



YAMAHA

IT175H

OWNER'S MANUAL
TUNING AND SERVICE

IMPORTANT NOTICE

THIS MACHINE IS DESIGNED STRICTLY FOR COMPETITION USE ONLY. IT IS ILLEGAL TO OPERATE THIS VEHICLE ON STREET. OFF ROAD USE ON PUBLIC LAND MAY BE ILLEGAL. PLEASE CHECK YOUR LOCAL RIDING AREA REGULATIONS. SUSPENSION ON THIS MACHINE CAN BE ADJUSTED TO ACCOMODATE DIFFERING RIDER WEIGHTS AND TECHNIQUE.

SAFETY WARNINGS:

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

www.legends-yamaha-enduros.com

IT175H

OWNER'S SERVICE MANUAL

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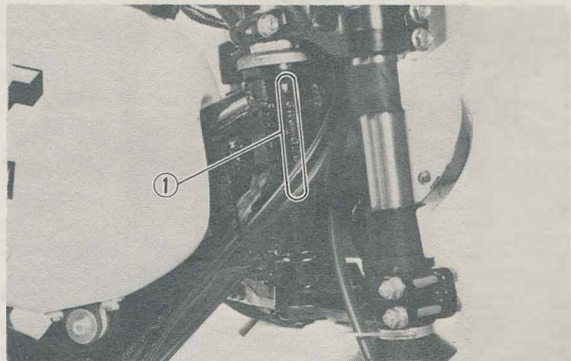
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GENERAL INFORMATION

MACHINE IDENTIFICATION

Frame serial number

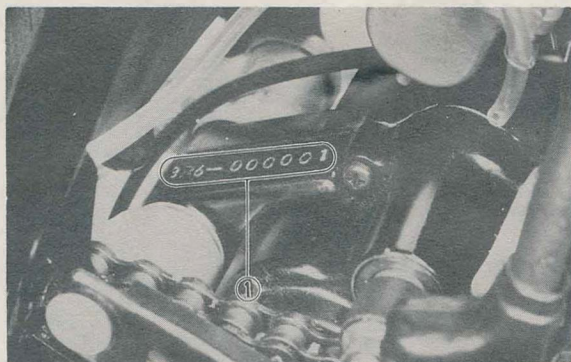
The frame serial number is stamped on the right side of the steering head pipe.



1. Frame serial number

Engine serial number

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



1. Engine serial number

NOTE:

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

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

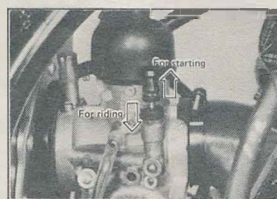
CONTROL FUNCTIONS

WARNING:

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. Observe the break-in procedures to preclude mechanical failures.
3. This model is designed for OFF ROAD use only. 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.



Starter knob

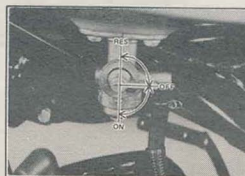
When cold, the engine requires richer fuel mixture for starting. Pull the knob up to open the circuit (for starting) and push it down to close the circuit before riding. Never ride the machine with the starter knob up.



Tool bag
Owner's tool kit is in this bag.

Headlight
(25W)

Kick crank
Brake pedal



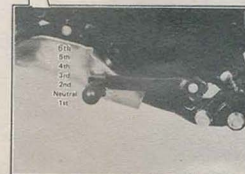
OFF: Fuel will not flow. Always return the lever to this position when the engine is not running.

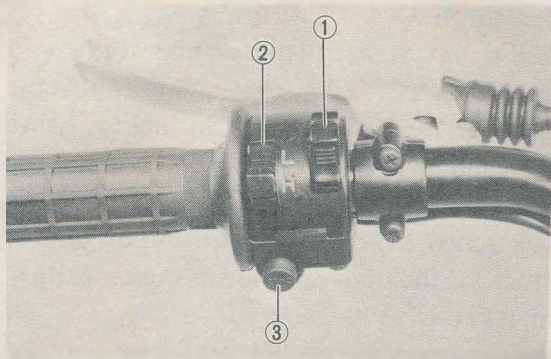
ON: Fuel flow to the carburetor. Normal riding is done with the lever in this position.

RES: This indicates "RESERVE". If you run out of fuel while riding, move the lever to this position. THEN, FILL THE TANK AT THE FIRST OPPORTUNITY.

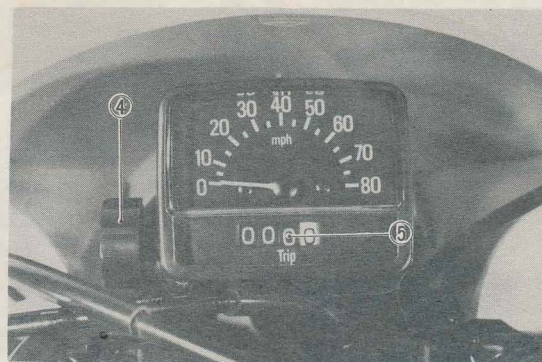


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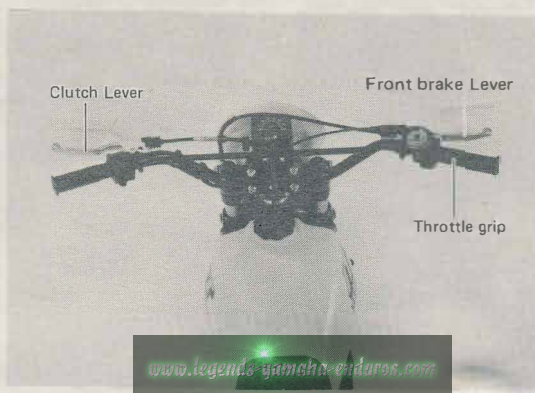




1. Lighting switch
When the lighting switch is moved forward, both headlight and taillight come on.
2. Dimmer switch
"H" position for high beam
"L" position for low beam
3. Engine stop button
Push the button and hold it to stop the engine.



4. Reset knob
1) Turn the knob clockwise to reset the meter.
2) To change the meter reading partly, pull the knob and turn it as required.
5. Trip-odometer



FUEL AND OIL

Fuel

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

Fuel tank capacity: 11 l (2.9 US. gal)

Engine mixing oil

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

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

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

CAUTION:

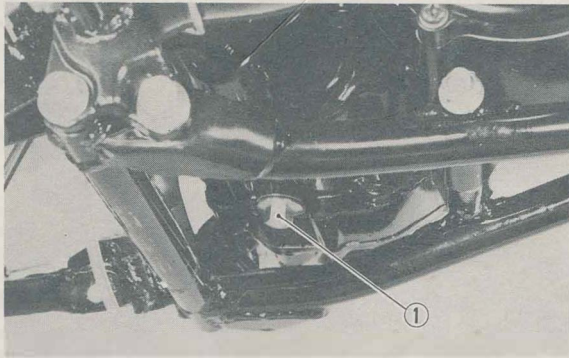
Always use the oil of same brand.
Never use any other brand of oil.

Transmission oil OIL REPLACEMENT

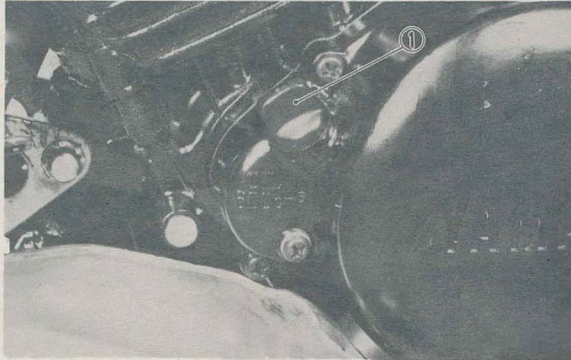
On the bottom of the engine there is a drain plug. Remove it and drain all the oil from the transmission. Reinstall the drain plug (make sure it is tight). Add oil through filler hole.

Transmission oil capacity:
Periodic oil change:
600 cc (0.63 US qt)
Overhaul:
700 cc (0.74 US qt)

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



1. Drain plug



1. Filler plug

CHECKING OIL LEVEL

On the left side of the engine there is a checking screw. To check, warm up the engine for 2~ 3 minutes. Stop engine. Leave the engine as it is for a few minutes and place the machine upright, then remove the oil level check screw. If oil flows out, the oil level is correct. If the oil level is lower than specification, add oil.



1. Checking screw

PRE-OPERATION CHECKS

Before using this machine please check the following points:

Item	Procedure	Page
Brakes	Check operation/adjustment	14, 15
Clutch	Check operation/adjustment	13, 14
Fuel tank	Fill with proper fuel/oil mixture	2
Transmission oil	Check oil level/Change oil as required	2, 3
Drive chain	Check alignment/adjustment/lubrication	15, 16
Spark plug	Check color and condition/Replace as required	10
Throttle cable	Check for proper cable operation	11, 12
Air filter	Clean and damp with oil	12, 13
Wheels & tires	Check pressure/runout/spoke tightness/axle nuts	44
Fittings/fasteners	Check all/tighten as necessary	—
Lights	Check operation.	—

NOTE:

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

STARTING AND OPERATION

CAUTION:

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

WARNING:

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

This model is not equipped with highway approved lighting. This model is designed solely for competition use and should not be used on a street or highway at any time. In most instances, it is illegal to drive this model on any public street or highway.

Starting a cold engine

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

Warm-up

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

CAUTION:

Do not operate engine for extended warm-up periods.

Starting a warm engine

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

CAUTION:

Observe break-in procedures for initial operation.

Break-in procedures

1. Prior to starting, fill tank with a break-in gasoline/oil mixture of 15 : 1.
2. After fueling and pre-operational checks have been made, refer to "Starting and Operation" and start engine.
3. Allow engine to warm up. Check engine idle speed. Check operating controls and "Engine stop switch operation".
4. Operate machine in lower gears at moderate throttle settings for 5 ~ 8 minutes. Check spark plug condition. Spark plug will show rich condition during break-in.
5. Allow engine to cool. Repeat procedure, running for 5 minutes. Very briefly, shift to higher gears (4th or 5th) and check full throttle response. Check spark plug condition.
6. Allow engine to cool. Repeat procedure, running for 5 minutes. Full throttle and higher gears may be used, but avoid sustained full throttle operation. Check spark plug condition.
7. Allow engine to cool. Remove cylinder head and inspect.
For disassembly, refer to page 21. Remove "high" spots on piston with No.600 grit, wet sandpaper. Clean and carefully reassemble.
8. Remove break-in fuel/oil mixture from tank. Refill with specified operation fuel/oil mixture. Check entire unit for loose or mis-adjusted fittings/controls /fasteners.
9. Re-start engine and check through entire-operating range thoroughly. Stop. Check spark plug condition. Restart. After 10 ~ 15 minutes operation, machine is ready to race.

CAUTION:

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

PERIODIC MAINTENANCE AND ADJUSTMENTS

MAINTENANCE AND LUBRICATION SCHEDULE CHART

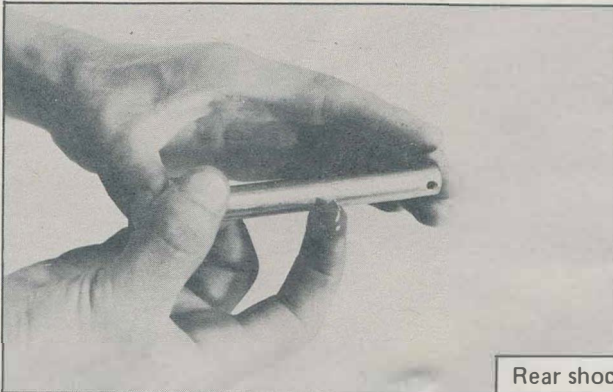
The maintenance and lubrication schedule chart should be considered strictly as a guide to general maintenance and lubrication intervals. You must take into consideration that weather, terrain, geographical locations, and a variety of individual uses all tend to demand that each owner alter this time schedule to match his environment. For example, if the machine is continually operated in an area of high humidity, 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.

	After Every Ride	Every 500 km (300 Miles)	Every 1,300 km (800 Miles)	After Every Event (Competition)	As Required	Recommended lubricant type
WASH MACHINE	(This item is also essential to proper performance)				x	
PISTON						
Inspect		x		x		
Clean		x		x		
Replace					x	
RINGS						
Inspect		x		x		
Replace			x		x	
CYLINDER						
Inspect		x		x		
Head torque		x		x		
Replace					x	
CLUTCH						
Adjust		x		x		
Replace plates					x	
TRANSMISSION						
Oil change/		x		x		Use Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil.
Inspect gears/shift mech.						
Replace bearings					x	
CRANKSHAFT						
Main bearing check			x			
Big end check			x			
Small end check		x				
Piston pin check		x				
CARB						
Clean, inspect, & adjust		x		x		
EXHAUST SYSTEM						
Inspect & tighten		x		x		
Clean and decarbonize					x	

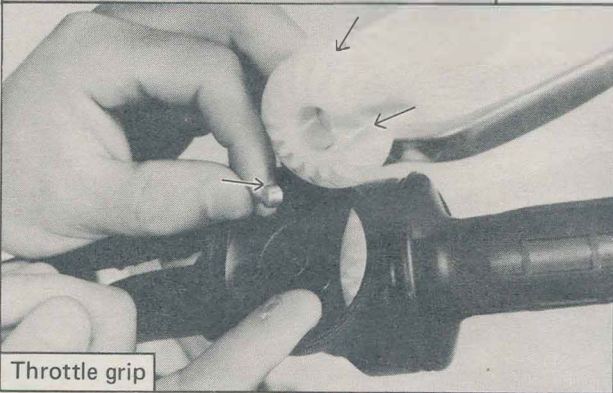
	After Every Ride	Every 500 km (300 Miles)	Every 1,300 km (800 Miles)	After Every Event (Competition)	As Required	Recommended lubricant type
FRAME Clean & inspect		x		x		
SWING ARM Check Lubricate		x		x	x	Use lithium-base grease.
CONTROL & CABLES Check & adjust Lubricate	x	x		x		1. Use YAMAHA CHAIN/CABLE LUBE. 2. Use SAE 10W/30 "SE" motor oil. (If desired, specialty lubricants of quality manufacture may be used.)
BRAKES Check & adjust Replace linings		x		x	x	
WHEELS & TIRES Check runout Check spokes Check bearings	x	x		x		
STEERING HEAD Check Clean , lube & repair		x		x		Medium-weight wheel bearing grease of quality manufacture-preferably waterproof.
CDI Check connectors		x		x		
AIR FILTER Clean & oil Replace	x		x	x	x	Air filter: Foam element air filter must be damp with oil at all times to function properly. Clean and lube every ride. Do not over-oil. Use 2-stroke engine oil.
SPARK PLUG Check condition	x					
DRIVE CHAIN Clean & lubricate Check tension Replace	x x				x	1.Use YAMAHA CHAIN/CABLE LUBE. 2.Use SAE 10W/30 "SE" motor oil. (If desired, specialty lubricants of quality manufacture may be used.)
FUEL TANK Clean Clean petcock filter		x	x	x		
REAR SHOCK Clean & inspect		x		x		

FRONT FORKS Clean & change oil Replace seals		x		x	x	Use Yamaha Fork Oil 10 wt.
CLUTCH & BRAKE SHAFTS Lubricate		x		x		Use lithium-base grease.

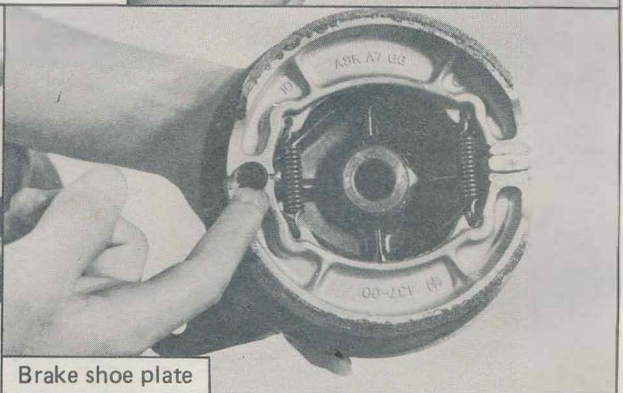
LUBRICATION



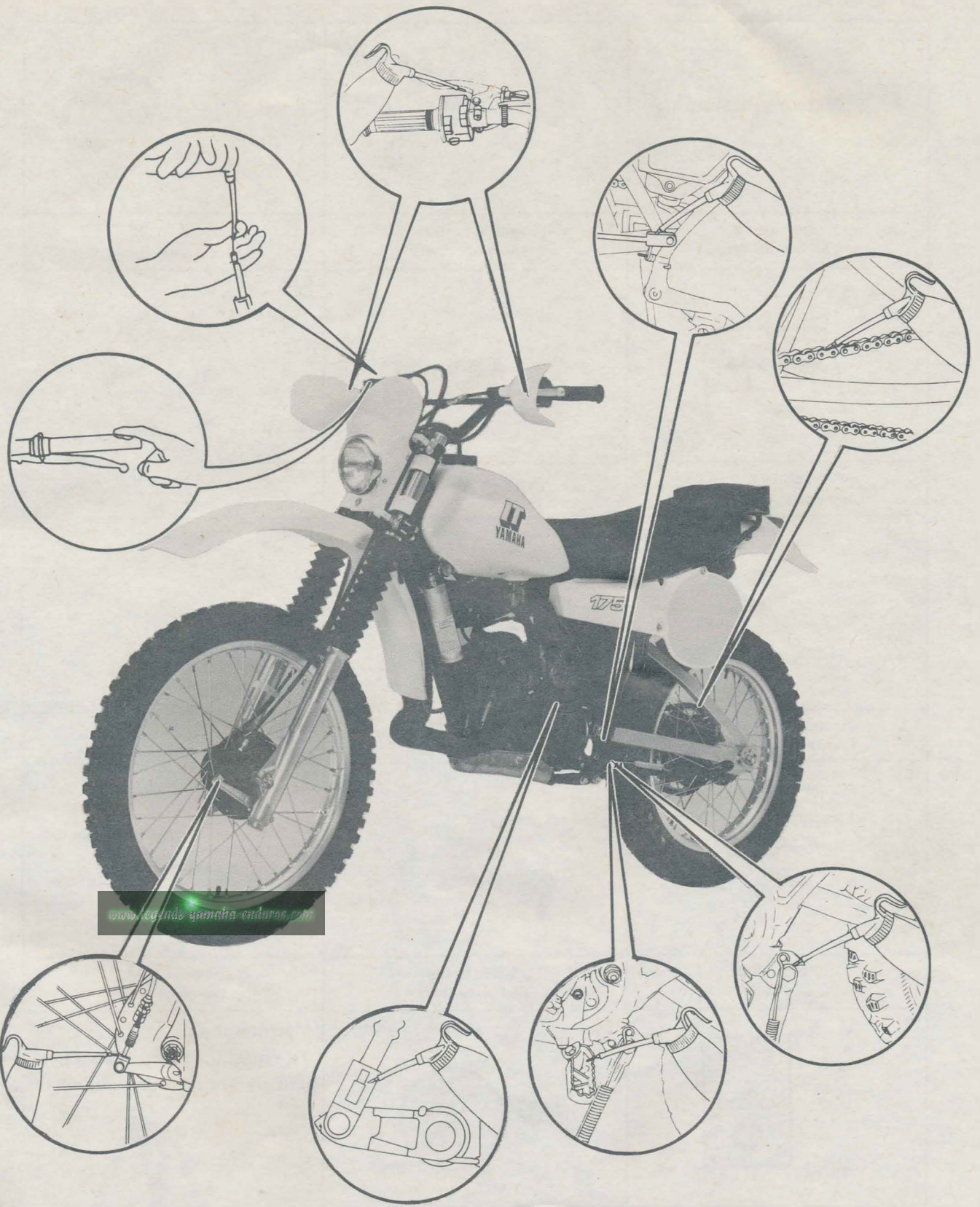
Rear shock absorber



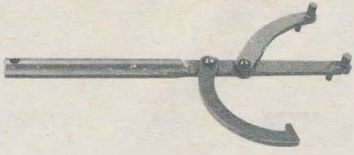
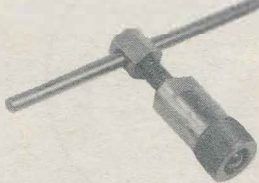
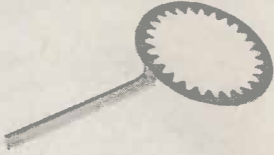


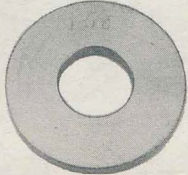




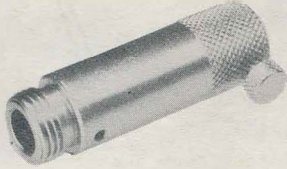

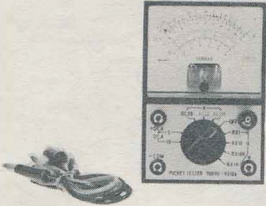
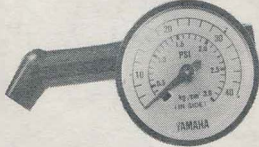

Throttle grip



Brake shoe plate



SPECIAL TOOLS

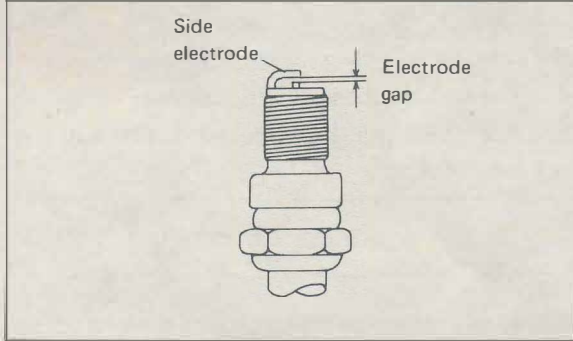
<p>1</p> 	<p>2</p> 	<p>3</p> 
<p>90890-01235 Flywheel holding tool</p>	<p>90890-01189 Flywheel puller</p>	<p>90890-01022 Clutch holding tool</p>
<p>4</p> 	<p>5</p> 	<p>6</p> 
<p>90890-01135 Crankcase separating tool</p>	<p>90890-01012 Crankshaft setting pot</p>	<p>90890-01016 Spacer</p>
<p>7</p> 	<p>8</p> 	<p>9</p> 
<p>90890-01015 Crankshaft setting tool</p>	<p>90890-01051 Steering nut wrench</p>	<p>90890-01212 Cylinder fork guide wrench</p>
<p>10</p> 	<p>11</p> 	<p>12</p> 
<p>90890-03002 Dial gauge</p>	<p>90890-01195 Dial gauge stand</p>	<p>90890-03098 Dial gauge needle</p>
<p>13</p> 	<p>14</p> 	<p>Machine stand The machine stand shown below will greatly facilitate your service.</p>
<p>90890-03104 Pocket tester</p>	<p>2X4-2811A-00 Air check gauge</p>	

ADJUSTMENTS

Spark plug

Standard spark plug:
N-2G (CHAMPION)

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



Adjustment can be made by bending the side electrode.

