

Product: 1977 Yamaha DT250D,DT400D Motorcycle Service Repair Workshop Manual

Full Download: <https://www.arepairmanual.com/downloads/1977-yamaha-dt250ddt>

[400d-motocycle-service-repair-workshop-manual/](https://www.arepairmanual.com/downloads/1977-yamaha-dt250ddt-400d-motocycle-service-repair-workshop-manual/)



**YAMAHA**

# **DT250D DT400D**

# **Service Manual**

Sample of manual. Download All 67 pages at:

<https://www.arepairmanual.com/downloads/1977-yamaha-dt250ddt400d-motocycle-service-repair-workshop-manual/>

**1M1-28197-10**

# INDEX

<b>GENERAL INFORMATION</b>	<b>1</b>
<b>PERIODIC INSPECTION AND ADJUSTMENT</b>	<b>2</b>
<b>ENGINE OVERHAULING</b>	<b>3</b>
<b>CARBURETION</b>	<b>4</b>
<b>CHASSIS</b>	<b>5</b>
<b>ELECTRICAL</b>	<b>6</b>
<b>APPENDICES</b>	<b>7</b>

# CHAPTER 1. GENERAL INFORMATION

1-1. MACHINE IDENTIFICATION .....	2
1-2. EXTERNAL VIEW.....	2
1-3. SPECIAL TOOLS.....	3

**1**

# CHAPTER 1. GENERAL INFORMATION

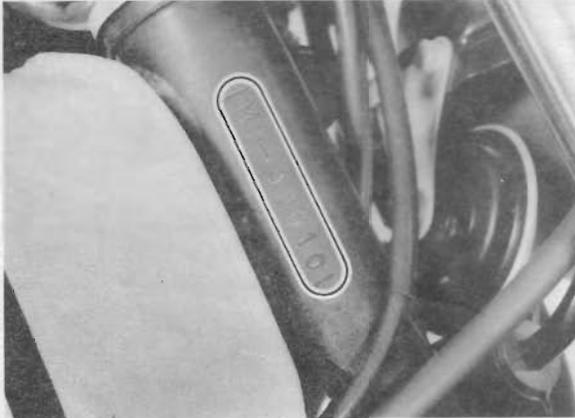
## 1-1. MACHINE IDENTIFICATION

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

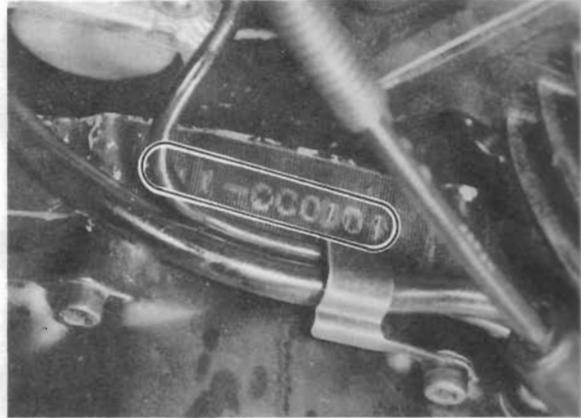
The engine serial number is located on a raised boss on the upper rear, right-hand side of the engine. Engine identification follows the same code as frame identification.

Starting Serial Number DT250D : 1M1-000101

DT400D : 1M2-000101



Frame serial number



Engine serial number

## 1-2. EXTERNAL VIEW

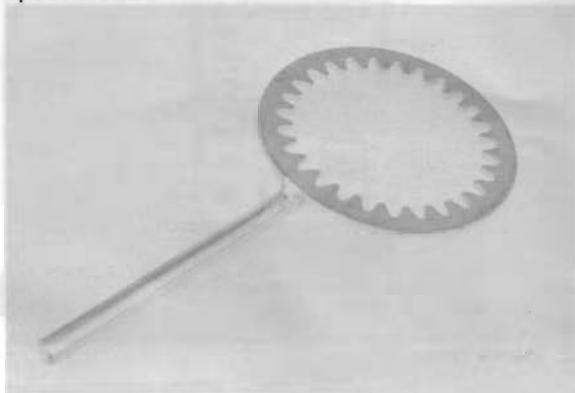


### 1-3. SPECIAL TOOLS

#### 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

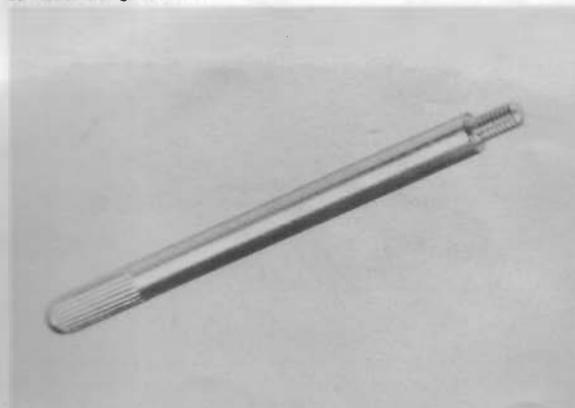
#### Special tools



1. Clutch Holding Tool



2. Dial Gauge Stand



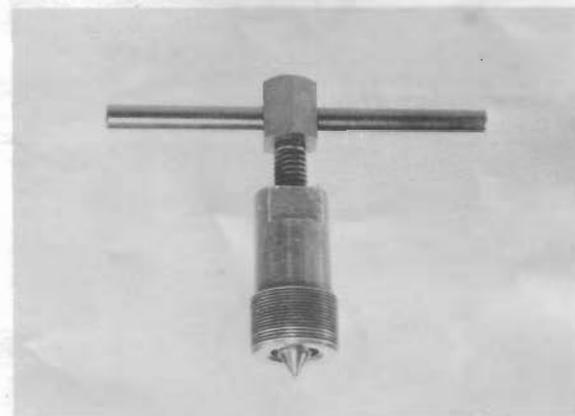
3. Dial Gauge Needle

#### Testers

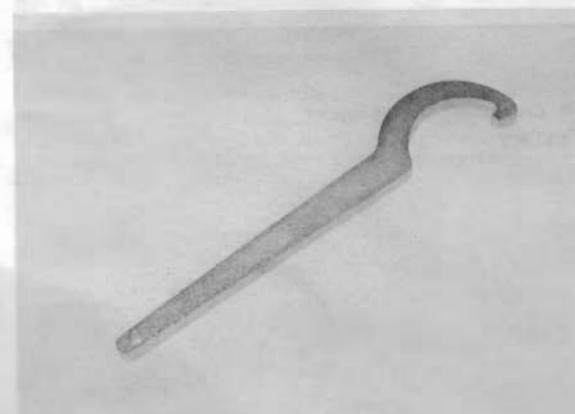
	Description	Tool No.
1.	Dial gauge	90890-03002
2.	Point checker	90890-03031
3.	Electro tester	90890-03021
4.	CDI checker	90890-03068
5.	CDI checker lead wire	90890-03062



