YAMAHA

YZ250D/YZ400D

OWNER'S SERVICE MANUAL

LIT-11626-00-46

IMPORTANT NOTICE

This motorcycle may be equipped either for competition use or general off-road use. It may be illegal to operate this vehicle off-road when it is equipped for competition use.
Check your state and local riding area regulations. This vehicle is not manufactured for use on public street, roads or highways. Such use is prohibited by law.

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.

YZ250D/400D OWNER'S SERVICE MANUAL

1st Edition —·November 1976
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LIT-11626-00-46

INTRODUCTION

Congratulations on your purchase of the Yamaha YZ250D/YZ400D. 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 the 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.

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Some data in this manual may become outdated due to improvements made to this model in the future.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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NOMENCLATURE

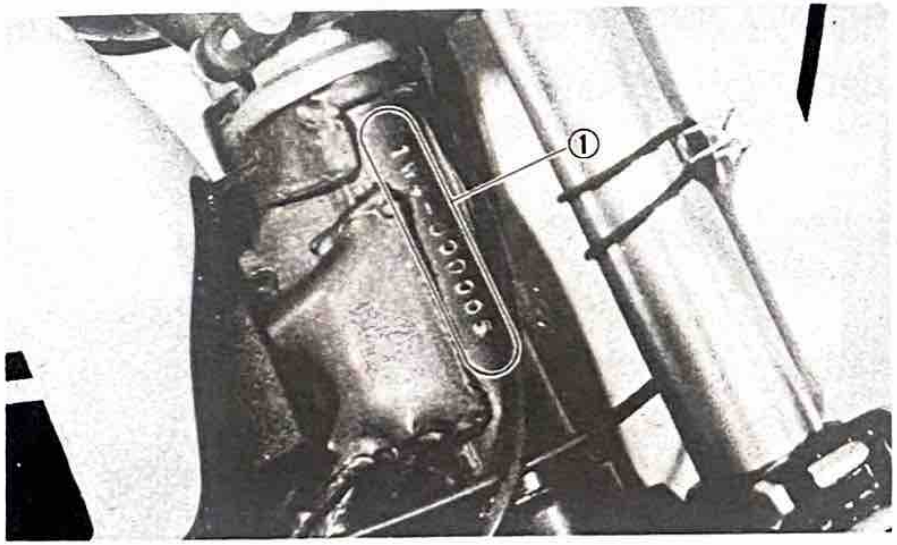
Right hand side

Left hand side

MACHINE IDENTIFICATION

Frame serial number

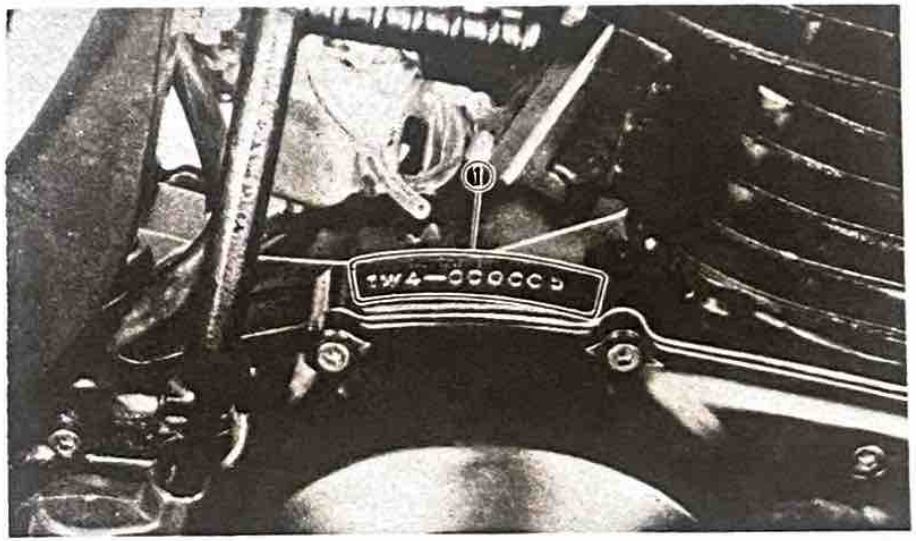
The frame serial number is stamped on the right side of the steering head stock.



1. Frame serial number

Engine serial number

The engine serial number is stamped into the raised 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. The engine and frame serial numbers are usually identical.

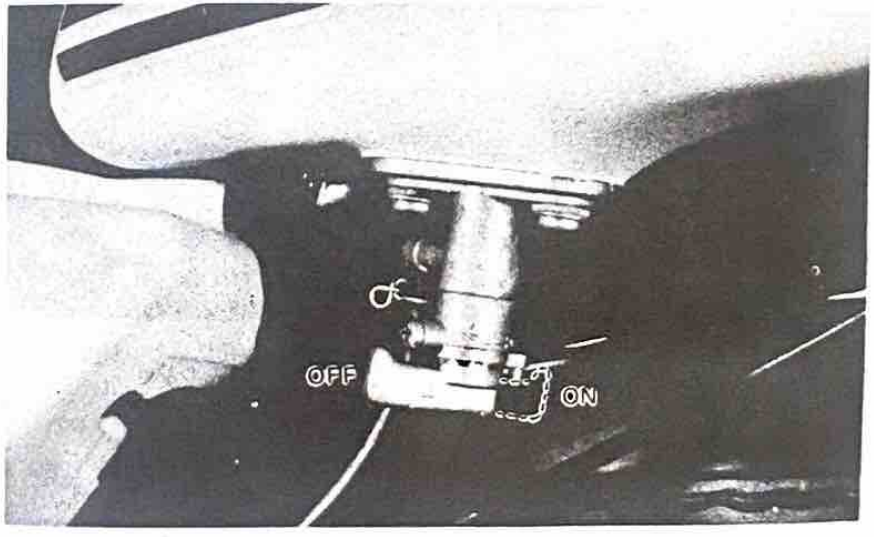
CONTROL FUNCTIONS

Engine Stop Button

The engine stop button is located on the left handlebar. Push and hold to stop engine.

Fuel Tank and Petcock

The fuel tank incorporates a threaded plastic filler cap. The cap has a vent tube which is routed to the tensionbar. The fuel tank petcock is located on the rear rightside of the fuel tank. Turn the petcock lever to the ON position and fuel will flow to the carburetor. Turn lever to the OFF position to shut off fuel supply to carburetor.



Front Brake Lever

Located on the right handlebar. The front brake lever actuates the single leading-shoe front brake when the brake lever is squeezed.

Rear Brake Pedal

Located directly in front of the right-side rider's foot rest. The rear brake pedal actuates the single-leading shoe rear brake when the pedal is depressed.

Clutch Lever

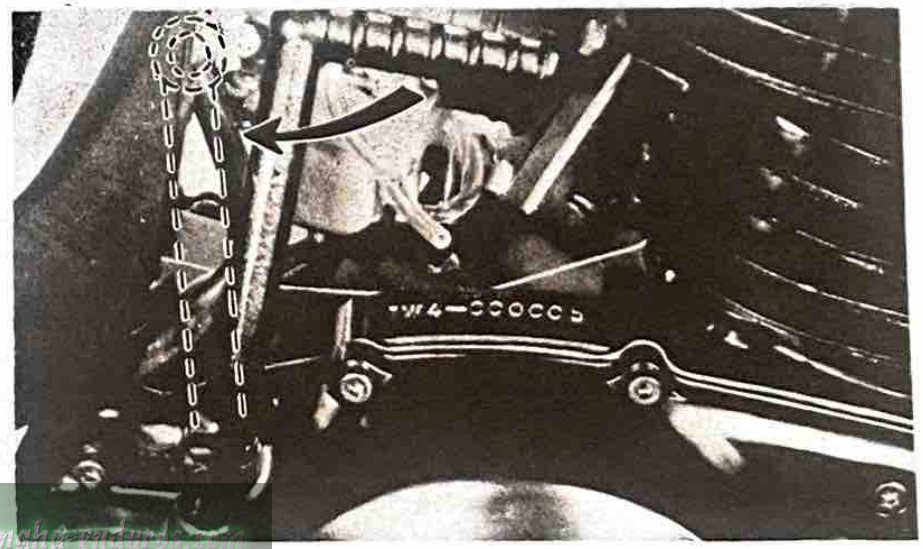
Located on the left handlebar. The clutch lever will disengage the wet-type, multi-plate clutch when the lever is squeezed.

Throttle

The throttle is the spring-return type, and is located on the right handlebar grip.

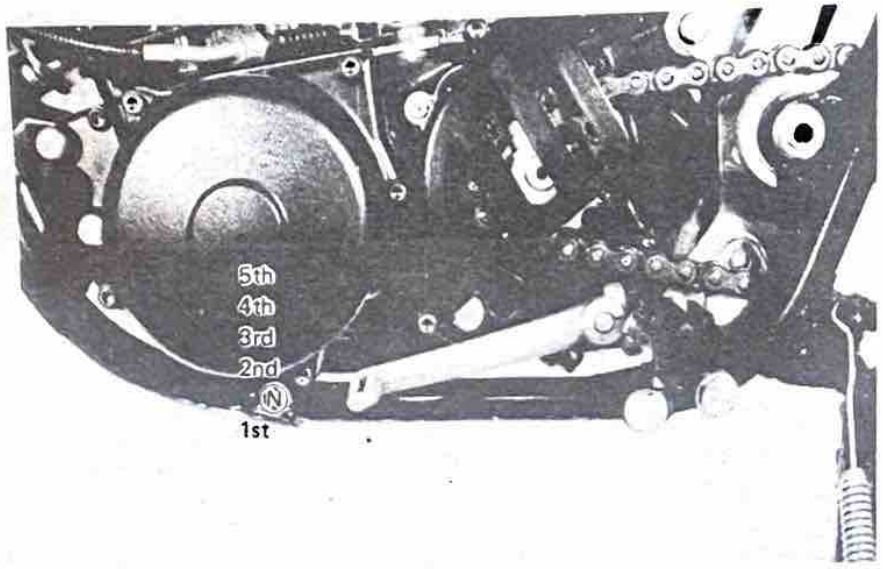
Kick Crank (Kick starter)

The kick starter crank is located on the right, rear side of the engine. Rotate the crank out, press your foot upon it firmly, push down until the gears engage the primary drive train and kick briskly to start the engine. Fold the crank in after engine starts.



Shift Pedal

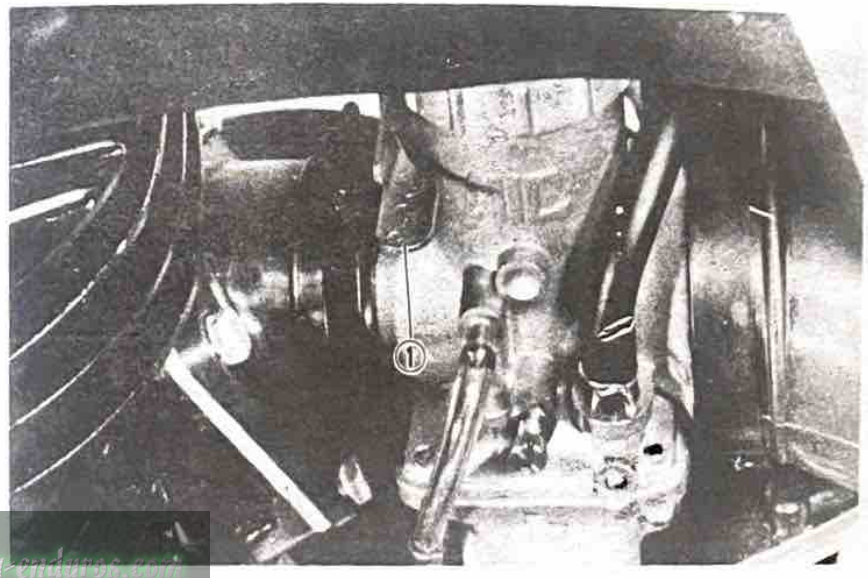
The transmission shift pedal is located on the leftside of the machine directly in front of the rider's foot rest. The shift mechanism is of the ratcheting type and controls gear selection for the 5-speed transmission.



1. Shift pedal

Carburetor Starter Jet (Lever)

The carburetor starter jet is located on the left-side of the carburetor assembly. The jet is designed to supply an extra-rich fuel/air mixture for cold engine starts. It is actuated by a lever. Push the lever down to open the jet. Always close the jet after the engine is running smoothly. Never ride the machine with the lever down.



1. Starter jet lever

PRE-OPERATION CHECKS

Before using this motorcycle please check the following points:

ITEM	PROCEDURE	PAGE
BRAKES	Check operation/adjustment	20, 21
CLUTCH	Check operation/adjustment	22, 23
FUEL TANK	Fill with proper fuel/oil mix	7
TRANSMISSION	Change oil as required	7, 8
DRIVE CHAIN	Check alignment/adjustment/lubrication	24, 25
SPARK PLUG	Replace each meet	27, 28
THROTTLE	Check for proper cable operation	25
AIR FILTER	Foam type—must be clean and damp with oil always	30, 31
WHEELS & TIRES	Check pressure/runout/spoke tightness/axle nuts	67, 68
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.

Fuel

Use premium gasoline with an octane rating of 90+ mixed with oil at a gas/oil ratio of 20 : 1. 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.

Oil

1. Engine Mixing Oil:

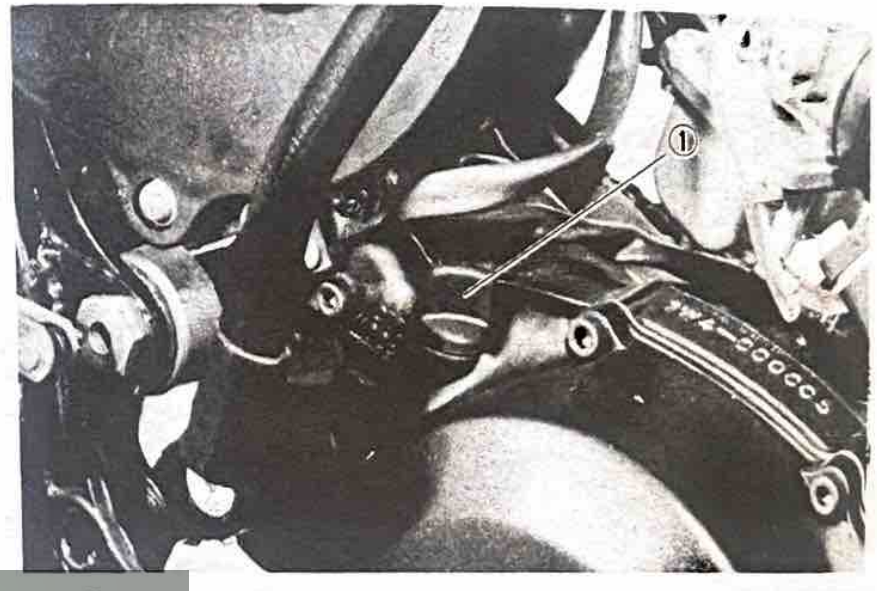
Recommended oil: Yamalube "R" (Yamalube Racing 2-cycle oil)

If for any reason you should use another type, the oil should meet BIA certification. "TC-W".
Check the container top or label for service specification and mixing ratios.

2. Transmission Oil:

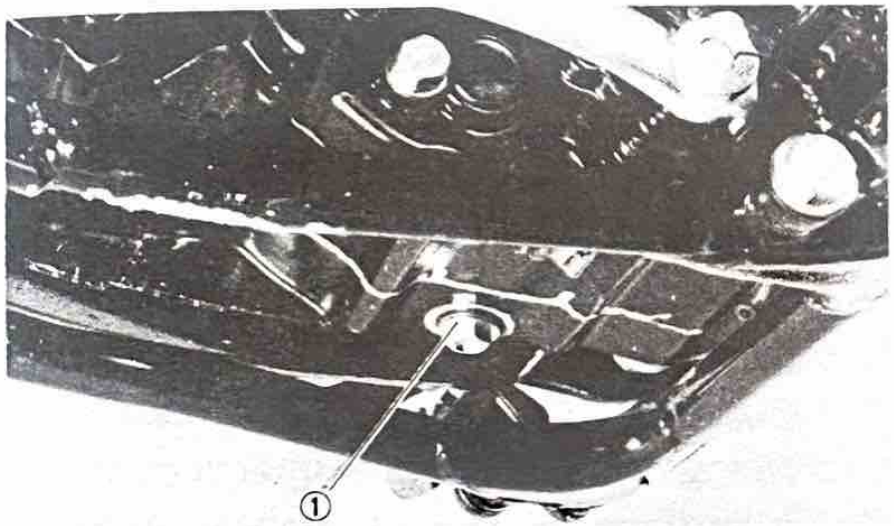
Recommended oil: Yamalube 4-cycle oil or SAE 10W/30 "SE" name-brand motor oil

The transmission filler plug is located above the kick starter.



1. Filler plug

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.



1. Drain plug

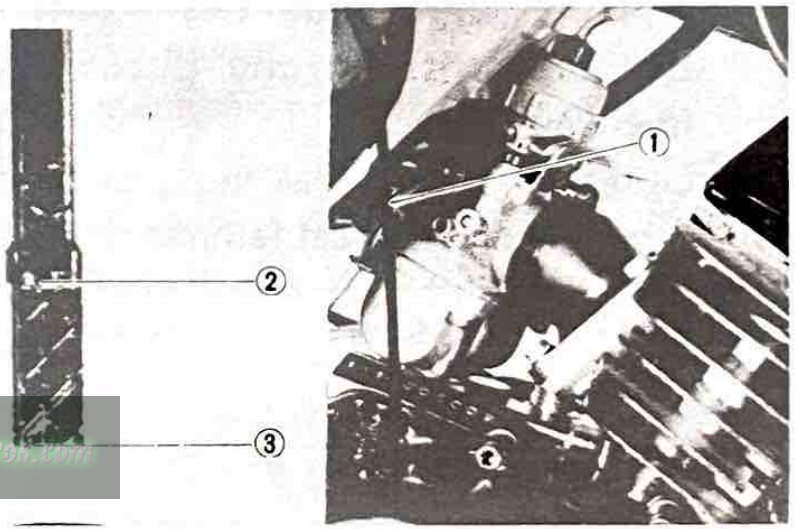
Transmission oil capacity	
Oil change:	1,050～1,150 cc (1.1～1.2 U.S. qt)
Total:	1,150～1,250 cc (1.2～1.3 U.S. qt)

To check the level, warm the engine up for several minutes, screw the dip stick completely out and then just rest the stick in the hole.

NOTE:

When checking transmission oil level with the dip stick, let the unscrewed dip stick just rest on the case threads. Also, be sure the machine is positioned straight up and on both wheels.

The dip stick has a minimum and a maximum mark, and the oil level should be between the two. If the level is lower, then add sufficient oil to raise it to the proper level.



1. Checking screw

OPERATION

CAUTION:

1. **Before riding this motorcycle, become thoroughly familiar with all operating controls and their function. Consult your Yamaha dealer regarding any control or function you do not thoroughly understand.**
2. **This model is designed for competition use. It is not equipped with highway approved lighting, mirrors, horn or directional signals. In most instances, it is illegal to ride this model (either day or night) on any public street or highway.**
3. **Observe the break-in procedures to preclude mechanical failures.**

BREAK-IN PROCEDURES

1. Prior to starting, fill tank with a break-in gasoline/oil mixture of 16 : 1 to 19 : 1.
2. After fueling and pre-operational checks have been made, refer to Starting and Operation (Section C) and start engine.
3. Allow engine to warm up. Check engine idle speed. Check operating controls and "Engine stop" button operation.
4. Operate machine in lower gears at moderate throttle settings for 3 – 5 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 (5th or 6th) 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. Remove "high" spots on piston with No. 600 grit, wet sandpaper. Clean, and carefully reassemble.
8. Remove break-in fuel/oil mixture from tank. Refil with 20 : 1 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. Re-start. After 10 — 15 minutes operation, machine is ready to race.

Starting And Operation

CAUTION:

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

NOTE:

Observe break-in procedures for initial operation.

Starting Cold

Depress the starter lever. Keep the throttle completely closed. Engage the kick starter and start the engine.

The kick mechanism is of the primary type. Therefore, the engine may be started in any gear, provided the clutch is disengaged. The engine may be started in neutral with clutch engaged or disengaged.

Starting with Engine Warm

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

Warm-up

Run the engine at idle or slightly higher using the starter jet 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 jet off.

CAUTION:

Do not operate engine for extended warm-up periods.

Shifting

A 5-speed transmission is used. Low gear is at the bottom of the shift pattern; high gear at the top of the shift pattern; neutral is located half-way between first and second positions.

The shift mechanism is of the ratcheting type common to most motorcycles. Allow the lever to return to its "at rest" position prior to selecting another gear. Neutral is selected by pulling up or depressing on the shift lever halfway between first and second gears.

With the engine running in the neutral position, disengage the clutch (pull in clutch lever), press down on the shift lever until low gear is engaged, remove foot from shift lever, increase engine speed slightly, slowly release clutch lever while advancing throttle. Repeat procedure for remaining gears.

PERIODIC MAINTENANCE AND MINOR REPAIR

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 motorcycle is continually operated in an area of high humidity then all parts must be lubricated much more frequently than shown on the chart to avoid 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.

MAINTENANCE AND LUBRICATION SCHEDULE CHART

Item	Recommended lubricant type*	Race/Meet Interval					
		Every meet	Every second	Every third	Every heat (moto)	Every 6 months of racing	As required
PISTON							
• Inspect		X					
• Clean		X					
• Replace							X
PISTON RING							
• Replace			X				
CYLINDER							
• Inspect (Compression Check)		X					
• Clean		X					
• Replace							X
• Check head bolt torque					X		
CLUTCH							
• Adjust		X					
• Replace (Plates)							X
TRANSMISSION							
• Change oil	No. 1		X				
• Inspect gears						X	
• Replace bearing						X	
• Inspect shift forks						X	
ENGINE MAIN BEARINGS							
• Replace						X	

* See Recommended Lubricants

Item	Recommended lubricant type	Race/Meet Interval					
		Every meet	Every second	Every third	Every heat (moto)	Every 6 months of racing	As required
CONNECTING ROD • Check bearings • Replace big end bearing • Replace small end bearing		X				X	(X) X
CARBURETOR • Check/Adjust/Tighten • Clean and Inspect					X X		
PISTON PIN • Inspect • Replace		X					X
EXHAUST SYSTEM • Inspect					X		
ROTOR NUT • Torque		X					
KICK STARTER • Inspect idler gear • Replace						X	X
FRAME • Clean and Inspect		X					
SWING ARM • Inspect							X
CONTROLS AND CABLES • Check and Adjust • Lubricate	No. 2	X			X		

Item	Recommanded lubricant type	Race/Meet Interval					
		Every meet	Every second	Every third	Every heat (moto)	Every 6 months of racing	As required
BRAKES • Clean/Check/Adjust • Replace		X					X
WHEELS AND TIRES • Check pressure • Check runout • Check spoke tension • Check bearings • Replace bearings		X X			X X		X
STEERING HEAD • Check • Clean and repack	No. 3			X	X		
CDI WIRING • Check connections					X		
AIR FILTER • Clean and oil • Replace	No. 4	X					X
SPARK PLUG • Replace							X
DRIVE CHAIN • Clean and lubricate • Check tension and alignment • Replace	No. 2				X X		X

Item	Recommended lubricant type	Race/Meet Interval					
		Every meet	Every Second	Every third	Every heat (moto)	Every 6 months of racing	Every As required
FITTINGS AND FASTENERS •Tighten					X		
FUEL TANK •Clean/Flush •Clean petcock filter		X X					
FRONT FORKS •Drain and refill •Replace seals •Check pressure	No. 5	 X		X			X
SHOCK ABSORBER •Check •Replace				X			X
CLUTCH AND BRAKE PIVOTS •Lubricate	No. 6	X					
FOOT PEG AND KICK CRANK •Lubricate	No. 2	X					
THROTTLE GRIP/HOUSING •Lubricate	No. 6			X			(X)

RECOMMENDED LUBRICANT

No.1 Use Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil

No.2 1. Use YAMAHA CHAIN/CABLE LUBE
2. Use SAE 10W/30 "SE" motor oil. (If desired, specialty type lubricants of quality manufacture may be used.)

No.3 Medium-weight wheel bearing grease of quality manufacture (preferably waterproof.)

No.4 Air filter: Foam element air filter must be damp with oil at all times to function properly. Clean and lube every meet. In hard usage, clean and lube every heat (MOTO). Do not over-oil. Use SAE 10W/30 "SE" motor oil.

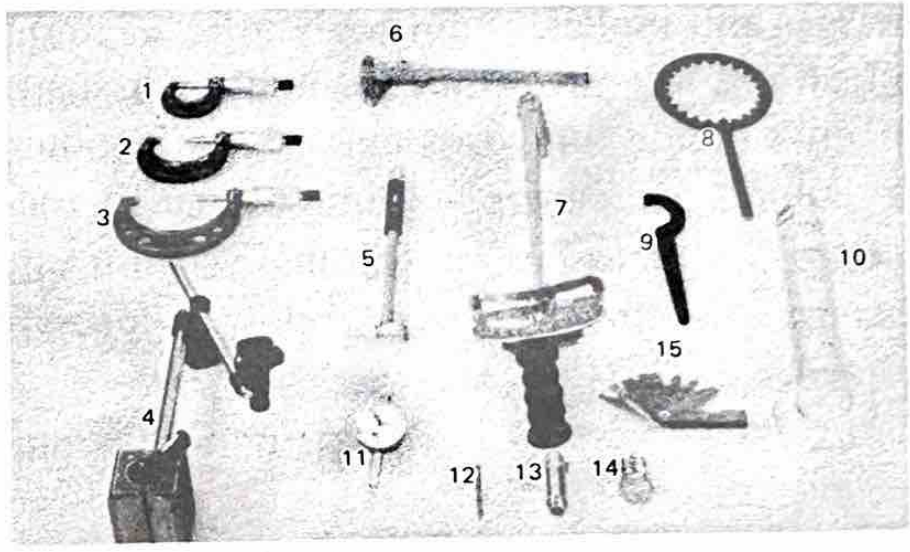
No.5 Use SAE15W "SE" motor oil.

