



YAMAHA

DT100D

Service Manual

www.legends-yamaha-enduros.com

1T9-28197-10

NOTICE

This manual has been written by Yamaha Motor Company for use by Authorized Yamaha Dealers and their qualified mechanics. In light of this purpose it has been assumed that certain basic mechanical precepts and procedures inherent to our product are already known and understood by the reader. This service manual has been written to acquaint the machine with common disassembly, inspection, reassembly, maintenance, and troubleshooting procedures associated with this machine.

The Research, Engineering, and Service Departments of Yamaha are continually striving to further improve all models manufactured by the company. Modifications are therefore inevitable 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 machine.

WARNING:.....A WARNING indicates special procedures that must be followed to avoid injury to a machine operator or person inspecting or repairing the machine.

**YAMAHA DT100D
SERVICE MANUAL
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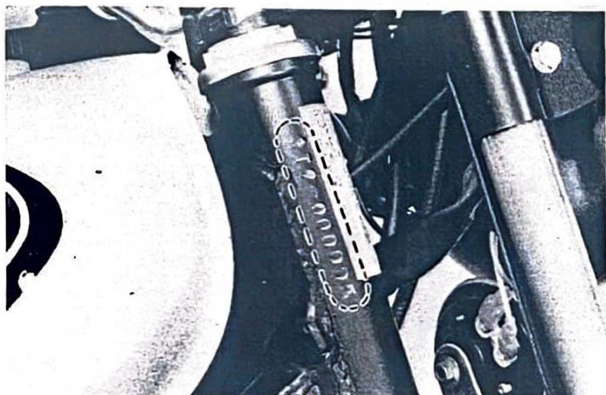
1-1. MACHINE IDENTIFICATION

The frame serial number is located on the right-hand side of the headstock assembly. The first three digits identify the model. This is followed by a dash. The remaining digits identify the production number of the unit.

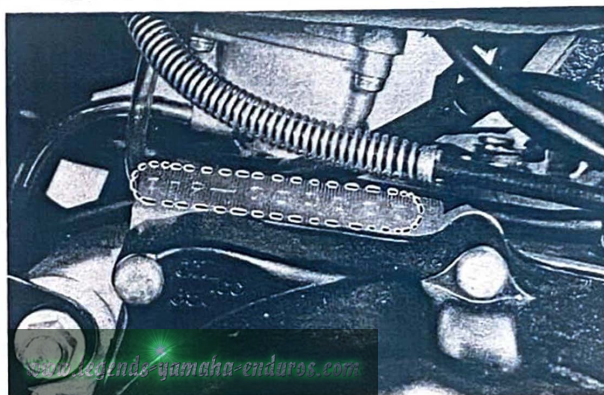
The engine serial number is located on a raised boss on the upper rear, right-hand side of the engine. Engine identification follows the same code as frame identification. Normally, both serial numbers are identical; however, on occasion they may be two or three numbers off.

Starting serial number
1T9-000101

Frame serial number



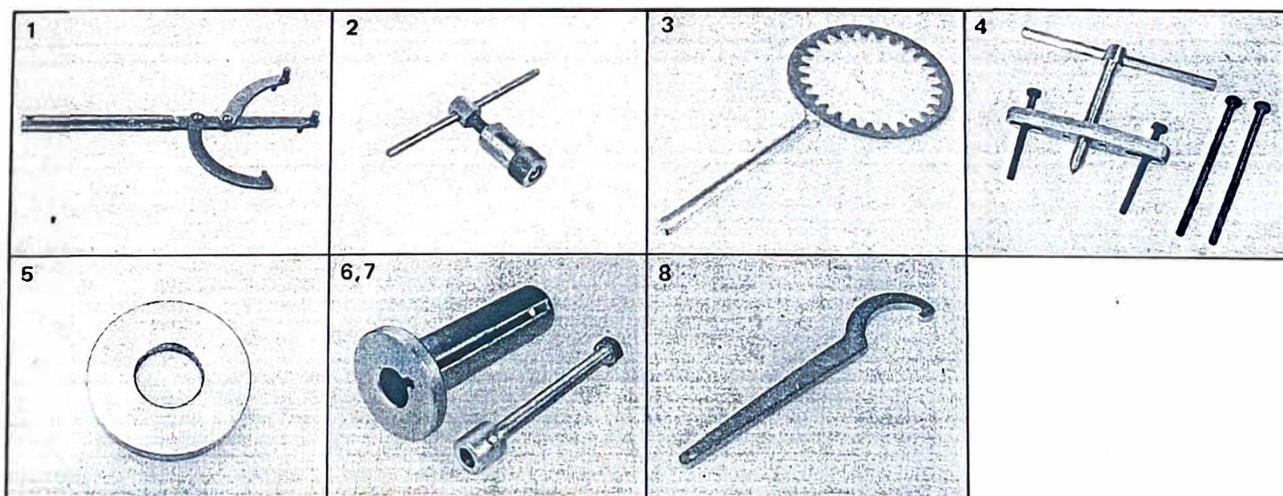
Engine serial number



1-2. SPECIAL TOOLS AND GAUGES

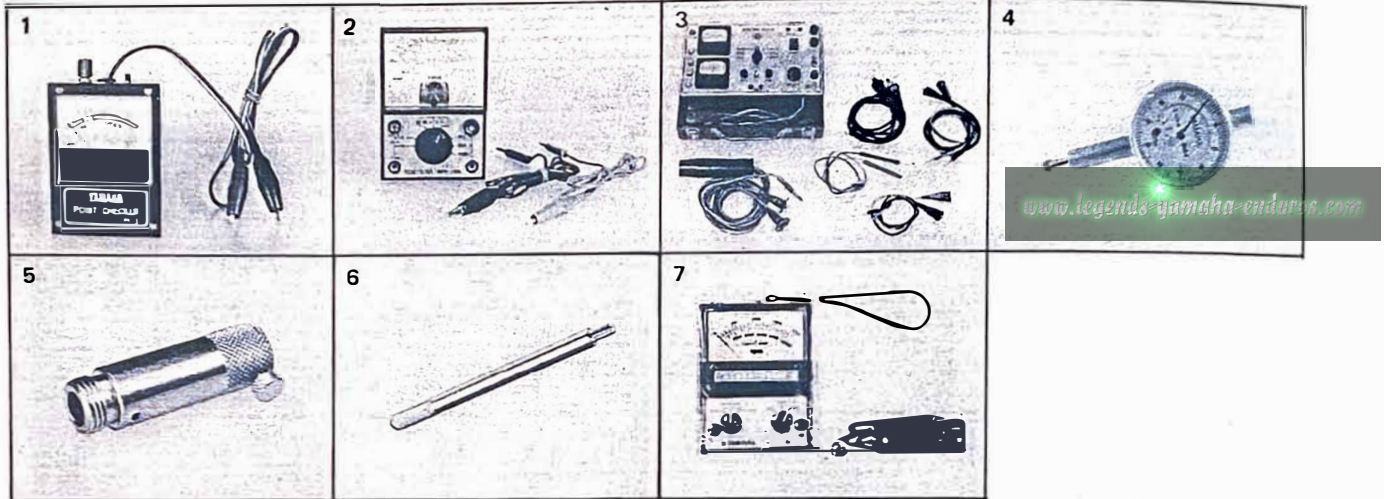
A. Special tools

	Parts name	Parts No.		Parts name	Parts No.
1	Flywheel holding tool	90890-01235	5	Spacer	90890-01016
2	Flywheel puller	90890-01189	6	Crankshaft setting pot	90890-01012
3	Clutch holding tool	90890-01022	7	Crankshaft setting tool	90890-01015
4	Crankcase separating tool	90890-01135	8	Steering nut wrench	90890-01051



B. Gauges

	Parts name	Parts No.		Parts name	Parts No.
1	Point checker	90890-03064	4	Dial gauge	90890-03002
2	Pocket tester	90890-03096	5	Dial gauge stand	90890-01039
3	Electro tester	90890-03021	6	Dial gauge needle	90890-03042
			7	Engine tachometer	90890-03082



C. Additional tools

- | | |
|------------------------|--------------------|
| 1. Thickness gauge | 5. Micrometer |
| 2. Torque wrench | 6. Vernier caliper |
| 3. Tire pressure gauge | 7. Cylinder gauge |
| 4. Measuring cup | 8. Grease gun |

CHAPTER 2. PERIODIC INSPECTIONS AND ADJUSTMENTS

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2-1. MAINTENANCE AND LUBRICATION INTERVALS CHARTS

The following charts should be considered strictly as a guide to general maintenance and lubrication intervals. You must take into consideration that weather, terrain, geographical location, and a variety of individual uses all tend to demand that each owner alter

this time schedule to match his environment. For example, if the motorcycle is continually operated in an area of high humidity, then all parts must be lubricated much more frequently than shown on the chart to avoid damage caused by water to metal parts.

A. Periodic Maintenance Chart

Unit: km (mi)

Item	Remarks	Initial				Thereafter every	
		400 (250)	800 (500)	1,600 (1,000)	3,200 (2,000)	1,600 (1,000)	3,200 (2,000)
Spark plug	Inspect/Clean or replace as required	○	○	○			○
Decarbonize engine	Includes exhaust system			○			○
Transmission oil level check	Unit level/Engine warm	○	○	○		○	
Air filter	Wet type — Clean/replace as required (No.2)			○	○	○	
Fuel petcock	Clean/Flush tank as required	○		○		○	
Carburetor adjustment	Check operation/Fittings		Check		○		○
Carburetor overhaul	Clean/Repair as required/Adjust						4,000
Clutch	Check/Adjust as required		○	○		○	
Brake system (complete)	Check/Adjust as required, repair as required		○	○		○	
Wheels and tires	Pressure/Spoke — Tension/runout	○	○	○		○	
Drive chain	Tension/Alignment (No. 1)	○		○		○	
Fittings and fasteners	Tighten before each trip and/or	○		○		○	
Ignition timing	Adjust/Clean or replace parts as required		○	Check	○		○
Battery	Top-off/Check special gravity monthly, or	○		○		○	

SERVICE NOTES:

- No. 1. **DRIVE CHAIN:** In addition to tension and alignment, chain must be lubricated every 300 ~ 400 km (200 ~ 250 mi).
If unit is subjected to extremely hard usage and wet weather riding, chain must be checked frequently. See "Lubrication Intervals" for additional details.
- No. 2. **AIR FILTER:** Remove and clean filter at least once per month or every 1,600 km (1,000 mi).
- No.3 See Assembly Manual for more complete pre-delivery set-up information.

B. Lubrication intervals

Unit: km (mi)

Item	Remarks	Type	Initial				Thereafter every		
			400 (250)	800 (500)	1,600 (1,000)	3,200 (2,000)	1,600 (1,000)	3,200 (2,000)	6,400 (4,000)
Transmission oil	Replace	1.Yamalube 4-cycle oil or 2.SAE 10W/30"SE"motor oil	Check	○	○		Check	○	
Drive chain	Remove/clean/lube/ adjust	Yamaha chain and cable lube or SAE 10W/30 motor oil	○				Every 400km (250 mi)		
Control/meter cables	Apply thoroughly	Yamaha chain and cable lube or SAE 10W/30 motor oil			○	○		○	
Throttle grip/ housing	Apply lightly	Lithium base grease				○		○	
Speedometer gear housing	Apply lightly	Lithium base grease				○			○
Front fork oil	Drain completely — refill	Yamaha fork oil	○			○			○
Rear arm pivot shaft	Apply grease fully	Medium-weight wheel bearing grease				○			○
Brake pedal shaft	Apply lightly	Soft chassis lube grease				○			○
Wheel bearings	Do not over-pack	Medium-weight wheel bearing grease				○			○
Point cam lubri- cation wicks	Apply very lightly	Light-weight machine oil			○			○	
Steering ball rece	Inspect thoroughly/pack moderately	Medium-weight wheel bearing grease			○				○

NOTE: See Assembly Manual for pre-delivery sat-up lubrication

2-2. ENGINE

A. Carburetor

1. Pilot air screw

Turn air adjusting screw (2) until it lightly seats, then back it out turns specified. This adjustment can be made with engine stopped.

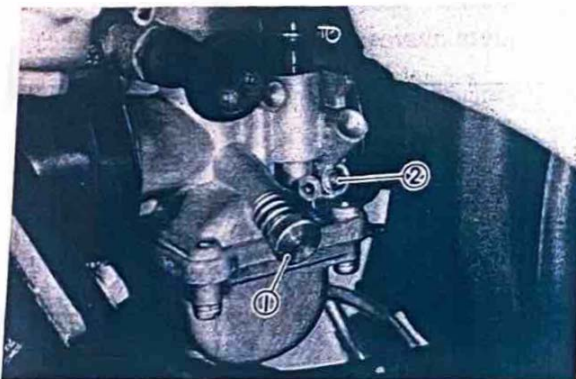
Air screw (Turns out): 2.0

2. Start the engine and let it warm up.

3. Throttle stop screw

Turn throttle stop screw (1) in or out to achieve smooth engine operation at idle speed specified in Carburetor Setting Table.

Idling speed: 1,300 rpm



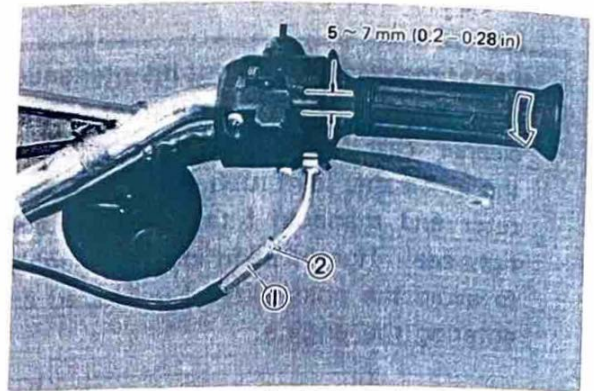
1. Throttle stop screw 2. Pilot air screw

NOTE:

The pilot air and throttle stop screws are separate adjustments but they must be adjusted at the same time to achieve optimum operating condition at engine idle speeds.

4. Throttle cable

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 locknut and turn the wire adjuster to make the necessary adjustment. Be sure tighten the locknut properly.



1. Adjuster

2. Lock nut

B. Air cleaner

1. Wash the element gently, but thoroughly, in solvent.

2. Squeeze excess solvent out of element and dry.

3. Pour a small quantity of 30W motor oil into cleaner element and work thoroughly into the porous foam material. Element must be damp with oil, but not dripping.

4. Coat the upper and lower edges of the cleaner element with lube grease.



NOTE:

Install the case cap with the mark (↑) place upward.

5. The air filter element should be cleaned once a month or every 1,600 km (1,000 mi).

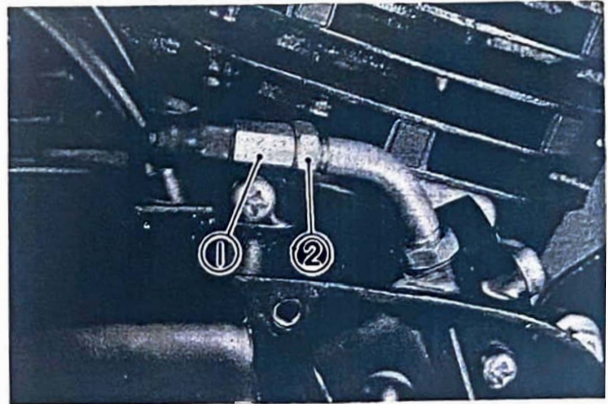
It should be cleaned more often if the machine is operated in dusty or wet areas.

NOTE:

Each time cleaner element maintenance is performed, check the air inlet to the cleaner case for obstructions. Check the air cleaner joint rubber to the carburetor and manifold fittings for an airtight seal. Tighten all fittings thoroughly to avoid the possibility of unfiltered air entering the engine.

CAUTION:

Never operate the engine with the air cleaner element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the cleaner element will affect carburetor jetting with subsequent poor performance and possible engine overheating.



1. Adjuster 2. Locknut

2. Minimum pump stroke check and adjustment

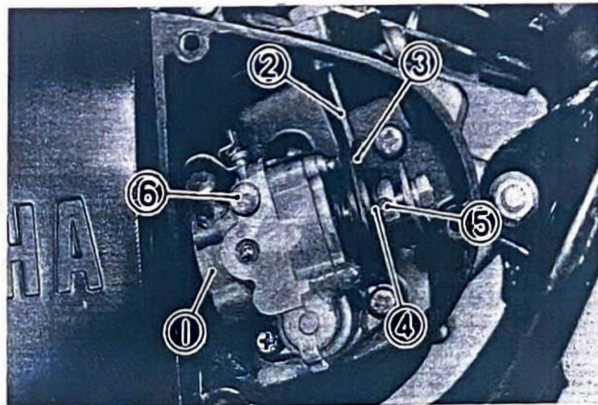
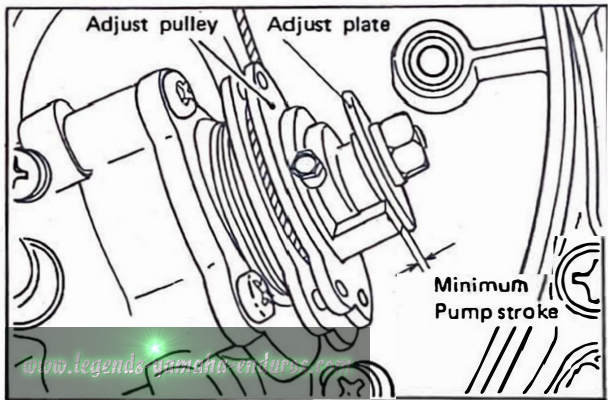
- a. With the cable properly adjusted and the magneto cover removed, turn the crankshaft until the adjust plate moves out to its limit.

While running the engine at idle, observe the pump adjust plate carefully. Stop the engine the moment that the adjust plate moves out to its limit.

C. Autolube pump

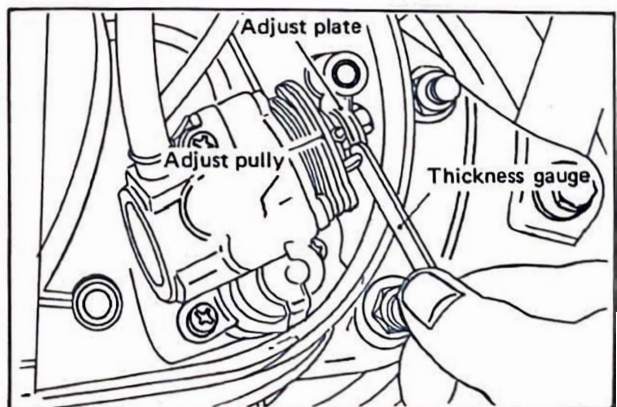
1. Cable adjustment

- a. Rotate throttle slightly until all slack is removed from all cables. Hold this position.
- b. Check to see that the Autolube pump guide pin (5) is aligned with the mark on the Autolube pump pulley.



1. Oil pump 2. Pump cable 3. Adjusting pulley 4. Match mark 5. Guide pin 6. Bleed screw

- b. Measure the gap with the thickness gauge between the raised boss on the pump adjust pulley and the adjust plate.



- c. If the mark and pin are not in alignment, loosen the cable length adjuster locknut on top of crankcase cover and adjust cable length until alignment is achieved.
- d. Tighten adjuster locknut.

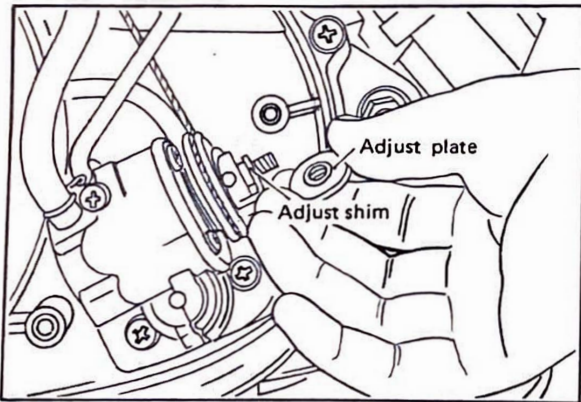
- c. Repeat steps a. and b. above a few times. When the gap measured is the largest, the pump stroke is considered to be at a minimum.

NOTE: _____

When inserting the thickness gauge between the adjusting plate and the adjusting pulley, be careful so that neither the plate nor the pulley is moved. In other words, do not force the thickness gauge into the gap.

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

- d. If clearance is not correct, remove the adjust plate locknut and the adjust plate.
e. Remove or add an adjust shim as required. Tighten locknut and remeasure gap.



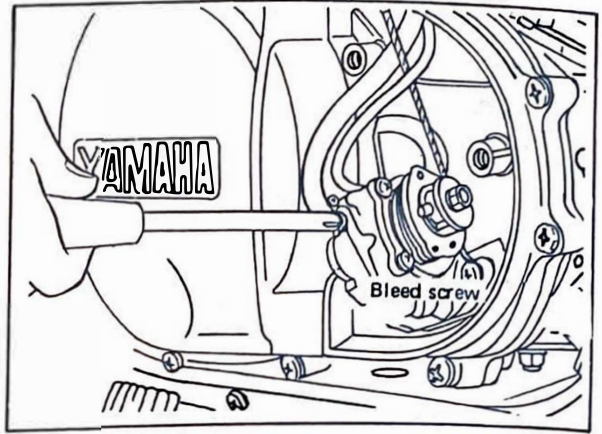
3. Air bleeding

The Autolube Pump and delivery lines must be bled on the following occasions:

- Setting up a new machine out of the crate.
- Whenever the Autolube tank has run dry.
- Whenever any portion of the Autolube system is disconnected.

a. Bleeding the pump case and/or oil pipe

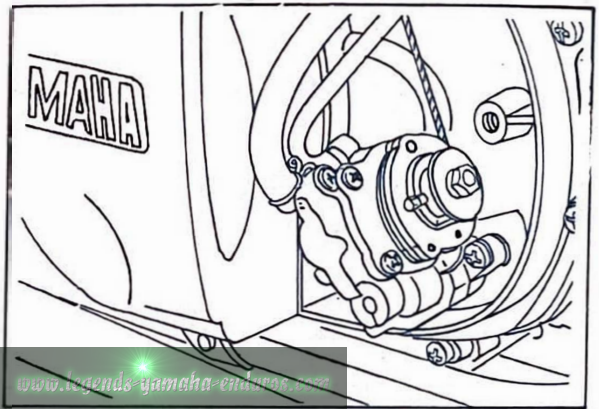
- 1) Remove the bleed screw.



- 2) Keep the oil running out until air bubbles disappear.

NOTE: _____

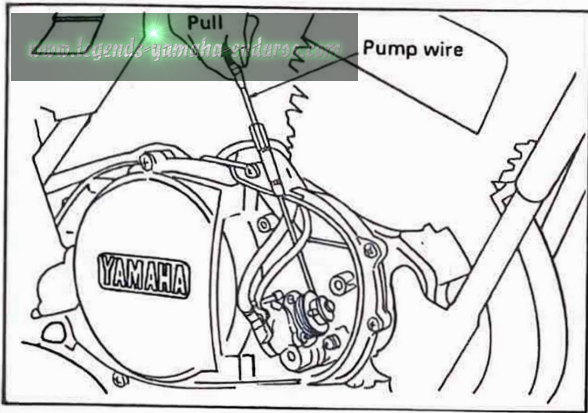
Check the bleed screw gasket, and if damaged, replace with a new one.



- 3) When air bubbles are expelled completely, tighten the bleed screw and install the pump cover.

b. Bleeding the pump distributor and/or delivery pipe

- 1) Start the engine.
- 2) Pull the pump wire all the way out to set the pump stroke to a maximum.



NOTE: _____

It is difficult to bleed the distributor completely with the pump stroke at a minimum, and therefore the pump stroke should be set to a maximum.

- 3) Keep the engine running at about 2,000 rpm for two minutes or so, and both distributor and delivery pipe can be completely bled.

D. Engine and transmission oil

1. Engine

a. Autolube oil

We recommend that first choice be Yamalube 2-cycle oil. If for any reason you should use another type, the oil should meet or exceed BIA certification "TC-W". Check container top or label for service specification. If above oils not available, use a 30W or 40W 2-stroke oil for air-cooled engines.

