



YAMAHA

CV80K

Service Manual

**CV80K
SERVICE MANUAL**

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NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent to motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

This model has been designed and manufactured to perform within certain specification in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the motorcycle will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his motorcycle and to conform with federal environmental quality objectives.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

NOTE: _____

This Service Manual contains information regarding periodic maintenance to the emission control system for the CV80K. Please read this material carefully.

Particularly important information is distinguished in this manual by the following notations:

NOTE: A NOTE provides key information to make procedures easier or clearer.

CAUTION: A CAUTION indicates special procedures that must be followed to avoid damage to the motorcycle.

WARNING: A WARNING indicates special procedures that must be followed to avoid injury to a motorcycle operator or person inspecting or repairing the motorcycle.

SERVICE DEPT.
INTERNATIONAL DIVISION
YAMAHA MOTOR CO., LTD.

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CHAPTER 1. GENERAL INFORMATION

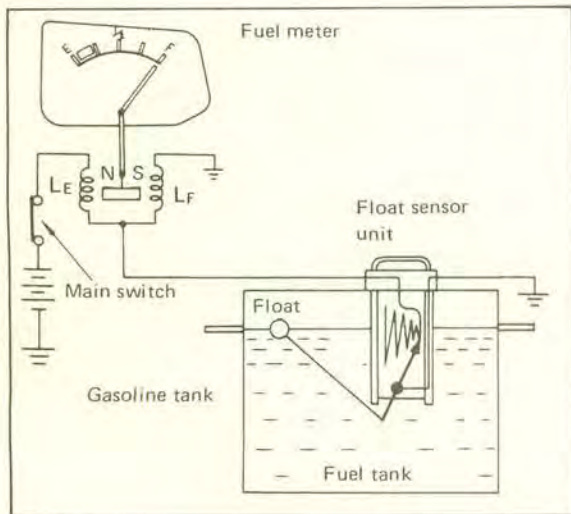
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GENERAL INFORMATION

NEW FEATURES

ELECTRIC FUEL METER

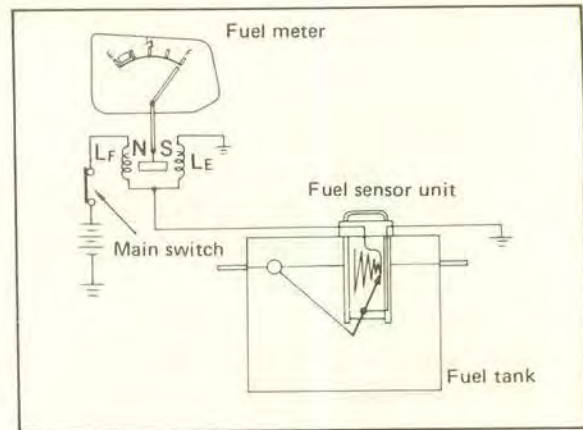
1 The fuel sensor unit incorporates a variable resistor, and the fuel meter has a movable 2-pole magnet in it. The sensor unit is provided with a float through the float lever. As the fuel level changes, the float also moves up and down. The movement of the float changes the resistance of the sensor and thus changes electrical current flowing in the sensor unit. As the current changes, it moves the magnet connected to the fuel meter needle, thus indicating the fuel level. This new type fuel meter always indicates the remaining amount of the fuel even after the main switch is turned off.



OPERATION

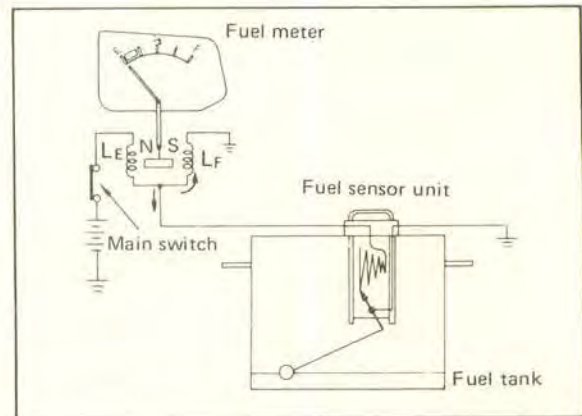
Fuel level is high

When the float is high, the variable resistor decreases its resistance, and thus the current flows more to coil (Le) than to coil (Lf). That is, the magnetic flux on the (Le) side is greater than on the (Lf) side so that the magnet turns to the right and as a result, the meter needle moves toward (F).



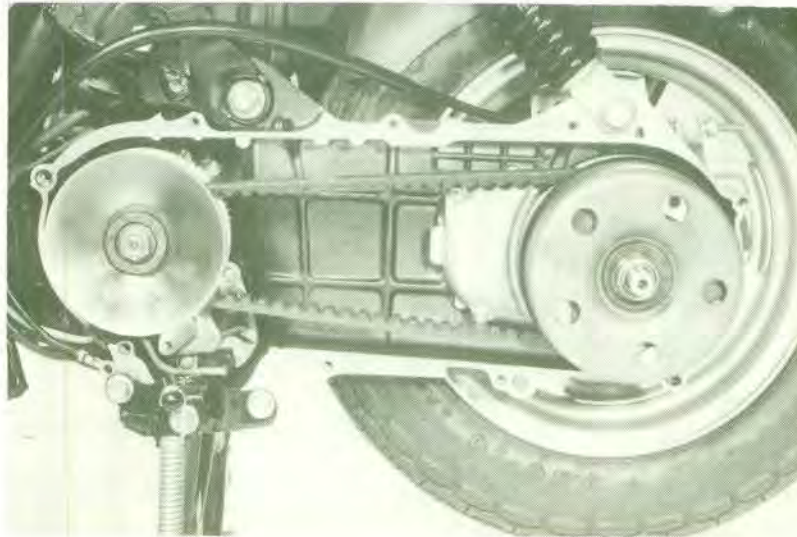
Fuel level is low

When the float is low, the variable resistor increases its resistance, and thus the current flows more to coil (Lf) than to coil (Le). That is, the magnetic flux on the (Lf) side is greater than on the (Le) side so that the magnet turns to the left and as a result, the meter needle moves toward (E).



V-BELT DRIVE SYSTEM

No gear shifting is required because the reduction ratio automatically changes with the engine speed. Stable climbing ability and smooth acceleration are ensured, independent of the rider's driving technique.



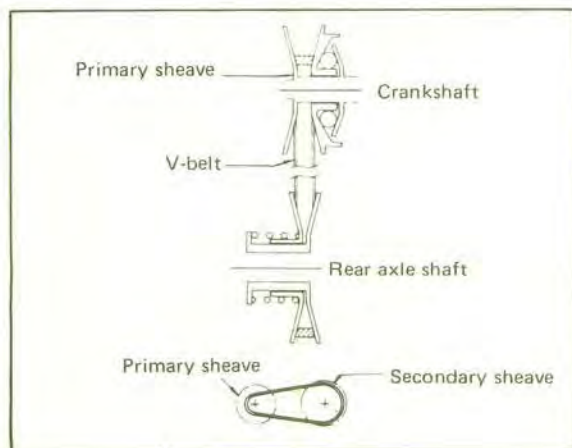
OPERATION

Starting off

The V-belt is positioned near the center of the primary sheave and near the perimeter of the secondary sheave at the same time.

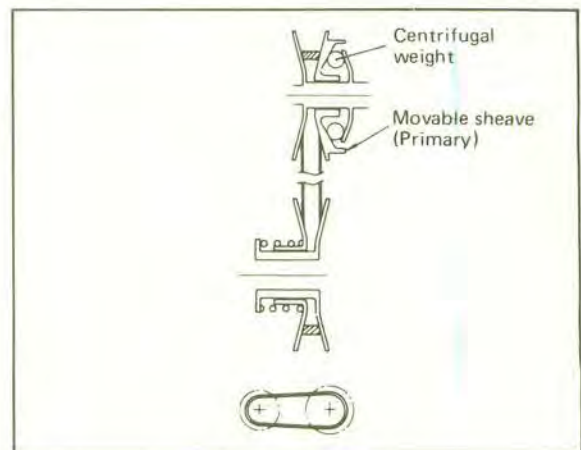
With the V-belt in this position, the reduction ratio is maximum so that full engine torque can be transmitted to the rear wheel. (Greater torque can be transmitted.)

Stall r/min: 3,500



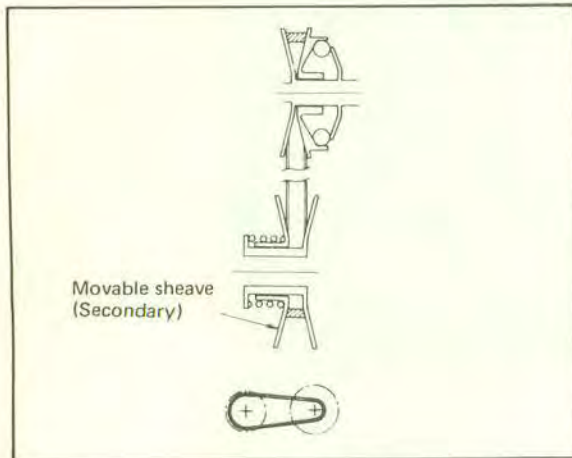
At medium speeds

As the engine speed increases, the sheave weights are thrown outward by centrifugal force, and the weights force the movable sheave inward. This means that on the primary sheave, the V-belt is forced toward the perimeter of the primary sheave and on the secondary sheave, the belt moves toward the center of the sheave. In other words, the reduction ratio decreases slowly and thus the secondary sheave speed increases.



At high speeds

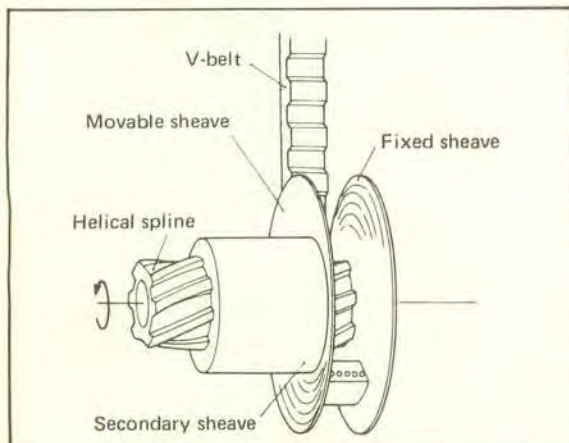
As the engine speed increases further, the sheave weights are also thrown further outward. This means that on the primary sheave, the V-belt is further forced toward the perimeter and on the secondary sheave, the V-belt is nearest the center of the sheave. With the V-belt in this position, the reduction ratio is minimum.



HELICAL SPLINES

Operation and construction

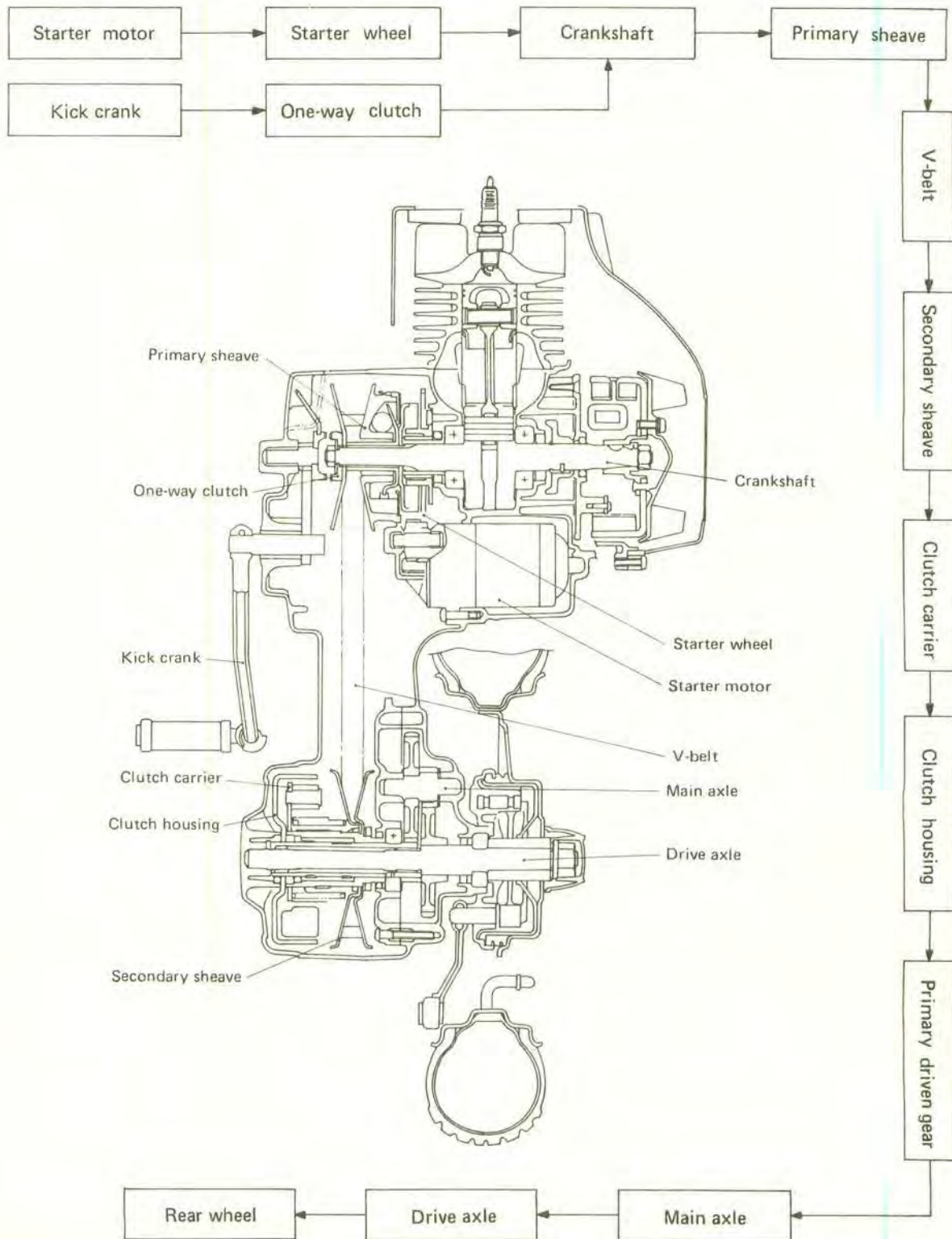
Engine torque is transmitted to the secondary sheave through the V-belt. The torque transmitted to movable sheave is changed to a thrust force that pushes the movable sheave toward the fixed sheave because of the helical splines. As a result, the V-belt is moved toward the perimeter, thus increasing the reduction ratio.



Effect

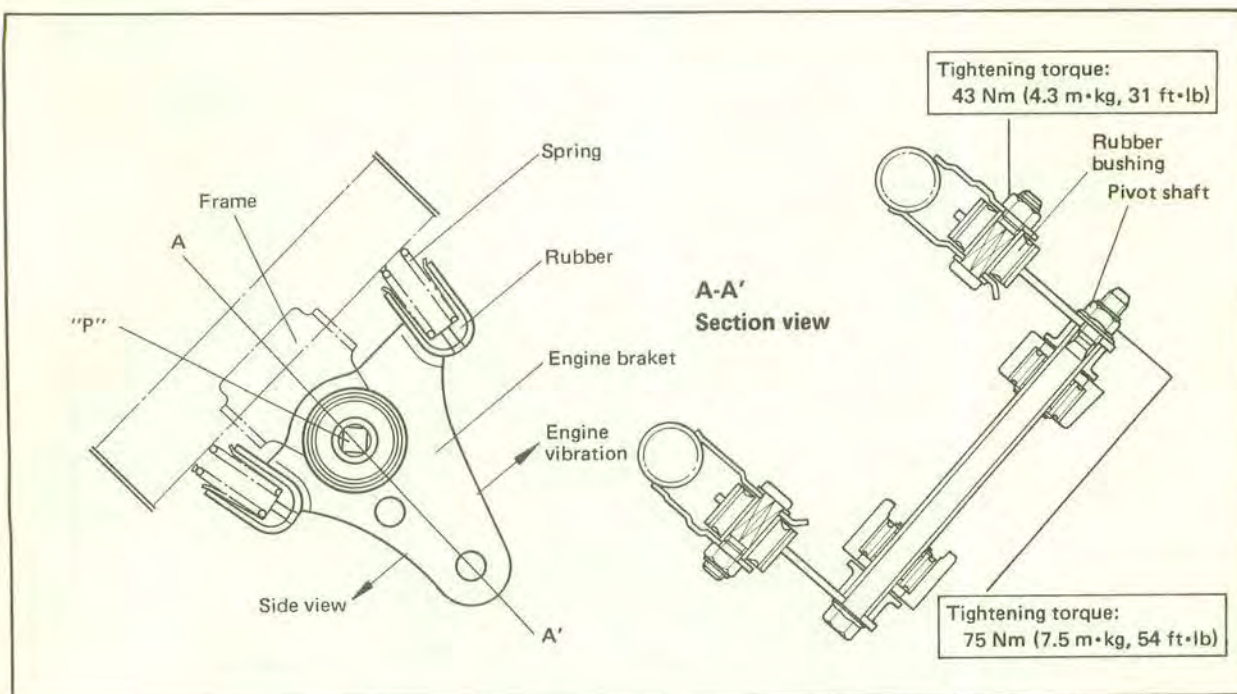
For instance, the rider opens the throttle when approaching a slope and because of the construction and operation of the helical splines provided for the secondary sheave shaft, the movable sheave moves toward the fixed sheave. This causes the V-belt to move toward the perimeter, and higher reduction ratio and greater torque required for climbing up the slope can be obtained.

Power flow chart



"VIBELESS" LINK ENGINE MOUNTING

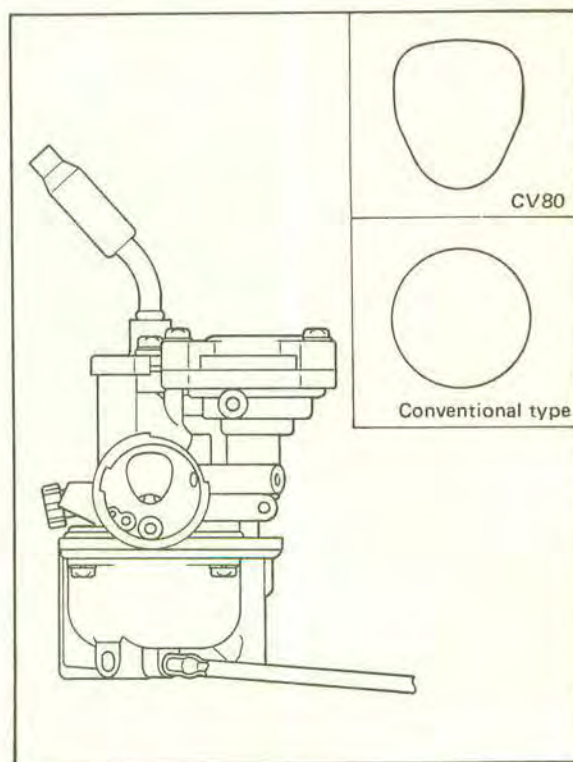
This engine mounting system effectively shuts off the unpleasant engine vibration to the frame so that superb riding comfort can be ensured.



The engine vibrates centering on the "P" point and the vibration is effectively damped out by the rubber dampers and springs.

ENERGY-SAVING S.E. CARBURETOR

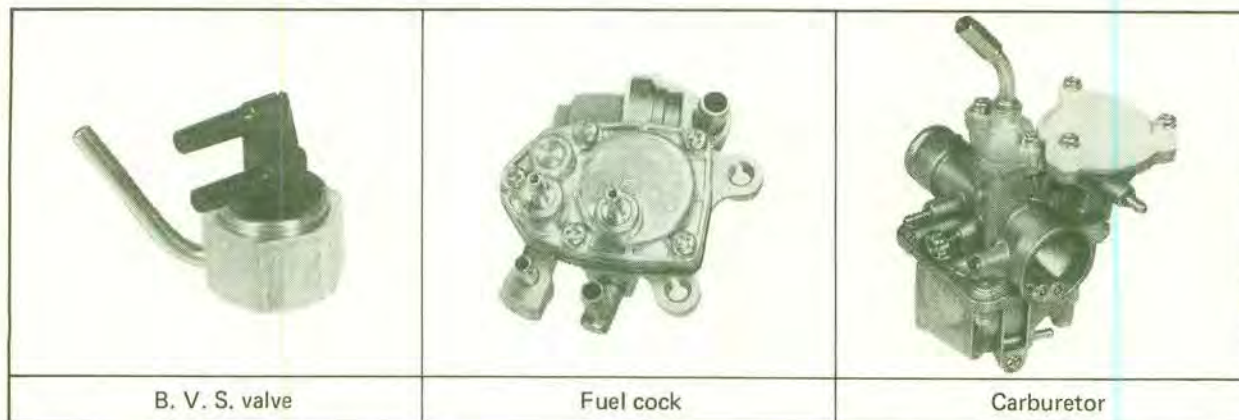
Unlike a conventional carburetor, the venturi has a cross-section shown to the right. The size of the throttle opening at full-throttle is almost the same as a round-type venturi, but at partial throttle the opening is smaller than in the conventional type. That is, fuel can be economized and at the same time, the engine can pick up speed smoothly. Along with the variable speed V-belt drive, the carburetor is designed with importance on fuel economy.



AUTO-CHOKE

The CV80K employs an auto-choke system that allows even the beginner a quick, easy start. That is, the operation of the choke lever is unnecessary.

This system is made up of the following three components; B. V. S. valve, fuel cock, and carburetor.



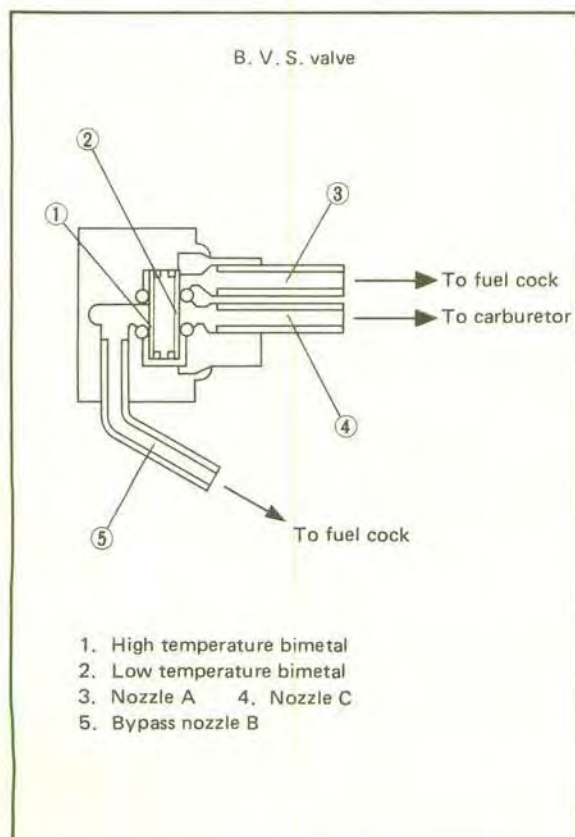
Construction

This system has two bimetals which deflect when they are subjected to a change in temperature. In other words, the two thermostats open and close the vacuum passage depending on the cylinder head temperature, and thereby the supply of mixture from the starter plunger chamber to the combustion chamber can be stopped or kept on.

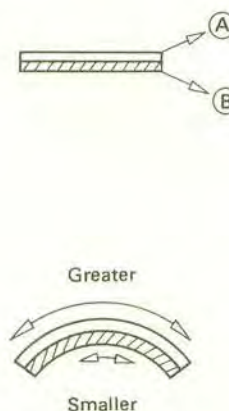
Bimetal

This is a strip of two metals having different temperature coefficients so arranged that the strip deflects due to a change in temperature.

	Low temperature bimetal	High temperature bimetal
Operating temperature	44°C or below	58° ± 7°C
Return temperature	34° ± 2°C	58° ± 7°C

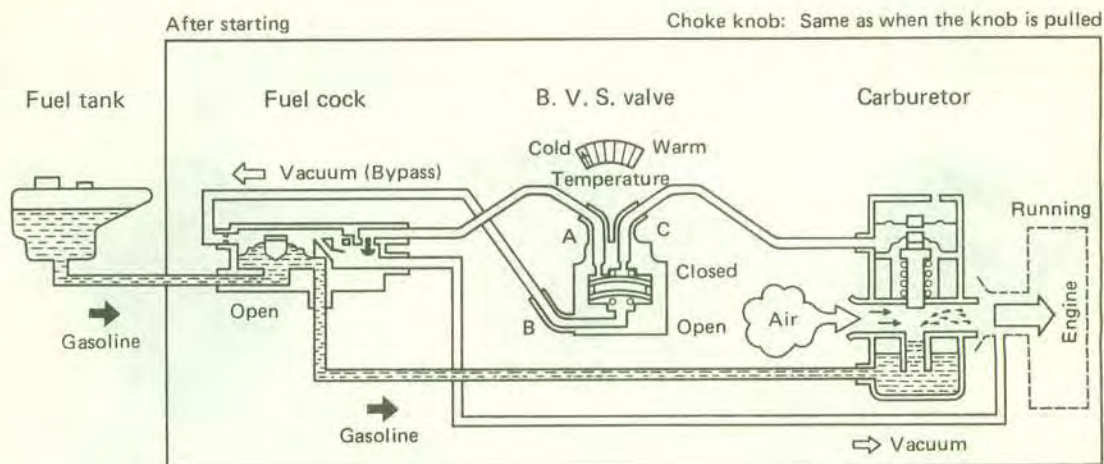


Elongation
caused by heat



OPERATION

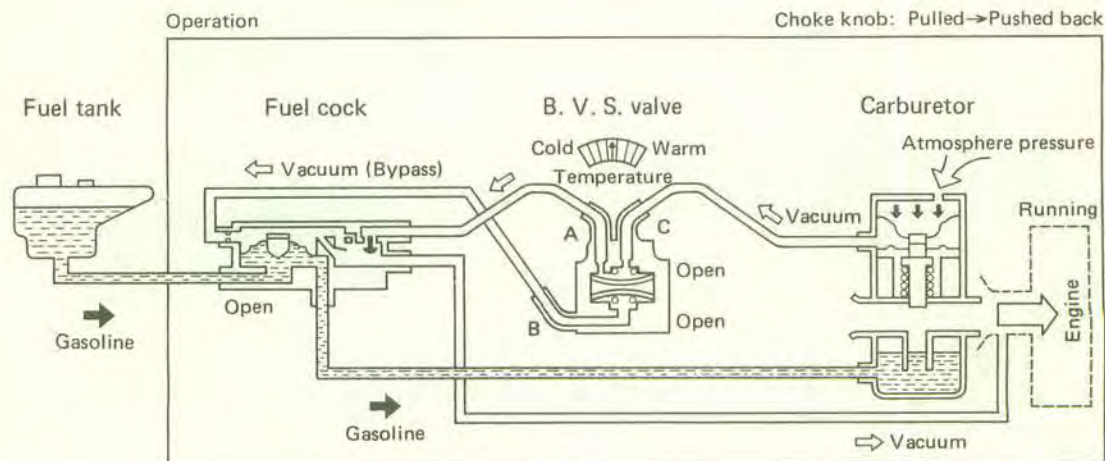
Cold engine



When the starter switch is pushed, the crankshaft begins to turn and thus a partial vacuum is produced in the crankcase. As the vacuum is created, the fuel cock valve is opened, thus allowing gasoline into the carburetor.

As the engine is cold, the low temperature bimetal (valve C) is closed but the high temperature bimetal (valve B) is open. In this case, the vacuum produced in the carburetor does not actuate the choke valve; that is, the choke valve is kept open so that the proper mixture required to start the engine is supplied.

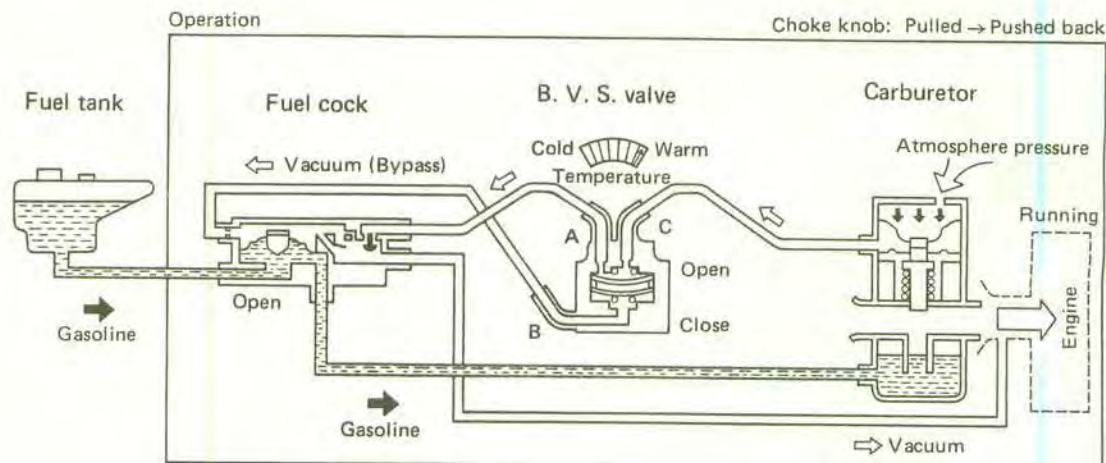
Slightly warm engine



When the engine warms up, the low temperature bimetal (valve B) opens slightly and thus a partial vacuum is produced in the carburetor vacuum chamber.

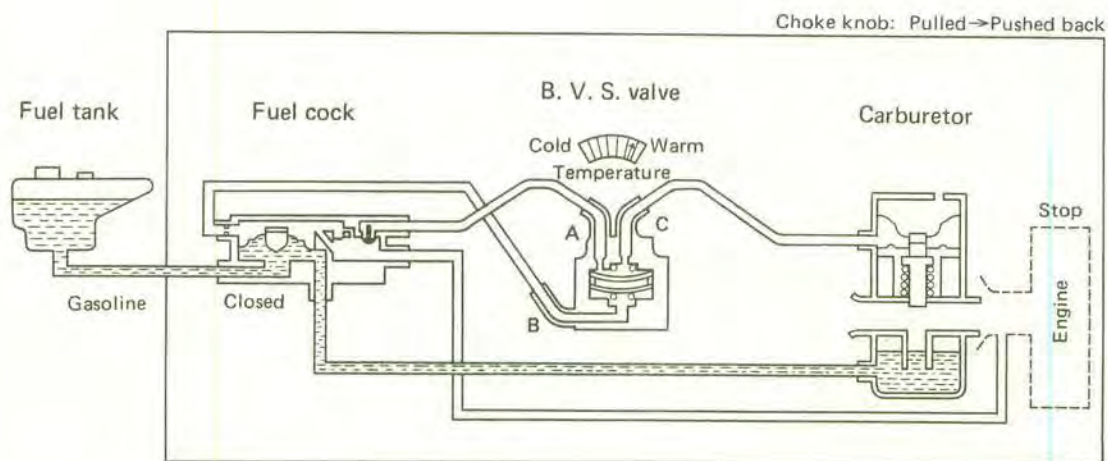
Therefore, the diaphragm is moved toward the vacuum side and pushes the choke valve downward.

Warm engine



As the engine warms up completely, the low temperature bimetal (valve C) opens, but the high temperature (valve B) is closed.

Restarting



When the engine is still warm, the fuel cock valve is kept closed and thus, the vacuum is held in the vacuum chamber. As a result, the choke valve is pushed downward.

As the engine cools down slowly to about $58^{\circ} \pm 7^{\circ}\text{C}$ or less, the high temperature bimetal (valve B) opens to allow atmospheric pressure into the bypass and as a result, the choke valve is open.

IGNITION CONTROL SYSTEM

The CV80K distinctly indicates START and RUN on the main switch. The electric engine speed control unit prevents the motorcycle from lurching forward due to the rider's unskillful operation.

WARNING:

Never start the engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and can cause death within a short time. Always operate the motorcycle in an area with adequate ventilation.

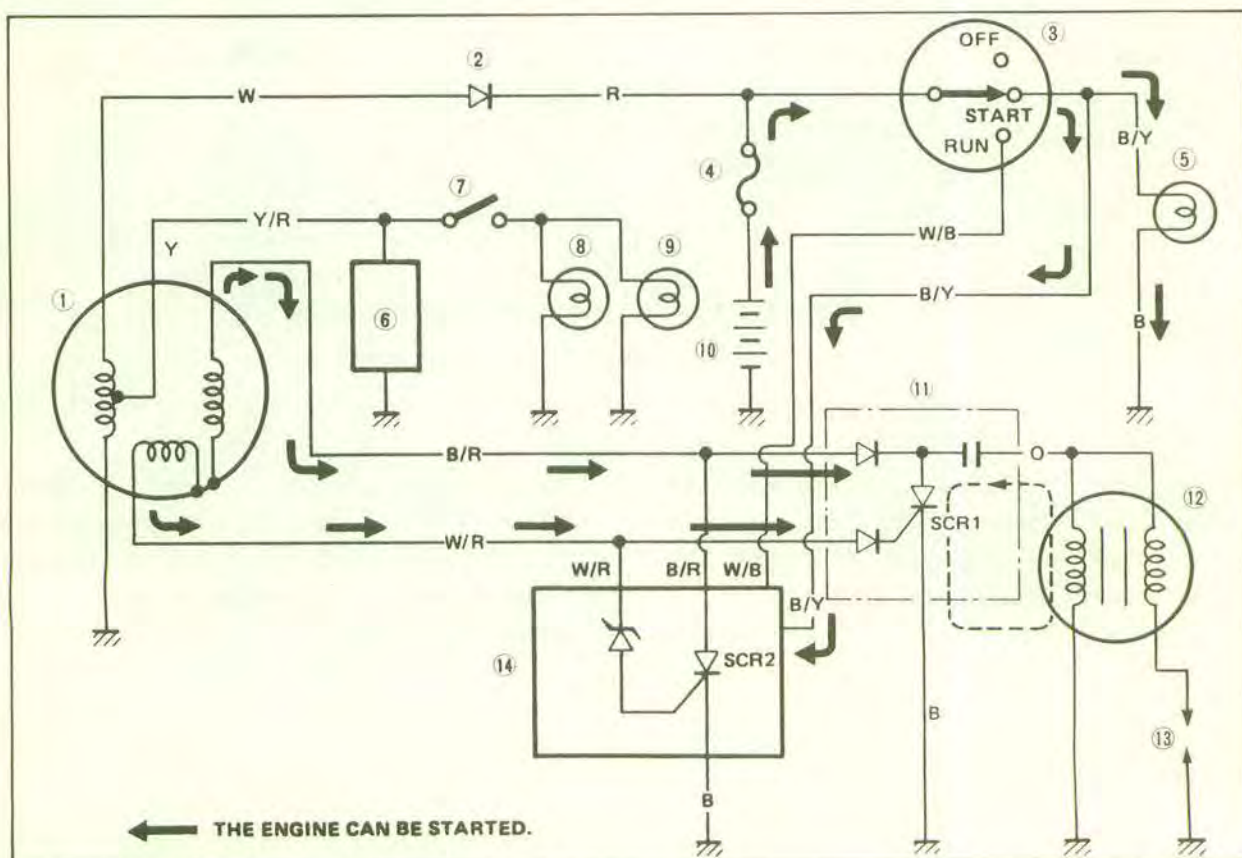


START: The start indicator light will come on in this position. The engine can be started, but the engine speed can not be increased by opening the throttle.

RUN: The motorcycle can be run by operating the throttle. The engine can not be started in this position.

Operation

1. When the kick starter is kicked or the starter button is depressed, the flywheel magneto turns and the charge coil generates a voltage of 150 to 350 volts which is stored in the condenser in the CDI unit. When a trigger voltage from the pulser coil turns on the SCR1 (silicon-controlled rectifier), the electricity stored in the condenser is discharged to the primary winding of the ignition coil. This induces a high voltage surge in the secondary winding and produces a spark across the spark plug gap.



1. CDI Magneto
2. Rectifier
3. Main switch
4. Fuse

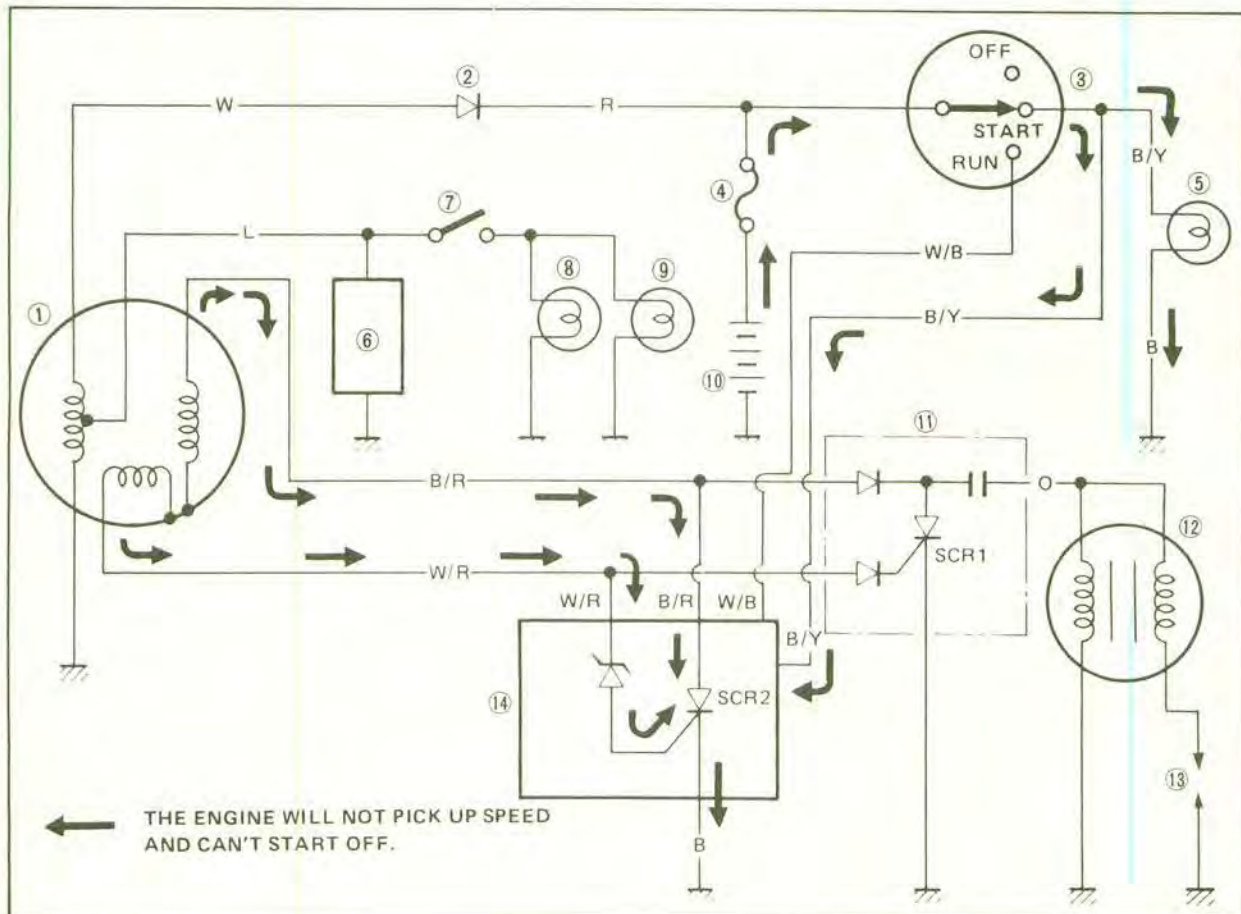
5. Start indicator
6. Regulator
7. Light switch
8. Taillight

9. Headlight
10. Battery
11. CDI Unit
12. Ignition coil

13. Spark plug
14. Ignition control unit

2. When the kick starter is kicked or the starter button is depressed with the key opened, the engine speed will increase slowly. But before the engine reaches the speed where the clutch engages, a trigger voltage from the pulser coil turns on the zener diode (ZD) which turns on SCR2. As a result, the voltage from the charge

coil is not supplied to the CDI unit; thus no spark is produced at the spark plug. As the engine speed decreases, both ZD and SCR2 turn off, and the engine runs normally by utilizing the CDI circuit. By alternating the operation specified in 1 and 2 above, the engine speed is controlled to $2,300 \pm 300$ r/min.



- 1. CDI Magneto
- 2. Rectifier
- 3. Main switch
- 4. Fuse

- 5. Start indicator
- 6. Regulator
- 7. Lights switch
- 8. Taillight

- 9. Headlight
- 10. Battery
- 11. CDI Unit
- 12. Ignition coil

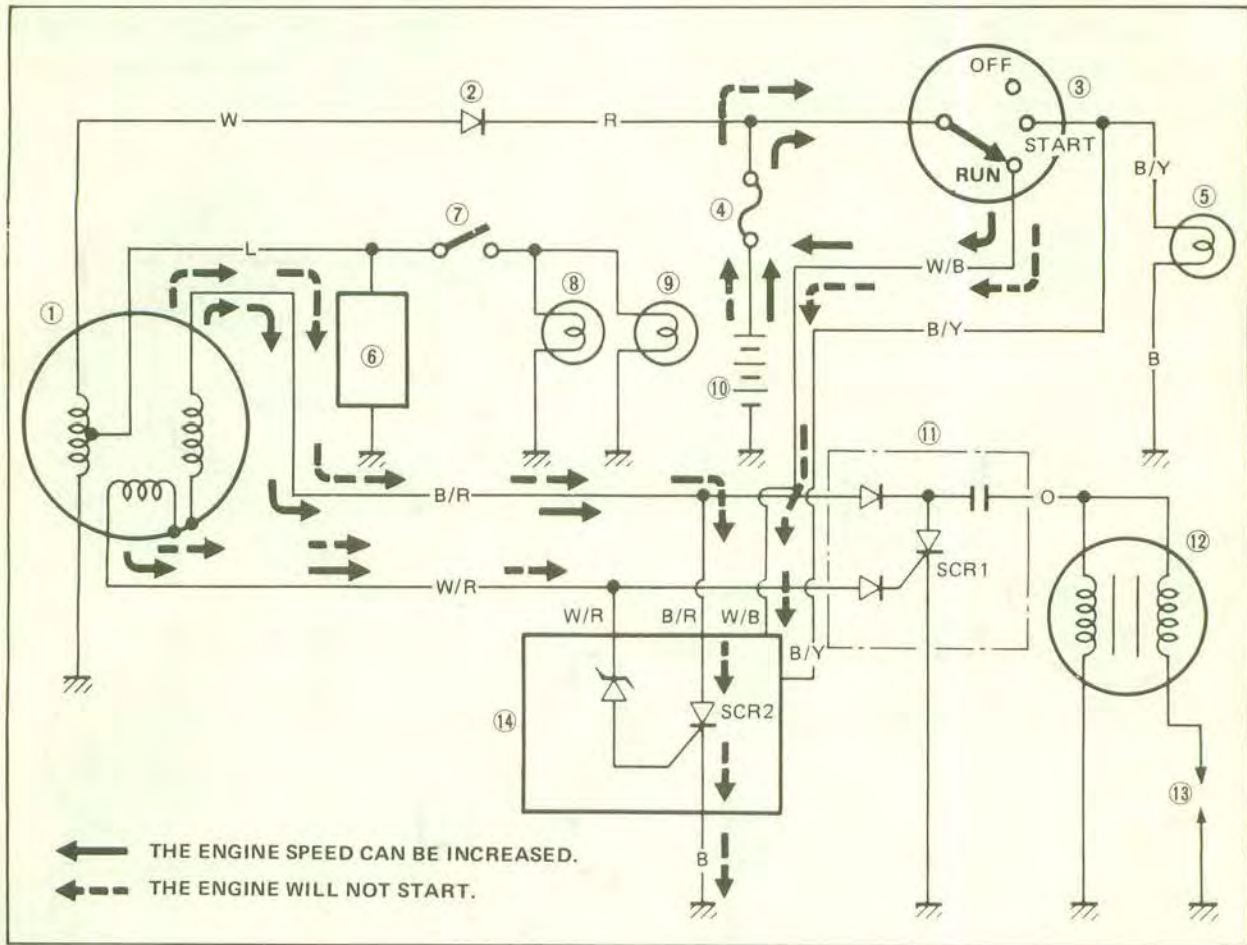
- 13. Spark plug
- 14. Ignition control unit

3. When the main switch key is turned from START to RUN, the engine speed control unit will not function, and the engine operates through the CDI circuit. The engine speed will increase in response to the throttle opening so that

you can start off. When the main switch key is turned from RUN to START, the engine speed control unit will function to control the engine speed. That is, the engine is placed under the condition described in 2 above.

4. When the kick pedal is kicked or the starter button is depressed with the main switch turned to RUN, the engine speed control unit turns on, and the voltage

generated by the charge coil flows through SCR2 to ground. This means that no spark is produced and thus the engine will not start.

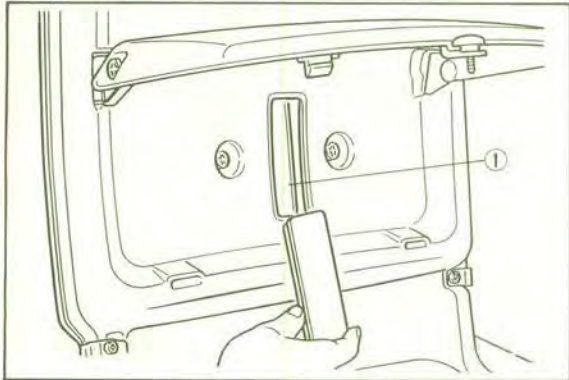


- | | | | |
|----------------|--------------------|-------------------|---------------------------|
| 1. CDI Magneto | 5. Start indicator | 9. Headlight | 13. Spark plug |
| 2. Rectifier | 6. Regulator | 10. Battery | 14. Ignition control unit |
| 3. Main switch | 7. Light switch | 11. CDI Unit | |
| 4. Fuse | 8. Taillight | 12. Ignition coil | |

MOTORCYCLE IDENTIFICATION

Vehicle Identification Number

The vehicle identification number is on the right-side of the steering head pipe.



1. Vehicle identification number

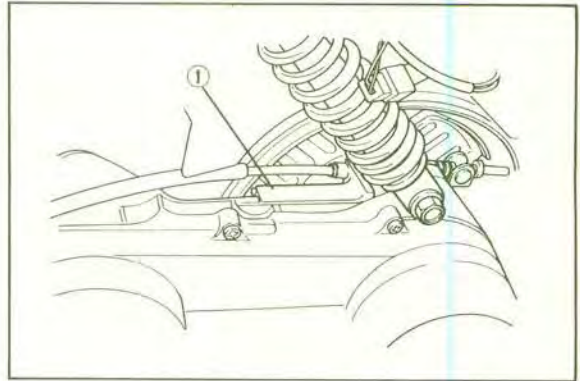
Engine Serial Number

The engine serial number is stamped into the elevated part of the right rear section of the engine.

Starting serial number:
CV80K.....13T-000101

NOTE:

The first three digits of these numbers are for model identification; the remaining digits are the unit production number.



1. Engine serial number

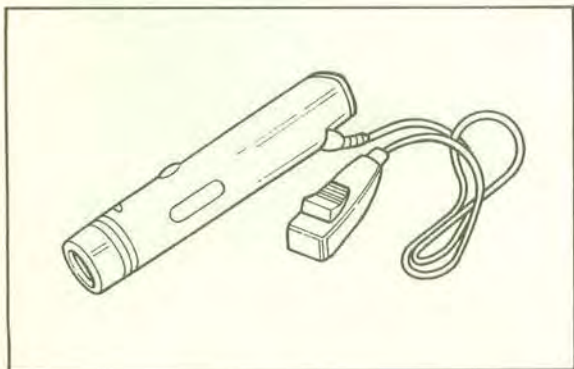


SPECIAL TOOLS

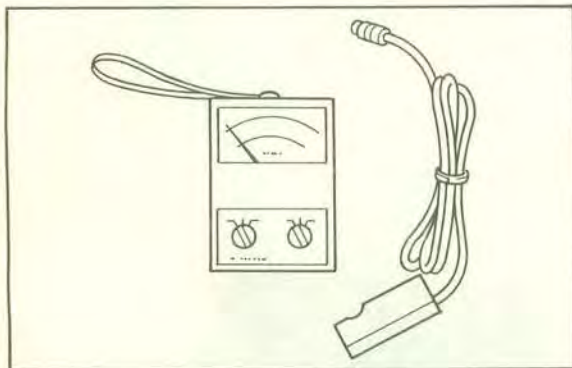
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.

For Tune-up

1. Timing light
P/N YU-33277

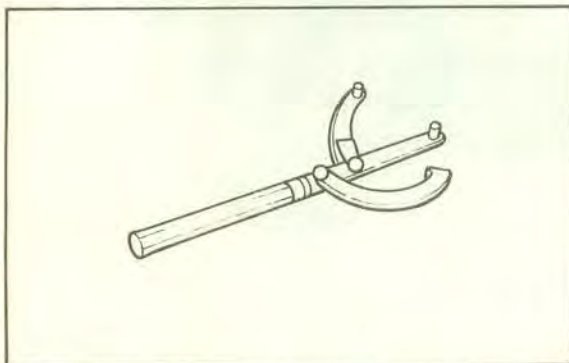


2. Engine tachometer
P/N YU-08036



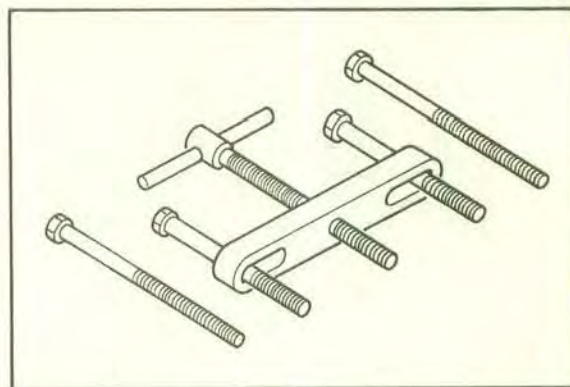
For Engine Service

1. Rotor holder
P/N YU-01235



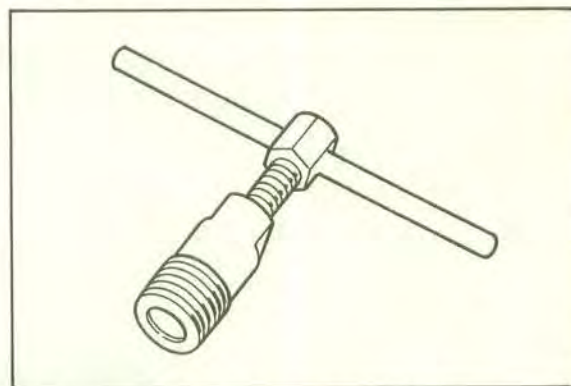
Use this tool to hold the flywheel magneto while removing or tightening the flywheel magneto securing nut.

2. Crankcase separator
P/N YU-01135



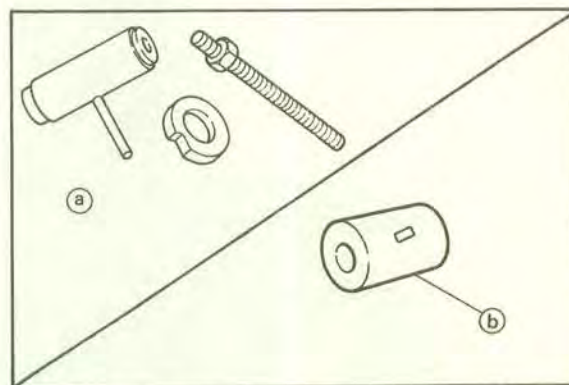
This tool is used to split the crankcase as well as remove the crankshaft from either case.

3. Flywheel puller
P/N YM-01189



This tool is used to remove the magneto flywheel.

4. Crankshaft installation set
P/N YU-90050

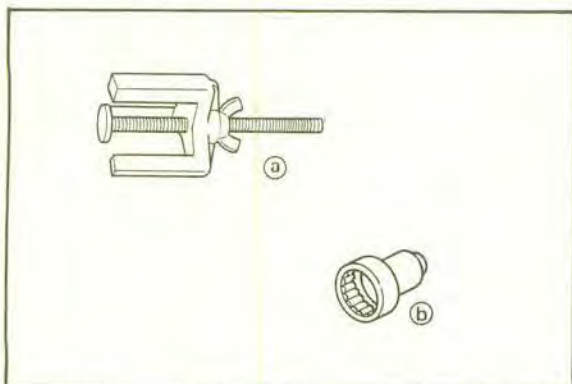


- a. Installing pot kit
P/N YU-90050
- b. Crank adapter
P/N YU-90063

Tools a and b are used to install the crankshaft.

5. Clutch removing tool

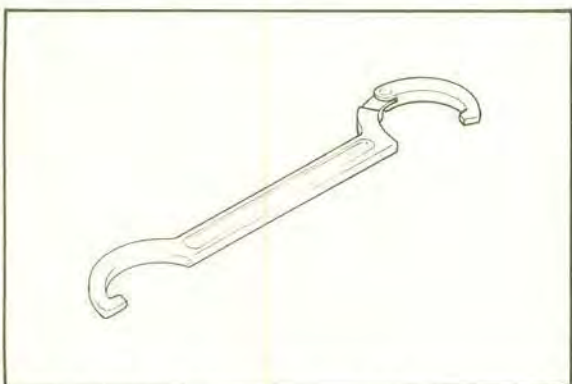
- a. P/N YS-28891
- b. P/N YM-04045A



Use this tool to hold the clutch while removing or tightening the clutch securing nut.

For Chassis Service

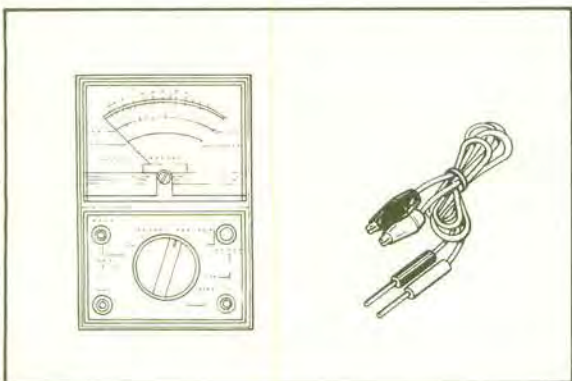
- 1. Steering nut wrench
P/N YU-01268



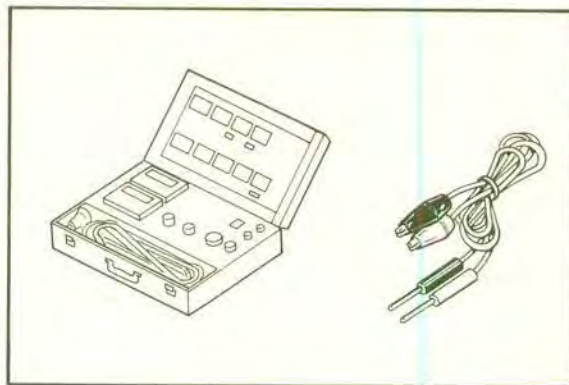
Use this tool to put the proper tension on the steering head bearing.

For Electrical Components

- 1. Pocket tester
P/N YU-03112



- 2. Coil tester
P/N YU-33261



Additional tools and supplies

- 1. Thickness gauge set
- 2. Torque wrench
- 3. Tire pressure gauge
- 4. Fluid measuring cup
- 5. Micrometer
- 6. Slide caliper
- 7. Cylinder gauge
- 8. Magnetic stand
- 9. Grease gun
- 10. Yamalube 4-cycle oil
- 11. Yamalube 2-cycle oil
- 12. Yamabond #4
- 13. Yamaha chain and cable lube or SAE 10W30 motor oil
- 14. Medium weight wheel bearing grease
- 15. Locktite stud' N Bearing Mount
- 16. Battery Hydrometer
(YU-03036)

CHAPTER 2. PERIODIC INSPECTIONS AND ADJUSTMENTS

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PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended inspection and adjustments. These preventative maintenance procedures, if followed, will insure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies not only to vehicles already in service, but also to new vehicles that are being prepared for sale. Any service technician performing preparation work should be familiar with this entire chapter.

MAINTENANCE INTERVALS CHARTS

Proper periodic maintenance is important. Especially important are the maintenance services related to emissions control. These controls not only function to ensure cleaner air but are also vital to proper engine operation and maximum performance. In the following maintenance tables, the services related to emissions control are grouped separately.

PERIODIC MAINTENANCE EMISSION CONTROL SYSTEM

Unit: km (mi)

No.	Item	Remarks	Initial break-in		Thereafter every
			1,000 (600) or 1 month	4,000 (2,500) or 7 months	3,000 (2,000) or 6 months
1	Spark plug	Check spark plug condition and plug gap. Replace plug every 3,000 (2,000).		Replace	Replace
2*	Fuel line	Check fuel hose and vacuum hose for cracks or damage. Replace if necessary.		○	○
3*	Fuel petcock	Check fuel filter screen. Clean it, if necessary	○	○	○
4*	Exhaust system	Check for leakage. Retighten, if necessary. Replace gasket(s), if necessary.		○	○
5*	Idle speed	Check and adjust engine idle speed.		○	○

* It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

GENERAL MAINTENANCE/LUBRICATION

Unit: km (mi)

No.	Item	Remarks	Type	Initial break-in		Thereafter every	
				1,000 (600) or 1 month	4,000 (2,500) or 7 months	3,000 (2,000) or 6 months	15,000 (9,500) or 24 months
1	Transmission oil	Warm-up engine before draining	Yamalube 4-cycle oil or SAE 10W30 SE motor oil or GL gear oil	Replace	Replace	Replace	
2*	Autolube pump	Check and adjust minimum pump stroke	—	○	○	○	
3*	Air filter	Check for clogging. If necessary clean and apply with oil	Foam-air-filter oil	○	○	○	
4	Control and meter cables	Inspect and lubricate thoroughly.	Yamaha chain and cable lube or SAE 10W30 motor oil	○	○	○	
5*	Brake system	Inspect and adjust. Replace shoes, if necessary.	—	○	○	○	
6*	Throttle	Adjust as necessary. Lightly lubricate.	Lithium base grease		○	○	
7	Brake pivot shaft	Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil		○	○	
8*	V-belt	Check cracks and wear. Replace if necessary.	—	Every 6,000 (4,000)			
9	Center stand pivot shaft	Apply chain lube lightly.	Yamaha chain and cable or SAE 10W30 motor oil		○	○	
10*	Steering bearings	Check steering assembly for looseness. Moderately repack every 15,000 (9,500)	Medium weight wheel bearing grease		○		Repack
11*	Wheel bearings	Check bearings for smooth rotation. Moderately repack every 15,000 (9,500)	Medium weight wheel bearing grease		○		Repack
12*	Battery	Check specific gravity and breather pipe for proper function.	—		○	○	

* It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

ANTICIPATED MAINTENANCE

The maintenance items in this table are set apart from the regular periodic maintenance items because of their anticipated need of irregular service intervals. The service interval

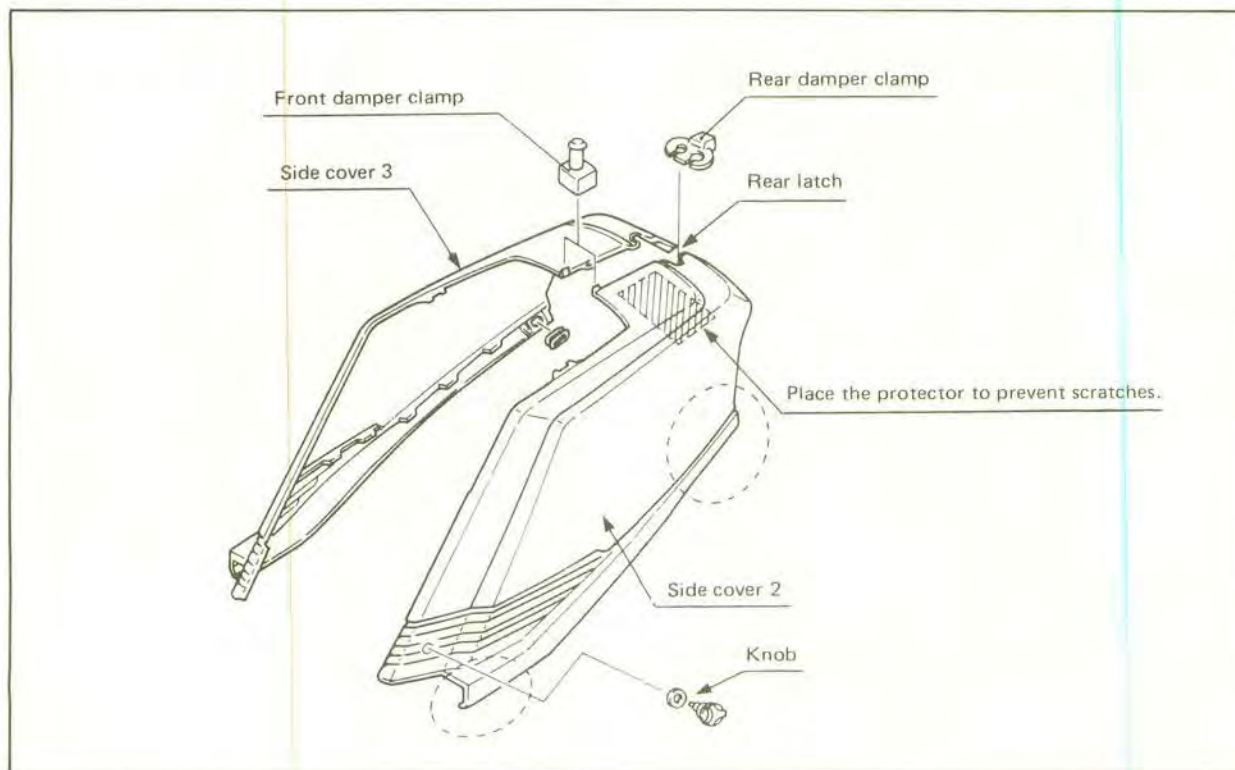
is dependent upon variable factors such as the severity of use, operating conditions, etc. Therefore, perform this maintenance when the described symptoms warrant it.

