

YAMAHA

www.legends-yamaha-enduros.com

Supplementary Service Information for Canada Model (Electronical System)

MODEL MINI ENDURO JT1



YAMAHA MOTOR CO., LTD.

This 60 JT1 (for Canada) is designed for off-the-road riding, but it is also perfect for on-the-road riding. A complete line of security parts enables the rider to enjoy a full speed drive on highways.

This Supplementary Service Manual is dedicated to the electrical system of the 60 JT1 motorcycles bound for Canada. Accordingly, the combined use of this Supplementary and the general Service Manual is recommended.

Except for the security parts such as the head lamp, tail lamp, flasher lamp and speedometer, this 60 JT1 is the same as the regular JT1. All electrical components are of 6V capacity and power is supplied from a flywheel magneto.

www.legends-yamaha-enduros.com

**YAMAHA MOTOR CO., LTD.
SERVICE DIVISION**

1. Highly-dependable Yamaha Autolube

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

2. Efficient primary kick-starter

The primary kick starter enable the engine to start both in gear or in neutral.

3. Powerful Brakes

Patented water-proof, dust-proof brake drums provide safe, fade-free braking on wet or dusty roads.

4. Front Fork Design

The Yamaha Enduro 60 JT1 employs a front fork design well-known for its strength and superior handling characteristics. Its use assures the rider of the ultimate suspension for even the roughest terrain.

www.legends-yamaha-enduros.com

5. Tires

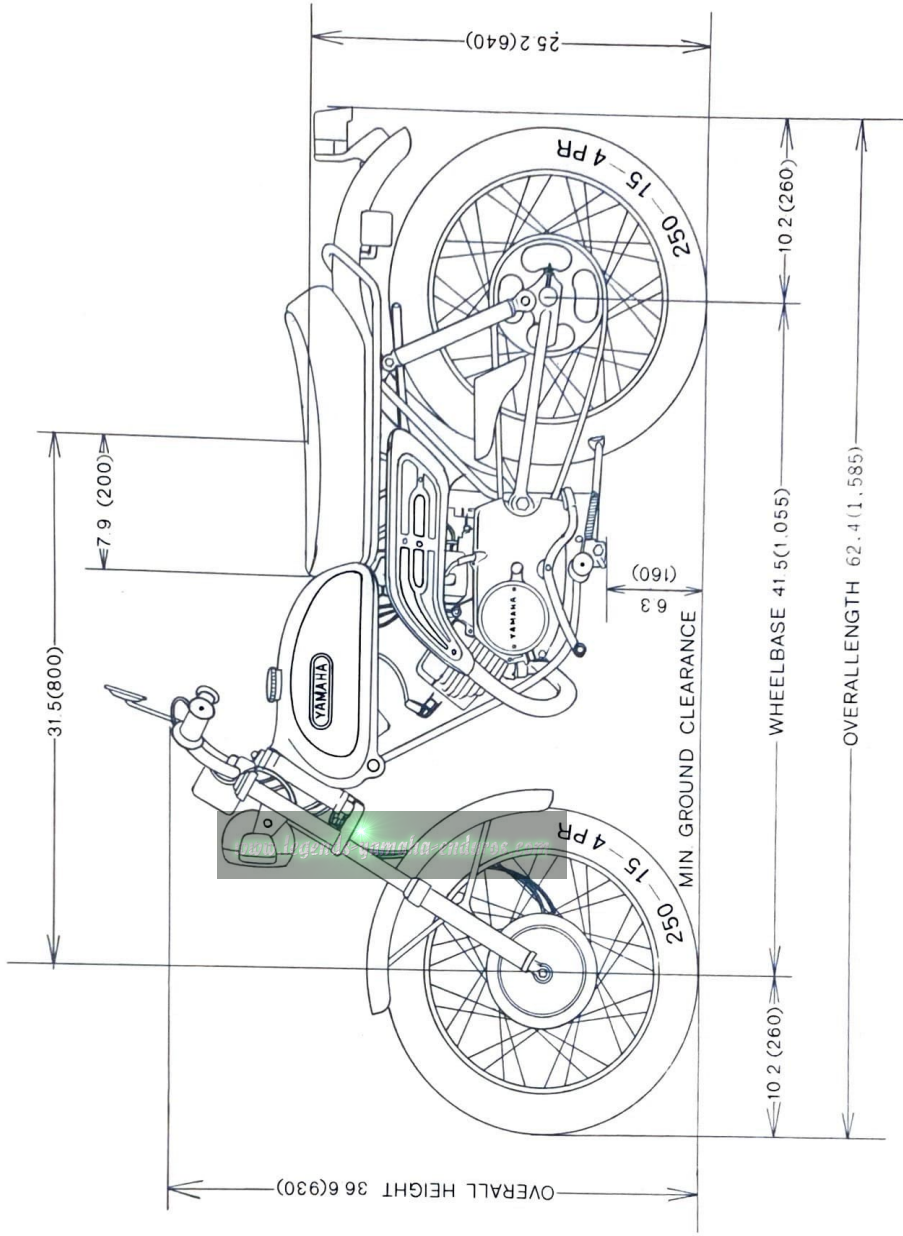
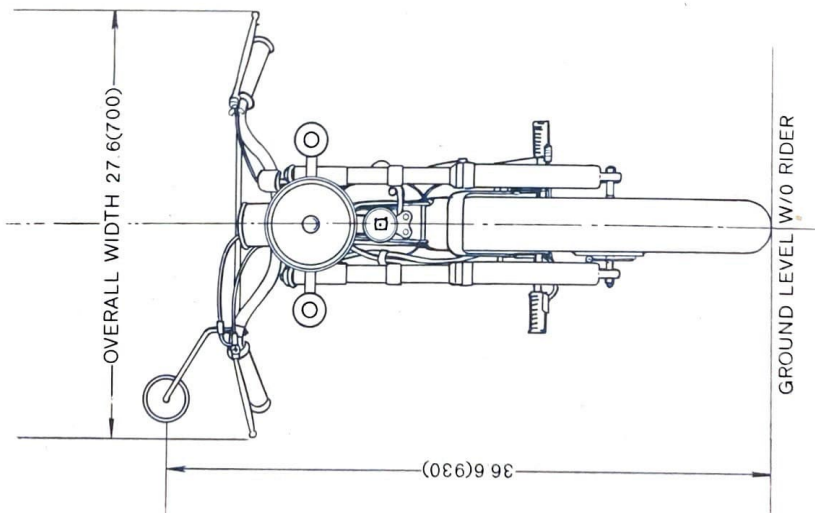
The Yamaha JT1 is fitted with Dunlop Trials Universal tires as standard equipment. This particular tread is one of the most versatile available. It gives maximum trail traction, yet is compatible with road usage.