No.6 Use lithium base grease.

SPECIAL TOOLS

The maintenance procedures outlined within this manual require special tools and instruments. A list of the special tools is given below.

*1. Outside Micrometer (0 – 25 mm)
*2. Outside Micrometer (25 – 50 mm)
*3. Outside Micrometer (50 – 75 mm)
(75 – 100 mm)
*4. Magnetic Base
*5. Cylinder Gauge (50 – 100 mm)
*6. Vernier Calipers (0 – 150 mm)
*7. Torque Wrench
*8. Clutch Holding Tool
*9. Steering Nut Wrench
10. Measuring Cylinder (0 – 250 cc, 10 cc increments)
*11. Dial Gauge
*12. 56mm dial gauge needle
*13. Dial Gauge Stand #2
*14. Flywheel Puller
15. Thickness Gauge



NOTE:
These items marked with an asterisk (*) available from Yamaha.

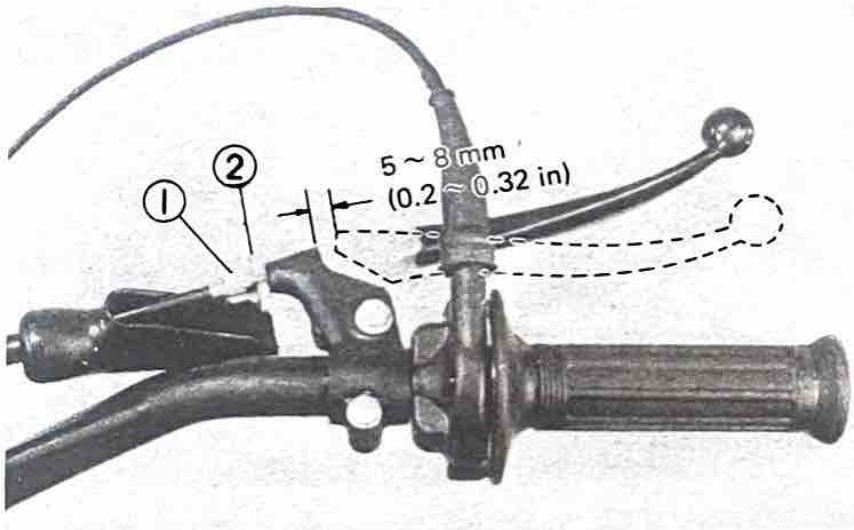
NOTE:

The Research and Engineering Departments of Yamaha are continually striving to further perfect all models. Improvements and modifications are therefore inevitable. In light of this fact, the foregoing specifications are subject to change without notice to the owner. Information regarding significant changes is forwarded to all Authorized Yamaha Dealers as soon as available. If a discrepancy is noted, please consult your dealer.

MECHANICAL ADJUSTMENTS

Front Brake

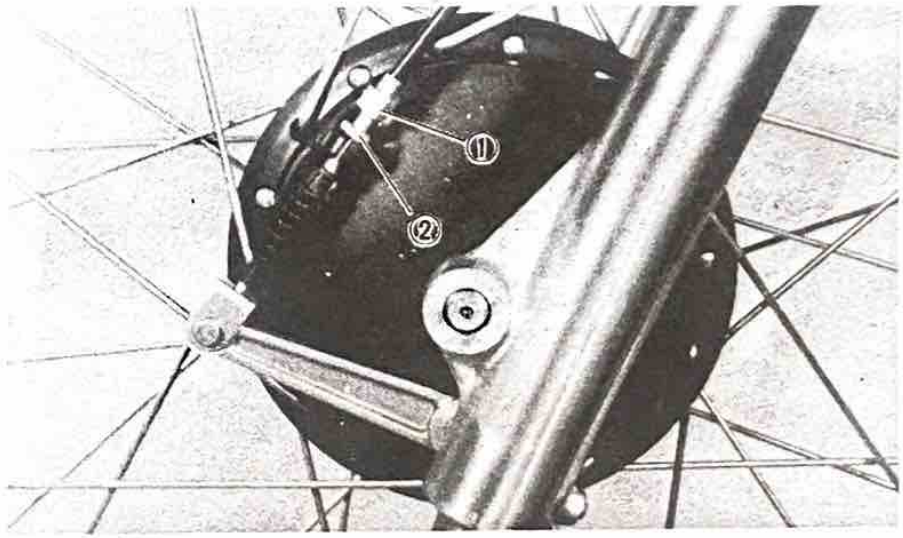
Front brake should be adjusted to suit rider preference with a minimum cable slack of 5 – 8 mm (0.2 – 0.32 in) play at the brake lever pivot point.



1. Adjuster 2. Adjuster locknut

Adjustment is accomplished at one of two places; either the handle lever holder or the front brake hub.

a. Loosen the adjuster locknut.
b. Turn the cable length adjuster in or out until adjustment is suitable.
c. Tighten the adjuster locknut.



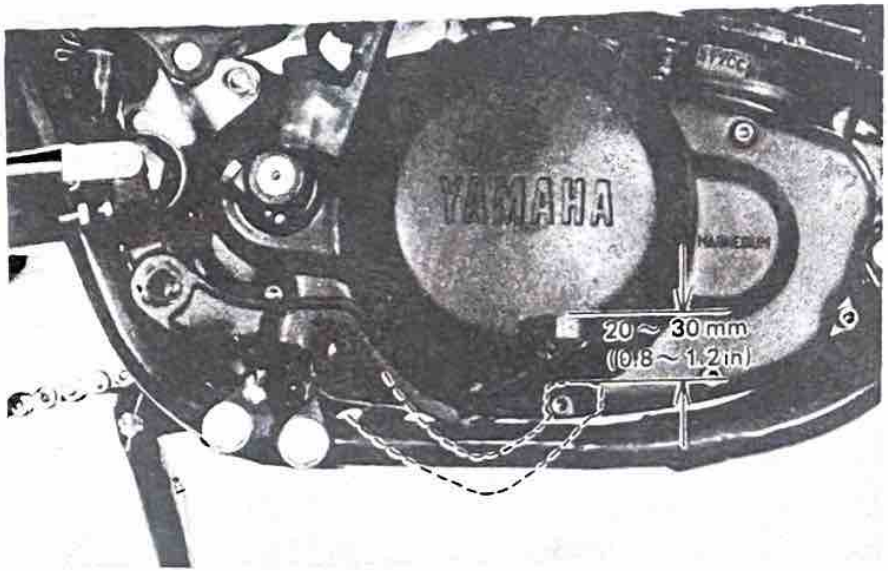
1. Adjuster 2. Locknut

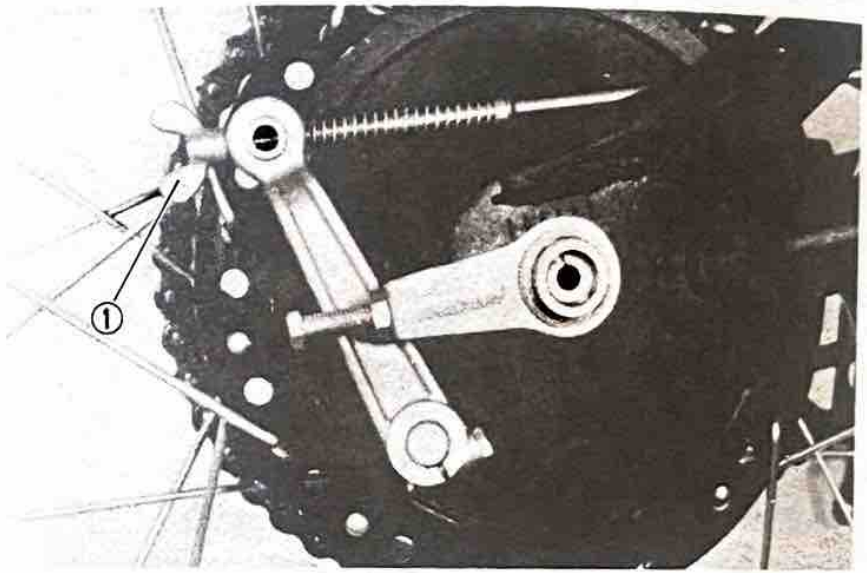
Rear Brake

Adjust rear brake pedal play to suit, providing a minimum of 20 – 30 mm (0.80 – 1.20 in) freeplay. Turn the adjusting nut on the rear brake ferrule in or out until brake pedal freeplay is suitable.

NOTE:

Rear brake pedal adjustment must be checked anytime chain is adjusted or rear wheel is removed and then reinstalled.



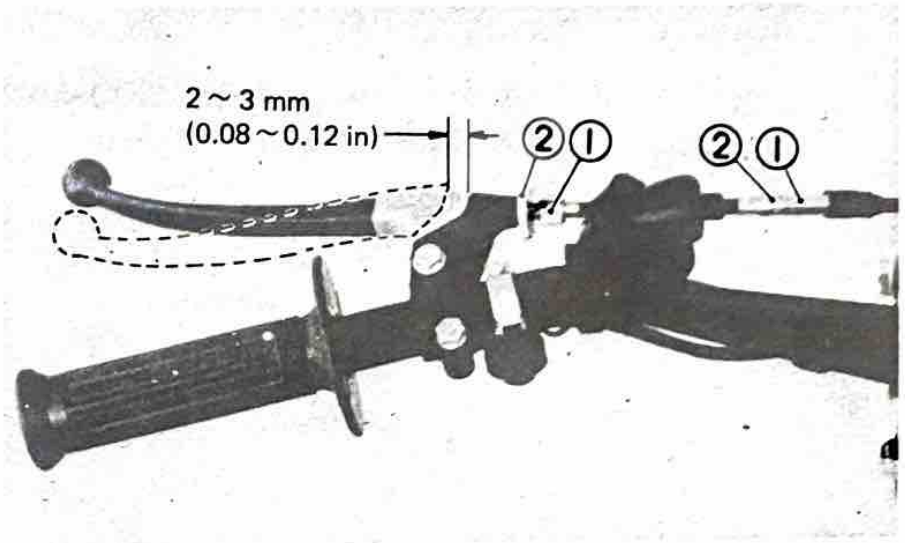


1. Adjusting nut

Clutch

This model has two clutch cable length adjustors and a clutch mechanism adjustor. Cable length adjustors are used to take up slack from cable stretch and to provide sufficient freeplay for proper clutch operation under various operating conditions. The clutch mechanism adjustor is used to provide the correct amount of clutch "throw" for proper disengagement. Normally, once the mechanism is properly adjusted, the only adjustment required is maintenance of freeplay at the clutch handle lever.

1. **Freeplay adjustment**
   Loosen either the handle lever adjustor locknut or the cable inline length adjustor locknut. Next, turn the length adjustor either in or out until proper lever freeplay is achieved (see illustration).

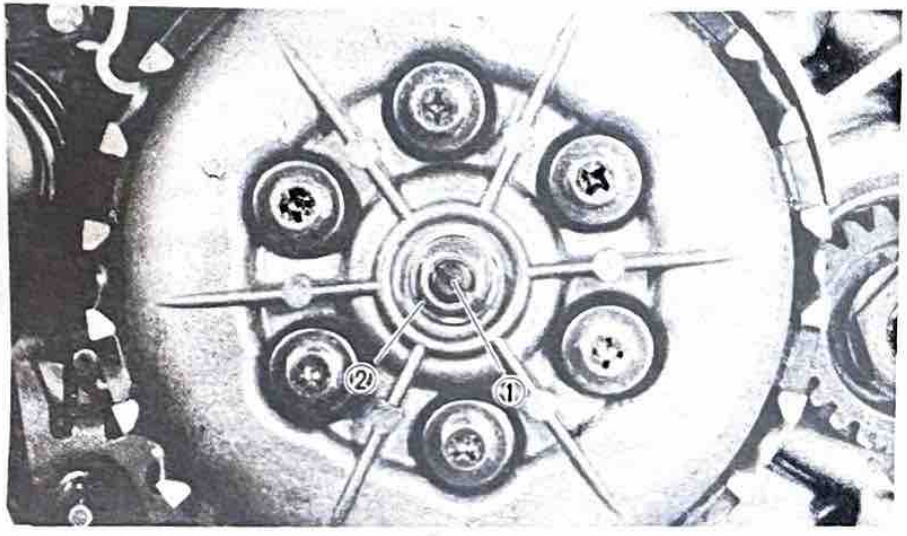


1. Adjuster 2. Locknut

2. **Mechanism adjustment**
   a. Fully loosen the cable in-line length adjustor locknut and screw in the adjustor until tight.
   b. Turn the handle lever adjustor in.
   c. Loosen the rear brake and remove right footrest.
      Remove kick crank.

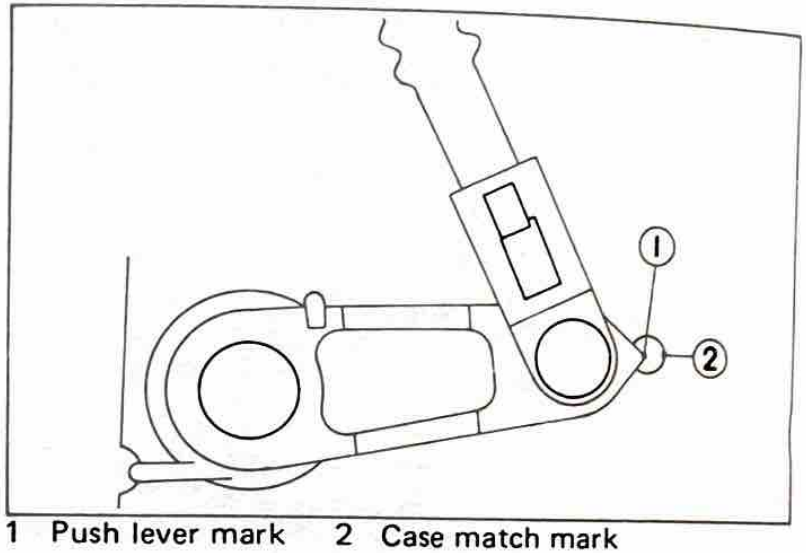
d. Drain the transmission oil and remove the crankcase cover (R).

e. Loosen the clutch mechanism adjustor locknut.



1. Adjustor 2. Locknut

f. Push the push lever toward the front with your finger until it stops. With the push lever in this position, turn the adjustor in until the push lever mark and crankcase match mark are aligned. Tighten locknut.



1 Push lever mark 2 Case match mark

g. Install the crankcase cover, kick crank and footrest. Re-adjust brake pedal and cluch lever freeplays as reguired.

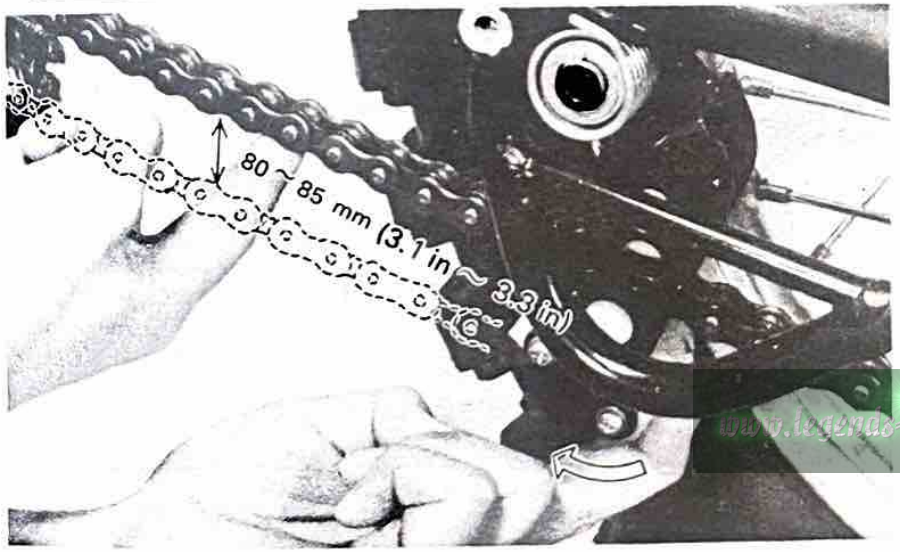
Drive chain

1. Drive chain tension check

Inspect the drive chain with both tires touching the ground. Check the tension at the position shown in the illustration. The normal vertical deflection is approximately 80 ~ 85 mm (3.1 ~ 3.3 in). If the deflection exceeds 85 mm (3.3 in) adjust the chain tension.

NOTE:

Tension inspection and adjustment should be made with the tensioner in the relaxed position (not touching the chain).



2. To adjust drive chain, proceed as follows:

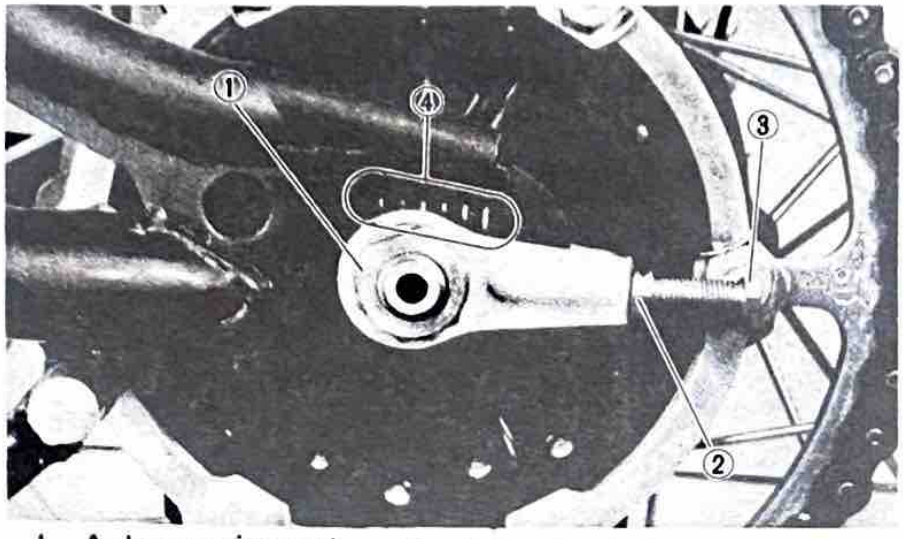
a. Loosen axle securing nut while holding the opposite side with a screwdriver.

b. 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 locknuts on adjusting bolts.

c. Tighten the rear axle securing nut.

Torque: 8.0 m-kg (58 ft-lb)

d. Check brake pedal freeplay.



1. Axle securing nut
2. Locknut
3. Adjusting bolt
4. Adjust mark

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.**

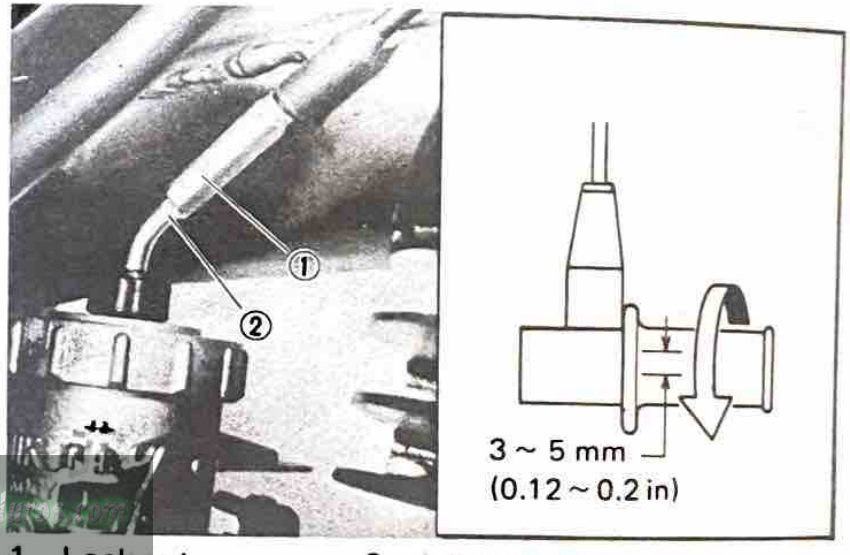
Carburetor

Under normal operating conditions, there are only two adjustments to be made to the carburetor.

1. Throttle cable adjustment:

Check play in turning direction of throttle grip. The play should be 3 – 5 mm (0.12–0.2 in) at grip flange, loosen the locknut and turn the wire adjuster to make the necessary adjustment.

Tighten the adjuster locknut.

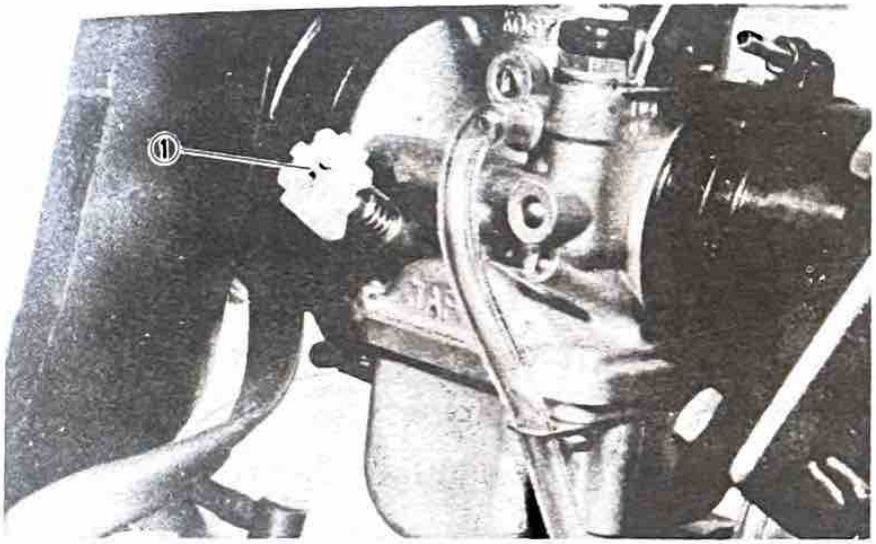


1. Locknut
2. Adjusting bolt

2. **Idle speed and idle air adjustments:**

a. Turn idle air screw in until lightly seated.

b. Back out 1-1/2 turns.



1. Air screw

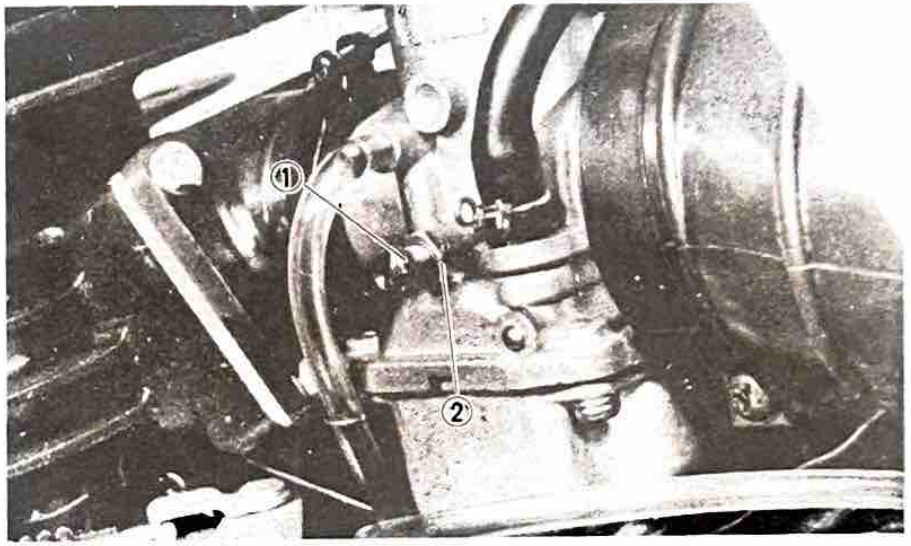
c. Turn the idle speed adjusting screw until idle is at desired rpm.

NOTE:

A locknut is incorporated for positive retention of idle adjusting screw.

d. Turn the idle air mixture screw in or out until idle speed is at highest rpm.

e. Turn the idle speed adjusting screw in or out until idle speed is at desired rpm.



1. Idle speed adjusting screw 2. Locknut

NOTE:

Idle air mixture and idle speed adjustment screws should be so adjusted that engine response from idle position is rapid and without hesitation.

Idle air screw: Back out 1-1/2 turns.

Idle speed: As desired.

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.

Spark plug

The spark plug in your machine indicates how the engine is operating. If the engine is operating correctly, and the machine is being ridden correctly, then the tip of the white insulator around the center electrode of the spark plug will be a medium to light tan color. 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.

Remember, the insulator must be a medium-to-light tan color. If it is not, check carburetion, timing, and ignition adjustments. If the situation persists, consult your Authorized Yamaha Dealer.

Do not attempt to experiment with different heat range spark plugs. This takes an experienced eye, to gauge the proper spark plug heat range to use and to determine if the spark plug itself is at fault.

For normal operation use:
YZ250D: N-2G · CHAMPION
YZ400D: N-3G · CHAMPION

Spark plug gap:
0.7 mm (0.028 in)

Engine conditions will cause any spark plug to slowly break down and erode. If erosion begins to increase, or if the electrodes finally become too worn, or if for any reason you believe the spark plug is not functioning correctly, replace it.

When installing the plug, always clean the gasket surface, use a new gasket, wipe off any grime that might be present on the surface of the spark plug, and torque the spark plug properly.

