

320  
K. Simmons

# YAMAHA

## SERVICE MANUAL

TW-143



**MF 3-D(U-5)**

U-7

**50cc**

75cc



**YAMAHA MOTOR CO., LTD.**

## YAMAHA 50 SERVICE MANUAL



### FOREWORD

*Succeeding the Yamaha MF (J) 2, comes the Yamaha 50 with a completely renewed style and many new features.*

*This Yamaha 50 is an easier-to-operate, high-performance motorcycle, equipped with automatic centrifugal clutch; Yamaha's exclusive primary coupled kickstarter for easy starting in any gear-change pedal position; "Autolube", the result of Yamaha's superb engineering know-how; and the performance proven rotary valve.*

*These new features, excellent quality and outstanding performance, however, could not alone bring complete satisfaction to our customers if competent servicing were not offered, and this manual is provided as a service guide.*

*All Yamaha dealers and servicemen undertaking this important responsibility should study this booklet to make their sales and service more efficient and profitable.*

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## YAMAHA LAUNCHING NEW 75cc MODEL U7

## YAMAHA 75 (U7 & -U7D) FEATURES-SALES POINTS

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## CHAPTER I GENERAL

### A. FEATURES

#### 1. Autolube-equipped, high-performance engine

Yamaha's unique "separate lubrication system" feeds the engine its oil "apart from the fuel", according to varying engine r.p.m. and load, resulting in reduced oil consumption, exhaust smoke, etc., and in overall improvement of engine performance and durability.

#### 2. Rotary valve

The Yamaha 50 powerplant is a Yamaha Rotary Valve engine which enjoys a reputation for superb performance, making it perfectly suited for commuting and touring.

#### 3. 3-speed ball-lock transmission with automatic centrifugal clutch

The YG1 ball-lock type transmission provides extra smooth gearshifting and positive gear engagement. The automatic centrifugal clutch does away with the clutch lever, enabling "anybody" — even the unexperienced rider — to "take off" by simply turning the accelerator grip.

#### 4. Primary kickstarter

Unlike ordinary motorcycles, the transmission need not be shifted to neutral every time the engine is kickstarted. The new Yamaha-developed primary-coupled kick system eliminates this inconvenience.

#### 5. Lightweight, rugged frame

The rigid, pressed steel, unit construction frame is combined with a lightweight engine allowing greater engine output per unit body weight; very useful for quick acceleration, hill climbing and handling ease.

#### 6. Dependable brakes

Waterproof, dustproof brake drums employed on all Yamaha motorcycles assure stable, fade-free braking on wet or dusty roads.

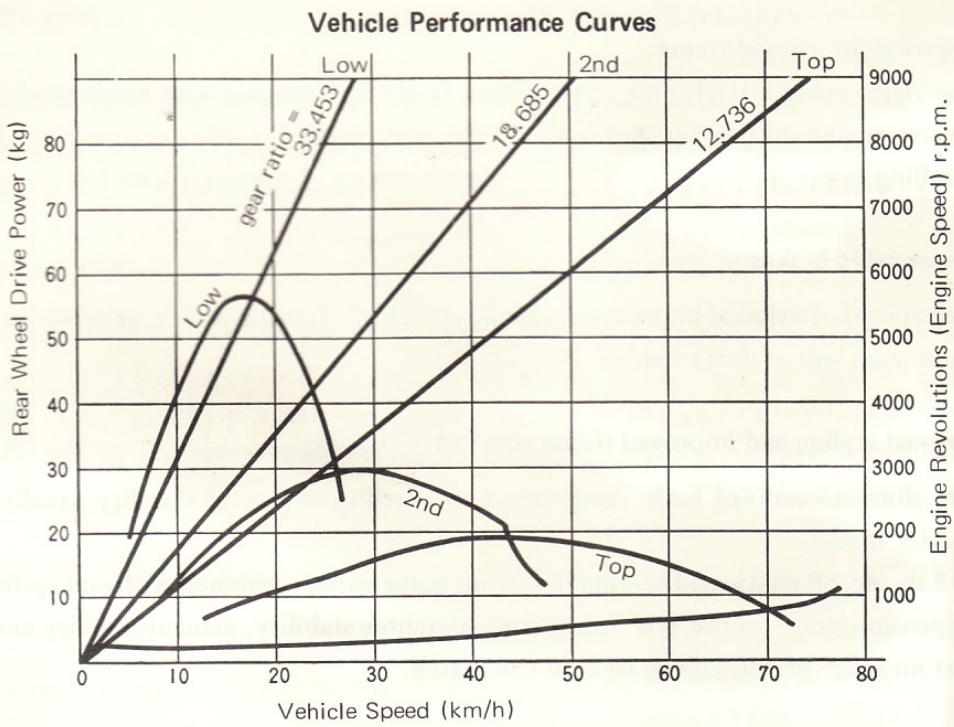
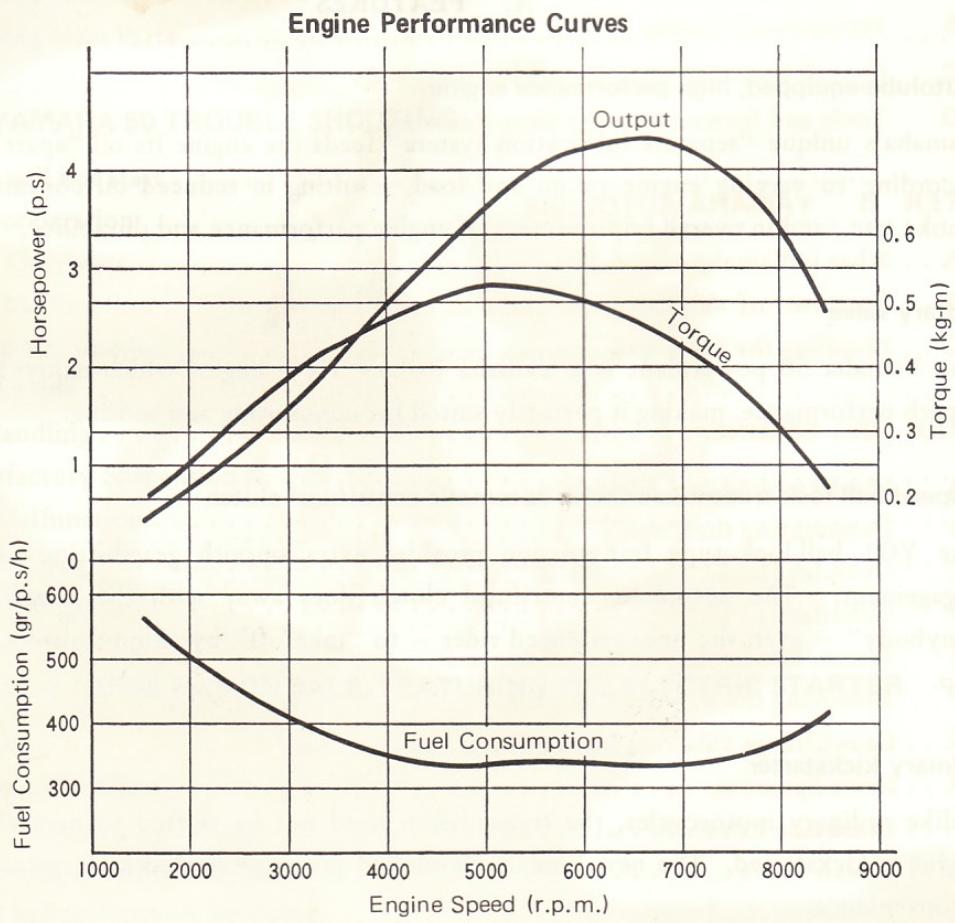
#### 7. Refined styling and improved riding comfort

The slim, streamlined body design imparts a feeling of greater stability usually found in much heavier models.

Coil spring, oil damped leading link front suspension, combined with coil spring, oil damped suspension units on the rear swing arm, guarantee stability, maneuverability and riding comfort that no other motorcycle in its class can match.

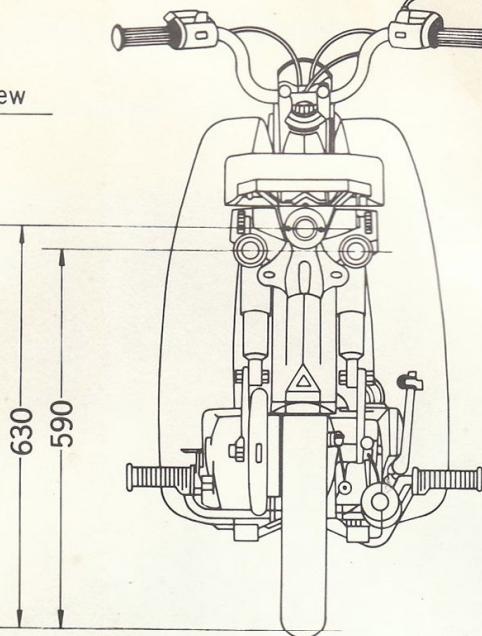
## B. PERFORMANCE CURVES

### Yamaha 50

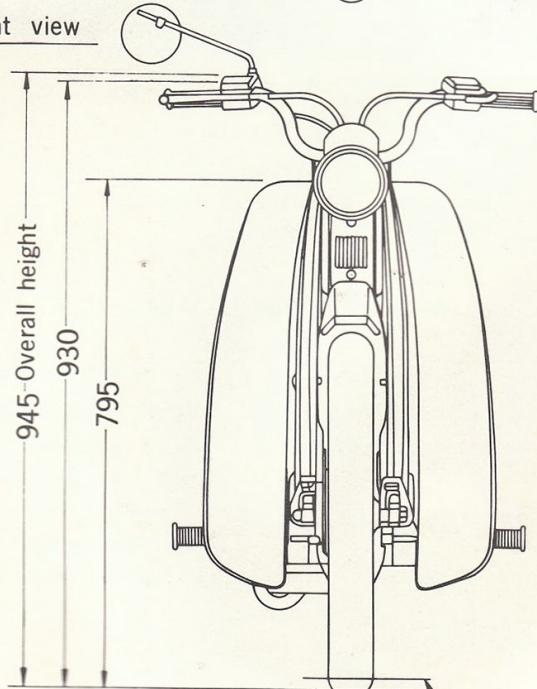


### C. Overall External View YAMAHA 50 MF3D

Rear view

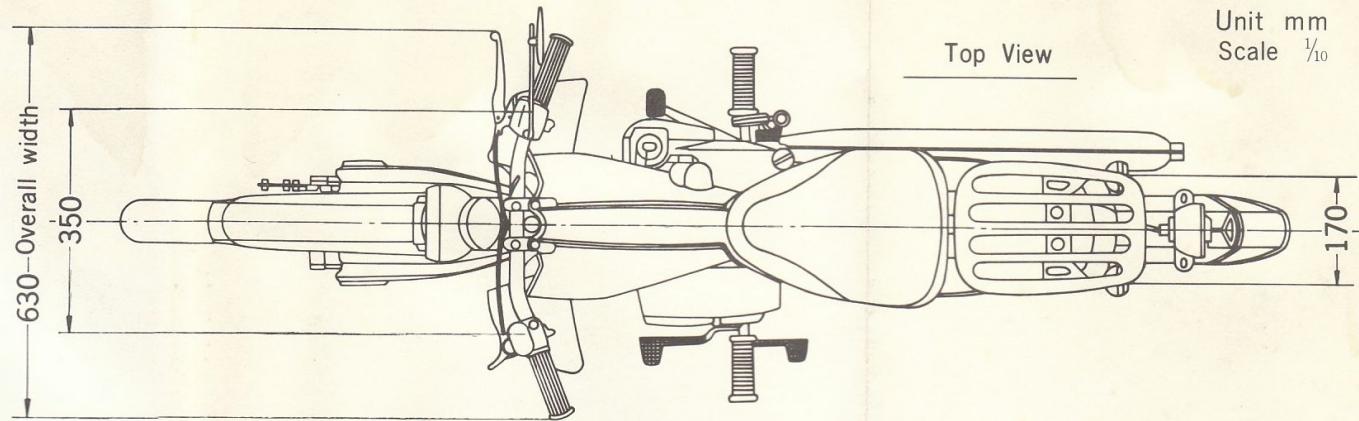


Front view

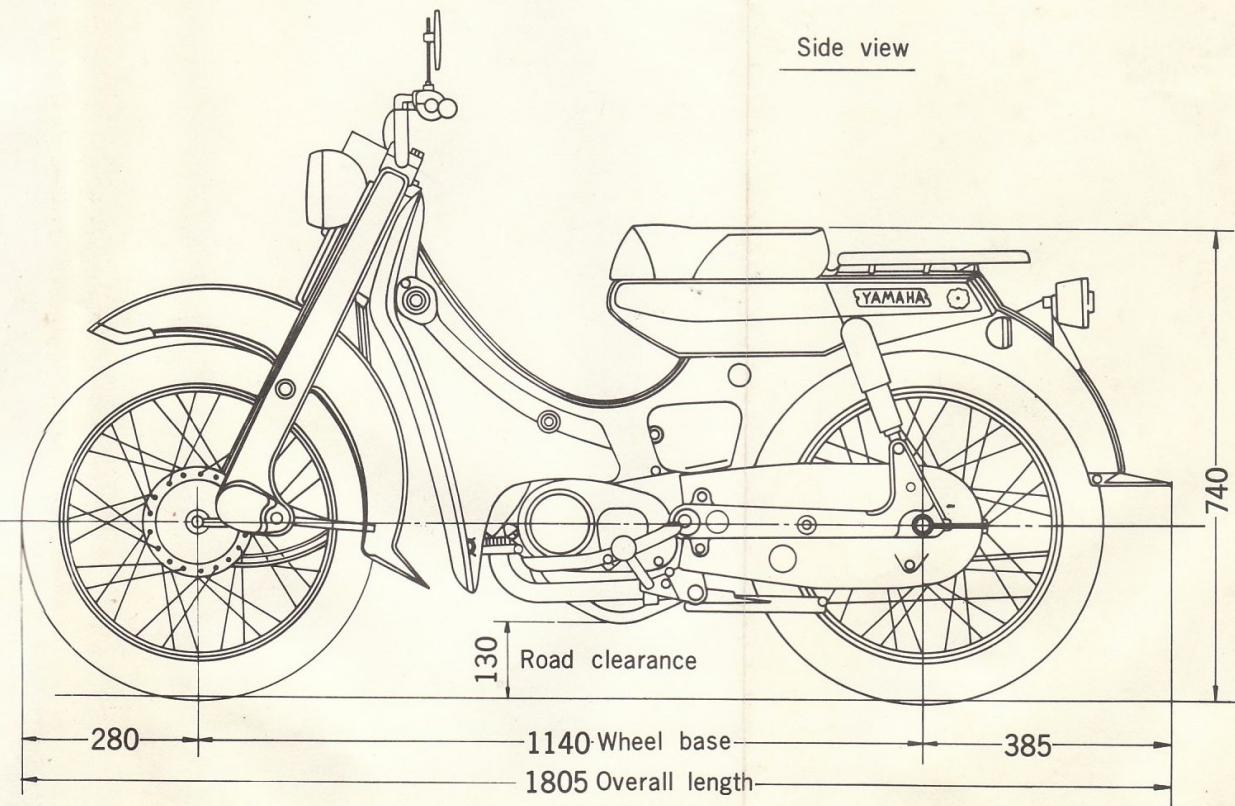


Unit mm  
Scale  $\frac{1}{10}$

Top View



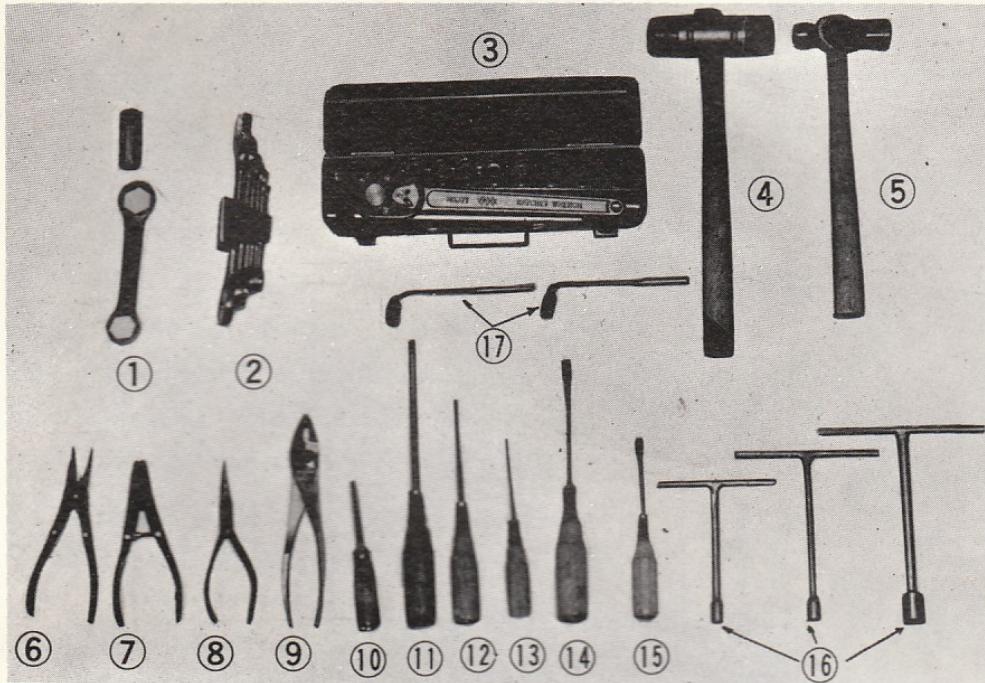
Side view



## D. TOOLS AND INSTRUMENTS FOR SHOP SERVICING

The following tools and instruments are required for shop servicing the Yamaha 50.

### 1. Ordinary tools

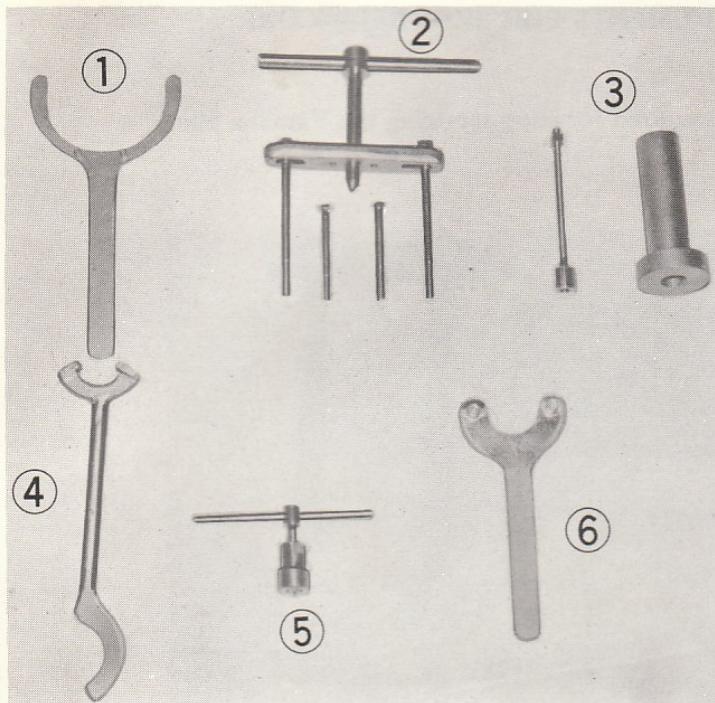


1. Plug wrench 23 x 29 mm	10. Phillips screwdriver
2. Set of wrenches	11. Phillips screwdriver, large
3. Set of socket wrenches	12. Phillips screwdriver, medium
4. Soft hammer	13. Phillips screwdriver, small
5. Steel hammer	14. Screwdriver, medium
6. Clip pliers	15. Screwdriver, small
7. Clip pliers	16. T-socket wrenches
8. Needle-nose pliers	17. L-socket wrenches
9. Pliers	

In addition to the above: point wrench, feeler gauges, etc., should be used.

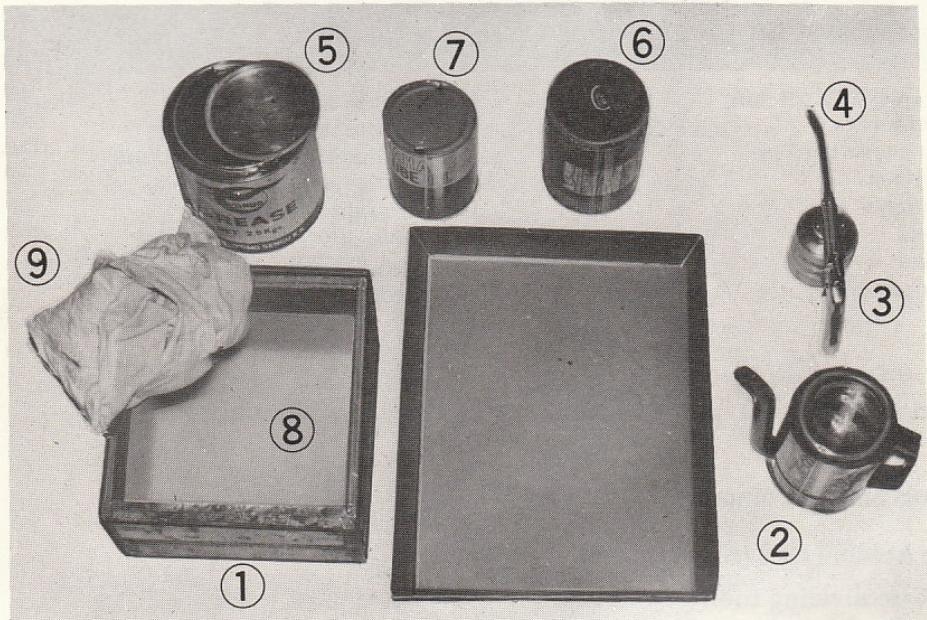
### 2. Special tools and instruments

1. Clutch holding tool (for MF2).
2. Crankcase dividing tool.
3. Crankshaft installing tool (for YG1).
4. Exhaust ring nut wrench.
5. Flywheel magneto removing tool.
6. Flywheel magneto holding tool.



In addition to the above, an electro-tester, selenium checker, hydrometer, etc., should be provided.

### 3. Others



1. Part trays
2. Oil tub or pan (for use in engine disassembling and reassembling, etc.)
3. Oil can (transmission oil)
4. Oiler
5. Grease
6. YAMAHA BOND (No. 5)
7. Autolube oil
8. Sandpaper
9. Rags (wiping material)

For easier and more efficient engine disassembling and reassembling work, place the engine on a wooden box (with oil tub) as shown in the figure.

Always make provision for expendable parts (gaskets, etc.) and spare parts.

## CHAPTER II YAMAHA AUTOLUBE

### A. WHAT IS YAMAHA AUTOLUBE?

Yamaha Autolube is an automatic engine lubrication system based on a revolutionary "separate lubrication" principle, which outdates the conventional 2-stroke pre-mixed system.

### B. FEATURES OF YAMAHA AUTOLUBE

1. The oil pump is driven by the engine through a reduction gear, and is connected to the throttle valve of the carburetor which is controlled by the accelerator grip.
2. Lubricating oil is fed to the engine after being automatically metered in proportion to engine rpm and throttle opening. Thus the engine provides and regulates its own lubrication.
3. Yamaha Autolube eliminates lubrication problems peculiar to 2-stroke engines with the conventional "pre-mix" system, and improves many inherent advantages of 2-stroke design. (Fig. 2-1 & 2)
  - a. Autolube supplies only the flow of engine lubricant the engine needs for its specific operating condition, allowing.
    - 1) Savings in oil consumption.
    - 2) Decreased carbon accumulation.
    - 3) Decreased exhaust smoke, and
    - 4) More effective engine lubrication.
  - b. Autolube facilitates refueling.
    - 1) No pre-mixing of oil and gasoline.
    - 2) Fuel - "straight" gasoline - leaves less combustion deposits than pre-mixed fuel.
  - c. Increased reliability of engine lubrication. The rider has no worries about the mixing qualities of an engine lubricant or about oil ratios.

YAMAHA AUTOLUBE GUARANTEES  
IMPROVED ENGINE PERFORMANCE  
AND EXTENDED ENGINE LIFE.

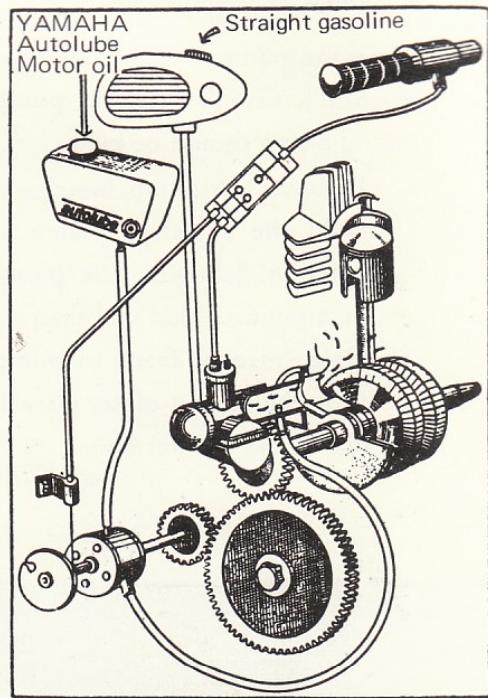


Fig. 2-1

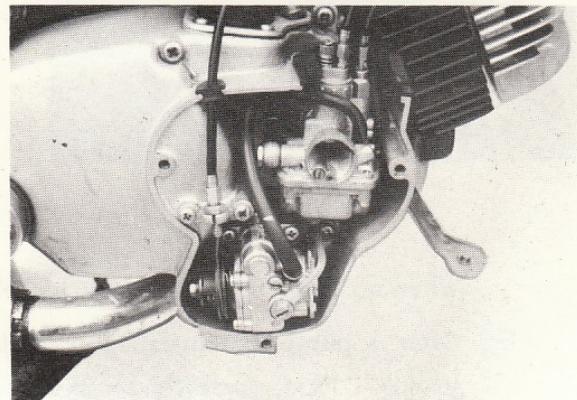


Fig. 2-2

### C. HANDLING THE OIL PUMP

The oil pump is a precision-machined and accurately assembled unit, free from trouble or malfunction if correctly mounted on the engine, properly bled, and accurately set. No attempt should be made to disassemble the pump, but if the pump has been demounted from the engine, take much care to keep dust or other foreign material out of it.

#### 1. Bleeding

When the pump is removed, the oil line disconnected, or the oil tank is empty (i.e. a brand new machine), air will enter the pump case and make oil flow irregular. In any of these conditions, the oil pump should be bled.

- a. Remove the pump bleeder bolt.

Hold the adjusting pulley at full delivery position, (allowing the plunger to pump at maximum stroke) and then rotate the starter plate (manual feed) to pump oil. As you turn the starter plate, oil will start running out of the bleeder hole.

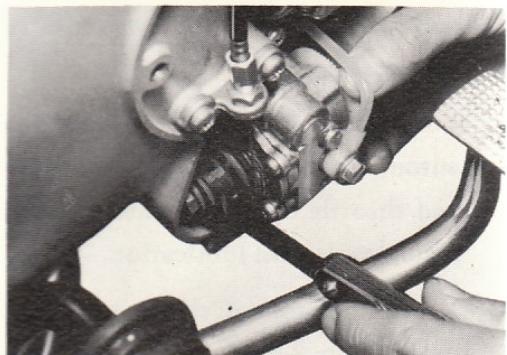


Fig. 2-3

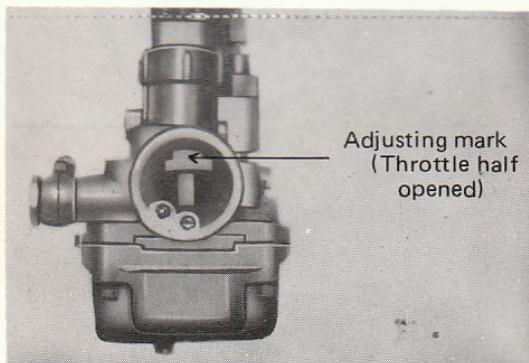


Fig. 2-4



Fig. 2-5

When no air bubbles appear in the delivery line, replace the bleeder bolt.

