SERVICING

YAMAHA

MOTOR CYCLES

50 – MF3 - D(U-5) 50 c. c.
MF3 - D(U-7) 75 c. c.
(U7D) 75 c. c.

CYCLESERV
PUBLICATIONS

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FOREWORD

The YAMAHA 50 with a completely renewed style and many new features supercedes the Yamaha MF(J) 2, and is a much 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.

Features include:

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 an overall improvement in engine performance and durability.

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-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 even the inexperienced rider to "take off" by simply turning the accelerator grip.

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.

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 easy handling.

DEPENDABLE BRAKES

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

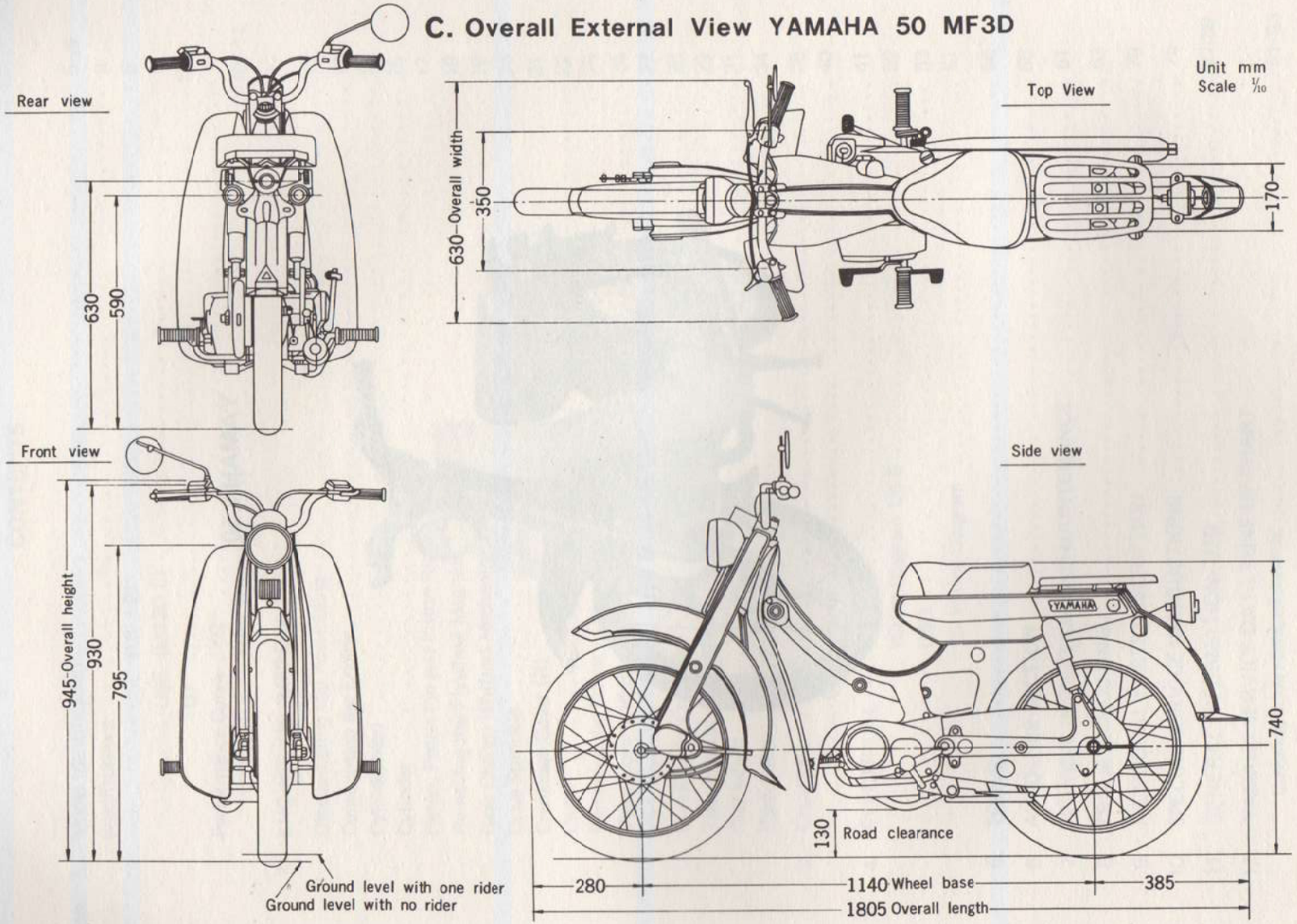
REFINED STYLING AND IMPROVED RIDING COMFORT

The slim, streamlined body design imparts a feeling of greater stability usually found in much heavier models. Coil spring, oil dampened suspension units on the rear swing arm, guarantee stability, manouverability and riding comfort that no other motorcycle in its class can match.

CONTENTS

YAMAHA 50

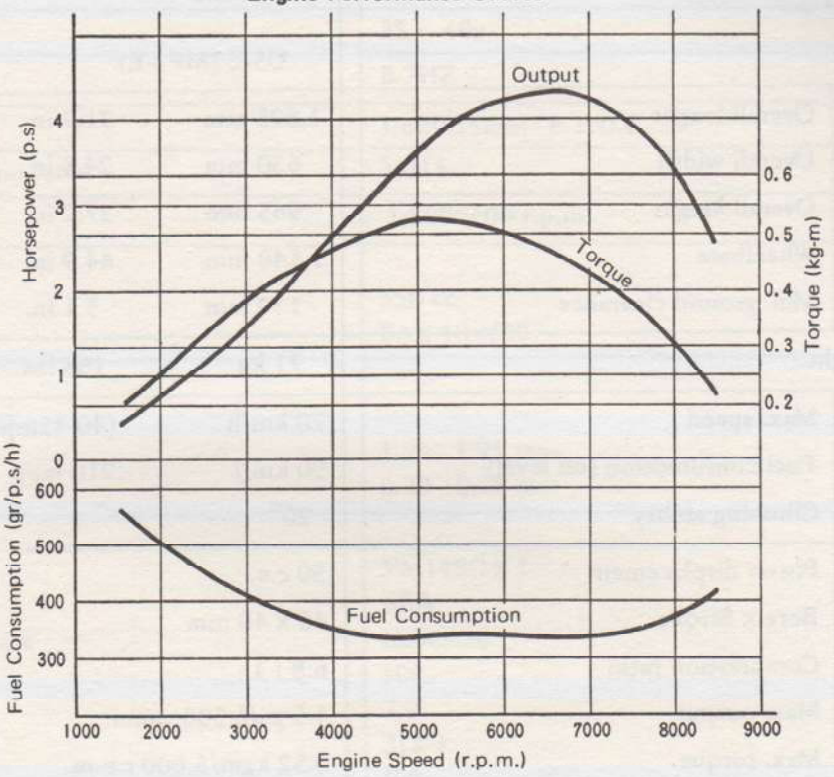
C. Overall External View YAMAHA 50 MF3D



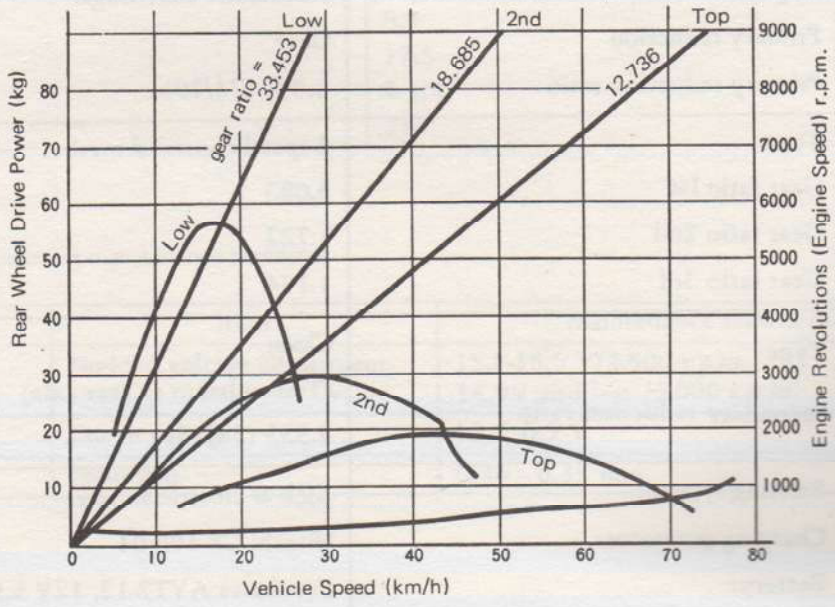
B. PERFORMANCE CURVES

Yamaha 50

Engine Performance Curves



Vehicle Performance Curves



B. U5-E SPECIFICATIONS

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

C. SERVICE DATA

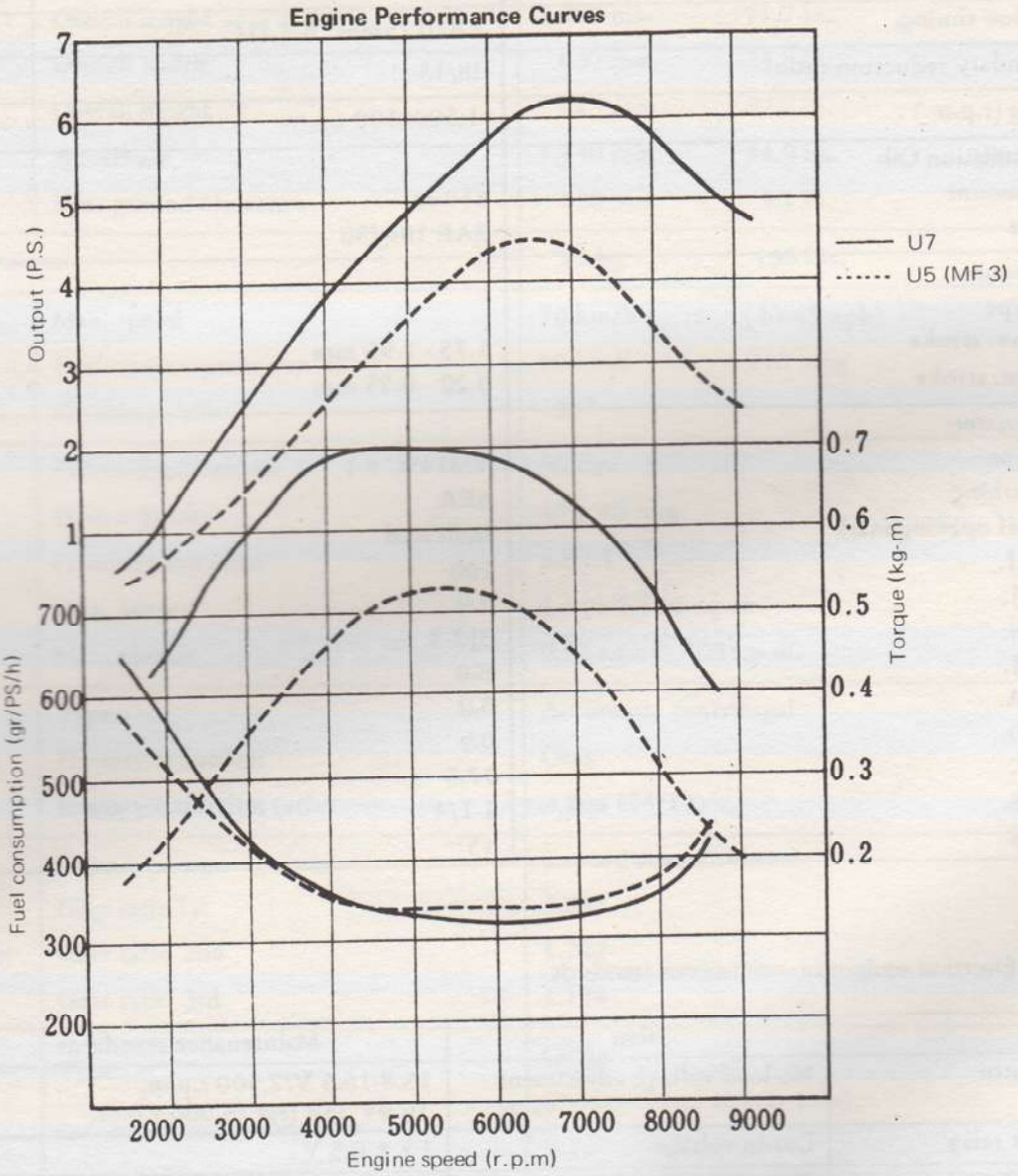
Engine maintenance standards (Same as U5D w/kick starter)

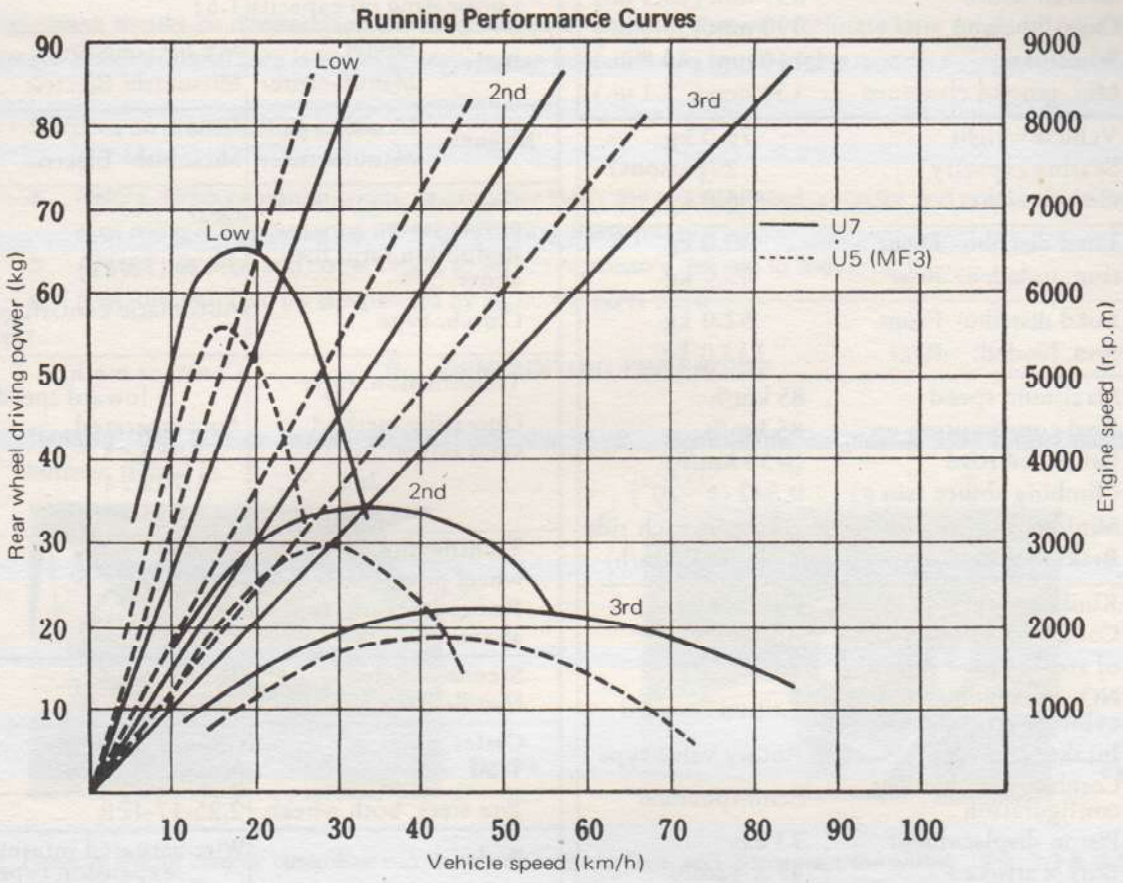
Model:	U5-E (MF3D-E)
Piston clearance:	35 ~ 40μ
Spark plug:	B-7HZ
Ignition timing:	1.8±0.15mm. B.T.D.C.
Secondary reduction ratio:	38/15
Idling (r.p.m.) :	1,500±100 r.p.m.
Transmission Oil: Oil amount Grade	 550 cc SAE 10w/30
Oil pump: Type Max. stroke Min. stroke	 1.75 - 1.95 mm 0.20 - 0.25 mm
Carburettor: Type Marking Half opening mark M.J. A.J. J.N. N.J. C.A. P.O. P.J. A.S. G.S.	 VM14SC x 1 6EA Indicated 100 2.0 3J2-3 E-0 3.0 0.9 17.5 1-1/4 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. MF3(U5) and U7 Performance Curves




Running Performance Curves
Low
2nd
3rd
Low
2nd
3rd
U7
U5 (MF3)
Rear wheel driving pqwer (kg)
Engine speed (r.p.m)
Vehicle speed (km/h)
90
80
70
60
50
40
30
20
10
9000
8000
7000
6000
5000
4000
3000
2000
1000
10
20
30
40
50
60
70
80
90
100

Name: YAMAHA	
Model Designation: U7	
Overall length	1,805 mm (71.0 in.)
Overall width	639 mm (25.1 in.)
Overall height	990 mm (38.9 in.)
Wheelbase	1,140 mm (44.8 in.)
Min. ground clearance	130 mm (5.1 in.)
Vehicle weight	75.0 kg
Seating capacity	2 (persons)
Gross weight	185.0 kg
Load distribution, unladen: Front	30.0 kg
Load distribution, unladen: Rear	45.0 kg
Load distribution, loaded: Front	52.0 kg
Load distribution, loaded: Rear	133.0 kg
Maximum speed	85 km/h
Fuel consumption on flat paved road	85 km/h (@35 km/h)
Climbing ability ($\sin\theta$)	0.342 (θ =20°)
Minimum turning radius	1,750mm each side
Braking distance	7.0m (@35km/h)
Kind of fuel	Gasoline
Cooling method, & No. of strokes per cycle.	Air-cooled, 2-stroke-cycle
NO. of cylinders and cylinder arrangement	1,tilted forward
Intake method	Rotary valve type
Combustion chamber configuration	Semi-spherical
Piston displacement	73 c.c.
Bore x stroke	47 x 42mm
Compression ratio	6.8 : 1
Compression pressure	7.0kg/cm² @1,000r.p.m.
Maximum output.	6.2PS/7,000r.p.m.
Maximum torque	0.70 kg-m/4,500 r.p.m.
Min. fuel consumption under fully loaded condition	320g/PS-h. @6,000r.p.m.
Service weight	21.3kg (incl. transmission)
Length x width x height	409x385x260mm
Starting method	Kick starter
Ignition method	Flywheel magneto ingition
Ignition coil: Model No.	HM-1/12
Ignition coil: Manufacturer	Mitsubishi Electric
Ignition plug: Model No.	B-7HZ
Ignition plug: Manufacturer	NGK or Hitachi
Carburetor: Model type:	Amal VM15SC (one unit)
Carburetor: Manufacturer	Mikuni
Air cleaner: Type	Filter paper
Air cleaner: Manufacturer	Toyo Kiro

Fuel tank capacity	4.4*l* (gal)
Lubricating method	Separate lubrication
Oil pump, type	Plunger type
Oil strainer, type	Wire-mesh
Lubricating oil capacity	1.5*l*
Battery: Model	MV2-9 (one unit)
Battery: Manufacturer	Mitsubishi Electric
Magneto: Model	FCH
Magneto: Manufacturer	Mitsubishi Electric
Engine-to-transmission power train	Gear
Reduction ratio for above	3.429 (72/21)
Clutch, type	Automatic centrifugal type
Transmission, type	Constant mesh, 3 foward speeds
Operating method	Foot-operated
Gear ratios: 1st	3.083 : 1
2nd	1.722 : 1
3rd	1.174 : 1
Transmission-to-rear wheel power train	Chain
Reduction ratio for above	2.466 (37/15)
Steering angles	46° each ride
Handle-bar span	590 mm
Caster	63°
Trail	80mm
Tyre sizes, both wheels	2.25-17-4PR
Brake Front:	Wire-actuated internal expansion type
Brake Rear:	Rod-actuated internal expansion type
Operating method Front:	Manual, right hand
Operating method Rear:	Foot, left foot
Suspension Front:	Leading link
Suspension Rear:	Swing arm
Damper Front:	Coil spring with oil damper
Damper Rear:	Coil spring with oil damper
Frame	Press-formed steel mono-cock
Headlamp	6V-15WD
Tail-stop lamp	6V-3/10W (red)
Direction indicator (flasher lamp), type:	Flasher (on-off type) 6V-8W (orange)
Horn	Flat type,
Speedometer	6V 100km/h

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).

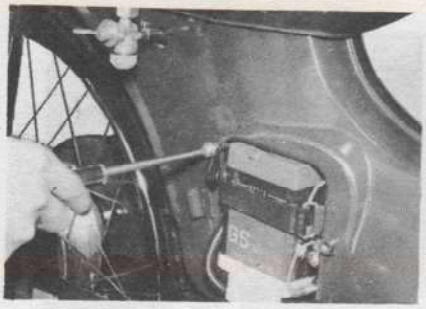


Fig. 3-1

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

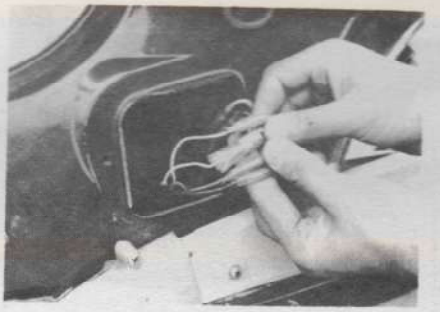


Fig. 3-4

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

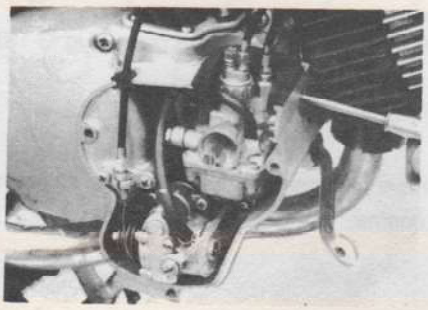


Fig. 3-5

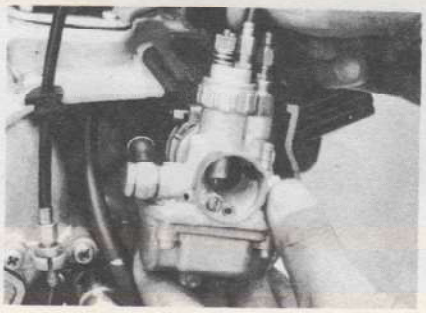


Fig. 3-6

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

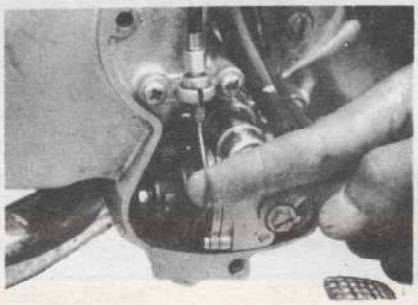


Fig. 3-7

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.

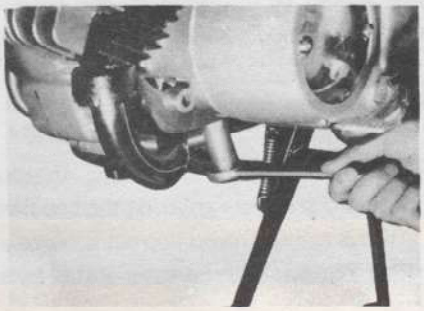


Fig. 3-8

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

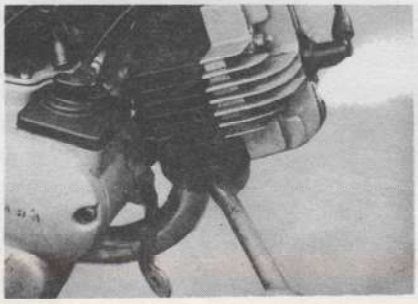


Fig. 3-9

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

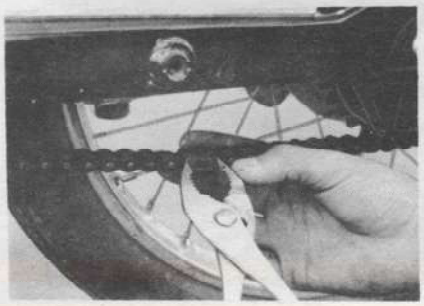


Fig. 3-10

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

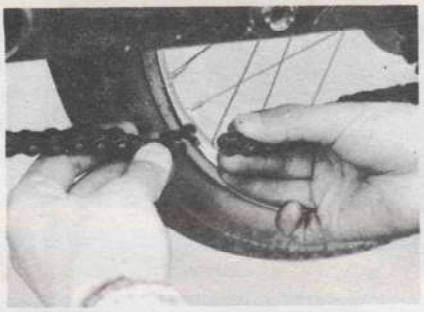


Fig. 3-11

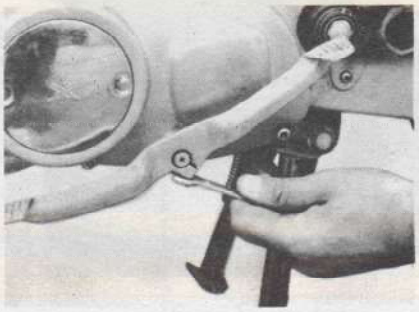


Fig. 3-12

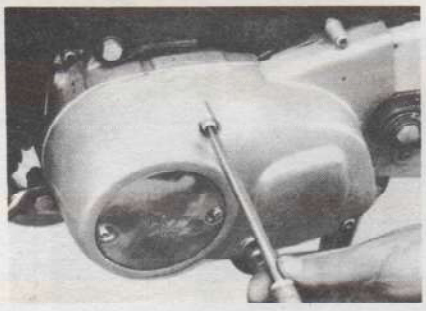


Fig. 3-13

10. Remove the left crankcase cover. (Fig. 3-13)

11. Remove the foot-rests.

12. Remove the engine mounting bolts, and demount the engine.

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)

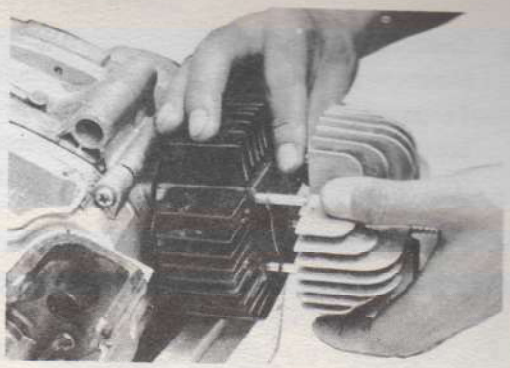


Fig. 3-14

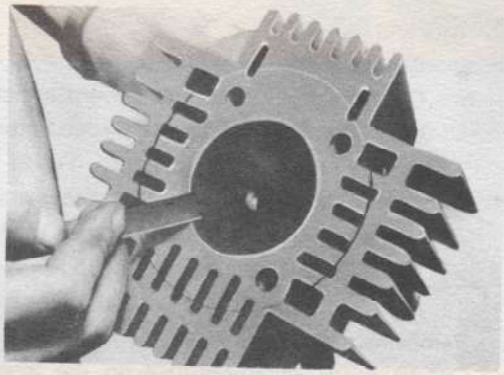


Fig. 3-15

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 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)

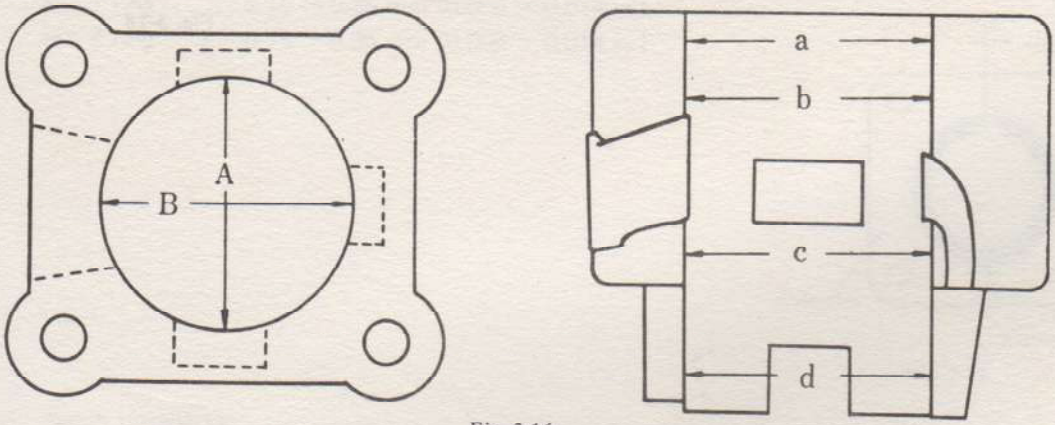


Fig. 3-16

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.)
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)

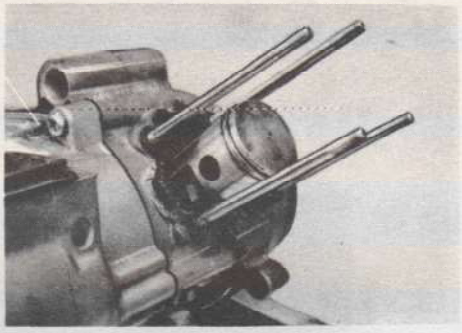


Fig. 3-17

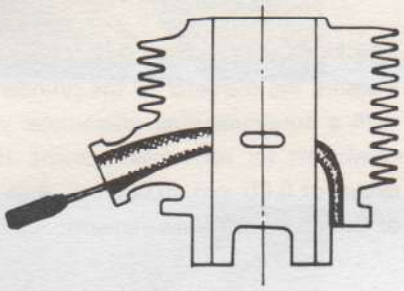


Fig. 3-18

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.

