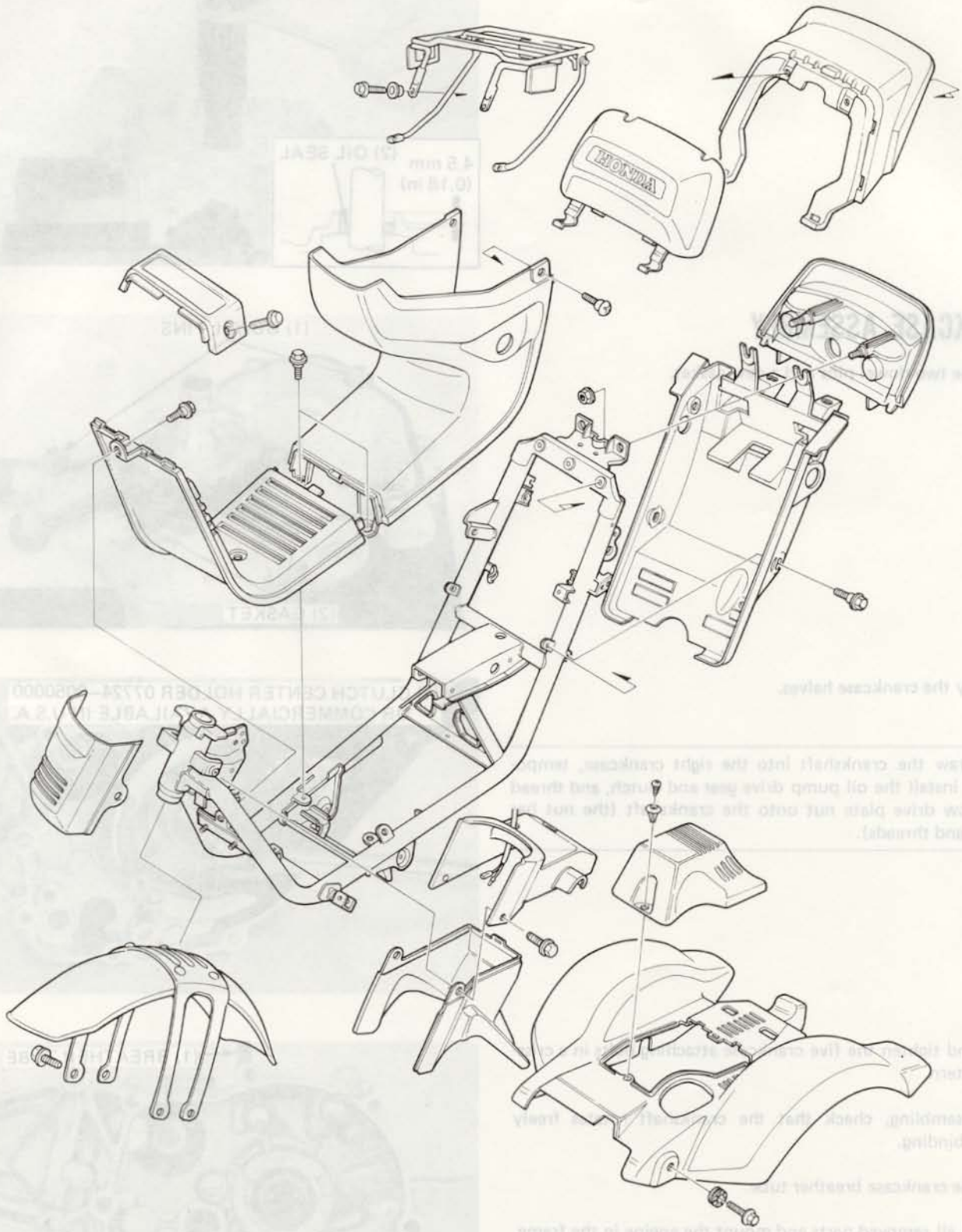
Install and tighten the five crankcase attaching bolts in a criss-cross pattern.

After assembling, check that the crankshaft rotates freely without binding.

Install the crankcase breather tube.

Reinstall all removed parts and mount the engine in the frame.




HONDA

SERVICE INFORMATION

GENERAL

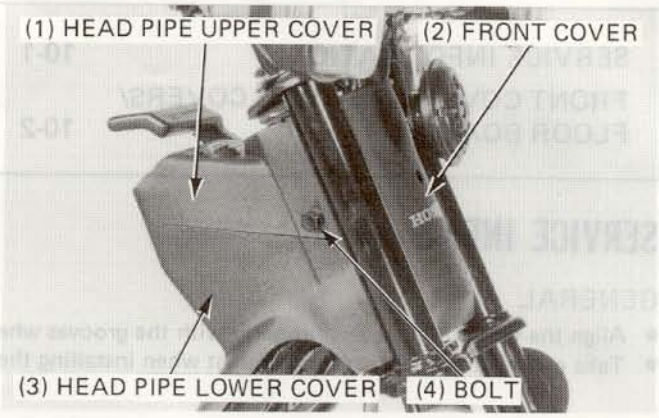
- Align the tabs on the covers properly with the grooves when installing.
- Take care that the wires are not cought when installing the covers.

FRONT COVER/HEAD PIPE COVERS/ FLOOR BOARD

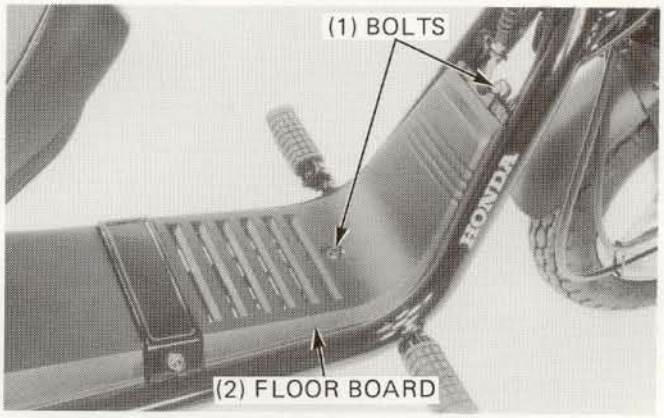
REMOVAL

Remove the headlight (page 14-5) and disconnect the oil level warning light wires in the headlight case.

Remove the two bolts attaching the front and head pipe covers and remove the front cover.
Turn the ignition switch OFF, release the parking lock lever and remove the head pipe upper cover.
Raise the parking lock lever up and remove the head pipe lower cover.

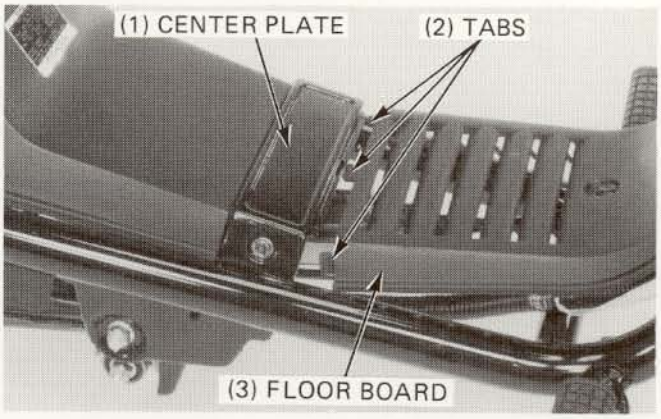


Remove the floor board by removing the two bolts.

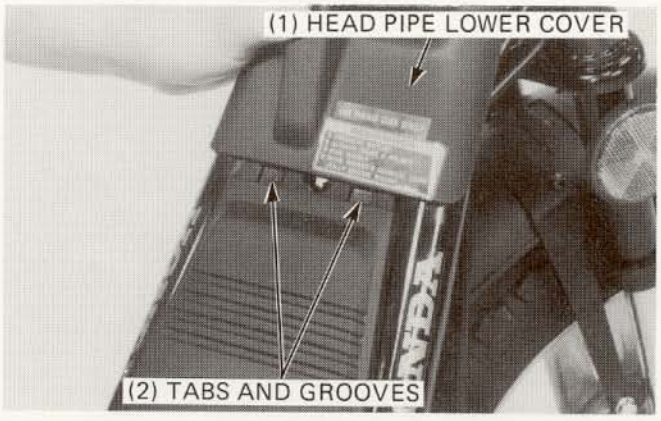


INSTALLATION

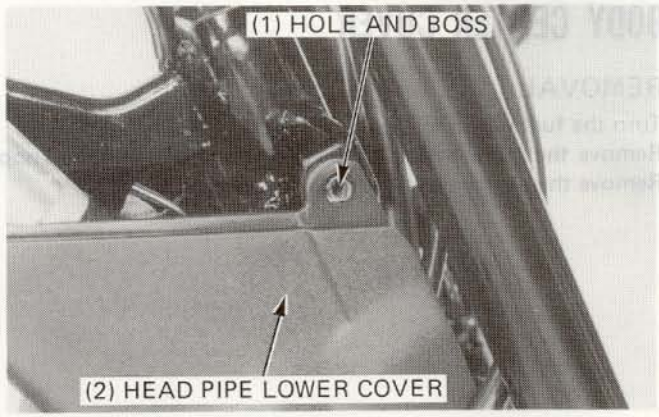
Align the tabs on the floor board with the groove in the center plate.
Tighten the two floor board bolts.



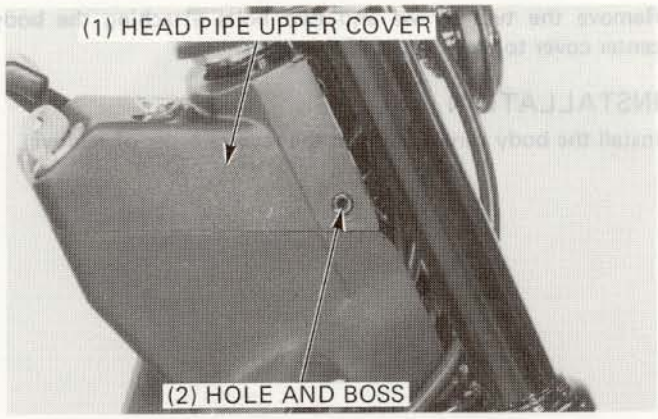
Align the tabs on the head pipe lower cover with the groove in the floor board and install the cover.



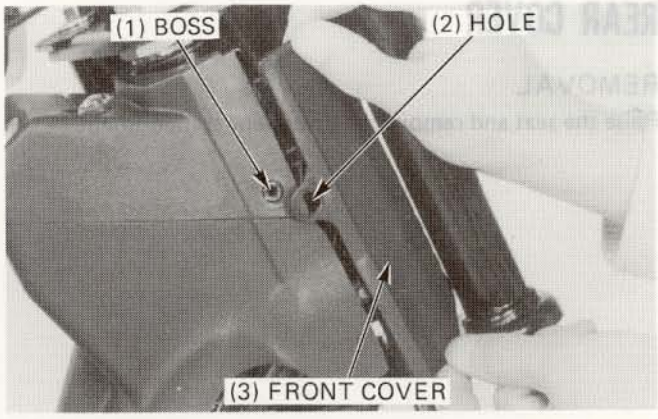
Align the holes in the head pipe lower cover with the bosses on the frame as shown.



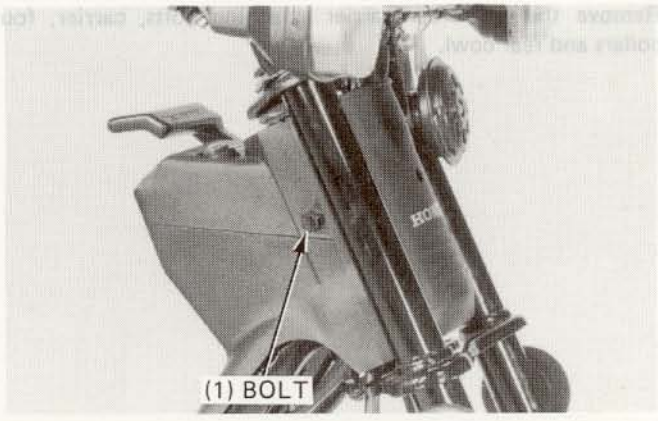
Release the parking lock lever and install the head pipe upper cover, then raise the parking lock lever.
Align the hole in the head pipe upper cover with the bosses on the frame as shown.



Install the front cover aligning its holes with the bosses.



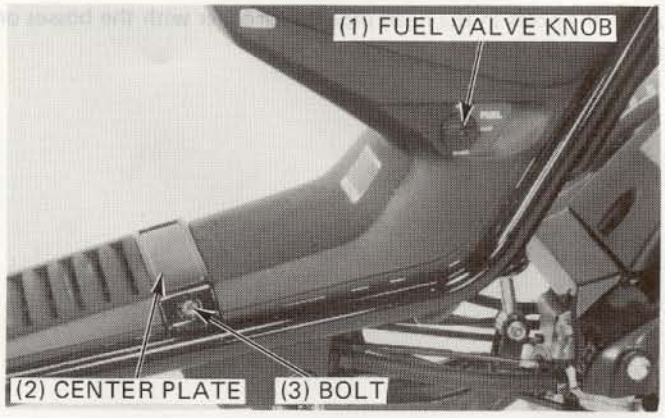
Install and tighten the two bolts.
Connect the oil level warning light wires to the wire harness and install the headlight.



BODY CENTER COVER

REMOVAL

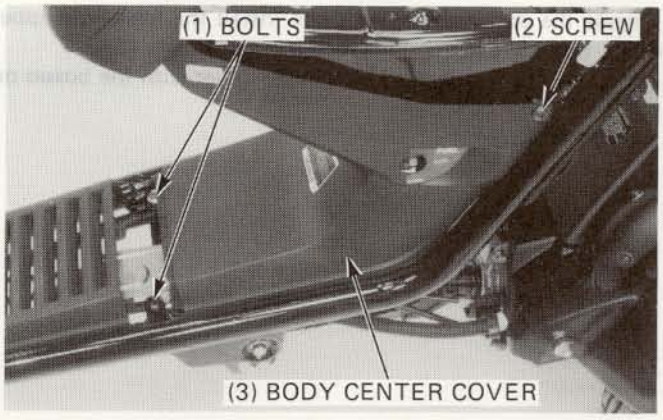
Turn the fuel valve OFF.
Remove the screw attaching the fuel valve knob and the knob.
Remove the center plate by removing the two bolts.



Remove the two screws and two bolts attaching the body center cover to the frame and the cover.

INSTALLATION

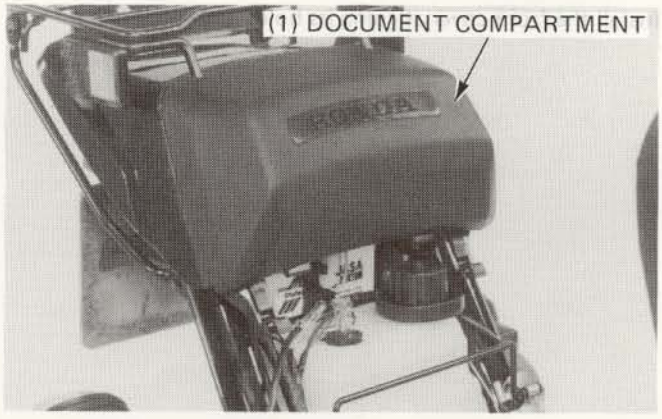
Install the body center cover in the reverse order of removal.



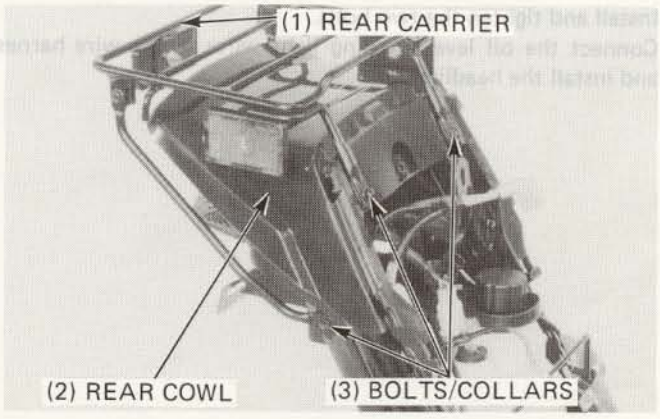
REAR COVER

REMOVAL

Raise the seat and remove the document compartment.



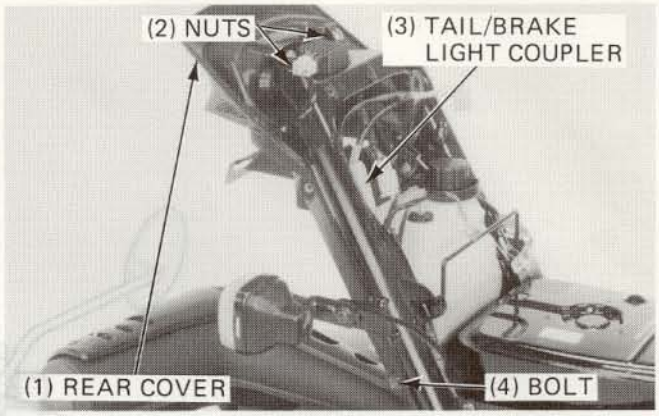
Remove the four rear carrier attaching bolts, carrier, four collars and rear cowl.



Disconnect the tail/brake light coupler.
Remove the rear cover by removing the two nuts and bolts.

INSTALLATION

Install the rear cover in the reverse order of removal.



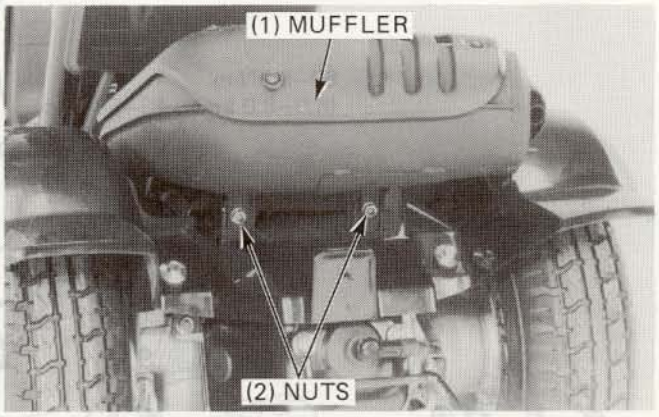
ENGINE COVER

REMOVAL

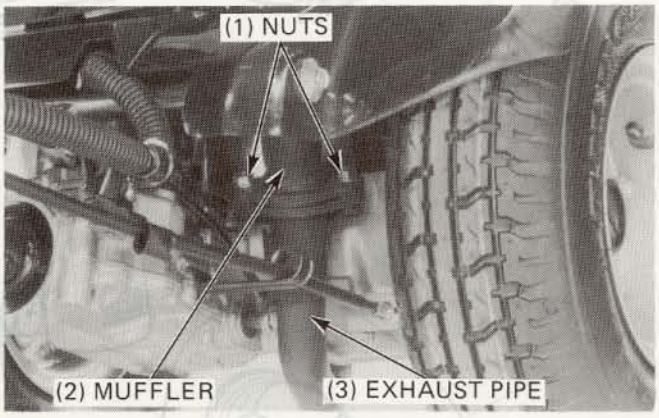
Remove the two muffler mounting nuts.

WARNING

- *Remove the muffler when it is cool.*



Remove the two muffler joint nuts and the muffler from the exhaust pipe.



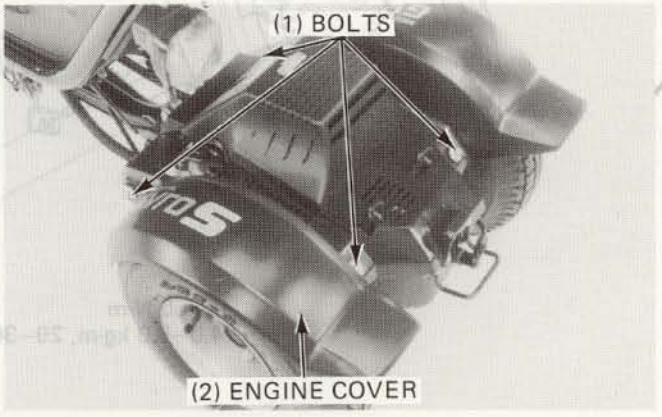
Remove the four engine cover bolts and remove the cover.

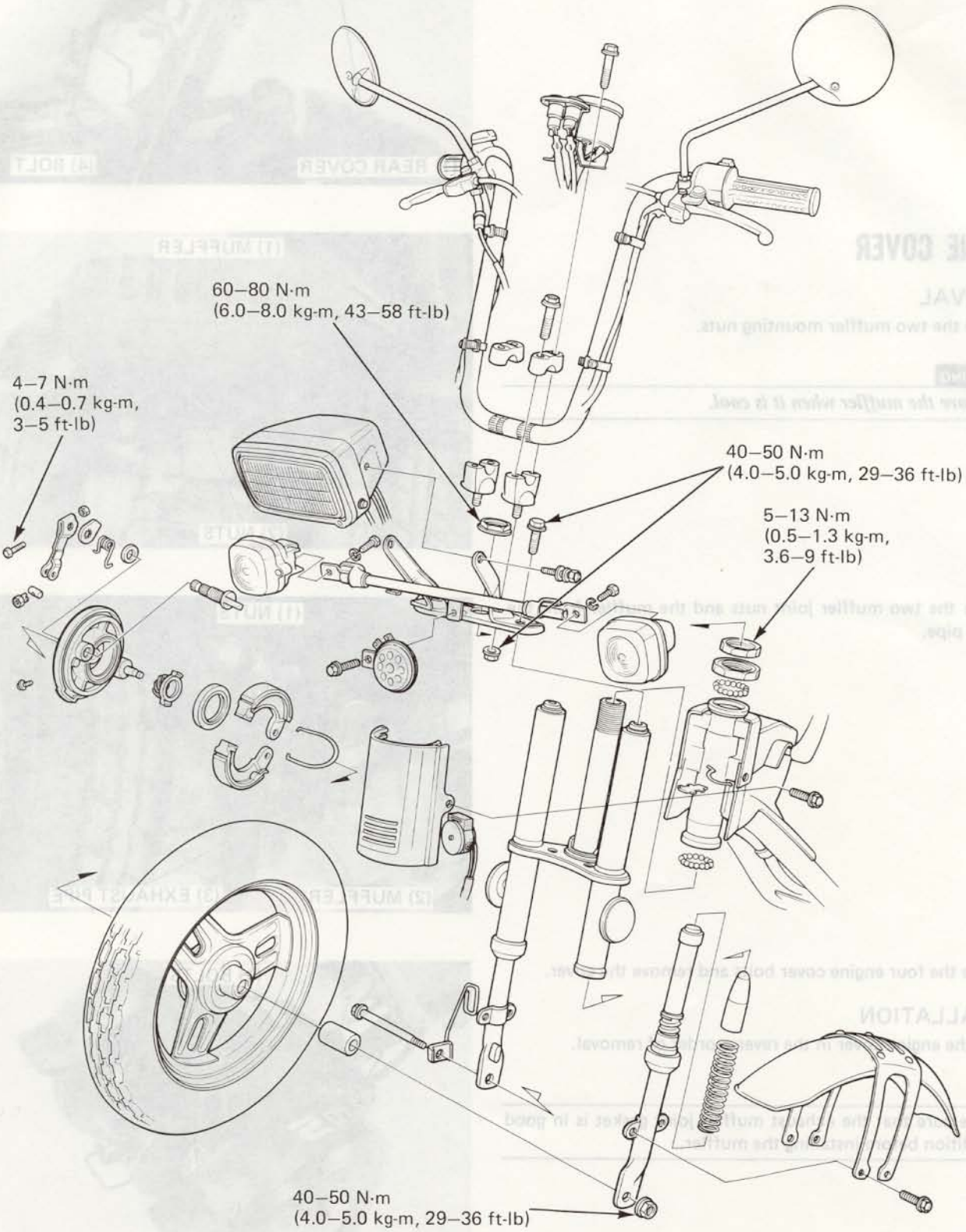
INSTALLATION

Install the engine cover in the reverse order of removal.

NOTE

- Make sure that the exhaust muffler joint gasket is in good condition before installing the muffler.




60–80 N·m
(6.0–8.0 kg-m, 43–58 ft-lb)
4–7 N·m
(0.4–0.7 kg-m,
3–5 ft-lb)
40–50 N·m
(4.0–5.0 kg-m, 29–36 ft-lb)
5–13 N·m
(0.5–1.3 kg-m,
3.6–9 ft-lb)
40–50 N·m
(4.0–5.0 kg-m, 29–36 ft-lb)

SERVICE INFORMATION

GENERAL

- Brake dust contains 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 collector. Wear a protective face mask and throughly wash your hands when finished.

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)
Axle shaft runout		–	0.2 (0.01)
Rim runout	Radial	–	2.0 (0.08)
	Axial	–	2.0 (0.08)
Front fork spring free length		121.8 (4.80)	117.0 (4.61)
Front brake drum ID		80.0 (3.15)	80.5 (3.17)
Front brake lining thickness		3.5 (0.14)	1.5 (0.06)

11

TORQUE VALUES

Handlebar lower holder nut	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Brake adjuster bolt lock nut	3.5–5 N·m (0.35–0.5 kg-m, 2.5–3.6 ft-lb)
Front axle nut	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Front brake arm bolt	4–7 N·m (0.4–0.7 kg-m, 3–5 ft-lb)
Steeringstem lock nut	5–13 N·m (0.5–1.3 kg-m, 3.6–9 ft-lb)
Fork bridge bolt	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Steering stem nut	60–80 N·m (6.0–8.0 kg-m, 43–58 ft-lb)

TOOLS

Special

Lock nut wrench	07916–1870101
Lock nut wrench	07916–KM10000
Snap ring pliers	07914–3230001
Attachment, 28 x 30 mm	07946–1870100
Ball race remover	07946–GA70000 (Not available in U.S.A.)
Steering stem driver	07946–4300101

Common

Extension	07716–0020500 — or commercially available in U.S.A.
Lock nut wrench, 30 x 32 mm	07716–0020400 — or commercially available in U.S.A.
Attachment, 42 x 47 mm	07746–0010300
Pilot, 10 mm	07746–0040100
Bearing remover shaft	07746–0050100
Bearing remover head, 10 mm	07746–0050200
Driver	07749–0010000

TROUBLESHOOTING

Hard steering
- Steering top cone race/nut too tight.
- Damaged steering balls and races.
- Insufficient tire pressure.

Steers to one side or does not track straight
- Bent front fork.
- Bend front axle or spoke plate.

Parking lever not locked
- Cable not adjusted properly.
- Damaged or elongated cable.
- Damaged engine side parking return spring.

Parking lever does not return or is stiff
- Insufficient cable play.
- Damaged parking lever spring.
- Cable E-ring disengaged from swing lock lever.

Swing mechanism is locked, but parking lock lever is not engaged
- Improperly adjusted cable.
- Swing-to-parking lock rod disconnected.
- Parking lock arm pawl damaged or chipped.
- Parking disc teeth damaged or chipped.

Parking lock lever is engaged, but swing lock is not applied
- Cable not adjusted properly.
- Swing lock pawl damaged.
- Swing lock pawl linkage damaged.

Parking lever returned with ignition switch in LOCK
- Deformed or damaged lever stopper.
- Twisted or damaged parking lever shaft.
- Worn or damaged parking lever shaft-to-stopper faces.

Front wheel wobbling
- Bent rim.
- Axle not tightened properly.
- Bent spoke plate.
- Excessive wheel bearing play.
- Faulty or unevenly worn tire.

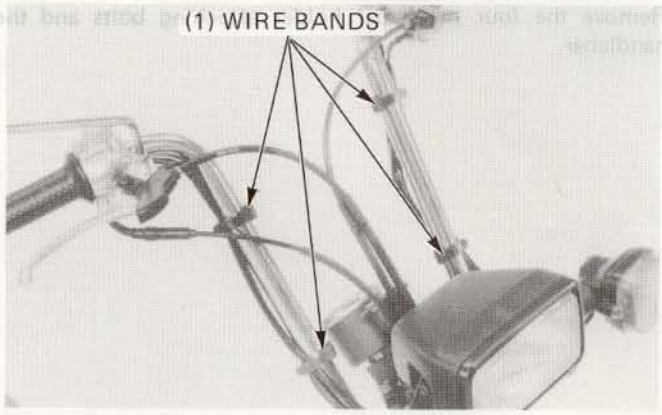
Soft suspension
- Weak fork springs.

Front suspension noise
- Slider binding.
- Loose front fork fasteners.

