YAMAHA

RD60B

Assembly Manual

YAMAHA MOTOR CO., LTD.

90894-07403

FOREWORD

This assembly manual contains the information required for the unpacking and assembly of Yamaha motorcycle so that the Yamaha serviceman can assemble the machine in the correct manner. To perform machine assembly, a basic knowledge of service and Yamaha machine is required. Therefore, all Yamaha derlers are urged to make a full study on the service of Yamaha motorcycles using the relevant service manuals.

NOTICE

The service specifications given in this Assembly Manual are based on the model as manufactured when this manual was published. Since this model may require improvements the service standards may be subject to change in the future.

If any change is introduced into the specifications or service procedures, Yamaha derlers will be notified through technical service information to be published by Yamaha. The assembly procedure is described in the order that the mechanic should follow, and the correct service tools should be used in the correct manner. Failure to do this may result in poor performance and danger to the rider.

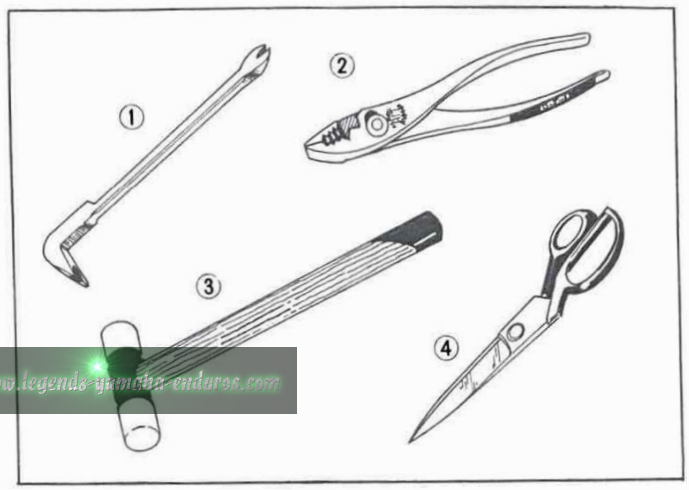
CONTENTS

PREPARATION

To assemble the machine correctly, the following service tools, greases and working space are required.

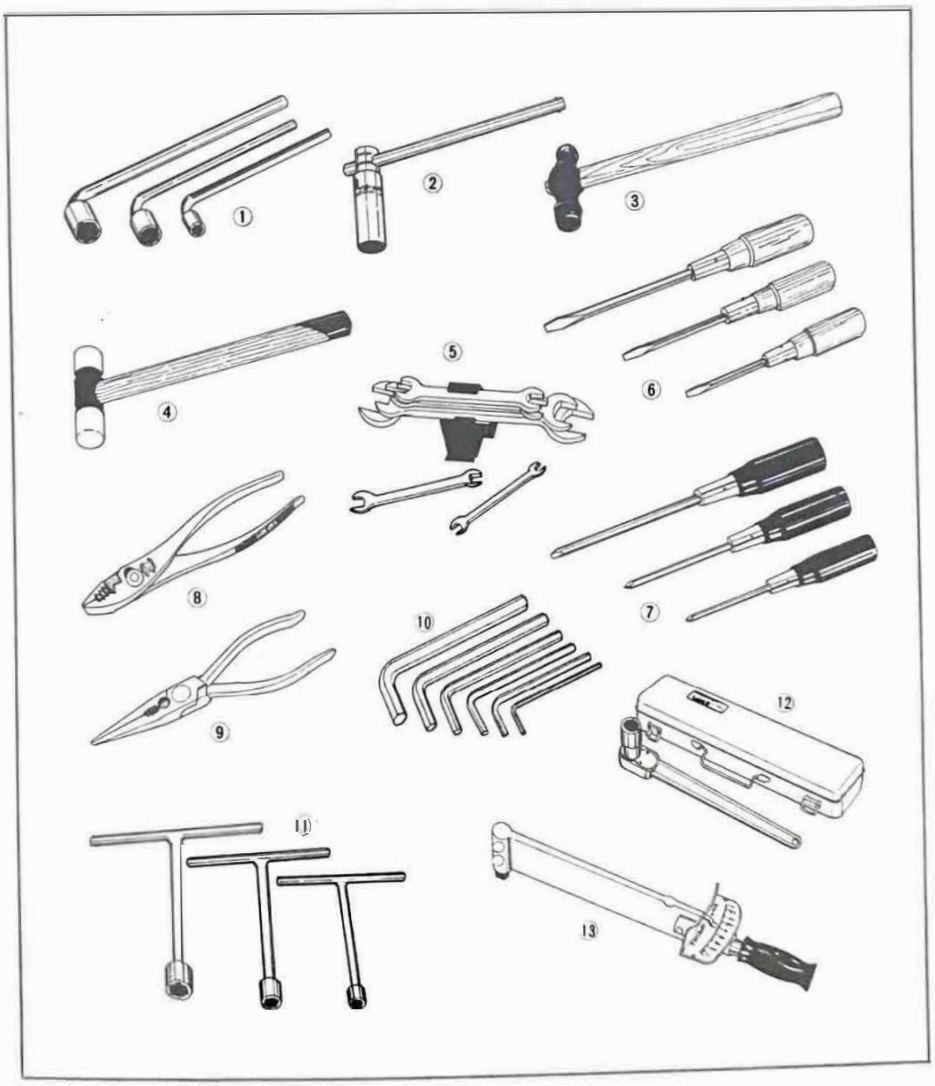
Tools for unpacking

1. Nail puller
2. Pliers
3. Steel hammer
4. Scissors



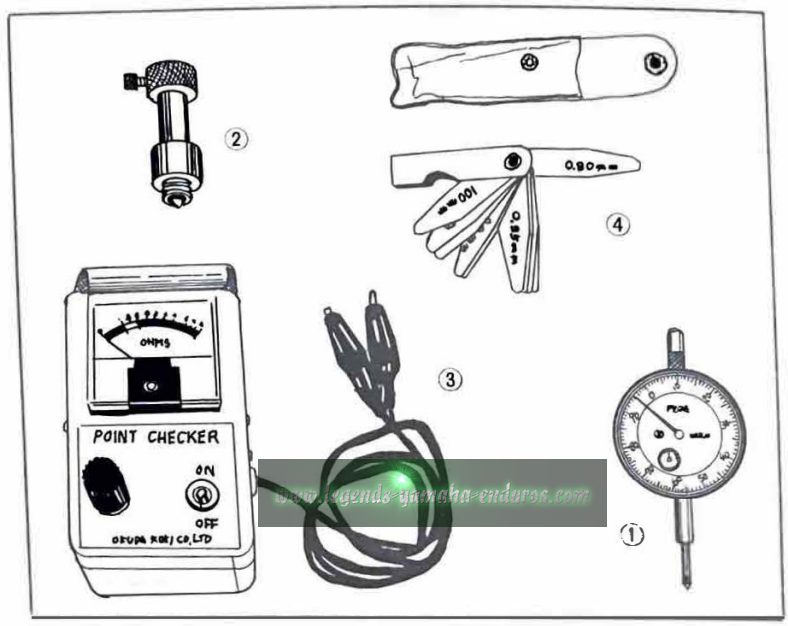
Tools for assembling

1. L-handle socket wrench
2. Spark plug wrench
3. Steel hammer
4. Soft faced hammer
5. Open end wrench set
6. Slotted head screwdrivers (Large, Medium and Small)
7. Phillips head screwdrivers (Large, Medium and Small)
8. Pliers
9. Long nose pliers
10. Allen wrench set
11. T-handle socket wrench
12. Socket wrench set
13. Torque wrench



Special tools

1. Dial gauge
2. Dial gauge holder
3. Point checker
4. Thickness gauge



TORQUE SPECIFICATIONS

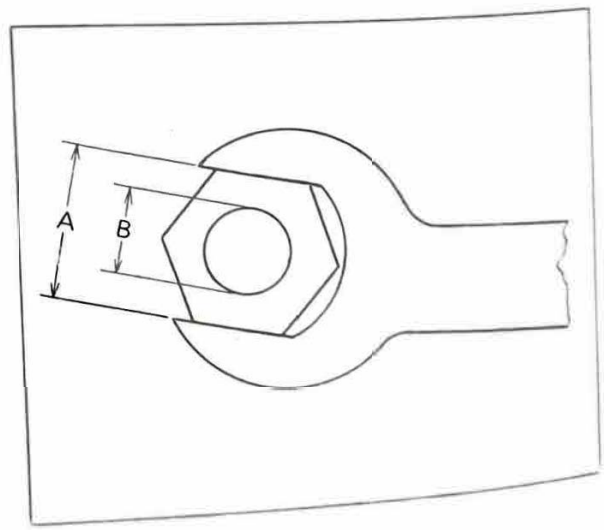
The following torque specifications must be adheled to on every machine. Some items with several fasteners should be torqued down in a criss-cross patern in successive stages until torque specification is reached.
The method is similar to installing an automobile wheel and will avoid warping the component.
Torque settings are for dry, clean threads. Torquing should always be done to the nut, never to the bolt head.

NOTE

Certain items with other than standard thread pitches may require differing torque. Consult the model Service Manual or distributor if a question arises.

Torque Specification

A (Nut)	B (Bolt)	m-kg.	ft-lbs.	in-lbs.
10mm.	6mm.	1.0	7.2	85
10mm.	7mm.	1.5	11	135
13mm. 14mm.	8mm.	2.0	15	175
17mm.	10mm.	3.5 - 4.0	20 - 29	300 - 350
19mm.	12mm.	4.0 - 4.5	29 - 33	350 - 400
22mm.	14mm.	4.5 - 5.0	33 - 36	400 - 440
26mm.	17mm.	5.8 - 7.0	42 - 50	500 - 600
27mm.	18mm.	5.8 - 7.0	42 - 50	500 - 600
30mm.	20mm.	7.0 - 8.3	50 - 60	600 - 700
SPARK PLUGS		2.7 - 2.9	19 - 21	230 - 250



Lubricants

Item	Remarks	Type
Autolube	See "Service Notes"	#1
Transmission Oil	Warm engine before draining	#2
Drive Chain	Lube / Adjust as required	#3
Drive Chain	Remove / Clean-Lube / Adjust	#3
Air Filter	Foam Tipe	#9
Control / Meter Cables	Apply thoroughly	#4
Throttle Grip / Housing	Light application	#5
Tacho / Speedogear Hausings	Light application	#5
Rear Arm Pivot Shaft	Apply until shows	#6
Brake Pedal Shaft	Light application	#5
Change Pedal Shaft	Light application	#5
Stand Shaft Pivot	Light application	#5
Front Forks	Drain Completely / Check Specs.	#3
Steering Ball Races	Inspect thoroughly med pack	#7
Point Cam Lublicating Wick	Very light application	#3
Wheel Bearings	Do not overpack	#7

No. 1 Check tank level before each ride. Top off when oil level is at sight glass or before any prolonged use. Use the following lubricant (in order of preference).
Yamalube 2-cycle or; two stroke oil labeled "BIA certified for service TC-W"

No. 2 At ambient temperatures of 45 - 90°F, use Yamalube 4-cycle. Do not use "additives" in oil.

No. 3 Use 10W/30"SE" motor oil (If desired, specialty type lubricants of quality manufacture may be used).
"Drive Chains" Lube every 150 - 200 miles. If severe usage, every 50 - 100 miles.

No. 4 Use graphic base type (specialty types available --- use name-brand, quality manufacture).

No. 5 Light duty-smooth light-weight "white" grease. Heavy duty standard lube grease (do not use lube grease on throttle/housing).