NO.	ITEM	REMARKS
1	Spark Plug	If any spark plug failure is noticed replace the spark plug. Symptoms indicating spark plug failure are anticipated to occur around 3,000 km (2,000 mi).
2	Decarbonization	If heavy power loss is evident, decarbonize the cylinder head, piston head, and exhaust system. Carbon build-up is anticipated to occur around 5,000 ~ 10,000 km (3,000 ~ 6,000 mi).
3	Piston	If the piston rattles, the vehicle becomes hard to start, appears to be lacking power, or becomes inoperative, repair as follows: replace the piston and piston rings, clean, hone, or replace the cylinder. These symptoms are anticipated to occur mainly below 500 km (300 mi).

1. Spark plug
 - a. Symptoms — If the spark plug becomes wet with fuel or oil, or receives an accumulation of carbon, the spark plug will become electrically shorted and ineffective. As a result, engine misfiring may occur, possibly the engine may suddenly stop, and restarting will be impossible. These symptoms are anticipated to occur at about 3,000 km (2,000 mi).
 - b. Maintenance criterion — If above mentioned symptoms are noticed, remove the spark plug and inspect the electrode for carbon bridging and/or oily electrode condition.
 - c. Maintenance — After inspection, replace plug if necessary.
2. Decarbonization
 - a. Symptoms — If a vehicle is driven habitually at low speed, the engine runs cold and thus carbon tends to build up on the cylinder exhaust port, cylinder head, piston head, exhaust passage, in the exhaust pipe, and in the silencer. With sufficient carbon deposits the exhaust passages become clogged and restricts the passage of exhaust gas. Eventually the engine will demonstrate poor performance, poor acceleration (20 to 30% down from original), afterburning, or after running. Sufficient carbon accumulation to justify decarbonization is anticipated to occur between 5,000 (3,100 mi) to 10,000 (6,200 mi) of operation.
 - b. Maintenance criterion — If any of the symptoms above are noticed, following procedures should be used;
 - 1) Check fuel flow.
 - 2) Check spark plug for color and carbon build-up. (In the case of heavy carbon build-up, spark plug shows black color and/or the carbon build-up evident.)
 - c. Maintenance — After this inspection, if decarbonization is deemed necessary, decarbonize the piston crown, exhaust port, cylinder head and exhaust passage of exhaust system by disassembling these components and carefully scraping the accumulated carbon with a round scraper.
3. Piston
 - a. Symptoms — If the engine develops a rattling piston noise, is difficult to start, provides markedly reduced performance (20% or more), and/or causes a sudden engine stoppage, the piston may be worn excessively. This may be the result of a number of conditions of improper carburetion, inadequate or improper lubrication and/or improper ignition timing. Such conditions can result in overheating and piston wear. These symptoms are anticipated to occur below 500 km (300 mi).
 - b. Maintenance criterion — If any of the above mentioned symptoms are noticed, following procedures should be used;
 - 1) Check fuel flow.
 - 2) Check for kick cranking resistance. (If the piston is worn, the resistance of the kick crank will be unusually heavy or unusually light.)
 - 3) Check the spark plug for unusual color or deposit. (If piston is worn, the spark plug may show a bright metallic color or deposit on the spark plug insulator.)
 - c. Maintenance — If an inspection reveals damage to the cylinder, bore or replace the cylinder, and replace the piston and piston rings. Make sure proper piston clearance is maintained.

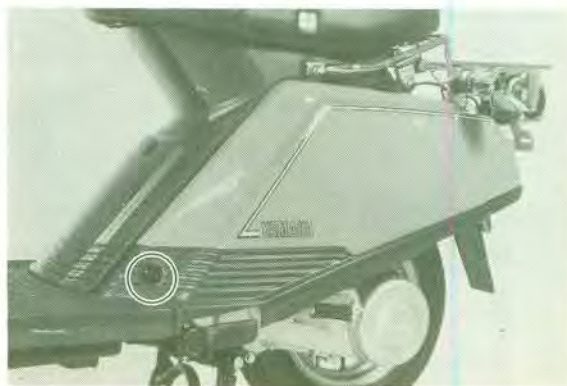
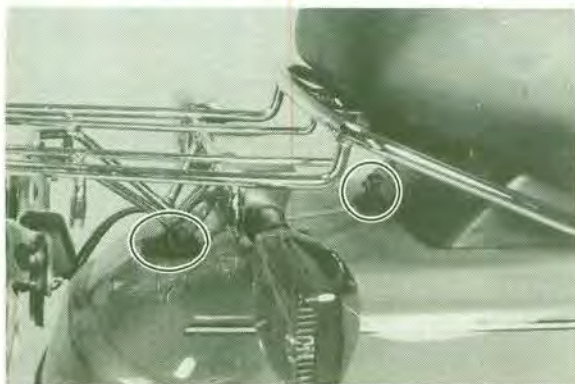
SIDE COVER – INSTALLATION AND REMOVAL

When checking parts (e.g., periodic inspection) or charging the battery, side cover 2 and 3 must be removed. To remove, follow the following procedure:



Removing side covers 2 and 3.

1. Remove the damper clamps positioned between side covers 2 and 3.



NOTE:

- To release the front damper clamp, push it to the front. (Don't push it sideways, or the hook could be damaged.)
- Avoid prying the clamp out using a slotted-head screwdriver, or the side cover may be scratched.



2. Loosen the knob and unhook the side covers.

Installing side covers 2 and 3.

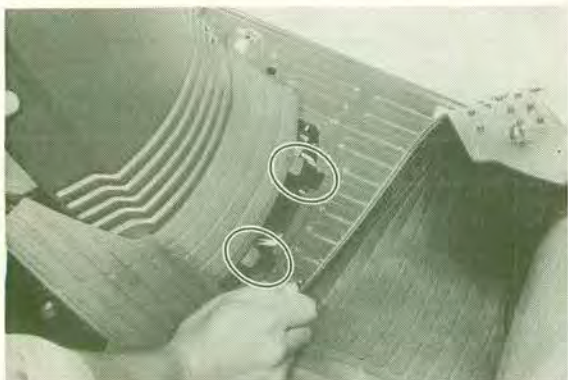
1. Fit the grommet (inside the side cover) at the rear and install the side covers.
2. Slightly lift up the mat 1 at the rear of the foot board and set the front of the covers, and put together the front parts of the covers.
3. Put together side covers 2 and 3.
(Fit the projection on side cover 2 to the recess in side cover 3.)
4. Insert the front and rear damper clamps and tighten the knob.

NOTE:

When installing or removing the side covers, be sure to hold the areas marked with a circle (○).

Installing side cover 4

1. Turn in both ends of mat 1.
2. Bring the cut in the footrest board to align with the projection of side cover 4.



3. Tighten side cover knob 1.
4. Align the projection on mat 1 with the hole in the footrest board, and install side cover 4.

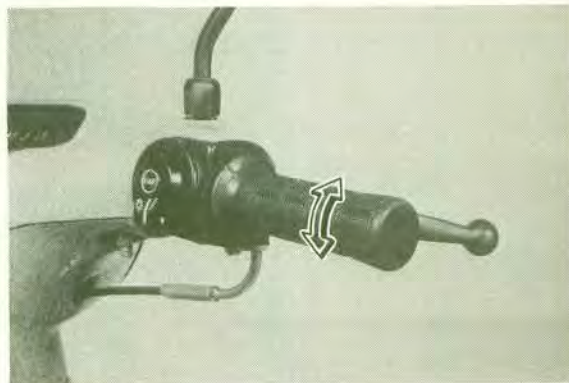


ENGINE

CARBURETOR

Throttle cable play

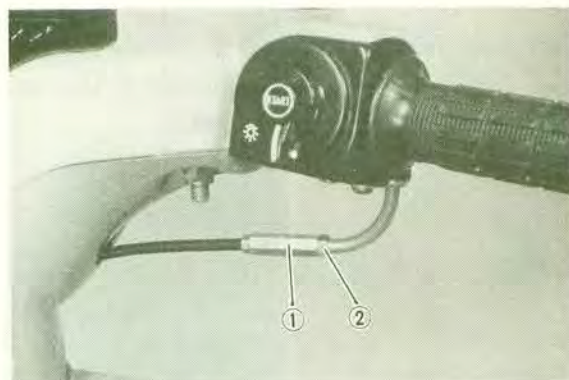
Check the free play of the throttle grip at its flange.



Throttle grip free play:

3 ~ 7 mm (0.12 ~ 0.28 in)

If play exceeds the above value, loosen the lock nut and adjust the play by turning the adjuster.



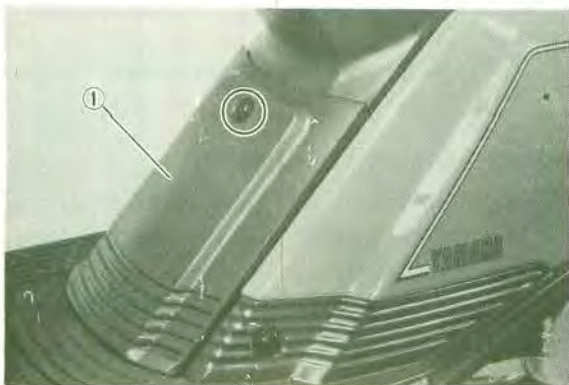
1. Lock nut 2. Adjuster.

NOTE:

- After adjusting, turn the handlebars to right and left and make sure that the engine idling does not run faster.
- Tighten the lock nut completely.

Idle-speed adjustment

1. Remove side cover 4.



1. Side cover 4

2. Start the engine and warm it up before setting idle speed.

NOTE:

A warm engine is defined as one which had been operated for about 3 minutes at 3,000 r/min with no load.

3. Set the idle speed to specified setting by turning the throttle stop screw in or out with the motorcycle in the upright position.

Idle speed: 1,350 ~ 1,500 r/min



1. Throttle stop screw

4. By turning the throttle grip, make sure the engine runs stably.

OIL PUMP

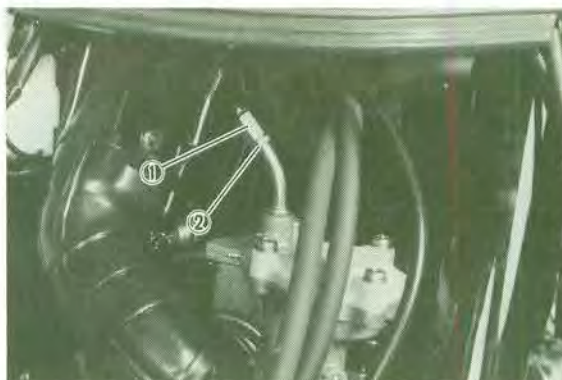
Oil pumpwire free play — checking and adjustment

1. Remove side cover 4.
2. Remove the grommet from the oil pump cover.



1. Grommet

3. Adjust throttle cable 2 that it has a play of 1 mm on the carburetor side.

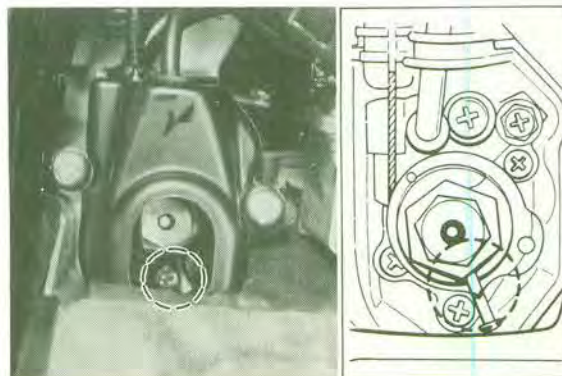


1. Adjuster

2. Lock nut

If it is impossible to produce a play of 1 mm, loosen the lock nut and make the necessary adjustment by turning the adjuster.

4. While keeping a play of 1 mm on the carburetor side, bring the match mark on the oil pump to align.



5. If the match mark is not aligned, loosen the pump cable lock nut and adjust by turning the adjuster.



1. Lock nut 2. Adjuster

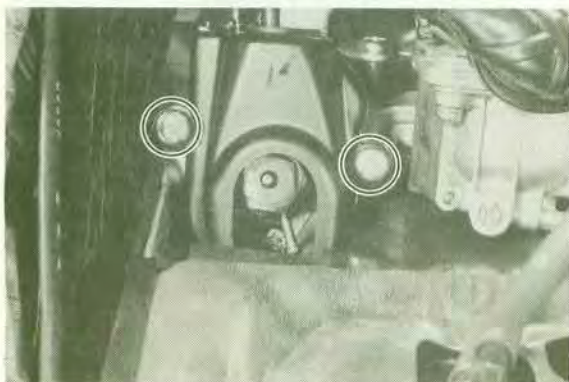
NOTE:

After adjusting, be sure to tighten the lock nut completely.

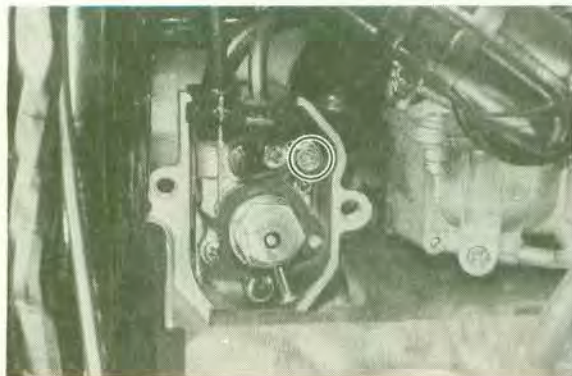
Air bleeding

The oil pump must be bled after the oil pipe or oil pump is reinstalled.

1. Remove the oil pump cover.



2. Remove the bleeder bolt.
3. When the bleeder bolt is removed, oil containing air bubbles flows out. Let the oil flow out until air bubbles completely disappear, and reinstall the bleeder bolt.



NOTE:

- Place a rag or oil can under the engine.
- Add the Autolube oil to the oil tank before bleeding.
- Thoroughly clean the engine exterior of oil.

ENGINE OIL (AUTOLUBE OIL)

We recommended Yamalube 2-cycle oil. If for any reason you should use another type, use air cooled 2-stroke engine oil or a 2-cycle engine oil labeled "BIA certified for service TCW".

TRANSMISSION OIL REPLACEMENT

Replacement intervals

Replace the gear oil according to the following chart.

	After first one month or 1,000 km (600 mi)	Every 3,000 km (2,000 mi)
Gear oil	Replace	Replace

Recommended oil

Yamalube 4-cycle oil or SAE 10W30 type SE motor oil or GL gear oil

Draining the oil

1. Remove the drain bolt on the bottom of the gear case and drain the oil.



1. Drain bolt

2. After draining, clean the drain bolt, install the bolt, and tighten to specification.

Drain bolt tightening bolt:
20 Nm (2.0 m·kg, 14.5 ft·lb)

Refilling with oil

1. Remove the oil plug and add oil.



1. Oil plug

NOTE:

- To add oil, use an oiler.

Oil capacity	When replacement	180 cm ³ (cc) (6.3 Imp oz, 0.03 US oz)
	When overhauling	200 cm ³ (cc) (7.0 Imp oz, 6.7 US oz)

2. Clean the oil plug, install and tighten. Start the engine and check for oil leakage.

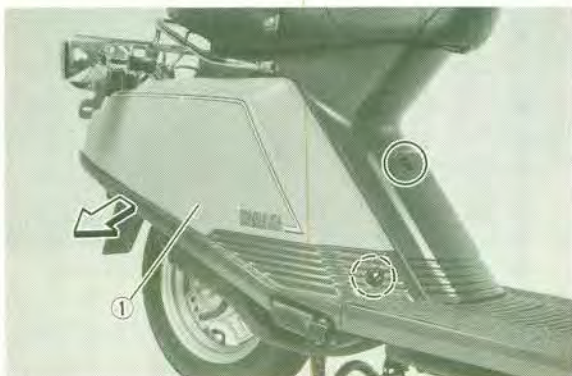
CAUTION:

- Thoroughly clean off the case cover of oil.
- Wipe off any oil spilt on tires or the brake plate.

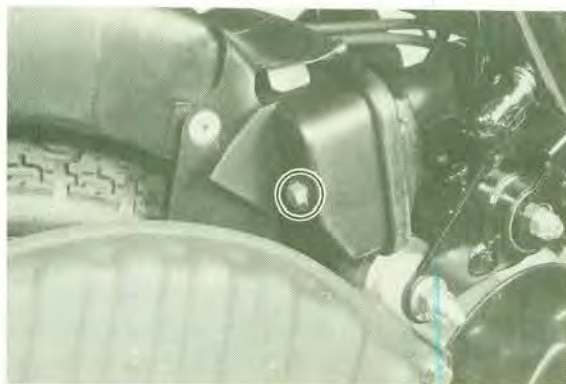
AIR CLEANER

Cleaning

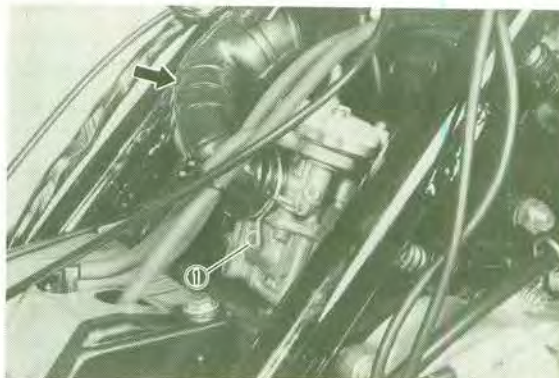
1. Remove side covers 3 and 4.



2. Remove the bolts securing the air cleaner case.

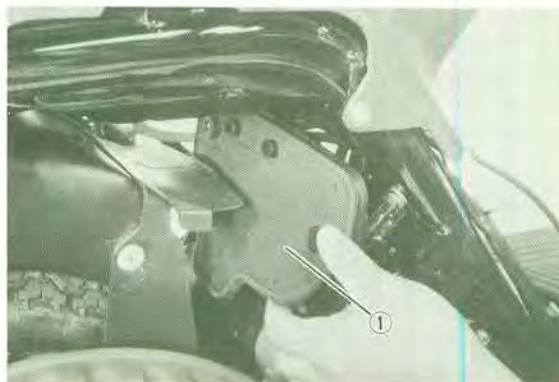


3. Remove the air cleaner joint.



1. Clip

4. Place the air cleaner case to the rear, remove the cleaner case screws, and remove the element.



1. Element

5. Wash the element with solvent.
6. Dry the element, apply the foam-air-filter oil, wrap it with a clean cloth, and squeeze it lightly.



NOTE: _____

- Don't squeeze the element in the manner as shown below.



- Replace the element, if damaged.
- After installing the element, make sure it is positioned correctly in place.

Exhaust sytem

1. Tighten the joint bolts and nuts.
2. Replace the joint gaskets, if necessary.

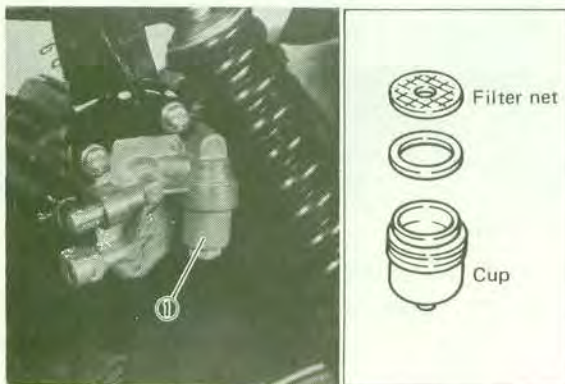
CHASSIS

FUEL COCK

Cleaning the fuel cock strainer

(Clean the strainer after draining the fuel.)

1. Remove side cover 2.
2. Remove the fuel cock filter cup, and wash the cup and filter net.



1. Filter cup

3. Install the filter net and cup, and install side cover 2.

CAUTION: _____

- Keep away from fire.
- Take care not to damage the O-ring.
- Always use a new O-ring.

Inspection intervals:

Initial:	After first 7 months or 4,000 km (2,500 mi)
Thereafter:	Every 6 months or 3,000 km (2,000 mi)

Fuel hose

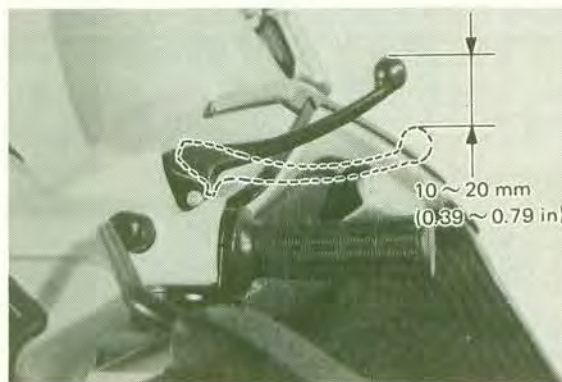
Check the fuel hose.

1. Visually check for cracks or damage.
2. If any defect is found, replace the hose.

BRAKES

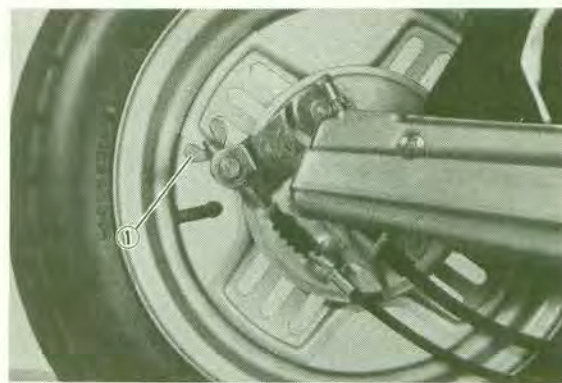
Front brake

Check the free play of the brake lever (right).



Free play: 10 ~ 20 mm (0.4 ~ 0.8 in)

If the play is out of the specified range, adjust by turning the adjuster.



1. Adjuster

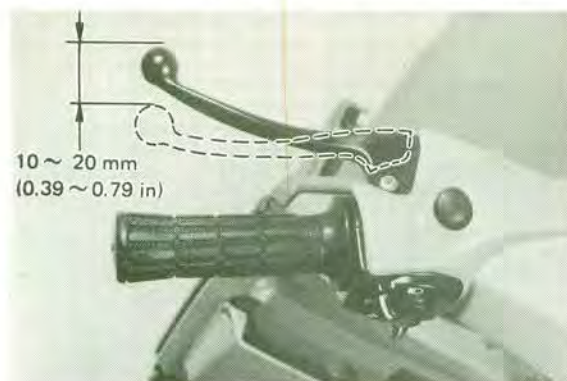
Adjuster	Tightening	Play is decreased
	Loosening	Play is increased

NOTE: _____

After adjusting, check the operation of the brake light.

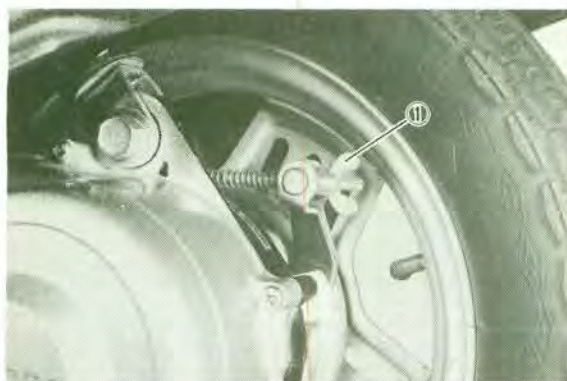
Rear brake

Check the free play of the brake lever (left).



Free play: 10 ~ 20 mm (0.4 ~ 0.8 in)

If the play is out of the specified range, adjust by turning the adjuster.



1. Adjuster

Adjuster	Tightening	Play is decreased
	Loosening	Play is increased

NOTE:

After adjusting, check the operation of the brake light.

TIRES

WARNING:

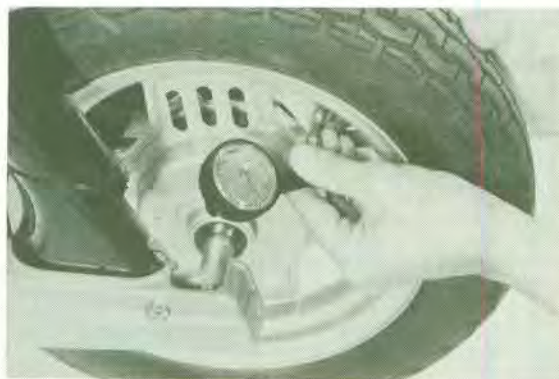
1. Proper loading of your motorcycle is important for the handling, braking, and other performance and safety characteristics of your motorcycle. **NEVER OVERLOAD YOUR MOTORCYCLE.** Make sure the total weight of the accessories, etc. do not exceed the maximum load limits. Operation of an overloaded motorcycle could cause tire damage, an accident, and injury.
2. Improper tire pressures greatly affect tire life and handling. Check tire pressures prior to each trip and adjust properly if necessary.

If tire pressures are too high, shocks from the road will not be damped and will be carried to the frame and handlebars, thus adversely affecting riding comfort. In addition, motorcycle stability will be poor when making a turn.

If tire pressures are too low, tires will be deformed greatly, thus shortening tire life. When braking the wheels, tires could slip over wheel rims and tire tubes could be broken. When turning the corner or the curve, the motorcycle could easily turn over.

Tire pressure

When checking tire pressure, the tire must be cold. Using an air gauge, measure tire pressure.



Tire pressure	Front	Rear
Solo rider	98.1 kPa (1.0 kg/cm ² , 14.2 psi)	147 kPa (1.5 kg/cm ² , 21.3 psi)
With passenger	98.1 kPa (1.0 kg/cm ² , 14.2 psi)	220 kPa (2.25 kg/cm ² , 32.0 psi)
Tire size	3.50-10-4PR	3.50-10-4PR

Checking

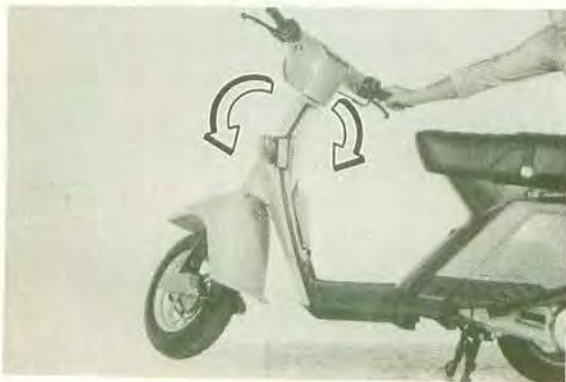
1. If a tire is cracked, damaged, or abnormally worn, replace it. If a tire is imbedded with pebbles or metal pieces, remove them.
2. If the groove depth in the tread center is 0.8 mm (0.03 in), replace the tire.
3. If the wear indicator is exposed to view, replace the tire.



HANDLEBARS

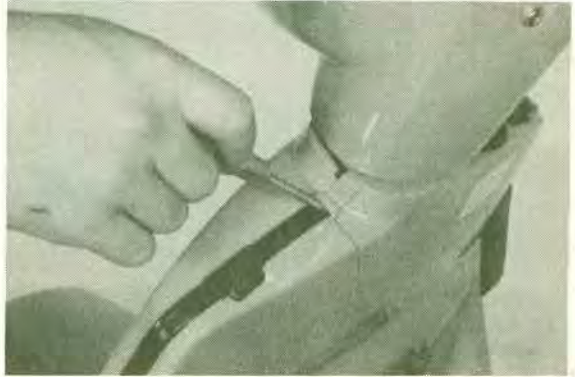
Checking

1. Place the motorcycle on the centerstand, raise the front wheel off the ground, and check that the handlebars turn smoothly and have no excessive play.

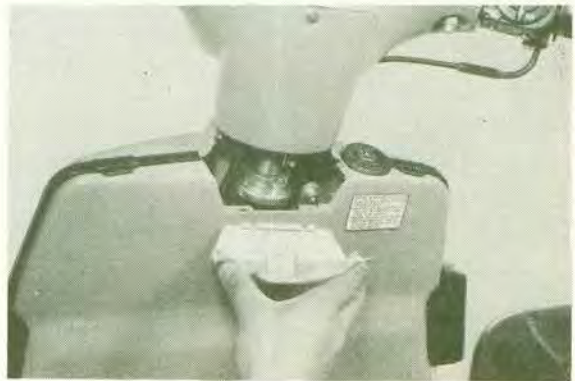


NOTE:

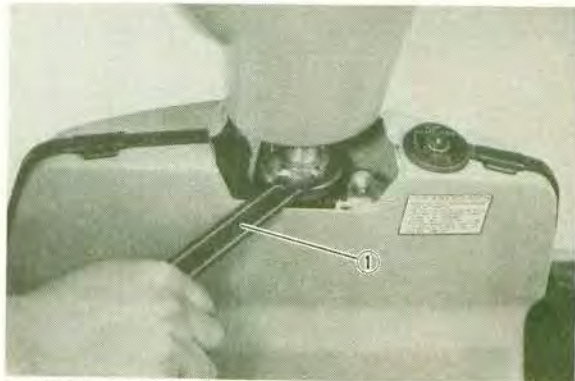
- Removing the handle cover cap
 - a. Insert a slotted-head screwdriver into the two cuts in the panel 2 alternately, and pry out the handle cover cap.



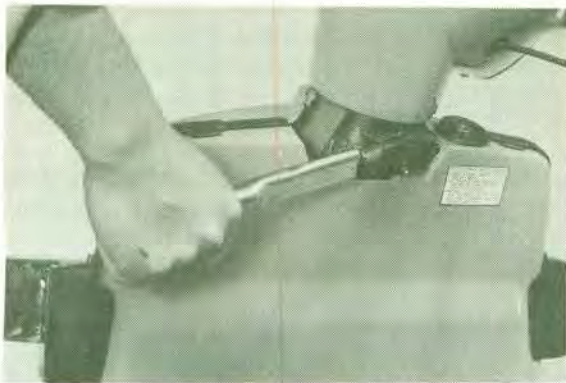
- b. Hold both ends of the handle cover cap, and remove the cap by pushing it diagonally to the rear.



2. If the handlebars are stiff to turn or have excessive play, check the tightness of the steering fitting nut and handlebar mounting bolt.



1. Steering nut wrench



3. Tighten the steering fitting nut and handlebar mounting bolt.

Tightening torque:

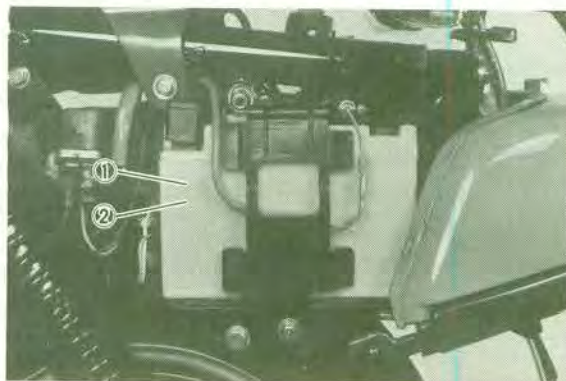
34 Nm (3.4 m·kg, 25 ft·lb)

ELECTRICAL

BATTERY

Checking the battery fluid level

1. Remove side cover 2.
2. Check to see that the fluid level is between the upper and lower level lines.



1. Upper level 2. Lower level

If the fluid level is lower than the lower line, add distilled water.

NOTE:

To check the level, use the center stand on level place.

Checking the specific gravity of the battery fluid

1. Disconnect both positive and negative wires of the battery.
2. Remove the battery case mounting screws, and remove the battery.

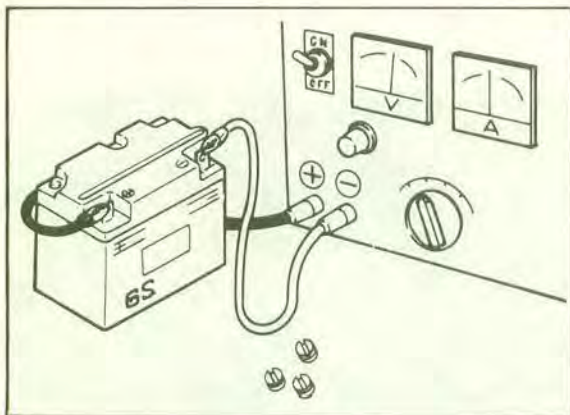


Specific gravity: 1.280 at 20°C (68°F)

If the specific gravity measured is less than the above figure, recharge the battery.

Recharging

Charge the battery at the 10-hour rate (at an amperage of 1/10 of the battery capacity) until the specific gravity reaches the specified value.



Item	Description
How to connect	• Connect + wire of charger to + wire of battery. • Connect - wire of charger to - wire of battery.
Charging current	1.1A or less
Charging is over	Specific gravity 1.280 at 20°C (68°F)

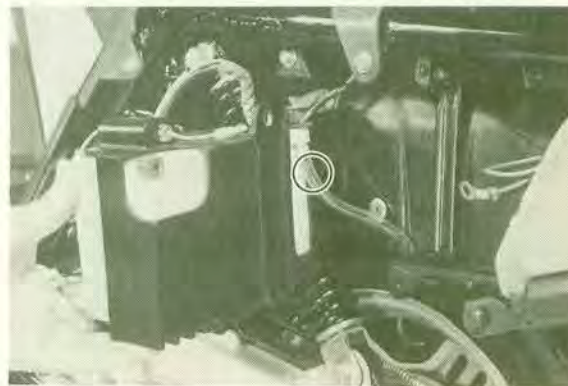
CAUTION:

- Keep off fire.
- Select a well-ventilated place.
- Remove the battery caps.
- Avoid quick charging, or the battery could be ruined.
- Be sure to use the charger switch to turn on and off.
- Don't allow the fluid temperature to rise to higher than 45°C (113°F).
- Replace the battery, if it has sediments.
- Replace the battery, if it shows a sign of sulfation.
- After charging, install the caps and wash the battery with water.

NOTE:

- If the breather pipe is improperly connected or routed, the battery fluid may spill on tires, wheels, or case cover, thus causing corrosion.
- A broken or clogged breather pipe may cause damage to the battery.

- The breather pipe has a slit at a point 30 mm (1.2 in) from its end on the battery side. Be careful not to connect it the other way round.
- Be careful not to touch the slit area because it is often wet with the battery fluid.



CAUTION:

TAKE SPECIAL CARE WHEN HANDLING THE BATTERY.

Be sure to follow these instructions.

The battery emits combustible gas, so if it is handled improperly, explosion could occur, causing injuries.

- Keep away from fire-spark. Never smoke or produce a near the battery when charging.
- The battery should be charged in a well-ventilated area, or explosion could occur.

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing.

Antidote:

EXTERNAL — Flush with water.

INTERNAL — Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately.

Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc. away. Ventilate when charging or using in closed space. Always shield eyes when working near batteries. **KEEP OUT OF REACH OF CHILDREN.**

SPARK PLUG

Checking

1. After a run of initial 1,000 km (600 mi), check the discoloration of the spark plug and clean it.
2. Remove the spark plug cap and remove the plug.



If the spark plug has heavy carbon deposits, clean using a plug cleaner or wire brush.



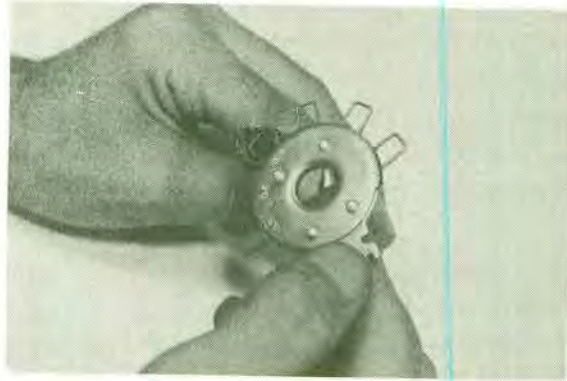
3. Whenever the spark plug is replaced or cleaned, measure the plug gap, and if incorrect, readjust the plug gap.
4. Replace the spark plug when the machine has travelled the specified distance. When replacing the spark plug, always use the proper type.

Replacement limit:

Initial 4,000 km (2,500 mi) and thereafter every 3,000 km (2,000 mi)

Spark plug gap

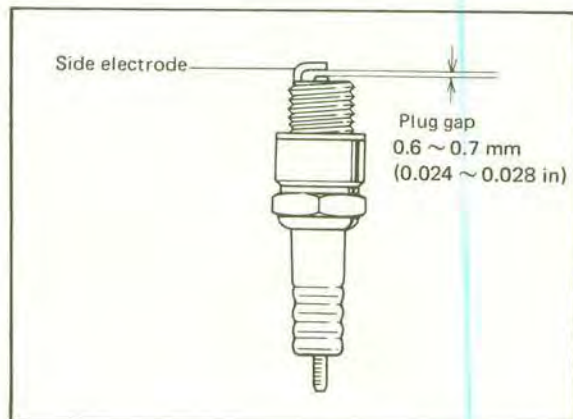
Check the plug gap.



Spark plug gap:

0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

Adjust the plug gap by bending in or out the side electrode.

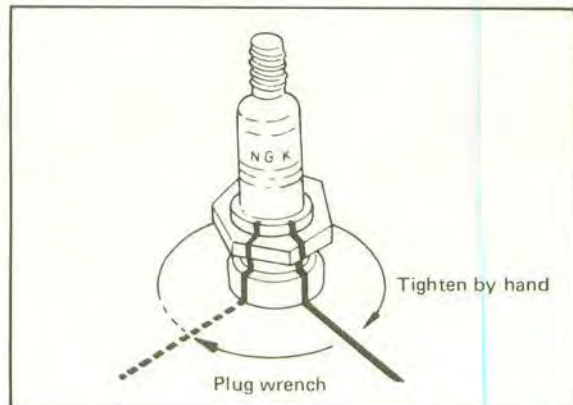


Standard spark plug

BP7HS (NGK)

Tightening

1. First screw it in with your fingers until tight, and then tighten it to specification using a plug wrench.



Tightening torque:
20 Nm (2.0 m·kg, 14 ft·lb)

NOTE:

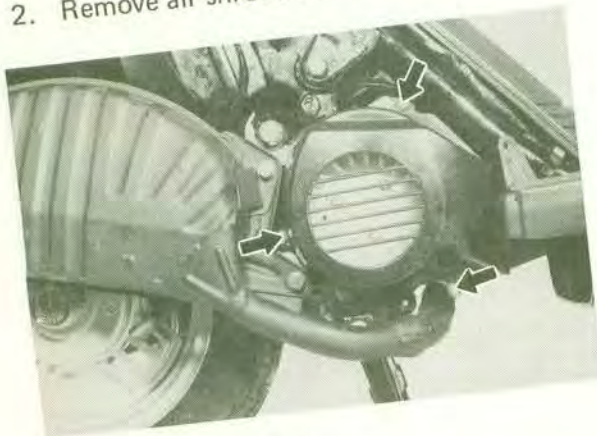
Don't tighten the spark plug using a plug wrench at the first time. (Threads of the spark plug hole in the cylinder head could be damaged.)

2. Install the plug cap and install side cover 4.

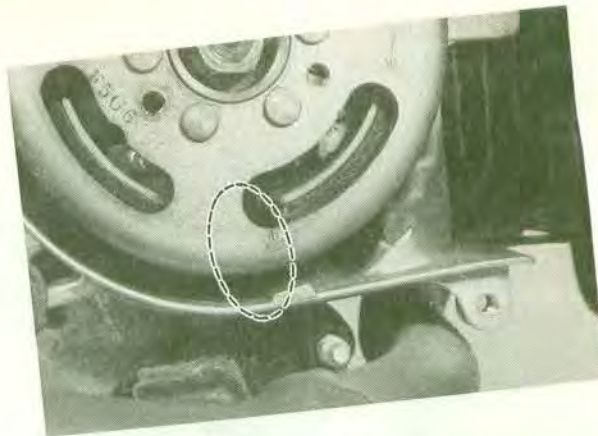
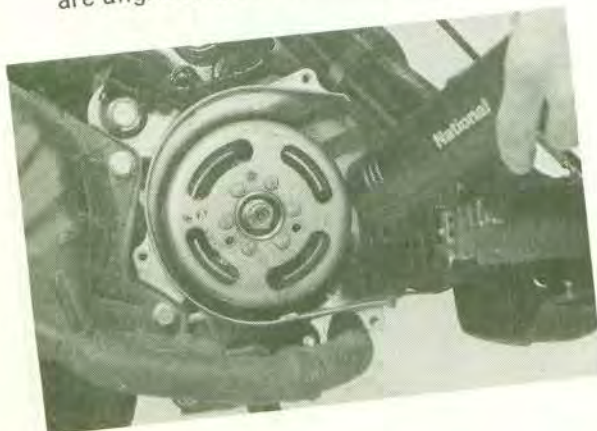
IGNITION TIMING

Checking

1. Remove side covers 3 and 4.
2. Remove air shroud 3.



3. Remove the fan.
4. Set the timing light.
5. Start the engine.
6. The mark on the magneto should align with the mark on the crankcase. If marks are aligned, ignition timing is correct.



Headlight beam adjustment

1. Horizontal adjustment:

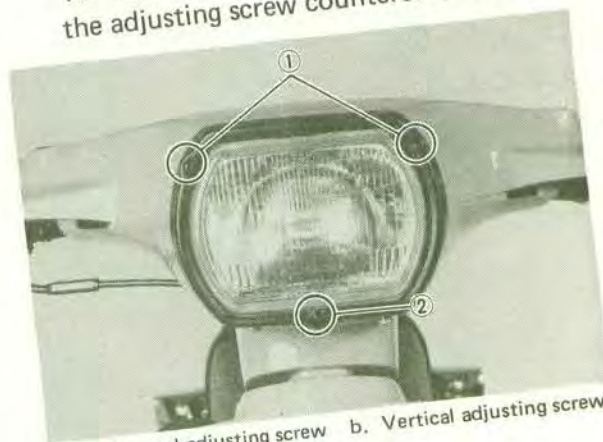
To adjust the beam to the left, turn the adjusting screw clockwise.

To adjust the beam to the right, turn the screw counterclockwise.

2. Vertical adjustment:

To adjust the beam to the upper, turn the adjusting screw clockwise.

To adjust the beam to the lower, turn the adjusting screw counterclockwise.



a. Horizontal adjusting screw b. Vertical adjusting screw

CHAPTER 3. ENGINE OVERHAUL

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NOTES ON MAINTENANCE

1. Thoroughly clean the frame and engine of dirt and dust in order to prevent them from entering the inside of the engine.



3

2. Keep away from fire.



3. When special tools are required, be sure to use them so that damage to motorcycle parts can be avoided. Always use the right tools and instruments for the right purposes. (Avoid using an open-end wrench as much as possible, in place of a box or socket wrench.)

4. Always use a new gasket (packing), O-ring, cotter pin, circlip, lock washer, etc. for repairs.

Also use genuine Yamaha parts, oil and grease, or those recommended by Yamaha. Avoid using other brands.



5. During service, take special care so that you don't get injured or burnt from the engine, exhaust pipe or muffler.



6. Notes on disassembly and reassembly
 - a. Place all removed parts neatly and separately in groups so that they will not be confused or lost.
 - b. Wash engine and transmission parts in a solvent and blow them out dry with compressed air.
 - c. While checking the smooth movement of parts, install them.
 - d. Oil contact surfaces of moving parts.
 - e. Tighten parts to specification.



7. Take care so that the battery fluid does not spill on your clothes or the motorcycle.

CAUTION:

Take the following precautions.
The battery emits inflammable gases.
Exercise special care, or explosion could occur.

- Keep away from fire-sigarettes, electric sparks, etc.
- When charging the battery, select a well-ventilated place. Never attempt to charge the battery in a closed place.
- Take special care so that the battery fluid (diluted sulfuric acid) does not splash to your skin, eyes or clothed.
You may be burned or injured in the eyes.
First aid:
 - Should the battery fluid splash to your skin or clothes, wash it out with plenty of water.
 - Should it splash to your eye, wash it away with water immediately and go to a doctor.



8. Wax
Application of automobile wax containing polishing powder will discolor plastic parts or resin-coated parts.
9. Key to symbol mark
The following symbols are used in this Service Manual to indicate service instructions and procedures.

Symbols	Description
	Parts can be serviced without removing from the motorcycle.
	Engine can not be serviced without removing from the machine.
	Use special tools.
	Apply grease.
	Always use a new part.
	Apply oil.

ENGINE OVERHAUL

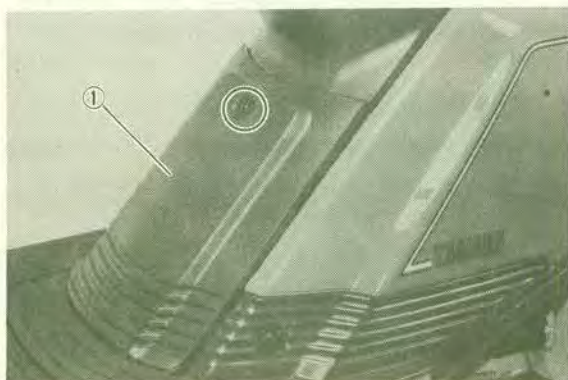
Engine Removal

NOTE:

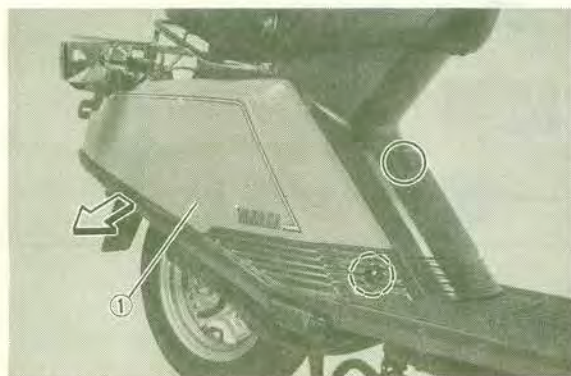
Before removing the engine, make sure the main switch is turned off. All the removed parts should be kept in groups.

Side covers

1. Completely loosen the knob on side cover 4 and remove the cover.
2. Completely loosen the knobs on side covers 2 and 3, and remove the covers.



1. Side cover 4



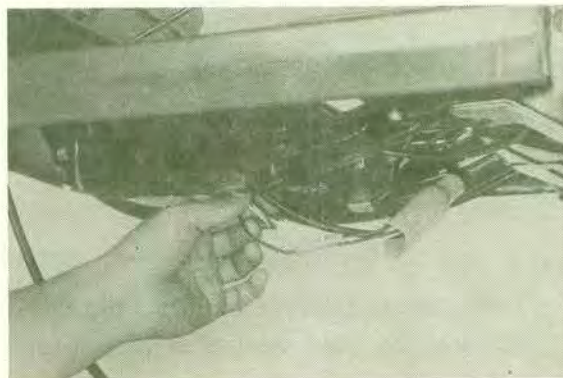
1. Knob

Spark plug and plug cap



Auto-choke pipes, wiring, and cables

1. Remove the auto-choke pipes.
2. Disconnect couplers and ignition coil leads from the CDI magneto.



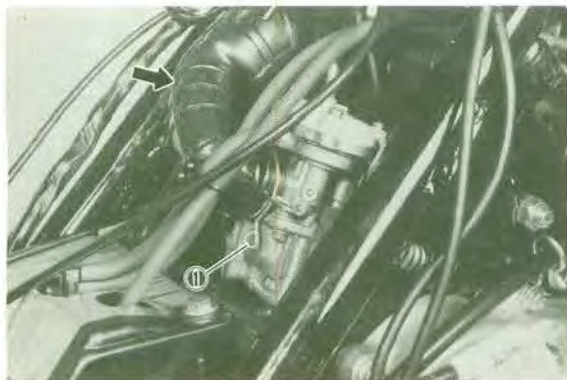
3. Disconnect the fuel pipe on the fuel cock side and at the same time, disconnect the vacuum pipe on the fuel cock side.



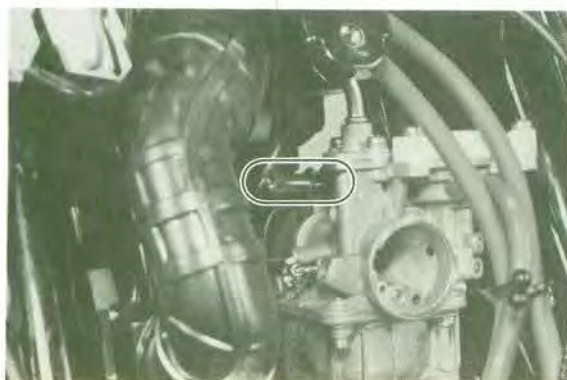
1. Fuel pipe 2. vacuum pipe

Carburetor

1. Remove the air cleaner joint.



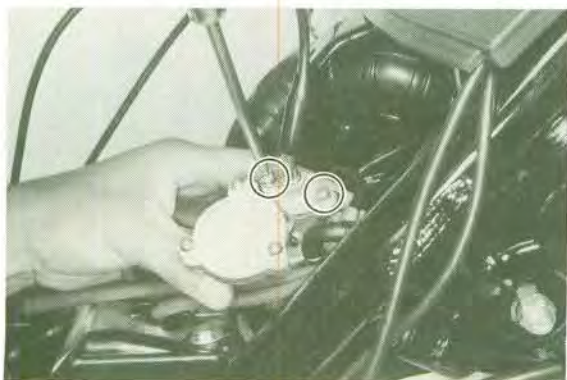
1. Clip
2. Loosen the hose clamp and remove the carburetor.



3. Disconnect the oil delivery pipe on the carburetor side.

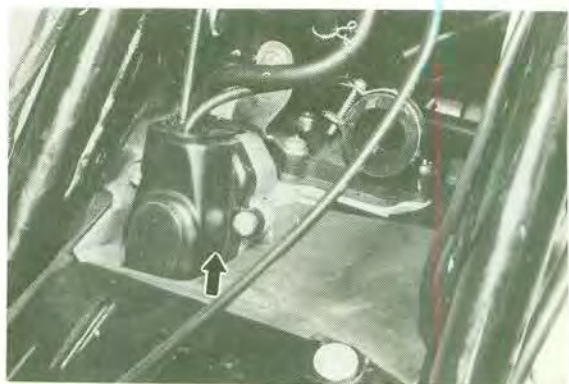
NOTE:

Be careful so that the oil delivery pipe clip is not lost.

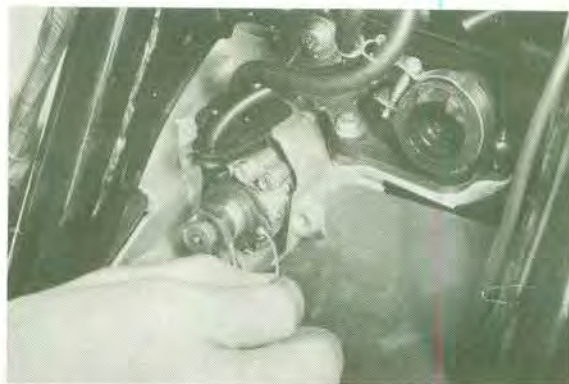


Oil pump cable

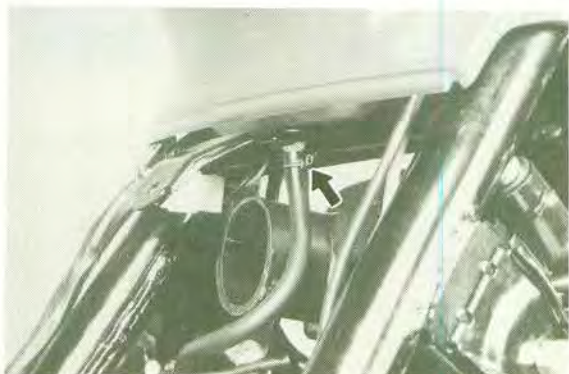
1. Remove the oil pump cover.



2. Remove the oil pump cable.



3. Remove the oil pipe on the oil tank side.



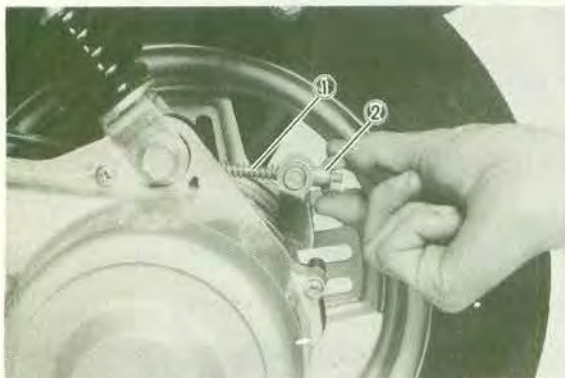
NOTE:

Plug the oil tank outlet.



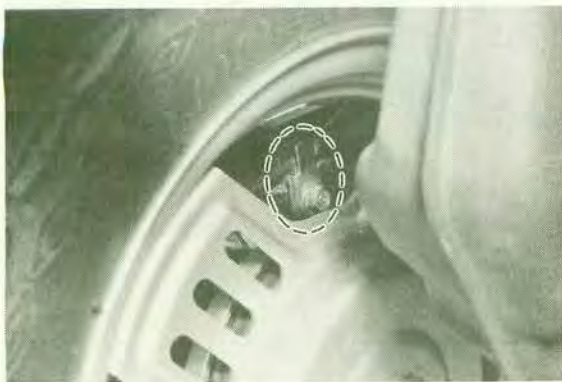
Rear brake cable

1. Remove the brake adjuster and spring.



1. Spring 2. Adjuster

2. Remove the cable from the clamp.



Air cleaner case

1. Remove the cleaner mounting screw.

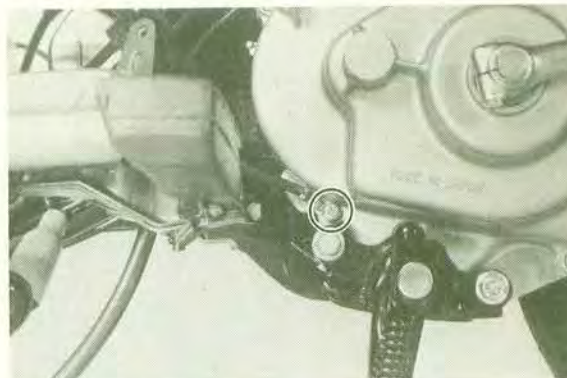


2. Remove the air cleaner case.



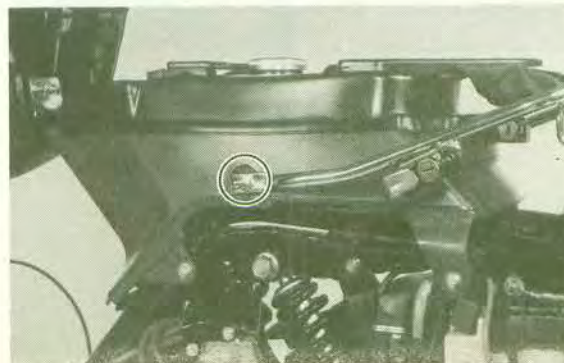
Ground lead

1. Remove the ground lead.

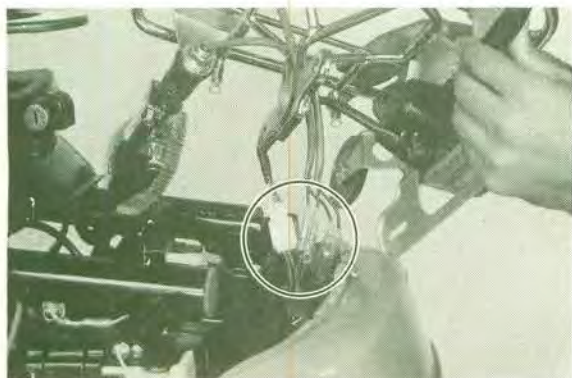


Starter switch lead

1. Remove the rear carrier.



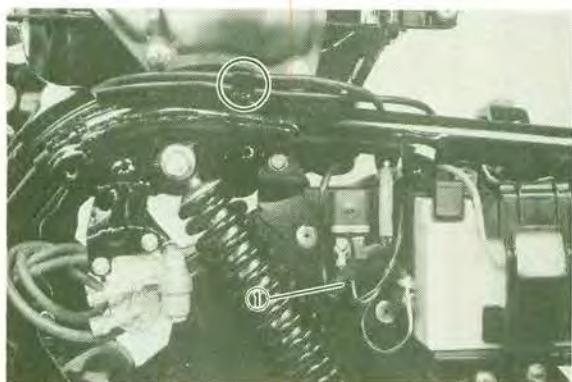
2. Disconnect the couplers and leads of tail light and flasher lights.



3. Remove the fuel tank covers.



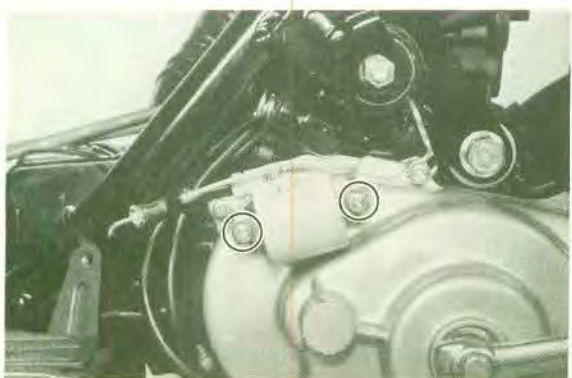
4. Disconnect the starter switch lead.



1. Starter switch lead

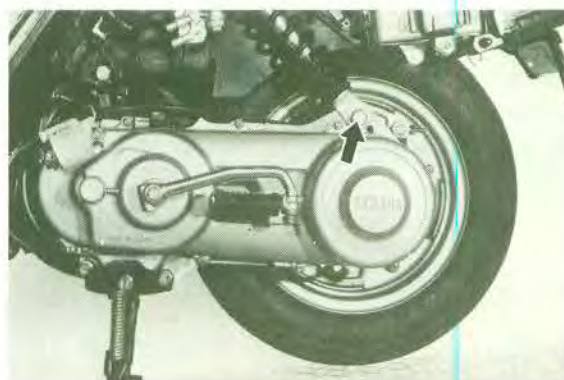
Ignition coil

Remove the ignition coil from crankcase 1.



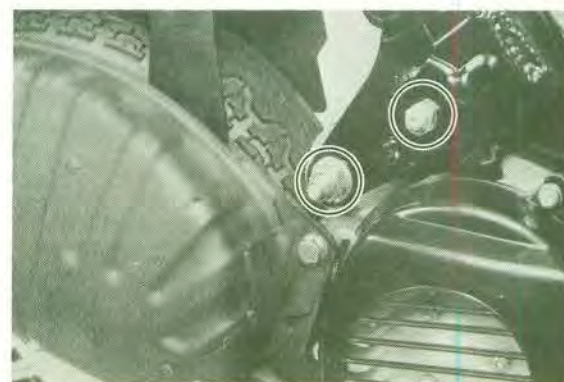
Rear shock absorber

Remove the bolt securing the lower part of the rear shock absorber.

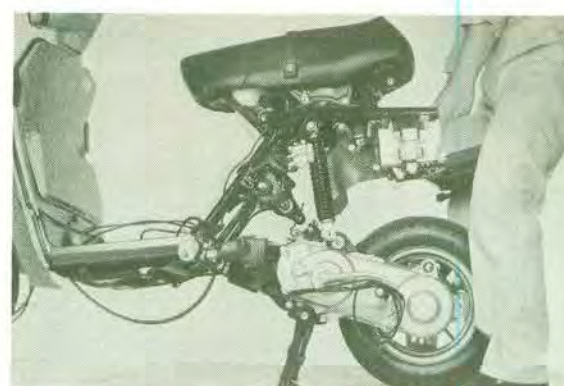


Engine mounting bolt

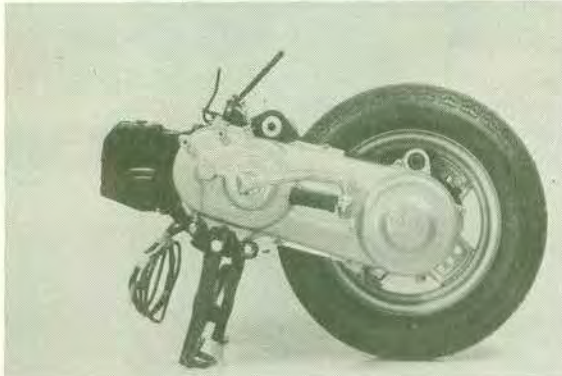
1. Remove the engine mounting bolt on the engine side.



2. Remove the frame from the engine assembly.



3. Place the frame on a suitable stand.



ENGINE INSTALLATION

(To mount the engine, reverse the procedure for removing.)

Notes on engine installation

1. Install the auto choke pipes as shown in the following diagrams.

NOTE: _____

When installing pipes, be careful not to allow dust and dirt to enter pipes.



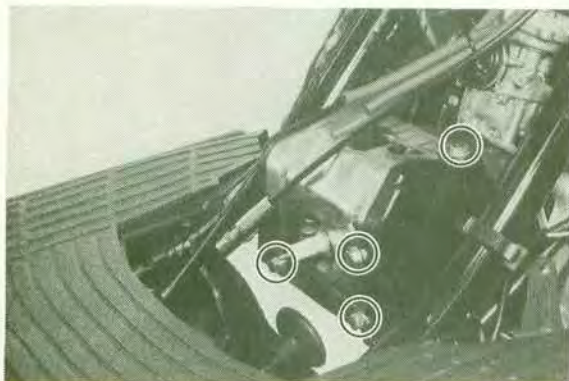
DISASSEMBLY • INSPECTION • ASSEMBLY



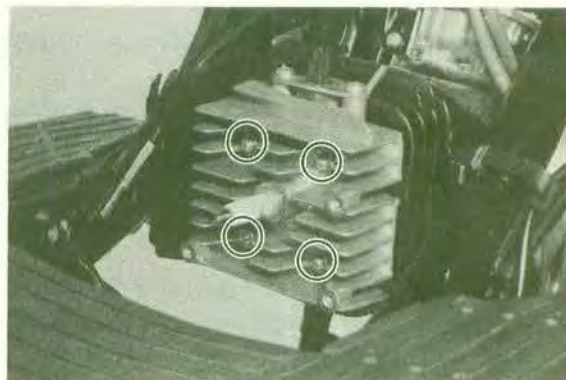
CYLINDER HEAD

Removing the cylinder head

1. Side cover 4.
2. Side cover 3.
3. Spark plug cap and spark plug.
4. B.V.S. pipes from the cylinder head side.
5. Air shrouds 1, 2, 3 and 4.



