Official

HONDA

SHOP MANUAL

NH125 aero125



'84

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IMPORTANT SAFETY NOTICE

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

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

NOTE: Gives helpful information.

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

HOW TO USE THIS MANUAL

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

Sections 1 through 3 apply to the whole motor scooter, while sections 4 through 16 describe parts of the 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 familiar with this scooter read the Technical Features in section 17.

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

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION WHATEVER.
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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

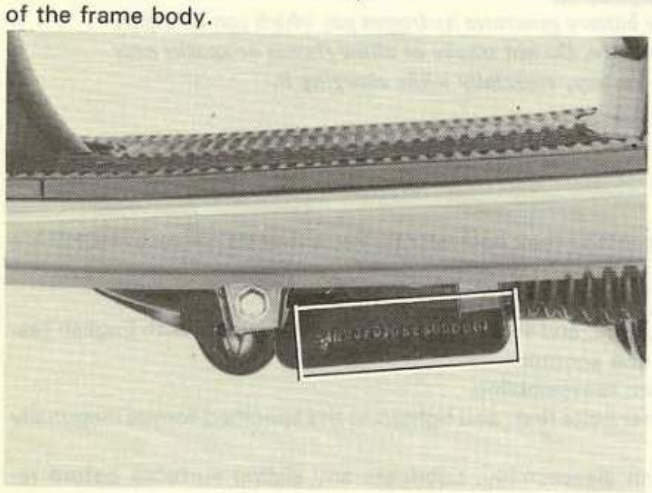
1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that do not meet HONDA's design specifications may damage the scooter.
2. Use the special tools designed for this product.
3. Use only metric tools when servicing this scooter. Metric bolts, nuts, and screws are 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.

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MODEL IDENTIFICATION



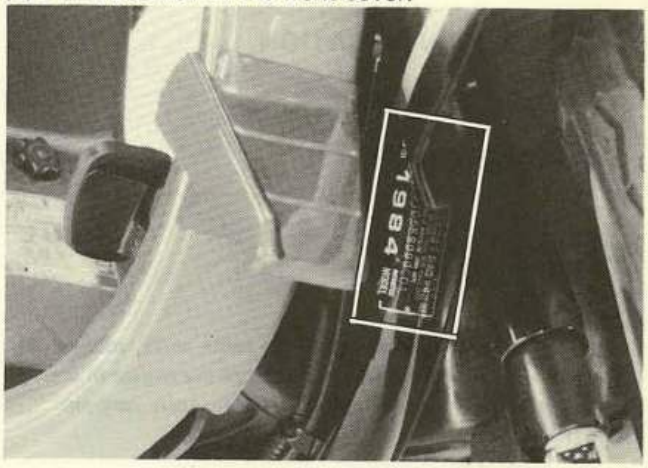
The frame serial number is stamped on the left side of the frame body.



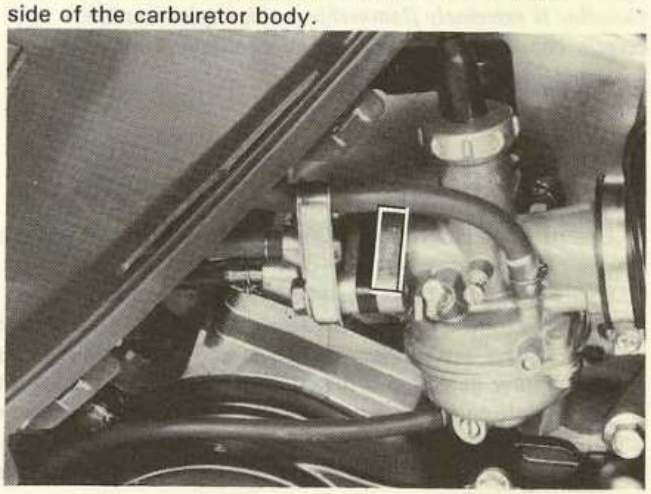
The engine serial number is stamped on the back of the crankcase near the rear wheel.



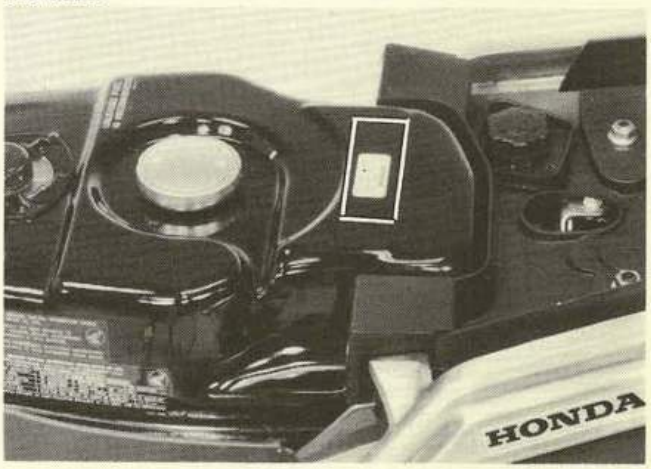
The vehicle identification number is on the frame pipe in the center of the front cover.



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



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



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SPECIFICATIONS

ITEM				SPECIFICATION
DIMENSIONS	Overall length			1750 mm (68.9 in)
	Overall width			645 mm (25.4 in)
	Overall height			1090 mm (42.9 in)
	Wheelbase			1205 mm (47.5 in)
	Seat height			755 mm (29.7 in)
	Ground clearance			110 mm (4.3 in)
	Dry weight			89 kg (196 lb)
	Curb weight			96.4 kg (24.2 lb)
FRAME	Type			Back bone
	Front suspension, travel			Bottom link, 86.4 mm (3.4 in)
	Rear suspension, travel			Engine/Final drive unit swing arm, 75.5 mm (3.0 in)
	Gross vehicle weight rating			240 kg (530 lb)
	Vehicle capacity load			145 kg (320 lb)
	Front tire size			3.50—10—4PR
	Rear tire size			3.50—10—4PR
	Cold tire pressure	Up to 90 kg (200 lbs) load	Front	21 psi (150 kPa, 1.5 kg/cm²)
			Rear	28 psi (200 kPa, 2.0 kg/cm²)
		Up to vehicle capacity load	Front	21 psi (150 kPa, 1.5 kg/cm²)
			Rear	36 psi (250 kPa, 2.5 kg/cm²)
	Front brake, lining swept area			Internal expanding shoe, 86.4 cm² (13.4 sq in)
	Rear brake, lining swept area			Internal expanding shoe, 86.4 cm² (13.4 sq in)
	Fuel capacity			7.0 liters (1.8 US gal)
	Caster			27°
	Trail			73 mm (2.9 in)
ENGINE	Type			Air cooled 2-stroke
	Cylinder arrangement			Single cylinder 20° inclined from vertical
	Bore and stroke			55 x 52.4 mm (2.17 x 2.06 in)
	Displacement			124 cm³ (7.6 cu in)
	Compression ratio			6.7 : 1
	Maximum horsepower			9.5 BHP/7000 rpm
	Maximum torque			1.3 kg-m (8.7 ft-lb)/5.000 rpm
	Transmission oil capacity			90 cc (0.09 US qt)
	Oil tank capacity			1.3 liters (1.4 US qt)
	Lubrication system			Lubricated by mixing oil with fuel
	Air filtration			Oiled urethane foam
	Cylinder compression			12.0 kg/cm² (171 psi)
	Port timing	Intake	Open	Reed valve controlled
			Close	Reed valve controlled
		Exhaust	Open	84° BBDC
			Close	84° ABDC
		Scavenge	Open	57° BBDC
			Close	57° ABDC
	Engine dry weight			21.3 kg (46.9 lb)
	Idle speed			1,800 ± 100 rpm

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ITEM		SPECIFICATION	
CARBURETION	Carburetor type, size	Piston valve, 18 mm (0.71 in) venturi dia.	
	Identification number	PB02B	
	Air screw	Refer to page 4-11	
	Float level	8.5 mm (0.33 in)	
DRIVE TRAIN	Clutch type	Automatic dry centrifugal clutch	
	Primary reduction	V-belt	
	Gear ratio	2.23~1.22	
	Final reduction	6.061 : 1	
ELECTRICAL	Ignition type	C.D.I.	
	Ignition timing "F" mark	18°BTDC at idle	
	Starting system	Starting motor	
	Alternator	12V–131W/5,000 rpm	
	Battery capacity	12V–5AH	
	Spark plug		
	Spark plug gap	0.6–0.7 mm (0.024–0.028 in)	
	Fuse capacity	7A	
LIGHTS	Headlight (High/Low)	12V–35/35 W	
	Tail/brake light	12V–3/32 cp	
	Turn signals (Front)	12V–32 cp	SAE No. 1156
	(Rear)	12V–32 cp	SAE No. 1156
	Speedometer light	12V–2 cp	SAE No. 57
	Oil indicator light	12V–2 cp	SAE No. 57
	Turn signal indicator	12V–2 cp	SAE No. 57
	High beam indicator	12V–2 cp	SAE No. 57

Spark plug	NGK	ND
Standard	BPR6HS	W20FPR
For cold climate (Below 5°C, 41°F)	BPR4HS	W14FPR-L
For extended high speed riding	BPR7HS	W22FPR

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TORQUE VALUES

ENGINE

ITEM	THREAD DIA. mm	TORQUE N·m (kg-m, ft-lb)	REMARKS
Cylinder head	8	18–12 (1.8–2.2, 13–16)	While the engine is cold (below 35°C, 95°F).
Flywheel	10	35–40 (3.5–4.0, 25–29)	
Drive pulley	12	50–60 (5.0–6.0, 36–43)	
Clutch outer	10	35–40 (3.5–4.0, 25–29)	
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)	
Crankcase	6	8–12 (0.8–1.2, 6–9)	

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	12	50–70 (5.0–7.0, 36–51)	Self-locking nut
Engine hanger bolt	10	27–33 (2.7–3.3, 20–24)	Self-locking nut
Rear axle nut	14	80–100 (8.0–10.0, 58–72)	Self-locking nut
Rear shock absorber (Upper)	10	30–45 (3.0–4.5, 22–33)	
Rear shock absorber (Lower)	8	20–30 (2.0–3.0, 14–22)	
Rear shock absorber damper lock nut	8	15–25 (1.5–2.5, 11–18)	Apply a locking agent.
Rear brake arm	6	8–12 (0.8–1.2, 6–9)	
Front brake arm	6	8–12 (0.8–1.2, 6–9)	
Front fork pivot arm	8	20–24 (2.0–2.4, 14–17)	
Front fork (Upper)	8	30–36 (3.0–3.6, 22–26)	
Front fork (Lower)	8	15–20 (1.5–2.0, 11–17)	
Front fork damper lock nut	8	15–25 (1.5–2.5, 11–18)	
Muffler	8	40–50 (4.0–5.0, 29–36)	

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

*: These tools are designed and have not been used before.

DESCRIPTION	NUMBER	ALTERNATIVE	NUMBER	REF, PAGE
Hand vacuum pump with gauge	A937X–041–XXXXX	Hand vacuum pump (USA only: Included in turbo kit)	ST-AH-260-MC7	4–14
Bearing puller	07931–4630000			12–19, 12–20
*Front shock absorber attachment set	07967–KG80000	Puller attachment Puller shaft	07967–KG80100 07967–KG80200	12–19, 12–20
Universal bearing puller	07631–0010000			10–3
Lock nut wrench, 39 mm	07916–1870002			8–10, 8–17
Lock nut wrench	07916–1870100			12–22, 12–26
Crankcase puller	07935–KG80000			8–8, 10–2
Bearing remover set, 12 mm	07936–1660001	Bearing remover 12 mm Remover weight	07936–1660100 07741–0010201	9–4 9–4
Bearing remover, 17 mm	07936–3710300			9–4
Bearing remover handle	07936–3710100			9–4
Remover weight	07741–0010201			9–4
Bearing driver	07945–GC80000			8–15
Bearing driver attachment 28 x 30 mm	07946–1870100			8–16
Seal and Case assembling tool				
~1. Assembly tool	07965–1480200	Right crankshaft		10–6
~2. Assembly collar	07965–GC70100	Left crankshaft		10–5
~3. Assembly tool	07965–1660200			
Clutch spring compressor	07960–KJ90000			8–10, 8–17
Rear shock absorber attachment A	07967–GA70101			13–7, 13–8
Spring attachment holder	07967–GC80000	Spring attachment holder	07967–1180100	13–7, 13–8

COMMON

DESCRIPTION	NUMBER	ALTERNATIVE	NUMBER	REF, PAGE
Float level gauge	07401–0010000			4–7
Lock nut wrench 30 x 32 mm	07716–0020400			12–8, 12–9
Extension bar	07716–0020500			12–8, 12–9
Universal holder	07725–0030000			7–2, 7–5, 8–2, 8–10, 8–17
Rotor puller	07733–0010000	Flywheel puller	07933–0010000	7–3,
Pilot 12 mm	07746–0040200			12–12
Driver outer 32 x 35 mm	07746–0010100			12–12, 13–1
Pilot 15 mm	07746–0040300			13–1
Driver outer 37 x 40 mm	07746–0010200			9–4, 9–5
Pilot 17 mm	07746–0040400			9–4, 9–5, 8–16
Driver outer 42 x 47 mm	07746–0010300			9–4, 12–24
Pilot 20 mm	07746–0040500			9–4
Driver outer 52 x 55 mm	07746–0010400			10–5
Pilot 25 mm	07746–0040600			10–5
Driver	07749–0010000			9–4, 9–5, 9–6, 10–5, 12–12, 12–24
Pin spanner	07702–0020000	Adjustable pin spanner (USA only)	M9361–412–099788	12–26
Bearing remover shaft	07746–0050100			8–13, 12–12
Bearing remover head 12 mm	07746–0050300			8–13, 12–12
Bearing remover head 17 mm	07746–0050500			8–13
Rear shock absorber compressor	07959–3290001			13–7, 13–8

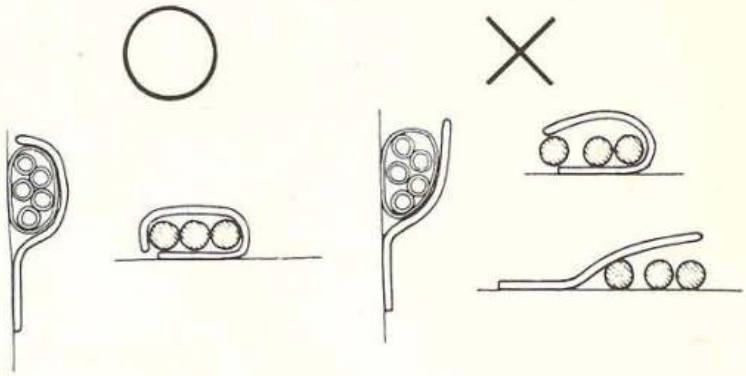
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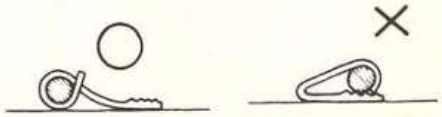
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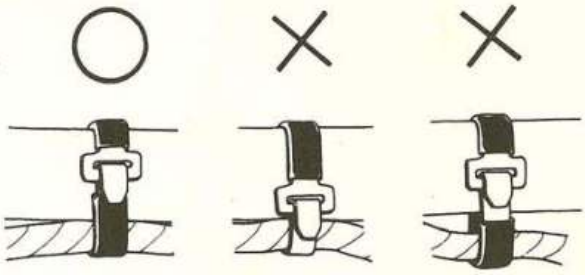
CABLE & HARNESS ROUTING

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.

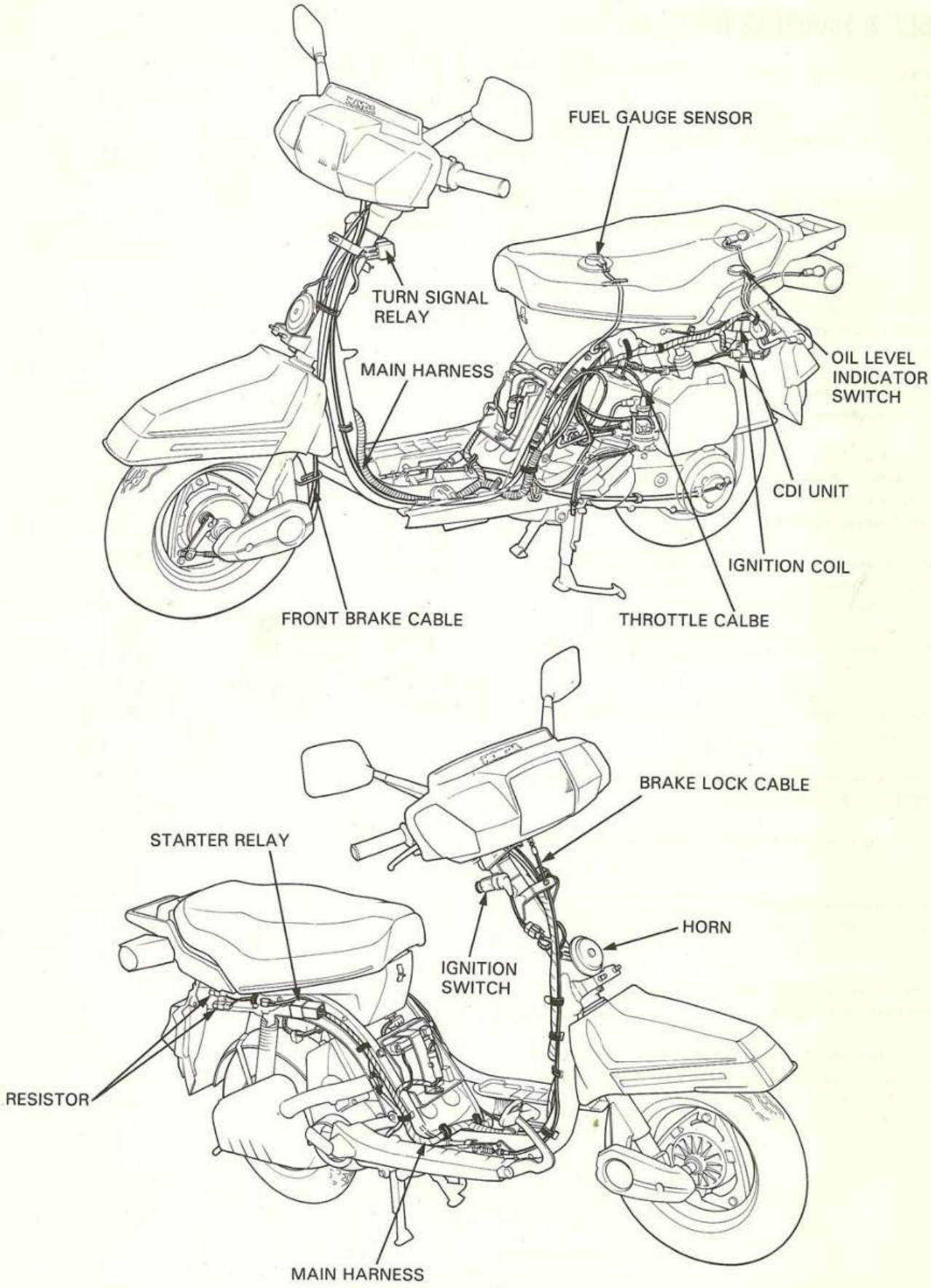
- Do not squeeze wires against the weld or end of its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.
- Route harnesses so they are not pulled tight 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 them 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.
- After routing, check that the wire harnesses are not twisted or kinked.
- Wire harnesses routed along the handlebars should not be pulled tight, have excessive slack, be pinched, or interfere with adjacent or surrounding parts in all steering positions.



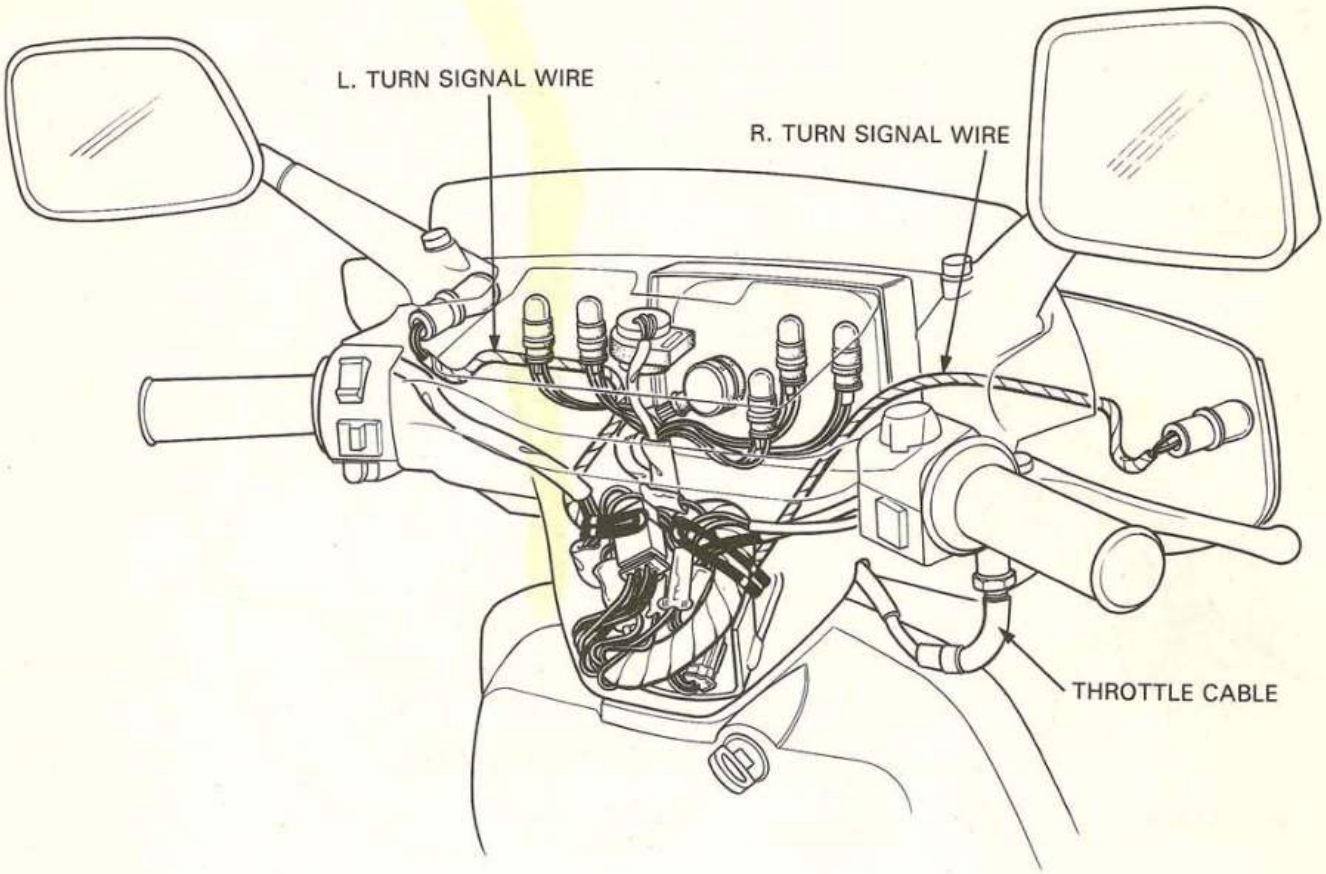


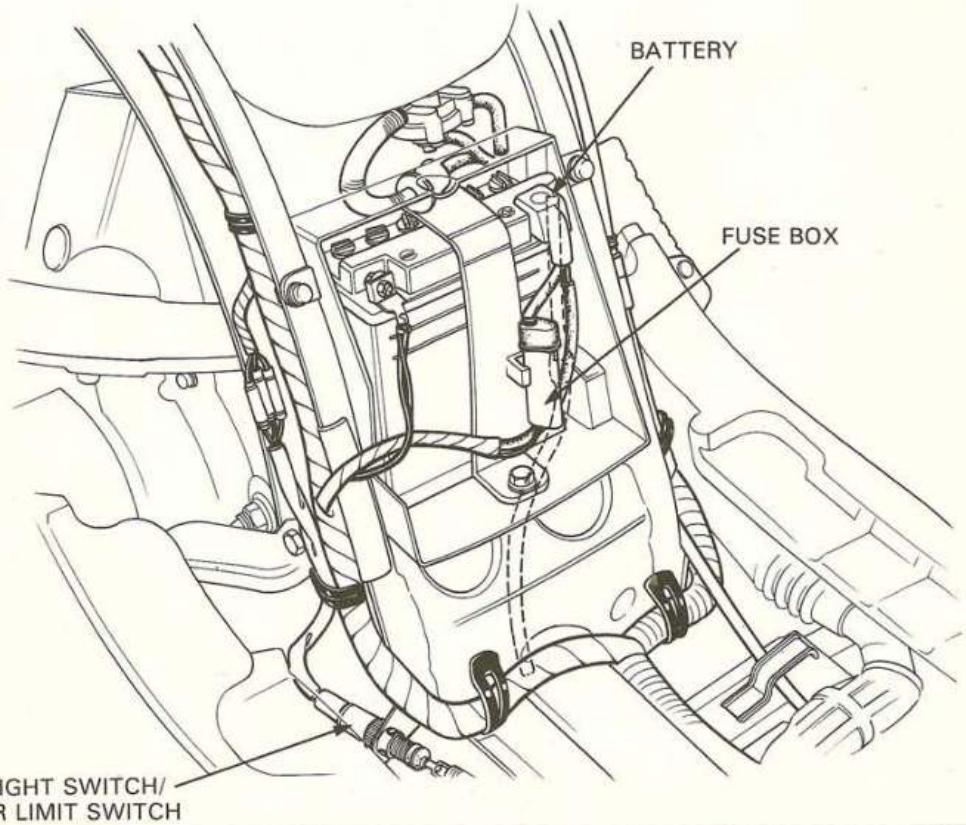


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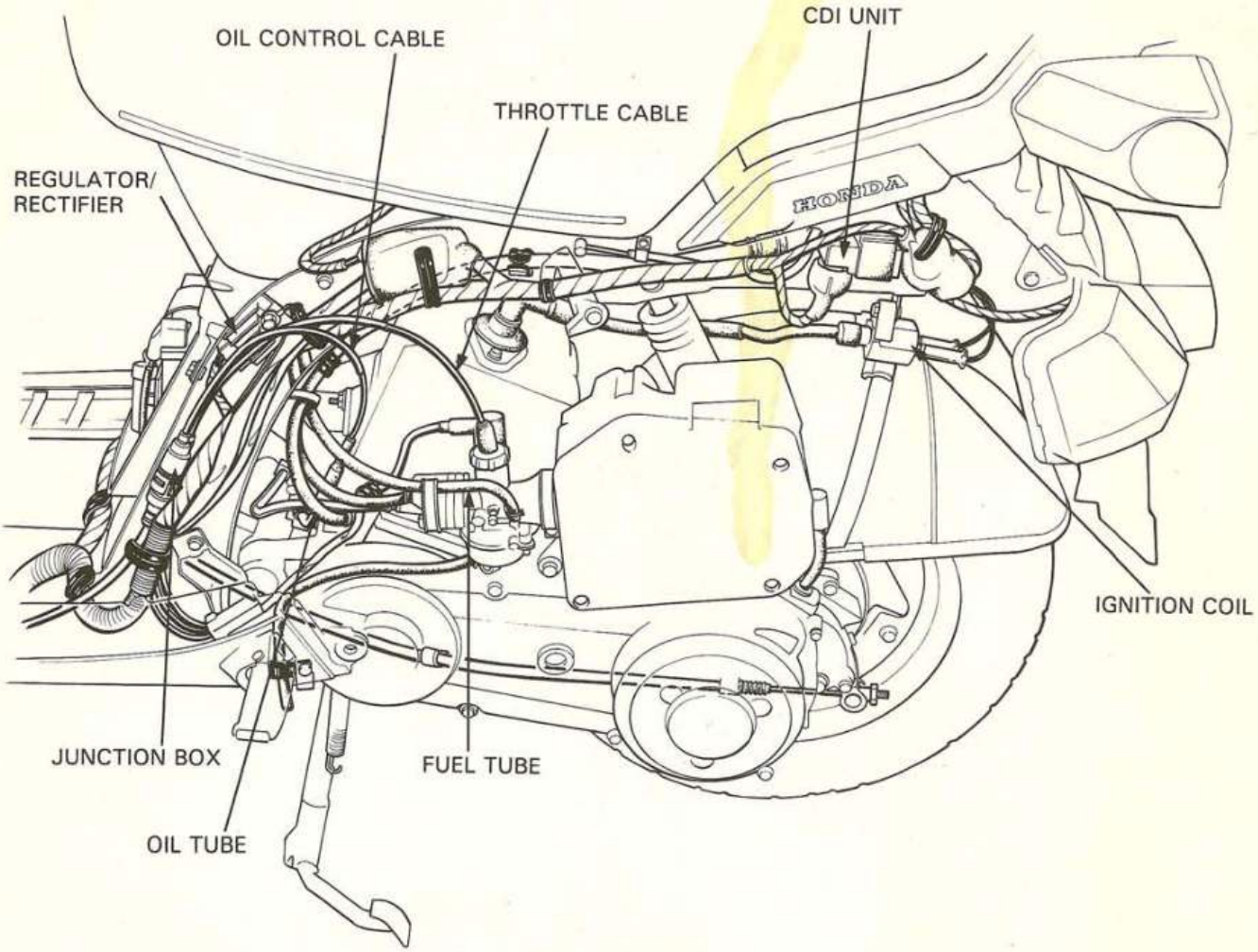


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EXHAUST AND NOISE EMISSION CONTROL SYSTEMS (U.S.A. ONLY)

The U.S. Environmental Protection Agency requires manufacturers to certify that scooters built after December 31, 1977 will comply with applicable emission standards during their useful life when operated and maintained according to the instructions provided, and that scooters built after January 1, 1983 will comply with applicable noise emission standards when operated and maintained according to the instructions provided for one year or 6.000 km (3.730 miles) after the time of sale to the ultimate purchaser. Compliance with the terms of the Distributor's warranty for Honda Motorcycle Emission Control System is necessary in order to keep the emission control system warranty in effect (U.S.A. only).

Noise Emission Control System

TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED:

Federal law prohibits the following acts or causing thereof:

(1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

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

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

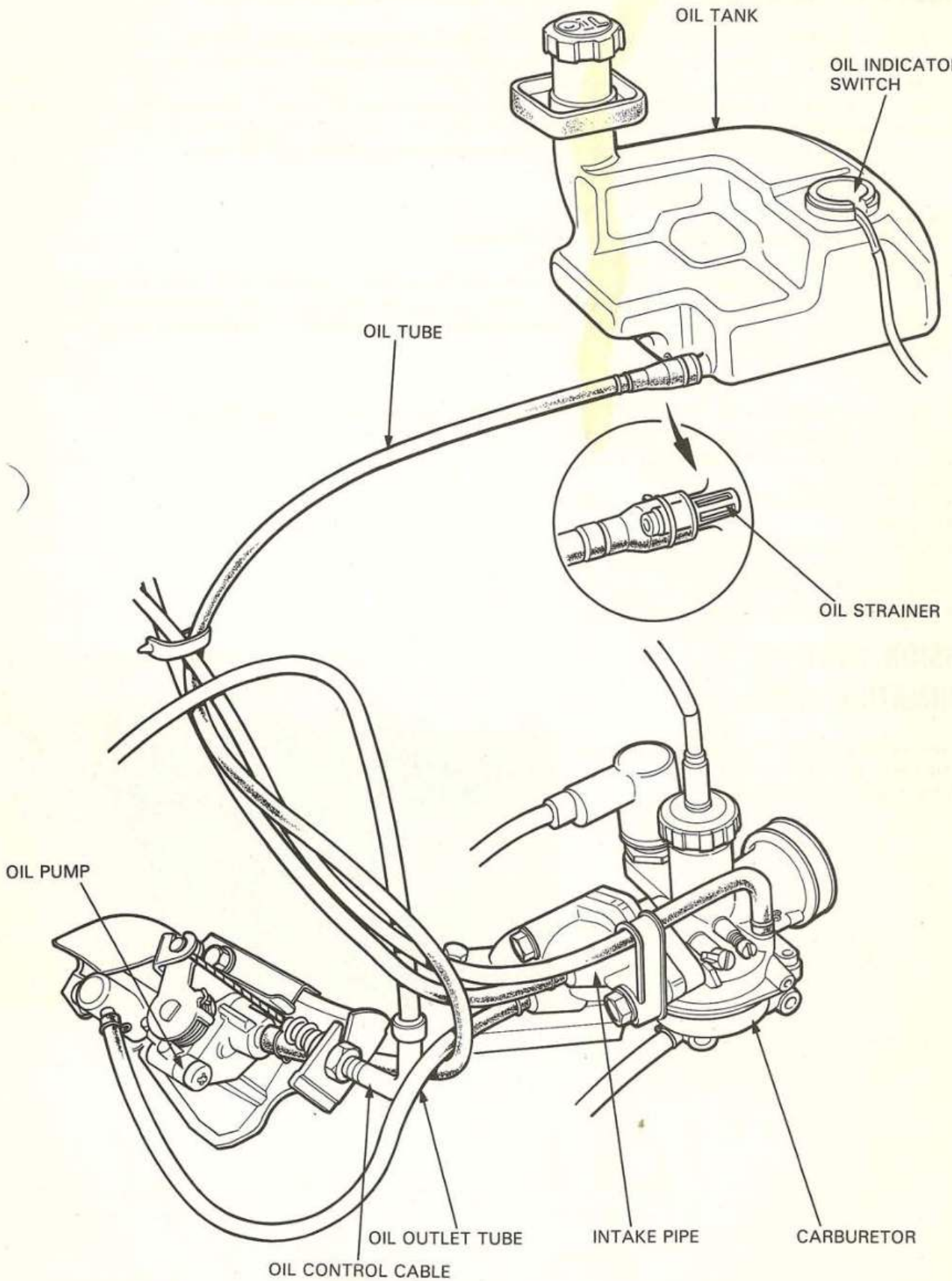
EMISSION CONTROL INFORMATION LABEL

An emission control information label is attached to the frame below the seat, as shown.
It gives basic tune-up specification.

EMISSION CONTROL INFORMATION LABEL



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SERVICE INFORMATION

GENERAL

- The engine must be removed from the frame when removing and installing the oil pump.
- When removing and installing the oil pump, use care not to allow dust and dirt to enter the engine and oil line.
- 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.

SPECIFICATIONS

Engine oil recommendation:	Honda 2-stroke oil or equivalent
Final reduction oil capacity:	90 cc (3.0 oz)
Final reduction oil recommendation:	Honda 4-stroke oil or equivalent Viscosity: SAE 10W-40 API Service classification: SE or SF

TORQUE VALUE

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

TROUBLESHOOTING

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

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

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

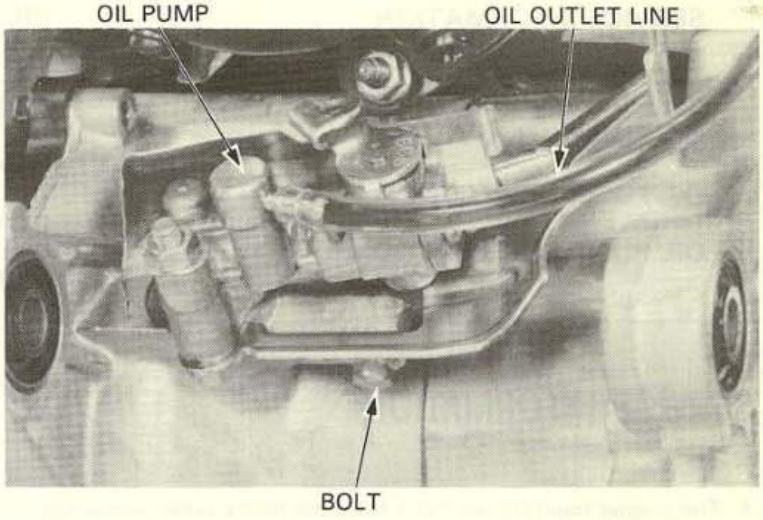
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OIL PUMP REMOVAL

NOTE:

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

Remove the engine (Section 5).
Remove the starter motor (Page 15-12).
Disconnect the oil outlet line from the intake pipe.
Remove the oil pump attaching bolt and remove the oil pump.



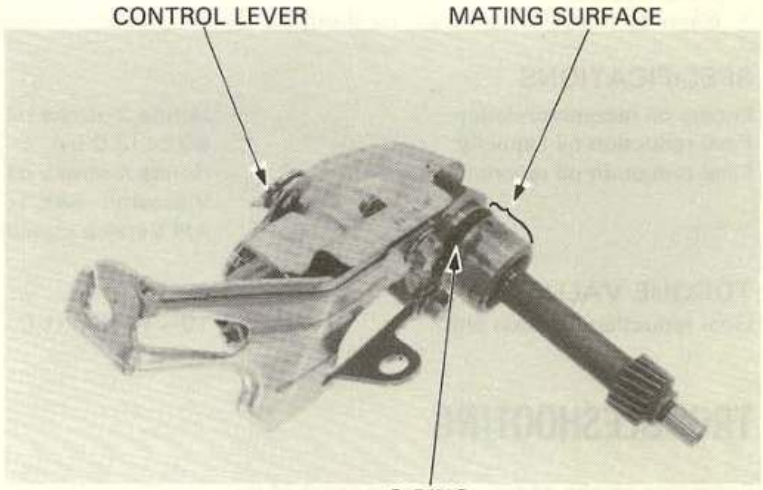
OIL PUMP INSPECTION

Remove the oil pump and check for 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.

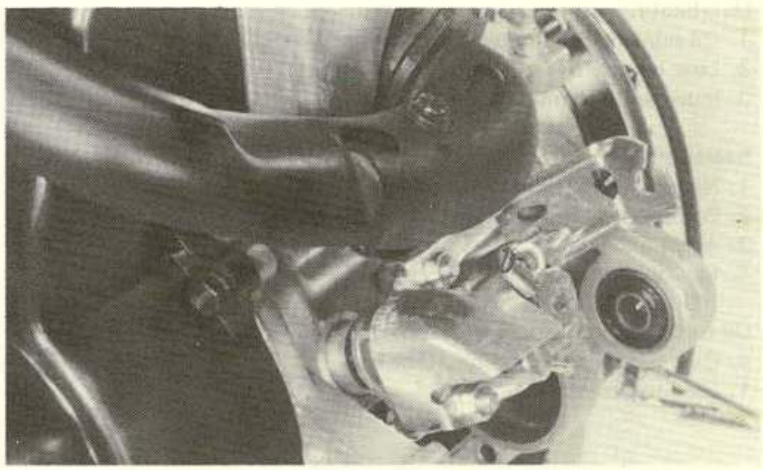


OIL PUMP INSTALLATION

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.*

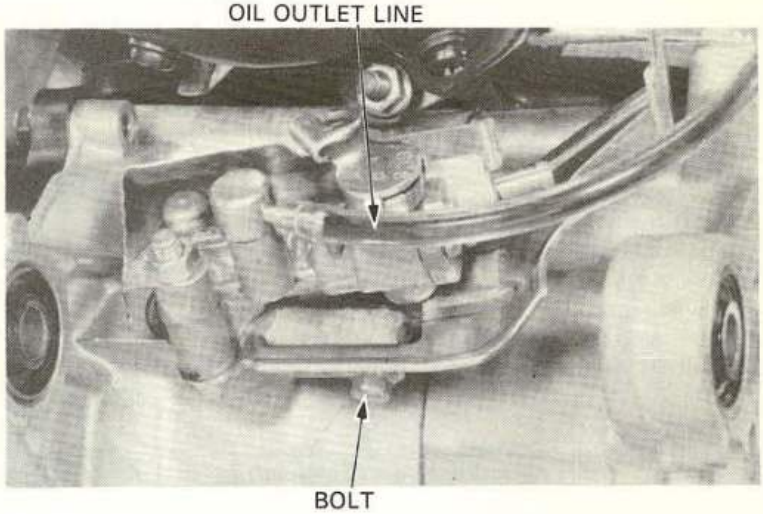


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Tighten the oil pump attaching bolt securely.
Connect the oil outlet line.
Install the starter motor (Page 15-14).
Install the engine (Page 5-4).

NOTE:

After installation, perform the following inspections and adjustment:
- Control cable adjustment (Page 2-4).
- Oil pump bleeding.
- Check for oil leaks.



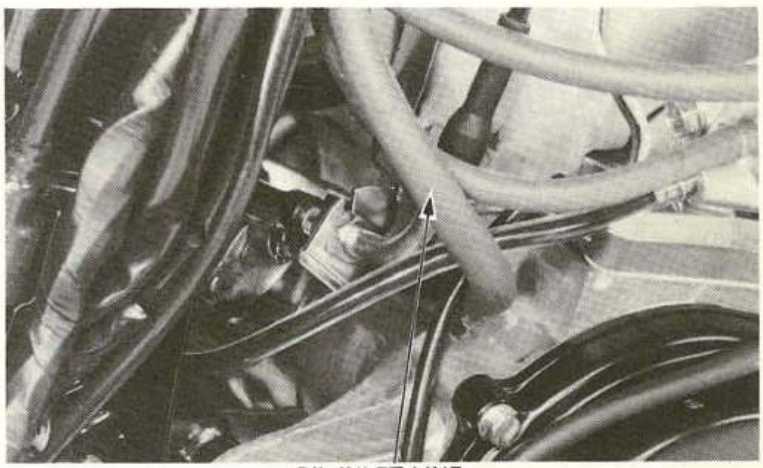
OIL PUMP BLEEDING

CAUTION:

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

Fill the oil tank with the recommended oil.
Place a shop towel around the oil pump.
Disconnect the oil inlet line from the oil pump.
Fill the oil pump with oil by squirting clean oil through the joint (about 3 cc).
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.



CAUTION:

Bleed air from the oil outlet line after bleeding the oil inlet line and oil pump.

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OIL OUTLET LINE

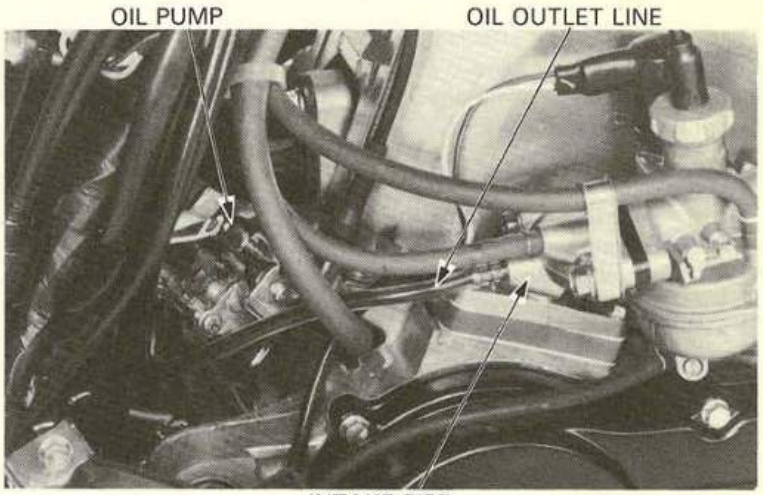
1. Disconnect the oil outlet line at the carburetor and force air out of the tube by filling it with oil using an oil squirt can.
2. Connect the oil outlet line to the carburetor.
3. Start the engine and allow it to idle with the oil control lever in the fully open position, making sure that there are 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.

WARNING

- *Preform this operation in a well ventilated area.*

CAUTION:

- *Do not race the engine unnecessarily.*



OIL PUMP CONTROL CABLE ADJUSTMENT

NOTE:

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

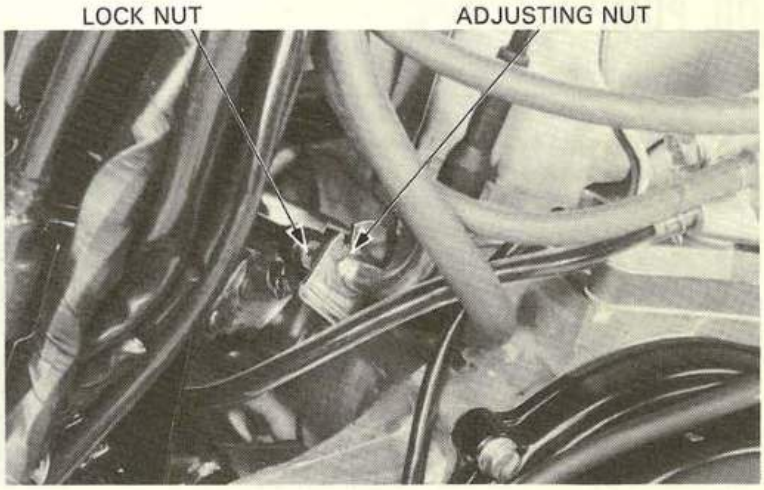
Remove the frame center cover (Page 11-3).
Loosen the oil pump control cable lock nut and open the throttle fully.
Check that the aligning mark on the oil pump control lever is aligned with the index mark projection on the pump body.
Adjust if necessary by turning the adjusing nut.

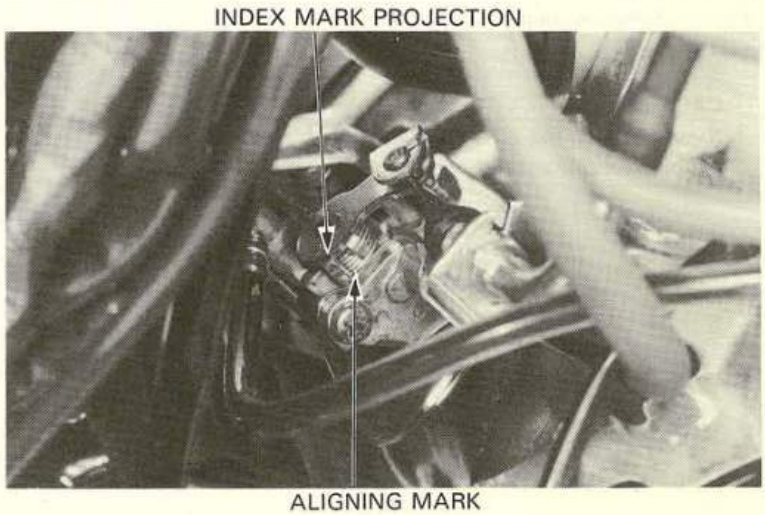
CAUTION:

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





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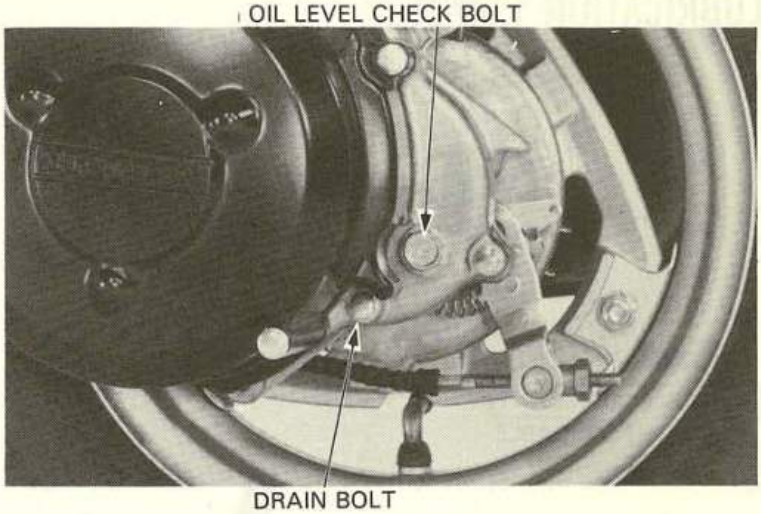
FINAL REDUCTION OIL

CHECK

NOTE:

Place the scooter on level ground and support it with the center stand.

Remove the oil level check bolt and ckeck that the oil level is at the oil level check bolt hole.



CHANGE

Remove the oil level check bolt.
Remove the drain bolt to allow the oil to drain thoroughly.
Reinstall the drain bolt

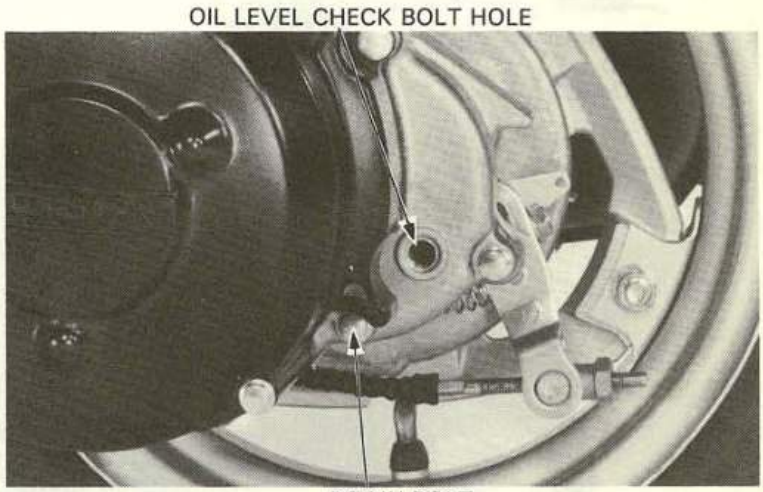
TORQUE: 10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

NOTE:

Check that the sealing washer is in good condition.

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

OIL CAPACITY: 90 cc (3.0 oz)
SPECIFIED OIL: HONDA 4-STROKE OIL or equivalent, 10W-40

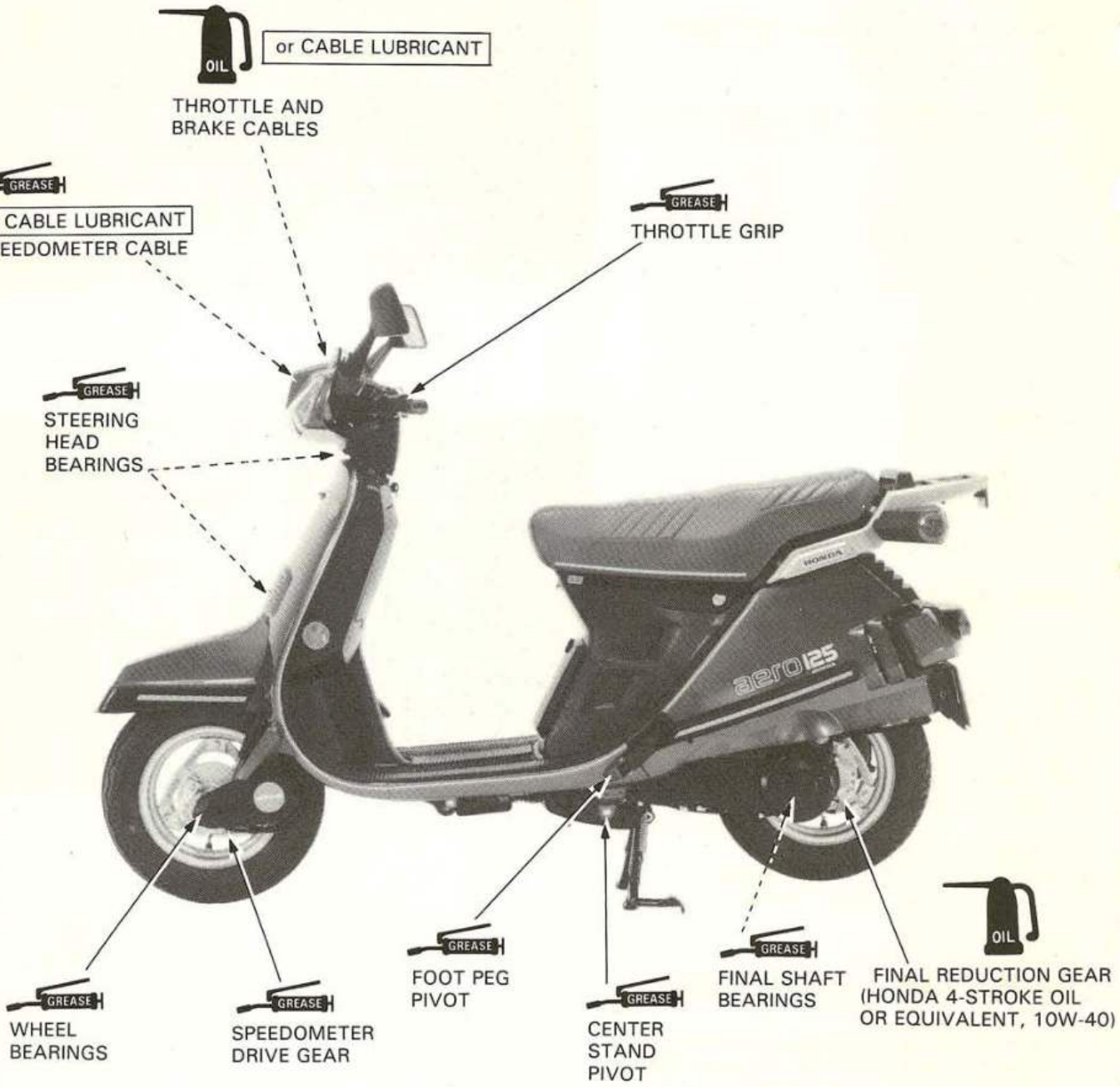


CONTROL CABLE LUBRICATION

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

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LUBRICATION POINTS



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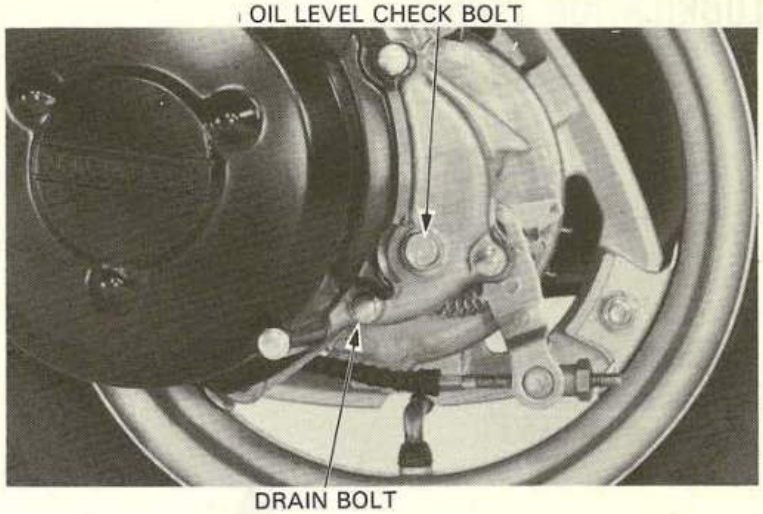
FINAL REDUCTION OIL

CHECK

NOTE:

Place the scooter on level ground and support it with the center stand.

Remove the oil level check bolt and ckeck that the oil level is at the oil level check bolt hole.



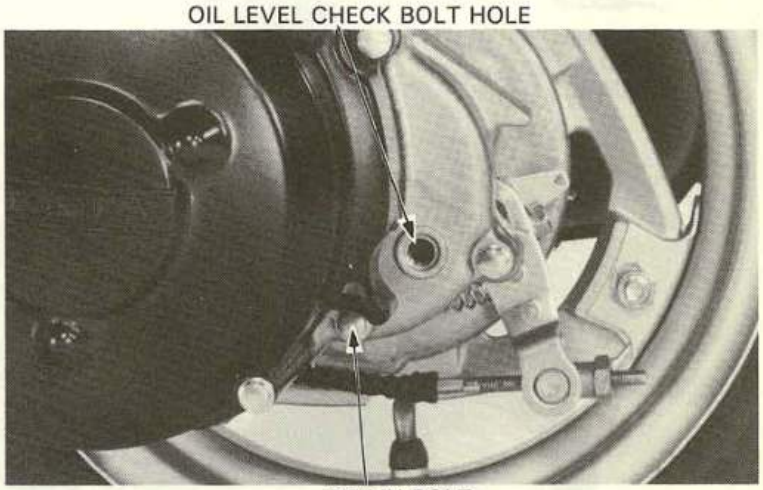
CHANGE

Remove the oil level check bolt.
Remove the drain bolt to allow the oil to drain thoroughly.
Reinstall the drain bolt

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

NOTE:

Check that the sealing washer is in good condition.



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

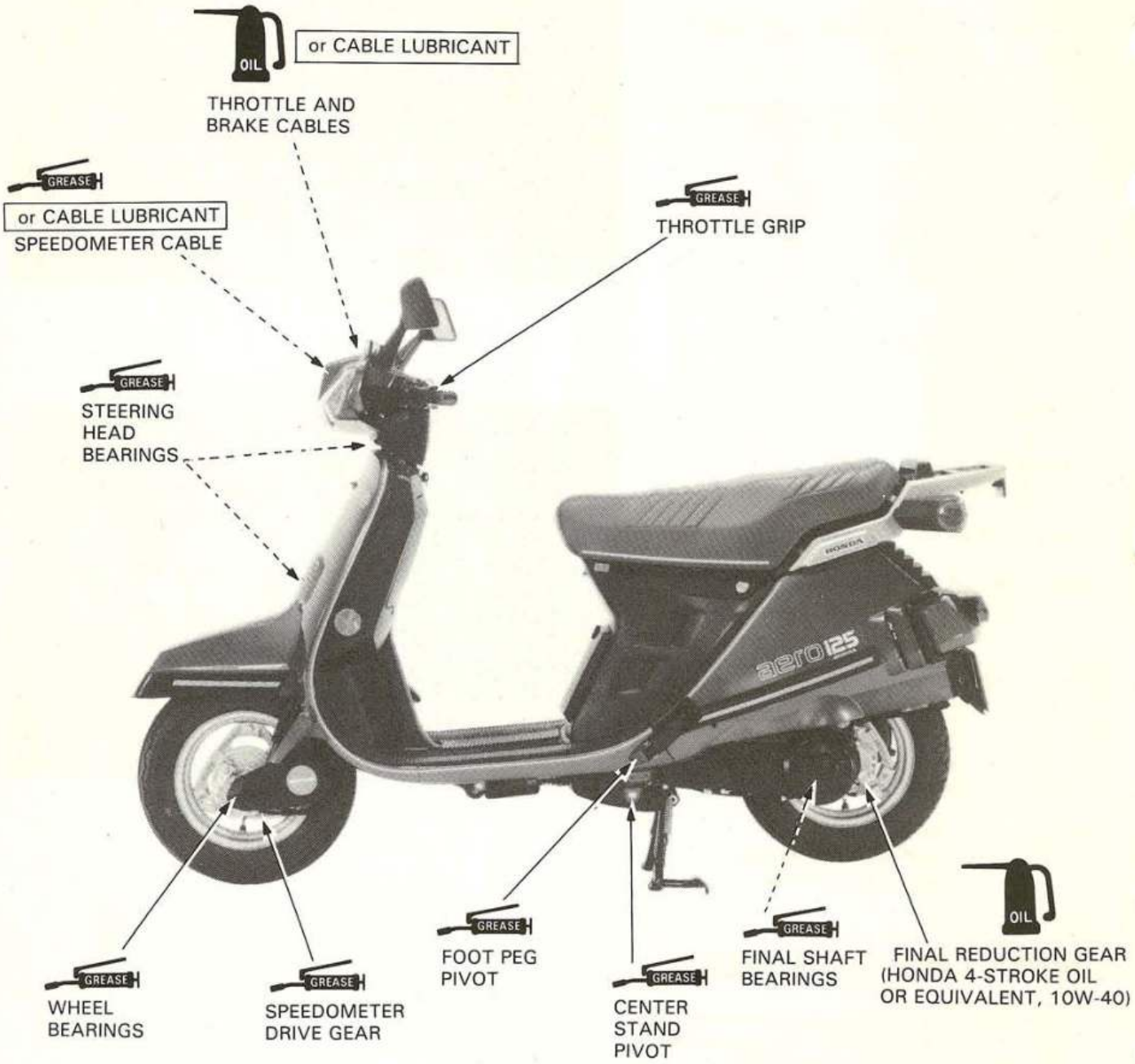
OIL CAPACITY: 90 cc (3.0 oz)
SPECIFIED OIL: HONDA 4-STROKE OIL or equivalent, 10W-40

CONTROL CABLE LUBRICATION

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

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LUBRICATION POINTS



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3

SERVICE INFORMATION

GENERAL

Oil pump — See page 2-2.
Transmission oil — See page 2-5.
Clutch shoe wear — See page 8-14.

SPECIFICATIONS

<Engine>
Spark plug:

Standard		For cold climate (below 5°C, 41°F)		For extended high speed riding	
NGK	ND	NGK	ND	NGK	ND
BPR6HS	W20FPR	BPR4HS	W14FPR–L	BPR7HS	W22FPR

Spark plug gap: 0.6–0.7 mm (0.024–0.028 in)
Throttle grip free play: 2–6 mm (1/8–1/4 in)
Idle speed: 1,800 ± 100 rpm
Cylinder compression: 12.0 kg/cm² (171 psi)

<Chassis>
Front brake free play: 10–20 mm (3/8–3/4 in)
Rear brake free play: 20–30 mm (3/4–1 1/8 in)

Tire:

Tire size		Front	Rear
		3.50–10–4PR	3.50–10–4PR
Cold tire pressure psi (kPa, kg/cm²)	Up to 90 kg (200 lbs) load	21 (150, 1.5)	28 (200, 2.0)
	90 kg (200 lbs) load and up to vehicle capacity load	21 (150, 1.5)	36 (250, 2.5)

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MAINTENANCE SCHEDULE

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

I : INSPECT AND CLEAN, ADJUST, LUBRICATE, OR REPLACE IF NECESSARY.
C : CLEAN
R : REPLACE
A : ADJUST
L : LUBRICATE

		ITEM \ FREQUENCY	WHICHEVER COMES FIRST ➡ / EVERY ⬇	ODOMETER READING (NOTE 2) 600 mi (1,000 km)	2,500 mi (4,000 km)	5,000 mi (8,000 km)	7,500 mi (12,000 km)	Refer to page
EMISSION RELATED ITEMS	*	FUEL LINES			I	I	I	3-3
	*	FUEL FILTER					R	3-3
	*	THROTTLE OPERATION		I	I	I	I	3-4
		AIR CLEANER	NOTE 1		C	C	C	3-4
		SPARK PLUG			R	R	R	3-6
	**	OIL PUMP		I	I	I	I	2-2
		ENGINE OIL LINES			I	I	I	3-6
	*	ENGINE OIL STRAINER SCREEN				C		3-6
	**	MUFFLER DECARBONIZATION					C	3-7
	*	CARBURETOR-IDLE SPEED		I	I	I	I	3-7
NON-EMISSION RELATED ITEMS	*	DRIVE BELT				I		3-13
	*	TRANSMISSION OIL	2 YEARS R*					2-5
		BATTERY	MONTH	I	I	I	I	3-8
		BRAKE SHOE WEAR			I	I	I	3-8
		BRAKE SYSTEM		I	I	I	I	3-9
	*	BRAKE LOCK LEVER		I	I	I	I	3-10
	*	STARTER LIMIT SWITCH		I	I	I	I	3-11
	*	BRAKE LIGHT SWITCH		I	I	I	I	3-11
	*	HEADLIGHT AIM		I	I	I	I	3-11
	*	SUSPENSION		I	I	I	I	3-11
	*	NUTS, BOLTS, FASTENERS		I	I	I	I	3-12
	**	CLUTCH SHOE WEAR			I	I	I	8-14
	**	WHEELS		I	I	I	I	3-12
	**	STEERING HEAD BEARINGS		I			I	3-13

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

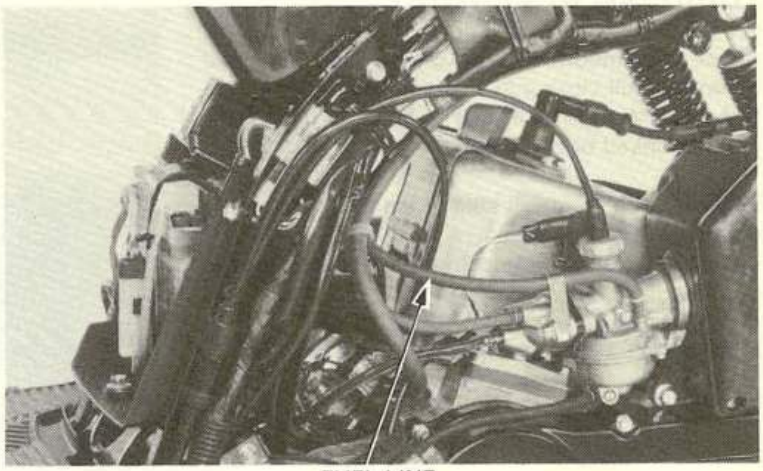
** IN THE INTEREST OF SAFETY, WE RECOMMEND THESE ITEMS BE SERVICED ONLY BY AN AUTHORIZED HONDA SCOOTER DEALER.

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

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FUEL LINES

Remove the framer center cover (Section 11.)
Check the fuel lines and replace any parts which show deterioration, damage or leakage.
Install the frame center cover.

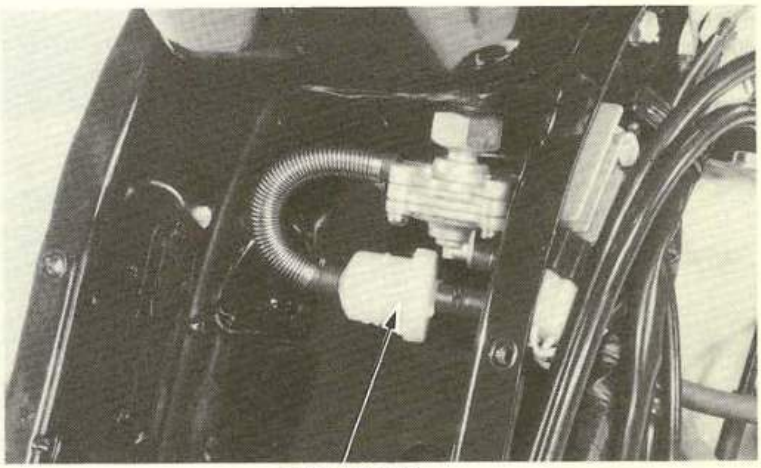

FUEL LINE

FUEL FILTER

Replace the fuel filter with a new one when indicated by the maintenance schedule (page 3-2).
Remove the frame center cover and battery box (Section 11).
Disconnect the fuel lines from the fuel filter.
Replace the fuel filter with a new one.

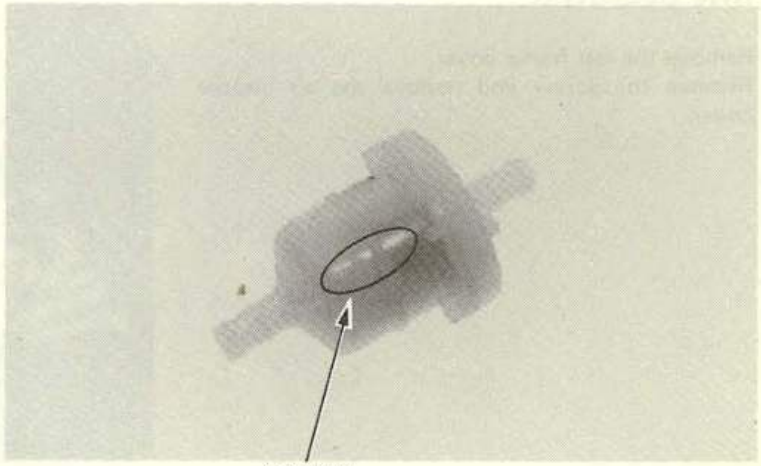
WARNING

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


FUEL FILTER

Install the fuel filter with the arrow in the normal direction of fuel flow.

After installing, check that there are no fuel leaks.


ARROW

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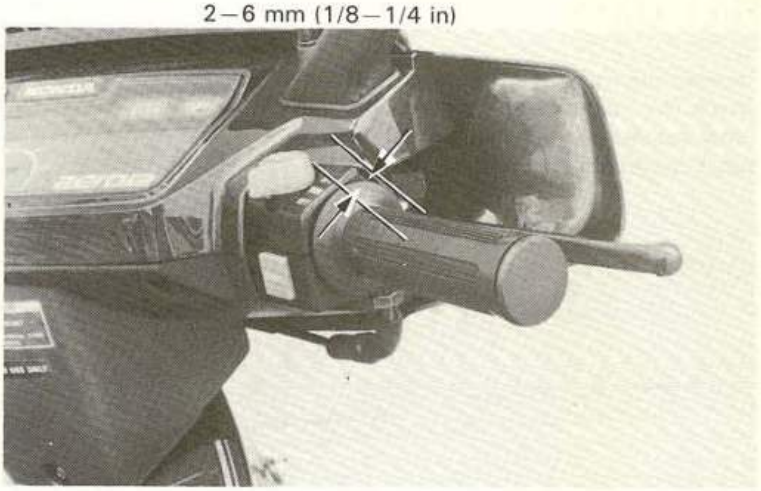
THROTTLE OPERATION

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

Lubricate the throttle cable (page 2-5), if throttle operation is not smooth.
Measure the throttle grip free play at the throttle grip flange.

PREE PLAY: 2–6 mm (1/8–1/4 in)

2–6 mm (1/8–1/4 in)



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.

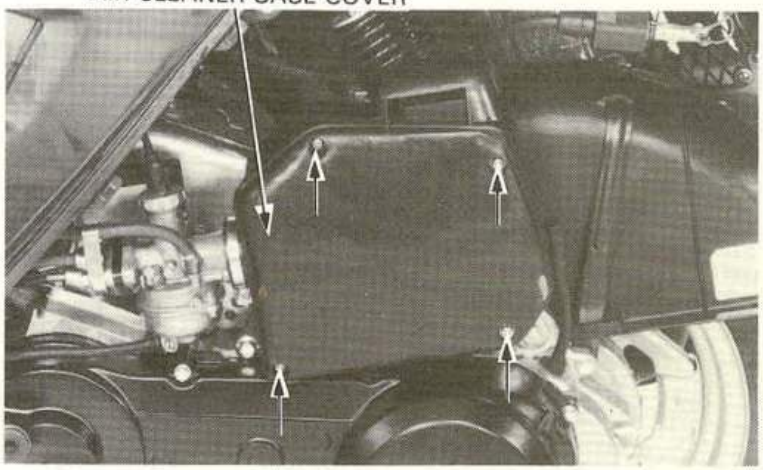


ADJUSTER LOCK NUT

AIR CLEANER

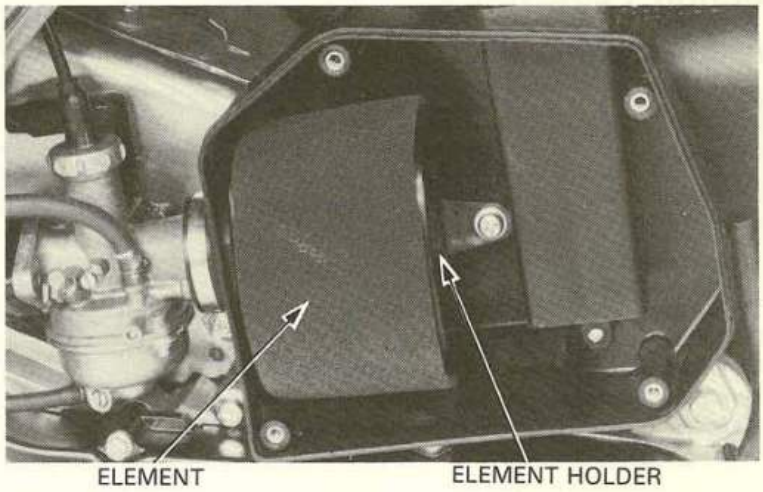
Remove the left frame cover.
Remove the screw and remove the air cleaner cover.

AIR CLEANER CASE COVER



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Remove the element holder.
Remove the element from the element holder.

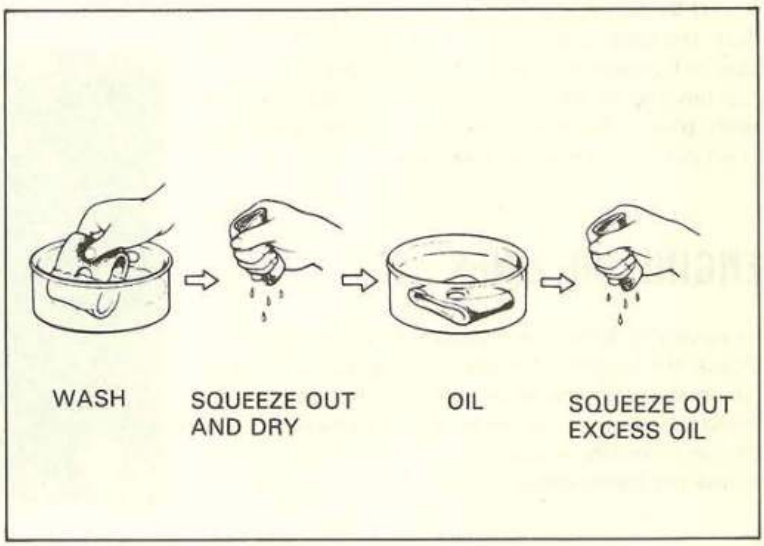


Wash the element in non-flammable or high flash point solvent, squeeze out and allow to dry.

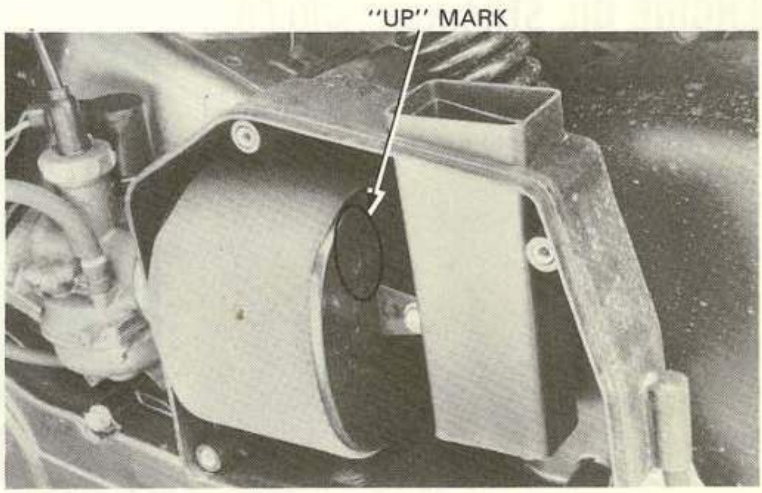
WARNING

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

Soak the element in clean motor oil (SAE 10W–40) or gear oil (#80–90) and squeeze out the excess. Reinstall the element, element holder, air cleaner case cover and carburetor cover.

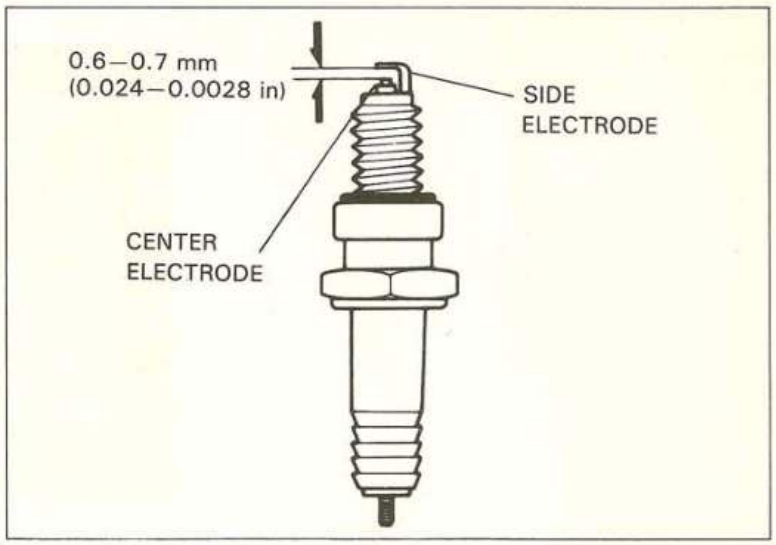


Install the element according the up mark.