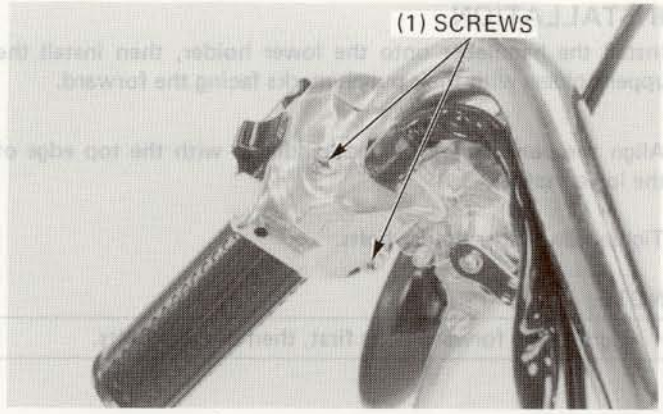
HANDLEBAR

REMOVAL

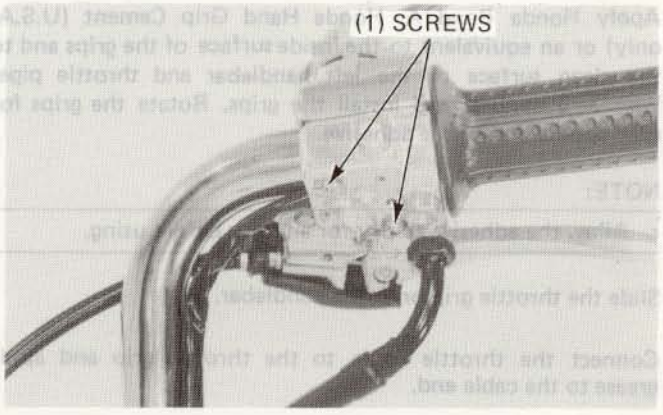
Remove the handlebar switch wire bands.



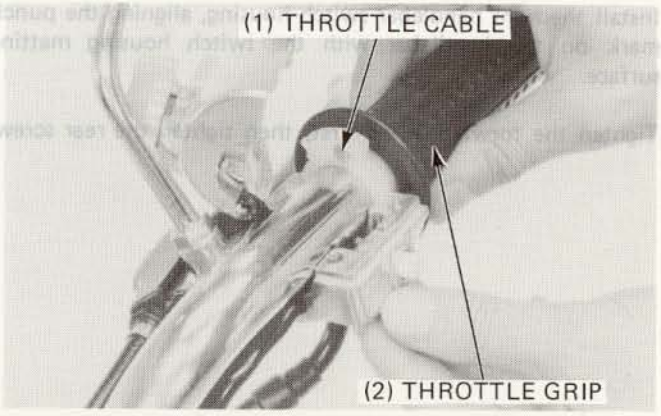
Remove the two left handlebar switch housing screws and remove the left handlebar switch housing with the rear brake lever bracket.



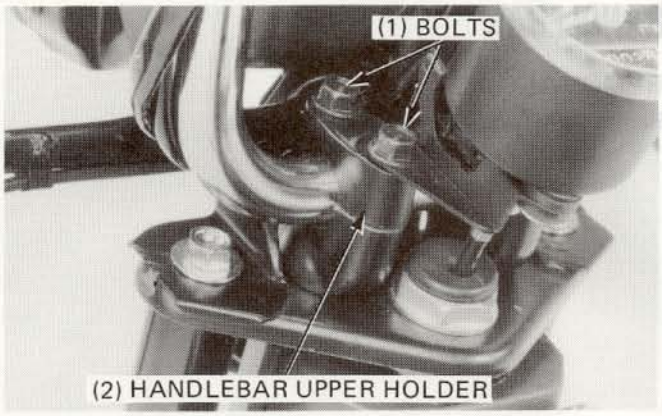
Remove the two right handlebar switch housing screws and remove the right handlebar switch housing with the front brake lever bracket.



Disconnect the throttle cable from the throttle grip and slide it off the handlebar.



Remove the four handlebar holder attaching bolts and the handlebar.



INSTALLATION

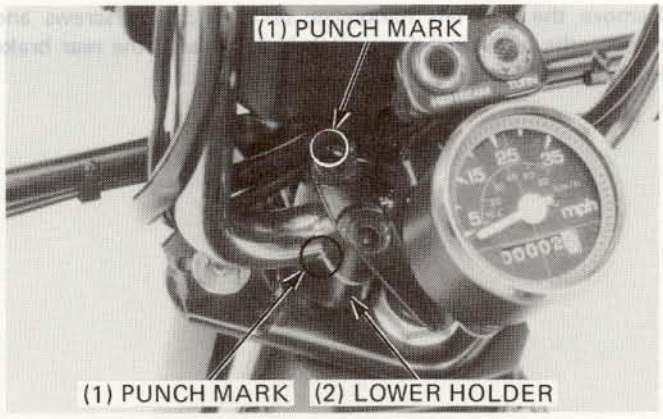
Install the handlebar onto the lower holder, then install the upper holders with their punch marks facing the forward.

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

Tighten the upper holder bolts.

NOTE

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



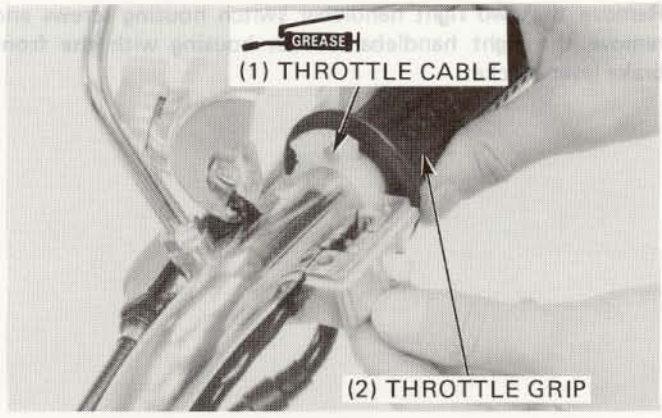
Apply Honda Bond A, Honda Hand Grip Cement (U.S.A. only) or an equivalent to the inside surface of the grips and to the clean surface of the left handlebar and throttle pipe. Wait 3–5 minutes and install the grips. Rotate the grips for even application of the adhesive.

NOTE:

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

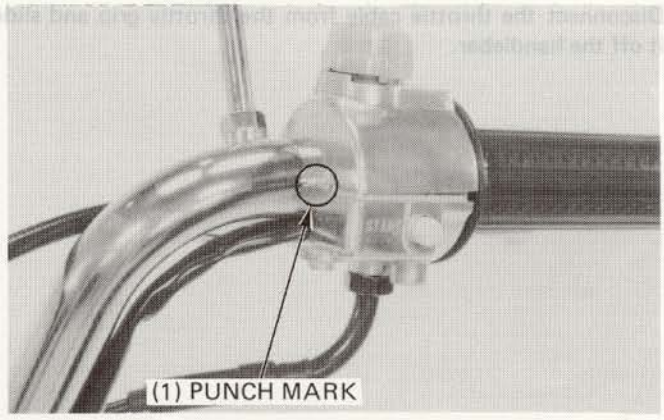
Slide the throttle grip onto the handlebar.

Connect the throttle cable to the throttle grip and apply grease to the cable end.



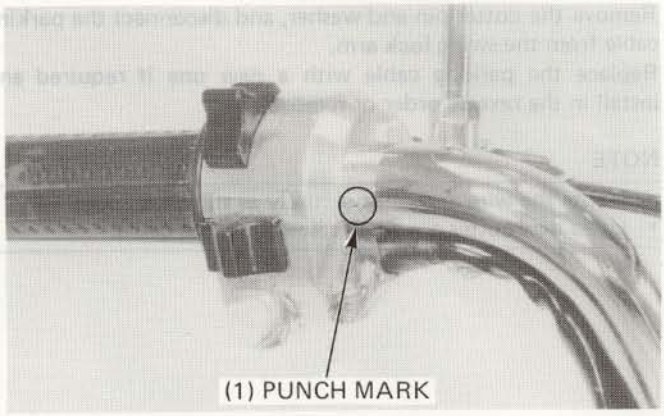
Install the right handlebar switch housing, aligning the punch mark on the handlebar with the switch housing matting surface.

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



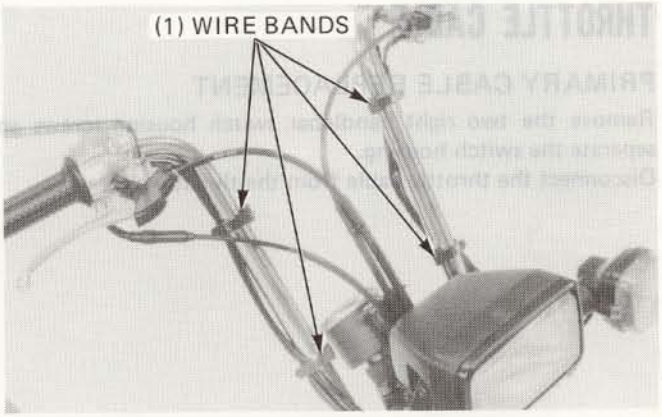
Install the left handlebar switch housing, aligning the punch mark on the handlebar with the switch housing matting surface.

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



Install the handlebar switch wire bands.

Adjust the throttle grip free play (page 3-5) and brake lever free play (page 3-7).



PARKING LOCK

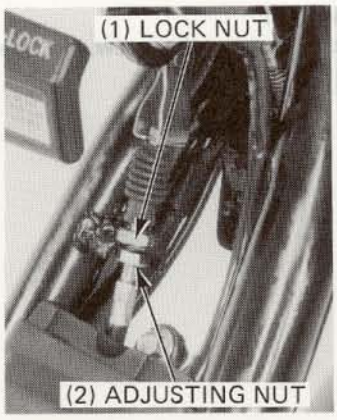
LEVER REMOVAL/INSTALLATION

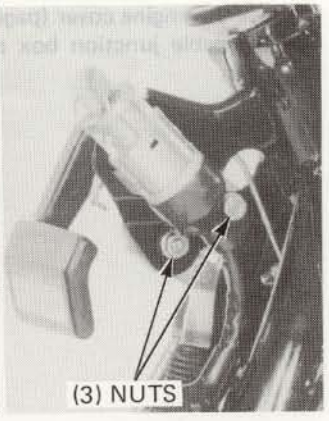
Remove the head pipe covers and floor board (page 10-2).

Support the scooter by placing the floor jack or other adjustable support under the frame.

Move the parking lever down and loosen the lock, adjusting nuts, and disconnect the parking cable.
Remove the two nuts and parking lever.

Install the parking lever in the reverse order of removal and adjust the parking lever free play (page 3-8).



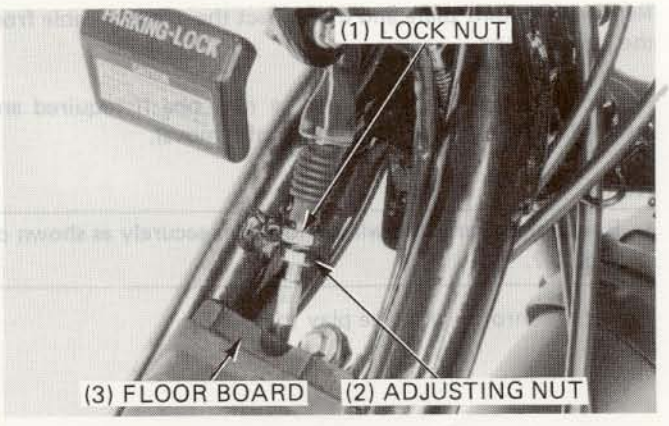


CABLE REPLACEMENT

Remove the floor board, engine and body center covers (section 10).

Support the scooter by placing the floor jack or other adjustable support under the frame.

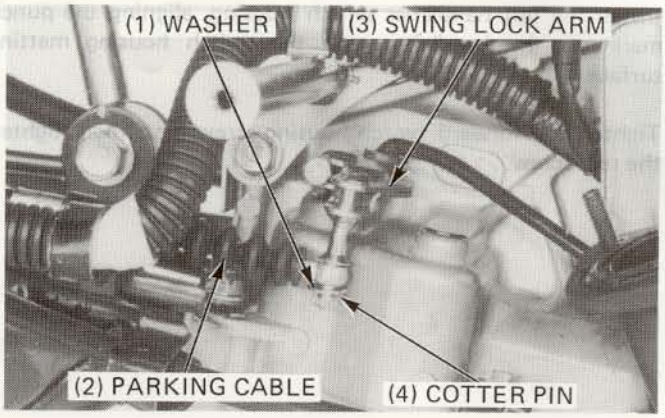
Loosen the lock, adjusting nuts and disconnect the parking cable from the cable guide and parking lever.



Remove the cotter pin and washer, and disconnect the parking cable from the swing lock arm.
Replace the parking cable with a new one if required and install in the reverse order or removal.

NOTE

- Route the wire and cable securely as shown on page 1-7.
- Use a new cotter pin when reinstalling the cable.



THROTTLE CABLE

PRIMARY CABLE REPLACEMENT

Remove the two right handlebar switch housing screws and separate the switch housing.
Disconnect the throttle cable from the throttle grip.

Remove the engine cover (page 10-5).
Pull the cable junction box out, remove the screw and open the cover.

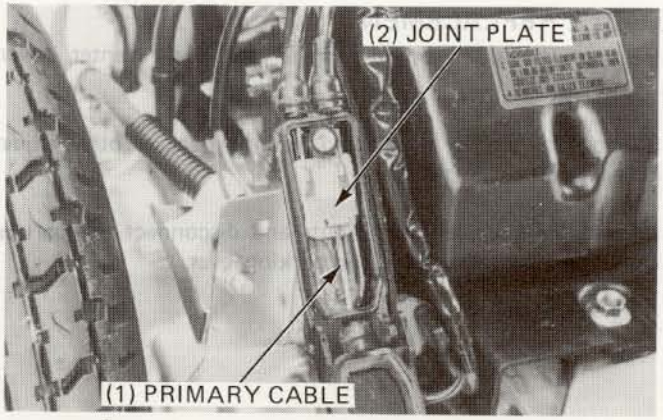
Remove the joint plate and disconnect the primary cable from the junction box.

Replace the primary cable with a new one if required and install the cable in the reverse order of removal.

NOTE

- Route and clamp the wires and cables securely as shown on page 1-7.

Adjust the throttle grip free play (page 3-5).



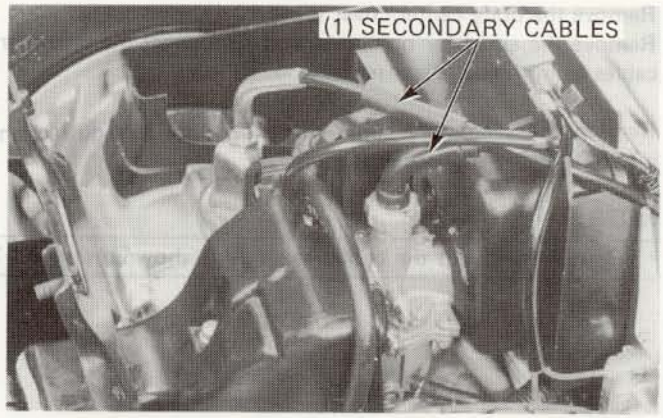
SECONDARY CABLE REPLACEMENT

Remove the engine cover (page 10-5) and disconnect the primary cable from the junction box (page 11-6).
Disconnect the throttle cable from the carburetor top (page 4-4).
Disconnect the oil control cable from the oil control lever (page 2-2).
Remove the secondary cable from the junction box.
Replace the cables with new ones if required and install in the reverse order of removal.

NOTE

- Route and clamp the cables securely as shown on page 1-7.

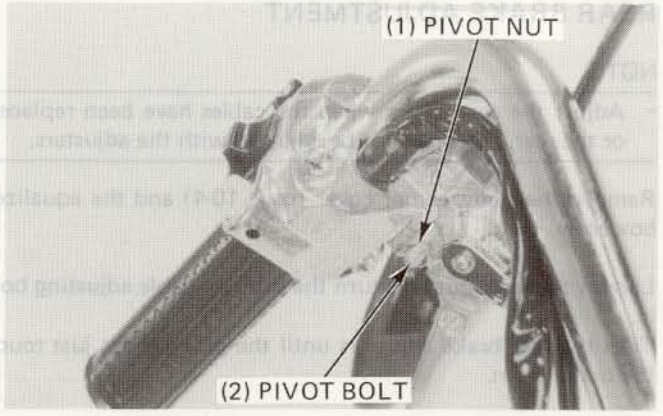
Adjust the throttle grip free play and oil control cable (page 3-5).



REAR BRAKE CABLE

PRIMARY CABLE REPLACEMENT

Remove the brake lever pivot bolt, nut and brake lever and disconnect the brake cable from the lever.



Remove the body center cover (page 10-4).

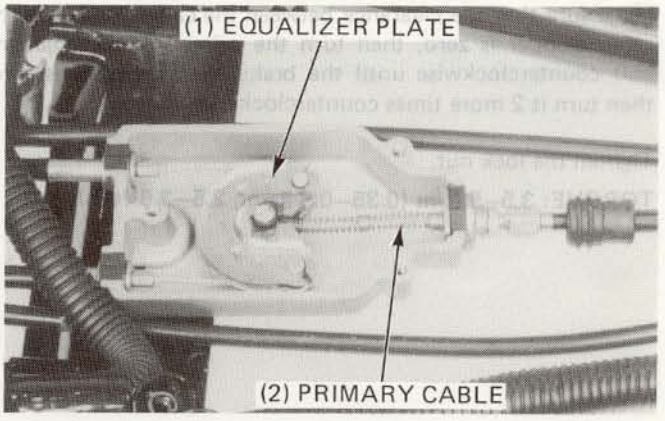
Remove the equalizer box cover and disconnect the primary brake cable from the equalizer plate.

Replace the brake cable with a new one if required and install in the reverse order of removal.

NOTE

- Route and clamp the cable securely as shown on page 1-7.

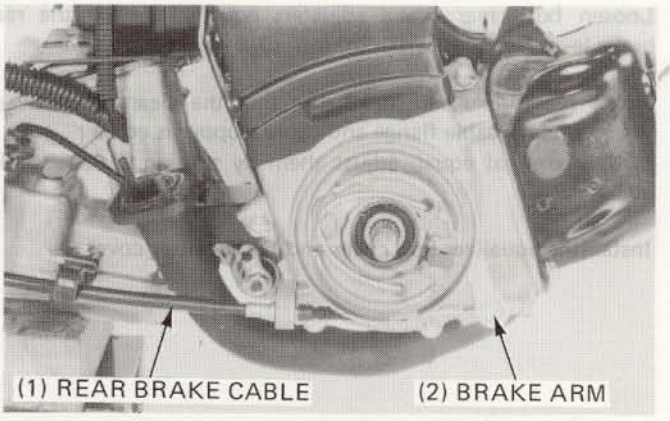
Adjust the rear brake lever free play.



SECONDARY CABLE REPLACEMENT

Remove both rear wheels with the wheel hub attached (page 12-2).

Remove the rear brake cables from the brake arms.

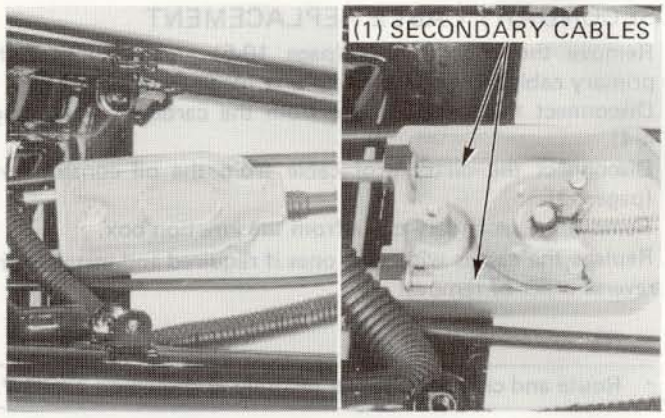


Remove the body center cover (page 10-4).
Remove the equalizer box cover and disconnect the secondary cables from the equalizer plate.

Replace the secondary cable with new ones if required and install in the reverse order of removal.

NOTE

- Route and clamp the cables securely as shown on page 1-7.



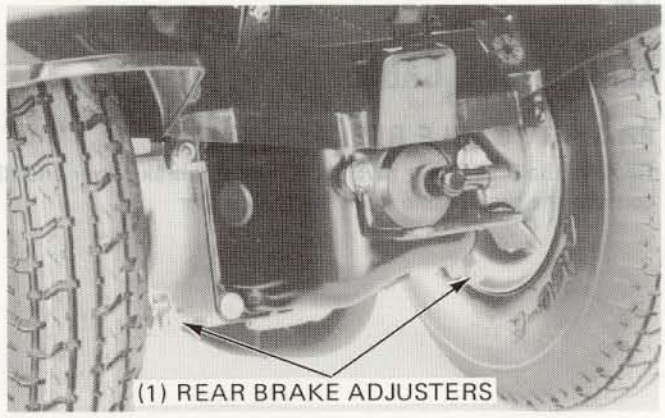
REAR BRAKE ADJUSTMENT

NOTE

- Adjust the rear brake when the cables have been replaced or the rear brake can not be adjusted with the adjusters.

Remove the body center cover (page 10-4) and the equalizer box cover.

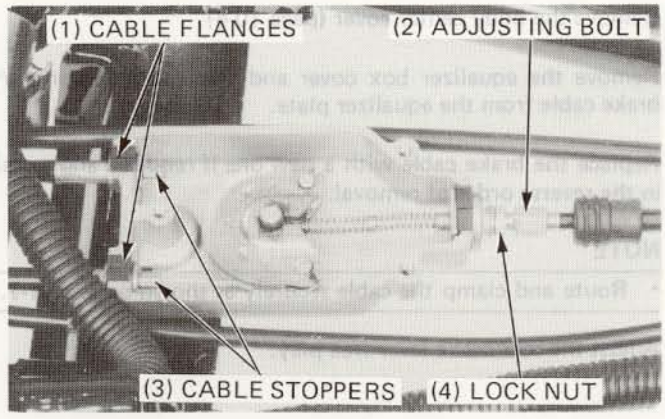
Loosen the lock nut and turn the primary cable adjusting bolt in.
Turn the rear brake adjusters until the brake shoes just touch the brake drum.



Make sure that the clearance between the cable flange and the cable stopper is zero, then turn the primary cable adjusting bolt counterclockwise until the brake lever free play is zero, then turn it 2 more times counterclockwise.

Tighten the lock nut.

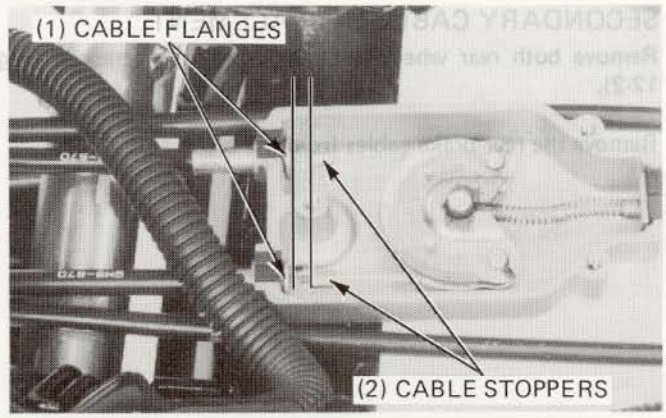
TORQUE: 3.5–5 N·m (0.35–0.5 kg-m, 2.5–3.6 ft-lb)



Loosen both rear brake adjusters equally so that the rear brake lever free play is 10–20 mm (3/8–3/4 in).

Apply rear brake and make sure that the clearance between the secondary cable flange and cable stopper is equal.
If they are not equal, adjust them by turning the rear brake adjuster.

Install the equalizer box cover and body center cover.



FRONT WHEEL

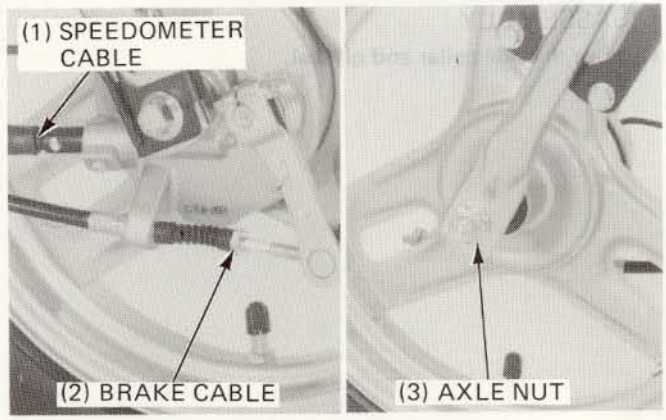
REMOVAL

Disconnect the front brake cable and speedometer cable.

Raise the front wheel off the ground by placing a floor jack or other adjustable support under the frame.

Remove the axle nut and pull out the front axle.

Remove the front wheel.



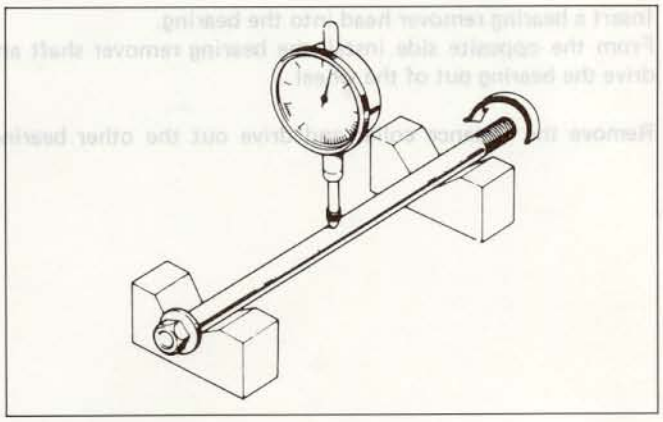
INSPECTION

- **AXLE SHAFT**

Set the axle shaft in V blocks and measure the runout.

The actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)

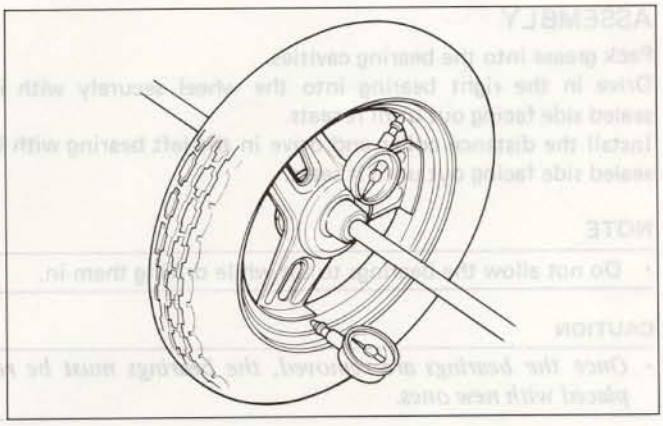


- WHEEL RIM

Place the wheel in a truing stand.

Spin the wheel by hand and measure the rim runout using a dial indicator.

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



- **BEARING INSPECTION**

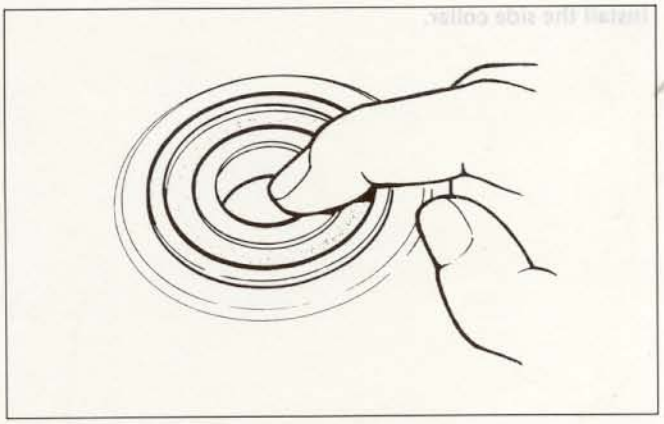
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

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

NOTE:

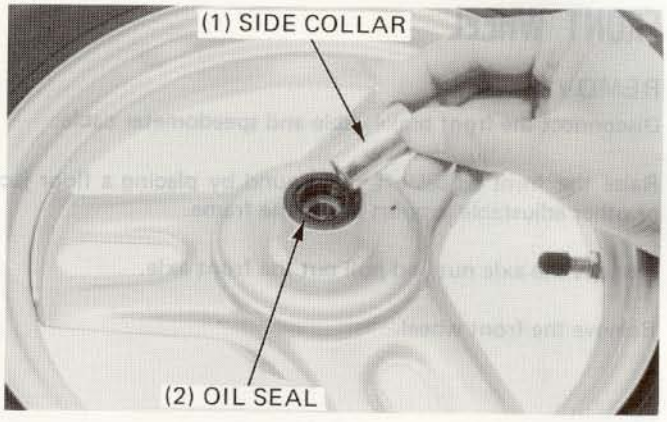
- Replace hub bearings in pairs.

For replacement of bearings, see page 11-10.



DISASSEMBLY

Remove the side collar and oil seal.



Insert a bearing remover head into the bearing.
From the opposite side install the bearing remover shaft and drive the bearing out of the wheel.

Remove the distance collar and drive out the other bearing.

