HONDA NB50M

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

If you are not familiar with this motor scooter, read Technical Features in section 16.

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

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HONDA MOTOR CO., LTD.
Service Publications Office

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1. GENERAL INFORMATION

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GENERAL SAFETY

WARNING

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

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 reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown on page 1-7, Cable and Harness Routing and always away from sharp edges and areas where they might be pinched between moving parts.

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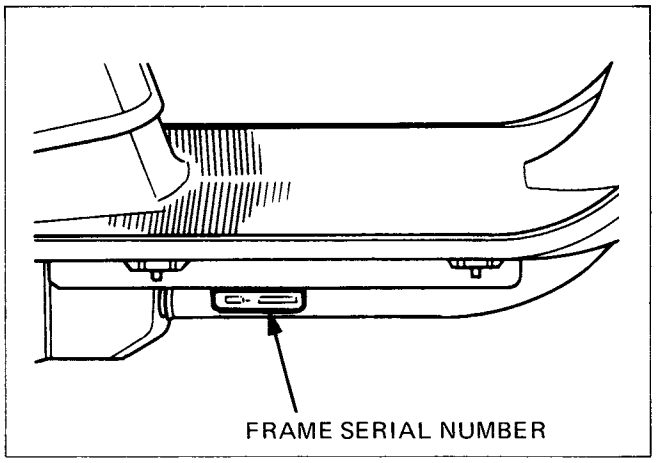
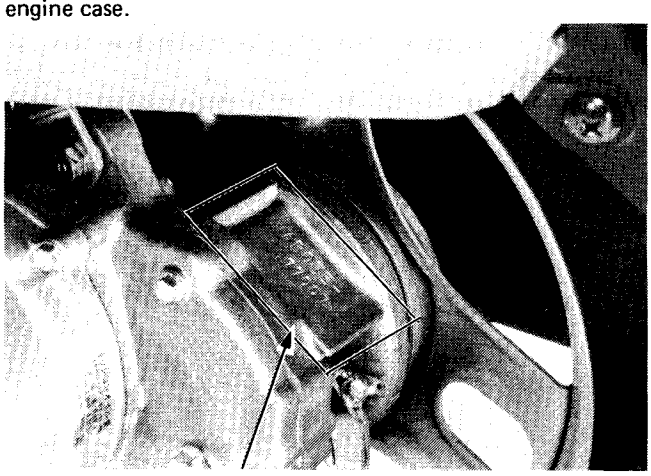
MODEL IDENTIFICATION

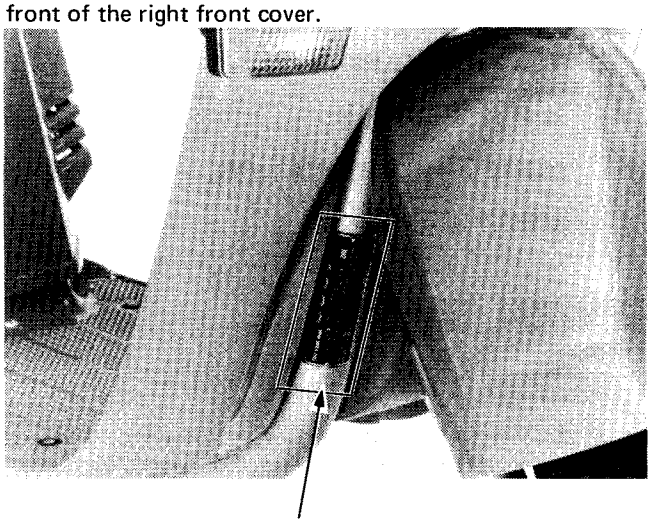
The frame serial number is stamped on the right side of the frame.



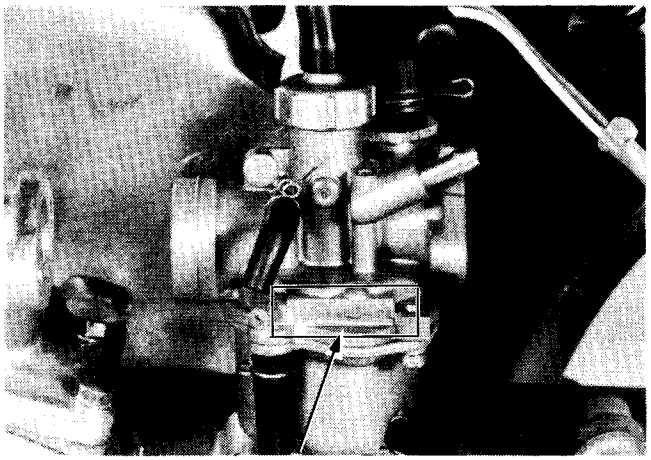
The engine serial number is stamped on the left side of the engine case.



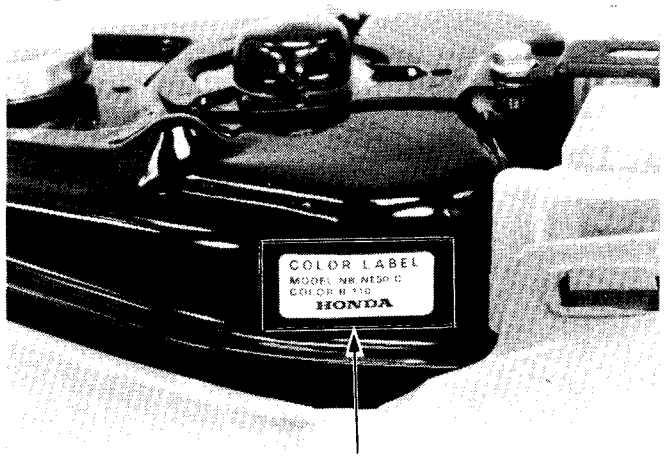
The vehicle identification number is on the frame tube in front of the right front cover.



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



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



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SPECIFICATIONS

ITEM		SPECIFICATIONS
DIMENSIONS	Overall length	1,600 mm (63.0 in)
	Overall width	630 mm (24.8 in)
	Overall height	960 mm (37.8 in)
	Wheel base	1,120 mm (44.1 in) NEW
	Ground clearance	105 mm (4.13 in)
	Dry weight	56 kg (123.5 lb)
FRAME	Type	Back bone
	Front suspension, travel	Leading link, 55 mm (2.16 in)
	Rear suspension, travel	Final drive unit/swing arm, 60 mm (2.36 in)
	Vehicle capacity load	84 kg (185 lb)
	Front tire size, pressure	2.75-10-2PR, 150 kPa (1.50 kg/cm^2, 21 psi)
	Rear tire size, pressure	2.75-10-2PR, 175 kPa (1.75 kg/cm^2, 24 psi)
	Front brake	Internal expanding shoe
	Rear brake	Internal expanding shoe
	Fuel capacity	3.2 ℓ (0.85 U.S. gal., 0.71 imp. gal.)
	Fuel reserve capacity	0.5 ℓ (0.13 U.S. gal., 0.11 imp. gal.)
	Caster angle	62°
	Trail	78 mm (3.07 in)
	Front fork grease	11g (0.4 ozs)
ENGINE	Type	Air cooled 2-stroke
	Cylinder arrangement	Single cylinder inclined 15° from vertical
	Bore and stroke	40 x 39.3 mm (1.57 x 1.54 in)
	Displacement	49.3 cm^3 (3.01 cu. in)
	Compression ratio	7.2 : 1
	Transmission oil capacity	90 cc (3.0 U.S. oz, 2.5 Imp. oz)
	Oil tank capacity	0.9 lit. (0.95 U.S. qt, 0.79 Imp. qt)
	Lubrication system	Forced and wet sump
	Port timing	
	Intake Open	Reed valve controlled
	Close	Reed valve controlled
	Exhaust Open	71° (BBDC)
	Close	71° (ABDC)
	Scavenge Open	52° (BBDC)
	Close	52° (ABDC)
	Engine dry weight	15.2 kg (33.5 lb)
	Idle speed	1,800 ± 100 rpm
CARBURETION	Carburetor type	Piston valve
	Identification number	PA 05A
	Air screw initial setting	1-1/2 turns out
	Float level	12.2 mm (0.48 in)

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ITEM		SPECIFICATIONS	
DRIVE TRAIN	Clutch type	Automatic dry centrifugal clutch	
	Primary reduction	V-Belt	
	Gear ratio	2.4–1.2 : 1	
	Final reduction	7.978 : 1	
ELECTRICAL	Ignition	Condenser capacitive discharge ignition (CDI)	
	Starting system	Electric and kick	
	Alternator	12V 89W/5,000 rpm	
	Spark plug	NGK	ND
	Standard	BPR6HS	W20FPR
	For cold climate	BPR4HS	W14FPR
	For extended high speed riding	BPR8HS	W24FPR
	Spark plug gap	0.6–0.7 mm (0.024–0.028 in)	
	Ignition timing "F" mark	18° BTDC	
	Battery capacity	12V4AH	
	Fuse capacity	7A	
LIGHTS	Headlight Low/High	12V-25/25W	
	Tail/stoplight	12V-8/25W	SAE No. 1157
	Turn signal Front/Rear	12V-32 cp	SAE No. 1073
	Speedometer light	12V-1 cp	SAE No. 161
	High beam indicator	12V-2 cp	SAE No. 194
	Turn signal indicator	12V-2 cp	SAE No. 194

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TORQUE VALUES

ENGINE

Item	Q'ty	Thread Dia (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Cylinder head	4	6	9–12 (0.9–1.2, 7–9)	While the engine is cold. (Below 35°C, 95°F)
Flywheel	1	10	35–40 (3.5–4.0, 25–29)	
Drive pulley	1	10	30–35 (3.0–3.5, 22–25)	
Intake pipe	4	6	8–12 (0.8–1.2, 6–9)	While the engine is cold. (Below 35°C, 95°F)
Clutch outer	1	10	30–35 (3.0–3.5, 22–25)	
Carburetor	2	6	9–12 (0.9–1.2, 7–9)	While the engine is cold. (Below 35°C, 95°F)

CHASSIS

Item	Q'ty	Thread Dia (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Steering stem nut	1	25	80–120 (8.0–12.0, 58–87)	
Front axle nut	1	10	40–50 (4.0–5.0, 29–36)	Self-locking nut
Rear axle nut	1	14	80–100 (8.0–10.0, 58–72)	Self-locking nut
Front fork pivot arm nut	2	8	20–30 (2.0–3.0, 14–22)	
Engine hanger bolts	2	10	35–45 (3.5–4.5, 25–33)	Self-locking nut
Link stopper bolt	1	8	20–30 (2.0–3.0, 14–22)	
Rear shock absorber (Upper)	1	10	30–40 (3.0–4.0, 22–29)	
Rear shock absorber (Lower)	1	8	25–35 (2.5–3.5, 18–25)	
Front/Rear brake arm	2	5	4–7 (0.4–0.7, 3–5)	
Battery support	1	6	4–7 (0.4–0.7, 3–5)	
Frame body center cover	1	5	2–4 (0.2–0.4, 1.4–3)	

Torque specifications listed above are for important fasteners. Others should be tightened to the standard torque values 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	4–6 (0.4–0.6, 3–4)	5 mm screw	3–5 (0.3–0.5, 3–4)
6 mm bolt and nut	8–12 (0.8–1.2, 6–9)	6 mm screw	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	20–30 (2.0–3.0, 14–22)
12 mm bolt and nut	50–60 (5.0–6.0, 36–43)	10 mm flange bolt and nut	30–40 (3.0–4.0, 22–29)

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TOOLS

SPECIAL

Description	Tool Number	Alternate Tool	Tool Number	Ref. Page
Hand vacuum pump with gauge	A937X-041-XXXXX	Hand vacuum pump (U.S.A. only: Included in turbo kit)	ST-AH-260-MC7	4-11
Flywheel puller	07933-0010000	Flywheel puller	07733-0010000	7-3
Case puller	07935-KG80000			8-8, 10-2
Lock nut wrench	07916-1870001			8-14, 8-18
Clutch spring compressor	07960-KJ90000			8-14, 8-18
Bearing remover set, 12 mm	07936-1660001	• Bearing remover shaft • Remover weight	07936-1660100 07936-3710200 or 07741-0010201	9-3
Bearing remover set, 15 mm (Seal and case assembly tool set)	07936-KC10000 (07965-1480010)	• Bearing remover shaft Not available in U.S.A.	07936-KC10100	9-3 10-4, 10-5
Assembly collar	07965-1480100			10-4, 10-5
Assembly bolt	07965-1480200			10-4, 10-5
Attachment, 28 x 30 mm	07946-1870100	Not available in U.S.A. – Use: • Pilot, 30 mm • Driver	 07746-0040700 07749-0010000	
Fork seal driver	07947-1180001			11-22
Rear shock absorber compressor attachment	07967-GA70001			12-5
Rear shock absorber compressor	07959-3290001			12-5

COMMON

Description	Tool Number	Alternate Tool	Tool Number	Ref. Page
Float level gauge	07401-0010000			4-8
Universal holder	07725-0030000			7-3, 8-3, 8-13, 8-19
Attachment, 32 x 35 mm	07746-0010100			9-3
Attachment, 37 x 40 mm	07746-0010200			9-3, 9-4
Pilot, 10 mm	07746-0040100	Not available in U.S.A.		11-2
Pilot, 12 mm	07746-0040200			9-3
Pilot, 15 mm	07746-0040300			9-3
Pilot, 17 mm	07746-0040400			9-3
Driver	07749-0010000			9-3, 10-4, 11-22
Bearing puller	07631-0010000	Equivalent tool commercially available in U.S.A.		10-4
Attachment, 42 x 47 mm	07746-0010300			10-4, 11-22
Pilot, 20 mm	07746-0040500			10-4
Bearing remover expander	07746-0050100	Equivalent tool commercially available in U.S.A.		11-13
Bearing remover collet, 10 mm	07746-0050200			
Adjustable pin spanner wrench	07702-0020000	Adjustable pin spanner (U.S.A. only)	M9361-412-099788	11-20, 11-23
Pilot, 25 mm	07746-0040600			11-22
Wrench, 30 x 32 mm	07716-0020400	Equivalent tools commercially available in U.S.A.		11-9
Extension bar	07716-0020500			11-9
Sanwa electric tester	07308-0020000	Kowa digital multimeter (U.S.A.) (Included in turbo kit)		14-9

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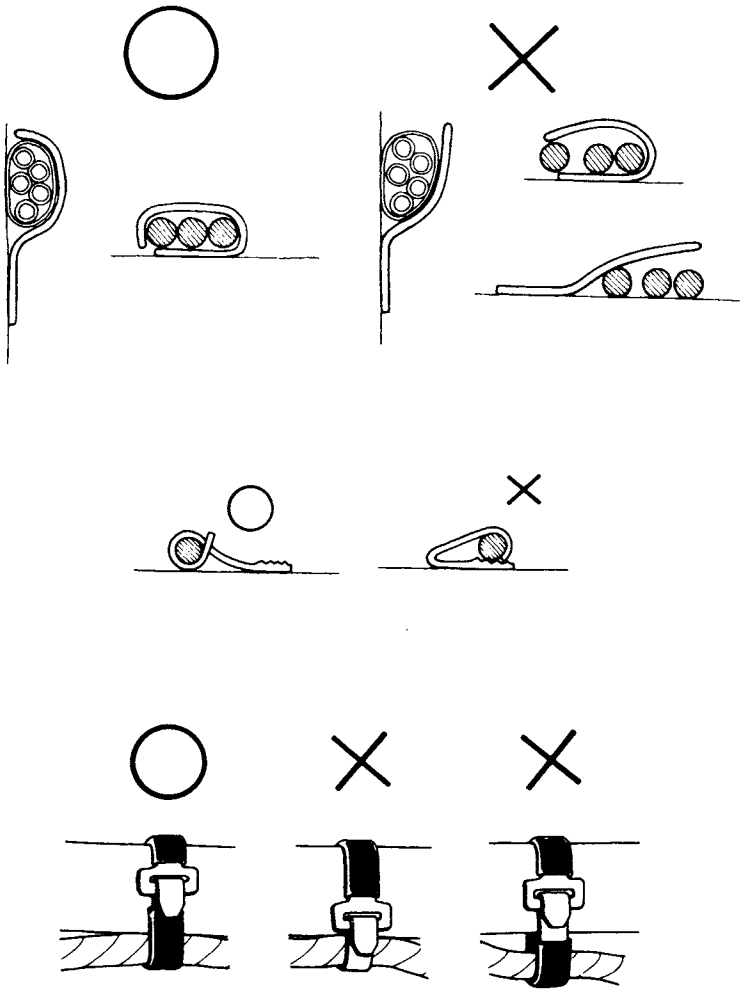
CABLE & HARNESS ROUTING

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 its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.
- Route harnesses so they are not pulled taut or have excessive slack.
- Protect wires and harnesses with electrical tape or tubing if they are in contact with a sharp edge or corner. Clean the attaching surface thoroughly before applying tape.
- Do not use wires or harnesses with a broken insulator. Repair by wrapping then with a 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 tight, have excessive slack, be pinched, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.



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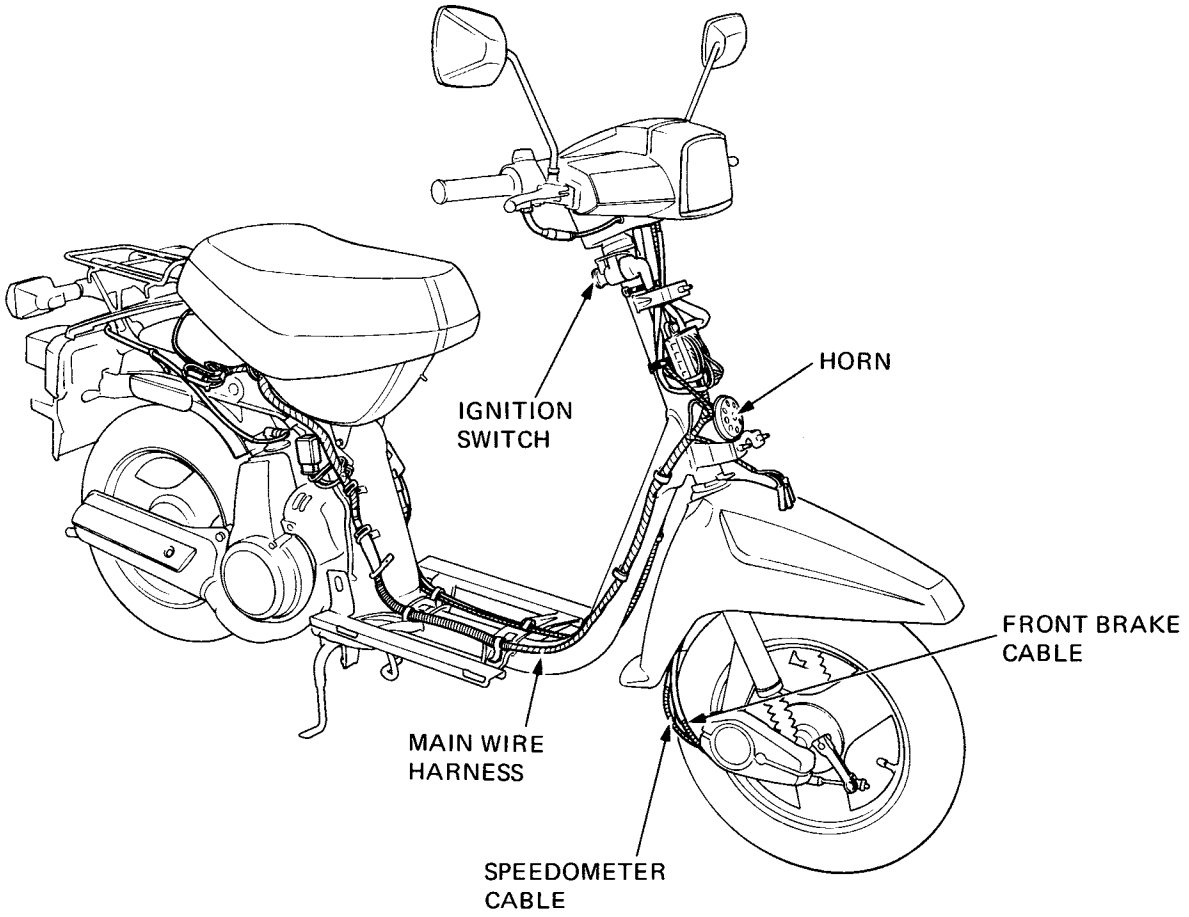

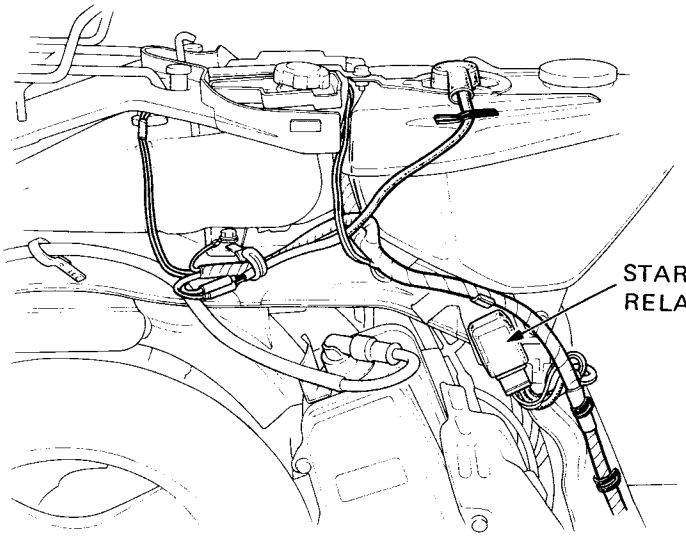

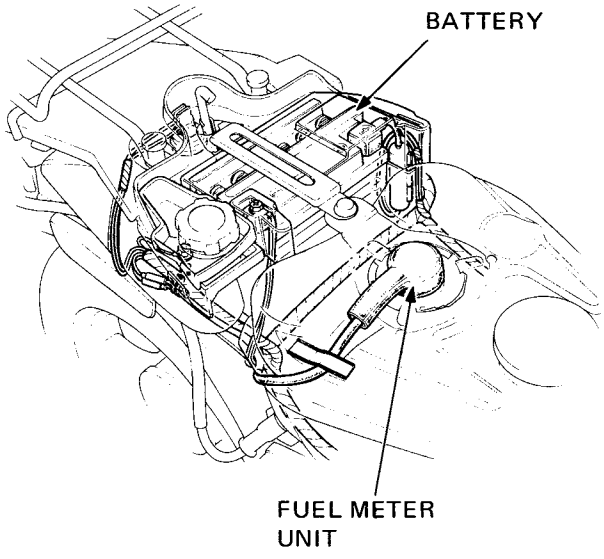

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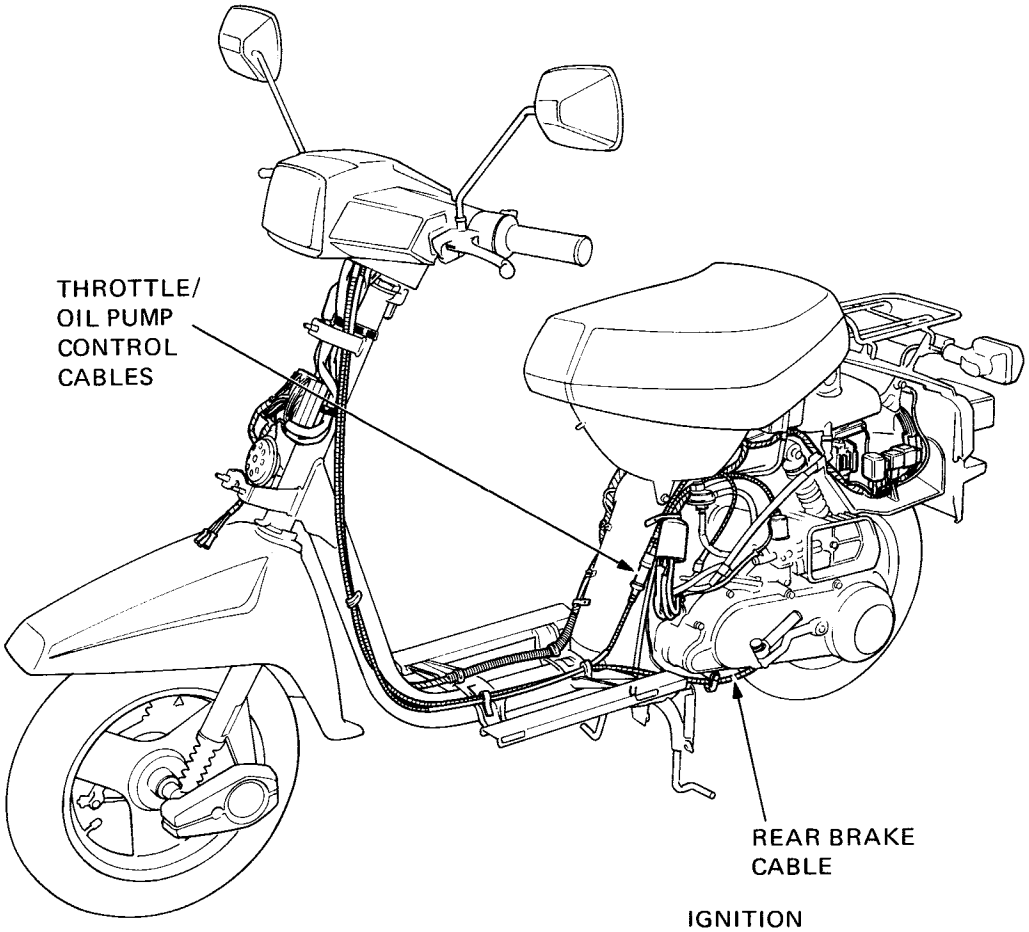

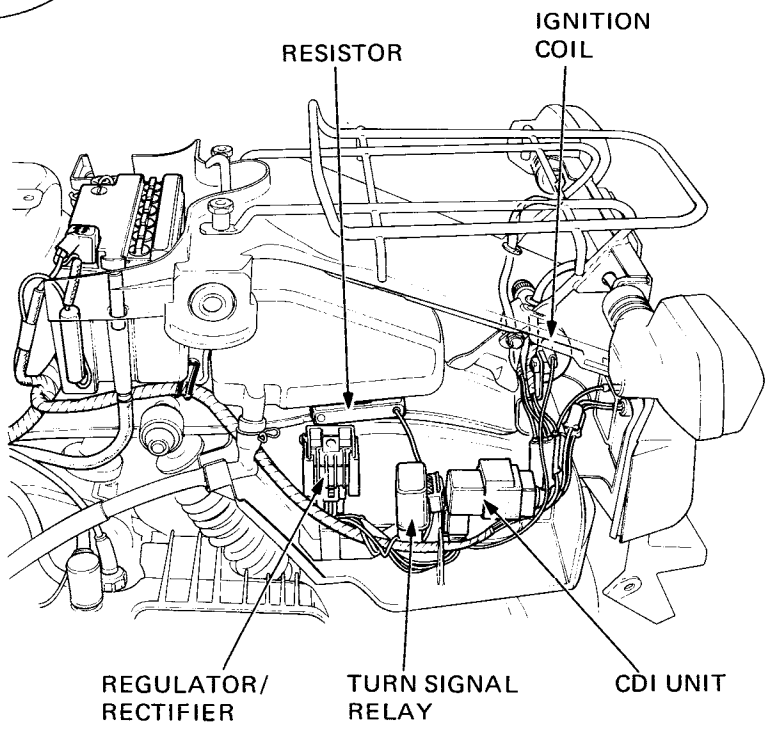

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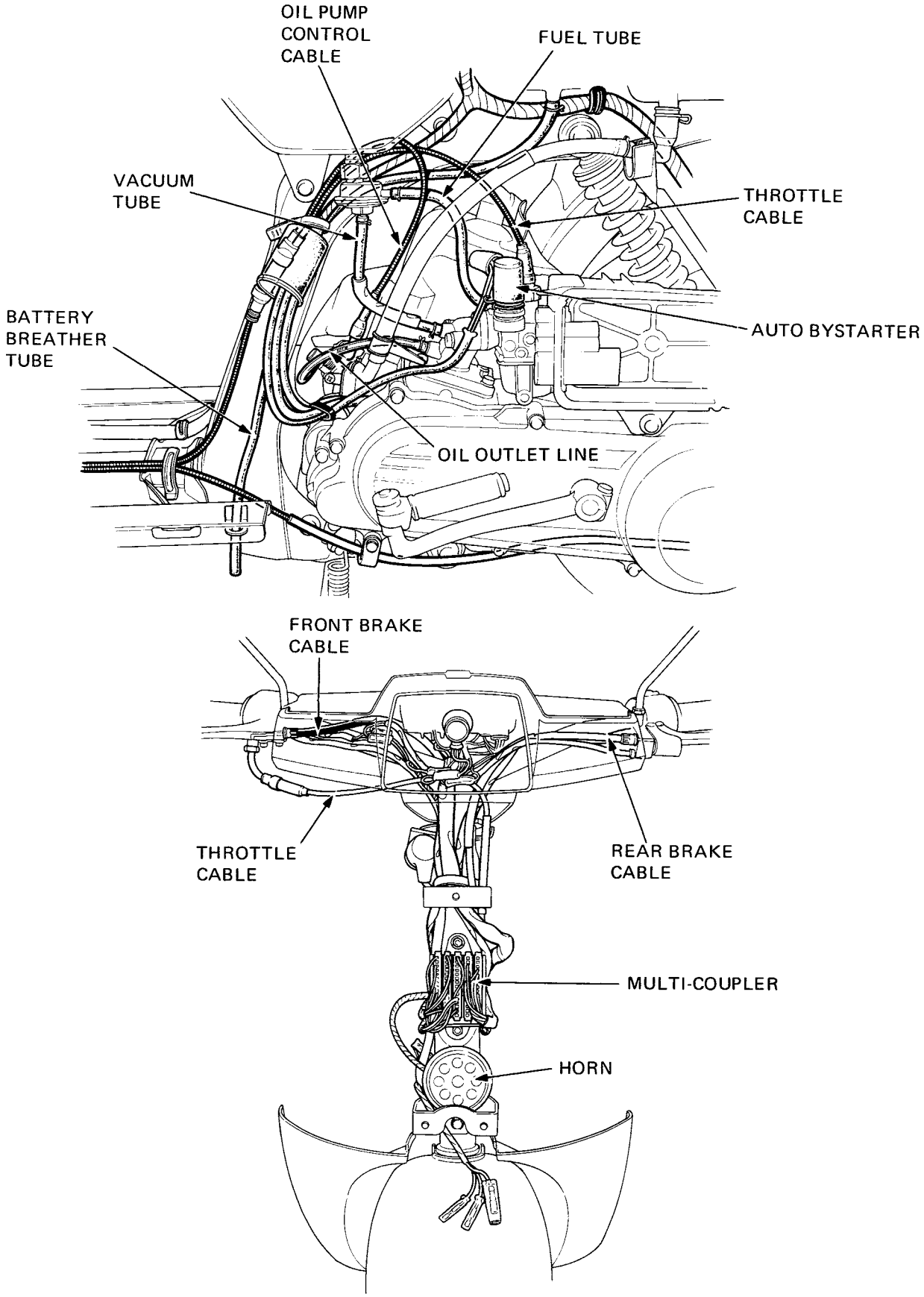

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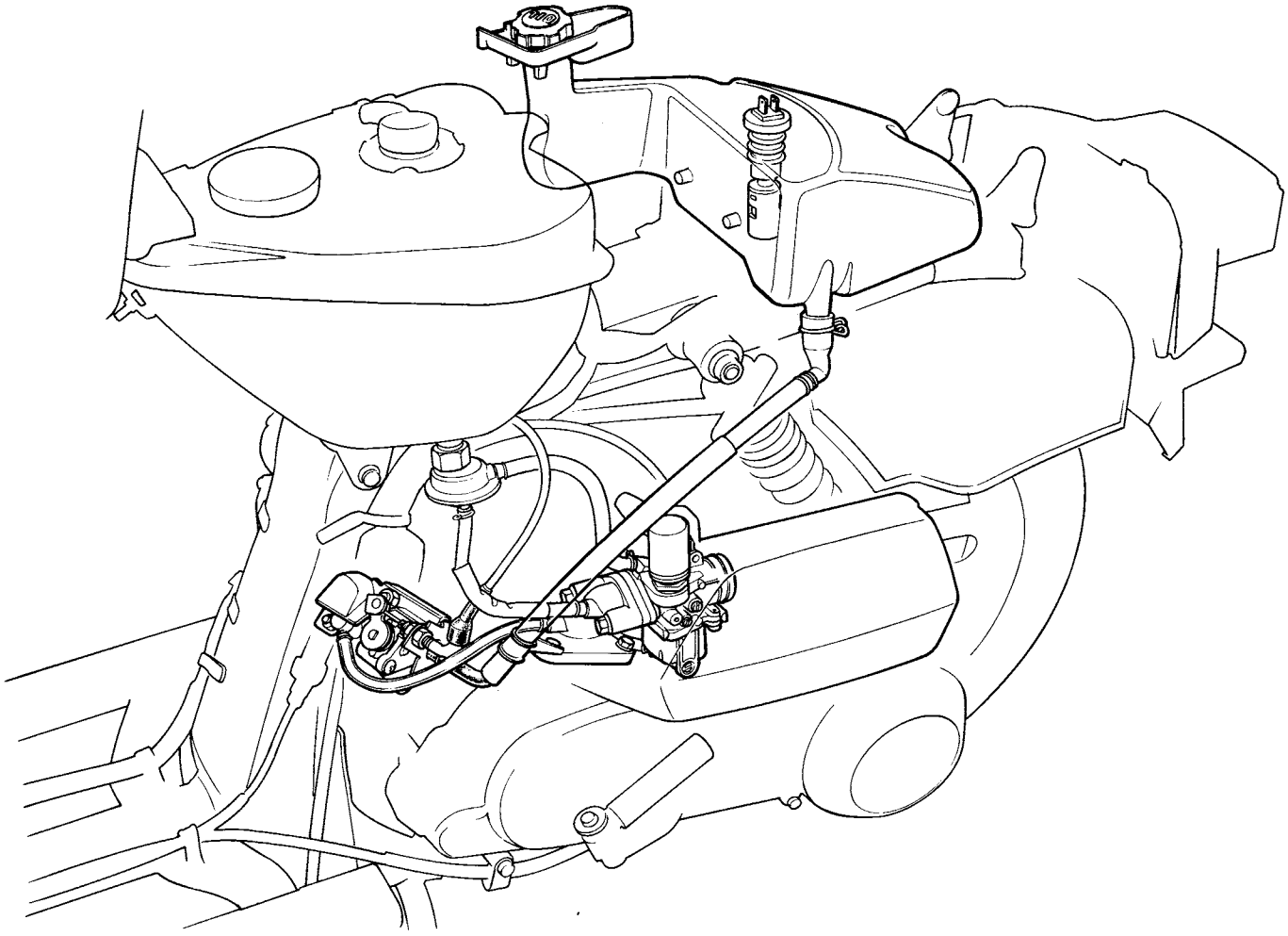
LUBRICATION SYSTEM



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SERVICE INFORMATION

GENERAL

- When removing and installing the oil pump use care not to allow dust or dirt to enter the engine and oil line.
- Do not attempt to disassemble the oil pump.
- Bleed air from 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 is disconnected.
- Bleed air from the oil outlet line (from the oil pump to the carburetor) if the line is disconnected (Page 2-5).

SPECIFICATION

Specified oil is HONDA 2-stroke injector oil or equivalent.

TROUBLESHOOTING

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

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

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

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

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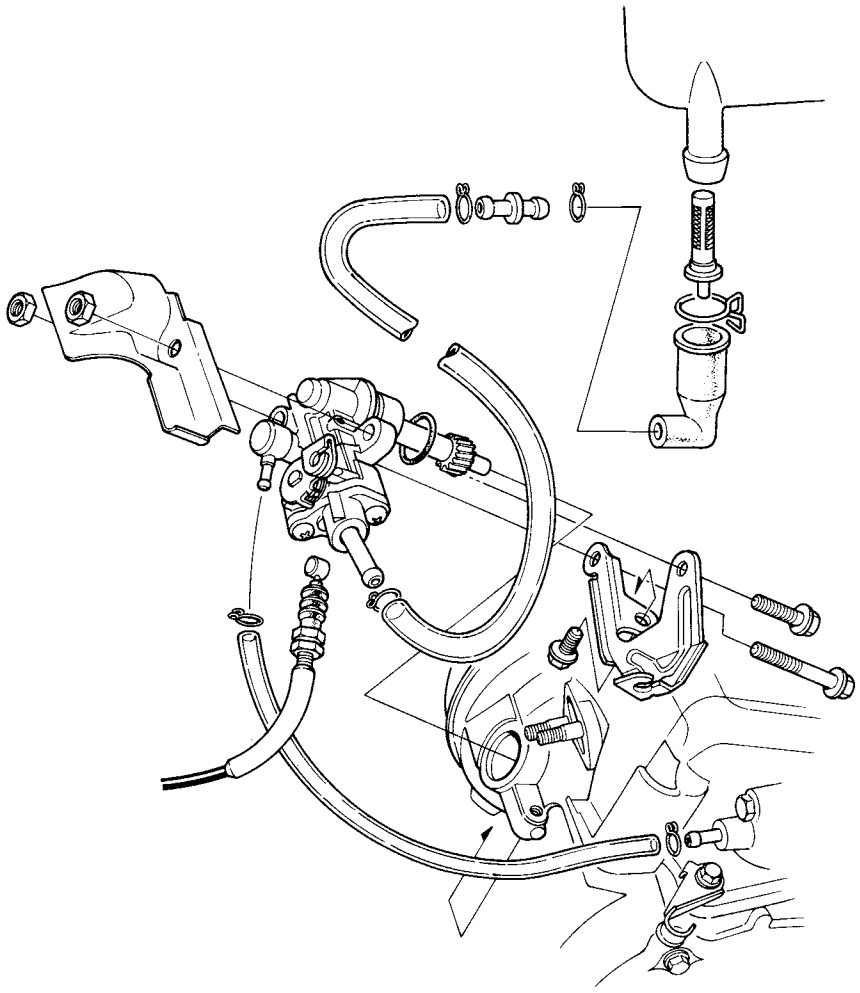
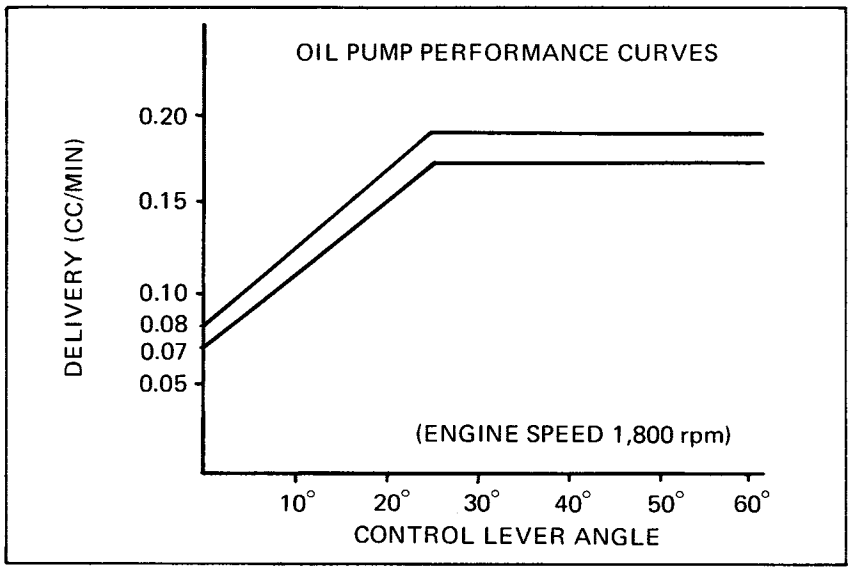
OIL PUMP DIAGRAM





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OIL PUMP REMOVAL

NOTE:

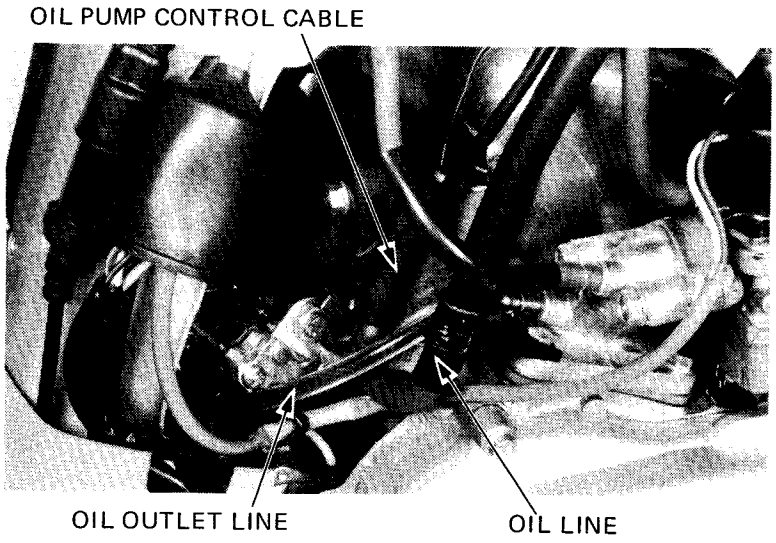
> Before removing the oil pump, clean the oil pump and crankcase.

Remove the starter motor (Page 14-11).

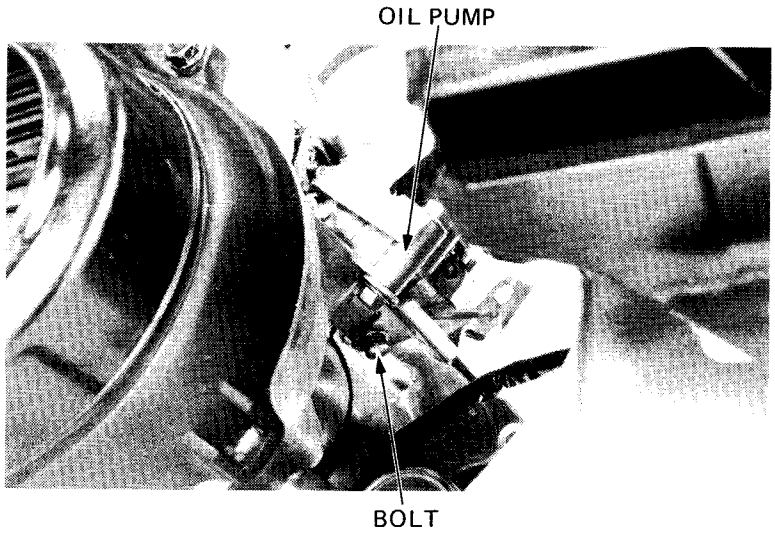
Disconnect the oil pump control cable.
Disconnect the oil line.
Disconnect the oil outlet line from the oil pump.

NOTE:

> Plug the oil line so oil does not flow out of it.



Remove the oil pump attaching bolt and remove the oil pump.



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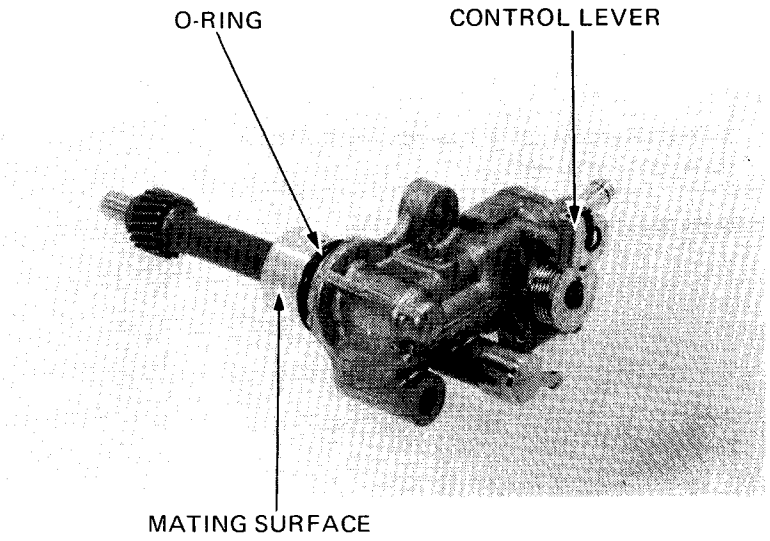
OIL PUMP INSPECTION

Remove the oil pump and inspect the following items:

- Damaged or weak O-rings
- Damage to crankcase mating surface
- Damage to pump body
- Control lever operation
- Worn or damaged pump gears
- Oil leaks

CAUTION:

Do not disassemble the oil pump.



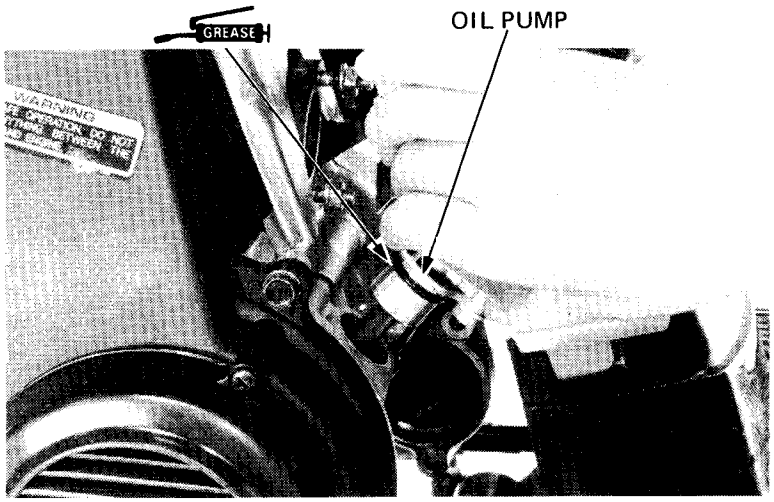
OIL PUMP INSTALLATION

Install the oil pump onto the crankcase.

CAUTION:

- *Lubricate the pump gear and O-ring with clean grease before installation.*
- *Make sure that the oil pump is inserted into the crankcase properly.*

Tighten the oil pump attaching bolts securely.

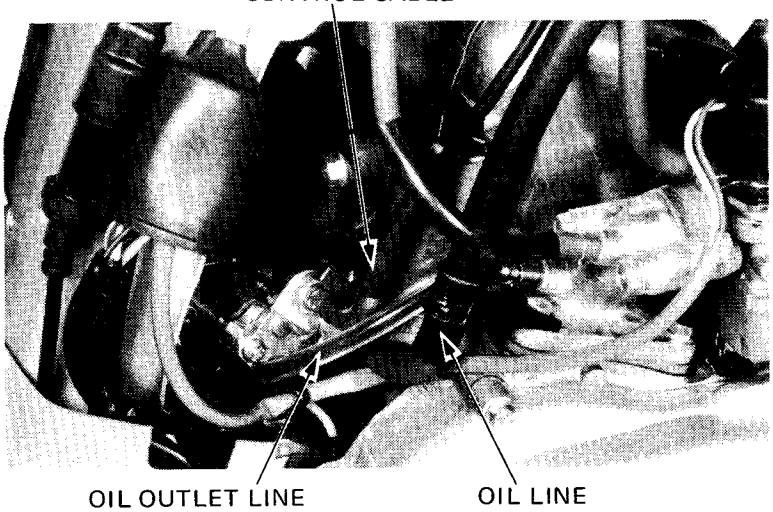


Reconnect the oil line and oil outlet line as shown. Installation of the oil pump is the reverse order of removal.

NOTE:

After installation, perform the following inspections and adjustments:

- Control cable adjustment (Page 3-8)
- Oil pump bleeding (Page 2-5)
- Oil outlet line bleeding (Page 2-5)
- Check for oil leaks.



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OIL PUMP BLEEDING

CAUTION:

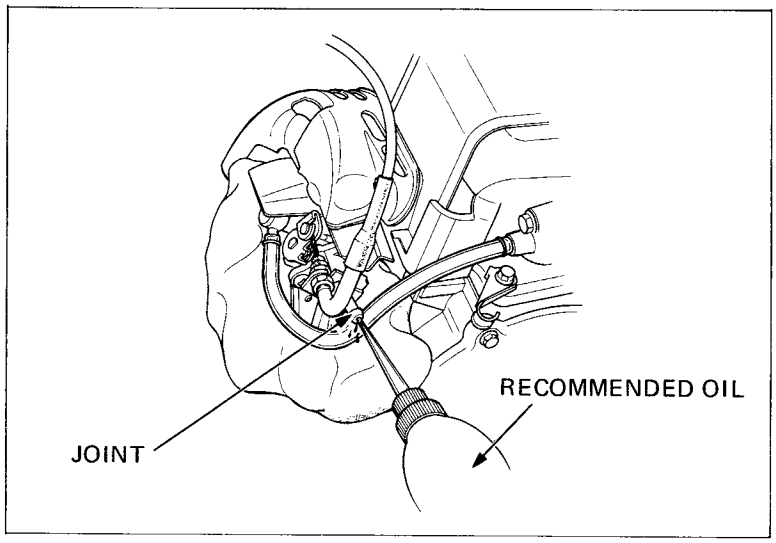
- *Air in the oil system will block or restrict oil flow and may result in severe engine damage.*
- *Bleed air from the oil inlet line first, then bleed air from the oil outlet line.*

OIL INLET LINE/OIL PUMP

CAUTION:

Bleed air from the oil lines whenever the oil lines or pump have been removed or there is air in the oil lines.

Fill the oil tank with the recommended oil (Page 2-1).
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 3 cc of clean oil through the joint.
Fill the oil line with oil and connect it to the joint of the oil pump. After installation, make sure there is no air in the oil inlet line.
Bleed air from the oil outlet line after bleeding the oil inlet line and oil pump.

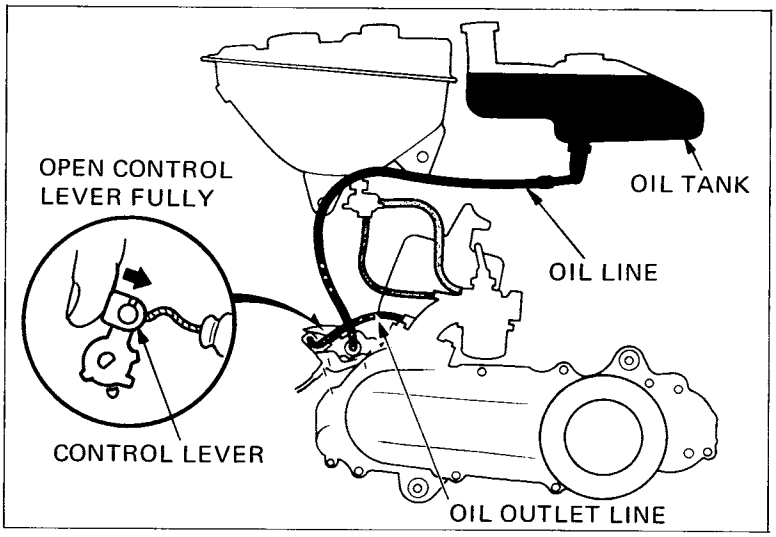


OIL OUTLET LINE

WARNING

- *Perform this operation in a well-ventilated area.*
- *Do not race the engine unnecessarily.*

1. Disconnect the oil outlet line at the carburetor and force air out of the tube by filling it with oil using an oil squirt can.
2. Connect the oil outlet line to the carburetor.
3. Start the engine and allow it to idle with the oil control lever in the fully open position, making sure that there are no air bubbles in the oil from the oil pump.
4. If there are air bubbles, repeat steps 1 through 3 until the oil line is free of air bubbles.



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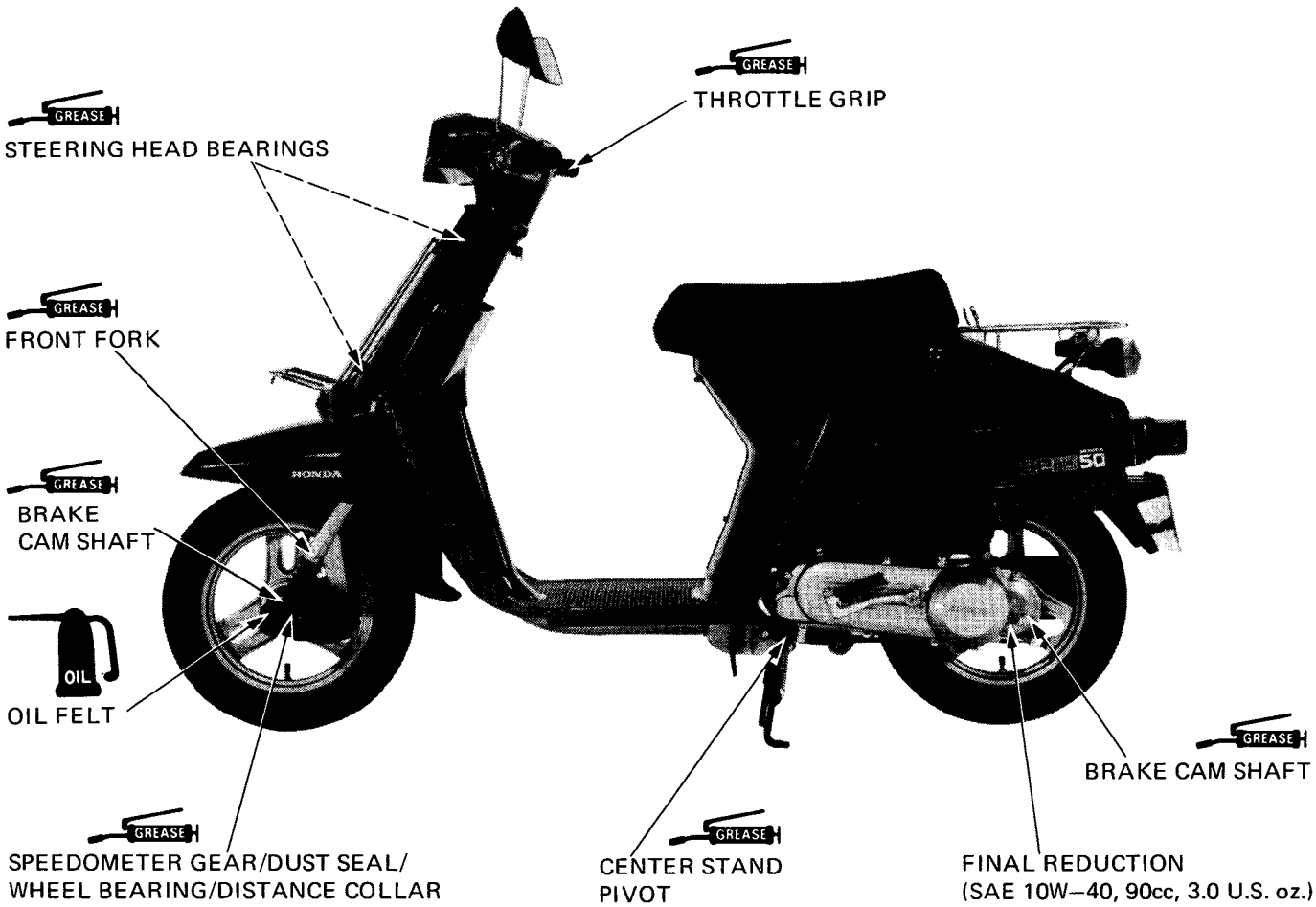
LUBRICATION POINTS

ENGINE

LUBRICATION POINTS	LUBRICANT	REMARKS
Piston/crankshaft	Honda 2-stroke injector oil or equivalent	
Kick starter spindle bushing	General purpose grease	
Movable drive face	Lithium Based Grease Mitsubishi HD-3 Nippon Sekiyu Lipanox Delux 3 Idemitsu Coronex 3 or equivalent	 10–15g (0.35–0.53 oz.)
Starter idle gear	General purpose grease	

FRAME

Apply clean engine oil or grease to cables and parts not called out.



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SERVICE INFORMATION

SPECIFICATIONS

SPARK PLUG

	NGK	ND
Standard	BPR6HS	W20FPR
For cold climate	BPR4HS	W14FPR
For extended high speed riding	BPR8HS	W24FPR

SPARK PLUG GAP		0.6–0.7 mm (0.024–0.028 in)
COMPRESSION		12.0 kg/cm^2 (170 psi)
IGNITION TIMING		18° BTDC/2,000 rpm
		20° BTDC/4,500 rpm
		15° BTDC/8,000 rpm
THROTTLE FREE PLAY		2–6 mm (1/8–1/4 in)
IDLE SPEED		1,800 ± 100 rpm
AIR SCREW OPENING		1-1/2 turns out
BRAKE LEVER FREE PLAY		
	FRONT	10–15 mm (3/8–5/8 in)
	REAR	10–15 mm (3/8–5/8 in)
TIRE SIZE	FRONT	2.75–10–2PR
	REAR	2.75–10–2PR
TIRE PRESSURE	FRONT	150 kPa (1.50 kg/cm^2, 21 psi)
	REAR	175 kPa (1.75 kg/cm^2, 24 psi)

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MAINTENANCE SCHEDULE

I – Inspection and clean, adjust, lubricate or replace if necessary R – Replace C – Clean

This maintenance schedule is based upon average riding condition. Scooters subject to severe use, or ridden in unusually dusty areas, require more frequent servicing.	PRE-RIDE INSPECTION	INITIAL SAFETY INSPECTION	REGULAR SERVICE PERIOD Perform at every indicated month or mileage interval whichever occurs first		Refer to page
		1 month 200 miles (300 km)	12 months 1,000 miles (1,500 km)	24 months 2,000 miles (3,000 km)	
AIR CLEANER ELEMENT			(EVERY 6 MONTHS) C		3-3
CARBURETOR		I	I	I	3-7
* THROTTLE OPERATION	I	I	I	I	3-7
OIL PUMP		I	I	I	3-8
FUEL FILTER SCREEN		C	C	C	3-4
FUEL LINE		I	I	I	3-4
* OIL AND FUEL LEVEL	I				
DECARBONIZE CYLINDER HEAD, CYLINDER, PISTON AND MUFFLER				C	6-4, 6-5
TRANSMISSION OIL				R	3-6
* TRANSMISSION CASE FOR LEAKS	I				3-6
CLUTCH SHOE WEAR				I	8-16
TIRE: PRESSURES AND CONDITION	I				3-11
WHEEL TRUENESS		I	I	I	3-11
* BRAKE OPERATION AND FREE PLAY	I	I	I	I	3-9
BRAKE LININGS			I	I	3-9
STEERING HEAD BEARINGS		I		I	3-10
SUSPENSION OPERATION			I	I	3-10
NUTS, BOLTS (TIGHTEN)		I		I	3-11
* SPARK PLUG			R	R	3-6
* BATTERY FLUID LEVEL	I				3-3
BATTERY FLUID SPECIFIC GRAVITY			I	I	14-3
ALL LIGHTS AND HORN	I				

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

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BATTERY

Inspect the battery fluid level.
When the fluid level nears the lower level mark, refill with distilled water to the upper level line.

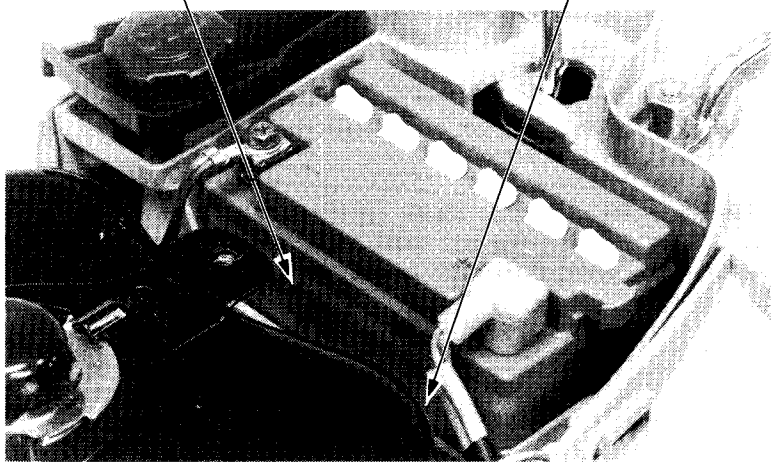
- Check the specific gravity of the battery electrolite in each cell (Page 14-3).
- Recharge the battery if necessary (Page 14-4).

NOTE:

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

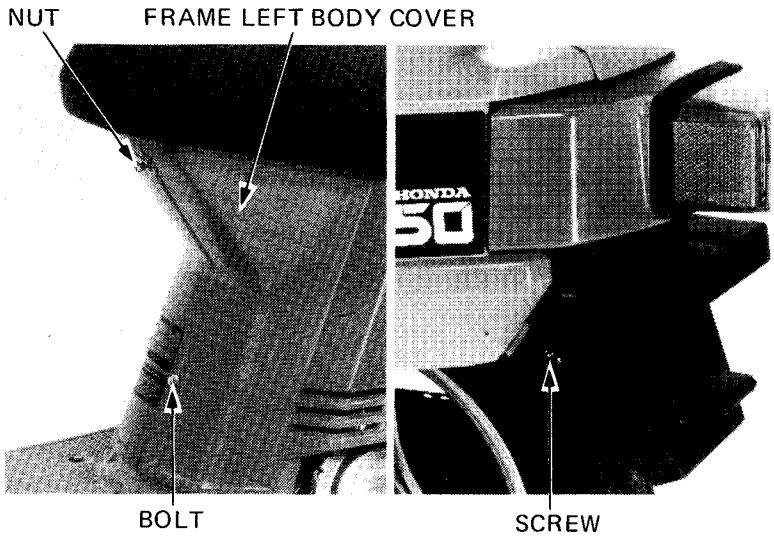
WARNING

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

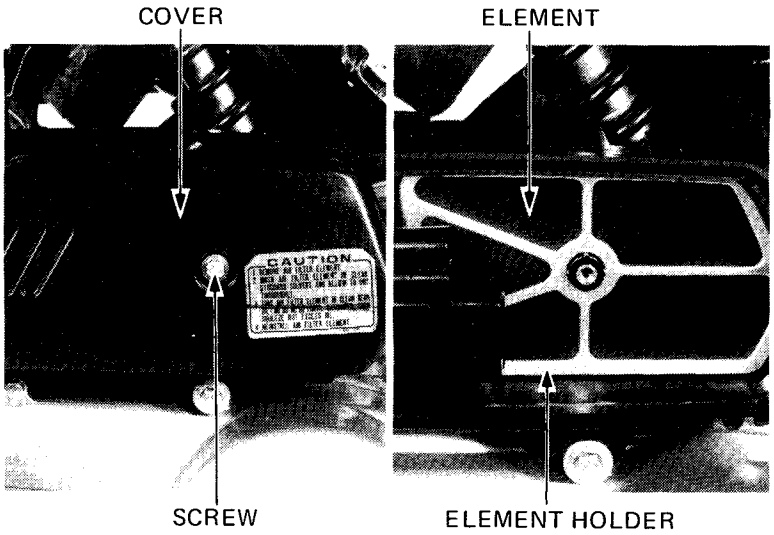


AIR CLEANER

Remove the bolt, nut and screw attaching the frame left body cover and remove the frame left body cover.



Remove the screw attaching the air cleaner case cover and remove the air cleaner case cover.
Remove the air cleaner element holder and air cleaner element.



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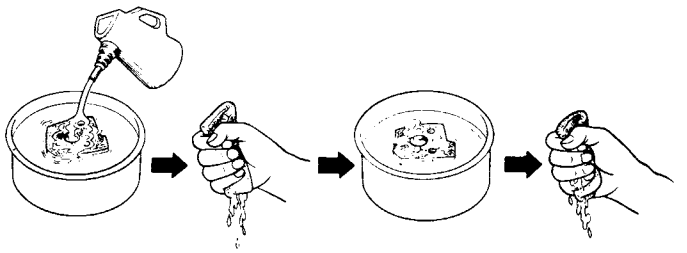
Wash the element in non-flammable or high flash point solvent, squeeze out and allow to dry.

WARNING

Never use the 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–40) or gear oil (#80–90) and squeeze out excess. Reinstall the element, element holder, air cleaner case cover.



FUEL LINE/FUEL STRAINER CLEANING

WARNING

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

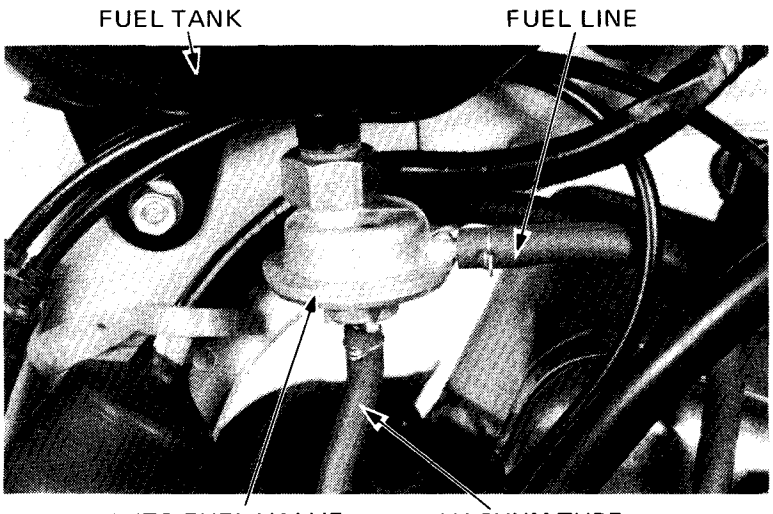
Check the fuel lines for deterioration, damage, or leakage.
Replace if necessary.

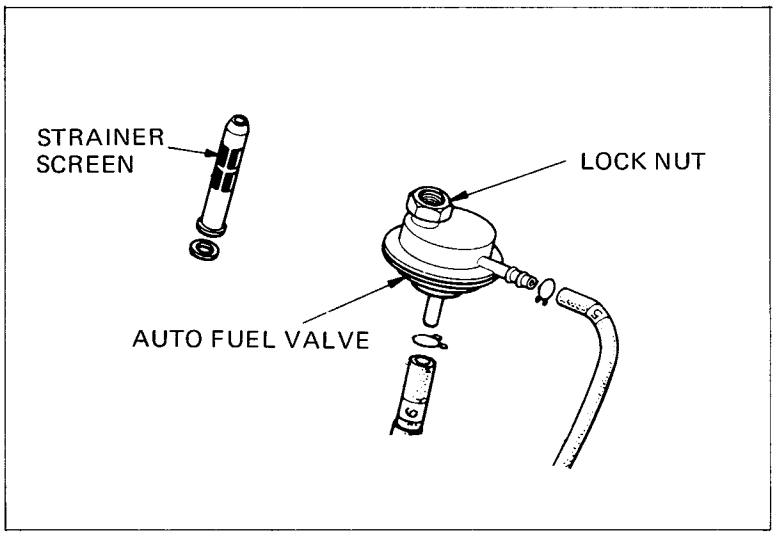
Remove the frame left body cover (Page 3-3).
Disconnect the fuel line and vacuum tube at the fuel valve. Drain the gasoline into a safe container.

WARNING

Drain the gasoline into a safe container labeled for gasoline.

Remove the lock nut and remove the fuel valve.
Remove the fuel strainer.
Clean the strainer with compressed air.





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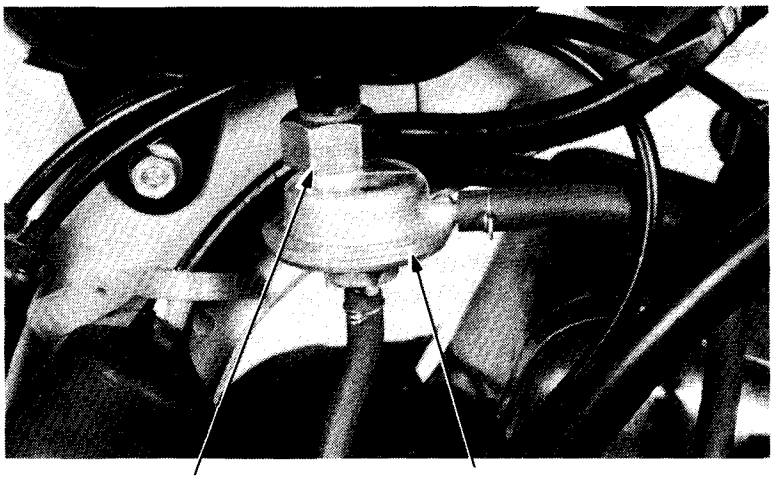
Install the fuel valve.

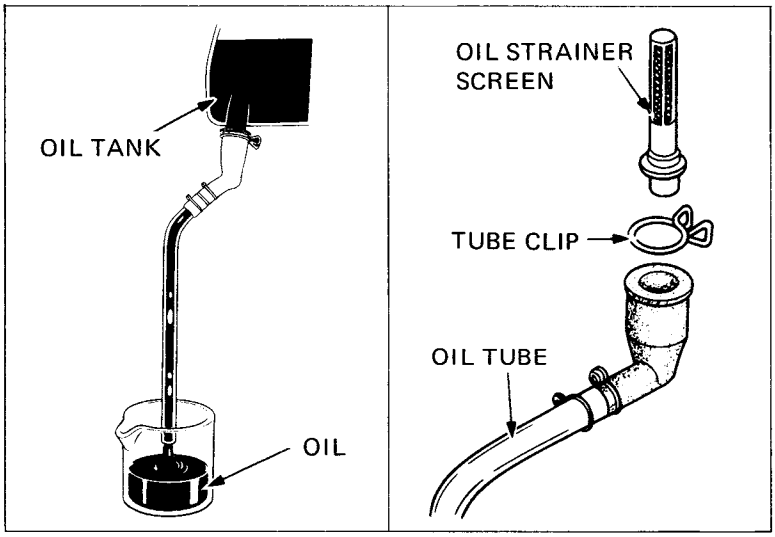
NOTE:

- After assembling, check for leaks.
- Do not overtighten the lock nut.



OIL STRAINER

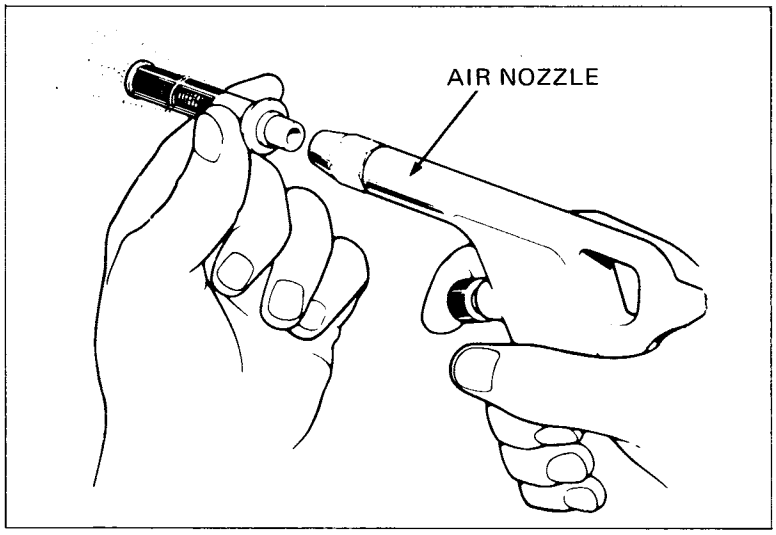
Remove the frame left body cover.
Disconnect the oil inlet line at the oil pump and allow the oil to drain into a clean container.
Loosen the tube clip and disconnect the oil tube joint under the oil tank.
Remove the oil strainer.