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SPARK PLUG



RECOMMENDED SPARK PLUG

	NGK	ND
Standard	BPR6HS	W20FPR
For cold climate (Below 5°C, 41°F)	BPR4HS	W14FPR–L
For extended high speed riding	BPR7HS	W22FPR

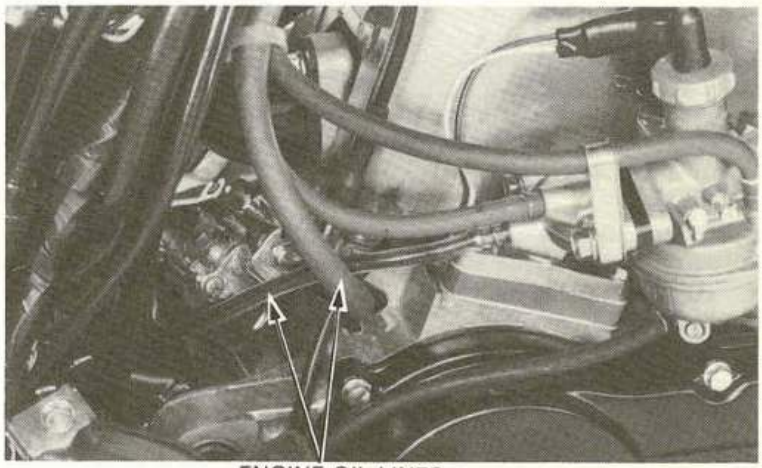
Disconnect the spark plug cap.
Clean any dirt from around the spark plug base.
Remove and discard the spark plug.
Measure the new spark plug gap using a wire-type feeler gauge.

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

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

ENGINE OIL LINES

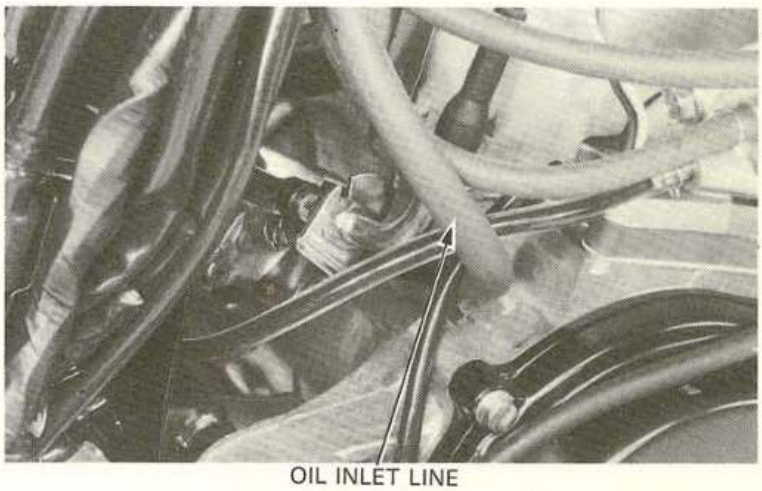
Remove the frame center cover (Section 11.).
Check the engine oil lines and replace any parts which show deterioration, damage or leakage.
Bleed the oil pump and oil lines, if they have air bubbles in them (Page 2-3).
Install the frame center cover.



ENGINE OIL LINES

ENGINE OIL STRAINER SCREEN

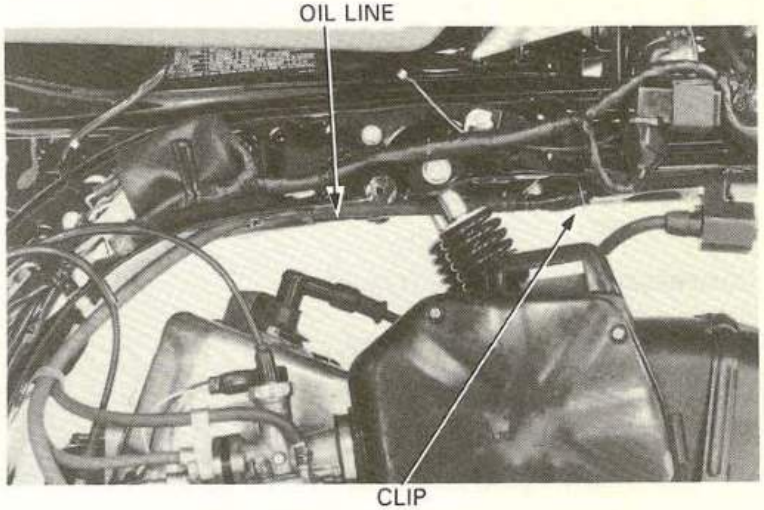
Remove the frame center cover (Section 11).
Disconnect the oil inlet line at the oil pump and allow the oil to drain into a clean container.



OIL INLET LINE

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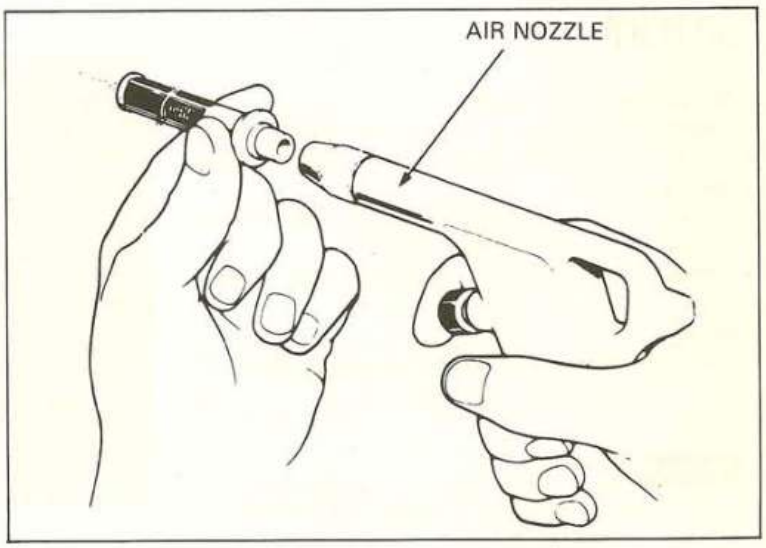
Disconnect the oil line at the bottom of the oil tank by loosening the clip.
Remove the oil strainer.



Clean the oil strainer with compressed air. Replace the oil strainer if necessary. The installation sequence is essentially the reverse order of removal. Fill the tank with the recommended oil up to the proper level and bleed air from the oil pump and oil line (Page 2-3).

NOTE:

- Connect the oil line securely.
- Check for leaks.



MUFFLER DECARBONIZATION

Remove the muffler (Page 13-2).
Remove the carbon from the muffler.
Reinstall the muffler (Page 13-3).

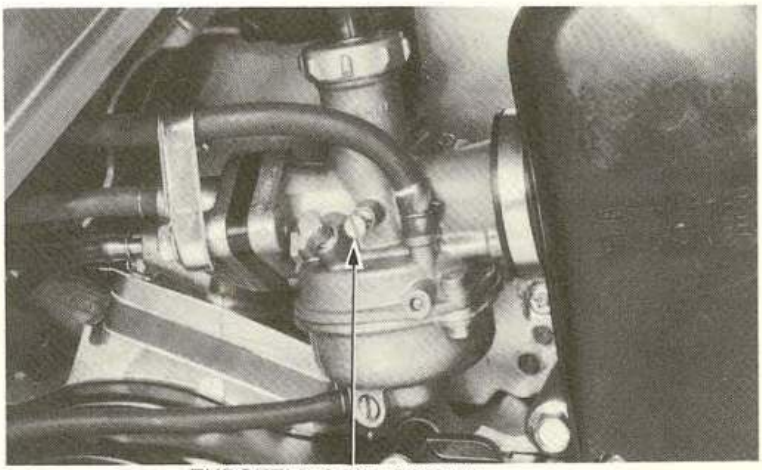
CARBURETOR IDLE SPEED

NOTE:

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

Remove the left side cover.
Warm up the engine and place the scooter on its center stand.
Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 1,800 ± 100 rpm



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COMPRESSION TEST

Remove the left frame cover and warm up the engine.
Stop the engine and remove the spark plug.
Insert a compression gauge. Open the throttle grip fully and crank the engine with the starter motor for 3 to 5 seconds.

COMPRESSION: 12.0 kg/cm² (171 psi)

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

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



COMPRESSION GAUGE
(COMMERCIALLY AVAILABLE IN U.S.A.)

BATTERY

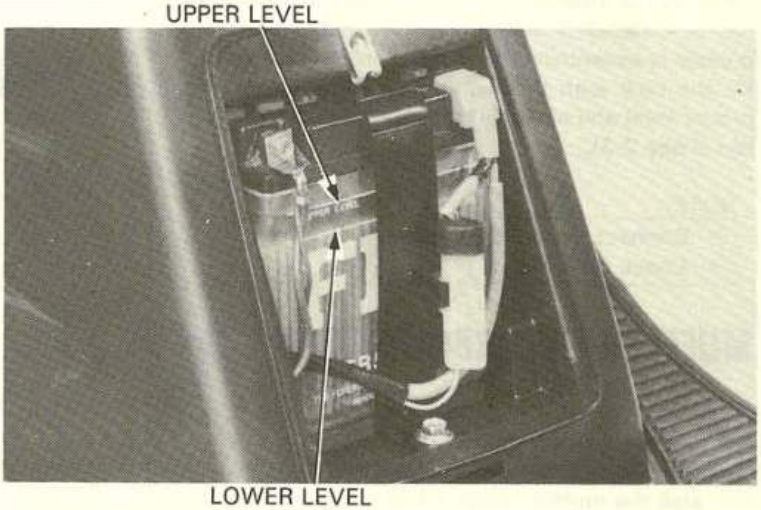
Remove the battery cover.
Inspect the battery fluid level. When the fluid level nears the lower level mark, refill with distilled water to the upper level.
- Check the specific gravity of the battery electrolyte in each cell (Page 15-3).
- Recharge the battery if necessary (Page 15-4).

NOTE:

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

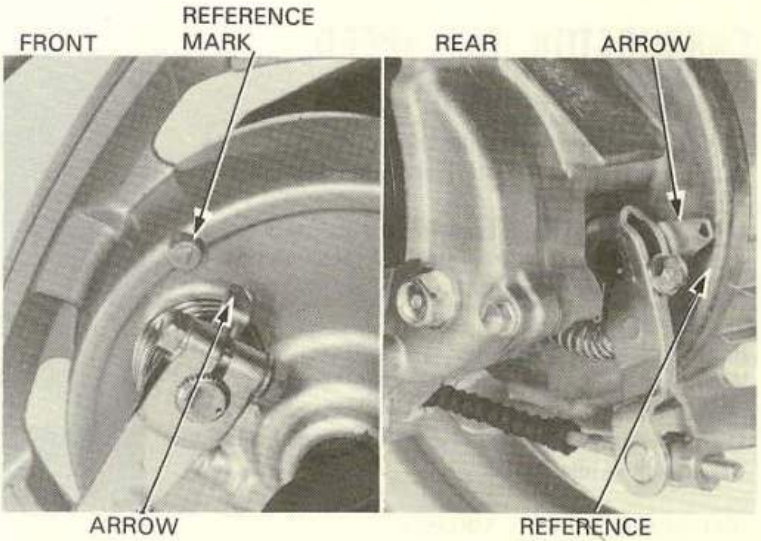
WARNING

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.



BRAKE SHOE WEAR

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



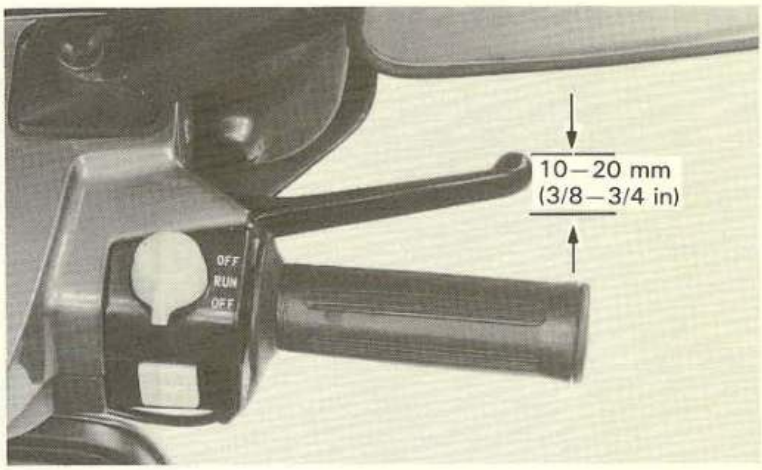
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BRAKE SYSTEM

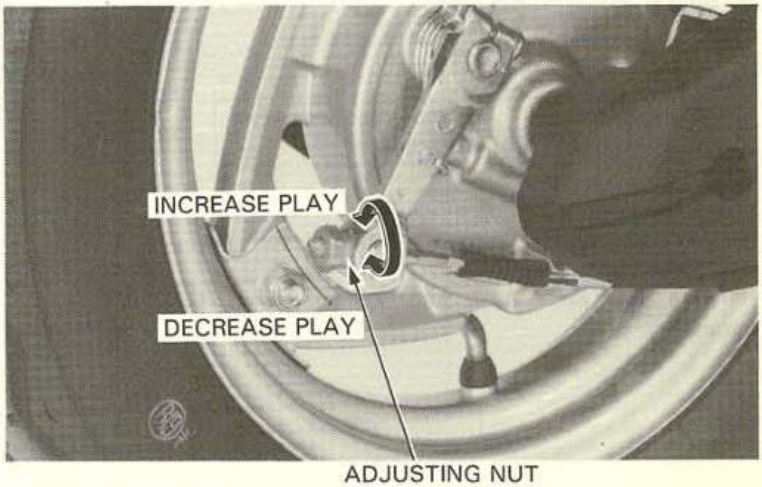
FRONT BRAKE

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

FREE PLAY: 10—20 mm (3/8—3/4 in)



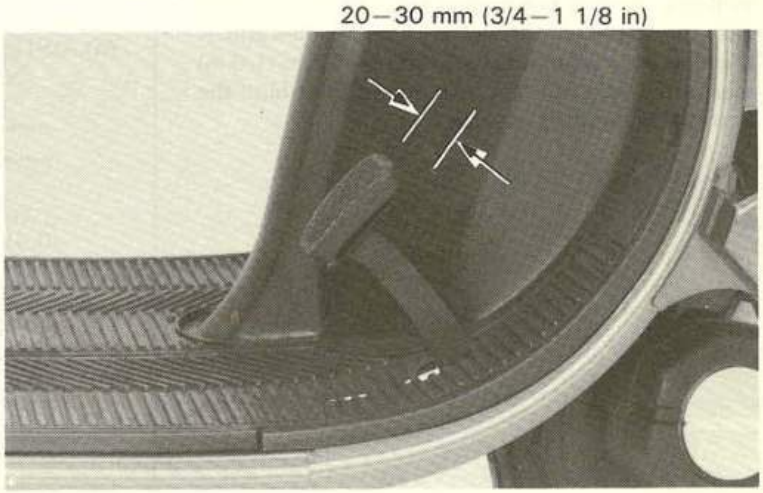
If adjustment is necessary, turn the front brake adjusting nut.



REAR BRAKE

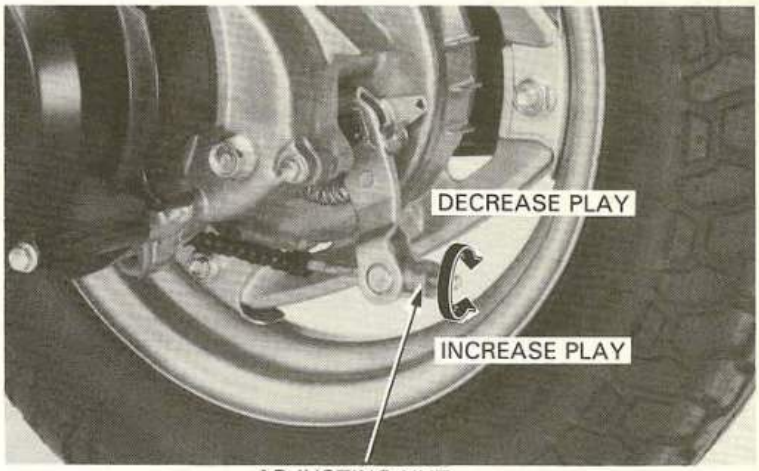
Measure the rear brake pedal free play at the tip of the brake pedal.

FREE PALY: 20—30 mm (3/4—1 1/8 in)



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

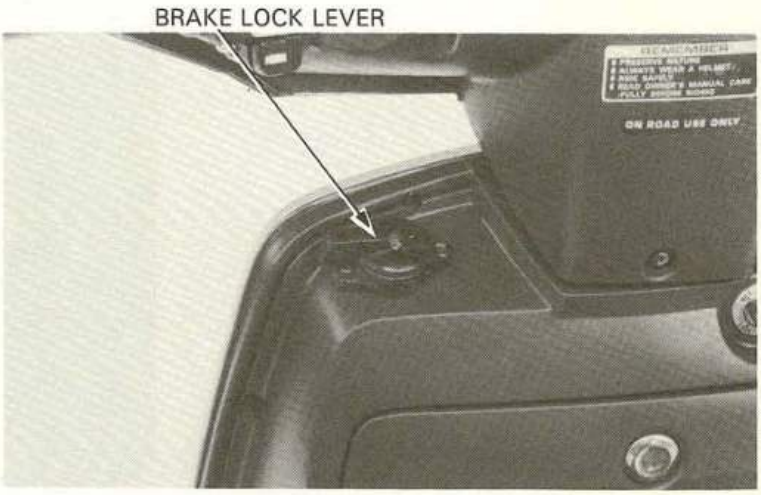


BRAKE LOCK LEVER

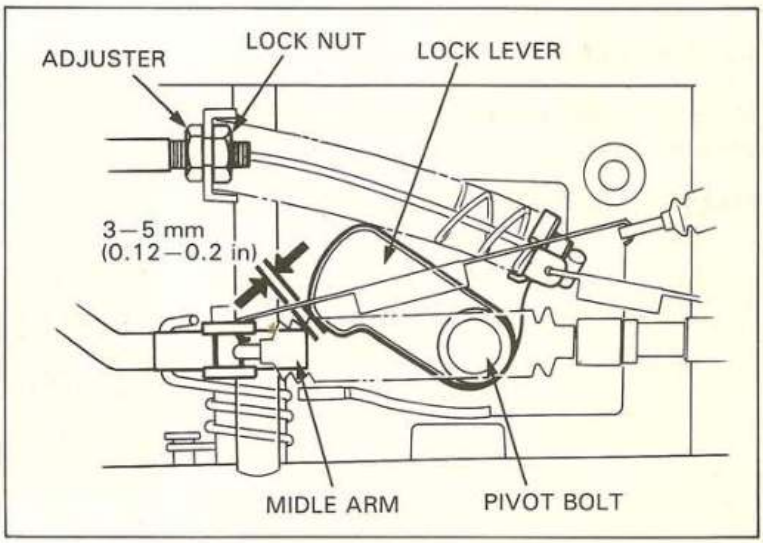
NOTE:

Parking brake inspection must be made after the rear brake is properly adjusted.

Check the operation of the lock lever.
It should be returned smoothly by hand with the rear brake pedal depressed.
Remove the pivot bolt and apply grease if necessary.



With the parking brake lever applied, measure the clearance between the lock lever and middle arm. If the clearance is more or less than 3—5 mm (1/8 in) loosen the lock nut and turn the adjuster until the correct clearance is obtained.



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BRAKE LIGHT SWITCH/ STARTER LIMIT SWITCH

Adjust the rear brake pedal free play (Page 3-9).
Turn the ignition switch on.

Check that the brake light comes on when the brake pedal is depressed 15 ± 3 mm (0.6 ± 0.1 in).

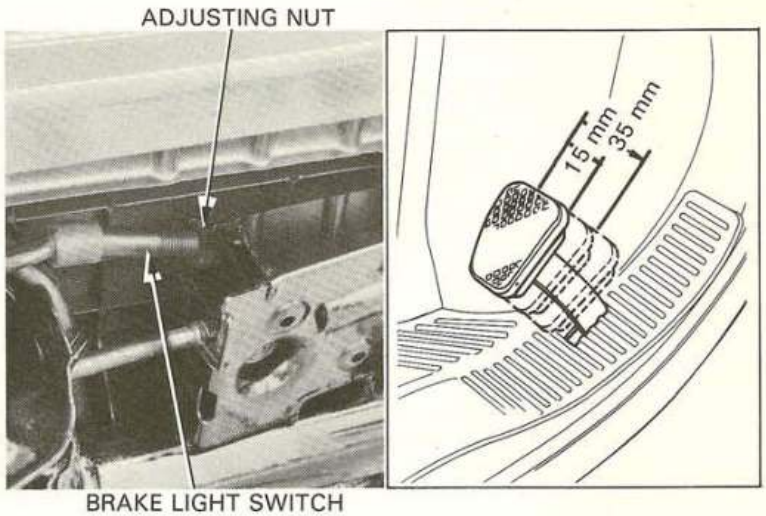
Adjust as follows:
Turn the adjusting nut of the brake light/starter limit switch, to adjust the brake light.

Then press the starter button and de press the brake pedal at the same time. The starter motor should engage after the pedal is depressed 35 ± 3 mm (1.4 ± 0.1 in).

Replace the switch. If the motor does not engage as specified.

NOTE:

The front brake light switch does not require adjustment.



HEADLIGHT AIM

Adjust the headlight beam vertically by turning the vertical adjusting screw. Turn the adjusting screw clockwise to direct the beam down.

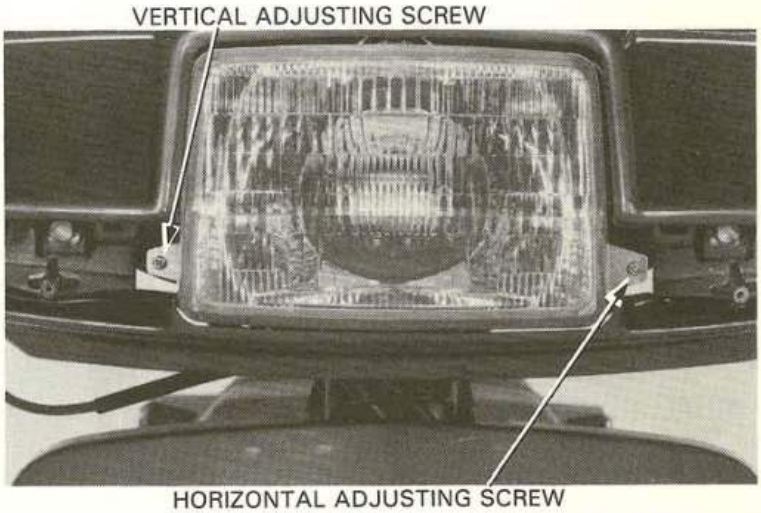
Adjust the headlight beam horizontally by turning the horizontal adjusting screw. Turn the adjusting screw clockwise to direct the beam toward the left side of the rider.

NOTE:

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

WARNING

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



SUSPENSION

WARNING

Do not ride a scooter with faulty suspension. Loose, worn or damaged suspension parts impair vehicle stability and control.

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FRONT

Check the action of the front fork/shocks by compressing them several times.
Check the entire fork assembly for damage.
Replace damaged components which cannot be repaired.
Tighten all nuts and bolts.



REAR

Place the scooter on its center stand.
Move the rear wheel sideways with force to see if the engine hanger bushings are worn.
Replace the hanger bushings if there is any looseness.

Check the shock absorber for damage.
Tighten all rear suspension nuts and bolts.

NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (Section 1) at the intervals shown in the Maintenance Schedule (Page 3-2).
Check all cotter pins, safety clips, hose clamps and cable stays.



WHEELS

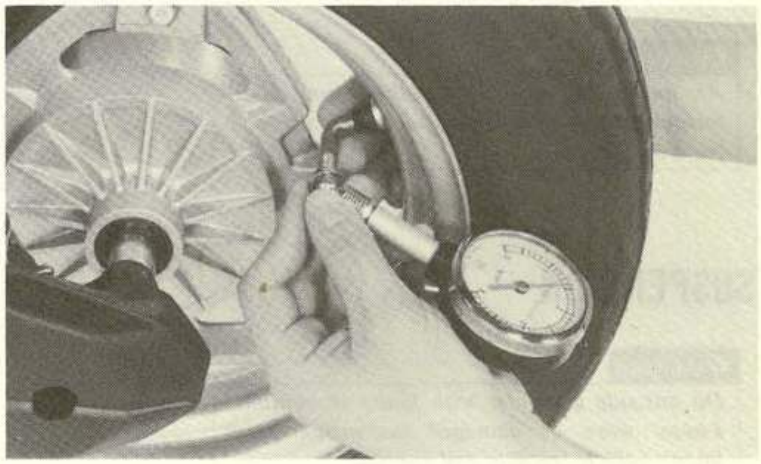
NOTE:

> Tire pressure should be checked when tires are COLD.

Check the tires for cuts, imbedded nails, or other sharp objects.

RECOMMENDED TIRES AND PRESSURES:

		Front	Rear
Tire size		3.50-10-4PR	3.50-10-4PR
Cold tire pressure psi (kPa, kg/cm²)	Up to 90 kg (200 lbs) load	21 (150, 1.5)	28 (200, 2.0)
	90 kg (200 lbs) and up to vehicle capacity load	21 (150, 1.5)	36 (250, 2.5)



Check the front and rear wheels for trueness.

Measure the tread depth at the center of the tires.
Replace the tires if the tread depth reaches the following limits:

Minimum tread depth:
Front: 1.5 mm (1/16 in)
Rear: 2.0 mm (3/32 in)

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STEERING HEAD BEARINGS

NOTE:

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

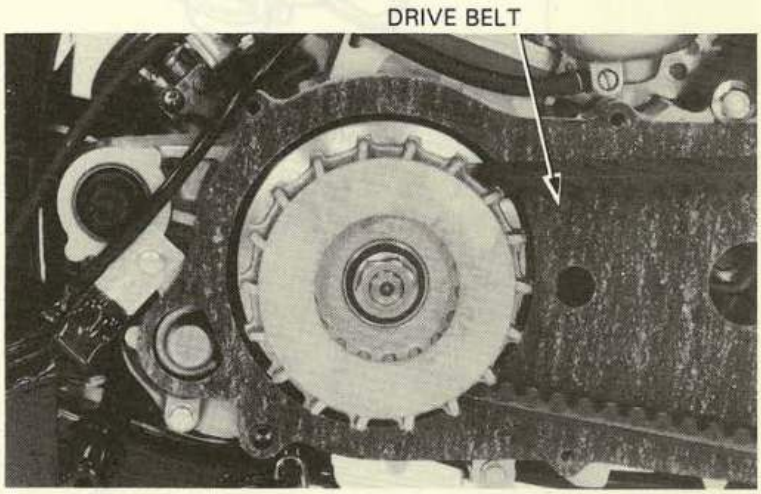
Raise the front wheel off the ground and check that the handlebar rotates freely.

If the handlebar moves unevenly, binds, or has vertical movement, adjust the steering head bearing by turning the steering head adjusting nut (Page 12-26).

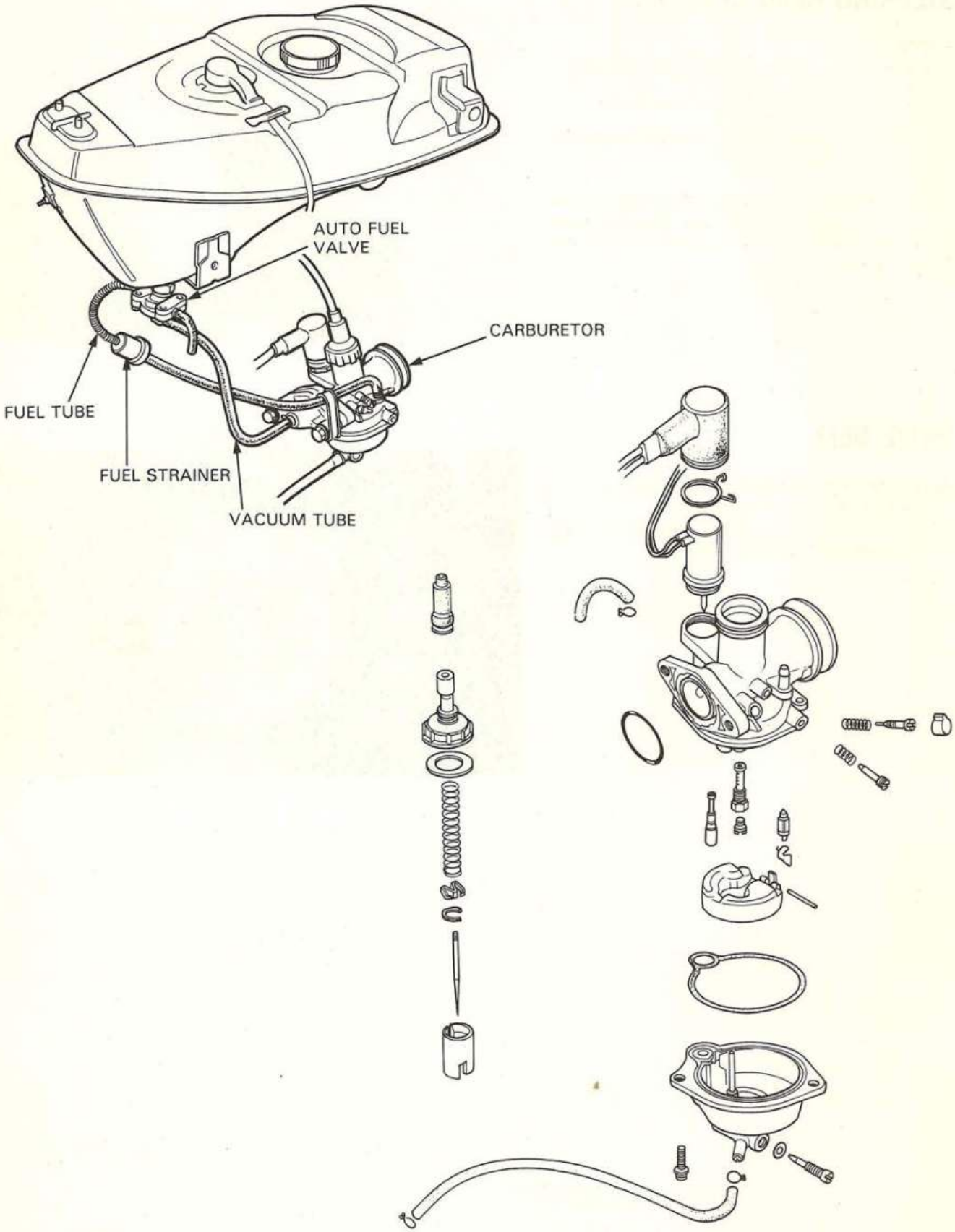


DRIVE BELT

Remove the left crankcase cover (Page 8-2).
Remove the drive belt (Page 8-2).
Check the drive belt for cracks, separation or abnormal or excessive wear (Page 8-2).



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4. FUEL SYSTEM

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JETS/FLOAT VALVE/FLOAT ASSEMBLY	4–7	AUTO FUEL VALVE INSPECTION	4–14

SERVICE INFORMATION

GENERAL

WARNING

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

- 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.

TOOLS

Special

Hand vacuum pump	ST-AH-260-MC7 (U.S.A. only)

Common

Float level gauge	07401–0010000

SPECIFICATIONS

Venturi dia.	18 mm (0.71 in)
Identification number	PB02B
Float level	8.5 mm (0.335 in)
Air screw opening	See page 4–11
Idle speed	1,800 ± 100 prm
Throttle grip free play	2–6 mm(1/8–1/4 in)
Main jet	#105

TROUBLESHOOTING

Engine cranks but won't start
1. No fuel in tank
2. Fuel not reaching carburetor
3. Too much fuel getting to cylinder
4. Clogged air cleaner

Rich mixture
1. Faulty float valve
2. Float level too high
3. Carburetor jets clogged

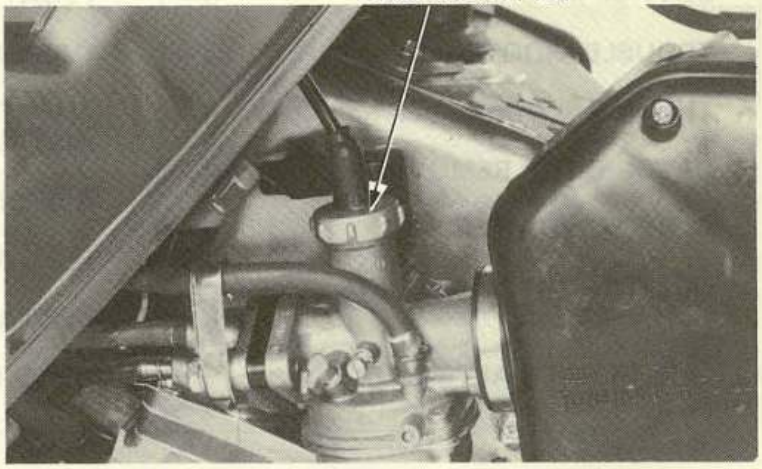
Engine idles roughly, stalls or runs poorly
1. Idle speed incorrect
2. No spark at plug
3. Loss of compression
4. Rich mixture
5. Lean mixture
6. Clogged air cleaner
7. Intake pipe leaking
8. Fuel contaminated

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

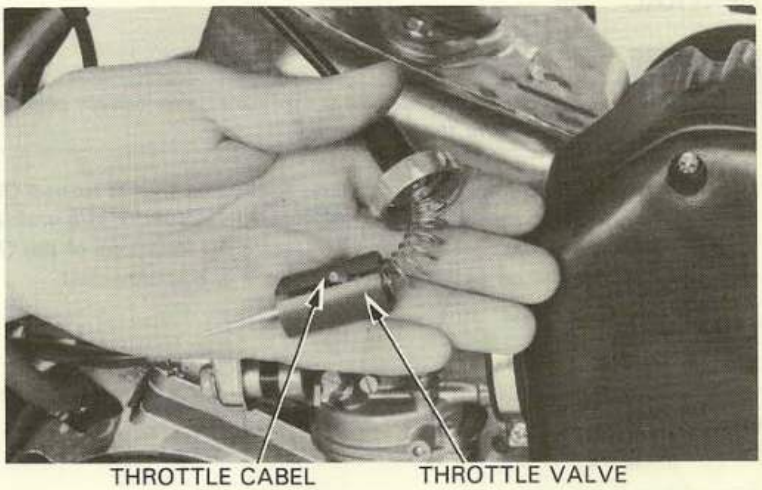
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THROTTLE VALVE DISASSEMBLY

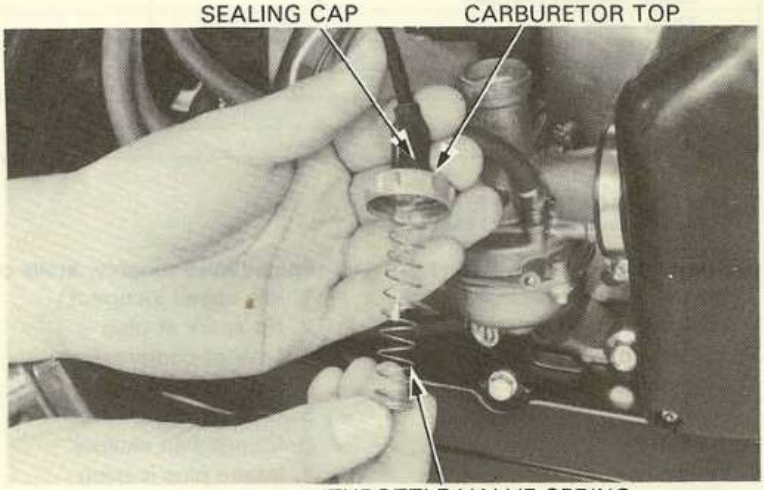
Remove the left frame cover.
Remove the carburetor top.



Disconnect the throttle cable from the throttle valve.



Remove the throttle valve spring, carburetor top and sealing cap.

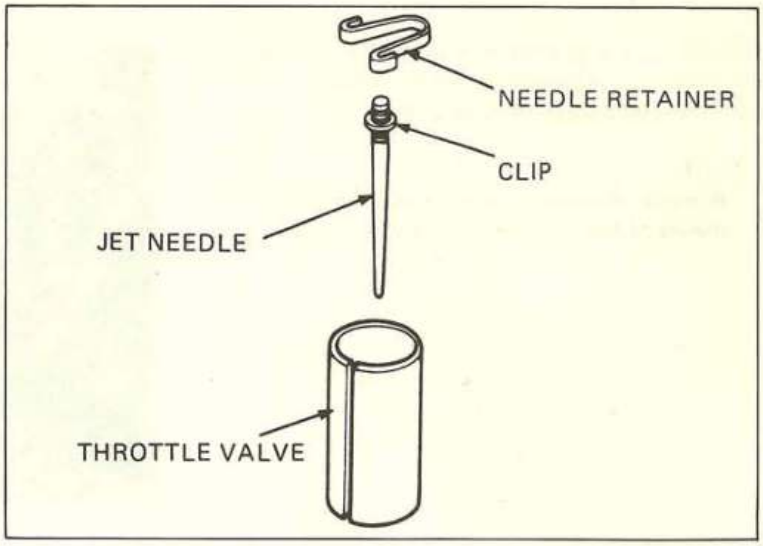


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Pry off the needle retainer and remove the jet needle.

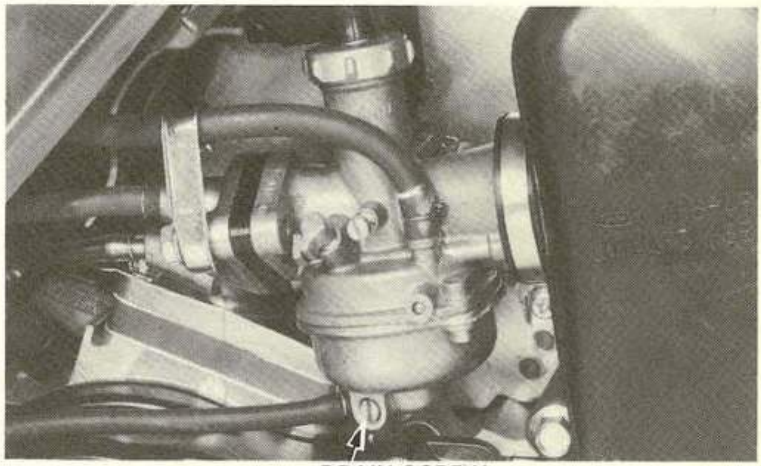
JET NEEDLE/THROTTLE VALVE INSPECTION

Check the jet needle and throttle valve for wear or damage.

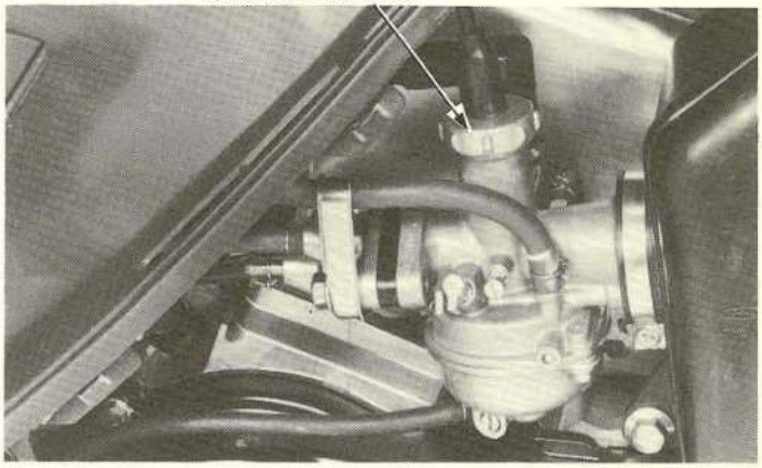


CARBURETOR REMOVAL

Remove the right and left frame covers.
Loosen the drain screw to drain fuel from the carburetor.



Remove the carburetor top and throttle valve.

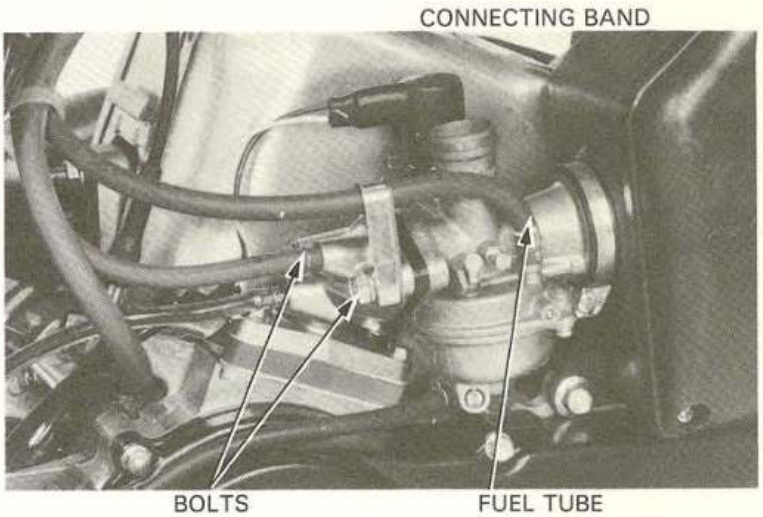


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Disconnect the fuel tube from the carburetor.
Remove the carburetor attaching bolts.
Loosen the connecting tube band.

NOTE:

Remove the frame center cover for easy removal of the attaching bolts if necessary.



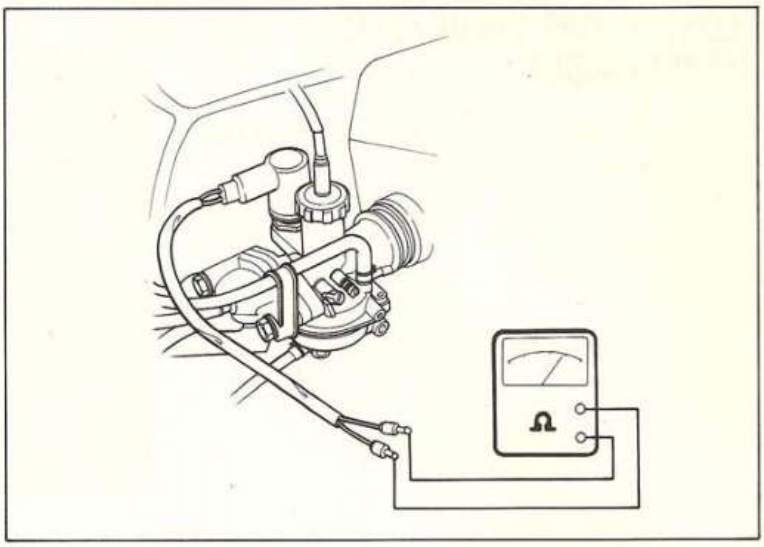
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AUTO BYSTARTER

INSPECTION

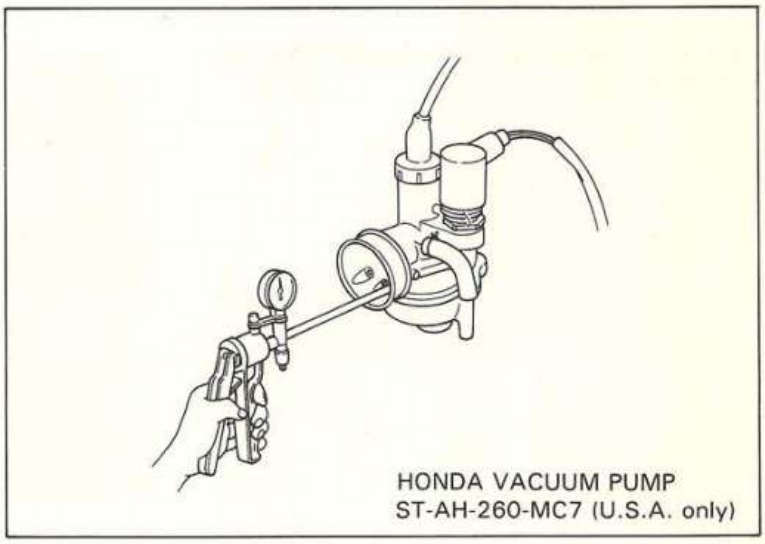
Stop the engine and let it cool for 10 minutes or more.
Measure the resistance between the auto bystarter wires. Replace the auto bystarter with a new one if it is out of specification or there is no continuity.

RESISTANCE: 10 ohms max.



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

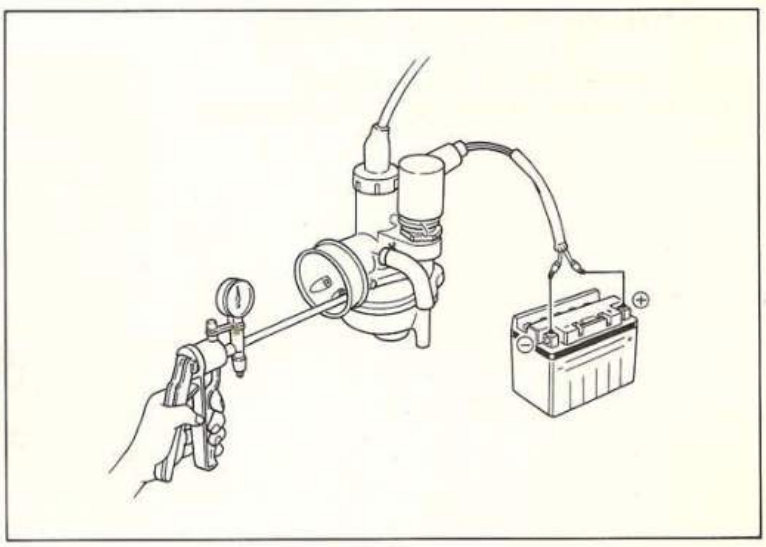
If the passage is blocked, replace the auto bystarter with a new one.



HONDA VACUUM PUMP
ST-AH-260-MC7 (U.S.A. only)

Connect a 12 V 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

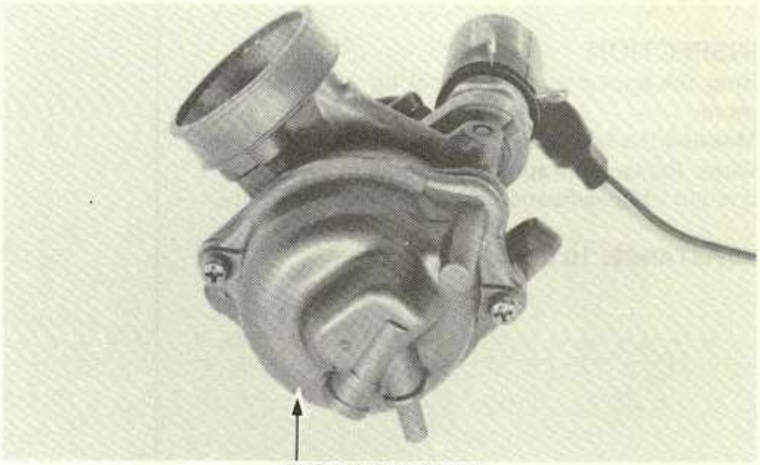
Loosen the auto bystarter lock nut and remove the auto bystarter from the carburetor body.
Install a new auto bystarter and tighten the lock nut.

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

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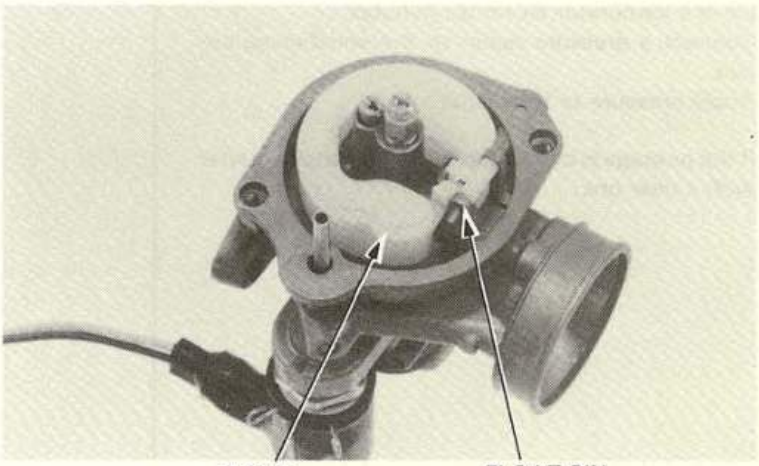
FLOAT/FLOAT VALVE/JETS DISASSEMBLY

Remove the float chamber from the carburetor body.



FLOAT CHAMBER

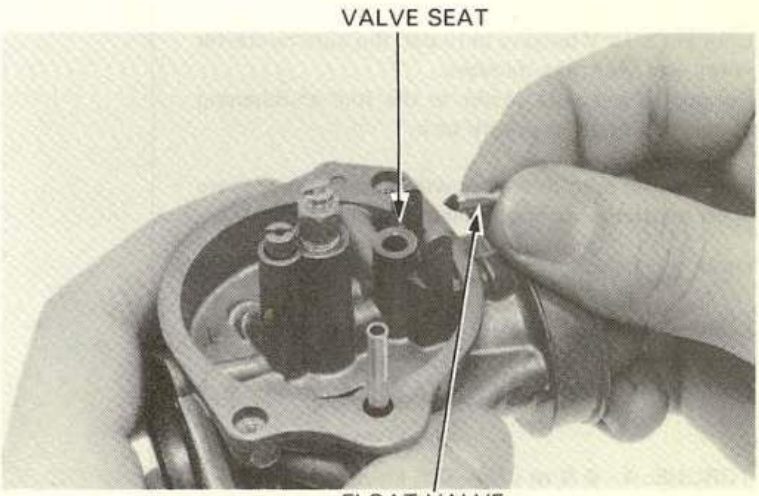
Remove the carburetor float and float valve by removing the pin.



FLOAT FLOAT PIN

FLOAT/FLOAT VALVE INSPECTION

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



VALVE SEAT

FLOAT VALVE

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NOTE:

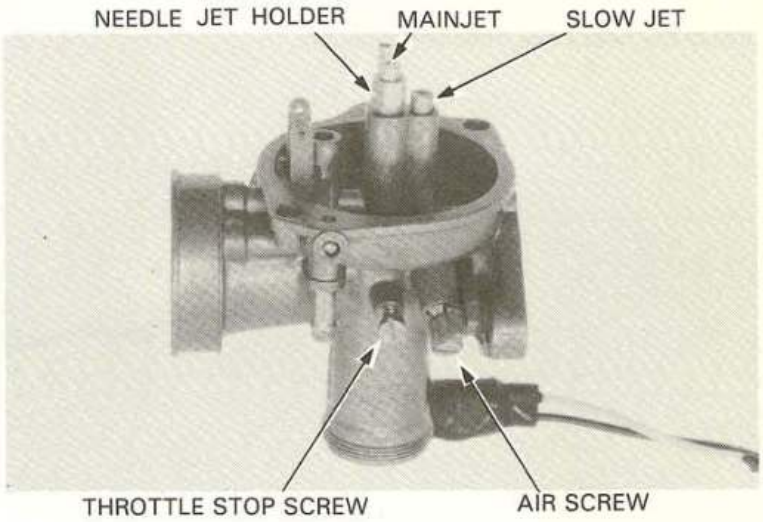
- The air screw is factory pre-set and should not be removed unless the carburetor is overhauled.
- The air screw limiter cap is factory installed to prevent air screw misadjustment.

Remove the throttle stop and air screws. Record the number of rotations until it seats, so it can be returned to its original positions.

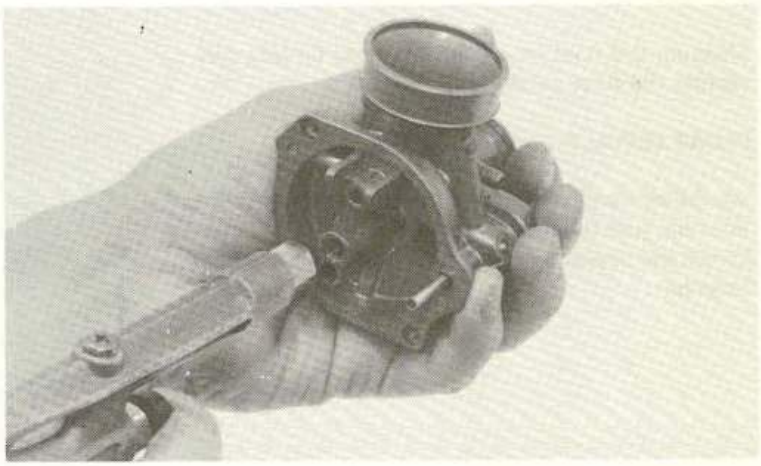
CAUTION:

Do not force the screw against its seat to prevent damage to the seat.

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



Blow open all jets and body openings with compressed air.

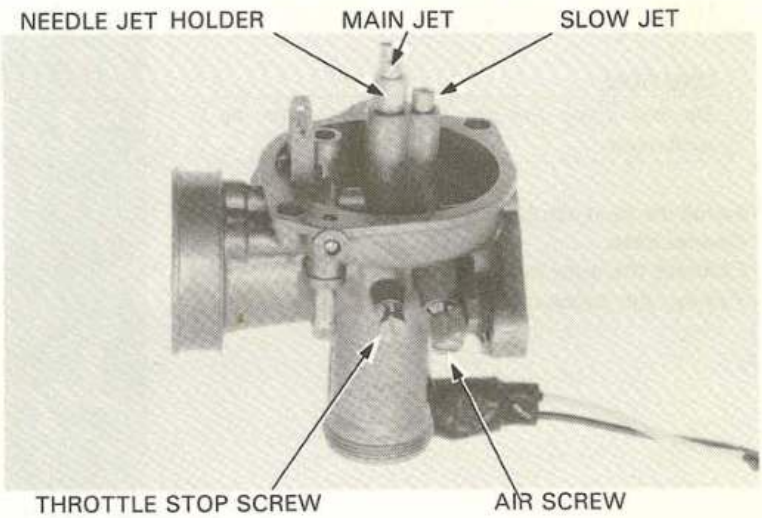


JETS/FLOAT VALVE/FLOAT ASSEMBLY

Install the slow jet, needle jet holder and main jet. Install the throttle stop and air screws and return them to their original position as noted during removal.
Perform air screw adjustment if a new air screw is installed (Page 4-11).

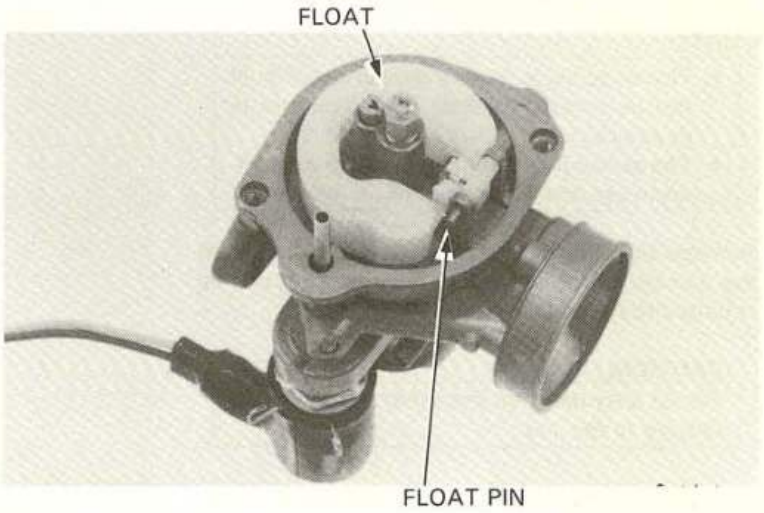
NOTE:

Do not install a new limiter cap on a new air screw head until after adjustment has been made.



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Install the float valve, float and float pin.

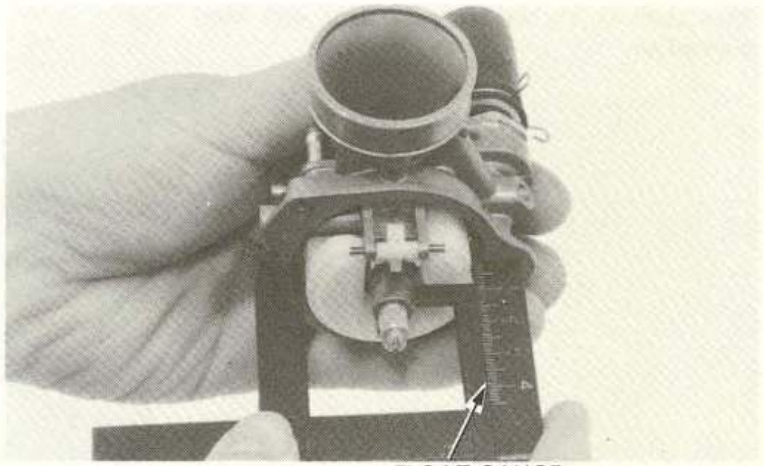


FLOAT LEVEL INSPECTION

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

FLOAT LEVEL: 8.5 mm (0.335 in)

Adjust by carefully bending the float arm until the float tip, just touches the float valve.
Check the operation of the float and install the float chamber.

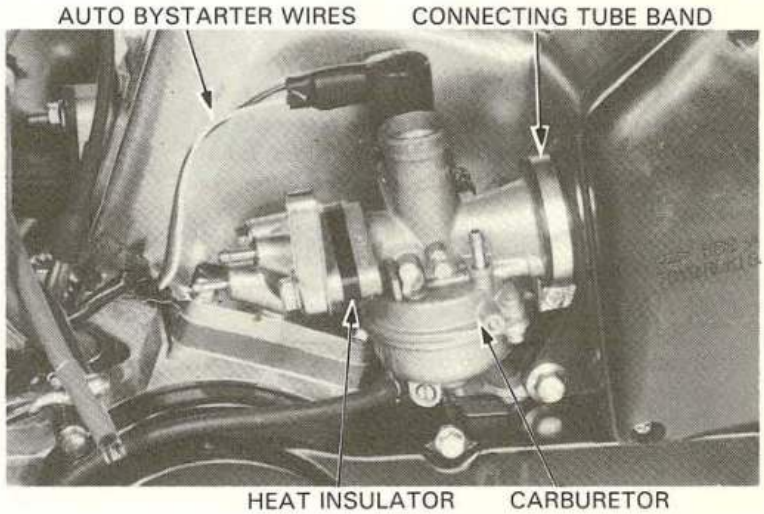


CARBURETOR INSTALLATION

CAUTION:

Do not allow foreign particles to enter the carburetor.

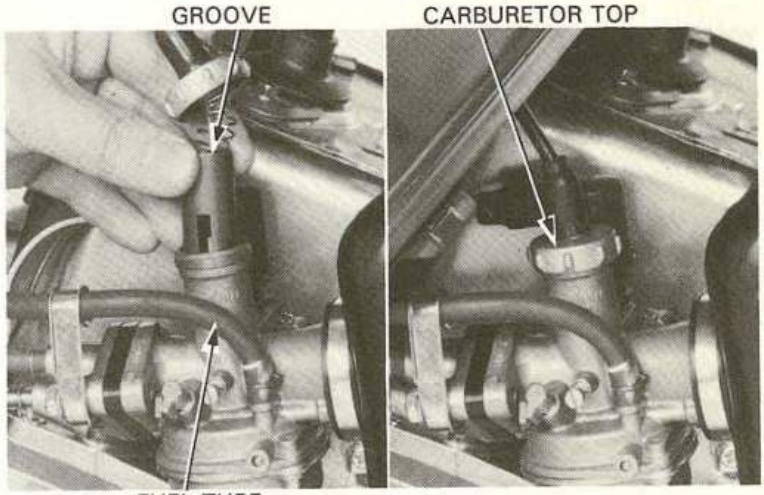
Install the heat insulator and carburetor with the air cleaner case.
Connect the auto bystarter wires.
Tighten the connecting tube band.



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Connect the fuel tube.
Install the throttle valve, aligning the groove in the throttle valve with the throttle stop screw.

Install the carburetor top.



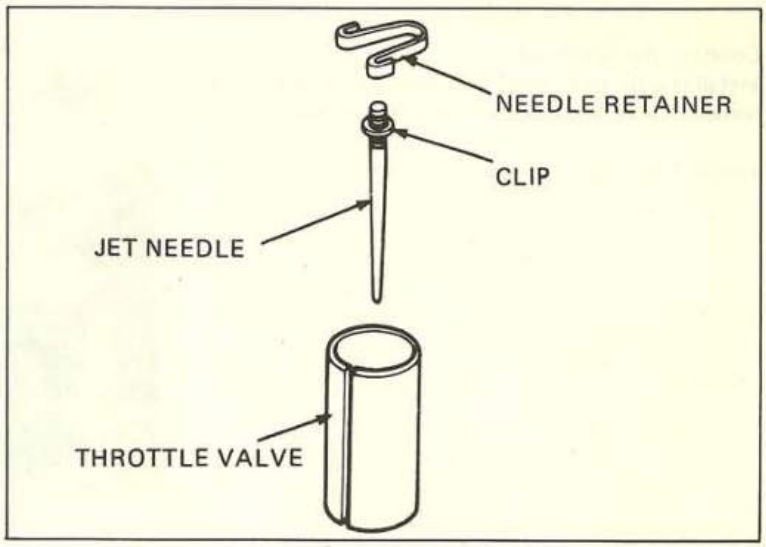
Install the right and left frame covers.

Perform the following adjustments and operatins:
- Throttle cable free play adjustment (Page 3-4).
- Oil pump adjustment (Page 2-4).
- Idle speed adjustment (Page 3-7)

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THROTTLE VALVE INSTALLATION

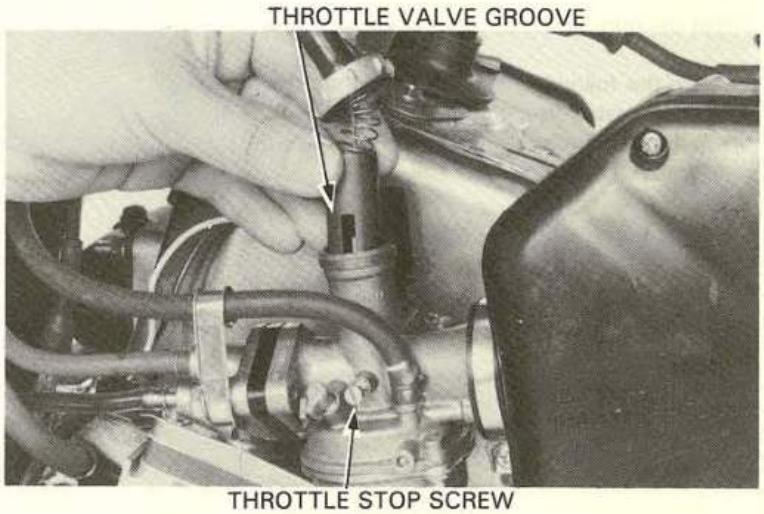
Install the jet needle on the throttle valve and secure with the needle retainer.
Assemble the seal cap, carburetor top and throttle spring.



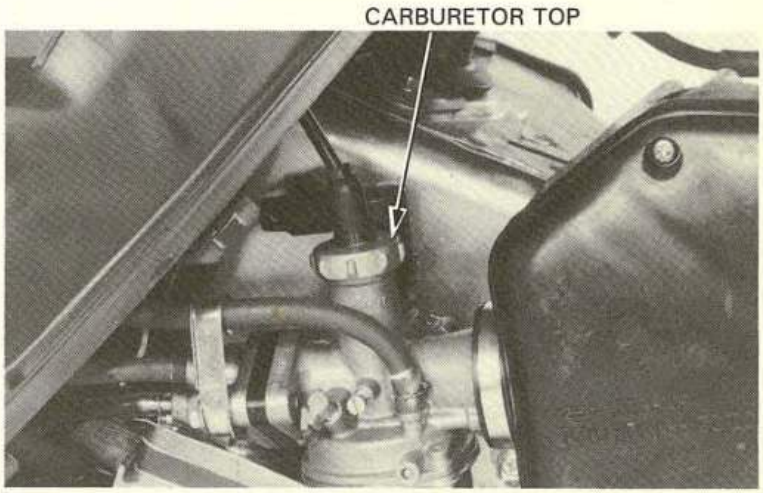
Connect the throttle cable to the throttle valve.
Slide the throttle valve into the carburetor body.

NOTE:

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



Tighten the carburetor top.
Install the left frame cover.
Adjust the throttle cable free play (Page 3-4).



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AIR SCREW

REMOVAL/INSTALLATION

NOTE:

The air screw is factory pre-set and should not be removed unless the carburetor is overhauled.

Break the tab of the limiter cap with pliers.
Groove the end of the limiter cap with a hacksaw blade.

Turn the air screw in and carefully count the number of turns so it can be reinstalled in its original position. Then remove the air screw.

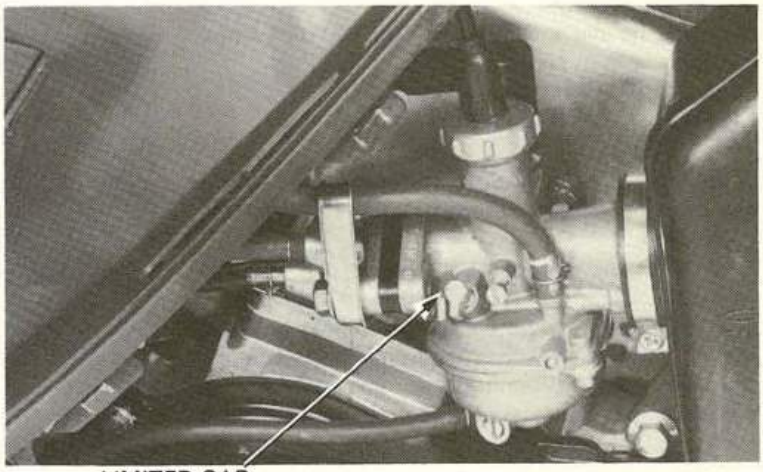
CAUTION:

Damage to the air screw and seat can occur if the air screw is tightened against the seat.

Inspect the air screw and replace it if it is worn or damaged.

Install the air screw and return it to its original position as noted during removal.

Perform air screw adjustment if a new air screw is installed.
Install a new limiter cap (Page 4-12).



LIMITER CAP

ADJUSTMENT

NOTE:

The air screw is factory pre-set and no adjustment is necessary unless the air screw is replaced.

Turn the air screw clockwise until it seats lightly and back it out to the specification given. This is an initial setting prior to the final air screw adjustment.

INITIAL OPENING: 1-3/4 turns out

CAUTION:

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

Warm the engine up to operating temperature. Stop and go riding for 10 minutes is sufficient. Connect a tachometer and adjust the idle speed with the throttle stop screw.

IDLE SPEED: 1,800 ± 100 rpm



AIR SCREW THROTTLE STOP SCREW

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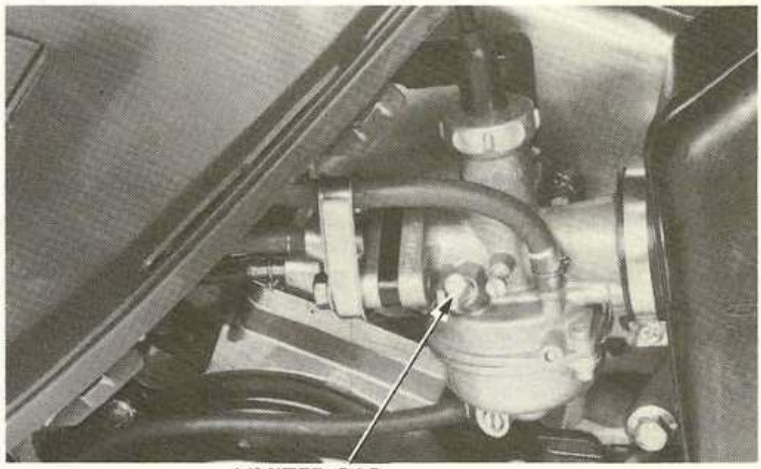
Turn the air screw in or out to obtain the highest engine speed.
Readjust the idle speed to 1,800 ± 100 rpm, using the throttle stop screw.

LIMITER CAP INSTALLATION

If the air screw has been removed, a new limiter cap must be installed after air screw adjustment is completed.
After adjustment, cement the limiter cap over the air screw, using LOCTITE ® #601 or equivalent.
The limiter cap should be placed against its stop, preventing further adjustment that would enrich the fuel mixture (limiter cap position permits counterclockwise rotation and prevents clockwise rotation).

NOTE:

An air screw limiter cap must be installed. It prevents misadjustment that could cause poor performance and increase emissions.



LIMITER CAP

HIGH ALTITUDE ADJUSTMENT

For sustained high altitude operation (above 2,000 m/6,500 ft) install a #100 main jet and readjust idle speed.

Remove the carburetor from the engine and remove the float chamber.

Replace the standard main jet with the high altitude #100 main jet.

Assemble and install the carburetor.

Adjust idle speed to 1,800 ± 100 rpm, using the throttle stop screw.

CAUTION:

Sustained operation at altitudes lower than 1,500 m (5,000 ft) with the high altitude main jet installed may cause engine overheating and damage. For sustained operation below 1,500 m (5,000 ft), reinstall the standard main jet and readjust idle speed.

	Standard 2,000 m (6,500 ft) max.	High altitude type 1,500 m (5,000 ft) min.
Main jet	#105	#100
Idle speed	1,800 ± 100 rpm	←
Air screw initial opening	Factory pre-set	←

Attach the vehicle Emission Control Information Update Label as shown.

NOTE:

Do not attach the label to any part that can be easily removed from the vehicle.

VEHICLE EMISSION CONTROL INFORMATION UPDATE LABEL

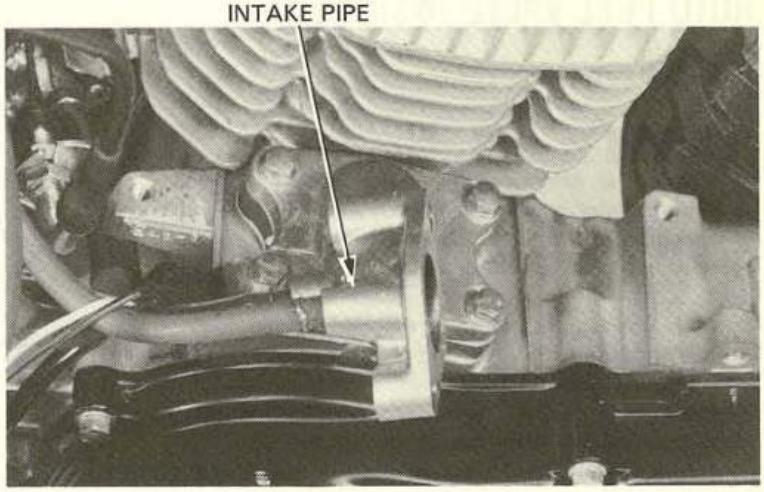


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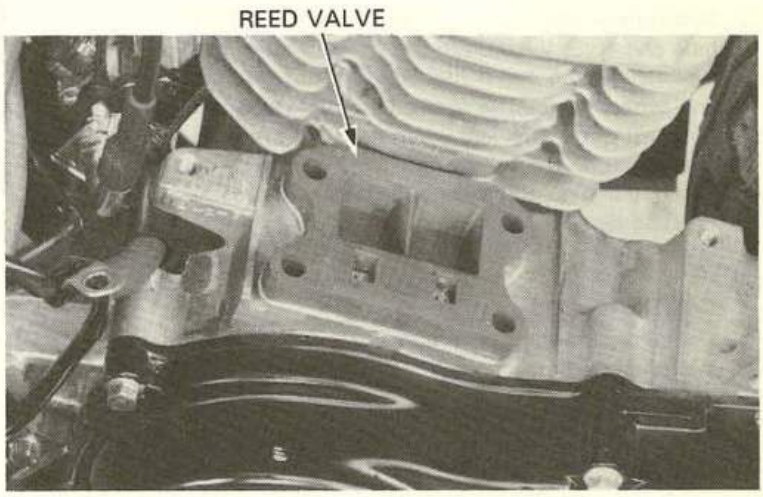
REED VALVE

REMOVAL

Remove the following:
- frame center cover.
- carburetor
- muffler.
- spark plug cap and spark plug.
- fan cover.
- engine shrouds (Page 6-2)
- intake pipe



Remove the reed valve.

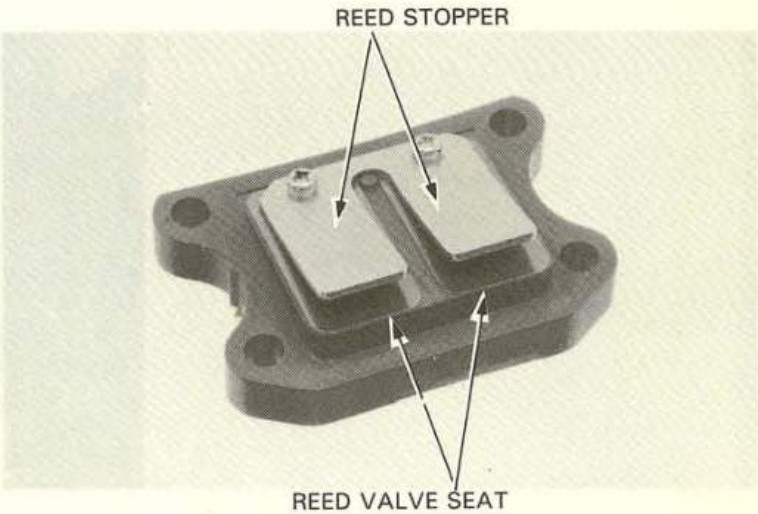


INSPECTION

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

CAUTION:

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



INSTALLATION

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

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AUTO FUEL VALVE INSPECTION

INSPECTION

WARNING

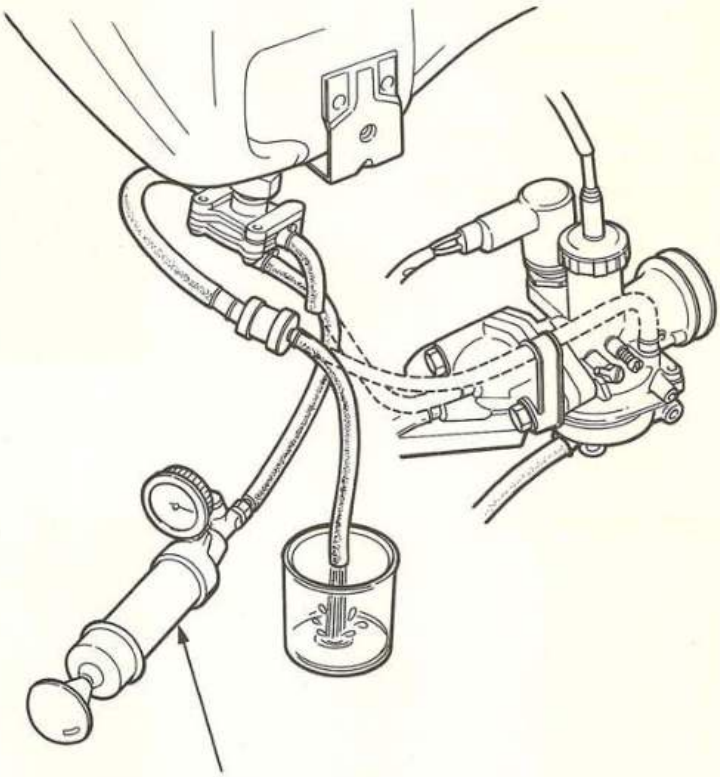
Gasoline is extremely flammable and is explosive under certain conditions. Perform this operation in a well ventilated area and do not smoke or allow sparks in the area.

1. With the engine stopped, 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 (5—10 cc) has been drained out of the fuel valve and fuel line thoroughly. Should fuel fail to stop flowing out of the fuel line, check the vacuum tube for blockage.