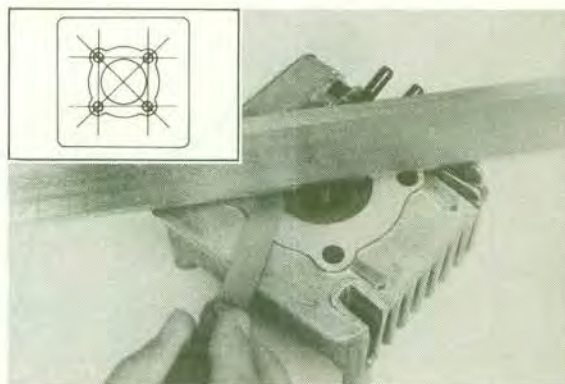
6. Cylinder head mounting nuts.



7. Cylinder head.

Checking

Using a straight edge and thickness gauge, check the cylinder head for warpage.

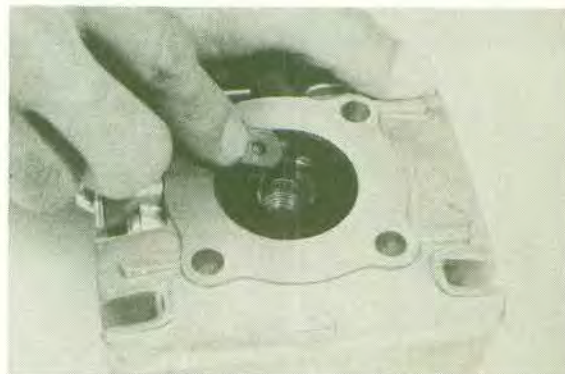


Max. warpage: 0.02 mm (0.0008 in)

If warpage exceeds the above limit, resurface or replace the cylinder head.

Decarbonizing

Decarbonize the combustion chamber and spark plug hole.

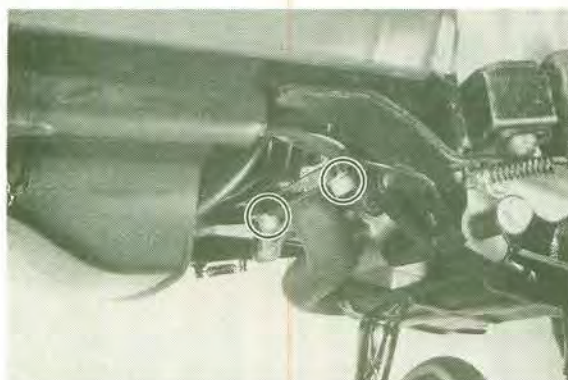
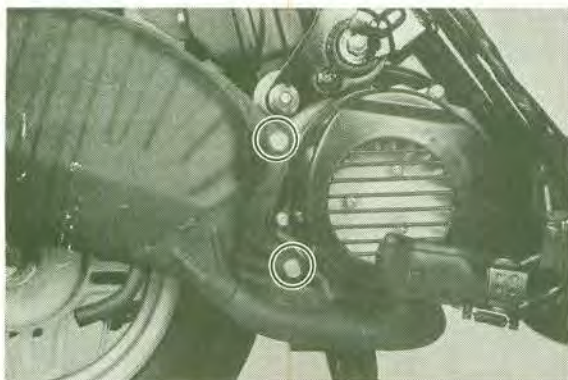


NOTE:

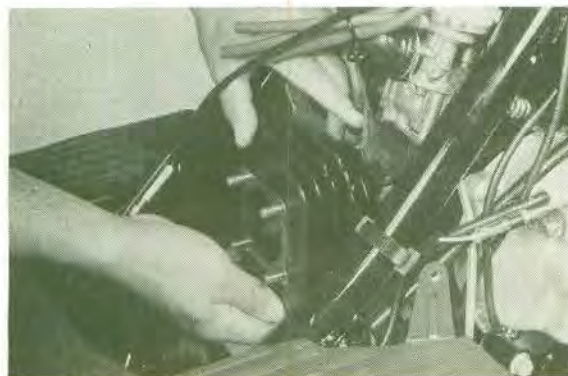
- Take care not to scratch the combustion chamber.
- After decarbonizing, clean it with solvent.

CYLINDER**Removing**

1. Remove the cylinder head.
2. Remove the muffler.



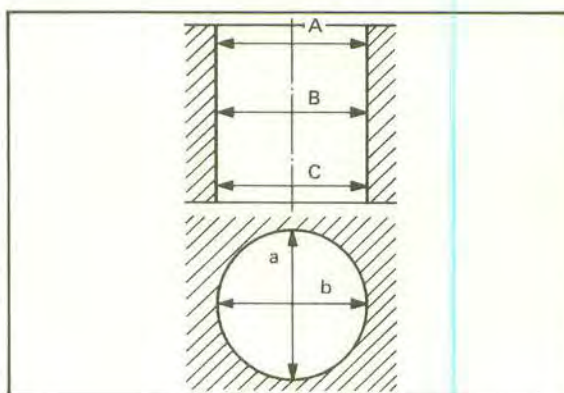
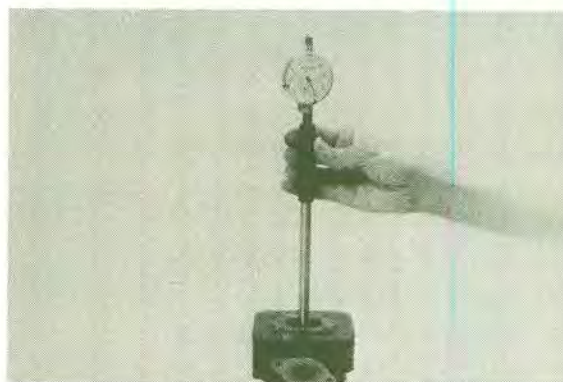
3. Remove the cylinder head gasket and remove the cylinder.

**NOTE:**

Thoroughly remove the gasket from the contact surface of the cylinder with the crankcase.

Checking

1. Check the cylinder wall for scratches. If there is any scratch in the thrust direction, the cylinder should be rebored.
2. Check wear on the cylinder wall.



Measure the cylinder bore diameter in the three depths, A, B and C and in the directions of ① and ②. That is, six measurements are necessary.

The difference between the maximum and minimum measurements is the amount of wear.

Max. wear: 0.05 mm (0.002 in) or less

When the cylinder is worn more than the above limit, it should be bored or replaced.

Decarbonizing

Decarbonize the cylinder exhaust port.



PISTON AND PISTON RINGS

Removing

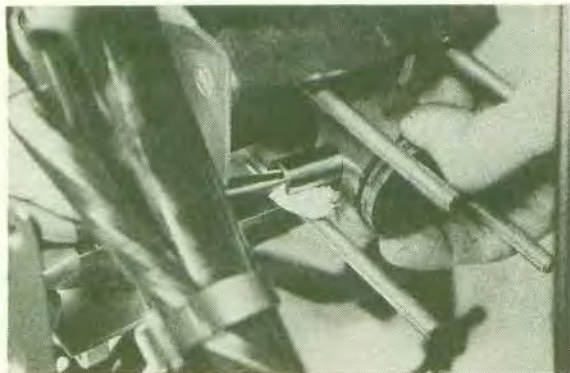
1. Remove the cylinder head.
2. Remove the cylinder.
3. Remove the piston pin clips.



NOTE: _____

Cover the crankcase with a clean cloth to prevent piston pin clips from falling into the case.

4. Pull out the piston pin and remove the small-end bearing.



5. Remove the piston rings from the piston.



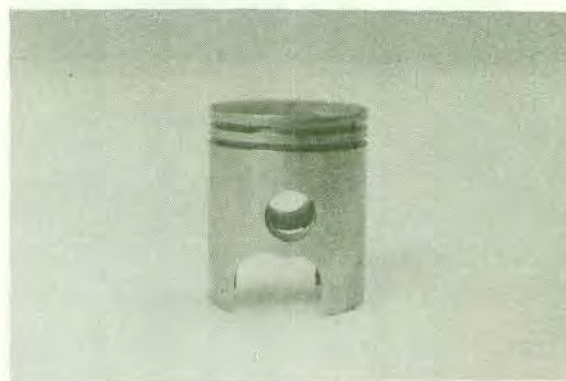
NOTE: _____

Take care not to break piston rings.

CHECKING

Piston

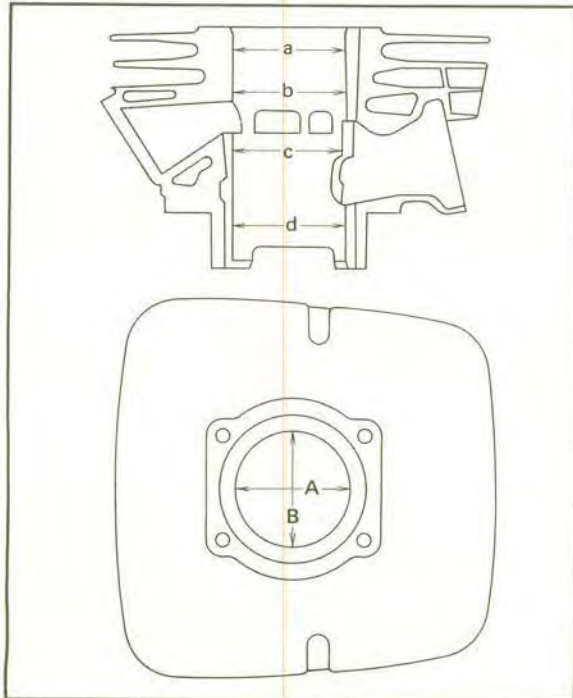
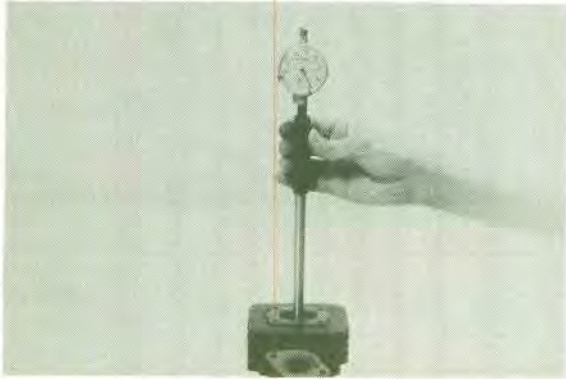
1. Check the piston for scratches or cracks, and service or replace, as required.



Cylinder size

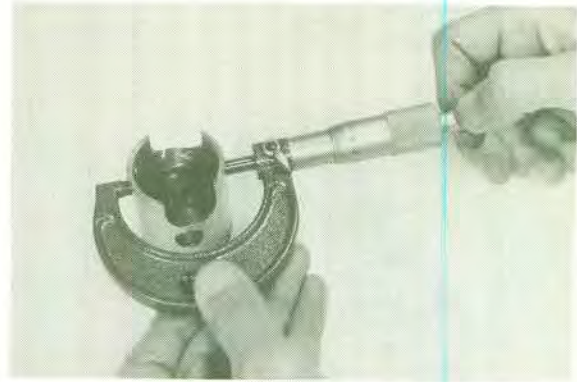
1. Hone cylinder bore using a hone with fine stones. Hone no more than required to remove all wear marks.
2. Using a Cylinder Gauge set to standard bore size, measure the cylinder. Measure front-to-rear and side-to-side at top, center and bottom just above exhaust port. Compare minimum and maximum measurements. If over tolerance and not correctable by honing, rebore to next over-size.

Max. allowable taper ($d - a$):
 0.05 mm (0.0020 in)
 Max. allowable out-of-round
 ($B - A$ or $A - B$):
 0.01 mm (0.0004 in)
 Wear limit: 56.10 mm (2.21 in)
 (at "a" position)



Piston size

Measure the piston outside diameter at its skirt.



NOTE:

The measurement should be made at a point 5 mm above the piston bottom edge.

Min. outside diameter:
 48.940 mm (1.93 in)

If the outside diameter measures less than the above limit, replace the piston.

Piston clearance

Compare piston diameter to cylinder bore measurements. Piston maximum diameter (as shown below) subtracted from minimum cylinder diameter ($d - B$) gives piston clearance. If beyond tolerance, hone cylinder to tolerance or re-bore to next over-size and fit over-size piston.

Standard piston clearance:
 0.035 ~ 0.040 mm (0.0014 ~ 0.0016 in)

If the piston clearance measures more than the standard value, replace the piston.

Matching piston and cylinder

1. Indication of cylinder size

The cylinder size is indicated on the piston skirt.

Example: 012 49.012



2. Indication of piston size

The piston size is indicated in felt point pen on the piston head. (Only brand-new ones)

Example: 96 48.996



c. Calculation of piston clearance

Indication on piston skirt 012

Indication on piston head 96

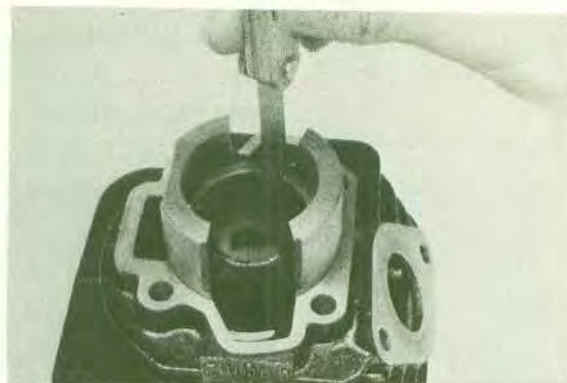
$$\begin{aligned}\text{Piston clearance} &= \text{Cylinder size} - \text{Piston size} \\ &= 49.012 \text{ mm} - 48.996 \text{ mm} \\ &\quad (1.930 \text{ in}) \quad (1.929 \text{ in}) \\ &= 0.016 \text{ mm} \\ &\quad (0.0006 \text{ in})\end{aligned}$$

NOTE:

The sizes indicated on the cylinder and piston are useable for calculations of the piston clearance only when both cylinder and piston are brand-new. Otherwise, the difference between the cylinder bore and piston outside diameters actually measured is the piston clearance.

Piston ring end gap

Place each piston ring in the cylinder skirt and measure the end gap with a thickness gauge.



Piston ring end gap	Top ring	0.15 ~ 0.35 mm (0.006 ~ 0.014 in)
	Second ring	

If the end gap exceeds the above specification, replace the ring.

NOTE:

Place each piston ring in the cylinder skirt (where the cylinder bore diameter is minimum) and measure the ring end gap.

Piston ring side clearance

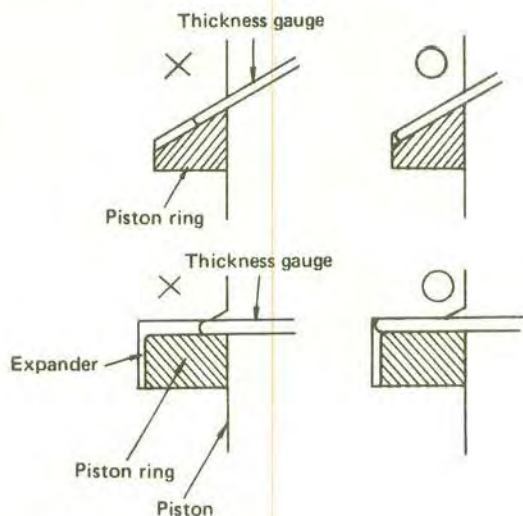
Measure the clearance between the ring and groove.



Side clearance	Top ring	0.15 ~ 0.35 mm (0.006 ~ 0.014 in)
	Second ring	

If the side clearance is more than specified, replace the piston ring.

Insert the thickness gauge into the groove so it contacts the bottom of the groove.

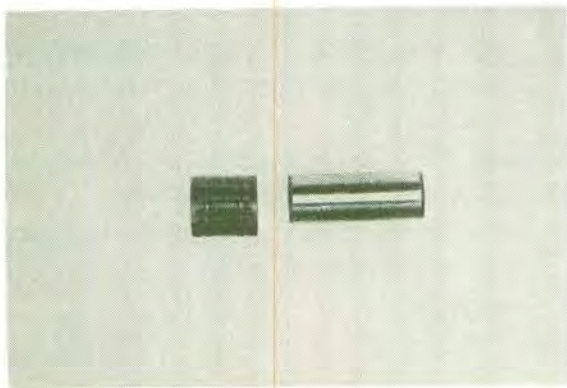


CAUTION:

- Before measuring, decarbonize the grooves.
- Make measurements at several points.
- The second ring has an expander. Don't forget to install the expander.

Piston pin

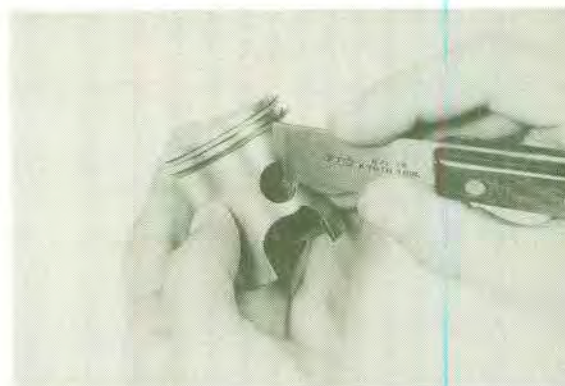
1. Check the piston pin for excessive wear, grooved wear, or burning, and replace it, together with the small-end bearing, as required.



2. Check that the piston pin moves into the pin smoothly.



If it is hard to fit in, check the pin hole for scratches or protuberances, and smooth out using a scraper.



INSTALLING

Piston rings

1. Fit the piston rings in the grooves.



2. Align each ring end gap with the locating pin.



NOTE:

- Take care not to scratch the piston or break the piston rings.
- Make sure all piston rings are fit with markings facing upward.
- Piston rings should be replaced as a set, when replaced.
- After fitting the rings, check that they move smoothly.

Piston

1. Install the piston onto the connecting rod so that the arrow mark on the piston crown faces toward the exhaust port.



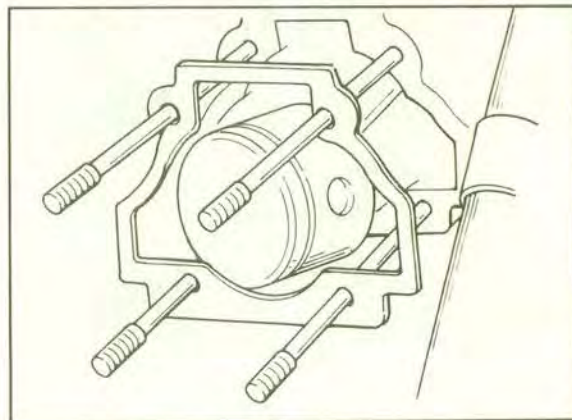
2. Install the piston pin clip.

NOTE:

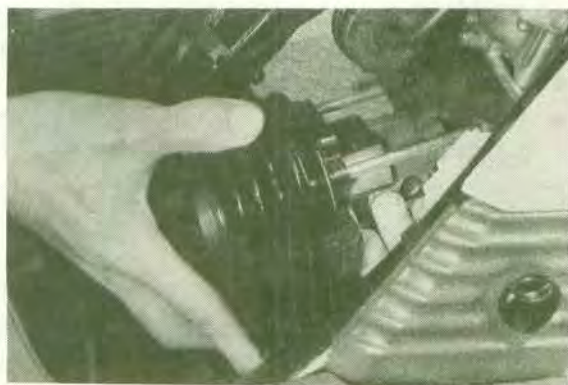
- Apply oil to the connecting rod small-end bearing, piston pin, and piston before installing.
- Take care not to scratch the piston.
- Always use new piston pin clips.

Piston in the cylinder

1. Thoroughly remove the gasket, oil and any other foreign matter from the mating surfaces of the cylinder and crankcase, and install a new cylinder gasket.



2. While holding down the piston rings, insert the piston into the cylinder.

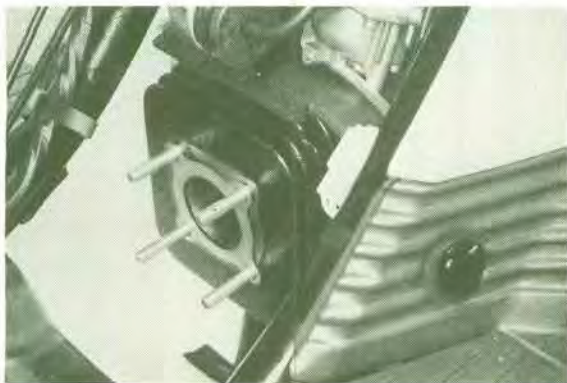


NOTE:

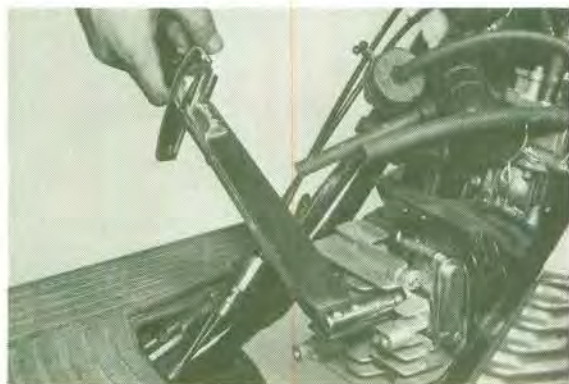
- Align the piston ring end gaps with the locating pins, and insert the piston into the cylinder.
- Coat the piston, piston rings and cylinder wall with air cooled 2-stroke oil.
- After inserting the piston, make sure that the piston can be moved up and down smoothly.

Cylinder head

1. Thoroughly clean the contact surface of the cylinder head with the cylinder, and install a new cylinder head gasket.



2. Install the cylinder head and tighten the bolts to specification.

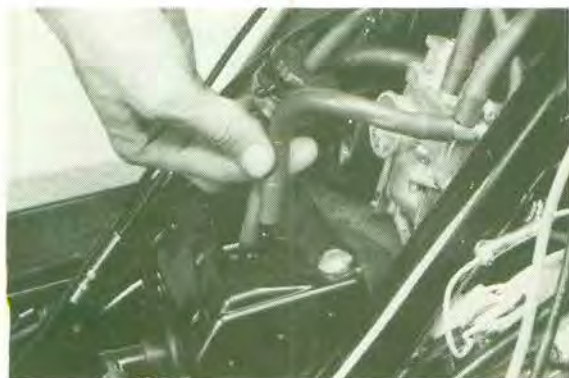


Tightening torque:
15 Nm (1.5 m·kg, 11 ft·lb)

3. Install air shrouds 1, 2, 3 and 4.

Tightening torque:
8 Nm (0.8 m·kg, 5.8 ft·lb)

4. Connect the pipes to B.V.S.



NOTE:

Be careful so that the pipes are connected in the correct positions (according to the identification letters).

5. Install the spark plug and plug cap.

Tightening torque:
20 Nm (2.0 m·kg, 14 ft·lb)

6. Install the muffler.

Tightening torque:
20 Nm (2.0 m·kg, 14 ft·lb)

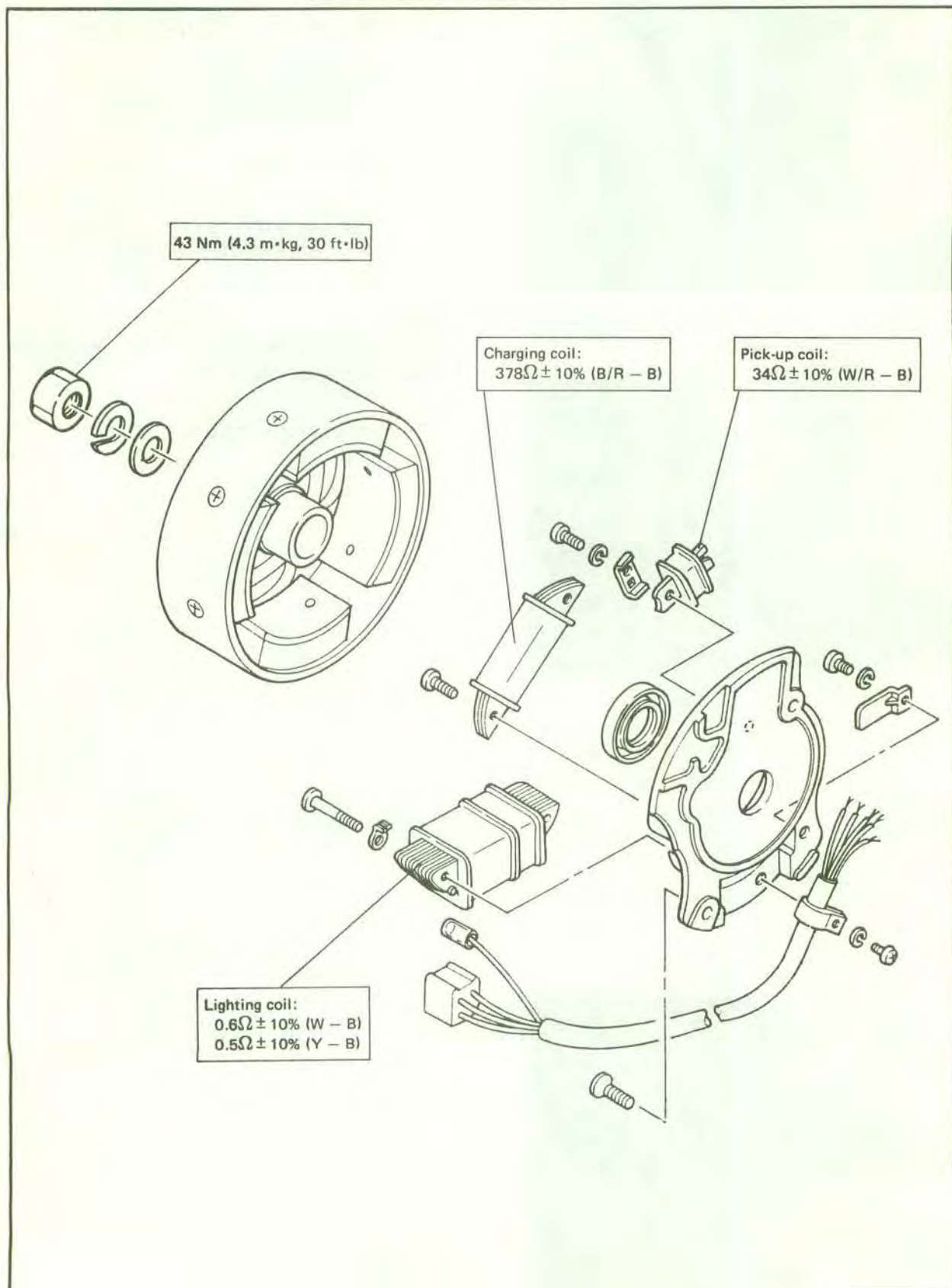
NOTE:

When installing the muffler, take care not to drop the exhaust pipe gasket.

7. Install side cover 3 and 4.

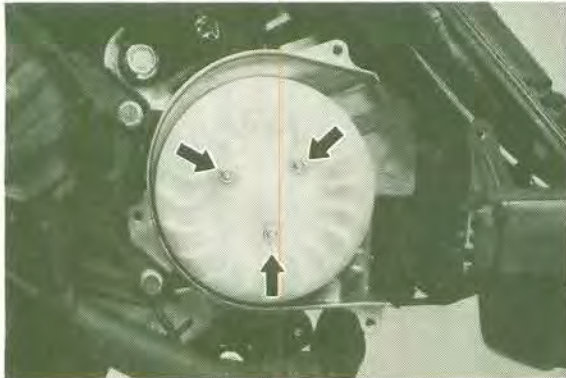
CDI MAGNETO

DISASSEMBLY • ASSEMBLY

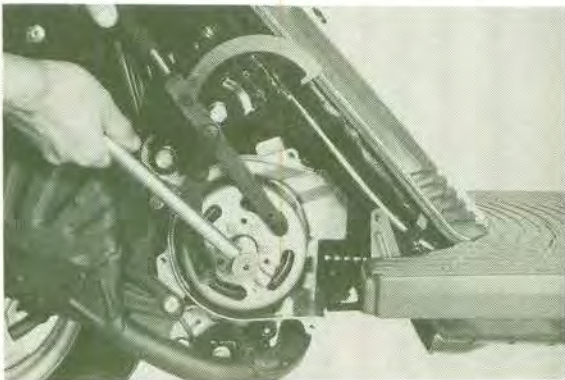


Removal

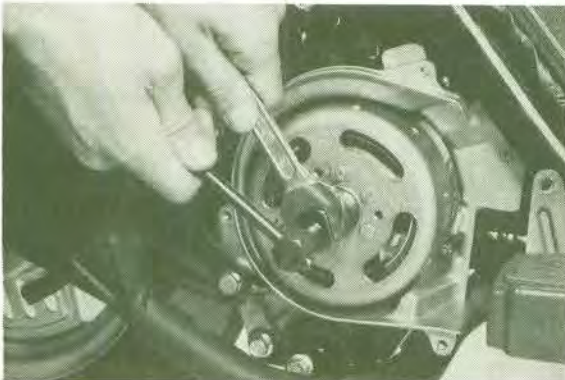
1. Remove side cover 3.
2. Remove air shroud 3.
3. Remove the fan.



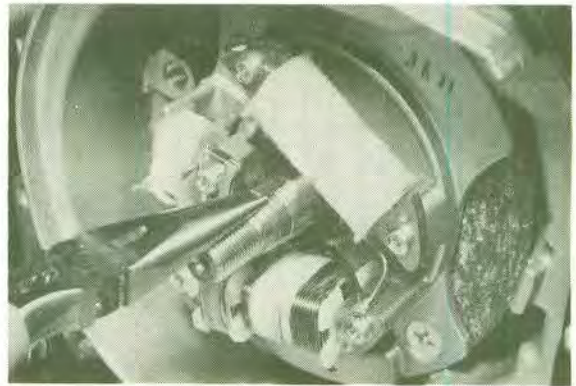
4. Remove the flywheel holding nut.



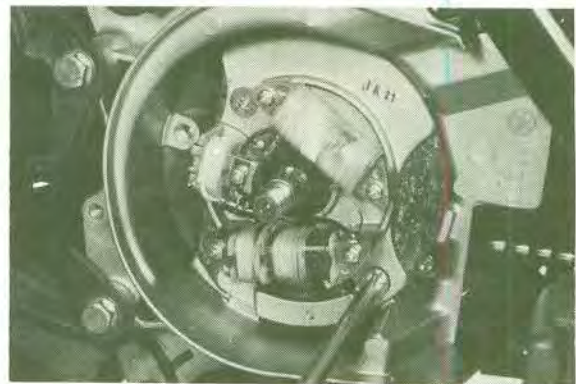
5. Remove the flywheel.



6. Remove the woodruff key.



7. Remove the magneto base screws and remove the magneto base.



Installation

1. Install the magneto base.
2. Install the woodruff key.
3. Install the flywheel.

Tightening torque:
43 Nm (4.3 m·kg, 31 ft·lb)

4. Install the fan.

Tightening torque:
8 Nm (0.8 m·kg, 5.8 ft·lb)

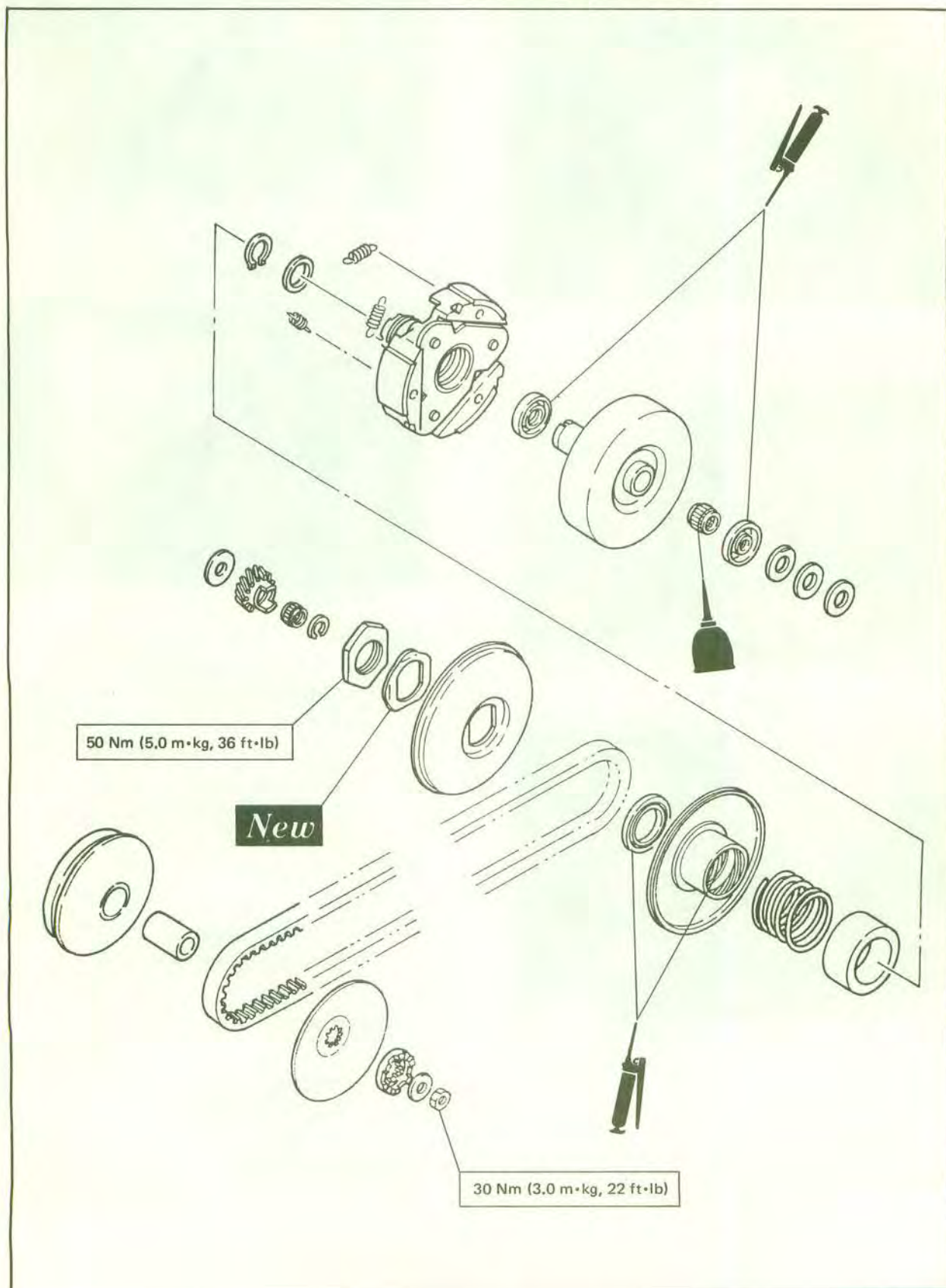
5. Install air shroud 3.

Tightening torque:
8 Nm (0.8 m·kg, 5.8 ft·lb)

6. Install side cover 3.

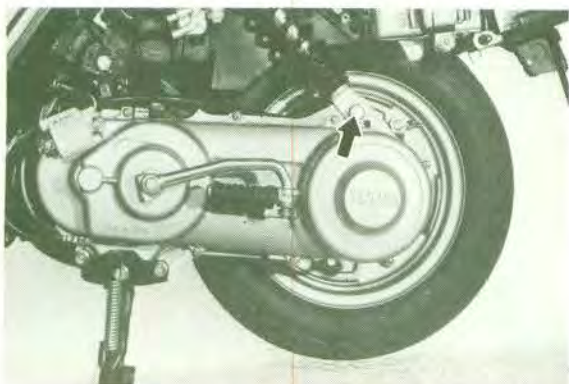
PRIMARY SHEAVE • SECONDARY SHEAVE • CLUTCH

DISASSEMBLY • INSPECTION • ASSEMBLY

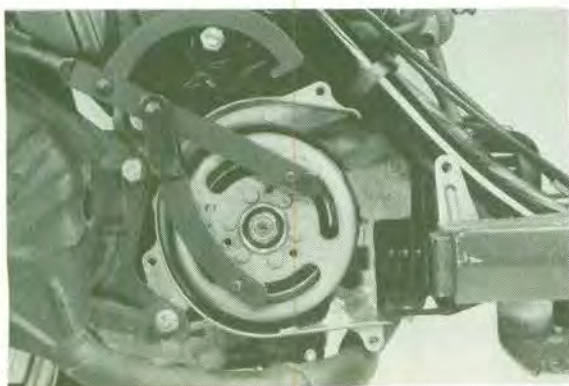
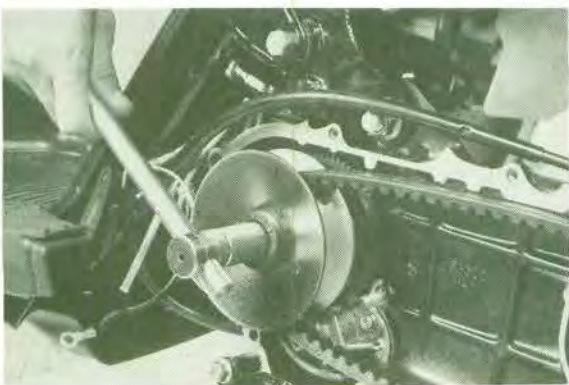


Removing

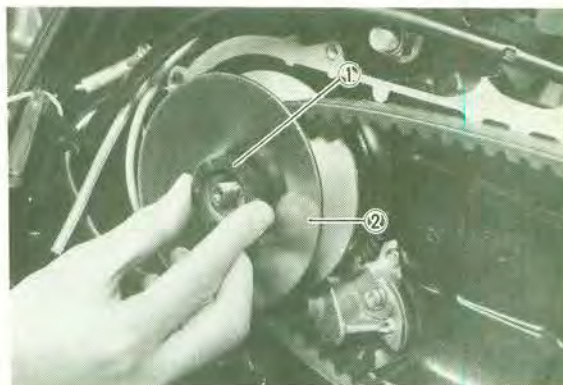
1. Remove side covers 2 and 3.
2. Remove crankcase cover 1.



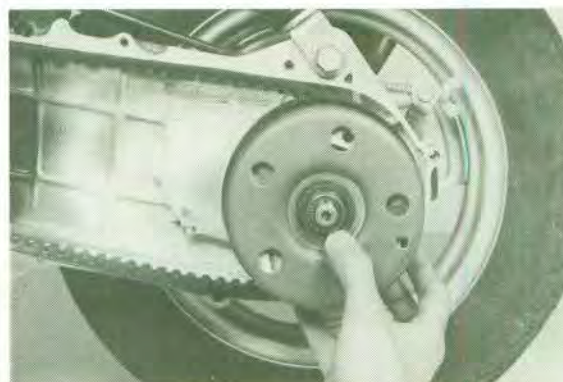
3. Remove air shroud 3 and fan, lock the magneto with the magneto holding tool, and remove the one-way clutch nut.



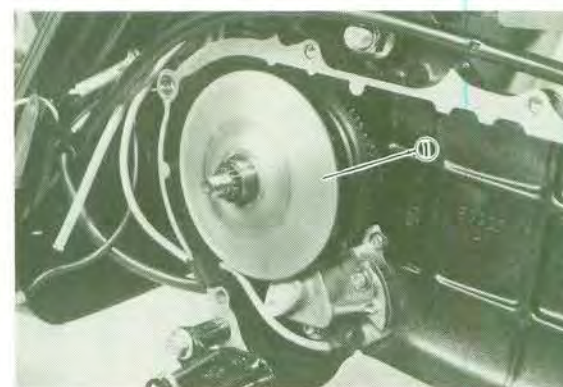
4. Remove the one-way clutch, and remove the primary fixed sheave.



5. Remove the secondary sheave, clutch and V-belt.



6. Remove the primary sheave assembly.



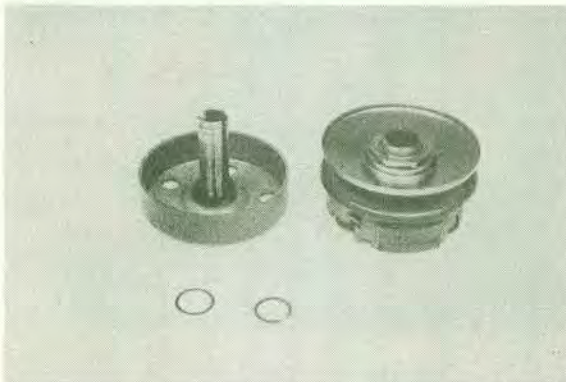
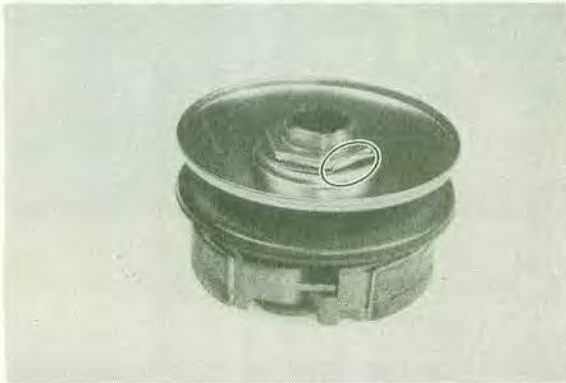
1. Primary sheave Assy

NOTE:

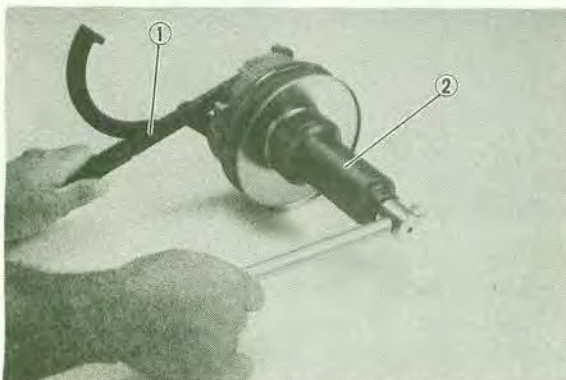
When removing the primary sheave assembly, hold the back of the sheave. Never attempt to remove it by pulling its edge.

Disassembling the secondary sheave and clutch.

1. Straighten the lock washer and remove the circlip, washer and clutch housing.

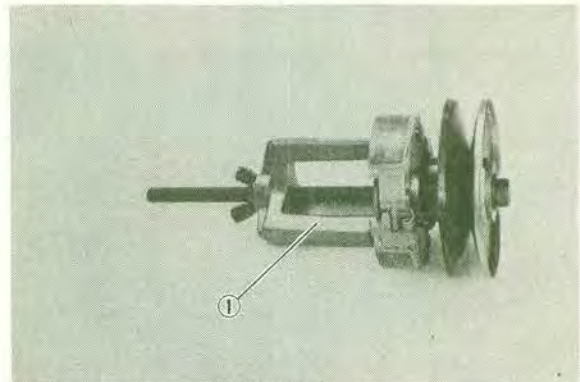


2. Loosen the nut using the rotor holder and nut wrench.



1. Rotor holder (YU-01235) 2. Nut wrench (YM-04045A)

3. Remove the secondary fixed and sliding sheaves.



1. Sheave compressor (YS-28891)

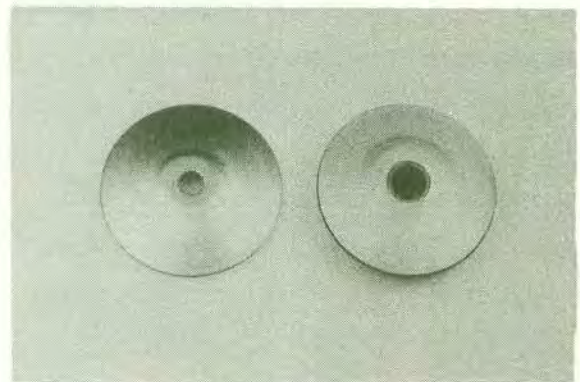
NOTE:

The nut should be screwed out slowly, or the secondary fixed and sliding sheave may spring out. It is necessary to hold down the secondary fixed sheave with special tool, and screw out the nut slowly.

CHECKING

Primary sheave

Check the primary sliding sheave and primary fixed sheaves for scratches.

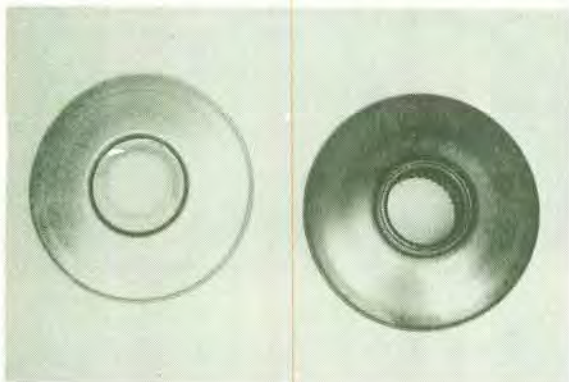


NOTE:

The primary sheave complete can not be disassembled, and accordingly if it is disassembled, it must be replaced in the form of a complete assembly.

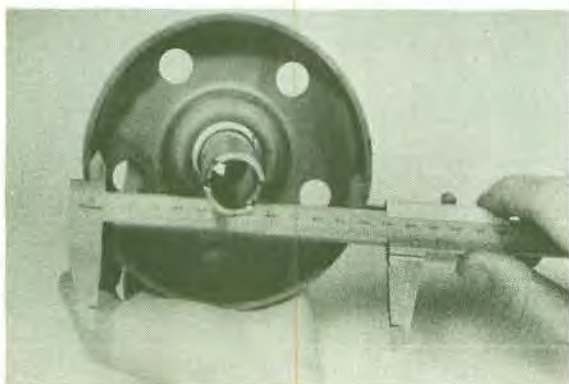
Secondary sheave

Check surfaces of the secondary fixed and sliding sheaves.



Clutch

1. Measure the inside diameter of the clutch housing.



Clutch housing inside diameter	Standard	Limit
	119.9 ~ 120.1 mm (4.72 ~ 4.73 in)	120.4 mm (4.74 in)

If the diameter measures more than the limit, replace the clutch housing.

NOTE:

This measurement should be made at several points.

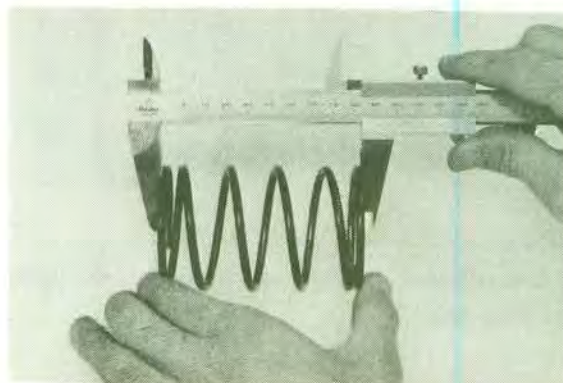
2. Check the clutch shoes for scratches or other damage.



Clutch shoe lining thickness	Standard	Limit
	3.5 mm (0.14 in)	2 mm or less (0.079 in)

If the shoe thickness is less than the limit, replace the shoes.

3. Check the free length of the compression spring.

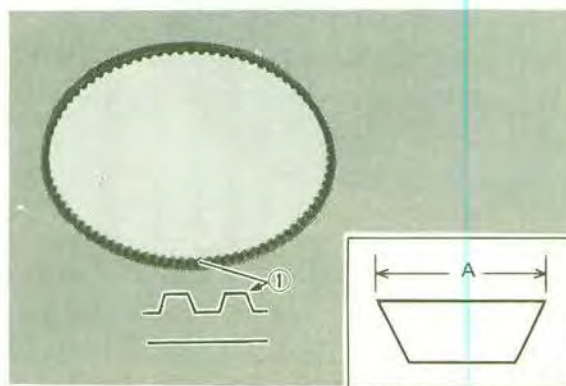


Compression spring	Free length	Limit
	92 mm (3.62 in)	85 mm (3.35 in)

If the compression spring free length is less than the limit, it should be replaced.

V-belt

Check the V-belt for cracks, abnormal wear, scaling off, or chipped cogs.



1. Cogs

V-belt (A distance)	Standard	Limit
	17 mm (0.67 in)	15.5 mm or less (0.61 in)

If the "A" distance is less than the limit, the belt should be replaced.

Clutch housing oil seal

Press-fit the clutch housing oil seal as shown below.



NOTE:

If the oil seal is fitted upside-down, oil leakage may result.

Assembling

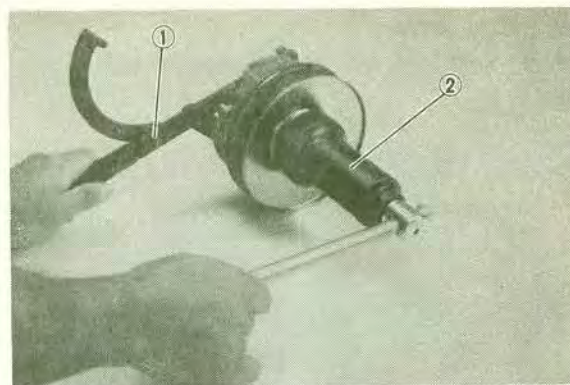
1. Install the compression spring, apply grease (about 1 cm³) to the secondary sliding sheave splined portion, and install the clutch housing.



NOTE:

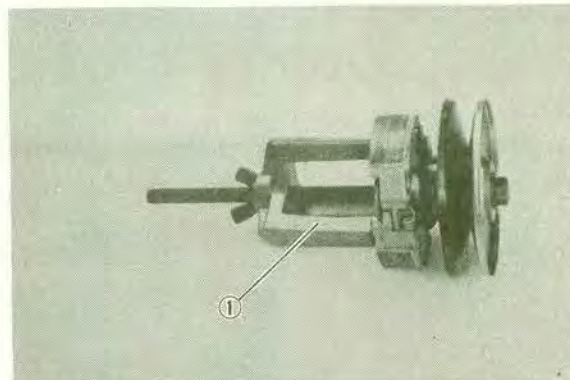
Take care not to spill oil or grease on clutch shoe linings.

2. Using the special tool, push the secondary sliding sheave until the compression spring completely contracts, and install the secondary fixed sheave, lock washer and nut.



1. Rotor holder (YU-01235) 2. Nut wrench (YM-04045A)

3. Tighten the nut.



1. Sheave compressor (YS-28891)

Tightening torque:
50 Nm (5.0 m·kg, 36 ft·lb)

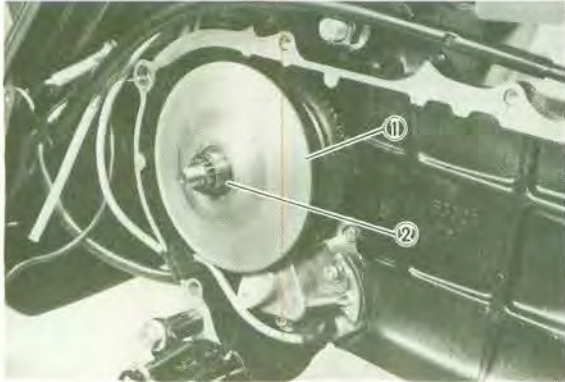
4. Install the clutch housing.



NOTE:

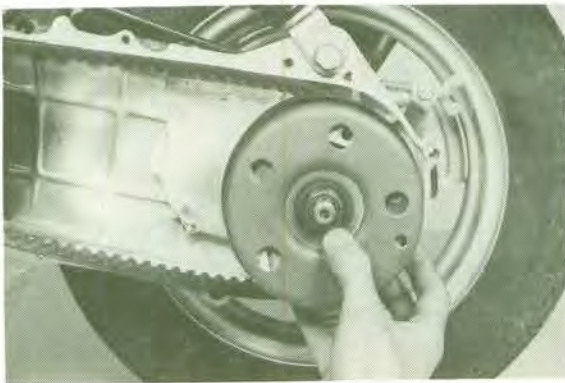
- Apply the gear oil to the drive axle and install the secondary sheave.
- Firmly hold down the secondary sliding sheave until the nut is completely tightened; or the sheave may jump out due to spring force.

5. Install the primary sheave and collar on the crankshaft.



1. Primary sheave 2. Collar

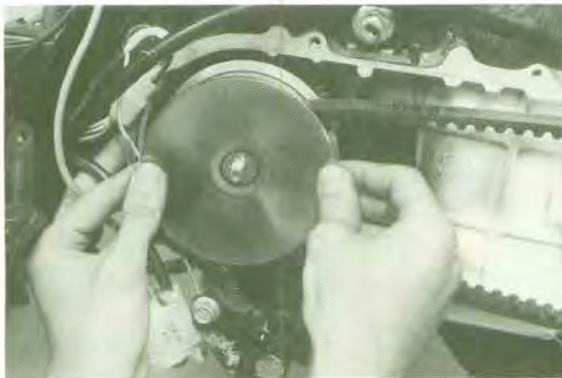
6. Place the V-belt around the secondary sheave and install it on the drive axle.



NOTE:

- Don't forget to install the roller bearing.
- Apply the gear oil to the drive shaft and install the secondary sheave on the shaft.

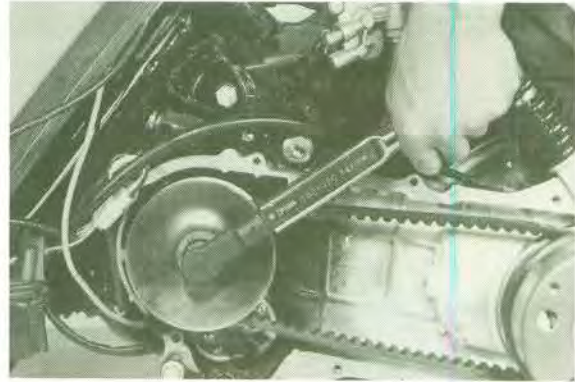
7. Install the primary fixed sheave.



WARNING:

Take care so that no oil or grease spills on the primary and secondary sheaves, clutch housing inner surfaces, or V-belt.

8. Install the one-way clutch, lock the CDI magneto, and tighten the nut.



NOTE:

Keep the V-belt tight.

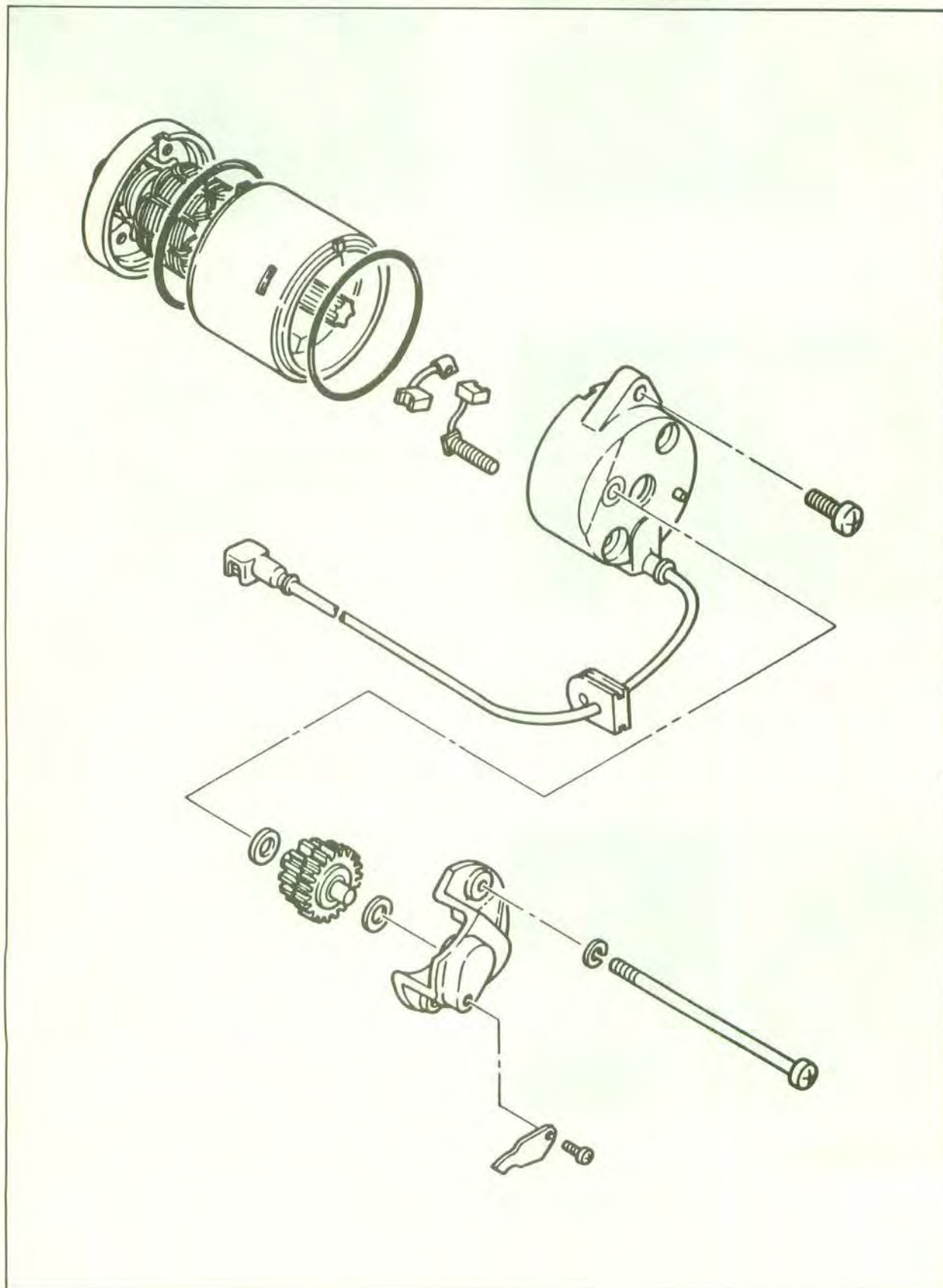
Tightening torque:

30 Nm (3.0 m·kg, 22 ft·lb)

10. Install case cover 1.
11. Install the fan and air shroud 4.
12. Install side covers 2 and 3.

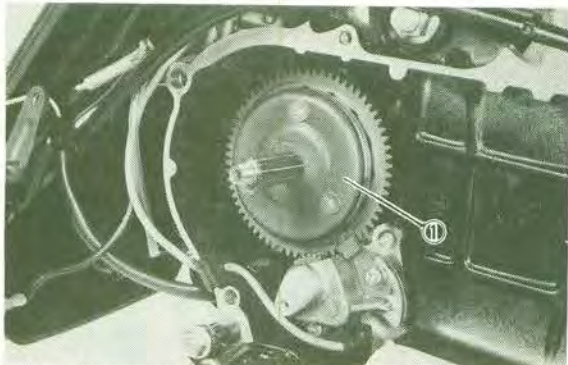
STARTER CLUTCH · STARTER MOTOR

DISASSEMBLY · INSPECTION · ASSEMBLY



REMOVING

1. Remove the starter clutch assembly.

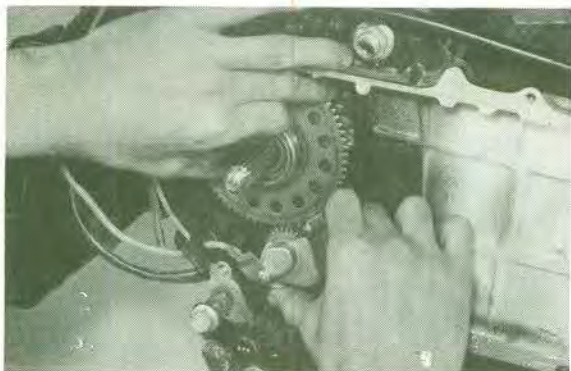


1. Starter clutch Assy

NOTE:

When removing the starter clutch assembly, the roller, compression spring and starter clutch spring cap tend to fall off. So remove it carefully.

2. Remove the starter motor screw and remove the starter motor and starter wheel from the crankcase.

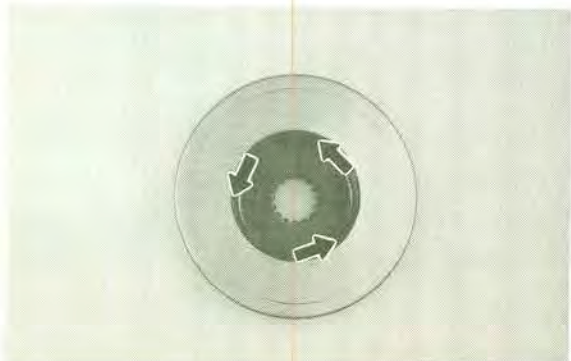


3. Disconnect the lead wire from the starter motor.

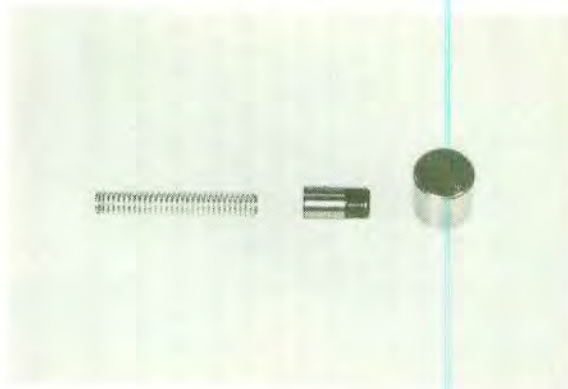
CHECKING

Starter clutch

1. By pushing the roller in the direction of the arrow, check that it turns smoothly.

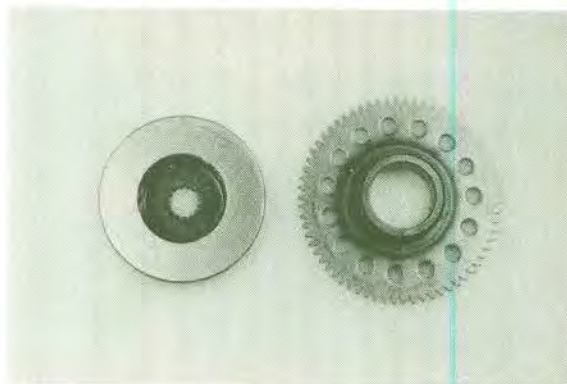


2. Remove the roller and compression spring, and check for uneven wear, scratches, or fatigue.



Starter wheel

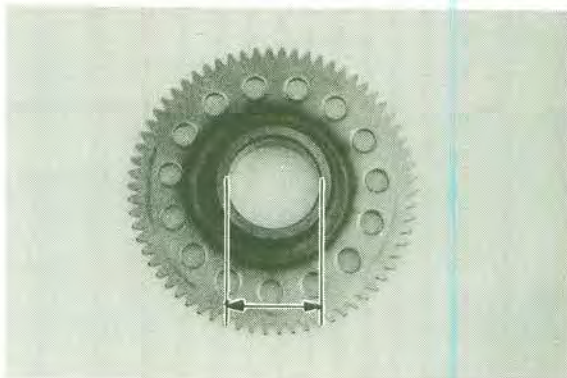
1. Check for grooved wear or scratches on the surface of the roller.