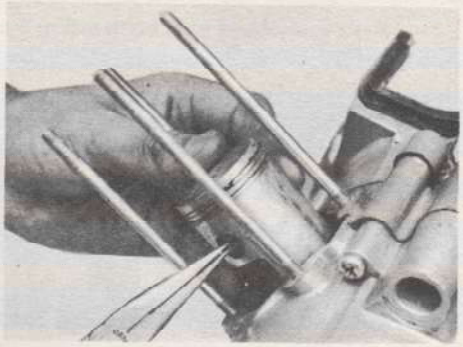


Fig. 3-19

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.
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)

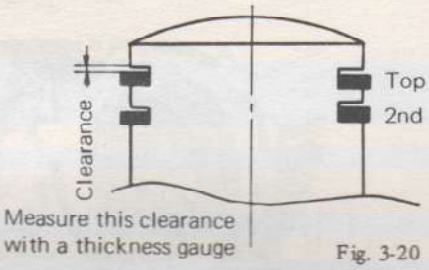


Fig. 3-20

   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)

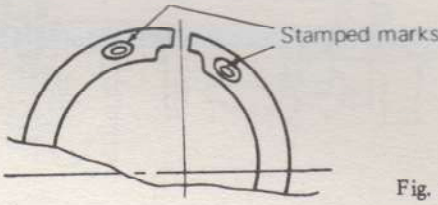


Fig. 3-21

   d. Measuring Piston Ring Wear.
      Push a piston ring into the cylinder with an inverted piston to set it at right angles to he cylinder wall; and using a feeler gauge, check the ring end gap against the recommended 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.)

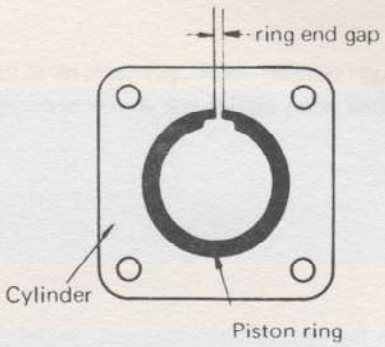


Fig. 3-22

   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)

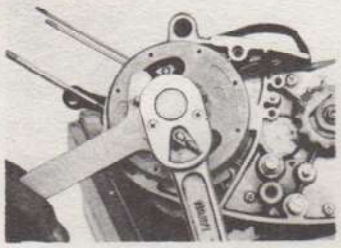


Fig. 3-23

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)

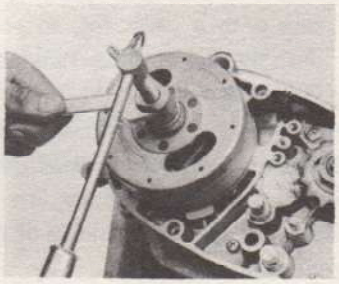


Fig. 3-24

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

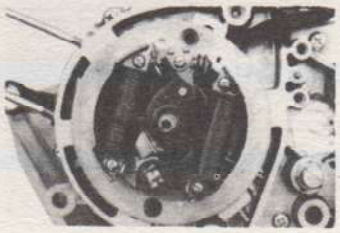


Fig. 3-25

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

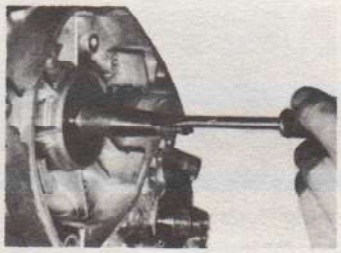


Fig. 3-26

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).

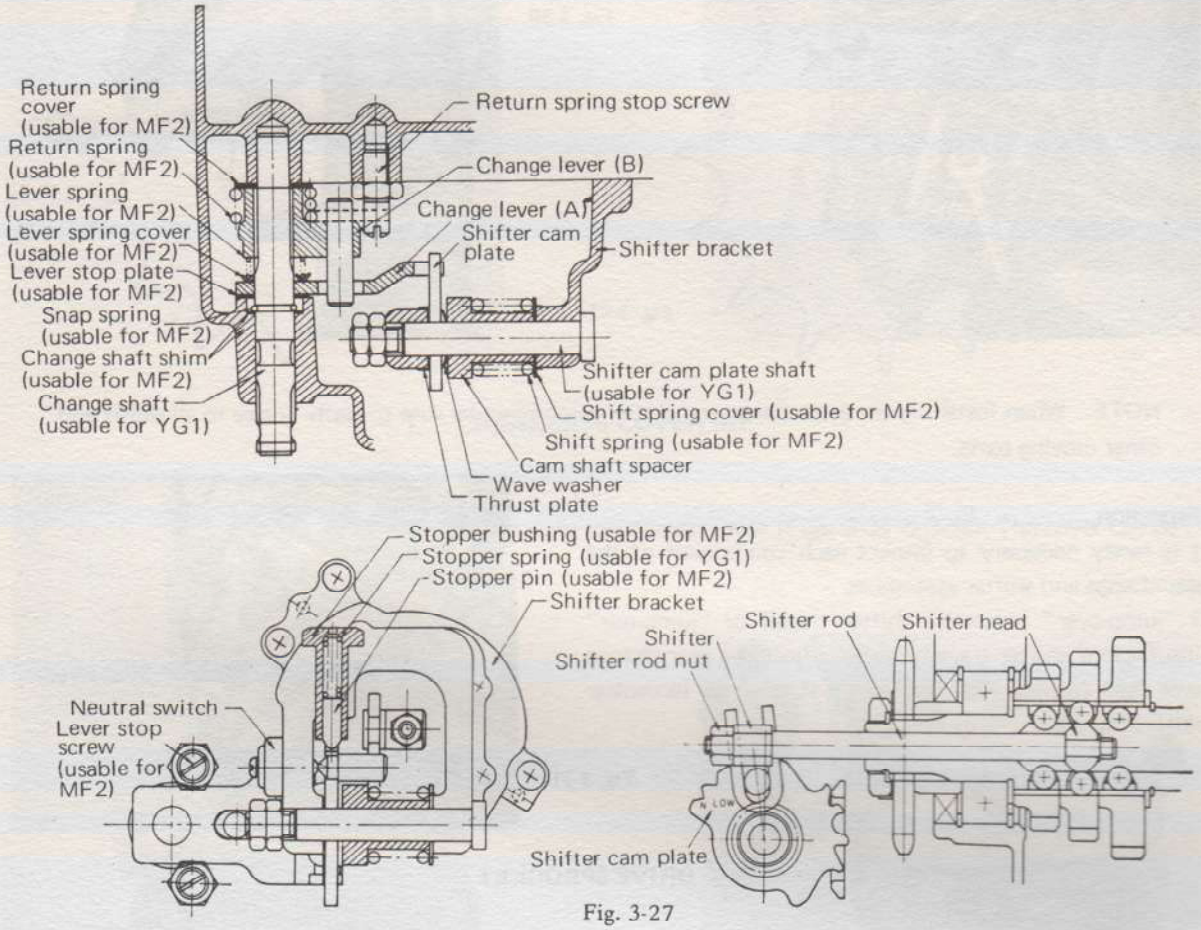


Fig. 3-27

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)

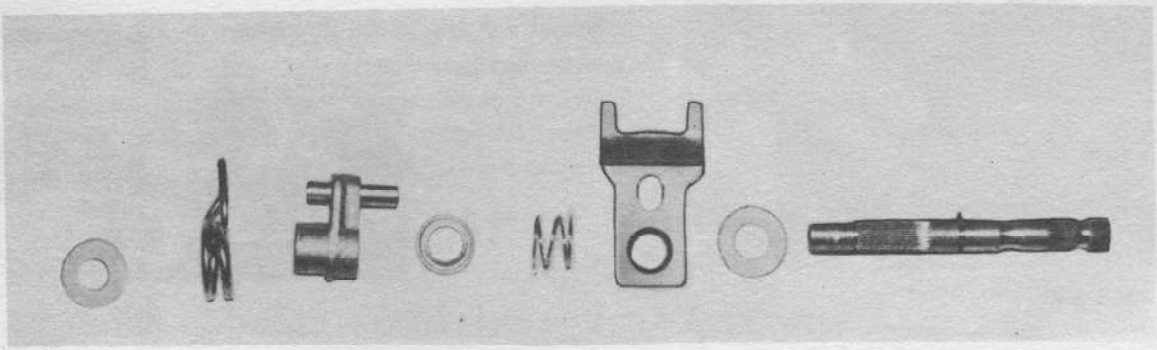


Fig. 3-28

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)

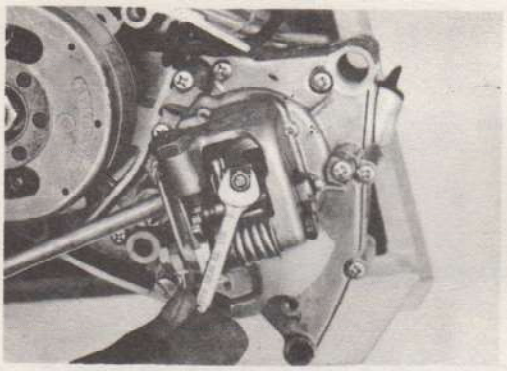
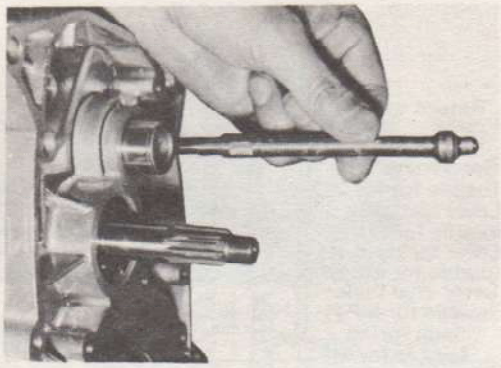


Fig. 3-29

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-our" (insufficient shifter travel) occurs, adjust the gear change lever feed (travel) with the lever's stop screw (eccentric bolt). (Fig. 3-31)

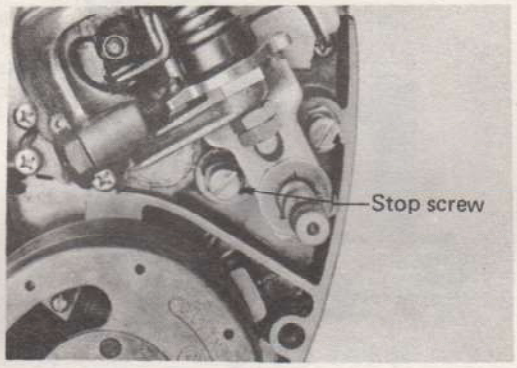


Fig. 3-31

H. DRIVE SPROCKET

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

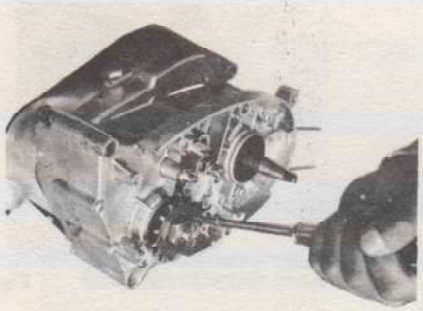
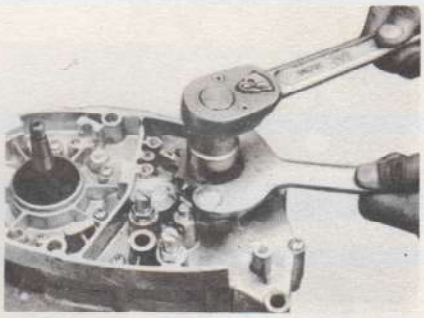


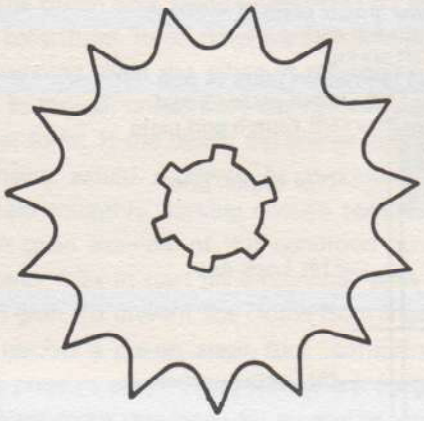
Fig. 3-32

Fig. 3-33

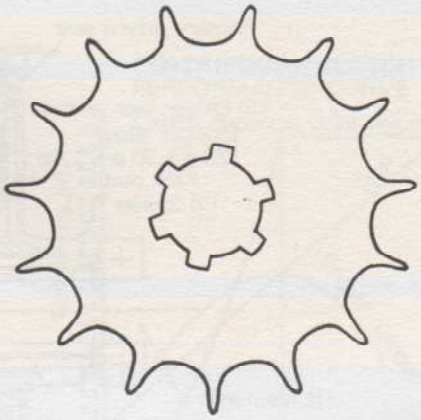


2. Inspection.
Replace the drive sprocket if teeth show wear. A worn out sprocket causes chain noise, and shortens the chain's service life very quickly.

Proper



Improper (worn out)



I. CRANKCASE COVER (R)

1. Removal.
   a. 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.

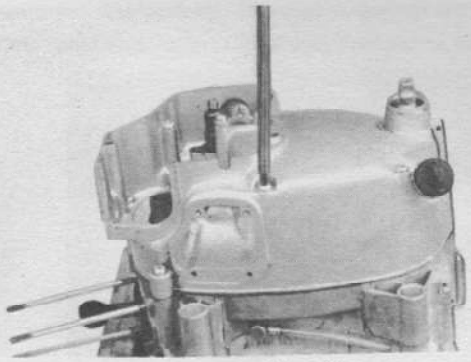


Fig. 3-34

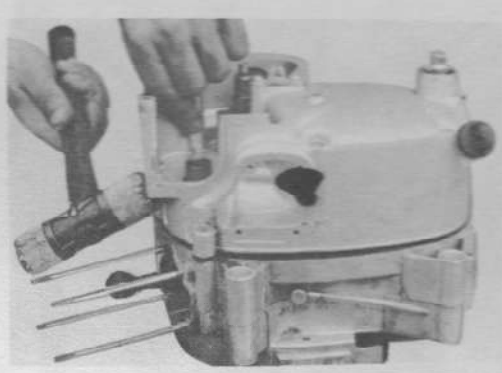


Fig. 3-35

   b. Always replace a damaged or defective crankcase cover gasket. (Fig. 3-36)
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.

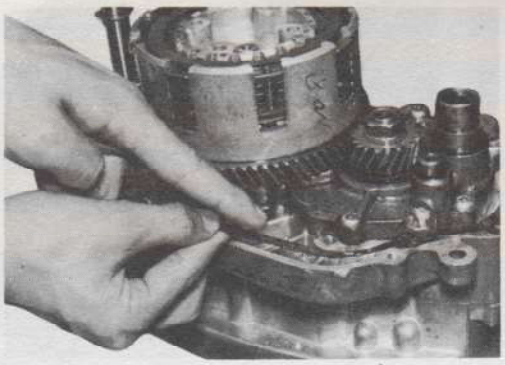


Fig. 3-36

J. CLUTCH

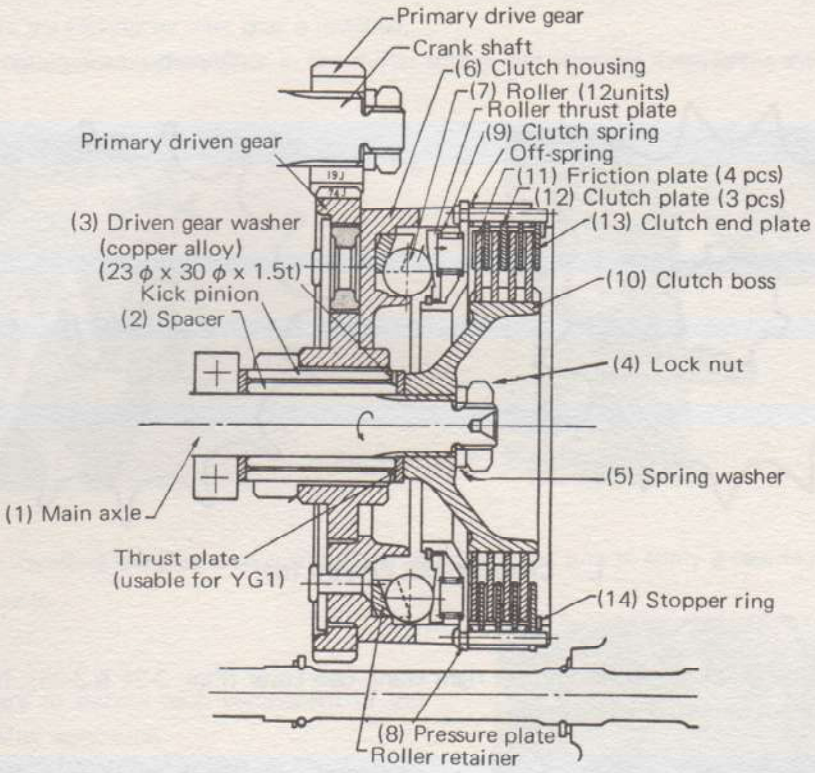
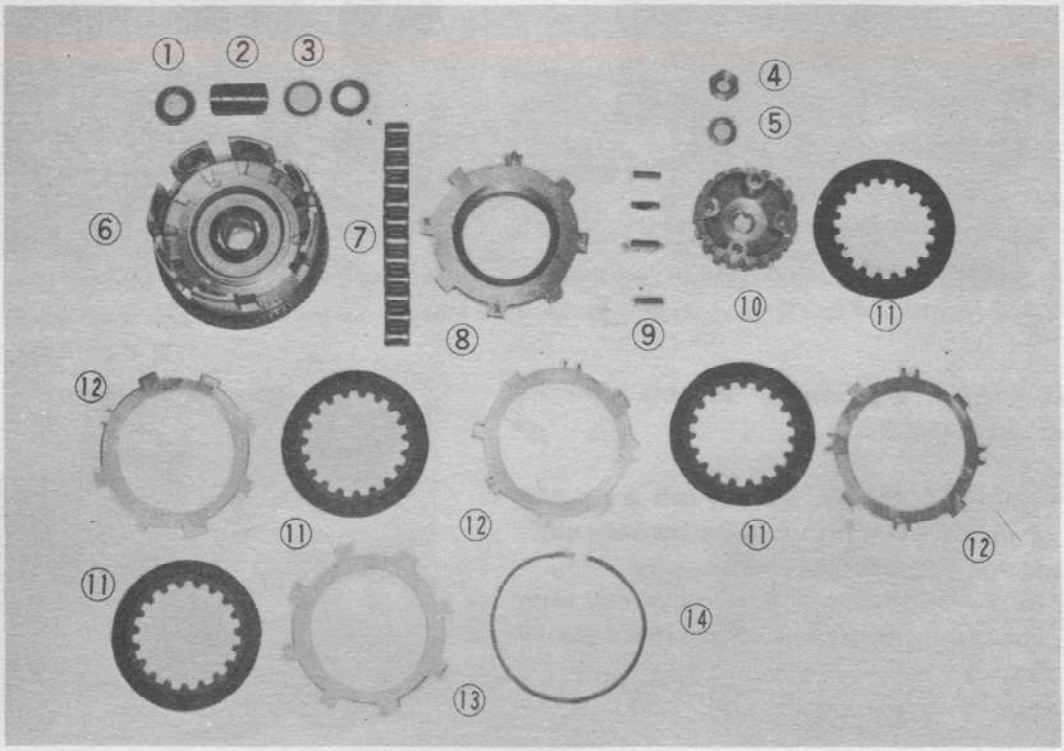


Fig. 3-37



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 was 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 1970 r.p.m., thereby hold-the friction plate away from the clutch plate. In other words, the clutch will not engage until engine speed exceeds approximately 1970 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.

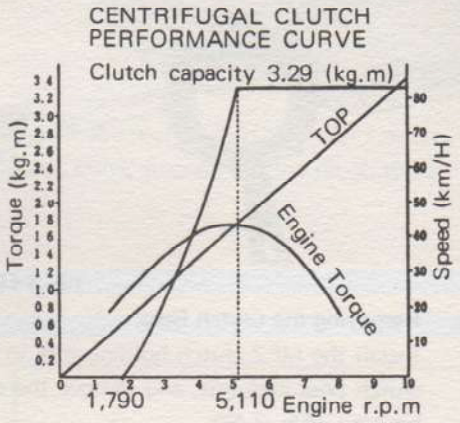


Fig. 3-38

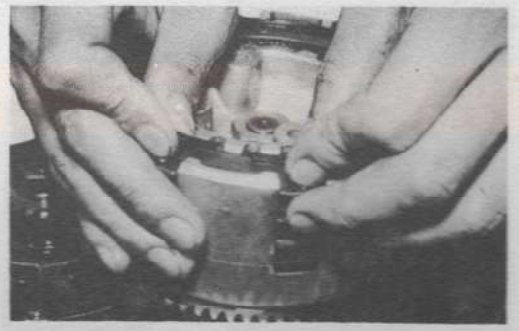


Fig. 3-39

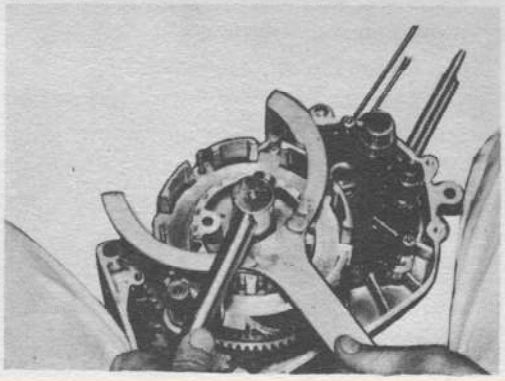


Fig. 3-40

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)

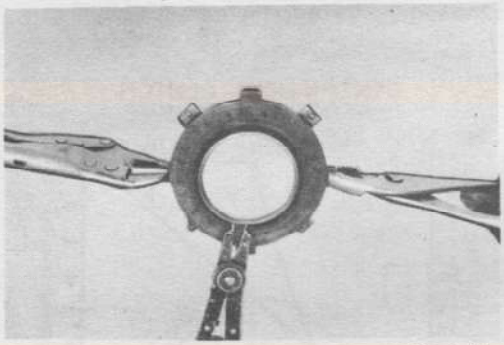


Fig. 3-41

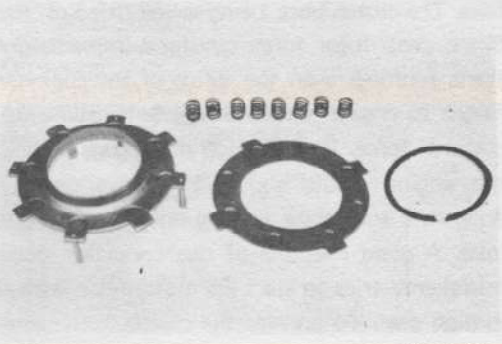


Fig. 3-42

   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.

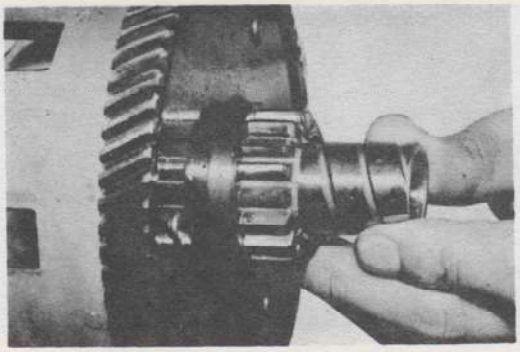


Fig. 3-43

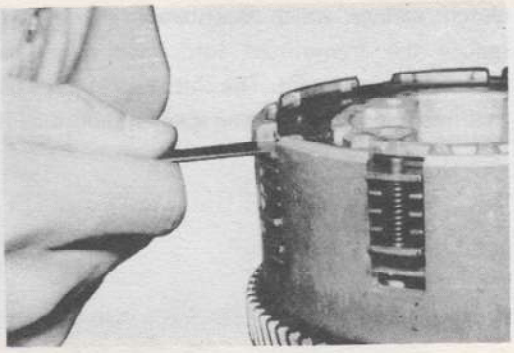
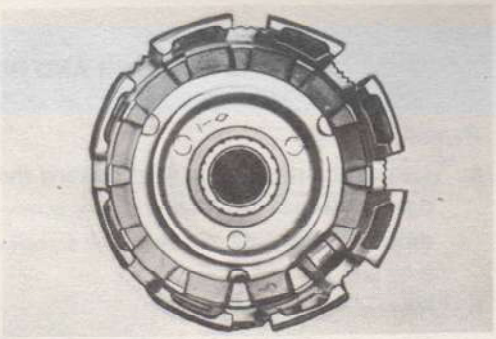


Fig. 3-44

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.)

