



**YAMAHA**

**YZ250H**

*[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)*

**OWNER'S  
SERVICE MANUAL**

## IMPORTANT NOTICE

THIS MACHINE IS DESIGNED STRICTLY FOR COMPETITION USE ONLY. IT IS ILLEGAL TO OPERATE THIS VEHICLE ON STREET, OFF ROAD USE ON PUBLIC LAND MAY BE ILLEGAL. PLEASE CHECK YOUR LOCAL RIDING AREA REGULATIONS.

### SAFETY WARNINGS:

1. **GASOLINE IS HIGHLY FLAMMABLE:** Lee Waldie Craig Scott Chris Koira
  - \* Always turn off the engine when refueling.
  - \* Take care not to spill on the engine or exhaust pipe/muffler, when refueling.
  - \* If any gasoline spills on the engine or exhaust pipe/muffler, wipe it off immediately.
  - \* Never refuel while smoking or in the vicinity of an open flame.
2. If you should swallow some gasoline or inhale a lot of gasoline vapor, or allow some gasoline to get in your eye(s), see your doctor immediately. If any gasoline spills on your skin or clothing, immediately wash it with soap and water, and change your clothes.
3. Do not touch any moving or heated areas.
  - \* The engine and exhaust pipe/muffler are heated up. Park the machine in a place where pedestrians or children are not likely to touch the machine.
  - \* Do not park the machine on a slope or soft ground; the machine can easily overturn.
4. When transporting the machine in another vehicle, be sure it is kept upright and that the fuel petcock is turned to the "OFF" position. If it should lean over, gasoline may leak out of the carburetor or fuel tank.
5. Never start your engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and can cause loss of consciousness and death within a short time. Always operate your machine in an area with adequate ventilation.
6. Always wear a helmet, gloves, boots, trousers, and jacket for motocross riding.
7. The side stand should be removed whether in races or practice.

YZ250H

OWNER'S SERVICE MANUAL

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## INTRODUCTION

Congratulations on your purchase of the Yamaha YZ250H. This model represents the product of many years of Yamaha experience in the production of fine sporting, touring, and pace-setting racing machines. You can now appreciate the high degrees of craftsmanship and reliability that have made Yamaha a leader in these fields.

This manual will provide you with a good basic understanding of features, operation, and basic maintenance and inspection items of this vehicle.

**PLEASE READ THIS MANUAL CAREFULLY AND COMPLETELY BEFORE OPERATING YOUR NEW MACHINE.** If you have any questions regarding the operation or maintenance of your machine, please consult your Yamaha dealer.

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

**NOTE:** . . . . . A NOTE provides key information to make procedures easier or clearer.

**CAUTION:** . . . . A CAUTION indicates special procedures that must be followed to avoid damage to the machine.

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

## NOTICE

Some data in this manual may become outdated due to improvements made to this model in the future. If there is any question you have regarding this manual or your machine, please consult your Yamaha dealer.

SERVICE DEPT.  
INTERNATIONAL DIVISION  
YAMAHA MOTOR COMPANY, LTD.

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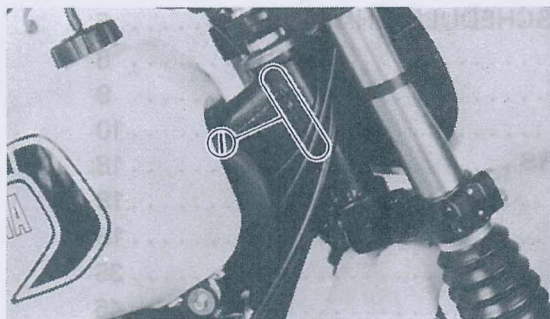
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# GENERAL INFORMATION

## MACHINE IDENTIFICATION

### Frame serial number

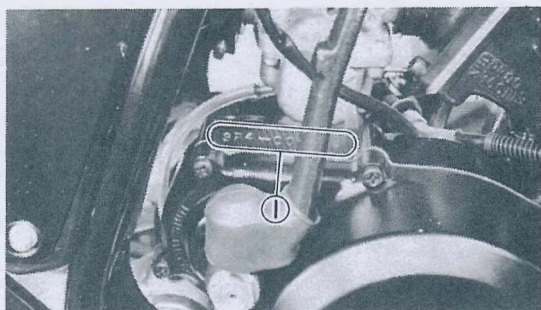
The frame serial number is stamped on the right side of the steering head pipe.



1. Frame serial number

### Engine serial number

The engine serial number is stamped into the elevated part of the right rear section of the engine.



1. Engine serial number

### NOTE:

The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.

Keep a record of these numbers for reference when ordering parts from your Yamaha dealer. In case of theft, the authorities will need these numbers and your model name for identification.

## CONTROL FUNCTIONS

### WARNING:

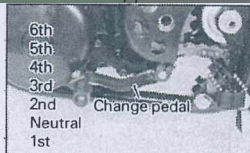
Before riding this machine, become thoroughly familiar with all operating controls and their function.

Consult your Yamaha dealer regarding any control or function you do not thoroughly understand.

### NOTICE:

This motorcycle is designed strictly for competition use only. It is not equipped with highway approved lighting. Off-road use on public land may be illegal.

## LEFTSIDE

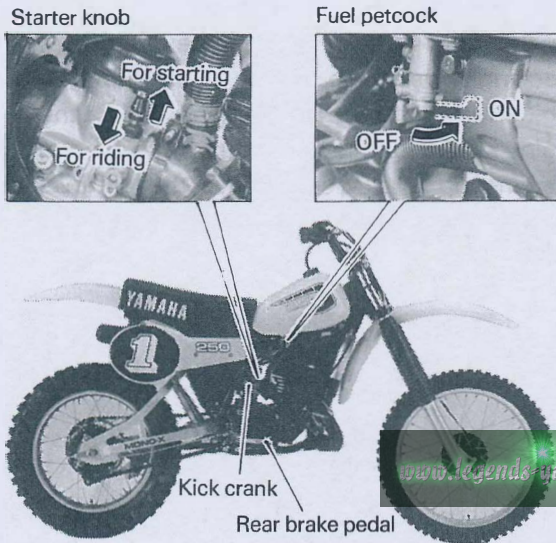


## RIGHTSIDE

### Starter knob

When cold, the engine requires richer fuel mixture for starting. Pull the knob up to open the circuit (for starting) and push it down to close the circuit before riding. Never ride the machine with the knob up.

## FUEL AND OIL



### Fuel

Use premium gasoline with an octane rating of 90+ mixed with oil at a gas/oil ratio of specification. Always use fresh, name-brand gasoline. Always mix a fresh batch of fuel the morning of the race and do not retain a mixed batch overnight.

Fuel tank capacity:  
7.6 lit (2.0 US.gal)

### Engine mixing oil

Recommended oil: Yamalube "R"  
(Yamalube Racing 2-cycle oil)  
Mixing ratio: 16: 1

If for any reason you should use another type, select from the following list.

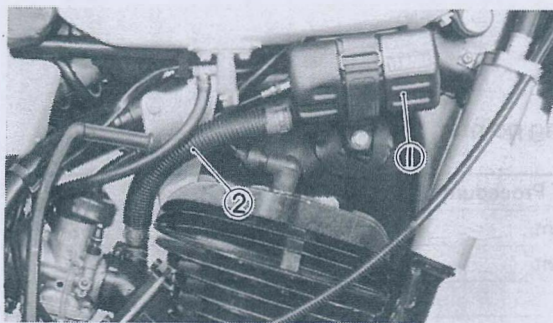
\* Shell Super M  
\* Castrol R30  
Mixing ratio: 20 : 1

### CAUTION:

**Always use the oil of same brand.  
Never use any other brand of oil.**

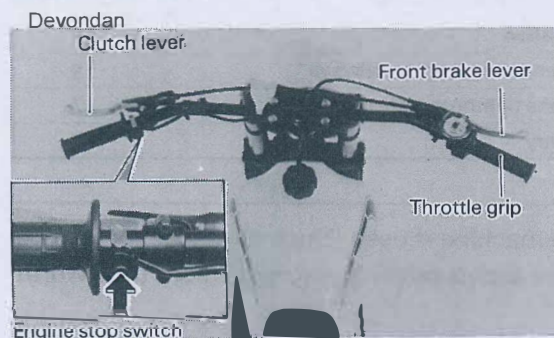
### Note on handling of the Yamaha Energy Induction System

Handle the air chamber and hose with special care. Improper installation or damaged parts will result in poor performance. Replace any cracked or damage parts immediately. No modification of this system in any form is not allowed.



1. Air chamber 2. Hose

### INSTRUMENTS



### Transmission oil

#### OIL REPLACEMENT

The transmission oil should be drained and refilled every fifth race meet.

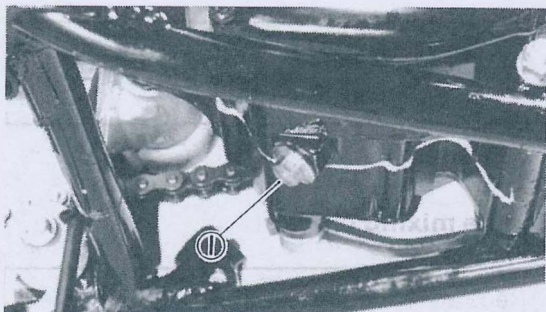
On the bottom of the engine there is a drain plug. Remove it and drain all the oil from the transmission. Reinstall the drain plug (make sure it is tight). Add oil through filler hole.

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

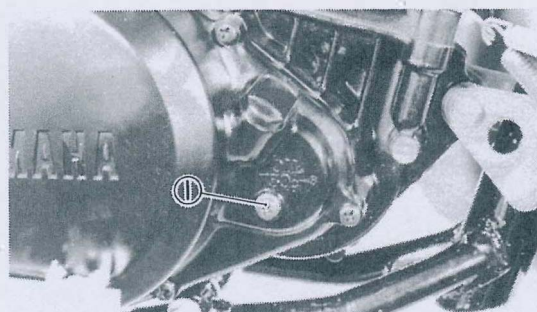
Transmission oil capacity:  
 Periodic oil change:  
     750 cc (0.80 US qt)  
 Overhaul:  
     800 cc (0.85 US qt)

#### CHECKING OIL LEVEL

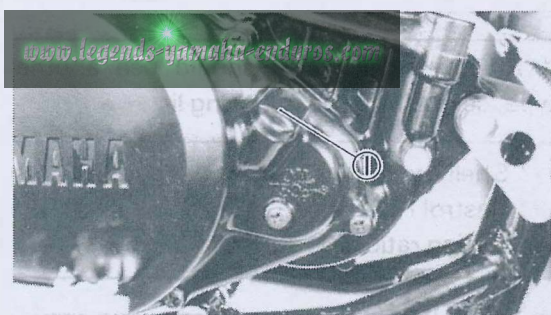
On the right side of the engine there is a checking screw. To check, warm up the engine for 1 minute. Stop engine. Leave the engine as it is for a few minutes and place the machine upright, then remove the oil level checking screw. If oil flows out, the oil level is correct.



1. Drain plug



1. Checking screw



1. Filler plug

## PRE-OPERATION CHECKS

Before using this machine please check the following points:

Item	Procedure	Page
Brakes	Check operation/adjustment	15
Clutch	Check operation/adjustment	14
Fuel tank	Fill with proper fuel/oil mix	2
Transmission oil	Check oil level/Change oil as required	2, 3
Drive Chain	Check alignment/adjustment/lubrication	15, 16
Spark Plug	Check color and condition/Replace as required	10
Throttle	Check for proper cable operation	12
Air Filter	Foam type — must be clean and damp with oil always	13
Wheels & Tires	Check pressure/runout/spoke tightness/axle nuts	17
Fittings/Fasteners	Check all/tighten as necessary	—

#### NOTE:

Pre-operation checks should be made each time the machine is used. Such an inspection can be thoroughly accomplished in a very short time and the added safety it assures is more than worth the time involved.

## STARTING AND OPERATION

### CAUTION:

Prior to operating the machine, perform steps listed in pre-operation check list.

### WARNING:

Never start your engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and can cause loss of consciousness and death within a short time. Always operate your machine in an area with adequate ventilation.

### Starting a cold engine

Shift transmission into "NEUTRAL". Turn the fuel petcock to "ON" and operate the starter knob and completely close the throttle grip. Engage the kick starter and start the engine.

### Warm-up

Run the engine at idle or slightly higher using the starter knob as required until the engine is warm. This procedure normally takes 1 to 2 minutes. To check, see if the engine responds normally to throttle with starter off.

### CAUTION:

Do not operate engine for extended warm-up periods.

### Starting a warm engine

Do not engage starter knob. Open throttle slightly. Engage the kick starter and start the engine.

### CAUTION:

Observe break-in procedures for initial operation.

### Break-in procedures

1. Prior to starting, fill tank with a break-in gasoline/oil mixture of 12 : 1 ~ 14 : 1.
2. After fueling and pre-operational checks have been made, refer to "Starting and Operation" and start engine.
3. Allow engine to warm up. Check engine idle speed. Check operating controls and "Engine stop switch operation".
4. Operate machine in lower gears at moderate throttle settings for 5 ~ 8 minutes. Check spark plug condition. Spark plug will show rich condition during break-in.
5. Allow engine to cool. Repeat procedure, running for 5 minutes. Very briefly, shift to higher gears (4th or 5th) and check full throttle response. Check spark plug condition.
6. Allow engine to cool. Repeat procedure, running for 5 minutes. Full throttle and higher gears may be used, but avoid sustained full throttle operation. Check spark plug condition.
7. Allow engine to cool. Remove top end and inspect.  
For disassembly, refer to page 23. Remove "high" spots on piston with No. 600 grit, wet sandpaper. Clean and carefully reassemble.
8. Remove break-in fuel/oil mixture from tank. Refill with specified operation fuel/oil mixture. Check entire unit for loose or mis-adjusted fittings/controls/fasteners.
9. Re-start engine and check through entire operating range thoroughly. Stop. Check spark plug condition. Restart. After 10 ~ 15 minutes operation, machine is ready to race.

### CAUTION:

After the break-in period, check every fitting and fastener for looseness. If any loose is found, retighten it securely.



# PERIODIC MAINTENANCE AND ADJUSTMENT

## MAINTENANCE AND LUBRICATION SCHEDULE CHART

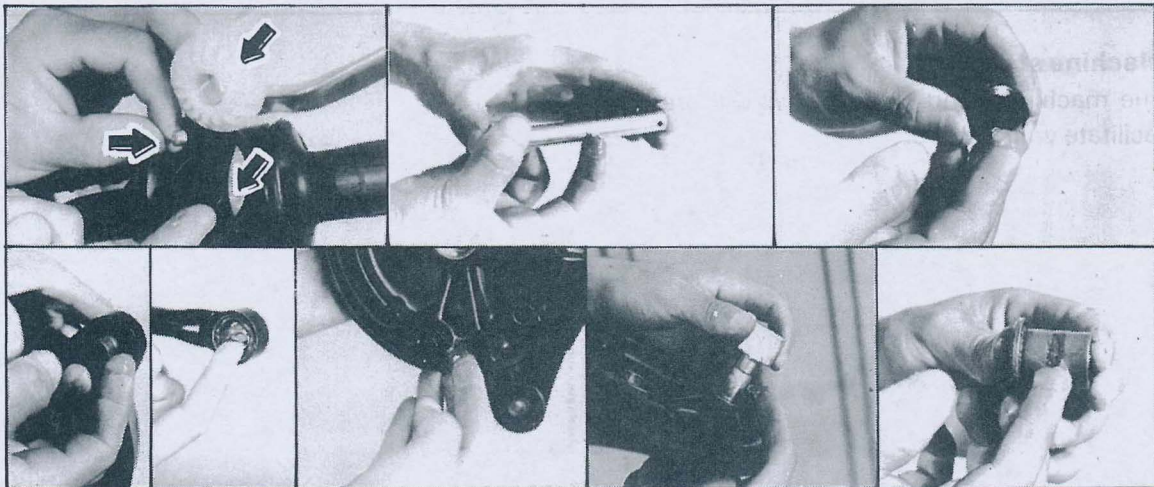
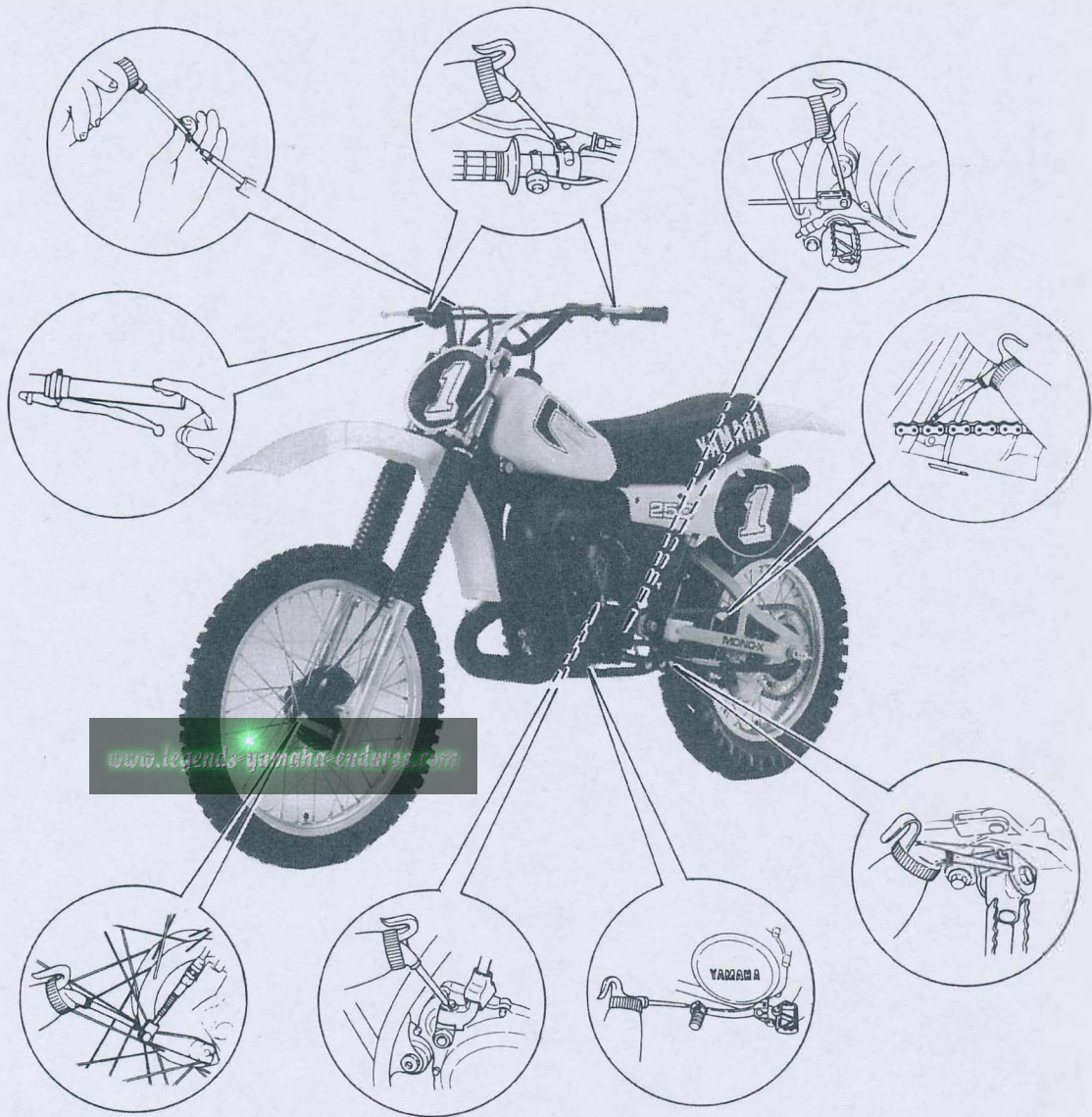
The maintenance and lubrication schedule chart should be considered strictly as a guide to general maintenance and lubrication intervals. You must take into consideration that weather, terrain, geographical locations, and a variety of individual uses all tend to demand that each owner alter this time schedule to match his environment. For example, if the machine 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 rust and damage. If you are in doubt as to how closely you can follow these time recommendations, check with the Yamaha dealer in your area.

Item	Every race	Every second race	Every third race	Every fifth race	As required	Recommend lubricant
PISTON Clean/Inspect for cracks and seizure	○					
Replace				○		
PISTON RING Replace		○				
CYLINDER HEAD Inspect	○					
Clean/Retighten	○					
CYLINDER Clean/Inspect for seizure	○					
Replace					○	
Retighten	○					
CLUTCH Adjust			○			
Inspect	○					
Replace					○	
TRANSMISSION Change oil				○		Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil
Inspect gears and shift fork				(○)	○	
Replace bearing					○	
ENGINE MAIN BEARING Inspect				○		
CONNECTING-ROD Inspect bearings				○		
Replace					○	
PISTON PIN Inspect				○		
Replace					○	
CDI ROTOR NUT Retighten				○		
KICK STARTER Inspect idle gear					○	
Replace					○	

Item	Every race	Every second race	Every third race	Every fifth race	As required	Recommend lubricant
<b>EXHAUST SYSTEM</b>						
Inspect	○					
Cleaning				○		
<b>CARBURETOR</b>						
Inspect/Adjust	○					
Clean/Retighten	○					
<b>ENERGY INDUCTION SYSTEM</b>						
Inspect air chamber and hose for damage	○					
<b>AIR FILTER</b>						Air filter must be cleaned and damp with oil after every race. Do not over-oil. Use SAE 10W/30 motor oil.
Clean and lube	○					
Replace					○	
<b>SPARK PLUG</b>						
Inspect	○					
Replace					○	
<b>DRIVE CHAIN</b>						a. Yamaha chain and cable lube b. SAE 10W/30 motor oil
Clean and lube	○					
Check tension and alignment	○					
Replace					○	
<b>FRAME</b>						
Clean/Inspect	○					
<b>FUEL TANK PETCOCK</b>						
Clean					○	
<b>FRONT FORK</b>						Yamaha fork oil 10 wt
Change oil				Initial 5	After 10 race	
Replace seal					○	
Check and adjust air pressure	○					
<b>REAR SHOCK ABSORBER</b>						
Inspect/Adjust	○					
Lube	○					
<b>STEERING HEAD</b>						Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)
Inspect	○					
Clean/Lube				○		
Replace bearings					○	
<b>SWING ARM</b>						Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)
Inspect	○					
Lube	○					
<b>CHAIN GUARD</b>						
Replace					○	Chain roller, guard and tensioner

Item	Every race	Every second race	Every third race	Every fifth race	As required	Recommend lubricant
<b>WHEELS AND TIRES</b>						
Check pressure/runout/spoke tension	○					Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)
Inspect bearings	○					
Lube oilseal			○			
Replace bearings					○	
<b>THROTTLE</b>						
Lube	○					
<b>CONTROL CABLES</b>						
Rounting (Connection)	○					SAE 10W/30 motor oil
Inspect/Lube	○					
<b>CLUTCH AND BRAKE LEVER PIVOT</b>						
Lube/Retighten	○					SAE 10W/30 motor oil
<b>KICK CRANK, BRAKE PEDAL AND FOOTREST PIVOT</b>						
Lube	○					Lithium base grease
Retighten	○					
<b>BOLTS AND NUTS</b>						
Retighten	○					
<b>BRAKE</b>						
Clean/Inspect/Adjust	○					Lithium base grease
Lube						
Replace					○	

# LUBRICATION



## SPECIAL TOOLS

		
<p>90890-01235 Flywheel holding tool</p>	<p>90890-01189 Flywheel puller</p>	<p>90890-01024 Clutch holding tool</p>
		
<p>90890-01135 Crankcase separating tool</p>	<p>90890-01016 Spacer</p>	<p>90890-01274 Crankshaft setting pot</p>
		
<p>90890-01275, 90890-01278 Crankshaft setting tool</p>	<p>90890-01268 Steering nut wrench</p>	<p>90890-03002 Dial gauge</p>
		
<p>90890-01195 Dial gauge stand</p>	<p>90890-03099 Dial gauge needle</p>	<p>90890-01327 90890-01326 Fork cylinder holder, adapter</p>

### Machine stand

The machine stand show below will greatly facilitate your service.

