YAMAHA

DT250D
DT400D

Service Manual

1M1-28197-10

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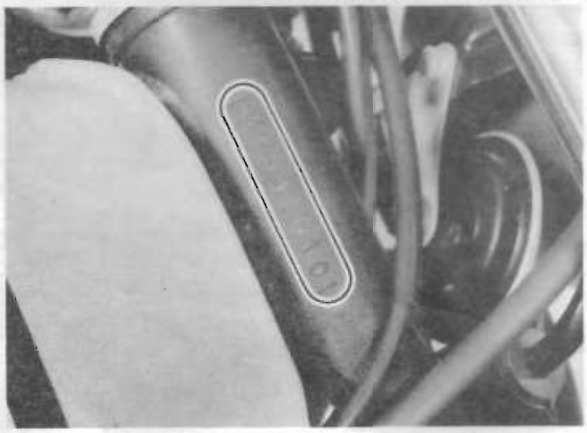
CHAPTER 1. GENERAL INFORMATION

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 following 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.

Starting Serial Number DT250D : 1M1-000101 DT400D : 1M2-000101



Frame serial number



Engine serial number

1-2. EXTERNAL VIEW

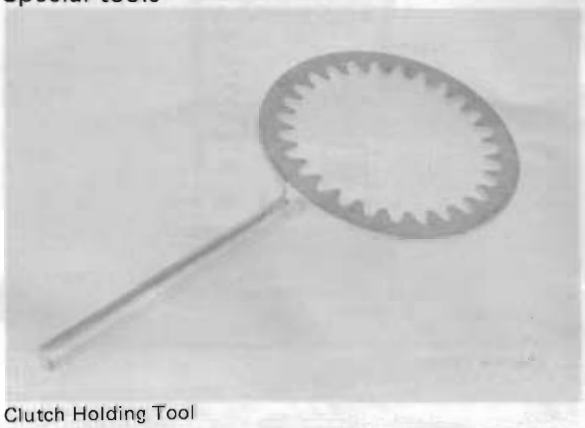


1-3. SPECIAL TOOLS

Special tools

	Description	Tool No.
1.	Clutch holding tool	90890-01024
2.	Dial gauge stand	90890-01195
3.	Dial gauge needle	90890-03042
4.	Flywheel holding tool	90890-01032
5.	Flywheel puller	90890-01189
6.	Steering nut wrench	90890-01051
7.	Crankcase separating tool	90890-01135
8.	Crankshaft setting pot	90890-01012
9.	Crankshaft setting tool	90890-01017
10.	Crankshaft setting spacer	90890-01016

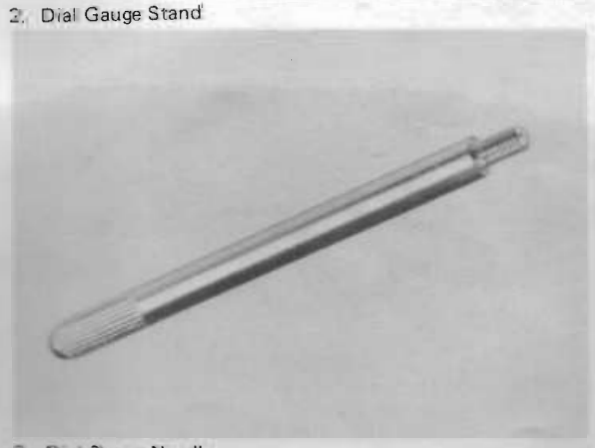
Special tools



1. Clutch Holding Tool



2. Dial Gauge Stand



3. Dial Gauge Needle

Testers

	Description	Tool No.
1.	Dial gauge	90890-03002
2.	Point checker	90890-03031
3.	Electro tester	90890-03021
4.	CDI checker	90890-03068
5.	CDI checker lead wire	90890-03062



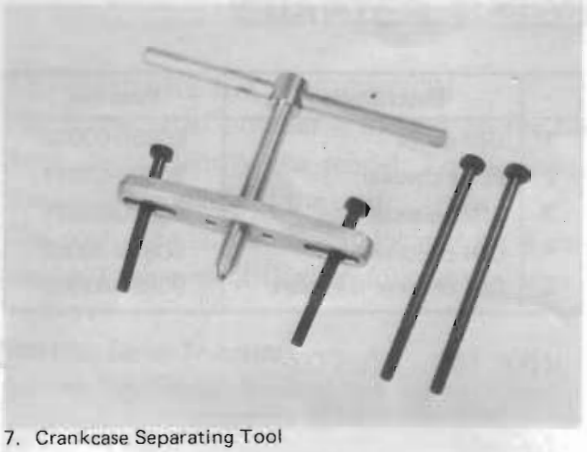
4. Flywheel Holding Tool



5. Flywheel Puller



6. Steering Nut Wrench



7. Crankcase Separating Tool



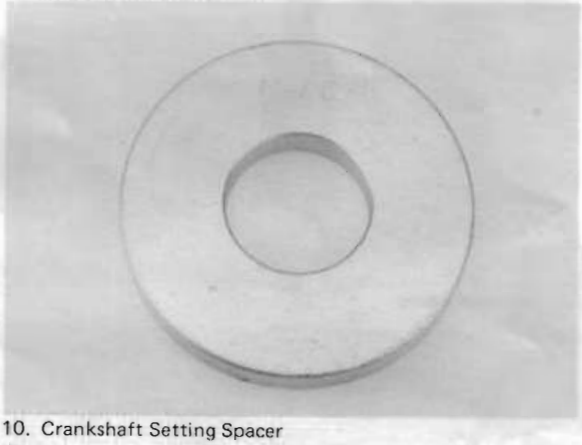
2. Point Checker



8. Crankshaft Setting Pot
9. Crankshaft Setting Tool



3. Electro Tester



10. Crankshaft Setting Spacer



4. CDI Checker

Testers



1. Dial Gauge



5. CDI Checker leadwire

CHAPTER 2. PERIODIC INSPECTION AND ADJUSTMENT

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CHAPTER 2. PERIODIC INSPECTION AND ADJUSTMENT

This chapter includes all information necessary to perform recommended inspection and adjustments. These preventive maintenance procedures, if followed, will insure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies not only to vehicles already in service, but also to new vehicles that are being prepared for sale. Any service technician performing preparation work should be familiar with this entire chapter.

2-1 MAINTENANCE AND LUBRICATION CHART

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 motorcycles 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. Maintenance Intervals

Item	Remarks	Initial km (mile)				Thereafter every km (mile)		
		400 (250)	800 (500)	1,600 (1,000)	3,200 (2,000)	1,600 (1,000)	3,200 (2,000)	6,400 (4,000)
Spark plug	Inspect/clean or replace	○			○		○	
Carburetor	Check operation/adjust		○		○		○	
Air filter	Oiled foam rubber type -- clean and recoil	Once per month or every 1,600 km (1,000 mile)						
Fuel petcock	Remove and clean	○		○		○		
Battery	To-off/check specific gravity and breather pipe	○	○	○	○	○		
Ignition timing	Adjust/clean or replace parts		○				○	
Brake system (comp.)	Check/adjust -- repair as required		○	○			○	
Clutch	Check/adjust as required		○	○			○	
Drive chain	Adjust tenstion/clean and lubricate (See "NOTE #2")	Every 400 km (250 mile)						
Front fork and rear shock absorber	Check operation, damaged and oil leakage		○		○			○
Wheels and tires	Pressure/spoke-tension/runout	○	○	○		○		
Fittings/fasteners	Tighten before each trip and or ...	○		○			○	
Cylinder head	Decarbonize			○			○	
Autolube pump	Check/adjust/Air bleeding	○		○	○	○		

NOTE:

#1. Oiled foam rubber type air filters must be wet with oil at all times.
If the machine is ridden off-road in wet or dusty conditions, the element should be serviced every 160 km (100 miles).

#2. Drive chain should be cleaned and lubricated every 80 ~ 160 km (50 ~ 100 miles) when operated in dusty or wet conditions.

B. Lubrication Intervals

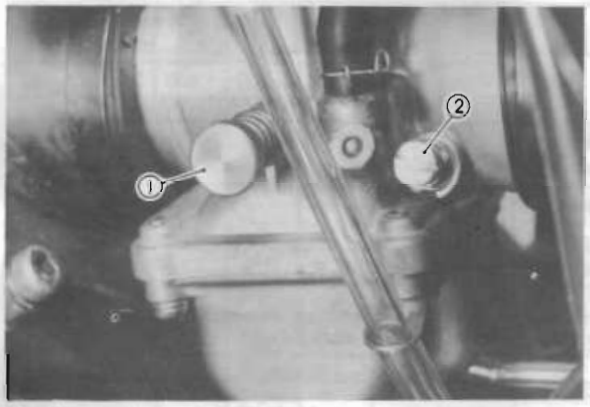
Item	Remarks	Type	Initial km (mile)				Thereafter every km (mile)		
			400 (250)	800 (500)	1,600 (1,000)	3,200 (2,000)	1,600 (1,000)	3,200 (2,000)	6,400 (4,000)
Transmission oil	Replace	Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil	○		○			○	
Drive chain	Remove/clean/lube/ adjust	Yamaha chain and cable lube SAE 10W/30 motor oil			○			○	
Control/meter cables	Apply throughly	Yamaha chain and cable lube 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 lubrication wicks	Apply very lightly	Light-weight machine oil			○			○	
Steering ball races	Inspect throughly/pack moderately	Medium-weight wheel bearing grease			○				○

2-2 ENGINE

A. Carburetor

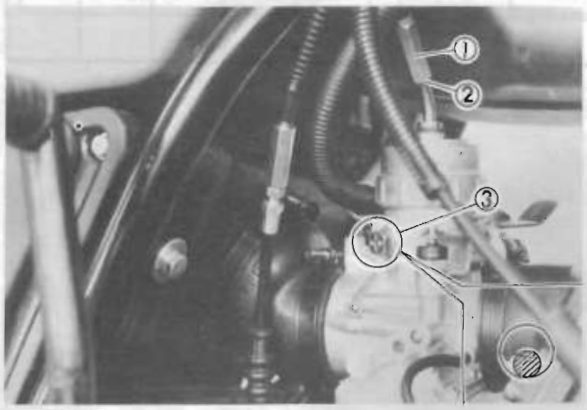
1. Idle mixture and idlw speed adjustment
   a. Fully warm up the engine and turn the pilot screw in until lightly seated.
   b. Backout pilot screw as specified.
   c. Turn the idle speed adjust screw until idle is at desired rpm.
   d. Turn the pilot screw in or out until speed is at highest rpm.
   e. Turn the idle speed adjust screw in or out until idle speed is at specified rpm.

	DT250D	DT400D
Pilot screw (Turns out)	1¾ turns	1 ½ turns
Idle speed (rpm)	1,300 ~ 1,400	1,400 ~ 1,500



1. Idle speed adjust screw
2. Pilot screw

2. Throttle cable
   a. Remove the bolt (a) and fully turn the throttle grip out.
   b. The mark on the throttle slide should be aligned with the bolt hole as illustrated. If adjustment is necessary:

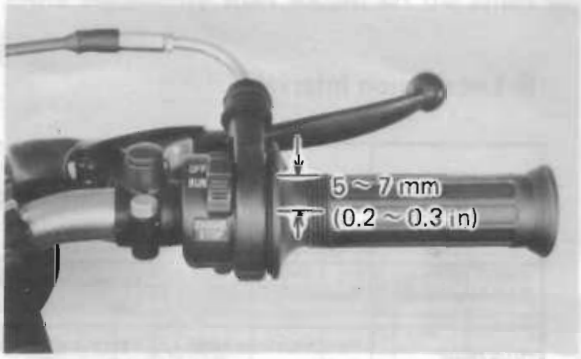


1. Adjuster 3. Bolt
2. Locknut

NOTE:
During this operation, take care so that not dust enters the carburetor.

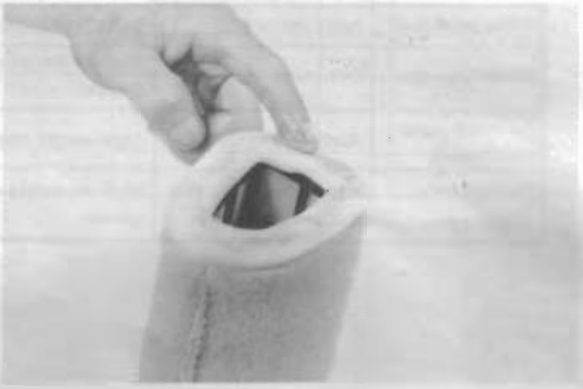
(1) Loosen the locknut.
(2) By turning the adjustor in or out, adjust the throttle slide.
(3) Tighten the locknut.

   c. Close the throttle grip and fully open it again. Check the position of slide. Install the bolt.
   d. The play in turning direction should be 3–7mm (0.12–0.28 in) at grip flange.
   After adjusting, be sure to tighten the locknut properly.



B. Air Filter

1. Cleaning method
   Clean the element with solvent. After cleaning, remove the remaining solvent by squeezing the foam rubber. Then apply 30 wt motor oil.
   Foam should be wet but not dripping.. Coat the filter element with light grease.



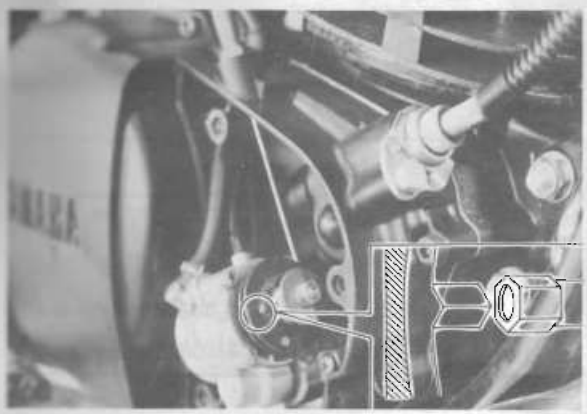
2. The air filter element should be cleaned once a month or every 3,000km (2,000 mi). It should be cleaned more often if the machine is operated in extremely dusty areas.

C. Autolube pump

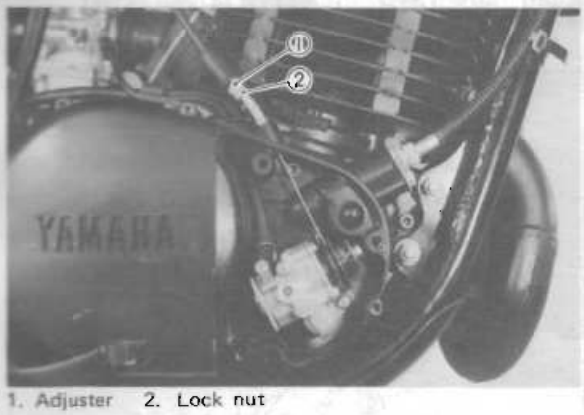
1. Cable adjustment

a. Fully open the throttle grip. Hold this position.

b. Check to see that Autolube pump plunger pin is aligned with the mark on the Autolube pump pulley.



c. If the mark and pin are not aligned, adjust cable length until alignment is achieved.



1. Adjuster 2. Lock nut

d. Apply grease to pump pulley.

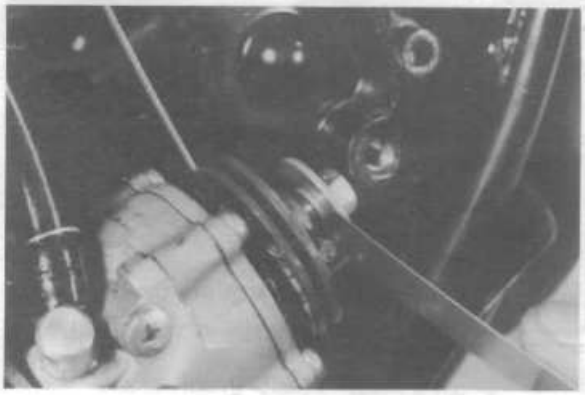
NOTE:

Before adjusting Autolube cable always set throttle cable free play first. (Refer to page 8).

2. Pump stroke adjustment

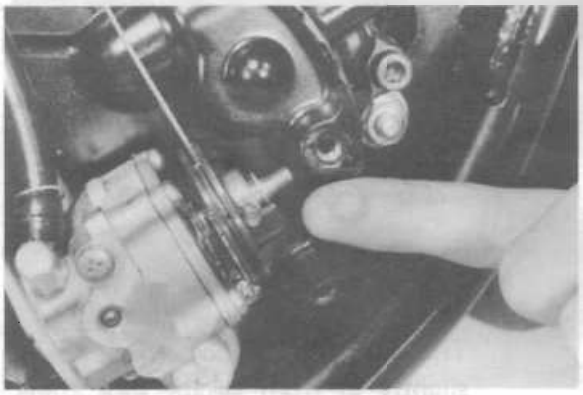
a. With throttle closed, rotate starter plate until the pump plunger moves fully out and away from the pump body to its outermost limit.

b. Measure gap with thickness gauge between raised boss on pump adjusting pulley and adjusting plate.
If clearance is not correct, remove adjusting plate locknut and adjusting plate.



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

c. Remove or add an adjustment shim as required.



d. Re-install adjusting plate and locknut. Tighten the locknut. Re-measure gap. Repeat procedure as required.

3. Bleeding the pump

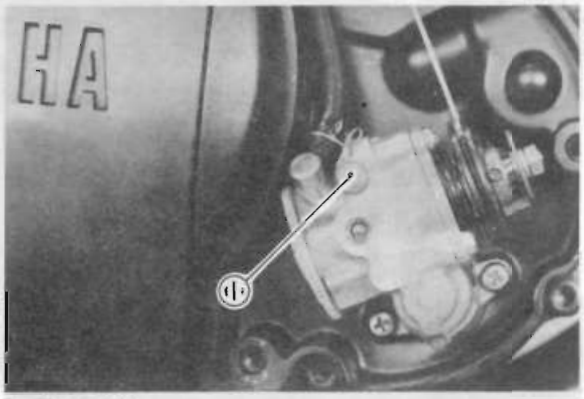
The Autolube pump and delivery lines must be bled on the follwing occasions:

1) Setting up a new machine out of the crate.

2) Whenever the Autolube tank has run dry.

3) Whenever any portion of the Autolube system is disconnected.

a. Remove the pump bleed screw.



1. Bleed screw

b. Turn the throttle to the full open position.
c. Rotate the starter plate until a steady flow of oil, with no air bubbles, comes out.
d. Re-install bleed screw and pump cover.

D. Engine and Transmission Oil

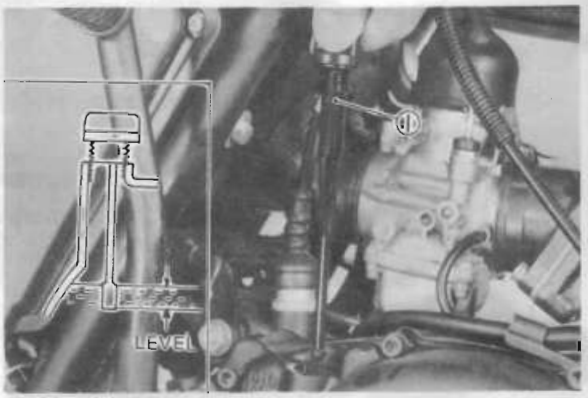
1. Engine oil (Autolube oil)

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

2. Transmission oil

The dip stick is located above and slightly in front of the kick crank. To check level, start the engine and let it run for several minutes to warm and distribute oil with the engine stopped, unscrew the dipstick and clean. Set it on the case threads in a level position.

Remove and check level.



1. Dip stick

Recommended oil: Yamalube 4-cycle oil or SAE 10W/30 automotive oil with "SE" rating

Transmission drain plug torque: 1.5 ~ 2.1 m-kg (10.8 ~ 15.2 ft-lb)
Transmission oil quantity: Total: 1,200 cc (1.26 US.qt) Exchange: 1,100 cc (1.16 US.qt)

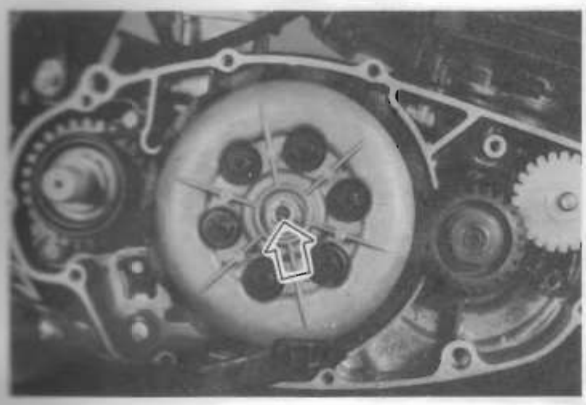
CAUTION:
Under no circumstances should any additives be included with the transmission oil. This oil also lubricates and cools the clutch. Additives may cause clutch slippage.

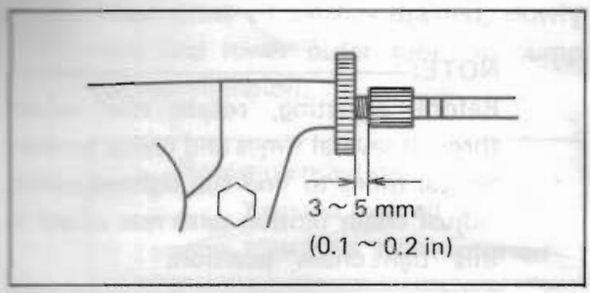
2-3. CHASSIS

A. Clutch Freeplay Adjustment

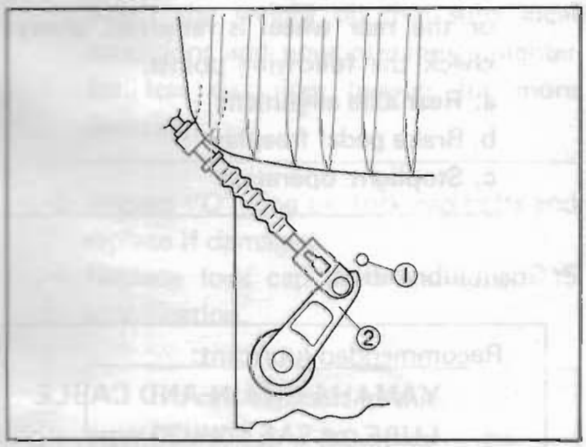
Adjust the clutch lever freeplay with the lever adjuster. If the freeplay is out of adjustment, proceed as follows:

a. Drain the transmission oil and remove crankcase cover (R).
b. Turn the cable adjuster in as illustrated.
c. Loosen the locknut and turn the adjuster in until lightly seated.





d. Push the push lever toward the front with your finger until it stops.
Then turn the adjuster in until the push lever mark and crankcase match mark are in aligned.