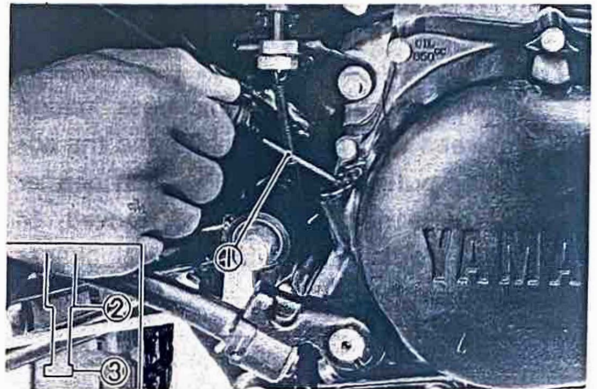
CAUTION: _____

Under extremely cold conditions (0°C or below) SAE 30 and 40W oils become very thick and will not flow as readily to the Autolube pump. This may cause oil pump starvation and engine damage.

2. Transmission

- a. To check level, start the engine and let it run for several minutes to warm and distribute oil. Stop engine.

Unscrew the dip stick and wipe it clean. Set it on the case threads in a level position. Remove and check level.



1. Dip stick 2. Max. Level 3. Min. Level

NOTE: _____

Be sure the machine is level and on both wheels.

- b. The oil level should be between the minimum and maximum marks. Top off as required.

Recommended oil:

Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil

Transmission drain plug torque:

2.0 ~ 2.5 m·kg
(14.5 ~ 18.1 ft·lb)

Transmission oil quantity:

650 cc (687.1 US. qt)

Transmission oil should be replaced several times during the break-in period. If the unit is used for competition, oil replacement should also be often.

CAUTION: _____

Under no circumstances should any additives be included with the transmission oil. This oil also lubricates and cools the clutch. Many additives will cause server clutch slip-page. (This does not refer to "additives" are speciality ingredients such as oil boosters, thickness, etc.)

E. Clutch

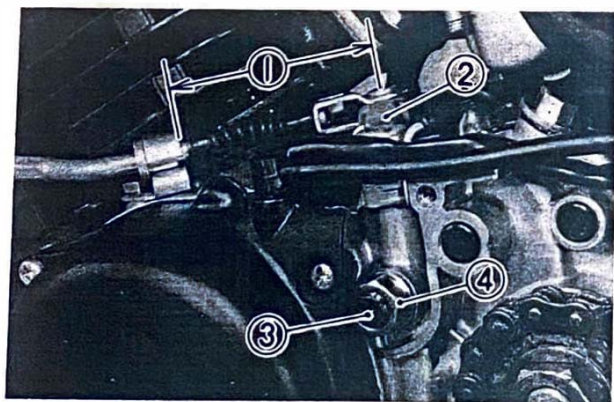
1. Mechanism adjustment

- Loosen adjusting screw locknut and fully tighten eccentric adjusting screw.
- Turn either cable length adjuster in or out until lever is positioned slightly behind main axle center line.
- Back eccentric adjust screw out until axle lever shaft contacts clutch push rod inside engine. Turn adjust screw in approximately 1/8 turn and tighten locknut. Re-adjust handle lever free-play as required.

NOTE:

After adjusting, pull clutch lever in and hold against handle grip. Measure distance from outer cable stopper (bottom of cylinder fin) to center of axle lever clevis pin. If distance is less than specified, loosen cable length adjuster slightly to obtain minimum distance.

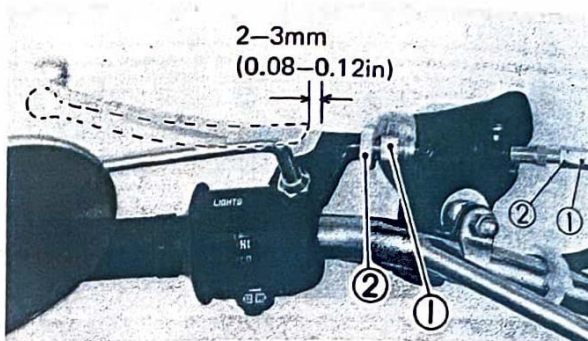
Minimum distance:
55mm (2.16 in)



- Min. distance
- Axle lever
- Adjusting screw
- Locknut

2. Freeplay adjustment

- Loosen either the handle lever adjuster locknut or the cable inline length adjuster locknut.
- Turn the length adjuster either in or out until proper lever freeplay is achieved.
- Tighten the locknut.

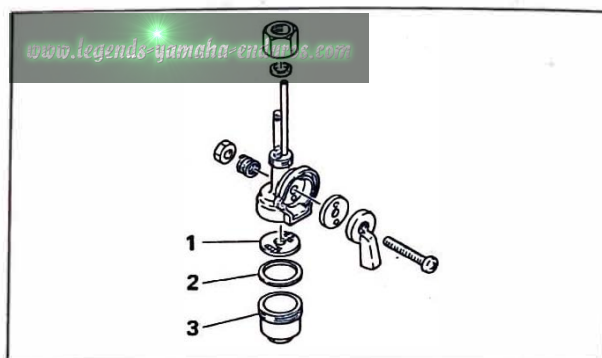


- Adjuster
- Adjuster locknut

2-3. CHASSIS

A. Fuel petcock

- Clean fuel filter and filter cap.



- Filter screen
- Filter gasket
- Filter cup

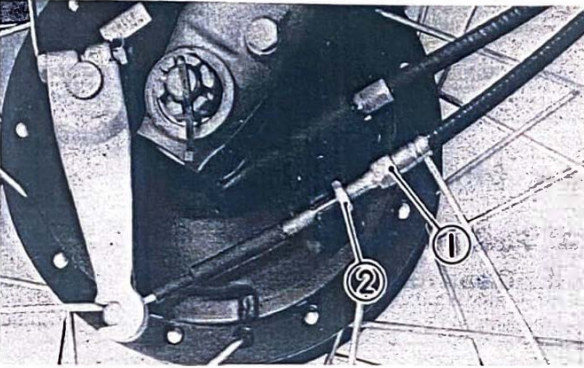
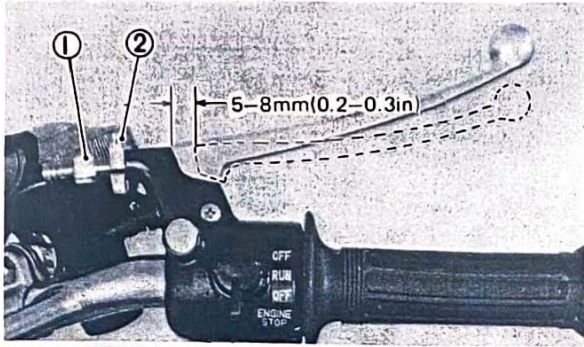
B. Brakes and wheels

1. Front brake adjustment

Front brake cable freeplay can be adjusted to suit rider preference, but a minimum freeplay of 5 ~ 8 mm (0.2 ~ 0.3 in) should be maintained.

Freeplay can be adjusted at handlebar lever or brake shoe plate.

- Loosen the adjuster locknut (2).
- Turn the adjuster (1) in or out until adjustment is suitable.
- Tighten the adjuster locknut (2).

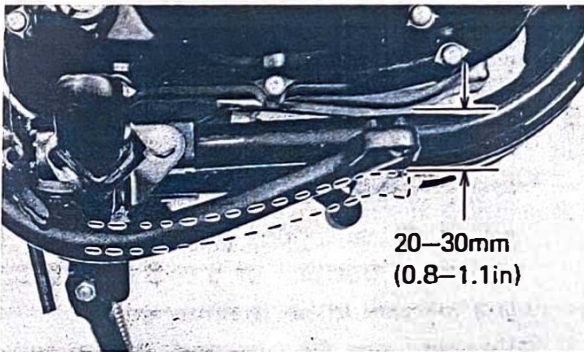


1. Adjuster 2. Lock nut

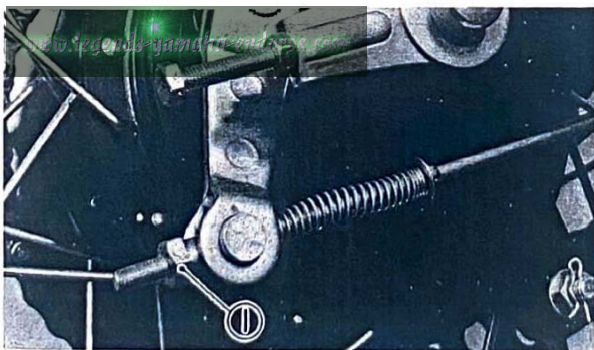
2. Rear brake adjustment

Adjust rear brake pedal play to suit, providing the minimum of 20 mm (0.8 in) freeplay.

- a. Turn the adjusting nut on the rear brake rod in or out until brake pedal freeplay is suitable.



20-30mm
(0.8-1.1in)



1. Adjusting nut

NOTE:

Rear brake pedal adjustment must be checked whenever chain is adjusted or

rear wheel is removed and re-installed.

3. Brake lining check

Brake lining can be checked through the inspection hole in the brake shoe plate. If thickness is less than 2 mm, replace the brake shoes.

Always replace shoes as a set.

4. Spoke adjustment and torque

- a. Raise the wheel off the ground. Spin. Check rim runout.

Rim runout limits:

Vertical — 2 mm (0.08 in)

Lateral — 2 mm (0.08 in)

- b. Check each spoke for tightness.

5. Axles

- a. Check axle nut.

Front: 7 ~ 10.0 m-kg
(50.4 ~ 72.4 ft-lb)

Rear: 8.3 ~ 13.0 m-kg
(60 ~ 108 ft-lb)

6. Check tire pressure.

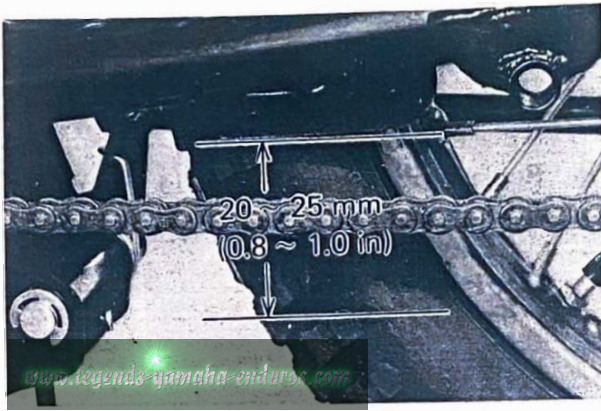
Recommended pressures:

	off - road	On paved road
Front:	1.0 kg/cm ² (15 p.s.i)	1.6 kg/cm ² (23 p.s.i)
Rear:	1.2 kg/cm ² (17 p.s.i)	2.0 kg/cm ² (28 p.s.i)

C. Drive chain

1. Drive chain adjustment

- a. Remove rear axle cotter pin.
- b. Loosen rear axle securing nut and sprocket shaft nut.
- c. With rider in position on machine both wheels on ground, set axle adjusters until there is 20 to 25 mm freeplay in the drive chain at the bottom of the chain at a point midway between the drive and driven axles.

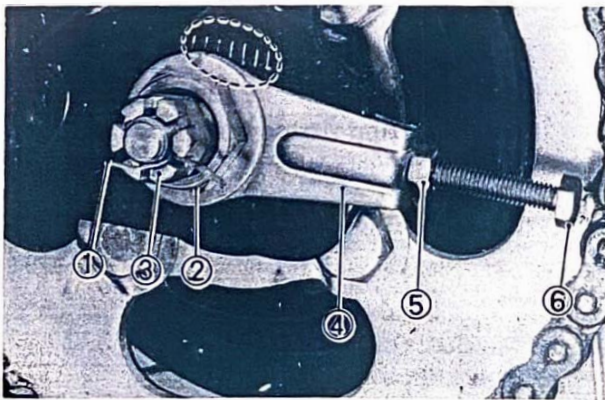


- d. Turn left and right adjusters (chain puller bolts) until axle is situated in the same position as shown by position marks on swing arm axle locating tabs.
- e. Tighten the securing nuts.

Rear axle nut torque:
 3.0 ~ 4.8 m-kg
 (21.7 ~ 34.7 ft-lb)
 Sprocket shaft nut torque:
 11 ~ 18 m-kg
 (80 ~ 130 ft-lb)

- f. Install a new cotter pin and bend the end over.

NOTE: _____
 Tighten adjuster locknuts thoroughly.



- | | |
|-----------------------|-----------------|
| 1. Cotter pin | 4. Chain puller |
| 2. Sprocket shaft nut | 5. Lock nut |
| 3. Axle nut | 6. Adjuster |

2. Drive chain maintenance
 The chain should be lubricated according to the recommendations given in the Maintenance and Lubrication Interval Charts or more often if necessary. (Preferably before and after each use.)

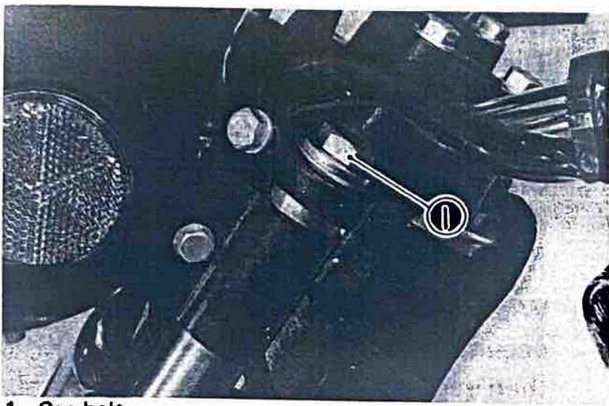
- a. Wipe off dirt with shop rag. If accumulation is severe, use wire brush, then rag.
- b. Apply lubricant between roller and side plates on both inside and outside of chain.
 Don't skip a portion as this will cause uneven wear.
 Apply thoroughly. Wipe off excess.

NOTE: _____
 Chain and lubricant should be at room temperature to assure penetration of lubricant into rollers. Use Yamaha chain and cable Lubricant.

- c. Periodically, remove the chain. Wipe and/or brush excess dirt off. Blow off with high pressure air.
- d. Soak chain in solvent, brushing off remaining dirt. Dry with high pressure air. Lubricate thoroughly while off the machine. Work each roller thoroughly to make sure lubricant penetrates. Wipe off excess. Reinstall chain and adjust.

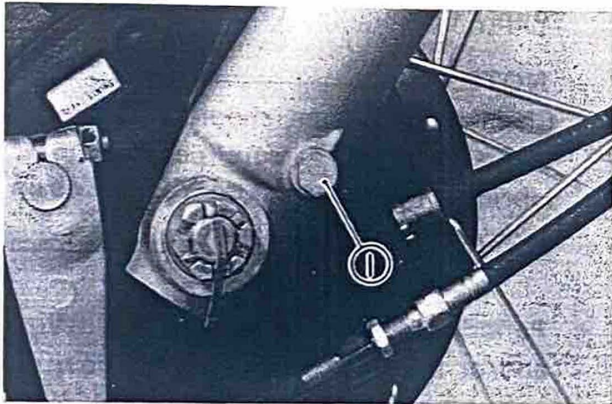
D. Front fork oil change

1. With the front wheel removed or raised off the floor with a suitable frame stand
2. Remove cap bolts from inner fork tubes



1. Cap bolt

3. Remove drain screw from each outer tube with open container under each drain hole.



1. Drain screw

4. After most of oil has been drained, slowly raise and lower outer tubes to pump out remaining oil.
5. Replace drain screws.

NOTE: _____
 Check gaskets, replace if damaged.

6. Pour specified amount of oil in to the inner tube through the upper end opening. Use Yamaha fork oil (20W, 30W). Select the weight of oil that suits local conditions and your preference (lighter for less damping; heavier for more damping).

Front Fork oil Capacity:
 116 ± 2 cc (3.92 ± 0.03 oz)

7. After filling, slowly pump the outer tubes up and down to distribute the oil.
8. Inspect O-ring on fork cap bolts and replace if damaged.
9. Replace fork cap bolts and torque to specification.

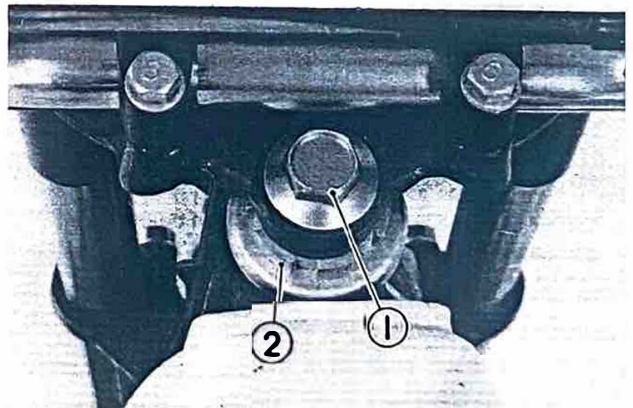
Fork cap torque:
 1.5 ~ 2.5 m-kg (11 ~ 18.1 ft-lb)

E. Steering

1. Steering head adjustment
 - a. Block machine up so that front wheel is off the ground.
 - b. Grasp the bottom of the forks and gently rock the fork assembly backward and forward, checking for looseness in the steering assembly bearings.



- c. If steering head needs adjustment, loosen steering fitting bolt.



1. Fitting bolt 2. Steering nut

- d. Using steering nut wrench, adjust steering head fitting nut until steering head is tight without binding when forks are turned.

NOTE: _____
Excessive tightening of this nut will cause rapid wear of ball bearings and races. Re-check for looseness and freedom of movement.

- e. Tighten steering fitting bolt in that order.

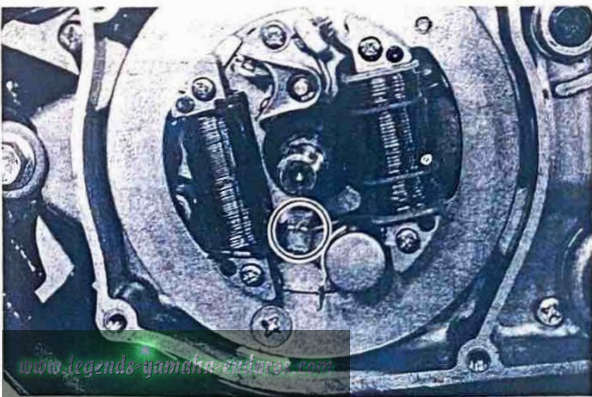
Fitting bolt torque:
5.0 ~ 8.0 m·kg (36 ~ 57 ft·lb)

NOTE: _____
After completing steering adjustment, make certain forks pivot from stop to stop without binding. If binding is noticed, repeat adjustment.

2-4. ELECTRICAL

A. Contact breaker point

1. Apply a few drops of light-weight machine oil or distributor lubricant to the point cam lubricator. Do not over-oil.



2. The ignition points can be lightly sanded with 400 ~ 600 grit sandpaper to remove corrosion. Place a piece of clean paper between the points, let them close, and remove the paper. Repeat until no residue shows. The paper may be dipped in lacquer thinner or point cleaning fluid to remove oil and sanding residue from point surfaces.

3. Point replacement should only be necessary when point gap exceeds maximum tolerance; when the points are severely pitted; or if the points become shorted or show faulty operation. Never bend points to achieve proper gap.

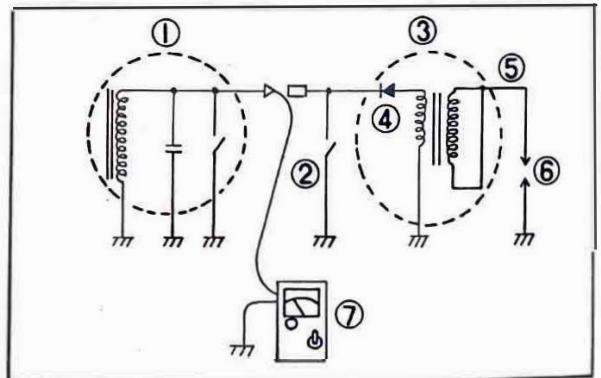
NOTE: _____
New points, when installed, must be cleaned and adjusted.

B. Ignition timing

Ignition timing must be set with dial gauge and point checker.

Proceed as follows:

1. Remove spark plug and screw Dial Gauge Stand in to spark plug hole.
2. Insert Dial Gauge into stand.
3. Remove left engine crankcase cover.
4. Switch on point checker and adjust to zero. Disconnect magneto harness from main harness. Connect red lead of Point Checker to black wire in wire harness coming from magneto.
5. Connect black lead of Point Checker to good ground. (unpainted surface of cylinder fin or unpainted crankcase bolt or screw.)

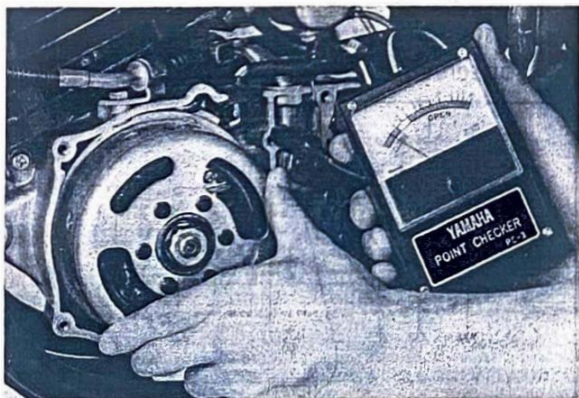


- | | |
|-----------------------|----------------------|
| 1. Flywheel magneto | 5. High tension cord |
| 2. Engine stop switch | 6. Spark plug |
| 3. Ignition coil | 7. Point checker |
| 4. Diode | |

6. Rotate magneto flywheel until piston is at top-dead-center (T.D.C.). Set the zero on dial gauge face to line up exactly with dial gauge needle. Tighten set screw on spark plug stand to secure dial gauge assembly. Rotate flywheel back and forth to be sure that indicator needle does not go past zero.
7. Starting at T.D.C., rotate flywheel clockwise until dial gauge reads approximately 3 needle turns before-top-dead-center (B.T.D.C.).
8. Slowly turn flywheel counterclockwise until dial gauge reads ignition advance setting listed in Specifications Table. At this time the point checker needle should swing from "CLOSED" to "OPEN" position, indicating the contact breaker (ignition points) have just begun to open.

**Ignition timing specifications
(B.T.D.C.):**

1.8 ± 0.15 mm
 (0.072 ± 0.006) in



9. Repeat steps 7. and 8. to verify point opening position. If points do not open within specified tolerance, they must be adjusted.
10. Adjust ignition points by barely loosening Phillips head screw before rechecking timing. Recheck timing by repeating steps 7 and 8.
11. When correct ignition timing has been accomplished, check maximum point gap

by turning flywheel until maximum point gap occurs. Measure point gap with thickness gauge.

Point gap

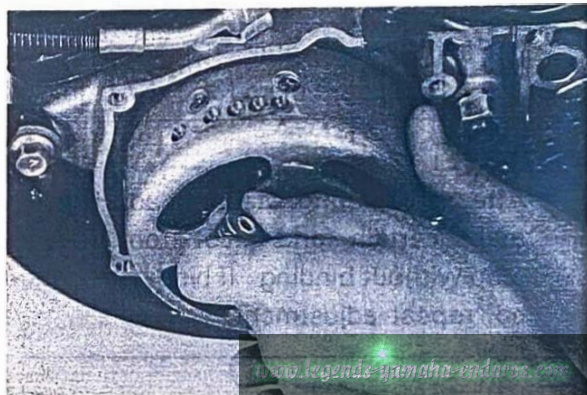
Normal: 0.35 mm (0.014 in)

Minimum:

0.30 mm (0.012 in)

Maximum:

0.40 mm (0.016 in)



NOTE:

If the maximum point gap is over tolerance the contact breaker assembly should be replaced. Do not attempt to bend the fixed point breaker to decrease maximum point gap. This will only result in point misalignment, difficulty in setting timing and premature point failure.

12. Remove dial gauge assembly and stand. Disconnect point checker and reconnect magneto wire harness. Replace crankcase cover.

C. Spark plug

The life of a spark 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 the rides, and recommend a hot, standard or cold plug type accordingly. It is actually economical to install new plugs often 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.

NOTE: _____

This information is a general guide only. It is rarely necessary to change to a different heat range spark plug. Often spark plug conditions are influenced by improper timing, dirty air filter, or long periods of engine idling. Check for these conditions before, changing the spark plug heat range.

2. Inspection

- a. Inspect and clean the spark plug at least once per month or every 500 ~ 1,000 km.
- b. Clean the electrodes of carbon and adjust the electrode gap.
- c. Be sure to use the proper reach plug as replacement to avoid overheating, fouling or piston damage.

Model	Spark plug type	Spark plug gap
DT100D	B-8ES	0.6~0.7 mm (0.012~0.016 in)

D. Battery

1. Checking

- a. If sulfation (white accumulations) occurs on plates due to lack of battery electrolyte, the battery should be replaced.
- b. If the bottom of the cells are filled with corrosive material falling off plates, the battery should be replaced.
- c. If the battery shows the following defects, it should be replaced.
 - 1) The voltage will not rise to a specific value even after long hours charging.
 - 2) No gassing occurs in any cell.
 - 3) The 6V battery requires a charging voltage of more than 8.4V in order to supply a current of 0.4A for 10 hours.

