YAMAHA

YZ125J

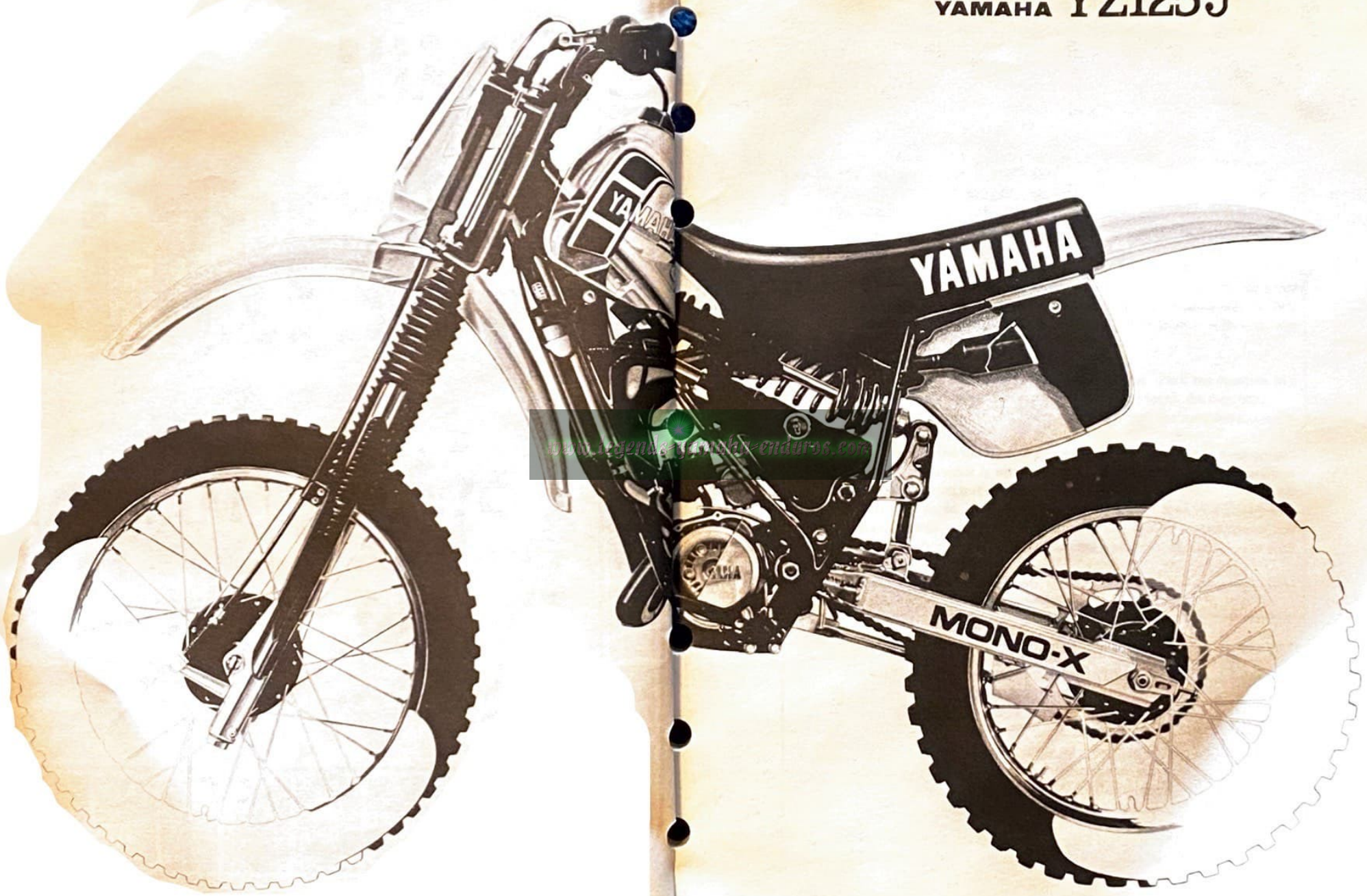
OWNER'S MANUAL

TUNING AND SERVICE

LIT-11626-03-16

5X4-28199-10

YAMAHA YZ125J



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 REGURATIONS. SUSPENSION ON THIS MACHINE CAN BE ADJUSTED TO ACCOMODATE DIFFERING RIDER WEIGHT, COURSE CONDITION 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. Do not touch any moving or heated areas.
   *The engine and exhaust pipe/muffler are heated up. Park the machine in a place where pedestrians or children are not likely to touch the machine.
   *Do not park the machine on a slope or soft ground; the machine can easily overturn.
4. When transporting the machine in another vehicle, be sure it is kept upright and that the fuel petcock is turned to the "OFF" position. If it should lean over, gasoline may leak out of the carburetor or fuel tank.
5. Never start your engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and can cause loss of consciousness and death within a short time. Always operate your machine in an area with adequate ventilation.
6. Always wear a helmet, groves, boots, trousers, and jacket for motocross riding.
7. The side stand should be removed whether in races or practice.

YZ125J
OWNER'S MANUAL
TUNING AND SERVICE

1st. edition, September 1981

P/N LIT-11626-03-16

TO THE NEW OWNER

This manual will provide you with a good basic understanding of features, operation, and basic maintenance and inspection items of this vehicle.
PLEASE READ THIS MANUAL CAREFULLY AND COMPLETELY BEFORE OPERATING YOUR NEW MACHINE. If you have any questions regarding the operation or maintenance of your machine, please consult your Yamaha dealer.

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

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

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

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

NOTICE

Some data in this manual may become outdated due to improvements made to this model in the future.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

SERVICE DEPT.
INTERNATIONAL DIVISION
YAMAHA MOTOR COMPANY, LTD.

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1 GENERAL INFORMATION

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1 GENERAL INFORMATION

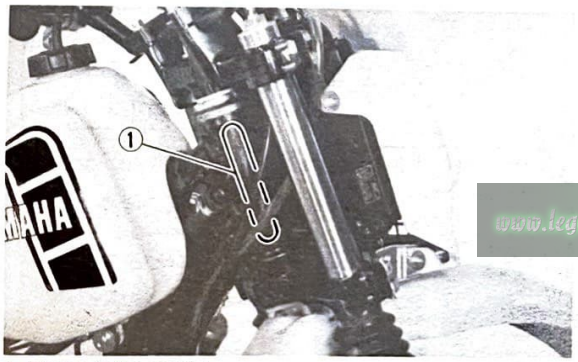
MACHINE IDENTIFICATION

There are two significant reasons for knowing the serial number of your machine:

1. When ordering parts, you can give the number to your Yamaha dealer for positive identification of the model you own;
2. If your bike is stolen, the authorities will need the number to search for and identify your machine.

Frame serial number

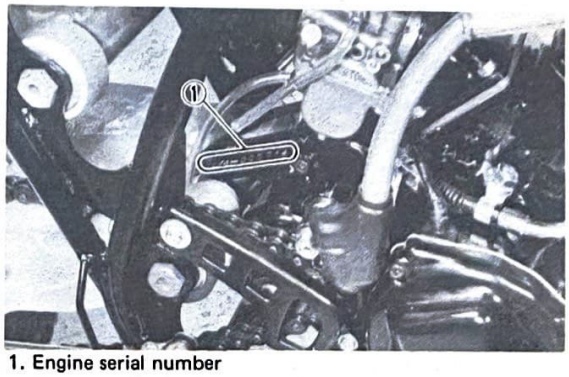
The frame serial number is stamped on the right of the steering head pipe.



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

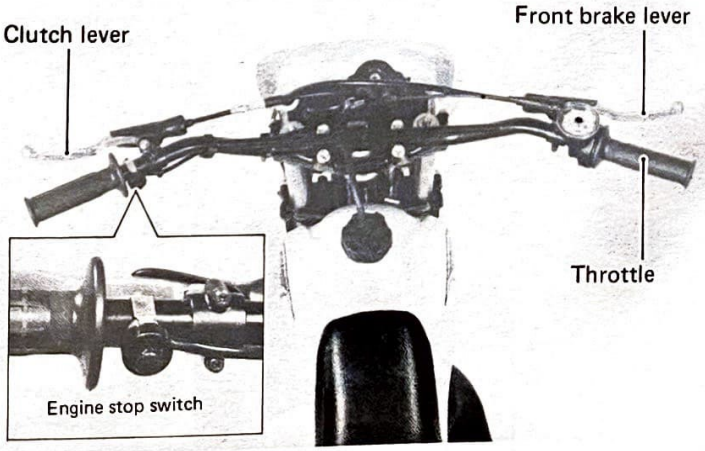
CONTROL FUNCTIONS

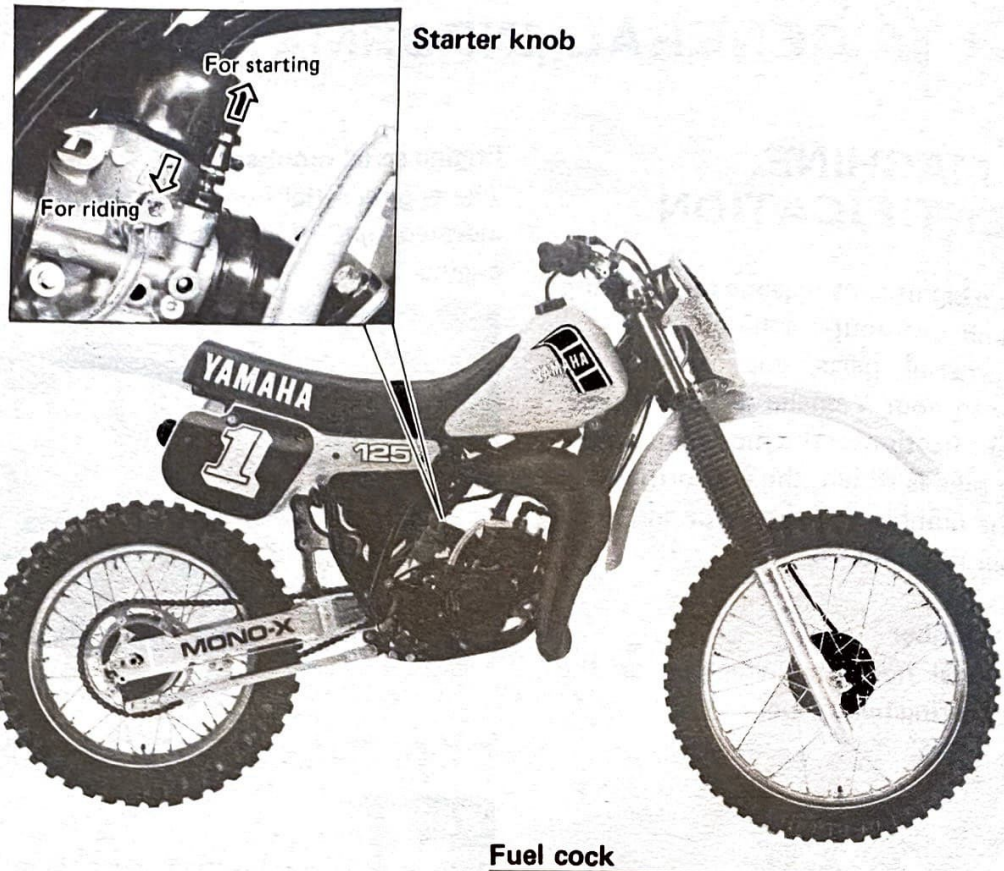
WARNING:

