



**YAMAHA**

**DT100G**

**Supplementary**

**Service Manual**

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# FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the DT100G.

For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with Service Manual for the DT100D (1T9-28197-11).

**NOTE:** \_\_\_\_\_

This Supplementary Service Manual contains special information regarding periodic maintenance to the emissions control system for the DT100G. Please read this material carefully.

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

## NOTICE

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

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

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

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

- NOTE:** A NOTE provides key information to make procedures easier or clearer.
- CAUTION:** A CAUTION indicates special procedures that must be followed to avoid damage to the motorcycle.
- WARNING:** A WARNING indicates special procedures that must be followed to avoid injury to a motorcycle operator or person inspecting or repairing the motorcycle.

# NEW SERVICE

## MAINTENANCE AND LUBRICATION CHART

### A. Periodic Maintenance Emission Control System

No.	ITEM	REMARKS	INITIAL BREAK-IN		THERE-AFTER EVERY
			1,000 km or 1 month (600 mi)	4,000 km or 7 months (2,500 mi)	3,000 km or 6 months (2,000 mi)
1.	Spark Plug	Check spark plug condition and plug gap. Replace plug every 3,000 km (2,000 mi).		Replace	Replace
2.	Fuel Hose	Check fuel for cracks and damage. Replace if necessary.		○	○
3.	Fuel Petcock	Check fuel filter screen. Clean it, if necessary.	○	○	○
4.	Exhaust system	Check for leakage. Retighten if necessary. Replace gasket(s), if necessary.		○	○
5.	Idle Speed	Check and adjust engine idle speed.		○	○

### B. General maintenance/lubrication

No.	ITEM	REMARKS	TYPE	INITIAL BREAK-IN		THEREAFTER EVERY	
				1,000 km or 1 month (600 mi)	4,000 km or 7 months (2,500 mi)	3,000 km or 6 months (2,000 mi)	15,000 km or 24 months (9,500 mi)
1.	Transmission Oil	Warm-up engine before draining.	Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil or "GL" gear oil.	Replace	Replace	Replace	
2.	Autolube Pump	Check and adjust minimum pump stroke.	—	○	○	○	
3.	Air Filter	Check for clogging. If necessary clean and dampen with oil.	—	○	○	○	
4.	Control and Meter Cables	Inspect and lubricate thoroughly.	Yamaha chain and cable lube or SAE 10W/30 motor oil	○	○	○	
5.	Clutch	Adjust free play.	—	○	○	○	
6.	Brake System	Inspect and adjust. Replace shoes, if necessary.	—	○	○	○	
7.	Throttle	Adjust as necessary. Lightly lubricate.	Lithium base grease		○	○	
8.	Brake/Clutch pivot shaft	Lubricate. Apply lightly.	Yamaha chain and cable lube or SAE 10W/30 motor oil		○	○	
9.	Drive Chain	Check chain condition. Adjust chain tension. Lubricate chain thoroughly.	Yamaha chain and cable lube or SAE 10W/30 motor oil.		Every 500 km (300 mi)		
10.	Side Stand Pivot Shaft	Lubricate. Apply lightly.	Yamaha chain and cable lube or SAE 10W/30 motor oil		○	○	
11.	Front Fork Oil	Drain completely. Fill to specification.	Yamaha fork oil 10 wt or equivalent				Replace
12.	Steering Bearings	Check steering assembly for looseness. Moderately repack every 15,000 km (9,500 mi).	Medium weight wheel bearing grease		○		Repack
13.	Wheel Bearings	Check bearings for smooth rotation. Moderately repack every 15,000 km (9,500 mi).	Medium weight wheel bearing grease		○		Repack
14.	Battery	Check specific gravity and breather pipe for proper function.	—		○	○	

### C. Anticipated maintenance

The maintenance items in this table are set apart from the regular periodic maintenance items because of their anticipated need for irregular service intervals. The service interval is dependent upon variable factors such as the severity of use, operating conditions, etc. Therefore, perform this maintenance when the described symptoms warrant it.

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

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

500 km.

- b. Maintenance criterion—If any of the above mentioned symptoms are noticed, inspect as follows to determine the necessity for anticipated maintenance.
- 1) Check fuel flow.
  - 2) Check for kick cranking resistance. (If piston worn, the resistance of the kick crank is unusually heavy or unusually light.)
  - 3) Check spark plug for unusual color or deposit. (If piston is worn, the spark plug may show a bright metallic color or deposit on the spark plug insulator.)
- c. Maintenance—If an inspection reveals damage to the cylinder, bore or replace cylinder, and replace piston and piston rings. Make sure proper piston clearance is maintained.

## A. GENERAL

### Machine identification

The frame serial number is located on the right-hand side of the head pipe assembly. The first three digits identify the model. This is followed by a dash. The remaining digits identify the unit. The engine serial number is located on a raised boss on the upper rear, right-hand side of the engine. Engine identification follows the same code as frame identification.

Starting serial number

3A3-000101

## B. ENGINE

### Spark plug

1. After a run of initial 1,000 km, check the discoloration of the spark plug and clean it. After that, measure the spark plug gap and adjust it, if it does not conform to the specification.

### Spark plug gap:

0.6 ~ 0.8 mm (0.024 ~ 0.031 in)

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

### Replacement limit:

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

Standard spark plug: NGK 87ES

4. When installing the spark plug, always clean the gasket surface, wipe off any grime that might be present on the surface of the spark plug, and torque the spark plug properly.

Tightening torque: 2.5 m·kg (18 ft·lb)

### Carburetor

1. Idle speed

Check and adjust idle speed as follows:

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

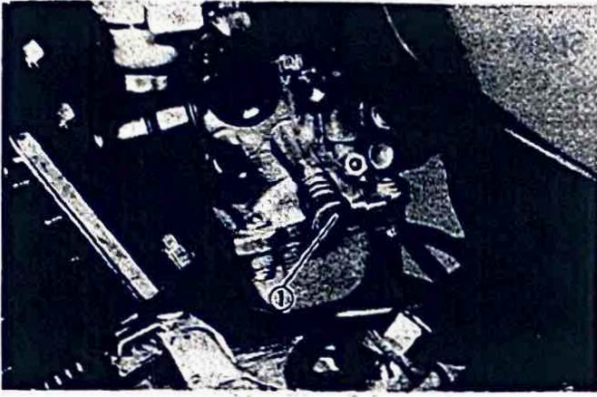
### NOTE:

A warmed engine is defined as one which has been operated for about 3 minutes at 4,000 r/min with no load.

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

Idle speed: 1,300 ~ 1,450 r/min

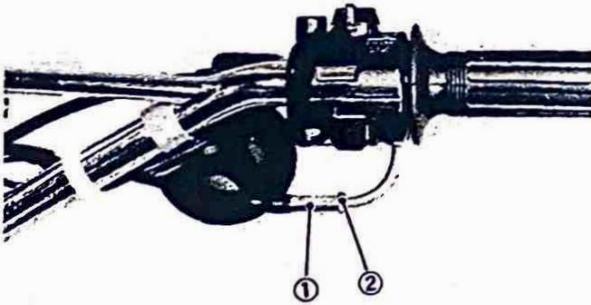
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1. Throttle stop screw

## 2. Throttle cable 1

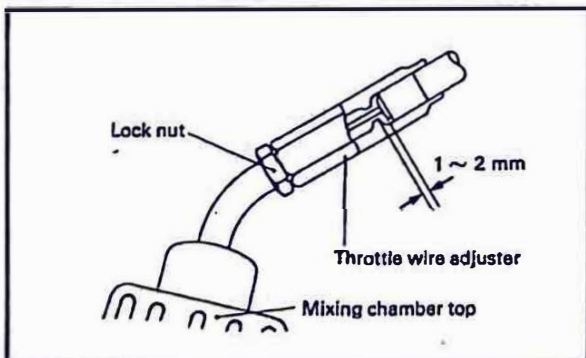
Check play in turning direction of throttle grip. The play should be 5 ~ 7 mm (0.2 ~ 0.28 in) at grip flange. Loosen the lock nut and turn the wire adjuster to make the necessary adjustments. Be sure to tighten the lock nut properly.