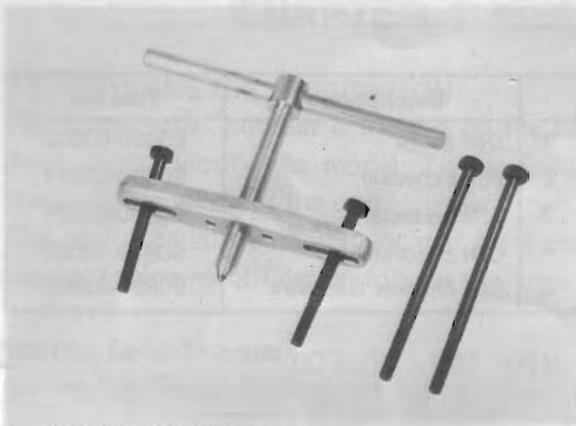
4. Flywheel Holding Tool



5. Flywheel Puller



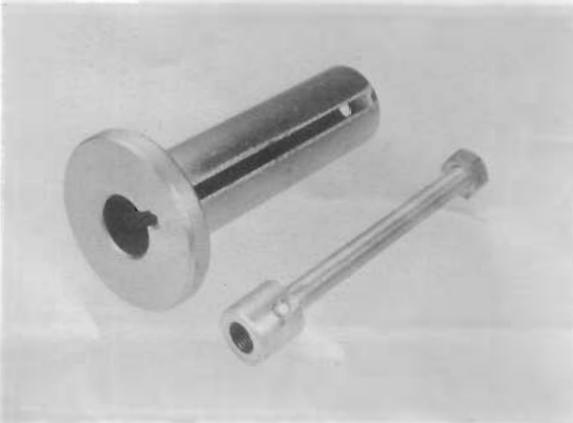
6. Steering Nut Wrench



7. Crankcase Separating Tool



2. Point Checker

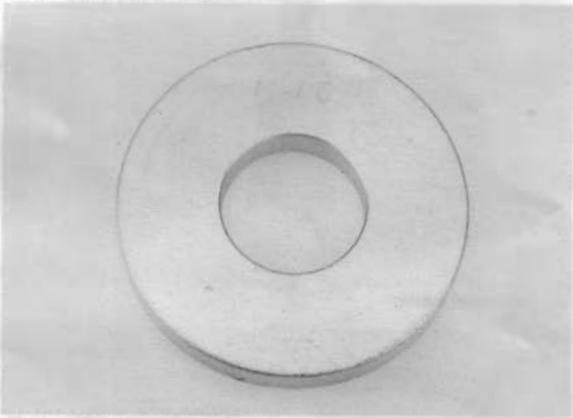


8. Crankshaft Setting Pot

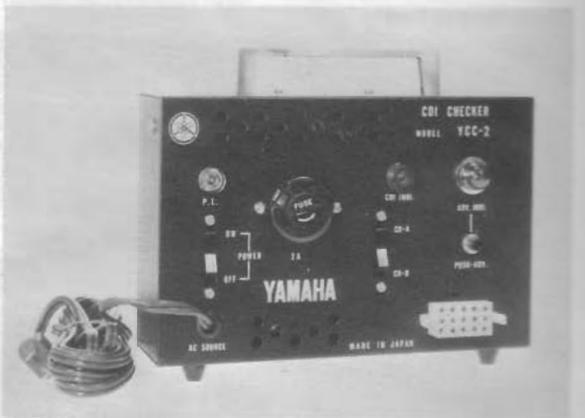
9. Crankshaft Setting Tool



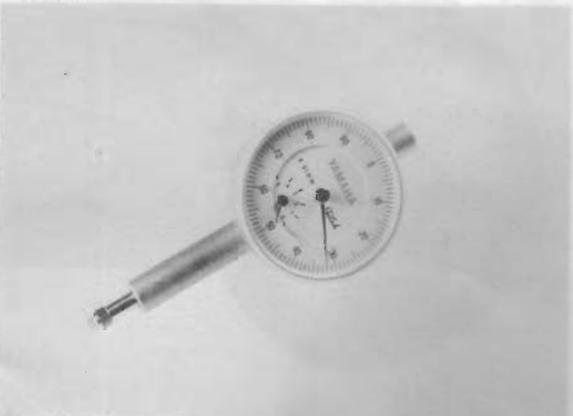
3. Electro Tester



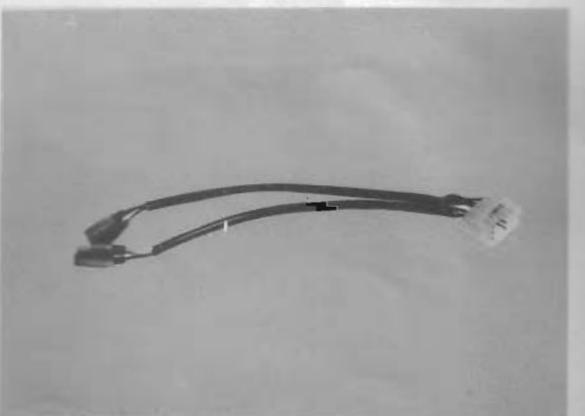
10. Crankshaft Setting Spacer  
Testers



4. CDI Checker



1. Dial Gauge



5. CDI Checker leadwire

# CHAPTER 2. PERIODIC INSPECTION AND ADJUSTMENT

- 2-1. MAINTENANCE AND LUBRICATION CHART
  - A. Maintenance intervals ..... 6
  - B. Lubrication Intervals..... 7
- 2-2. ENGINE
  - A. Carburetor..... 8
  - B. Air Filter..... 8
  - C. Autolube Pump..... 9
  - D. Engine and Transmission Oil..... 10
- 2-3. CHASSIS
  - A. Clutch Freeplay Adjustment..... 10
  - B. Brakes and Wheels..... 11
  - C. Drive Chain..... 12
  - D. Front Fork Oil Change..... 12
  - E. Suspension, Steering and Swing Arm..... 13
- 2-4. ELECTRICAL
  - A. Ignition Timing Adjustment (DT250D)..... 13
  - B. Ignition Timing Adjustment (DT400D)..... 14
  - C. Spark Plugs..... 14
  - D. Battery..... 14
  - E. Headlight..... 15



Item	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000
Oil Change																			
Spark Plug																			
Brake Pad																			
Chain Lubrication																			
Headlight																			
Battery																			
Ignition Timing																			
Clutch Freeplay																			
Front Fork Oil																			
Suspension																			
Steering																			
Swing Arm																			

## 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 motorcycle is continually operated in an area of high humidity, then all parts must be lubricated much more frequently than shown on the chart to avoid damage caused by water to metal parts.

#### A. 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 reoil	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 tension/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**

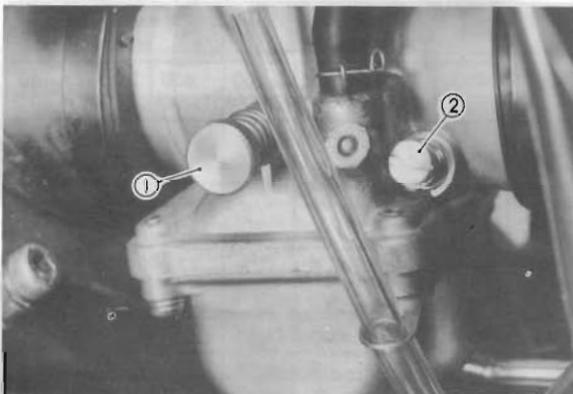
Item	Remarks	Type	Initial km (mile)				Thereafter every km (mile)		
			400 (250)	800 (500)	1,600 (1,000)	3,200 (2,000)	1,600 (1,000)	3,200 (2,000)	6,400 (4,000)
Transmission oil	Replace	Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil	○		○			○	
Drive chain	Remove/clean/lube/adjust	Yamaha chain and cable 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.

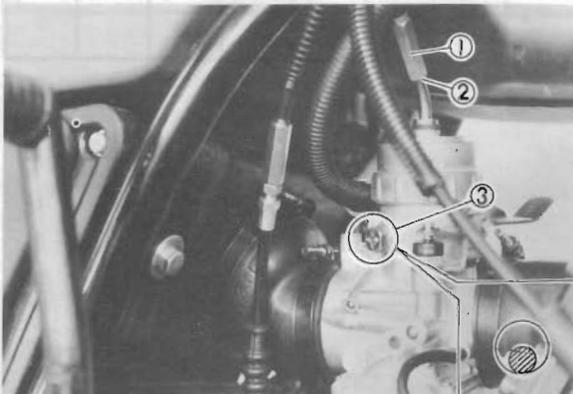
	DT250D	DT400D
Pilot screw (Turns out)	1 ¼ turns	1 ½ turns
Idle speed (rpm)	1,300 ~ 1,400	1,400 ~ 1,500



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:

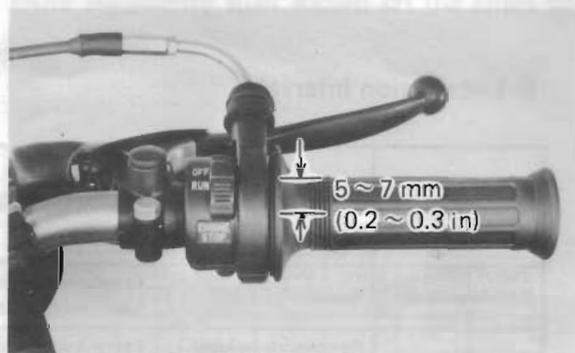


1. Adjuster
2. Locknut
3. Bolt

### 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.

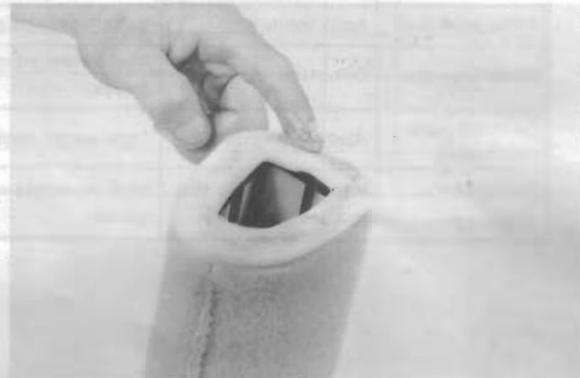


### B. Air Filter

#### 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.

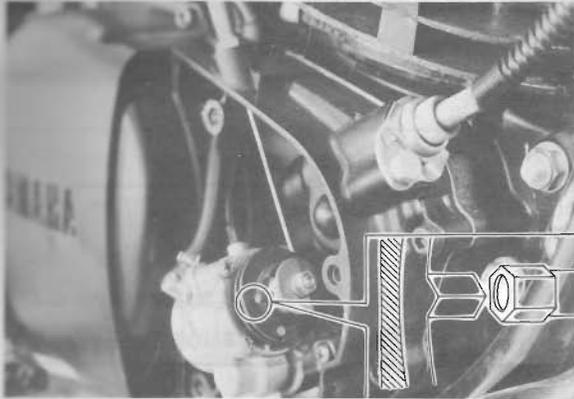


2. The air filter element should be cleaned once a month or every 3,000km (2,000 mi). It should be cleaned more often if the machine is operated in extremely dusty areas.