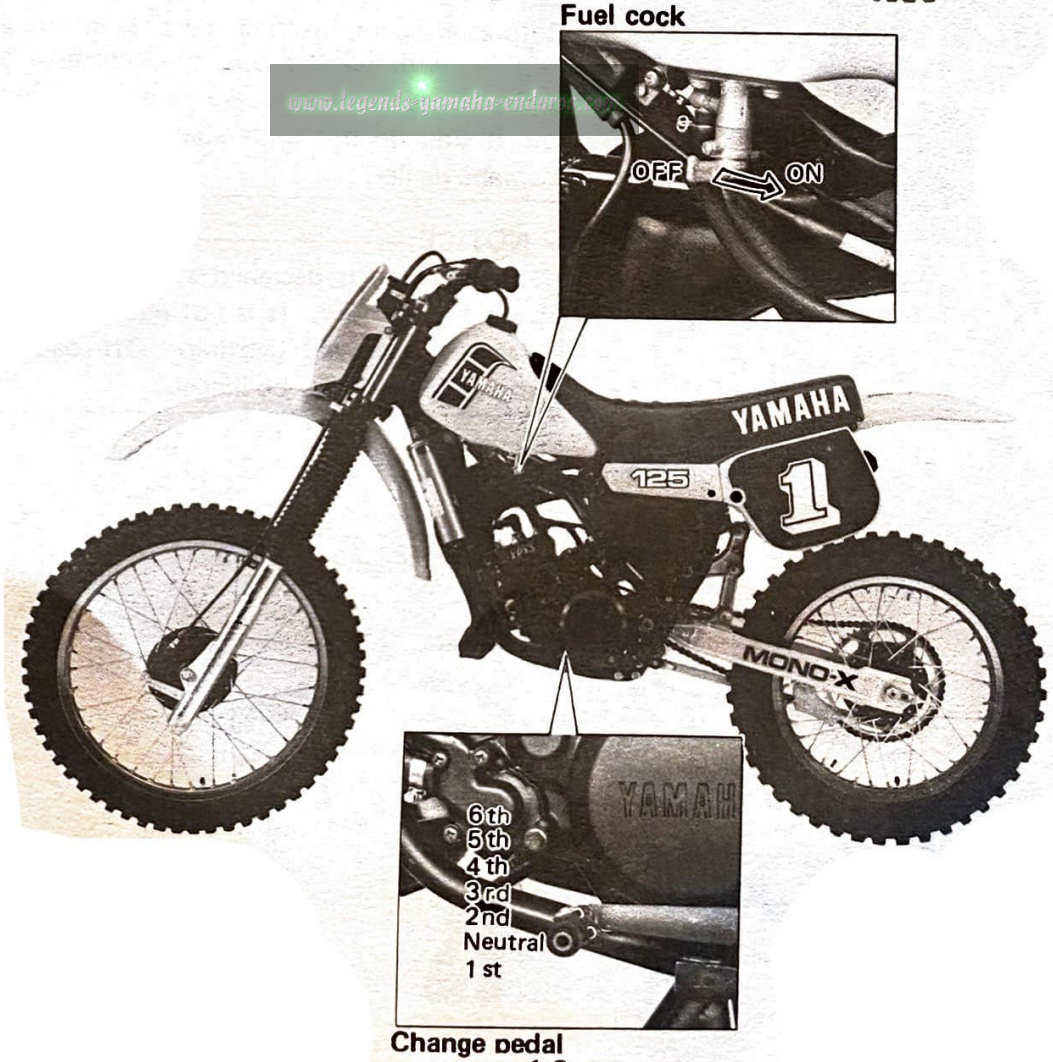
Before riding this machine, become thoroughly familiar with all the operating controls and their functions. If there are any controls which you do not understand, consult your Yamaha dealer.

NOTICE:

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







FUEL, OIL AND COOLANT

Fuel

Use premium fuel with an octane rating of at least 90. Mix oil with the gas at the ratio specified below. Always use fresh, name-brand gasoline, and mix the oil and gas the day of the race. Do not use premix that is more than a few hours sold.

Fuel tank capacity:
8.2 L (1.8 Imp gal, 2.2 US gal)

Engine mixing oil

Oil must be mixed with the gasoline to lubricate the piston, cylinder, crankshaft bearings, and connecting rod bearings.

Recommended oil: Yamalube "R"
(Yamalube Racing 2-cycle oil)
Mixing ratio: 24 : 1

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

Mixing ratio: 20 : 1
*Castrol R30 , A545

CAUTION:

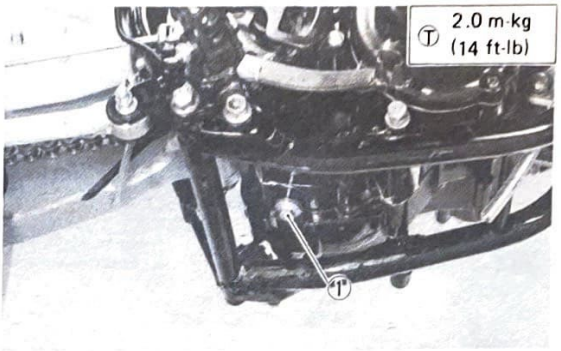
Never mix two types of oil in the same batch; clotting of the oil could result. If you wish to change oil types, be sure to drain the fuel tank and the carburetor float bowl of old premix prior to filling with the new type.

Transmission oil

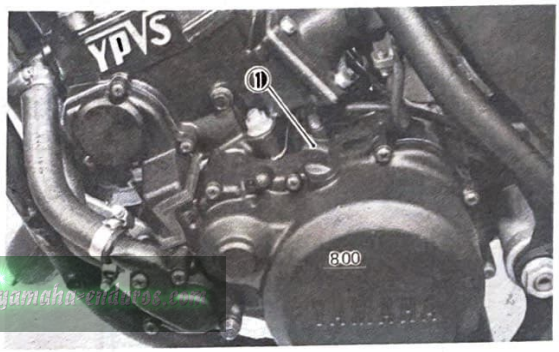
To assure proper lubrication of the transmission, clutch, and primary gears, the transmission oil should be changed after every fifth race. Remove the drain plug and allow the oil to drain for several minutes into a drain pan. Reinstall and tighten the drain plug. Remove the filler plug, refill the transmission, and replace the filler plug.

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

Transmission oil capacity:
Periodic oil change:
800 cm³ (0.70 Imp qt, 0.85 US qt)
Overhaul:
850 cm³ (0.75 Imp qt, 0.90 US qt)



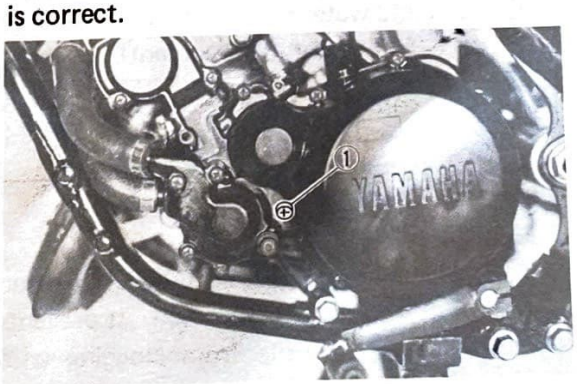
1. Drain plug Ⓣ : Tightening torque



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 1 minute. Stop engine. Leave the engine as it is for a few minutes and place the machine upright, then remove the oil level checking screw. If oil flows out, the oil level is correct.

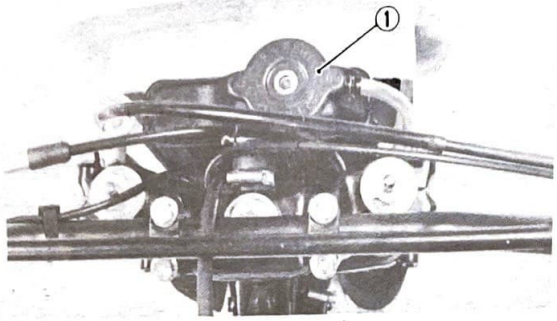


1. Checking screw

Coolant level

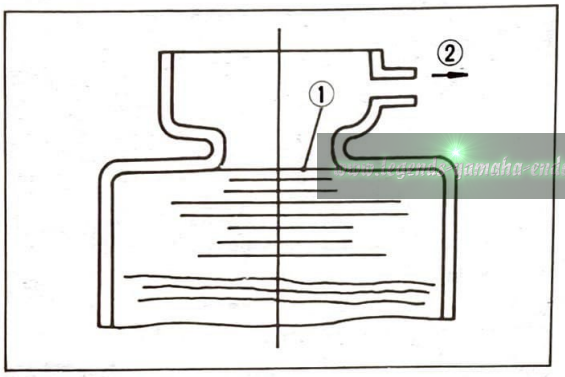
WARNING:

Do not remove the radiator cap, especially when the engine and radiator are hot.