2. Measure the starter wheel inside diameter.

	Standard	Limit
Starter wheel inside diameter	36.00 mm (1.417 in)	36.05 mm (1.419 in)

If the inside diameter is more than the above limit, replace the starter wheel.

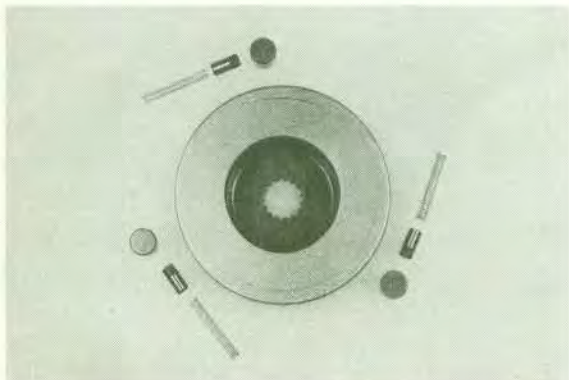


3. Check the starter motor gear and starter wheel for worn or damaged teeth or incorrect meshing.



Assembling

Install the starter clutch spring cap, compression spring, and roller in the starter clutch housing.



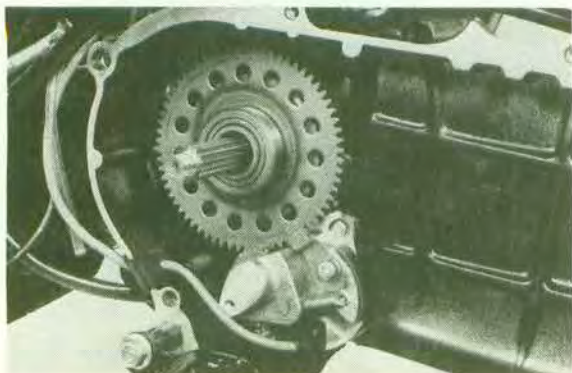
NOTE:

Apply a thin coat of oil to the roller before installing it.

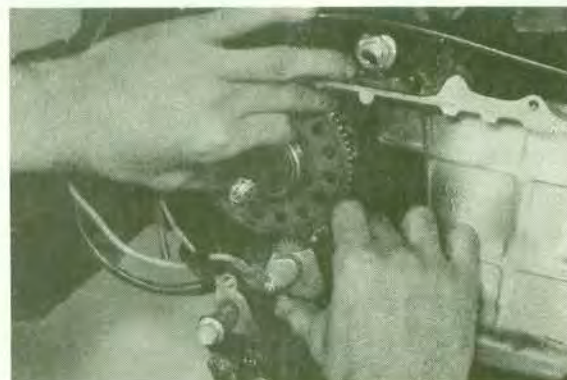
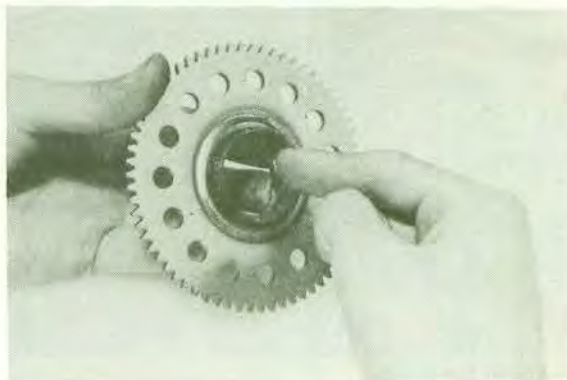
- * For details of checking and adjustment of the starter motor, refer to the section of Electrical Equipment (Page 6-9).

Installing

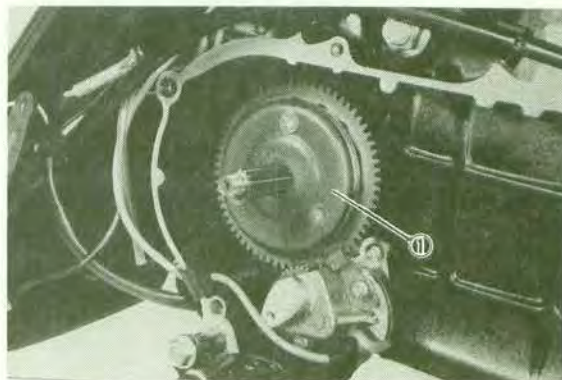
1. Connect the lead to the starter motor.



2. Grease the bearing, fit it in the starter wheel, and install it together with the starter motor.



3. Install the starter clutch assembly.



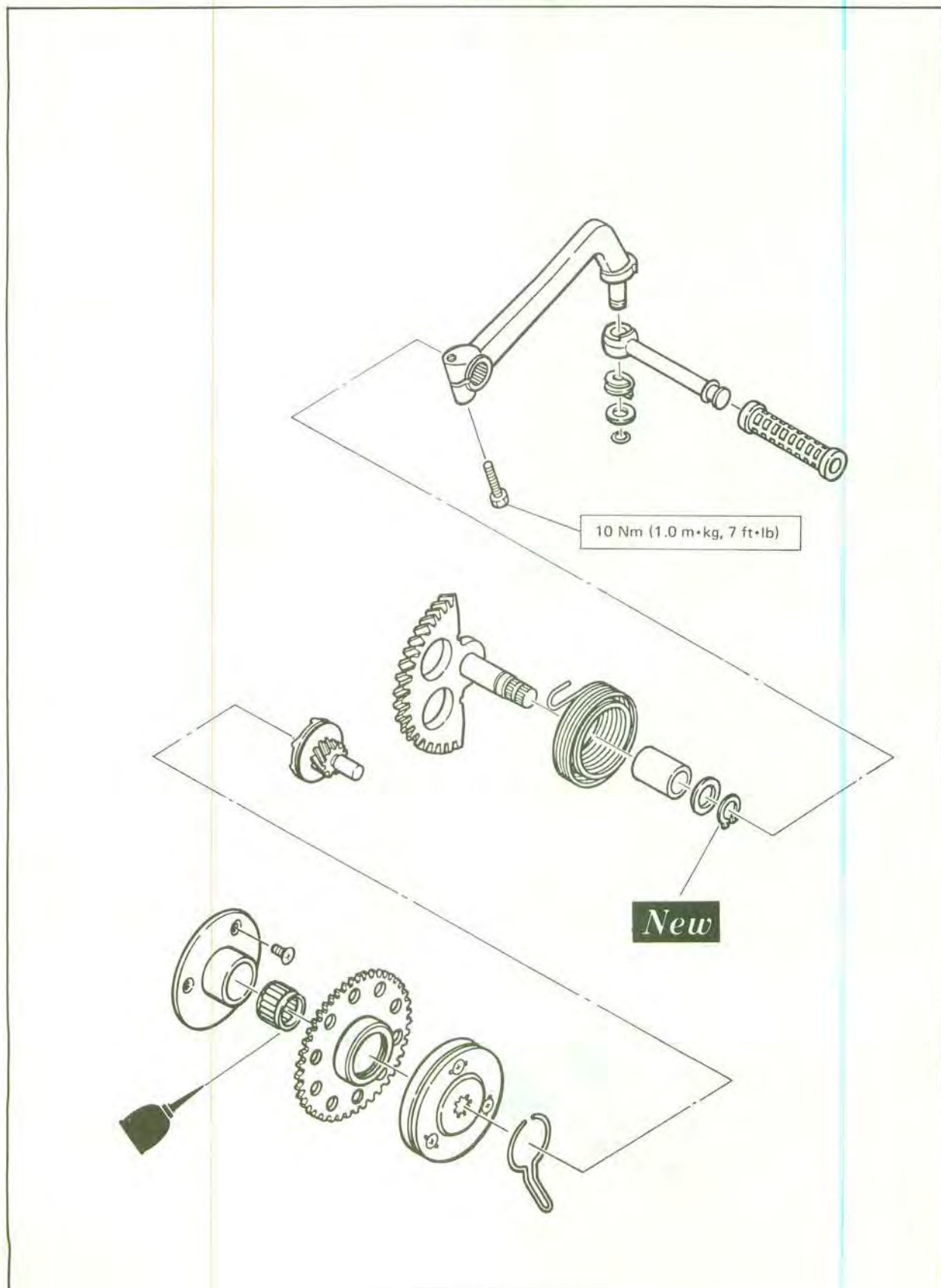
1. Starter clutch Assy

NOTE:

- Be careful so that the roller does not spring out.
- For easy operation, it is advisable to turn the starter clutch slightly to left.

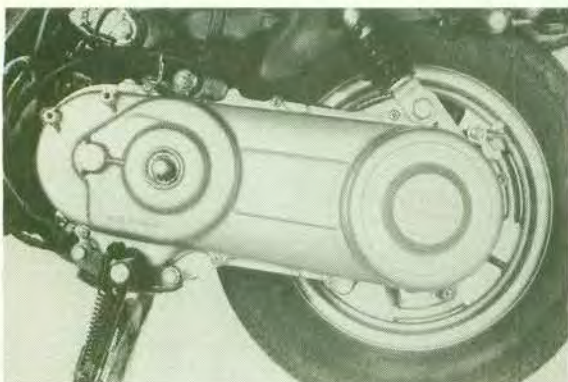
KICK STARTER

DISASSEMBLY • INSPECTION • ASSEMBLY

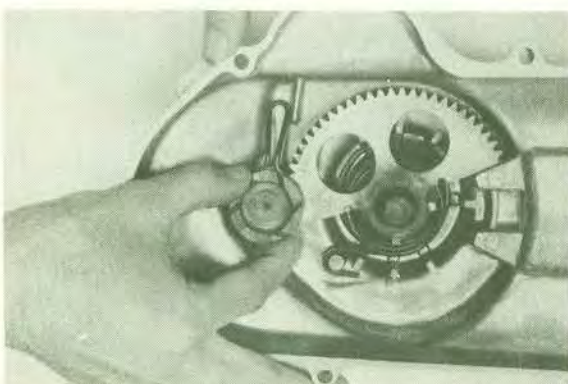


Disassembling

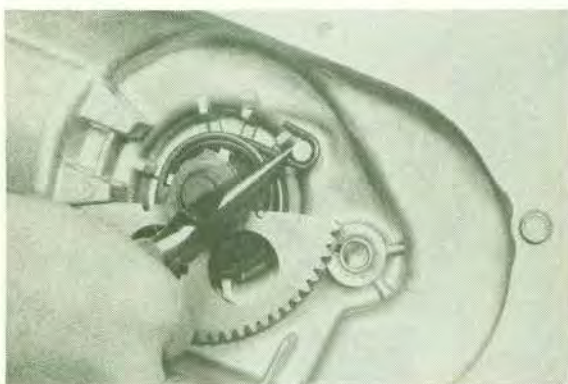
1. Remove crankcase cover 1.



2. Remove the kick pinion gear.



3. Unhook the torsion spring.

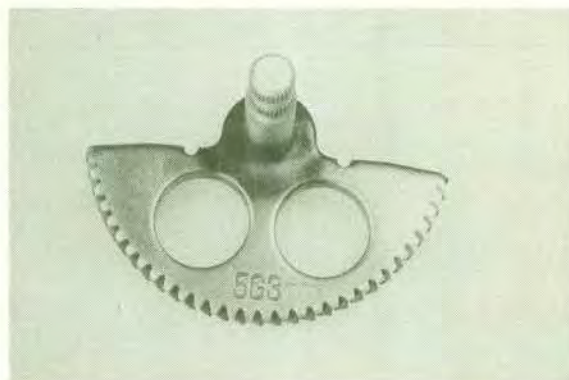


4. Remove the kickshaft clip and pull out the kickshaft.



Checking

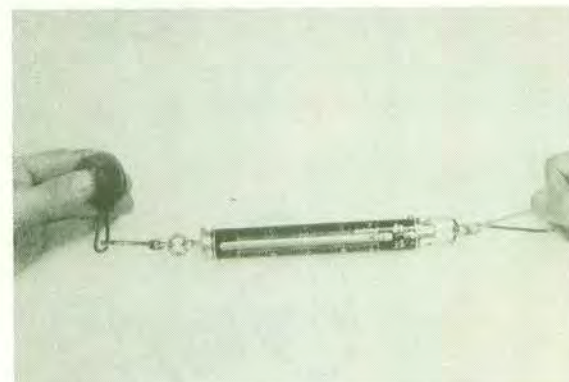
1. Check the kickshaft for wear, scratches, and defective gear teeth.



2. Check the solid bushing for wear and scratches.



3. Connect a spring scale to the end of the clip and read the scale.



Standard clip load:
0.2 ~ 0.4 kg (0.4 ~ 0.8 lb)

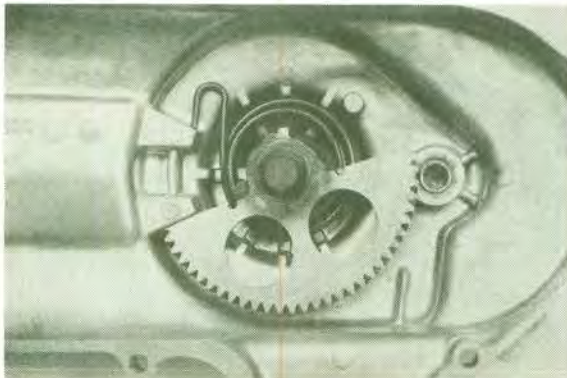
If the clip load (at which the clip begins to move) is less than the above value, replace the clip.

4. Check the kick pinion teeth and dogs for serious scratches or damage.

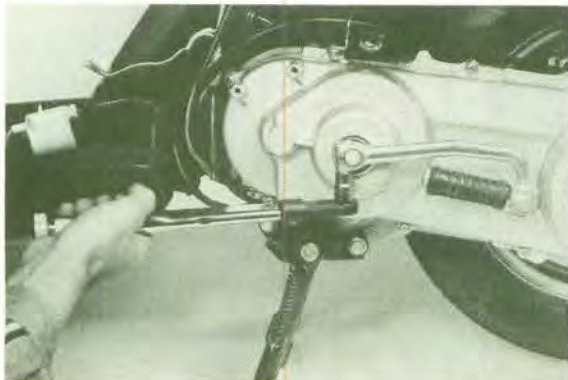


Assembling

1. Install the solid bushing, torsion spring, and kick gear in crankcase cover 1.



2. Install the circlip on the kickshaft (on the kickshaft side).
3. Hook the torsion spring onto the rib on crankcase cover 1.

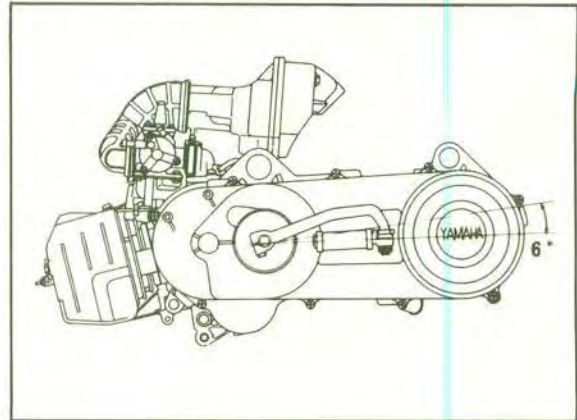


4. Install crankcase cover 1 on the crankcase.

5. Install the ignition coil and connect the leads.

Install side cover 2.

Kick crank installation diagram



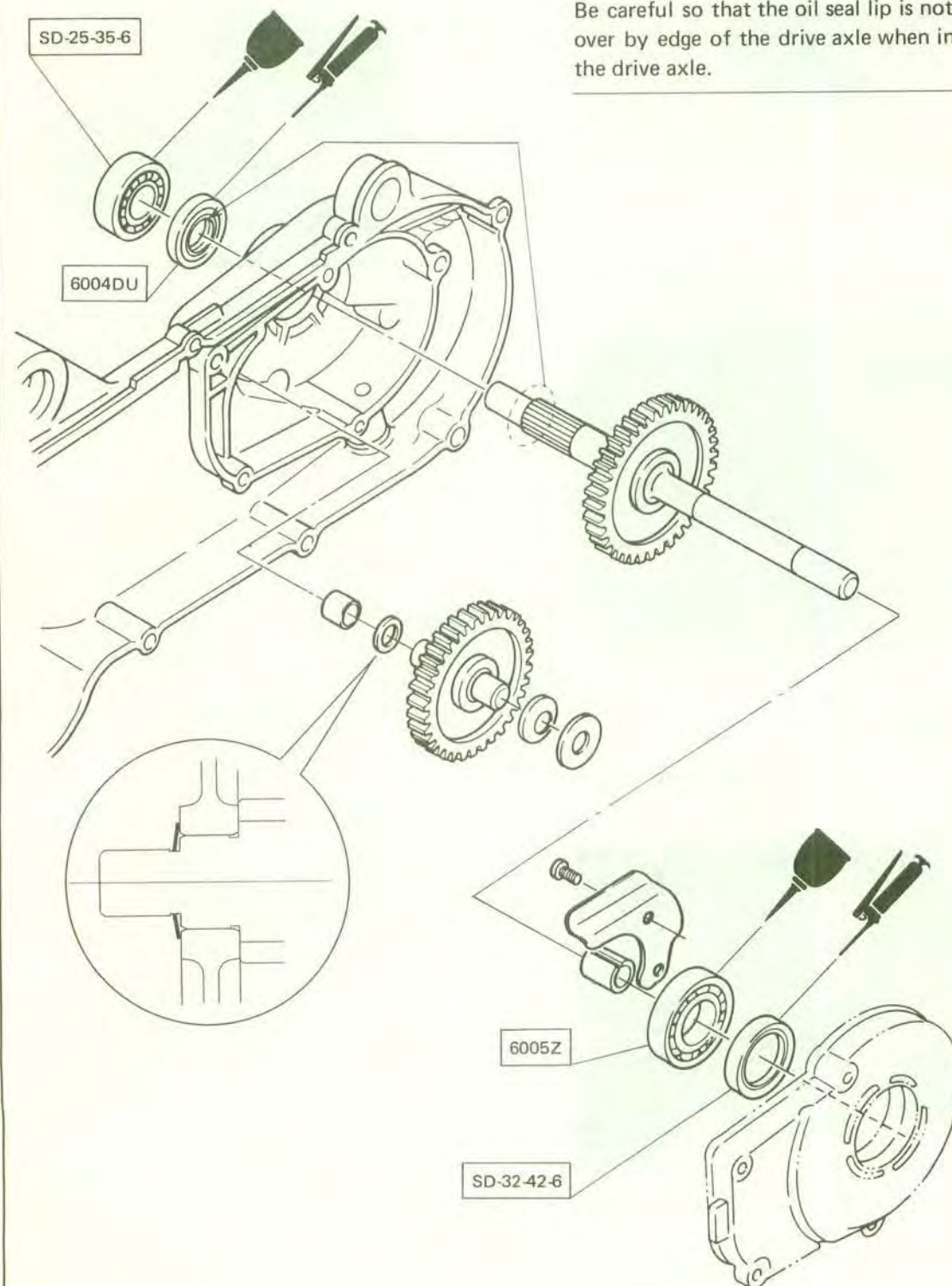
TRANSMISSION

DISASSEMBLY • INSPECTION • ASSEMBLY



NOTE:

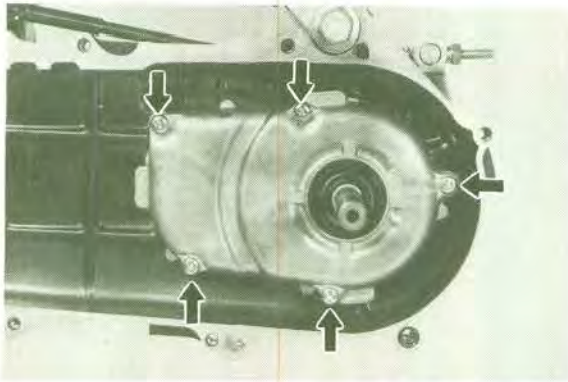
Be careful so that the oil seal lip is not turned over by edge of the drive axle when installing the drive axle.



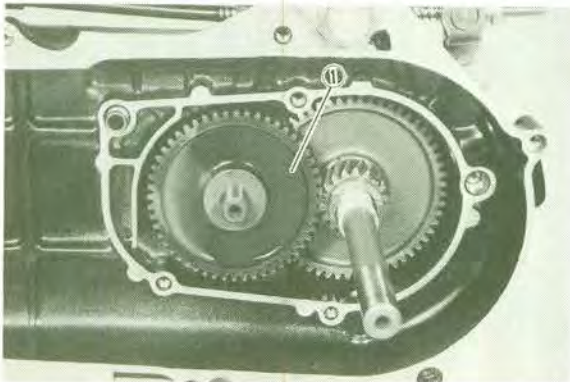
TRANSMISSION

Removing

1. Remove crankcase cover 2.

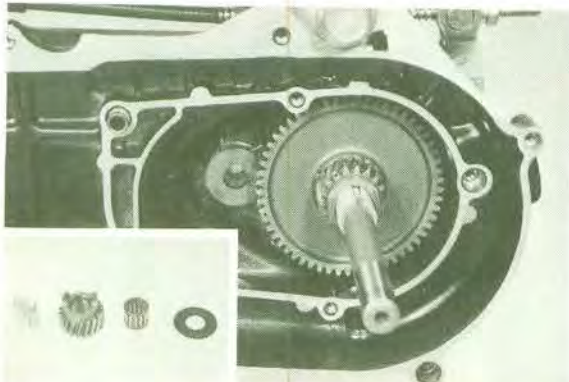


2. Remove the main axle.

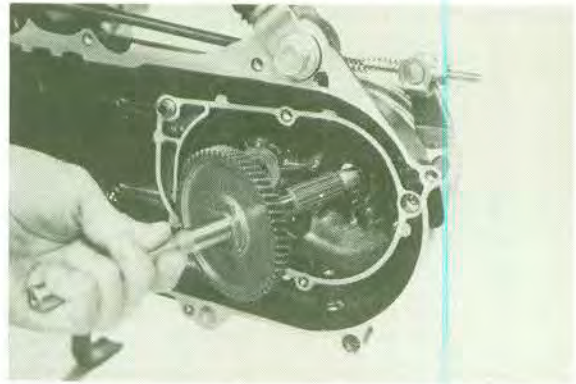


1. Main axle

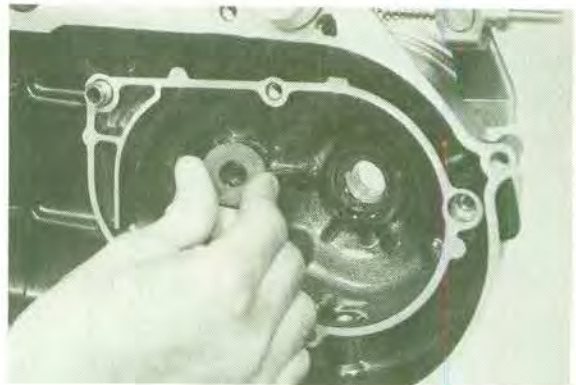
3. Remove the collar, primary drive gear and bearing.



4. Remove the drive axle.

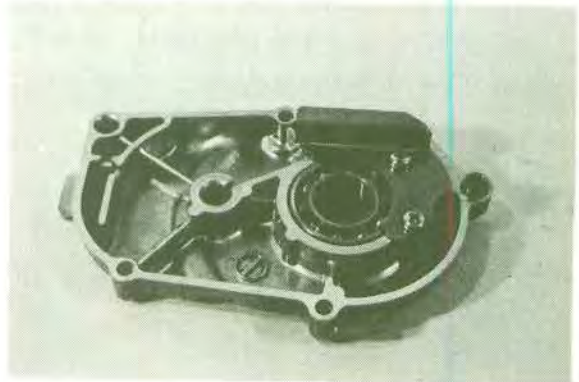


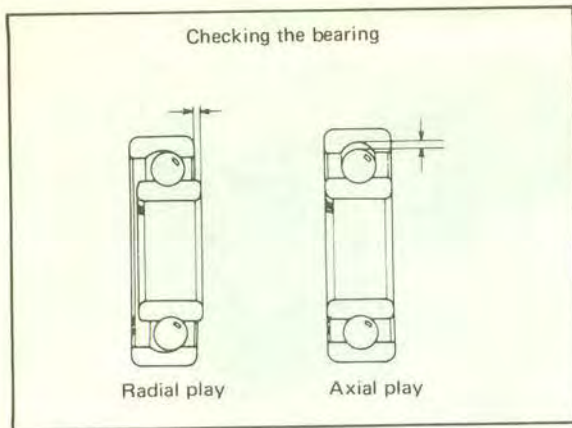
5. Remove the thrust washer.



Checking the crankcase cover 2 bearing

By rotating the bearing, check for abnormal noise or excessive play.





If noise or play is excessive, replace the bearing.

Installing

For installation, reverse the procedure for removal.

Tightening torque:

Self locking nut:

90 Nm (9.0 m•kg, 65 ft•lb)

Muffler:

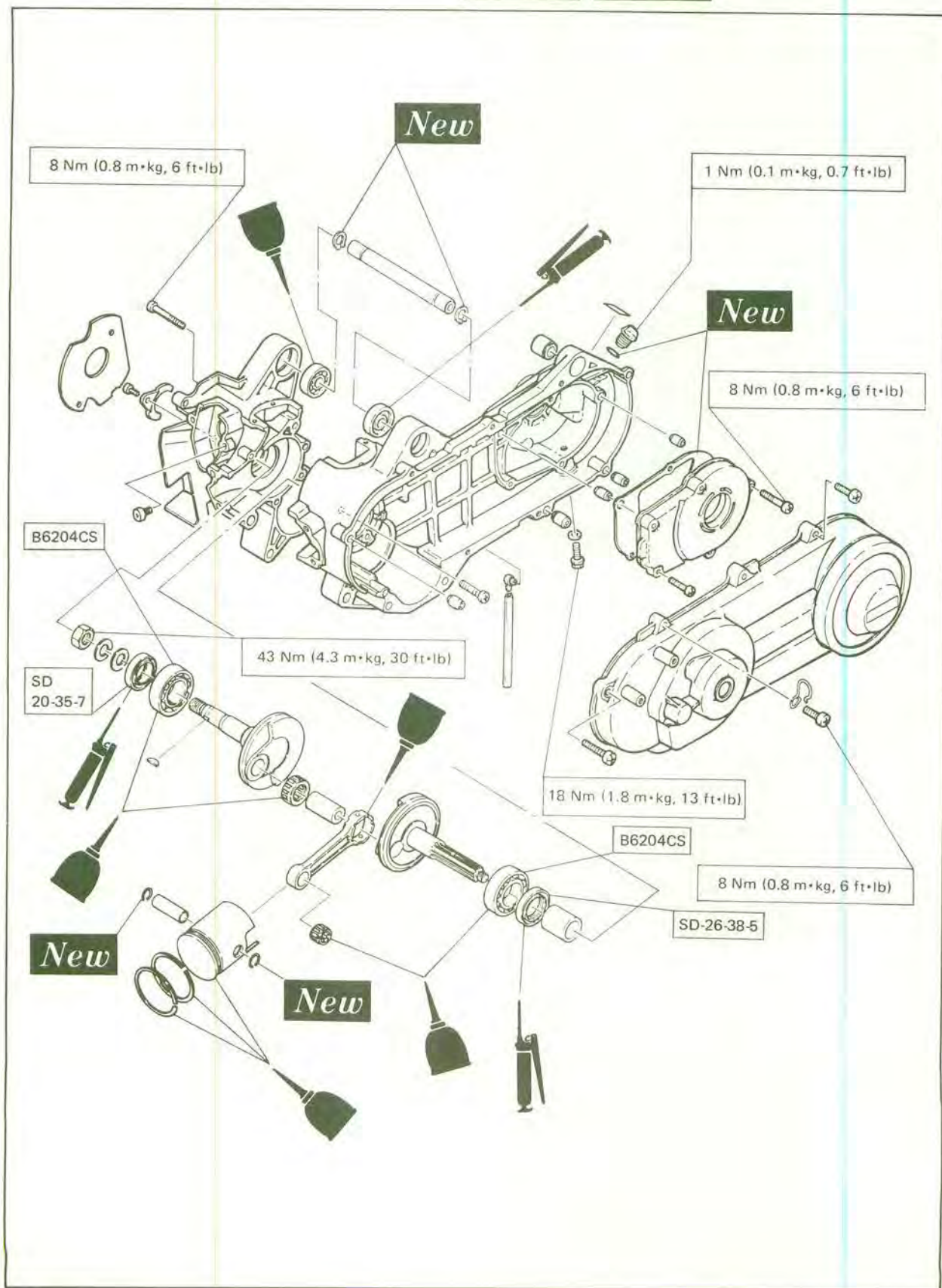
18 Nm (1.8 m•kg, 13 ft•lb)

NOTE: _____

- Take care so that no oil or grease spills on the V-belt or sheave surfaces.
 - When installing the drive axle, be careful not to turn over the oil seal lip with the edge of serrated portion.
- _____

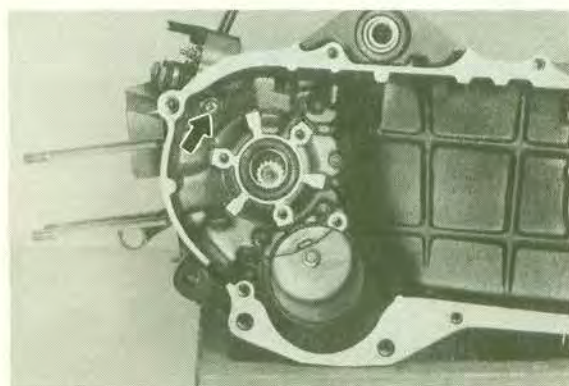
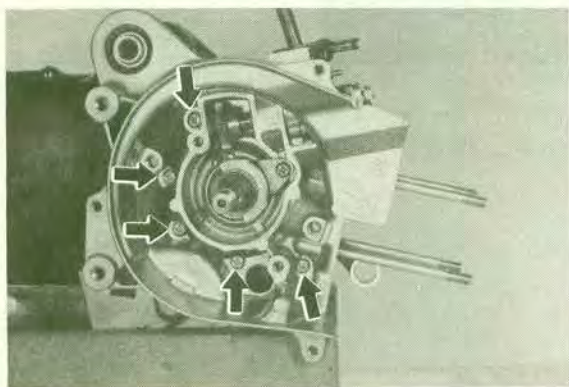
CRANKCASE • CRANKSHAFT

DISASSEMBLY • INSPECTION • ASSEMBLY

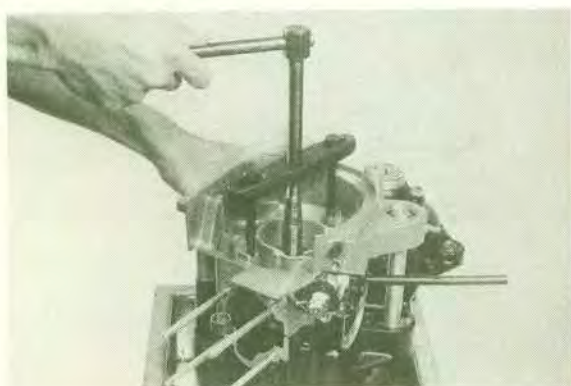


Disassembly

1. Remove the crankcase screws.

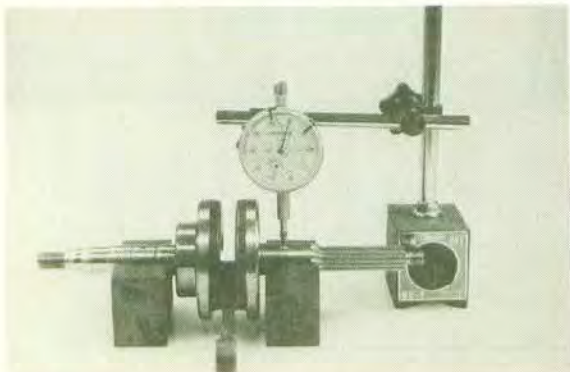


2. Using the crankcase separating tool, split the crankcase.



Checking

1. Measure the run-out of the crankshaft.



Max. run-out: 0.025 mm (0.0009 in)

If the run-out is more than the above limit, recondition or replace the crankshaft.

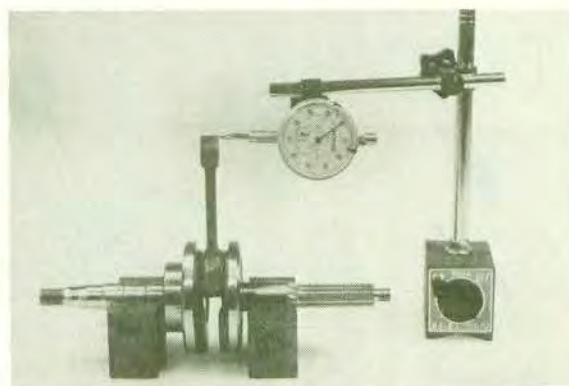
2. Measure the side clearance at the connecting rod big end.



Max. clearance:
0.3 ~ 0.65 mm (0.011 ~ 0.025 in)

If the side clearance is more than the above limit, replace the connecting rod.

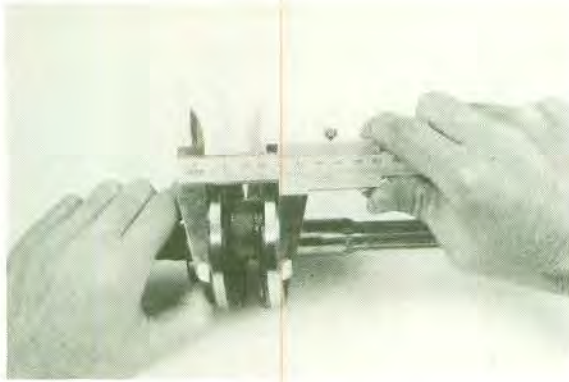
3. Measure the side play of connecting rod small end.



Max. play: 0.8 ~ 2.0 mm (0.031 ~ 0.078 in)

If the side play is more than the above limit, replace the connecting rod.

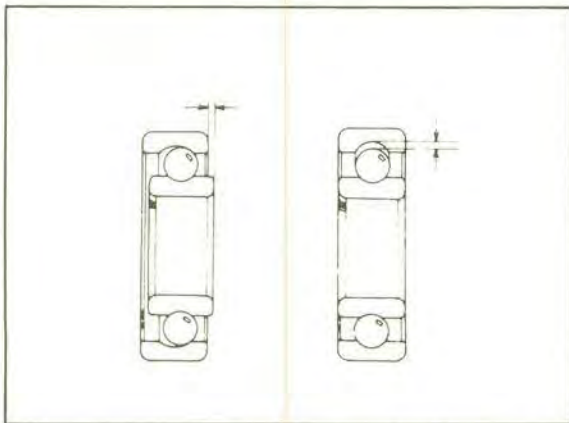
4. Measure the width of the crankshaft assembly.



Crankshaft assembly width:
 $38 \begin{smallmatrix} -0.05 \\ -0.10 \end{smallmatrix} \text{ mm } (1.5 \begin{smallmatrix} -0.002 \\ -0.004 \end{smallmatrix} \text{ in})$

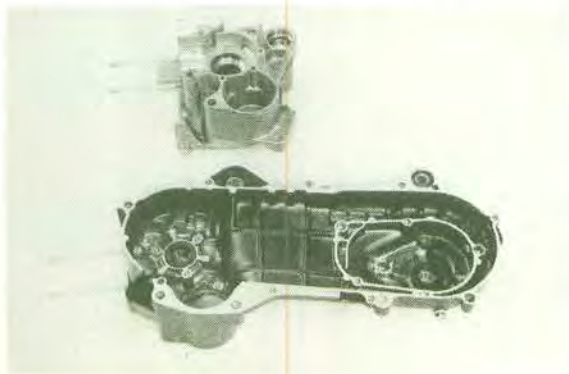
If the width exceeds specifications, replace the crankshaft.

5. Check the play of crankshaft bearings.



If the play is noticed, replace the bearing.

6. Thoroughly wash the crankcase with solvent, and check for cracks or damage.



Installing

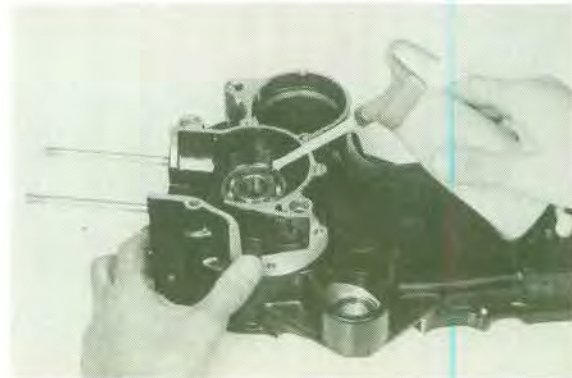
1. Thoroughly remove the gasket on the crankcase sealing surface and drive the bearings into the crankcase.



NOTE:

Be sure that the bearings are fit squarely in the crankcase.

2. Oil the bearings and install them in the crankcase.

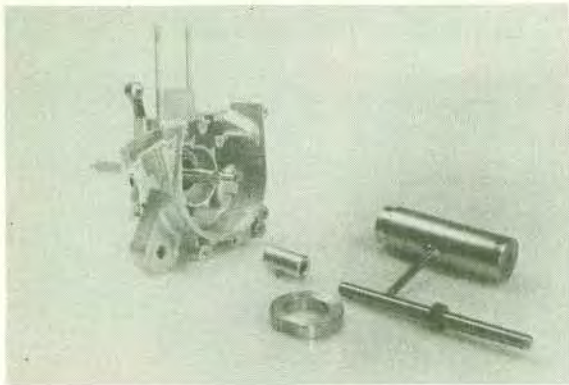


Crankshaft Installation

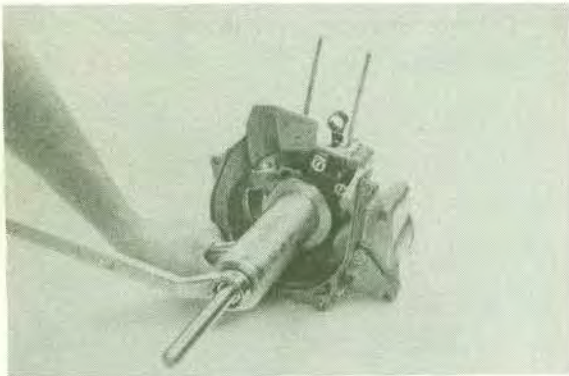
CAUTION:

To protect the crankshaft against scratches or to facilitate the operation of installation: Pack the oil seal lips with grease. Apply engine oil to each bearing.

1. Set the crankshaft into left case half and install crankshaft installing tool.

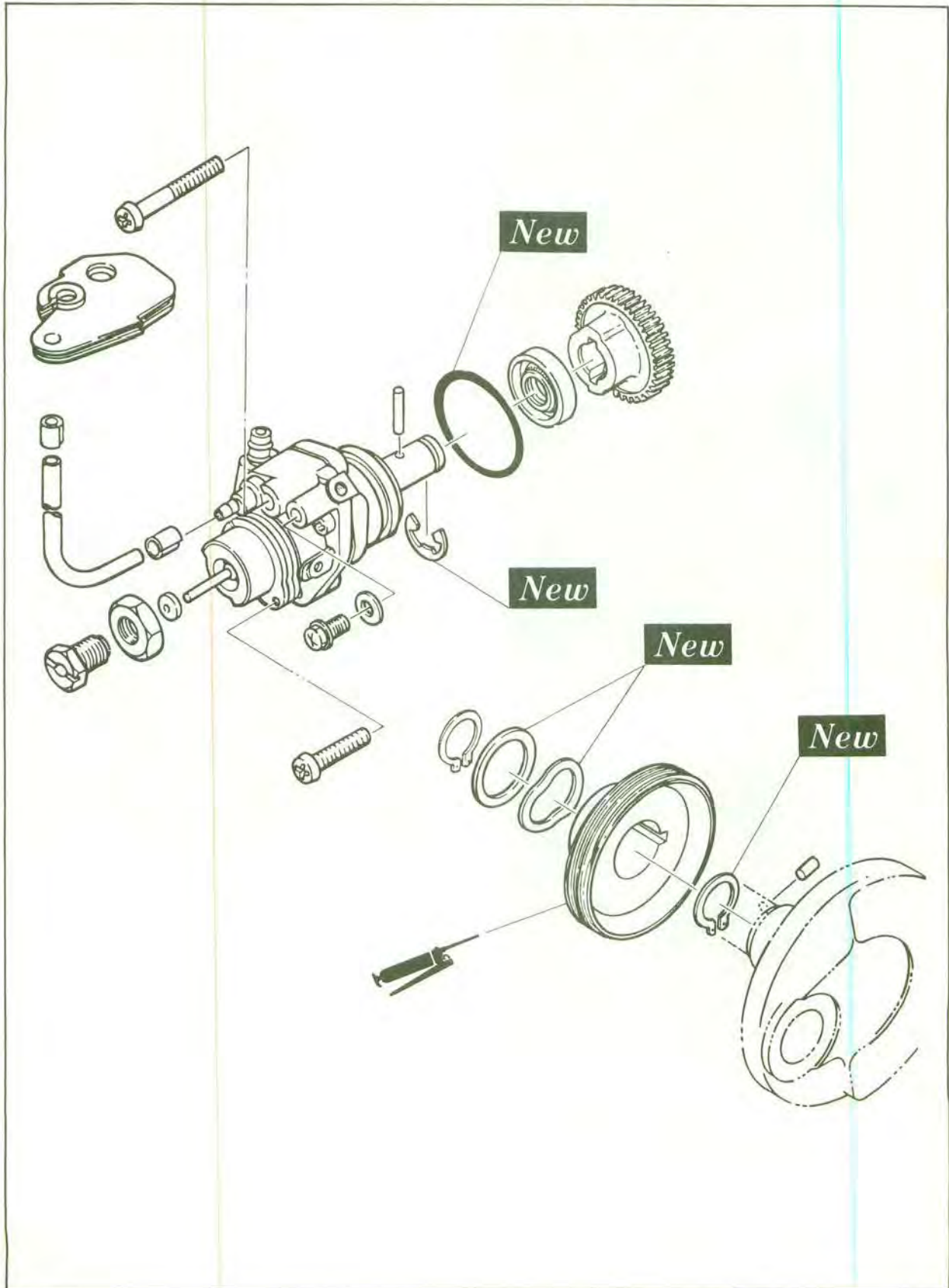


2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the other. Operate tool until crankshaft bottoms against bearing.



AUTOLUBE PUMP

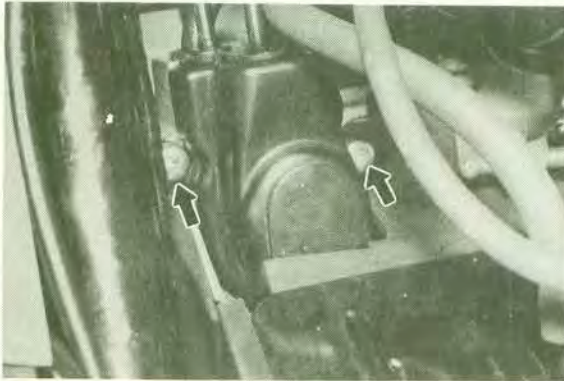
DIASSEMBLY • INSPECTION • ASSEMBLY



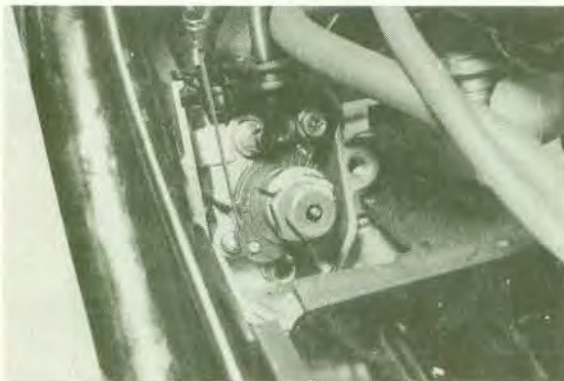
AUTOLUBE PUMP

Removing

1. Remove side cover 4.
2. Remove the oil pump cover.



3. Remove the oil pump cable.



4. Remove the oil pipe and oil delivery pipe.

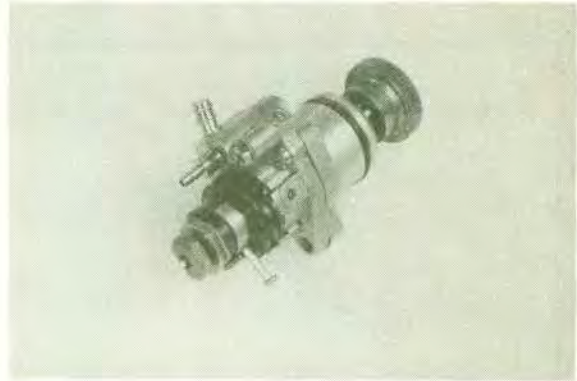


NOTE: _____
After removing the oil pipe and oil delivery pipe, plug the holes to prevent oil from leaking.

5. Remove the screws and remove the oil pump.

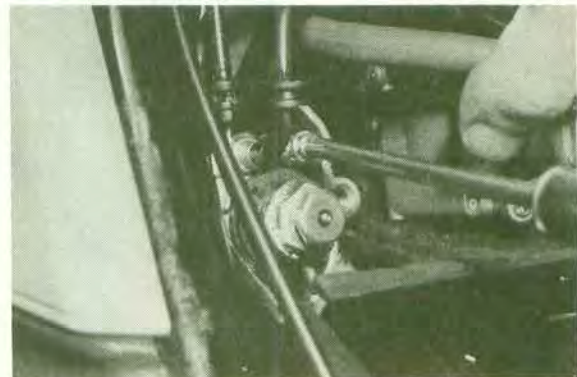
Checking

Check the worm gear for chipped or damaged teeth.



Installing

1. Install the oil pump on the crankcase.
2. Connect the oil pump and oil delivery pipe to the pump.
3. Install the pump cable.
4. Bleed the oil pump. (Air bleeding is necessary whenever the oil pump or oil pipe has been removed.)
 - a. Remove the bleeder bolt.

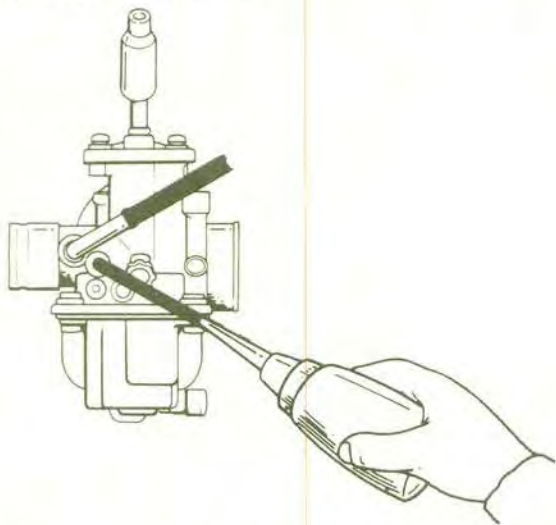


- b. Oil containing air bubbles runs out. Until air bubbles completely disappear, let the oil flow out, and install the bleeder bolt.

NOTE: _____
Before starting air-bleeding, add oil to the Autolube tank.

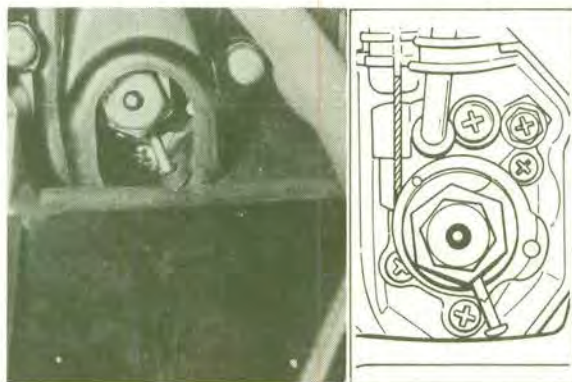
NOTE:

Since the discharge of the oil pump is small, filling the delivery pipe with oil will take time. So use an oiler to fill with oil before starting air bleeding.



Oil should be added until it flows out of the carburetor outlet.

5. Check that the marks on the pump are aligned.



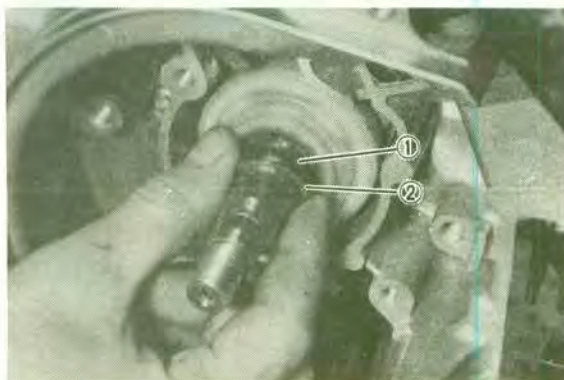
6. Install the oil pump cover.
7. Install side cover 4.

PUMP DRIVER GEAR**Removing**

1. Remove side cover 3.
2. Remove air shroud 3.
3. Remove the fan.
4. Remove the CDI magneto.
5. Remove the magneto base.
6. Remove the circlip.



7. Remove the shim and wave washer, and remove the pump drive gear.



1. Wave washer
2. Shim

NOTE:

Be careful so that the locating pin is not lost.

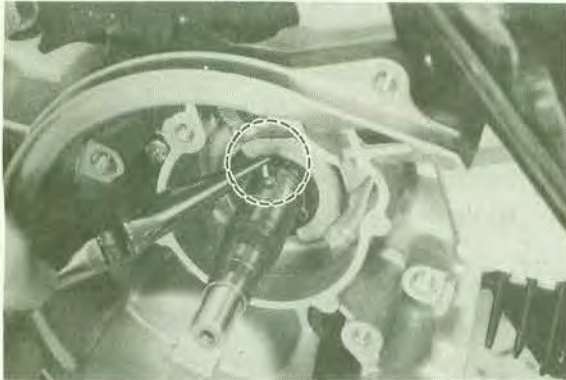
Checking

Check the gear teeth for damage or wear.

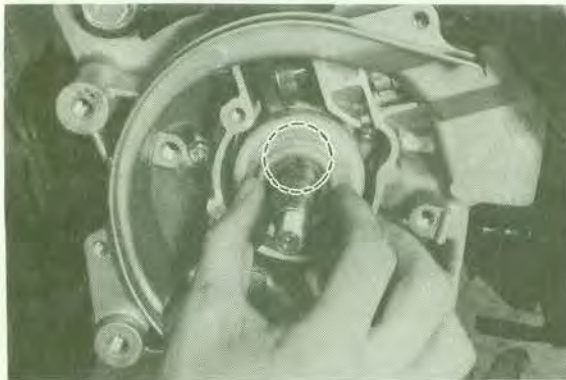


Installing

1. Fit the locating pin to the crankshaft.



2. Align the locating pin with the hole in the pump drive gear, and install the pump drive gear.



NOTE:

- Mesh the pump drive gear with the pump worm gear completely.
- Apply grease to the worm gear.

3. Install the wave washer and shim and install the circlip.
4. Install the magneto base and magneto.

Tightening torque:
43 Nm (4.3 m·kg, 31 ft·lb)

NOTE:

Be sure to check that ignition timing is correct.

5. Install the fan.
6. Install air shroud 3.
7. Install side cover 3.

CHAPTER 4. CARBURETION

CARBURETOR	4-1
Removing	4-2
Disassembling	4-3
Checking	4-4
Assembling	4-4
Installing	4-5
REED VALVE	4-6
Removing	4-7
Checking	4-7
Installing	4-8

CARBURETION

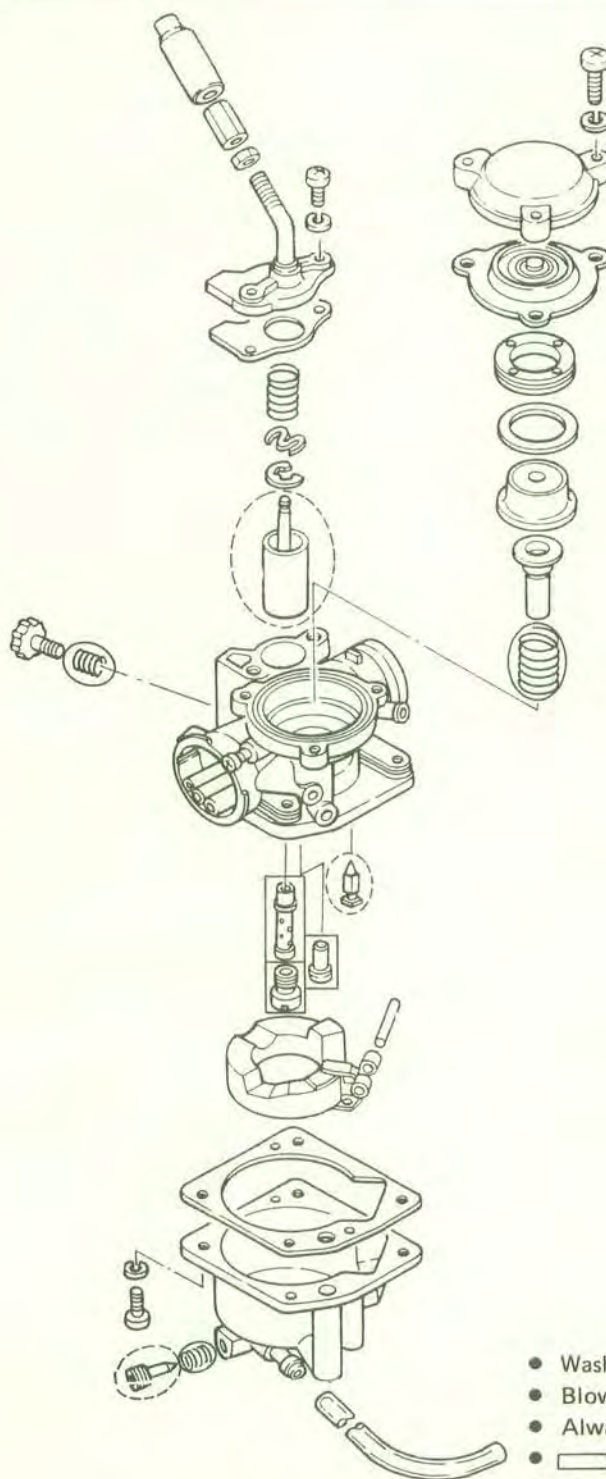
CARBURETOR

DISASSEMBLY • INSPECTION • ASSEMBLY



Keep away from fire and select a well-ventilated place for service.

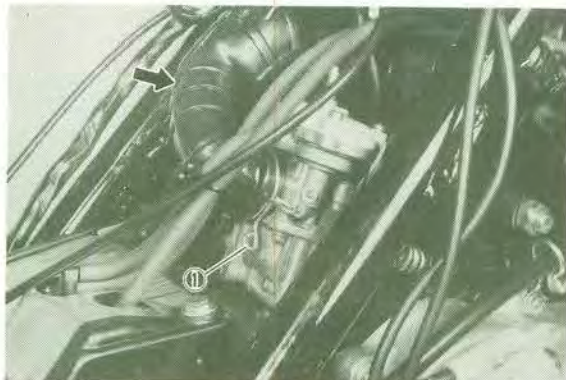
4



- Wash all component parts in detergent oil.
- Blow all passage with compressed air.
- Always use a new gasket and O-ring.
- Check for clogging.
- Check for scratches or bends.
- Check for fatigue.

Removing

1. Remove side cover 4.
2. Remove side cover 2 and 3.
3. Remove the air cleaner joint.



1. Air cleaner joint

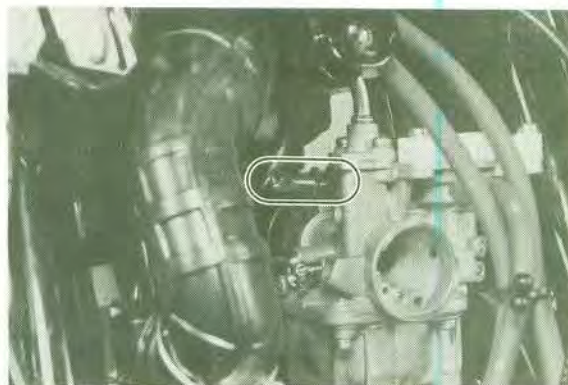
4. Disconnect the fuel pipe and vacuum pipe from the fuel cock.



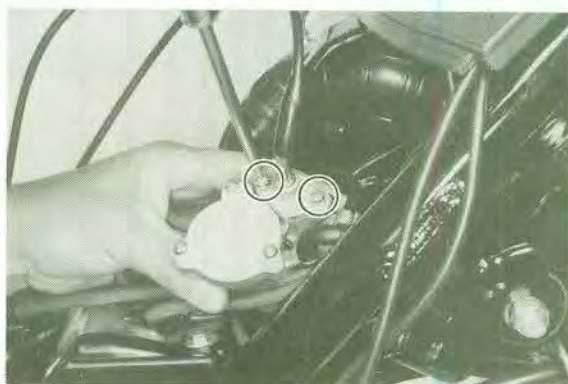
5. Disconnect the B.V.S. pipe on the B.V.S. side.



6. Loosen the carburetor joint and remove the carburetor.



7. Remove the mixing chamber top.



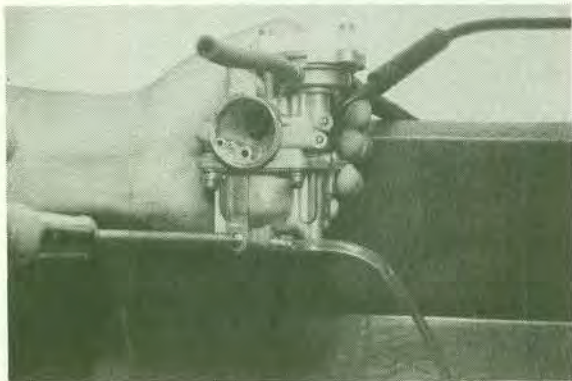
8. Disconnect the oil delivery pipe.



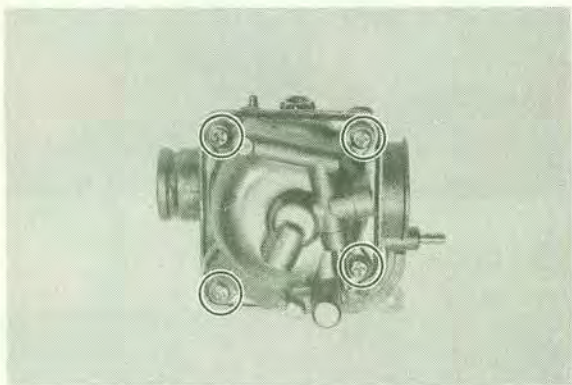
Disassembling

When disassembling the carburetor, keep away from fire and pay attention to air ventilation.

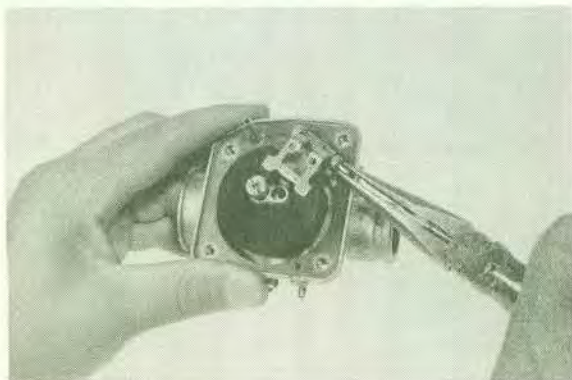
1. Place an empty can under the open end of the delivery pipe, loosen the drain screw, and drain the float chamber.



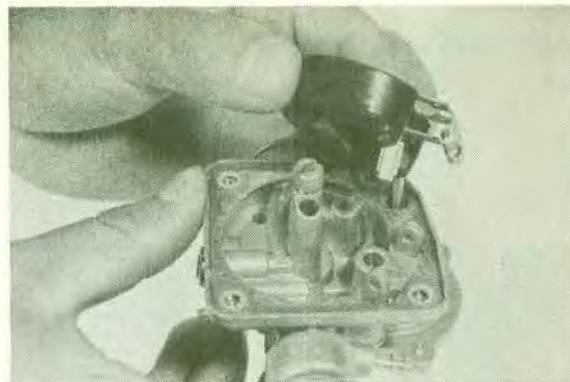
2. Remove the float chamber.



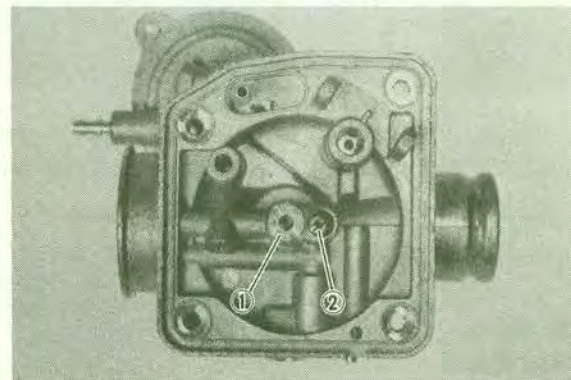
3. Pull out the float pin and remove the float.