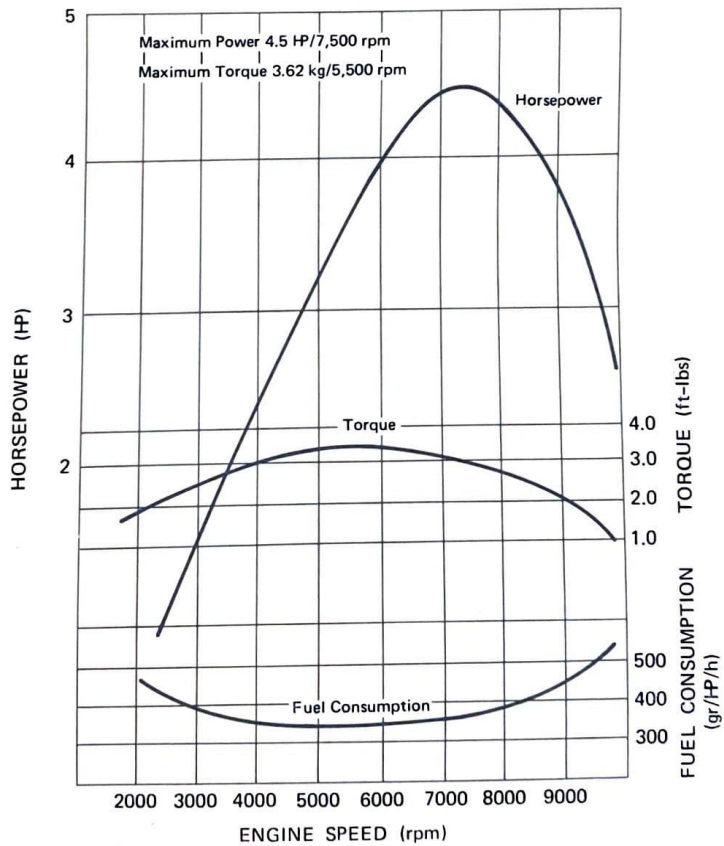
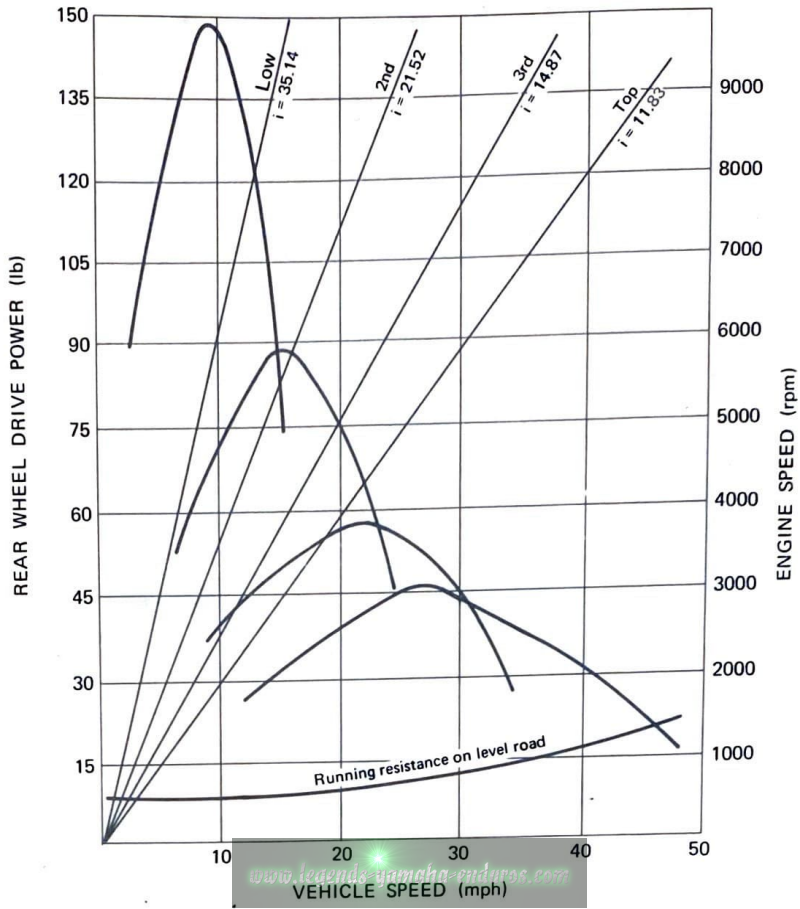
6. Carburetor Starter Feature

Yamaha's starter feature is already well-known for providing easy starting. Equipped with this unique carburetor, the Yamaha JT1 is quick starting under all conditions.