No. 6 Use standard lube grease -smooth, not coarse.

No. 7 Medium-weight wheel bearing grease of quality manufacture-preferably water-proof.

No. 8 Light-weight machine oil.

No. 9 Air filters-form element air filters must be damp with oil at all times to function properly. Clean and lube monthly or per mileage.
If hard usage, clean and lube daily. Do not over-oil. Use SAE10W/30 "SE".

Miscellaneous supplied

shop rags
electrical contact cleaner
oiler
grease

Workshop

The workshop where the machine is assembled should be clean and large. The floor should be level.

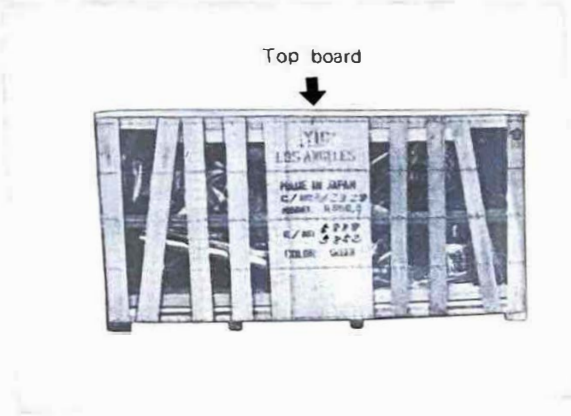
NOTE ON TRANSPORTATION

Use care not to butt the machine, packed in the crate, against a hard object or give it a heavy shock during transportation or in the service shop.

Procedure for unpacking

To remove the machine and parts packed in the crate, proceed as follows: (See figures)

1. Removes the nails securing the top board, and remove the top board complete.

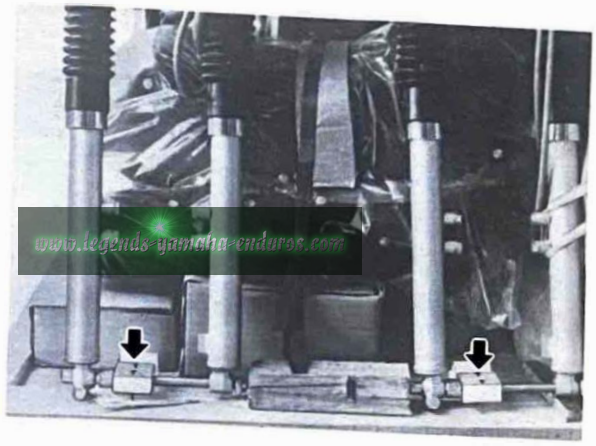


2. Remove the nails securing two wooden crosspieces suporting the top board, and remove the crosspieces.

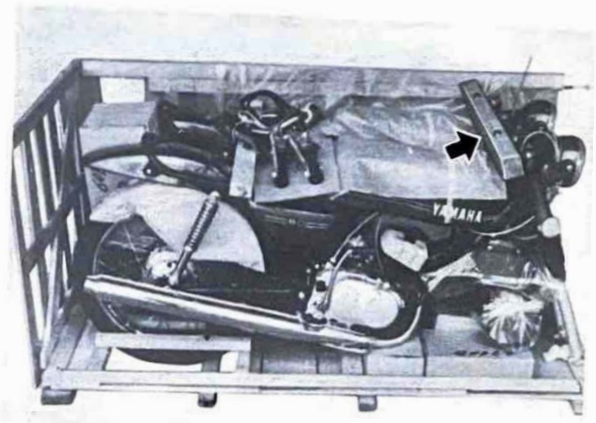
3. Remove the nails securing the frame holding crosspiece, and remove the crosspiece.

4. Cut the five wire bands at the positions illustrated, and remove the side board.

5. Remove the synthetic resin piece holding the front wheel axle to the bottom board.

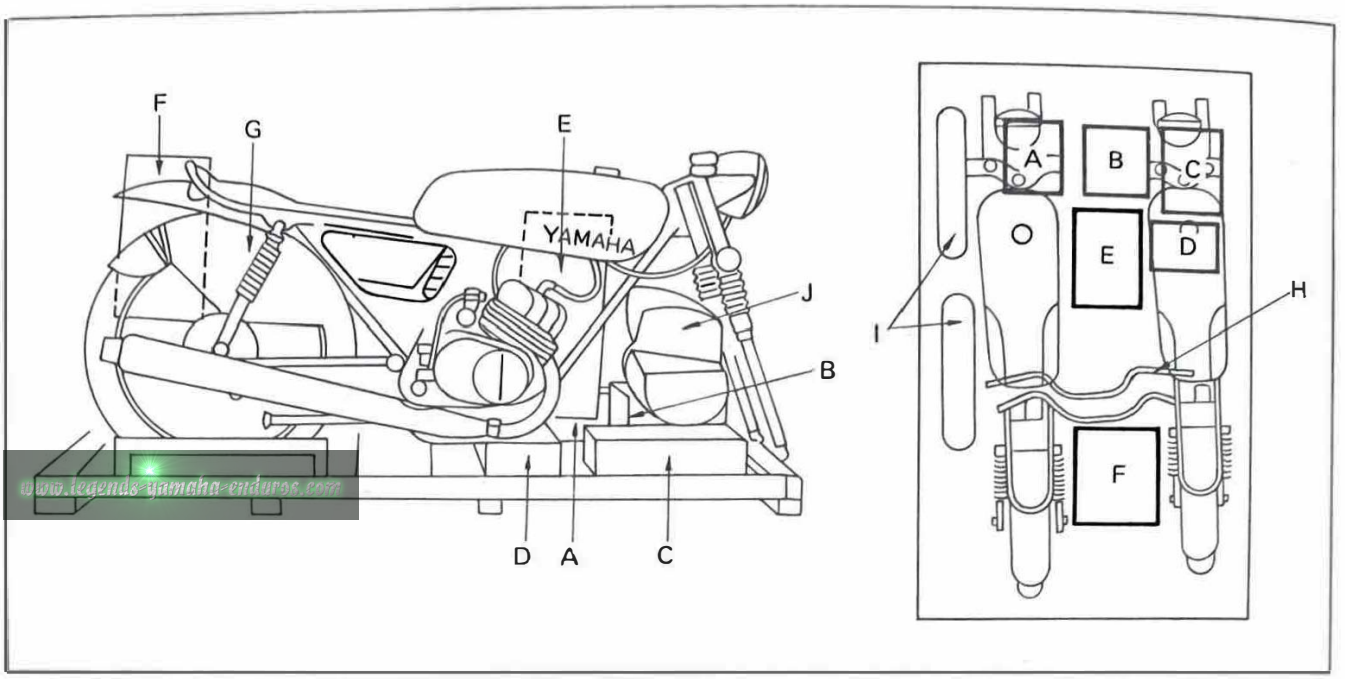


6. Remove the wooden piece holding the handle crowns with 10 mm bolts.



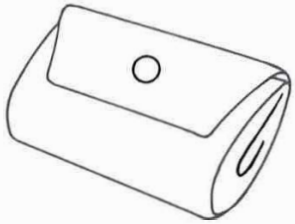
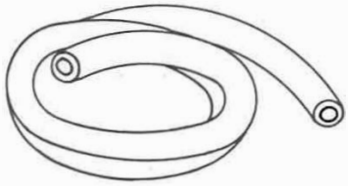
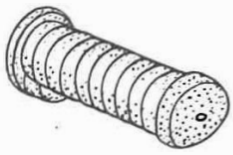
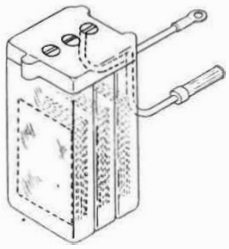
PARTS CHECK LIST

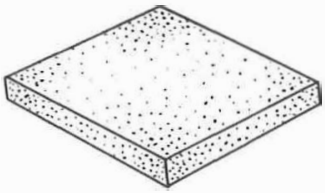
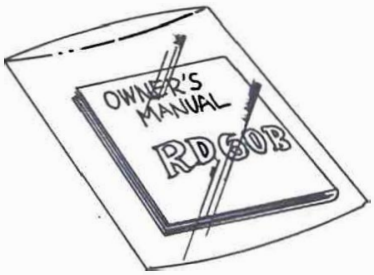
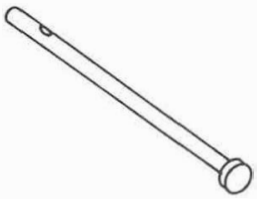
The following parts contained in the cardboard box and the vinyl bag in the box.
Check the quantity of parts. Also check for damage.

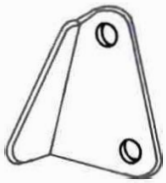
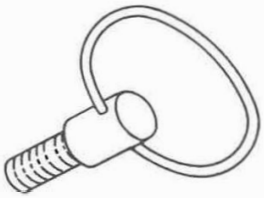
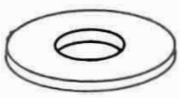


Setting Position	Part Name	Q'ty
A & C	Carton box (Tool set, back miller, battery)	1 each
B	Carton box (Speedometer and tachometer ass'y)	1
D	Carbon box (Front brake shoe plate ass'y)	1
E	Carbon box (Front frasher light, 8 mm nut &)	1
F	Carton box (Tail light ass'y)	1
G	Front fender	2
H	Handle bar ass'y	2
I	Front wheel ass'y	2
J	Semi double seat	2

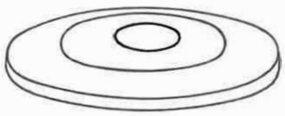
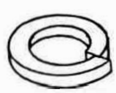
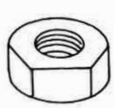
Details of parts in the setting position

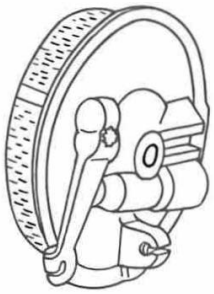
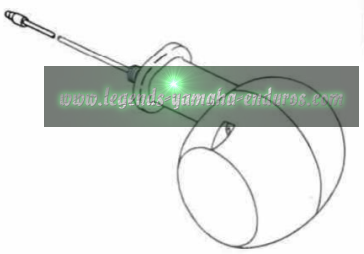
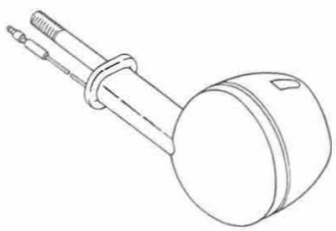
No.	Illustration	Part Name and its Position	Q'ty
A-1		Tool set	1 each
A-2		Back millor	1 each
A-3		Battery breather pipe	1 each
A-4		Footrest cover	2 each
A-5		Battery	1 each

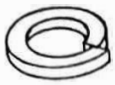
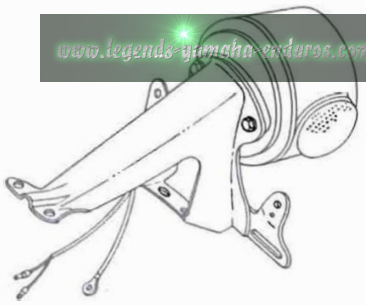
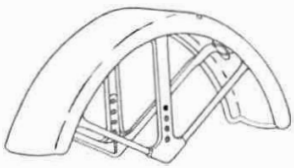
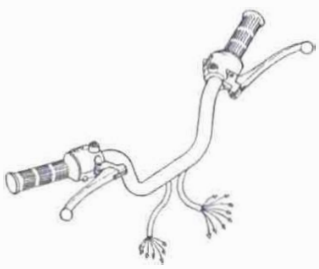
No.	Illustration	Part Name and its Position	Q'ty
A-6		Battery seat	1 each
A-7		Owner's Manual	1 each
A-8		Oil level gauge	1 each
A-9		Vinyl bag	1 each
A-9-1		Seat pin	1 each