4. Remove the valve seat assembly.

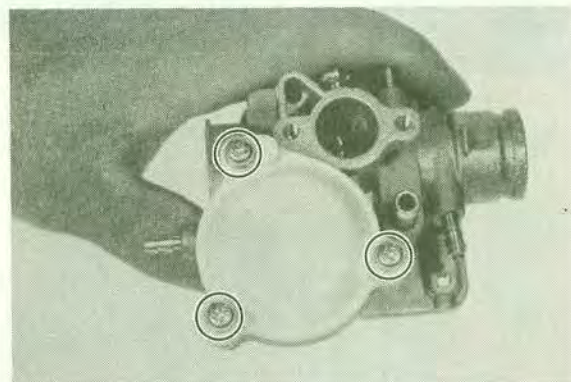


5. Remove the pilot jet and main jet.

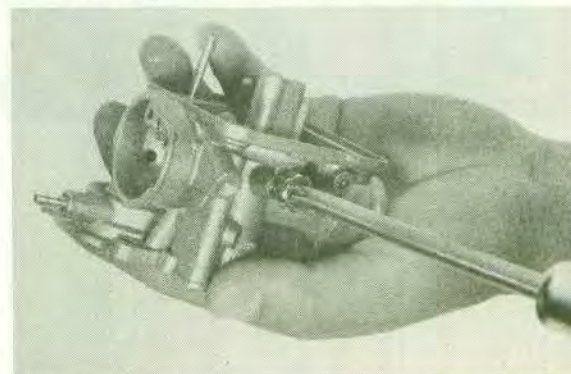


1. Main jet 2. Pilot jet

6. Remove the diaphragm cover, and remove the diaphragm spring and diaphragm assembly.



7. Remove the throttle stop screw.



1. Throttle stop screw

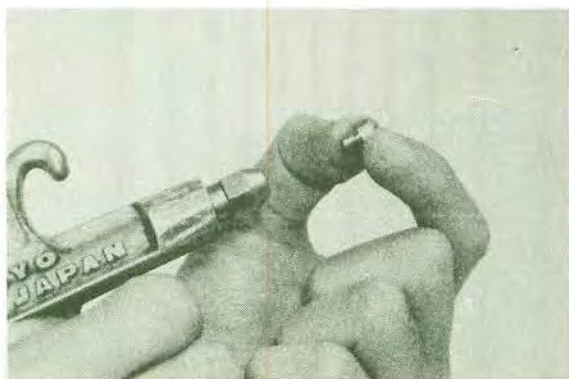
Checking

1. Check the float valve for grooved wear and scratches.



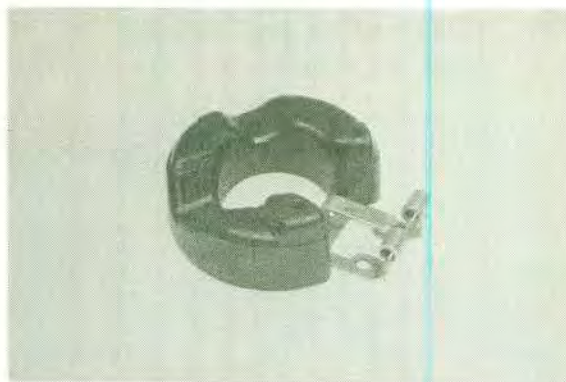
If grooved wear or scratches are noticed, replace the valve seat assembly.

2. Check the jets, valves, and passages for clogging, and clean them with compressed air, if necessary.



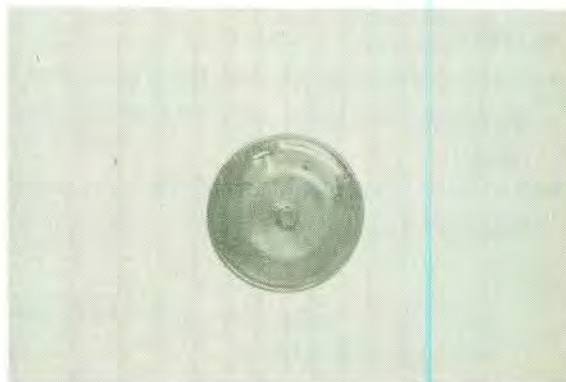
NOTE: _____
Don't use a wire to clean jets and valve.

3. Check the float for deformation or damage.



If deformed or damaged, the float should be replaced.

4. Check the diaphragm rubber for breaks or cracks.



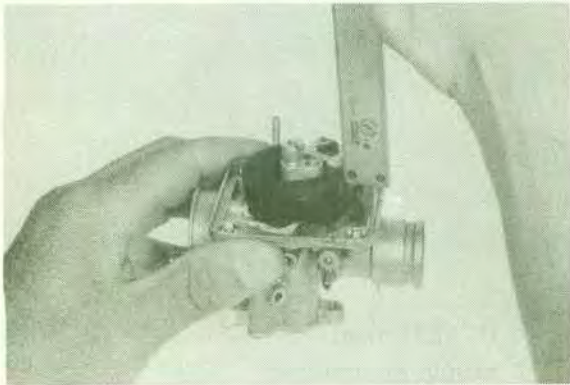
If broken or cracked, the diaphragm should be replaced.

Assembling

1. Install the throttle stop screw.



2. Install the main nozzle, main jet and pilot jet.
3. Install the valve seat assembly.
4. Install the float and float pin.
5. Check the float height.



Float height: 14.5 ± 1 mm (0.57 ± 0.04 in)

NOTE: _____

- Lift up the float so that the float valve tip contacts the float arm and measure the height.
- Before measuring, remove the float chamber gasket.

If the float height is incorrect, adjust by bending the float arm.

6. Install the float chamber.

Installing

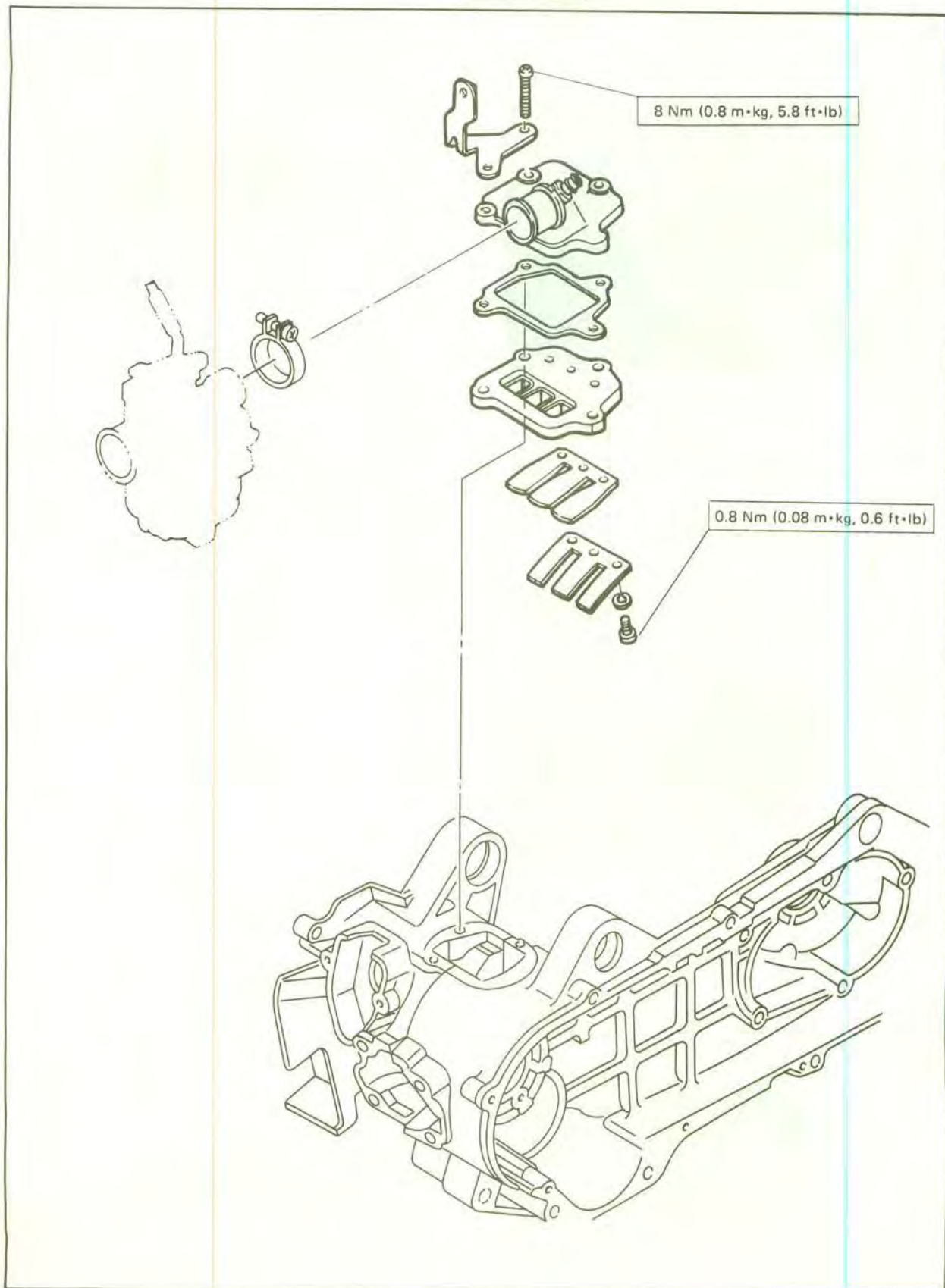
For installation, reverse the procedure for removal.

NOTE: _____

After installing, adjust the play of throttle cable and idling speed. (See page 2-5.)

REED VALVE

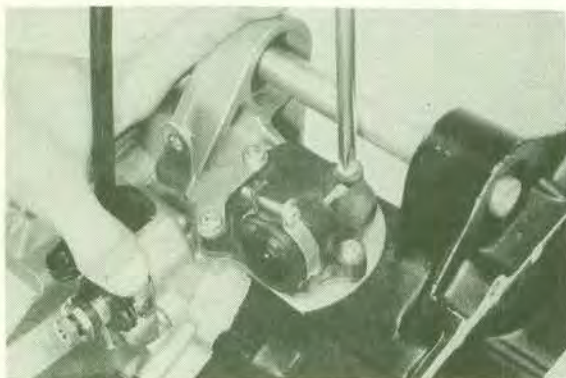
DISASSEMBLY • INSPECTION • ASSEMBLY



Removing

Remove the side covers 2, 3 and 4.

1. Remove the engine. (See page 3-3.)
2. Remove the four screws, and remove the intake manifold gasket and reed valve assembly.



NOTE:

Thoroughly remove the gasket on the crank-case sealing surface and reed valve assembly.

3. Remove screws and remove the reed valve stopper and reed valve.



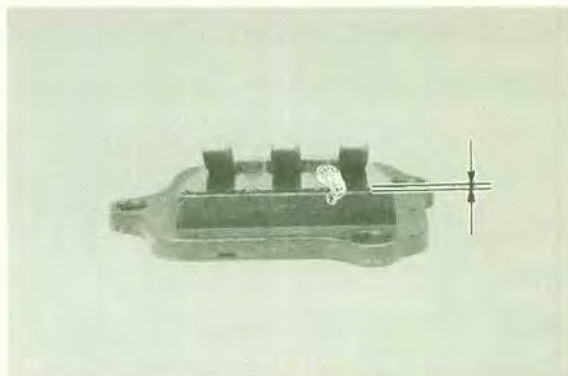
Checking

1. Checking the reed valve for cracks and damage.



If cracks or damage is noticed, replace the reed valve.

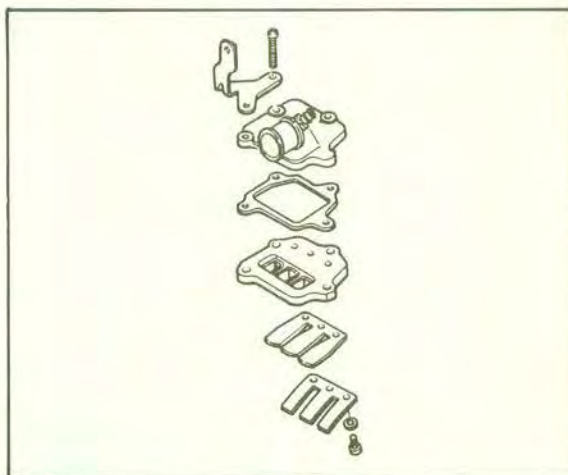
2. Check the clearance between the valve and seat.



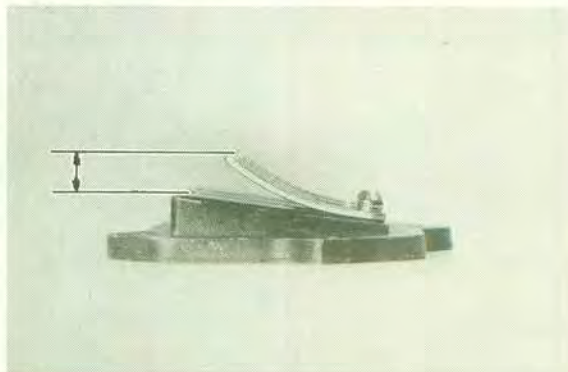
Valve bending limit: 0.2 mm (0.008 in)

NOTE:

1. As shown below, the reed valve should be assembled.
2. The warped side should face the seat.



3. Check the valve stopper height.



Stopper height: 7.8 mm (0.31 in)

If the height is less than the above limit,
replace the reed valve.

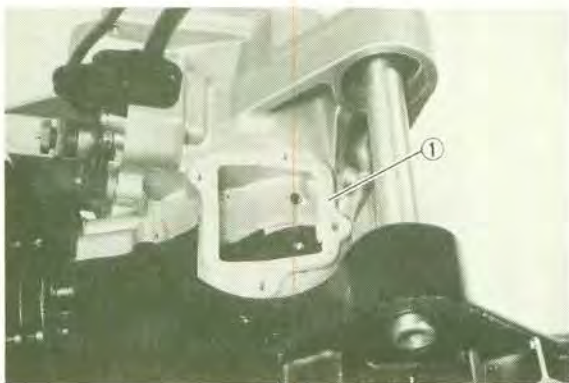
Tightening torque:
0.8 Nm (0.08 m•kg, 0.6 ft•lb)

CAUTION:

Never attempt to recondition the stopper by
bending it excessively.

Installing

1. Thoroughly remove the gasket on the
contact areas of the case and seat, and
install a new gasket.



1. Gasket
2. Install the gasket and intake manifold,
and tighten the screws.



Tightening torque:
8 Nm (0.8 m•kg, 5.8 ft•lb)

3. Install the carburetor.
4. Install the engine.
5. Install side covers 2, 3 and 4.

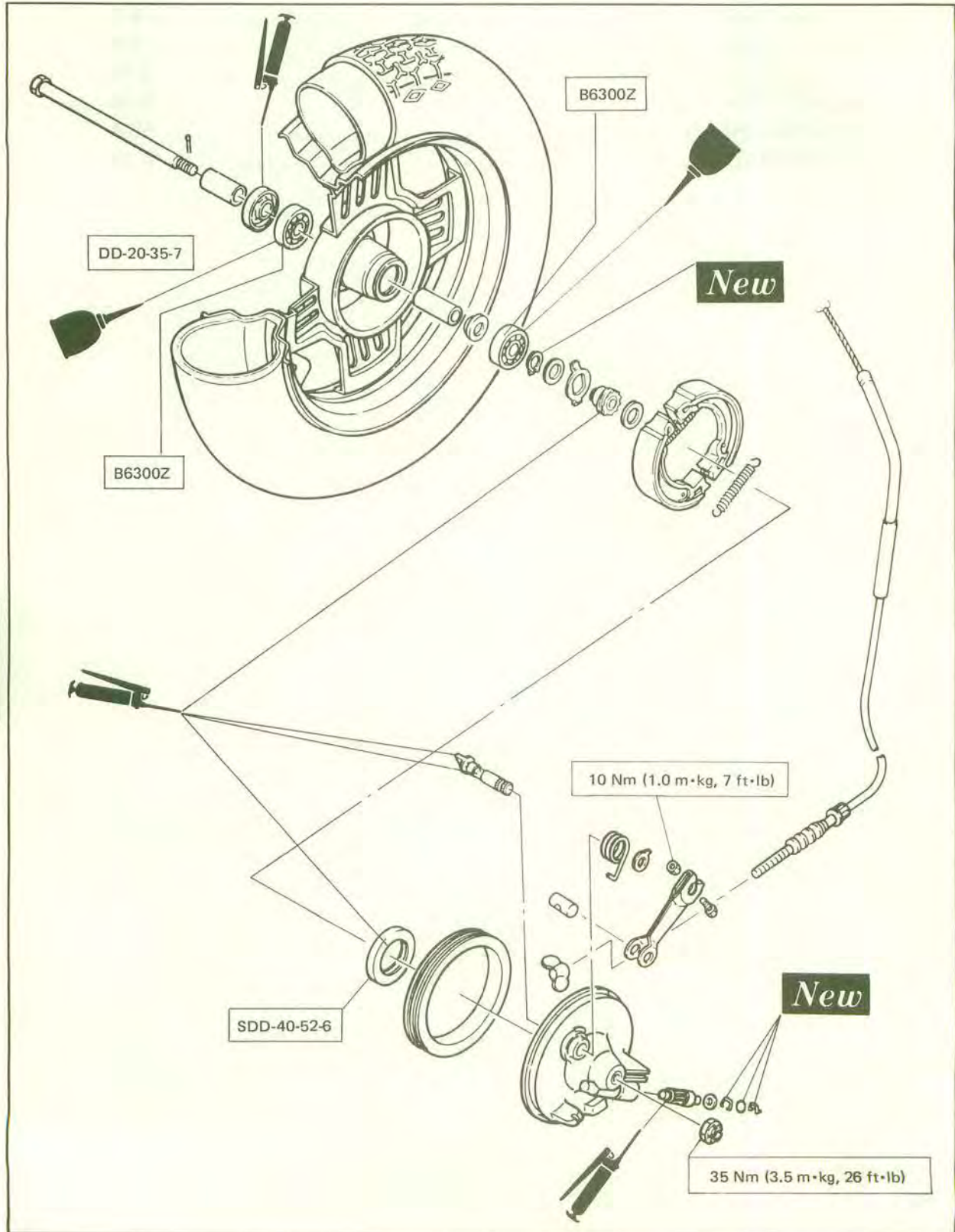
CHAPTER 5. CHASSIS

FRONT WHEEL • FRONT BRAKE.....	5-1
Front Wheel	5-2
Front Brake.....	5-5
Meter Gear	5-7
REAR WHEEL	5-9
Rear Brake	5-11
FRONT FORK	5-14
STEERING HEAD	5-18
MAIN STAND.....	5-28

CHASSIS

FRONT WHEEL • FRONT BRAKE

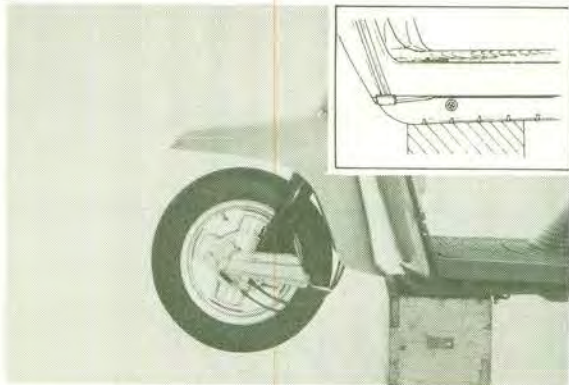
DISASSEMBLY • INSPECTION • ASSEMBLY



FRONT WHEEL

Removing

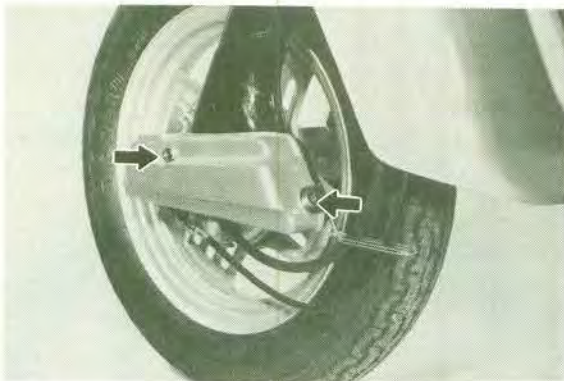
1. Place a suitable stand under the engine protector.



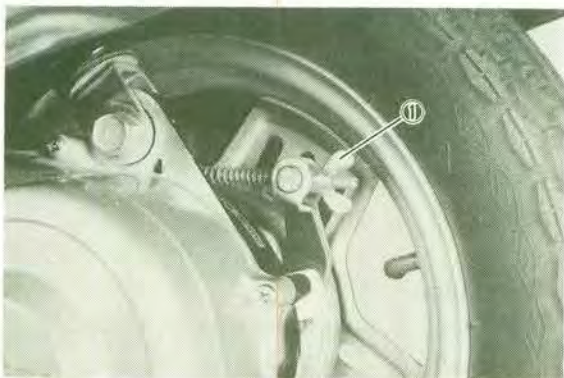
NOTE:

Raise the front wheel off the ground.

2. Remove the suspension cover.



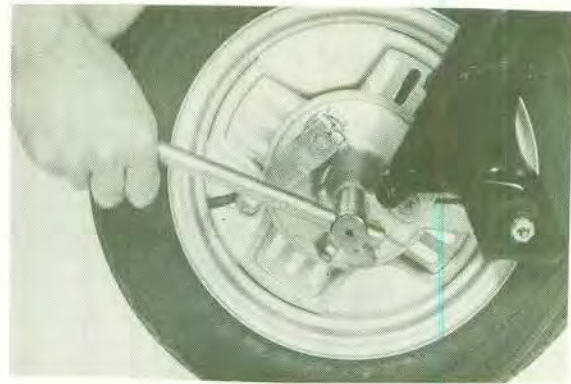
3. Remove the speedometer cable and brake cable.



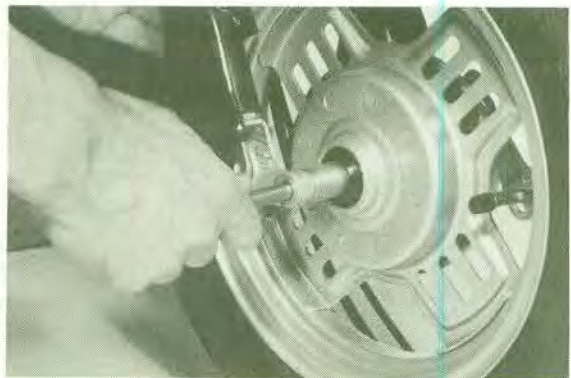
1. Brake cable

2. Speedometer cable

4. Remove the cotter pin and remove the castle nut.

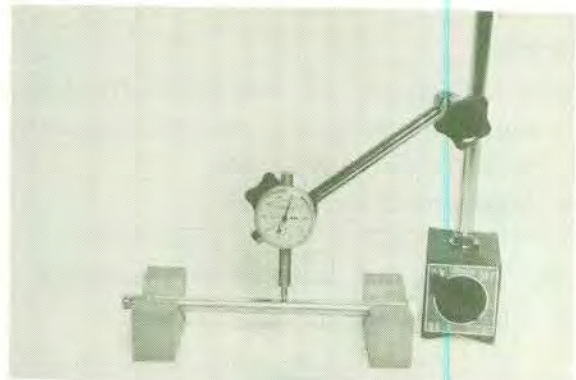


5. Pull out the wheel axle and remove the front wheel.



Checking

1. Using a dial gauge, check bends of the wheel axle.



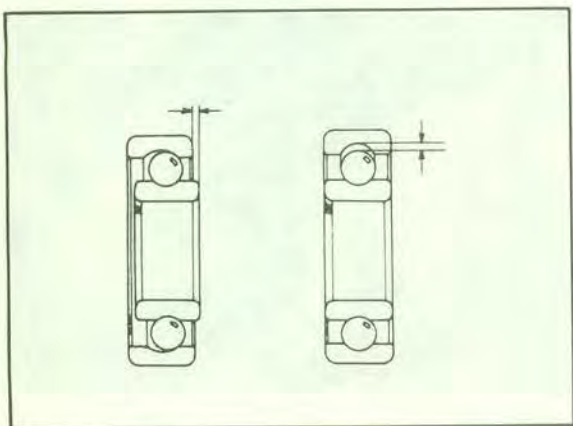
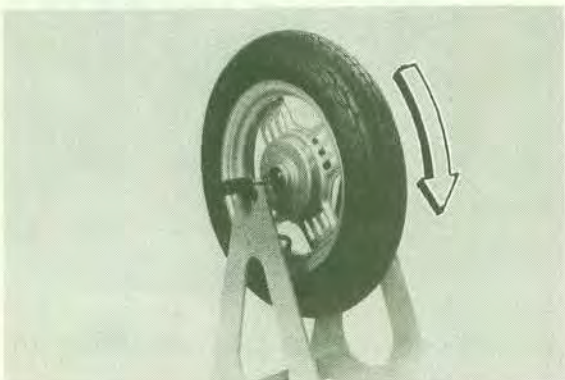
Bending limit: 0.2 mm (0.008 in)

If bent more than the above limit, replace the wheel axle.

NOTE:

Half of the dial gauge reading indicates the bend of the wheel axle.

2. By rotating the front wheel, check for abnormal noise or play of the bearing.

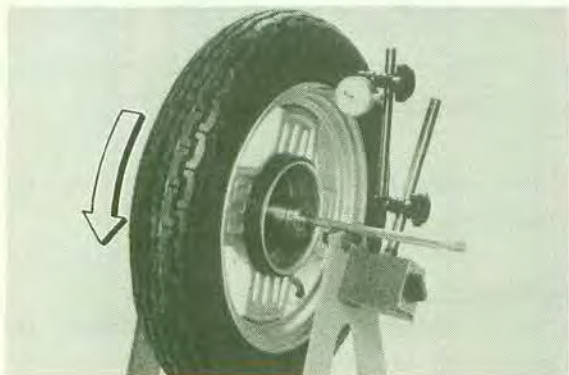


If noise or play is excessive, replace the bearing.

NOTE:

- If the bearing has play, check the spacer and spacer flange for wear, and replace the bearing together with them.
- Always use a new oil seal.

3. Using a dial gauge, check the runout of the front wheel.

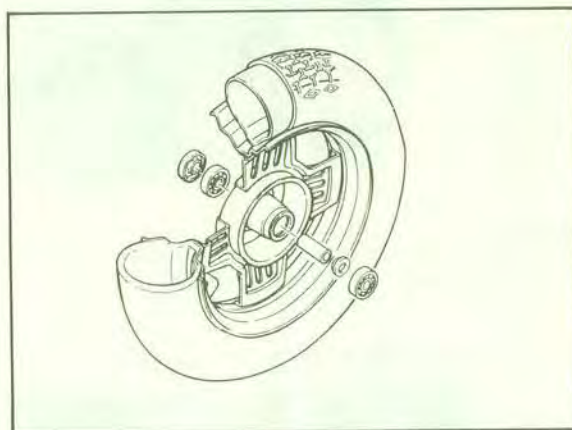


Max. runout	Radial	1 mm (0.4 in)
	Thrust	

If runout exceeds the above limit, the front wheel should be replaced.

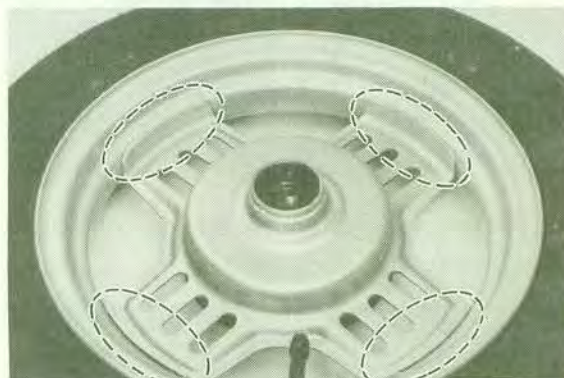
Disassembling

Remove the oil seal, bearing, spacer and spacer flange.



Checking

Check the front wheel for defective welded areas, damage, or excessive play.



If damage, defective welded areas, or excessive play is noticed, the front wheel should be replaced.

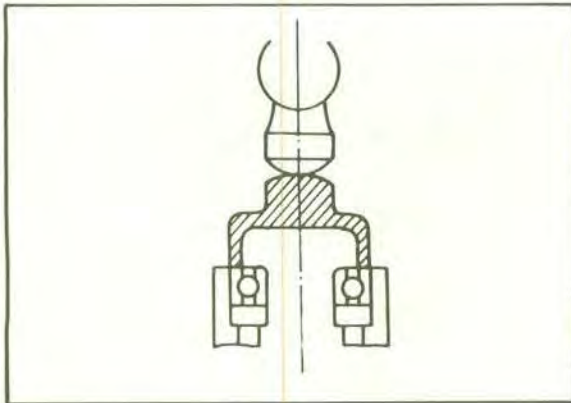
Assembling

1. Apply a liberal amount of grease to the bearings.
2. Drive in the left-side bearing.
3. Install the spacer and spacer flange.
4. Drive in the right-side bearing.
5. Install the right-side oil seal.



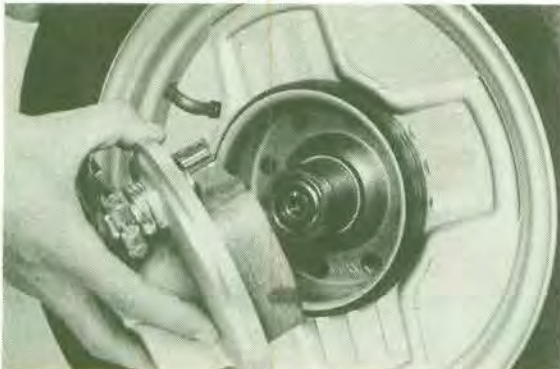
NOTE:

- To drive in the bearing, apply force to the outer race so that it fits over the shaft squarely.
- Make sure the bearing is positioned with the size mark facing outward.



Installing

1. Install the brake shoe plate onto the front wheel.

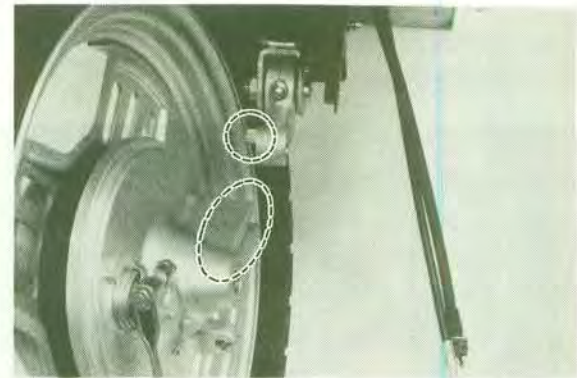


NOTE:

The tab on the meter clutch should not overlap with the projection on the wheel bearing housing.



2. Grease the oil seal lip and install the collar. Align the slot in the brake shoe plate with the projection on front suspension arm 1, and install the brake shoe plate.



3. Insert the wheel axle from the right side of the wheel and tighten the castle nut.

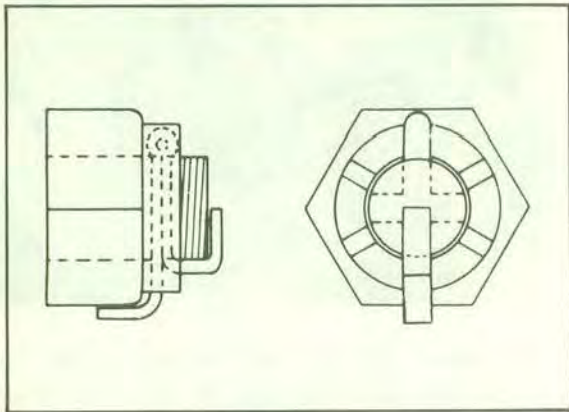


Tightening torque:
35 Nm (3.5 m·kg, 25 ft·lb)

NOTE:

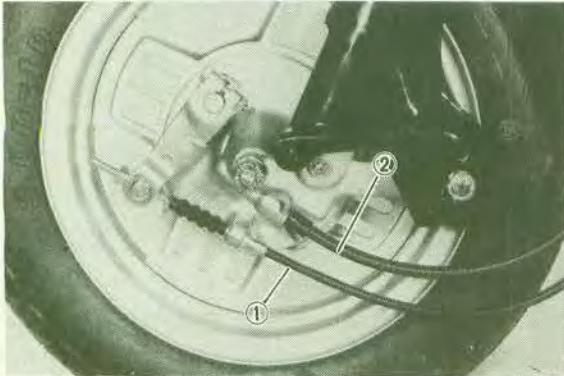
In order to align the cotter pin hole in the wheel axle with the castle nut hole, do not loosen the castle nut which has already been tightened to specification. (It should be rather tightened to align.)

4. Install the cotter pin correctly.



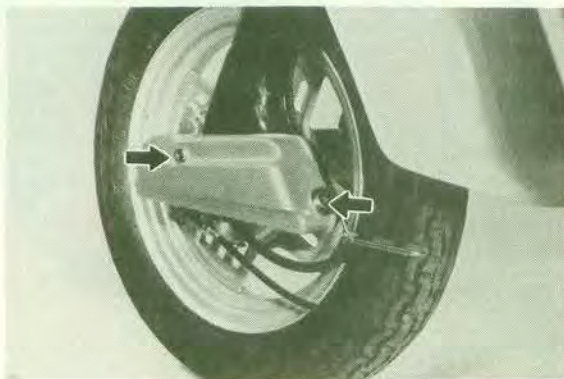
NOTE: _____
Always use a new cotter pin.

5. Connect the speedometer cable and brake cable.



1. Brake cable 2. Speedometer cable

6. Install the front suspension cover.



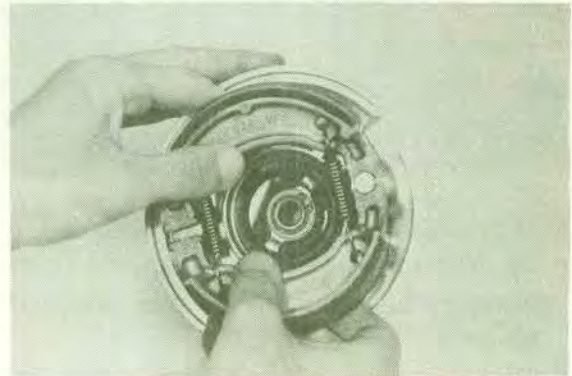
NOTE: _____

- After installing the front wheel, adjust the brake.
- Check the operation of the speedometer.
- Check that the front suspension operates smoothly.

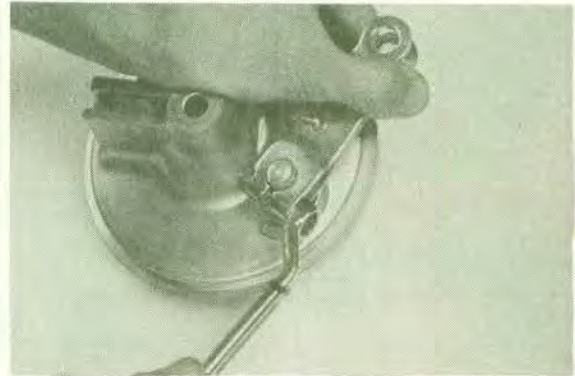
FRONT BRAKE

Disassembling

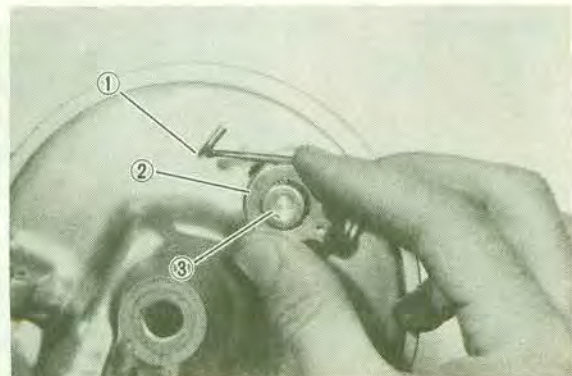
1. Remove the brake shoes from the brake shoe plate.



2. Remove the hexagon head bolt and remove the camshaft lever.



3. Remove the indicator plate and torsion spring, and remove the camshaft from the brake shoe plate.



1. Torsion spring 3. Camshaft
2. Indicator plate

Checking the brake shoes

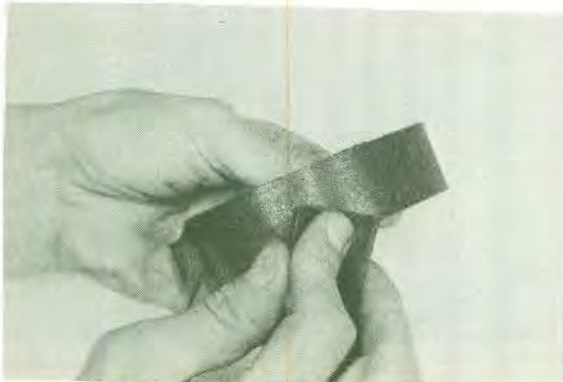
1. Check the brake lining thickness.



Wear limit: 2 mm (0.08 in)

If the thickness is less than the limit, the brake shoes should be replaced as a set.

2. If either shoe has scratches, smooth them out with sandpaper.



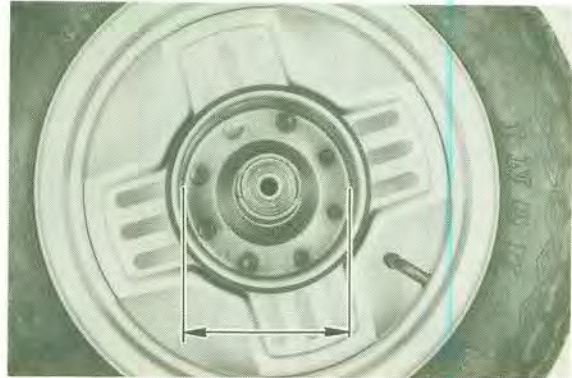
If it is impossible to smooth out, replace the brake shoes.

CAUTION:

- When checking or replacing brake shoe linings, be careful not to spill oil or grease on linings.
- When replacing the brake shoes, the tension springs should also be replaced.

Checking the brake drum

1. Check the brake drum inner surface for scratches. If it has scratches, smooth out or replace the drum.
2. Measure the inside diameter of the drum.

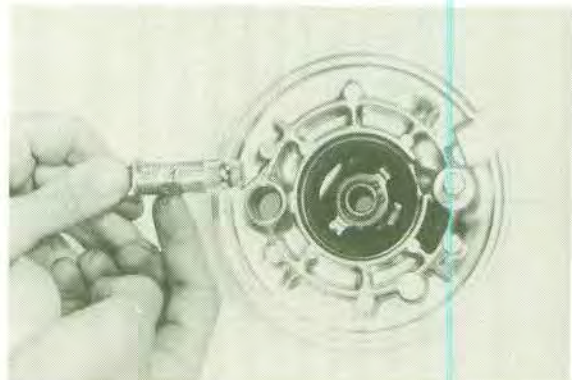


Max. limit: 110.5 mm (4.35 in)

If the inside diameter exceeds the **above** limit, the front wheel should be replaced.

Assembling

1. Grease the contact surface of the camshaft with the shoe plate, and fit it into the shoe plate.



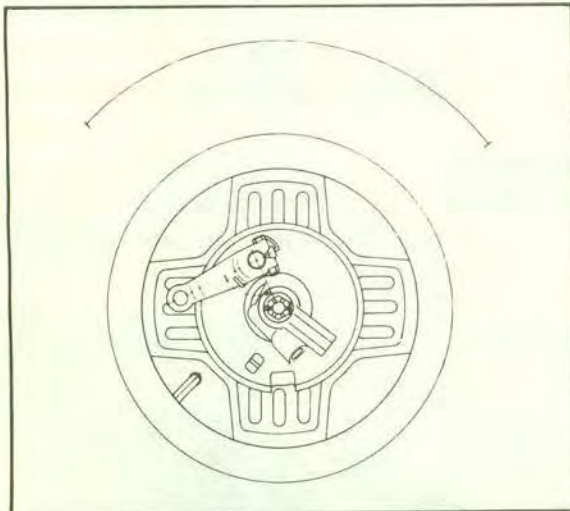
NOTE:

If grease overflows, thoroughly wipe it out so that it will not stick to brake shoe linings.

2. Install the torsion spring onto the camshaft, align the cut in the indicator plate with the non-serrated area of the camshaft, and install the indicator plate.



3. As shown, install the camshaft lever onto the camshaft.



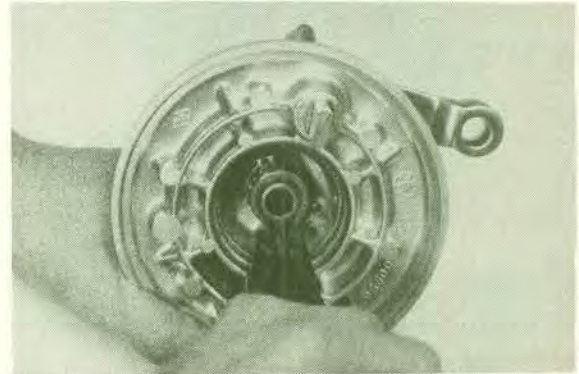
Tightening torque:
35 Nm (3.5 m·kg, 25 ft·lb)

METER GEAR

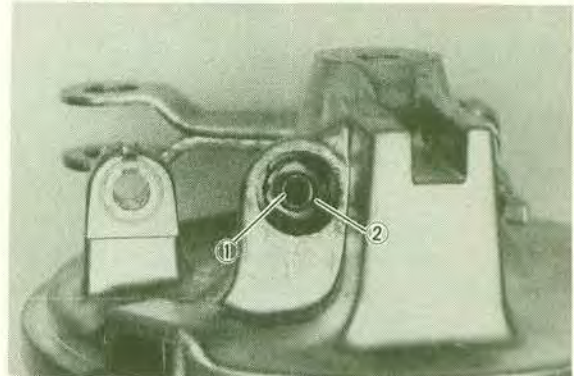
DISASSEMBLY · INSPECTION · ASSEMBLY

Removal

1. Remove the circlip and remove the meter clutch and drive gear.



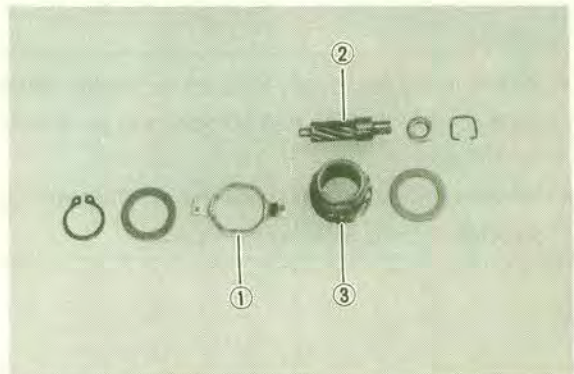
2. Remove the stopper ring and remove the meter gear.



1. Meter gear 2. Stopper ring

Checking

Check the meter clutch, drive gear and meter gear for uneven wear or damage.



1. Meter clutch 2. Meter gear 3. Drive gear

Replace them if they are worn unevenly or damaged.

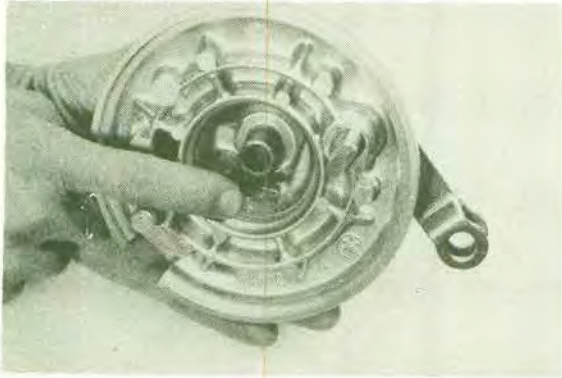
Assembling

1. Install the meter gear on the brake shoe plate.

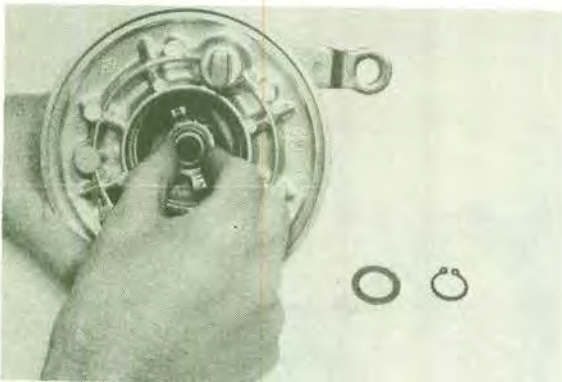
NOTE:

Install the stopper ring correctly.

2. Grease the meter gear.



3. Install the plate washer, drive gear, meter clutch, and plate washer, in this order, and install the circlip.

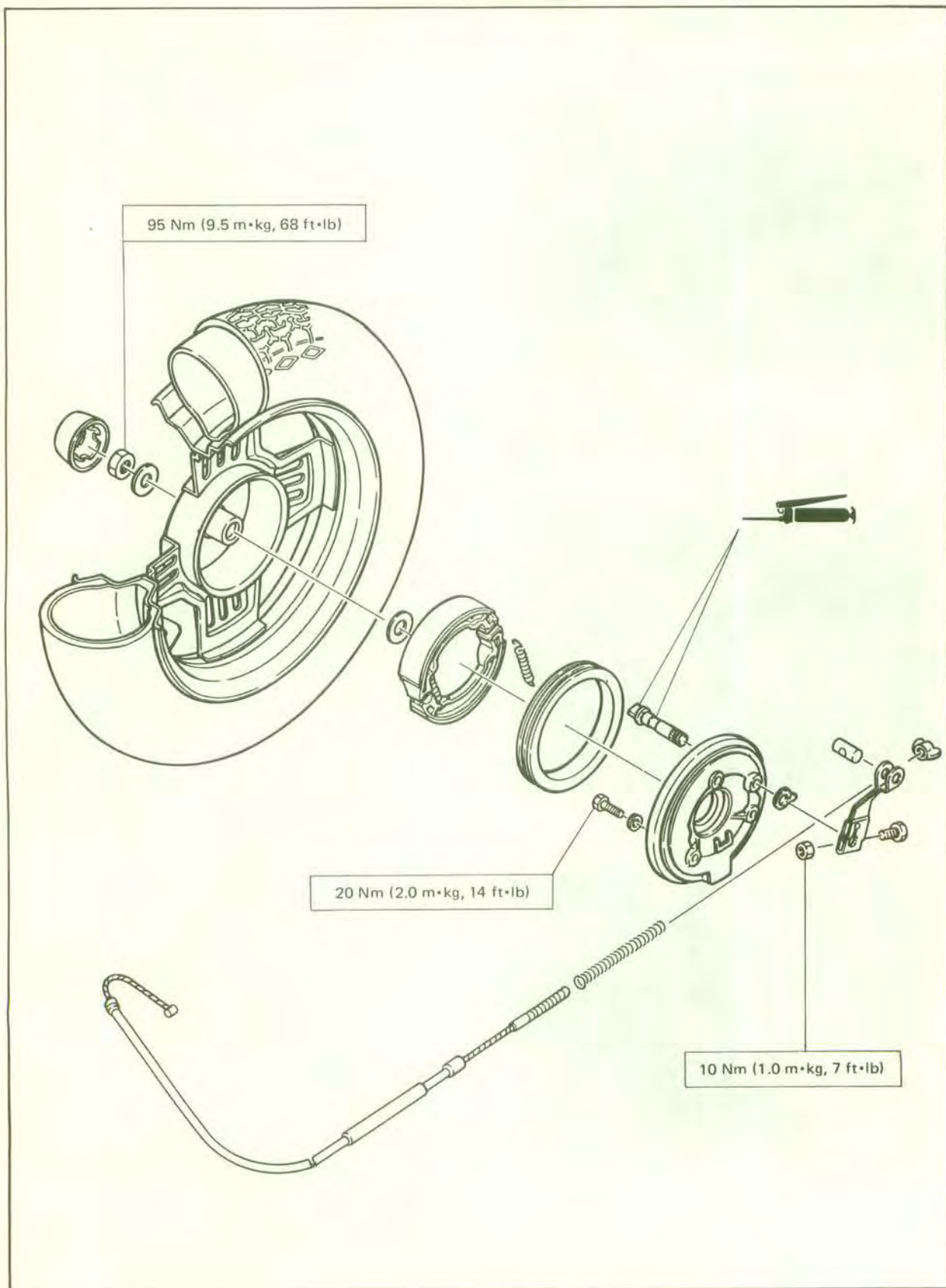


4. Install the oil seal.



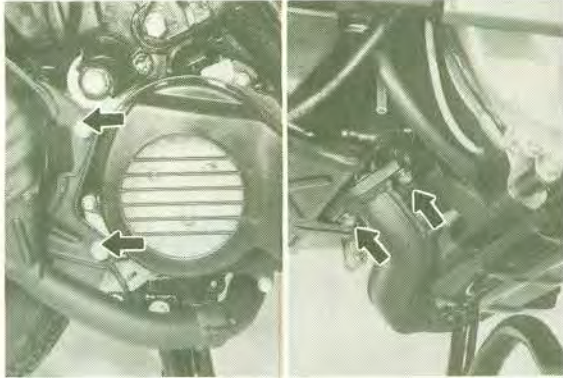
REAR WHEEL

DISASSEMBLY • INSPECTION • ASSEMBLY

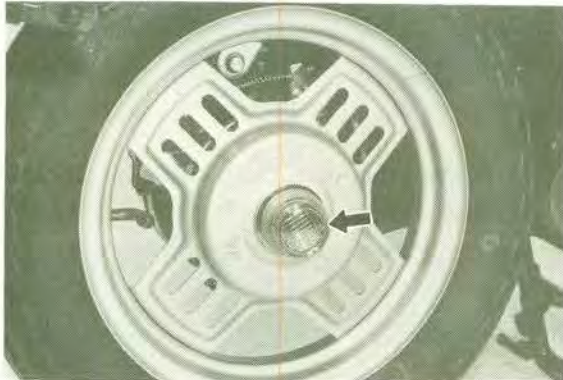


Removing

1. Remove side cover 3.
2. Remove the muffler bolt and remove the muffler.



3. Remove the rear wheel cap.



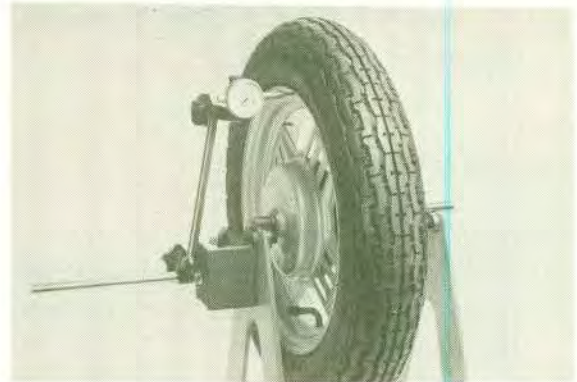
4. Apply the brake and remove the self-locking nut.



5. Remove the rear wheel.

Checking

1. Check the runout of the rear wheel.



Runout limit	Radial	1 mm (0.4 in)
	Thrust	

If runout exceeds the above limit, the rear wheel should be replaced.

2. Check the welded areas for separation, cracks or splits.



If there is separation, cracks or splits, replace the rear wheel.

3. Check the rear wheel serrations for wear or chipping.

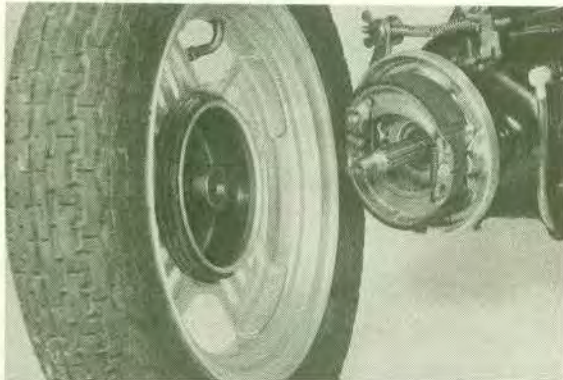


If excessive wear or chipping is noticed, replace the rear wheel.

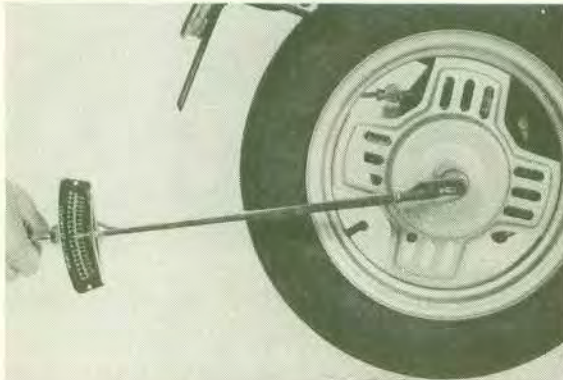
NOTE: _____
Check the drive axle serrations.

Installing

1. Clean the inner surface of the rear wheel brake drum and install the drum onto the drive axle serrations.

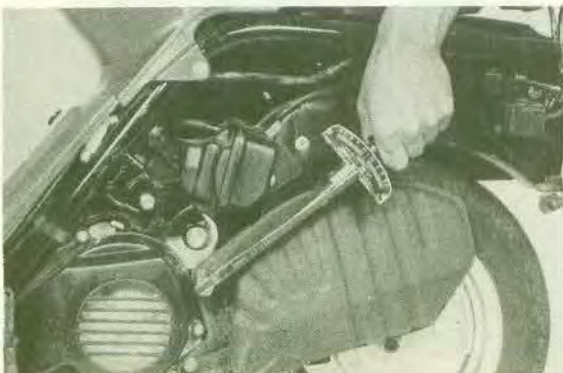


2. Apply the rear brake, and tighten the self-locking nut.



Tightening torque:
95 Nm (9.5 m·kg, 68 ft·lb)

3. Install the wheel cap.
4. Install the muffler.



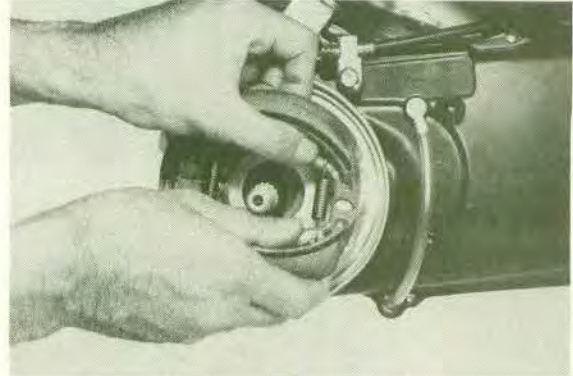
Tightening torque:
18 Nm (1.8 m·kg, 13 ft·lb)

5. Install side cover 3.

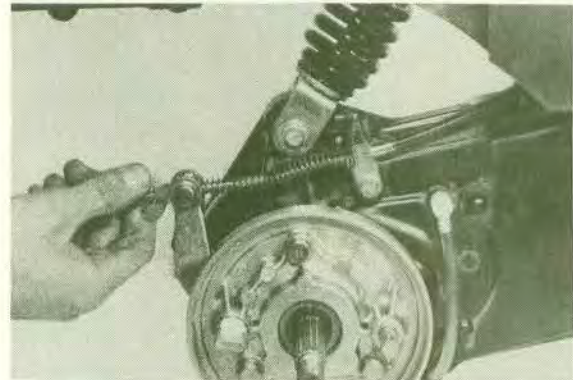
REAR BRAKE

Removing

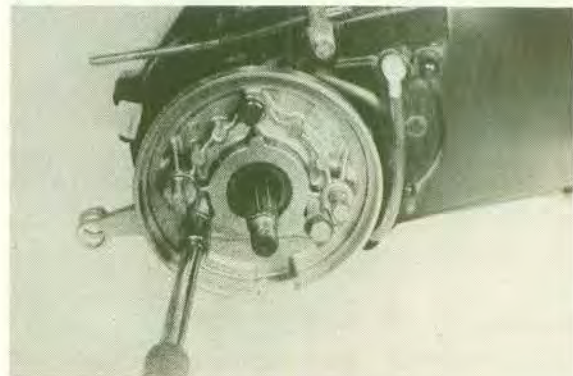
1. Remove the brake shoes from the brake shoe plate.



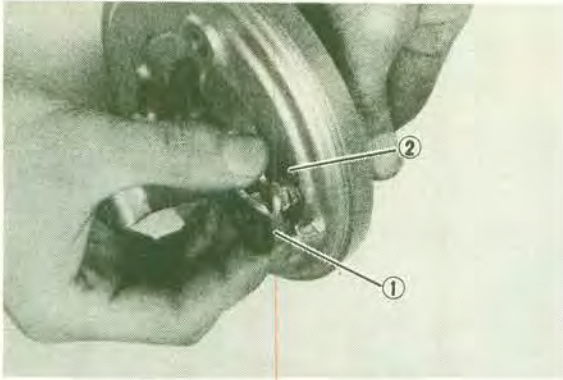
2. Remove the rear brake cable from the camshaft lever.



3. Remove the brake shoe plate.



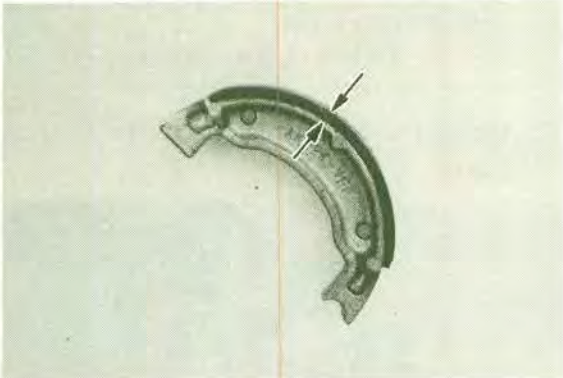
4. Remove the camshaft lever and indicator plate.



1. Indicator plate 2. Camshaft lever

Checking

1. Check the brake shoe lining thickness.



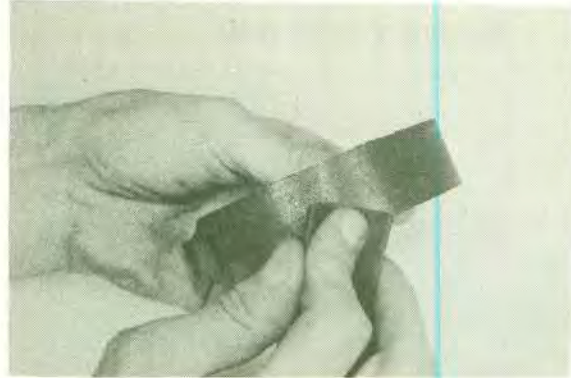
Min. thickness: 2 mm (0.08 in)

If thickness is below 2 mm (0.08 in), replace the brake shoes.

NOTE:

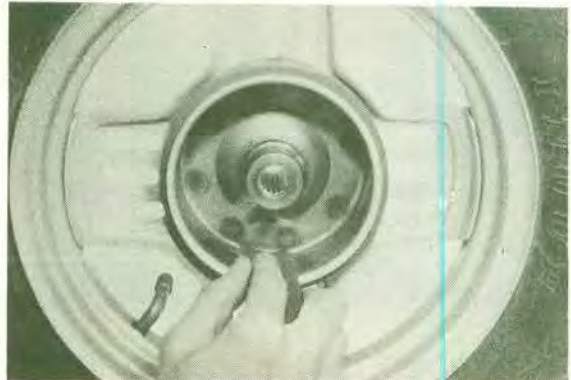
- Be careful so that no oil or grease spills on the brake linings when checking or replacing.
- When replacing the brake shoes, also replace the tension springs.

2. Smooth out scratches on lining surfaces, using a sandpaper.



If smoothing out is impossible, replace the brake shoes.

3. Check the brake drum inner surface for scratches.
Smooth out or replace the drum, if it has scratches.



4. Measure the brake drum inside diameter.

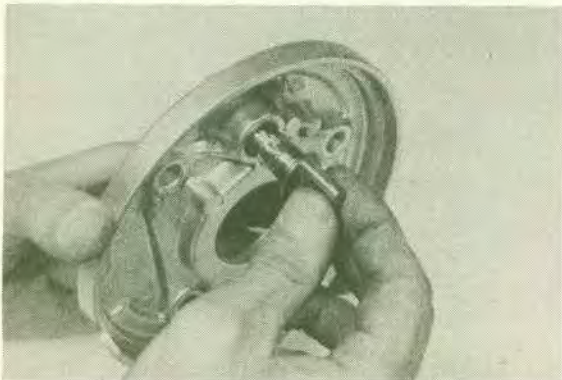


Max. diameter: 110.5 mm (4.35 in)

If the diameter exceeds the above limit, replace the rear wheel.

Assembling

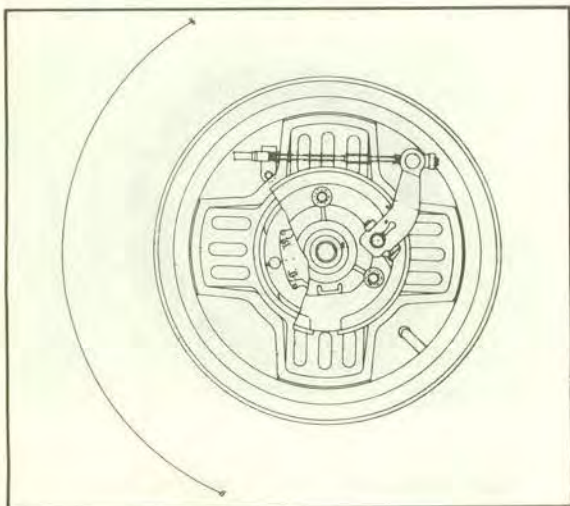
1. Grease the contact surface of the camshaft with the brake shoe plate, and fit it into the shoe plate.



2. Align the non-serrated portion of the camshaft with the cut in the indicator plate, and put them together.

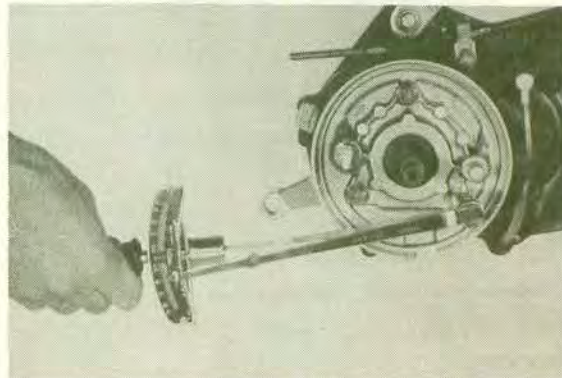


3. As shown above, install the camshaft lever on the camshaft.



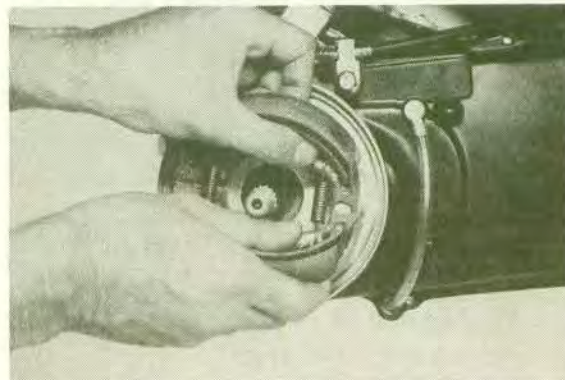
Tightening torque:
8 Nm (0.8 m·kg, 5.8 ft·lb)

4. Fit the brake cable outer cap to the holder on the crankcase.
5. Install the brake shoe plate on the left side of the crankcase and tighten the plate.