Model	YAMAHA 60 JT1
Dimensions: Overall length Overall width Overall height Wheelbase Min. ground clearance	62.4 in. 27.6 in. 36.6 in. 41.3 in. 6.3 in.
Weight: Gross Net Performance: Max. speed Fuel consumption (on paved level roads) Climbing ability Min. turning radius Braking distance	132 lbs. 143 lbs. 47 mph 176 mpg @ 19 mph 20° 59.1 in. 24.6 ft at 22 mph
Engine: Model Type Lubricating system Cylinder Displacement Bore x Stroke Compression ratio Max. power Max. torque Starting system Ignition system Spark plug	www.legends-yamaha-enduros.com JT1 2 stroke, gasoline Separate lubrication (Yamaha Autolube) Single cylinder, forward inclined 3.54 cu. in. (58 cc) 1.654 x 1.654 in. (42 x 42 mm) 6.4 : 1 4.5 hp/7,500 rpm 3.62 ft-lb/5,500 rpm Primary-coupled kick starter system Flywheel magneto ignition system B-7HS
Carburetor: Type M. J. J. N.	Y16P #84 032-2
Air cleaner:	Dry, Paper filter type
Transmission: Clutch Primary reduction system Primary reduction ratio	Wet, multiple-disk Gear 3.894 (74/19)

Model	YAMAHA 60 JT1
Gear Box: Type Reduction ratio 1st 2nd 3rd 4th Secondary reduction system Secondary reduction ratio	Constant mesh, 4-speed 3.077 1.889 1.304 1.038 Chain 3.153 (41/13)
Chassis: Frame Suspension system, front Suspension system, rear Cushion system, front Cushion system, rear	Tubular-Double loop Telescopic fork Swinging arm Coil spring, oil damper Coil spring, oil damper
Steering system: Caster Trail	63.5° 2.7 in.
Braking system: Type of brake Operation system, front Operation system, rear	Internal expansion Right hand operation Right foot operation
Tire size: Front Rear	2.50-15-4PR 2.50-15-4PR
Dynamo: Model Manufacturer	F11-L40 Hitachi Co., Ltd.
Battery: Model Manufacturer Capacity	6N-2A-3 Nippon Btry. 6V 2AH
Lighting: Head lamp Tail lamp Stop lamp Meter lamp Flasher lamp	6V 15W/15W 6V 3W 6V 10W 6V 1.5W 6V 8W
Tanks: Gasoline tank capacity Oil tank capacity	1.1 gals. 1.1 gals.





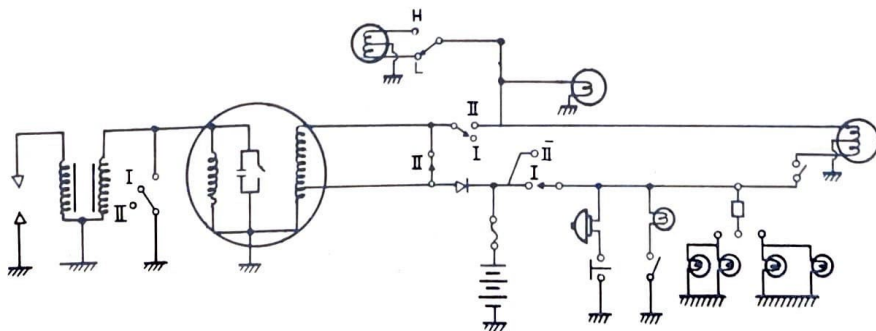
A. Description

The JT1 employs a flywheel magneto for its ignition system.

B. Table of Component Parts

	Parts	Manufacturer	Model & Type
Engine	Flywheel magneto Spark plug	Hitachi Ltd. N G K	F11-L40 B-7HS
Flame	Battery Main switch Rectifier Horn Ignition coil Flasher Relay Fuse Stop switch	Nippon Battery Asahi Denso Fuji Elec. Nikko Kinzoku Hitachi Ltd. Showa Elec. Osachi Mfg. Asahi Denso	6N2-2A-3 (6V2AH) 3A GF-6 CM61-50 B9 10A
Front	Head lamp Speed meter lamp Front flasher lamp Handle switch	Koito Mfg. Nippon Seiki Imasen Elec. Asahi Denso	6V 15W/15W 6V 1.5W 6V 8W x 2 ACS
Rear	Rear flasher lamp Tail, Stop lamp	Asahi Denso Koito Mfg.	6V 8W x 2 6V 3W/10W

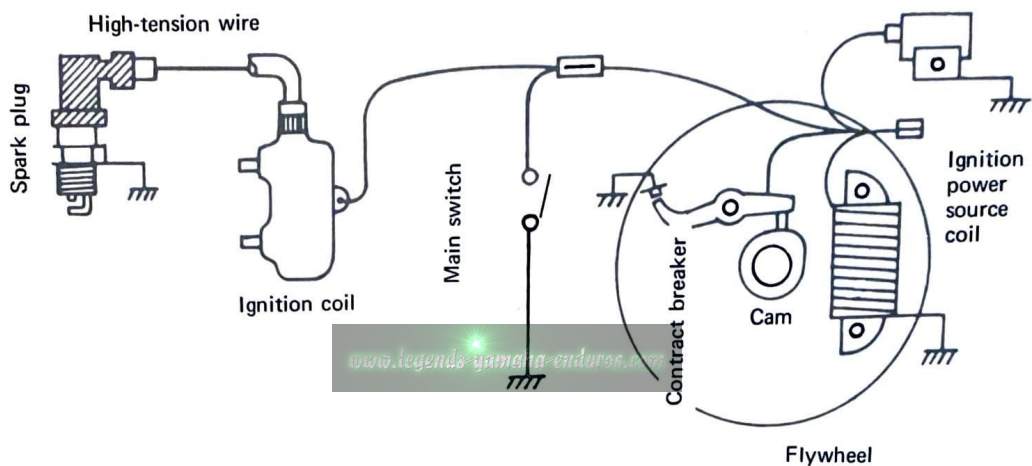
C. Connection Diagram



D. Ignition System—Function and Service

1. Function

The ignition system consists of the components as shown in Fig. 2. As the flywheel rotates, the contact breaker points begin to open and close, alternately. This make-and-break operation develops an electromotive force in the ignition power source coil, and produces a voltage in the ignition coil primary windings. The ignition coil is a kind of transformer, with a 1:50 turn ratio of the primary to the secondary winding. The voltage (150~300V) which is produced in the primary coil, is stepped up to 12,000~14,000V by mutual-induction and the electric spark jumps across the spark plug electrodes.