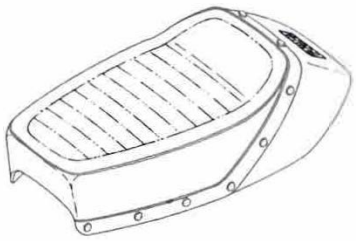
No.	Illustration	Part Name and its Position	Q'ty
A-9-2		Seat stopper	1 each
A-9-3		Wire holder	1 each
A-9-4		Cotter pin, for front axle nut	1 each
A-9-5		Hair pin, for seat pin stopper	1 each
A-9-6		10 mm plain washer, for handle holder	2 each

No.	Illustration	Part Name and its Position	Q'ty
A-9-7		10 mm. Spring washer, for handle holder	2 each
A-9-8		10 mm. Nut, for handle holder	2 each
A-9-10		6 mm. nut, for taillight 6 mm. nut, for wire guide	4 each 1 each
A-9-11		6 mm. bolt, for seat hinge 6 mm. bolt, for tail light	2 each 4 each
A-9-12		6 mm. spring washer, for taillight 6 mm. spring washer, for seat hinge 6 mm. spring washer, for wire guide	4 each 2 each 1 each

No.	Illustration	Part Name and its Position	Q'ty
A-9-13		Handle crown fitting bolt	1 each
A-9-14		Crown washer	1 each
A-9-15		8 mm. bolt, for front fender	4 each
A-9-16		8 mm. spring washer, for front fender 8 mm. spring washer, for frasher light	4 each 4 each
A-9-17		8 mm. nut, for frasher light	4 each

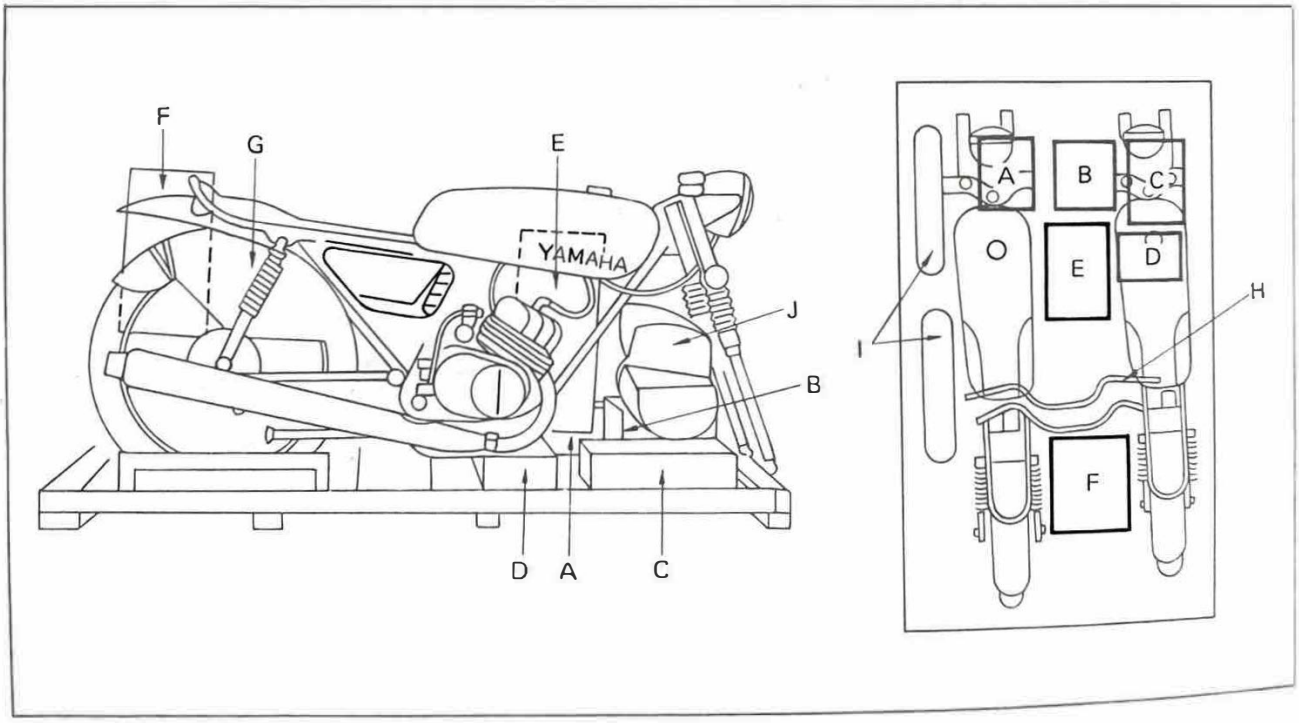
No.	Illustration	Part Name and its Position	Q'ty
B		Speedo and tachometer assembly	2
G, D		Front brake shoe plate	2
E-1		Front frasher light	4
E-2		Rear frasher light	4
E-3		Rear frasher light bracket	2

No.	Illustration	Part Name and its Position	Q'ty
E-4		8 mm. spring washer, for frasher light	4 each
E-5		8 mm. nut, for frasher light	4 each
F		Tail light assembly	2 each
G		Front fender	2 each
H		Handlebar assembly	2 each

No.	Illustration	Part Name and its Position	Q'ty
I		Front wheel assembly	2 each
J		Semi double seat	2 each

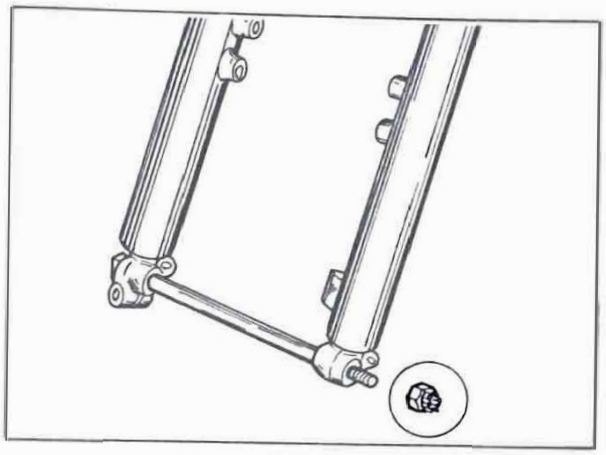
SET-UP PROCEDURES

Take out the front fender, all carton boxes, front wheels, semi double seats, and handle, bar assemblies. Front fenders are situated between the rear wheel and rear fender. Seats and one of the carton boxes are hold by the steel band.



A & C:	Carton box	E:	Carton box	H:	Handle bar assembly
B:	Carton box	F:	Carton box	I:	Front wheel assembly
D:	Carton box	G:	Front fender	J:	Semi double seat

2. a) Remove the front axle nut and pull out the front axle.

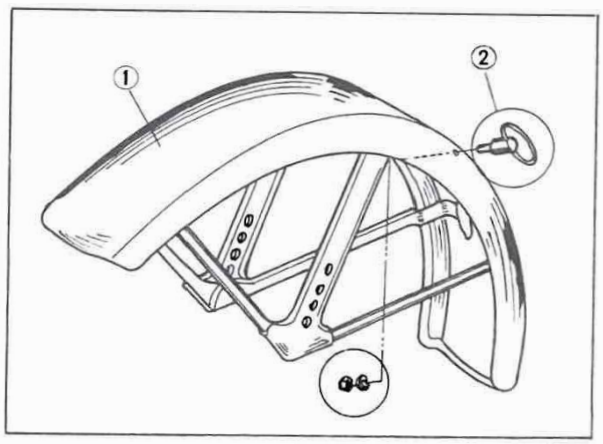


b) Hold the front fork and the frame, and lift up the motorcycle. Then take out the rear wheel from the case, and erect the main stand.

c) Place a suitable support under the engine in front of the main stand. This will keep the front of the machine elevated while the front fender and front wheel are installed.

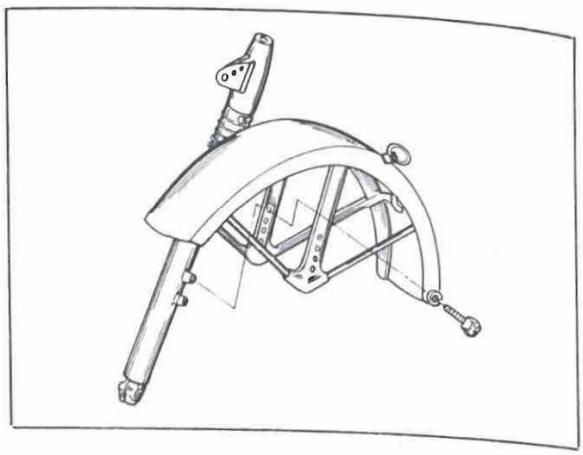
3. Install the wire holder (A-9-3) using spring washer (A-9-12) and nut (A-9-10).

(1) Front fender
(2) Wire holder

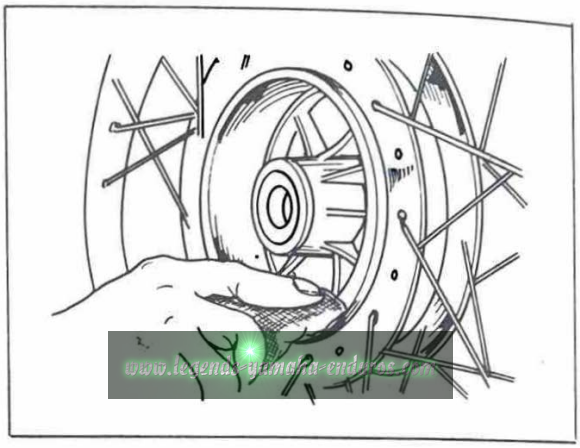


4. Insert the front fender between the front forks from the rear, and secure the front fender using 8 mm. bolts (A-9-15) and spring washers (A-9-16), for each.

Tightening torque:
70 - 110 in-lbs. (0.8 - 1.3 m-kgs.)

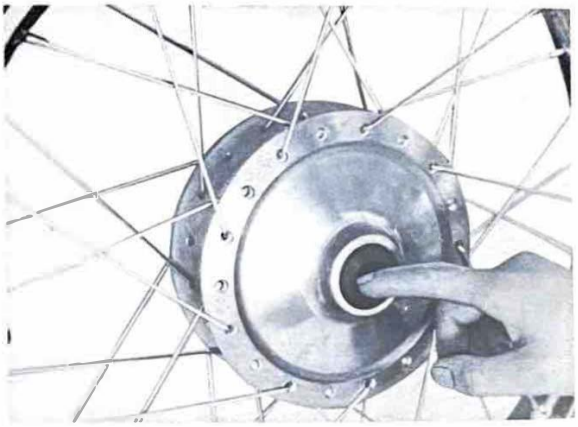


5. Wipe off and dust on the brake shoe lining and drum with a clean cloth.



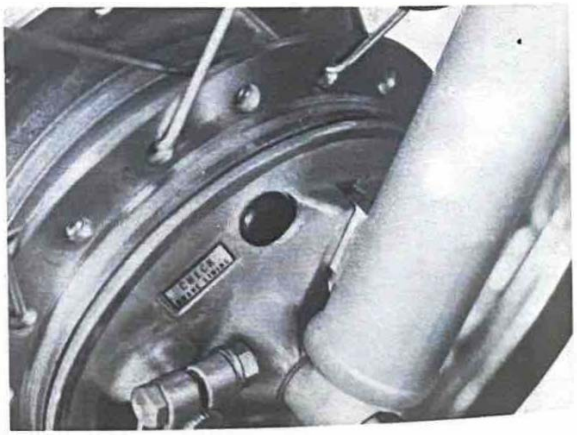
6. Lightly lubricate the oil seal with grease.