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

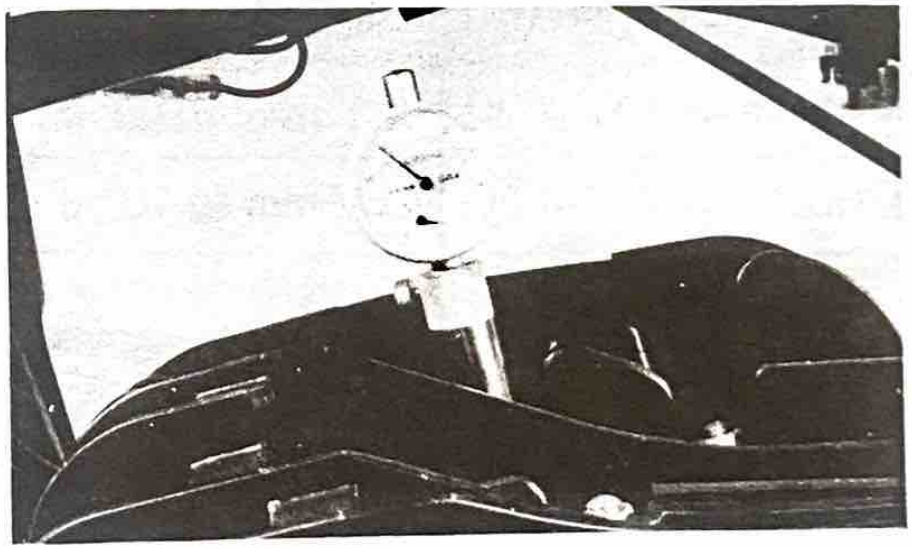
The spark plug must be removed and checked prior to using the machine. Check electrode wear, insulator color, and electrode gap.

Ignition timing

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

Proceed as follows:

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

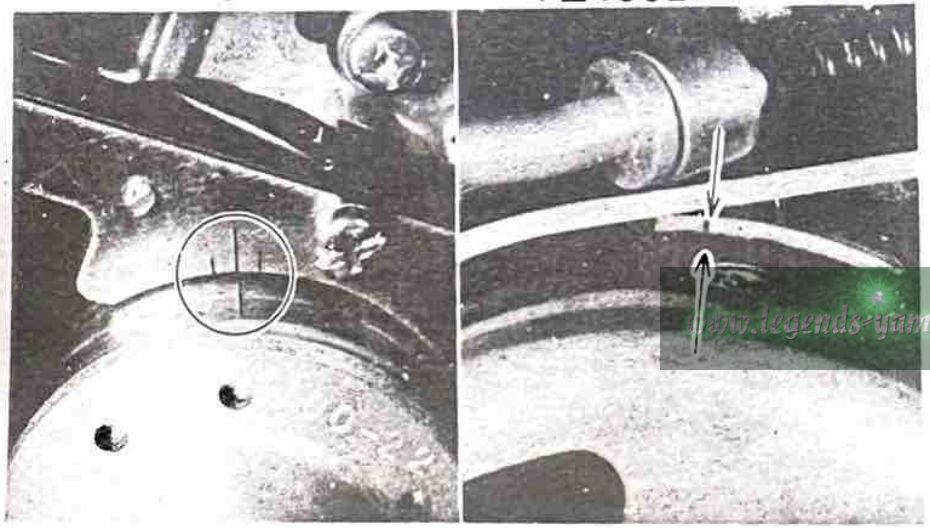


3. Remove left engine crankcase cover.

4. Rotate rotor until piston is at top-dead center (T.D.C.). Tighten set screw on spark plug 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.
5. Starting at T.D.C., rotate rotor clockwise until dial indicator reads (2.3 mm for YZ250D, 2.7 mm for YZ400D) before top-dead-center (B.T.D.C.)

Ignition timing:	YZ250D	2.3 mm (0.09 in)
B.T.D.C.	YZ400D	2.7 mm (0.10 in)

YZ250D YZ400D



a. YZ250D

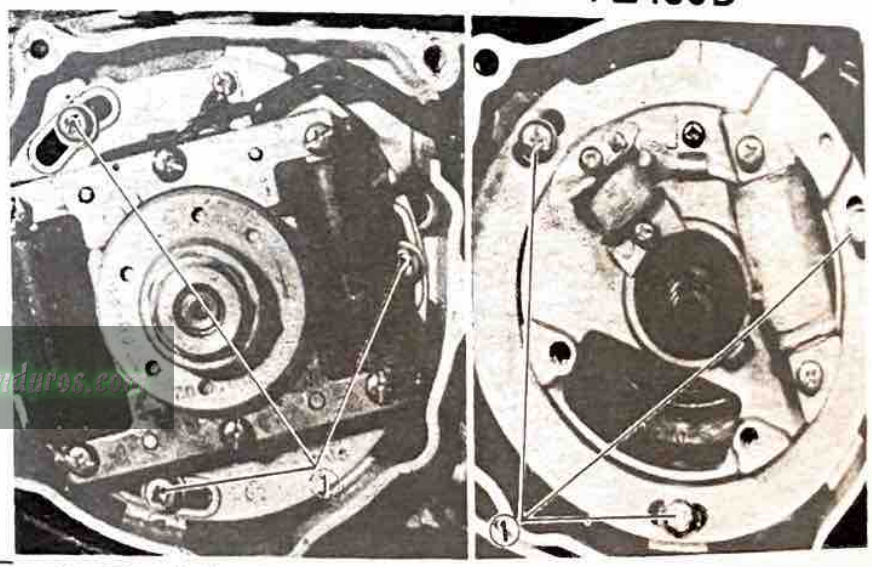
Check to see that the rotor timing mark aligns with the stator timing mark. To adjust, loosen the three stator retaining screws and rotate the stator. Tighten screws.

b. YZ400D

Check to see that the rotor timing mark aligns with the stator and crankcase (L) timing mark.

To adjust, remove the rotor and loosen the three stator retaining screws and rotate the stator. Tighten screws. Replace the rotor.

YZ250D YZ400D



1. Retaining screw

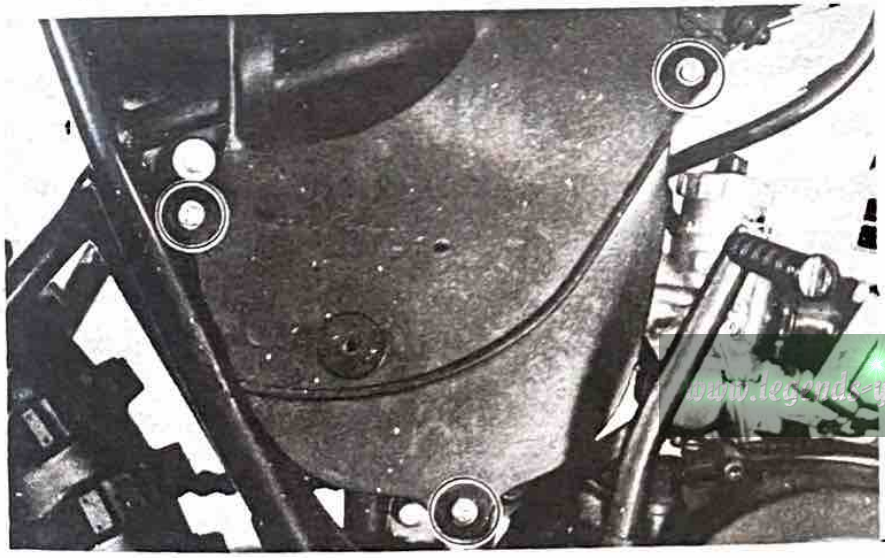
7. Remove dial gauge assembly and stand. Replace spark plug.

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

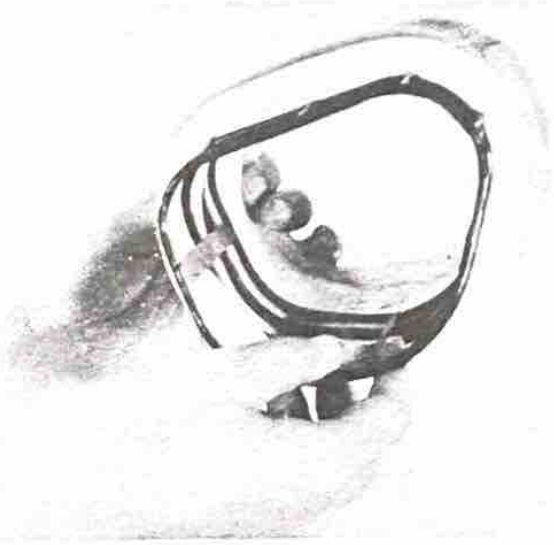
8. Replace engine crankcase cover.

Air filter

1. **Removal**
   a. Remove the screw and remove the right number plate.
   b. Remove the Phillips-head screws (3) and remove filter case cover.



   c. Remove the air filter from the filter case.
   d. Slip the filter from the wire guide.



2. **Cleaning method**
   a. Wash the element gently, but thoroughly, in solvent.
   b. Squeeze the excess solvent out of the element and let dry.
   c. Pour a small quantity of 30W motor oil onto the filter element and work thoroughly into the porous foam material.

NOTE:

In order to function properly, the element must be damp with oil at all times, but not dripping with oil.

d. Re-insert the filter element guide into the element.

e. Coat the sealing edges of the filter element with light grease. This will provide an air-tight seal between the filter case cover and filter seat.

f. Reinstall the element 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.

ENGINE MAINTENANCE AND MINOR REPAIRS

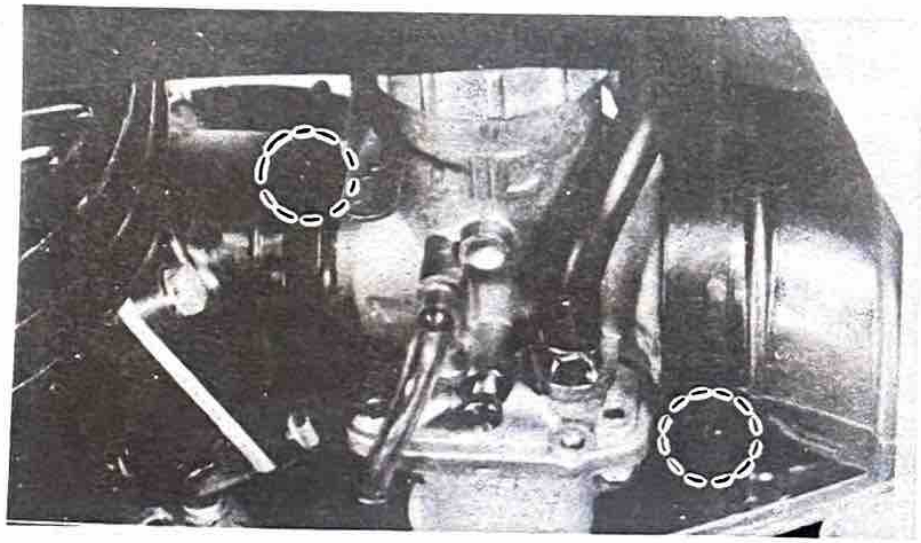
The following sections provide information for the disassembly, troubleshooting, and maintenance of various components of the machine. If you do not have the necessary tools and an understanding of the mechanical principles involved, please refrain from attempting repairs. The use of improper tools and/or procedures can cause major damage to units with resultant additional repair costs.

To properly understand the procedures outlined, we suggest you consult other technical publications.

Finally, we suggest you consult your Yamaha Dealer prior to attempting any repair procedures.

CARBURETOR

1. **Replacement of main jet**
   a. Turn fuel petcock lever to the "OFF" position.
   b. Remove the gasoline tank fuel line into from the fitting at the carburetor.
   c. Loosen the manifold and inlet joint bands (hose clamps).



   d. Rotate carburetor, exposing main jet cover bolt.
   e. Remove bolt. Main jet is located directly behind bolt.

IMPORTANT:

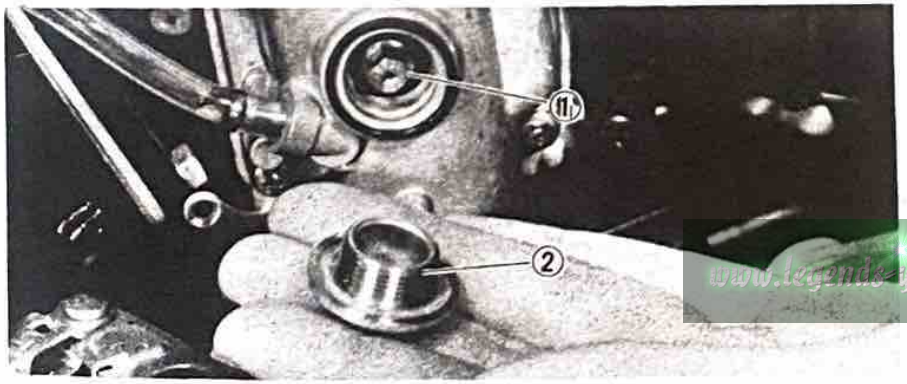
The YZ250D and YZ400D carburetor has been set for normal sea level conditions. The standard setting (listed below) is the result of extensive testing and does not usually require changing. However, under conditions of high atmospheric pressure or heavy load (deep sand or mud) the standard Main jet should 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.

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.

f. Remove the main jet. Change as required. Reinstall cover bolt and reassemble, reversing steps a through c.

Main jet	
YZ250D	YZ400D
#360	#370



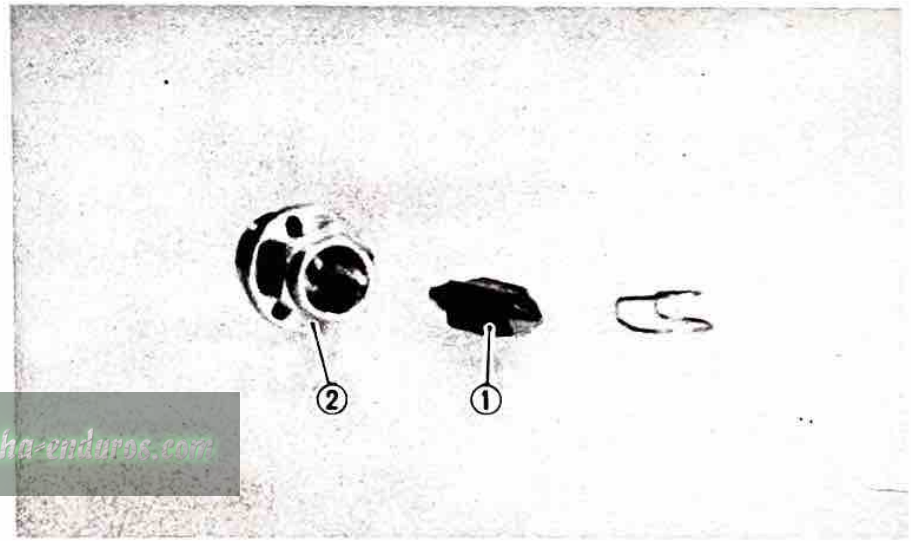
1 Main jet 2 Cover bolt

2. Inspection

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

b. Examine condition of floats. If floats are leaking or damaged, they should be replaced.

c. Inspect inlet needle valve and seat for wear or contamination. Replace these components as a set.

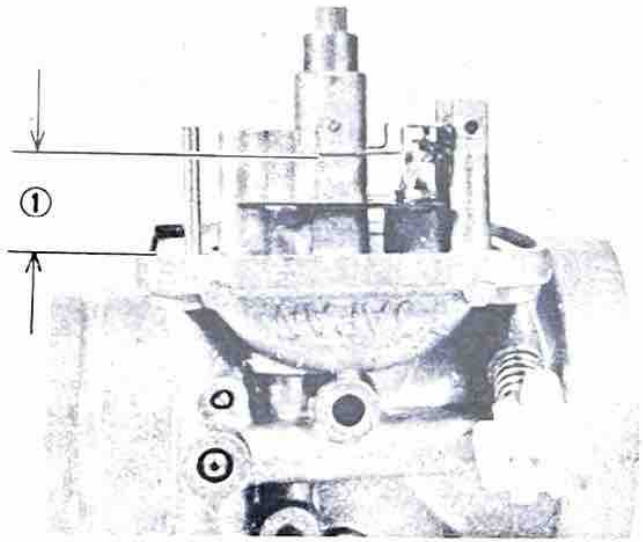


1 Needle valve 2 Valve seat

3. Adjustments

a. Float level

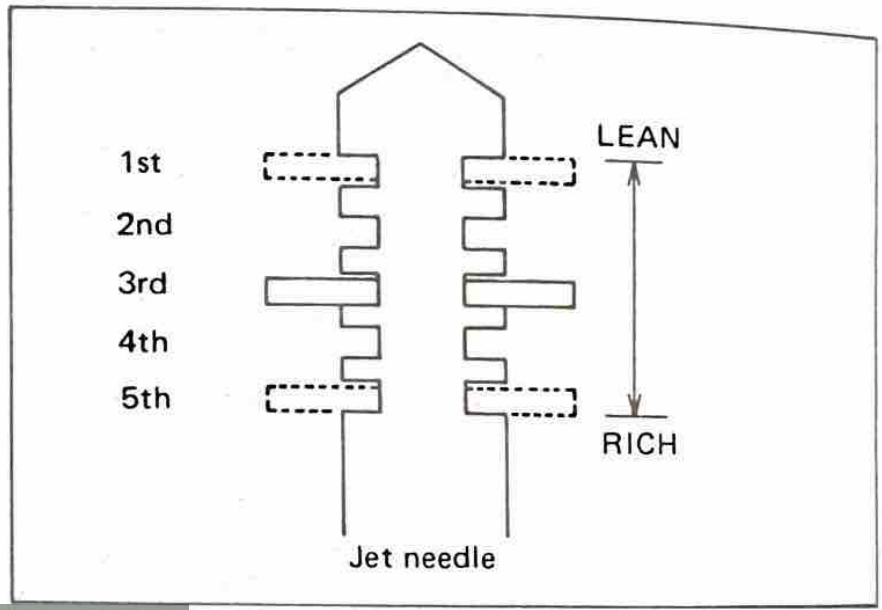
Measure the distance from the float arm to the float bowl gasket surface. Bend the tang on the float arm if any float level adjustment is necessary. Both float arms must be at the same height. If the fuel level is too high, a rich air/fuel mixture will occur. If too low, a lean mixture will result.



1. Float level

b. Jet needle

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



4. Troubleshooting

A Motocross 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.

Idle Air Mixture Screw:

Controls the ratio of air-to-fuel in the idle circuit. Turning the screw in decreases the air supply, giving a richer mixture.

OPERATING RANGE MOST AFFECTED BY THIS ADJUSTMENT: ZERO TO 1/8 THROTTLE.

Pilot jet:

Controls the ratio of fuel-to-air in the idle circuit. Changing the jet to one with a higher number supplies more fuel to the circuit. giving a richer mixture.

OPERATING RANGE MOST AFFECTED BY THIS JET: ZERO TO 1/8 THROTTLE.

Throttle Valve (Slide):

The throttle valve (slide) has a portion of the base cut away to control air flowing over the main nozzle. A wider angle (more "cutaway") will create a leaner mixture. Throttle valves are numbered according to the angle of the cutaway. The higher the number, the more cutaway, the leaner the mixture.

OPERATING RANGE MOST AFFECTED BY THE THROTTLE VALVE: 1/8 to 1/4 (+) THROTTLE.

Jet Needle:

The jet needle is fitted within the throttle valve. The tapered end of the needle fits into the main nozzle outlet. Raising the needle allows more fuel to flow out of the needle. Moving the needle clip from the first, or top groove, through the fifth, or bottom groove, will give a correspondingly richer mixture.

OPERATING RANGE MOST AFFECTED BY THE JET NEEDLE: 1/4 to 3/4 (+) THROTTLE.

Main jet:

The main jet controls overall fuel flow through the main nozzle. Changing the jet to one with a higher number supplies more fuel to the main nozzle giving a richer mixture.

OPERATING RANGE MOST AFFECTED BY THE MAIN JET: 3/4 TO FULL THROTTLE.

NOTE:

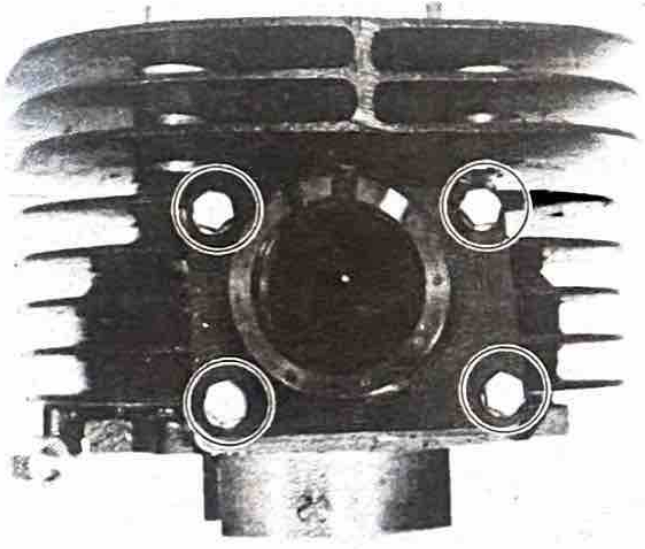
Excessive changes in main jet size can affect performance at all throttle positions.

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

a. With carburetor removed, remove the four bolts holding the intake manifold and reed valve assembly to the cylinder. Remove the reed valve assembly.



b. Inspect reed petals for signs of fatigue cracks. Reed petals should fit flush or nearly flush against neoprene seats. If in doubt as to sealing ability, apply suction to carburetor side of assembly. Leakage should be slight to moderate.

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

1) Remove philips screws (2) securing stopper plate and reed to reed block. Handle reed carefully. Avoid scratches and do not bend. Note from which side of the reed block the reed and stopper plate were removed. Reinstall on same side.

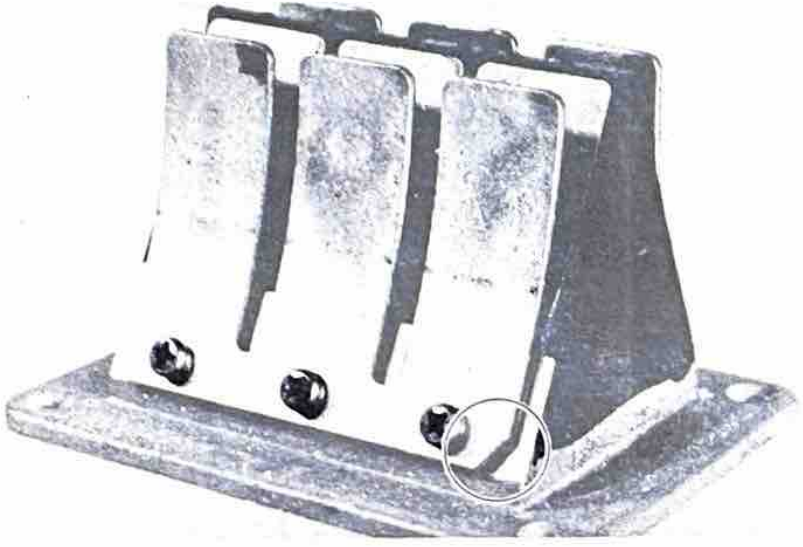
2) During reassembly, clean reed block, reed, and stopper plate thoroughly. Apply a holding agent, such as "Lock-Tite," to threads of phillips screws. Tighten screws gradually to avoid warping, then tighten the screws thoroughly.

CAUTION:

Do not over-tighten securing screws or stopper plates may warp.

Securing screw torque:

8.0 cm-kg (6.9 in-lb)



NOTE:

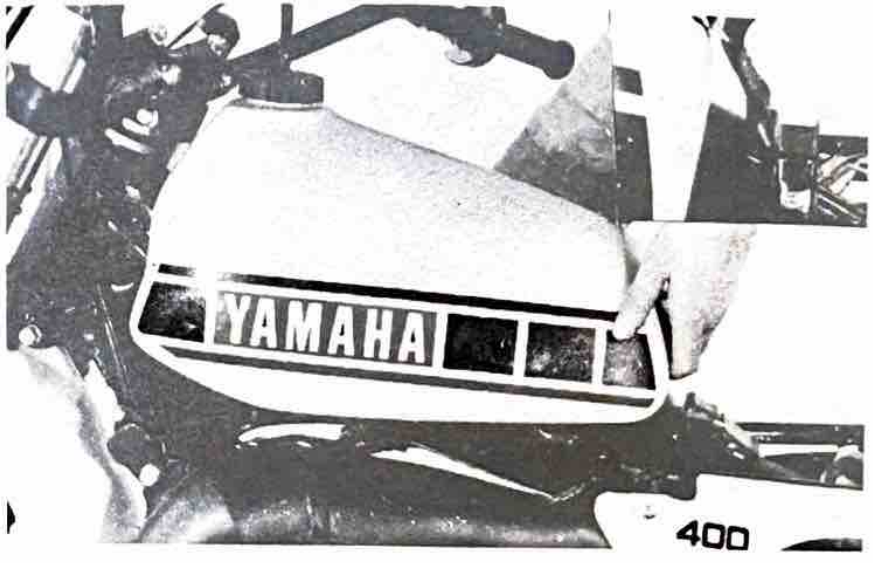
During reassembly, observe the cut in the lower corner of the reed and stopper plate. Use as aid to direction of reed installation.

d. During reassembly of the reed valve assembly and manifold, install new gaskets and torque the securing bolts gradually and in pattern.