Electrode gap: 0.7 mm (0.028 in)

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

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

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

NOTE: _____
If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/2 to 1/4 turns past finger tight. Have the spark plug torqued to

the correct value as soon as possible with a torque wrench.

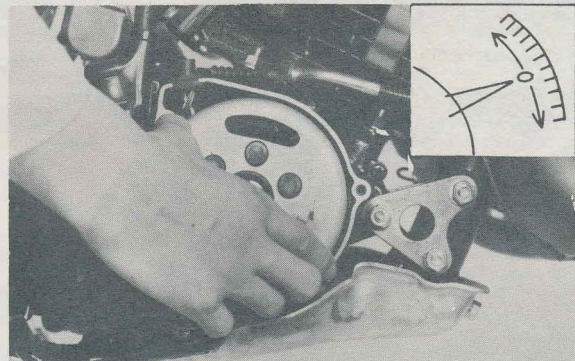
Ignition timing

Checking

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

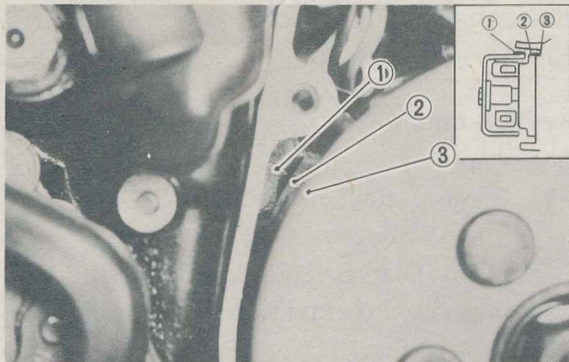


3. Remove right engine crankcase cover.
4. Rotate rotor until piston is at top-dead-center (T.D.C.). Tighten set screw on dial gauge stand to secure dial gauge assembly. Set the zero on dial gauge face to line up exactly with dial gauge needle. Rotate rotor back and forth to be sure that gauge needle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



5. Starting at TDC, rotate flywheel counter-clockwise until dial gauge reads approximately 3 needle revolutions before top-dead-center.
6. Slowly turn flywheel clockwise until dial gauge reads ignition advance setting listed in specifications table.

Ignition timing: 2.6 mm (0.102 in)



1. Flywheel mark 2. Base mark 3. Case mark

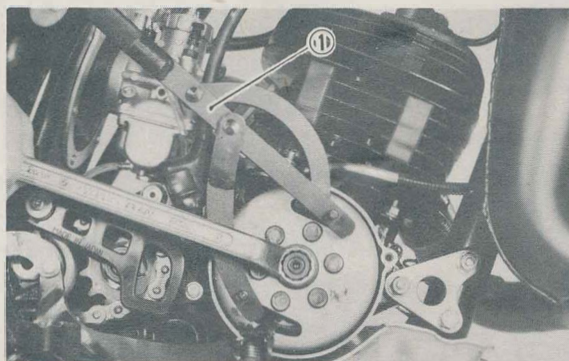
7. Check the marks on the flywheel and crankcase for alignment. If they are not aligned, punch a new mark on the crankcase matching the one on the flywheel.

NOTE:

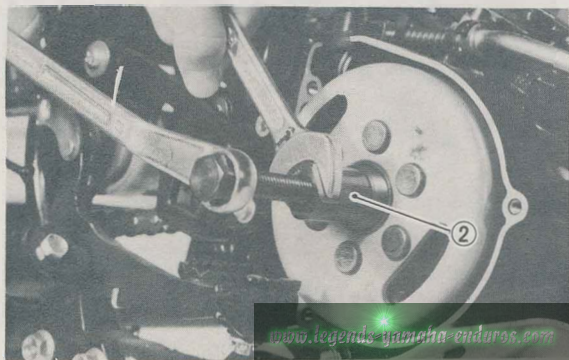
Be sure to locate the position in the correct position before remarking.

Adjustment

1. Remove the magneto flywheel.

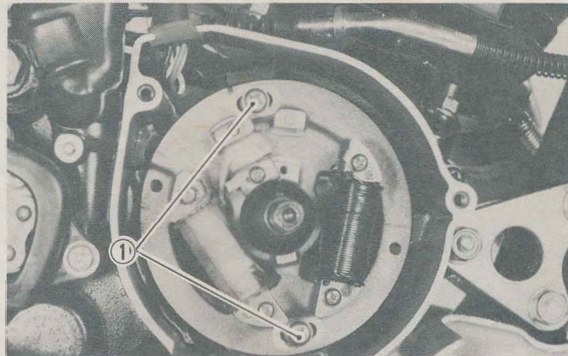


1. Flywheel holding tool



1. Flywheel puller

2. Loosen the base setting screws.
3. Turn the base right or left until the base mark aligns the case mark.



1. Set screw

4. Tighten the base setting screws.
5. Reinstall the flywheel and tighten the lock nut.

Tightening torque: 7.5 m·kg (50 ft·lb)

In case of crankcase replacement how to adjust the ignition timing.

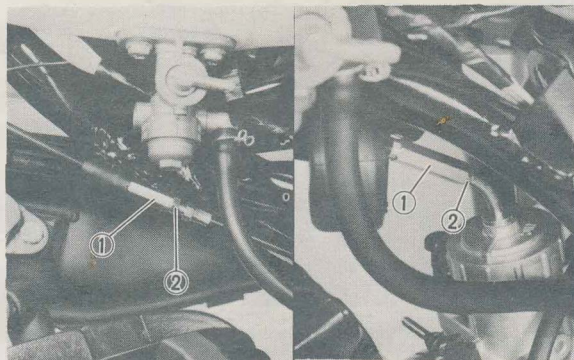
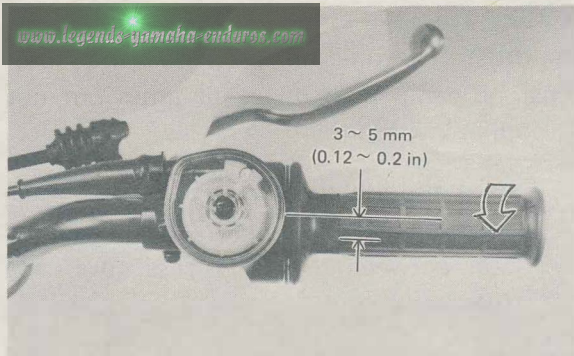
1. Screw the dial gauge mounted on its holder into the spark plug hole.
2. While rotating the rotor in one direction, right and left, watch for the gauge needle to start reversing its course.
3. Stop the rotor just where the needle begins to take its return course, and the top dead center can be determined.
4. Then, dial the gauge so the needle is on the digit "0" on the scale.
5. Rotate the rotor counter-clockwise until the needle indicates the figure specified in the ignition timing spec. table.

Ignition timing: 2.6 mm (0.102 in)·

6. Then, punch an alignment mark on the crankcase in line with that on the rotor.
7. For ignition timing setting, follow the procedure in the above "Adjustment".

Throttle cable adjustment

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

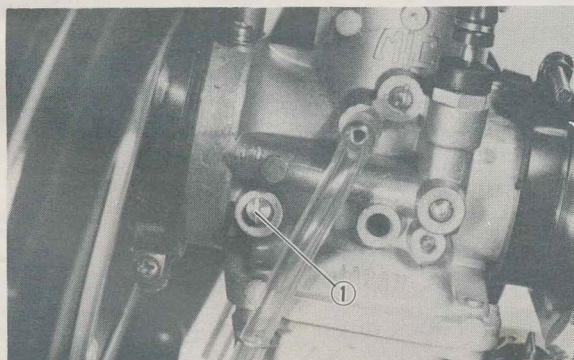


1. Adjuster 2. Lock nut

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

Idle speed adjustment

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



1. Pilot air screw

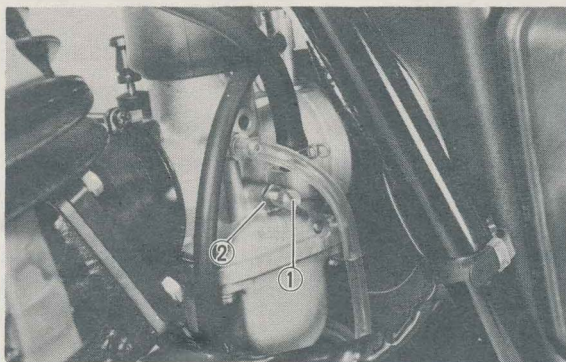
Pilot air screw turns out: 1 and 1/4

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

NOTE:

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

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



1. Throttle stop screw 2. Lock nut

NOTE:

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

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

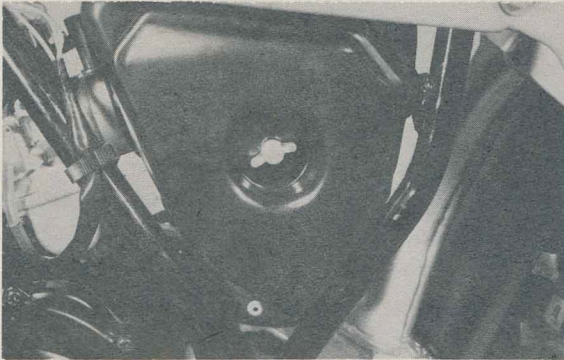
AIR FILTER

The air filter protects the engine from dirt which can enter with the intake air and cause rapid engine wear.

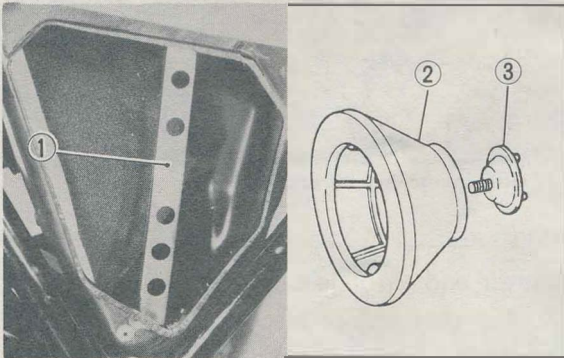
This model's double layer filter should be cleaned after every ride.

Removal

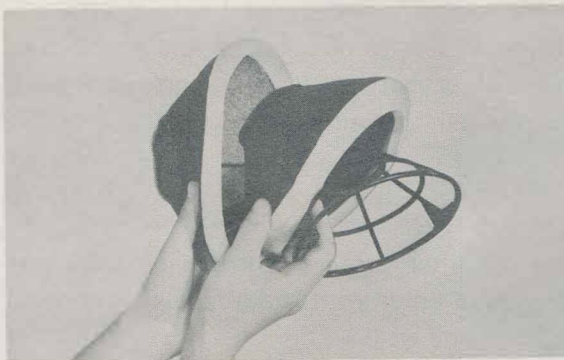
1. Remove the wing nut and remove the filter case cover.



2. Remove the stay from the filter case and turn the filter fitting plate counterclockwise and remove it.
3. Pull out the filter from case.



1. Stay 2. Filter 3. Plate



Cleaning

1. Wash the filter gently, but thoroughly, in solvent.
2. Squeeze the excess solvent out of the filter and let it dry.
3. Pour a small quantity of 30W motor oil onto the filter and work thoroughly into the porous foam material.
4. Re-insert the guide into the filter.

NOTE:

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

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



6. Reinstall the filter assembly and parts removed for access.

NOTE:

Each time air filter maintenance is performed, check the air inlet to the filter case for obstructions. Check the air filter 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:

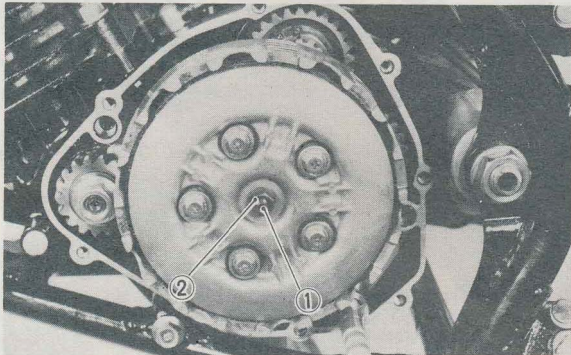
Never operate the engine with the air filter removed. This will allow unfiltered air to enter causing rapid wear and possible engine damage. Additionally, operation without the air filter will affect carburetor jetting with subsequent poor performance and possible engine overheating.

CLUTCH

Mechanism adjustment

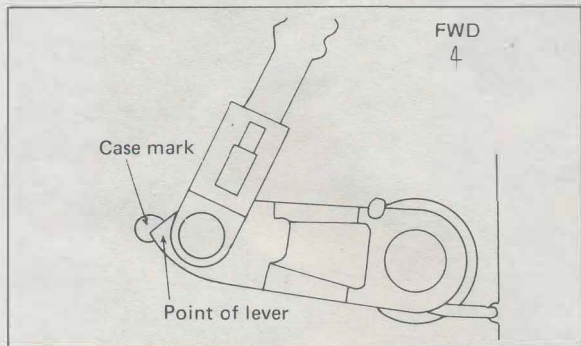
1. Fully loosen the cable in-line length adjuster lock nut and screw in the adjusters until tight.
2. Turn the handle lever adjuster in.

- Footrest holds with two bolts, remove rear one and loosen the front one. Remove the change pedal.
- Drain the transmission oil and remove the crankcase cover.
- Loosen the adjuster lock nut on the pressure plate.



1. Adjuster 2. Lock nut

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



- Turn the mechanism adjuster in until resistance is felt, then back out 1/4 turns, and tighten the lock nut.

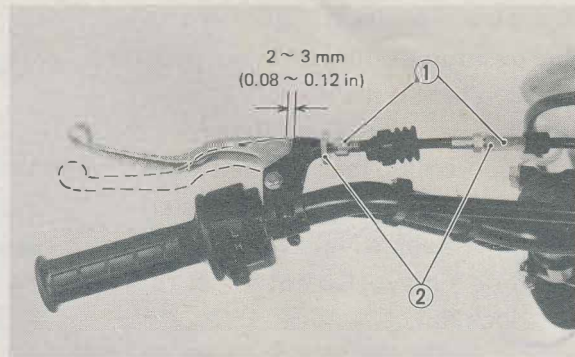
Tightening torque: 0.8 m·kg (6 ft·lb)

- Adjust the lever freeplay.

Lever adjustment

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

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

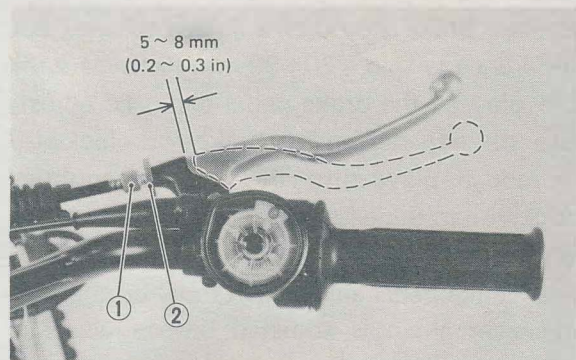


1. Adjuster 2. Lock nut

Front brake

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

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



1. Adjuster 2. Lock nut

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

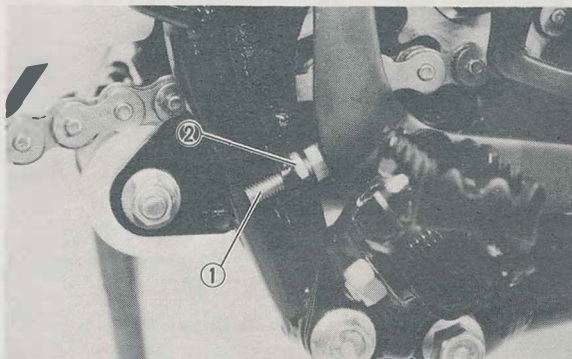


1. Adjuster 2. Lock nut

Brake pedal position adjustment

The position of the rear brake pedal should be adjusted to suit the rider.

1. Loosen adjuster on the brake rod.
2. Loosen the lock nut and adjust the pedal height by turning the adjuster.
3. After adjusting, check for correct rear brake play. Do not forget to tighten the lock nut.



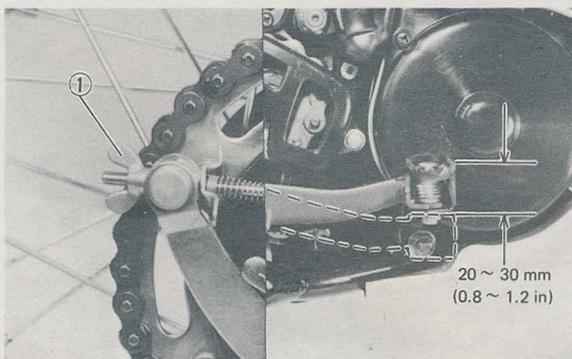
1. Adjuster 2. Lock nut

Rear brake

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

NOTE:

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



1. Adjuster

Drive chain tension check

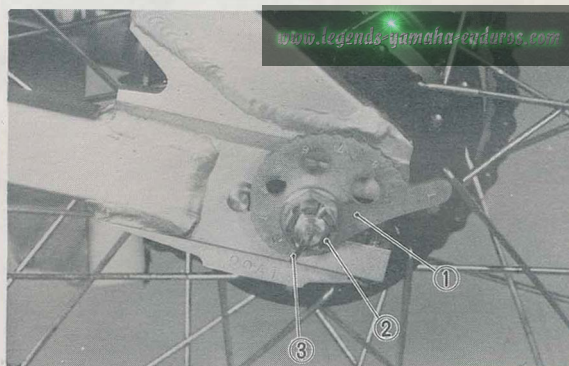
To check the chain play, the machine must stand vertically with its both wheels on the ground and without operator on it. Check the tension at the position shown in

the photo. The normal vertical deflection is approximately 10 ~ 15 mm (0.39 ~ 0.59 in). If the deflection exceeds 15 mm (0.59 in) adjust the chain tension.



Drive chain tension adjustment

1. Loosen the rear brake adjuster.
2. Remove the rear axle cotter pin.
3. Loosen the rear wheel axle nut.
4. Turn chain puller both left and right, until axle is situated in same puller slot position on each side.



1. Chain puller 2. Axle nut 3. Cotter pin

NOTE:

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

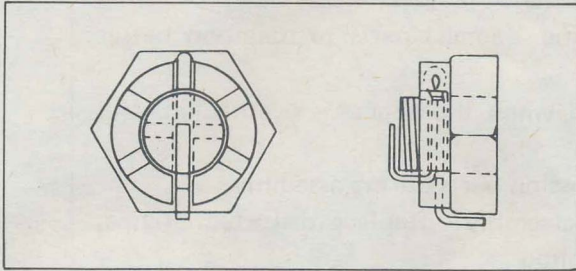
CAUTION:

Do not over tighten the chain. Excessive chain tension will overload the engine and other vital parts; Keep the tension within the specified limits.

5. Tighten the rear axle nut.

Axle nut torque: 8.5 m·kg (60 ft·lb)

6. Insert the new cotter pin into the rear wheel axle nut and bend the end of cotter pin. If the nut notch and pin hole do not match, tighten the nut slightly to match.



7. In the final step, adjust the play in the brake pedal.

CAUTION:

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

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

Steering head adjustment

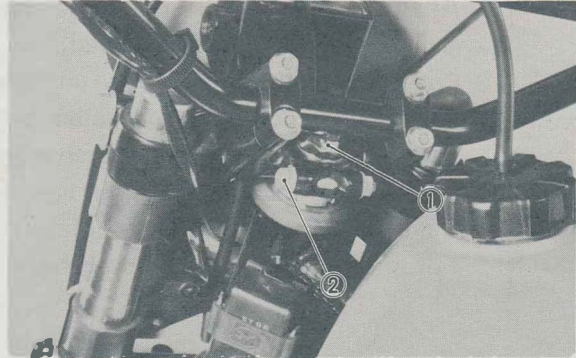
1. With front wheel elevated, grab bottoms of fork legs and gently push and pull to check steering head free play. There should be no noticeable free play.



