

**Supplementary Service  
Information for New Model  
Model DT1M**

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

 **YAMAHA MOTOR CO., LTD.**

## FOREWORD

The New YAMAHA 250 DT1M is designed as a high-performance motocrosser for racing.

The DT1M is converted into a fully-equipped motocrosser with the DT1C G. Y. T. kit parts.

You are kindly requested to use this supplementary information together with DT1C service manual.

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

YAMAHA MOTOR CO., LTD.

## Profile



## CONTENTS

1. Features .....	2
2. Specifications .....	3
3. Performance Curves .....	5
4. Transmission Gear Assembly .....	6
5. Service Data .....	8
6. Change in Specifications .....	10
7. Adjusting Ignition Timing .....	11
8. Check and Service Prior to Racing .....	12
9. WIRING DIAGRAM .....	12

# 1. Features

## (1) High-performance Single Cylinder Engine

The YAMAHA 250 DT1M utilizes a powerful two-stroke 246 cc engine. The new five port cylinder, which is another Yamaha technical development, greatly improves engine efficiency and is responsible for high power output throughout a broad RPM range.

## (2) Highly-dependable Yamaha Autolube

Yamaha Autolube provides superior engine lubrication that extends the life of the engine.

## (3) Easy Starting

The engine can be started by simply disengaging the clutch and kicking the kick pedal without shifting gears back to neutral. This is a valuable convenience to the rider. The DT1M is equipped with a magneto. To start the engine kick the kick pedal.

## (4) Powerful Brakes

Patented waterproof, dustproof brake drums provide safe, fade-free braking on wet or dusty roads.

## (5) Adjustable Rear Cushion

The rear cushions are adjustable for three positions. The rider can adjust spring tension to compensate for varying weights, speeds, and course conditions.

## (6) Front Fork design

The YAMAHA 250 DT1M employs an oil damper for better driving stability. A front fork design is well-known for its strength and superior handling characteristics.

## (7) Tires

The DT1M is fitted with tires having a nobby type tread pattern same as the DT1C GYT kit parts.

## (8) Carburetor Starter Feature

Yamaha's starter feature is already well-known for its easy starting. Equipped with this unique carburetor, the DT1M is quick starting under all conditions for warming up the machine.

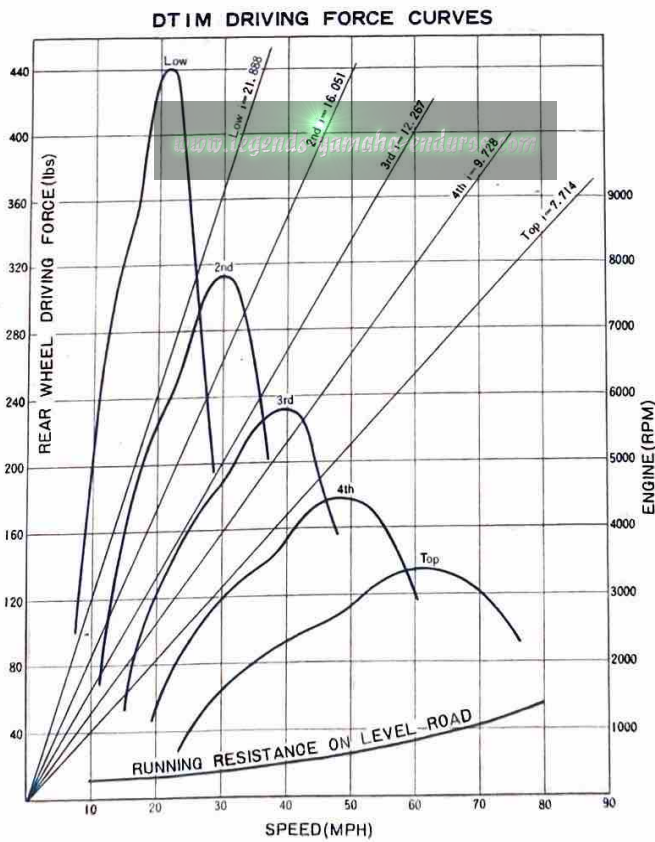
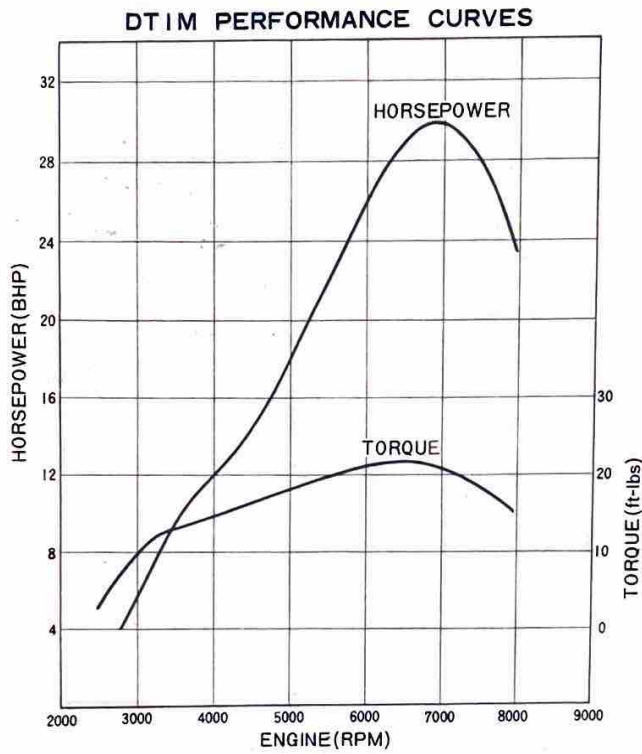
## 2. Specifications