Clean the oil strainer with compressed air.
Installation of the oil strainer is the reverse of removal.
Fill the oil tank with the recommended oil up to the proper level.
Bleed air from the oil pump and oil line (Page 2-5).

NOTE:

Connect the oil line securely and check for leaks.



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FINAL REDUCTION OIL

OIL LEVEL INSPECTION

NOTE:

> Place the scooter on level ground and support with the main stand.

Start the engine and let it idle for a few minutes. Stop the engine, remove the oil level check bolt and check that the oil level is at the bottom edge of the oil level check bolt hole.

OIL CHANGE

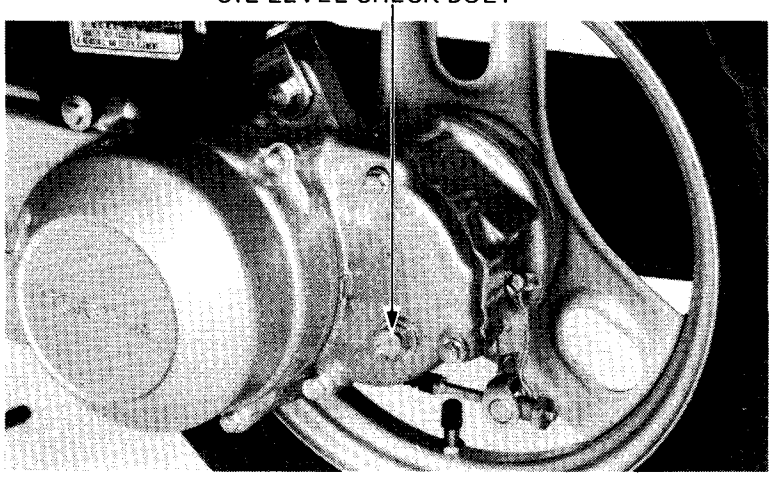
Remove the oil level check bolt.
Remove the drain bolt to allow the oil to drain thoroughly.
Check that the sealing washer is in good condition and reinstall the drain bolt.

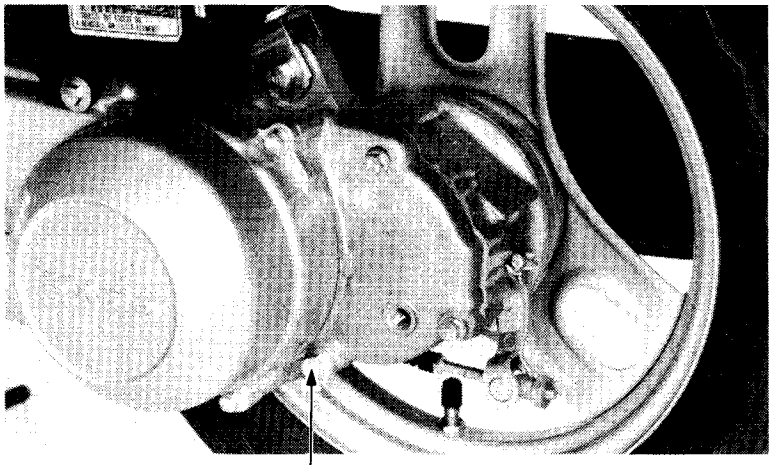
TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

Fill the final reduction case up to the proper level with the recommended oil.

OIL CAPACITY: 90 cc (3.0 US oz., 2.5 Imp. oz.)
SPECIFIED OIL: HONDA 4-STROKE OIL SAE 10W–40 or equivalent

OIL LEVEL CHECK BOLT





OIL DRAIN BOLT

SPARK PLUG

RECOMMENDED SPARK PLUGS:

	NGK	ND
Standard	BPR6HS	W20FPR
For cold climate	BPR4HS	W14FPR
For extended high speed riding	BPR8HS	W24FPR

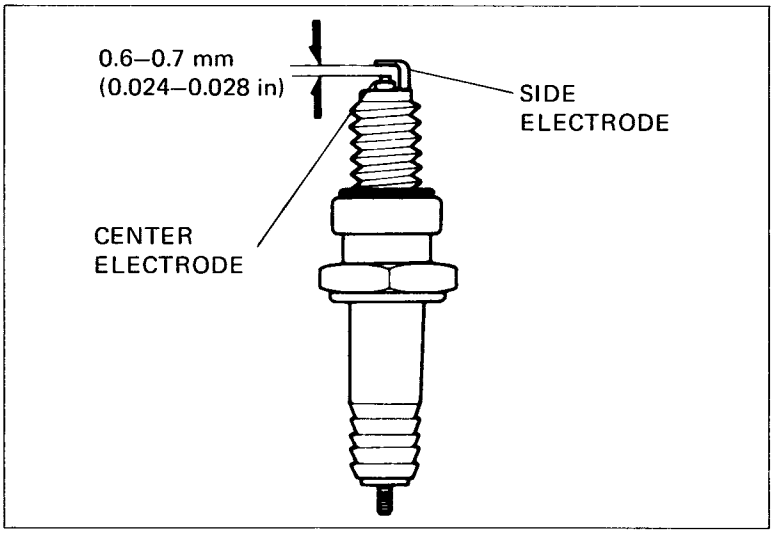
Disconnect the spark plug cap and clean any dirt from around the spark plug base.

Remove and discard the spark plug.

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

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

Adjust the gap by bending the side electrode carefully.
With the plug washer attached, thread the spark plug in by hand to prevent crossthreading. Tighten the spark plug another 1/2 turn with a spark plug wrench to compress the plug washer. Then connect the spark plug cap.



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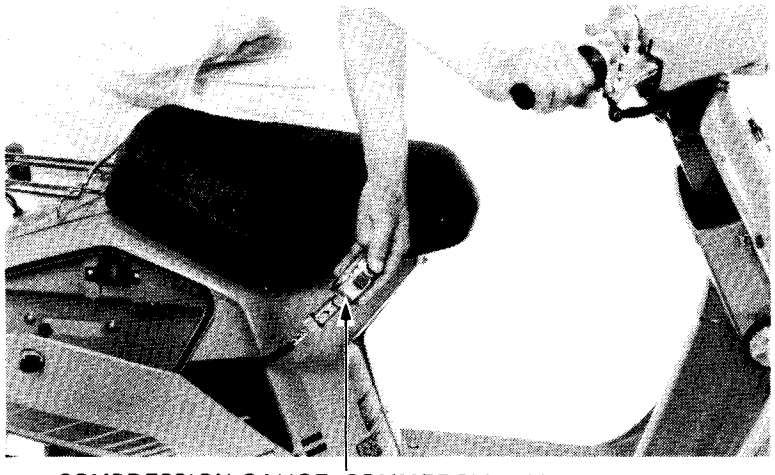
COMPRESSION TEST

Warm up the engine.
Stop the engine and remove the spark plug.
Insert a compression gauge.
Open the throttle grip fully and operate the kick starter several times.

COMPRESSION: 12.0 kg/cm^2 (170 psi)

Low compression can be caused by:
- Leaking cylinder head gasket
- Worn piston rings
- Worn cylinder

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



COMPRESSION GAUGE, COMMERCIALLY AVAILABLE

IGNITION TIMING

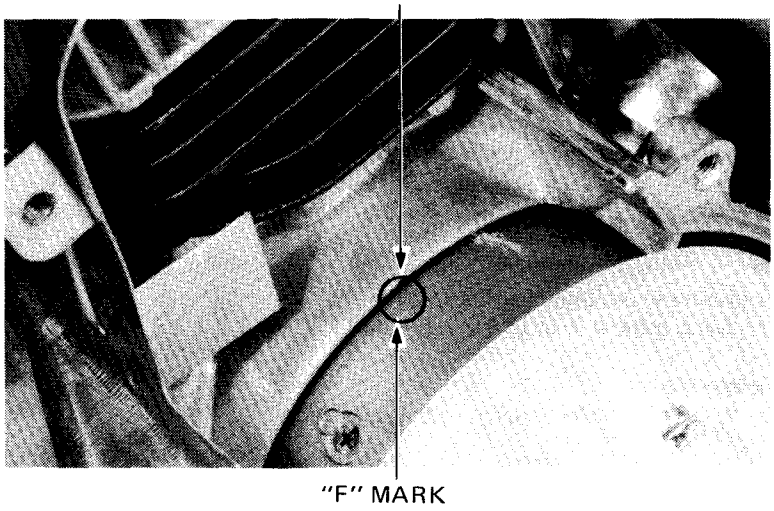
NOTE:

- The CDI ignition timing is not adjustable. If the ignition timing is not correct, check the CDI unit and alternator and replace any faulty parts.
- Use the Honda Genuine Service Tester (07308–0070000 or 07308–0010000) to check the ignition timing.

IGNITION TIMING INSPECTION

Remove the frame right body cover (Page 5-2).
Remove the exhaust pipe and fan cover (Page 7-2).
Install the exhaust pipe and check the ignition timing with a timing light.
Timing is correct if the index mark aligns with the "F" mark at 2,000 rpm.

IGNITION TIMING: 18° at 2,000 rpm

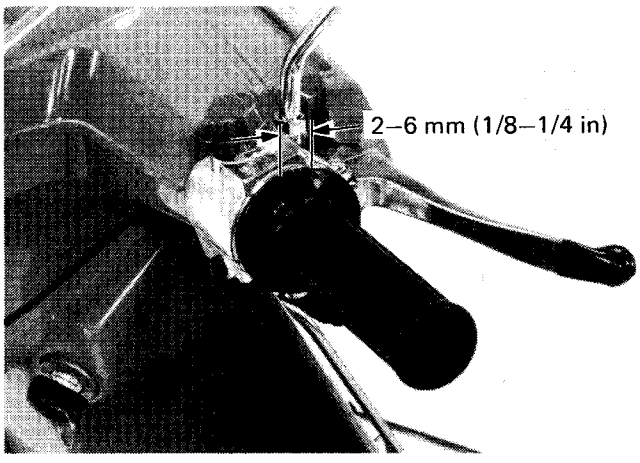


CARBURETOR ADJUSTMENT

THROTTLE CABLE

Measure the throttle grip free play at the throttle grip flange.

FREE PLAY: 2–6 mm (1/8–1/4 in)



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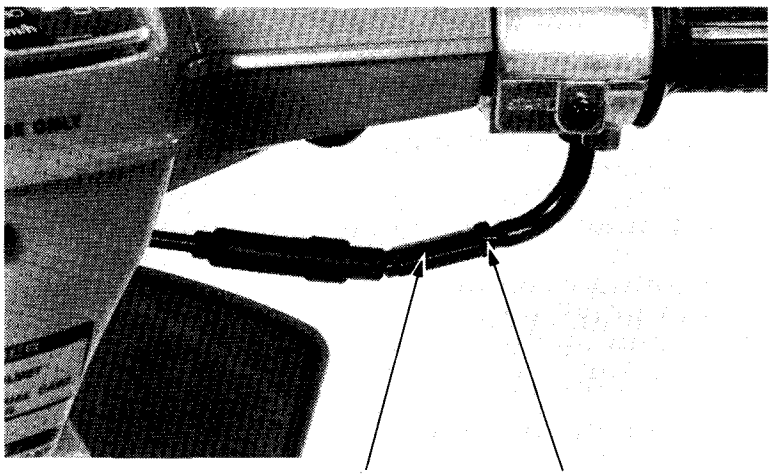
Adjustments can be made by loosening the lock nut and turning the throttle grip free play adjuster.

Replace the throttle cable when the above procedure is no longer effective.



OIL PUMP CONTROL CABLE

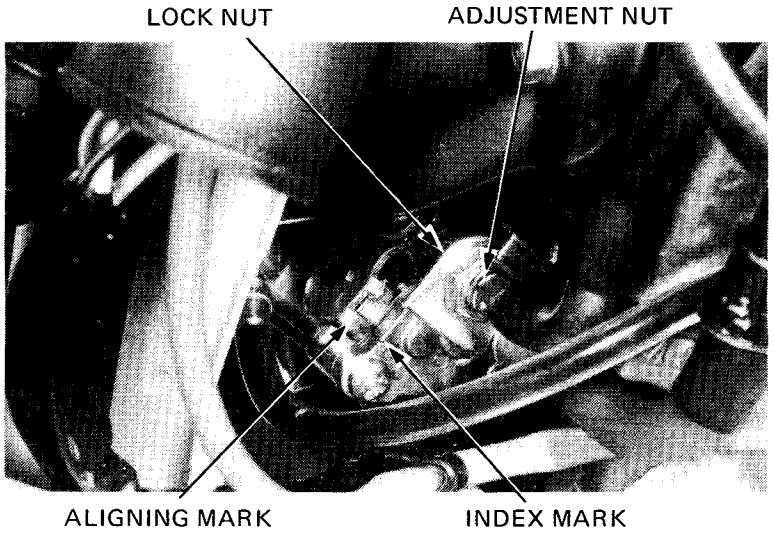
NOTE:

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

Remove the frame left body cover (3-2).
Loosen the oil pump control cable lock nut and open the throttle fully.
Check that the aligning mark on the oil pump control lever is aligned with the index mark on the pump body.
Adjust if necessary by turning the adjusting nut.

CAUTION:

> *Reference tip adjustment within 1 mm (0.04 in) of index mark on the open side is acceptable. However, the aligning mark must never be on the closed side of the index mark, otherwise engine damage will occur because of insufficient lubrication.*



Excessive white smoke or hard starting:
- Pump control lever excessively open

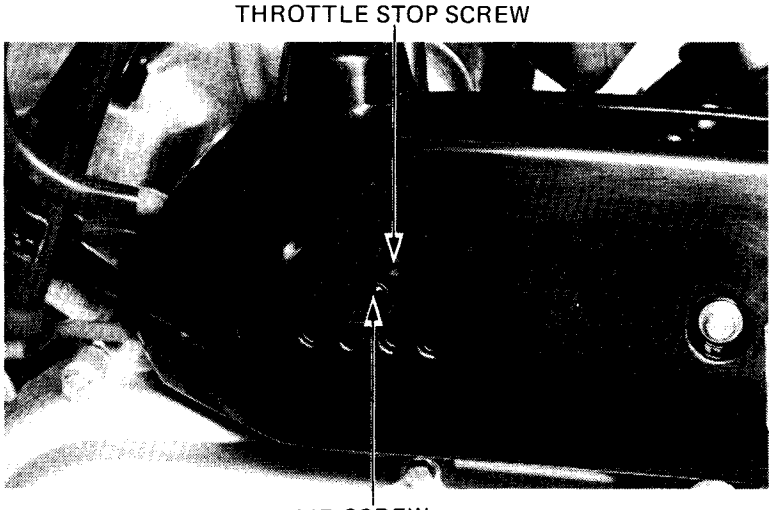
Seized piston:
- Pump control lever not properly adjusted

IDLE SPEED ADJUSTMENT

NOTE:

> The engine must be warm for accurate adjustment.

1. Remove both frame body covers (Page 5-2).
2. Attach an engine tachometer.
3. Turn the throttle stop screw to obtain the specified idle speed of 1,800 ± 100 rpm. When the engine misses or runs erratic, proceed as follows:
   (1) Screw in the air screw until it lightly seats, then turn it out 1-1/2 turns.
   (2) Reset the idle speed with the throttle stop screw.
   (3) Turn the air screw in or out to find the highest idle speed.
   (4) Reset the idle speed with the throttle stop screw.
   (5) Make sure that the engine does not miss or run erratic. If necessary, repeat steps (2) through (4).



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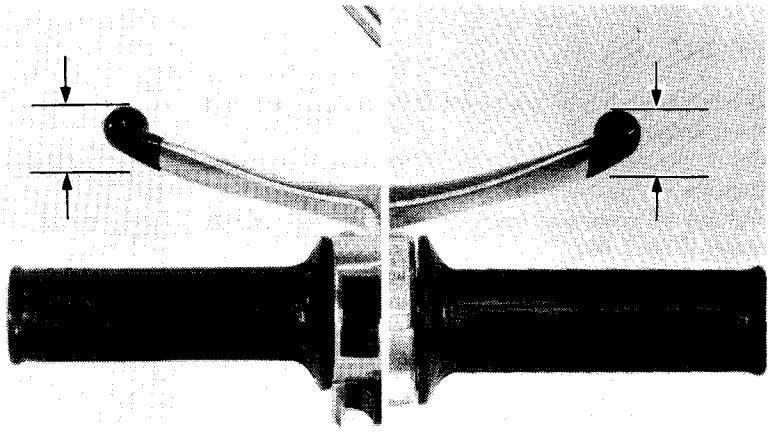
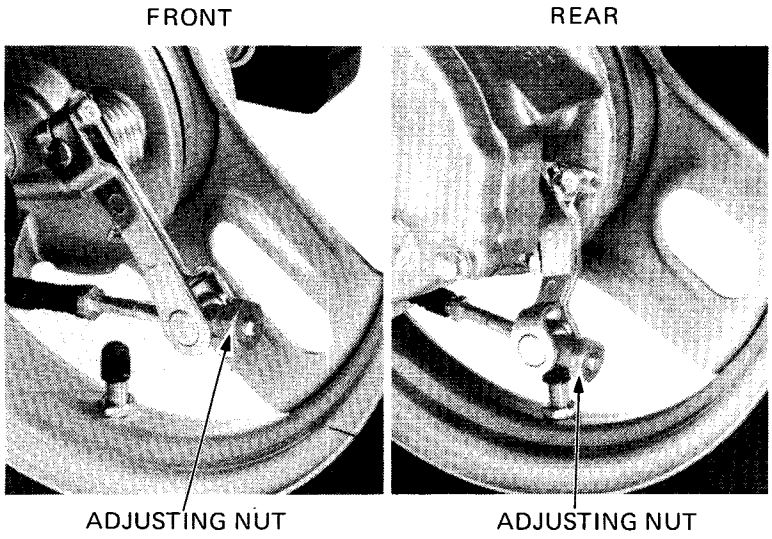
BRAKES

Measure the front and rear brake lever free play at the end of the levers.

FREE PLAY:
FRONT: 10–15 mm (3/8–5/8 in)
REAR: 10–15 mm (3/8–5/8 in)

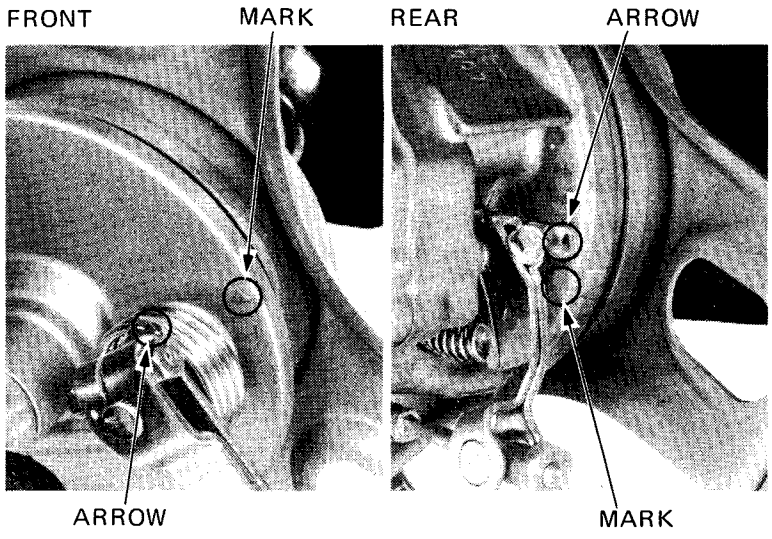


If adjustment is necessary, turn the brake adjusting nut.



BRAKE SHOE INSPECTION

Replace the brake shoes if the arrow on the brake arm aligns with the reference mark "▲" on full application of the front or rear brake.



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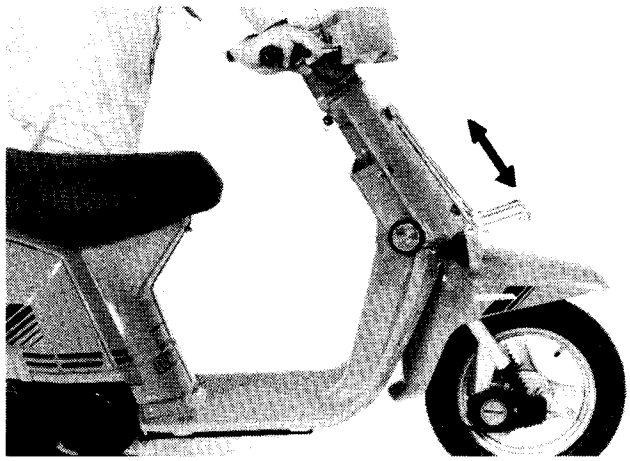
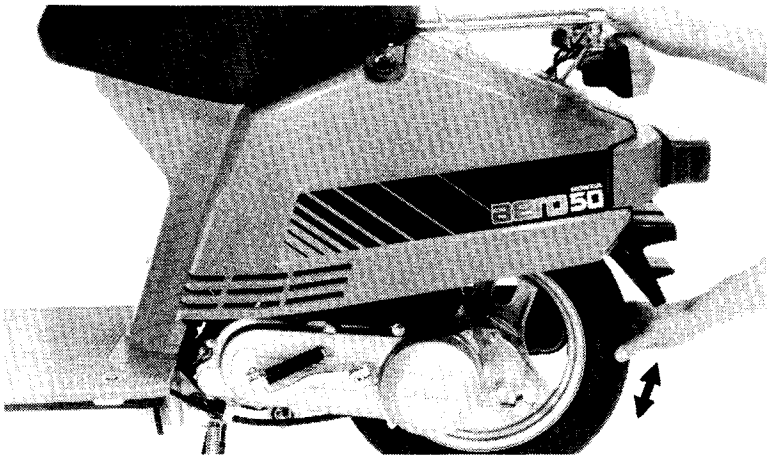
SUSPENSION

FRONT



Check the action of the front forks by compressing them several times.
Check the entire fork assembly for signs of damage.
Replace any components which cannot be repaired.
Tighten all nuts and bolts to the specified torque values (Page 1-6).

REAR

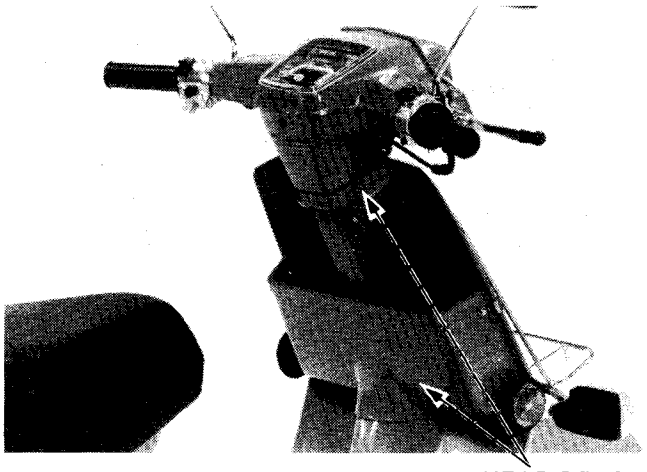


Place the scooter on the center stand.
Hold the rear carrier with one hand and move the left crankcase sideways with force to see if the swing arm bushings are worn.
Replace if excessively worn.
Check the entire suspension assembly.
Be sure it is securely mounted and not damaged.
Tighten all nuts and bolts to the specified torque values (Page 1-6).

STEERING HEAD BEARINGS

NOTE:

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



HEAD BEARINGS

Place the scooter on the center stand.
Raise the front wheel off the ground by placing a support under the frame.
Check that the handlebar rotates freely.
If the handlebar moves unevenly, binds, or has vertical movement, adjust the steering head bearing by turning the steering head adjusting nut with a pin spanner (Page 11-23).

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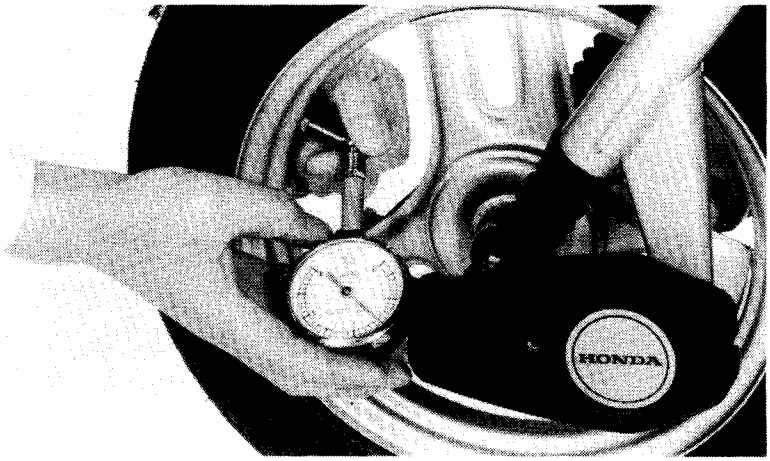
WHEELS/TIRES



Check the tire pressures when the tires are COLD.

TIRE PRESSURES:
FRONT: 150 kPa (1.50 kg/cm^2, 21 psi)
REAR: 175 kPa (1.75 kg/cm^2, 24 psi)

TIRE SIZES:
FRONT: 2.75–10–2PR
REAR: 2.75–10–2PR

Check the tires for wear, damage or imbedded objects.

NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to the correct torque values (Page 1-6).

Check all cotter pins and safety clips.

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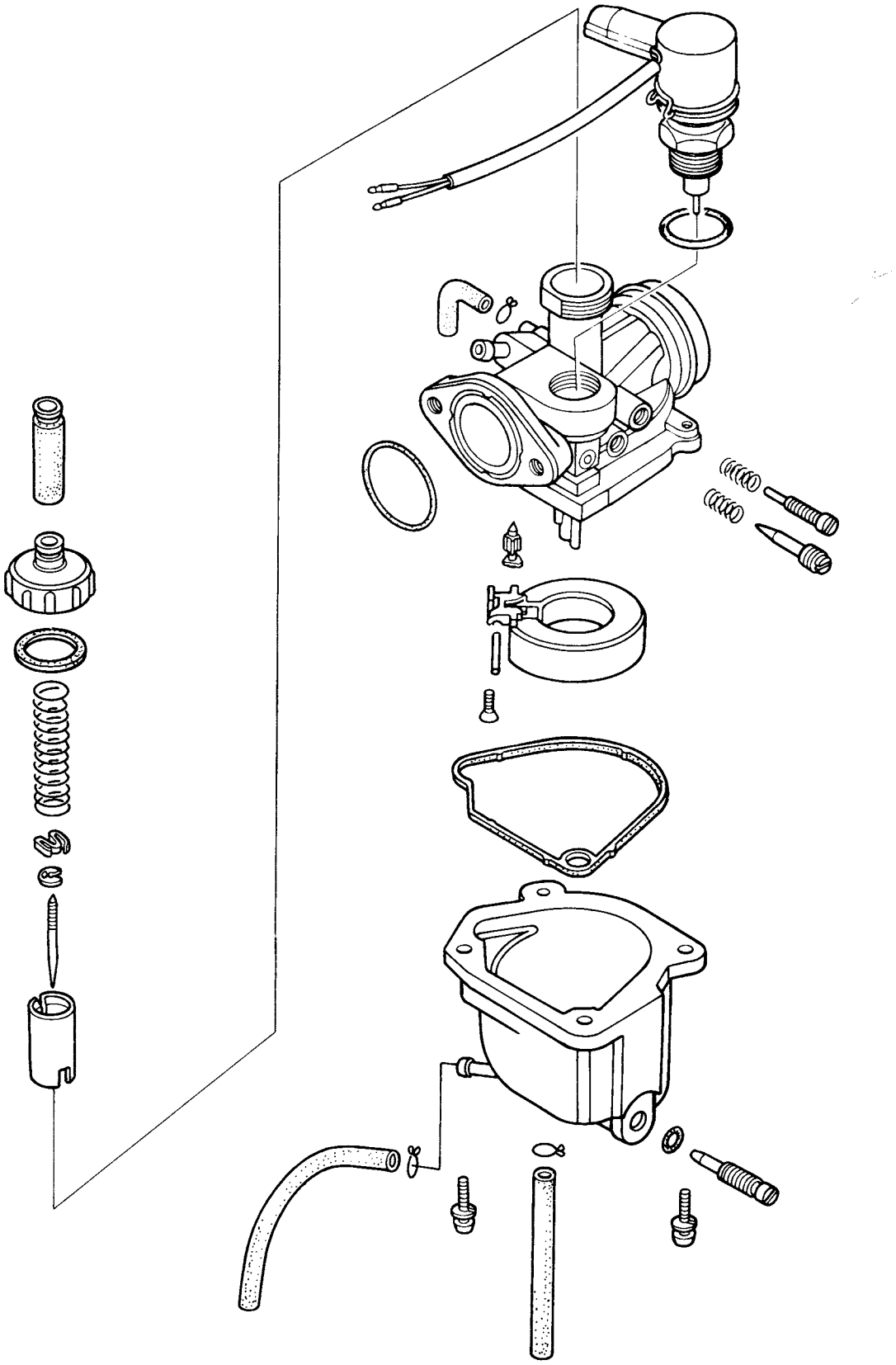

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SERVICE INFORMATION	4–1	FLOAT LEVEL INSPECTION	4–8
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THROTTLE VALVE DISASSEMBLY	4–2	THROTTLE VALVE INSTALLATION	4–9
CARBURETOR REMOVAL	4–4	REED VALVE	4–10
AUTO BYSTARTER	4–5	FUEL AUTO VALVE INSPECTION/ MAINTENANCE	4–11
FLOAT/FLOAT VALVE/JETS DISASSEMBLY	4–6		
JETS/FLOAT VALVE/FLOAT ASSEMBLY	4–7		

SERVICE INFORMATION

GENERAL

- The fuel tank is equipped with an auto fuel valve that is turned OFF automatically when the engine is stopped.
- 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 locations of the O-rings. Replace them with new ones during assembly.
- Bleed air from the oil outlet line whenever it is disconnected.

SPECIFICATIONS

Venturi dia.	12 mm (0.47 in)
Identification number	PA 05A
Float level	12.2 ± 1.0 mm (0.48 ± 0.04 in)
Air screw opening	1-1/2 turns out
Idle speed	1,800 ± 100 rpm
Throttle grip free play	2–6 mm (1/8–1/4 in)

TOOLS

Special

Vacuum Pump — A937X-041-XXXXX or ST-AH-260-MC7 (U.S.A. only, included in Turbo kit.)

Common

Float Level Gauge — 07401–0010000

TROUBLESHOOTING

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

Engine idles roughly, stalls or runs poorly
1. Idle speed incorrect
2. Rich mixture
3. Lean mixture
4. Clogged air cleaner
5. Intake pipe leaking
6. Fuel contaminated

Lean mixture
1. Carburetor fuel jets clogged
2. Fuel cap vent clogged
3. Clogged fuel filter
4. Fuel line kinked or restricted
5. Float valve faulty
6. Float level too low
7. Air vent tube clogged

Rich mixture
1. Faulty float valve
2. Float level too high
3. Carburetor air jets clogged
4. Disconnected auto bystarter wires

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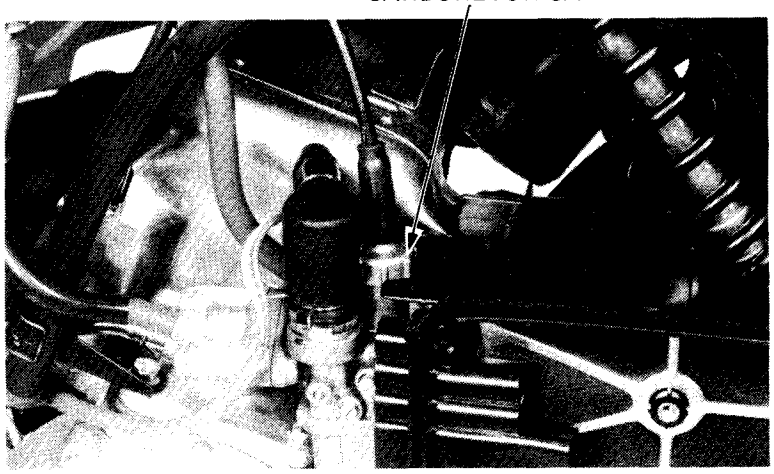
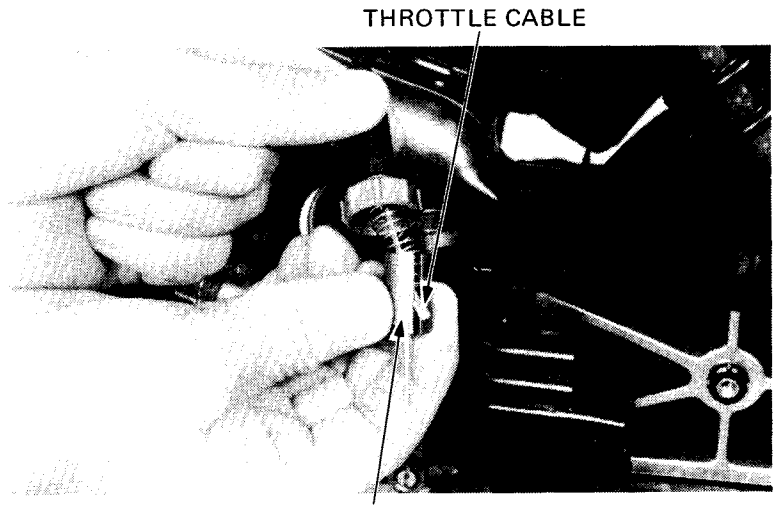
THROTTLE VALVE DISASSEMBLY

Remove the frame left body cover (Page 3-3).
Remove the air cleaner cover.

Remove the carburetor cap and pull out the throttle valve.



Disconnect the throttle cable from the throttle valve.



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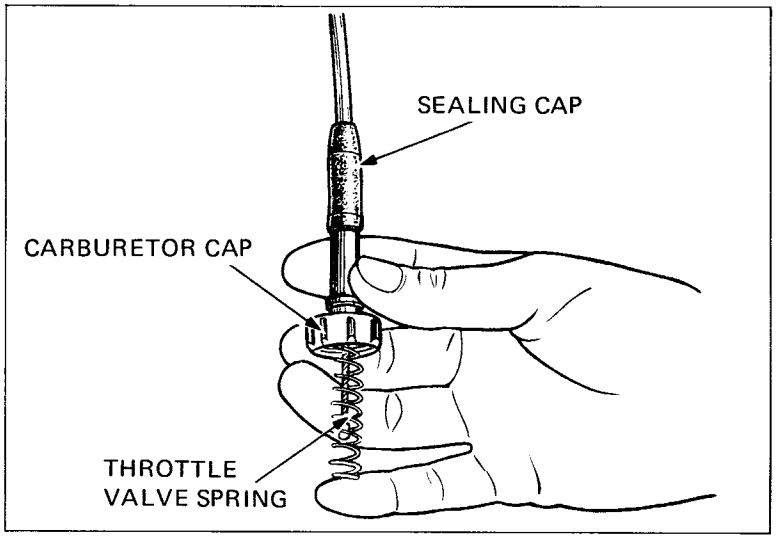
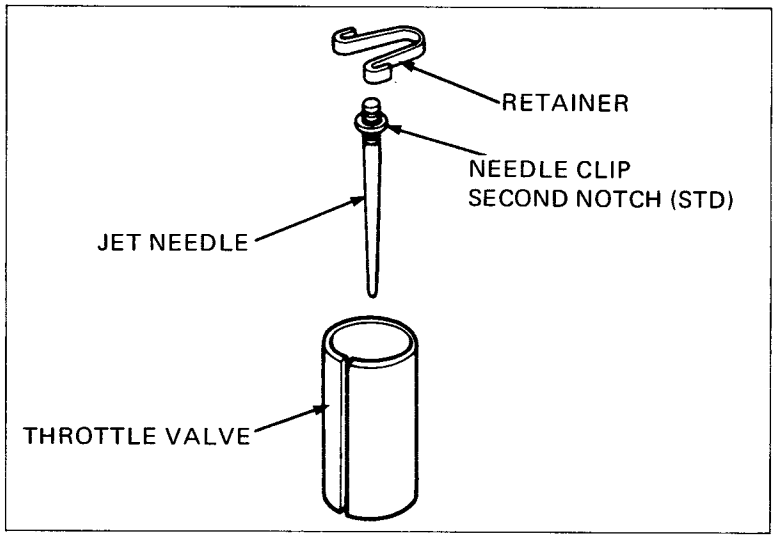
Remove the throttle valve spring, carburetor cap and sealing cap from the throttle cable.



Pry out the retainer and remove the jet needle.

JET NEEDLE/THROTTLE VALVE INSPECTION

Check the jet needle and throttle valve for wear or damage.
Replace them if they are worn or damaged.



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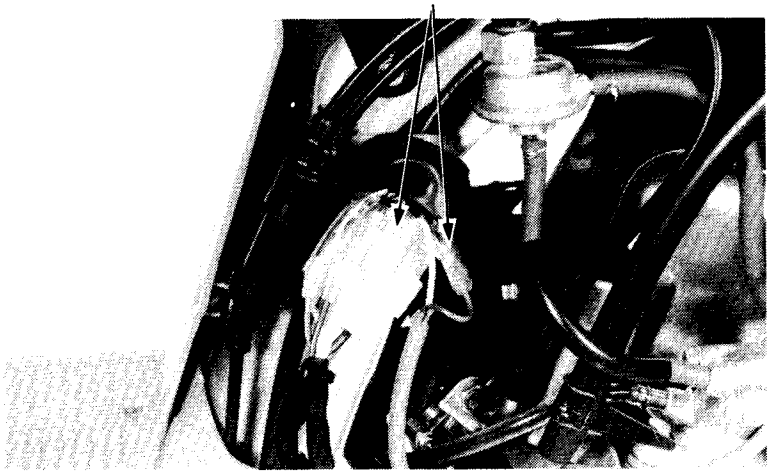
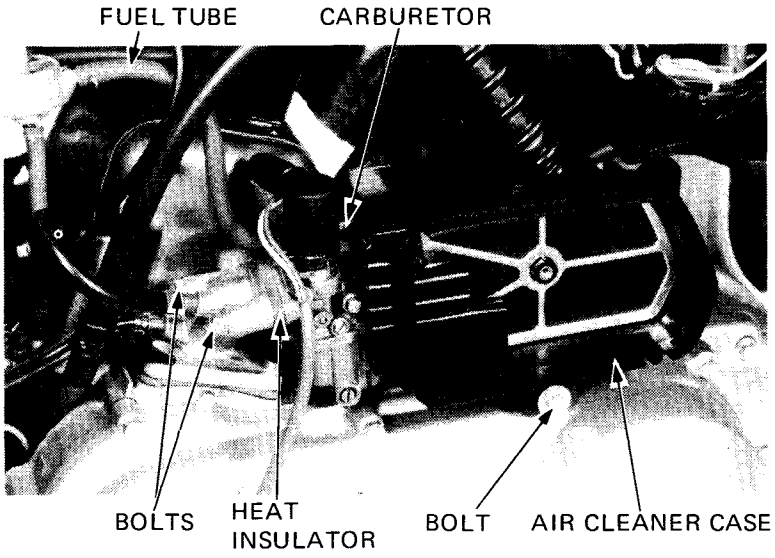
CARBURETOR REMOVAL

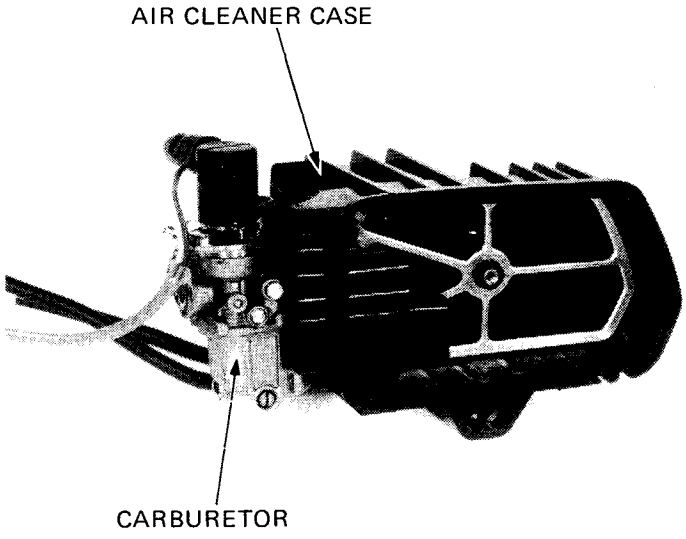
Remove the frame left body cover (Page 3-3).
Remove the carburetor cover, carburetor cap and throttle valve (Page 4-3).
Disconnect the auto bystarter wire connectors.



Disconnect the fuel tube.
Remove the carburetor and air cleaner case as a unit.
Remove the heat insulator from the carburetor.



Remove the carburetor from the air cleaner case.



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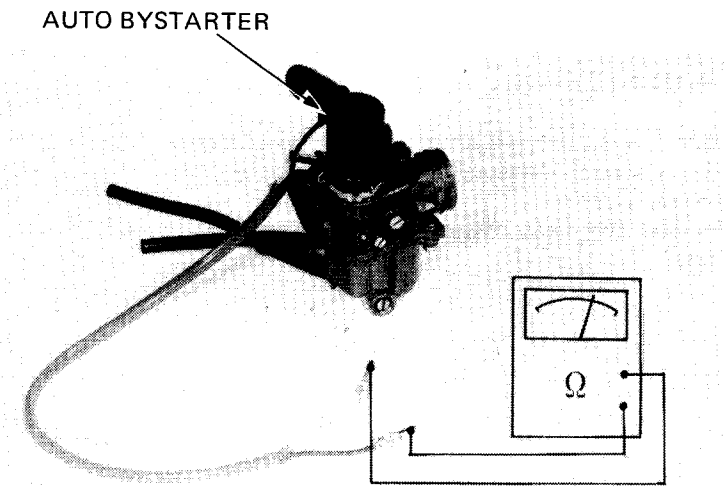
AUTO BYSTARTER

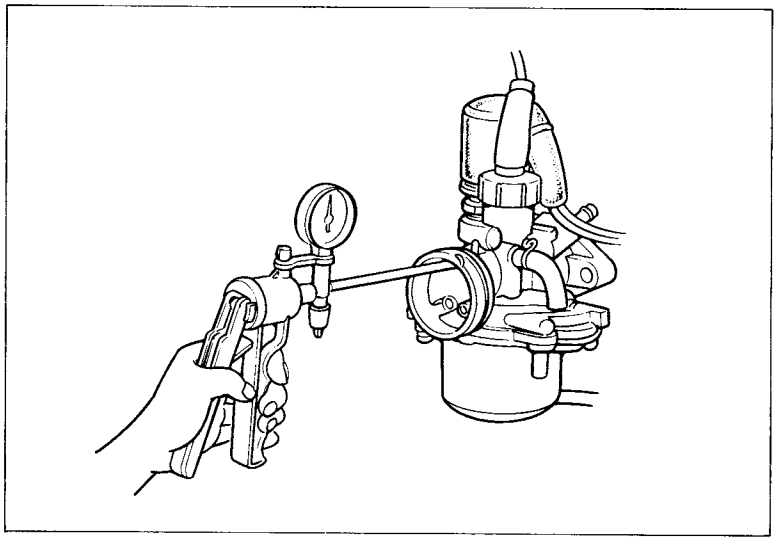


INSPECTION

Stop the engine and let it cool for 10 minutes or more.
Measure the resistance between the auto bystarter wires. Replace the auto bystarter with a new one if it is out of specification or there is no continuity.
RESISTANCE: 10 ohms max.

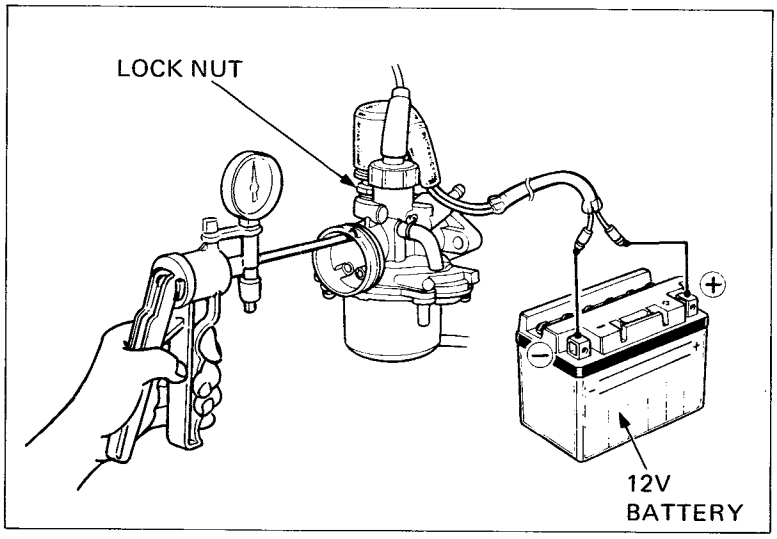
Let the carburetor sit for 30 minutes.
Connect a pressure tester to the enrichening circuit.
Apply pressure to the circuit.

If the passage is blocked, replace the auto bystarter with a new one.



Connect a 12V battery between the auto bystarter wires and wait five minutes.
Connect a pressure tester to the fuel enrichening circuit and apply pressure to it.

Replace the auto bystarter with a new one if there is no restriction to the pressure applied.



REPLACEMENT

Loosen the auto bystarter lock nut and remove the auto bystarter from the carburetor body.
Install a new auto bystarter and tighten the lock nut.

TORQUE: 4–6 N·m (0.4–0.6 kg-m, 3–4 ft-lb)

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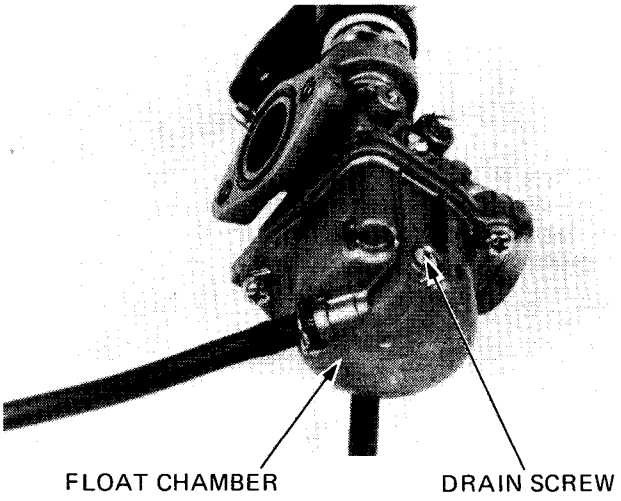
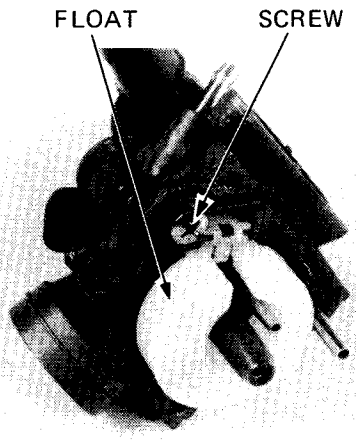
FLOAT/FLOAT VALVE/JETS DISASSEMBLY

Place a drain pan under the carburetor and loosen the carburetor drain screw to allow fuel to drain into the drain pan.
Remove the float chamber from the carburetor body.

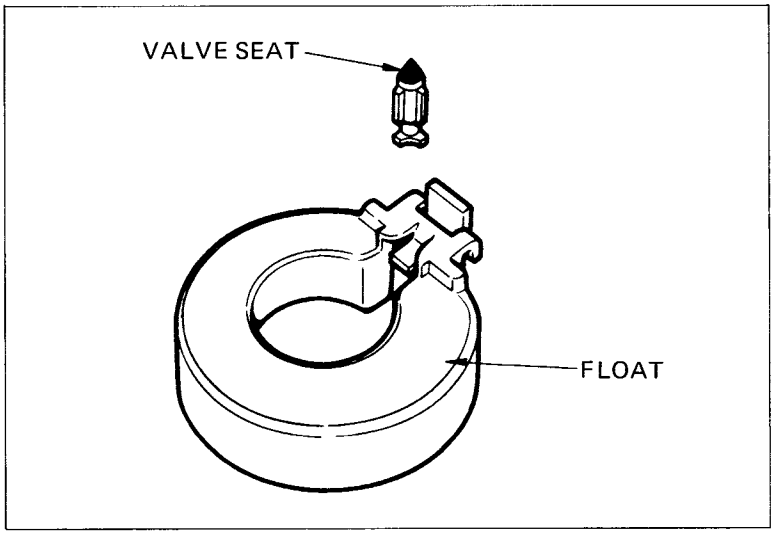


Remove the carburetor float and float valve by removing the attaching screw.



FLOAT/FLOAT VALVE INSPECTION

Check the valve seat for wear or damage.
Check the float for deformation or fuel inside the float.



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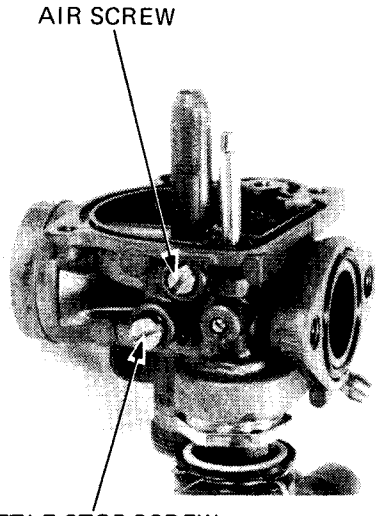
Remove the air and throttle stop screws.
Record the numbers of turns until they seat lightly, so they can be returned to the original positions during reassembly.

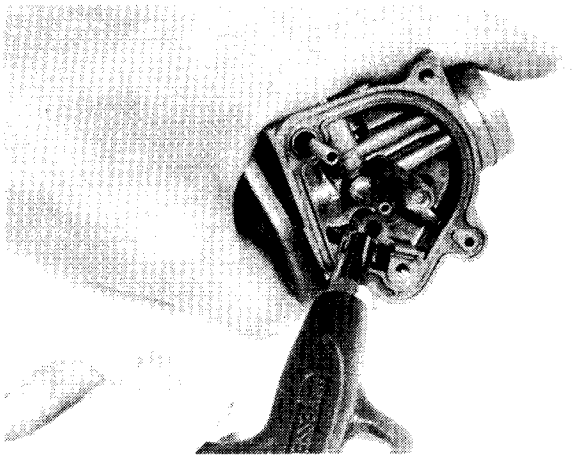
CAUTION:

Do not force the screws against their seats to prevent damage to the seats.

Loosen the auto bystarter lock nut and remove the auto bystarter.

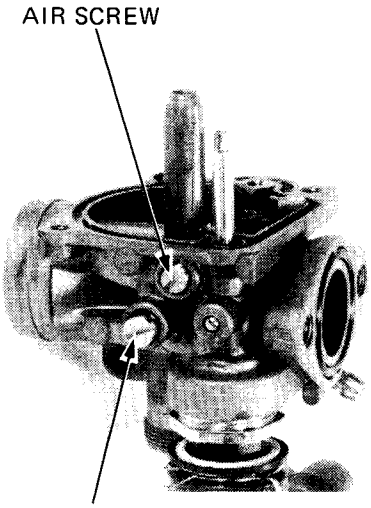


Blow open all jets and body openings with compressed air.



JETS/FLOAT VALVE/FLOAT ASSEMBLY

Install the air and throttle stop screws to their original positions recorded during disassembly.



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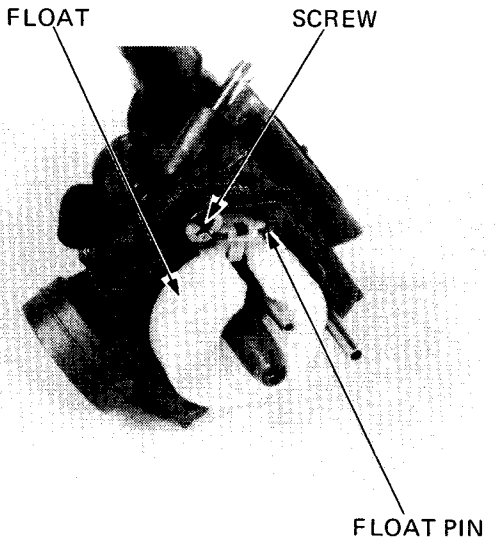
Install the float valve, float and float pin.
Tighten the float screw securely.

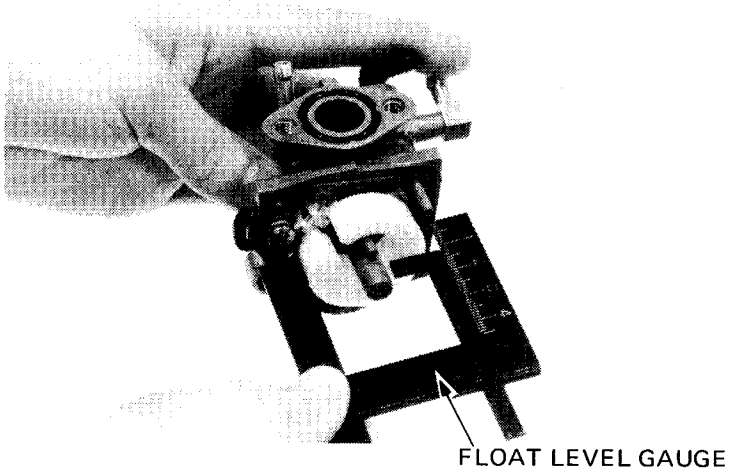


FLOAT LEVEL INSPECTION

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

FLOAT LEVEL: 12.2 ± 1.0 mm (0.48 ± 0.04 in)

Replace the float if it is out of the specified level range.
Check the operation of the float and install the float chamber.



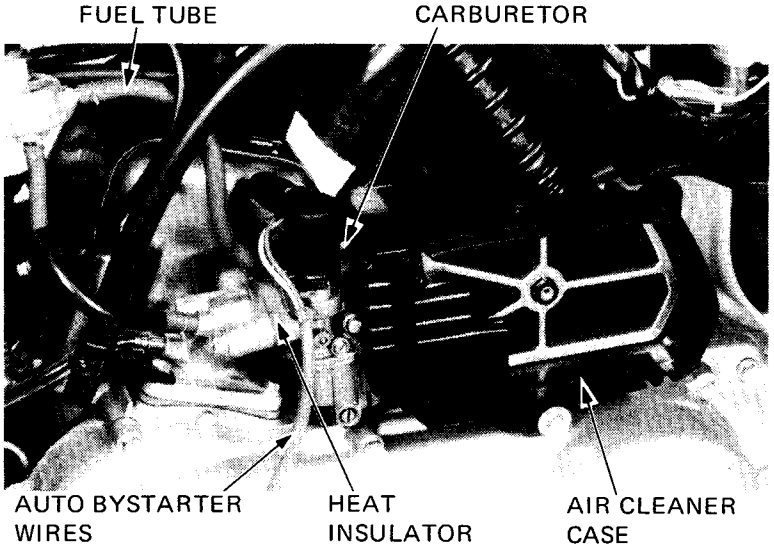
CARBURETOR INSTALLATION

CAUTION:

Do not allow foreign particles to enter the carburetor.

Be sure the O-ring is in place on the carburetor.
Install the heat insulator and carburetor with the air cleaner case.

Connect the fuel tube and auto bystarter wires.



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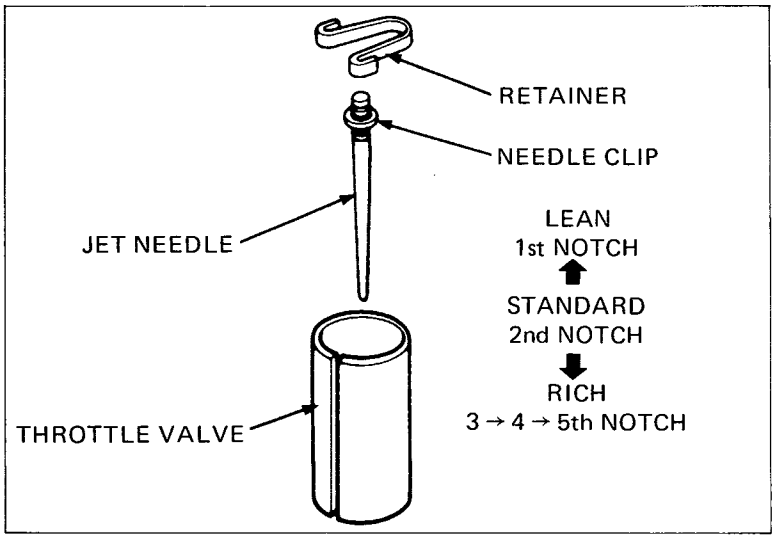
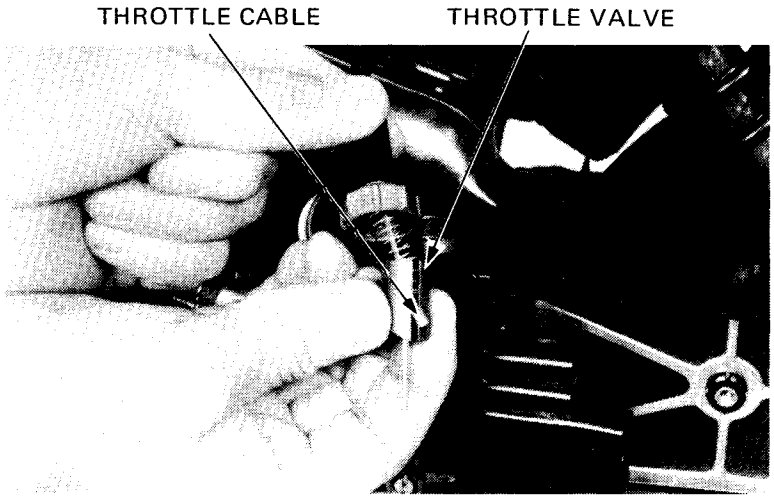
THROTTLE VALVE INSTALLATION

Install the jet needle into the throttle valve and secure with the retainer.
Assemble the throttle cable, carburetor cap, rubber seal and throttle valve spring.



Connect the throttle cable to the throttle valve.

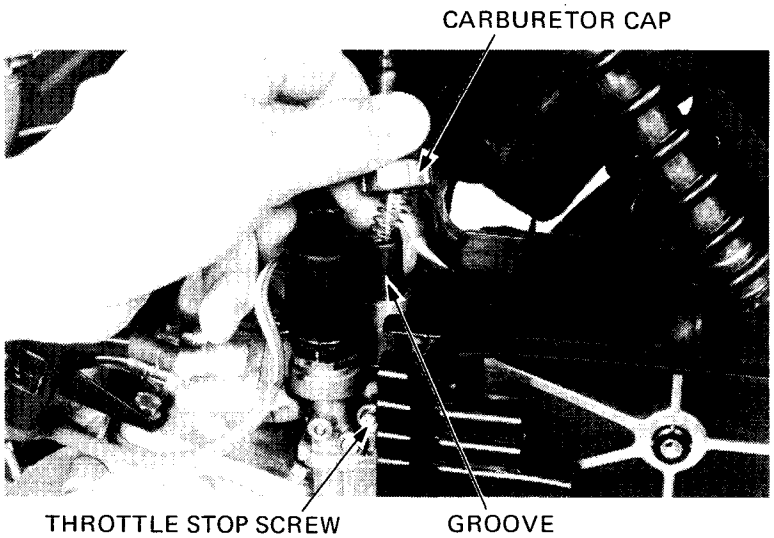


Slide the throttle valve into the carburetor body.

NOTE:

> Align the groove in the valve with the throttle stop screw on the carburetor body.

Tighten the carburetor cap.



Perform the following adjustments and operations.
- Throttle cable free play adjustment (Page 3-7).
- Oil pump cable adjustment (Page 3-8).
- Oil pump and line bleeding (Page 2-5).
- Idle speed adjustment (Page 3-8).

Install the carburetor cover and left body cover.

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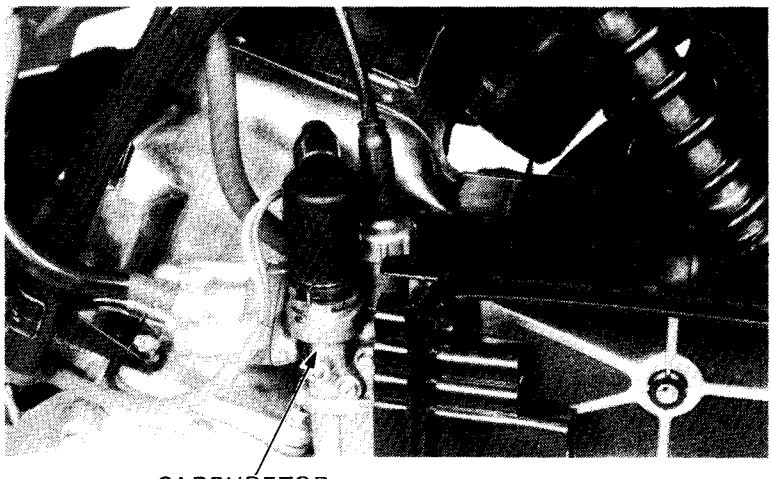
REED VALVE

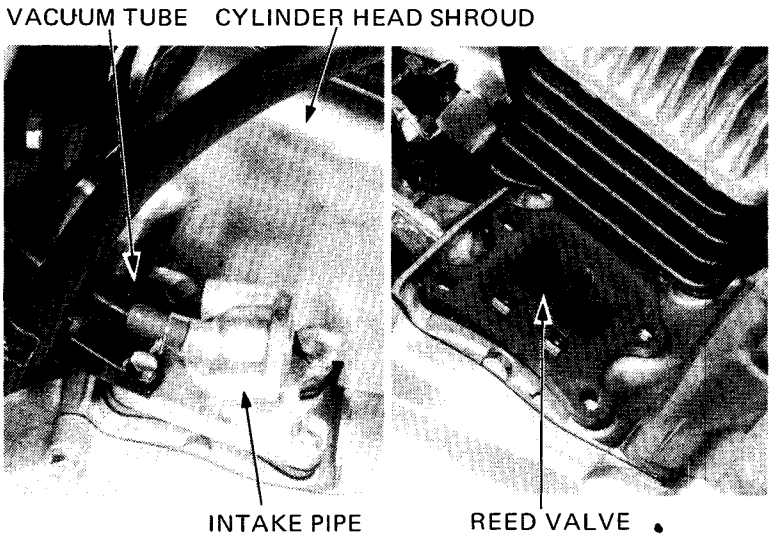
REED VALVE REMOVAL

Remove both frame body covers (Page 5-2).
Remove the carburetor (Page 4-4).



Remove the cylinder head shroud (Pages 6-3, 6-4).

Remove vacuum tube.
Remove the intake pipe by removing four bolts.
Remove the reed valve.

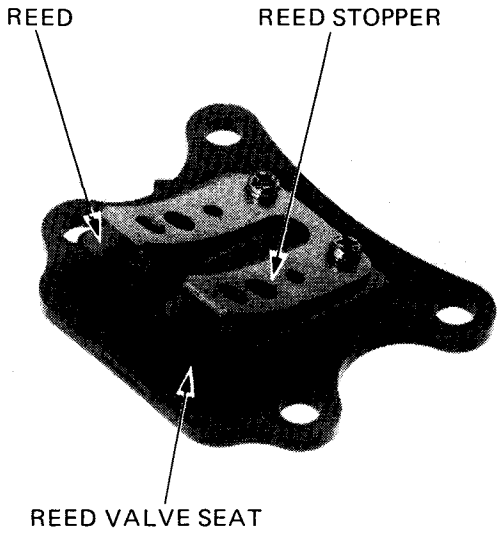


REED VALVE INSPECTION

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.



REED VALVE INSTALLATION

The installation sequence is essentially the reverse order of removal.
After installation, check for secondary leaks.

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FUEL AUTO VALVE INSPECTION/ MAINTENANCE

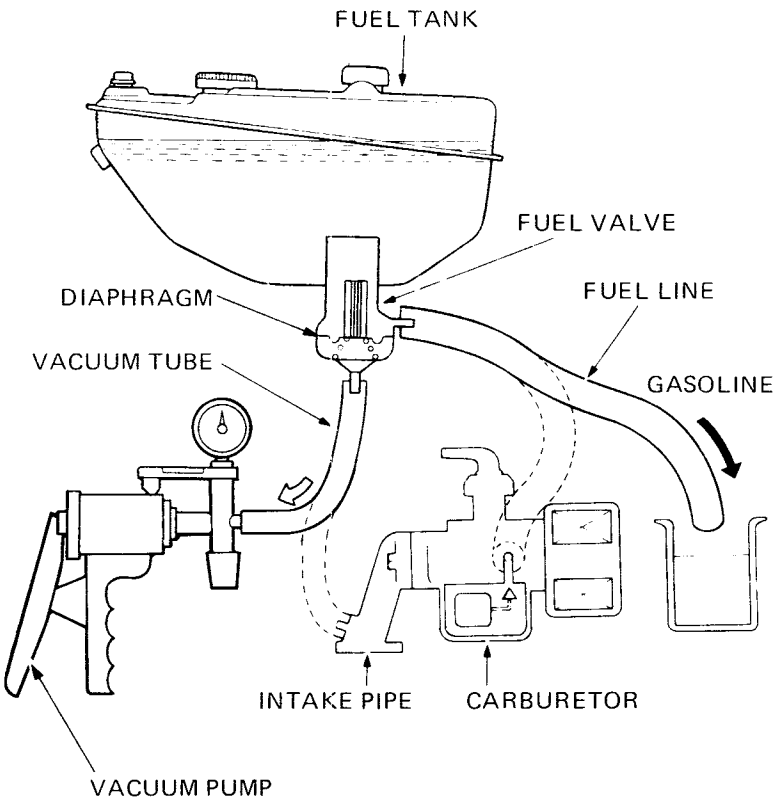
WARNING

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

1. Disconnect the fuel line from the carburetor and check if fuel is flowing out of the fuel line.
   The fuel valve is normal if fuel ceases to flow out of the fuel line after the remaining fuel has been drained out from the fuel valve and fuel line thoroughly. Should fuel fail to stop flowing out of the fuel line, perform the following operation:
   - Blow open the vacuum tube
   - Direct a jet of compressed air to the fuel valve from the top.

2. Disconnect the vacuum tube from the intake pipe and apply vacuum to the vacuum tube. The fuel valve is normal if fuel flows out of the fuel line when vacuum is applied.
   If fuel does not flow out of the fuel line when negative pressure is applied, observe the following:
   - Clean the vacuum tube with compressed air.
   - Clean the fuel strainer with compressed air.
   - Loosen a stuck diaphragm by directing a jet of compressed air to the fuel valve from the top.

For fuel auto valve removal and installation, see page 3-4.



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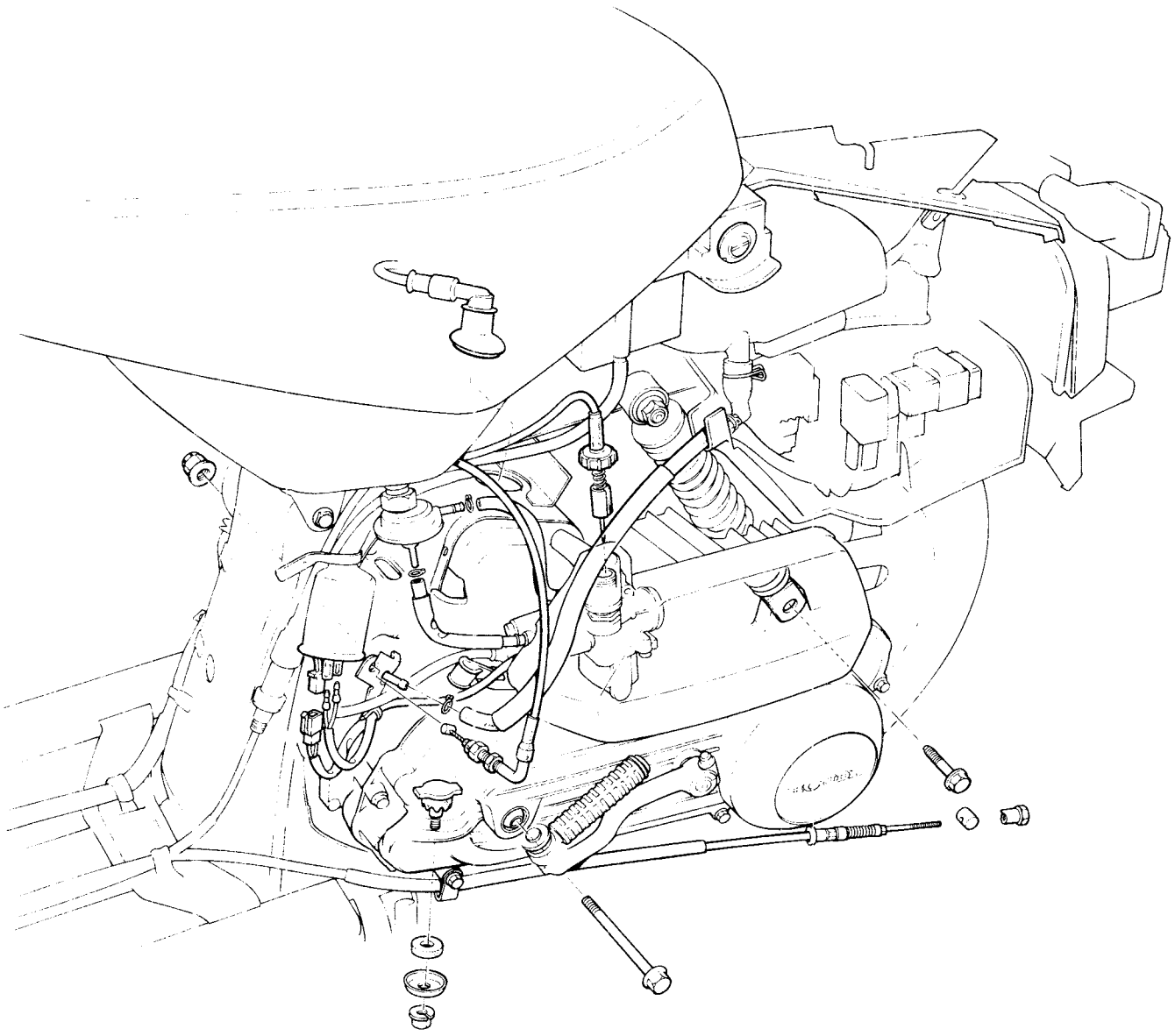

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5. ENGINE REMOVAL/INSTALLATION

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

SERVICE INFORMATION

GENERAL

The engine must be removed to service the crankshaft.