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, do the following;
   - Remove the vacuum tube and clean it with compressed air.

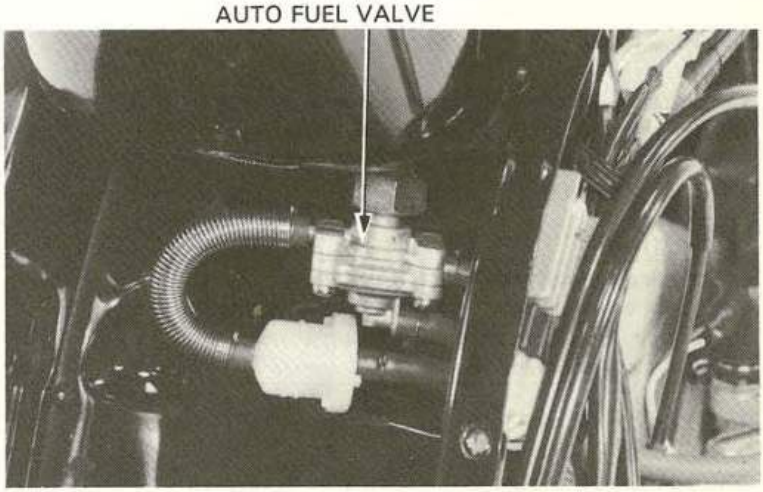
CAUTION:

Do not apply too much vacuum or the fuel valve diaphragm may tear.

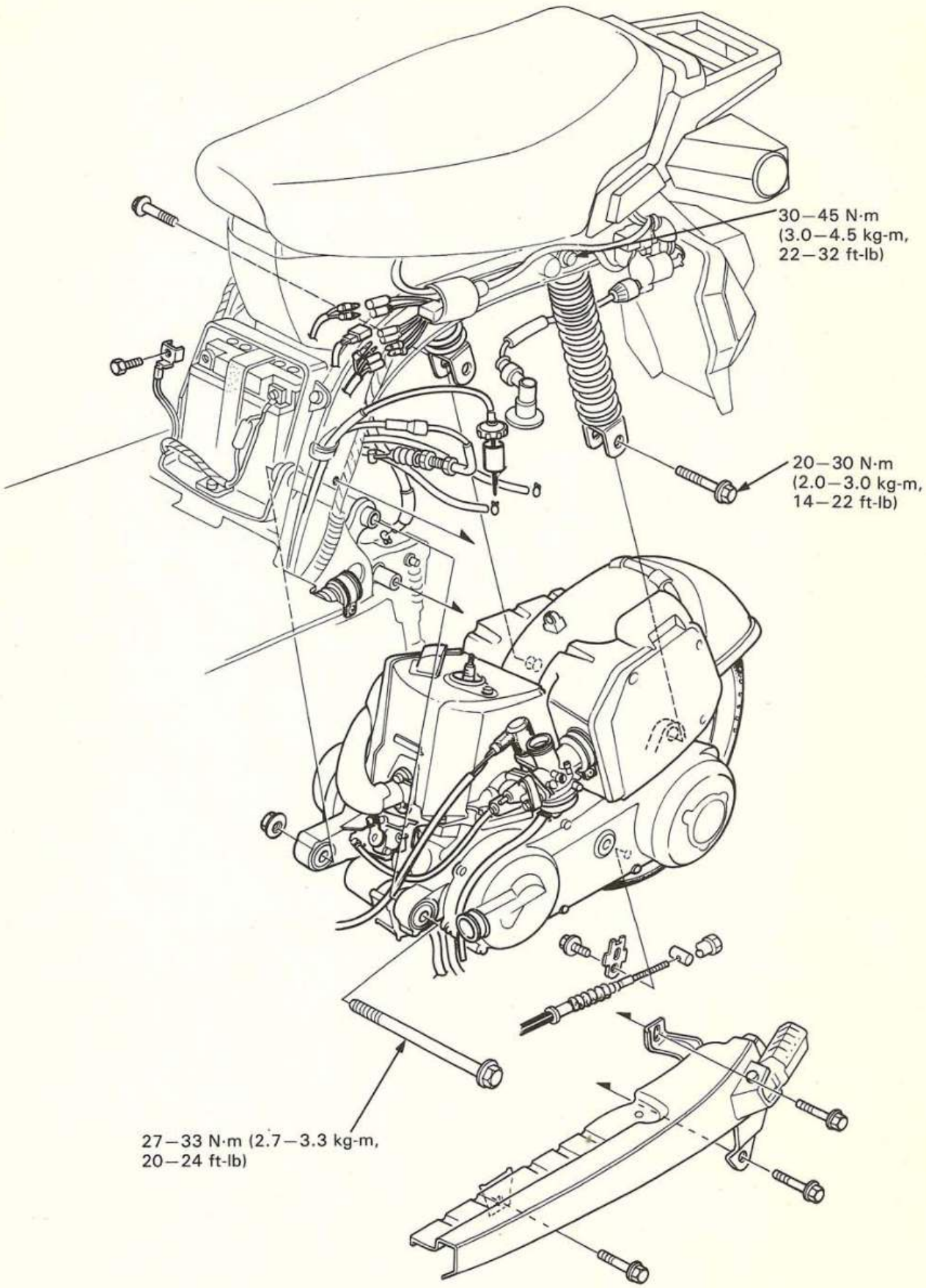


HONDA VACUUM PUMP
ST-AH-260-MC7 (U.S.A. ONLY)

AUTO FUEL VALVE



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5. ENGINE REMOVAL/INSTALLATION

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

SERVICE INFORMATION

GENERAL

Parts requiring engine removal for servicing:
- Oil pump
- Starter motor
- Crankshaft

SPECIFICATIONS

Engine weight: 21.3 kg·m (46.9 lbs)

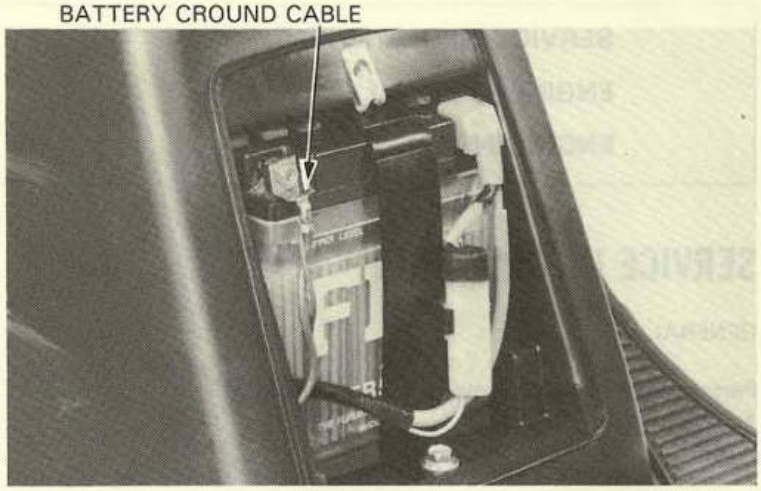
TORQUE VALUES

Engine mounting bolt	27—33 N·m (2.7—3.3 kg-m, 20—24 ft-lb)
Rear shock absorber upper mounting bolt	30—45 N·m (3.0—4.5 kg-m, 22—32 ft-lb)
Rear shock absorber lower mounting bolt	20—30 N·m (2.0—3.0 kg-m, 14—22 ft-lb)

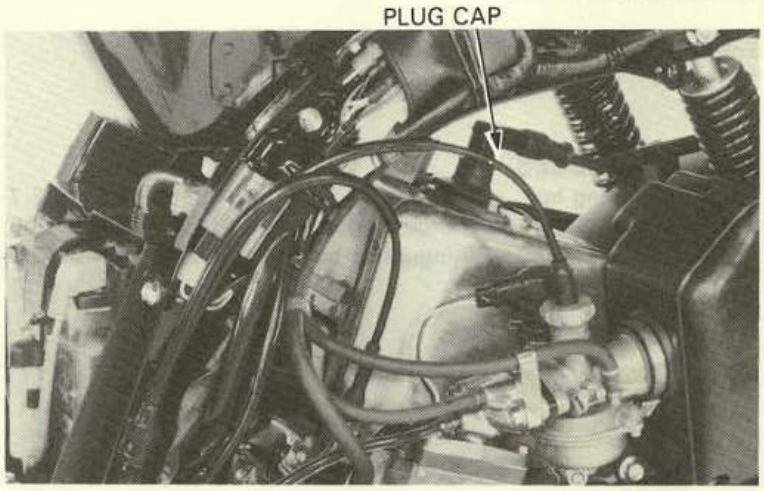
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ENGINE REMOVAL

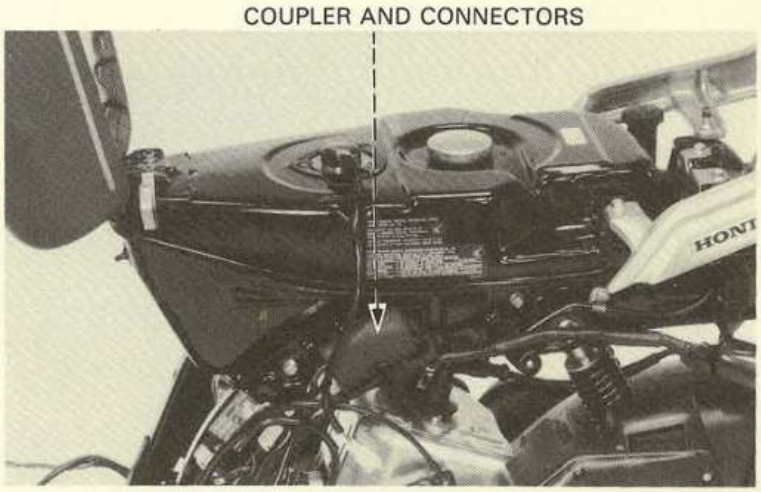
Remove the frame center cover.
Remove the right and left floor boards (Section 11).
Remove the battery cover and disconnect the battery ground cable from the battery negative terminal.



Remove the spark plug cap from the spark plug.

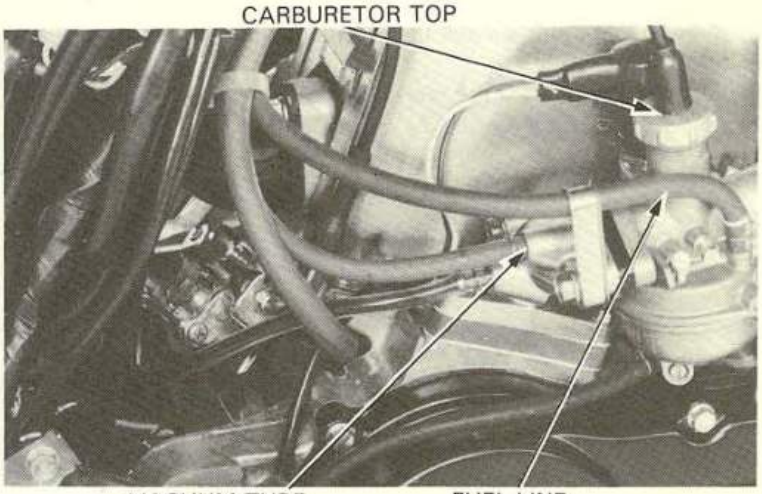


Remove the alternator and starter coupler and connectors.

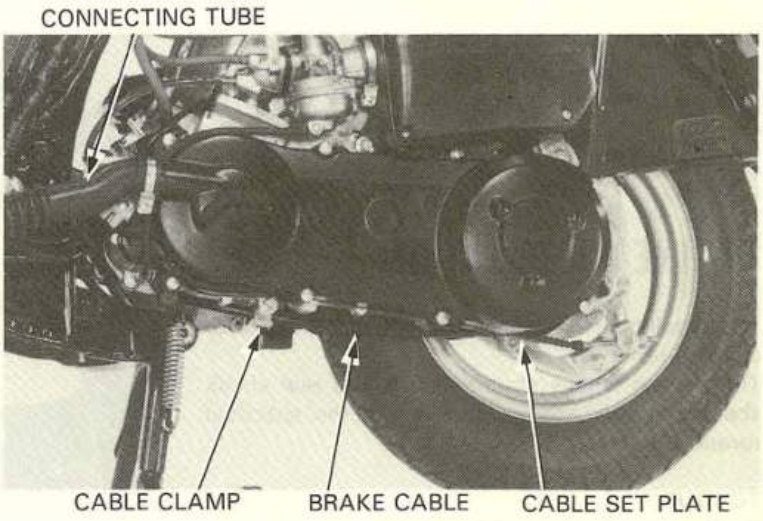


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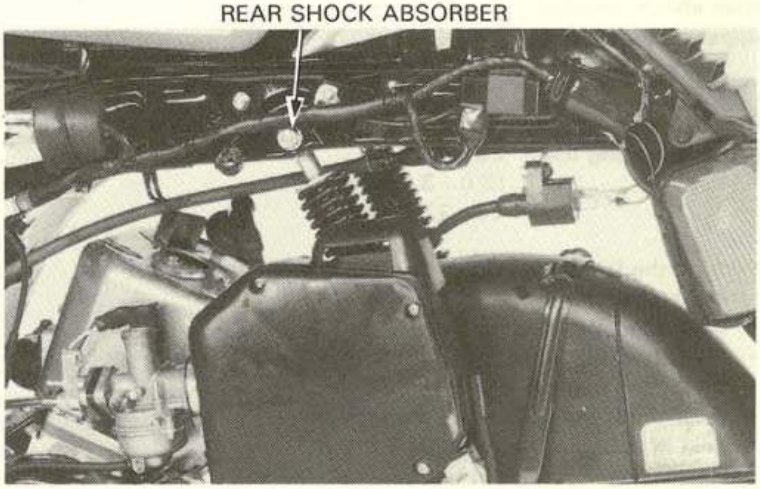
Remove the carburetor top.
Disconnect the vacuum tube and fuel line.



Disconnect the rear brake cable.
Disconnect the left crankcase cover connecting tube.

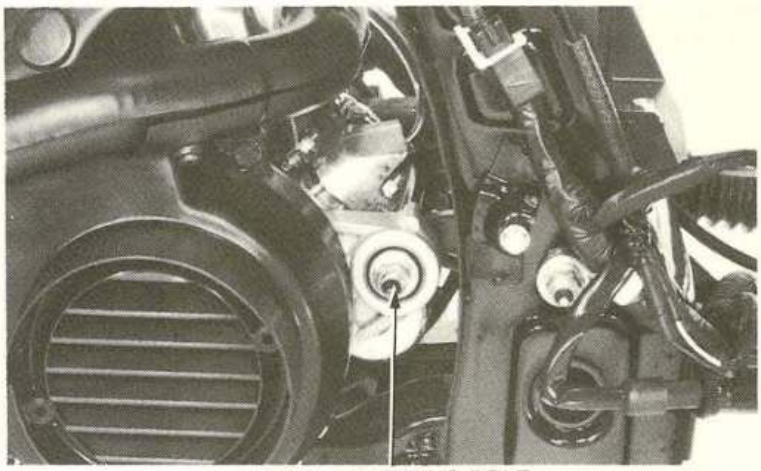


Remove the rear shock absorber.



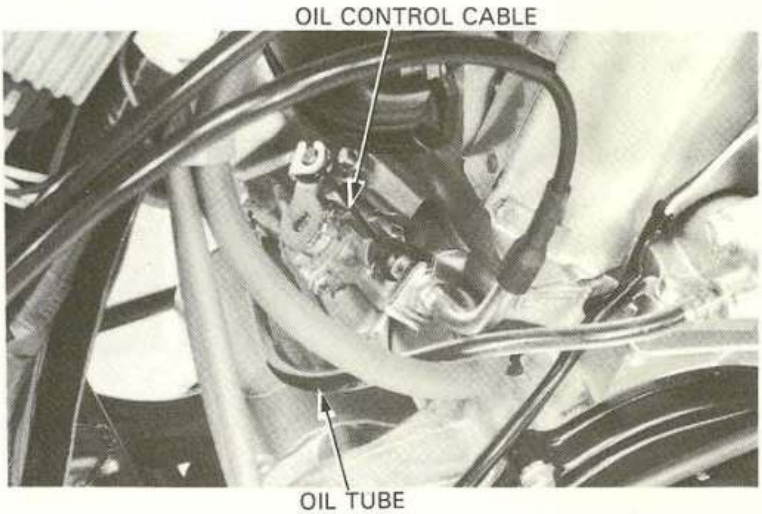
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Unscrew the nut and remove the engine mounting bolt.
Slide the engine toward the rear.



ENGINE MOUNTING BOLT

Disconnect the oil control cable.
Disconnect the oil tube.
Remove the engine.



ENGINE INSTALLATION

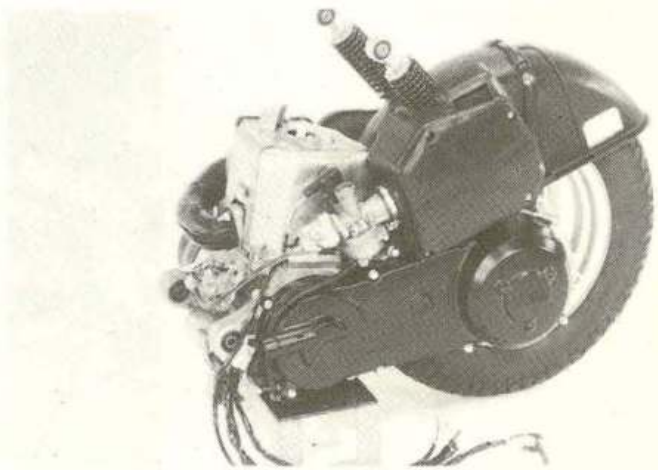
The installation sequence is essentiaaly the reverse order of removal.
Tighten the engine mounting bolt and rear shock sbsorber upper and lower bolts to the specified torque values.

TORQUE:

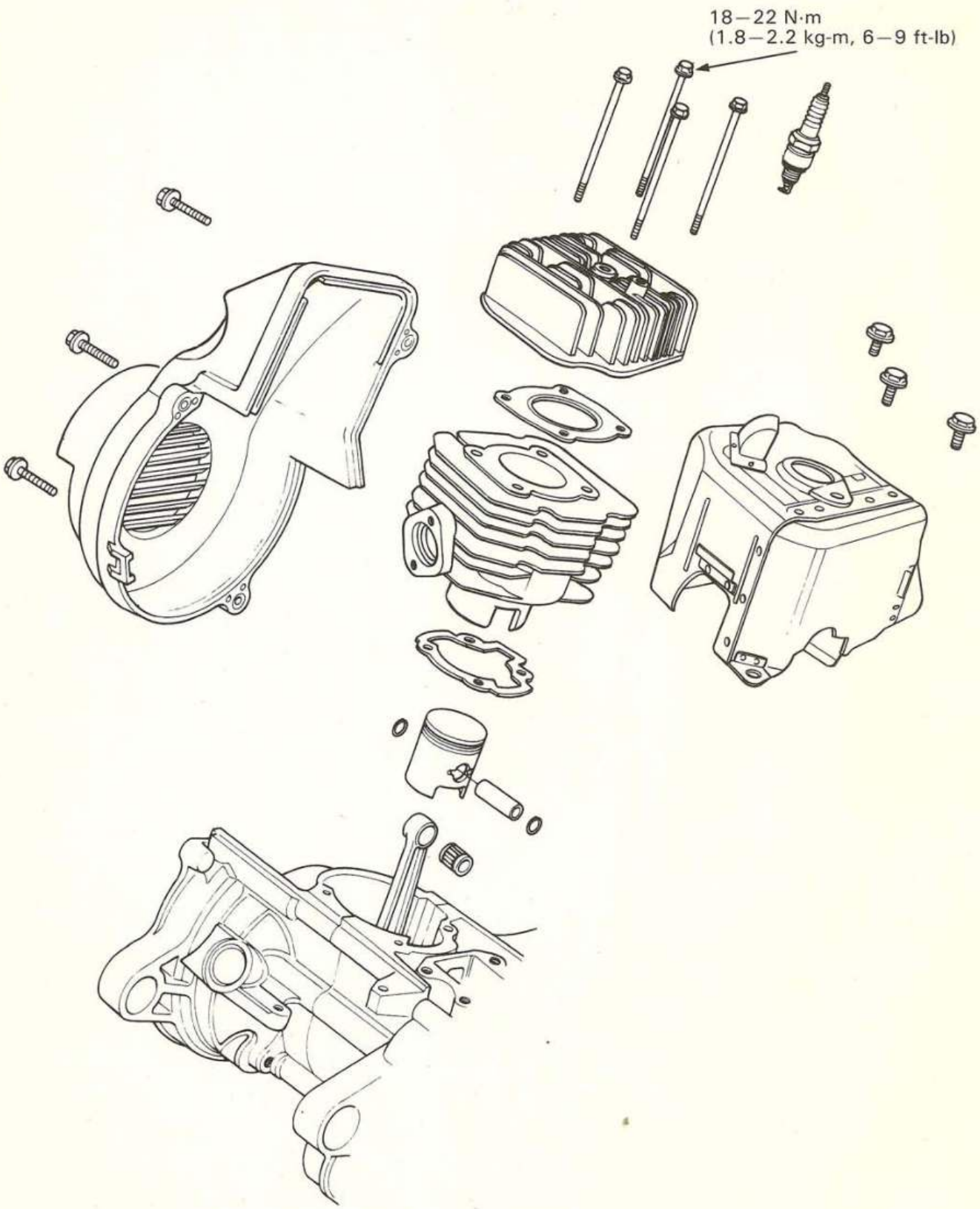
Engine mounting bolt:	**27–33 N·m (2.7–3.3 kg-m, 20–24 ft-lb)**
Rear shock absorber upper mounting bolt:	**30–45 N·m (3.0–4.5 kg-m, 22–32 ft-lb)**
Rear shock absorber lower mounting bolt:	**20–30 N·m (2.0–3.0 kg-m, 14–22 ft-lb)**

Perform the following inspections and adjustments after installation:

- Wire and cable routing (Page 1-8, 1-9, 1-10)
- Throttle calbe (Page 3-4)
- Oil control cable (Page 2-4)
- Oil pump bleeding/priming (Page 2-3)
- Rear brake adjustment (Page 3-9)



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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 maintenance and inspecton can be done with the engine installed.
- 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 inspecton. Coat all sliding surfaces with clean motor oil before assembly.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Cylinder head	Warpage	———	0.10 mm (0.004 in)
Piston	Piston O.D.	54.955–54.960 mm (2.1635–2.1367 in)	54.9 mm (2.16 in)
	Cylinder-to-piston clearance	0.035–0.050 mm (0.00137–0.00196 in)	0.10 mm (0.004 in)
	Piston pin bore	14.002–14.008 mm (0.5512–0.5514 in)	14.02 mm (0.552 in)
	Piston pin O.D.	13.994–14.000 mm (0.5509–0.5511 in)	13.98 mm (0.550 in)
	Piston-to-piston pin clearance	0.002–0.012 mm (0.0001–0.0005 in)	0.030 mm (0.0011 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.	19.005–19.017 mm (0.7482–0.7487 in)	19.02 mm (0.749 in)
Cylinder	I.D.	55.000–55.010 mm (2.1654–2.1659 in)	55.05 mm (2.167 in)

TORQUE VALUE

Cylinder head 18–22 N·m (1.8–2.2 kg-m, 13–16 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 or on piston top

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

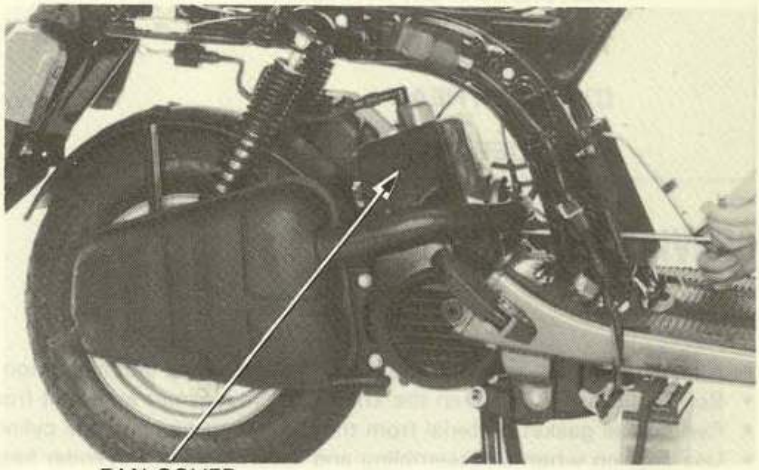
Abnormal noise — piston rings
1. Worn, stuck or broken piston rings
2. Worn or damaged cylinder

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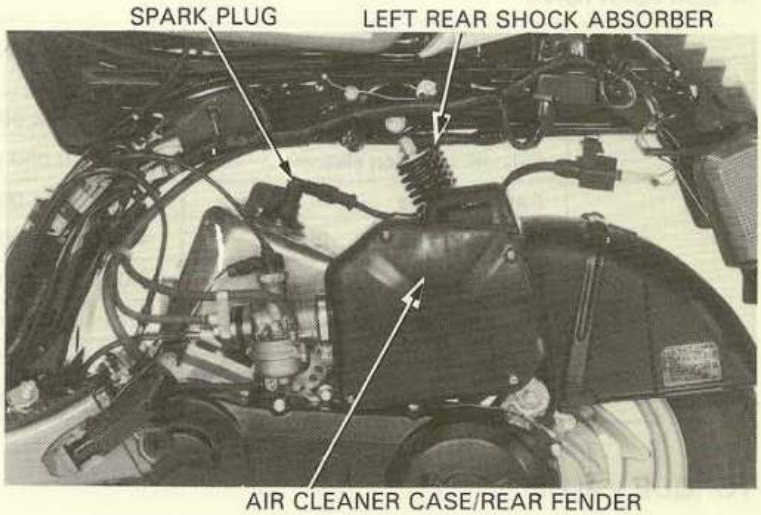
CYLINDER HEAD

CYLINDER HEAD REMOVAL

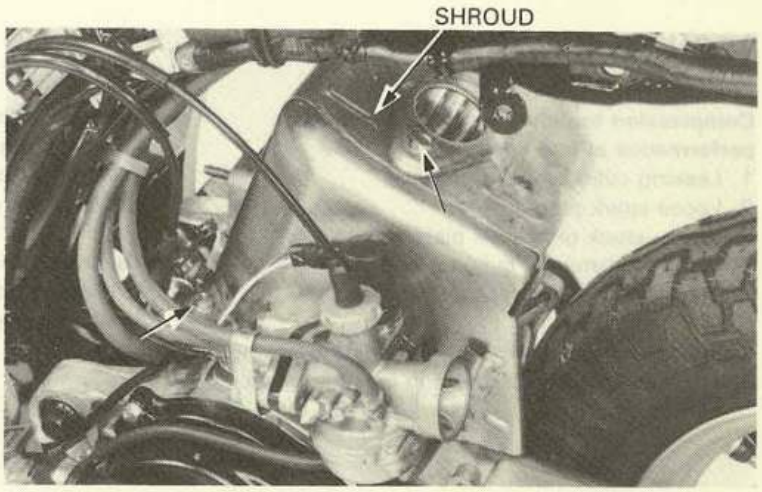
Remove the center cover (Section 11).
Remove the right floor board (Section 11).
Remove the exhaust muffler (Page 13-2).
Remove the cooling fan cover.



Remove the spark plug cap and spark plug.
Remove the left rear shock absorber.
Remove the air cleaner case/rear fender.

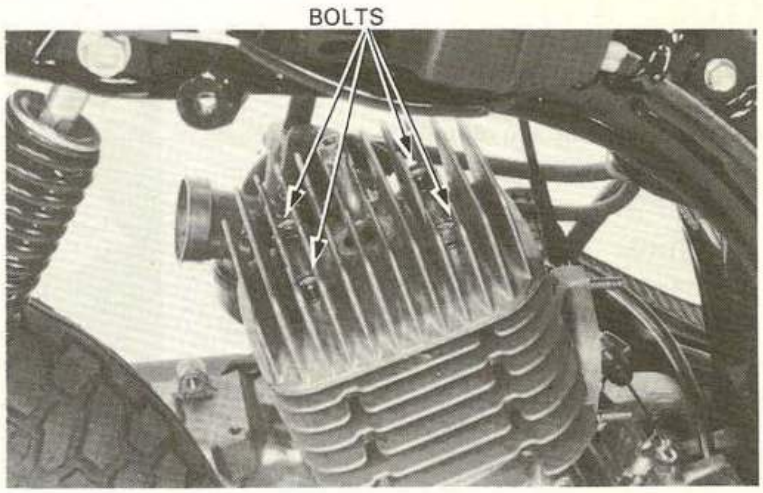


Remove the engine shroud.



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



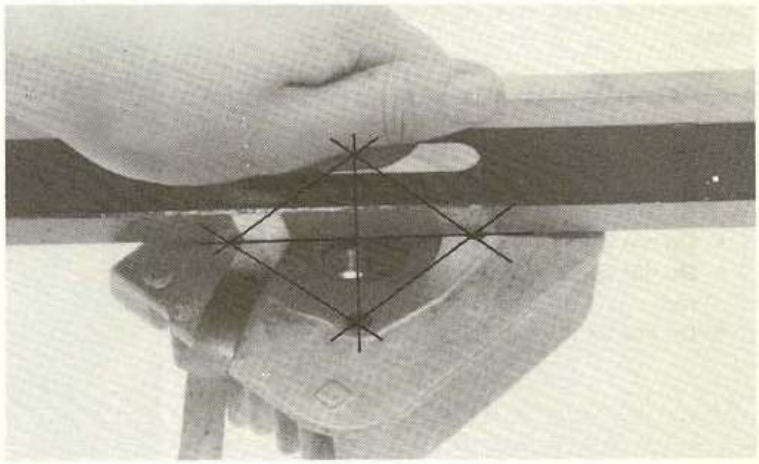
NOTE:

Loosen the bolts in a criss-cross pattern in 2-3 steps to prevent distorting head.

CYLINDER HEAD INSPECTION

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

SERVICE LIMIT: 0.10 mm (0.004 in)

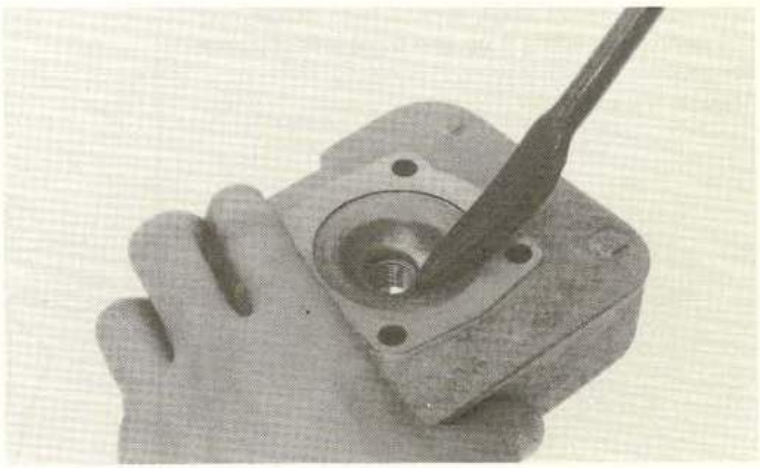


DECARBONIZING COMBUSTION CHAMBER

Remove the carbon build-up from the combustion chamber using a scraper as shown.

NOTE:

Do not scratch the combustion chamber wall and cylinder mating surface.



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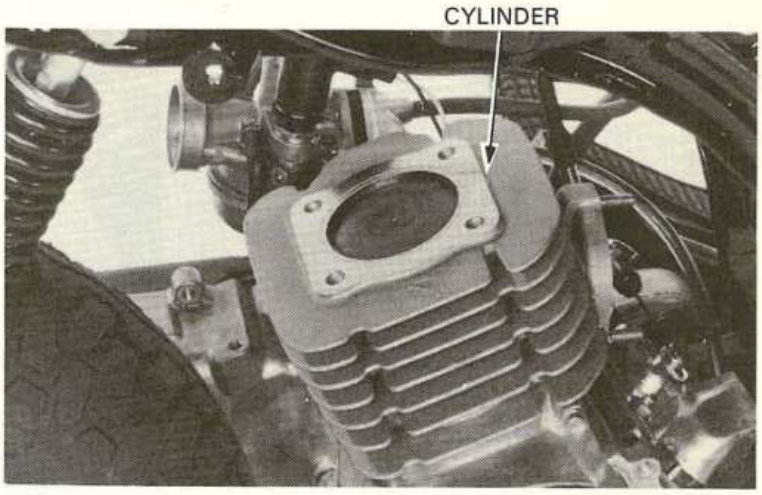
CYLINDER/PISTON

CYLINDER REMOVAL

Pull the cylinder up and off being careful not to let the piston get damaged.

CAUTION:

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

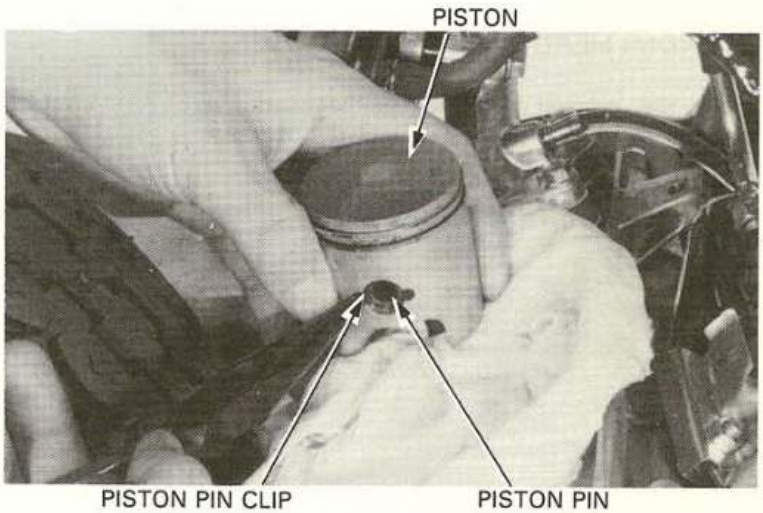


Place a shop towel into the crankcase around the piston.

Remove one piston pin clip and press the piston pin out of the piston.

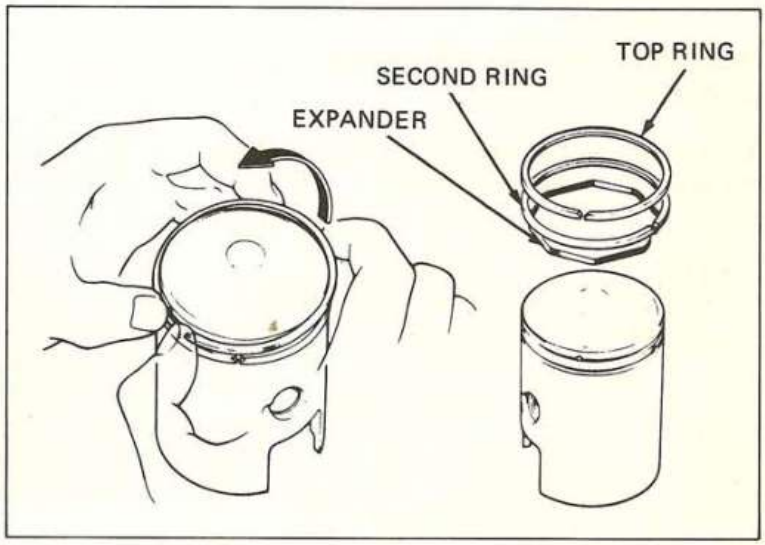
NOTE:

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



Remove the piston rings; spread each piston ring and remove by lifting it up at a point just opposite the gap.

Remove the expander.

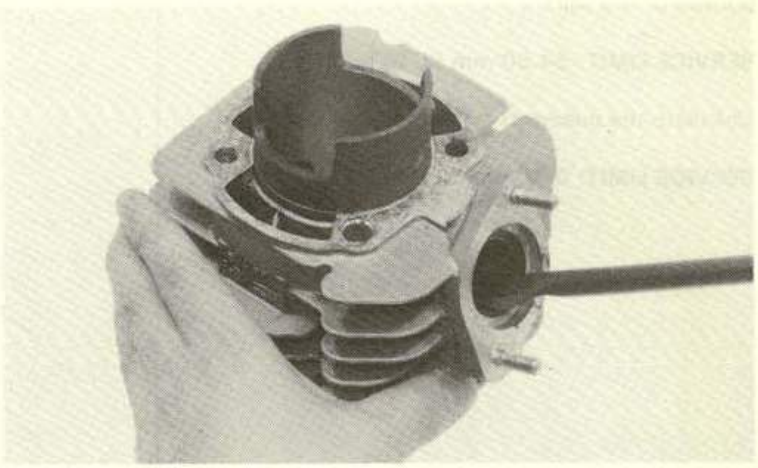


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CYLINDER/PISTON INSPECTION

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

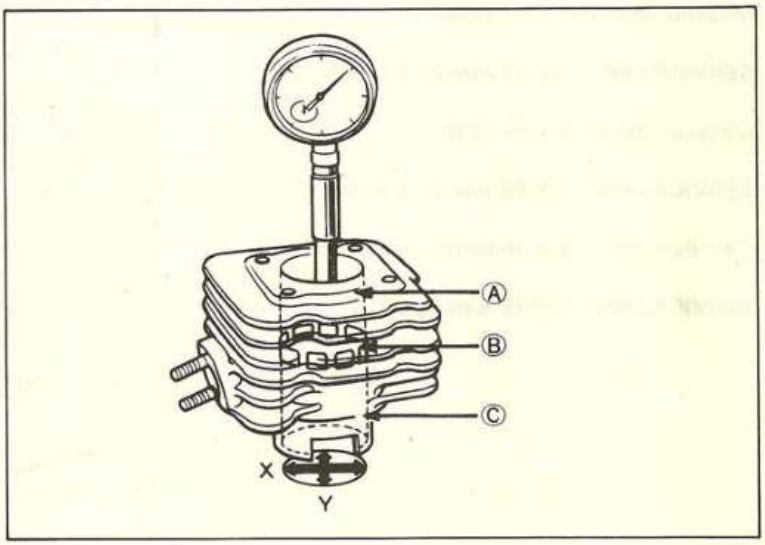


CAUTION:

Do not scratch or score the cylinder and piston.

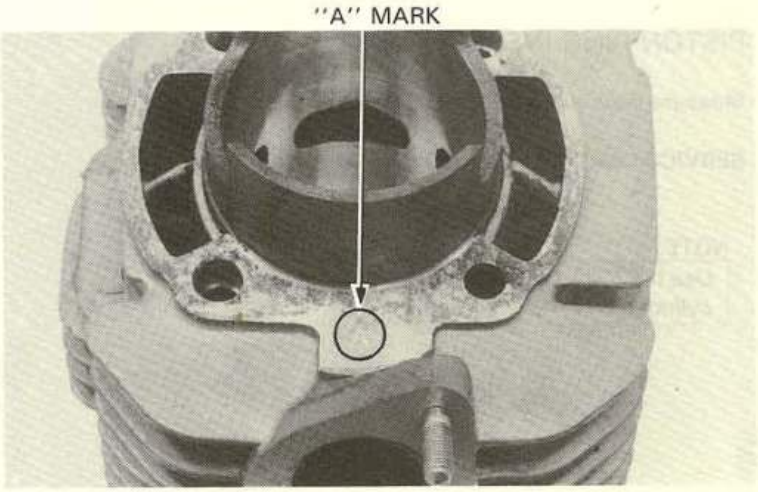
Inspect the cylinder bore for wear at three levels in X and Y directions. Use the largest measurement to determine the cylinder wear.

SERVICE LIMIT: 55.05 mm (2.167 in)



CAUTION:

The cylinder may or may not have an "A" mark on its crankcase mating surface as shown. When the cylinder is replaced, replace it with a similar one, to match the crankcase.



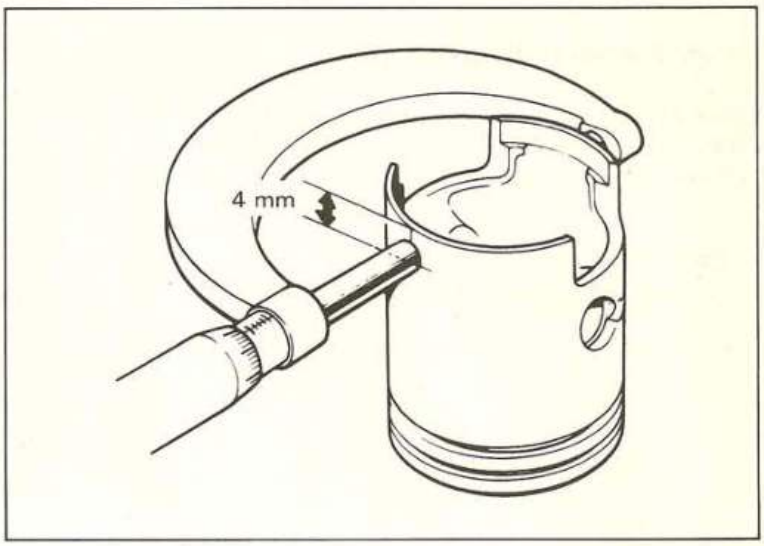
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Measure the piston O.D. at a point 4 mm from the bottom of the skirt.

SERVICE LIMIT: 54.90 mm (2.16 in)

Calculate the piston-to-cylinder clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



Measure the piston pin hole I.D.

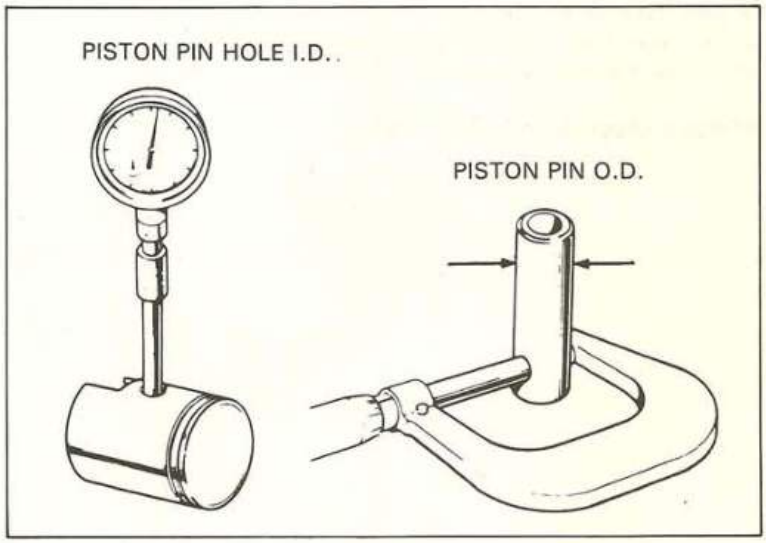
SERVICE LIMIT: 14.02 mm (0.552 in)

Measure the piston pin O.D.

SERVICE LIMIT: 13.98 mm (0.550 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.030 mm (0.0011 in)



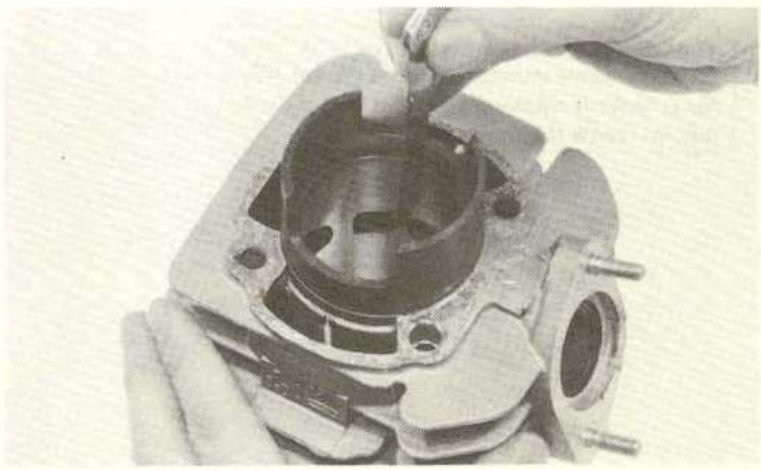
PISTON RING INSPECTION

Measure each piston ring end gap.

SERVICE LIMIT: 0.60 mm (0.024 in)

NOTE:

Use the piston to set each ring squarely in the cylinder.

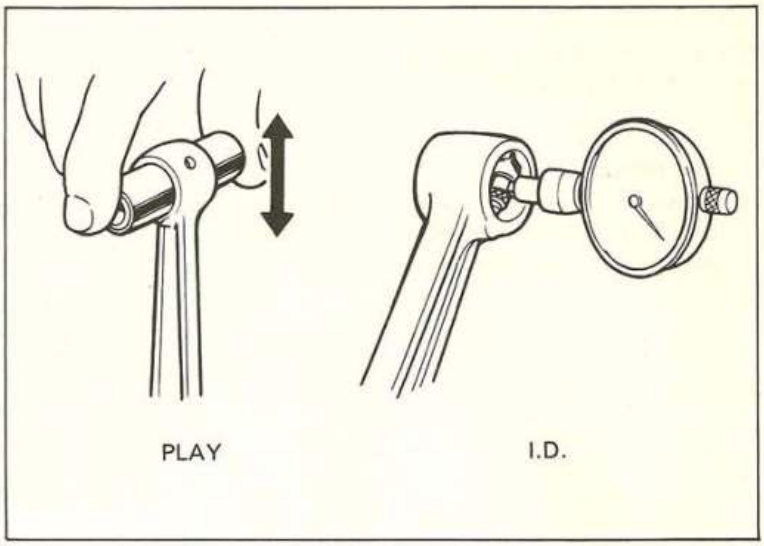


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CONNECTING ROD INSPECTION

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: 19.02 mm (0.749 in)



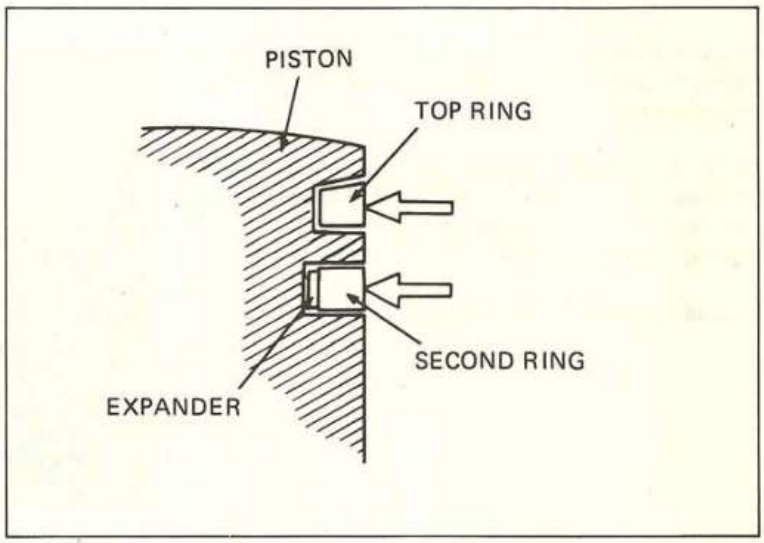
PISTON/CYLINDER INSTALLATION

Align the ring ends with the locating pins in the ring grooves and install the top and second rings in their respective ring grooves.

NOTE:

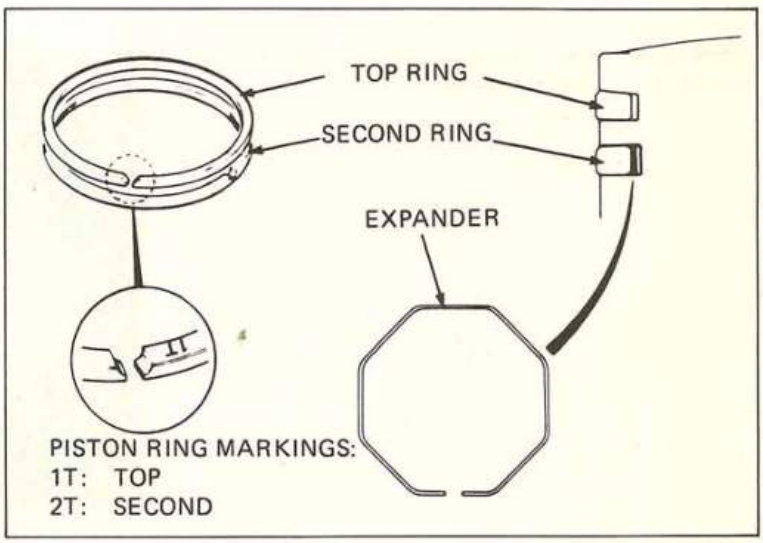
The top ring is a keystone ring and is not interchangeable with the square second ring.

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 or that the ring is in the wrong groove.



NOTE:

- Install the piston rings with the marks facing up.
- Do not replace one ring without replacing the other.
- Do not mix different brands of rings in one engine.

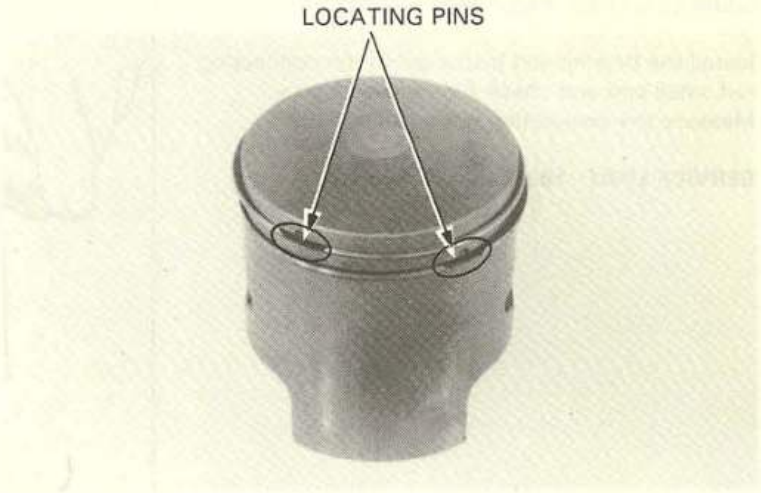


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Make sure that the ring ends align with the locating pins in the ring grooves.

CAUTION:

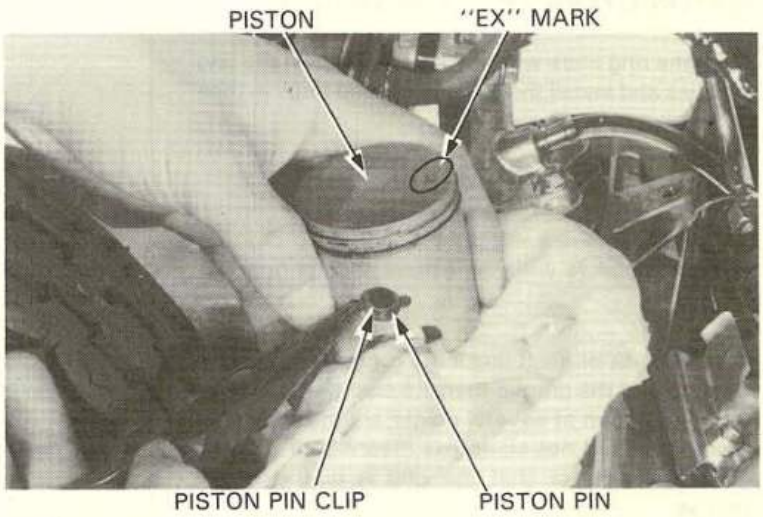
Be sure the rings do not rotate in their grooves over the locating pins to prevent ring breakage and piston and cylinder damage.



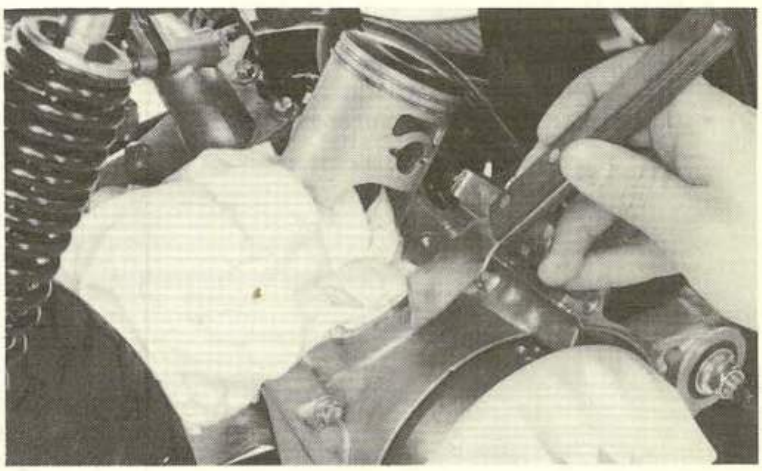
Place a shop towel over the crankcase opening to prevent piston pin clips from falling into the crankcase.

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

Install new piston pin clips.

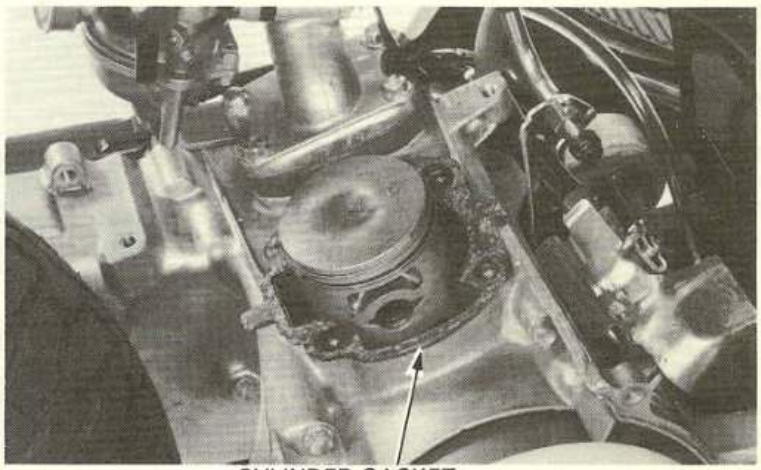


Remove all gasket material from the cylinder and crankcase mating surfaces.



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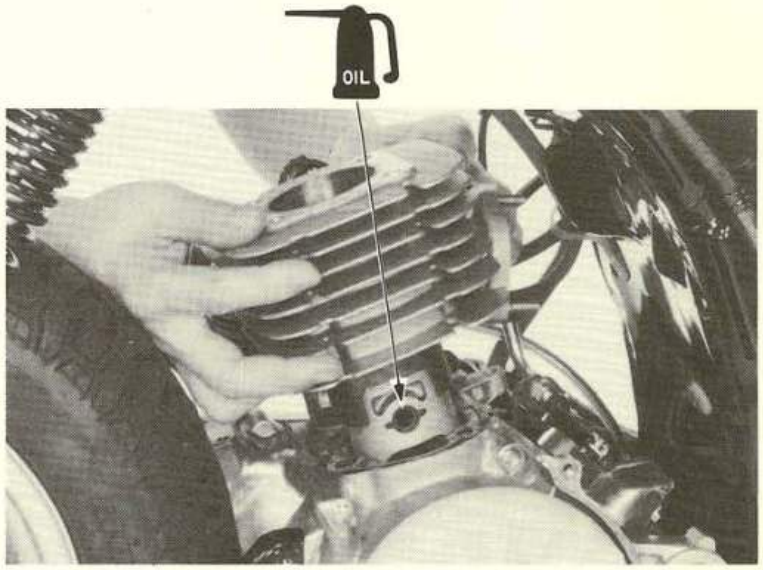
Place a new cylinder gasket on the crankcase.


CYLINDER GASKET

Lubricate the cylinder and piston 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.

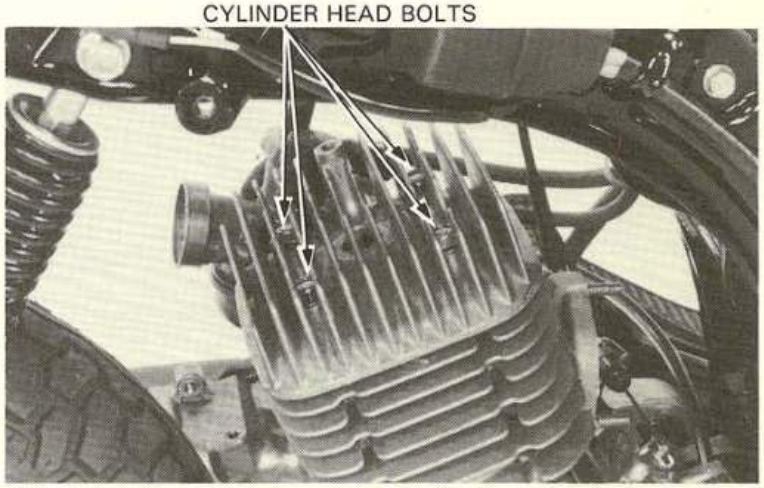


CYLINDER HEAD INSTALLATION

Install the cylinder head on the cylinder using a new cylinder head gasket.
Install and tighten the four cylinder head bolts in a criss-cross pattern.

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

CYLINDER HEAD BOLTS

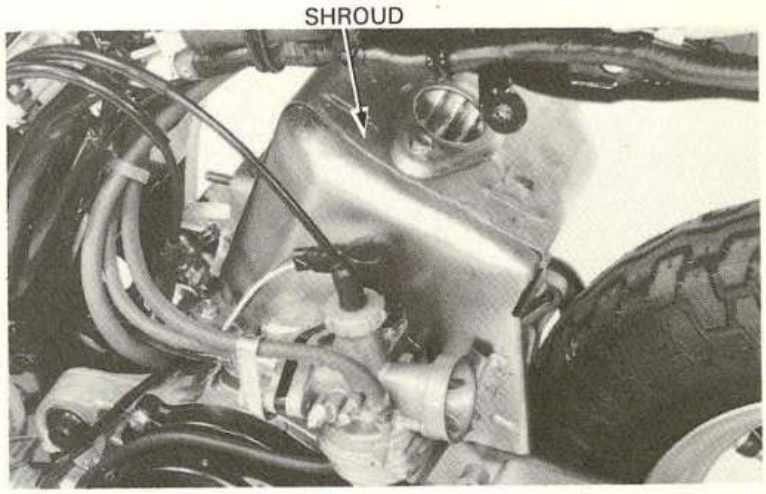


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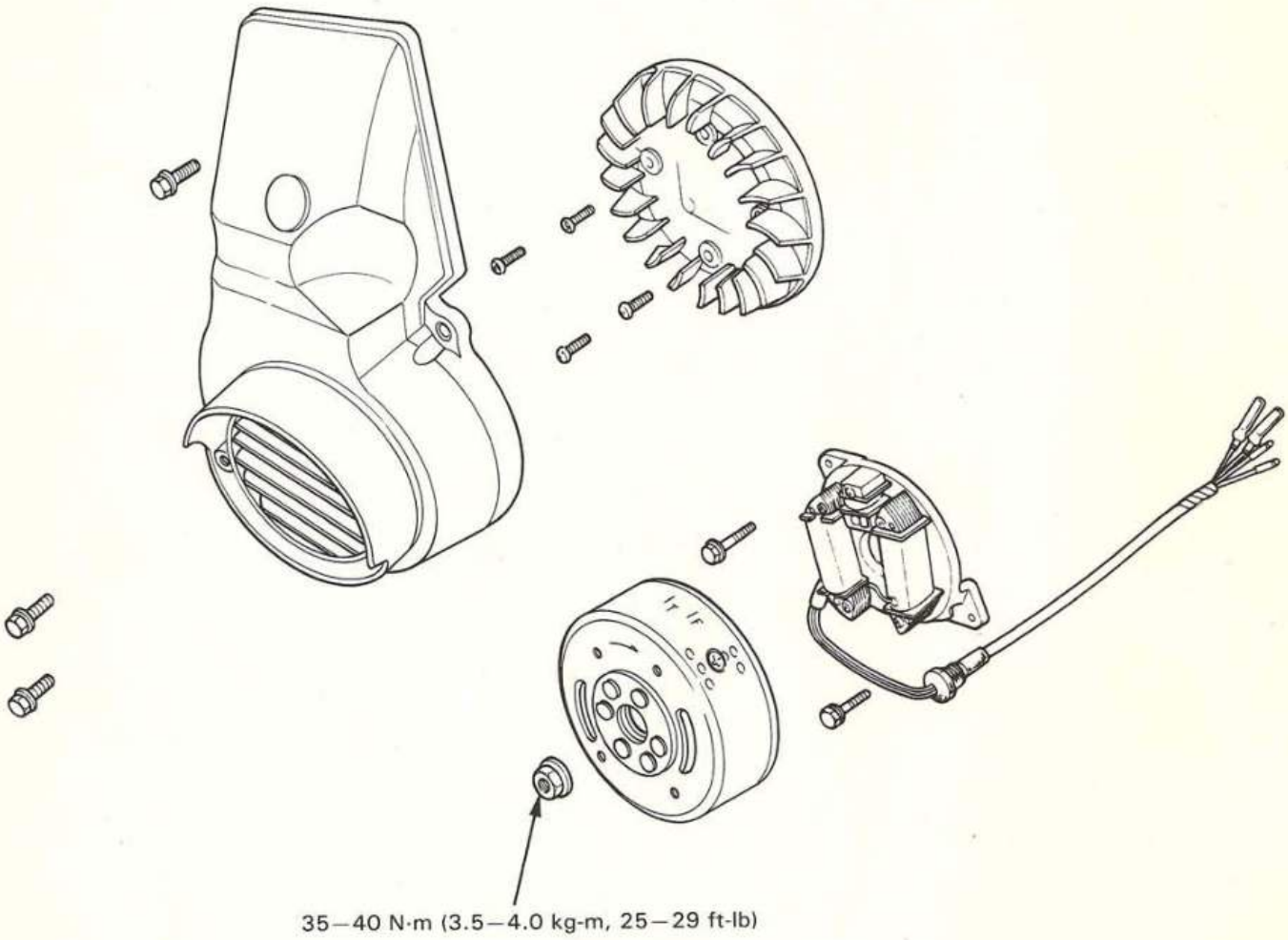
Install the engine shroud.

Install all removed parts in the reverse order of removal.

Perform the following inspections:
- Compression test (Page 3-8)
- Check for any abnormal engine noise.
- Check for cylinder air leaks.



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7. ALTERNATOR

SERVICE INFORMATION	7–1
ALTERNATOR REMOVAL	7–2
ALTERNATOR INSTALLATION	7–4

SERVICE INFORMATION

GENERAL

- All alternator maintenance can be made with the engine installed.
- Do not remove the pulse generator from the stator base.
- See Section 15 for alternator inspection.

TORQUE VALUE

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

TOOLS

Common	
Rotor puller	07733–0010000 or 07933–0010000
Universal holder	07725–0030000

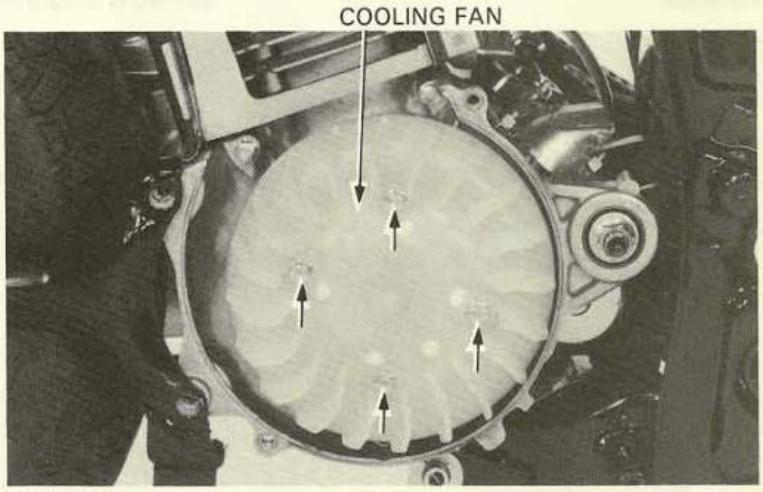
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ALTERNATOR REMOVAL

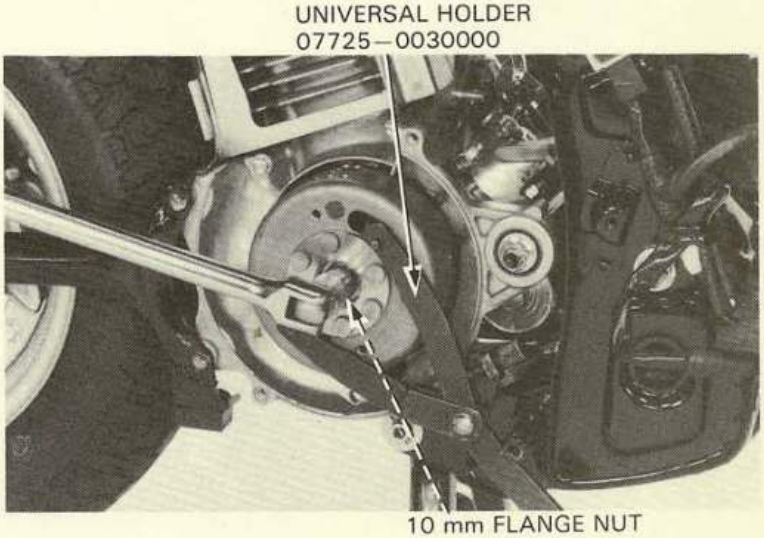
Remove the frame center cover (Section 11).
Remove the muffler.
Remove the right floor board.
Remove the fan cover.



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



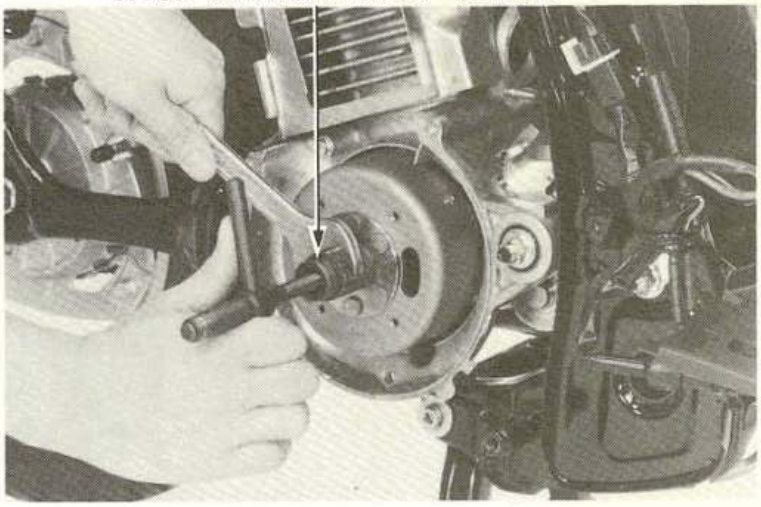
Attach the universal holder to the flywheel.
Hold the flywheel and remove the flywheel 10 mm flange nut.



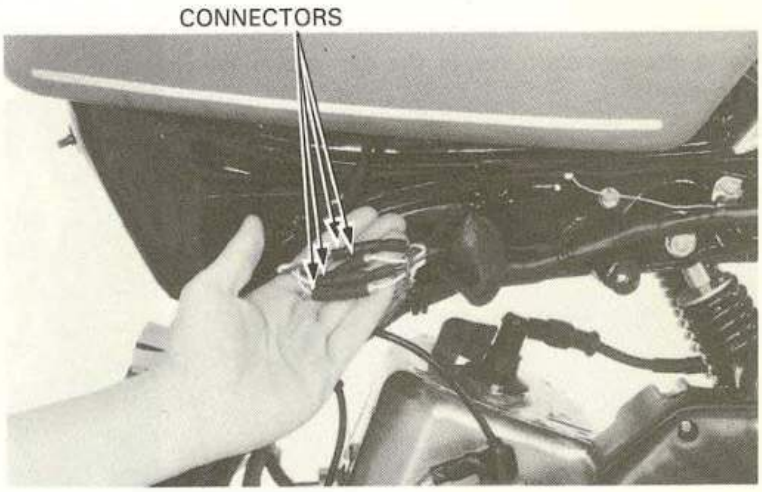
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Remove the flywheel with the rotor puller.
Remove the woodruff key.

ROTOR PULLER
07733–0010000 or 07933–0010000



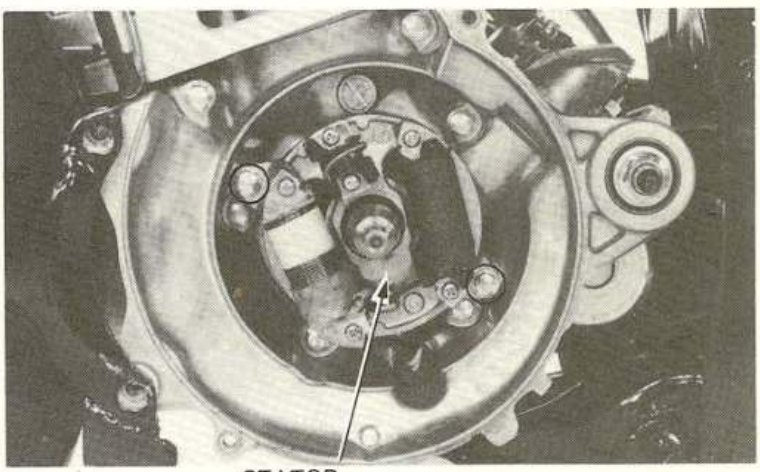
Disconnect the alternator wire connectors.



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

NOTE:

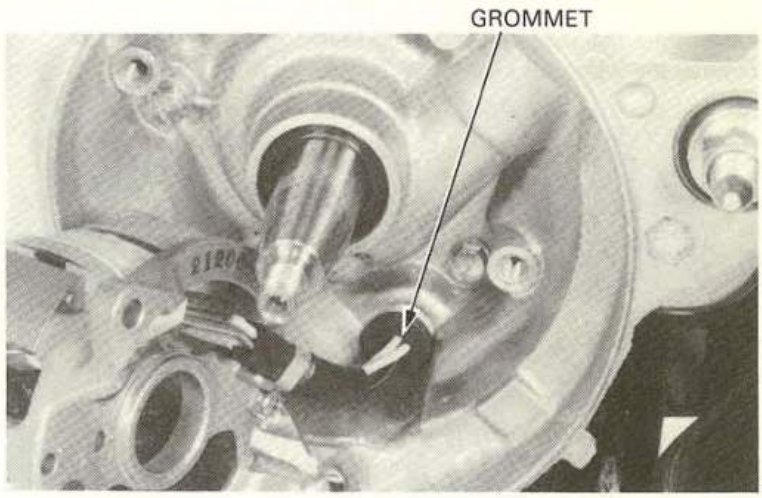
- Do not remove the pulse generator from the stator base.
- Avoid damaging the stator coils.



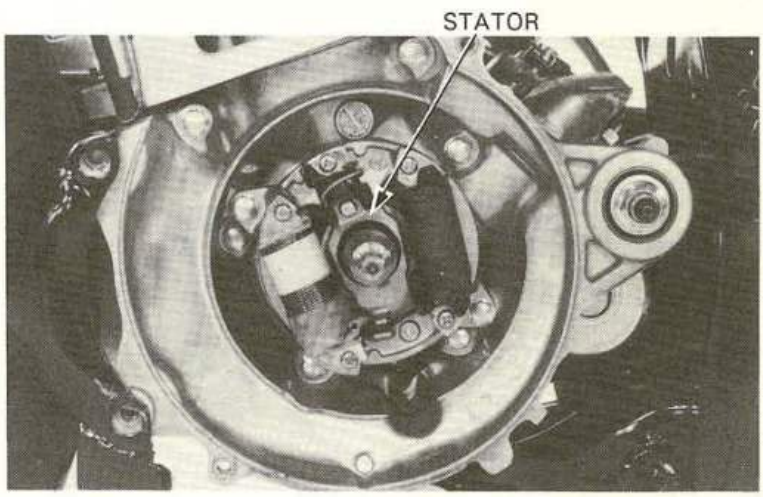
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ALTERNATOR INSTALLATION

Install the alternator wire grommet in the case.



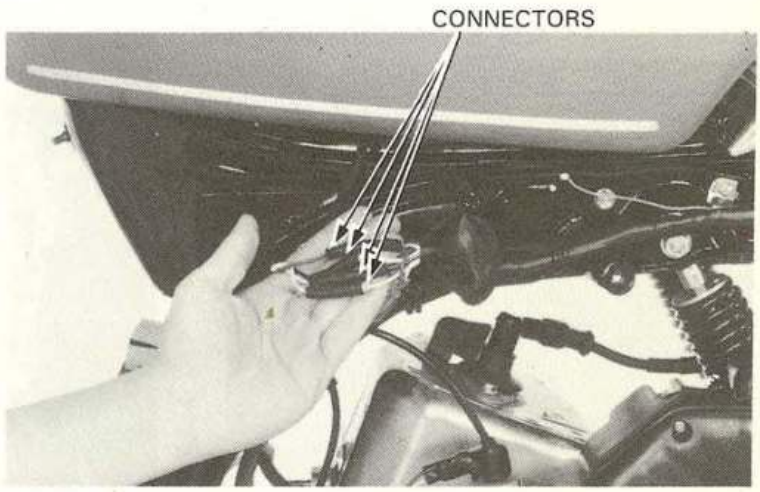
Install the stator.
Install the woodruff key in the keyway in the crankshaft.



Connect the alternator wire connectors.

NOTE:

Route the alternator wires properly and secure with the wire clamp.



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NOTE:

Clean the tapered hole in the flywheel of any burrs.

Install the flywheel onto the crankshaft.

NOTE:

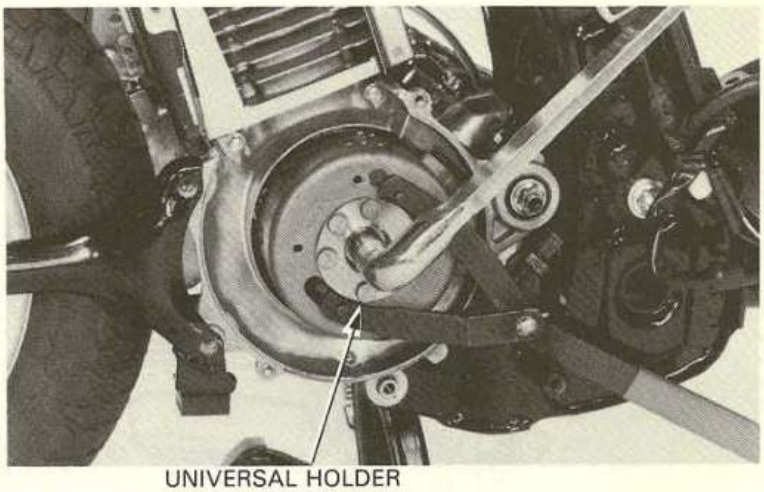
Make sure that there are no foreign particles inside the flywheel.

Torque the flywheel 10 mm flange nut.