1. Crankcase mach mark 2. Push lever

Lever freeplay: 5-8mm (0.2–0.3 in)

B. Brakes and Wheels

1. Brake adjustment
Front brake should be adjusted to suit rider preference with a minimum cable slack of 5–8mm (0.2–0.3 in) play at the brake lever pivot point. Adjust freeplay as follows:

a. Turn the cable adjuster in as illustrated.
b. Turn the cable adjuster of the brake shoe plate out until the brake lever play is none. Tightem locknut.
c. Turn the cable adjuster of the lever holder until the lever play is adjusted to specification.
Rear brake play should be checked anytime chain is adjusted or rear wheel is removed and reinstalled.

Rear brake pedal freeplay: 20–30mm (0.8–1.2 in)

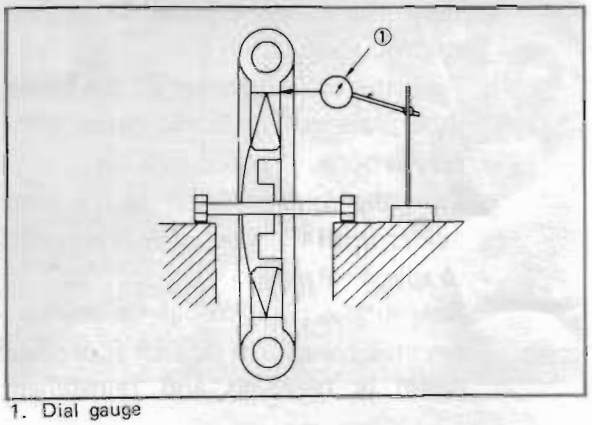
2. Brake lining check
Brake linings can be checked through the inspection hole in the shoe plate.

S.T.D. lining thickness: 4 mm (0.16 in) Wear limit: 2 mm (0.08 in)



3. Rim runout
Check rim runout as shown below.
Rim runout limits

	Front	Rear
Vertical :	1.0mm (0.04in)	0.5mm (0.02in)
Lateral :	0.5mm (0.02in)	0.5mm (0.02in)



1. Dial gauge

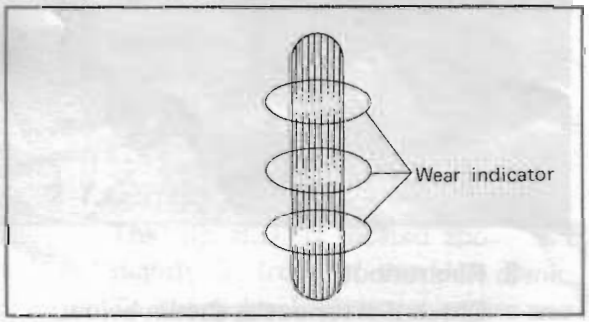
4. Tires

a. Tire pressure

	Front tire	Rear tire
Normal riding	1.3 kg/cm^2 (19 lb/in^2)	1.5 kg/cm^2 (21 lb/in^2)
Continuous high speed riding or with passenger	1.5 kg/cm^2 (21 lb/in^2)	1.8 kg/cm^2 (25 lb/in^2)

b. Check the tire for wear

If a tire tread shows cross wise lines, it means that the tire is worn to its limit. Replace the tire.



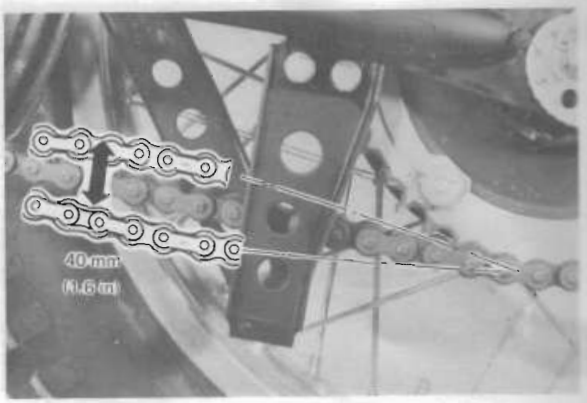
C. Drive Chain

1. Chain tension adjustment.

Inspect the drive chain with both tires touching the ground. Check the tension at the position shown below.

NOTE:

Excessive chain tension will overload the engine and other vital parts; keep the tension within the specified limits.



NOTE:

Before adjusting, rotate rear wheel through several times and check tension several times to find the tightest point. Adjust chain tension with rear wheel in this "tight chain" position.

Axle nut torque:
8.3 ~ 13 m-kg (60 ~ 90 ft-lb)

CAUTION:

Whenever the chain is adjusted and/or the rear wheel is removed. always check the following points.

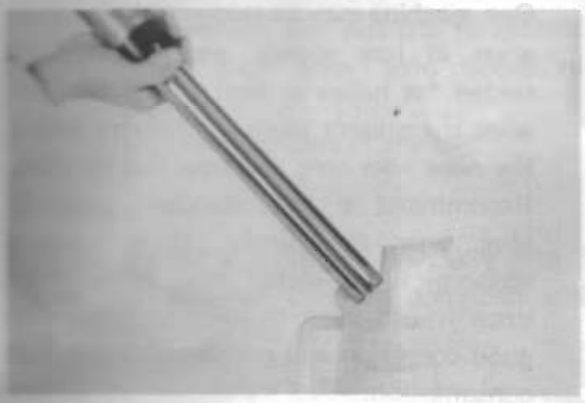
a. Rear axle alignment
b. Brake pedal freeplay
c. Stoplight operation

2. Chain lubrication

Recommended lubricant:
YAMAHA CHAIN AND CABLE LUBE, or SAE 10W/30 type "SE" motor oil

D. Front Fork Oil Change

1. Elevate front wheel by placing a suitable stand under the engine and drain oil.



2. After most of oil has drained, slowly raise and lower outer tubes to pump out remaining oil.

Recommended oil:
Yamaha fork oil or
10W,20W,30W motor oil

Quantity per leg:
190.5 cc
(6.44 oz)

NOTE:

Select the weight oil that suits local conditions and your preference (lighter for less damping; heavier for more damping).

3. Inspect "O" ring on fork cap bolts and replace if damaged.
4. Replace fork cap bolts and torque to specification.

Fork cap bolt torque:
1.5 ~ 3.0 m-kg
(11 ~ 21 ft-lb)



E. Suspension, Steering and Swing Arm

1. Adjust steering head fitting nut until steering head is tight without binding when forks are turned.
   To adjust, fully tighten the steering nut with your hand then back out the nut about ¼ turn.
2. Check swing arm freeplay.

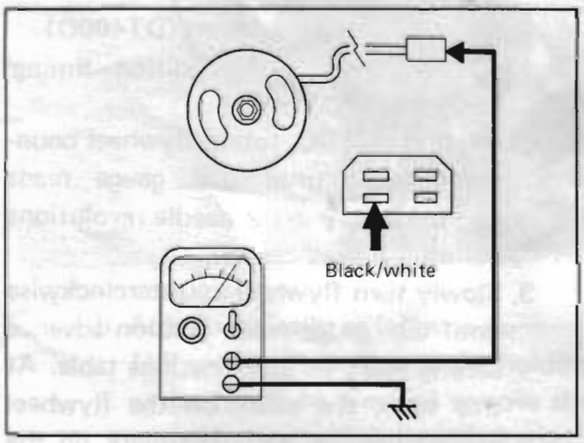
Swing Arm Freeplay:
1.0 mm at end of
swing arm

2-4. ELECTRICAL

A. Ignition Timing Adjustment. (DT250D)

Ignition timing must be set as follows:

1. Remove the mufller and set the dial gauge.
2. Connect point checker terminals as illustrated.



3. Rotate magneto flywheel until piston is at top dead center (TDC).
   Set the zero on dial gauge face to line up exactly with dial gauge needle. Tighten set screw on dial gauge stand to secure dial gauge assembly. Rotate magneto flywheel back and force to be sure that indicator needle does not past zero.
4. Starting at TDC rotate magneto flywheel clockwise until dial gauge reads approximately 4 needle revolutions before-top-dead-center (BTDC).
5. Slowly turn magneto flywheel until dial gauge reads ignition setting listed in

specifications. At this time the point checker needle should swing from "CLOSED" to"OPEN" position, indicating the contact breaker have just begun to open.

6. Repeat steps 9. and 10. to verify point opening position. If points do not open within specified tolerance, they must be adjusted.
7. Adjust ignition points by slightly loosening Phillips head screw and carefully rotating contact breaker plate assembly with a soltted screwdriver. Make small adjustment and retighten Phillips head screw before rechecking timing. Recheck timing by repeating steps 9. and 10.

Ignition timing (BTDC)
DT250D: 3.2 ± 0.15mm (0.12 ± 0.006 in)
DT400D: 2.9 ± 0.15mm (0.11 ± 0.006 in)

B. Ignition Timing Adjustment (DT400D)

1. Follow steps 1–3, ignition timing adjustment (DT250D)
2. Starting at TDC, rotate flywheel counterclockwise until dial gauge reads approximately 3-1/2 needle revolutions before-top-dead-center.
3. Slowly turn flywheel counterclockwise until dial gauge reads ignition advance setting listed in specifications table. At this time, the mark on the flywheel should line up with the mark on the charge coil.
4. If the marks are not in alignment, loosen the charge coil set screws and rotate the charge coil until alignment is achieved.

Tighten set screws. Repeat steps 2 and 3.

C. Spark Plugs

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.

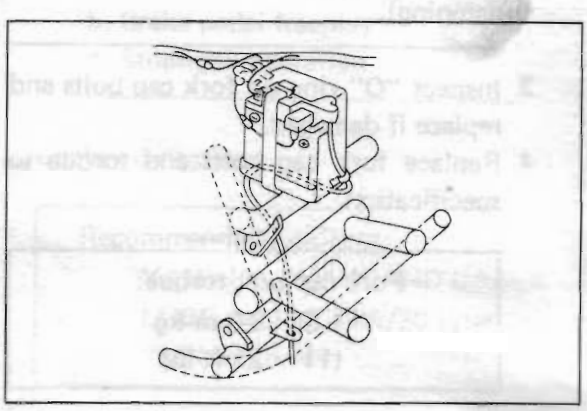
One machine may be ridden only in urban areas at low speeds; another may be ridden for hours at high speed. Confirm what the present plugs indicate by asking the rider how long and how fast he rides. Recommend a hot, standard, or cold plug type accordingly. It is actually economical to install new plugs often since it will tend to keep the engine in good condition and prevent excessive fuel consumption.

Spark plug type: NGK B-8ES, Champion N-2
Spark gap: 0.6 – 0.7 mm (0.023 – 0.027 in)

D. Battery

A poorly maintained battery will deteriorate quickly. The battery fluid should be checked at least once a month.

1. The level should be between the upper and lower level marks. Use only distilled water for refilling. Normal tap water contains minerals which are harmful to a battery;
2. Make sure the breather pipe is properly connected and is not damaged or obstructed.



3. If sulfation (white accumulations) occurs on plates due to lack of battery electrolyte, the battery should be replaced.
4. If the bottom of the cells are filled with corrosive material falling off plates, the battery should be replaced.
5. If the battery shows the following defects, it should be replaced.

a. The voltage will not rise to specific value even after long hours of charging.
b. No gassing occurs in any cell.

6. Service life

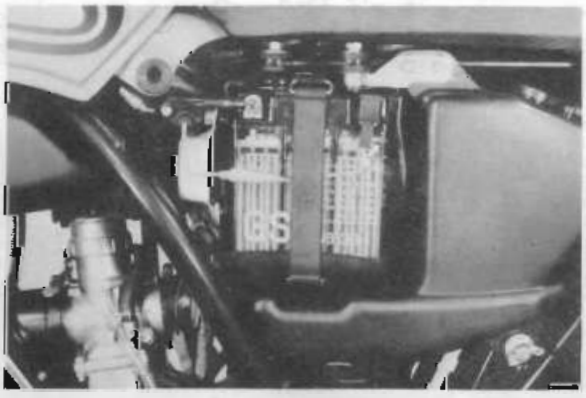
The service life of a battery is usually 2 to 3 years, but lack of care as described will shorten the life of the battery.

Battery	6V,6AH
Electrolyte	Specific gravity: 1.26 Quantity: 250cc (8.45 oz)
Initial charging current	0.4 amperes/10hours (New battery)
Re-charging current	0.6 amperes/10 hours (or until specific gravity reaches 1.26)
Refilling of fluid	Distilled water to maximum level line
Refilling of period	Check once per month or more often as required

7. 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 (32° F).
c. Recharge the battery before reinstallation;

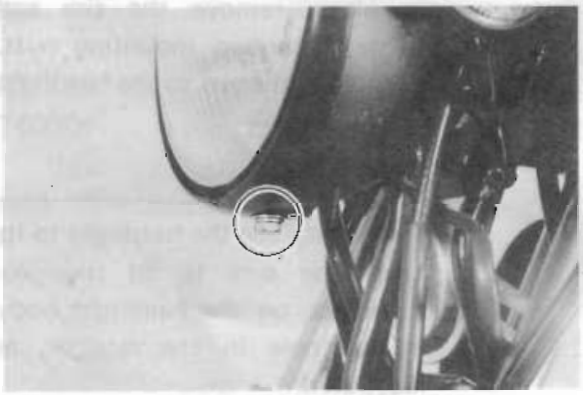


NOTE:
When filled with dilute sulfuric acid (electrolyte), this battery can be put into use immediately. That is, it is a dry-charged battery. It is advisable, however, that the battery be charged as much as possible before using to insure maximum performance. This initial charge will prolong the life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

E. Headlight

1. Headlight beam adjustment

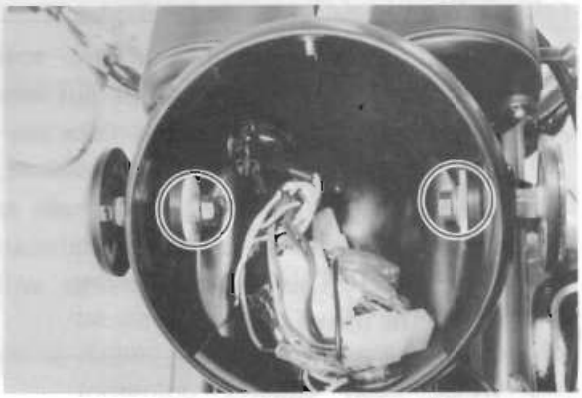
When necessary, adjust the headlight beam as follows.
First loosen the headlight holding nut, and adjust the headlight by moving it to the right or left.



b. Adjust vertically as follows:
1) Remove the anchor screw holding the headlight rim and remove the rim by prying lightly with a screwdriver at the gap provided at the bottom of the headlight.

NOTE:
Take care not to damage the headlight.

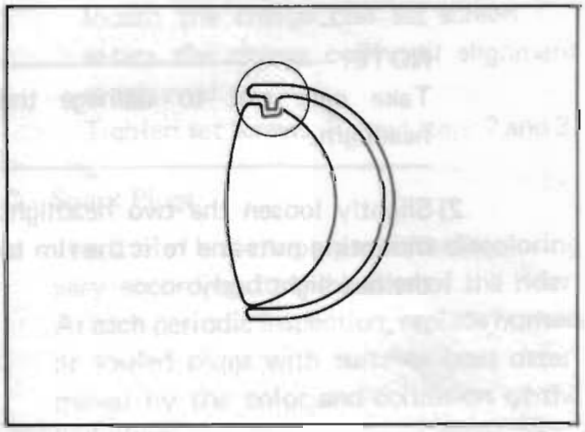
2) Slightly loosen the two headlight mounting nuts and refit the rim to the headlight body.



NOTE:
Do not tighten the anchor screw yet.

3) Next, adjust vertically by moving the headlight body. When adjustment is complete, hold the body in place, remove the rim and tighten the two mounting nuts. Then refit the rim to the headlight body.

NOTE:
When installing the headlight to its body, be sure to fit the protuberance on the headlight body in the hole in the retainer, as illustrated.
Next, secure the bottom bolt of retainer to the headlight body with the holding bolt.
Fit this protuberance in the hole firmly.



2. Replacing the headlight bulb
   a. Unhook spring and pull the defective unit out of the shell.



   b. Slip a new unit into position and install springs.
   c. Adjust headlight beam.

NOTE:
Take care not to damage the headlight. It is very fragile.

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3

CHAPTER 3.
ENGINE OVERHAUL

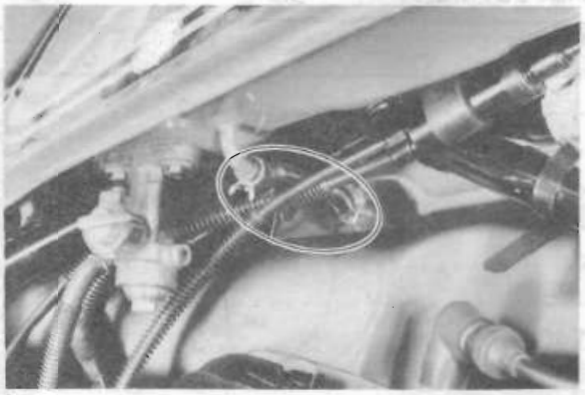
3-1. REMOVAL

A. Preparation for Removal

1. All dirt, mud, dust and foreign material should be thoroughly removed from the exterior of the engine before removal and disassembly. This will prevent any harmful foreign material from entering the interior of engine assembly.
2. Before engine removal and disassembly, be sure you have proper tools and cleaning equipment so you can perform a clean and efficient job.
3. During disassembly of the engine, clean and place all parts in trays in order of disassembly. This will ease and speed assembly time and insure correct reinstallation of all engine parts.
4. Start the engine and warm it for a few minutes; turn off the engine and drain engine oil.

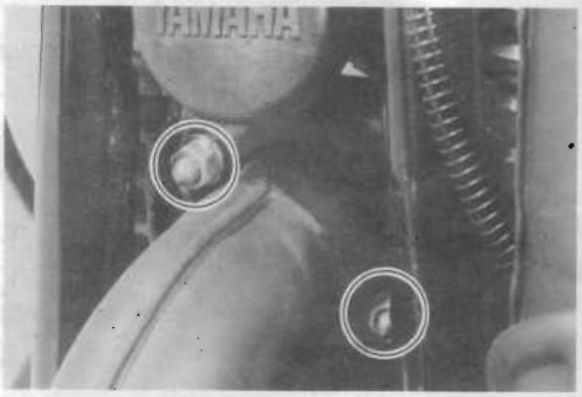
B. Fuel Tank Assembly

1. Remove bolt holding rear of fuel tank.
2. Disconnect and plug cross over pipe.

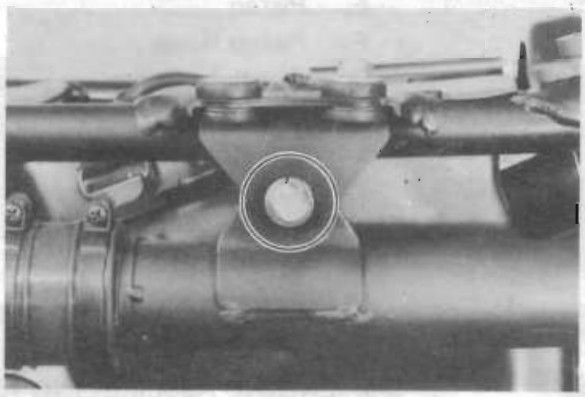


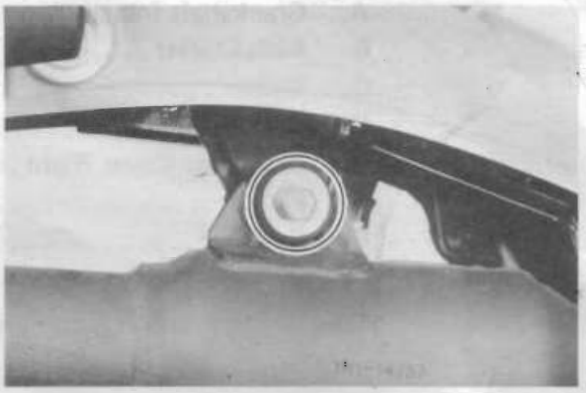
C. Exhaust Pipe

1. Remove the nuts holding the exhaust pipe to the cylinder head.
2. Remove the bolts and spring washer holding the exhaust pipe to the frame.





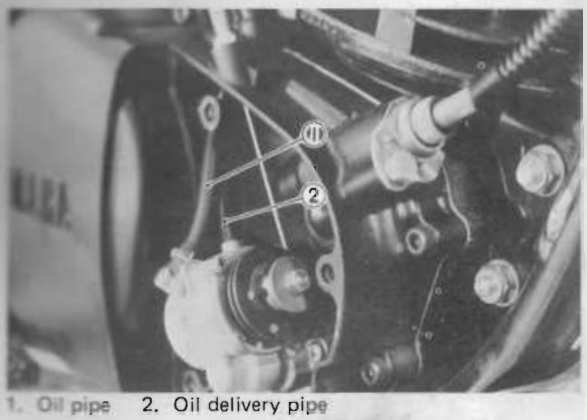




3. Loosen the band connecting the exhaustpipe to silencer.

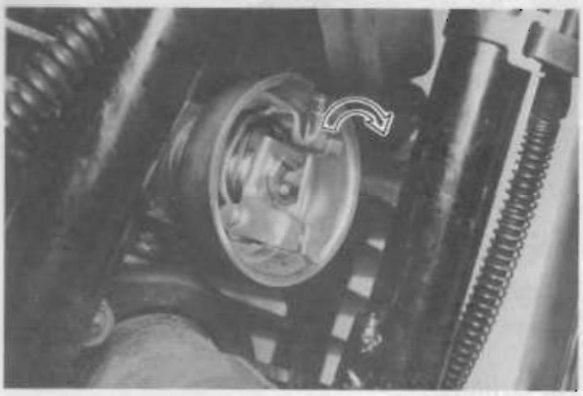
D. Wiring and Cables

1. Remove spark plug cap.
2. Remove oil pump cover.
3. Remove oil pipe at oil tank. Remove delivery pipe at carburetor.

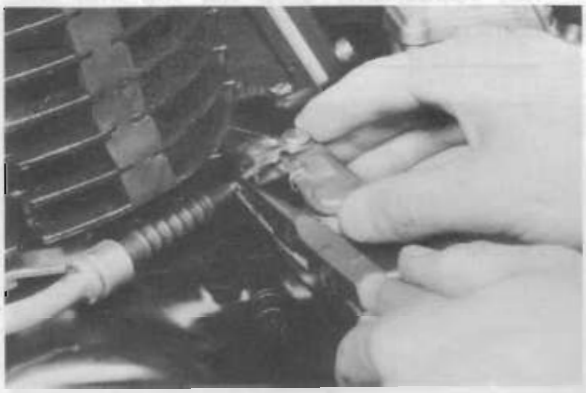


1. Oil pipe 2. Oil delivery pipe

4. Remove de-comp cable (DT400D)

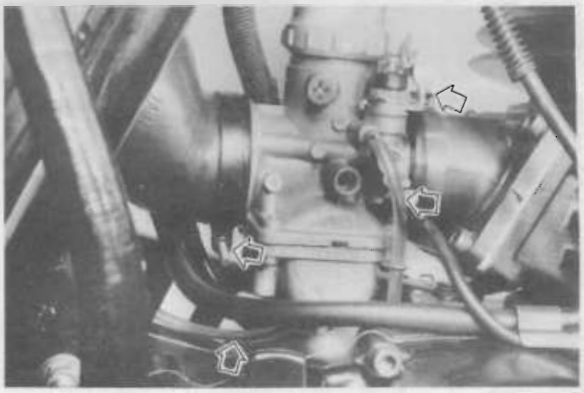


5. Remove pump cable.
6. Remove tachometer cable.
7. Remove left crankcase cover.
8. Remove clutch wire at clutch push lever



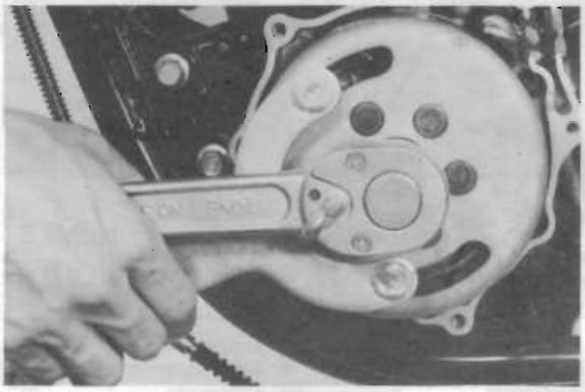
E. Carburetor

1. Loosen two carburetor hose clamp.
2. Remove carburetor assembly
3. Noting the presence, location and routing of all vent and overflow tubes, remove carburetor.