SPECIFICATIONS

Engine weight	15.2 kg (33.5 lb)

TORQUE VALUES

Engine hanger bolts:	35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)
Rear shock absorber lower bolt:	25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)
Rear axle nut:	80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)

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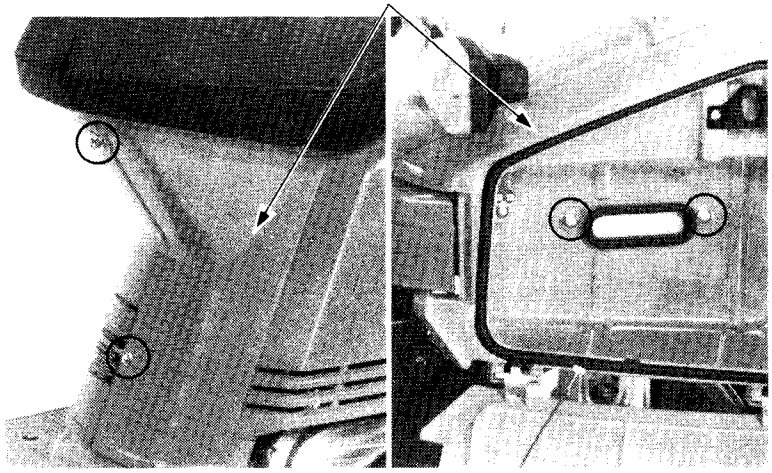
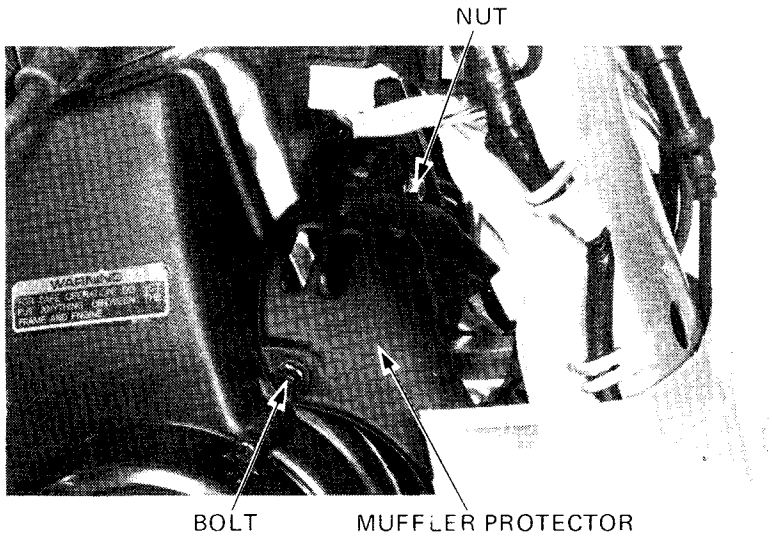
ENGINE REMOVAL

Remove both frame body covers.

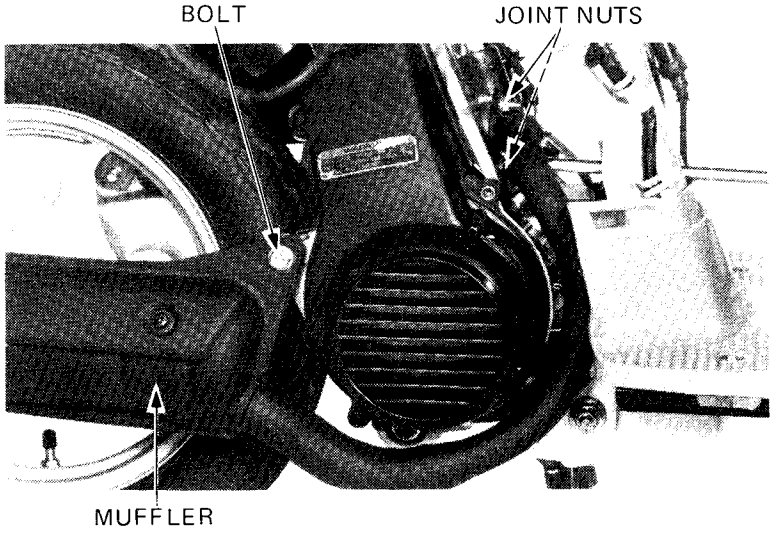


Remove the nut and bolt attaching the muffler protector.



Remove the exhaust pipe joint nuts.

Remove the muffler mounting bolt and the muffler.



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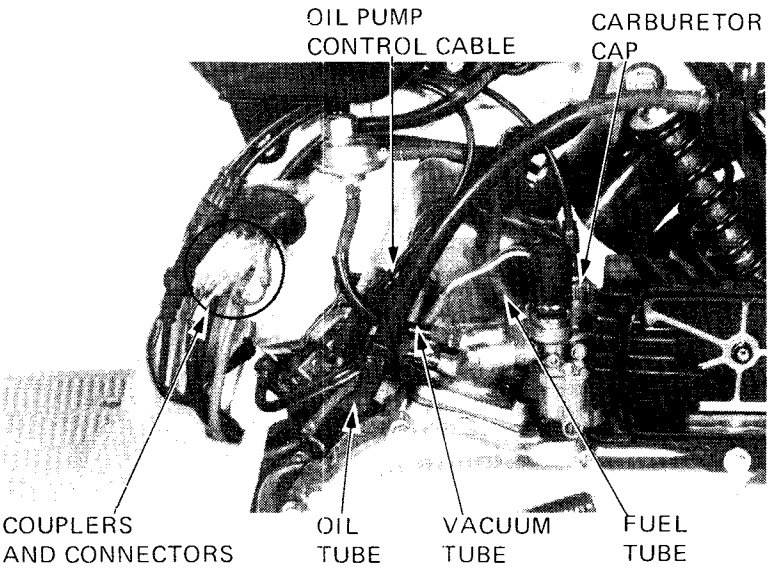
Remove the air cleaner cover.
Disconnect the oil, fuel and vacuum tubes.

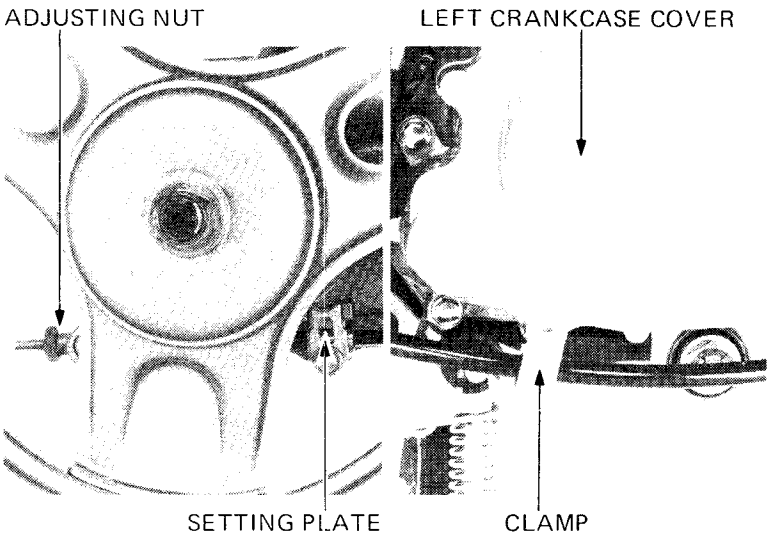
CAUTION:

Plug the end of the oil line to prevent oil from flowing out of the tube.

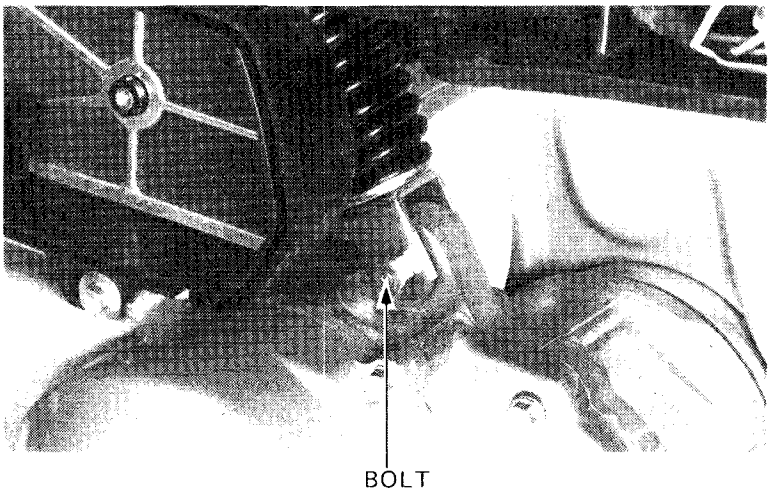
Disconnect the oil pump control cable at the oil pump.
Remove the carburetor cap from the carburetor.
Remove the spark plug cap.
Disconnect the alternator, starter motor and auto bystarter wire couplers and connectors.



Remove the rear brake cable setting plate and adjusting nut.
Remove the rear brake cable from the clamp on the left crankcase cover



Remove the rear shock absorber lower bolt.



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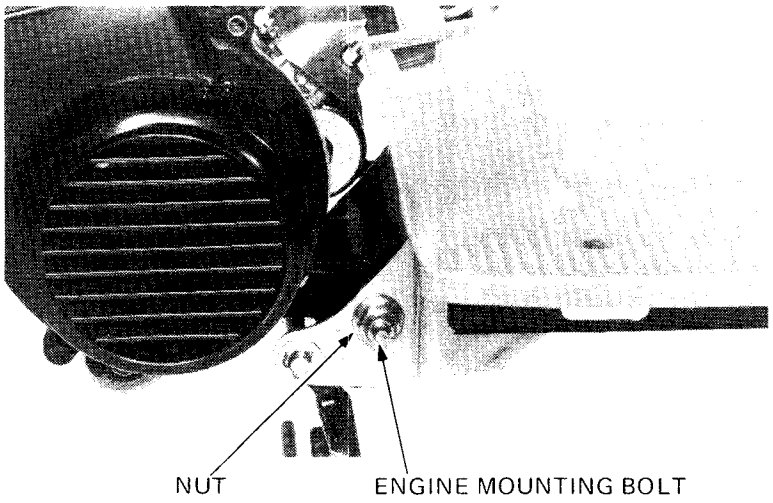
Unscrew the nut and remove the engine mounting bolt.
Remove the engine.

Remove the following parts when the crankcase is to be separated:

- Air cleaner
- Carburetor
- Intake pipe and reed valve
- Oil pump
- Rear wheel
- Engine mounting bracket
- Alternator
- Starter motor
- Drive/driven pulleys
- Cylinder/cylinder head



ENGINE INSTALLATION

Installation sequence is essentially the reverse of removal.
Torque the engine mounting bolt and rear shock absorber lower bolt to the specified torque values.

TORQUE:
ENGINE MOUNTING BOLT:
35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)
REAR SHOCK ABSORBER LOWER BOLT:
25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)

Perform the following inspections and adjustments after installation:

- Wire and cable routing (Page 1-7)
- Carburetor adjustment (Page 3-7)
- Rear brake adjustment (Page 3-9)
- Oil pump bleeding/priming (Page 2-5)

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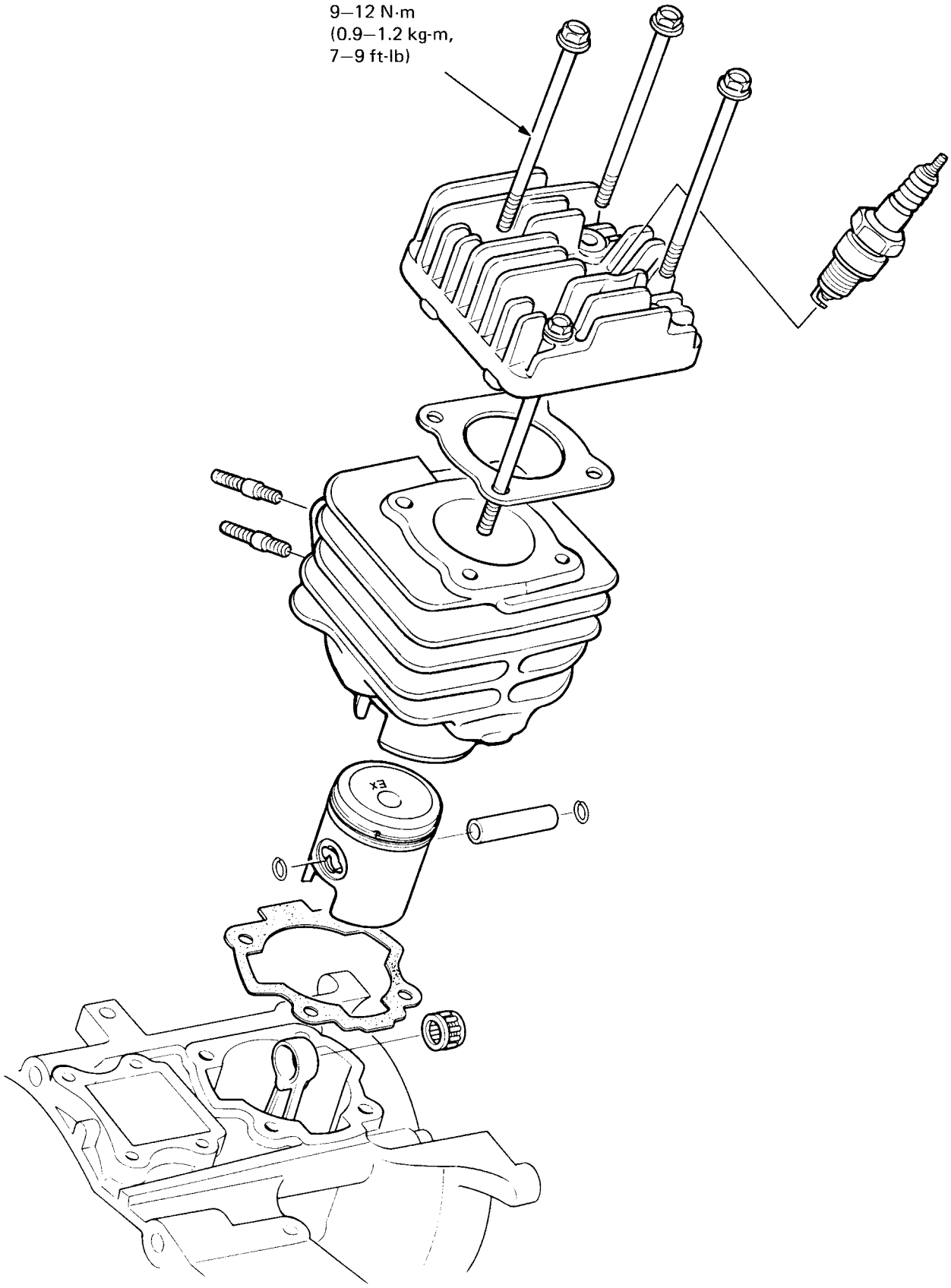

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6. CYLINDER HEAD/CYLINDER/PISTON

SERVICE INFORMATION	6–1
TROUBLESHOOTING	6–1
CYLINDER HEAD	6–2
CYLINDER/PISTON	6–4

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 bore	40.000–40.015 (1.5748–1.5754)	40.05 (1.577)
Piston O.D. (4 mm from bottom of piston skirt)	39.955–39.970 (1.5730–1.5736)	39.90 (1.571)
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)	10.03 (0.395)
Piston pin O.D.	9.994–10.000 (0.3935–0.3937)	9.97 (0.393)
Piston-to-piston pin clearance	0.002–0.012 (0.0001–0.0005)	0.040 (0.0016)
Piston ring end gap (top, second)	0.15–0.35 (0.006–0.014)	0.60 (0.024)
Connecting rod small end I.D.	14.005–14.017 (0.5514–0.5519)	14.03 (0.552)

TORQUE VALUE

Cylinder head bolt	9–12 N·m (0.9–1.2 kg-m, 7–9 ft-lb)

TROUBLESHOOTING

Compression too low, hard starting or poor performance at low speed
1. Leaking cylinder head gasket
2. Loose spark plug
3. Worn, stuck or broken piston rings
4. Worn or damaged cylinder and piston
5. Faulty reed valve

Compression too high, overheating or knocking
1. Excessive carbon build-up in cylinder head or on top of piston

Abnormal noise-piston
1. Worn cylinder and piston
2. Worn piston pin or piston pin hole
3. Worn connecting rod small end bearing

Abnormal noise
1. Worn, stuck or broken piston rings
2. Worn or damaged cylinder

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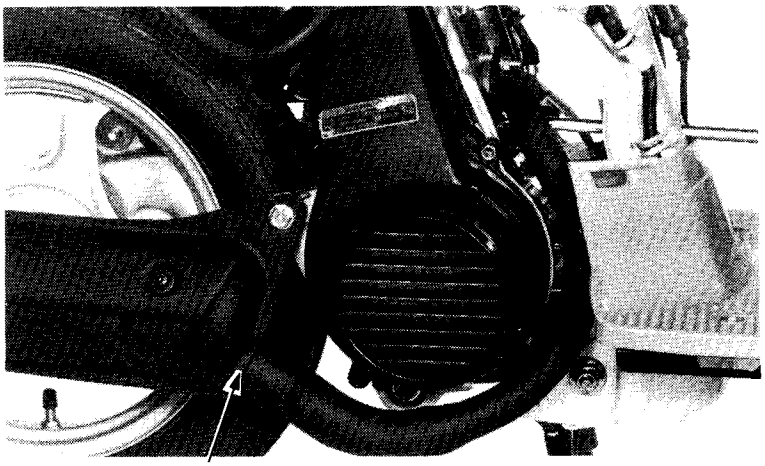
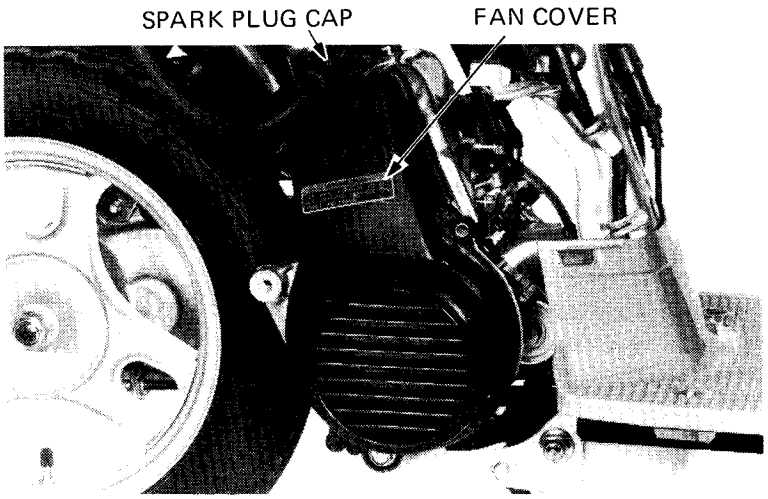
CYLINDER HEAD

Remove both frame body covers (Page 5-2).

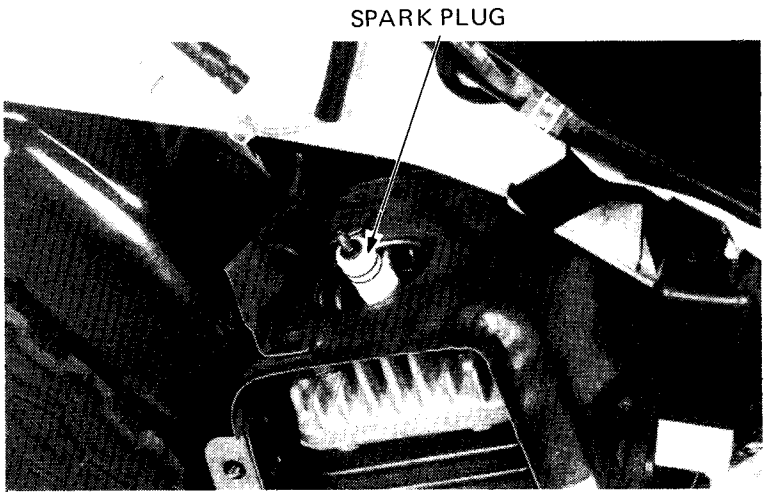
Remove the exhaust muffler (Page 5-2).



Remove the fan cover.
Remove the spark plug cap from the spark plug.



Remove the spark plug.



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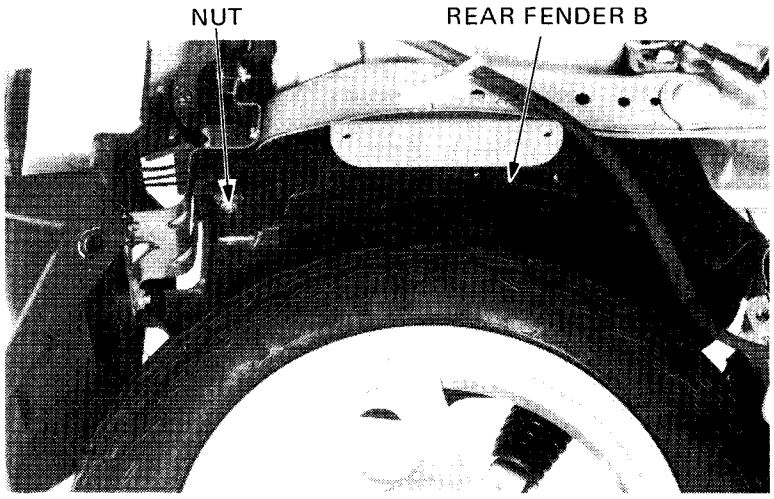
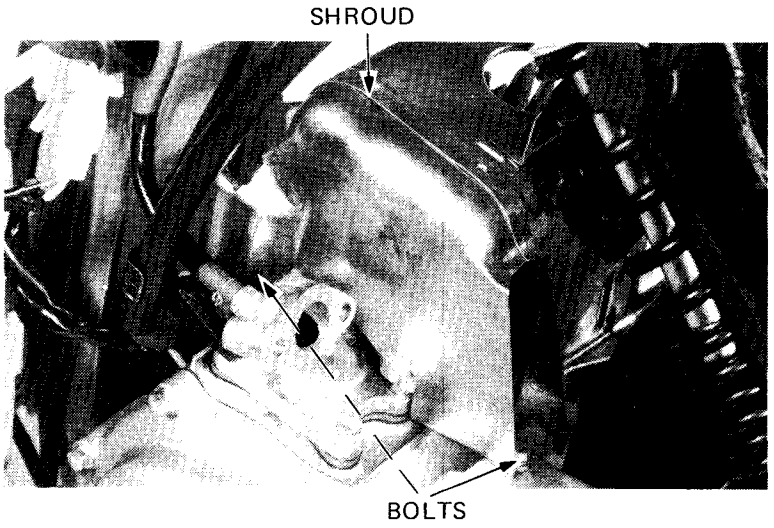
Remove the carburetor and air cleaner case (Page 4-4).

Remove the rear fender B attaching nut.

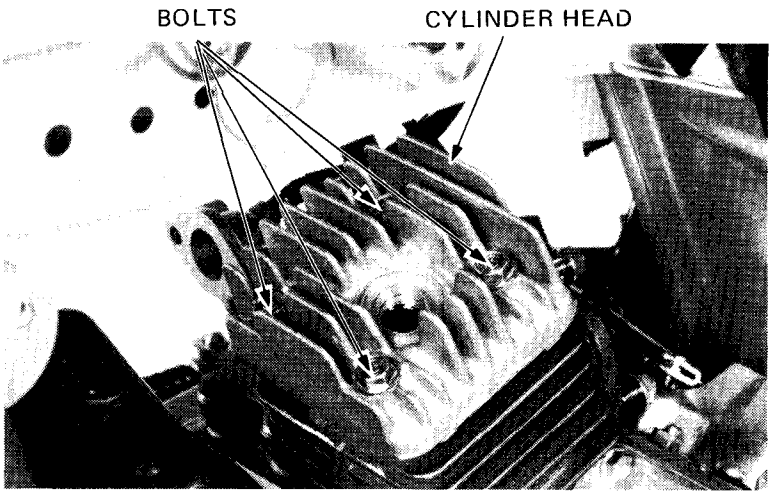


Remove the bolts attaching the engine shroud and remove the shroud.



CYLINDER HEAD REMOVAL

Remove the four cylinder head attaching bolts and remove the cylinder head.



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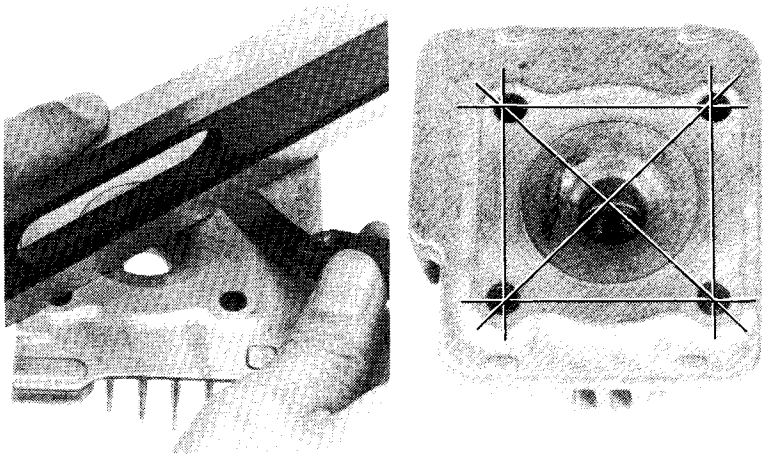
CYLINDER HEAD INSPECTION

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

SERVICE LIMIT: 0.10 mm (0.004 in)

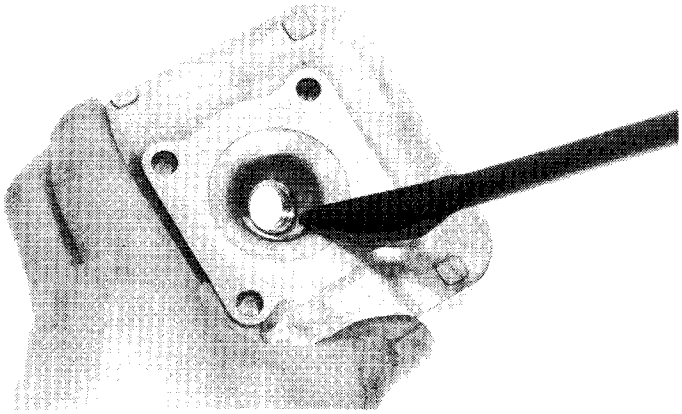


CYLINDER HEAD DECARBONIZING

Remove the carbon deposits from the combustion chamber.
Clean the head gasket surface of any gasket material.

CAUTION:

- *Avoid damaging the combustion chamber wall and gasket surfaces.*
- *Remove carbon deposits from the piston head.*



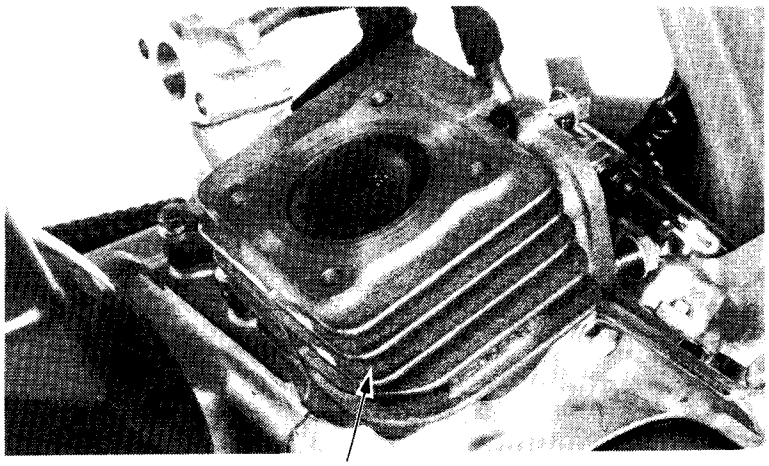
CYLINDER/PISTON

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 piston.



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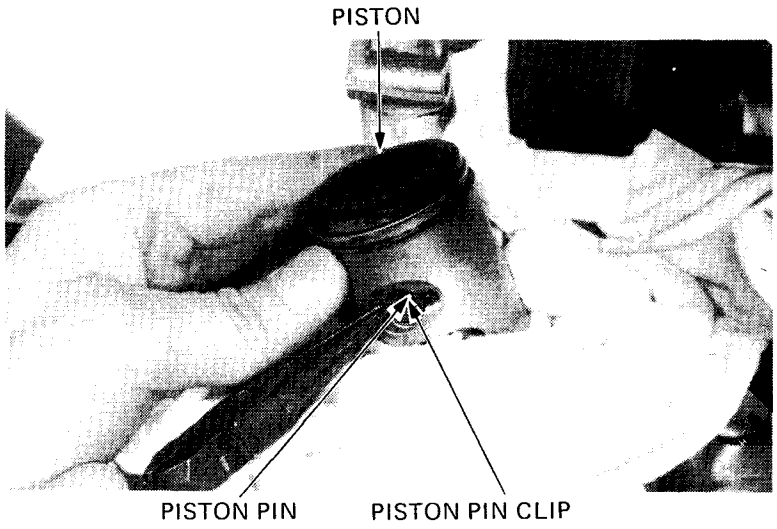
PISTON REMOVAL

Remove the piston pin clip using a pair of 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.



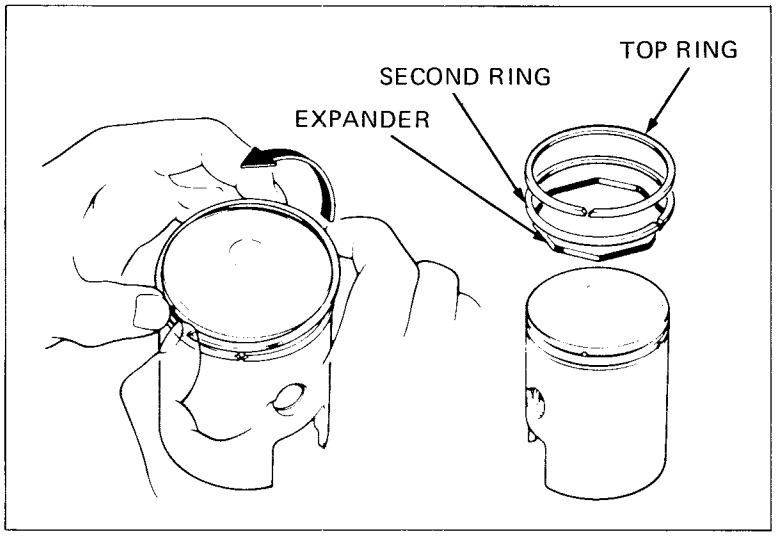
PISTON RING/EXPANDER REMOVAL

Remove the piston rings.

NOTE:

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

Remove the expander.

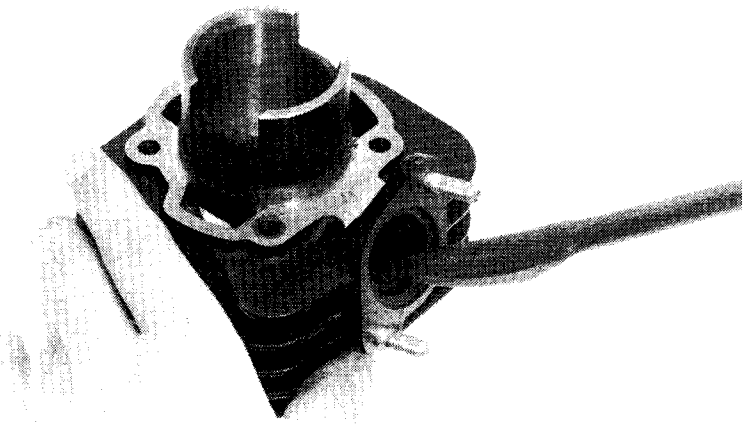


CYLINDER/PISTON INSPECTION

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.



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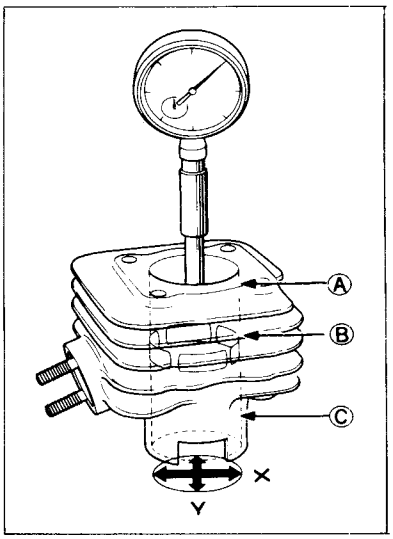
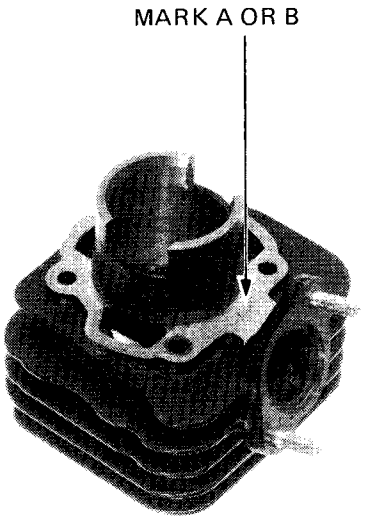
Inspect the cylinder bore for wear at three levels in the X and Y directions. Use the largest measurement to determine the amount of cylinder wear.

SERVICE LIMIT: 40.05 mm (1.577 in)

CAUTION:

The cylinder has an A or B mark on the crankcase mating face as shown. When the cylinder is replaced with a new one, use a cylinder having the same mark as the old one.



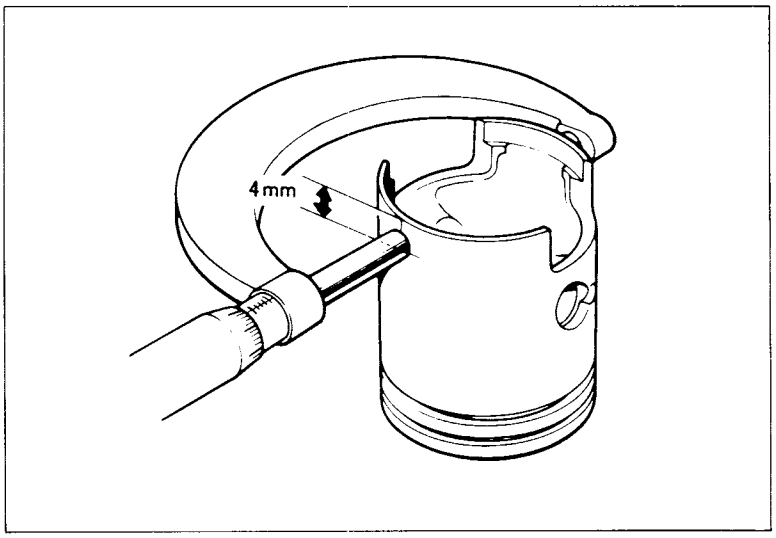


Measure the piston O.D. at a point 4 mm from the bottom of the skirt.

SERVICE LIMIT: 39.90 mm (1.571 in)

Calculate the piston-to-cylinder clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



Measure the piston pin hole I.D.

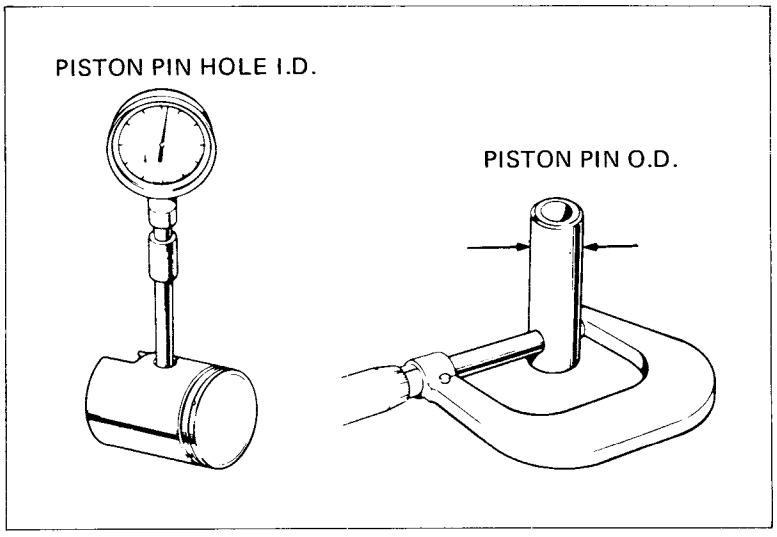
SERVICE LIMIT: 10.03 mm (0.395 in)

Measure the piston pin O.D.

SERVICE LIMIT: 9.97 mm (0.393 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.040 mm (0.0016 in)



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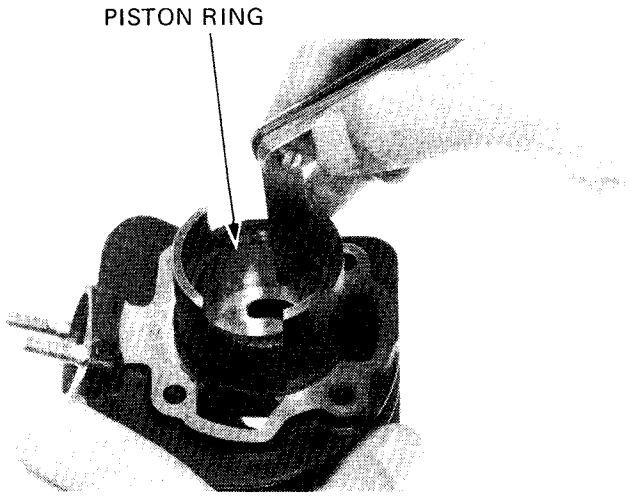
PISTON RING INSPECTION

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.

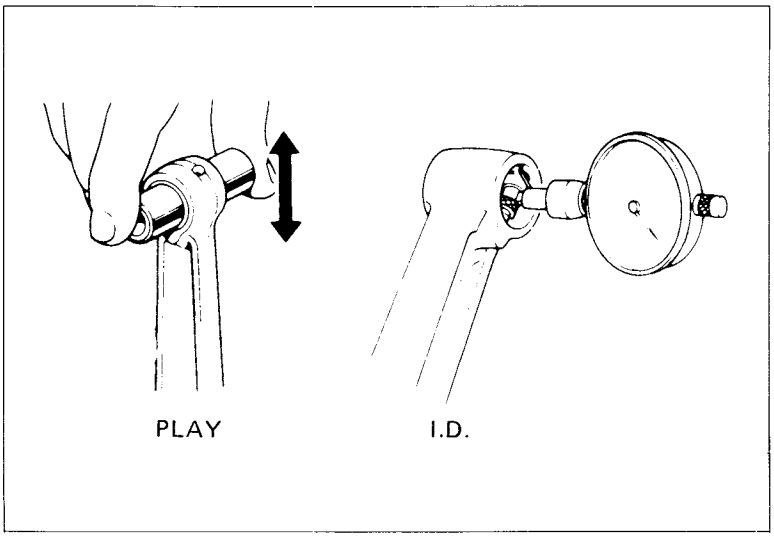
SERVICE LIMIT: 0.60 mm (0.024 in)



CONNECTING ROD INSPECTION

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

SERVICE LIMIT: 14.03 mm (0.552 in)



PISTON/CYLINDER INSTALLATION

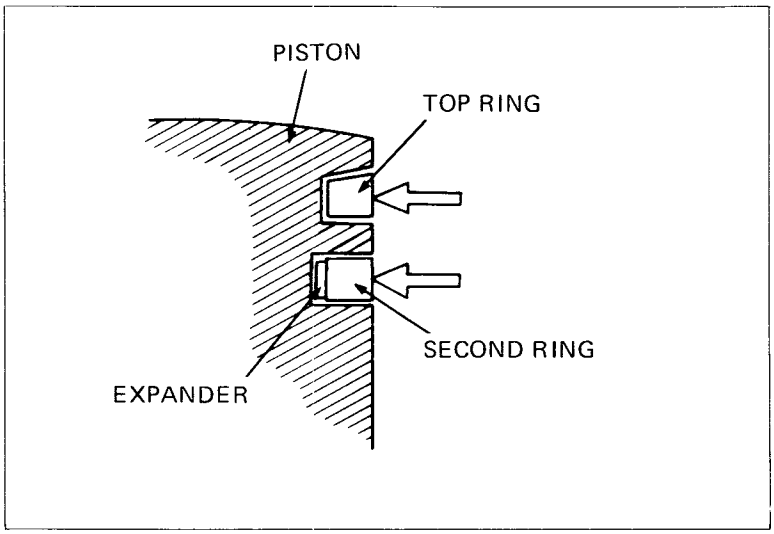
Remove all gasket material from the cylinder and crankcase mating surfaces.

Install the expander in the second ring groove.
Align the ring ends with the locating pins in the ring grooves and install the top and second rings in their respective ring grooves with the markings facing up.

NOTE:

> The top ring is a keystone ring and is not interchangeable with the square second ring.

Check the fit of each ring in its 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 it should be cleaned.



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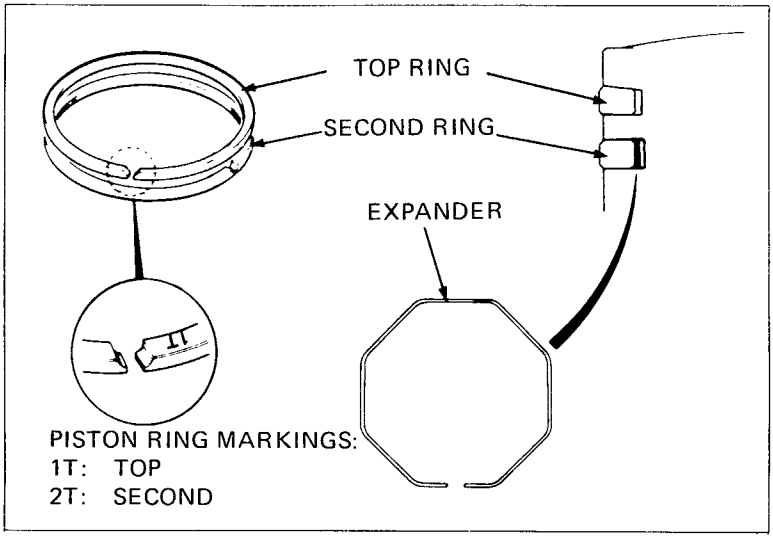
NOTE:

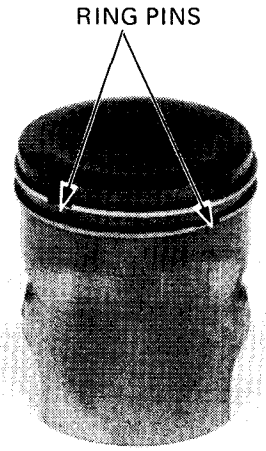
Do not replace one ring without replacing the other.



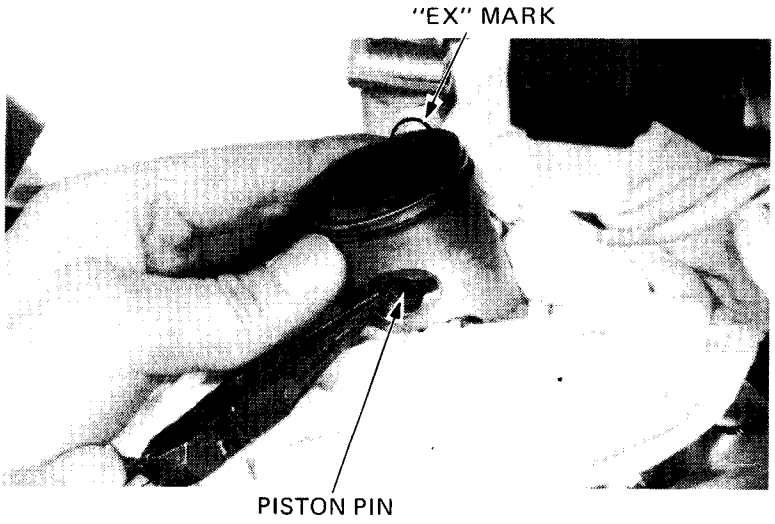
Be sure the ring end gaps are aligned with the piston ring pins in the ring grooves.

CAUTION:

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



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



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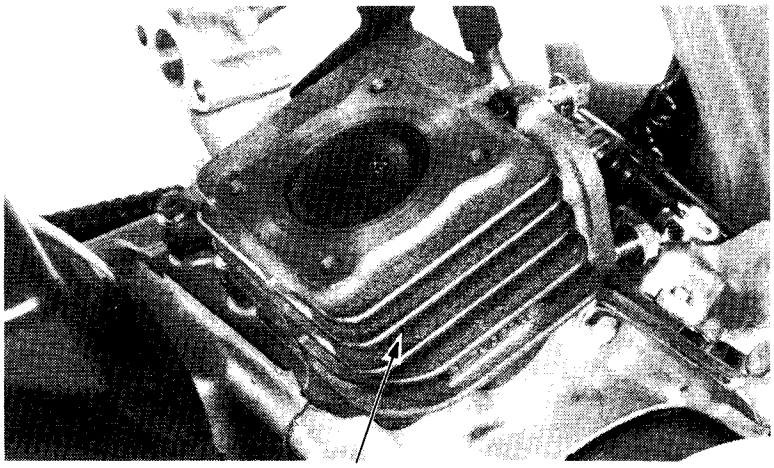
Remove the shop towel from the crankcase.

Place the cylinder gasket on the crankcase.
Lubricate the piston and cylinder with 2-stroke oil and install the cylinder over the piston while compressing the piston rings.

CAUTION:

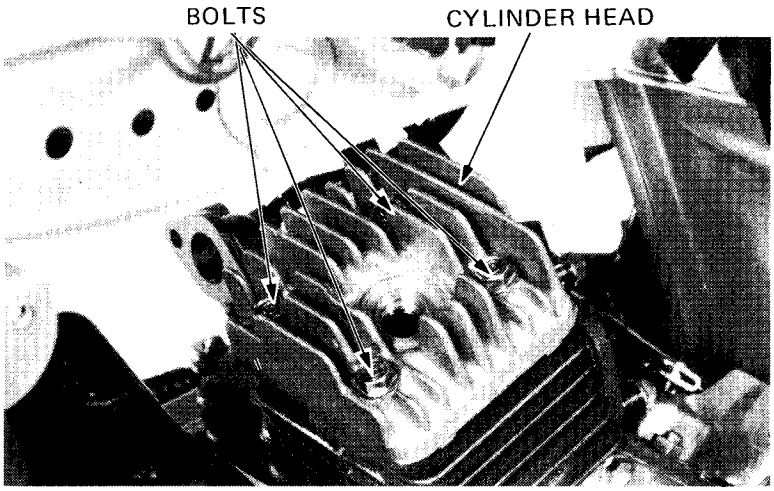
Avoid damaging the sliding surface of the piston.



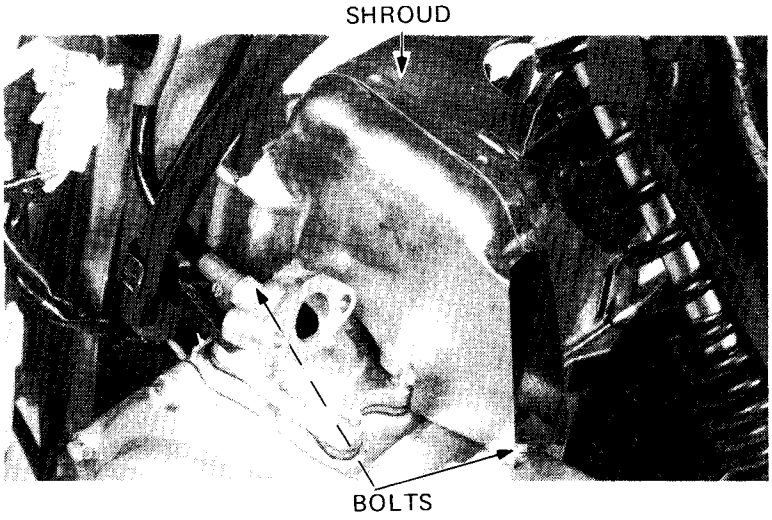
CYLINDER HEAD INSTALLATION

Install a new cylinder head gasket.
Install the cylinder head on the cylinder.
Install and tighten the four cylinder head bolts.

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



Install the engine shroud and tighten the two bolts.



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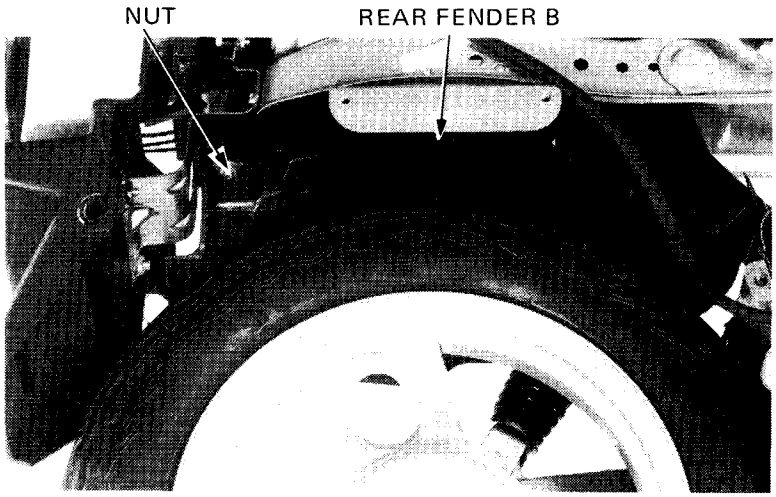
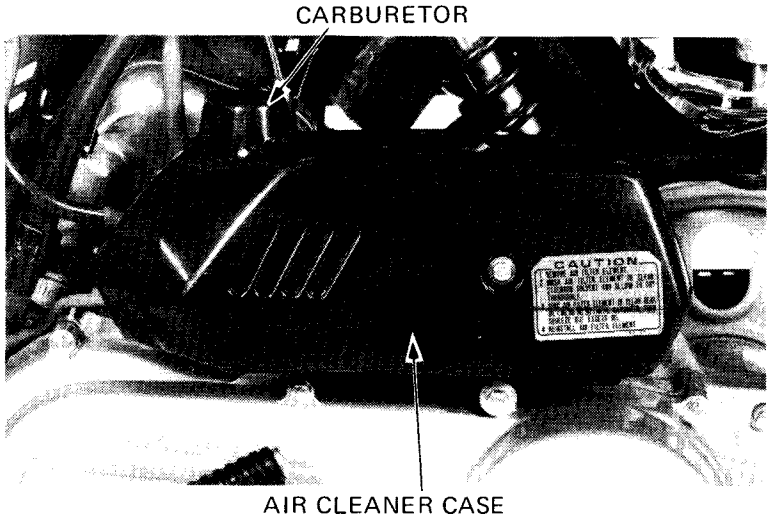
Install the spark plug.
Install rear fender B and tighten the nut.



Install the carburetor and air cleaner case (Page 4-8).
Install the fan cover.
Install the exhaust muffler and protector.

Install the frame body covers.



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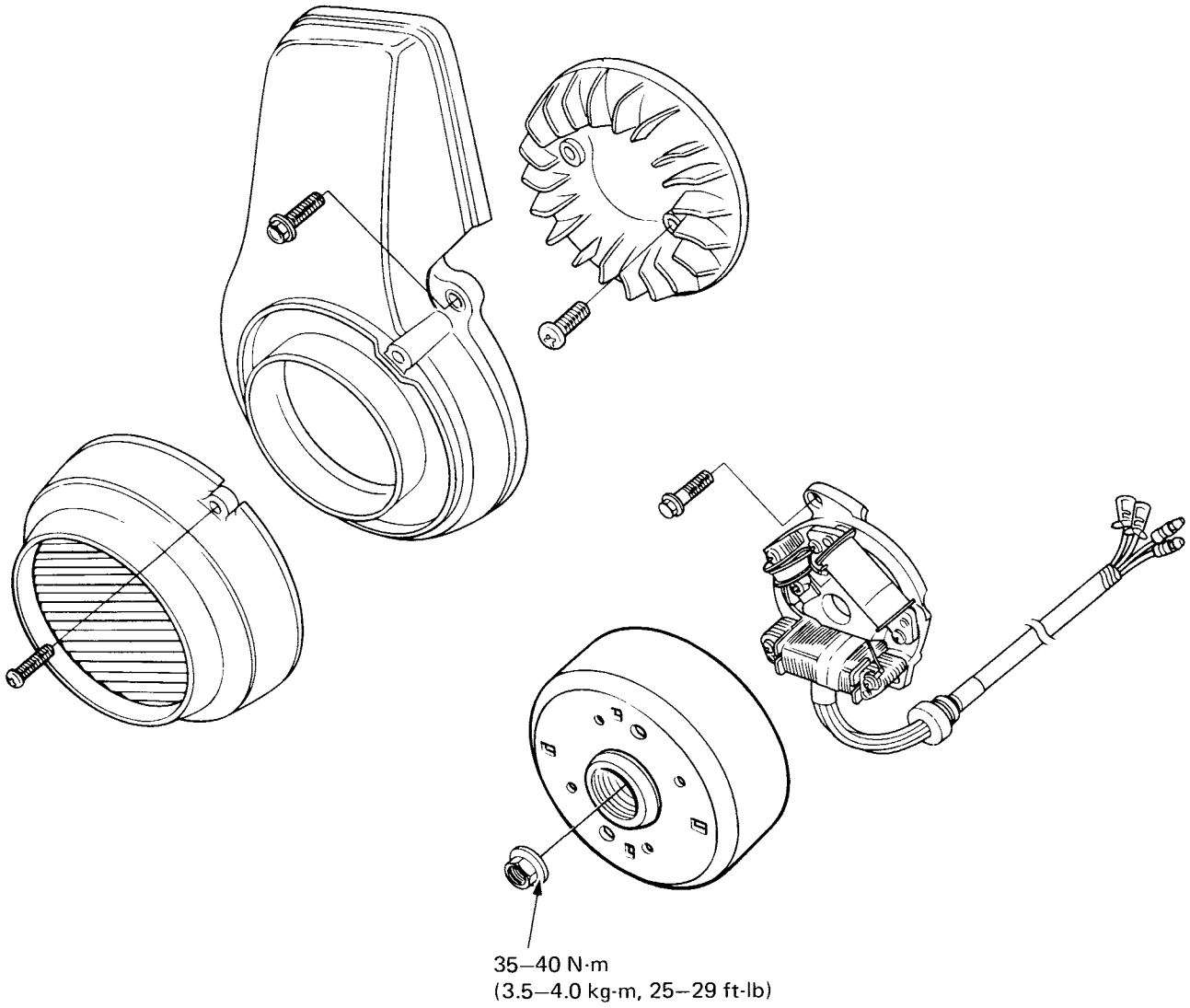

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7. ALTERNATOR

SERVICE INFORMATION	7–1
ALTERNATOR REMOVAL	7–2
ALTERNATOR INSTALLATION	7–5

SERVICE INFORMATION

GENERAL

- All alternator maintenance can be made with the engine installed.
- See Section 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	07933–0110000 or 07733–0010000
Universal Holder	07725–0030000

7

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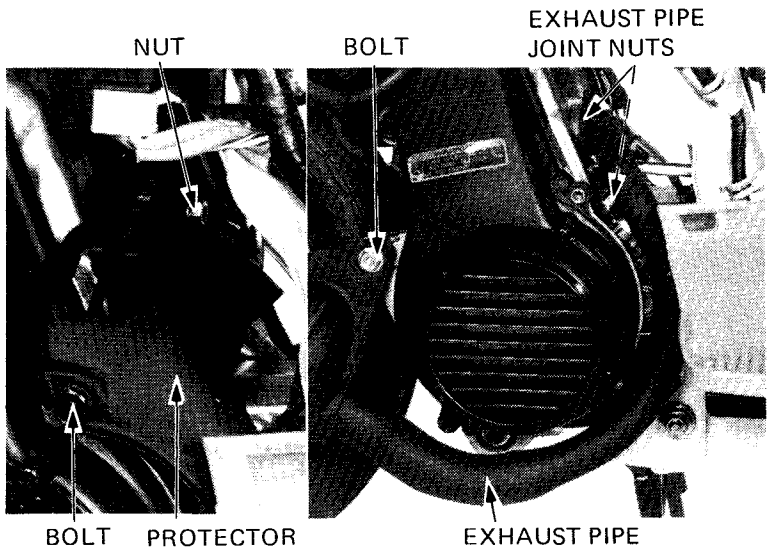
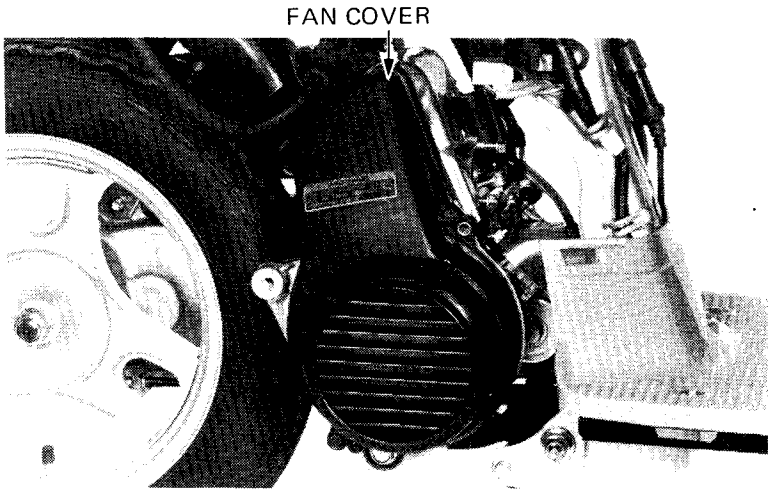
REMOVAL

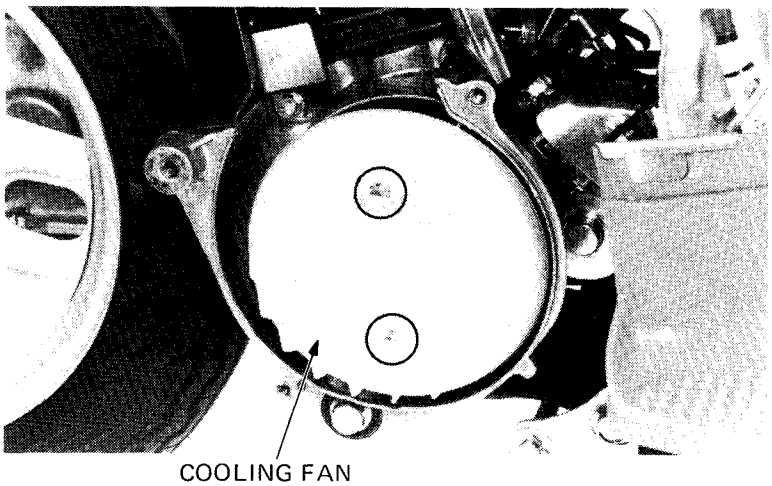
Remove the bolt and nut attaching the muffler protector and the protector.
Loosen the exhaust pipe joint nuts.
Remove the muffler hanger bolt and muffler.



Remove the fan cover.



Remove the two bolts attaching the cooling fan and remove the cooling fan.



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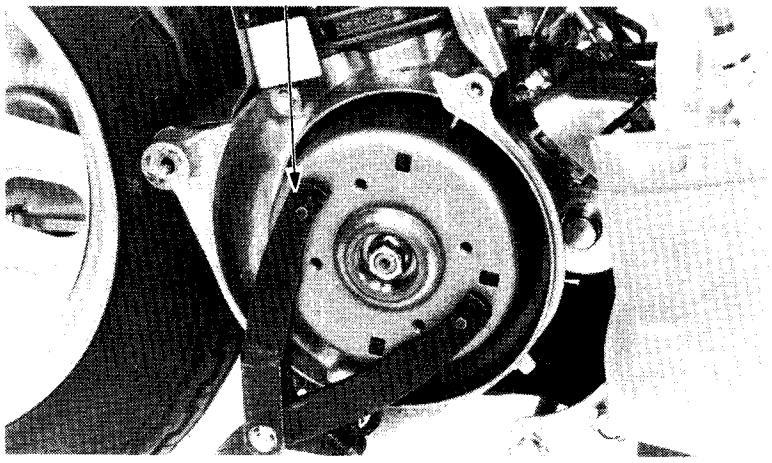
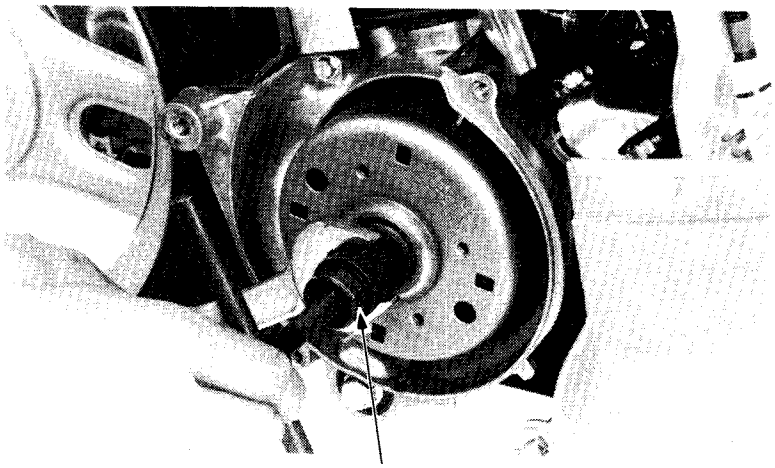
Hold the universal holder and remove the flywheel flange nut.

UNIVERSAL HOLDER 07933–0110000



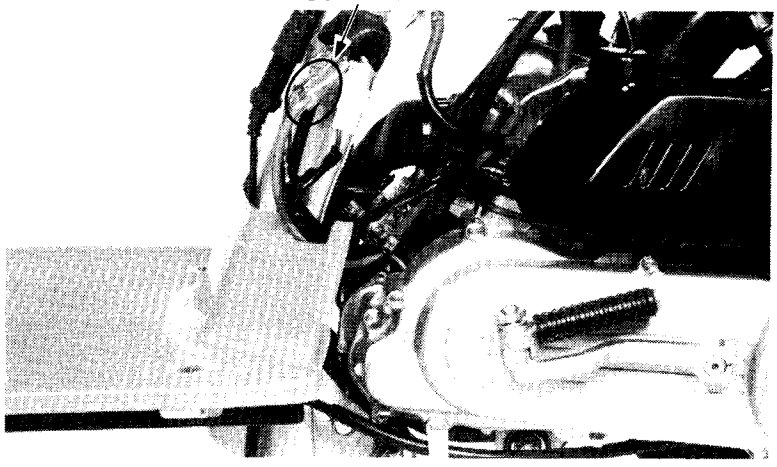
Remove the flywheel with the flywheel puller.
Remove the woodruff key.



FLYWHEEL PULLER
07933–0110000

Disconnect the alternator wire connectors

CONNECTORS



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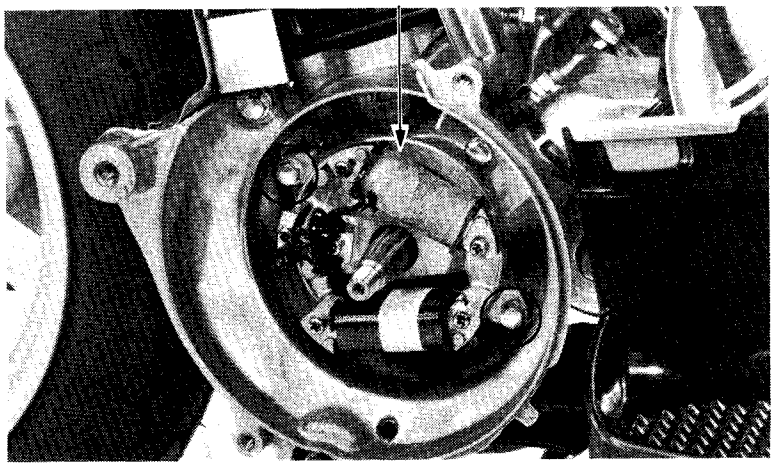
Remove the two bolts attaching the stator and remove the stator.

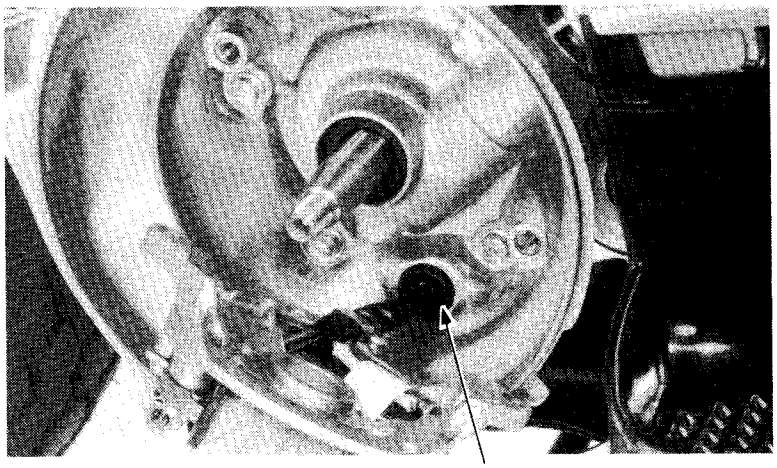
NOTE:

- Do not remove the pulse generator from the stator base.
- Avoid damaging the stator coils.

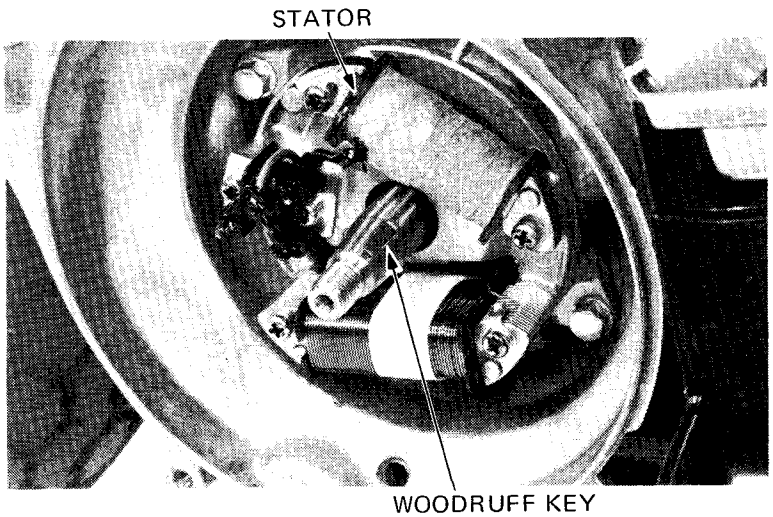


ALTERNATOR INSTALLATION

Install the alternator wire grommet in the case.



Install the stator.
Install the woodruff key in the keyway in the crankshaft.



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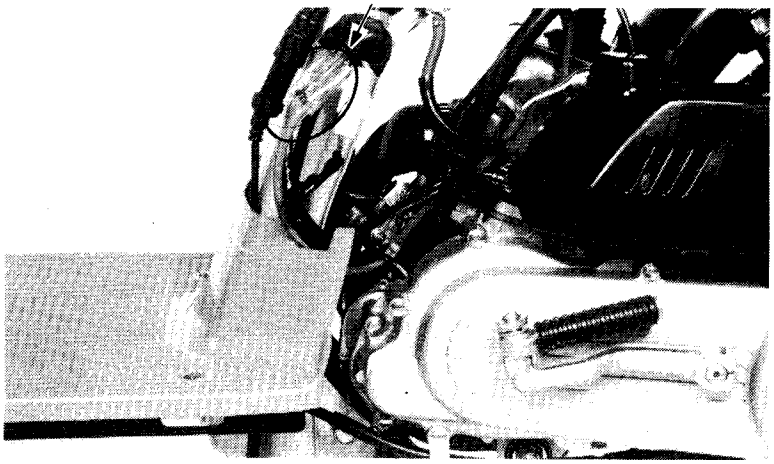
Connect the alternator wire connectors.

CONNECTORS



NOTE:

> Clean the taper hole in the flywheel of any burrs and dirt.

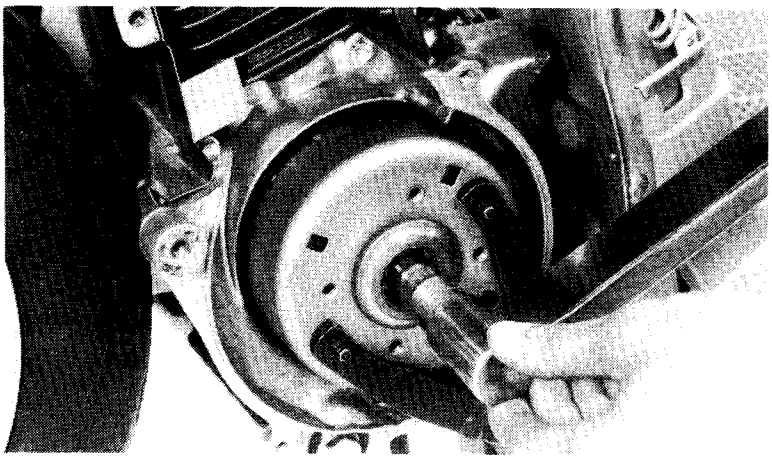
Install the flywheel onto the crankshaft.

NOTE:

> Make sure that there are no foreign particles inside the flywheel.

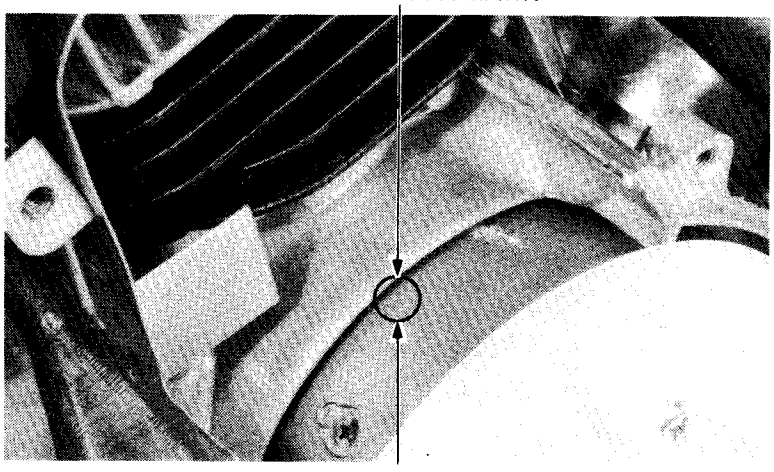
Hold the flywheel with the universal holder and torque the flywheel flange nut.

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



Start the engine and check the ignition timing (Page 3-7).
Install all removed parts in the reverse order of removal.