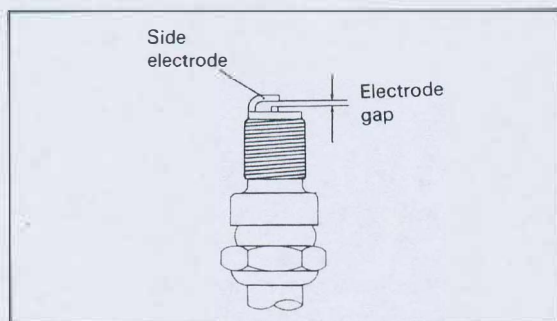


## ADJUSTMENTS

### Spark plug

Standard spark plug: N-2G (CHAMPION)

1. Measure the electrode gap with a wire thickness gauge.



Adjustment can be made by bending the side electrode.

Spark plug gap:  
0.45 ~ 0.55 mm (0.018 ~ 0.022 in)

When installing the plug, always clean the gasket surface and use a new gasket. Wipe off any grime from the threads and torque the spark plug properly.

Spark plug torque: 2.5 m·kg (18 ft·lb)

2. The insulator must be a medium-to-light tan color. If not, check carburetion, ignition timing and gas-oil mixing ratio. If the porcelain is a very dark brown or black color, then a plug with a hotter heat range may be required. This situation is quite common during the engine break-in period. However, use the standard plug. If the insulator tip shows a very light tan or white color or is actually pure white or if the electrodes show signs of melting, then a spark plug with a colder heat range is required.

### NOTE: \_\_\_\_\_

If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/2 to 1/4 turns past finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.

### IGNITION TIMING

#### Adjustment

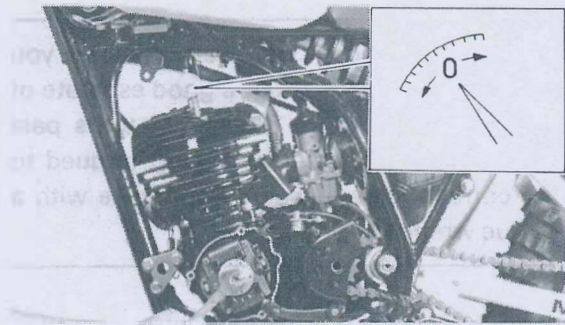
Ignition timing must be set with a dial gauge (to determine piston position).

Proceed as follows:

- 1 Remove spark plug, muffler and screw Dial Gauge Stand into spark plug hole.
2. Insert Dial Gauge Assembly with a 56 mm (2.2 in) extension (needle) into stand.

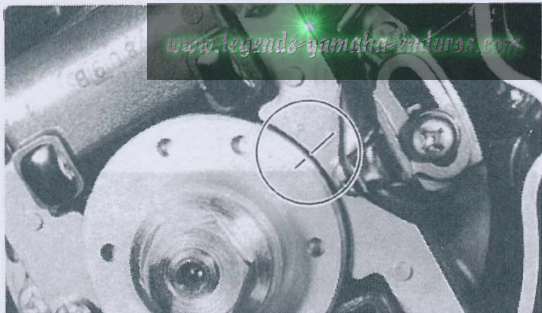


3. Remove left engine crankcase cover.
4. Rotate rotor until piston is at top-dead center (T.D.C.). Tighten set screw on dial gauge stand to secure dial gauge assembly. Set the zero on dial gauge face to line up exactly with dial gauge needle. Rotate rotor back and forth to be sure that gauge needle does not go past zero.

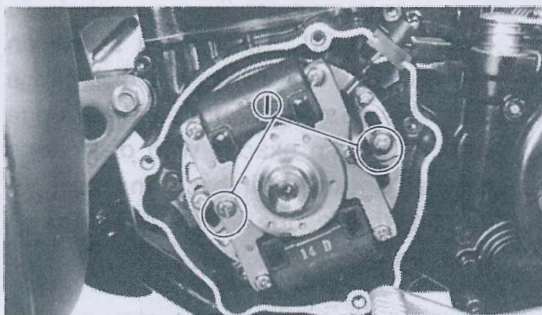


- Starting at T.D.C., rotate rotor clockwise until dial indicator reads 0.61 mm (0.24 in) before top-dead center (B.T.D.C.)

Ignition timing: 0.61 mm (0.024 in)



- Check to see that the rotor timing mark aligns with the starter timing mark. To adjust, loosen the two starter retaining screws and rotate the starter. Tighten screws and recheck the ignition timing.



1. Retaining screw

- Remove dial gauge assembly and stand. Replace spark plug.

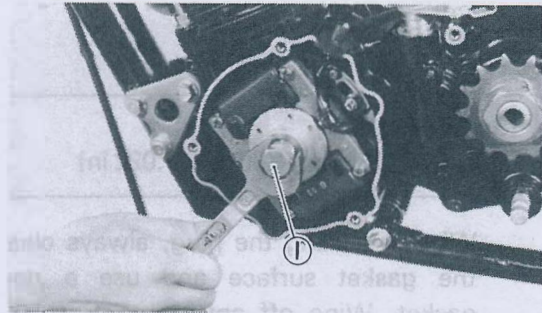
Spark plug torque: 2.5 m-k<sub>g</sub> (18 ft-lb)

- Replace engine crankcase cover.

### Rotor removal

When removing the rotor, use the rotor puller.

- Remove the rotor holding nut.
- Install the rotor puller and tighten it.



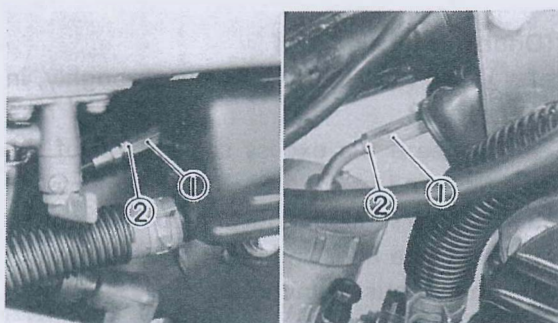
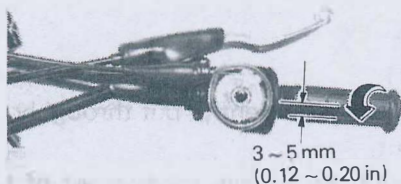
1. Rotor puller

Lee Waldie Craig Scott Chris Koira

Tightening torque: 3.5 m-k<sub>g</sub> (26 ft-lb)

### Throttle cable adjustment

Check play in turning direction of throttle grip. The play should be 3 ~ 5 mm (0.12 ~ 0.20 in) at grip flange. Loosen the lock nut and turn the wire adjuster to make the necessary adjustment. Be sure to tighten the lock nut properly.

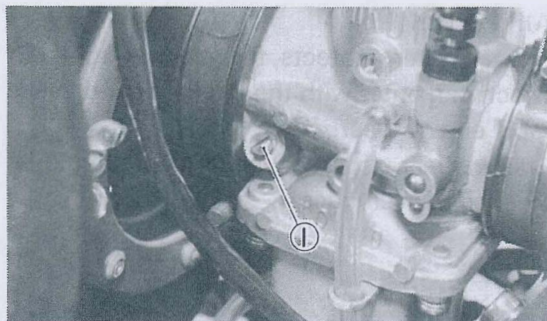


1. Adjuster 2. Lock nut

After adjustment, start the engine and check that the throttle grip turns smoothly. Also check if the engine speed increases suddenly when the handlebars are turned to limits in either direction.

### Idle speed adjustment

1. Turn the pilot air screw in until lightly seated.
2. Back out by the specified number of turns. Start the engine and let it warm up.



1. Pilot air screw

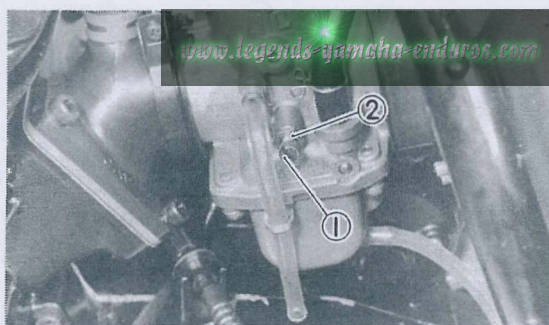
Pilot air screw turns out: 1 and 1/2

3. Turn the throttle stop screw until idle is at desired rpm.

### NOTE:

A lock nut is incorporated for positive retention of throttle stop screw.

4. Turn the pilot air screw in or out until idle speed is at highest rpm.
5. Turn the throttle stop screw in or out until idle speed is at desired rpm.



1. Throttle stop screw 2. Lock nut

### NOTE:

Pilot air and throttle stop screws should be so adjusted that engine response from idle position is rapid and without hesitation.

If the engine, when warm, hesitates after adjusting as described, turn the idle air mixture screw in or out in 1/4 turn increments until the problem is eliminated.



- Reinstall the filter assembly and parts removed for access.

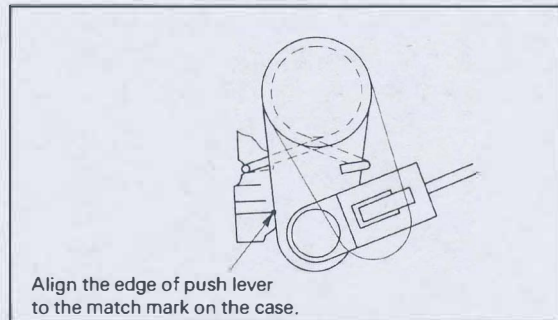
**NOTE:** \_\_\_\_\_

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

**CAUTION:** \_\_\_\_\_

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

- By turning the cable in-line length adjuster, bring the edge of push lever to align with the match mark on the case, and tighten the lock nut.



- Tighten the mechanism adjuster until resistance is felt, and tighten the lock nut.

Tightening torque: 0.8 m·kg (6 ft·lb)

**CLUTCH**

**Mechanism adjustment**

- Fully loosen the cable in-line length adjuster lock nut and screw in the adjuster until tight.
- Turn the handle lever adjuster in.
- Loosen the rear brake and remove the footrest. Remove the kick starter crank.
- Drain the transmission oil and remove the crankcase cover (R).
- Loosen the clutch mechanism adjuster lock nut.

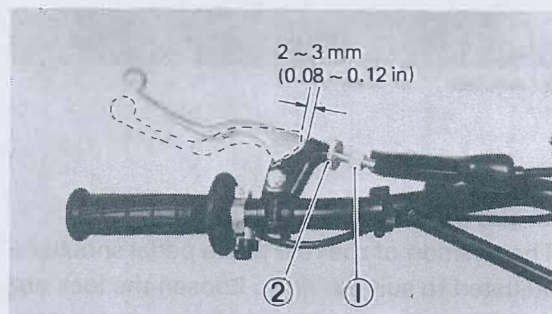


1. Adjuster 2. Lock nut

**Lever adjustment**

The clutch should be adjusted to suit rider preference within a 2 ~ 3 mm (0.08 ~ 0.12 in) free play at the clutch lever pivot side.

- Loosen the lever adjuster lock nut and turn the lever adjuster either in or out until proper lever free play is achieved. Tighten the lock nut.

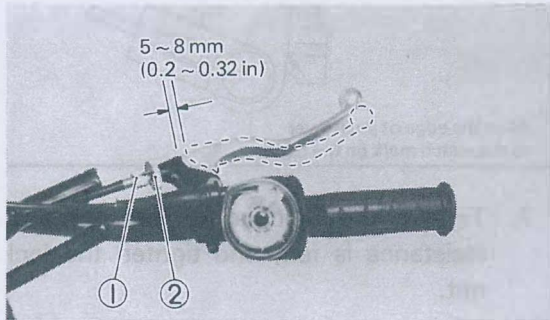


1. Adjuster 2. Lock nut

### Front brake

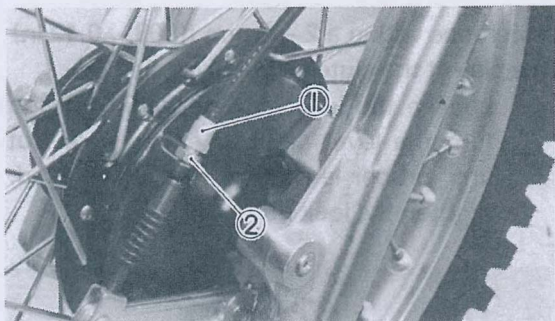
Front brake should be adjusted to suit rider preference within a 5 ~ 8 mm (0.2 ~ 0.32 in) free play at the brake lever pivot side.

1. Loosen the adjuster lock nut.
2. Turn the cable length adjuster in or out until adjustment is suitable.
3. Tighten the adjuster lock nut.



1. Adjuster 2. Lock nut

4. When adjusting the cable length on the brake hub side, first screw in the adjuster on the brake lever side and adjust to specification.

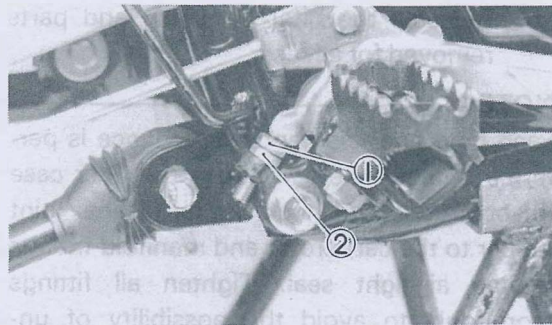


1. Adjuster 2. Lock nut

### Brake pedal position adjustment

The position of the rear brake pedal should be adjusted to suit the rider. Loosen the lock nut and adjust the pedal height by turning the adjuster.

After adjusting, check for correct rear brake play. Do not forget to tighten the lock nut.



1. Adjuster 2. Lock nut

### Rear brake

The rear brake should be adjusted to suit rider preference within a 20 ~ 30 mm (0.8 ~ 1.2 in) free play at the brake pedal end. To adjust, turn the adjuster on the brake rod clockwise to reduce play; turn the adjuster counter-clockwise to increase play.

#### NOTE:

Rear brake pedal adjustment must be checked whenever chain is adjusted or rear wheel is removed and then re-installed. Devondan

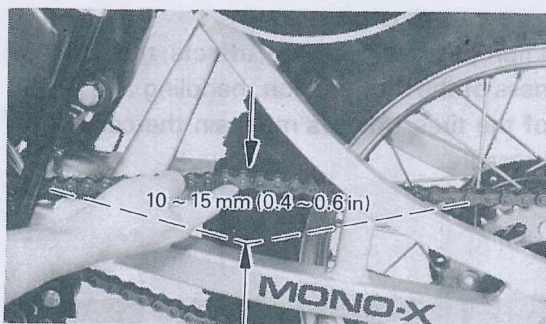


1. Adjusting nut

### Drive chain tension check

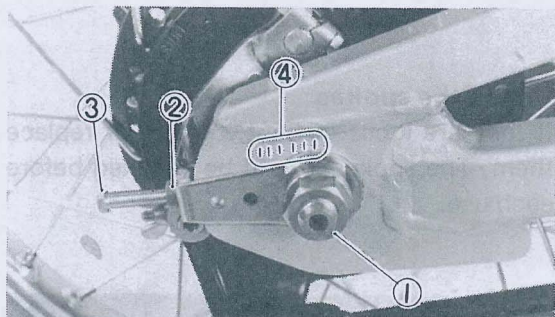
To check the chain play, the machine must stand vertically with its both wheels on the ground and without operator on it.

Check the tension at the position shown in the illustration. The normal vertical deflection is approximately 10 ~ 15 mm (0.39 ~ 0.59 in). If the deflection exceeds 15 mm (0.59 in) adjust the chain tension.



### Adjustment

1. Loosen axle securing nut and adjuster lock nut.
2. Turn adjusting bolts left and right until the adjust marks on the adjusters are aligned with the adjust marks on each side of the swing arm. Tighten lock nuts on adjusting bolts.



- |                      |                   |
|----------------------|-------------------|
| 1. Axle securing nut | 3. Adjusting bolt |
| 2. Lock nut          | 4. Adjust mark    |

**NOTE:** \_\_\_\_\_  
Be sure that both right and left adjusting bolts are in the corresponding positions.

3. Tighten the rear axle securing nut.

Torque: 10.0 m·kg (70 ft·lb)

4. Check brake pedal freeplay.

**CAUTION:** \_\_\_\_\_  
Whenever the chain is adjusted and/or the rear wheel is removed, always check during reassembly:

1. Rear axle alignments.
2. Brake pedal free play.

### Drive chain lubrication

1. First, remove dirt and mud from the chain with a brush or cloth and then spray the lubricant between both rows of side plates and on all center rollers.
2. To clean the entire chain, first remove the chain from the machine, dip it in solvent and clean out as much dirt as possible. Then take the chain out of the solvent and dry it. Immediately, lubricant the chain to prevent the formation of rust.

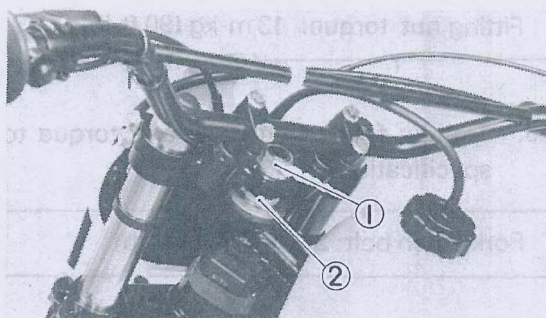
### Steering head adjustment

1. With front wheel elevated, grab bottoms of fork legs and gently push and pull to check steering head free play. There should be no noticeable free play.



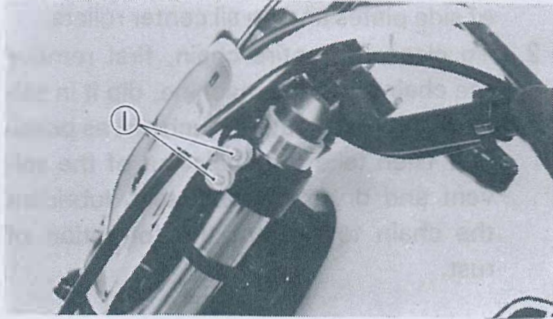
**NOTE:** \_\_\_\_\_  
Forks must swing from lock to lock without binding or catching. If it is felt, check the bearing or loosening.

2. To adjust, loosen steering fitting nut.



- |                         |             |
|-------------------------|-------------|
| 1. Steering fitting nut | 2. Ring nut |
|-------------------------|-------------|

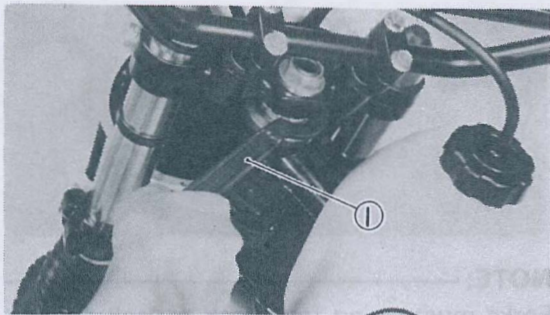
3. Loosen the front fork pinch bolts and slide the handle crown up.



1. Fork pinch bolt

4. Use steering nut wrench to tighten ring nut. Tighten until free play is eliminated.

Tightening torque: 0.7 m·kg (5 ft·lb)



1. Steering nut wrench

5. Tighten fitting nut and torque to specification.

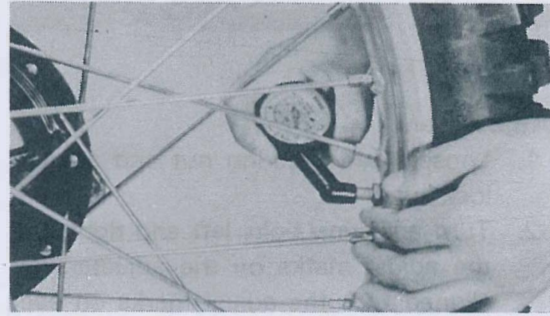
Fitting nut torque: 13 m·kg (90 ft·lb)

6. Tighten fork pinch bolts and torque to specification.

Fork pinch bolt: 2.3 m·kg (17 ft·lb)

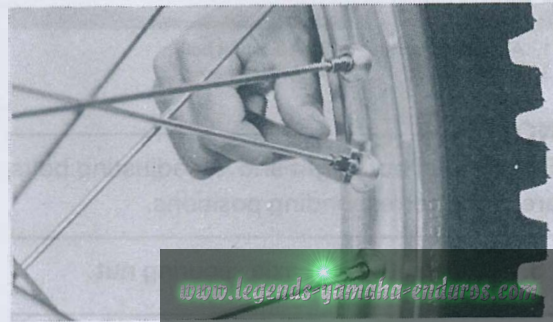
### Tire air pressure

Improper tire pressure affects the smoothness of the tire, traction, handling and the life of the tires. Always maintain the correct tire pressure.



### Check the spokes

If they are loose or bent, tighten or replace them. The spokes should be checked before each use.

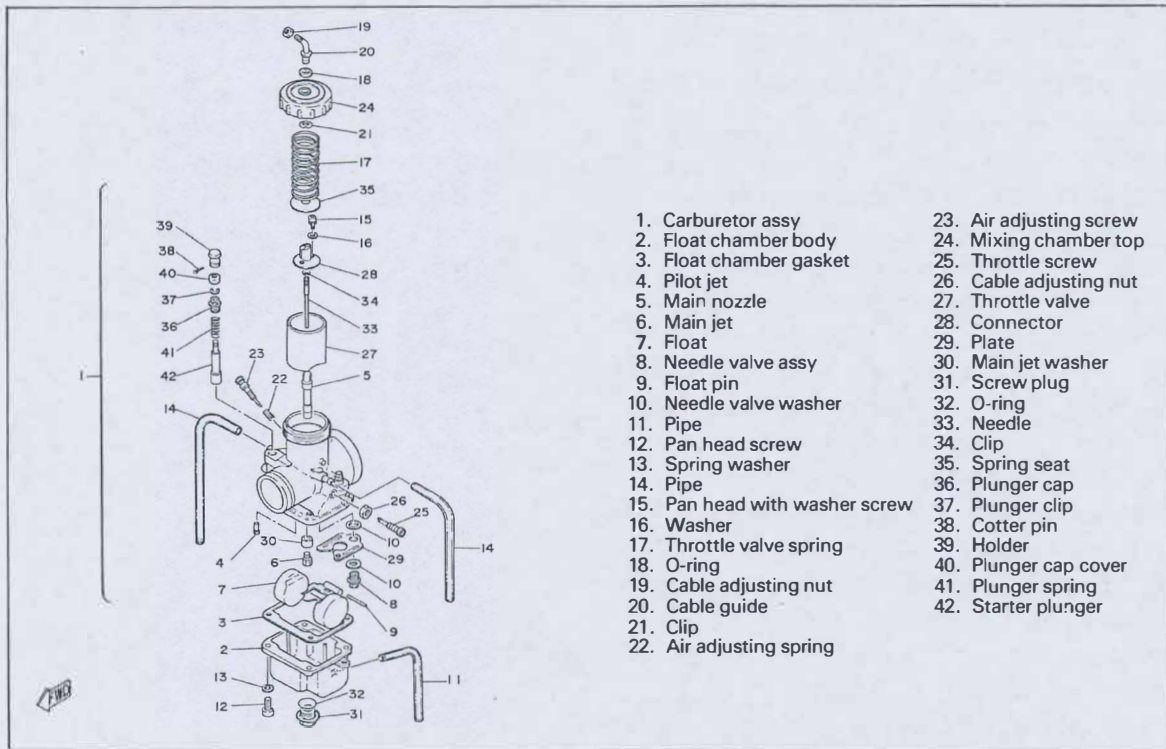


# MAINTENANCE AND MINOR REPAIRS

## PREPARATION FOR SERVICE

- \* Before servicing the machine, be sure to clean machine exteriors.
- \* Place the removed parts, always on a tray in the order of removal.
- \* When replacing parts, always use genuine Yamaha parts to maintain better performance, durability and safety.
- \* All gaskets and seals should be replaced when an engine is overhauled. All gasket surfaces must be cleaned.
- \* Properly oil all mating engine and transmission parts during assembly.
- \* All circlips should be inspected before assembly. Replace distorted circlips.
- \* Always replace cotter pins and piston pin clips after one use.
- \* When installing parts, apply grease or oil to them, as required, and following the torque chart. (Refer to "Maintenance & Lubrication Schedule Chart.")
- \* For assembly, reverse the procedure for removal.

## ENGINE CARBURETOR



### Replacement of main jet

1. Turn fuel petcock lever to the "OFF" position.
2. Disconnect the fuel hose.
3. Loosen the manifold and inlet joint bands (hose clamps).
4. Rotate carburetor, exposing main jet cover bolt.