NOTE:

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

2. To adjust, first loosen upper stem pinch bolt.
3. Loosen steering fitting bolt.



1. Steering fitting bolt 2. Stem pinch bolt

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

Tightening torque: 1.0 m-kg (7 ft-lb)



1. Steering nut wrench

5. Tighten fitting bolt and torque to specification.

Fitting bolt torque: 9.5 m-kg (68 ft-lb)

6. Tighten pinch bolt at fork crown and torque to specification.

Stem pinch bolt torque:
2.3 m-kg (17 ft-lb)

MAINTENANCE AND MINOR REPAIRS

PREPARATION FOR SERVICE

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

Tool kit

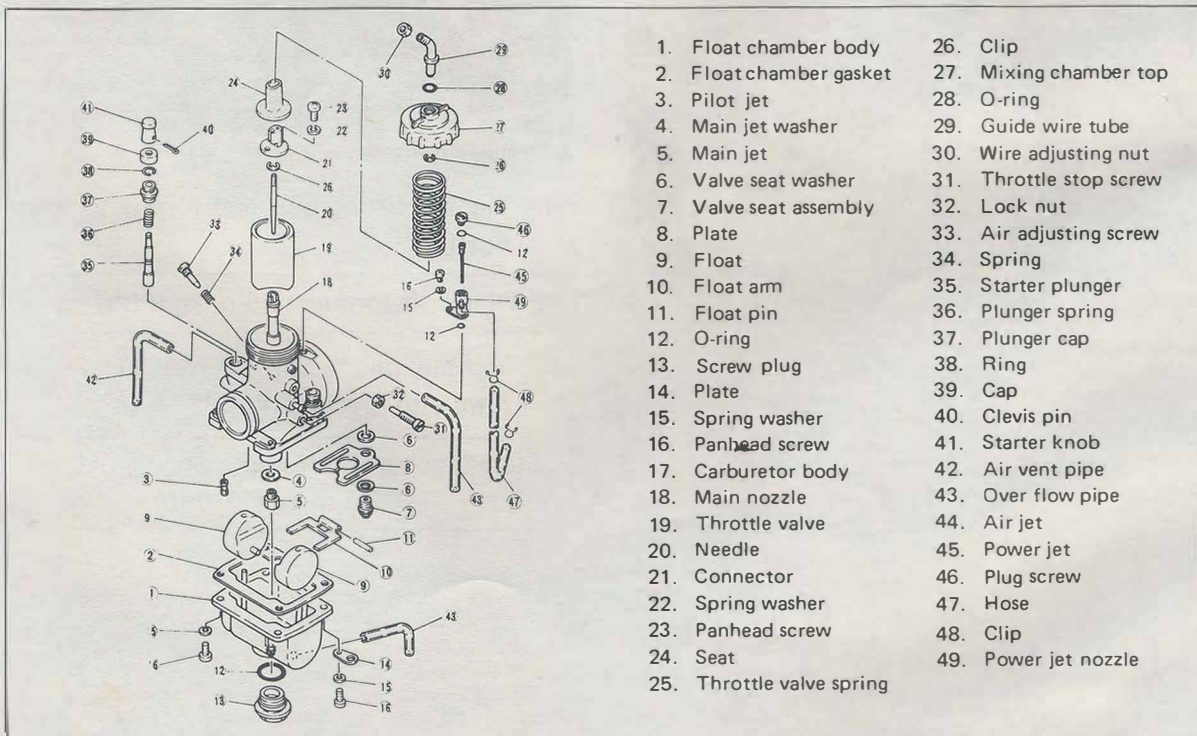
The owner's tool kit contains the tools which enable the owner to perform simple adjustments or periodic maintenance.



1. Tool kit

ENGINE

CARBURETOR



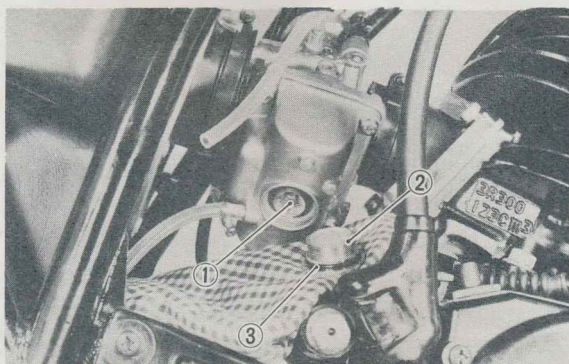
Replacement of main jet

1. Turn fuel petcock lever to the "OFF" position.
2. Disconnect the fuel hose.
3. Loosen the manifold and inlet joint bands (hose clamps).
4. Rotate carburetor, exposing main jet cover bolt.
Remove bolt. Main jet is located directly behind bolt.
5. Remove the main jet. Change as required. Reinstall cover bolt and reassemble, reversing steps 1 through 3.

Standard Main Jet Size: # 210

—WARNING:—

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



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

—IMPORTANT:—

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

engine performance and/or possible engine damage. Please consult your YAMAHA dealer about any carburetor setting changes before actually going about them.

Power jet

Power jet is a device which has succeeded in solving the tendency toward a rich air-fuel mixture in the mid speed range, though on the conventional carburetor it has been difficult to correct this tendency. Though with this new carburetor it is basically possible to achieve generally satisfactory settings just by determining the settings for the full throttle high rev range by means of a main jet, it is also possible to attempt the following settings with the use of a power jet.



Standard Power Jet Size: # 82.5

Adjustment

A. Full Throttle

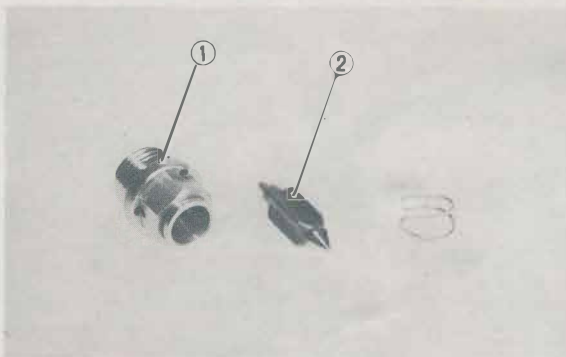
1. Mixture is rich in the maximum rev range and also in the range of 5000 to 6000 rpm Use a smaller No. MJ.
2. Mixture is rich in the maximum rev range and satisfactory in the range of 5000 to 6000 rpm. Use a smaller No. PwJ.
3. Mixture is rich in the maximum rev range and lean in the range of 5000 to 6000 rpm. Use a larger No. MJ and a smaller No. PwJ.
4. Mixture is lean in the maximum rev range and rich in the range of 5000 to 6000 rpm. Use a larger No. PwJ and a smaller No. MJ.
5. Mixture is lean in the maximum rev range and also in the range of 5000 to 6000 rpm. Use a larger No. MJ

B. Partial Settings

Partial settings follow the determination of the full throttle settings and these can be performed by usual procedure.

Inspection

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



1. Valve seat 2. Needle valve

Adjustment

1. Float height
 - a. Checking

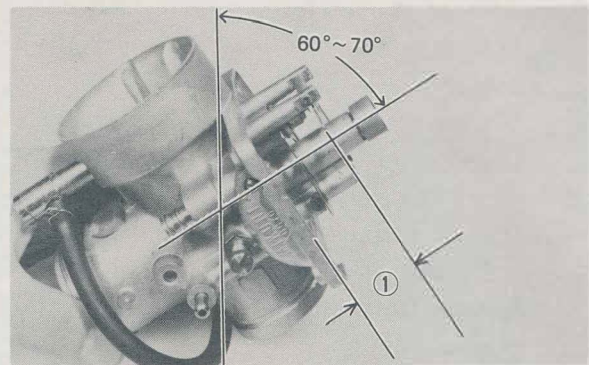
Hold the carburetor in an upside down position.

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

Float height:

23.4 ± 1.0 mm (0.92 ± 0.04 in)

Level with carburetor base



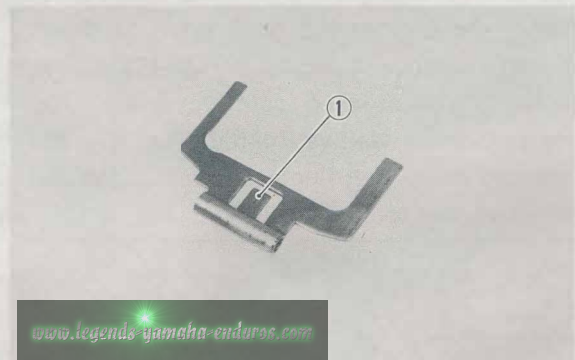
1. Float height

- b. Adjustment

CAUTION:

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

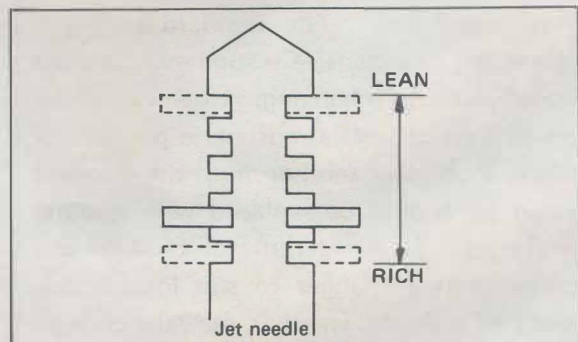
Make the adjustment by bending the tang on the float arm.



1. Tang

2. Jet needle adjustment

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



Troubleshooting

A 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.

Pilot air screw

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

Pilot jet

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

Throttle valve (slide)

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

Jet needle

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

Main jet

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

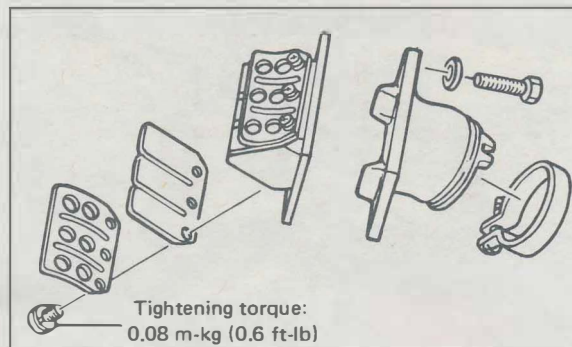
NOTE:

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

CAUTION:

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

REED VALVE



Inspection

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

Standard value "a":

9 mm (0.35 in)

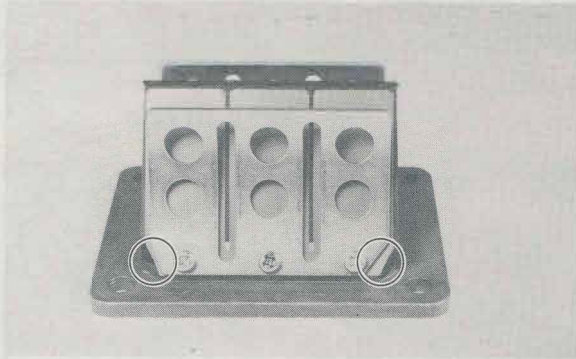
If it is 0.2 mm (0.008 in) more or less than specified, replace the valve stopper.



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

Reed valve bending limit:
1.4 mm (0.055 in)

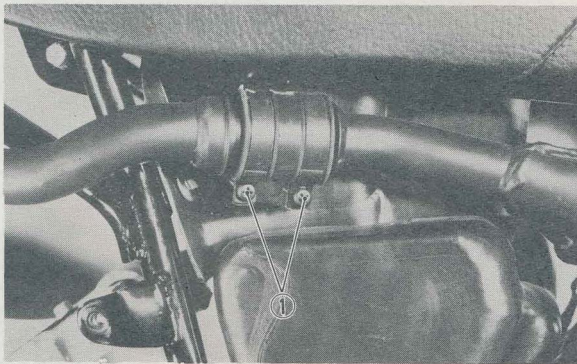
5. During reassembly, note the cut in the lower corner of the reed and stopper plate. Use as aid to direction of reed installation.



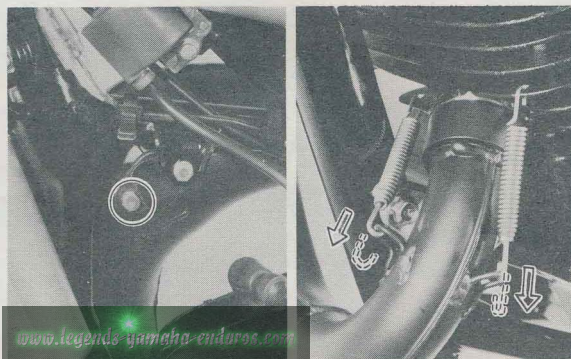
MUFFLER

Removal

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



1. Screw



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Maintenance

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

TOP END

(Muffler and carburetor removed.)

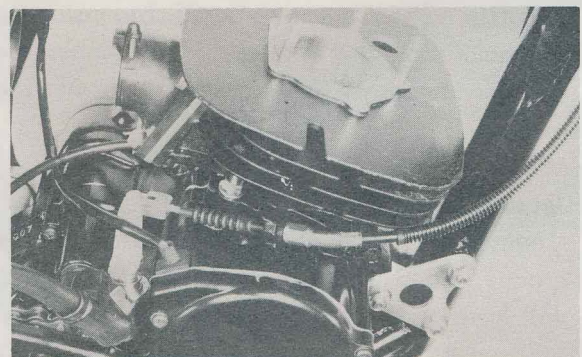
Removal

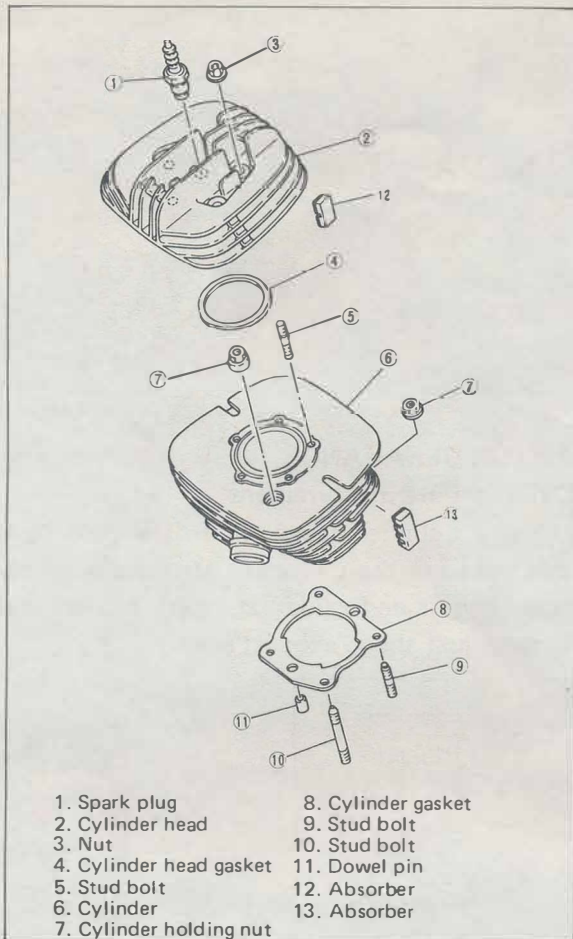
1. Remove spark plug lead wire. Loosen, but do not remove spark plug.
2. Remove the cylinder head holding nuts. Remove cylinder head and gasket.

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



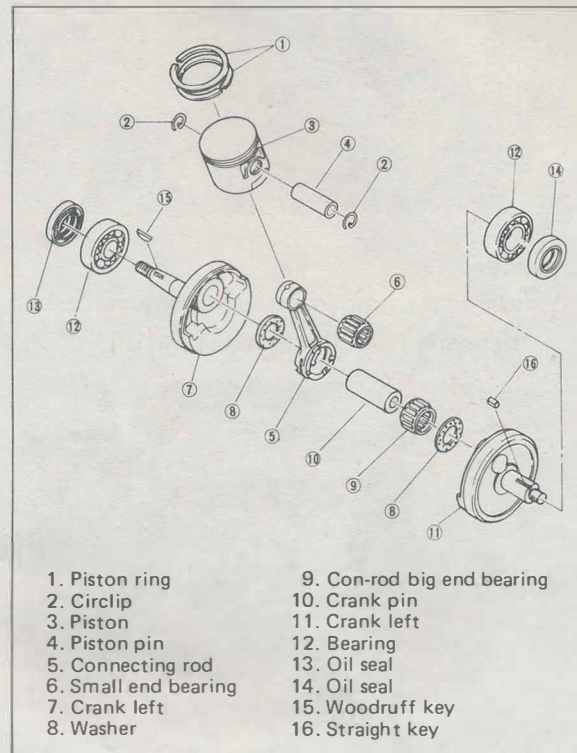
3. Remove the clutch wire.





NOTE:

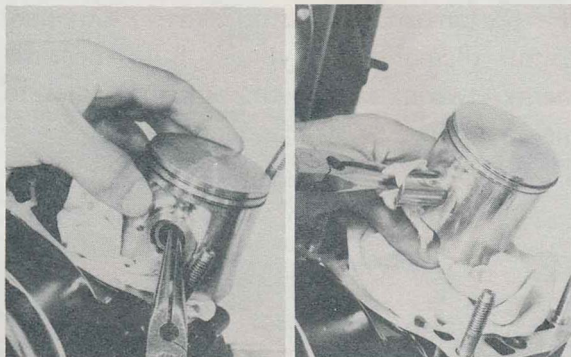
If the pin hangs up, use a piston pin puller. Do not hammer on pin as damage to rod, piston and bearing will result.



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

Cylinder holding nut:
3.0 m·kg (22 ft·lb)

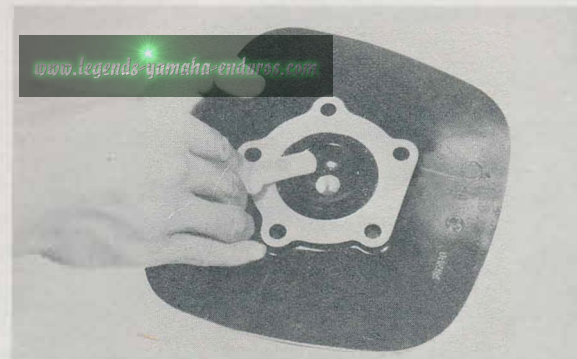
- Remove the piston pin clip (1) from the piston. Push the piston pin out from opposite side. Remove the piston.



MAINTENANCE

Cylinder head

- 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.

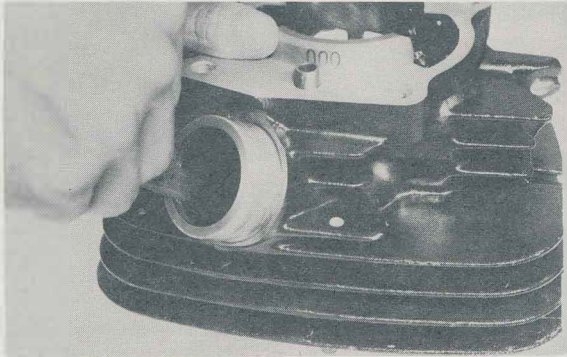


- Place the head on a surface plate. There should be no warpage. Correct by resurfacing. Place 400~600 grit wet emery sandpaper on surface plate and resurface head using a figure-eight sanding pattern. Rotate head several times to avoid removing too much material from one side.



Cylinder

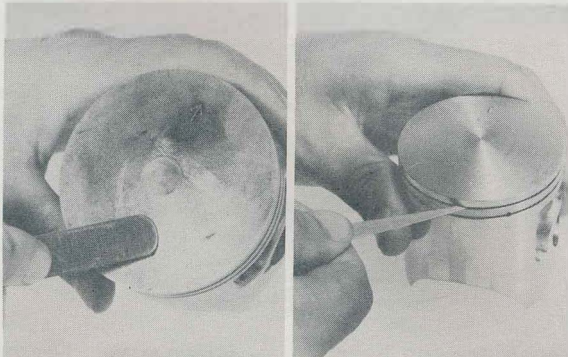
1. Using a rounded scraper, remove carbon deposits from the exhaust port.



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

Piston

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

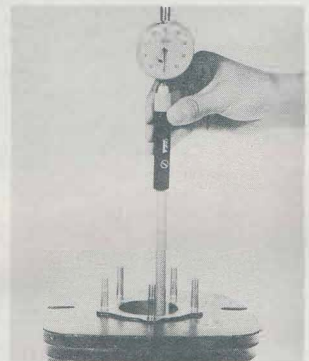
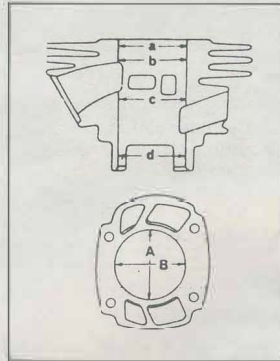


2. Using 400 ~ 600 grit wet sandpaper, lightly sand score marks and lacquer deposits from sides of piston. Sand in crisscross pattern. Do not sand excessively.

PISTON CLEARANCE

Cylinder bore measurement

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



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

Max. allowable taper:

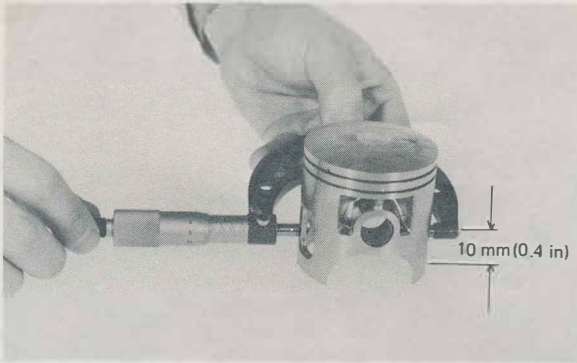
0.05 mm (0.0020 in)

Max. allowable out-of-round:

0.01 mm (0.0004 in)

Piston outside diameter measurement

Using an outside micrometer, measure piston diameter. The measuring point at right-angles to the piston pin holes, 10 mm (0.4 in) from the bottom of the piston skirts. Compare piston diameter to cylinder bore measurements (two measurements at right angles to piston pin line).



PISTON CLEARANCE =	
Minimum	Maximum
Cylinder Diameter – Piston Diameter	

If beyond tolerance replace piston or rebore cylinder as required.

Nominal piston clearance
0.050 ~ 0.055 mm (0.0020 ~ 0.0022 in)

Piston rings'

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

Ring end gap installed
0.2 ~ 0.4 mm (0.008 ~ 0.0157 in)



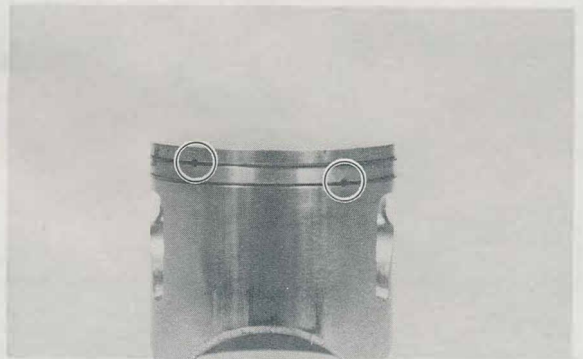
2. Holding cylinder towards light, check for full seating of ring around bore. If not fully seated, check cylinder. If cylinder is not out-of-round, replace piston ring.
3. Fit the piston rings in the grooves, and measure the side clearance. If it measures more than 0.1 mm (0.004 in), replace both piston and piston rings as an assembly.