1. Adjuster      2. Lock nut

## 3. Throttle cable 2

Check to see whether this cable allows a play of 1 ~ 2 mm (0.04 ~ 0.08 in) on the mixing chamber top. If not, loosen the lock nut and adjust it to specified play with the wire adjuster.

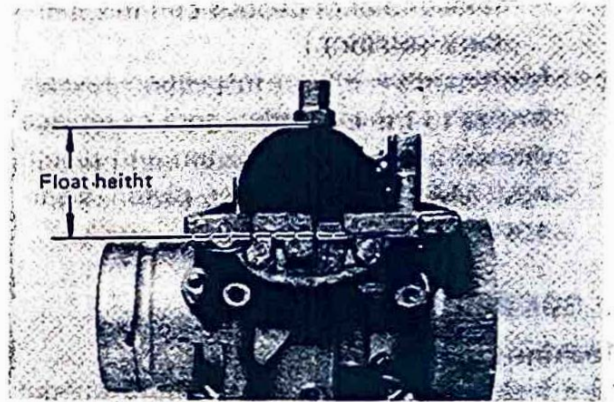


## 4. Checking the float height

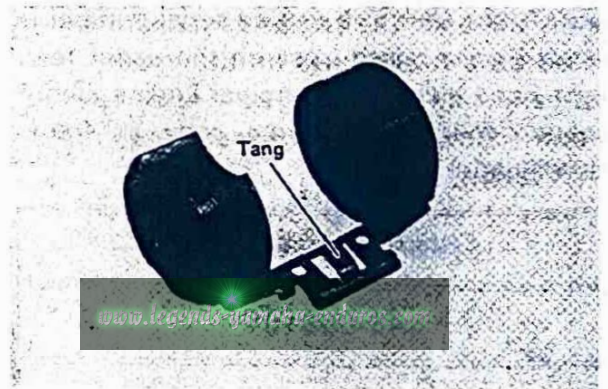
Hold the carburetor in an upside down position. Hold the floats so the tank is just touching the float needle. Measure the distance from the top of the float to the float bowl gasket base surface without the gasket. If distance is not correct, adjust the float height to the specification.

Float height:

$21.0 \pm 2.5$  mm ( $0.83 \pm 0.1$  in)



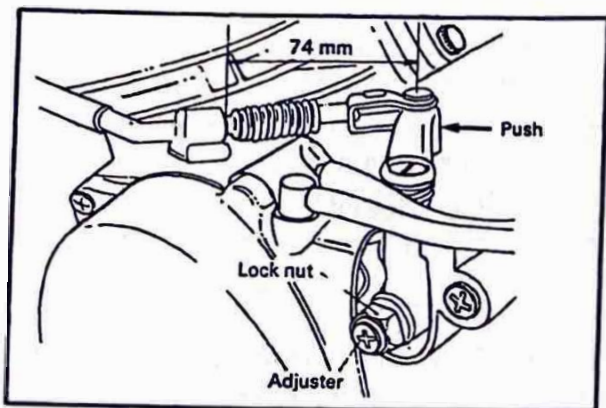
Bend the tang on the float arm. Both floats must be at the same height.



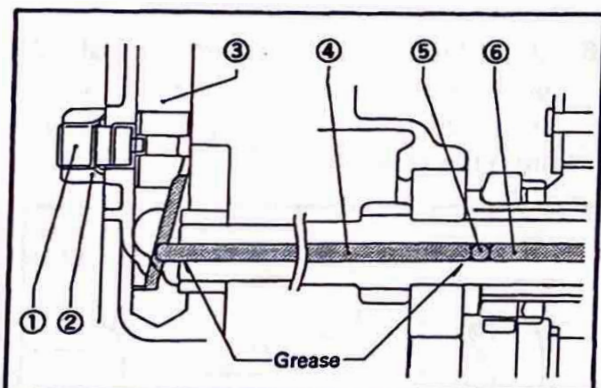
## Clutch

### 1. Mechanism adjustment

- a. Fully loosen the cable in-line length adjuster lock nut and screw in the adjuster until tight.
- b. Loosen the adjuster lock nut and screw the adjuster in until it lightly seats against the push cam.
- c. Push the push lever forward with your finger until it stops. With the push lever in this position, back out the adjuster (within full one turn) and adjust the distance to specified as shown below.

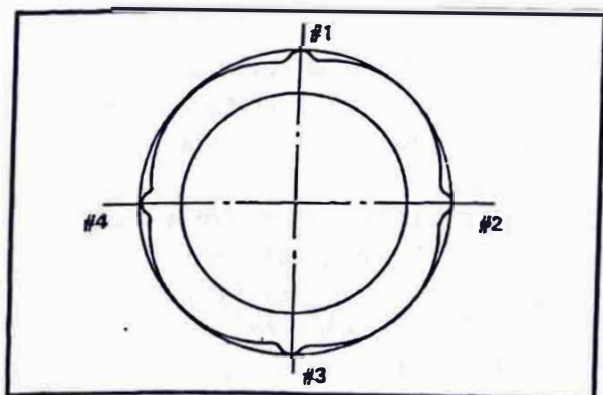


2. Before installation, apply grease to push lever axle, push rod 1, ball and push rod 2.
3. Make sure that push rod 2 is installed with its rounded end on the push lever axle side and with its flat end on the ball side.



- |                      |               |
|----------------------|---------------|
| 1. Adjuster          | 4. Push rod 2 |
| 2. Adjuster lock nut | 5. Ball       |
| 3. Push lever axle   | 6. Push rod 1 |

4. Install a clutch plate with cutaway offset approximately 90° from previous plate cutaway.



## Air cleaner

The air filter protects the engine from dirt which can enter with the intake air and cause rapid engine wear. This dirt is filtered from the air by air filter element.

### 1. Removal

- a. Remove the side cover, and remove the air filter case cap.
- b. Pull out the element from its case, remove element from guide.

### 2. Cleaning method

Clean the element with solvent. After it is completely cleaned and dry, pour a small quantity of Yamalube 2-cycle oil or SAE 20 motor oil onto the element and work it thoroughly into the entire porous foam material. Then wrap the element in a clean cloth and squeeze it in the hands (never twist it) to remove the excess oil from it. Coat the sealing edge of the filter element with light grease.



3. Reassemble by reversing the removal procedure. Check whether the element is seated completely against the case.

### NOTE:

Install the case cap with the mark (△) pointing upward.

4. The air filter element should be checked every 6 months or every 3,000 km (2,000 mi).

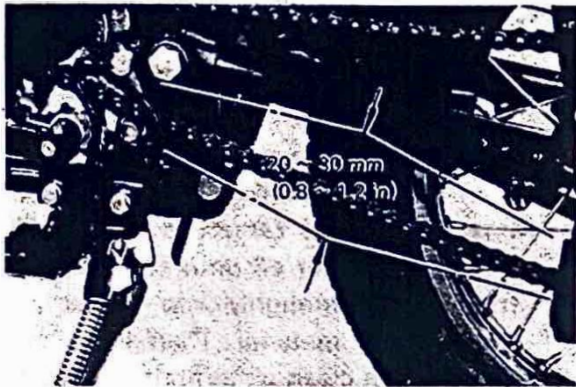
### CAUTION:

The engine should never be run without the air cleaner element installed; excessive piston and/or cylinder wear may result.

### Checking the drive chain tension

To check the chain play, the motorcycle must stand vertically with its both wheels on the ground and without passenger on it.

Then measure the play at the bottom of the chain at a point midway between the drive and driven sprockets.



The normal vertical deflection is approximately 20 ~ 30 mm (0.8 ~ 1.2 in). If the chain deflection is not as specified, adjust the chain tension.

### Adjusting the drive chain tension

1. Loosen the rear brake adjuster.
2. Remove the cotter pin of the rear wheel axle nut.
3. Loosen the axle nut.
4. To tighten chain, turn puller adjuster clockwise. Turn each bolt exactly the same amount to maintain correct axle alignment.