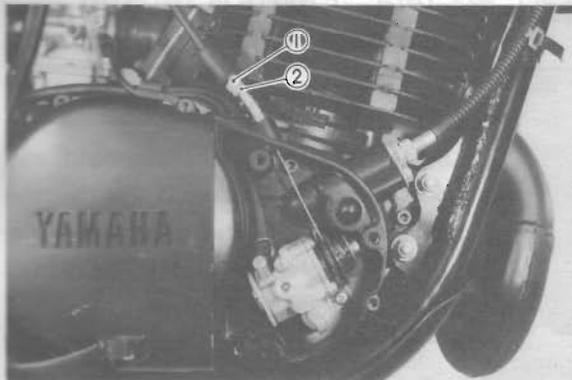
### C. Autolube pump

#### 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

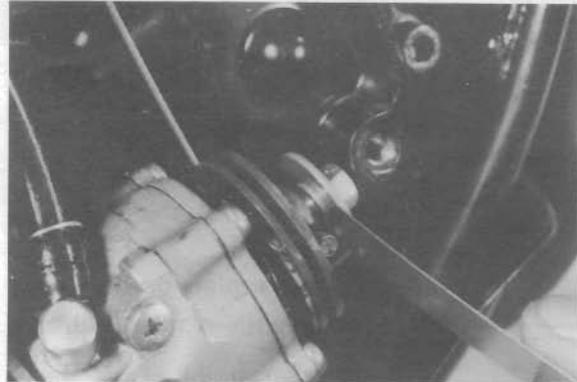
- d. Apply grease to pump pulley.

**NOTE:** \_\_\_\_\_  
Before adjusting Autolube cable always set throttle cable free play first. (Refer to page 8).  
\_\_\_\_\_

#### 2. Pump stroke adjustment

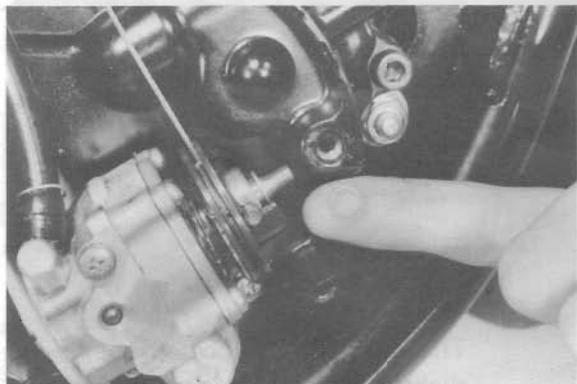
- a. With throttle closed, rotate starter plate until the pump plunger moves fully out and away from the pump body to its outermost limit.

- 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.

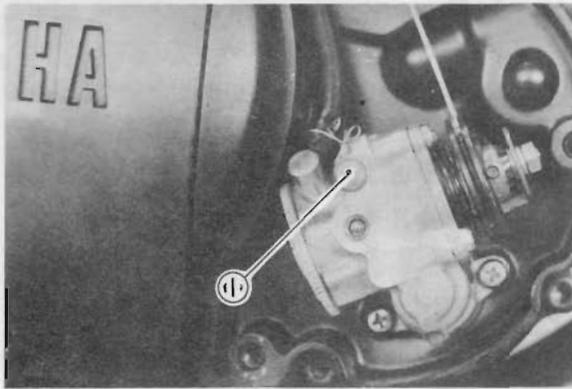


- d. Re-install adjusting plate and locknut. Tighten the locknut. Re-measure gap. Repeat procedure as required.

#### 3. Bleeding the pump

The Autolube pump and delivery lines must be bled on the following 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

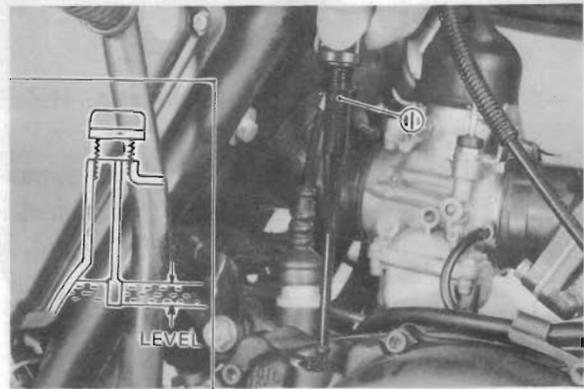
##### 1. Engine oil (Autolube oil)

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:

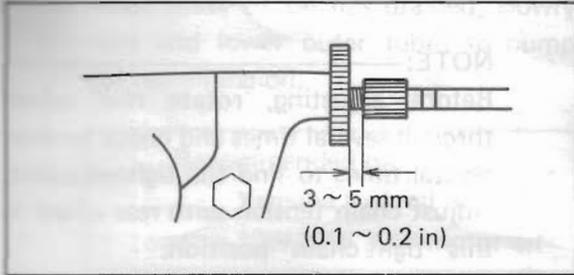
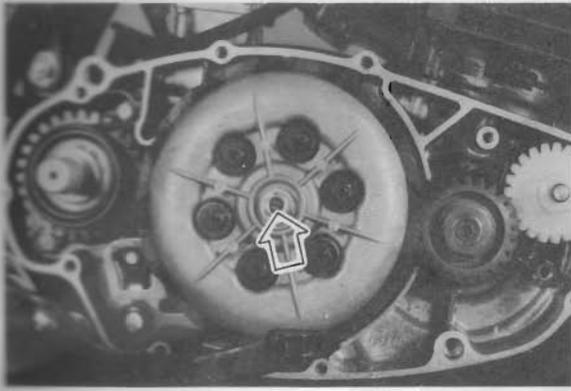
Under no circumstances should any additives be included with the transmission oil. This oil also lubricates and cools the clutch. Additives may cause clutch slippage.

## 2-3. CHASSIS

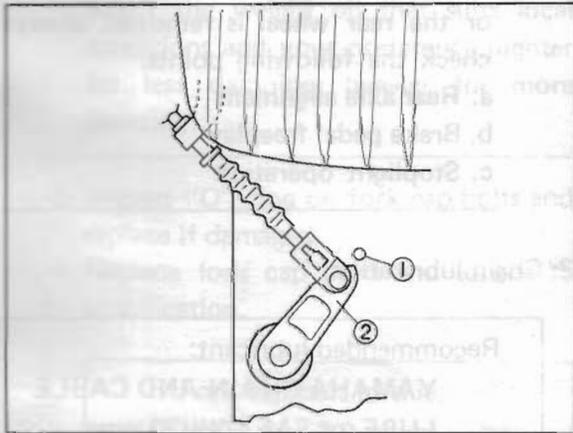
### A. Clutch Freeplay Adjustment

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:

- Turn the cable adjuster in as illustrated.
- Turn the cable adjuster of the brake shoe plate out until the brake lever shoe plate is none. Tighten locknut.
- Turn the cable adjuster of the lever holder until the lever play is adjusted to specification.

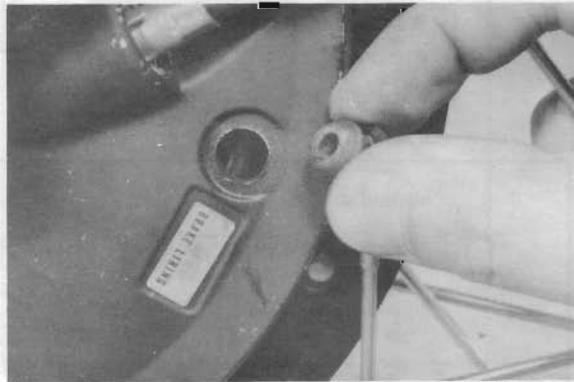
Rear brake play should be checked anytime chain is adjusted or rear wheel is removed and reinstalled.

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.

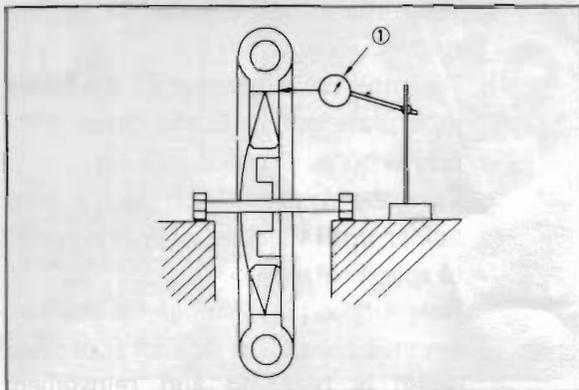
S.T.D. lining thickness:  
4 mm (0.16 in)  
Wear limit: 2 mm (0.08 in)