ASSEMBLY

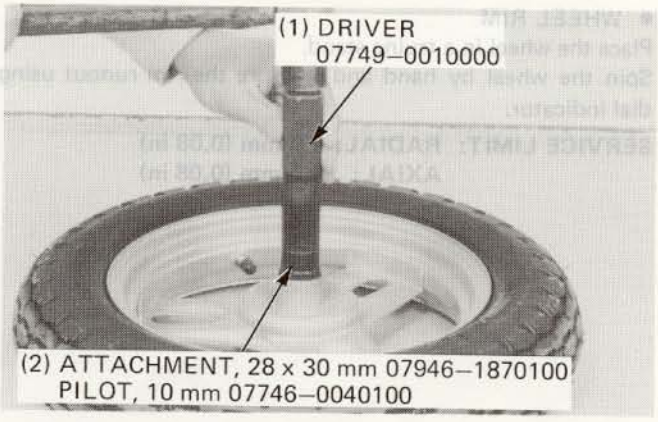
Pack grease into the bearing cavities.
Drive in the right bearing into the wheel securely with its sealed side facing out until it seats.
Install the distance collar and drive in the left bearing with its sealed side facing out until it seats.

NOTE

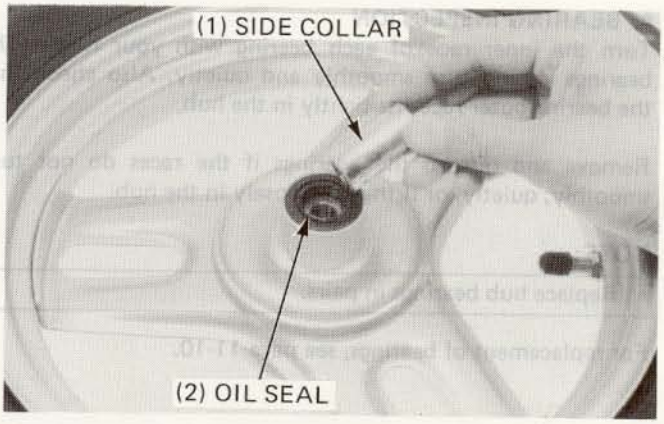
- Do not allow the bearings to tilt while driving them in.

CAUTION

- *Once the bearings are removed, the bearings must be replaced with new ones.*



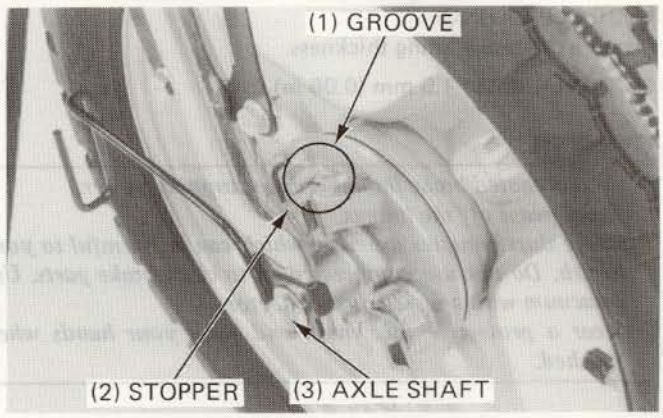
Install a new oil seal on the wheel.
Install the side collar.



INSTALLATION

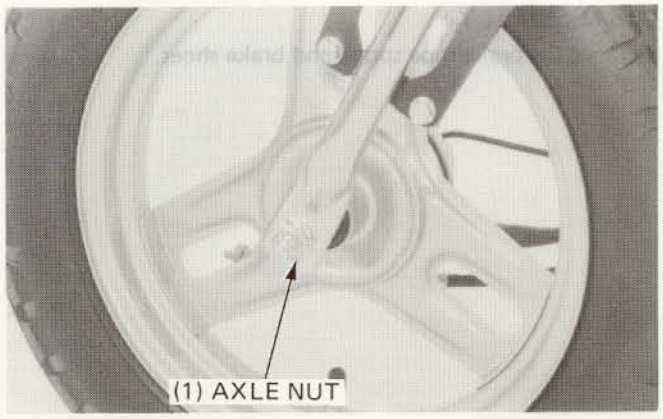
Position the front wheel between the fork legs, aligning the brake panel groove with the stopper on the fork.

Insert the axle shaft through the wheel hub from the right side.



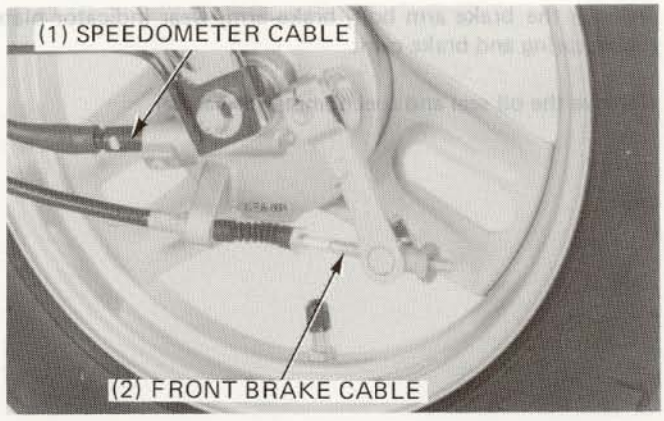
Install and tighten the axle nut.

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



Connect the front brake cble and speedometer cable.

Adjust the front brake free play.



FRONT BRAKE

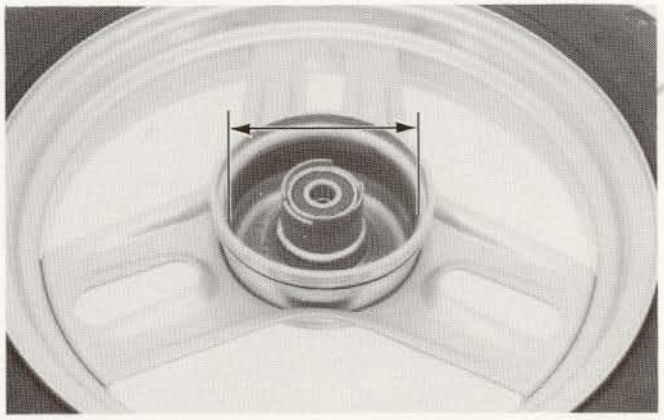
Remove the front wheel (page 11-9) and brake panel from the front wheel.

INSPECTION

- BRAKE DRUM

Measure the brake drum I.D.

SERVICE LIMIT: 80.5 mm (3.17 in)



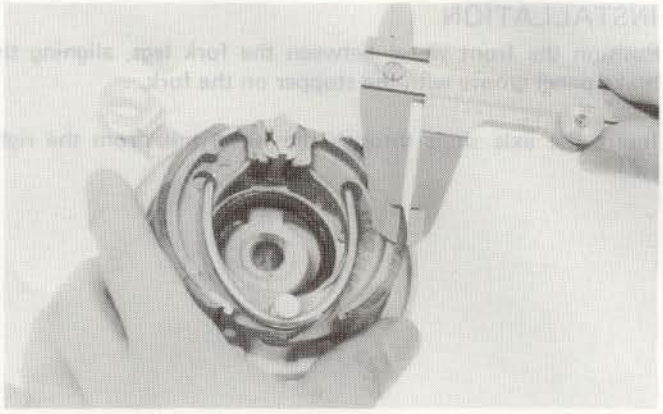
• BRAKE LINING

Measure the brake lining thickness.

SERVICE LIMIT: 1.5 mm (0.06 in)

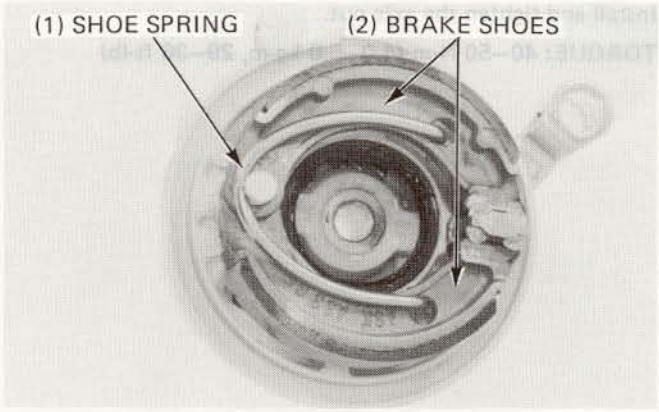
WARNING

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



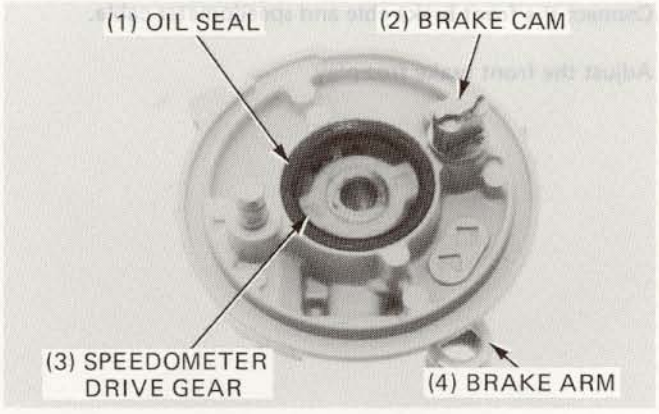
DISASSEMBLY

Remove the brake shoe spring and brake shoes.

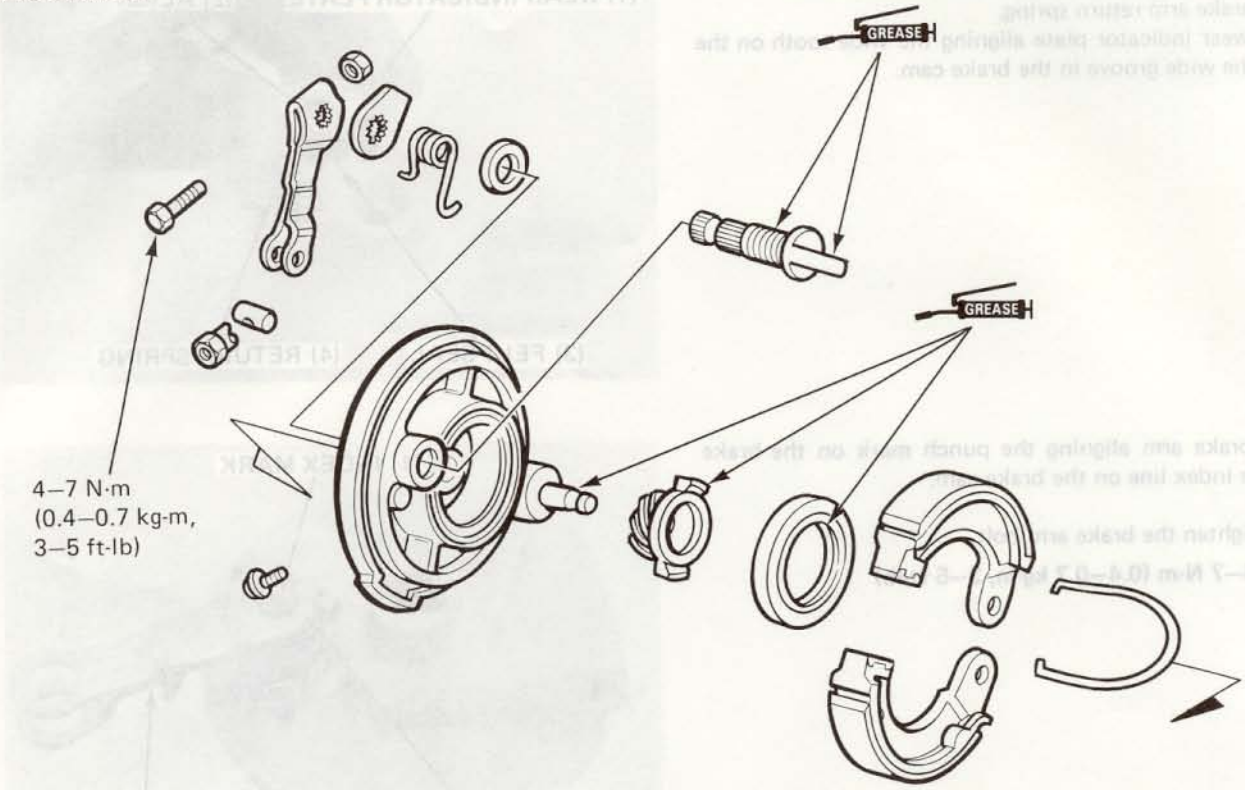


Remove the brake arm bolt, brake arm, wear indicator plate, return spring and brake cam.

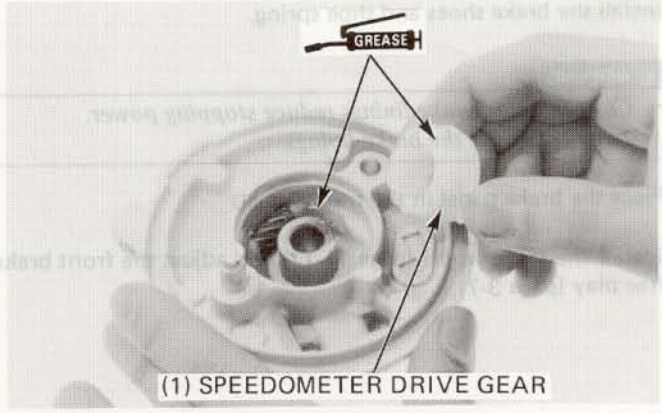
Remove the oil seal and speedometer drive gear.



ASSEMBLY



Lubricate the speedometer drive gear with grease and install the drive gear in the brake panel.

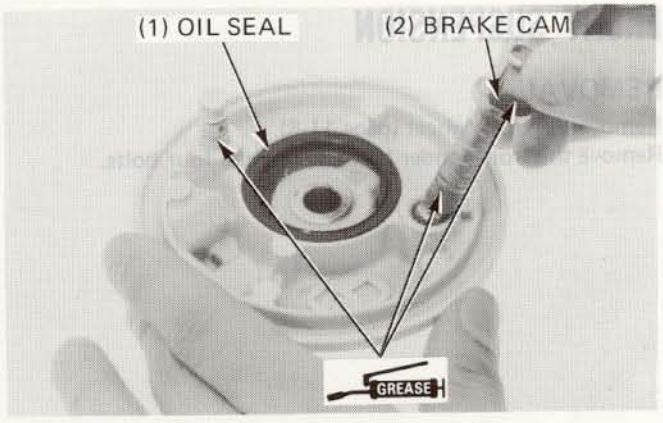


Install the oil seal.

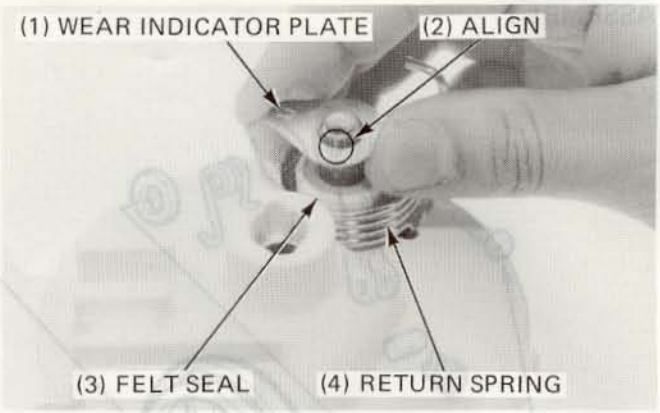
Apply grease to the brake cam and anchor pin, and insert the brake cam in the brake panel.

WARNING

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



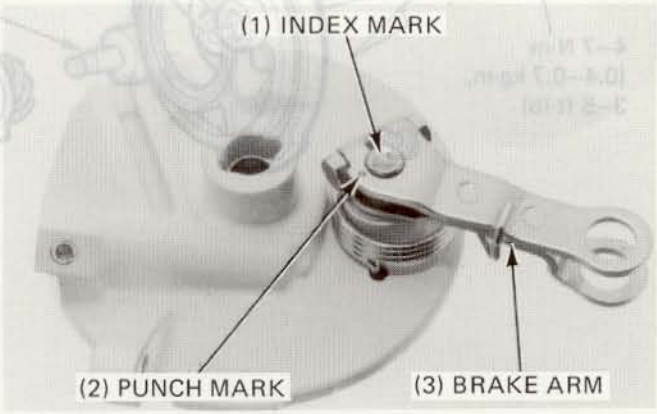
Apply oil to the felt seal and install to the brake panel.
Install the brake arm return spring.
Install the wear indicator plate aligning the wide tooth on the plate with the wide groove in the brake cam.



Install the brake arm aligning the punch mark on the brake arm with the index line on the brake cam.

Install and tighten the brake arm bolt.

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



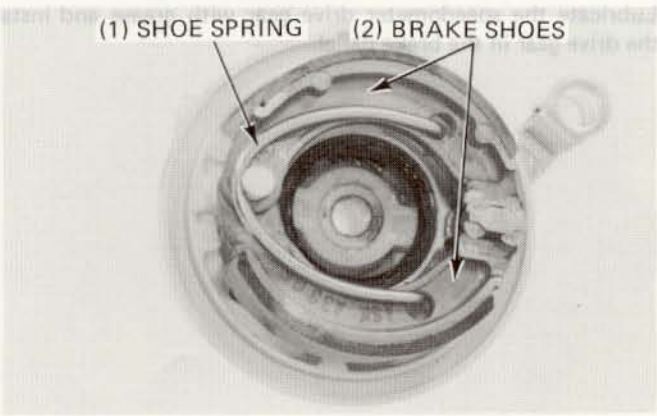
Install the brake shoes and shoe spring.

WARNING

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

Place the brake panel in the front wheel.

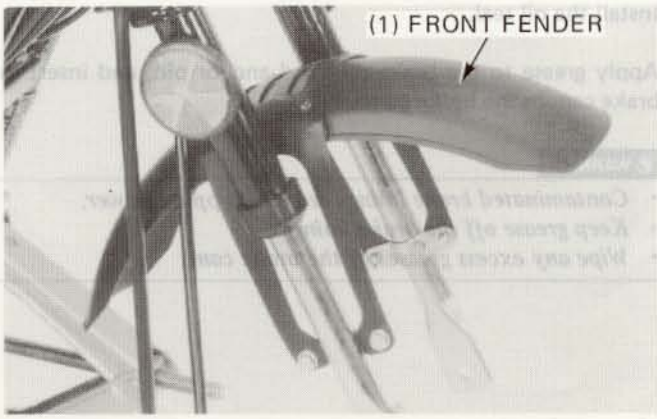
Install the front wheel (page 11-11) and adjust the front brake free play (page 3-7).



FRONT SUSPENSION

REMOVAL

Remove the front wheel (page 11-8).
Remove the front fender by removing the four bolts.

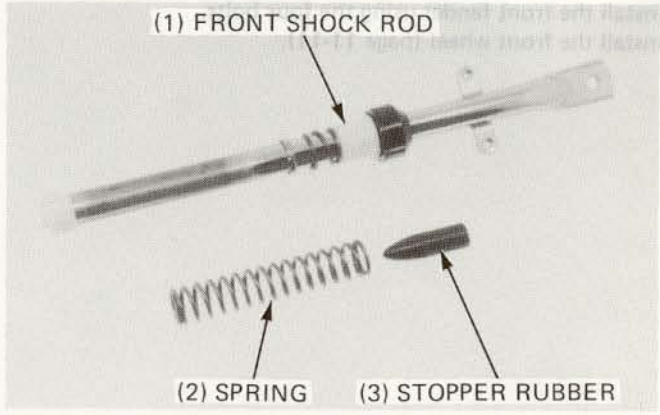


Slide the boot down the fork leg.

Remove the snap ring, front shock rod, stopper rubber and front shock spring from the fork pipe.

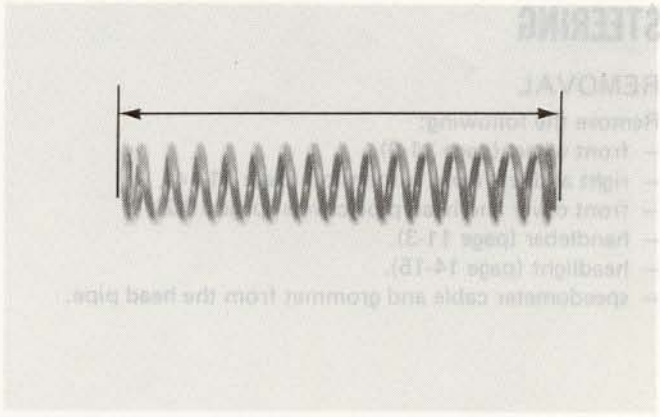
INSPECTION

Inspect for wear or damage and replace if necessary.



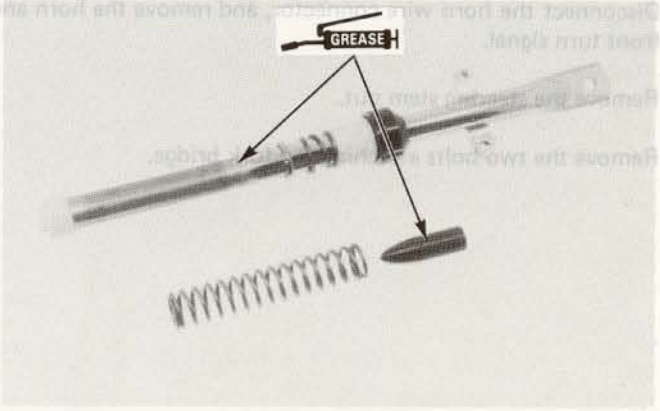
Measure the spring free length.

SERVICE LIMIT: 117.0 mm (4.61 in)



INSTALLATION

Apply grease to the front shock sliding surfaces.

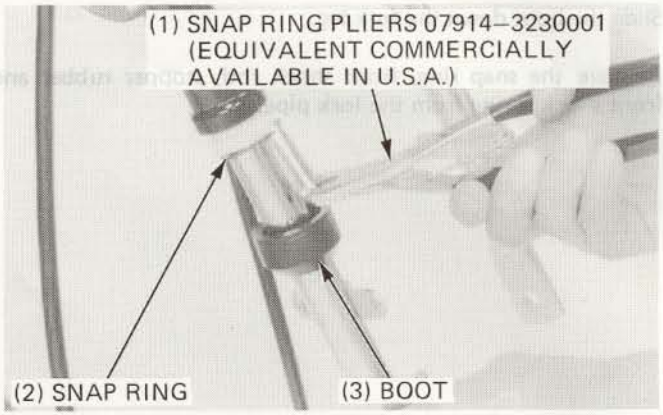


Install the spring, stopper rubber and front shock rod in the fork pipe and secure with the snap ring.

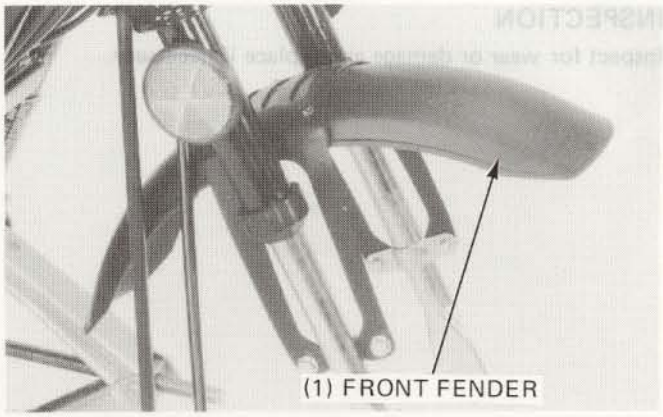
NOTE

- Install the snap ring with its radiused edge facing up and be certain the snap ring is seated firmly in the groove.

Slide the boot up onto the fork pipe.



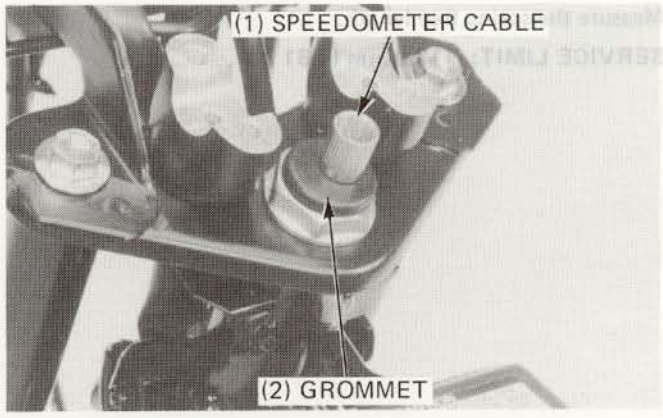
Install the front fender using the four bolts.
Install the front wheel (page 11-11).



STEERING

REMOVAL

Remove the following:
- front wheel (page 11-9).
- right and left front suspension (page 11-14).
- front cover and head pipe covers (page 10-2).
- handlebar (page 11-3).
- headlight (page 14-15).
- speedometer cable and grommet from the head pipe.



Disconnect the horn wire connector, and remove the horn and front turn signal.

Remove the steering stem nut.

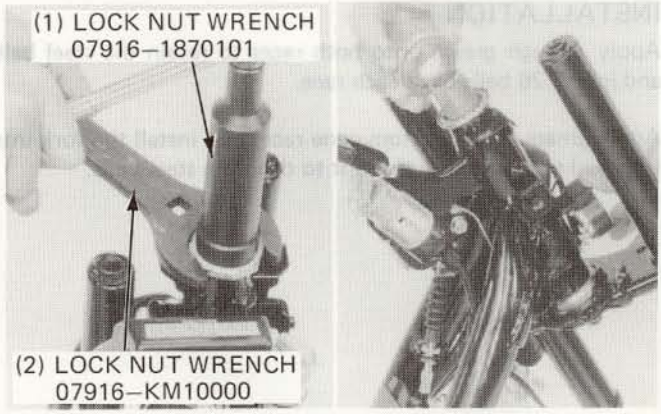
Remove the two bolts attaching the fork bridge.

Hold the top cone race and remove the steering stem lock nut.

Hold the front fork and remove the top cone race and front fork.

NOTE

- The steel balls are loose in the races, and can be easily dropped or lost.



BALL RACE INSPECTION

Inspect the top and bottom ball races for wear or damge, and replace if necessary.

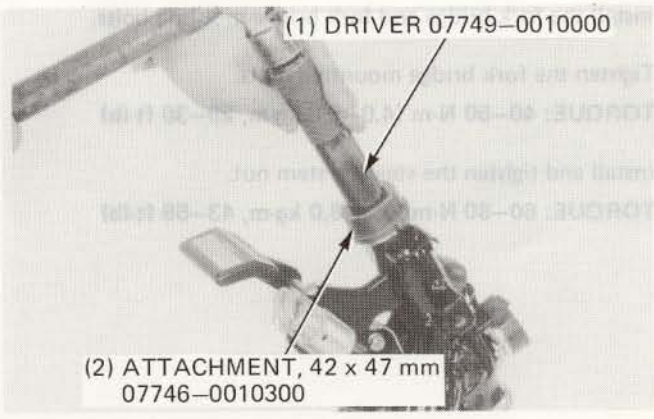
BALL RACE REPLACEMENT

Drive both ball races out of the steering head using a ball race remover or a suitable punch.

Drive the top and bottom ball races into the steering head using an attachment and driver.

NOTE

- Do not tilt or damage the races while driving them in.



BOTTOM CONE RACE INSPECTION

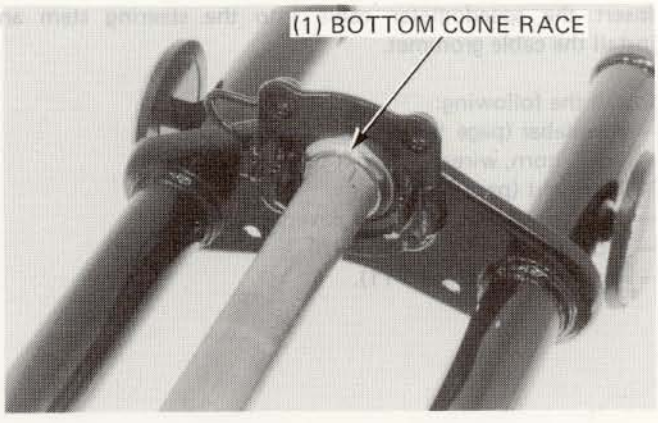
Inspect the bottom cone race for wear or damage and replace if necessary.

BOTTOM CONE RACE REPLACEMENT

Remove the bottom cone race using a chisel and discard it.

Place a new bottom cone race on the stem.

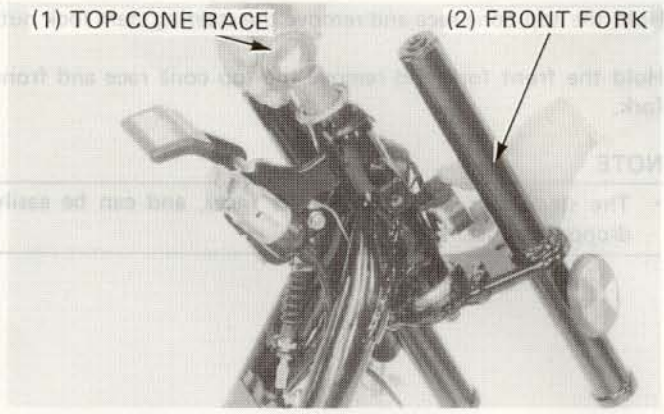
Drive the new cone race on using steering stem driver 07946–4300101.