1. Cotter pin
2. Axle nut
3. Lock nut
4. Adjusting bolt
5. Sprocket shaft nut
6. Marks for alignment

5. After adjusting, be sure to tighten the lock nuts and the rear wheel axle nut.
6. Install the new cotter pin.

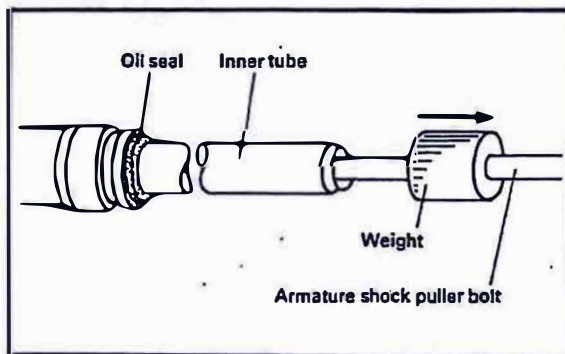
Rear axle nut torque:  
4.0 m-kg (28 ft-lb)

Sprocket shaft nut torque:  
14.0 m-kg (100 ft-lb)

### FRONT FORK

#### Disassembly

1. Remove the front wheel assembly.
2. Remove the cap bolt and the drain plug. Drain the oil.
3. Loosen the handle crown and under bracket pinch bolts.
4. Slide the front fork (inner and outer tube as an assembly) down and out of the bracket.
5. Remove the dust seal, oil seal clip and washer.
6. Using the special tools (Armature shock puller and weight), remove the inner tube assembly and damper assembly from the outer tube.



Weight: 90890-01050  
Bolt: 90890-01049

#### Inspection

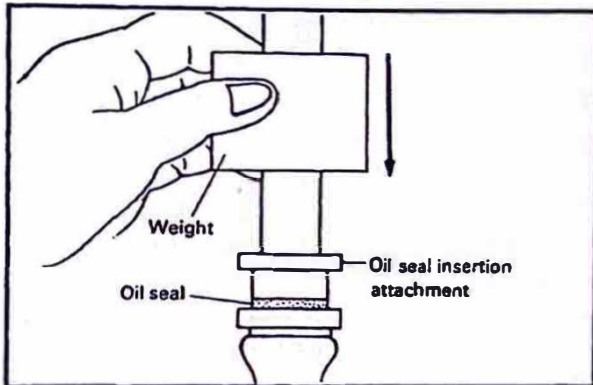
1. Examine fork inner tube for scratches and straightness. If the tube is scratched severely or bent, it should be replaced.
2. If the lips of the oil seal are worn, or the oil seal is leaking, replace it.
3. Check the outer tube for dents. If any dent causes the inner tube to "hang up" during operation, the outer tube should be replaced.



## Reassembly

When reassembling, reverse the removal procedure taking care of following points.

1. Make sure all components are clean before reassembly.
2. To install the fork oil seal;
  - a. Put the inner tube into the outer tube, and place the oil seal over the inner tube.
  - b. Slip the attachment over the inner tube until it contacts the oil seal.
  - c. Tap the attachment by sliding the oil seal insert weight up and down so that the oil seal moves in.



Weight: 90890-01184  
Attachment: 90890-02348

3. Pour specified amount of oil into the inner tube through the upper end opening.

**Recommended fork oil:**  
Yamaha fork oil 10wt, 20wt

4. Tighten the cap and pinch bolts.

### Tightening torque:

Cap bolt	2.0 m-k (14.5 ft-lb)
Pinch bolt	
upper	2.5 m-k (18 ft-lb)
lower	4.0 m-k (29 ft-lb)

## C. ELECTRICAL

### Capacitor Discharge Ignition (C.D.I.)

A capacitor discharge ignition (C.D.I.) system eliminates the need for a mechanical contact breaker and its inherent disadvantages. A simple electronic circuit using a large storage capacitor and a Thyristor (Silicon Control Re-

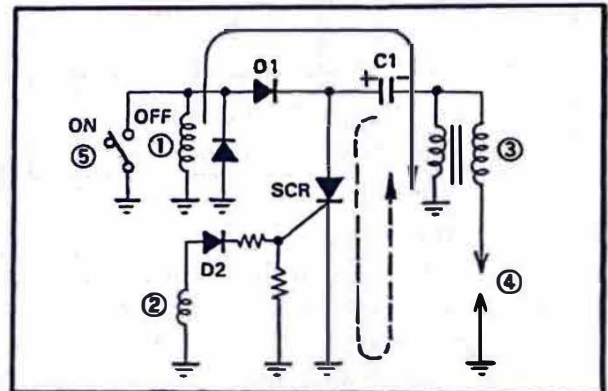
ctifier) provides a correctly-timed, high-intensity voltage to the spark plug.

#### 1. Method of ignition operation

The voltage generated by the charge coil is rectified by  $D_1$  (diode) and flows in the direction  $\rightarrow$  thus charging  $C_1$  (condenser). On the other hand, the voltage generated by the pulser coil is rectified by  $D_2$  then applied to SCR as a gate signal.

When the gate signal reaches the trigger level, SCR becomes conductive, thus allowing  $C_1$  to discharge its stored current. The current flows in the direction  $\leftarrow$ . This change in the current generates a high surge of voltage in the secondary winding of the ignition coil, thus causing a spark to jump.

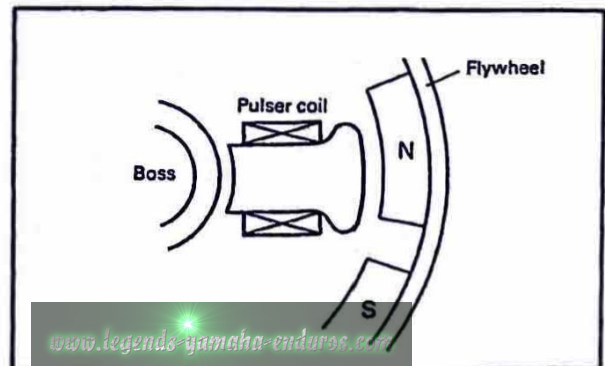
This ignition system is so called "CDI".



1. Charge coil
2. Pulser coil
3. Ignition coil
4. Spark plug
5. Main switch

#### 2. Generation of pulses

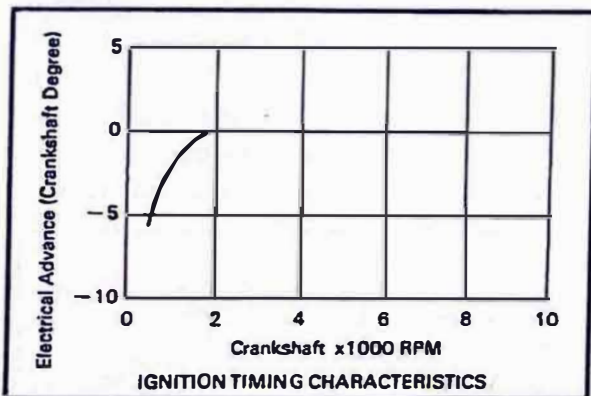
- a. The magnetic circuit is formed by the pulser core, boss, flywheel and magneto. As the rotor turns, the magnetic flux varies, and according to the variations, a voltage is produced in the pulser coil.



b. The voltages generated in the pulser coil, and when it reaches the trigger level, the SCR becomes conductive, thus causing the capacitor to discharge and to induce a spark to jump at the spark plug.

### 3. Method of ignition advance

Basically the ignition system for this engine has no ignition advance device, but the ignition timing delays slightly below 2,000 r/min due to electrical characteristics as illustrated below, and is not controlled.



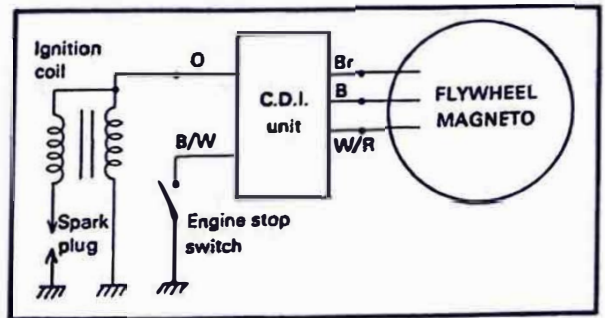
### 4. Handling notes

The wiring between the magneto, C.D.I. unit, and ignition coil uses couplers to prevent any wrong connection.

When connecting the ground circuit and the ignition coil, particular care should be taken. If these are connected incorrectly, the C.D.I. unit will become inoperative.