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

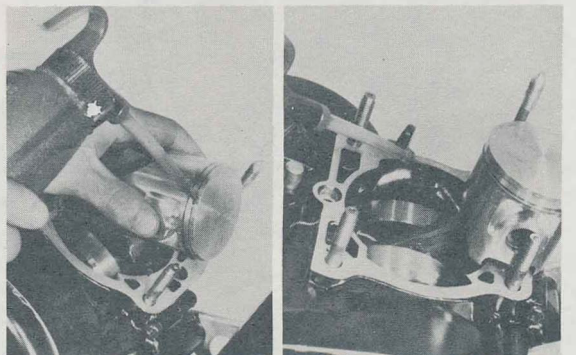
NOTE:

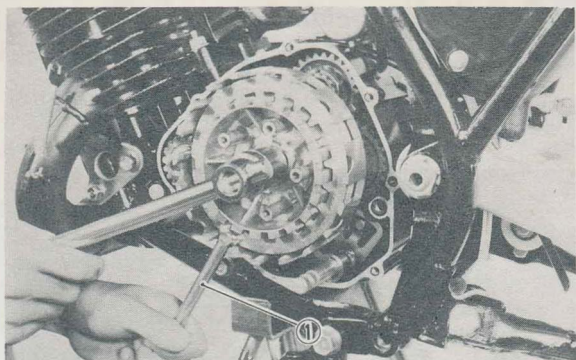
New ring requires break-in. Follow first portion of new machine break-in procedure.



Piston pin, bearing

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





1. Clutch holding tool (90890-01022)

Clutch lock nut torque:
5.0 m-kG (36 ft-lb)

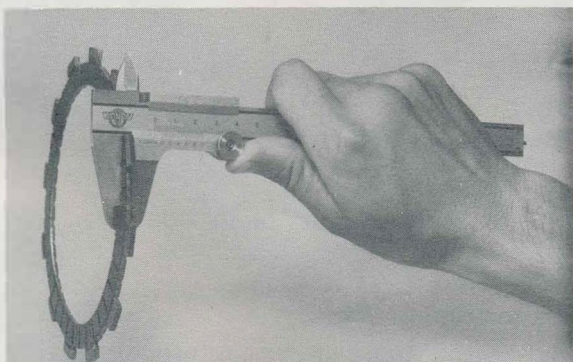
Primary drive gear nut torque:
6.0 m-kG (44 ft-lb)

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

Troubleshooting

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

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



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

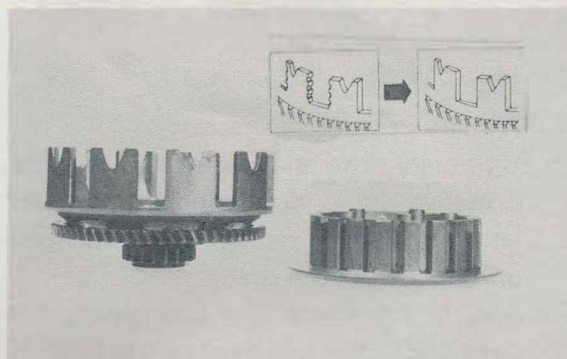
NOTE: _____
For optimum performance, if any plate requires replacement, it is advisable to replace the entire set.

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



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

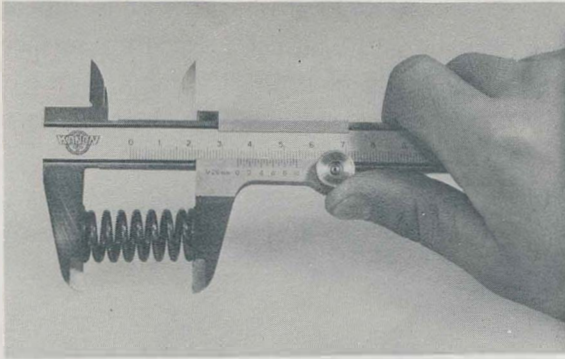
- Check dogs on driven gear (clutch housing). Look for cracks and signs of galling on edges. If moderate, deburr. If severe, replace.



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

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

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



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

Bend limit: 0.15 mm (0.006 in)

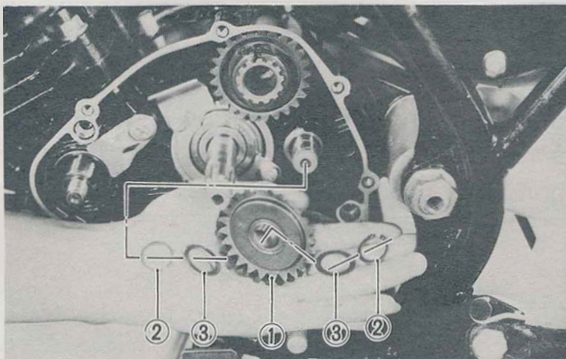


- Primary drive/driven gears**
If primary drive and driven gears produce excessive noise during operation, gear lash may be incorrect. Marks are scribed on the side of each gear. And in replacement, a gear having the same mark as before must be used.

KICK STARTER

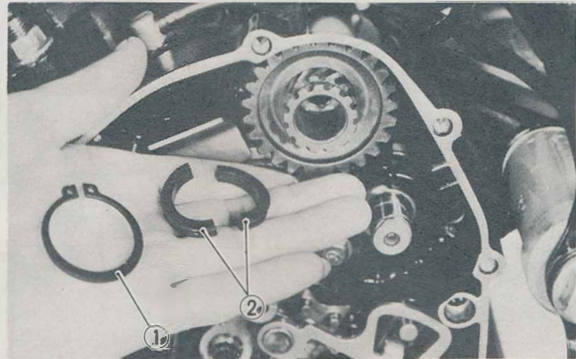
Removal

- Remove the circlip and then remove kick idle gear, washers and circlip.



1. Kick idle gear 2. Circlip 3. Washer

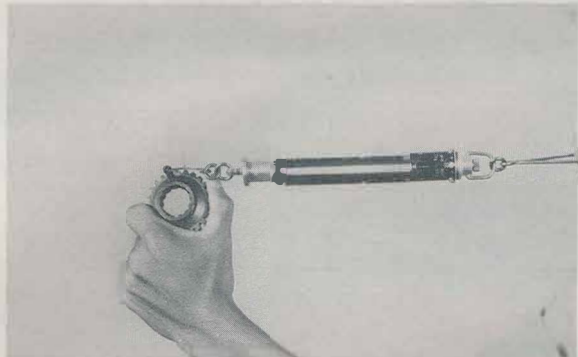
- Remove the circlip and retainers. Remove the kick gear by rotating the kick crank counterclockwise and then pulling out the gear.



1. Circlip 2. Retainers

Inspection

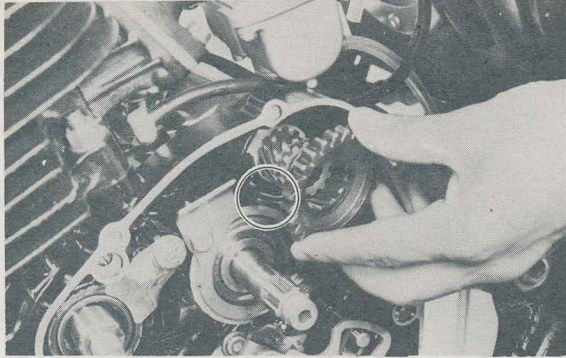
- The pressure of the kick clip is 1.0 kg (2.2 lb).
If above pressure is too strong, spring wear and kick starter slipping will result. If it is too weak, the same slippage will occur particularly at low temperatures. Do not try to bend the clip.



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

Reassembly

- Engage the kick gear return spring with the slot the slot of the crankcase. Check whether the kick starter acts correctly and whether it returns to its home position.



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

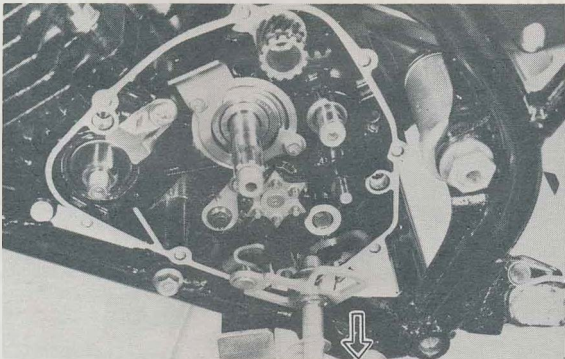
SHIFTER

NOTE:

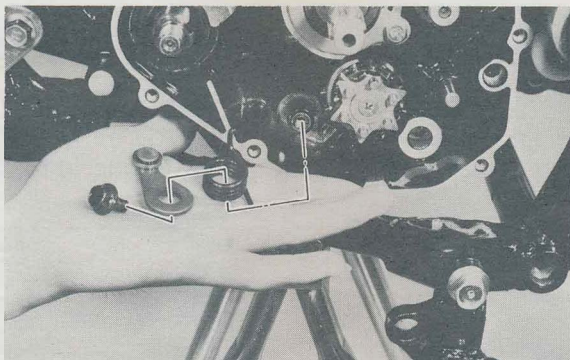
Shifter maintenance should be performed with clutch assembly removed.

Removal

1. Pull out change lever assembly.



2. Remove the flange bolt, stopper lever and spring.



3. Remove the flat head screw and remove the shift cam and straight key.

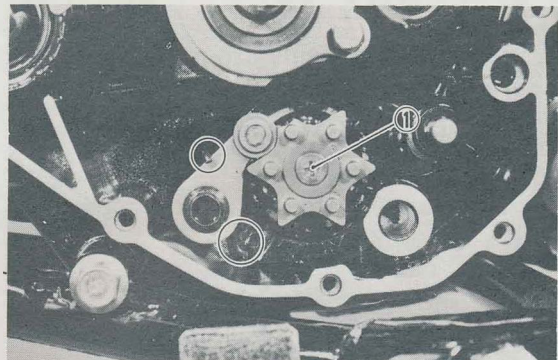


Inspection

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

Installation

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

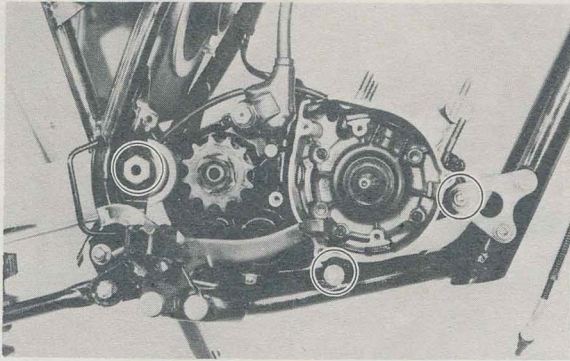


1. Apply a holding agent

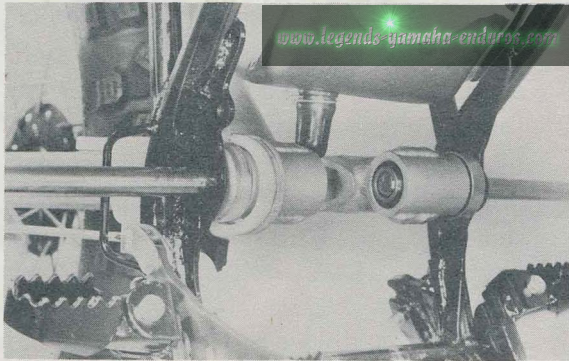
CRANKCASE

Engine removal

1. Remove the magneto base, and chain cover.
2. Remove the chain and two engine mounting bolts.



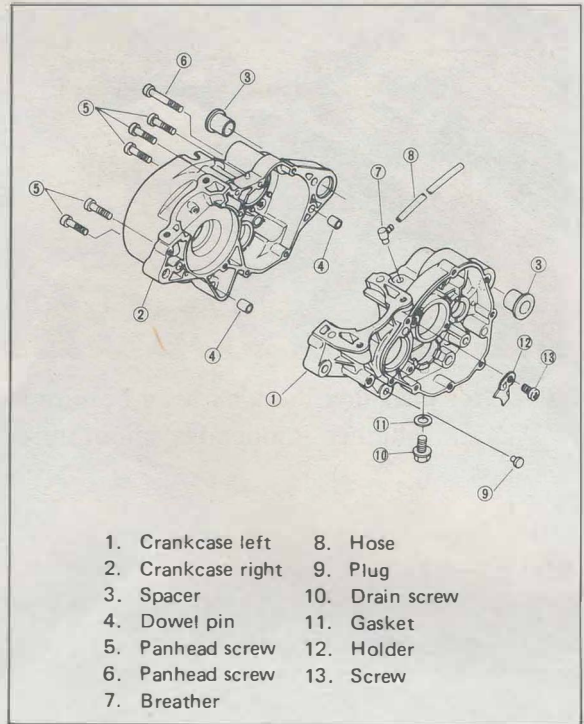
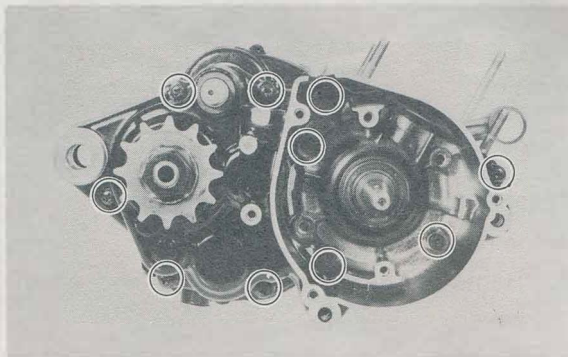
- Remove the nut and pull out the pivot shaft about 2/3 of its length.



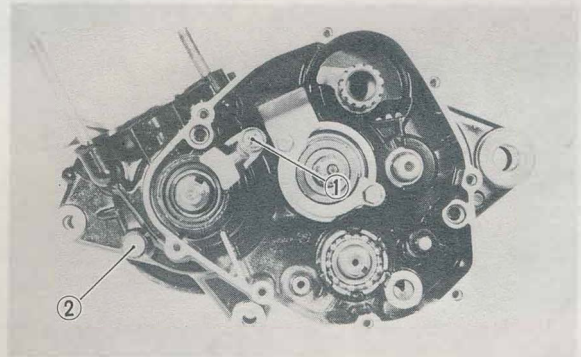
NOTE:

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

- Remove the engine from right side of frame.
- Working in a crisscross pattern, loosen 10 panhead screws 1/4 turn each. Remove them after all are loosened.



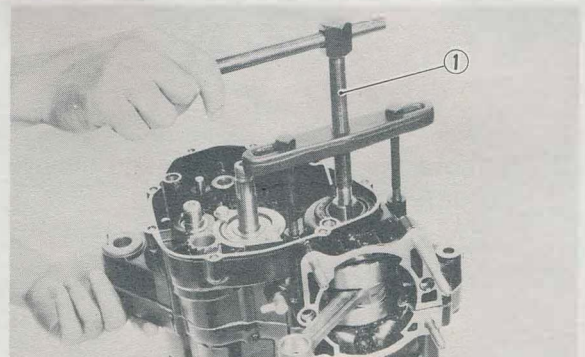
- Remove the oil seal retainer and plug. Install crankcase separating tool as shown.



1. Retainer 2. Plug

NOTE:

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

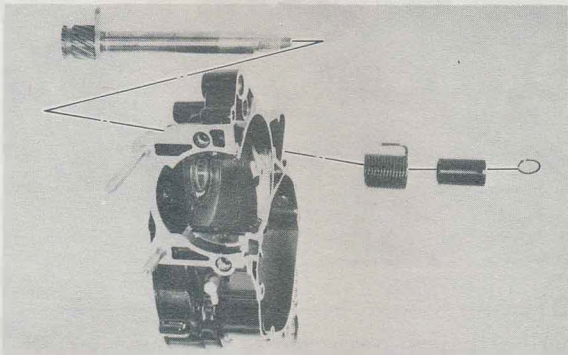
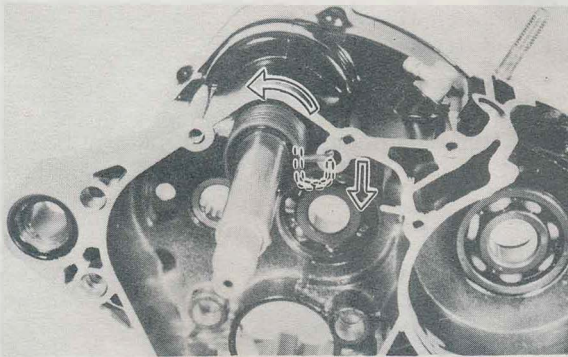


1. Crankcase separating tool

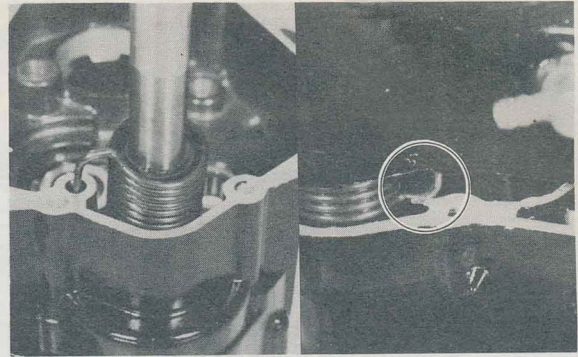
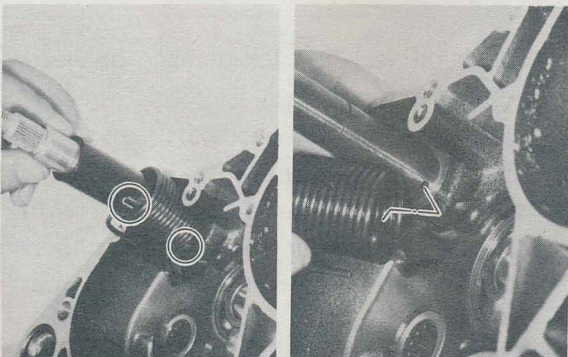
CAUTION:

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

- 7 Remove the circlip and unhook the torsion spring from its post in the crankcase. Then remove the torsion spring. Pull out the kick axle assembly from other side.

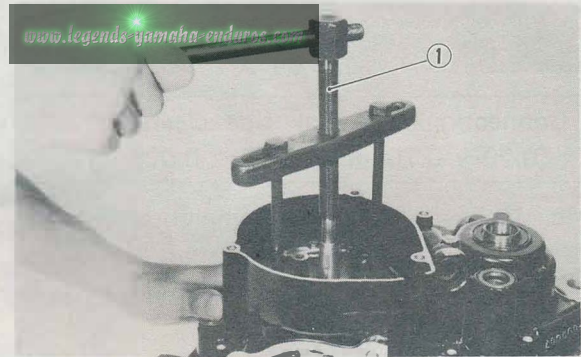


8. When installing the kick axle assembly, hook the torsion spring end to the hole of crankcase.



Crankshaft

1. Remove crankshaft assembly with crankcase separating tool.



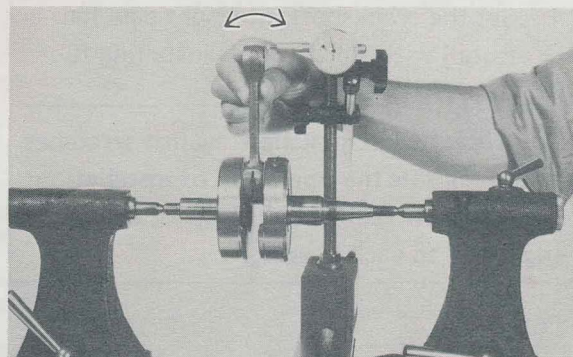
1. Crankcase separating tool

Inspection

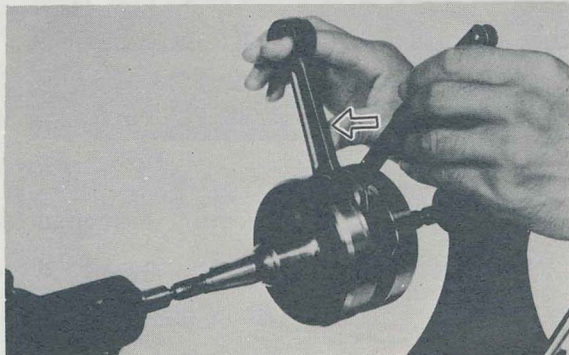
1. The crankshaft requires the highest degree of accuracy in engineering and servicing.
2. The crankshaft is susceptible to wear and therefore the crank bearing must be inspected with special care.
3. Check crankshaft components.
 - a. Mount the dial gauge at right angles to the connecting rod small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

Connecting rod axial play (C):

0.8 ~ 1.0 mm (0.031 ~ 0.039 in)

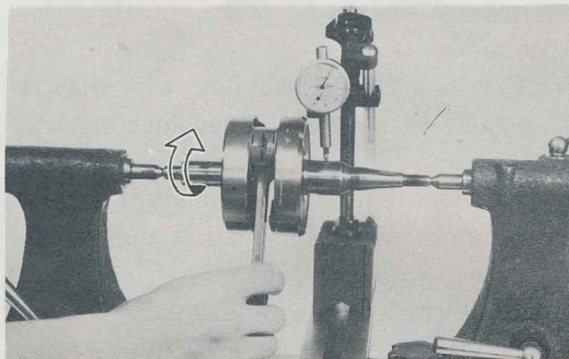


- b. Remove the dial gauge and slide the connecting rod to one side. Insert a thickness gauge between the side of the connecting rod big end and the crank wheel. Measure clearance.



Connecting rod/crank side clearance (D):
0.20 ~ 0.70 mm (0.008 ~ 0.028 in)

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



Unit: mm (in)

Deflection tolerance (A)		Flywheel width (B)
Left side	Right side	56 $\begin{smallmatrix} -0.05 \\ -0.18 \end{smallmatrix}$ mm
0.03 (0.0012)	0.03 (0.0012)	(2.205 $\begin{smallmatrix} -0.002 \\ -0.007 \end{smallmatrix}$ in)

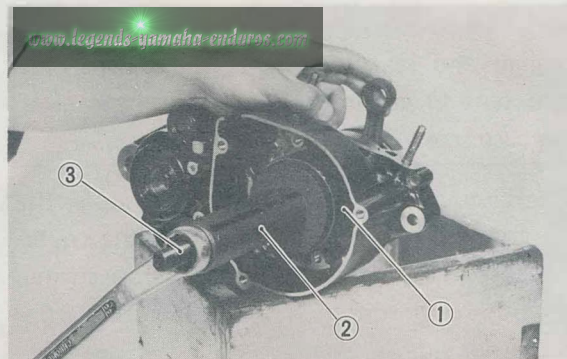
Crankshaft installation

1. Set the crankshaft into right case half and install with a crankshaft installing tool.

CAUTION:

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

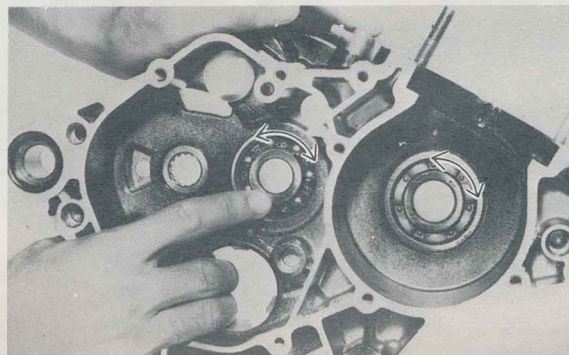
2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the other. Operate tool until crankshaft bottoms against bearing.