Fig. 3-45



b. Spacer Inspection.
Insert the spacer in the primary driven gear boss and check for play and overall fit. A scratched 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)

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.

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 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)

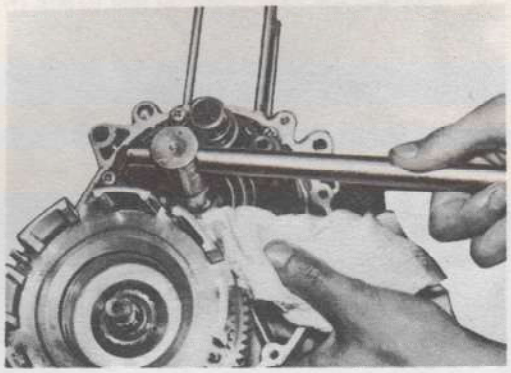


Fig. 3-46

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

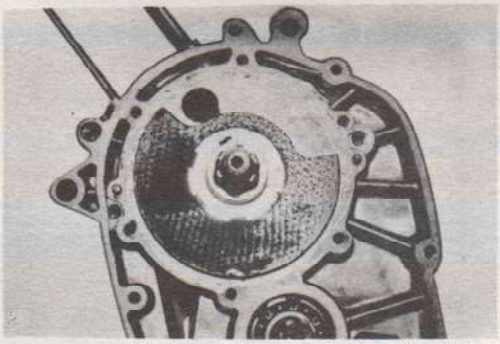


Fig. 3-48

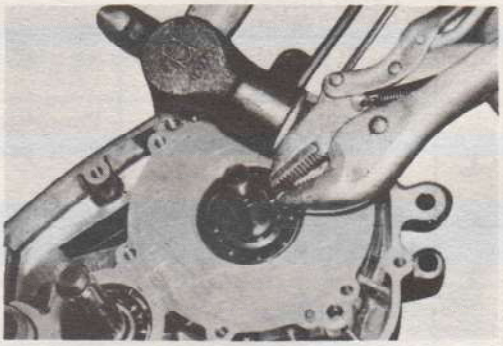


Fig. 3-49

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

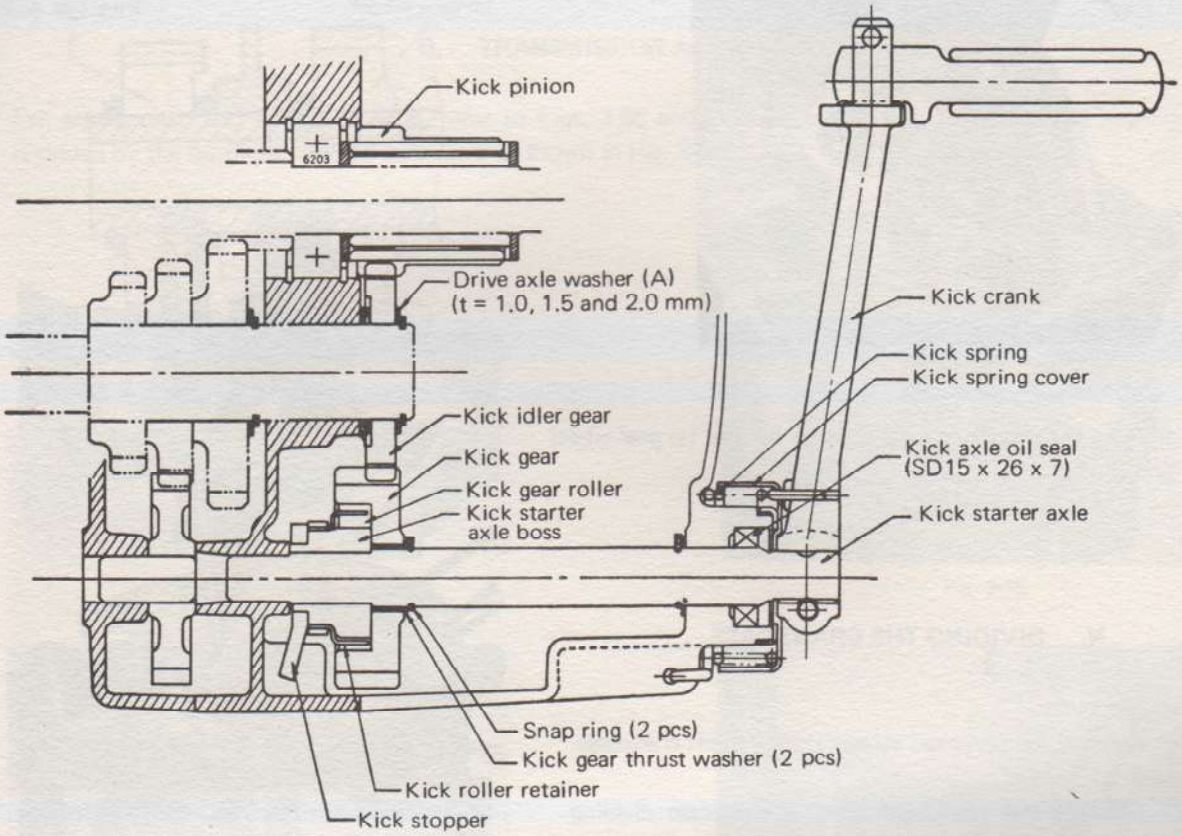


Fig. 3-50

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)

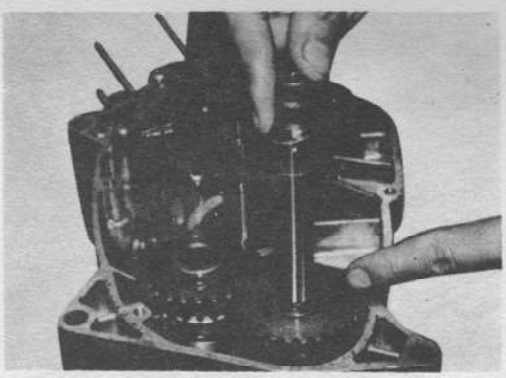


Fig. 3-51

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)

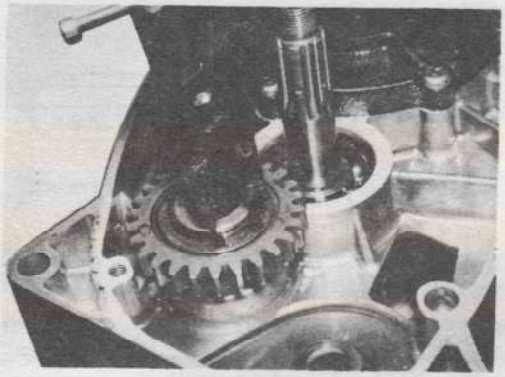


Fig. 3-52

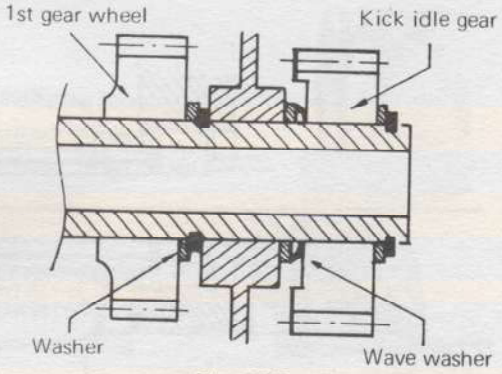


Fig. 3-53

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

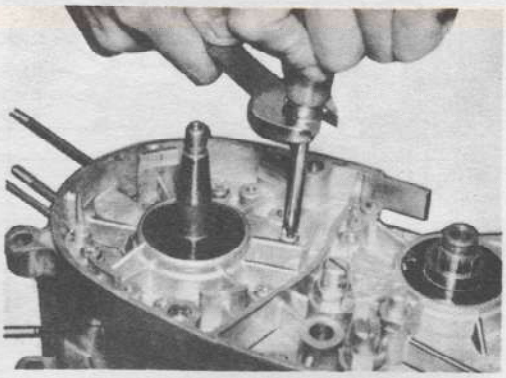


Fig. 3-54

N. DIVIDING THE CRANKCASE

1. Disassembling.
   a. Remove the pan-head screws from the left crankcase. (Fig. 3-54)
   b. 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.

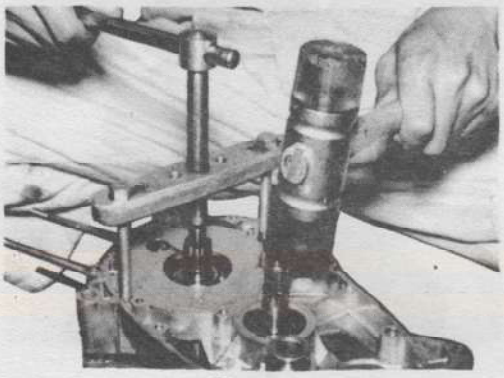


Fig. 3-55

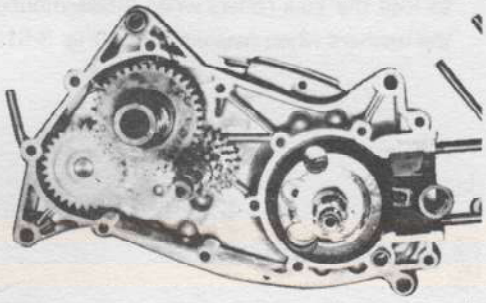


Fig. 3-56

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.

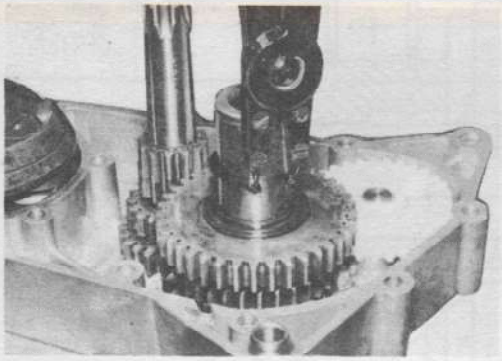


Fig. 3-57

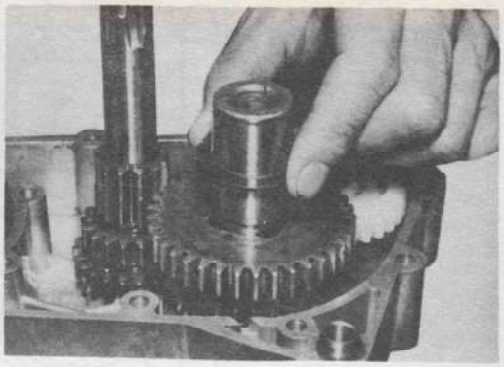


Fig. 3-58

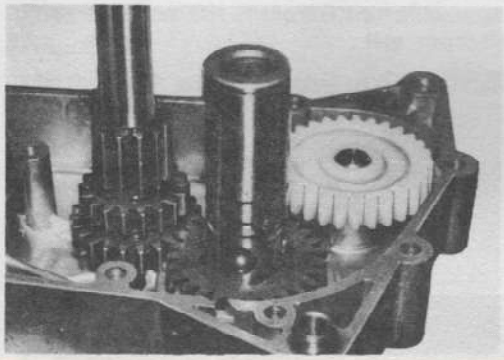


Fig. 3-59

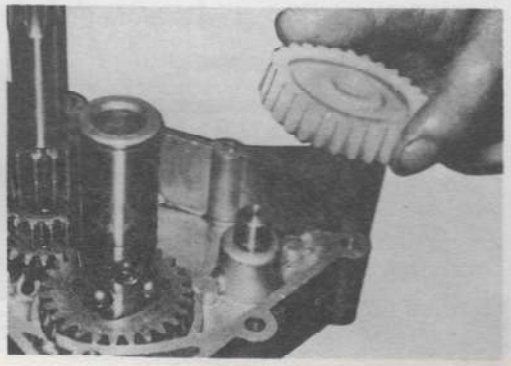


Fig. 3-60

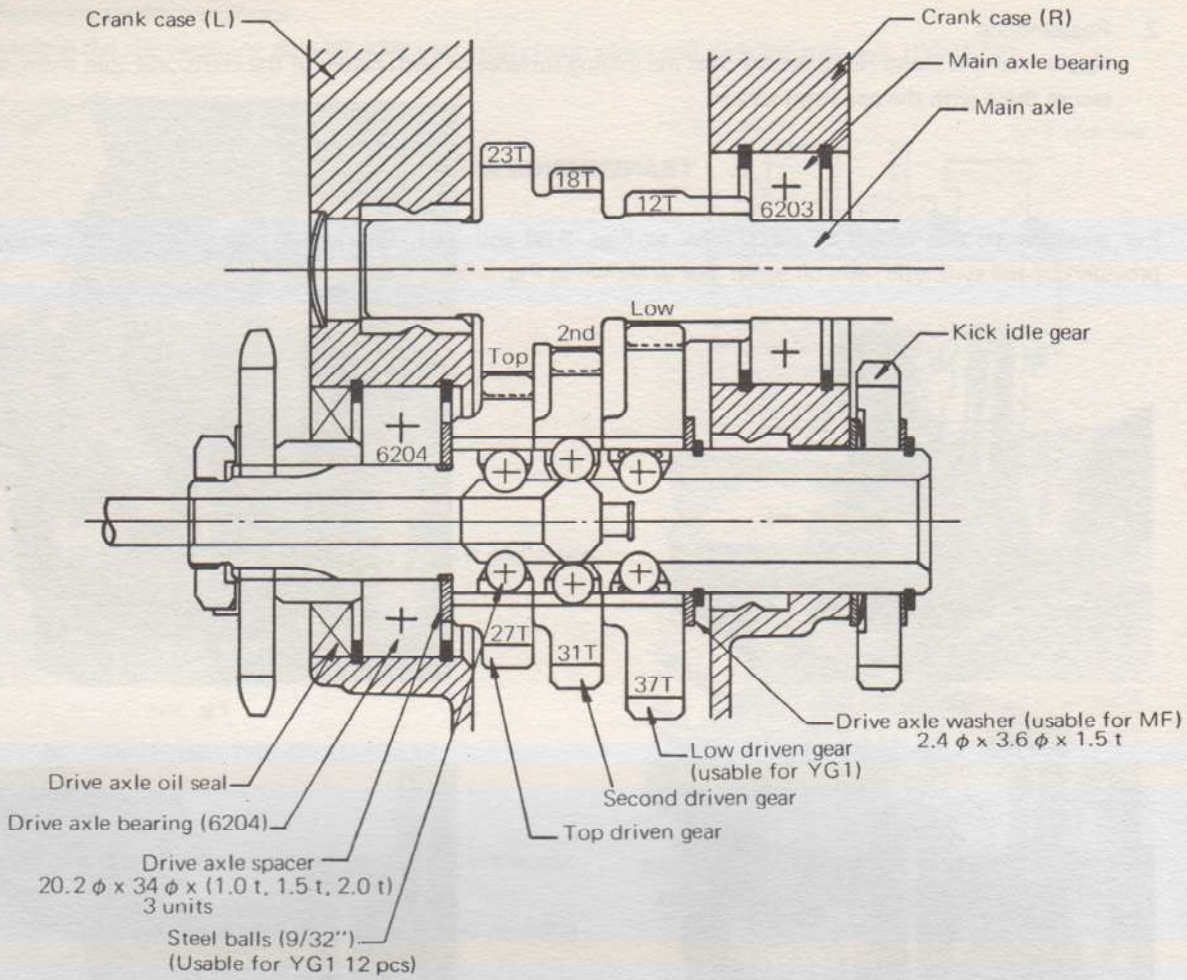


Fig. 3-61

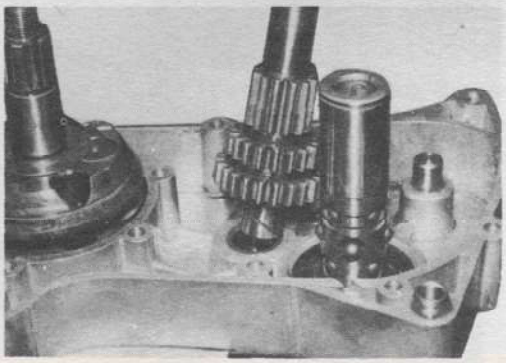


Fig. 3-62

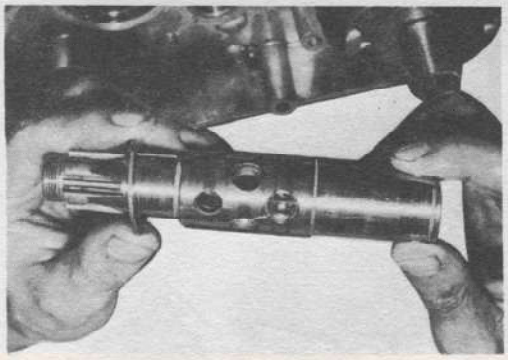


Fig. 3-63

Primary, secondary, and total reduction ratios:

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

* Mounted on crankshaft.

** Integrated with clutch mounted on main axle.

$$\frac{\text{38-teeth (wheel sprocket)}}{\text{15-teeth (drive sprocket)}} = 2.533 : 1$$

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)

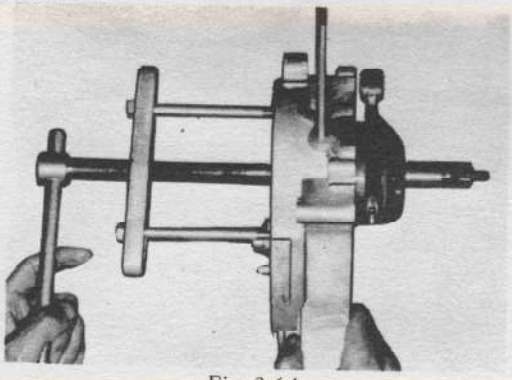


Fig. 3-64

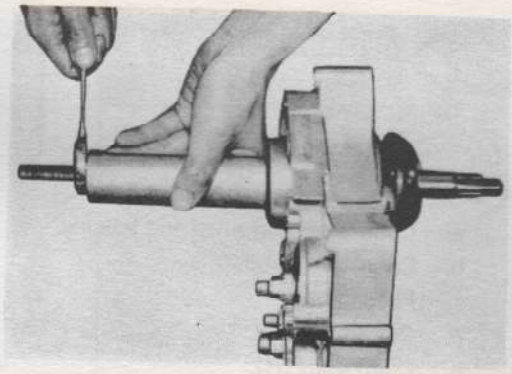


Fig. 3-65

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.

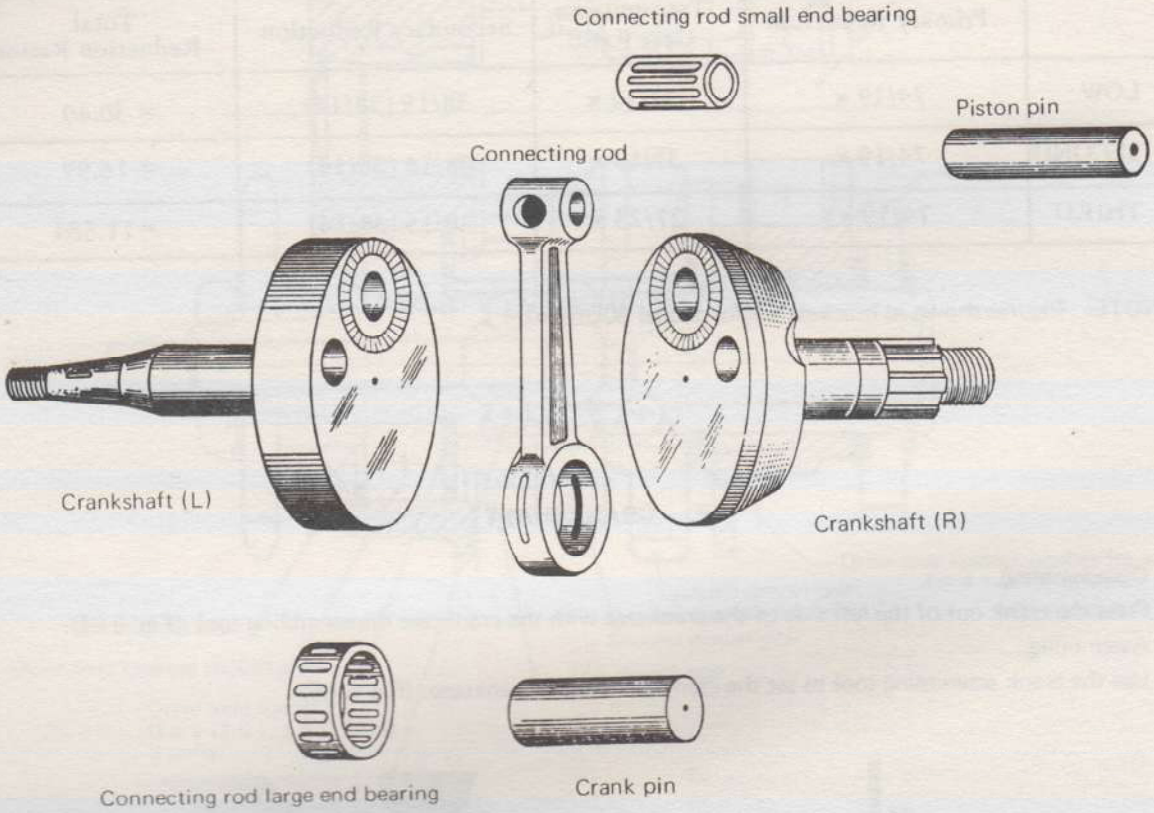
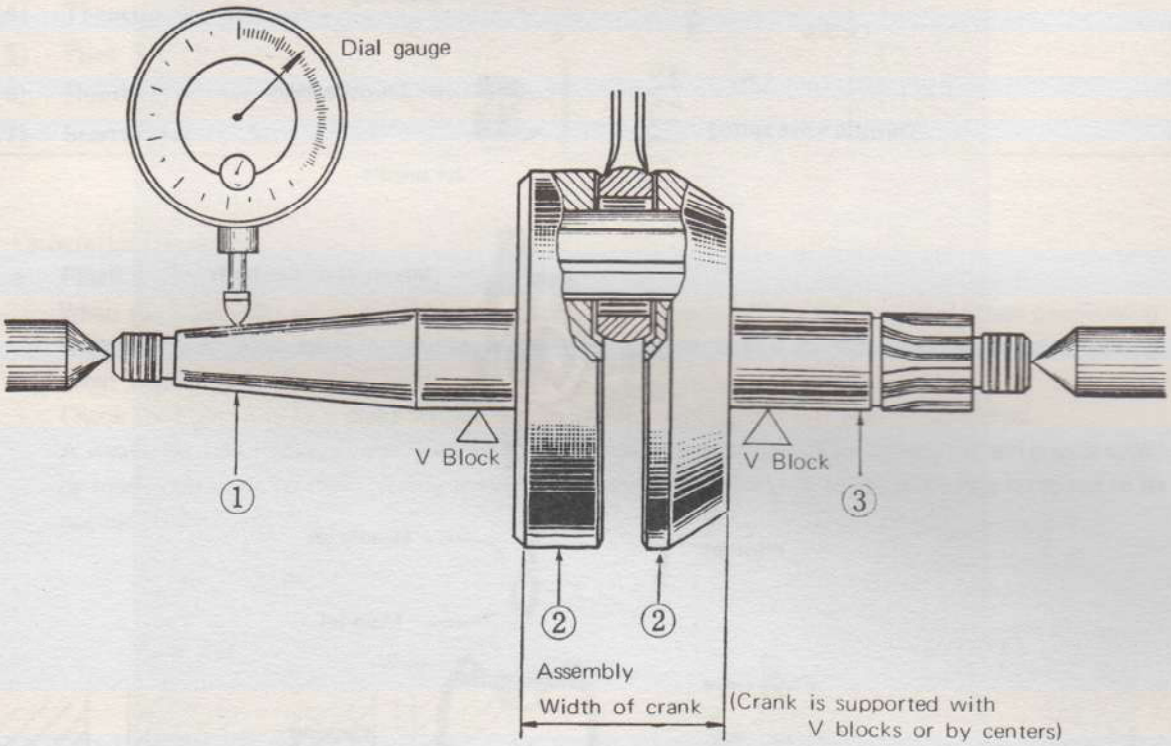


Fig. 3-66

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.



b. Inspection at the time of crank disassembling.

1) Crank pin.
Replace if it has any flaw on the roller runing 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 sloppy.

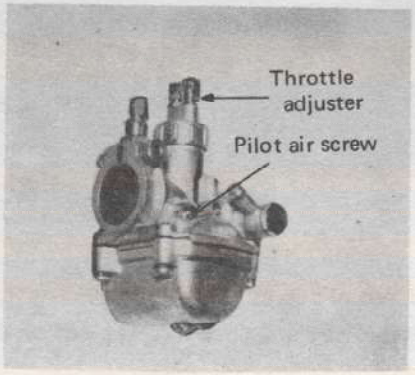


Fig. 3-68

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. CARBURETTOR (Figs. 3-68 & 3-69)

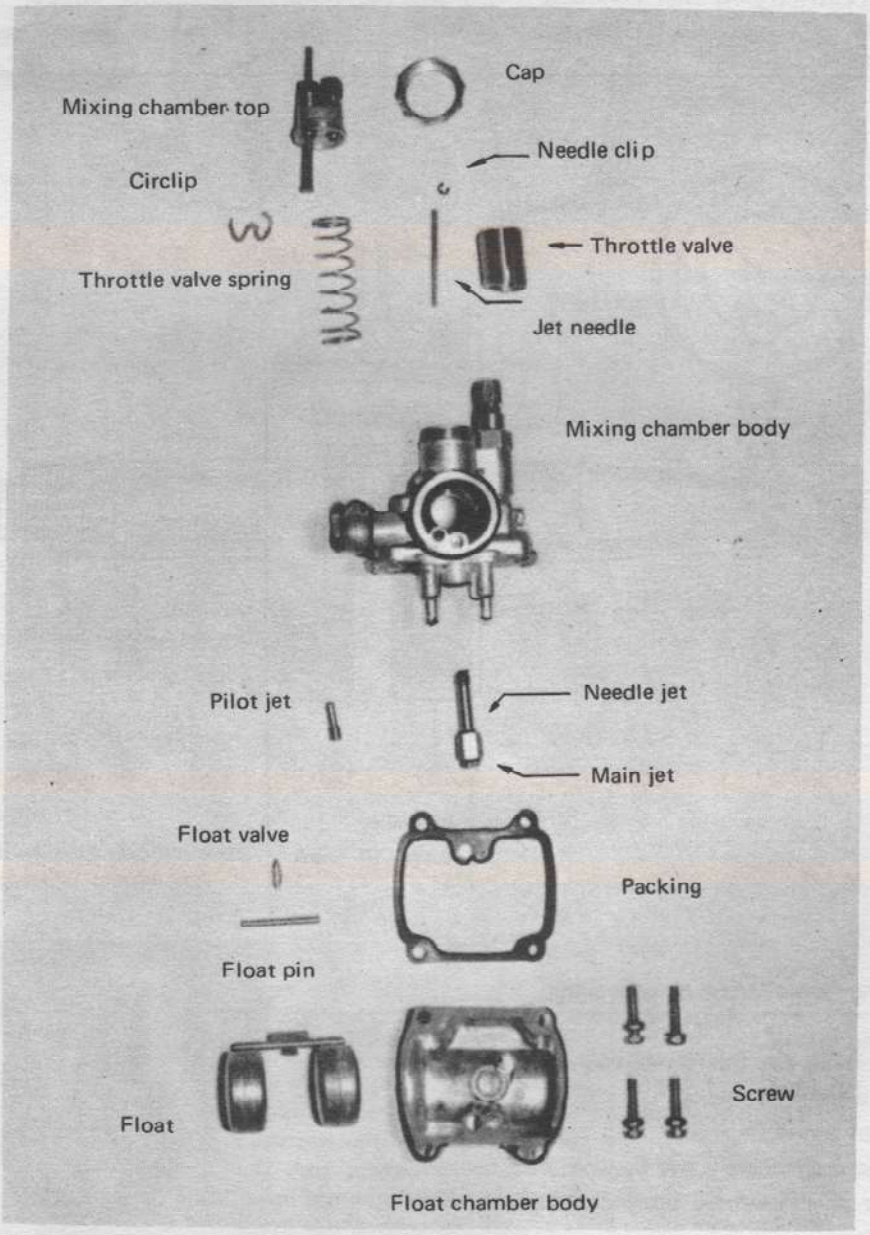


Fig. 3-69

1. Carburettor 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. Carburettor 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. Carburettor 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.