- b. After a pump is reinstalled, complete bleeding may require a large number of plunger strokes. First, correctly set the pump, and then start and run the engine at idling speed (rather than manually operating the starter plate). Pull the adjusting pulley cable tight to let the plunger pump at maximum stroke. It usually takes one or two minutes to completely bleed the pump this way. Watch the flow of oil in the transparent delivery line and when the white air bubbles disappear, bleeding is complete.

## 2. Pump setting procedure

After factory assembly each pump was adjusted.

- a. Using the adjusting shims, plunger stroke was set to 0.20~0.25mm. (with the adjusting pulley at minimum delivery position). (Fig. 2-3)
- b. Make sure the V-mark on the pump adjusting pulley aligns with the guide pin when the throttle valve is half open. (Figs. 2-4 & 5)

Plunger stroke: be sure you make feeler gauge measurements at the narrowest gap between the adjusting pulley and adjusting plate.

## CHAPTER III ENGINE

### A. DISASSEMBLING AND ASSEMBLING

The engine should be disassembled and reassembled in an order that will facilitate later repair or adjustment. The procedure outlined here is an "example", not an inflexible rule for all engine repair.

#### 1. Cautions on disassembling engine

- a. Before demounting the engine, thoroughly clean the cylinder head, cylinder and crankcase to prevent dust and grit from entering the engine during disassembly.
- b. Always use clean and correct tools to avoid unnecessary damage to engine parts.
- c. Keep disassembled parts separated by section in parts trays.

### B. DEMOUNTING THE ENGINE

1. Remove the battery cover, and remove the battery. (Fig. 3-1).

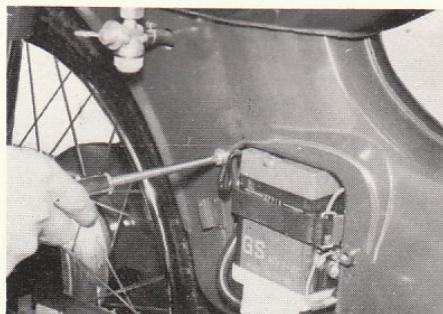


Fig. 3-1

2. Remove the air cleaner joint rubber band. (Fig. 3-2)



Fig. 3-2

3. Remove the air cleaner case, take out the air cleaner element, and disconnect the wiring. (Fig. 3-3 & 3-4)



Fig. 3-3

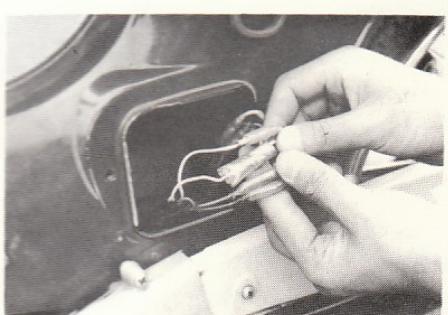


Fig. 3-4

4. Remove the carburetor cover, take out the carburetor, and disconnect the fuel line. (Figs. 3-5 & 3-6)

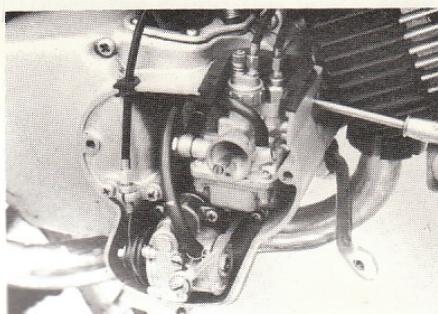


Fig. 3-5

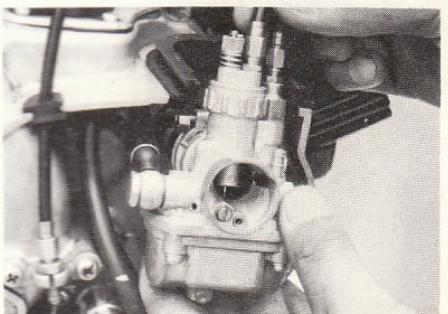


Fig. 3-6

5. Disconnect the oil line at the pump, plug the line with a bolt, and disconnect the pump cable. (Fig. 3-7)

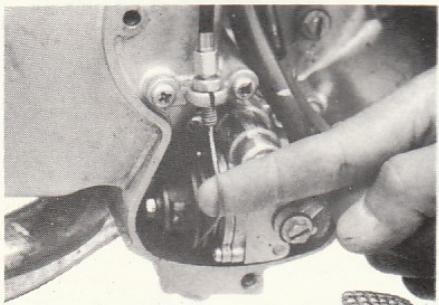


Fig. 3-7

7. Remove the exhaust ring nut, and remove the exhaust pipe from the muffler. (Fig. 3-9)

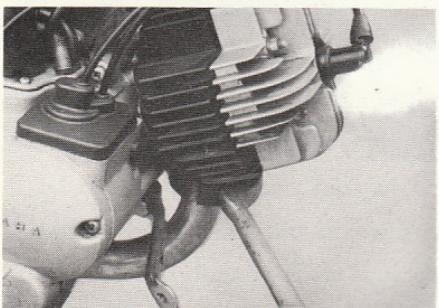


Fig. 3-9

9. Remove the gearshift pedal.  
(Fig. 3-12)



Fig. 3-11

6. Drain the transmission oil. (Fig. 3-8)  
To quickly and completely drain the oil, run the engine for a few minutes before removing the drain plug.

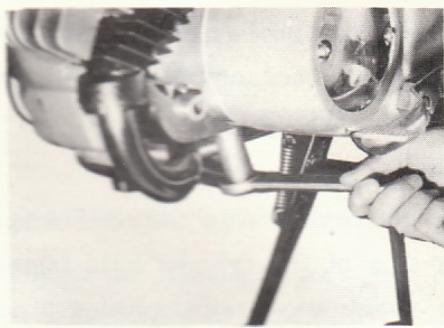


Fig. 3-8

8. Remove the chain case, disconnect the master link, and remove the chain.  
(Figs. 3-10 & 3-11)



Fig. 3-10



Fig. 3-12

10. Remove the left crankcase cover.  
(Fig. 3-13)
11. Remove the foot-rests.
12. Remove the engine mounting bolts, and demount the engine.



Fig. 3-13

### C. CYLINDER HEAD

#### 1. Removal and Installation

Remove the four nuts holding the cylinder head to the cylinder, then remove the cylinder head and head gasket.

Reverse this procedure when installing the cylinder head. (Fig. 3-14)

#### 2. Removing Carbon

Carbon accumulation on the combustion chamber portion of the cylinder head increases the engine compression ratio, causing pre-ignition, overheating and increased fuel consumption. Check the combustion chamber for carbon accumulation and scrape it clean. (Fig. 3-15)

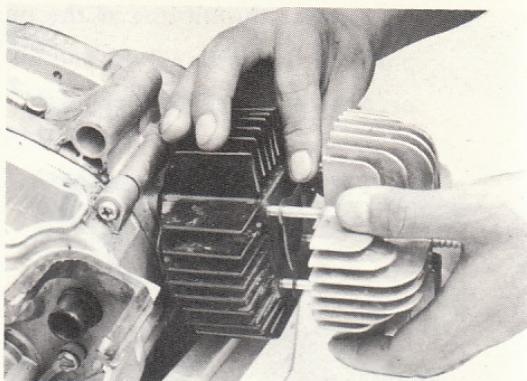


Fig. 3-14

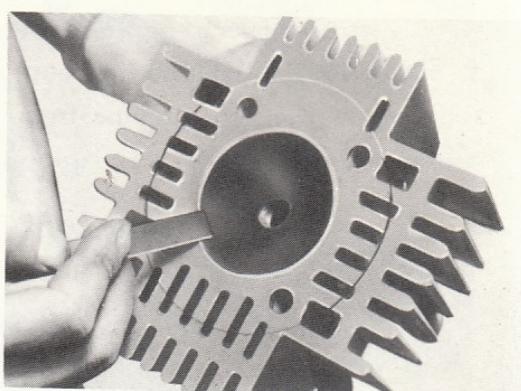


Fig. 3-15

### D. CYLINDER

#### 1. Checking Cylinder Wear (Fig. 3-16)

Measure the diameter of the cylinder bore at the top, above and below the exhaust port, and at the bottom with a bore-measuring micrometer or a cylinder gauge placed first at right angles then parallel with the crankshaft for each measurement. If the diameters measured at these

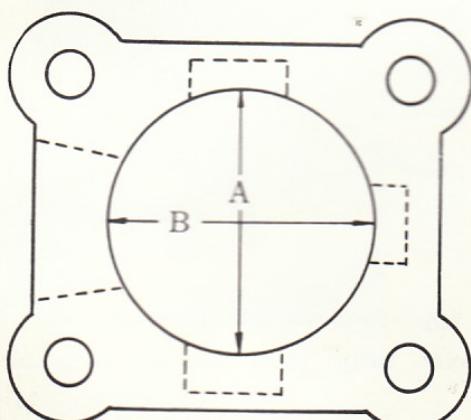
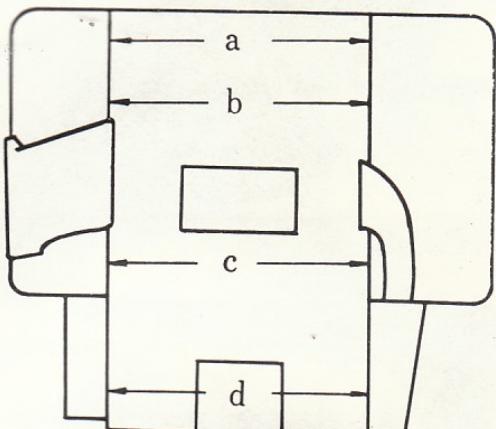


Fig. 3-16



depths differ from each other in excess of 0.05 mm. (0.002 in.), then bore and hone the cylinder to the nearest oversize. (Fig. 3-16 – Points of Cylinder Bore Measurement)

## 2. Checking New Piston Fit

Minimum piston-to-cylinder clearance should be between 0.035 ~ 0.040 mm (0.0138 ~ 0.0157 in.)

To determine the clearance, measure the outside diameter of the piston at 10 mm (3/8 in.) from the bottom of the skirt, with the gauge placed at right angles to the piston pin boss. Subtract this diameter from the cylinder bore diameter measured at the bottom of the bore; the balance is minimum piston-to cylinder clearance.

## 3. Cylinder Conditioning

- a. New pistons are available in 0.25 mm (0.010 in.) and 0.50 mm (0.020 in.) oversizes.
- b. Select the required oversize piston, and bore and hone the cylinder to get a good piston fit.
- c. Errors in the finished bore diameter should not exceed 0.01 mm (0.0004 in.).
- d. To avoid breaking the rings always check the horizontal edges of the exhaust and transfer ports. if they are not slightly beveled, "chamfer" them with a small file.

## 4. Installing Cylinder

- a. Always use a new cylinder gasket. (Fig. 3-17)
- b. Carefully slide the cylinder over the piston, squeezing the piston rings with your thumb and fingers so they do not catch on the cylinder. To do this, align the gaps of both piston rings with the locating pin in each ring groove, and squeeze the rings so their gaps close.  
(CAUTION: Forcing the cylinder over the piston rings without this care may break the piston rings.)

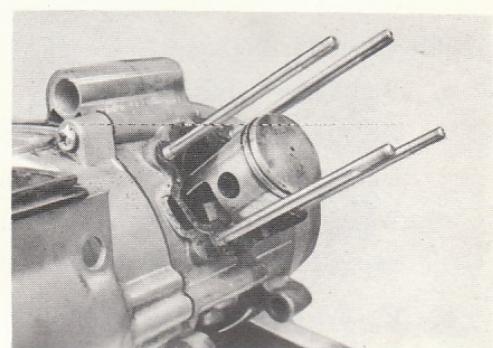


Fig. 3-17

## 5. Removing Carbon

Carbon tends to accumulate on the inner wall of the exhaust port, so you should remove it with a screwdriver or other appropriate scraping tool. (Fig. 3-18)

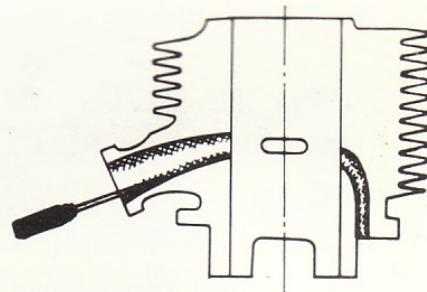


Fig. 3-18

## E. PISTON, PISTON PIN AND PISTON RINGS

### 1. Removing Piston Pin

Use needle nose pliers to remove the clips at both ends of the piston pin, and press the pin out with your finger or a screwdriver. (Fig. 3-19)

NOTE: Before removing the piston pin clip, cover the crankcase with a clean rag, so you will not accidentally drop the clip into the crankcase.

### 2. Fitting Piston Pin

The piston pin should slide into its bore when pressed with the thumb. If clearance between pin and bore is excessive, replace the worn part; either the piston or the pin. If step-wear is present in the middle of the pin, replace it.

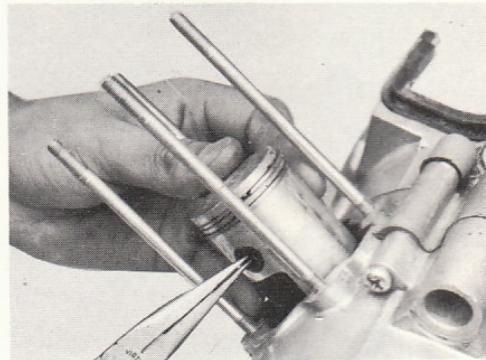


Fig. 3-19

### 3. Piston and Piston Rings.

#### a. Removing Carbon

Remove carbon from the piston head with a screwdriver. Remove the piston rings and clean all carbon from the ring grooves.

When carbon accumulates around the rings, they stick to their grooves, and are unable to expand freely and maintain compression, etc.

#### b. Ring-to-Groove Clearance

No. 1 (Top) Ring . . 0.0016 in. ~ 0.0031 in.  
(0.04 ~ 0.08 mm.)

No. 2 (2nd) Ring . . . . 0.0012 in ~ 0.0027 in.  
(0.03 ~ 0.07 mm.)

Measure this clearance "with a feeler gauge  
(Fig. 3-20)

#### c. Fitting Piston Rings

First fit the No.2 ring (Parkerized ring), and then the No.1 ring (chrome ring), both with the stamped marks at their cut ends facing upward. (Fig. 3-21)

#### d. Measuring Piston Ring Wear

Push a piston ring into the cylinder with an inverted piston to set it at right angles to the cylinder wall; and using a feeler gauge, check the ring end gap against the recommended

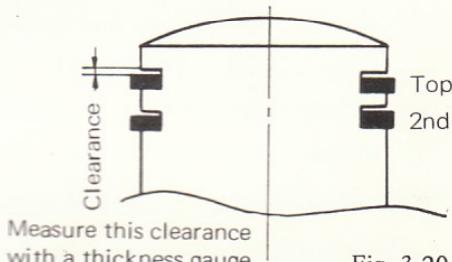


Fig. 3-20

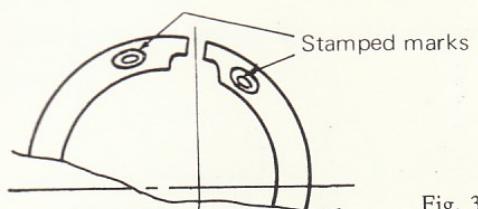
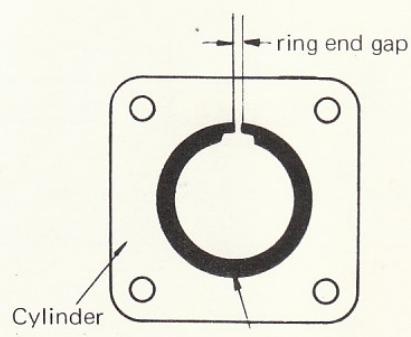


Fig. 3-21



Piston ring

Fig. 3-22

limits: (Fig. 3-22)

No. 1 ring . . . . . 0.15 ~ 0.35 mm (0.006 ~ 0.014 in.)

No. 2 ring . . . . . 0.15 ~ 0.35 mm (0.006 ~ 0.014 in.)

e. Piston Installation:

Install the piston with the arrow marked on its head pointing downward (toward the exhaust port).

## F. REMOVING THE FLYWHEEL MAGNETO

1. Hold the flywheel with the flywheel magneto holding tool, and remove the nut. (Fig. 3-23)

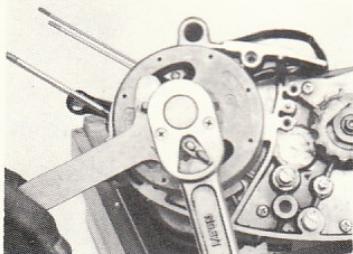


Fig. 3-23

2. Install the flywheel magneto puller in the threaded hole of the flywheel, and turn it to push the flywheel off the shaft. (Fig. 3-24)

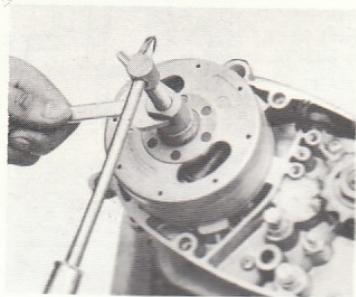


Fig. 3-24

3. Remove the two flush-head screws holding the flywheel base, and remove the flywheel base. (Fig. 3-25)

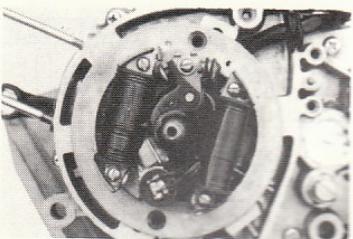


Fig. 3-25

4. Pry out the woodruff key with a screwdriver. (Fig. 3-26)

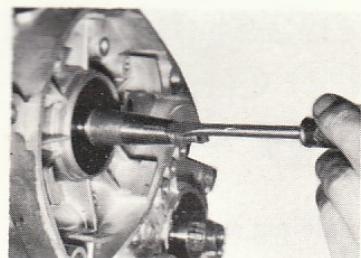


Fig. 3-26

## G. GEAR CHANGE (SHIFTER) MECHANISM

Mechanism: As the gear change pedal is stepped on, the gear-change shaft turns the change lever (A) inside the gearbox. The motion of change lever (A) turns the shifter cam plate to a preset angle. The cam plate pushes the shifter, which in turn moves the shifter rod to the left or right. The head of the shifter rod pushes out the steel balls of the driven gear, to lock the gear and deliver the engine's power to the drive axle (secondary shaft).

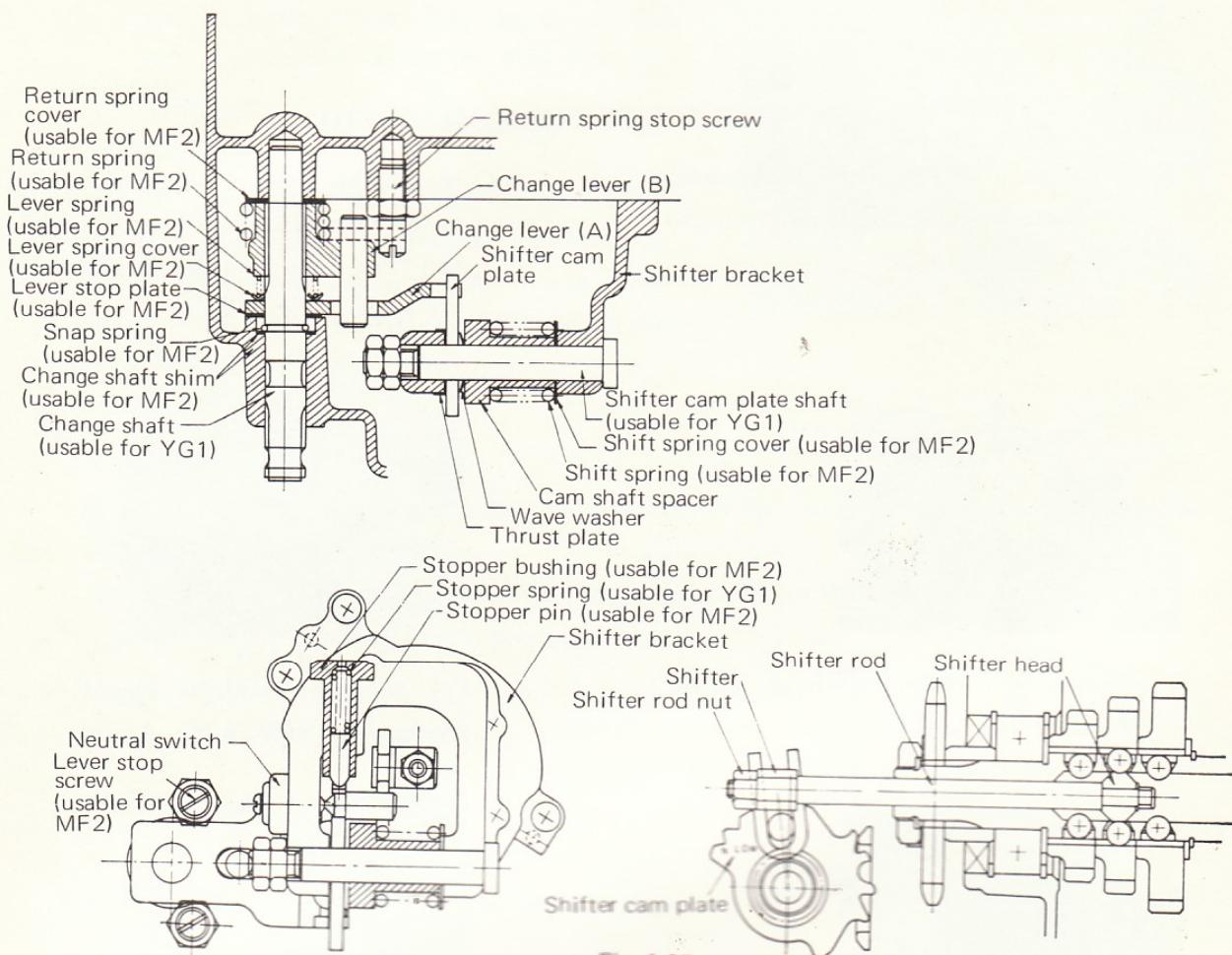


Fig. 3-27

### 1. Disassembling and Assembling

#### a. Gear-Change Mechanism

The gear-change mechanism can be easily removed by pulling it out as an assembly. When reinstalling, first assemble all the gear-change parts into a complete mechanism; then attach the shifter parts and install the unit in the crankcase. (Fig. 3-28)

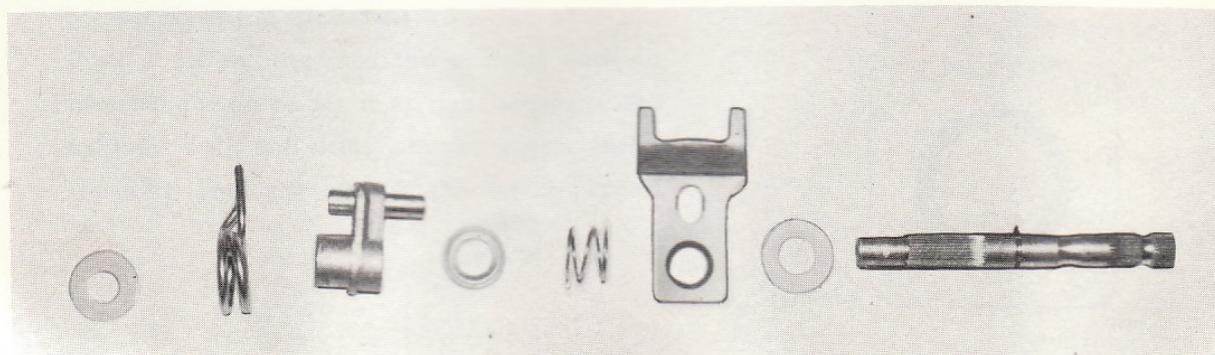


Fig. 3-28

b. Shifter Mechanism

Remove the three pan-head screws holding the shifter bracket and take out the shifter mechanism as an assembly. Then remove the shifter which is attached to the shifter rod. Pull out the shifter rod from the side where the kickstarter idler gear is installed.

When reassembling, install the shifter in the shifter spring, and assemble them to the shifter rod. (Figs. 3-29 & 3-30)

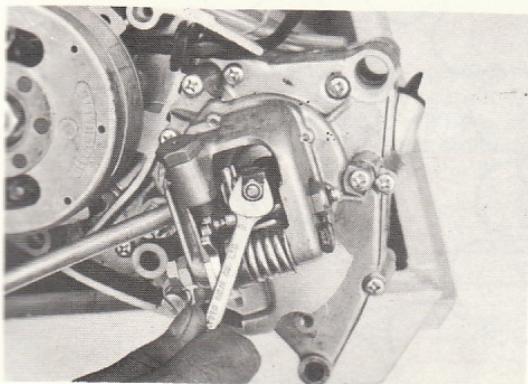


Fig. 3-29

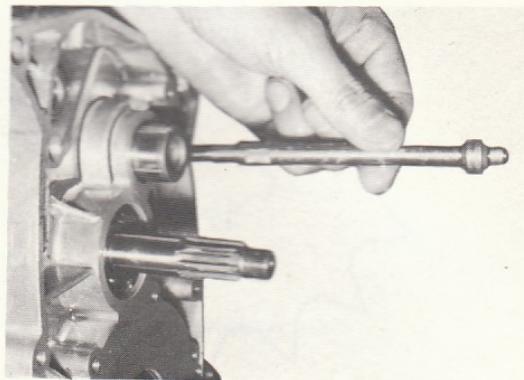


Fig. 3-30

NOTE: When installing the gear-change and shifter assemblies, be sure to apply grease to all shafts and other moving parts.

2. Inspection

It is rarely necessary to inspect each component of the gear-change and shifter assemblies.