NOTE:
Take care not to allow any oil or grease to adhere to the brake shoe lining or dum.



7. Insert the brake shoe plate ass'y (D) into the hub.

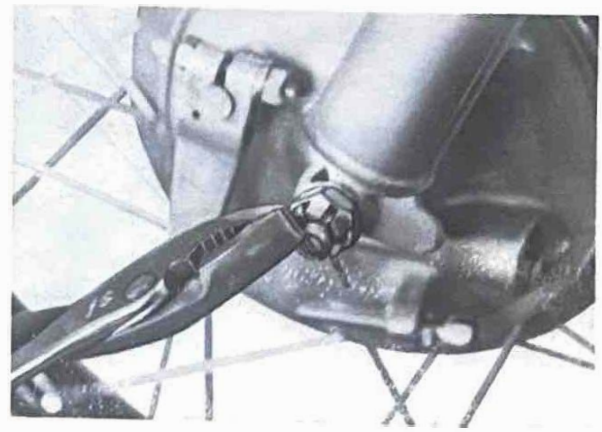
8. For front wheel installation, position the brake shoe plate stopper groove over the matching metal projection on the fork leg outer tube. Install the axle from the right side.



9. Tighten the axle nut correctly.

Tightening torque:
300 - 350 in-lbs. (3.5 - 4.0 m-kgs.)

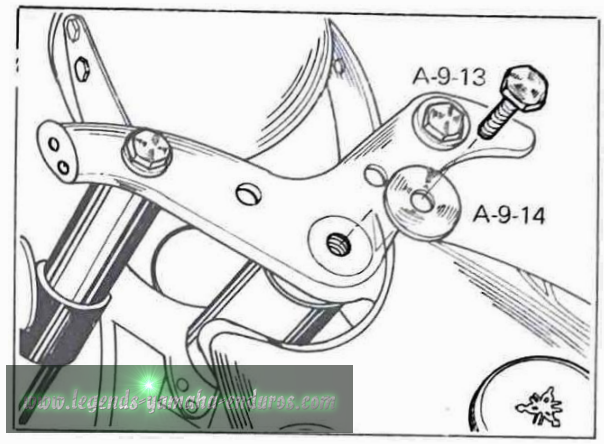
10. Install the cotter pin (A-9-4), bend the ends.



11. Install the crown washer (A-9-14) and fitting bolt (A-9-13). Then tighten the fitting bolt.

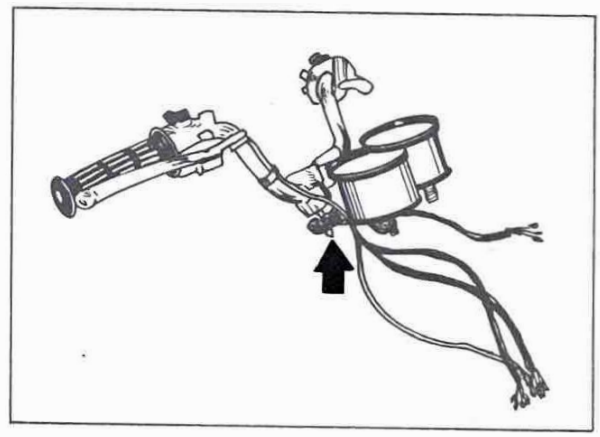
Fitting bolt tightening torque:

300 - 350 in-lbs. (3.5 - 4.0 m-kgs.)



12. Install the handle bar ass'y (H)

a) Insert the handle holder's bolts into the handle crown.

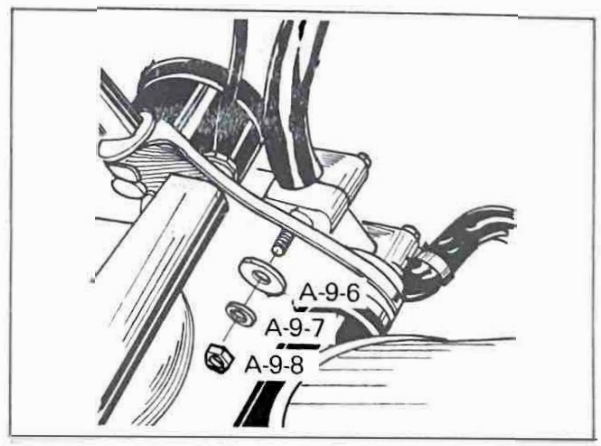


b) Install the plain washer (A-9-6) spring washers (A-9-7) and nuts (A-9-8) on the handle holder's bolts.

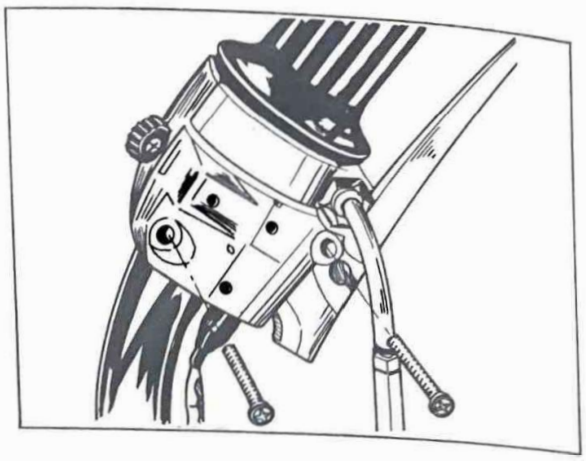
c) Tighten the nuts

Tightening torque:

300 - 350 in-lbs. (3.5 - 4.0 m-kgs.)



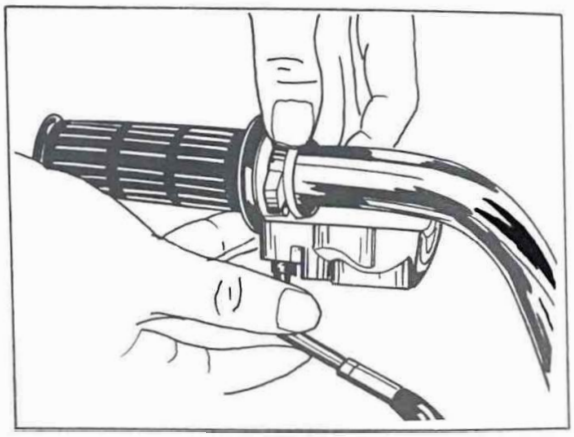
13. Remove the two setting screws holding the right-hand throttle housing and separate the throttle housing.



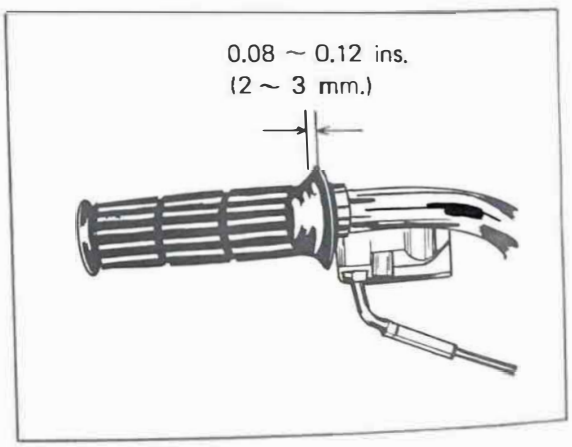
14. Apply the light coating of grease (Such as Shell Lithall MDS) to the right handle bar end and throttle grip housing.

15. Push the grip onto the bar until the handle bar end butts against the throttle grip.

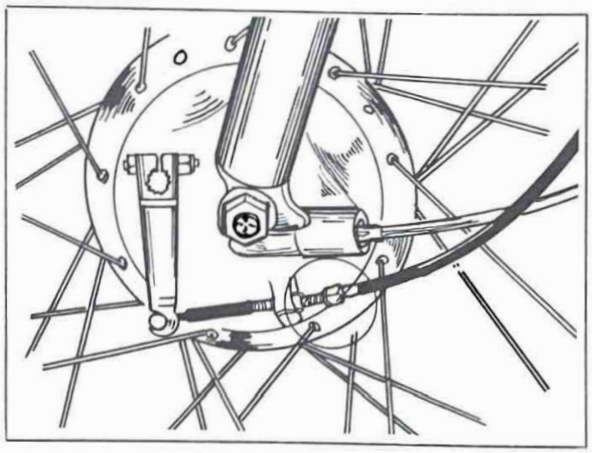
16. Install the accelerator wire with grip upper cap and insert the wire end piece into its seat in the accelerator grip.



17. Pull the grip back approximately 2~3mm. and tighten down the throttle housing securing screws.



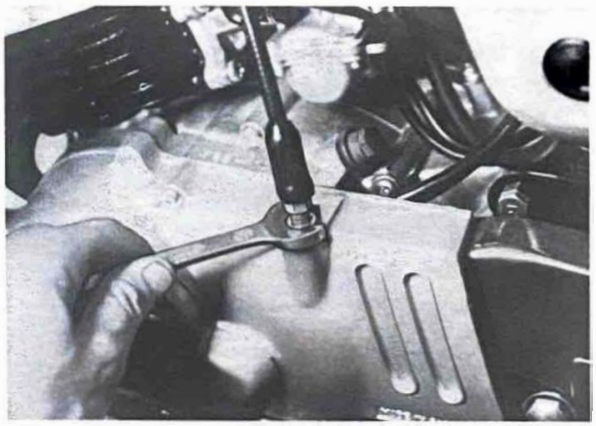
18. Install the brake cable.
Turn the brake cable length adjustor on the brake shoe plate all the way in.
Insert the brake cable end piece into its seat in the brake lever.
Squeeze in on the brake lever while holding firmly onto the cable outer housing. (Actuates brake and lengthens inner cable.) Release the brake lever while simultaneously pulling back on the brake cable housing. The cable ferrule will be pulled back and can now drop into its seat in the brake lever.



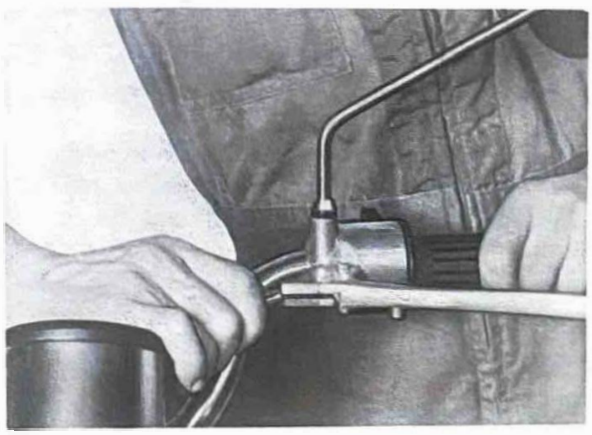
19. Clutch wire installation

a) Loosen the wire length adjustor lock nut on the crankcase cover (left), and screw in the adjustor until tight.