INSTALLATION

Apply enough grease onto both races to retain the steel balls and install 26 balls onto each race.

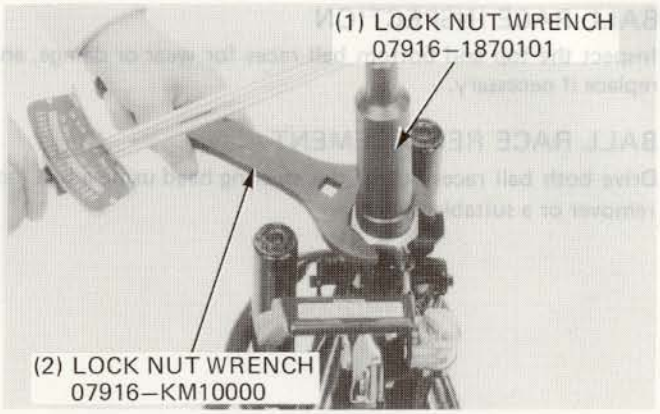
Apply grease to the bottom cone races and install the fork into the head pipe being careful not to drop the steel balls.



Apply grease to the top cone race and screw in the race until snug against the top ball race, then back it out 1/8 turn.

Turn the steering stem lock-to-lock 4–5 times to seat the bearings and check that the steering stem rotates smoothly and that there is no vertical play.
Hold the top cone race and tighten the steering stem lock nut.

TORQUE: 5–13 N·m (0.5–1.3 kg-m, 3.6–9 ft-lb)



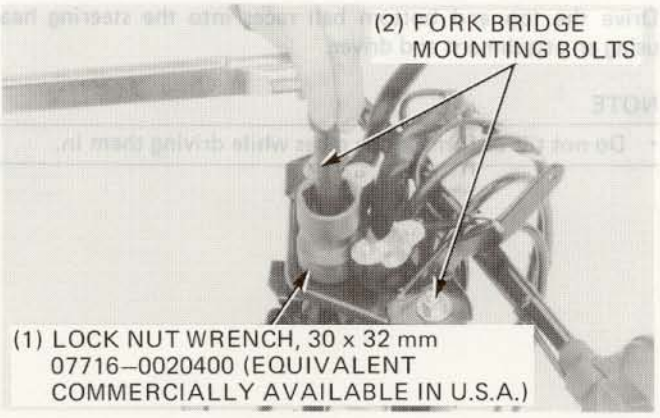
Install the fork bridge and fork bridge mouting bolts.

Tighten the fork bridge mounting bolts.

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

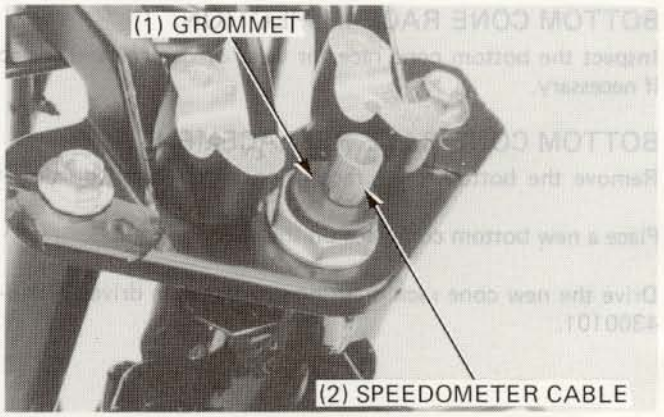
Install and tighten the steering stem nut.

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

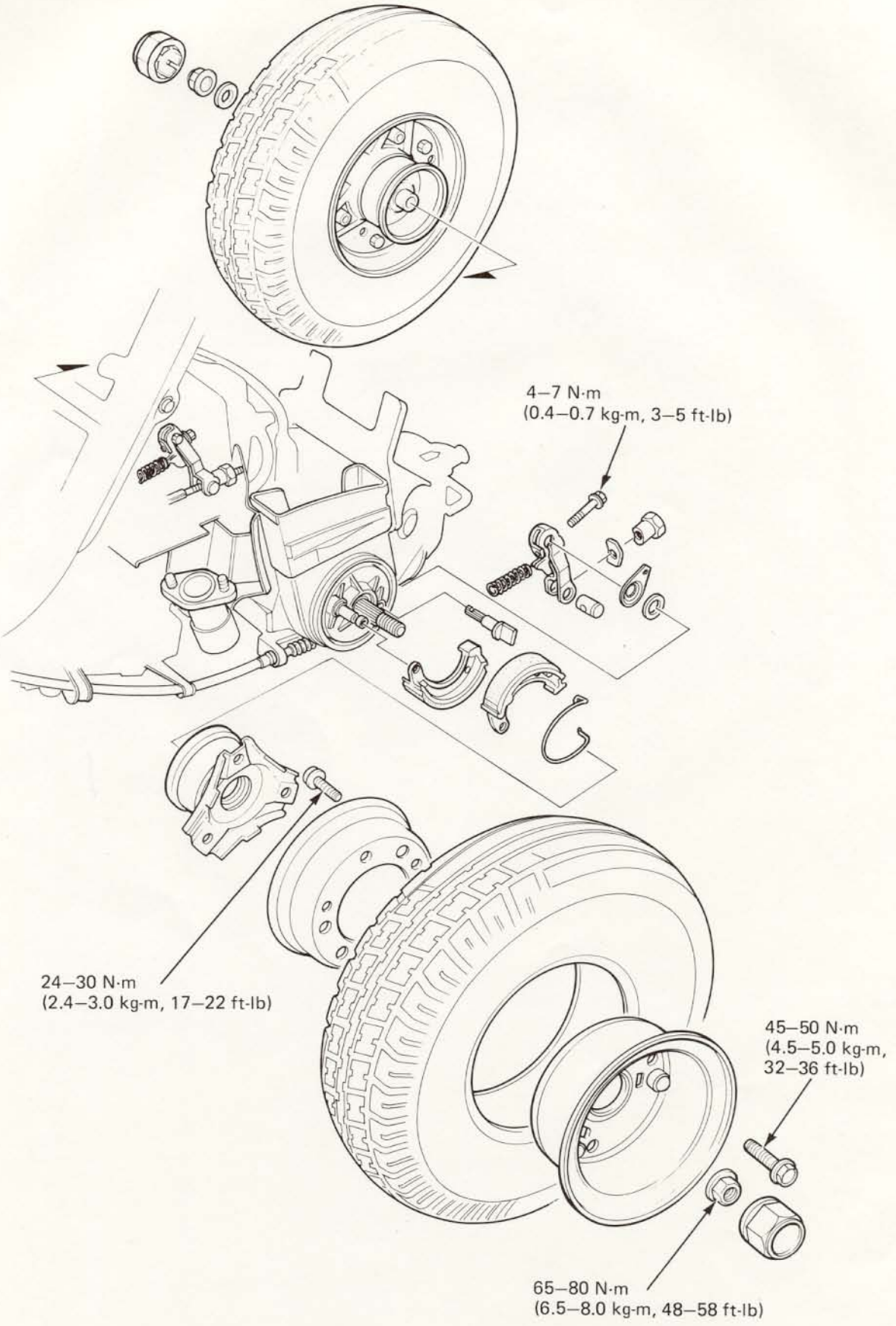


Insert the speedometer cable into the steering stem and install the cable grommet.

Install the following:
- handlebar (page 11-4).
- horn, horn, wires and front turn signal stay.
- headlight (page 14-16).
- front cover and head pipe covers (page 10-2).
- front suspension (page 11-15).
- front wheel (page 11-11).



MEMO


4–7 N·m
(0.4–0.7 kg-m, 3–5 ft-lb)
24–30 N·m
(2.4–3.0 kg-m, 17–22 ft-lb)
45–50 N·m
(4.5–5.0 kg-m,
32–36 ft-lb)
65–80 N·m
(6.5–8.0 kg-m, 48–58 ft-lb)

SERVICE INFORMATION

GENERAL

- Brake dust contains 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 duct collector. Wear a protective face mask and thoroughly wash your hands when finished.

SPECIFICATIONS

ITEM	STANDARD mm (in)	SERVICE LIMIT mm (in)
Rear wheel rim runout	–	2.0 (0.08)
Rear brake drum I.D.	80.0–80.2 (3.15–3.16)	80.5 (3.17)
Rear brake lining thickness	3.5 (0.14)	1.5 (0.06)

TORQUE VALUES

Rear axle nut	65–80 N·m (6.5–8.0 kg-m, 48–58 ft-lb) Apply oil
Rear wheel hub bolt	45–50 N·m (4.5–5.0 kg-m, 32–36 ft-lb) Apply oil
Rear wheel rim bolt	24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
Rear brake arm bolt	4–7 N·m (0.4–0.7 kg-m, 3–5 ft-lb)

12

TROUBLESHOOTING

Rear wheel wobbling

- Bent rim.
- Faulty or unevenly worn tires.
- Axle nut improperly tightened.

Poor brake performance

- Brake not adjusted properly.
- Contaminated brake shoes.
- Worn brake shoes.
- Worn brake shoes at cam contacting area.
- Worn brake cam.
- Worn brake drum.
- Improper engagement between brake arm and camshaft serrations.

REAR WHEEL

REMOVAL

Support the scooter by placing the floor jack or other adjustable support under the swing joint.

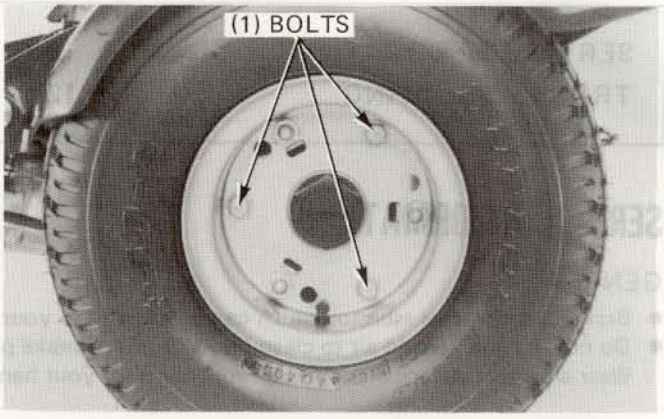
Apply rear brake.

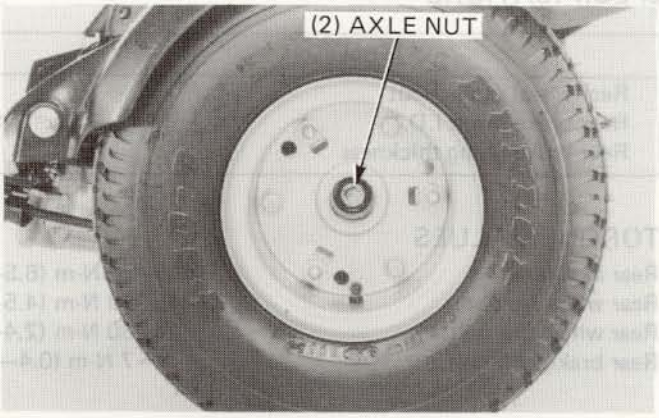
Without the wheel hub attached

Remove the three rear wheel hub bolts and remove the rear wheel.

With the wheel hub attached

Remove the wheel cap and rear axle nut, then remove the rear wheel with the wheel hub.



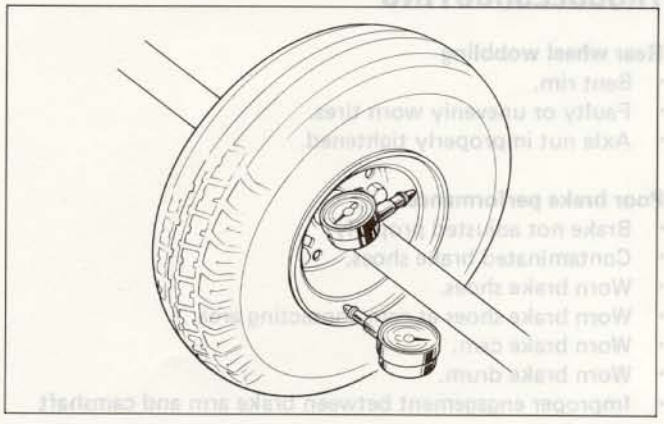


INSPECTION

Remove the rear wheel with the wheel hub.

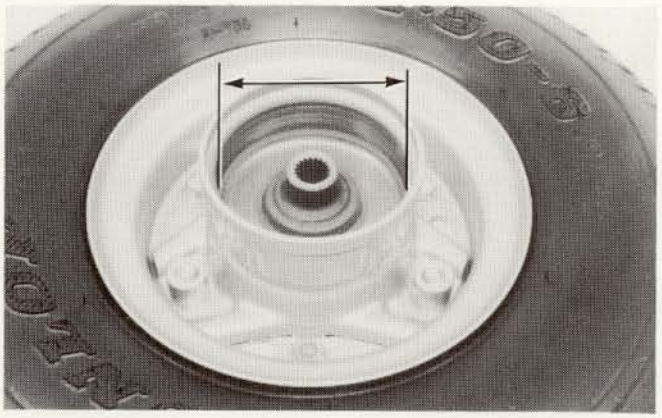
Check the wheel rim runout using a dial indicator as shown.

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



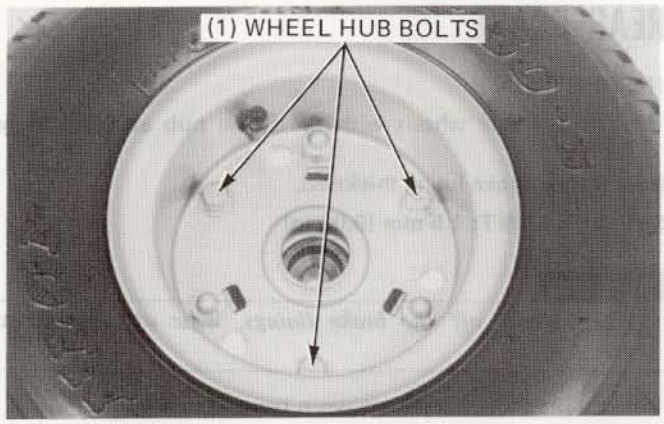
Measure the rear brake drum ID.

SERVICE LIMIT: 80.5 mm (3.17 in)



REAR BRAKE DRUM REPLACEMENT

Remove the three rear wheel hub bolts and remove the wheel hub from the wheel.



Install a new wheel hub onto the rear wheel and tighten the rear wheel hub bolts.

NOTE

- Apply oil to the bolt's threaded portion.

TORQUE: 45–50 N·m (4.5–5.0 kg-m, 32–36 ft-lb)

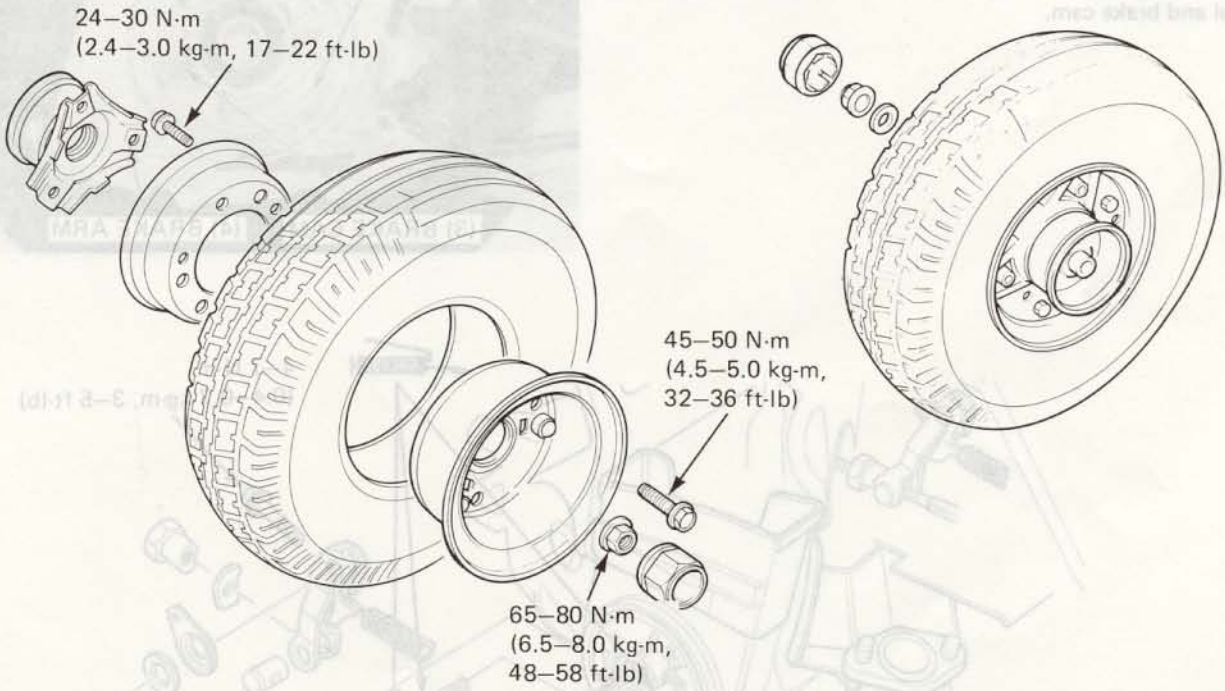
DISASSEMBLY/ASSEMBLY

Remove the rear wheel rim bolts and separate the wheel rim.

ASSEMBLY

Install the rear wheel and tighten the wheel rim bolts.

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



INSTALLATION

Without the wheel hub attached

Install the rear wheel, apply oil to the bolt's threaded portion and tighten.

TORQUE: 45–50 N·m (4.5–5.0 kg-m, 32–36 ft-lb)

With the wheel hub attached

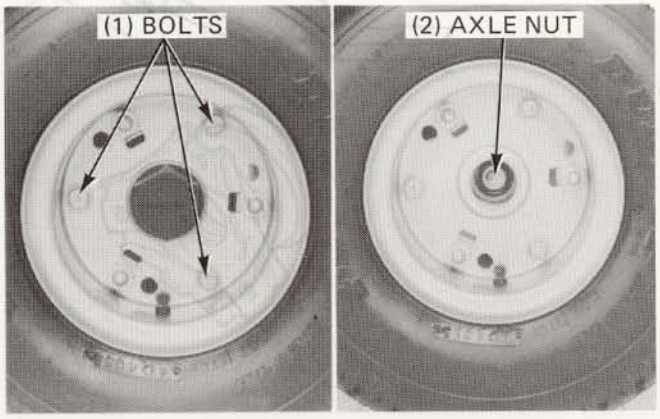
Install the rear wheel.

Apply oil to the axle nut threaded portion and tighten.

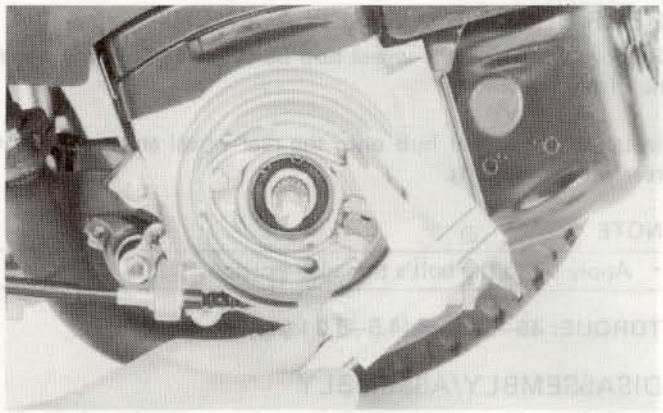
NOTE

- Install the washer under the right axle nut.

TORQUE: 65–80 N·m (6.5–8.0 kg-m, 48–58 ft-lb)



REAR BRAKE



INSPECTION

Remove the rear wheels with the wheel hub attached (page 12-2).

Measure the brake lining thickness.

SERVICE LIMIT: 1.5 mm (0.06 in)

WARNING

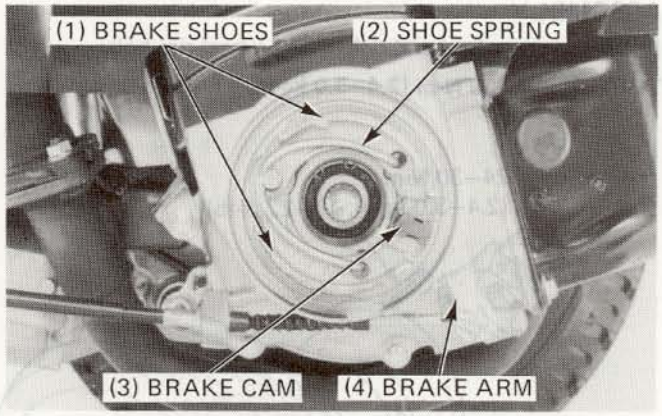
- *Keep grease off the brake linings. Wipe off any excess grease.*

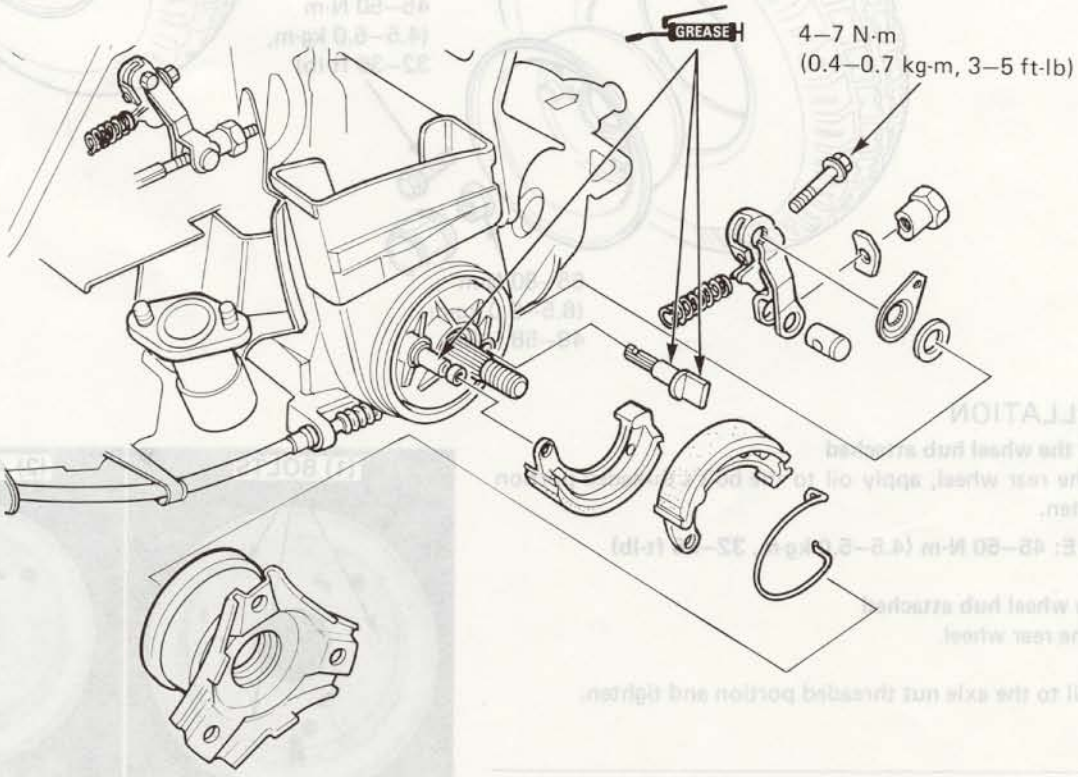
Replace the shoes if they are worn beyond the service limit.

DISASSEMBLY

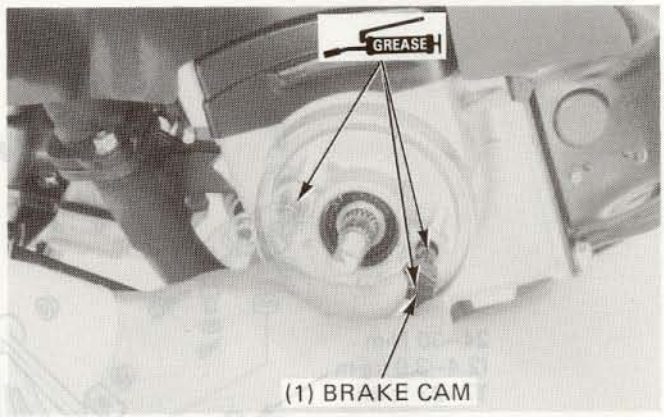
Remove the rear brake cable from the brake arm.
Remove the brake shoes, shoe spring, brake arm spring.

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





Apply grease to the brake cam and anchor pin.
Install the brake cam.

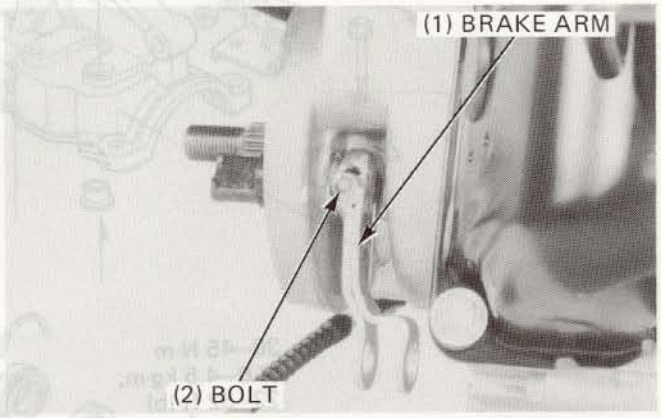


Apply oil to the felt seal and install it over the brake cam.

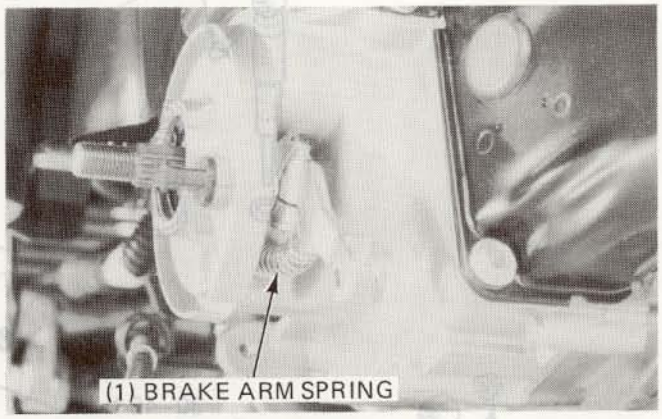
Install the wear indicator plate aligning the wide tooth of the plate with the wide groove on the brake cam.

Install the brake arm onto the brake cam, aligning the wide tooth of the brake arm with the wide groove of the brake cam and tighten the brake arm bolt.

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



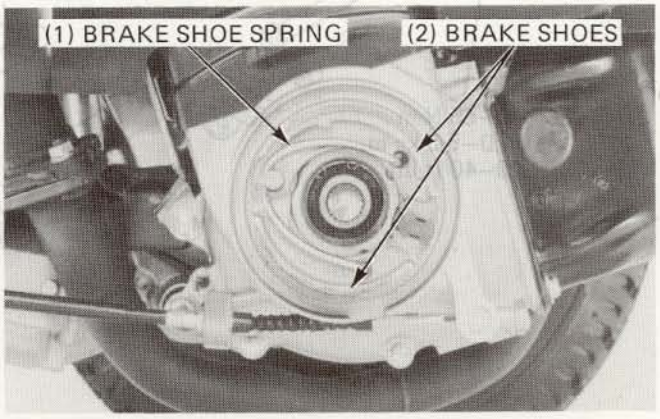
Install the brake arm spring.