If "jump-over" (excessive shifter travel) or "jump-out" (insufficient shifter travel) occurs, adjust the gear change lever feed (travel) with the lever's stop screw (eccentric bolt). (Fig. 3-31)

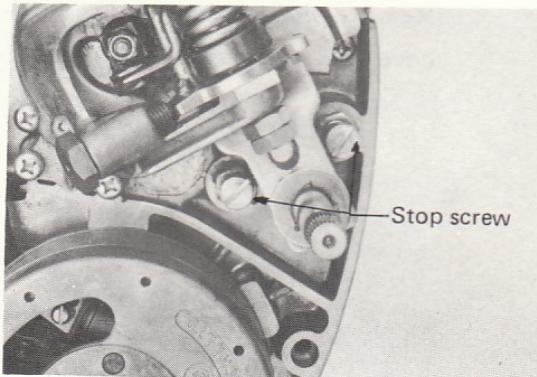


Fig. 3-31

## H. DRIVE SPROCKET

1. Removal

- Use a screwdriver to flatten the lock washer and unlock the nut. (Fig. 3-32)
- Keep the drive sprocket from turning with the flywheel magneto holding tool, and remove the sprocket nut. (Fig. 3-33)

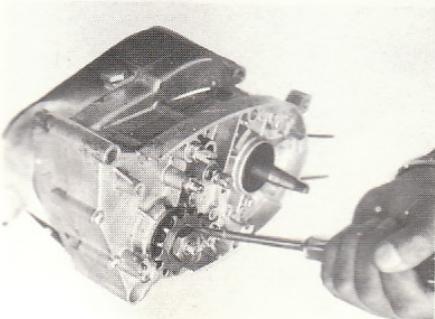


Fig. 3-32

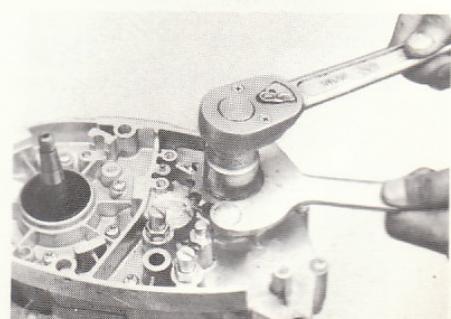
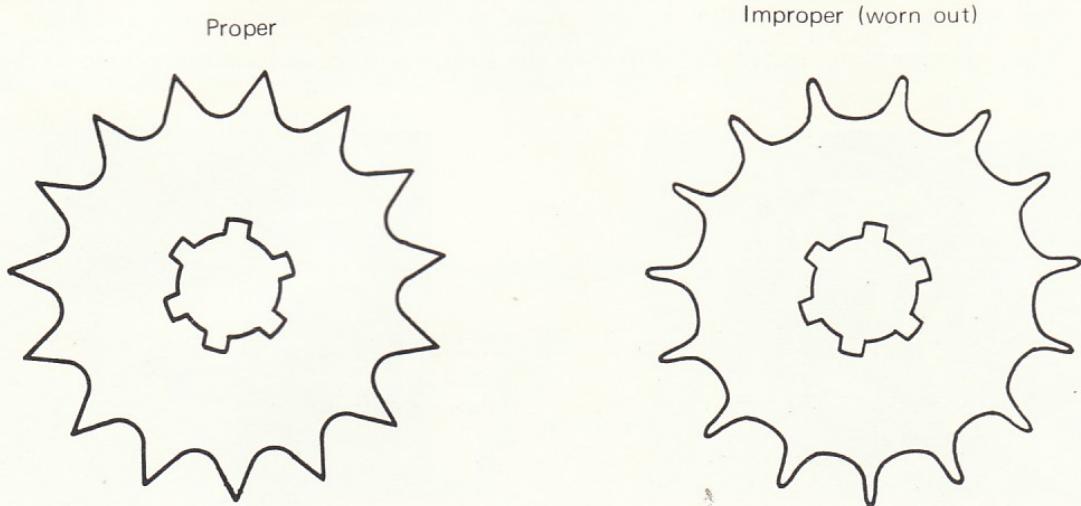


Fig. 3-33

## 2. Inspection

Replace the drive sprocket if its teeth show wear. A worn out sprocket causes chain noise, and shortens the chain's service life very quickly.



## I. CRANKCASE COVER (R)

### 1. Removal

- Remove the pan-head screws holding the right crank case cover (Figs. 3-34 & 3-35). The cover can be removed without removing the oil pump.

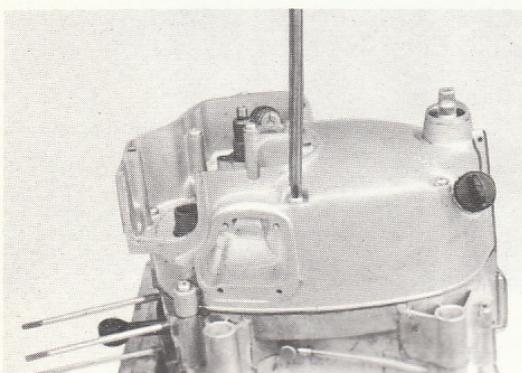


Fig. 3-34

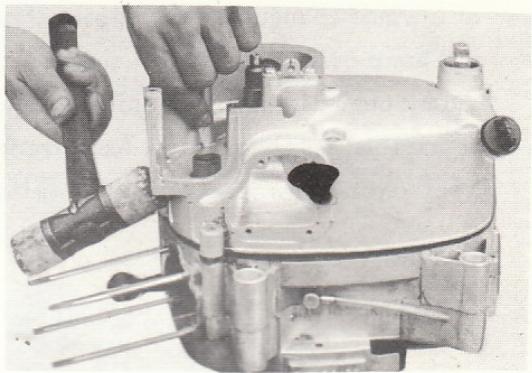


Fig. 3-35

### 2. Installation:

Apply YAMAHA BOND No. 5 evenly over the mating surface of the crankcase (R), replace a crankcase cover gasket, and then install the right crankcase cover.

NOTE: Be sure to apply gasket compound when installing the crankcase cover to prevent gear oil leakage.

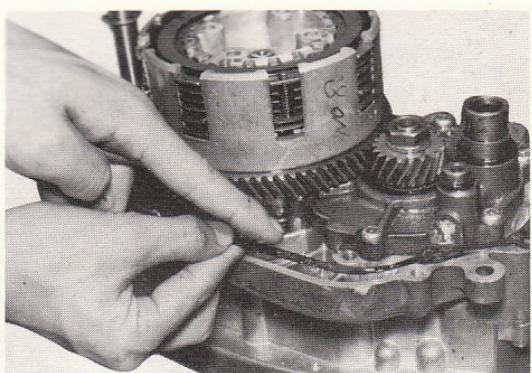


Fig. 3-36

## J. CLUTCH

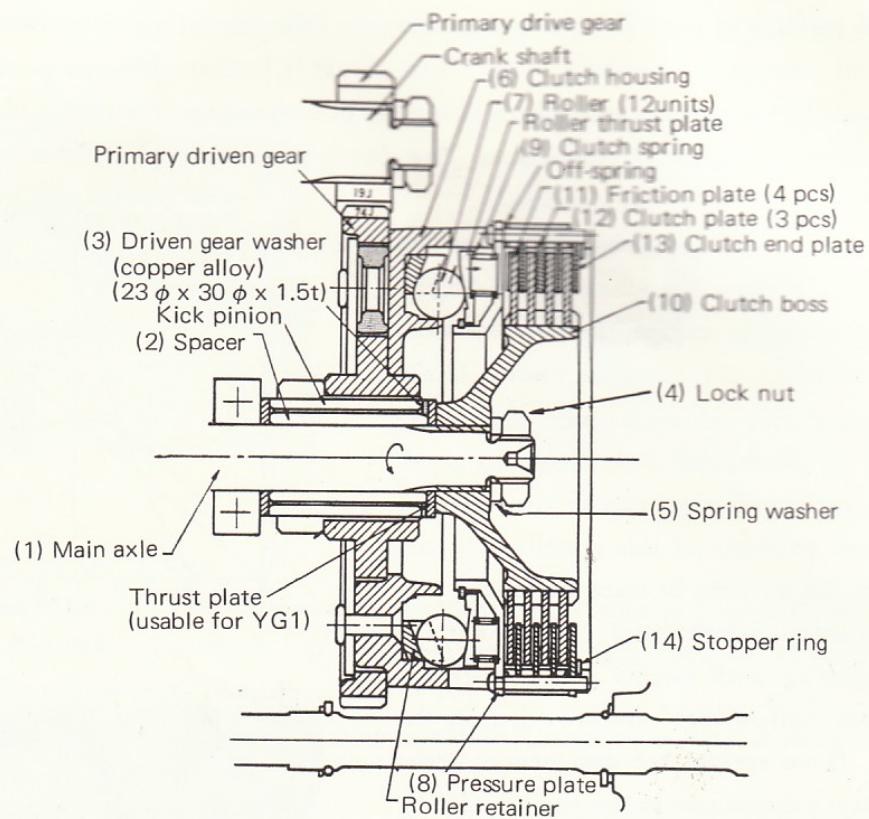


Fig. 3-37

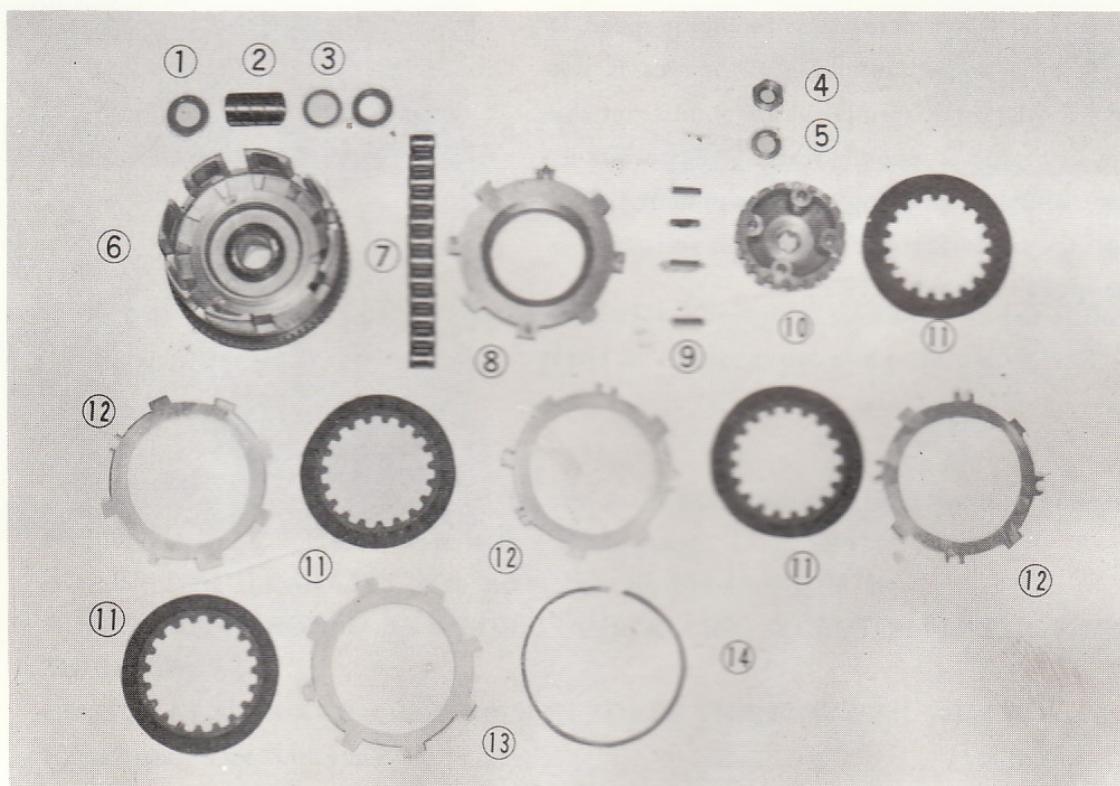


Fig. 3-38

### Operation of Centrifugal Clutch

The centrifugal force generated by the crankshaft's rotation causes 12-rollers to be thrown outward over the pitched surfaces of the roller retainer, causing the roller thrust plate to overcome the tension of the clutch and contact the pressure plate. This thrust is further delivered to the friction plate when the pressure plate engages it, and the friction plate in turn engages the clutch plate, transmitting the crankshaft's revolutions to the clutch boss. The clutch boss, being spline-fitted on the main axle, delivers the turning force to the transmission.

Since centrifugal force develops immediately as the engine starts running, even the idling of the engine would cause the clutch to engage, unless there were resistance to counteract this minimal force. If the clutch did engage during minimal r.p.m., the engine would suddenly be overloaded and unable to accelerate smoothly, lacking enough torque to overcome the load. A good example of this condition occurs when a rider mistakenly tries to start his motorcycle with the transmission in high gear. To prevent the clutch from engaging until engine speed reaches a pre-set stage, four "off-springs" are provided on the pressure plate. These springs are designed to resist the centrifugal force developed by an engine running at less than approximately 1790 r.p.m., thereby holding the friction plate away from the clutch plate. In other words, the clutch will not engage until engine speed exceeds approximately 1790 r.p.m.

Since centrifugal force increases with engine speed, it would create excessive clutch-face pressures if not regulated by the clutch springs which counteract the increasing force and reduce the transmitted torque to a constant amount at complete engagement. The clutch springs are designed to begin their resistance at an engine speed of about 5110 r.p.m.

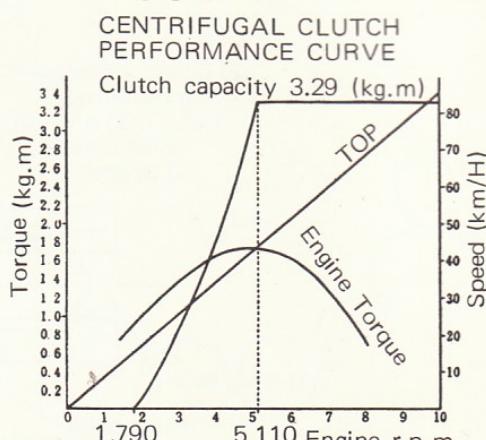


Fig. 3-38



Fig. 3-39

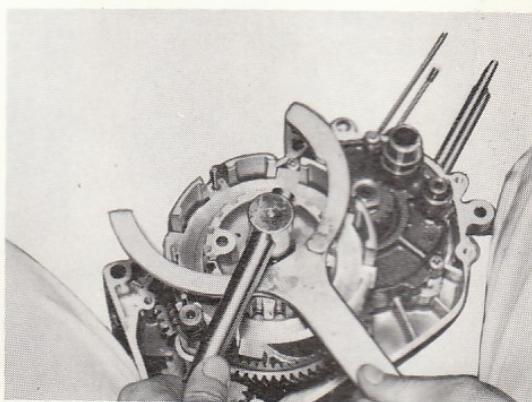


Fig. 3-40

## 1. Disassembling

### a. Removing the Stopper Ring

Bend the stopper-ring inward with your finger and remove it together with the clutch plate and friction plate. (Fig. 3-39)

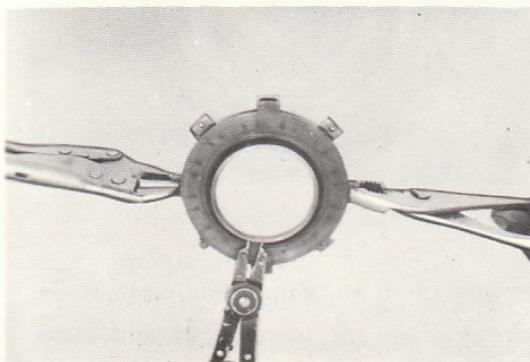


Fig. 3-41

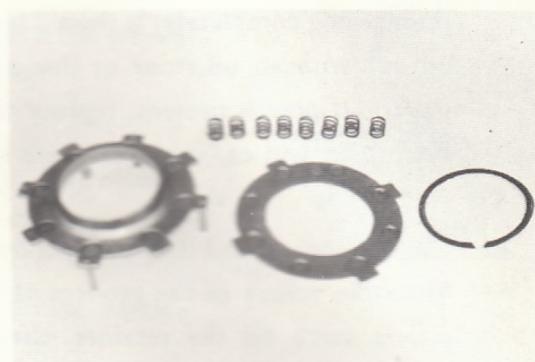


Fig. 3-42

### b. Removing the Clutch Boss

Install the MF2 clutch holding tool in the clutch boss hole to keep the boss from turning. Remove the clutch boss lock nut, and remove the clutch boss. After removing the boss, you can lift off the clutch housing. (Fig. 3-40)

If you want to remove the clutch as an assembly, first remove the clutch boss nut, and then take out the clutch assembly.

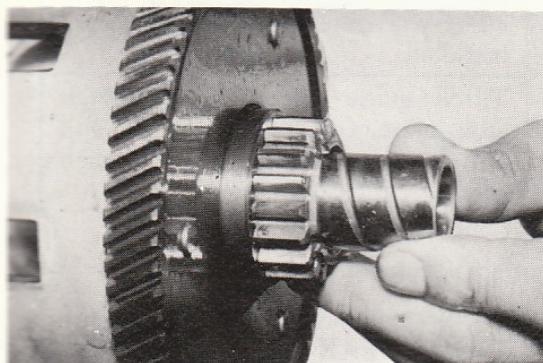


Fig. 3-43

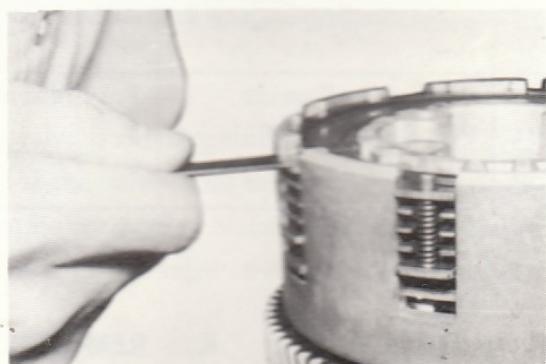


Fig. 3-44

## 2. Installation

Reverse the disassembling procedures for reinstallation. Be sure to install the washer at the inner end of the spacer and assemble the clutch plates in correct order and position.

## 3. Inspection and Adjustment

### a. Clutch Clearance Adjustment

With the clutch assembly mounted on the main axle, measure the clearance between the stopper-ring and the clutch plate with a feeler gauge. (Fig. 3-44)

ADJUST THE CLEARANCE TO: 1.0 ~ 1.2 mm (0.040 ~ 0.047 in.)

ADJUSTMENT SHOULD BE MADE BY INSTALLING A CLUTCH PLATE OF PROPER THICKNESS.

CLUTCH PLATES ARE AVAILABLE IN THREE THICKNESSES: 1.2, 1.4, and 1.6 mm (0.047, 0.055, & 0.063 in.)

b. **Spacer Inspection**

Insert the spacer in the primary driven gear boss and check it for play and overall fit.

A scratch spacer will prevent the clutch from disengaging completely; it should be smoothed out with an oil stone or fine-grain sandpaper. If play is present, replace the spacer because it will cause clutch noise and wear. (Fig. 3-45)

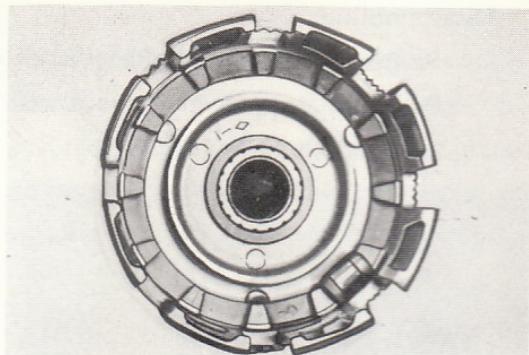


Fig. 3-45

c. **Roller Retainer and Roller Inspection**

Place the rollers in the grooves of the roller retainer, and tilt it to make them roll. If the rollers catch on the retainer, check them and/or the retainer for scars, nicks and burrs; smooth out the rough spots or replace the defective part.

d. **Other Inspections**

	Trouble	Clutch Operating Condition	Cause
1.	Roller malfunction.	Poor disengagement. Poor performance (slipping) Incorrect function.	Incorrect roller retainer groove width (due to burrs and dents) or rough roller surfaces (due to scars, scratches, etc.)
2.	Roller thrust plate and pressure plate malfunction.	Poor disengagement.	Pawls of the plate have been twisted at the time clutch springs were installed.
3.	"Off-spring" guide pin tilted or bent.	Poor disengagement.	Tilted guide pin hits the clutch and plate, or "off-springs" and clutch plate interfere with each other.

## K. REMOVING THE PRIMARY DRIVE GEAR

Lock the primary drive gear by jamming rags between the drive gear and driven gear, and remove the nut by turning it clockwise.

NOTE: The nut has left hand threads, and must be turned clockwise when loosening or removing.

The drive gear can then be removed by hand. (Fig. 3-46)

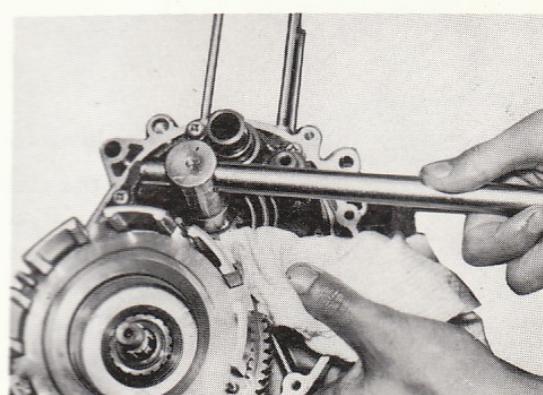


Fig. 3-46

## L. VALVE COVER AND ROTARY VALVE

### 1. Removal

- a. Loosen the pan-head screws holding the valve cover. If the screws are too tight to loosen with an ordinary screw-driver, use a shock screwdriver as shown in Fig. 3-47. Remove the screws and take off the valve cover. (Figs. 3-47 and 48)

#### b. Removing valve knock pin

The valve knock pin is driven into the crankshaft. To remove, use a vice-grip wrench as shown in Fig. 3-49, or knock it out with a drift pin.

NOTE: Exercise care not to damage the crankcase surface when removing the knock pin.



Fig. 3-47

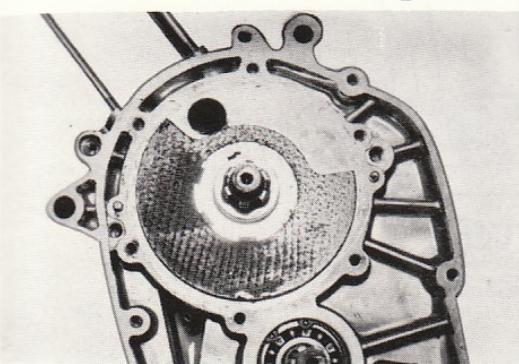


Fig. 3-48

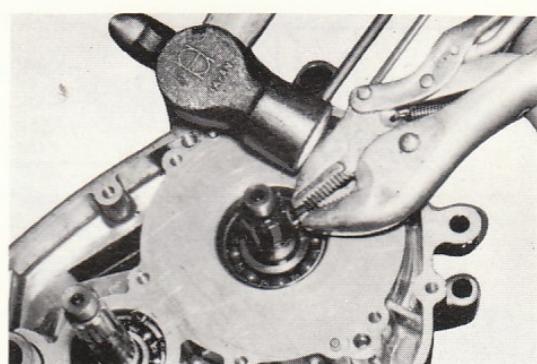


Fig. 3-49

### 2. Inspection

- a. Rotate the crankshaft, and check that the rotary valve is rotating smoothly inside its cover. If you hear any noise, or feel rough rotation, see if the valve is nicked, scarred or warped. Correct its defects or replace the valve if it cannot be corrected. Noise and uneven rotation may be due to improperly tightened pan-head screws in the valve cover. Correctly tighten these screws in criss-cross fashion.
- b. Replace the O-ring (#OR1.2-17.5) inside the valve unit collar (crankshaft O-ring) each time the valve is disassembled.
- c. Replace the valve cover oil seal (crank (R) oil seal = SW 28477) each time the valve is disassembled.

## M. KICK ASSEMBLY

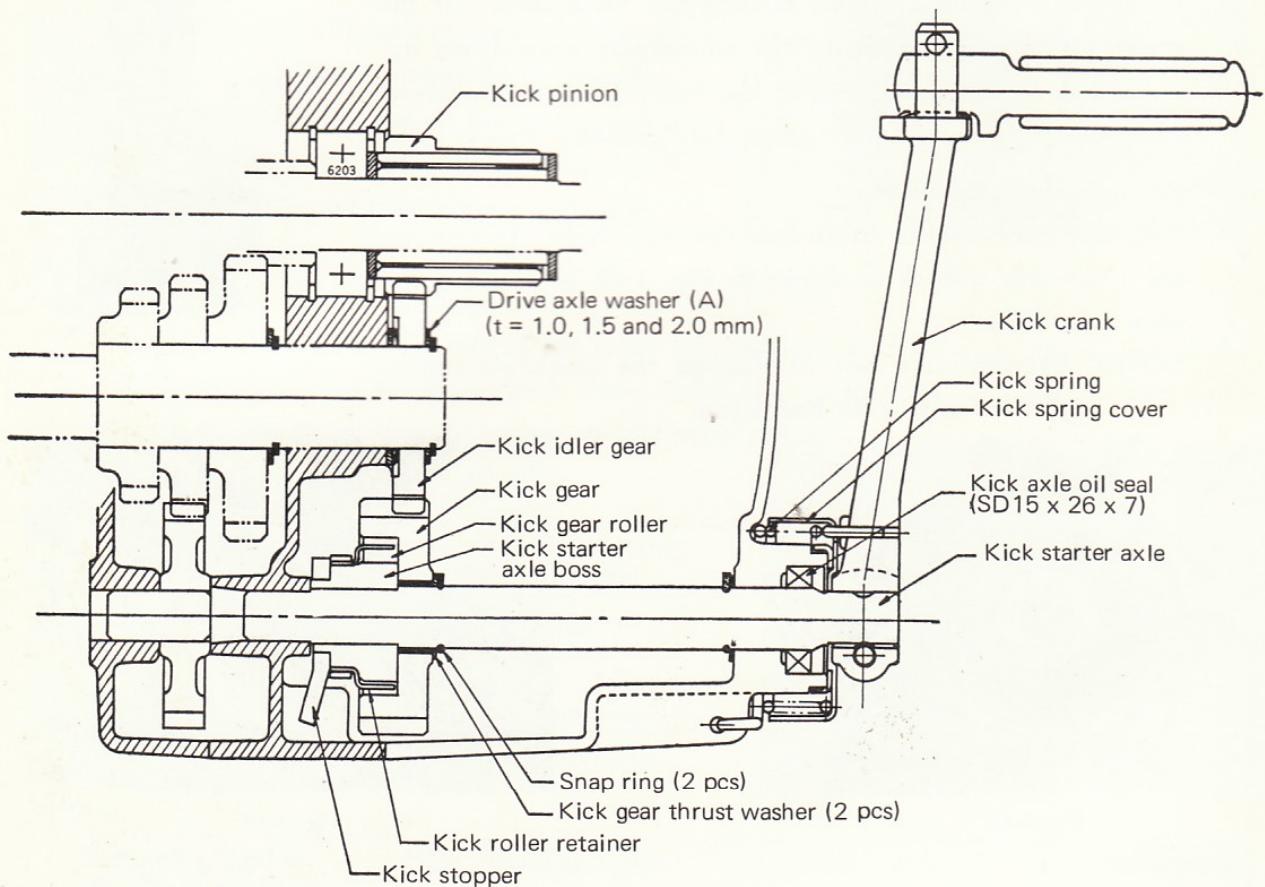


Fig. 3-50

Yamaha's 50 uses a "primary-coupled kick system" to start the engine. This "Primary" system means the engine can be kickstarted regardless of the position of the gear-change pedal. Kicking down the kick pedal turns the kick gear (on the kick-starter axle) which turns the kick idler gear (free mounted on the drive axle) and the idler gear turns the kick pinion (shrunk on the primary shaft). The primary driven gear (also the primary shaft) then turns the primary drive gear (splined on the crankshaft) which turns the crankshaft to start the engine.

1. The kick gear-related assembly can be removed by lifting out the kick shaft the way it was installed. Make sure not to lose the kick rollers when disassembling, or to misplace the washers when reassembling. (Fig. 3-51)

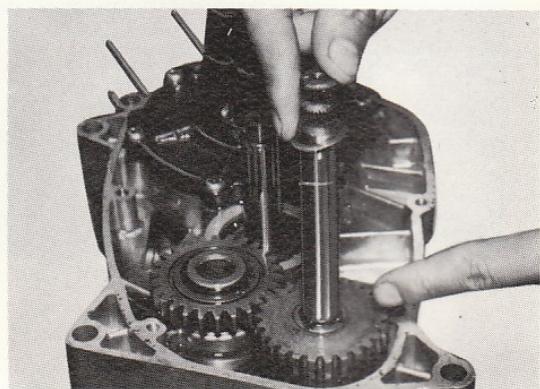


Fig. 3-51

## 2. Removing the kick idler-gear

Remove the clip retaining the kick idler gear with circlip pliers and slide the gear out. (Fig. 3-52)

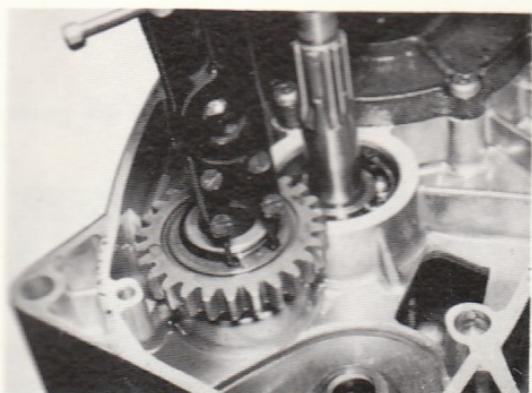


Fig. 3-52

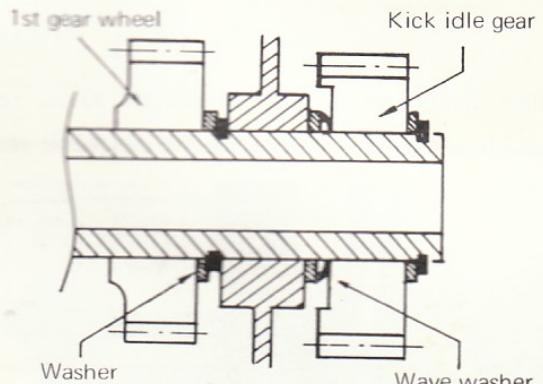


Fig. 3-53

3. Be sure to correctly install washers for the 1st gear wheel and the kick idler gear. The washer for the 1st gear wheel.