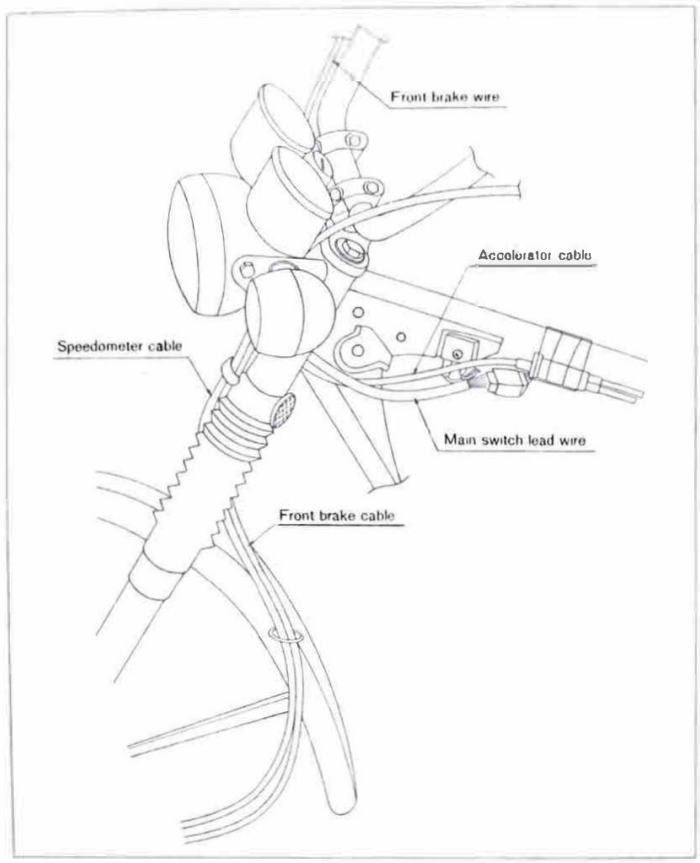
b) Insert the wire end, and hook the outer cable onto the wire holder. Next, squeeze lever, and while pulling the outer cable in the direction opposite to the lever, release the lever quickly. While releasing the lever, hook the outer cable onto the holder.



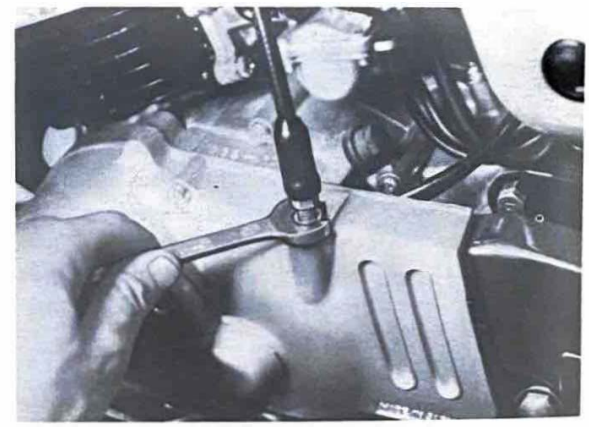
NOTE:
For details fo cable routing, refer to the cable routing diagram.



For detailed cable routing, refer to "CABLE ROUTING DIAGRAMS".



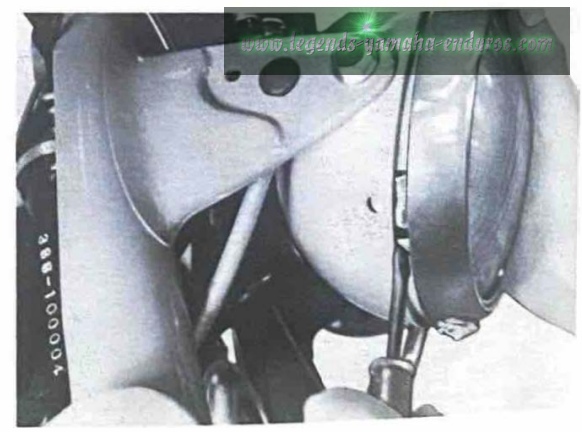
b) Back out the cable length adjuster until the clutch lever has 0.8 - 1.1 in. (20 - 30 mm.) slack.



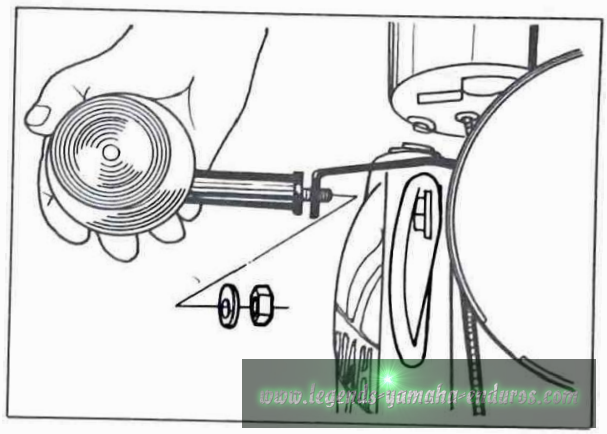
20. Install the rear view mirror on the clutch lever holder and tighten the lock nut. (Left hand side)

21. Remove the Phillips head screw from the bottom of the headlight body. Insert a slotted head screwdriver between the headlight body and the headlight rim, pry out the lens assembly.

NOTE:
During the operation, care should be taken not to scratch the headlight body and lens rim, Also take care so that the anchor screw is not lest.

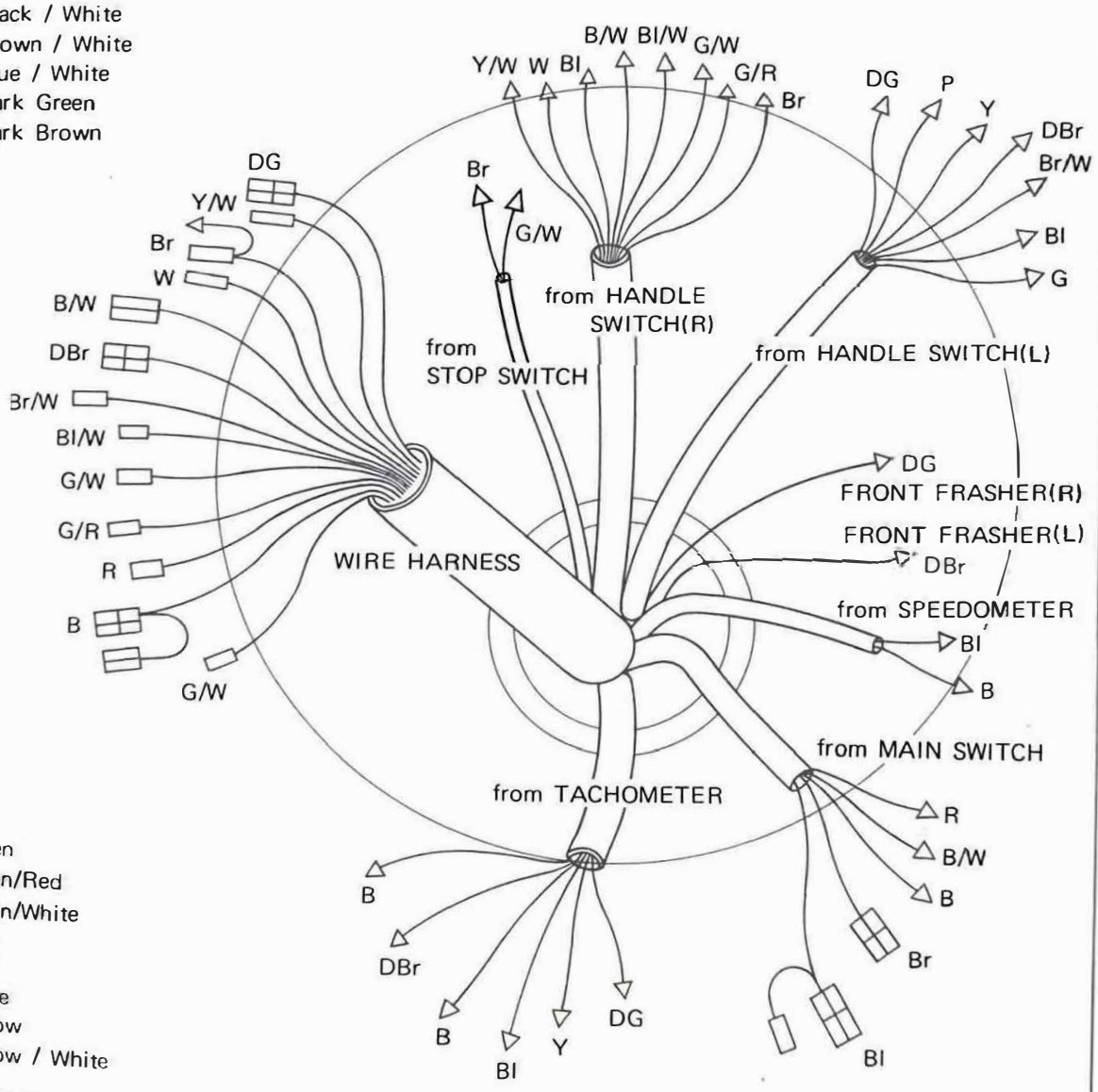


22. Front flasher installation
Install both right and left frasher light assemblies to the flasher light stays, and install the positive lead wires and spring washers as illustrated. Then tighten the nuts.



23. Connect all lead wires inside the headlight body. The wires of identical colors should be connected. (See next page)

B : Black
Bl : Blue
Br : Brown
B/W : Black / White
Br/W: Brown / White
Bl/W: Blue / White
DG : Dark Green
DBr : Dark Brown

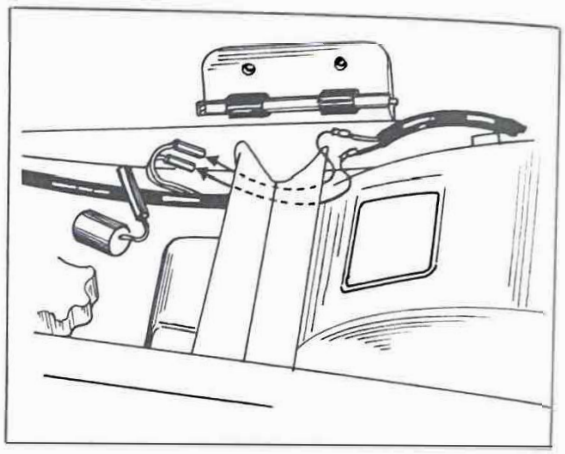


G : Green
G/R : Green/Red
G/W : Green/White
P : Pink
R : Red
W : White
Y : Yellow
Y/W : Yellow / White

When installing the headlight lens assembly, care should be used so that wires are not pinched.
Secure the headlight assembly in place with the Phillips head screw.

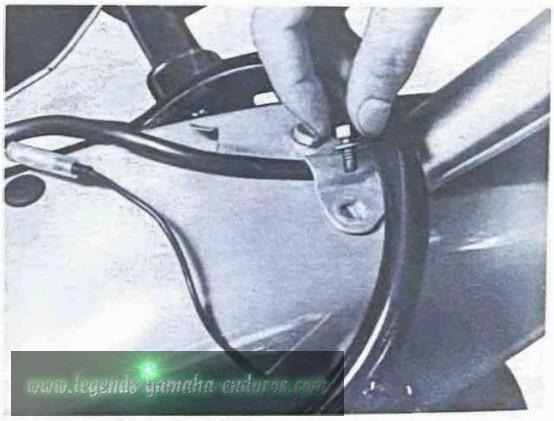
24. Taillight assembly installation

1. Connect the taillight lead wire to the wire harness, and look it with a hook. (The wires of identical colors should be connected.)