F. Flywheel Magneto

1. Remove magneto flywheel.

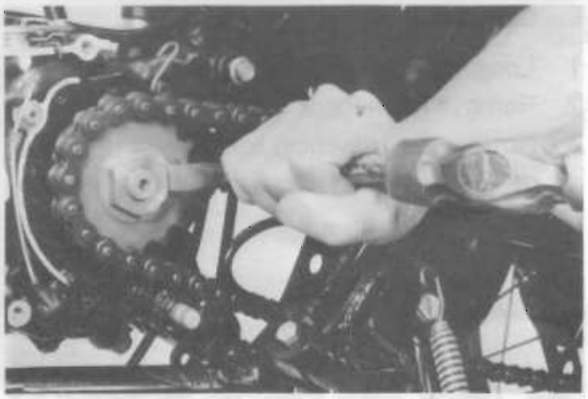


2. Disconnect the magneto lead wire, neutral switch lead from the wire harness at the rear frame down tube.
3. Remove flywheel backing plate assembly.

G. Drive Chain

1. Loosen drive sprocket before disconnecting chain.

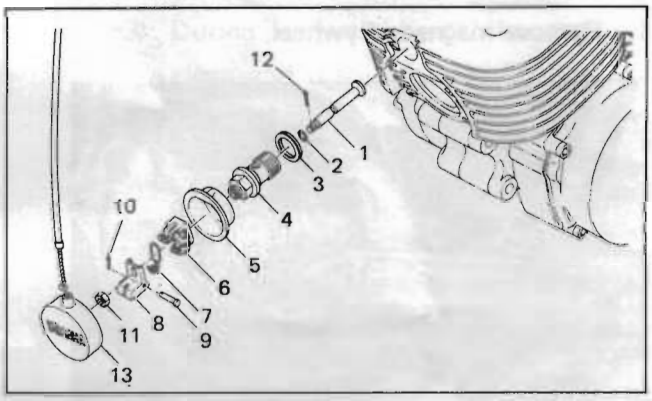
a. Bend down lock tab.
b. Put transmission in gear.
c. Apply rear brake.
d. Loosen sprocket securing nut.



2. Bring master link clip slightly before the sprocket wheel, and remove the clip. Remove the chain.

H. Decompression Assembly (DT400D)

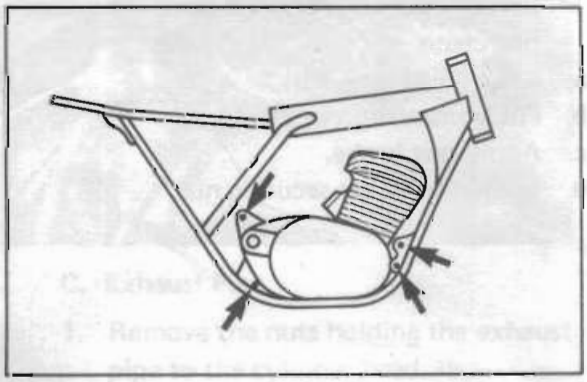
Remove decompression assembly, if necessary.



1. Decompression valve
2. O-ring
3. Gasket
4. Decompression bracket
5. Plate
6. Wire holder
7. Decompression spring
8. Decompression lever
9. Decompression lever pin
10. Cotter pin
11. Nut
12. Cotter pin
13. Decompression cover

I. Removal

1. Remove engine mounting bolts.



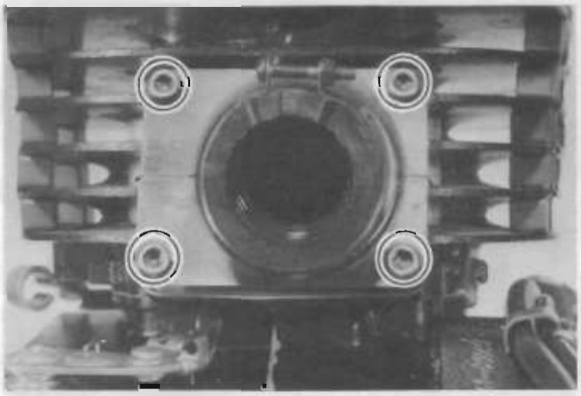
2. Remove engine from right side of frame.

3-2. DISASSEMBLY

A. Cylinder Block

Remove the following parts before checking and repairing.

1. Reed valve assembly holding bolts.
2. Carburetor joint.
3. Reed valve assembly.



4. Cylinder head.

NOTE:
Loosen spark plug before loosening cylinder head.

5. Cylinder.
6. Piston Pin and Piston.

NOTE:
Befroe removing the piston pin clip, cover the crankcase with a clean rag so you wili not accidentally drop the clip into the crankcase.



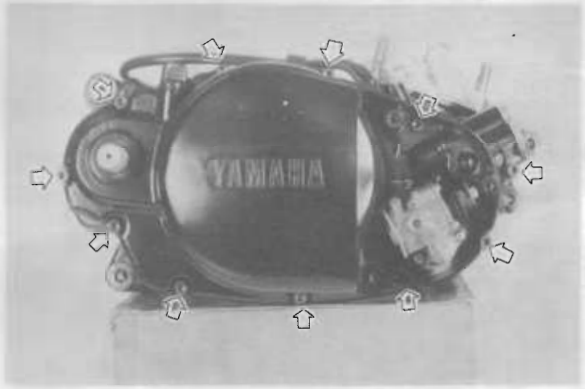


B. Crankcase Half (R)

1. Kick crank

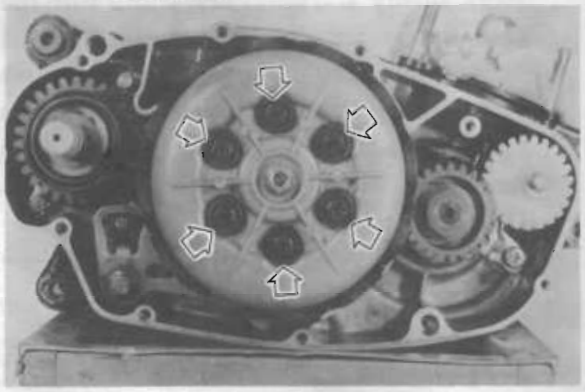
NOTE:
The bolt must be completely removed from the kick crank.

2. Crankcase cover, right.

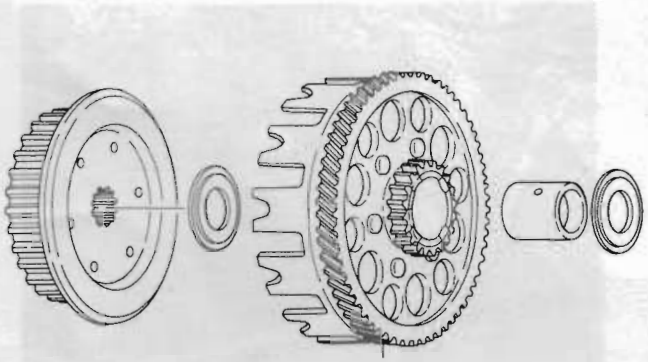


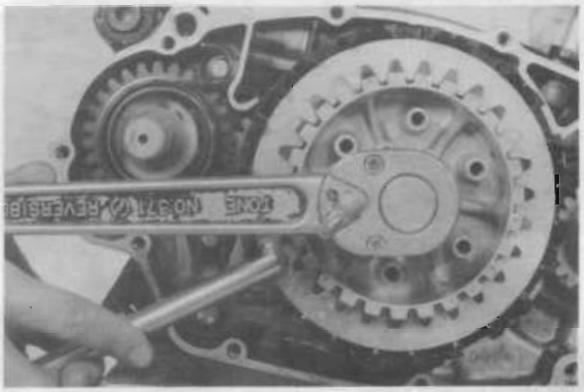
NOTE:
Crankcase cover can be removed without removing Autolube pump. (See Autolube pump section.)

3. Clutch spring screw.
4. Clutch spring.
5. Pressure plate.

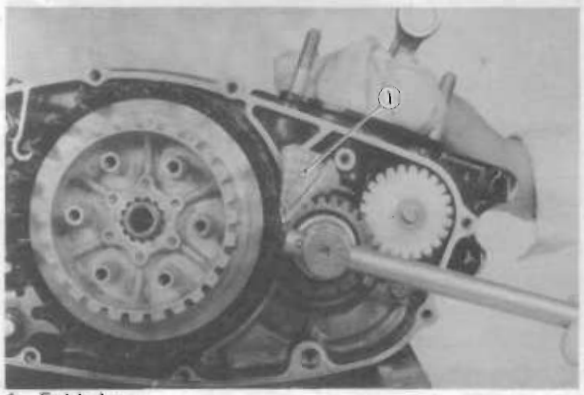


6. Locknut.
7. Belleville spring washer.



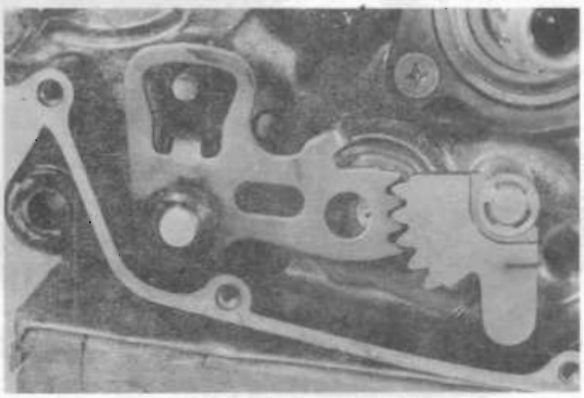


8. Primary drive gear.
To remove, place a folded rag between the teeth of the primary gearts to lock them.

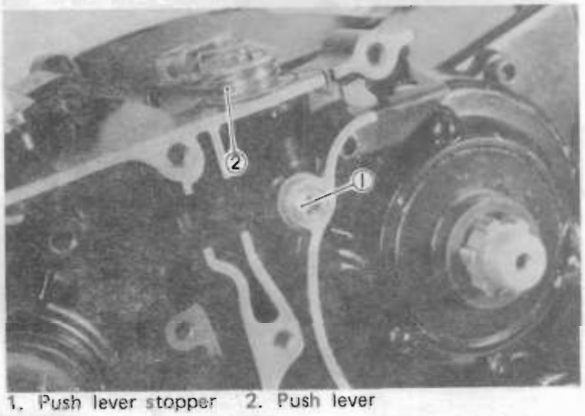


1. Folded rag

9. Primary driven gear kick idle gear, kick axle and change lever assembly.

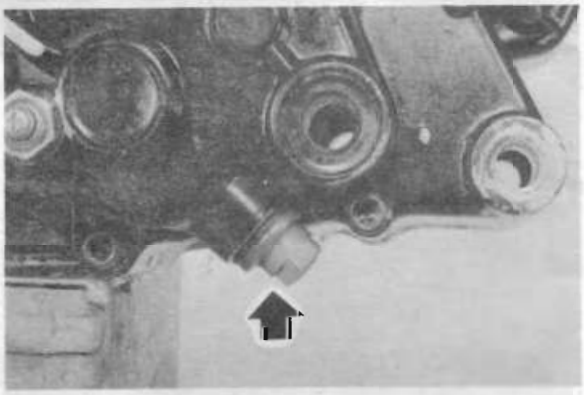


10. Push lever stopper screw.
11. Clutch push lever axle.



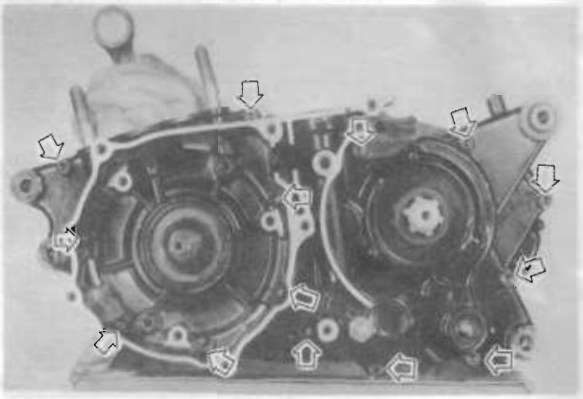
1. Push lever stopper 2. Push lever

12. Shift cam stopper.



C. Crankcase

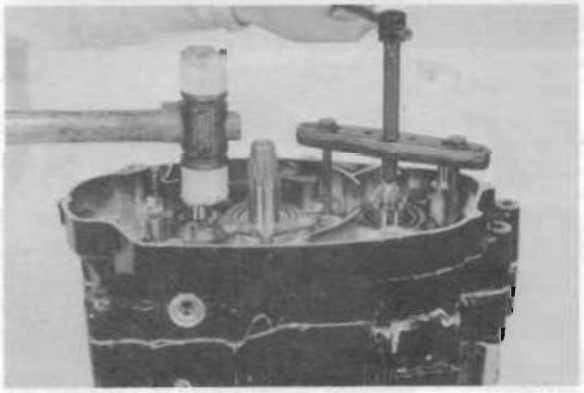
1. Remove hexagon bolts.



2. Install crankcase separation tools as shown. Use a thick plain washer to protect end of crankshaft.

NOTE:

Fully tighten the tool securing bolts, but make sure the tool body is parallel with the case.



3. As pressure is applied, alternately tap on the front engine mounting boss, the transmission shafts and the shift drum.

CAUTION:

Use 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.

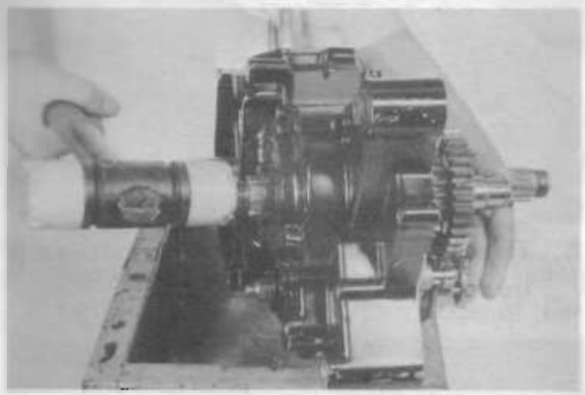
Do not force.

D. Transmission

Remove the transmission shaft, shift forks and shaft cam. Tap lightly on the transmission drive shaft with a soft hammer to remove.

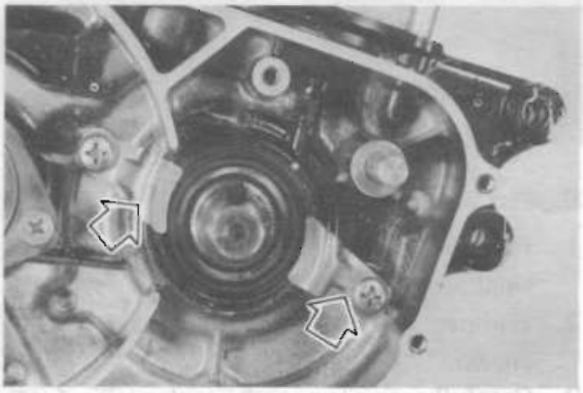
NOTE:

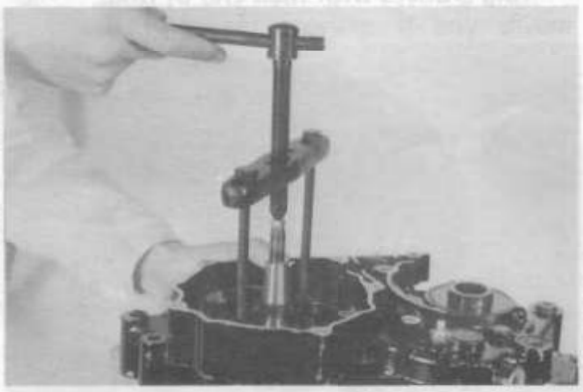
Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.



E. Crankshaft

Remove oil seal stopper then crankshaft assembly with the crankcase separation tool.





3-3. INSPECTION AND REPAIR

A. Cylinder Head

Remove carbon deposits from combustion chamber.

Place on a surface plate. There should be no warpage. Correct by re-surfacing as shown below.



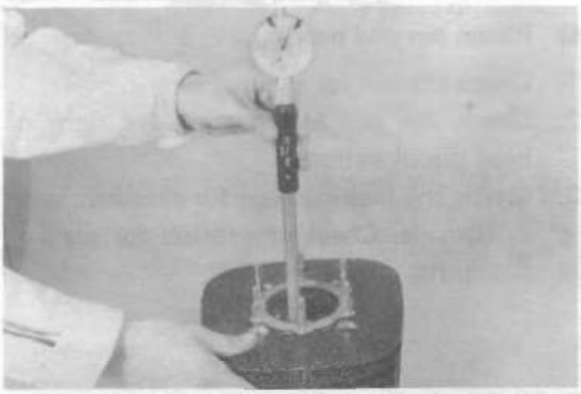
1. 400 ~ 600 grit wet sandpaper

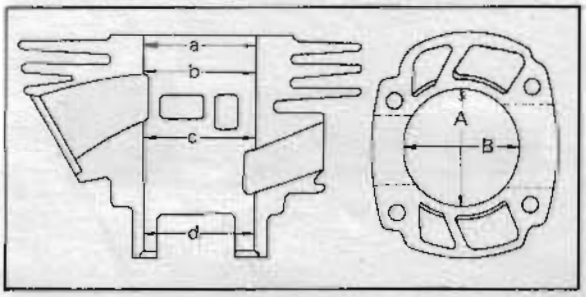
B. Cylinder

1 Visually check the cylinder walls for scratches. If vertical scratches are evident, the cylinder wall should be rebored or the cylinder should be replaced.

2. Measure cylinder wall wear in the manner as shown. If wear is excessive, rebore the cylinder wall.

Cylinder wear should be measured in the positions as illustrated.



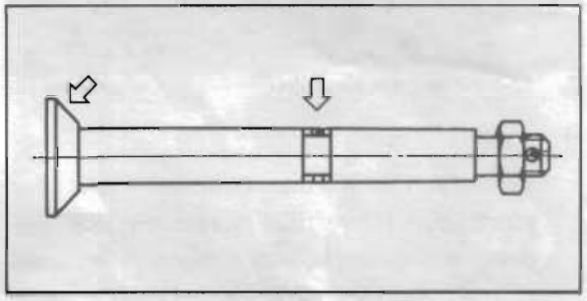


	DT250D	DT400D
Cylinder bore	70 ~ 70.02 mm	85 ~ 85.02 mm
Maximum	70.01 mm	85.1 mm
Cylinder taper	0.08 mm	0.08 mm

C. Decompression Assembly (DT400D)

A decompression assembly is used on the 400 c.c. engine. It is so designed as to operate automatically when the kick lever is engaged.

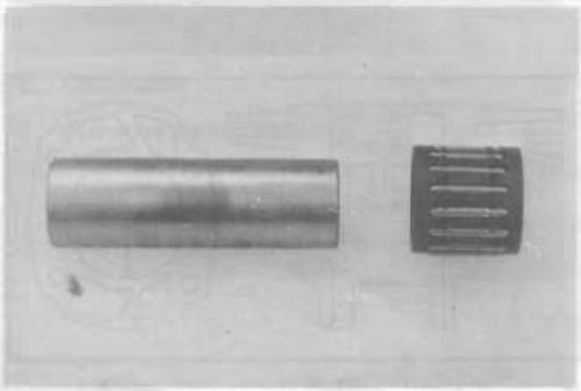
2. Carbon removal
   Remove the decompression holder (screw-(screw-in type) and remove any deposits from the decompression valve, decompression holder and passages.



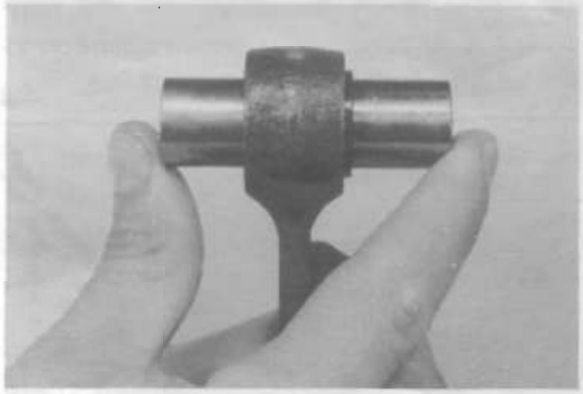
CAUTION:
After reassembling the decompression device, be sure to check it for compression pressure leaks.

D. Piston pin and bearing

1. Check the pin for signs of wear.
2. Check the pin and bearing for signs of head discoloration.
3. Check the bearing cage for excessive wear or damage. Check the rollers for signs of flat spots.



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



5. The piston pin should have no noticeable free play in the piston.



E. Piston

1. Remove piston rings and expander (2nd ring).
2. Remove carbon deposits from piston crown.
3. Carefully remove carbon deposits from ring grooves with filed end of ring.



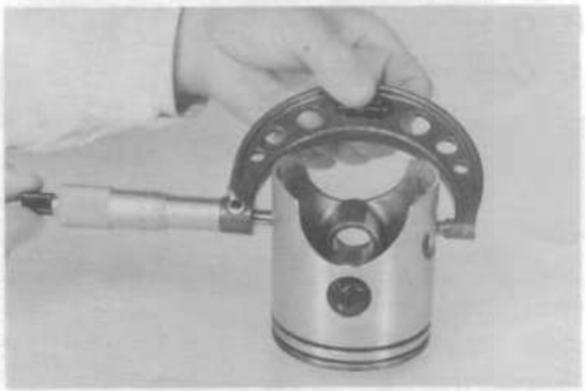
4. Remove score marks and lacquer deposits from sides of piston using 600 ~ 800 grit wet sandpaper. Sand in a crisscross pattern. Do not sand excessively.