## N. DIVIDING THE CRANKCASE

### 1. Disassembling

- Remove the pan-head screws from the left crankcase. (Fig. 3-54)
- Separate the crankcase using a crankcase dividing tool. (Figs. 3-55 and 56)

NOTES: 1) Tighten all bolts in the crankcase dividing tool, and be sure to hold the crankcase in a horizontal position.  
2) When turning the handle of the crankcase dividing tool, be sure to hold the rod at top dead center so it will not hit the crankcase.  
3) First divide the crank chamber end of the crankcase while the other end remains together. Tap the crank chamber end and the main axle with a soft hammer while turning the dividing tool, to split the crankcase so its mating surfaces will remain parallel to each other.

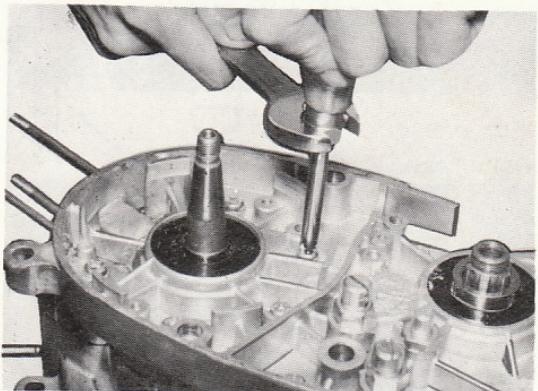


Fig. 3-54

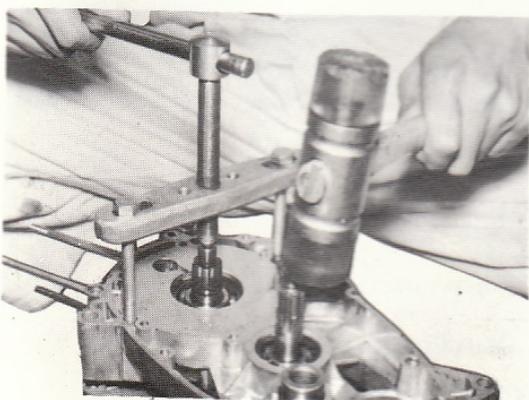


Fig. 3-55

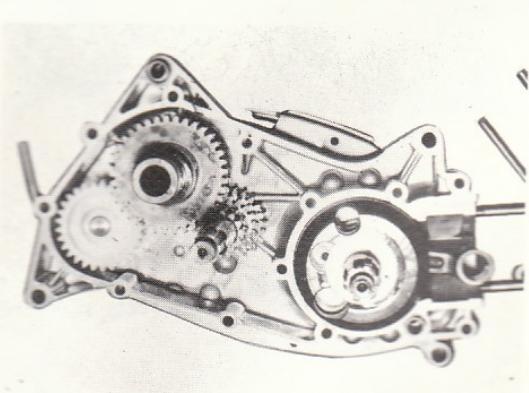


Fig. 3-56

## 2 Reassembling

Apply Yamaha Bond No. 5 evenly over the mating surfaces of both halves of the crankcase, join them, then secure them with the pan-head screws.

## O. TRANSMISSION ASSEMBLY

For arrangement and details of parts, refer to Figs. 3-56 and 3-61. Lubrication for all gears and bearings is provided by the synthetic resin oil sump gear as shown in Fig. 3-60.

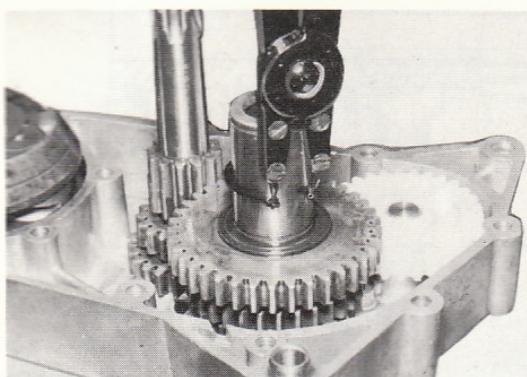


Fig. 3-57

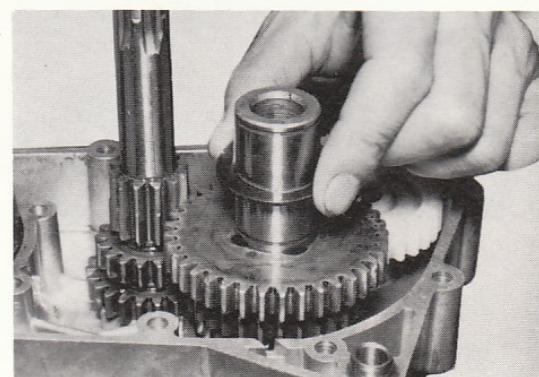


Fig. 3-58

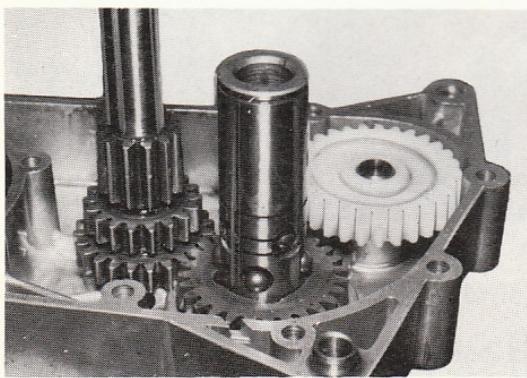


Fig. 3-59

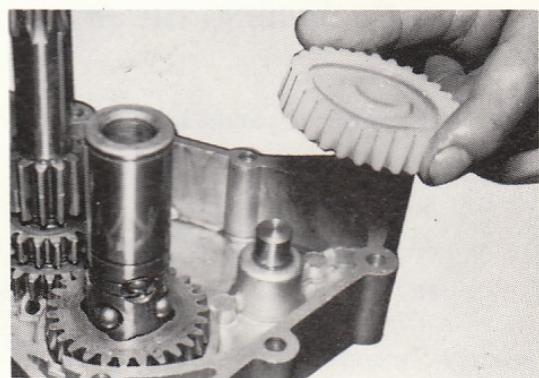


Fig. 3-60

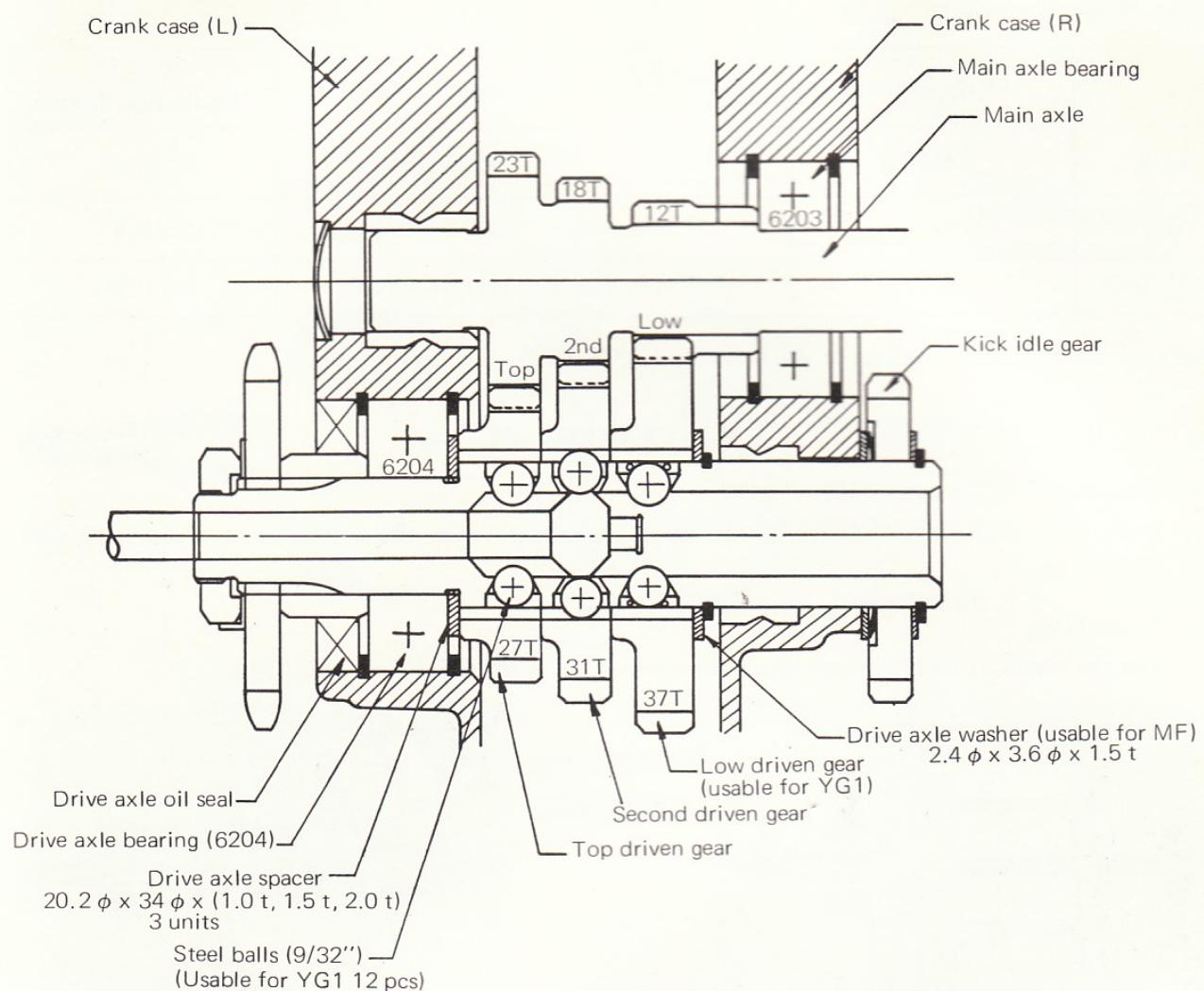


Fig. 3-61

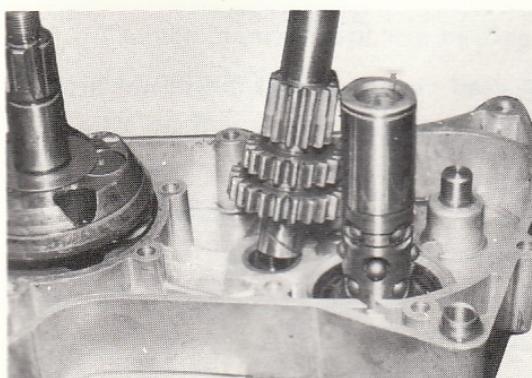


Fig. 3-62



Fig. 3-63

Primary, secondary, and total reduction ratios:

Primary reduction ratio:  $\frac{74\text{-teeth (primary driven gear)}}{19\text{-teeth (primary driven gear)}}^{**} = 3.894 : 1$

\*Mounted on crankshaft.

\*\*Integrated with clutch mounted on main axle.

38-teeth (wheel sprocket) = 2.533 : 1  
15-teeth (drive sprocket)

Total Reduction Ratios:

	Primary Reduction	Transmission Gear Ratio	Secondary Reduction	Total Reduction Ratios
LOW	74/19 x	37/12 x	38/15 (38/14)	= 30.40
SECOND	74/19 x	31/18 x	38/15 (38/14)	= 16.99
THIRD	74/19 x	27/23 x	38/15 (38/14)	= 11.584

NOTE: Figures shown in brackets are for Model 50U5(D).

## P. CRANKSHAFT

### 1. Disassembling

Press the crank out of the left side of the crankcase with the crankcase disassembling tool. (Fig. 3-64)

### 2. Assembling

Use the crank assembling tool to set the crankshaft in the crankcase. (Fig. 3-65)

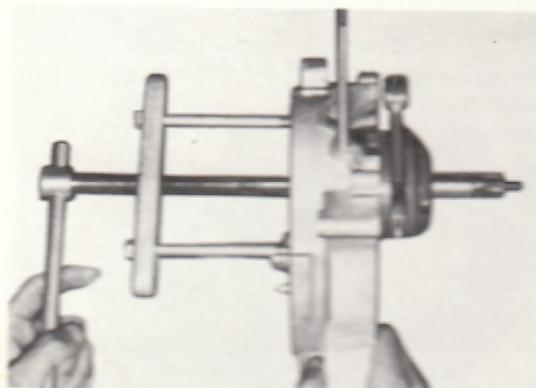


Fig. 3-64

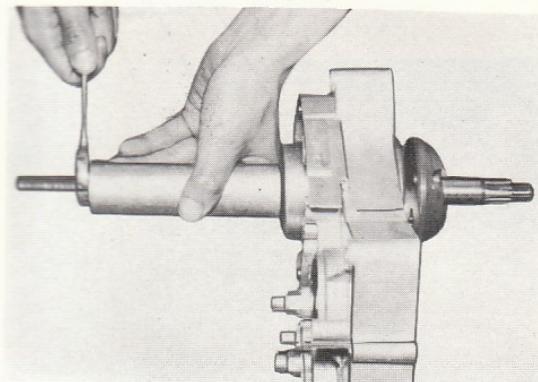


Fig. 3-65

NOTE: Be sure to position the connecting rod at top dead center so that it will not hit the crankcase. While turning the tool handle hold the connecting rod so it will not move.

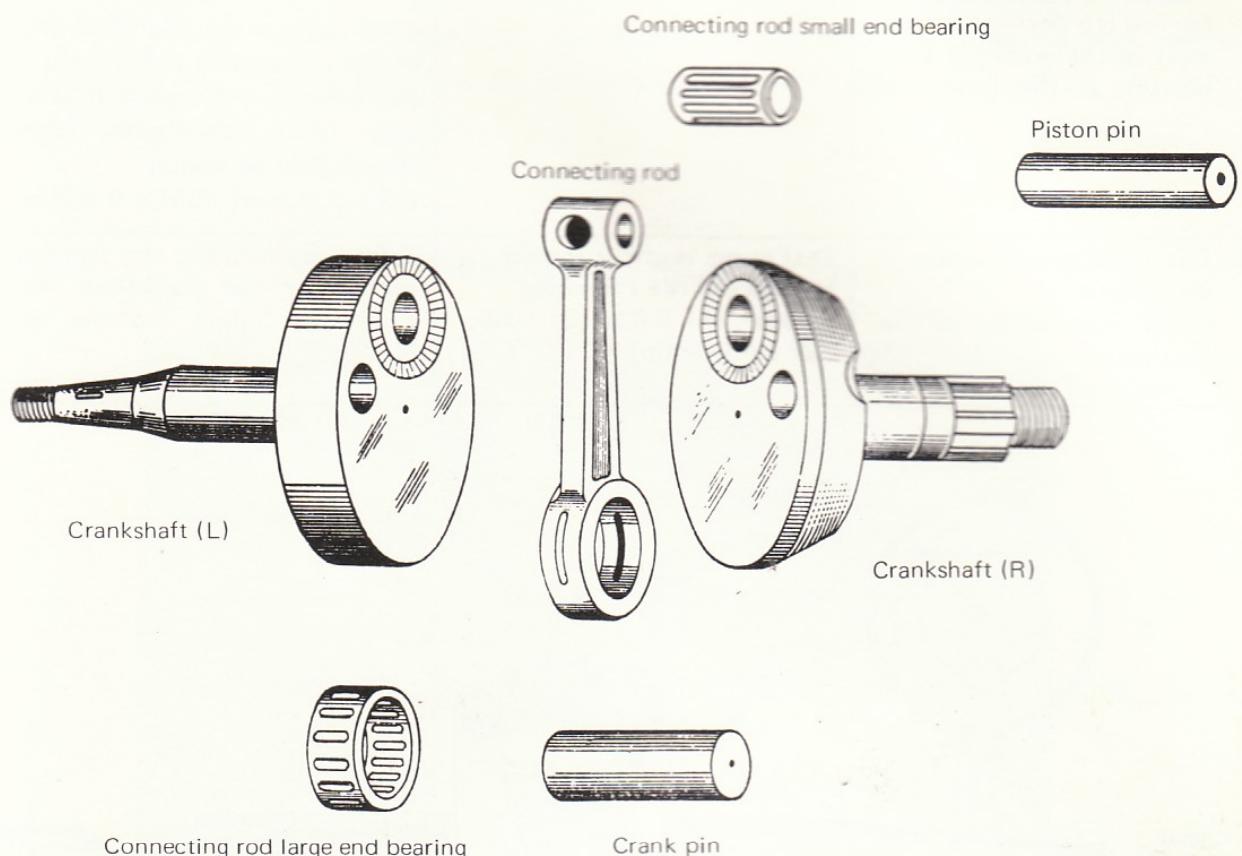


Fig. 3-66

3. Crank component parts (illustration).
  - a. Connecting rod small end bearing.
  - b. Connecting rod.
  - c. Piston Pin.
  - d. Crankshaft (L).
  - e. Crankshaft (R).
  - f. Connecting rod large end bearing.
  - g. Crankpin.

4. Inspection
  - a. Crank assembly inspection

Inspection Items	Standard	Correction
1. Connecting rod small end bearing and piston pin fit.	The piston pin, if well oiled, should slide easily into the connecting rod small end bearing. Any perceptible play between pin and bearing indicates worn pin and/or bearing.	Replace bearing or pin if the fit is too loose.

2. Axial deflection at the small end of the connecting rod (to check the wear in the crankpin and bearing at the large end).	Deflection should not exceed 3mm (0.118 in.).	If the deflection exceeds 3mm (0.118 in.) , disassemble the crank, check the degree of wear in the connecting rod, crankpin, and bearing and replace if necessary. After adjustment, deflection should be within 0.8 ~ 1.0 mm (0.031 ~ 0.039 in.)
3. For an accurately assembled crank: Check eccentricity of the crankshaft. (see the illustration)	Dial gauge readings should not exceed the following values: (1) 0.03; (2) 0.06; (3) 0.03. (mm)	Adjust by striking the flywheel section of the crankshaft with a special copper hammer and block.

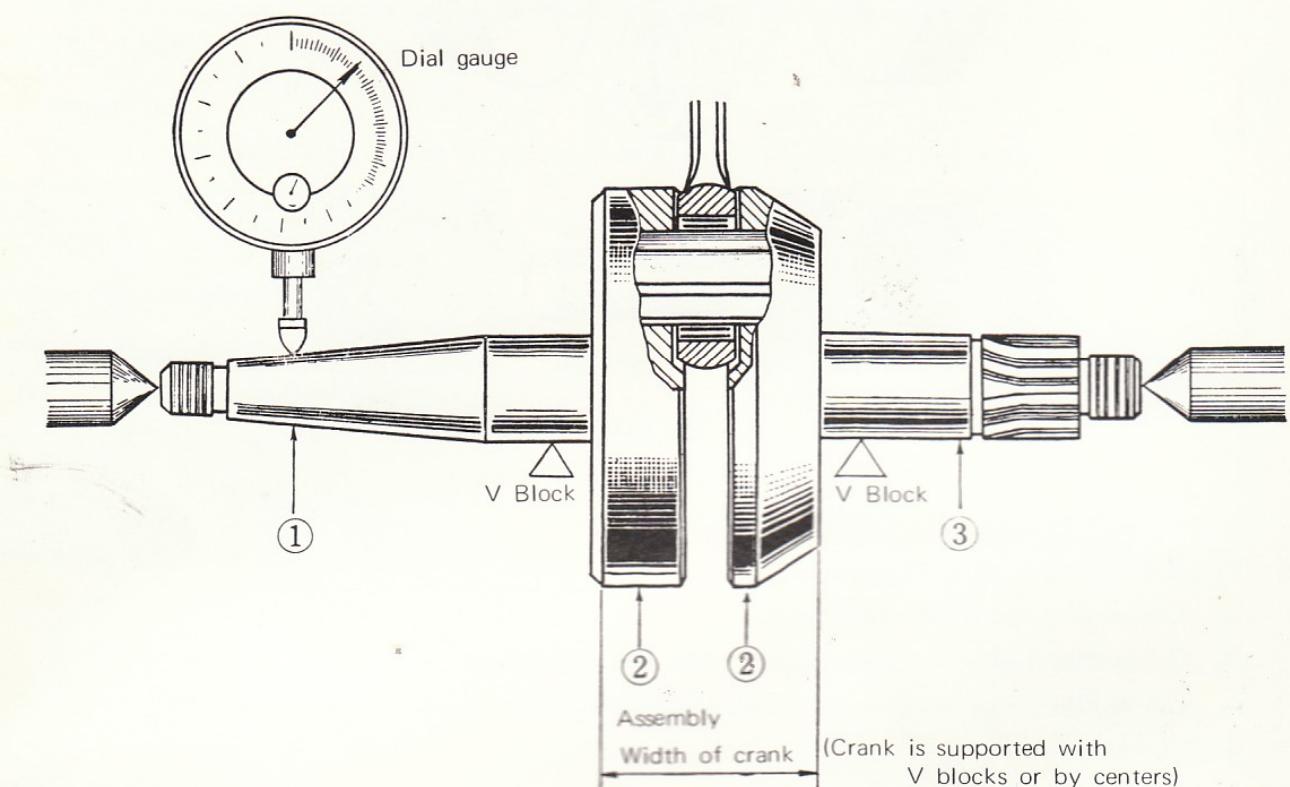


Fig. 3-67

b. Inspection at the time of crank disassembling.

1) Crank pin

Replace if it has any flaw on the roller running surface or any ridges worn in the center.

2) Large end of connecting rod

Replace the rod if there is any flaw on the roller running surface, or if the needle bearing to crank pin fit is shoppy.

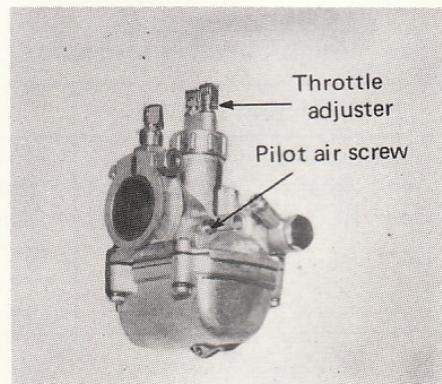


Fig. 3-68

NOTE: After long mileage, when overhauling the crank on the basis of the deflection measurement at the connecting rod small end or gap at the large end, or because of noise, etc., you should use new crankpin, connecting rod, needle bearing, etc. all at the same time.

#### Q. CARBURETOR (Figs. 3-68 & 3-69)

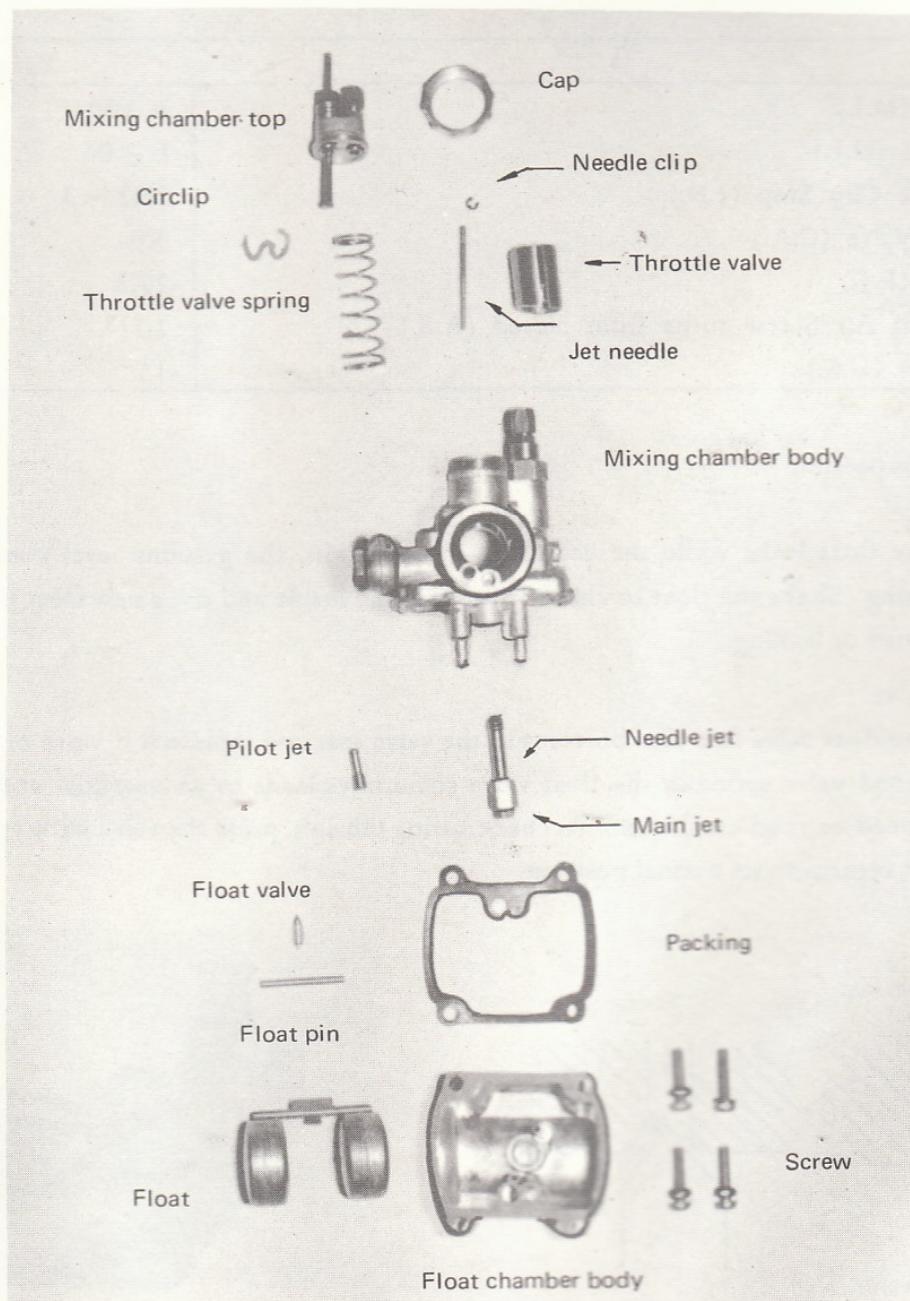


Fig. 3-69

## 1. Carburetor Adjustment

### a. Idling adjustment

After warming up the engine, set the throttle adjuster where the engine runs slowest (just before dying) with the air screw seated. Next, open the air screw gradually to increase the engine R.P.M. and set it at the position where engine speed is highest. Then, turn the throttle adjuster to reduce the engine R.P.M. slowly turn the air screw out and set it where the engine speed is highest. Repeat this operation two or three times to obtain correct idling.

The standard position for the air screw is 1-1/2 turns from seated.

### b. Carburetor specifications

Name of Part	Yamaha 50
(1) Main jet (M.J.)	# 100
(2) Needle jet (N.J.)	E - 0
(3) Jet Needle Clip Step (J.N.)	3N2 - 3
(4) Throttle Valve (C.A.)	3.0
(5) Pilot Jet (P.J.)	17.5
(6) Number of Air Screw turns from closed (A.S.)	1-1/4
(7) Starter Jet (G.S.)	15

## 2. Carburetor Inspection

### a. Float

When the float leaks while the vehicle is in operation, the gasoline level rises and causes overflowing. Shake the float to check it for gasoline inside and use a new float if the old one is deformed or leaking.