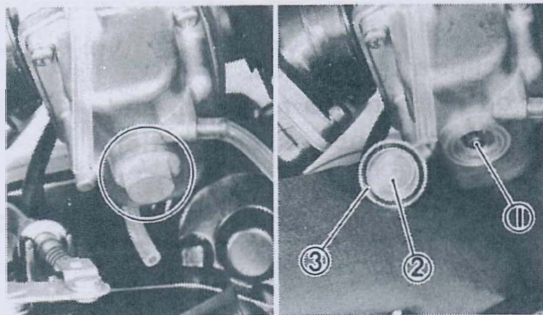
Remove bolt. Main jet is located directly behind bolt.

5. Remove the main jet. Change as required. Reinstall cover bolt and reassemble, reversing steps 1 through 3.

Standard Main Jet Size: # 380

**WARNING:**

Removing the main jet cover bolt will allow the fuel in the float bowl to drain. Do not remove if engine is hot. Place a rag under carburetor to catch overflow. Remove bolt in well-ventilated area. Do not remove near open flame. Always clean and dry machine after reassembly.



1. Main jet 2. Cover bolt  
3. O-ring

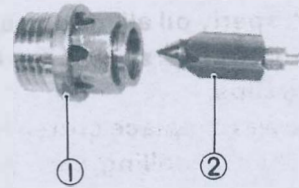
**IMPORTANT:**

The carburetor has been set for normal sea level conditions. The standard setting is the result of extensive testing and does not usually require changing. However, under conditions of high atmospheric pressure or heavy load (deep sand or mud) the standard Main jet should be replaced with another Main jet. If the carburetor requires any other setting changes to suit local conditions of altitude, weather, etc., the changes must be made with great care. Improper carburetor setting changes will cause poor engine performance and possible engine damage. Please consult your YAMAHA dealer about any carburetor setting changes before actually going about them.

**Inspection**

1. Examine carburetor body and fuel passages. If contaminated, wash carburetor in petroleum-based solvent. Do not use caustic carburetor cleaning solutions. Blow out all passages and jet with compressed air.

2. Examine condition of floats. If floats are damaged, they should be replaced.
3. Inspect inlet needle valve and seat for wear or contamination. Replace these components as a set.



1. Valve seat 2. Needle valve

**Adjustment**

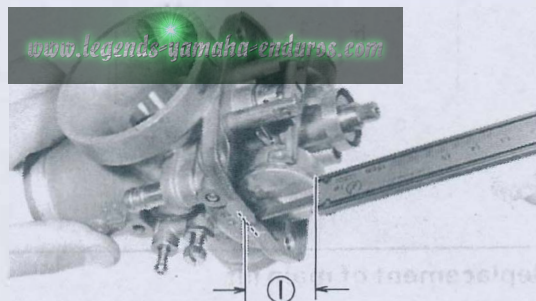
1. Float height
  - a. Checking

Hold the carburetor in an upside down position.

Incline the carburetor at 60° ~ 70° (so that the end of the float valve does not hang down of float weight), and measure the distance from the mating surface of the float chamber (gasket removed) to the top of the float arm using a gauge.

Float height:

27 mm ± 1 mm (1.06 in ± 0.04 in)  
Level with carburetor base



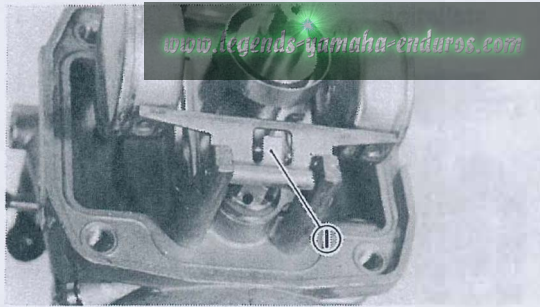
1. Float height

- b. Adjustment

**CAUTION:**

Check the needle valve and valve seat for wear before adjustment.

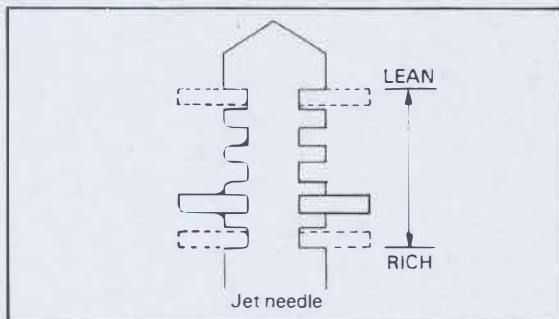
Make the adjustment by bending the tang on the float arm.



1. Tang

2. Jet needle adjustment

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



### Troubleshooting

A motorcross machine requires immediate, predictable throttle response over a wide operating range. Cylinder porting, combustion chamber compression, ignition timing, muffler design, and carburetor size and component selection are all balanced to achieve this goal. However, variations in temperature, humidity and altitude will affect carburetion and consequently, engine performance.

The following list gives each of the major components of the carburetor that can be readily changed in order to modify performance if required. If you are unfamiliar with

carburetor theory, we suggest you refrain from making changes. Quite often, a performance problem is caused by another related component, such as the exhaust system, ignition timing or combustion chamber compression.

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

See MECHANICAL ADJUSTMENTS for additional carburetor adjustments.

---

### Pilot air screw

Turning the screw in decreases the air supply, giving a richer mixture.

### Pilot jet

Changing the jet to one with a higher number supplies more fuel to the circuit giving a richer mixture.

### Throttle valve (slide)

Throttle valves are numbered according to the angle of the cutaway. The higher the number, the more cutaway, the leaner the mixture.

### Jet needle

Moving the needle clip from the first, or top groove, through the fifth, or bottom groove, will give a correspondingly richer mixture.

### Main jet

Changing the jet to one with a higher number supplies more fuel to the main nozzle giving a richer mixture.

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

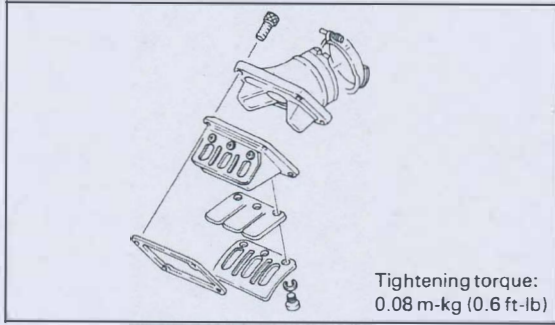
Excessive changes in main jet size can affect performance at all throttle position.

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**CAUTION:** \_\_\_\_\_

**The fuel/air mixture ratio is a governing factor upon engine operating temperature. Any carburetor changes, whatsoever, must be followed by a thorough spark plug test.**

## REED VALVE

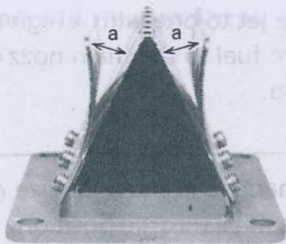


### Inspection

1. Inspect rubber intake manifold for signs of weathering, checking or other deterioration.
2. Inspect reed petals for signs of fatigue and 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.
3. The valve stopper controls the movement of the valve. Check clearance "a".

Standard value "a":  
12 mm (0.472 in)

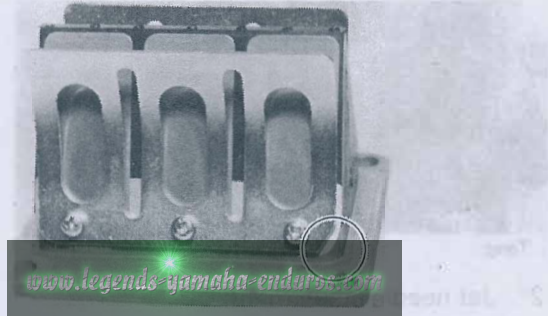
If it is 0.2 mm (0.008 in) more or less than specified, replace the valve stopper.



4. Check reed valve for bending. If beyond tolerance, replace reed valve.

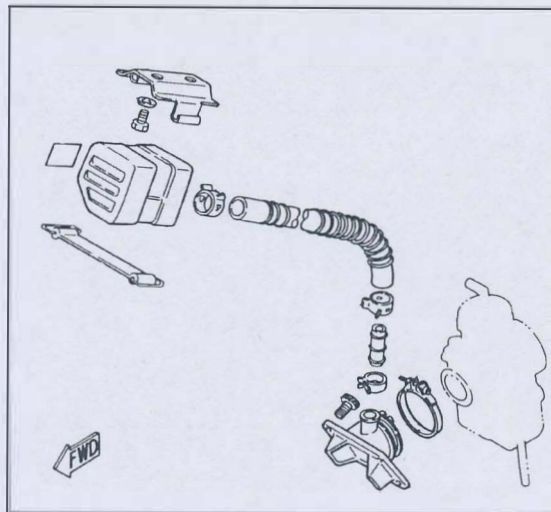
Reed valve bending limit:  
0.6 mm (0.024 in)

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



## YAMAHA ENERGY INDUCTION

SYSTEM Lee Waldie Craig Scott Chris Koira



### Inspection

1. Check the hose for damage, and replace it, as required.

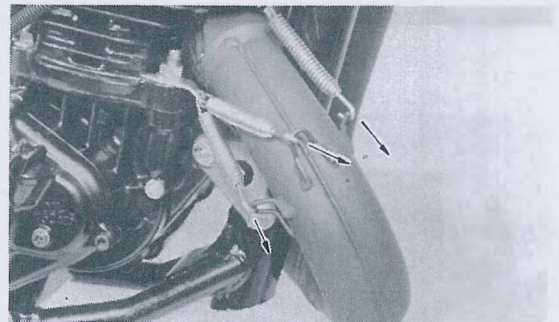
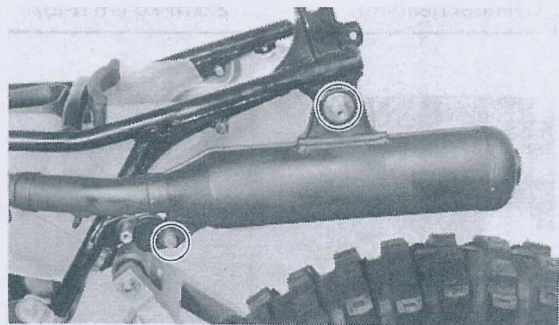
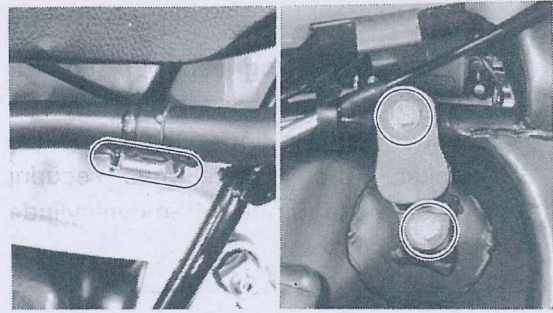
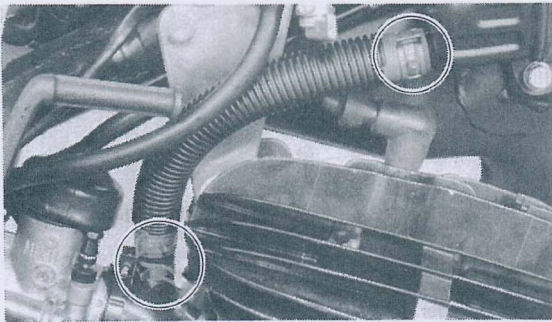




2. Check the air chamber for damage, and replace it as required.



3. Check that the hose is clipped correctly, and if not, refit clips.



## MUFFLER

### Removal

1. Remove the two bolts and remove side cover.
2. Remove muffler and silencer mounting bolts and screw.
3. Remove coil springs at muffler to cylinder joint and remove muffler.



### Maintenance

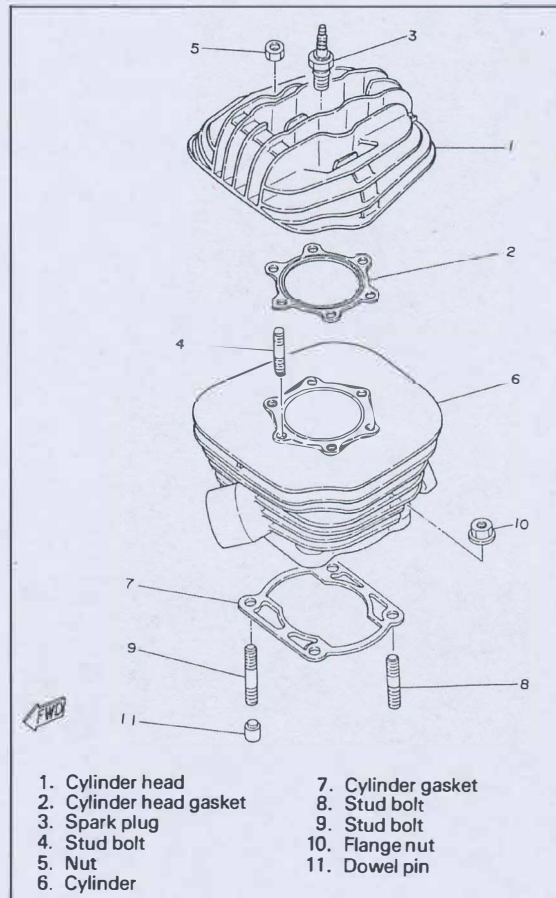
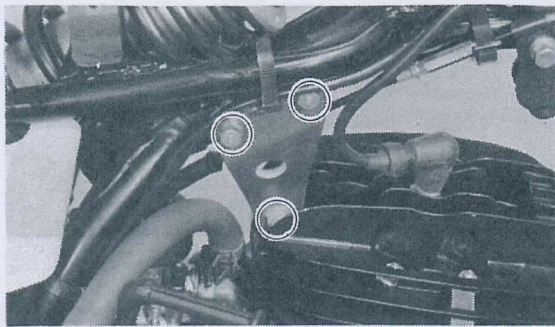
1. Using a rounded scraper, remove excess carbon deposits from manifold area of exhaust pipe.
2. Carbon deposits within the silencer may be removed by lightly tapping the outer shell with a hammer and then blowing out with compressed air. Heavy wire, such as a coat hanger, may be inserted to break loose deposits. Use care.
3. Check the exhaust pipe for cracks. If it has excessive cracks, replace it.

**TOP END**

**Removal**

1. Remove spark plug lead wire. Loosen, but do not remove spark plug.
2. Remove the cylinder head holding bracket. And remove nuts securing cylinder head (6 nuts). Remove cylinder head and gasket.

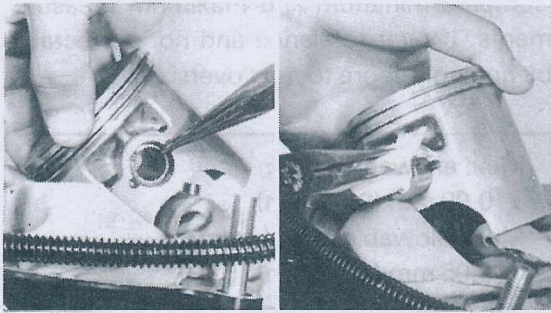
Upper	Bracket to frame	1.5 m-kg (10 ft-lb)
	Bracket to head	3.0 m-kg (22 ft-lb)
	Cylinder head nut	2.5 m-kg (18 ft-lb)



3. Remove cylinder holding nuts (4).  
 With the piston at top dead center, rise the cylinder until the cylinder skirts clear crankcase. Stuff a clean shop rag into crankcase cavity, around rod, to prevent dirt and other foreign particles from entering. Remove cylinder and base gasket.

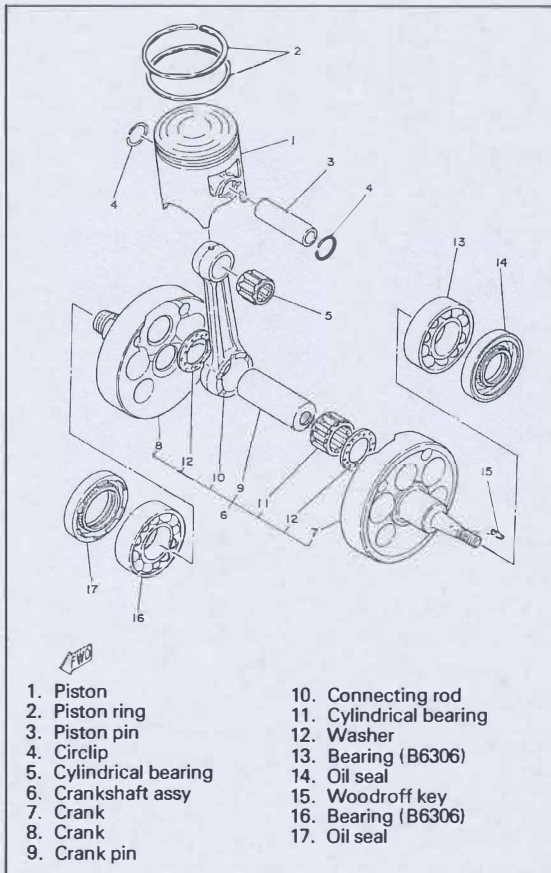
Cylinder holding nut: Martin I Henry  
 3.3 m-kg (24 ft-lb)

4. Remove the piston pin clip (1) from the piston. Push the piston pin out from opposite side. Remove the piston.



**NOTE:**

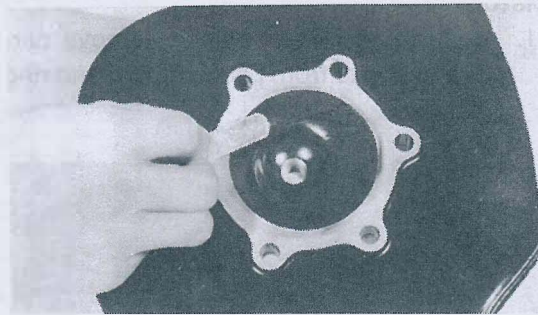
If the pin hangs up, use a piston pin puller. Do not hammer on pin as damage to rod, piston and bearing will result.



**MAINTENANCE**

**Cylinder head**

1. Using a rounded scraper, remove carbon deposits from combustion chamber. Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the metal surface.

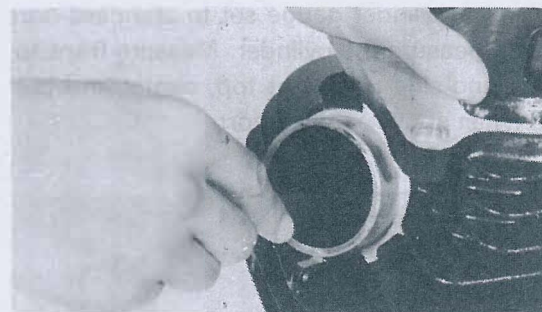


2. Place the head on a surface plate. There should be no warpage. Correct by resurfacing. Place 400 ~ 600 grit wet emery sandpaper on surface plate and resurface head using a figure-eight sanding pattern. Rotate head several times to avoid removing too much material from one side.



**Cylinder**

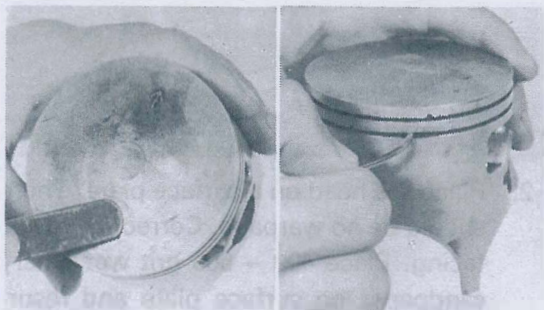
1. Using a rounded scraper, remove carbon deposits from the exhaust port.



2. Check cylinder bore. Using a cylinder hone, remove any scoring. Hone lightly, using smooth stones. Hone no more than required to avoid excess piston clearance.

## Piston

- Using a rounded scraper, remove carbon deposits from piston crown and ring grooves.



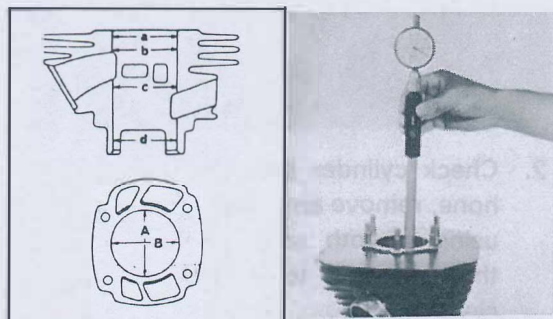
- Using 400 ~ 600 grit wet sandpaper, lightly sand score marks and lacquer deposits from sides of piston. Sand in cross-hatch pattern. Do not sand excessively.



## PISTON CLEARANCE

### Cylinder bore measurement

Using a cylinder gauge set to standard bore size, measure the cylinder. Measure front-to-rear and side-to-side at top, center and bottom just above exhaust port.

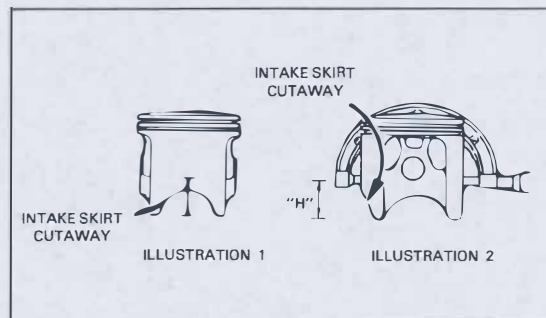


Compare minimum and maximum measurements. If over tolerance and not correctable by honing, rebore to next oversize.

Max. allowable taper: 0.08 mm (0.0031 in)
Max. allowable out-of-round: 0.05 mm (0.0020 in)

### Piston outside diameter measurement

- To measure a cutaway piston, measure across the skirts at height "H" (just above the intake skirt cutaway) as shown in illustrations 1 and 2. Record this partial measurement.



- Add to this Partial Measurement (PM) the Adjustment Amount (AA) in the following table (PM + AA = piston diameter). The result will be the piston diameter. Use this figure to compute piston-to-cylinder clearance.

HEIGHT "H"	ADJUSTMENT AMOUNT (AA)
31 mm	0.01 mm

**Remember:** Partial measurement + adjustment amount = piston diameter.

**Example:** 69.965 mm + 0.010 mm = 69.975 mm diameter.

Do not try to measure from one of the intake "fingers" to the exhaust skirt. The piston will appear to be undersize. This is due to piston cam grind.

## PISTON CLEARANCE

$$= \text{Minimum Cylinder Diameter} \\ - \text{Maximum Piston Diameter}$$

Example:

$$70,030 \text{ mm} - 69,975 \text{ mm} = 0.055 \text{ mm}$$

Nominal piston clearance: 0.055 ~ 0.060 mm (0.0022 ~ 0.0024 in)
---

If beyond tolerance replace piston or rebore cylinder as required.

## Piston rings

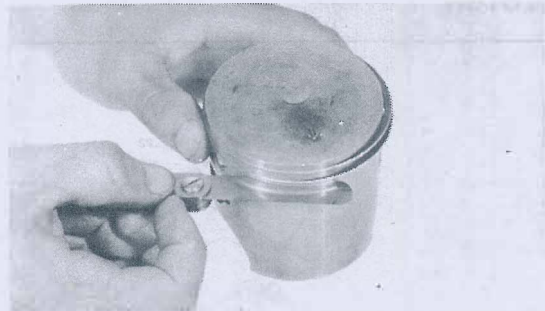
1. Insert ring into cylinder. Push down approximately 20 mm (0.787 in) using piston crown to maintain right-angle to bore. Measure installed end gap. If beyond tolerance, replace.

Ring end gap installed
------------------------

0.3 ~ 0.5 mm (0.012 ~ 0.020 in)
---------------------------------



2. Holding cylinder towards light, check for full seating of ring around bore. If not fully seated, check cylinder. If cylinder is not out-of-round, replace piston ring.
3. Fit the piston rings in the grooves, and measure the side clearance. If it measures more than 0.1 mm, replace both piston and piston rings as an assembly.



4. During installation, make sure ring ends are properly fitted around ring locating pin in piston groove. Apply liberal coating of two-stroke oil to ring.

## NOTE:

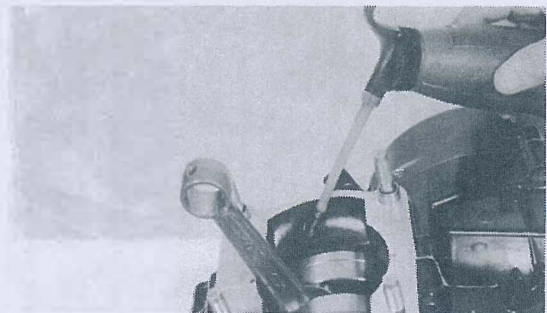
New ring requires break-in. Follow first portion of new machine break-in procedure.