2. Ignition Timing

Remove the spark plug and screw the dial indicator holder into the plug hole. Next, insert the dial indicator into the holder. 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. The crankshaft should then be turned backwards, so that the piston travels down past 1.8 mm B.T.D.C. and slowly brought back up to precisely 1.8 mm B.T.D.C. (This removes any slack in the gears). Adjust the points so that they are just beginning to open with the piston in this position. A low resistance point checker (100 Ohms or less) should be used to determine the opening and closing of the ignition points.

Ignition Timing, 1.8 mm. B.T.D.C.

Maximum ignition point gap 0.3 to 0.4 mm. (0.012"—0.015")

3. Ignition Coil

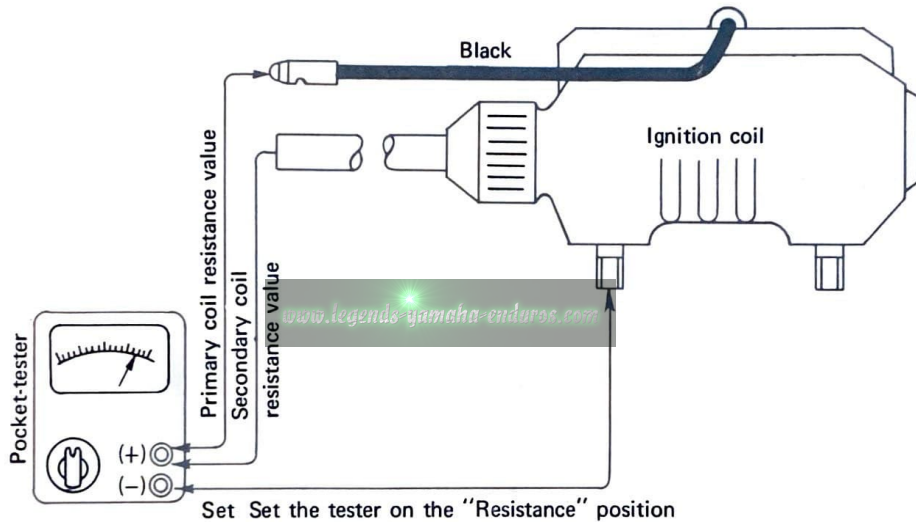
The ignition coil is protected by a resin mold to improve the earthquake proof ability and durability of the coil.

- Checking

To check the ignition coil for condition, measure the length of spark. As a simple checking method, the condition of the coil can be roughly judged by measuring the inner resistance of the coil. It is advisable, however, to measure the length of spark to accurately diagnose the coil.

Primary coil resistance $4.9 \Omega \pm 10\%$ (20°C)

Secondary coil resistance $11.0\text{K}\Omega \pm 20\%$ (20°C)



Spark Test:

Remove the spark plug from the cylinder head and reconnect the high voltage lead. Then hold the spark plug approximately 7 mm away from the head and see if it sparks as you crank the kickstarter.

If it sparks at 7 mm. or so, and has blue/white color, the ignition coil should be closed to be in good condition.

- Sparking (in combination with flywheel magneto)

7 mm or more at 500 rpm

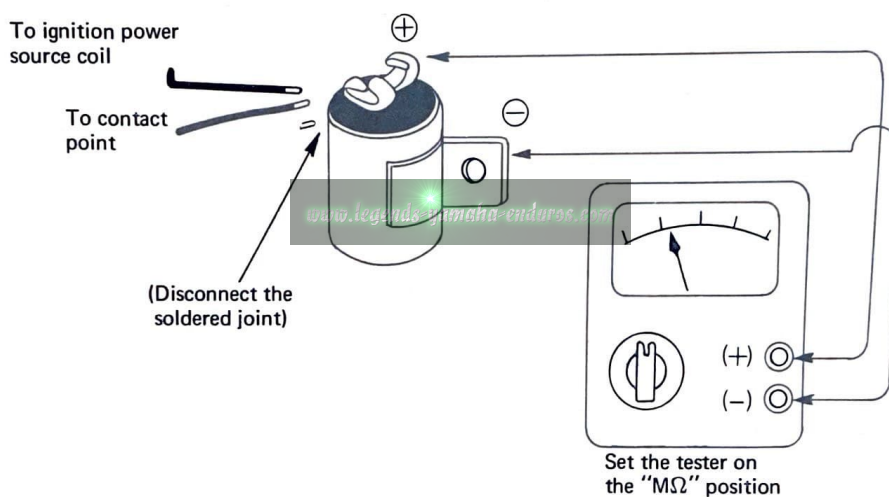
8 mm or more at 5000 rpm

4. Condenser

The condenser instantly stores a static electric charge as the contact breaker points separate, and the energy stored in the condenser discharges instantly when the points are closed. If it were not for the condenser, an electric arc would jump across the separating contact points, causing them to burn.

Burned contact points greatly affect the flow of current in the primary winding of the ignition coil. If the contact points show excessive wear, or the spark is weak (the ignition coil is in good condition), check the condenser.

Insulation resistance tests should be conducted by connecting the tester as shown in Fig. 4. If the pointer swings fully and the reading is more than $3M\Omega$, the insulation is in good condition. If the insulation is faulty, the pointer will stay pointing at the uppermost reading, indicating very little resistance.



Note:

After this measurement, the condenser should be discharged by connecting the positive and negative sides with a thick wire.