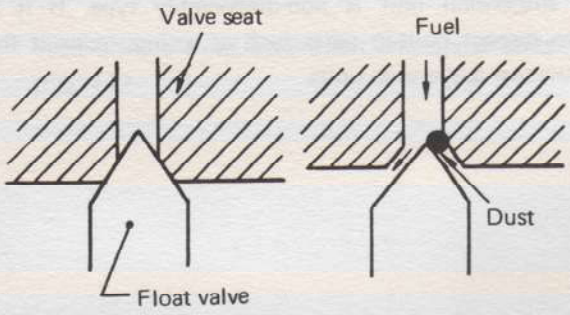


Fig. 3-70

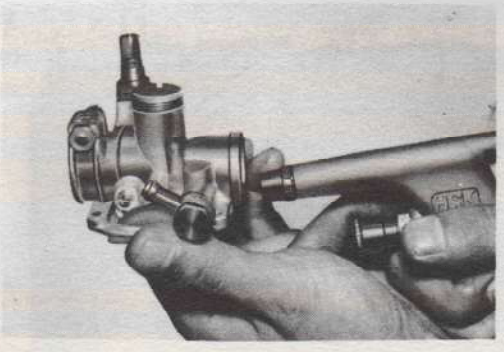


Fig. 3-71

   c. Overflow.
      If (a) and (b) are checked and nothing is found to be 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 carburettor and fuel lines with compressed air. (Figs. 3-70 & 3-71)

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 manouverability. 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)

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.

Disassembling.

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

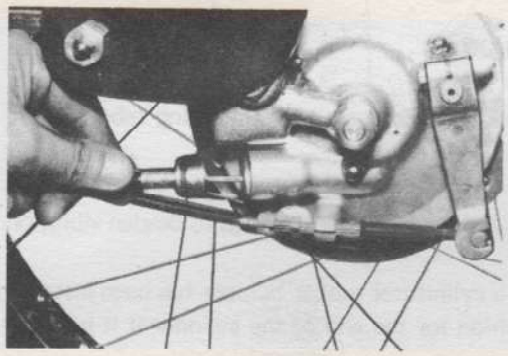


Fig. 4-2

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

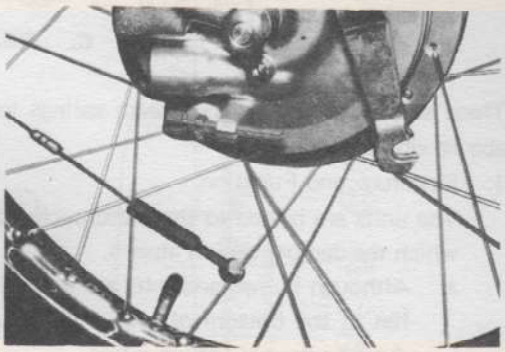


Fig. 4-3

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

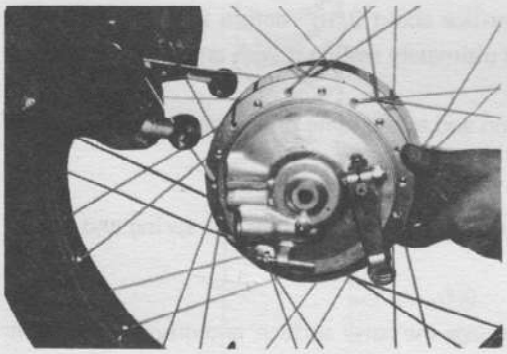


Fig. 4-4

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

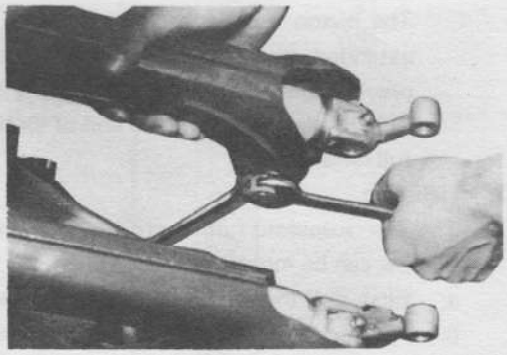


Fig. 4-5

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

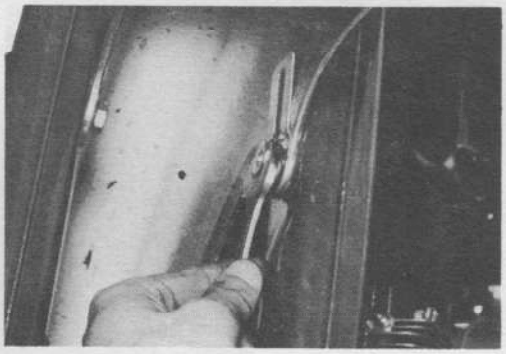


Fig. 4-6

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.

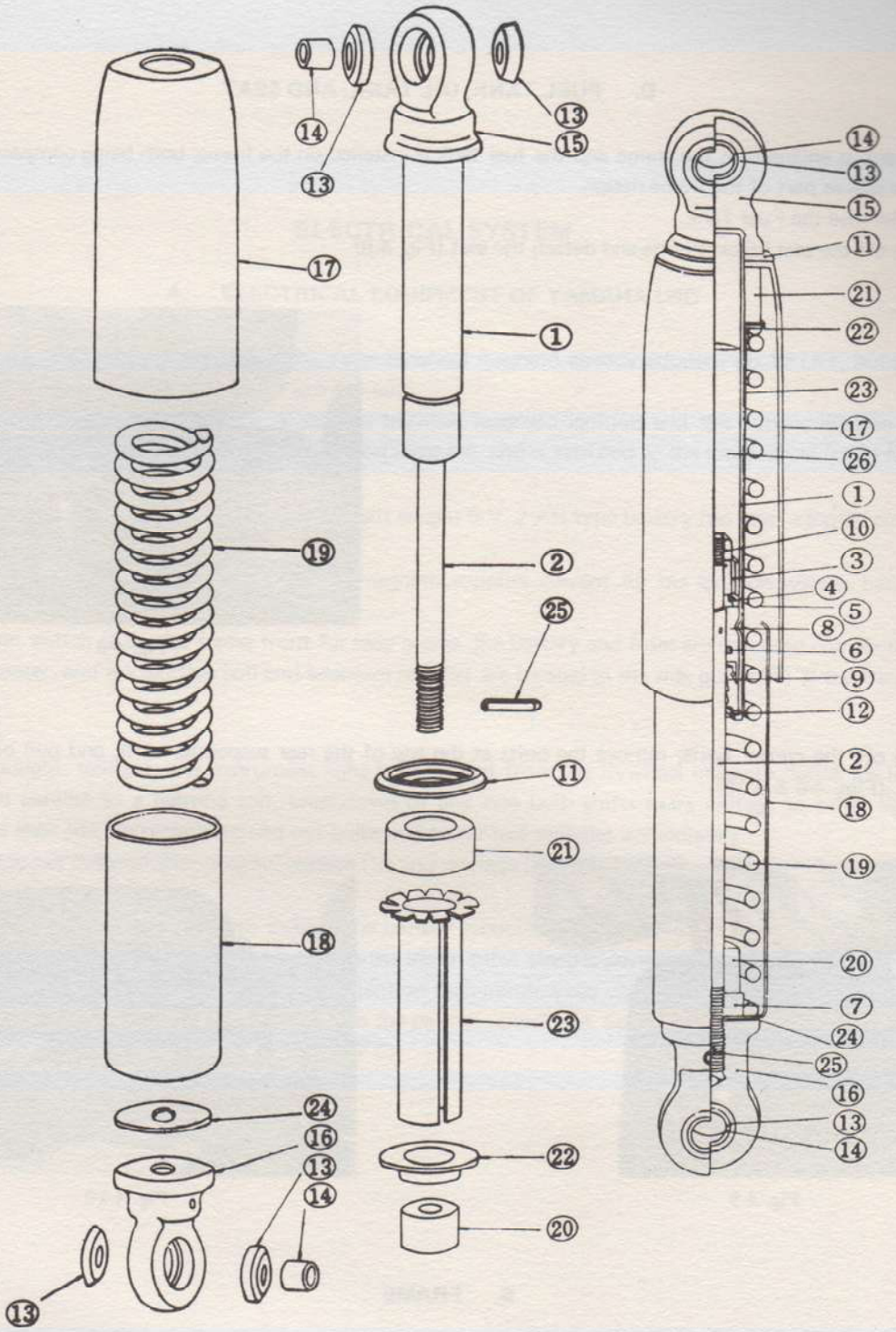
      The piston rod sleeve bearing begins to close off the orifice about 3/16" before the damper is fully extended, thus gradually decreasing the flow of oil, and ultimately sealing it with an oil-lock action, to prevent collision between the bearing and the piston.

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

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)

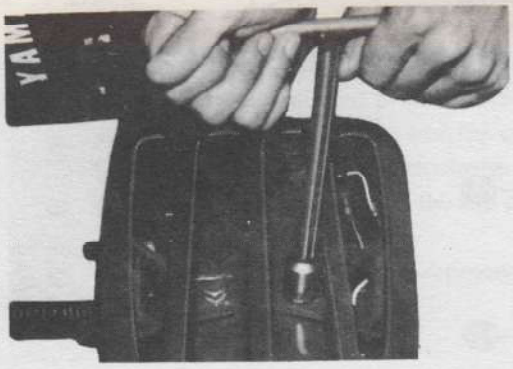


Fig. 4-9

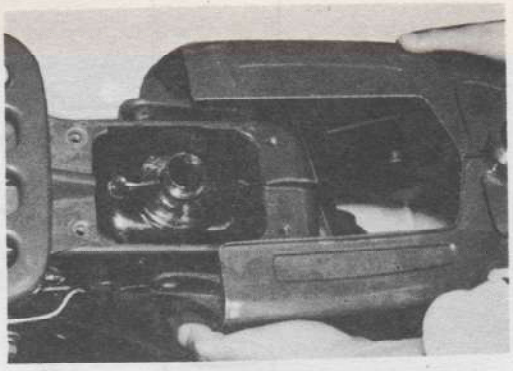


Fig. 4-10

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).

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, and 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:

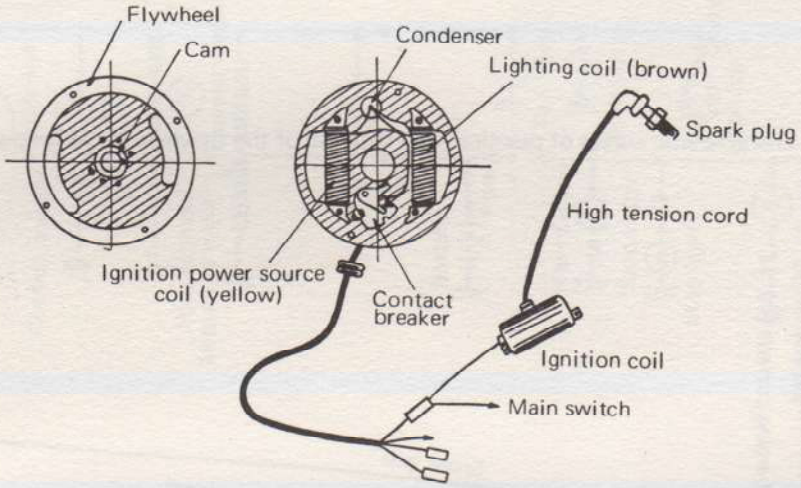
1. The headlight, taillight, and instrument light take current from the flywheel magneto. Since the lights are wired in parallel to a lighting coil, breakdown of any one bulb shifts extra voltage to other lights and shortens their life. So replace burned out bulbs and repair bad switches immediately.
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/500r.p.m. Over 8mm/5,000r.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 Main Switch Fuse holder	Nihon Denchi Furukawa Denchi Asahi Elec. Showa Elec.	MV1-6, 6V2 AH BWT1-6, 6V2AH YBM-10 10A x 2
Frame Back Section	Ignition coil Selenium rectifier Taillight bulb (stop lamp)	Mitsubishi Elec. Hitachi Fuji Denki Koito Elec.	HM-1/12 E CM61-05 A Sparking performance: Over 7 mm/500 r.p.m. Over 8mm/5,000 r.p.m. PH16C 11/1 6V 2W (6V6W)
Front Head	Head light bulb Speedometer light bulb Speedometer Neutaral light bulb Handle Switch (R) Handle Switch (L) Horn	Stanley Denki Nikko Kinzoku	6V15 WD 6V 1.5W 6V 3W 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

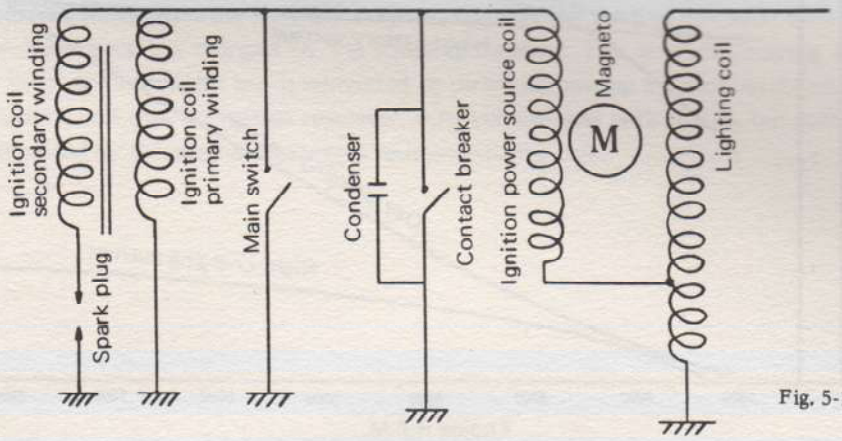


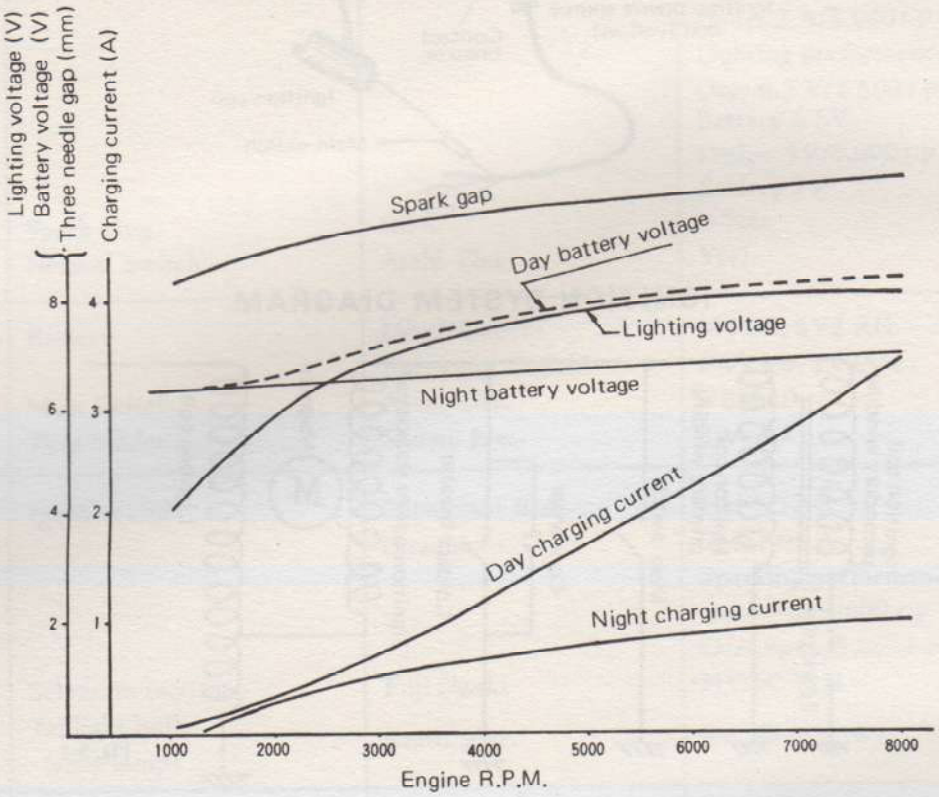
Fig. 5-1

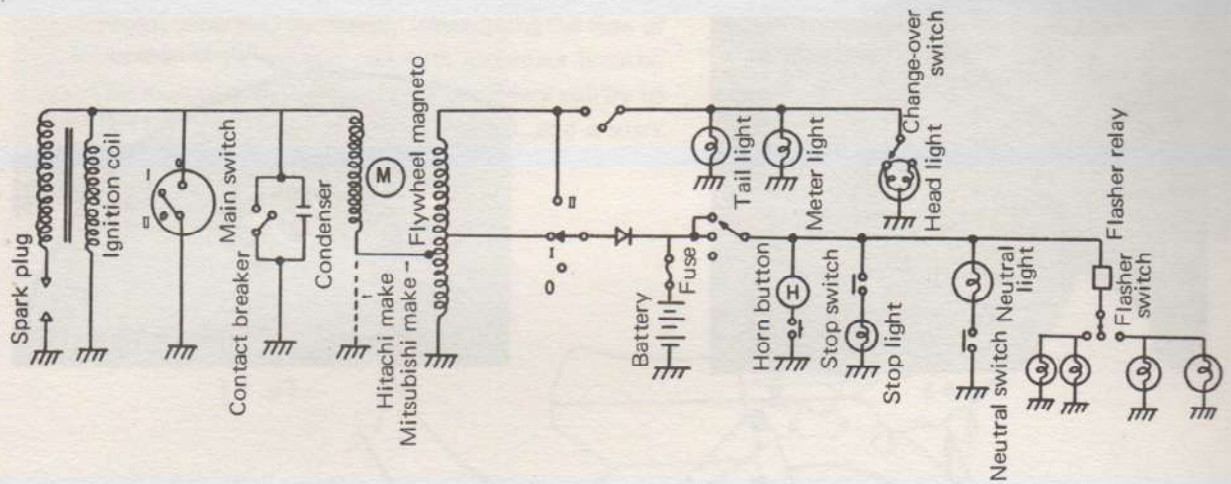
The flywheel magneto consists of an ignition power source coil supplying current to the ignition coil which produces voltage necessary to jump the spark plug gap, a lighting power source coil which produces the necessary voltage to light bulbs and charge the battery, a cam and contact breaker which interrupt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

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.

Fig. 5-2

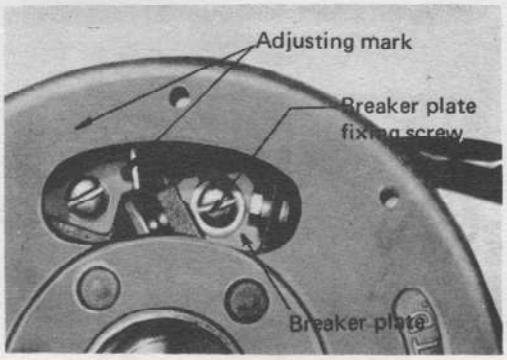


Fig. 5-3

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 ± 0.15 mm below top dead center (point gap of 0.30 ~ 0.35 mm (0.012 ~ 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) occuring 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.

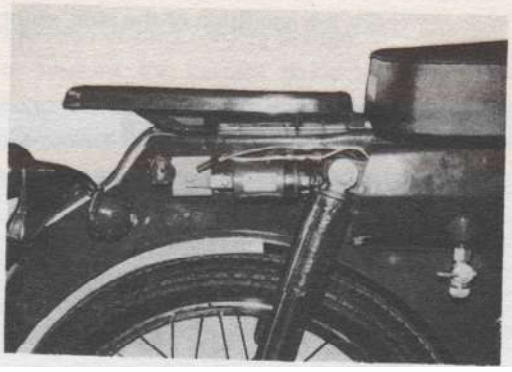
      Insulation test: The reading should exceed 3 MΩ with the Yamaha Electro tester. Capacity test: The reading should not exceed 0.25 μF ± 10% for Mitsubishi, and 0.3 μF ± 10% for Hitachi.

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



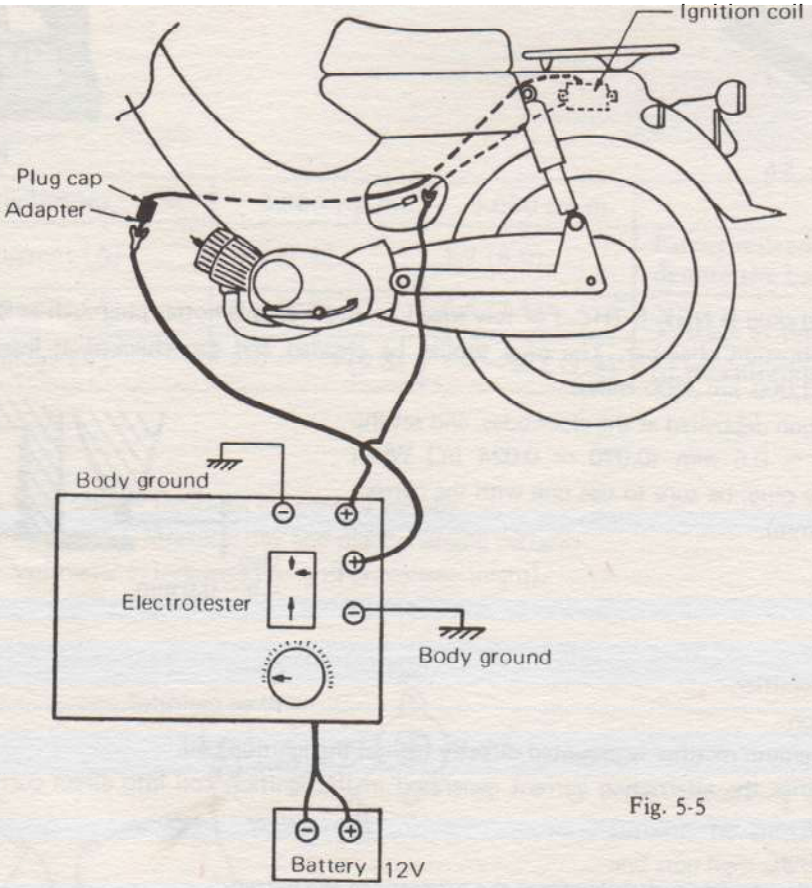


Fig. 5-5

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.

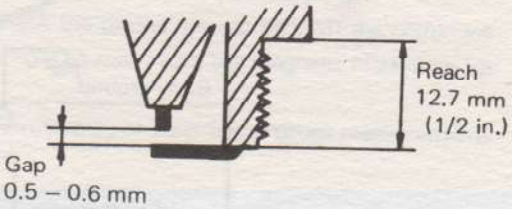
Fig. 5-6

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. The plug should be cleaned and gap checked 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.

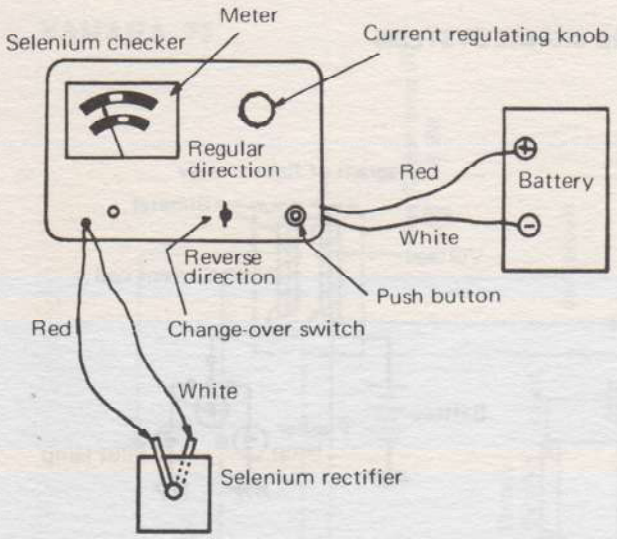
b. Inspection:

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.

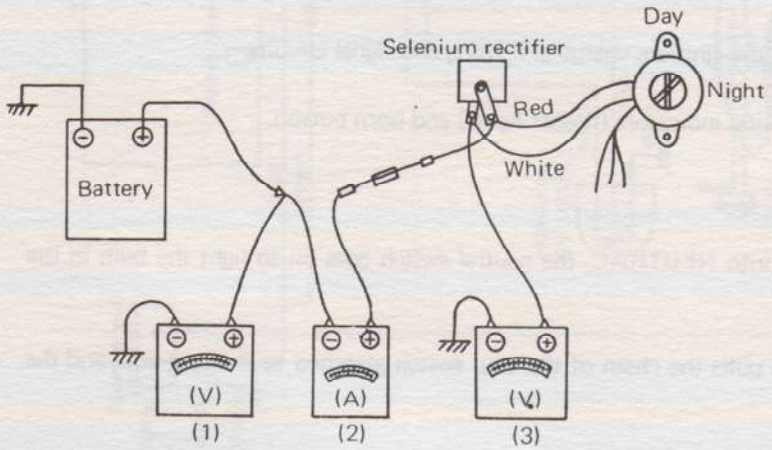


8. Inspection of the Charging System.
To measure the current going to the battery, disconnect the red lead from the rectifier, connect an ammeter (with a full scale of 3A-5A) between the rectifier and battery and start the engine.

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).