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

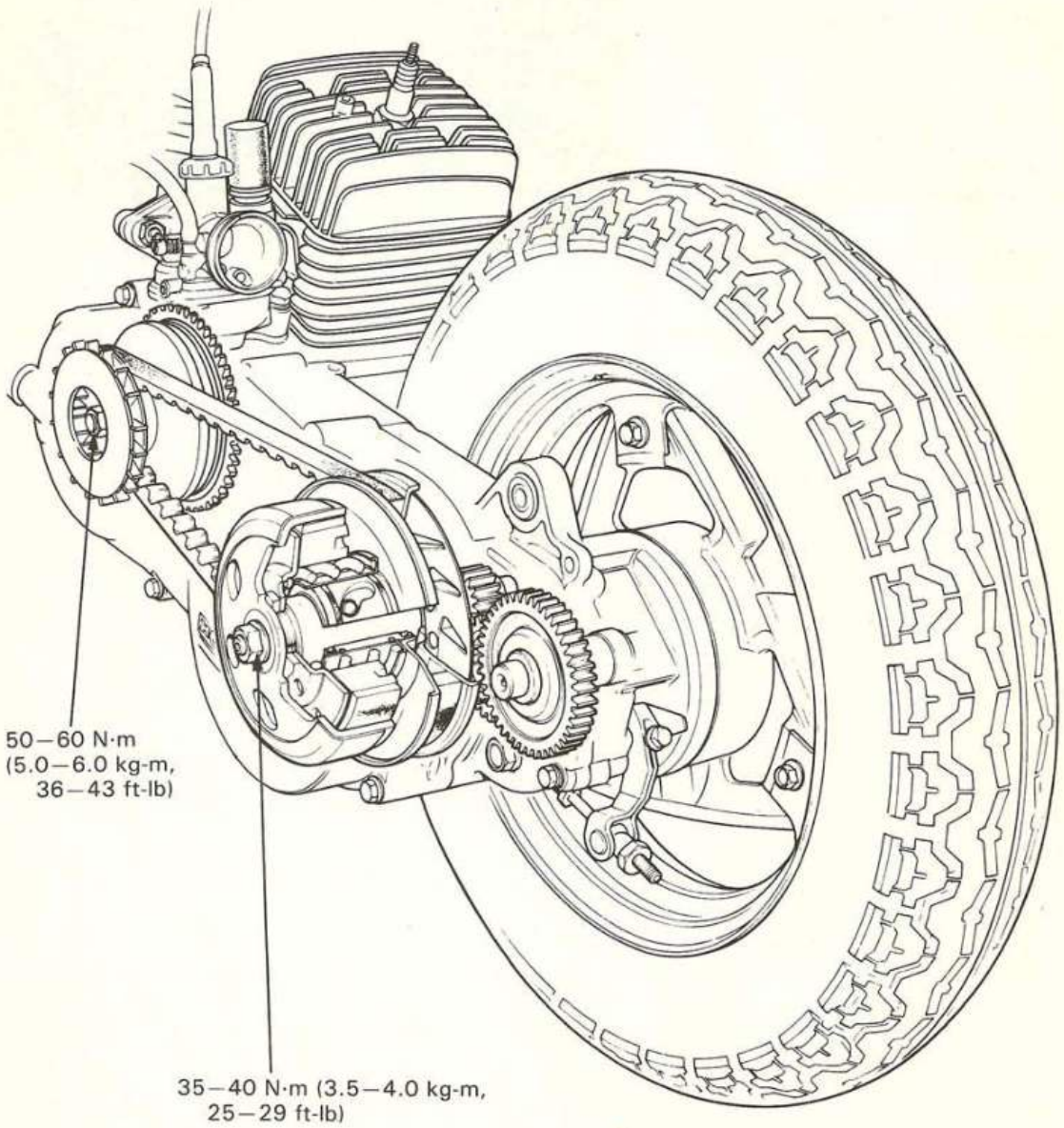
Install all removed parts in the reverse order or removal.

Start the engine and check the ignition timing (Page 15-8).



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07725—0030000

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8. DRIVE AND DRIVEN PULLEYS/ CLUTCH

SERVICE INFORMATION	8–1
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STARTER DRIVEN GEAR	8–8
CLUTCH/DRIVEN PULLEY	8–9

SERVICE INFORMATION

GENERAL

- Avoid getting grease and oil on the drive belt and pulley faces.

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Movable drive face bushing I.D.	24.000–24.021 mm (0.9449–0.9457 in)	24.070 mm (0.9476 in)
Drive face boss O.D.	23.970–23.990 mm (0.9437–0.9444 in)	23.940 mm (0.9425 in)
Weight roller O.D.	19.95–20.10 mm (0.785–0.791 in)	19.00 mm (0.748 in)
Clutch outer I.D.	125.00–125.20 mm (4.921–4.929 in)	125.50 mm (4.940 in)
Driven face spring free length	61.50–62.50 mm (2.421–2.461 in)	60.00 mm (2.362 in)
Driven face O.D.	33.965–33.985 mm (1.3372–1.3379 in)	33.940 mm (1.3362 in)
Movable driven face I.D.	34.000–34.025 mm (1.3386–1.3396 in)	34.060 mm (1.3409 in)

TORQUE VALUES

Drive face	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Movable driven face	35–40 N·m (3.5–4.0 kg-m, 25–29 ft-lb)
Clutch outer	35–40 N·m (3.5–4.0 kg-m, 25–29 ft-lb)

TOOLS

Special

Clutch spring compressor	07960–KJ90000
Bearing driver	07945–GC80000
Lock nut wrench, 39 mm	07916–1870002
Crankcase puller	07935–KG80000
Bearing driver attachment, 28 x 30 mm	07946–1870100

Common

Universal holder	07725–0030000
Bearing remover shaft	07746–0050100
Bearing remover head, 12 mm	07746–0050300
Bearing remover head, 17 mm	07746–0050500
Pilot, 17 mm	07746–0040400
Driver	07749–0010000

TROUBLESHOOTING

Engine starts but scooter won't move
1. Worn drive belt
2. Damaged ramp plate
3. Worn or damaged clutch lining

Engine stalls or scooter creeps
1. Broken clutch weight spring

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

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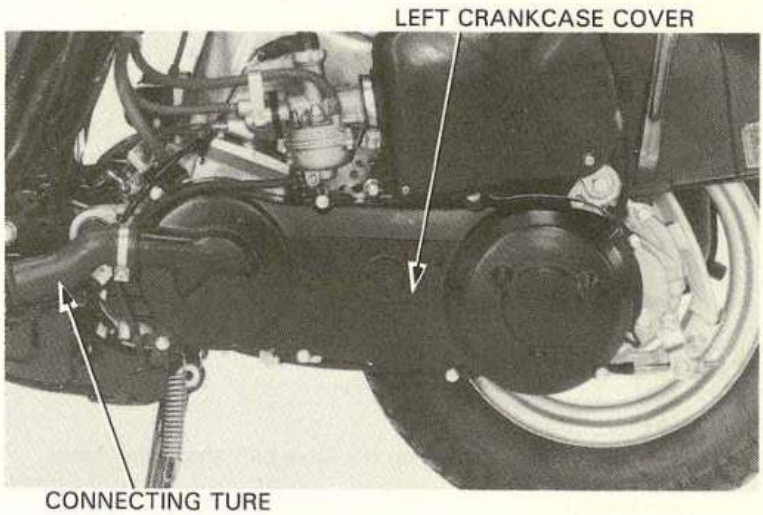
DRIVE PULLEY

LEFT CRANKCASE COVER REMOVAL

Remove the frame center cover and left floor board (Section 11).

Disconnected the connecting tube from the left crankcase cover.

Remove the bolts and left case cover.



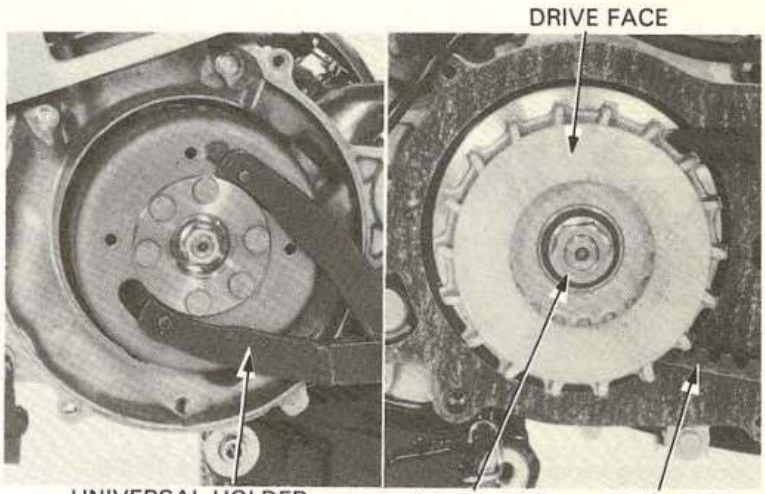
DRIVE BELT REMOVAL

Hold the flywheel with the universal holder and remove the 12 mm flange nut and drive face.

Remove the drive belt.
Remove the gasket and dowel pins.

CAUTION:

Do not bend the drive belt.



DRIVE BELT INSPECTION

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

SERVICE LIMITS: 15.8 mm (0.62 in)

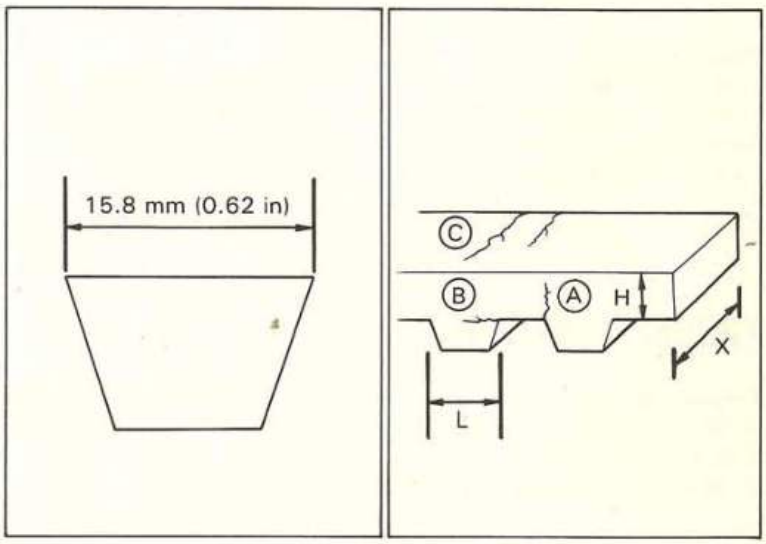
NOTE:

Use a genuine Honda Drive Belt.

Check for signs of cracks.
Replace the belt with a new one if the depth of a crack (A) exceeds the belt thickness (H).
Replace the belt with a new one if the length of a crack (B) exceeds the width of a tooth (L).

It is not necessary to replace the belt if these cracks have not reached the other end of the belt in the direction "X".

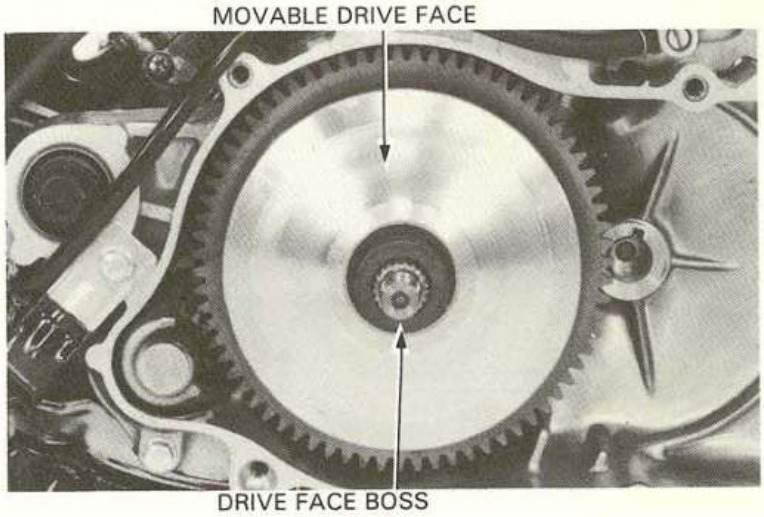
The belt need not be replaced if found with minor cracks (C).



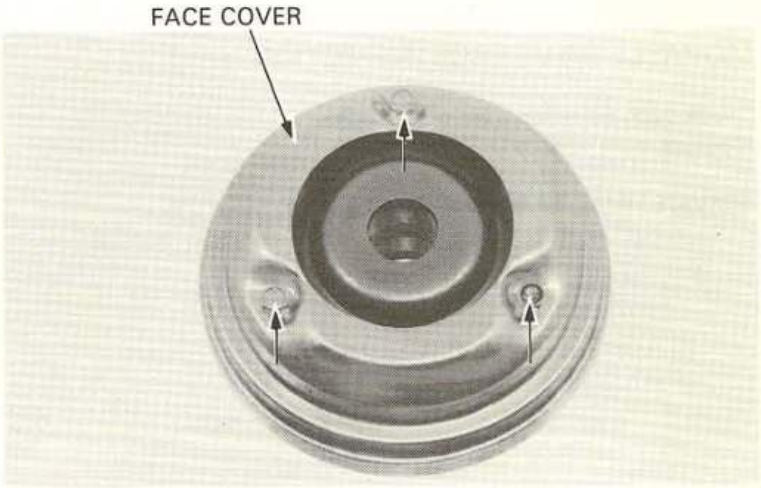
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MOVABLE DRIVE FACE REMOVAL/ DISASSEMBLY.

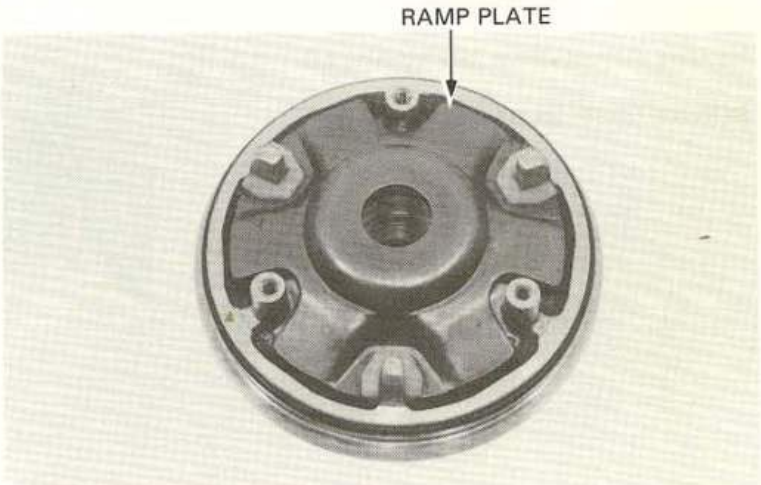
Remove the movable drive face assembly.



Remove the drive face boss.
Remove the three bolts attacing the movable drive face cover and remove the face cover.

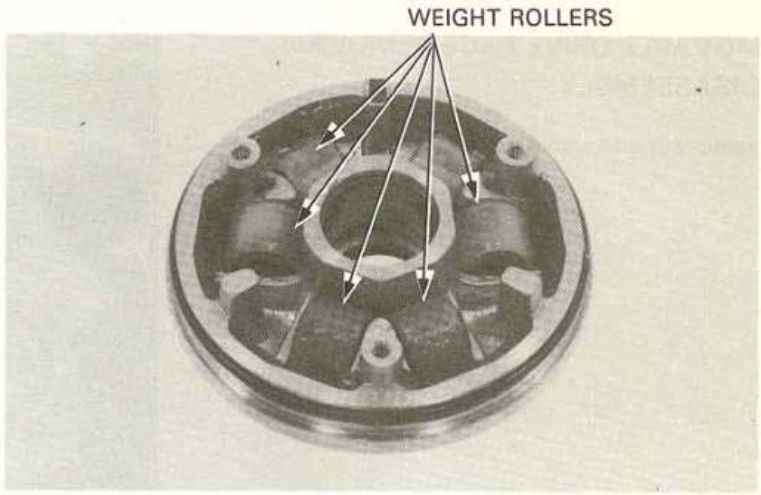


Remove the ramp plate.



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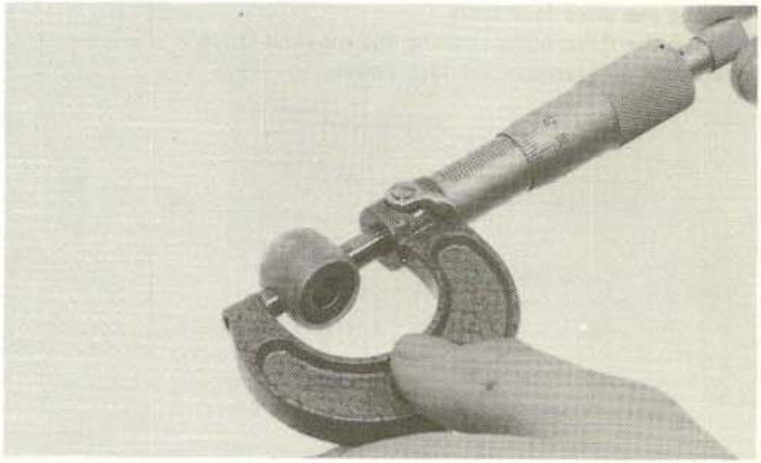
Remove the weight rollers.



MOVABLE DRIVE FACE INSPECTION

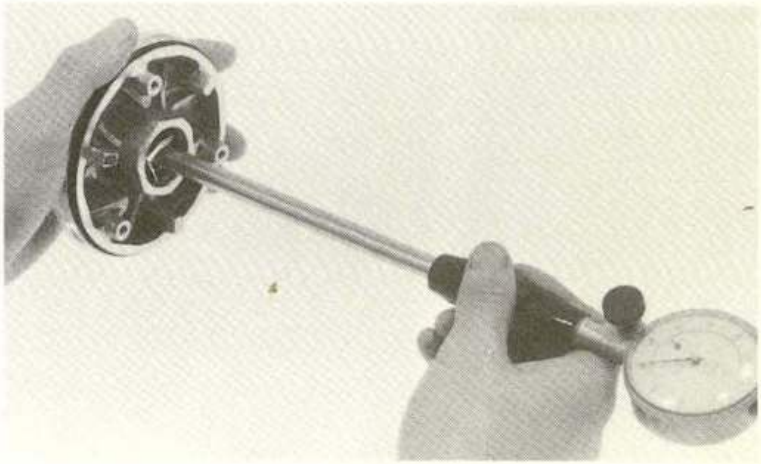
Check each roller for wear or damage.
Measure each roller's O.D.

SERVICE LIMIT: 19.00 mm (0.748 in)



Measure movable drive face bushing I.D.

SERVICE LIMIT: 24.07 mm (0.948 in)

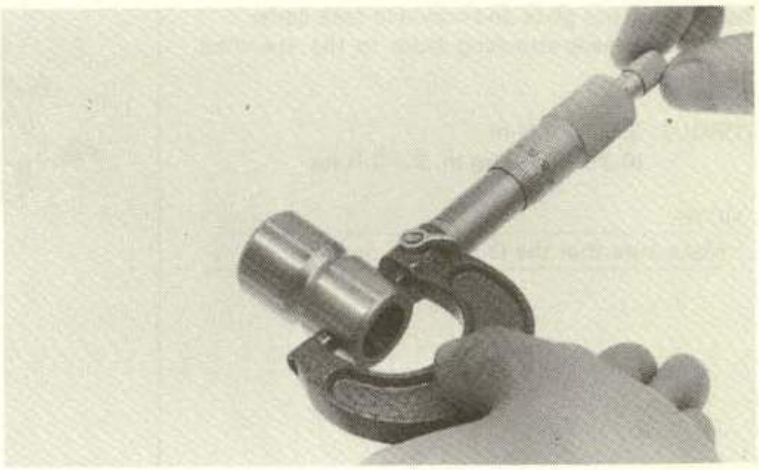


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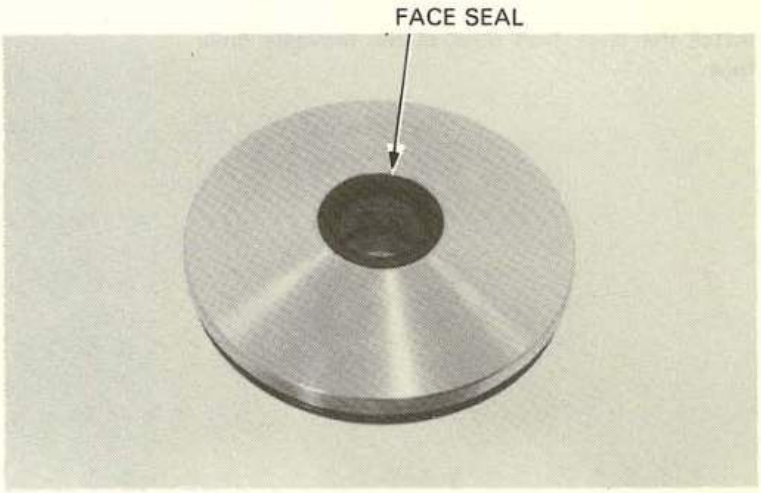
Inspect the drive face boss for wear or damage.
Measure the O.D at the drive face contacting face.

SERVICE LIMIT: 23.940 mm (0.9425 in)

Replace if smaller than the service limit.



Check the face seal for wear or damage.

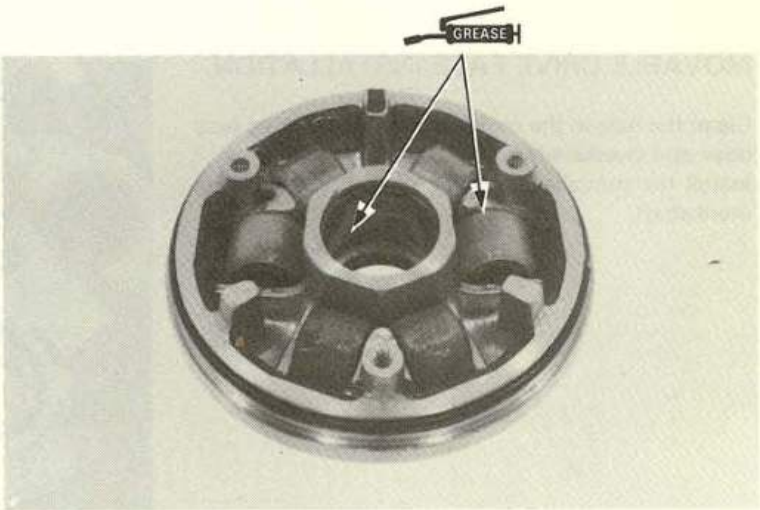


MOVABLE DRIVE FACE ASSEMBLY

Use 10—15g of grease and apply evenly to the inside of the drive face. Then install the weight rollers.

NOTE:

Specified grease:
Lithium based
- Mitsubishi: HD-3
- Nippon Sekiyu: Lipanox Deluxe 3
- Idemitsu: Coronex 3



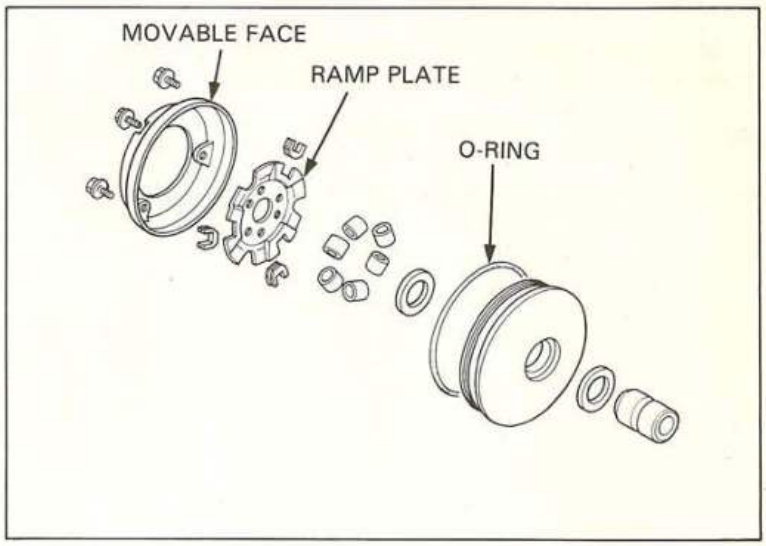
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Install the ramp plate and movable face cover. Tighten the seal attaching bolts to the specified torque.

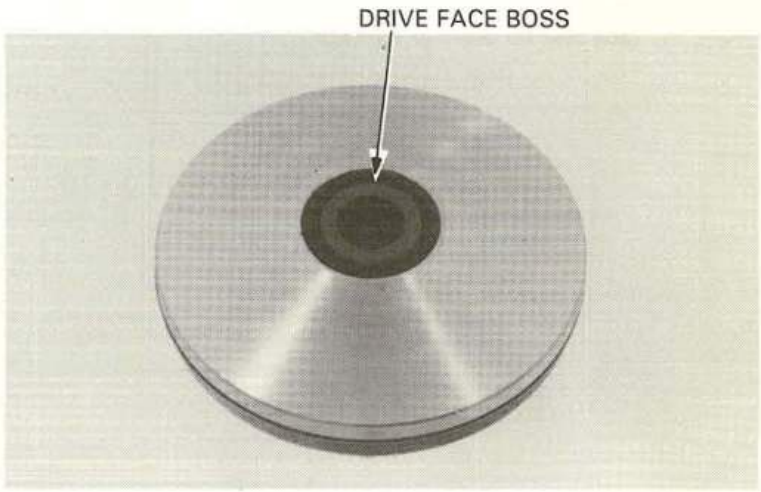
TORQUE: 2.5—4.0 N·m
(0.25—0.40 kg-m, 2—3 ft-lb)

NOTE:

Make sure that the O-ring is in position.

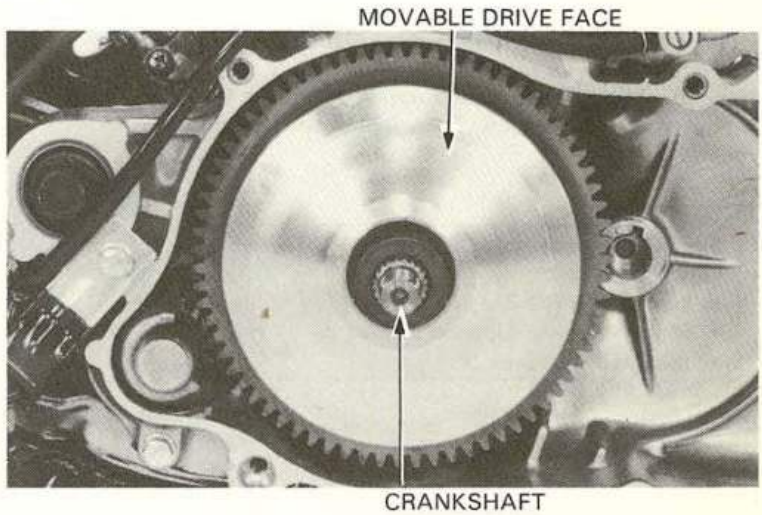


Install the drive face boss in the movable drive face.



MOVABLE DRIVE FACE INSTALLATION

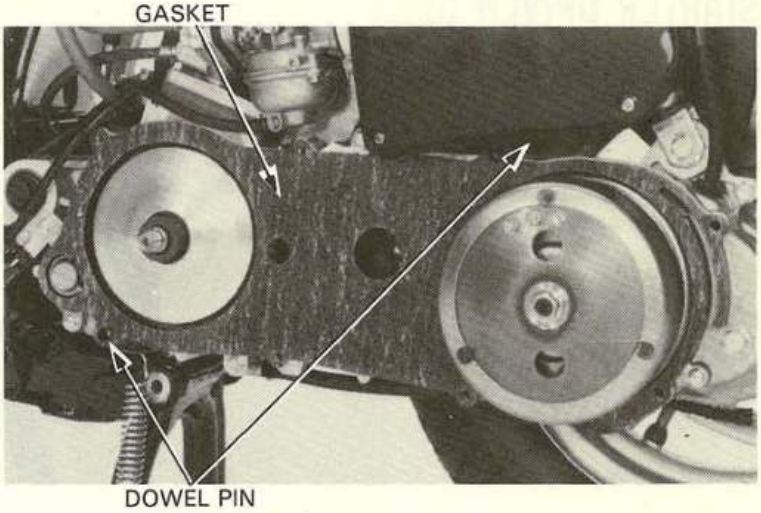
Clean the hole in the movable drive face, drive face boss and crankshaft.
Install the movable drive face assembly onto the crankshaft.



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DRIVE FACE AND LEFT CASE COVER INSTALLATION

Install the gasket and dowel pins.

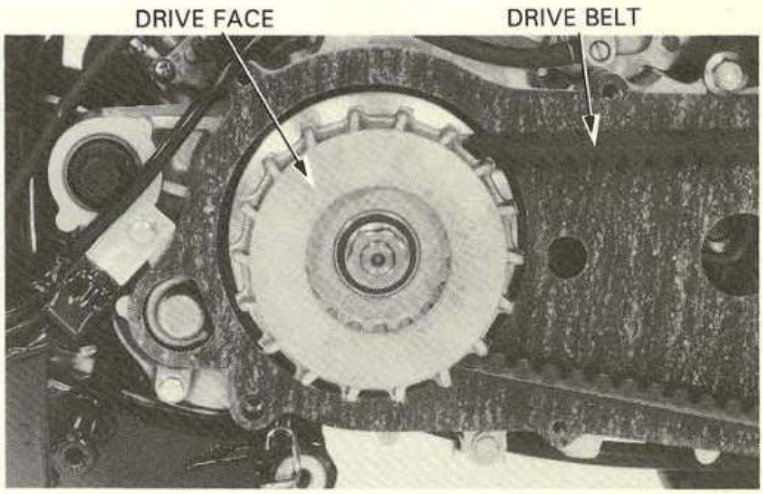


Install the drive belt.
Install the universal holder.
Install the movable drive face and tighten the 12 mm flange nut.

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

NOTE:

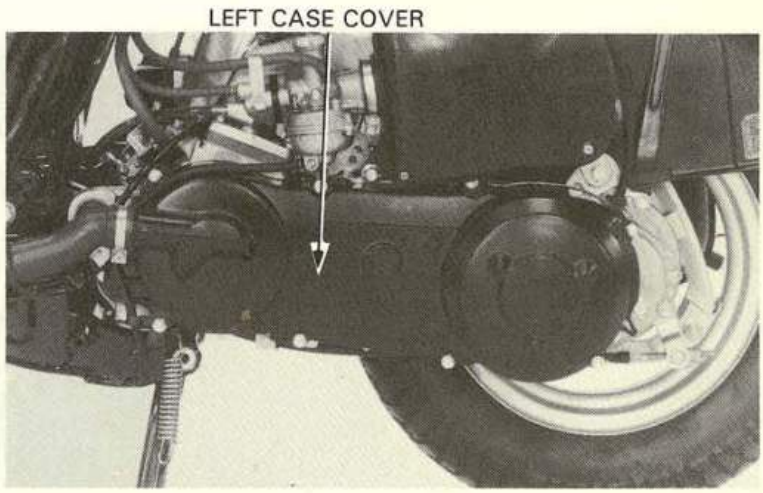
Do not get oil or grease on the drive belt or pulleys.



Install the left case cover.

Connect the connecting tube with the left crankcase.

Install the left floor board and frame center cover.

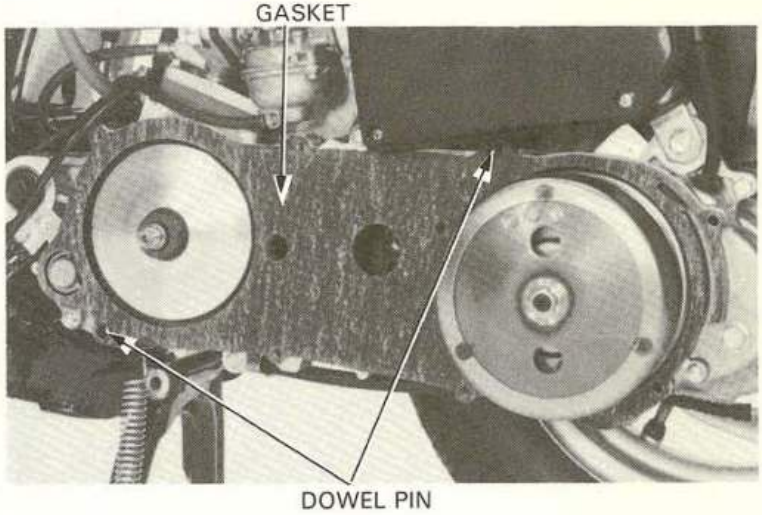


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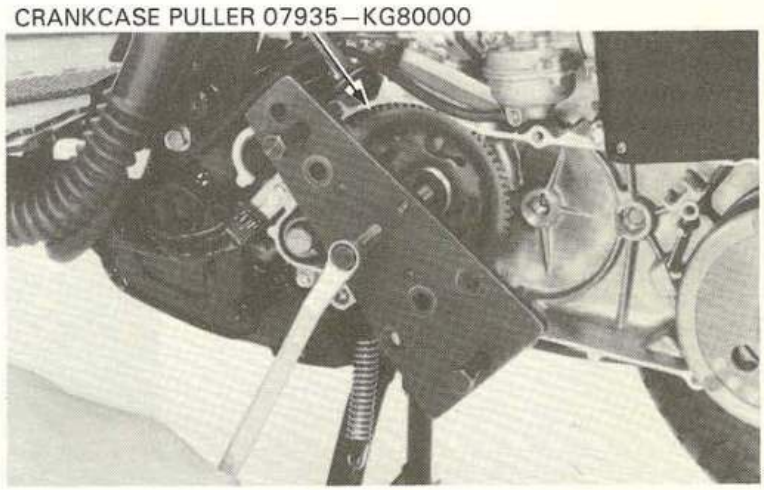
STARTER DRIVEN GEAR

REMOVAL/INSTALLATION

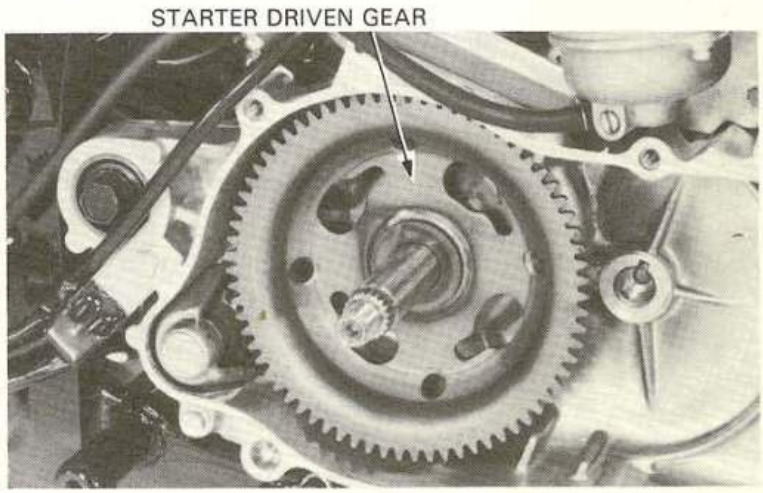
Removal:
Remove the left case cover, movable drive face (Page 8-3) and drive belt.
Remove the gasket and dowel pins.



Attach the crankcase puller as shown with the two long special bolts.
Remove the starter driven gear with the case puller.

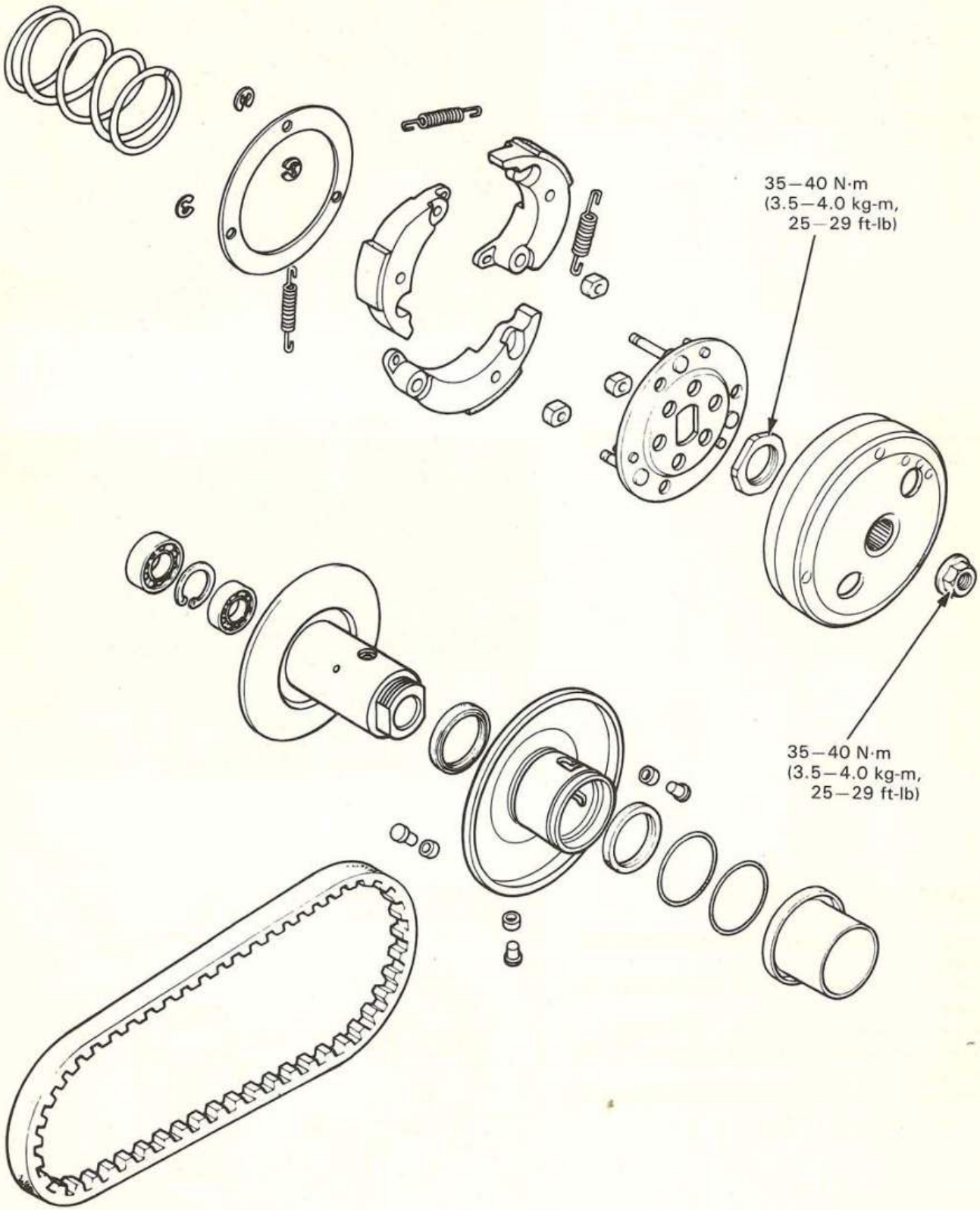


Installation:
Place the starter driven gear on the crankshaft.
Install the movable drive face, drive belt and left case cover (Page 8-7).



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CLUTCH/DRIVEN PULLEY

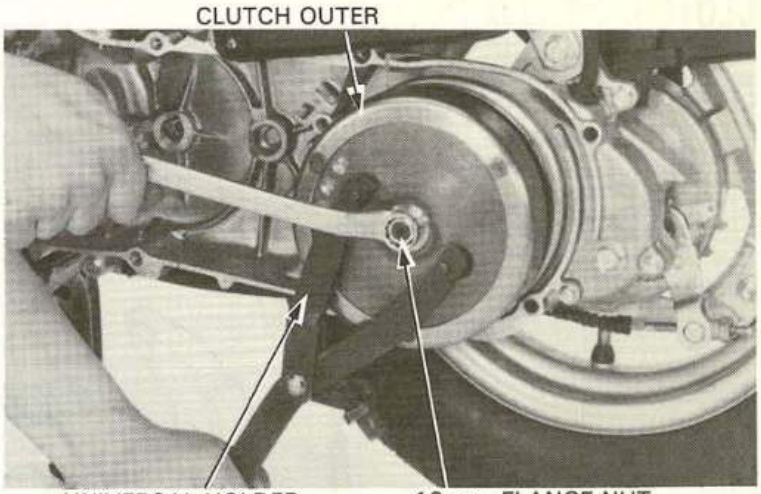


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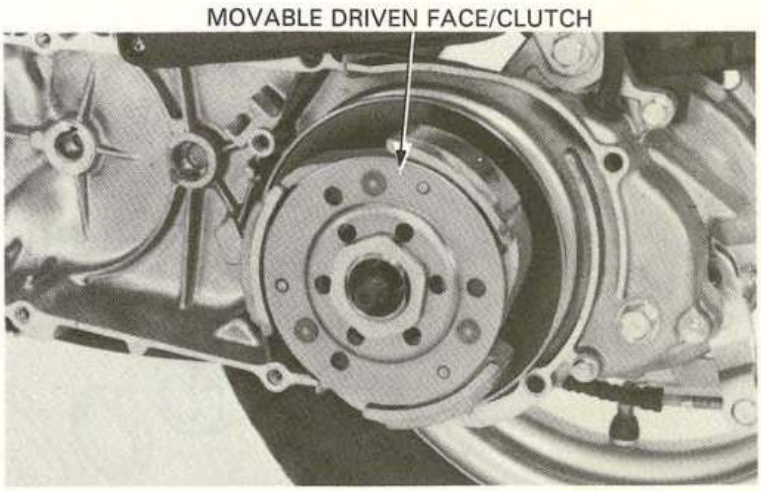
CLUTCH REMOVAL

Remove the left case cover (Page 8-2).
Remove the movable drive face and drive belt.

Remove the 10 mm flange nut holding the clutch outer with the universal holder and remove the clutch outer.

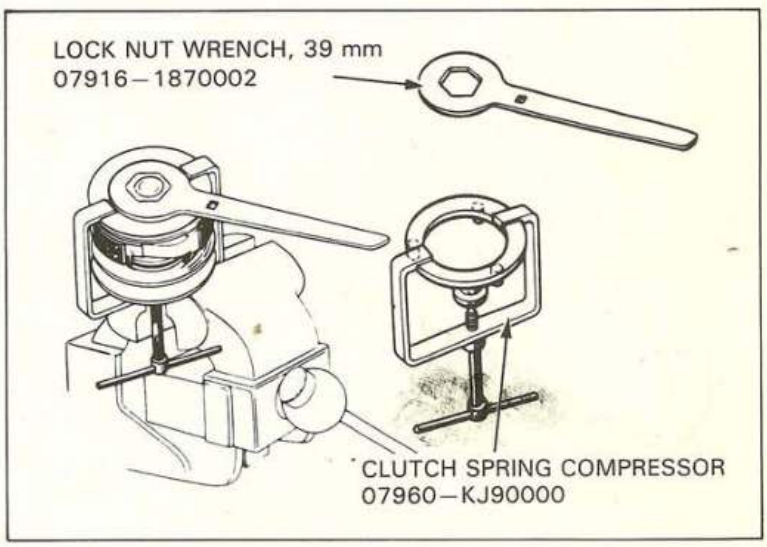


Remove the movable driven face and clutch from the drive shaft.

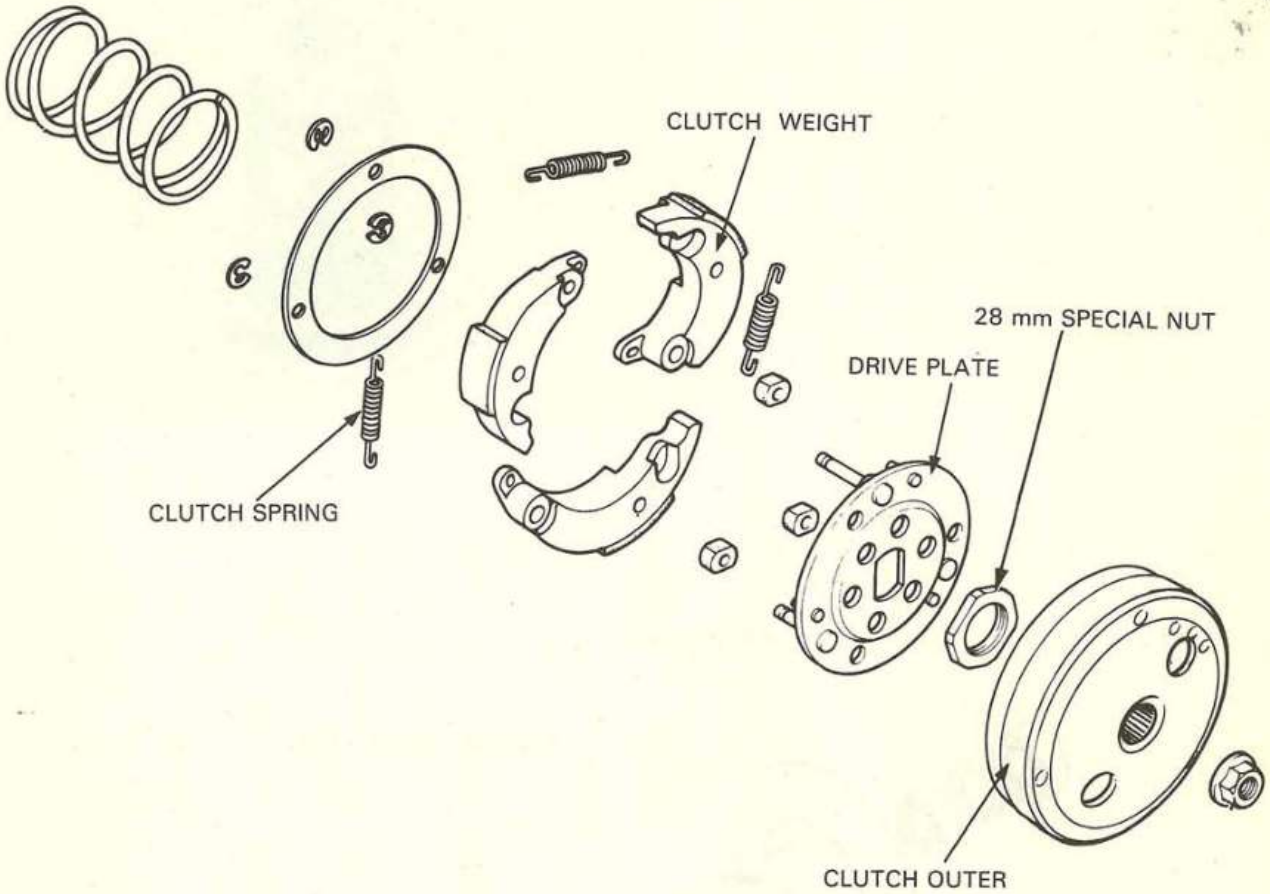


DRIVEN FACE DISASSEMBLY

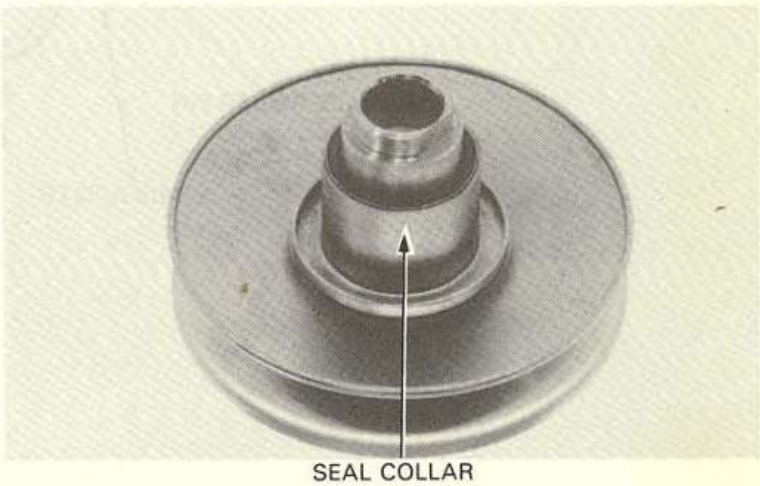
Position the driven pulley in the clutch spring compressor tool.
Turn the compressor handle to compress the spring.
Be sure the drive bolt is centered on the pulley.
Place the compressor in a vise and remove the 28 mm special nut.
Remove the compressor from the vise and back out the drive bolt.



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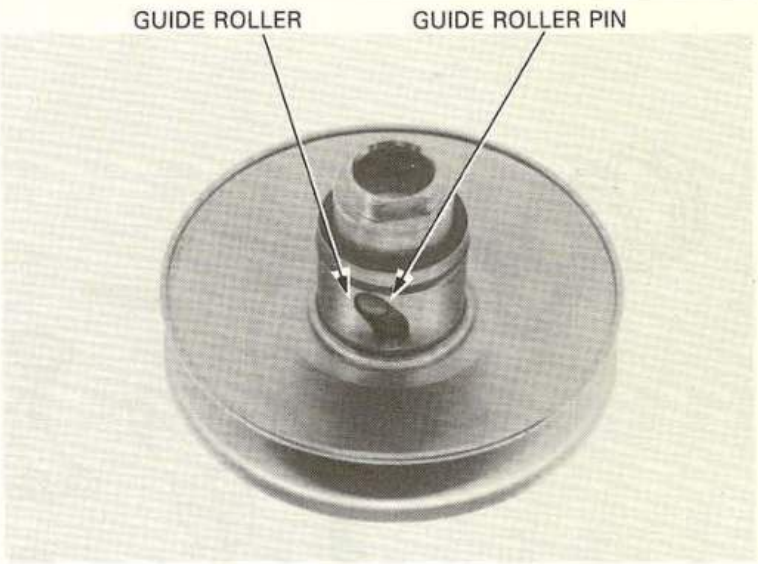


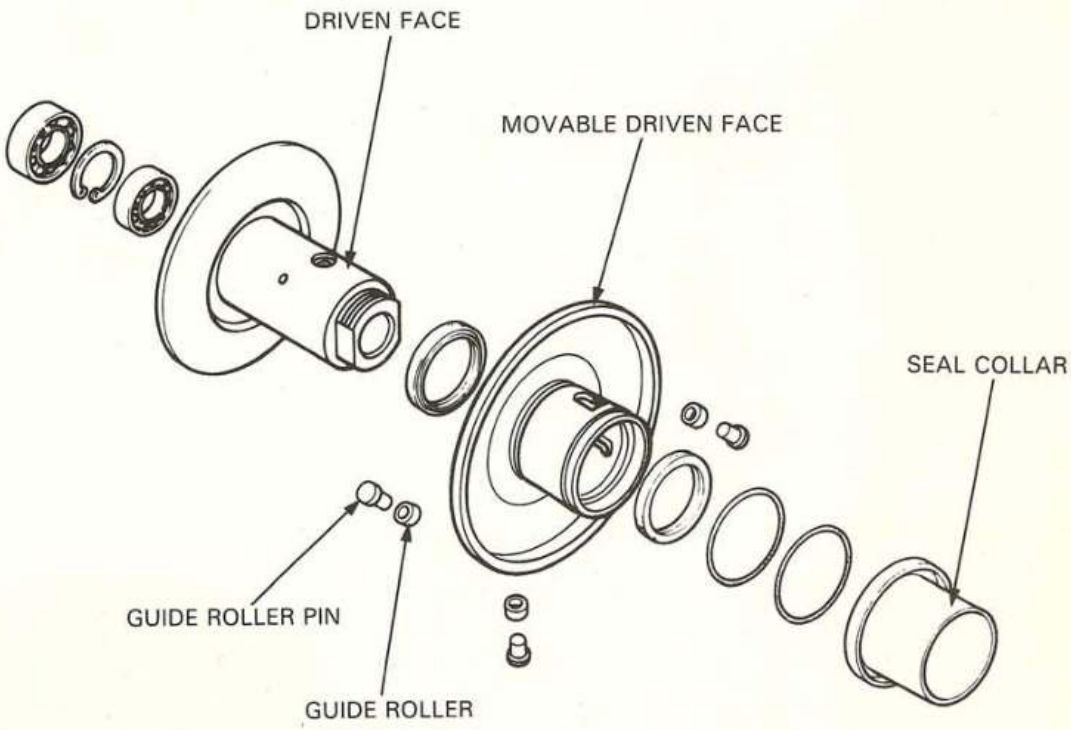
Remove the seal collar.



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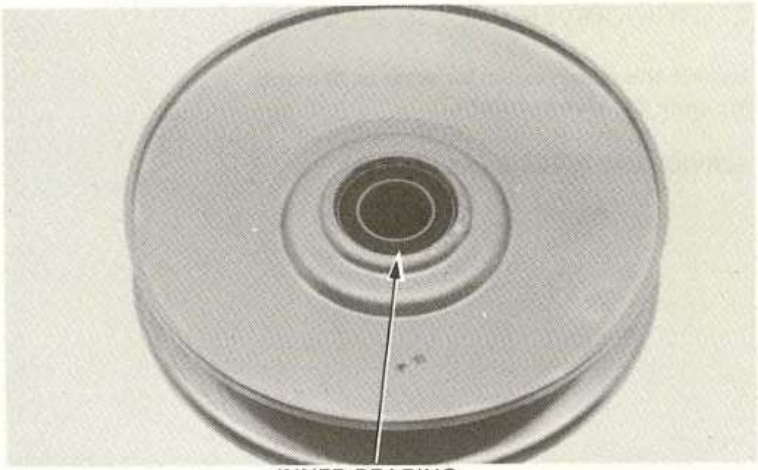
Withdraw the guide roller pin and guide roller.



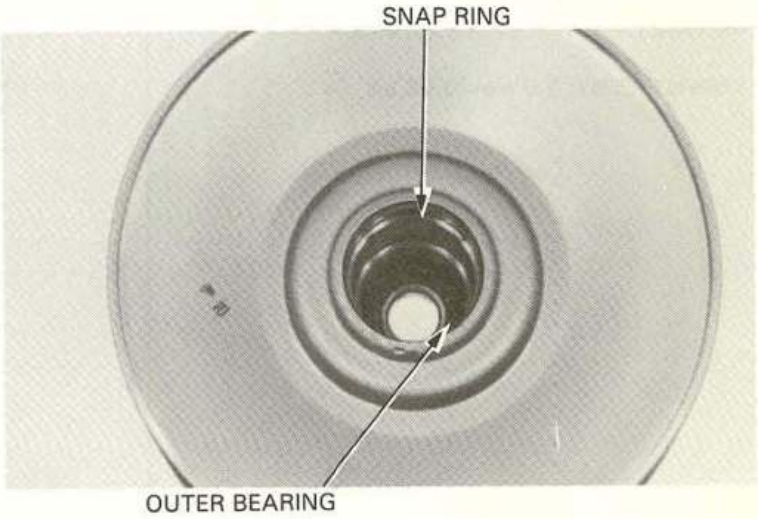


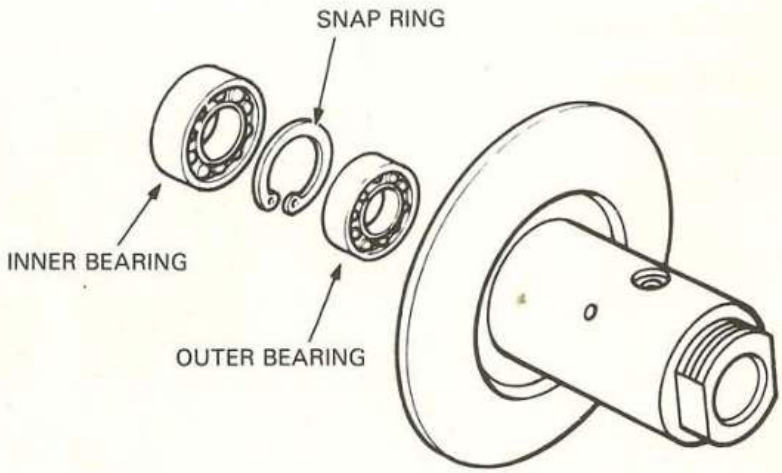
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Remove the inner bearing with Bearing Remover Shaft, 07746—0050100 and Bearing Remover Head, 17 mm, 07746—0050500.



Remove the snap ring and remove the outer bearing with Bearing Remover Shaft, 07746—0050100 and Bearing Remover Head, 12 mm, 07746—0050300.



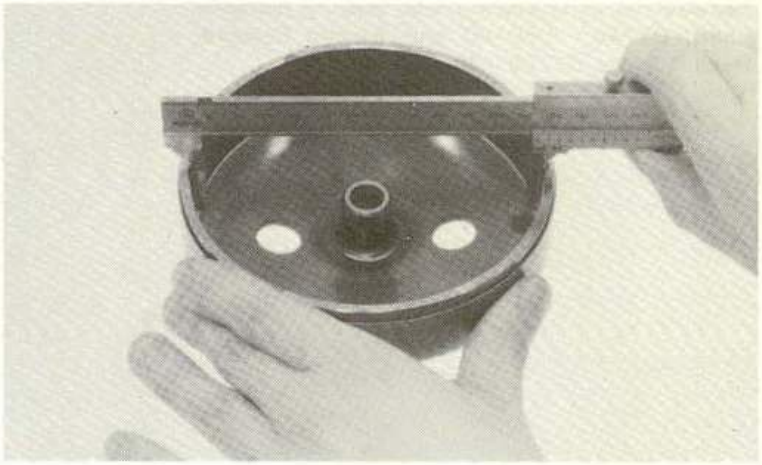


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CLUTCH/DRIVEN FACE INSPECTION

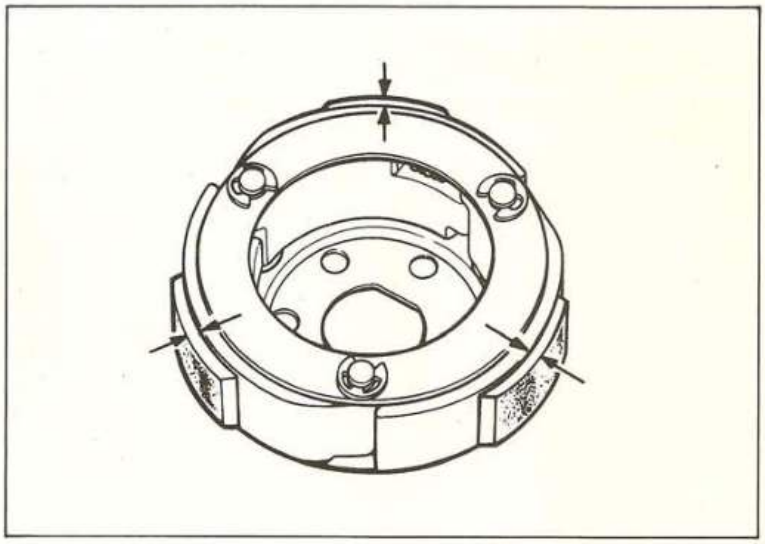
Inspect the clutch outer for wear or damage.
Measure the clutch outer I.D.

SERVICE LIMIT: 125.5 mm (4.94 in)



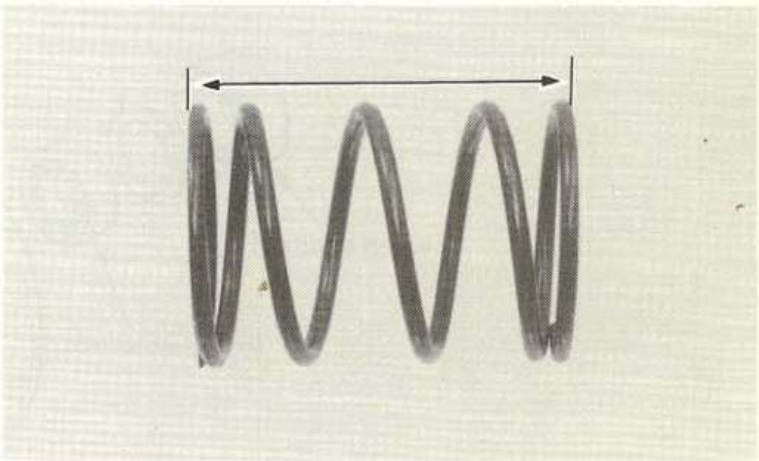
Inspect the clutch shoes for wear or damage.
Measure the thickness of each shoe.

SERVICE LIMIT: 2.0 mm (0.08 in)



Measure the driven faca spring free lengh.

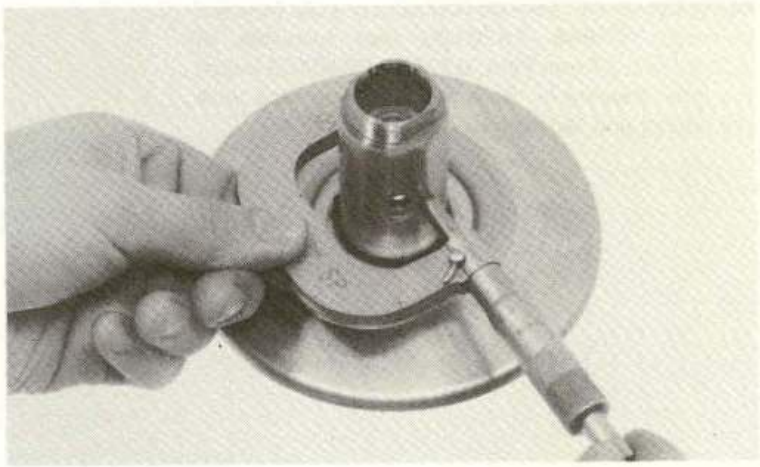
SERVICE LIMIT: 60.00 mm (2.362 in)



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

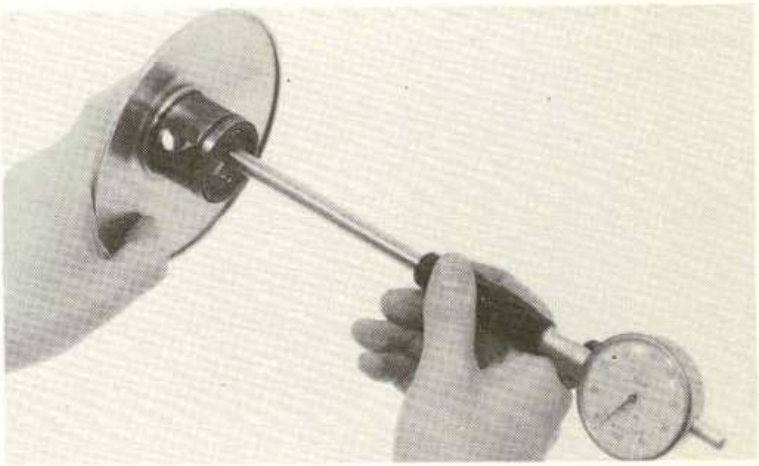
SERVICE LIMIT: 33.940 mm (1.3362 in)



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

SERVICE LIMIT: 34.060 mm (1.3409 in)

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

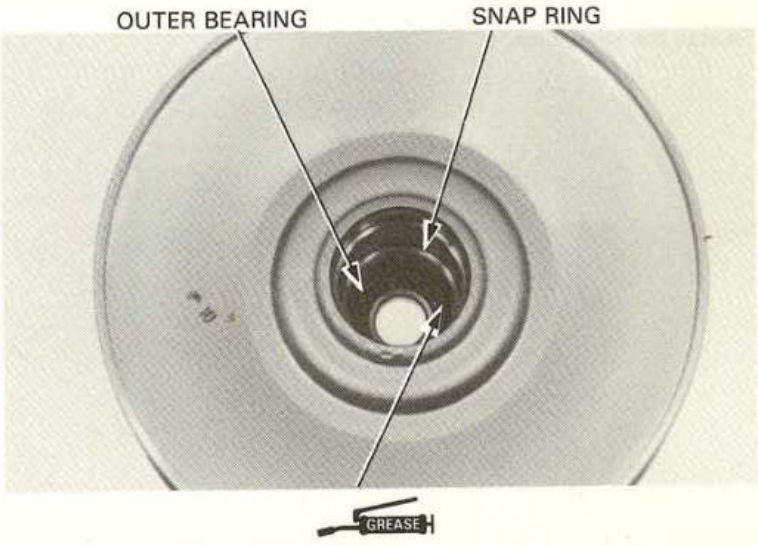


DRIVEN FACE ASSEMBLY

Using Bearing Driver 07945—GC80000, install the outer bearing in the movable driven face with the sealed end facing out.
Seat the snap ring in its groove.
Pack all bearing cavities with 5.0—5.5 g of grease.

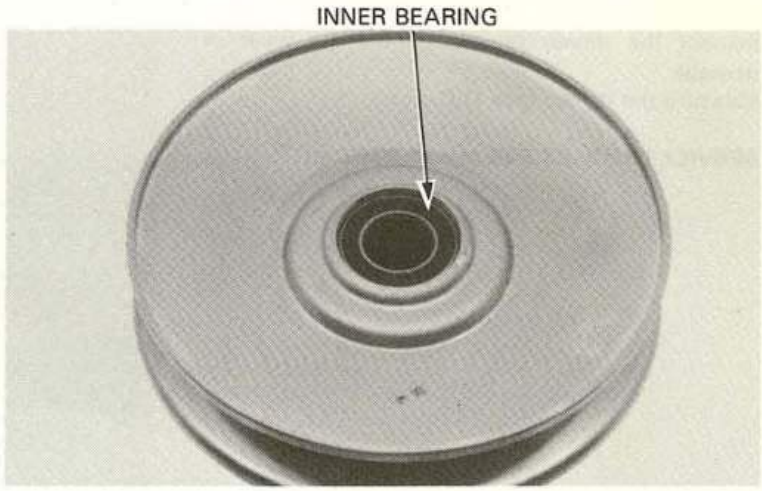
NOTE:

Specified grease: Nippon Sekiyu
LIPANOX DELUXE 3

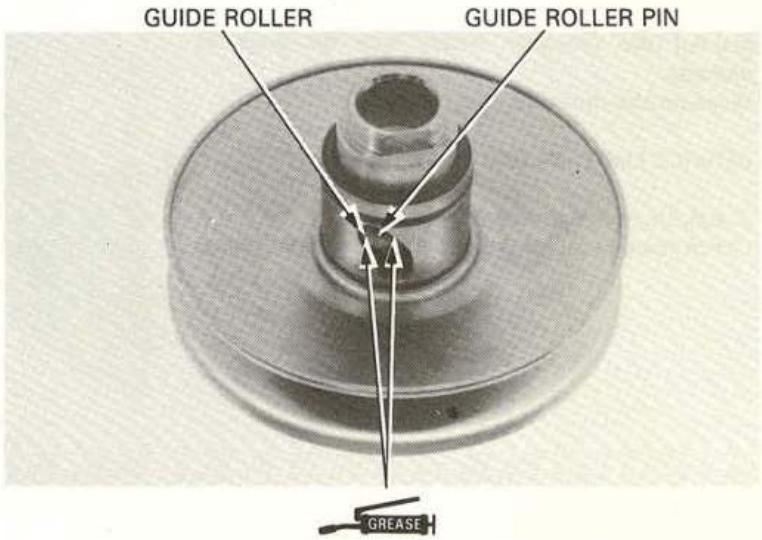


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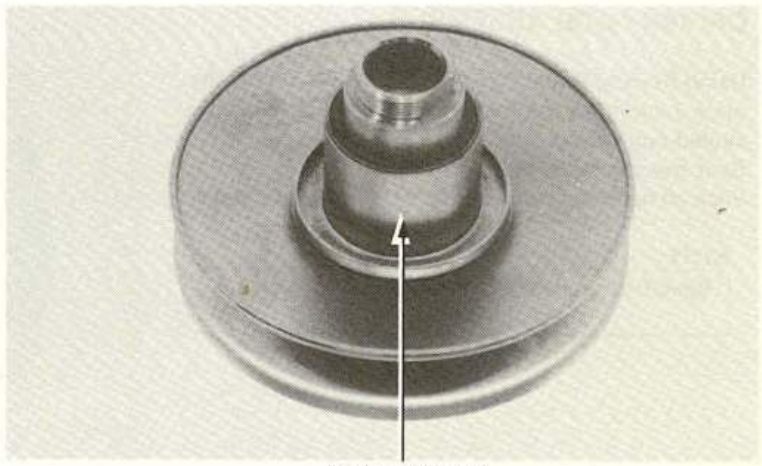
Using Driver 07749—0010000, 28 x 30 mm Attachment 07946—1870100 (not available in U.S.A.) and 17 mm Pilot, 07746—0040400 install the inner bearing in the movable driven face with the sealed end facing out.



Install the movable driven face, guide roller and roller pin.



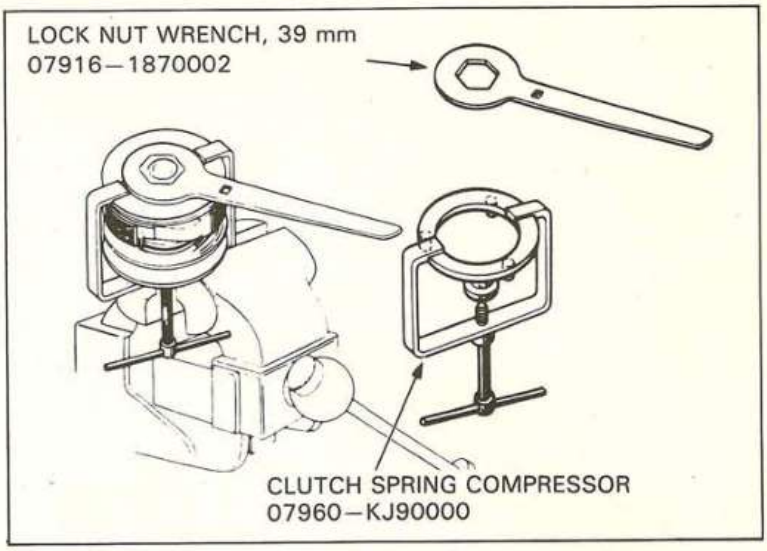
Install the seal collar.



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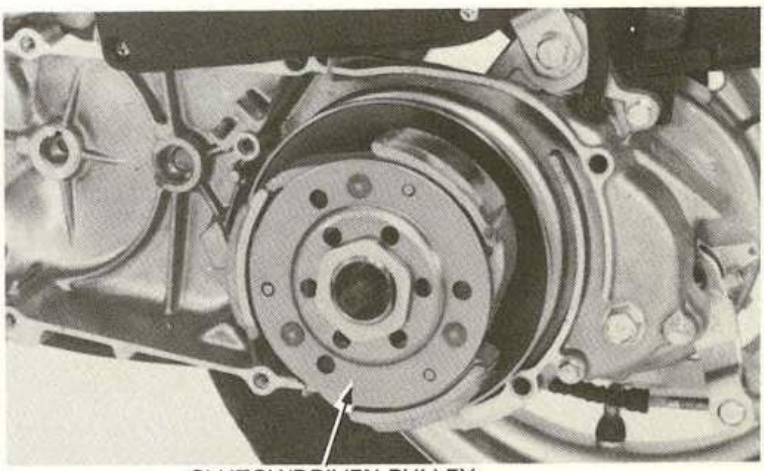
Position the driven face assembly, spring and guide plate assembly on the clutch spring compressor.
Compress the spring by turning the handle.
Install and tighten the 28 mm special nut.
Use a beam type torque wrench 12—14 inches long.

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



CLUTCH/DRIVEN PULLEY INSTALLATION

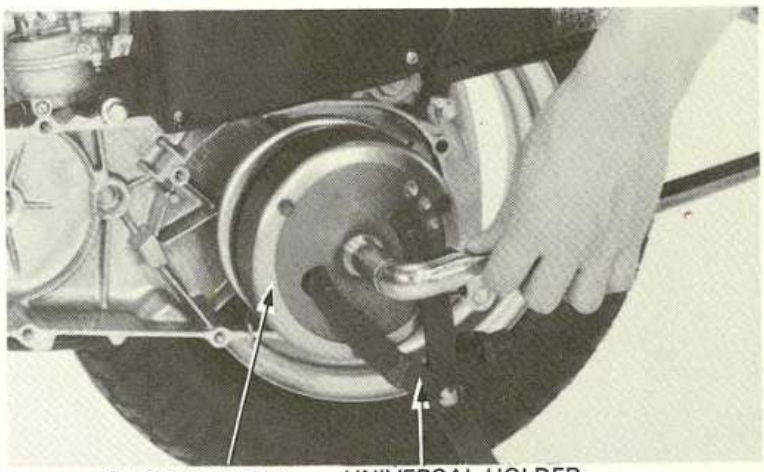
Install the driven pulley on the drive shaft.



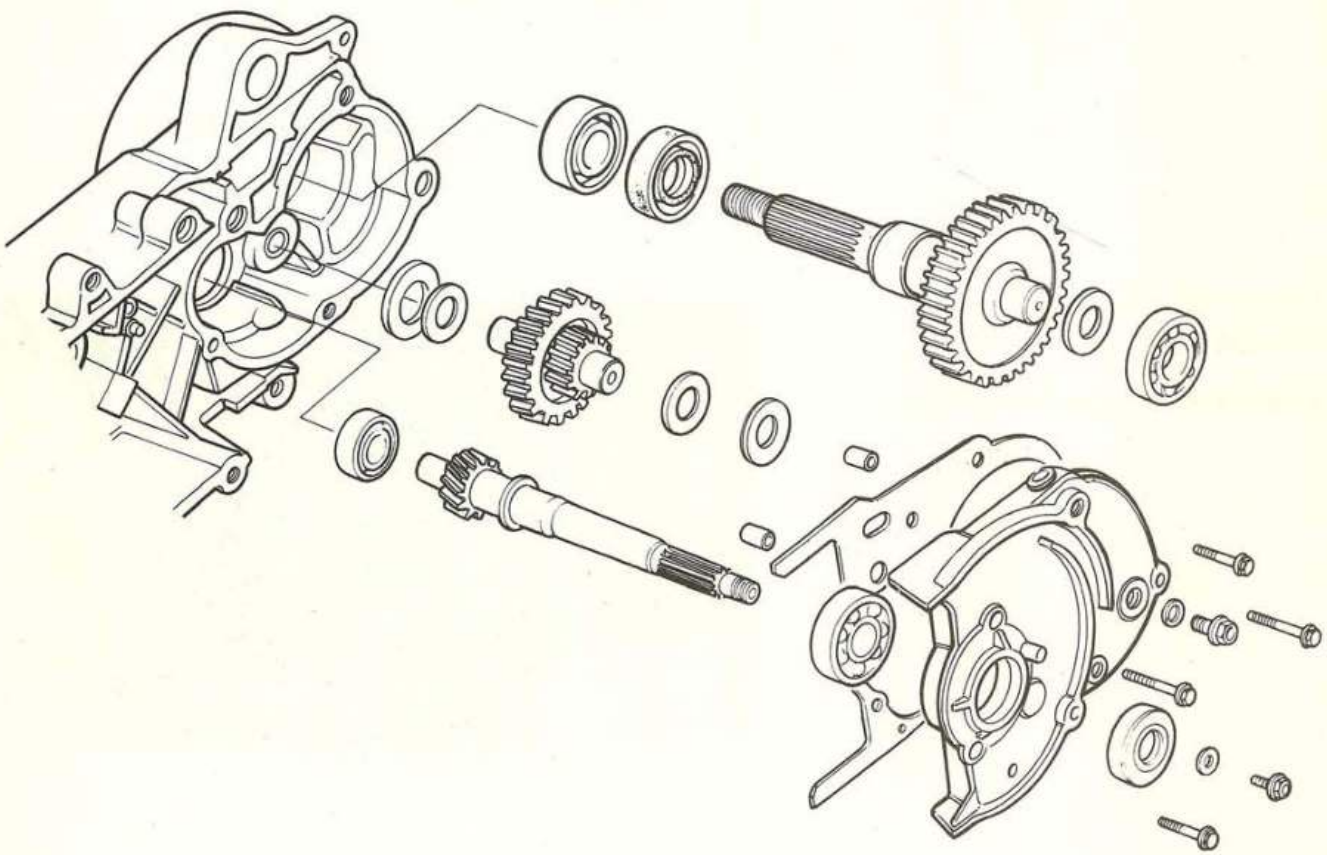
Install the clutch outer and torque the nut while holding the clutch outer with the universal holder.

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

Install the driven face (Page 8-6).
Install the left case cover (Page 8-7).