1. Radiator cap

Check the coolant level in the radiator tank when the engine is cold. If the coolant level is low, add the coolant.



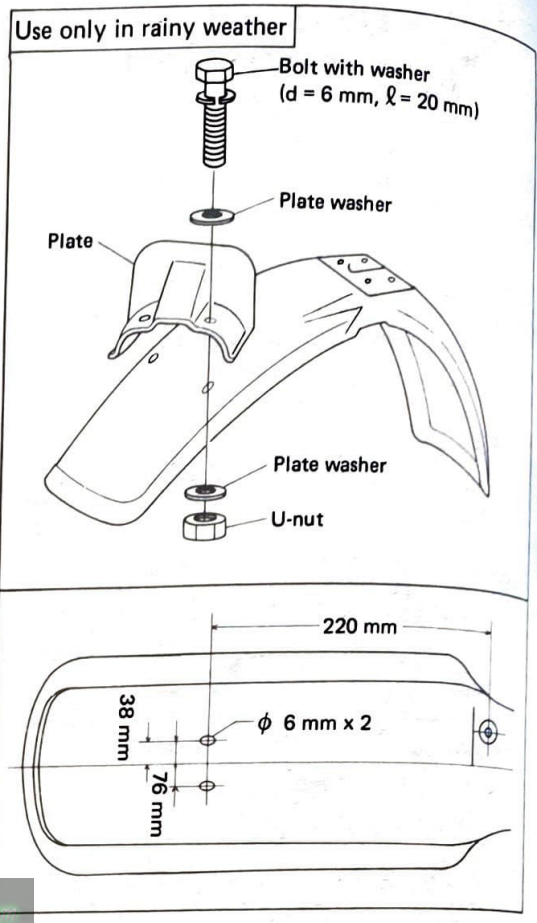
1. Coolant level 2. Breather pipe

Recommended coolant: High quality ethylene glycol anti-freeze containing corrosion inhibitors for alminum engine
Coolant and water mixed ratio: 1 : 1 (50% water, 50% coolant)
Coolant capacity: 1 ℓ (0.88 Imp qt, 1.1 US qt)

Fender plate

This fender plate should be used only when you ride the machine in the rain. It prevents the number plate grille from clogging with mud.

For installation, refer to the following figure.



PREOPERATION CHECKS

The following items should be checked before each use of the machine. These checks can be accomplished thoroughly in a very short time; the added safety they can assure is well worth the effort.

Item	Procedure	Page
Brakes	Check operation/adjustment	2-13
Clutch	Check operation/adjustment	2-11
Fuel tank	Fill with proper fuel/oil mix	1-3
Transmission oil	Check oil level/Change oil as required	1-3
Drive chain	Check alignment/adjustment/lubrication	2-14
Spark plug	Check color and condition/Replace as required	2-8
Throttle	Check for proper cable operation	2-9
Air filter	Foam type - must be clean and damp with oil always	2-10
Wheels & Tires	Check pressure/runout/spoke tightness/axle nuts	2-15
Bolts, nuts, and screws	Check all fasteners/tighten as required	–

STARTING AND BREAK-IN

CAUTION:

Before starting the machine, perform the checks in the preoperation check list.

WARNING:

Never start or run the engine in a closed area. The exhaust fumes are poisonous; they can cause loss of consciousness and death in a very short time. Always operate the machine in a well-ventilated area.

Starting a cold engine

Shift the transmission into neutral. Turn on the fuel petcock and raise the starter knob on the carburetor. With the throttle completely closed, kickstart the engine with a smooth, firm stroke. Using the starter knob as required, run the engine at idle or slightly higher until it warms up; this usually takes about one or two minutes. The engine is warmed up when it responds normally to the throttle with the starter knob pushed completely down.

CAUTION:

Do not warm up the engine for extended periods.

Starting a warm engine

Do not raise the starter knob. Open the throttle slightly and kickstart the engine with a smooth, firm stroke.

CAUTION:

Observe the following break-in procedures during initial operation to ensure optimum performance and avoid engine damage.

Break-in procedures

1. Before starting the engine, fill the fuel tank with a break-in oil-fuel mixture of 12 : 1 to 14 : 1.
2. Perform the preoperation checks on the machine.
3. Start and warm up the engine. Check the idle speed, and check the operation of the controls and the engine stop switch.
4. Operate the machine in the lower gears at moderate throttle openings for five to eight minutes. Stop and check the spark plug condition; it will show a rich condition during break-in.
5. Allow the engine to cool. Restart the engine and operate the machine as in the step above for five minutes. Then, very briefly shift to the higher gears and check fuell-throttle response. Stop and check the spark plug.
6. After again allowing the engine to cool, restart and run the machine for five more minutes.
   Full throttle and the higher gears may be used, but sustained full-throttle operation should be avoided. Check the spark plug condition.
7. Allow the engine to cool, drain the coolant, remove the top end, and inspect the piston and cylinder; instructions for this area on page 4-7. Remove any high spots on the piston with 600-grit, wet sandpaper. Clean all components and carefully reassemble the top end.
8. Drain the break-in oil-fuel mixture from the fuel tank and refill with the specified mix. Check the entire machine for loose screws, bolts, and nuts.
9. After refilling the coolant, restart the engine and check the operation of the machine throughout its entire operating range. Stop and check the spark plug condition. Restart the machine and operate it for about 10 to 15 more minutes. The machine will now be ready to race.

CAUTION:

1. **After the break-in period is completed, check the entire machine for loose fittings and fasteners. Tighten all such fasteners as required.**
2. **When any of the following parts have been replaced, they must be broken in.**
   CYLINDER AND CRANKSHAFT:
   About one hour of break-in operation is necessary.
   PISTON, RINGS, GEARS:
   These parts require about 30 minutes of break-in operation at half-throttle or less. Observe the condition of the engine carefully during operation.

CLEANING AND STORAGE

Cleaning

Frequent cleaning of your machine will enhance its appearance, maintain good overall performance, and extend the life of many components.

1. Before washing the machine, block off the end of the exhaust pipe to prevent water from entering. A plastic bag secured with a rubber band may be used for this purpose.
2. If the engine is excessively greasy, apply some degreaser to it with a paint brush. Do not apply degreaser to the chain, sprockets, or wheel axles.
3. Rinse the dirt and degreaser off with a garden hose; use only enough pressure to do the job.

CAUTION:

Excessive hose pressure can force water into wheel bearings, front fork seals, brake drums, and transmission seals. Avoid using high-pressure hoses such as those found in coin-operated car washes.

4. After the majority of the dirt has been hosed off, wash all surfaces with warm water and a mild detergent. Use an old toothbrush to clean hard-to-reach places.
5. Rinse the machine off immediately with clean water, and dry all surfaces with a soft towel or cloth.
6. Immediately after washing, remove excess water from the chain with a paper towel and lubricate the chain to prevent rust.
7. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.
8. Automotive wax may be applied to all painted or chromed surfaces. Avoid combination cleaner-waxes, as they may contain abrasives.
9. After completing the above, start the engine and allow it to idle for several minutes.

Storage

If your machine is to be stored for 60 days or more, some preventive measures must be taken to avoid deterioration. After cleaning the machine thoroughly, prepare it for storage as follows:

1. Drain the fuel tank, fuel lines, and the carburetor float bowl.
2. Remove the spark plug, pour a tablespoon of SAE 10W/30 motor oil in the spark plug hole, and reinstall the plug. With the engine stop switch pushed in, kick the engine over several times to coat the cylinder walls with oil.
3. Remove the drive chain, clean it thoroughly with solvent, and lubricate it. Reinstall the chain or store it in a plastic bag tied to the frame.
4. Lubricate all control cables.
5. Block the frame up to raise the wheels off the ground.
6. Tie a plastic bag over the exhaust pipe outlet to prevent moisture from entering.
7. If the machine is to be stored in a humid or salt-air environment, coat all exposed metal surfaces with a film of light oil. Do not apply oil to rubber parts or the seat cover.

NOTE:

Make any necessary repairs before the machine is stored.

2 REGULAR MAINTENANCE AND ADJUSTMENT

2 REGULAR MAINTENANCE AND ADJUSTMENT

MAINTENANCE INTERVALS CHART

The following schedule is intended as a general guide to maintenance and lubrication. Bear in mind that such factors as weather, terrain, geographical location, and individual usage will alter the required maintenance and lubrication intervals. If you are in doubt as to what intervals to follow in maintaining and lubricating your machine, consult your Yamaha dealer.