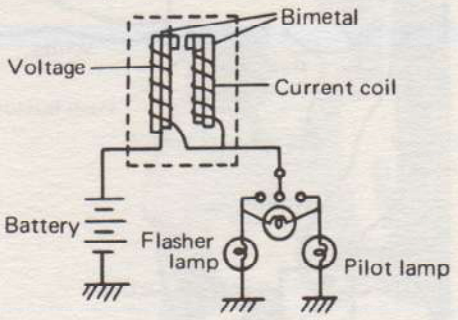
NOTE:
1) When measuring the day charging current, be sure the neutral light and stop light are off.
2) When measuring the night charging current, make sure the head, tail, and instrument lights are on.

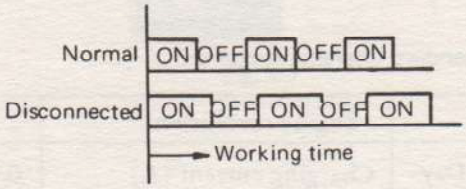
D. LIGHTING AND SIGNAL SYSTEMS

1. Lights:

Magneto lighting	Head light	6V 15/15W
	Tail light	6V 2W
	Meter light	6V 1.5W
Battery lighting	Flasher lights	6V 8W×4
	Stop light	6V 6W
	Neutral light	6V 3W

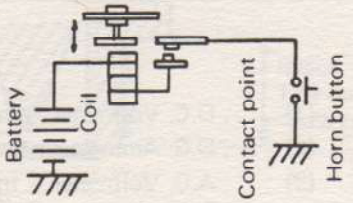
Diagram of flasher relay





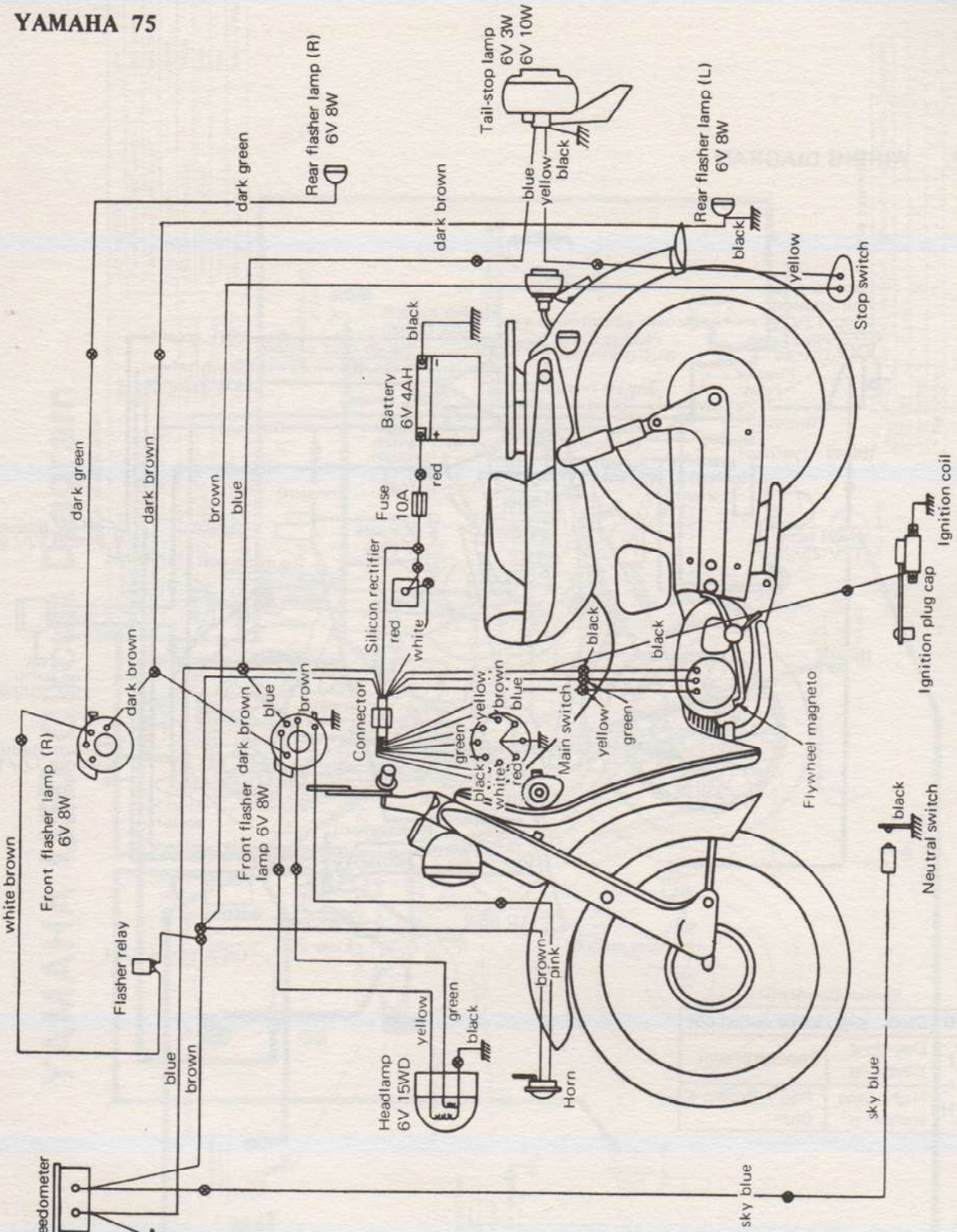
2. Flasher Relay:
   The flasher relay is a bimetal type. The specified light should be used, because the time when the relay causes it to go on and off has been designed on the basis of the bulb size.
   Normal light flash 8-12 times per minute.
3. Horn:
   The horn is based on the same theory as a DC buzzer. If the horn makes a strange sound or does not make any sound, adjust by turning the screw on its top side.

Diagram of Horn

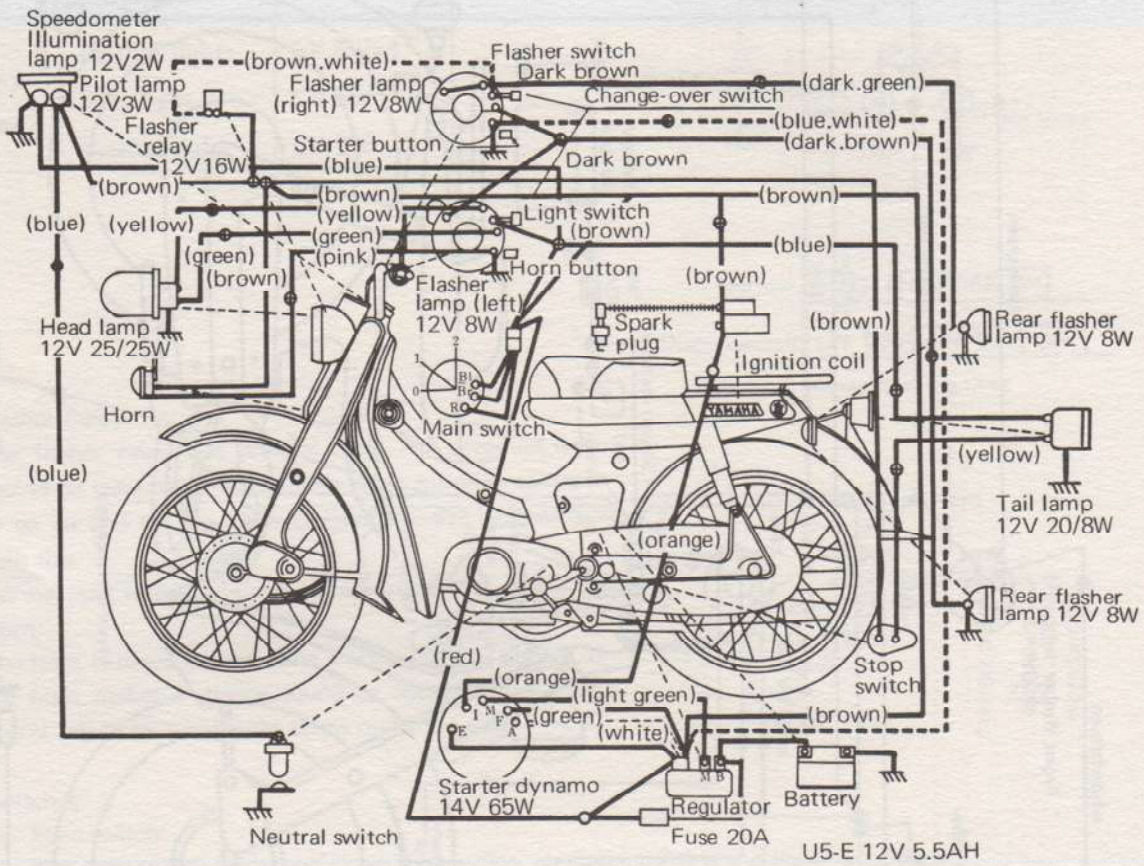


4. Switches:
   a. Main switch:
      The main switch opens and closes the ignition, charging, lighting and signal circuits.
   b. Handlebar switch (L):
      Switch for the right and left direction indicators (flasher lights) and horn button.
   c. Handlebar switch (R):
      Dimmer switch for the headlight.
   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.

YAMAHA 75


Rear flasher lamp (R) 6V 8W
Tail-stop lamp 6V 3W 6V 10W
Rear flasher lamp (L) 6V 8W
Stop switch
Battery 6V 4AH
Fuse 10A
Silicon rectifier
Connector
Main switch
Flywheel magneto
Ignition plug cap
Ignition coil
Front flasher lamp (R) 6V 8W
Front flasher lamp 6V 8W
Flasher relay
Headlamp 6V 15WD
Horn
Neutral switch
Speedometer
Speedometer lamp, 6V 1.5W
Neutral pilot lamp, 6V 3W
dark green
dark brown
brown
blue
yellow
green
black
red
white
white brown
brown-pink
sky blue

F. WIRING DIAGRAM



Switch Connection

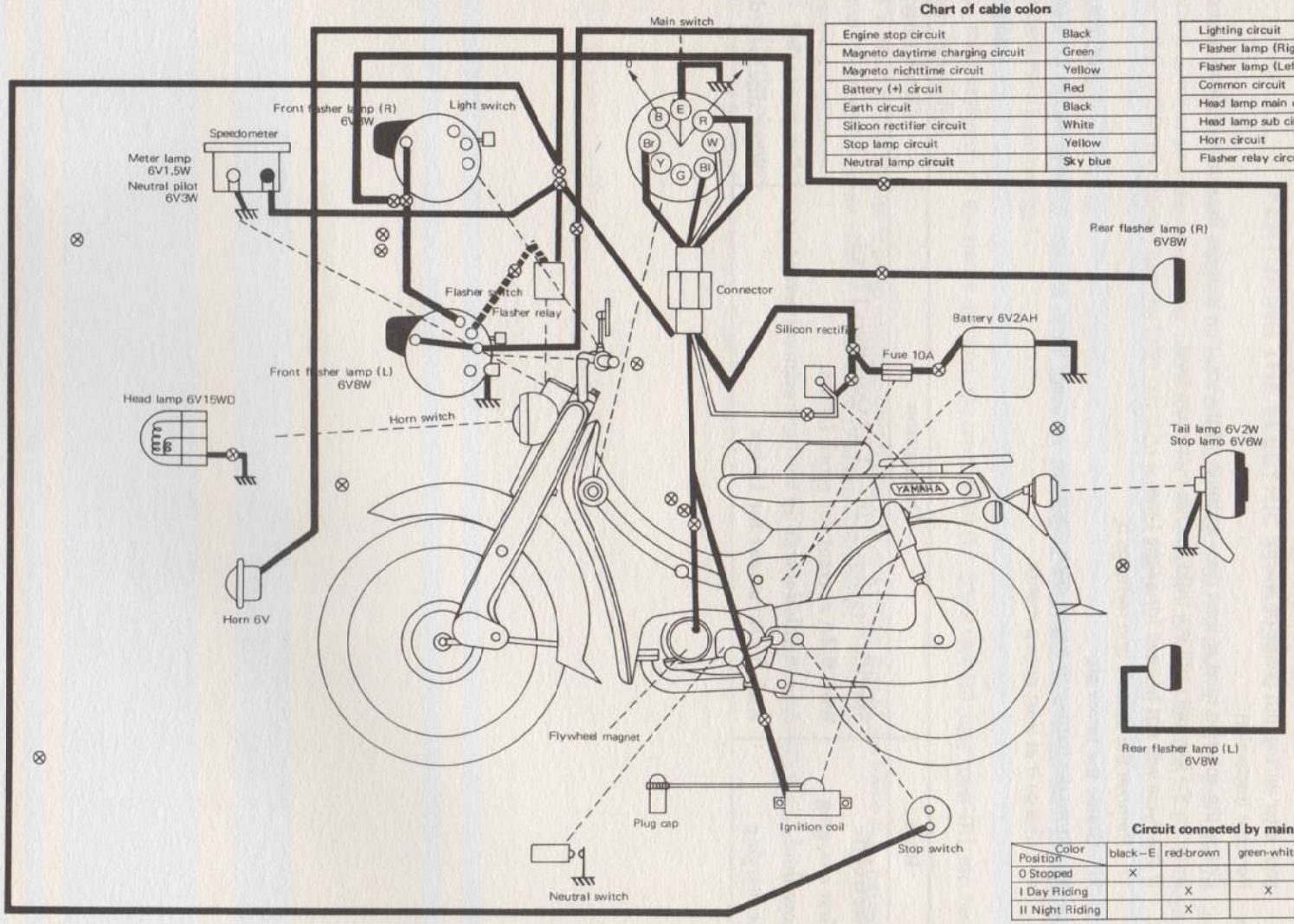
0	Stop	Key can be pulled out
I	Day-time travelling	Reddish brown
II	Night-time travelling	Red + Brown + Blue

YAMAHA U5D Circuit Diagram

Chart of cable colors

Engine stop circuit	Black
Magneto daytime charging circuit	Green
Magneto nichttime 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

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

a. First charging:
Prepare 170 c.c. of sulphuric acid (specific gravity: 1.26 at 20°C).
Remove the the three battery plugs and fill each cell up to the maximum level.
For the best results, charge every new battery with about 0.4 A current for 10 hours. After charging, gently shake the battery to remove the foam. 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 a 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'S NEW U5-E (MF3D-E), 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

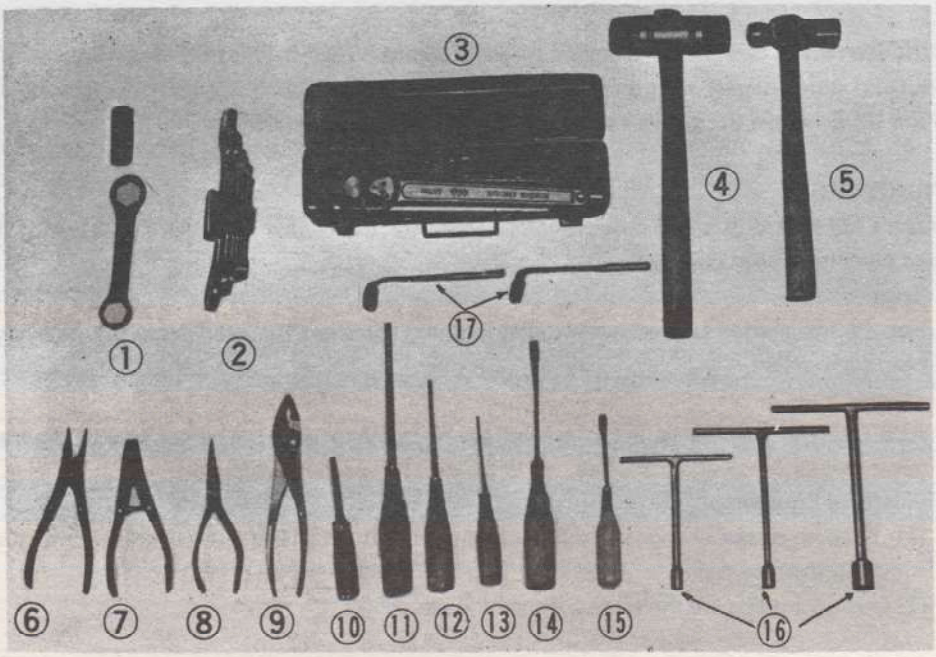
Yamaha's U5 starter dynamo requires larger space for the engine width and, as a result, the crankcase and related parts have been changed.

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 6V to 12V, 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.

D. TOOLS AND INSTRUMENTS FOR SHOP SERVICING

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

1. Ordinary tools

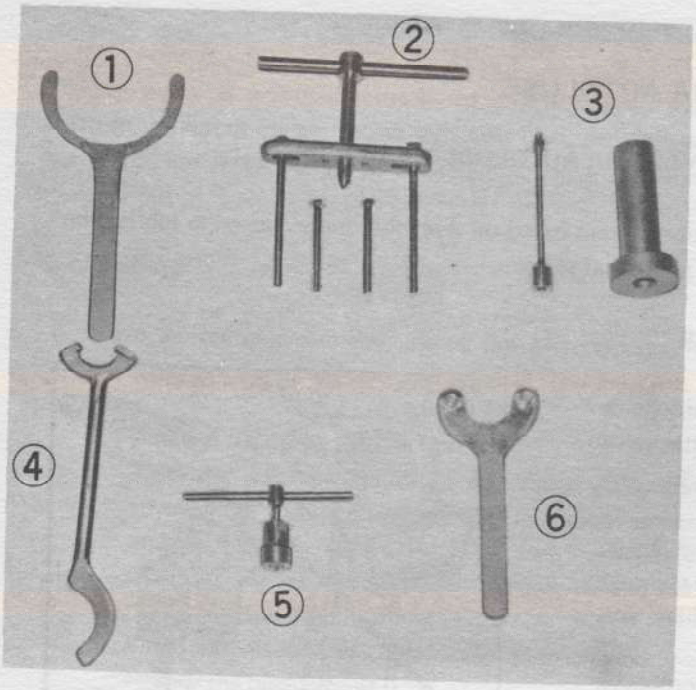


1. Plug wrench 23 x 29 mm
2. Set of wrenches
3. Set of socket wrenches
4. Soft hammer
5. Steel hammer
6. Clip pliers
7. Clip pliers
8. Needle-nose pliers
9. Pliers
10. Phillips screwdriver
11. Phillips screwdriver, large
12. Phillips screwdriver, medium
13. Phillips screwdriver, small
14. Screwdriver,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

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

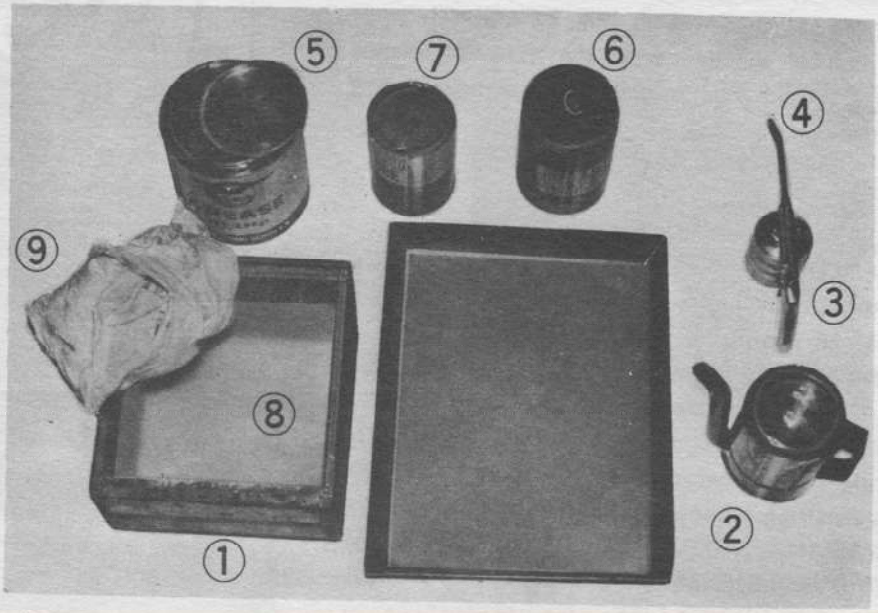
2. Special tools and instruments

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 electrotester, 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.

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 carburettor 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.
      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.

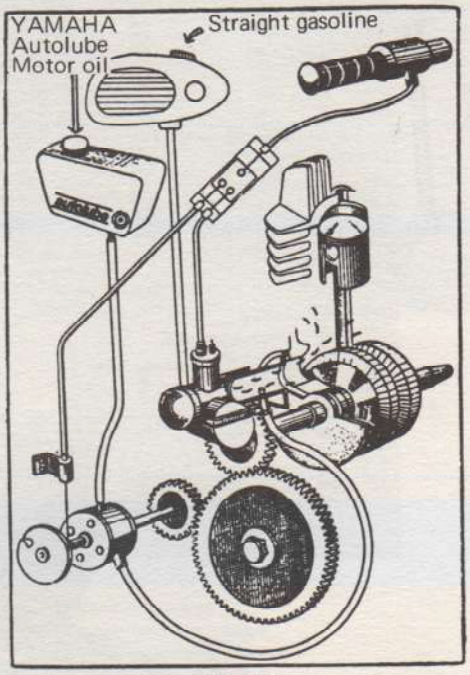


Fig. 2-1

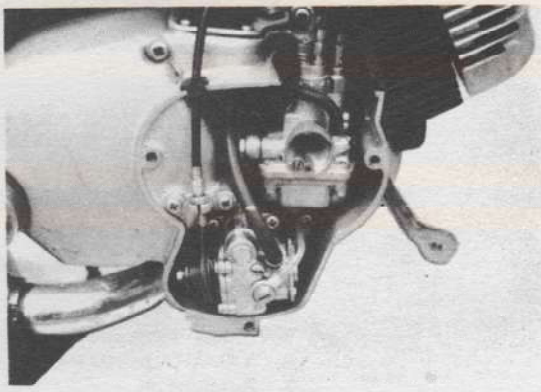


Fig. 2-2

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

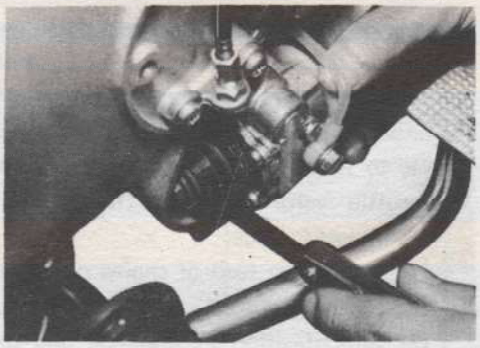


Fig. 2-3

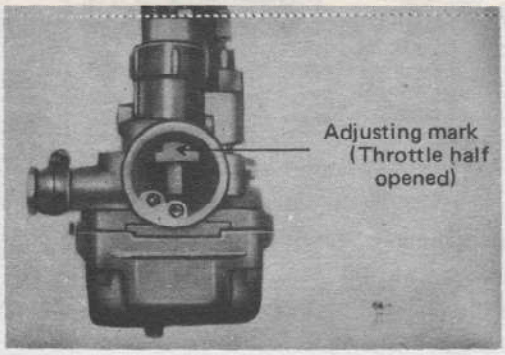


Fig. 2-4

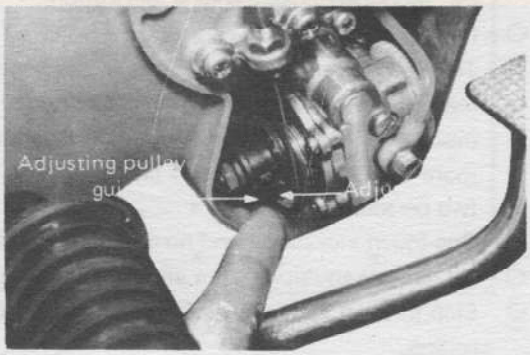


Fig. 2-5

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.

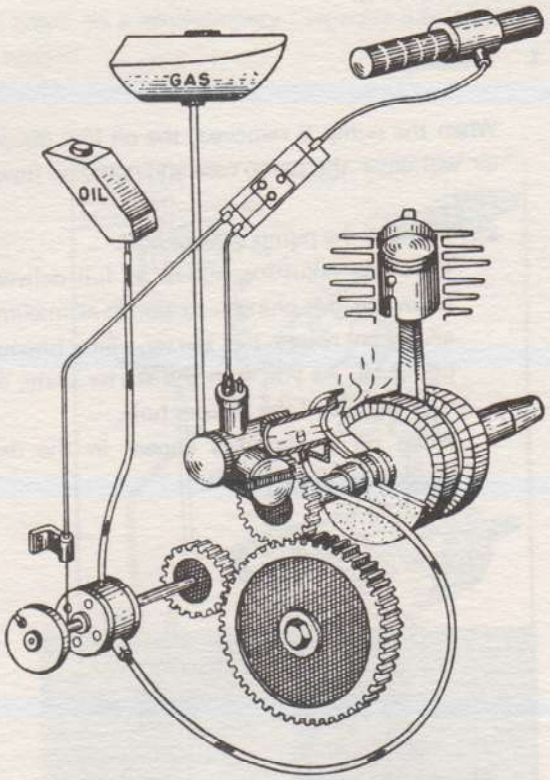
2. Pump setting procedure

After factory assembly each pump is adjusted.

a. Using the adjusting shims, plunger stroke is set to 0.20 ~ 0.25 mm. (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.

YAMAHA 75 (U7 & U7D) FEATURES



○ 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 6.2 PS/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.

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 carburettor		x	x	x
9	Overhaul carburettor			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. Carburettor.
   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 carburettor, 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 carburettor, 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 poor.
b. Carburettor 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 ± 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 carburettor.

5. Ignition Timing.

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

6. Battery.

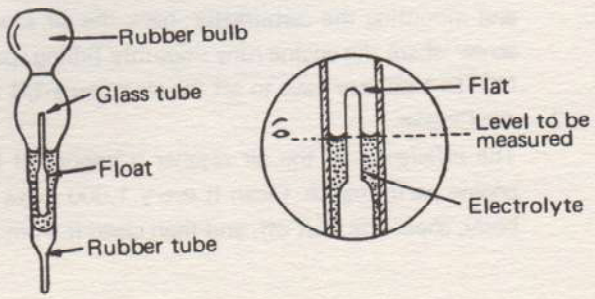
Check the battery at least once a month, because it is the power source for your machine's daytime lighting system (stoplight and neutral light; or any lights used when the engine is not running).

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 ~ 1.27.

When adding fluid, do not use dilute sulphuric acid; use distilled water.

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



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. b. Clean and adjust point gap. (0.30 ~ 0.35mm.) 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. c. Replace. d. Replace. e. Adjust ignition timing.

B. POOR ACCELERATION

NO.	INSPECTION	TROUBLE SOURCE	REMEDY
1	Check engine R.P.M.	If the engine winds up freely, trouble may be: 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). b. Heat range of spark plug is incorrect.	a. Adjust clutch or replace the clutch ass'y or necessary parts. b. Replace with correct heat range spark plug.
		If the engine dies, the clutch is good, the trouble may be: a. Starter jet plunger not returning to original position. b. Dirty air cleaner. c. Flow of gasoline restricted. d. Clogged vent hole in fuel tank cap. e. Clogged muffler or exhaust pipe. f. Oil leak in the O-ring at oil line to valve cover connection.	a. Check starter. b. Clean. c. Clean carburetor, fuel line and fule cock. d. Replace tank cap. e. Clean. f. Replace (OR-2.4-11.8).