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9. FINAL REDUCTION

SERVICE INFORMATION	9–1
TROUBLESHOOTING	9–1
FINAL REDUCTION DISASSEMBLY	9–2
FINAL REDUCTION INSPECTION	9–3
FINAL REDUCTION INSTALLATION	9–4

SERVICE INFORMATION

GENERAL

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

TOOLS

Special		
Bearing remover set, 12 mm	07936–1660001 (not available in U.S.A.) or	07936–1660100
Bearing remover	07936–3710300	07936–3710200
Bearing remover handle	07936–3710100	
Bearing weight	07941–0010201	
Assembly collar	07965–GC70100	
Assembly bole	07965–1480200	
Common		
Attachment, 32 x 35 mm	07746–0010100	
Attachment, 37 x 40 mm	07746–0010200	
Attachment, 42 x 47 mm	07746–0010300	
Pilot, 12 mm	07746–0040200	
Pilot, 17 mm	07746–0040400	
Pilot, 20 mm	07746–0040500	
Driver	07749–0010000	

TROUBLESHOOTING

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

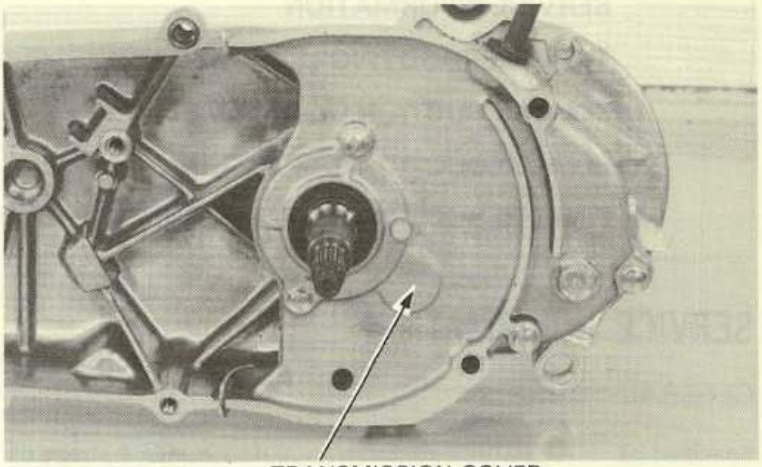
Abnormal noise
1. Worn seized or chipped gears
2. Worn bearing

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

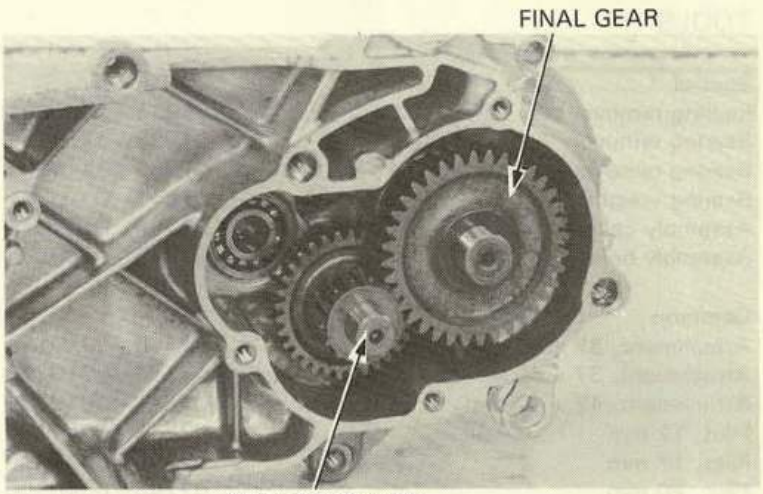
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FINAL REDUCTION DISASSEMBLY

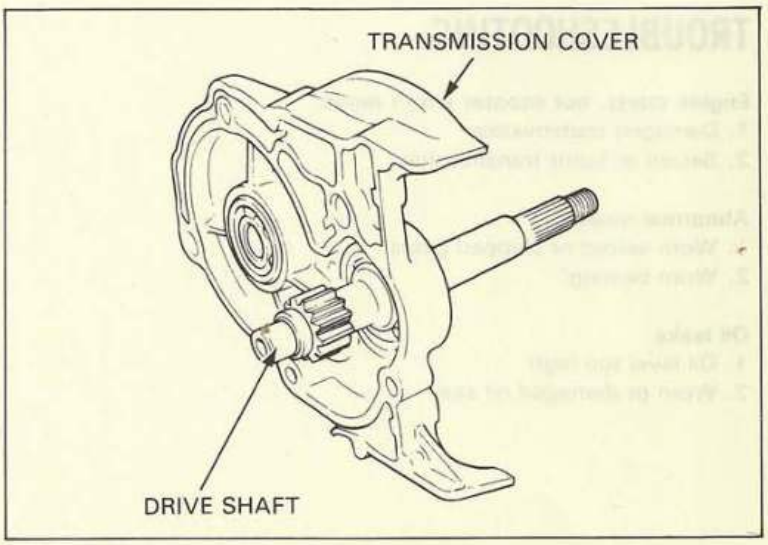
Remove the driven pulley (Page 8-10).
Drain the oil from the transmission case (Page 2-4).
Remove the rear wheel (Page 13-2).
Remove the transmission case cover bolts and remove the transmission cover.



Remove the final gear and countershaft.



Remove the drive shaft from the transmission cover.



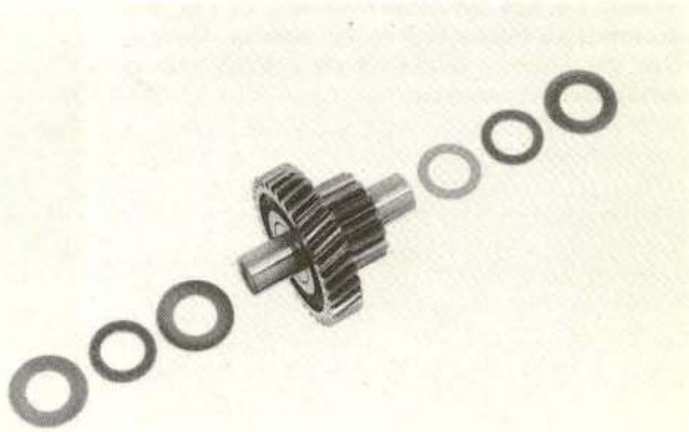
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FINAL REDUCTION INSPECTION

Inspect the drive shaft and gear for wear or damage.



Inspect the countershaft and gear for wear or damage.

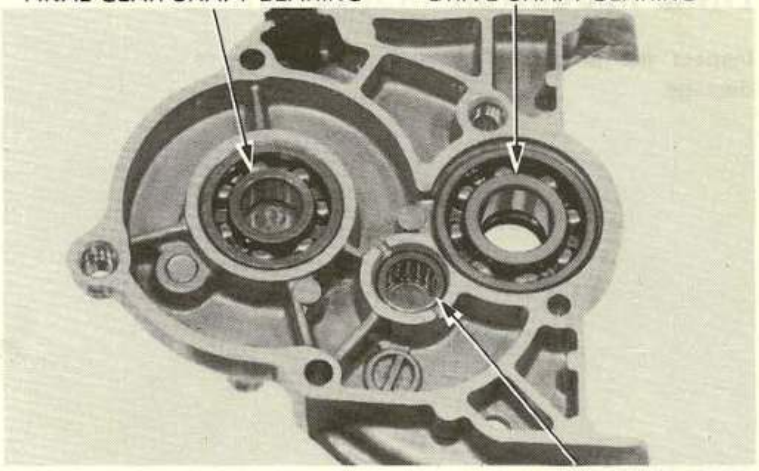


Inspect the final gear for wear or damage.



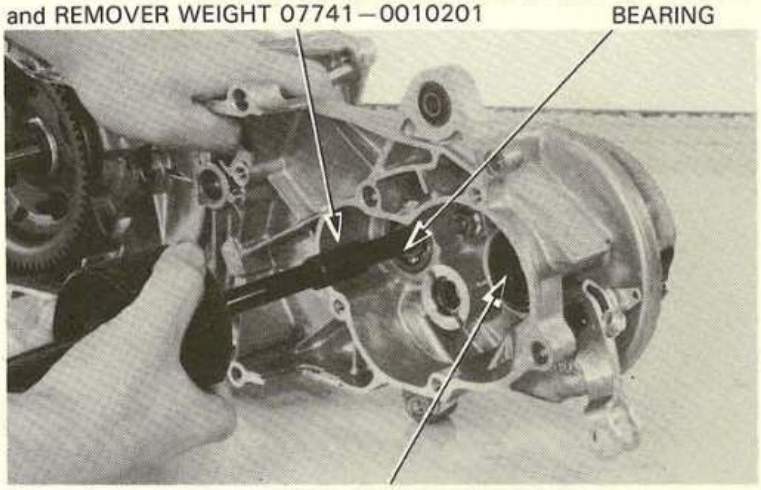
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Inspect the transmission cover bearing, oil seal and countershaft needle bearing for wear or damage. If the final gear shaft bearing must be replaced, use 17 mm Bearing Remover, 07936—3710300, bearing remover handle, 07936—3710100, and remover weight 07741—0010201.



BEARING REMOVER SET, 12 mm
07936—1660001 (Not available in U.S.A.) or
BEARING REMOVER, 12 mm 07936—1660100
and REMOVER WEIGHT 07741—0010201

Inspect the left crankcase bearings, oil seal and countershaft needle bearing for wear or damage. Use the bearing remover if drive shaft bearing replacement is necessary.

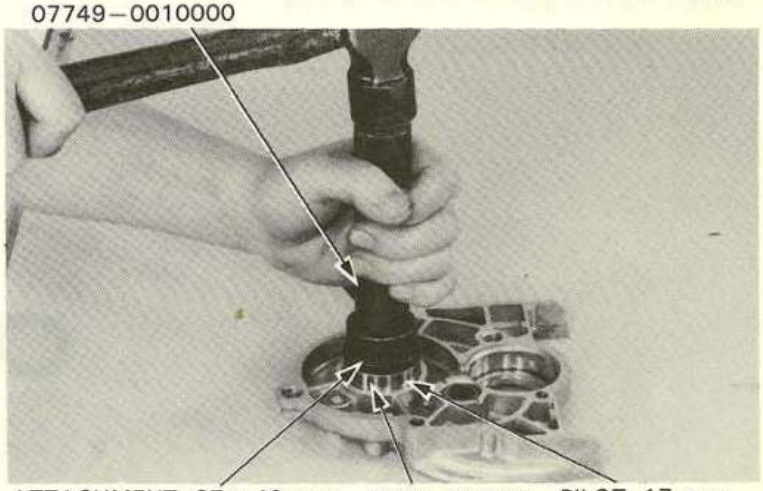


FINAL REDUCTION INSTALLATION

Install the final gearshaft bearing in the transmission cover.

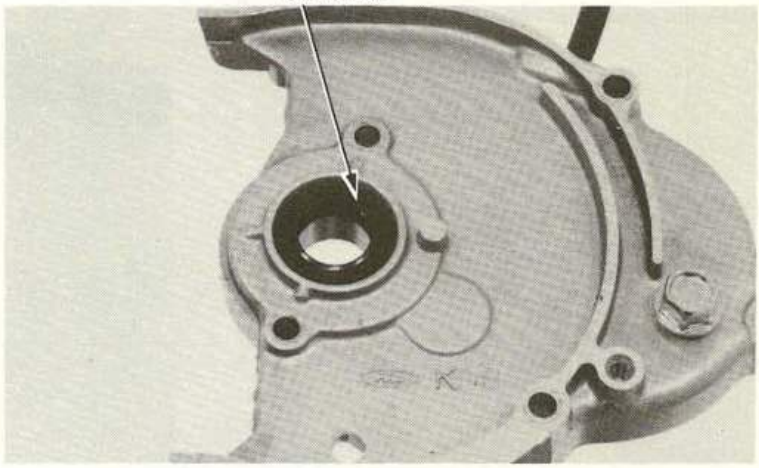
Install the drive shaft bearing in the transmission cover using the following tools.

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

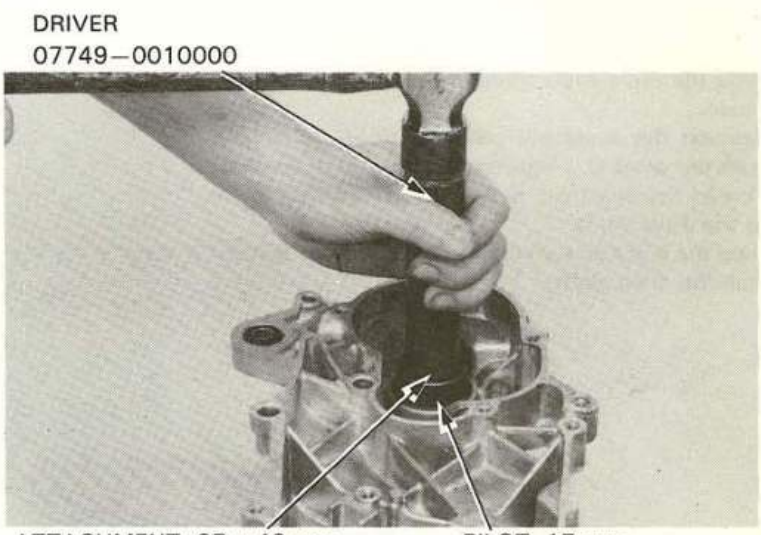


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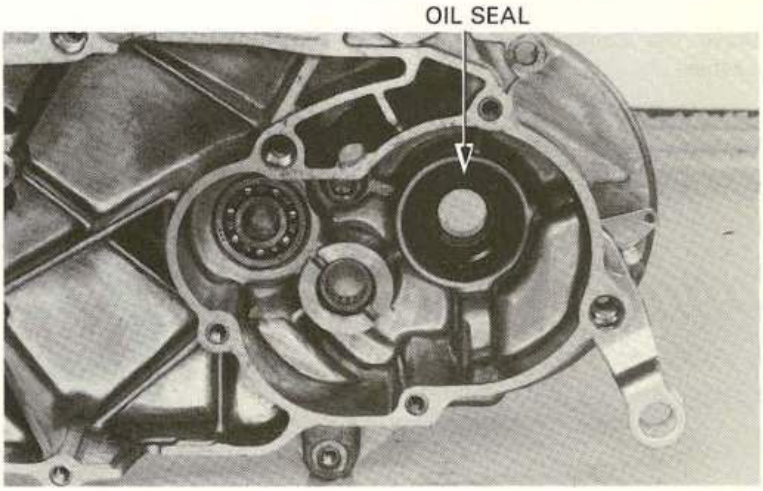
Install a new oil seal in the transmission cover.



Drive the final shaft bearing into the left case.

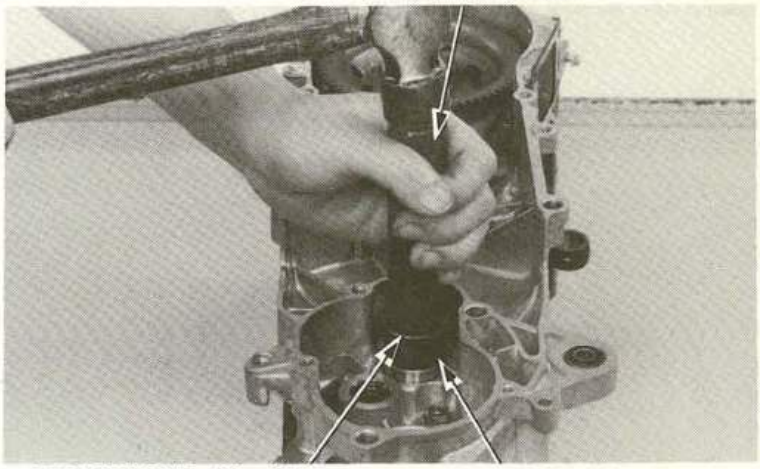


Install a new final shaft oil seal.

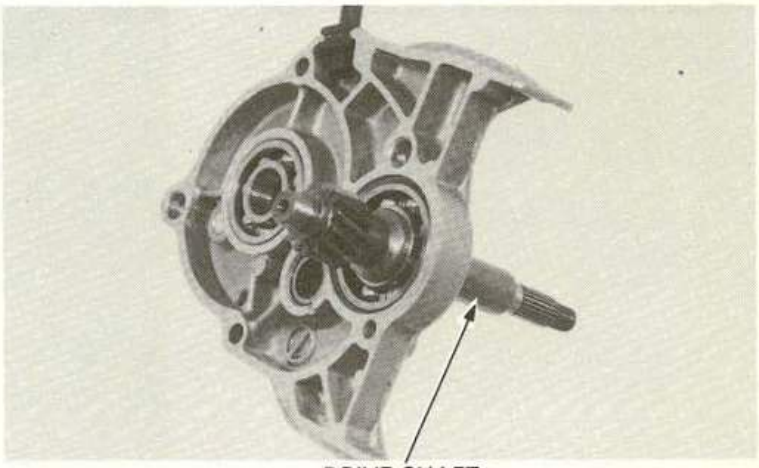


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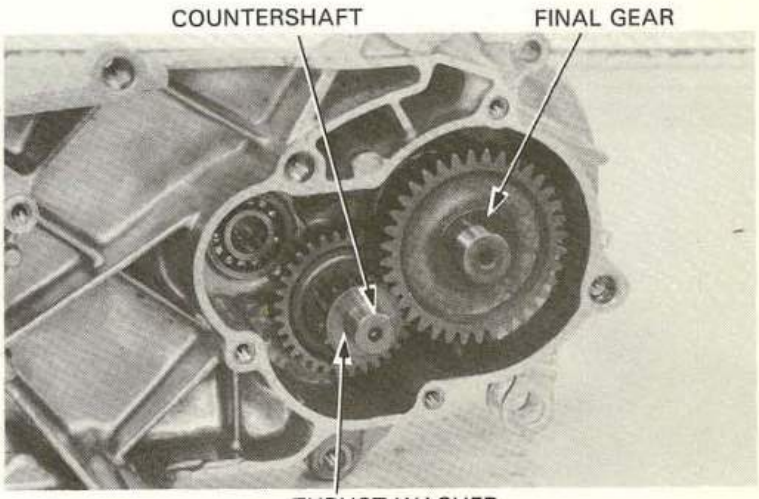
Install the drive shaft bearing into the left case.



Slide the drive shaft through the bearing from the inside.
Position the assembly collar (07965–GC70100) with the small O.D against the drive shaft bearing.
Thread the assembly bole (07965–1480200) on to the drive shaft.
Hold the bolt and turn the nut clockwise to fully install the drive shaft.

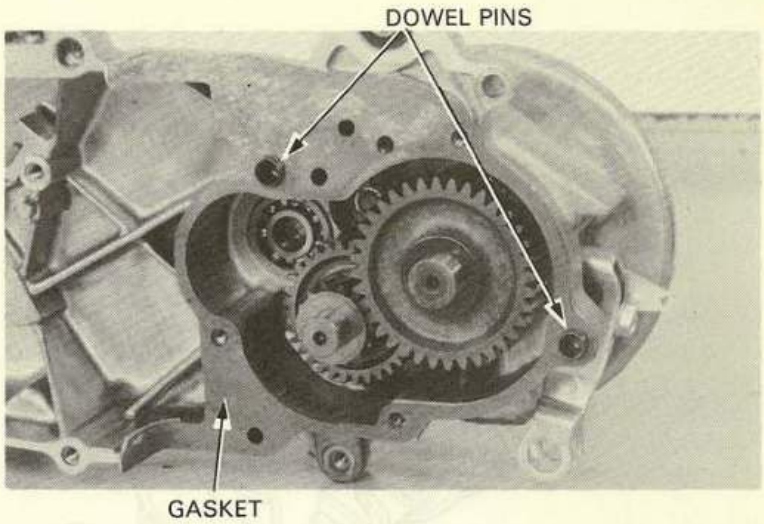


Install the countershaft, final gear and thrust washer.



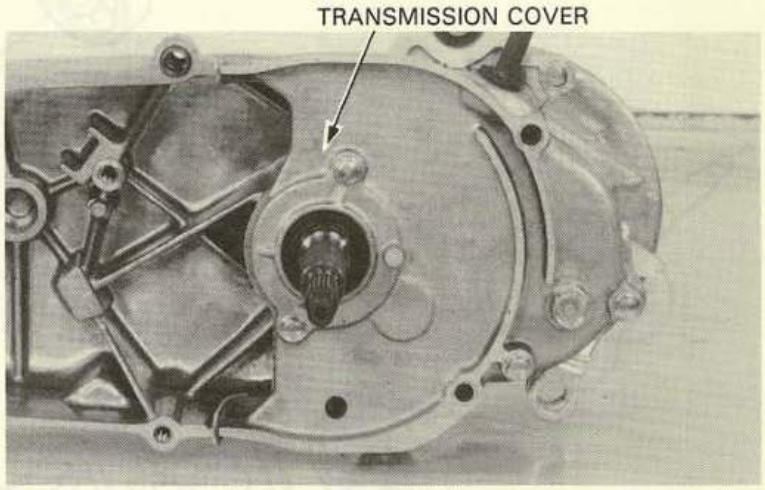
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Install a new gasket and the dowel pins.

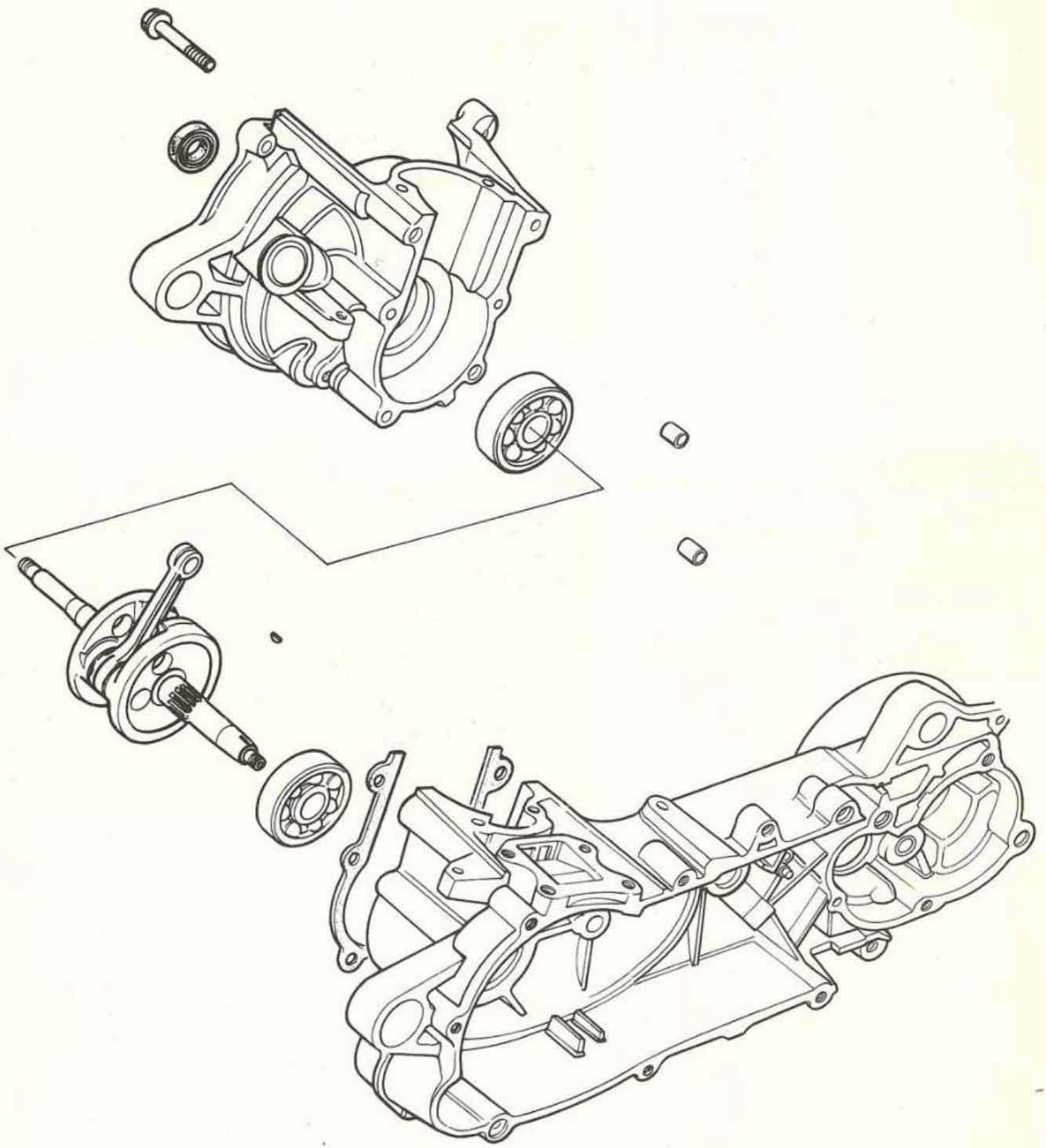


Install the transmision cover.
Install the movable driven face/clutch assembly (Page 8-17).
Install the drive pulley, drive belt and left case cover (Page 8-7).
Install the frame center cover (Section 11).
Install the rear wheel (Page 13-3).

Pour the specified amount of oil through the filler opening (Page 2-5).



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10. CRANKCASE/CRANKSHAFT

SERVICE INFORMATION	10–1	CRANKSHAFT INSPECTION	10–3
CRANKCASE SEPARATION	10–2	CRANKSHAFT INSTALLATION	10–4
CRANKSHAFT REMOVAL	10–2	CRANKCASE ASSEMBLY	10–6

SERVICE INFORMATION

GENERAL

- This section covers crankcase separation to service the crankshaft.
- The following parts must be removed before separating the crankcase:
  - Engine Page 5-2
  - Carburetor Page 4-3
  - Oil pump Page 2-2
  - Reed valve Page 4-13
  - Drive pulley Page 8-2
  - Alternator Page 7-2
  - Cylinder head, cylinder Page 6-2
- In addition to the above, remove the following when the left crankcase half must be replaced:
  - Final reduction
- When assembling the crankcase and crankshaft, force the crankshaft into the case bore with the special tool rested against the crankshaft bearing inner race. To do this, it is necessary remove the old bearing from the crankshaft and drive a new bearing onto the crankshaft on the case side. Use a new oil seal after assembling the crankcase.

10

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Connecting rod big end side clearance	0.15–0.55 mm (0.006–0.022 in)	0.50 mm (0.098 in)
Connecting rod big end radial clearance	—	0.04 mm (0.016 in)
Crankshaft runout	—	0.10 mm (0.039 in)

TOOLS

Special

Seal and case assembling tool	07965–GC70000 or	Assembly collar 07965–GC70100 Assembly bolt 07965–1480200
Universal bearing puller	07631–0010000 (not available in U.S.A.)	
Crankcase puller	07935–KG80000	

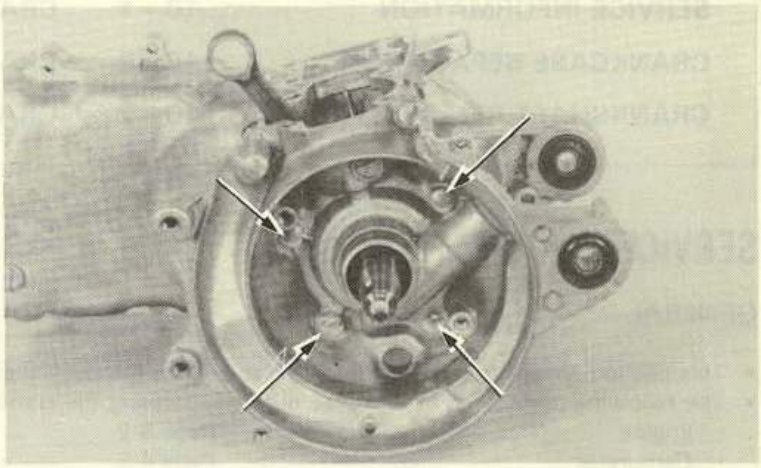
Common

Driver	07749–0010000
Attachment, 52 x 55 mm	07746–0010400
Pilot, 25 mm	07746–0040600

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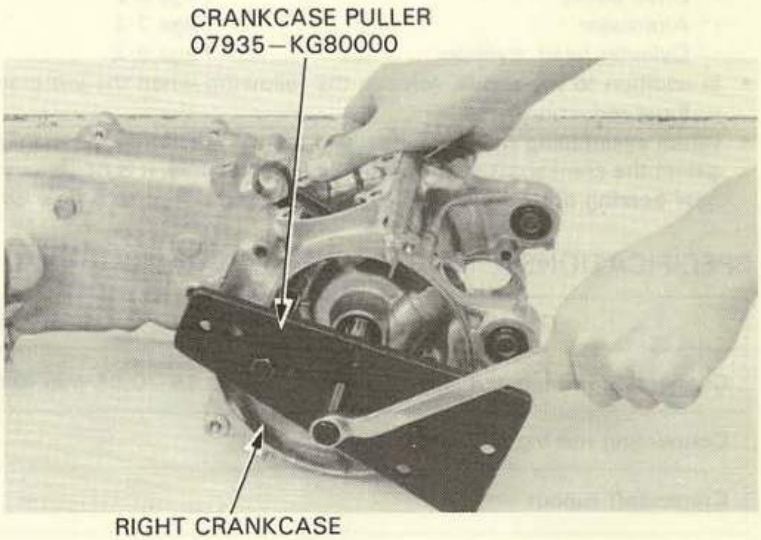
CRANKCASE SEPARATION

Remove the crankcase attaching bolts.



Attach the crankcase puller on the right crankcase as shown with the two special long bolts.

Separate the right crankcase half.

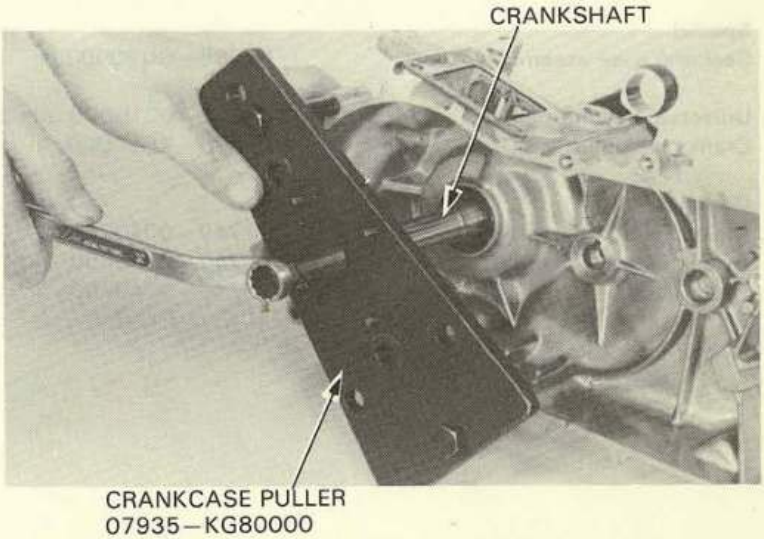


CRANKSHAFT REMOVAL

Attach the special tool on the left crankcase as shown with the three special short bolts.
Remove the crankshaft.

CAUTION:

Do not drive the crankshaft out with a hammer.



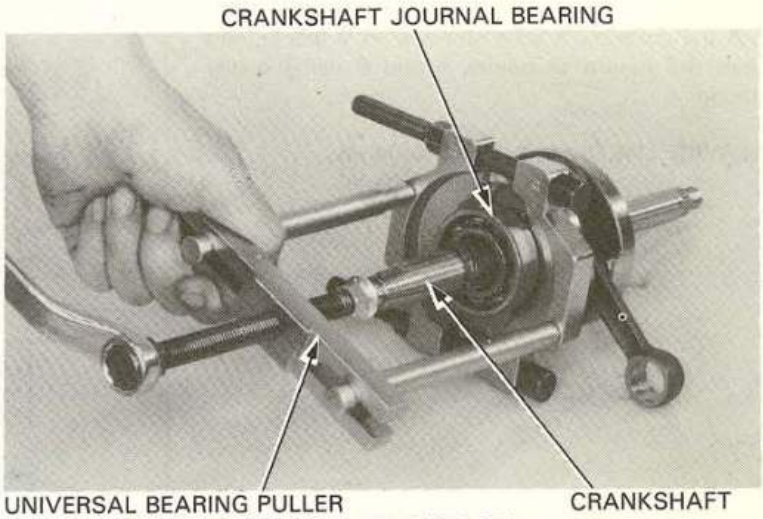
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Remove the journal bearing from the crankshaft with the bearing puller.

Remove the right and left oil seals.

NOTE:

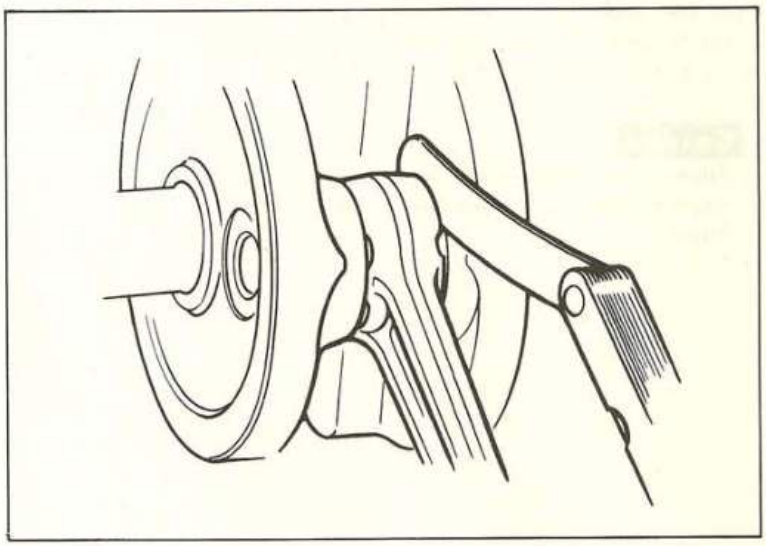
Replace the oil seals with new ones whenever they have been removed.



CRANKSHAFT INSPECTION

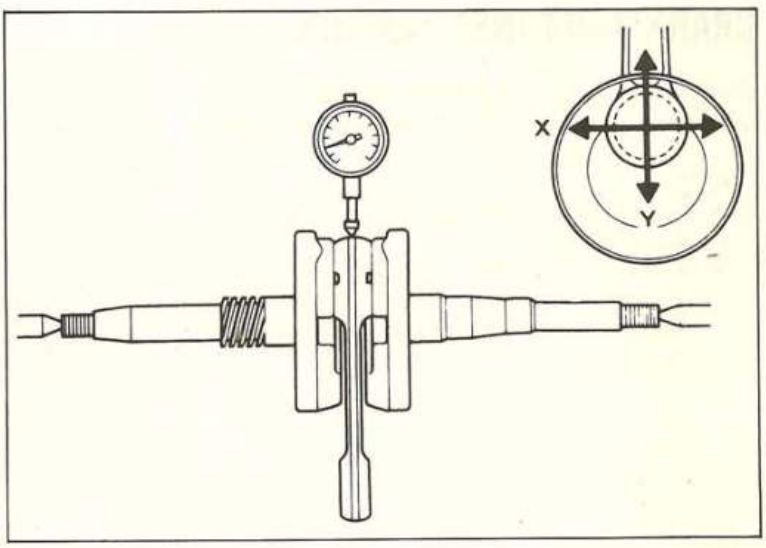
Measure the connecting rod big end side clearance with a feeler gauge.

SERVICE LIMIT: 0.50 mm (0.0984 in)



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

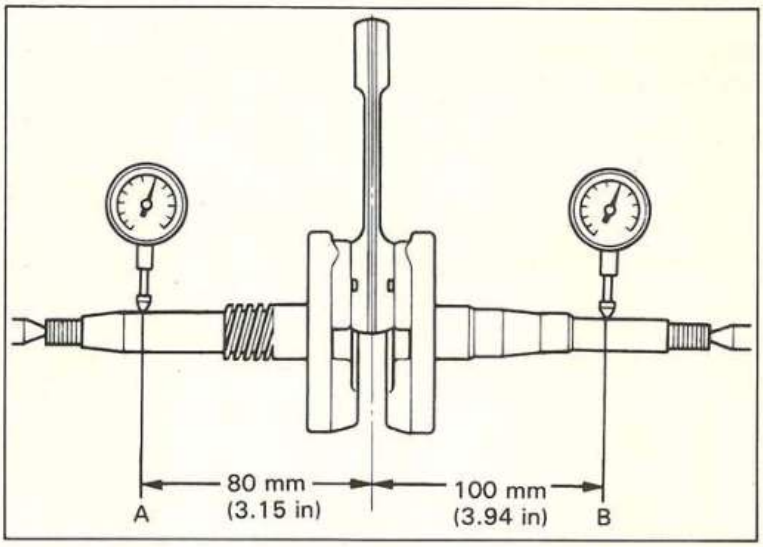
SERVICE LIMIT: 0.04 mm (0.016 in)



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Set the crankshaft on a stand or in V blocks and read the runout at points A and B using a dial gauge.

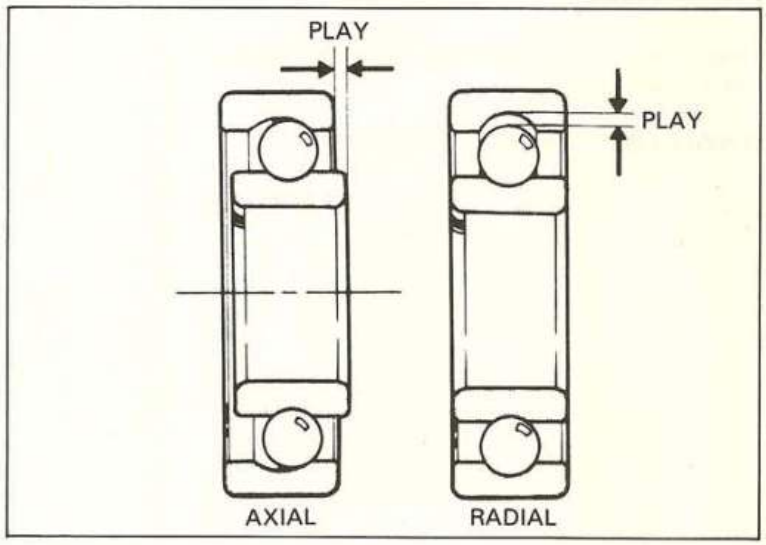
SERVICE LIMITS: A: 0.1 mm (0.04 in)
B: 0.1 mm (0.04 in)



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

WARNING

Do not spin a bearing with compressed air. The bearing could come a part and cause personal injury

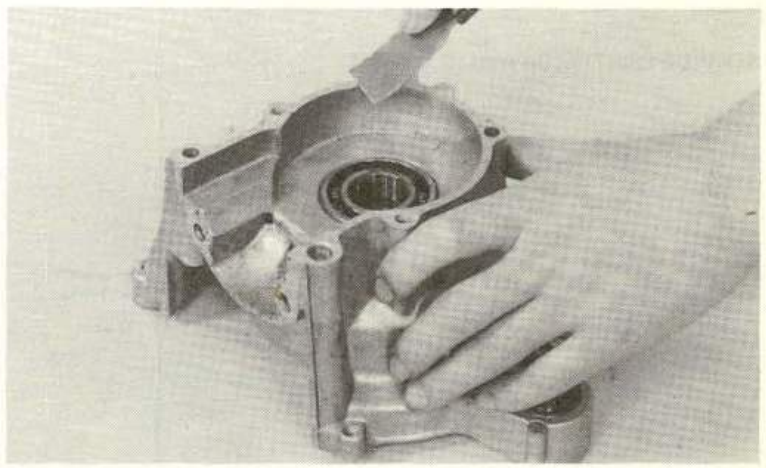


CRANKSHAFT INSTALLATION

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

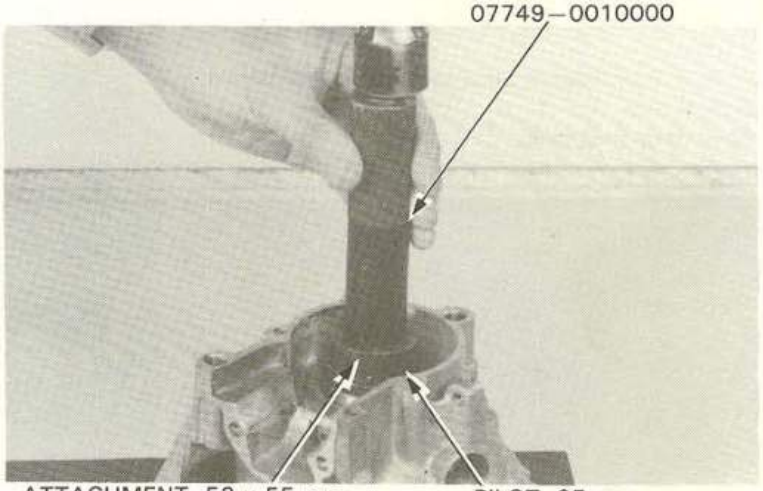
NOTE:

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

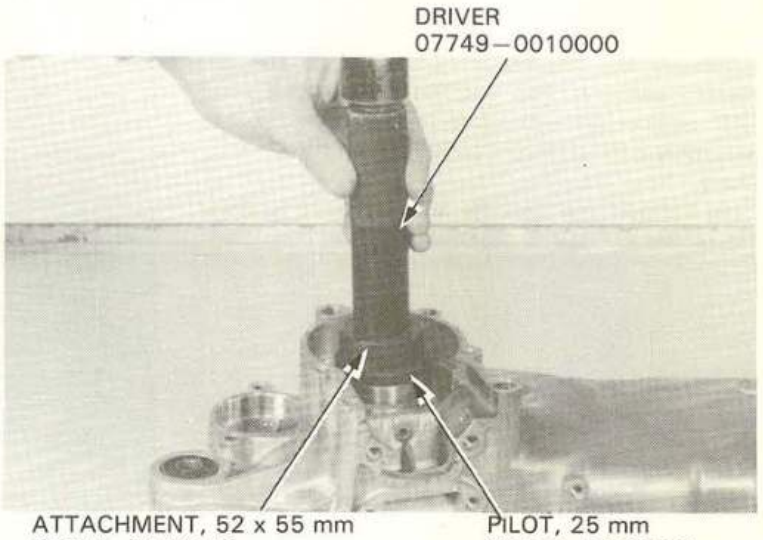


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Drive a new journal bearing into the right crankcase.



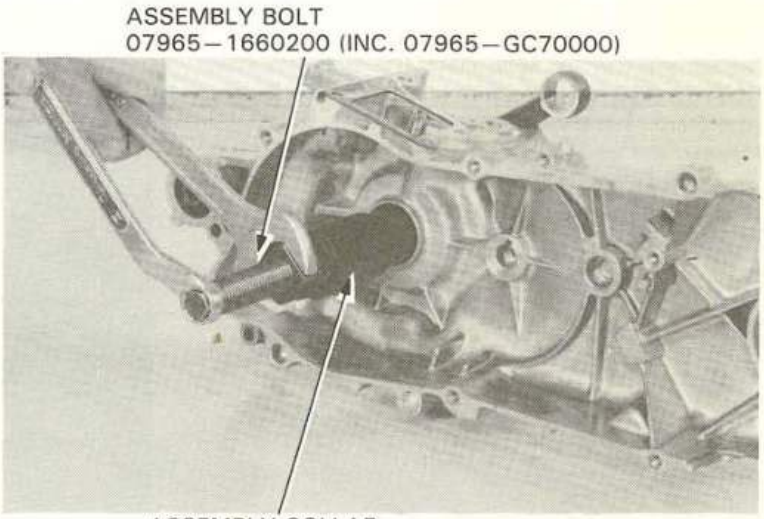
Drive a new journal bearing into the left crankcase.



Install the crankshaft into the left crankcase.

Position the assembly collar 07965–GC70100 with the small O.D. against the crankshaft bearing. Thread the Assembly Bolt (07965–1660200) onto the crankshaft.
Hold the bolt and turn the nut clockwise to fully install the crankshaft.

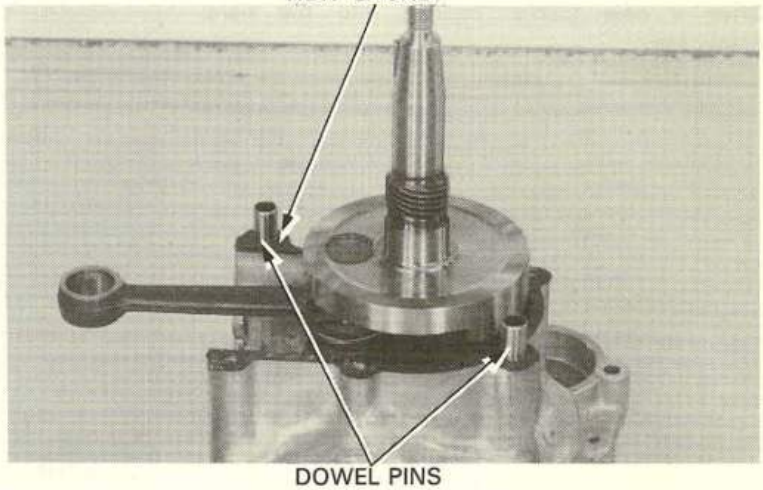
Lubricate the crankshaft main and journal bearings with Honda 2-stroke oil or equivalent.



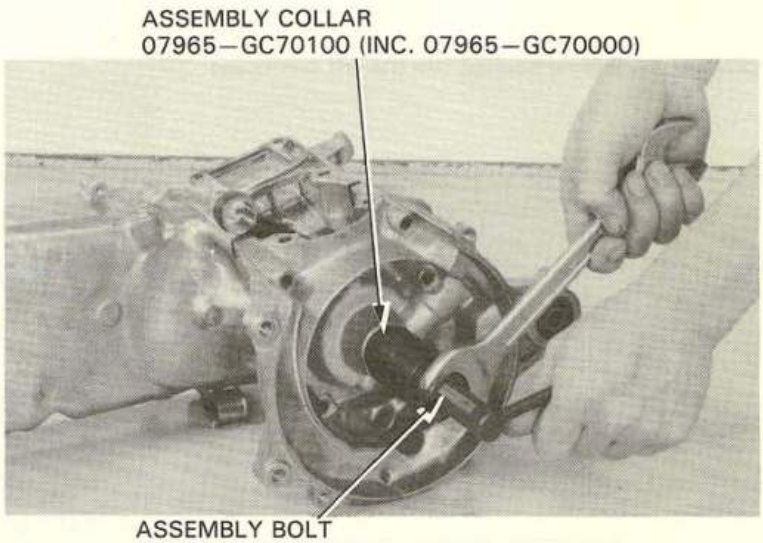
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CRANKCASE ASSEMBLY

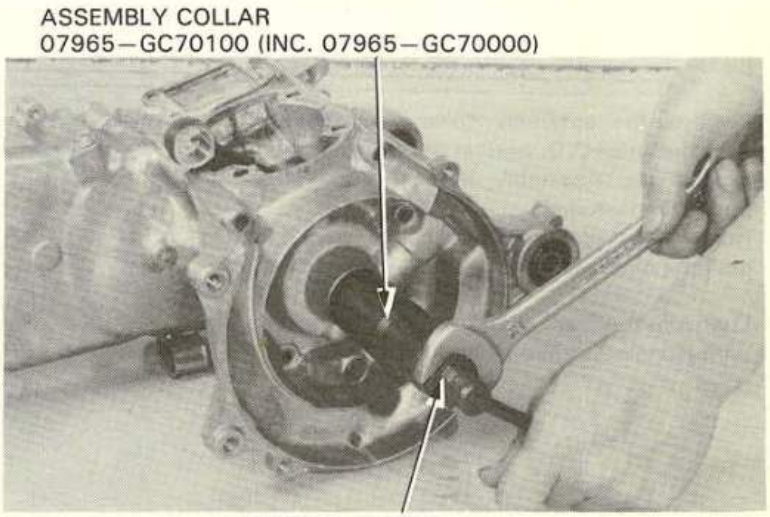
Install a new gasket onto the crankcase mating surface.
Install the dowel pins.



Assembly the crankcase halves; place the assembly collar, 07965—GC70100 with the small O.D. against the right crankshaft bearing. Thread assembly bolt, 07965—1480200 onto the crankshaft.
Hold the bolt and turn the nut clockwise to draw the crankcase halves together.

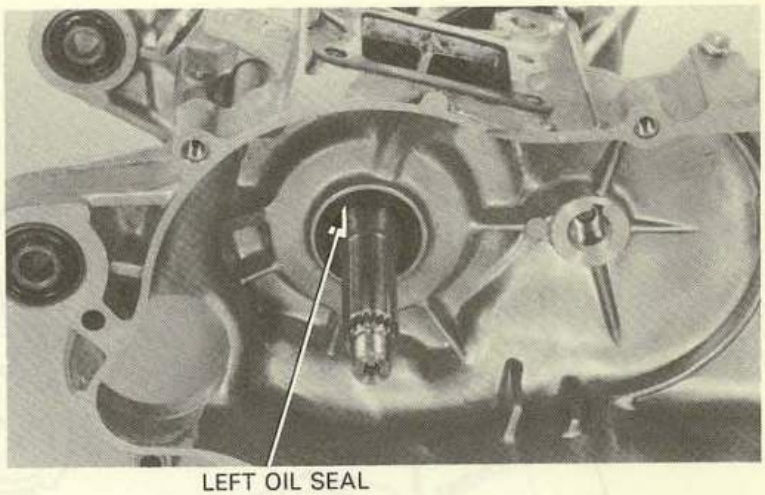


Install the right oil seal; place the assembly collar (07965—GC70100) so its stepped end is against the crankcase and oil seal.
Thread the assembly bolt 07965—1480200 onto the crankshaft. Hold the bolt and turn the nut clockwise to install the oil seal into place.



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Drive the oil seal into the left crankcase until it is flush with the case using the assembly collar, 07965–GC70100.

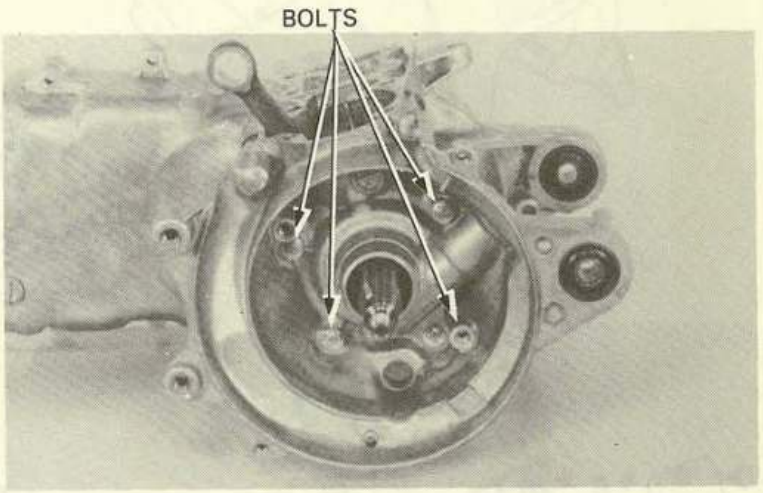


LEFT OIL SEAL

Install and tighten the crankcase bolts.

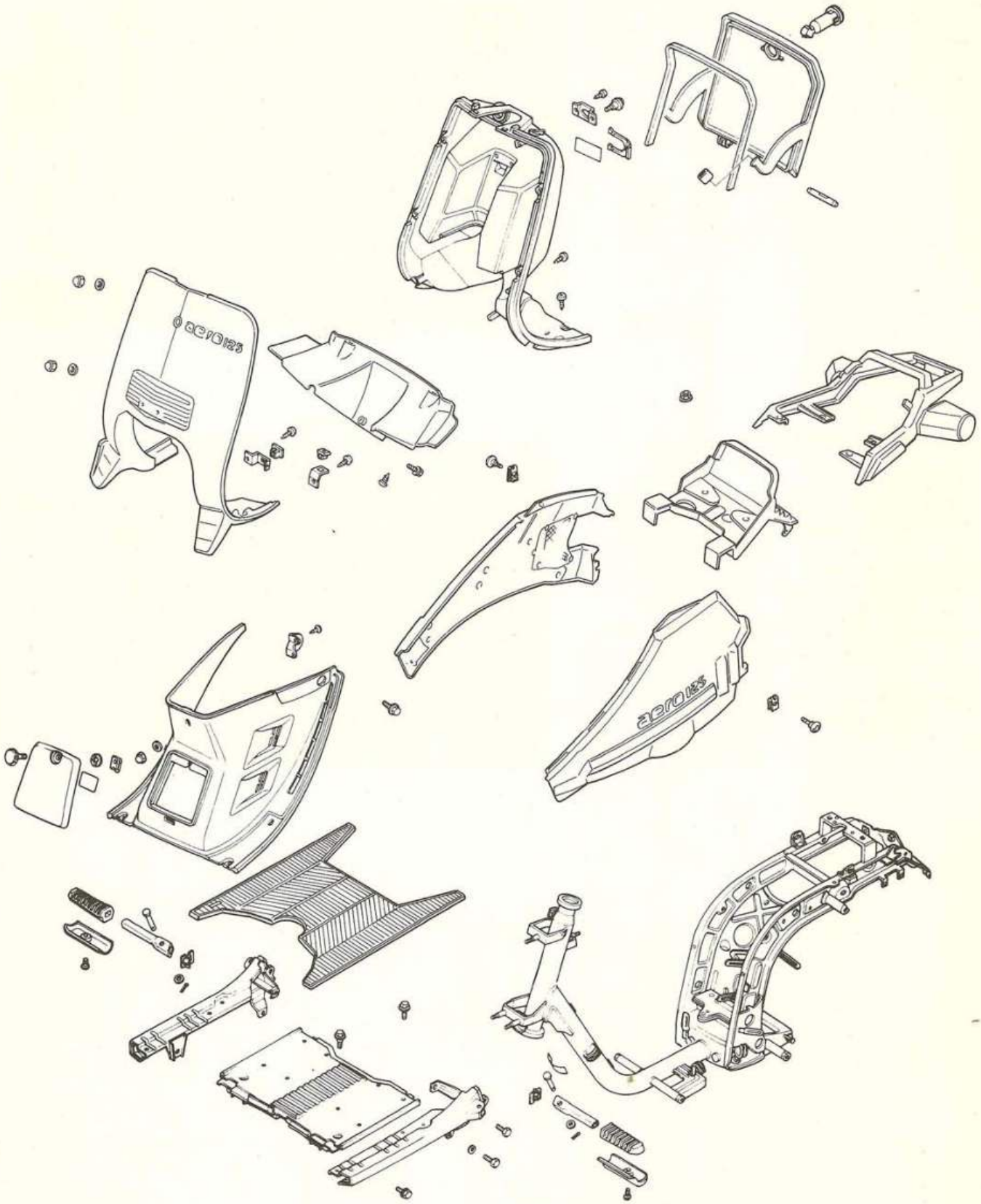
NOTE:

Make sure that the crankshaft rotates freely after tightening the bolts.



Install the following:
- Final reduction (Page 9-4).
- Alternator (Page 7-4).
- Piston, cylinder and cylinder head (Page 6-7).
- Drive and driven pulleys (Page 8-6, 8-17)
- Oil pump (Page 2-2).
- Reed valve and carburetor (Page 4-13, 4-8).
- Engine (Page 5-4).

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11. FRAME COVERS

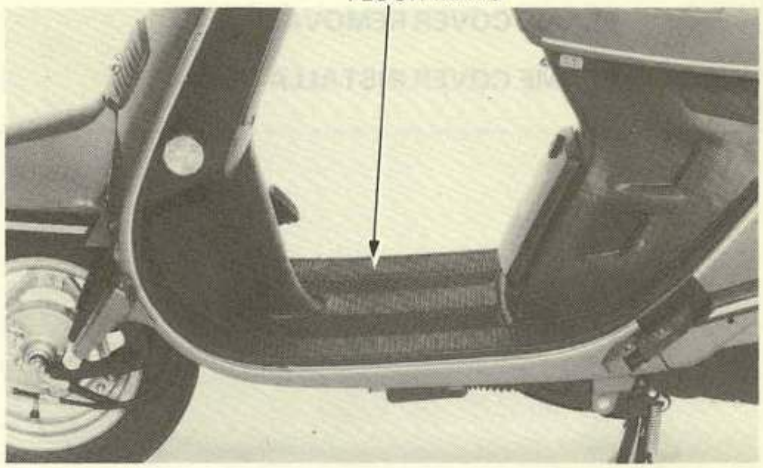
FRAME COVER REMOVAL	11–2
FRAME COVER INSTALLATION	11–4

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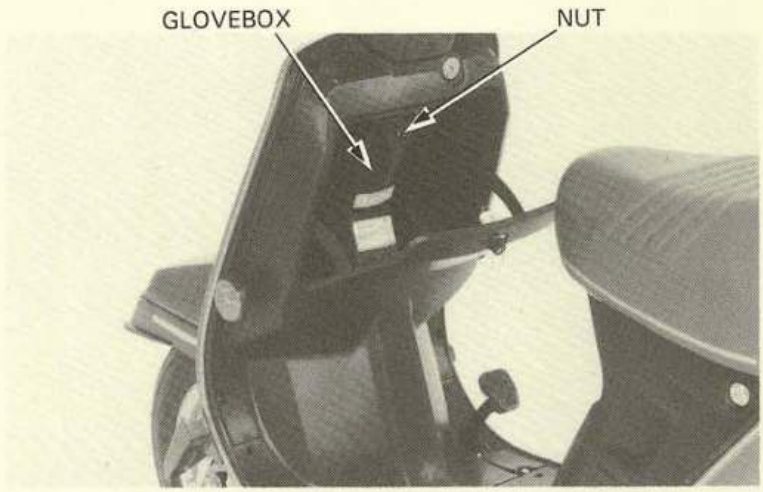
FRAME COVER REMOVAL

GLOVEBOX/FLOOR PLATE REMOVAL

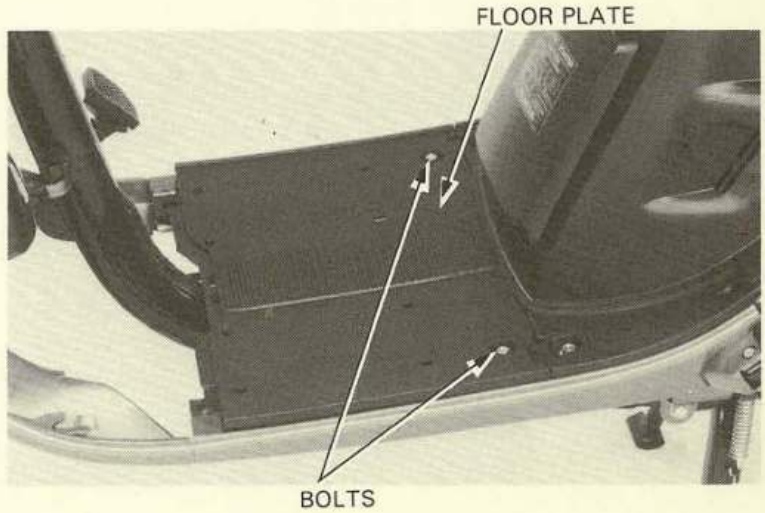
Remove the floor mats.



Open the glovebox lid and remove the glovebox by unscrewing the nut, two bolts and ten screws.



Remove the two bolts attaching the floor plate and remove the floor plate.



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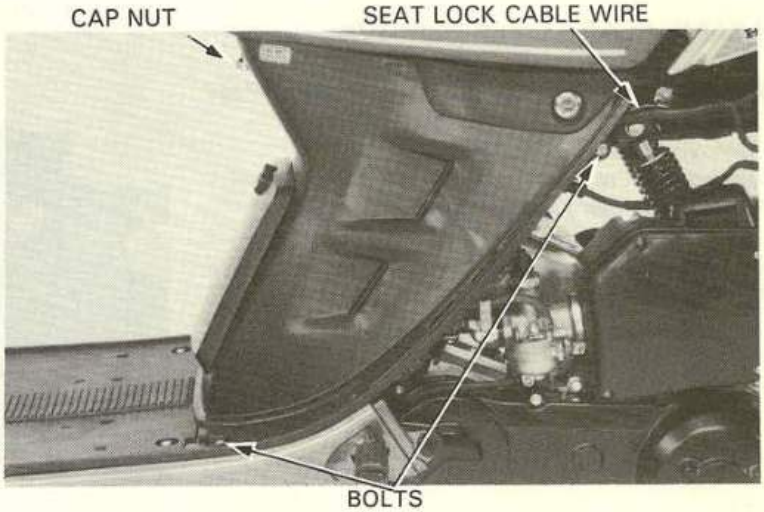
FRAME CENTER COVER REMOVAL

Remove the right and left frame covers.
Remove the floor mats.



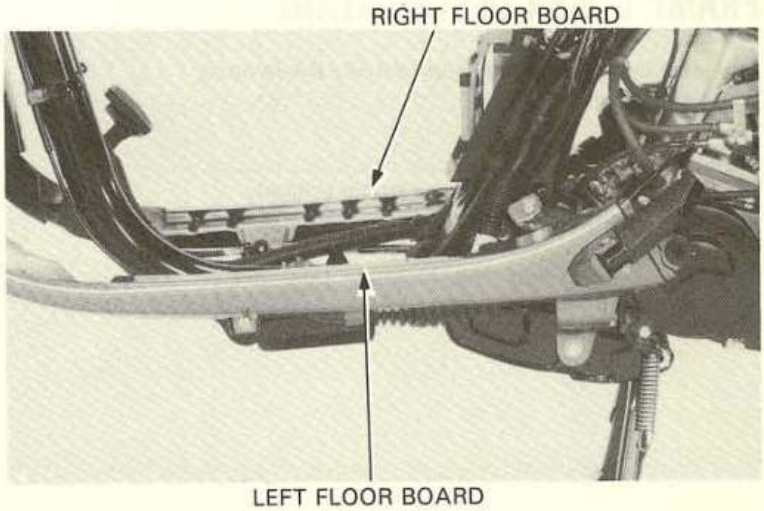
FRAME COVER

Remove the four blots and cap nut and lock cable wire.
Remove the center cover.



RIGHT AND LEFT FLOOR BOARD REMOVAL

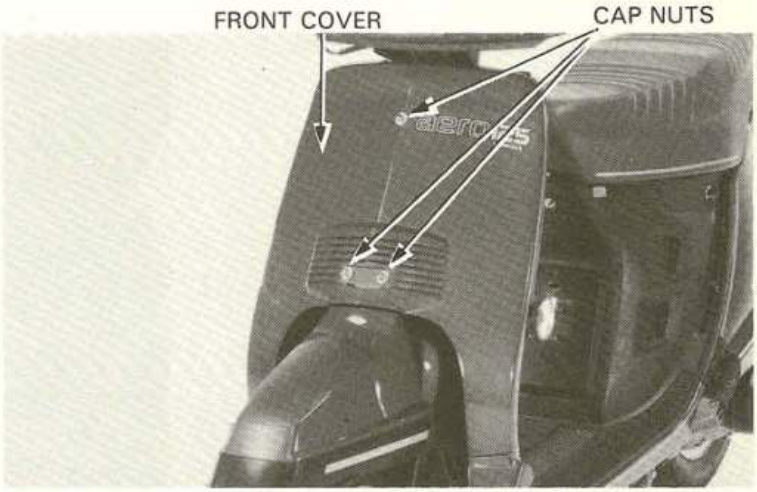
Remove the glovebox and floor plate (Page 11-2).
Remove the frame center cover.
Remove the right and left floor boards.



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FRONT COVER REMOVAL

Remove the glovebox (Paga 11-2).
Remove the three cap nuts and remove the front cover.



FRAME REAR COVER REMOVAL

Remove the right and left frame covers (Page 11-2).
Remove the oil filler cap.
Disconnect the rear turn signal wire connectors.
Remove the rear luggage carrier.

Remove the frame rear cover by removing the bolts.



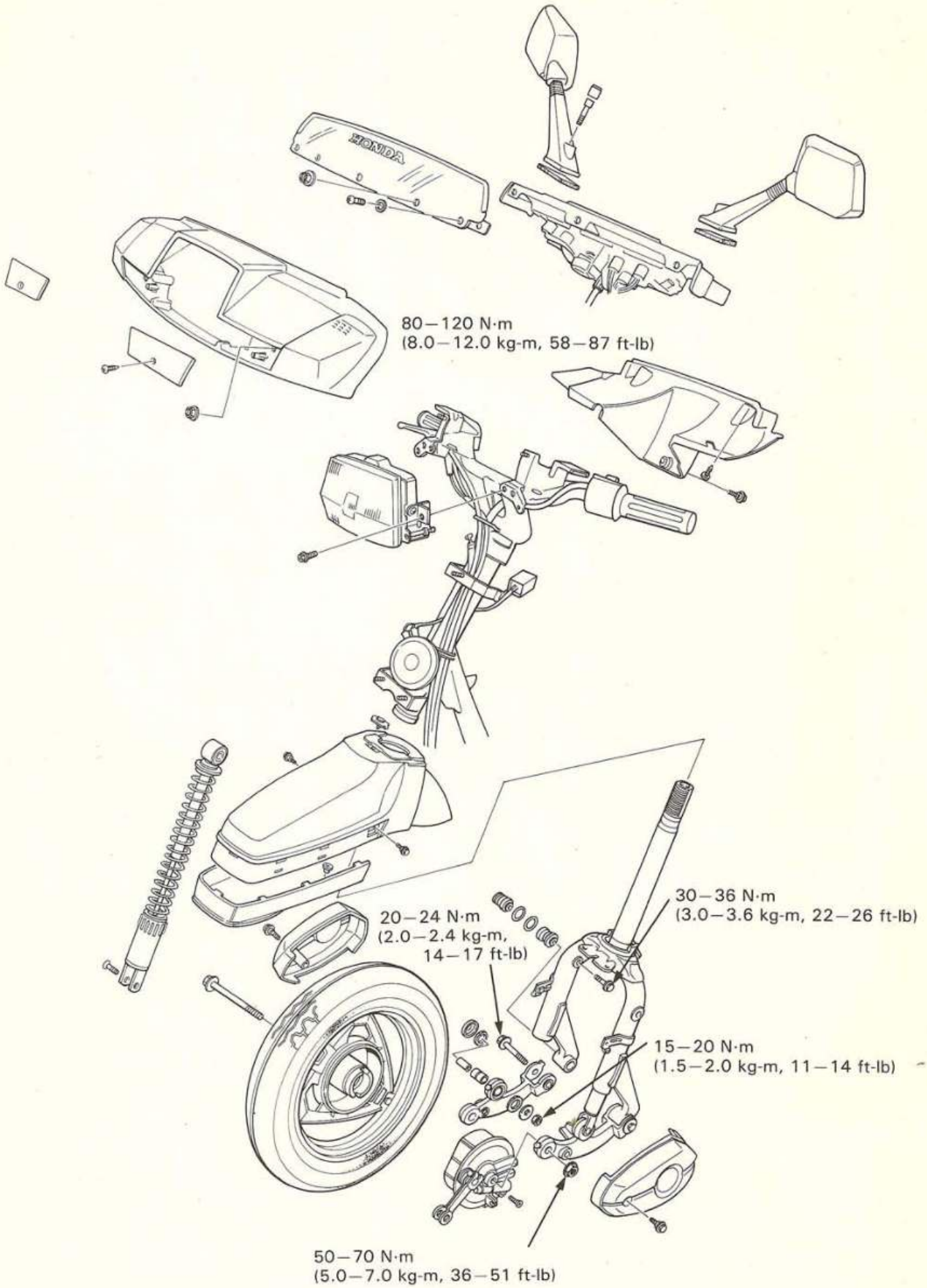
FRAME COVER INSTALLATION

The installation sequence is essentially the reverse order of removal.

NOTE:

- Align the covers with the frame properly.
- Do not pinch the electrical wires and cables between the cover and frame.
- Make sure that the locating tabs are engaged securely.

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12. STEERING/FRONT WHEEL/ BRAKE/SUSPENSION

SERVICE INFORMATION	12–1
TROUBLESHOOTING	12–2
SPEEDOMETER	12–3
HANDLEBAR	12–7
FRONT WHEEL	12–10
FRONT BRAKE	12–15
FRONT SHOCK	12–18
FRONT FORK	12–22

SERVICE INFORMATION

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Axle shaft runout		—	0.20 mm (0.008 in)
Rim runout	Radial	—	2.0 mm (0.08 in)
	Axial	—	2.0 mm (0.08 in)
Cushion spring free length		199.8 mm (7.86 in)	193.8 mm (7.63 in)
Front brake drum I.D.		110 mm (4.33 in)	111.0 mm (4.37 in)
Brake lining thickness		4.0 mm (0.16 in)	2.0 mm (0.08 in)

TORQUE VALUES

Steering stem nut	80–120 N·m (8.0–12.0 kg-m, 58–87 ft-lb)
Front axle nut	50– 70 N·m (5.0–7.0 kg-m, 36–51 ft-lb)
Front shock mount bolt (Upper)	30– 36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)
Front fork pivot arm	20– 24 N·m (2.0–2.4 kg-m, 14–17 ft-lb)
Front brake arm	8– 12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Front shock mount bolt (Lower)	15– 20 N·m (1.5–2.0 kg-m, 11–14 ft-lb)

TOOLS

Special

Front shock absorber attachment set	07967–KG80000 — Puller attachment 07967–KG80100
Bearing puller	07931–4630000 — Puller shaft 07967–KG80200

Common

Bearing remover shaft	07746–0050100
Bearing remover head 12 mm	07746–0050300
Driver	07749–0010000
Attachment, 32 x 35 mm	07746–0010100
Attachment, 42 x 47 mm	07746–0010300
Pilot, 12 mm	07746–0040200
Pin spanner	07702–0020000, 07702–0010000 or M9361–412–099788 (USA only)
Lock nut wrench	07916–1870100
Fork seal driver	07747–0010100 — or Fork seal driver 07947–3550000
Fork seal driver attachment	07747–0010400
Lock nut wrench 30 x 32 mm	07716–0020400 or equivalent
Extension	07716–0020500

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TROUBLESHOOTING

Hard steering
1. Steering stem nut too tight
2. Steering stem bearings damaged
3. Steering ball and cone races damaged
4. Insufficient tire pressure

Steers to one side or does not track straight
1. Uneven front shocks
2. Bent front fork
3. Bent front axle

Front wheel wobbling
1. Bent rim
2. Axle nut tightened improperly
3. Bent spoke plate
4. Faulty or unevenly worn tire
5. Excessive wheel bearing play

Soft suspension
1. Weak fork springs

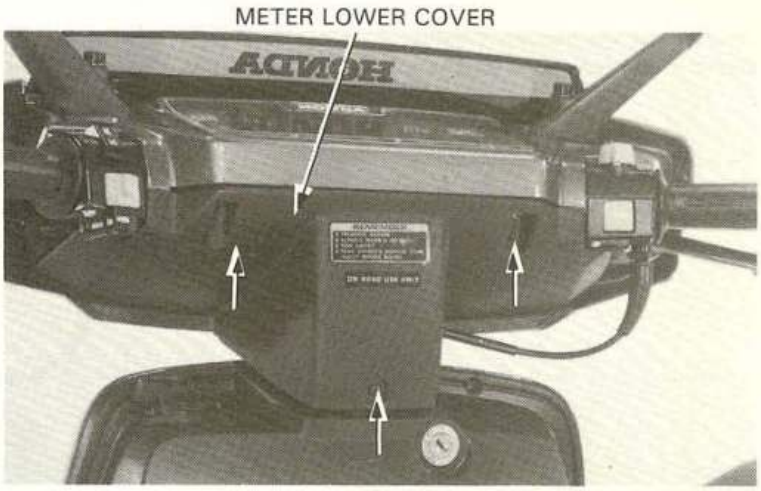
Front suspension noise
1. Fork link binding
2. Loose front fork fasteners

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SPEEDOMETER

SPEEDOMETER REMOVAL

Remove the meter lower cover by loosening the one bolt and two screws.



Remove the right and left headlight covers by removing the screws.



Disconnect the front turn signal wires.
Remove the two bolts attaching the handlebar front cover and remove the front cover with the right and left front turn signals.



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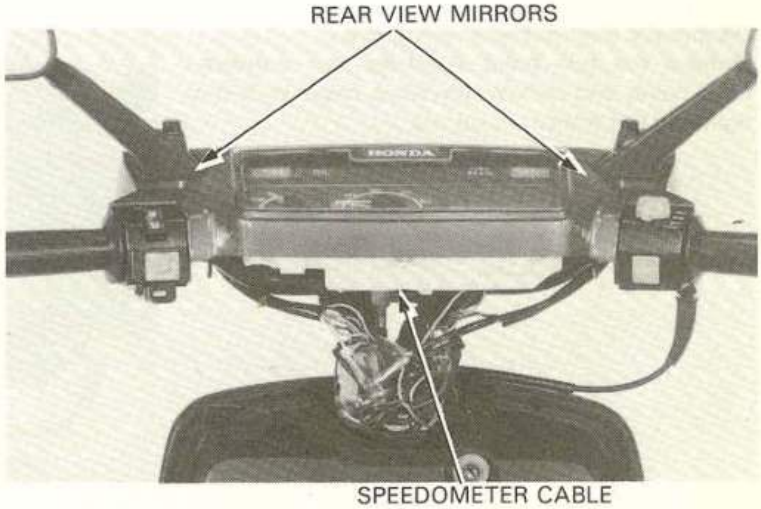
Disconnect the headlight wires.
Remove the two bolts and headlight.



Remove the windshield by removing the three screws and two nuts.



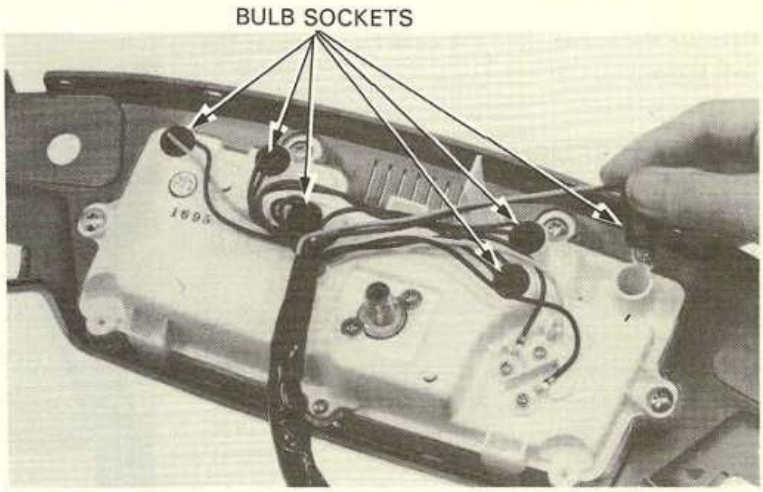
Disconnect the meter wires and the speedometer cable.
Remove the rear view mirrors and meter cluster assembly.



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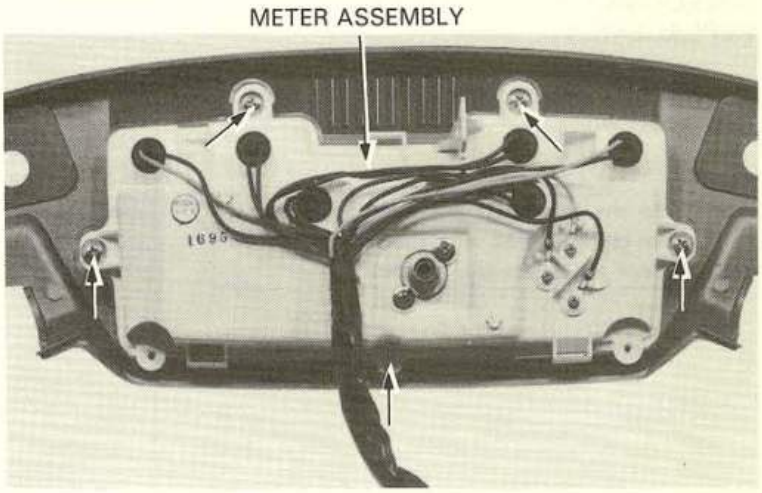
BULB REPLACEMENT

Remove the sockets and replace the bulbs with new ones.