Item	Every race	Every two races	Every three races	Every five races	As required	Recommend lubricant
PISTON Clean/Inspect for cracks and seizure	○					
Replace				○		
PISTON RING Replace			○			
CYLINDER HEAD Inspect distortion/cracks	○					
Clean/Retighten	○					
CYLINDER/POWER VALVE Clean/Inspect for seizure	○					
Replace					○	
Retighten	○					
CLUTCH Adjust			○			
Inspect for wear/damage	○					
Replace					○	
TRANSMISSION Change oil				○		Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil
Inspect gears and shift fork for wear/bending				(○)	○	
Replace bearing					○	
ENGINE MAIN BEARING Inspect wear				○		
CONNECTING ROD Inspect bearings for wear				○		
Replace					○	
PISTON PIN Inspect wear/heat damage				○		
Replace					○	
CDI ROTOR Retighten				○		
KICK STARTER Inspect idle gear for damage/wear					○	
Replace					○	

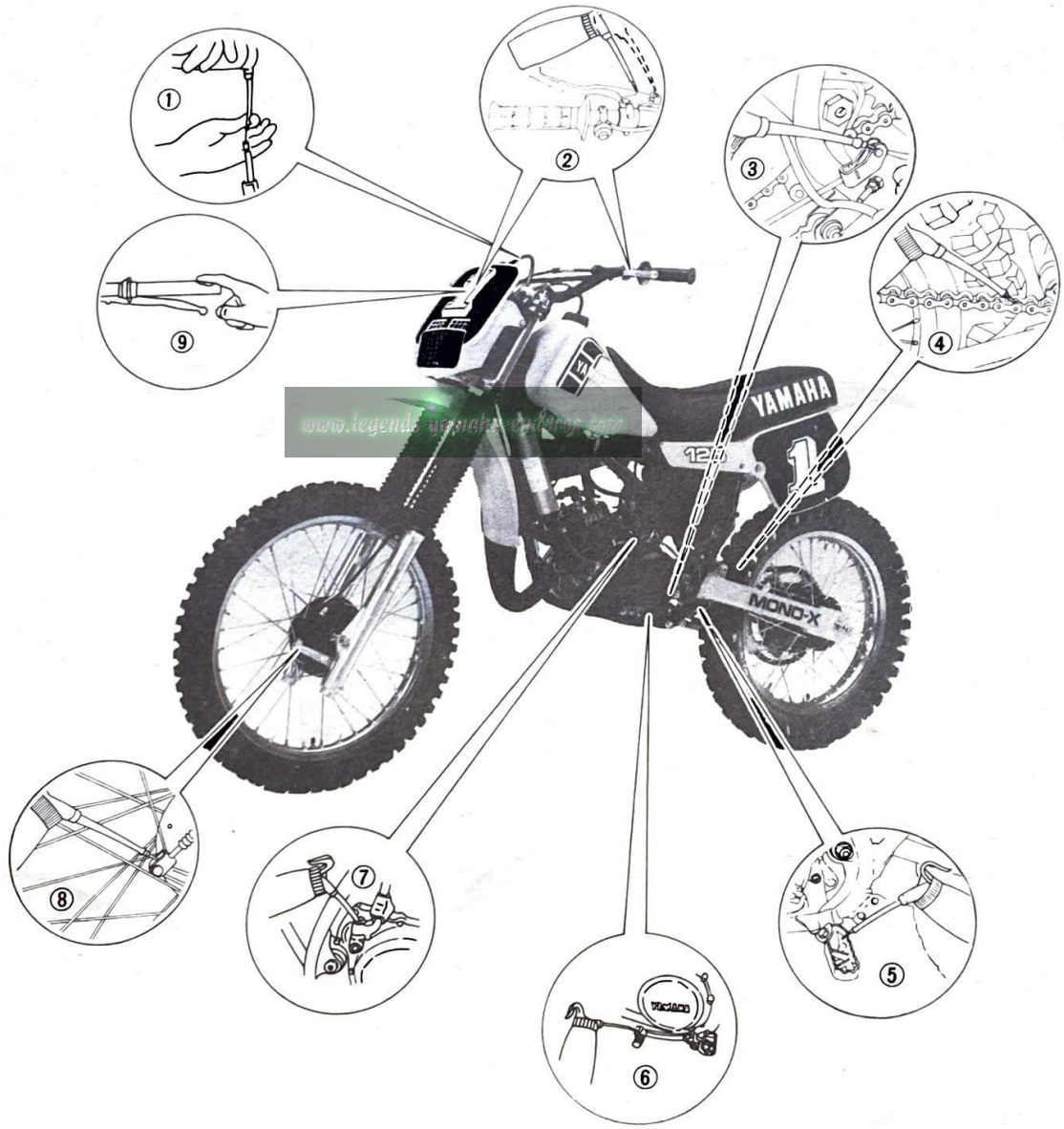
Item	Every race	Every two races	Every three races	Every five races	As required	Recommend lubricant
EXHAUST SYSTEM Inspect for cracks	○					
Cleaning				○		
CARBURETOR Inspect/Adjust	○					
Clean/Retighten	○					
AIR FILTER Clean and lube	○					Air filter must be cleaned and damp with oil after every race. Do not over-oil. Foam air-filter oil.
Replace					○	
SPARK PLUG Inspect for condition	○					
Replace					○	
DRIVE CHAIN Cleandand lube	○					a. Yamaha chain and cable lube b. SAE 10W/30 motor oil
Check tension and alignment	○					
Replace					○	
COOLING SYSTEM Check leakage	○					
Replace coolant					○ (two years)	
Inspect hoses for cracks/damage	○					
Retighten hose clamps	○					
FRAME Clean/Inspector for cracks	○					
FUEL TANK PETCOCK Clean					○	
FRONT FORK Change oil			Initial 5		After 10 race	Yamaha fork oil 10 wt
Replace seal					○	
Check and adjust air pressure	○					
REAR SHOCK Inspect/Adjust	○					Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)
Lube	○					
STEERING HEAD Inspect	○					Heat-resistance grease (Shell Retinax A)
Check leakage	○					
Clean/Lube				○		
Replace bearings, oil seals					○	
SWINGARM/RELAY ARM Inspect for cracks	○					Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)
Lube	○					
CHAIN GUARD Replace					○	Chain rollar, guard and tensioner
TORQUE ARM Inspect	○					
Lube	○					Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)

Item	Every race	Every two races	Every three races	Every five races	As required	Recommend lubricant
WHEELS AND TIRES Check pressure/runout/ spoke tension	○					Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)
Inspect bearings for wear	○					
Lube oil seal			○			
Replace bearings					○	
THROTTLE Lube/Check	○					
CONTROL CABLES Routing (Connection)	○					SAE 10W/30 motor oil
Inspect/Lube	○					
CLUTCH AND BRAKE LEVER PIVOT Lube/Retighten	○					SAE 10W/30 motor oil
KICK CRANK, BRAKE PEDAL AND FOOTREST PIVOTS Lube	○					Lithium base grease
Retighten	○					
BOLTS AND NUTS Retighten	○					
BRAKE Clean/Inspect/Adjust Lube	○					Lithium base grease
Replace					○	

LUBRICATION

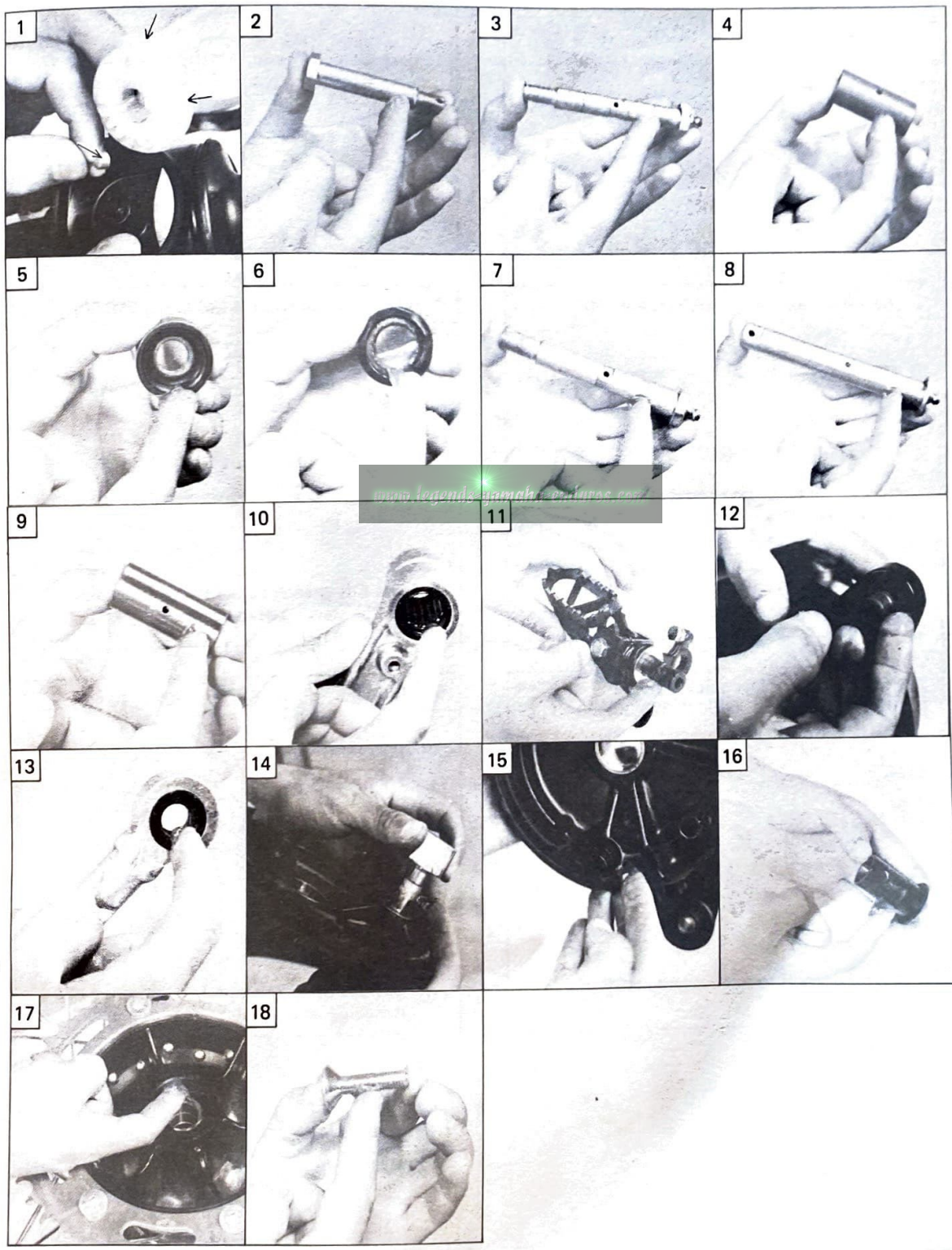
To ensure smooth operation of all components, lubricate your machine as follows after every race.