2. 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.

- a. Negligence in keeping battery topped off with distilled water.
- b. Battery being left discharged.
- c. Over-charging by rushing charge.
- d. Freezing.
- e. Filling with water or sulfuric acid containing impurities.
- f. Improper charging voltage/current on new battery.

Battery type	6V, 4AH
Electrolyte	Specific gravity: 1.26 Quantity: 200 cc
Initial charging current	0.25 Amperes/15 hours (New battery)
Re-charging current	0.4 Amperes/10 hours (or until specific gravity reaches 1.26)
Re-fill fluid	Distilled water to maximum level line
Re-fill period	Check once per month or more often as required

3. Storage

If the 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 charger.

- a. Recharge the battery.
- b. Store the battery in a cool, dry place, and avoid temperatures below 0°C.
- c. Recharge the battery before re-installation.

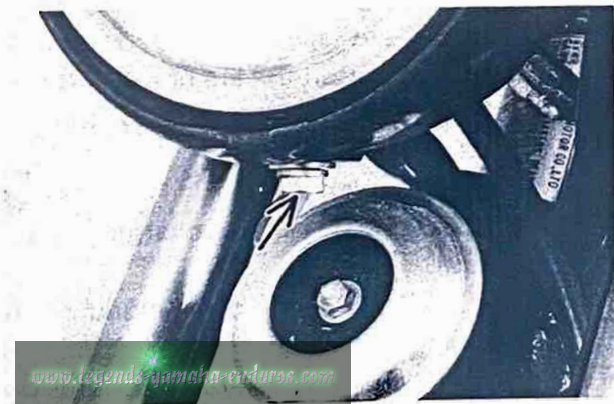
E. Headlight

1. Adjust horizontally as follows:

- a. Loosen the bolt holding the rim.

To adjust to the right; move the lens assembly to right side.

To adjust to the left; move the lens assembly to left side.



2. Adjust vertically as follows:

- a. Remove the headlight and loosen the headlight shell mounting nuts.
- b. Next, adjust vertically by moving the headlight body. When adjustment is complete hold the body in place, and tighten the two mounting nuts. Then refit the headlight body.

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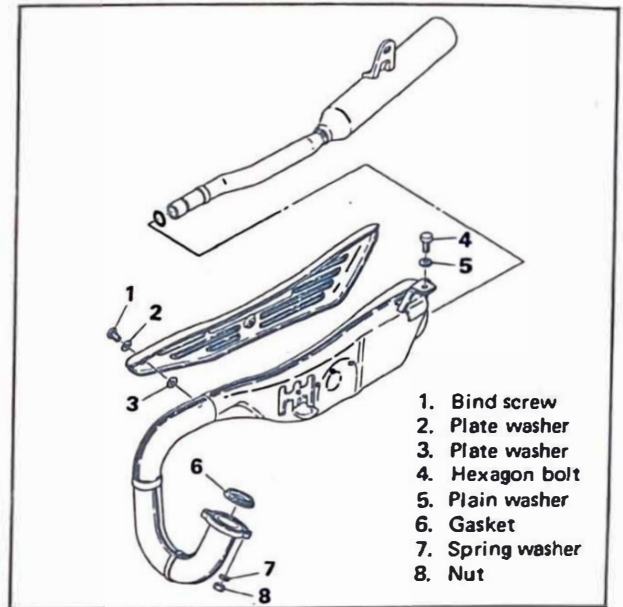
3-1. REMOVAL

A. Preparation for removal

1. Always clean engine before removal. Do not begin work until all proper tools are available. As parts are removed, clean them and place them in trays in order of disassembly.
2. Start the engine and warm it for a few minutes. Turn off and drain transmission oil.

B. Fuel Tank Assembly

1. Turn fuel petcock to the "OFF" position and disconnect fuel pipe. Remove the bolt holding the rear of the fuel tank and remove the fuel tank.



D. Wiring and cables

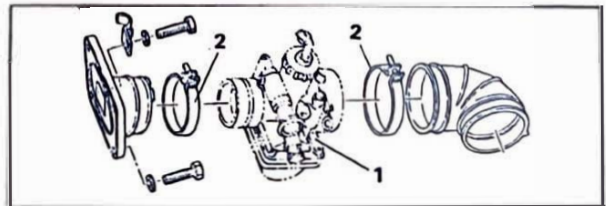
1. Remove the spark plug cap, oil pump cover, oil pipe at oil pump and delivery pipe at carburetor.

NOTE: _____
Pull oil pipe through oil pipe holder and plug the end so oil will not run out of oil tank..

2. Remove the pump wire from pulley seat
3. Remove the clutch cable from the engine.

E. Carburetor

1. Loosen clamps on each end of the carburetor.
2. Note the location and routing of carburetor tubes and carefully remove the carburetor.



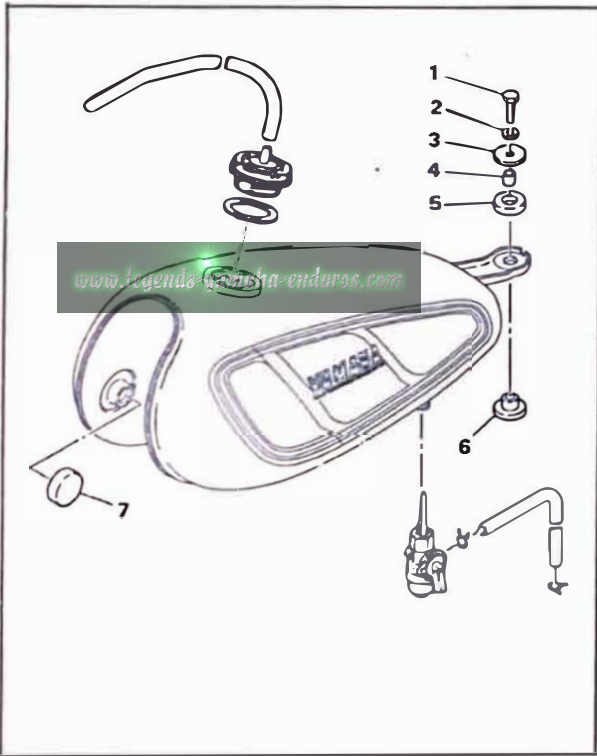
1. Carburetor 2. Clamp

F. Change pedal

Remove bolt securing change pedal. Remove change pedal. (shift lever)

G. Flywheel magneto

1. Remove the flywheel securing nut (use magneto holder.)
2. Install flywheel puller on flywheel and tighten it.



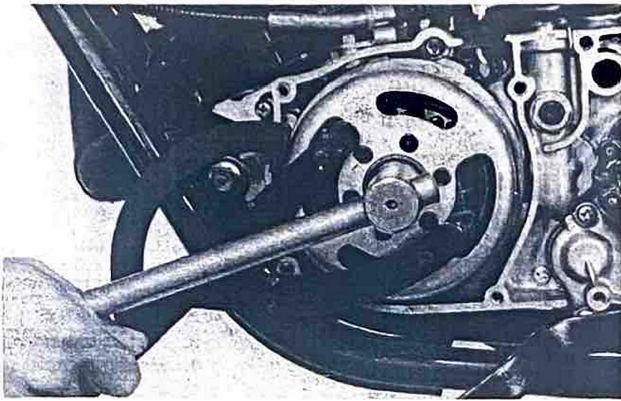
1. Hexagon bolt
2. Spring washer
3. Plate washer
4. Collar
5. Gromet
6. Damper
7. Damper

C. Muffler

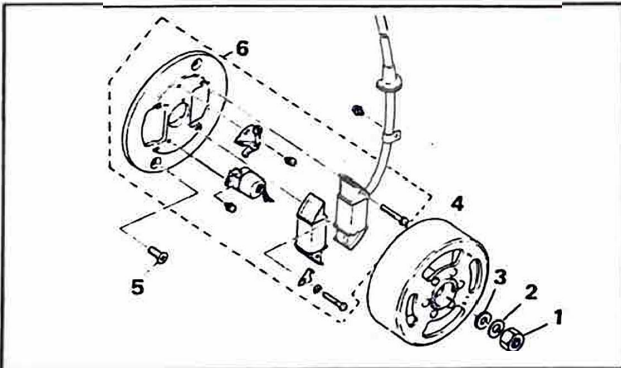
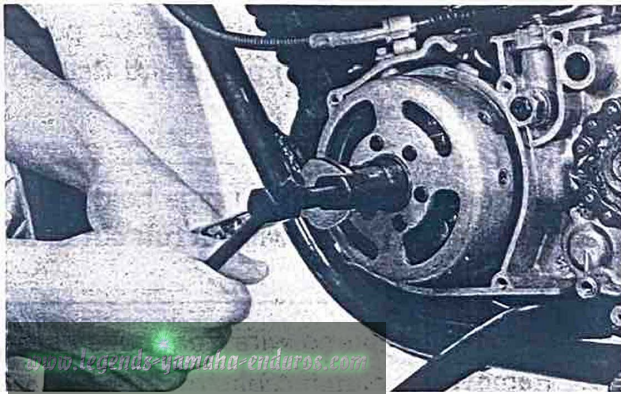
1. Remove exhaust pipe assembly.

NOTE: _____

The puller body has lefthand thread



3. While holding puller body, tighten push bolt. This will pull flywheel off the tapered end of the crankshaft.



- | | |
|------------------|------------------------------------|
| 1. Securing nut | 4. Rotor assembly |
| 2. Spring washer | 5. Flat head screw |
| 3. Plate washer | 6. Flywheel backing plate assembly |

H. Drive chain

1. Bend down lock tab, apply rear brake and loosen sprocket securing nut.
2. Remove the chain.

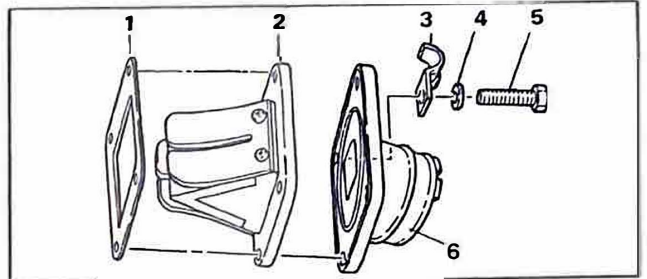
I. Removal

Remove the engine mounting bolts and remove engine from right side of frame.

3-2. DISASSEMBLY

A. Reed valve assembly

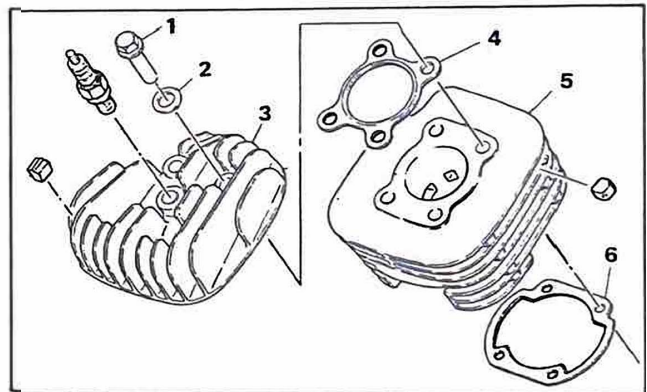
Remove reed valve assembly holding bolts (4), carburetor joint and reed valve assembly.



- | | | |
|------------------------|------------------|---------------------|
| 1. Valve seat packing | 4. Spring washer | 6. Carburetor joint |
| 2. Reed valve assembly | 5. Hexagon bolt | |
| 3. Wire holder | | |

B. Cylinder head and cylinder

1. Remove cylinder head holding bolts. Remove cylinder head and cylinder.



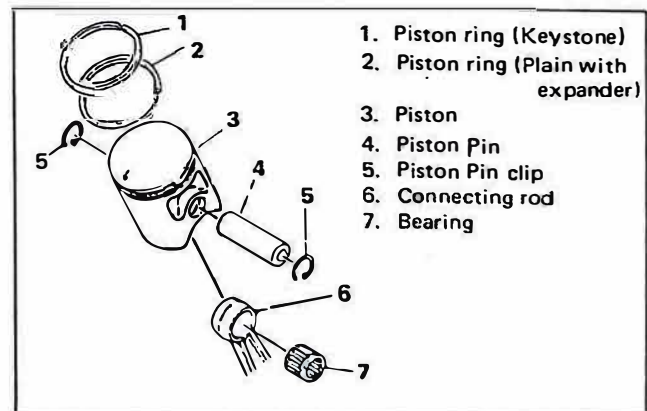
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|-------------------------------|-------------------------|
| 1. Cylinder head holding bolt | 4. Cylinder head gasket |
| 2. Washer | 5. Cylinder |
| 3. Cylinder head | 6. Cylinder base gasket |

C. Piston pin and piston

1. Remove one piston pin clip from piston.

NOTE: _____

Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.



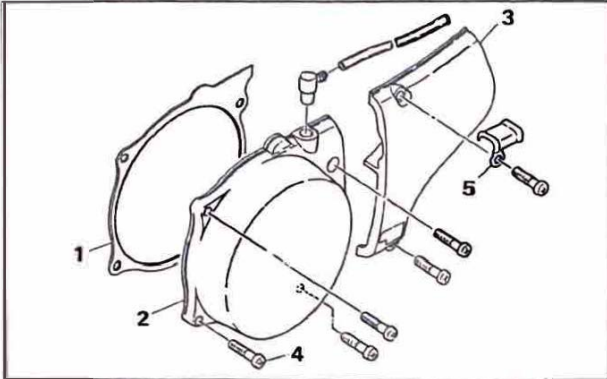
- | |
|--------------------------------------|
| 1. Piston ring (Keystone) |
| 2. Piston ring (Plain with expander) |
| 3. Piston |
| 4. Piston Pin |
| 5. Piston Pin clip |
| 6. Connecting rod |
| 7. Bearing |

D. Kick crank (kick starter)

The bolt must be completely removed to remove the kick crank. (kick starter)

E. Crankcase cover, right

1. Remove left crankcase cover screws and covers.

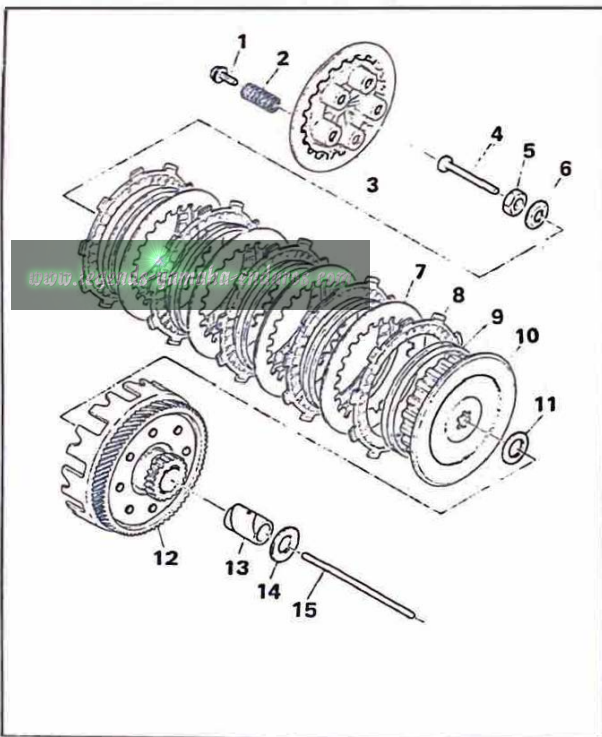


- | | |
|-------------------------|----------------------|
| 1. Gasket | 4. Panhead screw (6) |
| 2. L. Crankcase cover 1 | 5. Clamp |
| 3. L. Crankcase cover 2 | |

2. Remove right crankcase cover screws and cover. The cover can be removed without removing the Autolube pump.

F. Clutch assembly and primary drive gear

1. Remove clutch springs, pressure plate, all clutch plates, and push rod 1.

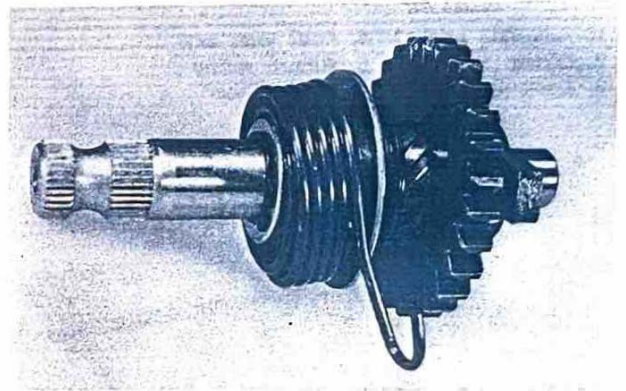


- | | | |
|-----------------------|-------------------|----------------------------------|
| 1. Bolt with washer | 6. Washer | 11. Plate washer |
| 2. Compression spring | 7. Clutch plate | 12. Primary driven gear complete |
| 3. Pressure plate | 8. Friction plate | 13. Spacer |
| 4. Push rod 1 | 9. Cushion ring | 14. Plate washer |
| 5. Nut | 10. Clutch boss | 15. Push rod 2. |

2. Install clutch holding tool on clutch boss. Remove locknut and washers.
3. Loosen primary drive gear by first placing a folded rag (at least 16 layers) between the teeth of the primary gears to lock them. If an impact-wrench is used, be careful to not allow the connecting rod to bounce around.
4. Remove primary drive gear (use puller if necessary) primary driven gear, and oil seal retainer.

G. Kick axle assembly

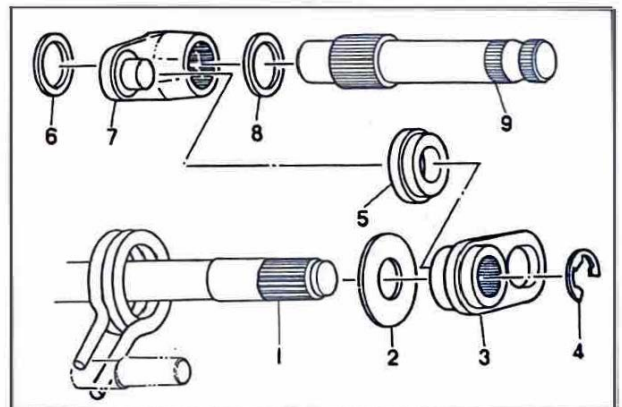
Remove the kick axle as an assembly.



H. Change shaft assembly

The DT100D uses two change shafts and two interconnecting levers.

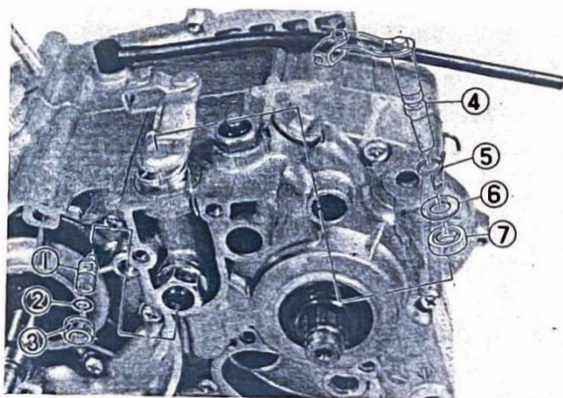
Remove circlips and indicated components on right side of engine. Lift spring loaded arm on right side of engine and pull out change shaft assembly.



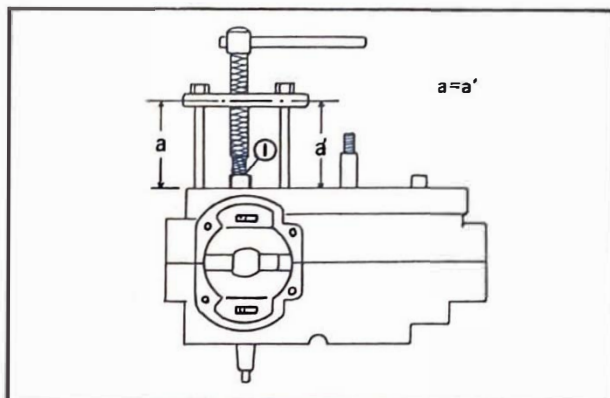
- | | |
|--------------------------|------------------------|
| 1. Change shaft assembly | 5. Change lever roller |
| 2. Plate washer | 6. Shim |
| 3. Change lever 4 | 7. Change lever 3 |
| 4. Circlip | 8. Shim |
| | 9. Change shaft 2 |

I. Clutch push lever axle

1. Loosen locknut and remove adjusting screw. Pull push lever axle up to remove.



- | | |
|--------------------|--------------------|
| 1. Adjusting screw | 4. Push lever axle |
| 2. O-ring | 5. Return spring |
| 3. Locknut | 6. Plate washer |
| | 7. Oil seal |

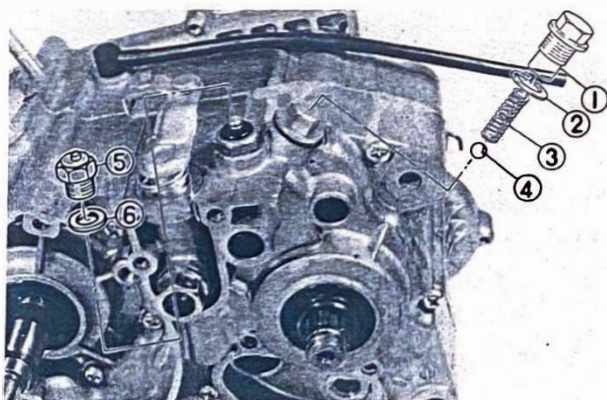


1. washer

CAUTION:

Use a soft hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface. Work slowly and carefully. Make sure the case halves separate evenly. If one end "hangs up", take pressure off the push screw, realign and start over. If the halves are reluctant to separate, check for a remaining case screw or fitting. Do not force.

J. Shift cam stopper and Neutral switch



- | | |
|-------------------|----------------------------|
| 1. Spring screw | 4. Ball |
| 2. Gasket | 5. Neutral switch assembly |
| 3. Neutral spring | 6. Gasket |

K. Crankcase

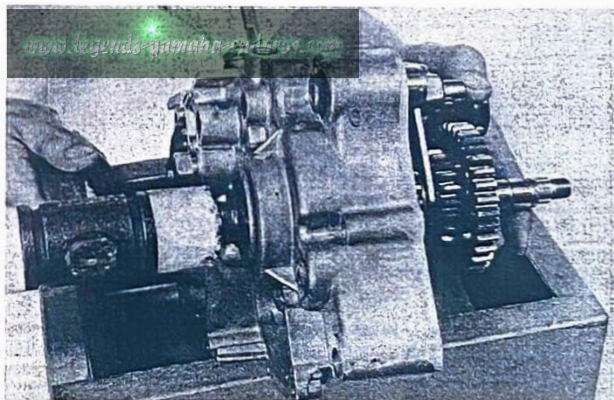
1. Working in a crisscross pattern, loosen 12 Panhead screws 1/4 turn each. Remove them after all are loosened.
2. Install crankcase separating tool as shown.

NOTE:

Fully tighten the tool securing bolts, but make sure the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.

L. Transmission

Tap lightly on the transmission drive shaft with a soft hammer to remove.

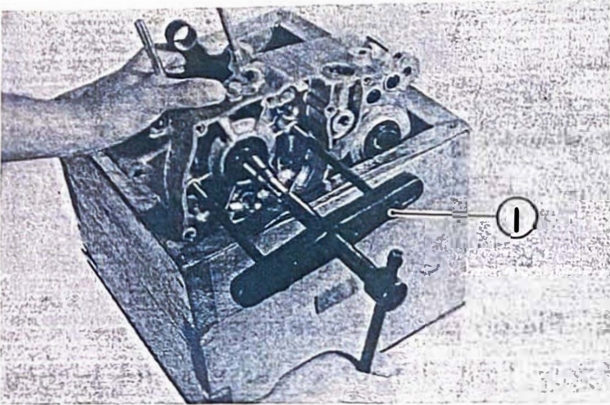


NOTE:

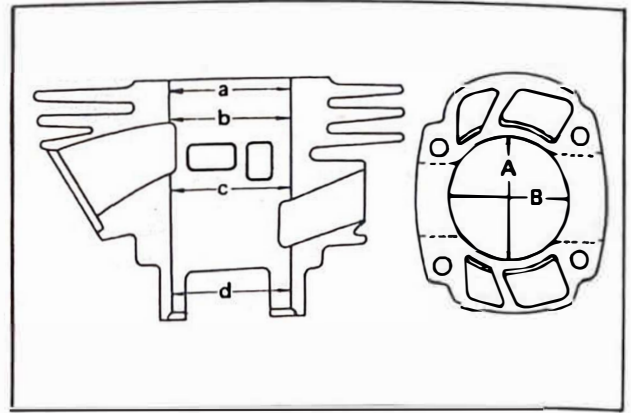
Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks. Further disassembly of the transmission can be accomplished after studying the parts list illustrations, or section 3-4.