<b>Dimensions:</b> Overall length Overall width Overall height Wheelbase Min. ground clearance	80.7 in. (2,050 mm) 35.0 in. ( 890 mm) 46.7 in. (1,185 mm) 53.5 in. (1,360 mm) 9.9 in. ( 252 mm)
<b>Weight:</b> Net	229 lbs. (104 kg)
<b>Performance:</b> Min. turning radius Braking distance	82.7 in. (2,100 mm) 50.5 ft at 31 mph (15.4 m at 50 km/h)
<b>Engine:</b> Model Type Lubricating system Cylinder Displacement Bore × Stroke Compression ratio Max. power Max. torque Starting system Ignition system	DT1 2 stroke, gasoline Yamaha Autolube & Gas/Oil mixture Single, forward inclined, 5 port 15 cu. in. (246 cc) 2.756 × 2.520 in. (70 × 64 mm) 7.0 : 1 30 BHP/7,000 r.p.m. 22.4 ft-lbs/6,500 r.p.m. (3.1 kg-m/6,500 r.p.m.) Primary-coupled kick starter Flywheel magneto
<b>Carburetor:</b> Type M. J. J. N.	VM30SH #200 5DP7-3 stages
<b>Air cleaner:</b>	Wet, foam rubber
<b>Transmission:</b> Clutch Primary reduction system Primary reduction ratio	Wet, multiple-disk Gear 65/21=3.095



<p>Gear box:</p> <p>Type</p> <p>Reduction ratio 1st</p> <p>2nd</p> <p>3rd</p> <p>4th</p> <p>5th</p> <p>Secondary reduction system</p> <p>Secondary reduction ratio</p>	<p>Constant mesh, 5-speed forward</p> <p><math>36/16=2.250</math></p> <p><math>33/20=1.650</math></p> <p><math>29/23=1.261</math></p> <p><math>26/26=1.000</math></p> <p><math>23/29=0.793</math></p> <p>Chain</p> <p><math>44/14=3.143</math></p>
<p>Chassis:</p> <p>Frame</p> <p>Suspension system, front</p> <p>Suspension system, rear</p> <p>Cushion system, front</p> <p>Cushion system, rear</p>	<p>Tubular-Double loop</p> <p>Telescopic fork</p> <p>Swinging arm</p> <p>Coil spring, Oil damper</p> <p>Coil spring, Oil damper</p>
<p>Steering system:</p> <p>Steering angle</p> <p>Caster</p> <p>Trail</p>	<p>49° both right and left</p> <p>60.5°</p> <p>5.39 in. (137 mm)</p>
<p>Braking system:</p> <p>Type of brake</p> <p>Operation system, front</p> <p>Operation system, rear</p>	<p>Internal expansion</p> <p>Right hand operation</p> <p>Right foot operation</p>
<p>Tire size:</p> <p>Front</p> <p>Rear</p>	<p>2.75-21-4PR</p> <p>4.00-18-4PR</p>
<p>Dynamo:</p> <p>Model</p> <p>Manufacturer</p>	<p>FZA-1BL</p> <p>Mitsubishi Elec.</p>
<p>Tanks:</p> <p>Gasoline tank capacity</p> <p>Oil tank capacity</p>	<p>2.5 U.S. gals (9.5 liters)</p> <p>1.7 U.S. qts. (1.6 liters)</p>