Capacity tests can be performed by simply setting the tester to the condenser capacity. The tester should be connected with the condenser in the same way as in the case of the insulation resistance test. Before this measurement, be sure to set the tester correctly. If the reading is within $0.22 \mu F \pm 10\%$, the condenser capacity is correct.

E. Charging System

The charging system consists of the flywheel magneto (charging and lighting coils), rectifier, and battery.

1. Flywheel Magneto

As the flywheel rotates, an alternating current is generated in the charging and, lighting coils and converted to a half-wave current by means of a silicon rectifier.

This half-wave current charges the battery.

- Day-time charging capacity

(6V-2AH battery full charge, silicon rectifier in use)

0.5A or less at 2500 rpm (Battery voltage : 6.5V)

4.0A or less at 8000 rpm (Battery voltage : 8.5V)

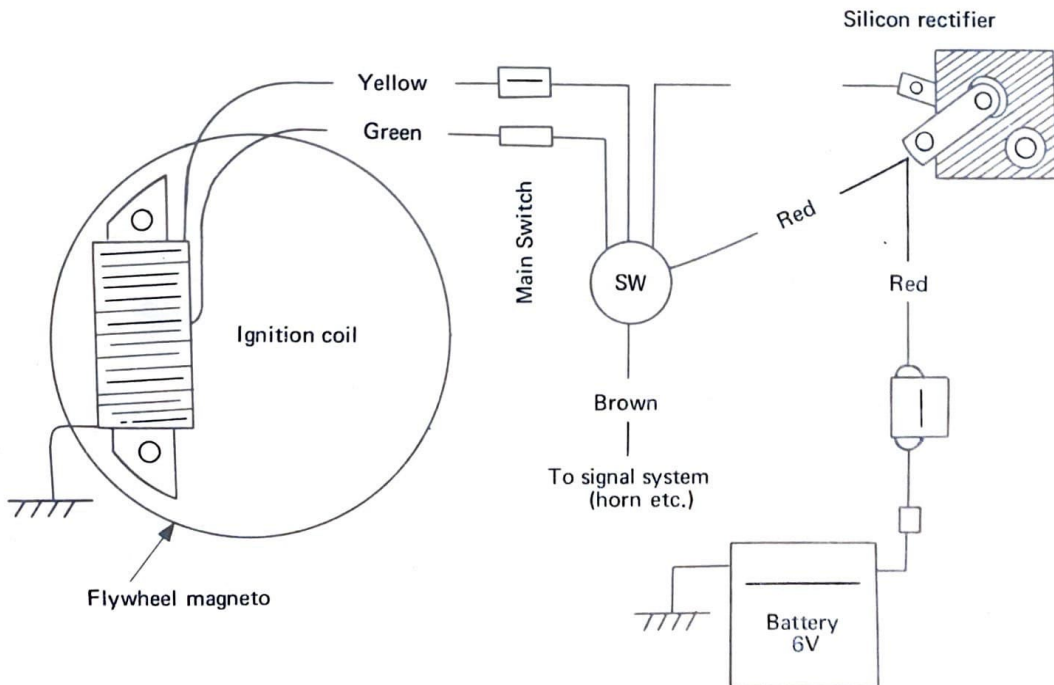
- Night-time lighting capacity (19.5W load in use)

6.0V or more at 2500 rpm (Battery voltage : 6.5V or less)

8.7V or more at 8000 rpm (Battery voltage : 7.0V or more)

The charging and lighting capacity is obtained when the battery is fully charged. If the battery is in a low state of charge and low in voltage, the charging rate will be not exactly the same as above. However, it is desirable that the figures are as close as possible.

www.legends-yamaha-enduros.com

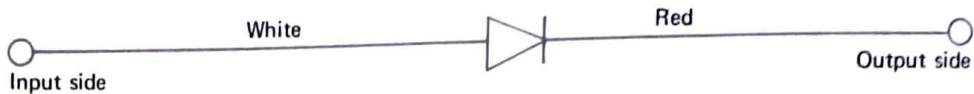


2. Silicon Rectifier

The alternating current, which is generated by the flywheel magneto, is rectified and charged to the battery. For this rectification, a single-phase halfwave silicon rectifier is employed.

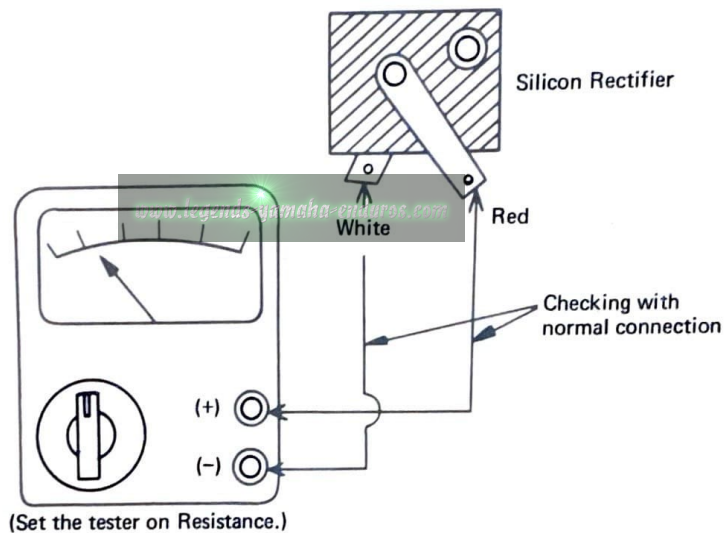
Characteristics: Rated output – 3A,
Rated peak inverse voltage 400V

Polarity:



a. Checking the Silicon Rectifier

For measurements, an ohmmeter can be used.



b. Checking with Normal Connection

Connect the tester's red lead (+) to the silicon rectifier's red terminal, and connect the tester's black lead (-) to the rectifier's white terminal.