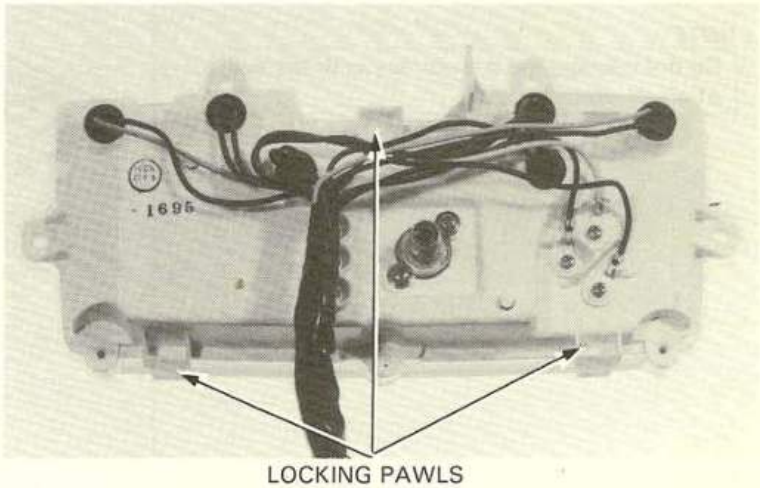


METER DISASSEMBLY

Remove the five screws and remove the meter assembly.

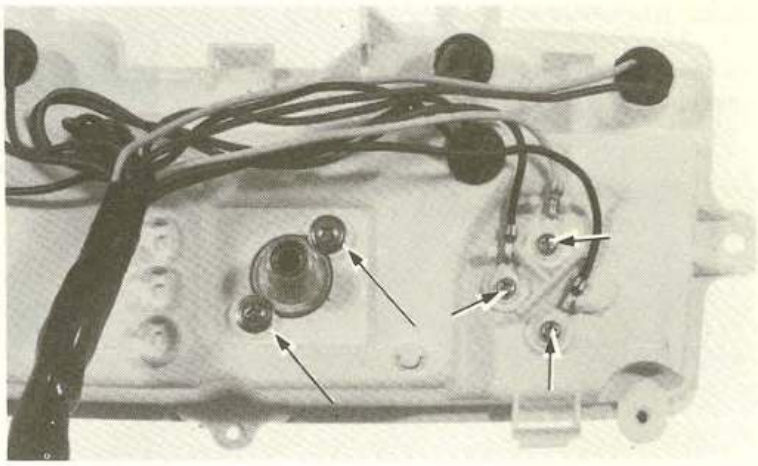


Remove the meter cover.
Remove the indicator panel by releasing the locking pawls.



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Remove the meter from the case by removing the five screws.

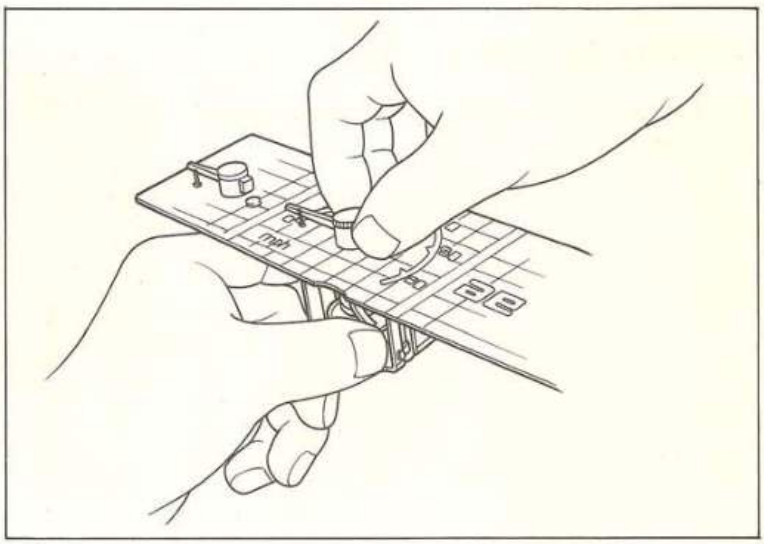


METER ASSEMBLY/INSTALLATION

The assembly and installation sequence is essentially the reverse order of disassembly and removal.

SPEEDOMETER MOVEMENT REPLACEMENT

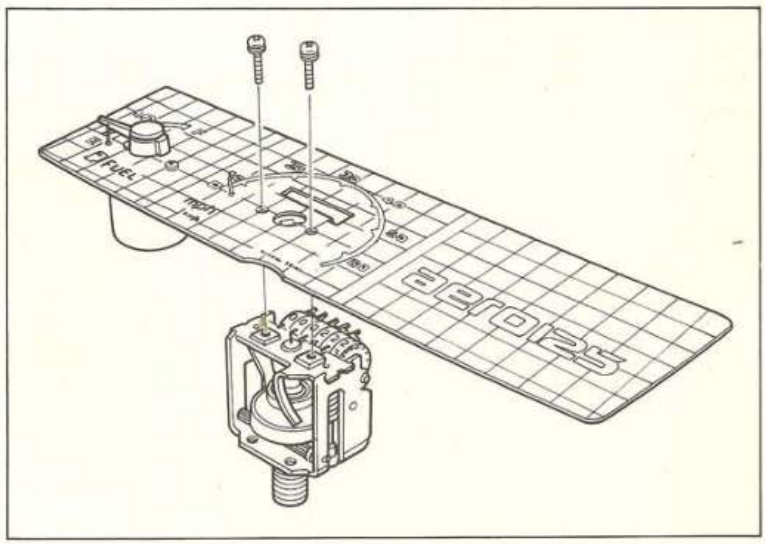
Screw off the needle while holding the body and rotor as shown.



NOTE:

- Hold the rotor just enough to prevent it from being turned with the needle.
- Do not touch the dial surface.

Remove the two screws attaching the meter dial.



NOTE:

Do not damage the dial surface with the end of a screwdriver.

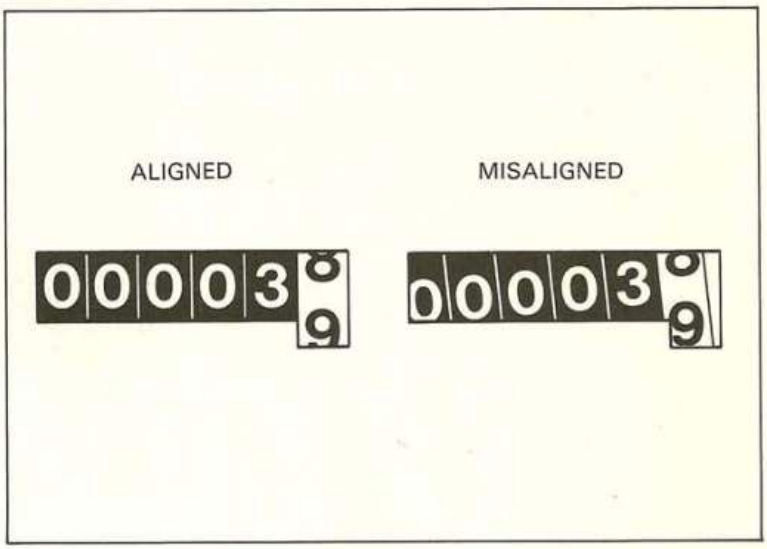
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Install a new speedometer movement on the meter face.

Install and tighten the two attaching screws.

NOTE:

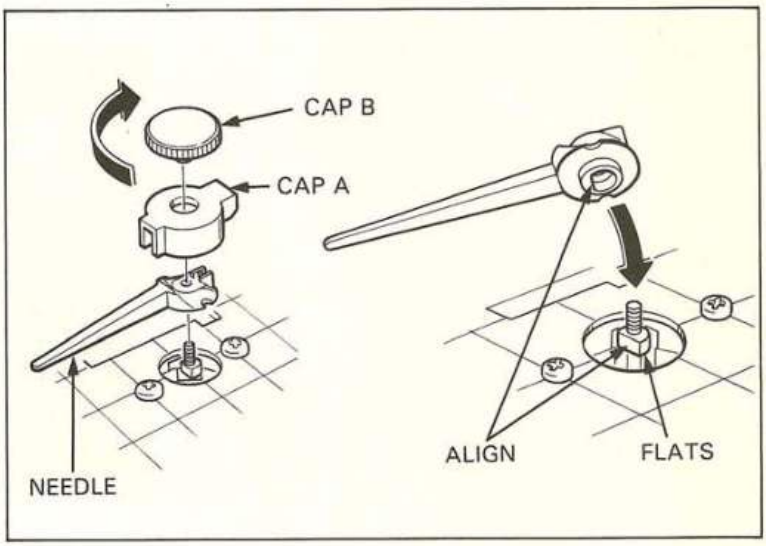
Check that the numerals on the wheels are aligned in the window properly as shown.



Install a new needle on the needle seat aligning the flat on the needle with the flat on the seat.
Install the needle caps A and B and turn cap B clockwise while holding the needle.

NOTE:

- Do not hold the rotor when tightening cap B.
- Do not touch the dial face.

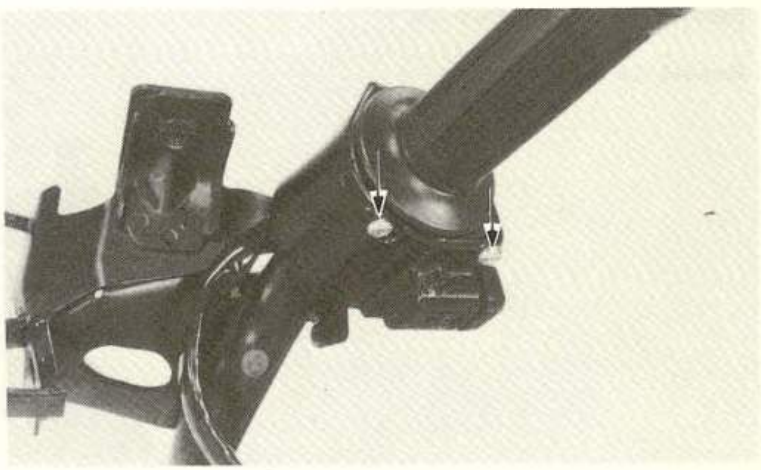


HANDLEBAR

REMOVAL

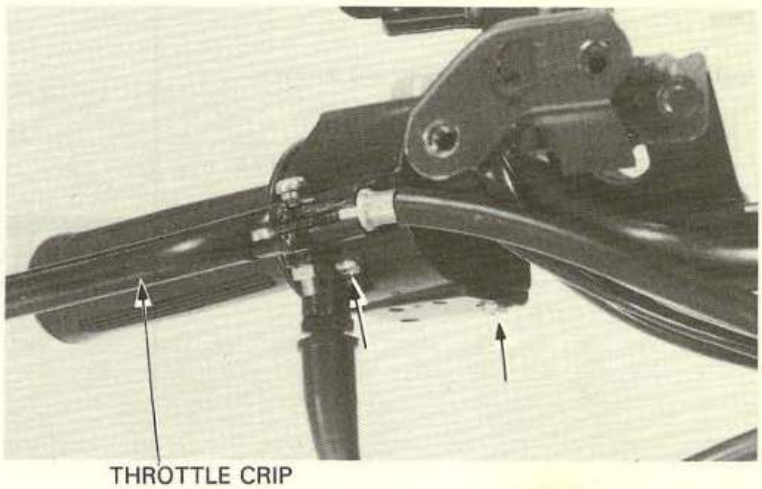
Remove the meter assembly (Page 12-3).

Remove the left handlebar switch by removing the two screws.



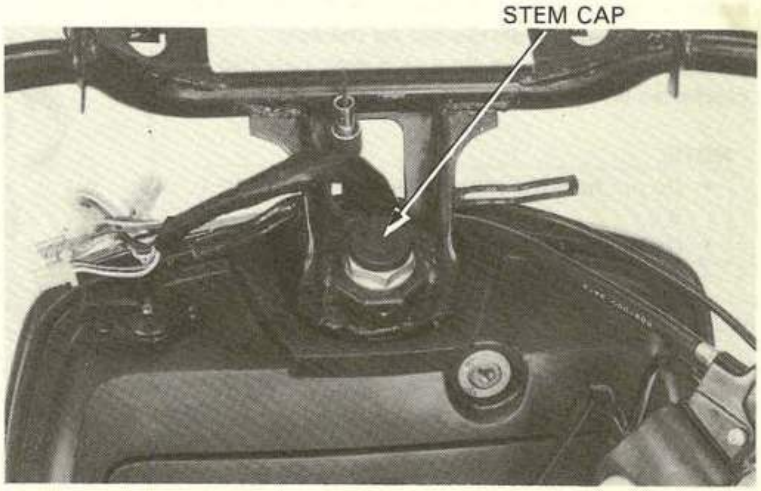
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Remove the right handlebar switch by removing the two screws.
Disconnect the throttle cable from the throttle grip and remove the throttle grip from the handlebar.



THROTTLE CRIP

Remove the steering stem cap.



Remove the steering stem nut.

Remove the handlebar.

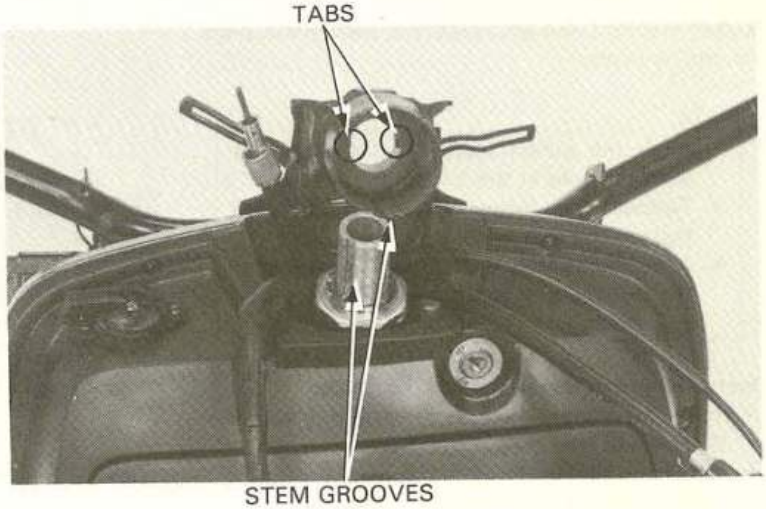


LOCK NUT WRENCH, 30 x 32 mm
07716—0020400 OR COMMERCIALLY
AVAILABLE IN U.S.A.

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INSTALLATION

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

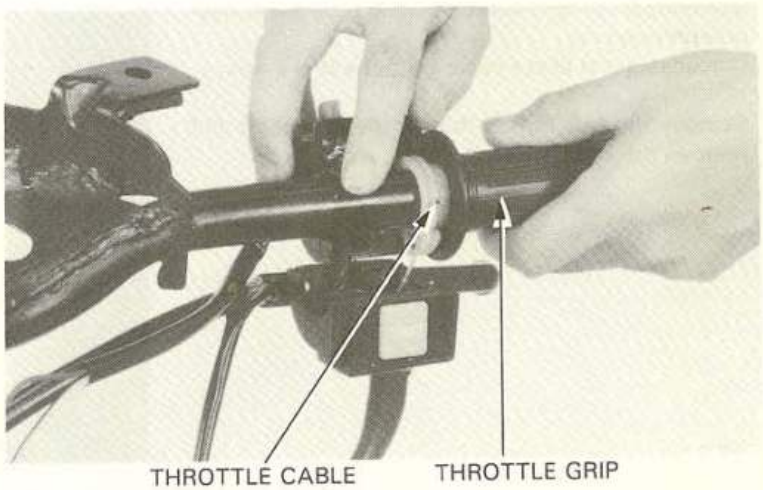


Torque the steering stem nut.

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



Apply grease to the throttle grip area of the handlebar.
Install the throttle grip onto the handlebar and connect the throttle cable to the throttle grip.

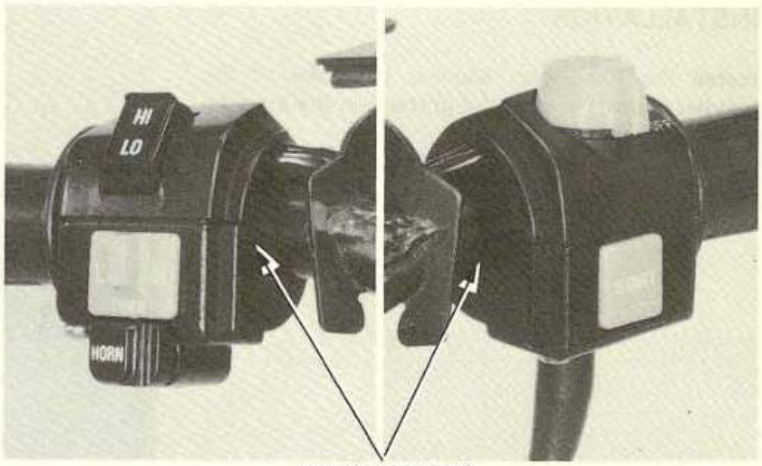


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Install the right and left handlebar switch housings on the handlebar.

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 in all steering positions.



PUNCH MARKS

Install all the removed parts.
Parform the following adjustments and operations:

- Brake lever free play (Page 3-9)
- Headlight aiming (Page 3-10)
- Throttle grip free paly (3-4)
- Operation of all electrical parts.

FRONT WHEEL

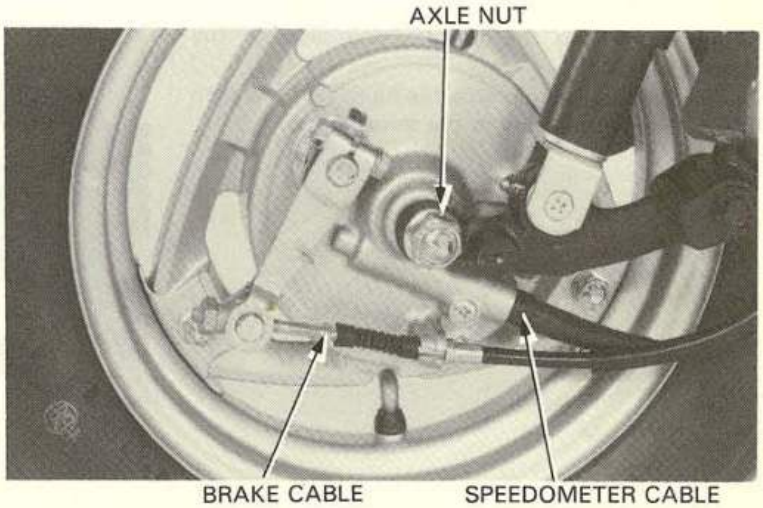
REMOVAL

Remove the cushion covers.



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

Remove the axle nut, withdraw the axle shaft and remove the front wheel.



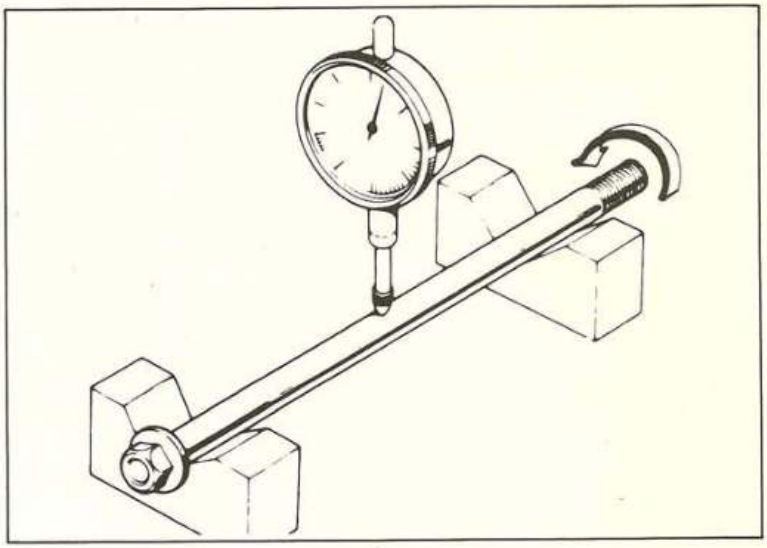
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INSPECTION

• AXLE SHAFT

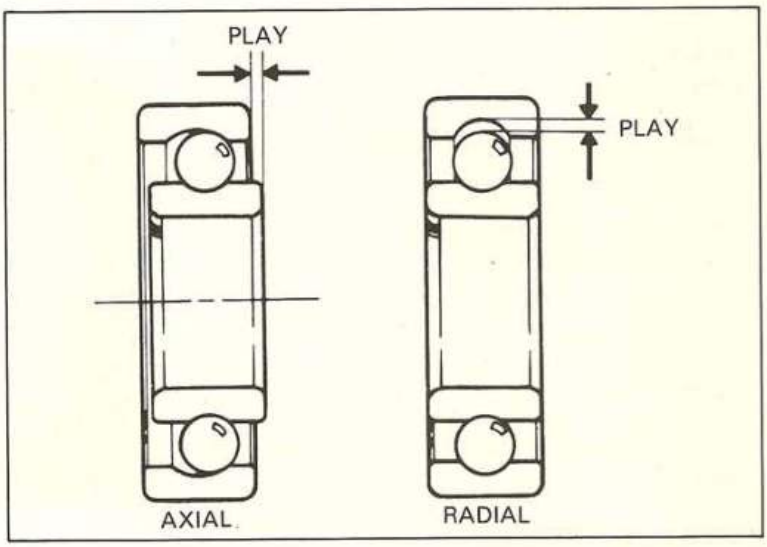
Set the axle in V blocks and measure the runout. The actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)



• WHEEL BEARING

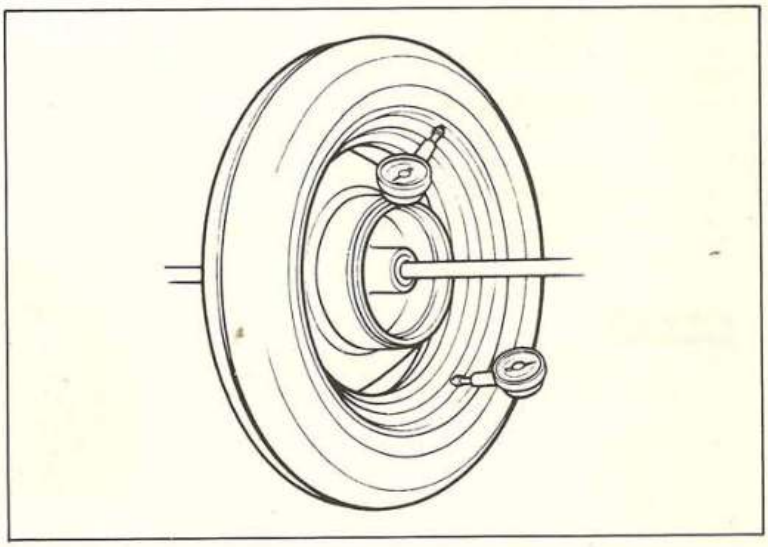
Check the wheel bearing play by placing the wheel in a truing stand and spinning the wheel by hand. Replace the bearings if they are noisy or have excessive play.



• 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 gauge.

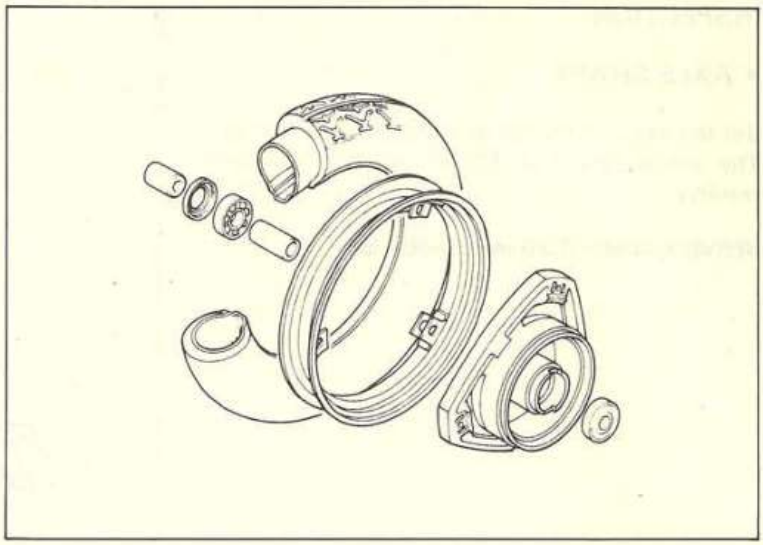
SERVICE LIMITS:
Radial: 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)



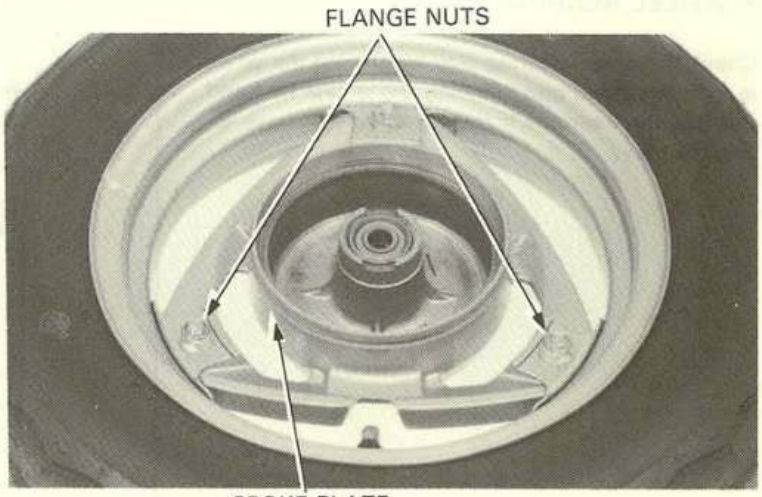
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DISASSEMBLY

Remove the dust seal, bearings and distance collar.



Remove the three flange nuts and remove the spoke plate from the rim.



Remove the bearing using the following tools.
Bearing remover shaft
07746–0050100
Bearing remover head 12 mm
07746–0050300

ASSEMBLY

Install the spoke plate onto the rim and tighten the flange nut.

TORQUE: 22–28 N·m
(2.2–2.8 kg-m, 16–20 ft-lb)

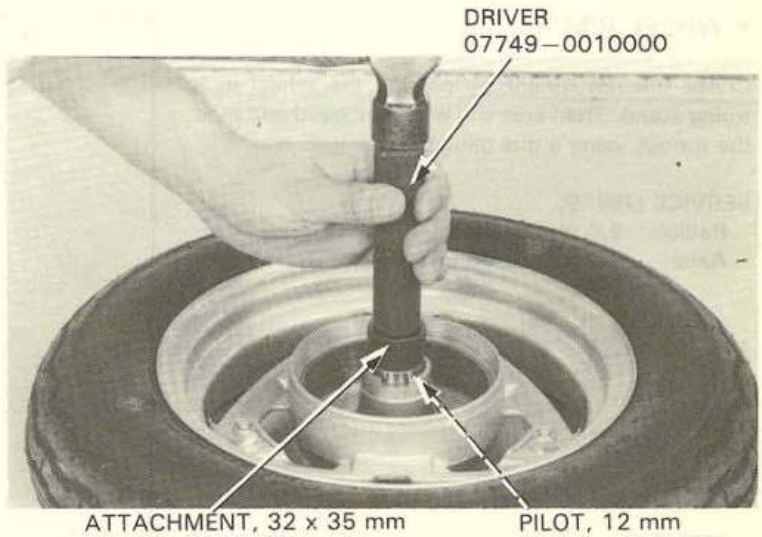
Pack all bearing cavities with grease.
Drive in the left bearing and install the distance collar.
Then drive in the right bearing.

NOTE:

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

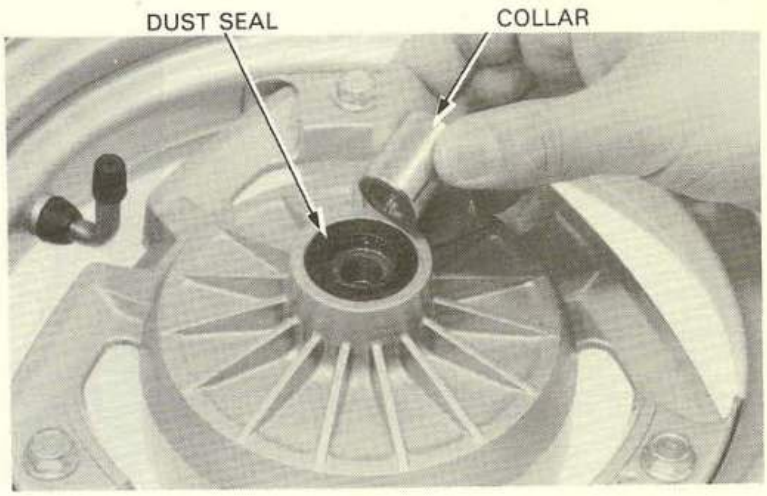
WARNING

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



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



INSTALLATION

Position the front wheel between the fork legs.

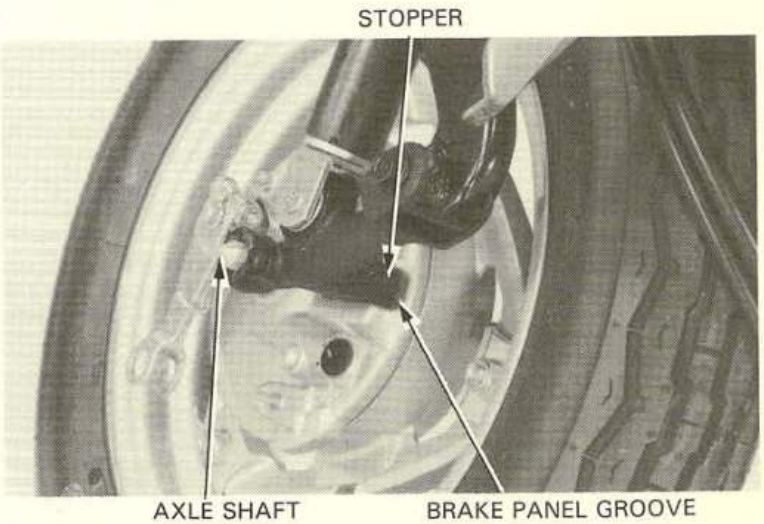
NOTE:

Align the brake panel groove with the pivot arm stopper.

Insert the axle shaft through the wheel bub from the right side and install the axle nut.

Tighten the right and left pivot arm bolts.

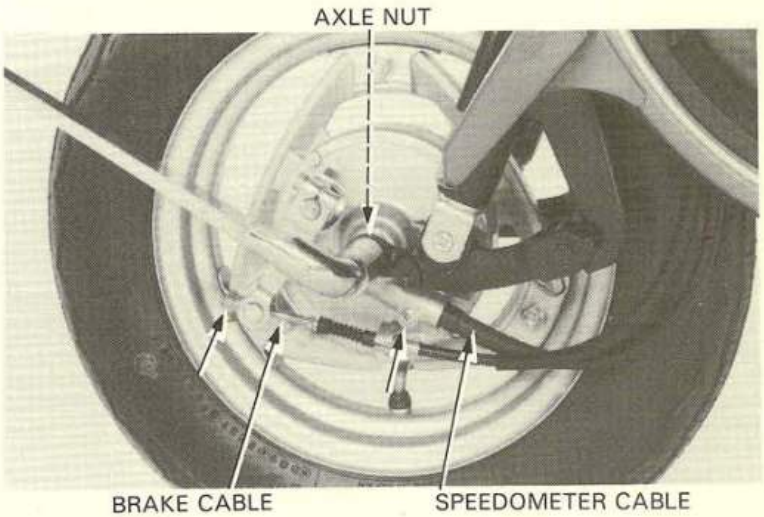
TORQUE: 20—24 N·m
(2.0—2.4 kg-m, 14—17 ft-lb)



Tighten the axle nut to the specified torque.

TORQUE: 50—70 N·m
(5.0—7.0 kg-m, 36—51 ft-lb)

Connect the speedometer cable to the speedometer gearbox.
Connect the brake cable to the front brake arm.
Adjust the front brake lever free play (Page 3-9).



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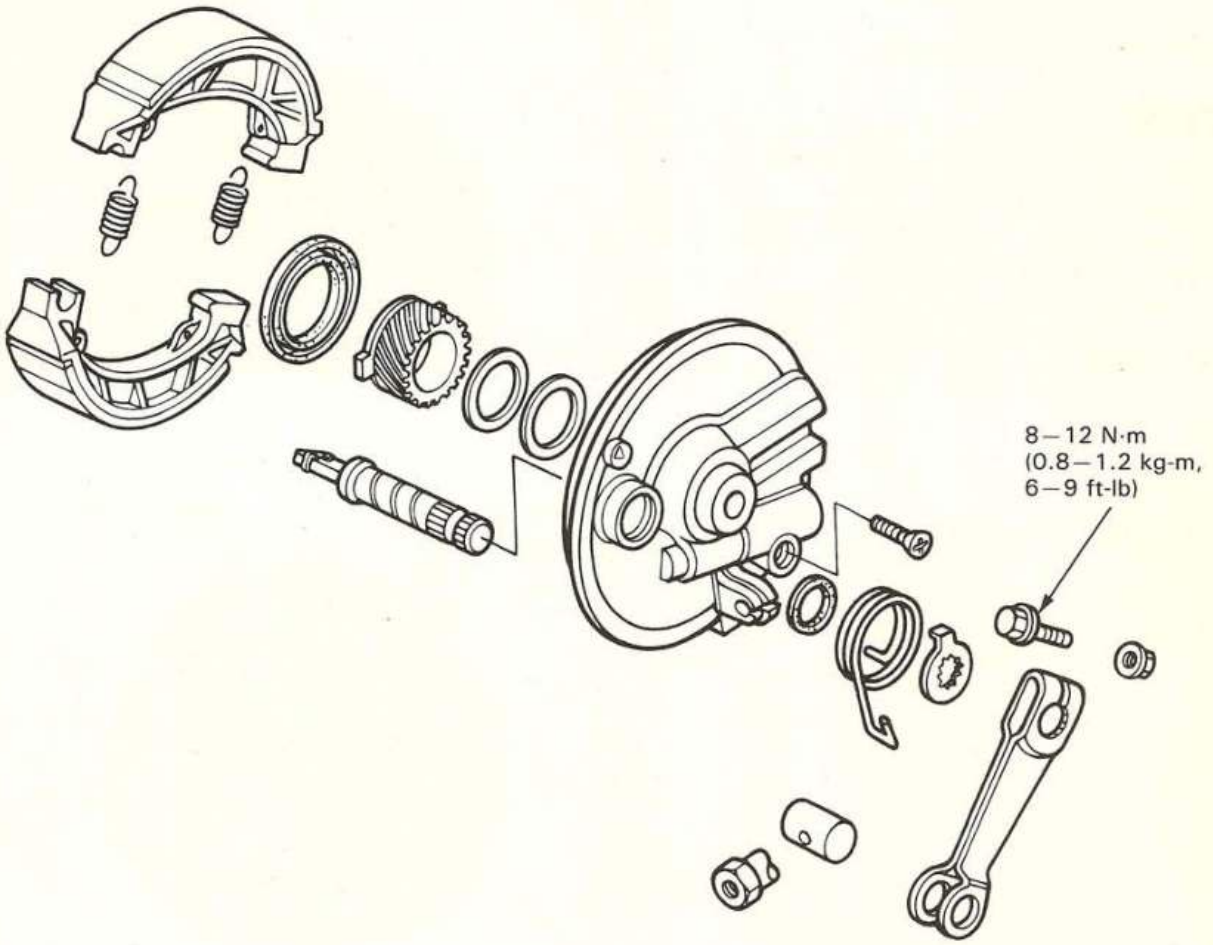
Install the cushion arm covers with the bolts.

CUSHION ARM COVER



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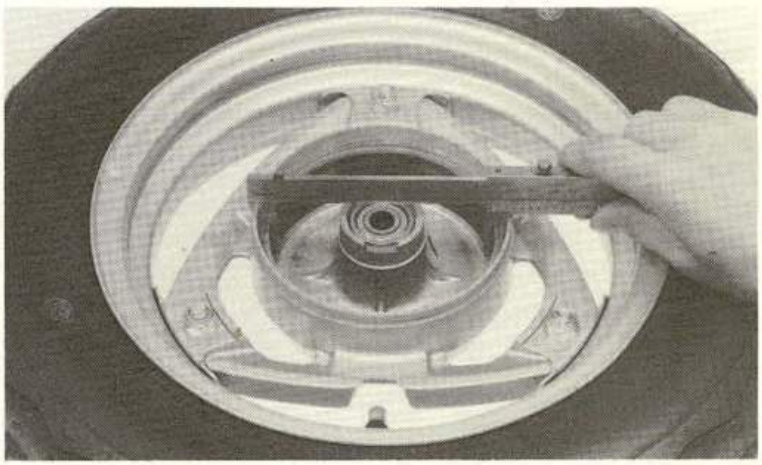
FRONT BRAKE



FRONT BRAKE DRUM INSPECTION

Remove the front wheel (Page 12-9).
Remove the brake panel.
Measure the brake drum I.D.

SERVICE LIMIT: 111 mm (4.37 in)



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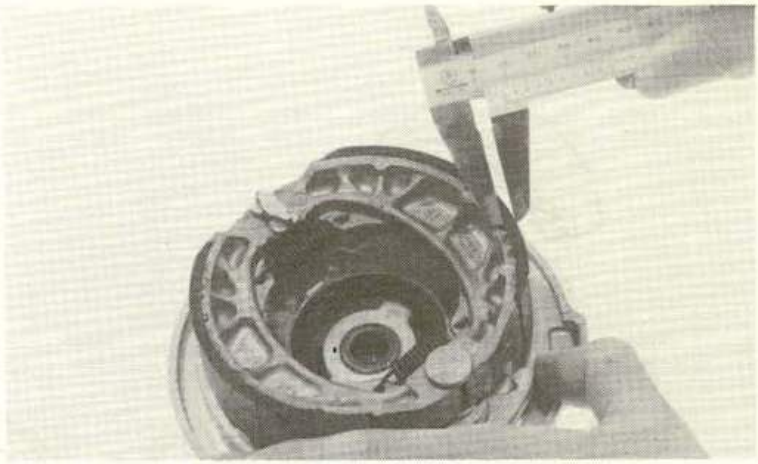
BRAKE LINING INSPECTION

Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.008 in)

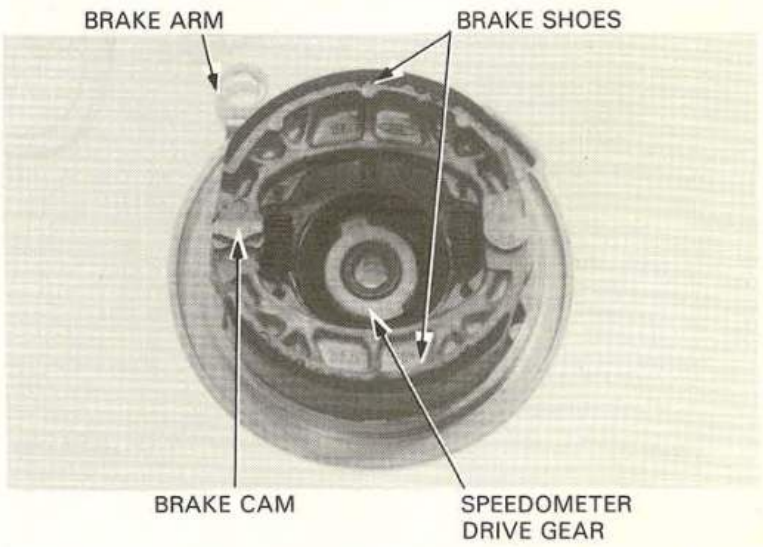
WARNING

- *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.*



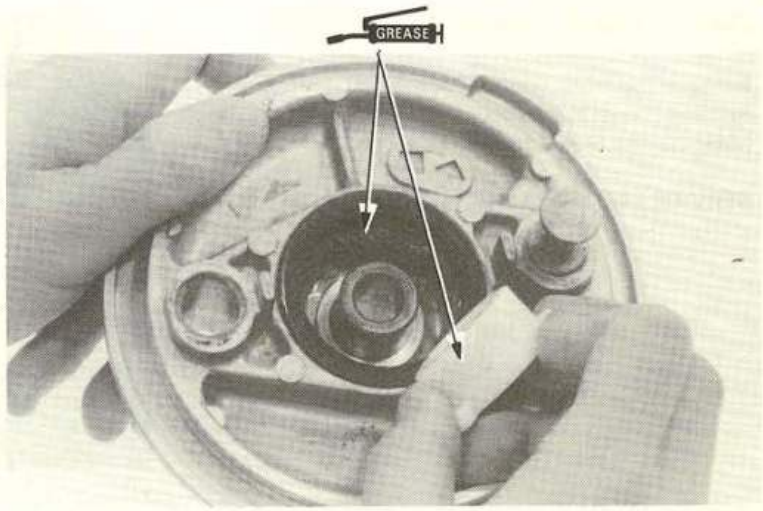
BRAKE PANEL DISASSEMBLY

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



BRAKE PANEL ASSEMBLY

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

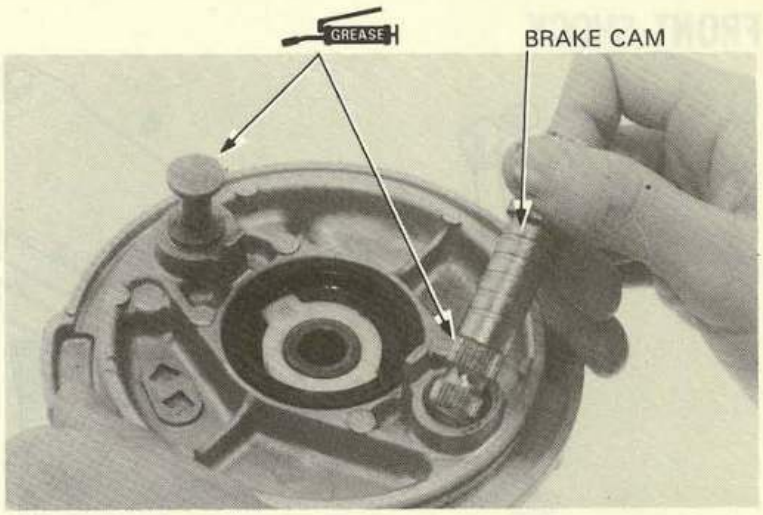


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Apply silicone grease to the anchor contacting area of each shoe and to the brake shoe contacting area of the brake cam.
Install the brake cam.

WARNING

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

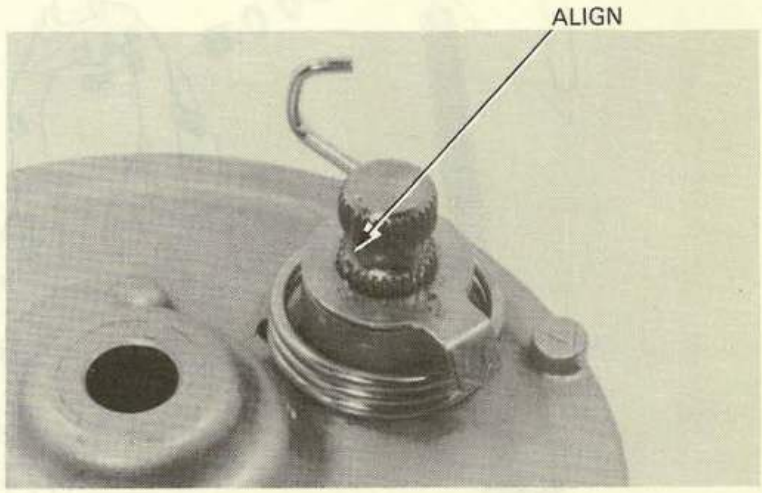


Install the brake shoes.

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

NOTE:

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



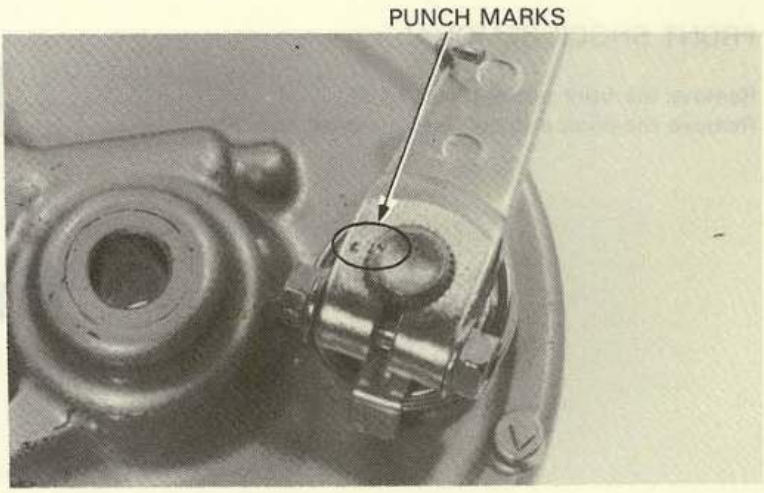
Install the brake arm.

NOTE:

Align the punch marks on the brake arm and camshaft.

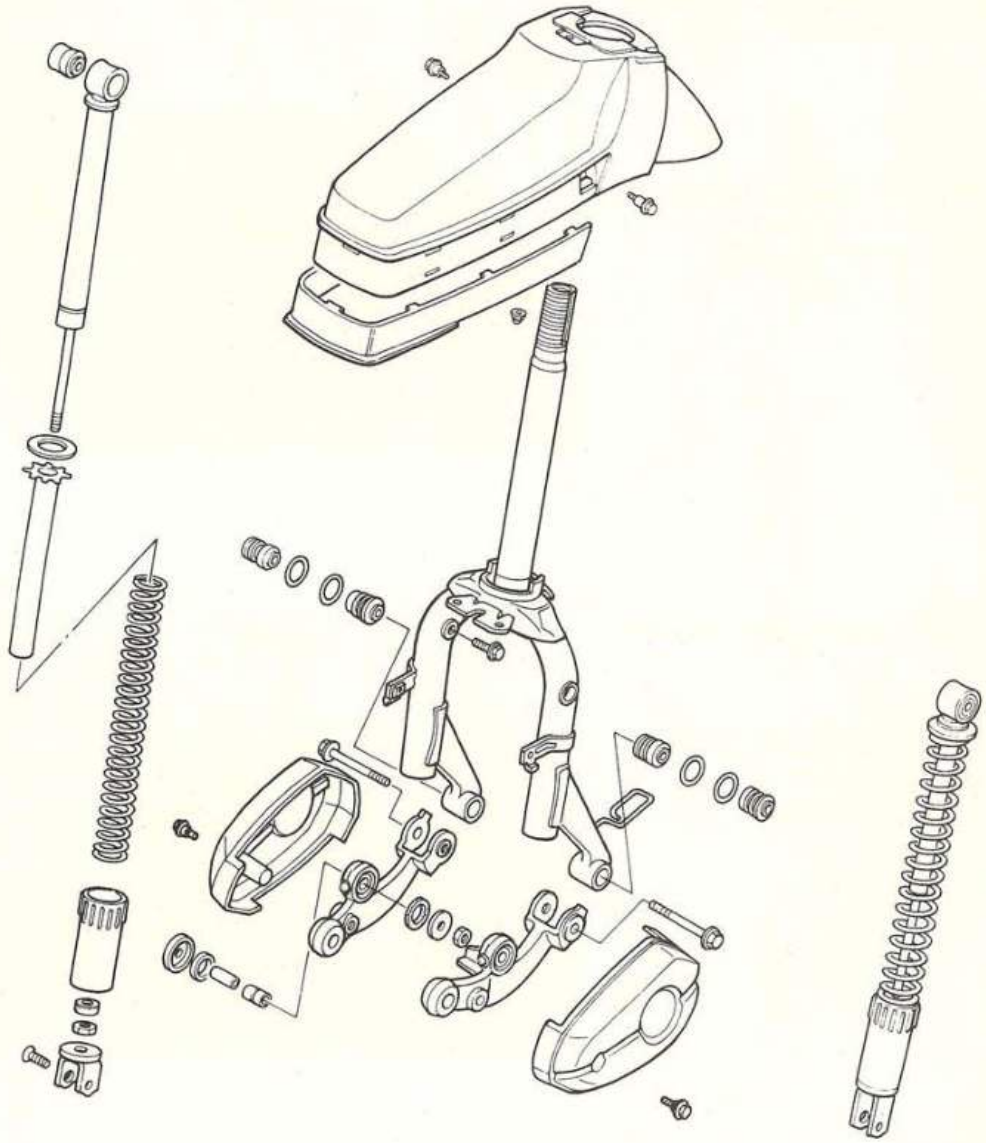
Torque the brake arm bolt.

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



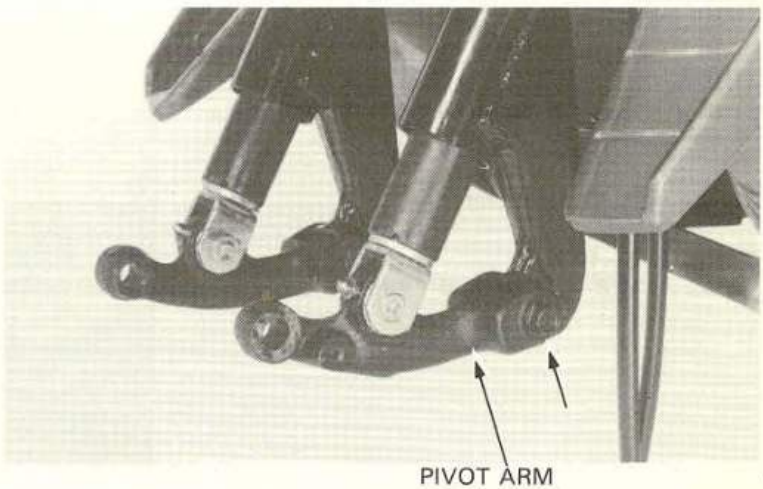
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FRONT SHOCK



FRONT SHOCK REMOVAL

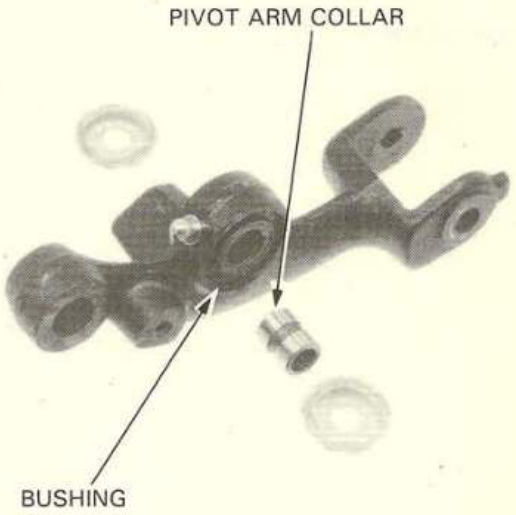
Remove the front wheel (Page 12-9).
Remove the pivot arm bolt and the pivot arm.



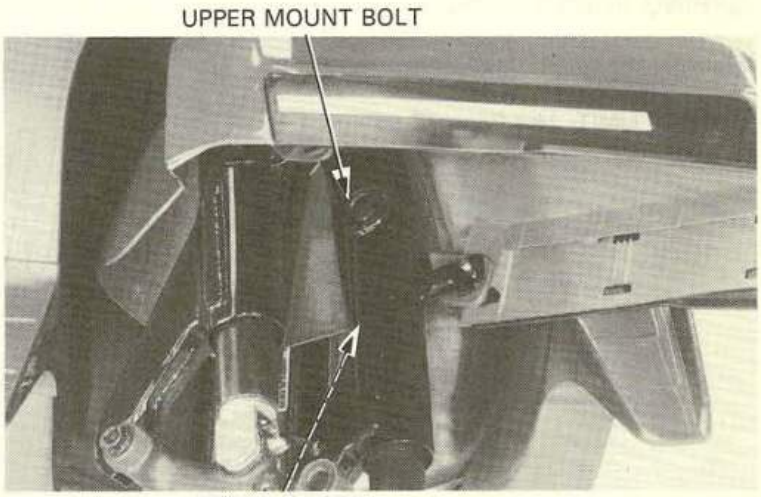
PIVOT ARM

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Check the pivot arm collars and bushings for wear or damage.

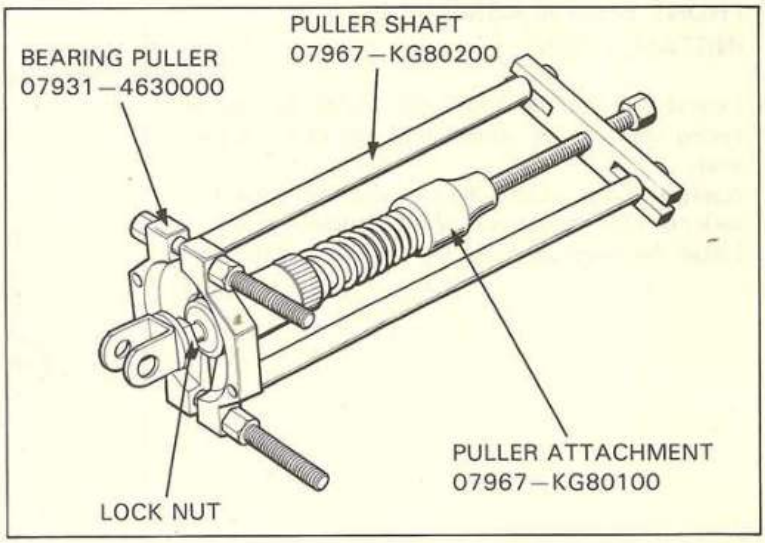


Remove the front shock by removing the upper mount bolts.



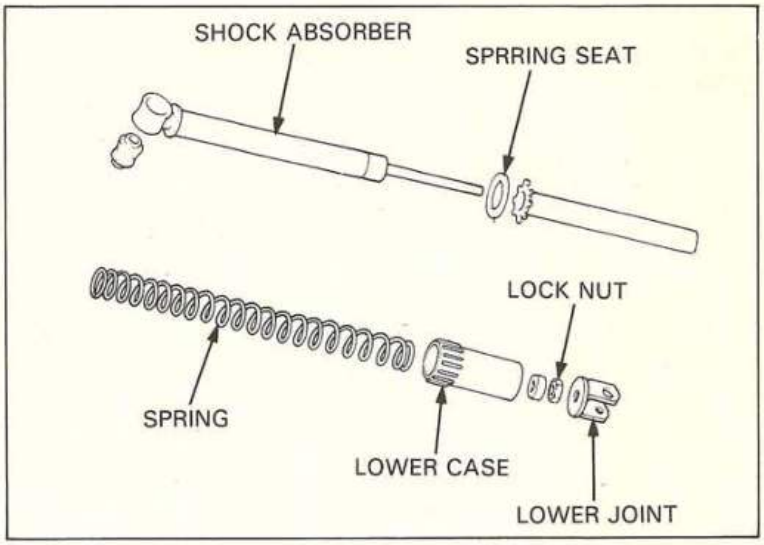
FRONT SHOCK DISASSEMBLY

Remove the front shock lower joint by compressing it with compressor.
Remove the joint and lock nut.
Remove the spring, lower case and spring seat.



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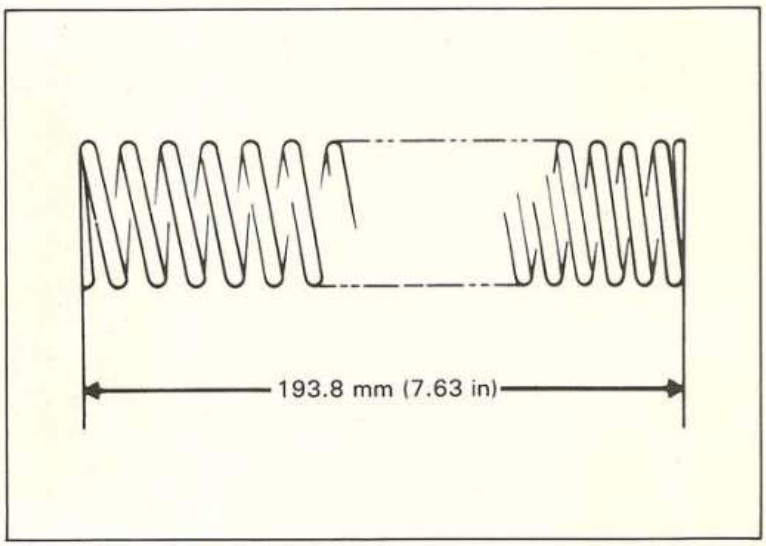
Disassemble the shock.



SPRING INSPECTION

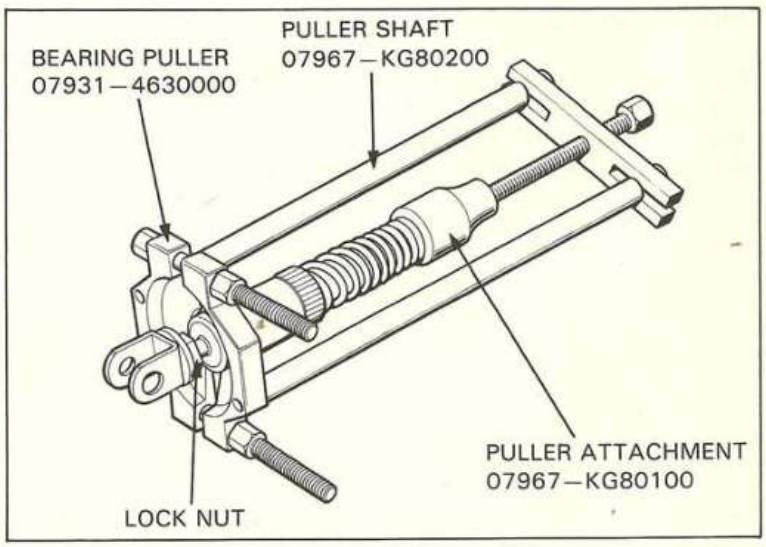
Measure the spring free length.

SERVICE LIMIT: 193.8 mm (7.63 mm)



FRONT SHOCK ASSEMBLY/ INSTALLATION

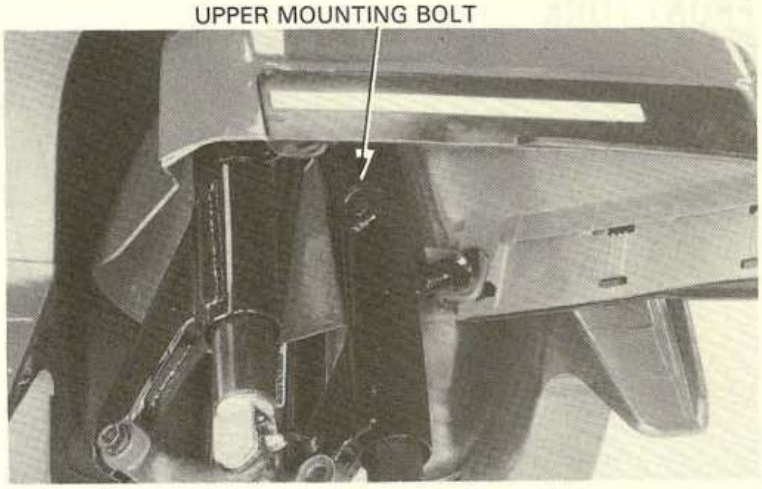
Extend the damper rod fully. Install the upper spring seat, spring, lower case and lower spring seat.
Apply a thread lock to the lock nut and screw the lock nut onto the damper shaft completely.
Install the lower joint and tighten the lock nut.



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Slide the front shock into the front fork and secure with the upper mounting bolt.

TORQUE: 30—36 N·m
(3.0—3.6 kg-m, 22—26 ft-lb)

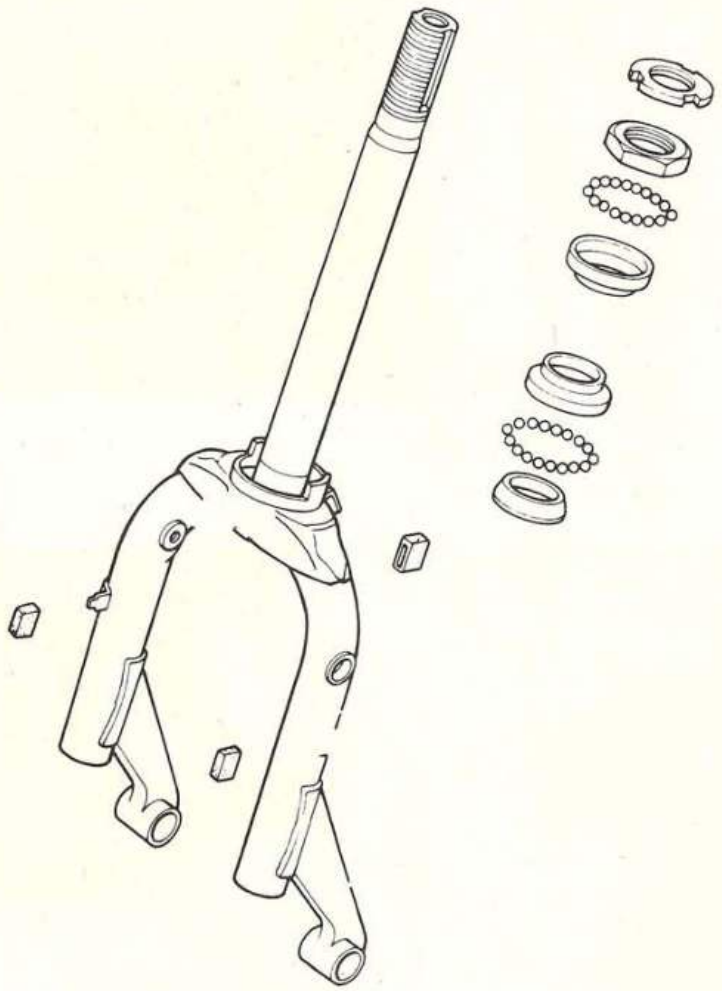


Lubricate and loosely install the front fork pivot arms with the attaching bolts and nuts.
Install the front wheel (Page 12-12)



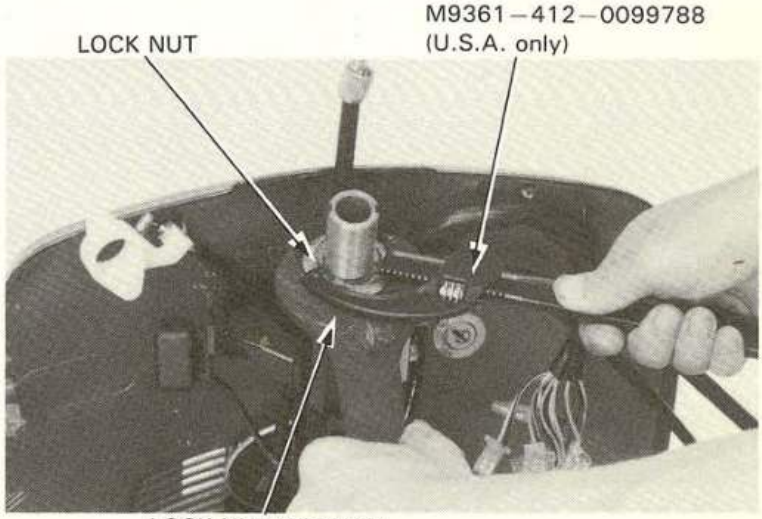
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FRONT FORK



FRONT FORK REMOVAL

Remove the following:
- Meter assembly (Page 12-3).
- Handlebar (Page 12-6).
- Front wheel (Page 12-9).
- Glovebox (Section 11).
- Lock nut.

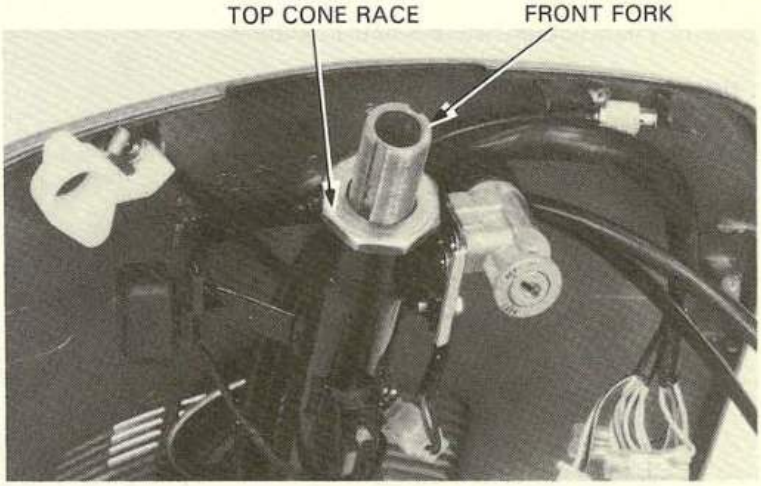


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Remove the top cone race and remove the front fork.

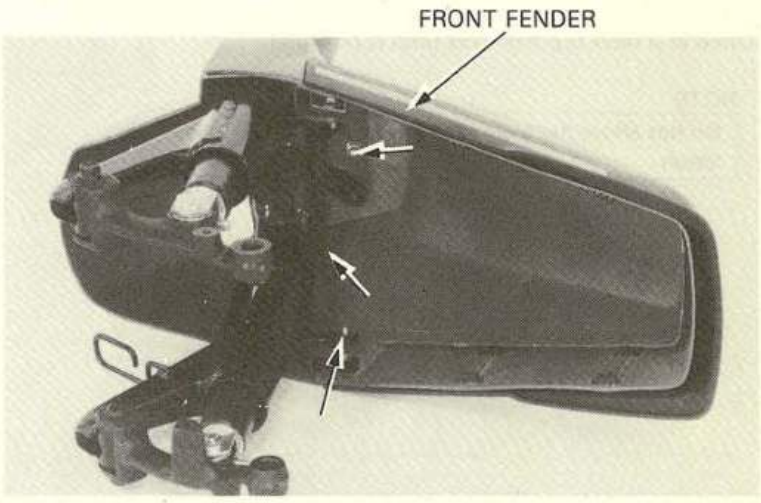
NOTE:

Place the steel balls in a parts tray so they are not lost.



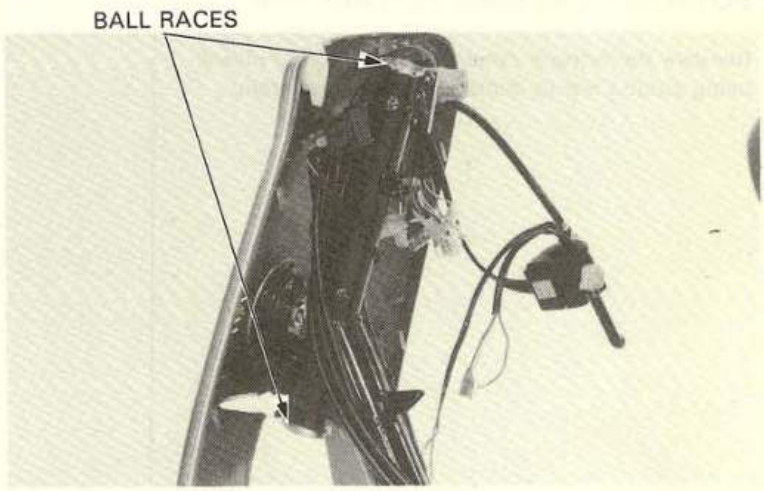
FRONT FENDER REMOVAL

Remove the three bolts attaching the front fender and remove the front fender.



BALL RACE REPLACEMENT

Remove the upper and lower ball races by tapping their flanges with a plastic hammer.

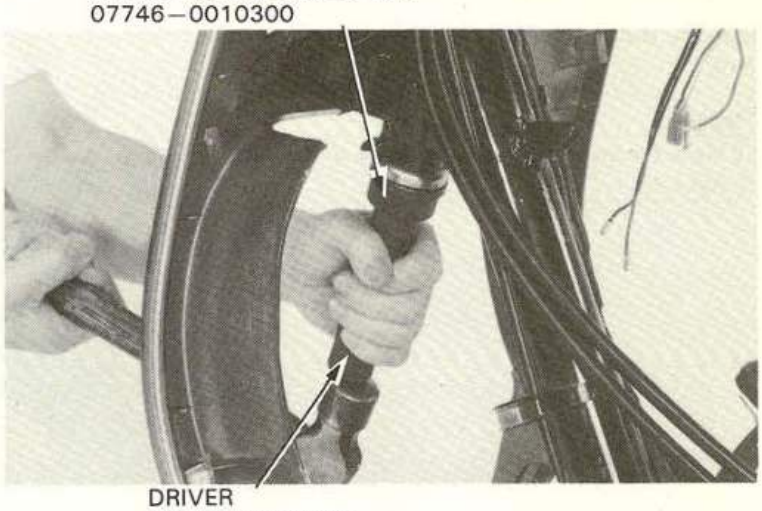


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Drive in a new bottom ball race until it bottoms.

NOTE:

Do not allow the ball race to tilt during installation.



Drive in a new top ball race until it bottoms.

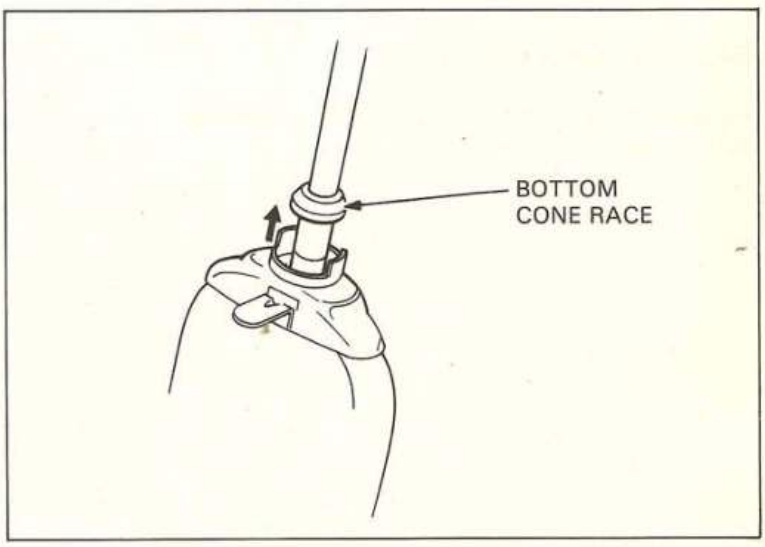
NOTE:

Do not allow the ball race to tilt during installation.



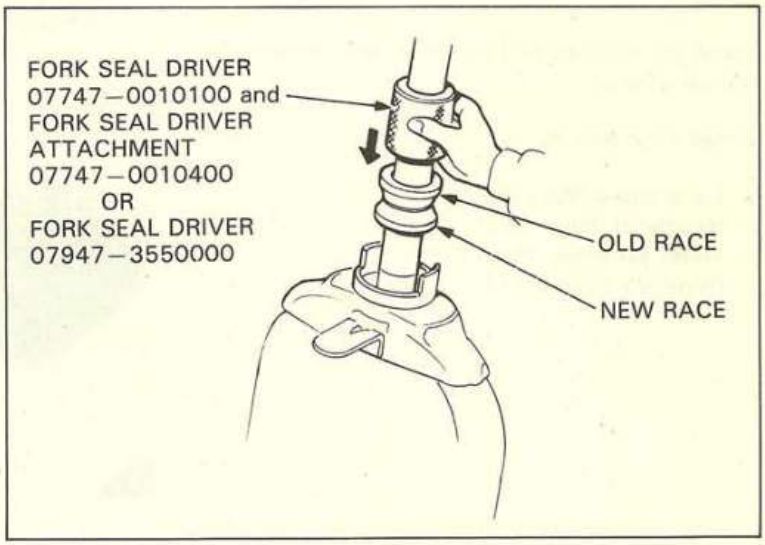
BOTTOM CONE RACE REPLACEMENT

Remove the bottom cone race with a cold chisel, being careful not to damage the steering stem.



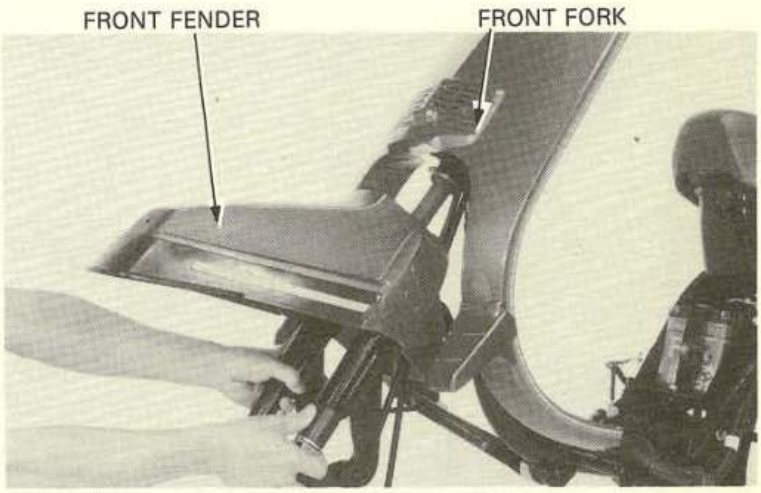
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Install a new bottom cone race over the steering stem.
Install the old bottom cone race over the new bottom cone race upside down.
Drive the bottom cone race with special tools until it seats in place, then remove the old bottom cone race.



FRONT FORK INSTALLATION

Install the front fender on the front fork.
Coat the ball races with grease and install 26 steel balls on the top ball race and 29 steel balls on the bottom ball race.



Lubricate the top cone race with grease.
Screw in the race until snug against the top ball race, then back it out 1/8 turn.

NOTE:

Check that the steering stem rotates freely and there is no vertical play.

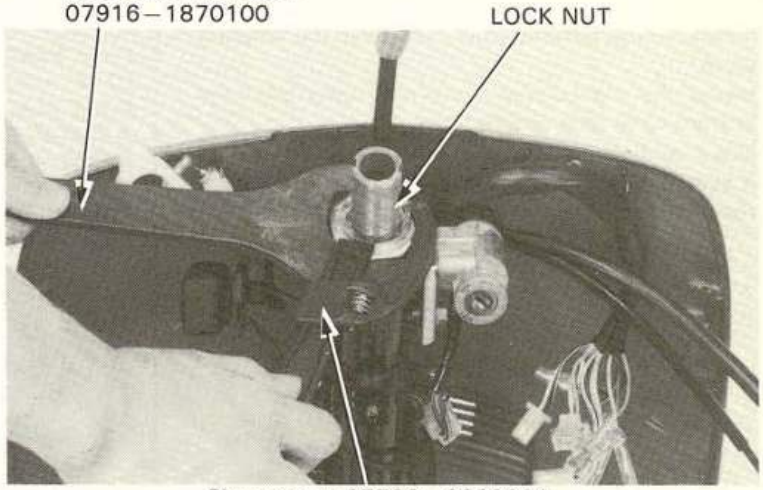


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Install the lock nut and tighten it while holding the top cone race.