When you are 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.	a. Scored piston and/or faulty rings. b. Worn or damaged piston and cylinder. c. Leak in head gasket. d. Compression leak in crank case. e. Faulty oil seal in crankcase.	a. Replace piston rings. b. Repair or replace. c. Replace. d. Repair or replace. e. Replace.
4	Check Carburettor 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 crankcase.	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. Continous noise.

1. Intermittent Noise

NO.	NOISE	TROUBLE SOURCE	REMEDY
1	Noise is heard during sudden acceleration.	a. Too much clearance between piston rings and grooves. b. Piston rings drag on cylinder wall caused by carbon accumulated in grooves. c. Too much clearance between piston pin and bushing at conrod small end. d. Too much clearance at conrod big end. The above noises have a definite metallic character. e. Knocking due to advanced ignition timing.	a. Replace rings and/or piston. b. Remove carbon. c. Replace pin and/or bushing. d. Repair crank. e. Adjust.
2	Noise is heard at slow R.P.M.	a. Too much clearance between piston and cylinder. (Noise is not heard when opening throttle.) b. Piston ring land is not smooth where it contacts the upper and lower edges of the ring. c. Worn-out shock absorber rubber in primary driven gear.	a. Replace piston. b. Smooth ring lands with sandpaper so rings expand freely. c. Replace primary driven gear.

2. Changing Noise

1	Noise is heard when starting.	a. Piston clearance excessive (noise is heard before engine is warmed up.) 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.)	a. Replace piston. b. Smooth ring land with sandpaper so rings may expand freely.
2	Noise continues after engine is warmed up.	a. Piston clearance is more than 1-a. b. Bent conrod.	a. Replace piston and/or cylinder. b. Overhaul crank.

3. Continuous Noise

NO.	PART	TROUBLE SOURCE	REMEDY
1	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 tyre pressures 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 tyre 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.

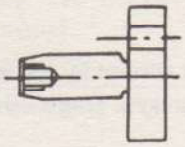
D. DESCRIPTION OF INDIVIDUAL PARTS

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

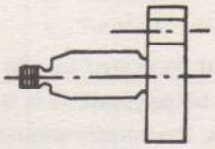
1. Engine

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

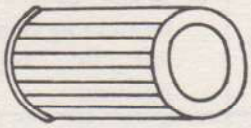
Change in shape because of dynamo mounted.

Crank case cover (L) Usable for U7-E

Change in shape because of dynamo mounted.

Air cleaner Usable for U7

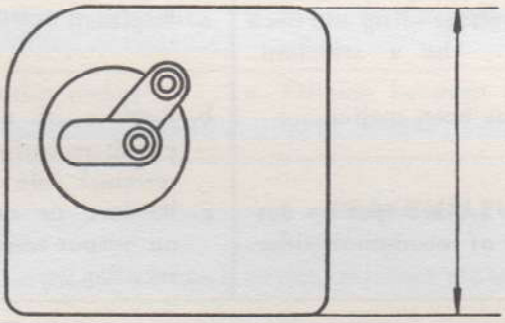
Change in shape because of the new type of battery mounted



U5-E (MF3-E)
w/electric starter

MF3D (U5D)
w/kick starter

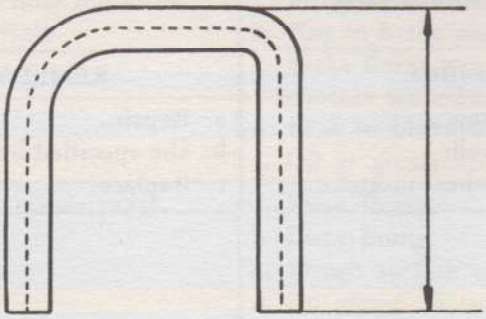
Carburettor cap (same as U7)



U5E 68 mm

U5D 64 mm

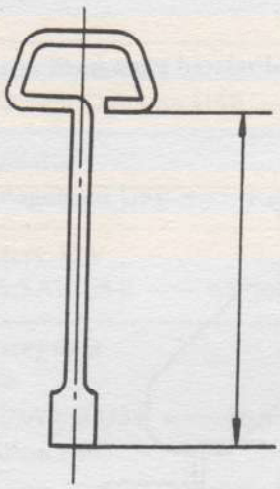
Carburettor cap guide (Same as U7)



U5E 60 mm

U5D 56 mm

Level gauge

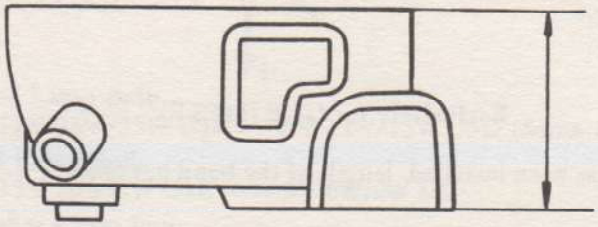


U5E 93 mm

U5D 90 mm

Crankcase cover (R) (same as U7)

For better maintenance

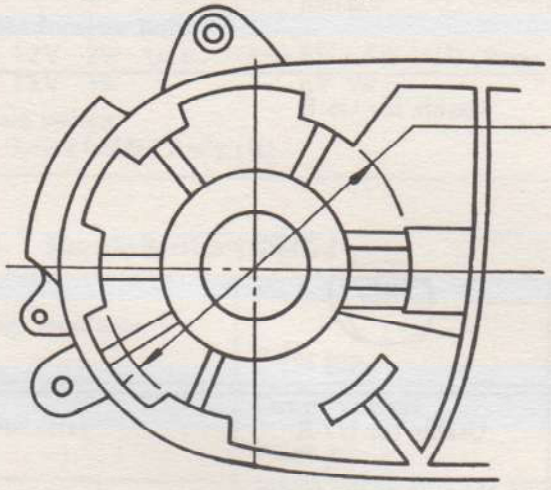


U5E 102 mm

U5D 98 mm

Crankcase (L)

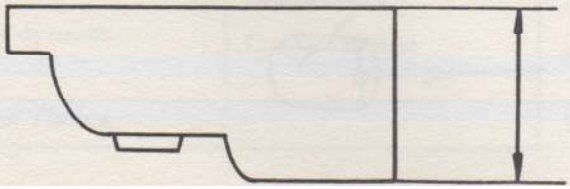
Change in shape because of dynamo mounted.



U5E 115 ϕ

U5D 106 ϕ

Crankcase cover (L)



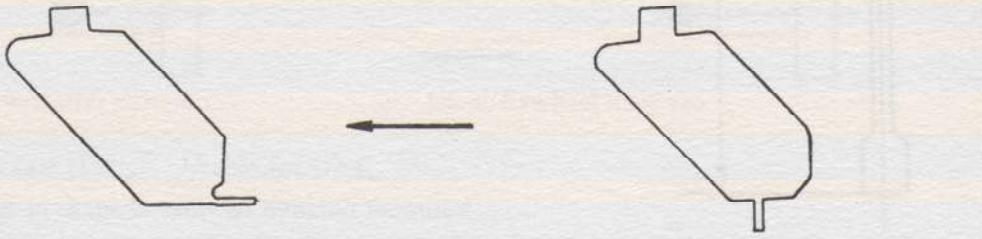
U5E 102 mm

U5D 85 mm

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



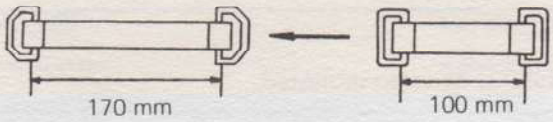
U5-E w/electric starter — U5D w/kick starter (MF3-D)

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

(U5E-1006)

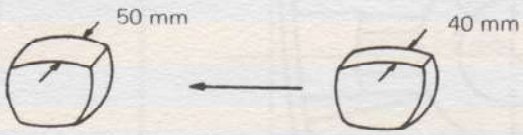
Battery band — Exclusively for U5-E (MF3-E)

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



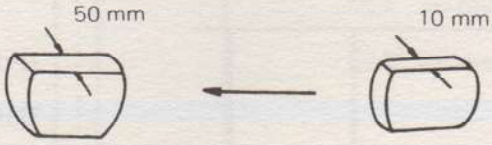
Cover (battery) — Usable for U5-E

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 x 3 U5E ⟵ 10A x 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)

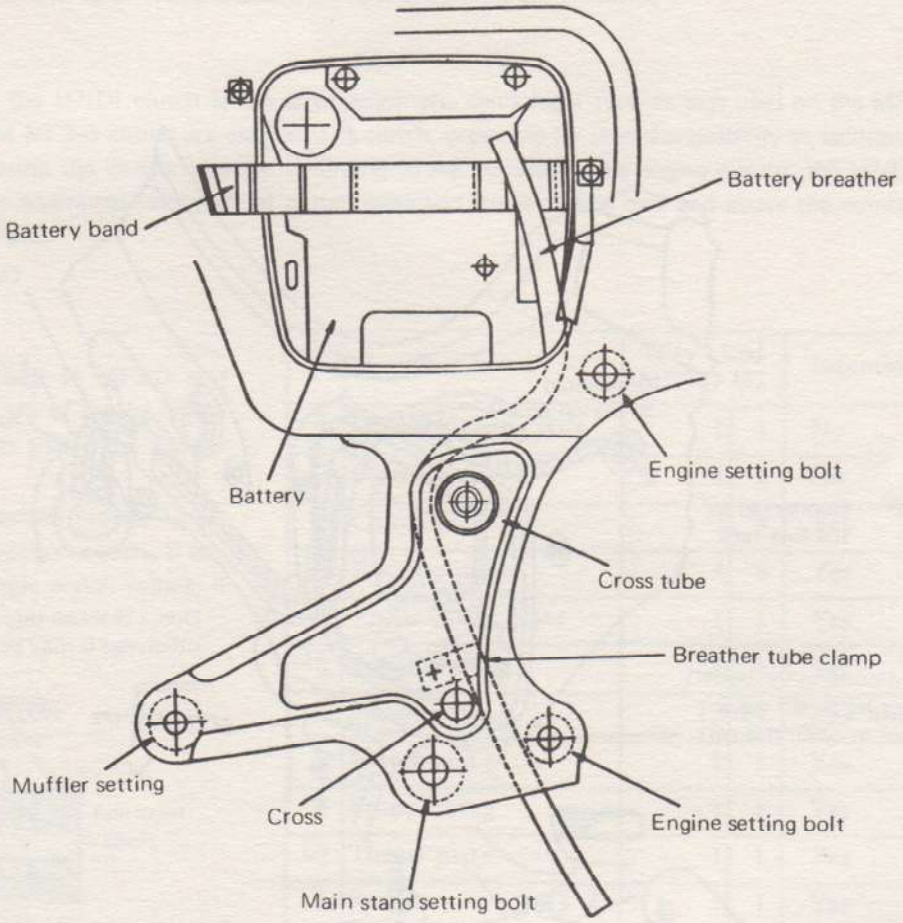
4. Electric Service Standard

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

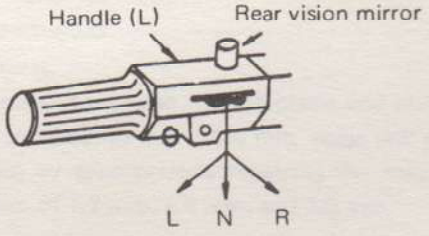
	Name of Part	Maker	U5-E Type & Standards	Remarks
Engine	Starter dynamo	Hitachi	GS106-04 14V65W 2 brushes	
	Neutral switch		YN7	Usable for U5D
	Spark plug	NGK	B-7HZ	
	Regulator	Hitachi	T106-52	Usable for U7D
	Ignition coil	Mitsubishi	HM-1/12G	Usable for U7D
	Horn	Nikko	MB-12	Usable for U7D
Frame	Battery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

E. SPECIAL INSTRUCTIONS ON SERVICING

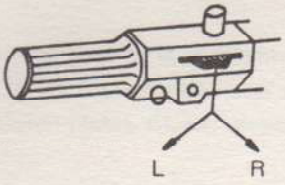
1. Installation of U5-E (MF3-E) battery breather.
   (1) For removal of the battery, remove the breather from the battery.
   (2) For reinstallation of the battery, position the exhaust tube outside the battery band.



2. Instructions for prevention of misuse of the handle of switch.
   The lever holder assembly 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.

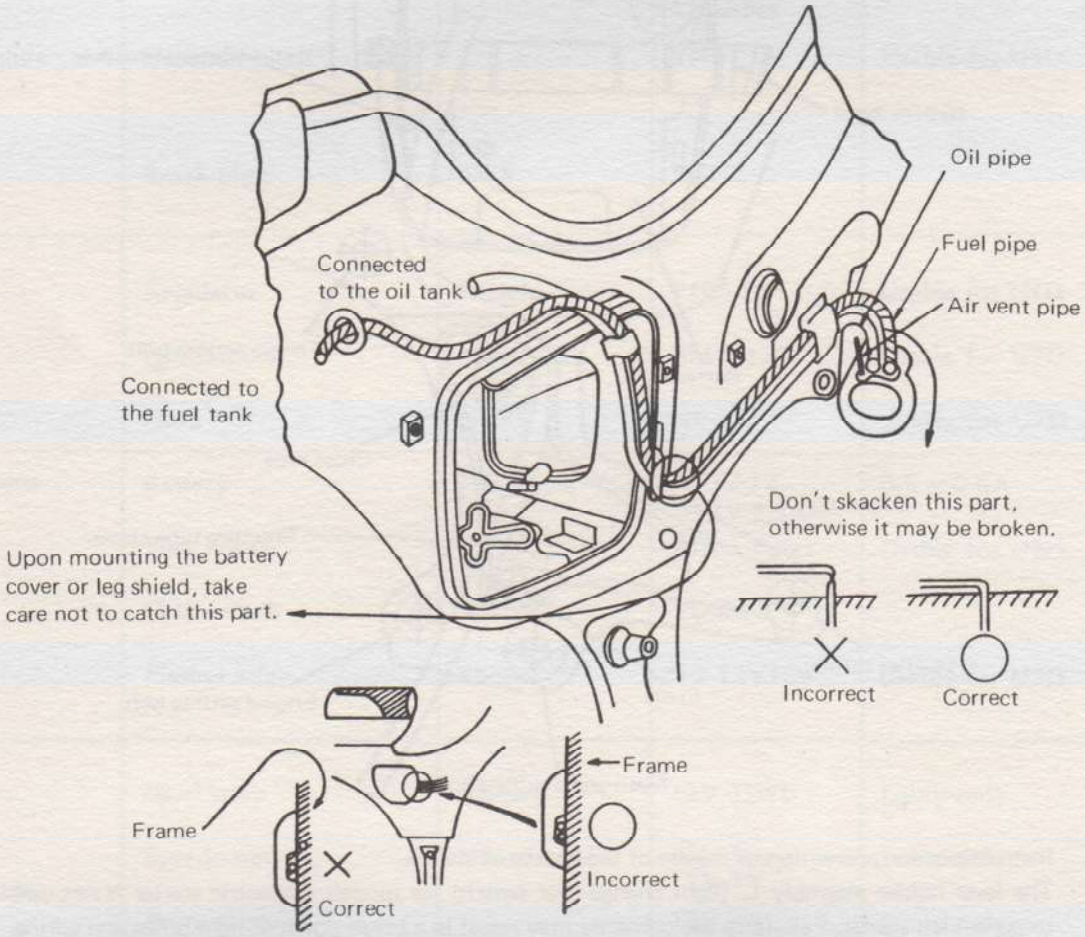


U5E/U7D (w/electric starter)



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 carburettor air vent pipe into the frame with special care not to bend it.



GENERAL INFORMATION

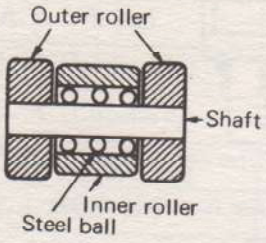
A. ENGINE

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 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.



No.	Part name	Q'ty Used MF3-D	U7	Interchangeability
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

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

O 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.

(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.

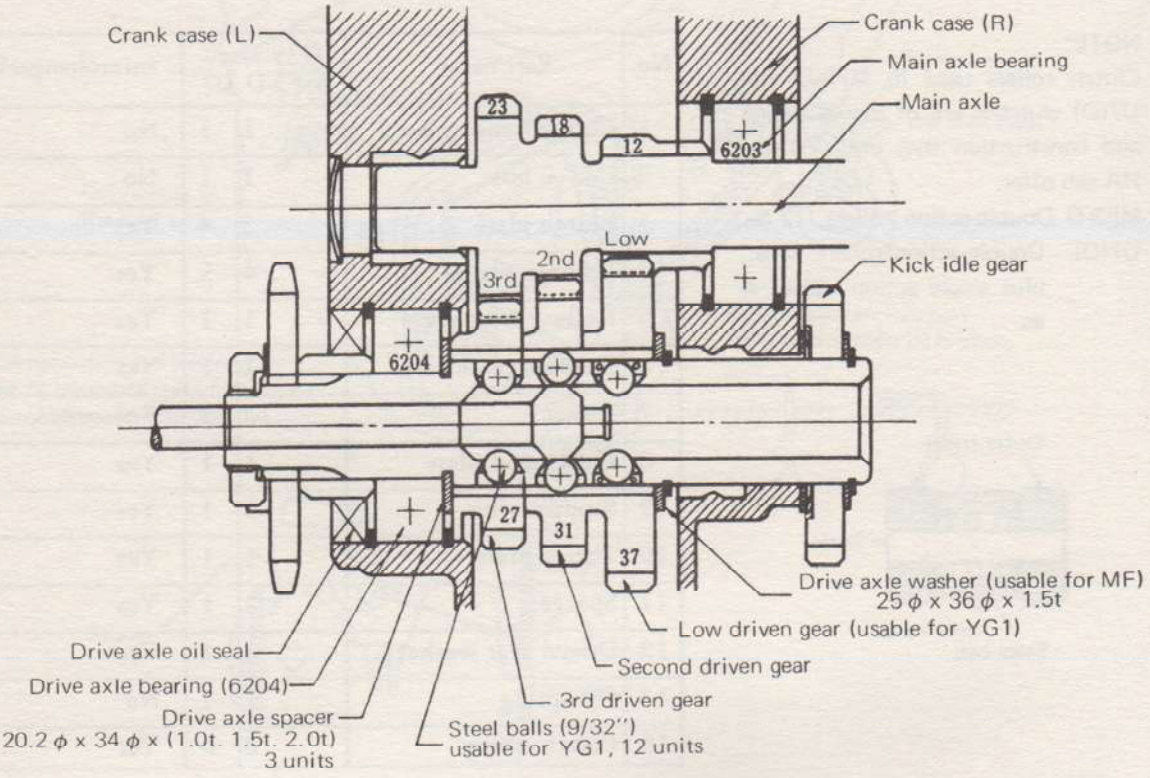
(3) Loss of proper tension of the clutch spring will cause clutch slippage.
The free length of a correct clutch spring is between 12.7 and 13.1 mm.

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.



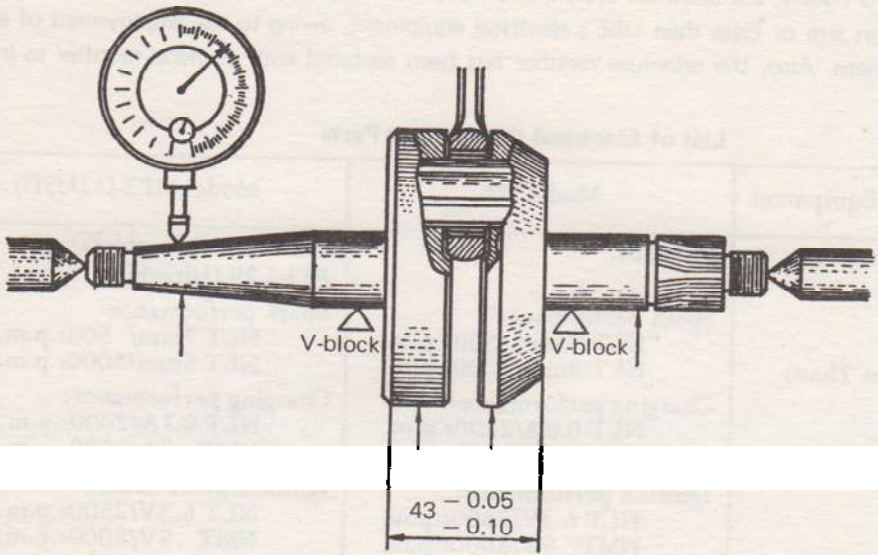
NOTE:
On MF3 (U5), the primary reduction ratio being 74/19, and secondary 38/15, the total reduction ratios are:

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



Carburettor

Carburettor 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.

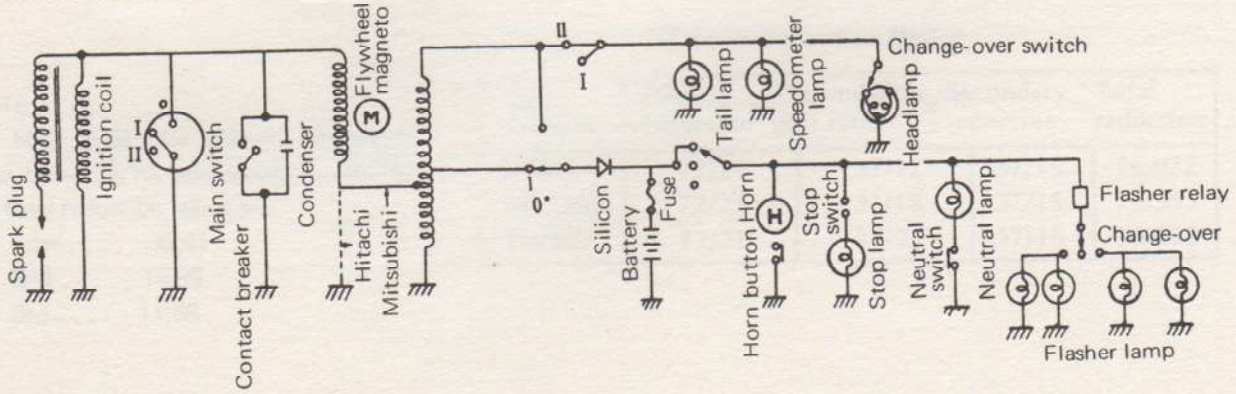
C. ELECTRICAL

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) Spark plug	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. B7HZ	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



YAMAHA
SERVICE DATA
TUNE UP
CHART
(Various Models)

1. MODEL	V50	V50E
2. HORSE POWER (B.H.P/r.p.m)	4.5 B.H.P./6,000 r.p.m.	4.5 B.H.P./6,000 r.p.m.
3. TORQUE (kg-m/r.p.m)	0.54 kg-m/5,000 r.p.m.	0.54 kg-m/5,000 r.p.m.
4. BORE & STROKE (mm)	40 x 39.7 mm	40 x 39.7 mm
5. ENGINE DISPLACEMENT (cc, cu.in)	49 cc (2.99 cu.in)	49 cc (2.99 cu.in)
6. NET WEIGHT (APPROX) (kg, lbs.)	70 kg (154 lbs)	75 kg (165 lbs)
7. COMPRESSION RATIO	6.6 : 1	6.6 : 1
8. IGNITION TIMING (mm B.T.D.C.)	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm
9. CONTACT BREAKER POINT GAP SETTING (mm)	0.30~0.40 mm	0.30~0.40 mm
10. SPARK PLUG AND GAP (mm)	B-7HS, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm
11. PISTON SKIRT CLEARANCE (mm)	0.030~0.035 mm	0.030~0.035 mm
12. CARBURETOR TYPE & MANUFACTURER	VM14SC Mikuni	VM14SC Mikuni
I.D. MARK	296A1	296A1
MAIN JET (M.J)	#85	#85
AIR JET (A.J)	2.4	2.4
JET NEEDLE - clip position (J.N)	3G12-3	3G12-3
NEEDLE JET (N.J)	E-8	E-8
CUTAWAY (C.A)	2.5	2.5
PILOT JET (P.J)	#12.5	#12.5
AIR SCREW (Turns out) (A.S)	1¾	1¾
STARTER JET (G.S)	#40	#40
FLOAT LEVEL (mm) (F.L)	22.5±2.5 mm	22.5±2.5 mm
13. AIR FILTER TYPE	Dry paper filter	Dry paper filter
14. PRIMARY REDUCTION RATIO & METHOD	68/19, 3.578 gear	68/19, 3.578 gear
15. SECONDARY REDUCTION RATIO & METHOD	39/13, 3.000 chain	39/13, 3.000 chain
16. TRANS. GEAR RATIOS		
1st (No. teeth) (Internal)	39/12, 3.250	39/12, 3.250
2nd (") (")	29/16, 1.812	29/16, 1.812
3rd (") (")	24/20, 1.200	24/20, 1.200
4th (") (")	—	—
5th (") (")	—	—
6th (") (")	—	—
17. TRANS. OIL CAPACITY (cc)	600~650 cc	600~650 cc
18. OIL TANK CAPACITY (ℓ, qt.)	1.4 ℓ (1.5 qt)	1.4 ℓ (1.5 qt)
19. FUEL TANK CAPACITY (ℓ, gal.)	4.5 ℓ (1.2 gal)	4.5 ℓ (1.2 gal)
20. FRONT FORK OIL CAPACITY (cc)	—	—
21. TIRE SIZE (Front)	2.25 - 17 - 4PR	2.25 - 17 - 4PR
(Rear)	2.25 - 17 - 4PR	2.25 - 17 - 4PR
22. TIRE PRESSURE (Front) (kg/cm^2)	1.4 kg/cm^2	1.4 kg/cm^2
(Rear) (kg/cm^2)	2.0 kg/cm^2	2.0 kg/cm^2
23. DRIVE CHAIN TENSION (Up & down freeplay) (mm, in)	20 mm (0.79 in)	20 mm (0.79 in)
24. OIL PUMP STROKE ADJUSTMENT MIN. (mm)	0.15~0.20 mm	0.15~0.20 mm
MAX. (mm)	0.87~1.02 mm	0.87~1.02 mm
25. AUTOLUBE CABLE ADJUSTMENT (Throttle position)	at idle	at idle
26. VALVE CLEARANCE INTAKE (mm)	—	—
EXHAUST (mm)	—	—
27. DYNAMO & MAGNETO TYPE	Flywheel magneto	Starter Generator
MODEL & MANUFACTURER	F11-L43, Hitachi	GS106-05, Hitachi
28. BREAKER CONTACT PRESSURE (gram)	650~850 gram	500~700 gram
29. CONDENSER CAPACITY (μF)	0.30 μF	0.22 μF
30. REGULATOR MODEL	—	T106-52A, Hitachi
"NO LOAD" VOLTAGE ADJUSTMENT (V/r.p.m.)	—	15.8~16.5V/2,500 r.p.m.
31. IGNITION COIL SPARK TEST (Minimum) (mm/r.p.m.)	10mm/500 r.p.m.	8mm/300 r.p.m.
PRIMARY WIDING RESISTANCE (Ω)	1.7 Ω	3.9 Ω
SECONDARY WIDING RESISTANCE (KΩ)	6.0 KΩ	10 KΩ
32. BATTERY MODEL	6N4 - 2A - 2	AYT2-12
VOLTAGE & AMPERAGE RATING (V-AH)	6V4AH	12V5.5AH
33. HEAD LAMP Hi/Lo RATING (V-W)	6V15W/15W	12V25W/25W
34. TAIL LAMP/STOP LAMP RATING (V-W)	6V3W/10W	12V8W/20W
35. FLASHER LAMP RATING (V-W)	6V8W	12V 8W