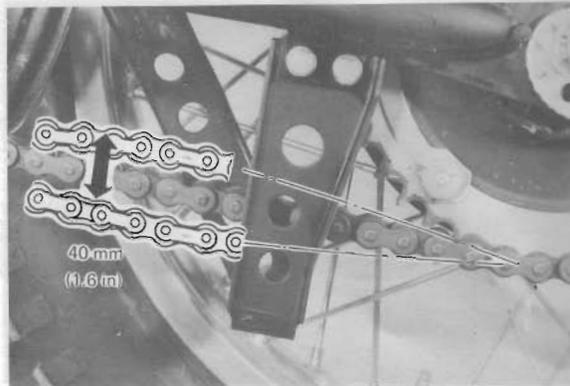
### 3. Rim runout

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



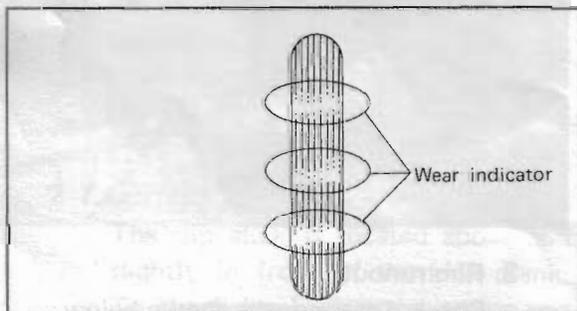
#### 4. Tires

##### a. Tire pressure

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

##### 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.

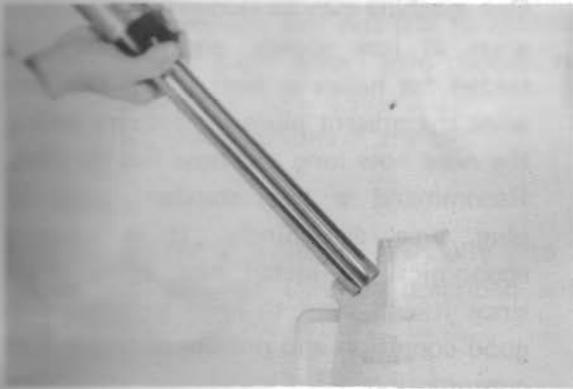
- a. Rear axle alignment
- b. Brake pedal freeplay
- c. Stoplight operation

#### 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.

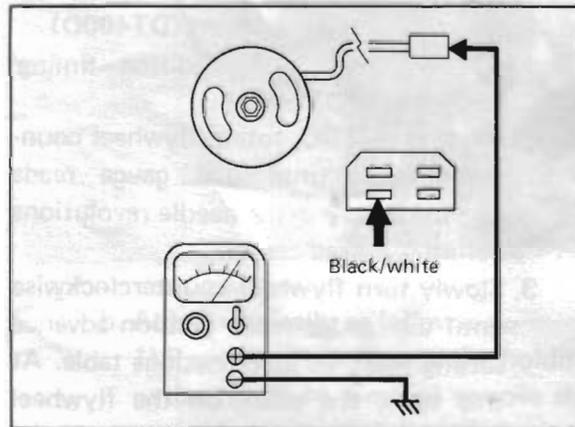
Swing Arm Freeplay:  
1.0 mm at end of  
swing arm

## 2-4. ELECTRICAL

### A. Ignition Timing Adjustment. (DT250D)

Ignition timing must be set as follows:

1. Remove the muffler 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:  $3.2 \pm 0.15\text{mm}$  ( $0.12 \pm 0.006$  in)

DT400D:  $2.9 \pm 0.15\text{mm}$  ( $0.11 \pm 0.006$  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.

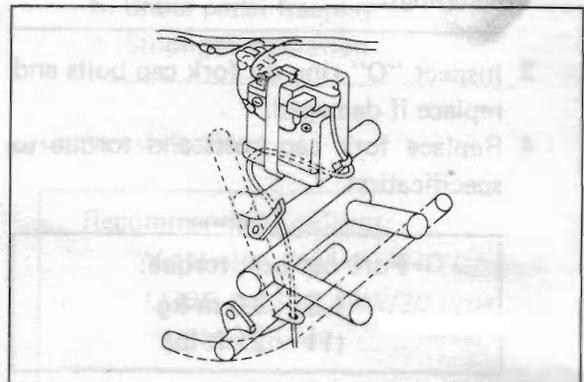
Spark plug type: NGK B-8ES, Champion N-2

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**

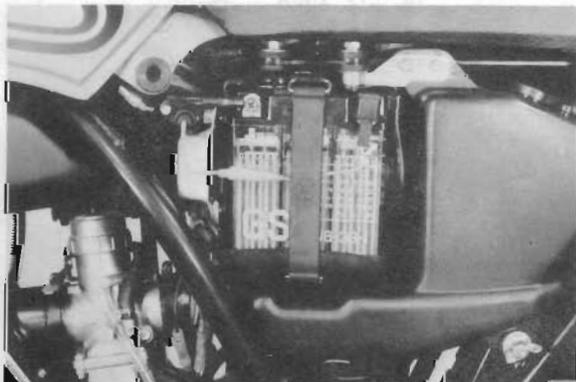
The service life of a battery is usually 2 to 3 years, but lack of care as described will shorten the life of the battery.

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:**

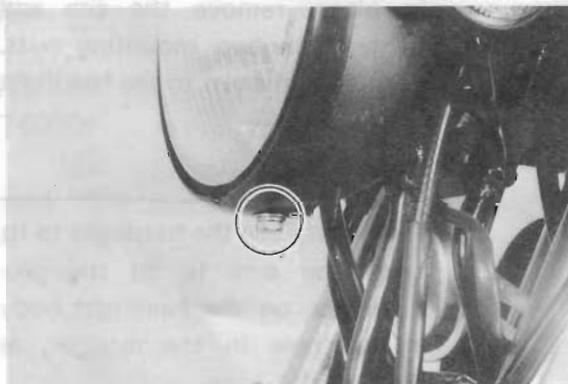
When filled with dilute sulfuric acid (electrolyte), this battery can be put into use immediately. That is, it is a dry-charged battery. It is advisable, however, that the battery be charged as much as possible before using to insure maximum performance. This initial charge will prolong the life of the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



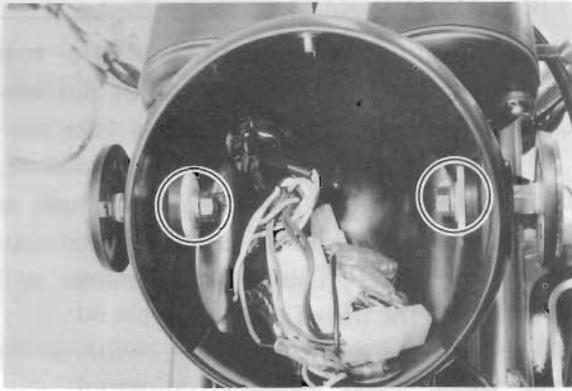
**b. Adjust vertically as follows:**

- 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.

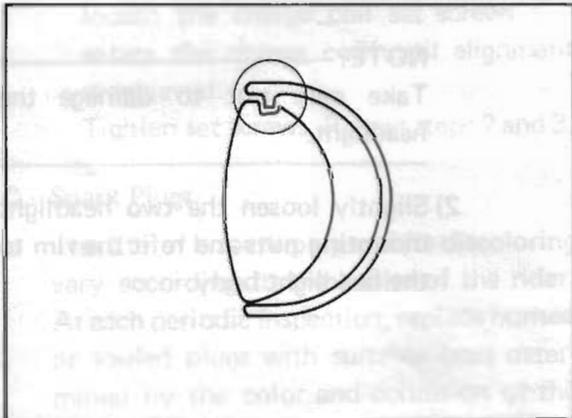
- 2) Slightly loosen the two headlight mounting nuts and refit the rim to the headlight body.



**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.

## CHAPTER 3. ENGINE OVERHAUL

3-1. REMOVAL	
A. Preparation for Removal	18
B. Fuel Tank Assembly	18
C. Exhaust Pipe	18
D. Wiring and Cables	19
E. Carburetor	19
F. Flywheel Magneto	19
G. Drive Chain	19
H. Decompression Assembly (DT400D)	20
I. Removal	20
3-2. DISASSEMBLY	
A. Cylinder Block	20
B. Crankcase Half (Right)	21
C. Crankcase	22
D. Transmission	23
E. Crankshaft	23
3-3. INSPECTION AND REPAIRING	
A. Cylinder Head	23
B. Cylinder	23
C. Decompression Assembly (DT400D)	24
D. Piston Pin and Bearing	24
E. Piston	24
F. Piston Rings	25
G. Autolube Pump	25
H. Clutch	26
I. Primary Drive	28
J. Kick Starter	28
K. Transmission	28
L. Crankshaft	29
M. Bearings and Oil Seals	30
N. Crankcase	30
3-4. ENGINE ASSEMBLING AND ADJUSTMENT	
A. Crankshaft Installation	31
B. Kick Starter	32
C. Shifter	32
D. Clutch	32
E. Crankcase Cover Right	33
F. Piston	33
G. Cylinder	33
H. Cylinder Head	33
I. Decompression Assembly (DT400D)	34
3-5. MOUNTING	
A. Engine Mounting	34
B. Drive sprocket	34
C. Flywheel Magneto	34