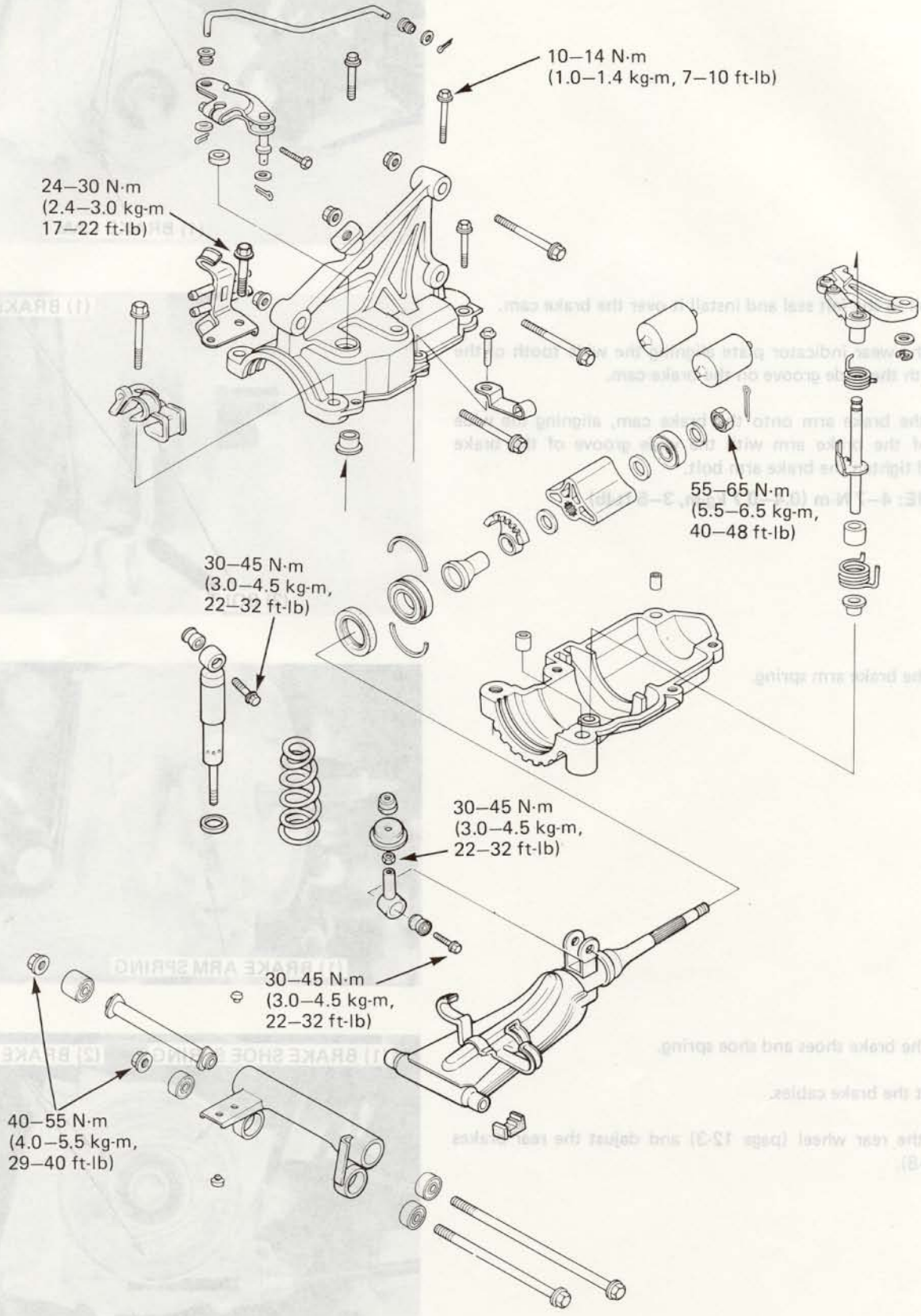


Install the brake shoes and shoe spring.

Connect the brake cables.

Install the rear wheel (page 12-3) and dajust the rear brakes (page 3-8).




10–14 N·m
(1.0–1.4 kg-m, 7–10 ft-lb)
24–30 N·m
(2.4–3.0 kg-m
17–22 ft-lb)
55–65 N·m
(5.5–6.5 kg-m,
40–48 ft-lb)
30–45 N·m
(3.0–4.5 kg-m,
22–32 ft-lb)
30–45 N·m
(3.0–4.5 kg-m,
22–32 ft-lb)
30–45 N·m
(3.0–4.5 kg-m,
22–32 ft-lb)
40–55 N·m
(4.0–5.5 kg-m,
29–40 ft-lb)

SERVICE INFORMATION

GENERAL

- The compression rubbers are made of natural rubber and will detriorate if they come in contact with oil or grease.

SPECIFICATION

ITEM	STANDARD mm (in)	SERVICE LIMIT mm (in)
Rear shock absorber sprring free length	103.6 (4.08)	100.5 (3.96)

TORQUE VALUES

Rear shock absorber:	
mounting bolt	30–45 N·m (3.0–4.5 kg-m, 22–32 ft-lb)
lower joint lock nut	30–45 N·m (3.0–4.5 kg-m, 22–32 ft-lb) Apply locking agent
Swing joint:	
joint shaft pivot bolt	40–55 N·m (4.0–5.5 kg-m, 29–40 ft-lb)
shaft nut	55–65 N·m (5.5–6.5 kg-m, 40–48 ft-lb)
unit case bolt; 8 mm	24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
6 mm	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Swing lock arm A bolt	4–7 N·m (0.4–0.7 kg-m, 3–5 ft-lb)

TOOLS

Special

Rear shock abosrber attachment A	07967–GA70101
Rear shock absorber attachment B	07967–GA70200

Common

Rear shock absorber compressor	07959–3290001

TROUBLESHOOTING

Refer to page 16-5 for parking/swing lock troubleshooting.

Soft suspension

- Weak shock absorber spring.
- Damper oil leaking.

Hard suspension

- Bent damper unit.

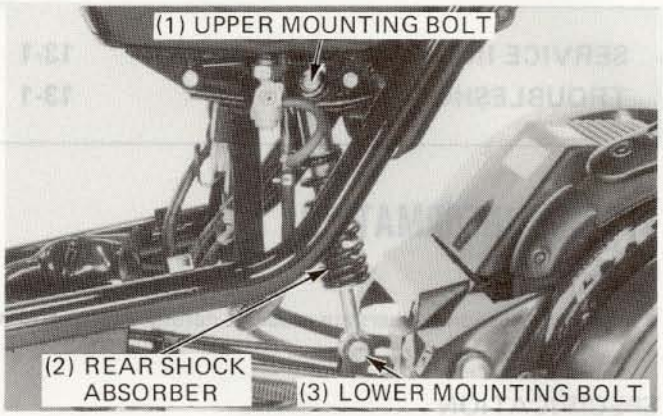
Suspension noise

- Shock absorber spring binding.
- Damaged stopper rubber.

REAR SHOCK ABSORBER

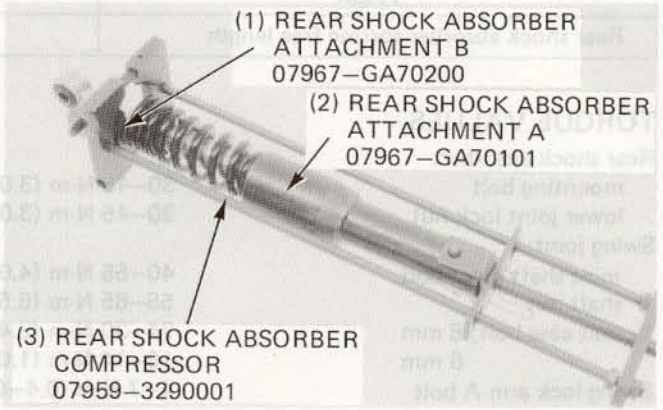
REMOVAL

Remove the body center cover (page 10-4).
Support the scooter by placing a floor jack or other adjustable support under the frame.
Remove the rear shock absorber upper and lower mounting bolts and the shock absorber.



DISASSEMBLY

Install the shock absorber compressor as shown and compress the shock absorber.

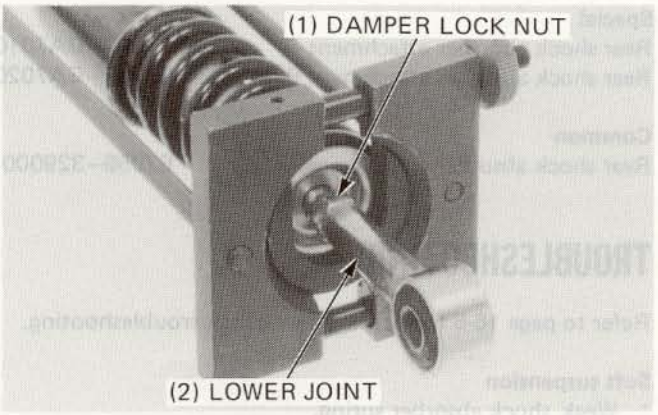


Loosen the damper lock nut, and remove the lower joint and lock nut.

Disassemble the rear shock absorber.

NOTE

- Do not damage the damper sliding surface.

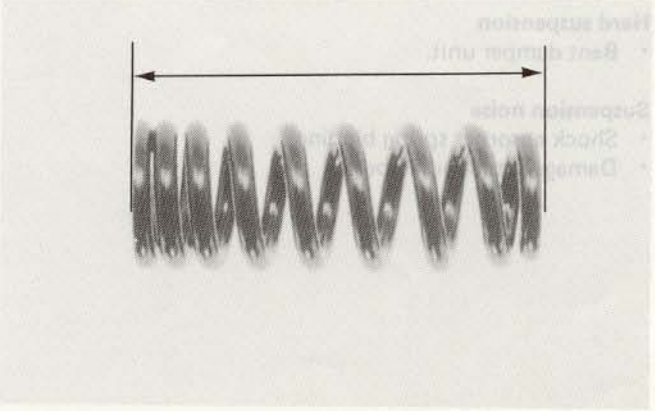


INSPECTION

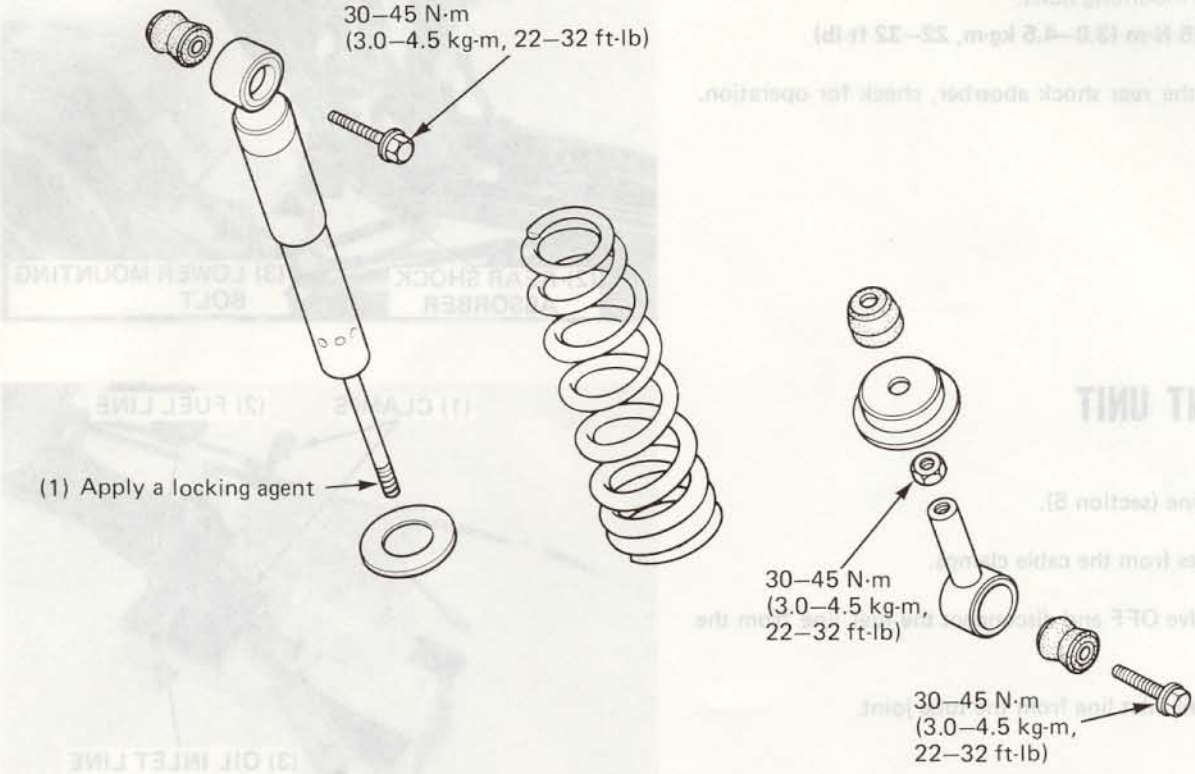
Measure the rear shock absorber spring free length.

SERVICE LIMIT: 100.5 mm (3.96 in)

Inspect the damper for damage and replace if necessary.



ASSEMBLY



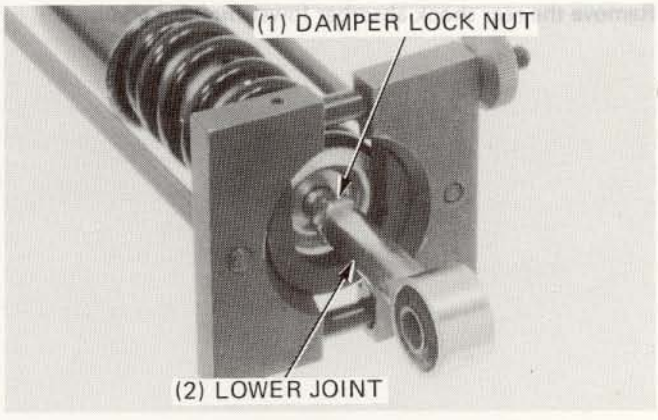
Install the shock absorber spring with the closely wound coil toward the top.

Compress the shock absorber with the compressor and attachments as shown.

Extend the damper rod fully and apply a locking agent to the threaded portion of the damper rod.

Install the lock nut and lower joint and tighten the lock nut.

TORQUE: 30–45 N·m (3.0–4.5 kg-m, 22–32 ft-lb)

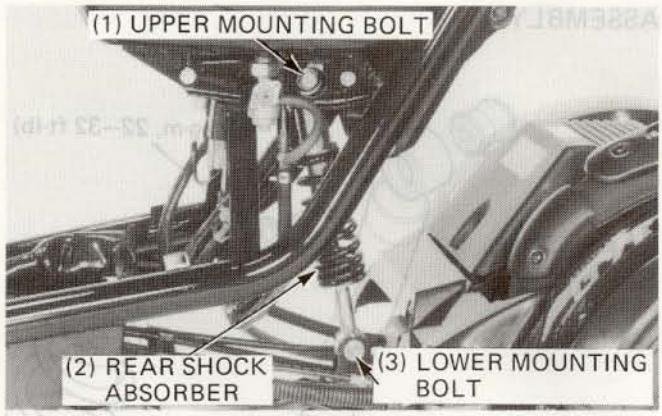


INSTALLATION

Install the rear shock absorber in the reverse order of removal and tighten both mounting bolts.

TORQUE: 30–45 N·m (3.0–4.5 kg-m, 22–32 ft-lb)

After installing the rear shock abosrber, check for operation.



SWING JOINT UNIT

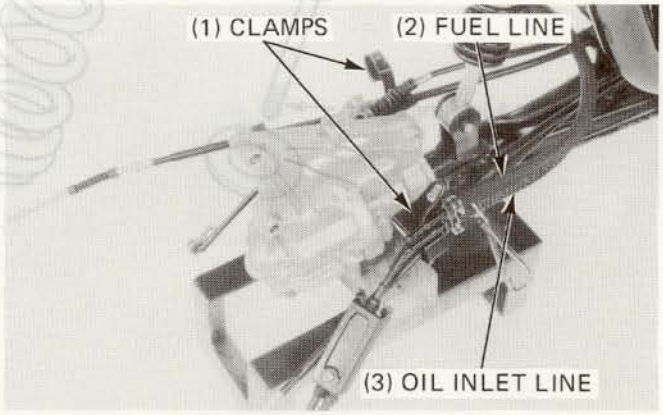
REMOVAL

Remove the engine (section 5).

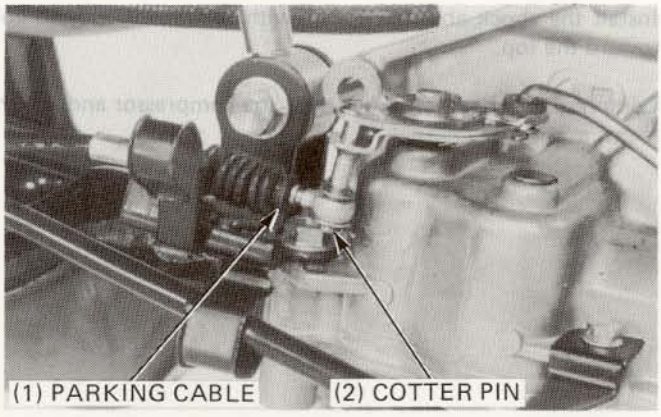
Release the cables from the cable clamps.

Turn the fuel valve OFF and disconnect the fuel line from the tube joint.

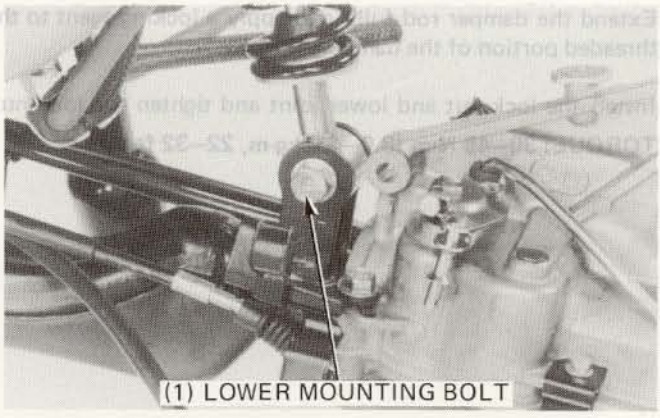
Disconnect the oil inlet line from the tube joint.



Remove the cotter pin, plain washer and disconnect the parking cable.

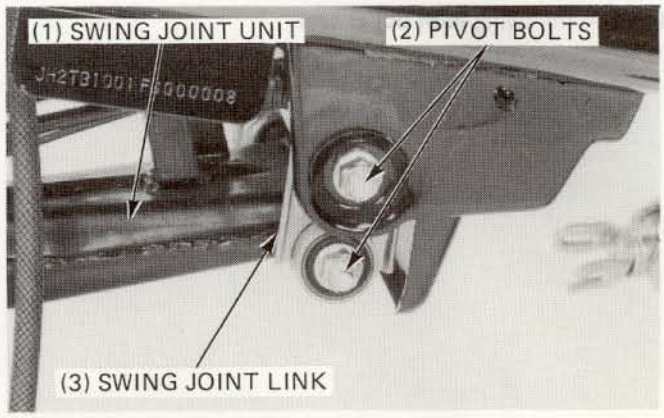


Remove the rear shock absorber lower mounting bolt.



Remove the swing joint shaft lower pivot bolt and swing joint unit.

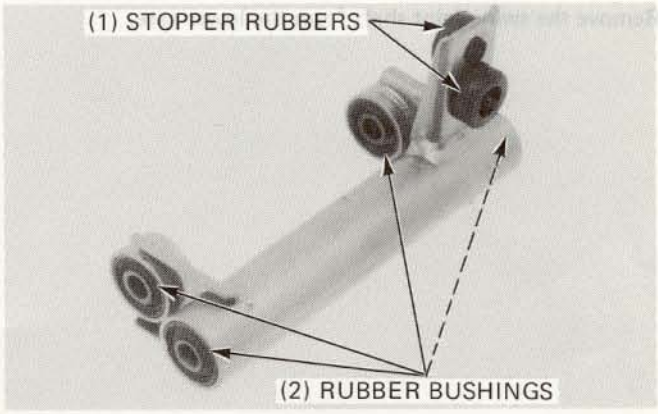
Remove the upper pivot bolt and remove the swing joint link from the frame.



INSPECTION

Inspect the swing joint link rubber bushings and stopper rubbers for wear or damage.

Check the joint link for cracks or damage.

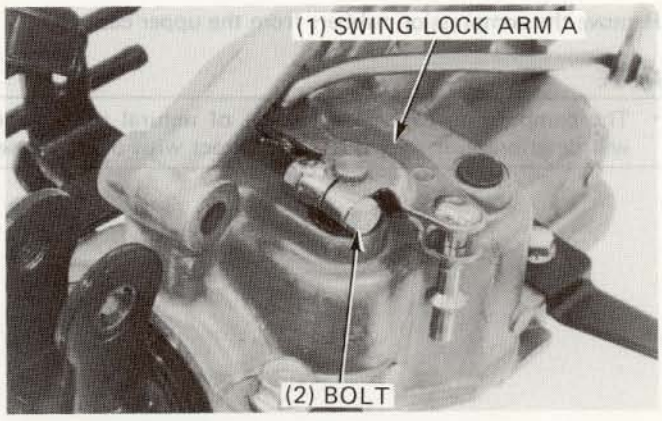


DISASSEMBLY

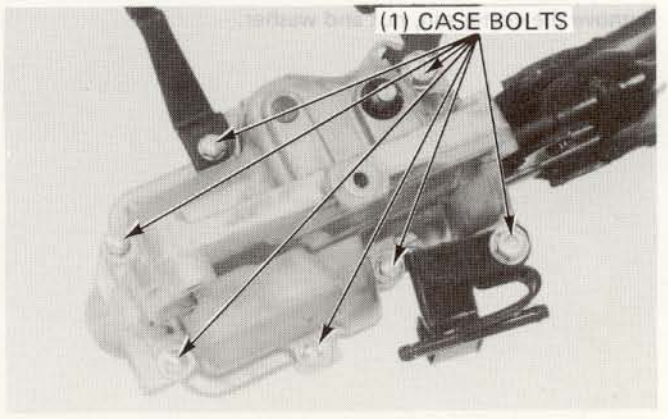
Remove the bolt and swing lock arm A.

NOTE

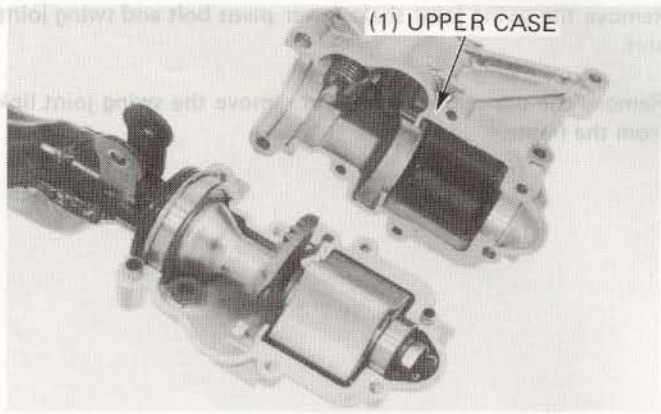
- Align the splits before removing the arm.



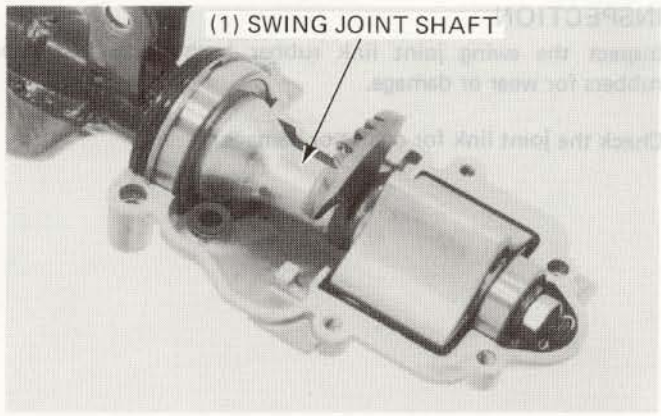
Remove the seven case bolts.



Remove the swing joint upper case.



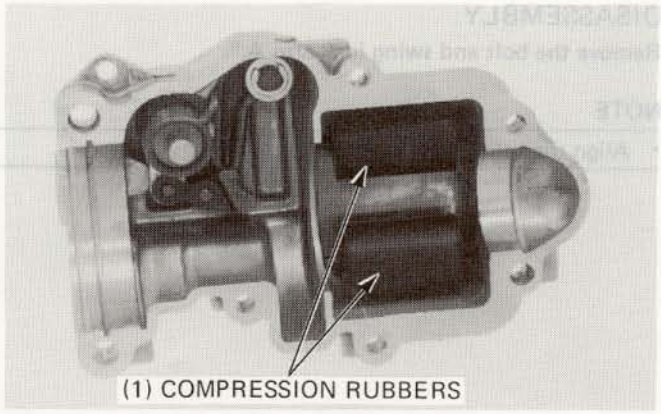
Remove the swing joint shaft from the lower case.



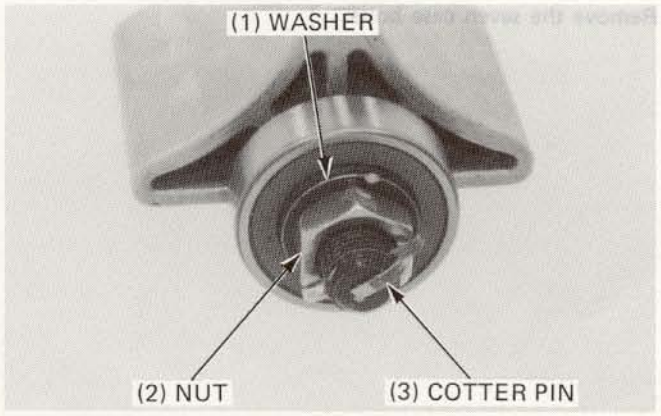
Remove the compression rubbers from the upper case.

NOTE

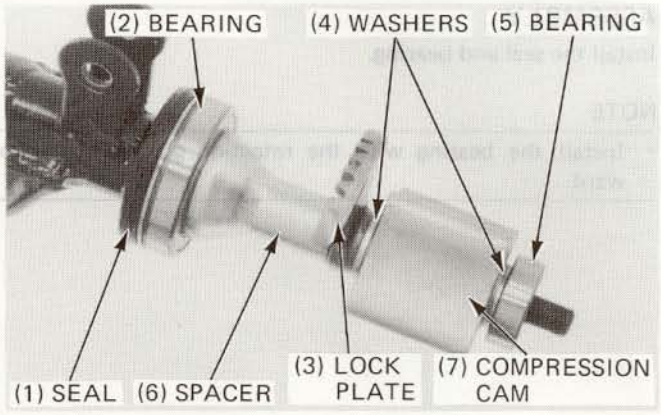
- The compression rubbers are made of natural rubber and will deteriorate, if they come in contact with oil or grease.



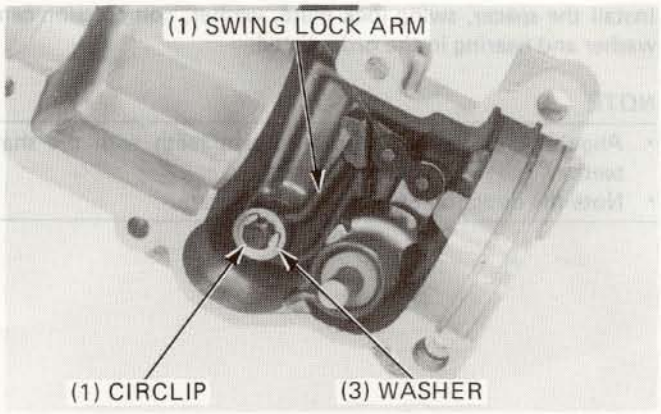
Remove the cotter pin, nut and washer.



Remove the bearing, washer, compression cam, washer, swing lock plate, spacer, bearing and seal from the shaft in the order listed.

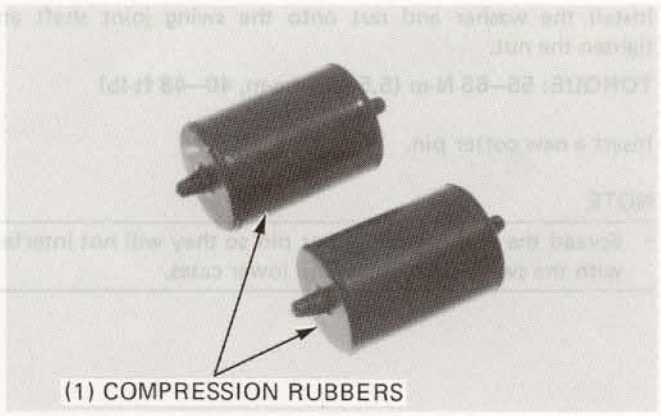


Remove the circlip and washer, then remove the swing lock arm from upper case.



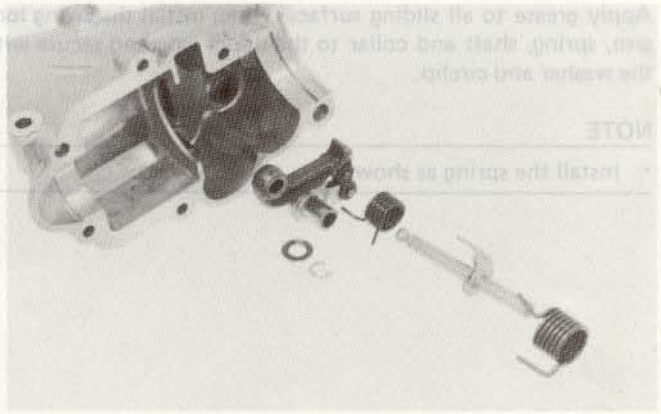
INSPECTION

Check each compression rubber for cracks or deterioration.



Check the swing lock plate teeth for wear or damage.

Inspect the swing lock pawl, shaft and bearing area for wear or damage.