- Connection must be done accurately. Special care is required for connection of the ground circuit and ignition coil.
- The C.D.I. unit and ignition coil should be installed in the specified positions. If position is to be changed, a dry and airy place should be selected. Keep free from mud and water.
- To remove the rotor, be sure to use the flywheel magneto puller. Avoid using a hammer, or the rotor may be damaged.
- Handle the C.D.I. unit with special care. If you should drop it, the incorporated electronic components will be damaged.

### Ignition circuit



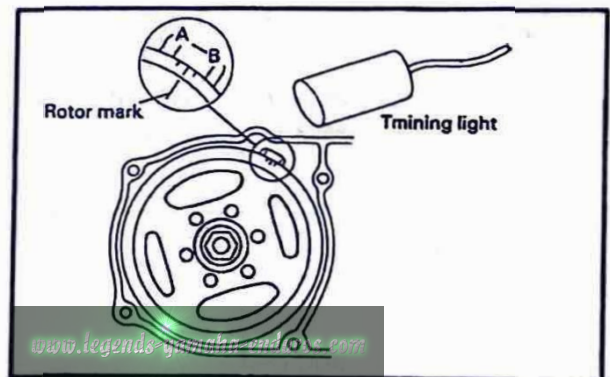
### Ignition timing

#### 1. Checking the ignition timing

Ignition timing is checked with a timing light by observing the position of the marks (A, B) stamped on the case and the mark on the rotor.

- Remove the crankcase cover (L).
- Connect the timing light to the spark plug lead wire.
- Start the engine and keep it running at the specified speed. Use a tachometer for checking.

Specified speed: 2,000 r/min



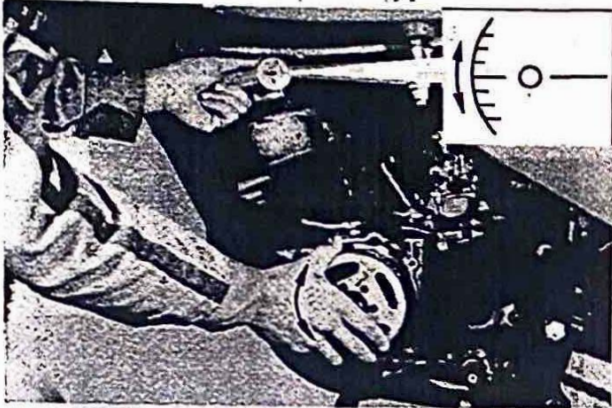
- While keeping the engine running at a specified speeds, check that the mark on the rotor is within the range of marks (A, B) stamped on the case. If off the range, check the woodruff key for damage and/or crankshaft bearing for damage.

#### 2. Stamping of check marks

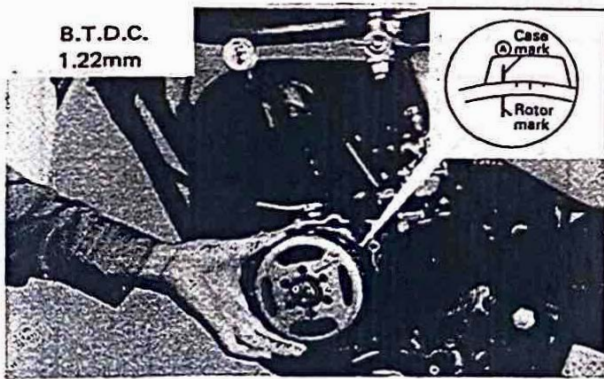
When the crankcase (L) has been replaced, stamp marks on the case to indicate that the ignition timing has been checked, in the following way:

- Shift transmission in neutral.
- Remove the spark plug and screw the dial gauge stand and the dial gauge into the plug hole.

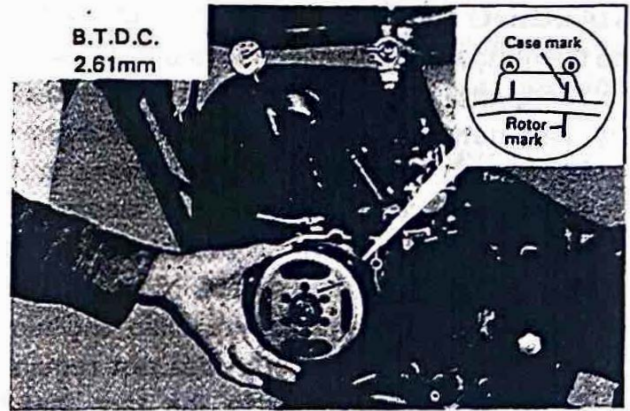
- c. Rotate the magneto flywheel until piston is a top-dead-center (T.D.C.). Set the zero on the dial gauge face to line up exactly with a dial gauge needle. Tighten the set screw on the dial gauge stand to secure the dial gauge assembly. Rotate the flywheel back and forth to be sure that indicator needle does not go past zero.



- d. Turn the flywheel clockwise, starting from TDC, and when the dial gauge reads 1.22 mm before TDC, hold the flywheel. With the flywheel in this position, stamp a mark (A) on the crankcase which is aligned with the mark on the rotor.



- e. After backing out the flywheel to TDC, again turn the flywheel clockwise until the dial gauge reads 2.61 mm before TDC, and hold it. With the flywheel in this position, stamp a mark (B) on the crankcase which is aligned with the mark on the rotor.



- f. After stamping the marks, check the ignition timing.

### Checking the magneto charge coil and pulser coil

The resistance of the magneto charge coil and pulser coil are as specified below. To locate the cause of trouble (broken coil, short-circuit, etc.), disconnect the magneto lead wires under the fuel tank and measure the resistance across each lead.

Charge coil: Br - B $300\Omega \pm 10\%$
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Pulser coil: W/R - B $10\Omega \pm 10\%$
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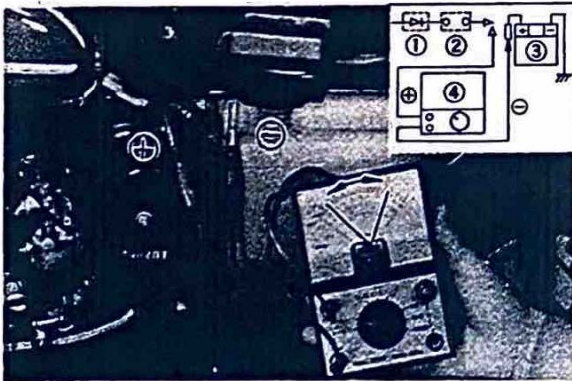


## CHARGING SYSTEM

The charging system consists of the flywheel, the charging/lighting coil, rectifier, and battery. Alternating current from the charging/lighting coil flows to the headlight, meter light, high beam indicator and, also, to the rectifier where it is converted to direct current for charging the battery. So long as all electrical load items are installed and working properly, the system does not require a regulator. This is due to the fact that as engine r.p.m. increases, frequency increased, lighting/charging coil impedance increases. This impedance increase acts to control the output of the magneto.

### Charging amperage test

1. Connect the engine tachometer and start the engine.
2. Disconnect the red wire connection at the battery and connect Pocket Tester. Take amperage readings at specified speed.



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

### Charging amperage (D.C.)

0.5A or more at 3,000 r/min

3.5A or less at 8,000 r/min

### CAUTION:

The battery must be fully charged when measuring the charging output test.

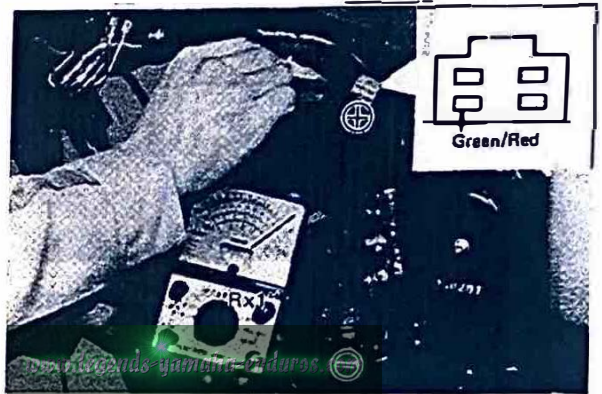
### NOTE:

Disconnect the Pocket Tester before stopping the engine.