M. Crankshaft

Remove crankshaft assembly with crankcase separating tool.



1. Crankcase separating tool



Maximum allowable taper:

0.05 mm (0.002 in)

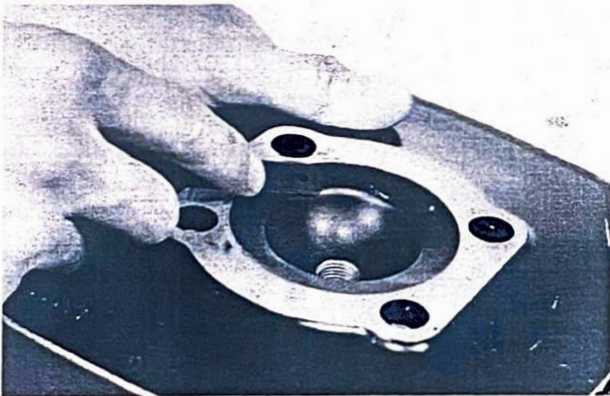
Maximum allowable out-of-round:

0.01 mm (0.0004 in)

3-3. INSPECTION AND REPAIR

A. Cylinder head

1. Using a rounded scraper, remove carbon deposits from combustion chamber.



2. Place on a surface plate. There should be no warpage. Correct by re-surfacing as follows:

Place 400 ~ 600 grit wet sandpaper on surface plate and re-surface head using a figure-eight sanding pattern.



C. Piston

1. Using an outside micrometer, measure piston diameter. The piston is cam-ground and tapered. The only measuring point is at right angles to the piston pin holes, about 10 mm (0.4 in) from the bottom of the piston. Compare piston diameter to cylinder bore measurements.

Piston maximum diameter subtracted from minimum cylinder diameter gives piston clearance. If beyond tolerance, hone cylinder to tolerance or bore to next oversize and fit oversize piston.

Piston clearance:

Maximum:

0.040 mm (0.0016 in)

Minimum:

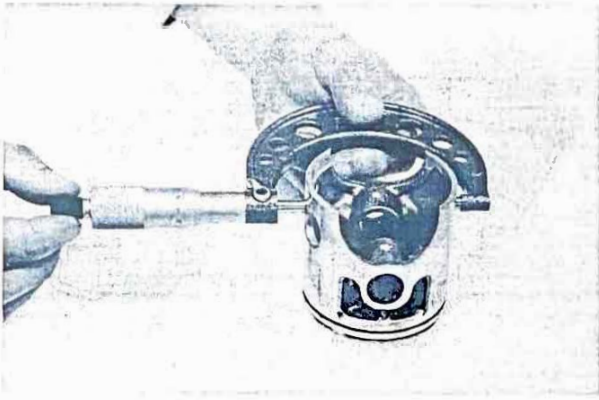
0.035 mm (0.0014 in)

Maximum wear limit:

0.1 mm (0.004 in)

B. Cylinder

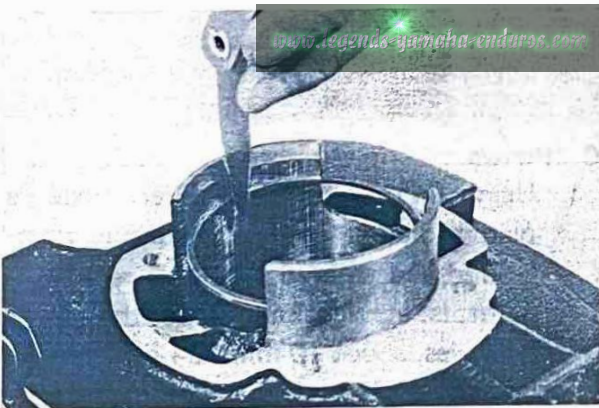
1. Using a cylinder gauge set to standard bore size, measure the cylinder. Measure front-to-rear and side-to-side at top, center and bottom just above exhaust port. Take minimum and maximum measurements. If over tolerance and not correctable by honing, rebore to next over-size.



D. Piston rings

1. Check rings for scoring. If any severe scratches are noticed, replace set.
2. Insert each ring into cylinder. Push down approximately 20 mm (0.8 in) using piston crown to maintain right angle to bore. Measure installed end gap. If beyond tolerance, replace set.

	Minimum	Maximum
Top and 2nd ring end gap, installed	0.3 mm (0.012 in)	0.5 mm (0.02 in)



3. With rings installed in grooves, insert feeler gauge between ring side and groove. If beyond tolerance, replace ring and/or piston, as required.

1st ring groove clearance:

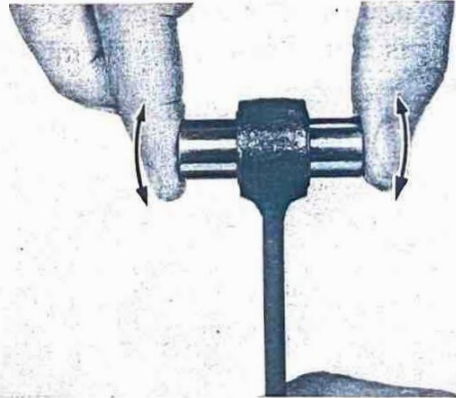
Minimum: 0.03 mm (0.0012 in)
Maximum: 0.05 mm (0.0020 in)

2nd ring groove clearance:

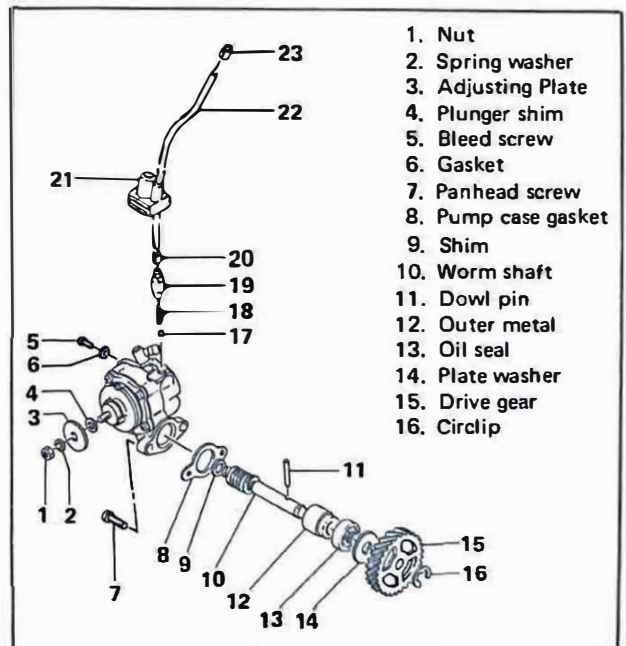
Minimum: 0.03 mm (0.0012 in)
Maximum: 0.07 mm (0.0028 in)

E. Piston pin and bearing

Apply light film of oil to pin and bearing surfaces. Install in connecting rod small end. Check for play. There should be no noticeable vertical play. If play exists, check connecting rod small end for wear. Replace pin, and bearing or all as required.



F. Autolube pump



1. Troubleshooting and repair

- a. Wear or an internal malfunction may cause pump output to vary from the factory setting. This situation is, however, extremely rare. If output is suspected, check the following:
 - 1) Obstructions in delivery line to pump or from pump to cylinder.
 - 2) Worn or damaged pump body seal or crankcase cover seal.
 - 3) Missing or improperly installed check ball or spring.
 - 4) Improperly installed or routed oil delivery line(s).
 - 5) Loose fitting(s) allowing air to enter pump and/or engine.
- b. If all inspections show no obvious problems and output is still suspect, connect a delivery line from the pump to a graduated container (cc). Keep the delivery line short.
 Rotate the pump bleed wheel while counting pump plunger strokes.
 If output is not to specification, replace pump assembly.
 Autolube Pumpe Specifications:

Pump output at 200 strokes	Maximum throttle		Minimum throttle	
	Min.	Max.	Min.	Max.
	4.6cc	5.15cc	0.50cc	0.63cc

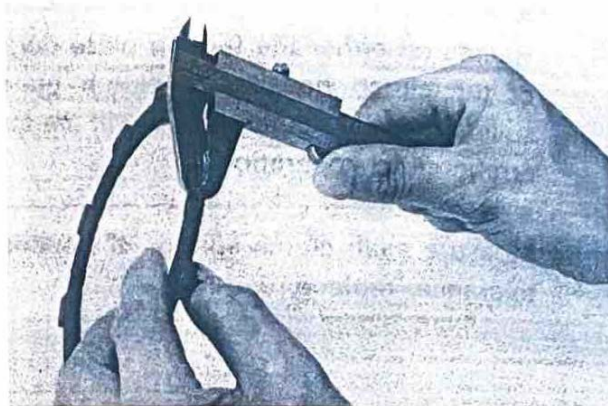
Pump Stroke length	Maximum throttle		Minimum throttle	
	Min.	Max.	Min.	Max.
	1.85mm	2.05mm	0.20mm	0.25mm

See Chapter 2 for pump stroke inspection.

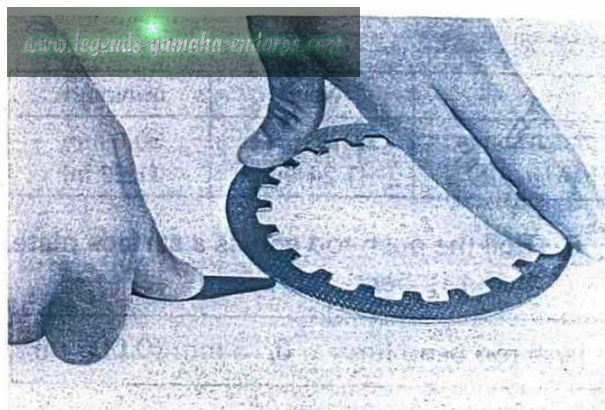
G. Clutch

1. Measure the friction plates at three or four points. If their minimum thickness exceeds tolerance, replace.

	New	Wear limit
Friction plate thickness	3.0 mm (0.12 in)	2.7 mm (0.11 in)



2. Check each clutch plate for signs of heat damage and warpage. Place on surface plate (plate glass is acceptable) and use feeler gauge as illustrated. If warpage exceeds tolerance, replace.



Clutch plate warpage allowance:
0.05 mm (0.002 in) maximum

NOTE:

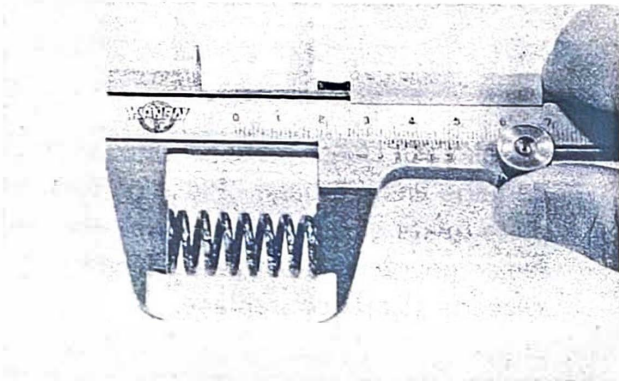
For optimum performance, if any friction or clutch plate requires replacement, it is advisable to replace the entire set.

3. Thoroughly clean the primary driven gear assembly and spacer. Apply a light film of oil on the bushing surface and spacer. Fit the spacer into the bushing. It should be a smooth, thumb-press fit. The spacer should rotate smoothly within the bushing.
4. Check splines on clutch boss for signs of galling. If moderate, deburr. If severe, replace.

NOTE: _____

Galling on either the friction plate dogs of the clutch housing or clutch plate splines of the clutch boss will cause erratic clutch operation.

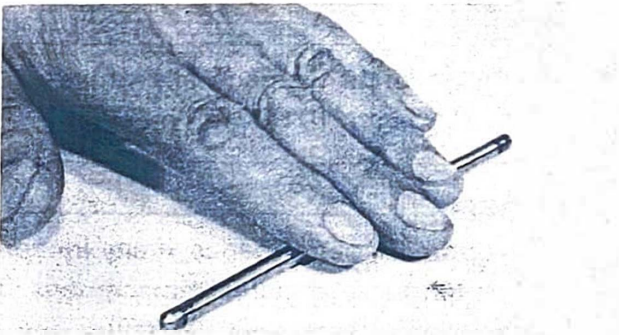
5. Measure each clutch spring. If beyond tolerance, replace.



	New	Minimum
Clutch spring free length	31.6 mm (1.24 in)	30.6 mm (1.20 in)

6. Roll the push rod across a surface plate. If rod is bent, replace.

Push rod bend limit : 0.15 mm (0.006 in)



H. Primary drive

1. If primary drive gears exhibit excessive noise during operation, gear lash may be incorrect. Numbers are scribed on the side of each gear. Add these numbers. If their total exceeds tolerance, replace with a numbered gear that will bring the total within specification.

NOTE: _____

This procedure is rarely required. However, if a gear must be replaced due to damage, it is always advisable to pay

strict attention to the back lash numbers during replacement.

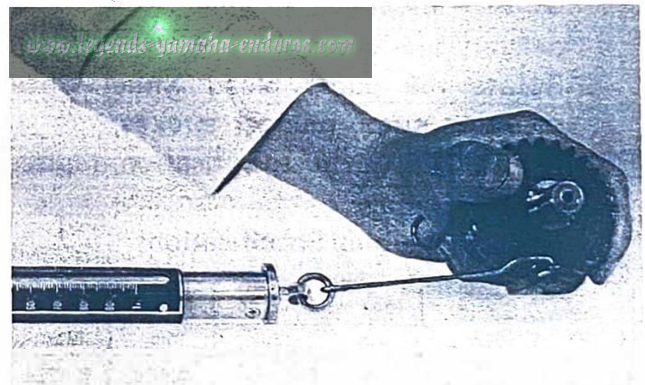
Primary reduction gear back lash			
136 ± 1 (B-B, C-C, D-D)			
Back lash number			
	B	C	D
Drive	80 81	82	83
Driven	56 55	54	53 52

I. Kick starter mechanism

1. Kick clip

- a. The pressure of the kick clip is 2.2 kg (4.85 lb).

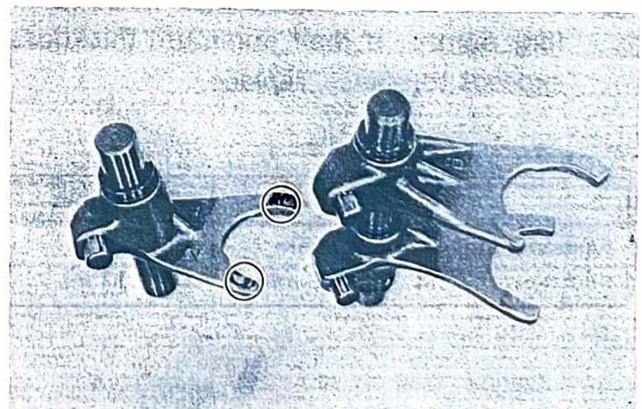
If above pressure is too strong, spring wear and kick starter slipping will result. If it is too weak, the same slippage will occur particularly at low temperatures. Do not try to bend the clip.



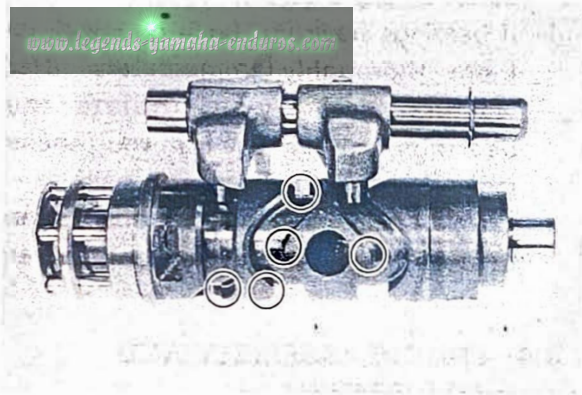
- b. Check the clip for damage and wear, and determine whether or not, it should be replaced.

J. Transmission

1. Inspect each shift fork for signs of galling on gear contact surfaces. Check for bending. Make sure each fork slides freely on its guide bar.



2. Roll the guide bars across a surface plate. If any bar is bent, replace.
3. Check the shift cam grooves for signs of wear or damage. If any profile has excessive wear and/or any damage, replace cam.
4. Check the cam followers on each shift fork for wear. The follower should fit snugly into its seat in the shift fork, but should not be overly tight. Check the ends that ride in the grooves in the shift cam. If they are worn or damaged, replace.

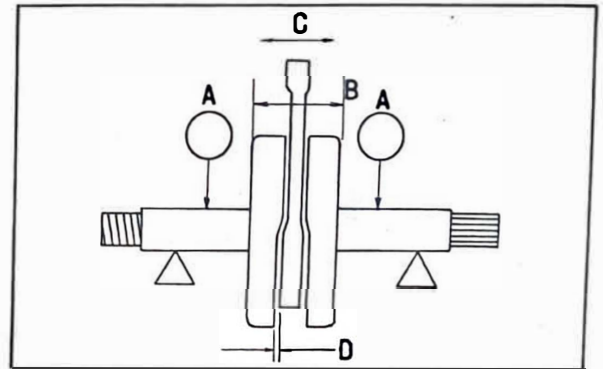


5. Check shift cam dowel pins and side plate for looseness, damage, or wear. Repair as required, or replace.
6. Check the transmission shafts using a centering device and dial gauge. If any shaft is bent, replace.
7. Carefully inspect each gear. Look for signs of obvious heat damage (blue discoloration). Check the gear teeth for signs of pitting, galling, or other extreme wear. Replace as required.
8. Check to see that each gear moves freely on its shaft.
9. Check to see that all washers and clips are properly installed and undamaged. Replace bent or loose clips and bent washers.
10. Check to see that each gear properly engages its counterpart on the shaft. Check the mating dogs for rounded edges, cracks, or missing portions. Replace as required.

K. Crankshaft

1. The crankshaft requires the highest degree of accuracy in engineering and servicing of all the engine parts.
2. The crankshaft is susceptible to wear and therefore the crank bearings must be inspected with special care.
3. Check crankshaft components by the chart.

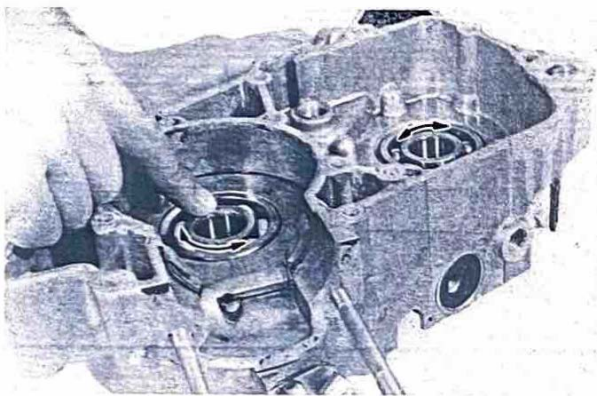
Check connecting rod axial play at small end (to determine the amount of wear of crank pin and bearing at large end).



Deflection tolerance (A)		Flywheel width (B)	Rod clearance			
			Axial (C)		Side (D)	
Left side	Right side		New	Max.	Min.	Max.
0.03 (0.0012)	0.03 (0.0012)	50 ^{-0.05} _{-0.10} 1.97 ^{-0.002} _{-0.004}	0.8 ~ 1.0 (0.032 ~ 0.04)	2.0 (0.08)	0.4 ~ 0.5 (0.016 ~ 0.020)	0.1 (0.004)

L. Bearings and oil seals

1. After cleaning and lubricating bearings, rotate inner race with a finger. If rough spots are noticed, replace the bearing.



NOTE:

Bearings(s) are most easily removed or installed if the cases are first heated to approximately 90° ~ 120°C (194° ~ 248°F). Bring the case up to proper temperature slowly. Use an oven. cracks, damage, etc.

2. Check oil seal lips for damage wear. Replace as required.
3. Always replace crankshaft oil seals whenever the crankshaft is removed.
4. Installation
Install bearing (s) and oil seal (s) with their manufacture marks or numbers facing outward.

M. Crankcase

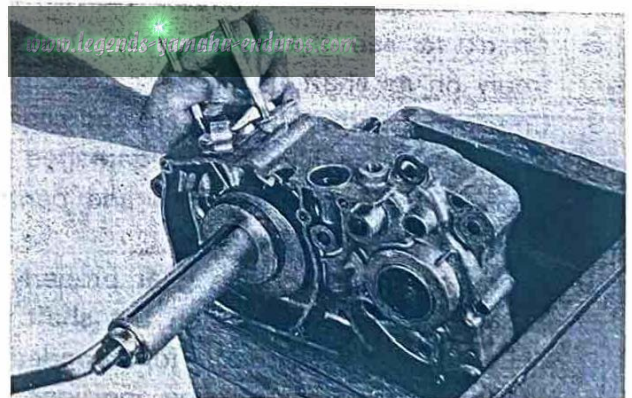
1. Visually inspect case halves for any cracks, damage, etc.
Check oil seal lips for damage and wear. Replace as required.

2. If bearings have been removed, check their seats for signs of damage (such as the bearing spinning in the seat, etc.).
3. Check oil delivery passages in transfer ports for signs of blockage.
4. If bearings have not been removed, oil them thoroughly immediately after washing and drying. Rotate the bearings, checking for roughness indicating damaged races or balls.
5. Check needle bearing(s) in transmission section for damage. Replace as required.

3-4. ENGINE ASSEMBLY AND ADJUSTMENT

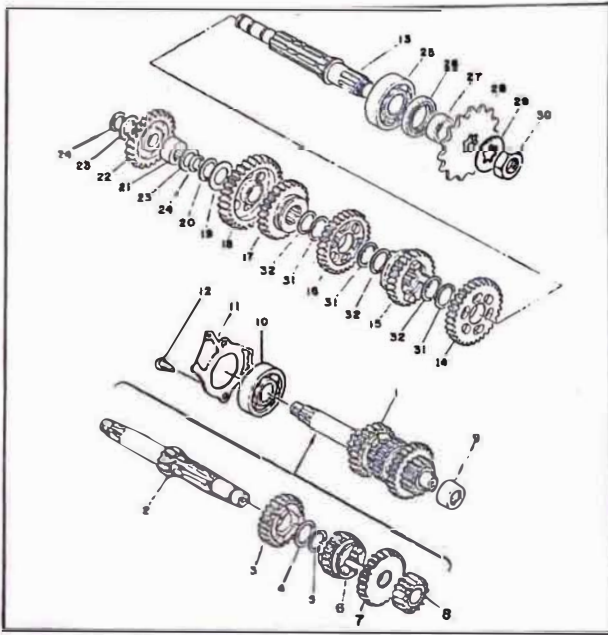
A. Crankshaft installation

1. After all bearings and seals have been installed in both crankcase halves, install crankshaft.
2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the handle of the installing tool with the other.