### b. Float Valve

Check the float valve face that bottoms in the valve seat and replace it if worn or scratched. A weakened valve spring in the float valve sometimes leads to an overflow under a certain engine speed or road condition. To check spring tension, press the valve with your finger to be sure it returns to its normal position.

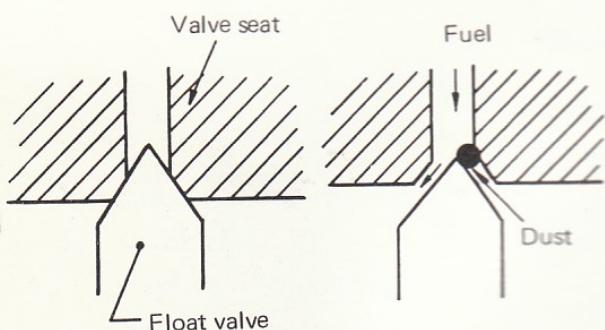


Fig. 3-70

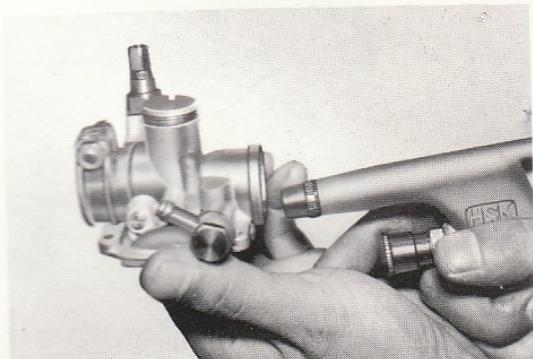


Fig. 3-71

### c. Overflow

If (a) and (b) are checked and nothing is found wrong, the overflow is due to dirt in the fuel being caught between the float valve and the valve seat. Remove the dirt by cleaning out carburetor and fuel lines with compressed air. (Figs. 3-70 & 3-71)

d. Carburetor cleaning:

After disassembling the carburetor, wash all components in clean gasoline. Then use compressed air to clean dirt from the inside. (Fig. 3-71)

When cleaning the jets, use compressed air as much as possible.

When the dirt is especially difficult to remove, use a thin wire, but be careful not to damage the jets.

## CHAPTER IV CHASSIS

### A. FRAME

The pressed steel frame of the Yamaha 50 like the YG1 and YA6, is light in weight, sturdy and developed from many years of experience and research. It has a structure very easy to produce and easy to operate.

The head pipe, welded to the front frame, carries steel races and ball bearings in its upper and lower ends to provide good riding qualities.

Compactly installed at the frame center, which is least subject to vibration, are electric equipment and an air cleaner designed to maintain high performance while assuring easy operation.

#### 1. Inspection of various parts, welded parts, etc.

Check the frame from head pipe to rear fender for any cracks, breakage, or deformation of pipe or pressed parts. Check the frame with extra care if the motorcycle has a history of collision or other accidents. If any crack or breakage is found, weld it or replace the cracked or broken part.

#### 2. Head pipe alignment

Closely inspect the head pipe for any torsion or eccentricity since it affects riding stability and maneuverability. Replace the whole frame if the pipe is severely deformed.

#### 3. Steel Race and Ball Bearings

Heavy steering, shaky handlebars etc., stem mostly from wear of the ball race and ball bearings. If you find defective part, always replace the bearings and the ball race as a unit, not just the defective part.

### B. FRONT FORK (Fig. 4-1)

The front suspension unit is non-disassembly type. If it is necessary to inspect built-in parts such as springs, consult the section on the rear suspension units.

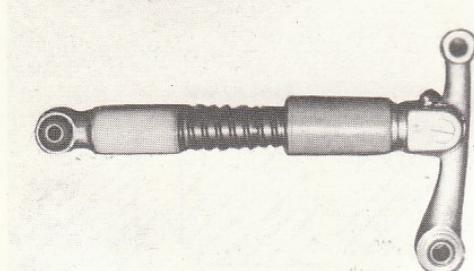


Fig. 4-1

## Disassembling

1. Pull out the speedometer cable from the front wheel by taking off its clips. (Fig. 4-2)

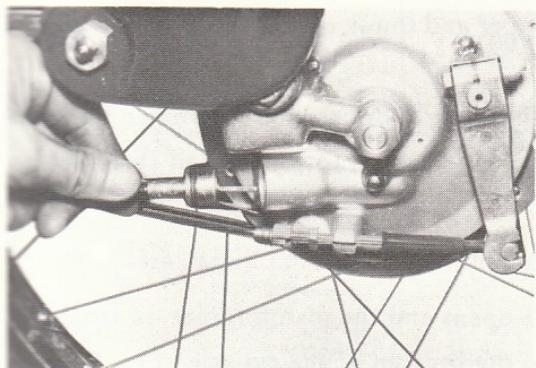


Fig. 4-2

2. Take off the brake cable from the front wheel. (Fig. 4-3)



Fig. 4-3

3. Pull out the front wheel shaft and take off the wheel. (Fig. 4-4)

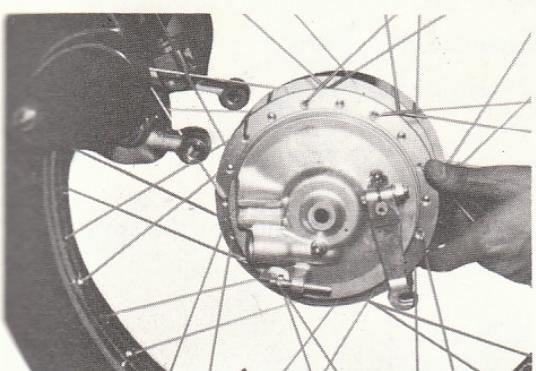


Fig. 4-4

4. Take off the front arm bolts. (Fig. 4-5)

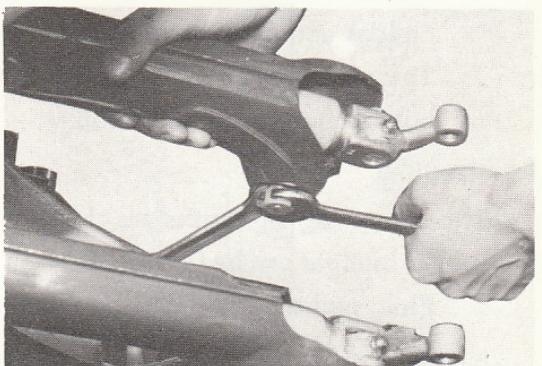


Fig. 4-5

5. Take off the front suspension unit upper bolts. (Fig. 4-6)

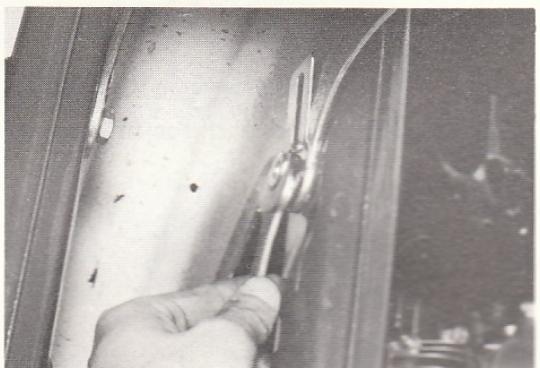


Fig. 4-6

## C. REAR SUSPENSION UNITS

These suspension units incorporate springs to soften road shock, and dampers to snub spring rebound and absorb vibration.

### 1. Structure, and Function

The units are bolted to the motorcycle body through upper and lower rubber bushings to deaden vibration which the damper cannot absorb.

- a. Although bumps and jolts are softened by the springs, a cylindrical rubber bumper has been installed flat in the bottom of each inner cover to act as a cushion for the end of the cylinder if it bottoms during extremely rough riding.
- b. The damper consists of a cylinder, piston, valve mechanism, piston rod, oil seal, etc.
- c. When the damper is compressed, the one-way valve opens and the piston forces oil from the top of the cylinder down through the valve and into the bottom of the cylinder.
- d. When the damper is extended, the valve closes and the piston now forces oil from the bottom of the cylinder into an orifice in the side of the piston rod, up a passage in the center of the rod, and out into the top of the cylinder.

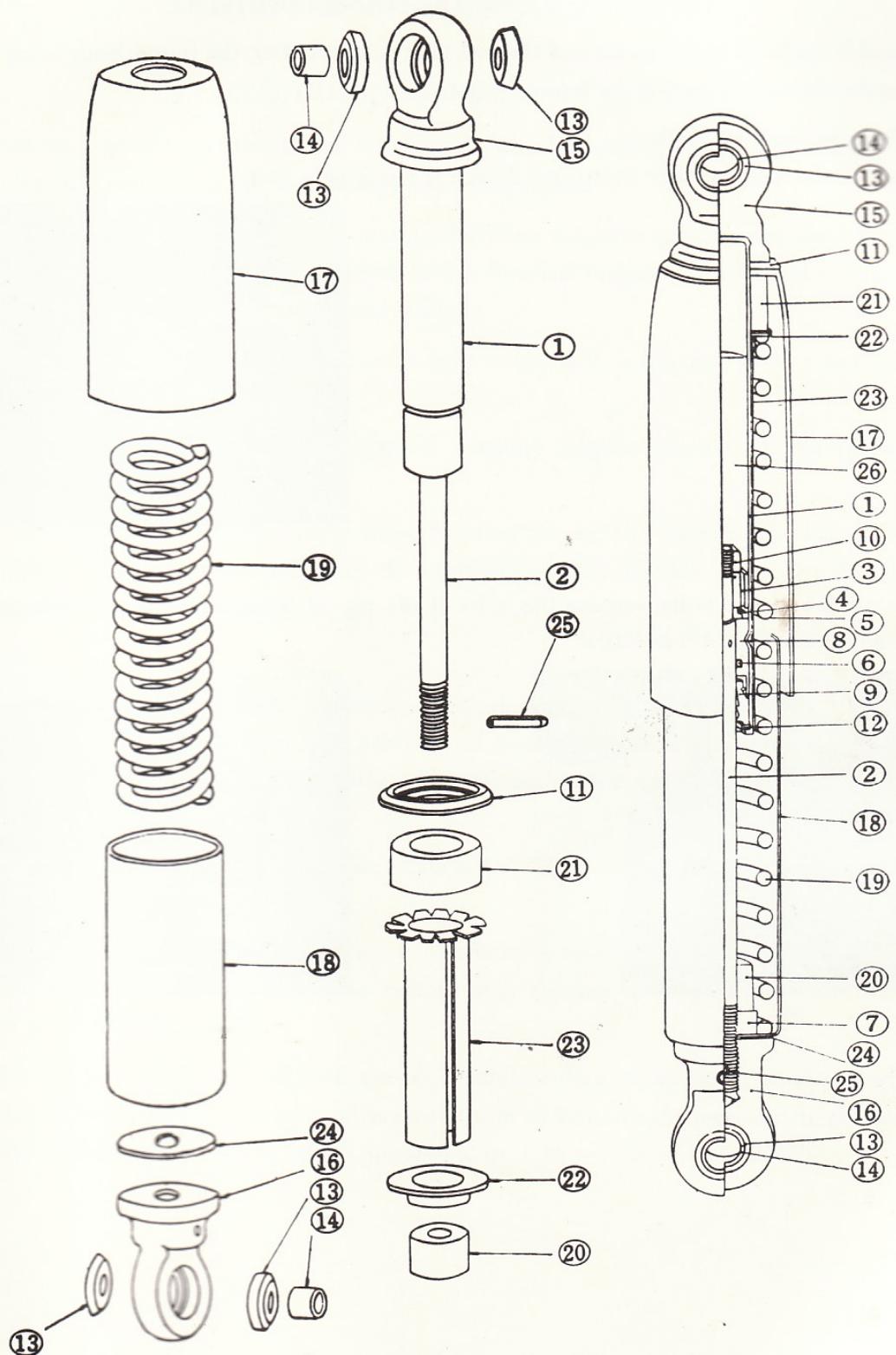
The piston rod sleeve bearing begins to close off the orifice about  $3/16"$  before the damper is fully extended, thus gradually decreasing the flow of oil, and ultimately sealing it with an oil-lock action, to prevent collision between the bearing and the piston.

This prevents noise at the end of each damper's extension and at the same time prevents bottoming on full extension.

### 2. Handling

The rear suspension units are the non-disassembly type, but built-in parts such as the spring and rubber bumper can be inspected.

- a. First, pull the roll pin out of each under bracket.
- b. Anchor the under cover in a vise, being careful not to damage the cover surface, and unscrew the under bracket by turning it counterclockwise.
- c. Next, hold the split groove at the end of the piston rod with a screwdriver and unscrew the under cover counterclockwise.
- d. For assembly, reverse the above procedure. After driving in each roll pin, extend and compress the unit for inspection.



1. Cylinder	10. Nut	19. Spring
2. Piston rod	11. Washer	20. Rubber bumper
3. Piston	12. Washer	21. Spacer
4. Non-return valve	13. Rubber bushing	22. Spring guide
5. Valve stopper	14. Rubber bushing collar	23. Spring guide
6. "O" ring	15. Upper bracket	24. Seat packing
7. Nut	16. Under bracket	25. Roll pin
8. Bearing	17. Upper cover	26. Oil
9. Oil seal	18. Under cover	

Fig. 4-7

#### D. FUEL TANK, OIL TANK, AND SEAT

The oil tank is enclosed in the frame and the fuel tank is installed on the frame; both being compactly secured under the seat as part of the frame design.

##### 1. To Remove the Fuel Tank

Take off the seat bracket bolts and detach the seat (Fig. 4-8)

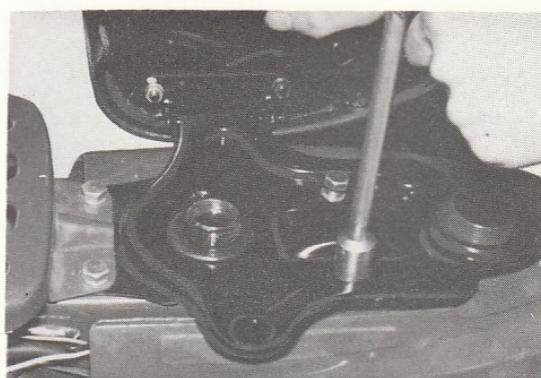


Fig. 4-8

##### 2. Take off the carrier bolts, remove the bolts at the top of the rear suspension unit, and pull out the fuel tank. (Figs. 4-9 & 4-10)

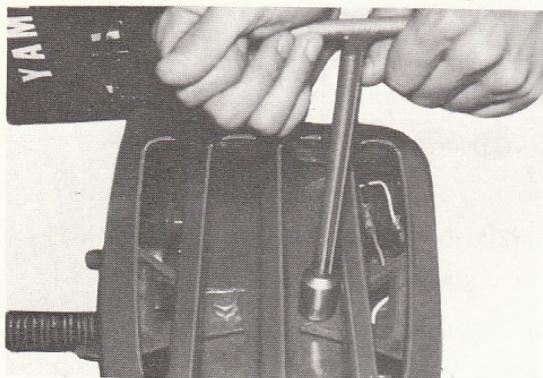


Fig. 4-9

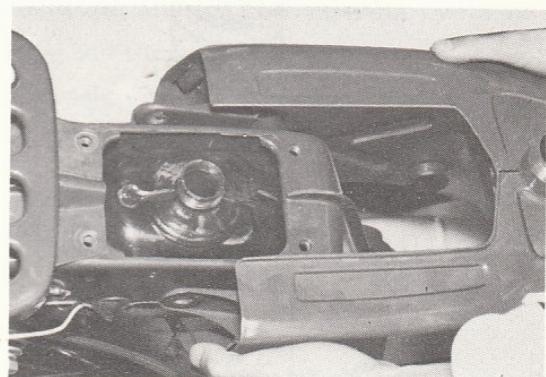


Fig. 4-10

## CHAPTER V ELECTRICAL SYSTEM

### A. ELECTRICAL EQUIPMENT OF YAMAHA U5D

This is winning a good reputation using the same flywheel magneto already adopted on YF(J)1, but its other electrical equipment has been changed to some extent.

- A. The ignition is the A. C. system, a method between magneto ignition and the battery ignition and the ignition coil, formerly enclosed in the flywheel magneto, is attached to the motorcycle frame for better thermal insulation and safety.
- B. All electrical parts are the 6-V type and a light weight 6-V, 2-AH type battery has been adopted along with the selenium rectifier.
- C. When the engine is running, the flywheel magneto supplies current for the ignition system, battery and lights.
- D. The main switch is on the frame front for easy access, the battery and fuses are mounted compactly at the frame center, and the ignition coil and selenium rectifier are located in the side guard (R) at the frame back.

#### Suggestions:

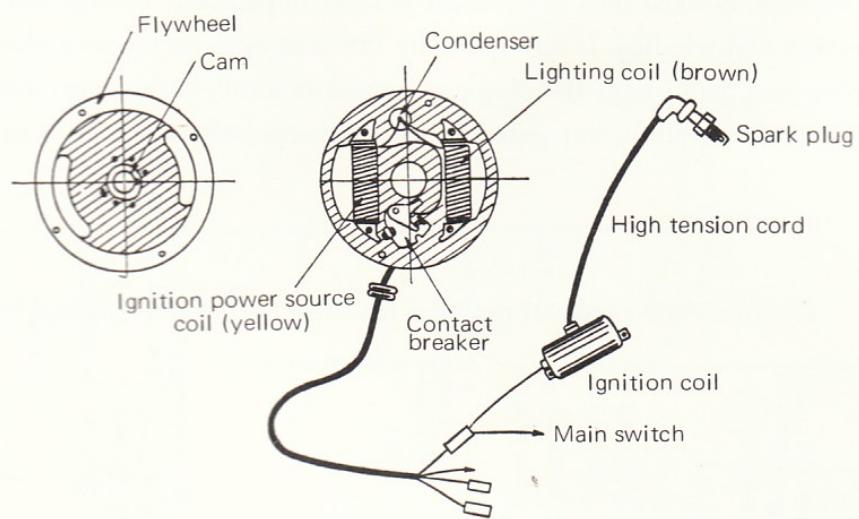
1. The headlight, taillight, and instrument light take current from the flywheel magneto. Since the lights are wired in parallel to a lighting coil, breakdown of any one bulb shifts extra voltage to other lights and shortens their life. So replace burned out bulbs and repair bad switches immediately.
2. Be sure to use bulbs of the specified voltage (V) and wattage (W), otherwise dim lighting or circuit breakage will follow.
3. When starting the engine, be sure to have the battery mounted and connected. If the engine is started with the battery off, surplus voltage may shorten the life of other electric devices or cause a break in the circuit.
4. Check the battery fluid level with greater attention than motorcycles equipped with starting motors. Check the fluid at least once a month, in addition to the periodic check-ups. Specific gravity of the battery fluid at full charge should be 1.25 ~ 1.27 (1.26 at 20°C).

## B. TABLE OF COMPONENT PARTS

	Electrical devices	Manufacturer	Specification
Engine Section	Flywheel magneto	Mitsubishi Elec. Hitachi	FAZ-IDL F11-L29 Sparking performance: Over 7mm/500 r.p.m. Over 8mm/5,000 r.p.m. Charging performance: Over 0.1 A/2,000 r.p.m. Under 3 A/8,000 r.p.m. Lighting performance: Over 6.3 V/2,500 r.p.m. Battery 6.5V Under 9V/8,000 r.p.m. Battery 7V
	Spark plug Neutral Switch	NGK Asahi Elec.	B-7Hz YN7
Frame Section	Battery	Nihon Denchi	MV1-6, 6V2 AH
	Main Switch Fuse holder	Furukawa Denchi Asahi Elec. Showa Elec.	BWT1-6, 6V2AH YBM-10 10A x 2
Frame Back Section	Ignition coil	Mitsubishi Elec. Hitachi	HM-1/12 E CM61-05 A Sparking performance: Over 7 mm/500 r.p.m. Over 8mm/5,000 r.p.m.
	Selenium rectifier Taillight bulb (stop lamp)	Fuji Denki Koito Elec.	PH16C 11/1 6V 2W (6V6W)
Front Head	Head light bulb Speedometer light bulb Speedometer Neutral light bulb Handle Switch (R) Handle Switch (L) Horn	Stanley Denki	6V15 WD 6V 1.5W 6V 3W
		Nikko Kinzoku	MB-6
Swing arm	Stop Switch	Asahi Elec.	YS10

### C. IGNITION AND CHARGING SYSTEM

1. Structure and function of the flywheel magneto (Fig. 5-1)



IGNITION SYSTEM DIAGRAM

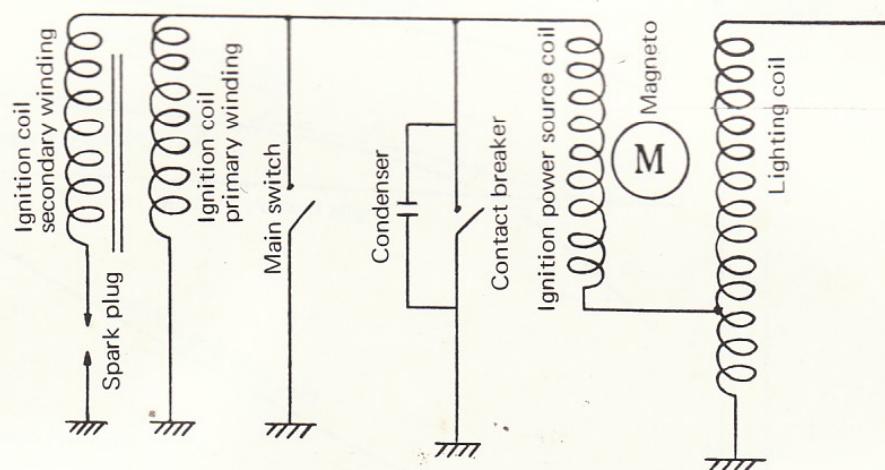


Fig. 5-1

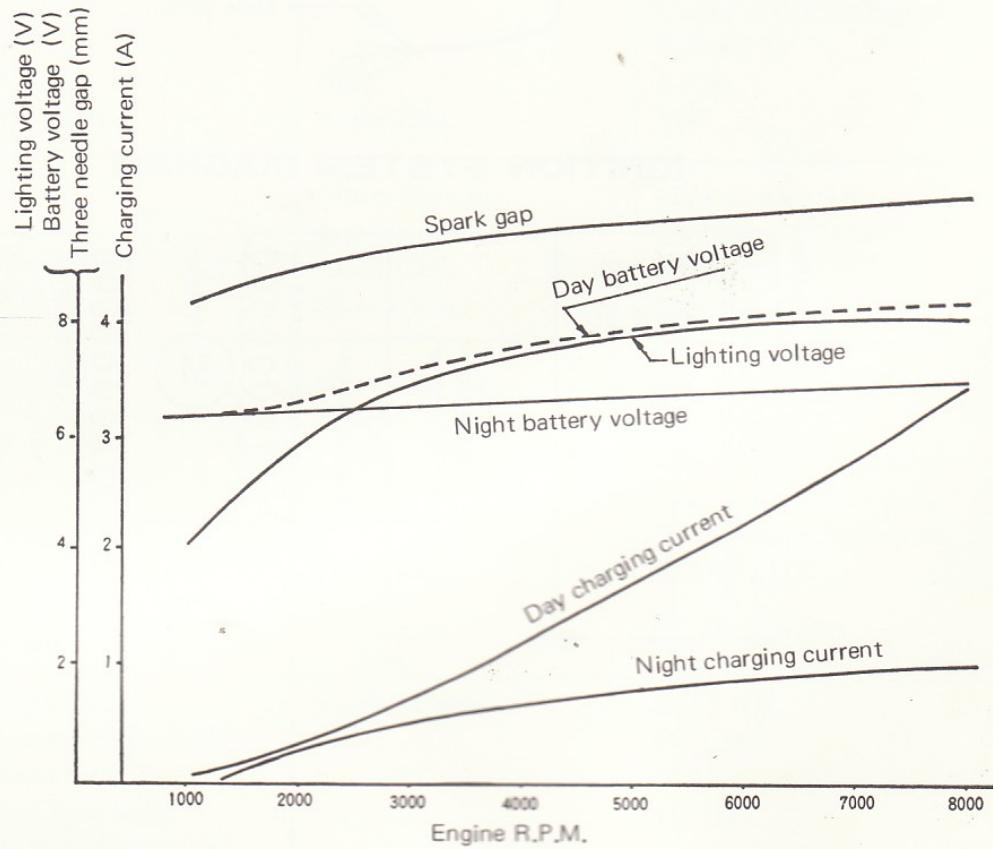
The flywheel magneto consists of an ignition power source coil supplying current to the ignition coil which produces voltage necessary to jump the spark plug gap, a lighting power source coil which produces the necessary voltage to light bulbs and charge the battery, a cam and contact breaker which interrupt the primary current flowing through the ignition coil.

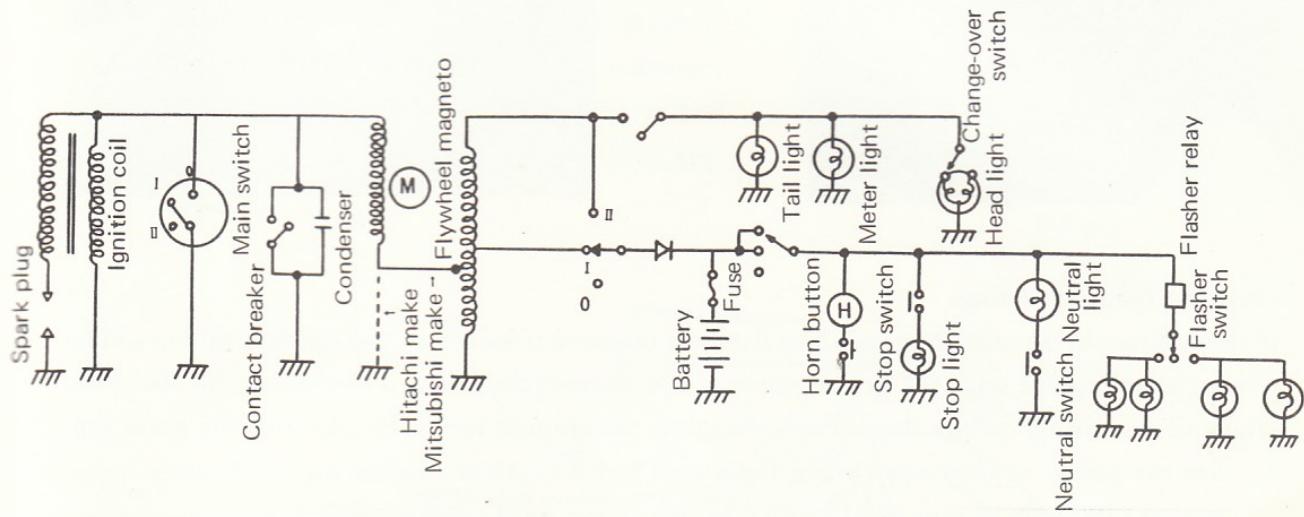
When the flywheel is rotating, the magnetic flux crossing the ignition power source coil changes,

and current flows through the coil accordingly.

When this current is interrupted at the contact breaker by the flywheel boss cam, a high frequency, oscillating voltage flows through a circuit composed of the ignition power source coil and the condenser, hooked into the contact breaker in parallel. Voltage then flows through the primary ignition coil winding, is multiplied by the turn ratio on the secondary coil side, follows the spark plug lead, and jumps the plug gap. Spark intensity varies depending on the frequency and duration of interruption, but generally the discharge voltage increases as engine speed rises.

Characteristic curves of practical load rotation of the flywheel are as follows.





## 2. Lighting and Charging System

(Separate sheet, Page A, to be inserted.)

Alternate current flows from the flywheel magneto through the lighting coil each time the magnetic flux crossing the lighting coil is changed by the rotating flywheel. This alternate current lights the taillight, instrument light, and headlight, but is converted to direct current by the rectifier for charging the battery.