5. Wash piston in solvent and wipe dry.

a. Measure the outside diameter of the piston.
Measurement should be made at a point 12 mm above the bottom edge of the piston.

Piston clearance:
0.040 ~ 0.045 mm

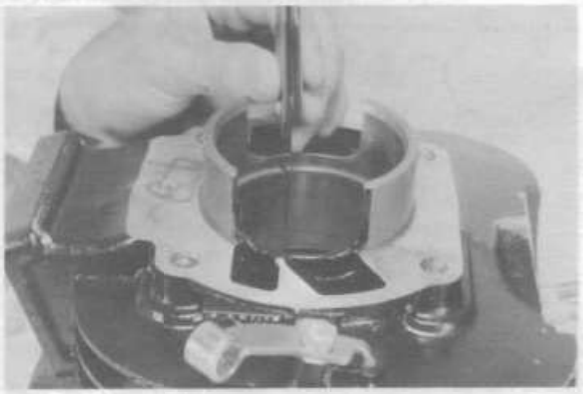


F. Piston Rings

1. Check rings for scoring. If any severe scratches are noticed, replace ring set.
2. Insert each ring into cylinder.
Measure installed end gap. If beyond tolerance, replace ring set.

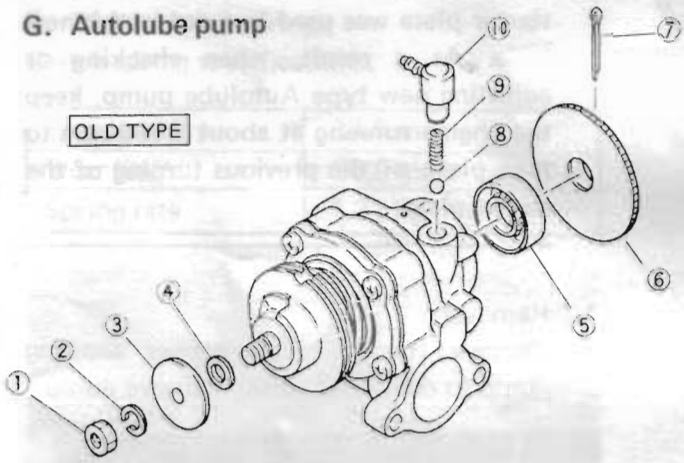
Ring end gap (installed)

	DT250D	DT400D
Top	0.2 ~ 0.4 mm	0.3 ~ 0.5 mm
2nd	0.2 ~ 0.4 mm	0.3 ~ 0.5 mm

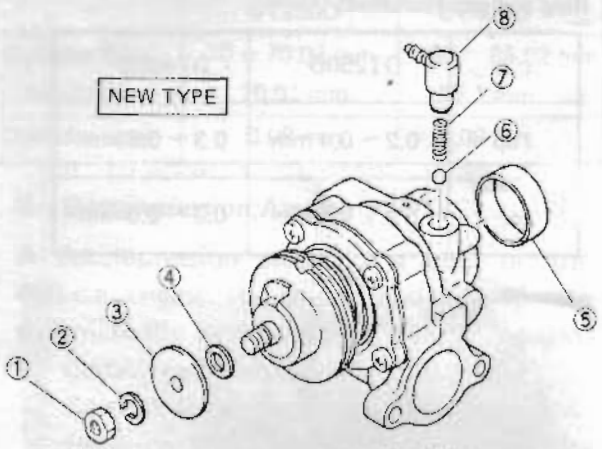


3. Check ring expander.

G. Autolube pump



1. Nut
2. Spring washer
3. Adjusting plate
4. Plunger shim
5. Oil seal
6. Starter plate
7. Cotter pin
8. Ball
9. Compression spring
10. Nozzle



1. Nut
2. Spring washer
3. Adjusting plate
4. plunger shim
5. Blind plug
6. Check ball
7. Check spring
8. Nozzle

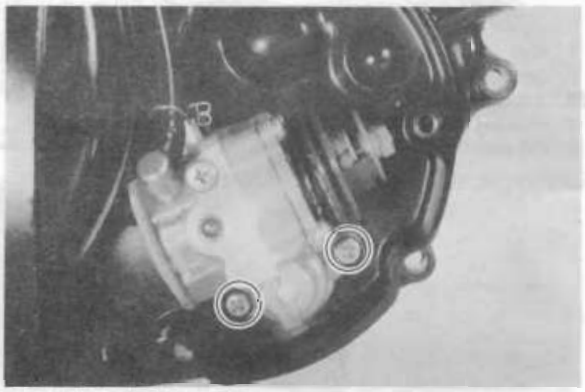
CAUTION:

The autolube pump on this machine was modified during the production.

In the original type Autolube pump, a starter plate was used but not in this new type. As a result, when checking or adjusting new type Autolube pump, keep the engine running at about 2,000 rpm to take place of the previous turning of the starter plate.

1. Removal

Remove (two) Phillips screws securing pump to crankcase cover. Remove pump.



2. 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 improper output is suspected, check the following:

1) Obstructions in delivery line to pump or from pump to carburetors.
2) Worn or damaged pump body seal or crankcase cover seal.
3) Missing or improperly installed check ball of 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 improper output is still suspected, connect a delivery line from the pump to a container graduated in cubic centimeters (cc's). Keep the delivery line short.

Rotate the pump starter plate while counting pump plunger strokes.

	Maximum throttle	Minimum throttle
Pump output at 200 strokes	4.65 ~ 5.15 cc	0.5 ~ 0.63 cc

3. Reassembly

Always install a new pump case gasket.

H. Clutch

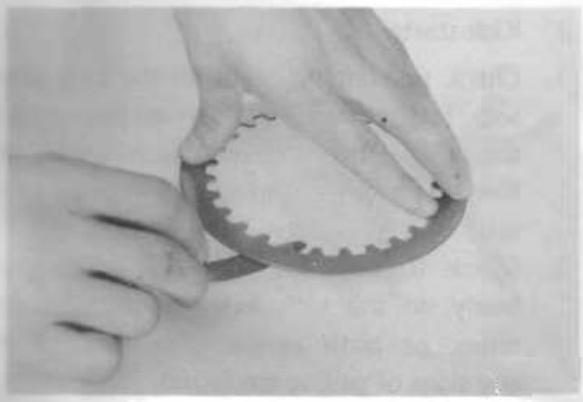
1. Checking friction plates



STD thickness:	3.0 mm
Wear limit:	2.7 mm

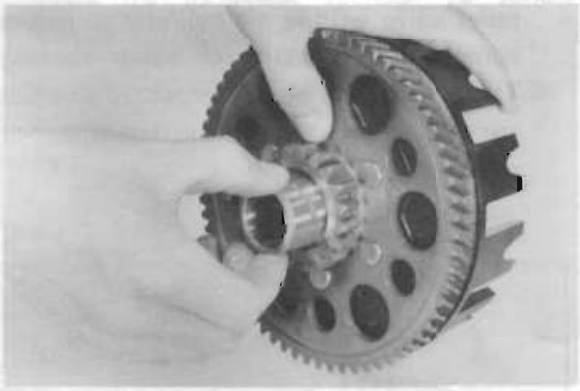
2. Measure clutch plates

Clutch plate warpage limit: 0.05 mm (0.002 in)



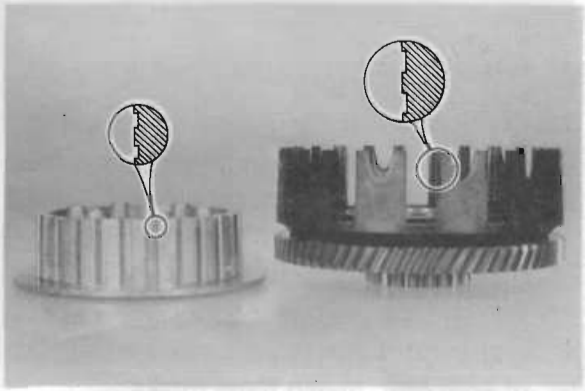
NOTE:
For optimum performance, if any friction or clutch plate requires replacement, it is advisable to replace the entire set.

3. Thoroughly clean the primary driven gear assembly and spacer.
   Apply a light film of oil to 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.



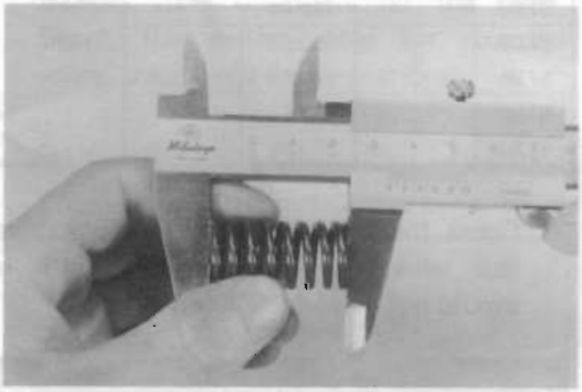
4. Check the bushing, spacer and main shaft for signs of galling heat damage, etc.
5. Apply a thin film of oil to tansmission main shaft and inside surface of bushing spacer. Slip spacer over main shaft. Spacer should fit with approximately same "feel" as in clutch housing.
   Replace as required.
6. Check dogs on driven gear (clutch housing).
   Look for cracks and signs of galing on edges. If damage is moderate, deburr. If severe, replace.
7. Check splines on clutch boss for signs of galling. If damage is 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.



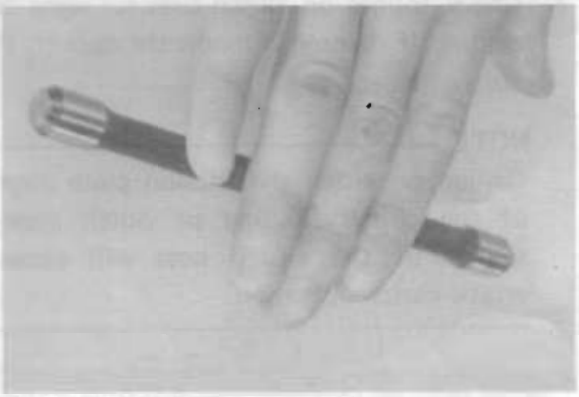
8. Check clutch springs.
Clutch spring specifications:

Free length	34.9 mm
Wear limit	33.9 mm
Spring rate	1.31 kg/mm



NOTE:
For optimum clutch operation it is advisable to replace the clutch springs as a set if one or more are faulty.

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



I. Primary drive

1. Check the drive gear and driven gear for obvious signs of wear or damage from material within the primary case.
2. If a gear must be replaced due to damage, it is always advisable to pay strict attention to the lash numbers (mark) during replacement. Marks are scribed on the side of each gear. Match these marks.

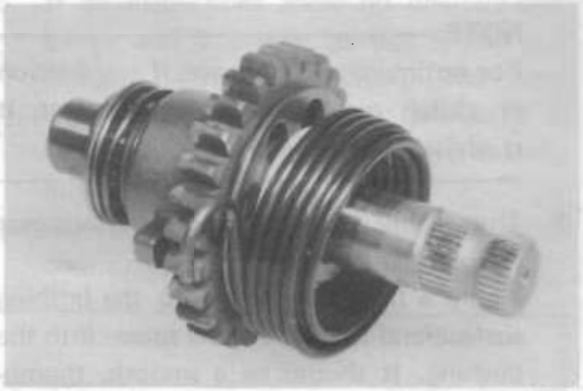
Primary drive gear		Primary driven gear		Lash tolerance
Lash number	Indicated mark	Lash number	Indicated mark	
58.03 58.02	E	153.44 153.45	E	47 ± 1
58.01 58.00	D	153.46 153.47	D	
57.99 57.88	C	153.48 153.49	C	
57.97 57.96	B	153.50 153.51	B	
57.95 57.94	A	153.52 153.53	A	

3. Check the shoulder on the primary drive gear where the crankshaft seal rides. It should not be severely worn or galled.

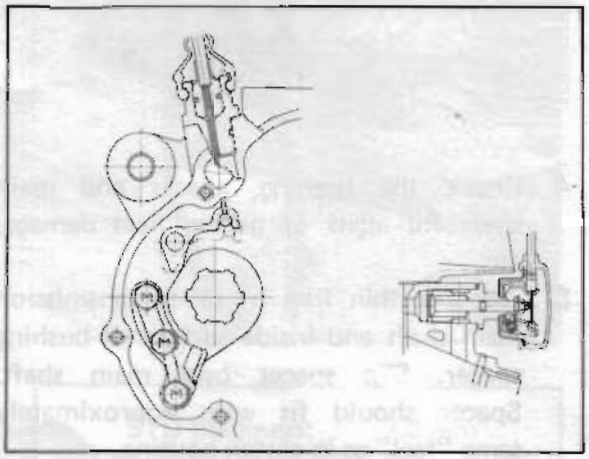


J. Kick starter

1. Check the ratchet teeth on the kick gear and ratchet wheel. The mating edges should fit flush against each other. If there is severe rounding off, replace as a set.
2. Check to see that the kick gear spins freely on the kick axle. If not, replace either or both as required. Replace if any signs of galling are found.



3. In the case of the DT400D, the kick mechanism is linked to a decompression relief valve within the cylinder to reduce compression pressure for easier starting. The actuating cable is connected to a link arm which is moved by the detent arm on the ratchet wheel.

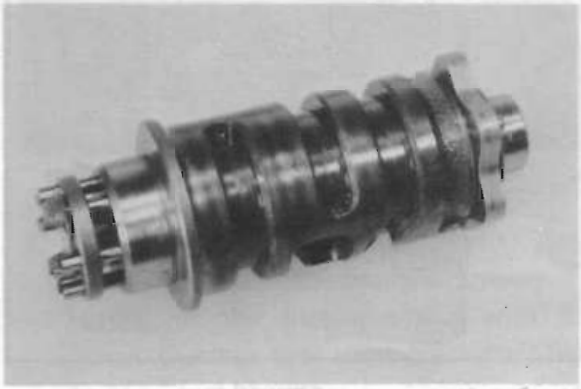


K. Transmission

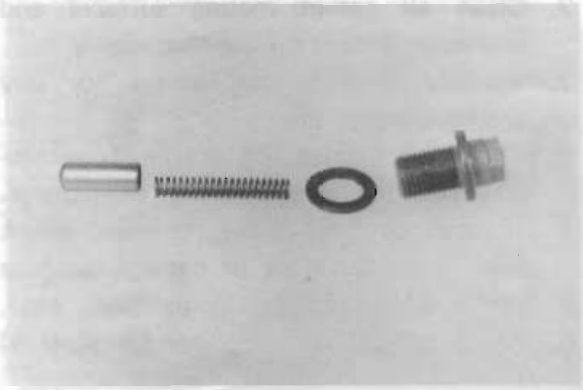
1. Inspect each shift fork for signs of galling on gear contact surfaces. Check for bending. Make sure each fork slides freely on its guide bar.
2. Check for the bend of shift fork guide bars.



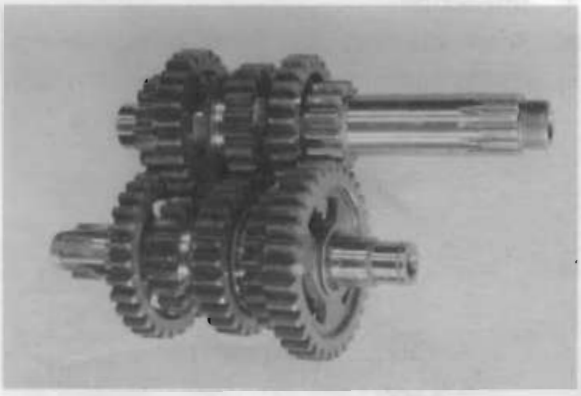
3. Check the shift cam grooves for signs of wear or damage. If any profile has excessive wear and/or any damage, replace cam.
4. Check the cam followers on each shift fork for wear. The follower should fit snugly into its seat in the shift fork, but should not be overly tight. Check the ends that ride in the grooves in the shift cam. If they are worn or damaged, replace followers.
5. Check shift cam dowel pins and side plate for looseness, damage, or wear. Repair as required.



6. Check the shift cam stopper plate and circlip and stopper for wear.



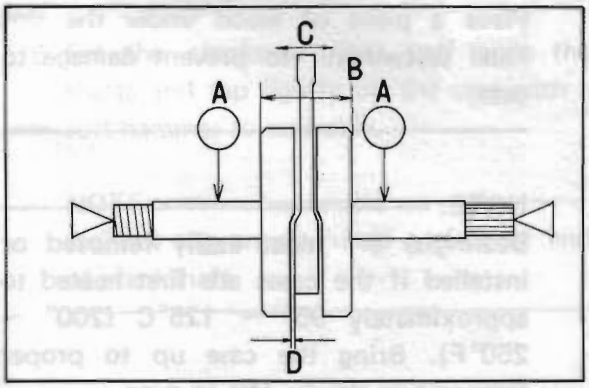
7. Check the transmission shafts using a centering device and dial gauge. If any shaft is bent, replace.
8. Carefully inspect each gear. Look for signs of obvious heat damage (blue discoloration). Check the gear teeth for signs of pitting, galling, or other extreme wear.



9. Check to see that each gear moves freely on its shaft.
10. Check to see that all washers and clips are properly installed and undamaged. Replace bent or loose clips and bent washers.
11. Check to see that each gear properly engages its counterpart on the shaft. Check the mating dogs for rounded edges, cracks, or missing portions.

L. Crankshaft

Check crankshaft components per chart.



Crankshaft Specifications

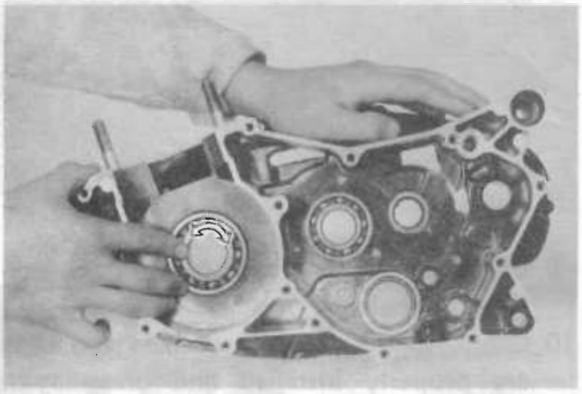
Unit : mm (in)

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)	61 ~ 62 (2.401 ~ 2.404)	0.4 ~ 1.0 (0.016 ~ 0.04)	2.0 (0.08)	0.25 ~ 0.75 (0.01~0.03)	0.1 (0.04)

M. Bearings and Oil Seals

1. Inspection

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



b. Check oil seal lips.

2. Removal

Pry oil seal(s) out of place using a slot head screwdriver.

Always replace all oil seals when overhauling engine.

NOTE:

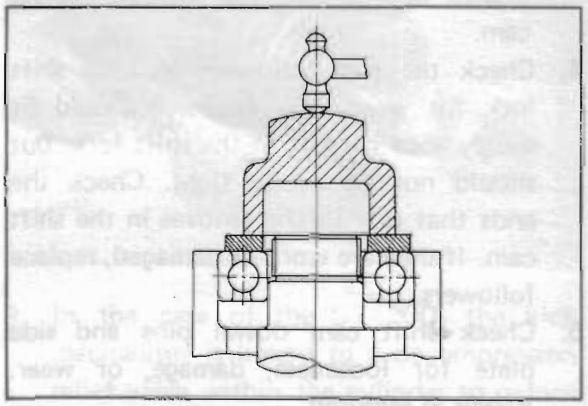
Place a piece of wood under the slot head screwdriver to prevent damage to case.

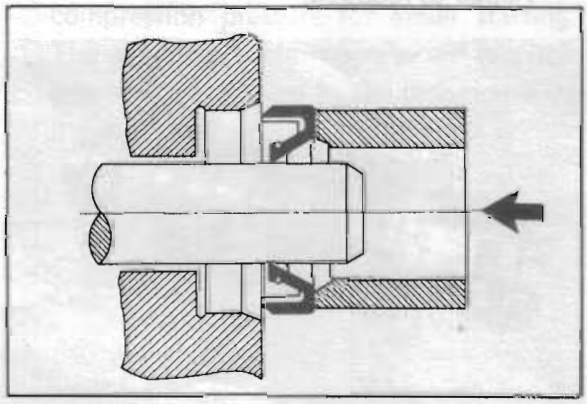
NOTE:

Bearing(s) are most easily removed or installed if the cases are first heated to approximately 95° ~ 125°C (200° ~ 250°F). Bring the case up to proper temperature slowly. Use an oven.

3. Installation

Install bearing(s) and oil seals(s) with their manufacture's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing bearing(s) or oil seal(s), apply a light coating of lightweight lithium base grease to balls and seal lip(s).





N. Crankcase

1. Thoroughly wash the case halves in mild solvent.
2. Clean all gasket mating surfaces and crankcase mating surface thoroughly
3. Visually inspect case halves for any cracks, damage, etc.
4. Check all fittings not previously removed for signs of loosening or damage.
5. If bearings have been removed, check their seats for signs of damage (such as the bearing spinning in the seat, etc.).
6. Check oil delivery passages for signs of blockage.

7. If bearings have not been removed, oil them thoroughly immediately after washing and drying. Rotate the bearing checking for roughness indicating damaged races or balls.
8. Check needle bearing(s) in transmission for damage. Replace as required.

3-4. ENGINE ASSEMBLING AND ADJUSTMENT

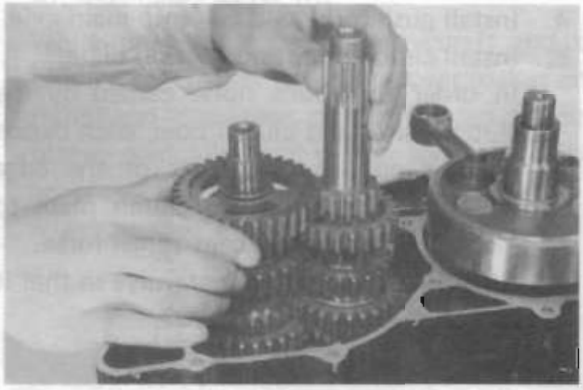
A. Crankshaft Installation

After all bearings and seals have been installed in both crankcase halves, install crankshaft as follows:

1. Set the crankshaft into left case half and install crankshaft installing tool and spacer (special tool).

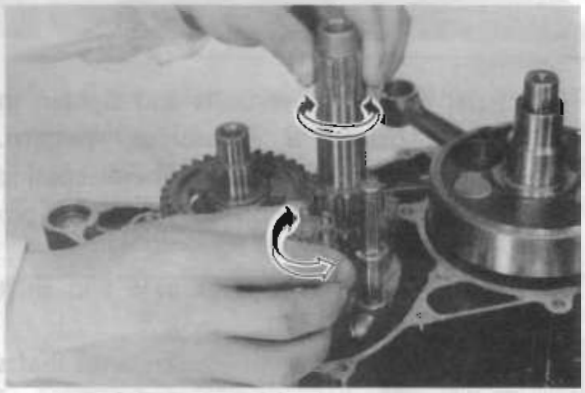


2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the other. Operate tool until crankshaft bottoms against bearing.
3. Install the following parts as a set.
   Main axle, drive axle, shiftcam shift forks and fork guide bars.