## CHAPTER 3. ENGINE OVERHAUL

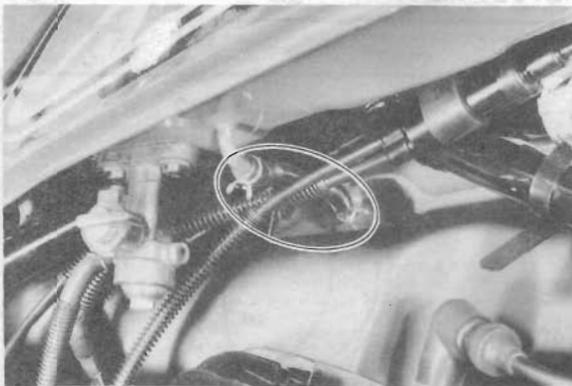
### 3-1. REMOVAL

#### 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

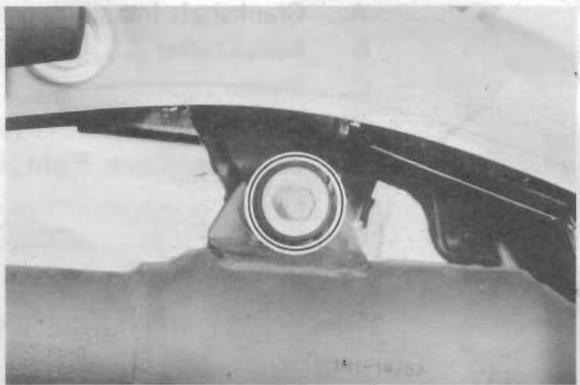
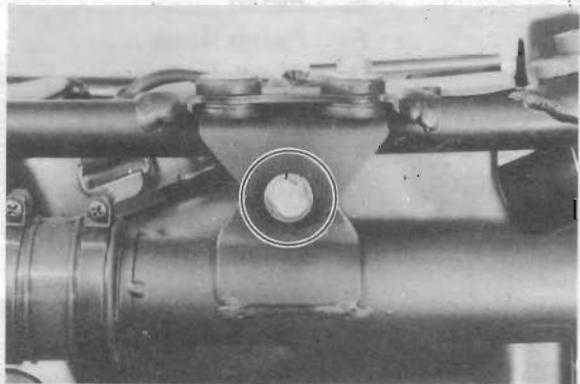
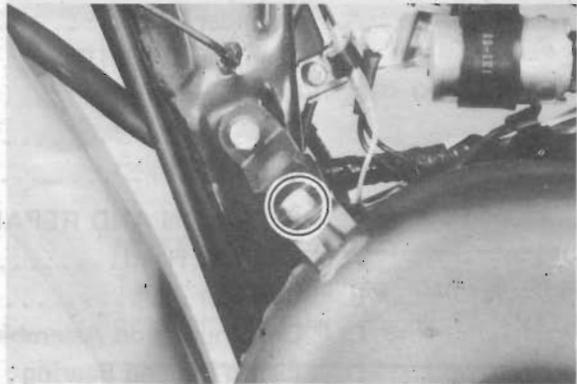
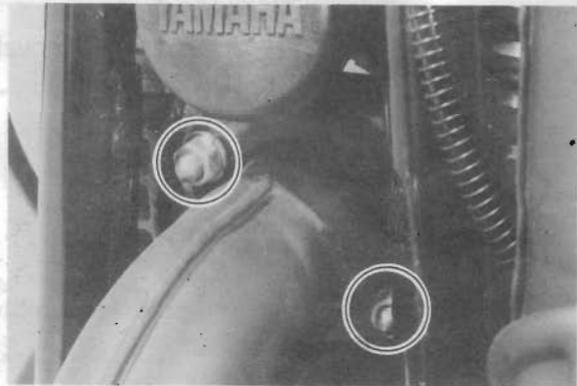
1. Remove bolt holding rear of fuel tank.
2. Disconnect and plug cross over pipe.



#### C. Exhaust Pipe

1. Remove the nuts holding the exhaust pipe to the cylinder head.

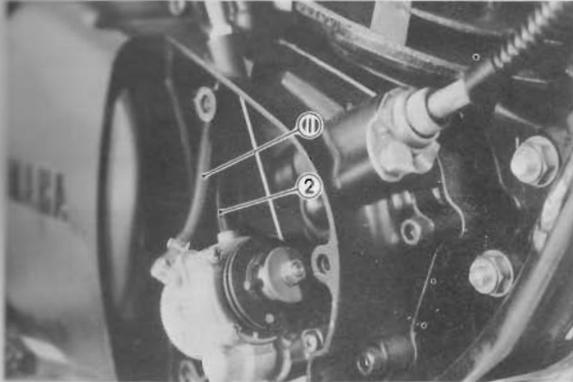
2. Remove the bolts and spring washer holding the exhaust pipe to the frame.



3. Loosen the band connecting the exhaust pipe to silencer.

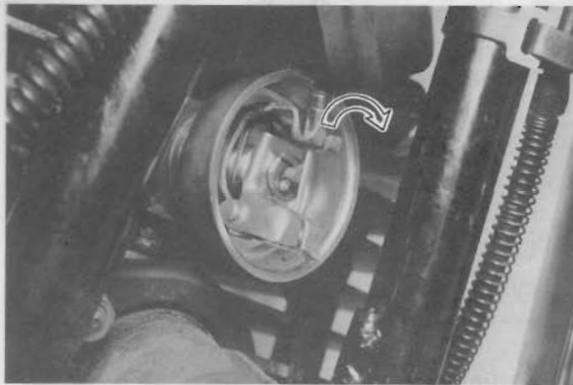
#### D. Wiring and Cables

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

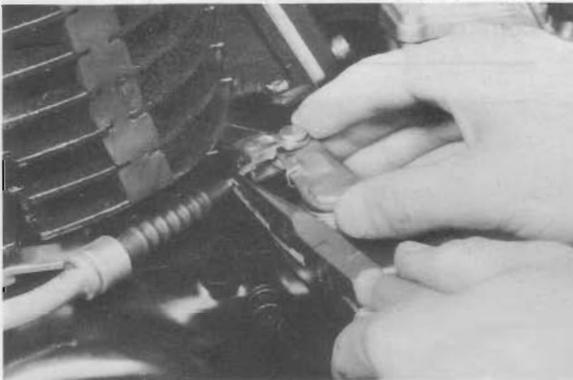


1. Oil pipe 2. Oil delivery pipe

4. Remove de-comp cable (DT400D)

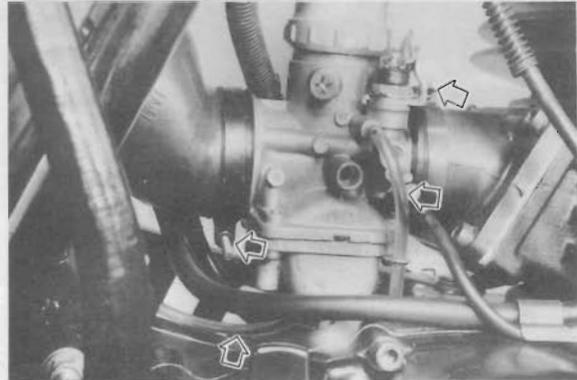


5. Remove pump cable.
6. Remove tachometer cable.
7. Remove left crankcase cover.
8. Remove clutch wire at clutch push lever



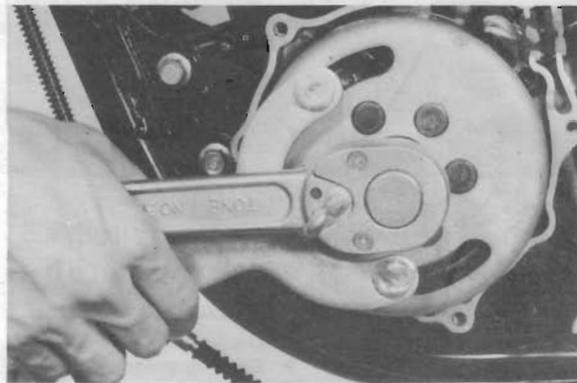
#### E. Carburetor

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

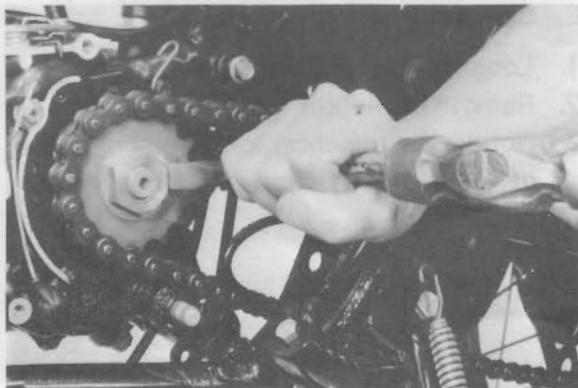
1. Remove magneto flywheel.



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

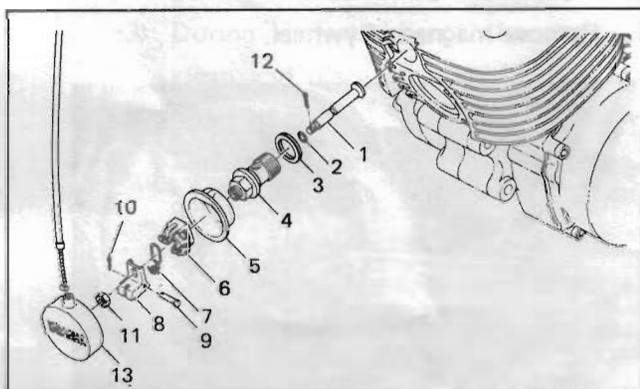
1. Loosen drive sprocket before disconnecting chain.
  - a. Bend down lock tab.
  - b. Put transmission in gear.
  - c. Apply rear brake.
  - d. Loosen sprocket securing nut.