INDEX MARK



"F" MARK

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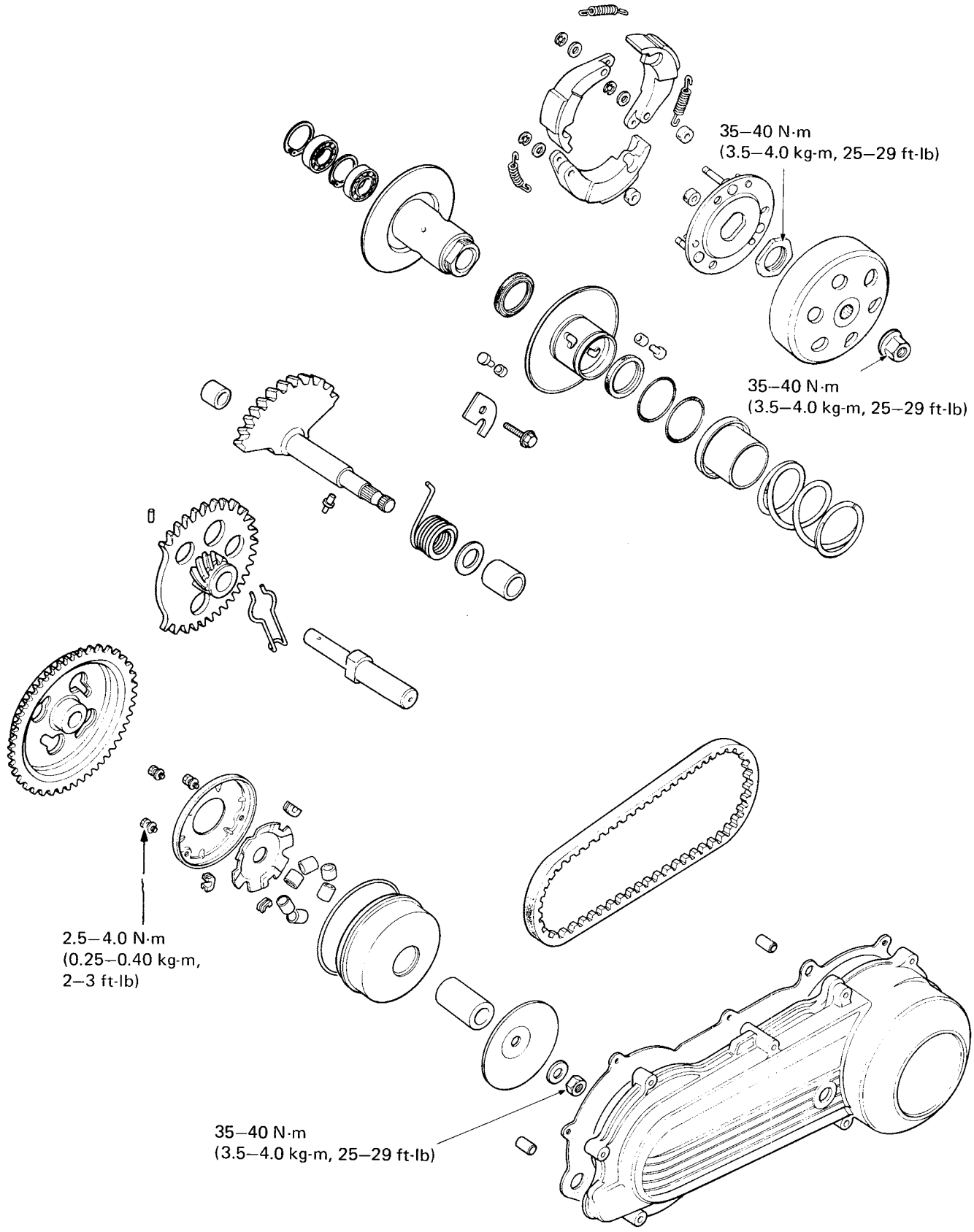

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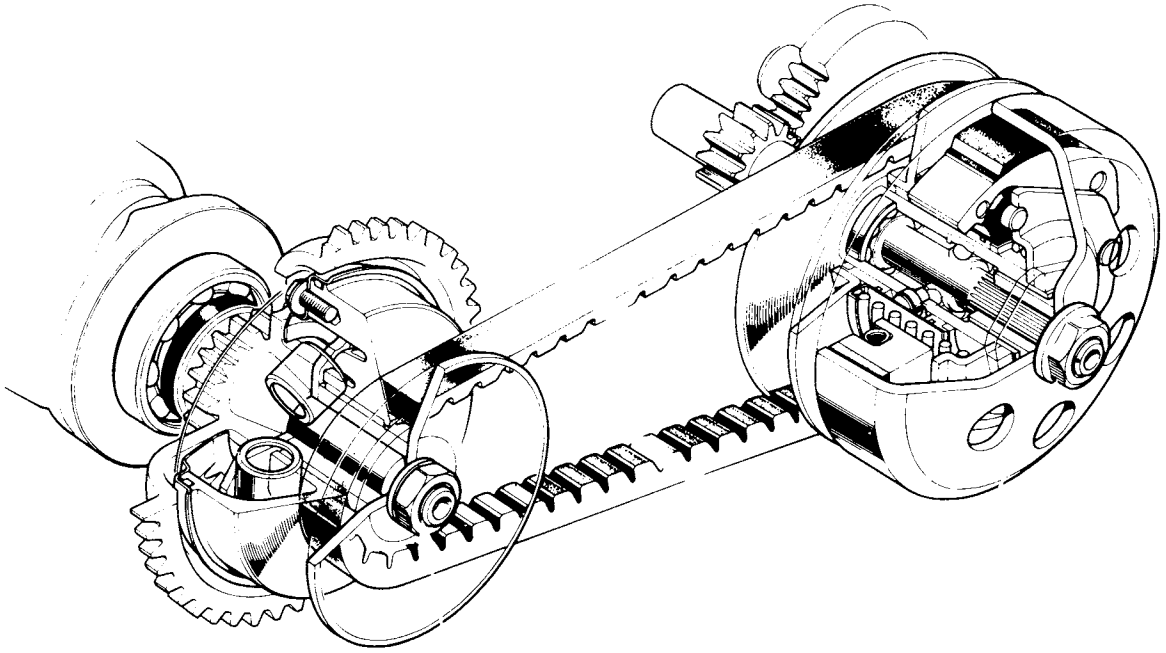
8. DRIVE AND DRIVEN PULLEYS/ KICK STARTER/CLUTCH

SERVICE INFORMATION	8–1
TROUBLESHOOTING	8–2
DRIVE PULLEY	8–3
KICK STARTER	8–8
CLUTCH/DRIVEN PULLEY	8–13



SERVICE INFORMATION

GENERAL

- Keep oily substances off the drive belt and pulley.

SPECIFICATIONS

ITEM	STANDARD mm (in)	SERVICE LIMIT mm (in)
Drive belt width	14.0 (0.55)	12.5 (0.49)
Movable drive face bushing I.D.	22.035–22.095 (0.8675–0.8699)	22.13 (0.871)
Drive face boss O.D.	21.955–22.025 (0.8644–0.8671)	21.96 (0.865)
Weight roller O.D.	15.92–16.08 (0.627–0.633)	15.40 (0.606)
Kick starter spindle O.D.	13.957–13.984 (0.5495–0.5506)	13.90 (0.547)
Kick starter spindle bushing (B) I.D.	14.016–14.051 (0.5518–0.5532)	14.10 (0.555)
Kick idle gear shaft O.D.	11.957–11.984 (0.4707–0.4718)	11.90 (0.469)
Clutch outer I.D.	107.0–107.2 (4.21–4.22)	107.5 (4.23)
Clutch shoe thickness	4.0–4.1 (0.157–0.161)	2.0 (0.08)
Driven face spring free length	87.9 (3.46)	82.8 (3.26)
Driven face O.D.	33.950–33.975 (1.3366–1.3376)	33.93 (1.336)
Movable driven face I.D.	34.000–34.025 (1.3386–1.3396)	34.06 (1.341)

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TORQUE VALUES

Drive pulley nut	35–40 N·m (3.5–4.0 kg-m, 25–29 ft-lb)
Clutch outer nut	35–40 N·m (3.5–4.0 kg-m, 25–29 ft-lb)
Clutch lock nut	35–40 N·m (3.5–4.0 kg-m, 25–29 ft-lb)

TOOLS

Special

Lock Nut Wrench, 39 mm	07916–1870001
Case Puller	07935–KG80000
Clutch Spring Compressor	07960–KJ90000

Common

Universal Holder	07725–0030000

TROUBLESHOOTING

Engine starts, but scooter won't move
1. Worn drive belt
2. Broken ramp plate
3. Worn or damaged clutch lining
4. Broken torque spring
5. Damaged driven pulley shaft splines

Engine stalls or scooter starts suddenly
1. Broken clutch weight spring
2. Damaged clutch lining

Poor performance at high speed or lack of power
1. Worn drive belt
2. Weak torque spring
3. Worn weight roller
4. Faulty driven face
5. Worn or seized driven pulley bearing

Clutch noise or smell
1. Oil or grease on drive belt or pulley
2. Worn drive belt
3. Weak torque spring
4. Worn or seized driven pulley bearing

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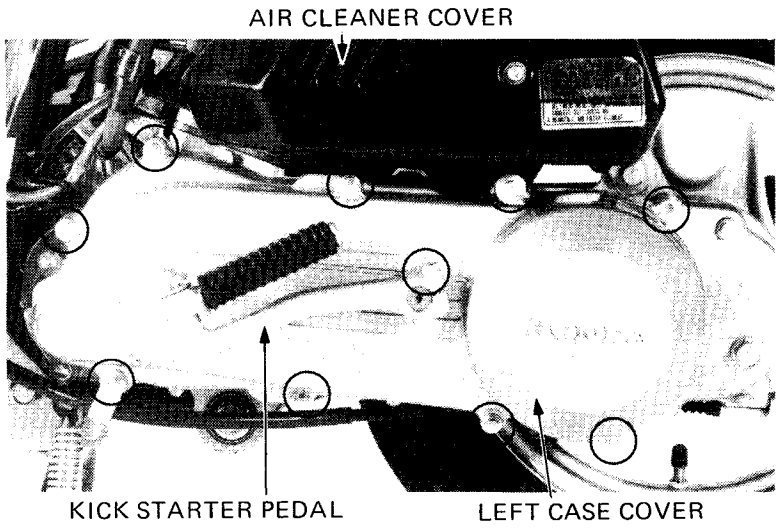
DRIVE PULLEY

LEFT CRANKCASE COVER REMOVAL

Remove the frame right and left body covers.
Remove the air cleaner cover and air cleaner case.
Remove the kick starter pedal.
Remove the left case cover bolts and left case cover.

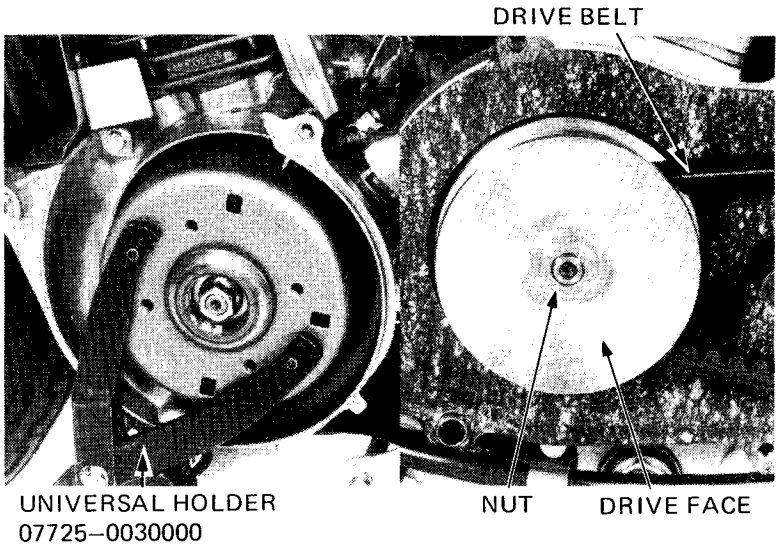


DRIVE BELT REMOVAL

Remove the fan cover.
Hold the flywheel with the universal holder.
Remove the nut and drive face.
Remove the drive belt.

CAUTION:

Do not bend the drive belt.



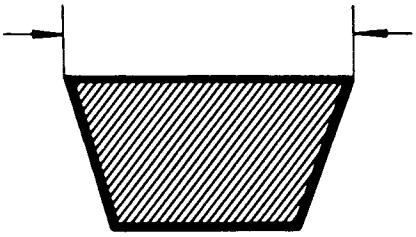
DRIVE BELT INSPECTION

Check the drive belt for cracks, separation or abnormal or excessive wear.

SERVICE LIMIT: 12.5 mm (0.49 in)

NOTE:

Use the genuine Honda Drive Belt.



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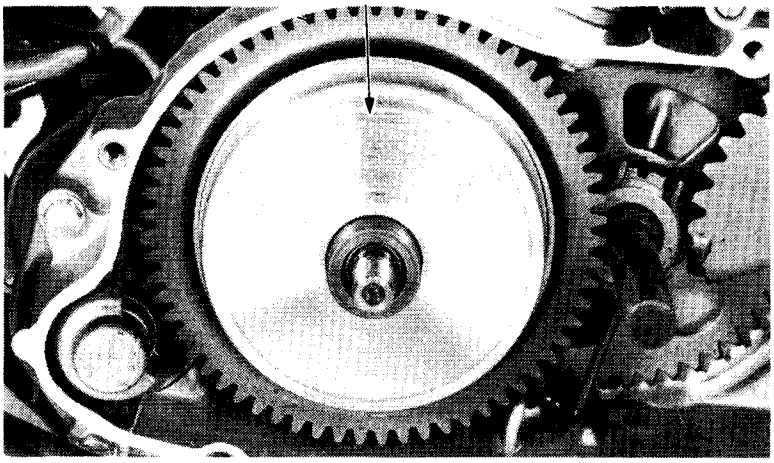
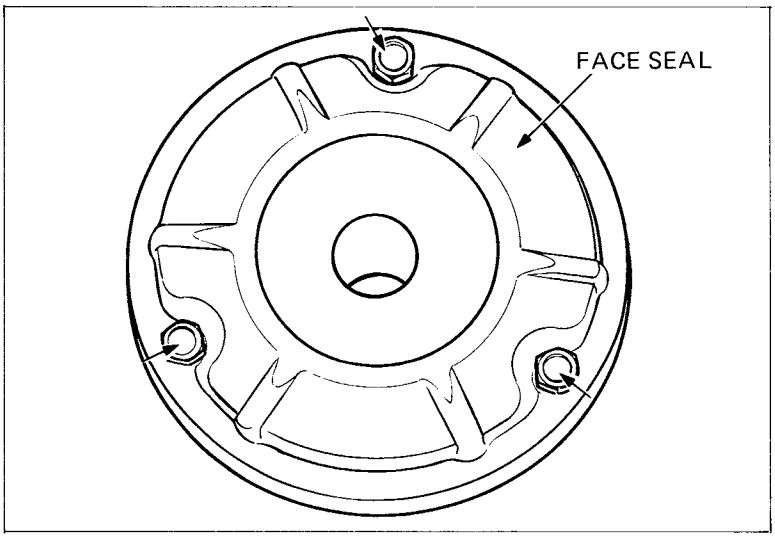
MOVABLE DRIVE FACE REMOVAL/ DISASSEMBLY

Remove the drive belt and gasket (Page 8-3).
Remove the movable drive face assembly.

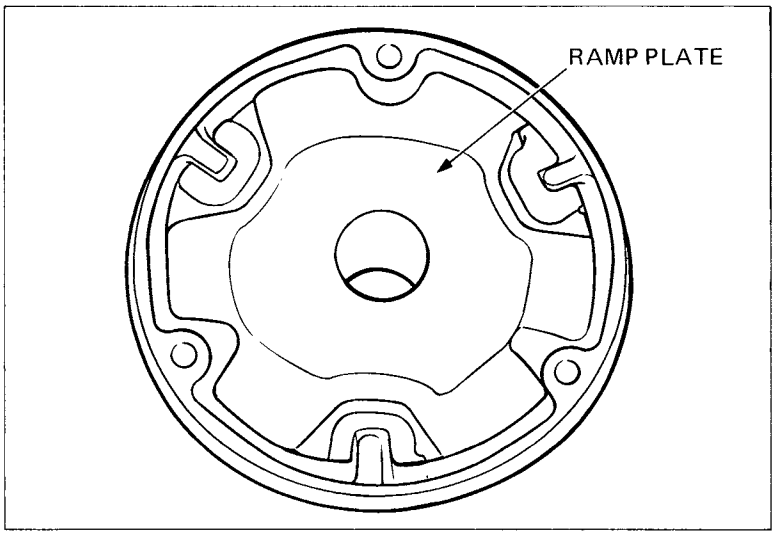
MOVABLE DRIVE FACE ASSEMBLY



Remove the three bolts attaching the movable drive face seal and remove the seal.



Remove the ramp plate.



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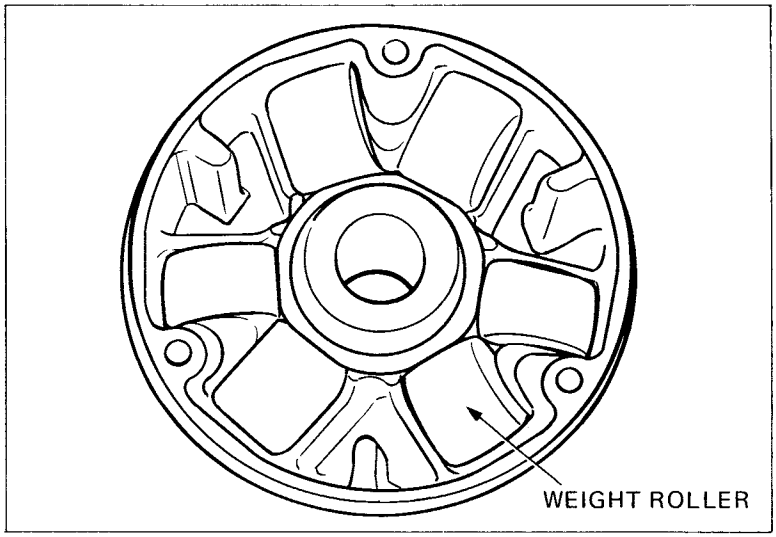
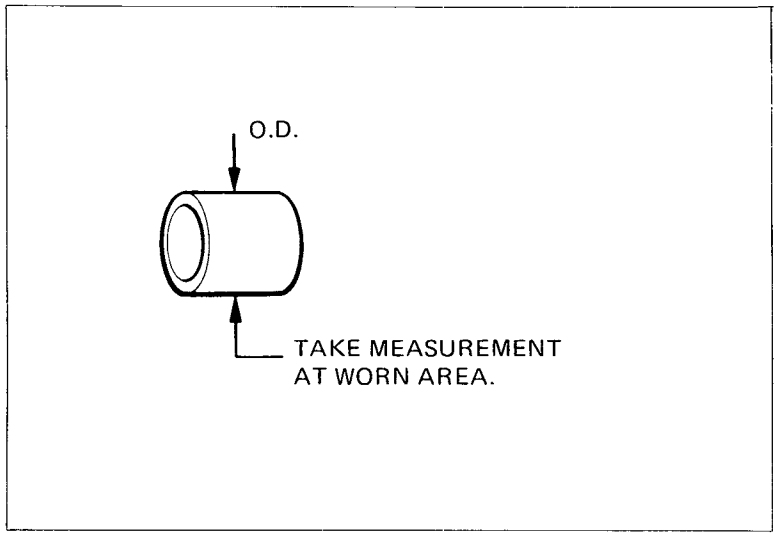
Remove the weight rollers.



MOVABLE DRIVE FACE INSPECTION

Check each roller for wear or damage.
Measure each roller O.D.

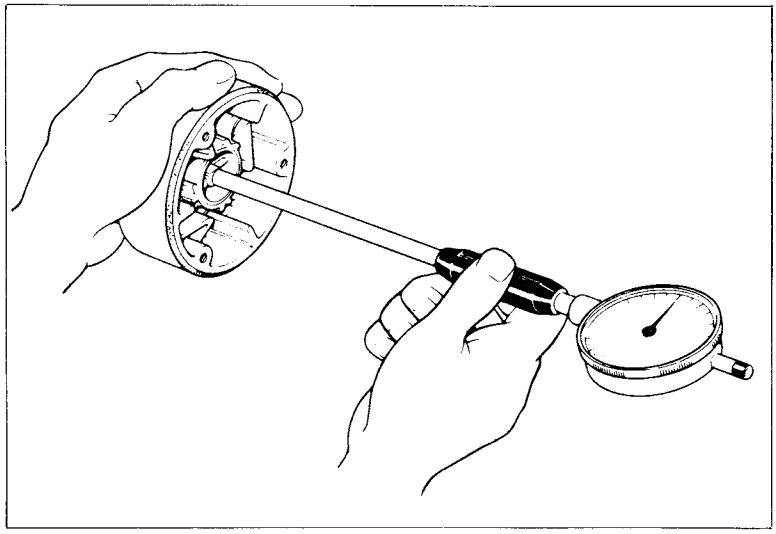
SERVICE LIMIT: 15.4 mm (0.61 in)



Measure the movable drive face bushing I.D.

SERVICE LIMIT: 22.13 mm (0.871 in)

Replace if larger than the service limit.



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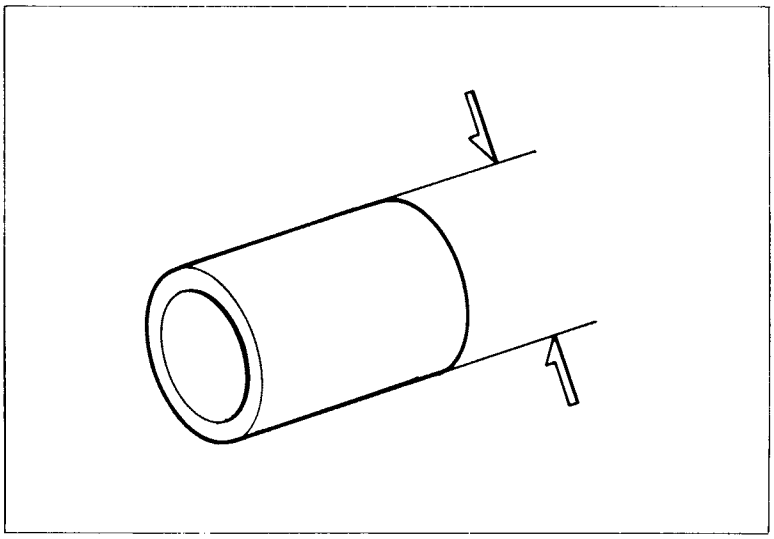
Inspect the drive face boss for wear or damage. Measure the O.D. at the drive face contacting surface.

SERVICE LIMIT: 21.96 mm (0.865 in)

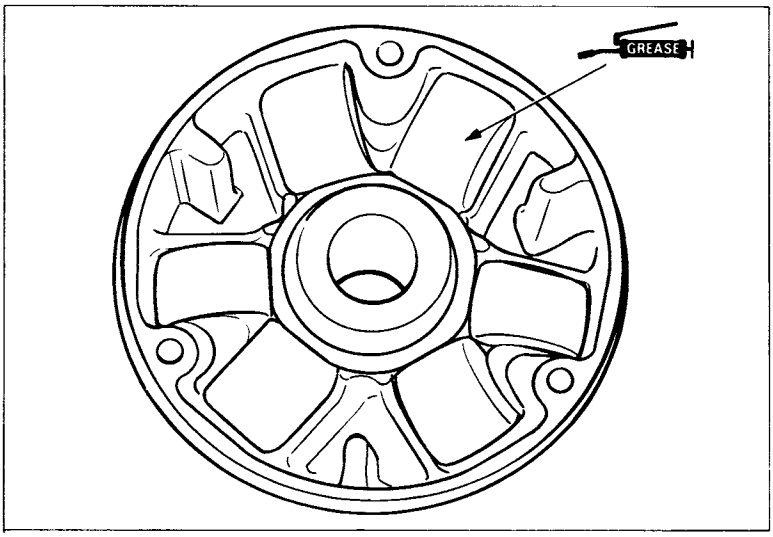
Replace if smaller than the service limit.



MOVABLE DRIVE FACE ASSEMBLY

Lubricate the inside of the drive face with 10–15g (0.35–0.53 oz) of grease, then install the weight rollers.

SPECIFIED GREASE: Lithium Based Grease
Mitsubishi HD-3
Nippon Sekiyu Lipanox Deluxe 3
Idemitsu Coronex 3
Sta-Lube MP #3141
Bel-Ray Moly Lube 126 EP #0

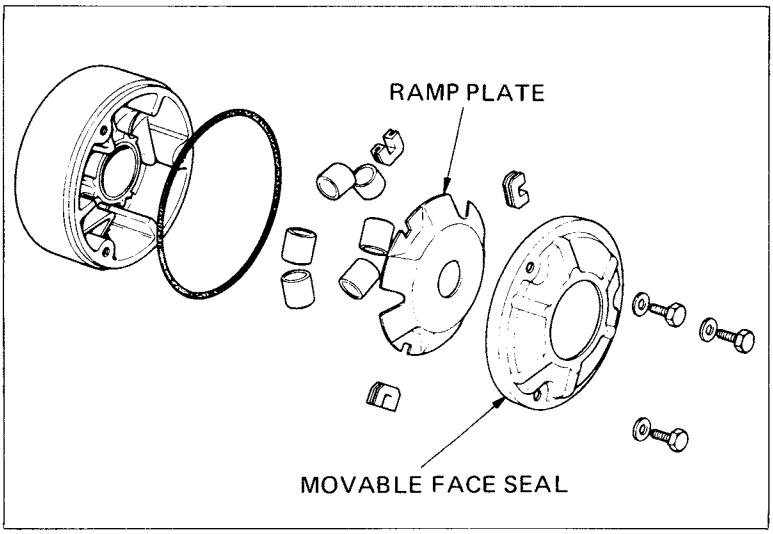


Install the ramp plate and movable face seal.
Torque the seal attaching bolts to the specified torque.

TORQUE: 2.5–4.0 N·m (0.25–0.40 kg-m, 2–3 ft-lb)

NOTE:

Make sure that the O-ring is in position.



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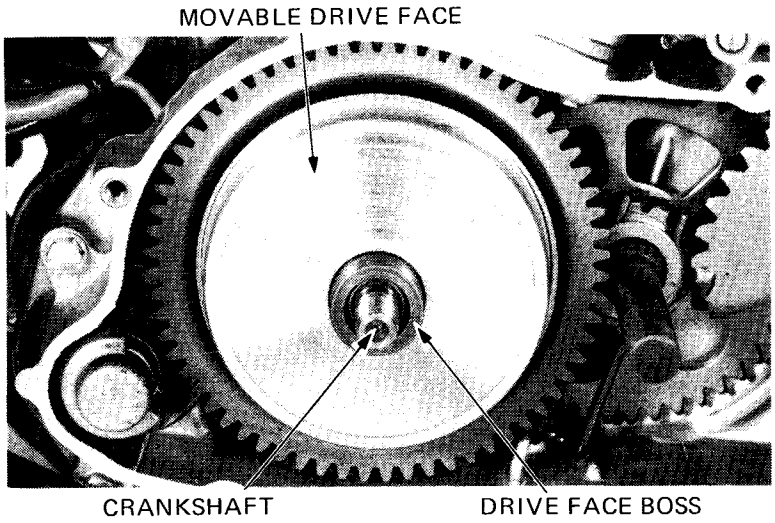
MOVABLE DRIVE FACE INSTALLATION

Install the drive face boss in the movable drive face. Install the assembly onto the crankshaft.

NOTE:

> Clean the hole in the movable drive face, drive face boss and crankshaft.



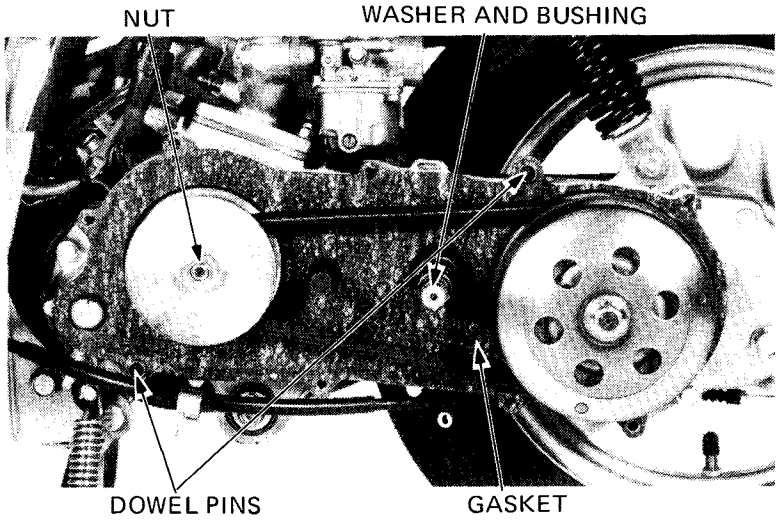
Install the gasket, dowel pins and drive belt. Install the drive face and tighten the nut.

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

NOTE:

> Do not get oil or grease on the drive belt or pulleys.

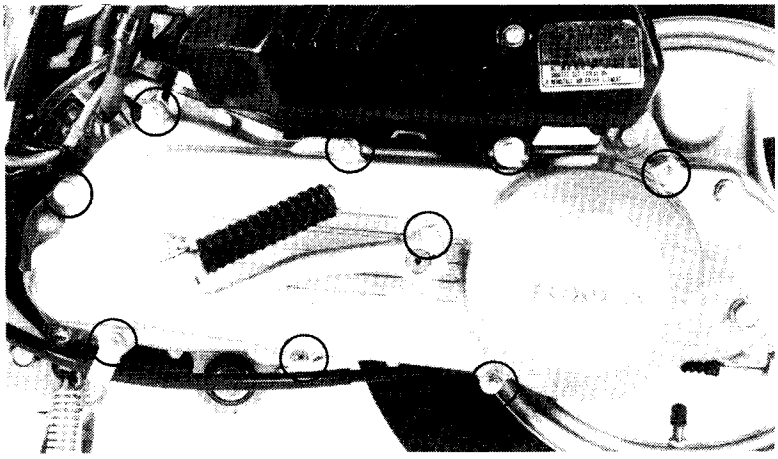
Install the washer and bushing over the kick starter spindle.



Install the left case cover and kick starter pedal.

Install the air cleaner case and cover.

Install both frame body covers.



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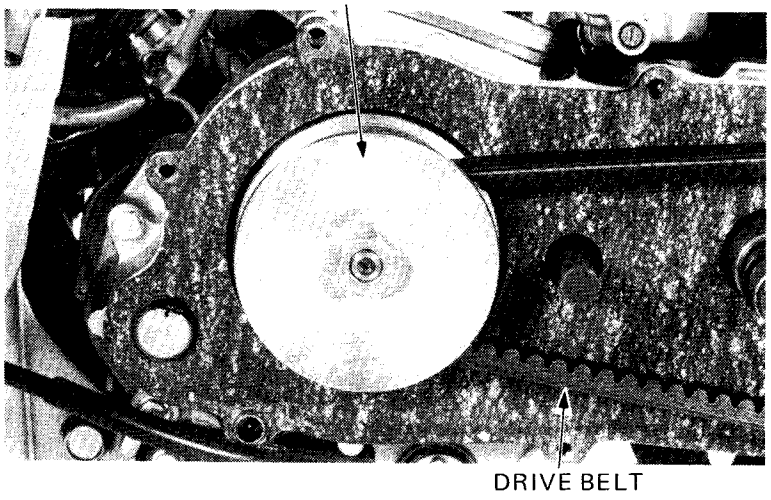
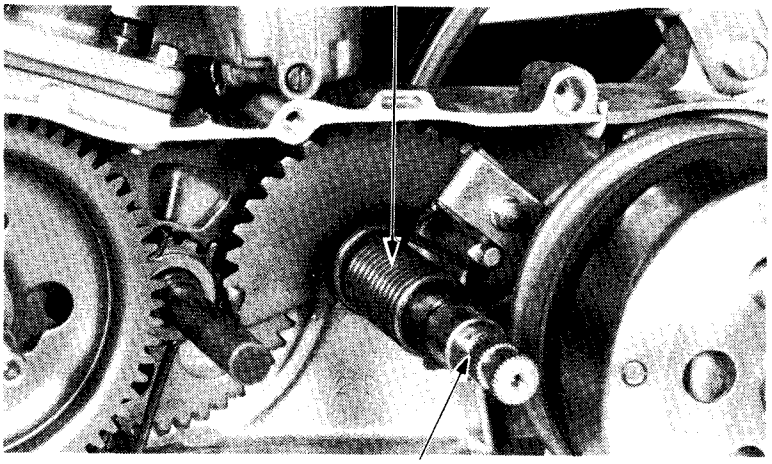
KICK STARTER

KICK STARTER REMOVAL

Remove the left case cover, movable drive face assembly and drive belt (Page 8-3, 8-4).



Remove the kick starter spring from the kick return stopper.
Remove the kick starter spindle.



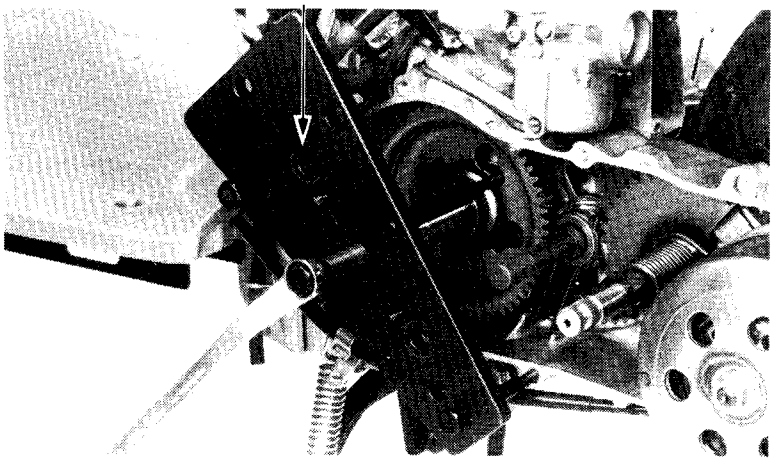
Remove the kick starter driven gear with the case puller.

NOTE:

> Insert the case puller mounting bolts through the slots in the kick starter driven gear.

CAUTION:

> *The case puller mounting bolts must be tight to prevent the gear from forcing the puller off.*



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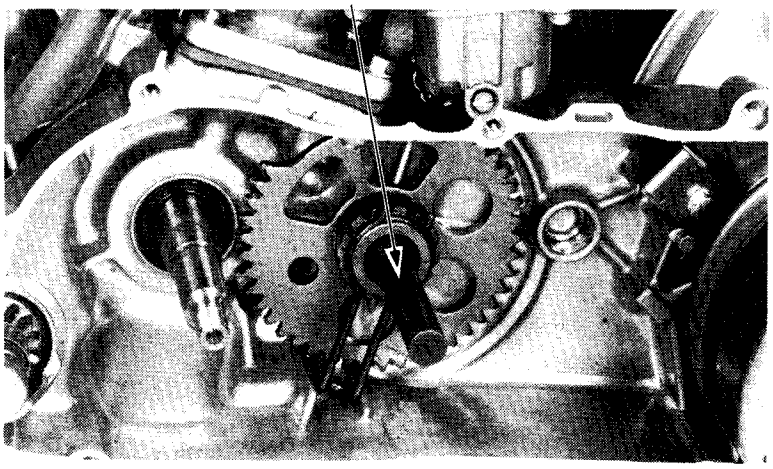
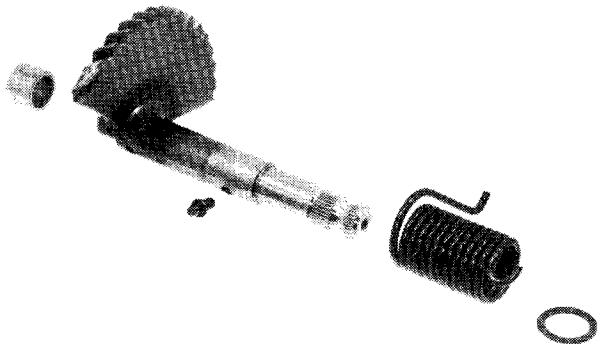
Remove the kick starter idle shaft.

KICK STARTER IDLE SHAFT

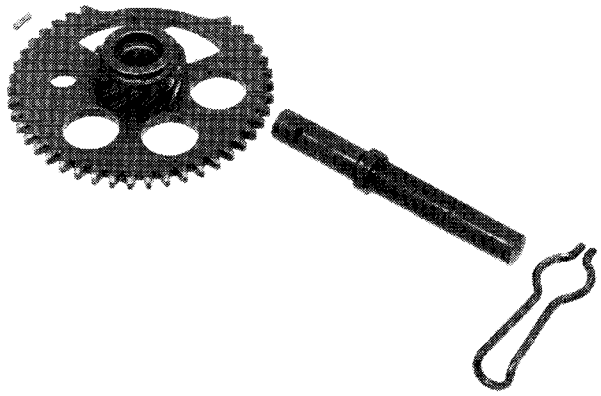


KICK STARTER DISASSEMBLY

Disassemble the kick starter spindle.



Disassemble the kick starter idle shaft.



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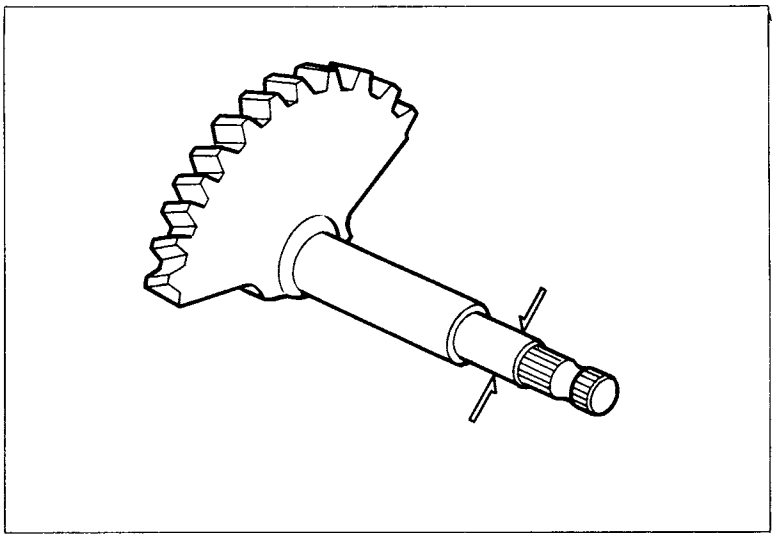
INSPECTION

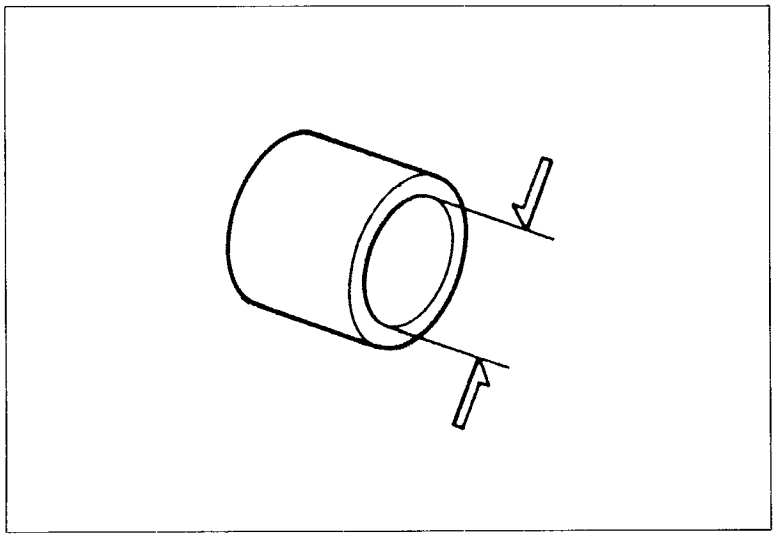
Inspect the kick starter spindle for wear or damage.
Measure the spindle O.D.

SERVICE LIMIT: 13.90 mm (0.547 in)



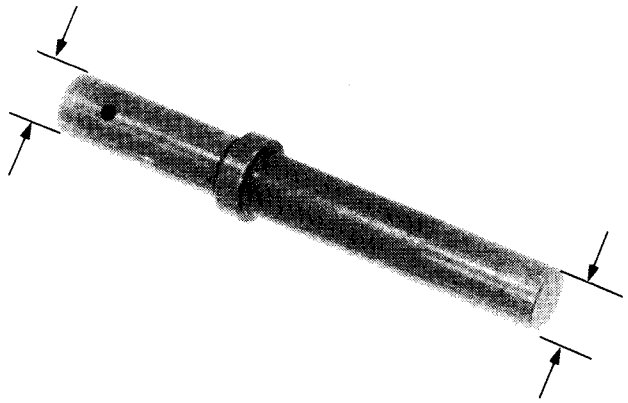
Inspect the kick starter spindle bushing B for wear or damage.
Measure the bushing I.D.

SERVICE LIMIT: 14.10 mm (0.555 in)



Inspect the idle gear for wear or damage.
Measure the idle gear shaft O.D.

SERVICE LIMIT: 11.90 mm (0.469 in)



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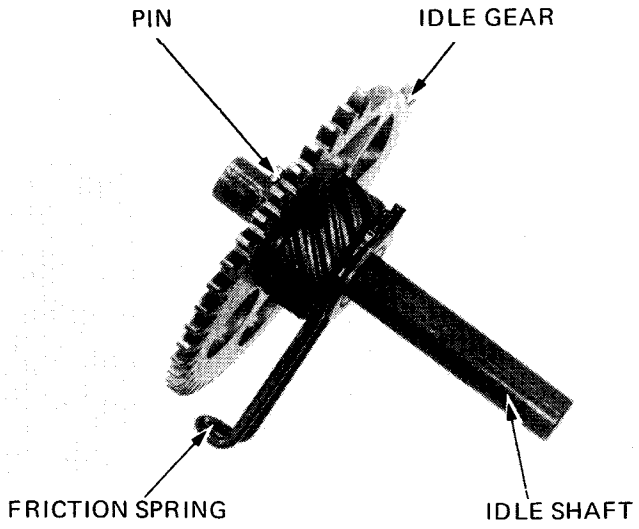
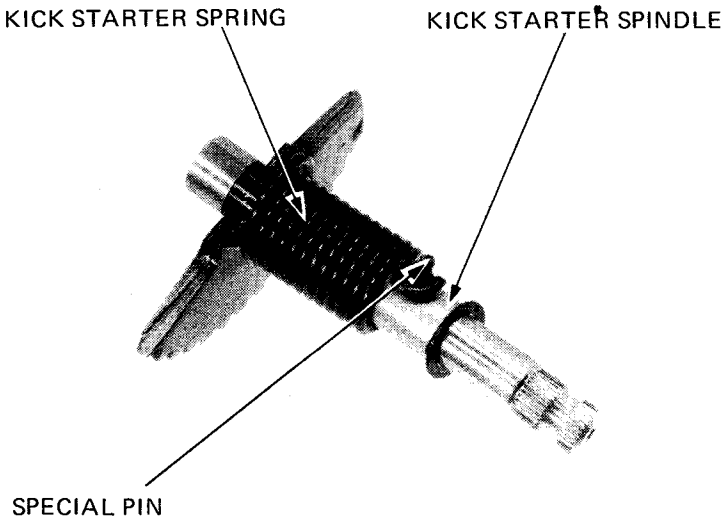
ASSEMBLY

Assemble the kick starter idle shaft.



KICK STARTER SPINDLE ASSEMBLY

Install the special pin in the hole of the spindle and install the spring on the spindle.

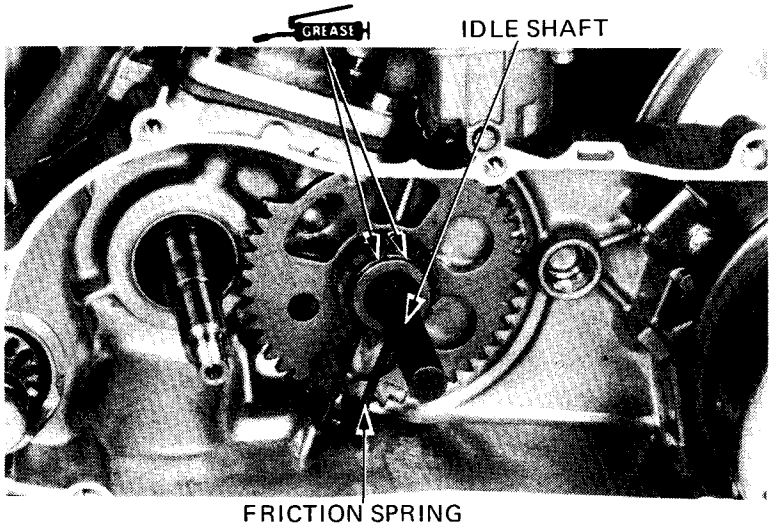


KICK STARTER INSTALLATION

Install the driven gear.
Install the kick starter idle shaft aligning the friction spring with the groove in the left case as shown.

NOTE:

> Apply grease to the spring groove and gears of the idle gear.



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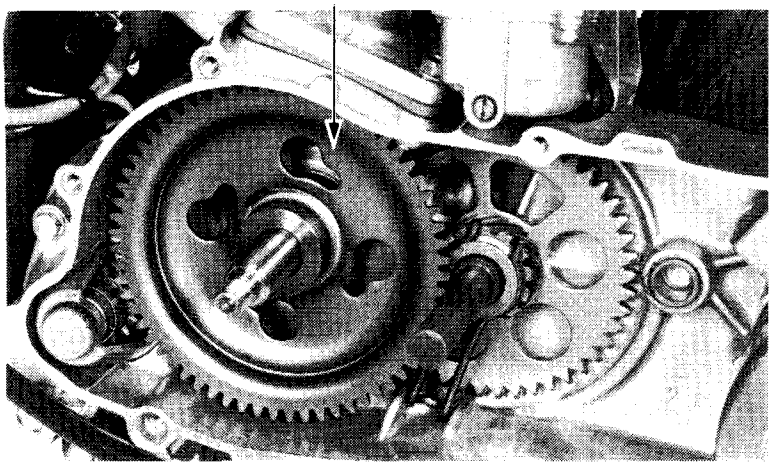
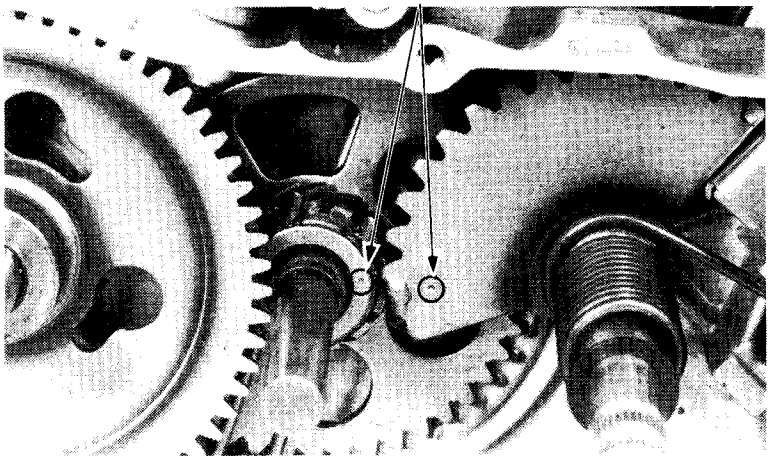
Install the starter driven gear.

STARTER DRIVEN GEAR



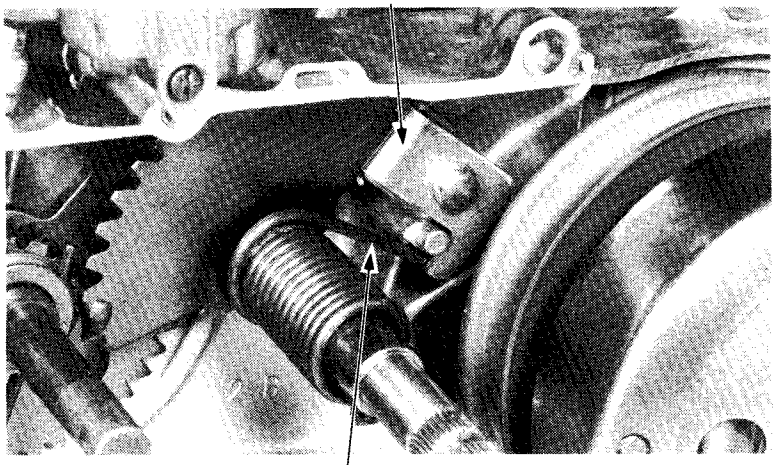
Install the kick starter spindle; turning the idle gear to align the punch marks as shown.

ALIGN PUNCH MARKS HERE



Hook the long end of the spindle return spring on the spring stopper as shown.
Install the drive belt and movable drive face assembly (Page 8-7).
Install the left case cover, kick starter pedal and both frame body covers.

KICK RETURN STOPPER



KICK RETURN SPRING

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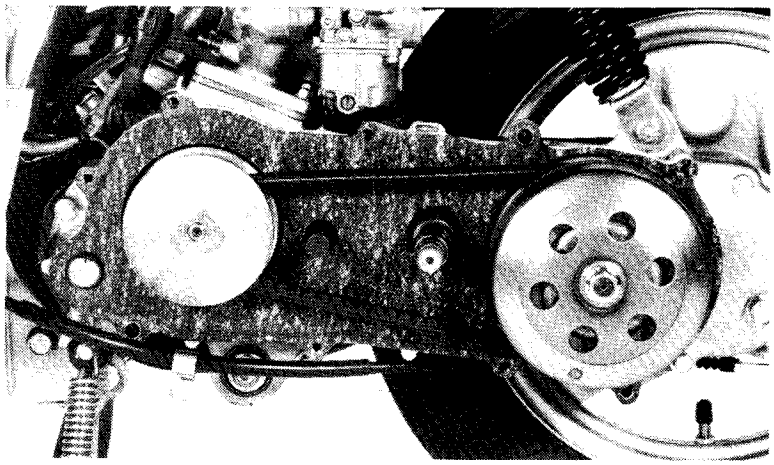
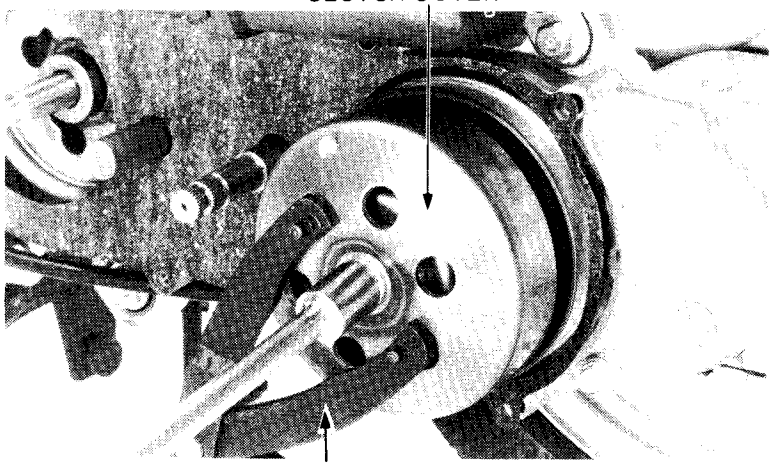
CLUTCH/DRIVEN PULLEY

CLUTCH REMOVAL

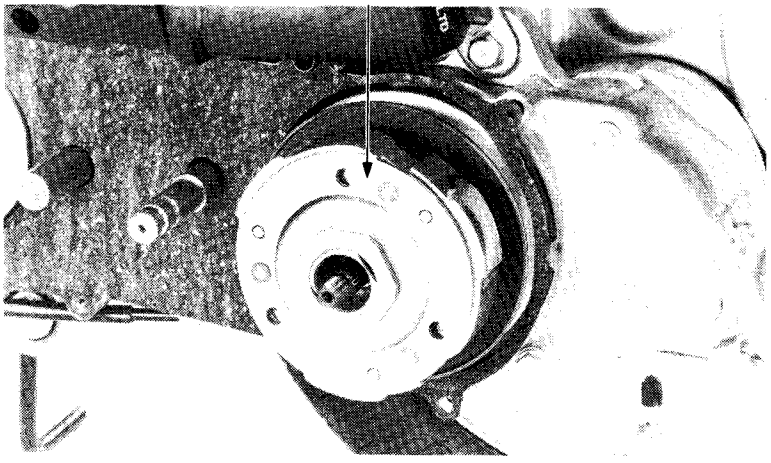
Remove both frame body covers.
Remove the left case cover.
Remove the drive face and drive belt (Page 8-3).



Remove the nut holding the clutch outer.
Remove the clutch outer.



Withdraw the movable driven face from the drive shaft.



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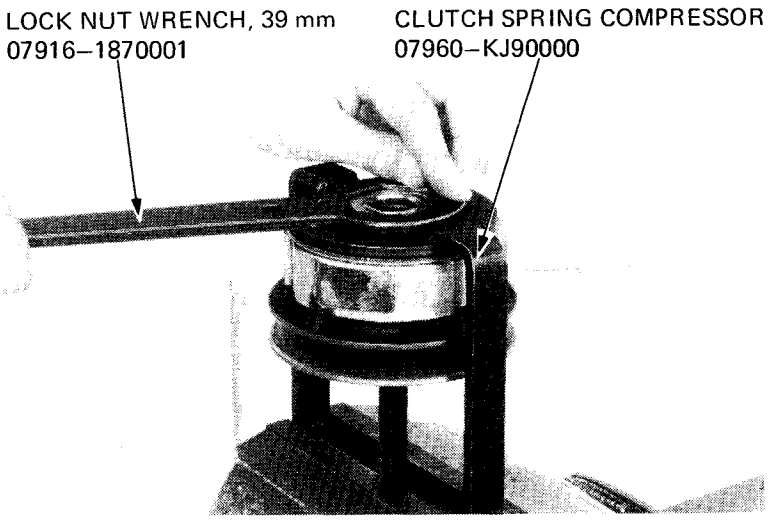
DRIVEN FACE DISASSEMBLY

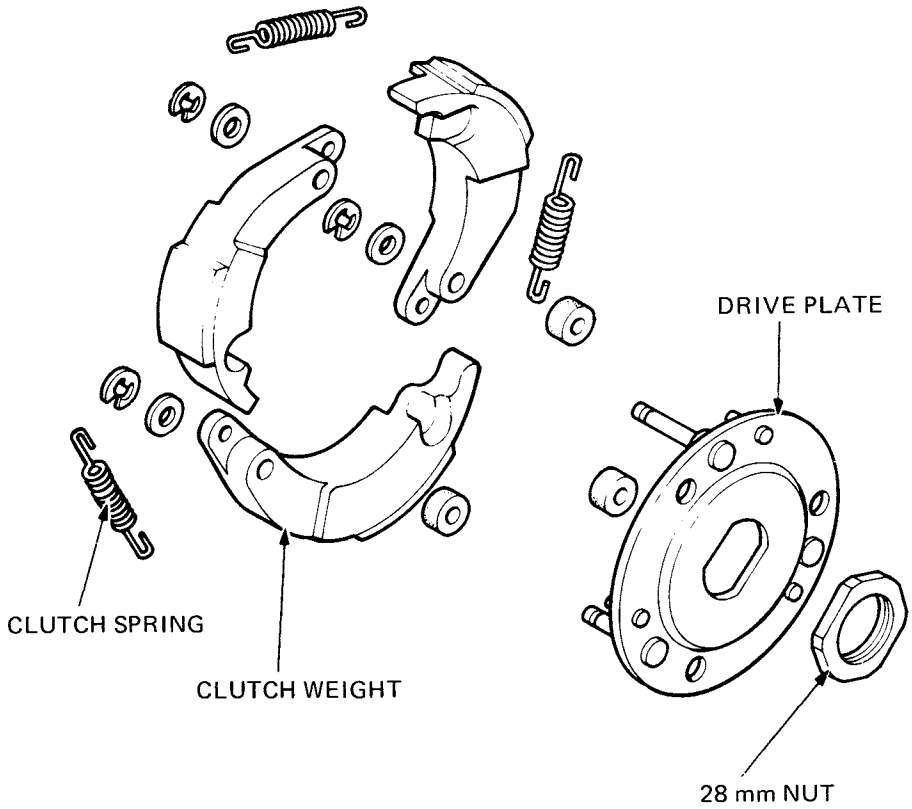
Install the clutch spring compressor and remove the 28 mm nut.
Remove the compressor and remove the clutch and driven face spring from the driven pulley.

CAUTION :

Do not overtighten the clutch spring compressor.

Disassemble the clutch.





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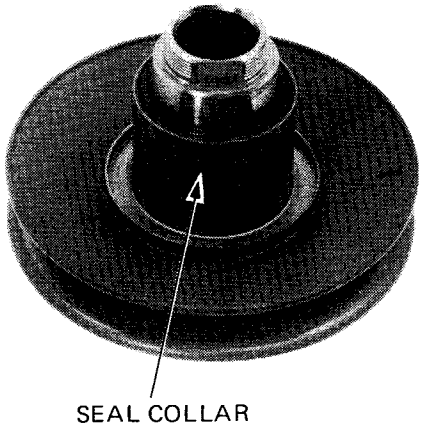
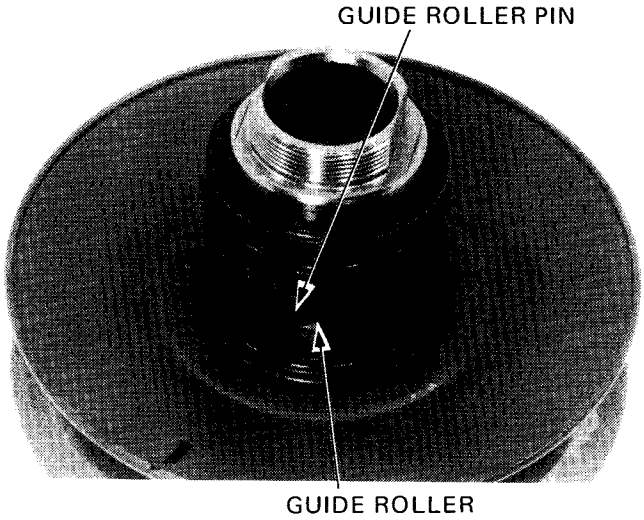
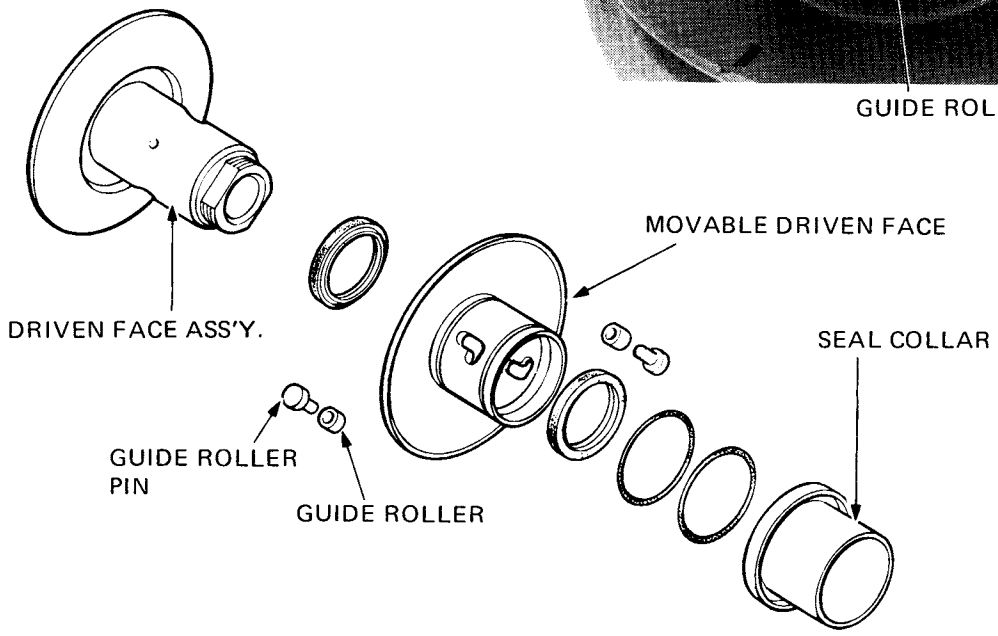
Remove the seal collar.



Withdraw the guide roller pins and guide rollers.
Remove the movable driven face.





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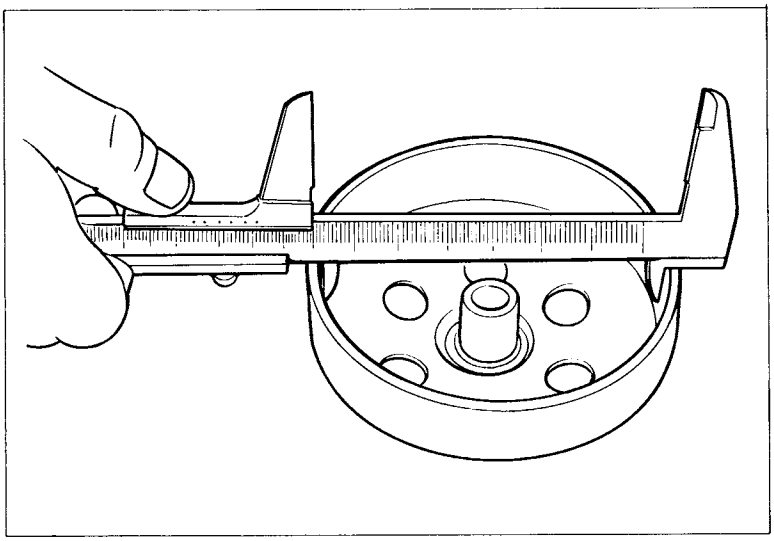
CLUTCH/DRIVEN FACE INSPECTION

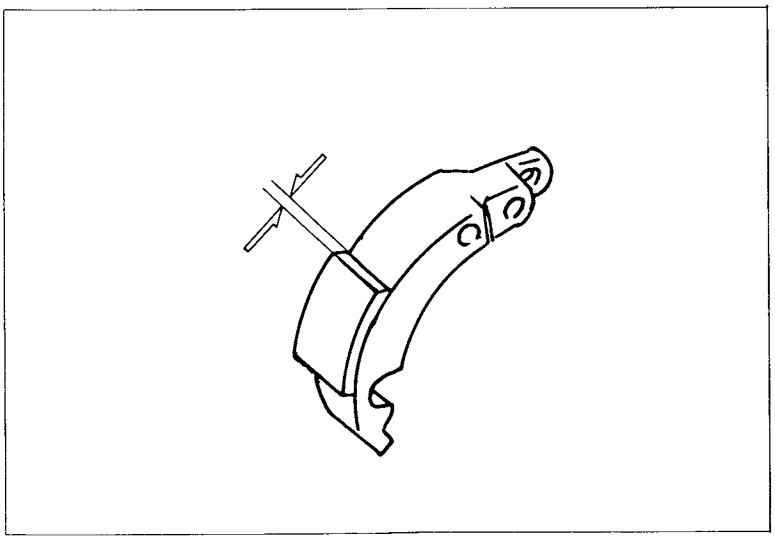
Inspect the clutch outer for wear or damage.
Measure the clutch outer I.D.

SERVICE LIMIT: 107.5 mm (4.23 in)



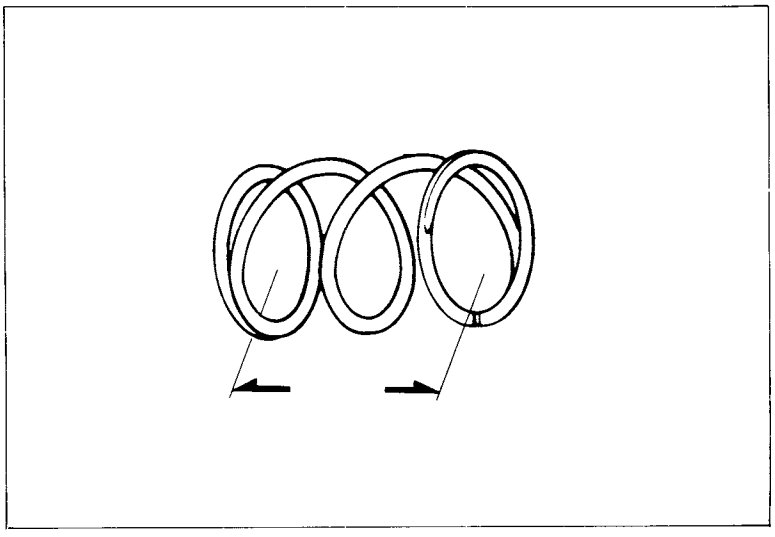
Inspect the clutch shoes for wear or damage.
Measure the thickness of each shoe.

SERVICE LIMIT: 2.0 mm (0.079 in)



Measure the driven face spring free length.

SERVICE LIMIT: 82.8 mm (3.26 in)



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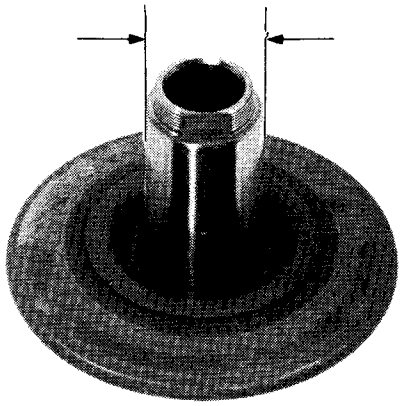
Inspect the driven face assembly for wear or damage.
Measure the driven face O.D.

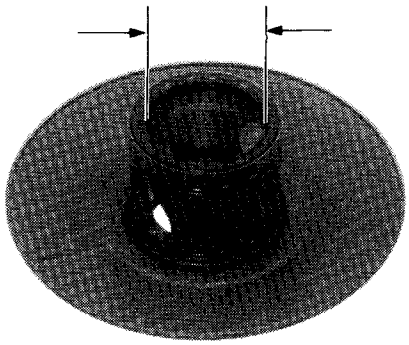
SERVICE LIMIT: 33.93 mm (1.336 in)



Inspect the movable driven face for wear or damage.
Measure the movable driven face I.D.

SERVICE LIMIT: 34.06 mm (1.341 in)

Check the guide groove for wear.
Check the oil seal for wear, damage or other faults.



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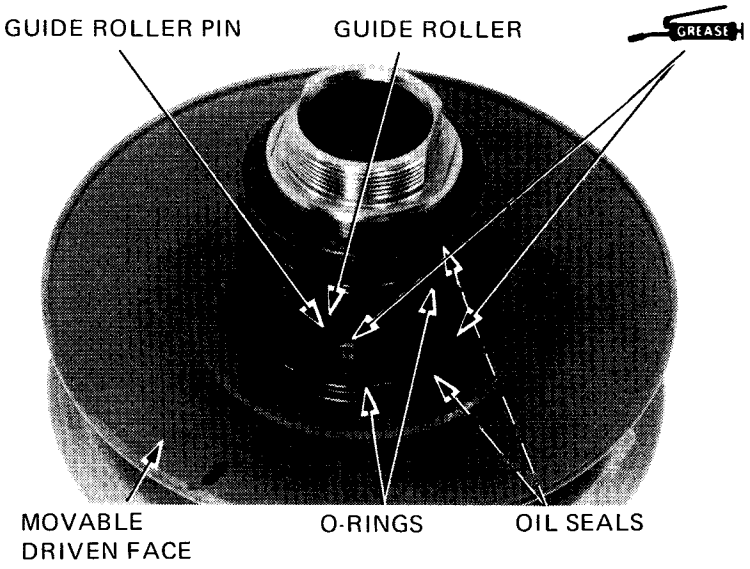
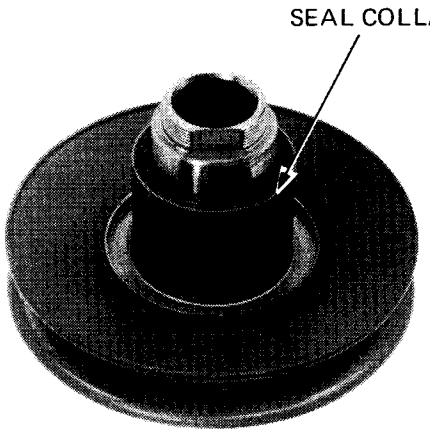
DRIVEN FACE ASSEMBLY

Install the movable driven face, guide rollers and guide roller pins, oil seals and O-rings.
Apply 4.0–4.5g (0.14–0.16 oz) of grease to the area shown.



Slide the seal collar onto the movable driven face.



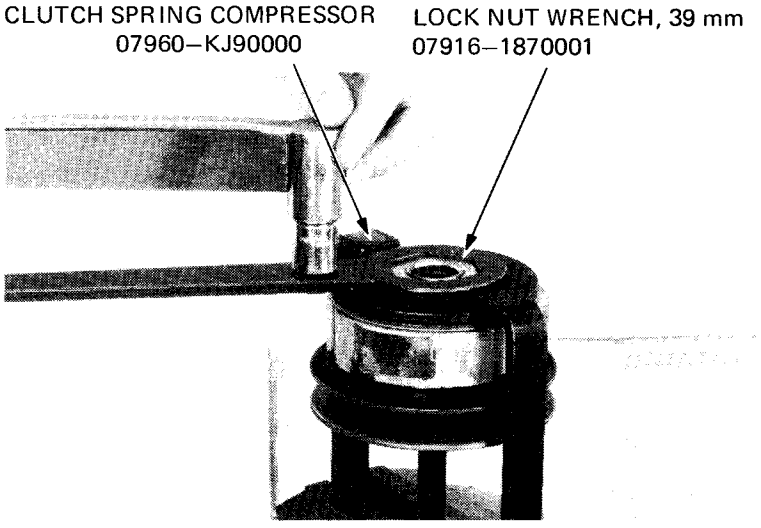
DRIVEN PULLEY ASSEMBLY

Position the driven face assembly, spring and drive plate assembly on the clutch spring compressor. Compress the spring by turning the handle.
Install and tighten the 28 mm special nut.

Use a beam type torque wrench 12–14 inches long.