Tightening torque:
18 Nm (1.8 m·kg, 13 ft·lb)

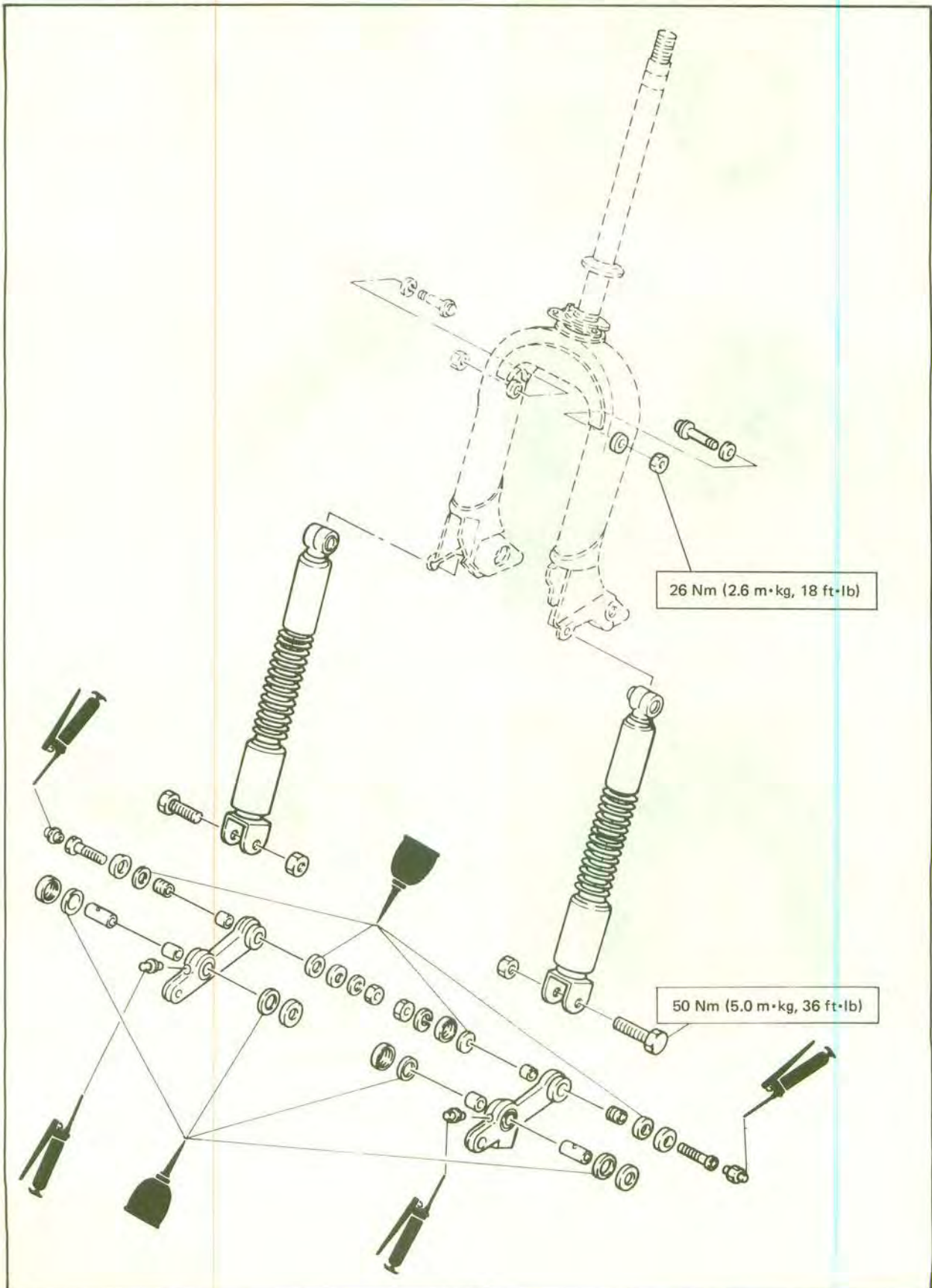
6. Install the brake shoes on the brake shoe plate.



NOTE:
Wipe off any overflow of grease so that the brake shoe linings can be kept free from grease.

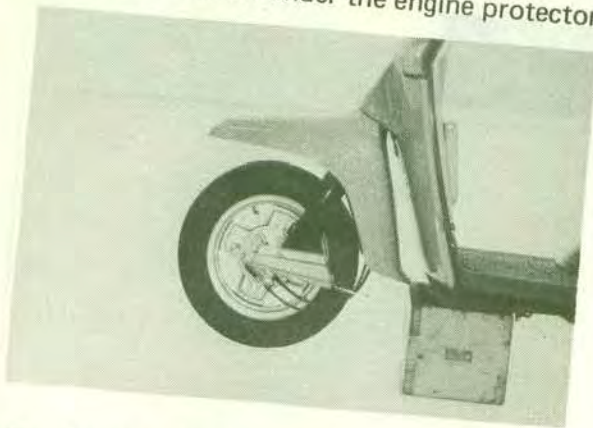
FRONT FORK

DISASSEMBLY • INSPECTION • ASSEMBLY



Removal

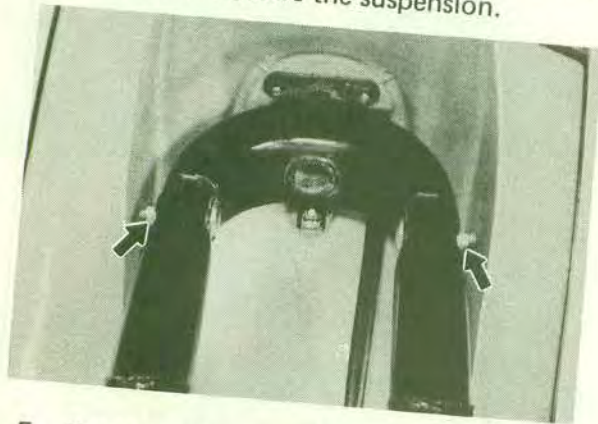
1. Place a stand under the engine protector.



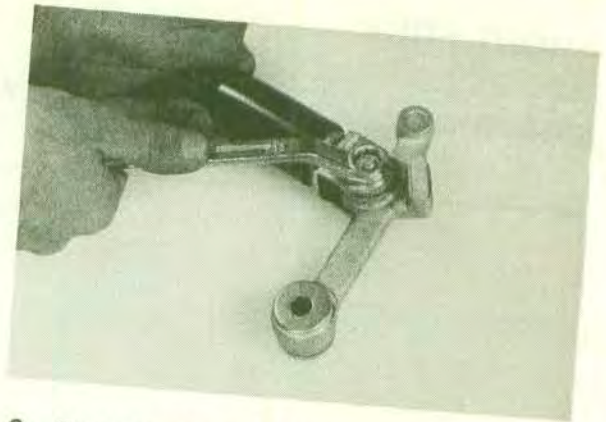
2. Remove the front wheel.
3. Remove the nut securing the arm.



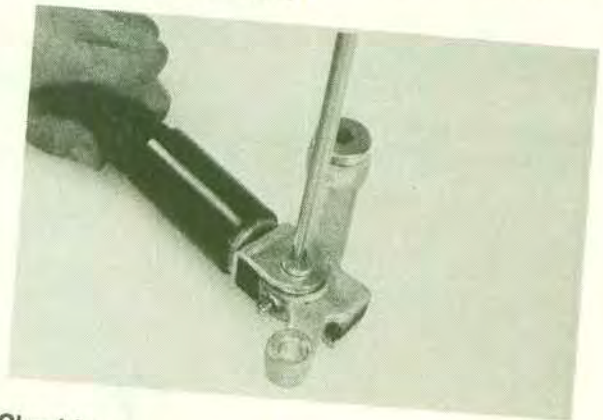
4. Remove the suspension mounting nut, bolt, and remove the suspension.



5. Remove the suspension mounting nut, and arm.

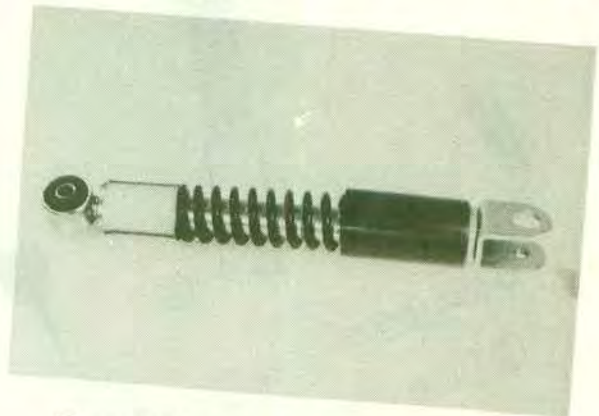


6. Remove the flat fillister head screw and remove the arm.

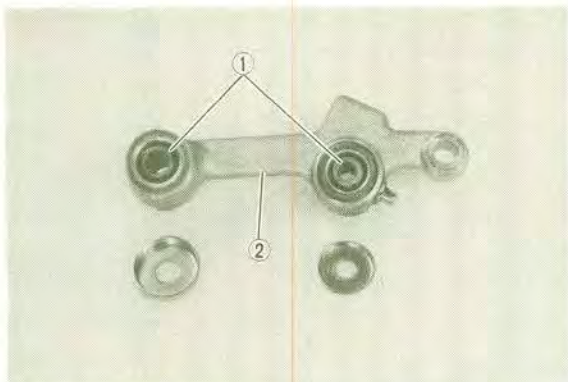


Checking

1. Check the front fork spring for cracks and damage.



- If cracked or damaged, replace the suspension spring.
2. Check the arm and collar for cracks, damage or wear.

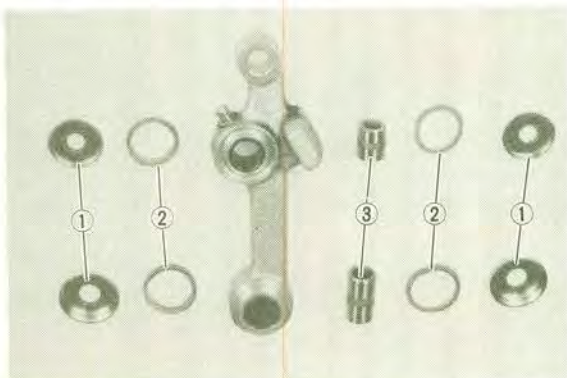


1. Collar 2. Arm

If cracked, damaged or worn, replace them.

Installing

1. Install the dust seal, dust seal cover, collar, dust seal, and dust seal cover on the arm, in that order.



1. Dust seal cover 3. Collar 2. Dust seal

NOTE:

- When installing the dust seal, coat it with oil and check for twists.
- The collars differ in length depending on their position. Take care so that you don't confuse when reinstalling.



Tightening torque:
55 Nm (5.5 m·kg, 40 ft·lb)

3. Insert the upper part of the suspension and tighten the nut.

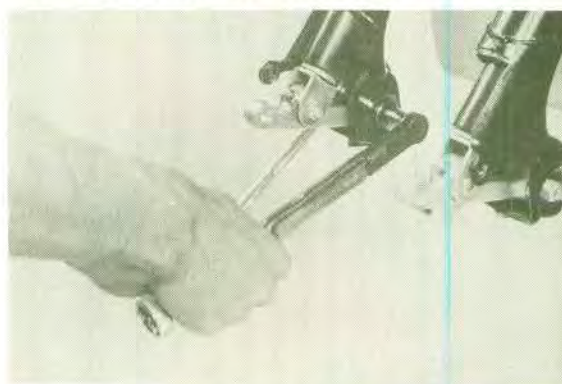


Tightening torque:
26 Nm (2.6 m·kg, 19 ft·lb)

NOTE:

Align the cut in the bolt with projection on the fork cover.

4. Tighten the arm mounting nut.



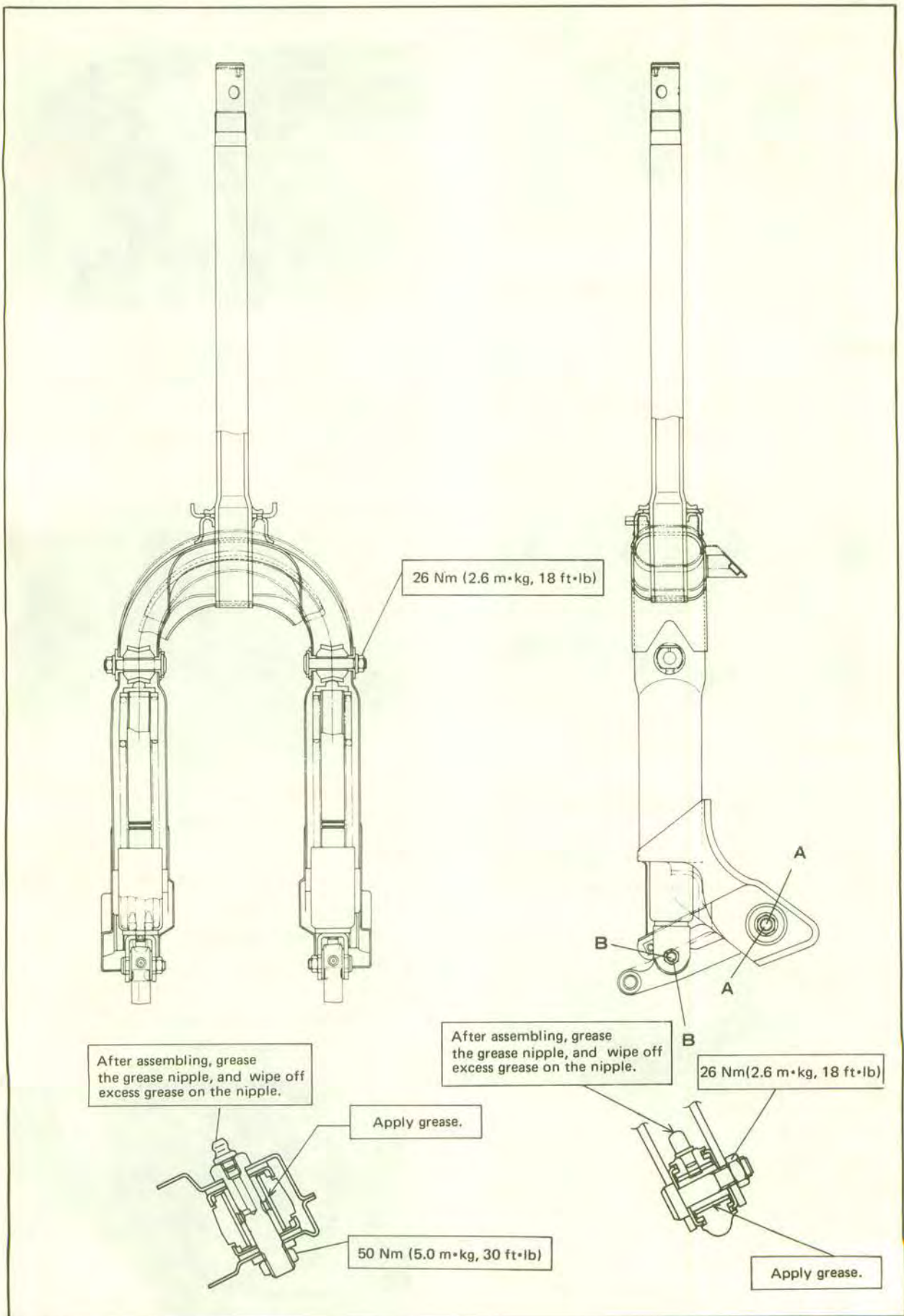
5. Tighten the front wheel.

NOTE:

- After installing, grease the grease nipple using a grease gun.
Wipe off extra grease.
- Adjust the brake.
- Squeeze the brake lever, and by forcing the handlebars up and down check the operation of the suspension.



Bottom link assembly diagram

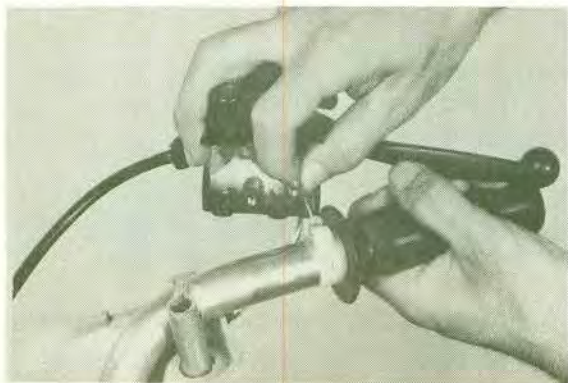


STEERING HEAD

DISASSEMBLY • INSPECTION • ASSEMBLY

Removal

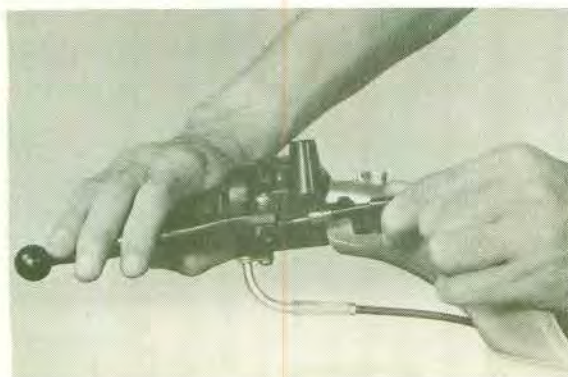
1. Place a stand under the engine protector.
2. Remove the rear view mirror.
3. Remove the headlight unit.
4. Remove the bind screws from the handlebar upper cover and lower cover.
5. Disconnect the wire harness coupler and connector, and remove the speedometer cable.



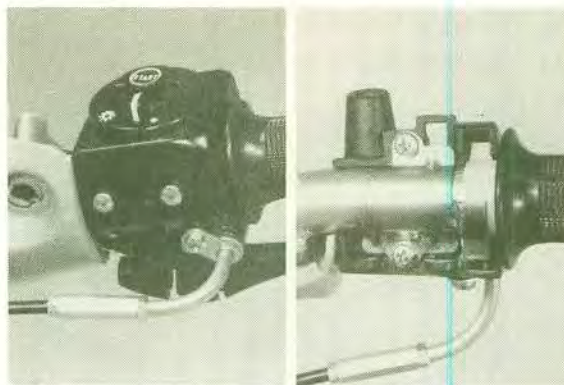
6. Remove the handlebar upper cover.



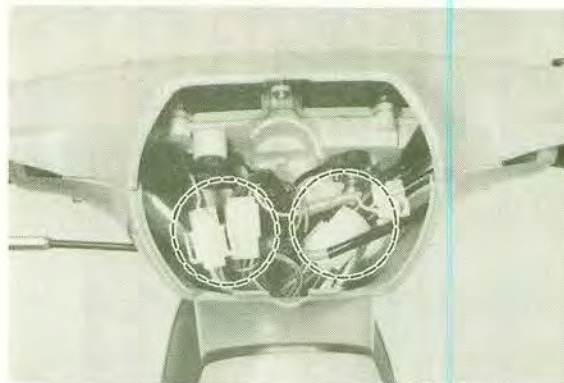
7. Remove the brake cable from the brake lever.



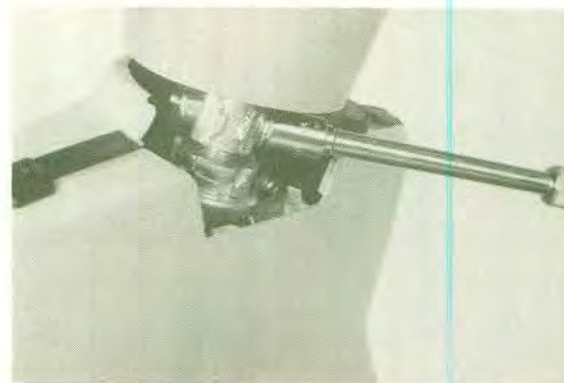
8. Remove handle switch 2.



9. Disconnect the throttle cable.



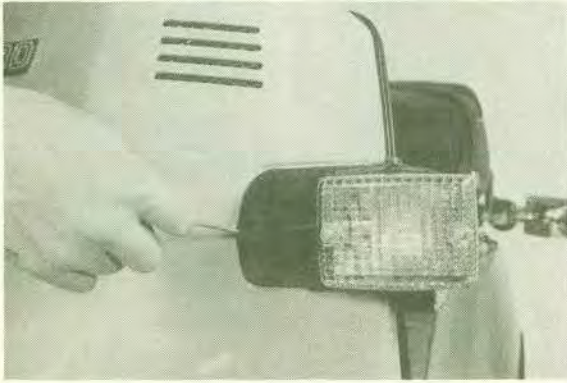
10. Remove the scooter panel. (See page 00.)
11. Remove the hexagon head bolt and remove the handlebars.



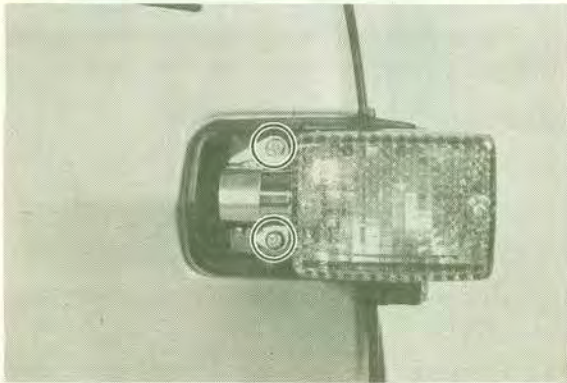
12. Remove the pan head screw securing the handlebar lower cover, and remove the wire harness and cables.



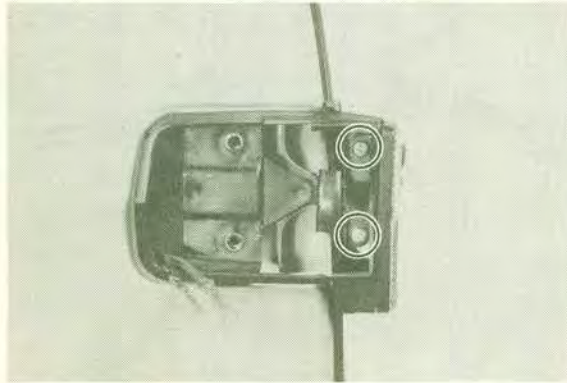
13. Remove the flasher lights.
a. Remove the flasher cover.



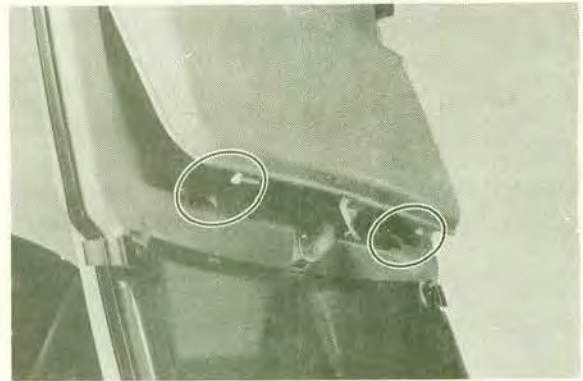
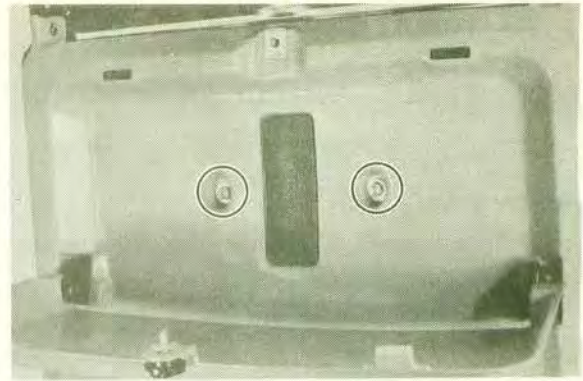
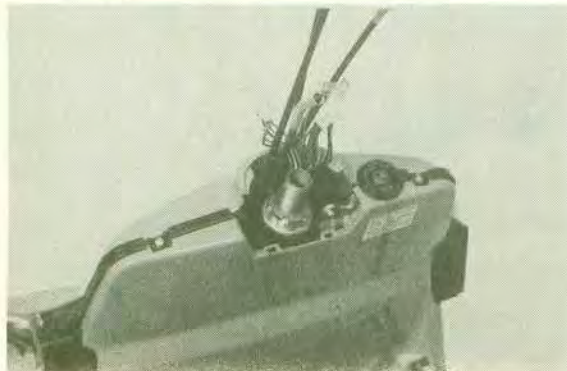
- b. Remove the flasher mounting screws.



- c. Remove the reflector fitting screws.



14. Remove the trunk fitting screws and nuts.



15. Remove the two nuts from the steering shaft.



16. Pull out the front forks downward.



NOTE:

- The front forks should be pulled out so that the front brake and speedometer cables are not caught by the scooter panel.
- When removing the nut, hold the front forks by hand.
- Be careful not to lose balls.

**Removing the ball race**

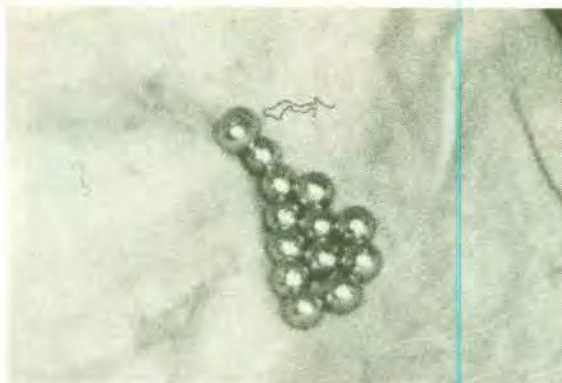
The ball race should be driven out by striking it in steps.

**NOTE:**

Be careful not to strike the contact surface of the race.

Checking

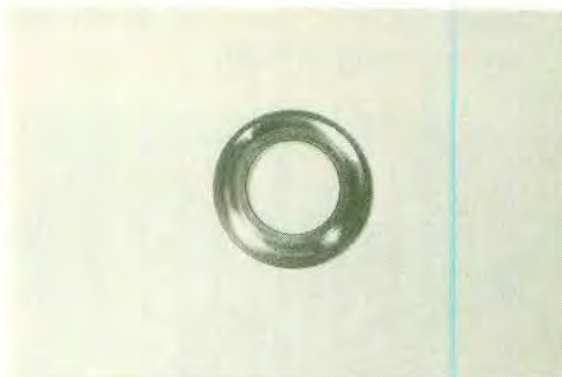
Check balls for wear or damage.



If any one of the balls is defective, all balls should be replaced.

Replacing the ball race

Check the contact surface of the race for wear or damage.



If worn or damaged, replace the ball race.

Installing the ball race

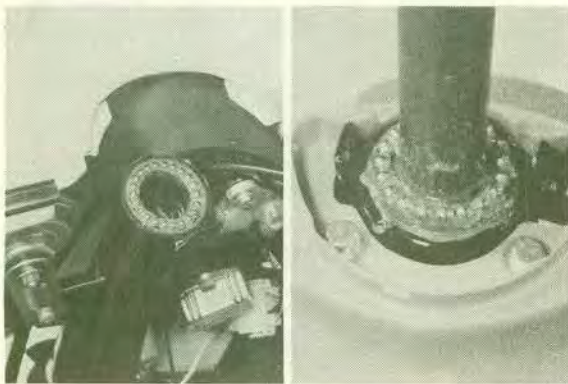
Fit the ball race squarely in the head pipe.

**NOTE:**

If the ball race is fitted not squarely, the head pipe could be damaged.

Installation

1. Grease the balls and install in the race.



NOTE:

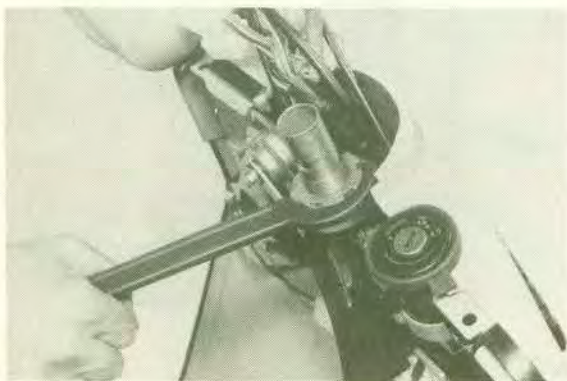
Make sure the balls are of the same size and the quantity is correct.

Upper	22 pcs	3/16 in
Lower	19 pcs	1/4 in

2. Install the front forks and tighten the nut temporarily by hand.



3. Using the steering nut wrench, tighten the nut until tight, and back it out 1/3 or 1/4 turn.

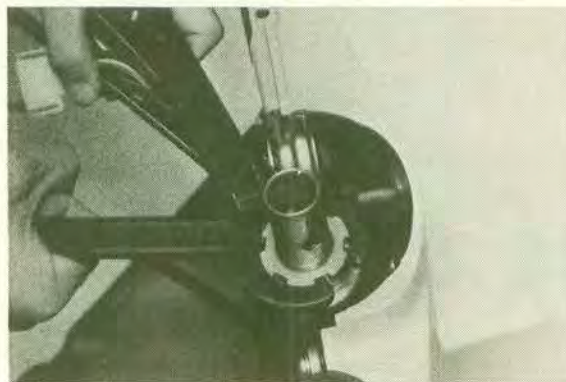


Tightening torque:
30 Nm (3.0 m·kg, 21 ft·lb)

NOTE:

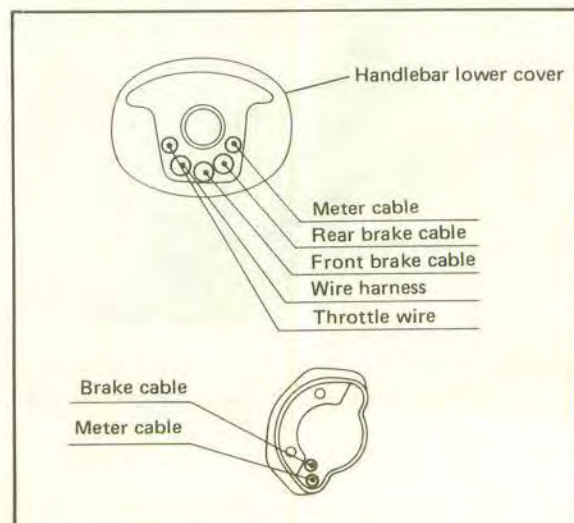
- The nut should be installed with the beveled side facing downward.
- The nut should be tightened so that the front forks can be turned smoothly, but not too loosely.

4. Lock the lower nut, and tighten the upper nut.



Tightening torque:
30 Nm (3.0 m·kg, 21 ft·lb)

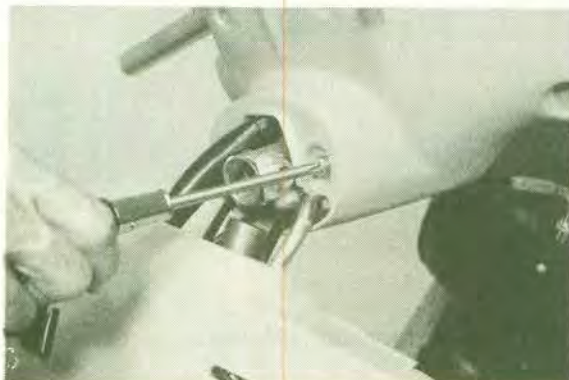
5. Pass the wire harness and cables through the handlebar lower cover.



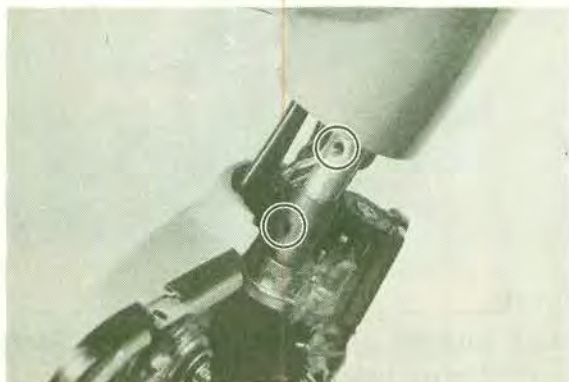
NOTE: _____

Pass the throttle cable through the right side hole of handle lower cover.

6. Install the lower cover to the handlebar.



7. Match the hole of front forks to the hole of handlebar.



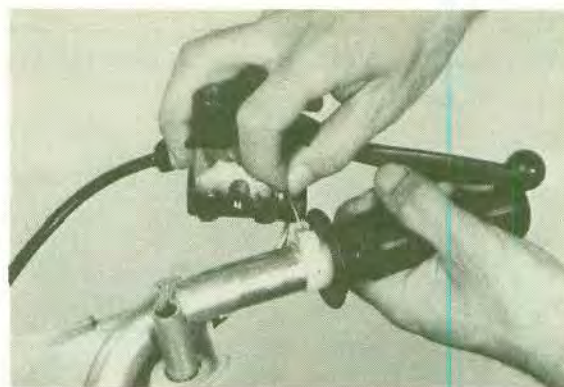
8. Tighten the bolt.



1. Steering fitting nut 2. Bolt

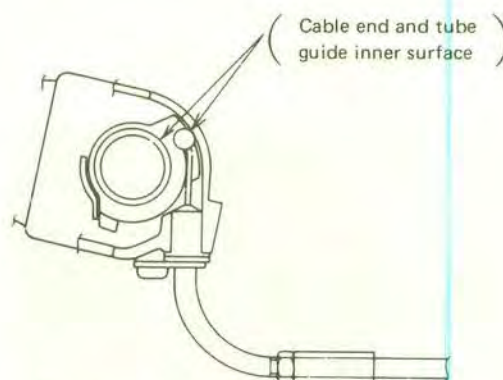
Tightening torque:
34 Nm (3.4 m·kg, 24 ft·lb)

9. Install the throttle wire and handle switch (2) assembly.



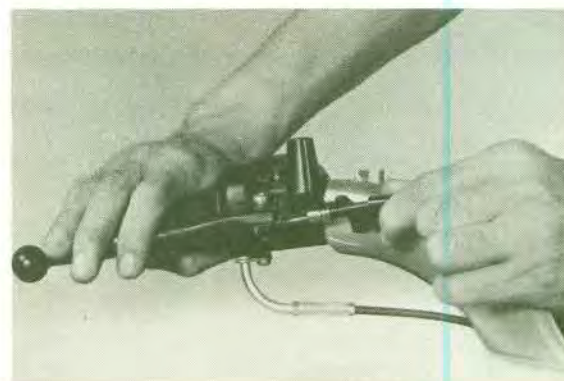
NOTE: _____

- Grease the throttle guide tube inner surface and reel, and check the operation of throttle.



- Check the cable for wear, damage and bend, if abnormal condition is noticed replace the cable.

10. Install the brake cable.

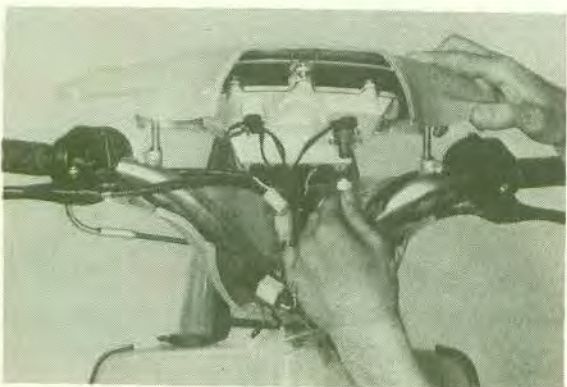


NOTE:

When routing cables, add oil to between the inner and outer cables.



11. Install the handlebar upper cover and connect the speedometer cable.

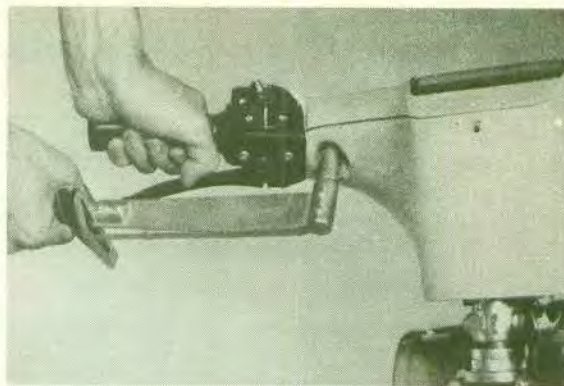


12. Connect the wire harness.

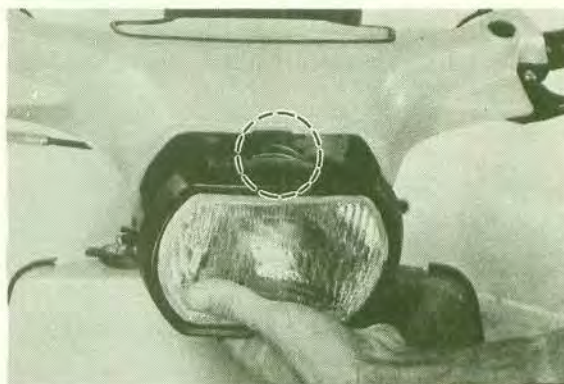


13. Tighten the handlebar upper cover.

Tightening torque:
15 Nm (1.5 m·kg, 11 ft·lb)



14. Install the headlight unit.



NOTE:

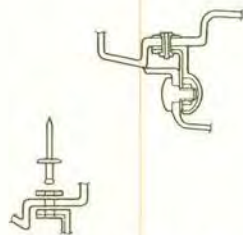
Make sure the upper part of the lens frame firmly fits the headlight shell.

15. Install the scooter panel.
16. Install the rear view mirror.

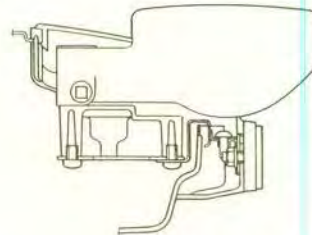
NOTE:

- After installing, adjust the brake.
- Hold the handlebars and move the front suspension up and down to make sure that it operates smoothly.
- Check to see if there is any wire harness or cable caught by other parts.
- Adjust throttle cable play.
- Start the engine and operate switches to make sure all lights go on.

Front panel installation guide



SECTION B - B



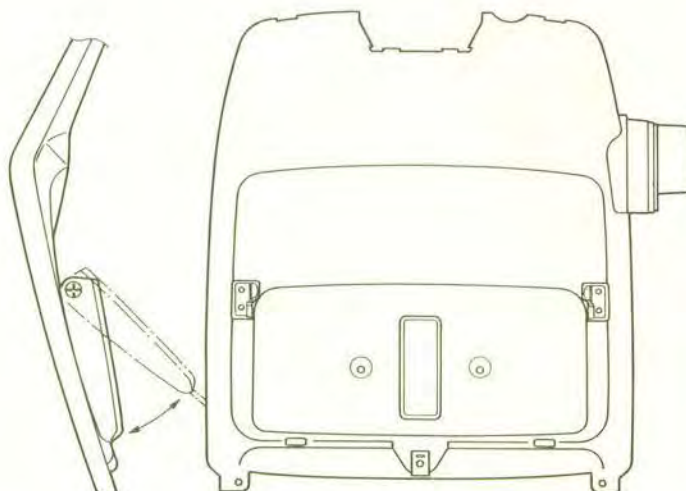
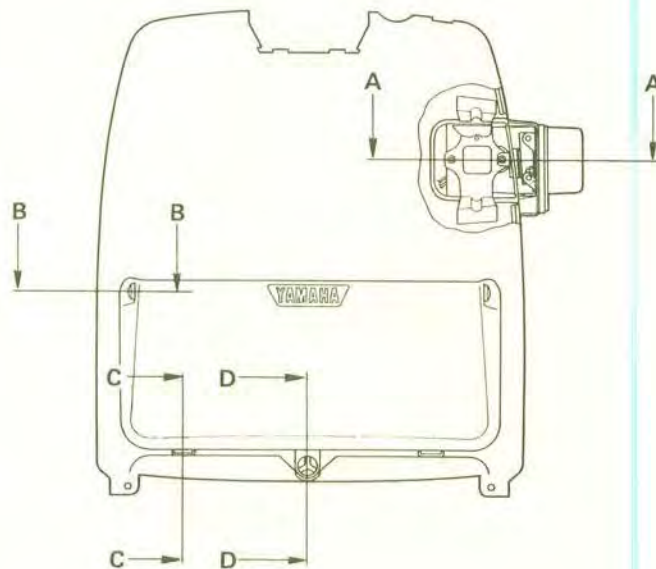
SECTION A - A



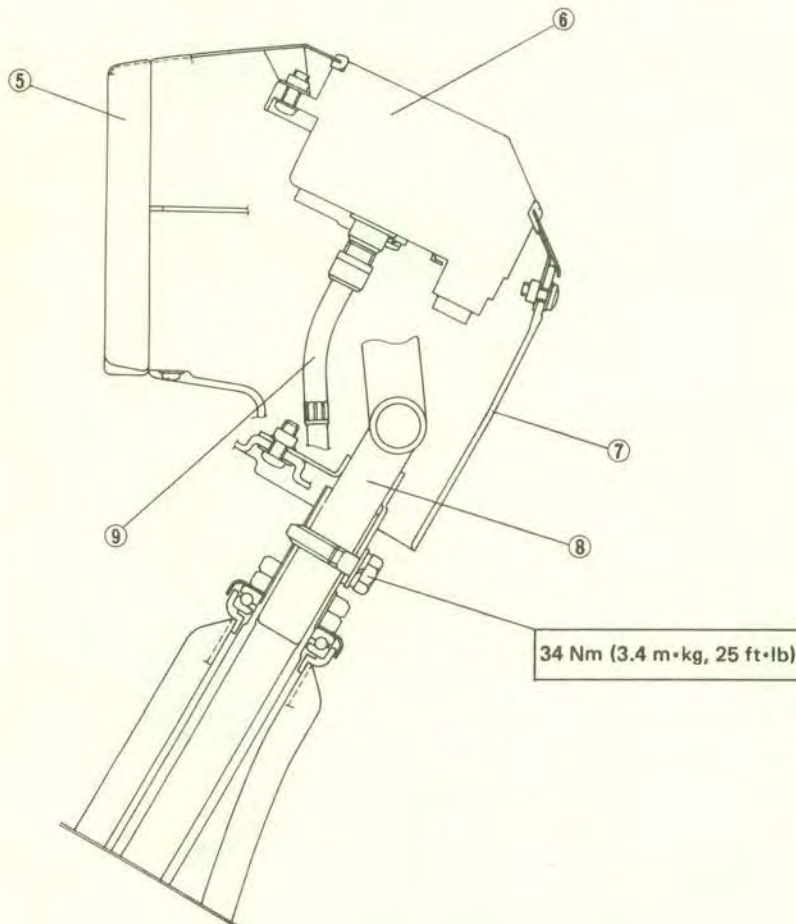
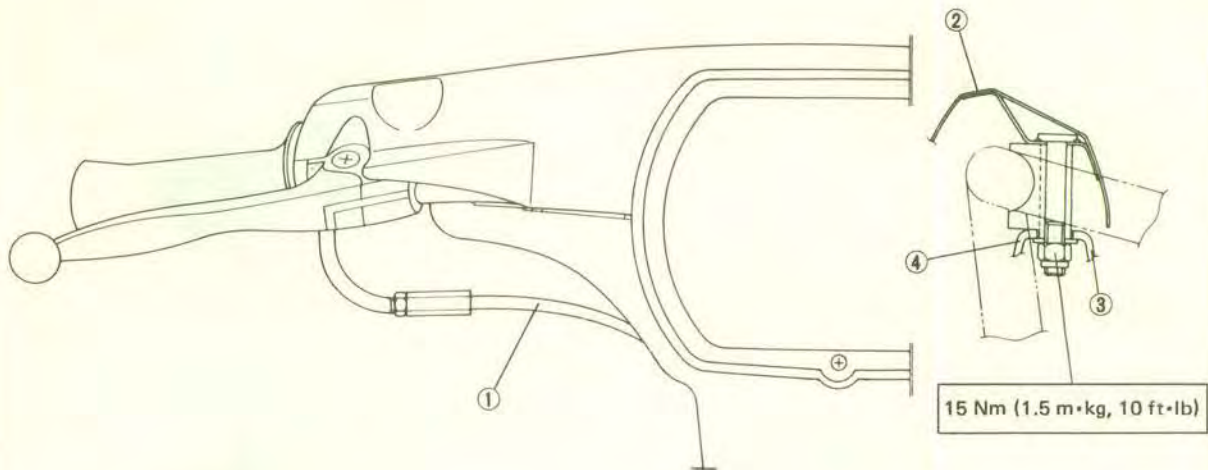
SECTION C - C



SECTION D - D

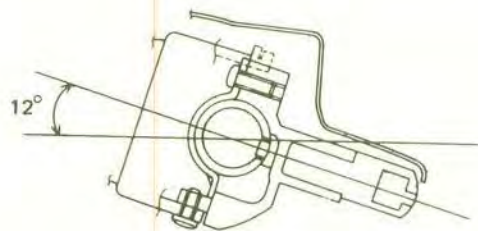
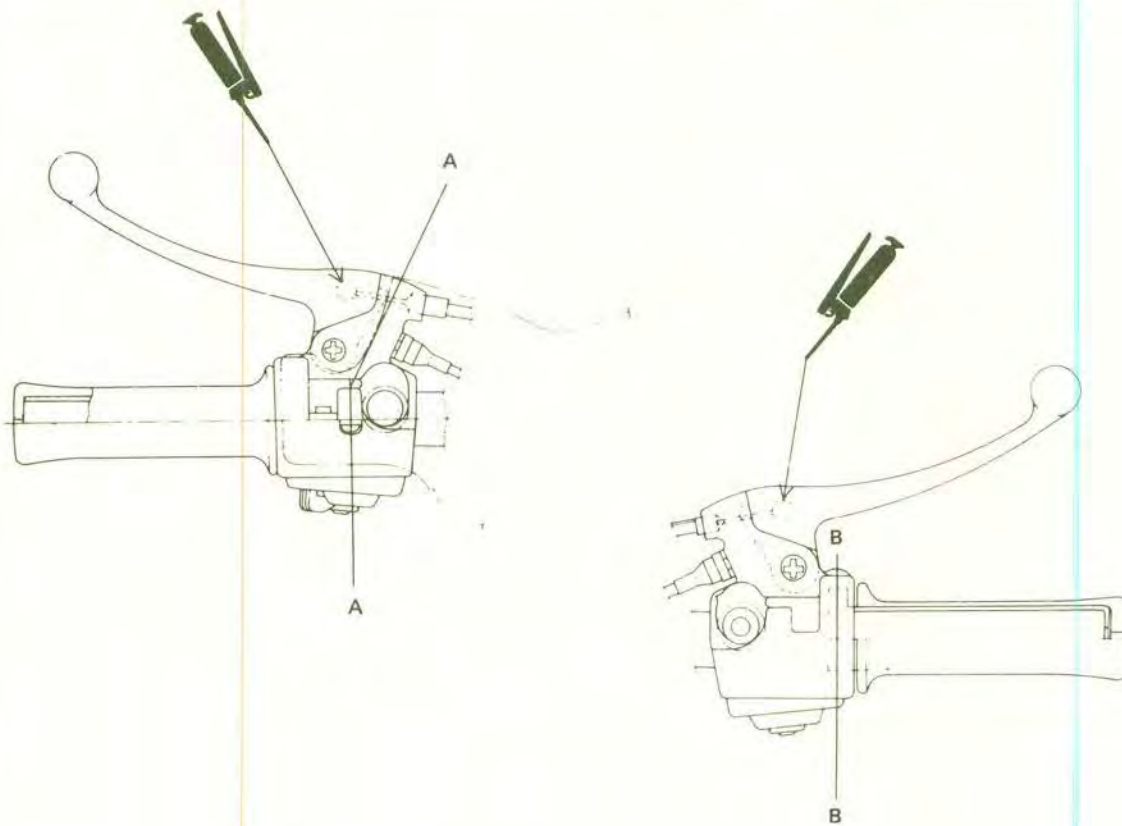


Headlight and meter installation guide

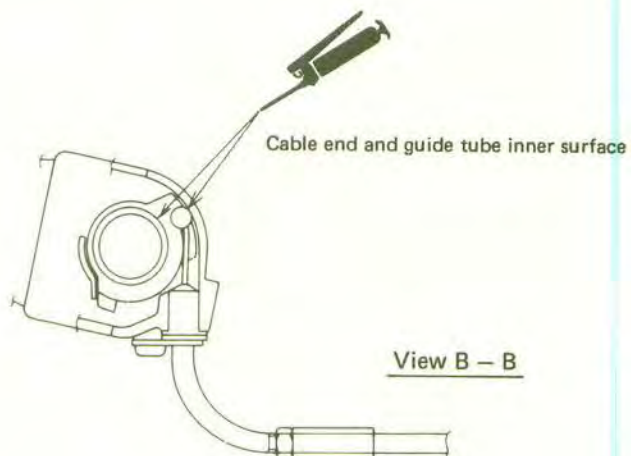


1. Throttle cable 1
2. Handlebar upper cover
3. Plate washer
4. Handlebar under cover
5. Headlight ass'y
6. Speedometer ass'y
7. Handlebar under cover
8. Handlebar comp.
9. Speedometer cable

Handle lever holder installation guide

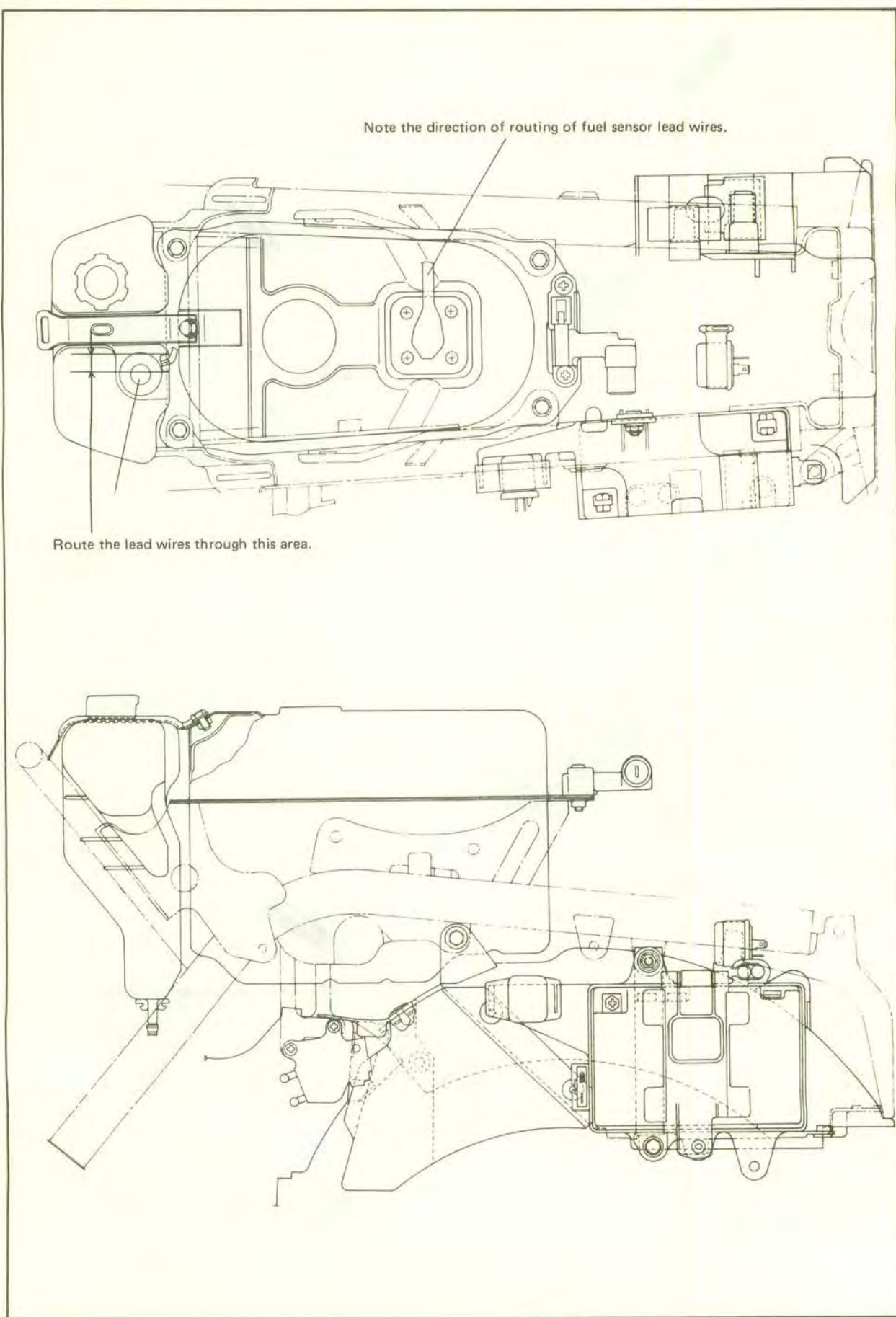


View A - A

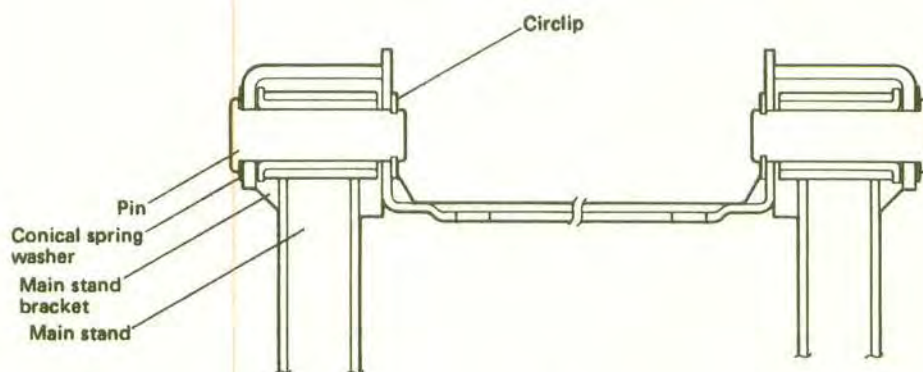
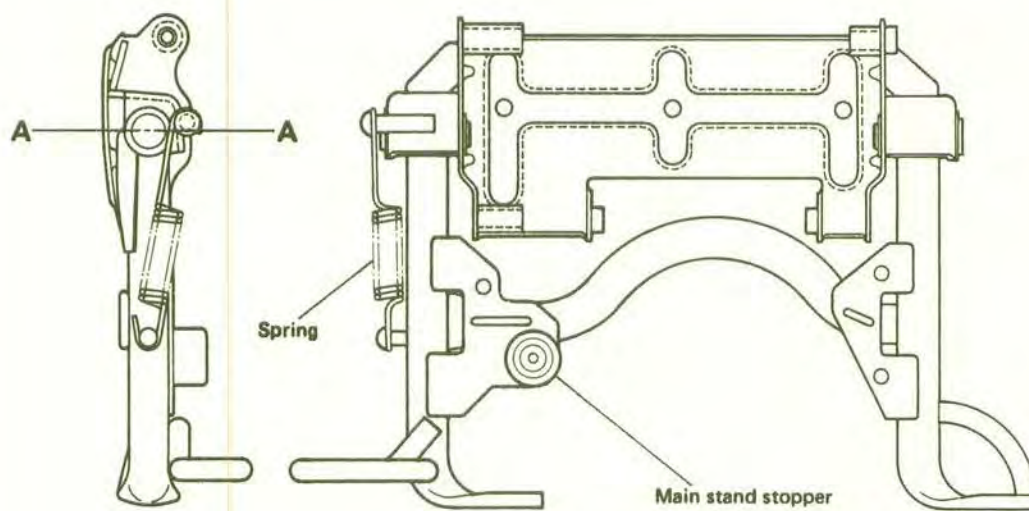


View B - B

Fuel Tank Installation Guide



MAIN STAND



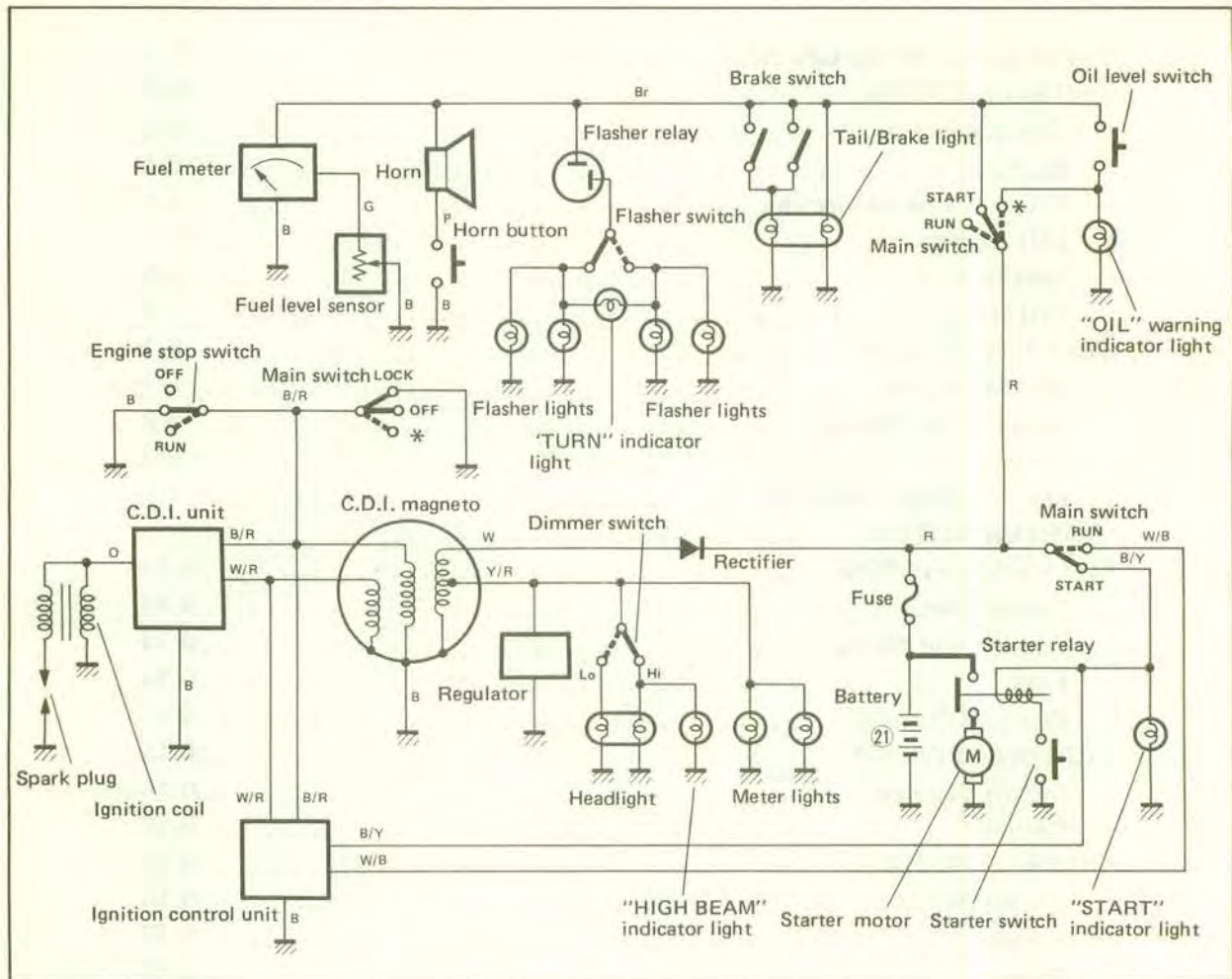
Section A - A

CHAPTER 6. ELECTRICAL

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ELECTRICAL

CV80K CIRCUIT DIAGRAM

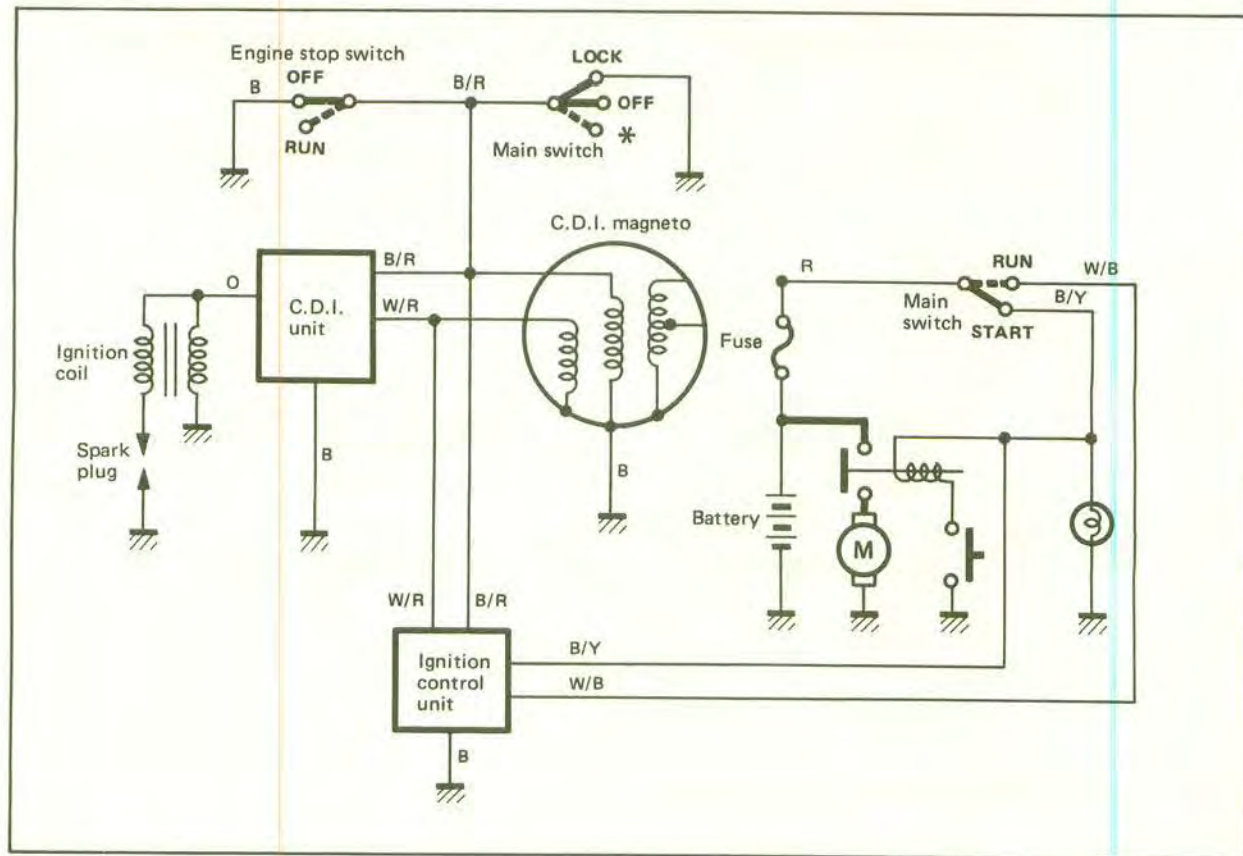


COLOR CODE

B	Black	P:	Pink	Dg:	Darg	B/Y:	Black/Yellow	B/R:	Black/Red
L:	Blue	R:	Red	Br:	Brown	Y/R:	Yellow/Red	W/R:	White/Red
G:	Green	O:	Orange	Gy:	Gray	L/W:	Blue/White	Br/W:	Brown/White
Y	Yellow	W:	White	Ch:	Chocolate	G/Y:	Green/Yellow	W/B:	White/Black

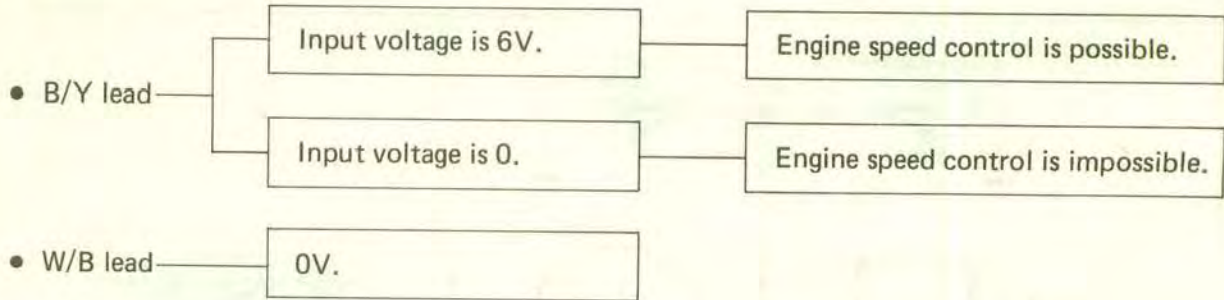
IGNITION SYSTEM

Circuit Diagram

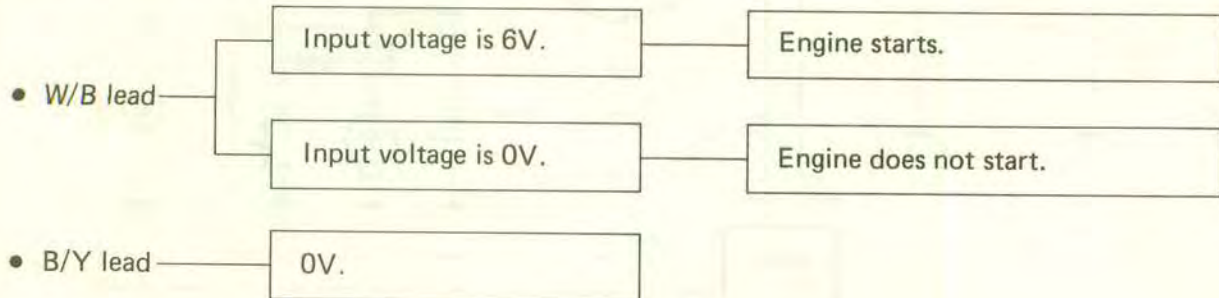


OPERATION OF THE CONTROL UNIT

A. Main switch in "START"



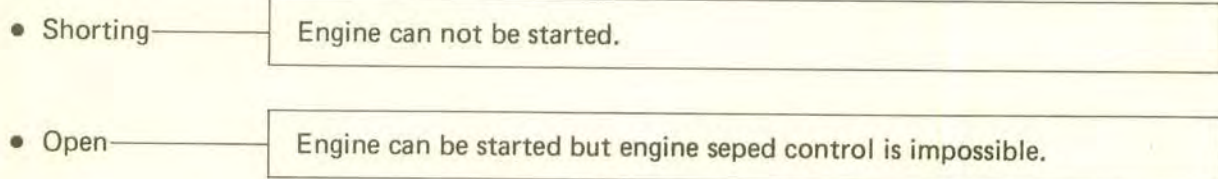
B. Main switch in "RUN"



C. Ground lead(s) broken or loosely connected

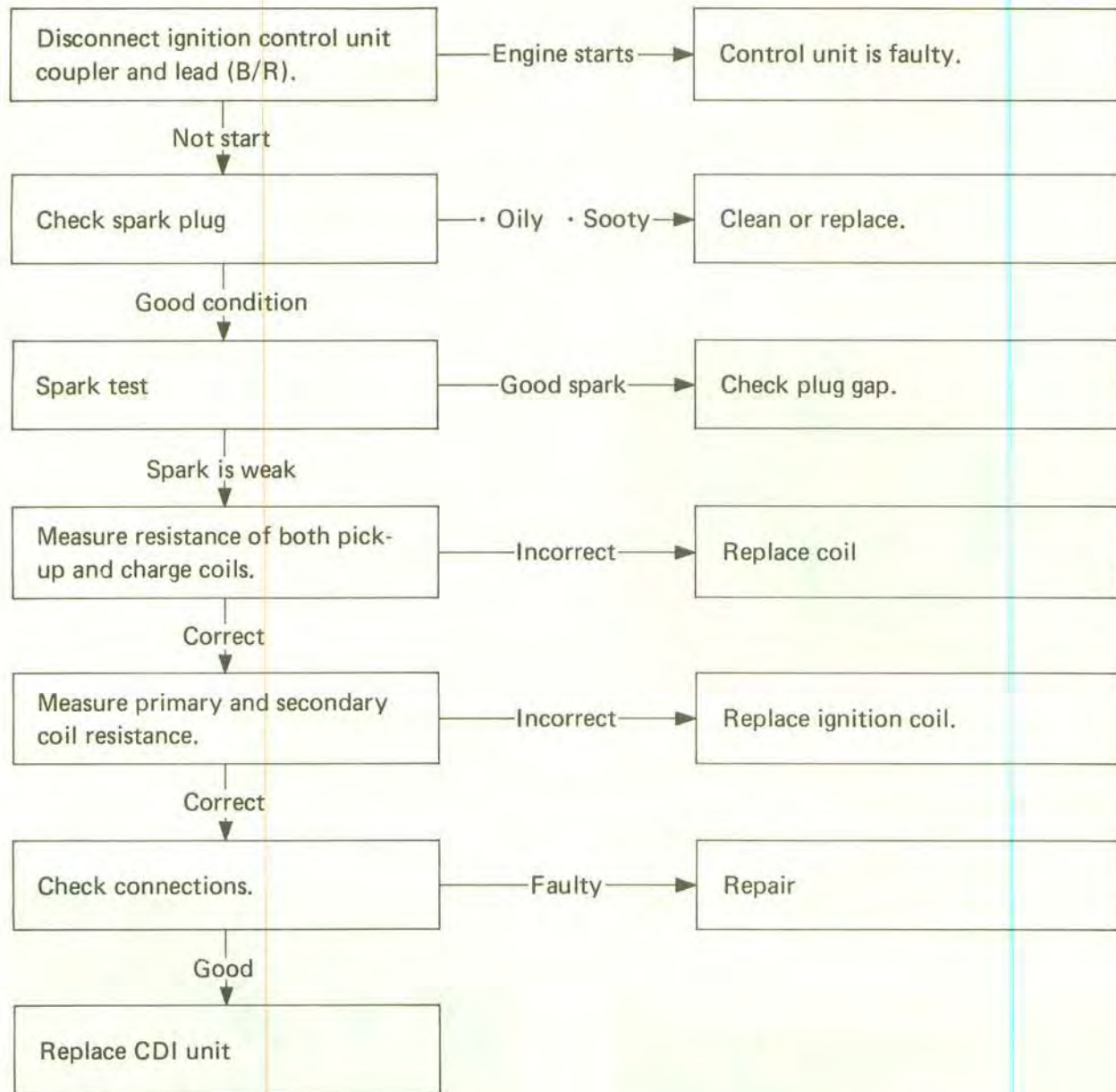
With the main switch set at either side of "START" and "RUN", the engine can be started and engine speed control is impossible.