Lee Waldie Craig Scott Chris Koira

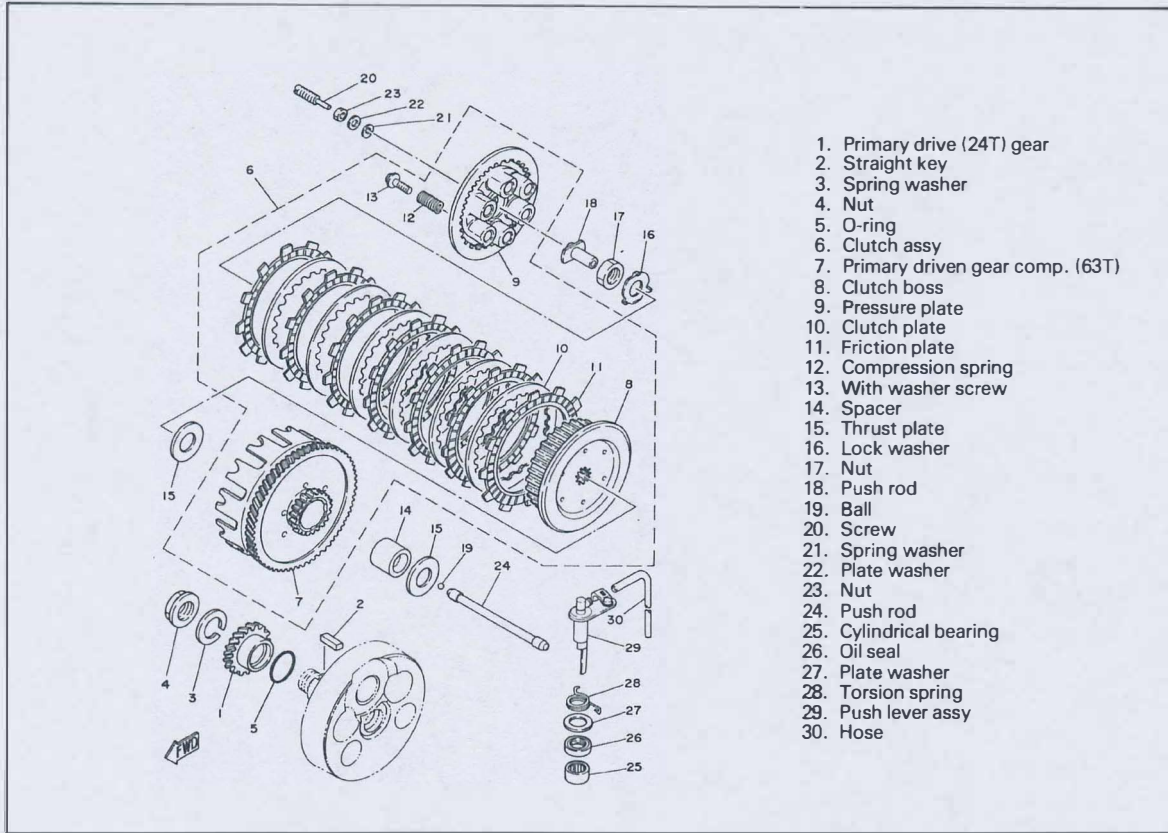


## Piston pin, bearing

1. Apply a light film of oil to pin and bearing surfaces. Install in connecting rod small end. Check for play. There should be no noticeable vertical play. If play exists, check connecting rod small end diameter for wear. Replace pin and bearing or all as required.
2. During reassembly, apply a liberal coating of two-stroke oil to the piston pin and bearing. Apply several drops of oil to the connecting rod big end. Apply several drops of oil into each crankshaft bearing oil delivery hole.



## CLUTCH



1. Primary drive (24T) gear
2. Straight key
3. Spring washer
4. Nut
5. O-ring
6. Clutch assy
7. Primary driven gear comp. (63T)
8. Clutch boss
9. Pressure plate
10. Clutch plate
11. Friction plate
12. Compression spring
13. With washer screw
14. Spacer
15. Thrust plate
16. Lock washer
17. Nut
18. Push rod
19. Ball
20. Screw
21. Spring washer
22. Plate washer
23. Nut
24. Push rod
25. Cylindrical bearing
26. Oil seal
27. Plate washer
28. Torsion spring
29. Push lever assy
30. Hose

### NOTE:

Clutch adjustment is covered in "Adjustments and Maintenance".

### Removal

1. Remove the oil plug and drain plug, and drain the transmission oil.
2. Remove the rear brake adjuster and remove the footrest. Remove the kick starter.

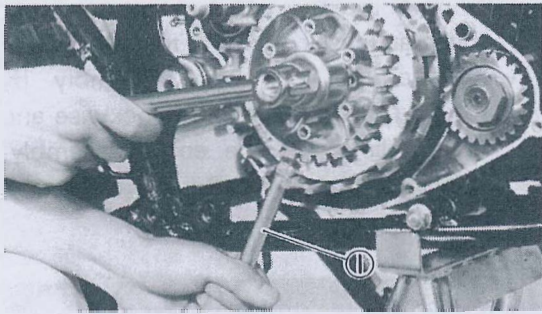


3. Remove the allen bolts holding the side cover in place and remove the cover. Note the position of the dowel pins.
4. Remove the phillips screws (6) holding the pressure plate. Remove the clutch springs, pressure plate and push rod. Remove the clutch plates and friction plates.

### NOTE:

When removing phillips spring screws, loosen each screw in several stages working in a crisscross pattern to avoid any unnecessary warpage. Note the condition of each piece as it is removed and its location within the assembly.

5. Bend lock washer tab down. Using the clutch holding tool, remove the clutch securing nut and lock washer. Remove the clutch boss and driven gear (clutch housing).



1. Clutch holding tool (90890-01024)

Clutch lock nut torque:  
7.5 m·kg (54 ft·lb)

Primary drive gear nut torque:  
7.5 m·kg (54 ft·lb)

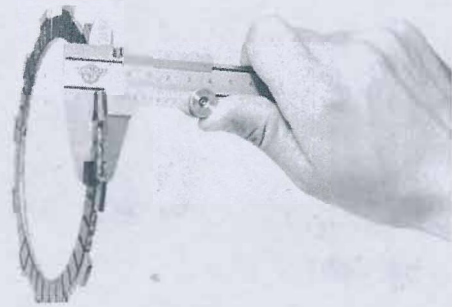
6. If the clutch housing spacer remains on the transmission main shaft, remove it. Remove the thrust plate and thrust plate spacers.
7. When installing the clutch pressure plate, align arrow mark on clutch boss and pressure plate mark.



### Troubleshooting

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

	New	Wear limit
Friction plate thickness	3.0 mm (1.12 in)	2.7 mm (0.106 in)

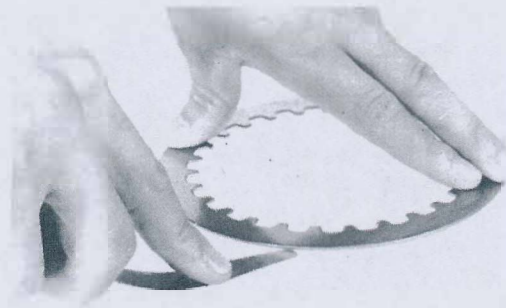


2. Check the plates for signs of warpage and heat damage, replace as required.

### NOTE:

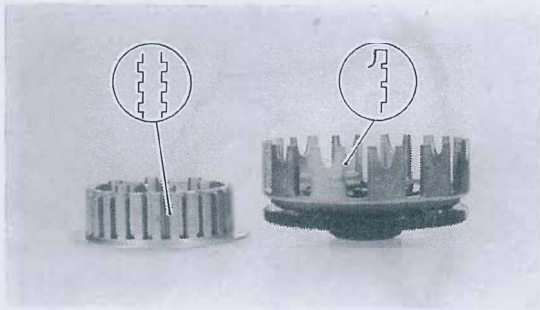
For optimum performance, if any plate requires replacement, it is advisable to replace the entire set.

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



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

4. Check dogs on driven gear (clutch housing). Look for cracks and signs of galling on edges. If moderate, deburr. If severe, replace.

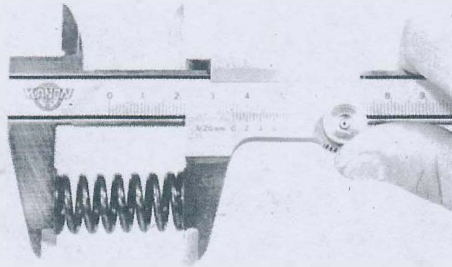


5. Measure each clutch spring. If beyond tolerance, replace.

	New	Min.
Clutch spring free length	36 mm (1.42 in)	35 mm (1.38 in)

**NOTE:**

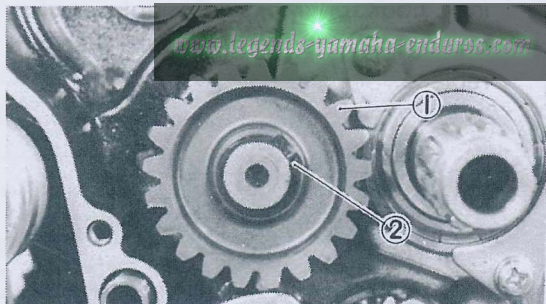
For optimum clutch operation it is advisable to replace the clutch springs as a set if one or more are faulty.



**KICK STARTER**

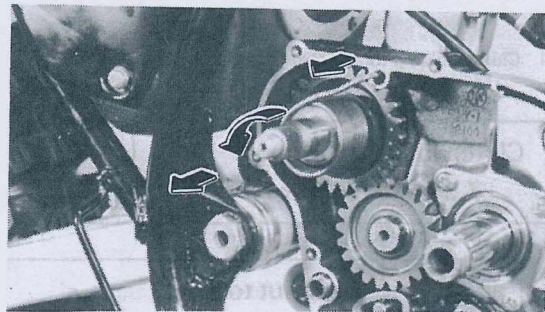
**Removal**

1. Remove the circlip and then remove kick idle gear and washers.



1. Kick idle gear    2. Circlip

2. Unhook the kick spring from its post in the crankcase. Allow it to relax. Then remove the kick axle assembly by rotating the shaft counterclockwise and then pulling out the entire assembly. Check the gear teeth for wear and breakage.

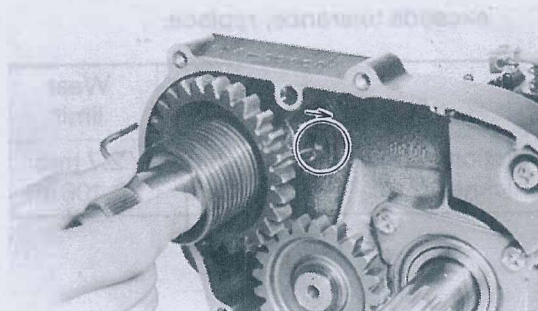


**Inspection**

1. The pressure of the kick clip is 1.0 kg (2.2 lb).  
If above pressure is too strong, spring wear and kick starter slipping will result. If it is too weak, the same slippage will occur particularly at low temperatures. Do not try to bend the clip.
2. Check the clip for damage and wear, and determine whether or not, it should be replaced.

**Reassembly**

1. While keeping the kick stopper upwards, engage the kick axle return spring with the slot on the end of the kick axle.  
And hook the spring to the spring hook. Check whether the kick starter acts correctly and whether it returns to its home position.





2. After installing the kick ass'y be sure to check where there it operates smoothly or not.

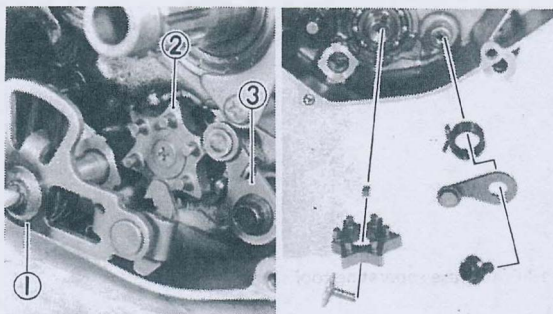
## SHIFTER

### NOTE:

Shifter maintenance should be performed with clutch assembly removed.

### Removal

1. Pull out the change lever assembly.
2. Shift into 2nd gear and unhook the stopper spring.
3. Remove the flange bolt, stopper lever and spring.
4. Remove the flat head screw and remove the shift cam, washer and straight key.



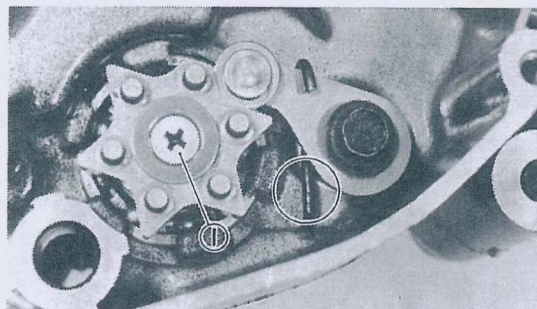
1. Change lever assembly
2. Segment
3. Change lever

### Inspection

1. Inspect shift return spring. A broken or worn spring will impair the return action of the shifting mechanism.
2. Inspect change shaft assembly for bending of shaft, worn or bent spline, and broken or worn shift arm spring. A bent shaft will cause hard shifting.

### Installation

1. Apply a holding agent, such as "Loc-Tite", to threads of flat head screw.
2. Engage the shift return spring with its home position.

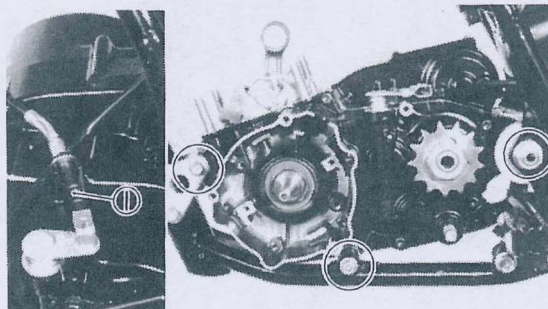


1. Apply a holding agent

## CRANKCASE

### Engine removal

1. Remove the clutch cable.
2. Remove the magneto base, change pedal, and chain cover.
3. Remove the chain and two engine mounting bolts.



1. Clutch wire

4. Remove the nut and pull out the pivot shaft about 2/3 of its length.

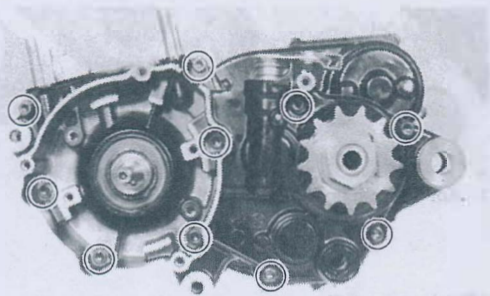


### NOTE:

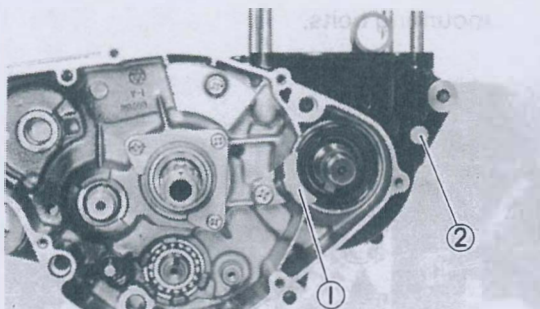
Do not pull it all the way out, or the swing arm will come off the frame.

5. Remove the engine from right side of frame.

- Working in a crisscross pattern, loosen 10 panhead screws 1/4 turn each. Remove them after all are loosened.



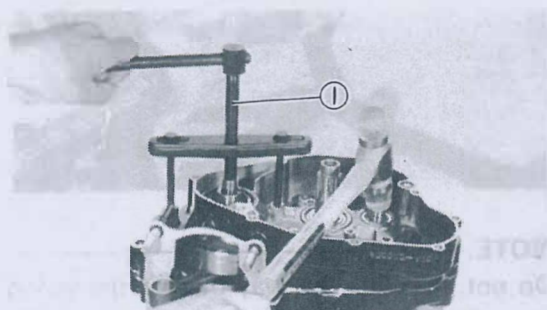
- Remove the oil seal retainer and plug. Install crankcase separating tool as shown.



1. Retainer 2. Plug

**NOTE:**

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



1. Crankcase separating tool

**CAUTION:**

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

**Crankshaft**

- Remove crankshaft assembly with crankcase separating tool.

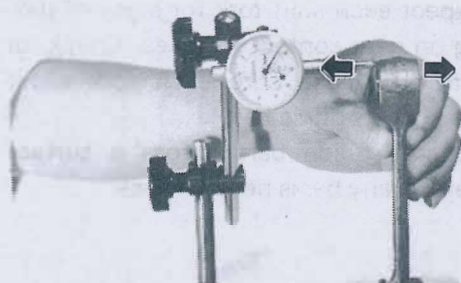


1. Crankcase separating tool

**Inspection**

- The crankshaft requires the highest degree of accuracy in engineering and servicing.
- The crankshaft is susceptible to wear and therefore the crank bearing must be inspected with special care.
- Check crankshaft components.
  - Mount the dial gauge at right angles to the connecting rod small end, holding the bottom of rod toward the dial indicator. Rock top of rod and measure axial play. Bill Riley

Connecting rod axial play (C):  
0.4 ~ 2.0 mm (0.016 ~ 0.079 in)

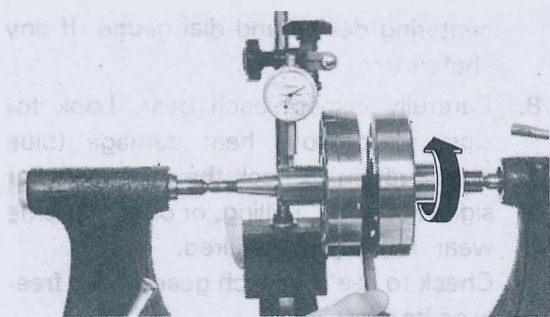


b. Remove the dial gauge and slide the connecting rod to one side. Insert a thickness gauge between the side of the connecting rod big end and the crank wheel. Measure clearance.



Connecting rod/crank side clearance (D):  
0.25 ~ 0.75 mm (0.01 ~ 0.030 in)

c. If any of the above measurements exceed tolerance, crankshaft repair is required. Take the machine to your Authorized Yamaha Dealer.



Unit: mm (in)

Deflection tolerance (A)		Flywheel width (B)
Left side	Right side	
0.03 (0.0012)	0.03 (0.0012)	$66_{-0.05}^0$ (2.598 $_{-0.002}^0$ )

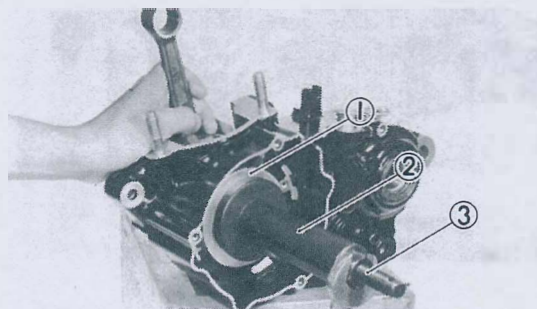
## Crankshaft Installation

1. Set the crankshaft into left case half and install crankshaft installing tool.

### CAUTION:

To protect the crankshaft against scratches or to facilitate the operation of installation: Pack the oil seal lips with grease. Apply engine oil to each bearing.

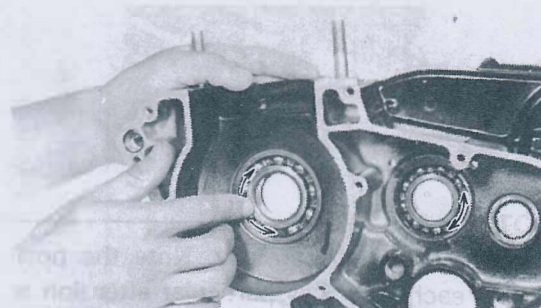
2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the other. Operate tool until crankshaft bottoms against bearing.



1. Adapter
2. Crankshaft installer pot
3. Crankshaft installer bolt

## Bearings and oil seals

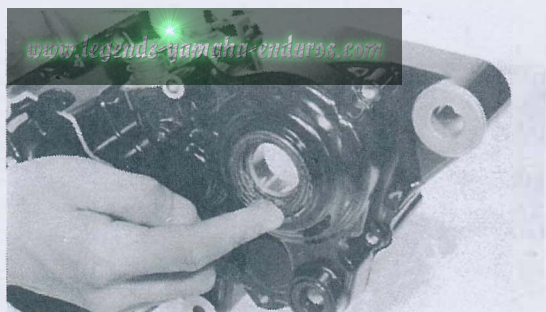
1. After cleaning and lubricating the bearings, rotate inner race with a finger. If rough spots are noticed, replace the bearing.



**NOTE:**

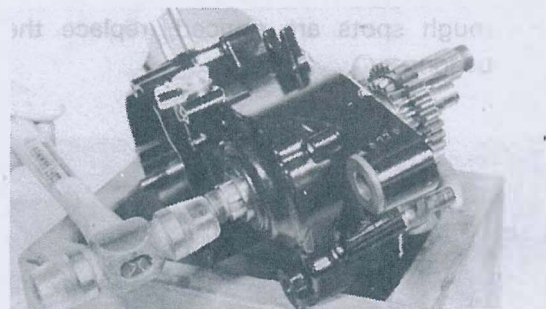
Bearing(s) are most easily removed or installed if the cases are first heated to approximately 90° ~ 120°C (194° ~ 248°F). Bring the case up to proper temperature slowly. Use an oven.

2. Check oil seal lips for damage or wear. Replace as required.
3. Always replace crankshaft oil seals whenever the crankshaft is removed.
4. Install bearing(s) and oil seal(s) with their manufacturer marks or numbers facing outward. Before installation, apply grease to oil seal lip(s) and bearing(s).



**Transmission**

1. Remove drive sprocket nut, lock washer, sprocket and collar.
2. 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.

**Inspection**

1. Inspect each shift fork for signs of galling on gear contact surfaces. Check for bending. Make sure each fork slides freely on its guide bar.
2. Roll the guide bars across a surface plate. If any bar is bent, replace.

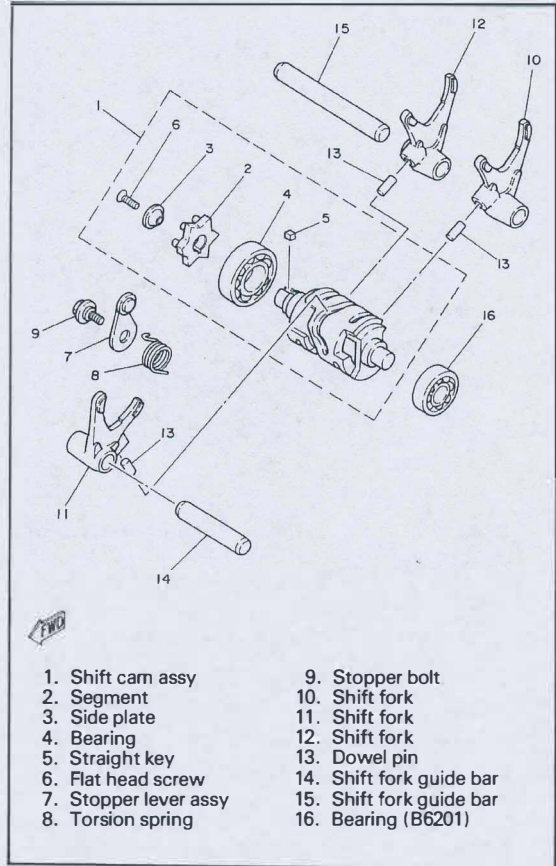


3. Check the shift cam grooves for signs of wear or damage. If any profile has excessive wear and/or any damage, replace cam.
4. Check the cam followers on each shift fork for wear. The follower should fit snugly into its seat in the shift fork, but should not be overly tight. Check the ends that ride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

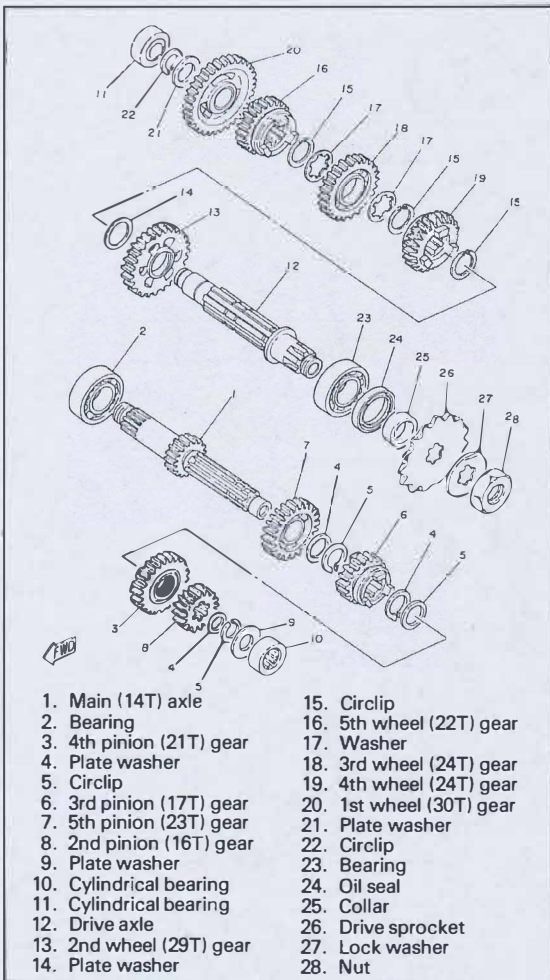
11. Check to see that each gear properly engages its counterpart on the shaft. Check the mating dogs for rounded edges, cracks, or missing portions. Replace as required.