V75	V75E	V90	F5
6.2 B.H.P./6,500 r.p.m.	6.2 B.H.P./6,500 r.p.m.	7.5 B.H.P./6,500 r.p.m.	4.8 B.H.P./7,000 r.p.m.
0.70 kg-m/4,500 r.p.m.	0.70 kg-m/4,500 r.p.m.	0.95 kg-m/4,500 r.p.m.	0.52 kg-m/6,000 r.p.m.
47 x 42 mm	47 x 42 mm	50 x 45.6 mm	40 x 39.7 mm
72 cc (4.39 cu.in.)	72 cc (4.39 cu.in.)	89 cc (5.43 cu.in.)	49 cc (2.99 cu.in.)
72 kg (159 lbs.)	77 kg (170 lbs.)	80 kg (176 lbs.)	71 kg (156 lbs.)
6.8 : 1	6.8 : 1	6.8 : 1	7.1 : 1
$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm
0.30~0.40 mm	0.30~0.40 mm	0.30~0.40 mm	0.30~0.40 mm
B-7HS, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm
0.030~0.035 mm	0.030~0.035 mm	0.030~0.035 mm	0.035~0.040 mm
VM15SC Mikuni	VM15SC Mikuni	VM16SC Mikuni	VM16SC Mikuni
298A1	298A1	300A1	257E2
#100	#100	#100	#150
2.4	2.4	2.4	0.5
3G9-3	3G9-3	3G9-3	3G9-3
E-8	E-8	E-8	E-4
2.5	2.5	2.5	1.5
#12.5	#12.5	#12.5	#25
1¾	1¾	1¼	1¾
#25	#25	#40	#50
22.5±2.5 mm	22.5±2.5 mm	22.5±2.5 mm	—
Dry paper filter	Dry paper filter	Dry paper filter	Dry paper filter
68/19,3.578 gear	68/19,3.578 gear	68/19,3.578 gear	74/19,3.894 gear
36/14,2.571 chain	36/14,2.571 chain	35/15,2.333 chain	39/12,3.250 chain
39/12,3.250	39/12,3.250	39/12,3.250	40/13,3.077
29/16,1.812	29/16,1.812	29/16,1.812	34/18,1.889
24/20,1.200	24/20,1.200	24/20,1.200	30/23,1.304
—	—	—	27/26,1.038
—	—	—	—
—	—	—	—
600~650cc	600~650 cc	600~650 cc	600~650 cc
1.4 ℓ (1.5 qt)	1.4 ℓ (1.5 qt)	1.4 ℓ (1.5 qt)	1.4 ℓ (1.5 qt)
4.5 ℓ (1.2 gal.)	4.5 ℓ (1.2 gal.)	5.3 ℓ (1.4 gal.)	6.0 ℓ (1.6 gal.)
—	—	—	R.L : 130 cc
2.25 - 17 - 4PR	2.25 - 17 - 4PR	2.50 - 17 - 4PR	2.25 - 17 - 4PR
2.25 - 17 - 4PR	2.25 - 17 - 4PR	2.50 - 17 - 4PR	2.25 - 17 - 4PR
1.4 kg/cm²	1.4 kg/cm²	1.4 kg/cm²	1.4 kg/cm²
2.0 kg/cm²	2.0 kg/cm²	2.0 kg/cm²	2.0 kg/cm²
20 mm (0.79 in.)	20 mm (0.79 in.)	20 mm (0.79 in.)	20 mm (0.79 in.)
0.25~0.29 mm	0.25~0.29 mm	0.25~0.29 mm	0.30~0.35 mm
1.10~1.34 mm	1.10~1.34 mm	1.70~1.94 mm	1.45~1.70 mm
at idle	at idle	at idle	at half open
—	—	—	—
—	—	—	—
Flywheel magneto	Starter Generator	A.C. Generator	Flywheel magneto
F11-L43, Hitachi	GS109-06, Hitachi	F136 -01, Hitachi	F11—L40, Hitachi
650~850 gram	500~700 gram	650~850 gram	650~850 gram
0.30 μF	0.22 μF	0.18 μF	0.30 μF
—	T106-52A, Hitachi	—	—
—	15.8~16,5V/2,500 r.p.m.	—	—
10mm/500 r.p.m.	8mm/300 r.p.m.	8mm/300 r.p.m.	7mm/500 r.p.m.
1.7 Ω	3.9 Ω	3.9 Ω	0.6 Ω
6.0 KΩ	10 KΩ	10 KΩ	5 KΩ
6N4-2A-2	AYT2-12	AYT2-12	6N4A-4D
6V4AH	12V5.5AH	12V5.5AH	6V4AH
6V15W/15W	12V25W/25W	12V25W/25W	6V15W/15W
6V3W/10W	12V8W/20W	12V8W/20W	6V3W/10W
6V8W	12V8W	12V8W	6V8W

1. MODEL	J5	G5G
2. HORSE POWER (B.H.P/r.p.m)	5.3 B.H.P./7,000 r.p.m.	6.7 B.H.P./7,500 r.p.m.
3. TORQUE (kg-m/r.p.m)	0.57 kg-m/6,000 r.p.m.	0.72 kg-m/6,000 r.p.m.
4. BORE & STROKE (mm)	42 x 42 mm	47x 42 mm
5. ENGINE DISPLACEMENT (cc, cu.in)	58 cc (3.54 cu.in)	73 cc (4.45 cu.in)
6. NET WEIGHT (APPROX) (kg, 'lbs.)	71 kg (156 lbs)	79 kg (174 lbs)
7. COMPRESSION RATIO	6.8 : 1	6.8 : 1
8. IGNITION TIMING (mm B.T.D.C.)	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm
9. CONTACT BREAKER POINT GAP SETTING (mm)	0.30~0.40 mm	0.30~0.40 mm
10. SPARK PLUG AND GAP (mm)	B-7HS, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm
11. PISTON SKIRT CLEARANCE (mm)	0.035~0.040 mm	0.030~0.035 mm
12. CARBURETOR TYPE & MANUFACTURER	VM16SC Mikuni	VM16SC Mikuni
I.D. MARK	257E2	206A4
MAIN JET (M.J)	#150	#120
AIR JET (A.J)	0.5	0.5
JET NEEDLE - clip position (J.N)	3G9-3	3G9-3
NEEDLE JET (N.J)	E-4	E-2
CUTAWAY (C.A)	1.5	2.5
PILOT JET (P.J)	#25	#25
AIR SCREW (Turns out) (A.S)	1¾	1¾
STARTER JET (G.S)	#50	#30
FLOAT LEVEL (mm) (F.L)	—	22.5±2.5 mm.
13. AIR FILTER TYPE	Dry paper filter	Dry paper filter
14. PRIMARY REDUCTION RATIO & METHOD	74/19,3.894 gear	74/19,3.894 gear
15. SECONDARY REDUCTION RATIO & METHOD	39/14,2.786 chain	37/15,2.467 chain
16. TRANS. GEAR RATIOS		
1st (No. teeth) (Internal)	40/13,3.077	40/13,3.077
2nd (") (")	34/18,1.889	34/18,1.889
3rd (") (")	30/23,1.304	30/23,1.304
4th (") (")	27/26,1.038	26/27,0.963
5th (") (")	—	—
6th (") (")	—	—
17. TRANS. OIL CAPACITY (cc)	600~650 cc	600~650 cc
18. OIL TANK CAPACITY (ℓ, qt.)	1.4 ℓ (1.5 qt)	1.6 ℓ (1.7 qt)
19. FUEL TANK CAPACITY (ℓ, gal.)	6.0 ℓ (1.6 gal)	6.5 ℓ (1.7 gal)
20. FRONT FORK OIL CAPACITY (cc)	R.L : 130 cc	R.L : 141 cc
21. TIRE SIZE (Front)	2.25 - 17 - 4PR	2.50 - 17 - 4PR
(Rear)	2.25 - 17 - 4PR	2.50 - 17 - 4PR
22. TIRE PRESSURE (Front) (kg/cm^2)	1.4 kg/cm^2	1.4 kg/cm^2
(Rear) (kg/cm^2)	2.0 kg/cm^2	2.0 kg/cm^2
23. DRIVE CHAIN TENSION (Up & down freeplay) (mm, in)	20 mm (0.79 in)	20 mm (0.79 in)
24. OIL PUMP STROKE ADJUSTMENT MIN. (mm)	0.30~0.35 mm	0.20~0.25 mm
MAX. (mm)	1.45~1.70 mm	1.70~1.95 mm
25. AUTOLUBE CABLE ADJUSTMENT (Throttle position)	at half open	at half open
26. VALVE CLEARANCE INTAKE (mm)	—	—
EXHAUST (mm)	—	—
27. DYNAMO & MAGNETO TYPE	Flywheel magneto	Flywheel magneto
MODEL & MANUFACTURER	F11— L40 Hitachi	FCH-ICL, Mitsubishi
28. BREAKER CONTACT PRESSURE (gram)	650~850 gram	650~850 gram
29. CONDENSER CAPACITY (μF)	0.30 μF	0.22 μF
30. REGULATOR MODEL	—	—
"NO LOAD" VOLTAGE ADJUSTMENT (V/r.p.m.)	—	—
31. IGNITION COIL SPARK TEST (Minimum) (mm/r.p.m.)	7mm/500 r.p.m.	7mm/500 r.p.m.
PRIMARY WIDING RESISTANCE (Ω)	0.6Ω	0.6Ω
SECONDARY WIDING RESISTANCE (KΩ)	5 KΩ	5 KΩ
32. BATTERY MODEL	6N4A-4D	6N4A-4D
VOLTAGE & AMPERAGE RATING (V-AH)	6V4AH	6V4AH
33. HEAD LAMP Hi/Lo RATING (V-W)	6C15W/15W	6V15W/15W
34. TAIL LAMP/STOP LAMP RATING (V-W)	6V3W/10W	6V3W/10W
35. FLASHER LAMP RATING (V-W)	6V8W	6V8W

L1	L2G	A7	A7F
9.5 B.H.P./8,500 r.p.m.	9.7 B.H.P./7,500 r.p.m.	11B.H.P./6,700 r.p.m.	11B.H.P./6,700 r.p.m.
0.805 kg-m/8,000 r.p.m.	0.95 kg-m/6,500 r.p.m.	1.25 kg-m/5,000r.p.m.	1.25 kg-m/5,000 r.p.m.
38 x 43 mm x 2	52 x 45.6 mm	56 x 50 mm	56 x 50 mm
97 cc (5.92 cu.in)	96 cc (5.86 cu.in)	123 cc (7.51 cu.in)	123 cc (7.51 cu.in)
92 kg (180 lbs)	92 kg (203 lbs)	110 kg (243 lbs)	103 kg (227 lbs)
7.1 : 1	7.2 : 1	6.8 : 1	6.8 : 1
$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm	$2.0^{+0.2}_{-0.5}$ mm	$2.0^{+0.2}_{-0.5}$ mm
0.30~0.40 mm	0.30~0.40 mm	0.30 - 0.40 mm	0.30~0.40 mm
B-8HC, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm
0.035~0.040 mm	0.030~0.035 mm	0.040~0.045 mm	0.040~0.045 mm
VM16SC Mikuni	VM20SC Mikuni	VM22SC Mikuni	VM22SC Mikuni
198A1	205E1	227E2	334B1
#70	#95	#190	#190
—	—	2.0	2.0
3D3-3	4D2-3	4J6-2	4J6-2
E-0	N-8	0-0	0-0
1.5	2.0	2.5	2.5
#17.5	#30	#30	#30
2½	1¾	1½	1½
#15	#40	#110	#110
22.5±2.5 mm	17.9±2.5 mm	23.8±2.5 mm	23.8±2.5mm
Dry paper filter	Dry paper filter	Dry paper filter	Dry paper filter
74/19,3.894 gear	74/19,3.894 gear	69/18,3.833 gear	69/18,3.833 gear
35/15,2.333 chain	37/16,2.312 chain	39/15,2.600 chain	40/14, 2.857 chain
40/13,3.077	40/13,3.077	38/15 2.533	38/15,2.533
34/18,1.889	34/18,1.889	32/21 1.524	32/21,1.524
30/23,1.304	30/23,1.304	28/25 1.120	28/25,1.120
26/27,0.963	26/27,0.963	24/29 0.823	24/29,0.823
—	—	—	—
—	—	—	—
650~700 cc	650~700 cc	1300±50 cc	1300±50 cc
1.75 ℓ (1.85 qt)	1.6 ℓ (1.7 qt)	1.7 ℓ (1.8 qt)	1.7 ℓ (1.8 qt)
7.3 ℓ (1.93 gal)	7.0 ℓ (1.9 gal.)	9.0 ℓ (2.4 gal)	9.0 ℓ (2.4 gal)
R.L : 130cc	R.L : 136 cc	R.L : 165cc	R.L : 165 cc
2.50 - 17 - 4PR	2.50 - 18 - 4PR	3.00 - 16 - 4PR	3.00 - 16 - 4PR
2.50 - 17 - 4PR	2.75 - 18 - 4PR	3.00 - 16 - 4PR	3.00 - 16 - 4PR
1.4 kg/cm²	1.4 kg/cm²	1.0 kg/cm²	1.0 kg/cm²
2.0 kg/cm²	2.0 kg/cm²	1.2 kg/cm²	1.2 kg/cm²
20 mm (0.79 in)	20 mm (0.79 in)	20 mm (0.79 in)	20 mm (0.79 in)
0.20~0.25 mm	0.20~0.25 mm	0.20~0.25 mm	0.20~0.25 mm
1.66~1.91 mm	1.85~2.05 mm	1.85~2.05 mm	1.85~2.05 mm
at idle	at half open	at half open	at half open
—	—	—	—
—	—	—	—
AC Generator	Flywheel magneto	Starter Generator	Flywheel magneto
G1206-01, Hitachi	FCH-ICL, Mitsubishi	GS113-02, Hitachi	F136-08, Hitachi
500~700 gram	650~850 gram	500~700 gram	650~850 gram.
0.22 μF	0.22 μF	0.22 μF	0.30 μF
T106-01, Hitachi	—	T107-56A, Hitachi	—
15.6 - 16.3 V/2,500 r.p.m.	—	15.8~16.5V/2,500 r.p.m.	—
7mm/700 r.p.m.	7mm/500 r.p.m.	8mm/300 r.p.m.	7mm/500 r.p.m.
2.3 Ω	0.6 Ω	4.9 Ω	4.9 Ω
10.5 KΩ	5 KΩ	5.5 KΩ	11 KΩ
BST3-12	6N4A-4D	12N10	6N4-2A-2
12V5.5AH	6V4AH	12V10AH	6V4AH
12V25W/25W	6V15W/15W	12V35W/35W	6V25W/25W
12V8W/20W	6V3W/10W	12V8W/20W	6V5.3W/17W
12V8W	6V8W	12V8W	6V8W

1. MODEL	FS1	LS3
2. HORSE POWER (B.H.P/r.p.m)	6.0 B.H.P./9,000r.p.m.	11.5 B.H.P./8,500 r.p.m.
3. TORQUE (kg-m/r.p.m)	0.5 kg-m/8,000 r.p.m.	1.05 kg-m/7,500 r.p.m.
4. BORE & STROKE (mm)	40 x 39.7 mm	52 x 45.6 mm
5. ENGINE DISPLACEMENT (cc, cu.in)	49 cc (2.99 cu.in)	97 cc (5.92 cu.in)
6. NET WEIGHT (APPROX) (kg, lbs.)	70 kg (154 lbs)	85 kg (187 lbs)
7. COMPRESSION RATIO	6.9 : 1	7.2 : 1
8. IGNITION TIMING (mm B.T.D.C.)	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm
9. CONTACT BREAKER POINT GAP SETTING (mm)	0.30~0.40 mm	0.30~0.40 mm
10. SPARK PLUG AND GAP (mm)	B-8HC, 0.5~0.6 mm	B-8HS, 0.5~0.6 mm
11. PISTON SKIRT CLEARANCE (mm)	0.035~0.040 mm	0.035~0.040 mm
12. CARBURETOR TYPE & MANUFACTURER	VM16SC Mikuni	VM20SH Mikuni
I.D. MARK	260A4	336E1
MAIN JET (M.J)	#150	#150
AIR JET (A.J)	0.5	0.5
JET NEEDLE - clip position (J.N)	3G9-3	4J13-2
NEEDLE JET (N.J)	E-4	N-6
CUTAWAY (C.A)	2.0	1.5
PILOT JET (P.J)	#25	#25
AIR SCREW (Turns out) (A.S)	1¼	1½
STARTER JET (G.S)	#50	#30
FLOAT LEVEL (mm) (F.L)	—	25.0±2.5 mm
13. AIR FILTER TYPE	Dry paper filter	Dry paper filter
14. PRIMARY REDUCTION RATIO & METHOD	74/19, 3.895 gear	74/19, 3.894 gear
15. SECONDARY REDUCTION RATIO & METHOD	41/15, 2.733 chain	36/15, 2.400 chain
16. TRANS. GEAR RATIOS		
1st (No. teeth) (Internal)	41/12, 3.417	35/11, 3.181
2nd (") (")	35/17, 2.059	30/15, 2.000
3rd (") (")	31/21, 1.476	26/19, 1.368
4th (") (")	28/24, 1.167	23/23, 1.000
5th (") (")	26/26, 1.000	—
6th (") (")	—	—
17. TRANS. OIL CAPACITY (cc)	600~650 cc	700±50 cc
18. OIL TANK CAPACITY (ℓ, qt.)	1.4 ℓ (1.5 qt)	1.4 ℓ (1.5 qt)
19. FUEL TANK CAPACITY (ℓ, gal.)	6.0 ℓ (1.6 gal)	7.5 ℓ (2.0 gal)
20. FRONT FORK OIL CAPACITY (cc)	R : 140 cc, L : 135 cc	RL : 147 cc
21. TIRE SIZE (Front)	2.25 - 17 - 4PR	2.50 - 18 - 4PR
(Rear)	2.50 - 17 - 4PR	2.75 - 18 - 4PR
22. TIRE PRESSURE (Front) (kg/cm^2)	1.4 kg/cm^2	1.6 kg/cm^2
(Rear) (kg/cm^2)	2.0 kg/cm^2	2.0 kg/cm^2
23. DRIVE CHAIN TENSION (Up & down freeplay) (mm, in)	20 mm (0.79 in)	20 mm (0.79 in)
24. OIL PUMP STROKE ADJUSTMENT MIN. (mm)	0.30~0.35 mm	0.20~0.25 mm
MAX. (mm)	1.45~1.70 mm	1.85~2.05 mm
25. AUTOLUBE CABLE ADJUSTMENT (Throttle position)	at half open	at idle
26. VALVE CLEARANCE INTAKE (mm)	—	—
EXHAUST (mm)	—	—
27. DYNAMO & MAGNETO TYPE	Flywheel magneto	Flywheel magneto
MODEL & MANUFACTURER	FAZ-10Q, Mitsubishi	F000T00371, Mitsubishi
28. BREAKER CONTACT PRESSURE (gram)	650~850 gram	650~850 gram
29. CONDENSER CAPACITY (μF)	0.22 μF	0.25 μF
30. REGULATOR MODEL	—	—
"NO LOAD" VOLTAGE ADJUSTMENT (V/r.p.m.)	—	—
31. IGNITION COIL SPARK TEST (Minimum) (mm/r.p.m.)	7mm/500 r.p.m.	7mm/500 r.p.m.
PRIMARY WIDING RESISTANCE (Ω)	0.6 Ω	1.6 Ω
SECONDARY WIDING RESISTANCE ($K\Omega$)	5 $K\Omega$	6.6 $K\Omega$
32. BATTERY MODEL	6N4A-4D	6N4-2A-2
VOLTAGE & AMPERAGE RATING (V-AH)	6V4AH	6V4AH
33. HEAD LAMP Hi/Lo RATING (V-W)	6V15W/15W	6V25W/25W
34. TAIL LAMP/STOP LAMP RATING (V-W)	6V3W/10W	6V5.3W/17W
35. FLASHER LAMP RATING (V-W)	6V8W	6V8W

LS2	AS3	CS5E
10.5 B.H.P./8,000 r.p.m.	15 B.H.P./8,500 r.p.m.	22 B.H.P./7,500 r.p.m.
0.96 kg-m/7,500 r.p.m.	1.3 kg-m/8,000 r.p.m.	2.17 kg/7,000 r.p.m.
38 x 43 mm x 2	43 x 43 mm x 2	52 x 46 mm x 2
97 cc (5.919 cu.in.)	124 cc (7.56 cu.in.)	195 cc (11.89 cu.in.)
95 kg (209 lbs)	99 kg (218 lbs)	117 kg (258 lbs)
7.0 : 1	7.0 : 1	7.1 : 1
$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm
0.30~0.40 mm	0.30~0.40 mm	0.30~0.40 mm
B-8HS, 0.5~0.6 mm	B-8HS, 0.5~0.6 mm	B-8HS, 0.5~0.6 mm
0.035~0.040 mm	0.040~0.045 mm	0.040~0.045 mm
VM17SC Mikuni	VM18SC Mikuni	VM20SC Mikuni
326A1	307A1	337E1
#70	#70	#60
0.8	0.8	—
3D12-3	3D12-3	4D16-3
0-0	0-0	0-6
2.0	2.0	2.0
#15	#15	#20
1¾	1¾	1½
#40	#40	#50
17.9±2.5 mm	17.9±2.5 mm	25.0±2.5 mm
Dry paper filter	Dry paper filter	Dry paper filter
74/19,3.894 gear	74/19,3.894 gear	53/16,3.313 gear
42/14,3.000 chain	39/14,2.785 chain	39/14,2.785 chain
35/11,3.181	35/11,3.181	34/12,2.833
29/16,1.812	29/16,1.812	30/16,1.875
26/20,1.300	26/20,1.300	27/19,1.421
23/22,1.045	23/22,1.045	23/22,1.045
21/25,0.840	21/25,0.840	21/25,0.840
—	—	—
750±50 cc	750±50 cc	800~850 cc
1.4 ℓ (1.5 qt)	1.5 ℓ (1.6 qt)	1.9 ℓ (2.0 qt)
7.5 ℓ (2.0 gal.)	9.0 ℓ (2.4 gal.)	9.0 ℓ (2.4 gal.)
RL : 147 cc	RL : 137 cc	RL : 160 cc
2.50 - 18 - 4PR	2.50 - 18 - 4PR	2.75 - 18 - 4PR
2.50 - 18 - 4PR	2.75 - 18 - 4PR	3.00 - 18 - 4PR
1.6 kg/cm²	1.6 kg/cm²	1.6 kg/cm²
2.0 kg/cm²	2.0 kg/cm²	2.0 kg/cm²
20 mm (0.79 in.)	20 mm (0.79 in.)	20 mm (0.79 in.)
0.20~0.25 mm	0.20~0.25 mm	0.20~0.25 mm
1.66~1.91 mm	1.66~1.91 mm	2.05~2.25 mm
at idle	at idle	at idle
—	—	—
—	—	—
A.C. Generator	A.C. Generator	Starter dynamo
K108-12, Hitachi	K108-12, Hitachi	GS214, Hitachi
500~700 gram	500~700 gram	700 gram
0.22 μF	0.15 μF	0.22 μF
—	—	T107-58, Hitachi
—	—	15.8~16.5V/2,500 r.p.m.
8mm/300 r.p.m.	8mm/300 r.p.m.	7mm/500 r.p.m.
3.9Ω	3.9Ω	3.9Ω
10 KΩ	10 KΩ	10 KΩ
AYT2-12	AYT2-12	12N9-3A-1
12V5.5AH	12V5.5AH	12V9AH
12V25W/25W	12V35W/35W	12V35W/25W
12V8W/20W	12V8W/23W	12V8W/ 23W
12V8W	12V8W	12V8W