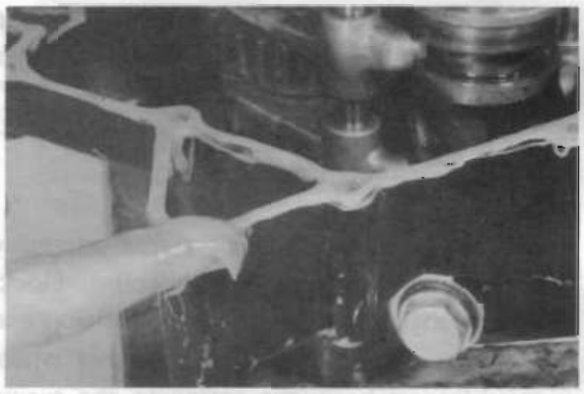


4. Check to see that all parts move freely prior to installing right case half.
   Check for correct transmission operation and make certain that all loose shims are in place.

NOTE:
Oil each gear and bearing thoroughly.

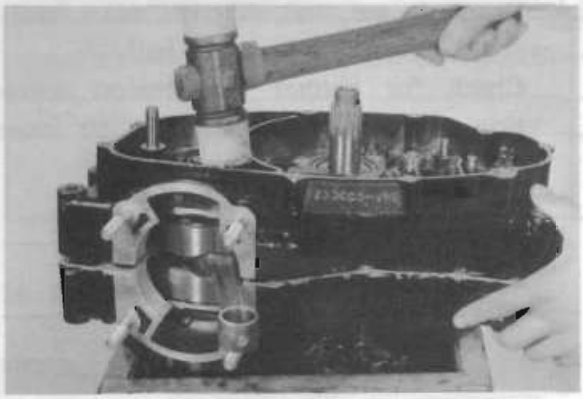


5. Apply Yamaha Bond No.4 to the mating surfaces of both case halves.



6. Set the crankcase right half onto the shafts and tap lightly on the case with a soft hammer to assemble.

NOTE:
Do not tap on machined surface or end of crankshaft.



7.. Install all crankcase bolts and tighten in stages, using a crisscross pattern.
8.. After reassembly, apply a liberal coating of 2-stroke engine oil to the crank pin and bearing.
9. Install clutch push lever axle and shift cam stopper.
10. Check crankshaft and transmission shafts for proper operation and freedom of movement.

NOTE:

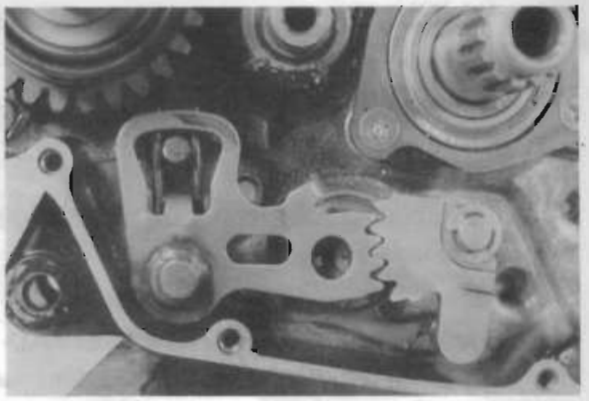
Put together both crankcase halves while taking care so that shafts or axles do not butt against bearings.

B. Kick Starter

1. While pushing the kick starter assembly straight in, rotate kick axle counterclockwise slightly from its home position and engage the stopper to the rachet wheel guide and hook the spring to the spring hook.
2. Install the kick idle gear.

C. Shifter

During installation, note the index mark on change lever 2 and center of change lever 1. Align.

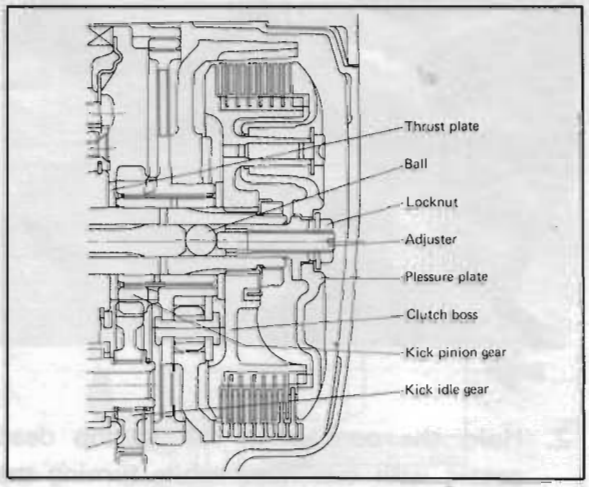


D. Clutch

1. Install primary drive gear.

Tightening torque: 7 ~ 8 m-kg (50 ~ 57 ft-lb)

2. Install thrust plate 1, kick pinion gear, spacer, clutch housing, thrust plate 2 and clutch boss in that order.

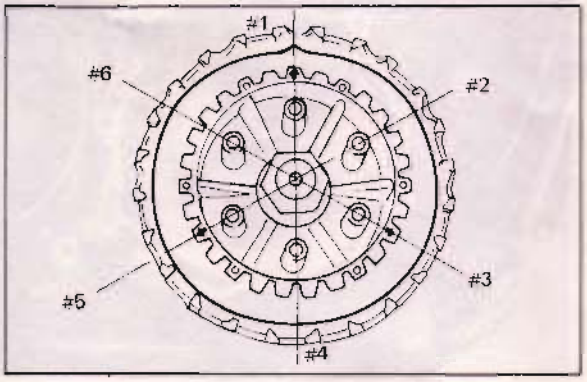


3. Tighten clutch boss lock nut.

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

4. Install push rod 2 and ball into main axle.
5. Install clutch plate and friction plate.
   In order to reduce noise caused by the clutch plates and clutch boss, each clutch plate is cut away at part of the edge (# 1). This permits the clutch plate to move outward due to centrifugal force.
   Align one of the plate cutaways so that it is positioned as shown at # 2.

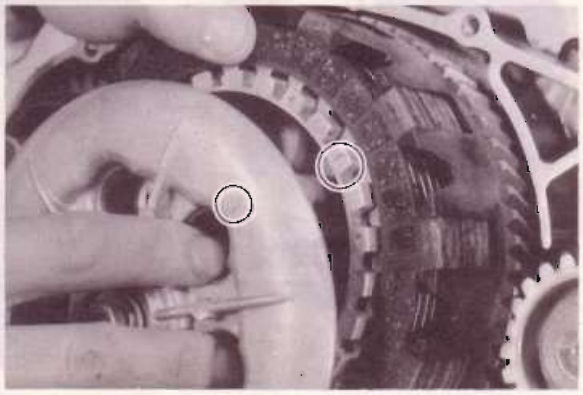
Install a friction plate. Next install a clutch plate with cutaway offset approximately 60° from previous plate cutaway.
Continue this procedure in a clockwise direction until all clutch plates are installed.



6. Install clutch pressure plate.
7. Continue installation of clutch and friction plates.

NOTE:
Align arrow mark on clutch boss and pressure plate mark.

8. Adjust the clutch push lever. (Refer to CHAPTER 2)



E. Crankcase Cover (R)

While properly engaging crankshaft and oil pump gear, install new case cover gasket and right-hand crankcase cover. Tighten holding screws gradually until proper torque is reached.

Crankcase cover holding screw torque:
0.7 ~ 1.0 m-kg (5.1 ~ 7.2 ft-lb)

F. Piston

1. During reassembly, coat the piston ring grooves, piston skirt areas, piston pin, and bearing with two-stroke oil.
2. Install new piston pin clips.

NOTE:
Take care during installation to avoid damaging the piston skirts against the crankcase as the cylinder is installed. Be sure the arrow stamped on the piston crown points forward.



G. Cylinder

1. Install a new cylinder base gasket.

NOTE:
Make sure the rings are properly positioned.

2. Tighten cylinder holding nuts.

Tightening torque:
10 mm nut
2.1 ~ 2.7 m-kg
(15 ~ 19.5 ft-lb)

H. Cylinder head

Tightening Torque:
1.9 ~ 2.1 m-kg (14 ~ 15 ft-lb)

I. **Decompression Assembly. (DT400D)**
Check each operation.

3-5. MOUNTING

A. Engine Mounting

Refer to sections 3-2, and mount the engine in the frame as follows:

1. Place the engine in the frame.
2. Install engine mounting bolts with proper tightening torque.

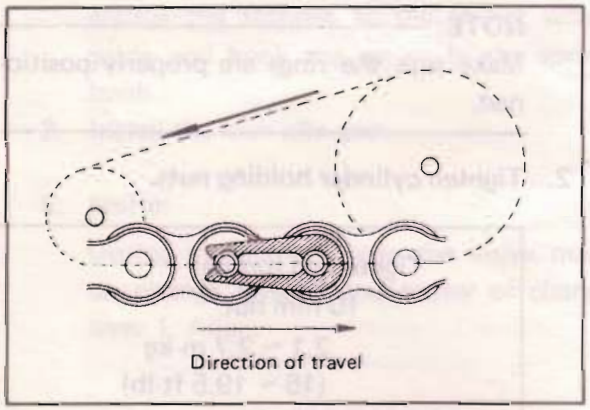
Tightening torque:
8 mm bolt – 1.8 ~ 2.9 m-kg (13 ~ 20 ft-lb)
10 mm bolt – 3.8 ~ 6.0 m-kg (27.5 ~ 43 ft-lb)

B. Drive Sprocket

1. Install the collar, drive sprocket, lock washer and locknut in that order. Tighten.

Tightening Torque:
7.0 ~ 8.0 m-kg (50 ~ 57 ft-lb)

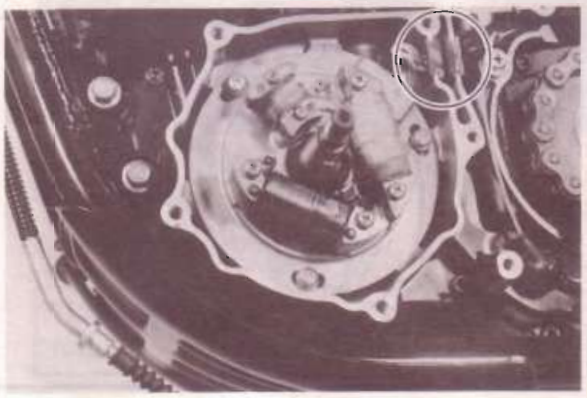
2. Install drive chain



C. Flywheel Magneto

Install the flywheel magneto assembly.

NOTE:
Install the lead wire grommet properly



NOTE:
When installing flywheel, make sure woodruff key is properiy seated in key-way of crankshaft.

Flywheel locknut Torque:
5.7 ~ 7.5 m-kg (42 ~ 54 ft-lb) lb)



CHAPTER 4. CARBURETION

4-1. AIR CLEANER 36
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B. Float Level 37
C. Reassembly and Installation 38
4-3. REED VALVE ASSEMBLY 38
A. Removal and Troubleshooting 38

4

CHAPTER 4. CARBURETION

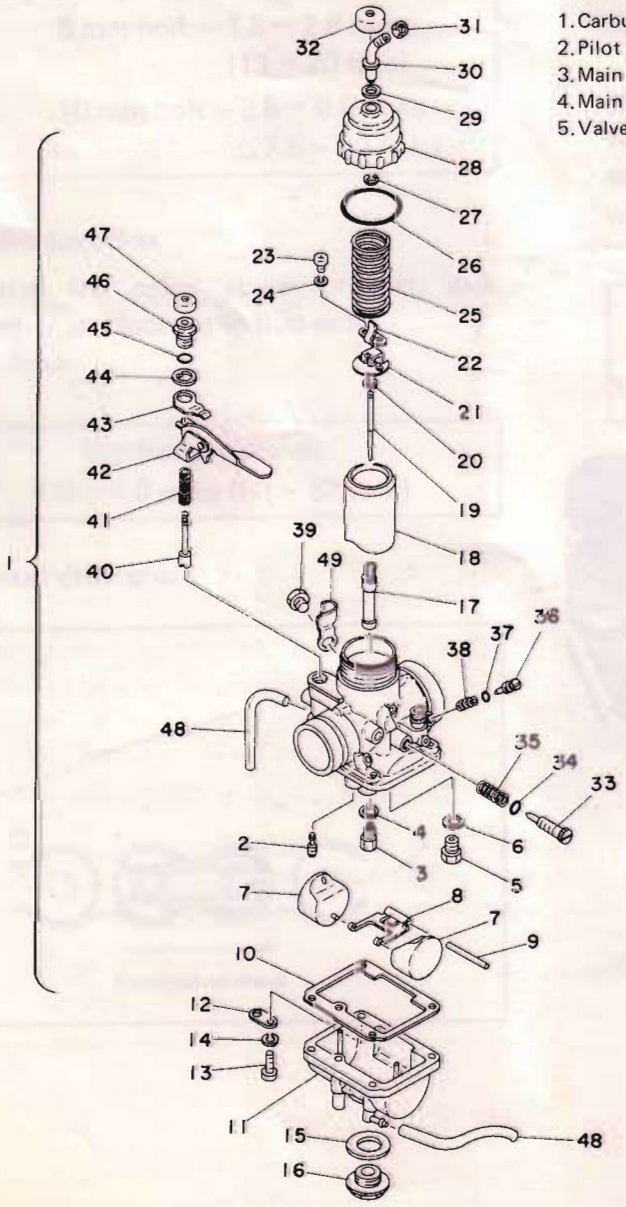
4-1. AIR CLEANER

1. The air filter is housed within a case below the seat.
2. The filter is made of polyurethane foam with a stiff bristle covering.
3. For carburetor to function properly, the filter must be in place and it must be damp with oil to provide adequate protection for vital engine parts.
4. For air filter maintenance see Chapter 2. "Air Cleaner".

4-2. CARBURETOR

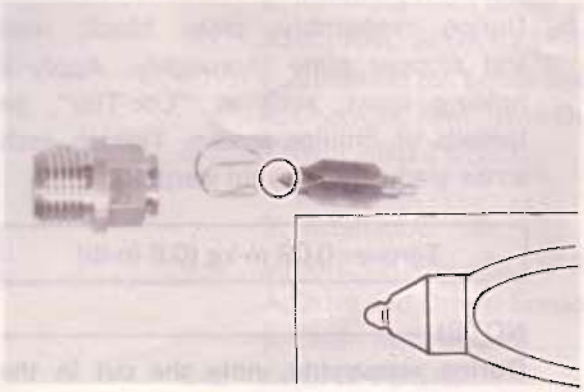
A. Inspection and repairing

1. Remove following parts
   a) Pilot air screw
   b) Idle speed screw
   c) Float chamber
   d) Float
   e) Needle valve
   f) Valve seat
   g) Main jet
   h) Main nozzle
   i) Pilot jet

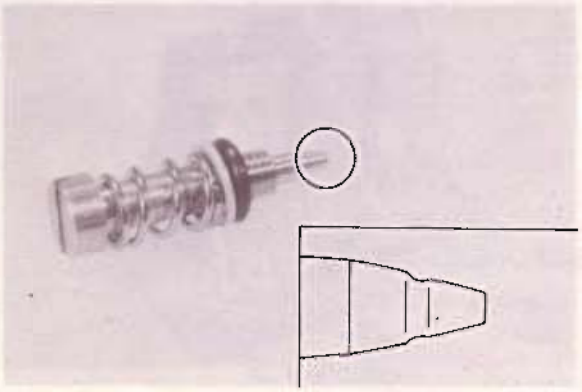


1. Carburetor ass'y
2. Pilot jet (# 50)
3. Main jet (# 140)
4. Main jet washer
5. Valve seat ass'y (# 1.5)
6. Valve seat washer
7. Float
8. Float arm
9. Float pin
10. Float chamber gasket
11. Float chamber body
12. Plate
13. Panhead screw
14. Spring washer
15. Screw plug washer
16. Screw plug
17. Main nozzle (N-8)
18. Throttle valve (# 2.0)
19. Needle (5DP33-3)
20. Clip
21 Plate
22. Spring plate
23. Panhead screw
24. Spring washer
15. Throttle valve spring
26. O-ring
27. Clip
28. Mixing chamber top
29. Gasket
30. Guide wire tube
31. Wire adjusting nut
32. Cap
33. Throttle stop screw
34. O-ring
35. Throttle stop spring
36. Air adjusting screw
37. O-ring
38. Air adjusting spring
39. Screw plug
40. Starter plunger
41. Plunger spring
42. Starter left lever
43. Starter lever plate
44. Starter lever washer
45. O-ring (1.78-9.25)
46. Plunger cap
47. Plunger cover
48. Air vent pipe
49. Clamp

2. Wash carburetor in petroleum base solvent. Wash all associated parts.
3. Using high pressure air, blow out all passages and jets.
4. Inspect needle and seat for signs of excessive wear or foreign particles. Replace as required. Always replace inlet needle and valve seat as an assembly.



5. Inspect pilot air screw for signs of excessive wear or foreign particles. Replace as required.

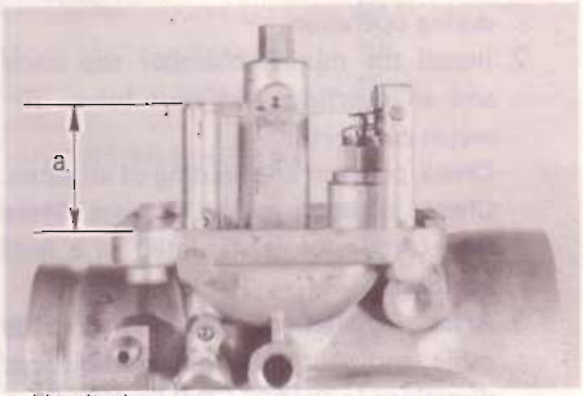


B. Float Level

1. Using a vernier caliper, measure the distance from the top of the float chamber gasket seat (gasket removed) to the float arm.

Float level:	
DT250D	15.8 ± 2.5 mm (0.62 ± 0.098 in)
DT400D	22.9 ± 2.5 mm (0.9 ± 0.098 in)

NOTE:
The float arm should be just resting on, but not depressing the spring loaded inlet needle.



a. Float level

2. To correct float level, bend the tang a little as required.

NOTE:
Both the right and left sides of the float should measure identically. Correct as required.



3. Moving to machine, push needle out of seat in throttle valve (slide). Inspect for signs of bending scratches or wear.

	DT400D	DT250D
Jet Needle Type:	5DP33	6F9
Clip Position:	3	3

4. Check throttle valve (slide) for signs of wear. Insert into carburetor body and check for free movement. If slide, or body, is out of round causing slide to stick, replace.

C. Reassembly and Installation

1. Tighten mixing chamber top as tight as possible by hand.
   Do not use pliers or vice-grips as they may deform the mixing chamber shape, causing the throttle valve to stick during operation.
2. Install the mixing chamber top cover and all overflow and vent tubes. Re-install carburetor.
   Check position and routing of all tubes. Check tightness of all fittings. Make sure carburetor is mounted in a level position.
3. After installation, re-adjust throttle cable and Autolube pump cable per directions in CHAPTER 2 Section C.

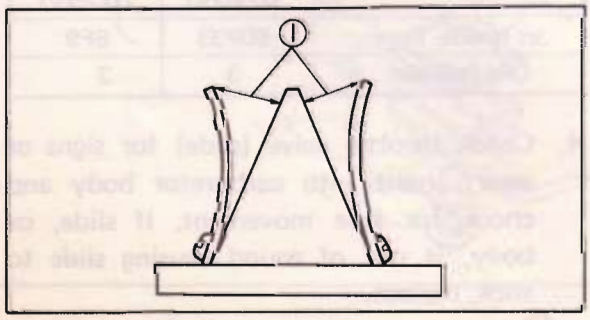
4-3. REED VALVE ASSEMBLY

A. Removal and troubleshooting

With carburetor removed, proceed as follows:

1. Remove the bolts holding the carburetor joint and reed valve assembly to cylinder. Remove assembly.
2. Inspect rubber carubretor joint for signs of weathering, checking or other deterioration.
3. 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 slight to moderate.
4. Check valve stopper clearance. If beyond tolerance, adjust stopper or replace as required.

Valve stopper clearance:
7.5 ± 0.2 mm (0.29 ± 0.008 in)



1. Valve stopper clearance

5. If disassembly of the reed valve assembly is required, proceed as follows:

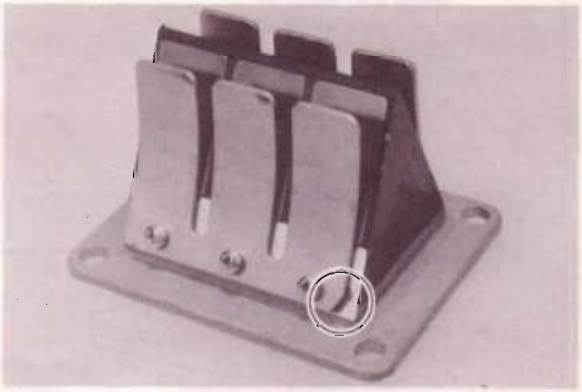
a. Remove Phillips screws securing stopper plate and reed to reed block.
   Handle reed carefully. Avoid scratches and do not bend. Note form which side of the reed block the reed and stopper plate were removed. Re-install on same side.

b. During reassembly, clean block, reed and stopper plate thoroughly. Apply a holding agent, such as "Loc-Tite", to threads of Phillips screws. Tighten each screw gradually to avoid warping.

Torque: 0.08 m-kg (0.6 in-lb)

NOTE:

During reassembly, note the cut in the lower corner of the reed and stopper plate. Use as aid to direction of reed installation.



6. During reassembly of the reed valve assembly and manifold, install new gaskets and troque the securing bolts gradually and in pattern to specification.

Reed valve securing bolt torque:
0.7 ~ 1.0 m-kg
(5.1 ~ 7.2 ft-lb)

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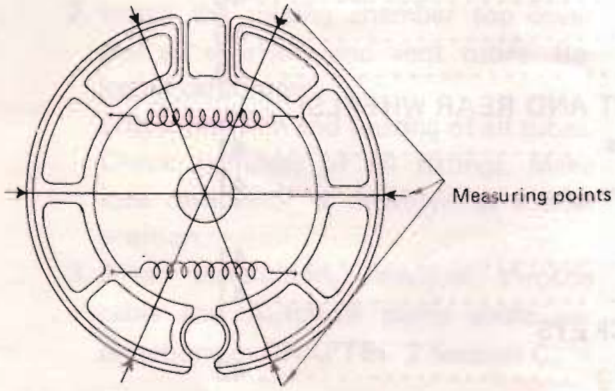
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CHAPTER 5. CHASSIS

5-1. FRONT AND REAR WHEEL

A. Checking Brake Shoe Wear

1. Measure the outside diameter at the brake shoes with side calipers.



Front brake shoe diameter; 160 mm (6.30 in) Replacement limit; 156 mm (6.14 in)
Rear brake shoe diameter: 150 mm (5.91 in) Replacement limit: 146 mm (5.74 in)

2. Remove any glazed areas from brake shoes using coarse sandpaper.

B. 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.

C. Brake Shoe Plate

Remove the cambshaft and grease. If the cam face is worn, replace.