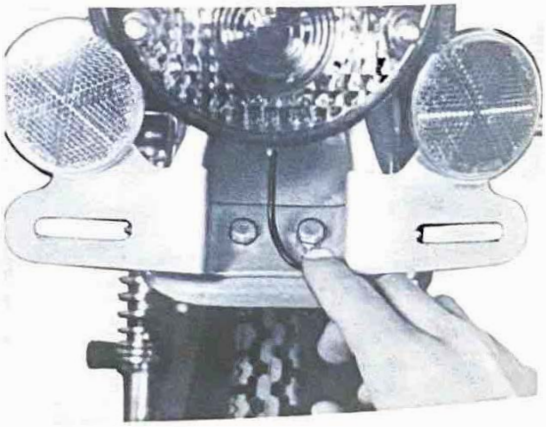
2. Using the bolt, washer with rim, spring washer and nut contained in the vinyl bag (A-9-11), secure the front part of the tail/stoplight bracket to the rear fender.

Bolts:	6 mm. x 2 pcs.
Spring washers:	6 mm. x 2 pcs.
Nut:	6 mm. x 2 pcs.



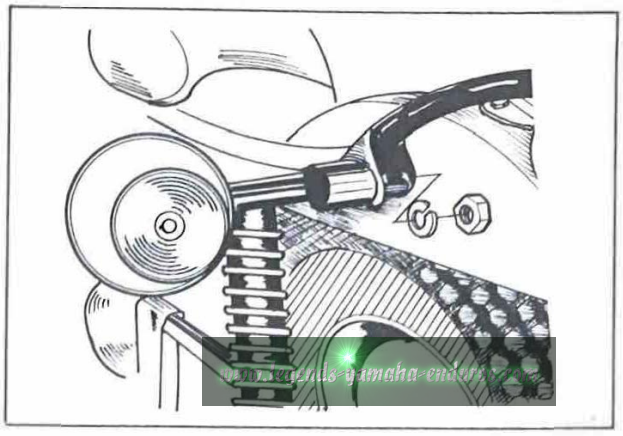
3. Using the shouldered bolts, plain washers, spring washers and nuts contained in the vinyl bag ( ), secure the rear part of the tail/stoplight bracket to the fender.

Shoulder bolts:	6 mm. x 2 pcs.
Spring washers:	6 mm. x 2 pcs.
	6 mm. x 2 pcs.



25. Rear frasher light installation

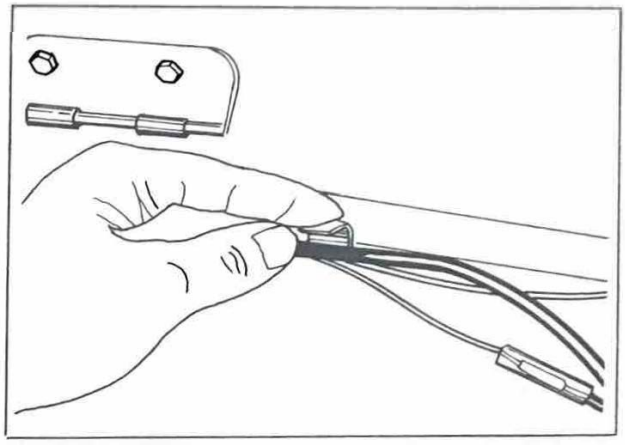
1. Install both frasher light assembly and collar by first aligning with the locating pin. Refer to the figure.



2. Press the frasher light lead wire through the bracket and connect to the wire of identical color inside the connector cover located on the rear fender. Then thread it through the connector cover, together with the taillight lead wire.

NOTE:
Install light with chocolate color marker on left-hand side and light with dark green color marker on right hand side.

3. After installing the light, secure the lead wires with the clamp located on the rear fender.



26 . Battery

1. When filled with diluted sulfuric acid, (electrolyte) this battery can be put into use immediately. That is, it is a dry-charged battery. It is advisable, however, that the battery be charged as much as possible before using it for the first time for maximum performance. This initial charge will prolong the life of the battery.

Charging current: 0.4 ~ 0.5 A.
Charging hours: 10 hrs.

2. How to prepare diluted sulfuric acid.
The diluted sulfuric acid can prepared by adding sulfuric acid to distilled water at a specific mixing ratio.

Specific gravity at 20 °C	Ratio of distilled water to sulfuric acid
1.25	3.4
1.26	3.2
1.27	3.0
1.28	2.8
1.29	2.7
1.30	2.6

Pour distilled water into a grass container, and add sulfuric acid will generate heat, and therefore care should be taken so that heat does not ride excessively.

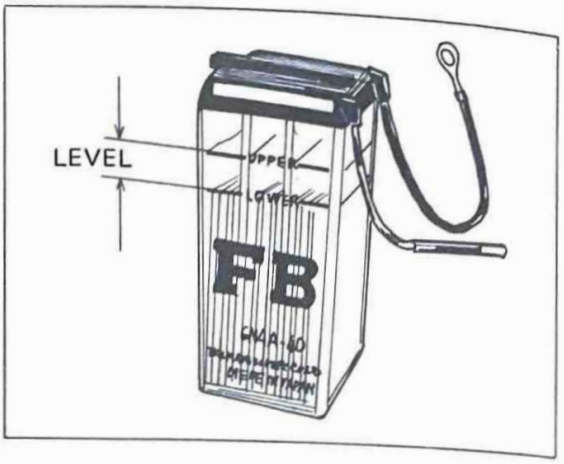
NOTE:
Never attempt to add distilled water to sulfuric acid.

27. Filling the battery with diluted sulfuric acid

1. Remove all filler caps from the battery, and remove the breather pipe cap at the sametime.

2. Cool the diluted sulfuric acid down to below 30°C. (86°F)

3. Pour diluted sulfuric acid into each cell little by little up to the upper level line, and leave it for a while. When the battery fluid permeates the plates and separaters, the fluid level begins to lower. Add diluted sulfuric acid again.

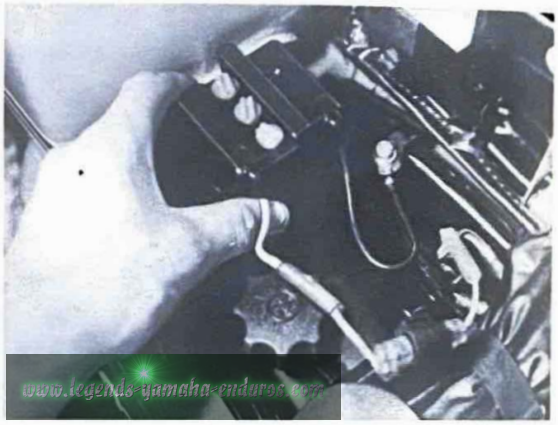


4. Charge the battery as required, and measure the specific gravity of the fluid.

5. Install the filler caps and thoroughly wash the fluid around the filler caps then wipe off.

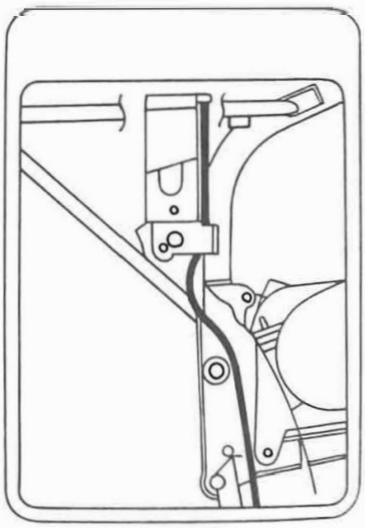
28. Battery installation

1. Make sure the main switch is turned off, and install the battery in the battery box. (Secure the battery with a band.) Connect the positive lead wire first, and then connect the negative lead wire.



2. The breather pipe should be connected as illustrated.

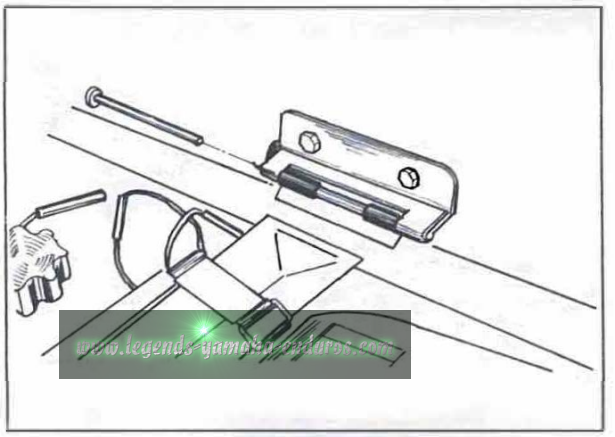
NOTE:
Route the breather pipe outlet down and away from any part of the machine.
(See battery caution emblem sticked on the rear fender)



29. Seat installation

Remove the seat hinge from the seat, install the clevis pin to the frame and seat hinge.

Secure the seat to the frame. The clevis pin should be installed into the stay from the front side, and its front end should be locked with stopper plate.



INSPECTION AND ADJUSTMENTS

Inspections
After all packed parts are installed, check to see that all these parts and other parts (mounted installed at the Yamaha factory) are correctly mounted or installed, or tightened to specification. This check-up should be started with the front of the machine.

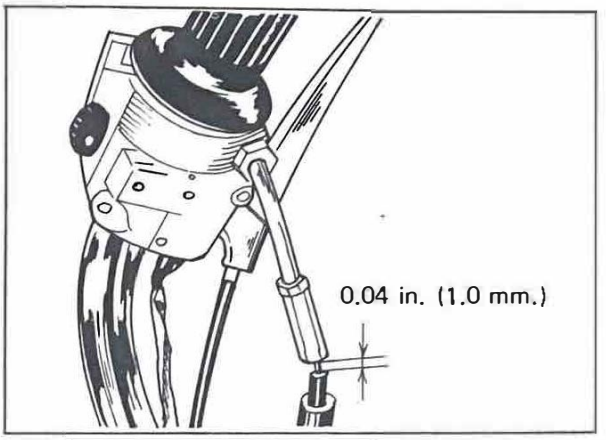
Item	
Front-wheel spokes	Tension
Front wheel rim	Hopping, deflection
Front wheel tire	Tire pressure
Front wheel axle nut	Cotter pin, tightening rorque
Front wheel axle pinch bolt	Tightening torque
Steering head lock nut	Tightening torque
Handle bar holder	Tightening torque
Clutch lever holder	Tightening torque
Brake lever holder	Tightening torque
Front flasher light	Mounting, wiring
Throttle housing	Position, operation, tightness
Engine mounting bolt	Tightening torque
Carburetor joint	Tightness
Footrest	Position, tightening torque
Change pedal	Position, looseness, operation
Brake pedal	Position, looseness, operation
Seat	Mounting, clevis pin, clips
Fuel tank	Mounting
Fuel pipe	Connection
Battery	Mounting, fluid level, wiring
Rear fender	Mounting
Taillight	Mounting, wiring
Rear shock absorber	Mounting, tightening torque
Rear swing arm pivot shaft	Tightening torque
Rear axle nut	Cotter pin, tightening torque
Rear wheel	Spoke tension
Rear wheel-rim	Hopping, deflection
Rear wheel tire	Tire pressure
Transmission oil	Oil level
Engine oil	Oil level

Adjustments

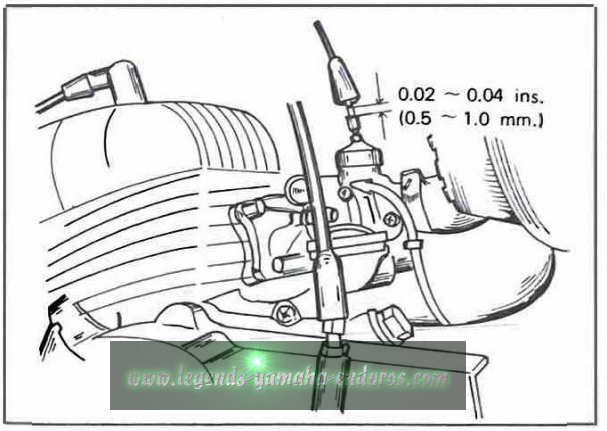
NOTE:
This section deals with the main points only. For details, refer to the service manual for this model.