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

Bearings and oil seals

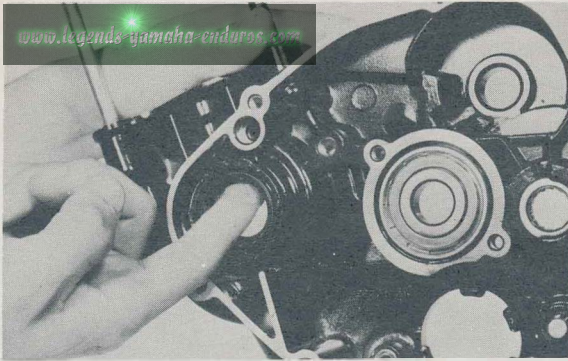
1. After cleaning and lubricating the bearings, rotate inner race with a finger. If rough spots are noticed, replace the bearing.



NOTE:

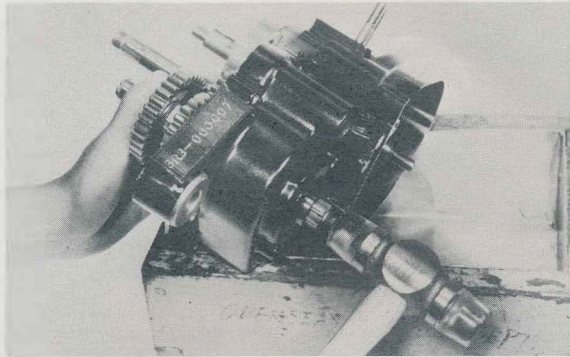
Bearing(s) are most easily removed or installed if the cases are first heated to approximately 90° ~ 120°C (194° ~ 248°F). Bring the case up to proper temperature slowly. Use an oven.

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



Transmission

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

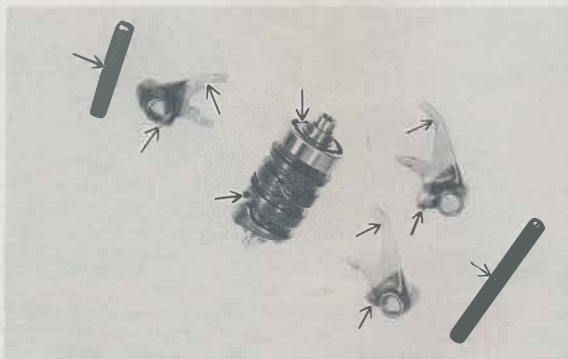


NOTE:

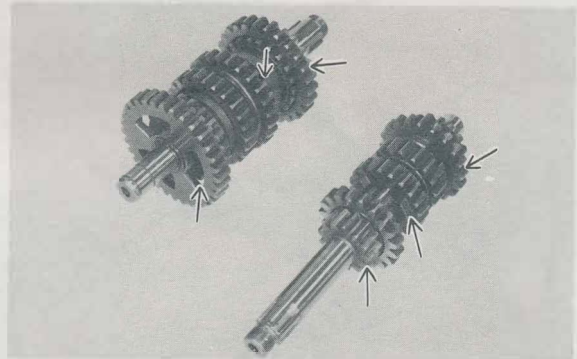
Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.

Inspection

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



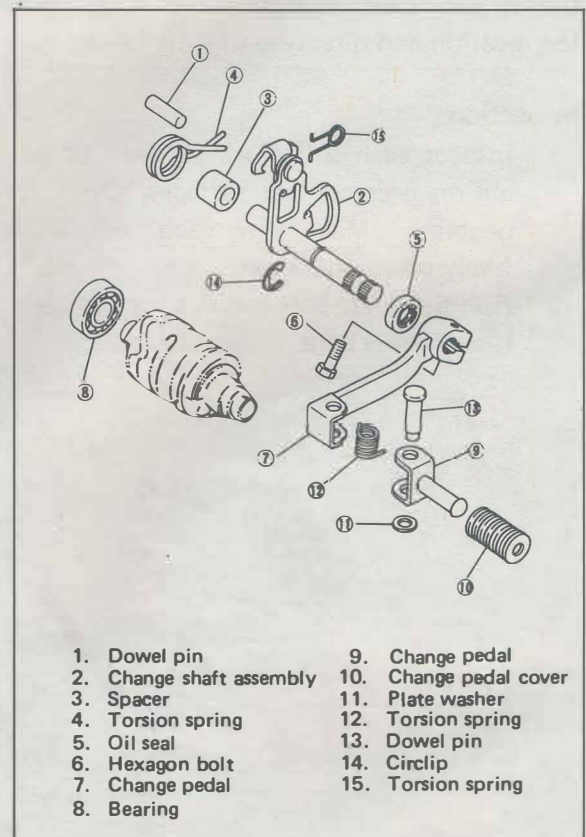
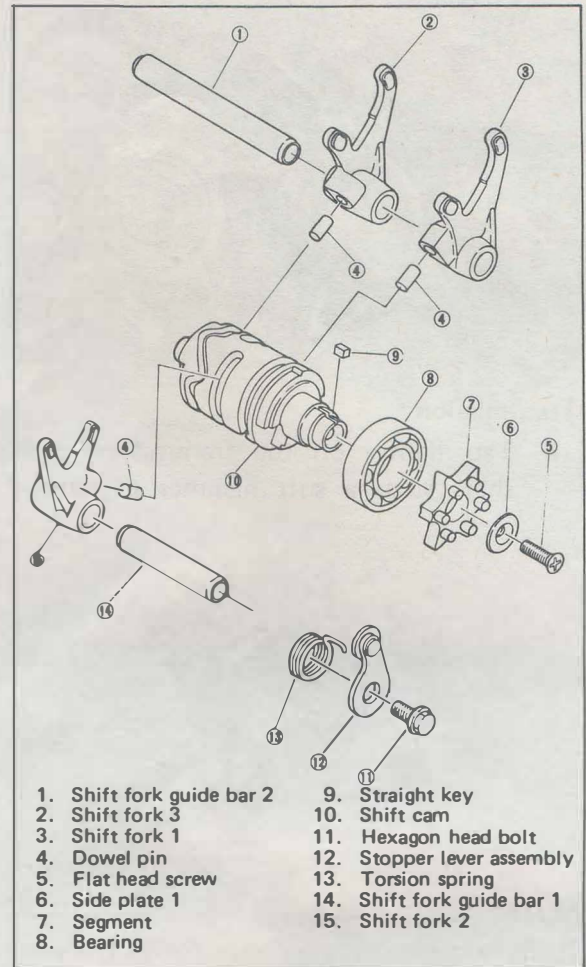
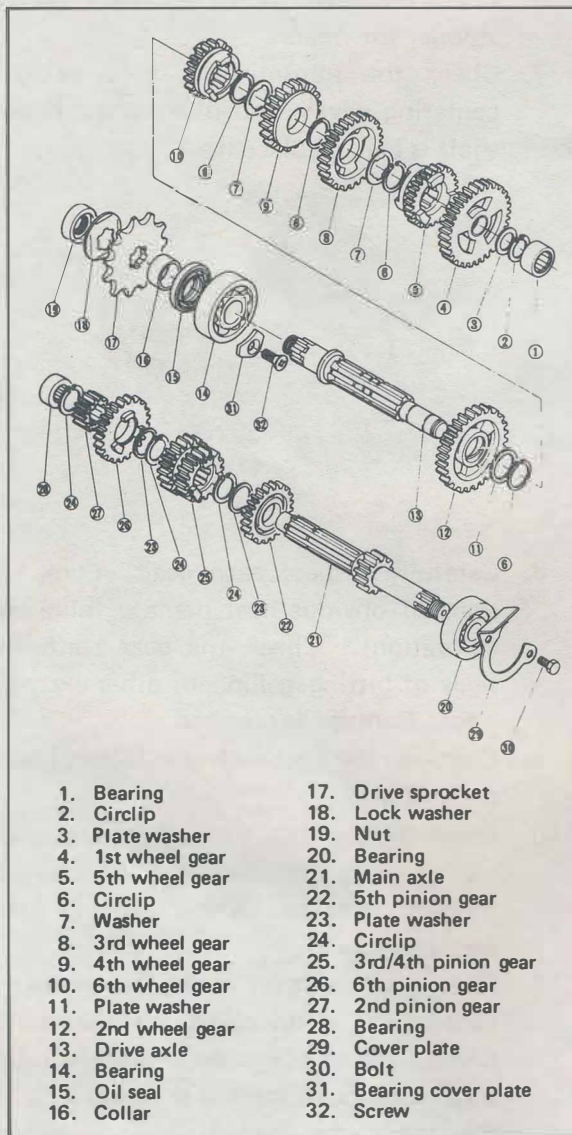
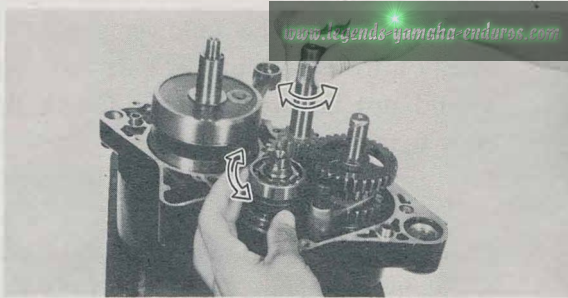
3. Check the shift cam grooves for signs of wear or damage. If any profile has excessive wear and/or any damage, replace cam.
4. Check the cam followers on each shift fork for wear. The follower should fit snugly into its seat in the shift fork, but should not be overly tight. Check the ends that ride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



8. Carefully inspect each gear. Look for signs of obvious heat damage (blue discoloration). Check the gear teeth for signs of pitting, galling, or other extreme wear. Replace as required.
9. Check to see that each gear moves freely on its shaft.
10. Check to see that all washers and clips are properly installed and undamaged. Replace bent or loose clips and bent washers.
11. Check to see that each gear properly engages its counterpart on the shaft. Check the mating dogs for rounded edges, cracks, or missing portions. Replace as required.

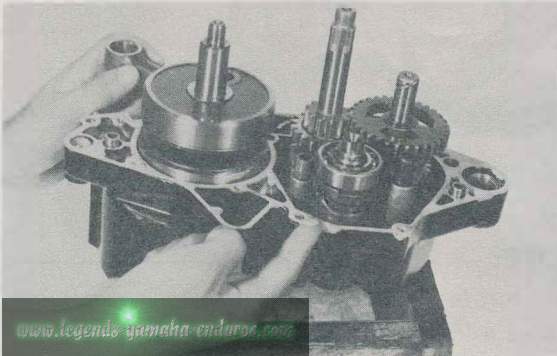
Installation

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



Reassembling

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



NOTE:

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

Cylinder nut torque:
3.0 m-kg (22 ft-lb)
Cylinder head nut torque:
2.5 m-kg (18 ft-lb)

5. During re-assembly, coat the piston skirt areas liberally with two-stroke oil.
6. Install new piston pin circlips and make sure they are fully seated within their grooves.
7. 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.

Mounting

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

Bolt	Tightening Torque
Bracket to frame	3.0 m-kg (22 ft-lb)
Bracket to engine	3.0 m-kg (22 ft-lb)
Center, Lower	3.0 m-kg (22 ft-lb)

Pivot shaft nut:
8.5 m-kg (60 ft-lb)

2. Install drive sprocket.

Drive sprocket nut torque:
6.0 m-kg (42 ft-lb)

3. Install flywheel magneto.

Rotor nut torque:
7.0 m-kg, (50 ft-lb)

CHASSIS

FRONT FORKS

CAUTION:

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

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

Air pressure adjustment

CAUTION:

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

Both forks must have the same pressure.

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

CAUTION:

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

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

Standard air pressure:

0 kg/cm^2 (0 psi)

NOTE:

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



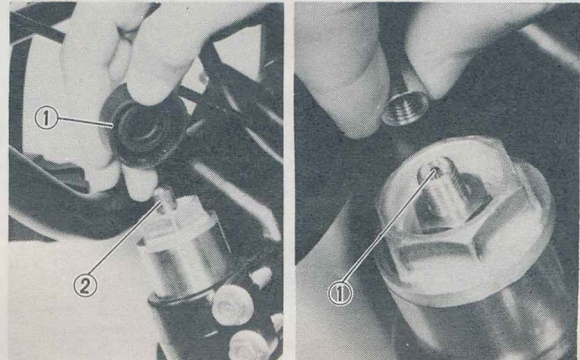
NOTE:

An optional air check gauge is available. Please ask your nearby Yamaha dealer. P/No. 2X4-2811A-00

4. The difference between both right and left tubes should be 0.1 kg/cm^2 (1.42 lb/in^2) or less.

Fork oil replacement

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



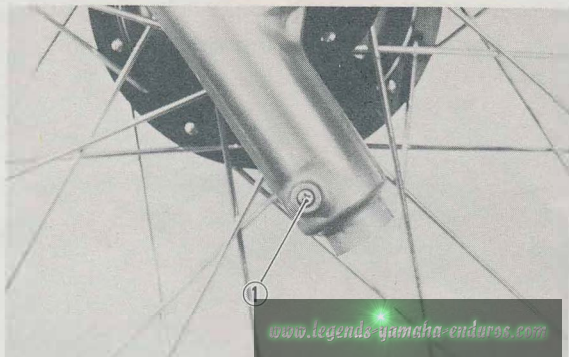
1. Rubber cap 2. Valve cap 1. Valve

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

NOTE:

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

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



1. Drain screw

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

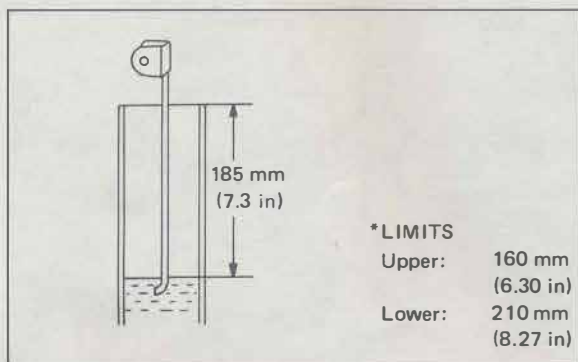
NOTE: _____
Check gasket, replace if damaged.

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

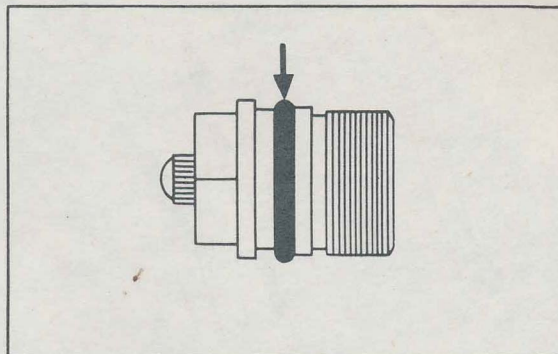
Recommended oil:
Yamaha fork oil 10 wt or
SAE # 10 oil
Oil quantity: 317 cc (10.7 oz)

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

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



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

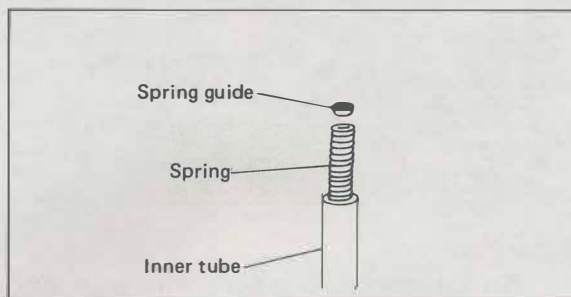


- Install spring seat, fork spring and cap bolt and torque to specification.

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

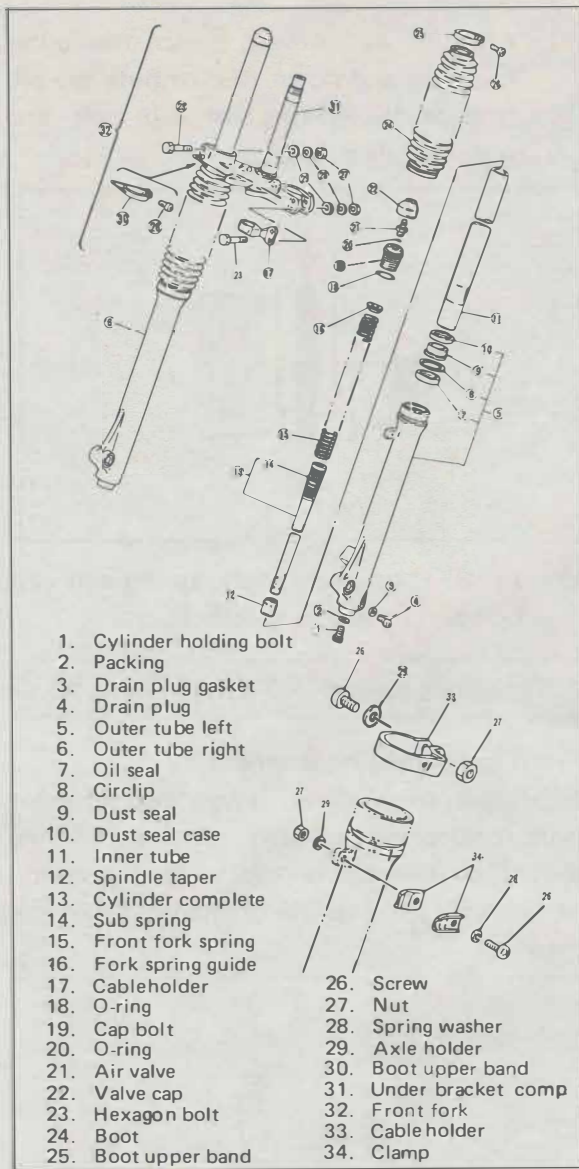
Front fork spring replacement

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



Type		Part No.	Spring rate (kg/mm)	I.D. mark
Light duty	Spring	3R6-23141-10	K ₁ = 0.235 K ₂ = 0.46	
STD	Spring	3R6-23141-LO	K ₁ = 0.277 K ₂ = 0.539	
Heavy duty	Spring	3R6-23141-20	K ₁ = 0.32 K ₂ = 0.62	

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

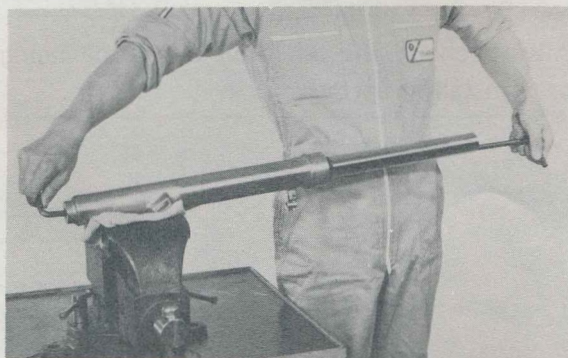


Disassemble

1. To disassemble the front fork assembly, remove the cylinder holding bolt from the bottom of the outer tube and pull the inner and outer tubes apart.

NOTE:

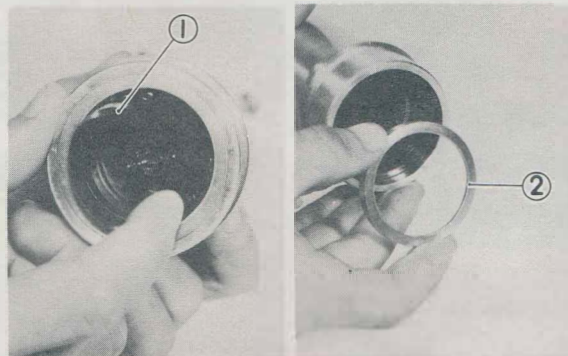
Use the fork spring guide wrench for removing the cylinder holding bolt.



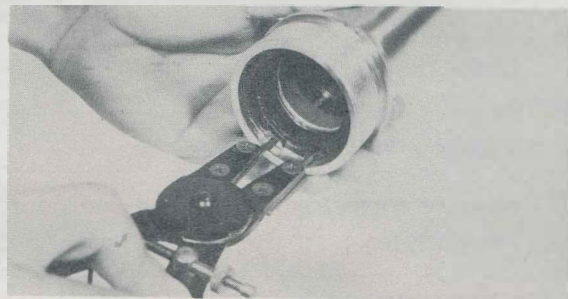
NOTE:

Apply a holding agent, such as "LOCTITE" to threads of bolt when assembling.

2. To replace the fork seal, remove the dust seal and pull out the dust seal case, with an appropriate tool like a bearing puller. Remove the snap ring with clip plier.



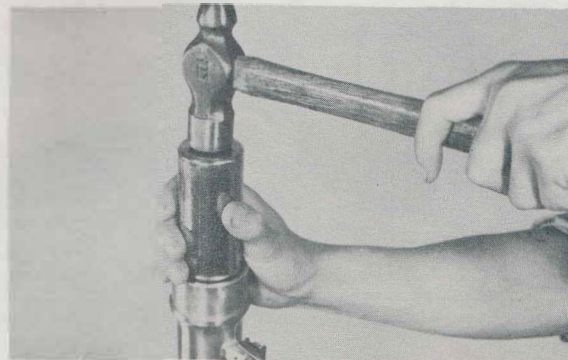
1. Dust seal 2. Dust seal case



3. Carefully pry out the old seal without damaging fork tube.



4. Insert the new seal with "Open" side down (Manufacture's marks up) using large socket and hammer.



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

—WARNING:—

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

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

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

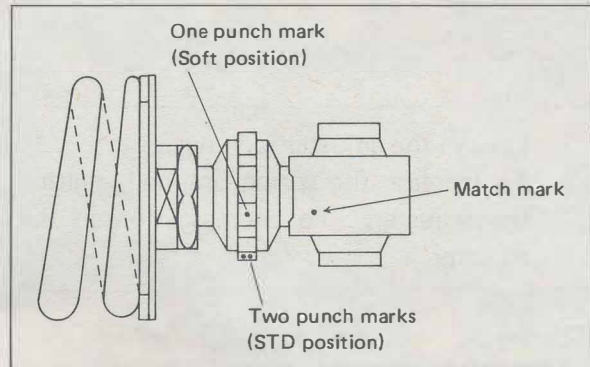
ADJUSTMENT

This machine's suspension is adjustable to best suit the rider's preference or road condition. (For adjustment, refer to "SUSPENSION TUNING".)