A. Use Yamaha chain and cable lube on these these areas:
1. All control cables
2. Brake and clutch lever pivots
3. Brake rod pivot
4. Drive chain
5. Footpeg pivots
6. Shift lever pivot
7. Kickstart lever pivot
8. Brake arm pivot
9. Throttle-to-handlebar contact area



B. Lubricate the following areas with lithium base grease:

1. Throttle bevel gear
2. Rear shock upper pivot
3. Rear shock lower pivot
4. Rear shock solid bush
5. Rear shock dust cover
6. Razmo bushing
7. I shape arm pivot (upper)
8. I shape arm pivot (lower)
9. I shape arm bushing
10. I shape arm needle bearing
11. Brake pedal pivot
12. Brake stay pivot stud
13. Brake stay pivot bushing
14. Brake shoe pivot
15. Brake shoe cam
16. Brake backing plate bushing
17. Wheel oil seal lip
18. Sprocket fitting bolt



SPECIAL TOOLS

The following special tools are required to perform maintenance, adjustments, and repairs on your machine. These tools can be obtained through your Yamaha dealer.

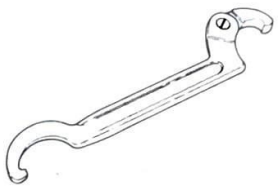
1 Dial gauge (90890-03097-00)

2 Dial gauge stand (90890-01195-00)

3 Dial gauge extension (90890-03098-00)

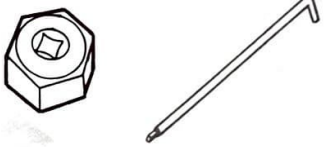
Tools 1, 2 and 3 are used to set the ignition timing.

4 Steering nut wrench (90890-01268-00)



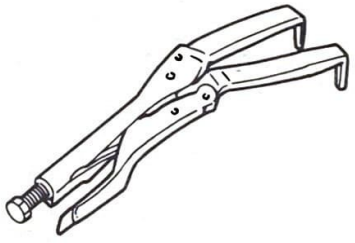
Use this wrench to put the proper tension on the steering head bearings.

5 Fork cylinder holder and adapter (90890-01326-00; 90890-01328-00)



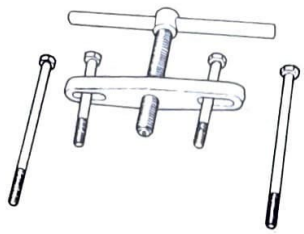
Use these tools to remove and install the fork cylinder.

6 Clutch holding tool (TLM-90910-42-00)



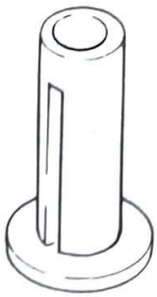
Use this tool to hold the clutch boss while removing or tightening the clutch boss nut.

7 Crankcase separating tool (90890-01135-00)



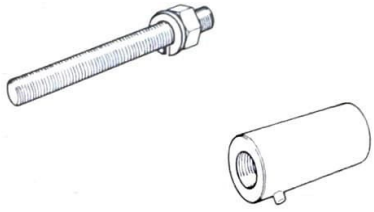
This tool is used to split the crankcase as well as remove the crankshaft from either case.

8 Crankshaft installing tool (90890-01274-00)



9 Spacer (90890-01016-00)

10 Crankshaft installing bolt and adapter (90890-01275-00; 90890-01278-00)



Tools 8, 9, and 10 are used to install the crankshaft.

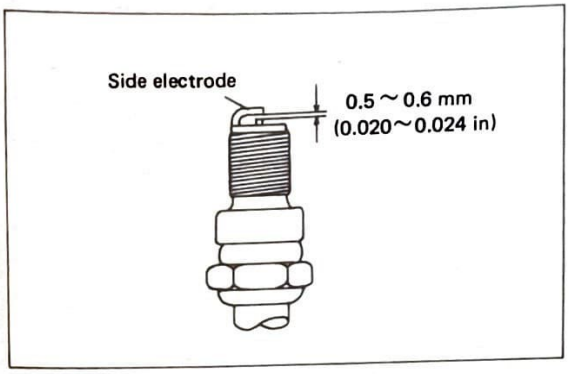
11 Rotor puller (2K7-8555-00)

This tool is used to remove the magneto.

Spark plug

Standard spark plug:
N-84 (CHAMPION)

Spark plug gap:
0.5 ~ 0.6 mm (0.020 ~ 0.024 in)



1. Whenever a new spark plug is installed, the gap must be checked and adjust properly. Use a wire feeler gauge to check the gap, and adjust the gap by bending the side electrode gently.
2. Be sure to clean the gasket surface and threads before installing the spark plug. Torque the plug to specification.

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

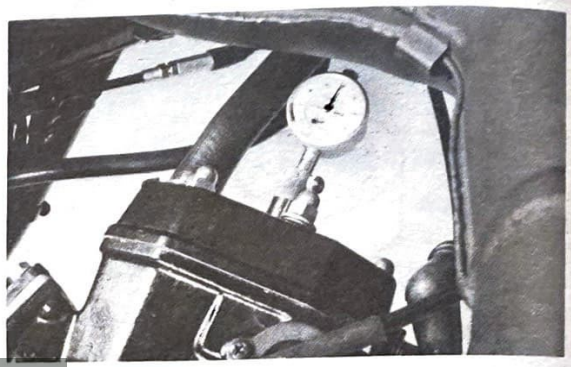
3. After running, the porcelain insulator around the center electrode should be a medium-to-light tan color. If it is too light or dark, check the carburetion, ignition timing, and oil-fuel mixture. If the light or dark color persists, a spark plug with a different heat range may be required. Bear in mind, though, that a darker-normal color is not unusual during break-in.

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.

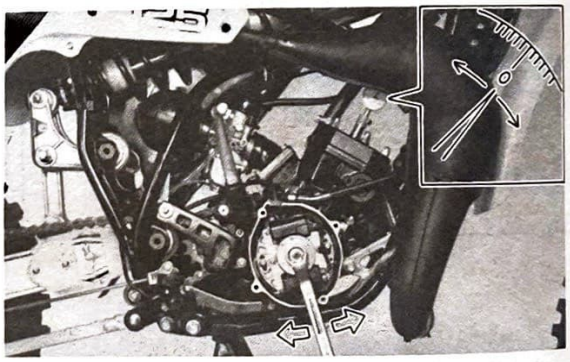
Ignition timing

The ignition timing must be set precisely to ensure that the ignition spark occurs at the proper time to provide optimum engine power.

1. Remove the spark plug, and the right-hand crankcase cover.
2. Screw the dial gauge stand into the spark plug hole.
3. Install the extension on the dial gauge, and slide the dial gauge assembly into the dial gauge stand.

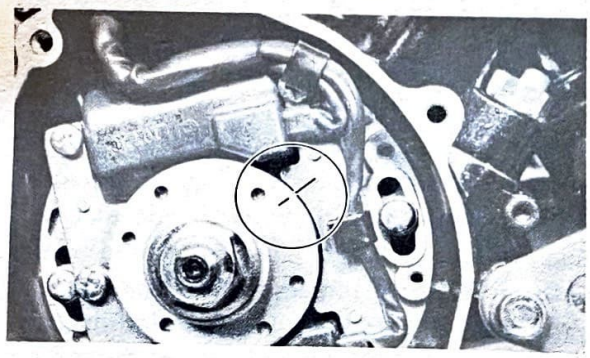


4. Rotate the magneto rotor until the piston reaches top dead center (TDC). When this happens, the needle on the dial gauge will stop and reverse directions even though the rotor is being turned in the same direction. Zero the dial gauge at TDC.

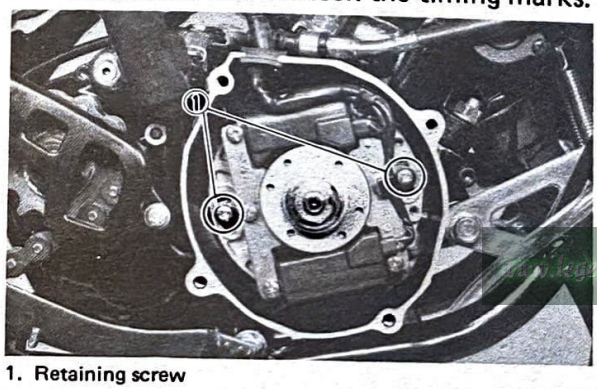


5. From TDC, rotate the rotor counterclockwise until the dial gauge indicates that the piston is at a specified distance from TDC. At this point, the scribed marks on the rotor and the stator plate should be aligned.

Ignition timing: B.T.D.C.
1.88 ± 0.15 mm
(0.074 ± 0.006 in)



6. If the marks are not aligned, loosen the two stator retaining screws and rotate the stator until the marks line up. Tighten the screws and recheck the timing marks.



1. Retaining screw

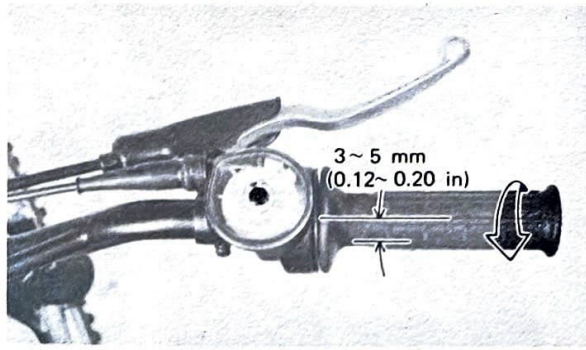
7. Remove the dial gauge assembly and stand, and reinstall the spark plug. Torque the plug to specification.

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

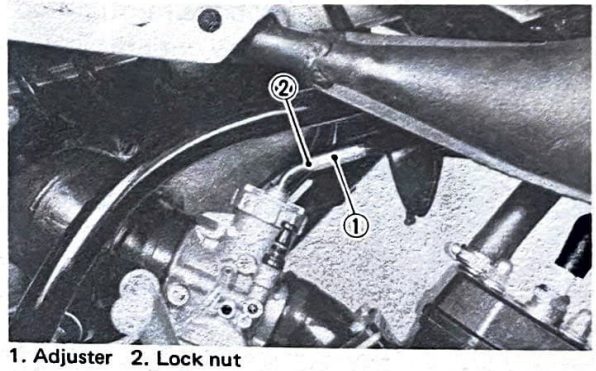
8. Reinstall the right-hand crankcase cover.