### 3. Performance Curves





## 4. Transmission Gear Assembly

The constant mesh, close ratio, 5-speed transmission makes it possible to fully utilize the steady performance of the engine throughout the entire speed range from low to high. The transmission gear reduction ratio is designed more closed ratio than the DT1C.

For layout of the transmission and related parts, refer to Fig. 1 and 2.

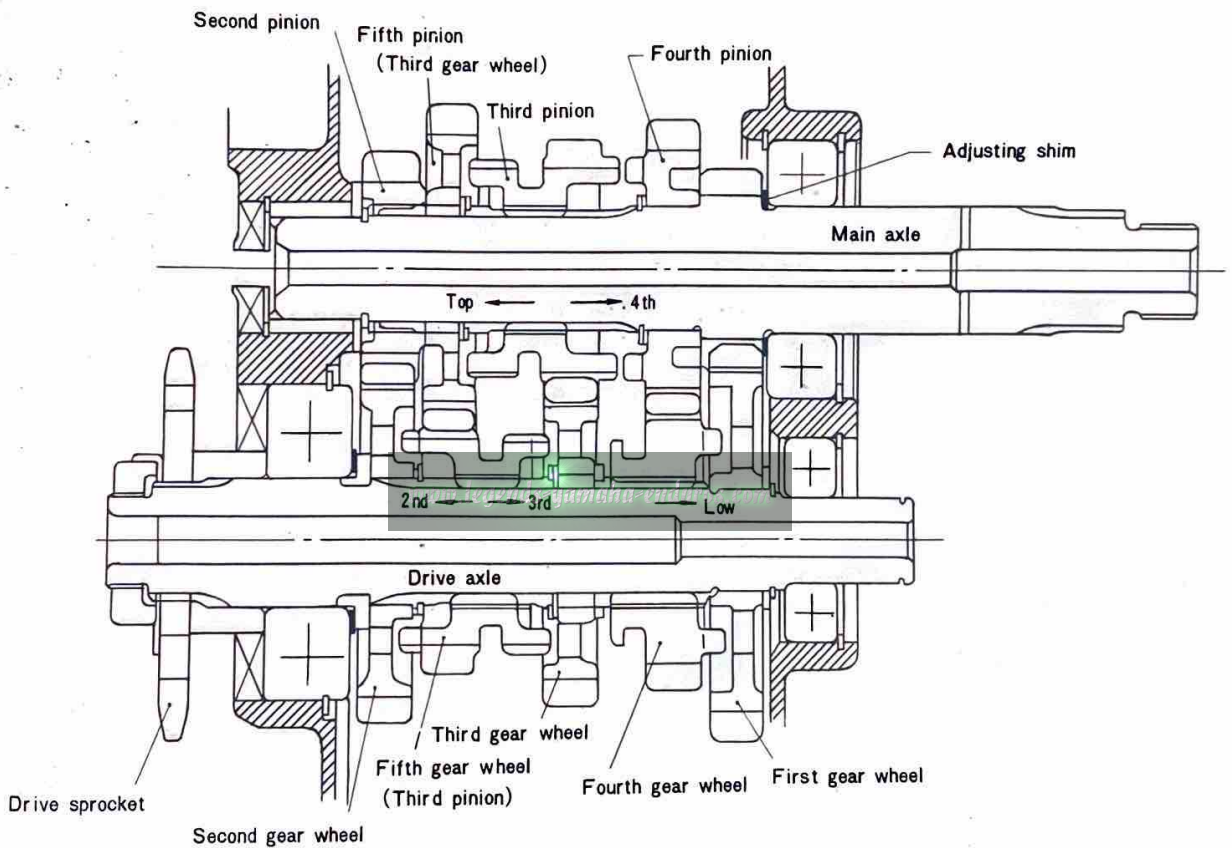


Fig. 1

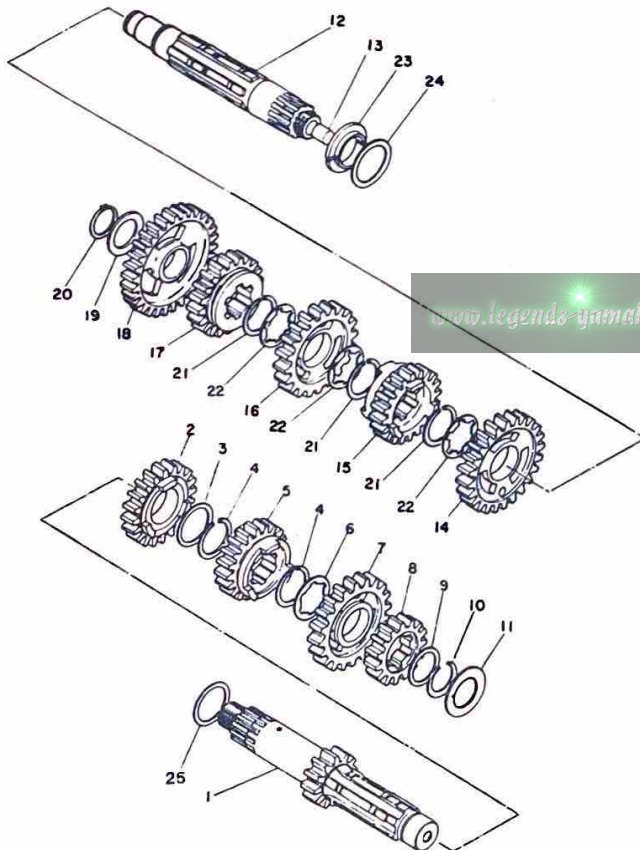
The primary reduction ratio is  $65/21=3.095$

The secondary reduction ratio is  $44/14=3.143$

Therefore the total reduction ratios will be:

Primary reduction ratio  $\times$  Transmission gear reduction ratio  $\times$  Secondary reduction ratio = Total reduction ratio.

	Transmission Gear Reduction Ratio	Total Reduction Ratio
1st	$36/16=2.250$	21.888
2nd	$33/20=1.650$	16.051
3rd	$29/23=1.261$	12.267
4th	$26/26=1.000$	9.728
5th	$23/29=0.793$	7.714



**Component parts of transmission**

1. Main axle
2. 4th pinion gear
3. Gear holding washer
4. Circlip
5. 3rd pinion gear