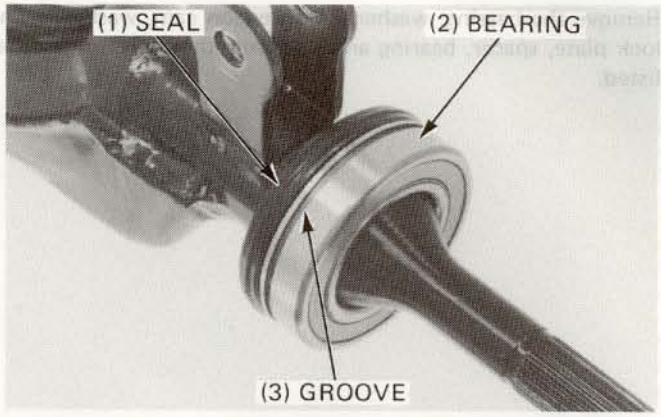


ASSEMBLY

Install the seal and bearing.

NOTE

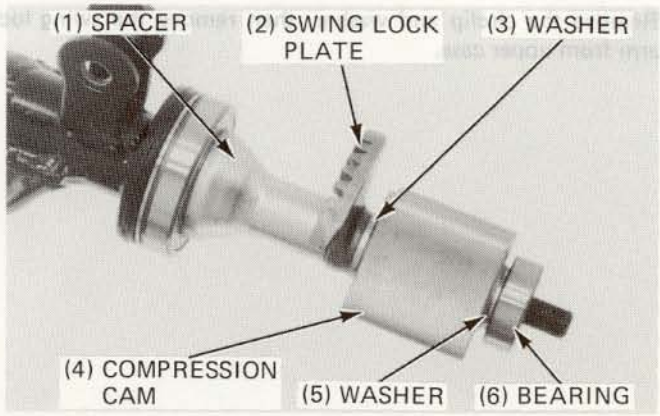
- Install the bearing with the retaining groove facing forward.



Install the spacer, swing lock plate, washer, compression cam, washer and bearing in the order listed.

NOTE

- Align the swing lock plate and cam teeth with the shaft teeth.
- Note the direction of the swing lock plate.



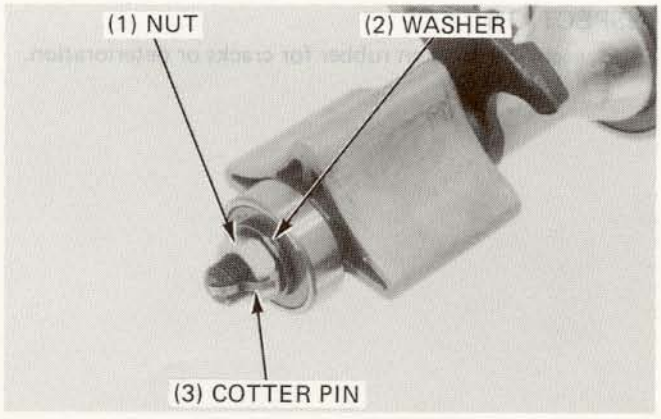
Install the washer and nut onto the swing joint shaft and tighten the nut.

TORQUE: 55–65 N·m (5.5–6.5 kg-m, 40–48 ft-lb)

Insert a new cotter pin.

NOTE

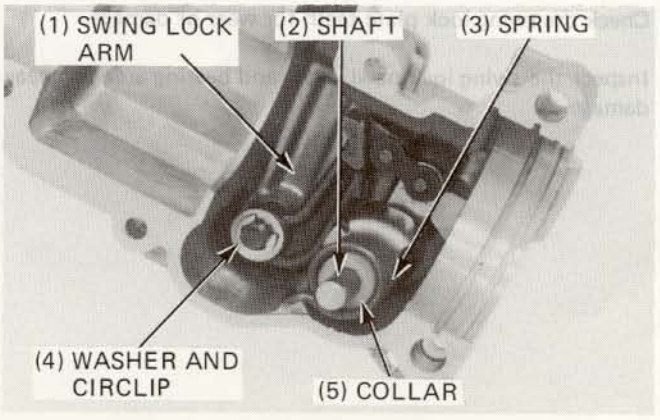
- Spread the ends of the cotter pin so they will not interfere with the swing joint upper and lower cases.



Apply grease to all sliding surfaces, then install the swing lock arm, spring, shaft and collar to the upper case and secure with the washer and circlip.

NOTE

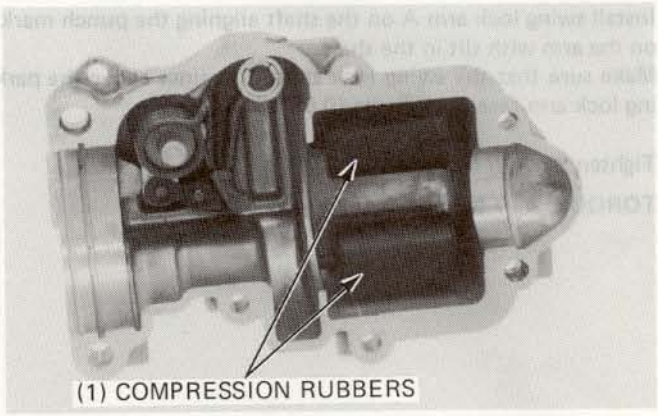
- Install the spring as shown.



Install the compression rubbers in the upper case.

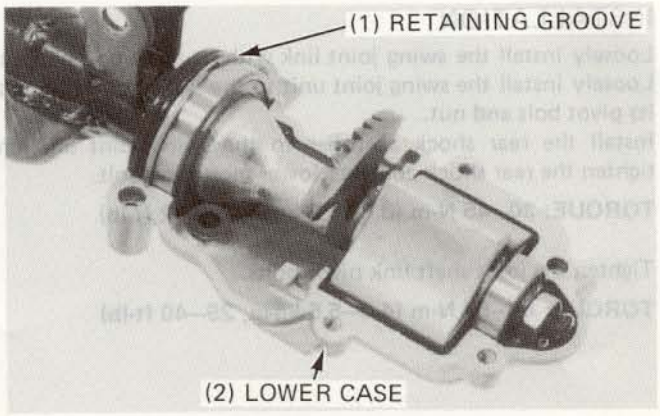
NOTE

- Keep grease or oil off the compression rubbers.



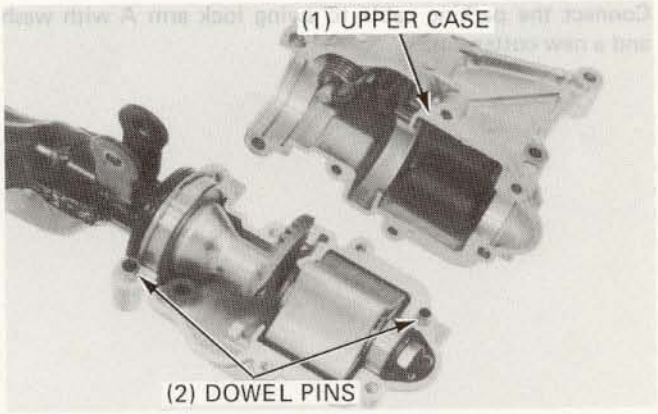
Set the bearing retaining rings in the groove of the shaft bearing.

Install the swing shaft assembly in the lower case.



Install the two dowel pins onto the lower case.

Apply sealing agent to the case mating surfaces and install the upper case onto the lower case.



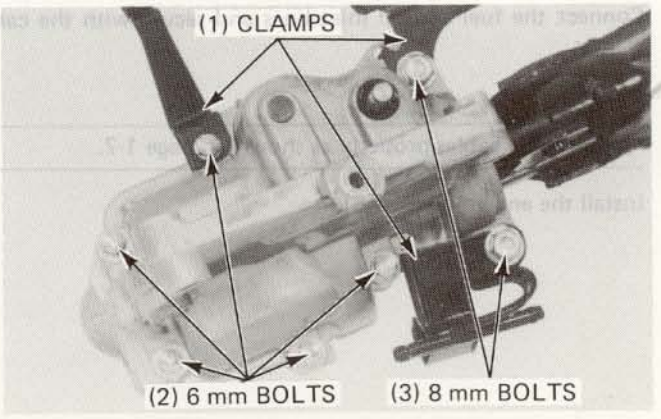
Install the two 8 mm bolts and five 6 mm SH bolts and tighten them.

TORQUES:

8 mm: 24–30 N·m (2.4–3.0 kg-m, 17–22 ft-lb)
6 mm: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

NOTE

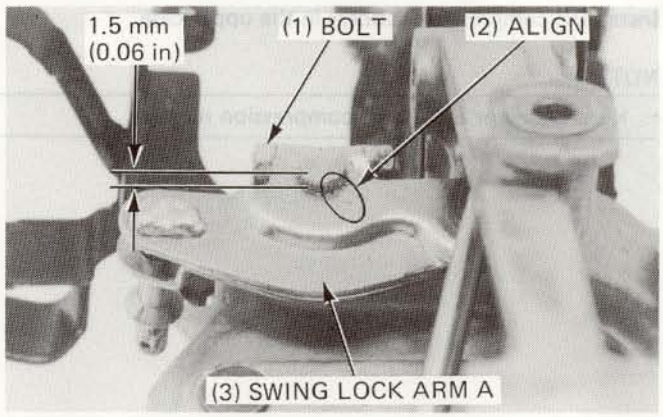
- Do not forget to install the clamps as shown.



Install swing lock arm A on the shaft aligning the punch mark on the arm with slit in the shaft.
Make sure that the swing lock shaft protrudes above the parking lock arm face by 1.5 mm (0.06 in) or less.

Tighten the arm bolt.

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



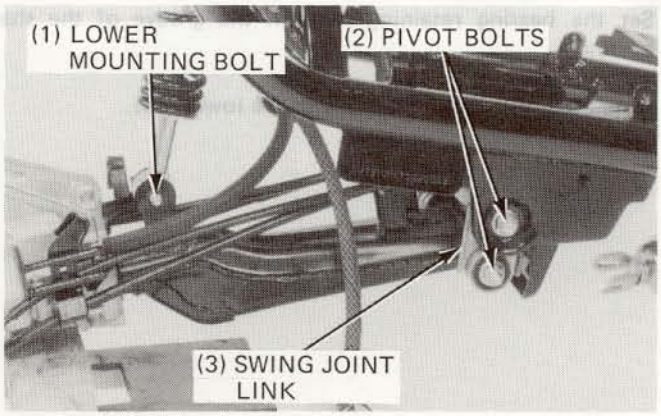
INSTALLATION

Loosely install the swing joint link with its pivot bolt and nut.
Loosely install the swing joint unit to the swing joint link with its pivot bolt and nut.
Install the rear shock absorber to the swing joint unit and tighten the rear shock absorber lower mounting bolt.

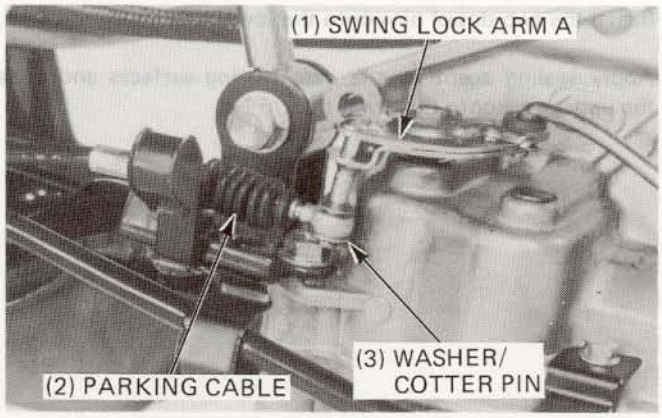
TORQUE: 30–45 N·m (3.0–4.5 kg-m, 22–32 ft-lb)

Tighten the joint shaft link pivot bolts.

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



Connect the parking cable to swing lock arm A with washer and a new cotter pin.

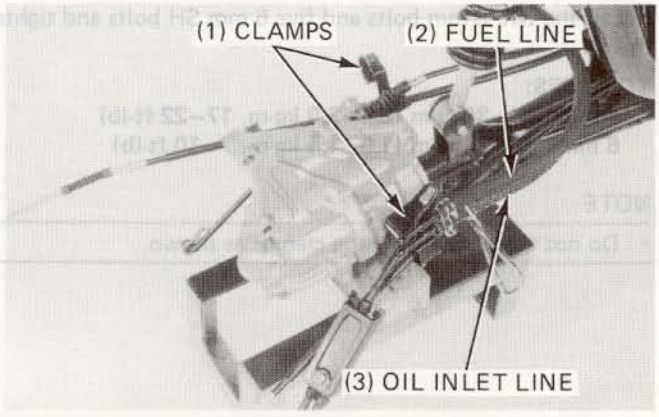


Connect the fuel and oil inlet lines and secure with the cable clamps.

NOTE

- Route the cables properly as shown on page 1-7.

Install the engine (section 5).



SERVICE INFORMATION

GENERAL

- Slow charge the battery whenever possible, quick charge is an emergency procedure only.
- Remove the battery from the scooter for charging. If the battery must be charged on the scooter, disconnect both battery cables.
- The battery on this scooter is a sealed type. Do not try to remove the filler hole caps even during charging. Do not use a non-sealed battery as a replacement.
- All charging system components can be checked on the scooter.

WARNING

- *Do not smoke, and keep flames away from a charging battery. The gas produced by a battery will explode if a flame or spark is brought near.*

CAUTION

- *For battery charging, do not exceed the charging current and time specified on the battery cover. Use of excessive current or charging time may damage the battery.*

- Ignition timing can not be adjusted since the CDI (Capacitive Discharge Ignition) unit is factory present.
- For spark plug inspection, refer to page 3-9.
- For alternator and pulse generator removal, refer to section 7.
- Some wires have different colored bands around them near the connector. These are connected to other wires which correspond with the band color.
- All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.
- The following color codes used are indicated throughout this section and on the wiring diagram.

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

- 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 scooter. Simply disconnect the wires and connect a continuity tester or volt-ohmmeter to the terminals or connections.
- A continuity tester is useful when checking to find out whether or not there is an electrical connection between the two points. An ohmmeter is needed to measure the resistance of a circuit, such as when there is a specific coil resistance involved, or when checking for high resistance caused by corroded connections.

SPECIFICATIONS

ITEM			STANDARD mm (in)		SERVICE LIMIT mm (in)
Battery	Capacity		12V–3AH		
	Voltage		13.0–13.2V		
	Charging current		0.4A		
	Charging time		5 hours		
Alternator capacity			91W/5,000 rpm		
Charging coil resistance	Yellow-Green		0.1–1.0 Ω		
	White-Green		0.1–1.5 Ω		
Spark plug			Standard	For cold climate (below 5°C, 41°F)	For extended high speed riding
		NGK	BPR6HSA	BPR4HSA	BPR8HSA
		ND	W20FPR-L	W14FPR-L	W24FPR-L
Spark plug gap			0.6–0.7 (0.024–0.028)		
Ignition coil resistance	Primary		0.2–0.3 Ω		
	Secondary		3.4–4.2 kΩ		
Ignition timing			14° BTDC		
Pulse generator resistance			10–100 Ω		
Exciter coil resistance			100–400 Ω		

TOOL

Special

Digital multimeter	07411–0020000 or KS–AHM–32–003 (U.S.A. only)

TROUBLESHOOTING

CHARGING SYSTEM

No current

- Dead battery.
  - Battery sulfation.
  - Internally shorted battery.
  - Charging system failure.
- Disconnected battery cable.
- Fuse burned out.
- Faulty ignition switch.

Low current

- Weak battery.
- Loose battery connection.
- Charging system failure.
- Faulty regulator/rectifier.

Intermittent current

- Loose:
  - Battery cable.
  - Charging system connection.
  - Connection or short circuit in lighting system.
  - Ignition system connection.

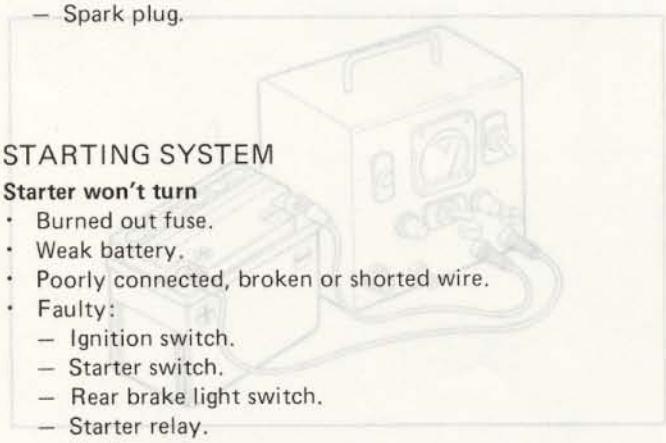
Charging system failure

- Loose, broken or shorted wire or connection.
- Faulty regulator/rectifier.
- Faulty alternator.

IGNITION SYSTEM

No spark at plug

- Poorly connected, broken or shorted wire.
  - Between pulse generator and CDI unit.
  - Between CDI unit and ignition coil.
  - Between CDI unit and ignition switch.
  - Between ignition coil and spark plug.
- Faulty:
  - Ignition switch.
  - Ignition coil.
  - CDI unit.
  - Pulse generator.
  - Spark plug.



Engine starts but runs poorly

- Ignition primary circuit.
  - Faulty ignition coil.
  - Loose or bare wire.
  - Poor connection at ignition switch.
- Ignition secondary circuit.
  - Faulty ignition coil.
  - Faulty spark plug.
  - Faulty spark plug wire.
  - Poorly insulated plug cap.
- Improper ignition timing.
  - Faulty pulse generator.
  - Stator not installed properly.
  - Faulty CDI unit.

STARTING SYSTEM

Starter won't turn

- Burned out fuse.
- Weak battery.
- Poorly connected, broken or shorted wire.
- Faulty:
  - Ignition switch.
  - Starter switch.
  - Rear brake light switch.
  - Starter relay.
  - Starter motor.

Lack of power

- Weak battery.
- Loose or bare wire.
- Faulty starter or starter gear.

Starter rotates, but engine does not start

- Faulty starter pinion.
- Low battery.

BATTERY

REMOVAL/INSTALLATION

Open the seat and remove the rear compartment.
Remove the battery holder bolt.
Disconnect the battery negative cable firsty, then positive cable.
Remove the battery.

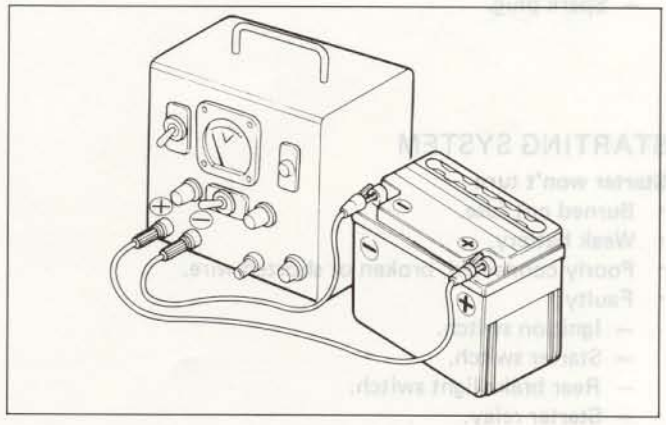
Install the battery in the reverse order of removal.

VOLTAGE

Remove the seat, rear compartment and remove the battery positive terminal cover.
Measure the battery voltage using a digital multimeter 07411–0020000 or KS–AHM–32–003 (U.S.A. only).

VOLTAGE: Fully charged 13.0–13.2V
Under charged Below 12.3V

CHARGING



Remove the battery cables and the battery.
Connect the charger positive (+) cable to the battery positive (+) terminal.
Connect the charger negative (–) cable to the battery negative (–) terminal.

Charging current: 0.4A (standard)
Charging time: 5 hours (standard)

WARNING

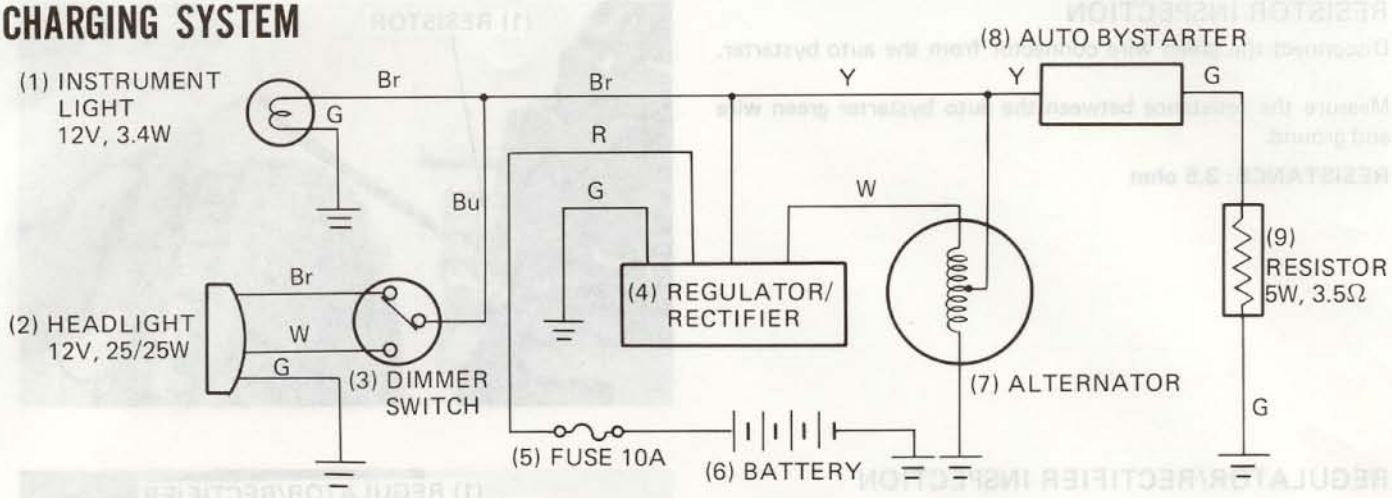
- *Keep flames and sparks away from a charging battery.*
- *Turn power ON/OFF at the charger, not at the battery terminals.*

CAUTION

- *Quick-charging should only be done in an emergency; slow charging is preferred.*
- *For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.*

After installing the cables, coat the terminals with clean grease.

CHARGING SYSTEM



ALTERNATOR

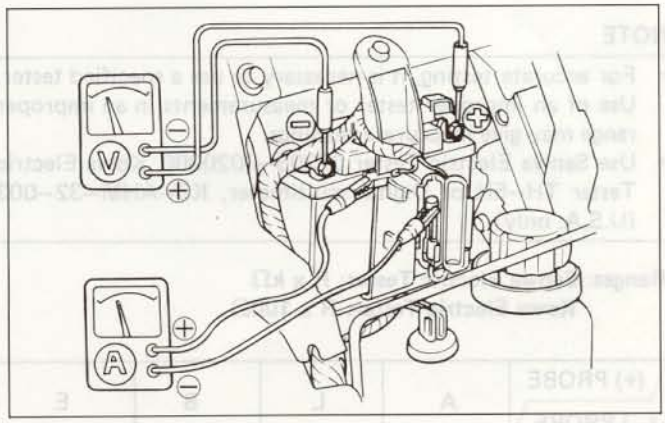
- **PERFORMANCE TEST**

Warm up the engine before taking readings.
Raise the seat.

NOTE

- Use a fully charged 12V battery to check the charging system output.

Stop the engine and open the fuse holder.
Disconnect one end of the fuse at the terminal, and connect an ammeter between the fuse and terminal as shown.



NOTE

- Do not allow the fuse holder lead (red) and tester probes to touch any metal parts.

Connect a voltmeter between the positve (+) and negative (–) terminals of the battery.
Start the engine, gradually increase engine speed and read the ammeter and voltmeter. The readings should be 0A min. and 14–15V.
If the readings do not meet 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.

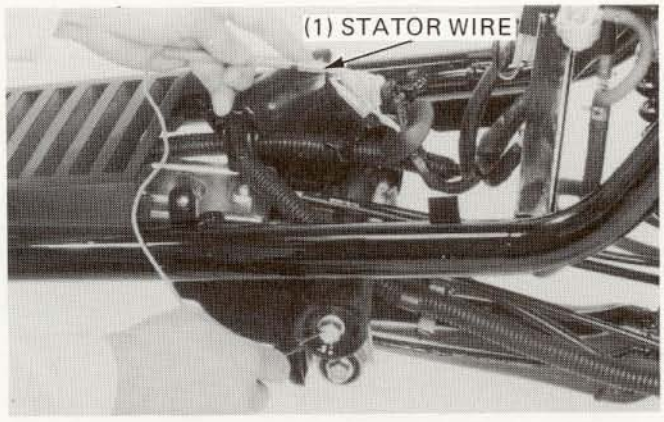
- **RESISTANCE TEST**

NOTE

- This test can be made without removing the stator from the engine.

Remove the body center cover (page 10-4).
Disconnect the alternator and auto bystarter wire connectors.
Measure the resistance between the stator yellow wire terminal and ground, and the white wire terminal and ground.

RESISTANCE: W and ground: 0.1–1.5 ohm
Y and ground: 0.1–1.0 ohm



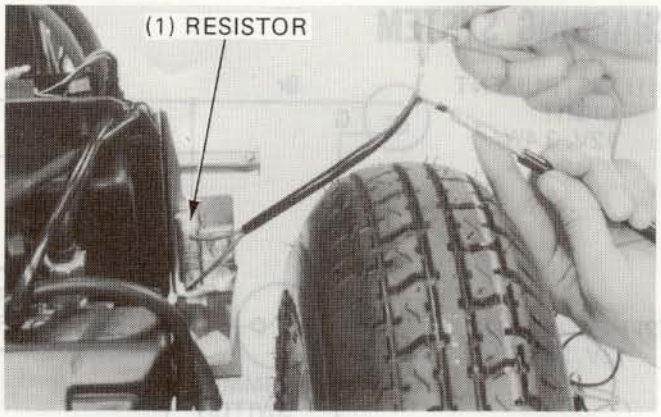
For alternator replacement, refer to page 7-3.

RESISTOR INSPECTION

Disconnect the green wire connector from the auto bystarter.

Measure the resistance between the auto bystarter green wire and ground.

RESISTANCE: 3.5 ohm



REGULATOR/RECTIFIER INSPECTION

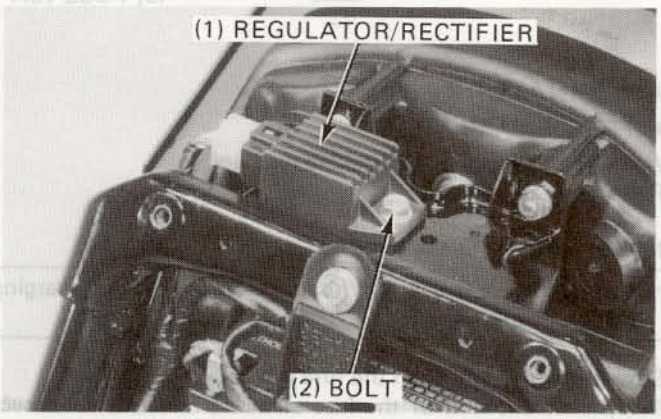
Remove the rear cowl (page 10-4).
Remove the bolt, disconnect the coupler and remove the regulator/rectifier.
Measure the resistance between each terminals with an ohmmeter. Replace the regulator/rectifier if the readings do not fall within the limits shown in the chart below.

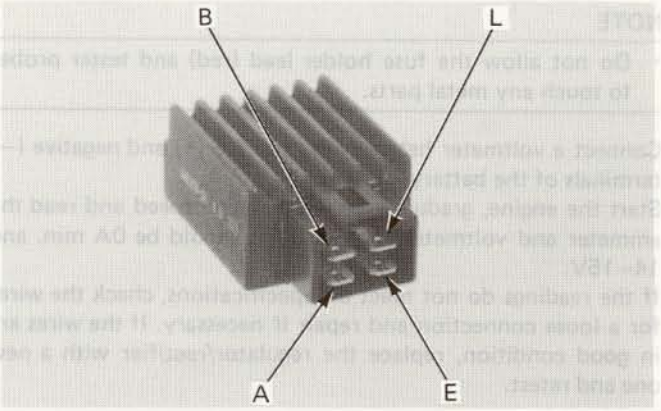
NOTE

- For accurate testing, it is necessary to use a specified tester. Use of an improper tester or measurements in an improper range may give inaccurate readings.
- Use Sanwa Electric Tester 07308–0020000, Kowa Electric Tester TH–5H or Digital multimeter, KS–AHM–32–003 (U.S.A. only).