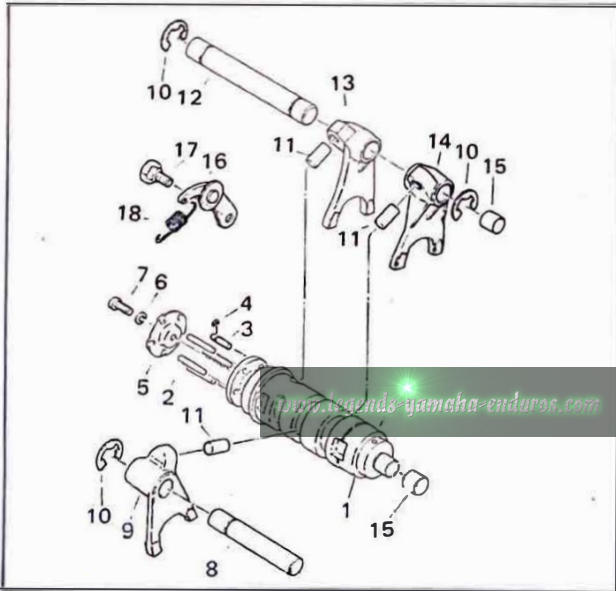


B. Transmission and shifter installation

1. Check to see that all parts move freely and that all loose shims are in place. Make sure all shafts are fully seated.



- | | |
|-------------------------|---------------------|
| 1. Main axle comp | 17. 4th wheel gear |
| 2. Main axle | 18. 1st wheel gear |
| 3. 4th pinion gear | 19. Drive axle shim |
| 4. Plate, washer | 20. Circlip |
| 5. Circlip | 21. Bearing |
| 6. 3rd pinion, gear | 22. Kick idle gear |
| 7. 5th pinion gear | 23. Main axle shim |
| 8. 2nd pinion gear | 24. Circlip |
| 9. Bearing | 25. Bearing |
| 10. Bearing | 26. Oil seal |
| 11. Bearing cover plate | 27. Collar |
| 12. Panhead screw | 28. Drive sprocket |
| 13. Drive axle | 29. Lock washer |
| 14. 2nd wheel gear | 30. Nut |
| 15. 5th wheel gear | 31. Plate washer |
| 16. 3rd wheel gear | 32. Circlip |



- | | |
|-------------------------|--------------------------|
| 1. Shift cam | 10. Circlip |
| 2. Dowel pin | 11. Pin |
| 3. Pin | 12. Shift fork guide bar |
| 4. Circlip | 13. Shift fork 3 |
| 5. Side plate | 14. Shift fork 1 |
| 6. Spring washer | 15. Blind plug |
| 7. Panhead screw | 16. Stopper lever ass'y |
| 8. Shift fork guide bar | 17. Bolt |
| 9. Shift fork 2 | 18. Tension spring |

C. Crankcase

1. Apply YAMAHA BOND #4 to the mating surfaces of both case halves.

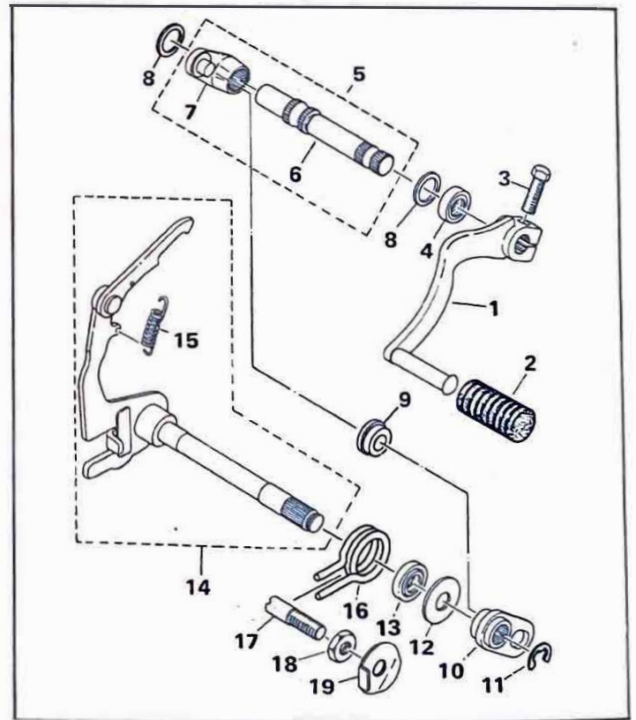
NOTE:

- a. Do not tap on machined surface or end of crankshaft.
- b. Before installing the crankshaft, check the crankshaft O-ring for damage.

2. After reassembly, apply a liberal coating of two-stroke oil to the crank pin and bearing and into each crankshaft bearing oil delivery hole.
3. Check crankshaft and transmission shafts for proper operation and freedom of movement.

D. Change shaft assembly

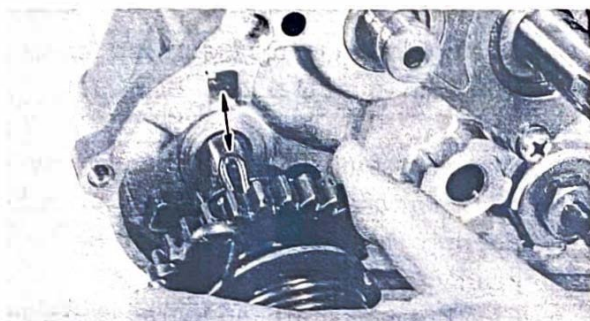
1. Take special care so that all parts are installed correctly. Refer to the illustrations.



- | | |
|-------------------------|------------------------|
| 1. Change pedal | 11. Circlip |
| 2. Change pedal cover | 12. Plate washer |
| 3. Hexagon bolt | 13. Oil seal |
| 4. Oil seal | 14. Change shaft ass'y |
| 5. Change shaft 2 ass'y | 15. Torsion spring |
| 6. Change shaft 2 | 16. Torsion spring |
| 7. Change lever 3 | 17. Adjusting screw |
| 8. Shim | 18. Screw nut |
| 9. Change lever roller | 19. Lock washer |
| 10. Change lever 4 | |

E. Kick starter assembly

1. While keeping the kick stopper upwards, engage the kick axle return spring with the slot on the end of the kick axle.



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F. Kick idle and primary drive gears

Install kick idle gear and primary drive gear.

NOTE:

Tighten primary drive gear securing nut after clutch assembly is installed.

Primary drive gear nut torque:
7.0 ~ 9.0 m-kg
(50 ~ 64 ft-lb)

G. Clutch

Clutch lock nut torque:
7.0 ~ 8.0 m-kg
(50 ~ 57 ft-lb)

NOTE:

Install all parts with a coat of heavy motor oil on their mating surfaces.

H. Crankcase cover, right

While properly engaging crankshaft and oil pump worm shaft, install crankcase cover (right).

I. Piston

NOTE:

Take care during installation to avoid damaging the piston skirts against the crankcase as they cylinder is installed. Note the two induction holes in the piston skirt. These must be to the rear during installation.

NOTE:

Make sure the rings are properly positioned.

J. Cylinder and cylinder head

Install cylinder and head with new base gasket (cylinder gasket) and head gasket.

3-5. MOUNTING

Install engine mounting bolts and nuts with proper tightening torque.

Bolt size	Tightening Torque
10 mm	3.0 ~ 4.8 m-kg (22 ~ 33.6 ft-lb)
8 mm	2.2 ~ 3.0 m-kg (16 ~ 22 ft-lb)

Drive sprocket nut torque:
7.0 ~ 9.0 m-kg
(50 ~ 64 ft-lb)

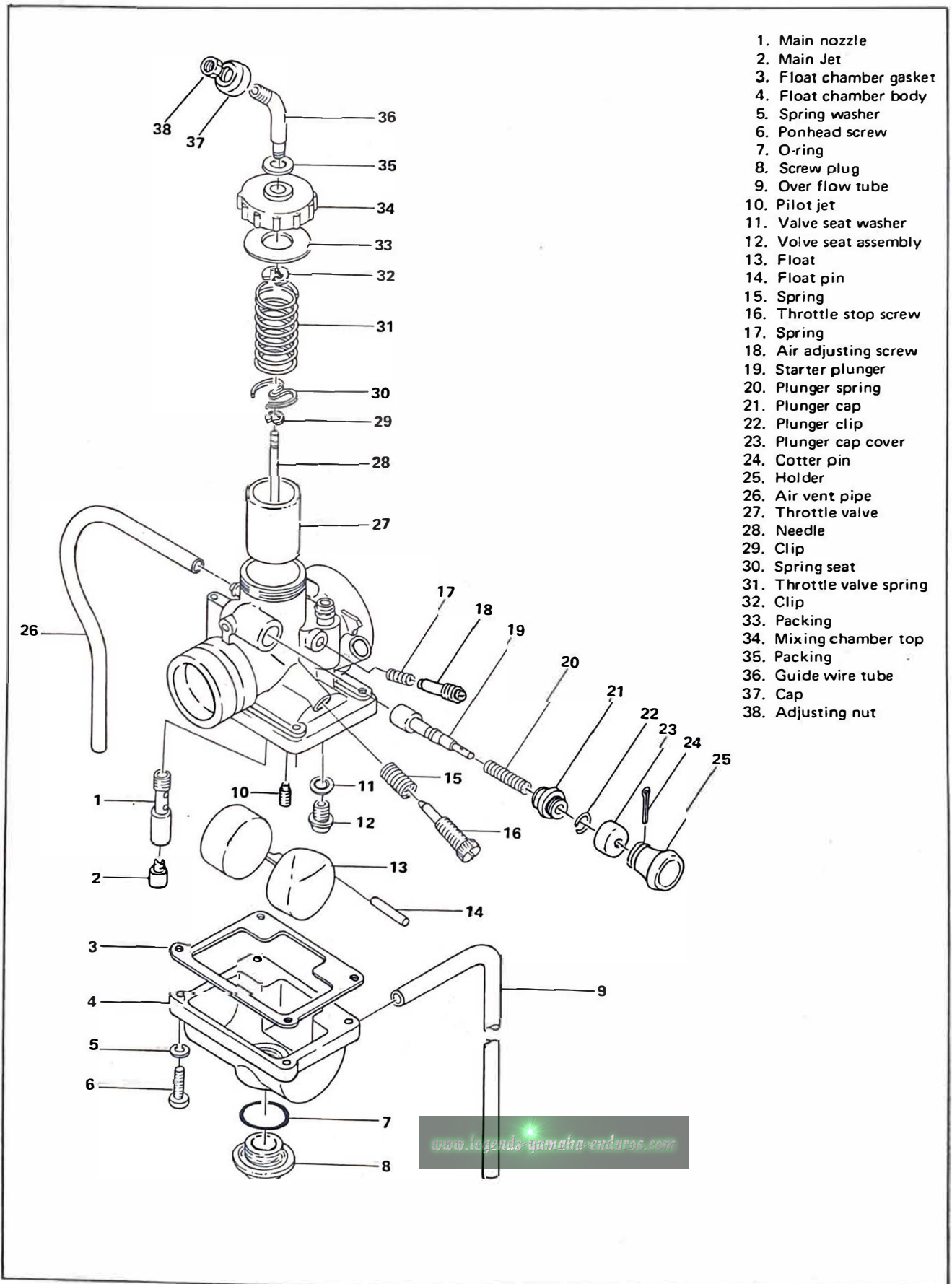
Flywheel nut torque:
7.0 ~ 7.5 m-kg
(50 ~ 54 ft-lb)

CHAPTER 4. CARBURETION

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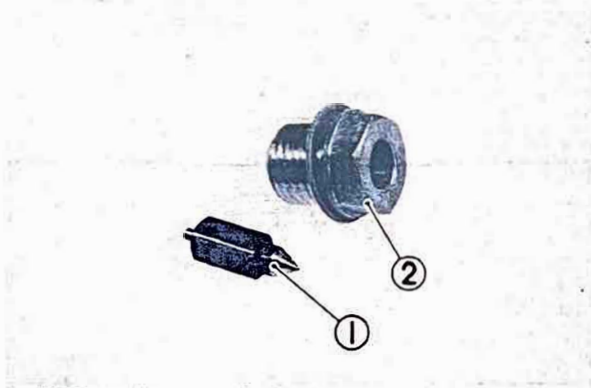


4-1. CARBURETOR



A. Inspection

1. Examine carburetor body and fuel passages. If contaminated, wash carburetor in petroleum-based solvent. Do not use caustic carburetor cleaning solutions. Blow out all passages and jets with compressed air. (New use compressed air with floats installed.)
2. Examine condition of floats. If floats are leaking or damaged, they should be replaced.
3. Inspect inlet needle valve and seat for wear or contamination. Replace these components as a set.

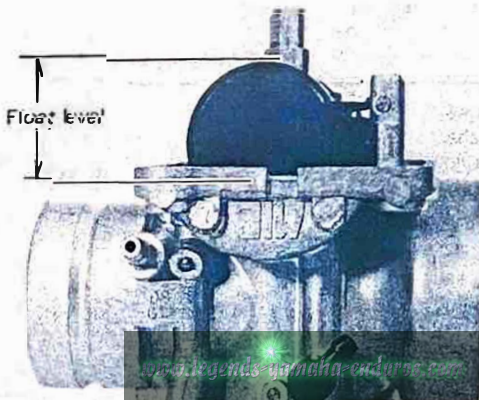


1. Float needle 2. Seat

B. Adjustment

1. Float level

Measure the distance from the bottom of the float to the float bowl gasket surface. Bend the tang on the float arm if any float level adjustment is necessary. Both floats must be at the same height. If the fuel level is too high, a rich air/fuel mixture will occur. If too low, a lean mixture will result.

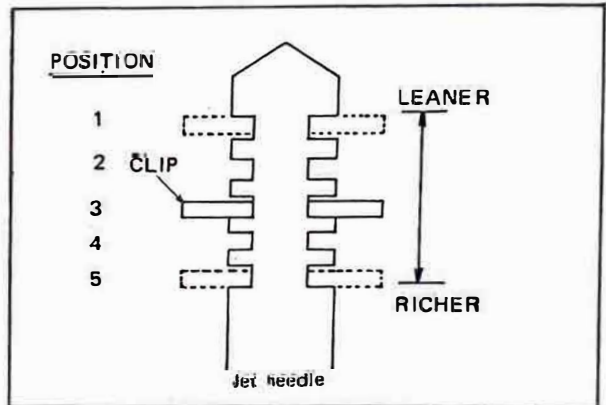


Float level:

$26.0 \pm 1.0 \text{ mm (1.02} \pm 0.04 \text{ in)}$

2. Jet needle

The mid-range air/fuel supply is affected by the position of the needle in the needle jet. If it is necessary to alter the mid-range air/fuel mixture characteristics of the machine, the jet needle position may be changed. Move the jet needle up for a leaner condition or toward the bottom position for a richer condition.



4-2. REED VALVE ASSEMBLY

A. Inspection

1. Inspect rubber intake manifold for signs of weathering, or other deterioration, deterioration.
2. Inspect reed petals for signs of fatigue cracks. Reed petals should fit flush or nearly flush against neoprene seats. If in doubt as to sealing ability, apply suction to carburetor side of assembly. Leakage should be only slight.
3. The valve stopper controls the movement of the valve. Check clearance "a".

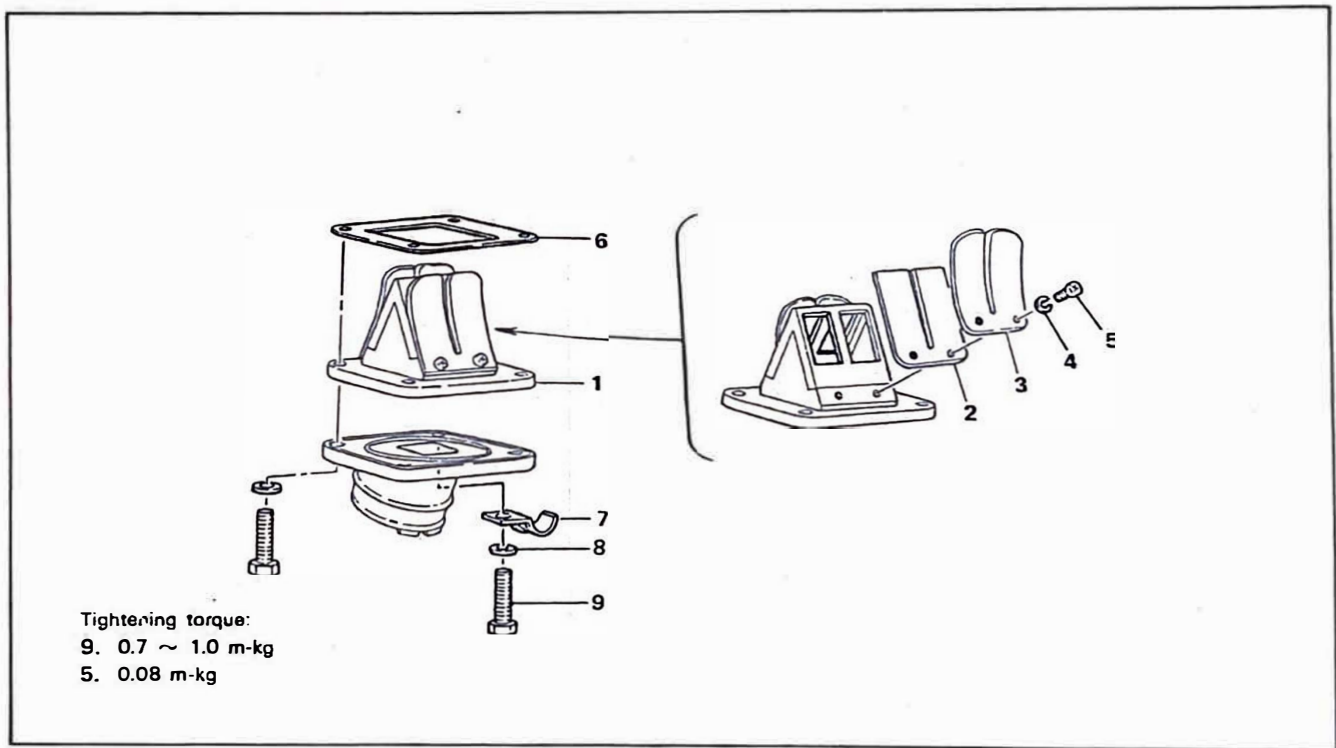
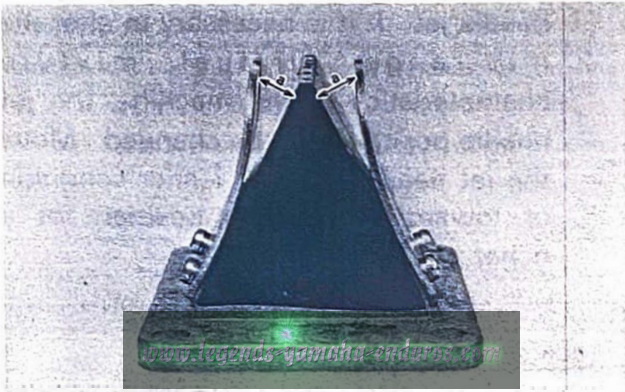
Standard value "a":

$7.0 \pm 0.2 \text{ mm}$

$(0.276 \pm 0.0079 \text{ in})$

If it is 0.5 mm more or less than specified, replace the valve stopper.

The curvature of the reed valve stopper greatly affects engine output and durability of the reed valve. Never attempt to bend the stopper.



Tightening torque:
9. 0.7 ~ 1.0 m·kg
5. 0.08 m·kg

- 1. Reed valve assembly
- 2. Reed valve
- 3. Reed valve stopper

- 4. Spring washer
- 5. Panhead screw
- 6. Valve seat packing

- 7. Clamp
- 8. Washer
- 9. Fitting bolt

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5

5-1. WHEELS

A. Axles

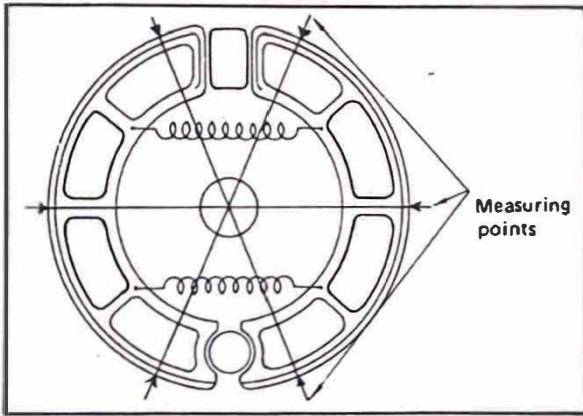
Remove any corrosion from axle with emery cloth. Then place it on a surface plate and check for bending. If bent, replace.

Tightening torque:

Axlenut (front)	3.5 ~ 5.0 m·kg (23.5 ~ 36 ft·lb)
(rear)	3.0 ~ 4.8 m·kg (22 ~ 33.6 ft·lb)

B. Checking brake shoe wear

1. Measure the outside diameter at the brake shoes with slide calipers. Also check thickness of individual shoes.



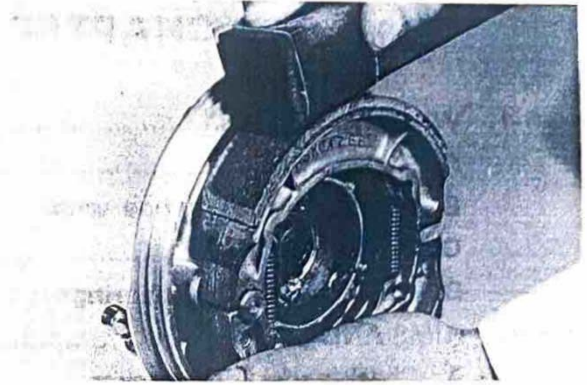
BRAKE INSTALLED DIAMETER

	standard	minimum
F:	110 mm (4.22 in)	106 mm (4.17 in)
R:	110 mm (4.22 in)	106 mm (4.17 in)

BRAKE SHOE THICKNESS

standard	minimum
4 mm (0.016 in)	2 mm (0.08 in)

2. Remove any glazed areas from brake shoes using coarse sand paper.



C. Brake drum

Oil or scratches on the inner surface or the brake drum will impair braking performance or result in abnormal noises.

Remove oil by wiping with a rag soaked in lacquer thinner or solvent. Remove scratches by lightly and evenly polishing with emery cloth.

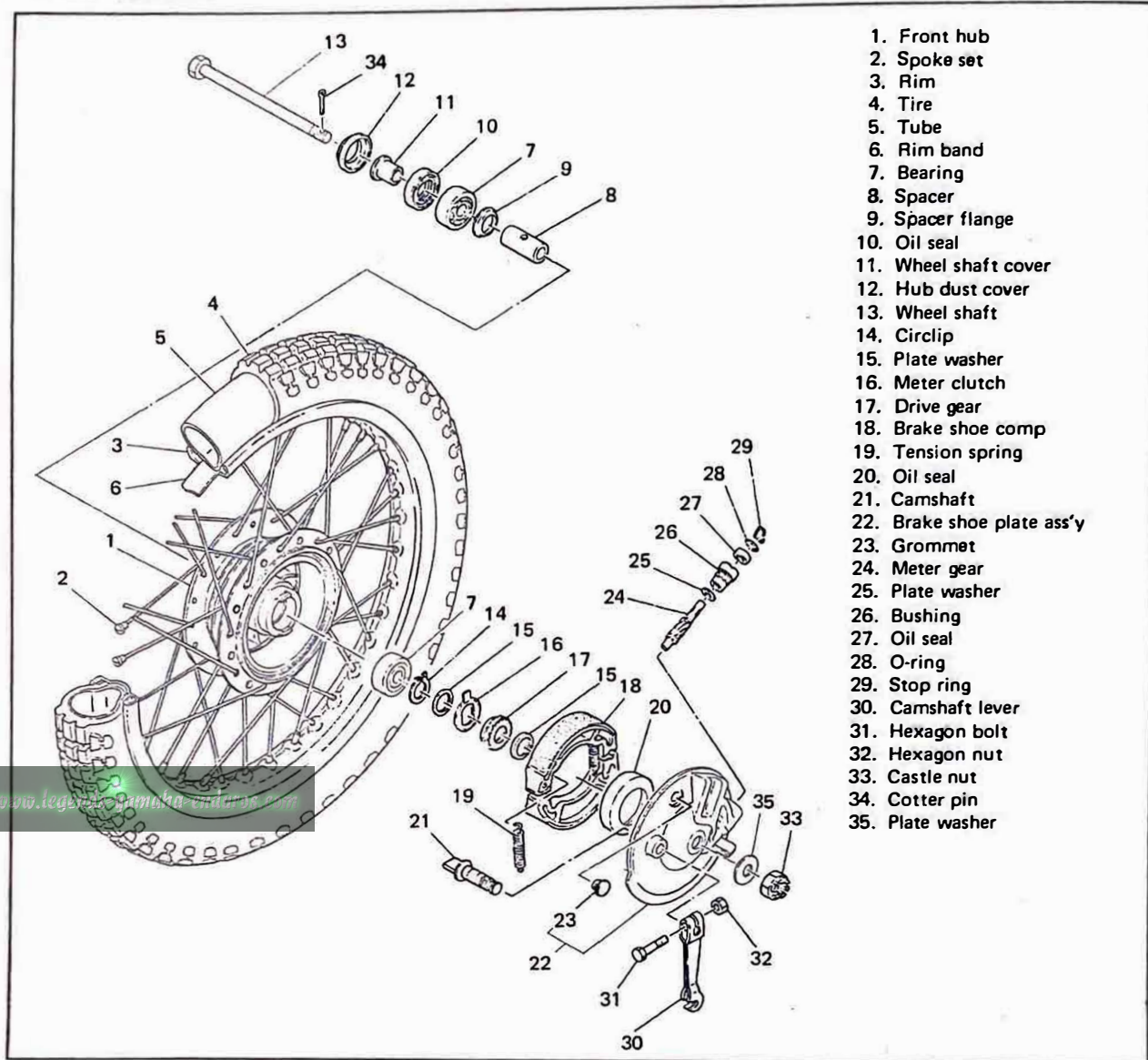


D. Replacing wheel bearings

If the bearings allow play in the wheel hub or if wheel does not turn smoothly, replace the bearings as follows:

1. First clean the outside of the wheel hub.
2. Drive the bearing out by pushing the spacer aside (the spacer "floats" between the bearings) and tapping around the perimeter of the bearing inner race with a soft metal drift pin and hammer. Either or both bearings can be removed in this manner.
3. To install the wheel bearing, reverse the above sequence. Be sure to grease the bearing before installation. Use a socket that matches the outside race of the bearing as a tool to drive in the bearing.