NOTE:
Before removing the cam lever, put a match mark on the cam lever and camshaft to indicate their positions for easy assembly.

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.

E. Installing front wheel

When installing front wheel, reverse the removal procedure taking care of the following points:

1. Lightly grease lips of front wheel oil seals and gear teeth of speedometer drive and driven gears. Use light-weight lighium soap base grease.
2. Check for proper engagement of the boss on the outer fork tube with the locating slot on brake shoe plate.



3. Always secure the front wheel axle as follows:

a. Torque the front axle nut.

Axle nut torque: 7 ~ 10 m-kg (50 ~ 72 ft-lb)

b. Torque axle holder nuts. First tighten nut on front end of axle holder, and tighten nut on rear end.



Holder nut torque:
1.1 ~ 1.8 m-kg
(8.0 ~ 13.0 ft-lb)

c. Install a new cotter pin.

4. To installt the rear wheel, reverse the removal procedure and check the following points.

a. When connecting the chain, make certain closed end of master link clip face in direction of rotation.

b. Check for proper engagement of the boss on swing arm with the locating slot on brake shoe plate.

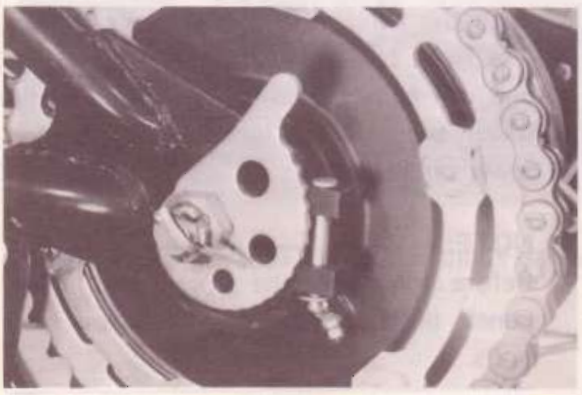
c. Make sure the nut is properly torqued.

Tightening torque:
8.3 ~ 13 m-kg (60 ~ 90 ft-lb)

d. Make sure to adjust the tension of chain. See "Drive chain adjustment".

e. Adjust both brake pedal and stop light switch.

f. Always use a new cotter and safety pins.



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 rotate 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.

B. Checking Rim "Run-Out"

See CHAPTER 2, "Front brake and wheel".

5-3. TIRES AND TUBES

A. Removal

1. Remove valve cap, valve core, and valve stem lock nut. Loosen bead spacer(s), (rim locks).
2. When all air is out of tube, separate tire bead from rim (both sides), by stepping on tire with your foot.
3. Use two tire removal irons (with rounded edges) to work the tire bead over the edge of the rim, starting 180° opposite the tube stem. Take care to avoid pinching the tube as you do this.
4. After you have worked one side of the tire completely off the rim, then you can slip the tube out. Be very careful not to dagage the stem while pushing it back out of the rim hole.

NOTE:

If you are changing the tire itself, then finish the removal by working the second bead off the rim.

B. Installation

Reinstalling the tire and tube can be accomplished by reversing the disassembly procedure. The only difference in procedure

would be right after the tubes has been installed, but before the tire has been completely slipped onto the rim, momentarily inflate the tube. This removes any creases that might exist. Release the air and continue with reassembly. Also, right after the tire has been completely slipped onto the rim, check to make sure that the stem comes out of the hole in the rim at a right angle to the rim.
Finally, inflate the tire and tighten the bead spacer securing nut(s).

Tire Pressure (Normal Riding)
Front: 1.3 kg/cm²
Rear: 1.5 kg/cm²

5-4. DRIVE CHAIN AND SPROCKETS

NOTE:
Please refer to Maintenance Intervals and Lubrication Intervals charts for additional information.

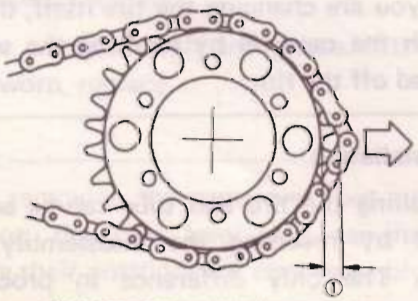
A. Drive and Driven Sprocket

1. Check teech wear, bent and loose bolt.

Drive Sprocket Securing Nut Torque:
7 ~ 8 m-kg
(50 ~ 57 ft-lb)

Driven Sprocket torque:	
DT250D	3.0 ~ 4.8 m-kg (22 ~ 34 ft-lb)
DT400D	2.7 ~ 3.3 m-kg (20 ~ 23 ft-lb)

2. 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

3. Check the side plate for damage. Check to see if excessive play exists in pins and rollers. Check for damaged rollers. Replace as required.

B. Chain Maintenance

The chain should be lubricated according to the recommendations given in the Maintenance and Lubrication intervals charts.
More often if possible. Preferable after every use. See "Chassis and suspension, swing arm", for additional information regarding chain guide.

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

Recommended lubricant:
YAMAHA CHAIN AND CABLE LUBE, or SAE 10W/30 type "SE" motor oil.

3. Periodically, remove the chain. Wipe and/or brush excess dirt off. Blow off with high pressure air.
4. Soak chain in solvent, brushing off remaining dirt. Dry with high pressure air. Lubricate thoroughly to make sure lubricant penetrates. Wipe off excess. Re-install.

5-5. FRONT FORKS

A. Disassembly

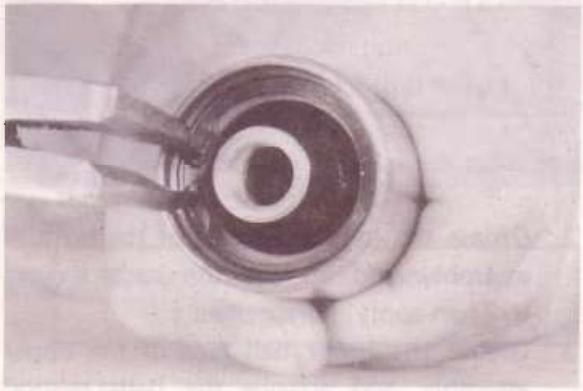
1. With the front wheel, speedometer cable and front brake cable removed, the fork legs can be removed from the upper and lower brackets by loosening upper and lower pinch bolts.

NOTE:
Before loosening the upper and lower pench bolts, loosen the front fork cap bolts.

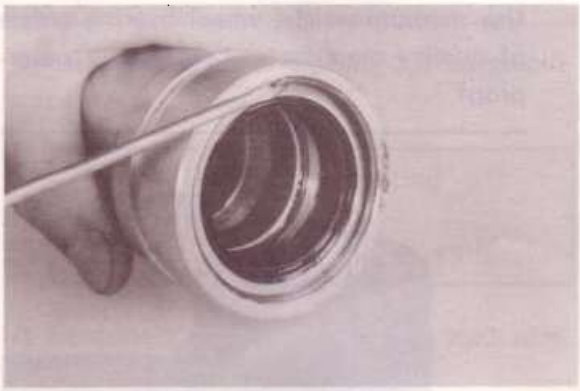
2. Drain the oil
3. Remove the special bolt from bottom of outer tubes.



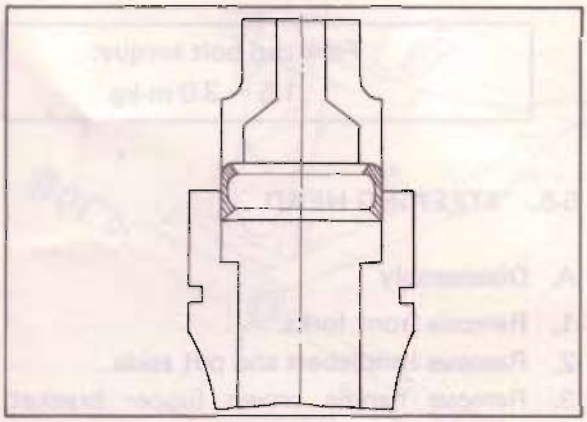
4. Remove inner tube and damper assembly from outer tube.
5. Remove clip from bottom of inner tube and pull out damper assembly. Inspect and replace if damaged.



6. To replace fork seal, remove wire clip, felt ring and cover washer from outer tube.



7. Carefully pry out old seal without damaging fork tube.
8. Insert new seal "open" side down using large socket and steel hammer.



B. Inspection

Inspect the inner tube for bends or scratches. If the bend is slight, it can be corrected with a press. It is recommended, however, to replace the tube.

C. Assembly

1. When assembling the front fork, reverse the order of disassembly.
2. Installing the front forks

a. Bring up the front fork to the correct position and partially tighten the under-bracket mounting bolt.

b. Measure correct amount of oil and pour into each leg.

Recommended oil:
Yamaha fork oil or
10W, 20W, 30W

Quantity per leg:
190.5 cc

NOTE:

Select the weight oil that suits local conditions and your preference (lighter for less damping; heavier for more damping).

3. After filling, slowly pump the outer tubes up and down to distribute the oil.
4. Inspect "O" ring on fork cap bolts and replace if damaged.

5. Replace fork cap bolts and torque to specification.

Fork cap bolt torque: 1.5 ~ 3.0 m-kg

5-6. STEERING HEAD

A. Disassembly

1. Remove front forks.
2. Remove handlebars and put aside.
3. Remove handle crown (upper bracket) and steering nut.

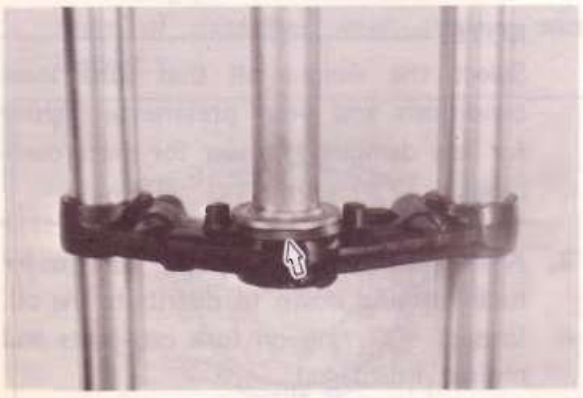
NOTE:
Support under bracket with one hand to hold the bracket up into the headstock so that the loose ball bearings will not fall out.

Ball quantity/size (Upper race): 22 pcs., 3/16 in

Ball quantity/size (Lower race): 19 pcs., 1/4 in

4. Remove races from head pipe.
5. Remove the bearing race from the lower bracket by tapping around its diameter with a drift punch and hammer.

NOTE:
Remove dust seal.



B. 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.
2. Examine dust seal under lowest race and replace if damaged.

C. Installation

1. If pressed-in races have been removed, tap in new races.



2. Grease the lower ball race of the bottom assembly and arrange the balls around it. Then apply more grease.
3. Grease the lower ball race of the upper 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 manufacture preferably water-proof.



4. Carefully slip the underbracket stem up into the steering head. Hold the top bearing assembly in place so the stem does not knock any balls out of position.
5. Set the upper bearing cover on and install the ring nut. Tighten the ring nut so that all freeplay is taken up, but so the bracket can still pivot freely from lock to lock. Recheck for freeplay after the entire fork unit has been installed. (Refer to Chapter 2. "Steering head adjustment".)
6. Install the fork tubes into the underbracket.
7. Install the upper fork bracket. Tighten steering fitting bolt, then tighten stem pinch bolt. Torque to specification.

Tightening torque:
Steering fitting bolt;
4.2 ~ 6.5 m-kg (31 ~ 47 ft-lb)
Stem pinch bolt;
1.1 ~ 1.8 m-kg (8.0 ~ 13 ft-lb)

8. Tighten upper fork tube pinch bolts and torque to specification.

Upper fork tube pinch bolt torque:
1.1 ~ 1.8 m-kg (8.0 ~ 13 ft-lb)

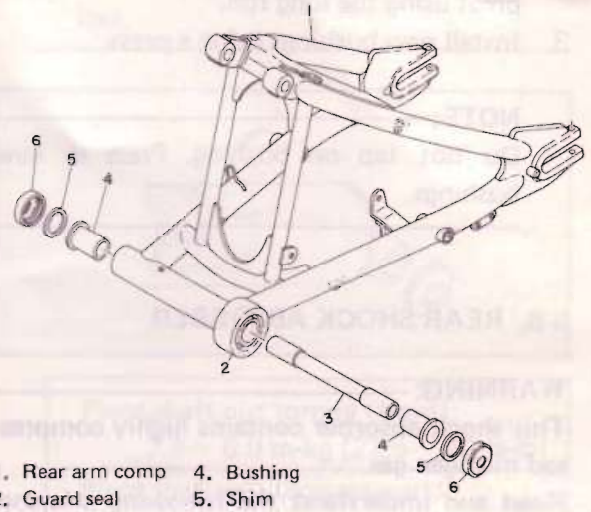
NOTE:
Make certain that tops of fork tubes are adjusted to the same level. If necessary, loosen underbracket pinch bolts and adjust.

9. Install handlebras and torque to specification.

Handlebar mounting bolt torque:
1.1 ~ 1.8 m-kg (8.0 ~ 13 ft-lb)

10. Reconnect engine stop switch lead wire.
11. Install front wheel.
12. Reconnect clutch, front brake, (decomp cables) and throttle grip assembly and check operation.

5-7. SWING ARM



1. Rear arm comp
2. Guard seal
3. Collar
4. Bushing
5. Shim
6. Thrust cover

A. Inspection

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

Swing arm free play:
1 mm (0.04 in)

If free play is excessive, remove swing arm and replace swing arm bushings.

B. Lubrication

1. Apply grease to pivot shaft and bushings.

Recommended lubricant:
Smooth chassis lube grease

2. Wipe off excess grease.

C. Removal

1. Remove nut on swing arm pivot bolts and tap out bolt.

NOTE:
Carefully remove the arm while noting the location of spacing washers and shims. They must be reinstalled in the same positions.

Pivot bolt torque:
5.0 ~ 8.0 m-kg
(36 ~ 58 ft-lb)

2. Tap out old bushing from each side of pivot using the long rod.
3. Install new bushings using a press.

NOTE:
Do not tap on bushing. Press in new bushings.

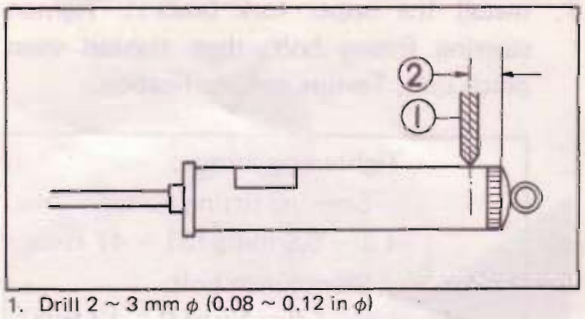
5-8. REAR SHOCK ABSORBER

WARNING:
This shock absorber contains highly compressed nitrogen gas.
Read and understand the following information before handling the shock absorber. The manufacture can not be held responsible for property damage or personal infury that may result from improper handling.

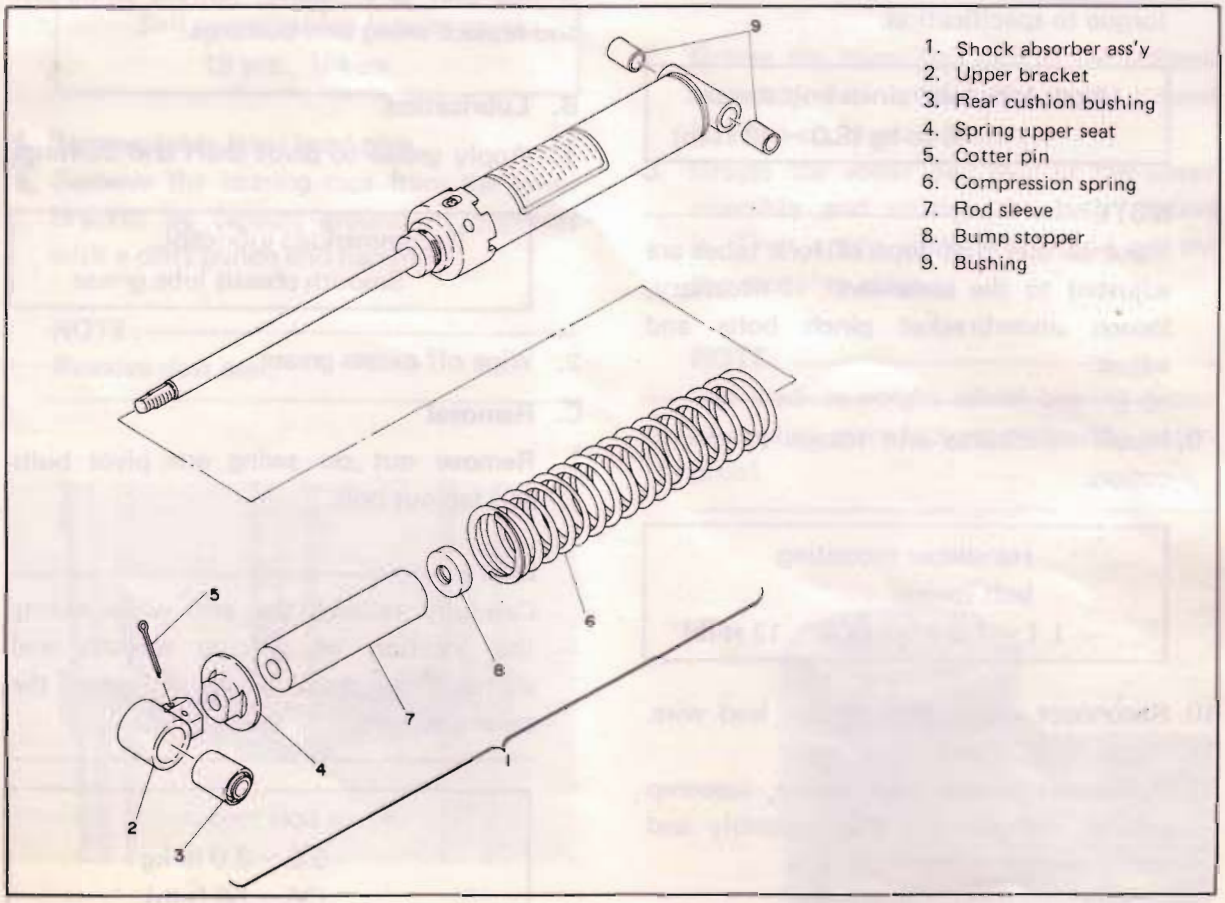
1. **Do not tamper or attempt to open the cylinder assembly.**
2. **Do not subject shock absorber to an open frame or other high heat.**
   This may cause the nuit toexplode due to excessive gas pressure.
3. **Do not deform or damage the cylinder in any way. Cylinder damage will result in poor damping performance.**

A. Notes on Disporsing

Gas pressure must be released before disporsing of shock absorber. To do so, drill a 2-3 mm hole through the cylinder wall at a point 10-15 mm above the bottom of the cylinder. At this time, wear eye protection to prevent eye damage from escaping gas and/or metal chips.



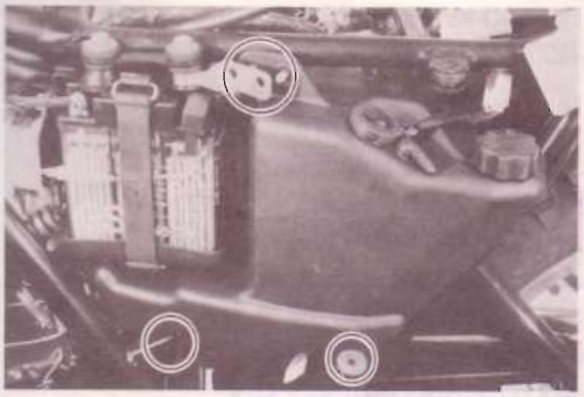
1. Drill 2 ~ 3 mm ϕ (0.08 ~ 0.12 in ϕ)
2. 10 ~ 15 mm (0.40 ~ 0.60 in)



1. Shock absorber ass'y
2. Upper bracket
3. Rear cushion bushing
4. Spring upper seat
5. Cotter pin
6. Compression spring
7. Rod sleeve
8. Bump stopper
9. Bushing

B. Removal

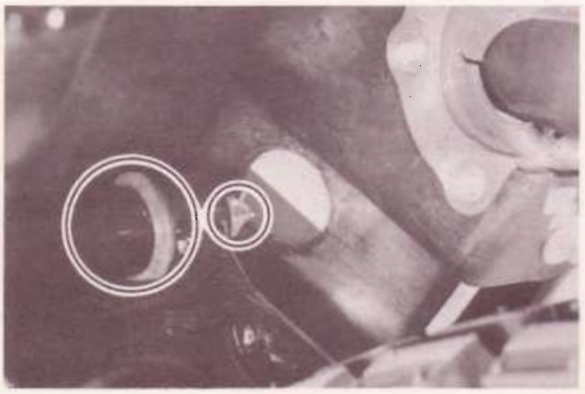
1. Raise the rear of the machine by placing the suitable stand under the engine.
2. Remove the seat, fuel tank and side covers (L and R) and cleaner case cap.
3. Remove oil tank.



4. Remove the mud guard grommets (L R).

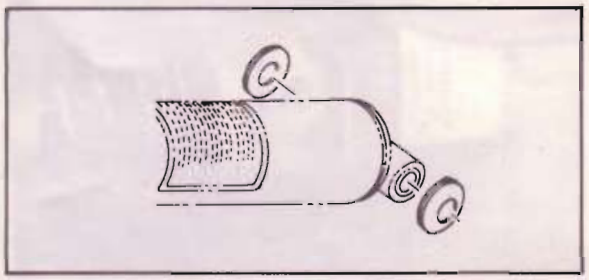


5. To remove the shock absorber assembly, first of all remove the rear pivot shaft, then remove the front pivot shaft.



NOTE:

1. When pull out the shock absorber, be careful not to bend the shock absorber rod by falling down the machine on it.
2. Take care so the two washer are not lost.