TORQUE WRENCH READING:
33–38 N·m (3.3–3.8 kg-m, 24–28 ft-lb)

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



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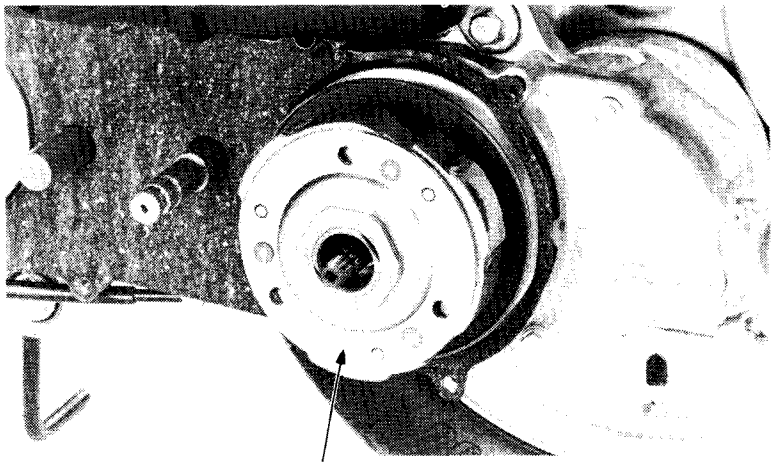
CLUTCH/DRIVEN PULLEY INSTALLATION

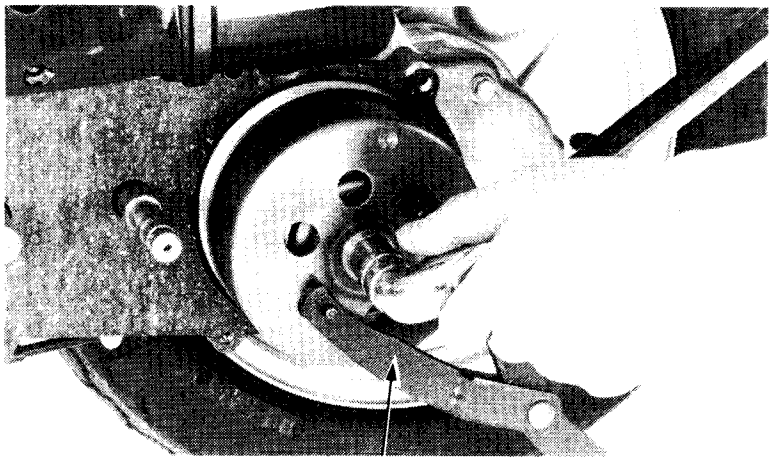
Install the driven pulley on the drive shaft.



DRIVEN PULLEY

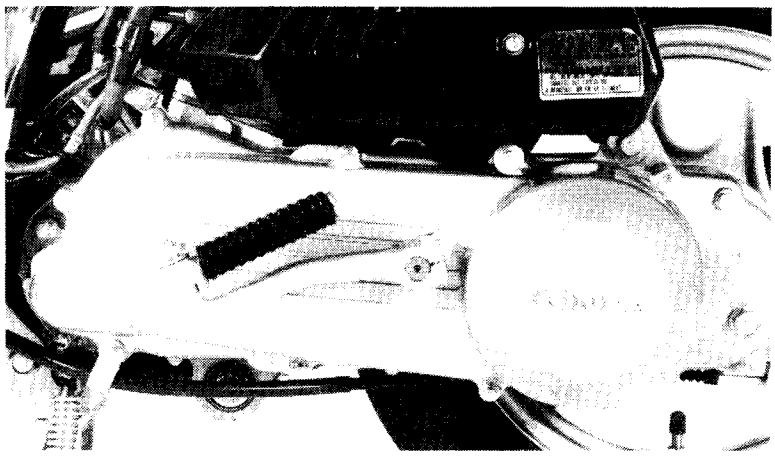
Install the clutch outer and torque the nut.

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



UNIVERSAL HOLDER
07725–0030000

The installation sequence is essentially the reverse order of removal.



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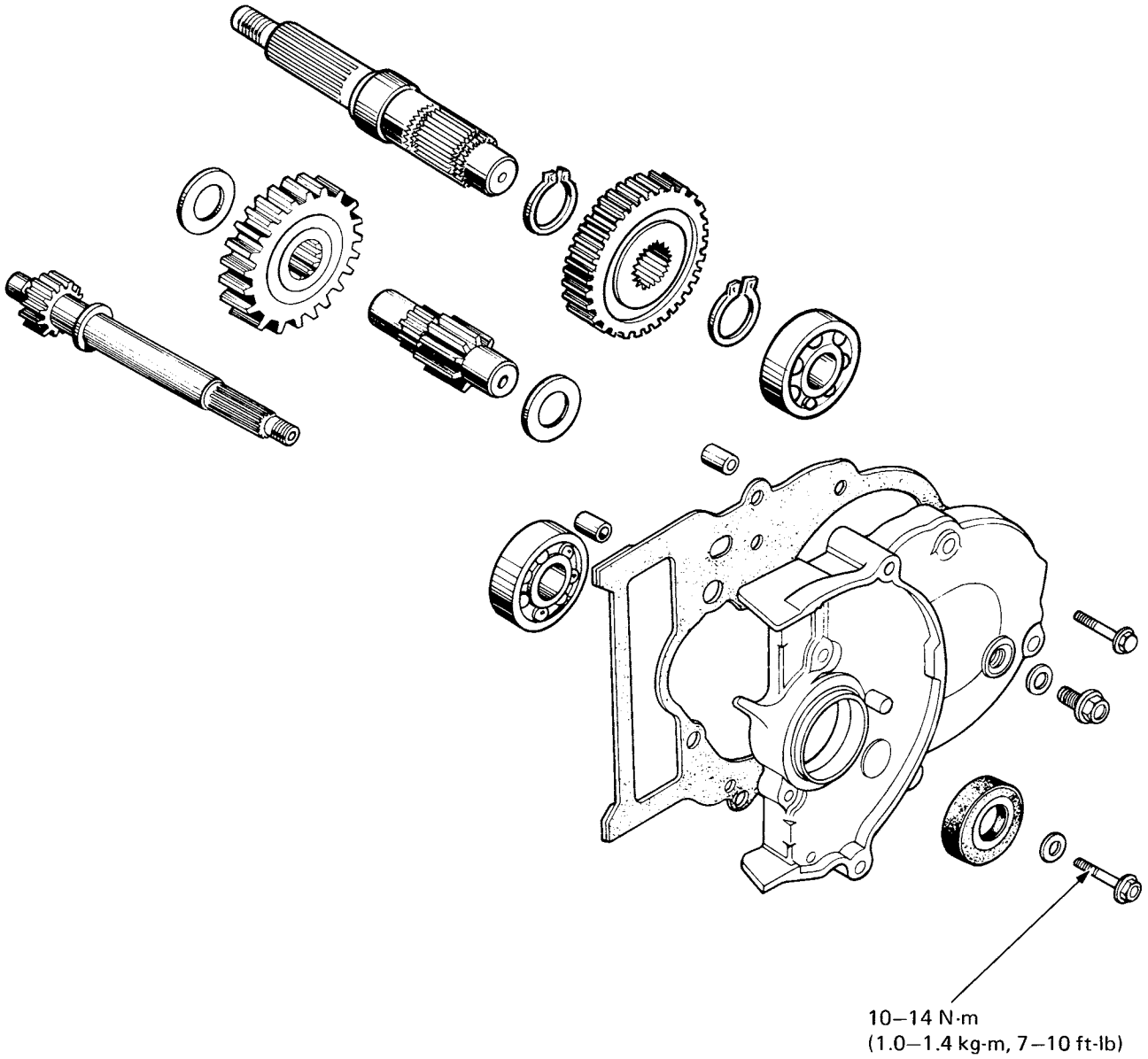

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FINAL REDUCTION DISASSEMBLY	9–2
FINAL REDUCTION INSPECTION	9–3
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SERVICE INFORMATION

SPECIFICATIONS

Specified oil	Honda 4-stroke oil SAE 10W–40 or equivalent
Oil quantity	90 cc (3.0 US oz., 2.5 Imp. oz.)

TORQUE VALUE

Oil drain bolt	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

TOOLS

Special

Bearing Remover Set	07936–1660000	(Not available in U.S.A.) or	
		Bearing remover, 12 mm	07936–1660100
		and Remover weight	07936–3710200

Common

Pilot, 12 mm	07746–0040200
Attachment, 32 x 35 mm	07746–0010100
Pilot, 15 mm	07746–0040300
Attachment, 37 x 40 mm	07746–0010200
Pilot, 17 mm	07746–0040400
Driver	07749–0010000

TROUBLESHOOTING

Engine starts, but scooter won't move
1. Damaged transmission
2. Seized or burnt transmission

Abnormal noise
1. Worn, seized or chipped gears
2. Worn bearing

Oil leaks
1. Oil level too high
2. Worn or damaged oil seal

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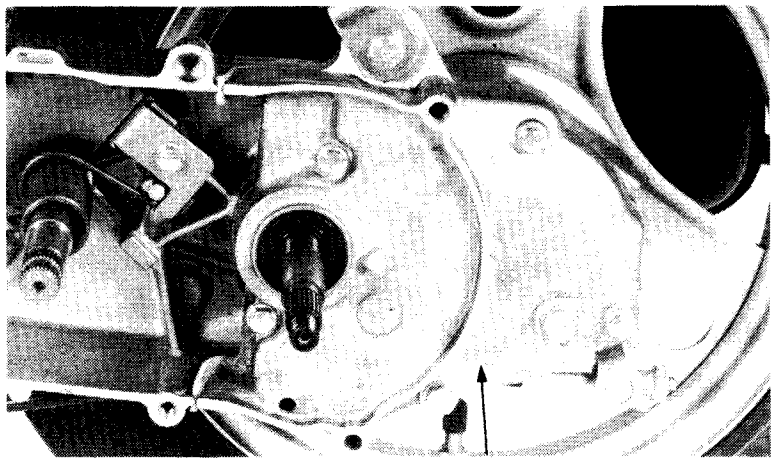
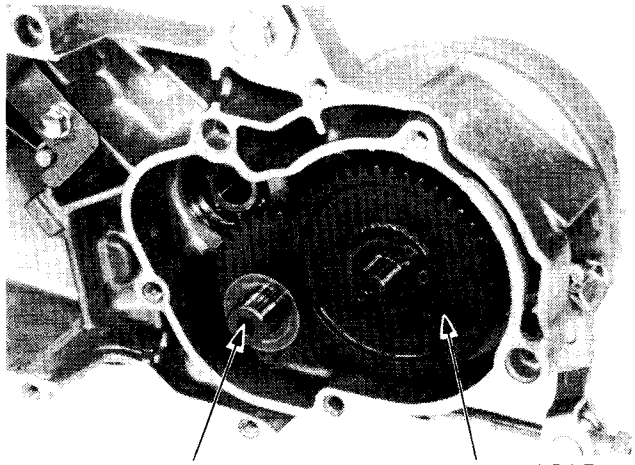
FINAL REDUCTION DISASSEMBLY

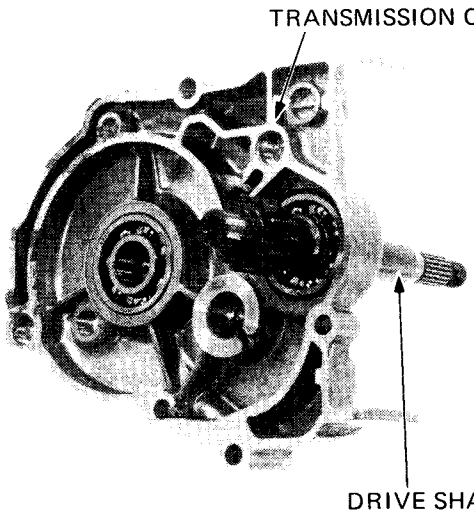
Remove the driven pulley (Page 8-13).
Drain the oil from the transmission case (Page 3-5).
Remove the rear wheel (Page 12-2).
Remove the transmission cover bolts and remove the transmission cover.



Remove the final gear and countershaft.



Remove the drive shaft from the transmission cover.



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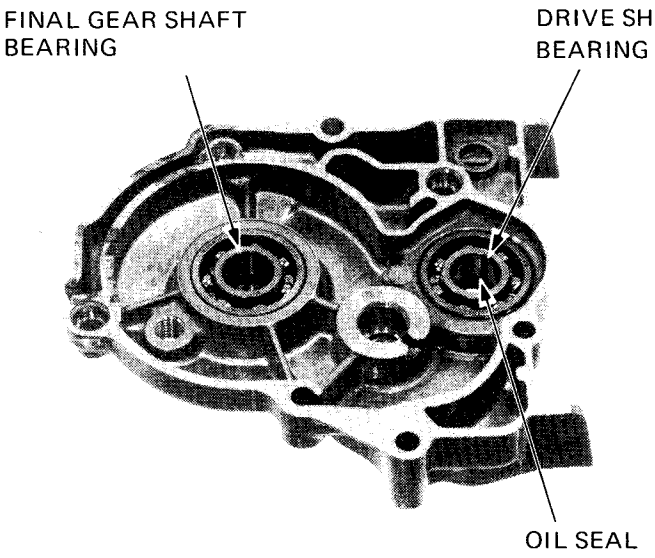
Check the transmission cover bearing play by rotating the bearing by hand. Replace the bearing with a new one if it is noisy or has excessive play.

Inspect the oil seal for wear or damage. Replace the oil seal with a new one if worn or damaged.

TOOLS

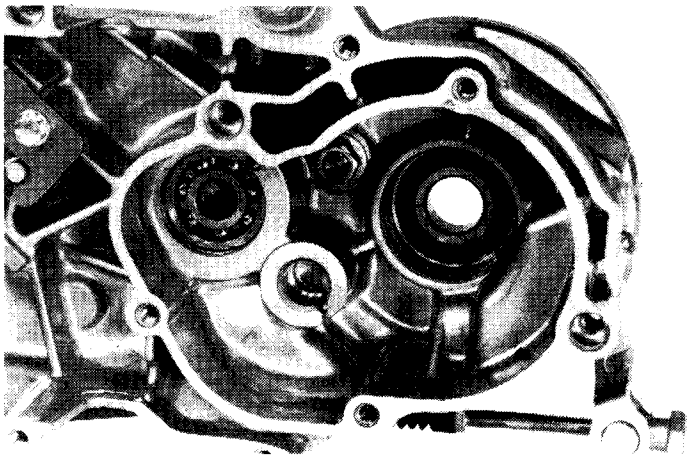
Attachment, 32 x 35 mm	07746–0010100
Pilot, 15 mm	07746–0040300
Driver	07749–0010000



Check the left case bearing play by rotating the bearing by hand. Replace the bearing with a new one if it is noisy or has excessive play.
Check the oil seal for wear or damage and replace with a new one if necessary.

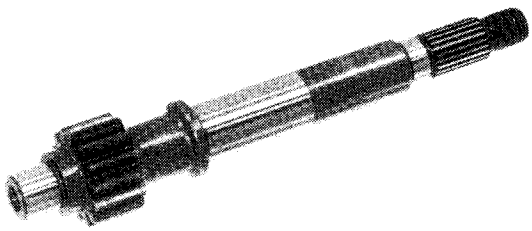
TOOLS

Bearing Remover Set, 12 mm (Not available in U.S.A.) or	07936–1660000
Bearing remover, 12 mm	07936–1660100
and Remover weight	07936–3710200
Pilot, 12 mm	07746–0040200
Pilot, 17 mm	07746–0040400
Attachment, 32 x 35 mm	07746–0010100
Attachment, 37 x 40 mm	07746–0010200
Driver	07749–0010000



FINAL REDUCTION INSPECTION

Inspect the drive shaft and gear for excessive wear or damage.



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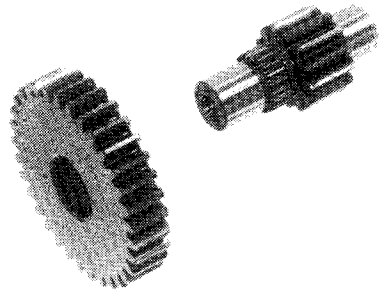
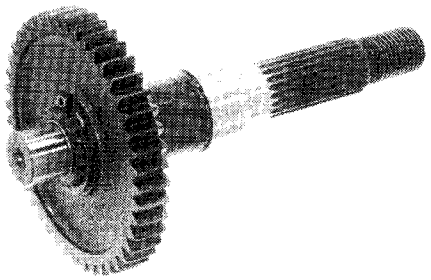
Check the countershaft and gear for excessive wear or damage.



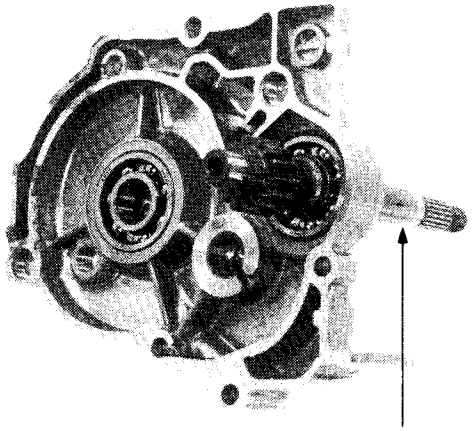
Check the final gear for wear, damage or signs of seizure.



FINAL REDUCTION INSTALLATION

TRANSMISSION COVER ASSEMBLY

Slide the drive shaft through the bearing from the inside.



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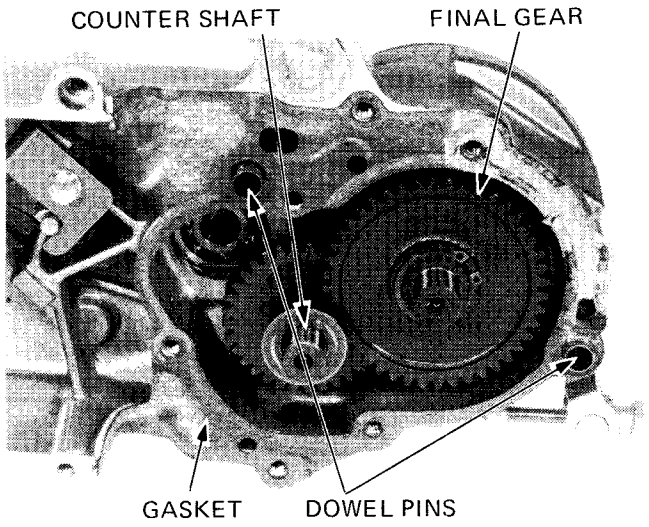
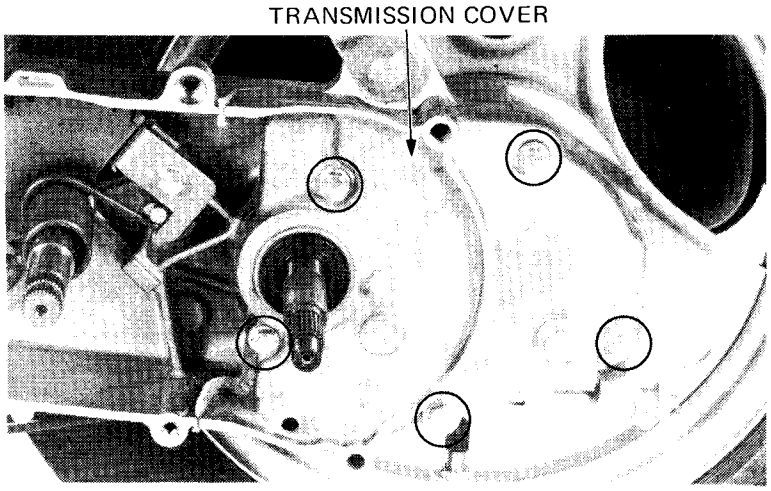
Clean the cover mating surface of the final reduction case of any gasket material.
Install the countershaft and final gear.
Install a new gasket and dowel pins.



Install the transmission cover.
Install the rear wheel (Page 12-3).

Install the movable driven face assembly and clutch outer (Page 8-19).
Install the left cover gasket and dowel pins.
Install the drive belt and drive face.

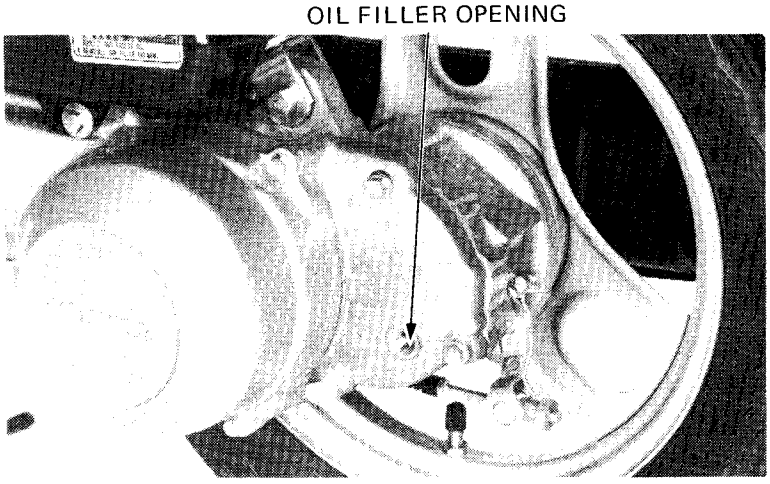
Install the left cover and kick starter pedal.
Install both frame body covers.



Pour the specified amount of oil through the filler opening.

SPECIFIED OIL: **HONDA 4 STROKE OIL 10W—40 or equivalent**
QUANTITY: **90 cc (3.0 U.S. oz., 2.5 Imp. oz.)**

Start the engine and check for leaks.



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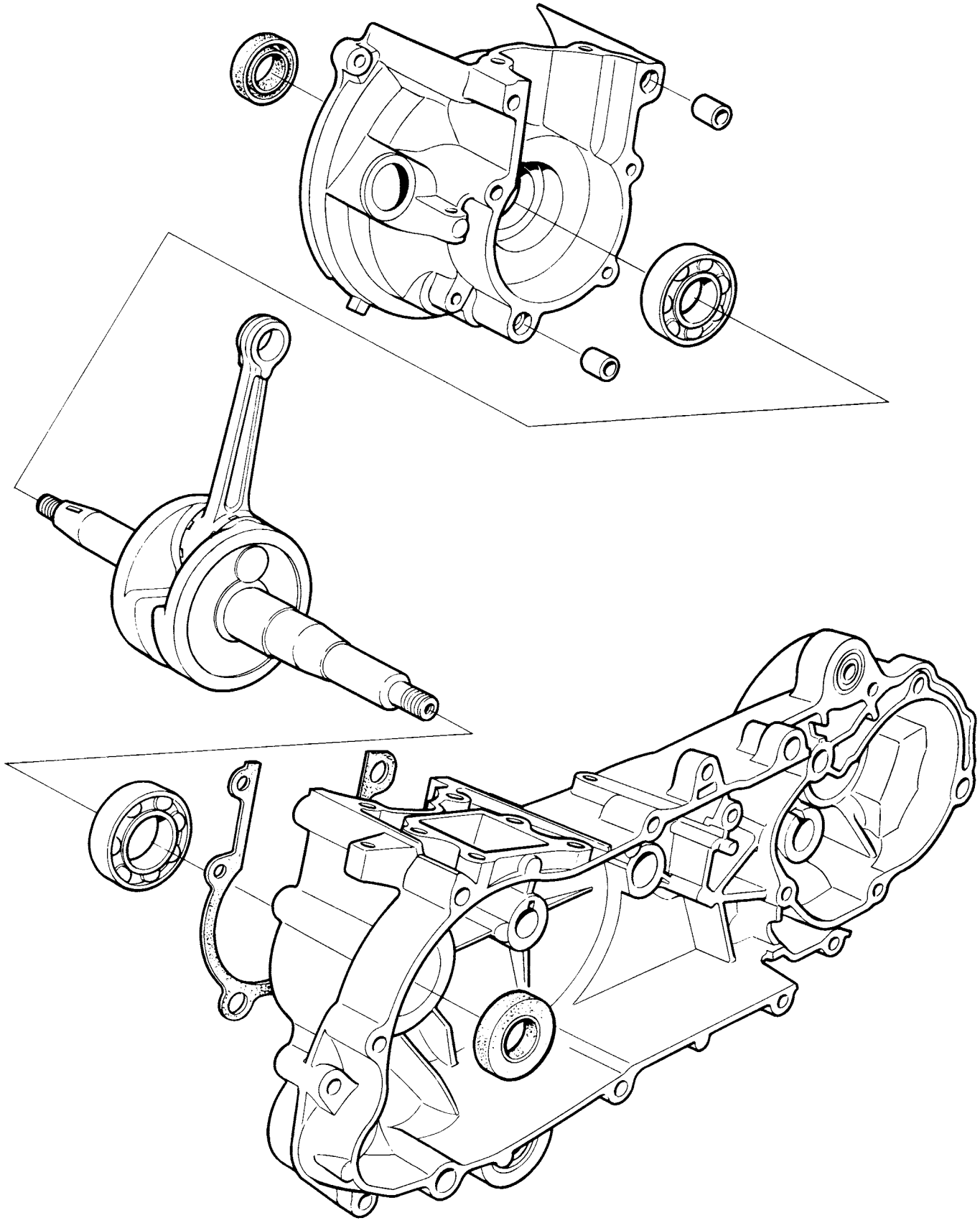

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10. CRANKCASE/CRANKSHAFT

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CRANKSHAFT ASSEMBLY	10–4
CRANKCASE ASSEMBLY	10–5

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)
    - Mounting bracket
  - Carburetor (Section 4)
  - Oil pump (Section 2)
  - Reed valve (Section 4)
  - Kick starter (Section 8)
  - Alternator (Section 7)
  - Cylinder head, cylinder (Section 6)
  - Starter motor (Section 14)
- In addition to the above, remove the following parts when the left crankcase half must be removed:
  - Rear wheel (Section 12)
  - Final reduction (Section 9)

10

SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)
Connecting rod big end side clearance		–	0.60 (0.024)
Connecting rod big end radial clearance		–	0.05 (0.002)
Crankshaft runout	A	–	0.15 (0.006)
	B	–	0.10 (0.004)

TORQUE VALUES

Link stopper bolt	20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb)
Engine mounting bolt	35–40 N·m (3.5–4.0 kg-m, 25–29 ft-lb)

TOOLS

Special

Bearing Puller	07631–0010000 (Commercially available in U.S.A.)
Case Puller	07935–KG80000
Assembly collar	07965–1480100
Assembly bolt	07965–1480200

Common

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

TROUBLESHOOTING

Abnormal engine noise

1. Worn main journal bearing
2. Worn crankpin bearing
3. Worn transmission bearing

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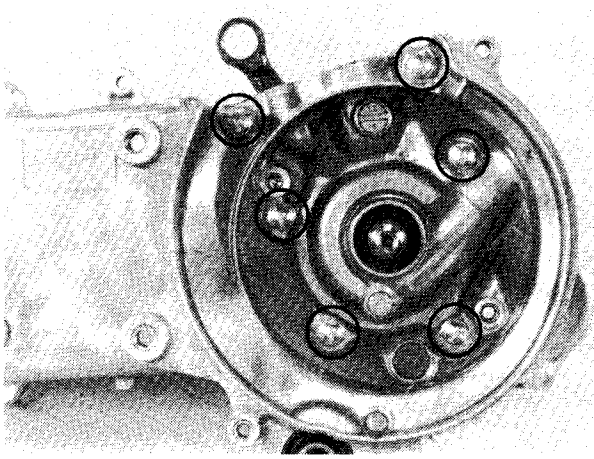
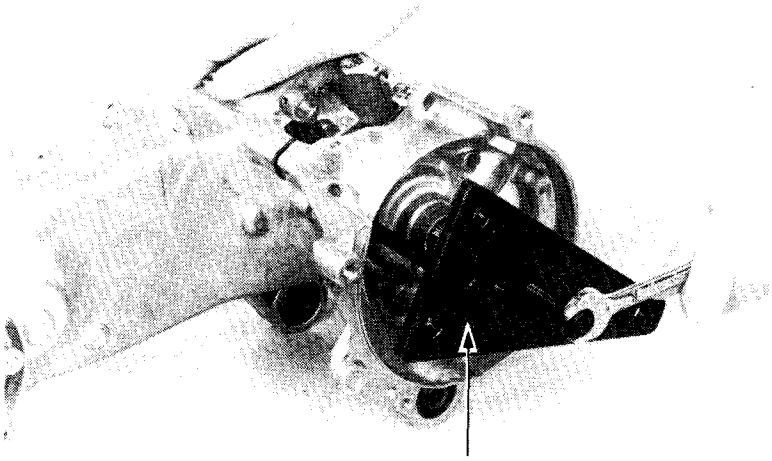
CRANKCASE SEPARATION

Remove the engine mounting bracket.

Remove the crankcase attaching bolts.



Attach the special tool on the right crankcase as shown. Use the case puller holes marked "L" to mount the puller. Also use the 3 special short bolts. Separate the right crankcase half.

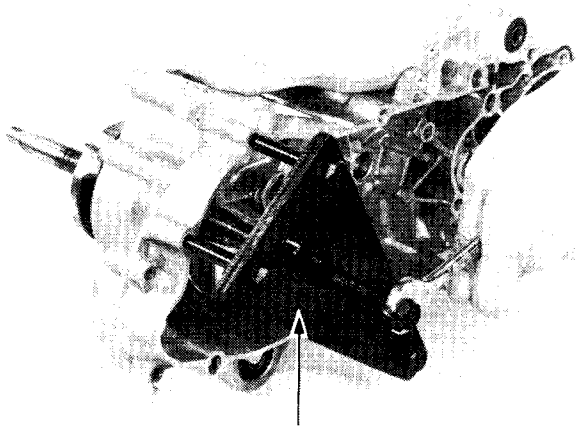


CASE PULLER
07935–KG80000

CRANKSHAFT REMOVAL

Attach the special tool on the left crankcase as shown.
Attach the case puller with the two special long bolts through the "R" holes.

Remove the crankshaft.



CASE PULLER
07935–KG80000

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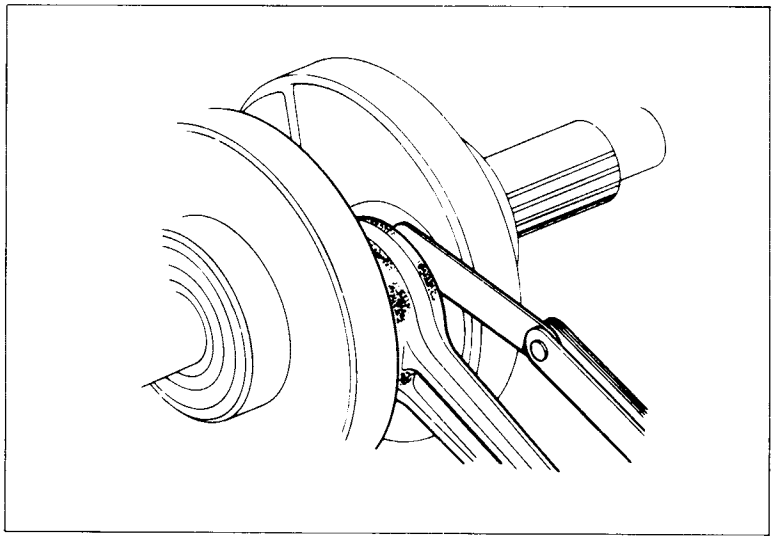
CRANKSHAFT INSPECTION

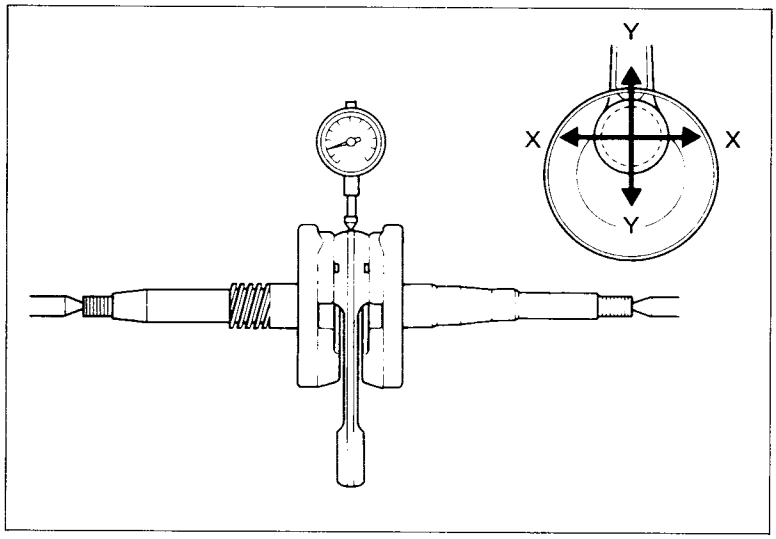
Measure the connecting rod big end side clearance with a feeler gauge.

SERVICE LIMIT: 0.60 mm (0.024 in)



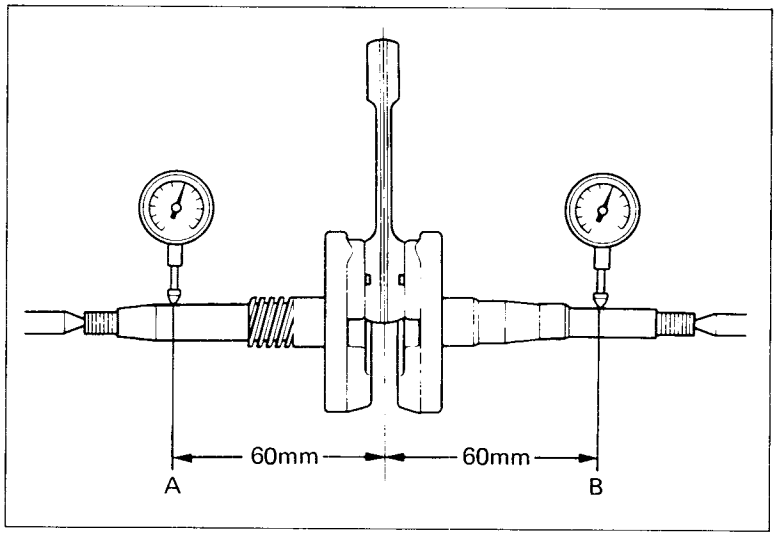
Measure the connecting rod big end radial clearance at two points in the X and Y directions.

SERVICE LIMIT: 0.05 mm (0.002 in)



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

SERVICE LIMITS :
A: 0.15 mm (0.006 in)
B: 0.10 mm (0.004 in)



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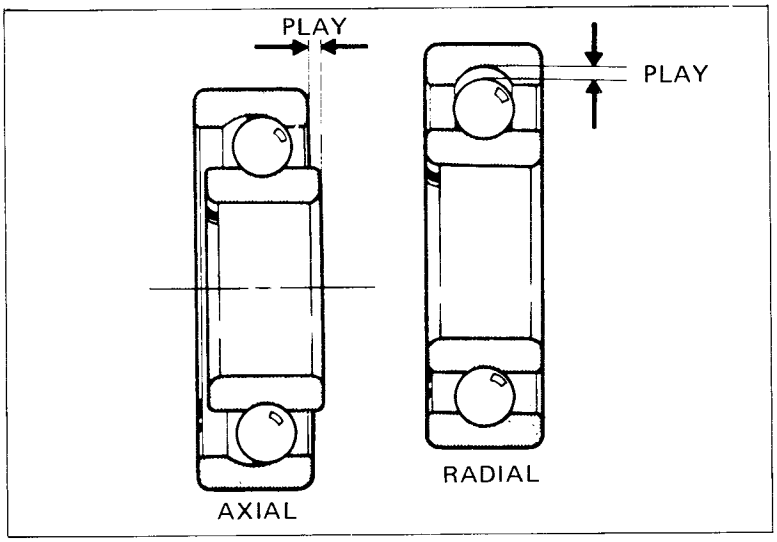
Spin the crankshaft bearing by hand and check for play.
The bearing must be replaced if it is noisy or has excessive play.

TOOLS

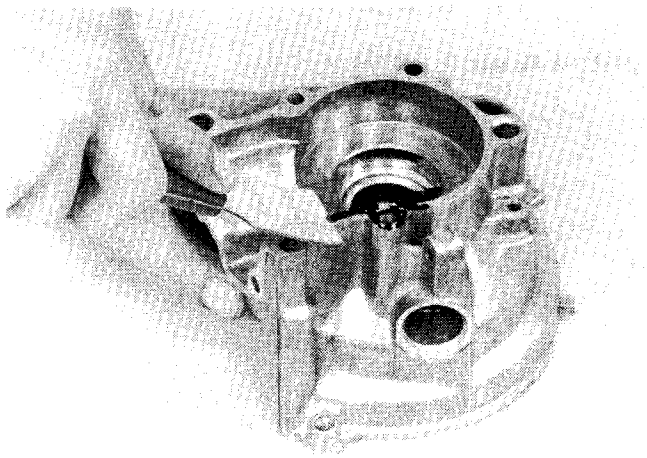
Bearing Puller	07631–0010000
Attachment, 42 x 47 mm	07746–0010300
Pilot, 20 mm	07746–0040500
Driver	07749–0010000



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

NOTE:

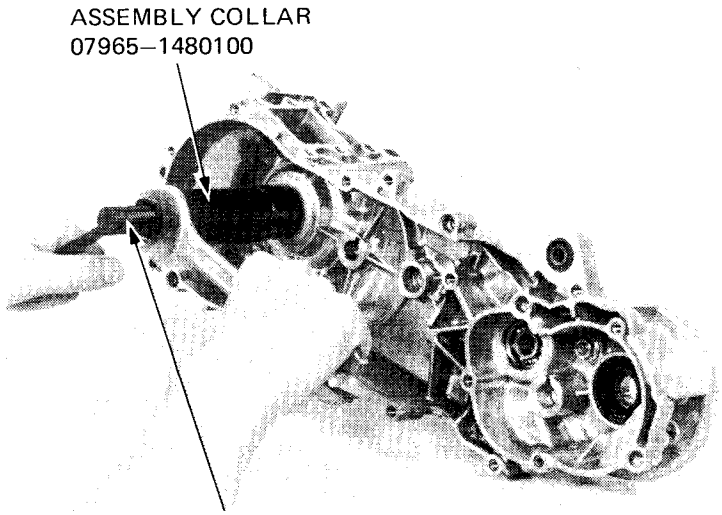
- Apply clean 2-stroke injector oil to all moving and sliding surfaces.
- Remove all gasket material from the crankcase mating surfaces. Dress any roughness or irregularities with an oil stone.



Install the crankshaft into the left crankcase.
Position the assembly collar's small O.D. against the crankshaft bearing. Thread the assembly bolt onto the crankshaft. Hold the bolt and turn the nut to install the crankshaft into the left crankcase.

NOTE:

- Lubricate the crankshaft main and journal bearings with Honda 2-stroke oil or equivalent.
- Pack the sealing lips with clean grease.



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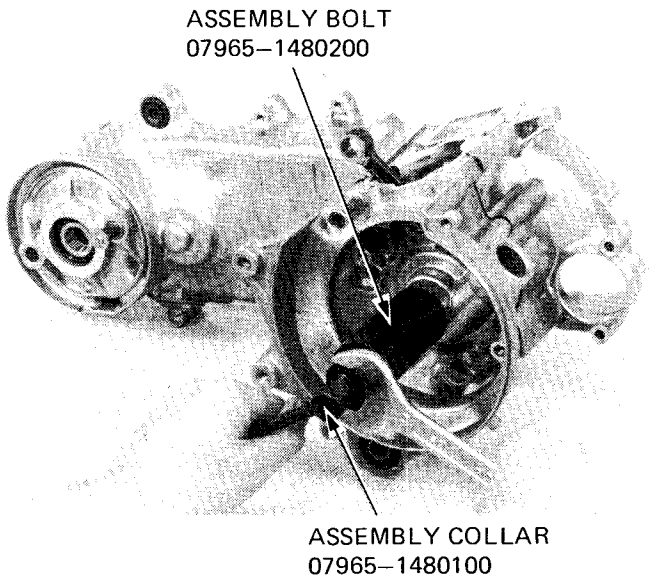
Install a new gasket and dowel pins onto the crankcase mating surface.
Assemble the crankcase halves; place the collar with the small O.D. against the right crankshaft bearing. Thread the bolt through the collar onto the crankshaft. Hold the bolt and turn the nut clockwise to draw the crankcase halves together.
Install the right oil seal; place the collar so its stepped end is against the crankcase and oil seal. Thread the bolt through the collar onto the crankshaft. Hold the bolt and turn the nut counterclockwise to install the oil seal into place.



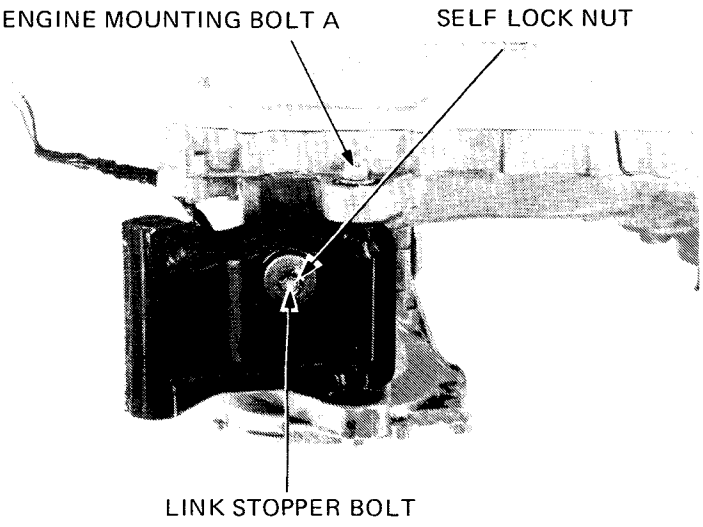
Install the engine mounting bracket.

NOTE:

> After loosely installing the bracket, tighten the link stopper self lock nut, and then tighten the engine mounting bolt A.

TORQUE:

Link stopper bolt:	**20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb)**
Engine mounting bolt:	**35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)**



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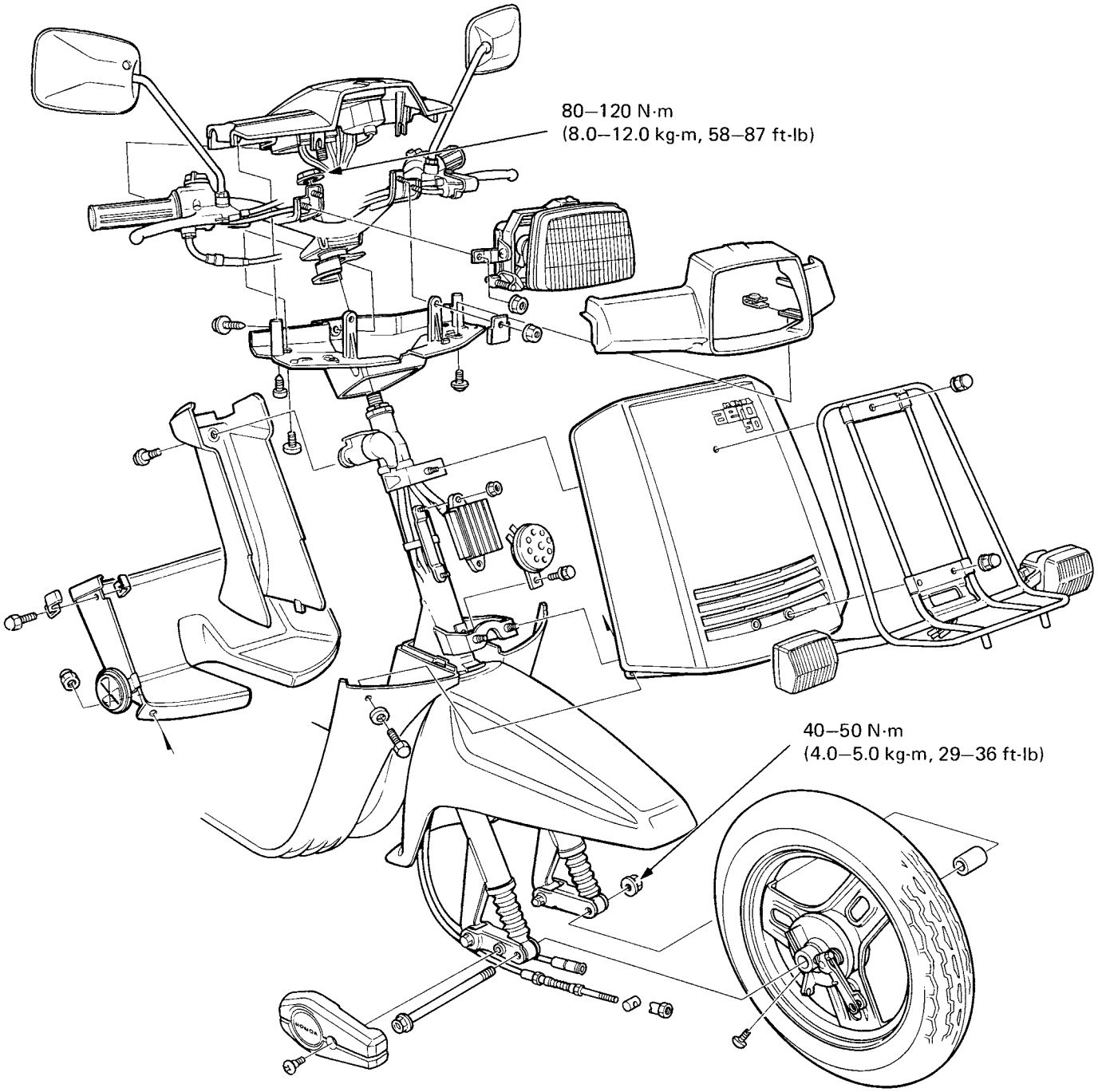

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11. STEERING/FRONT WHEEL/ BRAKE/SUSPENSION

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INSTRUMENTS	11–4
HANDLEBAR	11–8
FRONT WHEEL	11–11
FRONT BRAKE	11–15
FRONT FORK	11–16

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 thoroughly 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)
Fork spring free length		131.0 (5.16 in)	127 (5.0)
Fork tube runout		–	0.2 (0.01)

11

TORQUE VALUES

Steering stem	80–120 N·m (8.0–12.0 kg-m, 58–87 ft-lb)
Front axle nut	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Steering top thread nut	5–13 N·m (0.5–1.3 kg-m, 4–9 ft-lb)
Fork pivot arm nut	20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb)

TOOLS

Special

Attachment, 28 x 30 mm	07946–1870100 (Not available in U.S.A.)
Fork seal driver	07947–1180001

Common

Pin Spanner	07702–0020000 or M9361-412-099788 (U.S.A. only)
Wrench, 30 x 32 mm	07716–0020400 ┐ Equivalents commercially available in U.S.A.
Extension bar	07716–0020500 ┘
Pilot, 10 mm	07746–0040100
Driver	07749–0010000
Bearing remover expander	07746–0050100 ┐ Equivalents commercially available in U.S.A.
Bearing remover collet, 10 mm	07746–0050200 ┘
Pilot, 30 mm	07746–0040700
Attachment, 42 x 47 mm	07746–0010300
Pilot, 25 mm	07746–0040600

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TROUBLESHOOTING

Hard Steering
1. Steering stem nut too tight
2. Steering top cone race/nut too tight
3. Damaged steering balls and races
4. Insufficient tire pressure

Steers to One Side or Does Not Track Straight
1. Bent front forks
2. Bent front axle
3. Bent spoke plate

Front Wheel Wobbling
1. Bent rim
2. Axle not tightened properly
3. Bent spoke plate
4. Excessive wheel bearing play
5. Faulty or unevenly worn tire

Soft Suspension
1. Weak fork springs

Front Suspension Noise
1. Slider binding
2. Loose front fork fasteners

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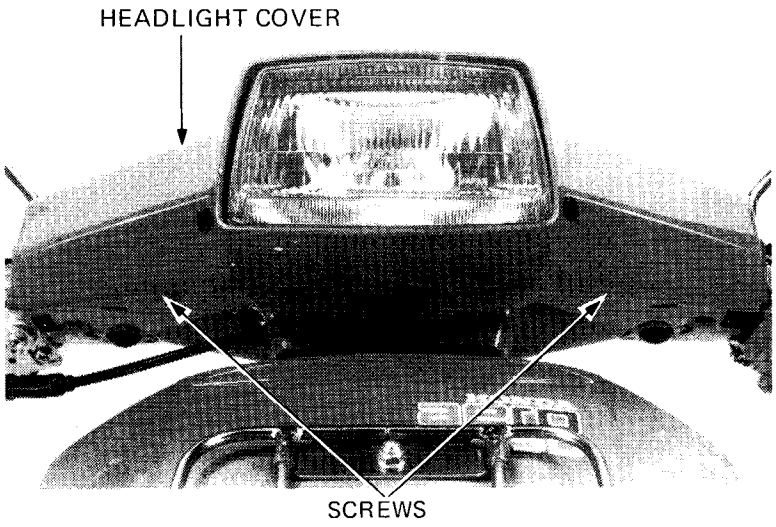
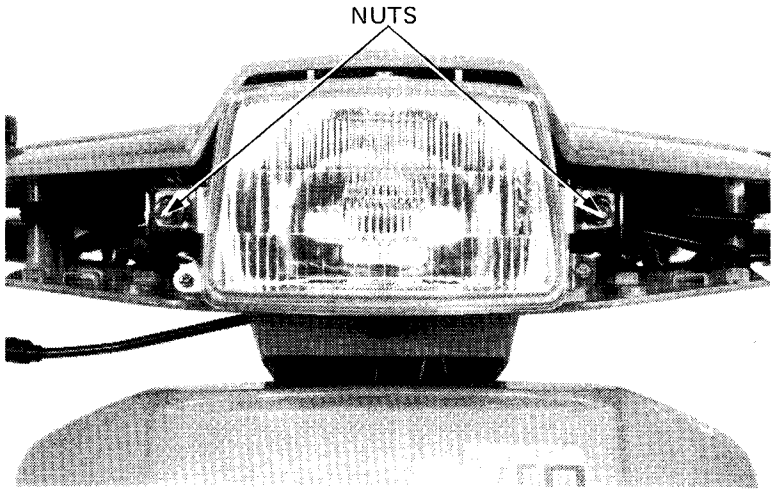
HEADLIGHT

REMOVAL

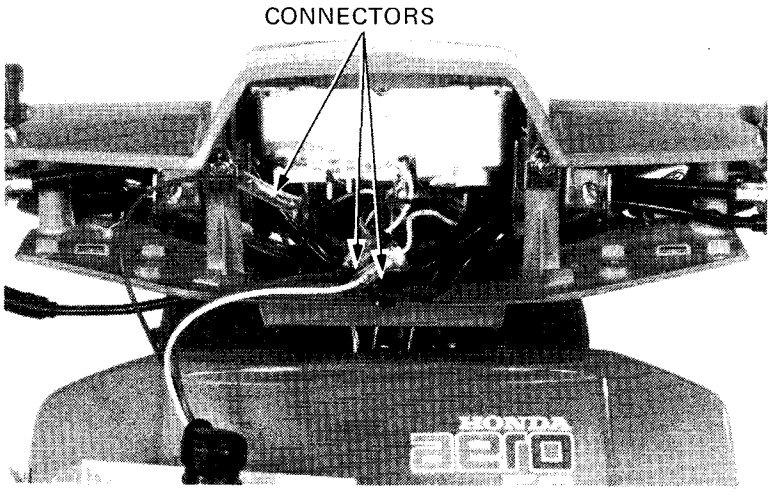
Remove the two screws attaching the headlight cover and the cover.



Remove the two nuts attaching the headlight.



Disconnect the headlight wire connectors and remove the headlight.



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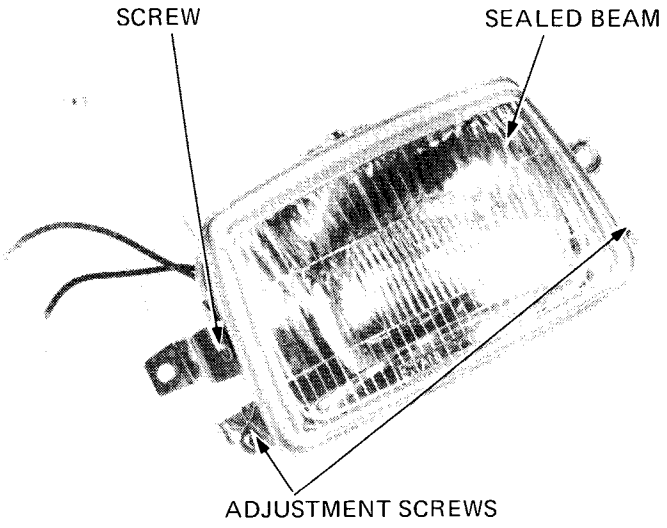
DISASSEMBLY

Remove the two sealed beam attaching screws and two adjustment screws.
Remove the sealed beam from the headlight bracket.



ASSEMBLY/INSTALLATION

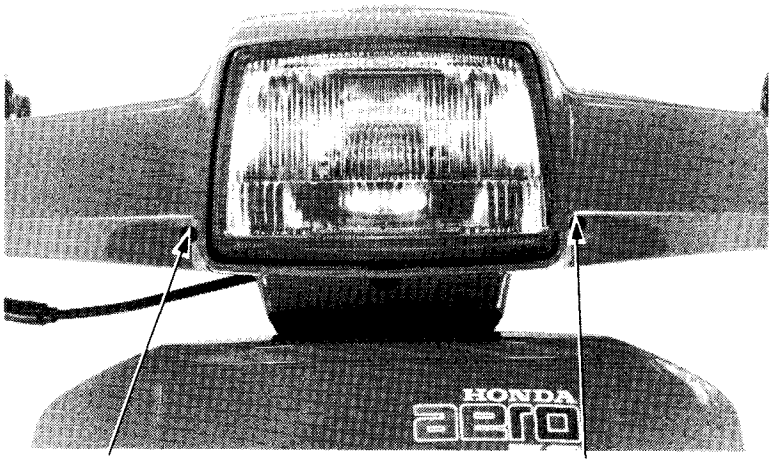
Assemble and install the headlight in the reverse order of disassembly and removal.

HEADLIGHT BEAM ADJUSTMENT

Adjust the headlight beam by turning the vertical and horizontal adjusting screws.

CAUTION:

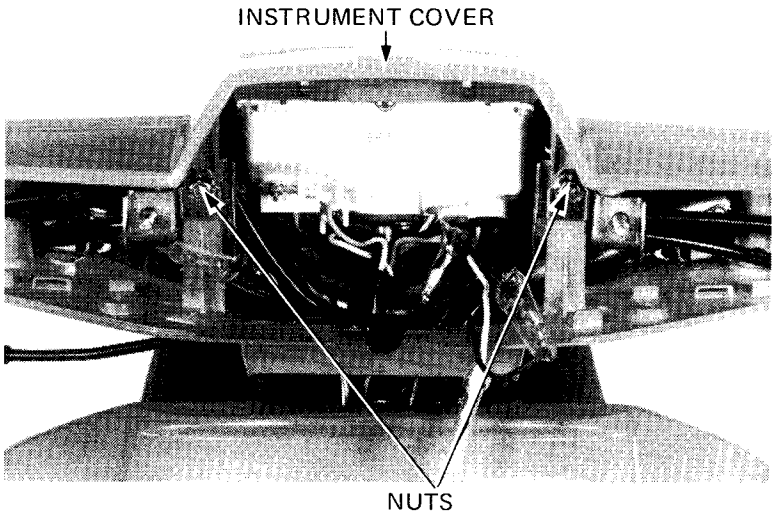
Adjust the headlight beam as specified by local laws and regulations.



INSTRUMENTS

BULB REPLACEMENT

Remove the headlight (Page 11-3).
Remove the two nuts attaching the instrument cover.



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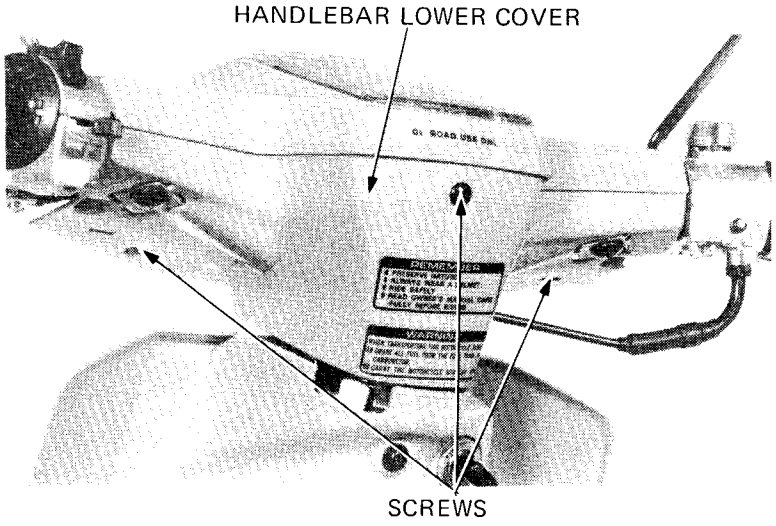
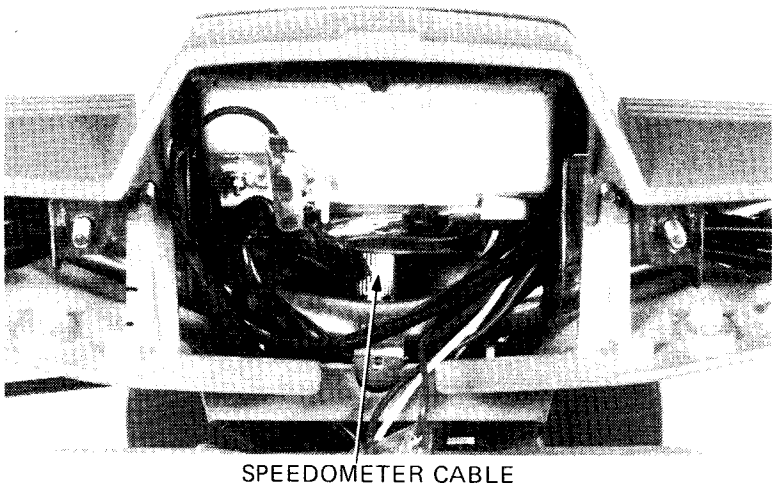
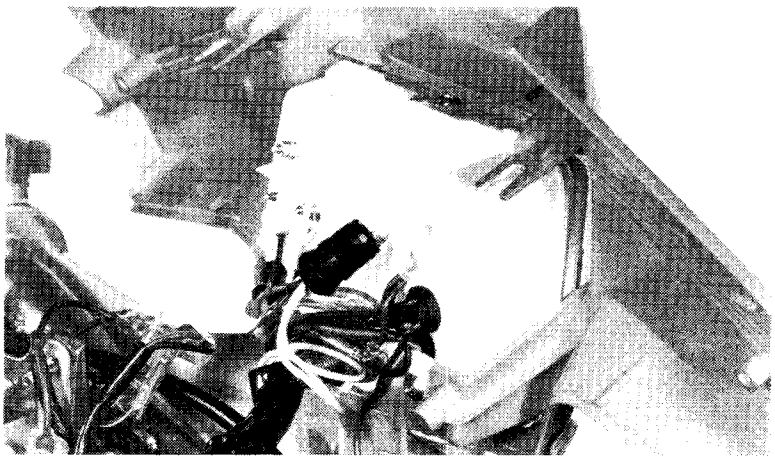
Remove the three screws attaching the handlebar lower cover.



Disconnect the speedometer cable and raise the instrument.



Pull the bulb socket out and replace the bulb with a new one.



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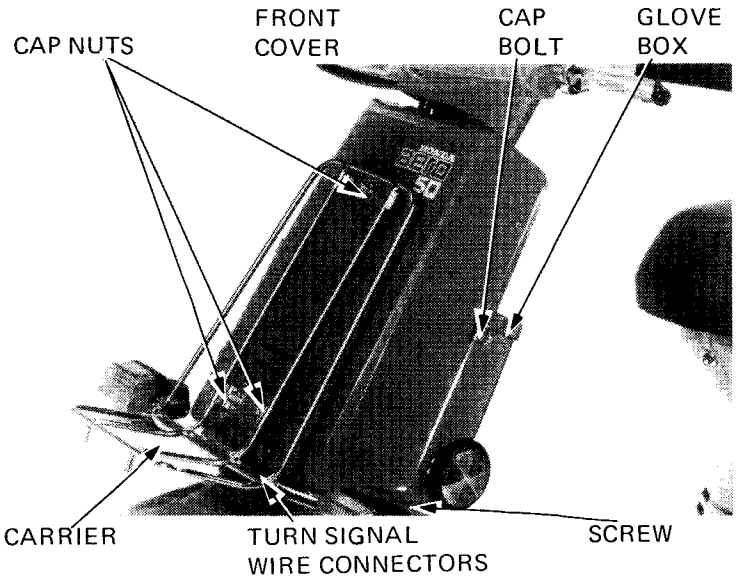
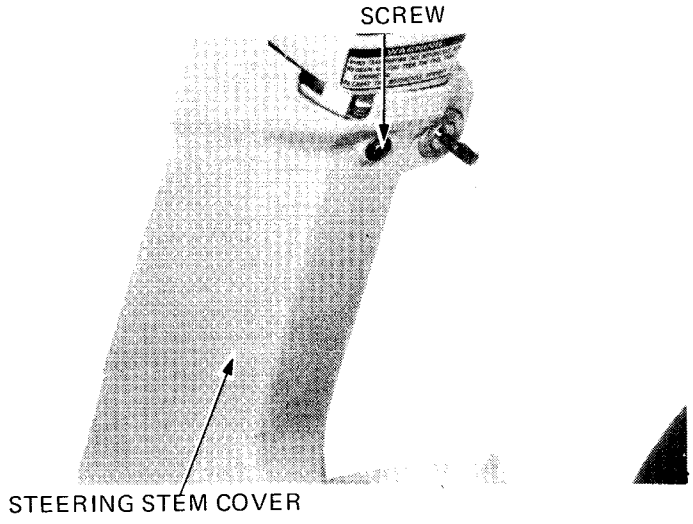
REMOVAL

Disconnect the front turn signal wire connectors.
Remove the three cap nuts attaching the front carrier and the carrier.
Remove the two cap bolts attaching the glove box clamp and the glove box.
Remove the two screws attaching the front cover and the front cover.



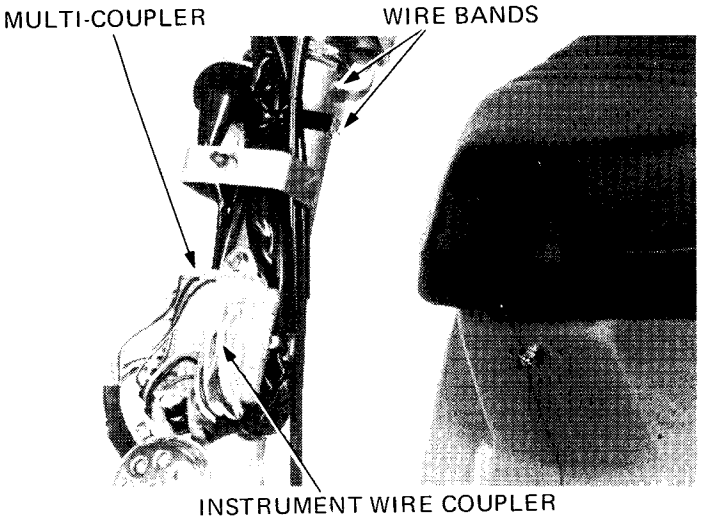
Remove the screw attaching the steering stem cover and the cover.



Remove the wire bands and disconnect the instrument wire coupler from the multi-coupler.

CAUTION:

Do not set the speedometer upside down, because internal lubricant may get on the lens.



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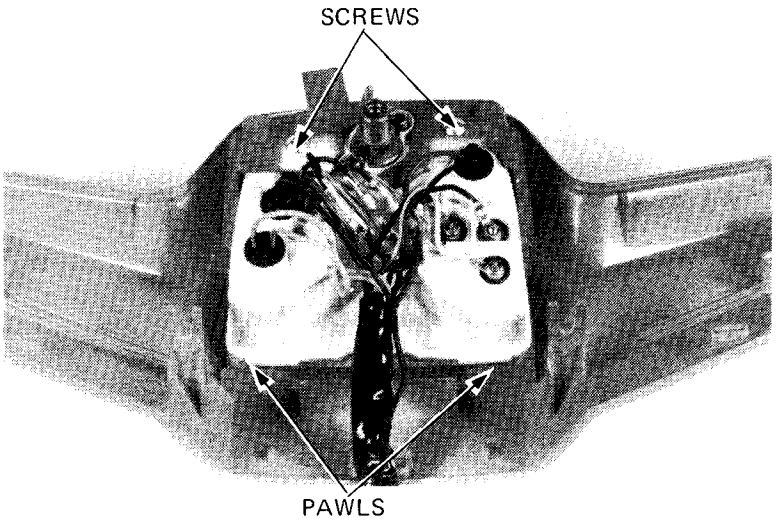
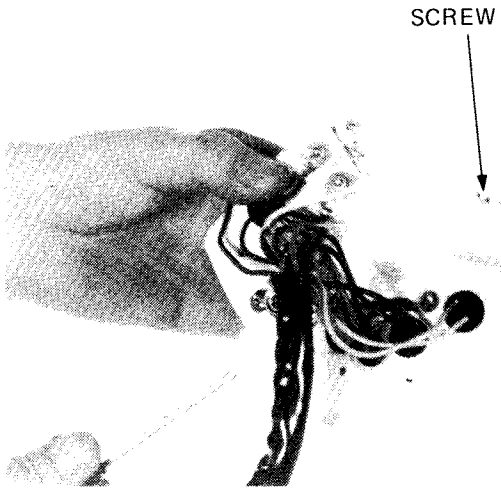
DISASSEMBLY

Remove the two screws attaching the instruments to the cover, release the two pawls and remove the instruments from the cover.



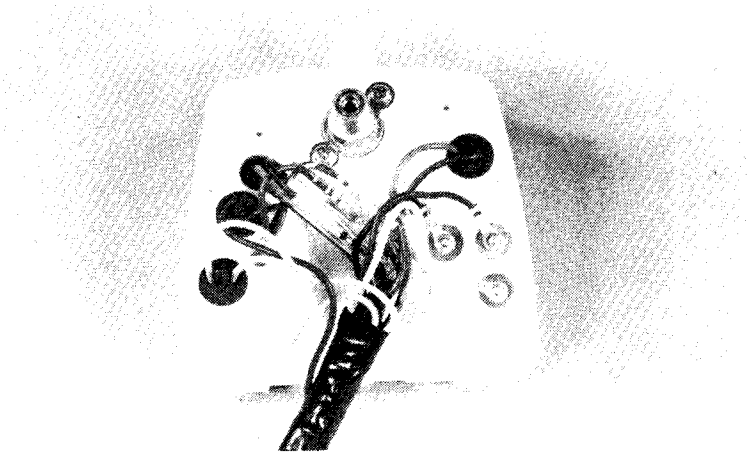
Remove the two screws attaching the lens to the instruments and remove the lens.



Disassemble the instrument by removing the screws and terminal nuts.

ASSEMBLY/INSTALLATION

Assemble and install the instruments in the reverse order of disassembly and removal.



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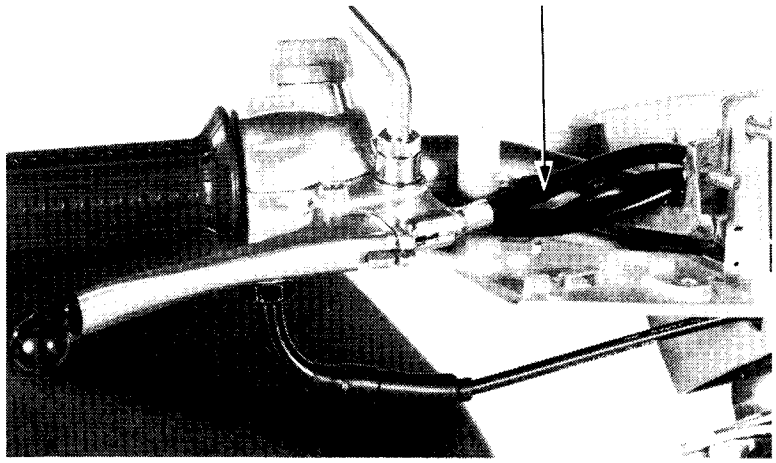
HANDLEBAR

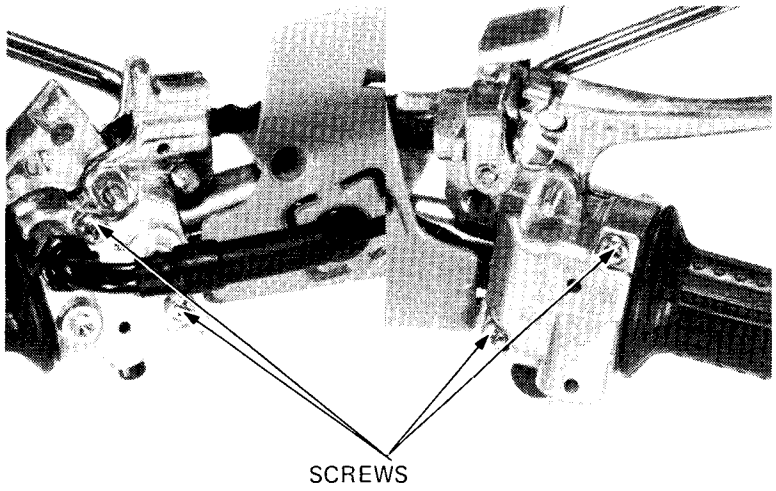
REMOVAL

Remove the headlight (Page 11-3).
Remove the instruments (Page 11-4).
Disconnect the right and left handlebar switch and turn signal wire connectors.
Remove the front brake and speedometer cables from the front wheel (Page 11-11).

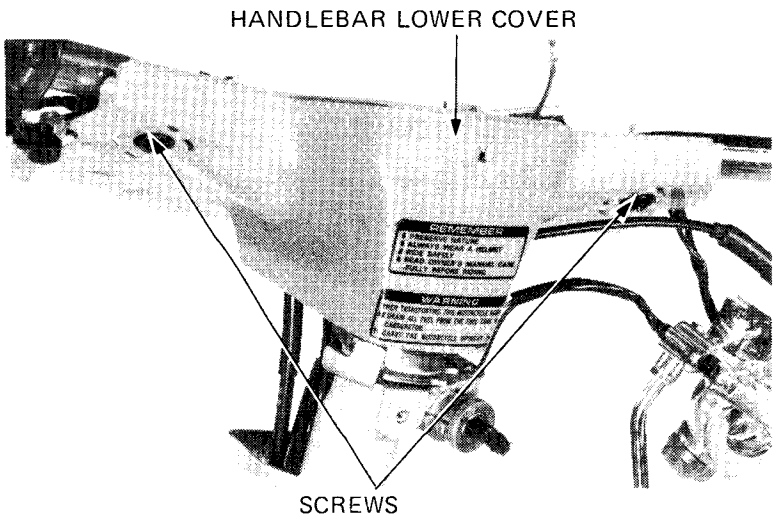
Disconnect the front brake cable from the front brake lever.



Remove the right and left handlebar switch housings by removing the screws.
Disconnect the throttle cable and remove the throttle grip.