### Installation

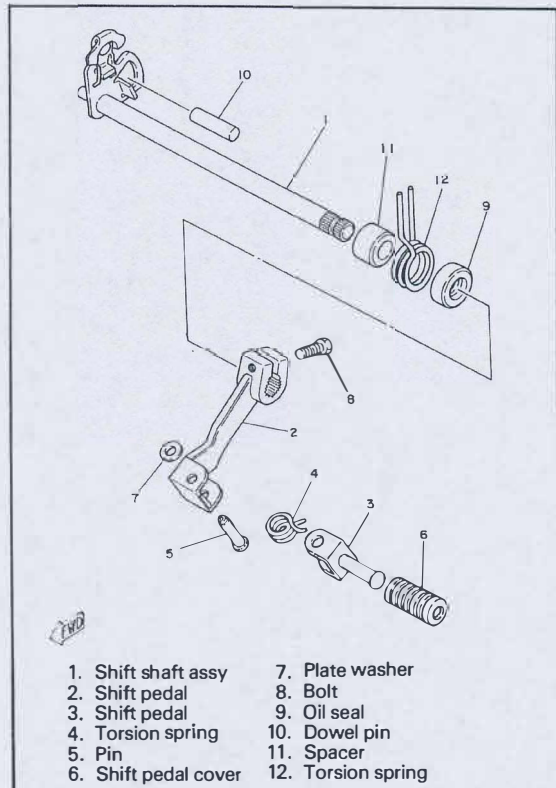
1. Check to see that all parts move freely and that all loose shims are in place. Make sure all shafts are fully seated.



- |                       |                          |
|-----------------------|--------------------------|
| 1. Shift cam assy     | 9. Stopper bolt          |
| 2. Segment            | 10. Shift fork           |
| 3. Side plate         | 11. Shift fork           |
| 4. Bearing            | 12. Shift fork           |
| 5. Straight key       | 13. Dowel pin            |
| 6. Flat head screw    | 14. Shift fork guide bar |
| 7. Stopper lever assy | 15. Shift fork guide bar |
| 8. Torsion spring     | 16. Bearing (B6201)      |



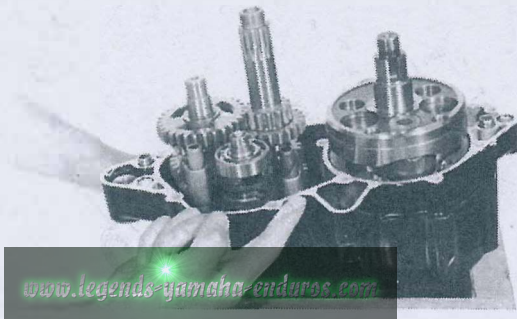
- |                          |                          |
|--------------------------|--------------------------|
| 1. Main (14T) axle       | 15. Circlip              |
| 2. Bearing               | 16. 5th wheel (22T) gear |
| 3. 4th pinion (21T) gear | 17. Washer               |
| 4. Plate washer          | 18. 3rd wheel (24T) gear |
| 5. Circlip               | 19. 4th wheel (24T) gear |
| 6. 3rd pinion (17T) gear | 20. 1st wheel (30T) gear |
| 7. 5th pinion (23T) gear | 21. Plate washer         |
| 8. 2nd pinion (16T) gear | 22. Circlip              |
| 9. Plate washer          | 23. Bearing              |
| 10. Cylindrical bearing  | 24. Oil seal             |
| 11. Cylindrical bearing  | 25. Collar               |
| 12. Drive axle           | 26. Drive sprocket       |
| 13. 2nd wheel (19T) gear | 27. Lock washer          |
| 14. Plate washer         | 28. Nut                  |



- |                      |                    |
|----------------------|--------------------|
| 1. Shift shaft assy  | 7. Plate washer    |
| 2. Shift pedal       | 8. Bolt            |
| 3. Shift pedal cover | 9. Oil seal        |
| 4. Torsion spring    | 10. Dowel pin      |
| 5. Pin               | 11. Spacer         |
| 6. Shift pedal cover | 12. Torsion spring |

## Reassembling

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



### NOTE:

- a. Do not tap on machined surface or end of crankshaft.
  - b. Before installing the crankshaft, check the crankshaft O-ring for damage.
2. After reassembly, apply a liberal coating of two-stroke oil to the crank pin and bearing and into each crankshaft bearing oil delivery hole.
  3. Check crankshaft and transmission shafts for proper operation and freedom of movement.

## Mounting

1. Install engine mounting bolts and nuts with proper tightening torque.

	Bolt	Tightening Torque
Front	Bracket to frame	1.5 m·kg (28 ft·lb)
	Bracket to engine	3.0 m·kg (18 ft·lb)
Center, Lower		3.0 m·kg (24 ft·lb)

Pivot shaft nut:  
7.0 m·kg (49 ft·lb)

2. Install drive sprocket.

Drive sprocket nut torque:  
7.5 m·kg (54 ft·lb)

3. Install inner rotor.

Rotor nut torque: 3.5 m·kg (26 ft·lb)

## CHASSIS

### FRONT FORKS

#### CAUTION:

To prevent an accidental explosion of air, the following instructions should be observed:

1. Use only air or nitrogen for filling. Never use any other gas. An explosion may result.
2. Never throw the air shock absorber into fire.
3. Before removing the air shock absorbers out from the front forks, be sure to extract the air from the air chamber completely.

### Air pressure adjustment

#### CAUTION:

For proper damping effects, the sealed air pressure must be maintained at the following levels.

Both forks must have the same pressure.

1. Place a suitable stand under the engine to keep the front of machine raised off the floor. No weight on front wheel.
2. Using a manual air pump fill with air.

#### CAUTION:

The gas pressure should not exceed 2.5 kg/cm<sup>2</sup>. Excess gas pressure will cause damage to the forks.

3. Using the air check gauge, adjust the air pressure to specification.

Standard air pressure:  
0 kg/cm<sup>2</sup> (0 psi)

### NOTE:

Each time the air gauge is inserted, the air pressure decreases about 0.05 to 0.1 kg/cm<sup>2</sup>.



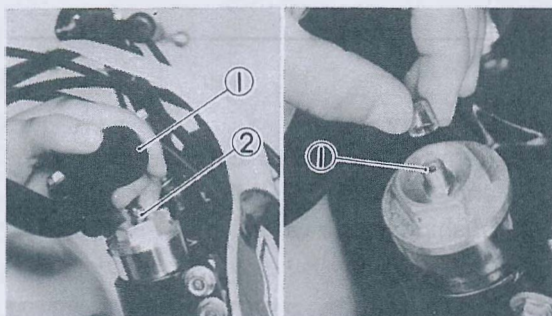
**NOTE:** \_\_\_\_\_

When oil enters the gauge, thereby keeping the needle from returning to the original position, loosen the screw in the rubber at the gauge mouth, and shake the gauge several times to remove the oil inside. After making sure of the needle being at the original position, retighten the screw.

3. The difference between both right and left tubes should be 0.1 kg/cm<sup>2</sup> (1.42 lb/in<sup>2</sup>) or less.

**Fork oil replacement**

1. Place a suitable stand under the engine to keep the front of machine raised off the floor.
2. Remove the rubber cap and valve cap.



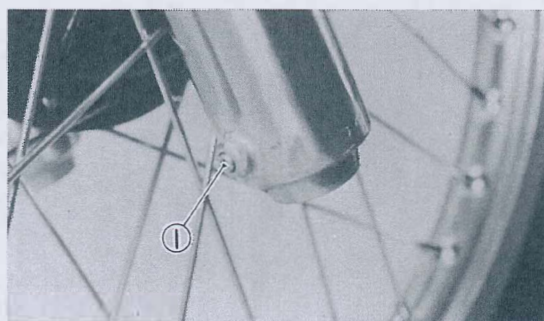
1. Rubber cap 2. Valve cap 1. Valve

3. Using a slotted-head screwdriver, press the valve and keep it open for more than 3 seconds so that the air can be let out from the inner tube.

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

When the air has to be extracted from the tube extract little by little. If not, oil stout out together with the air, causing harm to you.

4. Remove the cap bolt assembly. And remove the spacer, spring seat and fork spring.
5. Place an open container beneath each drain hole and remove the drain screws.



1. Drain screw

6. After most of oil has drained, slowly raise and lower outer tubes to pump out remaining oil.
7. Install drain screws.

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

Check gasket, replace if damaged.

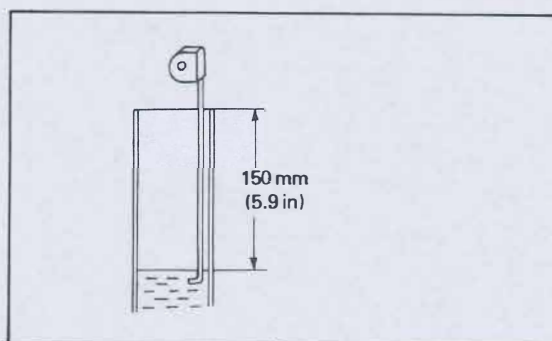
8. Measure correct amount of oil and pour into each leg.

Recommended oil:  
 Yamaha fork oil 10 wt or  
 SAE #10 motor oil  
 Oil quantity: 604 cc (20.4 oz)

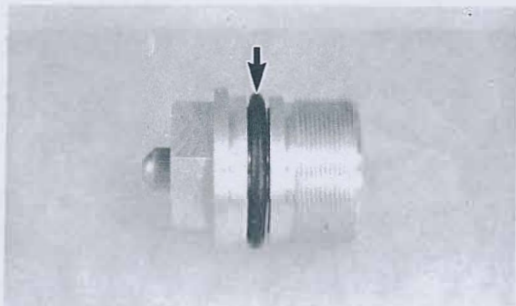
**NOTE:** \_\_\_\_\_

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

9. Measure the oil level from top of the fork tube with a tape measure. The fork tubes must be fully bottomed.



10. After filling, slowly pump the outer tubes up and down to distribute the oil.
11. Inspect the O-ring on cap bolt and replace if damaged.

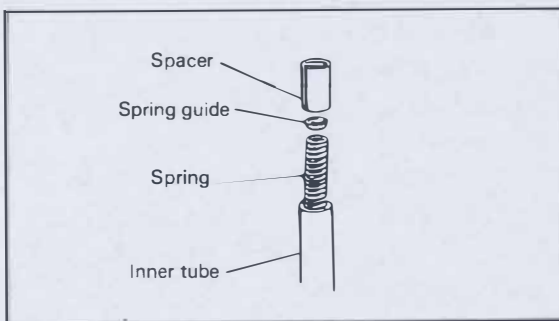


12. Install spacer, spring seat, fork spring and cap bolt and torque to specification.

Tightening torque: 2.3 m·kg (16.5 ft·lb)

### Front fork spring replacement

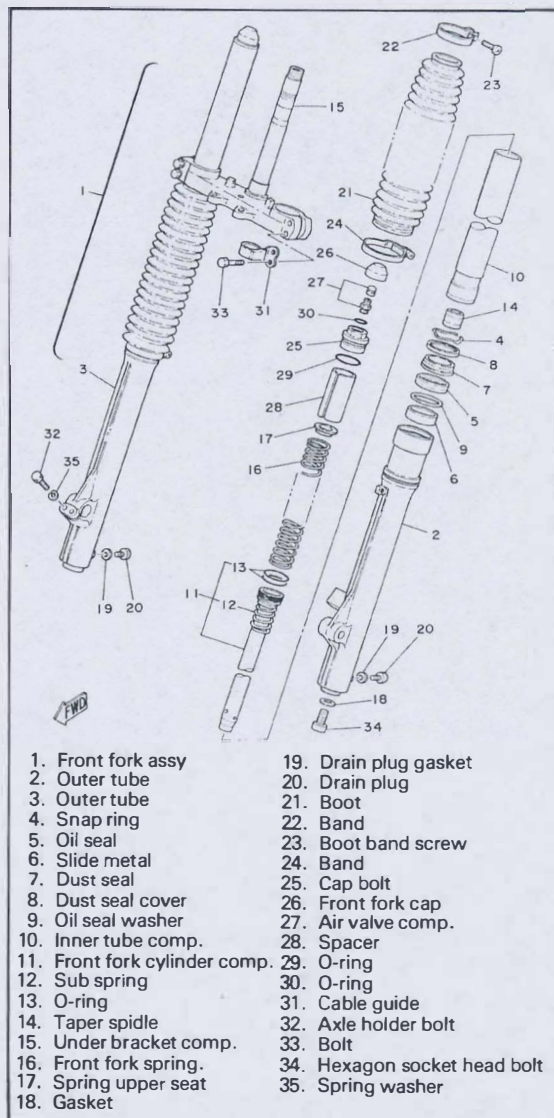
In addition to the standard type, two different type fork spring are sold. A proper spring should be selected according to the conditions of a racing course or the weight of the rider.



Type		Part No.	Spring rate (kg/mm)	I.D. Mark
Light duty	Spring	4V4-23141-10	K = 0.248	
	Spacer	4V4-23118-M0	ℓ = 50 mm	
STD	Spring	4V4-23141-L0	K = 0.29	
	Spacer	4V4-23118-L0	ℓ = 80 mm	
Heavy duty	Spring	4V4-23141-20	K = 0.31	
	Spacer	4V4-23118-L0	ℓ = 80 mm	

#### NOTE:

Always check the oil levels before changing or re-installing springs.



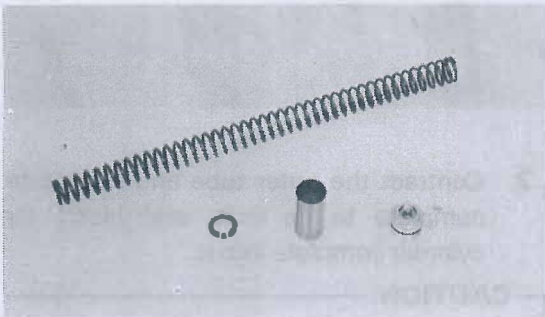
### Disassembly

1. Remove the rubber cap and valve cap, and extract the air completely by pushing the air valve.



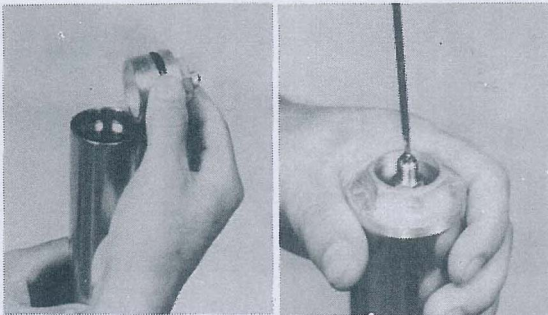


2. Loosen the cap bolt.
3. Remove the front fork assembly from the frame.
4. Remove the cap bolt assembly, spacer spring seat, and main spring.



5. Stretch the inner tube, and fill with the front fork oil, then install the cap bolt.

**NOTE:** Lee Waldie Craig Scott Chris Koira  
After installing the cap bolt, bleed the air completely until oil flows out of the air valve.



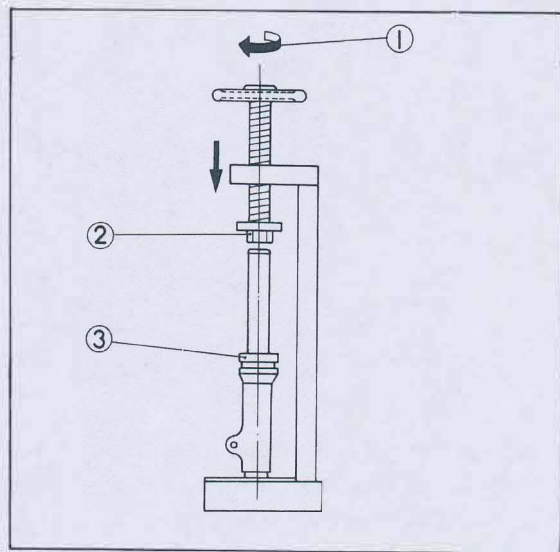
6. Remove the snap ring on the top end of the outer tube.



7. As illustrated, gently grip the top of the cap bolt with a hand press. Place the spacer on the cap bolt so that no load is imposed on the air valve.

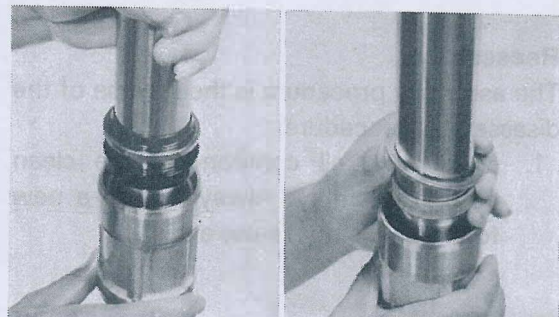
**CAUTION:**

If the inner tube is abruptly contracted or air enters the inner tube, the oil may spurt out or the oil seal may spring out. Never touch the inner tube during disassembling operation. Also wrap the oil seal with a rag for safety.



1. Turn slowly
2. Spacer
3. Wrap with rag

8. Remove the dust seal, oil seal, washer and slide metal.



9. Remove the cap bolt and drain the oil away. Remove the drain screw and drain the oil, too. When most of the oil is drained, slide the inner up and down so that the remaining oil can be drained.



- Contract the inner tube to its limit, and remove the cylinder holding bolt using the cylinder guide wrench.



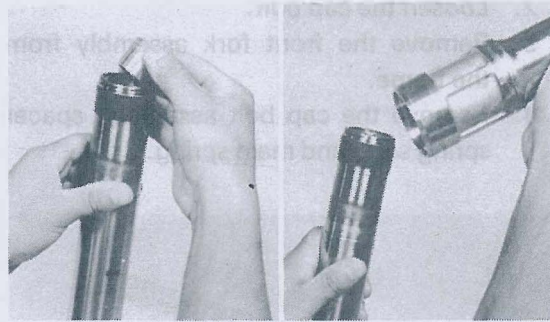
- While keeping the inner tube in the maximum contracted position, invert it and pull out the cylinder complete.

**CAUTION:**  
 Keep the inner tube in the maximum contracted position so that the oil hole plug does not come off from the piston.

### Reassembly

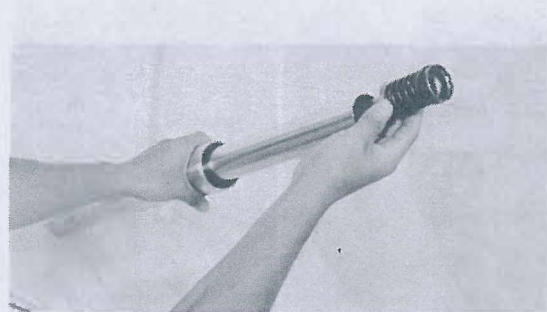
The assembly procedure is the reverse of the disassembly procedure.

- Make sure all components are clean before assembly. Always install a new fork seal. Do not re-use a seal.



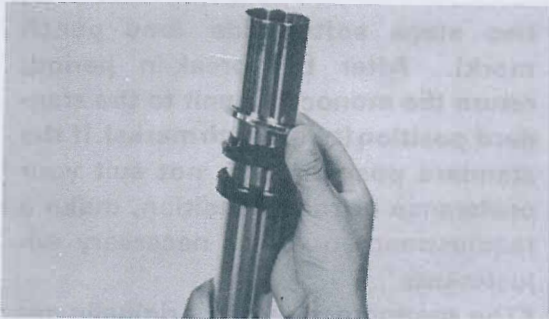
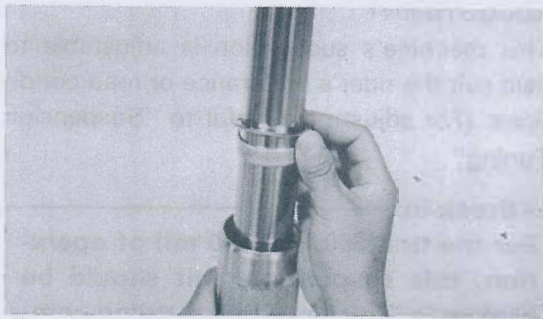
- Contract the outer tube and inner tube complete to its limit, and insert the cylinder complete into it.

**CAUTION:**  
 Never insert the cylinder complete while holding the inner tube vertically. If you do so, the cylinder complete will fall down quickly, thus damaging the valve inside.

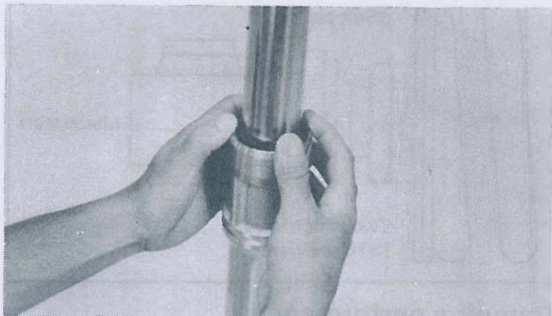


- When the cylinder fits over the oil hole plug, temporarily tighten the cylinder holding bolt.
- Slip the slide metal, washer, oil seal, dust seal and dust seal cover over the inner tube, in that order, and then push the oil seal gently over the inner tube. The seal cover should be pushed down beyond the snap ring groove.

**NOTE:**  
 If the parts are pushed down too much, seals could be deformed and oil leakage may result.



5. Install the snap ring on the groove around the inner tube.

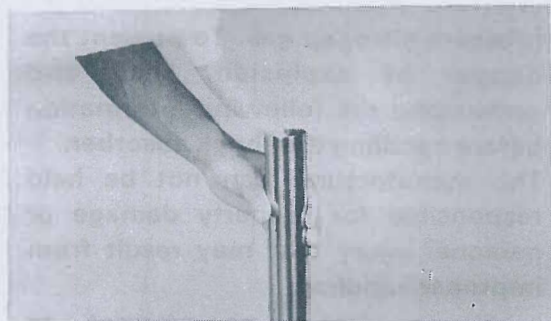


6. Grip the outer tube in a vise and tighten the cylinder holding bolt to specification using the fork guide wrench.

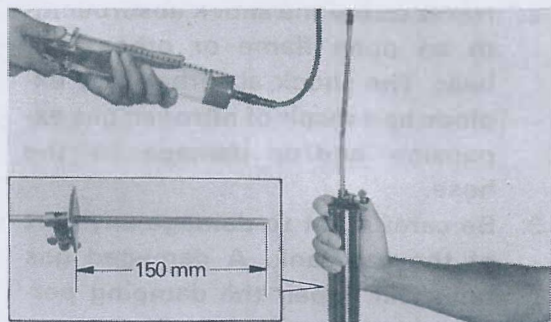
**NOTE:**  
Apply a holding agent, such as "Loctite" to threads of cylinder holding bolt.



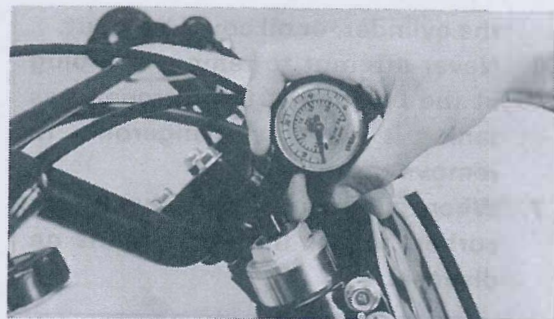
7. Install the drain screw and packing onto the outer tube.  
8. Fill the fork with a specified amount of fork oil.



To check the oil level, contract the inner tube to its maximum, and if the oil level from the top end of the inner tube is 150 mm, the oil level is correct.



9. Install the spring, spring seat, spacer, and install the cap.  
10. Remove the air valve cap, and adjust the air pressure to specification.