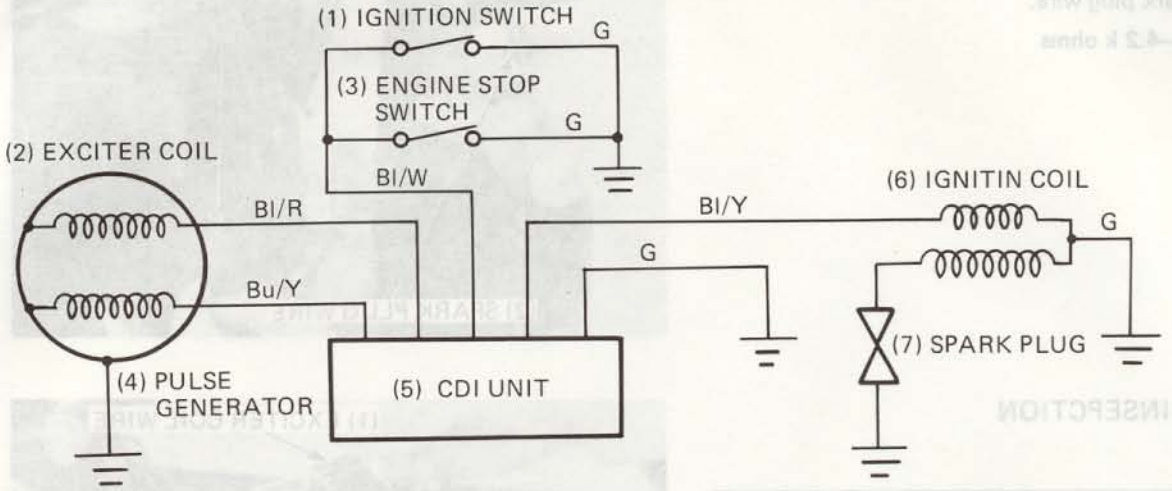
Ranges: Sanwa Electric Tester: R x kΩ
Kowa Electric Tester: R x 100Ω

(+) PROBE / (–) PROBE	A	L	B	E
A		∞	0.5–100	∞
L	∞		∞	5–100
B	∞	∞		∞
E	∞	5–100	∞	





IGNITION SYSTEM



SPARK PLUG

For spark plug inspection, refere to page 3-10.

IGNITION COIL INSPECTION

Remove the engine cover (page 10-5).

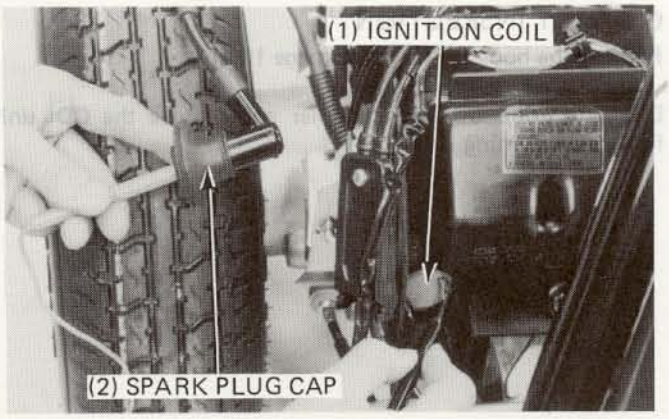
Disconnect the ignition coil wires and remove the spark plug cap from the spark plug.

Measure the resistance between the ignition coil primary wire terminals.

RESISTANCE: 0.2–0.3 ohm

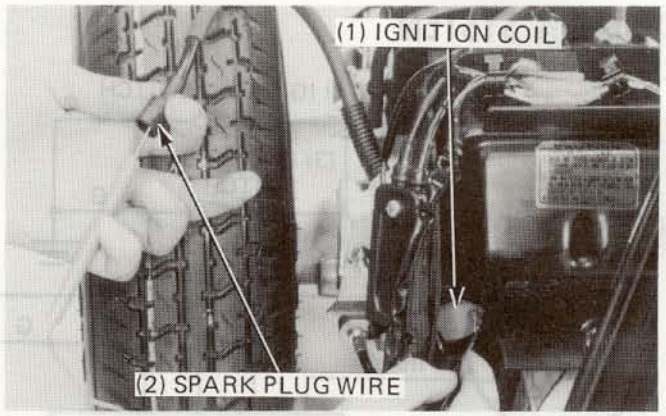
Measure the resistance between the ignition coil primary terminal (–) and spark plug cap.

RESISTANCE: 8.2–9.3 k ohms



Remove the spark plug cap from the spark plug wire and measure the resistance between the ignition coil primary wire terminal (–) and spark plug wire.

RESISTANCE: 3.4–4.2 k ohms



EXCITER COIL INSEPCTION

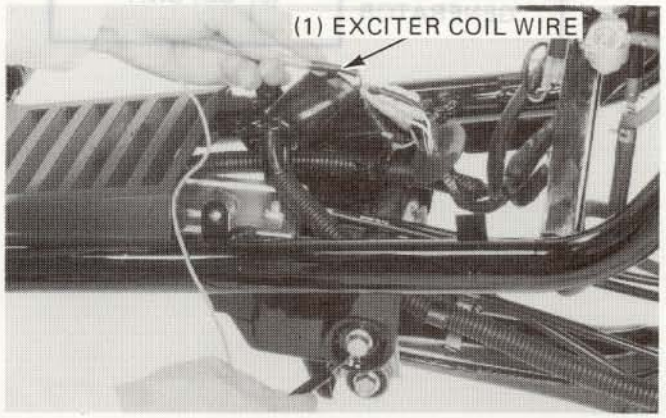
NOTE

- This test can be performed with the stator installed in the engine.

Remove the body center cover (page 10-4).
Disconnect the exciter coil wire connector (BI/R) and measure the resistance of the exciter coil.

RESISTANCE: 100–400 ohms

Refer to page 7-3 for exciter coil replacement.

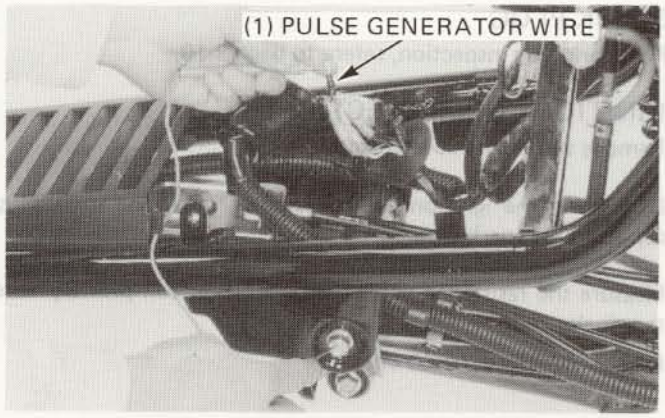


PULSE GENERATOR

Disconnect the pulse generator wire connector (Bu/Y) and measure the resistance between the connector and ground.

RESISTANCE: 10–100 ohms

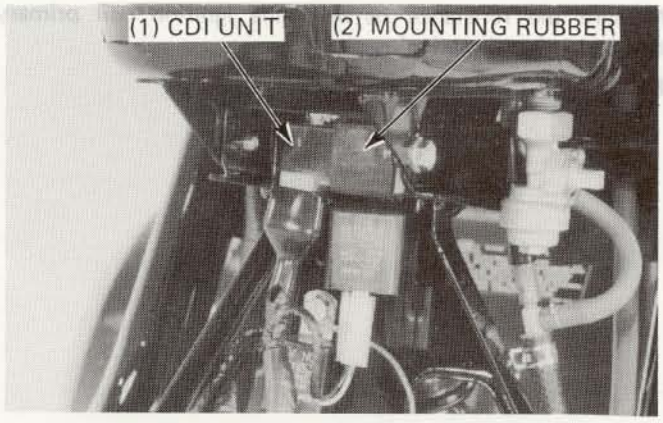
Refer to page 7-3 for pulse generator replacement.



CDI UNIT INSPECTION

Remove the body center cover (page 10-4).

Disconnect the CDI unit coupler and remove the CDI unit from its mounting rubber.



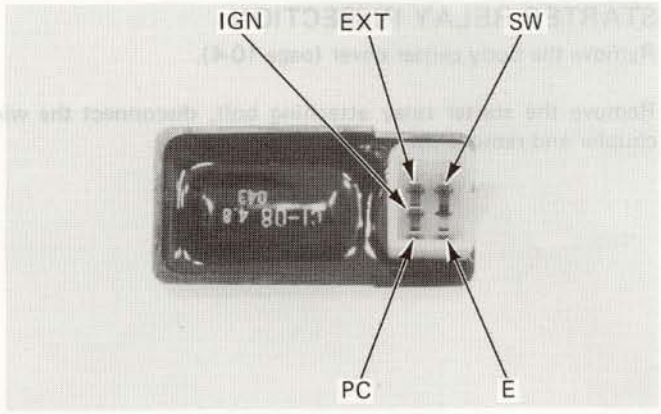
Measure the resistance between the terminals.

Replace the CDI unit if the readings are not within the specifications in the table below.

NOTE

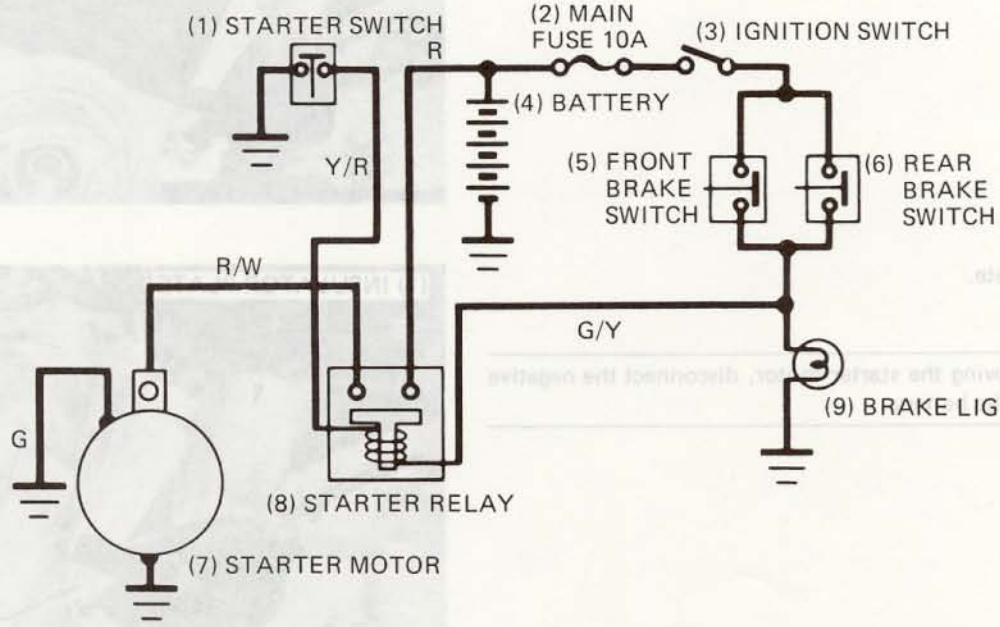
- For accurate testing, it is necessary to use a specified tester. Use of an improper tester or measurements in an improper range may give false readings.
- Use a Sanwa Electical Tester 07308–0020000 or Kowa Electric Tester TH–5H, or Digital multimeter KS–AHM–003 (U.S.A. only).
- In the table, "Needle swings then returns" indicates that there is a charging current applied to a condenser. The needle will then remain at "∞" unless the condenser is discharged.

Use the xkΩ range for Sanwa tester.
Use the x100Ω range for Kowa tester.



(+)PROBE / (–)PROBE	SW	EXT	PC	E	IGN
SW		∞	∞	∞	∞
EXT	0.1–10		∞	∞	"Needle swings then returns"
PC	10–∞	10–200		1–100	∞
E	1–100	0.1–20	∞		∞
IGN	∞	∞	∞	∞	

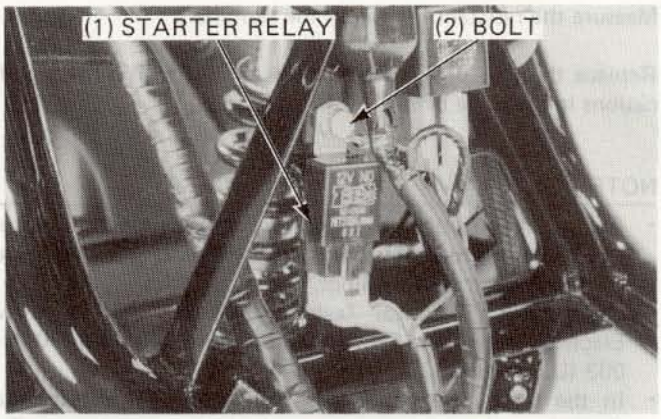
STARTING SYSTEM



STARTER RELAY INSPECTION

Remove the body center cover (page 10-4).

Remove the starter relay attaching bolt, disconnect the wire coupler and remove the starter relay.

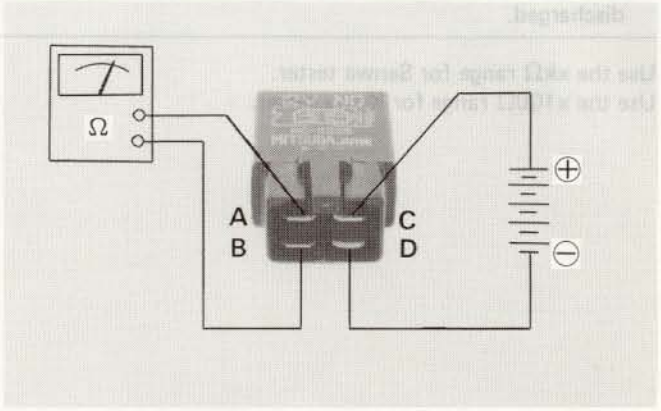


Connect an ohmmeter or continuity tester between the A and B terminals of the starter relay.

Connect the 12V battery positive wire to the starter relay C terminal and battery negative wire to the starter relay D terminal using jumper wires.

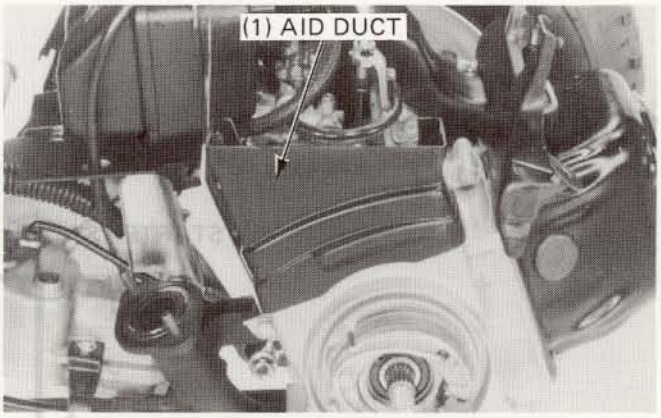
Check for continuity between the starter relay A and B terminals.

Replace the starter relay with a new one if there is no continuity.

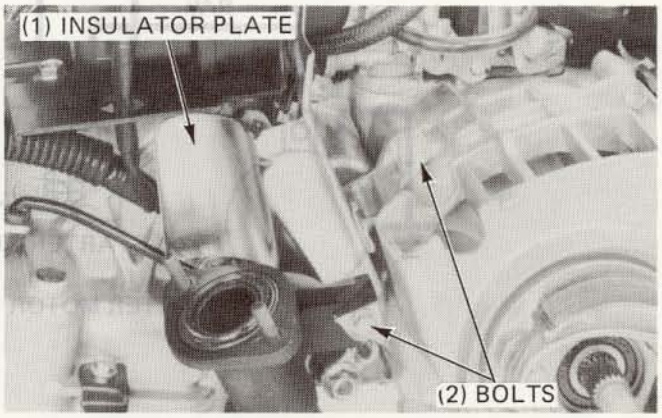


STARTER MOTOR REMOVAL

Remove the following:
- engine cover (page 10-5).
- left rear wheel (page 12-2).
- air duct.



- insulator plate.



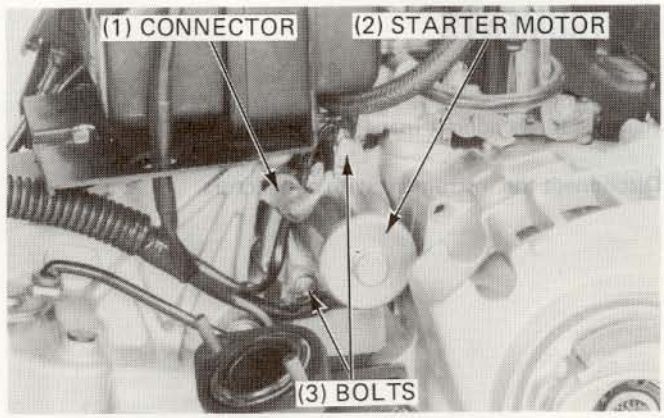
NOTE

- Before removing the starter motor, disconnect the negative cable from the battery.

Remove the two starter motor mounting bolts and the starter motor.

Disconnect the starter motor wire connector from the motor.

Remove the O-ring from the starter motor.



STARTER MOTOR INSPECTION

Connect the battery positive wire to the starter motor wire terminal and battery negative wire to the motor body and check its operation.

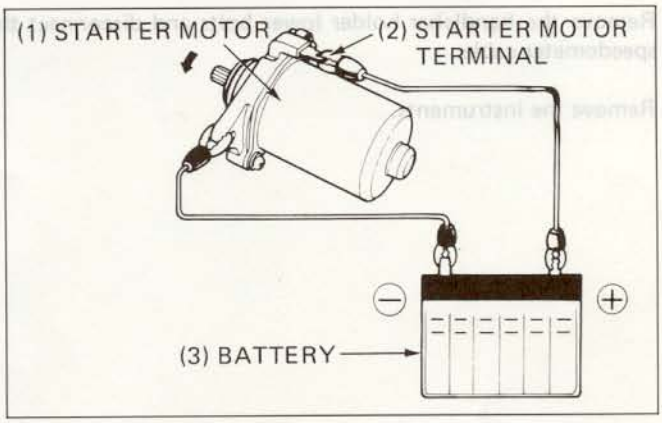
NOTE

- Be careful to observe polarity.

The motor should turn clockwise (View from shaft side).

NOTE

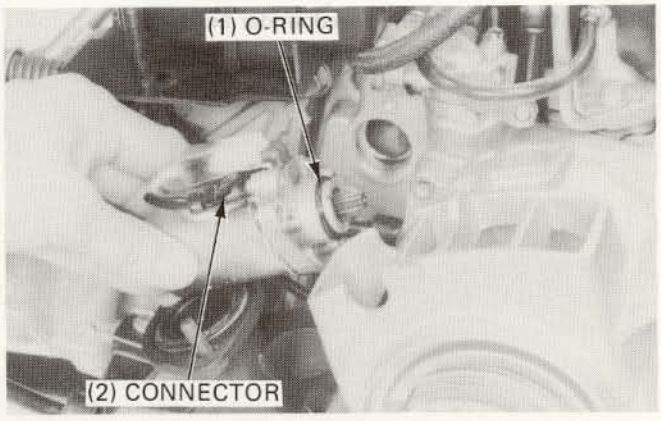
- Do not try to disassemble the starter motor.



INSTALLATION

Apply grease to a new O-ring and install onto the starter motor.

Connect the starter motor wire to the motor terminal.

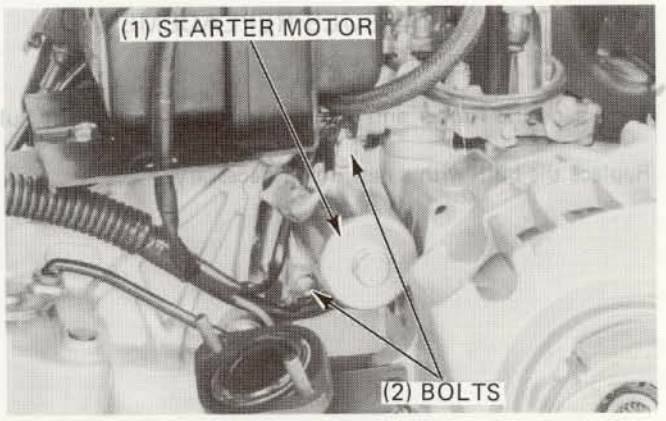


Install the starter motor and tighten the two mounting bolts.

NOTE

- Tighten the ground wire together with the lower mounting bolt.

Install the removed parts in the reverse order of removal.

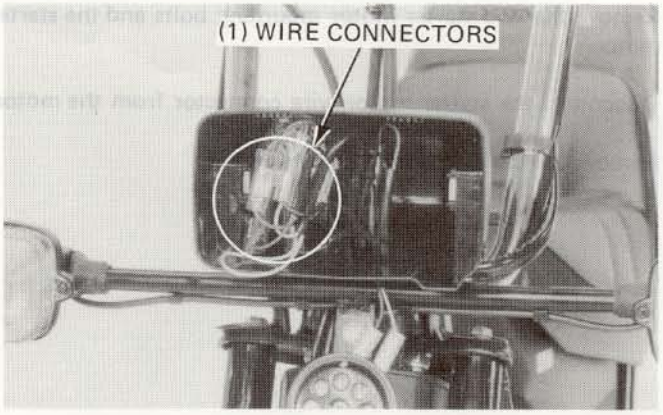


INSTRUMENTS

REMOVAL

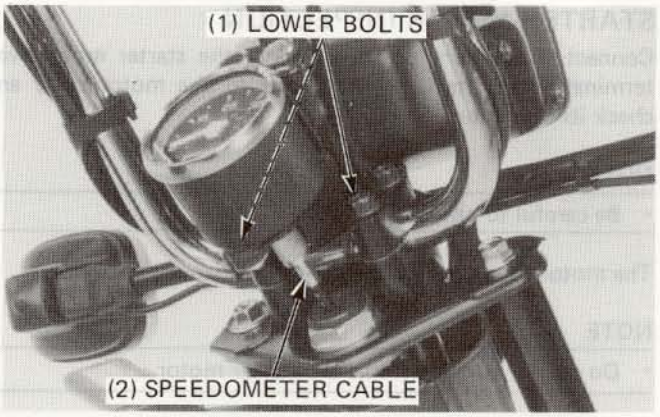
Remove the headlight (page 14-15).

Disconnect the instrument wire connectors.

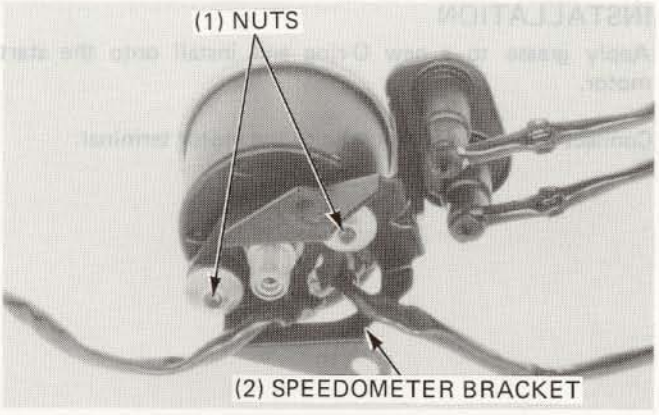


Remove the handlebar holder lower bolts and disconnect the speedometer cable.

Remove the instruments.



Remove the two nuts and speedometer bracket.

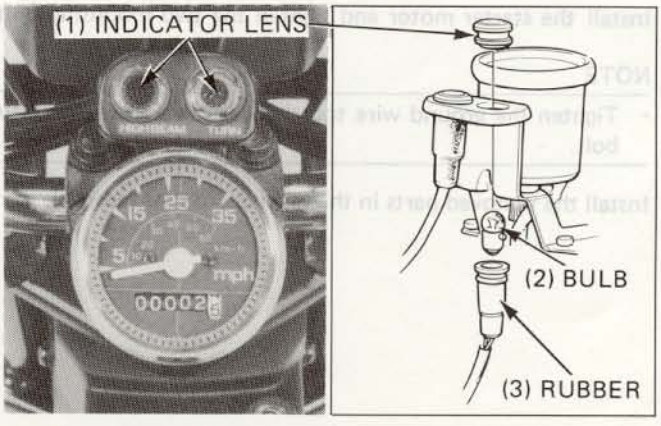


INDICATOR LIGHT BULB REPLACEMENT

Remove the indicator light lens.

Slide back the rubber and turn the socket to remove the bulb.

Replace the bulb with a new one if necessary.



IGNITION SWITCH

INSPECTION

Remove the floor board (page 10-2).

Disconnect the ignition switch coupler.

Check for continuity between the terminals.

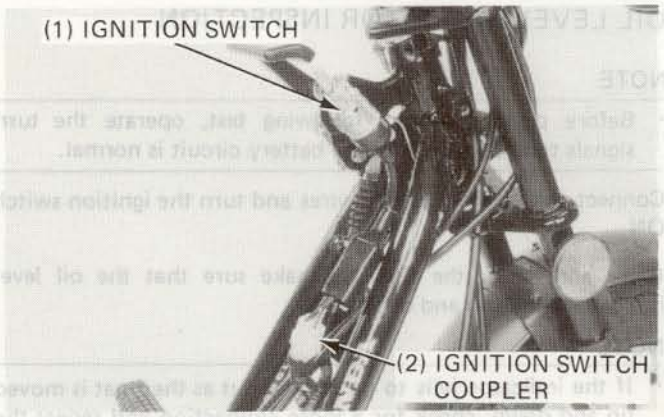
Continuity should exist between color coded wires indicated by interconnecting circles on the chart below.

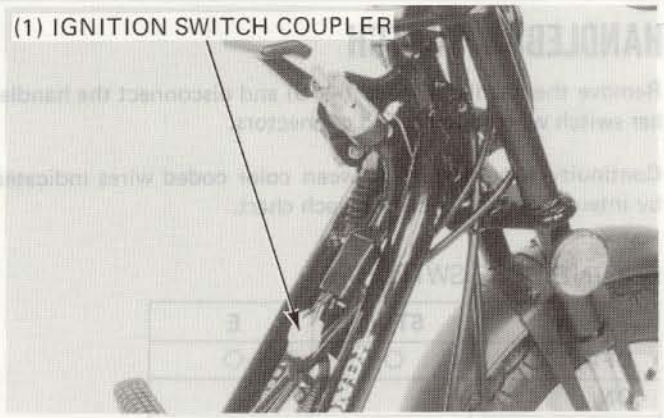
Terminal	BAT1	BAT2	IG	E
ON	○	○		
OFF			○	○
LOCK			○	○
COLOR CODE	R	BI	BI/W	G

REMOVAL

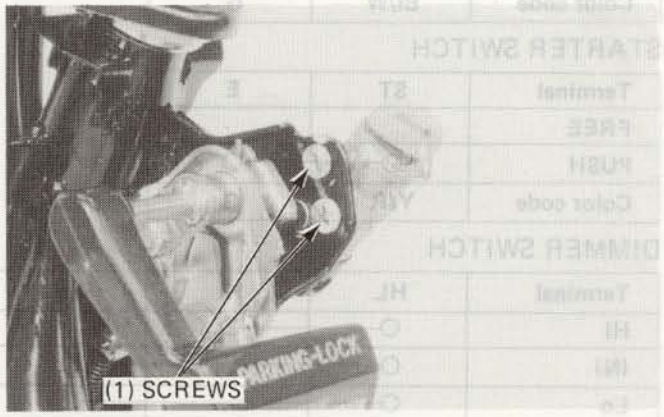
Remove the floor board (page 10-2).

Disconnect the ignition switch coupler.





Remove the two screws attaching the ignition switch and remove the ignition switch.



OIL LEVEL SENSOR/INDICATOR

OIL LEVEL SENSOR

Disconnect the oil level sensor wire connectors and pull out the sensor.

Check for continuity between the sensor terminals with the float in upper and lower positions.

Continuity should exist with the float in the lower position and should no exist with the float in the upper position.

OIL LEVEL INDICATOR INSPECTION

NOTE

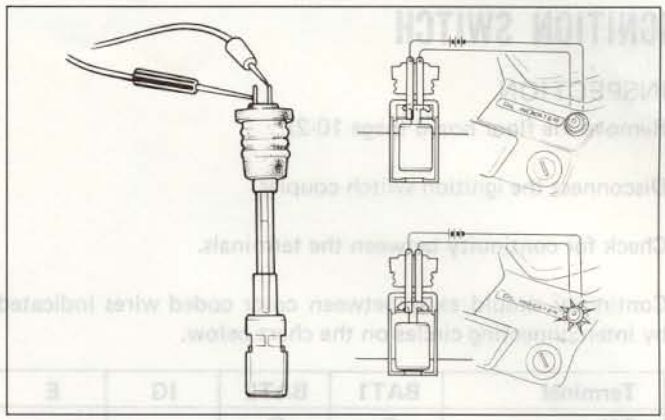
- Before performing the following test, operate the turn signals to determine that the battery circuit is normal.

Connect the oil level sensor wires and turn the ignition switch ON.

Raise and lower the float to make sure that the oil level indicator blinks on and off.