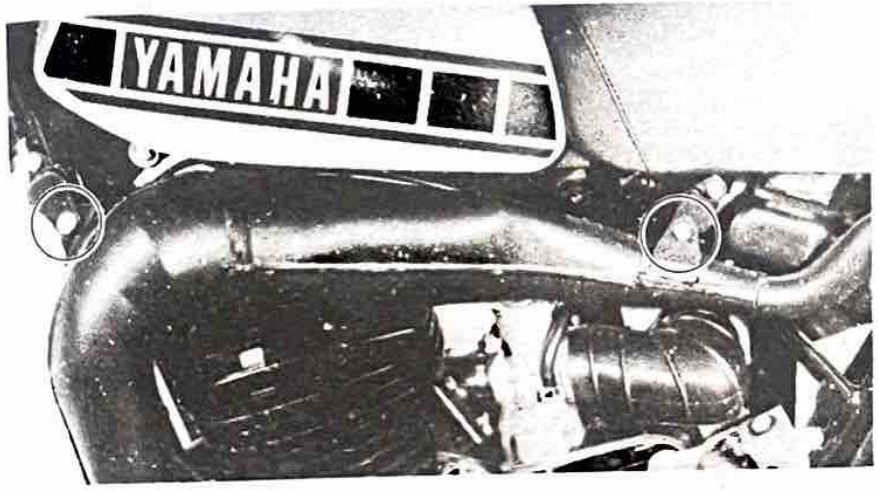
TOP END AND MUFFLER

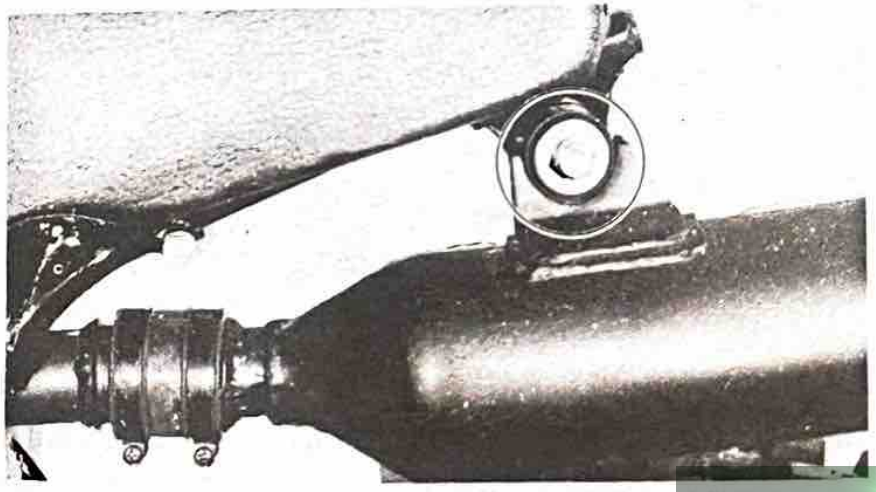
Muffler, Head, and Cylinder Removal (Carburetor Removed)

a. Remove the two bolts and remove seat.
b. Remove the securing bolt from fuel tank.
c. Lift front of fuel tank up and pull back to remove fitting band. Remove tank.

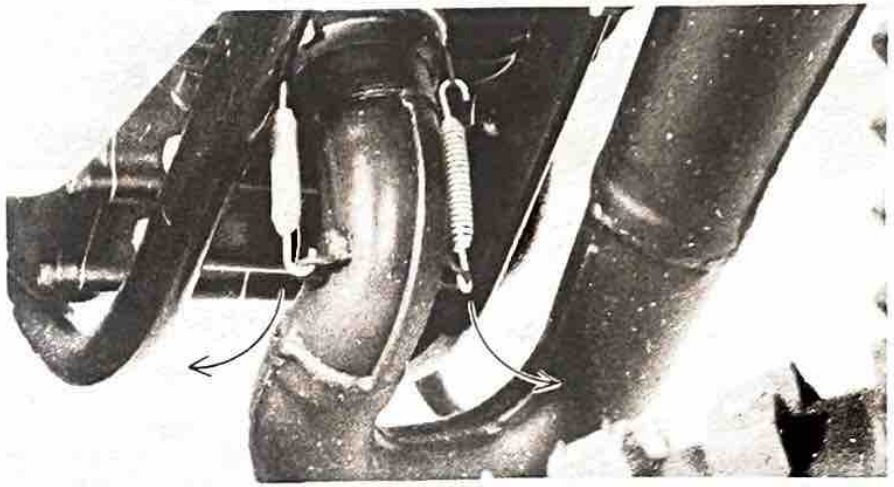


d. Remove muffler and silencer mounting bolts.

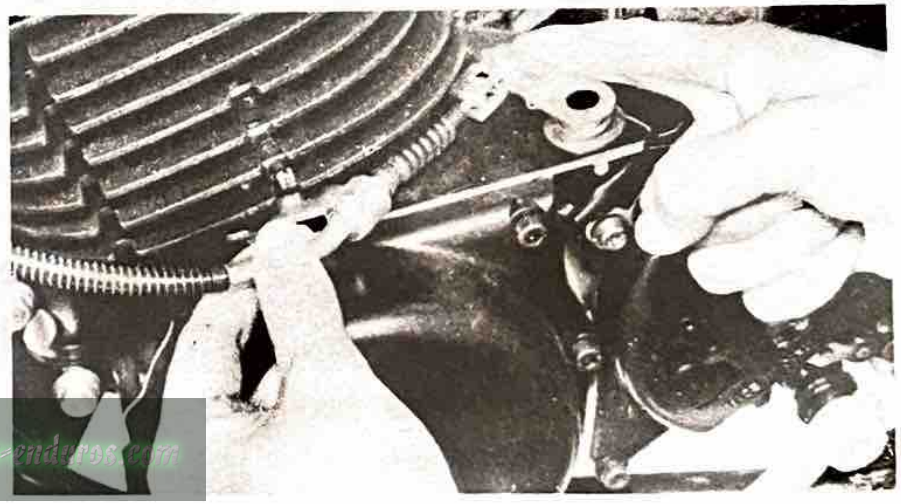




e. Remove coil springs at muffler to cylinder joint and remove muffler, and silencer.



f. Remove the clutch wire at handle lever first and then at clutch push lever.

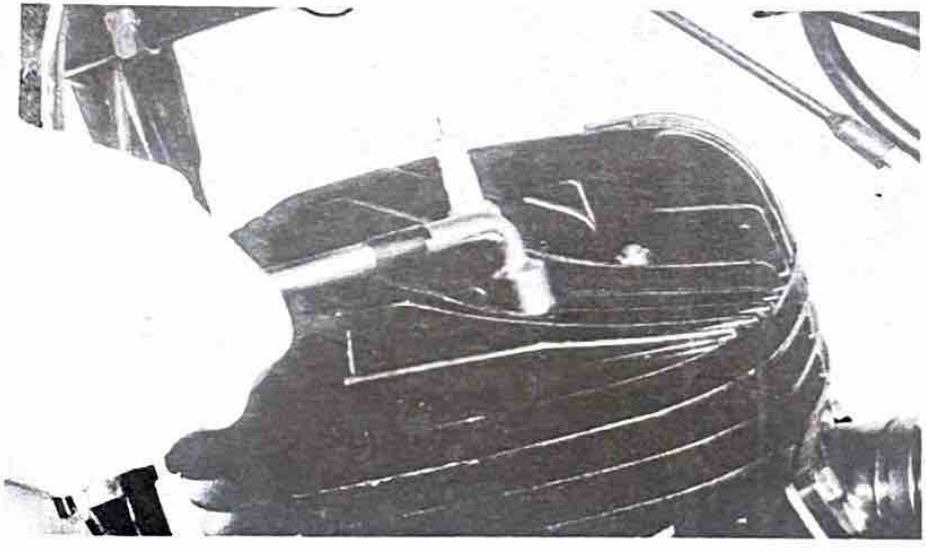


g. Remove spark plug lead wire. Loosen, but do not remove spark plug.

h. Remove nuts securing cylinder head (6 nuts). Remove cylinder head and gasket.

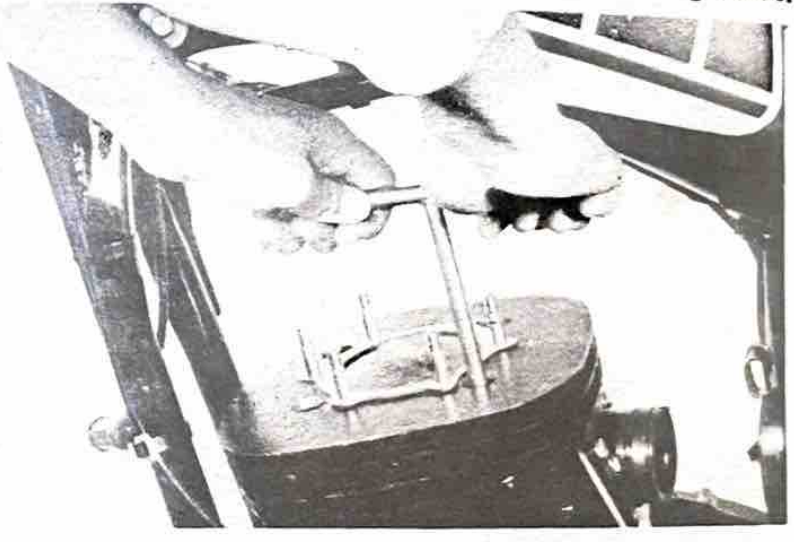
NOTE:

Break each nut loose (1/4 turn) prior to removing.

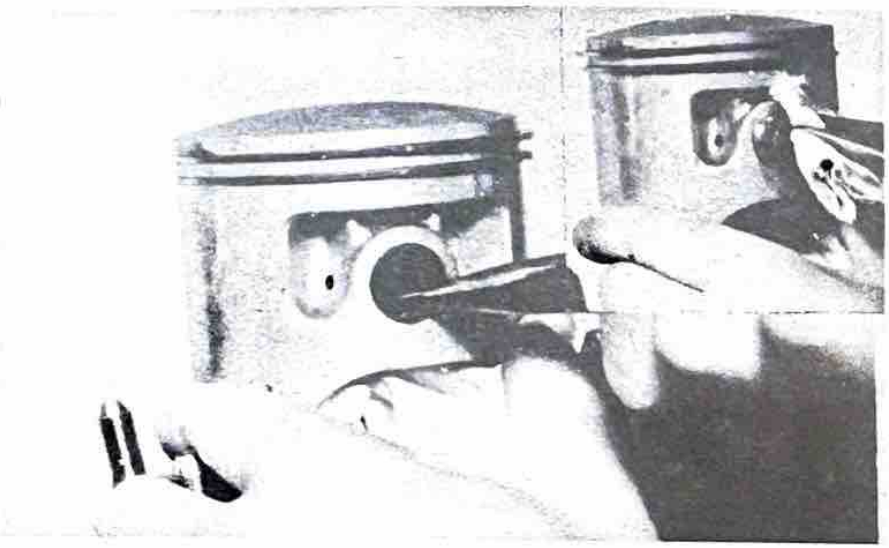


Cylinder and Piston Removal

a. Remove cylinder holding nuts.
With the piston at top dead center, raise 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.



b. Remove the piston pin clip (1) from the piston. Push the piston pin out from opposite side. Remove the piston, and small end bearing.



NOTE:

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

MAINTENANCE

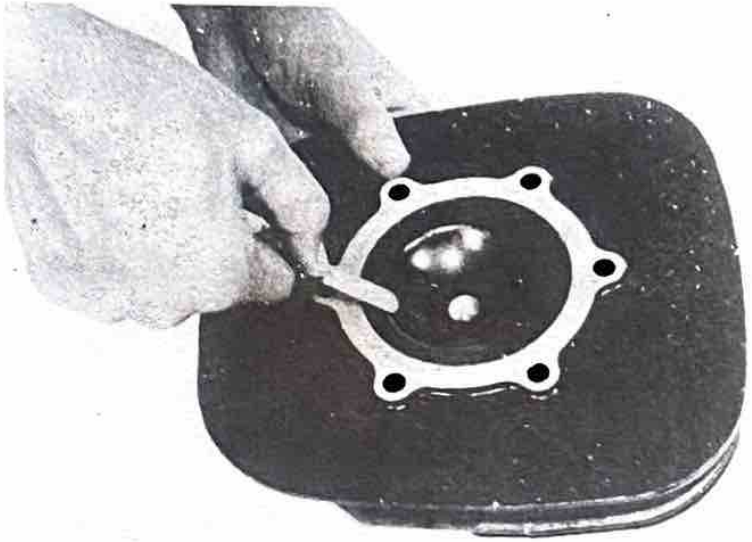
Exhaust Pipe

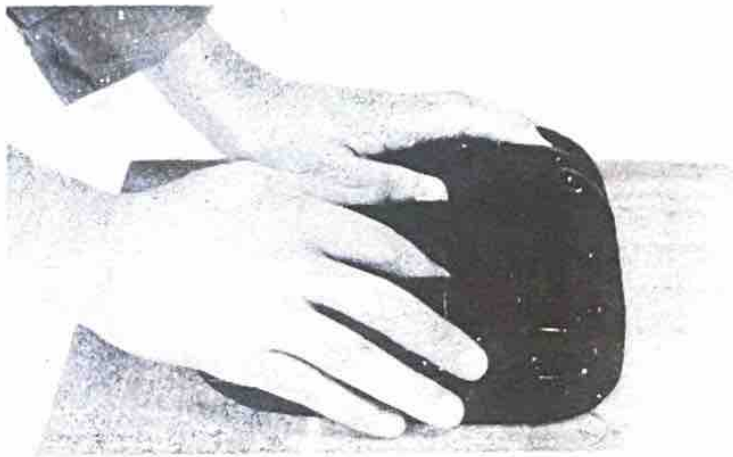
Accumulations of carbon and other residue can cause damaging conditions in the combustion chamber area and impair performance of the exhaust pipe.

a. Using a rounded scraper, remove excess carbon deposits from manifold area of exhaust pipe.
   Check muffler gasket condition. The gasket seat is located around the cylinder exhaust port.
b. 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.
c. Reinstall muffler.

Cylinder Head

a. 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.





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

c. Install new cylinder head gasket during reassembly.

Cylinder head nuts torque: 2.5 m-kg (18 ft-lb)

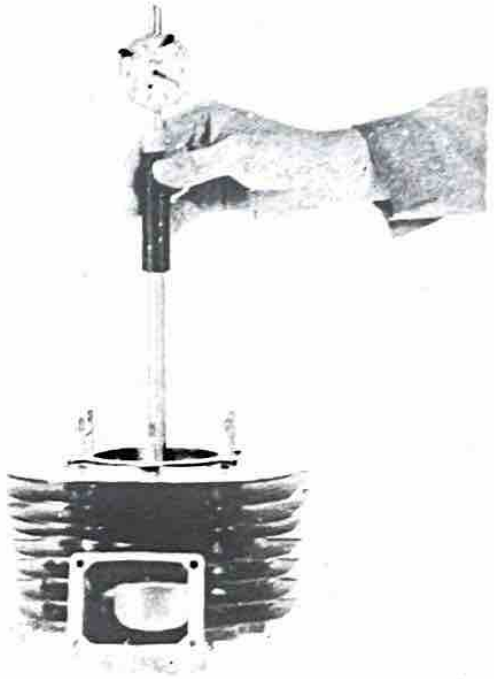
CRANKCASE · CYLINDER

Cylinder

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

b. Hone cylinder bore using a hone with fine stones. Hone no more than required to remove all wear marks.

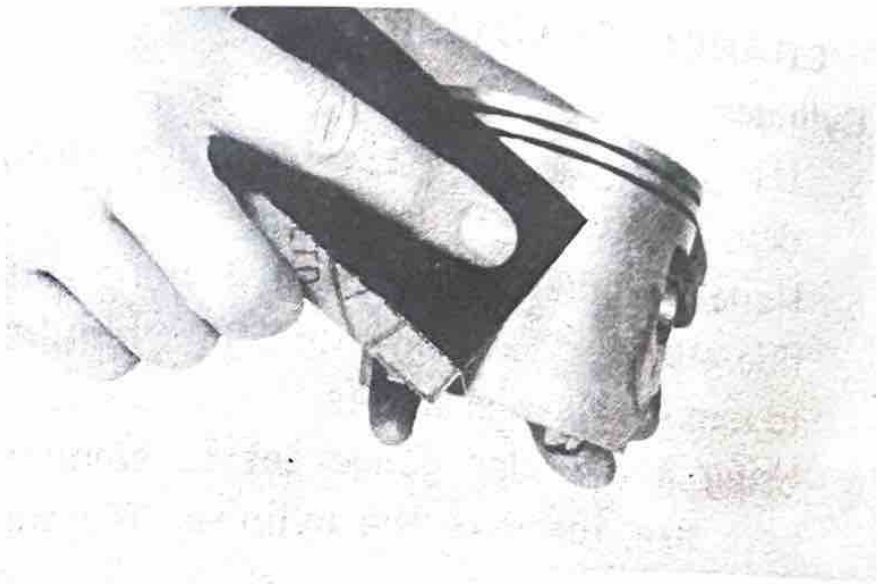
c. Using a cylinder gauge set to standard bore size, measure the cylinder. Measure front-to-rear and side-to-side at top, center and bottom just above exhaust port. Compare minimum and maximum measurements. If over tolerance and not correctable by honing, rebore to next oversize.



	YZ250D	YZ400D
Standard bore	70 mm (2.756 in)	85 mm (3.346 in)
Max. allowable taper: 0.08 mm (0.003 in)		
Max. allowable out-of-round: 0.05 mm (0.002 in)		

d. Clean cylinder in solvent, then wash with hot soapy water. Dry. Coat walls with light oil film.

e. During re-assembly always use a new cylinder base gasket.



Piston (see also Piston Ring)

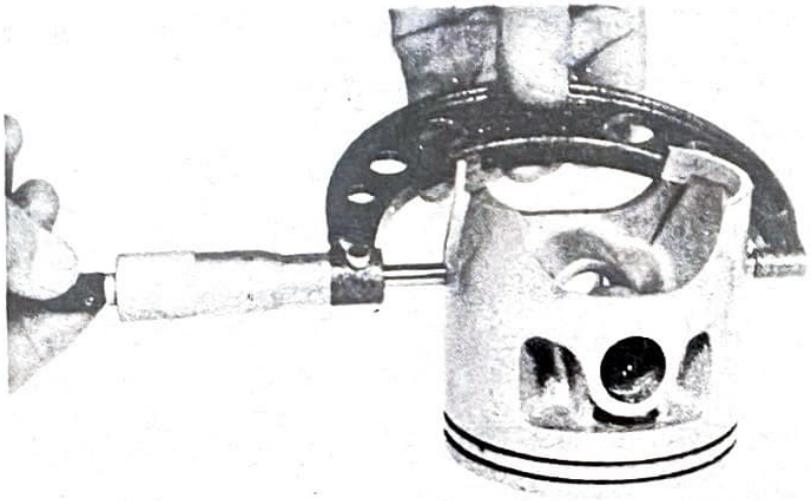
a. Using a rounded scraper, remove carbon deposits from piston crown.

b. Break a used piston ring in two. File end square. De-burr edges to avoid scratching ring groove and clean carbon deposits from ring groove.

c. 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.

d. Wash piston in solvent and wipe dry.

e. Using an outside micrometer, measure piston diameter. The piston is cam-ground and tapered. The only measuring point is at right-angles to the piston pin holes, 30 mm (1.18 in) from the bottom of the piston skirts. Compare piston diameter to cylinder bore measurements (bottom two measurements at right angles to piston pin line).



Piston maximum diameter subtracted from minimum cylinder diameter gives piston clearance. If beyond tolerance, replace piston or rebore cylinder as required.

Nominal piston clearance	
YZ250D	0.045 - 0.050 mm (0.0018 - 0.0020 in)
YZ400D	0.055 - 0.060 mm (0.0021 - 0.0024 in)
Maximum wear limit: 0.1 mm (0.0039 in)	

f. During re-assembly, coat the piston skirt areas liberally with two-stroke oil.
g. Install new piston pin circlips and make sure they are fully seated within their grooves.
h. Take care during installation to avoid damaging the piston skirts against the crankcase as the cylinder is installed.

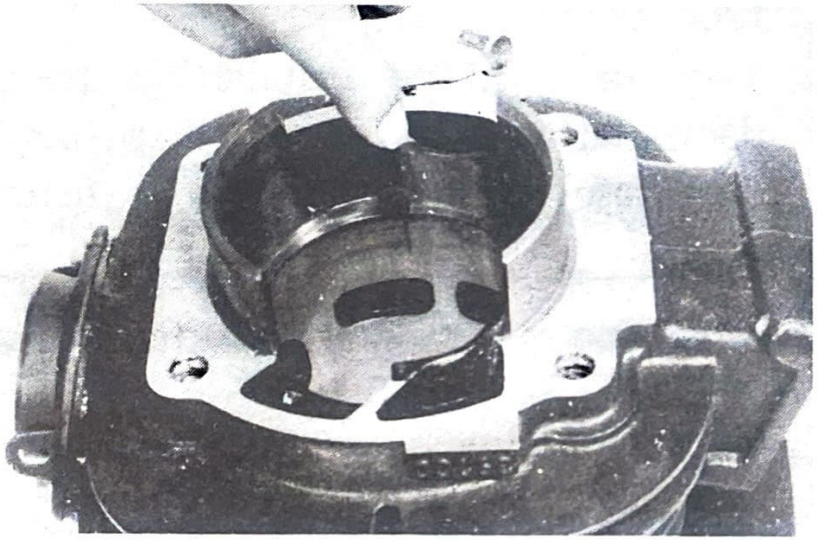
NOTE:
The arrow on piston dome must face forward.

i. Make sure the ring is properly seated as the cylinder is installed.

Piston Ring

a. Insert ring into cylinder. Push down approximately 20 mm (0.79 in) using piston crown to maintain right angle to bore. Measure installed end gap. If beyond tolerance, replace ring.

Ring end gap installed	
YZ250D	0.4 - 0.5 mm (0.016 - 0.019 in)
YZ400D	0.3 - 0.5 mm (0.012 - 0.019 in)



b. 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 ring.
c. During installation, make sure ring ends are properly fitted around ring location 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.

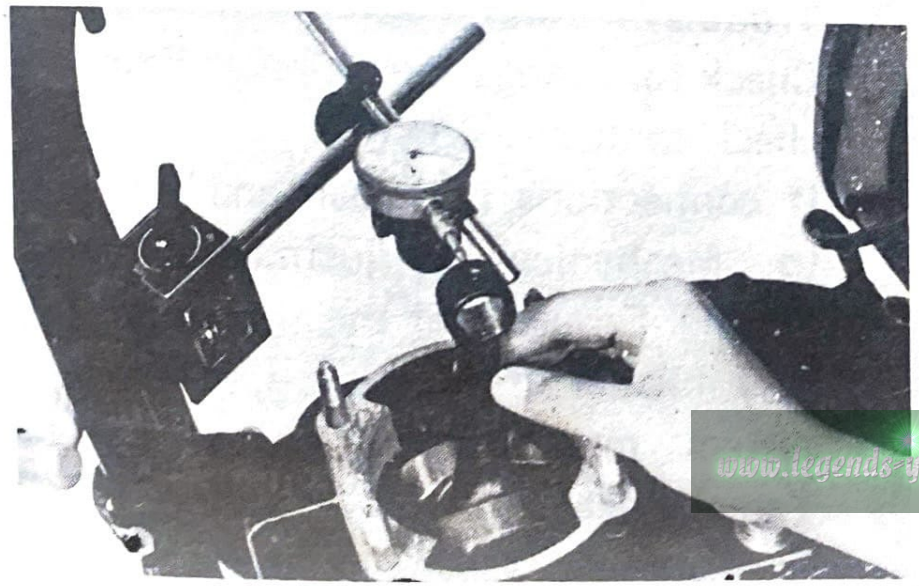
Piston pin, Bearing and Connecting Rod

a. Check the pin for signs of wear. If any wear is evident, replace pin and bearing.
b. Check the pin and bearing for signs of heat discoloration. If excessive (heavily blued), replace both.
c. Check the bearing cage for excessive wear. Check the rollers for signs of flat spots. If found, replace pin and bearing.
d. Apply a light film of oil to pin and bearing surfaces. Install in connecting rod small end.
Check for play. There should be no

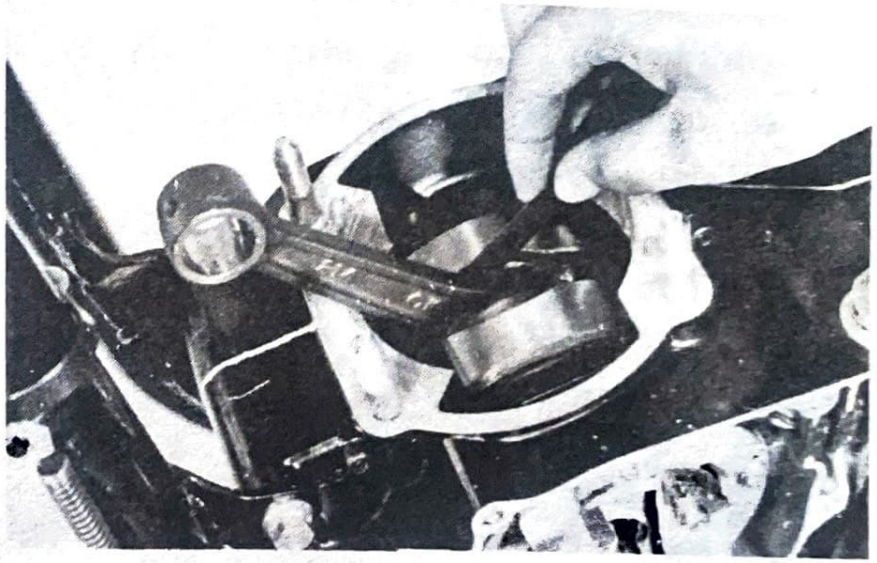
noticeable vertical play. If play exists, check connecting rod small end diameter and wear. Replace pin and bearing or all as required.

e. 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.