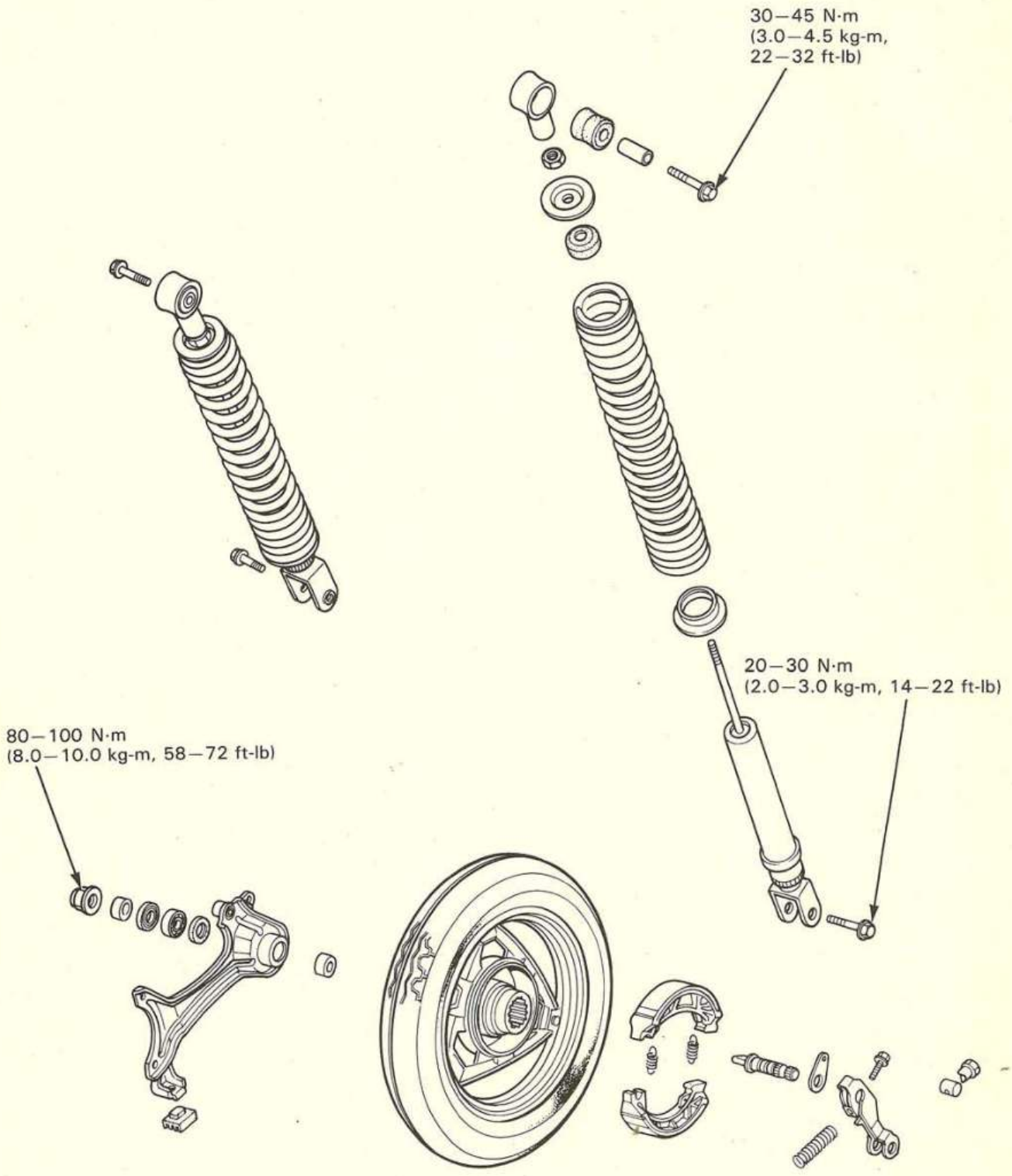
Install the following:

- Front wheel (Page 12-12).
- Handlebar (Page 12-7)
- Meter assembly (Page 12-6)
- Glovebox (Section 11).



Pin spanner 07702–0020000,
07702–0010000 or
M9361–412–099788
(U.S.A. only)

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13. REAR WHEEL/BRAKE/ SUSPENSION

SERVICE INFORMATION	13–1
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REAR WHEEL	13–2
REAR BRAKE	13–4
REAR SHOCK ABSORBER	13–7

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 pads. Use a vacuum with a sealed dust collector. Wear a protective face mask and thoroughly wash your hands when finished.

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Rear wheel rim runout	–	2.0 mm (0.08 in)
Brake drum I.D.	110 mm (4.33 in)	111 mm (4.37 in)
Brake lining thickness	4.0 mm (0.16 in)	2.0 mm (0.08 in)
Rear shock absorber spring free length	207 mm (8.15 in)	200.8 mm (7.91 in)

TORQUE VALUES

Rear shock upper mount bolt	30–45N·m (3.0–4.5 kg-m, 22–32 ft-lb)
Rear shock lower mount bolt	20–30N·m (2.0–3.0 kg-m, 14–22 ft-lb)
Rear axle nut	80–100N·m (8.0–10.0 kg-m, 58–72 ft-lb)

TOOLS

Special

Rear shock absorber attachment A	07967–GA70101
Spring attachment holder	07967–1180100

Common

Rear shock absorber compressor	07959–3290001
Driver outer 32 x 35 mm	07746–0010100
Pilot 15 mm	07746–0040300
Bearing remover shaft	07746–0050100
Bearing remover head 15 mm	07746–0050300

TROUBLESHOOTING

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

Soft suspension
1. Weak shock absorber spring

Brake squeaks
1. Worn brake linings
2. Foreign matter on linings
3. Rough brake drum shoe contacting face

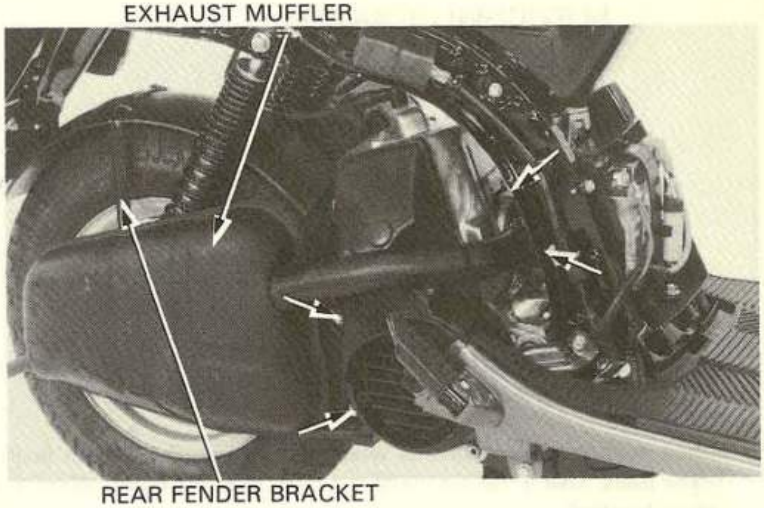
Poor brake performance
1. Brake not adjusted properly
2. Contaminated brake linings
3. Worn brake linings
4. Worn brake shoes at cam contacting area
5. Worn brake cam
6. Worn brake drum
7. Improper engagement between brake arm and camshft serrations

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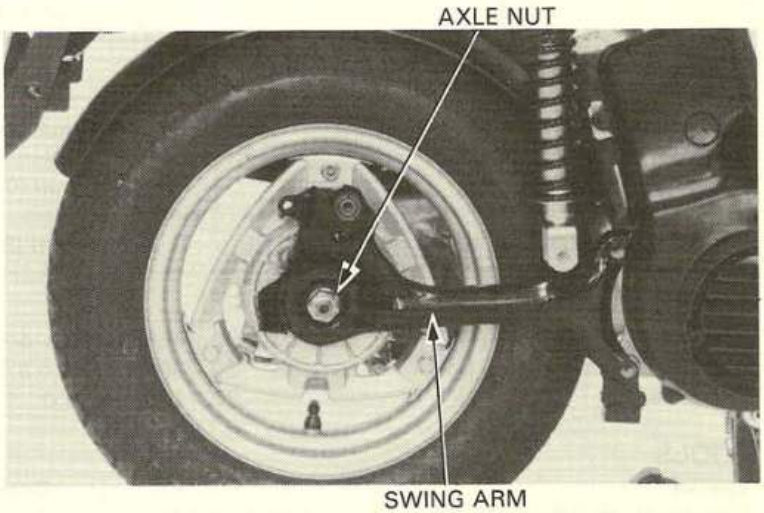
REAR WHEEL

REMOVAL

Remove the frame center cover (Section 11).
Remove the exhaust muffler.
Remove the fender bracket and right rear shock absorber lower bolt.

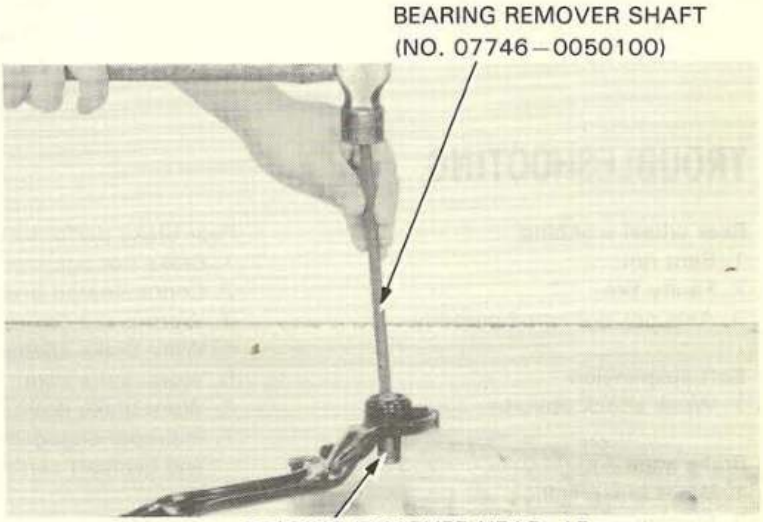


Remove the axle nut and the rear wheel.



SWING ARM BEARING REPLACEMENT

Remove the swing arm.
Remove the dust seal.
Rest the swing arm on the support block as shown.
Remove the bearing by tapping the bearing remover head into the wheel bearing and inserting the bearing remover shaft into the split in the bearing remover head.
Tap the bearing remover shaft with a hammer as shown.

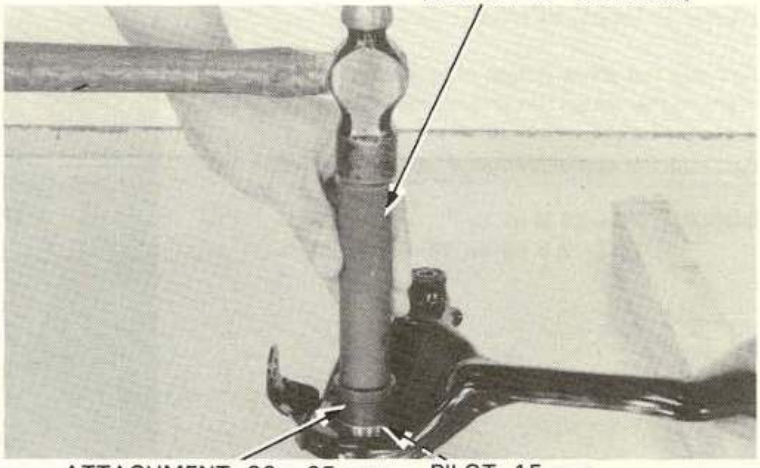


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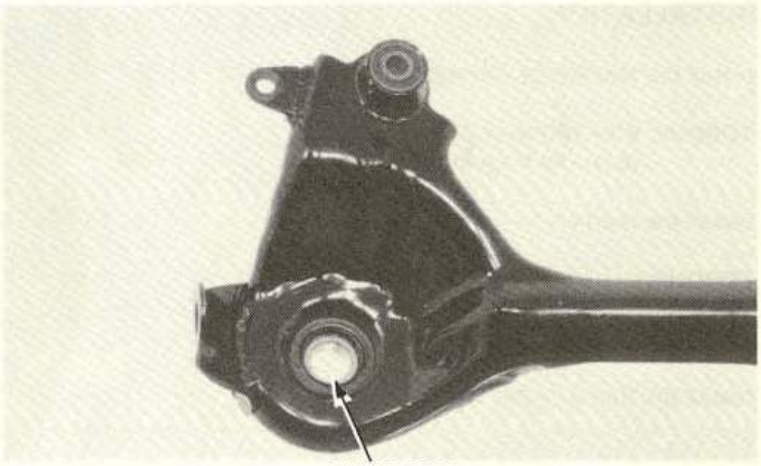
Pack all bearing cavities with grease.
Drive in the bearing.

NOTE:

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



Apply grease to the inside of the dust seal install the dust seal.

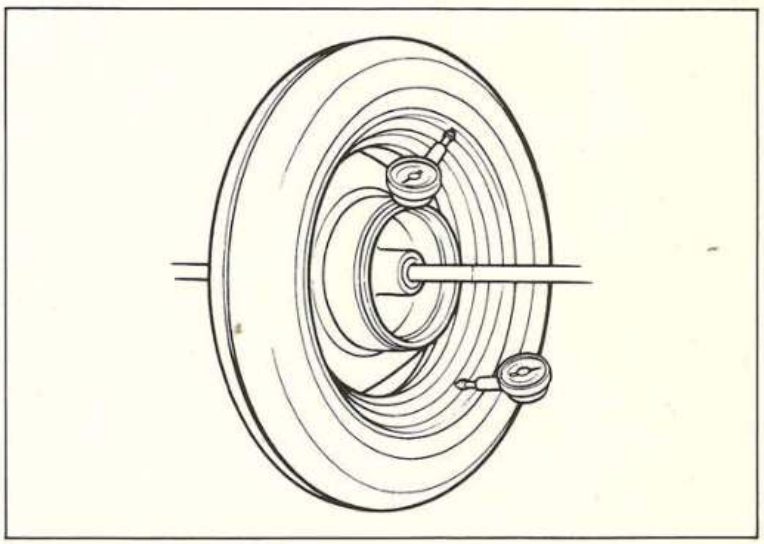


REAR WHEEL RIM RUNOUT INSPECTION

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)



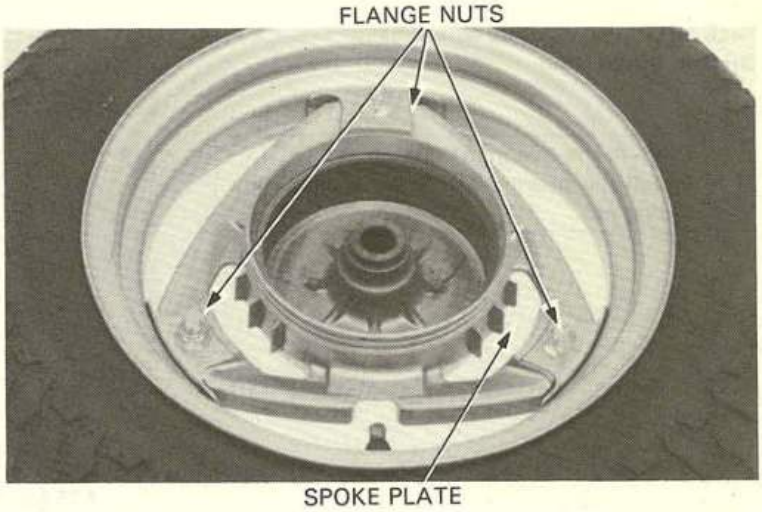
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REAR WHEEL SPOKE

Remove the three flange nuts attaching the spoke plate to the wheel rim and remove the spoke plate.

Reinstall the spoke plate and tighten the flange nut.

TORQUE: 22–28 N·m
(2.2–2.8 kg-m, 16–20 ft-lb)



INSTALLATION

Install the rear wheel and tighten the axle nut.

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

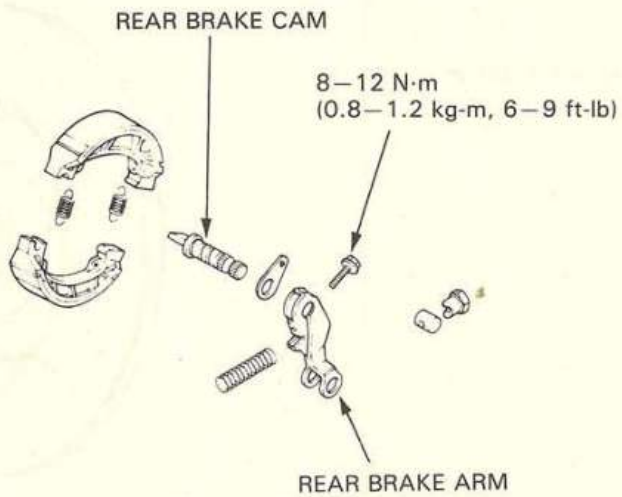
Install the muffler.

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

Install the frame center cover.

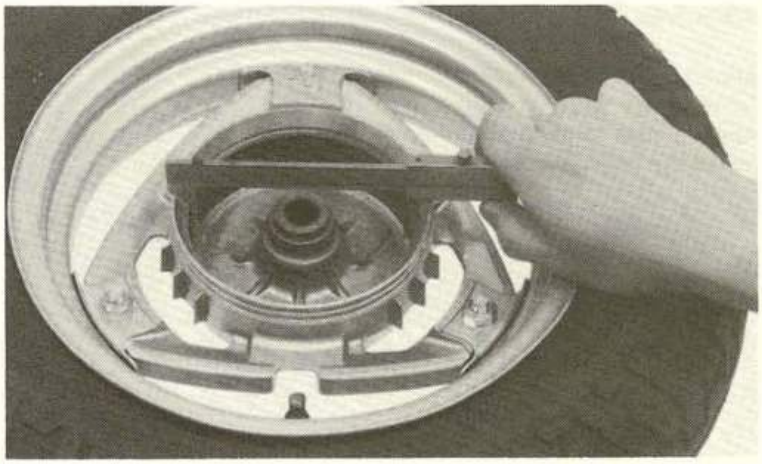


REAR BRAKE



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Remove the rear wheel (Page 13-2).



INSPECTION

- DRUM

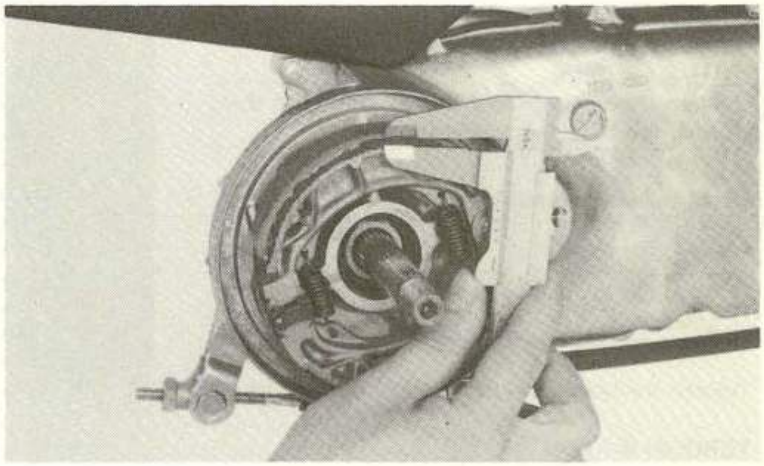
Measure the rear brake drum I.D.

SERVICE LIMIT: 111 mm (4.37 in)

- LINING

Measure the rear brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)

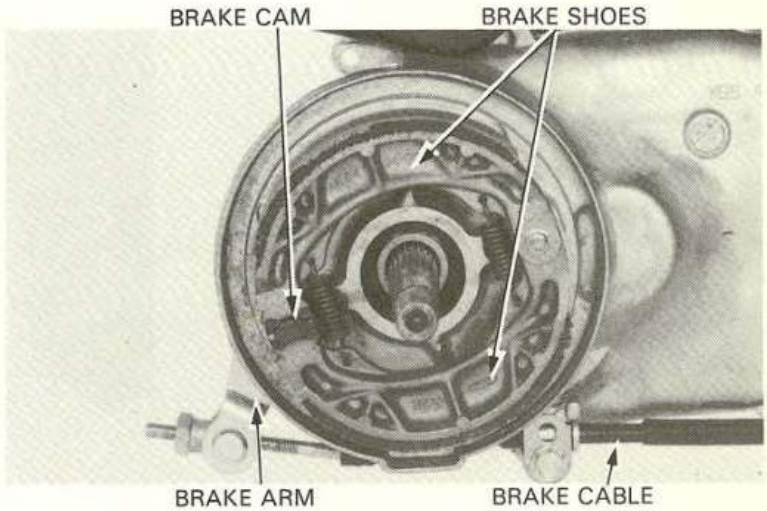


WARNING

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

DISASSEMBLY

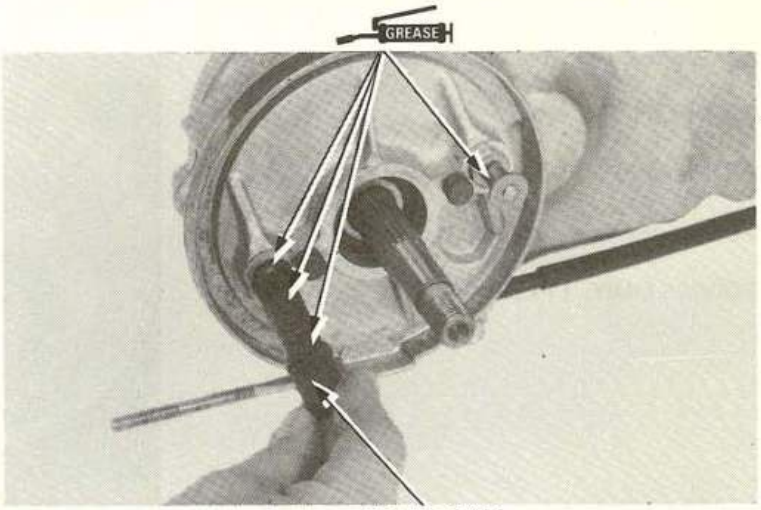
Disconnect the brake cable from the brake arm.
Remove the brake shoes.
Remove the brake arm and the brake cam.



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ASSEMBLY

Apply grease to the anchor contacting area of the brake cam.
Apply grease to the brake cam, and install.
Install the brake shoes.



BRAKE CAM

Install the wear indicator plate.

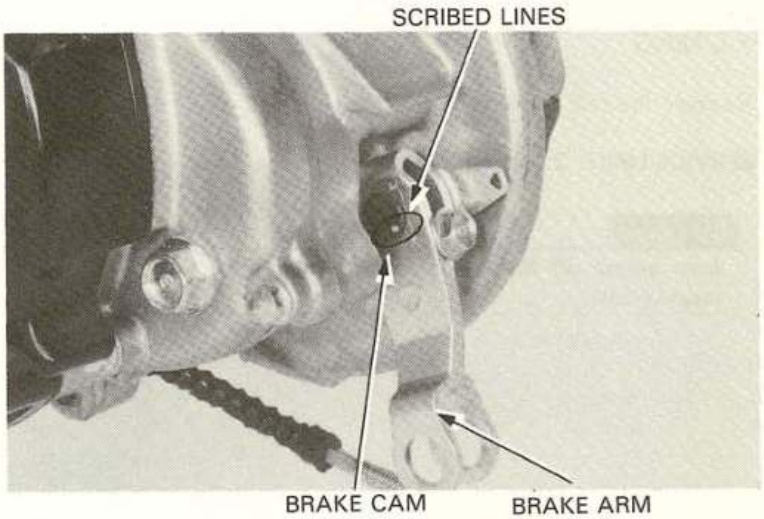
NOTE:
Align the wide groove on the cam with the wide tooth on the indicator plate.

Install the brake arm.

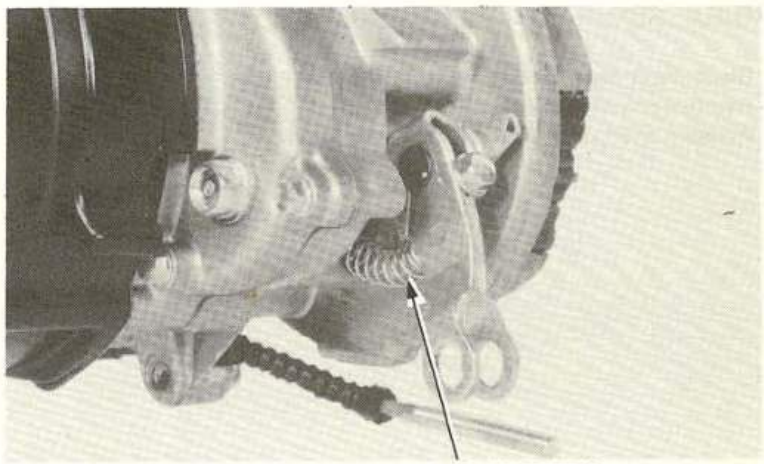
NOTE:
Align the scribed lines on the brake cam and brake arm.

Tighten the brake arm bolt to the specified torque.

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



Install the brake arm spring.

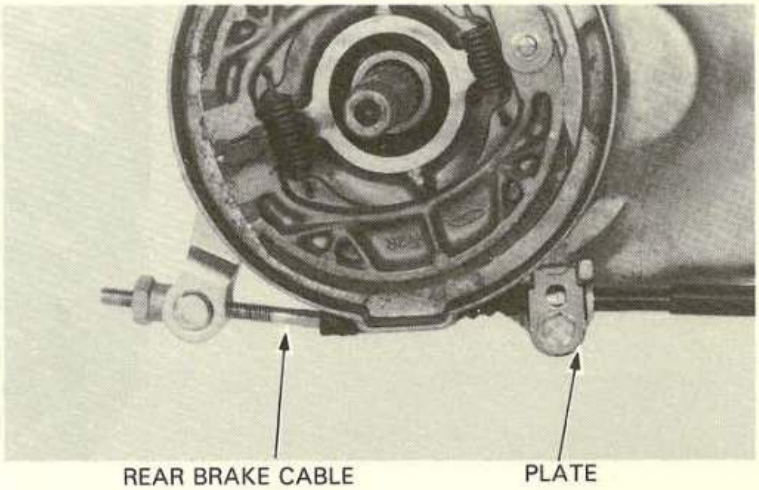

BRAKE ARM SPRING

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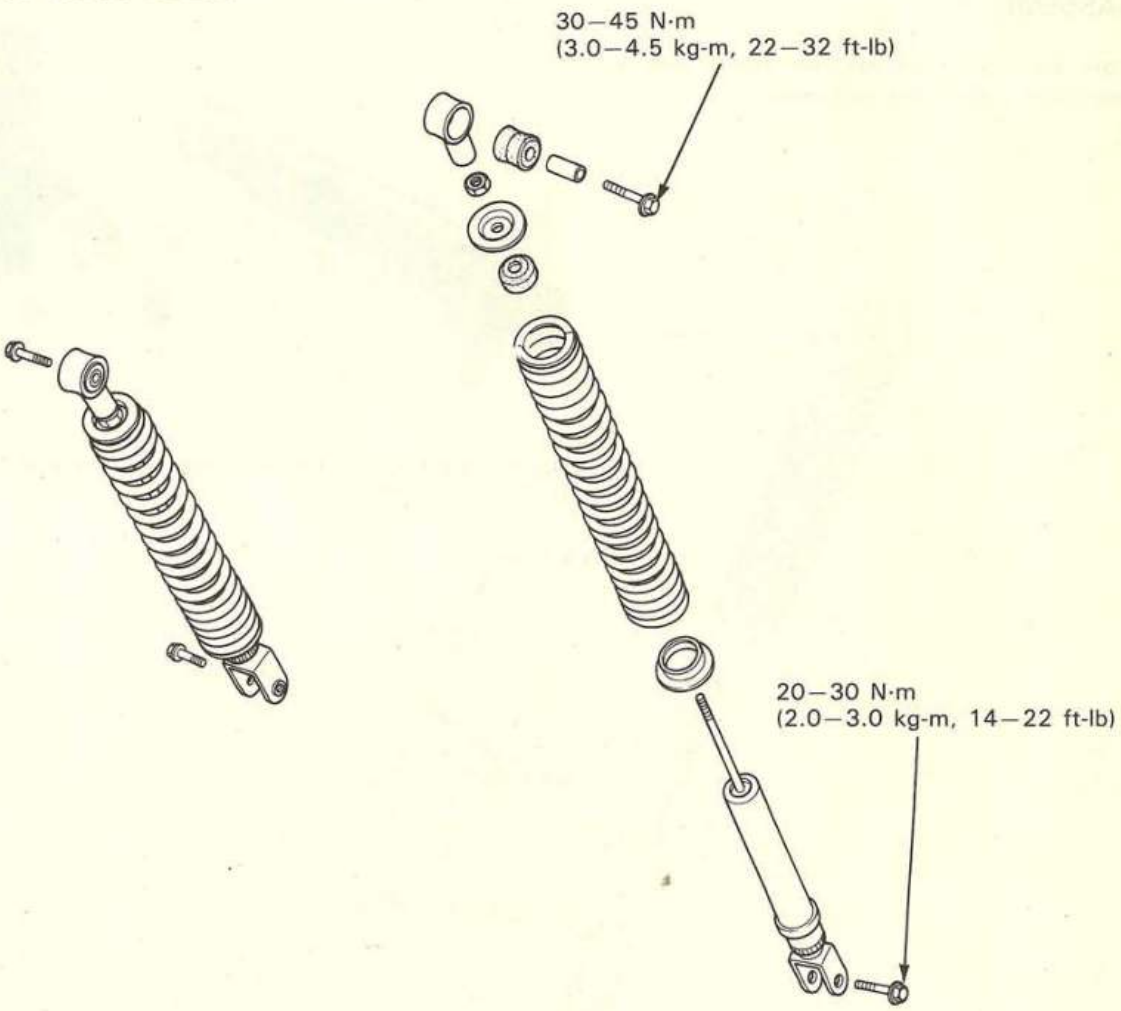
Connect the rear brake cable to the brake arm.

NOTE:

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



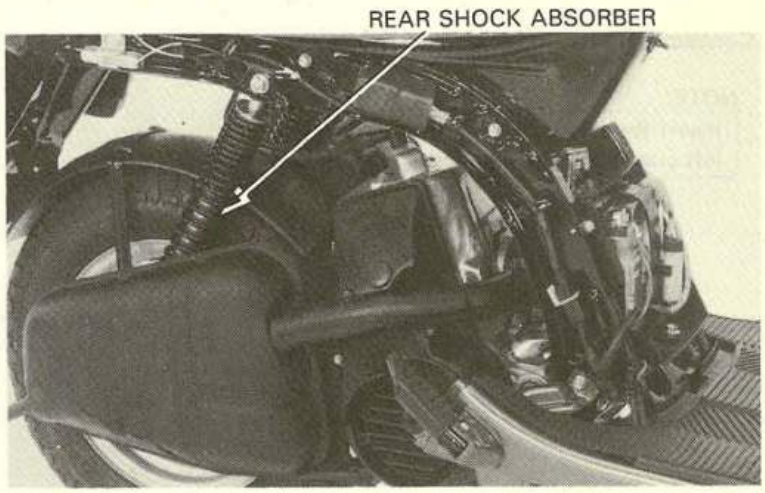
REAR SHOCK ABSORBER



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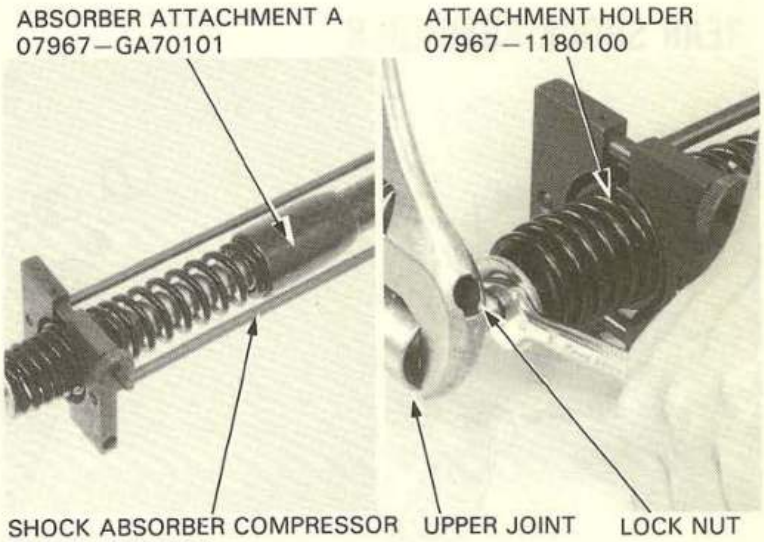
REMOVAL

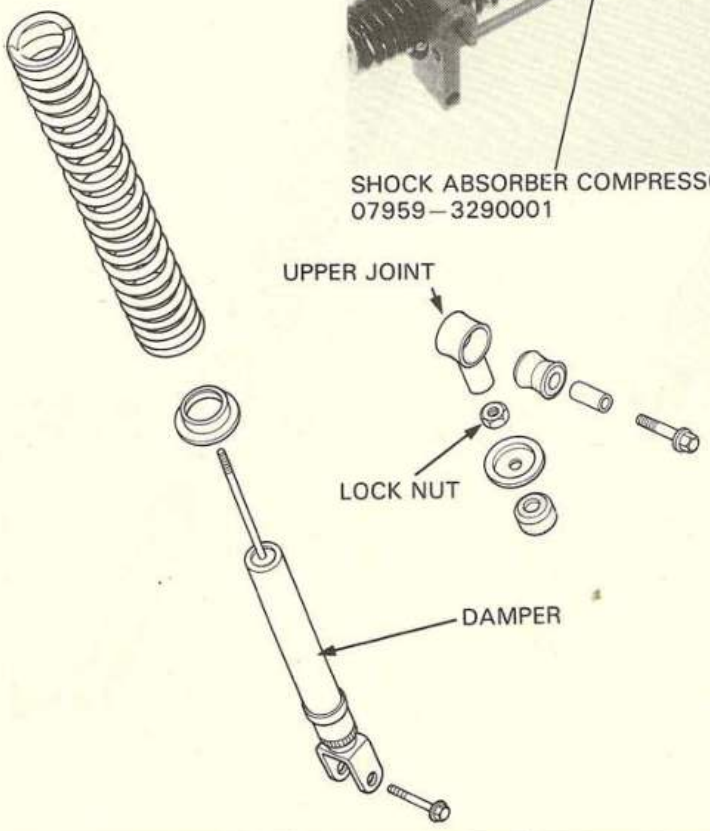
Remove the right and left frame covers.
Remove the exhaust muffler.
Remove the rear shock absorber upper and lower bolts.
Remove the rear shock absorber.



DISASSEMBLY

Remove the rear shock absorber lower joint by compressing it with the compressor.



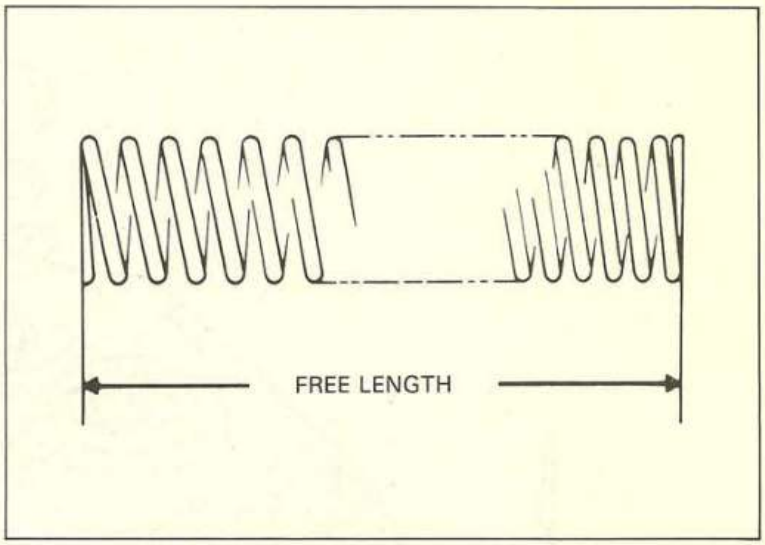


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SPRING FREE LENGTH

Measure the spring free length.

SERVICE LIMIT: 200.8 mm (7.91 in)

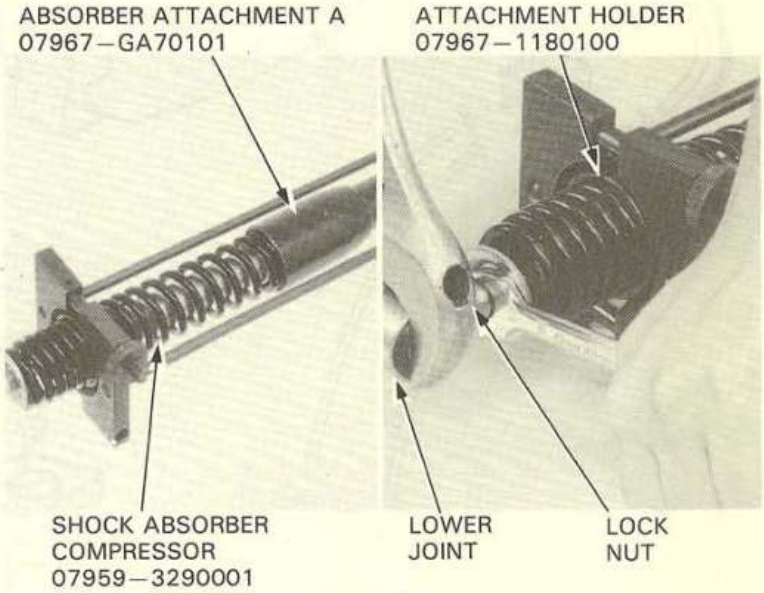


ASSEMBLY

NOTE:

- Install the spring with the tightly wound coil on the upper metal side.
- Apply locking agent to the lock nut before installation.

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



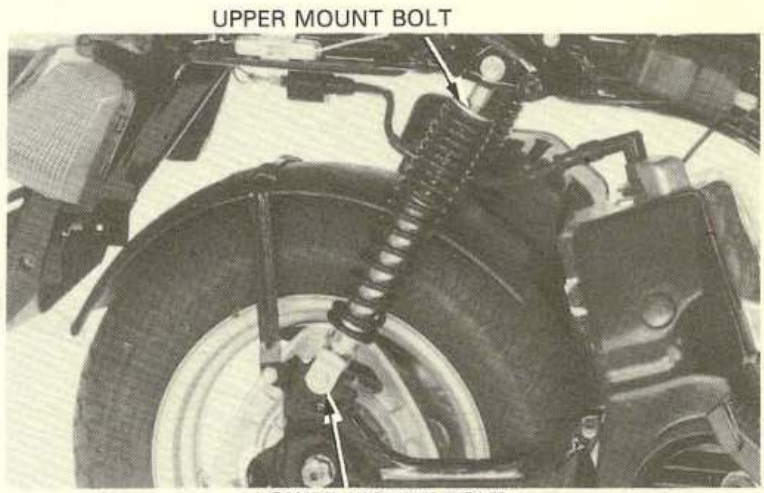
INSTALLATION

Install the rear shock absorber.
Tighten the upper and lower mount bolts to the specified torques values.

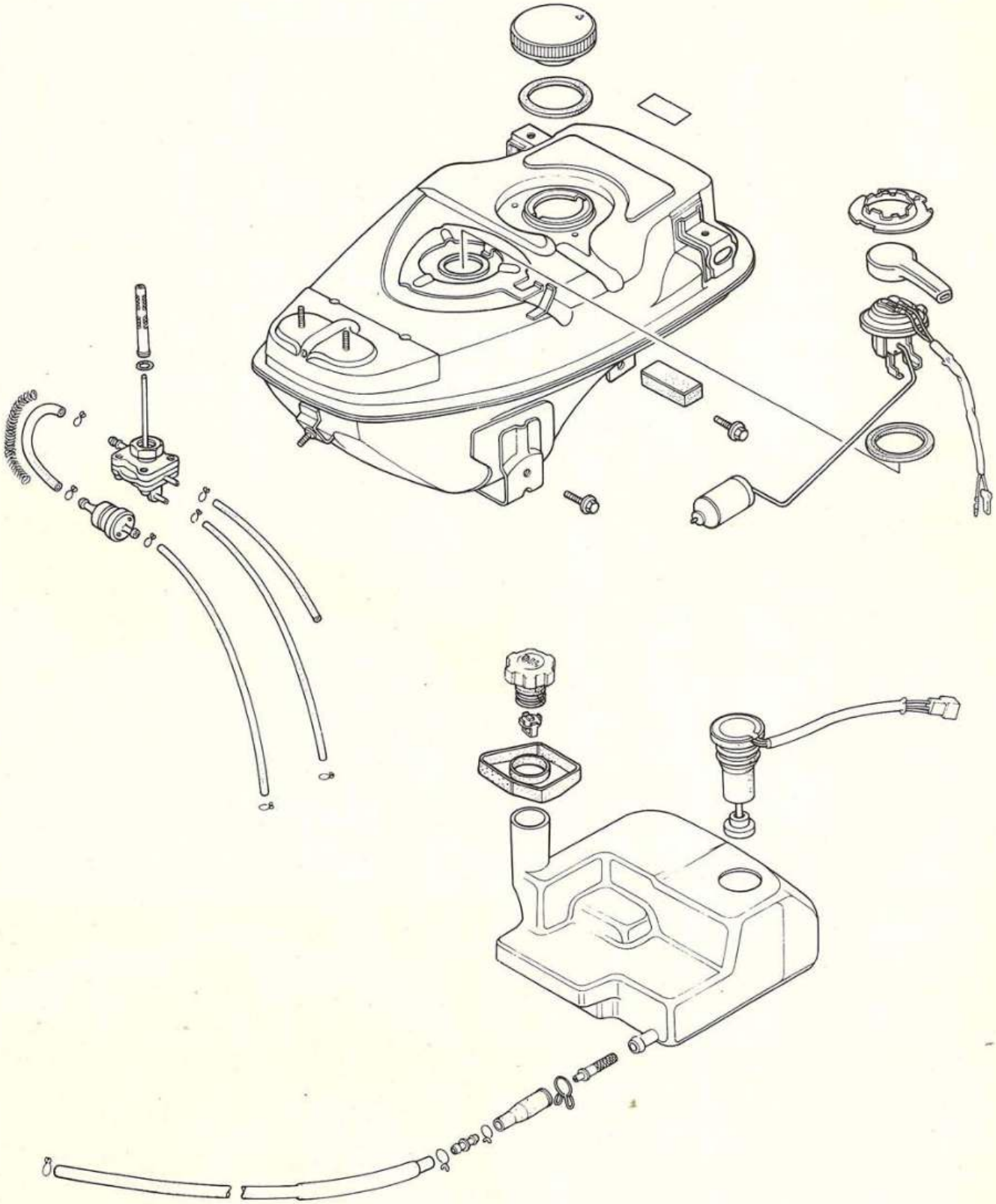
TORQUES:

Upper bolt:	**30–45 N·m**
	(3.0–4.5 kg-m, 22–32 ft-lb)
Lower bolt:	**20–30 N·m**
	(2.0–3.0 kg-m, 14–22 ft-lb)

Check the operation of the shock absorber by pressing down on the end of the frame several times.
Install the exhust muffler.
Install the right and left frame covers.



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14. FUEL TANK/OIL TANK

SERVICE INFORMATION	14–1
TROUBLESHOOTING	14–1
FUEL TANK	14–2
OIL TANK	14–3

SERVICE INFORMATION

GENERAL

WARNING

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

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

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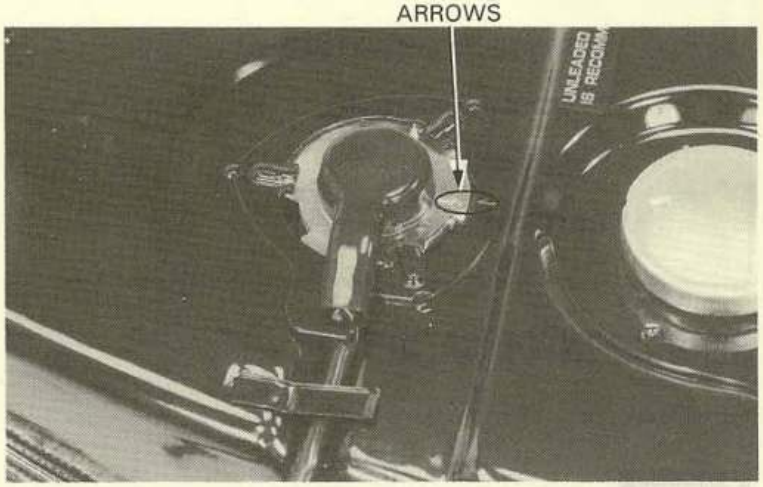
FUEL TANK

FUEL GAUGE SENSOR REMOVAL/ INSTALLATION

Raise the seat.
Disconnect the fuel gauge sensor wire coupler.
Remove the fuel gauge sensor by turning it counterclockwise.

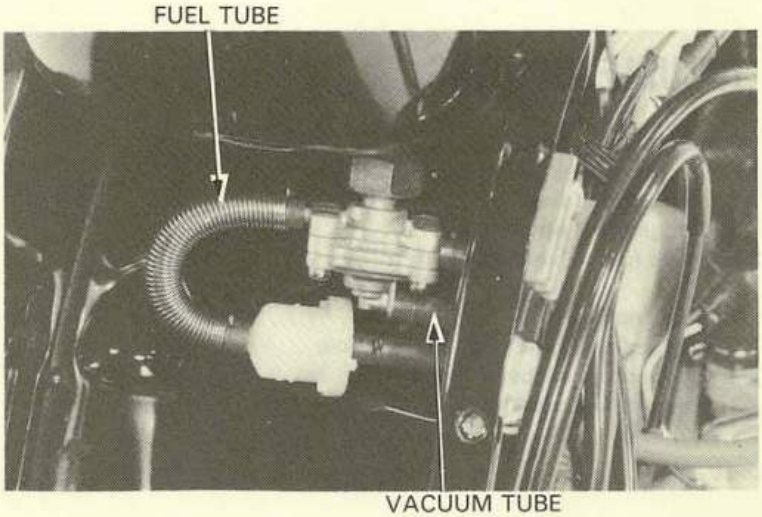
NOTE:

- Do not bend the float arm.
- Install the fuel gauge sensor with the arrow on the sensor aligned with the arrow on the fuel tank.

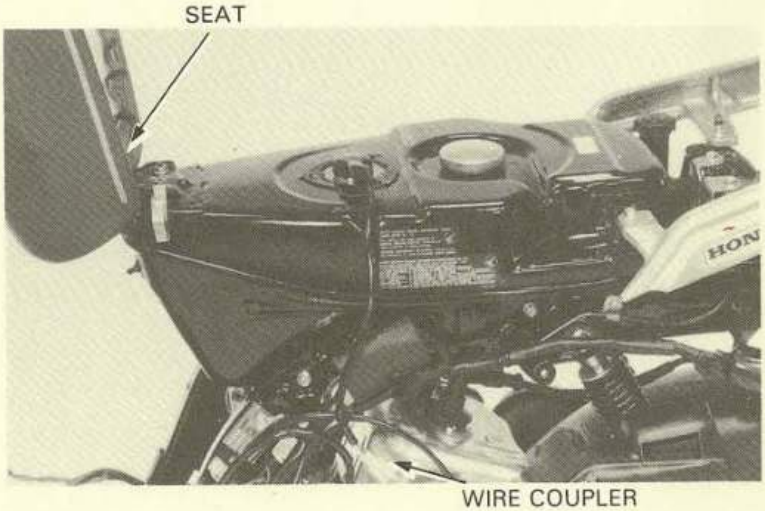


FUEL TANK REMOVAL

Remove the frame center and rear covers (Section 11).,
Remove the bolt and take out the battery.
Disconnect the fuel and vacuum tubes.



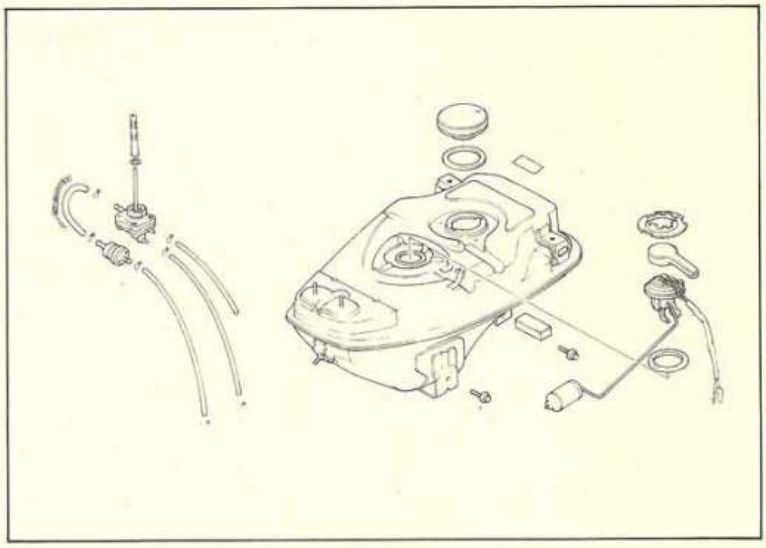
Remove the seat.
Disconnect the fuel gauge sensor wire coupler.
Remove the fuel tank mount bolts and remove the fuel tank.
Remove and clean the fuel strainer.
Remove the fuel gauge sensor (Page 14-2).
Check the fuel gauge sensor's operation (Page 15-18).



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FUEL TANK INSTALLATION

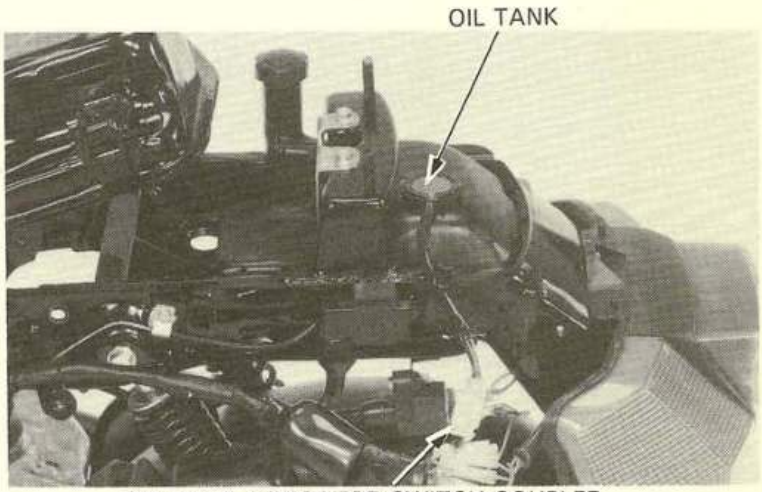
The installation sequence is essentially the reverse order of removal.

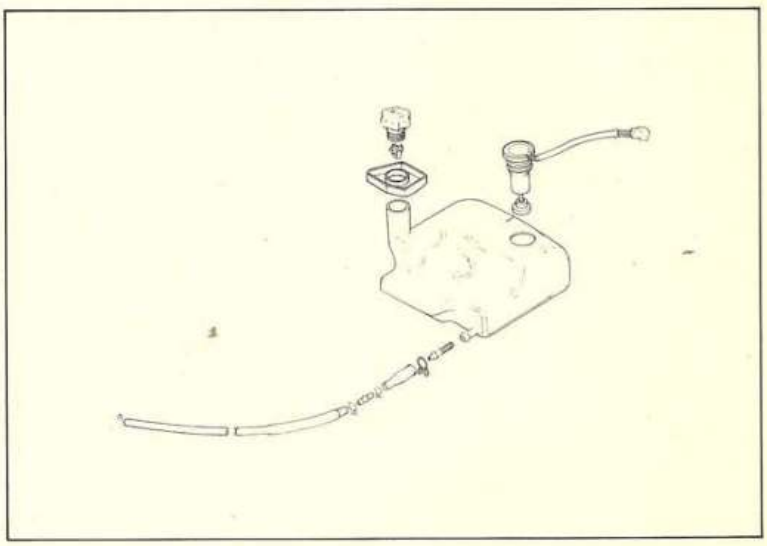


OIL TANK

REMOVAL/INSTALLATION

Remove the frame center and rear covers. (Section 11)
Drain the oil from the oil tank.
Disconnect the oil level indicator switch coupler.
Remove the oil tank.
Clean the oil strainer (Page 3-6).
To install, reverse the foregoing removal procedure.
Bleed the oil lines after installing the oil pump (Page 2-3).





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15. ELECTRICAL EQUIPMENT

SERVICE INFORMATION	15–1	STARTING SYSTEM	15–11
TROUBLESHOOTING	15–2	SWITCHES/HORN	15–15
BATTERY	15–3	FUEL GAUGE SENSOR	15–17
CHARGING SYSTEM	15–5	OIL LEVEL INDICATOR UNIT	15–18
IGNITION SYSTEM	15–8	FRONT TURN SIGNALS	15–19

SERVICE INFORMATION

GENERAL

- Do not quick charge the battery. Quick charging may damage the battery.
- Remove the battery from the motorcycle 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 pulse generator and replace any faulty parts.

SPECIFICATIONS

CHARGING SYSTEM

ITEM		SPECIFICATIONS
Battery	Capacity	12V 5AH
	Specific gravity	1.270–1.290 at 20°C (68°F)
	Charging rate	0.5A max.
Alternator	Charging rpm	2,000 rpm max 14.2V
	Capacity	0.9A min./4,000 rpm (17.7V)
		1.4A min./6,000 rpm (18.0V)

IGNITION SYSTEM

ITEM		SPECIFICATIONS	
Spark plug		NGK	ND
	Standard	BPR6HS	W20FPR
	For cold climate (Below 5°C, 41°F)	BPR4HS	W14FPR–L
	For extended high speed riding	BPR7HS	W22FPR
Spark plug gap		0.6–0.7 mm (0.024–0.028 in)	
Ignition coil resistance	Primary	0.2~0.3 Ω	
	Secondary	3.4~4.2 kΩ	
Ignition timing		18° (BTDC) 1,800 rpm	

TOOLS

Common

Kowa digital multi-tester	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 pulse generator 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 pulse generator

Engine starts but turns poorly
1. Ignition primary circuit
   - Faulty ignition coil
   - Loose or bare wire or connector
   - Poorly contacted ignition switch
2. Ignition secondary circuit
   - Faulty ignition coil
   - Faulty spark plug
   - Faulty spark plug wire
   - Poorly insulated plug cap
3. Improper ignition timing
   - Faulty pulse generator
   - Stator not installed properly
   - Faulty CDI unit

STARTING SYSTEM

Starter won't turn
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 batery
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. Low battery

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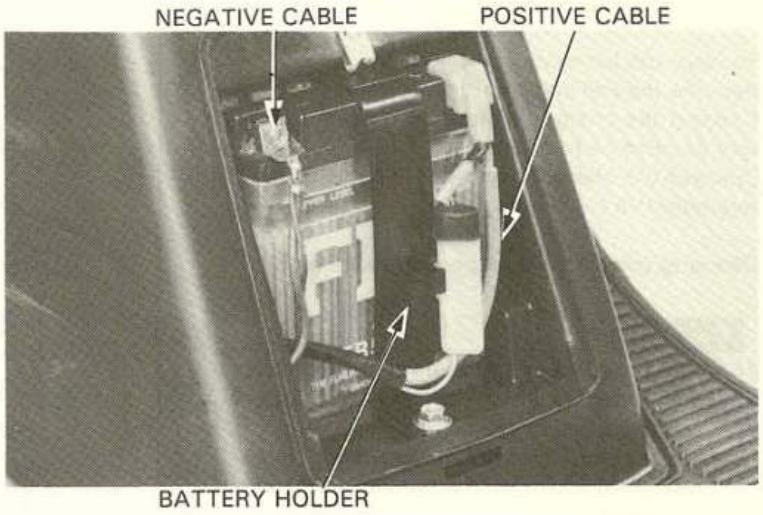
BATTERY

REMOVAL/INSTALLATION

Remove the battery cover.
Remove the battery holder by removing the attaching bolt.
Disconnect the negative cable first, then disconnect the positive cable.
Remove the battery.
The installation sequence is the reverse order of removal.

NOTE:

Connect the battery breather tube to the battery breather pipe securely.



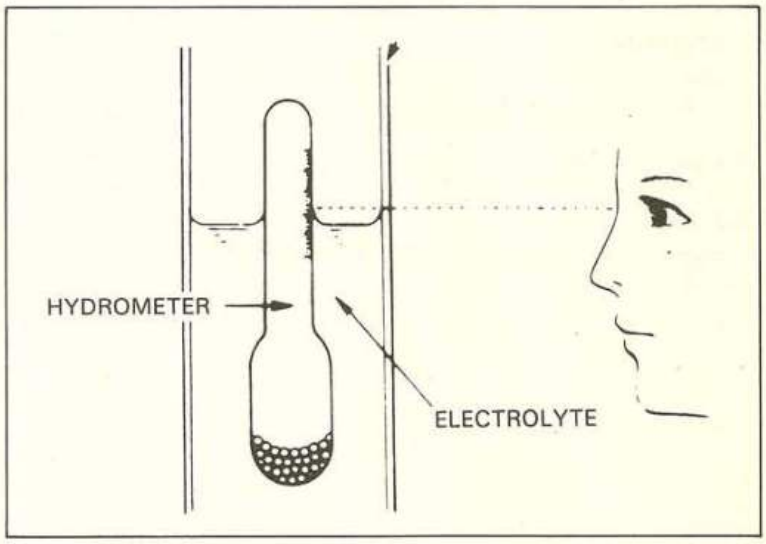
SPECIIFIC GRAVITY TEST

Test each cell by drawing electrolyte into a hydrometer.

SPECIFIC GRAVITY (20°C, 68°F)

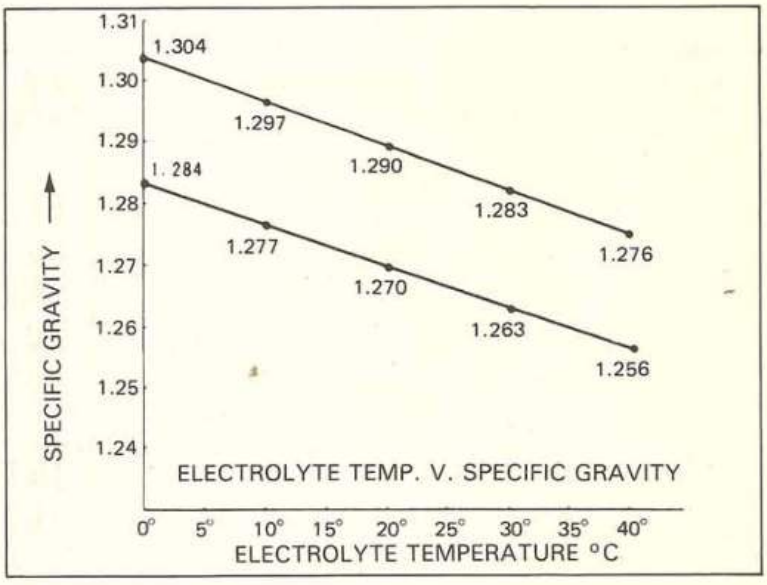
1.270—1.290	Fully charged
1.230 or below	Undercharged

The battery must be charged if the specific gravity falls below 1.230.
Retest each cell after charging.
There should be no more than 0.05 S.G. between any two cells or the battery must be replaced.



NOTE:

- 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.



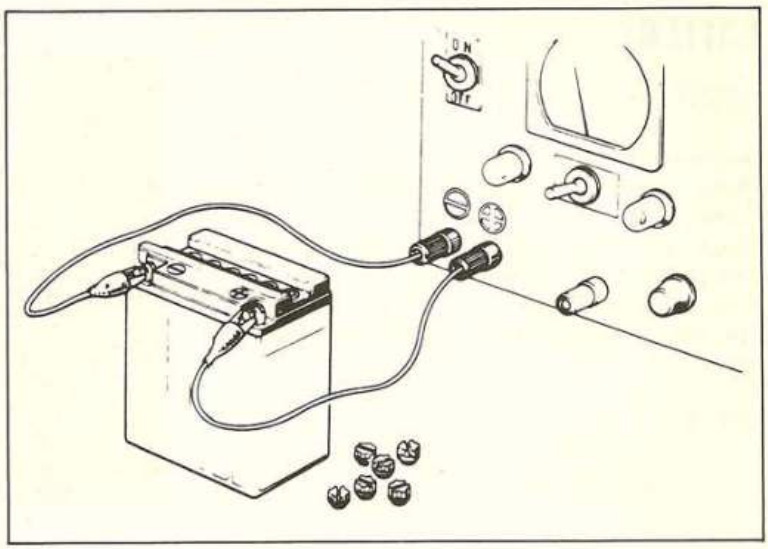
WARNING

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

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BATTERY CHARGING

Remove the battery.
Remove the cell cap from the battery.
Connect the charger positive (+) cable to the battery positive (+) terminal.
Connect the charger negative (−) cable to the battery negative (−) terminal.



Charging current: 0.5 amperes maximum

WARNING

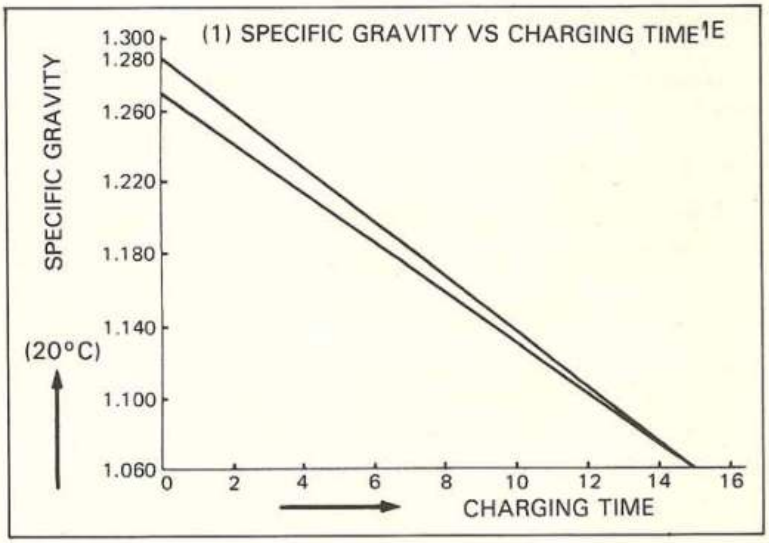
- *Keep flames and sparks away from a charging battery to prevent igniting the hydrogen gas produced by the battery.*
- *Turn power ON/OFF at the charger, not at the battery terminals to prevent sparks near the battery cells.*
- *Discontinue charging if the electrolyte temperature exceeds 45°C (117°F).*

CAUTION:

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

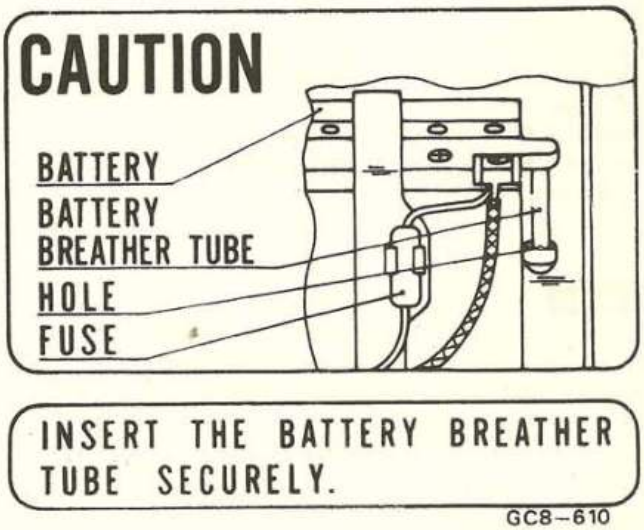
Charging time: 3—15 hours

Charging:
Charge the battery at 0.5A until specific gravity is 1.270—1.290 (20°C, 68°F).



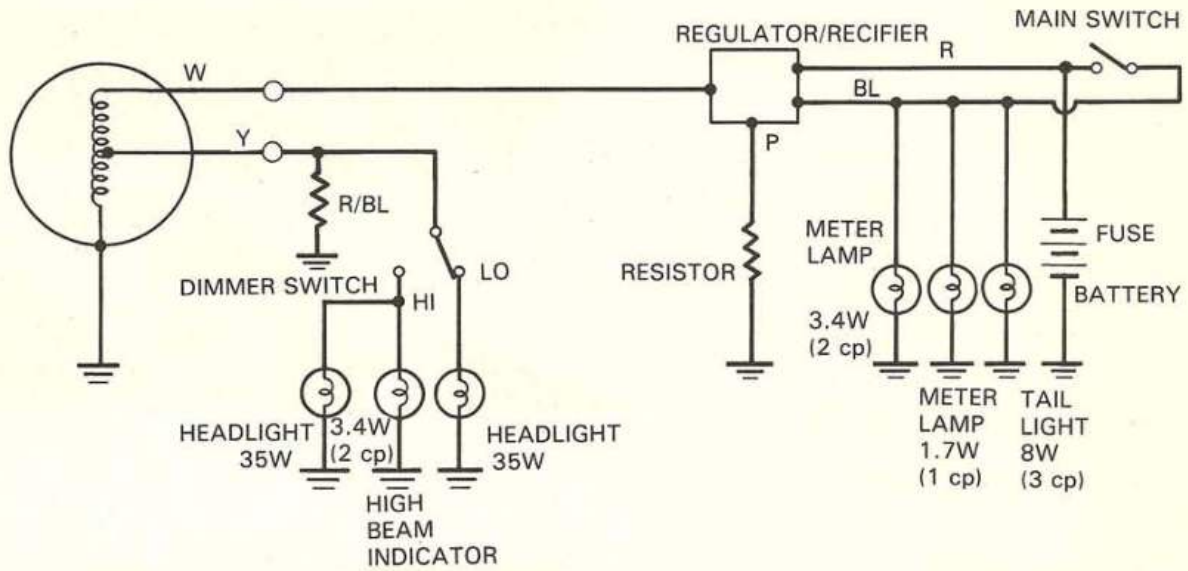
CAUTION:

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



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CHARGING SYSTEM



W : WHITE
R : RED
BL : BLACK
P : PINK
Y : YELLOW

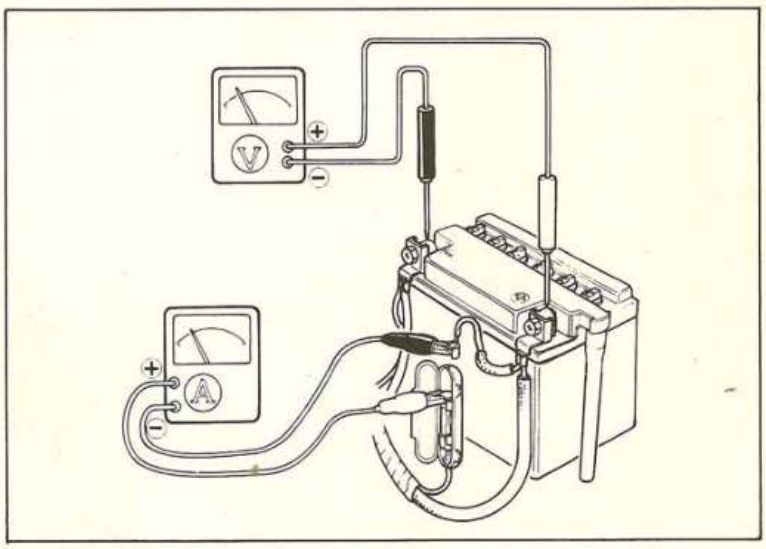
PERFORMANCE TEST

Warm up the engine.

NOTE:

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

Disconnect the black wire lead from the regulator/rectifier coupler.
Open the fuse holder and disconnect the red wire from the holder.
Connect an ammeter and voltmeter as shown.
Start the engine and take meter readings.
The readings should match the chart.



TECHNICAL DATA

Charging rpm (Initial)	4,000 rpm	6,000 rpm
2,000 max.	0.9A min.	1.4A max.

If the readings are not within specifications, check the stator and regulator/rectifier.

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ALTERNATOR INSPECTION

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

Remove the frame center cover (Section 11).
Disconnect the stator wire coupler.
Measure the resistances between the terminals as follows:

Yellow and engine ground	50~300 Ω
White and eingine ground	10~100 Ω

NOTE:
Measure the resistances in the x 1 Ω range.

Alternator removal/installation (Page 7-2, 7-4).



RESISTOR INSPECTION

Remove the frame center cover (Section 11).
Measure the resistance between the resistor wire lead and any body ground.

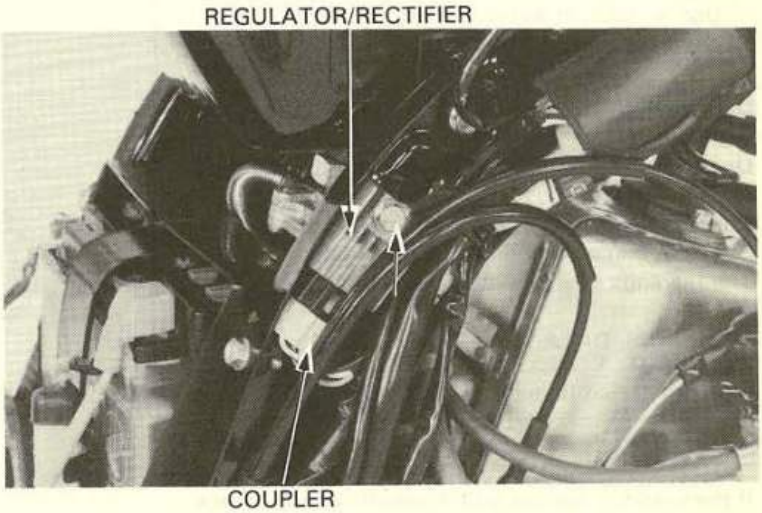
RESISTANCE: 6.7 Ω

NOTE:
A faulty or poorly grounded resistor can be a frequent cause of a blown headlight.



REGULATOR/RECTIFIER INSPECTION

Remove the frame center cover (Section 11).
Disconnect the regulator/rectifier coupler.
Remove the regulator/rectifier by removing the attaching bolt.



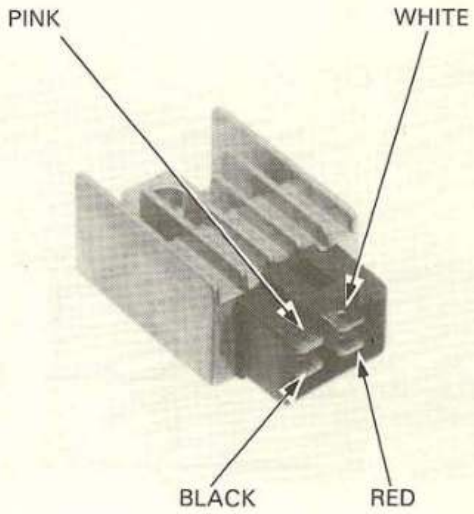
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Measure the resistances between the terminals. Replace the regulator/rectifier with a new one if the readings do not fall within the limits shown in the table.

NOTE:

- For accurate testing, it is necessary to use a specified tester. Use of an improper tester or measurements in the improper range may give false readings.
- Use Sanwa Electric Tester SP-10D (07308–0020000), Kowa Electric Tester TH-5H or Kowa Digital Multi Tester KS-AHM-32-003 (U.S.A. only).

Measuring range:
SANWA TESTER: x kΩ
KOWA TESTER: x 100Ω



(1) UNIT: kΩ

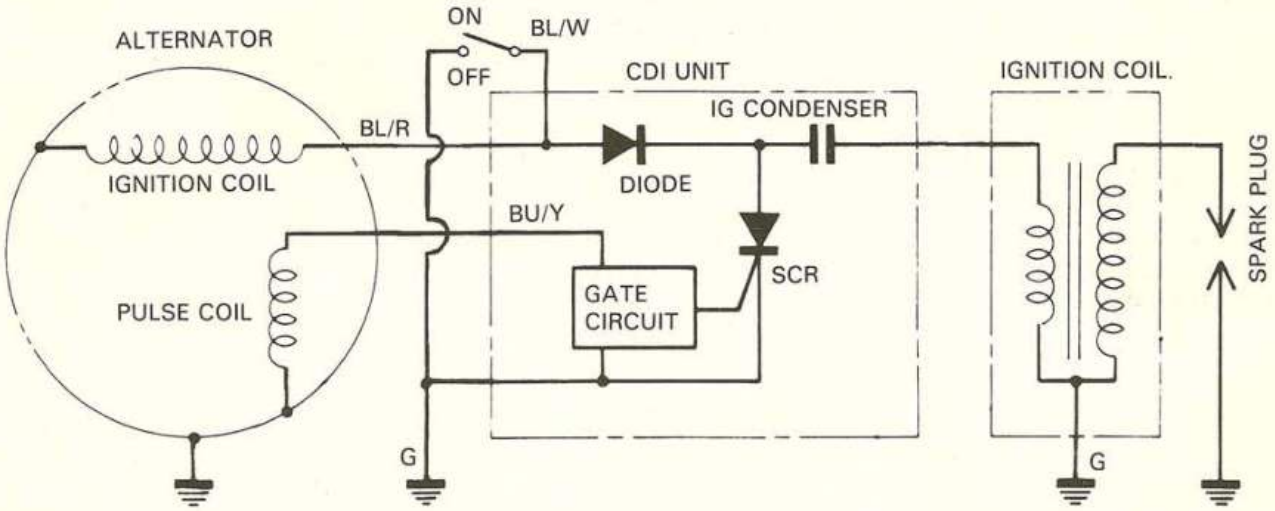
+ PROBE / − PROBE	PINK	WHITE	BLACK	RED
PINK		∞	1–5	∞
WHITE	∞		∞	0.5–10
BLACK	1–5	∞		∞
RED	∞	∞	∞	

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IGNITION SYSTEM

IGNITION SYSTEM CIRCUIT

BL : BLACK
Y : YELLOW
BU : BLUE
G : GREEN
R : RED
W : WHITE



SPARK PLUG

For spark plug gap inspection and adjustment, see Page 3-6.

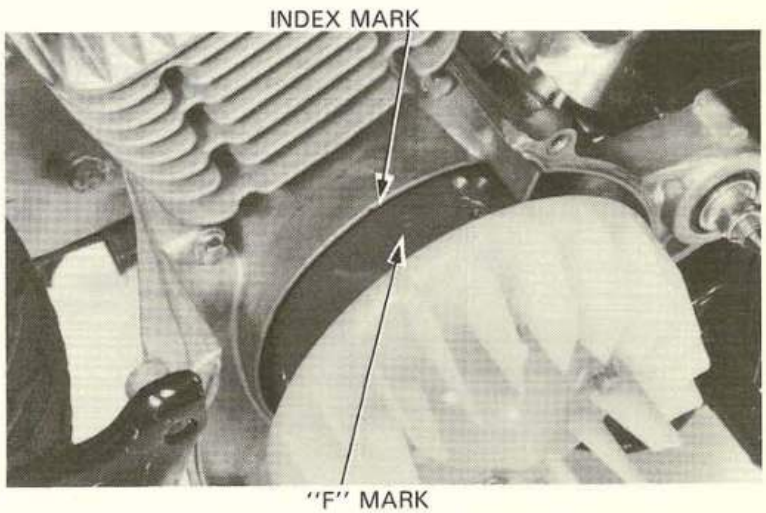
IGNITION TIMING

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.

Remove the fan cover and check the ignition timing with a timing light. Timing is correct if the index mark aligns with the "F" mark (within 3°) at 1,800 rpm.

IGNITION TIMING: 18° BTDC at 1,800 rpm

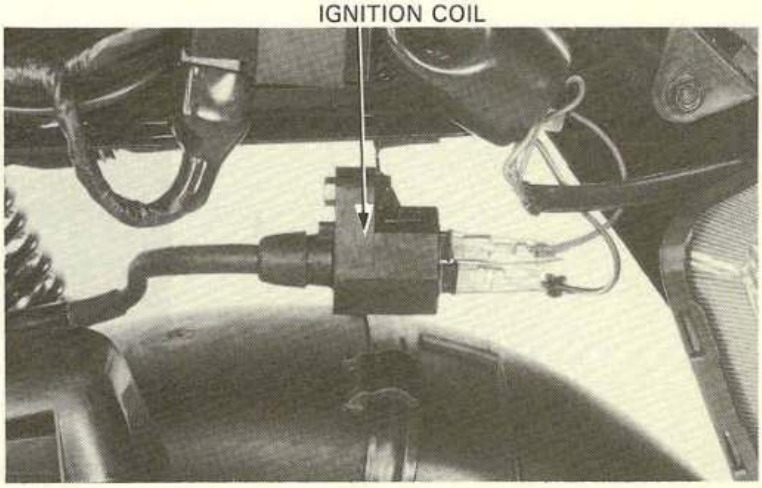


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IGNITION COIL INSPECTION

Remove the left frame cover.
Disconnect the plug cap from the spark plug wire while rotating the plug cap.