## REAR SHOCK ABSORBER (MONOCROSS SUSPENSION "DE CARBON" SYSTEM)

### —WARNING:—

This shock absorber is provided with a separate type tank filled with high-pressure nitrogen gas. To prevent the danger of explosion, read and understand the following information before handling the shock absorber.

The manufacturer can not be held responsible for property damage or personal injury that may result from improper handling.

1. Never tamper or attempt to disassemble the cylinder or the tank. Never tamper with the nut securing the hose to the cylinder assembly; otherwise, oil will spurt from the cylinder due to the high pressure in the nitrogen gas tank.
2. Never throw the shock absorber into an open flame or other high heat. The shock absorber may explode as a result of nitrogen gas expansion and/or damage to the hose. Lee Waldie Craig Scott Chris Koira
3. Be careful not to damage any part of the gas tank. A damaged gas tank will impair the damping performance or cause a malfunction.
4. Use care not to damage any part of the hose. Any break in the hose may result in a spurt of oil under high pressure.
5. Take care not to scratch the contact surface of the piston rod with the cylinder; or oil could leak out.
6. Never attempt to remove the plug at the bottom of the nitrogen gas tank. It is very dangerous to remove the plug.
7. When scrapping the shock absorber, follow the instructions on disposal.

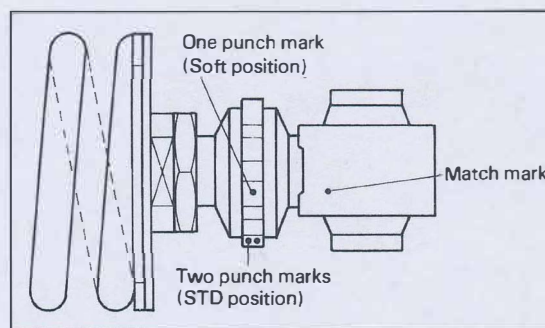
## ADJUSTMENT

This machine's suspension is adjustable to best suit the rider's preference or road conditions. (For adjustment, refer to "Suspension Tuning".

### —Break-in:—

For the first 300 km (200 mi) of operation, this suspension unit should be broken in. To afford better riding comfort, the monocross unit is set on a two steps softer side (one punch mark). After the break-in period, return the monocross unit to the standard position (two punch marks). If the standard position does not suit your preference or road condition, make a readjustment or other necessary adjustments.

\*The monocross unit is originally set so as to suit the standard rider.

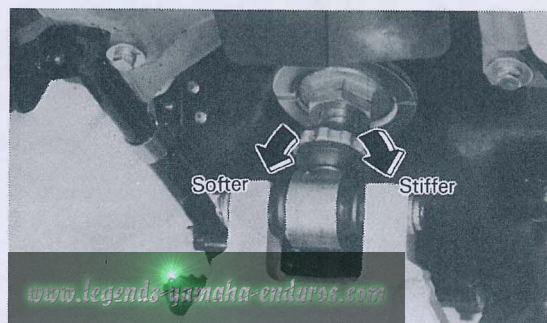


### Damping performance

This adjustment can be done in 24 steps without removing the rear shock absorber.

- \* To make it stiffer, tighten the adjuster. (As illustrated, turn it clockwise.)
- \* To make it softer, loosen the adjuster. (Turn it counterclockwise.)

Adjustment should be made notch by notch and test it by riding after each adjustment.



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

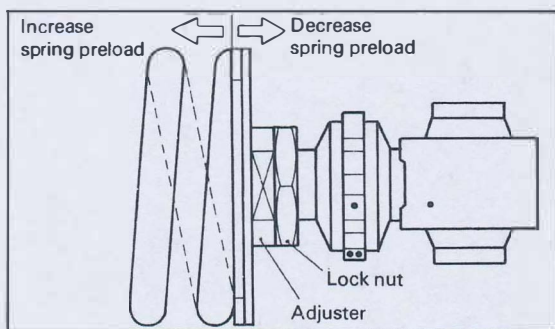
Turn the adjuster until it clicks.  
 Stop turning the adjuster when it suddenly becomes heavy or light. Do not give any further turns. The adjustable range covers approximately 12 notches on stiffer side from the standard position.

**Spring pre-load**

To make an adjustment of the spring pre-load, use the special wrench (contained in the owner's tool kit).



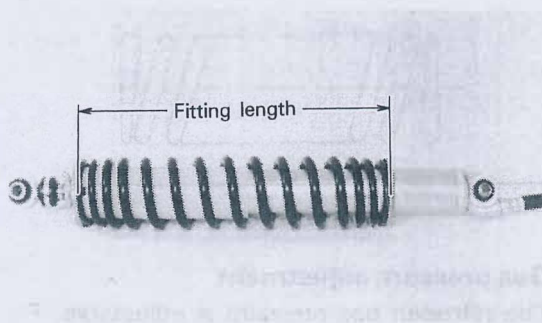
1. Loosen the adjuster lock nut.
2. To increase the spring pre-load, tighten the adjuster. To decrease, loosen the adjuster.



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

Adjustment should be made by tightening or loosening the adjuster 2 mm each time.

Standard Length (installed):	358 mm (14.09 in)
Minimum Length (installed):	345 mm (13.6 in)
Maximum Length (installed):	360 mm (14.2 in)



BE SURE THAT ADJUSTMENT IS WITHIN THE ABOVE RANGE.

3. After adjustment, tighten the lock nut.

Tightening torque: 5.5 m-kg (40 ft-lb)

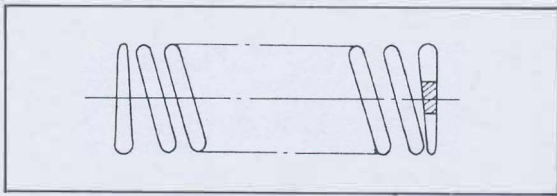
**Spring replacement**

In addition to the standard type, hard and soft types of springs are available and also the springs from the YZ125H can be used. If the standard type is improper for your purpose, select a proper one according to the rider's weight or road conditions.

YZ250H	Type	Part No.	Spring rate (kg/mm)	I.D. color
	Light duty	3R4-22212-10	$K_1 = 2.0, K_2 = 4.6$	Green
	Standard	3R4-22212-00	$K_1 = 2.1, K_2 = 5.1$	—
	Heavy duty	3R4-22212-20	$K_1 = 2.2, K_2 = 5.7$	Blue

YZ125H	Type	Part No.	Spring rate (kg/mm)	I.D. color
	Light duty	3R3-22212-10	$K_1 = 1.7, K_2 = 2.8$	Green
	Standard	3R3-22212-00	$K_1 = 1.8, K_2 = 3.1$	Red
	Heavy duty	3R3-22212-20	$K_1 = 1.9, K_2 = 3.6$	Blue

Identification color is shown on right end of a spring.



### Gas pressure adjustment

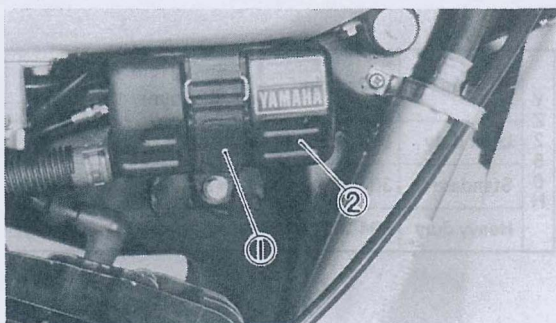
The nitrogen gas pressure is adjustable. For this adjustment, take the unit to your Authorized Yamaha dealer.

### Absorber removal

1. Place a suitable stand under the engine to raise the rear wheel off the ground.
2. Remove the seat and fuel tank (place the fuel petcock lever to "OFF" and disconnect fuel hose) and remove the rear wheel.

#### NOTE:

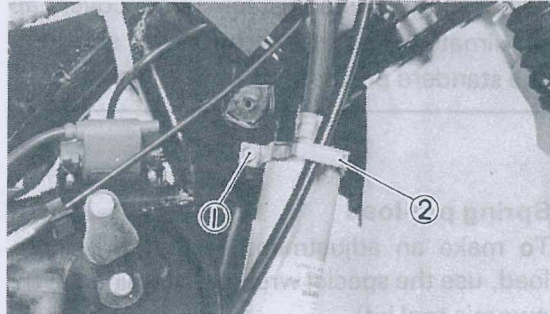
The fuel tank is mounted with the air chamber. Remove the band and separate the air chamber from the fuel tank. Next, remove the fuel tank.



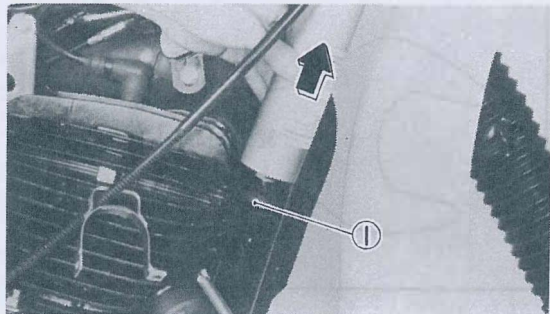
1. Band 2. Air chamber



3. Remove the screw and remove the band holding the gas tank. Next, remove the gas tank from the grommet.

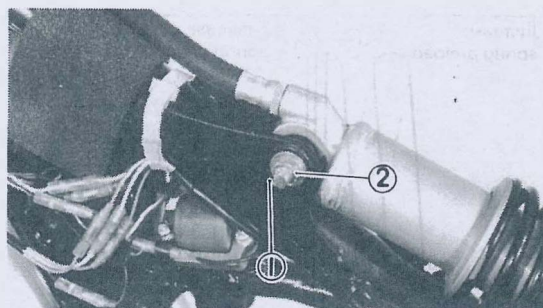


1. Fitting screw 2. Holder



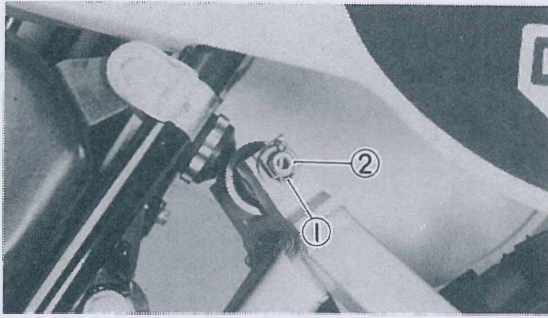
1. Grommet

4. Remove the cotter pin and nut from the bolt securing the upper part of shock absorber, and remove the bolt.



1. Cotter pin 2. Nut

5. Remove the cotter pin and washer from the pin securing the lower part of the shock absorber, and pull out the pin. (Be careful so that the thrust washer is not lost.)



1. Cotter pin 2. Washer

6. Remove the shock absorber from the frame.

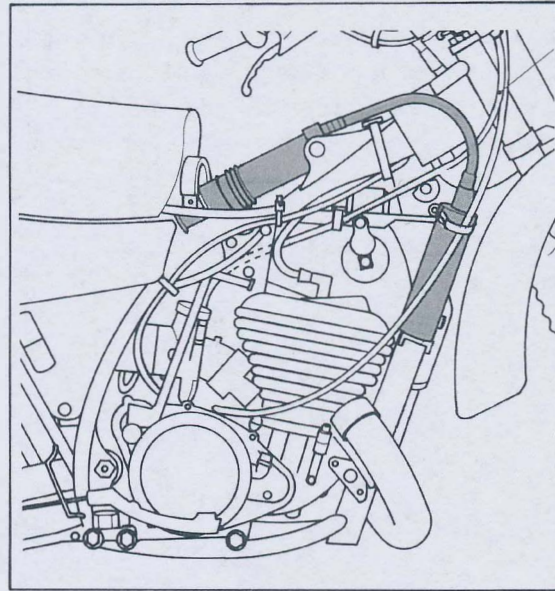
**NOTE:** \_\_\_\_\_

When removing the shock absorber, take the following precautions:

- a. Take care not to damage the gas tank.
- b. Do not damage the rubber hose.



7. For assembly, reverse the procedure for disassembly while taking the following precautions:
  - a. Be sure that the shock absorber is installed as illustrated.

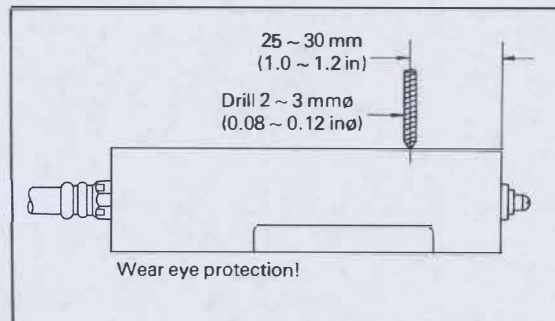


- b. Installing the shock absorber, make sure the locating damper is securely in place.
- c. Always use a new cotter pin.
- d. Grease the PIN and thrust washer.
- e. Tighten the nut to specification.

Upper bolt: 3.0 m·kg (22 ft·lb)

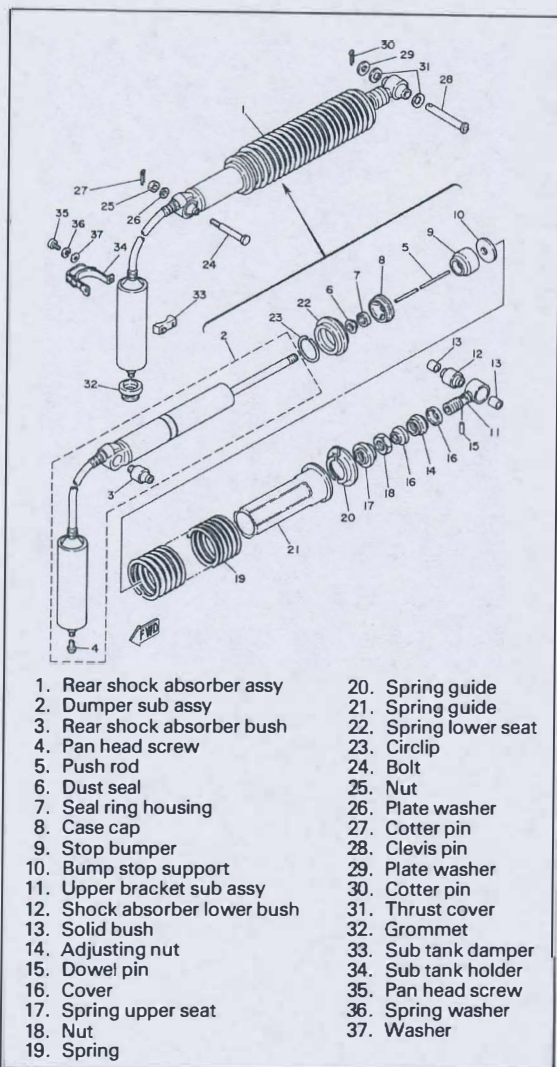
**Notes on disposal (Yamaha dealers only)**

Before disposing the shock absorber, be sure to extract the nitrogen gas. To do so, drill a 2 or 3 mm (0.08 ~ 0.12 in) hole through the tank at a position 25 ~ 30 mm (1.0 ~ 1.2 in) from the bottom end of the tank. At this time, wear eye protection to prevent eye damage from escaping gas and/or metal chips.



**WARNING:**

To dispose of a damaged or worn-out shock absorber, take the unit to your Yamaha dealer for this disposal procedure.





## SUSPENSION TUNING

**WARNING:**

**READ AND UNDERSTAND ALL INSTRUCTIONS DEALING WITH SUSPENSION COMPONENTS. FAILURE TO FOLLOW INSTRUCTIONS AND GUIDELINES MAY RESULT IN DAMAGE TO MACHINE AND/OR INJURY TO A MECHANIC OR USER.**

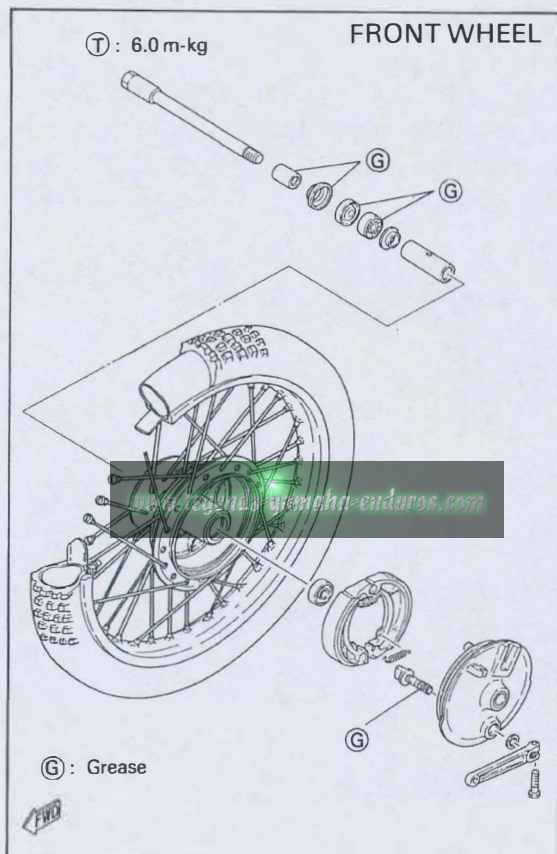
To solve any of the following problems perform step 1, then test ride. If further improvement is needed, perform step 2 and follow it with a test ride. Proceed to step 3 if necessary.

### FRONT FORKS

Problem	Step 1	Step 2	Step 3
Bottoming	Increase air pressure	Use harder spring	Devondan —
Too soft	Increase air pressure	Increase oil viscosity (10 wt to 15 wt)	Use harder spring
Too hard	(Decrease air pressure)	Decrease oil viscosity (10 wt to 5 wt)	Use softer spring
<b>GUIDELINES AND LIMITS</b>			
(1)	Oil: STANDARD: 10 wt fork oil		ALTERNATE: 5 wt, 15 wt
(2)	AIR PRESSURE: MINIMUM: 0 kg/cm <sup>2</sup> (0 psi) MAXIMUM: 1.2 kg/cm <sup>2</sup> (17.0 psi) INCREASES: steps of 0.1 kg/cm <sup>2</sup> (1.5 psi)		

### REAR SHOCK ABSORBER

Problem	Step 1	Step 2	Step 3
Bottoming	Shorten the spring set length	Increase damping force	Use harder spring (3R4-22212-20)
Too soft	Increase damping force	Shorten the spring set length	Use hard spring (3R4-22212-20)
Too hard	Decrease damping force	Extent the spring set length	Use softer spring (3R4-22212-10)
<b>GUIDE LINES AND LIMITS</b>			
1. SET LENGTH	MINIMUM: 345 mm (13.58 in) MAXIMUM: 360 mm (14.17 in) INCREASE: steps of 2 mm (0.08 in)		
2. DAMPING FORCE	Adjust by 1 or 2 clicks. Do not jump over many clips at a time; it may give the rider a misleading suspension feeling.		

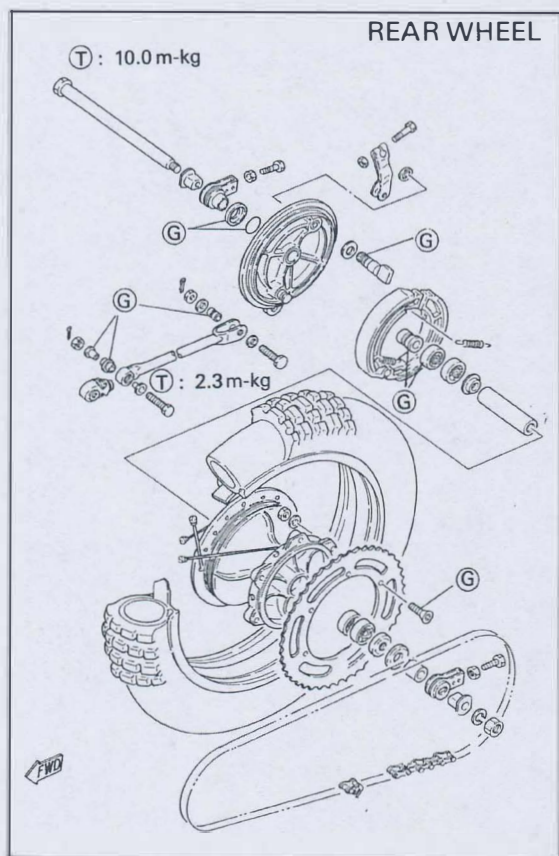


### Front wheel removal

1. Elevate the front wheel by placing a suitable stand under the engine.
2. Remove brake cable: Loosen all cable adjuster screws and remove cable from handle lever holder. Then remove cable from cam lever at front brake shoe plate.
3. Loosen front axle pinch bolts.
4. Remove the front wheel axle.
5. Remove the front wheel assembly.

### Rear wheel removal

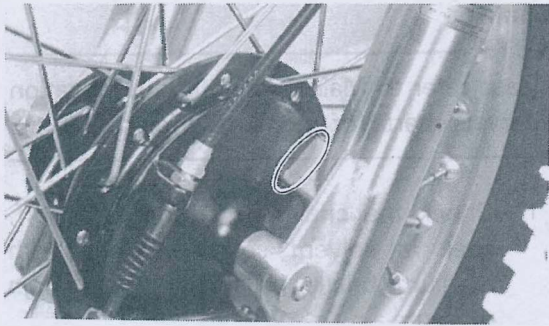
1. Elevate the rear wheel by placing a suitable stand under the engine.
2. Remove the tension bar and the brake rod from the brake shoe plate. The tension bar can be removed by removing the cotter pin and nut from the tension bar bolt. The brake rod can be removed by removing the adjuster.
3. Remove the rear wheel axle nut.
4. Pull out the rear wheel axle.
5. Remove the chain from the rear sprocket.
6. Remove the rear wheel assembly.



### Wheel installation

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

1. Lightly smear grease on:
  - \* The shafts
  - \* The bearings and oil seal lips
  - \* The O-ring and dust cover interior for the rear brake shoe plate
  - \* The oil seal and collar outer circumference from the tension bar.
2. Check for proper engagement of the boss on the outer tube with the locating slot on the brake shoe plate.



3. Always use a new cotter pins. Old pins should be discarded.
4. Make sure nuts are properly tightened.

Front wheel axle: 6.0 m-kG (43 ft-lb)  
 Axle pinch bolt: 2.0 m-kG (14 ft-lb)  
 Rear wheel axle: 10.0 m-kG (72 ft-lb)  
 Tension bar: 2.3 m-kG (16 ft-lb)

5. Be sure to adjust the tension of the chain. (Refer to "Drive chain tension adjustment".)
6. Adjust the plays in the brake lever and pedal.

### Check the rims and spokes

Place a suitable stand under the engine to rise wheels off the ground. Rotate a wheel by hand and check for rim run-out. If spokes are loose or bent, tighten or replace them. The spokes should be checked before each use.



### Check the wheel bearings

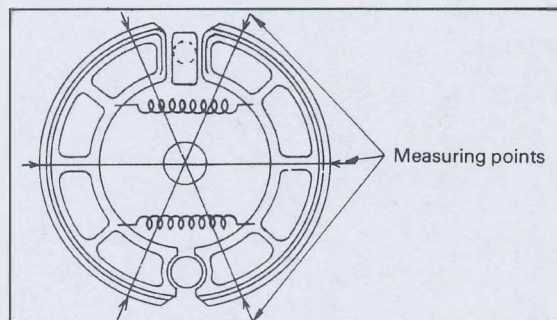
Hold the top of the rear wheel with one hand and the frame with the other hand, and check the play of the wheel by shaking it sideways. If the bearings allow excessive play in the wheel or if it does not turn smoothly have your dealer replace the wheel bearings.

### Brake shoe inspection

Measure the outside diameter of the brake shoe set with slide calipers.

If they measure less than replacement limit, replace them. Smooth out any rough spots on shoe surface with sandpaper.

Brake shoe diameter	130 mm (5.12 in)	150 mm (5.9 in)
Replacement limit	126 mm (4.96 in)	146 mm (5.75)



### Brake drum

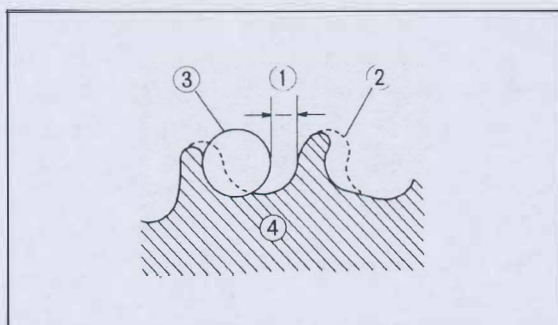
Oil or scratches on the inner surface of the brake drum will impair braking performance or result in abnormal noises. Remove oil by wiping with a rag soaked in lacquer thinner or solvent. Remove scratches by lightly and evenly rubbing with emery cloth.