Standard value: 9 ~ 10 Ω

If the tester's pointer will not swing back over from the scale, the rectifier is defective.

c. Checking with Reversal Connection

Connect the tester the other way around.

Standard value: If the pointer will not swing, the rectifier is in good condition.

If the pointer swings, the rectifier is faulty.

d. Operational Note

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

3. Battery

The battery is a 6 volt–2 AH unit that is the power source for the horn and stoplight. Because of the fluctuating charging rate due to the differences in engine R.P.M.s, the battery will lose its charge if the horn and stoplight are excessively used. The charging of the battery begins at about 2,500 R.P.M. Therefore, it is recommended to sustain engine R.P.M.s at about 3,000 to 4,000 R.P.M. to keep the battery charged properly. If the horn and stoplight are used very often, the battery water should be checked regularly as continuous charging will dissipate the water. If the battery will not retain a charge (and the battery is in good condition) the White/Red wire of the flywheel magneto can be connected to the green wire of the wiring harness. This will increase the charging rate. But if the machine is ridden for long periods of time at high speeds with this wiring connection, the battery may be overcharged and damaged.

a. Checking

- 1) If sulfation occurs on plates due to lack of battery electrolyte, showing white accumulations, the battery should be replaced.
- 2) If the bottoms of the cells are filled with corrosive material falling off plates, the battery should be replaced.
- 3) If the battery shows the following defects, it should be replaced.
 - The voltage will not rise to a specific value even after long hours charging.
 - No gassing occurs in any cell.
 - The 6V battery requires a charging current of more than 8.4 volts in order to supply a current at a rate of 1 amp. per hour for 10 hours.

b. Service Life

The service life of a battery is usually 2 to 3 years, but lack of care as described below will shorten the life of the battery.

- 1) Negligence in re-filling the battery with electrolyte.
- 2) Battery being left discharged.
- 3) Over-charging by rushing charge.
- 4) Freezing.

5) Feeding of water or sulfuric acid containing impurities when re-filling the battery.

c. Storage

If any motorcycle is not used for a long time, remove the battery and have it stored by a battery service shop. The following instructions should be observed by shops equipped with chargers.

- 1) Recharge the battery.
- 2) Store the battery in a cool, dry place, and avoid temperatures below 0°C (32°F).
- 3) Recharge the battery before mounting it on the motorcycle.

d. Service Standards

Battery Spec.		6V-2AH
Electrolyte-Specific gravity and quantity	1.26–1.27, 110 c.c.	At full charge
Initial charging current	0.2A for 25 hours	Brand new motorcycle
Charging current	0.2A for 13 hours (Charge until specific gravity reaches 1.26–1.27)	When discharged
Refilling of electrolyte	Distilled water up to the max. level line.	Once a month

www.legends-yamaha-enduros.com

4. Checking the Main Switch (removed from the chassis)

Key "O" position (Off)

Black ↔ Switch body

Key "I" position
(for day)

Green ↔ White

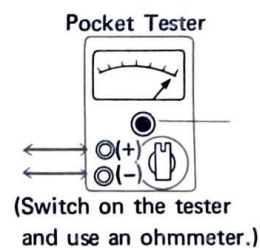
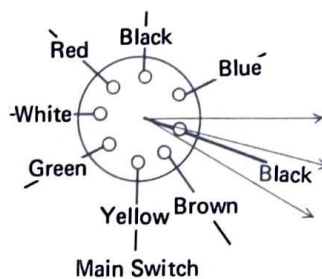
Red ↔ Brown

Key "II" position
(for night)

Yellow ↔ White

White ↔ Blue

Red ↔ Brown



If the readings or the above six measurements are nearly 0Ω, and no short-circuit is noticed between the terminals, as well as between the lead terminal and the switch body, the main switch is in good condition.

5. Spark Plug

The life of a plug and its discoloring vary, according to the habits of the rider. At each periodic inspection, replace burned or fouled plugs with suitable ones determined by the color and condition of the bad plugs. One machine may be ridden only in urban areas at low speeds, whereas another may be ridden for hours at high speeds, so confirm what the present plugs indicate by asking the rider how long and how fast he rides, and recommend a hot, standard, or cold plug accordingly. It is actually economical to install new plugs every 3,000 km (2,000 miles) since it will tend to keep the engine in good condition and prevent excessive fuel consumption.

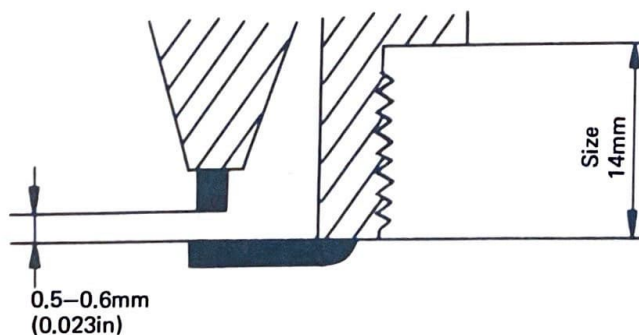
1) How to "read" spark plug (condition)

- a. Best . . . When the porcelain around the center electrode is a light tan color.
- b. If the electrodes and porcelain are black and somewhat oily, replace the plug with a hotter-type for low speed riding.
- c. If the porcelain is burned white and/or the electrodes are partially burned away, replace the plug with a colder-type for high speed riding.

2) Inspection

Instruct the rider to:

Inspect and clean the spark plug at least once a month or every 1,000 km (600 miles). Clean the electrodes of carbon and adjust the electrode gap to 0.5 ~ 0.6 mm (0.023 in.). Be sure to use standard B-7HS plug as replacements to avoid any error in reach.



F. Lighting and Signal Systems

The lighting and signal systems consist of the horn and stop light (power source-battery) and the head light, tail light, meter lamps, speedometer.

1) Head Light

The head light has two 6V, 15W bulbs, and a 6V, 3W neutral pilot light on its top. A beam directing adjusting screw is fitted on the right side of the light rim so that the horizontal direction of the beam can be adjusted (not vertically).