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

#### H. Decompression Assembly (DT400D)

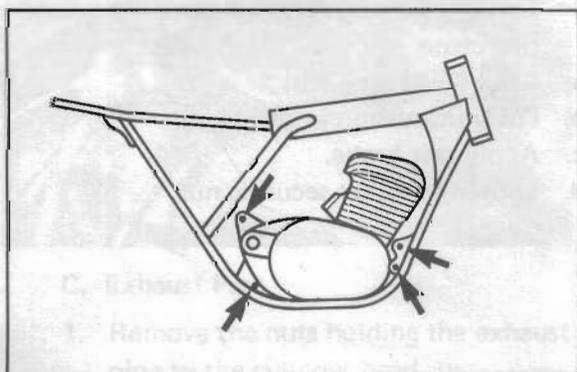
Remove decompression assembly, if necessary.



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

#### I. Removal

1. Remove engine mounting bolts.



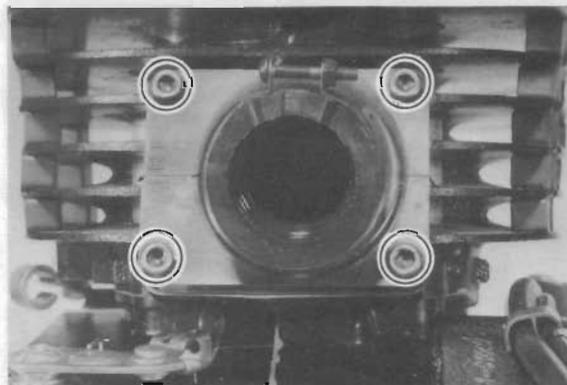
2. Remove engine from right side of frame.

### 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:

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



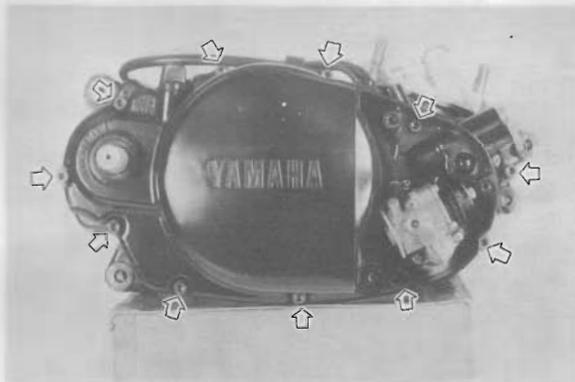


**B. Crankcase Half (R)**

1. Kick crank

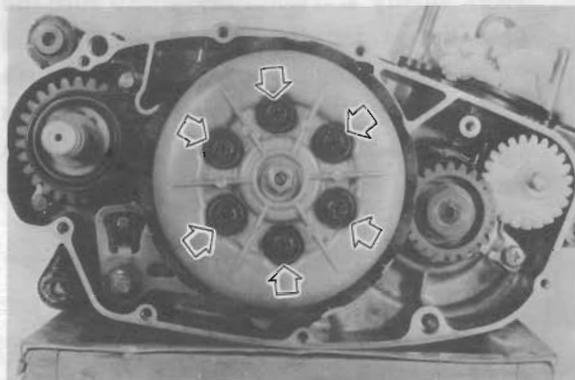
**NOTE:** \_\_\_\_\_  
 The bolt must be completely removed from the kick crank.

2. Crankcase cover, right.

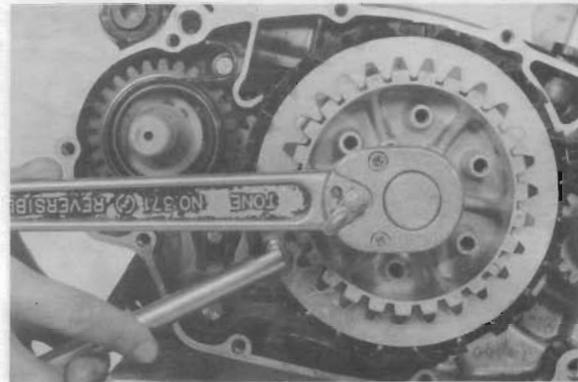
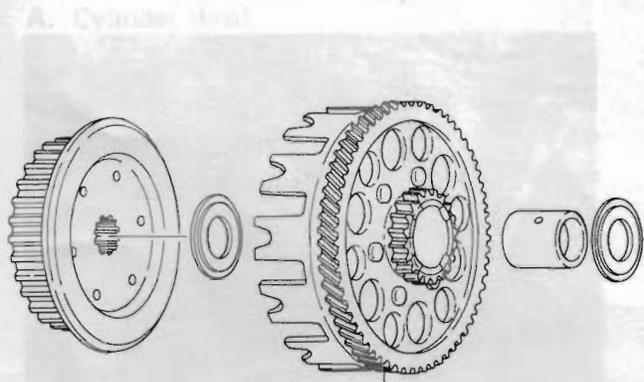


**NOTE:** \_\_\_\_\_  
 Crankcase cover can be removed without removing Autolube pump. (See Autolube pump section.)

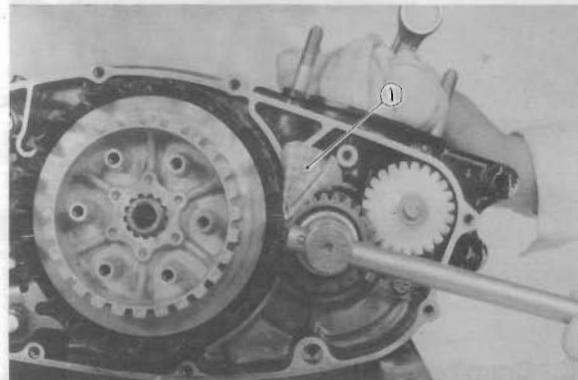
3. Clutch spring screw.
4. Clutch spring.
5. Pressure plate.



6. Locknut.
7. Belleville spring washer.

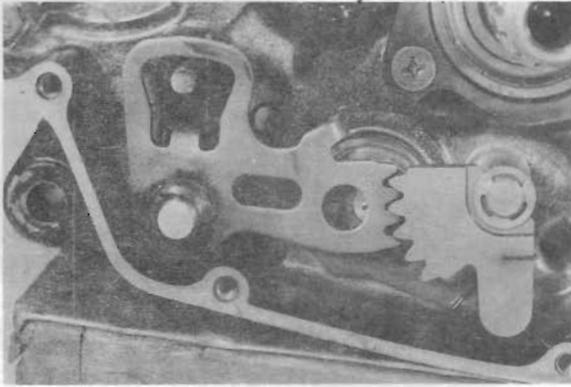


8. Primary drive gear.  
 To remove, place a folded rag between the teeth of the primary gears to lock them.



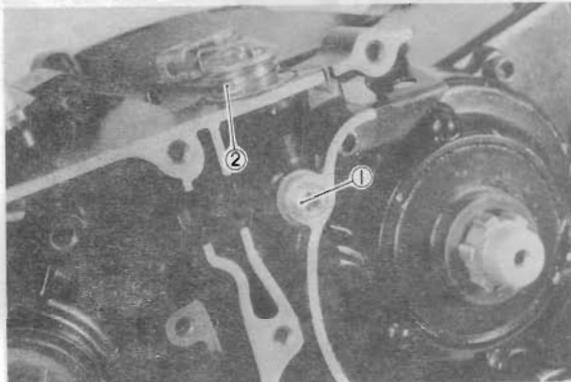
1. Folded rag

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



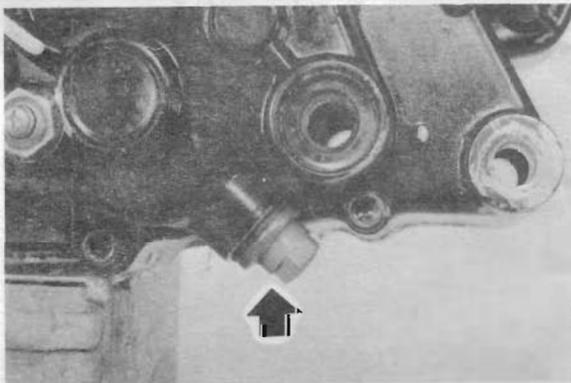
10. Push lever stopper screw.

11. Clutch push lever axle.



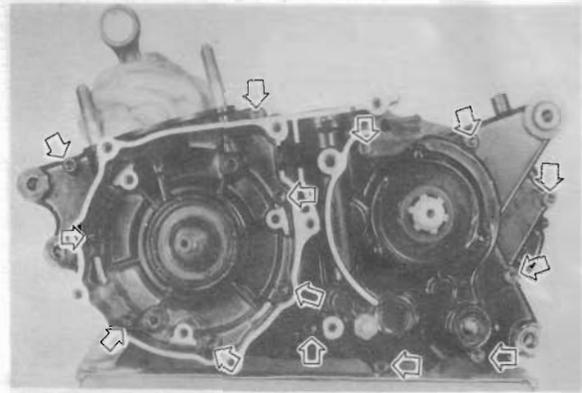
1. Push lever stopper 2. Push lever

12. Shift cam stopper.



### C. Crankcase

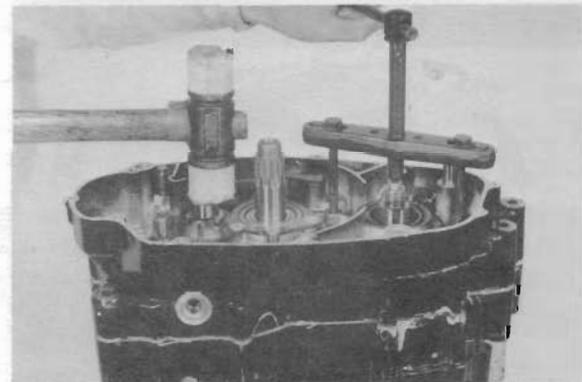
1. Remove hexagon bolts.