Throttle cable adjustment

1. After adjusting the idling speed, adjust the play in throttle cable (2).



2. Next, adjust the play of throttle wire (1) to 0.5 - 1.0 mm. (0.02 ~ 0.04 in.) at the throttle cable end.

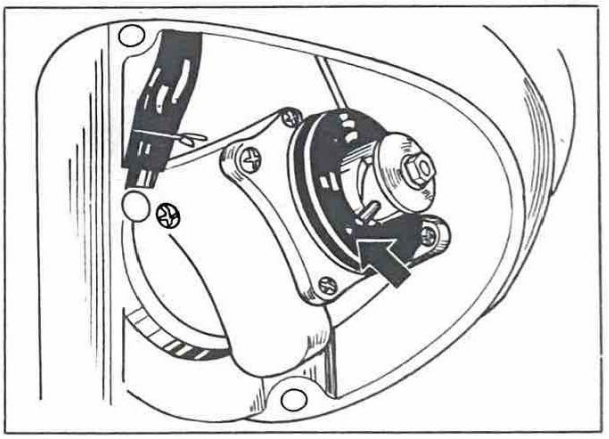


Pump wire adjustment

1. Remove pump cover.

2. Open thorttle slightly to take up all play.

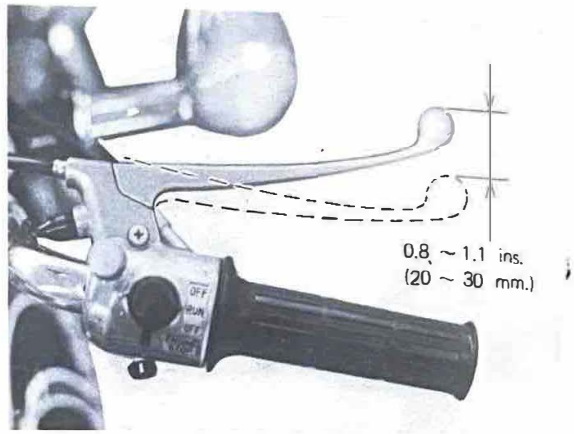
3. Loosen wire adjuster lock nut and turn adjuster in or out until proper mark on adjust pulley aligns with the guide pin.



Front brake wire adjustment

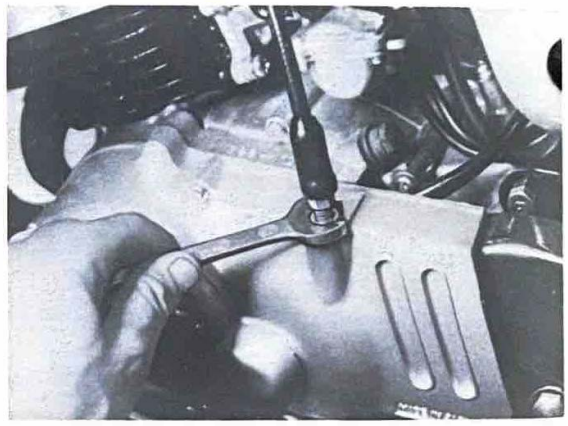
Loosen the brake wire adjuster lock nut, and adjust the play of the brake lever (at the position illustrated) to specification. After the adjustment, be sure to screw in, the lock nut until tight.

Standard value: 20 - 30 mm. (0.8 - 1.1 ins.)

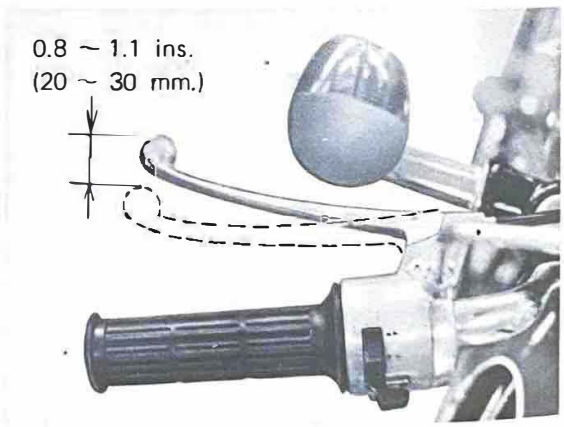


Clutch cable adjustment

Loosen the clutch cable adjuster lock nut at the clutch cable end, and adjust the clutch cable by turning the cable adjuster.



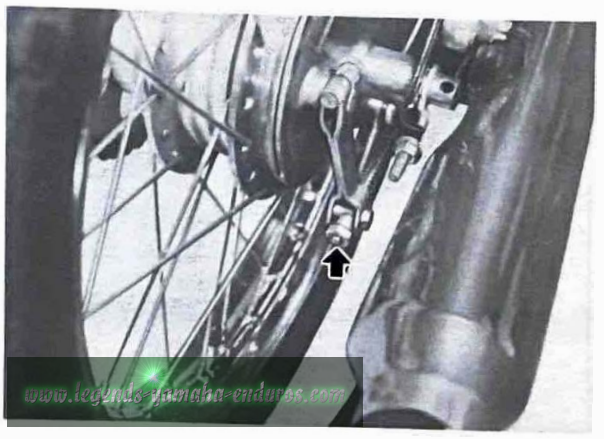
Turning the adjuster clockwise increases clutch cable play, while turning counterclockwise decreases the play. The play should be 20 - 30 mm. (0.8 - 1.1 ins.) at the position shown in the figure.

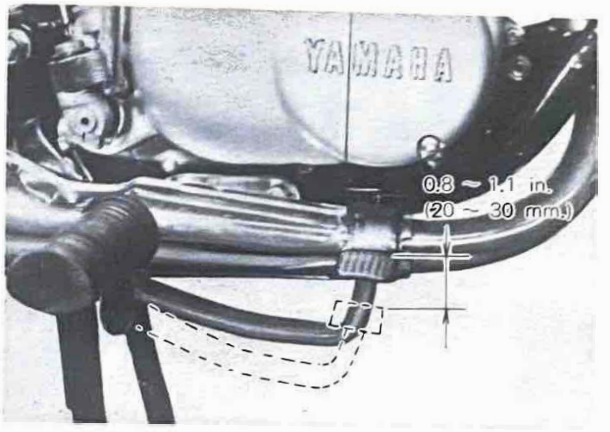


Rear brake pedal adjustment

Rear brake pedal play can be adjusted by turning the adjuster nut on the rear end of the brake rod. Turning clockwise (tightening) reduces play. Turning counter-clockwise (loosening) increases play.

Standard value: 20 - 30 mm. (0.8 - 1.1 ins.) at the brake pedal





Ignition timing - checking and adjustment

After starting the engine, check the ignition timing, and if necessary, adjust.

Ignition timing: 1.8 ± 0.15 mm.

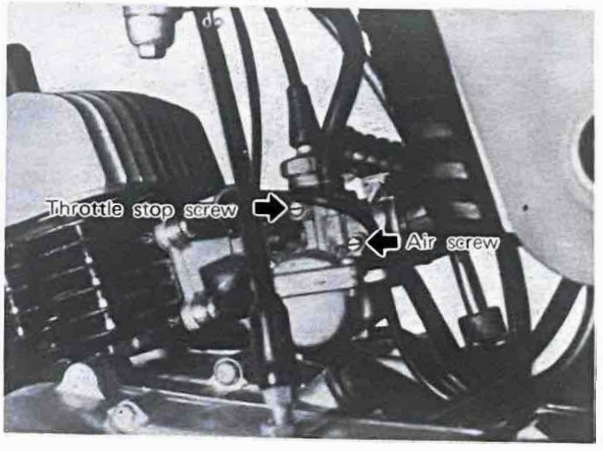
NOTE:
For details, refer to the service manual for this model.

Idling speed adjustment

1. Before adjustment, fully warm up the engine.
2. Start the engine, and idle the engine a little faster by screwing in the throttle stop screws.
3. Screw in and out slowly pilot screw, and stop turning when the engine idles faster.
4. By backing out throttle stop screw evenly, reduce the idling speed to specification.

   Standard turns out: 1½
5. Reset the throttle stop screw to specified rpm.

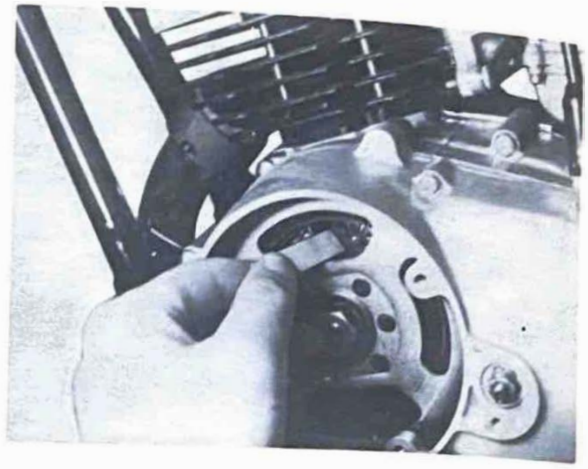
   Standard speed: 1,200 rpm.



If the engine will not start or will not start easily after inspection and adjustments are complete, check the following parts.

Braker point - checking and cleaning

If the engine is hard to start , the breaker point surfaces may be dirty. Clean with a clean name card (heavy paper) dampened with contact cleaner and try to start the engine.



Spark plug - checking and adjustment

When the machine is stored or not used for a long period of time, the spark plug may get wet with oil. If so, hard starting will result. Remove the spark plug, and clean as required.