5. If the indicated amperage cannot be reached, perform the next test.

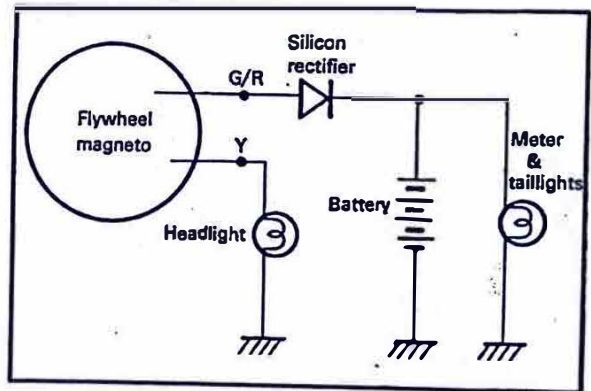
### Charging coil resistance

Check the resistance between terminal and ground. If resistance is out of specification, coil is broken. Check the coil connections. If the coil connections are good, then the coil is broken inside and it should be replaced.



### Charge coil resistnace

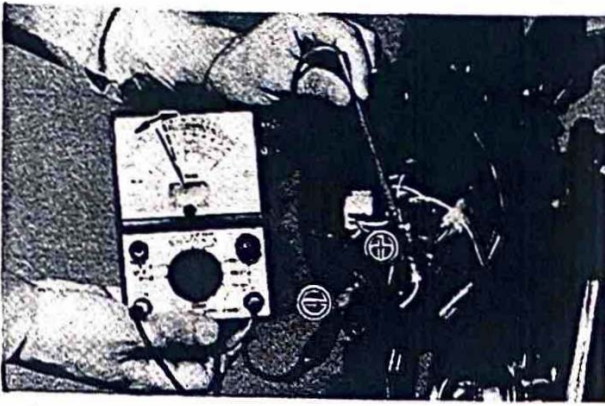
Green/Red - Ground:  $0.32\Omega \pm 10\%$



### Lighting output test

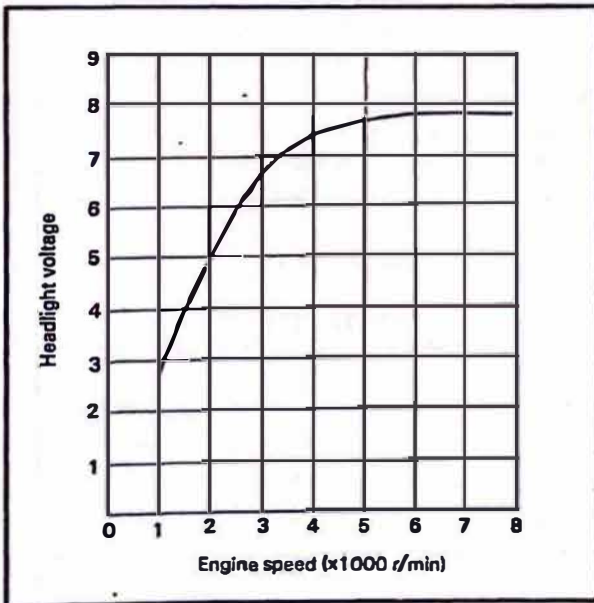
With all A.C. lights in operation, the circuit will be balanced and the voltage will be the same at all points at a given r/min.

1. Switch Pocket Tester to "AC20V" position. Turn the dimmer switch to "HI" position.
2. Connect positive (+) test lead to yellow connection and negative (-) test lead to a earth connection.



3. Start the engine, and check voltage at each engine speed in table below (approximate engine speed).  
If measured voltage is too high or too low, check for bad connections, damaged wires, burned out bulbs or bulb capacities which are too large throughout the A.C. lighting circuit.

Engine speed	Voltage
3,000 r/min	6.0V or more
8,000 r/min	7.0V to 8.0V



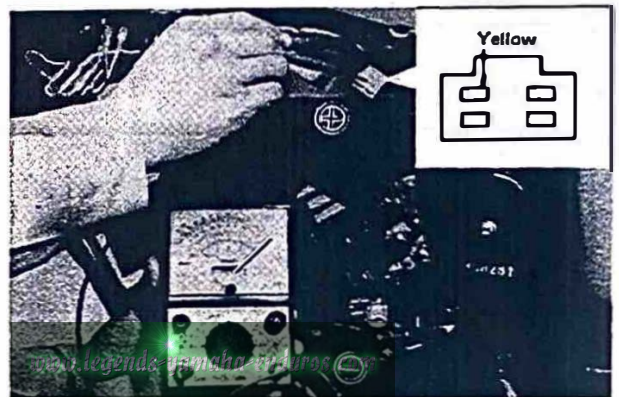
**NOTE:** This voltage test can be made at any point throughout the A.C. lighting circuit and the readings should be the same as specified above.

### Lighting coil resistance check

If voltage is incorrect in AC lighting circuit, check the resistance of the yellow wire windings of the lighting coil.

1. Switch Pocket Tester to "RX1" position and zero meter.
2. Remove the fuel tank and disconnect the magneto lead wire.
3. Connect position (+) test lead to yellow from magneto and negative (-) test lead to a good ground on engine. Read the resistance on ohms scale.

Lighting coil resistance
Ground to yellow: $0.22\Omega \pm 10\%$ at $20^{\circ}\text{C}$



4. If AC lighting circuit components check out properly but circuit voltage is still excessive, go to charging circuit checks. If voltage is low in charging circuit due to a defective battery, rectifier, or connection voltage will be too high in lighting circuit.

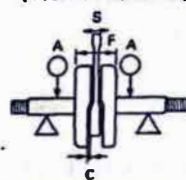
## GENERAL SPECIFICATIONS

### A. General

<b>Model:</b> Model (I.B.M. No.) Frame I.D. & Starting Number Engine I.D. & Starting Number	3A3 3A3-000101 3A3-000101
<b>Dimension:</b> Overall Length Overall Width (standard) Overall Height (standard) Seat Height Wheelbase Minimum Ground Clearance	1,880 mm (74.0 in) 800 mm (31.5 in) 990 mm (39.0 in) 730 mm (28.7 in) 1,190 mm (46.9 in) 200 mm (7.9 in)
<b>Weight:</b> Net Weight	80 kg (176 lb)
<b>Performance:</b> Minimum Turning Radius	1,810 mm (71.3 in)

### B. Engine

<b>Description:</b> Engine Type Engine Model Displacement Bore x Stroke Compression Ratio Starting System Ignition System Lubrication System	Air cooled, 2-stroke gasoline, Torque induction 3A3 97 cc 52 x 45.6 mm (2.05 x 1.77 in) 9.7 : 1 Primary kick starter Capacitor Discharge Ignition Separate lubrication (Yamaha Autolube)
<b>Cylinder Head:</b> Combustion Chamber Volume (with plug) Combustion Chamber Type Head Gasket Thickness	13.4 cc (0.82 cu.in) Squish 0.3 mm (0.027 in)
<b>Cylinder:</b> Material Bore Size Taper Limit Out of Rond Limit	Cast iron 52 mm (2.05 in) 0.05 mm (0.002 in) 0.01 mm (0.0004 in)
<b>Piston:</b> Piston Skirt Clearance Piston Over Size Piston Pin Outside Diameter x Length	0.035 – 0.040 mm 52.25, 52.50 52.75, 53.00 mm 14 x 41 mm (0.55 x 1.61 in)
<b>Pistons Ring:</b> Piston Ring Design (Top) " (2nd) Ring End Gap (Installed) (Top/2nd) Ring Groove Side Clearance (Top/2nd)	Keystone Plane (with expander) 0.15 – 0.35 mm (0.006 – 0.0138 in) 0.03 – 0.05 mm (0.001 – 0.0020 in)

Small End Bearing: Type	Needle bearing
Big End Bearing: Type	Needle bearing
<b>Crankshaft:</b>  Crankshaft Assembly Width (F) Crankshaft Deflection (A) Connecting Rod big End Side Clearance (C) Connecting Rod Small End Deflection (S) Crank Pin Outside Diameter x Length Crank Pin Type Crank Bearing Type (Left) x Q'ty " (Right) " Crank Oil Seal Type (Left) " " (Right) "	50 <sup>-0.05</sup> <sub>-0.10</sub> mm (1.97 <sup>-0.002</sup> <sub>-0.004</sub> in) 0.03 mm (0.001 in) 0.2 – 0.7 mm (0.008 – 0.027 in) 0.8 – 2.0 mm (0.031 – 0.079 in) 22 x 49.6 mm (0.87 x 1.95 in) Hollow type 6304 x 1 6304 x 1 SD-20-40-8 SW-28-40-8
	