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:

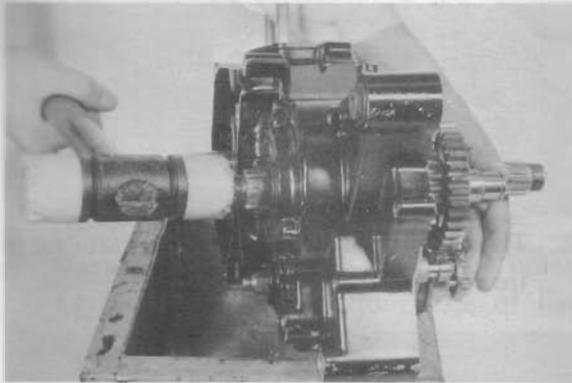
Use soft hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface. Work slowly and carefully. Make sure the case halves separate evenly. If one end "hangs up", take pressure off the push screw, realign and start over. If the halves are reluctant to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

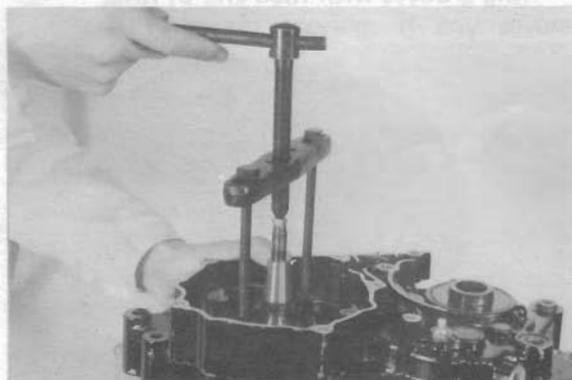
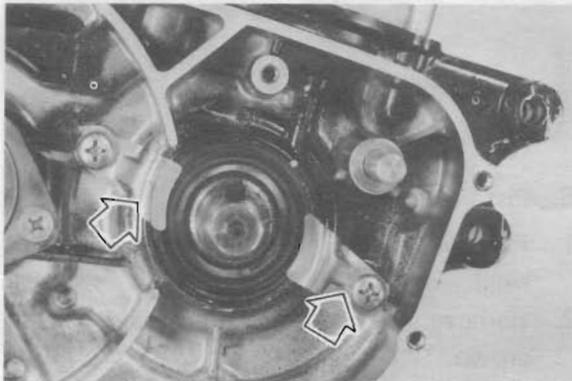
#### NOTE:

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.

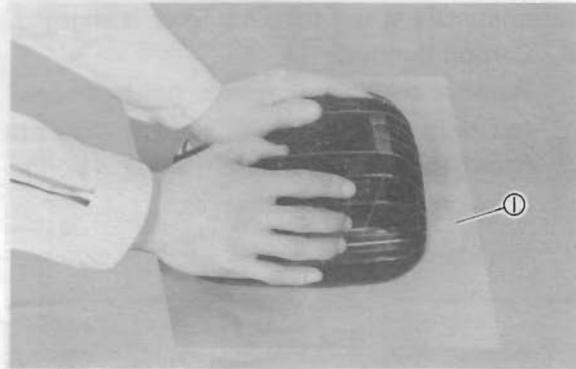


### 3-3. INSPECTION AND REPAIR

#### 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.



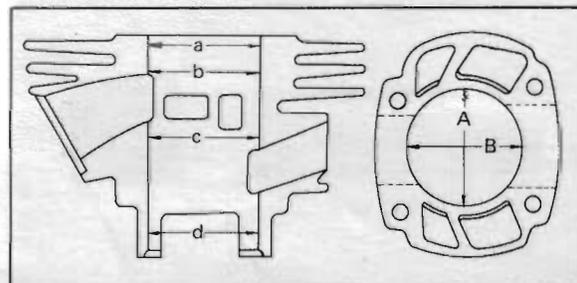
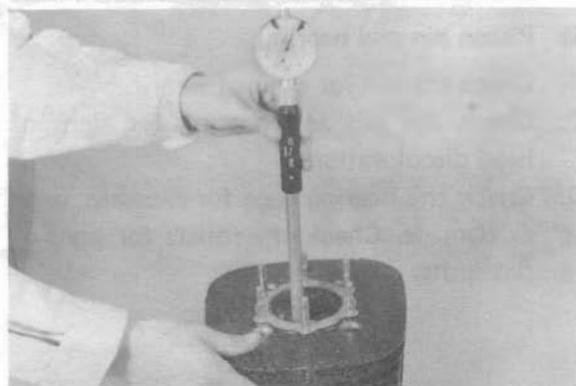
1. 400 ~ 600 grit wet sandpaper

#### 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.



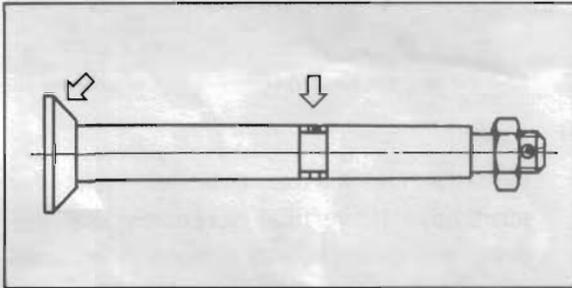
	DT250D	DT400D
Cylinder bore	70 ~ 70.02 mm	85 ~ 85.02 mm
Maximum	70.01 mm	85.1 mm
Cylinder taper	0.08 mm	0.08 mm

### 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-in type) and remove any deposits from the decompression valve, decompression holder and passages.

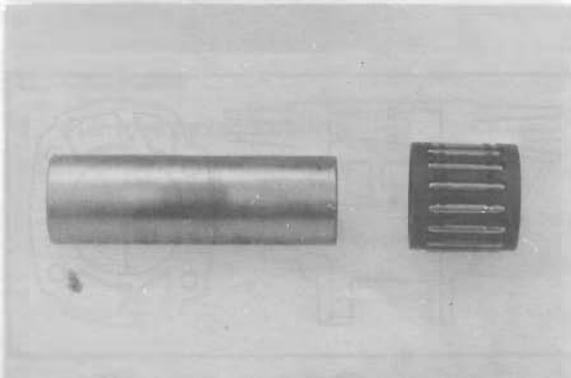


#### CAUTION:

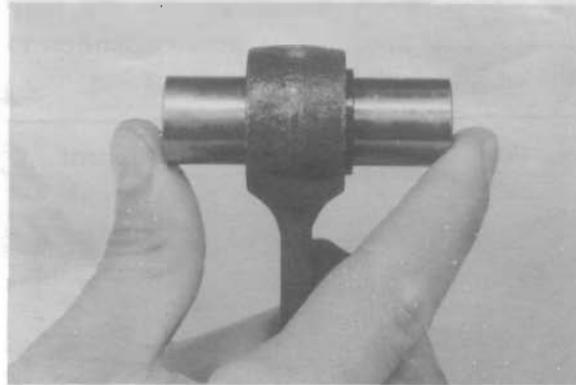
After reassembling the decompression device, be sure to check it for compression pressure leaks.

### 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.

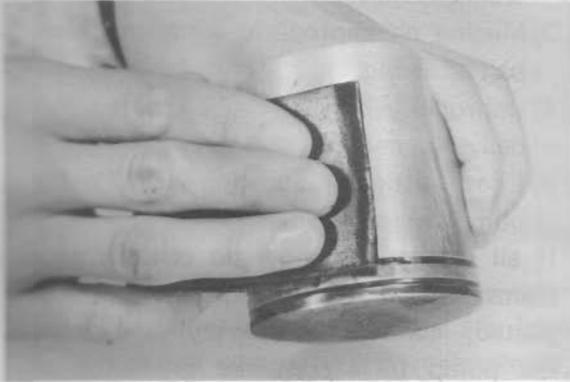


### E. Piston

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.



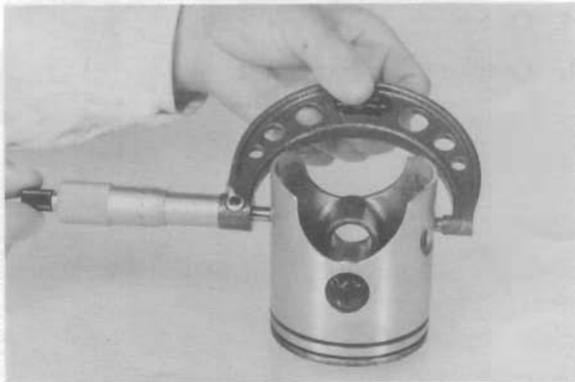
4. Remove score marks and lacquer deposits from sides of piston using 600 ~ 800 grit wet sandpaper. Sand in a crisscross pattern. Do not sand excessively.