Remove the two screws tightening the handlebar lower cover to the handlebar.



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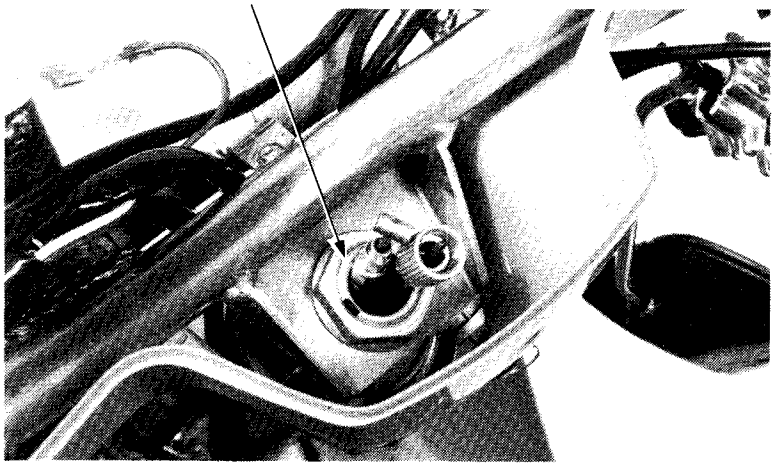
Remove the steering stem nut and remove the handlebar.

TOOLS

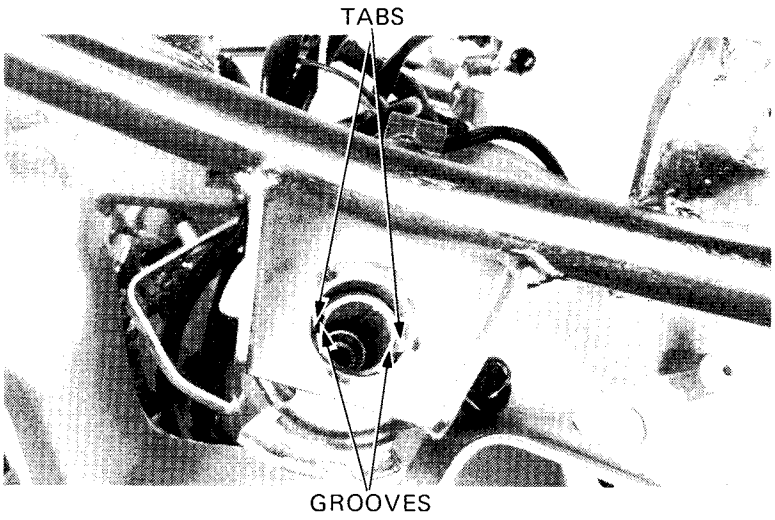
Wrench, 30 x 32 mm	07716–0020400
Extension Bar	07716–0020500

Commercially available in U.S.A.



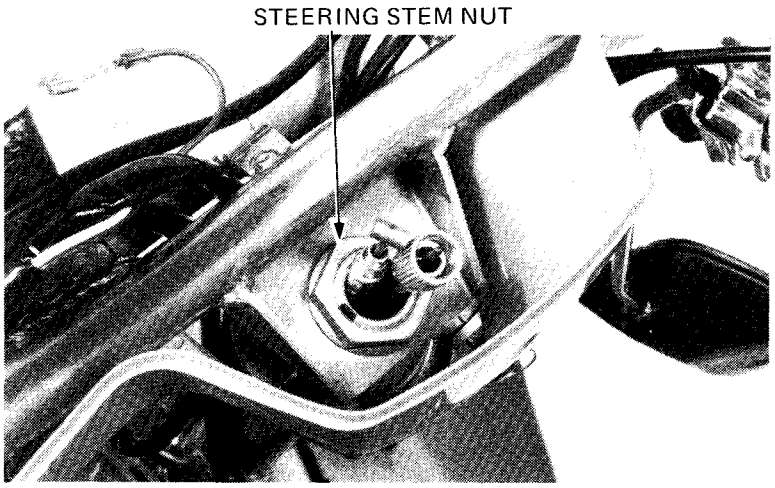
INSTALLATION

Install the handlebar on the steering stem, aligning the tabs of the handlebar bracket with the grooves in the steering stem.



Torque the steering stem nut.

TORQUE: 80–120 N·m (8.0–12.0 kg-m, 58–87 ft-lb)



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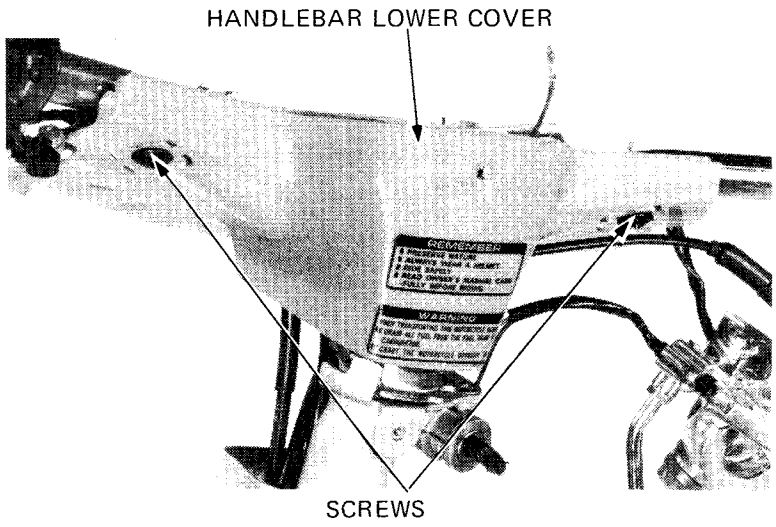
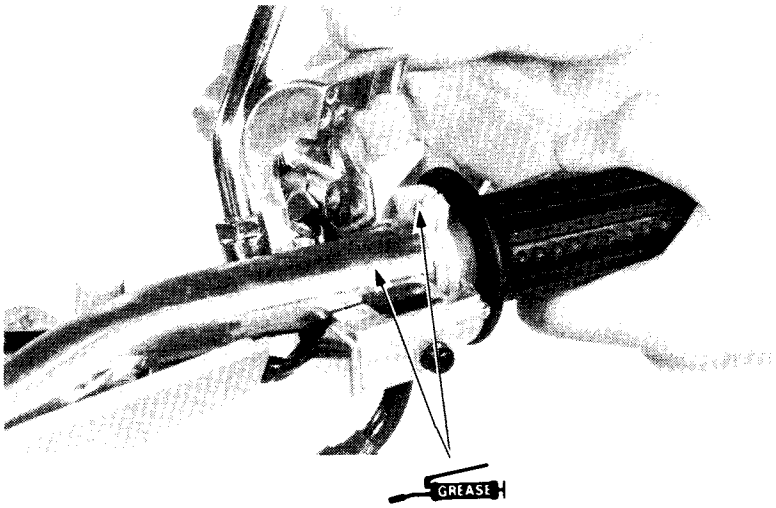
Tighten the handlebar lower cover to the handlebar with the two screws.



Lubricate the throttle grip area of the handlebar with grease.



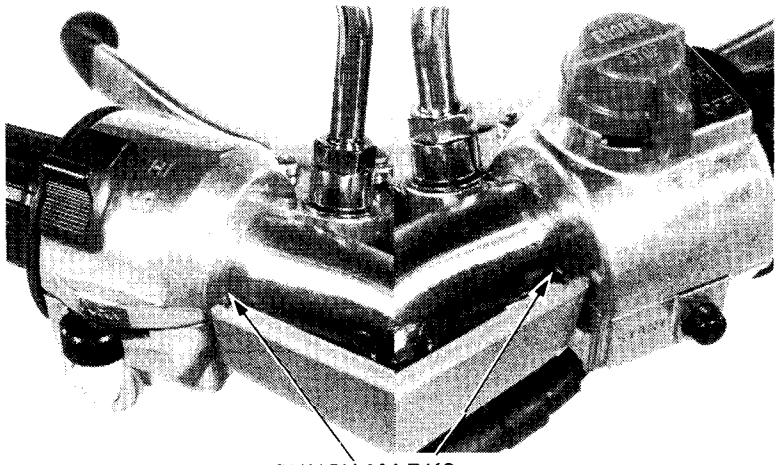
Install the right and left handlebar switch housings on the handlebar.

NOTE:

- Align the punch mark on the handlebar with the split in the housing.
- Tighten the forward screw first, then tighten the rear screw.
- After tightening the screws, check that the throttle grip rotates freely.

Connect the front brake cable to the front brake lever.
Install the front brake cable and speedometer cable to the front wheel.

Install the instruments (Page 11-7) and headlight (Page 11-4).
Adjust the front brake (Page 3-9) and throttle cable (Page 3-8).



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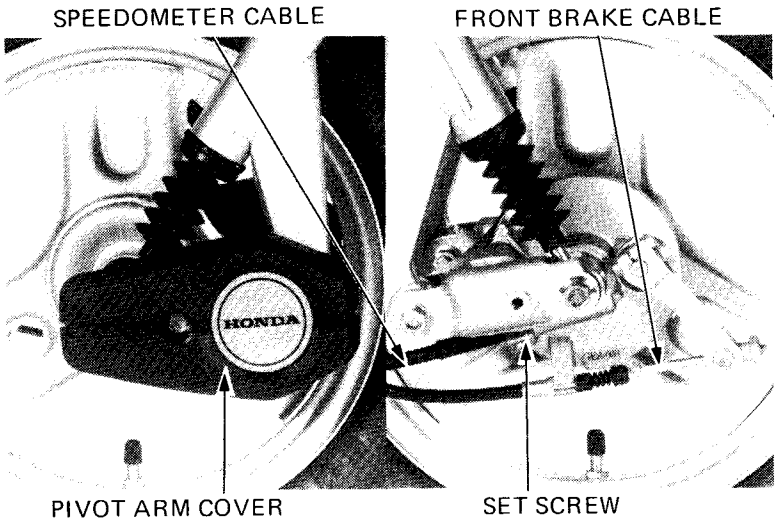
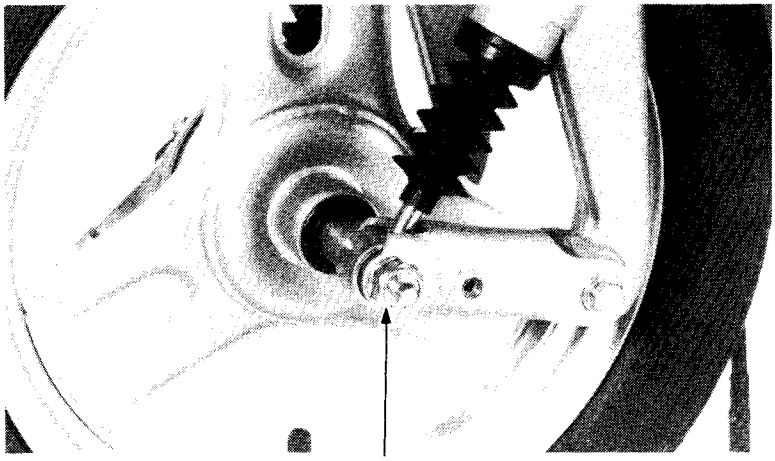
FRONT WHEEL

REMOVAL

Remove the right and left pivot arm covers.
Remove the set screw and disconnect the speedometer cable.
Turn the brake adjusting nut counterclockwise all the way, disconnect the brake cable.



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

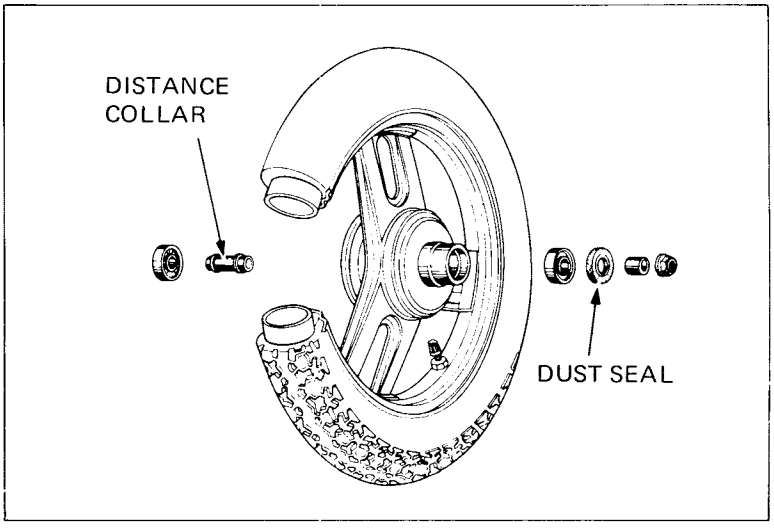


DISASSEMBLY

Remove the dust seal.
Drive out the left bearing.
Remove the distance collar, then drive out the right bearing.

TOOLS

Bearing remover expander
07746–0050100
Bearing remover collet, 10 mm
07746–0050200
or equivalent commercially available in U.S.A.



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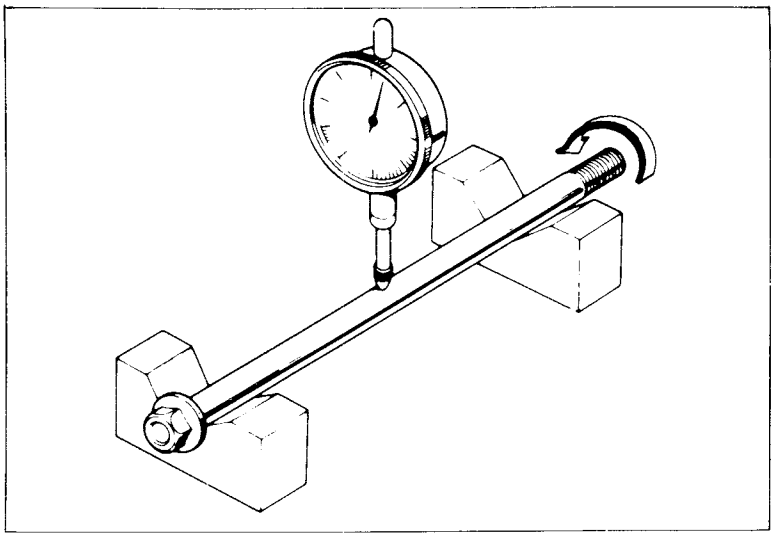
AXLE SHAFT

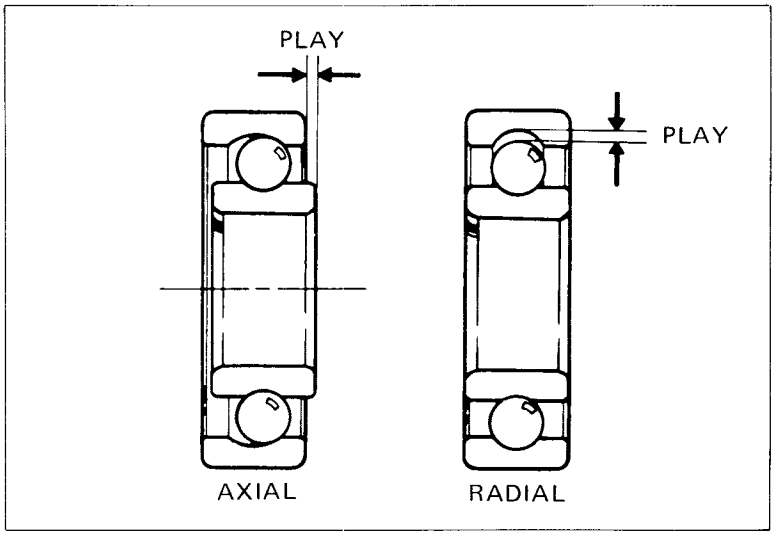
Set the axle in V blocks and measure the runout. The actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)



WHEEL BEARING

Check the wheel bearing play by placing the wheel in a truing stand and spinning the wheel by hand. Replace the bearings if they are noisy or have excessive play.

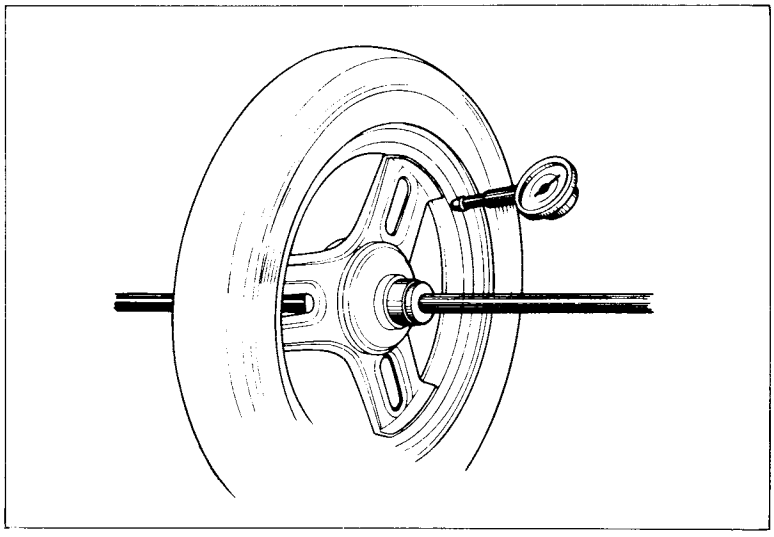


WHEEL RIM

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

SERVICE LIMITS:

Radial;	**2.0 mm (0.08 in)**
Axial;	**2.0 mm (0.08 in)**



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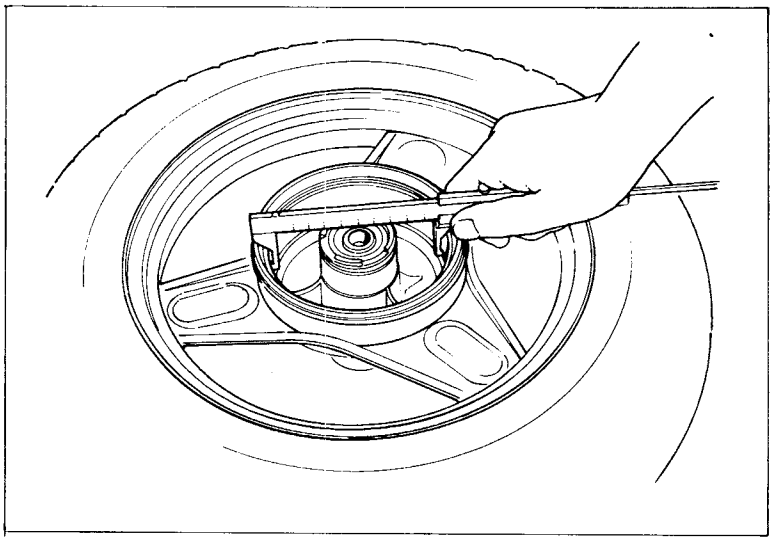
FRONT BRAKE DRUM

Remove the brake panel from the front wheel.
Measure the brake drum I.D.

SERVICE LIMIT: 80.5 mm (3.17 in)



ASSEMBLY

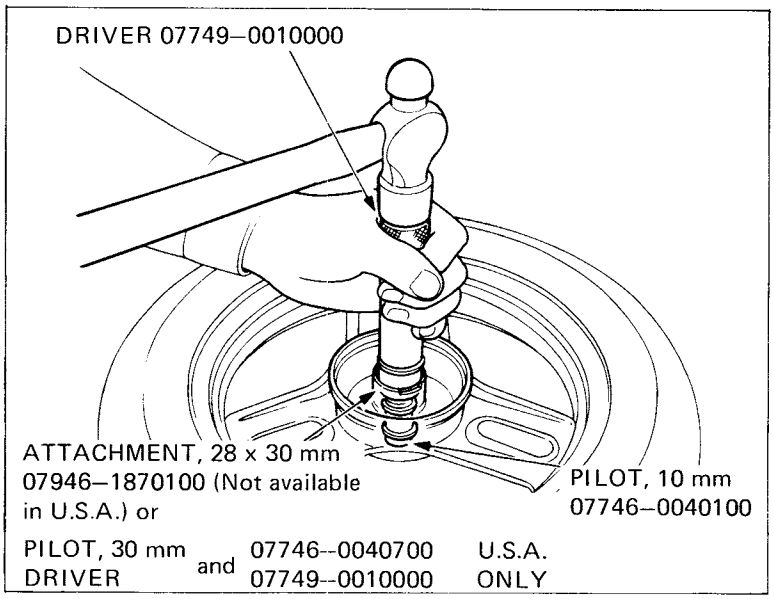
Pack all bearing cavities with grease.
Drive in the right bearing and install the distance collar.
Drive in the left bearing.

NOTE:

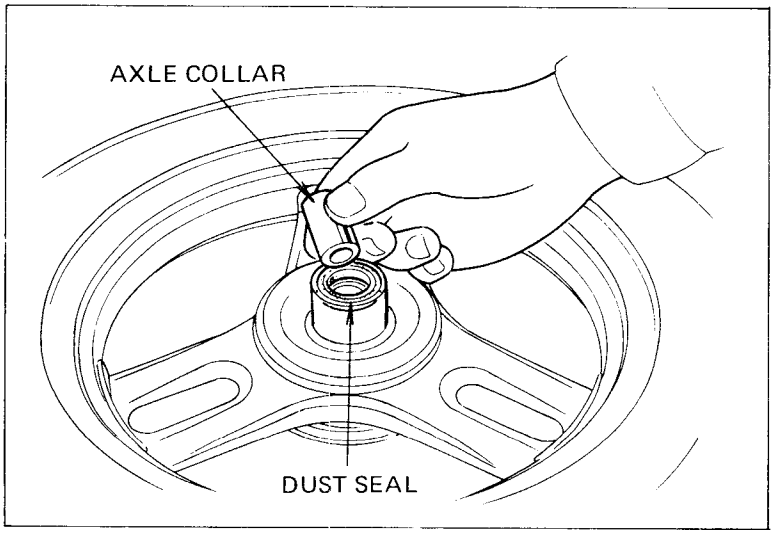
Install the bearings with the sealed end facing out.

WARNING

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



Apply grease to the inside of the dust seal.
Install the dust seal and axle collar.



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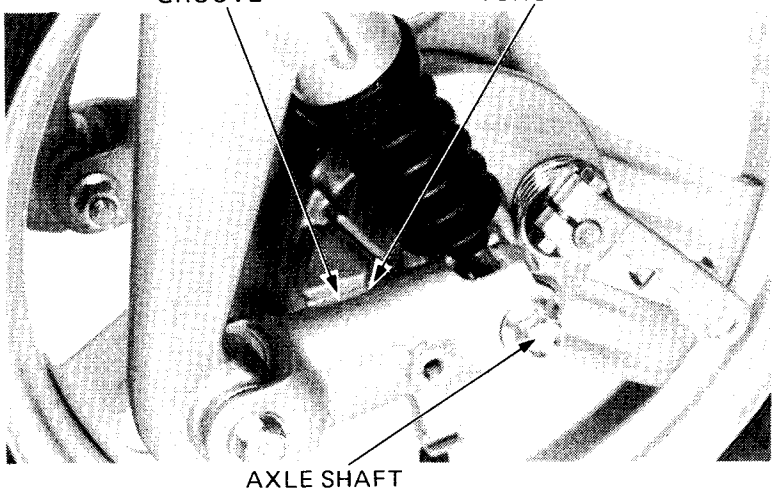
INSTALLATION

Install the brake panel into the wheel hub.
Position the front wheel between the front forks and insert the axle shaft through the wheel hub from the right side.

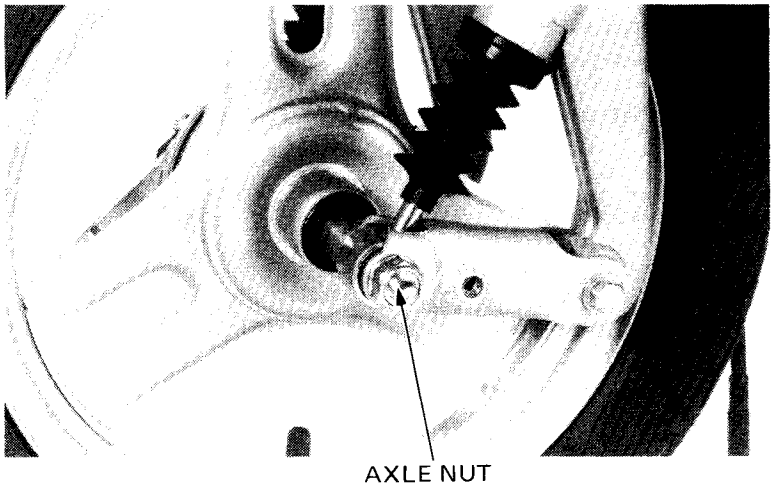
NOTE:

> Be sure to fit the tongue of the right fork leg into the groove in the backing plate.

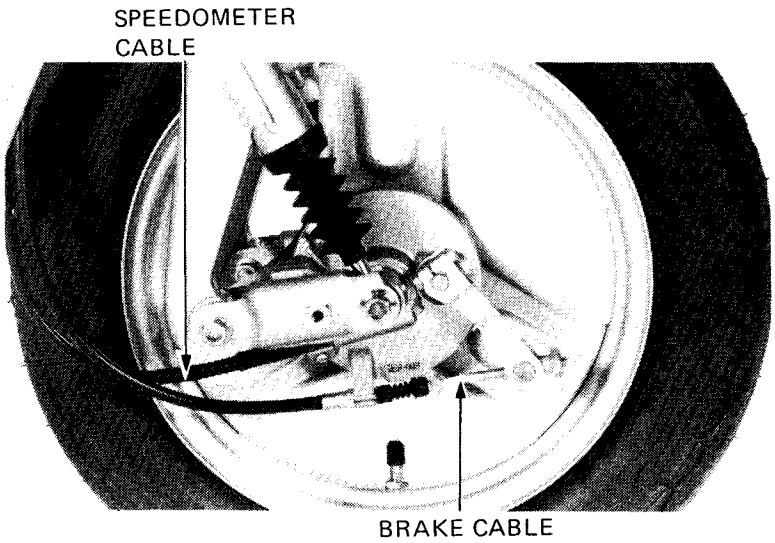


Install and tighten the axle nut to the specified torque.

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



Connect the speedometer cable and the brake cable.
Adjust the front brake lever free play (Page 3-9).
Install the pivot arm cover.



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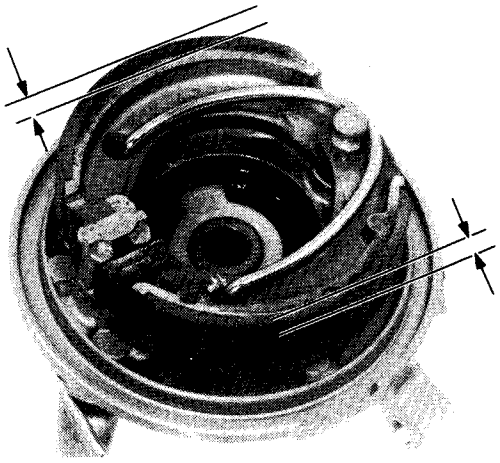
FRONT BRAKE

BRAKE LINING INSPECTION

Remove the front wheel (Page 11-11).
Measure the brake lining thickness.



SERVICE LIMIT: 2.0 mm (0.08 in)

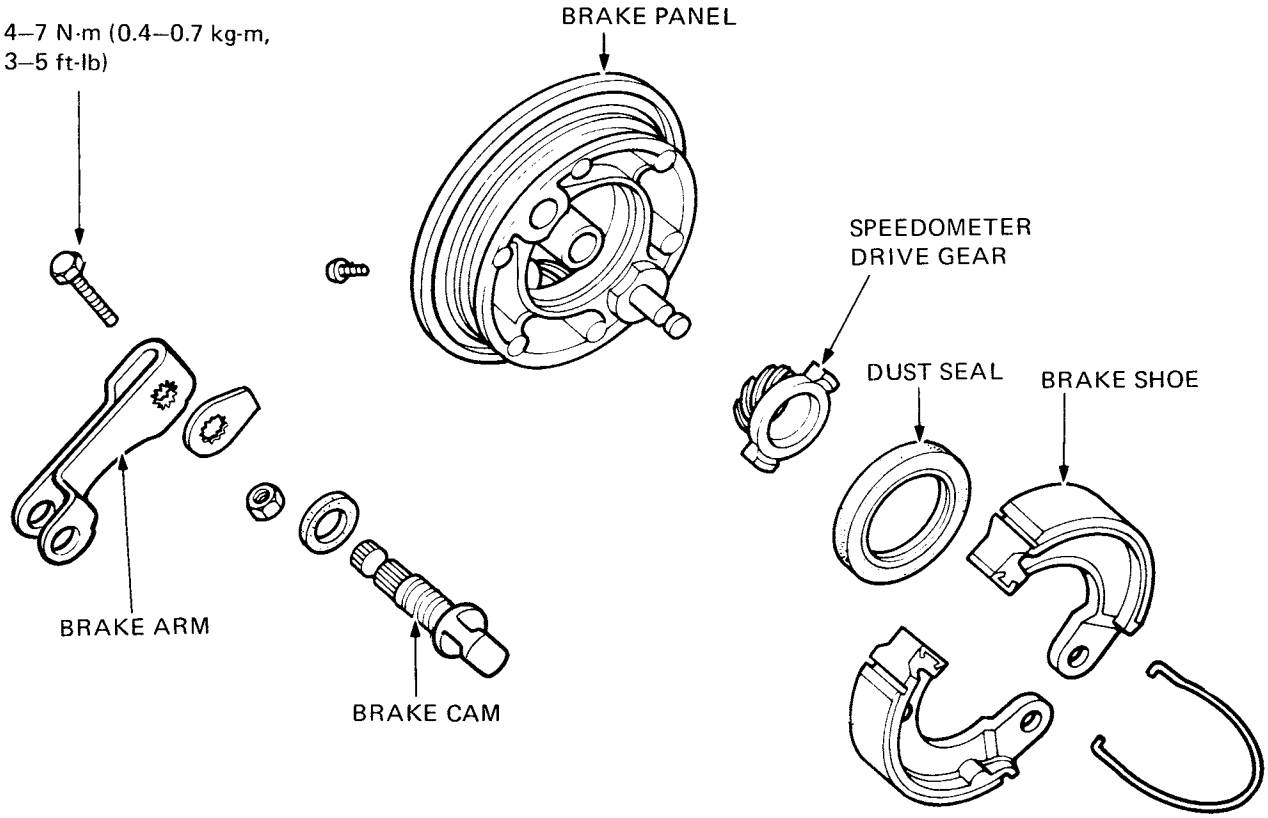
WARNING

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

Refer to page 11-13 for brake drum inspection.

BRAKE PANEL DISASSEMBLY

Remove the brake shoes.
Remove the brake arm and the brake cam.
Remove the speedometer drive gear.



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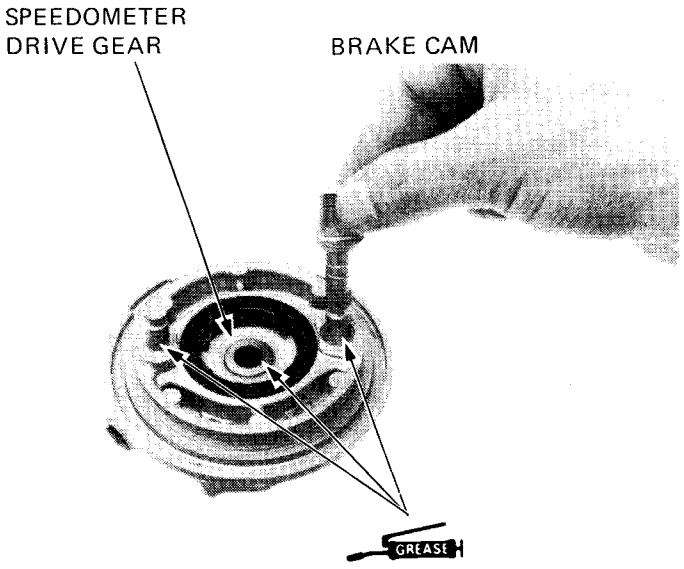
BRAKE PANEL ASSEMBLY

Lubricate the speedometer drive gear with grease and install the drive gear in the brake panel.
Apply silicone grease to the anchor contacting area of each shoe and to the brake shoe contacting area of the brake cam.
Install the brake cam.



WARNING

Avoid getting grease on the inside of the brake drum or braking power will be reduced. Clean the inside of the brake panel throughly.

Install the felt seal and wear indicator plate on the brake cam shaft.

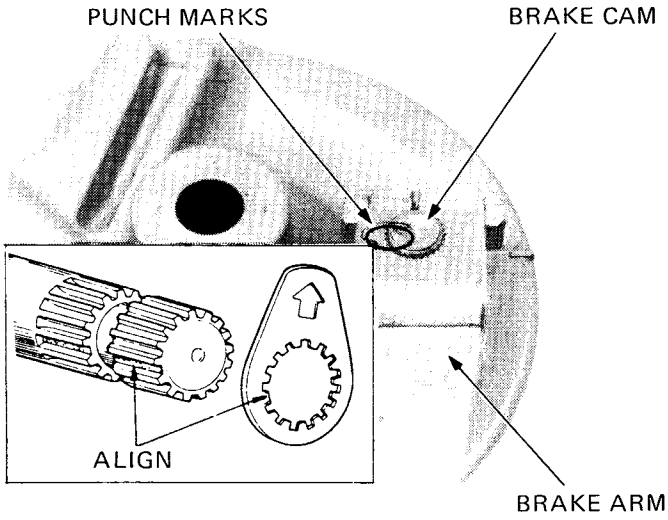
NOTE:

Align the wide tooth on the plate with the wide groove on the camshaft.

Align the punch mark on the brake arm and the camshaft and install the arm on the camshaft.
Install and tighten the brake arm bolt to the specified torque.

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

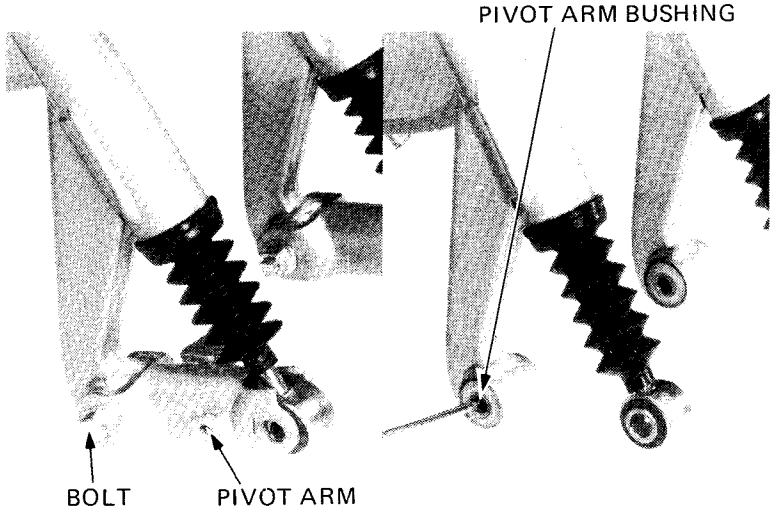
Install the brake shoes.



FRONT FORK

PIVOT ARM REMOVAL

Remove the front wheel (Page 11-11).
Remove the pivot arm bolts and remove the pivot arms.
Remove the pivot arm bushings from the pivots.



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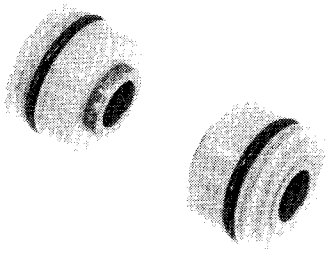
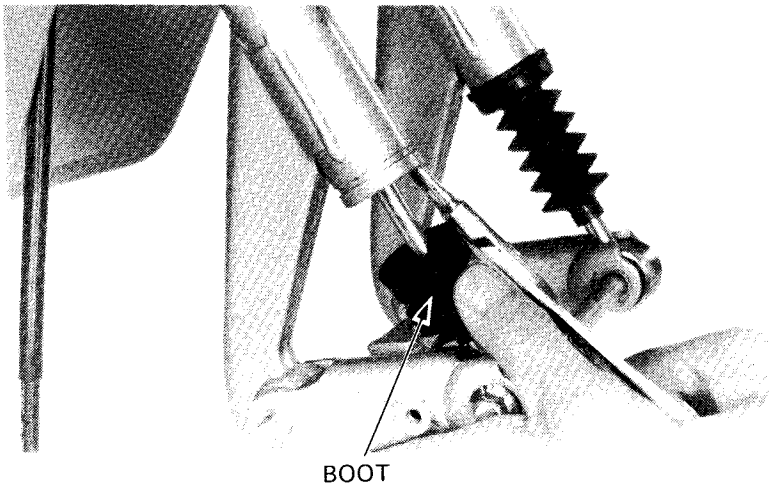
PIVOT ARM BUSHING INSPECTION

Check the pivot arm bushings for wear or damage.

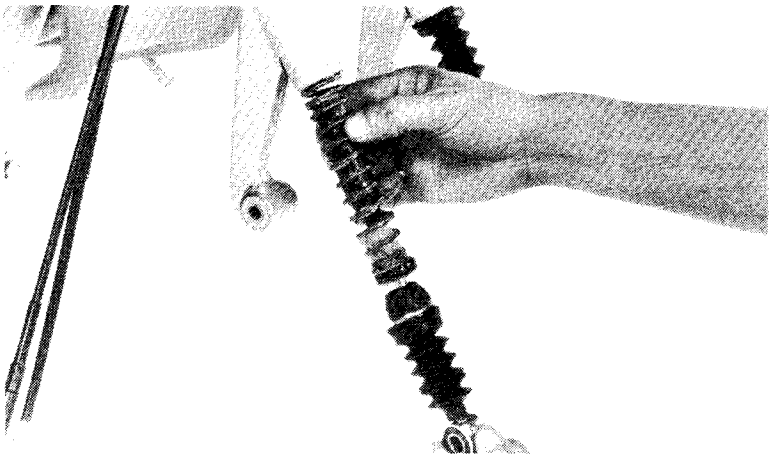


FRONT SHOCK REMOVAL

Remove the pivot arms (Page 11-16).
Slide the boot down to expose the 28 mm internal circlip and remove the circlip.



Remove the front shock rod assembly.



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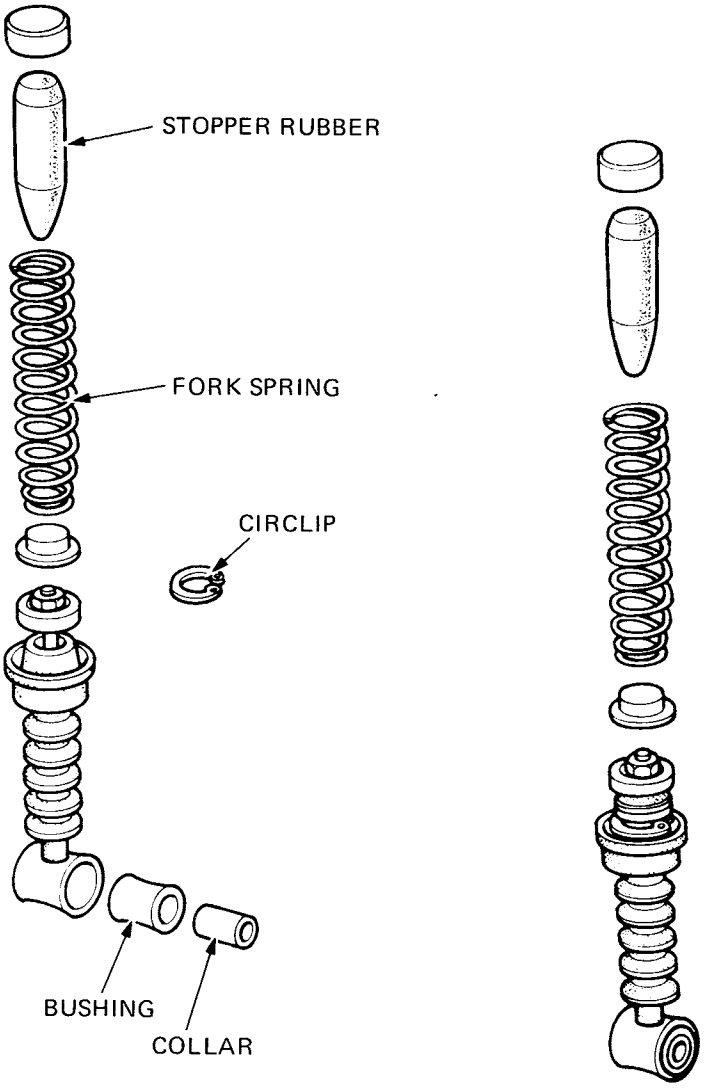
FRONT SHOCK DISASSEMBLY

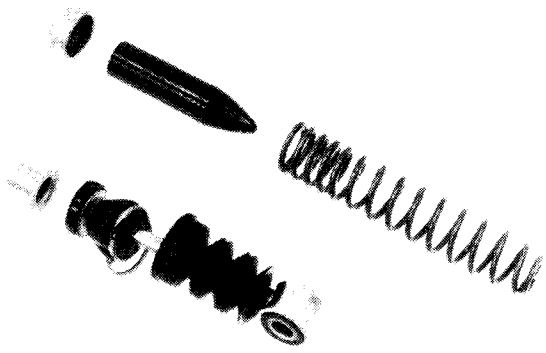


FRONT SHOCK INSPECTION

Check the front shock rod assembly for runout. Check each part for abnormal wear or damage.

NOTE:

Replace the front shock rod if it is bent.



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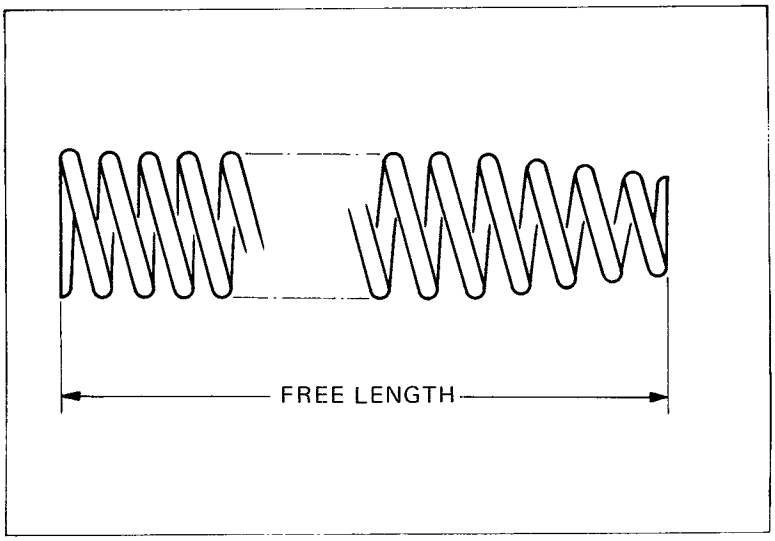
FRONT FORK SPRING INSPECTION

Measure the fork spring free length.

SERVICE LIMIT: 127.1 mm (5.00 in)



FRONT SHOCK ASSEMBLY

Assembly of the front shock is essentially the reverse order of disassembly.

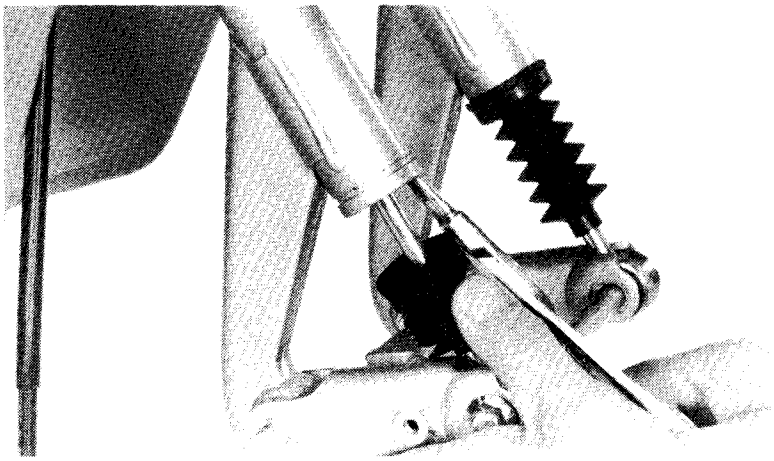
NOTE:

Before assembly, apply grease to the sliding surfaces of the fork tube and pivot arm bushings.

Temporarily assemble the pivot arms and front shock and install the 28 mm (1.1 in) internal circlip while pushing the shock rod into the front fork.

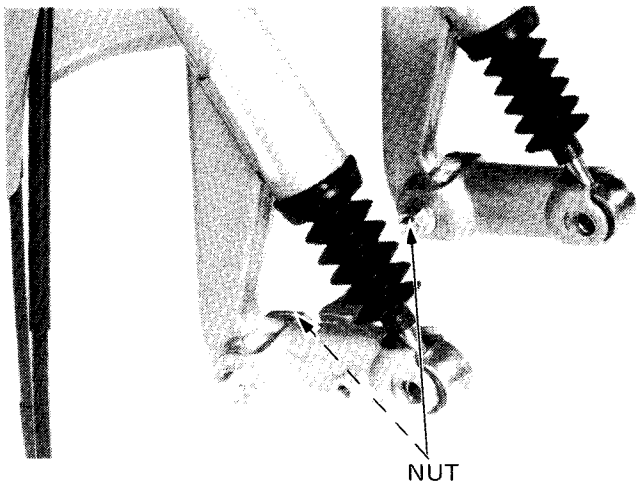
NOTE:

- Face the sharp edge surface of the 28 mm internal circlip down.
- Make sure that the 28 mm internal circlip seats in the groove in the front fork properly.



Torque the front fork pivot arm nuts.

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



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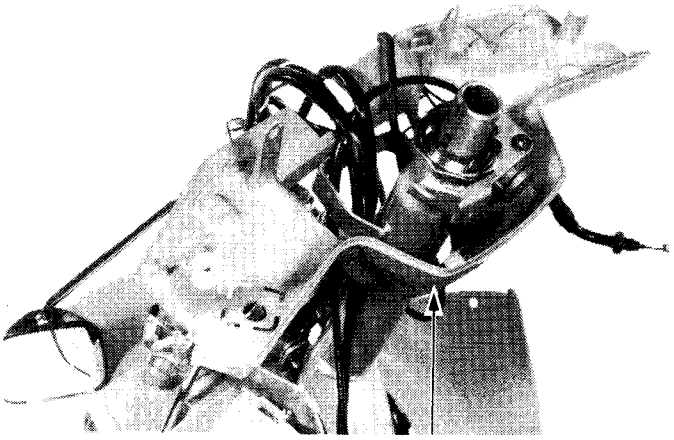
STEERING STEM REMOVAL

Remove the following parts.
- headlight (Page 11-3).
- instruments (Page 11-4).
- handlebar (Page 11-8).
- front wheel (Page 11-11).
- handlebar lower cover.



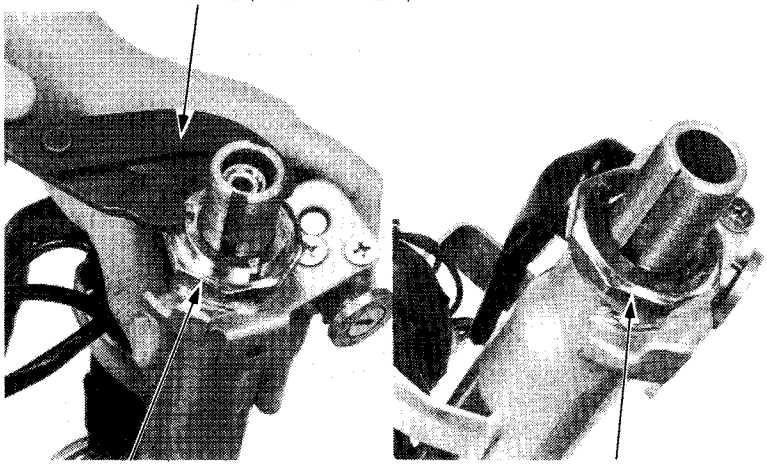
HANDLEBAR LOWER COVER

Remove the top thread nut and top cone race.

ADJUSTABLE PIN SPANNER WRENCH
07702–0020000 OR
M9361-412-099788 (U.S.A. ONLY)

NOTE:

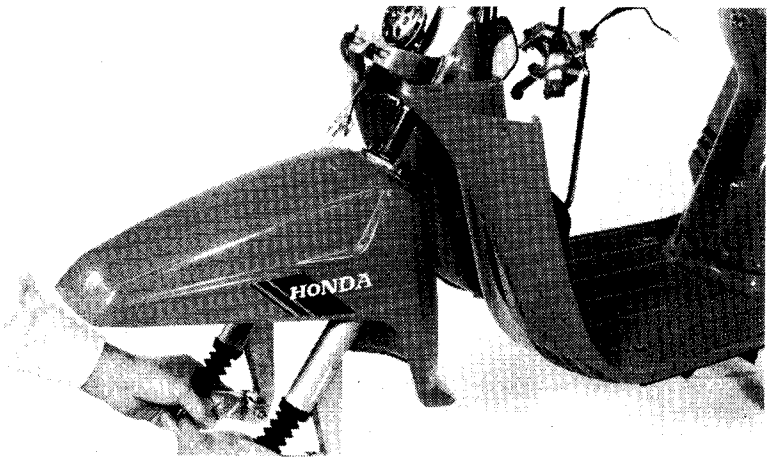
Do not allow the steel balls to fall out.



TOP THREAD NUT

TOP CONE RACE

Remove the front fork assembly from the steering head by pulling it down.



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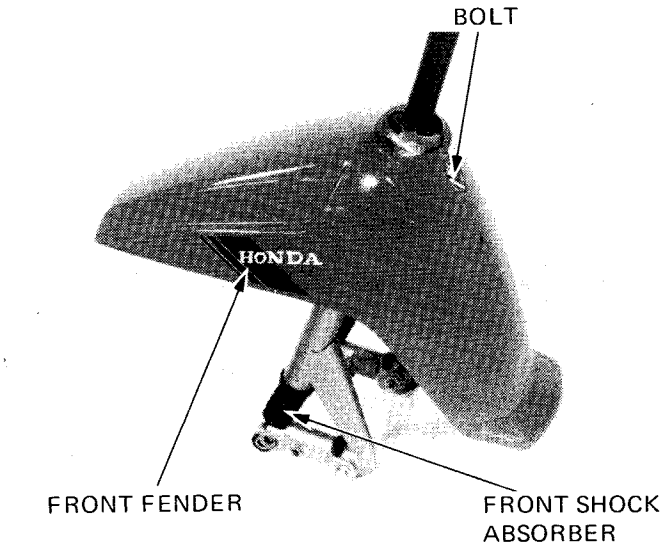
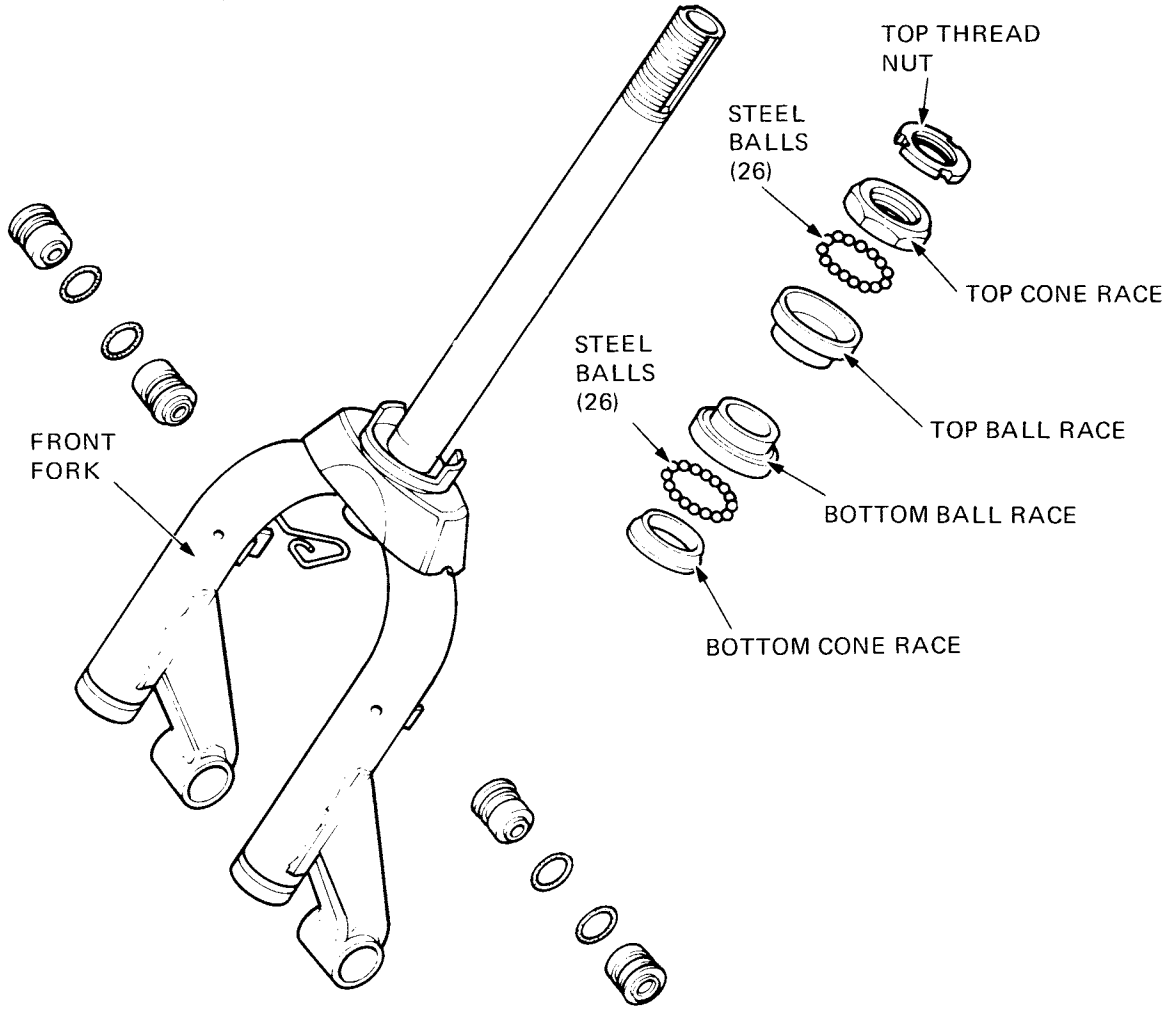
Remove the front shock absorbers from the front fork (Page 11-16).
Remove the front fender bolt and remove the front fender.



BALL RACE DISASSEMBLY/ASSEMBLY



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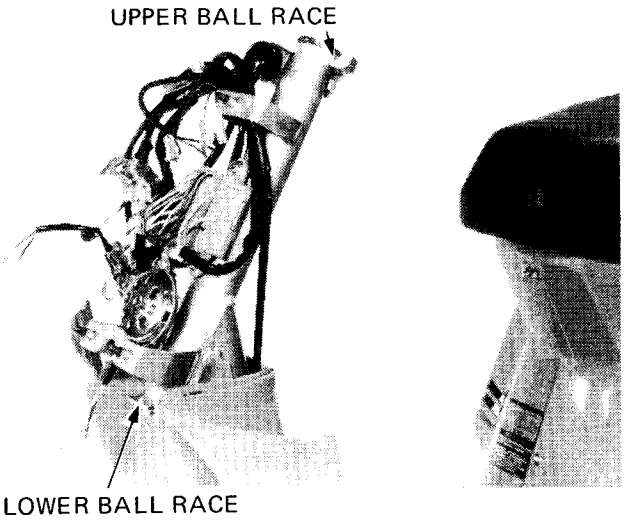
Remove both ball races with a long drift.
Install new races with the following tools.

Attachment, 42 x 47 mm	07746–0010300
Pilot, 25 mm	07746–0040600
Driver	07749–0010000

NOTE:

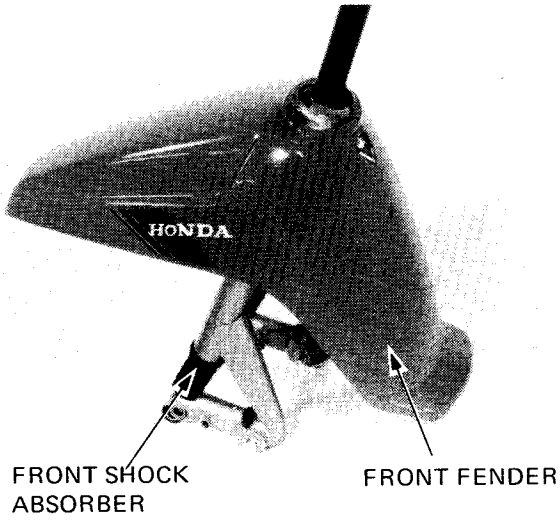
- Do not allow the ball races to tilt when installing.
- Drive in the races until they are fully seated.

Remove the steering stem cone race with a chisel. Install a new race with driver 07947–1180001 with the old race turned over for additional height.

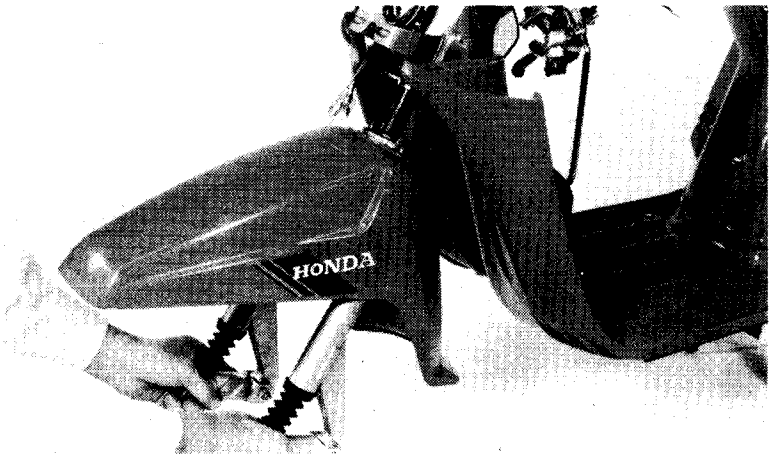


STEERING STEM INSTALLATION

Install the front fender.
Install the front shock absorbers (Page 11-19).



Lubricate the bearing races, steel balls and cone races with grease.
Install the steering stem.



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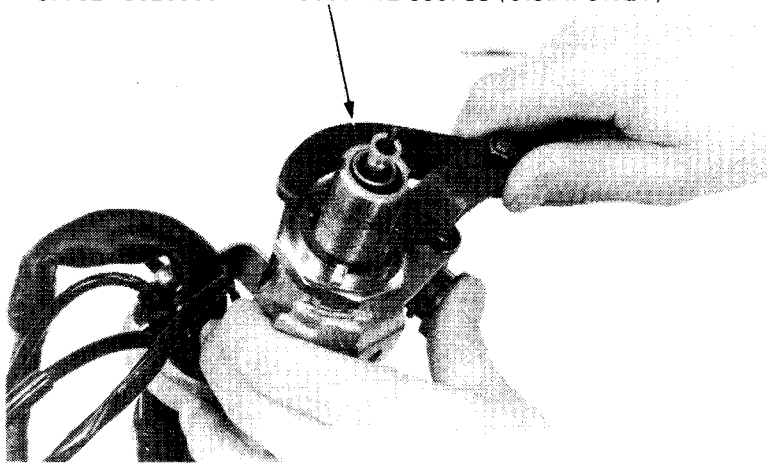
Screw in the top cone race, then back it out 1/8 turn.
Check that the steering stem rotates freely without vertical play.
Tighten the head top thread nut to the specified torque.

TORQUE: 5–13 N·m (0.5–1.3 kg-m, 4–9 ft-lb)

Install the removed parts in the reverse order of removal.

ADJUSTABLE PIN SPANNER WRENCH
07702–0020000 OR M9361-412-099788 (U.S.A. ONLY)



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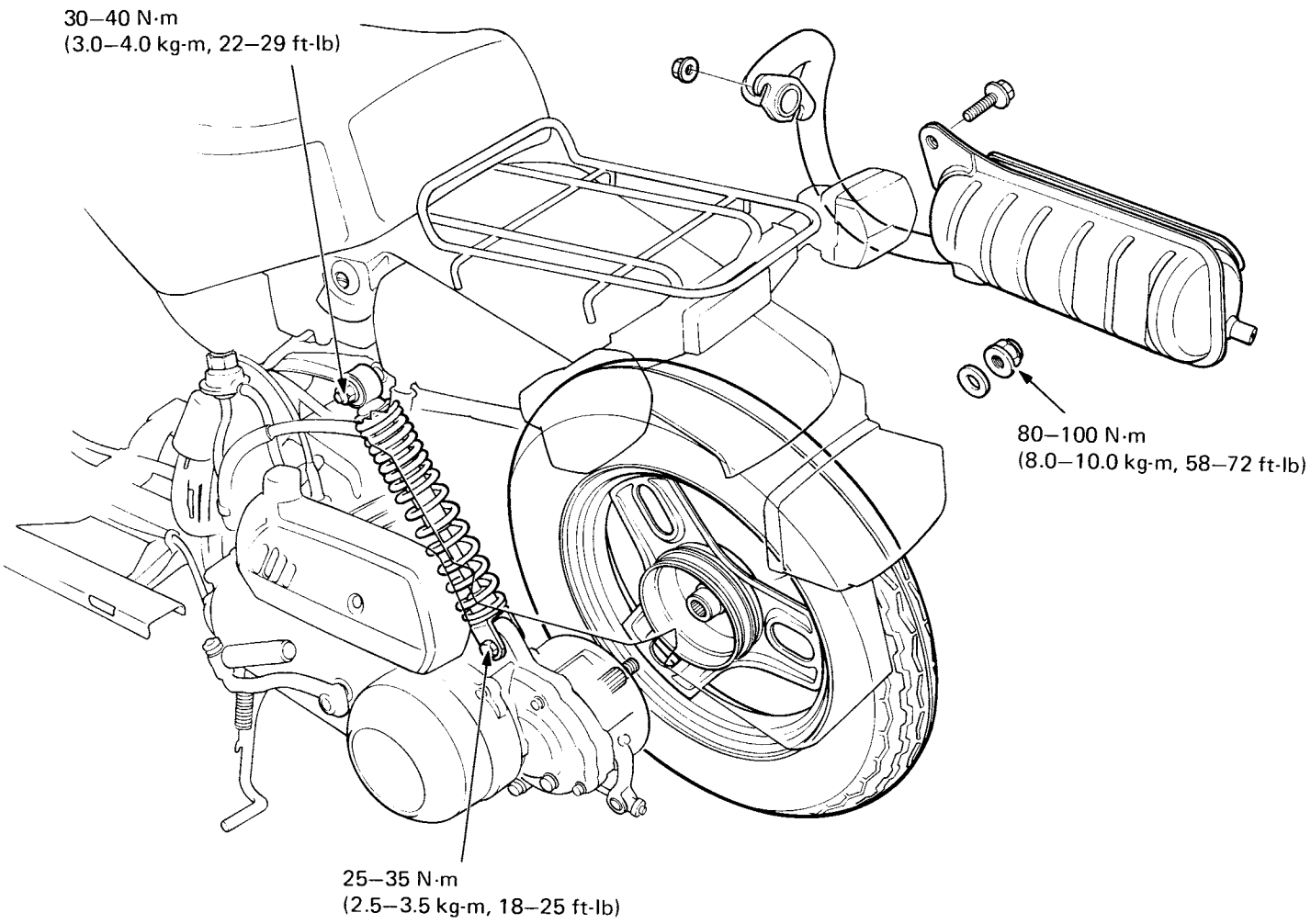

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SERVICE INFORMATION	12–1
TROUBLESHOOTING	12–1
REAR WHEEL	12–2
REAR BRAKE	12–3
REAR SHOCK ABSORBER	12–5

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 dust 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.	95.0 (3.74)	95.5 (3.76)
Rear brake lining thickness	5.0 (0.20)	2.0 (0.08)
Rear shock absorber spring free length	195.7 (7.70)	189.8 (4.47)

TORQUE VALUES

Rear axle nut	80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Rear shock upper mount	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)
Rear shock lower mount	25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)

TOOLS

Special

Shock Absorber Attachment	07967–GA70001
Shock Absorber Compressor	07959–3290001

TROUBLESHOOTING

Rear wheel wobbling
1. Bent rim
2. Faulty tire
3. Axle not tightened properly

Soft suspension
1. Weak shock absorber spring

Suspension noise
1. Shock case interferring with spring
2. Damaged stopper rubber

Poor brake performance
1. Brake not adjusted properly
2. Contaminated brake shoes
3. Worn brake shoes
4. Worn brake shoes at cam contacting area
5. Worn brake cam
6. Worn brake drum
7. Improper engagement between brake arm and camshaft serrations

Brake squeaks
1. Worn brake shoes
2. Foreign matter on lining
3. Rough brake drum shoe contacting face.
4. Brake shoes glazed

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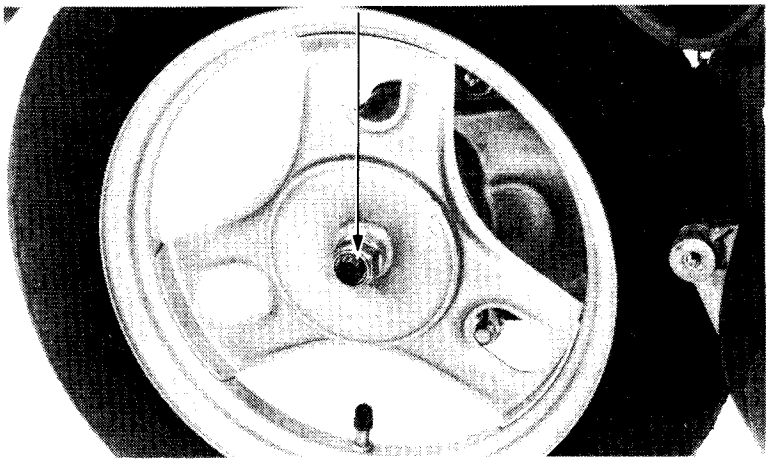
REAR WHEEL

AXLE NUT



REMOVAL

Remove the both frame body covers (Page 5-2).

Remove the muffler protector and muffler (Page 5-2).

Remove the axle nut.
Remove the rear wheel.

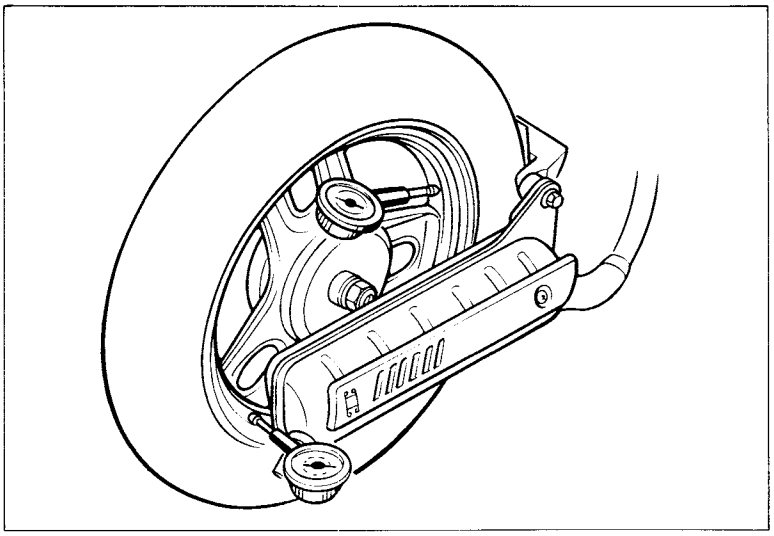
INSPECTION

WHEEL RIM RUNOUT

Check the rim for runout using a dial gauge as shown.

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

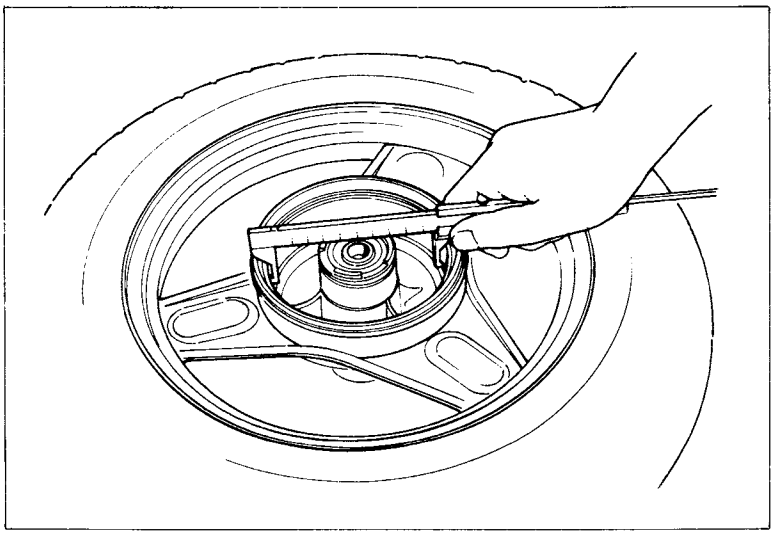
Replace the rim if runout is beyond the service limit.



BRAKE DRUM

Measure the rear brake drum I.D.

SERVICE LIMIT: 95.5 mm (3.76 in)



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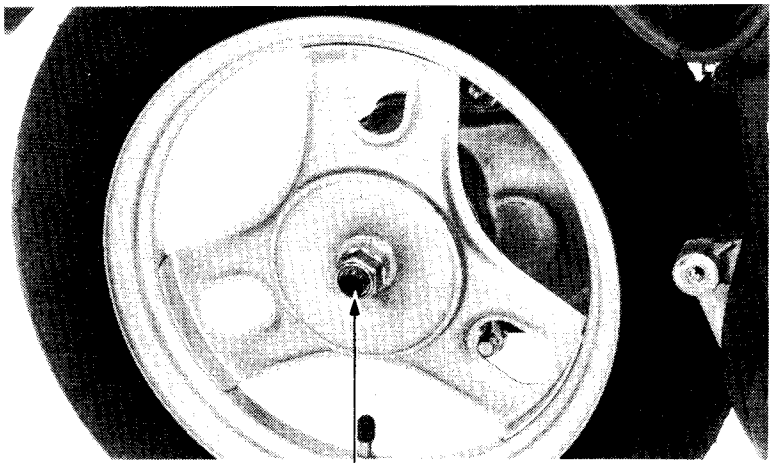
INSTALLATION

Install the rear wheel and torque the axle nut.

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

Install the muffler, muffler protector and frame body covers.



REAR BRAKE

Remove the rear wheel (Page 12-2).