<b>Clutch:</b>  Clutch Type Clutch Operating Mechanism Primary Reduction Ratio & Method Friction Plate - Thickness/Quantity - Wear Limit Clutch Plate - Thickness/Quantity - Warp Limit Clutch Spring - Free Length/Quantity - Warp Limit Clutch Housing Axial Play (Wear Limit) Push Rod Bending Limit	Wet, multiple disc type Inner push type, Cam axle 74/19 (3.895), Helical gear 3.0 mm (0.12 in) x 5 pcs. 2.7 mm (0.11 in) 1.2 mm (0.047 in) x 4 pcs. 0.05 mm (0.002 in) 31.5 mm (1.24 in) x 4 pcs. 0.05 mm (0.002 in) 0.15 – 0.45 mm (0.006 – 0.018 in) 0.15 mm (0.006 in)
<b>Transmission:</b>  Type Gear Ratio 1st (Teeth) (Ratio) 2nd 3rd 4th 5th Transmission Gear Oil Quantity & Type Secondary Reduction Ratio & Method	Constant mesh, 5-speed forward 35/11 (3.181) 30/15 (2.000) 26/19 (1.368) 23/23 (1.000) 20/25 (0.800) 650 cc (Yamalube 4-cyle or SAE 10W/30 "SE" motor oil. "GL" gear oil) 45/14, Chain
<b>Shifting Mechanism:</b>  Type	Cum drum, return type
<b>Kick Starter:</b>  Type	Kick-and-mesh
<b>Intake:</b>  Air Cleaner - Type - Oil Grade Induction System Reed Valve Type Bending Limit	Wet-foam rubber Yamalube 2-cycle oil Reed valve  V type 0.3 mm (0.012 in)

Valve Lift	7 mm (0.28 in)
<b>Carburetor:</b> Type & Manufacturer/Quantity I.D. Mark Main Jet (M.J.) Air Jet (A.J.) Jet Needle (J.N.) Needle Jet (N.J.) Cutaway (C.A.) Pilot Jet (P.J.) Air Screw (turns out) (A.S.) Starter Jet (G.S.) Float Arm Height (F.H.) Engine Idling Speed	VM20SS/Mikuni/1 3A360 # 130 2.5 4 L 17 0 – 6 2.0 #15 1-3/4 20 21.0 mm ± 2.5 mm (0.83 ± 0.1 in) 1,300 – 1,450 rpm
<b>Lubrication:</b> Autolube Pump -Color Code " -Minimum Stroke " -Maximum Stroke Autolube Pump -Reduction Ratio " -Minimum Output/100 cycles " -Maximum Output/100 cycles Throttle Position (Adjusting Mark) Oil Tank Capacity Oil Grade	Green 0.20 – 0.25 mm (0.008 – 0.01 in) 1.85 – 2.05 mm (0.07 – 0.08 in) 40/1 x 28/19 0.25 cc 2.58 cc ▲ 1.0 lit Yamalube 2-cycle oil or 2-cycle engine oil with "BIA certified for service TC-W"

### C. Chassis

<b>Frame:</b> Frame Design  <b>Steering system:</b> Caster Trail Number & Size of Balls in Steering Head Upper Race Lower Race Lock to Lock Angle	Tubular, double cradle  61° 103 mm (4.06 in)  3/16 in x 22 1/4 in x 19 47°
<b>Front suspension:</b> Type Damper Type Front Fork Cushion Travel Front Fork Spring Free Length Wire Diameter x Winding Diameter Spring Constant  Inner Tube Outside Diameter Oil Seal Type Front Fork Oil Quantity & Type	Telescopic fork Coil spring, oil damper 110 mm (4.33 in)  418.5 mm (16.48 in) 3 mm x 17.5 mm (0.12 x 0.69 in) 0.42 kg/mm, 0.57 kg/mm (0-70 mm) (70-110 mm) 27 mm (1.06 in) PJ 27-39-10.5 116 ± 2 cc, Yamaha fork oil 10wt, 20wt
<b>Rear suspension:</b> Type Damper Type	Swing Arm Coil spring, Oil damper



Rear Shock Absorber Travel Rear Wheel Travel Swing Arm Free Play Pivot Shaft -Outside Diameter -Type	75 mm (2.95 in) 84 mm (3.31 in) None 12 mm (0.47 in) Rubber bush
Fuel Tank: Capacity Fuel Grade	4.5 lit (1.2 us gal) Regular or low lead gasoline
Wheel: Tire Size (Front) (Rear) Tire Pressure (Front) (Rear) Rim Size (Front) (Rear) Rim Run Out Limit (Front/Rear) Vertical Lateral Drive Chain Type Type Number of Links Chain Free Play	2.50-18-4PR 3.00-16-4PR 1.6 kg/cm <sup>2</sup> 2.0 kg/cm <sup>2</sup> 1.40 x 18 1.60 x 16 2 mm (0.08 in) 2 mm (0.08 in) RS420 101 20~30 mm (0.79~1.2 in)
Brake: Front Brake Type Drum Diameter (Limit) Shoe Diameter x width Shoe Spring Free Length Lining Thickness (Wear Limit) Rear Brake Type Drum Diameter Shoe Diameter x Width Shoe Spring Free Length Lining Thickness (Wear Limit)	Leading, Trailing 110 mm 110 x 25 mm (4.33 x 0.98 in) 34.5 mm (1.36 in) 2 mm (0.08 in) Leading, Trailing 110 mm (4.33 in) 109.6 x 25 mm (4.32 x 0.98 in) 34.5 mm (1.36 in) 2 mm (0.08 in)

#### D. Electrical

Ignition System: Type-Flywheel magneto (C.D.I.) Model/Manufacturer Voltage Pulser coil resistance (White/Red) Source coil resistance (Brown) Flywheel puller thread size	<a href="http://www.legends-yamaha-enduros.com">www.legends-yamaha-enduros.com</a> F03T15171/Mitsubishi 6V 10Ω±10% 300Ω±10% 27 mm (1.08 in)
Ignition Timing:	21° B.T.D.C. at 2,000 r/min (1.8 ± 0.15 mm/0.072 ± 0.006 in)
Ignition Coil: Model/Manufacturer Spark gap Primary winding resistance Secondary winding resistance Diode	F06T41674 10 mm 1 Ω ± 15% 5.9 kΩ ± 20% No

<b>Spark plug:</b> Type/Manufacture Spark plug gap	<b>B7ES/NGK</b> 0.6 — 0.8 mm (0.024 in — 0.031 in)
<b>Charging System:</b> Flywheel magneto Charging output  Charge coil resistance (Green/Red) Lighting output  Lighting coil resistance (Yellow) Rectifier Type Capacity Withstand voltage Rating Battery Model/Manufacture Capacity Charging rate Specific gravity	<b>F03T15171/Mitsubishi</b> 0.5A or more at 3,000 r/min 3.5A or less at 8,000 r/min 0.32Ω ± 10% 6.0V or more at 3,000 r/min 7.0V — 8.0V at 8,000 r/min 0.22Ω ± 10%  Single phase half wave 4A 400V Silicon  6N4-2A-2/G.S. 6V-4AH 0.4A x 10 hour 1.26
<b>Lighting System:</b> Head light type Bulb wattage/Q'ty Head light wattage Tail/Stop light wattage Flasher light wattage Flasher pilot light wattage Meter light wattage High beam indicator light wattage Neutral light wattage Oil level indicator light wattage	<b>Sealed beam</b>  6V, 30W/30W 6V, 5.3W (3cp)/26W (32cp) 6V, 17W 6V, 3W 6V, 3W 6V, 3W 6V, 3W 6V, 3W
<b>Horn:</b> Model Maximum amperage	<b>MF2 — 6</b> 1.5A
<b>Flasher Relay:</b> Type Flasher frequency	<b>Condenser</b> 85 cycle/min.
<b>Fuse:</b> Rating/Q'ty	<b>10A/1</b>

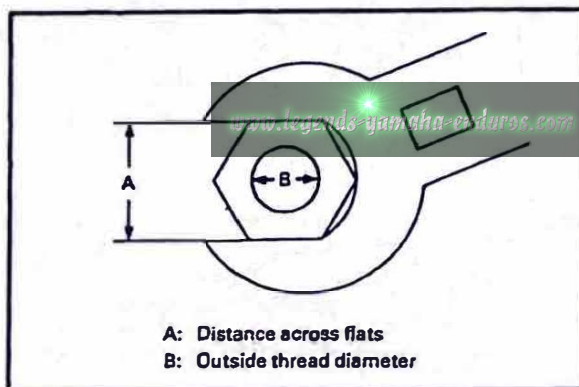
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## TORQUE SPECIFICATIONS

This list at right covers those stud/bolt sizes with standard I.S.O. pitch thread. Torque specifications for components with thread pitches other than standard are given within the applicable chapter.