D. Control unit zwener diode damaged



IGNITION CIRCUIT

Engine does not start:



CHECKING

Sparks

1. Remove side cover 4.
2. Disconnect the spark plug cap from the high-tension wire, and bring the wire end to a point 5 or 6 mm (0.20 or 0.24 in) off the cylinder head or the air shroud.
3. Push the starter switch (or kick the kick-starter), and if spark takes place, the CDI system is considered to be in good condition. (Main switch ON)



NOTE: _____
Be careful not to touch the high-tension wire.

When spark takes place: Check plug cap and spark plug.
If no spark takes place: Check the CDI parts.

Couplers and connectors

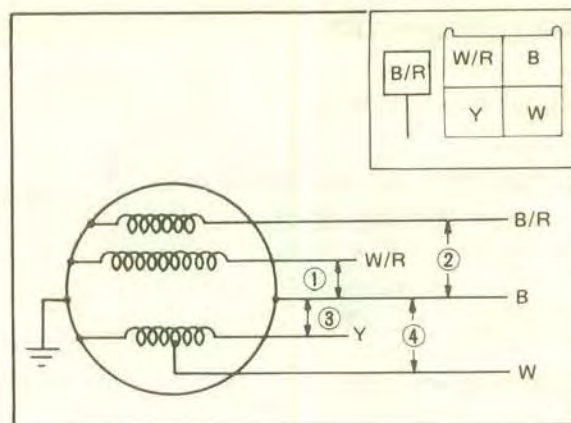
1. Check couplers and connectors for loose connections.
2. Check for dirt and rust.



CDI magneto

Measure the resistance of the CDI magneto pick-up and charge coils.

1. Remove side cover 2 and disconnect the CDI magneto coupler.
2. Using the Pocket Tester, measure the resistance.



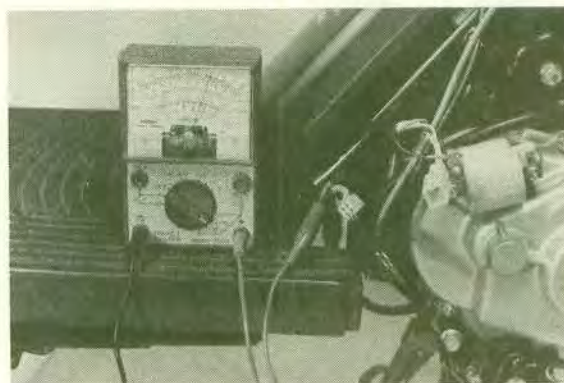
Check item	Tester's lead wire		Standard resistance	Tester's range
	Red lead	Black lead		
1 Pick-up	W/R	B	$34.6\Omega \pm 10\%$	$R \times 1$
2 Source coil	B/R	B	$378\Omega \pm 10\%$	$R \times 100$
3 Lighting coil	Y	B	$0.5\Omega \pm 10\%$	$R \times 1$
4 Charge coil	W	B	$0.6\Omega \pm 10\%$	

If the resistance measured shows a big difference, replace the ignition coil.

IGNITION COIL

Primary winding resistance

1. Remove side covers 2 and 4 and remove the ignition coil connector.
2. Using the Pocket Tester, measure the resistance.

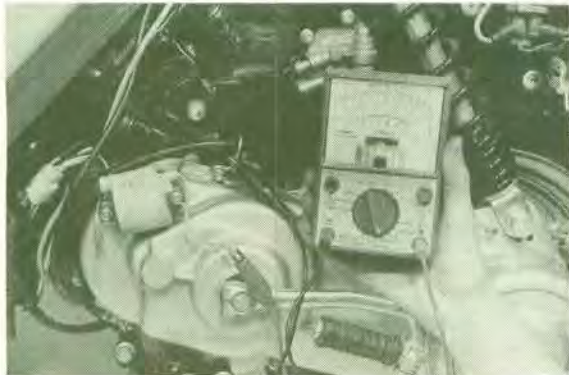


Check point	Tester's lead wire		Standard resistance	Tester's range
	Red lead	Black lead		
Primary winding	Orange	Chassis ground	1.6Ω	$R \times 1$

If the resistance measured shows a big difference, replace the ignition coil.

Secondary winding resistance

Remove the spark plug cap and using the pocket Tester, measure the resistance of the secondary winding.

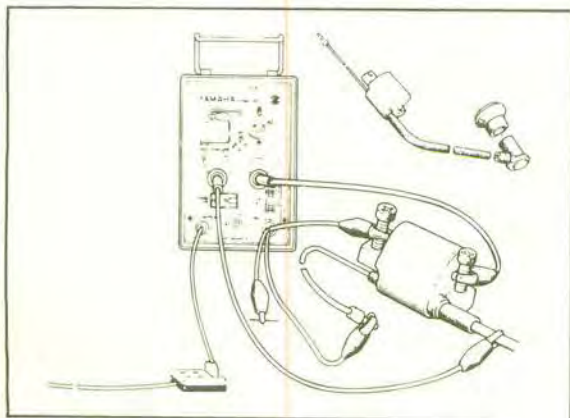
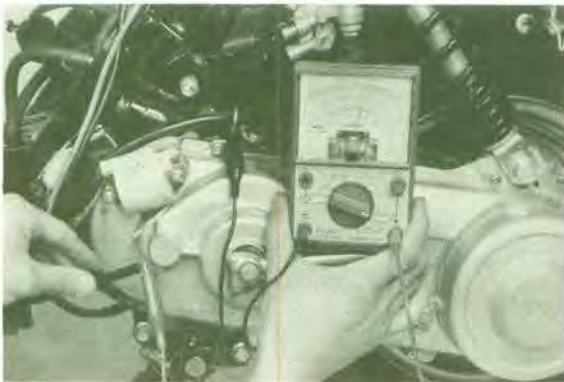


Check point	Tester's lead wire		Standard resistance	Tester's range
	Red lead	Black lead		
Secondary winding	High-tension wire	Orange	6.6K Ω	R x 1 K

If the resistance measured shows a big difference, replace the ignition coil.

Ignition coil

Remove the ignition coil from the engine and connect it to the Coil Tester. Make a spark test for more than five minutes.



Min. spark length: 6 mm (0.25 in)

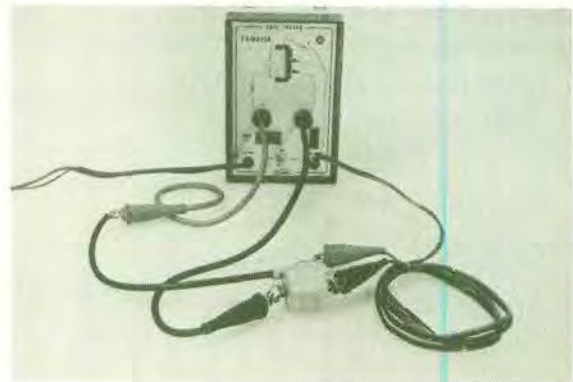
If spark takes place irregularly or will not take place at all, the ignition coil should be replaced.

NOTE:

The Coil Tester knob should be set 0 or thereabout first, and then it should be turned in steps.

CDI UNIT

1. Remove side cover 3.
2. Check that the connector and coupler are plugged in lightly.
3. Check the connector and coupler for dirt or rust.



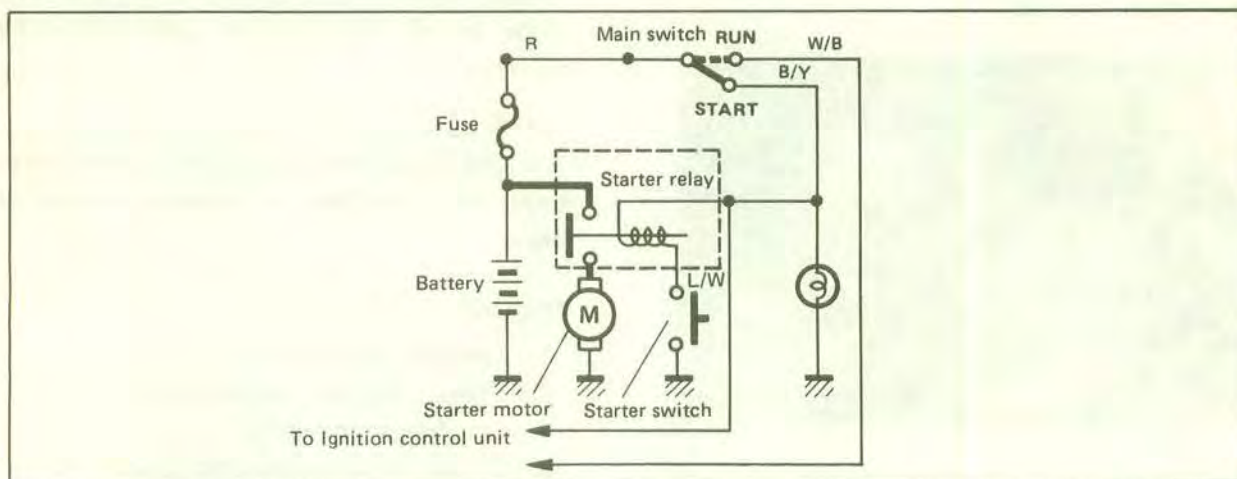
NOTE:

- When disconnecting the connector or coupler, hold its body. Don't pull the wire.
- Make sure the CDI unit is wired correctly, since a large amount of current flows from the CDI unit to the ignition coil.

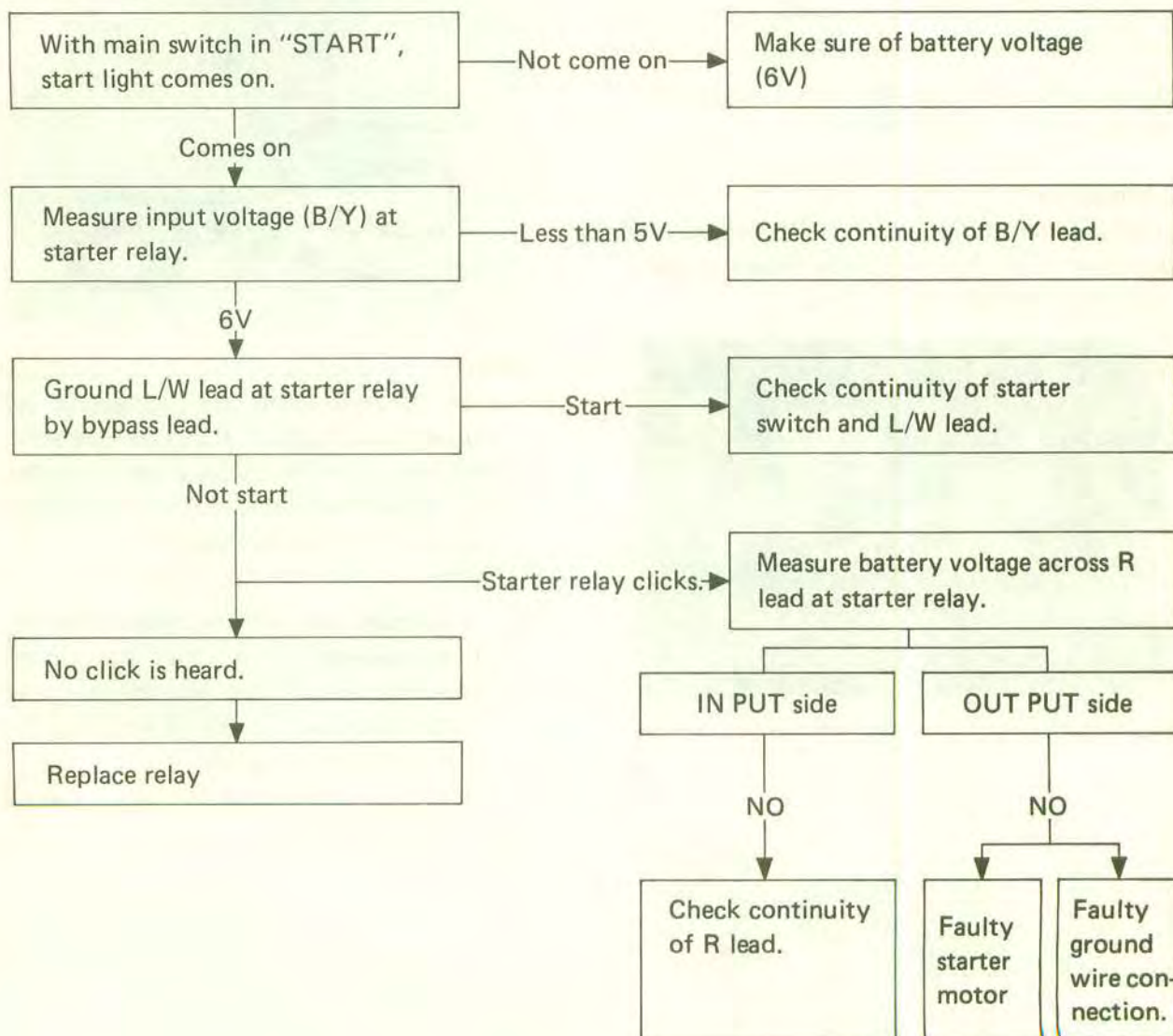
4. If no spark will take place even when the CDI magneto wiring, coupler, ignition coil and spark plug all are in good condition, make a check by replacing the CDI unit with a new one.

STARTER SYSTEM

Circuit Diagram

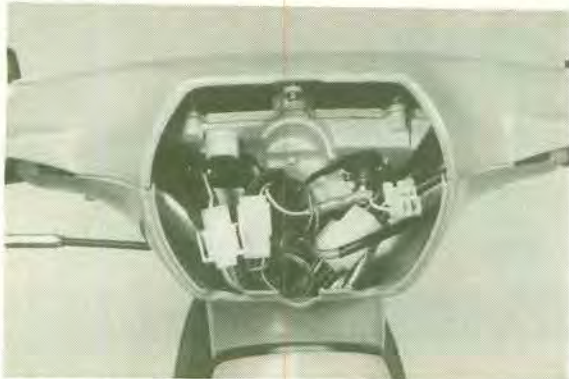


Starter motor does not turn over:



TERMINALS AND WIRING

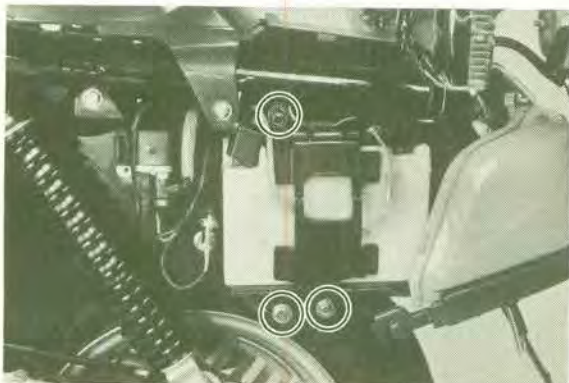
1. Check the terminals of the battery, starter switch, and starter motor for loose connections.
2. Check the wire harness for broken wires.



BATTERY

Removing

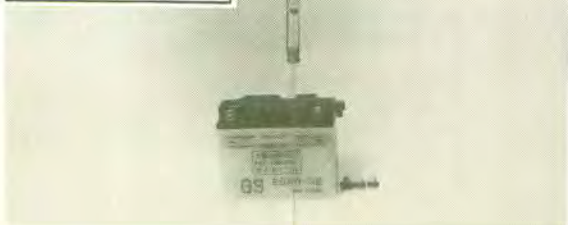
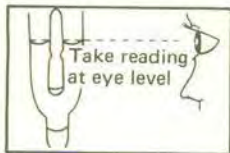
1. Remove side cover 2.
2. Remove the plate and disconnect both positive and negative wires, and breather pipe.



3. Remove the battery.

Checking

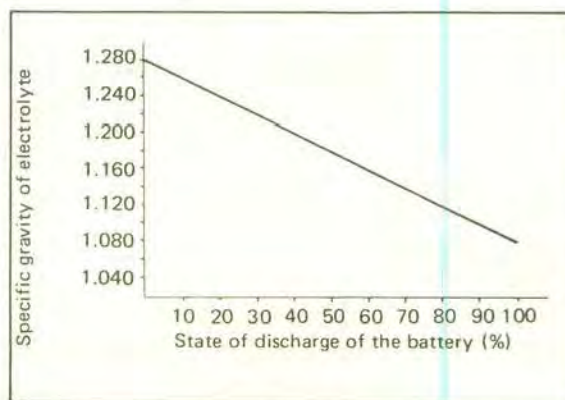
1. Remove the cap of each cell and measure the specific gravity of battery fluid.



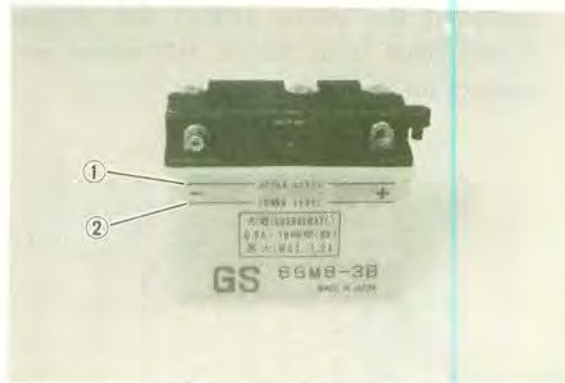
Specific gravity:

1.250 ~ 1.280 [at 20°C (68°F)]

2. The specific gravity decreases with a decrease in the charge of the battery. In other words, the specific gravity represents the state of charge of the battery. When the specific gravity of a fully-charged battery is 1.280 [at 20°C (68°F)], the specific gravity varies with the state of charge as shown in the following table:



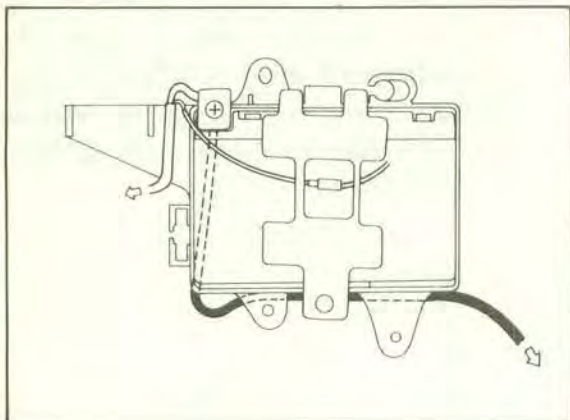
3. Check the battery fluid level. If the fluid level is lower than the lower level line, add distilled water.



1. Upper level
2. Lower level

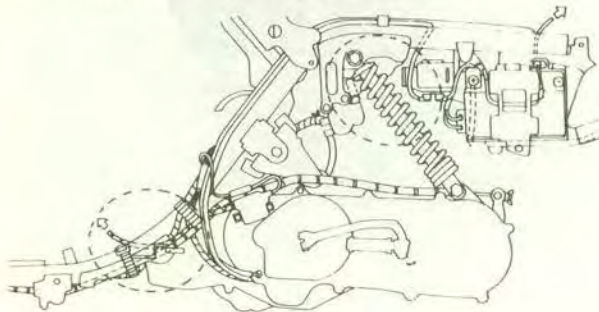
Mounting the battery

1. Place the battery in the battery box and install the plate.
2. Connect the breather pipe and connect the positive and negative wires to the battery.



CAUTION:

- Connect the positive wire first.
- Make sure the battery breather pipe is firmly connected and that it is not kinked or flattened.
- Make sure there is no slack in the lead wire connecting the starter switch to the battery positive terminal and in the ground wire (between the starter switch and engine). If the slack is excessive, lead wires may contact the rear suspension.

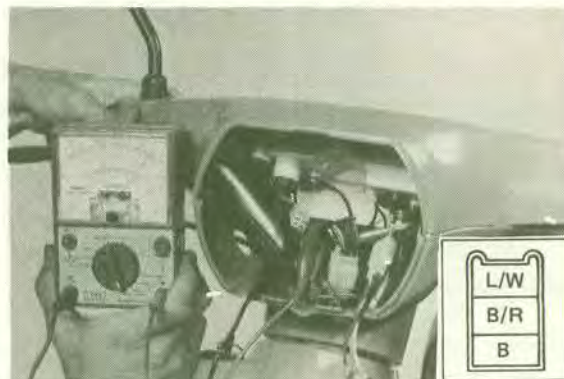


3. Install side cover 2.

STARTER SWITCH CHECKING

Leads continuity

1. Remove the headlight unit and make a continuity test using the Pocket Tester.

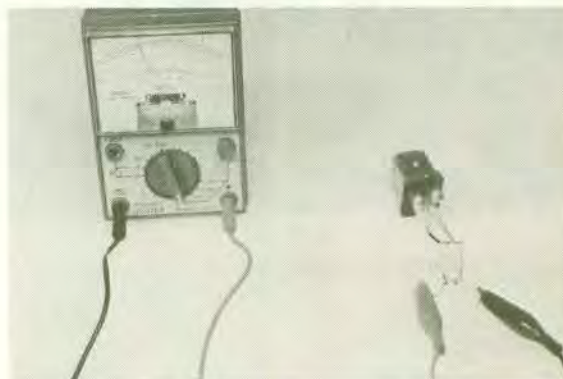


Tester's lead wire		When starter switch is pushed	Tester range
Red lead	Black lead		
Blue/White	Black	Conduct	R x 1

2. If there is no continuity, the starter switch is faulty.

Primary winding

1. Remove side cover 2.
2. Disconnect the starter switch coupler, remove the starter switch, and make a continuity test using the Pocket Tester.

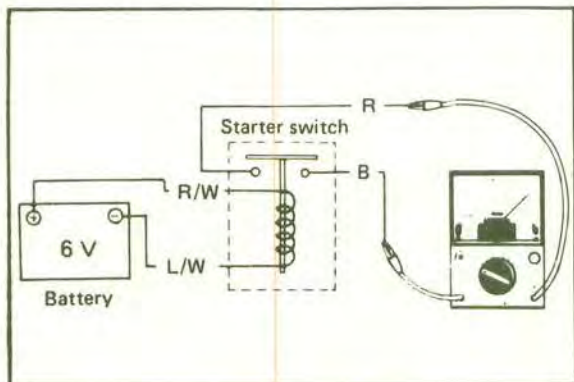
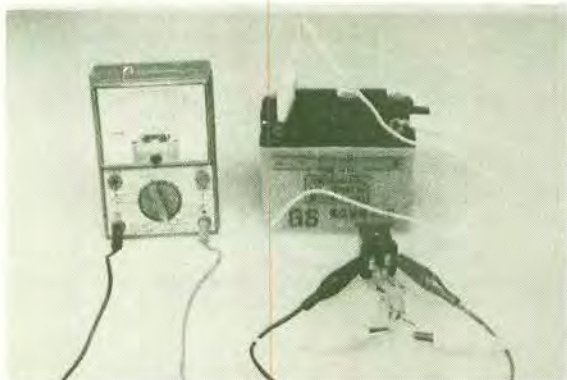


Tester's lead wire		Continuity	Tester range
Red lead	Black lead		
Black/Yellow	Blue/White	Conduct	R x 1

If there is no continuity, the starter switch is faulty.

Secondary terminals

1. Connect the positive side of the 6V battery to the Black/Yellow lead wire of the starter switch, and connect the negative side to the Blue/White lead wire.
2. Using the Pocket Tester, check continuity between the secondary terminals (Red – Black).

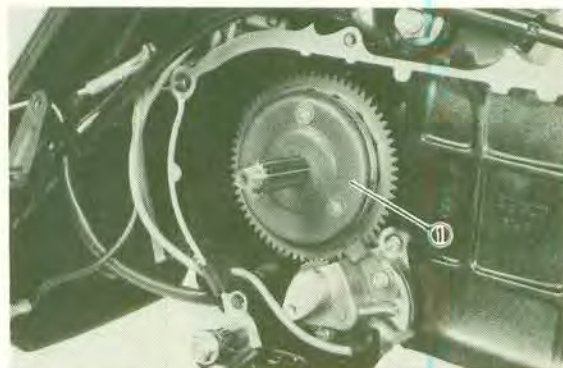


Tester's lead wire		Continuity	Tester range
Red lead	Black lead		
Red	Black	Conduct	R x 1

If there is not continuity, the starter switch is faulty.

STARTER MOTOR

1. Remove the starter clutch assembly.

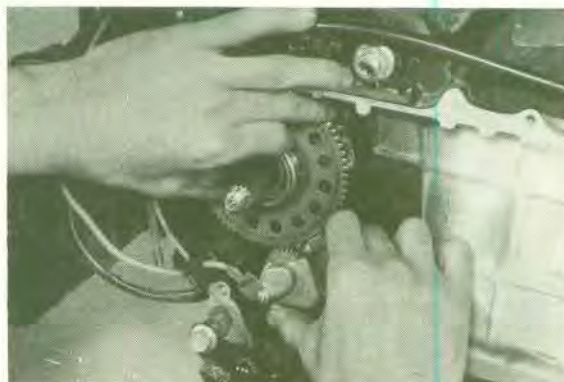


1. Starter clutch ass'y

NOTE:

When removing the starter clutch assembly, the roller, compression spring and starter clutch spring cap tend to fall off. So remove it carefully.

2. Remove the starter motor screw and remove the starter motor and starter wheel from the crankcase.

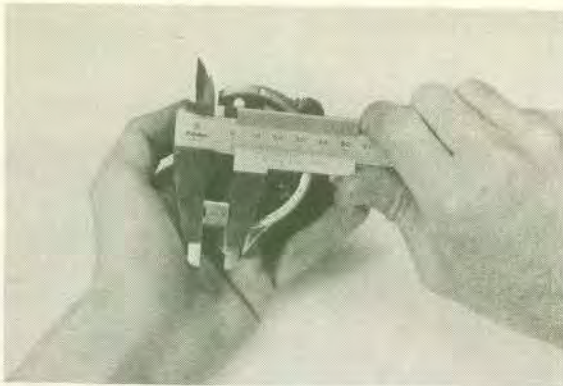


3. Disconnect the lead wire from the starter motor.

CHECKING

Brushes

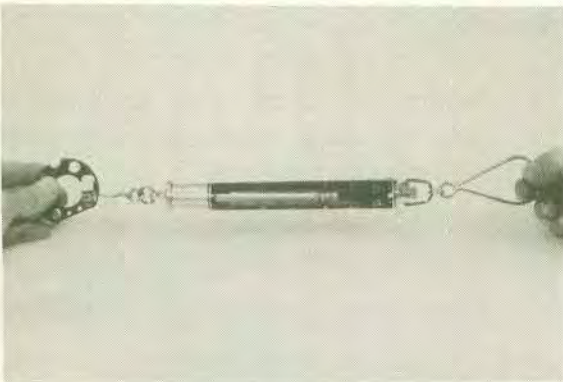
1. Remove the case mounting bolts.
2. Check the length of each brush.



	Standard	Limit
Brush length	11 mm (0.4 in)	5 mm (0.2 in)

If the length is shorter than the limit, replace the brush.

3. Check spring tension.

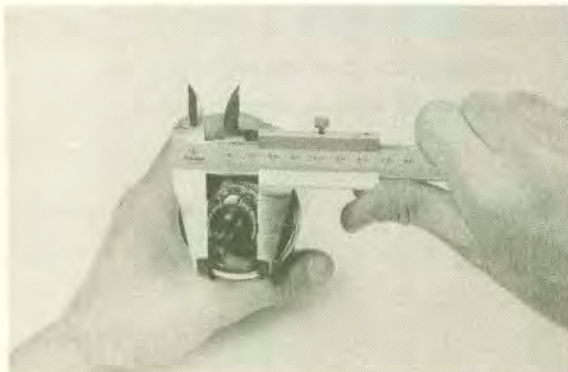


	Limit
Spring tension	300 g (10.6 oz) or less

If the length is shorter than the limit, replace the brush.

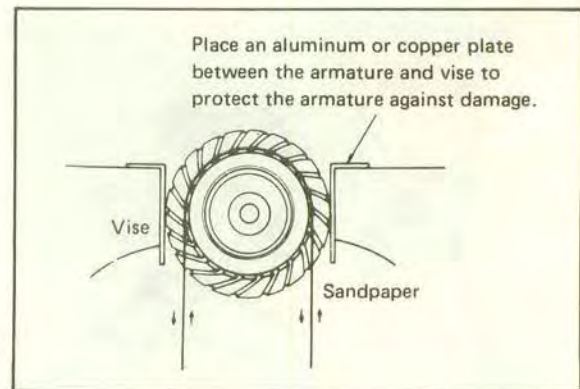
Commutator

1. Replace the commutator if it has serious scratches or damage.
2. Check the outside diameter of the commutator.



	Standard	Limit
Commutator	23 mm (0.91 in)	22 mm (0.87 in)

3. Check the commutator for scratches, grooved wear, or burning. If necessary, grip the armature in a vise and smooth out using a sandpaper (#500 ~ 600).



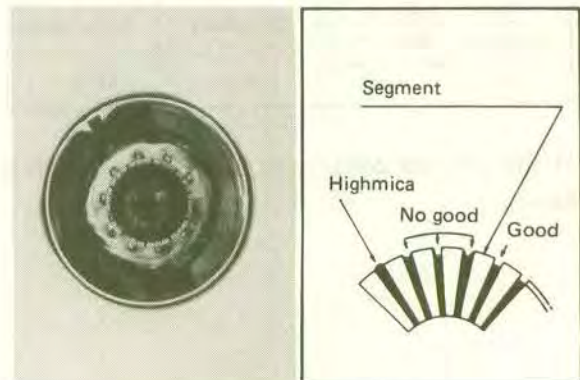
NOTE:

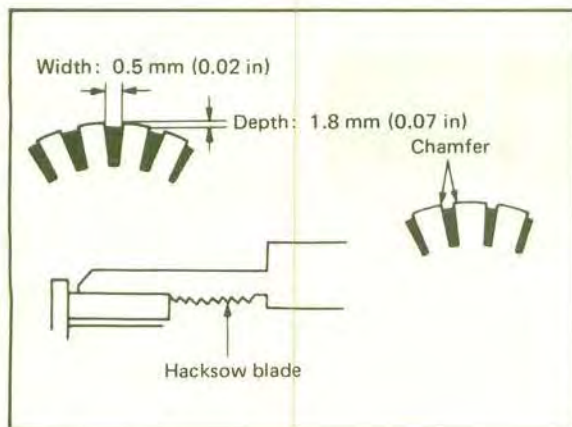
Sand the commutator outer surface lightly and evenly.

Mica insulation

After sanding the commutator, check the depth of mica undercuts. If the depth is less than limits, undercut the mica with a hacksaw blade.

After undercutting, chamfer all the edges of segments lightly with sandpaper.





Armature coil

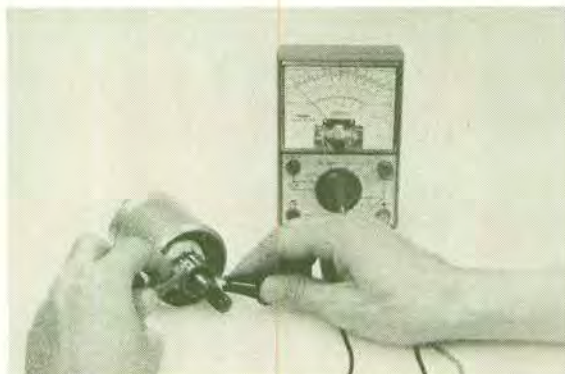
1. Make a resistance test using the Pocket Tester.



Tester's lead wire		Continuity	Tester range
Red lead	Black lead		
Commutator	Commutator	Conduct	R x 1

If there is no continuity, repair or replace the armature.

2. Using the Pocket Tester, check the insulation between the commutator and iron core.

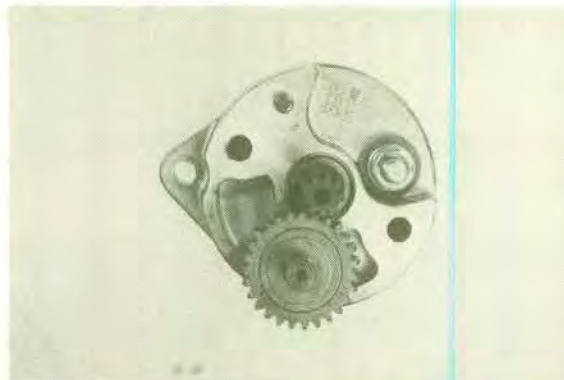


Tester's lead wire		Continuity	Tester range
Red lead	Black lead		
Commutator	Iron core	No conduct	R x 1 K

If there is no continuity, repair or replace the armature.

Starting motor gear

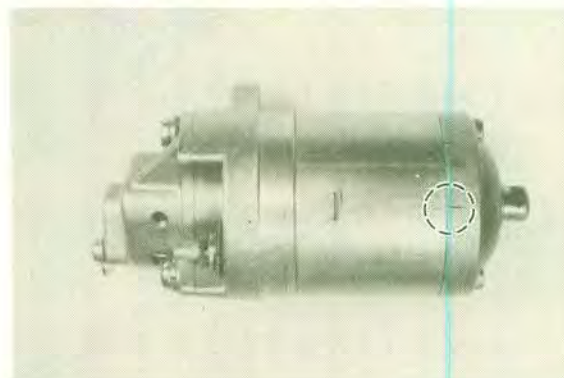
Check the starter motor gear for breaks or uneven wear.



Replace it if broken or worn unevenly. Also check the armature.

Assembling and installing

1. Align the marks on the case and cover and put them together.

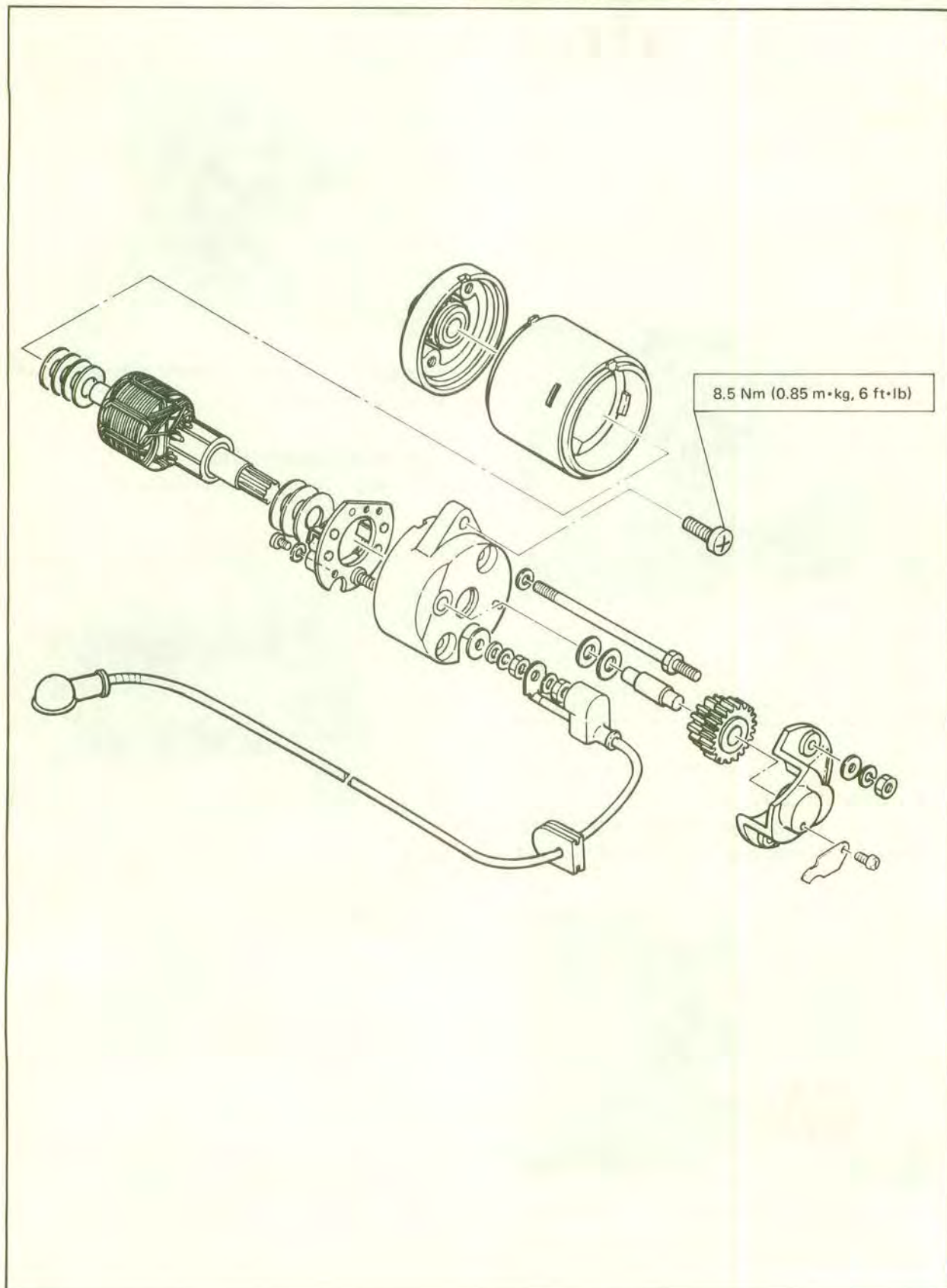


NOTE:

After assembling, check that the armature turns smoothly.

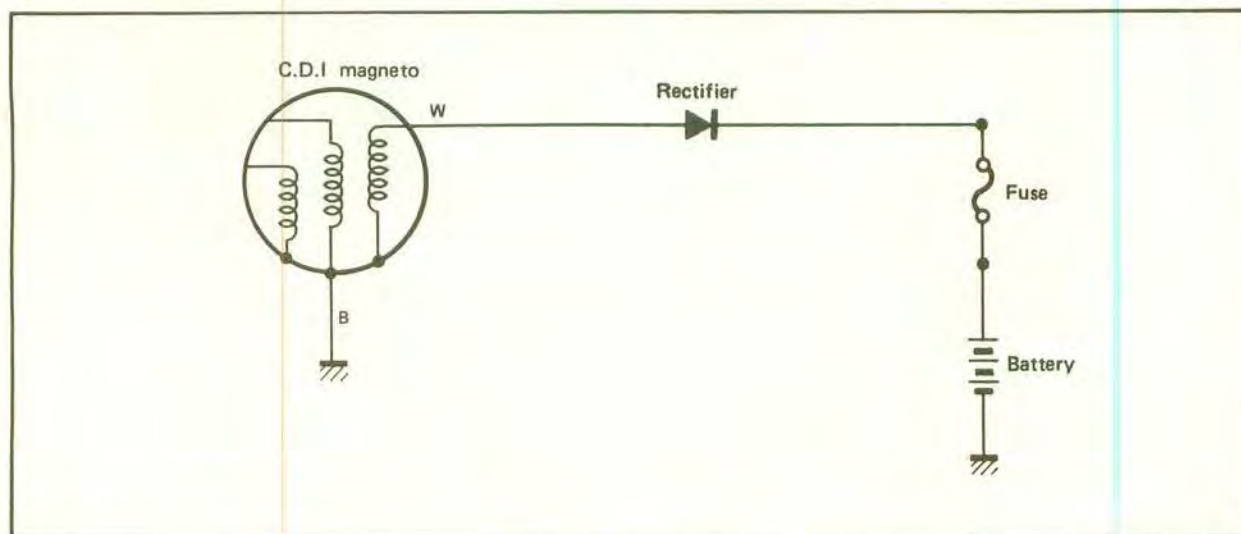
STARTER MOTOR

DISASSEMBLY • INSPECTION • ASSEMBLY



CHARGING SYSTEM

Circuit Diagram



CHECKING

Coupler and wiring

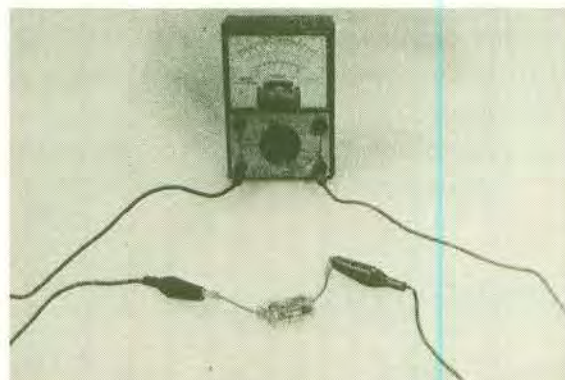
1. Check that the coupler is connected tightly.
2. Check the coupler for fouling or rust.
3. Check the wire harness for broken wires.



If the coupler is loosely connected, fouled, rusty or has broken wires, re-condition or replace it.

Fuse

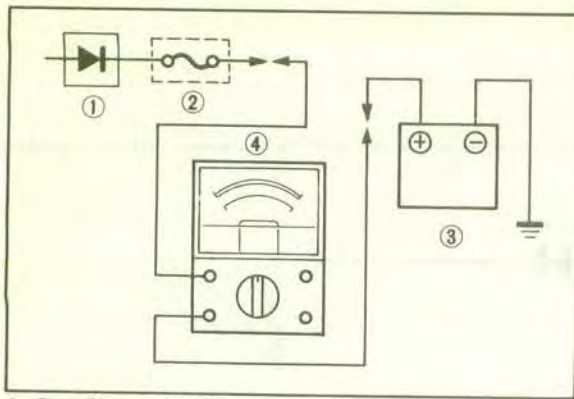
1. Remove side cover 2.
2. Remove the fuse holder from the fuse box above the battery, and check for continuity.



If there is no continuity, or the socket is loose or damaged, replace the fuse holder.

Charging current

1. Remove side cover 2 and disconnect the fuse connector.
2. Connect the engine tachometer and start the engine.
3. Disconnect the red wire connection at the battery and connect Pocket Tester. Take amperage readings at specified speed.

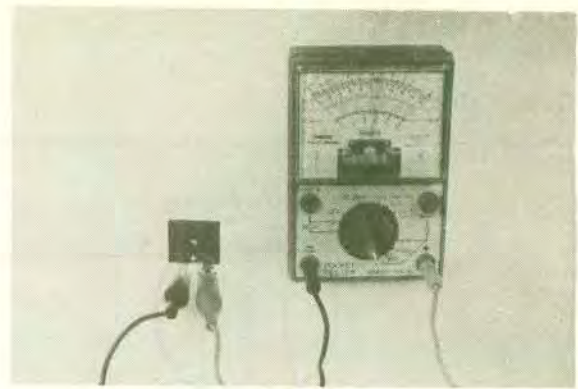


1. Rectifier
2. Fuse
3. Battery
4. Set the tester in "DC A-5" position

Charging start	1,500 r/min
3,000 r/min	1.0A or more
8,000 r/min	3.5A or less

Rectifier

1. Remove the side cover 2, and disconnect the rectifier coupler.
2. Connect the pocket tester leads as shown.
3. Change the connection, and check the movement of the meter needle.



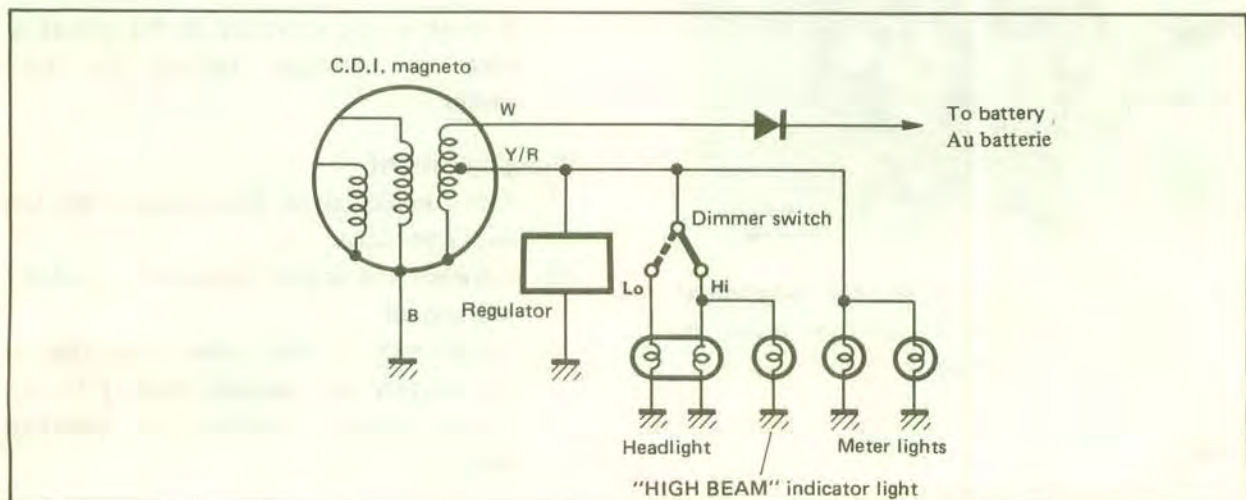
Moved by both connection	Broken → Replace
Not moved by both connection	

CAUTION:

The silicon rectifier can be damaged if subjected to overcharging. Special care should be taken to avoid a short circuit and/or incorrect connection of the positive and negative leads at the battery. Never connect the rectifier directly to the battery to make a continuity check.

LIGHTING SYSTEM

Circuit Diagram

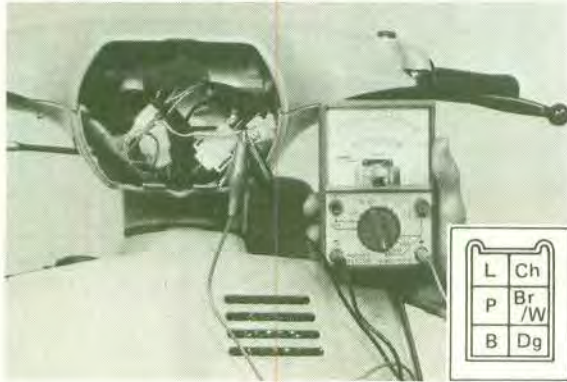


SWITCH

Using the Pocket Tester, check continuity between the terminals.

Dimmer switch

Remove the headlight unit and check continuity between the terminals.



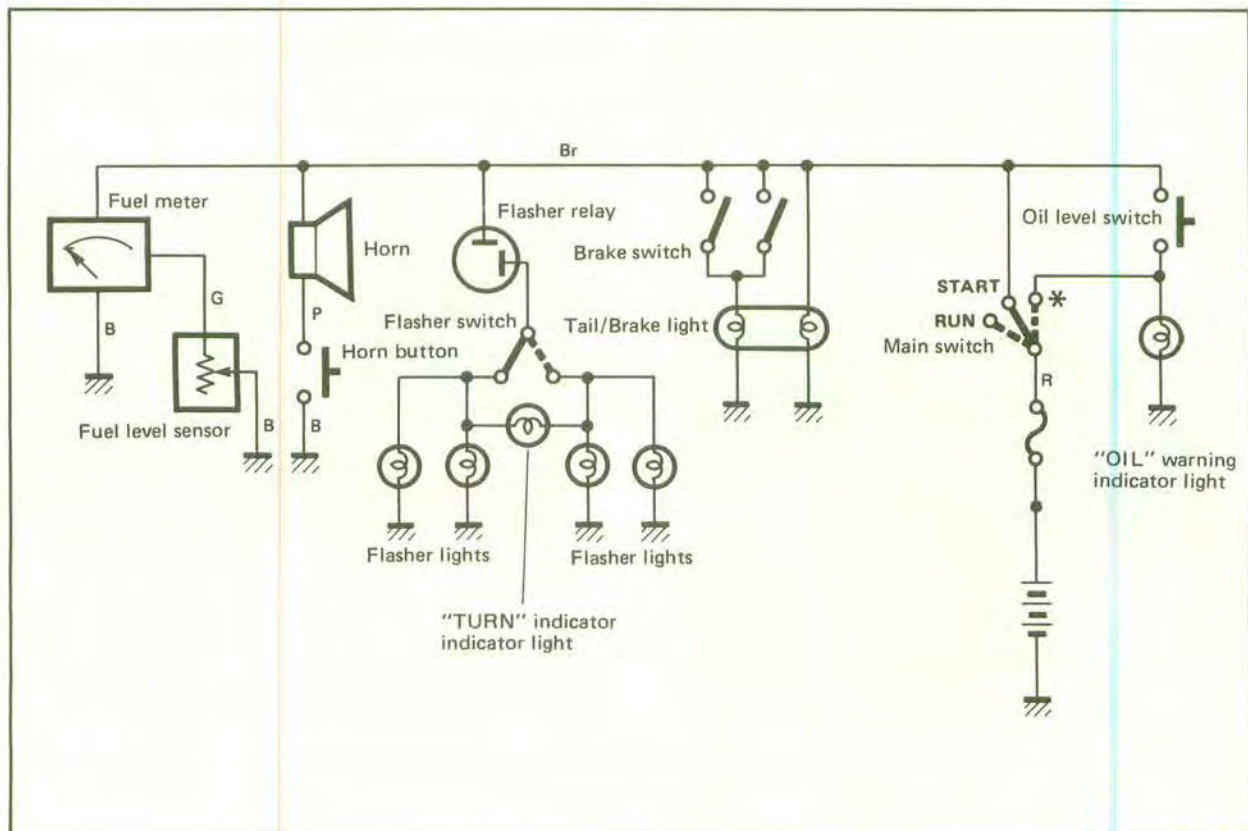
Tester lead wire		Switch position		Tester range
Red lead	Black lead	LO	HI	
G	L	○	X	R x 1
L	Y	X	○	
G	Y	X	X	

○ Continuity (Tester read "0")

X No continuity

SIGNAL SYSTEM

Circuit Diagram

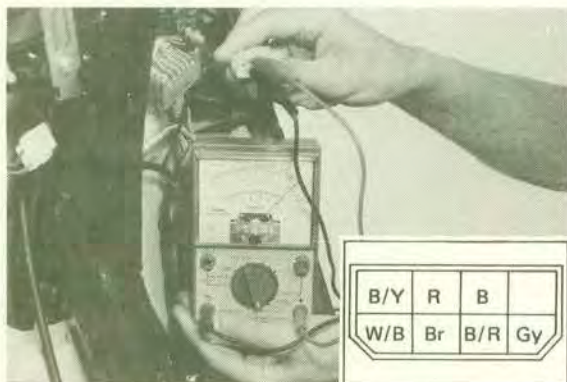


SWITCH

Using the Pocket Tester, check continuity between the terminals.

Main switch

Remove starter panel 2 and check continuity between the terminals.

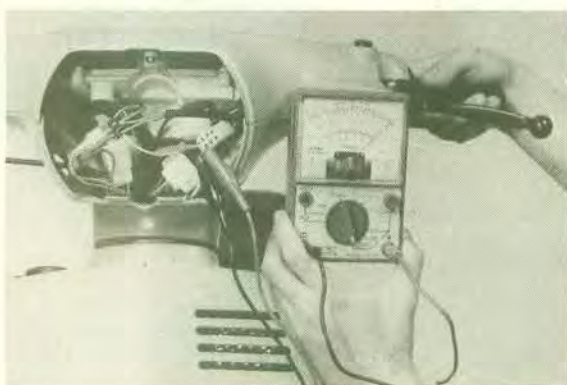


B/Y	R	B	
W/B	Br	B/R	Gy

	B/R	B	Gy	R	Br	B/R	W/R
LOCK	○	○					
OFF	○	○					
*	○	○	○	○			
START				○	○	○	
ON				○	○		○

Horn switch

Remove the headlight unit and make a continuity test.

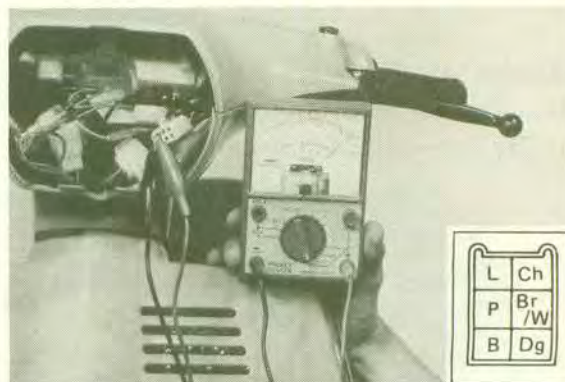


Tester lead wire		Switch position		Tester range
Red lead	Black lead	OFF	ON	
P	B	X	○	R x 1

○ Continuity (Tester reads "0")
X No continuity

Flasher switch

Remove the headlight unit and check continuity between the terminals.



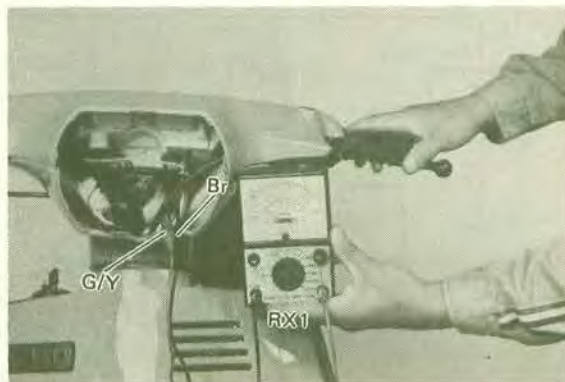
L	Ch
P	Br/W
B	Dg

Tester lead wire		Switch position			Tester range
Red lead	Black lead	(L)	N	(R)	
Dg	Br/W	X	X	○	
Ch	Br/W	○	X	X	R x 1
Dg	Ch	X	X	X	

○ Continuity (Tester reads "0")
X No continuity

Front and rear brake switch

Remove the headlight unit and make a continuity test.

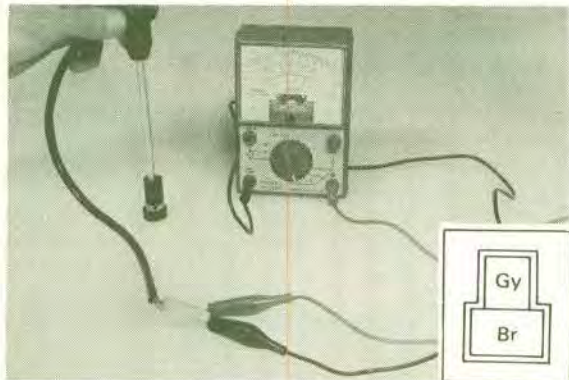


Tester lead wire		Switch position		Tester range
Red lead	Black lead	OFF	ON	
Br	G/Y	X	○	R x 1

○ Continuity (Tester reads "0")
X No continuity

Oil level gauge

1. Remove side cover 4 and disconnect the oil level gauge coupler.
2. Open the seat, remove the seat rubber, and remove the oil level gauge screw.
3. Remove the oil level gauge and make a continuity test.