—Break-in:—

For the first 300 km (200 mi) of operation, this suspension unit should be broken in. To afford better riding comfort, the mono-

cross unit is set on a two steps softer side (one punch mark). After the break-in period, return the monocross unit to the standard position (two punch marks). If the standard position does not suit your preference or road condition, make a re-adjustment or other necessary adjustments. *The monocross unit is originally set so as to suit the standard rider.



Damping performance

This adjustment can be done in 30 steps without removing the rear shock absorber.

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

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

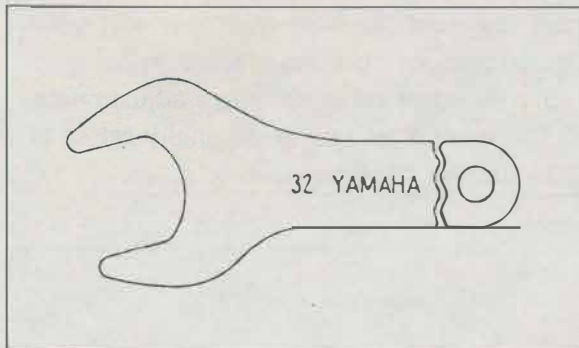


NOTE:—

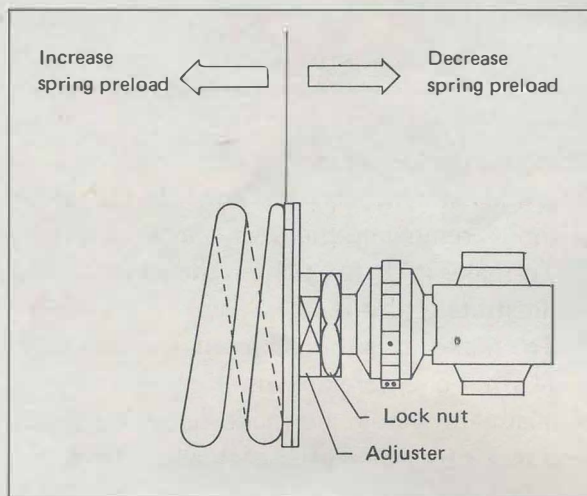
Turn the adjuster until it clicks. Stop turning the adjuster when it suddenly becomes heavy or light. Do not give any further turns. The adjustable range covers approximately 20 notches on stiffer side from the standard position.

Spring pre-load

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



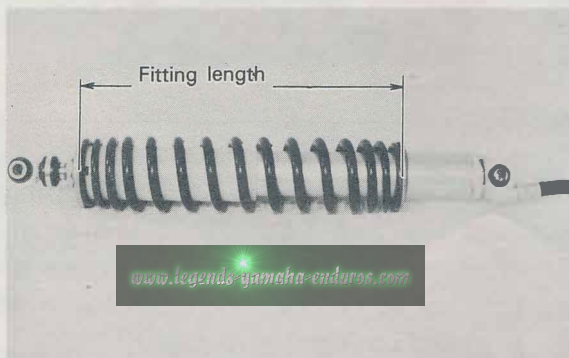
1. Loosen the adjuster lock nut.
2. To increase the spring pre-load, tighten the adjuster. To decrease, loosen the adjuster.



NOTE:

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

Standard Length (installed):	335 mm (13.2 in)
Minimum Length (installed):	323 mm (12.7 in)
Maximum Length (installed):	338 mm (13.3 in)



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BE SURE THAT ADJUSTMENT IS WITHIN THE ABOVE RANGE.

3. After adjustment, tighten the lock nut.

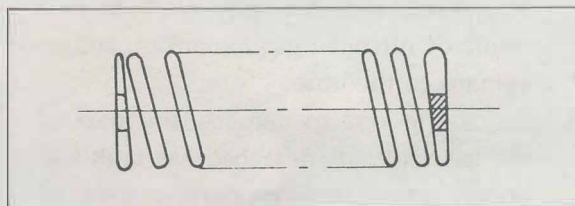
Tightening torque: 6.5 m·kg (46 ft·lb)

Spring replacement

In addition to the standard type, hard and soft springs are available and also the springs from the YZ250G can be used. If the standard type is improper for your purpose, select a proper one according to the rider's weight or road conditions.

Type	Part No.	Spring rate (kg/mm)	I.D. color
Light duty	3R6-22212-10	$K_1 = 2.0, K_2 = 4.2$	Yellow/Green
Standard	3R6-22212-00	$K_1 = 2.2, K_2 = 4.6$	Yellow
Heavy duty	3R6-22212-20	$K_1 = 2.4, K_2 = 5.2$	Yellow/Blue

Identification colors are shown on right end of a spring.

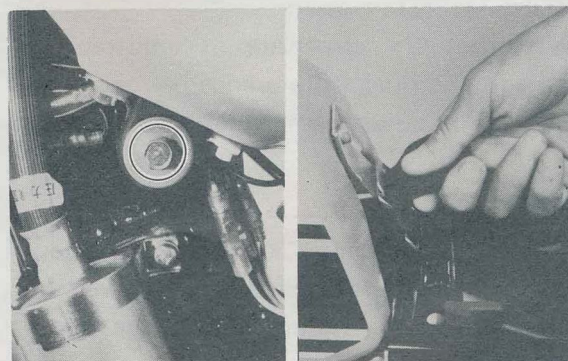


Gas pressure adjustment

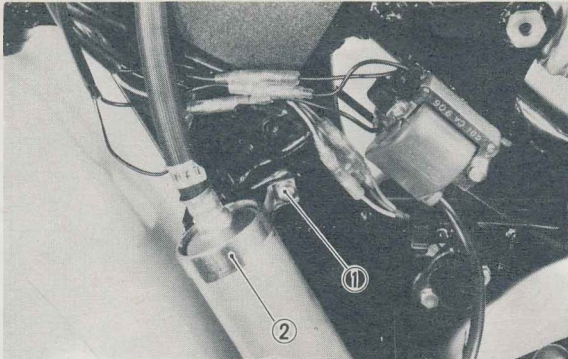
The nitrogen gas pressure is adjustable. For this adjustment, take the unit to your Authorized Yamaha dealer.

Absorber removal

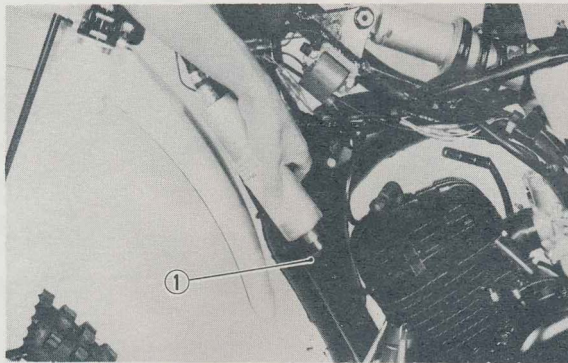
1. Place a suitable stand under the engine to raise the rear wheel off the ground.
2. Remove the seat and fuel tank (place the fuel petcock lever to "OFF" and disconnect fuel hose) and remove the rear wheel.



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

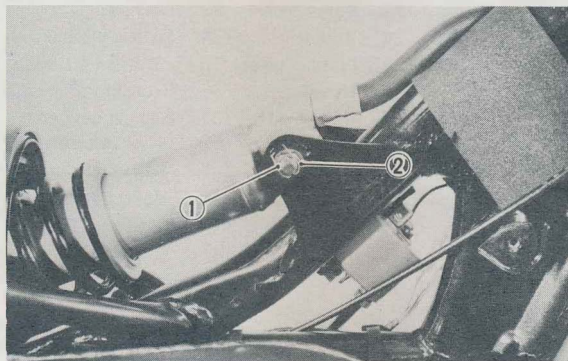


1. Fitting screw 2. Band



1. Grommet

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



1. Cotter pin 2. Nut

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



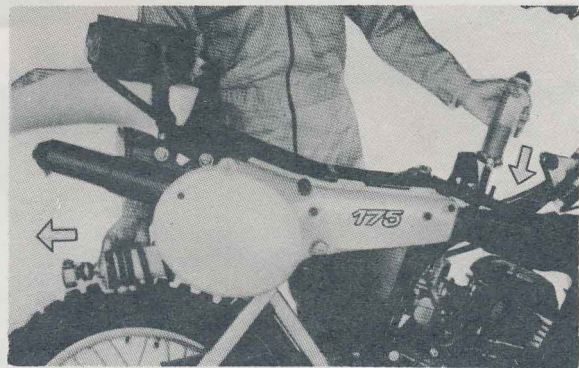
1. Cotter pin 2. Washer

- Remove the shock absorber from the frame.

NOTE:

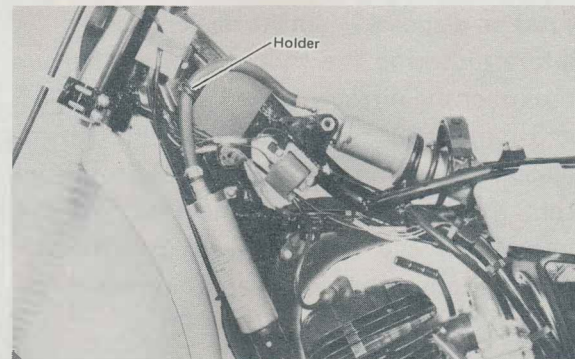
When removing the shock absorber, take the following precautions:

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



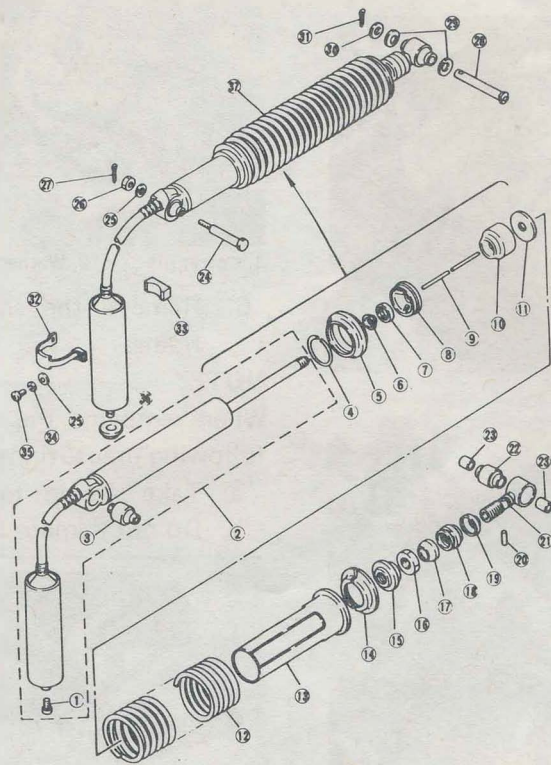
- For assembly, reverse the procedure for disassembly while taking the following precautions:

- Be sure that the shock absorber is installed as illustrated.



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

Upper bolt: 3.0 m-kg (22 ft-lb)

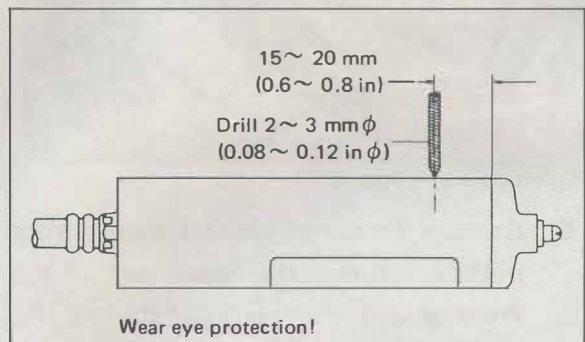


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- | | | | | |
|------------------------|--------------------------|-----------------------|------------------|----------------------------------|
| 1. Panhead screw | 8. Case cap | 15. Spring upper seat | 21. Bracket | 29. Thrust cover |
| 2. Damper sub assembly | 9. Push rod | 16. Nut | 22. Bush | 30. Plate washer |
| 3. Bush | 10. Bump stopper | 17. Cover | 23. Solid bush | 31. Cotter pin |
| 4. Circlip | 11. Bump stopper support | 18. Adjusting nut | 24. Bolt | 32. Sub tank holder |
| 5. Spring lower seat | 12. Spring | 19. Cover | 25. Plate washer | 33. Damper |
| 6. Dust seal | 13. Guide spring 2 | 20. Dowel pin | 26. Nut | 34. Spring washer |
| 7. Seal ring housing | 14. Guide spring 1 | | 27. Cotter pin | 35. Panhead screw |
| | | | 28. Clevis pin | 36. Gromet |
| | | | | 37. Rear shock absorber assembly |

Notes on disposal (Yamaha dealers only)

Before disposing the shock absorber, be sure to extract the nitrogen gas. To do so, drill a 2 or 3 mm (0.08 ~ 0.12 in) hole through the tank at a position 15~ 20 mm (0.6~ 0.8 in) from the bottom end of the tank. At this time, wear eye protection to prevent eye damage from escaping gas and/or metal chips.



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

SUSPENSION TUNING

WARNING:

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

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

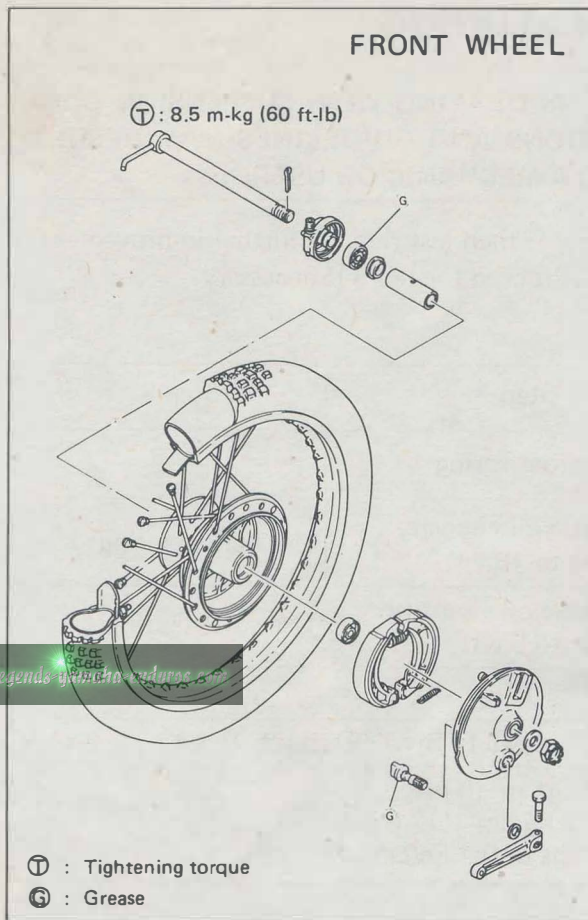
FRONT FORKS

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

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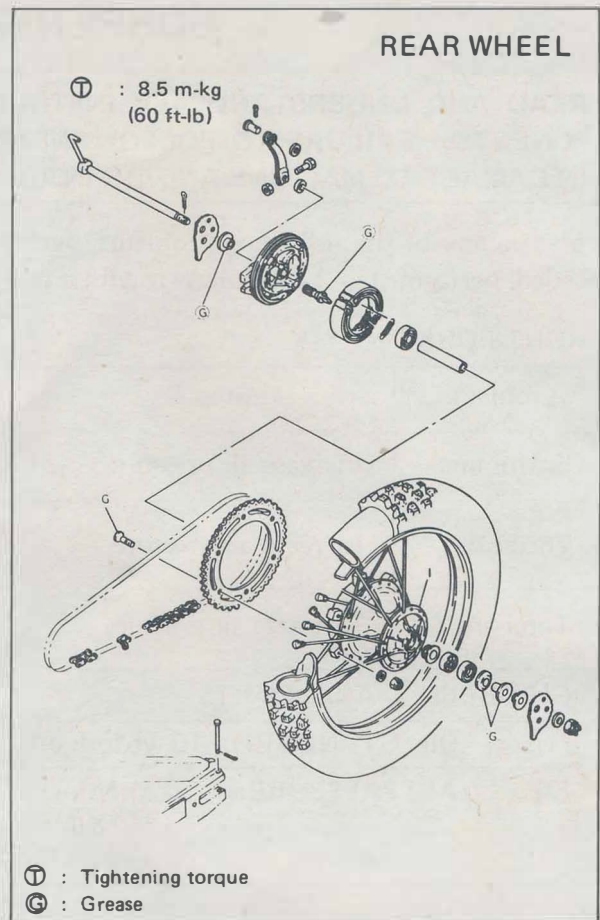
REAR SHOCK ABSORBER

Problem	Step 1	Step 2	Step 3
Bottoming	Shorten the spring set length	Increase damping force	Use harder spring
Too soft	Increase damping force	Shorten the spring set length	Use hard spring
Too hard	Decrease damping force	Extend the spring set length	Use softer spring
GUIDE LINES AND LIMITS			
1. SET LENGTH		MINIMUM: 323 mm (12.7 in) MAXIMUM: 338 mm (13.3 in) INCREASE: steps of 2 mm (0.08 in)	
2. DAMPING FORCE		Adjust by 1 or 2 clicks. Do not jump over many clips at a time; it may give the rider a misleading suspension feeling.	



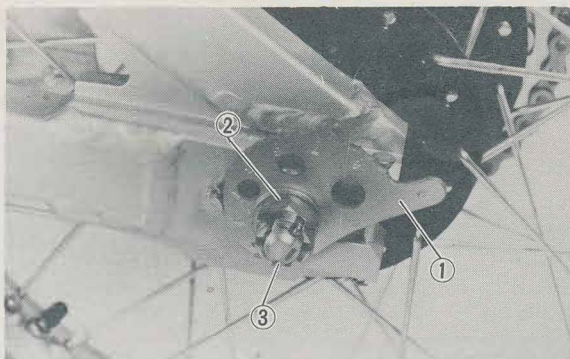
Front wheel removal

1. Elevate the front wheel by placing a suitable stand under the engine.
2. Remove brake cable: Loosen all cable adjuster screws and remove cable from handle lever holder. Then remove cable from cam lever at front brake shoe plate.
3. Remove the cotter pin and axle nut.
4. Turn and pull out the front wheel axle, and remove the wheel assembly.

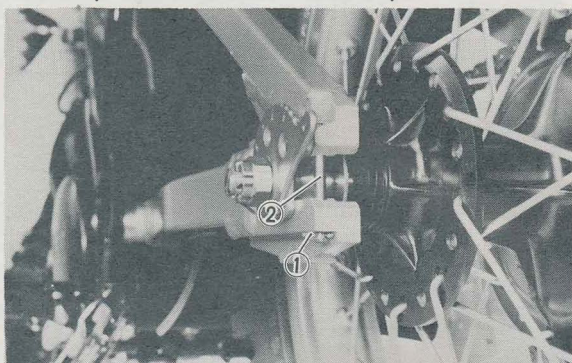


Rear wheel removal

1. Elevate the rear wheel by placing a suitable stand under the engine.
2. Remove the brake adjuster and brake rod from the brake arm.
3. Remove the cotter pin from the axle nut and loosen the axle nut.
4. Remove the link clip and joint link and remove the chain.
5. Remove the cotter pins (left and right). Then remove the clevis pins.
6. Pull the wheel backward, remove the rear wheel assembly.



1. Chain puller 2. Axle nut 3. Cotter pin



1. Cotter pin 2. Clevis pin

Wheel installation

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

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

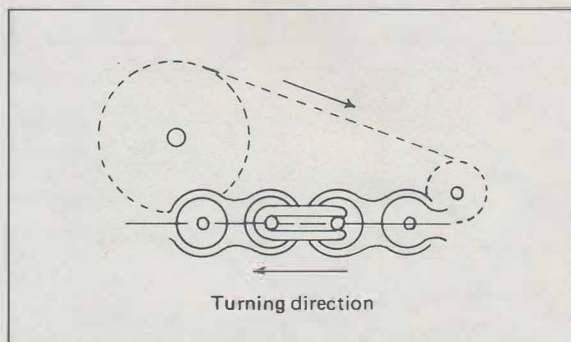


3. Always use a new cotter pins. Old pins should be discarded.
4. Make sure nuts are properly tightened.
5. Be sure to adjust the tension of the chain. (Refer to "Drive chain tension adjustment".)

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

NOTE:

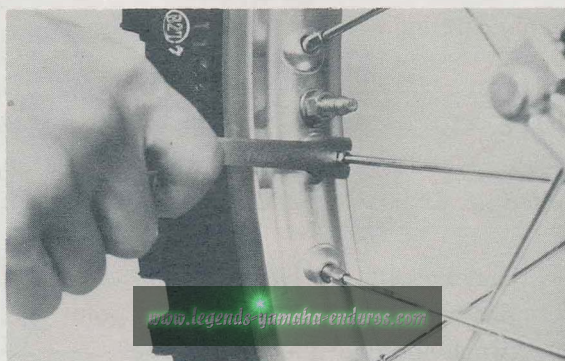
The chain should be cleaned and lubricated after every use of the machine.



7. Adjust the plays in the brake lever and pedal.

Check the rims and spokes

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



Check the wheel bearings

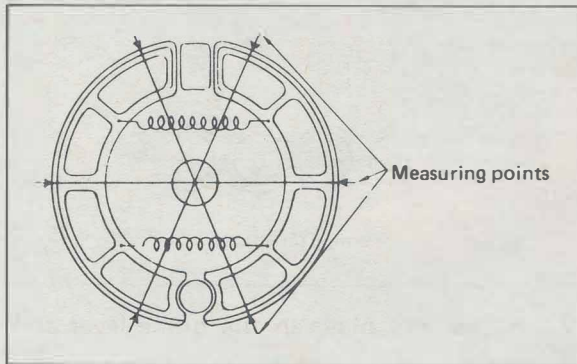
Hold the top of the rear wheel with one hand and the frame with the other hand, and check the play of the wheel by shaking it sideways. If the bearings allow excessive play in the wheel or if it does not turn smoothly have your dealer replace the wheel bearings.