## Sprockets

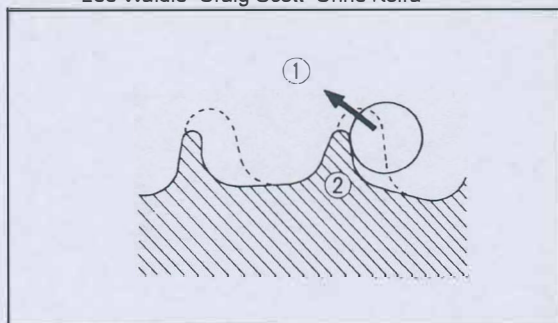
### NOTE:

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

1. Check sprocket wear. Replace if wear decrease tooth height to a point approaching the roller center line.
2. Replace if tooth wear shows a pattern such as that in the illustration.



1. 1/4 tooth 2. Correct 3. Roller 4. Sprocket  
Lee Waldie Craig Scott Chris Koira



1. Slip off 2. Bend teeth

Drive sprocket securing nut torque:  
7.5 m-kp (54 ft-lb)

Driven sprocket securing nut torque:  
3.0 m-kp (22 ft-lb)

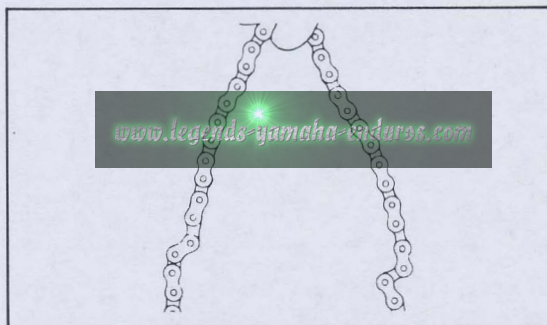
3. When installing the driven sprocket, lightly smear grease on the fitting bolts.

## Chain

### NOTE:

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

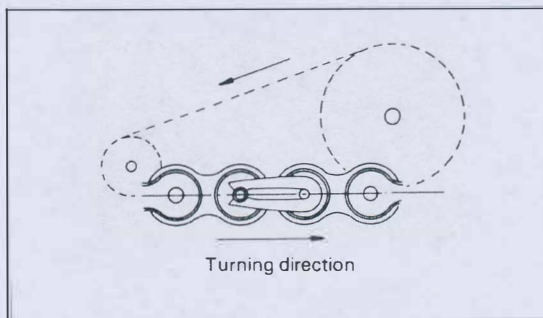
1. Check the chain for stiffness. If stiff, soak in solvent solution, clean with medium bristle brush, dry with high pressure air. Oil chain thoroughly and attempt to work out kinks. If still stiff, replace.



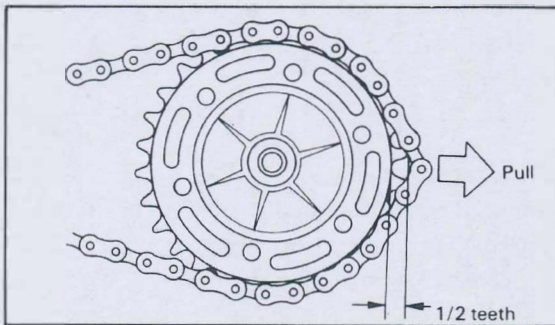
2. Check the side plates for visible wear. Check to see if excessive play exists in pins and rollers. Check for damaged rollers. Replace as required.
3. During reassembly, the master link clip must be installed with the rounded end facing the direction of travel.

### NOTE:

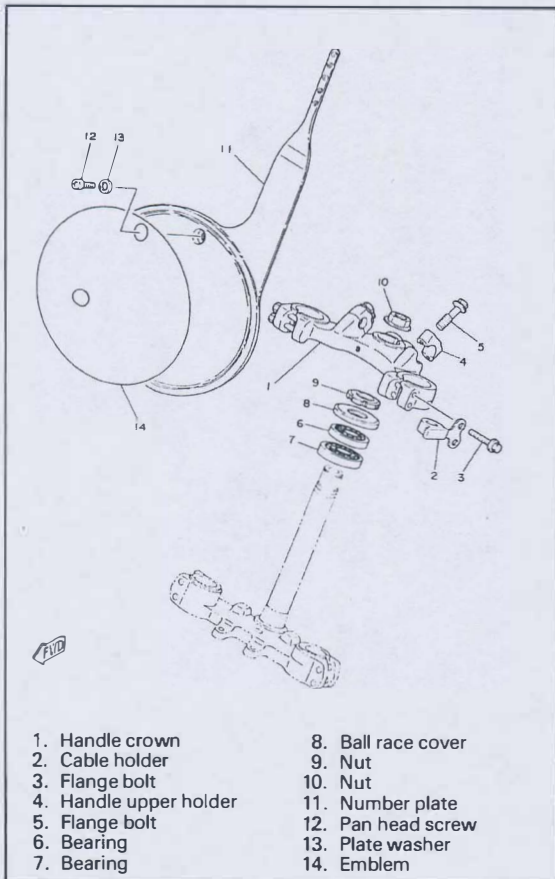
The chain should be cleaned and lubricated after every use of the machine.



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



## STEERING HEAD



## Inspection

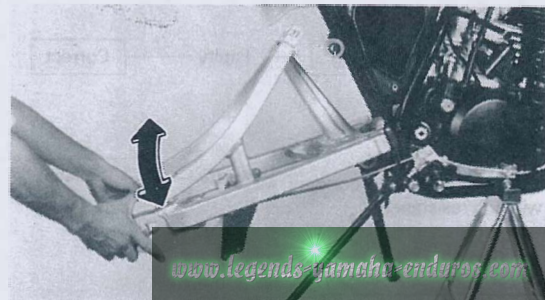
1. Wash the bearings in solvent.
2. Inspect the bearings for pitting or other damage. Replace the bearings if pitted or damaged. Replace the races when bearings are replaced.
3. Clean and inspect the bearing races. If races are damaged, replace the races and bearings.
4. Install the bearings in the races. Spin the bearings by hand. If the bearings hang up or are not smooth in their operation in the races, replace bearings and races.

## Swing arm inspection

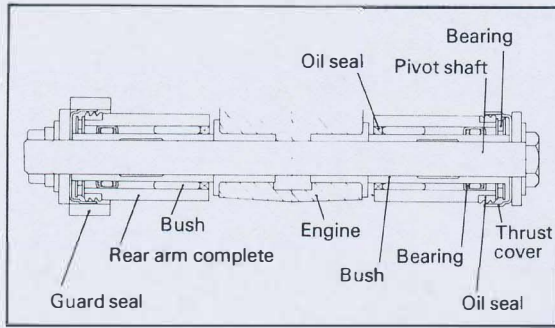
1. With rear wheel and shock absorber removed, grasp the ends of the arm and move from right to left to check for free play.

Swing arm free play:  
0 ~ 1 mm (0 ~ 0.04 in)

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



3. Check the swing arm for cracks. If there is any crack, repair or replace the swing arm, as required.
4. For installation, refer to the figure below.



**NOTE:** \_\_\_\_\_  
 When assembling, grease the following points.

1. Oil seal lips and inside of seal guard.
2. Inside of spacer.
3. Contact surfaces of bearing and bush.

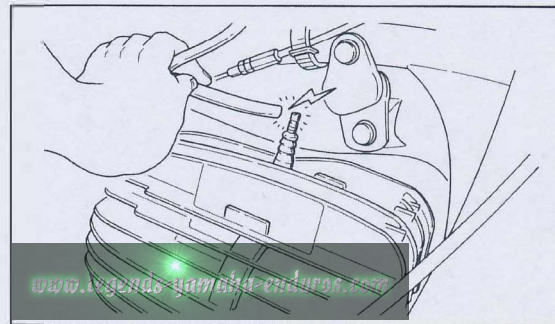
**NOTE:** \_\_\_\_\_  
 In the absence of sparking despite nothing wrong with the C.D.I. magneto, wiring, ignition coil, or spark plug, replace with a NEW C.D.I. unit and check.

**Connectors check-up**

1. Check the connectors and couplers for looseness of joining ends.
2. Keep the connectors and couplers from dirt or rust.
3. For secure and firm joining, take care to hold the connectors and couplers, not the wire portions, in attaching or separating them.

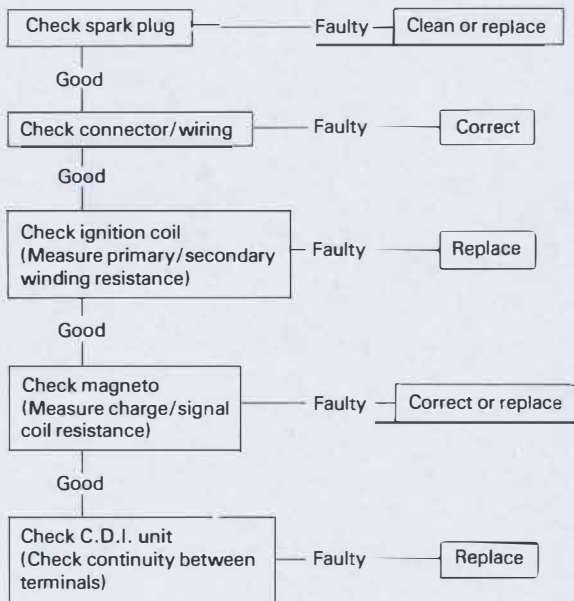
**Spark gap test**

Remove the high tension wire from the spark plug cap, and hold it 5 mm off the plug. Kick the kick crank and check for spark.



**ELECTRICAL**

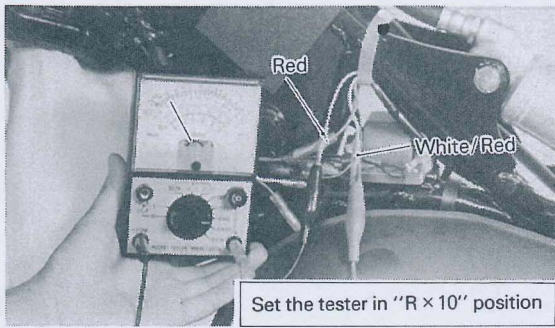
**Troubleshooting**



**Coil resistance test**

Measure the resistance of the charge coil and pulser coil. If the resistance measured does not match the specification below, the coil is considered to be shorted or to have a broken wire.

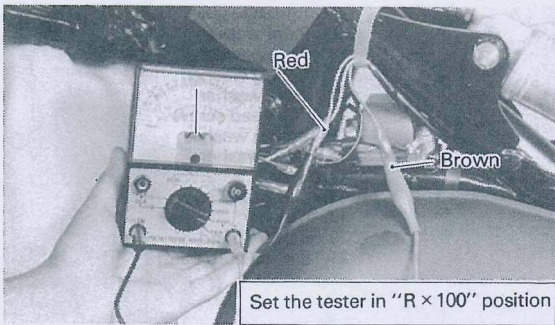
Pulser coil and Charge coil:	500Ω ± 10%
(High speed)	White/ Red to Red
Charge coil:	1,437Ω ± 10%
(Low speed)	Red to Brown



Primary coil resistance Use ( $\Omega \times 1$ ) scale	Secondary coil resistance Use ( $\Omega \times 100$ ) scale
$0.6\Omega \pm 10\%$	$6.2\text{ k}\Omega \pm 20\%$

### Engine stop switch

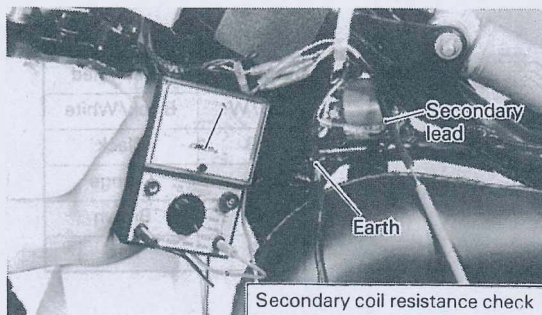
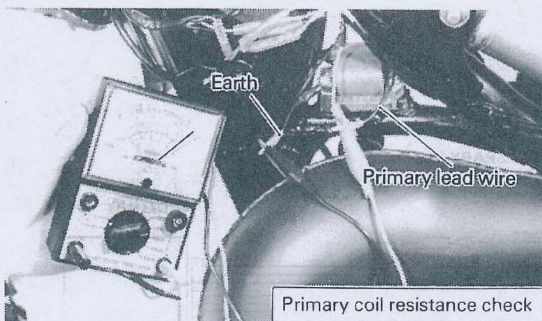
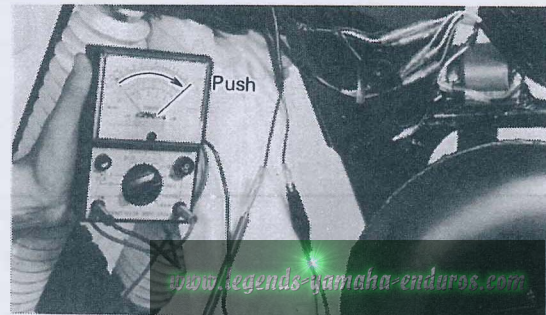
Switch may be checked for continuity with a pocket tester on the "R x 1" position.

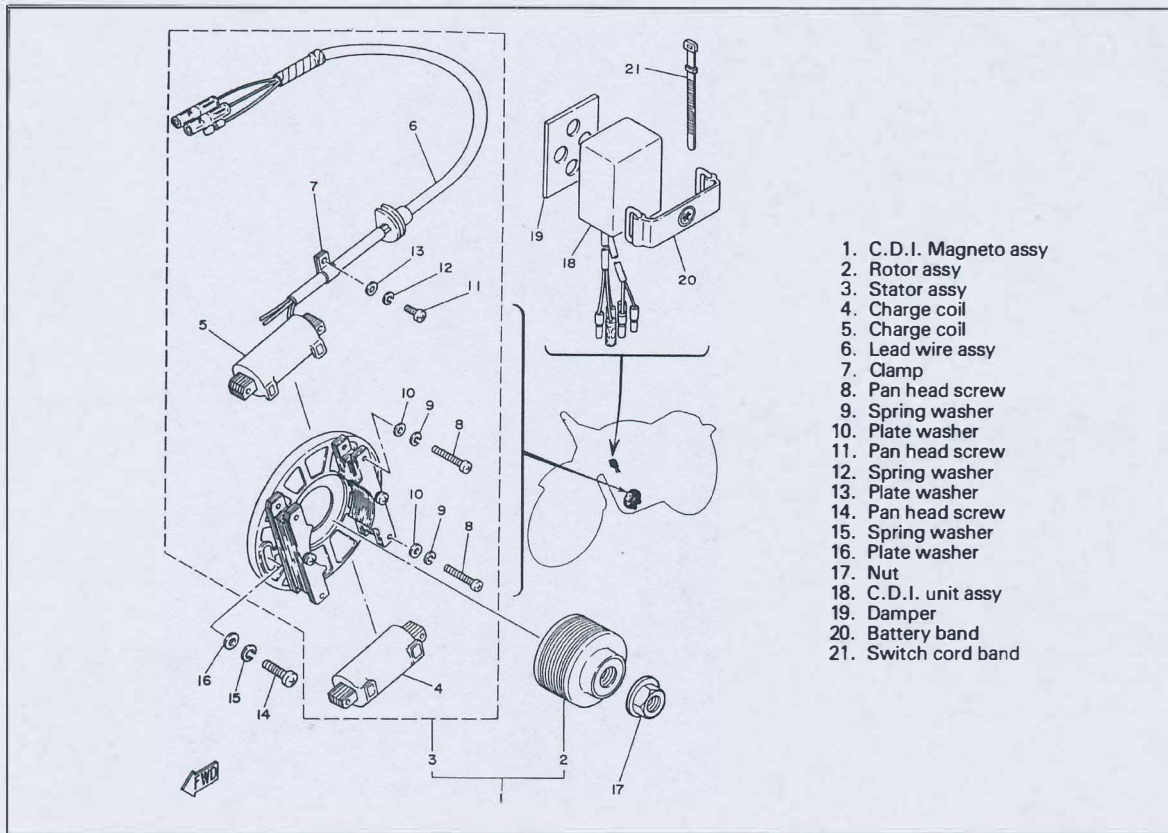


	Wire color	
	Black/White	Black
Push	○	○
Free	—	—

### Ignition coil test

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

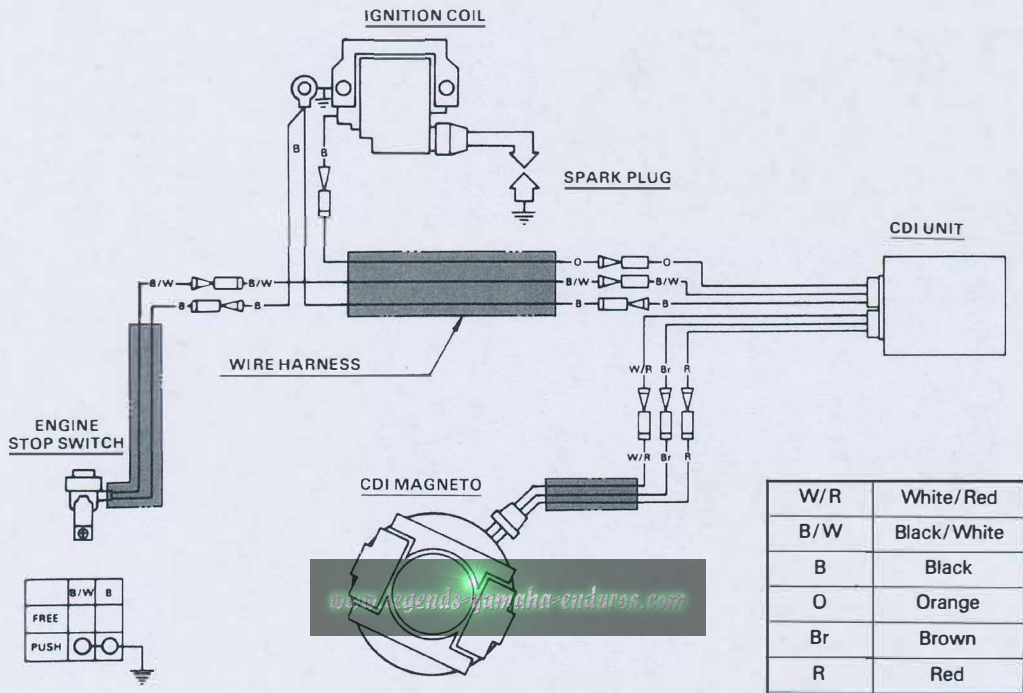




1. C.D.I. Magneto assy
2. Rotor assy
3. Stator assy
4. Charge coil
5. Charge coil
6. Lead wire assy
7. Clamp
8. Pan head screw
9. Spring washer
10. Plate washer
11. Pan head screw
12. Spring washer
13. Plate washer
14. Pan head screw
15. Spring washer
16. Plate washer
17. Nut
18. C.D.I. unit assy
19. Damper
20. Battery band
21. Switch cord band

## MISCELLANEOUS

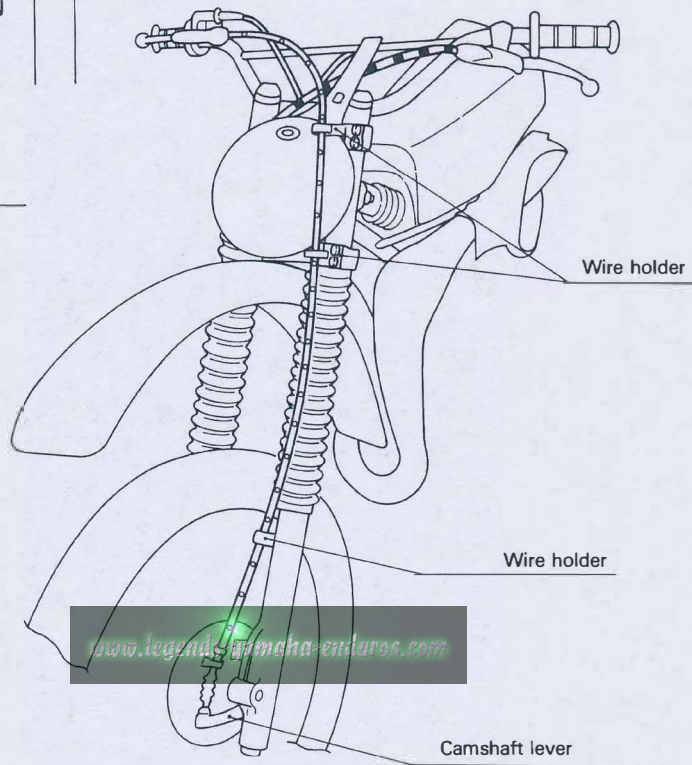
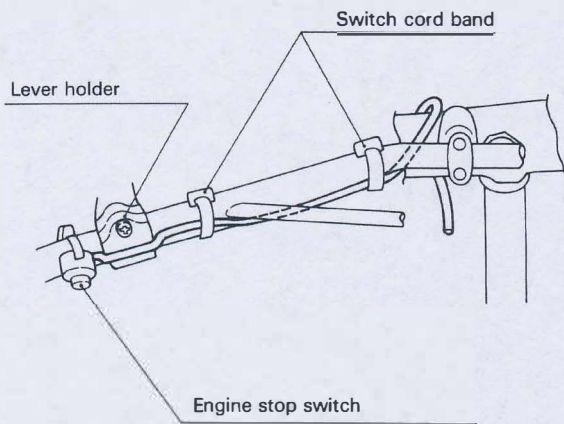
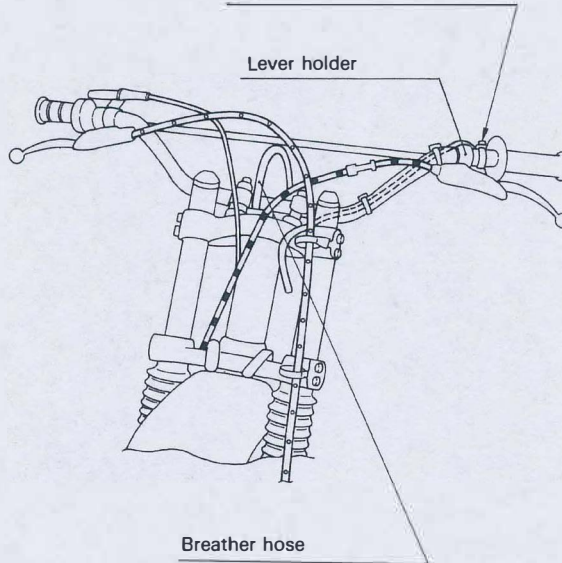
### WIRING DIAGRAM



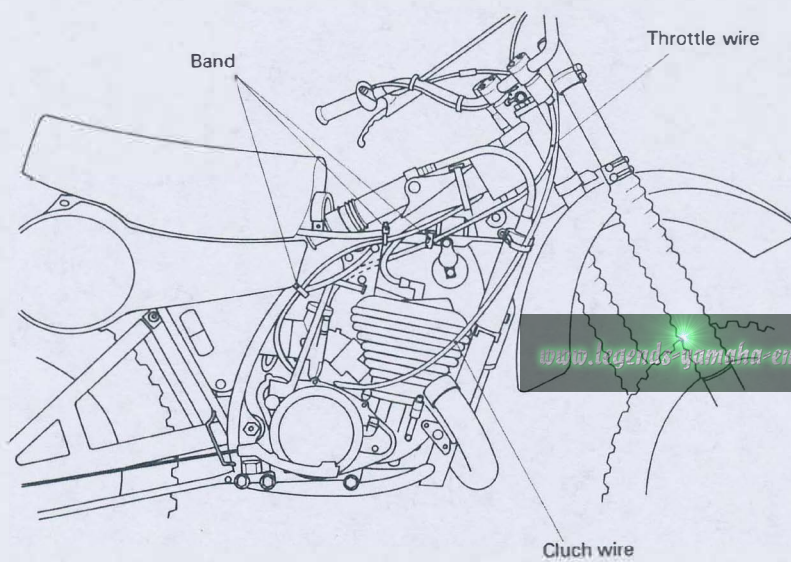
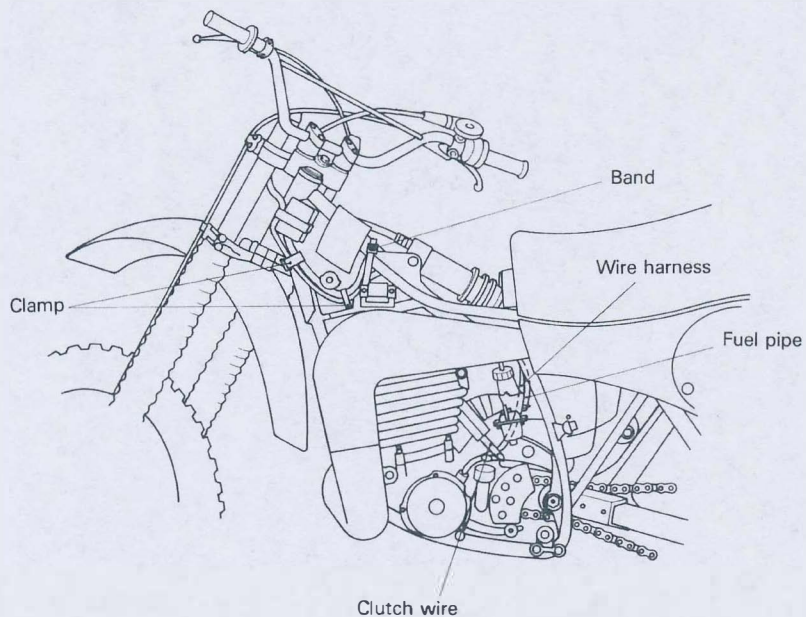


# CABLE ROUTING DIAGRAM

Engine stop switch  
Provide some distance between  
engine stop switch and lever  
holder



[www.legends@yamaha-enduros.com](http://www.legends@yamaha-enduros.com)



## TROUBLE SHOOTING GUIDE

Engine is hard to start or does not start.