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

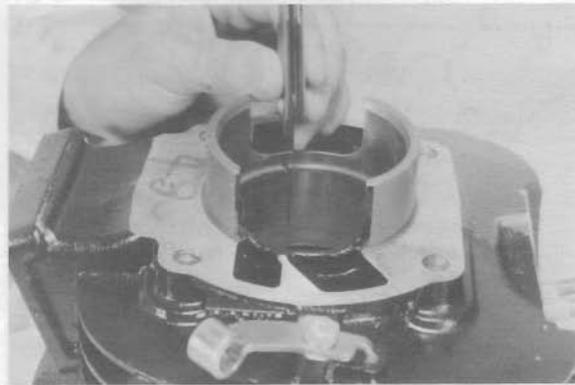


#### F. Piston Rings

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.

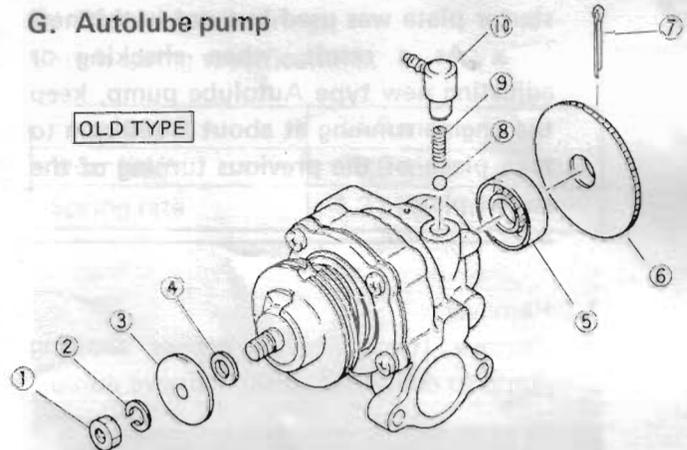
Ring end gap (installed)

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

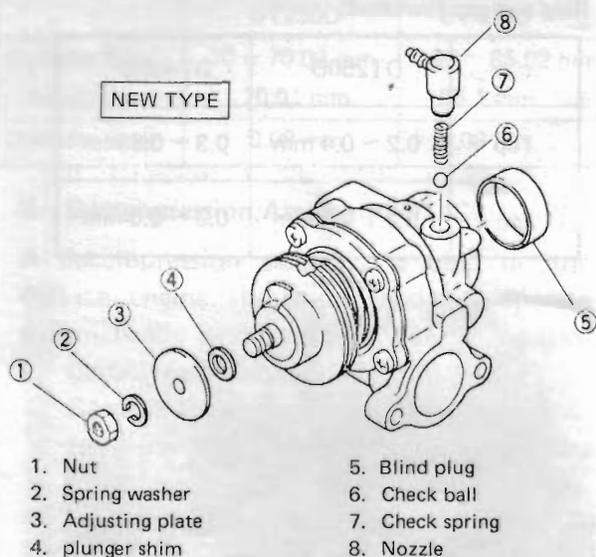


3. Check ring expander.

#### G. Autolube pump



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



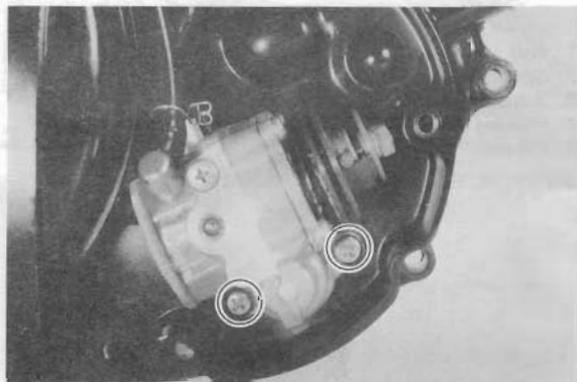
**CAUTION:**

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**

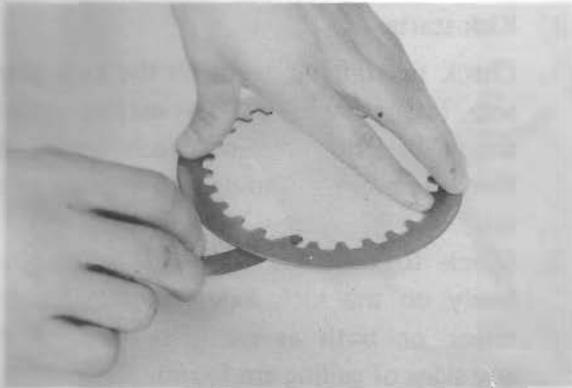
**1. Checking friction plates**



STD thickness:	3.0 mm
Wear limit:	2.7 mm

**2. Measure clutch plates**

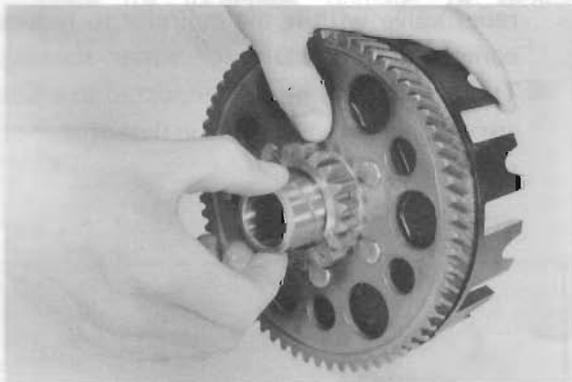
Clutch plate warpage limit:	0.05 mm (0.002 in)
-----------------------------	--------------------



**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.

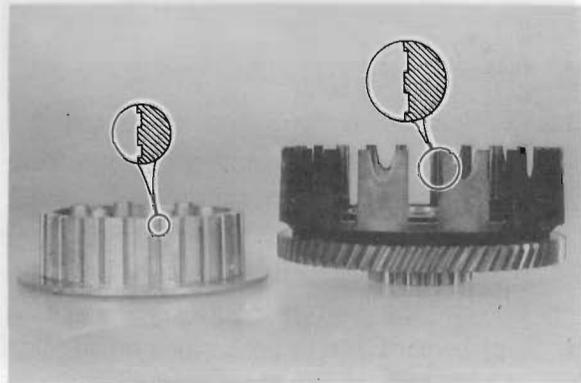


4. Check the bushing, spacer and main shaft for signs of galling heat damage, etc.
5. Apply a thin film of oil to transmission main shaft and inside surface of bushing spacer. Slip spacer over main shaft. Spacer should fit with approximately same "feel" as in clutch housing.  
Replace as required.
6. Check dogs on driven gear (clutch housing).  
Look for cracks and signs of galling 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.

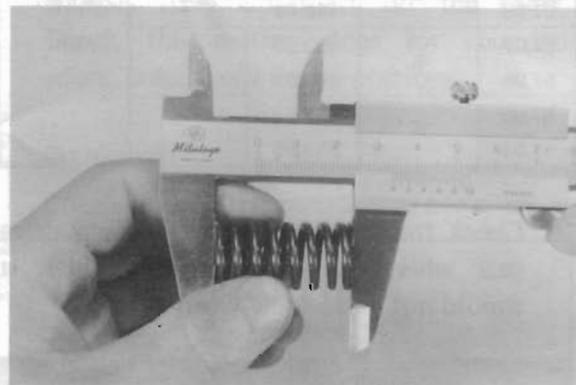
**NOTE:** \_\_\_\_\_

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.

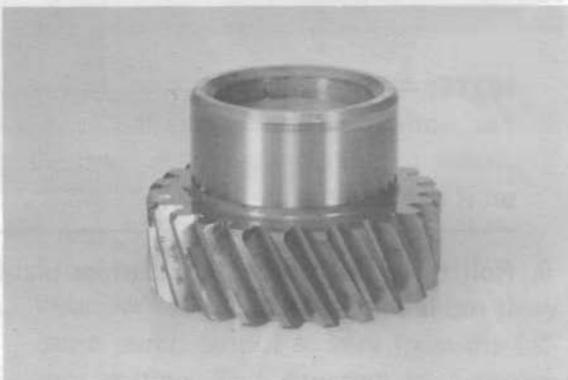


**I. Primary drive**

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	E	153.44	E	47 ± 1
58.02		153.45		
58.01	D	153.46	D	
58.00		153.47		
57.99	C	153.48	C	
57.88		153.49		
57.97	B	153.50	B	
57.96		153.51		
57.95	A	153.52	A	
57.94		153.53		

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



Sample of manual. Download All 67 pages at:

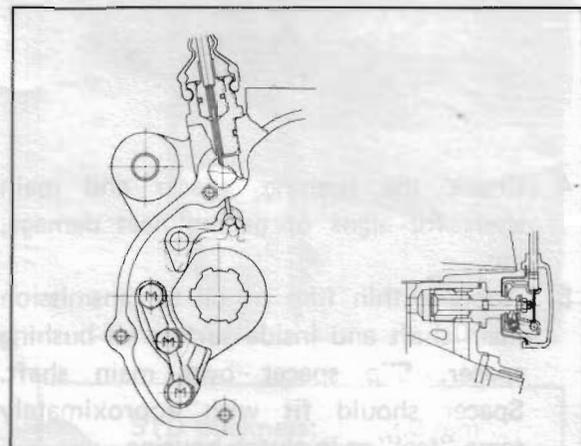
<https://www.aresairmanual.com/downloads/1977-yamaha-dt250ddt-400d-motorcycle-service-repair-workshop-manual/>

**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.