REAR BRAKE LINING THICKNESS INSPECTION

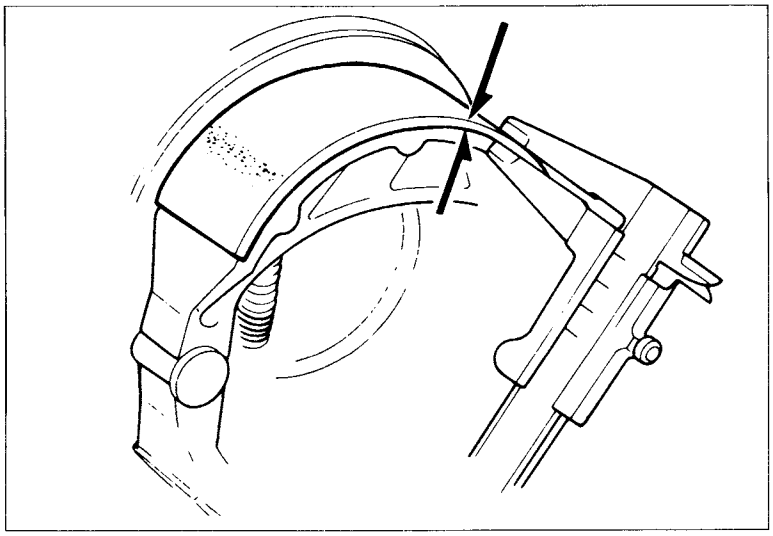
Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)

WARNING

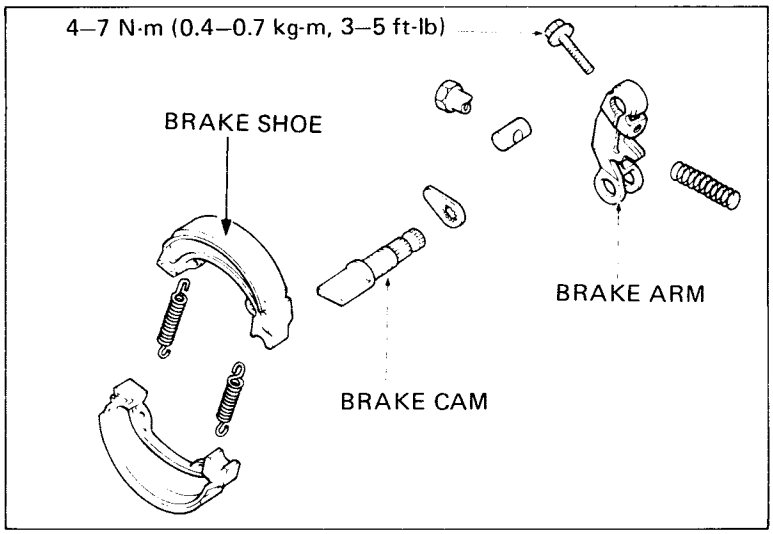
Keep grease off the brake linings. Wipe off excess grease.

Refer to page 12-2 for brake drum inspection.



DISASSEMBLY

Remove the brake cable from the brake arm.
Remove the brake shoes.
Remove the brake arm and the brake cam.



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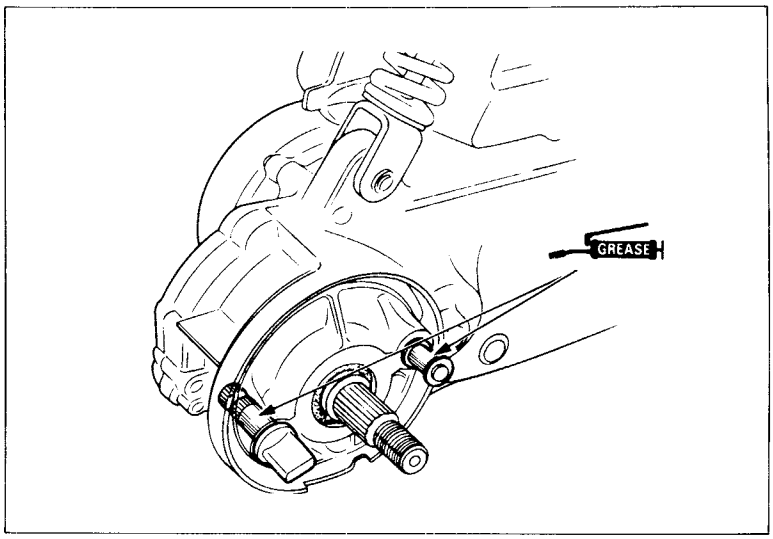
ASSEMBLY

Apply grease to the cam contacting area of each shoe.
Apply grease to the brake cam and install the brake cam.
Apply grease to the anchor pin.



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

Install the brake arm.

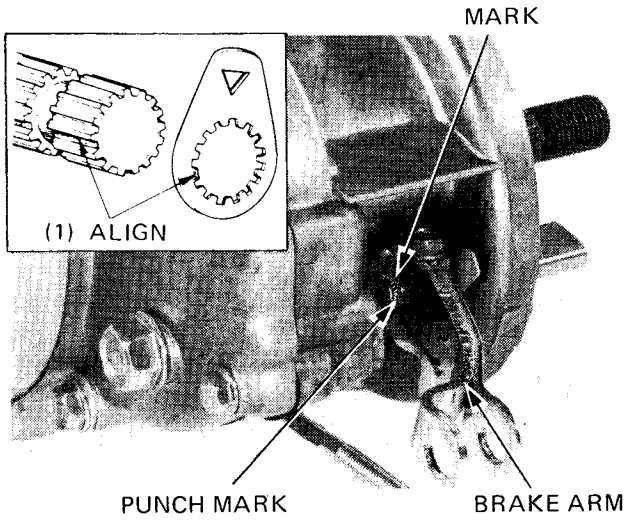
NOTE:

> Align the mark on the brake arm with the punch mark on the brake cam.

Tighten the brake arm bolt to the specified torque.

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

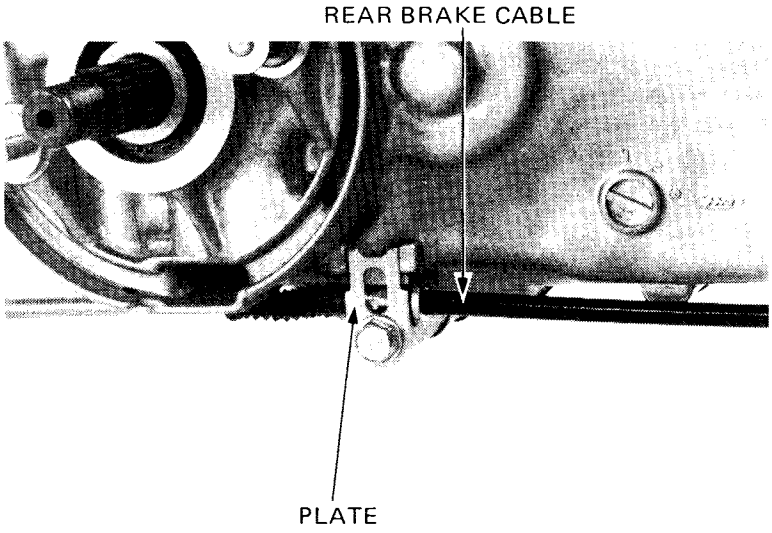
Install the brake shoes.



Install the rear brake cable.

NOTE:

> Insert the brake cable into the groove in the left crankcase and install the plate as shown.



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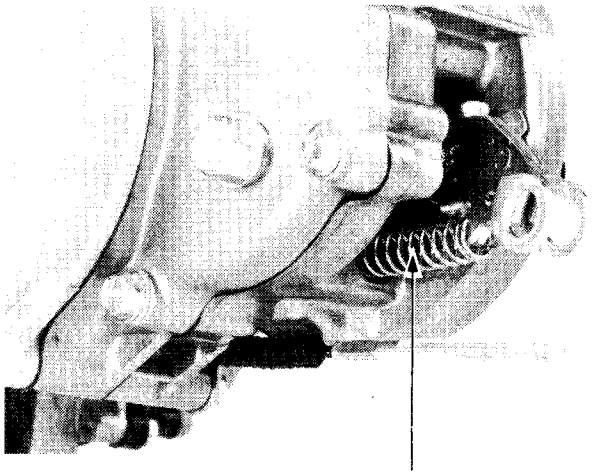
Install the brake arm spring.

Install the rear wheel (Page 12-3).
Install the muffler and frame body covers.

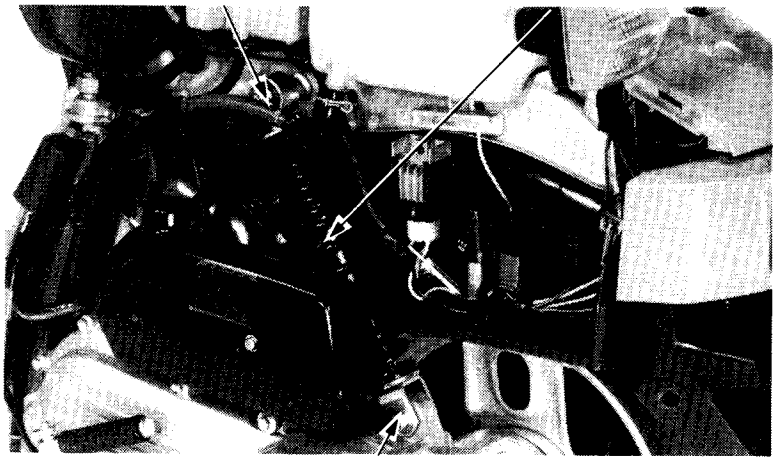


BRAKE ARM SPRING

REAR SHOCK ABSORBER

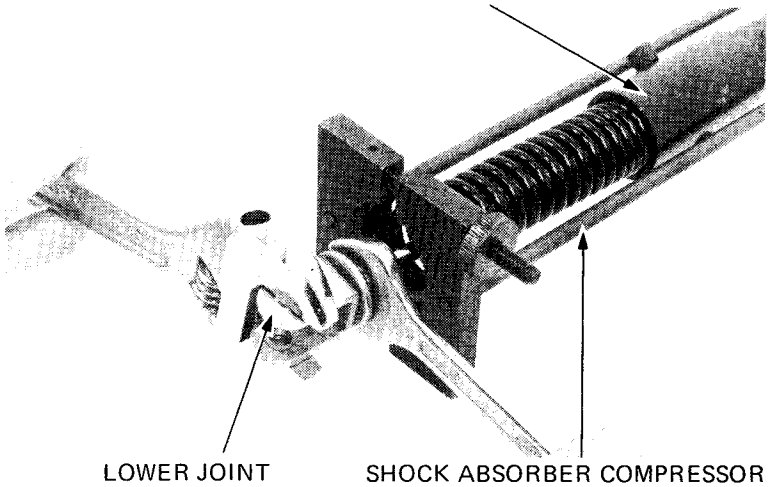
REMOVAL

Remove frame left body cover.
Remove the shock absorber upper nut and lower bolt.
Remove the shock absorber.



DISASSEMBLY

Compress the shock and remove the lower joint.



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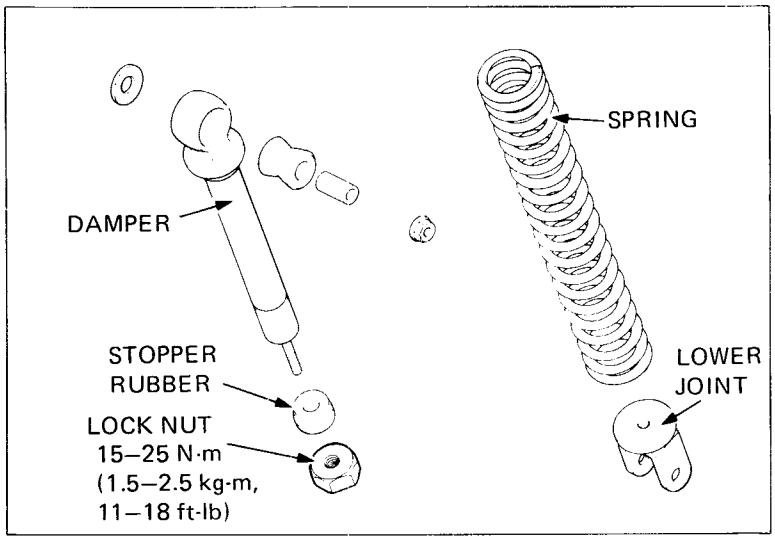
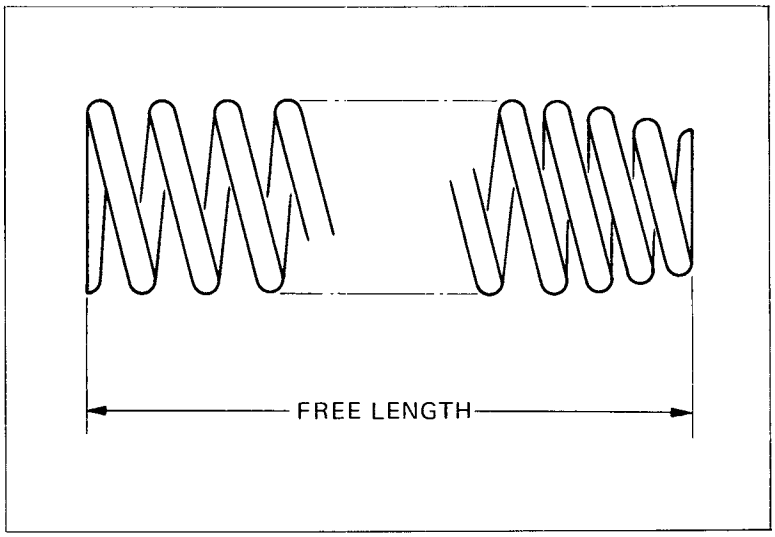


REAR SHOCK ABSORBER SPRING FREE LENGTH

Measure the spring free length.

SERVICE LIMIT: 189.8 mm (4.47 in)

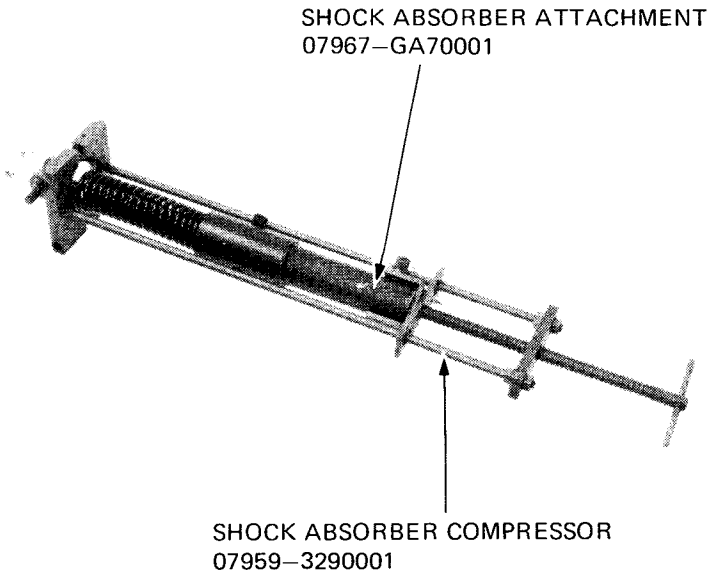
Replace the spring if it is shorter than the service limit.



ASSEMBLY

Install the spring with the tightly wound coils facing up.
Apply a locking agent to the lock nut threads and torque the lock nut.

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



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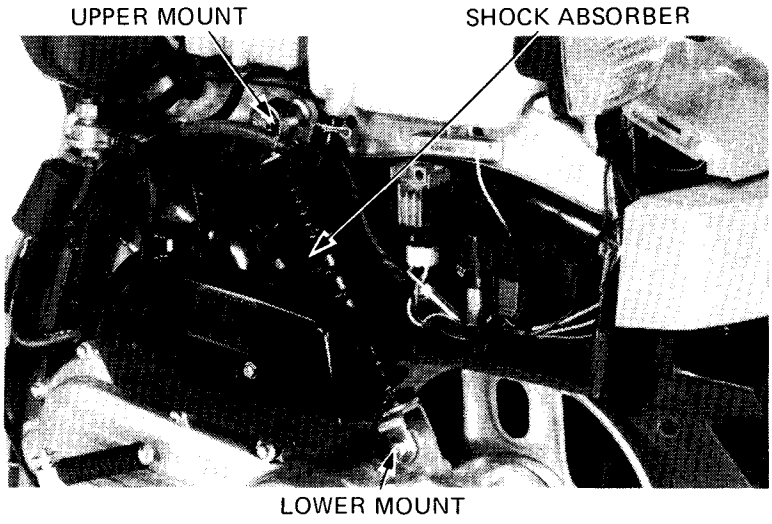
INSTALLATION

Install the rear shock absorber.
Tighten the upper nut and lower bolt to the specified torque values.

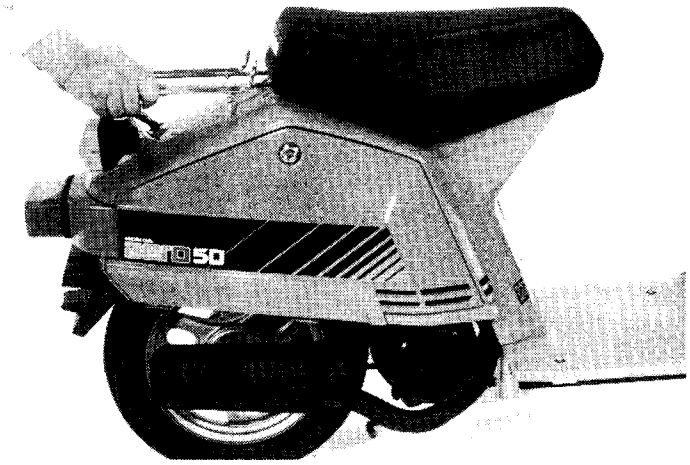
TORQUES:

Upper nut:	**30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)**
Lower bolt:	**25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)**

Install the frame left body cover.



Check the operation of the shock absorber by pressing down on the end of the frame several times.



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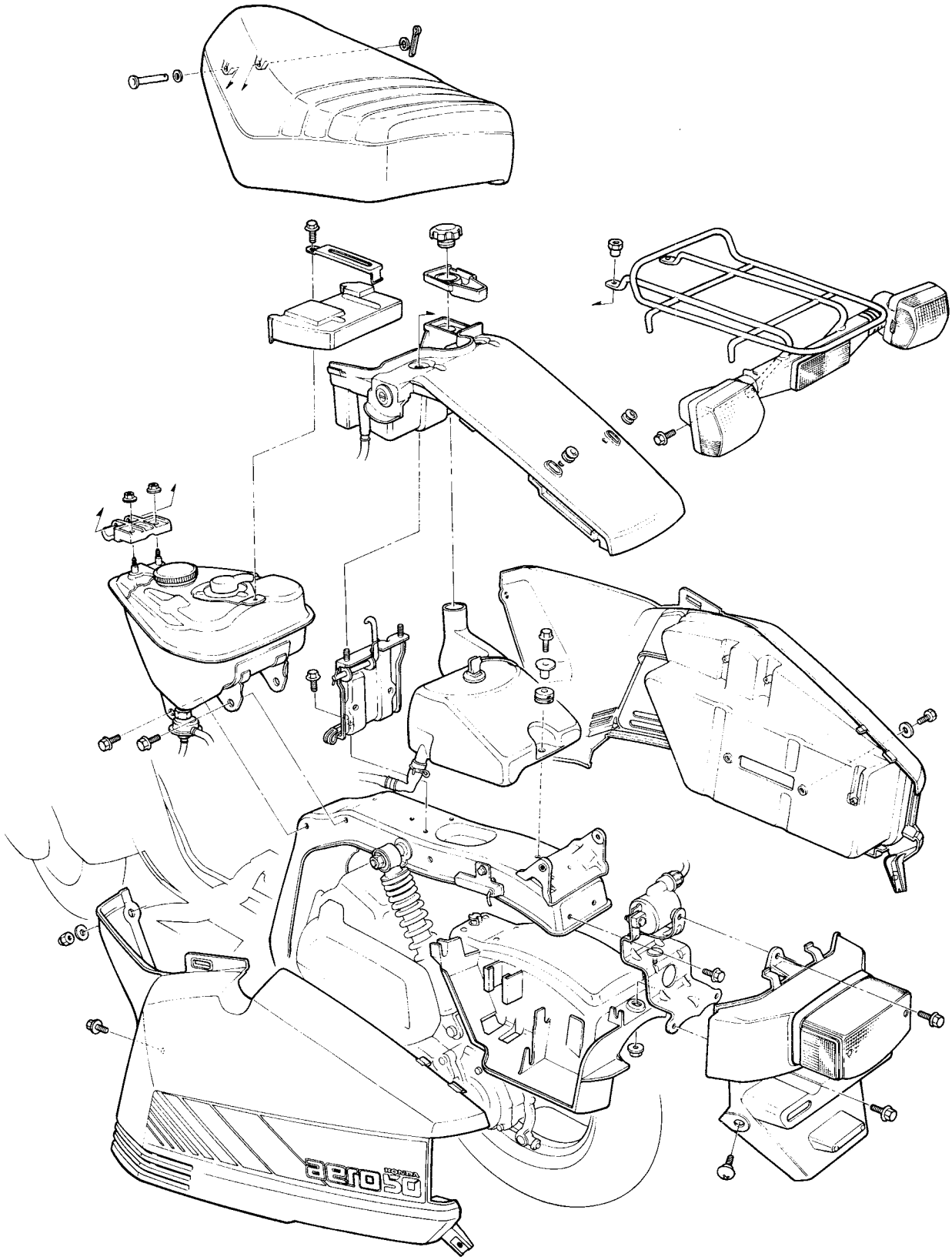

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13. FUEL TANK/OIL TANK

SERVICE INFORMATION	13–1
TROUBLESHOOTING	13–1
FUEL TANK	13–2
OIL TANK	13–4

SERVICE INFORMATION

GENERAL

- Gasoline is flammable and is explosive under certain conditions. Always stop the engine and do not smoke or allow sparks near the motorcycle when working with gasoline.
- Bleed air from oil pump if there is air in the oil inlet line (oil tank to oil pump, page 2-5).

TROUBLESHOOTING

Engine fails to start

1. No fuel in tank
2. Clogged fuel line
3. Clogged fuel strainer
4. Stuck fuel valve diaphragm

Mixture too lean

1. Clogged fuel tank cap breather hole
2. Clogged or collapsed fuel line
3. Clogged fuel strainer

13

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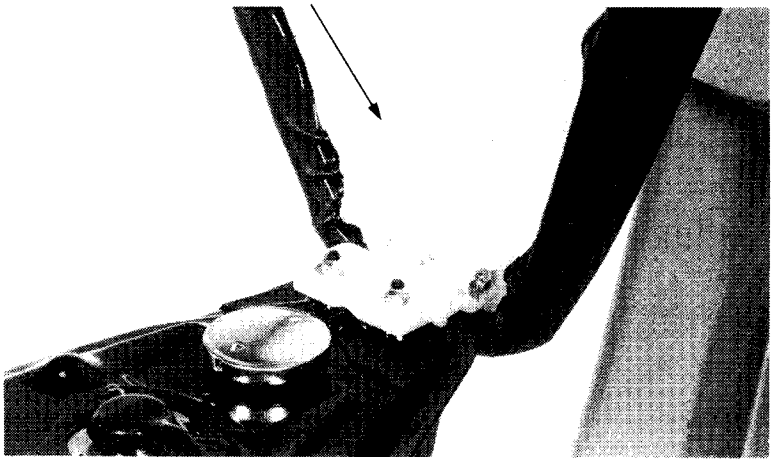
FUEL TANK

FUEL TANK REMOVAL

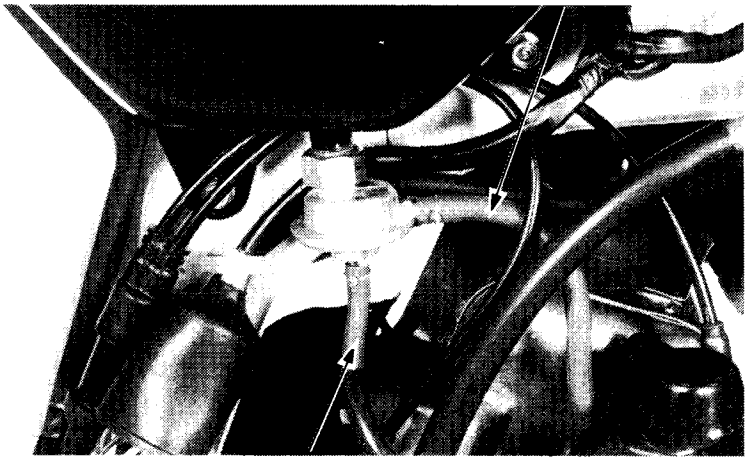
WARNING

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

Remove both frame body covers (Page 5-2).
Remove the seat.

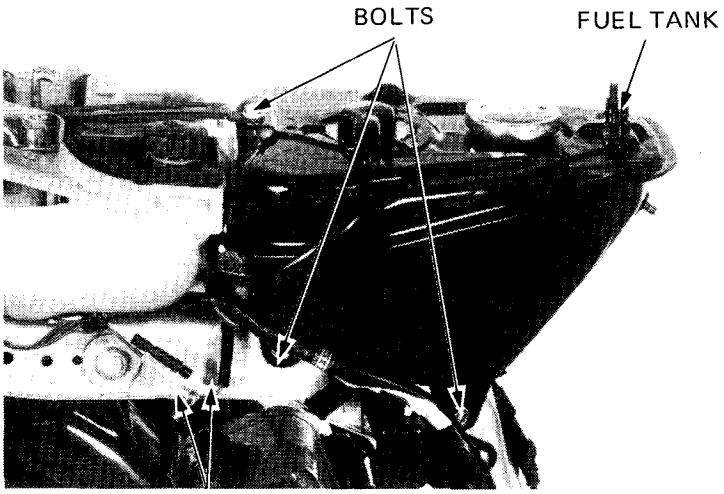


Remove the fuel line and vacuum tube.



Disconnect the fuel unit wire connectors.

Remove the fuel tank mounting bolts and the tank.



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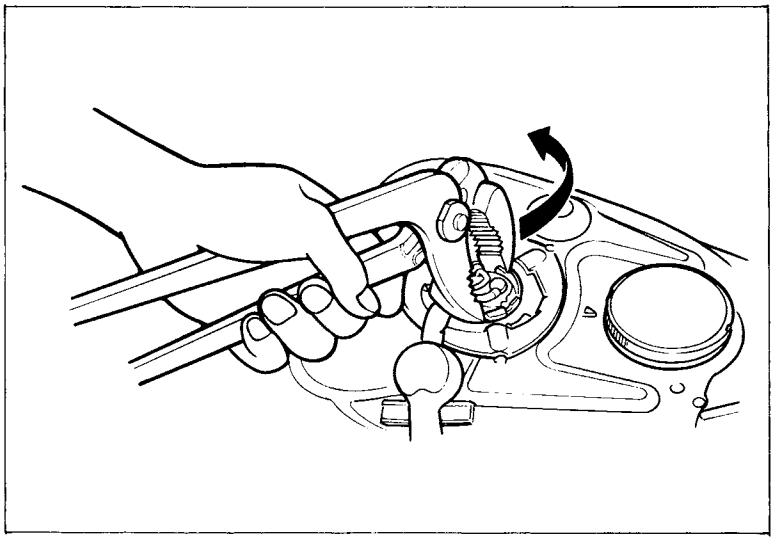
FUEL TANK DISASSEMBLY

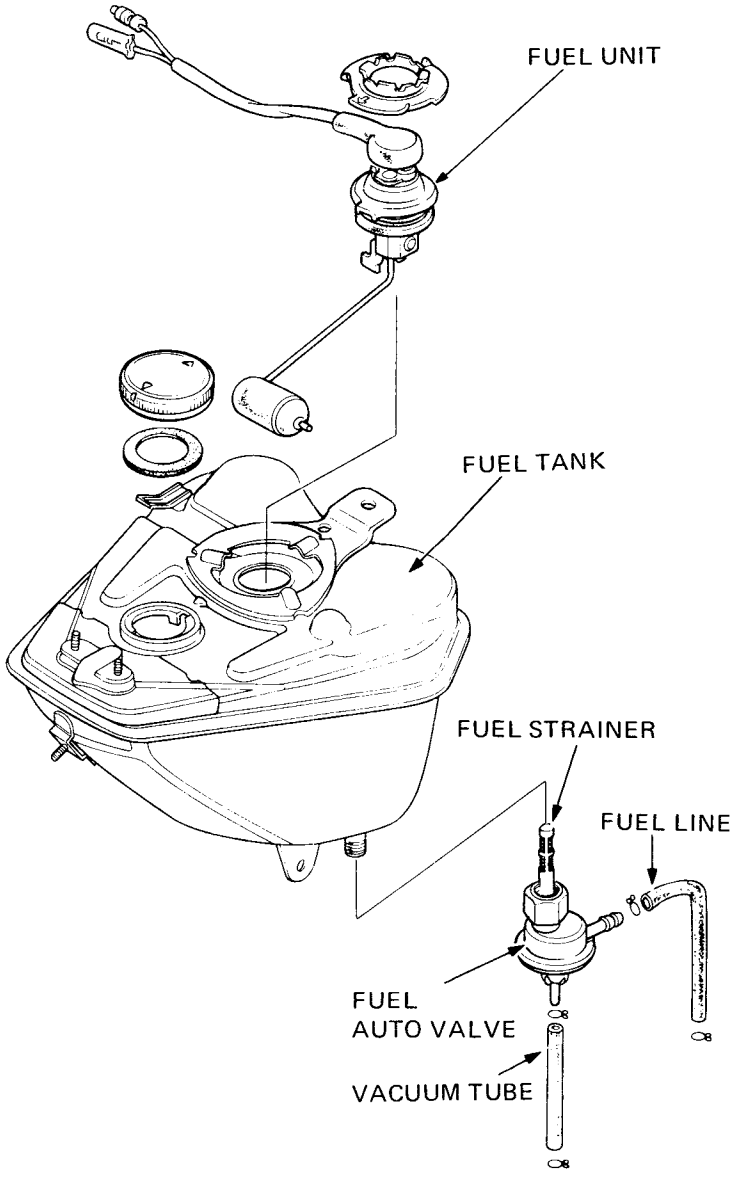
Remove the fuel unit with the channel pliers.

Remove the fuel auto valve.
Clean the fuel strainer (Page 3-4).



FUEL TANK ASSEMBLY

The assembly is the reverse order of disassembly.



NOTE:

Face the arrow mark on the fuel unit forward.

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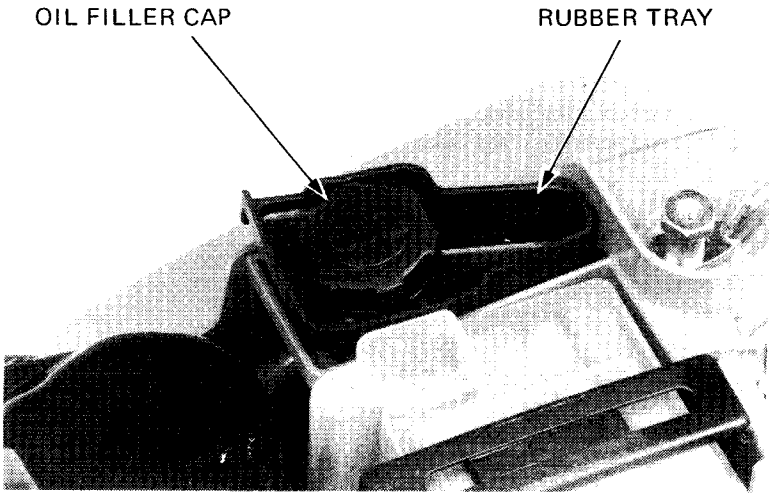
OIL TANK

OIL TANK REMOVAL

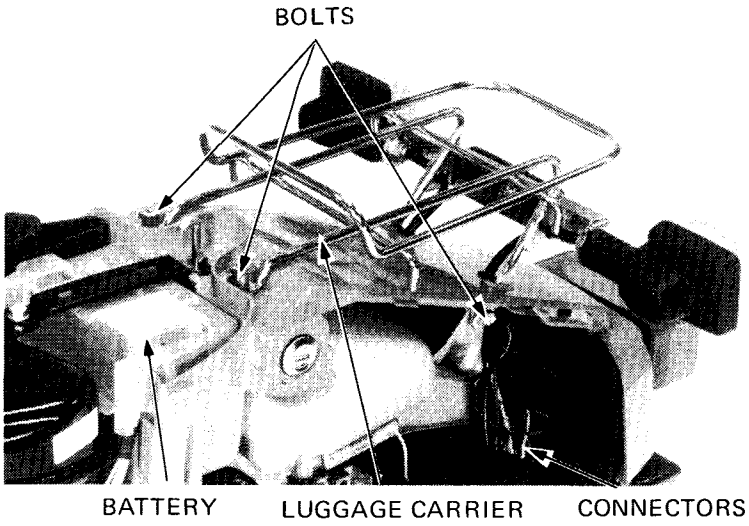
Remove both frame body covers (Page 5-2).

Remove the oil filler cap and rubber tray.



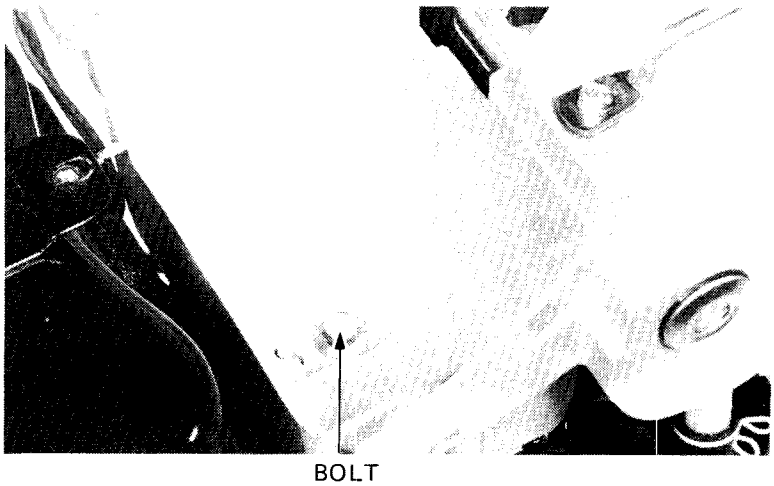
Remove the battery.

Remove the luggage carrier mounting bolts and disconnect the taillight/rear turn signal wire connectors.



Remove the bolt mounting the battery case to the luggage carrier.

Remove the luggage carrier and the battery case.



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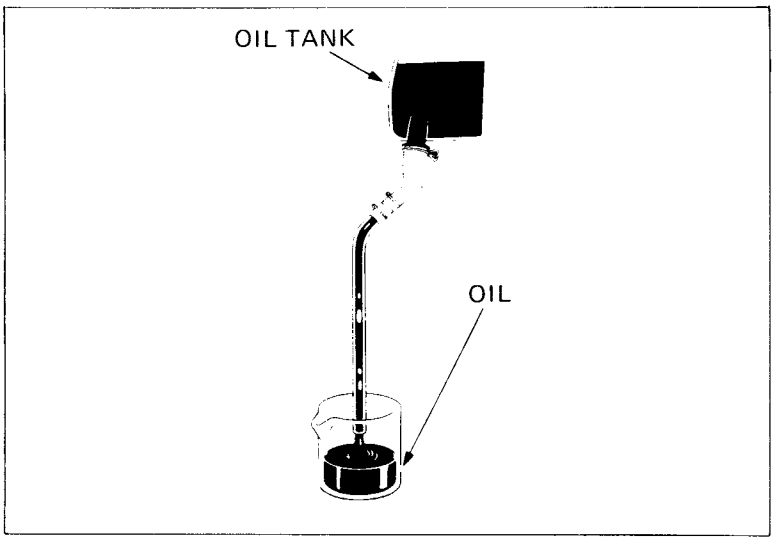
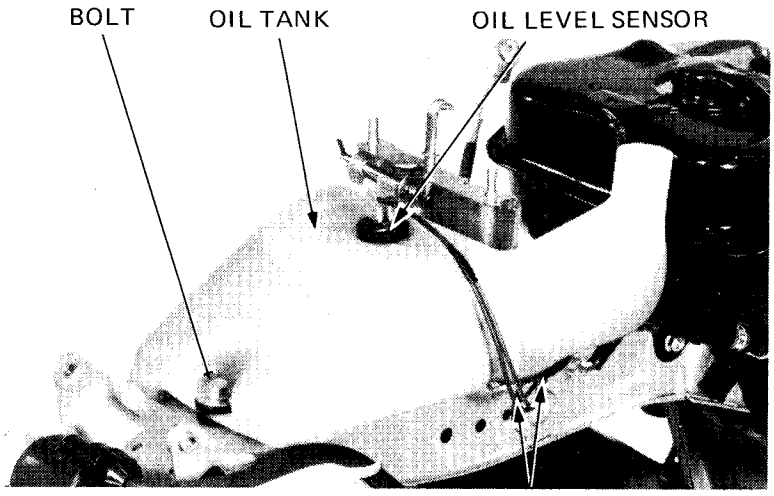
Disconnect the oil line at the oil pump and allow oil to drain into a clean container.



Disconnect the oil level sensor wires.
Remove the oil tank bolt and remove the oil tank.



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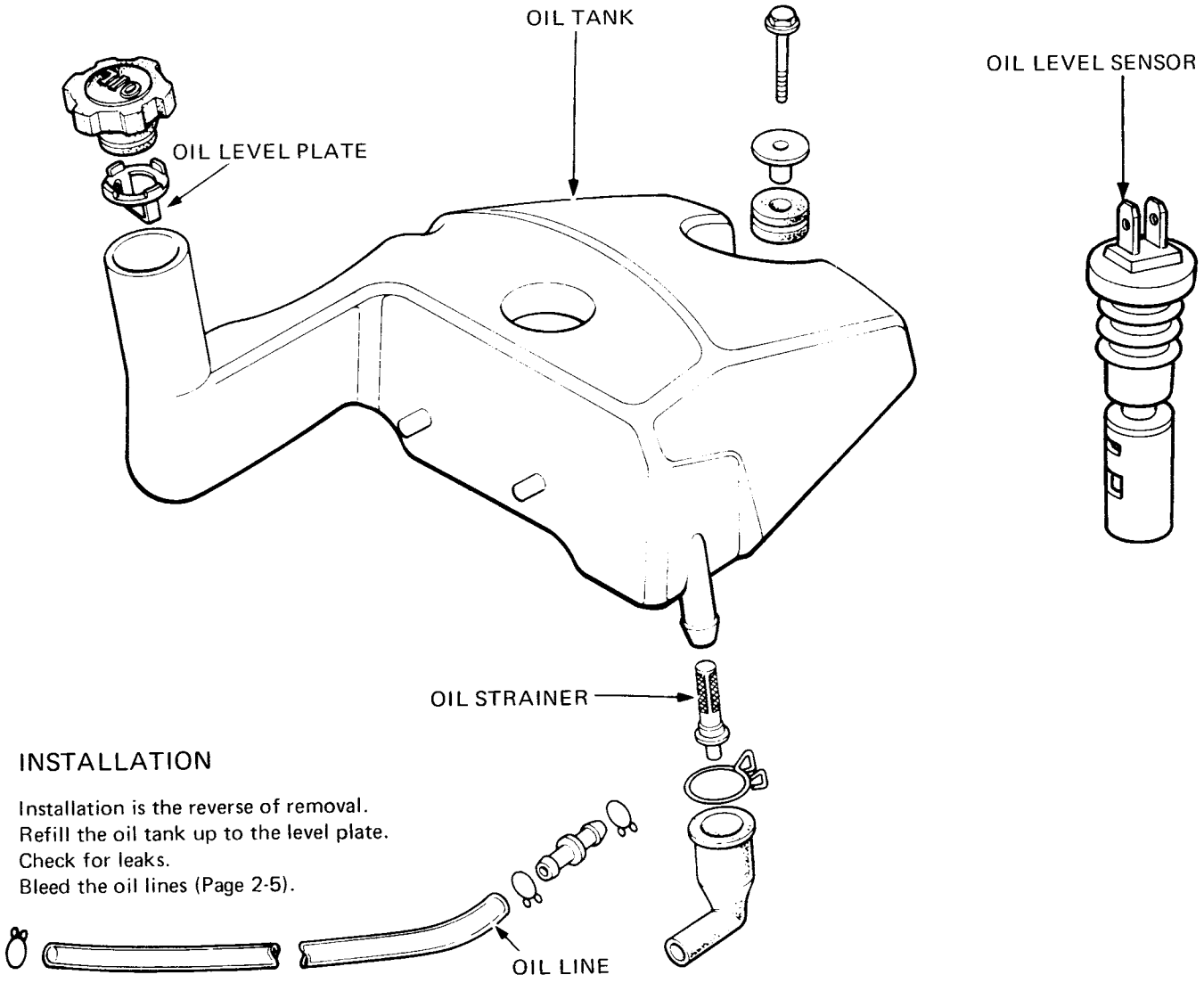
DISASSEMBLY

Clean the interior of the oil tank thoroughly.
Clean the oil strainer (Page 3-5).



INSTALLATION

Installation is the reverse of removal.
Refill the oil tank up to the level plate.
Check for leaks.
Bleed the oil lines (Page 2-5).

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14. ELECTRICAL EQUIPMENT

SERVICE INFORMATION	14–1
TROUBLESHOOTING	14–2
BATTERY	14–3
CHARGING SYSTEM	14–5
IGNITION SYSTEM	14–7
STARTER MOTOR	14–10
SWITCHES/HORN	14–14
OIL LEVEL SENSOR	14–16
FUEL LEVEL SENSOR	14–17

SERVICE INFORMATION

GENERAL

- Do not quick charge the battery. Quick charging may damage the battery.
- Remove the battery from the scooter for charging. Remove the cell caps before charging the battery.
- Do not smoke or have flames near a charging battery. The gas produced by a battery is very flammable and can explode.
- Ignition timing cannot be adjusted. If the timing is incorrect, inspect the CDI unit and alternator and replace any faulty parts.

SPECIFICATIONS

ITEM				
Battery	Capacity	12V4AH		
	Specific gravity	1.270–1.290 at 20°C (68°F)		
	Charging rate	0.4A maximum		
Alternator	Charging rpm	2,300 rpm max. (14.2V)		
	Capacity	0.6A min. (17.4V) / 4,000 rpm 1.1A max. (17.7V) /6,000 rpm		
Spark plug			NGK	ND
		Standard	BPR6HS	W20FPR
		For cold climate	BPR4HS	W14FPR
		For extended high speed riding	BPR8HS	W24FPR
Spark plug gap		0.6–0.7 mm (0.024–0.028 in)		
Ignition timing		18° BTDC at 2,000 rpm		

TOOLS

Common

Sanwa Electrical Tester	07308–0020000 or KS-AHM-32-003 (U.S.A. only)

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TROUBLESHOOTING

CHARGING SYSTEM

No power
1. Dead battery
   - Low fluid level
   - Battery sulfation
   - Internally shorted battery
   - Charging system failure
2. Disconnected battery cable
3. Fuse burned out
4. Faulty ignition switch

Low power
1. Weak battery
2. Loose battery connection
3. Charging system failure

Intermittent power
1. Loose battery cable
2. Loose charging system connection
3. Loose connection or short circuit in lighting system
4. Loose ignition system connection

Charging system failure
1. Loose, broken or shorted wire or connection
2. Faulty regulator/rectifier
3. Faulty alternator

IGNITION SYSTEM

No spark at plug
1. Faulty spark plug
2. Poorly connected, broken or shorted wire
   - Between alternator and CDI unit
   - Between CDI unit and ignition coil
   - Between CDI unit and ignition switch
   - Between ignition coil and spark plug
3. Faulty ignition switch
4. Faulty ignition coil
5. Faulty CDI unit
6. Faulty alternator

Engine starts but runs poorly
1. Ignition primary circuit
   - Faulty ignition coil
   - Loose or bare wire or connector
   - Poorly connected ignition switch
2. Ignition secondary circuit
   - Faulty ignition coil
   - Faulty spark plug
   - Faulty high tension wire
   - Poorly insulated plug cap
3. Improper ignition timing
   - Faulty alternator
   - Stator not installed properly
   - Faulty CDI unit

STARTING SYSTEM

Starter won't run
1. Fuse burned out
2. Weak battery
3. Faulty ignition switch
4. Faulty starter switch
5. Faulty front or rear stop switch
6. Faulty starter relay
7. Poorly connected, broken or shorted wire
8. Faulty starter motor

Lack of power
1. Weak battery
2. Loose or bare wire or connection
3. Foreign matter stuck in starter or starter gear

Engine does not crank-starter rotates
1. Faulty starter pinion
2. Reverse rotation of starter
3. Low battery

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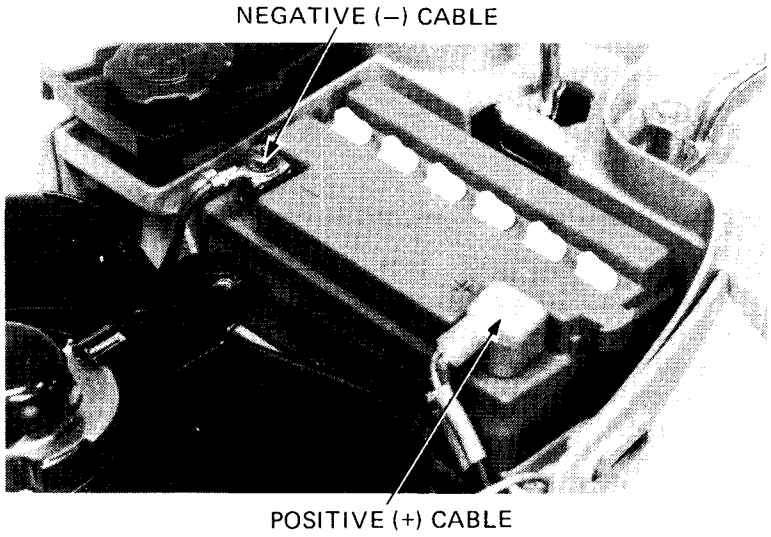
BATTERY

REMOVAL

Remove the battery holder by removing the attaching bolt.
Remove the battery cover.
Disconnect the negative cable, then disconnect the positive cable.
Remove the battery.
Installation of the battery is the reverse of removal.

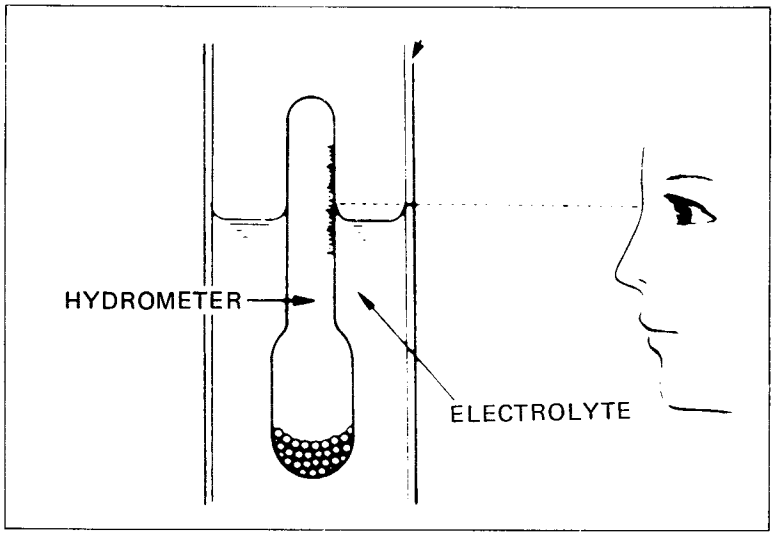


SPECIFIC GRAVITY TEST

Test each cell by drawing electrolyte into a hydrometer.

SPECIFIC GRAVITY (20°C, 68°F)

1.270–1.290	Fully charged
1.230 or below	Undercharged

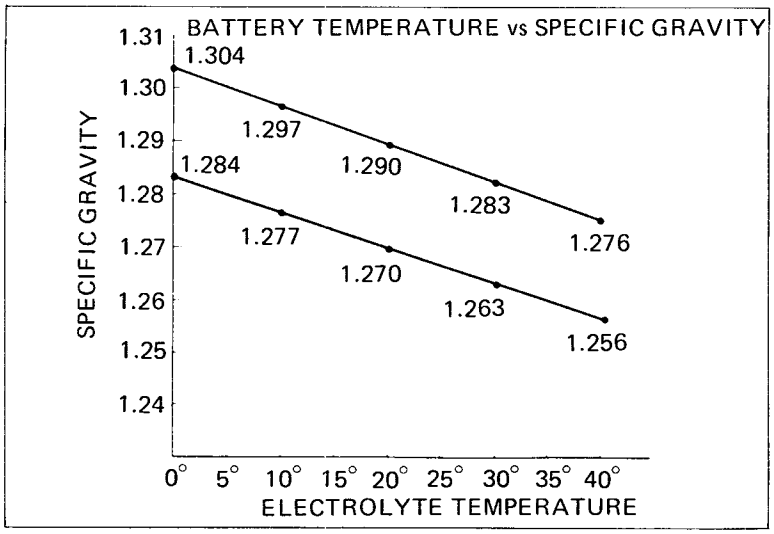


NOTE:

- The battery must be charged if the specific gravity falls below 1.230.
- The specific gravity varies with the temperature as shown. (Specific gravity changes by 0.007 for every 10°C).
- Replace the battery if sulfation has formed, or if the space below the cell plates is filled with sediment.

WARNING

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



Specific gravity changes by 0.007 for every 10°C

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BATTERY CHARGING

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

CHARGING CURRENT: 0.4 amperes maximum

WARNING

- *Before charging a battery, remove all caps to prevent battery case damage.*
- *Keep flames and sparks away from a charging battery to prevent igniting the hydrogen gas produced by the battery.*
- *Turn power ON/OFF at the charger, not at the battery terminals to prevent sparks near the battery cells.*
- *Discontinue charging if the electrolyte temperature exceeds 45°C (117°F).*

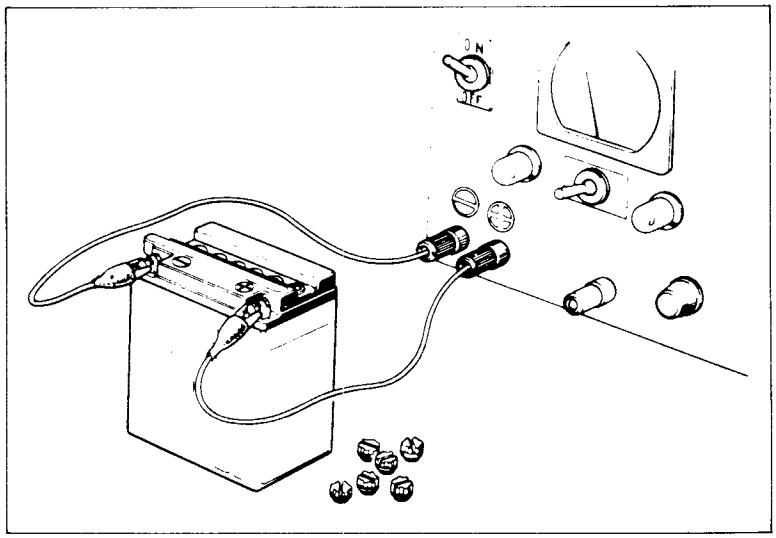
CAUTION:

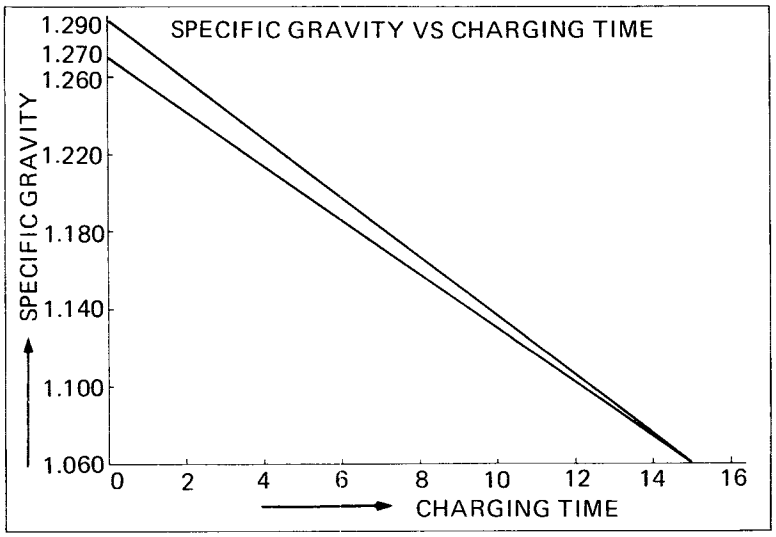
Quick charging should only be done in an emergency, slow charging is preferred.

CHARGING TIME: 3–15 hours

Charging:

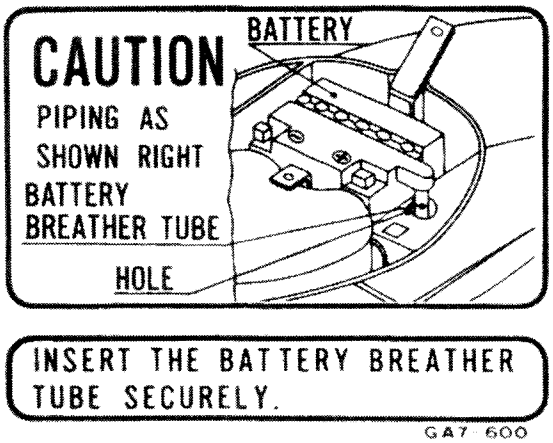
Charge the battery at 0.4A until specific gravity is 1.270–1.290 (20°C, 68°F).





CAUTION:

Check routing of the breather tube as shown on the battery caution label.



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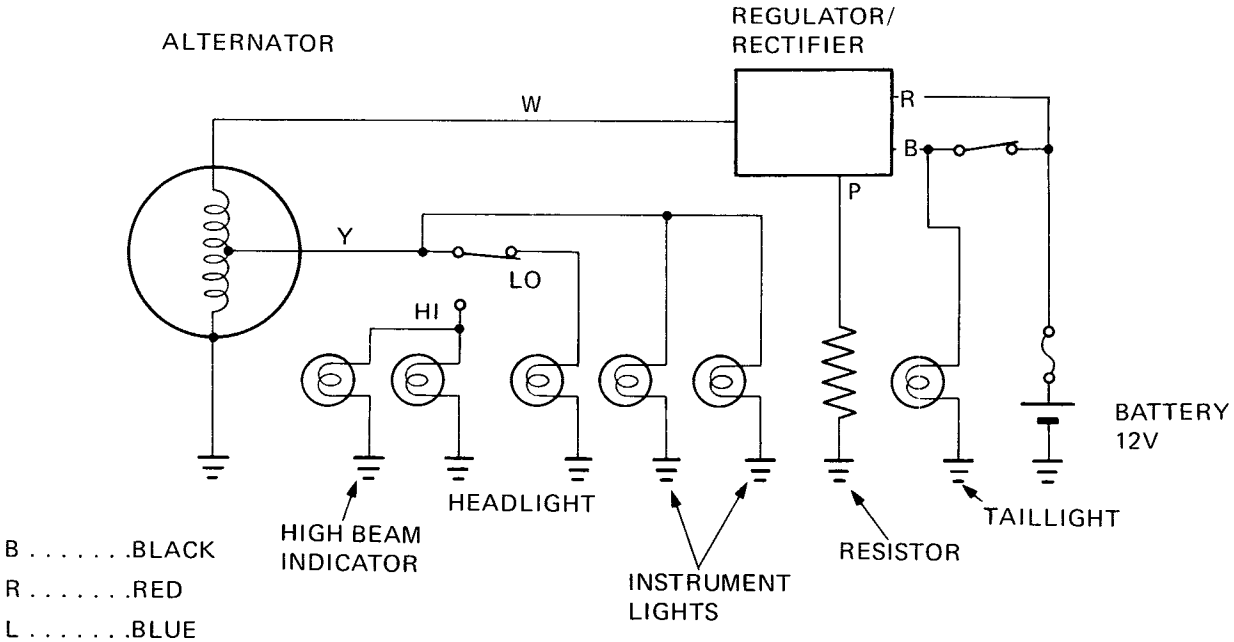
CHARGING SYSTEM

CHARGING CIRCUIT



B . . . . . .BLACK
R . . . . . .RED
L . . . . . .BLUE
Y . . . . . .YELLOW
W. . . . . .WHITE
P . . . . . .PINK

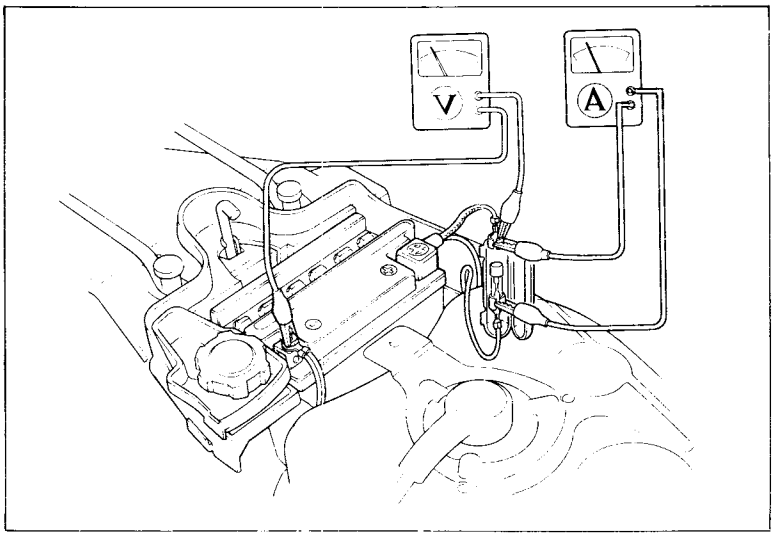
PERFORMANCE TEST

Warm up the engine before taking readings.

NOTE:

> Use a fully charged battery to check the charging system output.

Connect an ammeter and voltmeter as shown.
Start the engine and take readings.



TECHNICAL DATA

Charging rpm (initial)	4,000 rpm	6,000 rpm
2,300 rpm max. (14.2V)	0.6A min. (17.4V)	1.1A max. (17.7V)

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ALTERNATOR

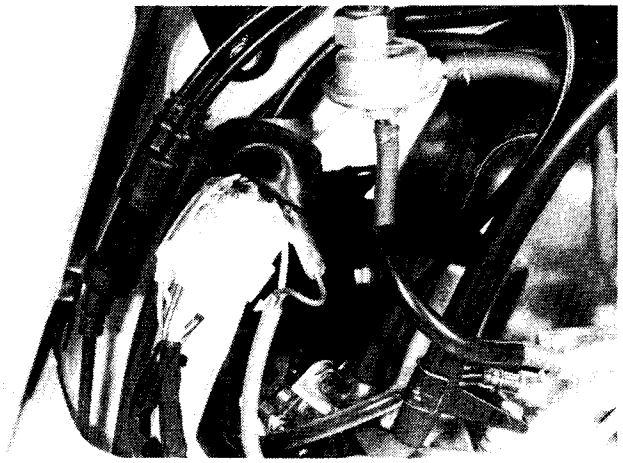
STATOR COIL INSPECTION

NOTE:

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

Disconnect the stator wire connectors.
Measure the resistances between the terminals as follows using the R x 1 scale:

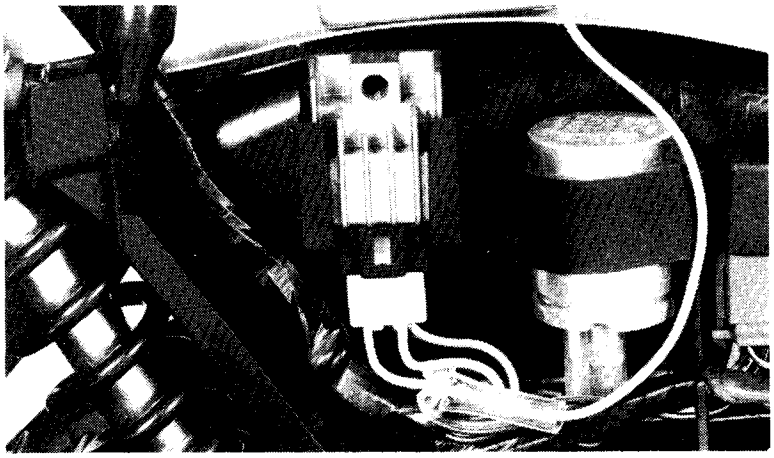
White and engine ground	0.2 ~ 2Ω
Yellow and engine ground	0.1 ~ 1Ω



For alternator removal/installation, see pages 7-2, 7-5.

NOTE:

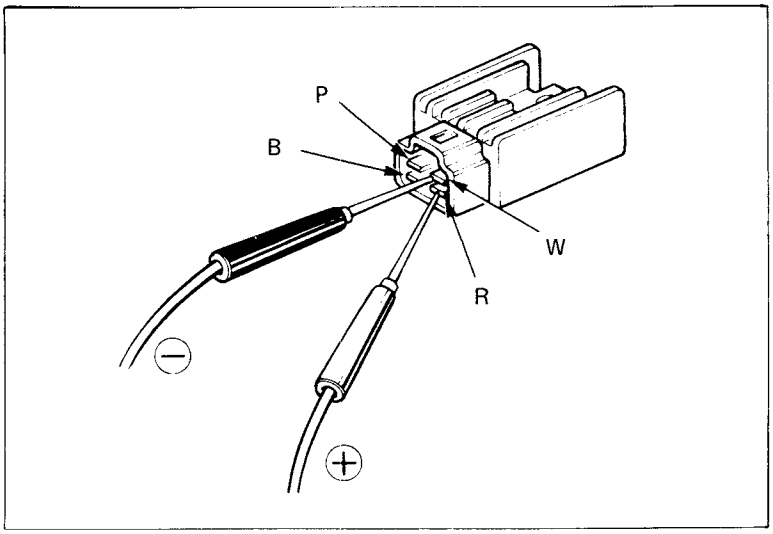
> Replace the stator coil and flywheel as a set. Do not replace one without replacing the other.



REGULATOR/RECTIFIER

Check continuity between the terminals with an ohmmeter. Continuity should exist only in one direction.

− \ +	RED	BLACK	PINK	WHITE
RED		∞	∞	∞
BLACK	∞		1–5kΩ	∞
PINK	∞	1–5kΩ		∞
WHITE	0.5–10kΩ	∞	∞	



NOTE:

> The test chart is for a positive ground ohmmeter. The test results will be reversed if a negative ground ohmmeter is used.

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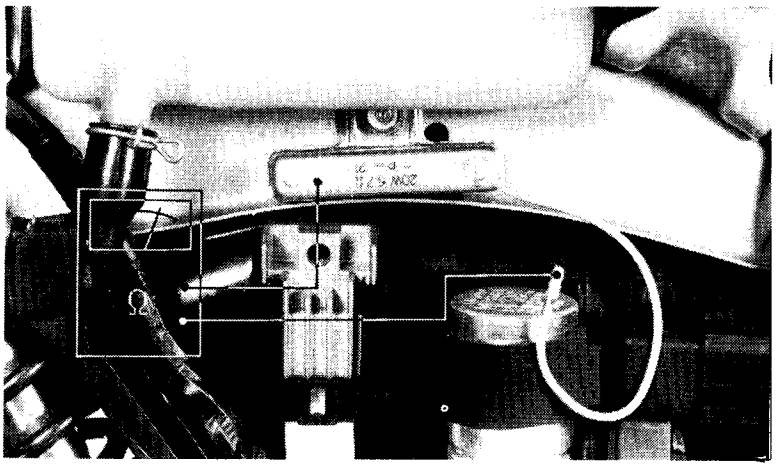
RESISTOR

Measure the resistance between the wire lead and frame ground.

Resistance	6.7 Ω

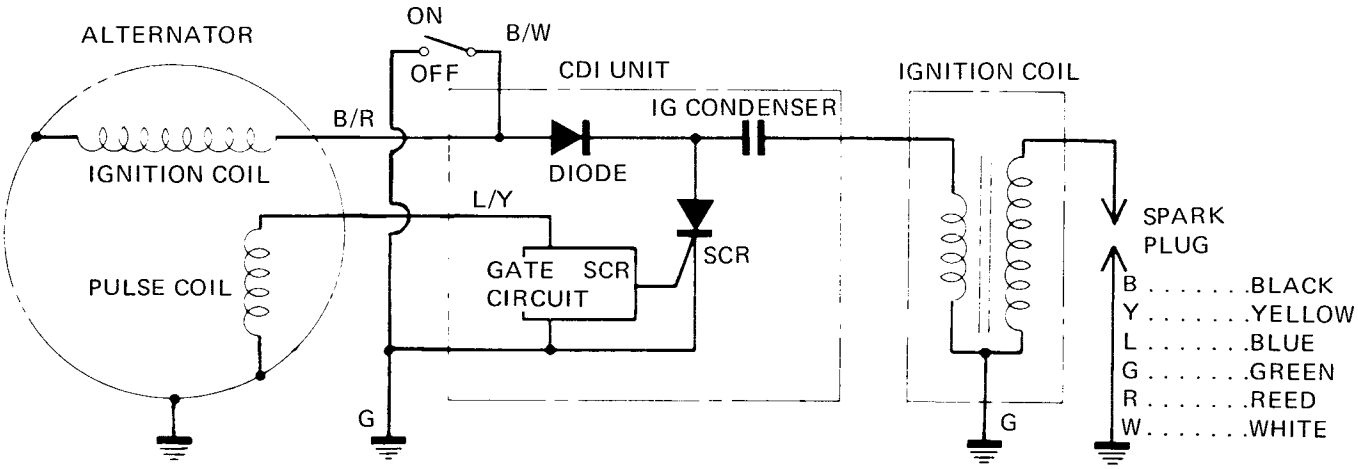
NOTE:

A faulty or poorly grounded resistor can be a cause of frequent instrument lamp failure.



IGNITION SYSTEM

IGNITION CIRCUIT

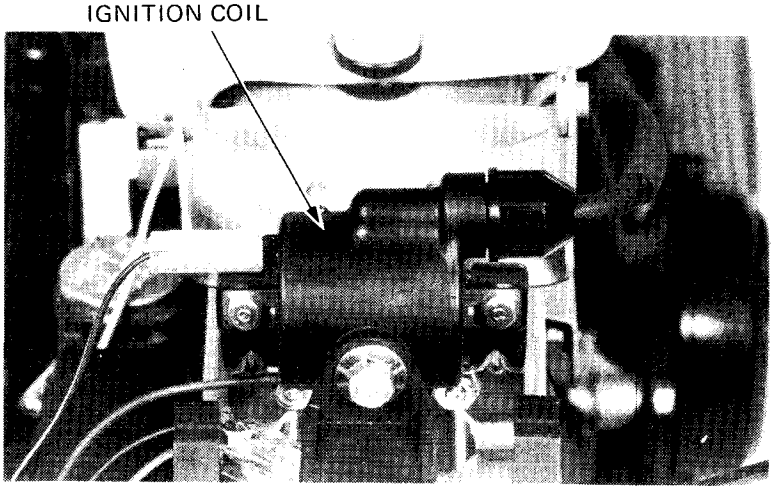


SPARK PLUG

For spark plug gap inspection and adjustment, refer to page 3-6.

IGNITION COIL

Remove the luggage carrier (Page 13-4).
Remove the ignition coil.
Disconnect the plug cap from the high tension wire; by twisting the plug cap.



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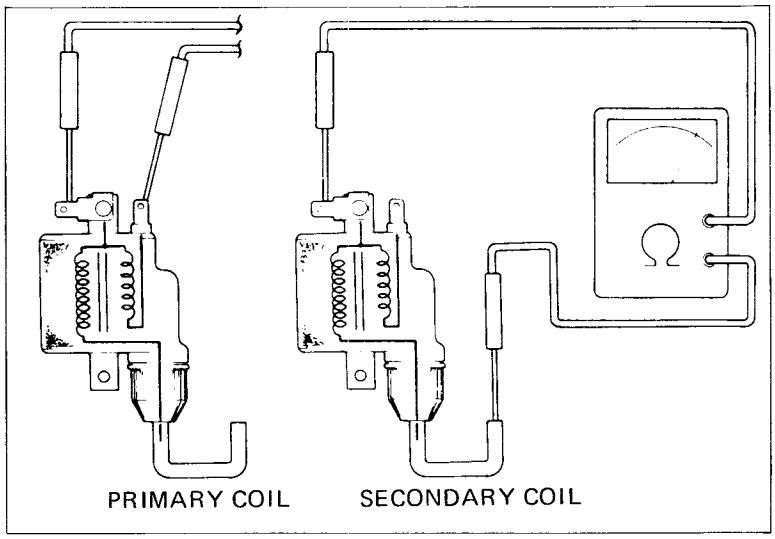
Continuity test
Measure the resistances of the primary and secondary coils.

RESISTANCES:

Primary coil	0.2–0.3 Ω
Secondary coil	3.4–4.2 kΩ



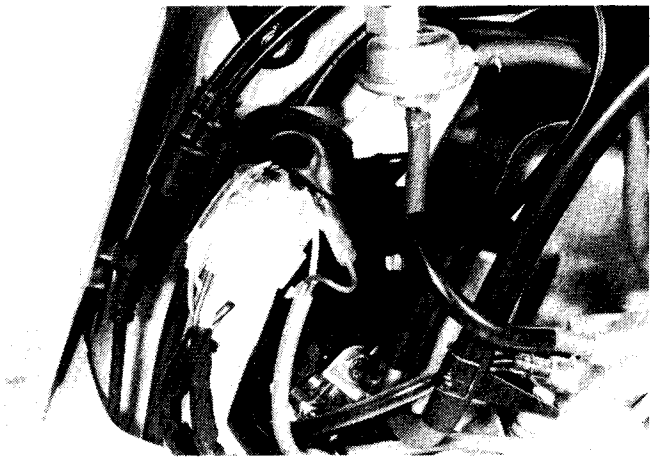
ALTERNATOR INSPECTION

NOTE:

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

Disconnect the stator coupler.
Measure the resistances between the terminals with an ohmmeter in the R x 1 range.

BLACK/RED and GROUND	50–300
BLUE/YELLOW and GROUND	10–100



Alternator removal/installation (Page 7-2, 7-5)

CAUTION:

> *Replace the stator and flywheel as a set, if either one needs replacement.*

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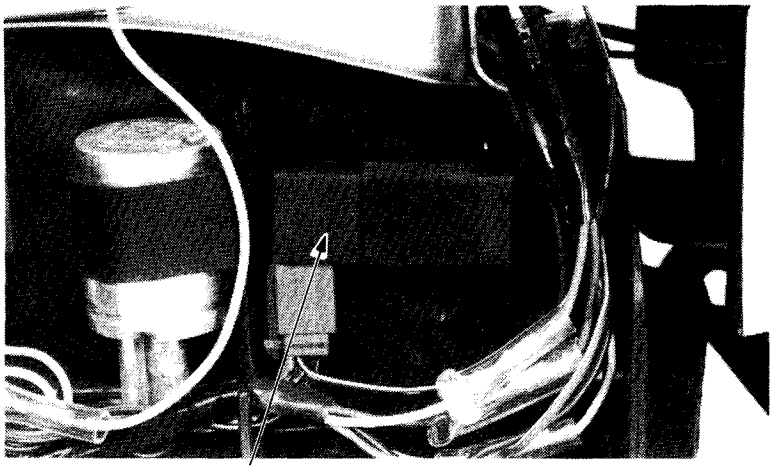
CDI UNIT

Remove the frame left body cover (Page 3-2).
Disconnect the CDI coupler and remove the CDI unit.