FRONT WHEEL



5-2. RIMS AND SPOKES (FRONT AND REAR WHEELS)

A. Checking for Loose Spokes

Loose spokes can be checked by bracing the machine off the ground so that the wheel can spin freely.

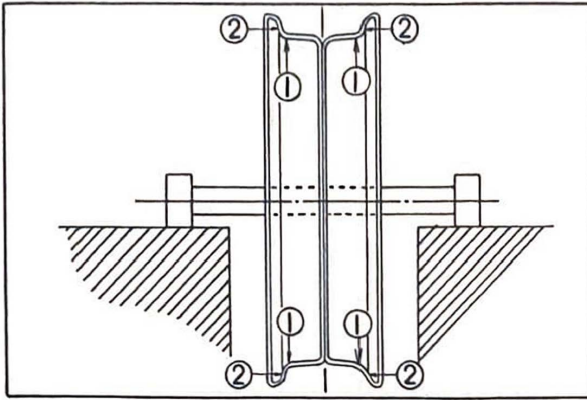
Slowly revolve the wheel and at the same time let the metal shaft of a fairly heavy screwdriver bounce off each spoke. If all the spokes are tightened approximately the same, then the sound given off by the screwdriver hitting the spokes should sound the same. If one spoke makes a dull flat sound, then check it for looseness. It is also a good idea to check all spokes with a spoke wrench, so that they can be tightened immediately.

B. Checking Rim "Run-Out"

While you have the wheel elevated, you should check that it does not have too much run-out. "Run-out" is the amount the wheel deviates from a straight line as it spins. Spin the wheel, and solidly anchor some sort of a pointer about 3 mm away from the side of the rim.

As the wheel spins, the distance between the pointer and the rim should not change more than 2 mm total. Any greater fluctuation should be eliminated by properly adjusting the spokes. This should be done by a trained Yamaha service person.

Run-out limits: 2 mm lateral
 Run-out limits: 2 mm vertical

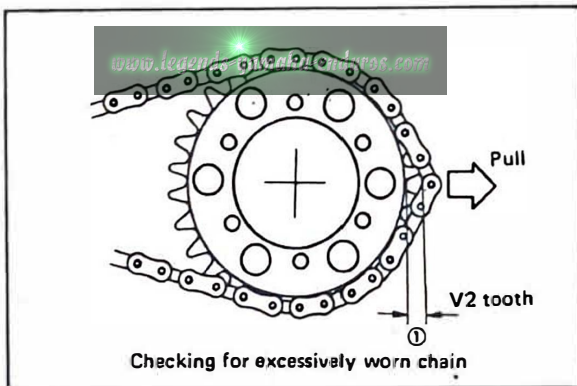


1. Vertical 2. Lateral

5-3. DRIVE CHAIN AND SPROCKETS

A. Chain inspection

1. With the chain installed on the machine, excessive wear may be roughly determined by attempting to pull the chain away from the rear sprocket. If the chain will lift away more than one-half the length of the sprocket teeth, remove and inspect. If any portion of the chain shows signs of damage, or if either sprocket shows signs of excessive wear, remove and inspect.

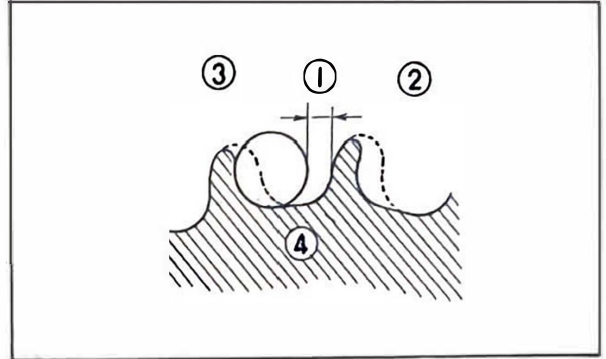


Checking for excessively worn chain.

2. Check the chain for stiffness. If stiff, soak in solvent solution, clean with wire brush, dry with high pressure air. Oil chain thoroughly and attempt to work out kinks. If still stiff, replace.
3. Check the side plates for damage. Check to see if excessive play exists in pins and rollers. Check for damaged rollers. Replace chain if damaged.

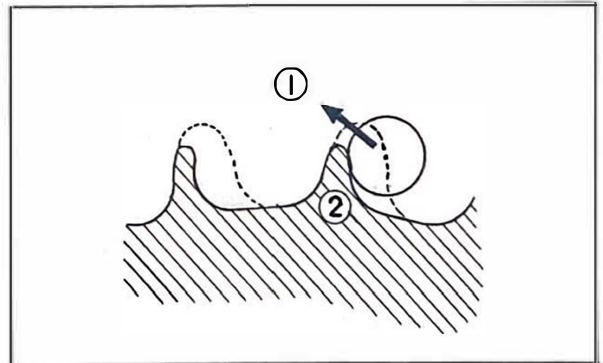
B. Drive sprocket & Driven sprocket

1. Check sprocket wear. Replace if tooth width has decreased as shown.



1. 1/4 tooth 2. Correct 3. Roller 4. Sprocket

2. Replace if tooth wear shows a pattern such as that in the illustration, or similar wear.



1. Slip off 2. Bend teeth

Drive sprocket securing bolt torque:

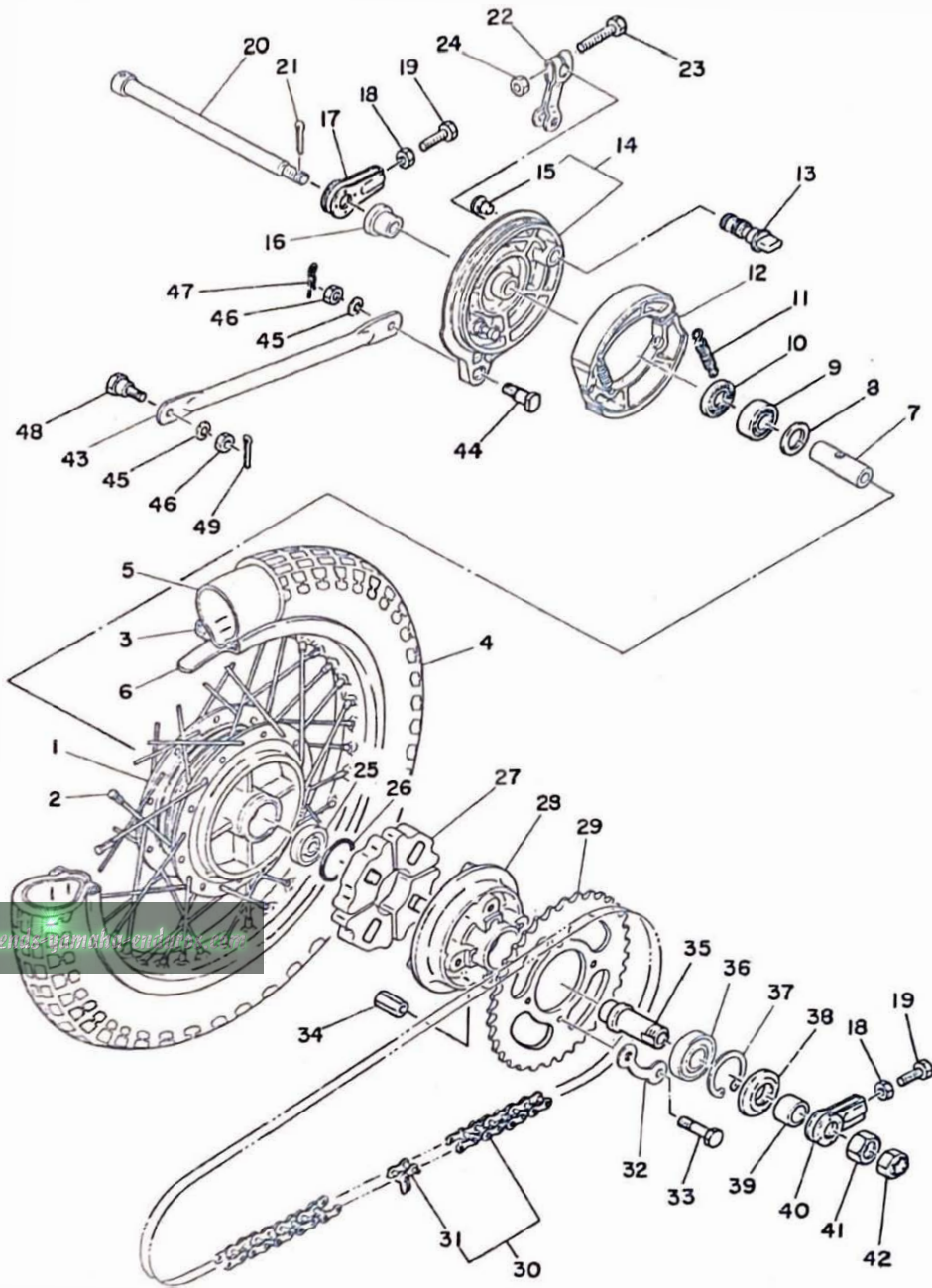
7.0 ~ 9.0 m·kg
(50 ~ 64 ft·lb)

Driven sprocket securing nut torque:

1.7 ~ 2.2 m·kg
(6.8 ~ 16 ft·lb)

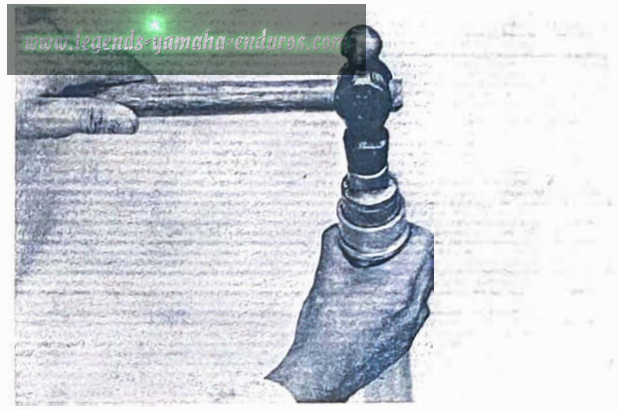
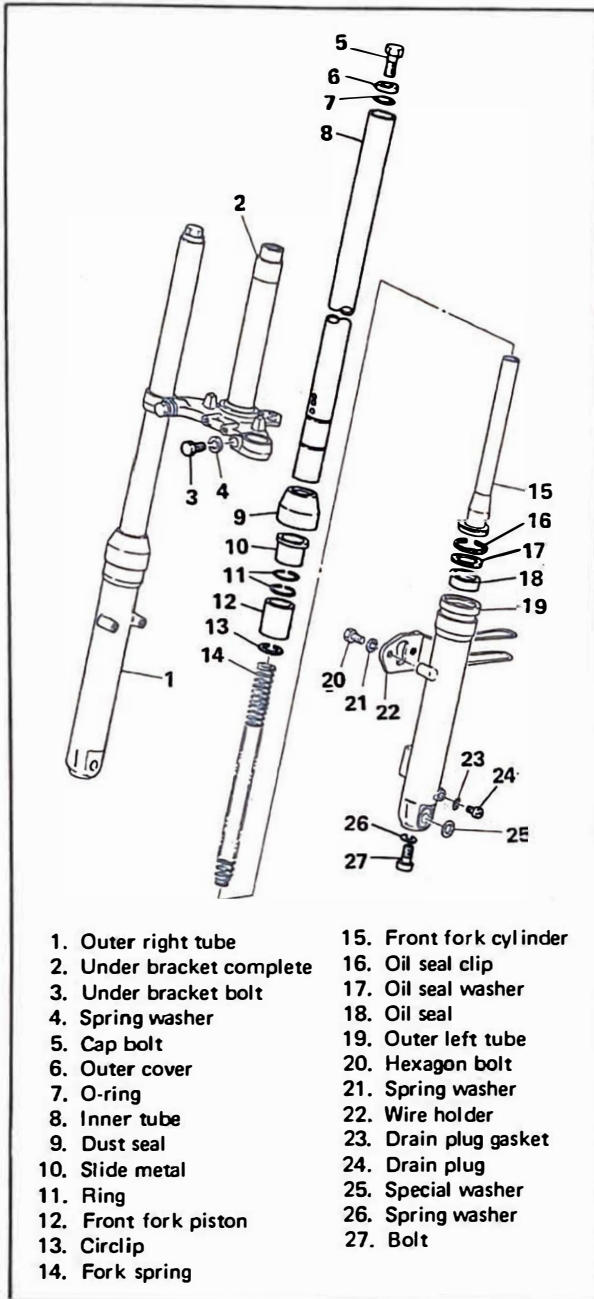
3. Always use new locking tabs (lock washer) and bend over end when re-installing a sprocket.

Rear wheel



- | | | |
|----------------------------|-------------------------|--------------------|
| 1. Rear hub | 19. Hexagon bolt | 36. Bearing |
| 2. Spoke set | 20. Wheel shaft | 37. Circlip |
| 3. Rim | 21. Cotter pin | 38. Oil seal |
| 4. Tire | 22. Camshaft lever | 39. Collar |
| 5. Tube | 23. Hexagon bolt | 40. Chain puller 1 |
| 6. Rim band | 24. Hexagon nut | 41. Hexagon nut |
| 7. Spacer | 25. Bearing | 42. Castle nut |
| 8. Spacer flange | 26. O-ring | 43. Tension bar |
| 9. Bearing | 27. Clutch damper | 44. Bolt |
| 10. Oil seal | 28. Hub clutch | 45. Spring washer |
| 11. Tension spring | 29. Sprocket wheel gear | 46. Hexagon nut |
| 12. Brake shoe comp | 30. Chain | 47. Clip |
| 13. Camshaft | 31. Chain joint | 48. Bolt |
| 14. Brake shoe plate ass'y | 32. Lock washer | 49. Cotter pin |
| 15. Grommet | 33. Hexagon bolt | |
| 16. Collar | 34. Hexagon nut | |
| 17. Chain puller 2 | 35. Sprocket shaft | |
| 18. Hexagon nut | | |

5-4. FRONT FORKS



B. Inspection

1. Inspect the inner tube for bends or scratches. If bent replace the tube. (To replace tube, remove allen screw from bottom of outertube.)
2. Fork oil: Use Yamaha fork oil 20, 30W, depending upon riding conditions and personal preference.

Fork oil capacity:

116 ± 2cc (3.92 ± 0.03 oz) each side

3. Tightening torque:

Inner tube cap torque:

1.5 ~ 2.5 m-kg
 (10.9 ~ 18.1 ft-lb)

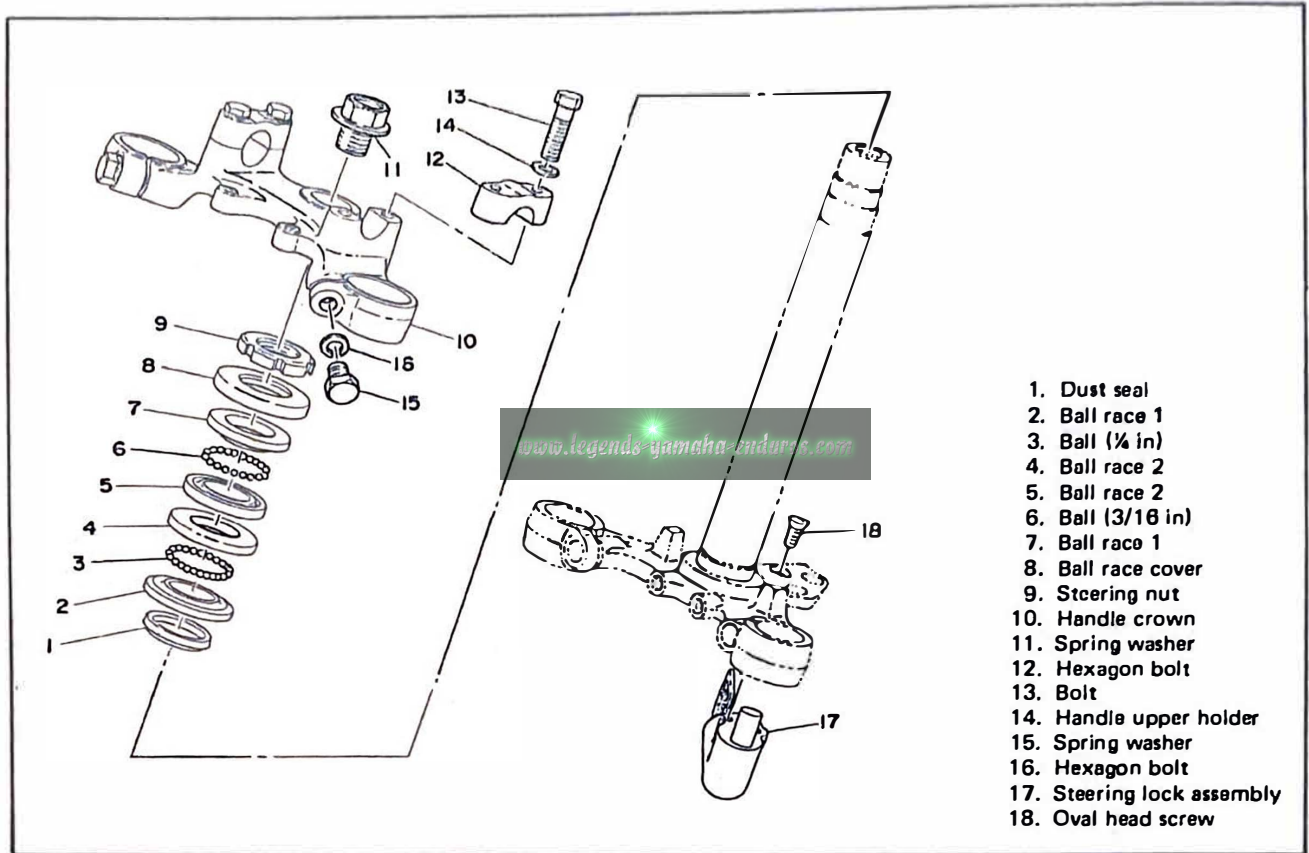
Pinch bolt torque:

3.0 ~ 4.8 m-kg
 (21.7 ~ 34.7 ft-lb)

A. Replacement of oil seal

1. To replace fork seal, remove wire clip, felt ring and cover washer from outer tube.
2. Carefully pry out old seal without damaging fork tube.
3. Insert new seal "open" side down using (manufacturer's marks up) using large socket and steel hammer.

5.5. STEERING HEAD



1. Dust seal
2. Ball race 1
3. Ball (1/4 in)
4. Ball race 2
5. Ball race 2
6. Ball (3/16 in)
7. Ball race 1
8. Ball race cover
9. Steering nut
10. Handle crown
11. Spring washer
12. Hexagon bolt
13. Bolt
14. Handle upper holder
15. Spring washer
16. Hexagon bolt
17. Steering lock assembly
18. Oval head screw

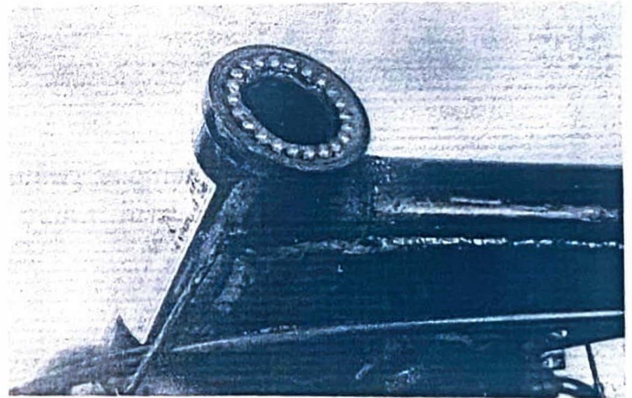
A. Inspection

1. Examine all the balls for pits or partial flatness. If any one is found defective, the entire set (including both races) should be replaced. If either race is pitted, shows rust spots, or is damaged in any way, replace both races and all balls.

Ball quantity/size:

Upper..... 22, 3/16 in

Lower 19, 1/4 in



4. Tightening torque:

Steering fitting bolt:

5.0 ~ 8.0 m·kg

(30 ~ 57 ft·lb)

2. Examine dust seal under lowest race and replace if damaged.
3. Grease the lower ball race of the upper and lower assembly and arrange the balls around it. Then apply more grease and set the top race into place.

NOTE: _____

Use medium-weight wheel bearing grease of quality manufacturer — preferably waterproof.

NOTE: _____

Make certain that tops of fork tubes are adjusted to the same level. If necessary, loosen underbracket pinch bolts and adjust.

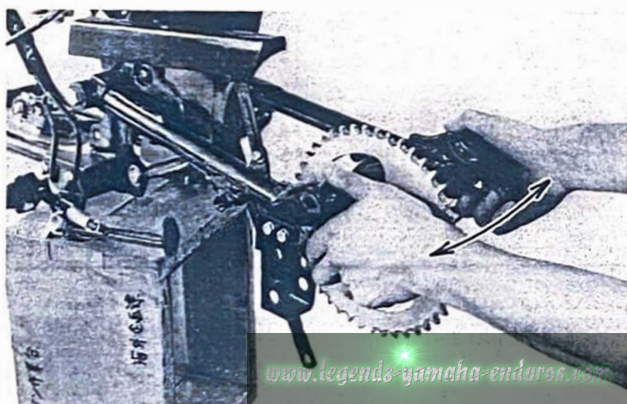
Handlebars mounting bolt torque:
1.5 ~ 2.0 m·kg
(11 ~ 18 ft·lb)

5-6. SWING ARM

A. Inspection

1. With rear wheel and shock absorbers removed, grasp the ends of the arm and move from right to left to check for freeplay.

Swing arm freeplay: None



2. If freeplay is excessive, remove swing arm and replace swing arm rubber bushing.

B. Lubrication

1. Apply grease to grease fitting on top of pivot with low pressure hand operated gun. Apply until fresh grease appears at both ends of pivot shaft.

Recommended lubricant:
Smooth chassis lube grease

2. Wipe off excess grease.

5-7. CABLES AND FITTINGS

A. Cable maintenance

NOTE: _____

See maintenance and Lubrication Intervals Charts for additional information.

Cable maintenance is primarily concerned with preventing deterioration through rust and weathering; and providing for proper lubrication to allow the cable to move freely within its housing.

Cable removal is straightforward and uncomplicated. Removal will not be discussed within this section. For details, see the individual maintenance section for which the cable is an integral part.

Cable routing is very important however. For details of cable routing, see the cable routing diagrams at the end of this manual.

1. Remove the cable.
2. Check for free movement of cable within its housing. If movement is obstructed, check for fraying or kinking of the cable strands. If damage is evident, replace the cable assembly.
3. To lubricate cable, hold in a vertical position. Apply lubricant to uppermost end of cable. Leave in a vertical position until lubricant appears at bottomend. Allow excess to drain and re-install.