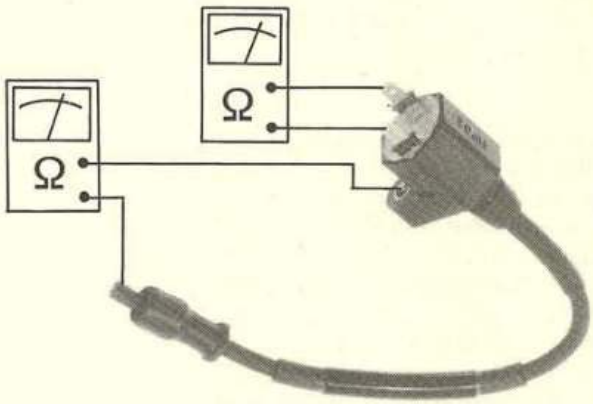
IGNITION COIL



Measure the resistances of the primary and secondary coils.

RESISTANCES:

Primary coil	**0.2∼0.3 Ω**
Secondary coil	**3.4∼4.2 kΩ**



PULSE GENERATOR INSPECTION

NOTE:

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

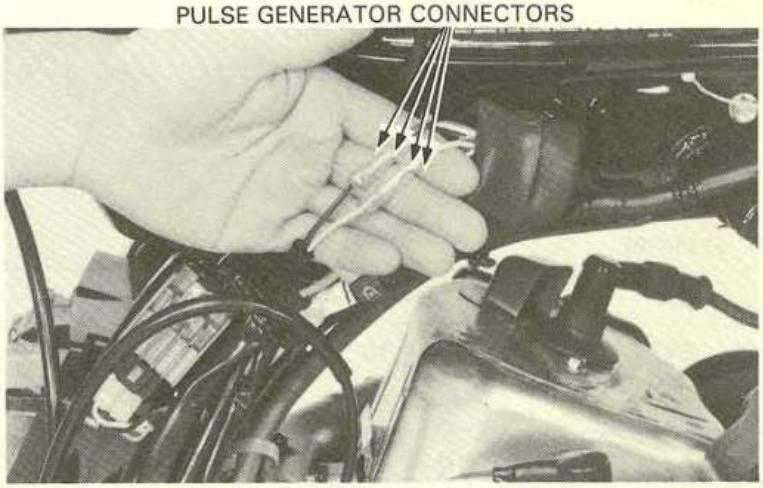
Remove the frame center cover (Section 11).
Disconnect the stator coupler.
Measure the resistances between the terminals with an ohmmeter.

Black/red—Engine ground 50—300 Ω
Blue/yellow—Body ground 10—100 Ω

NOTE:

Measure the resistances in the x 1 Ω range.

PULSE GENERATOR CONNECTORS

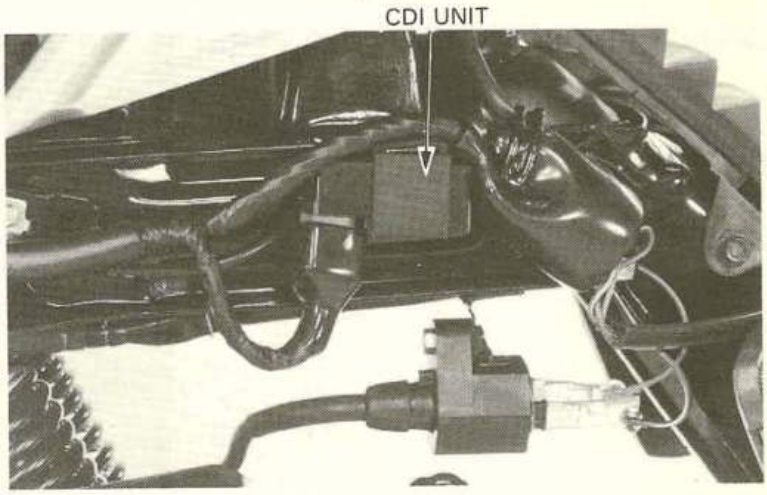


Alternator removal/installation (Page 7-2, 7-4).

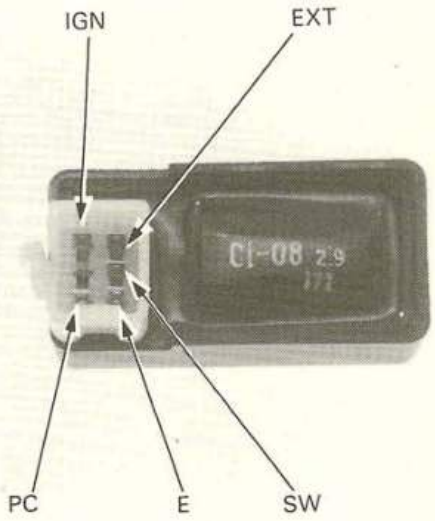
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CDI UNIT INSPECTION

Remove the left frame cover (Section 11).
Disconnect the CDI coupler and remove the CDI unit.



Measure the resistances between the terminals. Replace the CDI unit if the readings do not fall within the limits 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 false readings.
- Use Sanwa Electric Tester SP-10D (07308—0020000), Kowa Electric Tester TH-5H or Kowa Digital Multi Tester 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.

NOTE:

- Use the x kΩ range for Sanwa Tester.
- Use the x 100 Ω for Kowa Tester.

UNIT: kΩ

⊕ PROBE / ⊖ PROBE	SW	EXT	PC	E	IGN
SW		∞	∞	∞	∞
EXT	0.1—10		∞	∞	"Needle swings then returns"
PC	0.5—200	0.5—50		1—50	∞
E	0.2—30	0.1—10	∞		∞
IGN	∞	∞	∞	∞	

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STARTING SYSTEM

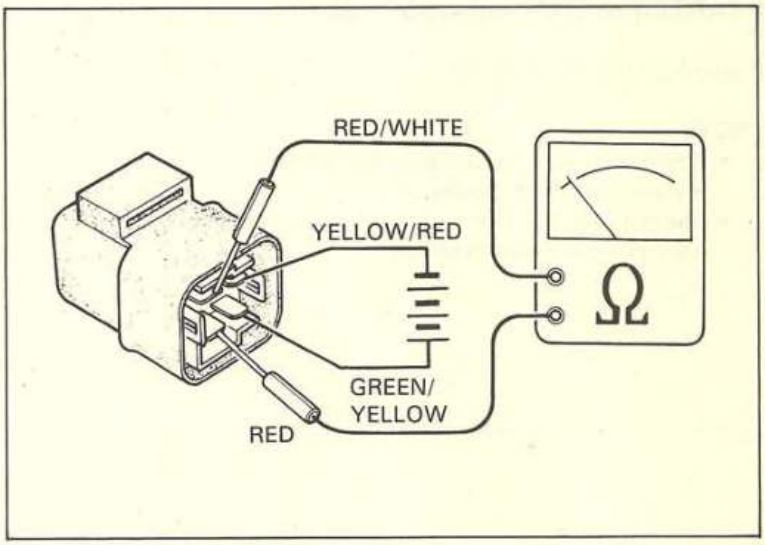
STARTER RELAY REMOVAL

Remove the frame center cover.
Remove the starter relay.


STARTER RELAY

STARTER RELAY INSPECTION

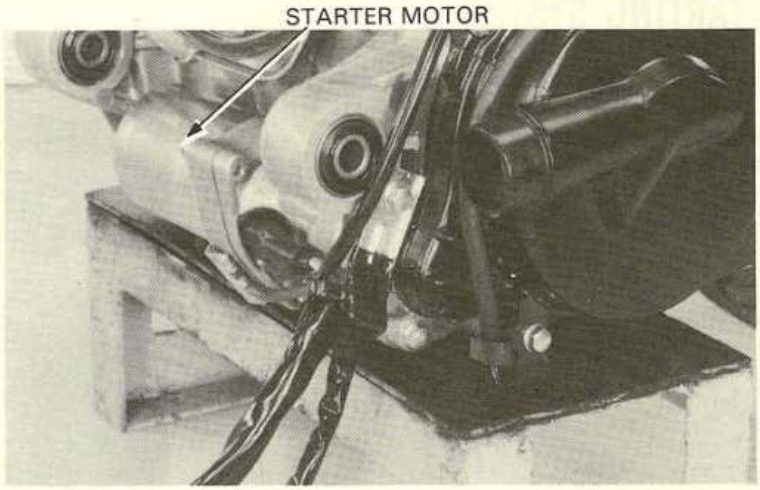
Connect the green/yellow lead to the positive terminal of a fully charged 12V battery and yellow/red lead to the negative (−) battery terminal. The relay is normal if there is continuity between the red and red/white lead terminals.



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STARTER MOTOR REMOVAL

Remove the engine (Section 5).
Remove the two bolts attaching the starter motor and remove the starter motor.

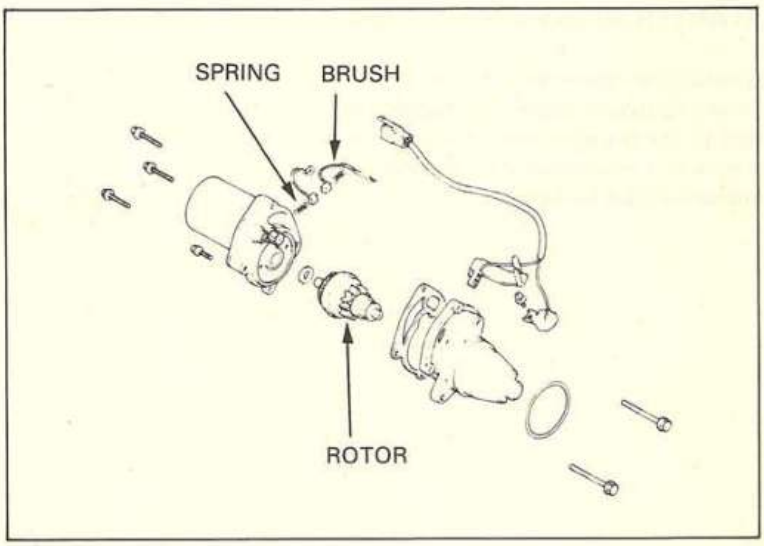


STARTER MOTOR DISASSEMBLY

Disconnect the starter wires.

NOTE:

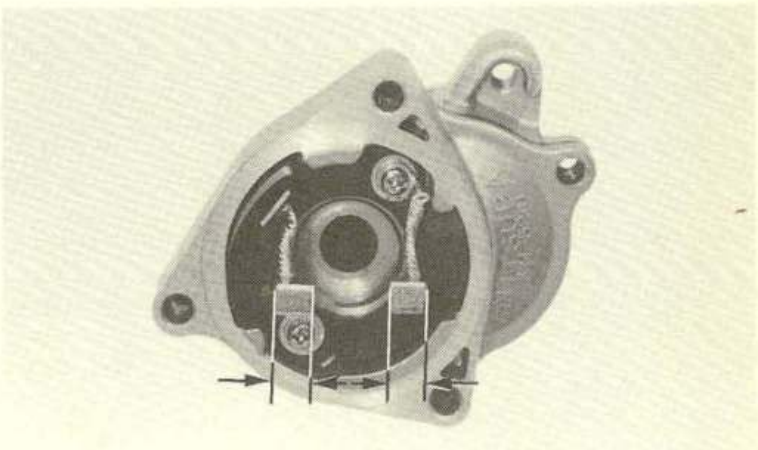
- The brush springs will pop out when removing the brush holder plate.
- Record the number and location of the commutator thrust washers.



BRUSH INSPECTION

Measure the length of each brush.

SERVICE LIMIT: 3.0 mm (0.12 in)



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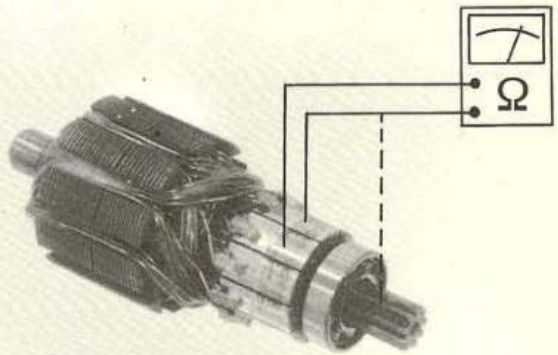
COMMUTATOR INSPECTION

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 segments and shaft.



STARTER MOTOR ASSEMBLY

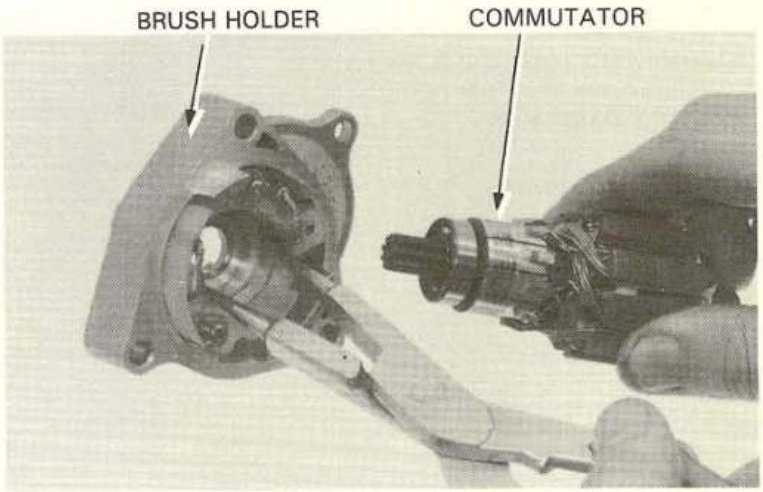
Install the brush springs and brushes in the holder plate.
Install the commutator and thrust washers while extending the brushes outward.

NOTE:

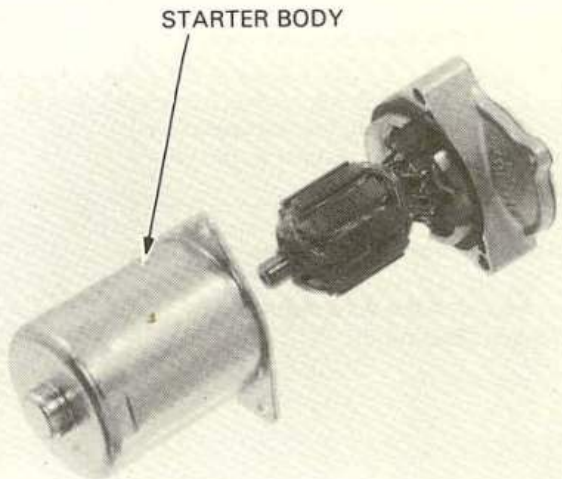
Note the number and location of the thrust washers.

CAUTION:

Check that there is no foreign material inside the starter body.

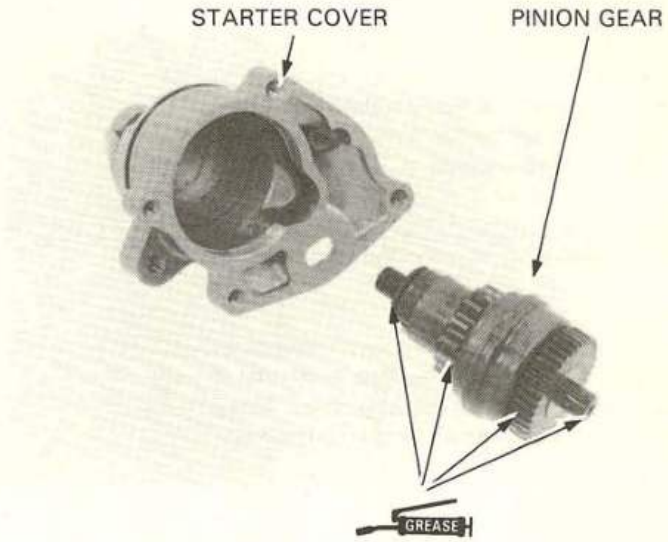


Install the commutator with the brush holder into the starter body.



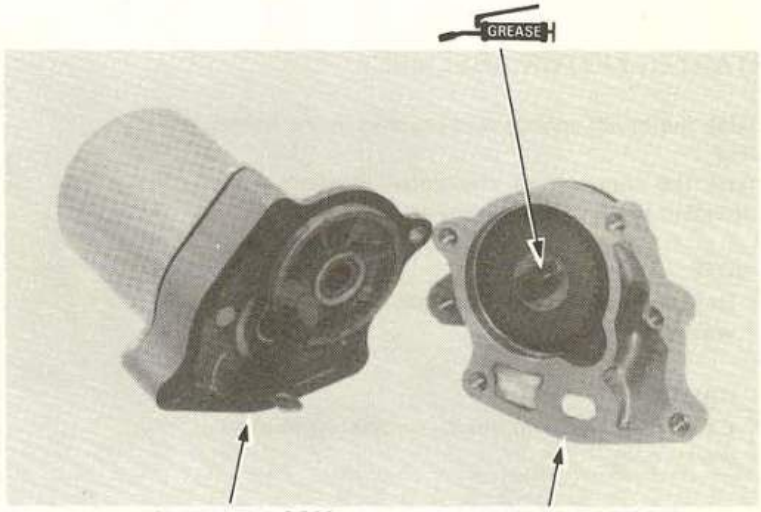
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Lubricate the starter pinion with clean grease.
Install the pinion and starter cover.



Lubricate the gear on the starter body and install the starter motor cover on the body.

Connect the starter wires.

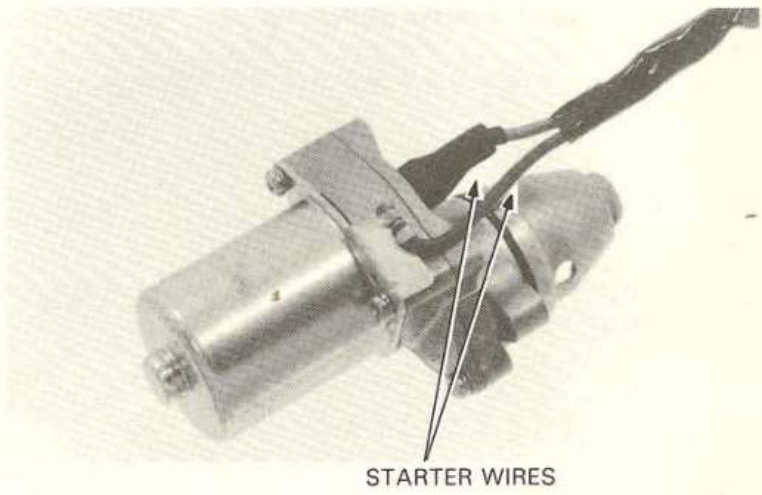


STARTER MOTOR INSTALLATION

NOTE:

> Before installing the starter, test for 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 wire clamps.
Install the engine (Section 5).



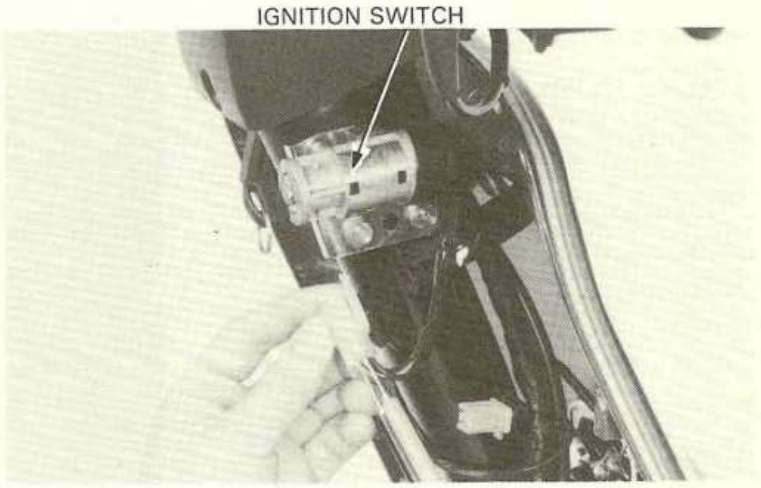
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SWITCHES/HORN

Remove the handlebar lower cover and glovebox.
Check the continuity of each switch.
Continuity should exist between color coded wires indicated by interconnected circles on each chart.

IGNITION SWITCH

COLOR CODE	RED	BLACK	BLACK/ WHITE	GREEN
	BAT 1	BAT 2	IG	E
ON	○	○		
OFF			○	○
LOCK				



TURN SIGNAL SWITCH

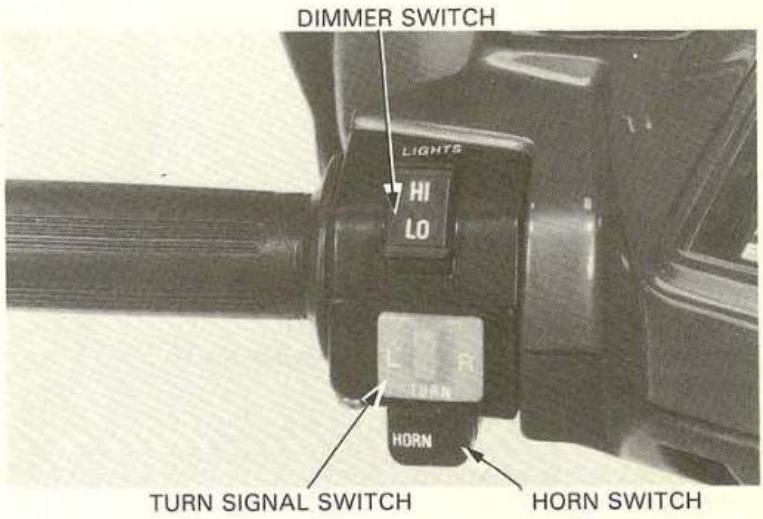
COLOR CODE	GRAY	LIGHT BLUE	ORANGE
	W	R	L
R	○	○	
N			
L	○		○

HORN SWITCH

COLOR CODE	LIGHT BLUE	BLACK
	HO	BAT 2
FREE		
PUSH	○	○

DIMMER SWITCH

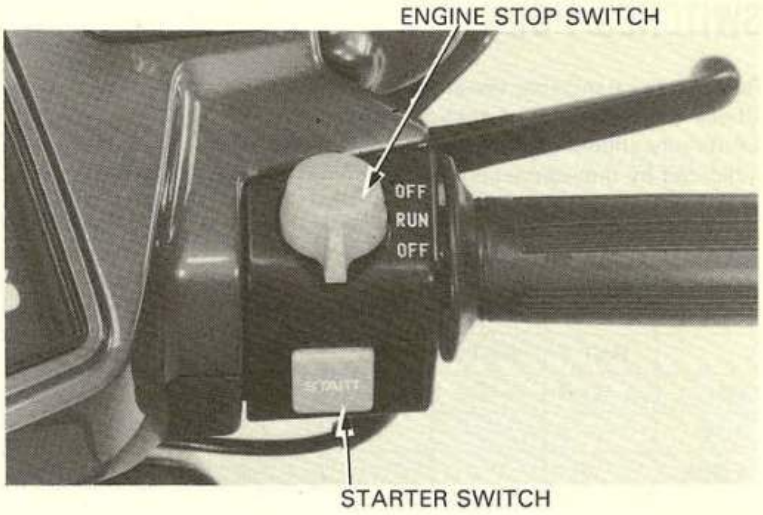
COLOR CODE	YELLOW	BLUE	WHITE
	HL	Hi	Lo
Hi	○	○	
(N)	○	○	○
Lo	○		○



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ENGINE STOP SWITCH

COLOR CODE	BLACK/ WHITE	GREEN
	IG	E
OFF	O———O	
RUN		
OFF	O———O	



STARTER SWITCH

COLOR CODE	YELLOW/ RED	GREEN
	ST	E
FREE		
PUSH	O———O	



FRONT/REAR STOPLIGHT SWITCH

The switch is normal if there is continuity when the brake lever is applied.
The switches are not adjustable.

HORN

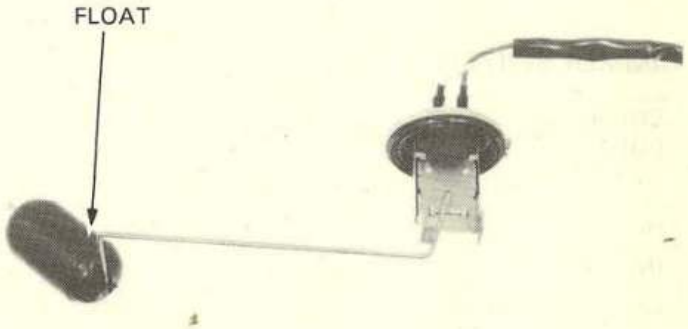
The horn is normal if it sounds when a 12V battery is connected across the terminals.

FUEL GAUGE SENSOR

FUEL GAUGE SENSOR INSPECTION

Remove the sensor from the fuel tank (Page 14-2). Measure the resistances between the terminals with the float at the UPPER (FULL) and LOWER (EMPTY) positions.

Float position	Resistance
UPPER (FULL)	4—10 Ω
LOWER (EMPTY)	97.5—107.5 Ω



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FUEL GAUGE INSPECTION

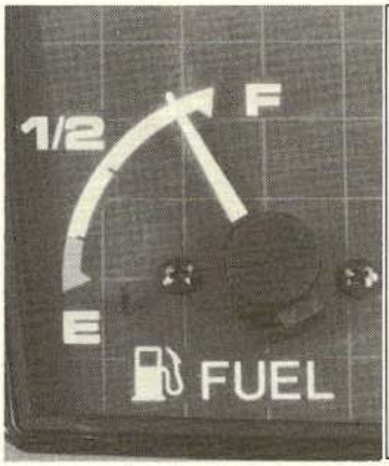
Connect the wire connectors and turn the ignition switch ON.

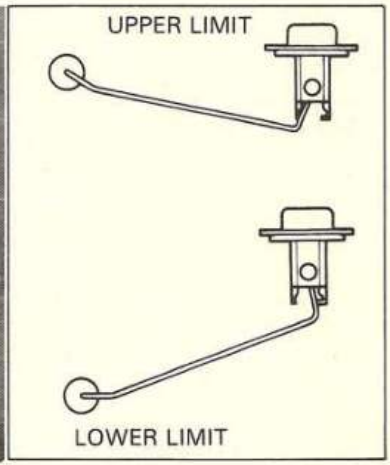
NOTE:

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.

Float position	Needle Position
FLOAT AT UPPER LIMIT	F (FULL)
FLOAT AT LOWER LIMIT	E (EMPTY)



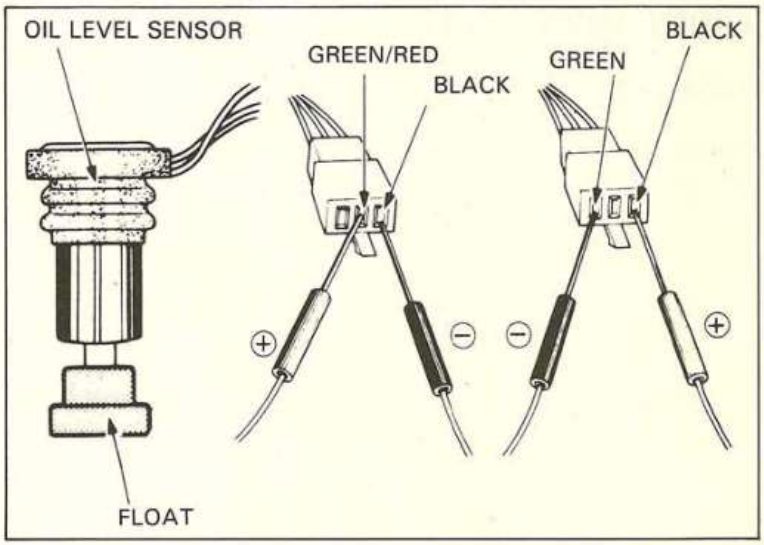


OIL LEVEL INDICATOR UNIT

OIL LEVEL SENSOR INSPECTION

Disconnect the coupler and remove the sensor. Lower the float fully until it will no longer go. Measure the resistances between the terminals as shown.

Terminal	Resistance
Green/Red (+) to Black (−)	5∼15 Ω
Green (−) to Black (+)	∞



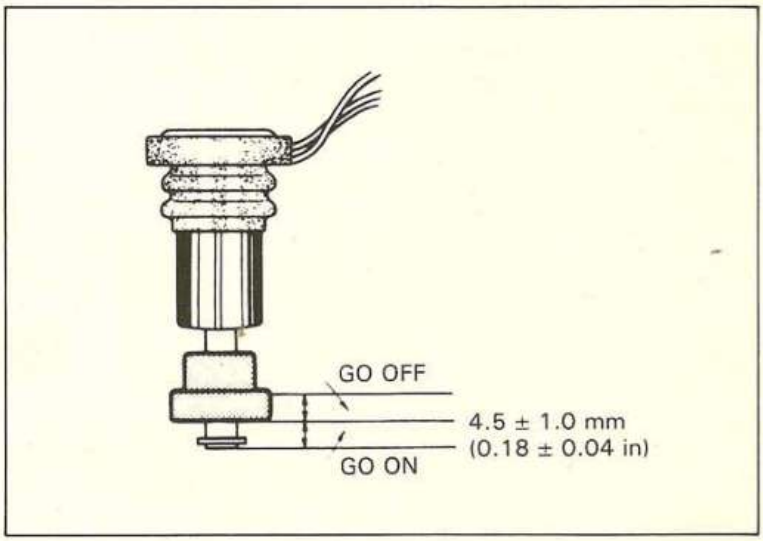
OIL LEVEL INDICATOR SWITCH INSPECTION

Connect the coupler and turn the ignition switch ON. With the float raised fully, measure the resistance between the terminals.

Green/Red (+) to Black (−)	340 Ω approx.

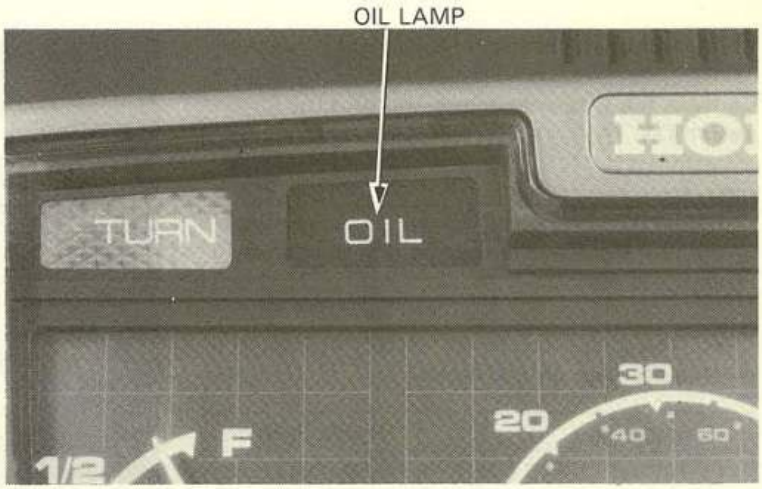
NOTE:

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



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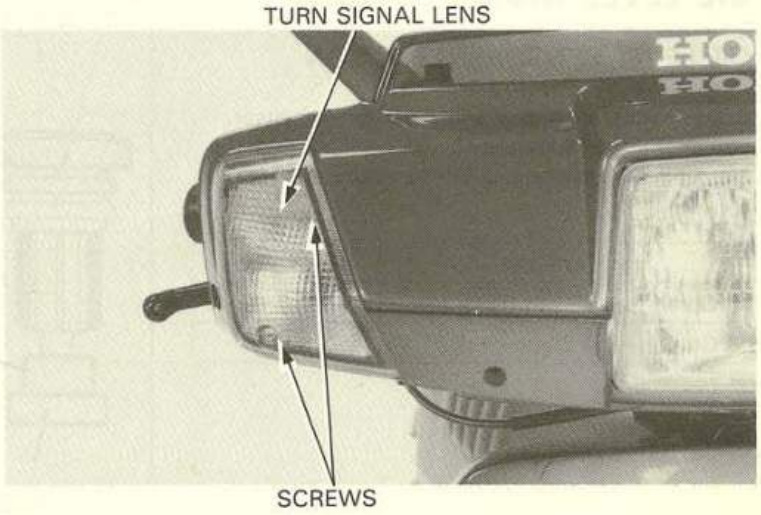
Raise and lower the float to make sure that the oil level indicator lamp blinks. Should the lamp fail to go on and go out as the float is moved up and down, check for loose connections and repeat the above procedure



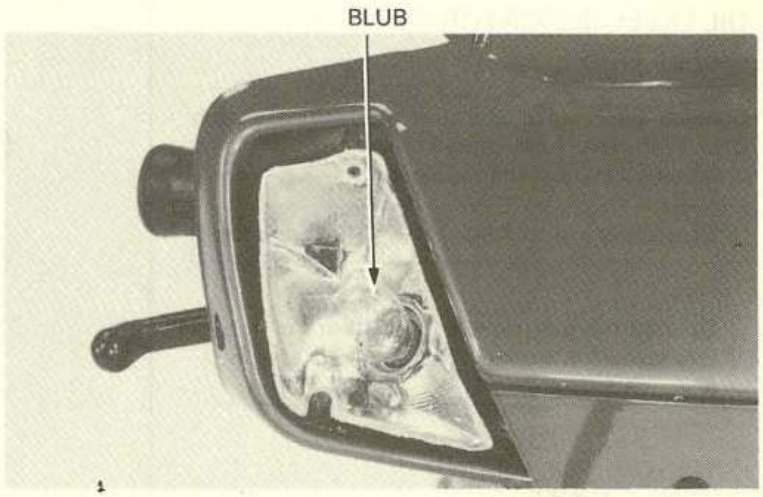
FRONT TURN SIGNALS

TURN SIGNAL BULB REPLACEMENT

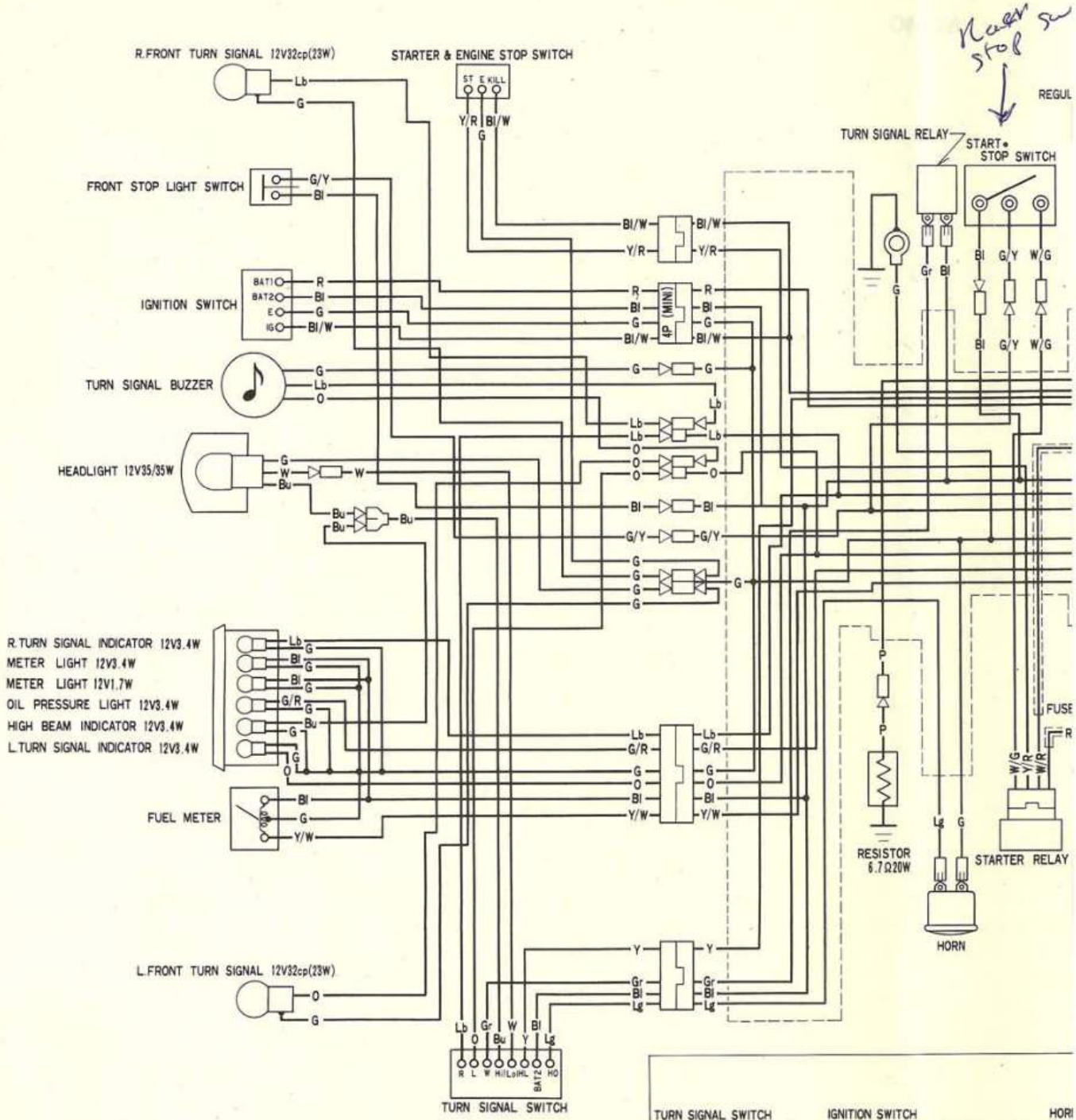
Remove the turn signal lenses by removing the screws.



Replace the bulb with a new one.
Install the lens, being careful not to overtighten the screws.



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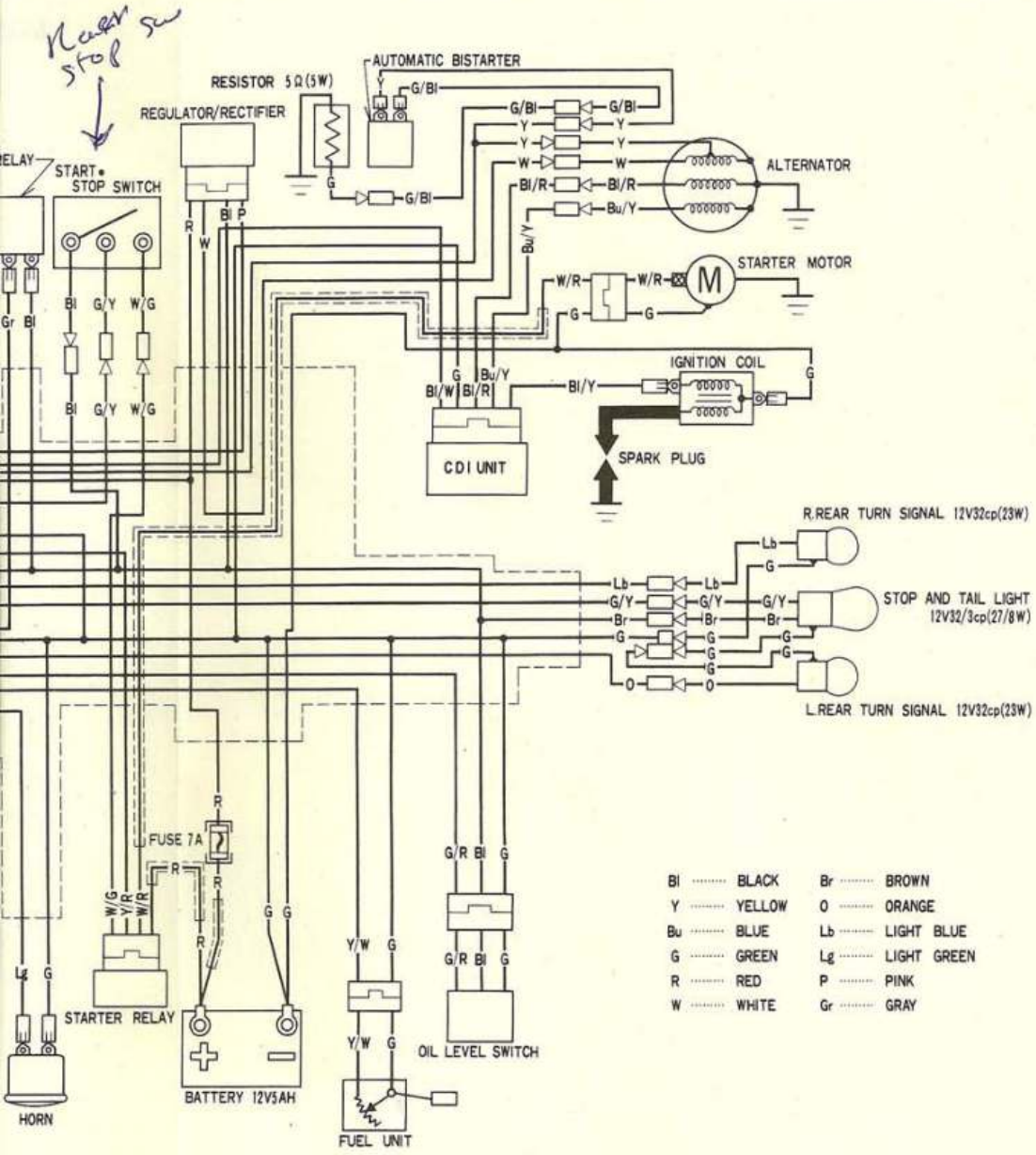
TURN SIGNAL SWITCH

	W	R	L
R	○	○	
N			
L	○		○
COLOR	Gr	Lb	O

IGNITION SWITCH

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

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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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SWITCH CONTINUITY

	BAT2	IG	E
	○		
		○	○
	Bl	Bl/W	G

HORN BUTTON SWITCH

	HO	BAT
FREE		
PUSH	○	○
COLOR	Lg	Bl

DIMMER SWITCH

		HL	Hi	Lo
ON	Hi	○	○	
	(N)	○	○	○
	Lo	○		○
COLOR		Y	Bu	W

STARTER SWITCH

	ST	E
FREE		
PUSH	○	○
COLOR	Y/R	G

ENGINE STOP SWITCH

	KILL	E
RUN		
OFF	○	○
COLOR	Bl/W	G

START• STOP SWITCH

	BAT	STOP	START
OFF			
STOP ON	○	○	
START ON	○	○	○
COLOR	Bl	G/Y	W/G

0030Z—KG8—6700

17. TECHNICAL FEATURES

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ENGINE

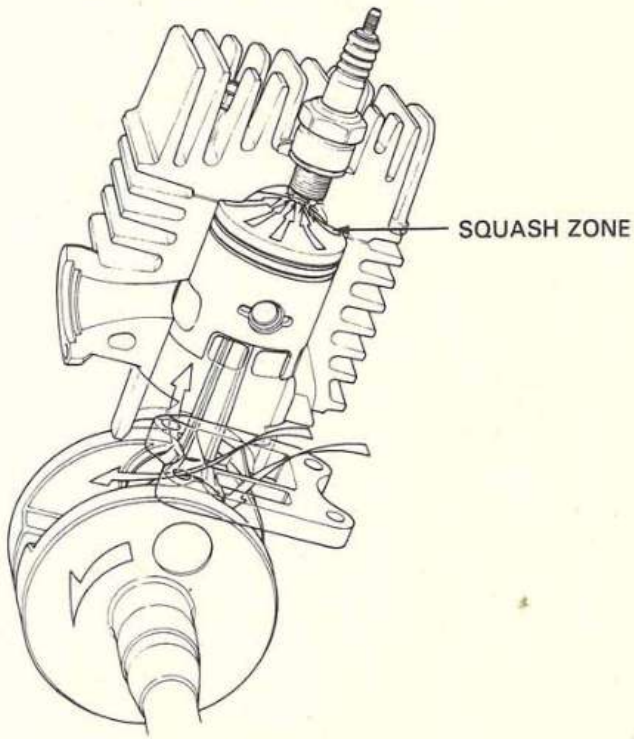
The features of the NH125 engine described below all contribute to meet United States emissions standards, and to provide better power and fuel economy than comparable engines in its displacement category.

5-SCAVENGE PORTS

The NH125 engine has 5-scavenge ports. These ports are especially designed to swirl the incoming fuel-air mixture into the combustion chamber. This swirl effect causes turbulence that will give the most efficient combustion. This works with the special designs of the nozzle type exhaust port, piston and combustion chamber.

PISTON/COMBUSTION CHAMBER

The piston top haa a rim around it to help maintain turbulence during the engine compression stroke. The turbulence is also aided by the semi-spherical shape of the combustion chamber. The chamber's shape and centrally located spark plug provide a fast smooth combustion process under all loads and engine speeds.

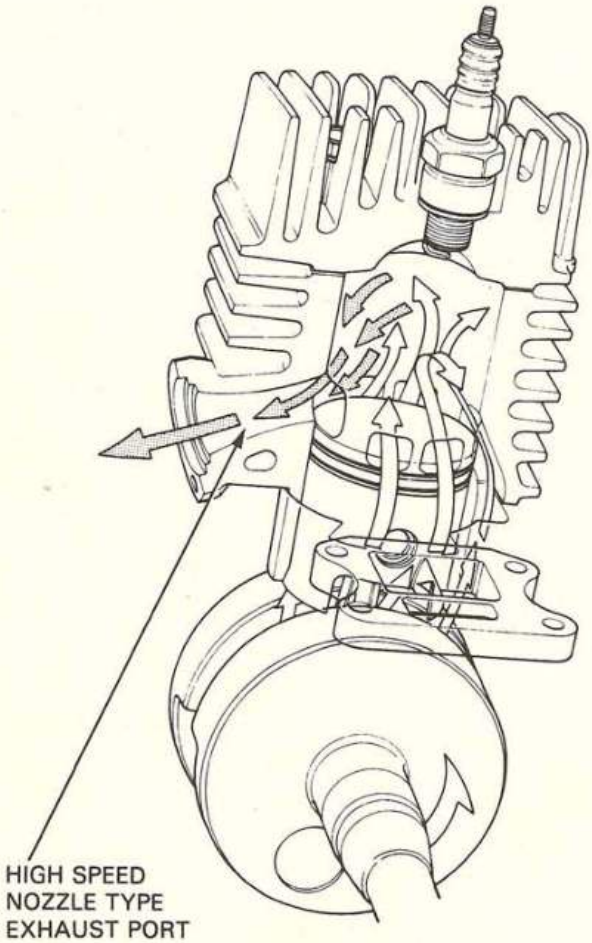


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VENTURI EXHAUST PORT

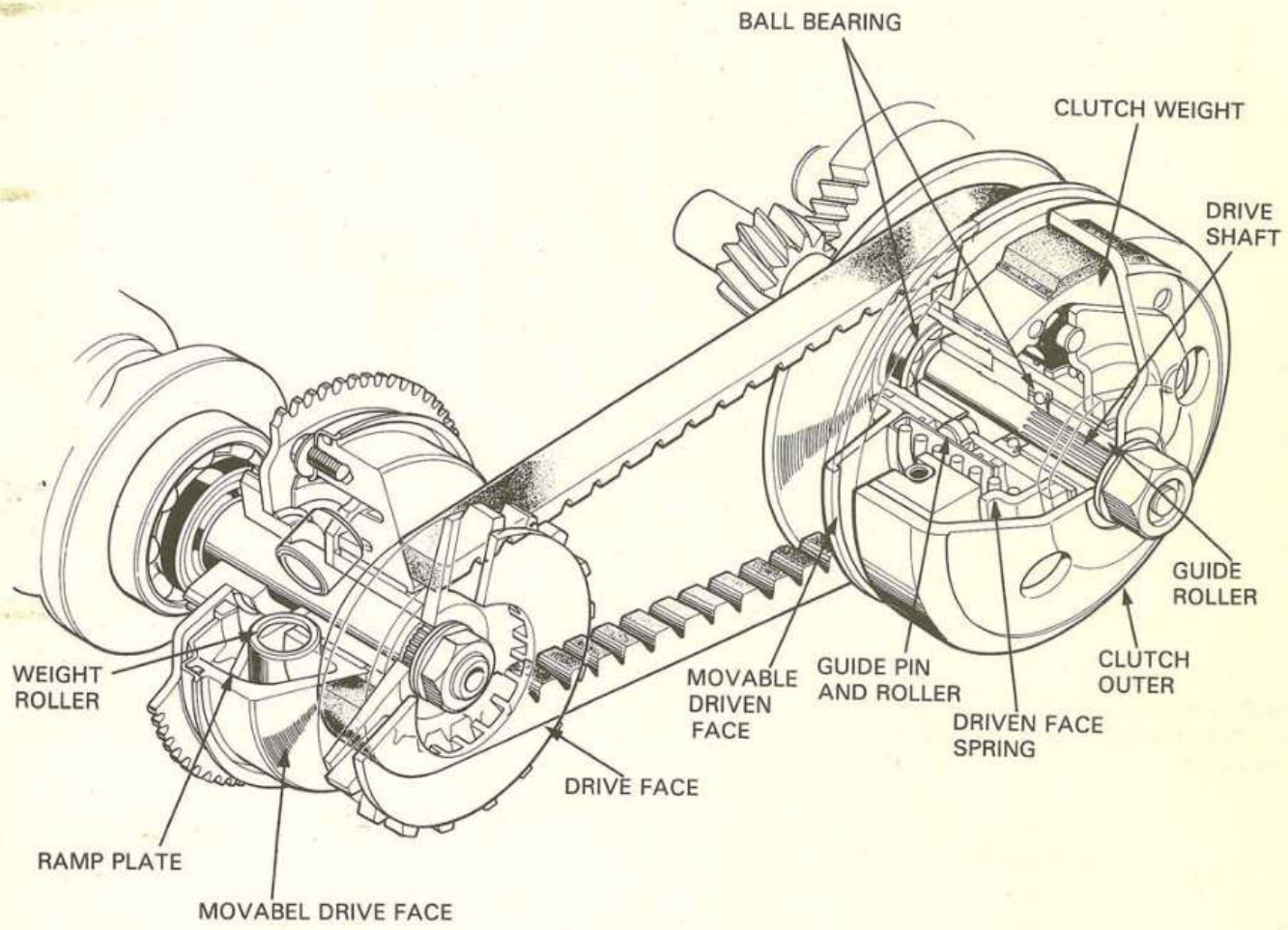
The exhaust port on this engine has been designed with a slight venturi shape to create just enough back pressure to momentarily restrict the exit of the exhaust gases for a more complete combustion cycle. The exhaust quickly exits the cylinder after passing the venturi of the exhaust port. This is a way that emission standards are met by the NH125 engine that also helps improve fuel mileage.

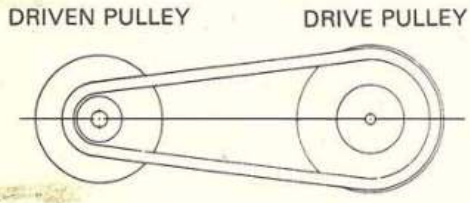


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AUTOMATIC TRANSMISSION

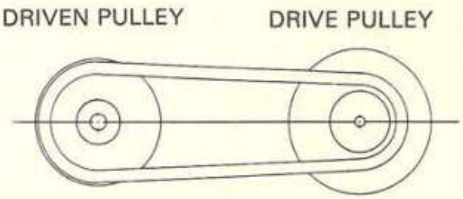
The automatic transmission provides various drive ratios between the eingine and rear wheel according to the engine speed and load. It accomplishes this by two sets of pulleys; drive and driven, and by the use of a drive belt between the pulleys. The drive pulley is attached to the engine crankshaft. The driven pulley is attached to a shaft and also incorporates a centrifugal clutch. There is a final gear reduction between the driven pulley and rear wheel, providing an additional increase in torque.





When the engine is running at low speed, the unit can increase or multiply torque so that more torque is delivered than at high engine speed through a greater drive ratio.

REDUCTION RATIO: 2:1

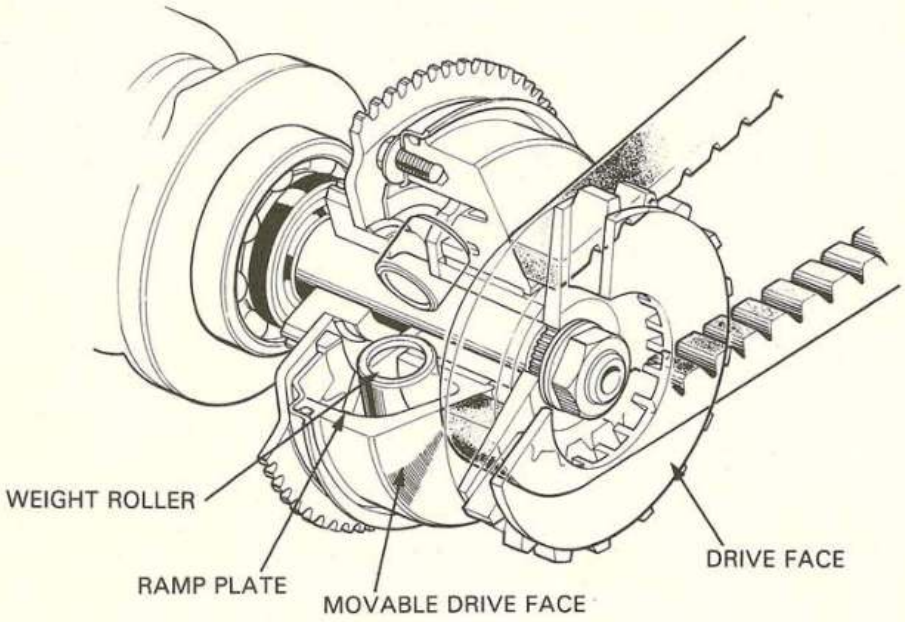


As the speed of the engine increases, or load on the rear wheel decreases, centrifugal force on the weight rollers throws the rollers radially outward. When the rollers are forced outward, they press-in the movable face of the drive pulley closer to the drive face which will result in a reduced drive ratio between the driven and drive pulleys.

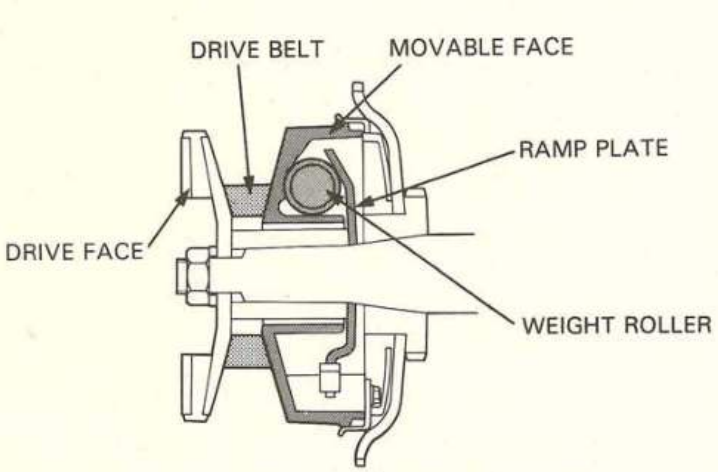
REDUCTION RATIO: 1:1

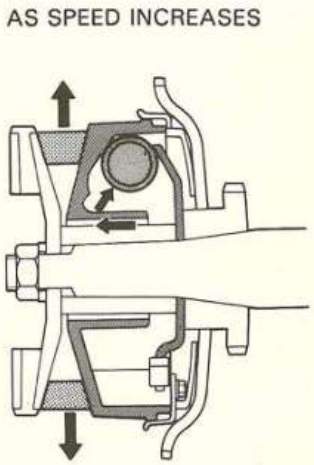
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DRIVE PULLEY



The drive pulley consists of a fixed face and a movable face. The movable face is capable of sliding axially on the boss of the fixed face. The ramp plate, which pushes in the weight rollers against the drive face, is attached to the boss of the drive face with a nut.

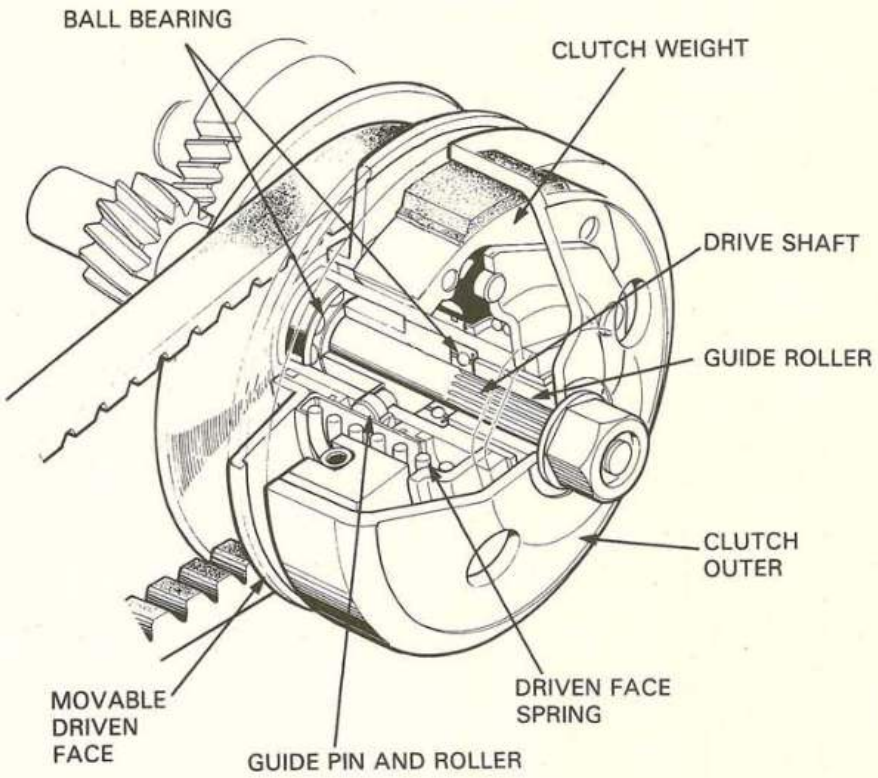




As the speed of the engine increases, centrifugal force on the weight rollers is also increased. This pushes the movable drive face inward. The unit then acts with a reduced drive ratio by allowing the drive belt to run on a pulley of greater diameter.

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DRIVEN PULLEY



The driven pulley and clutch weights are attached over the drive shaft. The clutch outer is attached to the drive shaft with a nut. The force of the driven face spring is always exerted on the movable face to push it against the driven face. Therefore, when engine speed is increased, the driven pulley turns and the clutch connects automatically. The effective diameter of the drive pulley is increased. The movable face is forced outward by means of the belt until an equilibrium is reached between the torque tension of the belt and force of the spring. When this occurs, the drive ratio decreases and less torque is delivered to the final reduction.

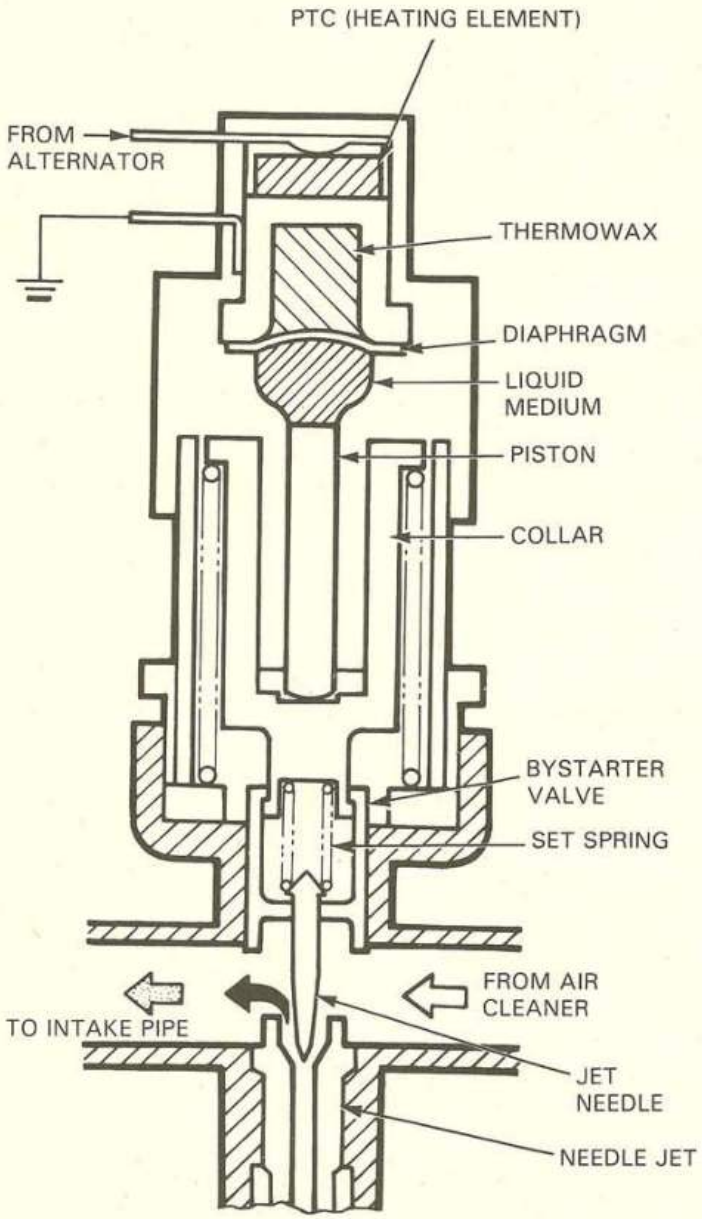
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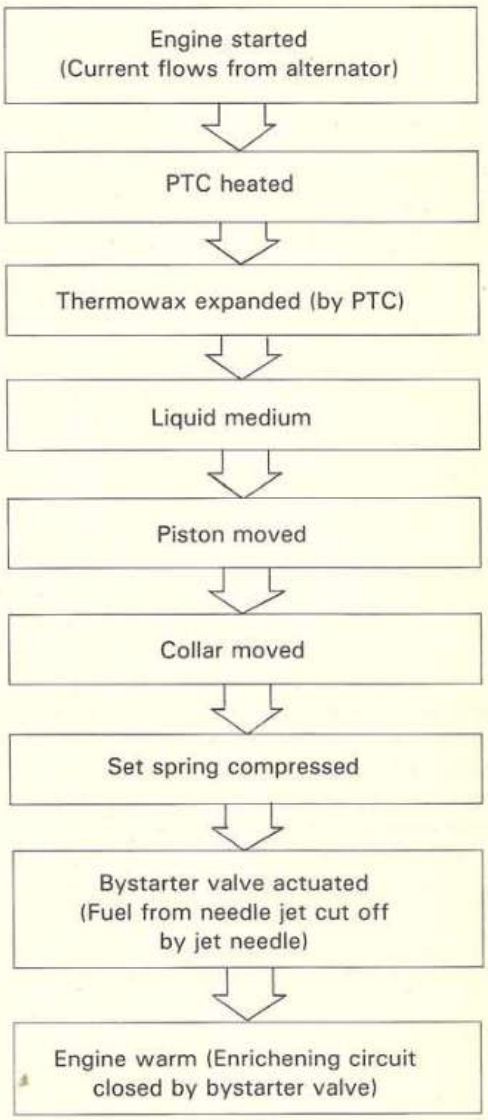
AUTO BYSTARTER

GENERAL

The automatic bystarter shuts off the enrichening circuit automatically once the engine is warmed and, provides the rich mixture required for starting. It consists of a PTC (heating element), thermowax, diaphragm, piston and bystarter valve as shown. The wax is contained in a chamber which is in contact with the PTC so the wax is expanded as the PTC is heated. As the engine is started, the alternator is also turned. Current then flows from the alternator to the PTC, causing it to be heated. As this takes place, the wax is expanded, pushing the piston down through a liquid medium contained in the same chamber and separated from the wax by a diaphragm. The movement is then transmitted to the bystarter valve; i.e. the valve is moved down through a collar to close the enrichening circuit.

• CONSTRUCTION AND OPERATING PRINCIPLE

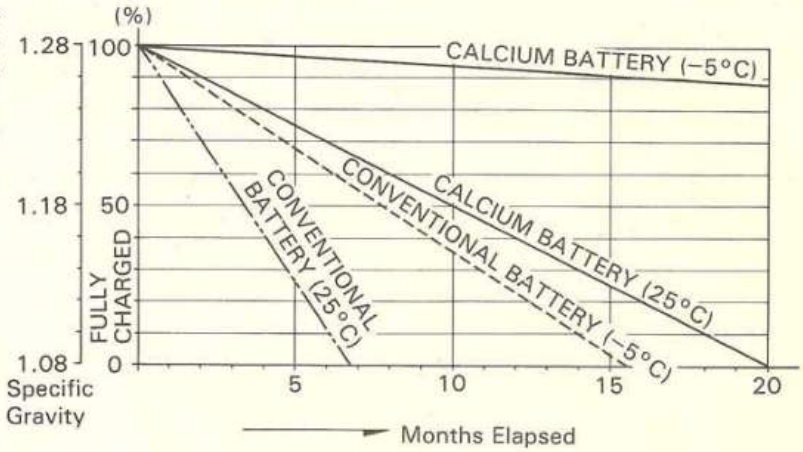




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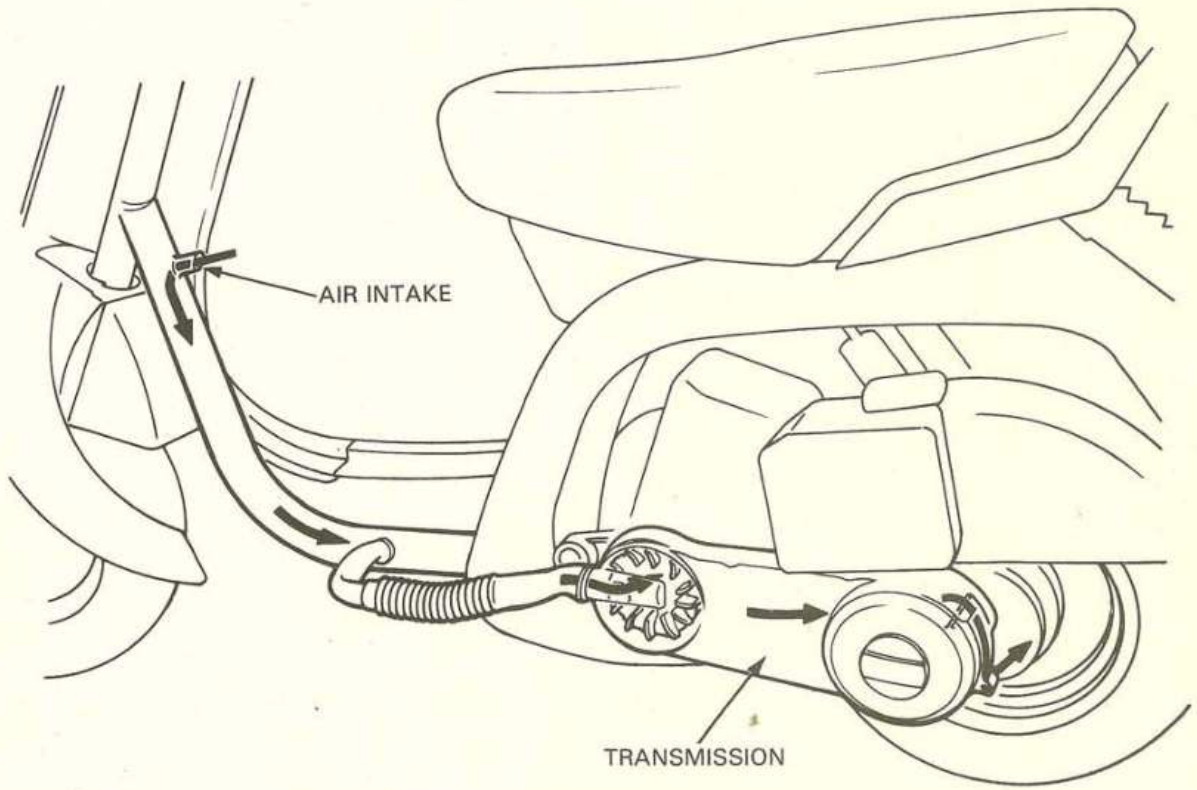
CALCIUM BATTERY

A calcium battery featuring less self-dischaging is standard on all models. A comparative analysis between the calcium battery and a conventional battery is given below.



TRANSMISSION COOLING SYSTEM

Air is drawn through an inlet at the frame and a rubber duct into the transmission by means of a fan on the drive pulley. After cooling the transmission, the air is exhausted through the opening at the rear of the left case cover as shown.



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18. TROUBLESHOOTING

ENGINE DOES NOT START OR IS HARD TO START	18–1
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POOR PERFORMANCE AT HIGH SPEED	18–3
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FUEL GAUGE	18–7
STARTER MOTOR	18–8

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 intake pipe (3) Clogged float valve (4) Cloggad fuel tank cap breather hole (5) Clogged fuel strainer
GETTING TO CARBURETOR ↓		
2. Try spark test	WEAK OR NO SPARK →	(1) Faulty spark plug (2) Fouled spark plug (3) Faulty CDI unit (4) Fautly pulse generator (5) Broken or shorted spark plug wire (6) Broken or shorted ignition coil (7) Faulty ignition switch
SPARK JUMPS ↓		
3. Test cylinder compression	LOW COMPRESSION →	(1) Stuck piston rings (2) Faulty or deteriorated reed valve (3) Worn cylinder and piston rings (4) Flaw in cylinder or cylinder head (5) Compression leak past crankcase (6) Blown cylinder head gasket
NORMAL COMPRESSION ↓		
4. Start by following normal starting procedure	ENGINE FIRES BUT SOON STOPS →	(1) Faulty control box (2) Air leaking past intake pipe (3) Improper ignition timing (4) Carbon blocking exhaust system
ENGINE DOES NOT FIRE ↓		
5. Remove spark plug	WET PLUG →	(1) Carburetor flooded (2) Faulty control box (3) Throttle valve open excessively
DRY		

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ENGINE LACKS POWER

		Probable Cause
1. Lightly accelerate engine ENGINE SPEED INCREASES	ENGINE SPEED DOES NOT INCREASE SUFFICIENTLY →	(1) Clogged air cleaner (2) Restricted fuel flow (3) Clogged fuel tank cap breather hole (4) Clogged muffler (5) Clogged exhaust port
2. Check ignition timing CORRECT	INCORRECT →	(1) Faulty CDI unit (2) Faulty pulse generator
3. Test cylinder compression 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
	TOO HIGH →	(1) Carbon build-up in combustion chamber
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 pulse generator
CORRECT ↓		
2. Check carburetor air screw for proper adjustment	INCORRECT →	(1) Fuel-air mixture too rich (Perform idle drop) (2) Fuel-air mixture too lean (Perform idle drop)
CORRECT ↓		
3. Check if air is leaking past intake pipe	LEAKING →	(1) Loose carburetor (2) Deteriorated intake pipe gasket (3) Deteriorated insulator O-ring
NO LEAKING ↓		
4. Try spark test	WEAK OR INTERMITTENT SPARK →	(1) Faulty, carbon or wet fouled spark plug (2) Faulty CDI unit (3) Faulty pulse generator (4) Faulty ignition coil (5) Broken or shorted spark plug wire (6) Faulty ignition switch
GOOD SPARK		

POOR PERFORMANCE AT HIGH SPEED

1. Check ignition timing	INCORRECT →	(1) Faulty CDI unit (2) Faulty pulse generator
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 a clogged jet	CLOGGED →	(1) Clean
NOT CLOGGED		

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POOR HANDLING

CLUTCH AND DRIVE/DRIVEN PULLEYS	Probable cause
1. If engine fires but motorcycle 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 motorcycle creeps or engine starts but soon stops	(1) Broken shoe spring (2) Stuck clutch outer weight (3) Seized pivot
3. If engine lacks power at start of a grade	(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 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

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 motorcycle pulls to one side	(1) Misaligned front and rear wheels (2) Bent front fork

POOR FRONT/REAR SUSPENSION PERFORMANCE - - - - - - - - Check tire pressure	Probable Cause
1. If suspension is too soft	(1) Weak chock spring (2) Excessive load (3) Leaky damper
2. If suspension is too hard	(1) Bent fork or shock rod
3. If suspension is noisy	(1) Slider binding (2) Damaged shock stopper rubber

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POOR BRAKE PERFORMANCE - - - - - - - -Check brake adjustment — 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 contacting face of brake drum

3. If brake performance is poor →
   - (1) Faulty or elongated brake cabel
   - (2) Brake shoes partially contacting brake drum
   - (3) Mud or water in brake drum
   - (4) Brake linings fouled with grease or oil

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OIL INDICATOR

INDICATOR LAMP DOES NOT LIGHT WHEN IGNITION SWITCH IS TURNED ON

		Probable Cause
1. Check battery circuit by operating turn signals	SIGNALS DIM, REMAINED ON OR DID NOT OPERATE →	(1) Blown fuse (2) Weak or dead battery (3) Faulty ignition switch
SIGNALS OPERATING CORRECTLY (60—120 flashings/min)		(4) Disconnected wire connector (5) Broken wire harness
↓		
2. Remove lamp and check for broken filament	LAMP DOES NOT LIGHT →	(1) Blown bulb
LAMP LIT		
↓		
3. Check for loose, disconnected or improperly connected terminal	INCORRECT →	(1) Loose or disconnected terminal (2) Broken wire harness (3) Incorrect wire connection
CORRECT		
↓		
4. Remove oil level sensor and check operation: Float up: Lamp off Float down: Lamp on	INCORRECT →	(1) Stuck float (2) Broken or shorted balancing coils
CORRECT		

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

		Probable Cause
1. Check for loose, disconnected or improperly connected terminals	INCORRECT →	(1) Loose or disconnected terminal (2) Broken wire harness (3) Incorrect wire connection
CORRECT		
↓		
2. Remove oil level sensor and check operation: Float up: Lamp off Float down: Lamp on	INCORRECT →	(1) Jammed or stuck float (2) Broken or shorted indicator sensor
⊢	→	(1) Deformed oil tank (2) Foreign matter in tank
CORRECT		

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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 DIM REMAINED ON OR NOT OPERATED AT ALL →	(1) Blown fuse (2) Weak or dead battery (3) Faulty ignition switch (4) Disconnected terminal (5) Broken wire harness
SIGNALS OPERATED PROPERLY ↓		
2. Remove fuel level sensor and check for operation by moving float Float up: Pointer at FULL Float down: Pointer at EMPTY	POINTER MOVES →	(1) Faulty float
POINTER DOES NOT MOVE ↓		
3. Short and open tank unit terminals on wire harness side	POINTER MOVES →	(1) Broken or shorted balancing coil
POINTER DOES NOT MOVE ↓		
4. Check for loose, disconnected or incorrectly connected terminals	INCORRECT →	(1) Disconnected terminal (2) Incorrectly connected terminals
CORRECT →		(1) 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 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
SIGNALS OPERATED PROPERLY ↓		
2. Remove tank unit and check for operation by moving float	POINTER DOES NOT MOVE →	(1) Loose or poor connection in fuel level sensor
POINTER MOVES ↓		
3. Move float up and down rapidly (up-and-down stroke/sec)	POINTER DOES NOT MOVE →	(1) Lack of damper oil in meter
POINTER MOVES ↓		
4. Check each connector	INCORRECT →	(1) Loose or disconnected terminal
CORRECT →		(1) Shorted or broken balancing coil/lead

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STARTER MOTOR

STARTER MOTOR DOES NOT ROTATE

NOTE: Perform checks with a fully charged battery.

		Probable Cause
1. Check starter relay for operation by depressing starter switch	ABNORMAL →	(1) Poorly contacting starter switch (2) Broken or shorted starter relay (3) Loose connector or terminal
MORMAL ↓		
2. Test starter by connecting it to the battery	DID NOT ROTATED →	(1) Worn brushes (2) Broken or shorted rotor windings (3) Broken staraer motor sub wire (4) Loose terminal
↓ ROTATED	→	(1) Broken wire harness

STARTER MOTOR ROTATES SLUGGISHLY OR FAILS TO CRANK ENGINE

		Probable Cause
1. Check battery circuit by operating turn signals	SIGNALS DIM, REMAIN NO OR DID NOT OPERATE →	(1) Dead battery
SIGNALS OPERATED PROPERLY ↓		
2. Connect starter motor sub wires across battery terminals	TURNED PROPERLY →	(1) Loose connector/terminal (2) Poorly contacting starter relay
↓ TURNED SLOWLY (SPEED DID NOT CHANGES)	→	(1) Broken or shorted slorter motor windings

STARTER WON'T STOP ROTATING

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

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