6. Gear holding washer
7. 3rd wheel gear
8. 2nd pinion gear
9. Gear holding washer
10. Circlip
11. Shim
12. Drive axle
13. Blind plug
14. 2nd wheel gear
15. 3rd pinion gear
16. 3rd wheel gear
17. 4th wheel gear
18. 1st wheel gear
19. Gear holding washer
20. Circlip
21. Circlip
22. Gear holding washer
23. Drive axle spacer
24. Drive axle shim
25. Main axle shim

Fig. 2

## 5. Service Data

○Piston clearance.....0.0018~0.0020 in. (0.045~0.050 mm)

○Piston ring end gap .....0.007~0.015 in. (0.2~0.4 mm)

(when piston is fitted in cylinder)

○Spark plug .....Standard B-10EN

○Ignition timing.....2.3 mm B.T.D.C.

○Oil pump

Minimum stroke : 0.20~0.25 mm (0.008~0.010 in.)

Maximum stroke : 1.85~2.05 mm (0.077~0.081 in.)

○Fuel mixing ratio

The DT1M, equipped with Yamaha Autolube system, uses mixed gasoline as fuel. The fuel mixing ratio is 30 : 1 for DT1M equipped with a Yamaha Autolube pump, and 15 : 1 when not using the Autolube pump.

○Gasoline and Oil

Gasoline: Use high-octane gasoline (more than 98~100 octane)

Oil : Use shell super 2-stroke oil or oil of similar quality.