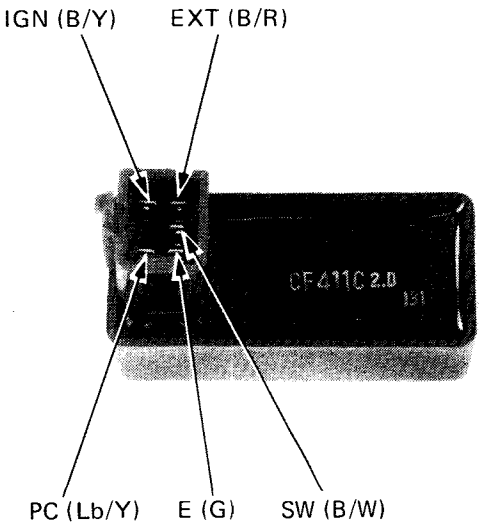


CDI UNIT

Measure the resistances between the terminals.
Replace the CDI unit with a new one if the readings do not fall within the limits shown in the table.

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 in accurate readings.
- Use Sanwa Electric Tester Type SP-10D (P/N 07308–0020000) or KS-AHM-32-003 (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.



Range Sanwa: RX kΩ Kowa: RX 100Ω

– PROBE \ + PROBE	SW	EXT	PC	E	IGN
SW		∞	∞	∞	∞
EXT	0.1–10		∞	∞	Needle swings then returns" or ∞
PC	0.5–200	0.5–50		1–50	∞
E	0.2–30	0.1–10	∞		∞
IGN	∞	∞	∞	∞	

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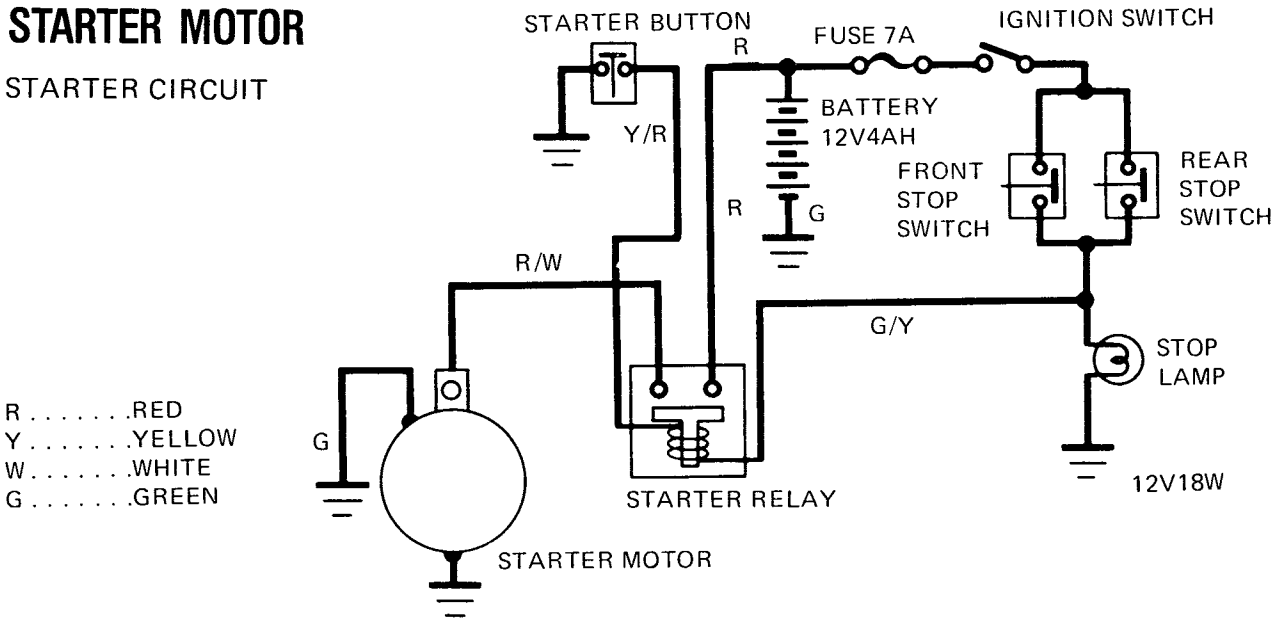
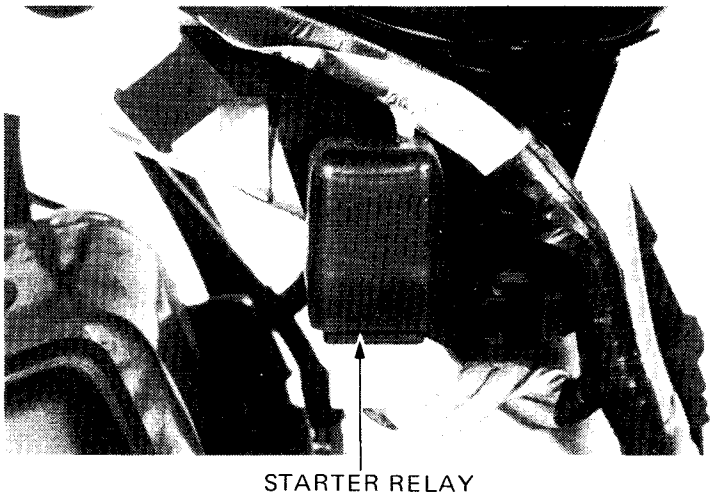
STARTER MOTOR

STARTER CIRCUIT



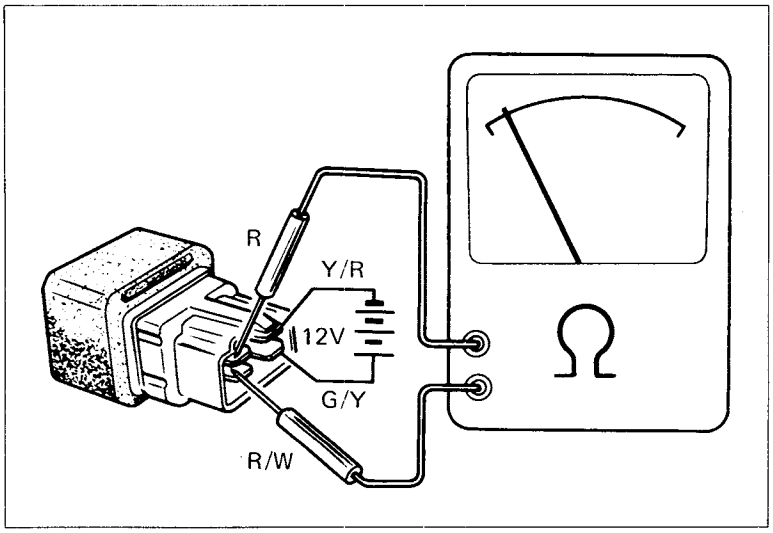
STARTER RELAY REMOVAL

Remove both frame body covers and remove the starter relay.



STARTER RELAY INSPECTION

There should be continuity between the red and red/white terminals only when the positive probe of a 12V battery is attached to the green/yellow wire terminal and the negative probe is attached to the yellow/red wire terminal.



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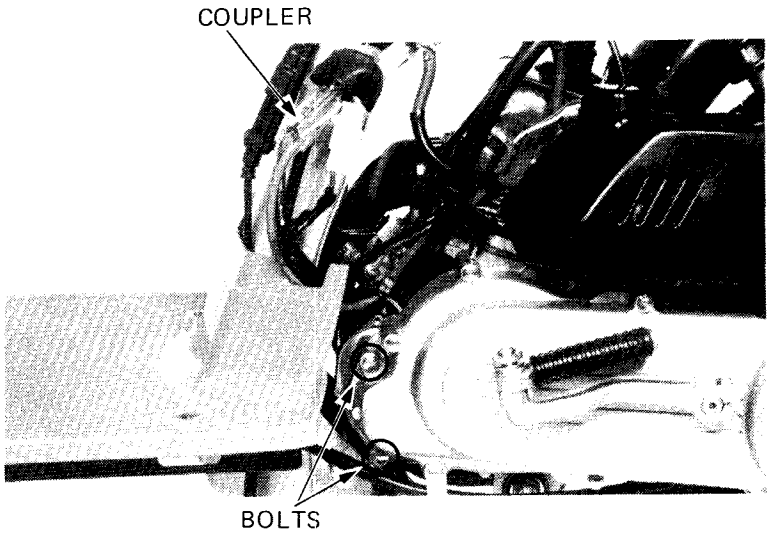
STARTER MOTOR REMOVAL

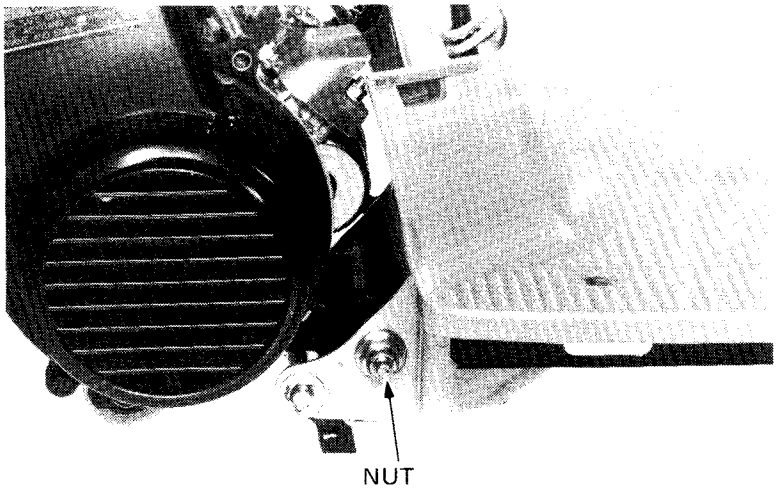
WARNING

Perform this operation while the engine and exhaust muffler are COLD.

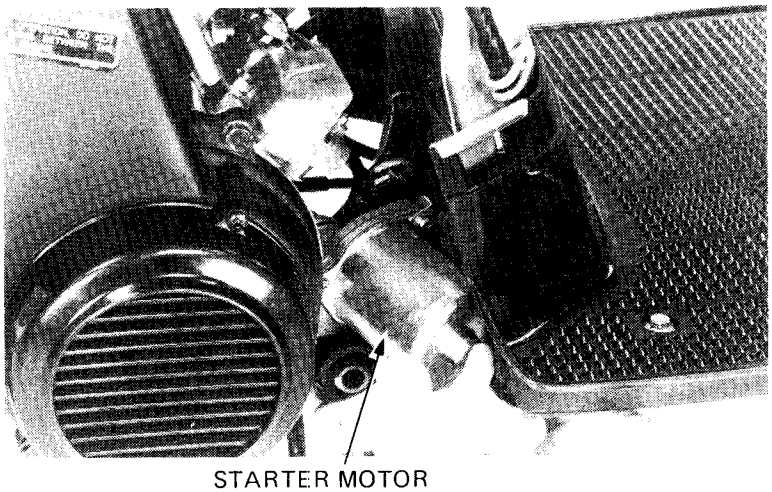
Remove the exhaust muffler (Page 5-2).
Disconnect the starter motor coupler.
Remove the starter motor attaching bolts.



Disconnect the rear brake cable.
Remove the rear fender B (Page 5-2).
Remove the engine hanger bolt nut.



Remove the engine hanger bolt and move the engine toward the rear.
Remove the starter motor.



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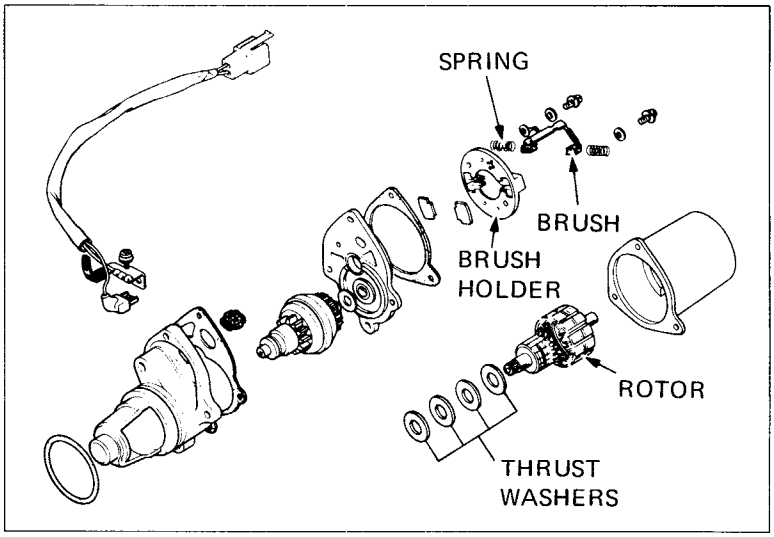
STARTER MOTOR DISASSEMBLY

Disconnect the starter cables.

NOTE:

- The brush springs will pop out when removing the brush holder plate.
- Record the number and location of the commutator thrust washers.

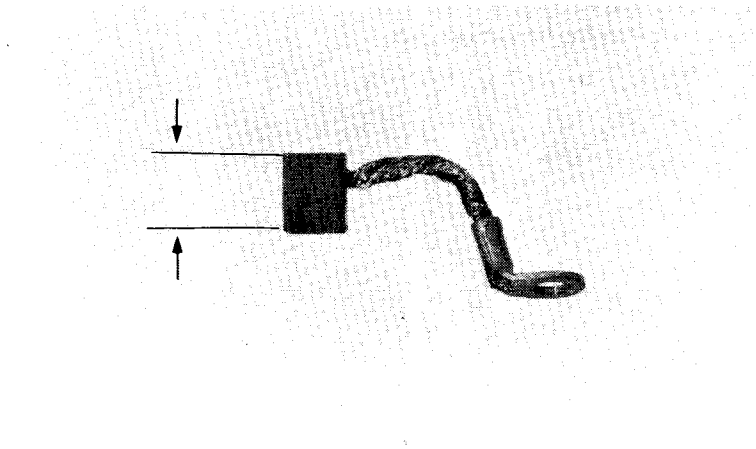


BRUSH INSPECTION

Measure the length of each brush.

SERVICE LIMIT: 3.0 mm (0.12 in)

Replace the brushes if they are shorter than the service limit.



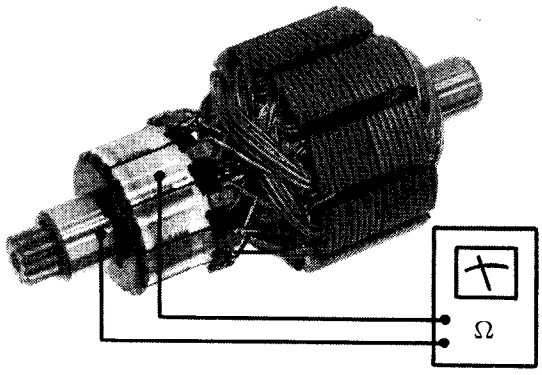
COMMUTATOR INSPECTION

Check the commutator for discoloration and other visual faults. Blackened adjacent segments are an indication of a shorted circuit.

NOTE:

Do not use sand paper to clean the commutator.

Check for continuity between segments, and commutator and shaft. The commutator is normal if there is continuity between the segments. There should be no continuity between the commutator and shaft.



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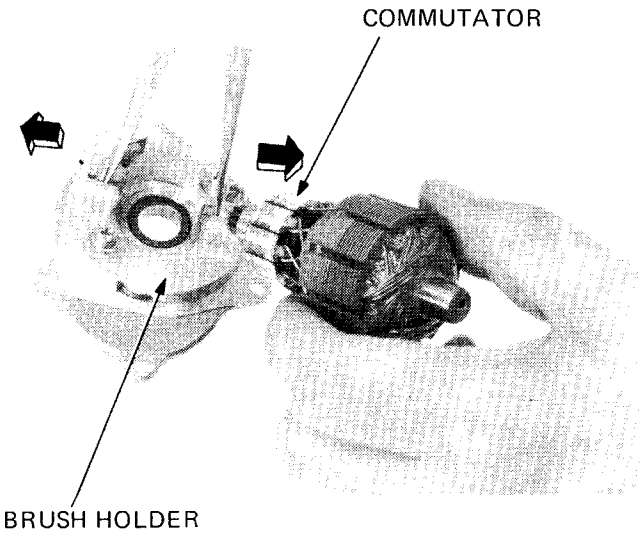
STARTER MOTOR ASSEMBLY

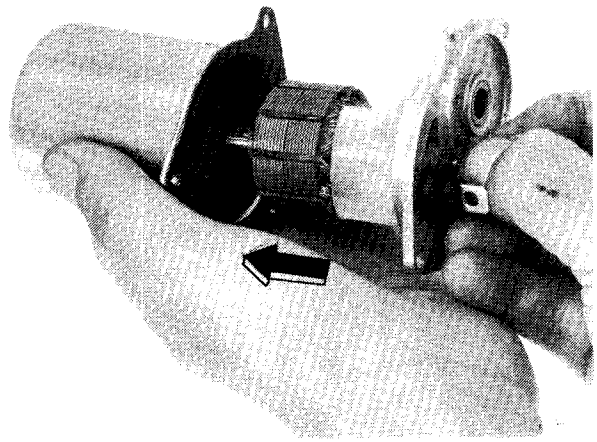
Install the brush springs and brushes in the holder plate.
Install the commutator and thrust washers while extending the brushes outward.

NOTE:

> Note the number and location of the thrust washers.



Insert the commutator into the starter body.
Lubricate the starter pinion with clean grease.
Install the pinion and starter cover.
Attach the starter wires and install the terminal cover.

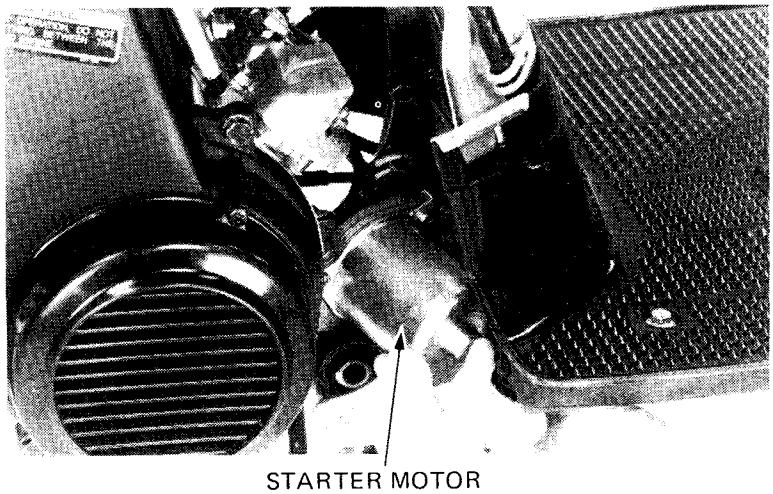


STARTER MOTOR INSTALLATION

NOTE:

> Before installing the starter, test its operation by connecting the starter coupler to the wire harness.

Install the starter motor in the reverse order of removal.
Secure the wires with the clamps.



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SWITCHES/HORN

Remove the front carrier, front cover and pocket. (Page 11-6).

Check the continuity of each switch.
Continuity should exist between color coded wires indicated by interconnected circles on each chart.

IGNITION SWITCH

CODE COLOR	RED	BLACK	BLACK/ WHITE	GREEN
	BAT1	BAT2	IG	E
ON	○	○		
OFF			○	○

DIMMER SWITCH

CODE COLOR	BROWN	BLUE	WHITE
	HL	Hi	Lo
L	○		○
(N)	○	○	○
H	○	○	

TURN SIGNAL SWITCH

CODE COLOR	GREY	LIGHT BLUE	ORANGE
	W	R	L
R	○	○	
N			
L	○		○

HORN BUTTON

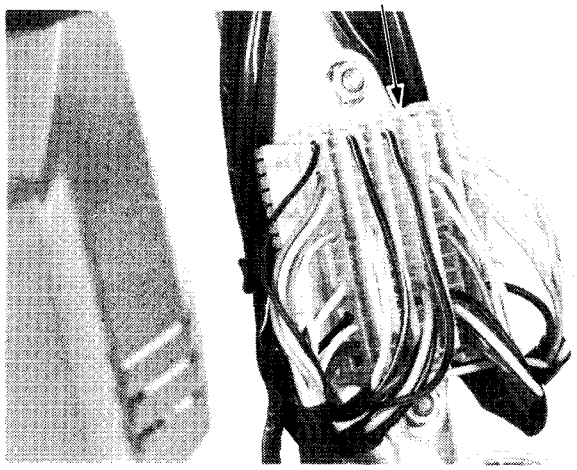
CODE COLOR	LIGHT BLUE	GREEN
	Ho	E
FREE		
PUSH	○	○

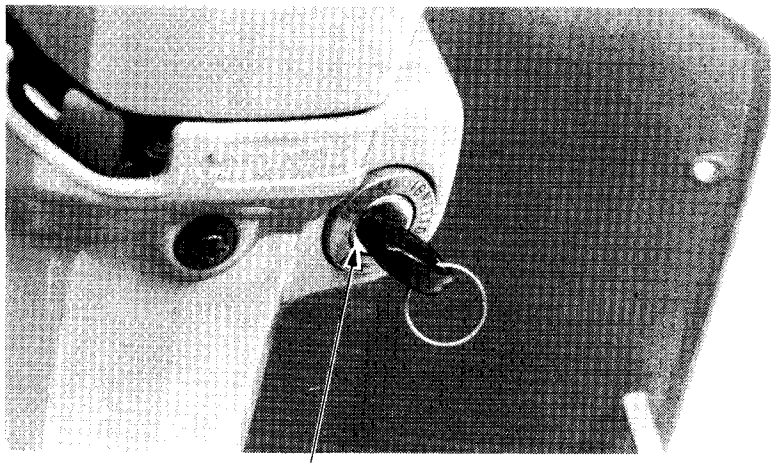
ENGINE STOP SWITCH

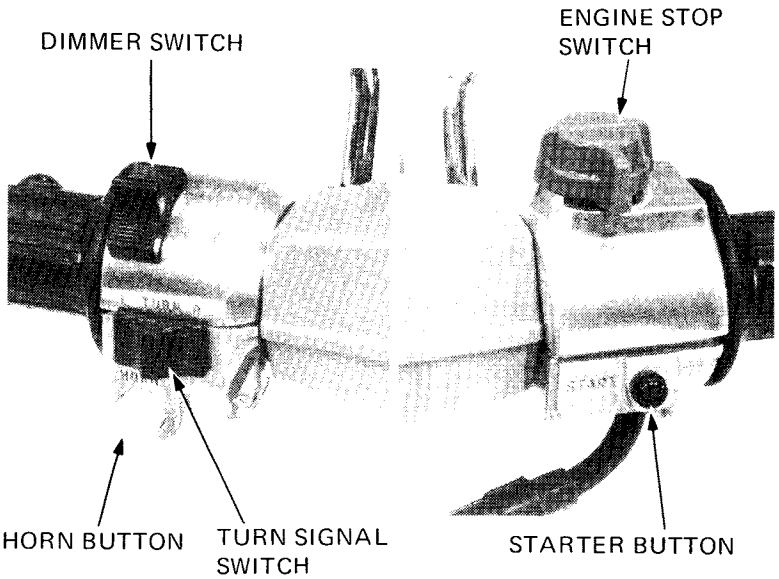
CODE COLOR	BLACK/WHITE	GREEN
	IG	E
OFF		
RUN	○	○
OFF		

STARTER BUTTON

	YELLOW/RED	GREEN
	ST	E
FREE		
PUSH	○	○







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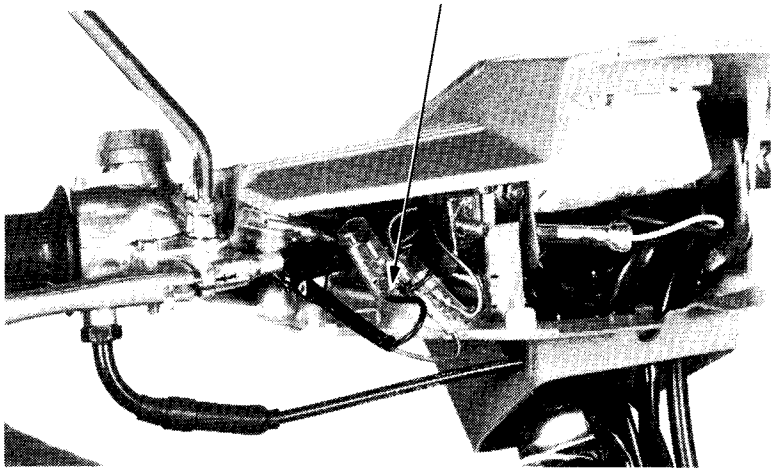
FRONT/REAR STOPLIGHT SWITCH

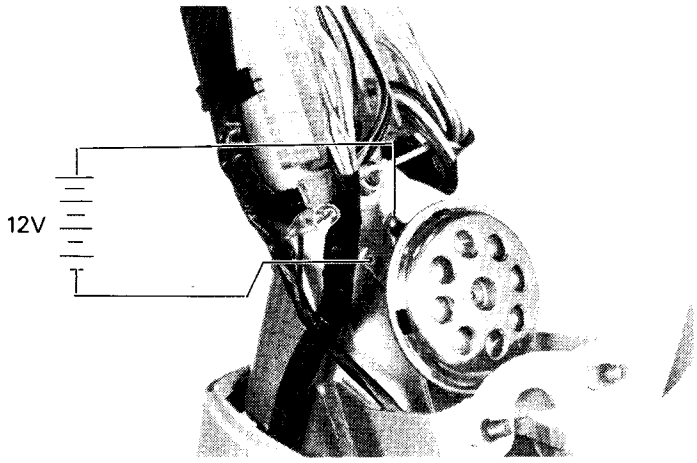
The switch is normal if there is continuity when the brake lever is applied.

STOPLIGHT SWITCH CONNECTORS



HORN

The horn is correct if it sounds when 12V is applied across the terminals.



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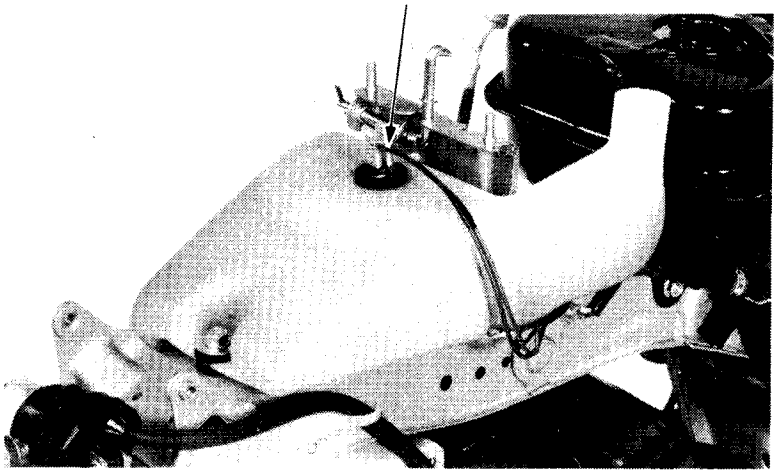
OIL LEVEL SENSOR

OIL LEVEL SENSOR



INSPECTION

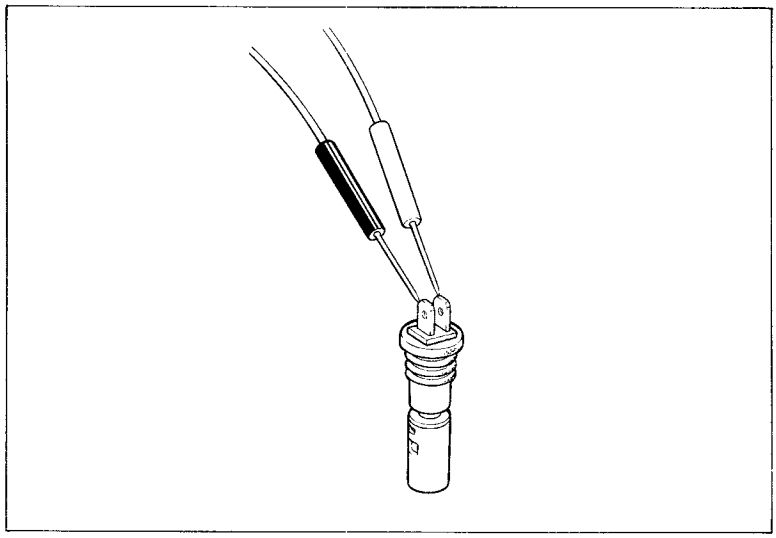
Disconnect the wires and remove the sensor.

Lower the float fully until it will no longer go. Measure the resistances between the terminals as shown.

	Resistance
Green/Red + Green –	0 Ω

With the float raised fully, measure the resistance between the terminals.

	Resistance
Green/Red + Green –	∞



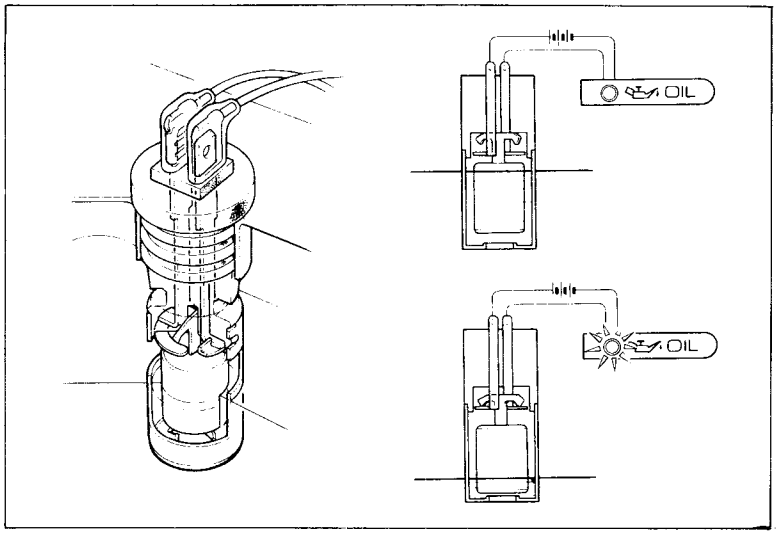
Operate the turn signals to see that the battery circuit is normal, then perform the following inspection.

Connect the 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:

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



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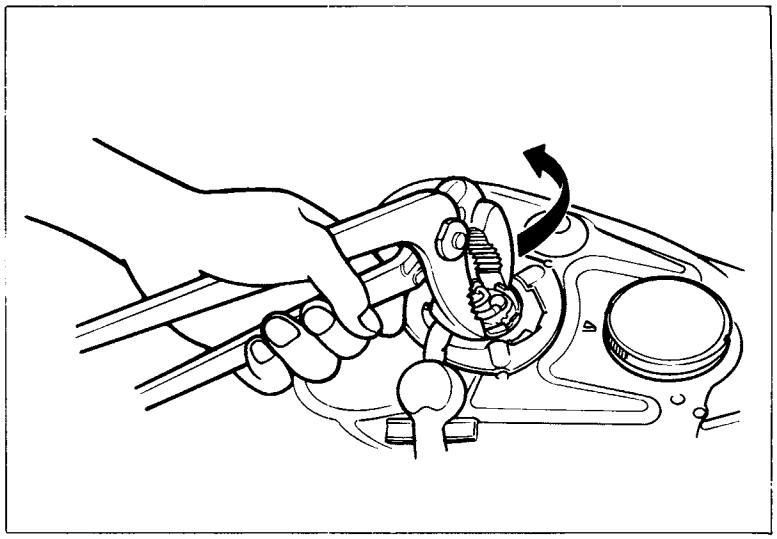
FUEL LEVEL SENSOR

FUEL LEVEL SENSOR REMOVAL/ INSTALLATION

Disconnect the connectors.
Remove the unit from the fuel tank (Page 13-3).

CAUTION:

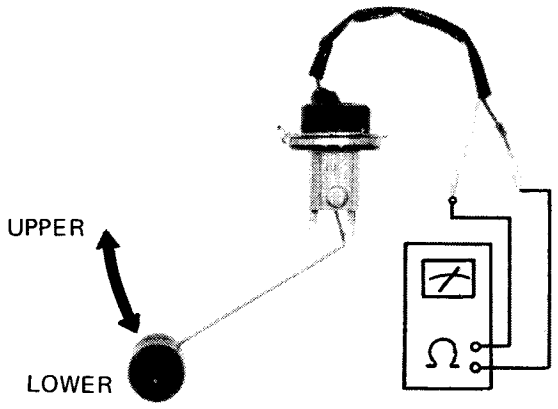
Do not bend the float arm.



UNIT INSPECTION

Measure the resistances between the terminals with the float at the UPPER (FULL) and LOWER (EMPTY) positions.

	Resistance
UPPER (FULL)	4–10Ω
LOWER (EMPTY)	90–100Ω

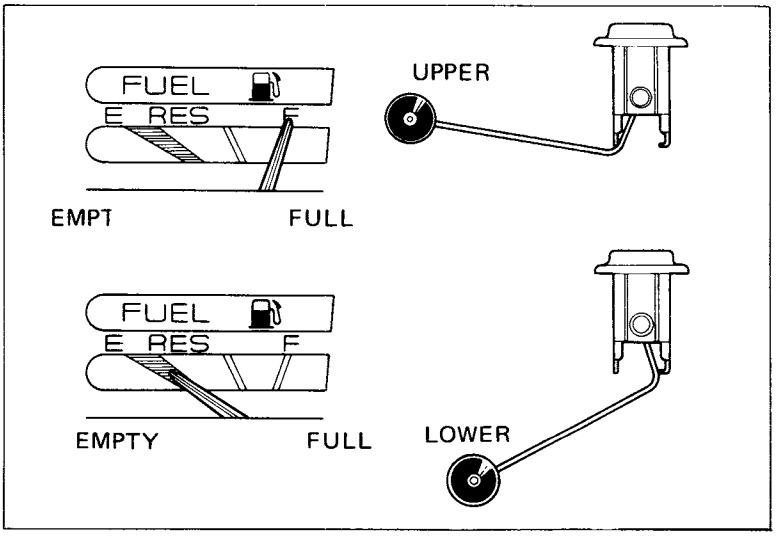


FUEL GAUGE INSPECTION

Connect the wire connectors and turn the ignition switch ON.
Before performing the following test, operate the turn signals to determine that the battery circuit is normal.

Check the gauge needle for correct indication by moving the float up and down.

	Needle Position
FLOAT AT UPPER POSITION	"FULL"
FLOAT AT LOWER POSITION	"EMPTY"



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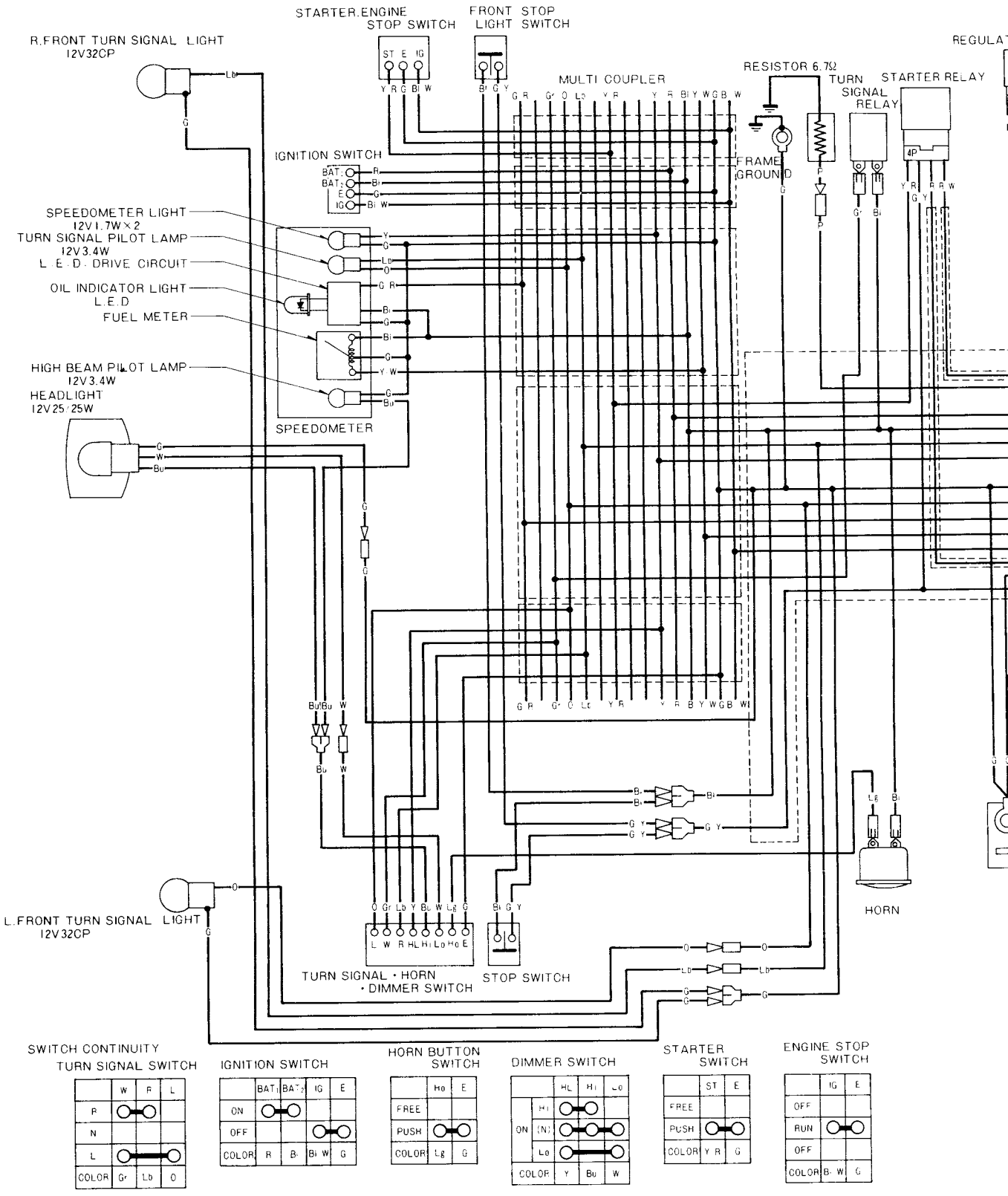

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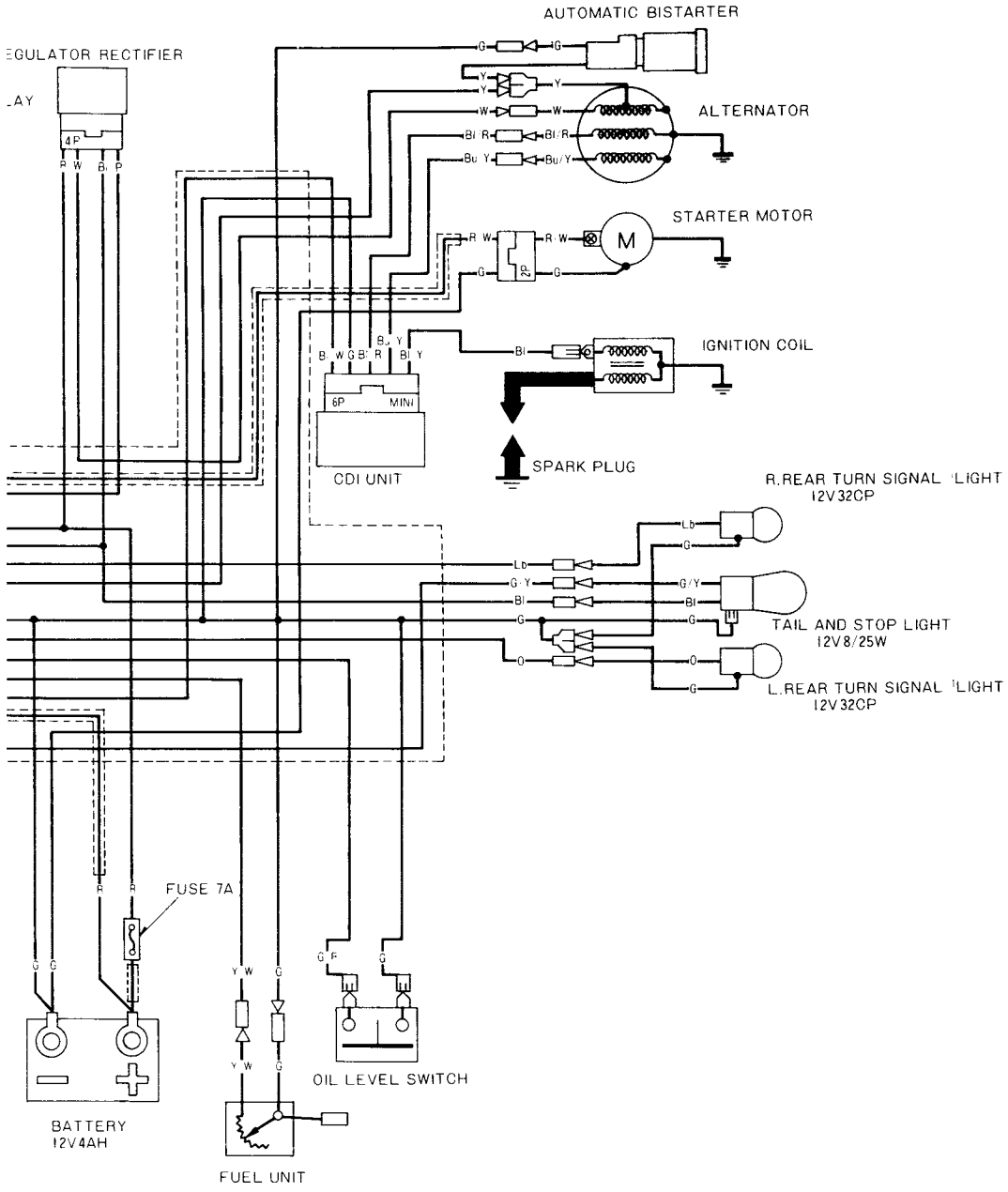
15. WIRING DIAGRAM



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

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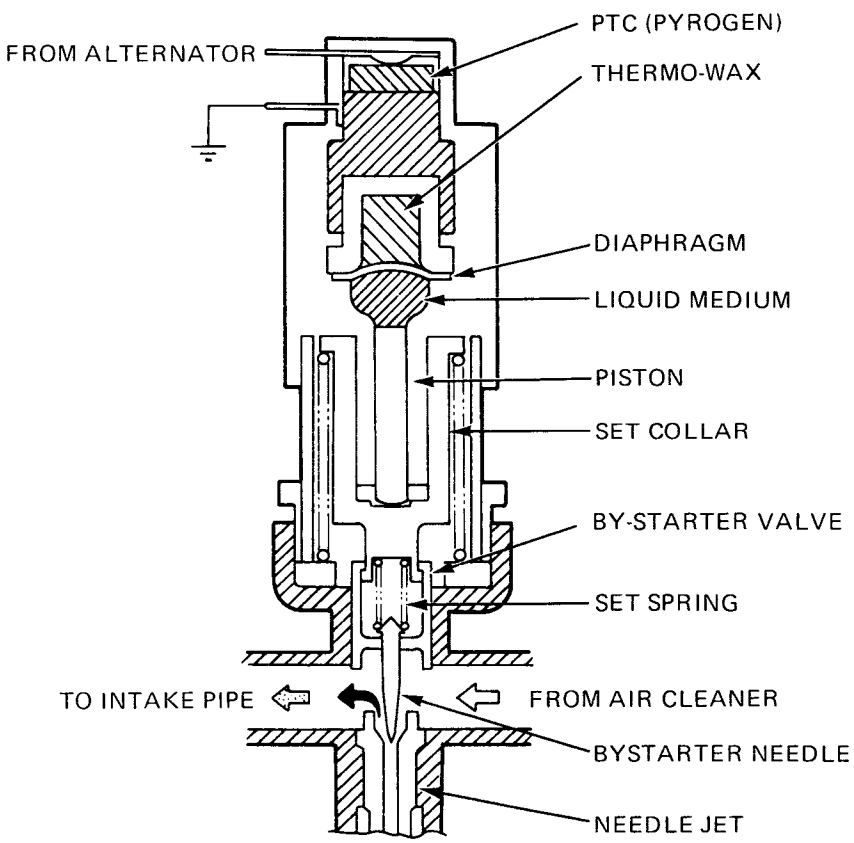
AUTO-BYSTARTER 16–1

AUTO-BYSTARTER

The NB50's auto-bystarter system uses a PTC (pyrogen – a heat producer), thermo-wax, piston, bystarter valve, and needle to control the fuel-air mixture at cold engine temperatures. When the engine is cold, the thermo-wax is solid and the bystarter valve holds the needle off its seat to allow an enriched fuel-air mixture for starting and warm up of the engine.
The PTC uses current from the alternator to produce heat. This heat melts the wax and increases its volume. As the volume of the wax increases it presses on a piston through a liquid filled diaphragm. This system gradually closes the needle against its seat as the engine is warmed up, so the fuel-air mixture will be correct for all engine temperatures.



ENGINE STARTS
⇩
(Alternator generates electrical current.)
⇩
PTC DEVELOPS HEAT
⇩
THERMO-WAX EXPANDS
(Thermo-wax senses heat of PTC.)
⇩
LIQUID MEDIUM
⇩
PISTON MOVES
⇩
SET COLLAR MOVES
⇩
SET SPRING
⇩
BY-STARTER VALVE MOVES DOWN
(Fuel is cut by bystarter needle)
⇩
ENGINE IS NORMAL OPERATING TEMPERATURE
(Bystarter valve closes fuel increase passage fully.)

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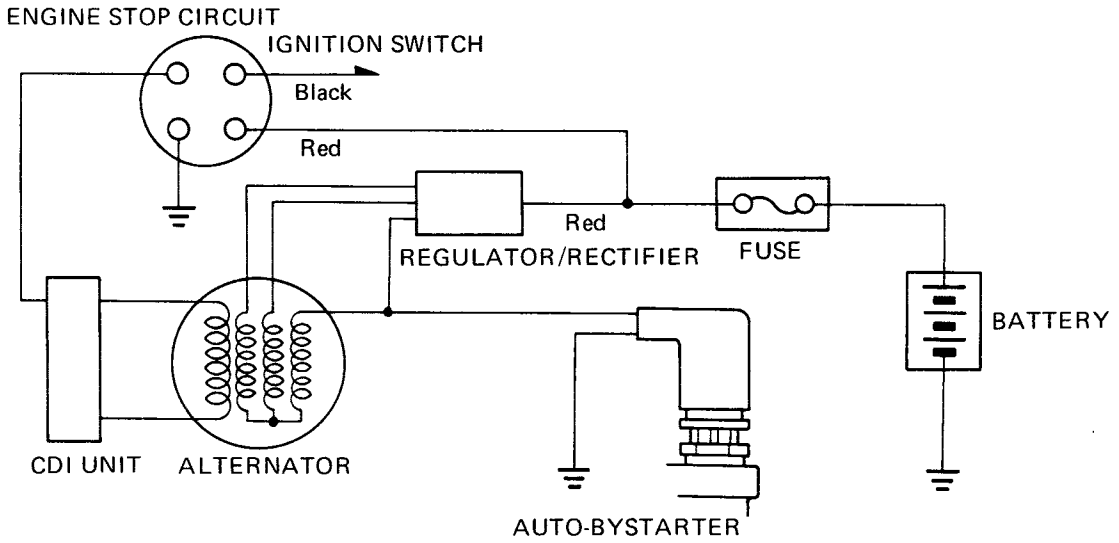

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ENGINE DOES NOT START OR IS HARD TO START	17–1
ENGINE LACKS POWER	17–2
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FUEL GAUGE	17–6
STARTER MOTOR	17–7

ENGINE DOES NOT START OR IS HARD TO START

		Probable Cause
1. Check if fuel is getting to Carburetor by loosening drain screw	NOT GETTING TO CARBURETOR →	(1) No fuel in fuel tank (2) Clogged fuel tube up to carburetor, vacuum tube up to inlet pipe, or fuel pipe (3) Clogged float valve (4) Clogged fuel tank cap breather hole
GETTING TO CARBURETOR ↓		
2. Try spark test	WEAK OR NO SPARK →	(1) Faulty spark plug (2) Fouled spark plug (3) Faulty CDI unit (4) Faulty alternator (5) Broken or shorted high tension 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 past 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
ENGINE DOES NOT FIRE ↓		
5. Remove spark plug	WET PLUG →	(1) Carburetor overflooded (2) Faulty auto bystarter (3) Throttle valve excessively open
DRY		

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ENGINE LACKS POWER

		Probable Cause
1. Lightly accelerate engine ENGINE SPEED INCREASES	ENGINE SPEED DOES NOT INCREASED 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 kickstarter pedal 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 →	(1) Carburetor not serviced frequently enough
5. Remove spark plug NOT FOULED OR DISCOLORED	FOULED OR DISCOLORED →	(1) Plug not serviced 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

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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) (3) Faulty auto bystarter
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

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 or fuel filter (3) Clogged fuel tank cap breather hole
FUEL FLOWS FREELY ↓		
3. Remove carburetor and check for clogged jet	CLOGGED →	(1) Clean
NOT CLOGGED		

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CLUTCH AND DRIVE/DRIVEN PULLEYS

	Probable Cause
1. If engine fires but scooter does not start	(1) Worn or slipping drive belt (2) Broken ramp plate (3) Broken drive face spring (4) Separated clutch lining (5) Damaged driven pulley shaft splines (6) Faulty transmission (7) Seized transmission
2. If scooter creeps or engine starts but stop soon	(1) Broken shoe spring (2) Stuck clutch outer and weight (3) Seized pivot
3. If engine lacks power at start (gradeability)	(1) Worn or slipping drive belt (2) Worn weight roller (3) Seized drive pulley bearing (4) Weak driven face spring (5) Worn or seized driven pulley bearing
4. If engine lacks power at high speed	(1) Worn or slipping drive belt (2) Worn weight roller (3) Worn driven pulley bearing
5. If there is an abnormal noise or smell	(1) Oily or greasy substances on drive belt/pulley (2) Worn drive belt (3) Weak driven face spring (4) Worn or seized driven pulley bearing

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) Misaligned front and rear wheels (2) Bent front fork

POOR FRONT/REAR SUSPENSION PERFORMANCE

	Probable Cause
1. If suspension is too soft	(1) Weak spring (2) Excessive load
2. If suspension is too hard	(1) Bent fork or shock rod
3. If suspension is noisy	(1) Slider binding (2) Shock spring binding (3) Damaged shock stopper rubber (4) Worn fork piston (front) (5) Worn slide pipe guide (front) (6) Loose steering stem nut

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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) Misajusted 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

OIL INDICATOR

INDICATOR DOES NOT LIGHT WHEN IGNITION SWITCH IS TURNED ON OR NO OIL IN TANK

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

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

		Probable Cause
1. Check for loose, disconnected or improperly connected terminals CORRECT	INCORRECT →	(1) Loose or disconnected terminal (2) Broken wire harness (3) Incorrect connection
2. Disconnect the green/red wire at instruments LED GOES OFF	LED REMAINS ON →	(1) Faulty LED drive circuit
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 indicator sensor

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FUEL GAUGE

POINTER DOES NOT REGISTER CORRECTLY (IGNITION SWITCH ON)

		Probable Cause
1. Check battery circuit by operating turn signals SIGNALS OPERATED PROPERLY ↓	SIGNALS DIM, REMAINED ON OR NOT OPERATED AT ALL →	(1) Blown fuse (2) Weak or dead battery (3) Faulty ignition switch (4) Disconnected terminal (5) Faulty float
2. Remove fuel level sensor and check for operation by moving float Float up: Pointer at FULL Float down: Pointer at EMPTY POINTER DOES NOT MOVE ↓	POINTER MOVED →	(1) Faulty float
3. Short the open tank unit terminals on wire harness side POINTER NOT MOVED ↓	POINTER MOVED →	(1) Broken or shorted balancing coil
4. Check for loose, disconnected or incorrectly connected terminals	INCORRECT →	(1) Disconnected terminal (2) Incorrectly connected terminals (3) Shorted or broken balancing coil/lead

POINTER FLUCTUATES OR SWINGS VIOLENTLY (IGNITION SWITCH ON)

		Probable Cause
1. Check battery circuit by operating turn signals SIGNALS OPERATED PROPERLY ↓	SIGNALS DIM, REMAINED ON OR NOT OPERATED AT ALL →	(1) Blown fuse (2) Weak or dead battery (3) Broken or shorted ignition switch (4) Loose or disconnected terminal (5) Broken wire harness
2. Remove tank unit and check for operation by moving float POINTER MOVED ↓	POINTER DOES NOT MOVE →	(1) Loose or poor connection in fuel level sensor
3. Move float up and down rapidly (up-and-down stroke/sec) POINTER MOVED ↓	POINTER DOES NOT MOVE →	(1) Lack of damper oil in meter
4. Check each connector CORRECT	INCORRECT →	(1) Loose or disconnected terminal (2) Shorted or broken balancing coil/lead

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STARTER MOTOR

STARTER MOTOR DOES NOT TURN

		Probable Cause
1. Check operation of brake stop light by operating brakes	DID NOT GO ON →	(1) Blown fuse (2) Weak or dead battery (3) Faulty stop 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 NOT OPERATED AT ALL →	(1) Dead battery
SIGNALS OPERATED PROPERLY (60–120 flashes/min) ↓		
3. Check starter relay for operation by depressing starter switch	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 sub 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, REMAINED ON OR NOT OPERATED AT ALL →	(1) Dead battery
SIGNALS OPERATED PROPERLY ↓		
2. Connect starter motor sub wires across battery terminals	TURNED PROPERLY →	(1) Loose connector/terminal (2) Poorly contacted starter relay
TURNED SLOWLY (SPEED DID NOT CHANGE) ↓		
3. Operate kickstarter	OPERATES STIFFLY →	(1) Seized engine
OPERATES NORMALLY		(2) Broken or shorted starter motor windings

STARTER WON'T STOP

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

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SERVICE TOOL NEWS HONDA

NB50 #1
REV. NOVEMBER, 1983

1983—1984 NB50 — AERO
REQUIRED SPECIAL TOOLS

(This STN supersedes NB50 #1, dated May, 1983)

No *new* Special Tools are required to service and maintain the NB50 for 1984. The tools listed below have been introduced as required tools for other models. If you don't already have these required tools, they can be ordered using normal ordering procedures. You must have all the required special tools or their approved equivalents in your dealership as per Paragraph 8.4, of the Motor Scooter Sales Agreement.

ENGINE TOOLS

INSPECTION/ADJUSTMENT

H/C	TOOL NUMBER	DESCRIPTION	APPLICABILITY
1230382	ST-AH-260-MC7	Hand Vacuum Pump with Gauge	Fuel valve inspection. Pump A937X-041-XXXXX may also be used.
0238923	07401-0010000	Float Level Gauge	Float level inspection.

CLUTCH

H/C	TOOL NUMBER	DESCRIPTION	APPLICABILITY
1049154	07725-0030000	Universal Holder	Hold flywheel to assist drive clutch nut removal and installation.
1072974	07916-1870001	Lock Nut Wrench	Remove and install the driven pulley nut.
1505809	07960-KJ90000	Clutch Spring Compressor	Compresses the driven pulley to disassemble and assemble clutch unit.

ALTERNATOR

H/C	TOOL NUMBER	DESCRIPTION	APPLICABILITY
1049154	07725-0030000	Universal Holder	Hold flywheel, assist flywheel nut removal and torquing.
0060756	07933-0010000	Flywheel Puller	Flywheel removal.

TRANSMISSION/CRANKSHAFT

H/C	TOOL NUMBER	DESCRIPTION	APPLICABILITY
0753509	07746-0010100	Attachment, 32 x 35 mm	To install transmission cover bearing #6202 and left crankcase bearing #6201.
0753491	07746-0010200	Attachment, 37 x 40 mm	To install transmission cover and left crankcase bearings #6203.
0959817	07746-0010300	Attachment, 42 x 47 mm	To install crankshaft bearings #6004.
0959874	07746-0040200	Pilot, 12 mm	Use with attachment 07746-0010100 to install left crankcase bearing #6201.
0959882	07746-0040300	Pilot, 15 mm	Use with attachment 07746-0010100 to install transmission cover bearing #6202.
0959890	07746-0040400	Pilot, 17 mm	Use with attachment 07746-0010200 to install transmission cover and left crankcase bearing #6203.
1252816	07746-0040500	Pilot, 20 mm	Use with attachment 07746-0010300 to install crankshaft bearing #6004.
0933242	07749-0010000	Driver	Use with all attachments and pilots.
1099365	07936-1660100	Bearing Remover, 12 mm	Left crankcase drive shaft bearing removal.
0413120	07936-3710200	Remover Weight	

(over)

ROUTING Copy 1: ☐ GENERAL MANAGER ☐ PARTS MANAGER ☐ TOOL CATALOG BINDER
Copy 2: ☐ SERVICE MANAGER ☐ SERVICE TECHNICIANS ☐ SERVICE MANUAL BINDER

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ENGINE TOOLS (CONTINUED)

TRANSMISSION/CRANKSHAFT (continued)

H/C	TOOL NUMBER	DESCRIPTION	APPLICABILITY
1490978	07935-KG80000	Case Puller	• Kick starter driven gear removal. Use with special bolts. • Crankcase separation.
1505817	07965-1480100	Assembly Collar	Use together for assembling the crankshaft, crankcases, and seals.
1503275	07965-1480200	Assembly Bolt	

CHASSIS TOOLS

WHEEL/BRAKE

H/C	TOOL NUMBER	DESCRIPTION	APPLICABILITY
1021252	07746-0040700	Pilot, 30 mm	Front wheel bearing #6200 installation.
0933242	07749-0010000	Driver	

SUSPENSION/FRAME

H/C	TOOL NUMBER	DESCRIPTION	APPLICABILITY
0997882	*M9361-412-099788 (07702-0010000)	Adjustable Pin Spanner Wrench	Steering stem adjuster nut removal/adjustment.
0959817	07746-0010300	Attachment, 42 x 47 mm	Top and bottom steering head race installation. Use with 25 mm Pilot 07746-0040600 and 07749-0010000.
0959916	07746-0040600	Pilot, 25 mm	Use with 07746-0010300 to install top and bottom steering head races.
0933242	07749-0010000	Driver	Use with attachments and pilots.
0484493	07947-1180001	Fork Seal Driver	Steering stem bottom race installation. Use with old bearing race turned over for additional height.

* This tool is substituted for the tool in parenthesis. The tool in parenthesis is listed in the shop manual but is not available from American Honda Motor Co., Inc.

CONVENIENCY TOOLS

The following tools are available from American Honda but are not required for this model.

H/C	TOOL NUMBER	DESCRIPTION	APPLICABILITY
0688168	07959-3290001	Rear Shock Absorber Compressor	Rear shock absorber dis/assembly.
1099456	07967-GA70000	Rear Shock Absorber Compressor Attachment	
0324210	07967-1180100	Spring Attachments	

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SERVICE DEPARTMENT

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0959890	07746-0040400	Pilot, 17 mm	Use with attachment 07746-0010200 to install transmission cover and left crankcase bearing #6203.
1252816	07746-0040500	Pilot, 20 mm	Use with attachment 07746-0010300 to install crankshaft bearing #6004.
0933242	07749-0010000	Driver	Use with all attachments and pilots.
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SERVICE DEPARTMENT

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HONDA

NB50 1983

Provisional Service Information

For Dealers Only
March 1983

Discontinue using this information after the 1983 Shop Manual becomes available.

AMERICAN HONDA MOTOR CO., INC.
SERVICE COMMUNICATIONS

22008303 DM

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MSV 5610

Reorder No. S0030

FOREWORD

This Provisional Service Information provides service data for the 1983 NB50.

Use the following reference materials until the NB50 Shop Manual becomes available.

—This provisional for specifications

—NH80 Provisional for Lubrication, Maintenance and Electrical Switches

—Set-up Instructions

—Owner's Manual

—NU50 Shop Manual for drive line service.

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GENERAL SPECIFICATIONS

ITEM			SPECIFICATION
DIMENSIONS	Overall length		1,600 mm (63.0 in)
	Overall width		630 mm (24.8 in)
	Overall height		960 mm (37.8 in)
	Wheelbase		960 mm (37.8 in)
	Ground clearance		105 mm (4.1 in)
	Dry weight		56 kg (124 lb)
FRAME	Type		Back bone
	Front suspension, travel		Leading link, 55 mm (2.16 in)
	Rear suspension, travel		Engine/Final drive unit swingarm 60 mm (2.36 in)
	Front tire size, pressure (cold)		2.75—10 2 PR, 150 kPa (1.50 kg/cm^2, 21 psi)
	Rear tire size, pressure (cold)		2.75—10 2 PR, 175 kPa (1.75 kg/cm^2, 24 psi)
	Front brake, lining swept area		Internal expanding shoe
	Rear brake, lining swept area		Internal expanding shoe
	Fuel capacity		3.2 liters (0.85 US gal)
	Fuel reserve capacity		0.5 liters (0.13 US qt)
	Caster angle		62°
	Trail		78 mm (3.1 in)
ENGINE	Type		Air cooled 2-stroke
	Cylinder arrangement		Single cylinder 15° inclined from vertical
	Bore and stroke		40 x 39.3 mm (1.57 x 1.54 in)
	Displacement		49.3 cm^3 (3.01 cu. in.)
	Compression ratio		7.2:1
	Transmission oil capacity		90 cc (3.0 oz)
	Oil tank capacity		0.9 liters (0.95 US qt)
	Lubrication system		Oil injector pump, 2-stroke oil
	Air filtration		Oiled urethane foam
	Port timing	Intake Open	Reed valve controlled
		Close	Reed valve controlled
		Exhaust Open	71° BBDC
		Close	71° ABDC
		Scavenge Open	52° BBDC
		Close	52° ABDC
	Engine dry weight		15.2 kg (33.5 lb)
	Idle speed		1,800 ± 100 rpm
CARBURETION	Carburetor type		Piston valve
	Identification number		PA05A
	Air screw initial setting		1½ turns out
	Float level		12.2 mm (0.48 in)
DRIVE TRAIN	Clutch type		Automatic dry centrifugal clutch
	Primary reduction		V-belt
	Gear ratio		2.4—1.2 : 1
	Final reduction		7.978:1

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ITEM		SPECIFICATION
ELECTRICAL	Ignition	Condenser capacitive discharge ignition (CDI)
	Starting system	Starting motor and kick starter
	Alternator	12 V, 89W/5000 rpm
	Spark plug	NGK: BPR6HS (BPR4HS, BPR8HS) ND: W20FPR (W14FPR, W24FPR)
	Spark plug gap	0.6—0.7 mm (0.024—0.028 in)
	Ignition timing "F" mark	18° BTDC
	Battery capacity	12V4AH
	Fuse capacity	7A
LIGHTS	Headlight Low/High	12V-25/25W
	Tail/stoplight	12V-8/25W SAE No. 1157
	Turn signal Front/rear	12V-32 cp SAE No. 1073
	Speedometer light	12V-1cp SAE No. 161
	High beam indicator	12V-2cp SAE No. 194
	Turn signal indicator	12V-2cp SAE No. 194

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STANDARDS AND SERVICE LIMITS

Cylinder Head/Piston/Cylinder

ITEM		STANDARD	SERVICE LIMIT
Cylinder head	Warpage	—	0.10 mm (0.004 in)
Piston	Piston O.D. (4 mm from bottom)	39.955 — 39.970 mm (1.5730—1.5736 in)	39.90 mm (1.571 in)
	Cylinder-to-piston clearance	0.035—0.050 mm (0.0013—0.0019 in)	0.100 mm (0.0039 in)
	Piston pin bore	10.002—10.008 mm (0.3938—0.3940 in)	10.03 mm (0.395 in)
	Piston pin O.D.	9.994—10.000 mm (0.3935—0.3937 in)	9.97 mm (0.393 in)
	Piston-to-piston pin clearance	0.002—0.012 mm (0.0001—0.0005 in)	0.040 mm (0.0016 in)
	Piston ring end gap (top/second)	0.15—0.35 mm (0.006-0.014 in)	0.60 mm (0.024 in)
	Connecting rod small end I.D.	14.005—14.017 mm (0.5514—0.5519 in)	14.03 mm (0.552 in)
Cylinder	I.D.	40.000—40.015 mm (1.5748—1.5754)	40.05 mm (1.577 in)

Crankshaft

ITEM	STANDARD	SERVICE LIMIT
Connecting rod big end side clearance	—	0.60 mm (0.024 in)
Connecting rod big end radial clearance	—	0.05 mm (0.002 in)
Crankshaft runout A	—	0.15 mm (0.006 in)
B	—	0.10 mm (0.004 in)

Drive Pulley/Clutch/Driven Pulley

ITEM	STANDARD	SERVICE LIMIT
Movable drive face bushing I.D.	22.035—22.095 mm (0.8675—0.8699 in)	22.13 mm (0.871 in)
Drive face boss O.D.	21.955—22.025 mm (0.8644—0.8671 in)	21.96 mm (0.865 in)
Weight roller O.D.	15.92—16.08 mm (0.627—0.633 in)	15.4 mm (0.61 in)
Clutch outer I.D.	107.0—107.2 mm (4.21—4.22 in)	107.5 mm (4.23 in)
Driven face O.D.	33.950—33.975 mm (1.3366—1.3376 in)	33.930 mm (1.3358 in)
Movable driven face I.D.	34.000—34.025 mm (1.3386—1.3396 in)	34.060 mm (1.3409 in)
Drive face spring free length	87.9 mm (3.46 in)	—

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Front Wheel/Brake/Suspension

ITEM		STANDARD	SERVICE LIMIT
Axle shaft runout		—	0.2 mm (0.01 in)
Rim runout	Radial	—	2.0 mm (0.08 in)
	Axial	—	2.0 mm (0.08 in)
Front spring free length		131.0 mm (5.12 in)	127 mm (5.0 in)

Rear Wheel/Brake/Suspension

ITEM	STANDARD	SERVICE LIMIT
Rear wheel rim runout	—	2.0 mm (0.08 in)
Brake drum I.D.	95.0 mm (3.74 in)	95.5 mm (3.76 in)
Brake lining thickness	5.0 mm (0.20 in)	2.0 mm (0.08 in)
Rear shock spring free length	195.7 mm (7.70 in)	189.8 mm (7.47 in)

Charging System

ITEM		SPECIFICATION
Battery	Capacity	12V 4 AH
	Specific gravity	1.270—1.290 at 20°C (68°F)
	Charging rate	0.4 A max.
Alternator	Charging rpm	2,300 rpm max./14.2V
	Capacity	0.6A min./4,000 rpm (17.4V)
		1.1A max./6,000 rpm (17.7V)

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TORQUE VALUES

Engine

Item	Thread Dia (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Cylinder head	8	8—12 (0.8—1.2, 6— 9)	While the engine is cold (below 35°C, 95°F).
Flywheel	10	35—40 (3.5—4.0, 25—29)	
Drive pulley	10	30—35 (3.0—3.5, 22—25)	
Clutch outer	10	30—35 (3.0—3.5, 22—25)	
Driven face and clutch	—	35—40 (3.5—4.0, 25—29)	
Intake pipe	6	8—12 (0.8—1.2, 6— 9)	
Carburetor	6	9—12 (0.9—1.2, 7— 9)	While the engine is cold (below 35°C, 95°F).

Frame

Item	Thread Dia (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Steering stem nut	—	80—120 (8.0—12.0, 58—87)	
Front axle nut	10	40—50 (4.0—5.0, 29—36)	Self-locking nut
Engine hanger bolt	10	35—40 (3.5—4.0, 25—29)	Self-locking nut
Rear axle nut	14	80—100 (8.0—10.0, 58—72)	Self-locking nut
Rear shock absorber (Upper)	10	30—40 (3.0—4.0, 22—29)	
Rear shock absorber (Lower)	8	25—35 (2.5—3.5, 18—25)	
Front fork pivot arm nut	8	20—30 (2.0—3.0, 14—22)	

Torque specifications listed above are for important fasteners. Others should be tightened to standard torque values 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— 6 (0.4—0.6, 3— 4)	5 mm screw	3— 5 (0.3—0.5, 3— 4)
6 mm bolt and nut	8—12 (0.8—1.2, 6— 9)	6 mm screw	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	20—30 (2.0—3.0, 14—22)
12 mm bolt and nut	50—60 (5.0—6.0, 36—43)	10 mm flange bolt and nut	30—40 (3.0—4.0, 22—29)

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MAINTENANCE

Maintenance Schedule

Perform the Pre-ride Inspection in the Owner's Manual at each scheduled maintenance period.
I : INSPECT AND CLEAN, ADJUST, LUBRICATE, OR REPLACE IF NECESSARY.
C: CLEAN
R: REPLACE
A: ADJUST
L: LUBRICATE

This maintenance schedule is based upon average riding conditions. Scooters subject to severe use, or ridden in unusally dust areas, require more frequent servicing.	INITIAL INSPECTION	REGULAR SERVICE PERIOD Perform at every indicated month or mileage interval, whichever occurs first	
	1 month 200 miles (300 km)	12 months 1,000 miles (1,500 km)	24 months 2,000 miles (3,000 km)
AIR CLEANER ELEMENT		(EVERY 6 MONTHS) C	
CARBURETOR	I	I	I
*THROTTLE OPERATION	I	I	I
OIL PUMP	I	I	I
FUEL FILTER SCREEN	C	C	C
FUEL LINE	I	I	I
DECARBONIZE CYLINDER HEAD, CYLINDER, PISTON AND MUFFLER			C
TRANSMISSION OIL			R
CLUTCH SHOE WEAR			I
TIRES, PRESSURE AND CONDITION	I	I	I
WHEEL TRUENESS	I	I	I
*BRAKE OPERATION AND FREE PLAY	I	I	I
BRAKE LININGS		I	I
STEERING HEAD BEARINGS	I		I
SUSPENSION OPERATION		I	I
NUTS, BOLTS	I		I
*SPARK PLUG		R	R
*BATTERY FLUID LEVEL	I	I	I
BATTERY FLUID SPECIFIC GRAVITY		I	I
LIGHTS AND HORN	I	I	I

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

NOTES: 1. Service more frequently when riding in dusty areas.
2. For higher odometer readings, repeat at the frequency intervals established here.

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