Ignition System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Spark plug is wet.</li> <li>2. Ignition coil is faulty.</li> <li>3. C.D.I. unit is faulty.</li> <li>4. C.D.I. magneto is faulty (Pulser coil, source coil)</li> <li>5. Ignition timing is incorrect.</li> <li>6. Wire is broken, shorted or disconnected.</li> <li>7. Engine stop switch is shorted.</li> </ol>	<ul style="list-style-type: none"> <li>• Clean or replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Adjust</li> <li>• Repair, replace or connect</li> <li>• Repair or replace</li> </ul>
Compression System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Piston rings are sticking or worn.</li> <li>2. Cylinder or piston is worn or scratched.</li> <li>3. Compression leaks passing cylinder head gasket. (Head is distorted.)</li> <li>4. Crankshaft side oil seal is faulty.</li> <li>5. Air leaks through crankcase sealing surfaces.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Repair or replace</li> <li>• Replace (or repair)</li> <li>• Replace</li> <li>• Repair</li> </ul>
Air/Fuel System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Carburetor pilot jet is clogged.</li> <li>2. Fuel petcock or pipe is clogged.</li> <li>3. Float valve is faulty. (Float height is too high or too low.)</li> <li>4. Reed valve is broken or deformed.</li> <li>5. Fuel tank filler cap or carburetor breather pipe is clogged.</li> <li>6. Air screw is improperly adjusted.</li> <li>7. Fuel is deteriorated.</li> <li>8. Oil-gas mixing ratio is incorrect.</li> <li>9. Air leaks through carburetor joints.</li> </ol>	<ul style="list-style-type: none"> <li>• Clean</li> <li>• Clean</li> <li>• Replace (remove gasoline from crankcase)</li> <li>• Replace</li> <li>• Clean</li> <li>• Adjust</li> <li>• Replace</li> <li>• Replace</li> <li>• Retighten or replace gasket.</li> </ul>

### Poor high speed performance

Ignition System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Spark plug is dirty or plug gap is too narrow.</li> <li>2. C.D.I. unit is faulty.</li> <li>3. C.D.I. magneto is faulty.</li> <li>4. Ignition coil is faulty.</li> <li>5. Ignition timing is incorrect.</li> <li>6. Loose wire connection.</li> </ol>	<ul style="list-style-type: none"> <li>• Clean, repair or replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Adjust</li> <li>• Repair</li> </ul>
Compression System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Piston rings are sticking or worn.</li> <li>2. Cylinder or piston is worn or scratched.</li> <li>3. Compression leakage through crankcase sealing surfaces or crankshaft side oil seal.</li> <li>4. Carbon deposits in combustion chamber (Piston, Cylinder head).</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Repair or replace</li> <li>• Repair or replace</li> <li>• Decarbonize</li> </ul>
Air/Fuel System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Clogged carburetor jets.</li> <li>2. Improperly adjusted main jet (High speed)</li> <li>3. Improperly adjusted jet needle (Medium speed)</li> <li>4. Incorrect fuel level</li> <li>5. Dirty or clogged air cleaner element</li> <li>6. Clogged fuel tank filler cap or carburetor breather pipe.</li> <li>7. Clogged fuel petcock or kinked fuel pipe.</li> <li>8. Deteriorated fuel.</li> <li>9. Improper oil-gas mixing ratio</li> <li>10. Cracked or broken exhaust pipe (Leakage of exhaust gases).</li> </ol>	<ul style="list-style-type: none"> <li>• Clean</li> <li>• Adjust</li> <li>• Adjust</li> <li>• Adjust</li> <li>• Clean</li> <li>• Clean</li> <li>• Clean or repair</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> </ul>

## Overheat

Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Incorrect air-fuel mixture</li> <li>2. Air leaks through carburetor joint.</li> <li>3. Incorrect ignition timing</li> <li>4. Carbon builds up in cylinder head or on piston head.</li> <li>5. Improper spark plug heat range (too hot)</li> <li>6. Fuel is deteriorated or oil-gas mixing ratio is incorrect.</li> </ol>	<ul style="list-style-type: none"> <li>• Adjust</li> <li>• Repair or replace</li> <li>• Adjust</li> <li>• Decarbonize</li> <li>• Replace</li> <li>• Replace</li> </ul> <p>Lee Waldie Craig Scott Chris Koira</p>

## Transmission and shifter

Trouble	Possible Cause	Remedy
Gears slip off	<ol style="list-style-type: none"> <li>1. Gear dogs are worn.</li> <li>2. Shift forks are bent. (burnt or worn)</li> <li>3. Shift cam stopper spring is fatigued.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> </ul>
Gear shifts skipping over the next.	<ol style="list-style-type: none"> <li>1. Shift cam stopper spring is fatigued.</li> <li>2. Shift forks are bent. (burnt or worn)</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> </ul>
Gear does not select	<ol style="list-style-type: none"> <li>1. Shift cam is worn. (broken)</li> <li>2. Change shaft is bent.</li> <li>3. Shift arm spring is broken.</li> <li>4. Gears are broken.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Removal (Replace)</li> </ul>
Shift pedal does not return.	<ol style="list-style-type: none"> <li>1. Change return spring is broken.</li> <li>2. Change shaft is bent.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> </ul>

## Clutch

Trouble	Possible Cause	Remedy
Clutch slips	<ol style="list-style-type: none"> <li>1. Friction plate is worn.</li> <li>2. Clutch plate is worn.</li> <li>3. Clutch spring is fatigued.</li> <li>4. Pressure plate is deformed.</li> <li>5. Clutch plug is too small.</li> <li>6. Clutch adjustment is incorrect.</li> <li>7. Match marks of clutch boss and pressure plate does not aligned.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Adjust</li> <li>• Adjust</li> <li>• Reassemble</li> </ul>
Clutch drags	<ol style="list-style-type: none"> <li>1. Clutch plate is warped.</li> <li>2. Clutch lock nut is loosen.</li> <li>3. Friction plate is broken.</li> <li>4. Clutch play is too much.</li> <li>5. Oil viscosity is incorrect.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Adjust</li> <li>• Replace</li> </ul>

## Chassis

Steering head is loose		
Possible Cause	Remedy	
<ol style="list-style-type: none"> <li>1. Roller is worn.</li> <li>2. Steering lock nut is loose.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Retighten</li> </ul>	
Wheels have excessive run-out		
Possible Cause	Remedy	
<ol style="list-style-type: none"> <li>1. Bearing is worn.</li> <li>2. Rim has dent.</li> <li>3. Spokes are loose (or broken).</li> <li>4. Axle nut is loose.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Repair or replace</li> <li>• Retighten or replace</li> <li>• Retighten</li> </ul>	
Brakes		
Problem	Possible Cause	Remedy
Faulty	<ol style="list-style-type: none"> <li>1. Brake shoes are worn.</li> <li>2. Brake is improperly adjusted.</li> <li>3. Brake drum contains water.</li> <li>4. Lining is greasy..</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Adjust</li> <li>• Clean</li> <li>• Degrease or replace</li> </ul>
Not return smoothly	<ol style="list-style-type: none"> <li>1. Wire is starved for oil.</li> <li>2. Camshaft is starved for grease.</li> <li>3. Return spring or brake shoe spring is broken.</li> <li>4. Brake pedal axle is starved for grease.</li> </ol>	<ul style="list-style-type: none"> <li>• Grease or replace</li> <li>• Grease</li> <li>• Replace</li> <li>• Grease</li> </ul>
Frame and Swing Arm		
Possible Cause	Remedy	
<ol style="list-style-type: none"> <li>1. Frame is cracked.</li> <li>2. Rear arm is bend.</li> <li>3. Rear arm is cracked.</li> <li>4. Bushing is worn.</li> </ol>	<ul style="list-style-type: none"> <li>• Weld, reinforce or replace</li> <li>• Repair or replace</li> <li>• Replace</li> <li>• Replace</li> </ul>	

## CLEANING AND STORAGE

### A. CLEANING

Frequent thorough cleaning of your machine will not only enhance its appearance but will improve general performance and extend the useful life of many components.

1. Before cleaning the machine:  
Block off end of exhaust pipe to prevent water entry; a plastic bag and strong rubber band may be used.
2. If engine case is excessively greasy, apply degreaser with a paint brush. Do not apply degreaser to chain, sprockets, or wheel axles.
3. Rinse dirt and degreaser off with garden hose, using only enough hose pressure to do the job. Excessive hose pressure may cause water seepage and contamination of wheel bearings, front forks, brake drums, and transmission seals. Many expensive repair bills have resulted from improper high pressure detergent applications such as those available in coin-operated car washers.
4. Once the majority of the dirt has been hosed off, wash all surfaces with warm water and mild, detergent-type soap. An old tooth reach nard-to-get-to places.
5. Rinse machine off immediately with clean water and dry all surfaces with a chamois, clean towel, or soft absorbent cloth.
6. Immediately after washing, remove excess moisture from chain and lubricate to prevent rust.
7. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.
8. Automotive-type wax may be applied to all painted and chrome-plated surfaces. Avoid combination cleaner-waxes. Many contain abrasives which may mar paint or protective finish.
9. After finishing, start the engine immediately and allow to idle for several minutes.

### B. STORAGE

Long term storage (60 days or more) of your machine will require some preventive procedures to insure against deterioration. After cleaning machine thoroughly, prepare for storage as follows:

1. Drain fuel tank, fuel lines, and carburetor float bowl(s).
2. Remove spark plug, pour about one tablespoon of SAE 10W/30 oil in spark plug hole(s) and re-install spark plug. Kick engine over several times (with ignition off) to coat cylinder walls with oil.
3. Remove drive chain. Clean thoroughly with solvent and lubricate. Re-install chain or store in a plastic bag (tie to frame for safe-keeping).
4. Lubricate all control cables.
5. Block up frame to raise both wheels off ground.
6. Tie a plastic bag over exhaust pipe outlet to prevent moisture from entering.
7. If storing in humid or salt-air atmosphere, coat all exposed metal surfaces with a light film of oil. Do not apply oil to rubber parts or seat cover.

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

Make any necessary repairs before storing the machine.

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## SPECIFICATIONS

### A. General

Model	YZ250H
Model (I.B.M. No.)	4V3
Frame I.D. & Starting Number	4V3-000101
Engine I.D. & Starting Number	4V3-000101
Dimension:	
Overall length	2,175 mm (85.6 in)
Overall width	880 mm (34.6 in)
Overall height	1,220 mm (48.0 in)
Seat height	950 mm (37.4 in)
Wheelbase	1,480 mm (58.3 in)
Minimum ground clearance	320 mm (12.6 in)
Weight:	
Net weight	99 kg (218 lb)

### B. Engine

Model	YZ250H
Description:	
Engine type	Air Cooled 2-stroke Gasoline, torque induction
Engine model	4V3
Displacement	246 cc (15.0 cu. in)
Bore × Stroke	70 × 64 mm (2.8 × 2.5 in)
Compression ratio	8.1 : 1
Starting system	Primary kick
Ignition system	Capacitor Discharge Ignition
Lubrication system	Mixed gasoline (Yamalube "R"; 16 : 1, Shell super M, Castrol R30; 20 : 1)
Cylinder head:	
Cylinder head volume-with	21 cc (1.23 cu. in)
Combustion chamber type	Dome + Squish
Head gasket material/thickness	Copper/0.8 mm (0.031 in)
Cylinder:	
Material	Cast iron sleeve with Aluminum alloy
Bore size	70 mm (2.756 in)
Wear limit	70.1 mm (2.76 in)
Taper limit	0.08 mm (0.003 in)
Out of round limit	0.05 mm (0.002 in)
Piston:	
Piston skirt clearance	0.055 ~ 0.060 mm (0.0022 ~ 0.0024 in)
Piston over size	70.25, 70.50, 70.75, 71.00 mm (2.766, 2.776, 2.785, 2.795 in)



Model	YZ250H
<b>Piston rings:</b> Piston ring design (Top/ Second) Ring end gap, installed (Top/ Second) Ring groove side clearance (Top/ Second)	Plane 0.3 ~ 0.5 mm (0.012 ~ 0.0197 in) 0.04 ~ 0.08 mm/0.03 ~ 0.07 mm (0.0016 ~ 0.003 in)/(0.0012 ~ 0.0028 in)
<b>Small end bearing:</b> Type	Needle bearing (18 × 22 × 22)
<b>Big end bearing:</b> Type	Needle bearing (25 × 31 × 20)
<b>Crankshaft:</b> Crankshaft width (F) Crankshaft deflection (D) Con-rod small end deflection (S) Big end side clearance (C) Crank bearing type (Left) (Right) Drive axle (Left) (Right)	62 <sup>+0</sup> <sub>-0.05</sub> mm (2.441 <sup>+0</sup> <sub>-0.002</sub> in) 0.03 mm (0.0012 in) 0.4 ~ 2.0 mm (0.016 ~ 0.079 in) 0.25 ~ 0.75 mm (0.010 ~ 0.030 in) 6206C4 6206C4 SD 30 × 55 × 12 SW 40 × 55 × 12
<b>Clutch:</b> Clutch type Clutch push mechanism Primary reduction ratio & method Friction plate thickness/limit Clutch plate thickness/warp limit Clutch spring length/limit Clutch housing thrust clearance Push rod bending limit	Wet, multiple disc type Inner push, Cam axle 63/24 (2.625), Helical gear 3.0 mm/2.7 mm (0.12 in/0.006 in) 1.6 mm/0.05 mm (0.063 in/0.0020 in) 36.4 mm/35.4 mm (1.43/1.39 in) 0.05 ~ 0.25 mm (0.002 ~ 0.0098 in) 0.2 mm (0.008 in)
<b>Transmission:</b> Type Gear ratio, 1st 2nd 3rd 4th 5th Transmission oil quantity & type  Bearing type: Main axle (Left) (Right) (Left) (Right)	Constant mesh 5 speed, Return 30/14 (2.142) 29/16 (1.812) 24/17 (1.411) 24/21 (1.142) 22/23 (0.956) Total: 800 cc (0.85 US qt) Exchange: 750 cc (0.80 US qt) Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil Needle bearing (30 × 17 × 13) 6205Z 6205R Needle bearing (32 × 20 × 12)

Model	YZ250H
Drive axle oil seal type Secondary reduction method ratio	SD 32 × 42 × 6 Chain 48/ 14 (3.429)
Shafting mechanism: Type Oil seal type Shift fork finger thickness/limit	Guide bar type S 12 × 22 × 5 4.85 mm/ 4.45 mm (0.191 in/0.175 in)
Intake: Air cleaner, type Oil grade Reed valve, type Bending limit Valve lift	Oiled foam rubber SAE 10W/30 motor oil "V" type 0.6 mm (0.024 in) 12 ± 0.2 mm (0.47 ± 0.008 in)
Carburetor: Type & manufacturer I.D. mark Main jet (M.J.) Jet needle-clip position (J.N.) Needle jet (N.J.) Cutaway (C.A.) Pilot jet (P.J.) Air screw turns out (A.S.) Starter jet (G.S.) Float height	VM38SS, Mikuni 4V300 #380 6F16-4 Q-0 3.0 80 1-1/2 80 27 ± 1.0 mm (1.06 ± 0.04 in)

### C. Chassis

Model	YZ250H
Frame: Frame design	Tubular steel double cradle
Steering system: Caster Trail Head pipe bearing type	28.5° 120 mm (4.72 in) Taper roller bearing
Front suspension: Type Damper type Fork travel Front fork spring, free length spring rate Fork oil quantity type Oil seal type Air pressure	Telescopic fork Coil, air spring, oil damper 300 mm (11.8 in) 553 mm K = 0.29 kg/mm 604 cc (20.40 oz) SAE #10 motor oil SD 43-55-10.5 0 kg/cm <sup>2</sup> (0 psi)

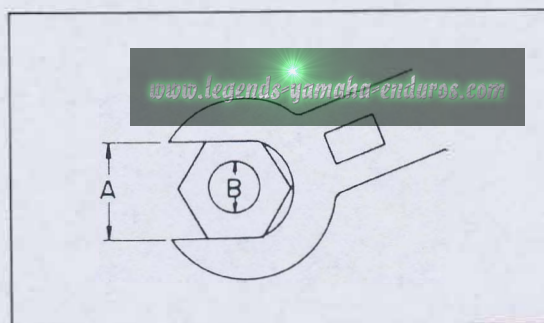
Model	YZ250H
<b>Rear suspension:</b> Type Damper type Gas pressure Gas propriteil Rear shock absorber spring: Free length Set length Spring rate (Taper coil spring) Rear shock absorber travel Rear wheel travel Swing arm length deflection (rear end) free play (pivot shaft) Pivot shaft-bearing type	Monocross suspension (De carbon system) Coil, gas spring + Oil damper 15 kg/cm <sup>2</sup> (213 psi) Nitrogen gas 365 mm (14.4 in) 358 mm (14.09 in) K = 2.1 ~ 5.1 kg/mm 158 mm (6.22 in) 310 mm (12.2 in) 540 mm (21.3 in) 0 ~ 1.0 mm (0 ~ 0.039 in) 0 ~ 0.2 mm (0 ~ 0.0079 in) Needle bearing + Thrust bearing
<b>Fuel tank:</b> Capacity	Lee Waldie Craig Scott Chris Koira 7.6 lit (2.0 US. gal)
<b>Wheels:</b> Tire size (Front) (Rear) Patern Pressure (Normal) (Front) (Rear) Rim size (Front) (Rear) Run out (vert.) Front — limit Rear — limit Run out (horiz.) Front — limit Rear — limit Bearing type and size Front wheel (Left) (Right) Rear wheel (Left) (Right) Oil seal type and size Front wheel (Right) Rear wheel (Left)	3.00-21-4PR 5.10-18-4PR Nobby 1.0 kg/cm <sup>2</sup> (14 psi) 1.0 kg/cm <sup>3</sup> (14 psi) 1.60-21 2.15-18 2 mm (0.08 in) 2 mm (0.08 in) 2 mm (0.08 in) 2 mm (0.08 in) 6202-RS 6202 6004 × 2 6004, 6004RS SD-20-35-7 SD-28-47-7
<b>Drive chain:</b> Type Number of links Chain pitch Free play	DK520DS 109 + Joint 15.875 mm (0.625 in) 10 ~ 15 mm (0.394 ~ 0.591 in)
<b>Brakes:</b> Type Brake drum I.D.: (F/R)	Drum brake (Two leadings) 130 mm (5.12 in)/ 150 mm (5.91 in)

Model	YZ250H
Brake shoe dia. × width	
Front	130 × 22 mm (5.12 in × 0.87 in)
Rear	150 × 25 mm (6.3 in × 0.98 in)
Lining length (Front/Rear)	136 mm (5.35 in)
Lining thickness/ wear limit	4 mm/2 mm (0.16 in/0.08 in)
Shoe springs free length (F)/(R)	36.5 mm (1.44 in)/68 mm (2.67 in)

#### D. Electrical

Model	YZ250H
Ignition system:	
System	Capacitor Discharge Ignition
Manufacture	Hitachi
Model	M100-27
Pulser coil resistance	500Ω ± 10% Red to White/ Red
Charge coil resistance	
Low speed:	1,437Ω ± 10% Red to Brown
High speed:	500Ω ± 10% Red to White/ Red
Ignition timing	B. T. D. C. 10° at 7,600 r/min (0.61 mm/0.024 in)
Ignition coil:	
Manufacture	Hitachi
Model	CM61-20
Spark gap	6 mm (0.28 in) or more 300 r/min
Primary winding resistance	0.6Ω ± 10%
Secondary winding resistance	6.2Ω ± 20%
Spark plug	
Manufacture and type	Champion N-2G
Gap	0.45 ~ 0.55 mm (0.018 ~ 0.022 in)
C.D.I. unit:	
Manufacture	Hitachi
Model	TIA01-28

A (NUT)	B (BOLT)	TORQUE SPECIFICATION	
		m-kg	ft-lb
10 mm	6 mm	0.6	4.5
12 mm	8 mm	1.5	11.0
14 mm	10 mm	3.0	22.0
17 mm	12 mm	5.5	40.0
19 mm	14 mm	8.5	61.0
22 mm	16 mm	13.0	94.0



## E. TIGHTENING TORQUE

Engine	Tightening torque	
Cylinder head	M8	2.5 m-kg (18 ft-lb)
Spark plug	M14	2.5 m-kg (18 ft-lb)
Cylinder	M10	3.3 m-kg (24 ft-lb)
Primary drive gear	M18	7.5 m-kg (54 ft-lb)
Clutch boss	M20	7.5 m-kg (54 ft-lb)
Clutch spring	M6	0.8 m-kg ( 6 ft-lb)
Drive sprocket	M20	7.5 m-kg (54 ft-lb)
Kick crank	M12	5.0 m-kg (36 ft-lb)
Change pedal	M6	1.0 m-kg ( 8 ft-lb)
Reed valve	M3	0.1 m-kg (0.7 ft-lb)
Rotor	M10	3.5 m-kg (26 ft-lb)
Startor	M6	0.8 m-kg ( 6 ft-lb)
<b>Chassis</b>		
Engine mounting bolt;		
Front upper	M8	3.0 m-kg (22 ft-lb)
Front under	M8	3.0 m-kg (22 ft-lb)
Rear upper	M10	6.5 m-kg (46 ft-lb)
Engine mount stay;		
Front	M8	3.0 m-kg (22 ft-lb)
Upper	M8	2.3 m-kg (16 ft-lb)
Handle crown;		
Steering shaft	M22	13.0 m-kg (90 ft-lb)
Inner tube	M8	2.3 m-kg (16 ft-lb)
Handle holder	M8	2.3 m-kg (16 ft-lb)
Front fork;		
Cap bolt	M40	2.3 m-kg (16 ft-lb)
Under bracket	M8	2.3 m-kg (16 ft-lb)
Damper unit	M14	8.0 m-kg (56 ft-lb)
Front wheel axle	M14	6.0 m-kg (42 ft-lb)
Front wheel axle pinch	M8	2.0 m-kg (14 ft-lb)
Pivot shaft	M16	8.0 m-kg (58 ft-lb)
Rear wheel axle	M18	10.0 m-kg (70 ft-lb)
Sprocket wheel	M8	3.0 m-kg (22 ft-lb)
Rear shock absorber	M10	3.0 m-kg (22 ft-lb)
Tension bar	M8	2.3 m-kg (16 ft-lb)
Camshaft lever (brake)	M6	1.0 m-kg ( 7 ft-lb)
Steering bearing	M25	0.7 m-kg ( 6 ft-lb)
Foot rest	M12	10.0 m-kg (70 ft-lb)

## WARRANTY INFORMATION

### STATEMENT OF PURCHASER'S RESPONSIBILITY

This (model) Yamaha motorcycle is sold AS IS, WITHOUT ANY WARRANTIES EXPRESSED OR IMPLIED REGARDLESS OF THE INTENDED USE.

THE PURCHASER OF THIS MOTORCYCLE, which is intended for competition purposes, IS RESPONSIBLE FOR ALL COSTS OF SERVICE AND/REPAIR.

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