Specifications

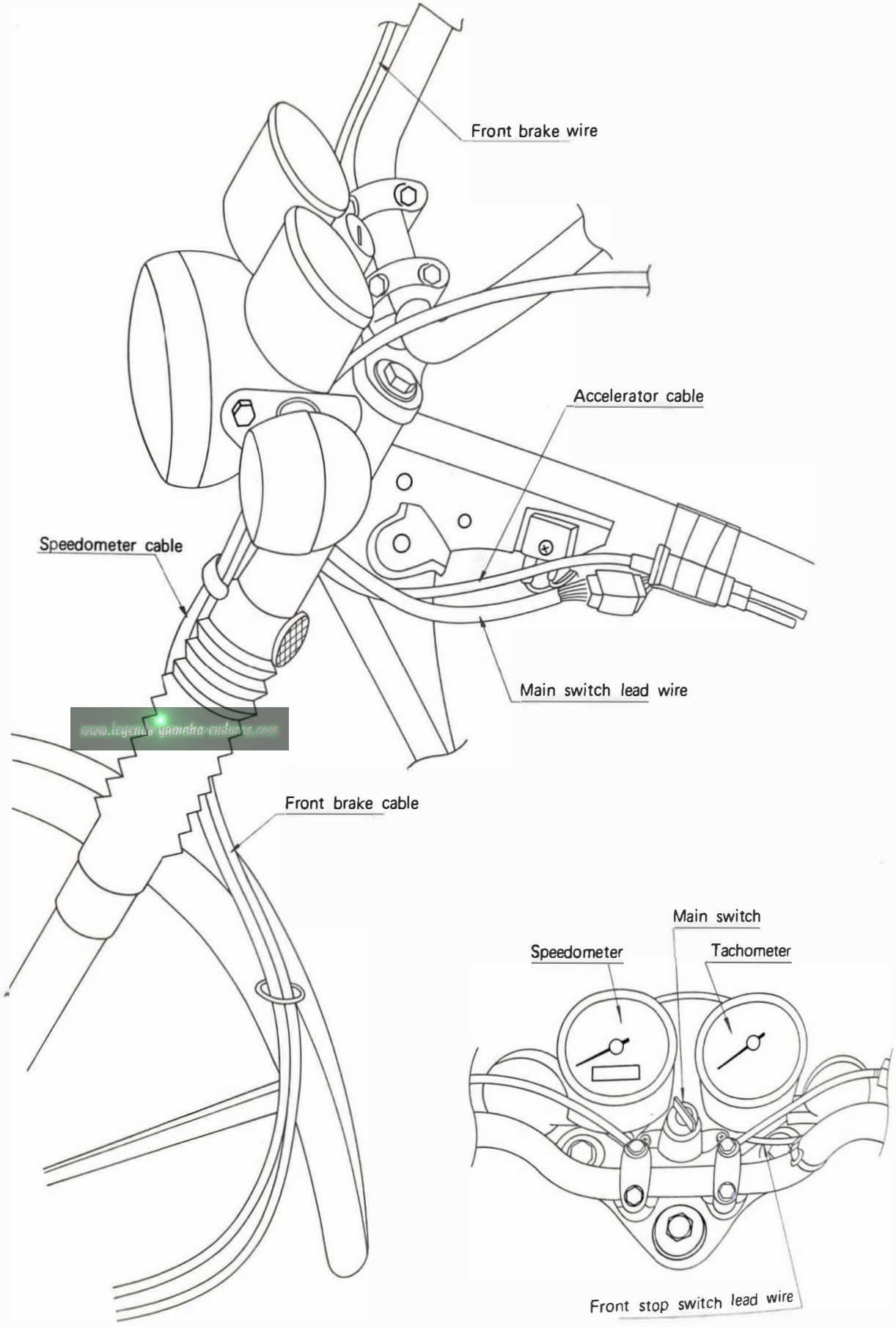
Model	RD60B
Dimensions:	
Overall length	71.9 in. (1.825 mm.)
Overall width	24.8 in. (630 mm.)
Overall height	38.0 in. (965 mm.)
Wheelbase	46.7 in. (1,185 mm.)
Min. ground clearance	5.9 in. (150 mm.)
weight:	
Net	163 lbs. (74 kgs)
Performance:	
Max. speed	50 ~ 53 mph (80 ~ 85 km/h)
Fuel consumption	188 mpg at 19 mph
(on paved level road)	(80 km/lit. at 30 km/h)
Climbing ability	18°
Min. turning radius	70.9 in. (1,800 mm.)
Braking distance	23.0 ft. at 22 mph (7.0 m at 35 km/h)
Engine:	
Model	388, 2 stroke, air cooled. Torque Induction
Type	Single, forward inclined,
Lubrication system	Separate lubrication (Yamaha Autolube)
Displacement	3.36 cu. in. (55 c.c.)
Bore & Stroke	1,654 in. x 1.563 in. (42.0 x 39.7 mm.)
Compression ratio	6.9 : 1
Starting system	Kick starter
Ignition system	Magneto ignition
Carburetor:	VM16SH
Air cleaner:	Wet, molt plain
Power transmission:	
Clutch	Wet, multi-disc type
Primary reduction system	gear
Primary reduction ratio	3.578 (68/19)
Gear box:	
Type	Constant mesh, 5-speed forward
Reduction ratio 1st	3.250 (39/12)
Reduction ratio 2nd	2.000 (34/17)
Reduction ratio 3rd	1.428 (30/21)
Reduction ratio 4th	1.125 (27/24)
Reduction ratio ,5th	0.961 (25/26)
Secondary reduction ratio	3.500 (42/12)
Secondary reduction system	Chain

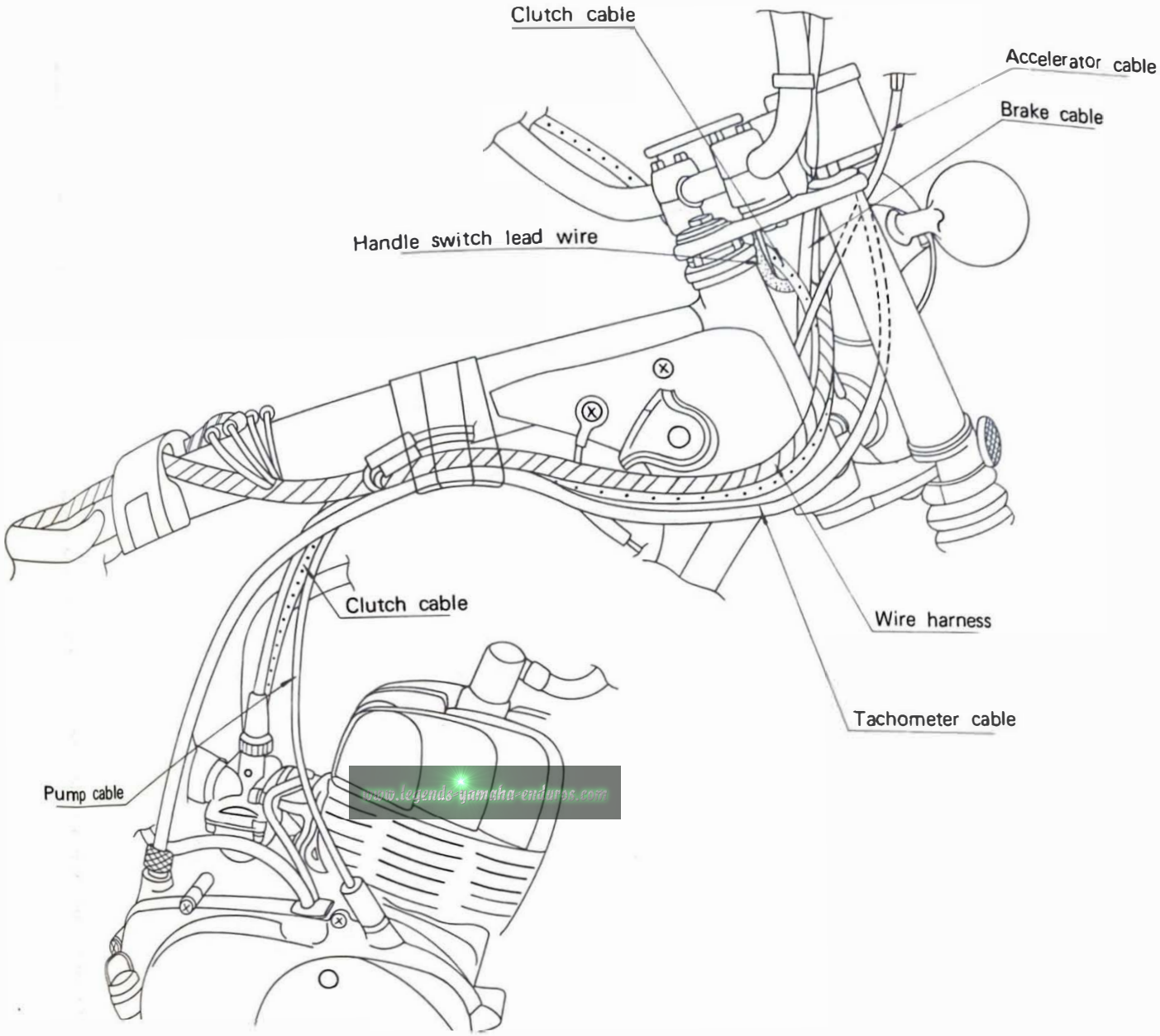
Model	RD60B
Chassis:	
Model	388
Type of frame	Pipe, diamond
Suspension system, front	Telescopic fork
Suspension system, rear	Swing arm
Shock absorber system, front	Coil spring, oil damper
Shock absorber system, rear	Coil spring, oil damper
Steering system:	
Caster	62°
Trail	3.3 in. (85 mm.)
Braking system:	
Type	Internal expansion
Operation method, front	Right hand operation
Operation method, rear	Right foot operation
Tire, front	2.50-17-4PR
Tire, rear	2.50-17-4PR
Fuel tank capacity	2.1 gals. (8.0 liters)
Oil tank capacity	1.1 qts. (1.0 liters)
Generator:	
Model	F11-L48
Manufacturer	HITACHI
Spark plug:	B-7HS
Battery:	
Model	6N4A-4D
Capacity	6V, 4AH
Lights:	
Headlamp	6V 15W/15W
Taillamp / Stoplamp	6V 5.3W/25W
Flasherlamps	6V 17W
Meterlamp	6V 1.5W x 2
Flasher pilot lamp	6V 3W
High beam indicator lamp	6V 1.5W

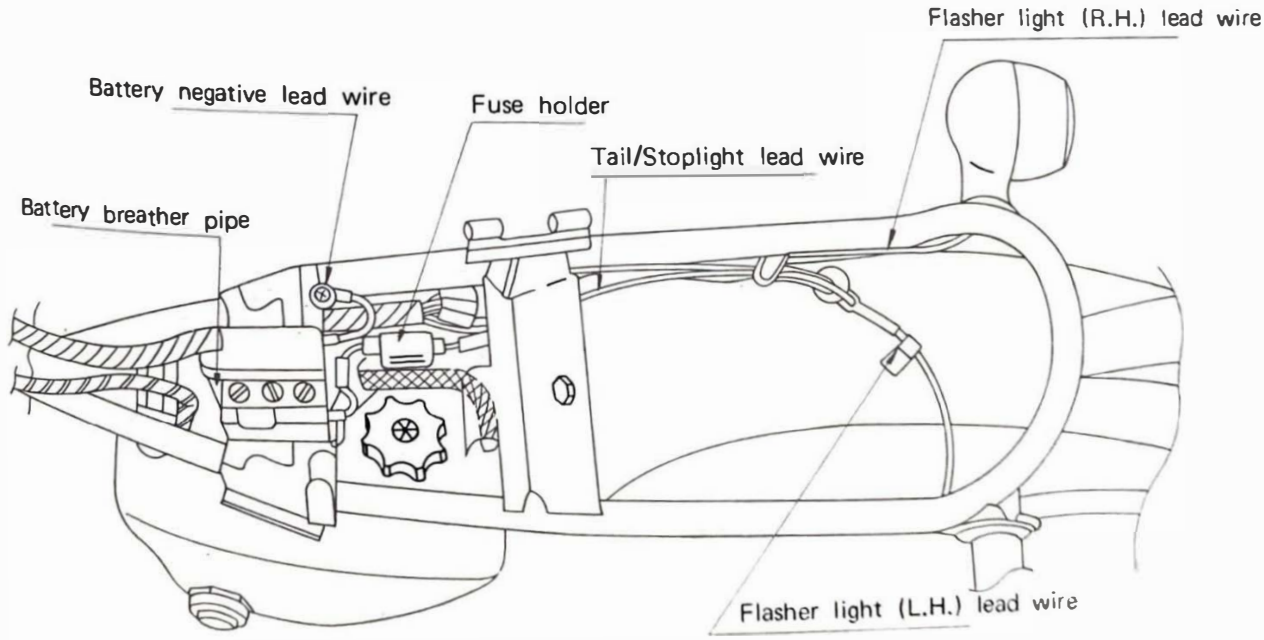
The following data subject to change without notice.

MEMO

MEMO


Front brake wire
Accelerator cable
Speedometer cable
Main switch lead wire
Front brake cable
Main switch
Speedometer
Tachometer
Front stop switch lead wire





PRINTED IN JAPAN
74.6-2.6×1.5

LIT-11664-00-03