Since the lighting coil uses no voltage regulator, light voltage rises with R.P.M. but as R.P.M. increase, the voltage is stabilized by the alternating current resistance of the coil.

To correctly perform the following tests, you should be familiar with standard testing procedures in the Electrical Components Section of the 1965 Yamaha Service Manual.



Fig. 5-2

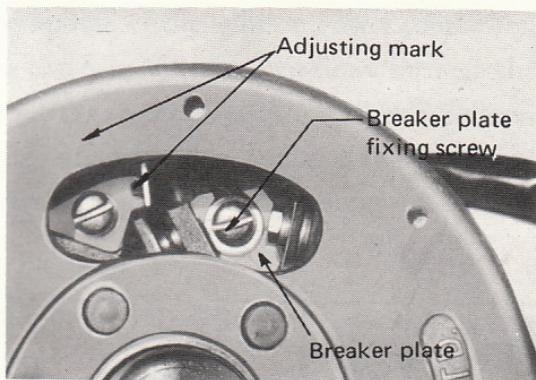


Fig. 5-3

### 3. Checking Ignition Timing

If the contact breaker point gap in the flywheel magneto is incorrect, the ignition timing will be wrong, affecting not only the performance of the motorcycle, but also shortening the life of the plug and promoting carbon deposition. Regulate the ignition timing by adjusting the point gap.

- a. Set the points so they open when the piston is  $1.8 \pm 0.15$  mm below top dead center (point gap of  $0.30 \sim 0.35$  mm (0.012  $\sim$  0.014 in.) at top dead center) using a dial indicator and point checker.
- b. The flywheel magneto has a timing mark on its edge, to check the timing, simply take off the crankcase cover cap (L) and, with the engine running, use a strobo light to make sure the magneto mark lines up with its matching mark on the crankcase.
- c. Smooth away any roughness on the point surfaces with sandpaper, or your feeler gauge measurements will be inaccurate.

### 4. Condenser (attached to the magneto)

#### a. Function

Absorbs arcs (sparks) occurring upon interruption of the primary current and prevents the point surfaces from burning.

#### b. Inspection

Three leads (one from the primary ignition coil, one with a double terminal, to the ignition switch and secondary coil, and one to the points) are soldered to the condenser. Heat the soldered ends of the leads free and test the condenser for insulation and capacity.

Insulation test: The reading should exceed  $3 \text{ M}\Omega$  with the Yamaha Electro tester.

Capacity test: The reading should not exceed  $0.25 \mu\text{F} \pm 10\%$  for Mitsubishi, and  $0.3 \mu\text{F} \pm 10\%$  for Hitachi.

## 5. Ignition Coil (Secondary)

### a. Function

The ignition coil, a kind of transformer, impresses in the primary coil a high frequency, oscillating, voltage current generated by sharply interrupting the flow of current in the ignition coil with a contact breaker. This multiplies the voltage in the secondary coil by its turn ratio, (through mutual induction), and a spark jumps the plug gap.

### b. Inspection

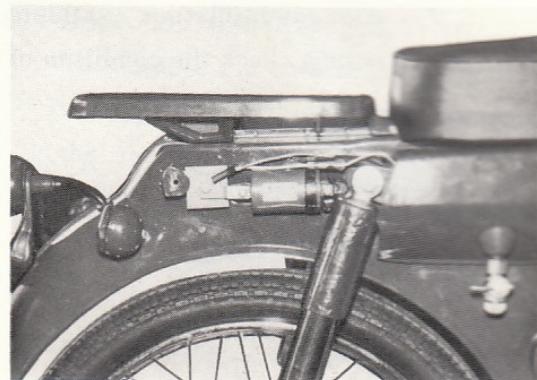


Fig. 5-4

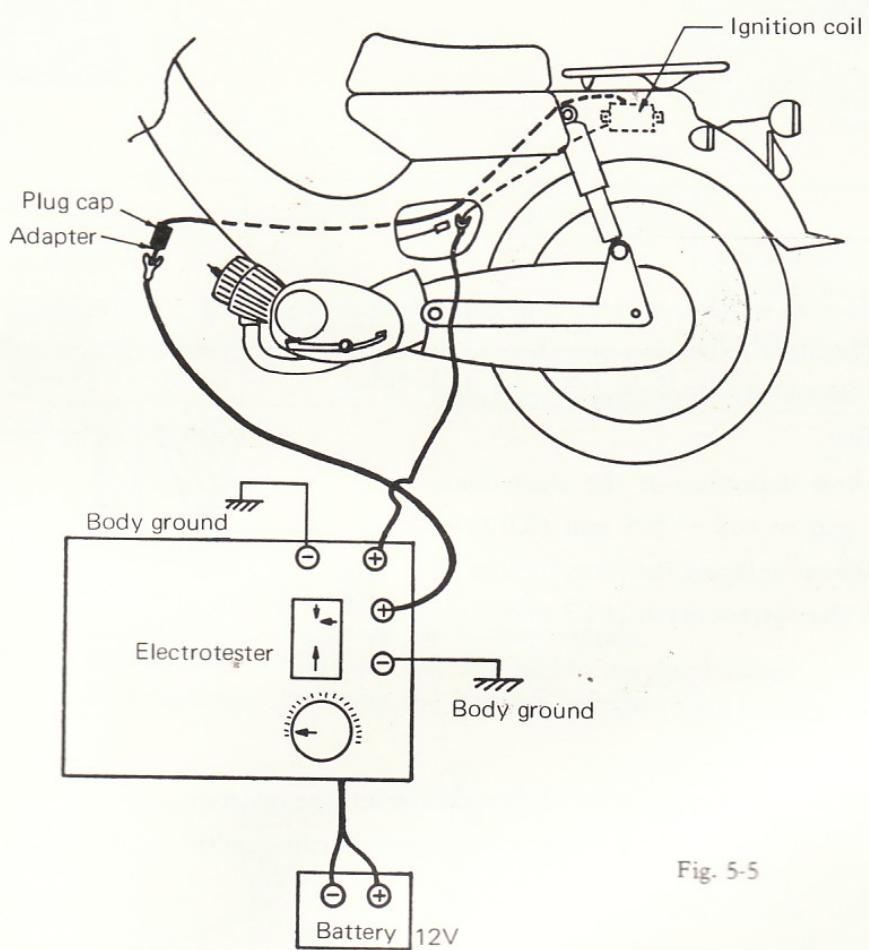


Fig. 5-5

If no spark jumps the plug gap or if the spark is weak, check the ignition coil as well as the contact breaker. The ignition coil is enclosed by the side cover (R) of the frame back. (Fig. 5-4)

- 1) Spark performance test: The gap jumped should exceed 7 mm (0.27 in.).

2) Also run insulation, continuity, and resistance tests on the coil. If you still find nothing wrong, check the condition of the plug, points, condenser, plug gap, etc.



Fig. 5-6

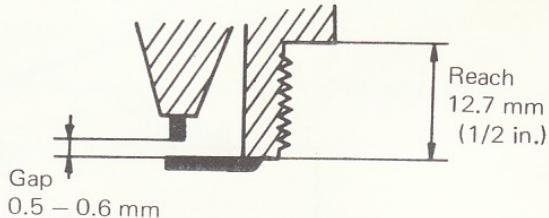


Fig. 5-7

## 6. Spark plug

The specified plug is NGK B-7HZ. For low speed or city riding, a hotter plug such as B-6H will maintain a cleaner combustion chamber. Advise your customers to clean the plug and check its gap at least once a month or after every 1,000 km (500 miles).

Remove carbon deposited at the electrodes, and set the gap to 0.5 ~ 0.6 mm (0.020 ~ 0.024 in.) When replacing the plug, be sure to use one with the correct reach (12.7 mm).



## 7. Selenium Rectifier

### a. Function

The selenium rectifier is mounted directly behind the ignition coil.

It rectifies the alternating current generated in the ignition coil into direct current for charging the battery.

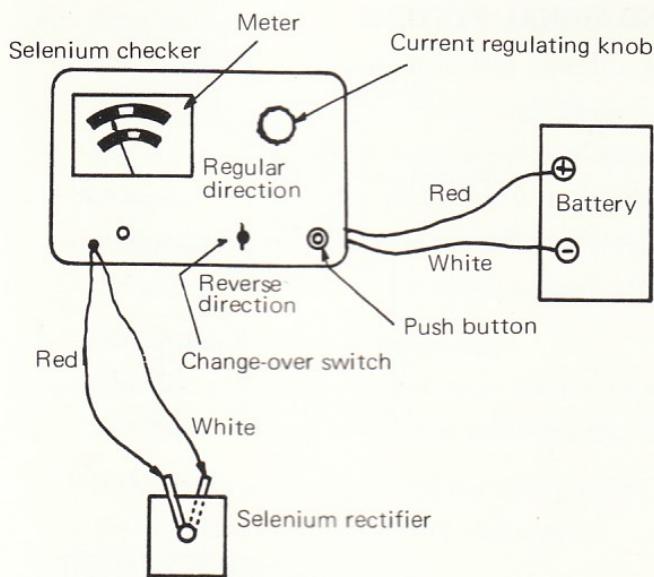
### b. Inspection

Check the electricity flowing from the magneto to the battery:

Is it uninterrupted, without "leakage," and in the right amount?

Testing the selenium rectifier on the frame:

You can run a rectifier voltage check the same way you check a voltage regulator. Hook your tester between the rectifier's red lead and ground. A voltage reading (D.C.) means the rectifier is O.K. but if you get no reading, the rectifier is bad to confirm your test use the white lead instead of the red: you should get an A. C. voltage reading with a bad rectifier.



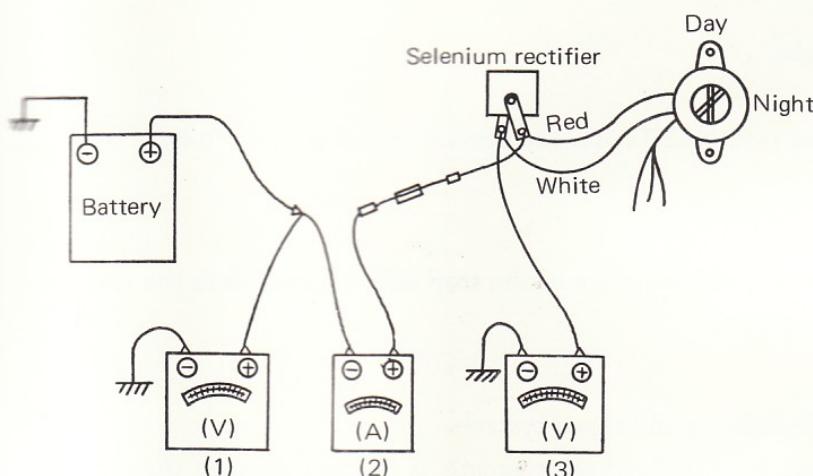
#### 8. Inspection of the Charging System.

To measure the current going to the battery, disconnect the red lead from the rectifier, connect an ammeter (with a full scale of 3A-5A) between the rectifier and battery and start the engine.

#### Standard Charging Amount:

	Engine revolutions	3,000 r.p.m.	5,000 r.p.m.	
Day	Charging current (A)	0.6 (7.1)	1.7 (8.0)	Parenthesized figures denote the battery.
Night	Charging current (A)	0.4 (6.8)	0.6 (7.5)	Voltage at the time of measurement.
	Ignition voltage (V)	7.0 ~ 7.3 (6.8)	7.8 ~ 8.1 (7.5)	

- (1) .... D.C. Voltmeter - Indicates the battery voltage.
- (2) .... D.C. Ammeter - Measures day and night charging current.
- (3) .... A.C. Voltmeter - Indicates the ignition voltage (night).



#### NOTE:

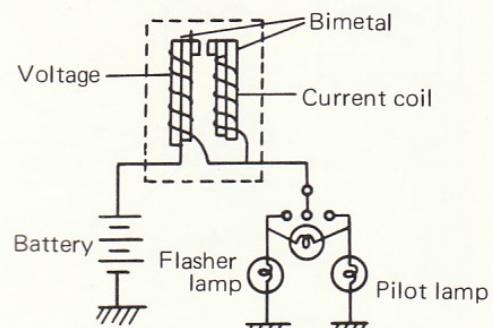
- 1) When measuring the day charging current, be sure the neutral light, and stop light are off.
- 2) When measuring the night charging current, make sure the head, tail, and instrument lights are on.

## D. LIGHTING AND SIGNAL SYSTEMS

### 1. Lights:

Magneto lighting	Head light	6V 15/15W
	Tail light	6V 2W
	Meter light	6V 1.5W
Battery lighting	Flasher lights	6V 8Wx4
	Stop light	6V 6W
	Neutral light	6V 3W

Diagram of flasher relay



### 2. Flasher Relay:

The flasher relay is a bimetal type. The specified light should be used, because the time when the relay causes it to go on and off has been designed on the basis of the bulb size.

Normal light flash 8-12 times per minute.

### 3. Horn:

The horn is based on the same theory as a DC buzzer. If the horn makes strange sound or does not make any sound, adjust it by turning the screw on its top side.

### 4. Switches:

#### a. Main switch:

The main switch opens and closes the ignition, charging, lighting and signal circuits.

#### b. Handlebar switch (L):

Switch for the right and left direction indicators (flasher lights) and horn button.

#### c. Handlebar switch (R):

Dimmer switch for the headlight.

#### d. Neutral switch:

When the shifter cam is placed into NEUTRAL, the neutral switch goes on to light the bulb in the meter.

#### e. Stop switch:

When depressed, the brake pedal pulls the chain of the stop switch attached to the rear arm, and the switch turns on the stop light.

### 5. Battery:

The battery furnishes current to the lighting and signal systems.

When riding, the current generated by the flywheel magneto is charged through the selenium rectifier.

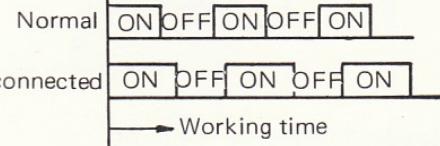
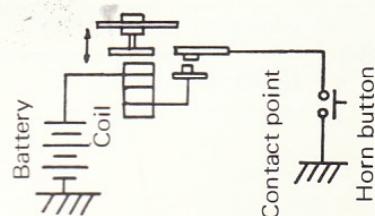


Diagram of Horn



a. First charging:

Prepare 170 c.c. of sulphuric acid (specific gravity: 1.26 at 20°C).

Remove the three battery plugs and fill each cell up to the maximum level.

For the best results, charge every new battery with about 0.4A current for 10 hours. After charging, gently shake the battery to remove the foam in it. Again add dilute sulphuric acid or distilled water up to the maximum level to get a specific gravity of 1.26 ~ 1.27. Tighten the plugs firmly, clean the terminals and, after wiring, put grease on them.

b. Periodic inspection:

Check the solution level at least once a month. If the solution is under the minimum level, add distilled water to the low cell until the fluid reaches maximum level.

c. If the cycle will not be used for a long time:

- 1) Remove the battery and recharge it;
- 2) Grease the terminals;
- 3) Store the battery in cool, dark place;
- 4) Charge it at least once a month.

Item	Description	Check interval
Electrolyte	Specific Gravity: 1.26 ~ 1.27 Quantity: 170c.c.	
First charging	With 0.2A current for more 10 hrs.	
Low fluid	Add distilled water up to the maximum level.	Every month
Recharging	With 0.2A current for 13 hrs.	When discharged.

# YAMAHA U5D Circuit Diagram

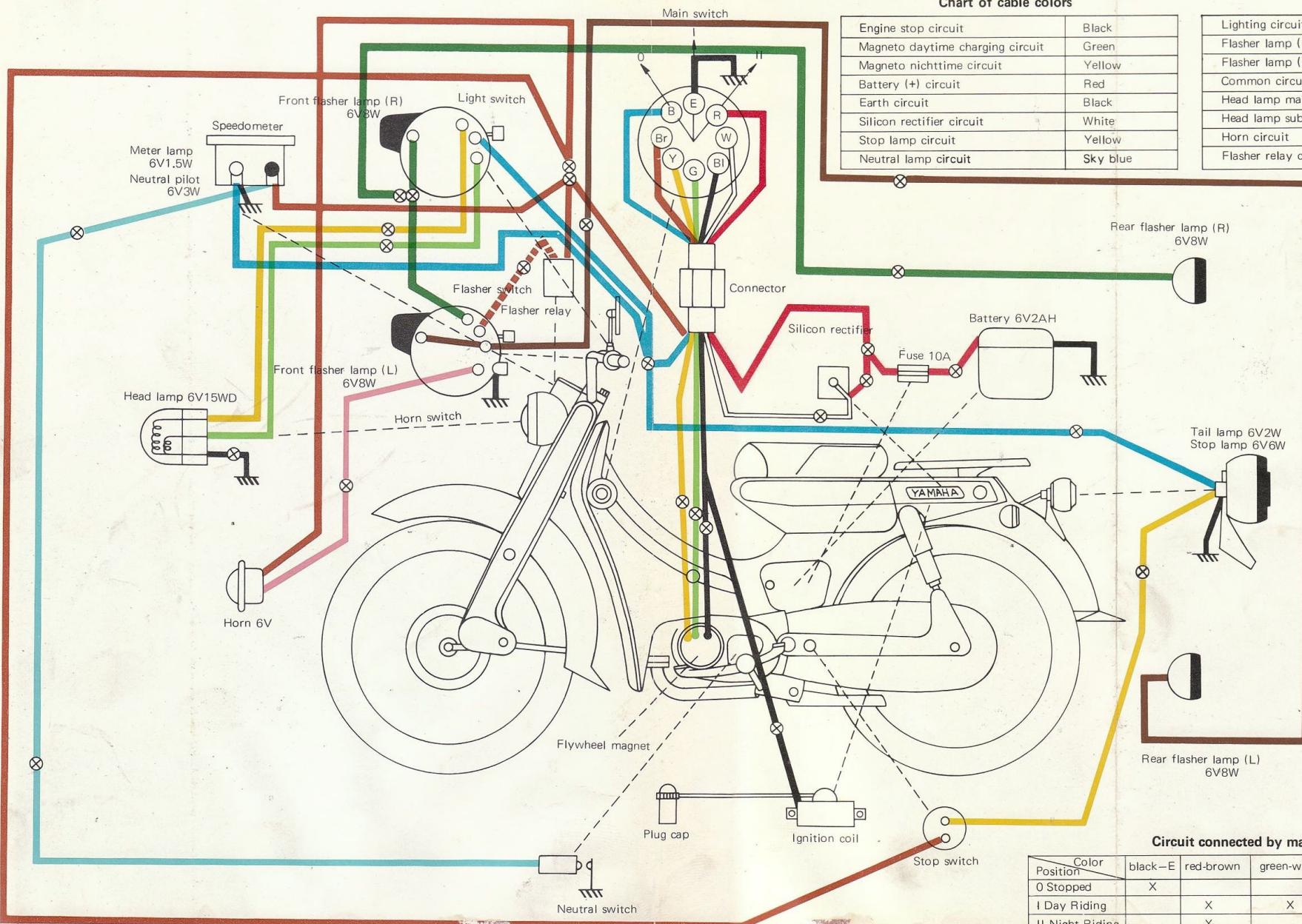


Chart of cable colors

Engine stop circuit	Black
Magneto daytime charging circuit	Green
Magneto nighttime circuit	Yellow
Battery (+) circuit	Red
Earth circuit	Black
Silicon rectifier circuit	White
Stop lamp circuit	Yellow
Neutral lamp circuit	Sky blue

Lighting circuit	Blue
Flasher lamp (Right) circuit	Dark green
Flasher lamp (Left) circuit	Dark brown
Common circuit	Brown
Head lamp main circuit	Yellow
Head lamp sub circuit	Green
Horn circuit	Pink
Flasher relay circuit	Brown & White

Circuit connected by main switch

Color Position	black-E	red-brown	green-white	yellow-white	yellow-blue
0 Stopped	X				
I Day Riding		X	X		
II Night Riding		X		X	X

## CHAPTER VI INSPECTION AND MAINTENANCE

### A. PURPOSE

1. The periodic inspection system has been built up for Yamaha owners, because it prevents trouble from developing and keeps their motor cycles in top condition.
2. The inspection system has been drawn up for Yamaha dealers, because good service will promote sales.

### B. INSPECTION INTERVALS

NO.	ITEM	1st insp. 200 miles	2nd insp. 2000 miles	3rd insp. 4000 miles	Thereafter every 3000 miles
1	Adjust front and rear brakes	x	x	x	x
2	Adjust clutch		x	x	x
3	Change gear oil	x	x	x	x
4	Grease		x	x	x
5	Check battery fluid level	x	x	x	x
6	Clean sparkplug	x	x	x	x
7	Adjust ignition timing		x	x	x
8	Adjust carburetor		x	x	x
9	Overhaul carburetor			x	x
10	Clean air cleaner		x	x	x
11	Clean cylinder head and piston		x	x	x
12	Clean muffler		x	x	x
13	Tighten bolts and nuts	x	x	x	x
14	Adjust drive chain	x	x	x	x
15	Check Autolube pump stroke	x	x	x	x

### C. INSPECTING MAIN PARTS

#### 1. Carburetor

Adjust and clean every 2,000 miles of riding and whenever any trouble occurs. To disassemble, remove the chamber cover, fuel line, throttle cable and starter cable. After removing the carburetor, take it down to:

1. Float Chamber      2. Starter Section      3. Mixing Body      4. Throttle Valve.

Wash them in gasoline and clean out the by-pass with compressed air. To adjust the idle after reassembling and mounting the carburetor, back the air screw off 1-1/4 turns: then start the engine and set the throttle screw where the engine runs smoothly (idling speed = 1,400 ~ 1,600 r.p.m.).

NOTE: You may have to set the air screw a 1/4 turn above or below the prescribed adjustment.

#### 2. Air Cleaner

The efficiency of the air cleaner is important to the life of the engine, and a clogged air cleaner reduces engine performance. Clean it every 1,000 miles in addition to the periodic inspection. Remove the cleaner body, shake the dust off, and then clean it from the inside with compressed air.

### 3. Removing Carbon

Carbon accumulation impairs engine performance and causes most of the troubles on a long used machine.

- a. Cylinder head ..... Clean with wire brush.
- b. Piston head ..... Clean with wire brush.
- c. Cylinder exhaust port ..... Wash it in solvent and remove carbon with a brush or screwdriver.
- d. Exhaust pipe ..... Remove the pipe and pull a chain through it to knock off crust and scale.
- e. Muffler silencer ..... Remove the silencer, clean it with a wire brush; then clean out the holes in its end with a piece of wire.

If an abnormal amount of carbon has accumulated:

- a. Fuel ratio is incorrect or quality of oil is bad.
- b. Carburetor setting is incorrect (starter jet plunger not returning to original position; check starter jet cable).
- c. Ignition timing is too late or spark plug is faulty.

### 4. Spark plug

The spark plug affects engine performance much like accumulated carbon. If its electrode is dirty or faulty, it will spark irregularly or not at all. Check it at regular intervals:

Is the porcelain around the center electrode a light tan color?

Is the gap correct?

- a. If the spark plug is fouling, the trouble source may be:
  - 1) Incorrect fuel ratio (perhaps starter jet plunger not returning to original position; check starter jet cable).
  - 2) Incorrect spark plug gap. (Set to 0.5 ~ 0.6 mm)
  - 3) Ignition timing is late, or points are dirty or faulty. (Adjust it to  $1.8 \pm 0.15$  mm).

If the B-7HZ spark plug still fouls after the above adjustments, check the owners riding habits and try the hotter B-6H plug for mild operating conditions.

- b. If the spark plug porcelain has been burned white, the trouble may be:

- 1) Incorrect fuel (too lean).
- 2) Ignition timing too far advanced.

If after checking 1) and 2) the center porcelain still burns white or the electrodes partially burn away, air is entering from parts other than the carburetor.

### 5. Ignition Timing

Incorrect ignition timing not only impairs performance, but shortens the life of the spark plug and promotes carbon accumulation.

## 6. Battery

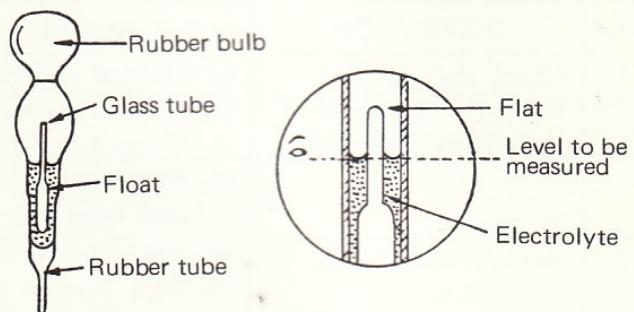
Check the battery at least once a month, because it is the power source for your machine's daytime lighting system (stoplight and neutral light; or any lights used when the engine is not running).

### Fluid Check

- 1) The level of battery solution should always be between the maximum and minimum lines.
- 2) The specific gravity should be  $1.26 \sim 1.27$ .

When adding fluid, don't use dilute sulphuric acid; use distilled water.

When measuring the specific gravity, read the hydrometer correctly as illustrated.



## CHAPTER VII YAMAHA 50 TROUBLE SHOOTING

When a malfunction is found, its repair is nearly complete because the key to repair is exact location of trouble. This chapter covers symptoms, diagnosis and repair.

### A. ENGINE WILL NOT START

NO.	INSPECTION	TROUBLE SOURCE	REMEDY
1	Check that gasoline runs into the carburetor (float chamber).	a. Clogged gasoline. b. Clogged gasoline cock. c. Clogged or faulty float valve. d. Plugged vent hole in fuel tank cap.	Remove parts and clean with compressed air.
2	Remove spark plug, attach it to its cap, ground it and kick down the starter crank to see if the plug sparks.	a. Faulty, dirty or wet spark plug. b. Dirty or incorrect point gap. c. Faulty condenser. d. Disconnected or punctured high-tension (spark plug) wire. e. Shortcircuited or disconnected ignition coil. f. Faulty main switch. g. Incorrect ignition timing.	Refer to "ELECTRIC EQUIPMENT" a. Clean or replace plug. <i>P.24</i> b. Clean and adjust point gap. (0.30 ~ 0.35mm.) <i>P.42</i> c. Check with a tester. d. Replace spark plug wire. e. Check coil with a tester. f. Check switch with a tester. g. Check with a timing light.
3.	Check the compression by kicking down starter crank.	a. Incorrect valve position or faulty valve. b. Worn cylinder, piston or rings. c. Leaking head gasket. d. Faulty piston. e. Crankcase leak.	a. If inlet port is open at top dead center and closed at bottom dead center, valve is good. b. Replace. c. Replace gasket. d. Replace piston. e. Repair or replace.
4.	Again try to start the enging according to operating instructions.	a. Too much air in gas mixture. b. Air screw on carburetor too loose. c. Faulty drain cleaner in right crankcase cover. d. Faulty rubber carburetor chamber cap. e. Incorrect ignition timing.	a. Adjust or replace. b. Tighten. <i>P.30</i> . c. Replace. d. Replace. e. Adjust ignition timing.