1. MODEL	R5F	XS2
2. HORSE POWER (B.H.P/r.p.m)	36 B.H.P./7,000 r.p.m.	53 B.H.P./7,000 r.p.m.
3. TORQUE (kg-m/r.p.m)	3.87 kg-m/6,500 r.p.m.	5.5 kg-m/6,000 r.p.m.
4. BORE & STROKE (mm)	64 x 54 mm x 2	75 x 74 mm x 2
5. ENGINE DISPLACEMENT (cc, cu.in)	347 cc (21.18 cu.in)	653 cc (39.85 cu.in)
6. NET WEIGHT (APPROX) (kg, lbs.)	141 kg (311 lbs)	194 kg (427 lbs)
7. COMPRESSION RATIO	6.8 : 1	8.4 : 1
8. IGNITION TIMING (mm B.T.D.C.)	$2.0^{+0.2}_{-0.5}$mm	B.T.D.C. 34°~42°($15^{\circ}\pm4^{\circ}$)
9. CONTACT BREAKER POINT GAP SETTING (mm)	0.30~0.40 mm	0.30~0.45 mm
10. SPARK PLUG AND GAP (mm)	B-8HS, 0.5~0.6 mm	B-7ES, 0.5~0.6 mm
11. PISTON SKIRT CLEARANCE (mm)	0.040~0.045 mm	0.050~0.055 mm
12. CARBURETOR TYPE & MANUFACTURER	VM28SC Mikuni	BS38 Mikuni
I.D. MARK	278A2	306E1
MAIN JET (M.J)	#120	#130
AIR JET (A.J)	—	(M.A.J : 1.0, P.A.J : 1.2)
JET NEEDLE - clip position (J.N)	5DP7-4	4JN19-4
NEEDLE JET (N.J)	0-0	Z-6
CUTAWAY (C.A)	2.0	(Th. V#125)
PILOT JET (P.J)	#30	#42.5
AIR SCREW (Turns out) (A.S)	1¼	(P.S. ¾)
STARTER JET (G.S)	#100	0.7
FLOAT LEVEL (mm) (F.L)	16.5±2.5 mm	24.0±2.5 mm
13. AIR FILTER TYPE	Dry paper filter	Dry paper filter
14. PRIMARY REDUCTION RATIO & METHOD	66/23, 2.869 gear	72/27, 2.666 gear
15. SECONDARY REDUCTION RATIO & METHOD	40/16, 2.500 chain	34/17, 2.000 chain
16. TRANS. GEAR RATIOS		
1st (No. teeth) (Internal)	41/16, 2.562	32/13, 2.461
2nd (") (")	35/22, 1.590	27/17, 1.588
3rd (") (")	31/26, 1.192	26/20, 1.300
4th (") (")	28/29, 0.965	23/21, 1.095
5th (") (")	25/31, 0.806	22/23, 0.956
6th (") (")	—	—
17. TRANS. OIL CAPACITY (cc)	1500±50 cc	2500±50 cc
18. OIL TANK CAPACITY (ℓ, qt)	2 ℓ (2.1 qt)	—
18. FUEL TANK CAPACITY (ℓ, gal)	12 ℓ (3.2 gal)	12.5 ℓ (3.3 gal)
20. FRONT FORK OIL CAPACITY (cc)	R L : 145 cc	R L : 135 cc
21. TIRE SIZE (Front)	3.00 - 18 - 4PR	3.50 - 19 - 4PR
(Rear)	3.50 - 18 - 4PR	4.00 - 18 - 4PR
22. TIRE PRESSURE (Front) (kg/cm^2)	1.6 kg/cm^2	1.6 kg/cm^2
(Rear) (kg/cm^2)	2.0 kg/cm^2	2.0 kg/cm^2
23. DRIVE CHAIN TENSION (Up & down freeplay) (mm, in)	20 mm (0.79 in)	20 mm (0.79 in)
24. OIL PUMP STROKE ADJUSTMENT MIN. (mm)	0.20~0.25 mm	—
MAX. (mm)	2.05~2.27 mm	—
25. AUTOLUBE CABLE ADJUSTMENT (Throttle position)	at idle	—
26. VALVE CLEARANCE INTAKE (mm)	—	0.15 mm
EXHAUST (mm)	—	0.30 mm
27. DYNAMO & MAGNETO TYPE	A.C. Generator	A.C. Generator
MODEL & MANUFACTURER	AZ2010N Mitsubishi	LD-115 Hitachi
28. BREAKER CONTACT PRESSURE (gram)	700±50 gram	500~650 gram
29. CONDENSER CAPACITY (μF)	0.22 μF	0.22 μF
30. REGULATOR MODEL	RL2150Z, Mitsubishi	TL1Z-49, Hitachi
"NO LOAD" VOLTAGE ADJUSTMENT (V/r.p.m.)	14.5~15.5V/3,000 r.p.m.	14.5±0.5V/1,500 r.p.m.
31. IGNITION COIL SPARK TEST (Minimum) (mm/r.p.m.)	7mm/500 r.p.m.	7mm/500 r.p.m.
PRIMARY WIDING RESISTANCE (Ω)	3.9 Ω	4.0 Ω
SECONDARY WIDiNG RESISTANCE (KΩ)	10 KΩ	11 KΩ
32. BATTERY MODEL	12N5.5A-3B	12N12-4A-1
VOLTAGE & AMPERAGE RATING (V-AH)	12V5.5AH	12V12AH
33. HEAD LAMP Hi/Lo RATING (V-W)	12V35W/25W	12V50W/40W
34. TAIL LAMP/STOP LAMP RATING (V-W)	12V8W/23W	12V8W/23W
35. FLASHER LAMP RATING (V-W)	12V8W	12V27W

JT1	JT1J	LT2	AT2J
4.5 B.H.P./7,500 r.p.m.	4.5 B.H.P./7,500 r.p.m.	10 B.H.P./7,500 r.p.m.	13 B.H.P./7,000 r.p.m.
0.5 kg-m/5,500 r.p.m.	0.5 kg-m/5,500 r.p.m.	0.97 kg-m/7,000 r.p.m.	1.38 kg-m/6,000 r.p.m.
42 x 42 mm	42 x 42 mm	52 x 45.6 mm	56 x 50 mm
58 cc (3.54 cu.in.)	58 cc (3.54 cu.in.)	97 cc (5.92 cu.in.)	123 cc (7.51 cu.in.)
55 kg (121 lbs)	60 kg (132 lbs)	85 kg (187 lbs)	94 kg (207 lbs)
6.4 : 1	6.4 : 1	6.9 : 1	7.1 : 1
$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm
0.30~0.40 mm	0.30~0.40 mm	0.30~0.40 mm	0.30~0.40 mm
B-7HS, 0.5~0.6 mm	B-7HS, 0.5~0.6 mm	B-8HS, 0.5~0.6 mm	B-7ES, 0.5~0.6 mm
0.040~0.045 mm	0.040~0.045 mm	0.040~0.045 mm	0.040~0.045 mm
Y16P Teikei	Y16P Teikei	VM20SH Mikuni	VM24SH Mikuni
288E3	288E3	305E2	316E1
#84	#84	#130	#240
0.7	0.7	0.5	—
035-3	0.35 - 3	4J13-3	4F10-2
2.080	2.080	N-6	0-6
1.5	1.5	1.5	1.5
#38	#38	#25	#25
1¼	1¼	1½	1¾
#50	#50	#30	#40
—	—	19.2 ±2.5 mm	21.2 ±2.5 mm
Wet foam rubber	Wet foam rubber	Wet foam rubber	Wet foam rubber
74/19,3.894 gear	74/19,3.894 gear	74/19,3.894 gear	74/19,3.894 gear
41/13,3.153 chain	41/13,3.153 chain	49/14,3.500 chain	37/15,2.400 chain
40/13,3.077	40/13,3.077	35/11,3.181	34/12, 2.833
34/18,1.889	34/18,1.889	30/15,2.000	30/16,1.875
30/23,1.304	30/23,1.304	26/19,1.368	25/19,1.368
27/26,1.038	27/26,1.038	23/23,1.000	24/22,1.090
—	—	20/25,0.800	22/23,0.956
—	—	—	—
600~650 cc	600~650 cc	700±50 cc	750 ±50 cc
1.0 ℓ (1.1 qt)	1.0 ℓ (1.1 qt)	1.2 ℓ (1.3 qt)	1.2 ℓ (1.3 qt)
4.3 ℓ (1.1 gal.)	4.3 ℓ (1.1 gal.)	6 ℓ (1.6 gal.)	7.0 ℓ (1.8 gal.)
R : 97cc L : 120cc	R : 97 cc L : 120 cc	R.L :136 cc	R.L: 120 cc
2.50 - 15 - 4PR	2.50 - 15 - 4PR	2.75 - 18 - 4PR	3.00 - 18 - 4PR
2.50 - 15 - 4PR	2.50 - 15 - 4PR	3.00 - 18 - 4PR	3.25 - 18 - 4PR
1.6 kg/cm²	1.6 kg/cm²	1.0 kg/cm²	1.0 kg/cm²
2.0 kg/cm²	2.0 kg/cm²	1.2 kg/cm²	1.2 kg/cm²
20 mm (0.79 in.)	20 mm (0.79 in.)	25 mm (1 in.)	25 mm (1 in.)
0.30~0.35 mm	0.30~0.35 mm	0.20~0.25 mm	0.20~0.25 mm
1.45~1.70 mm	1.45~1.70 mmm	1.85~2.05 mm	1.85~2.05 mm
at half open	at half open	at idle	at idle
—	—	—	—
—	—	—	—
Flywheel magneto	Flywheel magneto	Flywheel magneto	Flywheel magneto
F11-L46 Hitachi	F11-L46, Hitachi	F136-07, Hitachi	F136-02, Hitachi
650~850 gram	650~850 gram	650~850 gram	650~850 gram
0.30 μF	0.30 μF	0.30 μF	0.30 μF
—	—	—	—
—	—	—	—
7mm/500 r.p.m.	7mm/500 r.p.m.	7mm/500 r.p.m.	7mm/500 r.p.m.
4.9 Ω	4.9 Ω	1.6 Ω	1.6 Ω
11 KΩ	11 KΩ	6.6 KΩ	6.6 KΩ
—	6N2-2A-3	6N4A-4D	6N4A-4D
—	6V2AH	6V4AH	6V4AH
—	6V15W/15W	6V25W/25W	6V25W/25W
—	6V3W/10W	6V5.3W/17W	6V5W/20W
—	6V8W	6V17W	6V8W

1. MODEL	AT2E	CT2
2. HORSE POWER (B.H.P/r.p.m)	13 B.H.P /7,000 r.p.m.	16 B.H.P./7,500 r.p.m.
3. TORQUE (kg-m/r.p.m)	1.38 kg-m/6,000 r.p.m.	1.65 kg-m/6,000 r.p.m.
4. BORE & STROKE (mm)	56 x 50 mm	66 x 50 mm
5. ENGINE DISPLACEMENT (cc, cu.in)	123 cc (7.51 cu.in)	171 cc (10.43 cu.in)
6. NET WEIGHT (APPROX) (kg, lbs.)	100 kg (221 lbs)	97 kg (214 lbs)
7. COMPRESSION RATIO	7.1 : 1	6.8 : 1
8. IGNITION TIMING (mm B.T.D.C.)	$1.8^{+0.2}_{-0.5}$ mm	$1.8^{+0.2}_{-0.5}$ mm
9. CONTACT BREAKER POINT GAP SETTING (mm)	0.30~0.40 mm	0.30~0.40 mm
10. SPARK PLUG AND GAP (mm)	B-8ES, 0.5~0.6 mm	B-8ES, 0.5~0.6 mm
11. PISTON SKIRT CLEARANCE (mm)	0.040~0.045 mm	0.040~0.045 mm
12. CARBURETOR TYPE & MANUFACTURER	VM24SH Mikuni	VM24SH Mikuni
I.D. MARK	316E1	314E1
MAIN JET (M.J)	#230	#200
AIR JET (A.J)	—	—
JET NEEDLE - clip position (J.N)	4F10-3	4L6-3
NEEDLE JET (N.J)	0-6	0-6
CUTAWAY (C.A)	1.5	2.0
PILOT JET (P.J)	#25	#25
AIR SCREW (Turns out) (A.S)	1¾	2.0
STARTER JET (G.S)	#40	#40
FLOAT LEVEL (mm) (F.L)	21.2 ±2.5mm	21.2 ±2.5mm
13. AIR FILTER TYPE	Wet foam rubber	Wet foam rubber
14. PRIMARY REDUCTION RATIO & METHOD	74/19,3.894 gear	74/19, 3.894 gear
15. SECONDARY REDUCTION RATIO & METHOD	45/15,3.000 chain	45/16,2.812 chain
16. TRANS. GEAR RATIOS		
1st (No. teeth) (Internal)	35/11,3.181	35/11,3.181
2nd (") (")	30/15,2.000	30/15,2.000
3rd (") (")	26/19,1.368	26/19,1.368
4th (") (")	23/23,1.000	23/23,1.000
5th (") (")	20/25,0.800	20/25,0.800
6th (") (")	—	—
17. TRANS. OIL CAPACITY (cc)	750±50 cc	750±50 cc
18. OIL TANK CAPACITY (ℓ, qt)	1.2ℓ (1.3 qt)	1.2ℓ (1.3 qt)
18. FUEL TANK CAPACITY (ℓ, gal)	7.0ℓ (1.8 gal)	7.0ℓ (1.8 gal)
20. FRONT FORK OIL CAPACITY (cc)	R.L: 120 cc	R.L: 120 cc
21. TIRE SIZE (Front)	3.00 - 18 - 4PR	3.25 - 18 - 4PR
(Rear)	3.25 - 18 - 4PR	3.50 - 18 - 4PR
22. TIRE PRESSURE (Front) (kg/cm^2)	1.0 kg/cm^2	1.0 kg/cm^2
(Rear) (kg/cm^2)	1.2 kg/cm^2	1.2 kg/cm^2
23. DRIVE CHAIN TENSION (Up & down freeplay) (mm, in)	25 mm (1 in)	25 mm (1 in)
24. OIL PUMP STROKE ADJUSTMENT MIN. (mm)	0.20~0.25 mm	0.20~0.25 mm
MAX. (mm)	1.85~0.25 mm	1.85~2.05 mm
25. AUTOLUBE CABLE ADJUSTMENT (Throttle position)	at idle	at idle
26. VALVE CLEARANCE INTAKE (mm)	—	—
EXHAUST (mm)	—	—
27. DYNAMO & MAGNETO TYPE	Starter dynamo	Flywheel magneto
MODEL & MANUFACTURER	GS114-01, Hitachi	F130-06, Hitachi
28. BREAKER CONTACT PRESSURE (gram)	500~700 gram	650~850 gram
29. CONDENSER CAPACITY (μF)	0.22μF	0.30μF
30. REGULATOR MODEL	T107-17A, Hitachi	—
"NO LOAD" VOLTAGE ADJUSTMENT (V/r.p.m.)	15.8 -16.5V/2,500 r.p.m.	—
31. IGNITION COIL SPARK TEST (Minimum) (mm/r.p.m.)	8mm/300 r.p.m.	7mm/500 r.p.m.
PRIMARY WIDING RESISTANCE (Ω)	3.9Ω	1.6Ω
SECONDARY WIDING RESISTANCE (KΩ)	10 KΩ	6.6 KΩ
32. BATTERY MODEL	12N7-3B-1	6N4A-4D
VOLTAGE & AMPERAGE RATING (V-AH)	12V7AH	6V4AH
33. HEAD LAMP Hi/Lo RATING (V-W)	12V25W/25W	6V25W/25W
34. TAIL LAMP/STOP LAMP RATING (V-W)	12V7W/27W	6V5W/20W
35. FLASHER LAMP RATING (V-W)	12V27W	6V8W

DT2	RT2	LT2M	AT2M
24 B.H.P./7,000 r.p.m.	32 B.H.P./6,000 r.p.m.	16 B.H.P./10,500 r.p.m.	20 B.H.P./8,500 r.p.m.
2.53 kg-m/6,000 r.p.m.	3.83 kg-m/5,500 r.p.m.	1.12 kg-m/9,500 r.p.m.	1.7 kg-m/8,000 r.p.m.
70 x 64 mm	80 x 70 mm	52 x 45.6 mm	56 x 50 mm
246 cc (15.01 cu.in.)	351 cc (21.42 cu.in.)	97 cc (5.92 cu.in.)	123 cc (7.51 cu.in.)
117 kg (258 lbs)	119 kg (262 lbs)	84 kg (185 lbs)	92 kg (202 lbs)
6.8 : 1	6.3 : 1	7.8 : 1	7.8 : 1
$3.0^{+0.2}_{-0.6}$ mm	2.9 ± 0.2 mm	2.0 ± 0.2 mm	2.0 ± 0.15 mm
0.30~0.40 mm	0.30~0.40 mm	0.25~0.30 mm	0.30~0.40 mm
B-8ES, 0.5~0.6 mm	B-9ES, 0.5~0.6 mm	B-9HV, 0.5~0.6 mm	B-9EN, 0.5~0.6 mm
0.040~0.045 mm	0.045~0.050 mm	0.040~0.045 mm	0.040~0.050 mm
VM26SH Mikuni	VM32SH Mikuni	VM26SC Mikuni	VM26SC Mikuni
311E2	308E2	335M1	318M1
#160	#230	#160	#190
—	—	—	0.5
5DP7-3	6DH3-3	4F15-3	4F15-3
N-8	P-0	0-2	N-8
1.5	3.0	1.0	2.5
#30	#45	#40	#60
1¼	1½	1¼	1.0
#60	#60	#40	#30
16.3 ± 2.5 mm	21.4 ± 2.5 mm	25.7 ± 2.5 mm	25.7 ± 2.5 mm
Wet foam rubber	Wet foam rubber	Wet foam rubber	Wet foam rubber
65/21, 3.095 gear	65/21, 3.095 gear	74/19, 3.894 gear	74/19, 3.894 gear
44/14, 3.142 chain	39/15, 2.600 chain	52/14, 3.714 chain	45/14, 3.214 chain
38/15, 2.533	38/15, 2.533	34/12, 2.833	34/12, 2.833
34/19, 1.789	34/19, 1.789	30/16, 1.875	30/16, 1.875
30/23, 1.304	30/23, 1.304	26/19, 1.368	26/19, 1.368
26/26, 1.000	26/26, 1.000	24/22, 1.090	24/22, 1.091
23/30, 0.766	23/30, 0.766	22/23, 0.956	22/23, 0.956
	—	—	—
1000 ± 50 cc	1000 ± 50 cc	700 ± 50 cc	750 ± 50 cc
1.6 ℓ (1.7 qt)	1.6 ℓ (1.7 qt)	1.2 ℓ (1.3 qt)	1.2 ℓ (1.3 qt)
9.5 ℓ (2.5 gal.)	9.5 ℓ (2.5 gal.)	6.0 ℓ (1.6 gal.)	7.0 ℓ (1.8 gal.)
175 cc	R.L: 175 cc	R.L: 136 cc	R.L: 120 cc
3.25 - 19 - 4PR	3.25 - 19 - 4PR	2.75 - 19 - 4PR	2.75 - 21 - 4PR
4.00 - 18 - 4PR	4.00 - 18 - 4PR	3.00 - 18 - 4PR	3.50 - 18 - 4PR
0.9 kg/cm²	0.9 kg/cm²	1.0 kg/cm²	1.0 kg/cm²
1.1 kg/cm²	1.1 kg/cm²	1.2 kg/cm²	1.2 kg/cm²
25 mm (1 in.)	25 mm (1 in.)	25 mm (1 in.)	25 mm (1 in.)
0.20~0.25 mm	0.20~0.25 mm	0.20~0.25 mm	0.20~0.25 mm
1.85~2.05 mm	1.85~2.05 mm	1.85~2.05 mm	1.85~2.05 mm
at idle	at idle	at idle	at idle
—	—	—	—
—	—	—	—
Flywheel magneto	Flywheel magneto	Flywheel magneto	Flywheel magneto
FZA-1B1L, Mitsubishi	FZA-1B1L, Mitsubishi	F136-07, Hitachi	F136-06, Hitachi
700 gram ± 10 %	700 gram ± 10%	650~850 gram	650~850 gram
0.25 μF	0.25 μF	0.30 μF	0.30 μF
—	—	—	—
—	—	—	—
7mm/500 r.p.m.	7mm/500 r.p.m.	7mm/500 r.p.m.	7mm/500 r.p.m.
0.9 Ω	0.9 Ω	1.6 Ω	1.1 Ω
6.5 KΩ	6.5 KΩ	6.6 KΩ	6.2 KΩ
6N4-2A-2	6N4-2A-2	—	—
6V4AH	6V4AH	—	—
6V35W/35W	6V35W/35W	—	—
6V5.3W/17W	6V5.3W/17W	—	—
6V8W	6V8W	—	—

1. MODEL	DT2MX	RT2MX
2. HORSE POWER (B.H.P/r.p.m)	31 B.H.P./8,000 r.p.m.	39 B.H.P./7,500 r.p.m.
3. TORQUE (kg-m/r.p.m)	2.86 kg-m/7,000 r.p.m.	3.83 kg-m/7,000 r.p.m.
4. BORE & STROKE (mm)	70 x 64 mm	80 x 70 mm
5. ENGINE DISPLACEMENT (cc, cu.in)	246 cc (15.01 cu.in)	351 cc (21.42 cu.in)
6. NET WEIGHT (APPROX) (kg, lbs.)	102 kg (224.7 lbs)	103 kg (226.8 lbs)
7. COMPRESSION RATIO	7.13 : 1	7.13 : 1
8. IGNITION TIMING (mm B.T.D.C.)	2.3±0.15 mm	2.0±0.15 mm
9. CONTACT BREAKER POINT GAP SETTING (mm)	0.20~0.30 mm	—
10. SPARK PLUG AND GAP (mm)	B-9EN, 0.5~0.6 mm	B-9EN, 0.5~0.6 mm
11. PISTON SKIRT CLEARANCE (mm)	0.045~0.050 mm	0.055~0.060 mm
12. CARBURETOR TYPE & MANUFACTURER	VM30SC Mikuni	VM34SC Mikuni
I.D. MARK	313E1	322E1
MAIN JET (M.J)	#250	#370
AIR JET (A.J)	2.0	2.0
JET NEEDLE - clip position (J.N)	6F5-4	6F5-4
NEEDLE JET (N.J)	P-5	P-8
CUTAWAY (C.A)	2.5	3.0
PILOT JET (P.J)	#60	#60
AIR SCREW (Turns out) (A.S)	1.0	1.0
STARTER JET (G.S)	#80	#80
FLOAT LEVEL (mm) (F.L)	20.7±2.5 mm	21.0±2.5 mm
13. AIR FILTER TYPE	Wet foam rubber	Wet foam rubber
14. PRIMARY REDUCTION RATIO & METHOD	65/21,3.095 gear	65/21,3.095 gear
15. SECONDARY REDUCTION RATIO & METHOD	51/15,3.400 chain	51/15,3.400 chain
16. TRANS. GEAR RATIOS		
1st (No. teeth) (Internal)	36/16,2.250	36/16,2.250
2nd (") (")	32/20,1.650	33/20,1.650
3rd (") (")	29/23,1.260	29/23,1.261
4th (") (")	26/26,1.000	26/26,1.000
5th (") (")	23/29,0.793	23/29,0.793
6th (") (")	—	—
17. TRANS. OIL CAPACITY (cc)	1000±50 cc	1000±50 cc
18. OIL TANK CAPACITY (ℓ, qt)	0.5 ℓ (0.53 qt)	0.5 ℓ (0.53 qt)
18. FUEL TANK CAPACITY (ℓ, gal)	8.0 ℓ (2.11 gal)	8.0 ℓ (2.11 gal)
20. FRONT FORK OIL CAPACITY (cc)	R.L: 175 cc	R.L: 175 cc
21. TIRE SIZE (Front)	3.00 - 21 - 4PR	3.00 - 21 - 4PR
(Rear)	4.00 - 18 - 4PR	4.00 - 18 - 4PR
22. TIRE PRESSURE (Front) (kg/cm²)	Discretion	Discretion
(Rear) (kg/cm²)	"	"
23. DRIVE CHAIN TENSION (Up & down freeplay) (mm, in)	20~30 mm (0.79~1.18 in)	20~30 mm (0.79~1.18 in)
24. OIL PUMP STROKE ADJUSTMENT MIN. (mm)	0.60~0.65 mm	0.60~0.65 mm
MAX. (mm)	1.85~2.05 mm	1.85~2.05 mm
25. AUTOLUBE CABLE ADJUSTMENT (Throttle position)	at idle	at idle
26. VALVE CLEARANCE INTAKE (mm)	—	—
EXHAUST (mm)	—	—
27. DYNAMO & MAGNETO TYPE	Flywheel magneto (Inner Rotor)	C.D.I magneto (Inner Rotor)
MODEL & MANUFACTURER	M100-06, Hitachi	M100-07, Hitachi
28. BREAKER CONTACT PRESSURE (gram)	900~1,100 gram	—
29. CONDENSER CAPACITY (μF)	0.22 μF	—
30. REGULATOR MODEL	—	—
"NO LOAD" VOLTAGE ADJUSTMENT (V/r.p.m.)	—	—
31. IGNITION COIL SPARK TEST (Minimum) (mm/r.p.m.)	8.5 mm/500 r.p.m.	7mm and over /500 r.p.m.
PRIMARY WIDING RESISTANCE (Ω)	1.7 Ω	0.7 Ω
SECONDARY WIDING RESISTANCE (KΩ)	6.0 KΩ	6.0 KΩ
32. BATTERY MODEL	—	—
VOLTAGE & AMPERAGE RATING (V-AH)	—	—
33. HEAD LAMP Hi/Lo RATING (V-W)	—	—
34. TAIL LAMP/STOP LAMP RATING (V-W)	—	—
35. FLASHER LAMP RATING (V-W)	—	—

DS7	TD3	TR3
30 B.H.P./7,500 r.p.m.	44 B.H.P./10,000 r.p.m.	54 B.H.P./9,500 r.p.m.
2.92 kg-m/7,000 r.p.m.	3.17 kg-m/9,500 r.p.m.	4.17 kg-m/9,000 r.p.m.
54 x 54 mm x 2	54 x 54 mm x 2	64 x 54 mm x 2
247 cc (15.07 cu.in)	247 cc (15.07 cu.in)	347 cc (21.18 cu.in)
138 kg (304 lbs.)	105 kg (231 lbs)	110 kg (242 lbs)
7.1 : 1	7.6 : 1	7.04 : 1
$2.0^{+0.2}_{-0.5}$mm	2.0 mm	2.0 mm
0.30~0.40 mm	—	—
B-8HS, 0.5~0.6 mm	B-10EN, 0.5~0.6 mm	B-10EN, 0.5 - 0.6 mm
0.040~0.045 mm	0.040~0.045 mm	0.040~0.045 mm
VM26SC Mikuni	VM34SC Mikuni	VM34SC Mikuni
280A2	329A1	328A1
#100	#370	#360
—	2.0	2.0
5DP7-4	6F9-3	6F9-2
0-0	0-2	0-2
2.0	3.0	3.0
#30	#70	#70
1.0	1½	1½
#100	#80	#80
16.3 ± 2.5 mm	21.0 ± 2.5 mm	21.0 ± 2.5 mm
Dry paper filter	—	—
68/21, 3.238 gear	77/23, 3.347 gear	74/25 2.960 gear
40/15, 2.666 chain	34/16, 2.125 chain	35/17 2.058 chain
41/16, 2.562	29/15, 1.933	29/15, 1.933
35/22, 1.590	27/19, 1.421	27/19, 1.421
31/26, 1.192	27/24, 1.125	27/24, 1.125
28/29, 0.965	25/26, 0.961	25/26, 0.961
25/31, 0.806	20/23, 0.869	20/23, 0.869
—	22/27, 0.814	22/27, 0.814
1 500 ± 50 cc	1600 ± 50 cc	1600 ± 50 cc
2 ℓ (2.1 qt)	2 ℓ (2.1 qt)	2 ℓ (2.1 qt)
12 ℓ (3.2 gal)	23 ℓ (6.0 gal)	23 ℓ (6.0 gal)
RL: 145cc	R.L: 135 cc	R.L: 135 cc
3.00 - 18 - 4PR	2.75 - 18 - 4PR	3.00 - 18 - 4PR
3.25 - 18 - 4PR	3.00 - 18 - 4PR	3.00 - 18 - 4PR
1.6 kg/cm²	Discretion	Discretion
2.0 kg/cm²	"	"
20 mm (0.79 in)	20~30 mm (0.79~1.18 in)	20~30 mm (0.79 - 1.18 in)
0.20~0.25 mm	0.1~0.2 mm	0.1~0.2 mm
2.05~2.27 mm	1.95~2.05 mm	1.95~2.05 mm
at idle	at idle	at idle
—	—	—
—	—	—
A.C. Generator	C.D.I magneto (Inner Rotor)	C.D.I magneto (Inner Rotor)
AZ 2010N, Mitsubishi	M200-08, Hitachi	M200-08, Hitachi
700 ± 50 gram	—	—
0.22 μF	—	—
RL2150Z, Mitsubishi	—	—
14.5~15.5V/3,000 r.p.m.	—	—
7mm/500 r.p.m.	7mm/500 r.p.m.	7mm/500 r.p.m.
3.9Ω	1.7Ω	1.7Ω
10 KΩ	6.0 KΩ	6.0 KΩ
AYT2-12	—	—
12V5.5AH	—	—
12V35W/25W	—	—
12V8W/23W	—	—
12V8W	—	—