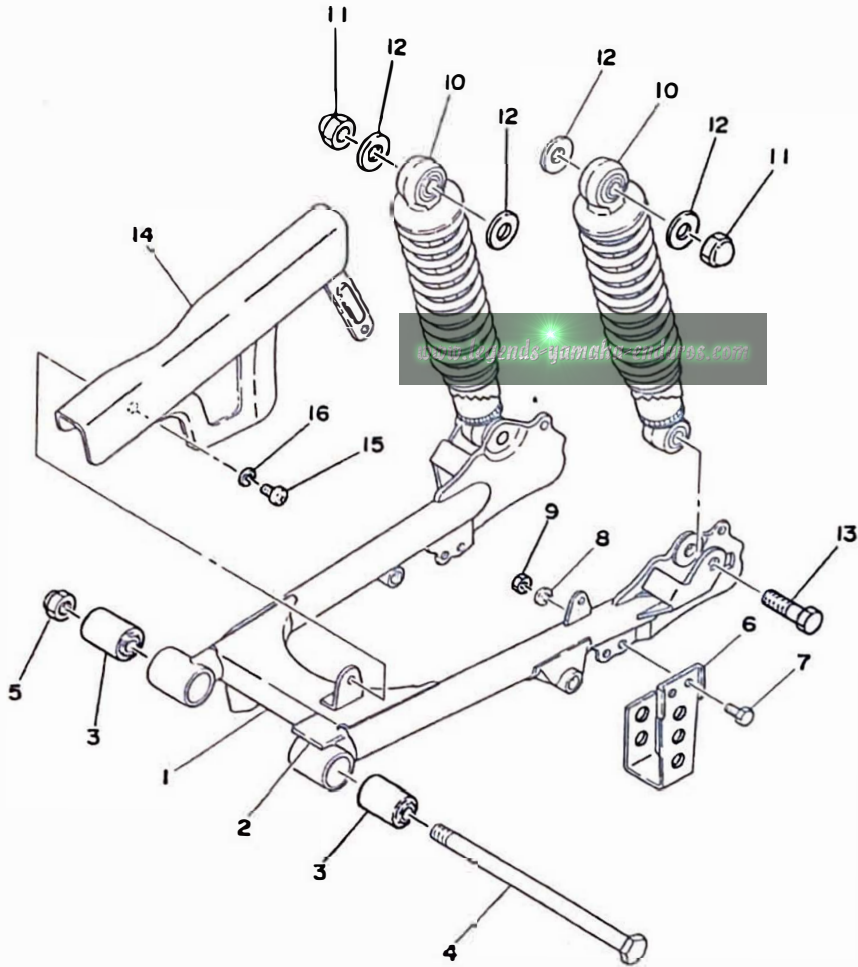
NOTE: _____

Choice of lubricant depends upon conditions and preference. However, a semi-drying chain and cable lubricant will probably perform adequately under most conditions.

B. Throttle maintenance

1. Remove two Phillips head screws from throttle housing assembly and separate two halves of housing.

REAR ARM



1. Rear arm comp
2. Guard seal
3. Bushing
4. Pivot shaft
5. Nut U
6. Chain guard
7. Hexagon bolt
8. Spring washer
9. Hexagon nut
10. Rear cushion ass'y
11. Crown nut
12. Plate washer
13. Hexagon bolt
14. Chain case
15. Panhead screw
16. Spring washer

2. Disconnect cable end from throttle grip assembly and remove grip assembly.
3. Wash all parts in mild solvent and check contact surfaces for burrs or other damage. (Also clean and inspect right hand end of handlebar.)
4. Lubricate contact surfaces with light coat of lithium soap base grease and reassemble.

NOTE: _____
Tighten housing screws evenly to maintain an even gap between the two halves.

5. Check for smooth throttle operation and quick spring return when released and make certain that housing does not rotate on handlebar.

CHAPTER 6. ELECTRICAL SYSTEM

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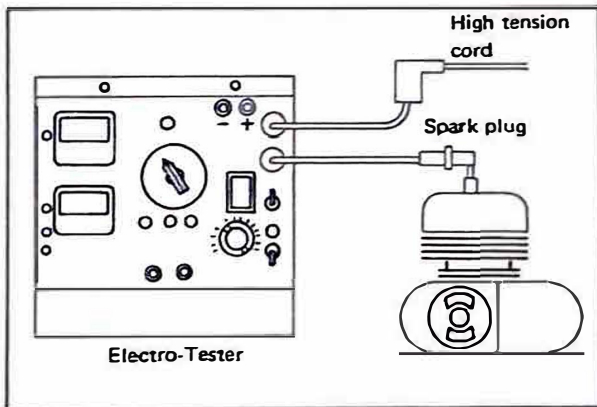
6-1. IGNITION SYSTEM

A. Spark gap test

The entire ignition system can be checked for misfire and weak spark using the Electro Tester. If the ignition system will fire across a sufficient gap, the entire ignition system can be considered good. If not, proceed with individual component tests until the problem is found.

1. Warm-up engine thoroughly so that all electrical components are at operating temperature.
2. Stop engine and connect tester as shown.
3. Start engine and increase spark gap until misfire occurs. (Test at various rpm's between idle and red line.)

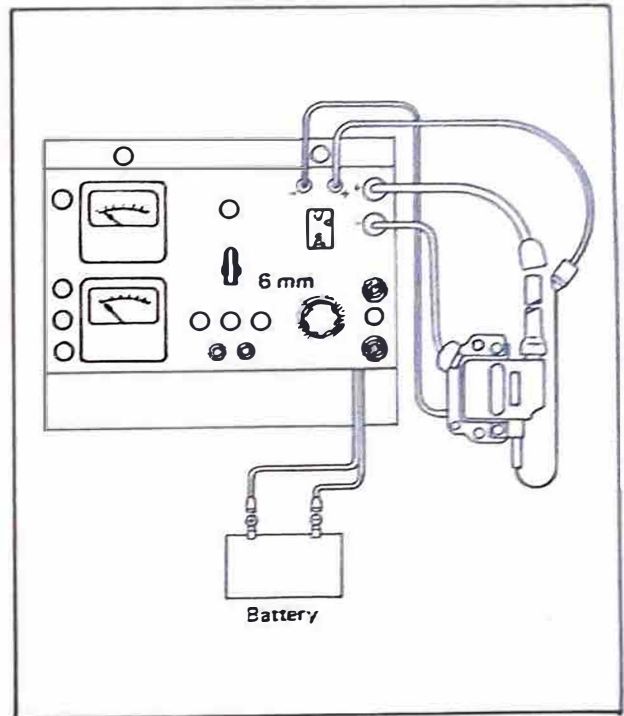
Minimum spark gap:
5 mm (0.157 in)



B. Ignition coil test

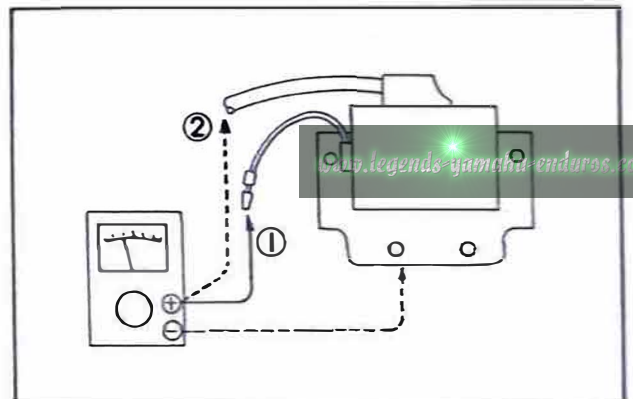
1. Coil spark gap test
 - a. Remove fuel tank and disconnect ignition coil from wire harness and spark plug.
 - b. Connect Electro Tester as shown.
 - c. Connect fully charged 6V battery to tester.
 - d. Turn on spark gap switch and increase gap until misfire occurs.

Minimum spark gap:
6 mm (0.236 in)



2. Coil winding resistance tests

Use a pocket tester or equivalent ohmmeter to determine resistance and continuity of primary and secondary coil windings.



1. Primary coil resistance check
2. Secondary coil resistance check

Primary coil resistance Use ($\Omega \times 1$) scale	Secondary coil resistance Use ($\Omega \times 100$) scale
$1\Omega \pm 15\%$	$5.9K\Omega \pm 15\%$

C. Condenser test

The condenser is capable of storing a large electrical charge.

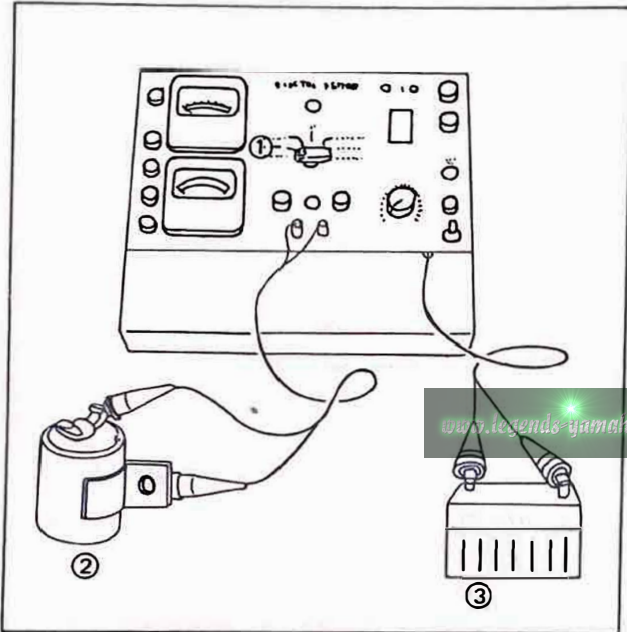
If it were not for the condenser, an electric arc would jump across the separating contact points, causing them to burn.

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 but the ignition coil is in good condition, check the condenser.

1. Capacity test (use Electro Tester)

a. Calibrate capacity scale.

b. Connect tester.



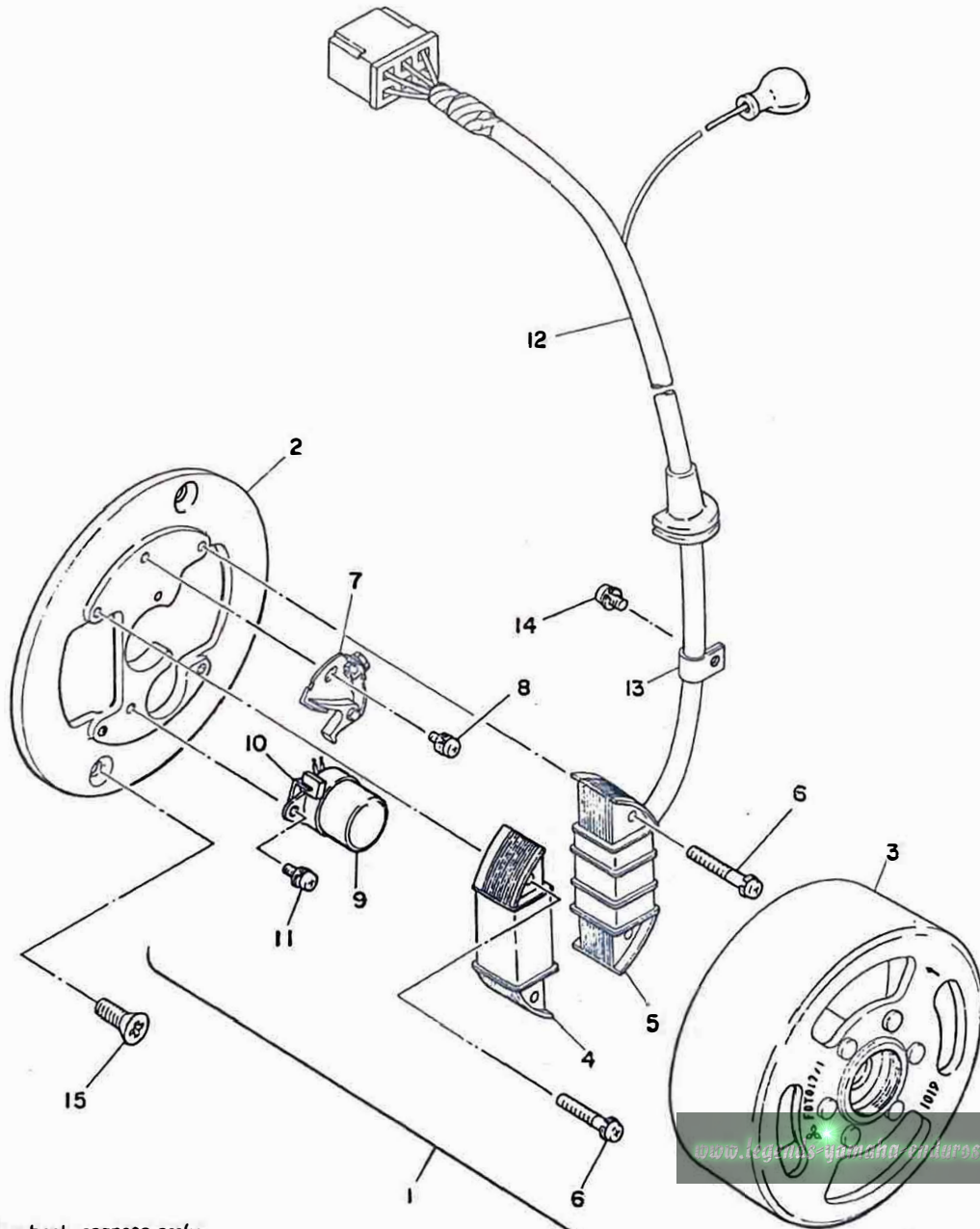
1. Capacity test 2. Condenser 3. Battery

c. Meter needle will deflect and return to center as condenser is charged. After needle stops, note reading on μF scale.

Condenser capacity: $0.25 \mu\text{F}$

CAUTION: _____
After this measurement, the condenser should be discharged by connecting the positive and negative sides with a thick wire to prevent shock.

Flywheel Magneto



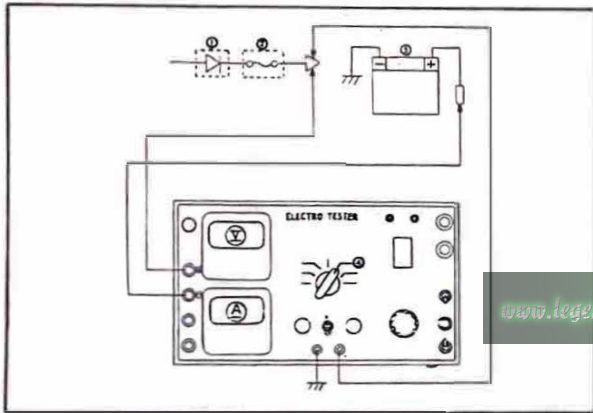
1. Flywheel magneto ass'y
2. Magneto base
3. Rotor ass'y
4. Source coil
5. Lighting coil ass'y
6. Panhead screw
7. Contact breaker ass'y
8. Panhead screw
9. Condenser
10. Lubricator
11. Panhead screw
12. Lead wire ass'y
13. Lead clamp
14. Pan head screw
15. Flathead screw

6-2. CHARGING SYSTEM

The charging system consists of the magneto flywheel, the charging/lighting coil, rectifier, and the battery.

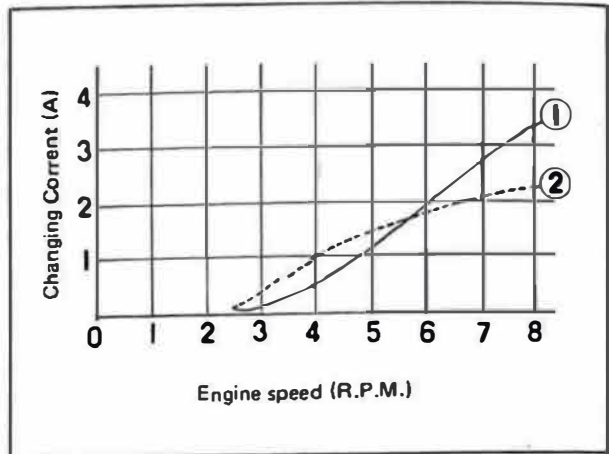
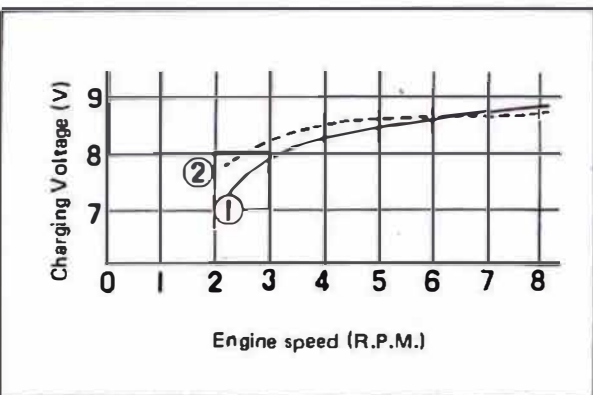
A. Charging output test

1. Voltage test
 - a. Raise seat and locate red battery wire connection.
 - b. Connect Electrotester If engine tachometer is not available, estimate engine rpm.
 - c. Turn ignition switch to ON (daytime) position, start engine and note voltage readings at approximate specified rpm's.
 - d. Switch to nighttime (lights on) and note voltage readings at specified rpm's.



1. Rectifier
2. Fuse
3. Battery
4. Set the tester in "DC VOLTAGE" position

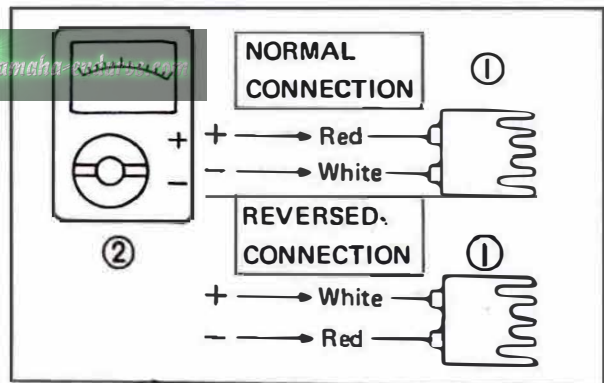
R.P.M	Amperage (D. C.)		Voltage (D.C.)	
	Daytime	Nighttime	Daytime	Nighttime
2,500	0.1A	0.1A	7.5V	7.8A
4,000	0.7A	1.0A	8.3V	8.5V
6,000	2.1A	1.9A	8.7V	8.7V



- ① Daytime
- ② Nighttime

B. Checking silicon rectifier

1. Checking with normal connection using Yamaha Pocket Tester:
Connect the tester's red lead (+) to the silicon rectifier's red lead, and connect the tester's black lead (-) to the rectifier's white lead.
2. Checking with reversed connection using Yamaha Pocket Tester:
Reverse the tester leads.

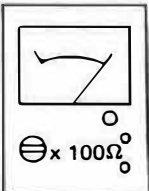
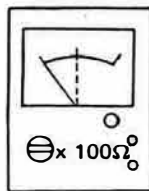
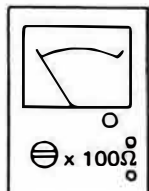
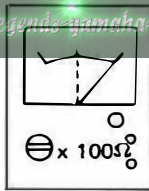


1. Silicon rectifier
2. Pocket tester

CAUTION:

The silicon rectifier can be damaged, if subject 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.

Result

	Good	Replace
Normal connection		
Reversed connection		

NOTE: _____

This rectifier test must be checked both normal and reversed connections.

6-3. LIGHTING AND SIGNAL SYSTEMS

WARNING: _____

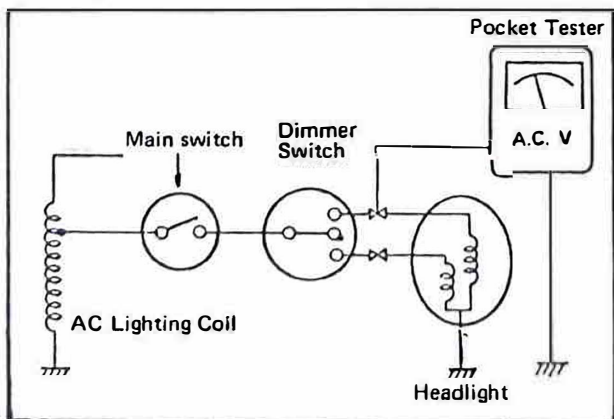
Use bulbs of the correct capacity for the headlight, meter lamp and high-beam indicator which are directly connected to the flywheel magneto.

If large capacity bulbs are used, the voltage will drop, giving a poor light. On the contrary, if smaller capacity bulbs are used, the voltage will rise, shortening the life of bulbs.

A. Lighting tests and checks — A.C. circuit

1. A.C. circuit 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 rpm.



- Switch Pocket Tester to "AC20V" position.
- Connect positive (+) test lead to yellow connection and negative (-) test lead to a good ground.
- Start engine, turn on lights 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 are too large throughout the A.C. lighting circuit.

Engine rpm	Voltage
2,500 rpm	5.7 A.C. or more
8,000 rpm	7.5 A.C. or more

NOTE: _____

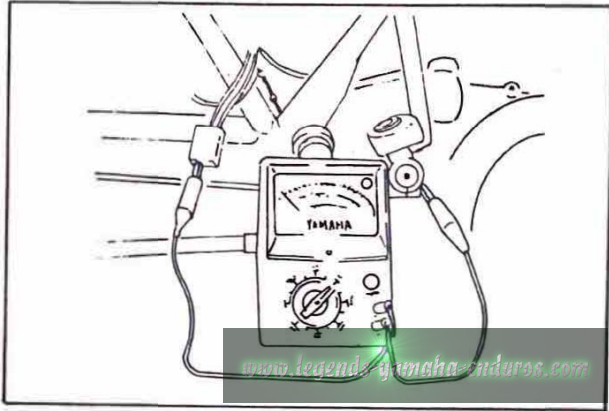
This voltage test can be made at any point throughout the A.C. lighting circuit and the readings should be the same as specified above.

2. Lighting coil resistance check

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

- Switch Pocket Tester to " $\Omega \times 1$ " position and zero meter.
- Connect positive (+) test lead to yellow, green and green-red wire from magneto and negative (-) test lead to a good ground on engine. Read the resistance on ohms scale.

	Lighting coil Resistance (at 20°C 68°F)
Ground to Yellow Leads	0.23 Ω ± 10%
Ground to Green/Red Leads	0.36 Ω ± 10%
Ground to Green Leads	0.09 Ω ± 10%



3. If A.C. lighting circuit components check out properly but circuit voltage is still excessive, go to charging circuit checks. (Sec. 6-2)
If voltage is low in charging circuit due to a defective battery, rectifier or connection, voltage will be too high in lighting circuit.

B. Lighting tests and checks — D.C. circuit

The 6V battery provides power for operation of the horn, taillight, stoplight, neutral light and flasher lights. If none of the above operate, always check battery voltage before proceeding further. Low battery voltage indicates either a faulty battery, low battery water, or a defective charging system. See Section 2-4, and 6-2, Charging system, for checks of battery and charging system.

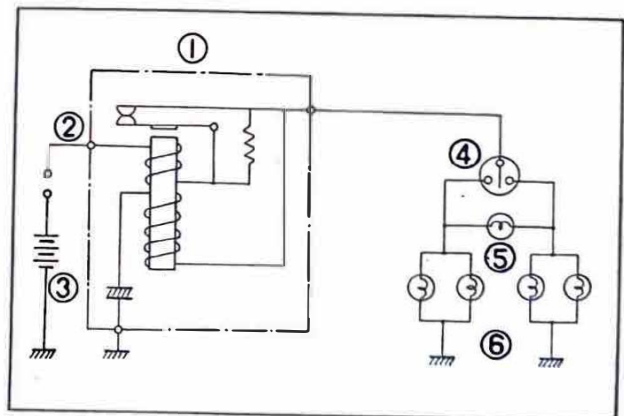
1. Horn does not work.
 - a. Check for +6V on brown wire to horn.
 - b. Check for good grounding of horn (pink wire) when horn button is pressed.
2. Stoplight does not work.
 - a. Replace bulb.
 - b. Check for 6V on yellow wire to stoplight.

- c. Check for 6V on brown wire to each stop switch (front brake and rear brake switches).
- d. Check ground on black wire to tail/stop-light assembly.
3. Taillight does not work.
 - a. Replace bulb.
 - b. Check for 6V on blue wire.
 - c. Check for ground on black wire to tail/stoplight assembly.
4. Flasherlight(s) do not work.
 - a. Replace bulb.
 - b. Right circuit.
 - 1) Check for +6V on dark green wire to light.
 - 2) Check ground on black wire to light assembly.
 - c. Left circuit.
 - 1) Check for +6V on dark brown wire to light.
 - 2) Check for ground on black wire to light assembly.
 - d. Right and left circuits do not work.
 - 1) Check for +6V on brown wire to flasher switch on left handlebar.
 - 2) Check for +6V on brown wire to flasher relay.
 - 3) Replace flasher relay.
 - 4) Replace flasher switch.

C. Flasher relay

1. Flasher relay

The flasher relay is a 6V, condenser type.