Brake shoe inspection

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

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

Brake shoe diameter	130 mm (5.12 in)
Replacement limit	126 mm (4.96 in)



Brake drum

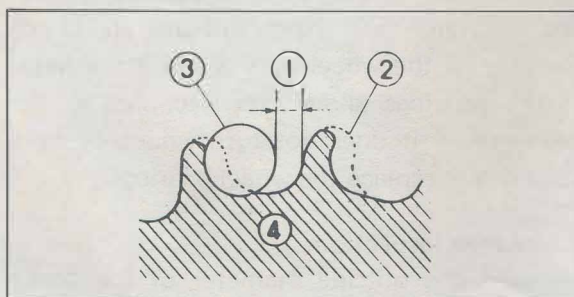
Oil or scratches on the inner surface of the brake drum will impair braking performance or result in abnormal noises. Remove oil by wiping with a rag soaked in lacquer thinner or solvent. Remove scratches by lightly and evenly rubbing with emery cloth.

Sprockets

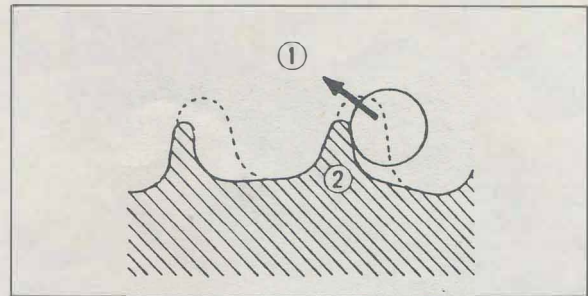
NOTE:

Please refer to Maintenance and Lubrication Schedule Charts for additional information.

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



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

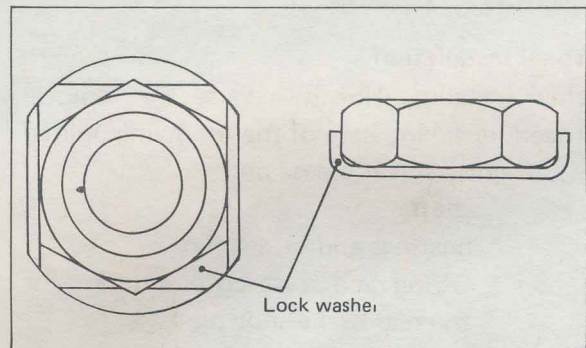


1. Slip off 2. Bend teeth

Drive sprocket securing nut torque:
5.5 m-k (40 ft-lb)

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

3. When replacing the drive sprockets, always use a new lock washer. After tightening the sprocket nut to the specification, be sure to lock it with the lock washer.



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

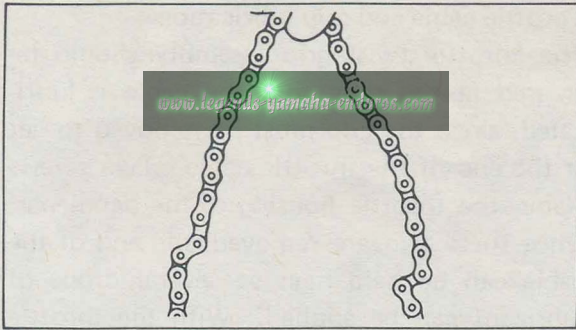
Chain

NOTE:

Please refer to Maintenance and Lubrication Schedule Charts for additional information.

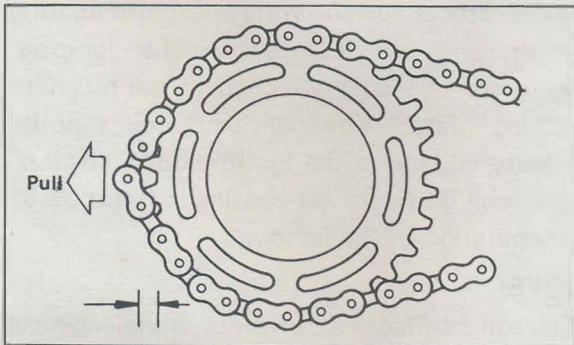
1. Check the chain for stiffness. If stiff, soak in solvent solution, clean with medium bristle brush, dry with high pressure air.

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

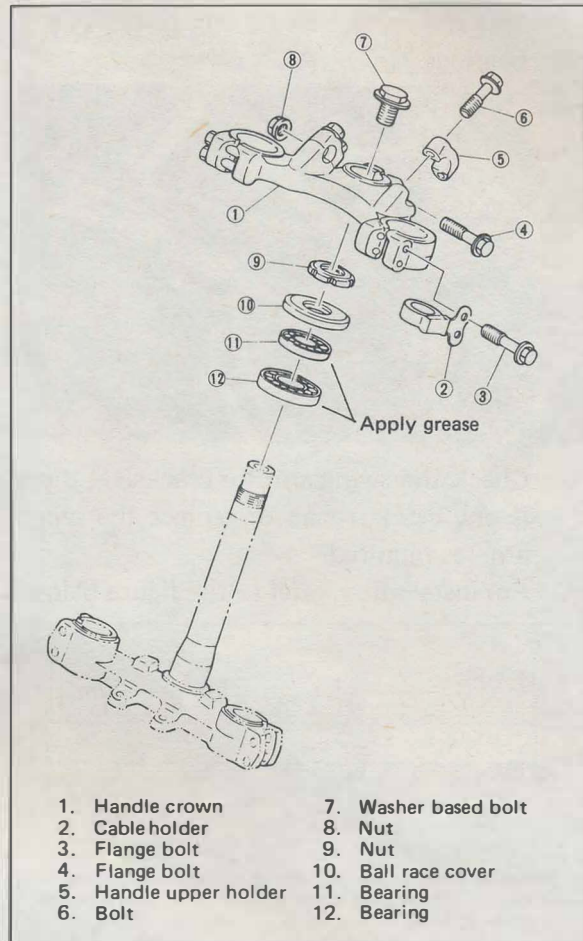


2. Check the side plates for visible wear. Check to see if excessive play exists in pins and rollers. Check for damaged rollers. Replace as required.
3. With the chain installed on the machine, excessive wear may be roughly determined by attempting to pull the chain away from the rear sprocket. If the chain will lift away more than one-half the length of the sprocket teeth, remove and inspect.

If any portion of the chain shows signs of damage, or if either sprocket shows signs of excessive wear, remove and inspect.



STEERING HEAD



Inspection

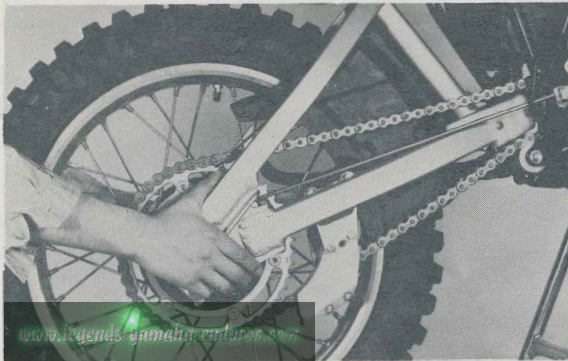
1. Wash the bearings in solvent.
2. Inspect the bearings for pitting or other damage. Replace the bearings if pitted or damaged. Replace the races when bearings are replaced.
3. Clean and inspect the bearing races. If races are damaged, replace the races and bearings.
4. Install the bearings in the races.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

Swing arm inspection

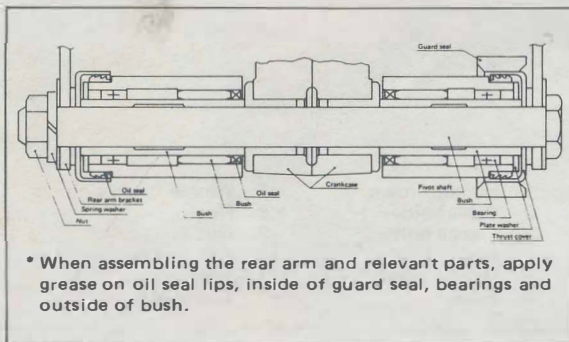
1. With shock absorber removed, grasp the the ends of the arm and move from right to left to check for free play.

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

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



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



NOTE: _____

When assembling, grease the following points:

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

Cable inspection and lubrication

1. Damage to the outer housing of the various cables may cause corrosion and often free movement will be obstructed. An unsafe condition may result so replacement should be made as soon as possible.
2. If the inner cables do not operate smoothly, lubricate or ask your Yamaha dealer to replace them.

Recommended lubricant:
Yamaha Chain and Cable Lube or
SAE 10W/30 motor oil

Throttle cable and grip lubrication

The throttle twist grip assembly should be greased at the time that the cable is lubricated, since the grip must be removed to get at the end of the throttle cable. Two screws clamp the throttle housing to the handlebar. Once these two are removed, the end of the cable can be held high so several drops of lubricant can be applied. With the throttle grip disassembled, coat the metal surface of the grip assembly with a suitable all-purpose grease to cut down friction. (See lubrication chart.)

Lubrication of levers, pedals, etc.

1. Lubricate the pivoting parts of the brake and clutch levers with Yamaha Chain and Cable Lube or SAE 10W/30 motor oil.
2. Lubricate the shaft of the brake pedal with lithium base grease.

ELECTRICAL

General information

The IT175H uses a flywheel magneto to generate electrical current/voltage for the lighting system and uses CDI system for ignition. There are two coils attached to the magneto backing plate. The righthand coil supplies primary voltage to the ignition coil. The left-hand coil provides alternating current (AC) for operation of the lights.

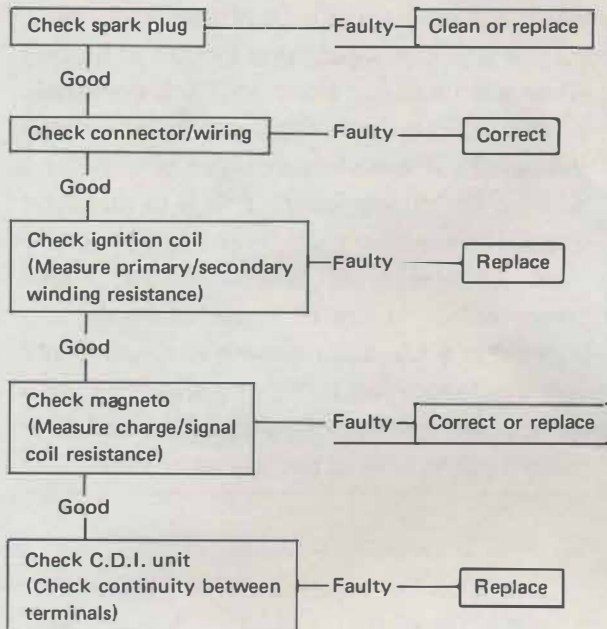
NOTE: _____

If headlight filament burns out while engine is running, the tail lamp filament may also burn out because of excess voltage. Always check taillight operation when replacing headlight.

Troubleshooting – Ignition

CDI check-up

If engine malfunction is apparently attributable to the C.D.I. system, perform check ups as per following procedure and order.



NOTE:

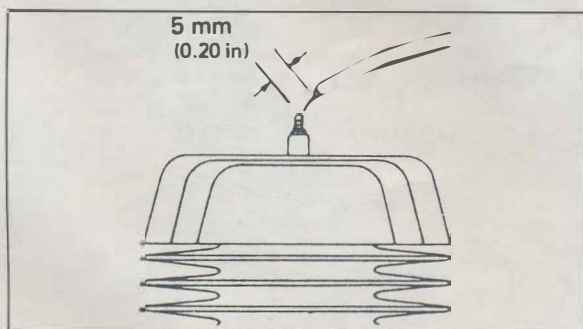
In the absence of sparking despite nothing wrong with the C.D.I. magneto, wiring, ignition coil, or spark plug, replace with a NEW C.D.I. unit and check.

Connectors check-up

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

Spark gap test

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



Coil resistance test

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

Charge coil:

Low speed:

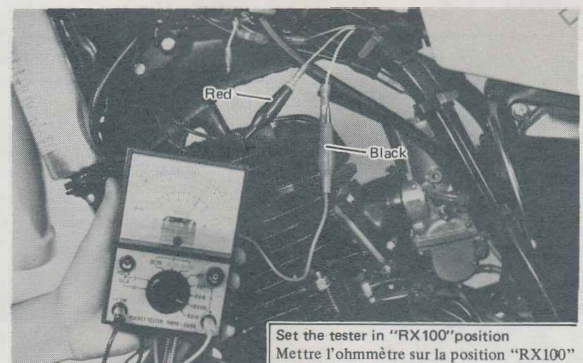
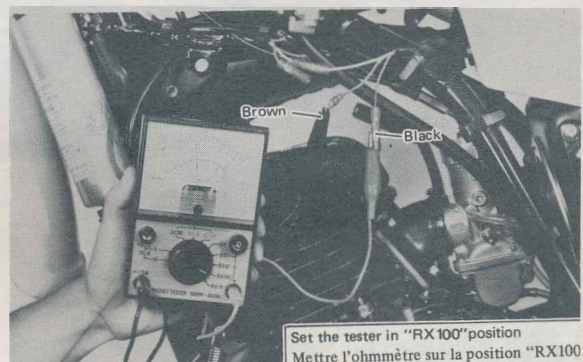
$420\ \Omega \pm 10\%$ (Black to Brown)

High speed:

$13.6\ \Omega \pm 10\%$ (Red to Black)

Pulser coil:

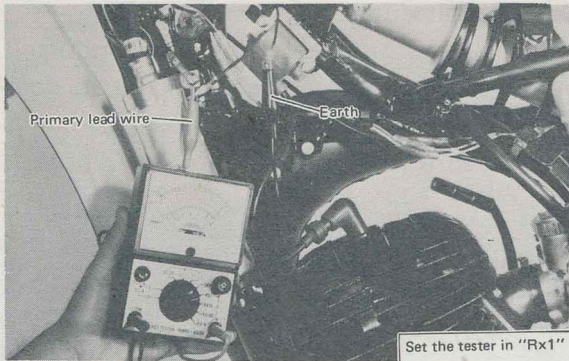
$12.4\ \Omega \pm 10\%$ (White/Red to Black)



Ignition coil test

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

Primary coil resistance Use ($\Omega \times 1$) scale	$1.0\ \Omega \pm 10\%$
Secondary coil resistance Use ($\Omega \times 1K$) scale	$5.9K\ \Omega \pm 10\%$



Primary winding resistance check



Secondary winding resistance check

Engine stop switch

Switch may be checked for continuity with a pocket tester on the "RX1" position.

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



Lighting systems

1. Description

The lighting system consists of the lighting coil, headlight and taillight. Lighting coil in the flywheel magneto supplies alternating current (A.C.) for the headlight, and taillight.

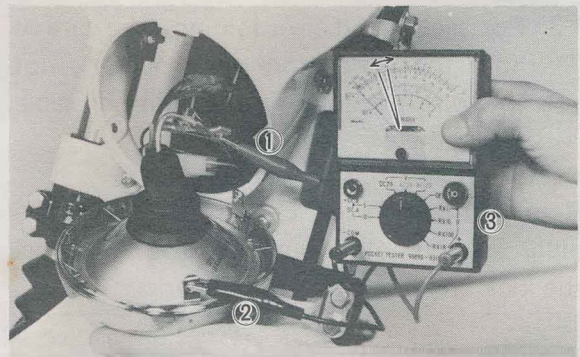
WARNING:

Use bulbs of the correct capacity for the headlight, and taillight which are directly connected to the flywheel magneto. If large capacity bulbs are used, the voltage will drop, giving a poor light. On the contrary, if smaller capacity bulbs are used, the voltage will rise, shortening the life of bulbs. When the headlight beam switch is operated to change the beam from one to another, the headlight is designed to keep both bulbs burning the change over. This is to protect other light bulbs from burning out as a result of turning off the head light, even temporarily. If one of these light bulbs is burnt out while the machine is running, it will overload other bulbs and shorten their service life. Reduce engine speed and replace a burnt bulb as quickly as possible.

2. A.C. Circuit output test

With all A.C. light in operation the circuit will be balanced and the voltage will be the same at all points at a given r.p.m.

- a. Switch Pocket Tester to "AC20V" position.
- b. Remove headlight and connect positive (+) test lead to Yellow connection and negative (-) test lead to a ground.
- c. Connect engine speed tachometer.
- d. Start engine, turn on light switch and (H) position. Check voltage at each engine speed in table below.



1. Positive lead wire of tester
2. Negative lead wire

3. Pocket tester (Set the tester in A.C. 20V position)

If measured voltage is too high or too low, check for bad connections, damaged wires, burned out bulbs or bulb capacities are too large throughout the A.C. lighting circuit.

Output Voltage:

5.0V or more/2,500 r/min

7.0V or less/8,000 r/min

NOTE: _____

Be sure to turn the lighting switch to ON.

NOTE: _____

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

3. Lighting coil resistance check

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

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

Lighting coil:

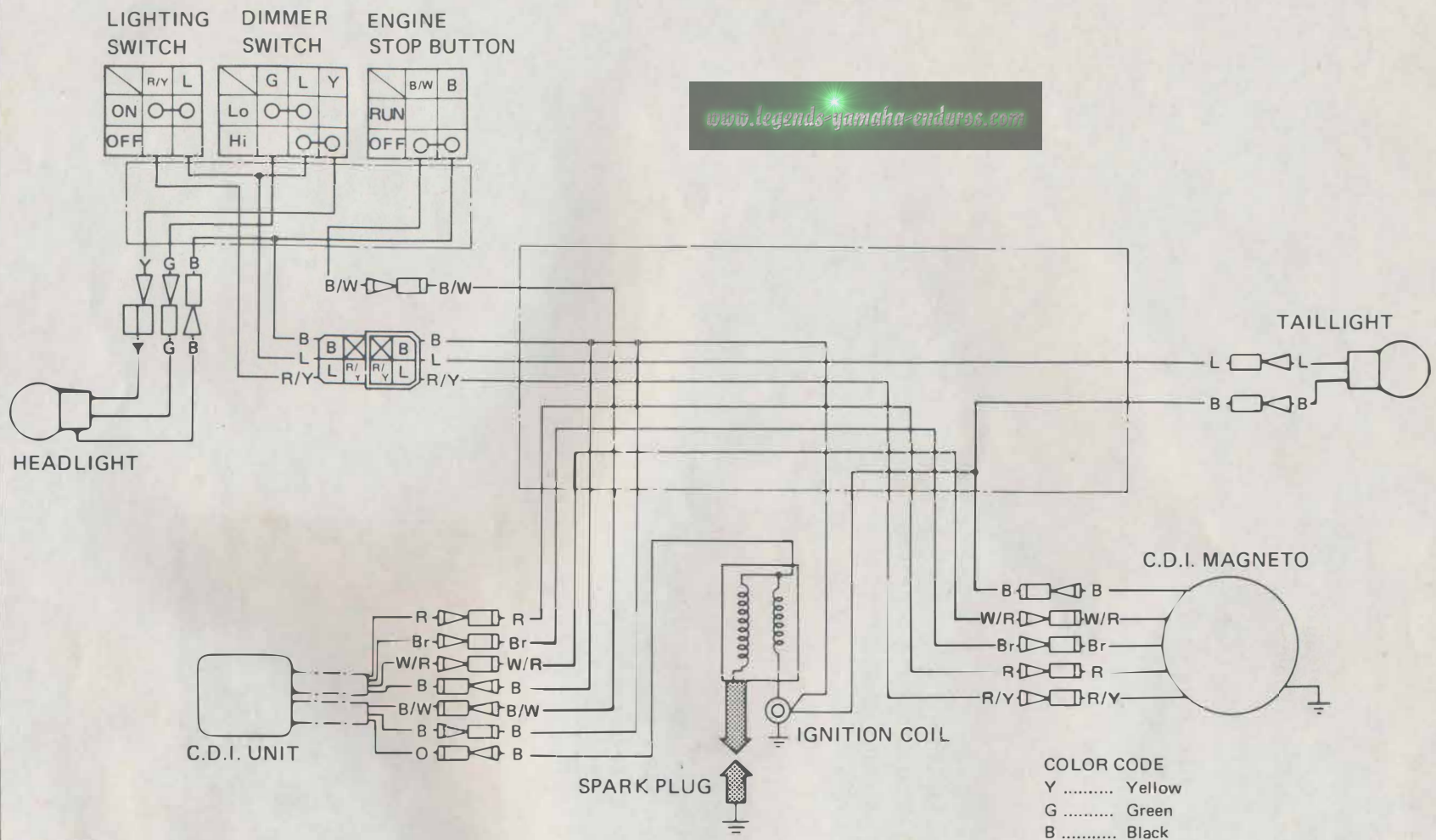
$0.48\Omega \pm 10\%$ (Yellow/Red to Black)