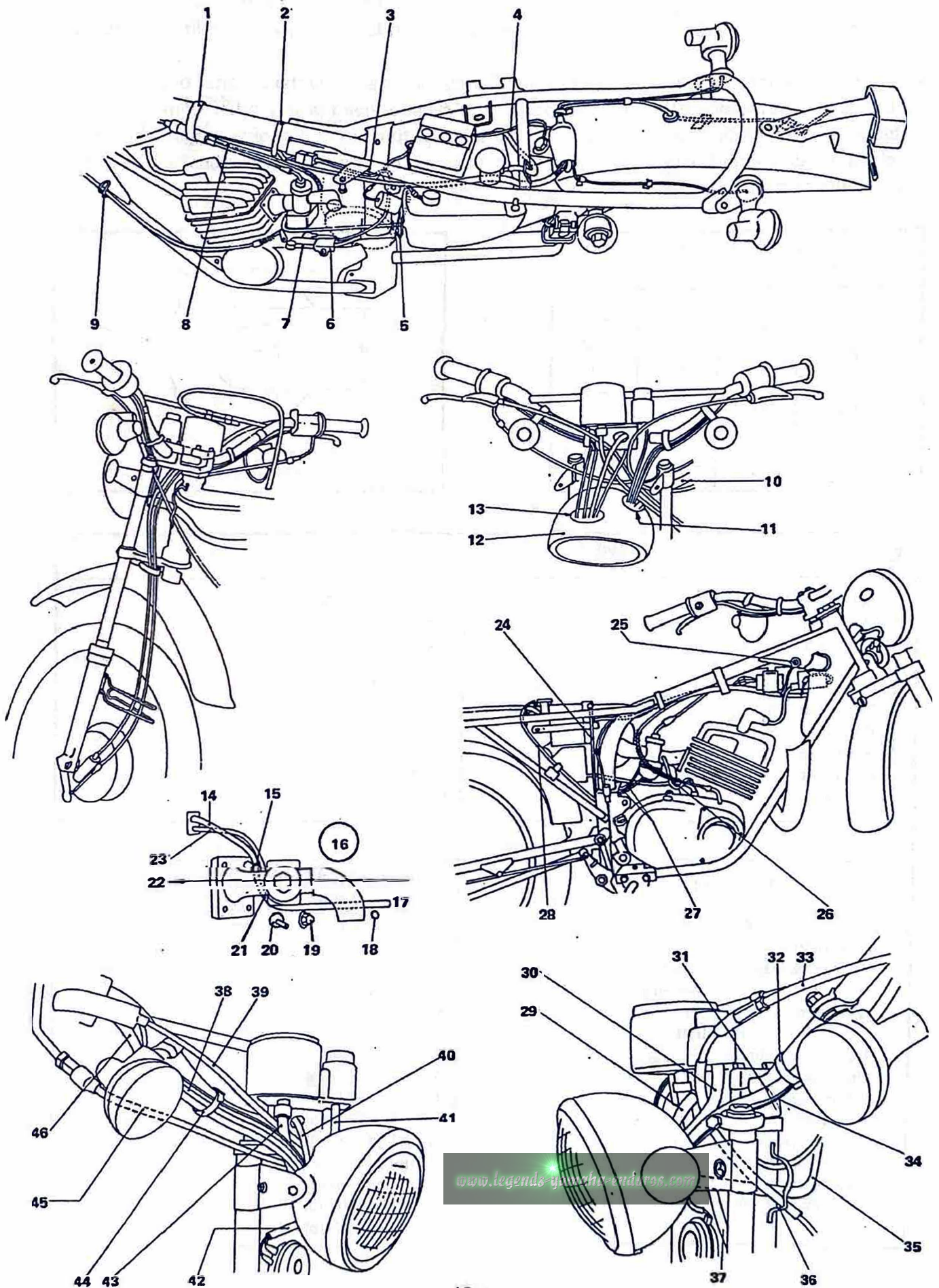
Torque specifications call for dry clean threads. Components such as the cylinder or cylinder head should be at room temperature prior to torquing. A cylinder head or any other item with several fasteners should be torqued down in a cross-hatch pattern in successive stages until torque specification is reached. The method is similar to installing an automobile wheel and will avoid warping the components.

A	B	TORQUE SPECIFICATION		
		m-kg	ft-lb	in-lb
10 mm	6 mm	1.0	7.2	85
12 mm	8 mm	2.0	15	175
14 mm	10 mm	4.0	29	350
17 mm	12 mm	4.5	33	400
19 mm	14 mm	5.0	36	440
22 mm	16 mm	6.0	43	520
24 mm	18 mm	7.0	50	610
27 mm	20 mm	8.0	58	700
Spark plug		2.5	18	230



Engine	
Cylinder head	2.5 m-kg (18 ft-lb)
Spark plug	2.5 m-kg (18 ft-lb)
Primary drive gear	6.0 m-kg (43 ft-lb)
Clutch boss	5.0 m-kg (36 ft-lb)
Clutch spring	0.6 m-kg (4 ft-lb)
Drive sprocket	6.0 m-kg (43 ft-lb)
Kick crank	1.5 m-kg (11 ft-lb)
Reed valve	1.0 m-kg (7 ft-lb)
Rotor nut	6.0 m-kg (36 ft-lb)
Starter	0.8 m-kg (6 ft-lb)
Chassis	
Engine mount front upper	2.5 m-kg (18 ft-lb)
rear upper	2.5 m-kg (18 ft-lb)
rear lower	4.0 m-kg (29 ft-lb)
Pivot shaft nut	4.5 m-kg (32 ft-lb)
Rear shock absorber (frame)	4.0 m-kg (29 ft-lb)
(swing arm)	2.5 m-kg (18 ft-lb)
Handle crown pinch bolt	2.5 m-kg (18 ft-lb)
fitting bolt	7.0 m-kg (50 ft-lb)
Handle upper bracket	2.0 m-kg (14 ft-lb)
Under bracket pinch bolt	4.0 m-kg (29 ft-lb)
Front axle nut	4.5 m-kg (32 ft-lb)
Rear axle nut	4.0 m-kg (29 ft-lb)
Sprocket shaft nut	15 m-kg (108 ft-lb)
Driven sprocket bolt	2.0 m-kg (14 ft-lb)
Footrest bolt	2.0 m-kg (14 ft-lb)
Tensionbar (brake plate)	2.0 m-kg (14 ft-lb)
(rear arm)	2.0 m-kg (14 ft-lb)

# CABLE ROUTING DIAGRAM



### Throttle wires 1

Lever holder assembly (R) → Front side of flasher (R) → Over the headlight stay (R) → Route around the head pipe and into wire guide → Over the tank fitting bracket → Over the rectifier → Wire cylinder (Tape to the main pipe together with wire harness.)

### Clutch wire

Clutch lever → Left front of handle crown → Main switch lead wire, Lever holder assembly (L) lead wire, and rear of front flasher lead wire → Wire guide (bottom end) of main pipe → Route downward along the down-tube (through the clamp) → Outer wire → Clutch lever.