- | | |
|------------------|----------------------------|
| 1. Flasher relay | 4. Flasher switch |
| 2. Main switch | 5. Flasher indicator light |
| 3. Battery | 6. Flasher light |

CHAPTER 7. APPENDICES

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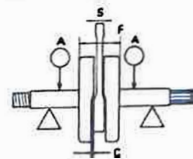
7-1 GENERAL SPECIFICATION

A. General

Model: Model (I.B.M. No.) Frame I.D. & Starting Number Engine I.D. & Starting Number	1T9 1T9-000101 1T9-000101
Dimension: 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)
Weight: Net Weight	80 kg (176.4 lb.)
Performance Minimum Turning Radius	1,810 mm (71.3 in)

B. Engine

Description: Engine Type Engine Model Displacement Bore x Stroke Compression Ratio Starting System Ignition System Lubrication System	Air cooled, 2-stroke gasoline, Torque induction 1T9 97 cc 52 x 45.0 mm (2.05 x 1.77 in) 7.4 : 1 Primary kick starter Magneto ignition Separate lubrication (Yamaha Autolube)
Cylinder head: Combustion Chamber Volume Combustion Chamber Type Head Gasket Thickness	9.9 cc (0.33 US liq) Squish 0.3 mm (0.012 in)
Cylinder: 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)
Piston: 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)
Pistons Ring: Piston Ring Design (Top) " (2nd) Ring End Gap (Installed) (Top) " (2nd) Ring Groove Side Clearance (Top) " (2nd)	Keystone Plane (with expander) 0.3 – 0.5 mm (0.012–0.020 in) 0.3 – 0.5 mm (0.012–0.020 in) 0.03 – 0.05 mm (0.001–0.0020 in) 0.03 – 0.07 mm (0.001–0.0027 in)

<p>Small end bearing: Type</p> <p>Big end Bearing: Type</p>	<p>Needle bearing</p> <p>Needle bearing</p>
<p>Crankshaft:</p> <p>Crankshaft Assembly Width (F)</p> <p>Crankshaft Deflection (A)</p> <p>Connecting Rod Big End Side Clearance (C)</p> <p>Connecting Rod Small End Deflection (S)</p> <p>Crank Pin Outside Diameter x Length</p> <p>Crank Pin Type</p> <p>Crank Bearing Type (Left) x Q'ty</p> <p>" (Right) "</p> <p>Crank Oil Seal Type (Left) "</p> <p>" (Right) "</p>	<p>50 $\begin{matrix} -0.05 \\ -0.10 \end{matrix}$ mm (1.97 $\begin{matrix} -0.002 \\ -0.004 \end{matrix}$ in)</p> <p>0.03 mm (0.001 in)</p> <p>0.4 – 0.5 mm (0.016–0.020 in)</p> <p>0.8 – 2.0 mm (0.031–0.079 in)</p> <p>18.0 x 37.0 mm (0.71–1.46 in)</p> <p>Hollow type</p> <p>6,304 x 1</p> <p>6,304 x 1</p> <p>SD-20-40-8</p> <p>SW-28-40-8</p> 
<p>Clutch:</p> <p>Clutch Type</p> <p>Clutch Operating Mechanism</p> <p>Primary Reduction Ratio & Method</p> <p>Friction Plate - Thickness/Quantity</p> <p>- Wear Limit</p> <p>Clutch Plate - Thickness/Quantity</p> <p>- Warp Limit</p> <p>Clutch Spring - Free Length/Quantity</p> <p>- Warp Limit</p> <p>Clutch Housing Axial Play (Wear Limit)</p> <p>Push Rod Bending Limit</p>	<p>Wet, multiple disc type</p> <p>Inner push type, Cam axle</p> <p>74/19 (3.894), Helical gear</p> <p>3.0 mm (0.12 in) x 5 pcs.</p> <p>2.7 mm</p> <p>1.2 mm (0.047 in) x 4 pcs.</p> <p>0.05 mm (0.002 in)</p> <p>31.6 mm (1.24 in) x 5 pcs.</p> <p>0.05 mm (0.002 in)</p> <p>0.15 – 0.45 mm (0.006 ~0.018 in)</p> <p>0.15 mm (0.006 in)</p>
<p>Transmission:</p> <p>Type</p> <p>Gear Ratio 1st (Teeth) (Ratio)</p> <p>2nd</p> <p>3rd</p> <p>4th</p> <p>5th</p> <p>Transmission Gear Oil Quantity & Type</p> <p>Secondary Reduction Ratio & Method</p>	<p>Constant mesh, 5-speed forward</p> <p>35/11 (3.181)</p> <p>30/15 (2.000)</p> <p>26/19 (1.368)</p> <p>23/23 (1.000)</p> <p>20/25 (0.800)</p> <p>650 cc (Yamalube 2-cycle, SAE10W/30)</p> <p>45/14, Chain</p>
<p>Shifting Mechanism: Type</p> <p>Kick Starter: Type</p>	<p>Cum drum, return type</p> <p>Kick-and-mesh</p>
<p>Intake:</p> <p>Air Cleaner-Type/Quantity</p> <p>-Oil Grade</p> <p>Induction System</p> <p>Reed Valve</p> <p>Type</p> <p>Bending Limit</p>	<p>Wet-foam rubber</p> <p>SAE 10W/30 "SE" motor oil</p> <p>Reed valve</p> <p>V type</p> <p>0.3 mm (0.012 in)</p>

Valve Lift Tightening Torque	7 mm 8.0 cm·kg	(0.28 in)
Carburetor: Type & Manufacturer/Quantity I.D. Mark Main Jet (M.J.) Air Jet (A.J.) Jet Needle-clip Position (J.N.) Needle Jet (N.J.) Cutaway (C.A.) Pilot Jet (P.J.) Air Screw (turns out) (A.S.) Starter Jet (G.S.) Fuel Level (F.L.) Engine Idling Speed	Mikuni/1 1T9-60 # 130 2.5 4J13-3 0 – 4 2.0 # 17.5 2.0 30 26 mm 1,300 rpm	(1.02 in)
Lubrication: Autolube Pump-Color Code " -Minimum Stroke " -Maximum Stroke Autolube pump-Reduction Ratio " -Minimum Output/200 strokes " -Maximum Output/200 strokes Throttle Position (Adjusting Mark) Oil Tank Capacity Oil Grade	Green 0.20 – 0.25 mm 1.85 – 2.05 mm 1/40 5 ~ 6.28cc 4.65 ~ 5.15 cc ▲ 1.0 lit Yamalube 2-cycle oil, SAE 10W/30 "SE" motor oil	

C. Chassis

Frame: Frame Design	Tubler, double cradle	
Steering system: Caster Trail Number & Size of Balls in Steering Head Upper Race Lower Race Lock to Lock Angle	61° 103 mm 3/16 in x 22 1/4 in x 19 47°	(4.06 in)
Front suspension: 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 418.5 mm 3 mm x 17.5 mm 0.42kg/mm, 0.57kg/mm 27 mm PJ 27-39-10.5 116 ± 2cc, SAE 10W, 20W, 30W	(4.33 in) (16.48 in) (0.12 x 0.69 in) (70-110mm)
Rear suspension: 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)	2.50-18-4PR 3.00-16-4PR
Tire Pressure (Front) (Rear) Rim Size (Front) (Rear) Rim Run Out Limit (Front/Rear) Vertical Lateral Secondary Drive Chain Type Type Number of Links Chain Free Play	1.6 kg/cm ² 2.0 kg/cm ² 1.40 x 18 1.60 x 16 0.5 mm (0.02 in) 0.5 mm (0.02 in) RS420 101 20 mm (0.79 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) 109.8 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 (Contact breaker point) Model/Manufacturer Voltage Source coil resistance Flywheel puller thread size	FOTO1771/Mitsubishi 6V 1.70 Ω \pm 10% 27 mm (1.08 in)
Ignition Timing:	1.3 mm \pm 0.15 mm (0.072 \pm 0.006 in)
Ignition Coil: Model/Manufacturer Spark gap Primary winding resistance Secondary winding resistance Diode	IF6T411/Mitsubishi 10 mm 1 Ω \pm 15% at 20°C 15.9 k Ω \pm 20% at 20°C Yes

Spark plug Type/Manufacture Spark plug gap Contact breaker Point gap Point spring pressure Condenser Capacity Insulation resistance	B-8ES/NGK 0.6 – 0.7 mm (0.012 in ~ 0.016 in) 0.3 – 0.4 mm (0.024 in ~ 0.028 in) 650 – 850g 0.25 uF 5M Ω
Charging System: Flywheel magneto Charging Output (Daytime) (Nighttime) Charg Coil resistance (Green) (Green/Red) Lighting output Lighting coil resistance (Yellow) Rectifier Type Capacity Withstand voltage Rating Battery Model/Manufacture Capacity Charging rate Specific gravity	0.1A or more/2,500 rpm 4.5A or less/8,000 rpm 0.1A or more/2,500 rpm 2.3 \pm 0.5A/8,000 rpm 0.09 Ω \pm 10% 0.36 Ω \pm 10% 5.4V or more/2,500 rpm 6.9 ~ 8V/8,000 rpm 0.36 Ω \pm 10% 4A 400V Silicon 6N4-2A-2/G.S. 6V-4AH 0.4 x 10hour 1.26
Lighting System: Heat 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	Sealed beam 6V, 30W/30W 6V, 5.3W/25W 6V, 17W 6V, 3W 6V, 3W 6V, 3W 6V, 3W 6V, 3W
Horn: Model Maximum amperage	MF 2 – 6 1.5A
Flasher relay: Type Flasher frequency	Condenser 85 cycle/min.
Fuse Rating/Q'ty	10A/1

7-2. TORQUE SPECIFICATIONS

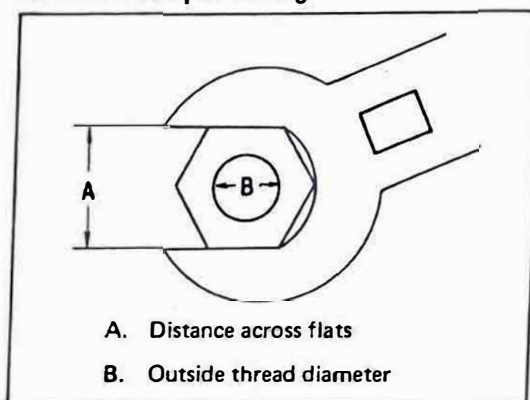
The list at right covers those stud/bolt sizes with standard I.S.O. pitch threads. Torque specifications for components with thread pitches other than standard are given within the applicable chapter.

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 component.

warping the component.

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	3.5 - 4.0	25 - 29	300 - 350
17 mm	12 mm	4.0 - 4.5	29 - 33	350 - 400
19 mm	14 mm	4.5 - 5.0	33 - 36	400 - 440
22 mm	16 mm	5.5 - 6.5	41 - 49	480 - 570
24 mm	18 mm	5.8 - 7.0	42 - 50	500 - 600
27 mm	20 mm	7.0 - 8.3	50 - 60	600 - 700
Spark plug		2.5 - 3.0	20 - 22	230 - 250

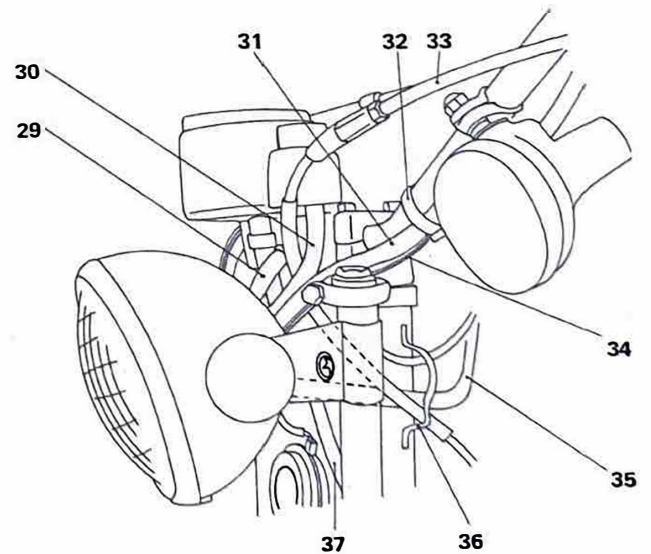
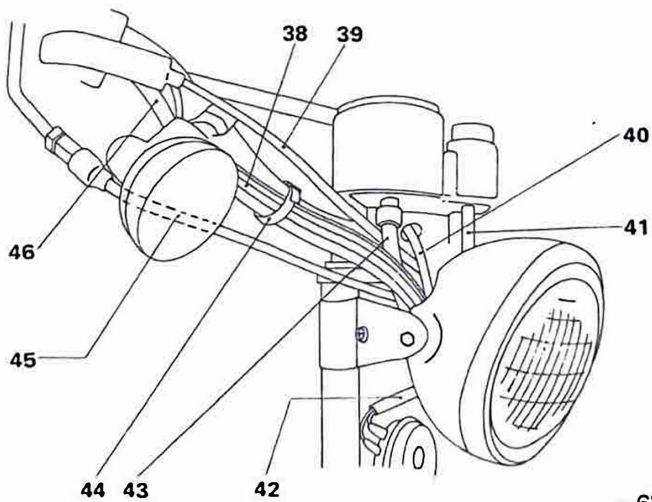
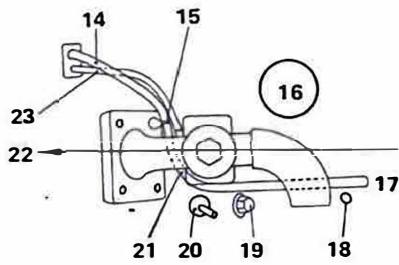
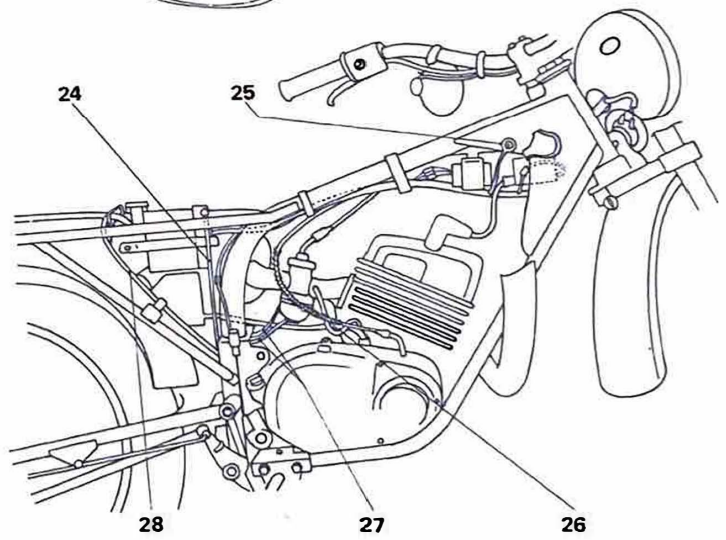
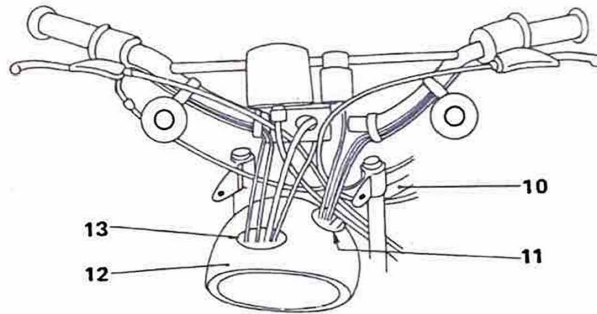
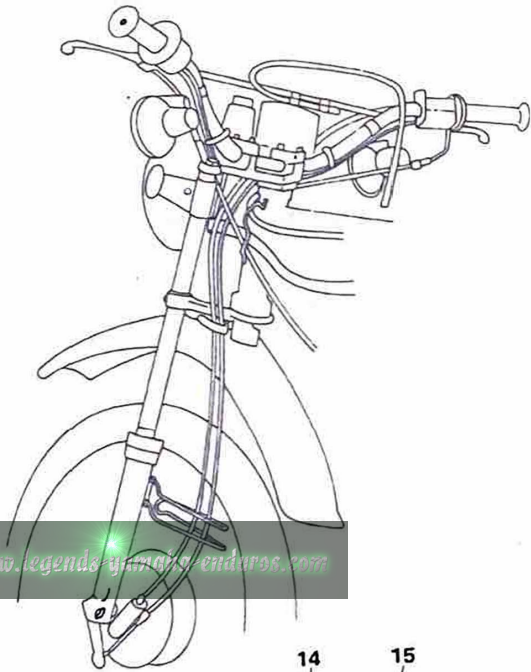
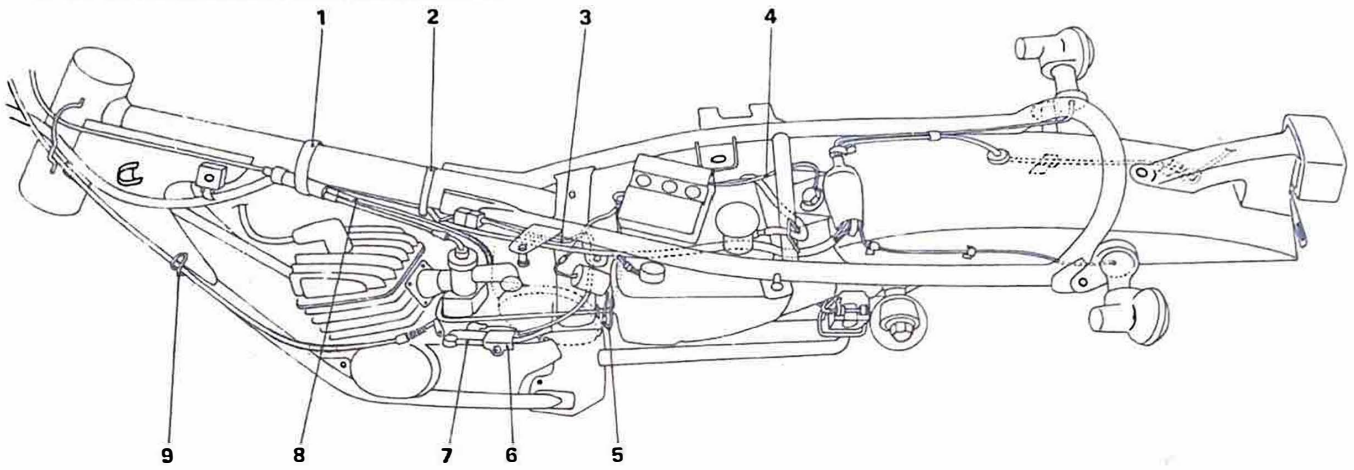
Standard Torque Setting



Tightening torque:

Engine		
Cylinder head	2.1 - 2.5m-kg	(15 - 18 ft-lb)
Spark plug	2.5 - 3.0m-kg	(18 - 22 ft-lb)
Primary drive gear	7.0 - 9.0m-kg	(50 - 63 ft-lb)
Clutch boss	7.0 - 8.0m-kg	(50 - 57 ft-lb)
Clutch spring	0.7 - 1.0m-kg	(5.0 - 7.0 ft-lb)
Drive sprocket	7.0 - 9.0m-kg	(50 - 63 ft-lb)
Kick crank	2.0m-kg	(14.5 ft-lb)
Reed valve	8.0 cm-kg	(6.7 in-lb)
Rotor nut	7.0 - 7.5m-kg	(50 - 54 ft-lb)
Starter	1.0 m-kg	(7.0 ft-lb)
Chassis		
Engine mount front upper	2.2 - 3.0m-kg	(16 - 22 ft-lb)
rear upper	2.2 - 3.0m-kg	(16 - 22 ft-lb)
rear lower	3.0 - 4.8m-kg	(22 - 33.6 ft-lb)
Pivot shaft nut	3.5 - 5.0m-kg	(24.5 - 36 ft-lb)
Rear shock absorber (frame)	3.0 - 4.8m-kg	(22 - 33.6 ft-lb)
(swing arm)	2.0 - 3.0m-kg	(14.5 - 22 ft-lb)
Handle crown pinch bolt	2.2 - 3.0m-kg	(16 - 22 ft-lb)
fitting bolt	5.0 - 8.0m-kg	(36 - 57 ft-lb)
Handle upper bracket	1.5 - 2.5m-kg	(11 - 18 ft-lb)
Under bracket pinch bolt	3.0 - 4.8m-kg	(22 - 33.6 ft-lb)
Front axle nut	3.5 - 5.0m-kg	(24.5 - 36 ft-lb)
Rear axle nut	3.0 - 4.8m-kg	(22 - 33.6 ft-lb)
Sprocket shaft nut	11.0 - 18.0m-kg	(77 - 126 ft-lb)
Driven sprocket bolt	1.7 - 2.2m-kg	(6.8 - 16 ft-lb)
Footrest bolt	1.4 - 2.2m-kg	(9.4 - 16 ft-lb)
Tensionbar (brake plate)	1.4 - 2.2m-kg	(9.4 - 16 ft-lb)
(rear arm)	1.4 - 2.2m-kg	(9.4 - 16 ft-lb)

7-3. 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

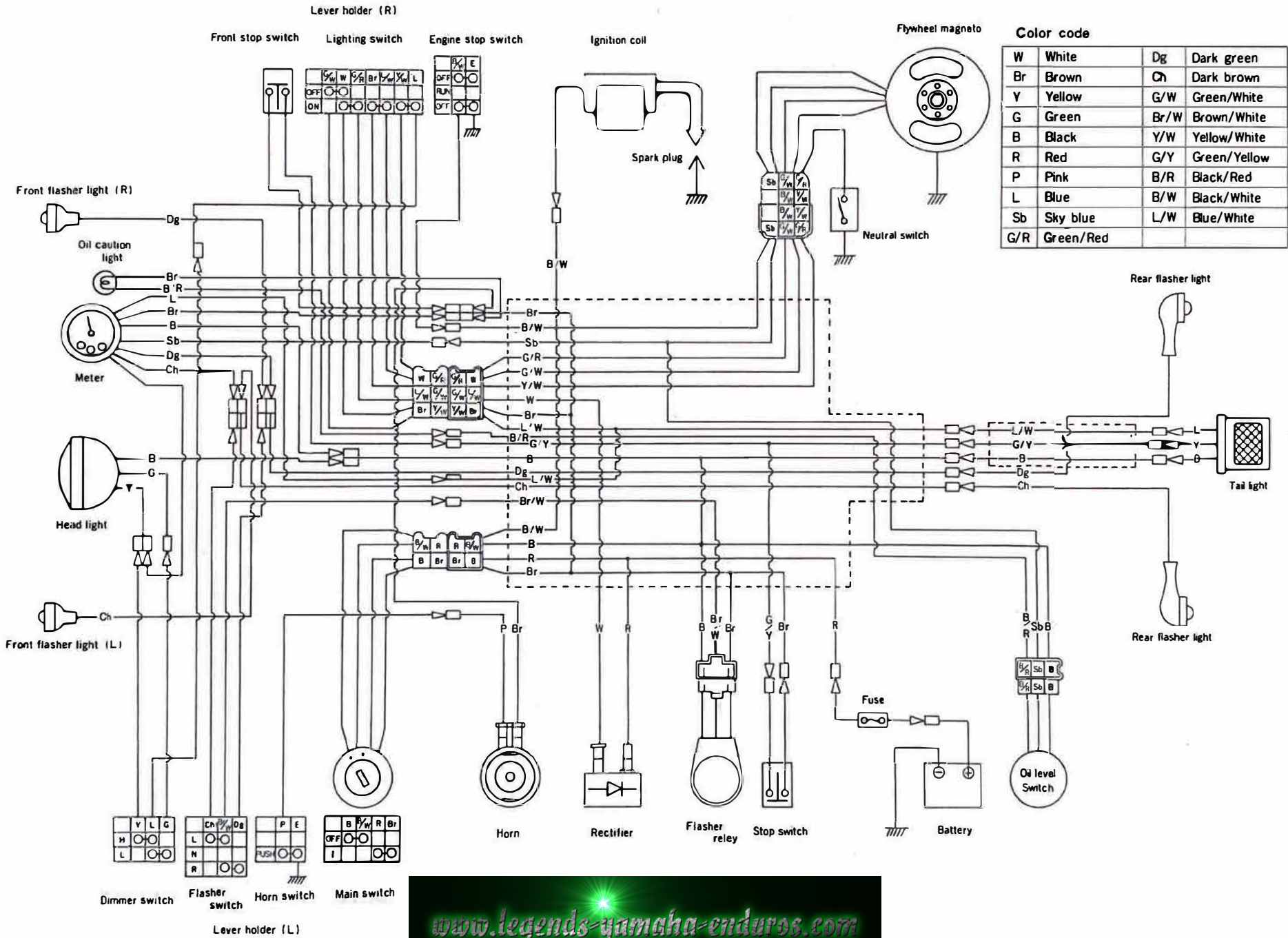
Speedometer → the other side of speedometer lead wire, oil caution switch lead wire, main switch lead wire, lever holder assembly (L) lead wire, and front flasher (L) and head pipe → Front fender bracket clamp (on this side of brake wire) → Through wire holder → Front brake shoe

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 seal rail → Connect to rear flasher light lead wires (R and L) and taillight sub-lead wire in the connector cover

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
Pass under the oil 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. Hornwire 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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