○Transmission oil

Volume of oil: 1,000 cc. (1.0 U.S. qt) SAE 10W/30

○Carburetor Setting Table

Name of Parts	Abbreviation	Specifications
Main Jet	M. J	#200
Air Jet	A. J	0.5
Jet Needle	J. N	5DP7- 3 stages
Needle Jet	N. J	0-2
Throttle Valve Cut Away	C. A	#3.5
Bypass Port Diameter	B. P	1.4
Pilot Outlet Diameter	P. O	0.6
Pilot Jet	P. J	#80
Air Screw	A. S	turns out one turn
Valve Seat Diameter	V. S	2.5
Starter Jet	G. S	#60

### ○ Float Level Adjustment

The carburetor float level is checked by the Yamaha factory during assembly and testing. But rough riding, worn needle valve, or bent float arm can cause the float level to fluctuate. If the float level raises, this will cause a rich fuel/air mixture that can cause poor performance and spark plug fouling. If the float level decreases, this can cause a lean fuel/air mixture that can result in engine damage. If the machine is subjected to continuous rough riding or many miles of travel, the float level should be checked and set regularly and in the following manner.

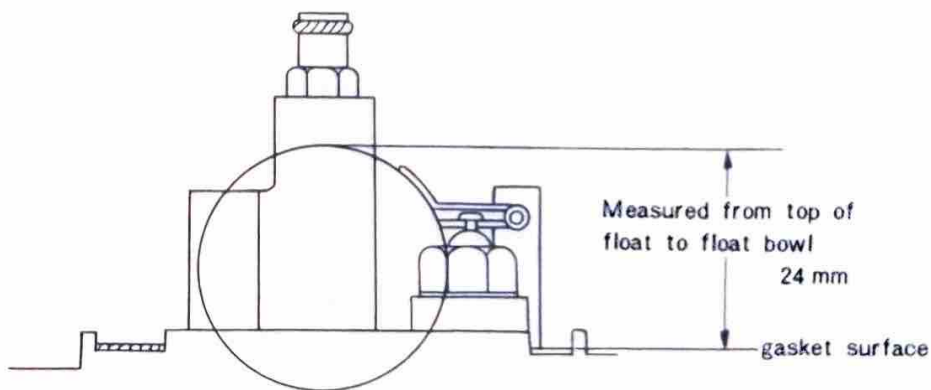


Fig. 3

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

- 1) Remove the float chamber body, and turn over the mixing body. Let the float arm rest on the needle valve without compressing the spring.
- 2) Then measure the distance from the top of the float to the float bowl gasket surface.  
Standard measurement 24 mm
- 3) When the distance measures less than the recommended distance, bend the tang up. If it is greater, bend the tang down. (with carburetor body up side down.)



## 6. Change in Specifications

Participants in racing must change specifications of the machine depending on conditions of the racing course, road surface, soil, length of straight aways, angles of curves, number of curves, slopes, weather, temperatures, and skill of the rider.

These factors and conditions must be determined by the rider himself after trial running over the whole race course.

### Main Points to be Modified

#### (1) Carburetor Setting

In addition to the specified M. J., the rider should carry with him spare M.J.s whose size numbers are larger and smaller than specified by #10 respectively.

#### (2) Secondary Reduction Ratio

Consideration should be given to a combination of the drive sprocket and sprocket wheel so that gear shifting to 3rd and 4th is easy.

#### (3) Spark Plug

Change the plug by judging discoloration of the plug. Choose the most suitable one from B-9EN, B-10EN and B11EN.

#### (4) Tire Pressure

Adjust the tire pressure, according to road conditions and the rider's choice.

#### (5) Front Fork

Adjust the front fork by adjusting the quantity or weight of oil. The oil amount is in the range of 210 to 220 cc.

#### (6) Rear Cushions

Adjust the spring depending on the rider's choice.

#### (7) Handlebar

Loosen the handle lever holder before racing. It will protect the rider's hands or fingers from getting injured, in case of an accidental crash during the race. (The lever can easily turn when the machine turns over.)

## 7. Adjusting Ignition Timing

### (1) Tools and instruments for adjusting

Dial gauge (accuracy — 1/100 mm)

Dial gauge stand 2

Continuity testing lamp, YAMAHA electro tester or YAMAHA point checker.

Thickness gauge

Slot-head and Phillips-head screw driver

### (2) Adjust ignition timing

a) Set the point gap at 0.30~0.40 mm (0.012~0.014 in.) Inspect the breaker points for any pittings. Excessive pitting should be smoothed out with sandpaper (#400~600), and wiped off with hard clean paper.

b) Remove the spark plug and screw the dial gauge stand 2 into the plug hole. (On the DT1M head the spark plug hole is centered and parallel to the cylinder bore).