Throttle cable

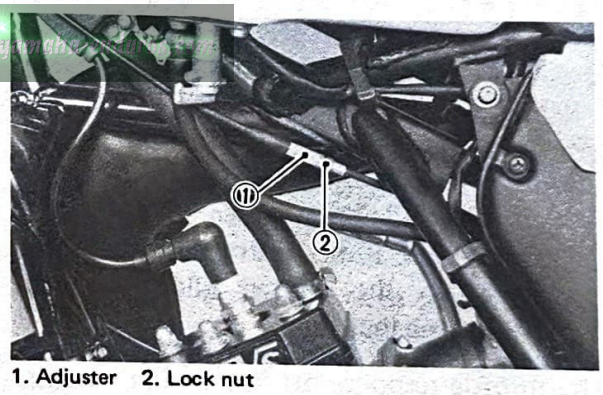
1. Check the free play in the throttle twist grip; the play should be 3~ 5 mm (0.12 ~ 0.20 in) at the edge of the inner flange of the grip.



2. To adjust the free play, loosen the lock nut on the cable adjuster and turn the adjuster in or out to achieve the proper free play. Retighten the lock nut.



1. Adjuster 2. Lock nut

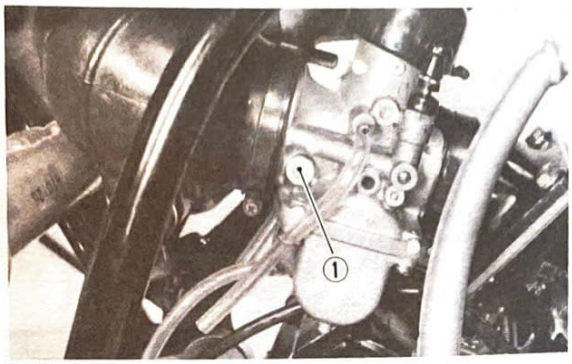


1. Adjuster 2. Lock nut

3. After adjustment, start the engine and check throttle operation. Turn the handlebars from lock to lock and note if the engine speeds up; if it does, the cable adjustment is too tight and must be readjusted.

Idle speed

1. Screw in the pilot air screw until it is 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 setting:
1 and 1/2

3. Loosen the lock nut on the throttle stop screw and turn the screw until the idle is at the desired rpm.

1. Throttle stop screw 2. Lock nut

4. Turn the pilot air screw in or out in 1/8-turn increments to achieve the highest rpm with just the pilot screw.
5. Once again, turn the throttle stop screw to attain the desired idle rpm, and tighten the lock nut.

The throttle response off idle should be crisp and clean, without any hesitation. If the engine is completely warmed up and hesitates off idle, turn the pilot air screw in or out in 1/8-turn increments until the problem is eliminated.

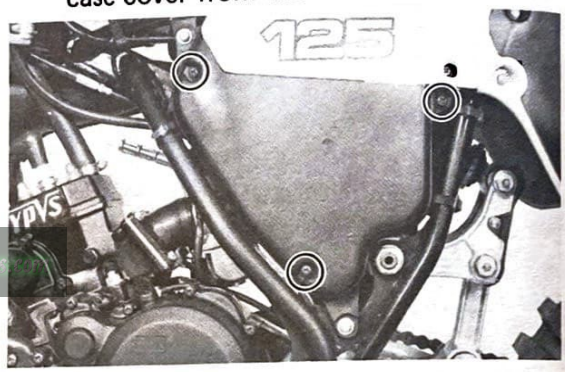
Air filter

Proper air filter maintenance is the biggest key to preventing premature engine wear and damage. All elements of the air filter system should be maintained after every moto; engine life will be prolonged and power output will remain consistent.

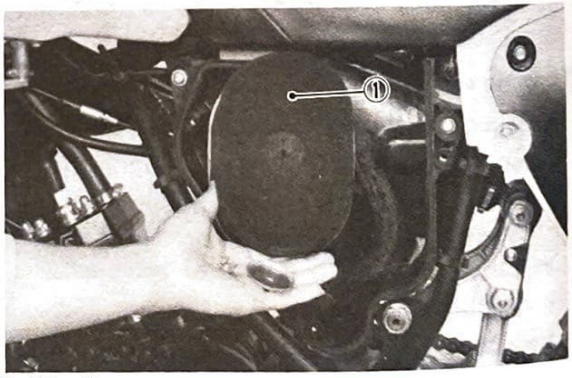
CAUTION:

Never run the engine without the air filter elements in place; this would allow dirt and dust to enter the engine and cause rapid wear and possible engine damage. In addition, carburetor jetting would be significantly affected, with subsequent poor performance and possible overheating.

1. Remove the panhead screws and filter case cover from the machine.



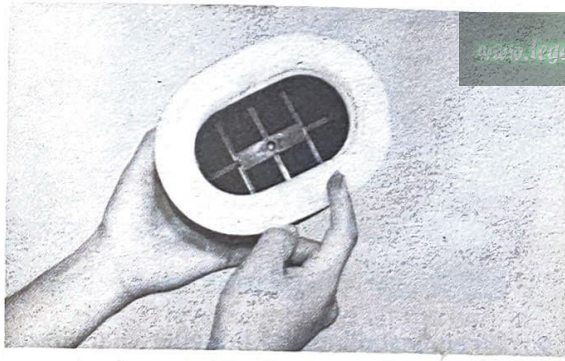
2. Remove element 1 from the filter box.
3. Wash element 1 in solvent, squeeze the element to remove the solvent, and let it dry.
4. Reinstall element 1 in the filter box.
5. Remove the wing nut, plate washer and remove the filter 2 from the box.



1. Filter 2

6. Separate the two elements from the filter "cage".

7. Wash both elements gently but thoroughly in solvent, squeeze the solvent out of the elements, and allow the elements to dry.
8. Pour a small quantity of foam-air-filter oil on the elements and work it thoroughly into the foam. Squeeze out the excess oil.
9. Reinstall the elements on the filter cage, and coat the sealing edge of the element assembly with light grease to provide an airtight seal.



10. After checking the air inlet hose for any obstructions, carefully reinstall the element assembly in the air filter box. Reinstall the wing nuts and tighten them.

CAUTION:

Do not overtighten the wing nuts to avoid distorting the filter element cage.

11. Reinstall the filter case cover.
12. Inspect the air filter joint and intake manifold rubber for tears and cracks. Replace them if any damage is found.

Clutch

To avoid clutch slipping or dragging, the clutch mechanism and cable must be adjusted correctly.

NOTE:

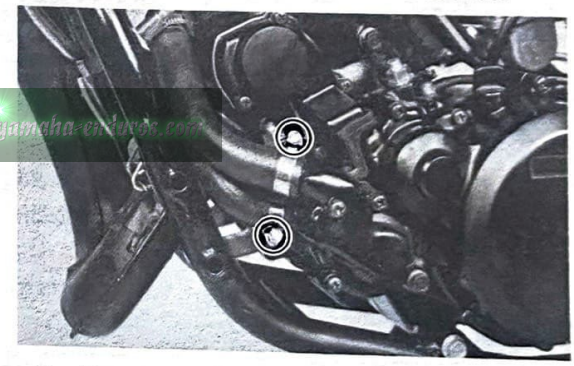
When removing the cylinder and clutch cover, be sure to remove the link assembly from the valve first.

1. Remove the two bolts which hold the footpeg to the frame.
2. Remove the shift pedal.
3. Drain the transmission oil and coolant completely.

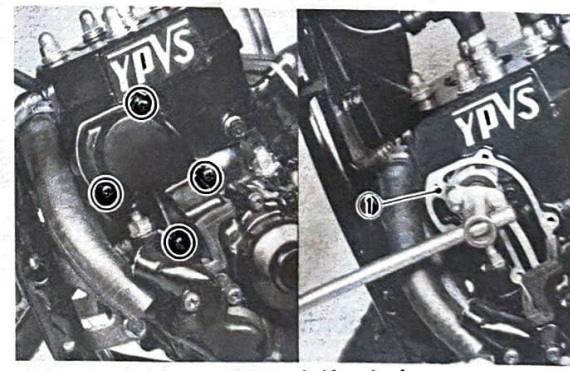
CAUTION:

Take care so that coolant does not splashes to painted surfaces. It splashes, wash it away with water.

4. Loosen the hose clamps and disconnected radiator hoses from the case.



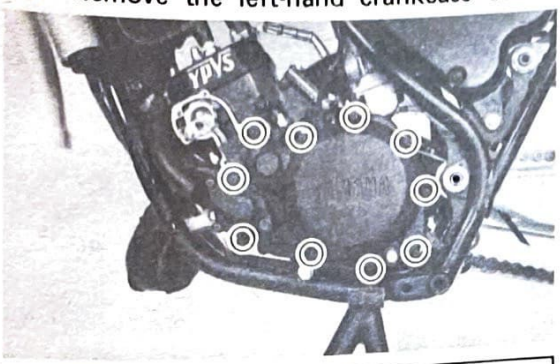
5. Remove the power valve case cover and remove the valve arm fitting nut. Disconnect the arm from the cylinder and remove the collar.