Pivot shaft nut torque (front): 3.8 ~ 6.0 m-kg (27.5 ~ 43 ft-lb)
Pivot shaft nut torque (rear): 2.0 ~ 3.0 m-kg (14.5 ~ 21 ft-lb)

C. Inspection

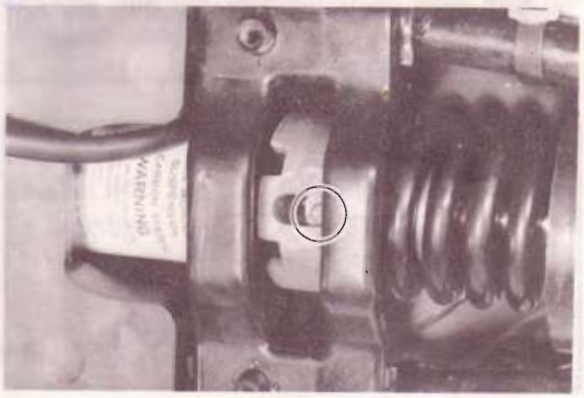
1. Check the rod, and if it is bent or damaged, replace the shock absorber.
2. Check for oil leakage. If the oil leakage is evident, replace the shock absorber.
3. By moving the rod, check to see if it has a proper damping effect.
   Slight resistance shoud be felt on the compression stroke and considerable resistance should be felt on the return stroke.

D. Adjustment

The spring preload of the shock absorber can be adjusted to suit rider preferance, weight and the course conditions.
To adjust, using a special wrench as shown. If the spring seat is raised, the spring becomes stiffer and if lowered the spring becomes softer.

NOTE:

After adjustment, tighten the adjuster lock bolt.



E. Service Data:

Gas pressure	15 kg/cm^2
Gas properties	Nitrogen gas
Absorber stroke	82 mm (3.23 in)
Wheel travel	140 mm (5.51 in)
Absorber spring	
Free length	265 mm (10.43 in)
Set length	250 mm (10.24 in)
Spring canstant	k = 4.5 (0-52 mm), k_2 = 7.5 (62-82 mm)
Number of winding	81 turns
Spring dia.	9.5 mm (ϕ) (0.37 in)
Spring O.D.	58 mm (ϕ) (2.28 in)

CHAPTER 6. ELECTRICAL

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CHAPTER 6. ELECTRICAL

The DT250D/400D series electrial systems are lightweight and functional for dependable engine operation and all necessary lighting equipment. A 6 volt battery is used in conjunction with the flywheel magneto. All of the light bulbs have been increased in output to insure sufficient night riding visibility.

The DT250D, utilizes a Flywheel Magneto Ignition system. The DT400D utilizes Capacitor Discharge Ignition system.

However, both models utilize a charging-coil which is excited by the magnetic flux of a rotating flywheel magneto.

Therefore, this chapter contain a section for DT250D ignition, another section for DT400D ignition and then common section for charging, battery and lighting.

6-1. IGNITION SYSTEM

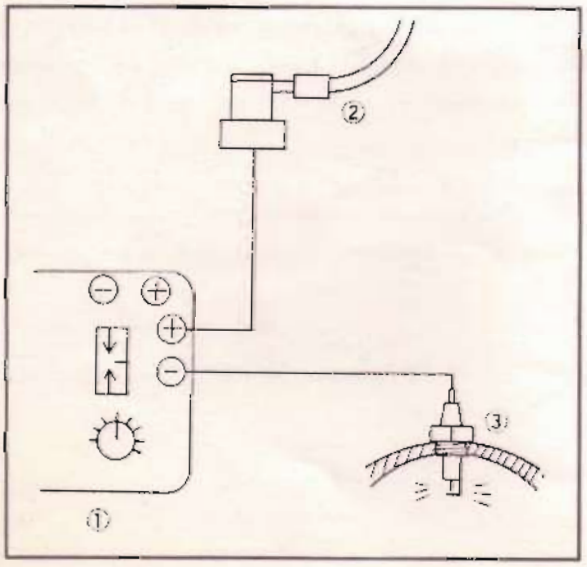
A. Ignition Timing Adjustment

Refer to Chapter 2, for ingnition timing adjustment.

B. 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 engine 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.



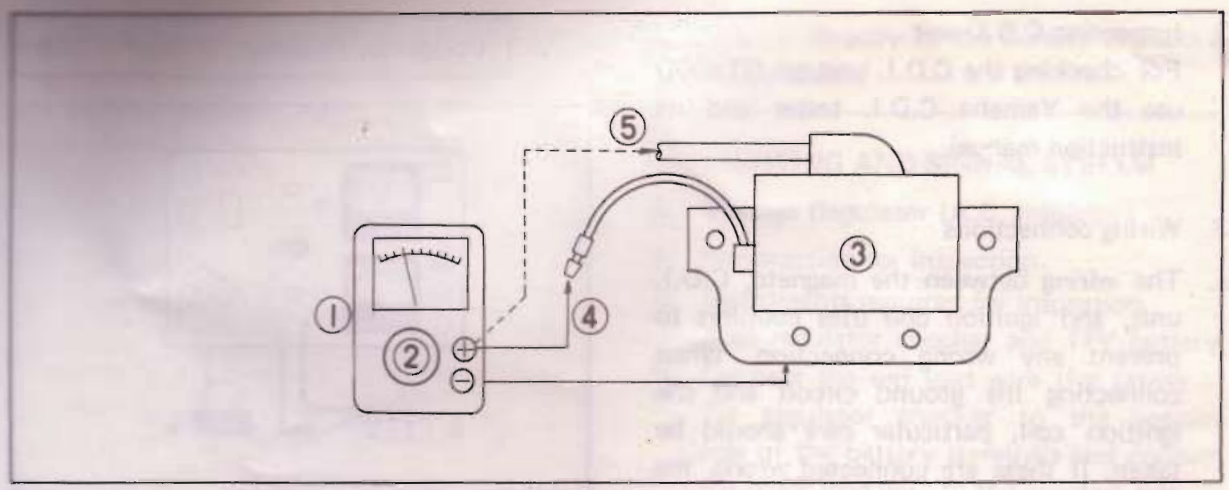
1. Electro-Tester
2. Plug wire from coil
3. Spark plug

3. Start engine and increase spark gap until misfire occurs. (Test at various rpm's between idle and red line.)

Minimum spark gap:
6 mm (0.24 in)

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

Standard values:
Primary coil resistance:
1.0 Ω ± 10% at 20° C (68° F)
Secondary coil resistance:
5.9 KΩ ± 20% at 20° C (68° F)



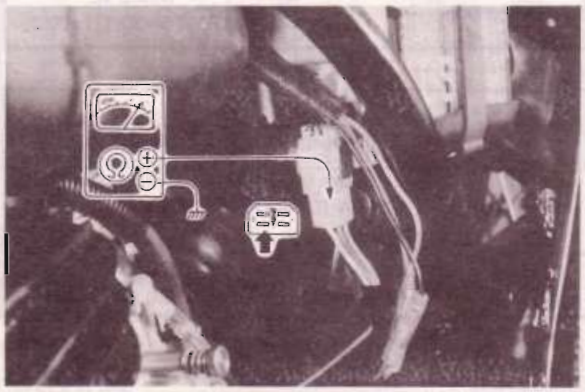
1. Pocket-Tester
2. Set the tester on the "Resistance" Position
3. Ignition coil
4. Primary coil resistance.
5. Secondary coil resistance.

C. Ignition Source Coil (DT250D)

Use a Pocket Tester or equivalent ohmmeter to determine resistance and continuity of source coil winding.

a. Set ohmmeter to "Ω x 1" position.
b. To open the contact points by rotating the flywheel magneto.
c. Disconnect at connector the black lead wire, one of the flywheel magneto lead wires.
d. Connect the two lead wires of Pocket Tester with their respective positions as illustrated, and read the resistance.

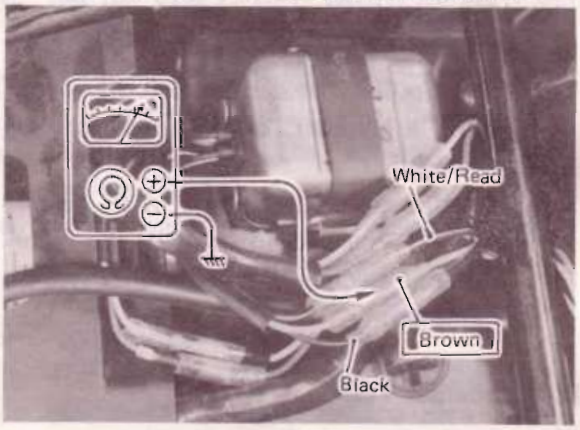
Source coil resistance (Ω x 1 position)	1.65Ω ± 10% (20°C, 68°F)



D. C.D.I.System (DT400D)

1. Charge Coil

Remove magneoto wire harness at the connector. Connect tester lead wires as illustrated and use ohmmeter to determine resistance.





1.Charge coil

Charge coil resistance: 0.33 ± 10% at 20°C, 68°F

2. Inspection C.D.I. unit
For checking the C.D.I. unit on DT400D use the Yamaha C.D.I. tester and its instruction manual.

3. Wiring connections

a. The wiring between the magneto, C.D.I. unit, and ignition coil uses couplers to prevent any wrong connection. When connecting the ground circuit and the ignition coil, particular care should be taken. If these are connected wrong, the C.D.I. unit will become inoperative.

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

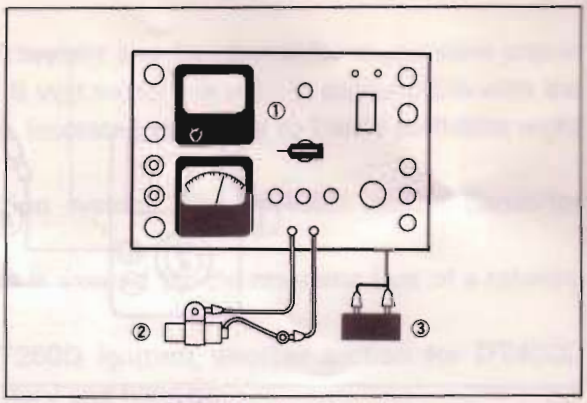
E. Condenser Test

If the contact points show excessive wear, or the spark is wear (but the ignition coil is in good condition), check the condenser. Capacity test (use electro tester).

1. Connect tester as shown.
2. Meter needle will deflect and return to center as condenser is charged.
After needle stops, note reading on "μF" scale.

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

Condenser capacity: 0.25 μF ± 10%



1. Capacity 2. Condenser 3. Battery

6-2. CHARGING SYSTEM

A. Charging Output Test

1. Voltage test
Remove left sidecover and locate red battery wire connection.
2. Connect "Electro-Tester"
3. Turn ignition switch to ON (daytime) position, start engine and note voltage and amperage readings at rpm's specified below.
4. Switch to nighttime (lights on) and note voltage and amperage readings at specified rpm's.

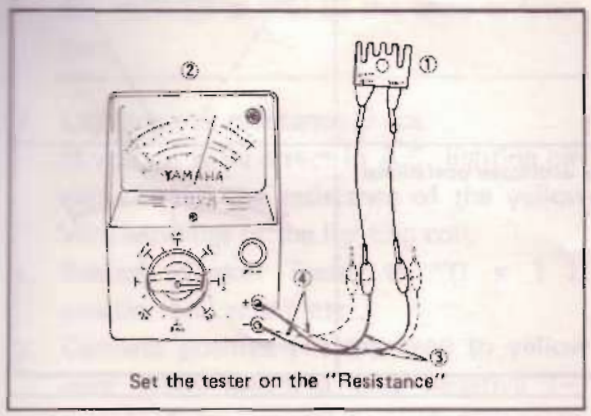
R.P.M.	Voltage	
	Daytime	Nighttime
2,500 r.p.m.	– –	5.5V. (DT250D) 5.5V. (DT400D)
8,000 r.p.m.	–	7.6 V. (DT2500D/DT400D)

R.P.M.	Amperage	
	Daytime	Nighttime
2,500 r.p.m.	1.5±0.3A (DT250D) 1.5±0.5A (DT400D) at 3,000 r.p.m.	0.9±0.3A (DT250D) 0.8±0.3A(DT400D)
8,000 r.p.m.	1.8±0.5A(DT250D) 3.0±0.5A(DT400D)	2.2±0.5A(DT250D) 1.5±0.5A(DT400D)

B. Checking Silicon Rectifier

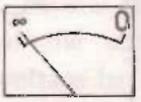
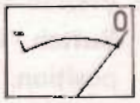
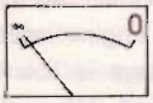
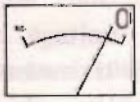
1. Checking with normal connection using Yamaha Porcket Tester:
Connect the tester's red lead (+) to the silicon rectifer's red lead, and connect the tester's black lead (–) to the rectifier's white lead.

2. Checking with reversed connection using Yamaha Pocket Tester:
Reverse the tester leads.



Set the tester on the "Resistance"

1. Silicon rectifier
2. Electro-tester
3. Checking with normal connection
4. Checking with reversed connection

	Normal connection	Reversed connection
Good		
Replace		
Replace		

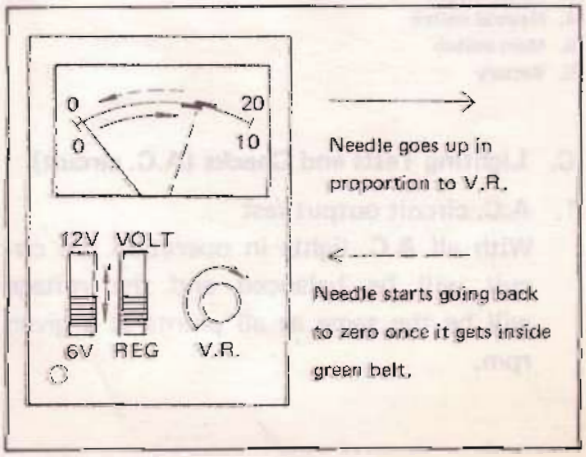
NOTE:
This rectifier test must be checked both normal and reversed connections.

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 cannect the rectifier directly to the battery to make a continuity check.

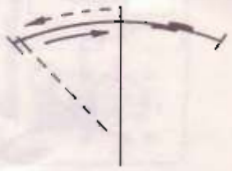
6-3. LIGHTING AND SIGNAL SYSTEM

A. Voltage Regulator (A.C. regulator)

1. Preparaction for inspection.
a. Instruments required for inspection.
A.C. regulator checker and 12V battery.
b. Connect the red lead wire (for power of the regulator checker to the positive side of the battery terminals and connect the black lead wire to the negative side.
c. Checking the battery voltage
First, set the switches, both righ and left, to "12V, VOLT". If the checker jeedle points to 10 volts or more, the battery voltage is sufficient.
2. Checking the regulator
a. Turn the volume (V.R.) of checker full to the counterclockwise.
b. Set the VOLT–REG switch for REG and the 6V–12V switch for 6V.
c. Connect the pintipped lead wires to the A.C. *regulator; balck to the* regulator body and red to the regulator lead wire (Yellow/White).
d. As the volume (V.R.) is gradually turned clockwise, the meter needle goes up. This needle comes back to zero as the regulator beings to operate.
The regulator functions all right if the needle starts back toward zero within the green belt range on the scale.
* Good regulator:
The meter needle begins to turn back within the green belt on the meter.

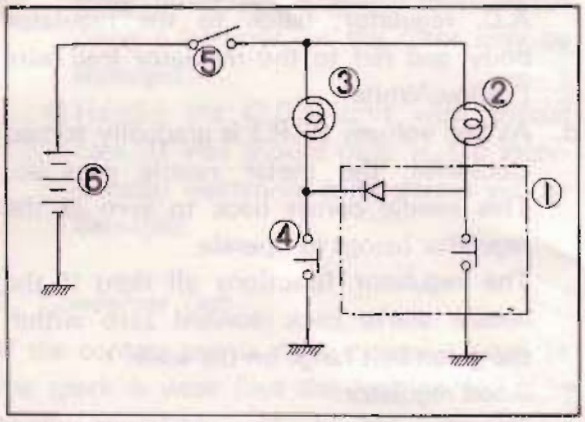


Bad regulator

Shorted regulator		Regulator with higher operational voltage	
Open regulator		Regulator with lower operational voltage	

B. Oil Caution Light

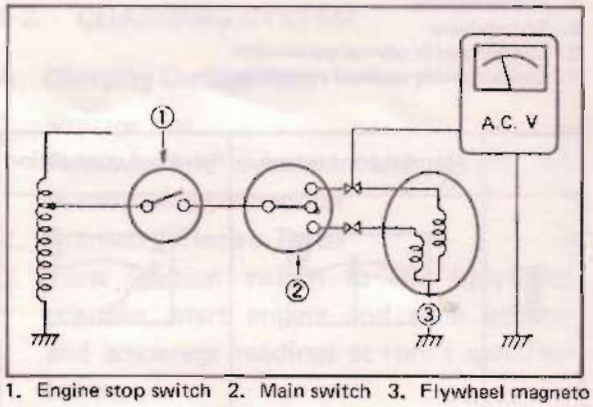
The oil caution light has been designed to come on when the transmission is in the neutral position. This will allow you to frequently check the condition of the bulb. If the caution light does not come on while the machine is in neutral, check the condition of the bulb.



1. Oil level switch assembly
2. Oil caution light
3. Neutral light
4. Neutral switch
5. Main switch
6. Battery

C. 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.



1. Engine stop switch 2. Main switch 3. Flywheel magneto

a. Switch Pocket Tester to "AC 20V)) position.
b. Connect positive (+) test lead to yellow connection and negative (–) test lead to a good ground.
c. Start engine, turn on lights and check voltage at each engine speed in table. 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.

Lighting output:
5.5V or more/2,500 rpm
(7.6V or less/8,000 rpm)

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.

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.

a. Swotch Pocket Tester to "Ω x 1)) position and zero meter.

b. Connect positive (+) test lead to yellow wire from magneto and negative (—) test lead to a good ground on engine. Read the resistance on ohms scale.
excessive, go to A.C. regurator check.

D. 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 fulty battery, low battery water, or a defective charging system. See 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 fot 6V on brown wire to each stop switch (front brake and rear brake switches).
Check for ground on balck wire to tail/ stoplight 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 for 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.

E. Flasher Relay and Horn

1. Flasher relay.
The flasher relay is employed 6V, condenser type.

CHAPTER 7. APPENDICES

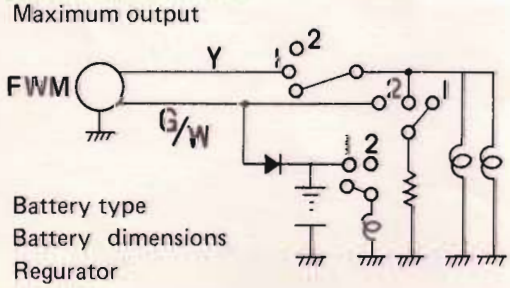
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- B. Maintenance Specifications 60
- C. Torque Specifications 63
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7-1. SPECIFICATIONS

A. General Specifications

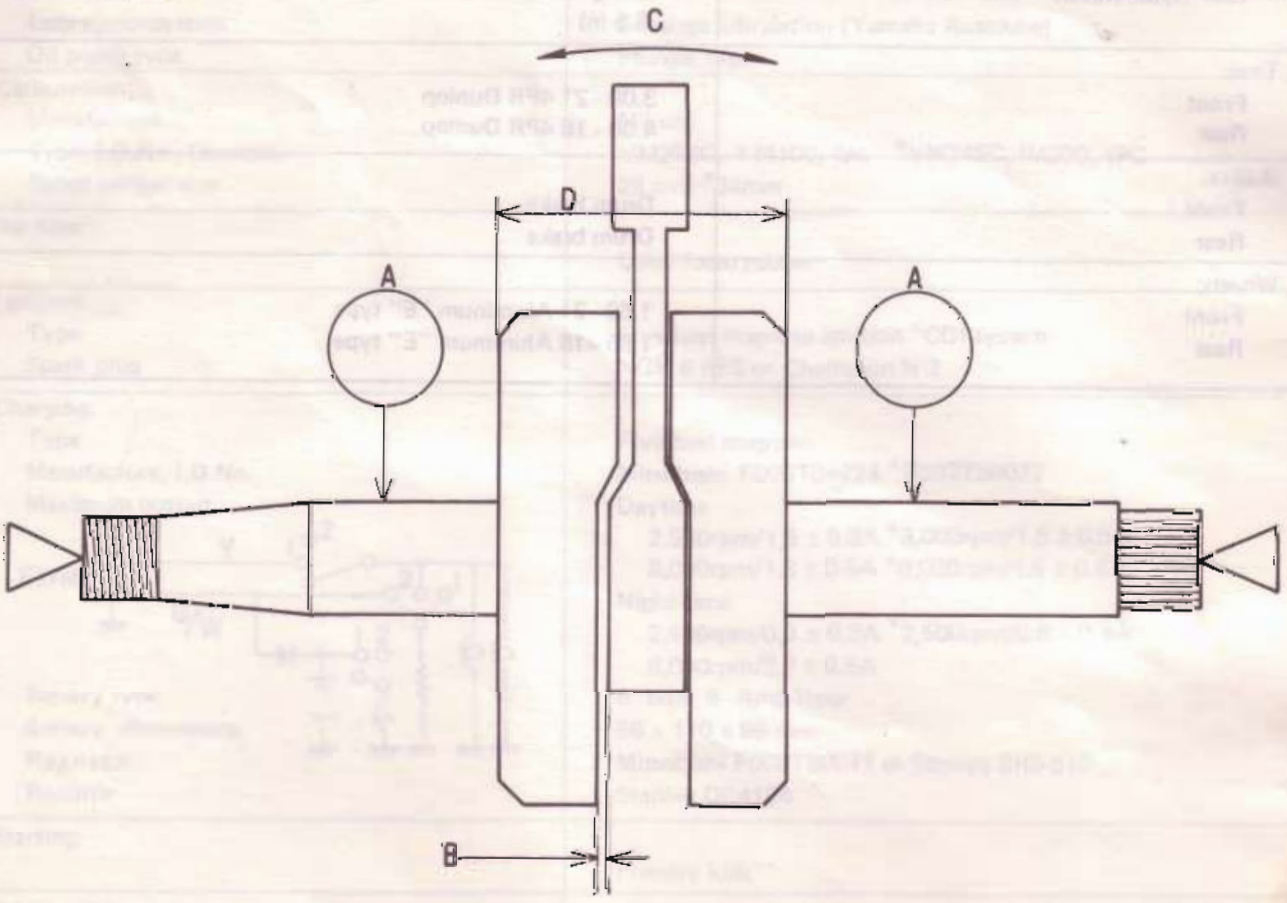
Model	DT250D *DT400D
Dimensions:	
Overall length	2,185 mm (86.0 in)
Overall width	870 mm (34.3 in)
Overall hight	1,165 mm (45.9 in)
Seat hight	855 mm (33.7 in)
Wheelbase	1,415 mm (55.7 in)
Minimum ground clearance	255 mm (10.0 in)
Caster	60°
Trail	135 mm (5.3 in)
Weight:	
Net	129 kg (284 lb) *133kg (293 lb)
Engine:	
Type	2-stroke, gasoline, air-cooled, Torque induction
Bore x Stroke x Cylinders	70 x 64 x 1 (2.76 x 2.52in x 1) *85 x 70mm x 1 (3.35 x 2.76in x 1)
Displacement	246cc (15.0 cu.in) *397cc (24.2 cu.in)
Compression ratio	6.7 : 1 * 6.4:1
Lubrication:	
Lubricationsystem	Separate lubrication (Yamaha Autolube)
Oil pump type	Plunger type
Carburetion:	
Manufacture	Mikuni
Type, I.D.No., Quantity	VM28SC, 1 M100, 1pc *VM34SC, IM200, 1PC
Rated venturi size	28 mm *34mm
Air filter:	Oiled foam rubber
Ignition:	
Type	Flywheel magneto ignition *CDI system
Spark plug	NGK B-8ES or Champion N-2
Charging:	
Type	Flywheel magneto
Manufacture, I.D.No.	Mitsubishi F000T04274 *F003T30072
Maximum output	Daytime 2,500rpm/1.5 ± 0.3A *3,000rpm/1.5 ± 0.5A 8,000rpm/1.8 ± 0.5A *8,000rpm/1.5 ± 0.5A Night time 2,500rpm/0.9 ± 0.3A *2,500rpm/0.8 ± 0.3A 8,000rpm/2.2 ± 0.5A
Battery type	6 bolt 6 Amp-Hour
Battery dimensions	56 x 110 x 98 mm
Regurator	Mitusbishi F008T80071 or Stanley SRS-610
Rectifier	Stanley DE4104
Starting:	Primary kick
Primary drive:	
Type	Helical gear
Teeth, ratio	65/23 2.826