Next, insert the dial indicator into the gauge stand 2. Bring the piston up to T.D.C. and set the zero on the dial face to line up exactly with the dial indicator needle.

Connect the positive (+) tester lead to the terminal.

c) Turn the crankshaft back well past 2.3 mm, to eliminate play in the gears, and then bring the piston up to exactly 2.3 mm B.T.D.C.

d) Loosen the breaker plate holding screws, and turn the breaker plate. When the points just start to open (the testing lamp lights up), tighten the holding screws. (Do not fully loosen the breaker plate holding screw, because the breaker plate tends to shift its position).

Turning the breaker plate in the engine rotation direction causes ignition timing to delay, and turning it in the opposite direction advances ignition timing.



## 8. Check and Service Prior to Racing

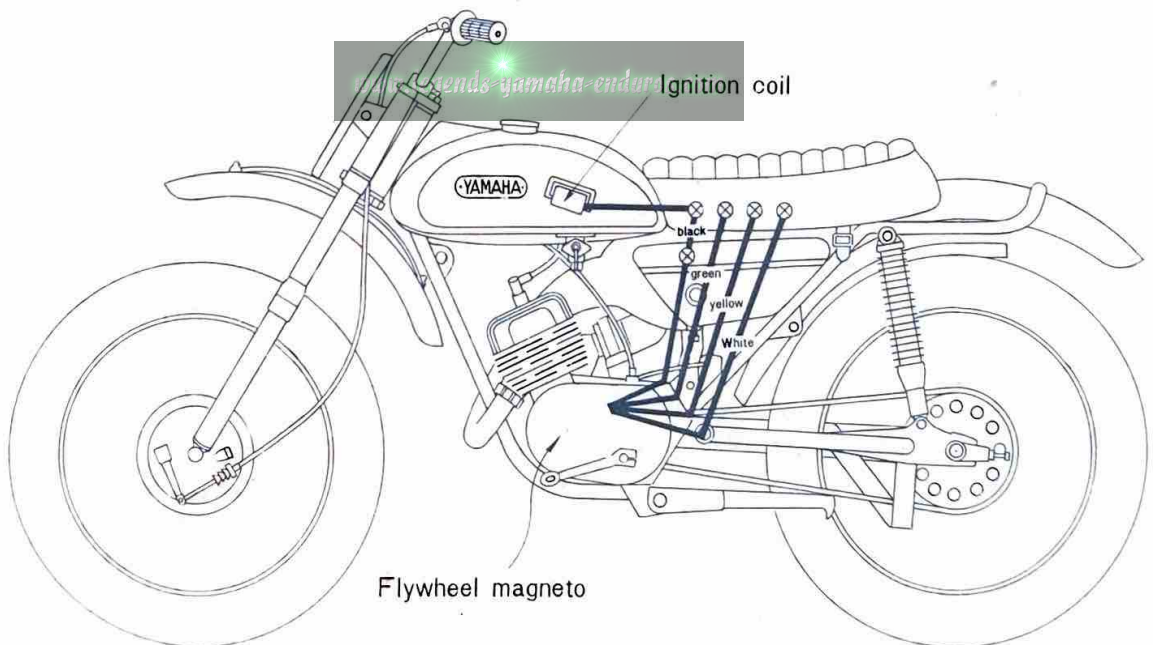
The following items should be checked and serviced before racing.

- (1) Check the cylinder, piston, and crankshaft ass'y for any defects.
- (2) Make sure that the carburetor is clean and correctly set.
- (3) Check for ignition timing, lead wire connect on, and insulation.
- (4) Retighten screws, bolts and nuts in all parts.
- (5) Check the cables.
- (6) Clean the gas tank and petcock.
- (7) Adjust and oil the chain.

Adjust the drive chain so that it has free play of approximately 1 in. (25 mm.) up and down at the center of the lower section with the rear wheel on the ground.

The racer should devote the maximum possible time to inspection and service of the machine prior to racing. **“Thorough inspection and service are the first step to victory.”**

## 9. WIRING DIAGRAM



[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)



**YAMAHA MOTOR CO., LTD.**

PRINTED IN JAPAN