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



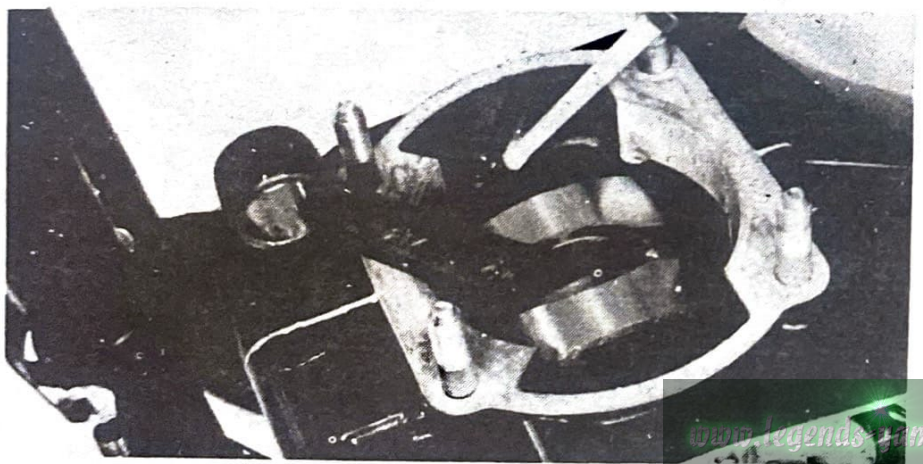
f. Remove the dial gauge and slide the connecting rod to one side. Insert a thickness gauge between the side of the connecting rod big end and the crank wheel. Measure clearance.



Connecting rod/crank clearance:
0.25 – 0.75 mm (0.010 – 0.029 in)

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

h. 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.



IGNITION

C.D.I. Ignition Requires No Periodic Maintenance.

1. Location of Components

The system consists of a magneto, a coil and a CDI unit. The magneto is located on the left side of the engine. The CDI unit is located under the seat, and coil is mounted under the fueltank.

The Engine Stop switch is located on the left handle bar.

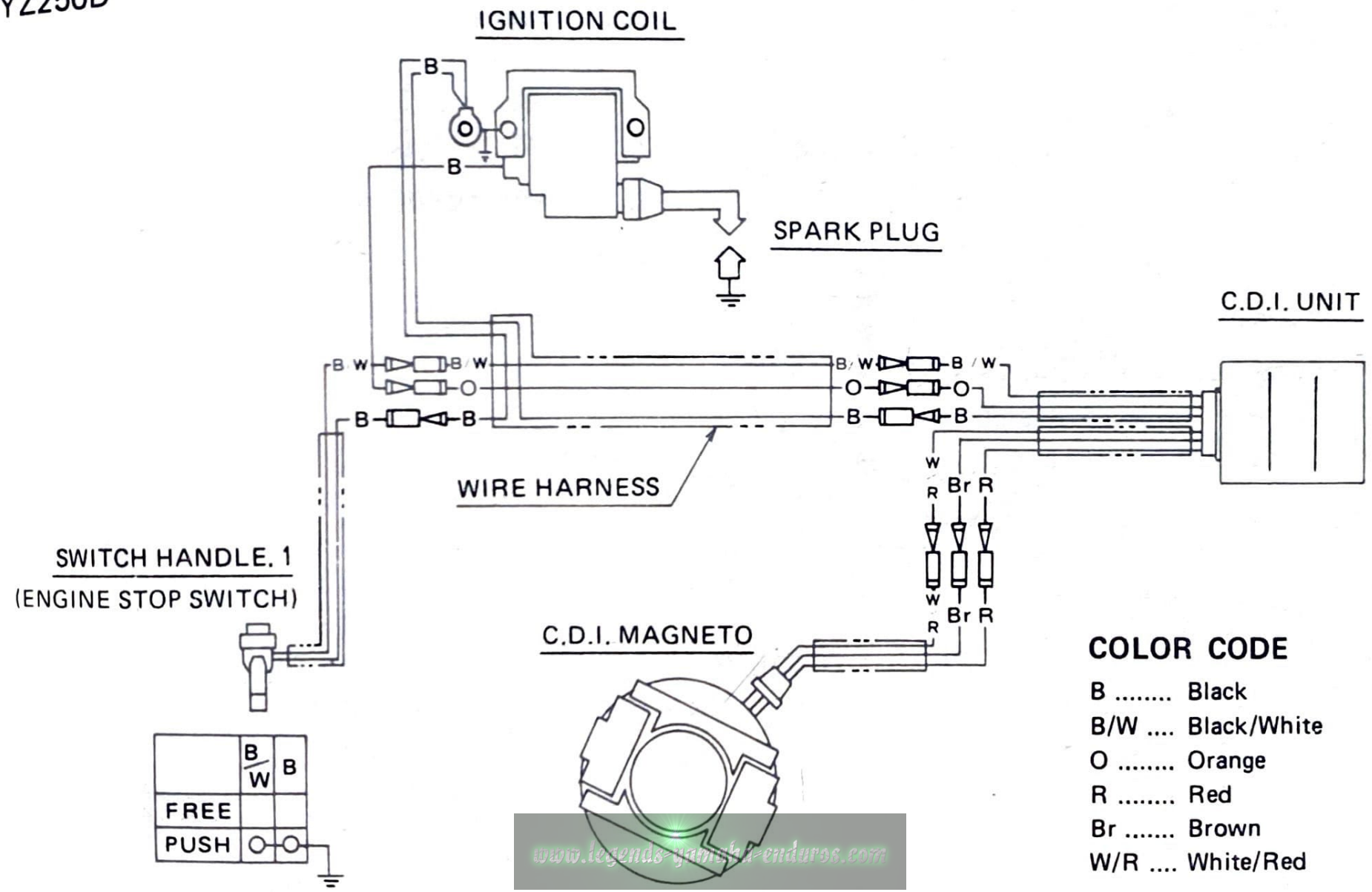
2. Troubleshooting

a. Check for spark at spark plug—if no spark, check connectors.

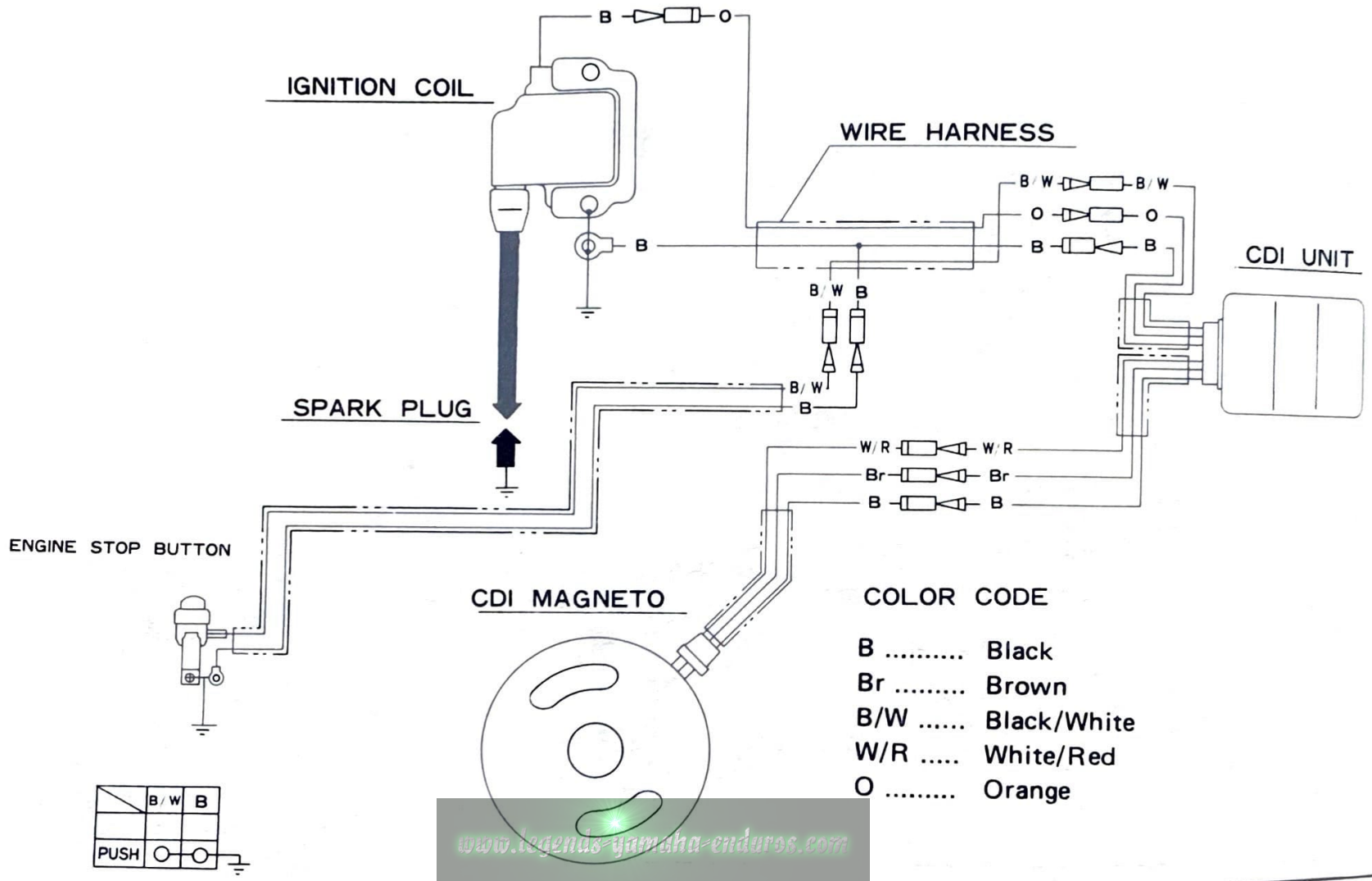
b. If connections are clean and tight, refer to Mechanical Adjustments, Ignition Timing. Ensure that the timing is correct. Any further troubleshooting of the CDI system must be performed by your Yamaha dealer.

Circuit Diagram

YZ250D



YZ400D



CLUTCH, SHIFTER, AND KICK STARTER

NOTE:

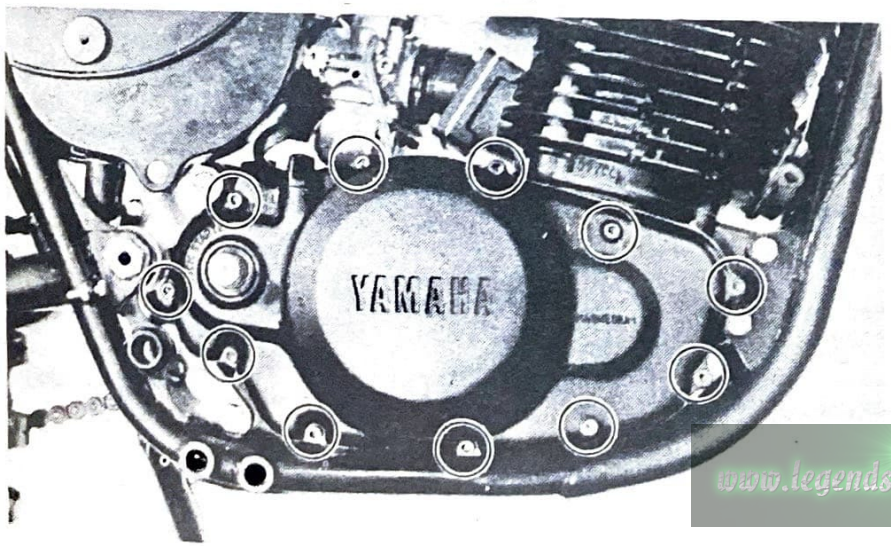
Clutch adjustment is covered in "Mechanical Adjustments"

Kick Starter and Crankcase Cover (R) Removal

a. Remove the filler plug and drain plug, and drain the transmission oil.

b. Loosen the rear brake and remove the foot peg. Remove the kick starter crank.

c. Remove the Allen bolts holding the side cover in place and remove the cover. Note the position of the dowel pins.



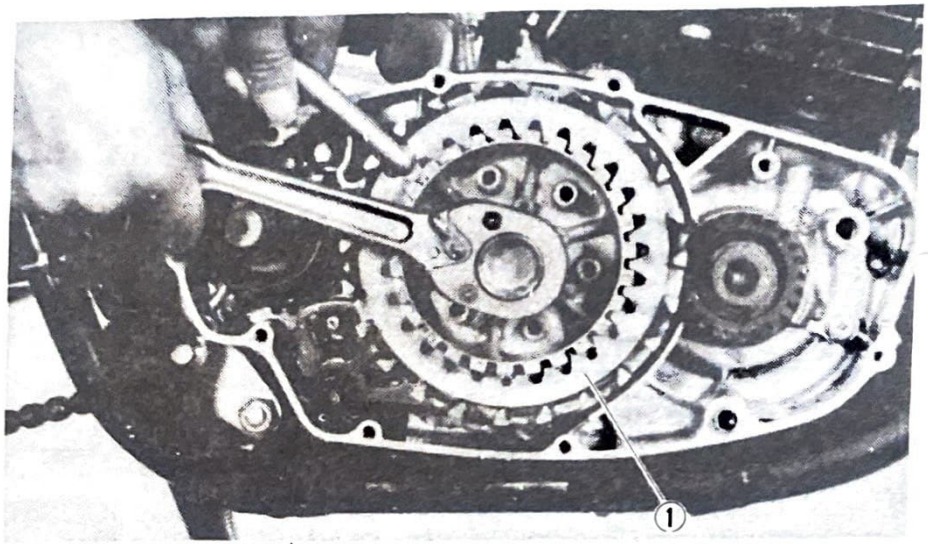
Clutch and Kick Axle Assembly Removal

a. Repeat steps Kick Starter and Crank case cover (R) Removal.

b. Remove the hexagon head screws (6) holding the pressure plate. Remove the clutch springs, pressure plate and push rod 1. Remove the clutch plates and friction plates.

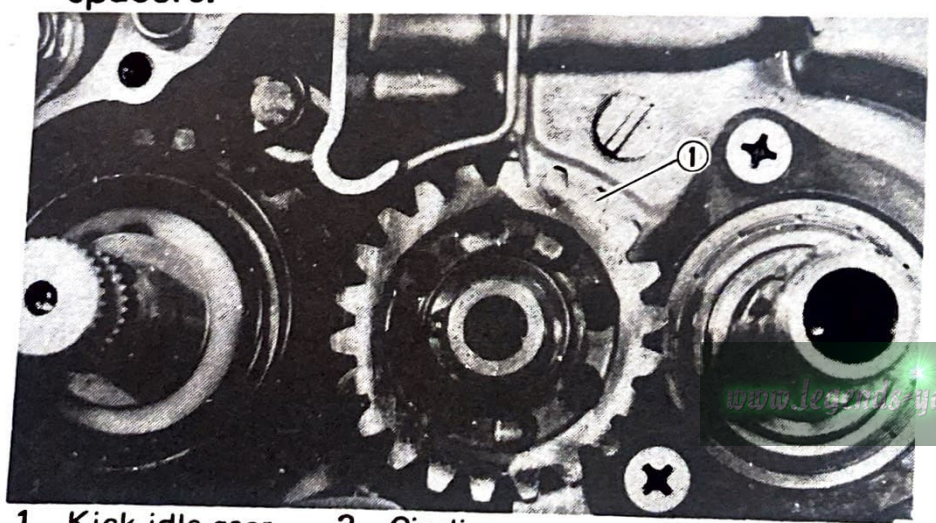
NOTE:

When removing hexagon head 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 with in the assembly.



1. Clutch hoolding tool

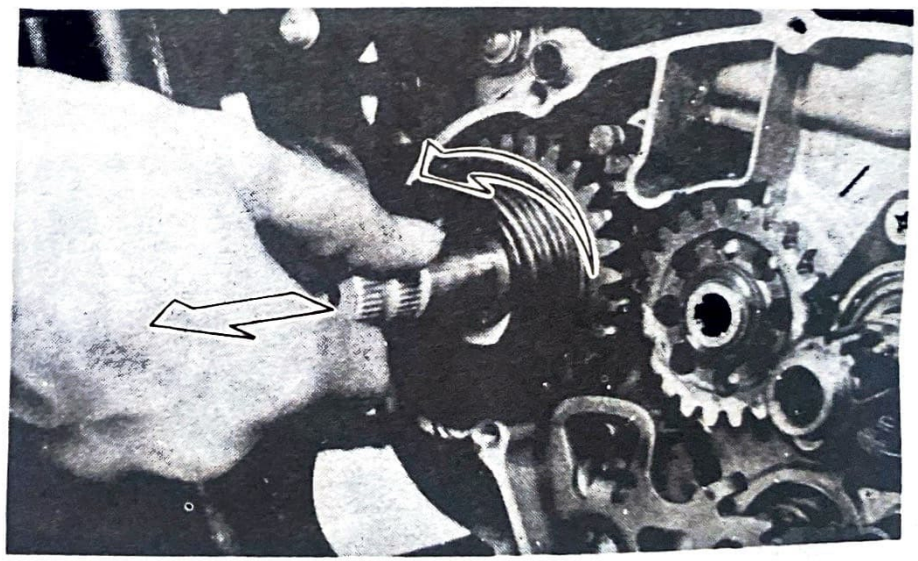
d. If the clutch housing spacer remains on the transmission main shaft, remove it. Remove the thrust plate and thrust plate spacers.



1. Kick idle gear 2. Circlip

e. Remove the circlip and then remove kick idle gear.

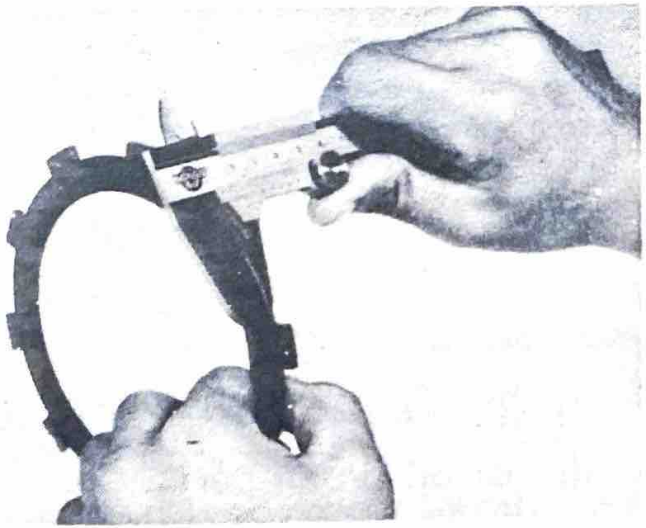
f. Unhook the kick spring from its post in the crankcase. Allow it to relax. Then remove the kick axle assembly by rotating the shaft counterclockwise and then pulling out the entire assembly. Check the gear teeth for wear and breakage.



Troubleshooting—Clutch Assembly

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

	New	Wear Limit
Friction plate thickness	3.0 mm (0.118 in)	2.7 mm (0.11 in)



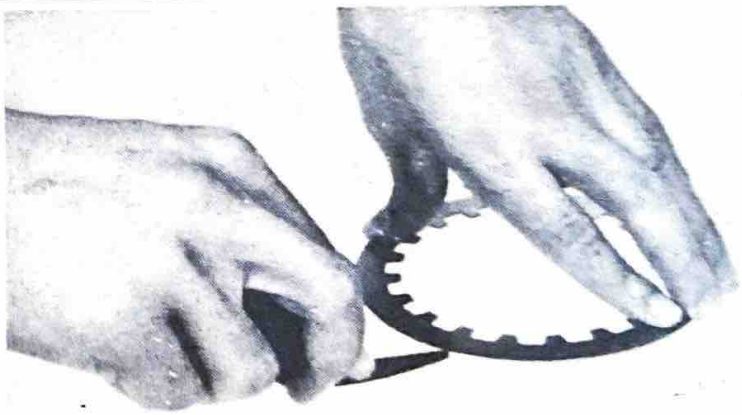
b. Check the plates for signs of warpage and heat damage, replace as required.

NOTE:

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

c. Check each clutch plate for signs of heat damage and warpage. Place on surface plate (plate glass is acceptable) and use feeler gauge.

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



d. Thoroughly clean the clutch housing and spacer. Apply a light film of oil on the bushing surface and spacer. Fit the spacer into the bushing. It should be a smooth, thumb-press fit. The spacer should rotate smoothly within the bushing. If necessary, replace spacer or clutch housing.

e. Check the bushing and spacer for signs of galling, heat damage, etc. If severe, replace as required.

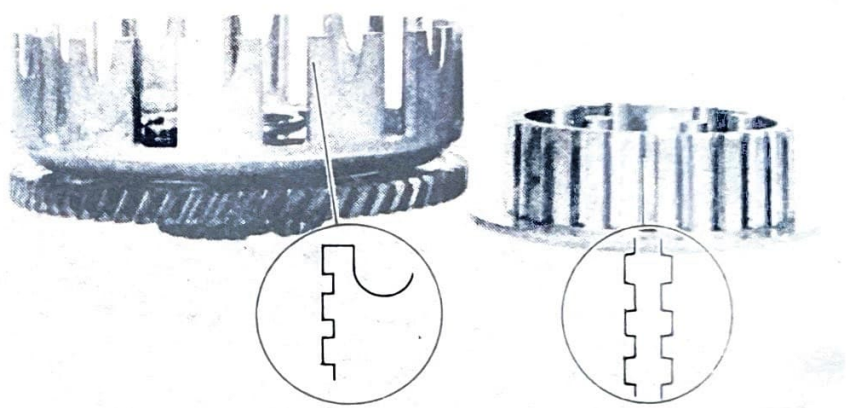
f. Apply thin coat of oil to transmission main shaft and bushing spacer I.D. Slip spacer over main shaft. Spacer should fit with approximately same "feel" as in clutch housing. Replace as required.

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

h. Check splines on clutch boss for signs of galling. If moderate, deburr. If severe, replace.

NOTE:

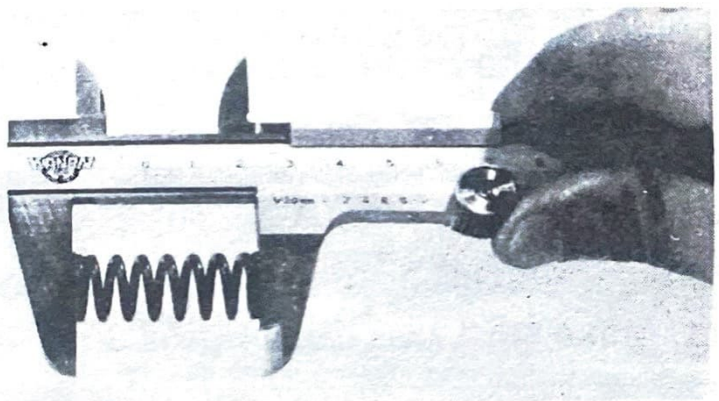
Galling on either the friction plate dogs of the clutch housing or clutch plate splines of the clutch boss will cause erratic clutch operation.



i. Fit the clutch thrust plate with a light film of oil on all parts. Check for smooth rotation. Check for signs of excessive wear, all parts. Replace as necessary.

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

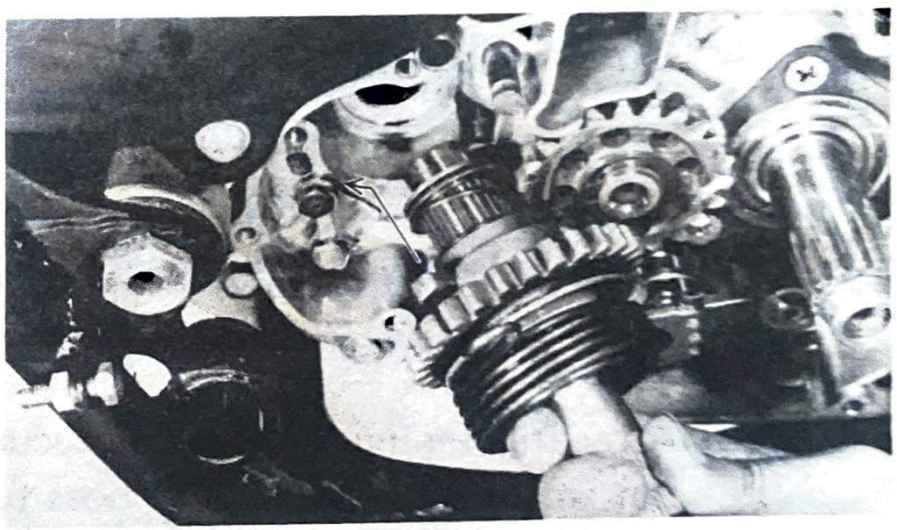
	New	Minimum
Clutch spring free length	36 mm (1.42 in)	35 mm (1.38 in)



k. Stack the clutch spring set on a level surface. Rotate each spring until all are at approximately the same vertical angle and maximum apparent height. Place straightedge across set. If any spring exceeds tolerance, it is advisable to replace the clutch springs as a set.

Reassembly

a. Install the kick starter assembly.
Push the kick starter assembly straight in, and hook the spring to the spring hook.
Check whether the kick starter acts correctly and whether it returns to its home position.



b. Install kick idle gear.
c. Install clutch assembly.
   1) Install the plate washer, spacer, primary driven gear, thrust plate and clutch boss in that order.
   2) Use clutch holding tool. Tighten clutch securing nut.

Clutch securing nut torque: 7.5 m-kg (54 ft-lb)

NOTE:
Apply motor oil 10W/30 to contact surfaces of moving parts.

   3) After tightening the clutch securing nut, make sure the clutch boss turns easily.
   4) Install clutch plates and friction plates with a heavy coat of 10W/30 motor oil on their mating surfaces.
   5) Install clutch pressure plate and push rod 1.

d. Install the crankcase cover (right). Next, install kick crank assembly, foot rest and adjust the brake pedal free play.