NOTE

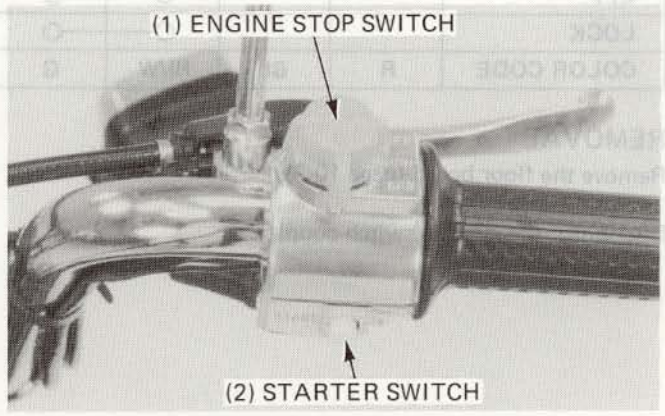
- If the indicator fails to go on and out as the float is moved up and down, check for a loose connection and repeat the above procedure.



HANDLEBAR SWITCH

Remove the headlight (page 14-15) and disconnect the handlebar switch wire couplers and connectors.

Continuity should exist between color coded wires indicated by interconnecting circles on each chart.

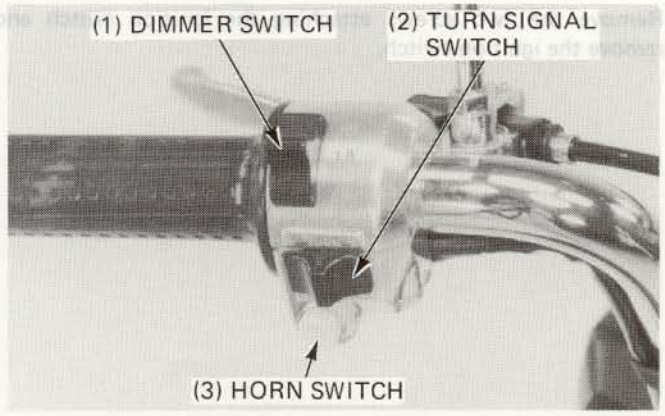


ENGINE STOP SWITCH

Terminal	STOP	E
OFF	○	○
ON		
OFF	○	○
Color code	Bl/W	G

STARTER SWITCH

Terminal	ST	E
FREE		
PUSH	○	○
Color code	Y/R	G



DIMMER SWITCH

Terminal	HL	Hi	Lo
HI	○	○	
(N)	○	○	○
Lo	○		○
Color code	Br	Bu	W

TURN SIGNAL SWITCH

Terminal	W	R	L
R	○	○	
N			
L	○		○
Color code	Gr	Lb	O

HORN SWITCH

Terminal	Ho	BAT2
FREE		
PUSH	○	○
Color code	Lg	Bl

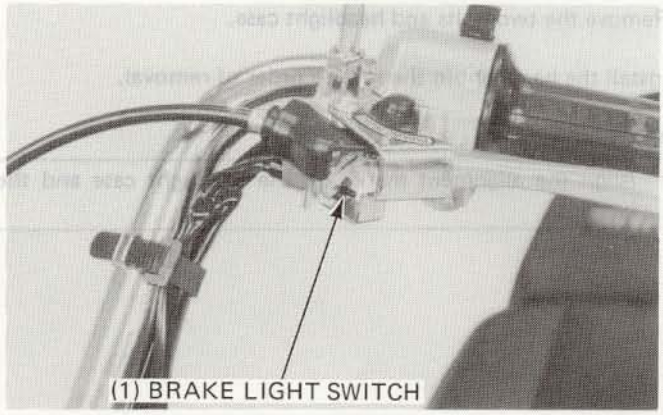
BRAKE LIGHT SWITCH

Remove the headlight and disconnect the brake light switch wire connectors.

Check for continuity between the switch terminals.

The switch is normal if there is continuity between the terminals when the brake lever is pulled on.

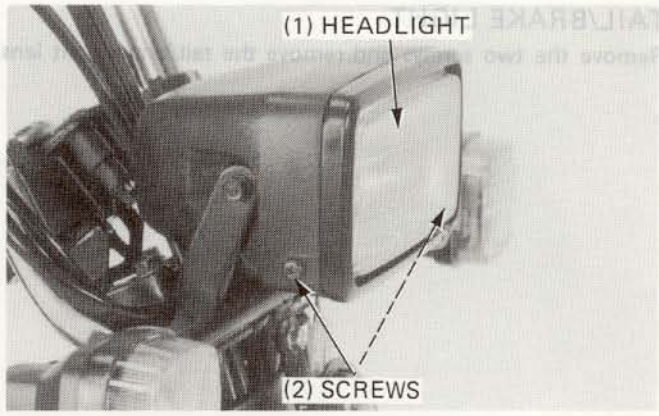
Replace the switch if it is faulty.



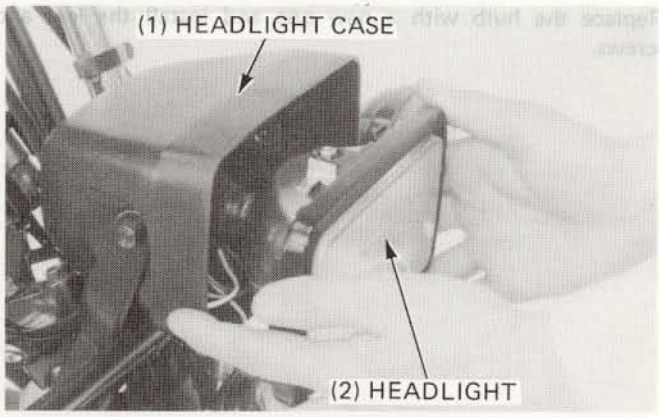
BULBS

HEADLIGHT

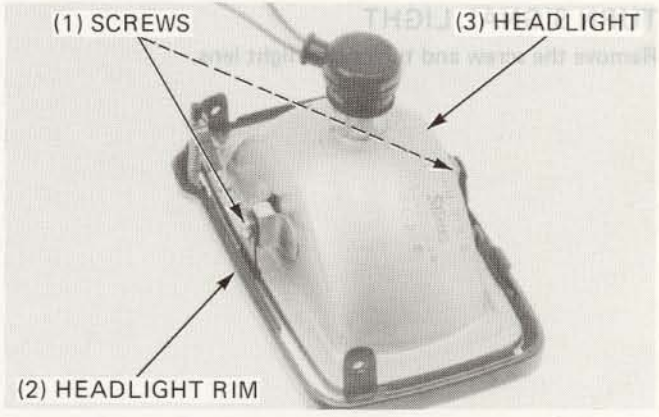
Remove the two screws and headlight from the headlight case.



Disconnect the headlight wire connectors and remove the headlight from the headlight case.



Remove the screws and headlight rim from the headlight.

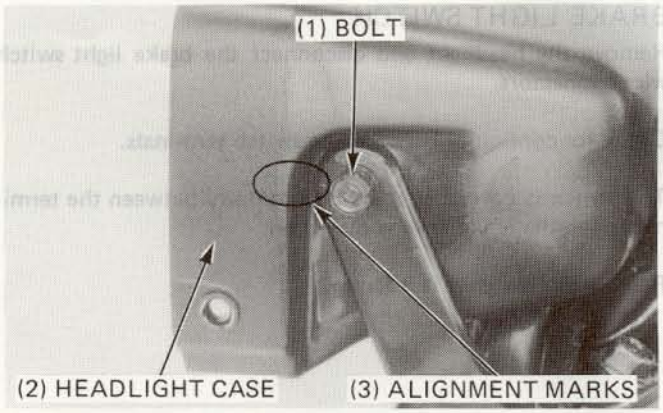


Remove the two bolts and headlight case.

Install the headlight in the reverse order of removal.

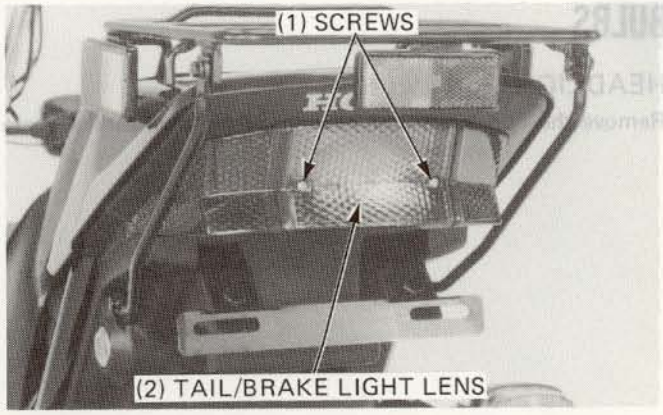
NOTE

- Align the alignment marks on the headlight case and the bracket.



TAIL/BRAKE LIGHT

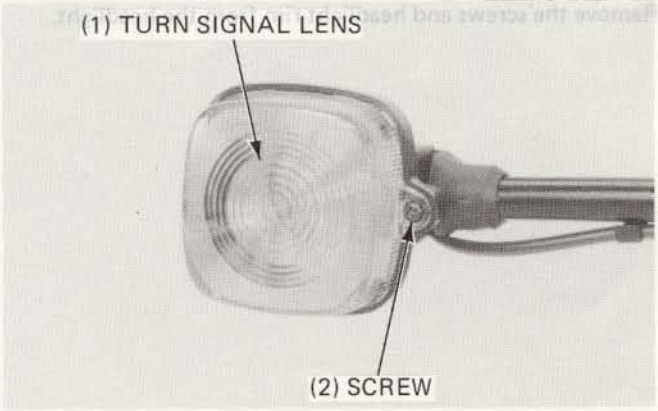
Remove the two screws and remove the tail/brake light lens.



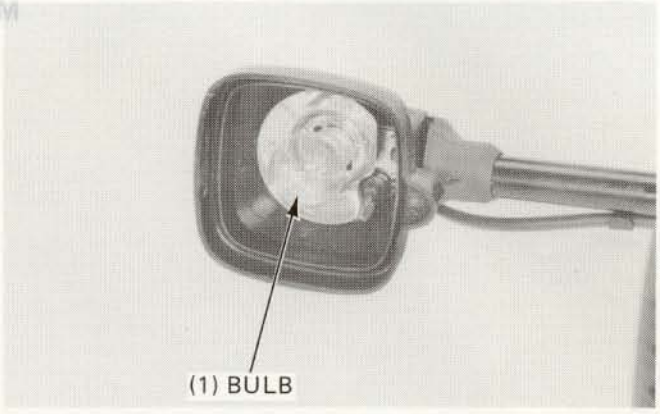
Replace the hulb with a new one and install the lens and screws.

TURN SIGNAL LIGHT

Remove the screw and turn signal light lens.



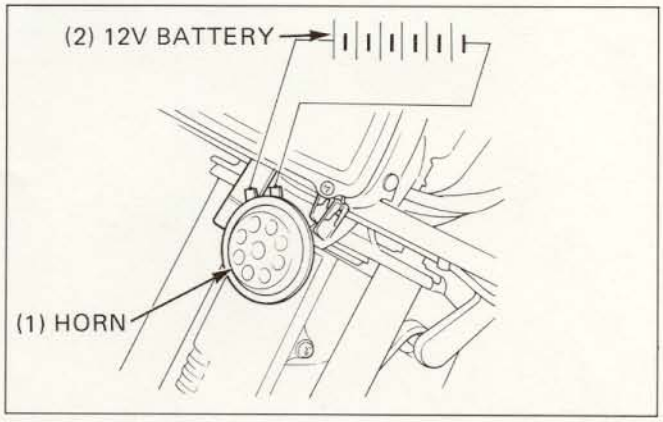
Replace the bulb with a new one and install the lens and screw.



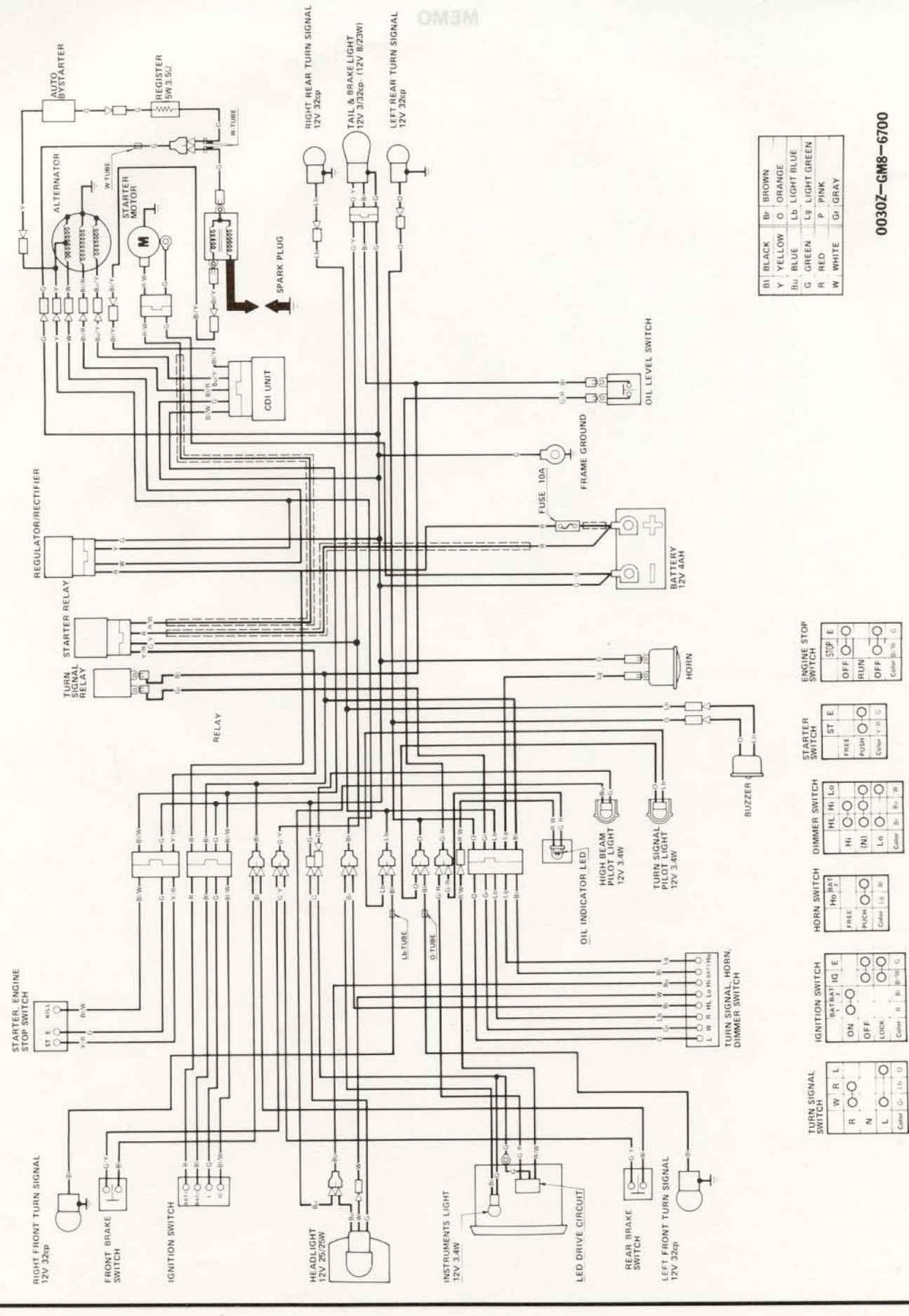
HORN

Disconnect the horn with connectors.

The horn is normal if it sounds when a 12V battery is connected across the horn wire terminals.
Replace the horn if necessary.



MEMO



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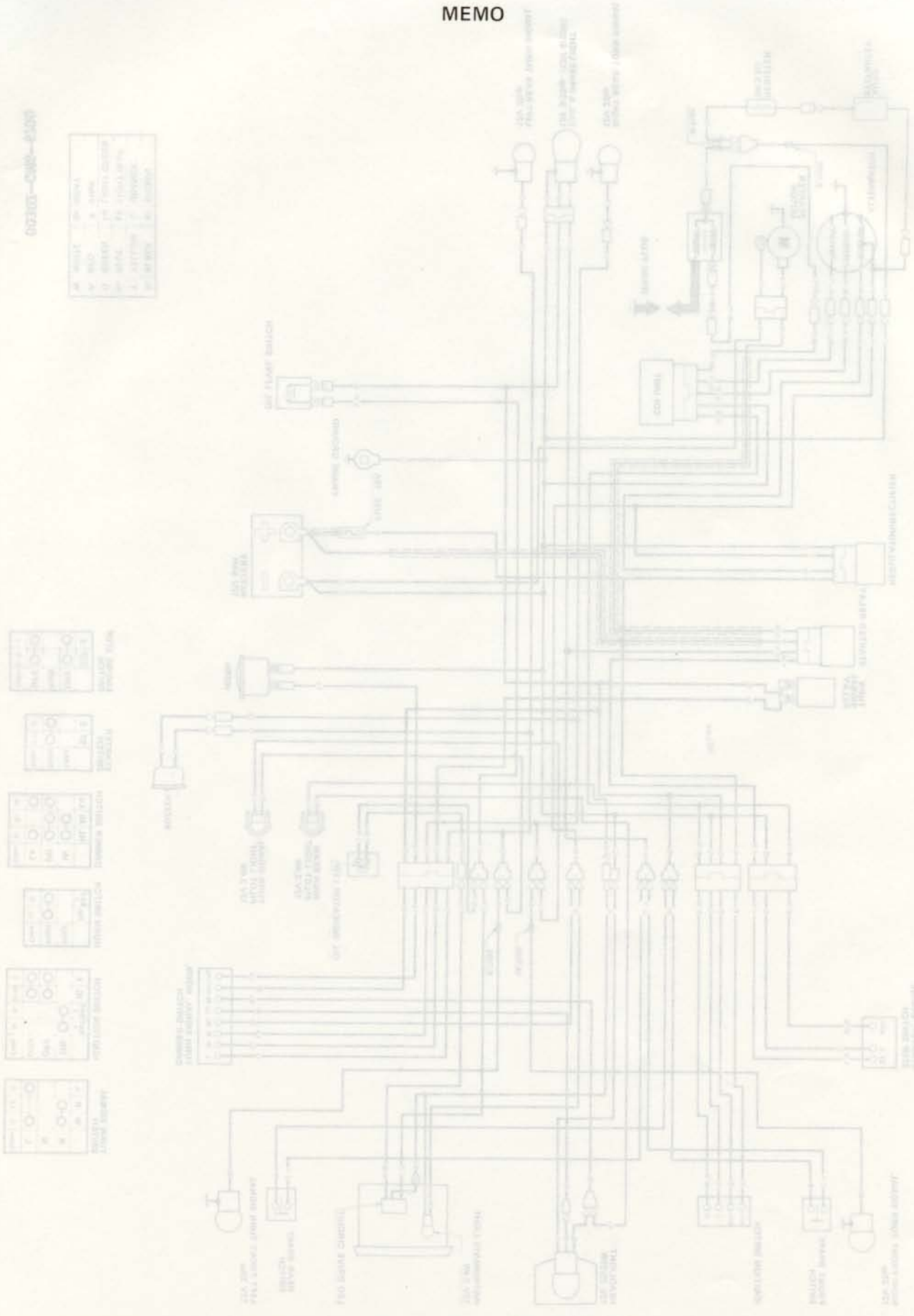
15

MEMO



ENGINE DOES NOT START OR IS HARD TO START

		Probable Cause
1. Check if fuel is getting to carburetor by loosening drain screw	NO FUEL TO CARBURETOR →	(1) No fuel in the tank (2) Clogged fuel line to the carburetor, vacuum tube up to the inlet pipe, or fuel pipe. (3) Clogged float valve (4) Clogged fuel tank cap breather hole (5) Clogged fuel strainer (6) Clogged fuel filter
FUEL TO CARBURETOR ↓		
2. Try spark test	WEAK OR NO SPARK →	(1) Faulty spark plug (2) Fouled spark plug (3) Faulty CDI unit (4) Faulty alternator (5) Broken or shorted spark plug wire (6) Broken or shorted ignition coil (7) Faulty ignition switch
SPARK JUMPS ↓		
3. Test cylinder compression	LOW COMPRESSION →	(1) Stuck piston rings (2) Faulty or deteriorated reed valve (3) Worn cylinder and piston rings (4) Faulty cylinder or cylinder head casting (5) Compression leak into crankcase (6) Leaking cylinder head gasket
NORMAL COMPRESSION ↓		
4. Start by following normal starting procedure	ENGINE FIRES BUT SOON STOPS →	(1) Faulty auto bystarter (2) Air leaking past intake pipe (3) Improper ignition timing (4) Carburetor air screw out of adjustment
ENGINE DOES NOT FIRE ↓		
5. Remove spark plug	WET PLUG →	(1) Carburetor overflooded (2) Faulty auto bystarter (3) Throttle valve open excessively (4) Water in fuel line (5) Deteriorated fuel in float chamber
DRY		

16

ENGINE LACKS POWER

		Probable Causes
1. Lightly accelerate engine ENGINE SPEED INCREASES	ENGINE SPEED DOES NOT INCREASE SUFFICIENTLY →	(1) Clogged air cleaner (2) Restricted fuel flow (3) Clogged fuel tank cap breather hole (4) Clogged muffler
2. Check ignition timing CORRECT	INCORRECT →	(1) Faulty CDI unit (2) Faulty alternator
3. Test cylinder compression by operating the starter NORMAL	TOO LOW →	(1) Worn cylinder or piston rings (2) Blown cylinder head gasket (3) Flaws in cylinder or cylinder head (4) Faulty or deteriorated reed valve
4. Check carburetor for clogging NOT CLOGGED	CLOGGED →	Carburetor not serviced frequently enough
5. Remove spark plug NOT FOULED OR DISCOLORED	FOULED OR DISCOLORED →	(1) Plug not replaced frequently enough (2) Use of plug with improper heat range
6. Check if engine overheats NOT OVERHEATED	OVERHEATED →	(1) Worn cylinder or piston (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
7. Try rapid acceleration or run at high speed ENGINE DOES NOT KNOCK	ENGINE KNOCKS →	(1) Excessive carbon build-up in combustion chamber (2) Use of improper grade of fuel (3) Clutch slipping (4) Fuel-air mixture too lean (5) Ignition timing too early

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

		Probable Cause
1. Check ignition timing	INCORRECT →	(1) Faulty CDI unit (2) Faulty alternator
CORRECT ↓		
2. Check carburetor air screw for proper adjustment	INCORRECT →	(1) Fuel-air mixture too rich (Screw out to correct) (2) Fuel-air mixture too lean (Screw in to correct)
CORRECT ↓		
3. Check if air is leaking past intake pipe	LEAKING →	(1) Deteriorated insulator gasket (2) Loose carburetor (3) Deteriorated intake pipe gasket (4) Deteriorated insulator O-ring
NOT LEAKING ↓		
4. Try spark test	WEAK OR INTERMITTED SPARK →	(1) Faulty, carbon or wet fouled spark plug (2) Faulty CDI unit (3) Faulty alternator (4) Faulty ignition coil (5) Broken or shorted high tension wire (6) Faulty ignition switch
GOOD SPARK		

POOR PERFORMANCE AT HIGH SPEED

		Probable Cause
1. Check ignition timing	INCORRECT →	(1) Faulty CDI unit (2) Faulty alternator
CORRECT ↓		
2. Disconnect fuel tube at fuel valve	FUEL FLOW RESTRICTED →	(1) No fuel in fuel tank (2) Clogged fuel tube of fuel filter (3) Clogged fuel tank cap breather hole
FUEL FLOWS FREELY ↓		
3. Remove carburetor and check for clogged jets	CLOGGED →	Clean
NOT CLOGGED		

CLUTCH AND TRANSMISSION

	Probable Cause
1. If engine starts but scooter does not move	(1) Separated clutch linings (2) Loose clutch drive plate nut or damaged splines (3) Damaged transmission (4) Seized transmission
2. If scooter creeps or engine starts but stalls (rear wheels rotate at idle)	Broken shoe spring

POOR HANDLING

LOSS OF CONTROL

Check tire pressure

	Probable Cause
1. If steering is heavy	(1) Steering head adjuster too tight (2) Damaged steering cones or steel balls
2. If either wheel is wobbling	(1) Excessive wheel bearing play (2) Bent rim (3) Loose axle nut
3. If the scooter pulls to one side	(1) Bent front fork (2) Twisted joint shaft bracket, cracked or damaged mount rubber

POOR FRONT/REAR SUSPENSION PERFORMANCE

	Probable Cause
1. If suspension is too soft	(1) Weak spring (2) Excessive load (3) Leaky damper seal
2. If suspension is too hard	(1) Bent fork or shock rod
3. If suspension is noisy	(1) Slider binding (2) Damaged shock stopper rubber (3) Loose fasteners

POOR BRAKE PERFORMANCE

	Probable Cause
1. If wear indicator arrow aligns with index mark on brake panel	(1) Worn brake shoes (2) Worn brake cam (3) Worn cam contacting face of shoe (4) Worn brake drum
2. If either brake is squealing	(1) Worn brake shoes (2) Foreign matter on brake lining (3) Rough shoe contact face of brake drum
3. If brake performance is poor	(1) Misadjusted or stretched brake cable (2) Brake shoes partially contacting brake drum (3) Mud or water in brake drum (4) Brake linings fouled with grease or oil

SWING LOCK

	Probable Cause
1. If parking lever does not lock →	(1) Improperly adjusted cable (2) Broken or stretched cable (3) Damaged parking return spring on swing case side
2. If parking lever does not release or is sluggish →	(1) Excessive cable play (2) Damaged return spring (3) Cable clip coming off swing lock lever
3. If parking brake is not locked with swing mechanism locked →	(1) Cable not adjusted properly (2) Broken or disconnected rod between swing lock and parking lock (3) Damaged parking lock arm pawl (4) Damaged parking gear teeth
4. If parking lever can be returned with ignition switch in LOCK position. →	(1) Deformed or damaged stopper plate (2) Twisted or damaged parking lever shaft (3) Worn friction surface between parking lever shaft and stopper plate

OIL INDICATOR

INDICATOR DOES NOT LIGHT WHEN IGNITION SWITCH IS TURNED ON OR WITHOUT OIL IN THE TANK

		Probable Cause
1. Check battery circuit by operating turn signals	SIGNALS DIM, REMAIN ON OR DO NOT OPERATE →	(1) Blown fuse (2) Weak or deal battery (3) Faulty ignition switch (4) Disconnected wire connector (5) Broken wire harness
SIGNALS OPERATING CORRECTLY (60–120 flashes/min)		
2. Remove instruments and connect black wire to battery positive terminal and green wire to negative terminal	LED DOES NOT LIGHT →	(1) Loose connector (2) Faulty LED or LED drive circuit
LED LIT		
3. Check for loose, disconnected or improperly connected terminal	INCORRECT →	(1) Loose or disconnected terminal (2) Broken wire harness (3) Incorrect connection
CORRECT		
4. Remove oil level sensor and check operation Float up: Indicator off Float down: indicator on	INCORRECT →	(1) Stuck float (2) Internal fault
CORRECT		

INDICATOR LAMP REMAINS ON WITH SUFFICIENT OIL IN OIL TANK (IGNITION SWITCH ON)

		Probable Cause
1. Check for loose, disconnected or improperly connected terminals	INCORRECT →	(1) Loose or disconnected terminal (2) Broken wire harness (3) Incorrect connection
CORRECT		
2. Disconnect the green/red wire at instruments	LED REMAINS ON →	(1) Faulty LED drive circuit
LED GOES OFF		
3. Remove oil level sensor and check operation Float up: Indicator off Float down: Indicator on	INCORRECT →	(1) Jammed or stuck float (2) Broken or shorted oil level sensor
CORRECT		
4. Check for deformed tank or foreign matter in tank		

STARTER MOTOR

STARTER MOTOR DOES NOT TURN

		Probable Cause
1. Check operation of brake light by operating brakes	DID NOT GO ON →	(1) Blown fuse (2) Weak or dead battery (3) Faulty brake light switch (4) Disconnected terminal (5) Broken or shorted ignition switch
WENT ON ↓		
2. Check battery circuit by operating turn signals	SIGNALS DIM, REMAINED ON OR DID NOT OPERATE →	Dead battery
SIGNALS OPERATE PROPERLY (60–120 flashes/min) ↓		
3. Check starter relay for operation by depressing starter button	ABNORMAL →	(1) Poorly contacted starter switch (2) Broken or shorted starter relay (3) Loose connector or terminal
NORMAL ↓		
4. Test starter by connecting it to battery	DID NOT TURN →	(1) Worn brushes (2) Broken or shorted rotor windings (3) Broken starter motor wire (4) Loose terminal
TURNS		

STARTER MOTOR TURNS SLUGGISHLY OR FAILS TO CRANK ENGINE

		Probable Cause
1. Check battery circuit by operating turn signals	SIGNALS DIM, REMAIN ON OR DID NOT OPERATE AT ALL →	Dead battery
SIGNALS OPERATED PORPERLY ↓		
2. Connect starter motor sub wires across battery terminals	TURNED PROPERLY →	(1) Loose connector/terminal (2) Poorly contacted starter relay
OPERATES NORMALLY →		(1) Broken or shorted starter motor windings (2) Faulty starter pinion

STARTER WONT' STOP

		Probable Cause
1. Turn ignition switch OFF	STOPPED →	Pinion stuck out
DOES NOT STOP →		Starter relay shorted or stuck closed

MEMO

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