1. Knock pin

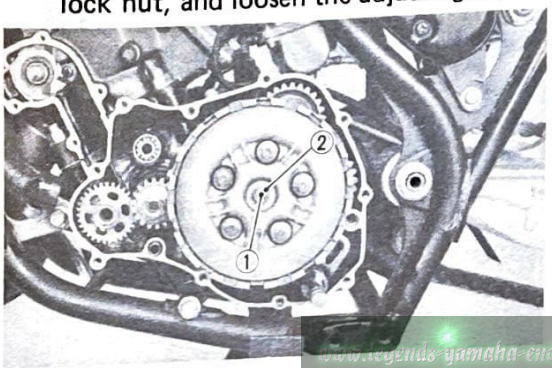
Tightening torque:
Cover: 10 Nm (1.0 m·kg, 7 ft·lb)
Nut: 5 Nm (0.5 m·kg, 4 ft·lb)

6. Remove the left-hand crankcase cover.



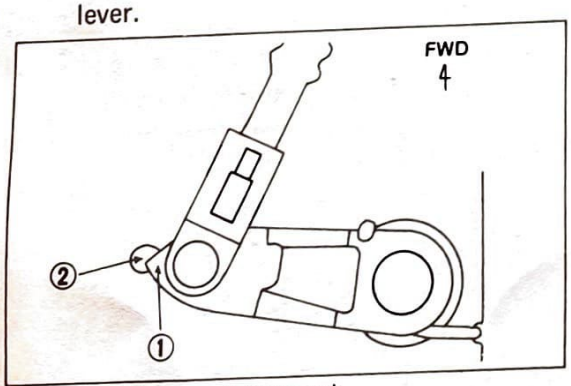
Tightening torque: 10 Nm (1.0 m·kg, 7 ft·lb)

7. Loosen the clutch mechanism adjuster lock nut, and loosen the adjusting screw.



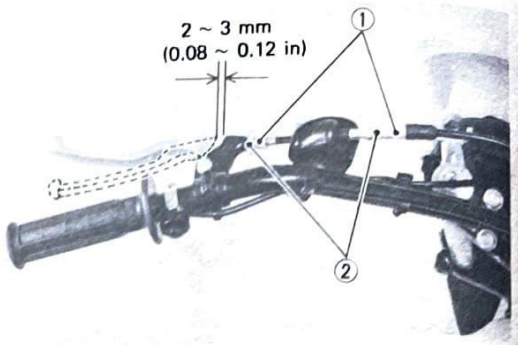
1. Adjuster 2. Lock nut

8. At the handlelever, loosen the cable adjuster lock nut and adjust the cable length to align the match mark on the crankcase with the point of the push lever.



1. Point of push lever 2. Case mark

9. Turn the clutch mechanism adjusting screw in until resistance is felt, and tighten the adjuster lock nut.
10. Adjust the cable adjuster at the handle lever to provide 2 ~ 3 mm (0.08 ~ 0.12 in) of free play at the clutch lever pivot; tighten the lock nut.



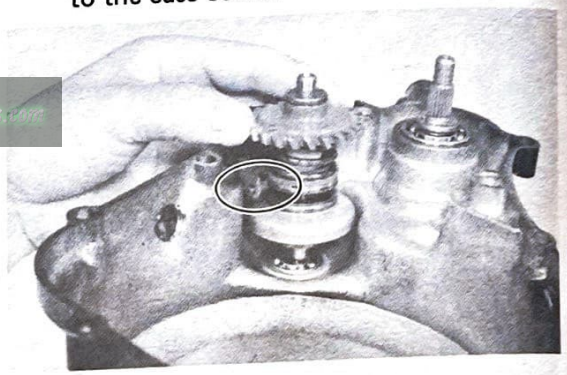
1. Adjuster 2. Lock nut

11. Reinstall the crankcase cover, power valve arm and cover, shift pedal and footpeg and connect the radiator hoses. Refill the transmission oil and coolant.

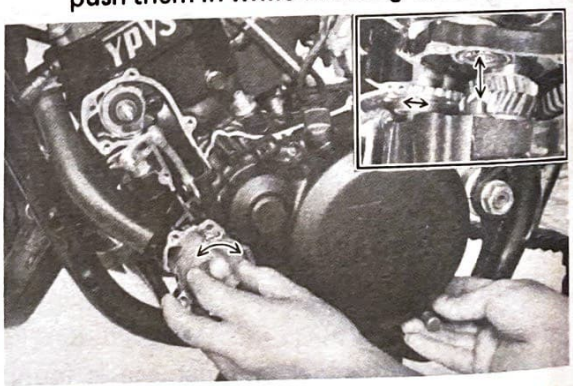
CAUTION:

When assembling, be sure to observe the following:

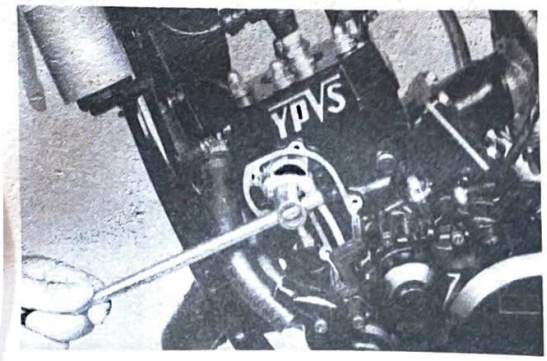
1. Align the groove in the governor with the case cover fork and fit the governor to the case cover.



2. When installing the impeller shaft inside the clutch case cover and the pump drive gear, align their serrations. (As shown push them in while rotating the impeller.)



3. Install the power valve arm in the following way.
a. Using the locating pin (contained in the owner's tool), secure the cut portion of the arm to the cylinder.



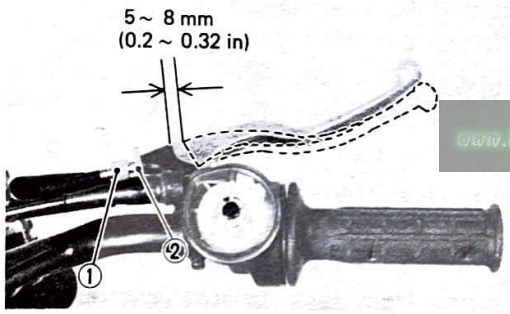
b. Tighten the nut to specification.

Tightening torque: 0.5 m·kg (4 ft·lb)

c. After tightening, don't forget to remove the locating pin.

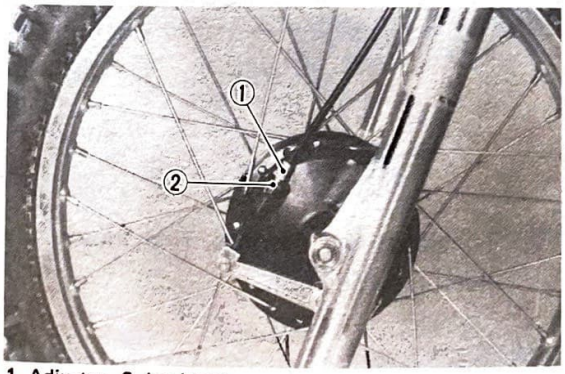
Front brake

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



1. Adjuster 2. Lock nut

1. Make sure the cable adjuster at the handle lever is screwed all the way in.
2. Loosen the lock nut on the cable adjuster at the brake backing plate, and turn the adjuster in or out to achieve 8 mm of free play at the brake lever pivot. Tighten the lock nut.



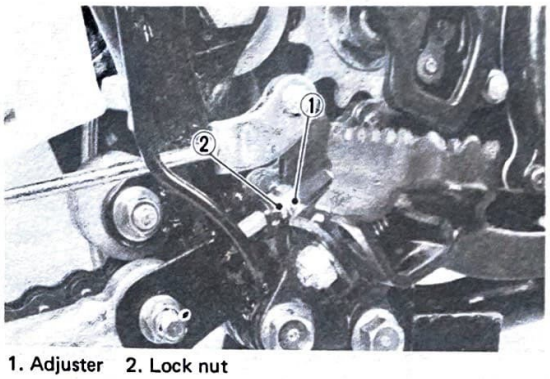
1. Adjuster 2. Lock nut

3. At the handle lever, turn the adjuster out to achieve the desired free play within the specified range. Tighten the lock nut.

Rear brake

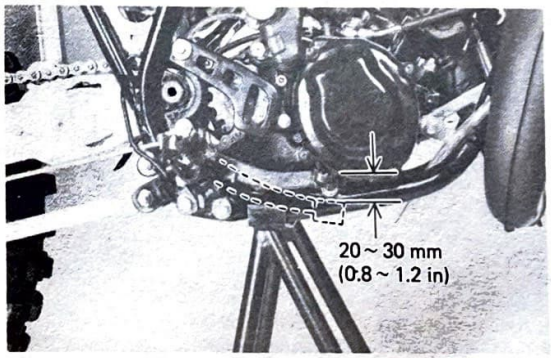
In adjusting the rear brake, the pedal height should first be set and then the free play should be adjusted.

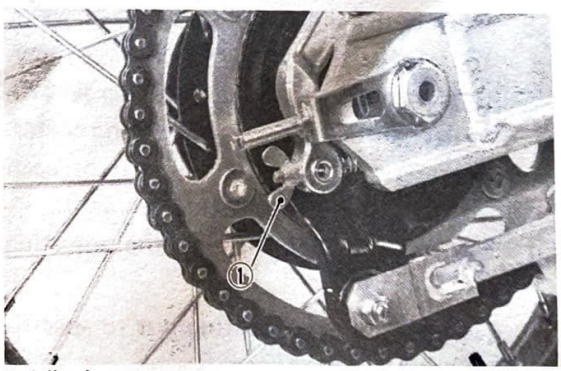
1. Loosen the lock nut on the brake pedal height adjuster, and turn the adjuster to achieve the desired pedal height according to rider preference. Tighten the lock nut.



1. Adjuster 2. Lock nut

2. Turn the adjusting nut on the end of the brake rod in or out to achieve the desired free play within 20 ~ 30 mm (0.8~1.2 in).