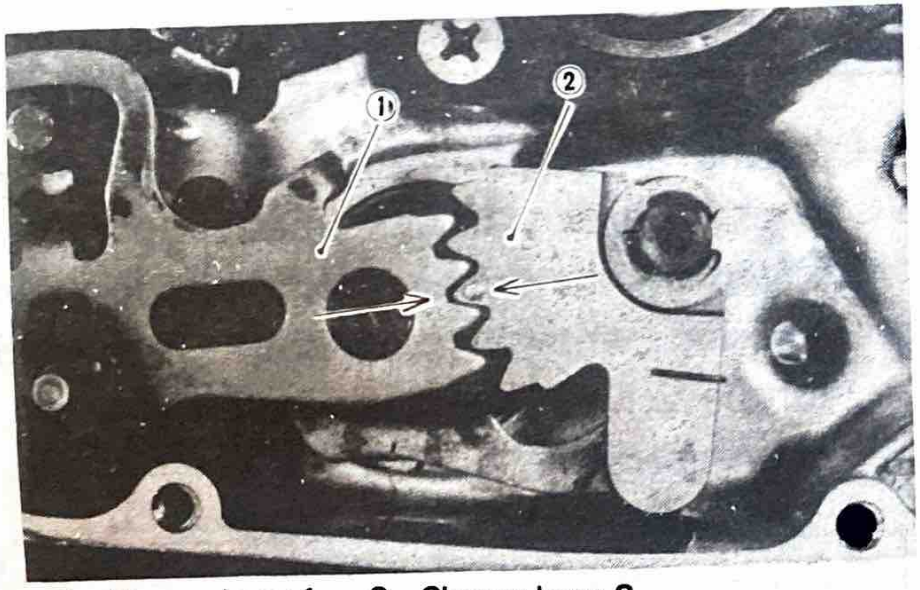
NOTE:
When installing the crankcase cover on crankcase, use a new crankcase cover gasket. Make sure two dowel pins are in place.

Shift Mechanism

NOTE:

Shifter maintenance and adjustment should be performed with clutch assembly removed.

a. During installation, align the index mark on change lever 2 and the center of change lever 1.



1. Change lever 1 . 2. Change lever 2.

DRIVE SPROCKETS-AND CHAIN

NOTE:

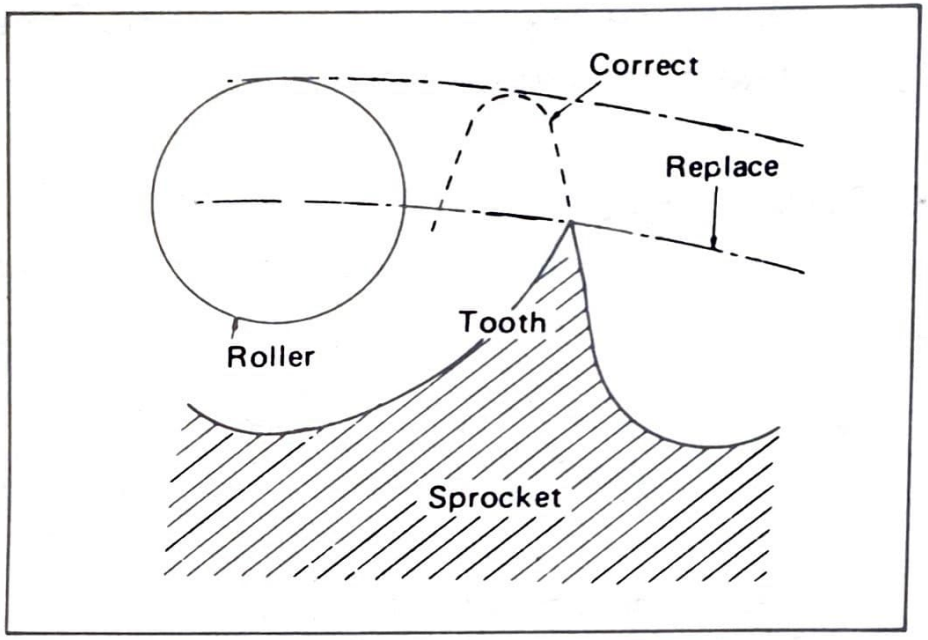
Please refer to Maintenance Intervals and Lubrication Intervals charts located in Chapter 1 for additional information.

Drive Sprocket

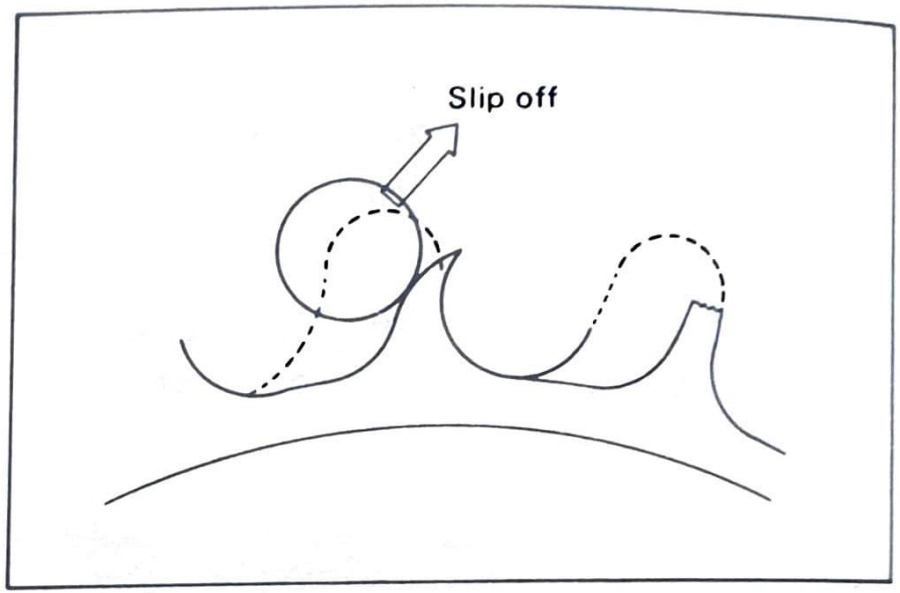
a. Using a blunt chisel, flatten the drive sprocket lock washer tab.

b. With the drive chain in place, transmission in gear, firmly apply the rear brake. Remove the sprocket securing nut. Remove the sprocket.

c. Check sprocket wear. Replace if wear decreases tooth height to a point approaching the roller center line.



d. Replace if tooth wear shows a pattern such as that in the illustration.



e. During drive sprocket reassembly, make sure the lock washer splines are properly seated on the drive shaft splines. Tighten securing nut thoroughly to specified torque value. Bend lock washer tab fully against securing nut flat.

Drive sprocket securing nut torque:
6.5 m-kg (47 ft-lb)

Driven Sprocket

With the rear wheel removed, proceed as follows:

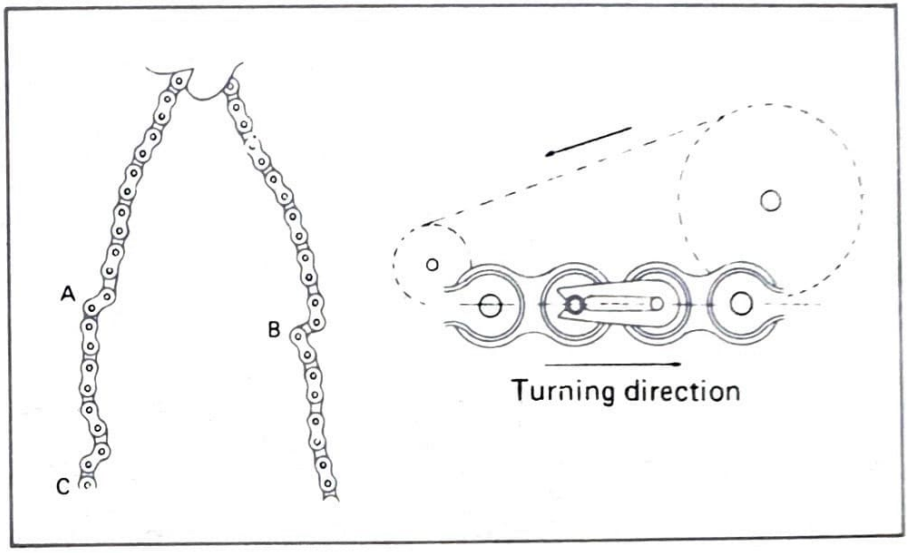
a. Using a blunt chisel, flatten the securing lockwasher tabs. Remove the securing nuts (6). Remove the lockwashers and sprocket.
b. Check sprocket wear (see procedures for the drive sprocket.)
c. Check the sprocket to see that it runs true. If severely bent, replace.
d. During reassembly, make sure the sprocket and sprocket seat are clean. Tighten the securing bolts in a crisscross pattern. Bend the tabs of the lock washers fully against the securing bolt flats.

Driven sprocket securing nut torque:
2.5 m-kg (18 ft-lb)

Drive Chain

NOTE:

Refer to Maintenance and Lubrication Charts for additional information.

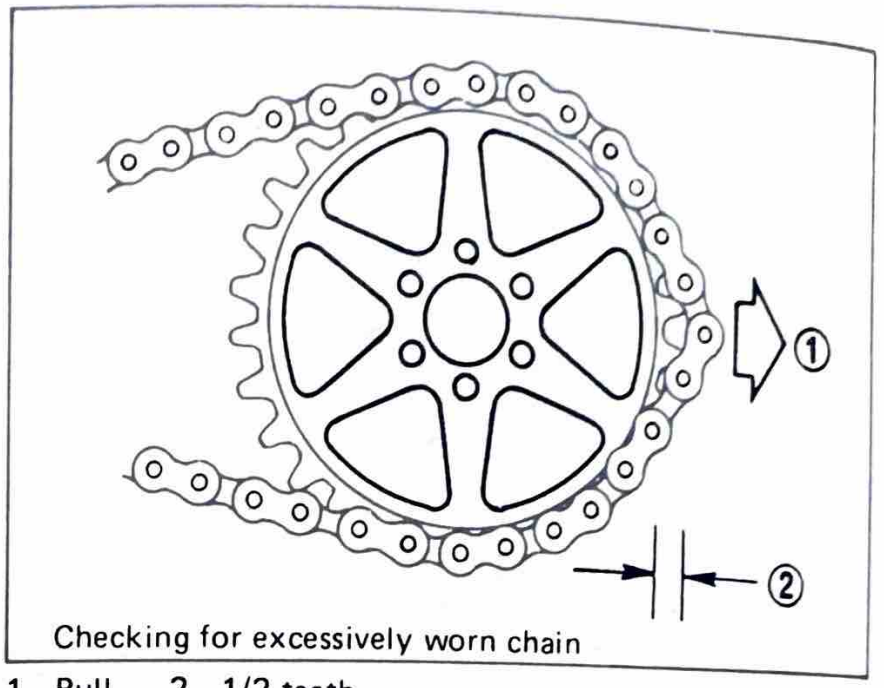


a. Using a blunt-nosed pliers, remove the master link clip and side plate. Remove the chain.
b. Check the chain for stiffness. Hold as illustrated. If stiff, soak in solvent solution, clean with medium bristle brush, dry with high pressure air. Oil chain thoroughly

and attempt to work out kinks. If still stiff, replace chain.

c. 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.

d. During reassembly, the master link clip must be installed with the rounded end facing the direction of travel.



Checking for excessively worn chain

1. Pull 2. 1/2 teeth

Troubleshooting

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-halt 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 replace chain and/or damaged sprockets.

Maintenance

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

a. Wipe off dirt with shop rag. If accumulation is severe, use wire brush, then rag.

b. Apply lubricant between roller and side plates on both inside and outside of chain. Don't skip a portion as this will cause uneven wear. Apply thoroughly. Wipe off excess.

NOTE:
Chain and lubricant should be at room temperature to assure penetration of lubricant into rollers.

Use Yamaha Chain and Cable Spray lubricant.

c. Periodically, remove the chain, wipe and/or brush excess dirt off. Blow off with high pressure air.

d. Soak chain in solvent, brushing off remaining dirt. Dry with high pressure air. Lubricate thoroughly while off machine. Work each roller thoroughly to make sure lubricant penetrates. Wipe off excess. Re-install.

NOTE:
See Maintenance and Lubrication Schedule Charts for additional information.

Cables

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

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

Maintenance

a. Remove the cable.

b. Check for free movement of the cable with its housing. If movement is obstructed, check for fraying of the cable strands. If fraying is evident, replace the cable assembly.

c. To lubricate cable, hold in vertical position. Apply lubricant to uppermost end of cable. Leave in vertical position until lubricant appears at bottom end. Allow excess to drain and reinstall.

Use Yamaha Chain and Cable Spray lubricant.

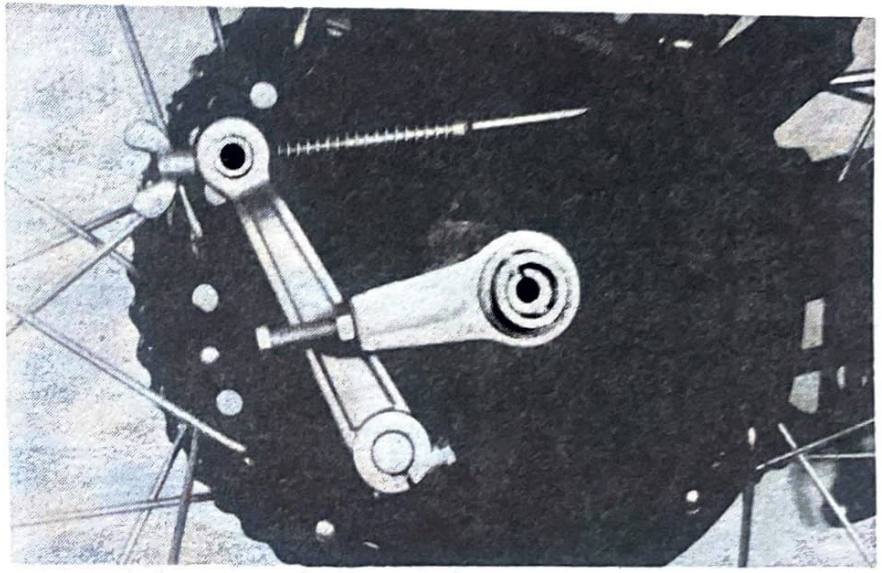
CHASSIS MAINTENANCE AND MINOR REPAIRS

Front Wheel Removal

1. To remove the front wheel, disconnect the brake cable at the front brake lever.
2. Loosen front axle pinch bolt.
3. Loosen the front axle.
4. Put a box or stand under the engine.
5. Remove the front wheel axle by simultaneously twisting and pulling out on the axle. Then remove the wheel assembly.

Rear Wheel Removal

1. Remove the brake rod from rear shoe plate.

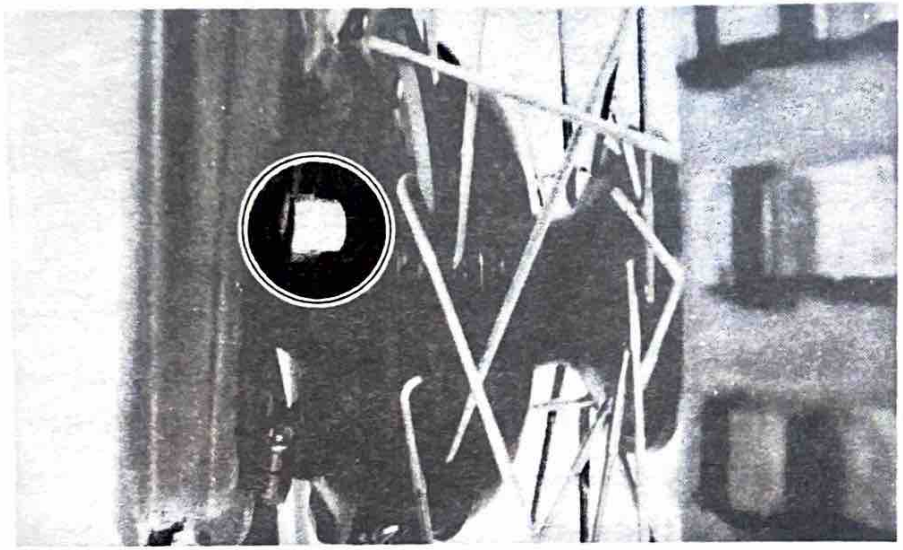


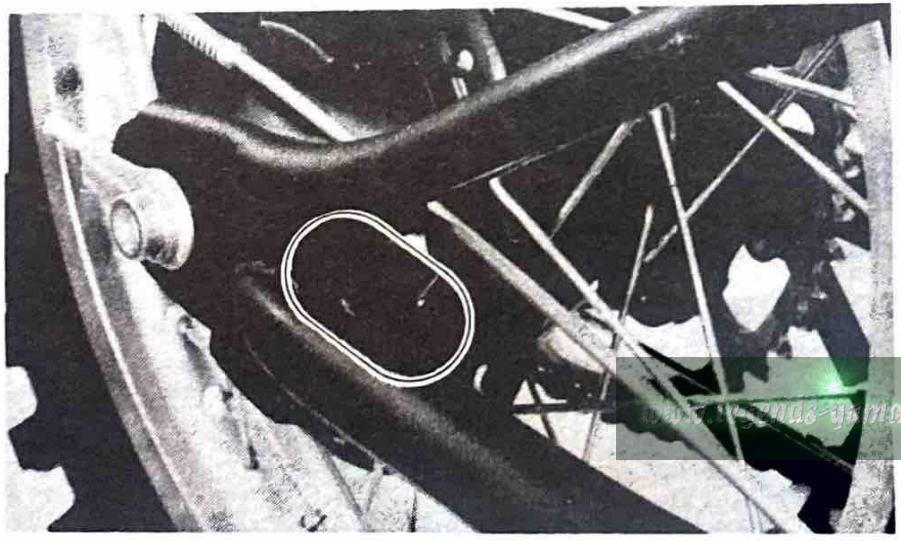
2. Remove the rear wheel shaft nut.
3. Pull out the rear wheel shaft by simultaneously twisting and pulling out.
4. Remove the rear brake shoe plate.
5. Lean the machine to the left and remove the rear wheel assembly.

Wheel installation

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

1. Check for proper engagement of the boss on the outer tube (or swing arm) with the locating slot on the brake shoe plate.





2. Make sure the axle nut is properly tightened.

Front:	6 m-kg (43 ft-lb)
Rear:	8 m-kg (58 ft-lb)

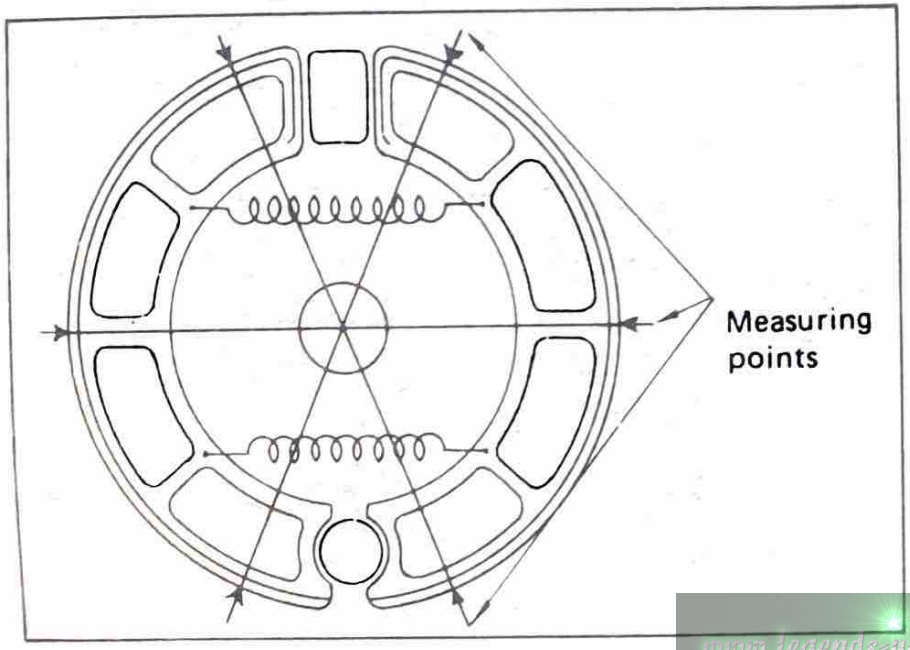
3. Adjust the play in the brake lever and pedal.

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.

	Front	Rear
Brake shoe diameter	130 mm (5.118 in)	160 mm (6.3 in)
Replacement limit	126 mm (4.96 in)	156 mm (6.14 in)
Minimum lining thickness	2 mm (0.08 in)	2 mm (0.08 in)



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.

Replacing Wheel Bearings

If the bearings allow excessive play in the wheel or if it does not turn smoothly have your dealer replace the wheel bearings. Bearing replacement requires the use of special tools and should be done by a Yamaha dealer.

Spokes

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

Checking Rims and Spokes (Front & Rear Wheels)

a. Checking for loose spokes

Loose spokes can be checked by bracing the machine off the ground so that the front wheel can spin freely. Slowly rotate the front wheel and at the same time let the metal shaft of fairly heavy screwdriver bounce off each spoke. If all the spokes are tightened approximately the same then the sound given off by the screwdriver hitting the spokes should sound the same. If one spoke makes a dull flat sound, then check it for looseness.

b. Checking rim "run-out"

While you have the machine up, check the front wheel run-out. "Run-out" is the amount the front wheel deviates from a straight line as it spins. Secure the front forks to keep them from turning. Set up a dial indicator or solidly anchor a pointer about 3 mm (0.12 in) away from the side of the rim. As the wheel spins, the distance between the pointer and the rim should not change more than 2 mm (0.08 in) total. Any greater fluctuation means that you should remove this rim warpage by properly adjusting the spokes.

Run-out limits:	
Vertical	1.0 mm (0.04 in)
Lateral	0.5 mm (0.02 in)

Tire Removal

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

NOTE:

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

Installing Tire

Re-installing the tire assembly can be accomplished by reversing the disassembly procedure. The only difference in procedure would be right after the tube has been installed, but before the tire has been completely slipped onto the rim. Inflate the tube. This removes any creases that might exist. Release the air and continue with reassembly. Also, right after the tire has been completely slipped onto the rim, check to make sure that the stem is squarely in the center of the hole in the rim.

Tire pressure:
Front—0.9 kg/cm² (13 psi)
Rear —1.1 kg/cm² (15 psi)

FRONT FORKS AND STEERING HEAD

Front fork

This machine employs newly developed air suspension whose front fork inner tube is furnished with a cap bolt having a valve which can adjust the interior air compression for varied spring characteristics.

This suspension features:

1. Adjustment of air pressure makes possible a free choice of spring characteristics.
2. Spring characteristics peculiar to the air suspension helps a great deal to give the rider greater comfort and less fatigne.

CAUTION:

To prevent an accidental explosion, the following instructions sould be observed:

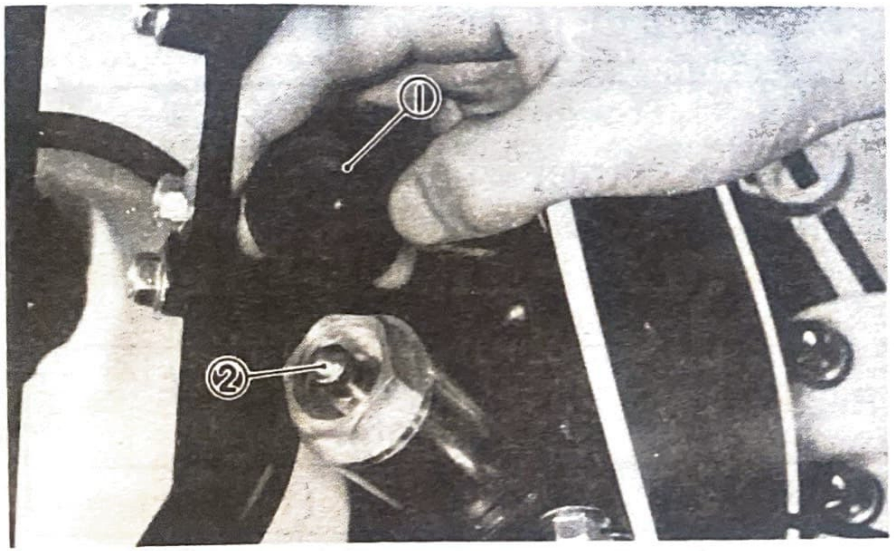
1) **Use only air or nitrogen for filling. Never use any other gas. An explosion may result.**
2) **Never throw the air shock absorber into fire. An explosion may result.**
3) **Before removing the air shock absorbers from the front forks, be sure to extract the air from the air chamber completely.**

Fork oil replacement and level adjustment:

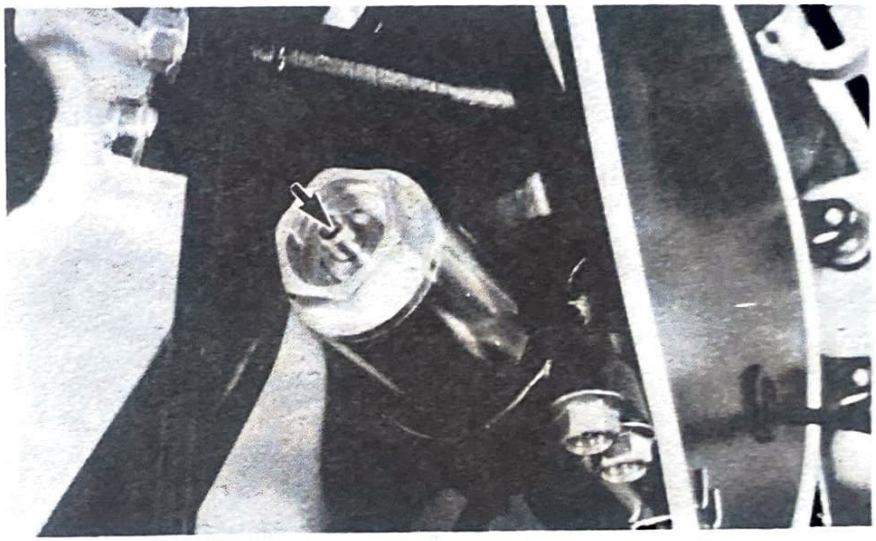
a. Raise the front wheel off the floor with a suitable frame stand.

b. Remove the rubber cap on the cap bolt. And remove valve cap.

c. Using a slotted-head screwdriver, press the valve and keep it open for more than 5 seconds so that the air can be let out from the inner tube.