### Brake wire

Brake lever → Front right of handle crown → Speedometer cable, speedometer lead wire, oil caution switch lead wire, main switch lead wire, lever holder assembly lead wire, and rear of front flasher lead wire → Between front fork inner tube (L) and head pipe → Front fender bracket clamp (behind the speedometer cable) → Through wire holder → Front brake shoe outer → Front brake shoe outer → Cam lever shaft.

### Speedometer cable

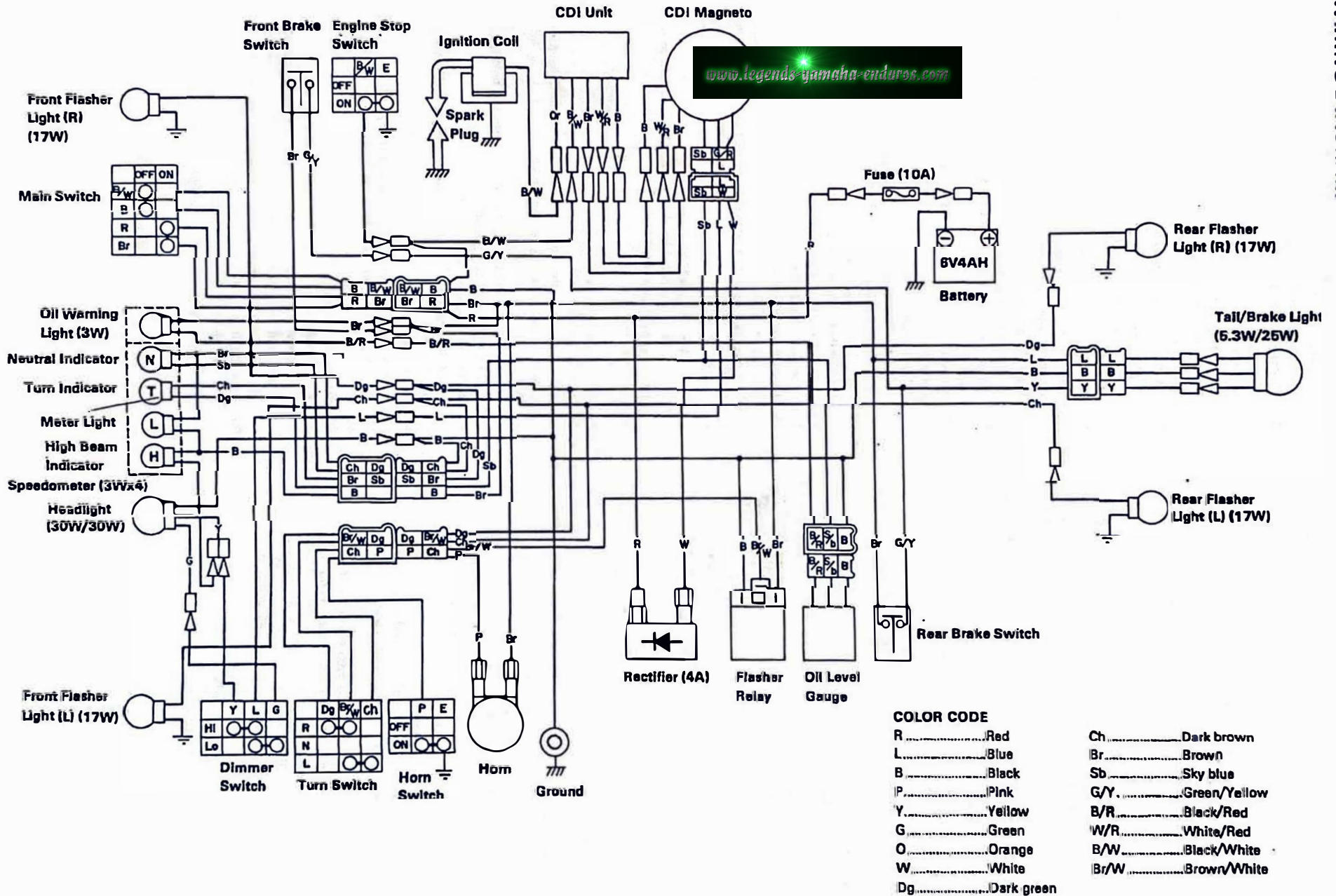
Speedometer → the other side of speedometer lead wire, oil caution switch lead wire, main switch lead wire, lever holder assembly (L) lead wire, and front flasher (L) and head pipe → Front fender bracket clamp (on this side of brake wire) → Through wire holder → Front brake shoe

### Wire harness

Hole in the left lower part of headlight body → Between speedometer cable, brake wire, clutch wire and head pipe → Through head pipe wire guide (over clutch wire) → Under tank fitting bracket → Under the rectifier → Tape to main pipe on the right side of wire cylinder → Clamp to main pipe in front of seat rail using switch cord band (A L) → On the left side of air cleaner bracket → Lower part of seat rail → Lower part of RF seat rail → Connect to rear flasher light lead wires (R and L) and taillight sub-lead wire in the connector over.

1. Taping (Black vinyl tape)  
Clamp wire cylinder and wire harness. Take care so that throttle wire 2 (between wire cylinder and carburetor) is not pulled.
2. Clamp the wire harness with switch cord band.
3. Flywheel magneto lead wire (From engine)  
Clamp to the engine, pass over the oil pipe, pass upward along the main pipe, route from the front of air cleaner bracket to the left side of frame, and connect to wire harness.
4. Battery ground wire  
Pass under the frame, and ground to the frame using the bolt securing the front part of rear fender
5. Wire harness fuse lead wire  
Bring out from between the oil tank and air cleaner case to the left side of frame, and connect to the fuse.
6. Battery ⊕ lead wire  
Pass under the seat rail, bring from the front of air cleaner bracket to the left side of frame, and connect to the fuse.
7. Engine breather pipe
8. Route the wire harness on the right side of main pipe. Pass the pump wire over throttle wire 2.
9. Clamp
10. Wire harness
11. Hole in left lower part
12. Headlight body
13. Hole in right upper part

14. Oil pipe  
Route between the main pipe and flywheel magneto lead wire and clamp to the bolt in the right lower part of reed valve. A gap should be allowed on top of the muffler.
15. Clamp the oil pipe only.
16. Main pipe
17. Oil tank
18. Flywheel magneto lead wire
19. Neutral stopper
20. Neutral switch
21. Route the oil pipe between the drain bolt at the bottom of carburetor, neutral switch and neutral stopper.
22. Frontward
23. Delivery pipe
24. Battery breather pipe  
Route to the rear of frame main pipe, right side of the flywheel magneto lead wire, and insert into the hole in the engine bracket. (Left side hole)
25. Wire harness - ground wire
26. Clamp the oil pipe only, and pass the delivery pipe under the oil pipe.
27. Between carburetor overflow pipe, air vent pipe and engine bracket.
28. Oil tank breather pipe  
Route over the seat rail, pass through the guide, under the seat rail and along the oil tank, and bring downward to the front. Pass through the clamp on the fender bracket and into the hole on the right side of frame bracket.
29. Speedometer lead wire
30. Main switch lead wire
31. Lever holder assembly (left) lead wire  
Pass under the flasher stay, and clamp with switch cord band, and insert into the hole in the left lower part of headlight body.
32. Switch cord band
33. Clutch wire
34. Front flasher (left) lead wire  
Clamp with switch cord band, and insert into the hole in the left lower part of headlight body.
35. Wire harness
36. Wire guide
37. Speedometer cable
38. Stop switch lead wire  
Pass under the flasher stay, clamp with switch cord band, and insert into the hole in the headlight body.
39. Front flasher (right) lead wire  
Clamp with switch cord band and insert into the hole in the right upper part of headlight body.
40. Speedometer lead wire  
Insert into the hole in the right upper part of the headlight body.
41. Main switch lead wire  
Insert into the left lower part of headlight body.
42. Horn wire harness lead wire
43. Speedometer cable
44. Switch cord band
45. Throttle wire 1  
Pass under the flasher light, pass over the headlight stay (right), and bring to the wire guide on the frame head pipe. (Take care so that the wire does not contact the flasher.)
46. Lever holder assembly (right) lead wire  
Pass under the flasher stay, clamp with switch cord band, and insert into the hole in the right upper part of the headlight body.



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