Clutch:	Wet, multiple disc
Transmission:	
Type	Constant nesh, 5-speed, drum shifter
Teeth, ratio, overall 1st	33/13 2.538 7.172
2nd	34/19 1.789 5.056
3rd	26/20 1.300 3.674
4th	23/23 1.000 2.826
5th	20/26 0.769 2.173
*1st	38/14 2.714 7.669
2nd	34/19 1.789 5.056
3rd	26/20 1.300 3.674
4th	23/23 1.000 2.826
5th	20/26 0.769 2.713
Secondary drive:	
Type	Roller chain, 104 link (includes chain joint) *102 Link (")
Size, Manufacture	DK520DS, Daido
Reduction ratio	47/14 3.357 *43/16 2.687
Chassis:	
Frame	Tubler, double cradle
Suspension:	
Front (type, travel)	Telescopic fork, 195mm (7.6 in)
Rear (type, travel)	Swing arm (Monocross suspension), 140 mm (Wheel travel) (5.5 in)
Tires:	
Front	3.00 - 21 4PR Dunlop
Rear	4.00 - 18 4PR Dunlop
Brakes:	
Front	Drum brake
Rear	Drum brake
Wheels:	
Front	1.60–21 Aluminum "E" type
Rear	1.85–18 Aluminum "E" type

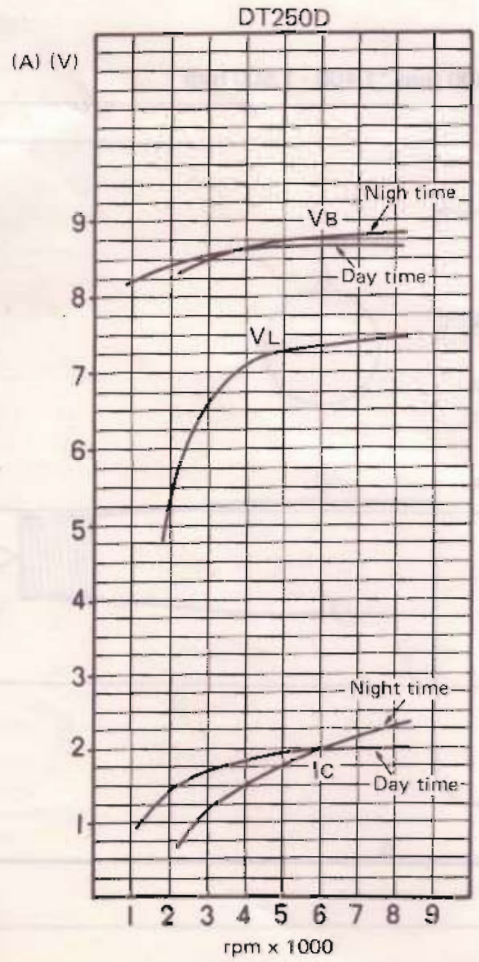
B. Maintenance Specifications

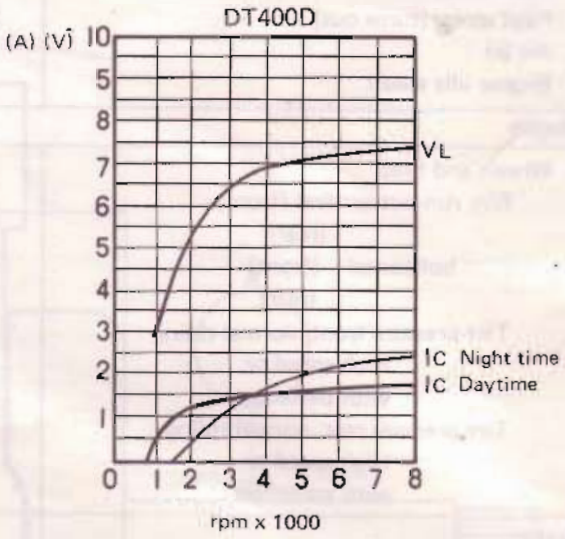
1. Engine	
Engine oil capacity:	
Dry	1,200 ± 50 cc
Oil change	1,100 ± 50 cc
Recomended lublicant:	
If temperature does not go below 5°C (40°F)	YAMALUBE 4-cycle or SAE 20W40 SE motor oil
If temperature does not go above 15°C (60°F)	YAMALUBE 4-cycle or SAE 10W30 SE motor oil
Piston clearance:	40 - 45μ
Ring end gap (installed), Top	0.2 - 0.4 mm *0.3 - 0.5 mm
2nd	0.2 - 0.4 mm *0.3 - 0.5 mm
Standard bore size/standard	70.00 - 70.02 mm *85.00 - 85.02 mm
Maximum	70.1 mm *85.1 mm
Cylinder taper limit	0.08 mm
Cylinder out of limit	0.05 mm
Piston ring side clearance	0.03 - 0.05 mm
Maximum	0.08 mm
Crankshaft:	
Defrection tolerance (A)	0.03 mm
Rod side clearance (B)	0.25 - 0.75 mm
Rod axial clearance (C)	0.4 - 1.0 mm (Maximum 2.0 mm)
Flywheel width (D)	$62^{0}_{-0.05}$ mm



Oil pump:	
Color code	Red *Yellow
Min. stroke	0.20 - 0.25 mm
Max. Stroke	1.85 - 2.05 mm
Total reduction ratio	18/23 x 55/1 = 43.0 *18/23 x 32/1 = 25.0
Oil discharge (Minimum stroke)	0.50 - 0.63 cc
(Maximum stroke)	4.65 - 5.15 cc
Pump adjustmentmark	(at full throttle)
Clutch:	
Friction plate thickness standard Q'ty	3.0 mm, 7 pcs
Minimum	2.7 mm
Clutch plate warp. limit	0.05 mm
Clutch spring length standard	34.9 mm, 6 pcs
Minimum	33.9 mm
Clutch push rod run-out maximum	0.2 mm
2. Carburetion	
Manufacturer	MIKUNI
Model, I.D.No.	VM28SC, 1M100 *VM34SC, 1M200
Main jet	#150 *#190
Needle jet	N-8 *0-2
Pilot jet	#50 *#80
Starter jet	#60
Jet needle§clip position	5DP33-3 *6F9-3
Float level	15.8 mm *22.9 mm
Pilot screw (turns out)	1-¾ *1-½
Air jet	ϕ2.5 mm
Engine idle speed	1,300 - 1,400 rpm *1,400 - 1,500 rpm
3. Chassis	
Wheels and tires:	
Rim run-out vertival (front)	1.0 mm
(rear)	0.5 mm
holizontal (front)	0.5 mm
(rear)	0.5 mm
Tire pressure front, normal riding	1.3 kg/cm^2
High speed or with passenger	1.5 kg/cm^2
Tire pressure rear, normal riding	1.5 kg/cm^2
High speed or with passenger	1.8 kg/cm^2
Brakes:	
Front drum diameter	160 mm
Minimum diameter	156 mm
Rear drum diameter	150 mm
Minimum diameter	146 mm
Front forks:	
Spring free length	399 mm
Preload length	385 mm
Spring constant	K=0.35
Fork oil capacity (each side)	190.5 cc

Rear shock absorber:	
Gas pressure	15 kg/cm^2
Absorber stroke	82 mm
Spring free length	265 mm
Preload length	260 mm
Spring constant	K_1=4.5 (0 - 62 mm), K_2=7.5 (62 - 82 mm)
4. Electrical	
Ignition timing	3.2±0.15 mm at BTCD *2.9±0.15 mm at BTDC
Point gap	0.6 - 0.7 mm 1.0 Ω±10% (20°C, 68°F)
Condenser capactty	0.25 F ± 10% 5.9KΩ±20% (20°C, 68°F)
Insulation resistance	50MΩ or more
Ignition coil:	
Type	Mitsubishi F006T41271 *F006T41174
Spark gap	7 mm
Primary resistance	1.0 Ω ± 10% (20°C, 68°F)
Secondary resistance	5.9 KΩ ± 20% (20°C, 68°F)
*CDI Unit:	
Type	Mitsubishi F008T00371
Flywheel magneto:	
Type	Mitsubishi F000T04274 *F003T30072
Sourse coil resistance	1.65Ω± 10% (20°C, 68°F)





VB : Battery voltage.
VL : Headlight voltage.
IC : Battery amperage

Charge coil resistance Lighting coil resistance	0.33Ω±10% *0.38Ω±10% 0.19Ω±10% *0.22Ω±10% } 20°C, 68°F
Regurator: Regurated voltage Allowable amparege	 7.0 V(Mitsubishi), 7.2 V(Stanley) 8.0A
Battery: Type Charging rate	 6N6-3B-1 0.6A at 10 hrs.
Lighting: Headlight Taillight/Stoplight License plate light Flasher light Meter lights High beam indicator light Oil levell worning light Neutral light	 6V 30/30W (Sealed beam) 6V 5.3/25W 6V 5.3W 6V 17W (for bulbs) 6V 3.0W (two bulbs) 6V 3.0W 6V 3.0W 6V 3.0W

C. Torque Specifications

Unit: m-kg (ft-lb)

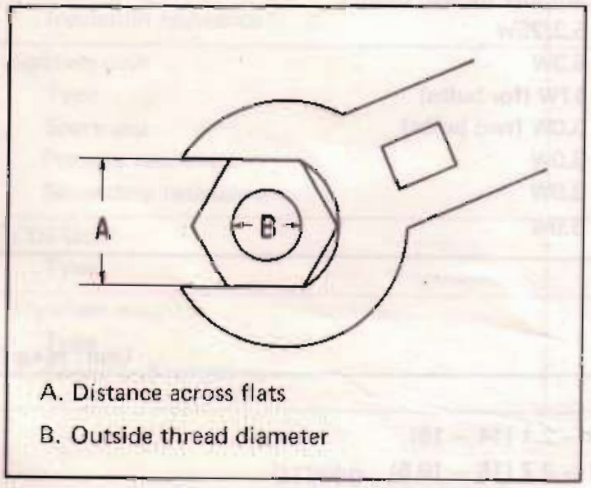
1. Engine	
Cylinder head nut	1.9 – 2.1 (14 – 15)
bolt	2.1 – 2.7 (15 – 19.5)
Spark plug	1.5 – 2.5 (11 – 18)
Cylinder nut	3.4 – 4.0 (24.5 – 28)
bolt	4.0 – 5.0 (28 – 36)
Primary drive gear	7.0 – 8.0 (50 – 57)
Clutch boss	7.0 – 8.0 (50 – 57)
Clutch spring	0.7 – 1.0 (5.0 – 7.0)
Drive sprocket	7.0 – 8.0 (50 – 57)
Kick crank	2.0 – 2.5 (14.5 – 18)
Reed valve	0.07 – 0.1 (0.5 – 0.7)
Rotor nut	5.7 – 7.5 (42 – 54)
Stater	0.7 – 1.0 (5.0 – 7.0)
Clutch plessure plate	2.0 – 2.5 (14.5 – 18)
2. Chassis	
Engine mount front upper	1.8 – 2.9 (13 – 20)
front lower	1.8 – 2.9 (13 – 20)
rear upper	1.8 – 2.9 (13 –20)
rear lower	3.8 – 6.0 (27.5 – 43)
Pivot shaft nut	5.0 – 8.0 (36 – 57)
Rear shock absorber front	3.8 – 6.0 (27.5 – 43)
rear	2.0 – 3.0 (14.5 – 2)
Handle crown pinch bolt	1.1 – 1.8 (8.0 – 13) *1.5 – 3.0 (10–20)
Fitting bolt	4.2 – 6.5 (31 – 47)
Handle upper bracket	1.1 – 1.8 (8.0 – 13)
Under bracket pinch bolt	1.1 – 1.8 (8.0 – 13) *1.34 – 1.9 (10–13)
Front axle bracket	0.8 – 1.2 (6 – 8.5)
Front axle nut	7 – 10 (50 – 72)
Rear axle nut	8.3 – 13 (60 – 90)
Driven sprocket nut	3.0 – 4.8 (22 – 34) *2.7 – 3.3 (20 – 23)
Footrest nut	5.0 – 6.8 (36 – 49)

D. General Torque Specifications

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book.

To avoid warpage, tighten multi-fastener assemblies in a criss-cross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads.

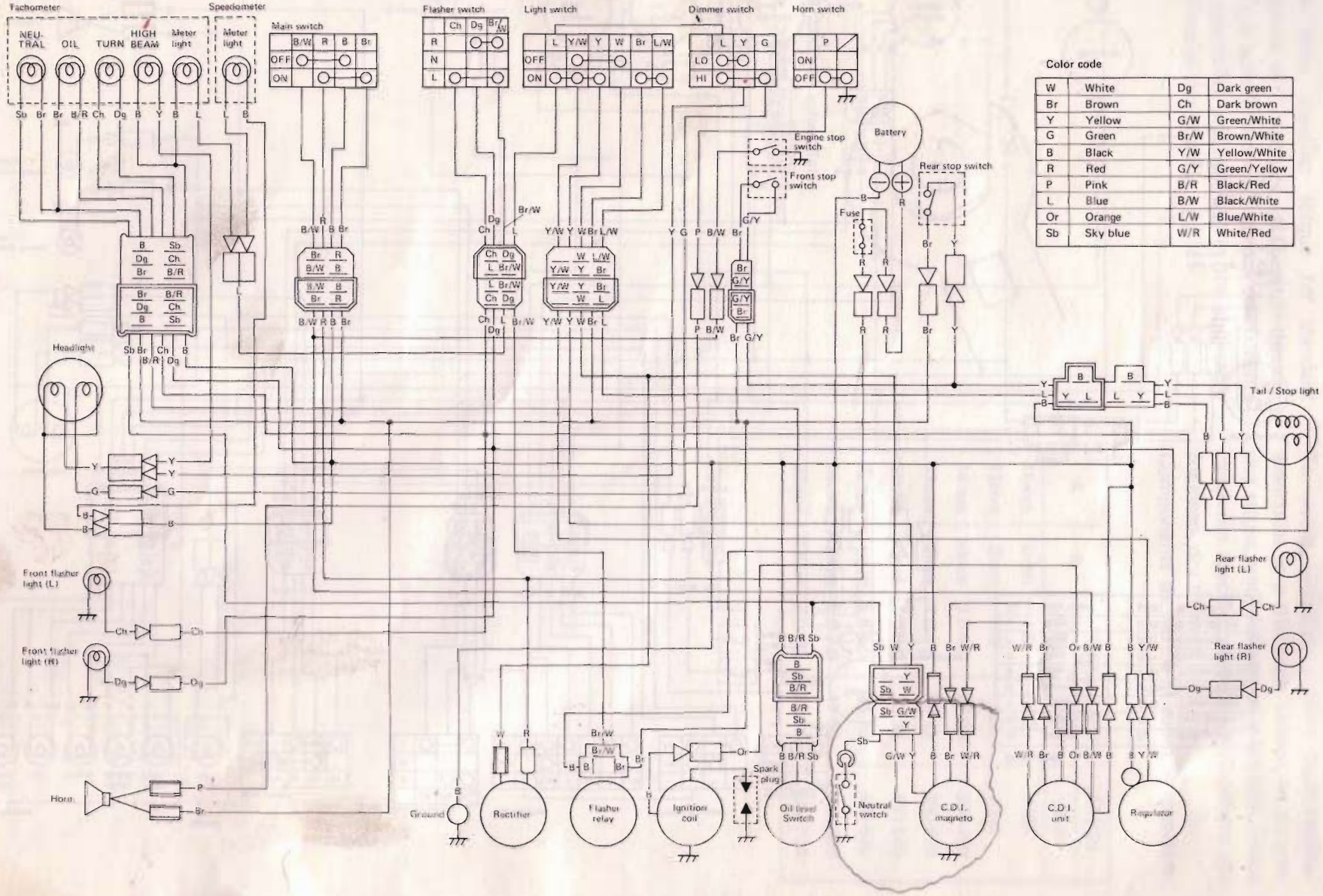
Components should be at room temperature.



A. Distance across flats

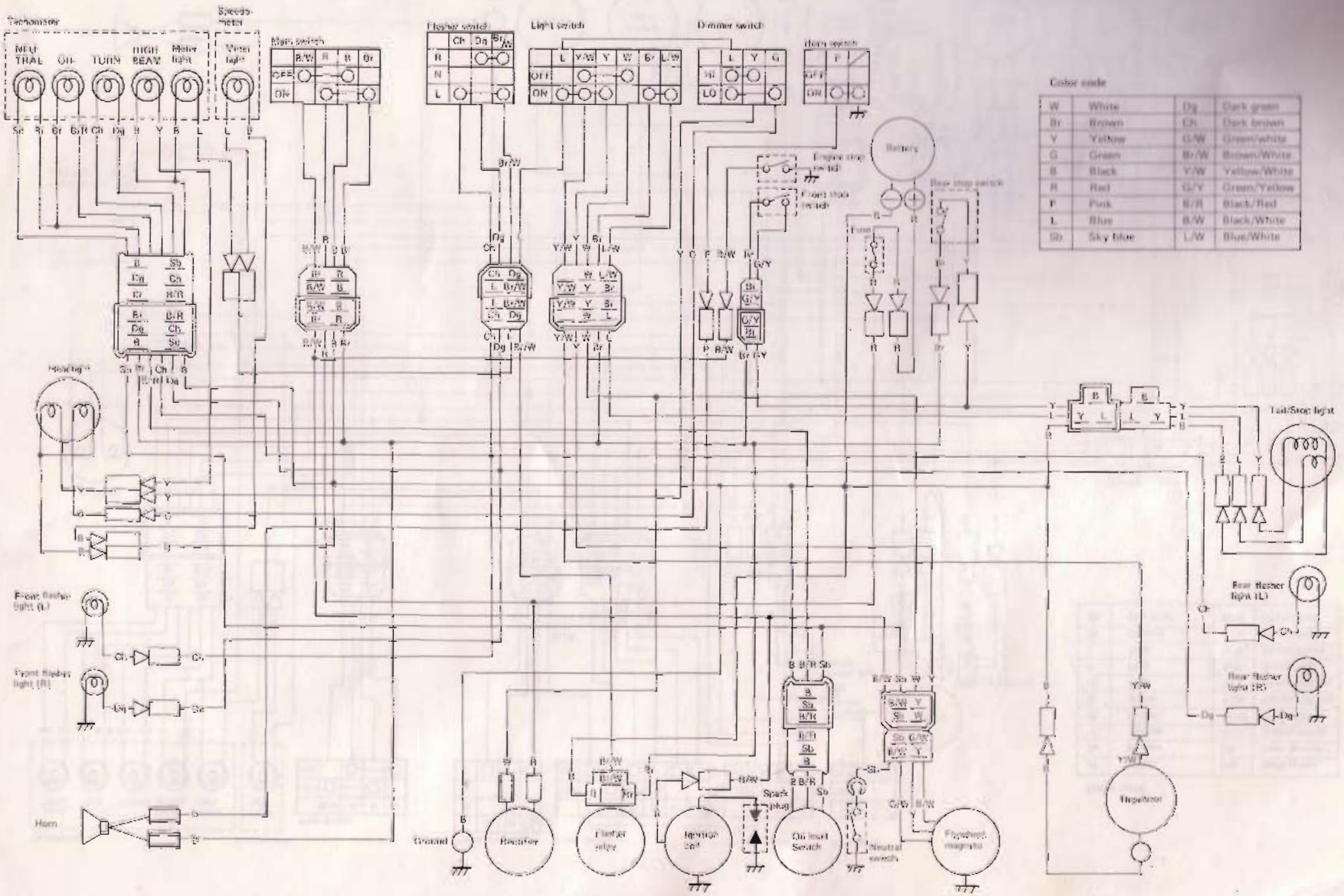
B. Outside thread diameter

A	B	TORQUE SPECIFICATION		
		m-kg	ft-lb	in-lb
10mm	6mm	1.0	7.2	85
12mm	8mm	2.0	15	175
14mm	10mm	3.5-4.0	25-29	300-350
17mm	12mm	4.0-4.5	29-33	350-400
19mm	14mm	4.5-5.0	33-36	400-440
22mm	16mm	5.5-6.5	41-49	480-570
24mm	18mm	5.8-7.0	42-50	500-600
27mm	20mm	7.0-8.3	50-60	600-700



Color code

W	White	Dg	Dark green
Br	Brown	Ch	Dark brown
Y	Yellow	G/W	Green/White
G	Green	Br/W	Brown/White
B	Black	Y/W	Yellow/White
R	Red	G/Y	Green/Yellow
P	Pink	B/R	Black/Red
L	Blue	B/W	Black/White
Or	Orange	L/W	Blue/White
Sb	Sky blue	W/R	White/Red


Tachometer
Speedometer
NEU TRAL
OIL
TURN
HIGH BEAM
Meter light
Main switch
Flasher relay
Light switch
Dimmer switch
Horn switch
Color code
W White
Br Brown
Y Yellow
G Green
B Black
R Red
P Pink
L Blue
Sb Sky blue
Dg Dark green
Ch Dark brown
G/W Green/white
Br/W Brown/White
Y/W Yellow/White
G/Y Green/Yellow
B/R Black/Red
B/W Black/White
L/W Blue/White
Battery
Engine stop switch
Front stop switch
Rear stop switch
Fuse
Tail/Stop light
Rear flasher light (L)
Rear flasher light (R)
Front flasher light (L)
Front flasher light (R)
Horn
Ground
Rectifier
Starter relay
Ignition coil
Spark plug
On-board Switch
Neutral switch
Flywheel magneto
Regulator