## B. POOR ACCELERATION

NO.	INSPECTION	TROUBLE SOURCE	REMEDY
1	Check engine R.P.M.	<p>If the engine winds up freely, trouble may be:</p> <ul style="list-style-type: none"> <li>a. Clutch is slipping (start engine with bike on the center stand, shift into gear, apply rear brake and rev. up the engine. If engine R.P.M. goes up, clutch is slipping).</li> <li>b. Heat range of spark plug is incorrect.</li> </ul>	<ul style="list-style-type: none"> <li>a. Adjust clutch or replace the clutch ass'y or necessary parts.</li> <li>b. Replace with correct heat range spark plug.</li> </ul>
		<p>If the engine dies, the clutch is good, the trouble may be:</p> <ul style="list-style-type: none"> <li>a. Starter jet plunger not returning to original position.</li> <li>b. Dirty air cleaner.</li> <li>c. Flow of gasoline restricted.</li> <li>d. Clogged vent hole in fuel tank cap.</li> <li>e. Clogged muffler or exhaust pipe.</li> <li>f. Oil leak in the O-ring at oil line to valve cover connection.</li> </ul>	<ul style="list-style-type: none"> <li>a. Check starter.</li> <li>b. Clean.</li> <li>c. Clean carburetor, fuel line and fule cock.</li> <li>d. Replace tank cap.</li> <li>e. Clean.</li> <li>f. Replace (OR-2.4-11.8).</li> </ul>

When you're sure the above points are o.k, run the machine on a paved level road. If the engine still does not run well:

2	Check ignition timing with a timing light.	Timing too far advanced or retarded.	Adjust correctly.
3	Check compression with a compression gauge.	<ul style="list-style-type: none"> <li>a. Scored piston and/or faulty rings.</li> <li>b. Worn or damaged piston and cylinder.</li> <li>c. Leak in head gasket.</li> <li>d. Compression leak in crank case.</li> <li>e. Faulty oil seal in crankcase.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace piston rings.</li> <li>b. Repair or replace.</li> <li>c. Replace.</li> <li>d. Repair or replace.</li> <li>e. Replace.</li> </ul>
4	Check carburetor and adjust all parts.		

NO.	INSPECTION	TROUBLE SOURCE	REMEDY
5	Make sure the engine is not overheating.	a. Accumulated carbon in combustion chamber. b. Incorrect fuel ratio.  c. Clutch is slipping. a. Leak in oil seals on dynamo side of intake passage and crankshaft.	a. Remove carbon. b. Check oil pump at minimum pump stroke. Be sure throttle and pump adjusting pulley are correctly synchronized. c. Adjust play or replace. a. Replace or apply Three Bond.

### C. ENGINE OVERHEATS

Preliminary checks:

- a) Proper brake adjustment
- b) Sufficient fuel flow
- c) Engine cleanliness
- d) Too much transmission oil

NO.	INSPECTION	TROUBLE SOURCE	REMEDY
1	Check for high compression ratio.	a. Accumulated carbon in combustion chamber. b. Faulty cylinder head gasket.	a. Remove carbon. b. Replace.
2	Check for restriction of exhaust.	Carbon in exhaust part and muffler.	Remove carbon.
3	Piston rings.	Stuck rings.	Clean ring grooves.
4	Fuel - Air mixture	a. Faulty gaskets. b. Leaky oil seal or loose inlet pipe.	a. Replace. b. Replace oil seal and retighten inlet pipe.
5	Clutch operation	a. Friction plate worn thin. b. Improper clutch lever adjustment, etc. see (D). below.	a. Replace friction plates. b. Adjust lever play to 1/16~3/32" (2~3mm.)
6	Check ignition system	Check ignition system in order given below. a. Condenser (use tester). b. Spark plug.  c. Ignition (use coil tester). d. Ignition timing. e. Spark plug lead.  f. Point gap, contact points and breaker arm spring.	a. Replace if faulty. b. Clean it and set electrode gap. (0.5~0.6mm.), replace faulty plug. c. Replace if bad. d. Adjust. e. Replace if insulation is bad. f. Replace breaker arm, clean contact points, and adjust point gap.

## D. CLUTCH MALFUNCTION

NO.	INSPECTION	TROUBLE SOURCE	REMEDY
1	Check for clutch slippage. (See B-1.)	a. Weakened clutch spring. b. Worn or deformed pressure plate. c. Deformed clutch housing. d. Bad splines on clutch plate.	a. Replace. b. Replace. c. Replace. d. Replace.
2	Check that the clutch disengages completely.	a. Wrong oil viscosity. b. Clutch boss too tight. c. Worn or warped clutch plate. d. Unbalanced tension of clutch springs. e. Weakened springs.	a. Use SAE 10W/30 motor oil. b. Adjust. c. Replace. d. Replace. e. Replace.

## E. SHIFTING MALFUNCTION

Check the viscosity and amount of gear oil and make sure the clutch completely engages and disengages. If you find nothing wrong, inspect shifting process itself:

NO.	TROUBLE	SOURCE	REMEDY
1	Pedal will not shift gears.	a. Faulty or damaged shifter head.	a. Replace shifter head together with shifter rod.
2	Pedal shifts to wrong gear.	a. Lever stop screw.	a. Adjust screw to get correct lever travel.
3	Pedal misses shifting gears.	a. Loose stopper bushing. b. Faulty shifter head.	a. Replace. b. Replace shifter rod assembly.
4	Pedal does not return.	a. Weak return-spring. b. Gear change shaft has been bent or is binding on crank-case.	a. Replace. b. Repair or replace.

## F. NOISY ENGINE

Moving parts on an engine produce some sound and vibration inherent in their high-speed motion, but there are abnormal noises caused by trouble in these parts.

Since a noise may be the only sign of trouble, even thoroughly trained service man sometimes make the wrong diagnoses.

Some of these noises have been classified:

1. Intermittent noise.
2. Changing noise.
3. Continuous noise.

### 1. Intermittent Noise

NO.	NOISE	TROUBLE SOURCE	REMEDY
1	Noise is heard during sudden acceleration.	<ul style="list-style-type: none"> <li>a. Too much clearance between piston rings and grooves.</li> <li>b. Piston rings drag on cylinder wall caused by carbon accumulated in grooves.</li> <li>c. Too much clearance between piston pin and bushing at conrod small end.</li> <li>d. Too much clearance at conrod big end.</li> </ul> <p>The above noises have a definite metallic character.</p> <ul style="list-style-type: none"> <li>e. Knocking due to advanced ignition timing.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace rings and/or piston.</li> <li>b. Remove carbon.</li> <li>c. Replace pin and/or bushing.</li> <li>d. Repair crank.</li> <li>e. Adjust.</li> </ul>
2	Noise is heard at slow R.P.M.	<ul style="list-style-type: none"> <li>a. Too much clearance between piston and cylinder. (Noise is not heard when opening throttle.)</li> <li>b. Piston ring land is not smooth where it contacts the upper and lower edges of the ring.</li> <li>c. Worn-out shock absorber rubber in primary driven gear.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace piston.</li> <li>b. Smooth ring lands with sandpaper so rings expand freely.</li> <li>c. Replace primary driven gear.</li> </ul>

### 2. Changing Noise

1	Noise is heard when starting.	<ul style="list-style-type: none"> <li>a. Piston clearance excessive (noise is heard before engine is warmed up.)</li> <li>b. Piston ring land is not smooth where it contacts the upper and lower edges of the ring. (Piston will be vibrated when returning accelerator grip.)</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace piston.</li> <li>b. Smooth ring land with sandpaper so rings may expand freely.</li> </ul>
2	Noise continues after engine is warmed up.	<ul style="list-style-type: none"> <li>a. Piston clearance is more than 1-a.</li> <li>b. Bent conrod.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace piston and/or cylinder.</li> <li>b. Overhaul crank.</li> </ul>

### 3. Continuous Noise

NO.	PART	TROUBLE SOURCE	REMEDY
1 C	Crank	Too little clearance between crankcase and crank; crank is riding against crankcase.	Add washer.
2	Bearings	Scratch on ball or race made by dust or carbon.	Replace bearings.

## G. POOR HANDLING

Make sure the tire pressure are correct, check the following suggestions:

NO.	TROUBLE	SOURCE	REMEDY
1	Handling feels heavier than normal.	a. Steering nut too tight. b. Fractured steering ball bearings.	a. Adjust. b. Replace all ball bearings.
2	Handlebars pull to one side.	a. Unbalanced fork. b. Bent fork. c. Bent rear suspension arm. d. Badly fitted front or rear wheel. e. Distorted frame.	a. Replace. b. Replace. c. Repair or Replace. d. Reassemble. e. Replace.
3	Play in front or rear wheels.	a. Play in wheel bearing. b. Deformed rim. c. Loose spoke. d. Play in rear arm bushing. e. Caused by loose drive chain.	a. Replace. b. Replace. c. Tighten. d. Replace. e. Tighten wheel, adjust chain.

## H. UNSATISFACTORY SUSPENSION

After making sure that tire pressures are correct, check the suspension units:

NO.	TROUBLE	SOURCE	REMEDY
1	Suspension is too soft.	a. Weak springs. b. Oil leak.	a. Replace. b. Replace unit or add oil.
2	Suspension is too stiff.	a. Bent piston rod or inner tube.	a. Replace the bad suspension unit.
3	Suspension makes noise.	a. Friction between spring and outer sleeve.	a. Put grease on spring and replace fiber packing.

## I. BRAKE MALFUNCTION

Make sure play in the brake cables is correct, and check the brakes:

NO.	TROUBLE	SOURCE	REMEDY
1	Brake does not work effectively.	a. Front brake cable is binding. b. Play in brake pedal shaft. c. Brake lining worn, or in poor contact with drum. d. Leak in brake drum. e. Oil or grease on lining.	a. Replace. b. Repair. c. Adjust or Relace. d. Repair or Replace. e. Clean.
2	Brake makes noise.	a. Worn lining. b. Dirty lining. c. Rough surface on drum. d. No grease on cam.	a. Replace. b. Clean. c. Replace. d. Put grease on cam.

NO.	TROUBLE	SOURCE	REMEDY
3	No space for adjustment	a. Worn lining. b. Worn brake cam.	a. Replace. b. Change position of cam or replace

### J. POOR CHARGING

The electric current generated by the flywheel magneto is changed into direct current by the selenium rectifier and stored by the battery, which is the electric source for the horn and neutral light. If this light is dim and the horn hardly sounds, the battery should be charged as soon as possible.

NO.	TROUBLE	SOURCE	REMEDY
1	There is no charging current.	a. Short circuit in lead wire or faulty connections. b. Faulty wiring. c. Faulty battery. d. Faulty main switch. e. Faulty flywheel magneto.	a. Repair. b. Repair c. Use a tester, if faulty replace. d. Measure terminal voltage of battery. e. Check generating voltage by running engine with key left in "Night Riding" position.
2	Charging current is much less than standard.	a. Faulty wiring. b. Faulty flywheel magneto.	a. Repair. b. Check generating voltage by running engine with key left in "Night Riding" position.
3	Selenium rectifier is faulty.	a. Check voltage drop and back current. Use a selenium checker. b. Alloy has been melted. c. There is a black spot on output side of selenium rectifier.	a. Replace. b. Replace or repair short circuit in wiring on output terminal side of rectifier. c. Replace or repair wiring on output terminal side of rectifier.

### K. DIM HEADLIGHT

NO.	TROUBLE	SOURCE	REMEDY
1	Head light is dim.	a. Faulty wiring. b. Incorrect bulb. c. Faulty flywheel magneto.	a. Repair. b. Use specified bulb. c. Replace.

## YAMAHA'S NEW U5-E (MF3D-E) IS ON SALE, FEATURING THE ELECTRIC STARTER

The electric starter has been newly installed on the Yamaha 50 (U5). This new electric starter promises the rider a (push-button) quick engine start and easier operation. The following is a brief explanation of the difference between the U5-E (w/electric starter) and the U5D (MF3-D) (w/kick starter).

### A. STRUCTURE

Yamaha's U5 starter dynamo requires larger space for the engine width, and as a result, the crankcase and related parts have been changed.

#### 1. Engine

For the installation of the starter dynamo, the crank shaft (L), crank case (L), case cover (R), etc. have been remodelled.

#### 2. Frame

As a result of the change in battery voltage from 6 V to 12 V, the center area of the frame (e.g., battery cover, regulator cover, air cleaner, oil tank, etc.) has been remodelled.

#### 3. Electrical Equipment

- (1) Because of the change in battery voltage from 6 V to 12 V, electrical equipment has been replaced with the new type.
- (2) All light bulbs are the same as those for the U7-E.

## B. U5-E SPECIFICATIONS

		U 5 - E (MF 3 - E)	
Name		Yamaha	
Model		U5-E (MF3-E)	
Dimensions:	Overall length Overall width Overall height Wheelbase Min. ground clearance	1,805 mm 630 mm 945 mm 1,140 mm 130 mm	71.7 in. 24.8 in. 37.2 in. 44.9 in. 5.1 in.
Weight:		71 kg	158 lbs.
Performance:	Max. speed Fuel consumption (on level) Climbing ability	70 km/h 90 km/l 20°	(40-45mph) 210 mpg
Engine:	Piston displacement Bore x Stroke Compression ratio Max. output Max. torque	50 c.c. 40 x 40 mm 6.8 : 1 4.5 ps/6,500 r.p.m. 0.52 kgm/5,000 r.p.m.	
Clutch:	Type Primary reduction Primary reduction ratio	Automatic centrifugal Gear 3.894 (74/19)	
Transmission:	Type Gear ratio 1st Gear ratio 2nd Gear ratio 3rd	3-speed constant mesh 3.083 1.722 1.174	
Final drive:	Type Secondary reduction ratio	Chain (Transmission to rear axle) 2.533 (38/15)	
	Starting system: Charging generator: Battery:	Kick & electric starter Hitachi GS 106-04 Furukawa AYT2-12, 12V 5.5AH	

### C. SERVICE DATA

Engine maintenance standards (Same as U5D w/kick starter)

Model:	U5-E (MF3D-E)
Piston clearance:	35 ~ 40 $\mu$
Spark plug:	B-7HZ
Ignition timing:	1.8±0.15mm. B.T.D.C.
Secondary reduction ratio:	38/15
Idling (r.p.m.):	1,500±100 r.p.m.
Transmission Oil:	
Oil amount	550 cc
Grade	SAE 10w/30
Oil pump:	
Type	
Max. stroke	1.75 - 1.95 mm
Min. stroke	0.20 - 0.25 mm
Carburetor:	
Type	VM14SC x 1
Marking	6EA
Half opening mark	Indicated
M.J.	100
A.J.	2.0
J.N.	3J2-3
N.J.	E-0
C.A.	3.0
P.O.	0.9
P.J.	17.5
A.S.	1-1/4
G.S.	15

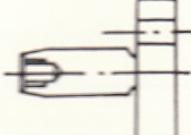
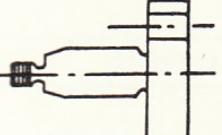
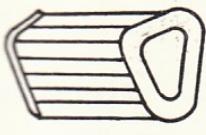
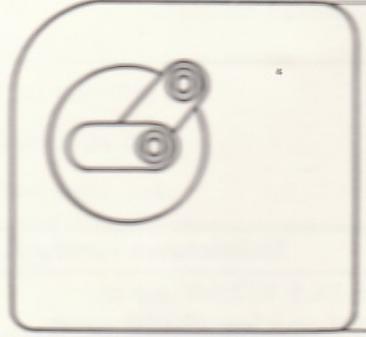
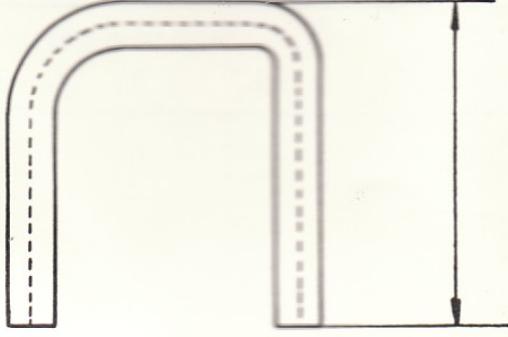
Electrical equipment maintenance standards

	Item	Maintenance standards
Regulator	No-load voltage adjustment value	15.8-16.5 V/2,500 r.p.m. 16.9V and less /5,000 r.p.m.
Cutout relay	Cut-in voltage	13 ± 0.5 V
Contact braker	Point gap	0.30 - 0.35 mm

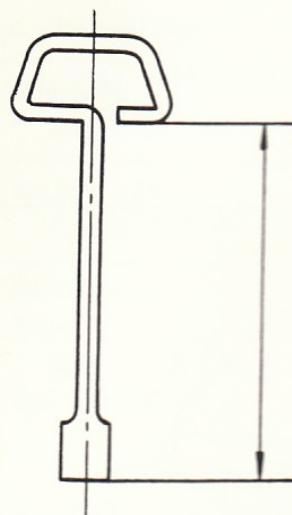
## D. DESCRIPTION OF INDIVIDUAL PARTS

Parts remodelled on the U5D (MF3-D) w/kick starter are as follows:

### 1. Engine

Crank shaft (L)	Exclusive use for U7-E because of dynamo mounted.
	
U5-E w/starter dynamo	U5 w/flywheel magneto
Crank case (L)	Usable for U7-E Change in shape because of dynamo mounted.
Crank case cover (L)	Usable for U7-E Change in shape because of dynamo mounted.
Air cleaner	Usable for U7 Change in shape because of the new type of battery mounted
	
U5-E (MF3-E) w/electric starter	MF3D (U5D) w/kick starter
Carburetor cap (same as U7)	
	U5E 68 mm
	U5D 64 mm
Carburetor cap guide (Same as U7)	
	U5E 60 mm
	U5D 56 mm

Level gauge

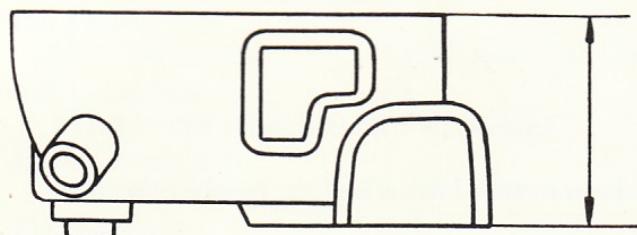


U5E 93 mm

U5D 90 mm

Crankcase cover (R) (same as U7)

For better maintenance

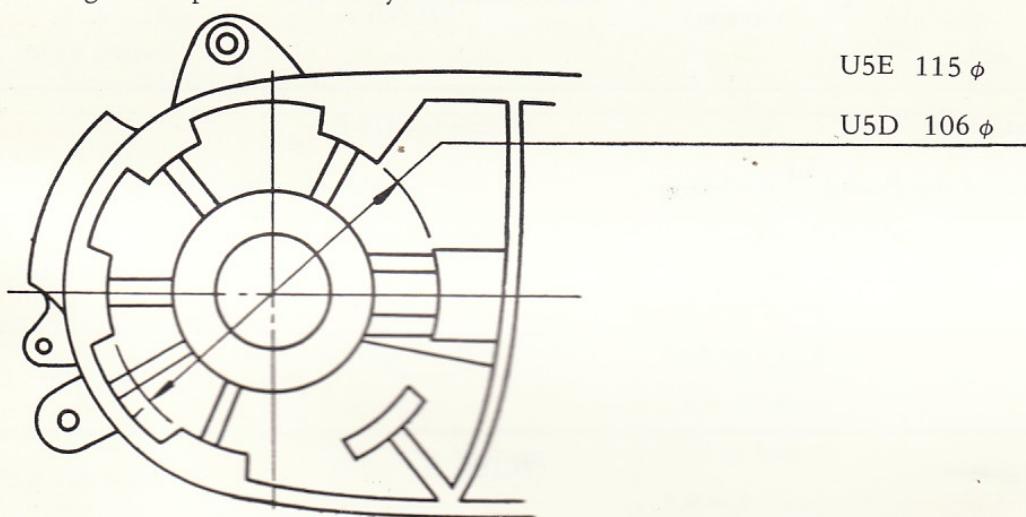


U5E 102 mm

U5D 98 mm

Crankcase (L)

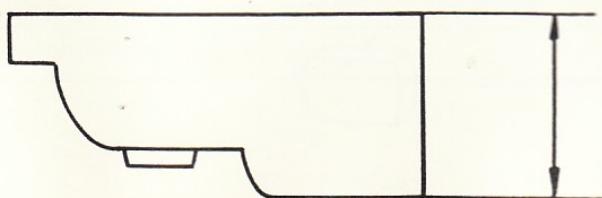
Change in shape because of dynamo mounted.



U5E 115  $\phi$

U5D 106  $\phi$

Crankcase cover (L)



U5E 102 mm

U5D 85 mm

## 2. Frame

### Frame

Exclusively for U5-E (MF3-E)

Due to the change in the battery type, the battery housing and related parts have been changed.

### Oil tank

Usable for U7



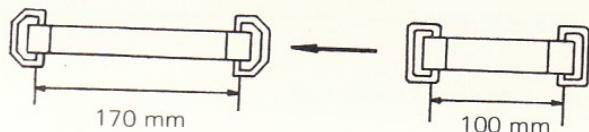
Because the new type of battery has been installed, the position of the oil outlet has been changed from bottom to side.

(U5E-1006)

### Battery band

Exclusively for U5-E (MF3-E)

Because the new type of battery has been installed, length of the band has been changed.



### Cover (battery)

Usable for U5-E

Because of the change of the battery.



### Cover (regulator)

Usable for U7-E

Because the regulator has been mounted on the side of the body.



### 3. Electric

#### Starter Dynamo

Starter Dynamo U5E ← Flywheel magneto U5D

#### Regulator

Regulator U5E ← Rectifier U5D (Same as U7)

#### Battery 12V

5.5AH U5E ← 6V 2AH U5D

#### Battery case

#### Fuse

20A × 3 U5E ← 10A × 2 U5D (Same as U7, YL1)

#### Ignition coil

Same as U7



#### Head Lamp Bulb

12V 25W/25W U5E ← 6V 15W/15W U5D (Same as U7)

#### Tail Lamp Bulb

12V 20W/8W U5E ← 6V 6W/2W U5

#### Flasher Lamp Bulb

12V 8W U5E ← 6V 8W U5D (Same as U7)

#### Flasher relay

12V 16W U5E ← 6V 16W U5D (Same as U7)

#### Speedometer Bulb

12V 2W U5E ← 6V 1.5W U5D (Same as U7)

12V 3W ← 6V 3W

#### Main switch

Lever holder Ass'y (R)

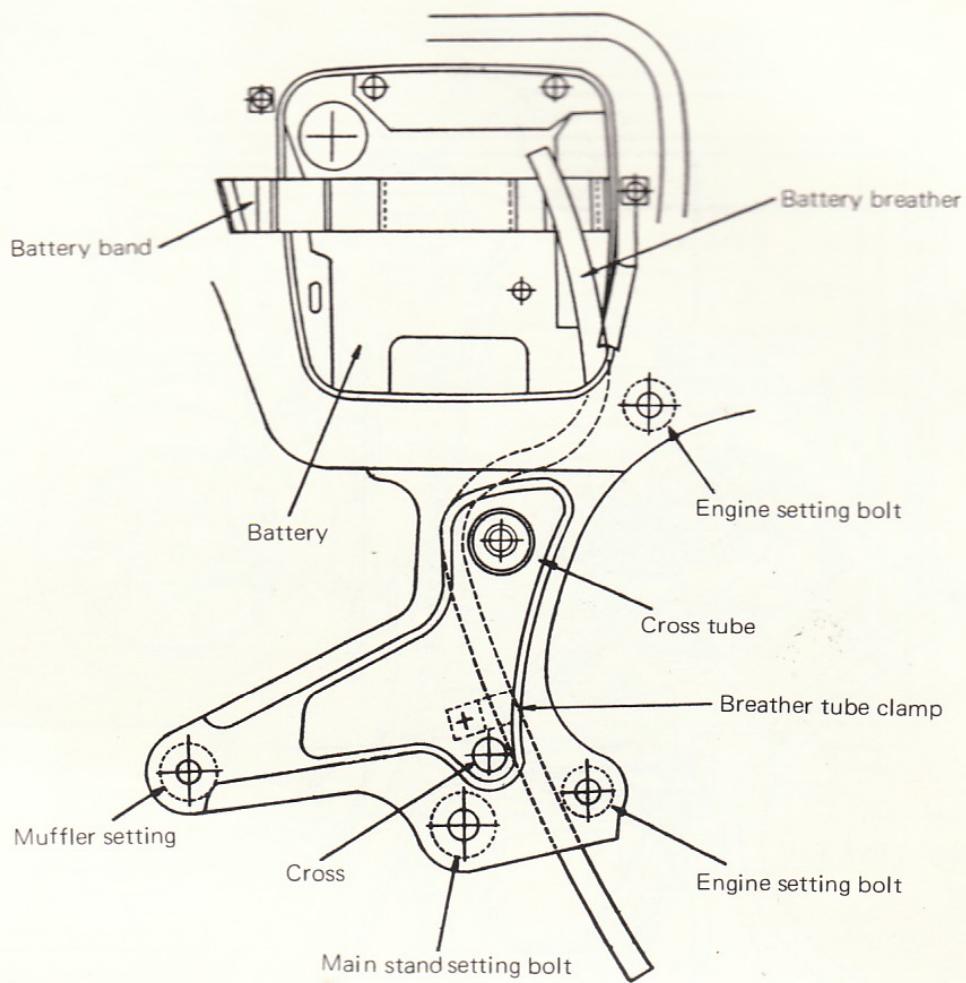
### 4. Electric Service Standard

Voltage regulator	No load voltage Point gap	15.8 ~ 16.5V/2,500 r.p.m. 16.9V less /5,000 r.p.m. 0.4 ~ 0.5mm
Cut out relay	Cut in Voltage Point gap	12.5 ~ 13.5V 0.6 ~ 0.5mm
Magnetic switch	Switch in Voltage Point gap	10V or less 1.4 ~ 1.5mm
Starter dynamo	Cut in speed Contact breaker point gap	1,950 r.p.m. less 0.3 ~ 0.35mm
Ignition Timing		B.T.D.C. 1.8±0.15mm

	Name of Part	Maker	U5-E Type & Standards	Remarks
Engine	Starter dynamo	Hitachi	GS106-04 14V65W 2 brushes	
	Neutral switch		YN7	Usable for U5D
	Spark plug	NGK	B-7HZ	
	Regulator	Hitachi	T106-52	Usable for U7D
	Ignition coil	Mitsubishi	HM-1/12G	Usabel for U7D
	Horn	Nikko	MB-12	Usable for U7D
Frame	Battery	Furukawa	AYT2-12 (12V 5.5AH) 20A 3 Fuses	0.5 ~ 0.6A
	Fuse holder		YUSM	Usabel for U7D
	Main switch		B-7 12V16W	Usable for U7D
	Flasher relay	Showa		
Front	Head lamp	Stanley	12V 25WD	Lamp only
	Speedometer	Nihon Seiki	Pilot lamp 12V 3W	Lamp only
	Front flasher lamp LR		12V 8W	Lamp only
	Handle switch		YUSG	Neutral at center
Tail	Tail lamp		12V 8W	
	Stop lamp		12V 20W	
	Rear flasher lamp		12V 8W	

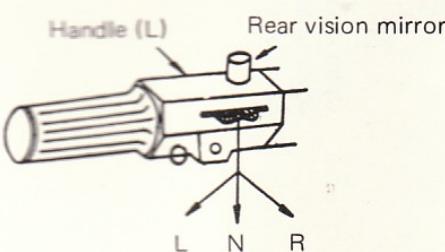
## E. SPECIAL INSTRUCTIONS ON SERVICING

1. Installation of U5-E (MF3-E) battery breather.
  - (1) For removal of the battery, remove the breather from the battery.
  - (2) For reinstallation of the battery, position the exhaust tube outside the battery band.



2. Instructions for prevention of misuse of the handle of switch.

The lever holder ass'y L. (light change-over switch) for models w/electric starter is not usable for those w/kick starter. Failure to use correctly may result in a break down of light bulbs and wiring.