1. Positive lead wire of tester
2. Negative lead wire
3. Pocket tester (Set the tester "Resistance" position)

R/Y: Red/Yellow

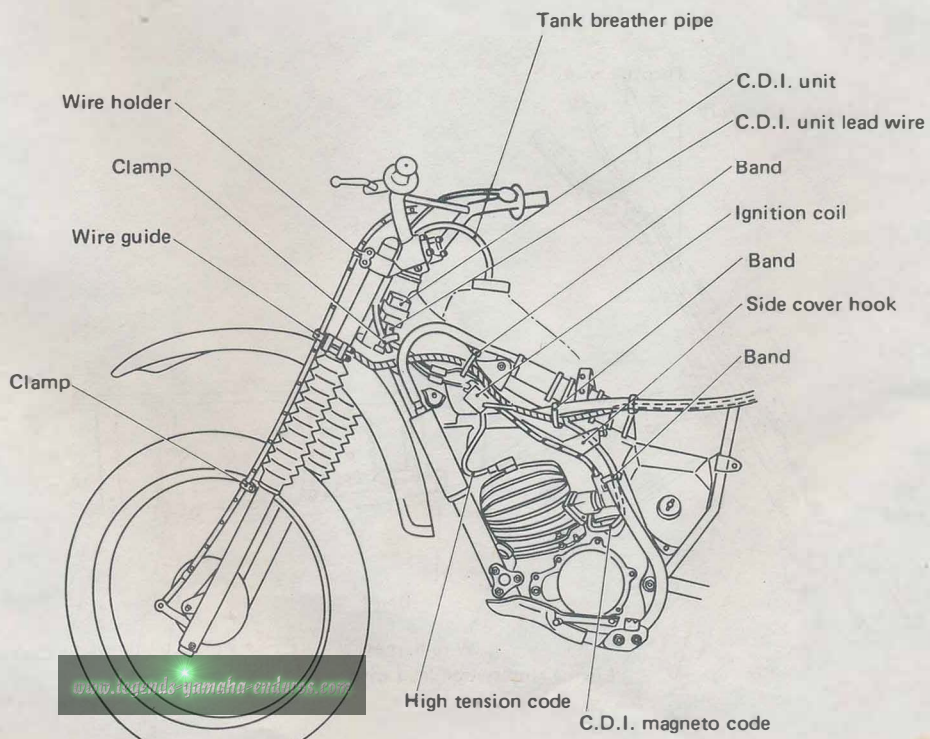
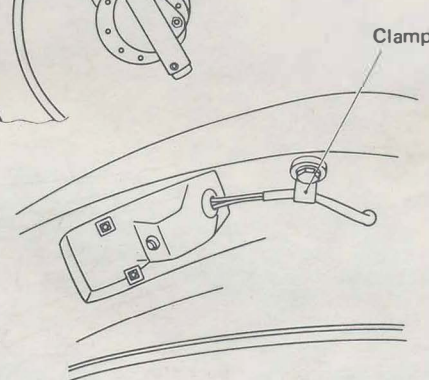
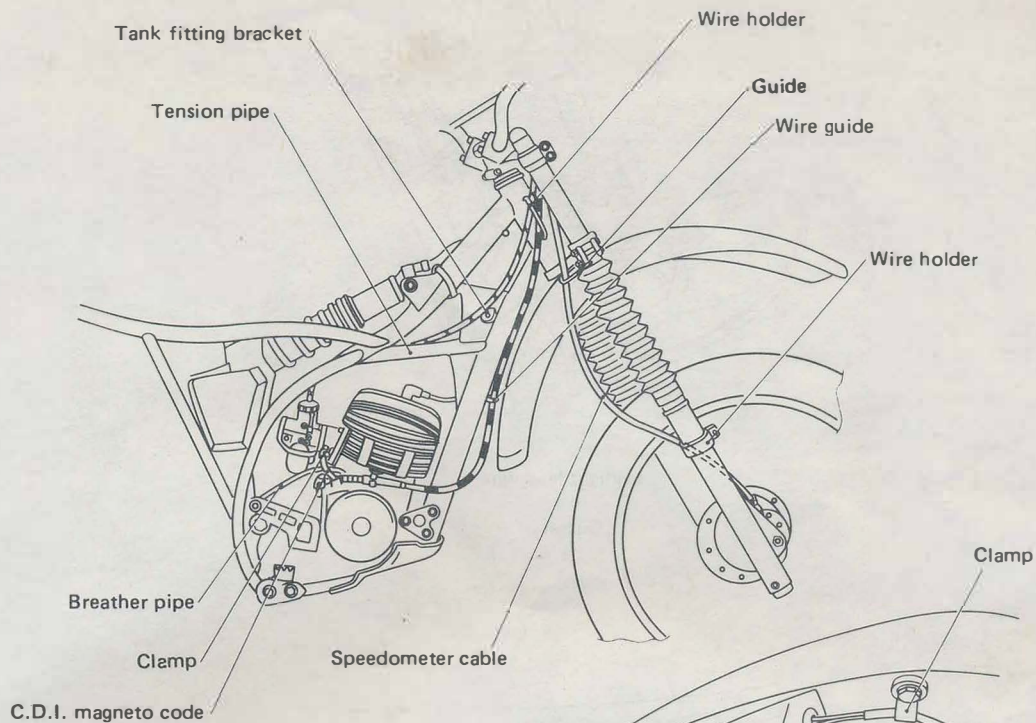
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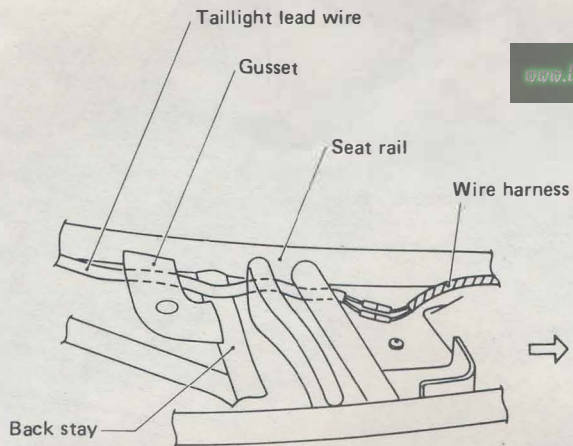
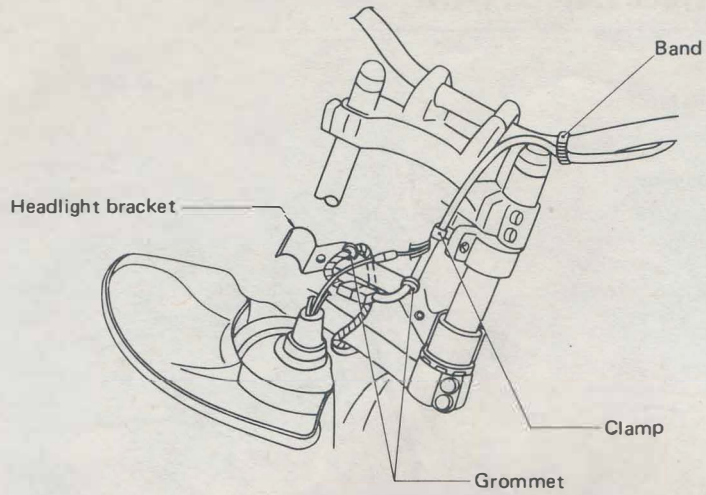
COLOR CODE

Y	Yellow
G	Green
B	Black
L	Blue
Br	Brown
R	Red
R/Y	Red/Yellow
B/W	Black/White
W/R	White/Red

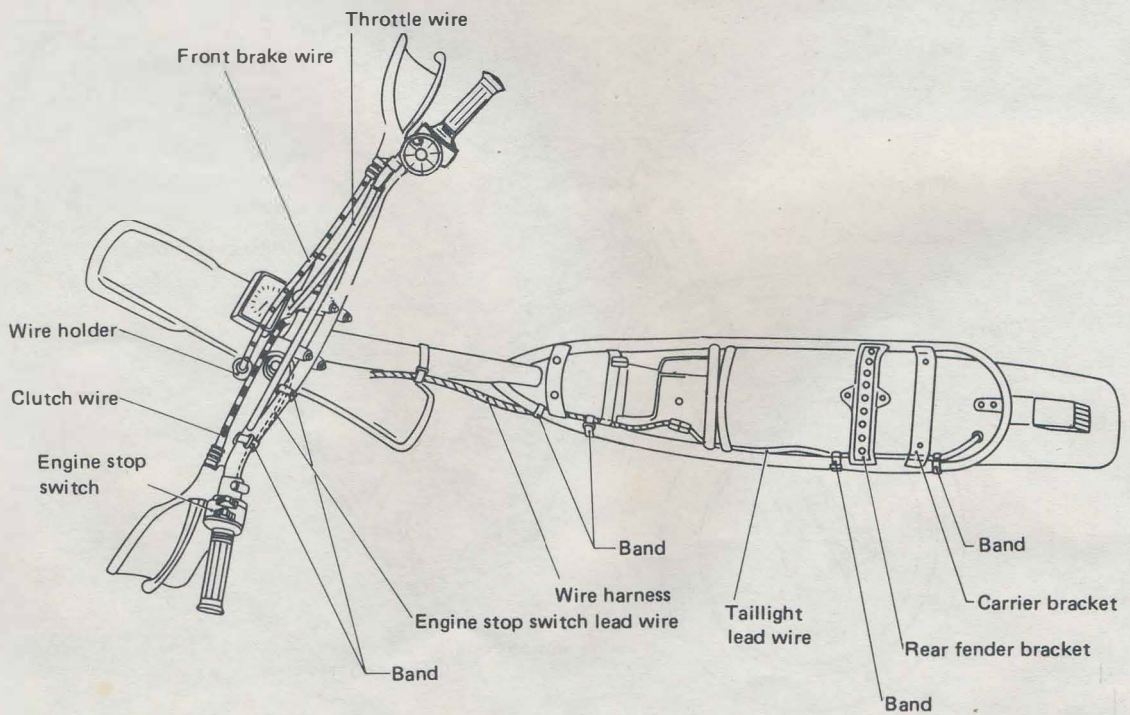
CABLE ROUTING DIAGRAM



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TROUBLE SHOOTING GUIDE



Engine is hard to start or does not start.

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

Poor high speed performance

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

Overheat

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

Transmission and shifter

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

Clutch

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

Chassis

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

CLEANING AND STORAGE

A. CLEANING

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

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

B. STORAGE

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

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

NOTE: _____
Make any necessary repairs before storing the machine.

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SPECIFICATIONS

A. General

MODEL	IT175H
Model: Model (I.S.M. No.) Frame I.D. and Starting Number Engine I.D. and Starting Number	3R6 3R6-020101 3R6-020101
Dimension: Overall length Overall width Overall height Seat height Wheelbase Minimum ground clearance	2,120 mm (83.46 in) 910 mm (35.8 in) 1,175 mm (46.3 in) 895 mm (35.2 in) 1,420 mm (55.9 in) 290 mm (11.4 in)
Weight: Net weight	94 kg (207 lb)

B. Engine

MODEL	IT175H
Description: Engine type Engine model Displacement Bore x Stroke Compression ratio Starting system Ignition system Lubrication system	Air Cooled, 2-stroke, Gasoline Torque Induction system 3R6 171 cc (10.4 cu.in) 66 mm x 50 mm (2.6 in x 1.97 in) 7.9 : 1 Primary kick starter Capacitor Discharge Ignition Mixed Gas 16 : 1 (Yamalube "R") 20 : 1 (Shell Super M, Castrol R30)
Cylinder head: Cylinder head volume Combustion chamber type Head gasket thickness	13.4 cc (0.8 cu.in) Dome + Squish 1.0 mm (0.04 in)
Cylinder: Material Bore size Wear limit	Aluminum cylinder with cast iron sleeve 66 mm (2.598 in) 66.1 mm (2.602 in)
Piston: Piston skirt clearance Piston oversize	0.050 ~ 0.055 mm (0.0020 ~ 0.0022 in) 66.25, 66.50, 66.75, 67.00 mm (2.608, 2.618, 2.628, 2.638 in)

MODEL	IT175H
Piston ring: Ring design, (Top/Second) Ring end gap, installed (Top, Second) Ring groove side clearance (Top/Second)	Keystone 0.2 ~ 0.4 mm (0.008 ~ 0.0157 in) 0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)
Small end bearing: Type	Needle bearing (20 x 16 x 16)
Big end bearing: Type	Needle bearing (22 x 28 x 16)
Crankshaft: Crank width (F) Crankshaft deflection (D) Con-rod small end deflection (S) Big end side clearance (C) Crank bearing type, L R Crank oil seal, L R	56 $\begin{smallmatrix} -0.05 \\ -0.18 \end{smallmatrix}$ mm (2.205 $\begin{smallmatrix} -0.002 \\ -0.007 \end{smallmatrix}$ in) 0.03 mm (0.0012 in) 0.8 ~ 1.0 mm (0.032 ~ 0.039 in) 0.20 ~ 0.70 mm (0.008 ~ 0.028 in) 6304C3SH 6205C4SH MHSD 28 x 40 x 8 MHSA 25 x 40 x 8 x R-1
Clutch: Clutch type Clutch push mechanism Primary reduction method ratio Friction plate thickness /limit Clutch plate thickness/warp limit Clutch spring length/limit Clutch housing thrust clearance Push rod bending limit	Wet multiple disc type Inner push, Cam axle Helical gear 52/17 (3.059) 3.0 mm/2.7 mm (0.12 in/0.006 in) 1.2 mm/0.05 mm (0.05 in/0.0020 in) 36.0 mm/35.0 mm (1.42 in/1.38 in) 0.20 ~ 0.25 mm (0.008 ~ 0.010 in) 0.15 mm (0.006 in)
Transmission: Type Gear ratio: 1st 2nd 3rd 4th 5th 6th Transmission oil quantity Type Bearing type: Main axle (L) (R) Drive axle (L) (R)	Constant mesh, 6 speed, return 34/11 (3.091) 27/13 (2.077) 24/16 (1.500) 25/21 (1.190) 20/20 (1.000) 18/22 (0.818) Total: 700 cc (0.74 US qt) Exchange: 600 cc (0.63 US qt) Yamahlube 4-cycle or SAE 10W/30 "SE" motor oil 6303Z Needle bearing (24 x 15 x 10) Needle bearing (25 x 15 x 12) 6304

MODEL	IT175H
Drive axle oil seal type (R) Secondary reduction method ratio	SD 26 x 38 x 5 Chain 44/12 (3.667)
Shifting mechanism: Type Oil seal type	Guide bar type S 12 x 21 x 4
Intake: Air cleaner, type Oil grade Reed valve, type Bending limit Valve lift	Oiled foam rubber Yamalube 2-cycle oil or Air cooled 2-cycle engine oil "V" type 1.4 mm (0.055 in) 9.0 ± 0.2 mm (0.35 ± 0.008 in)
Carburetor: Type and manufacturer I.D. mark Main jet (M.J.) Power jet Jet needle-clip position (J.N.) Needle jet (N.J.) Cutaway (C.A.) Pilot jet (P.J.) Air screw turns out (A.S.) Starter jet (G.S.) Float height	VM34SS/MIKUNI 3R600 # 210 # 82.5 6F21-4 P-8 2.0 60 1 and ¼ 80 23.4 ± 1.0 mm (0.92 ± 0.04 in)

C. Chassis

MODEL	IT175H
Frame: Design	Tubular steel semi double cradle
Steering: Caster Trail Head pipe bearing type	28.5° 122 mm (4.80 in) Taper roller bearing
Front suspension: Type Damper type Fork travel Front fork spring, free length spring rate Fork oil quantity type Oil seal type Air pressure	Telescopic fork Coil, air spring + oil damper 250 mm (9.84 in) 607.5 mm (23.9 in) K ₁ = 0.277 kg/mm, K ₂ = 0.539 kg/mm 317 cc (10.7 oz) G10 (SAE #10) SD-36-48-10.5 0 kg/cm ² (0 psi)

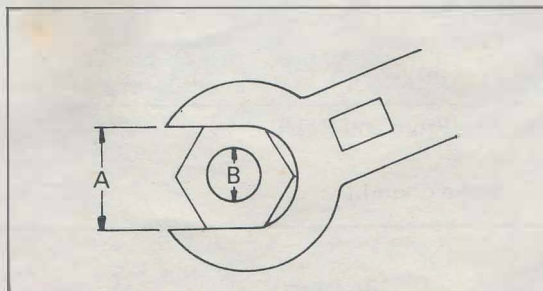
MODEL	IT175H
Rear suspension: Type Damper type Rear shock absorber spring: Free length Set length Spring rate (Taper coil spring) Rear shock absorber travel Gas pressure Gas properties Rear wheel travel Swing arm length deflection (rear end) free play (pivot shaft) Pivot shaft - bearing type	Monocross suspension (De Carbon system) Coil, gas spring + Oil damper 343 mm (13.5 in) 335 mm (13.2 in) $K_1 = 2.2 \text{ kg/mm}$, $K_2 = 4.6 \text{ kg/mm}$ 133 mm (5.24 in) 15 kg/cm^2 (210 lb/in^2) Nitrogen gas 250 mm (9.84 in) 492 mm (19.4 in) 0 ~ 1.0 mm (0 ~ 0.039 in) 0 ~ 0.2 mm (0 ~ 0.0079 in) Needle bearing + TA2210Z /2
Fuel tank: Capacity	11 lit (2.91 US. gal)
Wheels: Tire size (F) (R) Manufacture Pattern Pressure (Normal) Front Rear Rim size (F) (R) Run out (vert.) Front – limit Rear – limit Run out (horiz.) Front – limit Rear – limit Bearing type and size Front wheel (L) (R) Rear wheel (L) (R) Oil seal type and size Front wheel (R) Rear wheel (L)	3.00-21-4PR 4.10-18-4PR IRC Nobby 1.0 kg/cm^2 (14 psi) 1.0 kg/cm^2 (14 psi) 1.60-21 1.85-18 0.5 mm (0.02 in) 0.5 mm (0.02 in) 1.0 mm (0.04 in) 1.0 mm (0.04 in) 6202-RS 6202-3A 6202-3A 6302LU-3A SD-20-35-7 DD-22-38-8
Drive chain: Type Number of links Chain pitch Free play	DK520DS 99L + Joint 15.875 mm (0.625 in) 10 ~ 15 mm (0.394 ~ 0.591 in)
Brakes (Front and Rear): Type Brake drum I.D.:	Drum brake (Leading/trailing) 130 mm (5.12 in)

MODEL	IT175H
Brake shoe dia. x width (F) (R)	130 mm x 22 mm (5.12 in x 0.87 in) 130 mm x 28 mm (5.12 in x 1.1 in)
Lining length	136.14 mm (5.36 in)
Lining thickness /wear limit	4 mm/2 mm (0.16 in/0.079 in)
Shoe springs free length	35 mm (1.38 in)

D. Electrical

MODEL	IT175H
Ignition system: System Manufacture Model Charge coil resistance Low speed: High speed/ Pulser coil resistance:	Capacitor Discharge Ignition Mitsubishi F003T20271 420Ω ± 10% (Black to Brown) 13.6Ω ± 10% (Red to Black) 12.4Ω ± 10% (White/Red to Black)
Ignition timing (B.T.D.C.)	2.6 mm (0.102 in)
Ignition coil Manufacture Model Spark gap Primary winding resistance Secondary winding resistance	Mitsubishi F006T41174 6 mm (0.28 in) or more/300 r/min 1.0Ω ± 10% 5.9kΩ ± 20%
Spark plug Manufacture and type Gap	Champion N-2G 0.7 mm (0.028 in)
C.D.I. unit Manufacture Model	Mitsubishi F008T01172
Charging system: Flywheel magneto Lighting coil resistance (Y/R) Lighting output	F003T20271 0.48Ω ± 10% 5V or more/2,500 r/min 7V or less / 8,000 r/min
Lighting system: Headlight type Headlight wattage Taillight wattage	Bulb type 6V, 25W/25W 6V, 5W

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



E. TIGHTENING TORQUE

Engine		Tightening torque	
Cylinder head	M8	2.5 m-kg (18 ft-lb)	
Spark plug	M14	2.5 m-kg (18 ft-lb)	
Cylinder Nut	M8	3.0 m-kg (22 ft-lb)	
Stud	M8	2.5 m-kg (18 ft-lb)	
Primary drive gear	M12	6.0 m-kg (42 ft-lb)	
Clutch boss (with lock washer)	M14	5.0 m-kg (36 ft-lb)	
Clutch spring	M6	0.6 m-kg (4 ft-lb)	
Drive sprocket (with lock washer)	M16	6.0 m-kg (42 ft-lb)	
Kick crank	M10	3.5 m-kg (26 ft-lb)	
Change pedal	M6	1.0 m-kg (8 ft-lb)	
Reed valve	M3	0.1 m-kg (0.7 ft-lb) *	
Flywheel magneto	M12	7.5 m-kg (50 ft-lb)	
Stater	M6	0.8 m-kg (6 ft-lb)	
Chassis	www.legends-yamaha-enduros.com		
Engine mounting bolt:			
Front	M8	3.0 m-kg (22 ft-lb)	
Center	M8	3.0 m-kg (22 ft-lb)	
Engine mount stay:	M8	3.0 m-kg (22 ft-lb)	
Handle crown:			
Steering shaft	M14	9.5 m-kg (68 ft-lb)	
Steering pinch	M8	2.3 m-kg (16 ft-lb)	
Inner tube	M8	2.3 m-kg (16 ft-lb)	
Handle holder	M8	2.3 m-kg (16 ft-lb)	
Steering bearing	M25	1.0 m-kg (7 ft-lb)	
Front fork:			
Cap bolt	M32	2.3 m-kg (16 ft-lb)	
Damper unit	M10	2.3 m-kg (16 ft-lb) *	
Front wheel axle	M14	8.5 m-kg (60 ft-lb)	
Pivot shaft	M16	8.5 m-kg (60 ft-lb)	
Rear wheel axle	M14	8.5 m-kg (60 ft-lb)	
Sprocket wheel	M8	3.0 m-kg (22 ft-lb)	
Rear suspension	M10	6.5 m-kg (46 ft-lb)	
Tension bar	M8	2.3 m-kg (16 ft-lb)	
Camshaft lever	M6	1.0 m-kg (7 ft-lb)	
Footrest	M10	6.5 m-kg (46 ft-lb)	
	M12	8.5 m-kg (60 ft-lb)	

* : Apply with a holding agent such as "LOCTITE"

WARRANTY INFORMATION

Please refer to your copy of the Yamaha Owner's Warranty Guide* for details of the warranty offered on your new Yamaha.

The Warranty Guide contains the warranty policy, an explanation of the warranty, and other important information. Becoming familiar with these policies will be to your advantage in making the best use of Yamaha's programs.

There are certain requirements which you must meet in order to qualify for warranty coverage. FIRST, your new Yamaha must be operated and maintained properly, as explained in this manual. If you have any questions about any procedure in this manual, please consult your dealer. ABUSE AND NEGLECTED MAINTENANCE MAY LEAD TO MECHANICAL FAILURES WHICH CANNOT BE COVERED UNDER WARRANTY.

SECOND, IF ANY PROBLEMS OCCUR WHICH YOU FEEL SHOULD BE COVERED UNDER WARRANTY NOTIFY YOUR DEALER IMMEDIATELY. Don't delay, as small problems left unrepaired can become large problems which may not be covered under warranty.

We recommend that the Warranty Guide be used as a folder in which you may keep your registration and other important documents related to your new Yamaha.

- * The Yamaha Owner's Warranty Guide is to be supplied by your Yamaha dealer at the time of purchase. If you did not receive one, or have lost yours, you may obtain extra copies upon request from your Yamaha dealer or by writing to:

YAMAHA MOTOR CORPORATION, U.S.A.
P.O.Box 6555
6555 Katella Ave.
Cypress California 90630
Attn: Warranty Department

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