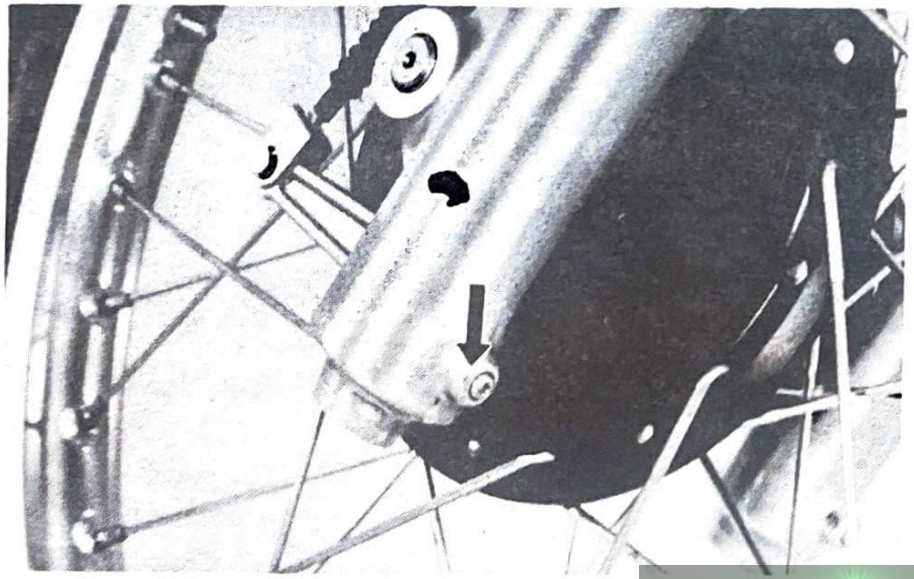
1 Rubber cap 2 Valve cap



NOTE:

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

d. Remove the cap bolt assembly.
e. Remove drain screw from each outer tube open container under each drain hole.



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

NOTE:

Check gasket, replace if damaged.

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

Recommended oil:	SAE 15W "SE" motor oil
Oil quantity:	338 cc (11.4 oz)

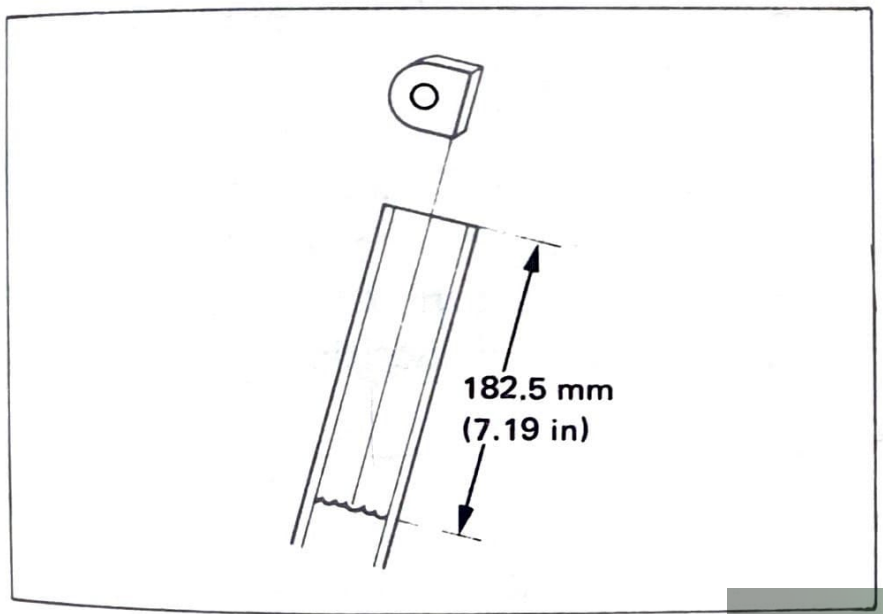
NOTE:

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

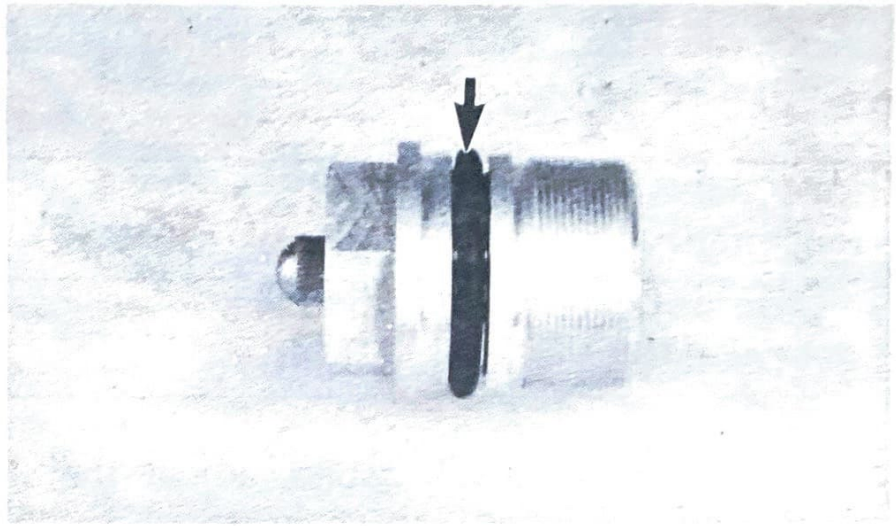
i. After filling, slowly pump the outer tubes up and down to distribute the oil.

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

Oil level : 182.5 mm (7.19 in)



k. Inspect the O-ring on cap bolt and replace if damaged.



L. Install cap bolt and torque to specification.

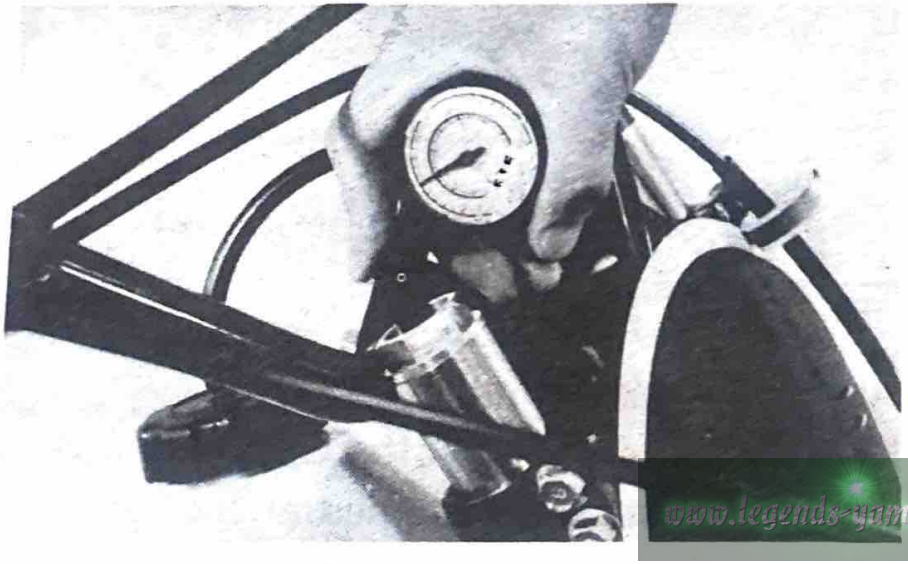
Tightening torque: 2.5 m-kg (18 ft-lb)

Air pressure adjustment:
For proper damping effects, the sealed air pressure must be maintained at the following levels. Both forks must have the same pressure.

a. Place a proper-size wooden box under the engine to keep the front of machine raised off the floor. (No weight on front wheel)
b. Fill fork with air.

MAXIMUM AIR PRESSURE (enclosed)	2.5 kg/cm² (35.6 psi)
Do not exceed this amount. Damage to seals will result.	

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



Standard air pressure:	1.0 ± 0.2 kg/cm² (14 ± 3 psi)
Adjustable extent: 0.8 ~ 1.2 kg/cm² (11 ~ 17 psi)	

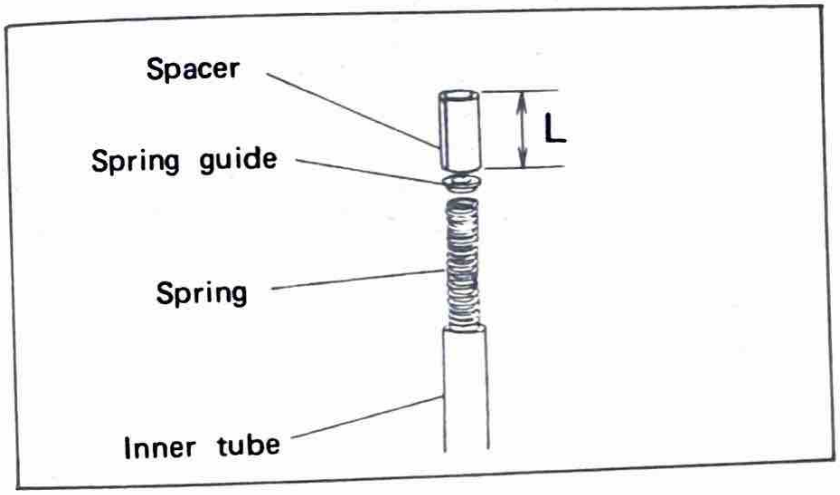
NOTE:

When oil enters the gauge, thereby preventing the needle from returning to the original position.
Loosen the screw built 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.

d. The difference between both right and left tubes should be 0.1 kg/cm² or less.

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.



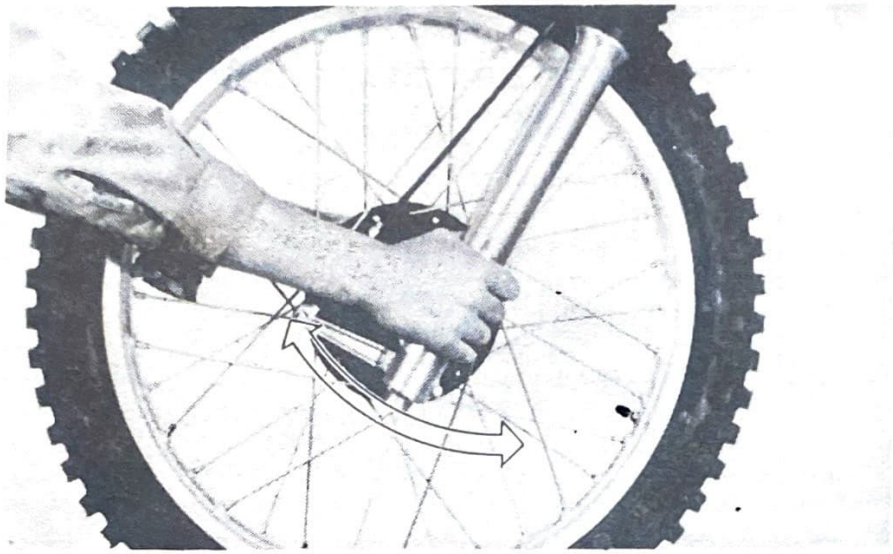
Type		Part No.	Spring rate (kg/mm)	I.D. mark
SOFT	Spring	1W4-23141-10	K=0.214	
	Spacer	Non spacer must be installed.		
STD	Spring	1W4-23141-00	K=0.268	
	Spacer	1W4-23118-L0	–	L = 50mm (2.0 in)
HARD	Spring	1W4-23141-20	K=0.333	
	Spacer	1W4-23118-L0	–	L = 50mm (2.0 in)

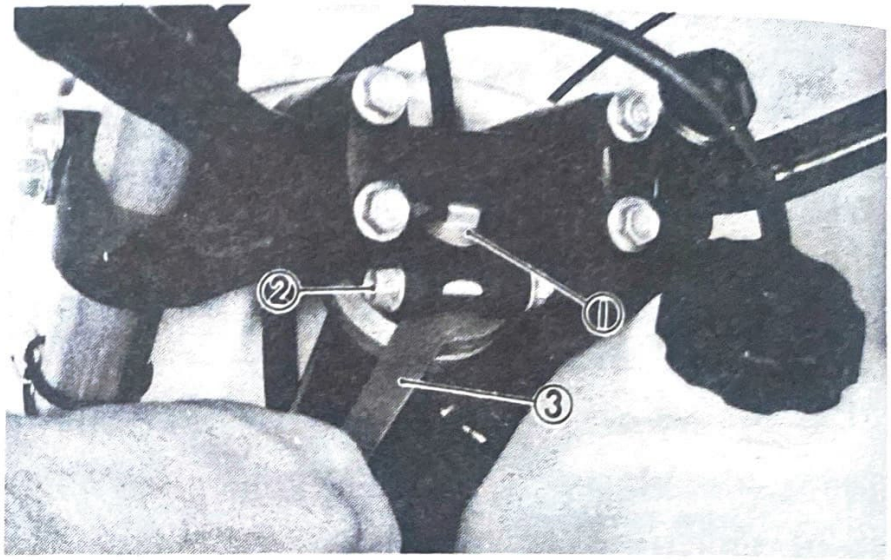
Steering head adjustment

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.
2. To adjust, first loosen upper stem pinch bolt.

Steering Head Adjustment

a. With front wheel elevated, grasp bottoms of fork legs and gently push and pull to check steering head freeplay. There should be no noticeable freeplay.





1. Stem bolt 2. Pinch bolt 3. Ring nut wrench

b. To adjust, first loosen upper stem pinch bolt.
c. Loosen stem bolt.
d. Use ring nut wrench to tighten adjust nut. Tighten until freeplay is eliminated.

CAUTION:

Forks must swing from lock to lock without binding or catching.

e. Tighten stem bolt and torque to specification.
f. Tighten pinch bolts at fork crown and torque to specification.

Stem pinch bolt torque:
1.5 m-kg (11 ft-lb)

REAR SHOCK (MONOCROSS SUSPENSION "DE CARBON" SYSTEM) AND SWING ARM

General Features:

This rear shock absorber, a recent Yamaha development, is of the nitrogen gas enclosed "De Carbon" type.

The main features are:

1. The damping performance can be adjusted.
2. The spring fitting load can be adjusted freely.
3. Improved characteristic and reduced weight by application of the taper coil spring.
4. Addition of aluminum cooling fins prolongs performance.
5. Application of the thermal compensator greatly helps improve fading resistance.

These noteworthy improvements have greatly contributed to the improved performance of the shock absorber.

WARNING: —READ CAREFULLY—

This shock absorber contains highly compressed nitrogen gas.

Read and understand the following information before handling the shock absorber. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling.

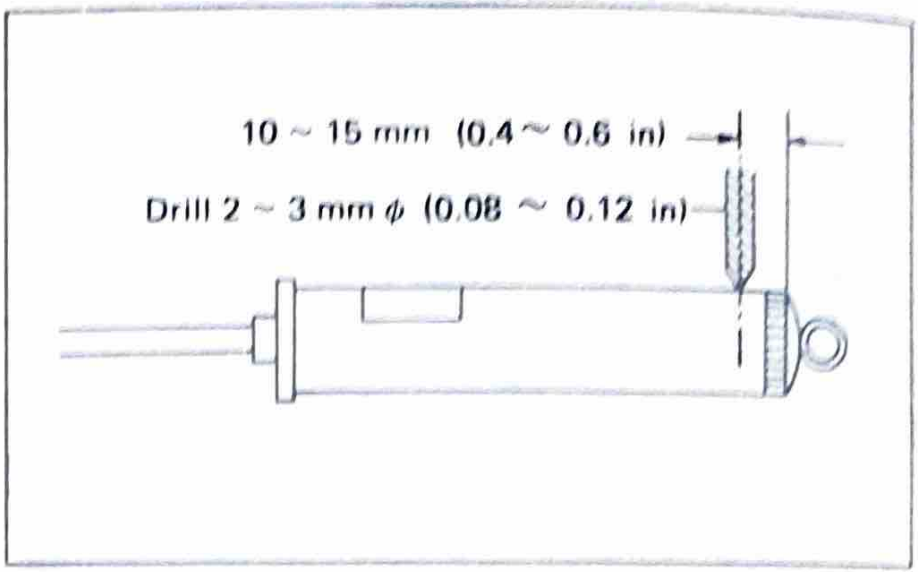
1. **Do not tamper with or attempt to open the cylinder assembly. Injury may result.**
2. **Do not subject shock absorber to an open frame or other high heat.**
   This may cause the unit to explode due to excessive gas pressure.
3. **Do not deform of damage the cylinder in any way. Cylinder damage will result in poor damping performance.**
4. **Handle it with great care, for a score or scratch in the piston rod sliging portion will cause oil leakage.**
5. **Never remove the plug on the cylinder bottom. Injury may result.**

A. Notes on Disposal (Yamaha dealers only)

Gas pressure must be released before disporsing of shock absorber. To do so, drill a 2-3 mm (0.08 - 0.12 in) hole through the cylinder wall at a point 10-15 mm (0.4 - 0.6 in) above the bottom of the cylinder. At this time, wear eye protection to prevent eye damage from, escaping gas and/or metal chips.

WARNING:

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

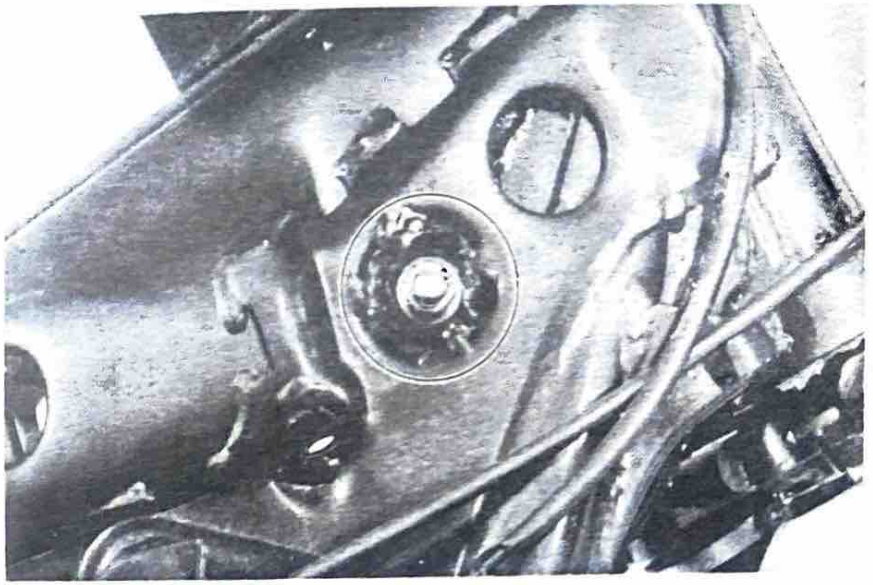


B. Rear shock absorber (Monocross suspension) Removal

1. Remove the two bolts holding the fuel tank (petcock lever must be turned OFF). Lift up the front of the tank and remove it.
2. Remove the cotter pin and nut. Remove the bolt securing the upper bracket to frame.

NOTE:

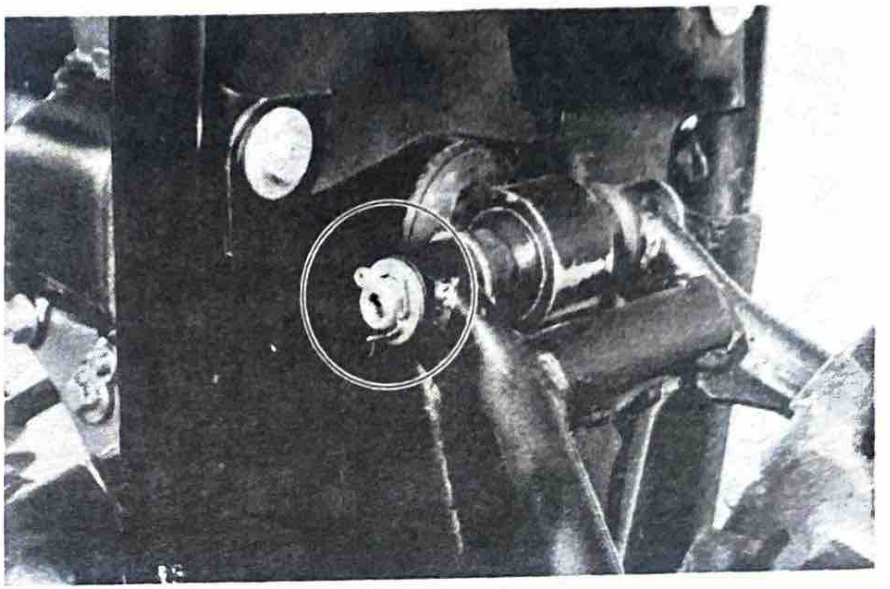
Use a new cotter pin in reassembly.



3. Remove the cotter pin and pull out the pivot shaft from the lower bracket.

NOTE:

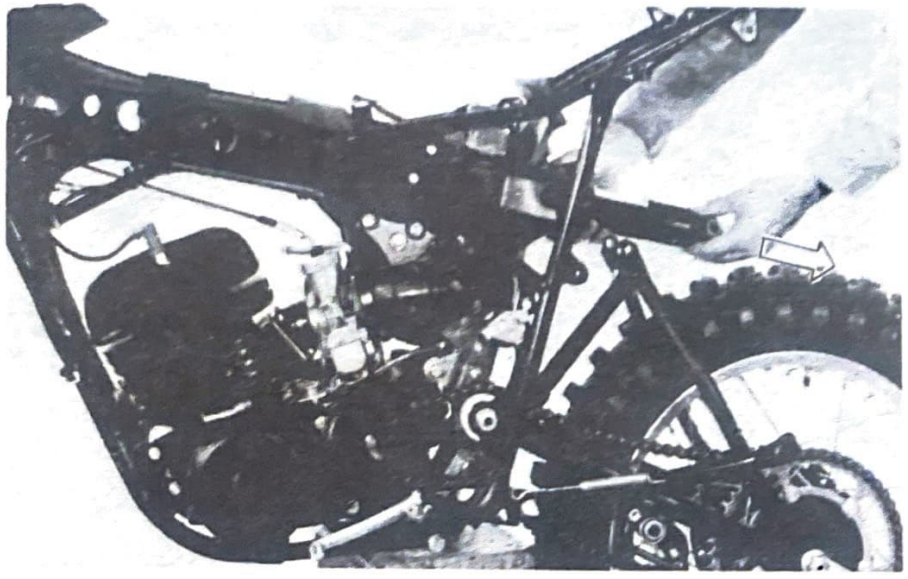
Put a proper support under the engine to keep the machine from falling over.

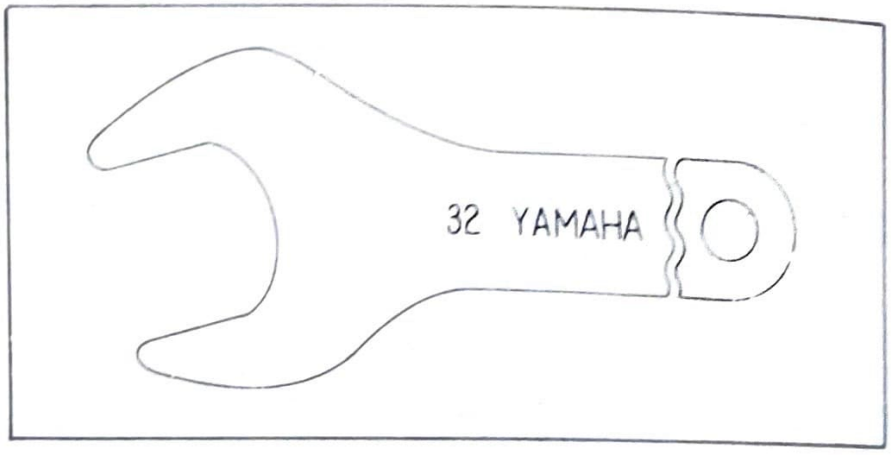


4. Remove the rear shock absorber form the frame. (To remove, pull the rear shock backward while lifting up the frame.)

NOTE:

a. When removing the shock absorber, be careful not to bend the absorber rod.
b. Take care so the two washers are not lost.





a. Loosen the adjuster locknut.

C. Adjustment

When bottoming feels excessive and too soft:

a. Increase the spring pre-load.
b. Make damping performance stiffer

When springing feels excessive and too hard:

a. Decrease the spring pre-load
b. Make damping performance softer

1. Changing suspension spring preload:
   Perform this adjustment with a special wrench (in the owner's tool kit)

b. To increase pre-load, screw IN the adjuster. To decrease pre-load, screw OUT the adjuster.
c. Tighten the locknut.