Tester lead wire		Float is down	Tester range
Red lead	Black lead		
Brown	Gray	Conduct	R x 1

(Tester reads "0")

HORN

Checking coil resistance

Remove scooter panel 2, and using the Pocket Tester, check continuity between the terminals.

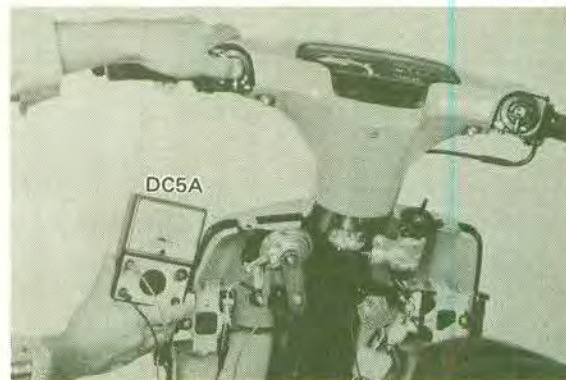


Tester lead wire		Standard resistance	Tester range
Red lead	Black lead		
Brown lead	Pink lead	$1.04\Omega \pm 10\%$	R x 1

If there is a big difference, replace the horn.

Volume and tone color

1. Connect the horn and battery by the Pocket Tester.
2. Turn the adjuster in and out so that the volume is maximum at the specified amperage.

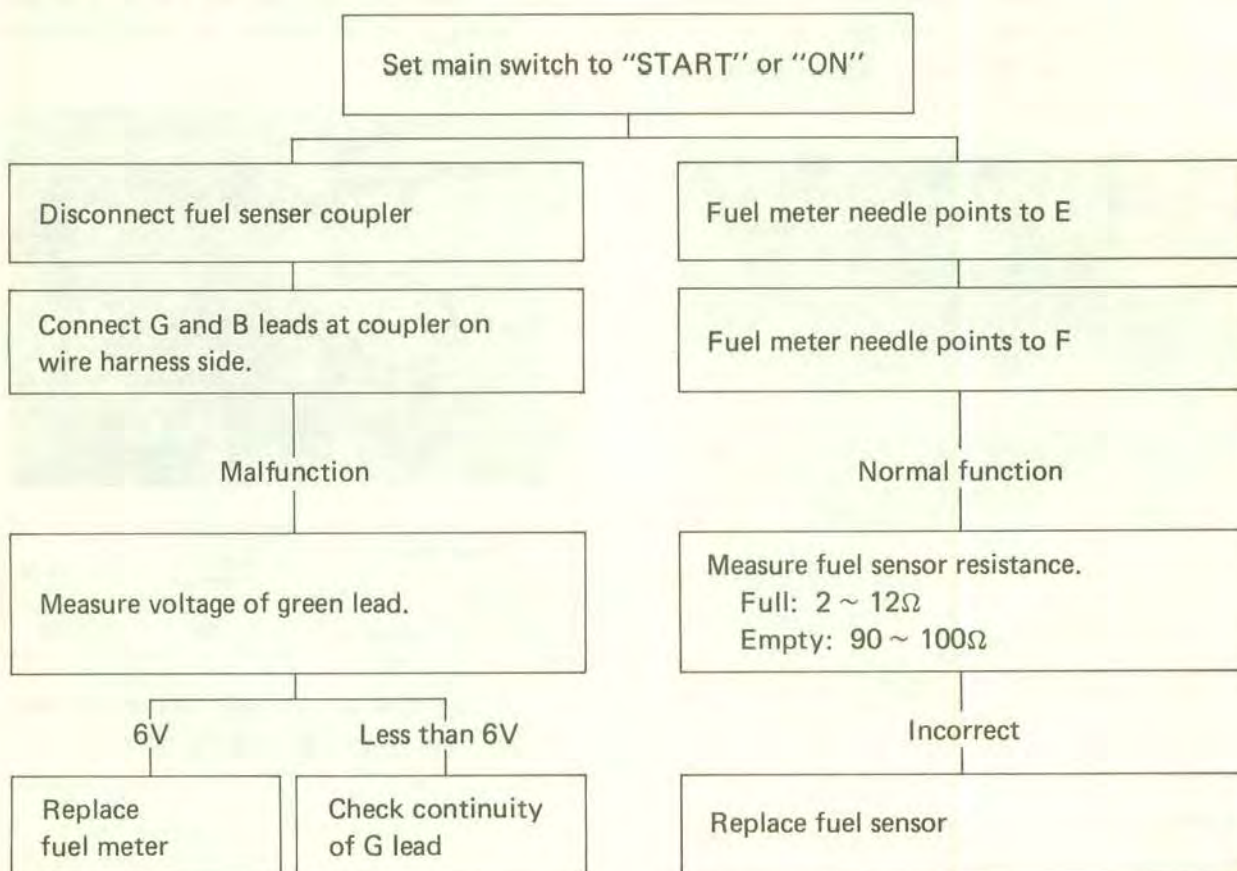


Tester lead wire		Specified amperage	Tester range
Red lead	Black lead		
Brown lead	Battery lead	1.5A	D.C. 5A

If the tone color is still bad or the horn will not sound, replace the horn.

FUEL METER

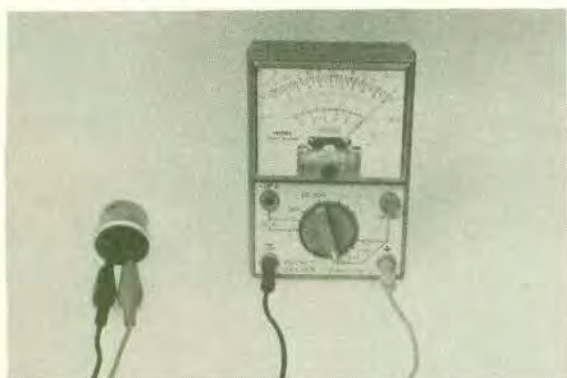
Fuel meter is faulty



FLASHER RELAY

Checking the flasher relay

1. Remove side cover 3, remove the flasher relay, and test a continuity between X and L.



Tester lead wire		Resistance	Tester range
Red lead	Black lead		
X lead	L lead	0Ω	R x 1

If there is continuity, replace the flasher relay.

2. Measure insulation resistance between the case and each terminal.



Tester lead wire		Standard insulation resistance	Tester range
Red lead	Black lead		
X, L lead	Body	1Ω	Insulation

If the insulation resistance measured is below the standard value, replace the flasher relay.

CHAPTER 7. APPENDICES

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SPECIFICATION

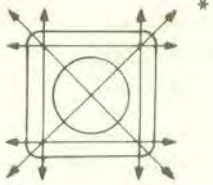
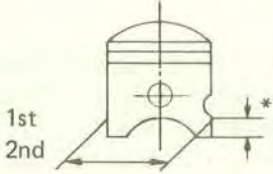
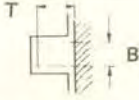
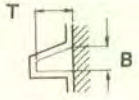
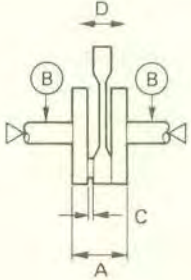
GENERAL SPECIFICATIONS

Item	Model	CV80K
Model:		
IBM Number		13T
Frame Starting Number		13T-000101
Engine Starting Number		13T-000101
Dimensions:		
Overall Length		1,820 mm (71.7 in)
Overall Width		670 mm (26.4 in)
Overall Height		1,020 mm (40.2 in)
Seat Height		757 mm (29.8 in)
Wheelbase		1,200 mm (47.2 in)
Minimum Ground Clearance		110 mm (4.3 in)
Basic Weight:		
With Oil and Full Fuel Tank		87 kg (191 lb)
Engine:		
Engine Type		Air cooled 2-stroke, gasoline, torque induction
Cylinder Arrangement		Forward incline, single
Displacement		79 cm ³ (4.82 cu.in)
Bore x Stroke		49.0 x 42.0 mm (1.93 x 1.65 in)
Compression Ratio		6.7 ~ 7.3 : 1
Starting System		Electric and kick starter
Lubrication System:		Separate lubrication (Autolube)
Oil Type or Grade:		
Engine Oil		Air cooled 2-stroke engine oil
Transmission Oil		SAE 10W30 type SE motor oil
Oil Capacity:		
Oil Tank (Engine Oil)		1.1 L (0.97 Imp qt, 1.16 US qt)
Transmission Oil:		
Periodic Oil Change		0.18 L (0.15 Imp qt, 0.19 US qt)
Total Amount		0.20 L (0.18 Imp qt, 0.21 US qt)
Air Filter:		Wet type element
Fuel:		
Type		Regular gasoline
Tank Capacity		4.7 L (4.14 Imp gal, 4.97 US gal)
Carburetor:		
Type		VM13SS
Manufacturer		MIKUNI
Spark plug:		
Type		BP7HS
Manufacturer		NGK
Gap		0.6 ~ 0.8 mm (0.024 ~ 0.031 in)
Clutch:		
Type		V-belt automatic

Item	Model	CV80K
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction Ratio Transmission Type Gear Ratio: 1st 2nd		V-belt 2.0 : 1 9.7 : 1 Constat mesh 52/18 (2.888) 47/14 (3.357)
Chassis: Frame Type Caster Angle Trail		Steel tube underbone 27°30' 64 mm (2.52 in)
Tire: Type Size (F) Size (R)		Tube-type tire 3.50-10-4PR 3.50-10-4PR
Tire Pressure (Cold tire): Solo rider: Front Rear With passenger: Front Rear		98.1 kPa (1.0 kg/cm ² , 14 psi) 147 kPa (1.5 kg/cm ² , 22 psi) 98.1 kPa (1.0 kg/cm ² , 14 psi) 245 kPa (2.25 kg/cm ² , 36 psi)
Brake: Front Brake Type Operation Rear Brake Type Operation		Drum brake Right hand operation Drum brake Left hand operation
Suspension: Front Suspension Rear Suspension		Bottom link fork Unit swing
Shock Absorber: Front Shock Absorber Rear Shock Absorber		Coil spring, oil damper Coil spring, oil damper
Wheel Travel: Front Wheel Travel Rear Wheel Travel		55 mm (2.2 in) 53 mm (2.1 in)
Electrical: Ignition System Generator System Battery Type or Model Battery Capacity		C.D.I. Magneto Flywheel magneto 6GM11-2D 6V, 11AH
Bulb Wattage/Quantity: Headlight Tail/Brake Light Flasher Light Pilot Lights: TURN HIGH BEAM OIL Meter Light		25W/25W x 1 5.3W/25W x 1 17W x 4 3W x 2 3W x 1 3W x 1 3W x 2

MAINTENANCE SPECIFICATIONS

A. Engine

Item	Model	
Cylinder Head: Warp Limit 	CV80K 0.02 mm (0.0008 in) * Lines indicate straightedge measurement.	
Cylinder: Bore Size Taper Limit Out of Round Limit	49 $\begin{smallmatrix} +0.020 \\ -0 \end{smallmatrix}$ mm (1.93 $\begin{smallmatrix} +0.0008 \\ -0 \end{smallmatrix}$ in) 0.05 mm (0.002 in) 0.01 mm (0.0004 in)	
Piston: Piston Size/ Measuring Point* Piston Clearance Oversize Offset 	49 mm (1.93 in)/ 5 mm (0.2 in) 0.035 ~ 0.040 mm (0.0014 ~ 0.0016 in) 49.25 mm (1.94 in) 49.50 mm (1.95 in) 0 mm (0 in)	
Piston Ring: Sectional Sketch: End Gap (Installed): Side Clearance :	Top Ring	2nd Ring
		
	Keystone	Plain
	B = 2.0 mm (0.08 in) T = 1.5 mm (0.06 in)	B = 1.8 mm (0.07 in) T = 1.5 mm (0.06 in)
	0.15 ~ 0.30 mm (0.006 ~ 0.01 in)	0.15 ~ 0.30 mm (0.006 ~ 0.01 in)
	0.03 ~ 0.05 mm (0.0011 ~ 0.0019 in)	0.03 ~ 0.05 mm (0.0011 ~ 0.0019 in)
Crankshaft:  Crank Width "A" Run Out Limit "B" Connecting Rod Big End Side Clearance "C" Small End Free Play Limit "D"	38 $\begin{smallmatrix} -0.05 \\ -0.10 \end{smallmatrix}$ mm (1.5 $\begin{smallmatrix} -0.002 \\ -0.004 \end{smallmatrix}$ in) 0.025 mm (0.0009 in) 0.3 ~ 0.65 mm (0.01 ~ 0.03 in) 0.8 ~ 0.2 mm (0.03 ~ 0.08 in)	

Item	Model	CV80K
Clutch: Clutch Shoe Thickness Clutch Shoe Spring Free Length Clutch-in Revolution Clutch-stall Revolution		Automatic centrifugal clutch 2.5 mm (0.10 in) 29.5 mm (1.20 in) 2,600 $\begin{smallmatrix} +200 \\ -100 \end{smallmatrix}$ r/min 3,500 $\pm$ 300 r/min
Transmission: Main Axle Deflection Limit Drive Axle Deflection Limit		0.015 mm (0.00059 in) 0.015 mm (0.00059 in)
Starter: Kick Starter Type Kick Clip Friction Force < Min. ~ Max. >		Kick and mesh type < P = 0.2 ~ 0.4 kg (0.44 ~ 0.88 lb) >
Carburetor: Type/Manufacturer/Quantity I.D. Mark Main Jet (M.J.) Air Jet (A.J.) Jet Needle-clip Position (J.N.) Needle Jet (N.J.) Cutaway (C.A.) Pilot Jet (P.J.) Air Screw (turns out) (P.A.S.) Starter Jet (G.S.) Valve Seat Size (V.S.) Float Height (F.H.) Engine Idling Speed		VM13SS/MIKUNI/1 pc. 13T00 #75 ϕ 2.5 3T12-1 D-8 3.0 #20 Preset #35 ϕ 2.0 14.5 $\pm$ 1 mm (0.57 $\pm$ 0.04 in) 1,500 ~ 1,700 r/min
Reed Valve: Thickness* Valve Lift Bending Limit		0.2 mm (0.008 in) 7.8 mm (0.31 in) 0.5 mm (0.02 in)
Lubrication system: Autolube Pump — Color Code — Minimum Stroke — Maximum Stroke Pulley Adjusting Mark (at Idle):		Autolube Pump Yellow 0.30 ~ 0.35 mm (0.012 ~ 0.014 in) 0.95 ~ 1.10 mm (0.037 ~ 0.043 in) 

Tightening torque

Part to be tightened	Thread size	Tightening torque			Remarks	
		Nm	m•kg	ft•lb		
ENGINE:						
Cylinder head	M7 P1.0	15	1.5	11		
Spark plug	M14 P1.25	20	2.0	14		
C.D.I. rotor	M12 P1.25	43	4.3	31		
Magneto base	M6 P1.0	8	0.8	5.8		
Magneto base	M6 P1.0	8	0.8	5.8		
Air shroud	M6 P1.0	8	0.8	5.8		
Fan	M6 P1.0	8	0.8	5.8		
Oil pump	M5 P0.8	4	0.4	2.9		
Reed valve	M6 P1.0	8	0.8	5.8		
Exhaust pipe, muffler	M8 P1.25	18	1.8	13		
Crankcase, cover	M6 P1.0	8	0.8	5.8		
Drain bolt	M8 P1.25	18	1.8	13		
B.V.S. mount	M6 P1.0	8	0.8	5.8		
Starter motor	M6 P1.0	8	0.8	5.8		
Oneway clutch	M10 P1.25	30	3.0	22		
Secondary sheave	M36 P1.5	50	5.0	36		
Cylinder stud	M7 P1.0	18	1.8	13		

B. Chassis

Item		Model	CV80K
Steering System:			
Steering Bearing Type			Ball bearing
No./Size of Steel Balss:	Upper		22 pcs/ 3/16 in
	Lower		19 pcs/1/4 in
Front Suspension:			
Front Fork Travel			55 mm (2.2 in)
Fork Spring Free length			170.5 mm (6.7 in)
Spring Rate/Stroke			$K_1 = 1.5 \text{ kg/mm (83.9 lb/in) /}$ $0 \sim 35 \text{ mm (0} \sim 1.37 \text{ in)}$
			$K_2 = 2.4 \text{ kg/mm (134.3 lb/in) /}$ $35 \sim 66.34 \text{ mm (1.37} \sim 2.61 \text{ in)}$
Optional Spring			No.
Rear Suspension:			
Shock Absorber Travel			53 mm (2.1 in)
Spring Free Length			214.5 mm (8.4 in)
Spring Rate/Stroke			$K_1 = 7.5 \text{ kg/mm (419.9 lb/in) /}$ $0 \sim 25 \text{ mm (0} \sim 0.98 \text{ in)}$
			$K_2 = 12.0 \text{ kg/mm (671.8 lb/in) /}$ $25 \sim 47 \text{ mm (0.98} \sim 1.85 \text{ in)}$
Optional Spring			No.
Wheel:			
Front Wheel Type			Disc Wheel
Rear Wheel Type			Disc Wheel
Front Rim Size/Material			10 x 2.50/Steel
Rear Rim Size/Material			10 x 2.50/Steel
Rim Runout Limit:	Vertical		2.0 mm (0.08 in)
	Lateral		2.0 mm (0.08 in)
Drum Brake:			
Type:	Front		Leading trailing
	Rear		Leading trailing
Drum Inside Diameter:	Front		110 mm (4.3 in)
	Rear		110 mm (4.3 in)
Lining Thickness			4 mm (0.16 in)
< Limit >			< 2 mm (0.08 in) >
Shoe Spring Free Length:	Front		34.5 mm (1.36 in)
	Rear		34.5 mm (1.36 in)

Tightening torque

Part to be tightened	Thread size	Q'ty	Tightening torque			Remarks
			Nm	m•kg	ft•lb	
CHASSIS:						
Front wheel axle	M10 P1.25	1	35	3.5	25	
Brake cam lever	M6 P1.0	1	10	1.0	7.2	
Front fender	M6 P1.0	3	6	0.6	4.3	
Mud gaurd	M6 P1.0	2	6	0.6	4.3	
Front panel	M6 P1.0	4	6	0.6	4.3	
Steering shaft, handle	M8 P1.25	1	34	3.4	24	
Steering shaft	M6 P1.0	4	6	0.6	4.3	
Footrest board	M6 P1.0	4	6	0.6	4.3	
Engine bracket, frame	M10 P1.25	2	42	4.2	30	
Engine bracket, engine	M12 P1.25	2	42	4.2	30	
Fuel tank	M6 P1.0	4	6	0.6	4.3	
Rear shock, frame	M10 P1.25	1	40	4.0	29	
Rear shock, engine	M12 P1.25	1	50	5.0	36	
Carrier	M8 P1.25	4	15	1.5	11	
Rear wheel axle	M14 P1.5	1	95	9.5	68	
Rear view mirror	M10 P1.25	2	30	3.0	22	
Handle upper cover	M8 P1.25	2	15	1.5	11	
Fuel sensor	M5 P0.8	4	2	0.2	1.4	
Front shock, upper	M8 P1.25	1	26	2.6	19	
Front shock	M10 P1.25	1	50	5.0	36	
Footrest brake	M8 P1.25	4	15	1.5	11	

C. Electrical

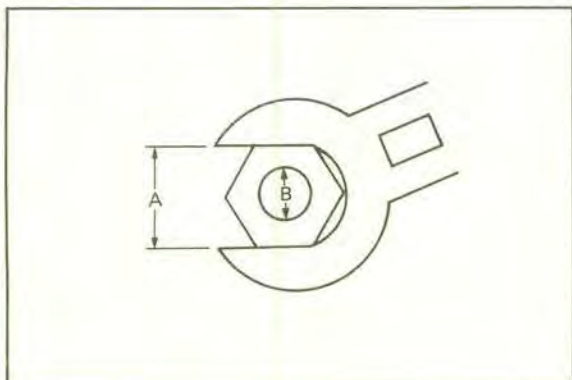
Item	Model	CV80K
Voltage:		6V
Ignition System:		
Ignition Timing (B.T.D.C.)		16° at 5,000 r/min, 1.8 ± 0.15 mm (0.07 ± 0.006 in)
		Ignition Timing (B.T.D.C.) Engine speed (× 10³ r/min)
C.D.I.:		
Model		13T/YAMAHA
Pick up Coil Resistance (Color)		34Ω ± 10% at 20°C (68°F) (White/Red — Black)
Charging Coil Resistance (Color)		378Ω ± 10% at 20°C (68°F) (Black/Red — Black)
C.D.I. Unit-Model		13T/YAMAHA
Ignition Coil:		
Model		C2T4
Minimum Spark Gap		13kV or more at 400 r/min, 12kV or more at 8,000 r/min
Primary Winding Resistance		1.6Ω ± 10% at 20°C (68°F)
Secondary Winding Resistance		6.6kΩ ± 10% at 20°C (68°F)
Charging System:		
Type		Flywheel magneto
F.W. Magneto:		
Model		13T/YAMAHA
Charging Current: Night		1.0A or more at 3,000 r/min
Charging Current		3.5A or less at 8,000 r/min
Charging Coil Resistance (Color)		0.6Ω ± 20% at 20°C (68°F) (White — Black)
Lighting Voltage		6.5V or more at 3,000 r/min, 7.7V or less at 8,000 r/min
		Charging Current (A) Lighting Voltage (V) Engine speed (× 10³ r/min)
Lighting Coil Resistance (Color)		0.5Ω ± 10% at 20°C (68°F) (Yellow — Black)

Item	Model	CV80K
Voltage Regulator: Type Model/Manufacture No Load Regulated Voltage Allowable Amperage		A.C. Regulator SU208Y/STANLEY 7.5V 8.5A
Rectifier: Model/Manufacturer Capacity Withstand Voltage		DE4504/STANLEY 4A 400V
Battery: Capacity Specific Gravity		6V, 11AH 1.280
Electric Starter System: Type Starter Motor: Model/Manufacturer Out put Brush: Overall Length < Limit > Spring Pressure Commutator Dia.: < Limit > Mica Undercut Starter switch: Model/Manufacturer Amperage Rating Coil Winding Resistance		Constant mesh type SM-7152/MITSUBA 0.15 kw 5.8 x 10.5 x 11 mm (0.228 x 0.413 x 0.433 in) 5 mm (0.197 in) 300 g (10.581 oz) φ23 mm (0.906 in) φ22 mm (0.866 in) 0.55 x 1.8 mm (0.022 x 0.071 in) G2MW-D3654/TATEISHI 50A 20Ω ± 10% at 20°C (68°F)
Horn: Type/Quantity Model/Manufacturer Maximum Amperage		Plain type/1 MF-6/ 1.5A
Flasher Relay: Type Model/Manufacturer Flasher Frequency Wattage		Condenser type FU637SD 85 cycle/min. 17W x 2 + 3W
Oil Level Switch: Model/Manufacturer		5G3/STANLEY
Fuel gauge: Model/Manufacturer Sender Unit Resistance: Fully Empty		5G3/NIPPONSEIKI 7Ω ± 5Ω 95Ω ± 7.5Ω
Circuit Breaker: Type Amperage for Individual Circuit/Quantity: Main Reserve		Fuse 10A x 1 10A x 1

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a criss-cross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	51
22 mm	16 mm	130	13.0	94



DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm cm	millimeter centimeter	10^{-3} meter 10^{-2} meter	Length Length
kg	kilogram	10^3 gram	Weight
N	Newton	$1 \text{ kg} \times \text{m}/\text{sec}^2$	Force
Nm m•kg	Newton meter Meter kilogram	$\text{N} \times \text{m}$ $\text{m} \times \text{kg}$	Torque Torque
Pa N/mm	Paskal Newton per millimeter	N/m^2 N/mm	Pressure Spring rate
L cm^3	Liter Cubic centimeter	—	Volume or Capacity
r/min	Rotation per minute	—	Engine speed

CONVERSION TABLES

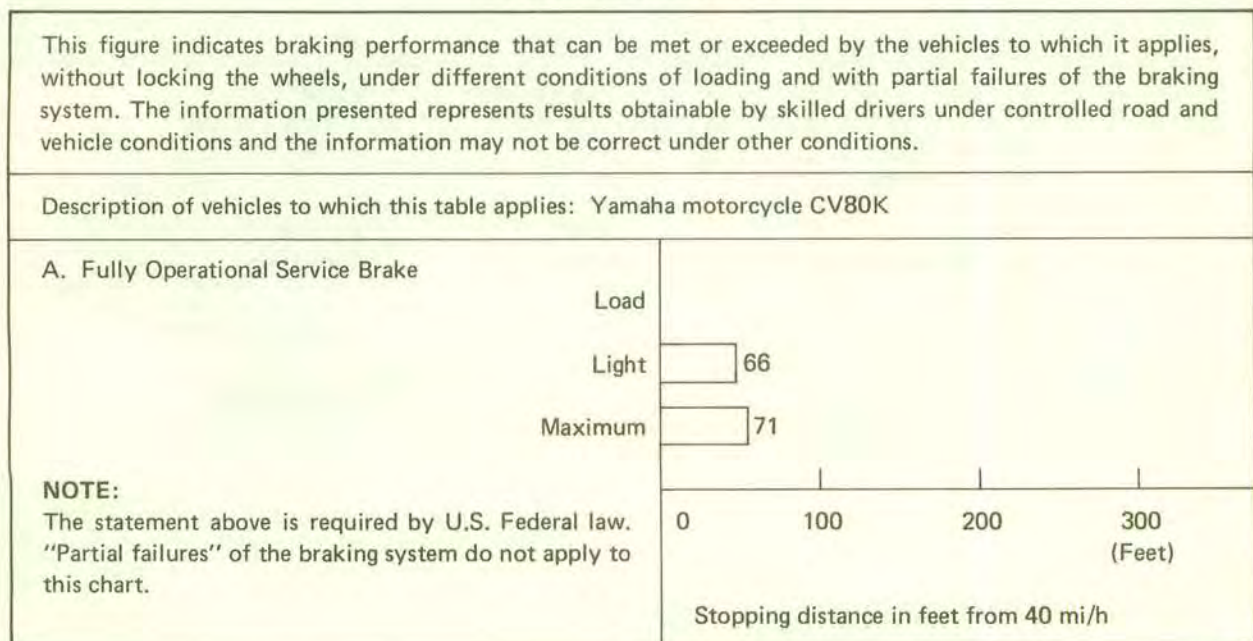
METRIC TO INCH SYSTEM		
Known	Multiplier	Result
m•kg	7.233	ft•lb
m•kg	86.80	in•lb
cm•kg	0.0723	ft•lb
cm•kg	0.8680	in•lb
kg	2.205	lb
g	0.03527	oz
km/lit	2.352	mpg
km/hr	0.6214	mph
km	0.6214	mi
m	3.281	ft
m	1.094	yd
cm	0.3937	in
mm	0.03937	in
cc (cm ³)	0.03382	oz (U.S. liq)
cc (cm ³)	0.06102	cu.in
lit (liter)	2.1134	pt (U.S. liq)
lit (liter)	1.057	qt (U.S. liq)
lit (liter)	0.2642	gal (U.S. liq)
kg/mm	56.007	lb/in
kg/cm ²	14.2234	psi (lb/in ²)
Centigrade (°C)	9/5 (°C) + 32	Fahrenheit (°F)

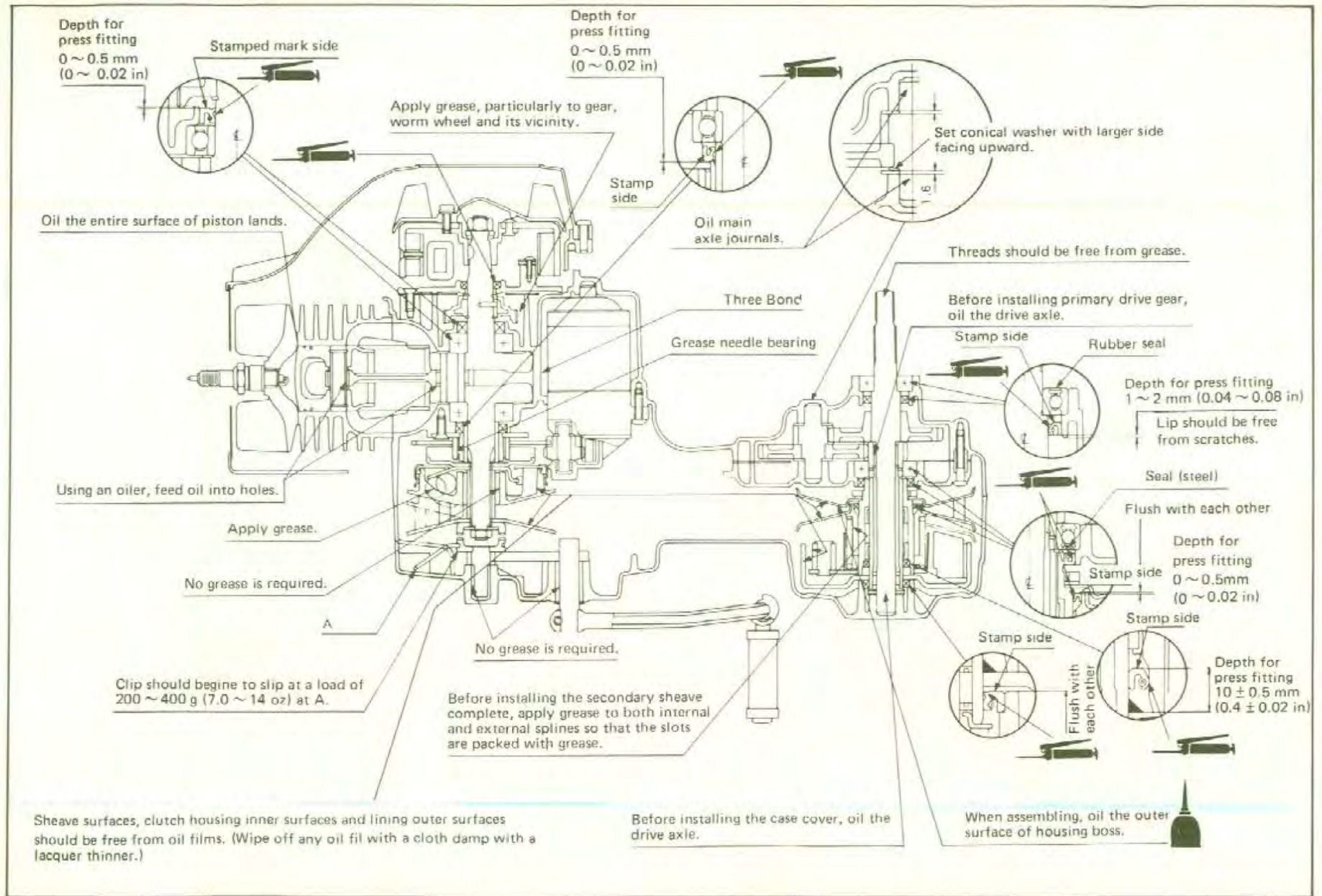
INCH TO METRIC SYSTEM		
Known	Multiplier	Result
ft•lb	0.13826	m•kg
in•lb	0.01152	m•kg
ft•lb	13.831	cm•kg
in•lb	1.1521	cm•kg
lb	0.4535	kg
oz	28.352	g
mpg	0.4252	km/lit
mph	1.609	km/hr
mi	1.609	km
ft	0.3048	m
yd	0.9141	m
in	2.54	cm
in	25.4	mm
oz (U.S. liq)	29.57	cc (cm ³)
cu.in	16.387	cc (cm ³)
pt (U.S. liq)	0.4732	lit (liter)
qt (U.S. liq)	0.9461	lit (liter)
gal (U.S. liq)	3.785	lit (liter)
lb/in	0.017855	kg/mm
psi (lb/in ²)	0.07031	kg/cm ²
Fahrenheit (°F)	5/9 (°F) - 32	Centigrade (°C)

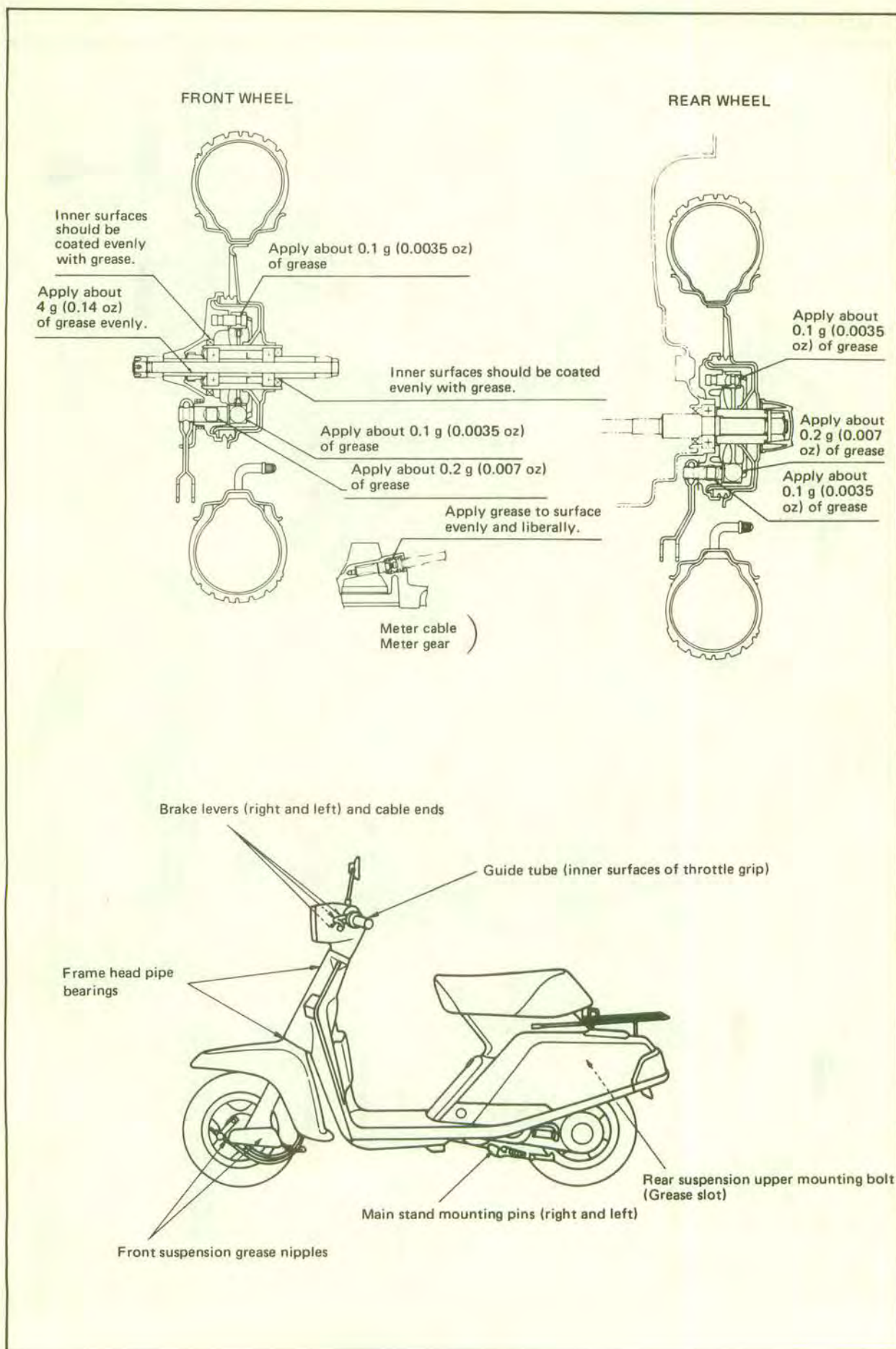
MISCELLANEOUS

Consumer Information

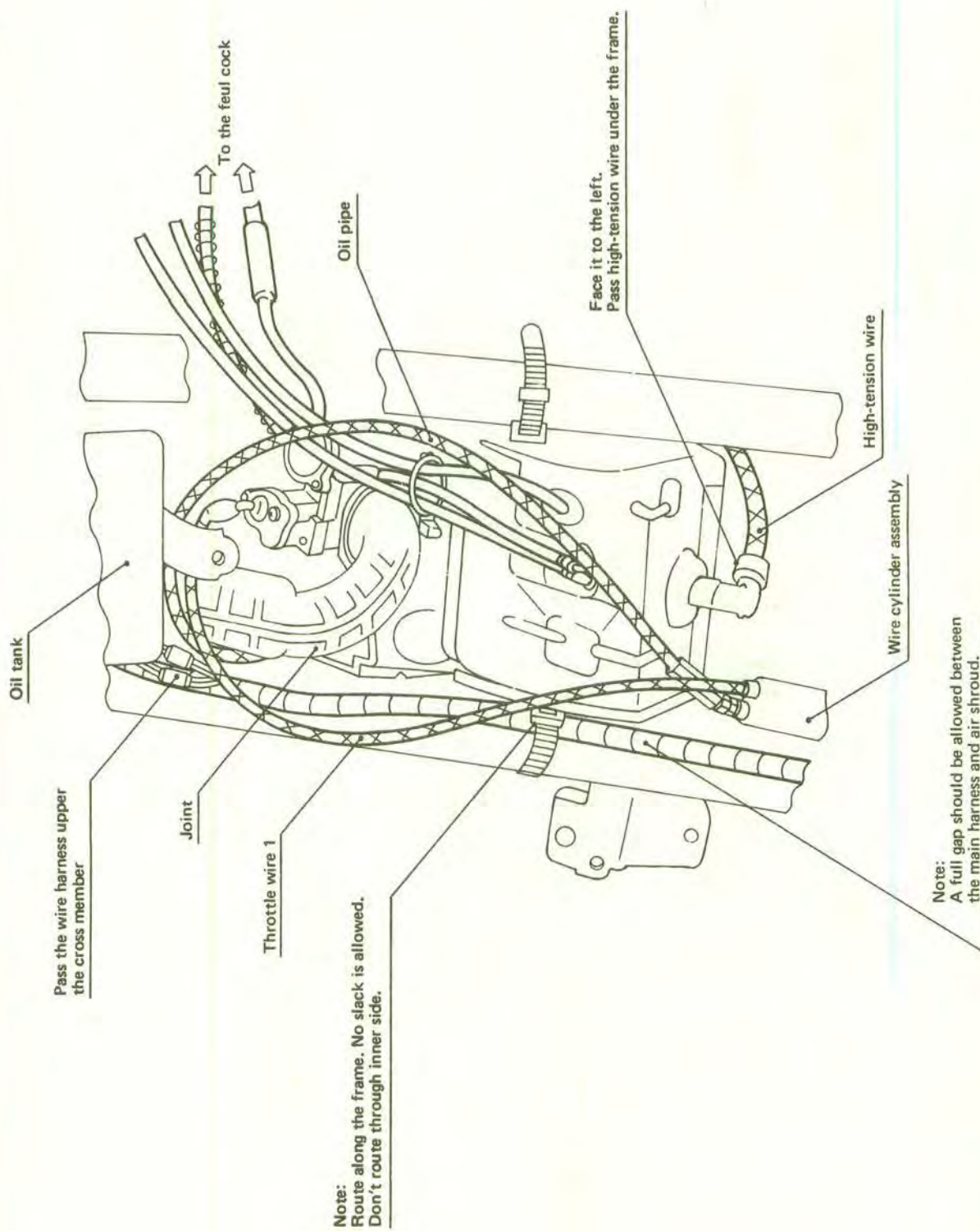
STOPPING DISTANCE

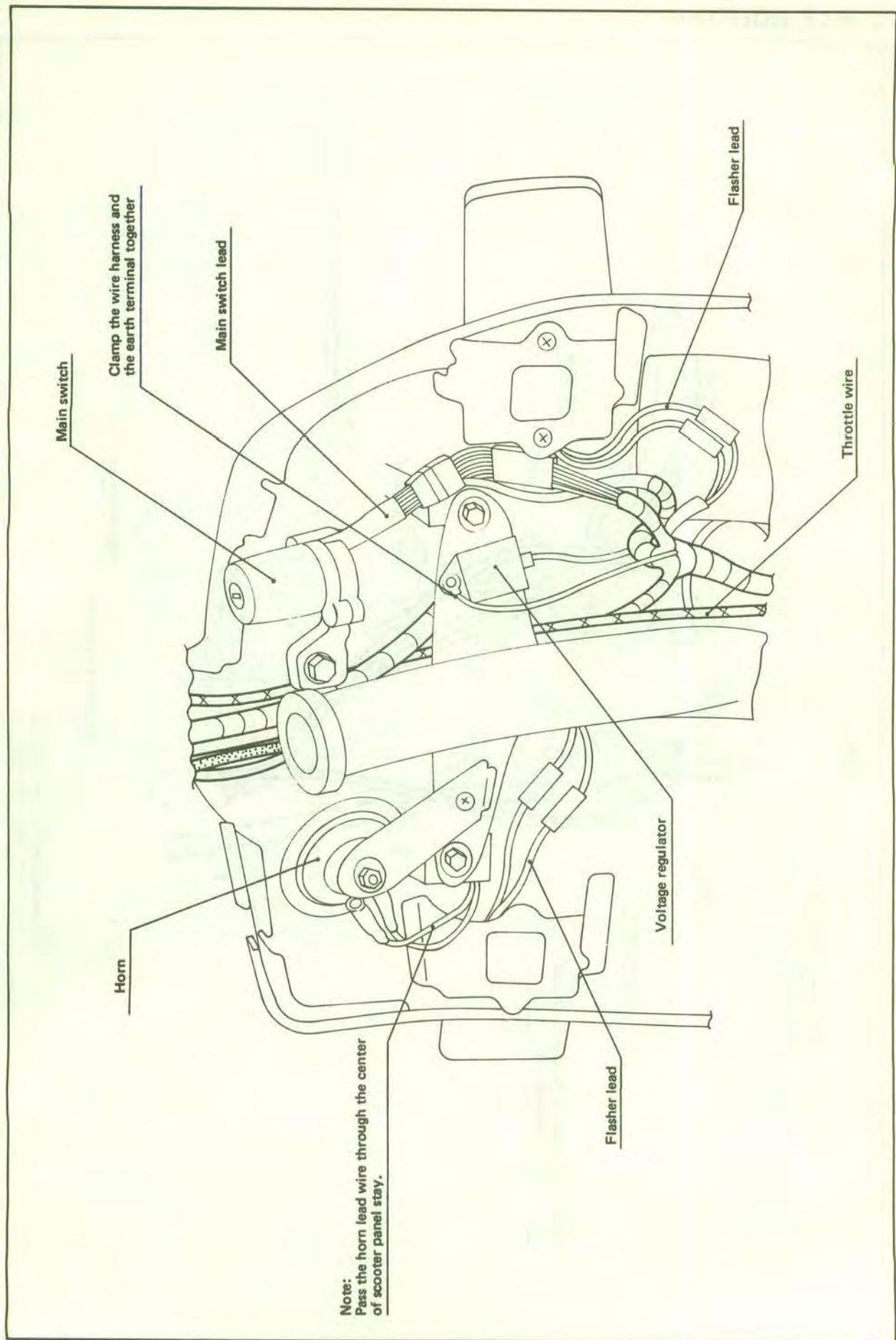


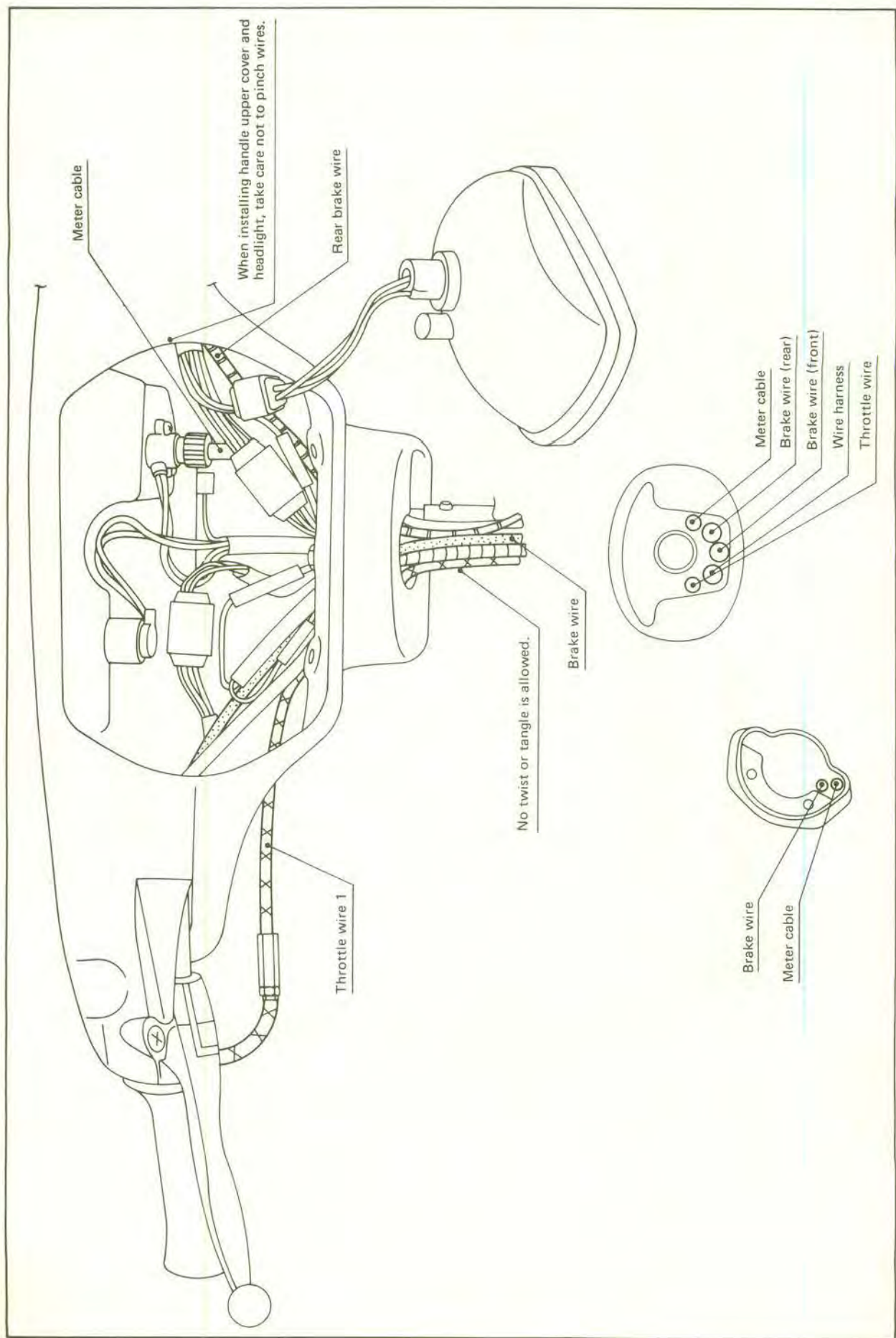


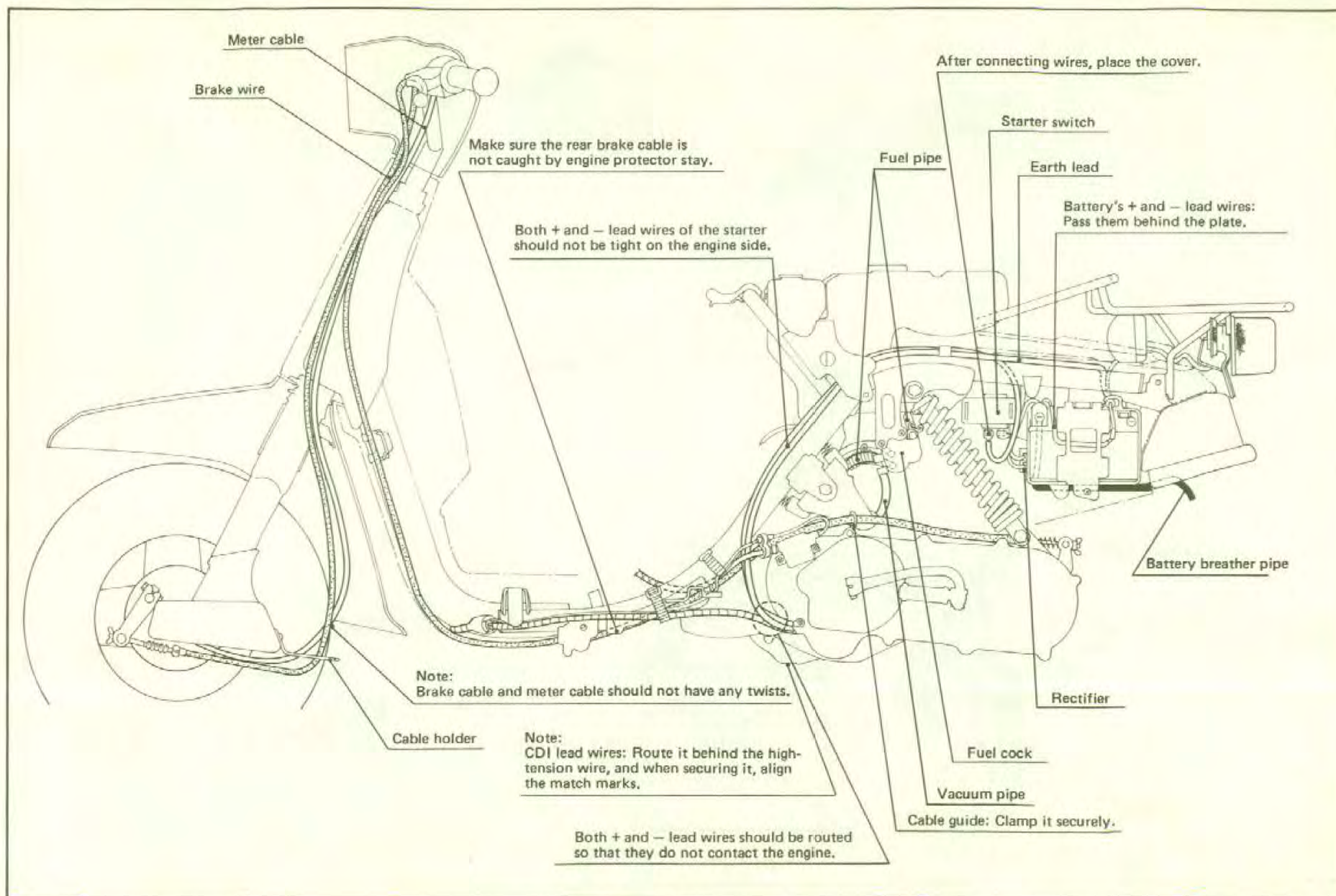


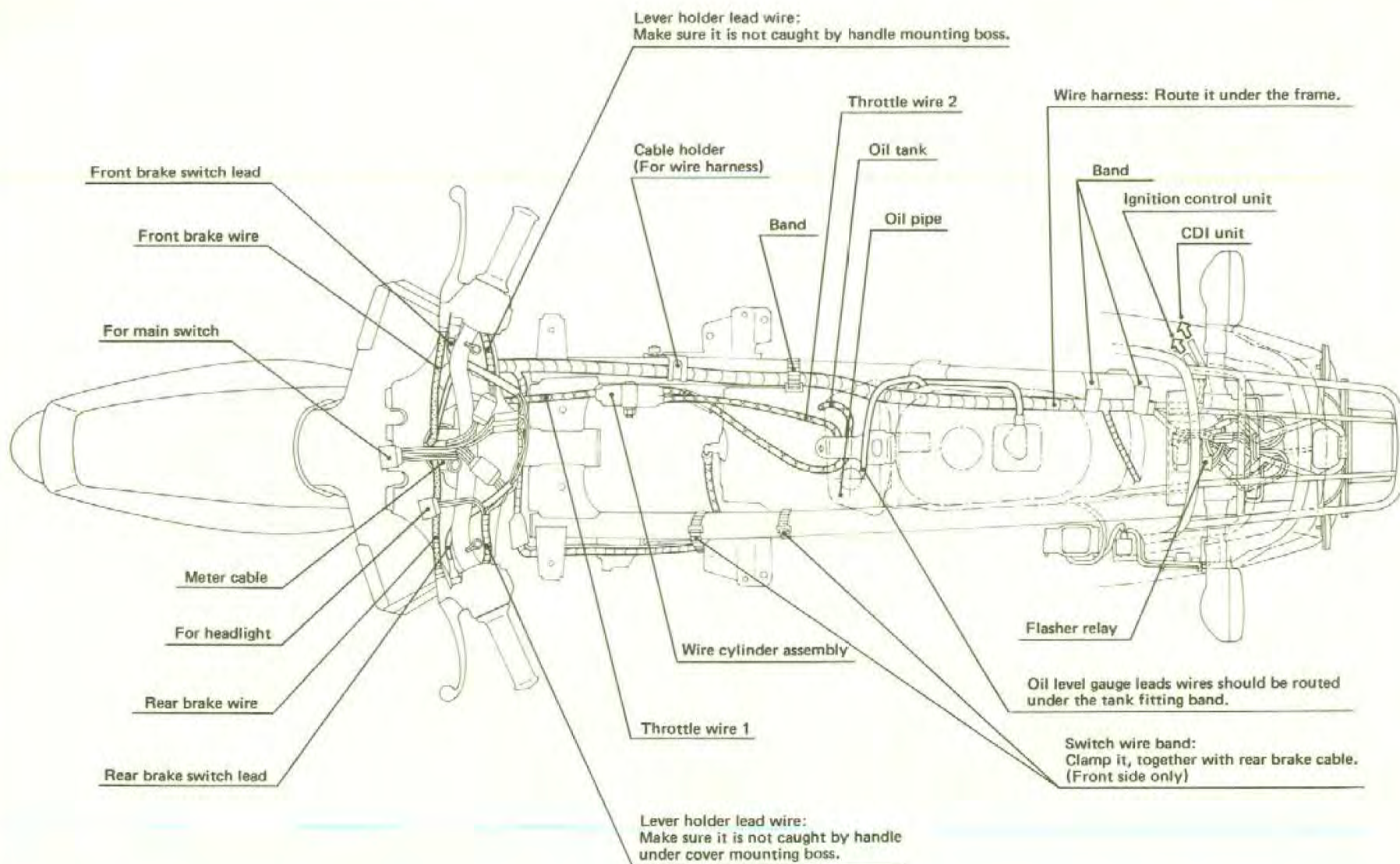
CABLE ROUTING

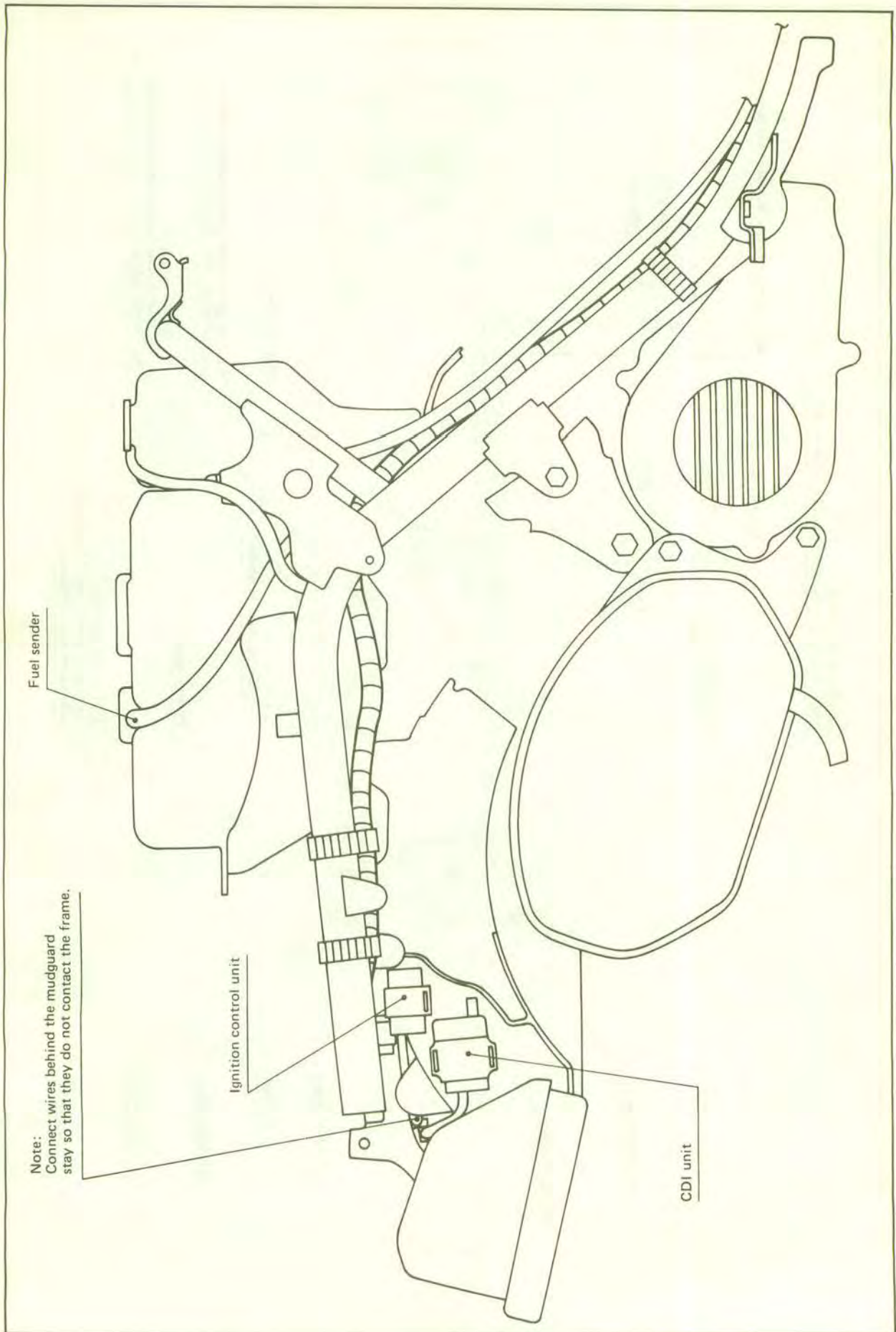


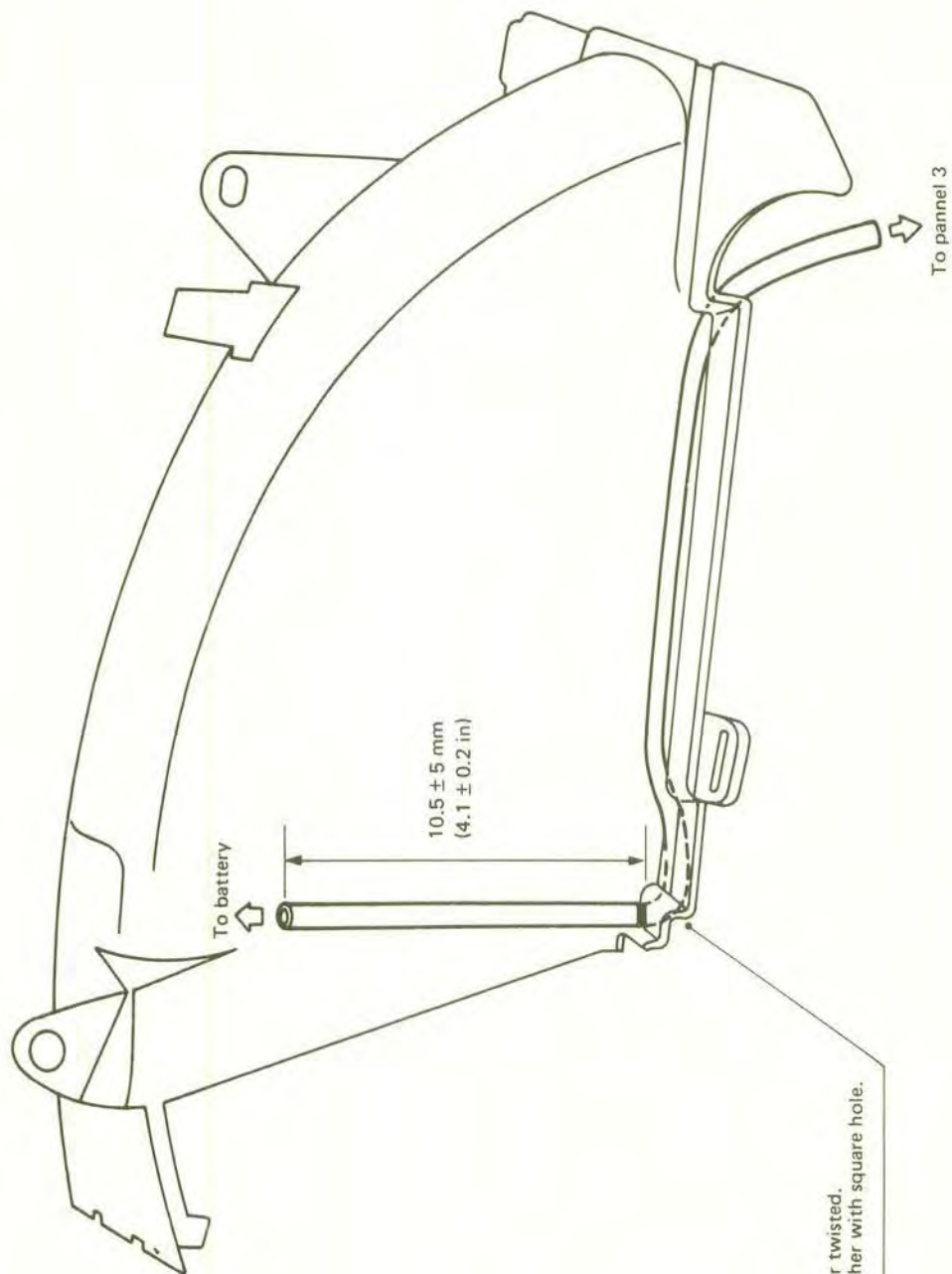












Pipe should not be flattened or twisted.
Align the mark on the breather with square hole.



YAMAHA MOTOR CO.,LTD.

IWATA, JAPAN

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