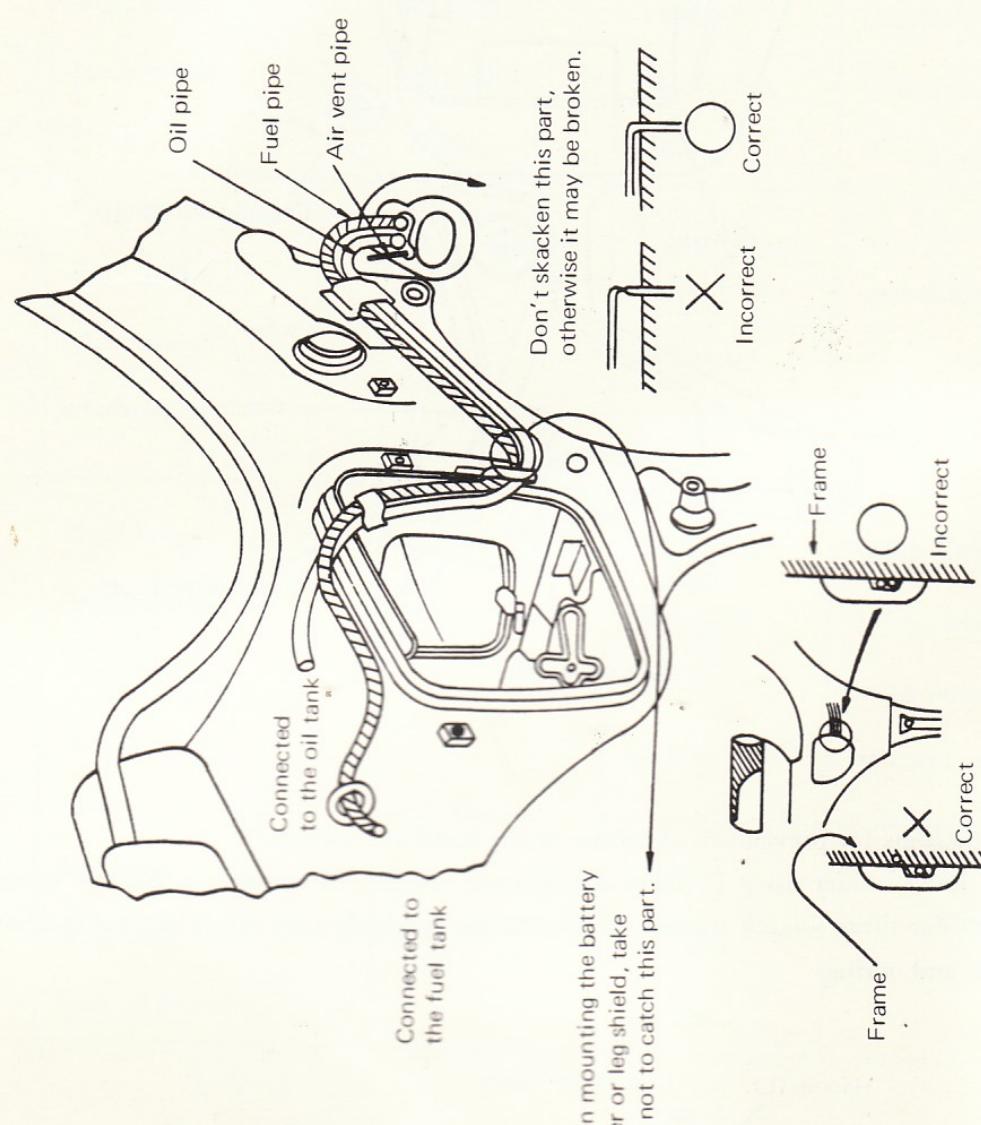
U5E/U7D (w/electric starter)



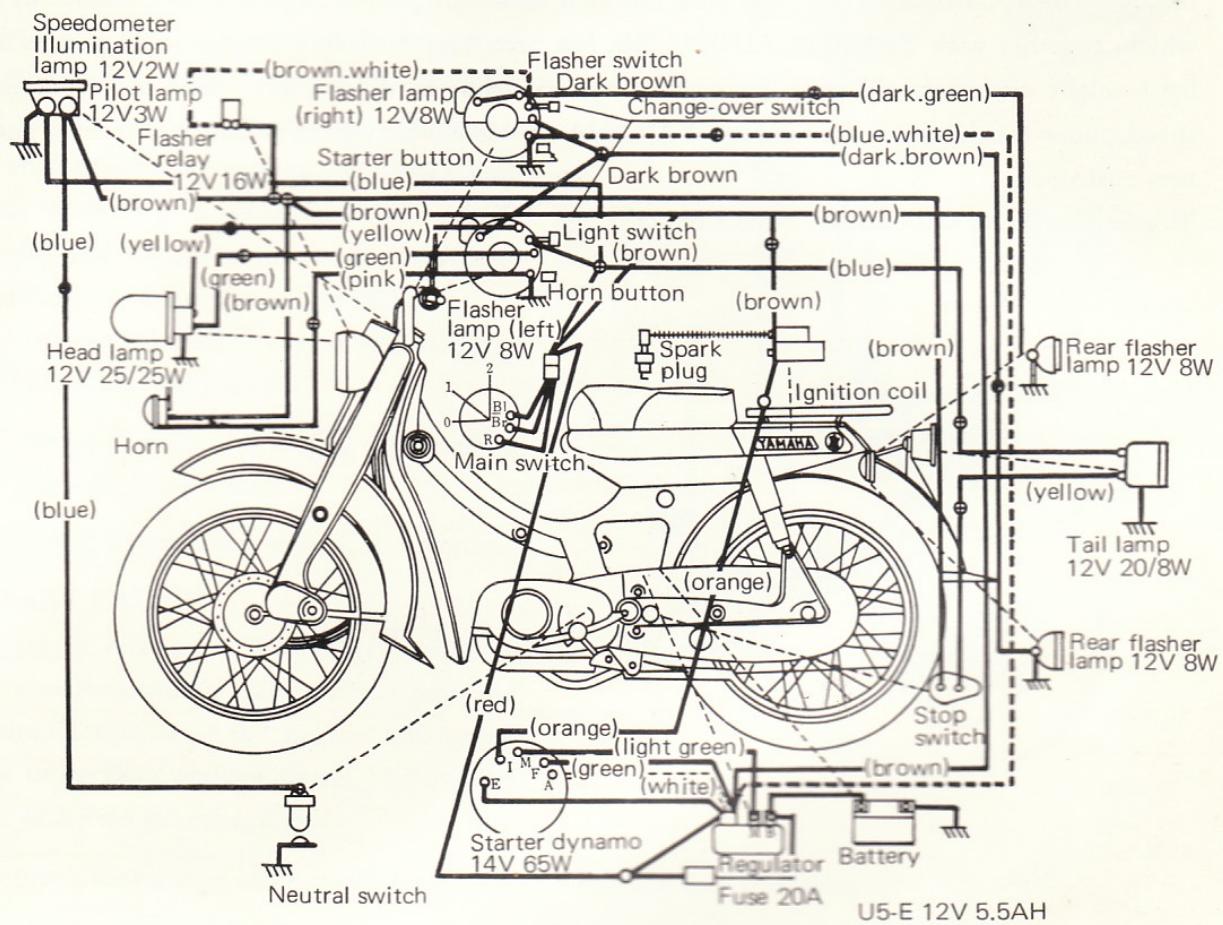
U5D/U7 (w/kick starter)

### 3. Installation of pipe

- \* Exercise care not to break or bend the gasoline pipe and oil pipe.
- \* Insert the end of the carburetor air vent pipe into the frame with special care not to bend it.



## F. WIRING DIAGRAM



Switch Connection

0	Stop	Key can be pulled out
I	Day-time travelling	Reddish brown
II	Night-time travelling	Red + Brown +, Blue

## YAMAHA LAUNCHING NEW 75cc MODEL U7

Following the successful sale of YAMAHA 50 (MF3-D), YAMAHA is now going to offer a new 75 c.c. model. The YAMAHA 75 (U7) will push one step ahead the proven excellent performance of MF3-D which, together with YAMAHA AUTOLUBE, has been very favorably commented upon as an ideal light-weight motorbike all over the world since its debut in the market. With more power, more speed, more toughness, and economy, YAMAHA 75 will enable you to widen your market and reach new customers.

This Service News will outline "what's in U7".

## YAMAHA 75 (U7 & U7D) FEATURES-SALES POINTS

### ○ YAMAHA AUTOLUBE

This is a new lubricating system for 2-cycle engine that has done away with the use of premixed fuel. It feeds engine oil separately and in just the correct amount to lubricate the engine under the varying operating conditions, according to its R.P.M. (i.e. vehicle speeds) and to the throttle valve opening. The many resultant advantages include

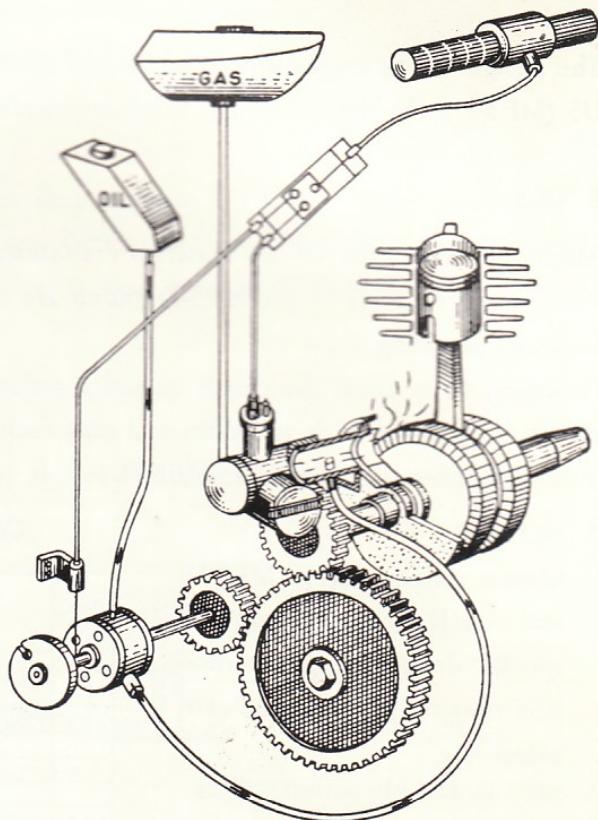
- (1) Controlled feed of engine oil, satisfying the lubrication need
- (2) Simplification of refueling due to elimination of premixing
- (3) More dependable engine lubrication.

### ○ ROTARY VALVE

The rotary valve-equipped engine developing a maximum output of 6.2PS/7,000 r.p.m. and maximum torque of 0.7 kg-m/4,500 r.p.m. gives more than enough power to drive the bike with two persons riding.

- One-touch kickstarter and no-clutch transmission provide easy operation.
- Oil damper-equipped front and rear suspension for assured riding comfort.
- Step-through style allows female users to ride in skirts, and the one-unit leg-shield protects clothes against soiling.
- Bright lighting and water-proof and dust-proof brakes insure perfect safety.
- Sharp start dash — 0 to 200 meters in 14 seconds.

Runs 85 km on one litre of gasoline.



## GENERAL INFORMATION

### A. ENGINE

The design of the engine and other related assemblies of U7(D) are developed on the basis of those of U5 (MF3-D). In the following, brief explanations on various sections are provided.

#### § Clutch

Mechanism-wise, the U7(D) clutch is the same automatic centrifugal type as that used on the MF3-D. Also, many of parts of the MF3-D clutch are used in U7's clutch, providing for interchangeability to facilitate servicing.

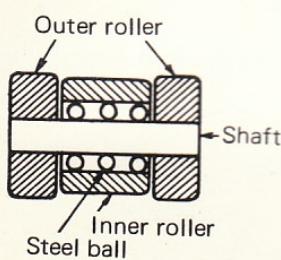
However, to increase the clutch capacity according to the increase in the engine output, the U7(D) clutch is provided with an additional unit each of clutch plate and friction plate over and above the number of these plates used in MF3-D.

#### \* NOTE:

• Clutch rollers used in MF3-D and U7(D) clutches are of special design and construction that only YAMAHA can offer.

MF3-D Double-action rollers, 12 ea.

U7(D): Double-action rollers, 8 ea., plus single action rollers, 4 ea.



Section-Double-action Roller

Outer roller and inner roller can revolve freely, independent of each other.

#### ○ Checkup and Servicing

- (1) The proper clearance between friction plates and clutch housing grooves is approximately 0.1 mm. If this clearance increases to 0.4 ~ 0.5 mm, noise will result. If the friction plate wear exceeds 0.4 mm, adjust clearance by appropriately repairing the matching clutch plates. Clutch plates are available in three thicknesses of 1.2 mm, 1.4 mm, and 1.6 mm.

#### Comparison of the MF3-D and U7(D) Clutches

No.	Part name	Q'ty Used		Interchangeability
		MF3-D	U7	
1	Clutch housing ass'y	1	1	No
2	Clutch boss	1	1	No
3	Clutch plate	3	4	Yes
4	Friction plate	4	5	Yes
5	Roller thrust plate	1	1	Yes
6	Pressure plate	1	1	Yes
7	Roller	12	12	*Ref. notes
8	Clutch end plate	1	1	Yes
9	Stopper ring	1	1	Yes
10	Thrust plate	1	1	Yes
11	Spacer	1	1	Yes
12	Driven gear washer	1	1	Yes
13	Off spring	1	1	No
14	Clutch spring	8	8	Yes

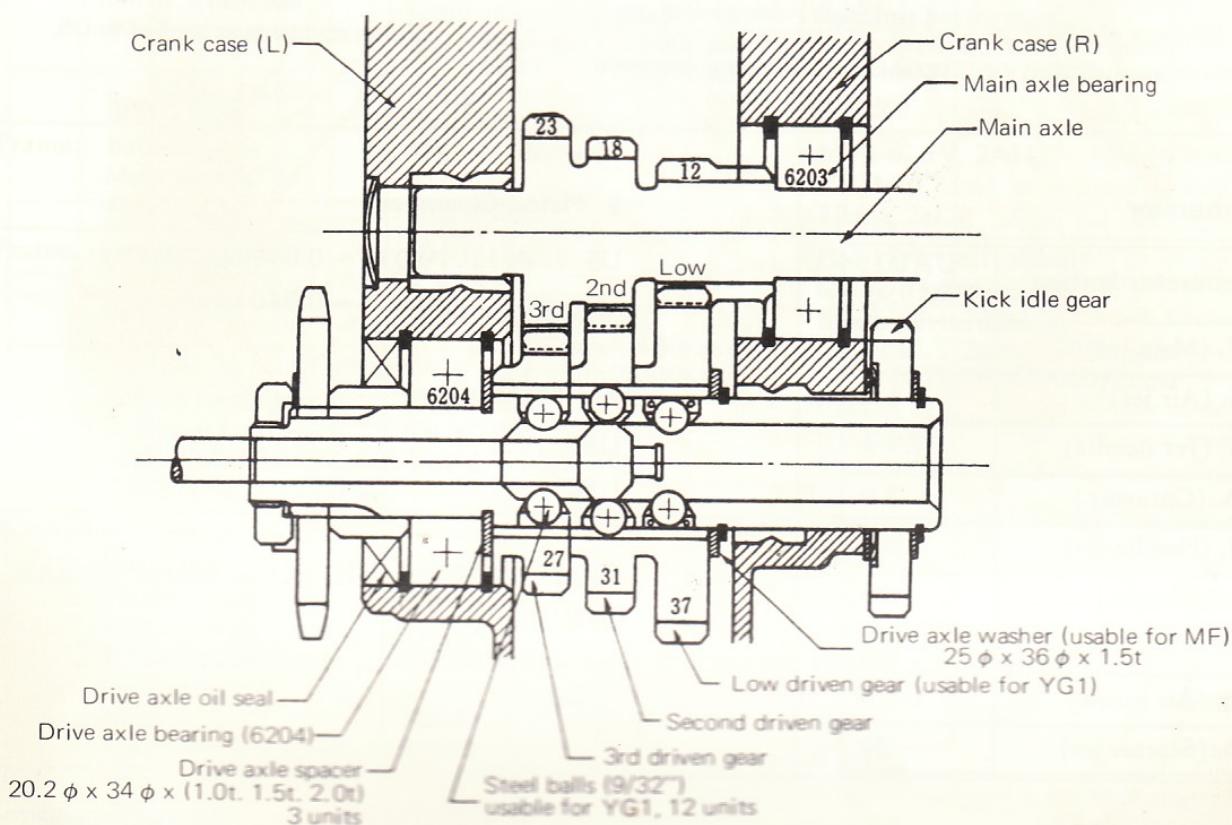
- (2) Insert the spacer in the bore of the clutch boss, and check for side play and fit. If you find groove or scratch smooth the surface using an oil stone to prevent fault clutch action.
- (3) Loss of proper tension of the clutch spring will cause clutch slippage.  
The free length of a correct clutch spring is between 12.7 and 13.1 mm.

## § Kickstarter

Model U7(D) uses the same "one-touch" kickstarter as that used on U5 (MF). This "one-touch" system enables the rider to kickstart the engine in any gear without shifting the transmission back to neutral. The kick mechanism is of a ratchet type identical to that used on YDS-3 and YL1, and is used for increased durability.

## § Transmission Shifter Mechanism

Both in mechanism and parts used, U7(D)'s transmission shifter is identical to that of MF3-D (U5) – a factor to facilitate servicing.



### NOTE:

On MF3 (U5), the primary reduction ratio being 74/19, and secondary 38/15, the total reduction ratios are:

Low .... 30.41

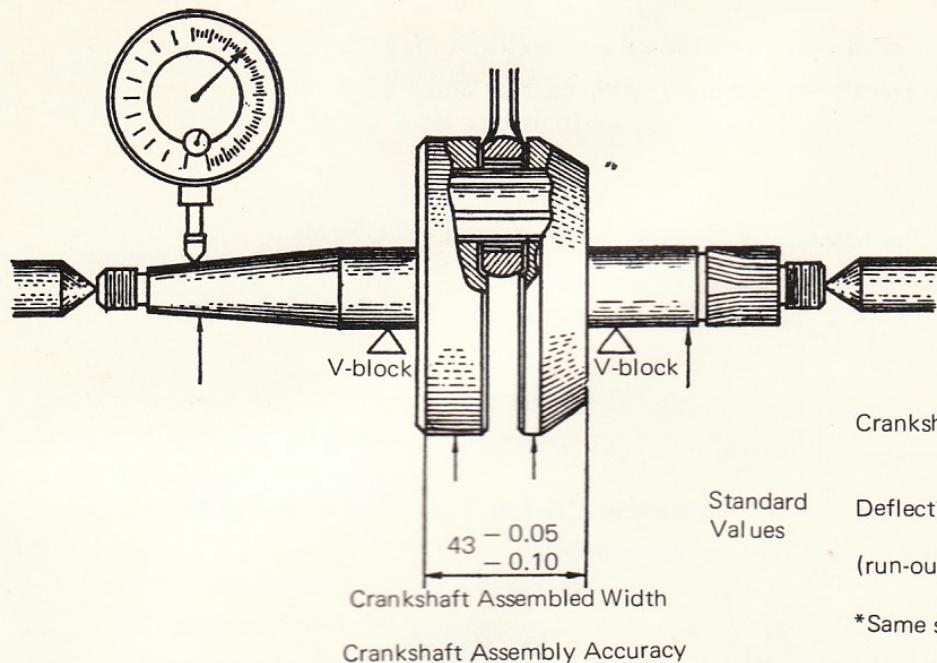
2nd .... 16.99

3rd .... 11.58

### U7 Total Reduction Ratios

Gear Position	Primary reduction	Transmission gear ratio	Secondary reduction	Total reduction
LOW	72/21	37/12	37/15	26.072
SECOND	72/21	31/18	37/15	14.563
THIRD	72/21	27/23	37/15	10.292

## § Crankshaft



Standard Values

Crankshaft assembled width  
 $43 - 0.05 - 0.10$  mm  
 Deflection.....At point (1),  
 less than 0.05 mm  
 (run-out) \* At point (2),  
 less than 0.10 mm  
 \* Same standards as applied to U5.

## § Carburetor

Carburetor Setting	U7(D) VM15SC
M. J. (Main jet)	150
A. J. (Air jet)	1.8
J. N. (Jet needle)	3G9-3
C. A. (Cutaway)	3.0
N. J. (Needle jet)	E-2
P. J. (Pilot jet)	20
P. O. (Pilot outlet)	0.9
A. S. (Air screw)	1-3/4
G. S. (Starter jet)	30

## § Piston Clearance

U5 ..... 0.035 ~ 0.040 mm (MF3)  
 U7 ..... 0.035 ~ 0.040 mm

## § Gear Oil

U5D ..... 450 c.c. (MF3D)  
 U5E ..... 550 c.c. (MF3E)  
 U7 ..... 550 c.c.  
 YAMAHA GEAR OIL (A) or Motor Oil SAE  
 10W/30.

## B. FRAME

The U7(D) has more "deluxe" appearance in its frame design than that of the MF3 (U5): the press-shaped handle-bar, one-unit leg-unit and the front fork integrated headlamp.

In addition, MF3's fuel tank has been enlarged on U7, and the oil checkup hole reshaped. The front and rear cushions of U7 are slightly "harder" compared with those of MF3 (U5) (cf. U7's dampers are mountable on U5).

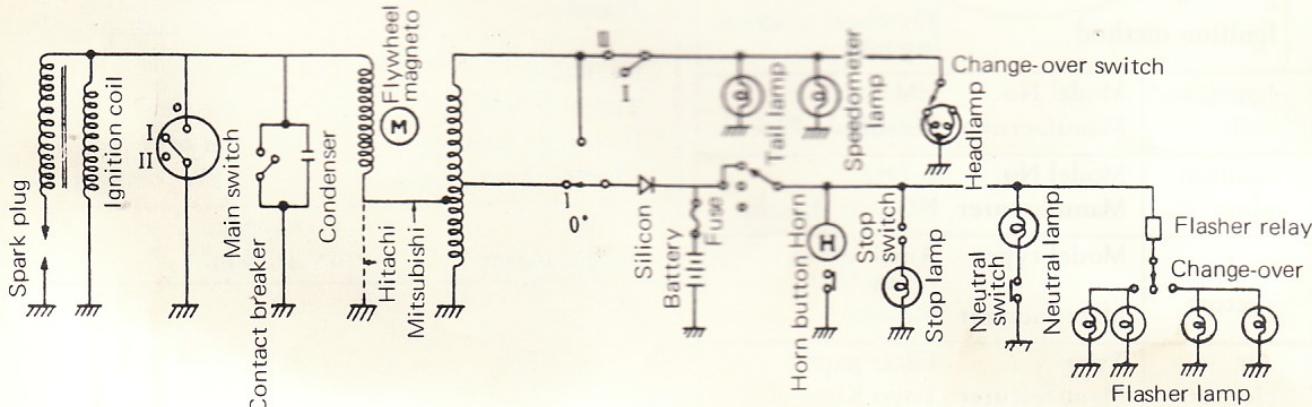
### C. ELECTRICAL

As in the case of MF3-D (U5D), the electrical system and equipment used on U7(D) are of 6V-type. However, they are a step larger in size or class than U5E's electrical equipment, owing to the employment of a larger capacity flywheel magneto. Also, the selenium rectifier has been replaced with a silicon rectifier to improve charging efficiency.

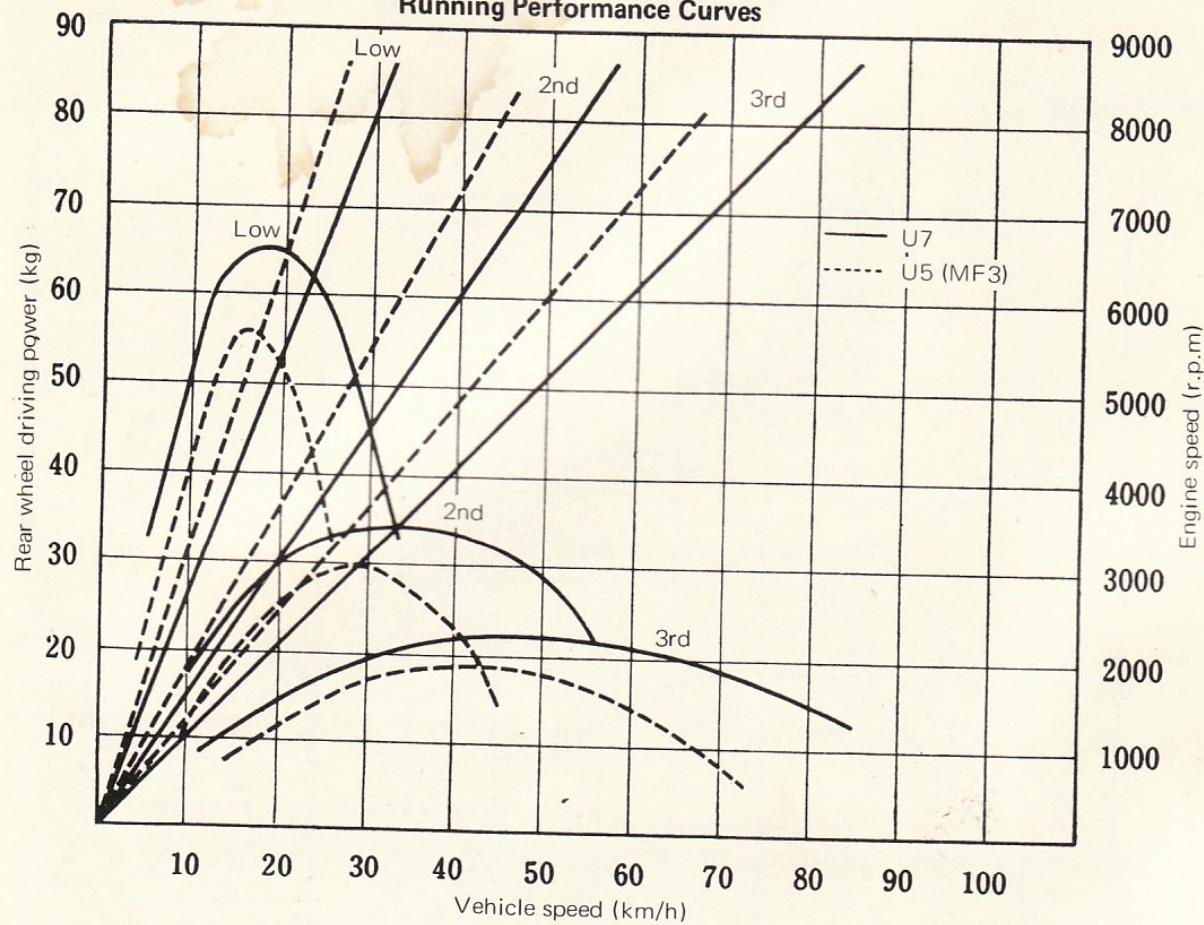
List of Electrical Component Parts

Name of Electrical Equipment	Model U7	Model MF3-D (U5D)
Engine: Flywheel magneto  ( *NLT— Not Less Than)  ( **NMT— Not More Than)	FCH-IBL  Spark performance: *NLT 7mm/ 500r.p.m. NLT 8mm/5000r.p.m.  Charging performance: NLT 0.6A/2500r.p.m. **NMT 4A/8000r.p.m.  Ignition performance: NLT 6.3V/2500r.p.m. NMT 9V/8000r.p.m.  Spark plug	FA2-1DL (Mitsubishi) F11-L29 (Hitachi)  Spark performance: NLT 7mm/ 500r.p.m. NLT 8mm/5000r.p.m.  Charging performance: NLT 0.1A/2000r.p.m. NMT 3A/8000r.p.m.  Ignition performance: NLT 6.3V/2500r.p.m. NMT 9V/8000r.p.m.  B7HZ
Frame: Battery Main switch Fuse holder	MV2-6, 6V, 4AH YUM 10A x 2es.	MV1-6, 6V, 2AH YBM-10 10A x 2es.
Frame, rear: Ignition coil  Silicon rectifier Tail-stop lamp Rear flasher lamp (L/R)	HM-1/12E  Spark performance: NLT 7mm/ 500r.p.m. NLT 8mm/5000r.p.m. CD2-H 1/1 6V 3/10W YER2. 6V-8W x 2	HM-12/1 (Mitsubishi) CM61-05A (Hitachi)  Spark performance: NLT 7mm/ 500r.p.m. NLT 8mm/5000r.p.m. CD2-H 1/1 6V 2/6W YFR2. 6V-8W x 2
Handle-bar & Front Fork: Headlamp Flasher relay Speedometer Front flasher lamp (L/R) Horn Stop switch	6V-15WD B-6 70mph 6V-8W x 2  MB-6 YS-10	6V-15WD B-6 60mph 6V-8W x 2  MB-6 YS-10

Connection Diagram



Running Performance Curves



white brown

Standard motor