2) Tail Light and Stop Light

A 6V, 3W tail light and a 6V, 10W stop light are mounted. The lens of the tail light is provided with reflectors on its three sides—rear, right and left.

3) Horn

The horn is a 6V, flat type, and has a tone-volume adjusting nut on its back.

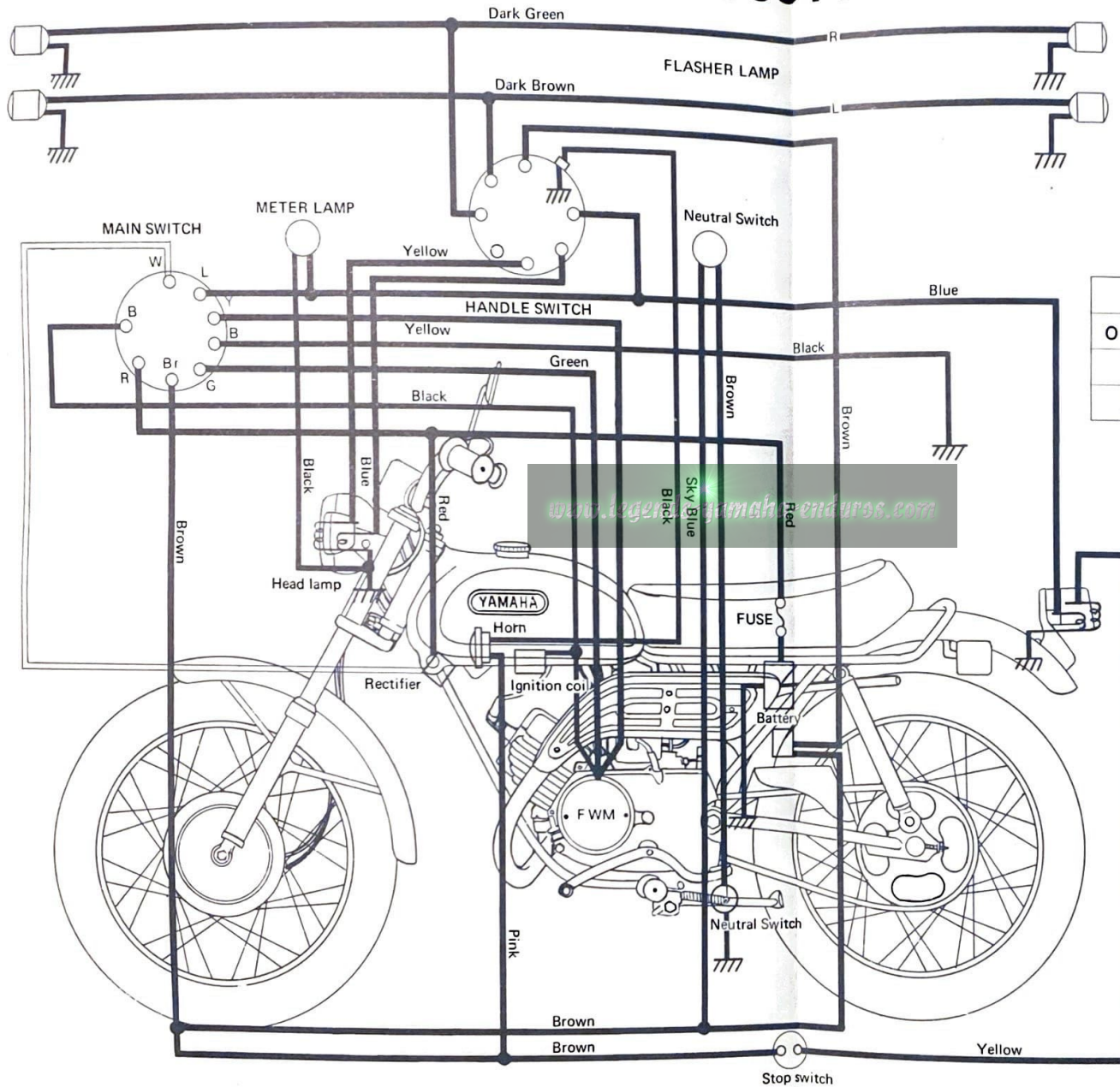
After adjustment is made, apply paint or lacquer to the nut for water proofing purposes.

4) Speedometer

A circular type speedometer is mounted on the bracket. For illumination, a 6V, 1.5W bulb is provided.