Tightening torque:
6.0 m-kg (43 ft-lb)

NOTE:

Initial fitting:

YZ250D: 303 mm (11.93 in)

YZ400D: 298 mm (11.7 in)

Minimum adjustable extent:

YZ250D: 292 mm (11.5 in)

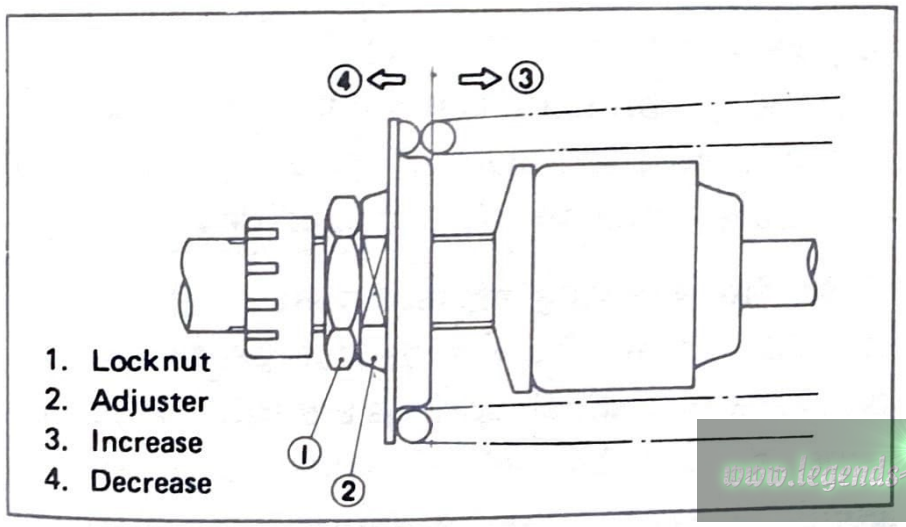
YZ400D: 292 mm (11.5 in)

Maximum adjustable extent:

YZ250D: 307 mm (12.1 in)

YZ400D: 307 mm (12.1 in)

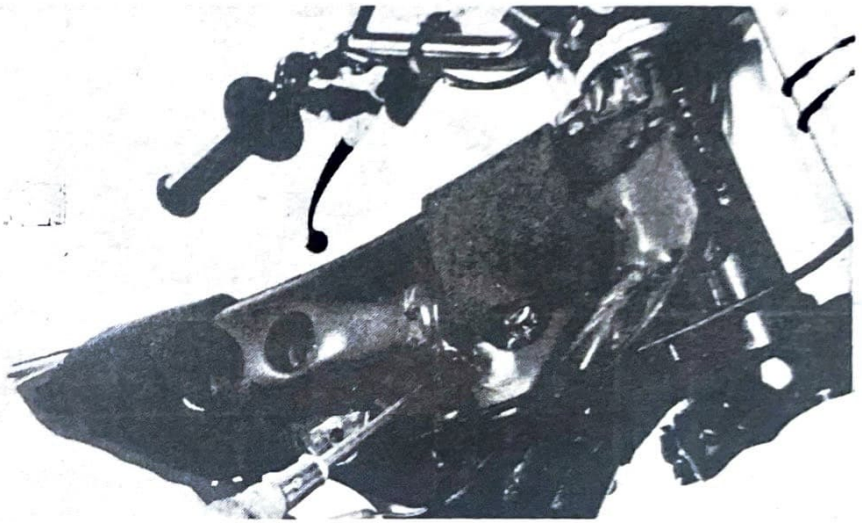
Be sure to adjust within the above limits.

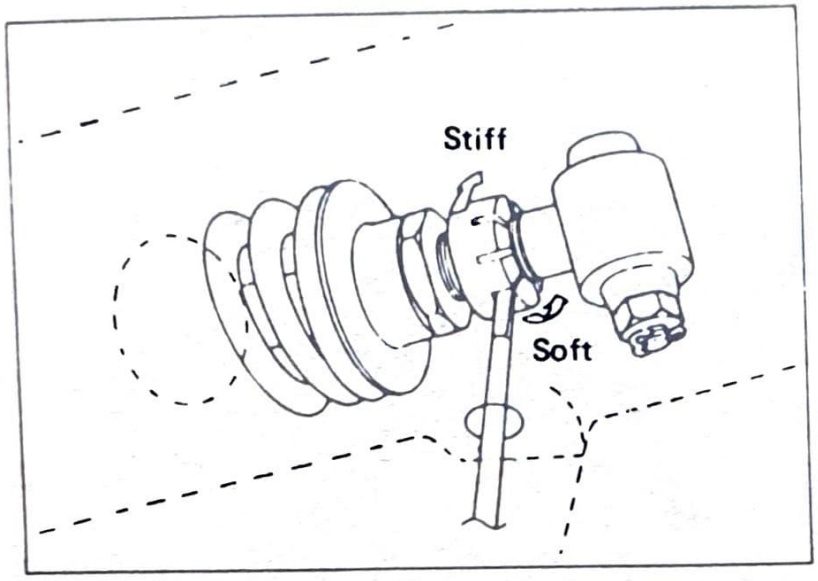


2. Changing damping performance

c. Adjustment can be made without removing the shock absorber.

Turn the adjuster with a slotted-head screw driver through the hole provided one each on either side of the frame.

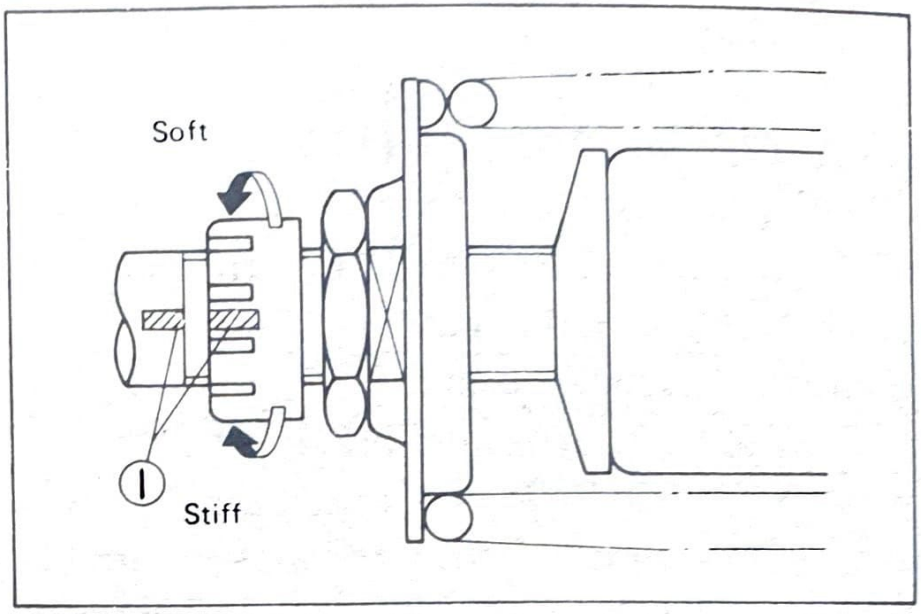




a. To make it stiffer, screw IN the adjuster.
b. To make it softer, screw OUT the djuster. Make notch by notch adjustment and test it by ruding after each adjustment.

NOTE:

Turn the adjuster until it clicks.
Maximum (Minimum) extent can be known by the position where turning suddenly feels heavy (light).
Do not give any more turns.



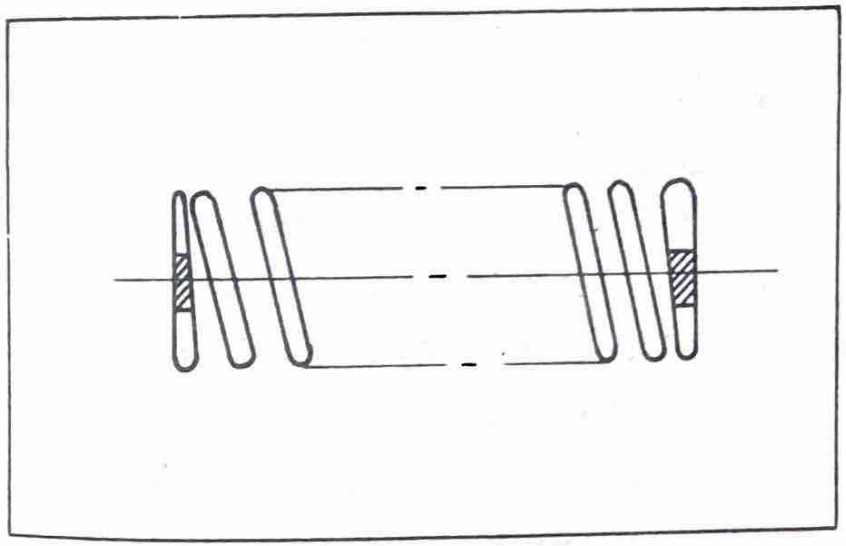
1. Match mark

3. Gas pressure
   The gas pressure can be adjusted. For this adjustment, however, please go to your nearest Yamaha Authorized dealer.

Rear shock spring replacement

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

Type	Part No.	Spring rate (kg/mm)	Color code
Soft	90501-99481	k_1 = 2.1 k_2 = 5.0	Yellow
Standard	90501-99479	k_1 = 2.55 k_2 = 5.03	Blue
Hard	90501-99480	k_1 = 2.9 k_2 = 5.0	Red

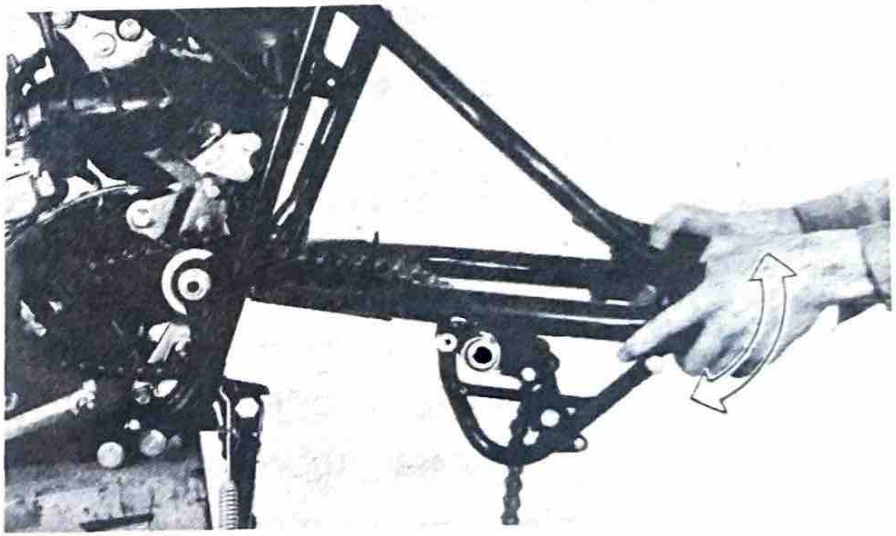


NOTE:
Code color is shown on the end of the spring.

Swing Arm Inspection

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

Swing arm freeplay:
0 ~ 1 mm (0 ~ 0.04 in)



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

CLEANING AND STORAGE

Cleaning

Frequent thorough cleaning of your motorcycle will not only enhance its apperance, 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 washes.

4. Once the majority of dirt has been hosed off, wash all surfaces with warm water and mild detergent-type soap. An old toothbrush or bottle brush is handy to reach those hard-to-get-to places.

5. Rinse machine off immediately with clean water and dry all surfaces with a chamois skin, 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.

Storage

Long term storage (30 days or more) of your motorcycle 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.

2. Remove empty fuel tank, pour a cup of 10W to 30W oil in tank, shake tank to coat inner surfaces thoroughly and drain off excess oil. Re-install tank.

3. Remove spark plug, pour about one tablespoon of 10W to 30W oil in spark plug hole and reinstall spark plug. Kick engine over several times (with ignition off) to coat cylinder wall with oil.

4. Remove drive chain. Clean thoroughly with solvent and lubricate with graphite-base chain lubricant. Re-install chain or store in a plastic bag (tie to frame for safe-keeping).

5. Lubricate all control cables.

6. Block up frame to raise both wheels off ground.

7. Deflate tires to 12 lb/in.^{2} (0.8 kg/cm.^{2})

8. Tie a plastic bag over exhaust pipe outlet to prevent moisture entering.

9. 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.

MISCELLANEOUS

CONVERSION TABLES

Metric to Inch System		
KNOWN	MULTIPLIER (Rounded off)	RESULT
TORQUE		
m-kg	7.233	ft-lb
m-kg	86.80	in-lb
cm-kg	0.0723	ft-lb
cm-kg	0.8680	in-lb
WEIGHT		
kg	2.205	lb
g	0.0353	oz
FLOW/DISTANCE		
km/lit	2.352	mpg
km/h	0.6214	mph
km	0.6214	mi
m	3.2809	ft
m	1.0936	yd
cm	0.3937	in
mm	0.03937	in
VOLUME/CAPACITY		
cc	0.03381	oz(U.S. liq)
cc	0.06103	cu. in
lit	2.1134	pt(U.S. liq)
lit	1.057	qt (U.S liq)
lit	0.2642	gal (U.S. liq)
MISC		
kg/mm	55.9970	lb/in
kg/cm²	14.2233	psi (lb/in²)
Centigrade (°C)	9/5 (°C) +32	Fahrenheit (°F)

Inch to Metric System		
KNOWN	MULTIPLIER (Rounded off)	RESULT
TORQUE		
ft-lb	0.1383	m-kg
ft-lb	13.8313	cm-kg
in-lb	0.01152	m-kg
in-lb	1.1522	cm-kg
WEIGHT		
lb	0.4536	kg
oz	28.3286	g
FLOW/DISTANCE		
mi/gal	0.4252	km/lit
mi/h	1.6093	km/h
mi	1.6093	km
ft	0.3048	m
yd	0.9144	m
in	2.540	cm
in	25.40	mm
VOLUME/CAPACITY		
oz (U.S. liq)	29.577	cc
cu. in	16.385	cc
pt (U.S. liq)	0.4732	lit
qt (U.S. liq)	0.9461	lit
gal (U.S. liq.)	3.7850	lit
MISC		
lb/in	0.01786	kg/mm
psi (lb/in²)	0.07031	kg/cm²
Farenheit (°F)	5/9 (°F−32)	Centigrade (°C)

DEFINITION OF TERMS:

m-kg – Meter-kilogram: Usually torque.
g – Gram.
kg – Kilogram: 1,000 grams.
km – Kilometer.
lit – Liter.
km/lit – Kilometer per liter: Mileage.
km/lit – Cubic centimeter (cm^3): Volume or capacity.
kg/mm – Kilogram per millimeter: Usually spring compression rate.
kg/cm^2 – Kilogram per square centimeter: Pressure.

SPECIFICATIONS

GENERAL SPECIFICATIONS

These specifications are for general use.

MODEL	YZ250D	YZ400D
DIMENSIONS/WEIGHT		
Overall length	2,135 mm (84.05 in)	←
Overall width	910 mm (35.8 in)	←
Overall height	1,180 mm (44.48 in)	←
Wheelbase	1,440 mm (56.69 in)	←
Minimum ground clearance	290 mm (11.4 in)	←
Seat height (unloaded)	910 mm (35.83 in)	←
Machine net weight	102 kg (225 lb)	104 kg (229 lb)
ENGINE		
Type	Air cooled, 2-stroke, single	←
Bore/Stroke	70x64 mm (2.756x2.52 in)	85x70 mm (3.346x2.755 in)
Displacement	246 cc (15.01 cu.in)	397 cc (24.2 cu.in)
Compression ratio	7.84 : 1	7.59 : 1
Starting system	Kick starter	←
Lubricating system	Mixed gas 20 : 1	←
CARBURETION		
Manufacturer/Type	MIKUNI VM38SC	MIKUNI VM36SC
Effective venturi size	36 mm (1.417 in)	38 mm (1.496 in)
Main jet	# 360	# 370
Needle jet	P-6	Q-0

MODEL		YZ250D	YZ400D
Jet needle		6F15-2	6F16-3
Pilot jet		# 60	←
Air screw (Turns out)		1-½	←
Cut away		2.0	3.0
Float level		18.1 mm (0.7 in)	←
CLUCH			
Type		Wet multiple disc type	←
Primary reduction system		Helical gear	←
Primary reduction ratio		64/24 (2.666)	←
TRANSMISSION			
Type		Constant mesh, 5 speed forward	←
Reduction ratio	1st	31/15 2.066	32/14 2.286
	2nd	28/18 1.555	29/17 1.706
	3rd	26/21 1.238	26/20 1.300
	4th	23/23 1.000	23/23 1.000
	5th	24/28 0.857	21/25 0.840
SECONDARY DRIVE			
Reduction system		Chain	←
Chain type/size		DK 520TR / 107L	DK520TR / 105L
Reduction ratio		54/13 4.15	50/14 3.571

MODEL	YZ250D	YZ400D
ELECTRICAL		
Magneto type / Manufacturer / Model	C.D.I. Magneto / HITACHI / M100-21	C.D.I. Magneto / MITSUBISHI / F3T35172
Coil / Manufacturer	CM61-20 / HITACHI	F6T41174 / MITSUBISHI
C.D.I. unit / Manufacturer	TIA01-16 / HITACHI	F8T00375 / MITSUBISHI
CHASSIS		
Frame type	Tubular steel double cradle	←
Front suspension travel	250 mm (9.8 in)	←
Front fork spring free length	502 mm (19.8 in)	←
Rear wheel travel	250 mm (9.8 in)	←
Rear cushion spring free length	315 mm (12.4 in)	←
Caster / Trail	59°30' / 134 mm (5.28 in)	←
Front tire size	3.00-21-4PR	←
Tread type	Full knobby	←
Nominal pressure	0.9 kg/cm^2 (13 psi)	←
Rear tire size	4.50-18-4PR	←
Tread type	Full knobby	←
Nominal pressure	1.1 kg/cm^2 (15 psi)	←
Front brake type	Drum (leading/trailing)	←
Actuating method	Cable	←
Rear brake type	Drum(leading/trailing)	←
Actuating method	Link rod	←

MODEL	YZ250D	YZ400D
VOLUME/TYPE FLUID		
Gasoline tank /Type (Gasoline: Oil ratio)	7.6 lit. / premium (20:1)	←
Transmission / Type	1,050～ 1,150 cc (oil change),	←
Front fork (each) Type	1,150～ 1,250 cc (total) / Yamalube 4-cycle oil or SAE 10W/30	←
	338 cc (11.4 oz)/SAE 15W	←
Rear shock nitrogen gas pressure	15kg/cm^2 (208.5 psi)	←

NOTE:

The Research and Engineering Departments of Yamaha are continually striving to further improve all models. Improvements and modifications are therefore inevitable.

In light of this fact, the foregoing specifications are subject to change without notice to the owner. Information regarding significant changes is forwarded to all Authorized Yamaha Dealers as soon as available. If a discrepancy is noted, please consult your dealer.

MAINTENANCE SPECIFICATIONS

MODEL	YZ250D	YZ400D
C.D.I. IGNITION		
Secondary ignition coil resistance (Primary)	0.6Ω± 10%/20°C (68°F)	1.0Ω ± 10%/20°C (68°F)
Secondary ignition coil resistance (Secondary)	6.0KΩ ± 20%/20°C (68°F)	5.9Ω ± 10%/20°C (68°F)
Ignition timing (Advanced)	2.3 mm (0.09 in)	2.7 mm (0.106 in)
Spark plug (Normal conditions)	N2G Champion	N3G Champion
Spark plug gap	0.7 mm (0.028 in)	←

MODEL	YZ250D	YZ400D
ENGINE - TOP END		
Piston clearance	0.045 - 0.050 mm (0.0018 - 0.0020 in)	0.055 - 0.060 mm (0.0021 - 0.0024 in)
Piston wear limit	0.1 mm (0.004 in)	←
Ring end gap (Installed)	0.4 - 0.5 mm (0.016 - 0.019 in)	0.3 - 0.5 mm (0.012 - 0.019 in)
Connecting rod / Axial play	0.4 - 2.0 mm (0.016 - 0.079 in)	←
Connecting rod / Crank side clearance	0.25 - 0.75 mm (0.010 - 0.029 in)	←
ENGINE - CLUTCH		
Friction plate thickness	3.0 mm (0.118 in) (2.7 mm minimum)	←
Clutch plate warp allowance	0.05 mm (0.002 in)	←
Clutch spring free length	36 mm (1.42 in) (35 mm minimum)	←
CHASSIS		
Front brake shoe diameter	130 mm (5.118 in)	←
Front brake shoe replacement limit	126 mm (4.96 in)	←
Rear brake shoe diameter	160 mm (6.3 in)	←
Rear brake shoe replacement limit	156 mm (6.14 in)	←
Wheel run-out limits vertical	1.0 mm (0.04 in)	←
Wheel run-out limits lateral	0.5 mm (0.02 in)	←
TORQUE VALUES		
Cylinder head	M8 2.5 m-kg (18 ft-lb)	←
Cylinder	M10 3.5 m-kg (25 ft-lb)	←
Clutch boss	M20 7.5 m-kg (54 ft-lb)	←

MODEL	YZ250D	YZ400D
Primary drive gear	M18 7.5 m-kg (54 ft-lb)	←
Drive sprocket	M18 7.5 m-kg (54 ft-lb)	←
C.D.I. rotor	M12 8.0 m-kg (58 ft-lb)	←
Engine mounting bolt (front upper)	M8 2.5 m-kg (18 ft-lb)	←
" (front, lower)	M8 2.5 m-kg (18 ft-lb)	←
" (rear, upper)	M8 2.5 m-kg (18 ft-lb)	←
" (rear, lower)	M8 2.5 m-kg (18 ft-lb)	←
Handle crown and inner tube	M8 1.5 m-kg (11 ft-lb)	←
Handle crown and steering shaft pinch bolt	M8 1.5 m-kg (11 ft-lb)	←
Steering stem bolt	M14 6.0 m-kg (43 ft-lb)	←
Handle crown and handle holder	M8 1.5 m-kg (11 ft-lb)	←
Under bracket and inner tube	M8 2.5 m-kg (11 ft-lb)	←
Under bracket and steering shaft	M10 2.0 m-kg (15 ft-lb)	←
Front fork cap bolt	M34 2.5 m-kg (18 ft-lb)	←
Front wheel axle	M15 6 m-kg (43 ft-lb)	←
Pivot shaft	M16 9 m-kg (65 ft-lb)	←
Rear wheel axle	M16 8 m-kg (58 ft-lb)	←
Driven sprocket	M8 2.5 m-kg (18 ft-lb)	←
Rear hub stud bolt	M8 2.5 m-kg (18 ft-lb)	←
Rear suspension ass'y (frame)	M8 2.5 m-kg (18 ft-lb)	←
" (Adjuster locknut)	M4 6 m-kg (43 ft-lb)	←

INTERCHANGEABILITY OF C.D.I. MAGNETO AND TRANSMISSION

C.D.I. magneto and transmission from YZ250D/400D can be interchangeability used on IT/DT models. The following explains this interchangeability for your reference where necessary.

1. C.D.I. Magneto

C.D.I. magneto and C.D.I. unit are installed on each model in a combination as listed below, and they are interchangeable as a set combined in this manner. It should be noted, however, that the combination for the YZ400D cannot be applied to the IT250D.

	YZ250D	YZ400D	IT250D	IT400D
C.D.I. magneto Part no. Type Moment of inertia	Inner rotor type 1W3-85500-10 M100-21 1.6 kg-cm^2	Outer rotor type 1W4-85500-20 F3T35172 38 kg-cm^2	1W5-85500-20 F3T35171 ←	1W6-85500-20 F3T35072 50 kg-cm^2
C.D.I. unit Part no. Type	509-85540-10 T1A01-16	1W4-85540-20 F8T00375		1M2-85540-21 F8T00372
Lighting coil	Without		With	

2. Ignition timing

CAUTION: Conform to the specified ignition timing.

a. Change from inner rotor type
   1) Temporarily set the rotor by fitting it to the key groove. Do not install the stator in this step.
   2) Rotate the rotor so as to bring the piston stroke to the specified ignition timing using a dial gauge (see Ignition Timing, page 28).
   3) Then punch a timing mark on the crankcase to align with the timing mark on the rotor.
   4) Remove the rotor and install the stator in alignment with the punched mark on the crankcase; then install the rotor.

b. Change from outer to inner rotor type
   1) See YZ250D Ignition Timing on page 28. The timing mark on the crankcase may be disregarded in this procedure.
   2) Apply the same circuitry as on the YZ250D (see page 50).
   3) Although the ignition coil is interchangeable, use of the same brand is recommended. Some coils of MITSUBISHI made may have a diode and will not start the engine when installed.

3. Installation of Outer Rotor Type furnished with Lighting Coil
   a. Engine operation is possible without lighting kit (headlight, taillight and handle switch ass'y).
   b. When the lighting kit is fitted, apply the same wiring (including the ignition system) as on the IT250D with some alterations to the load wire, etc. Contact your nearest Yamaha dealer.

c. Engine operation is possible without lighting kit.

d. Same as 3-b. 2).

4. Installation of Outer Rotor Type with Lighting Coil to YZ400D

a. Igition timing

1) Using the timing mark on the crankcase, follow the procedure for YZ400D Ignition Timing on page 28

2) Replace the crankcase and follow the 2-a procedure in the event of not punched mark.

b. C.D.I. magneto for the IT250D is the same as for YZ400D with only lighting coil added.

5. Transmission

The following table shows the transmission gear ratio for each model in the YZ, IT and DT series, and wheel gear and pinion gear (main axle) are interchangeable as a set for varied speeds. Also, transmission ass'y is interchangeable for all from A through E.

Kind / Model / Speed		A	B	C	D	E
		YZ400D IT250D	IT400D	YZ250D	DT250D	DT400D
1st	1st wheel gear / Main axle	32/14	33/13	31/15	Common with B	38/14
2nd	2nd wheel gear / 2nd pinion gear	29/17	Common with A	28/18	34/19	Common with D
3rd	3rd wheel gear / 3rd pinion gear	26/20	Common with A	26/21	Common with A	Common with A
4th	4th wheel gear / 4th pinion gear	23/23	Common with A	Common with A	Common with A	Common with A
5th	5th wheel gear / 5th pinion gear	21/25	20/26	24/28	Common with B	Common with A

* The drive axle is common for all from A through E.

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/OR REPAIR.