www.legends-yamaha-enduros.com

YAMAHA MINI ENDURO 60JT1 CIRCUIT DIAGRAM

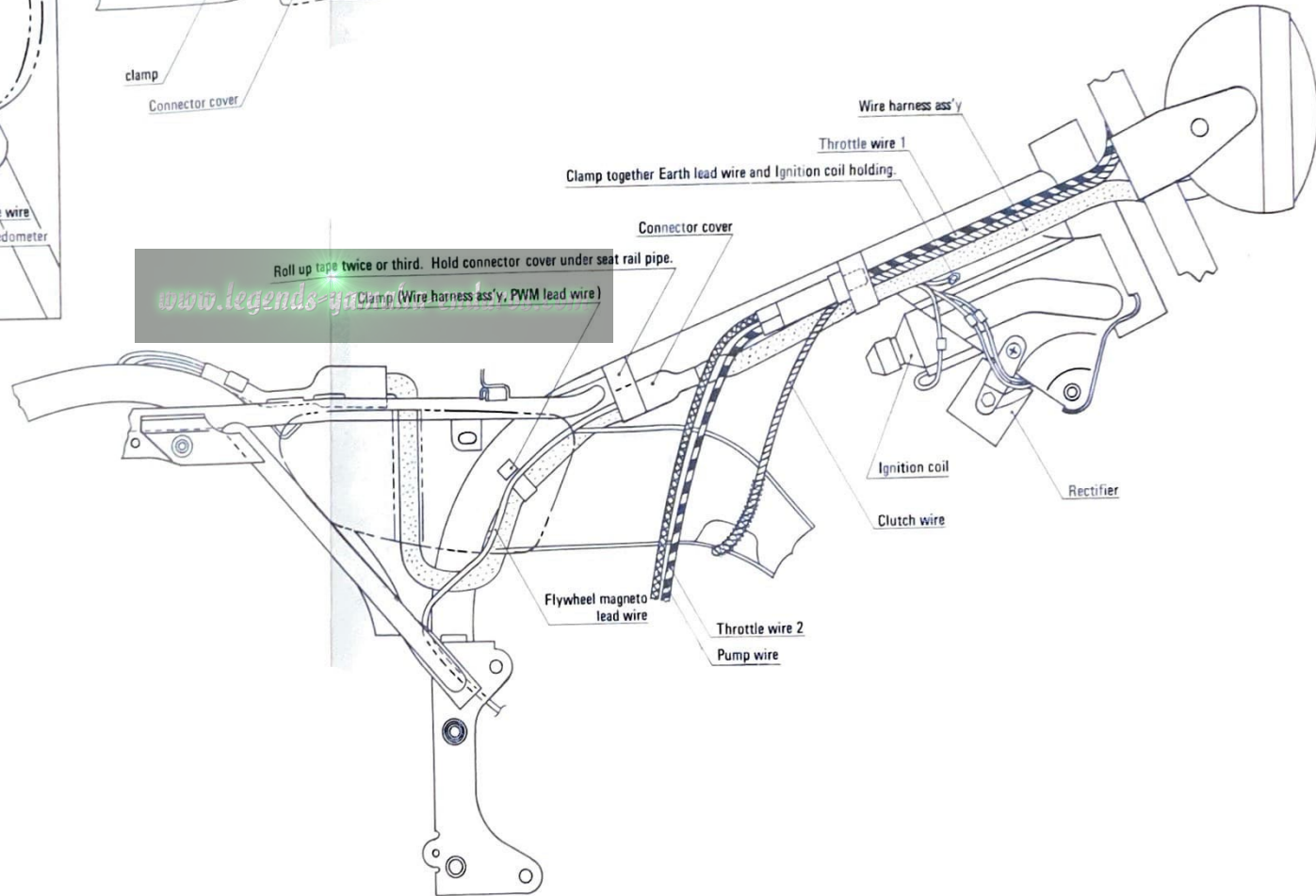
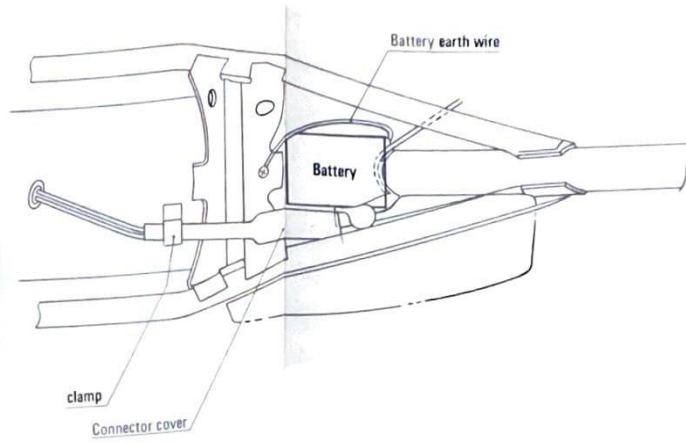
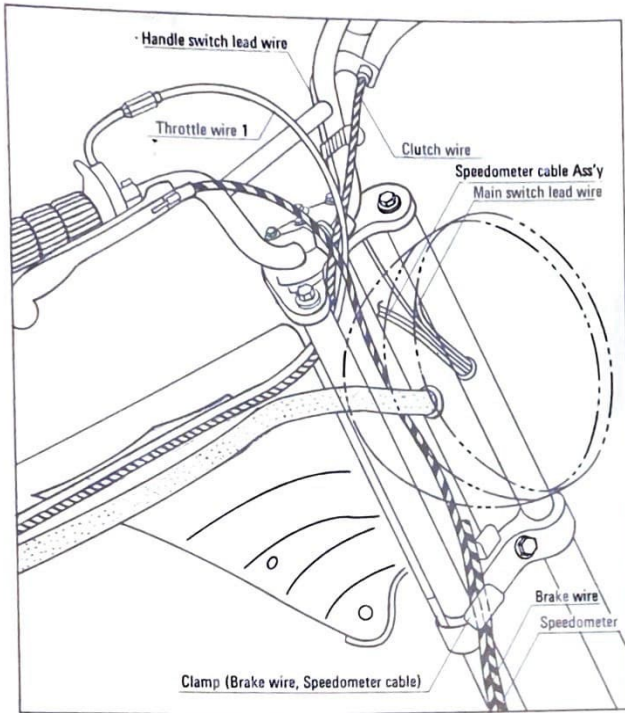


Main Switch connecting

	B-E	R-Br	G-W	W-Y-BI
OFF	○	×	×	×
I	×	○	○	×
II	×	○	×	○

chart of wire colors

Head lamp main circuit	Yellow
Magneto nighttime charging circuit	Yellow
Stop lamp circuit	Yellow
Lighting circuit	Blue
Tail lamp circuit	Blue
Common circuit	Brown
Earth circuit	Black
Ignition primary circuit	Black
Magneto daytime charging circuit	Green
Battery (+) circuit	Red
Horn circuit	Pink
Flasher lamp (Right) circuit	Dark Green
Flasher lamp (Left) circuit	Dark Brown
Neutral lamp circuit	Sky Blue



www.legends-yamaha-enduros.com



YAMAHA MOTOR CO., LTD.