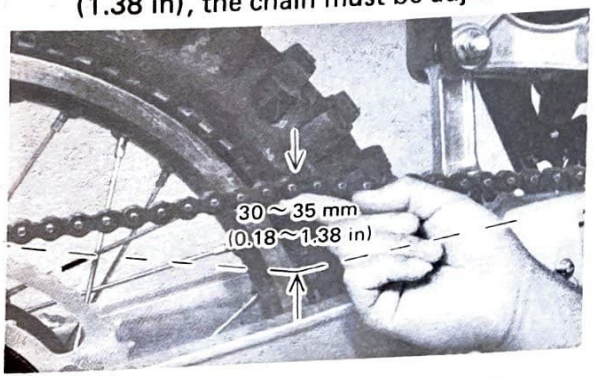


1. Adjusting nut

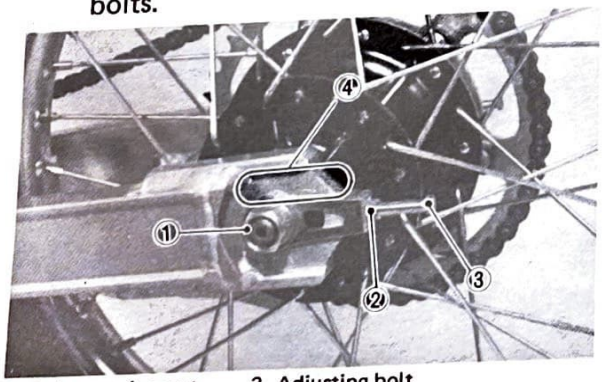
Drive chain

To ensure reliability and prolong chain and sprocket life, the chain must be adjusted and lubricated after every race. In addition, an excessively dirty or muddy chain should be wiped or brushed to remove as much dirt and mud as possible before lubricating.

1. With the machine standing vertically and rider on it, check the free play at the position shown below; the normal vertical free play is 30~ 35 mm (1.18 ~ 1.38 in). If the free play exceeds 35 mm (1.38 in), the chain must be adjusted.



2. Loosen the axle securing nut, and loosen both lock nuts on the chain adjuster bolts.



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

3. Turn both adjuster bolts an equal amount to achieve the proper chain free play. Check to see that the adjusting marks on both chain adjusters align with the corresponding marks on the swingarm on each side to ensure proper axle alignment.
4. Tighten the lock nuts on the adjusting bolts.
5. Tighten the axle securing nut to specification.

Torque: 85 Nm (8.5 m·kg, 60 ft·lb)

6. Check the brake pedal free play.

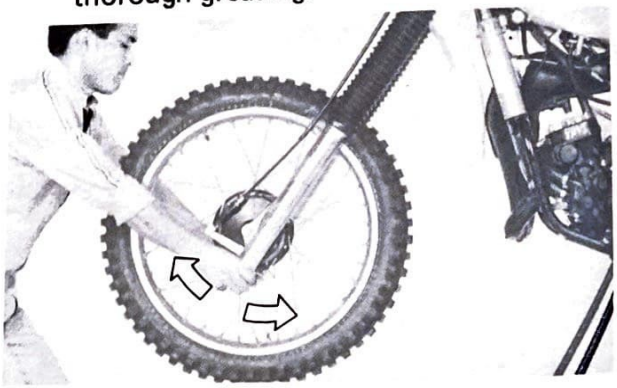
WARNING:

The brake pedal free play and the rear axle alignment must always be checked after the chain is adjusted or the rear wheel is removed.

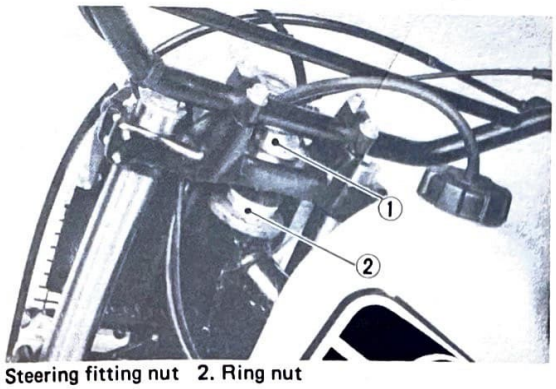
7. After removing any excessive dirt or mud, spray chain lube between both rows of sideplates and on the chain rollers.
8. To clean the chain thoroughly, remove the chain from the machine, place it in solvent, and brush off as much dirt as possible. Then remove the chain from the solvent, dry the chain, and lubricate it immediately to prevent rust. Reinstall the chain on the machine and adjust it.

Steering head

1. Block the front wheel off the ground, grab the bottom of the fork legs, and gently push and pull the legs to check for free play in the steering head. If there is any noticeable play in the steering head, the bearings must be adjusted. In addition, check to see that the forks swing from lock to lock without any binding or catching. If any such binding is noticed, the bearings should be cleaned, inspected, and readjusted after thorough greasing.

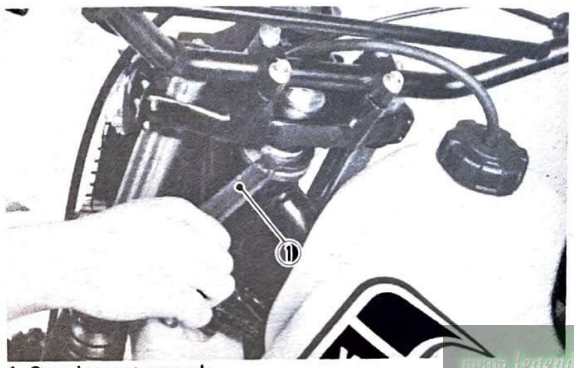


2. To adjust the bearings, first loosen the steering fitting nut.



1. Steering fitting nut 2. Ring nut

3. Tighten the ring nut beneath the handle crown with the steering nut wrench until the free play is eliminated and there is no binding.



1. Steering nut wrench

4. Torque the steering fitting nut to specification.

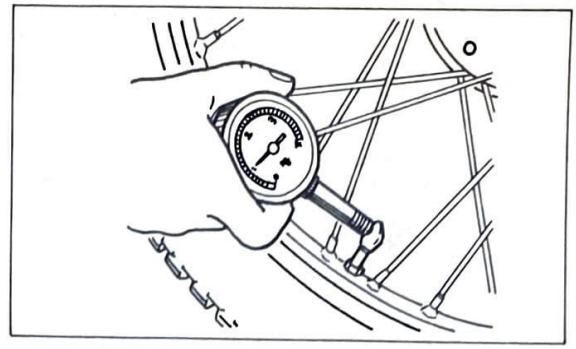
Fitting nut torque: 120 Nm (12.0 m·kg, 85 ft·lb)

Tire air pressure

Tire pressure affects traction, handling, and the life of the tire. Adjust the tire pressure to suit track conditions and rider preference, but do not stay too far from the recommended pressure.

Recommended pressure:

Front	98 kPa (1.0 kg/cm², 14 psi)
Rear	98 kPa (1.0 kg/cm², 14 psi)



Tuning guidance

Adjust the tire pressure to suit track conditions.

1. When the trail is wet in the rain, muddy, sandy or slippery, reduce the tire pressure to increase the tire tread.

78~98 kPa (0.8~1.0 kg/cm², 11~14 psi)

2. When the trail is pebbly or hard, increases the tire pressure to prevent punctures, though tires will become easy to kind.

98~118 kPa (1.0~1.2 kg/cm², 14~17 psi)

CAUTION:

When the tire pressure is low, a loose rim locks may allow the tire to slip on the rim. Check for loose rim locks.

Make sure the valve stem is square in the rim hole. If not square, adjust its position properly.

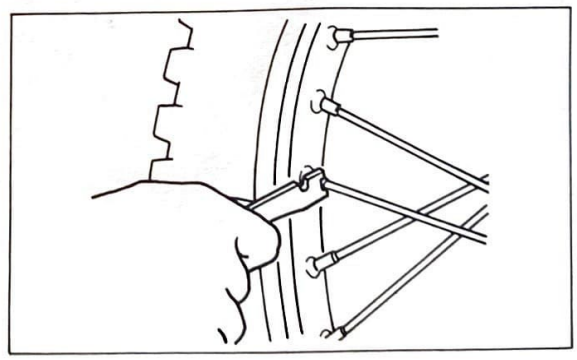
Spokes

The spokes should be checked after every race.

Bent	→	Replace spokes.
Loosen	→	Tighten spokes.

CAUTION:

Avoid overtightening the spokes, as the hub may be distorted and braking power diminished.



3 SUSPENSION TUNING

3 SUSPENSION TUNING

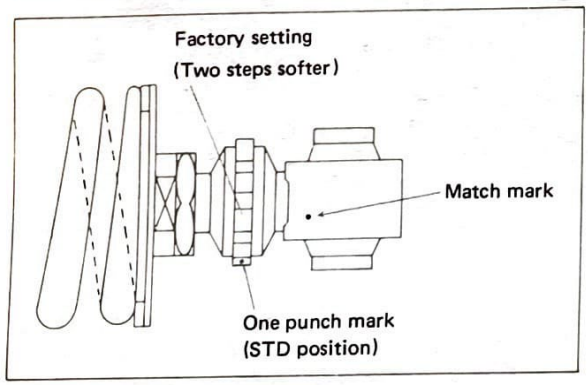
INTRODUCTION

No area of machine maintenance is more critical than proper suspension tuning. An improperly tuned suspension will keep even the best rider from attaining the full benefit of his motorcycle's ability. Hence, follow the instructions in this chapter to adjust the suspension to the rider's specifications and track conditions.

While tuning the suspension, you must bear some important points in mind:

* If the machine is new, break in the suspension with at least two hours of riding before marking any setting evaluations or changes.

Break-in:
To afford better riding comfort, the rebound damping is set on a two steps softer side. After the break-in period, return the rebound damping to the standard position (one punch mark). If the standard position does not suit your preference or road condition, make a readjustment or other necessary adjustments.



* The three major factors which must be considered in suspension tuning are RIDER WEIGHT, RIDER ABILITY, and TRACK CONDITIONS. Additional influences include the RIDER'S STYLE and POSITIONING on the machine.

* If you have any problem, make tests by changing your riding posture or position so that the cause of problem can be found out.

* It is a wise practice to adjust settings so as to best suit to straight lines, corners, or gaps, whatsoever you can most skillfully handle the bike in racing courses.

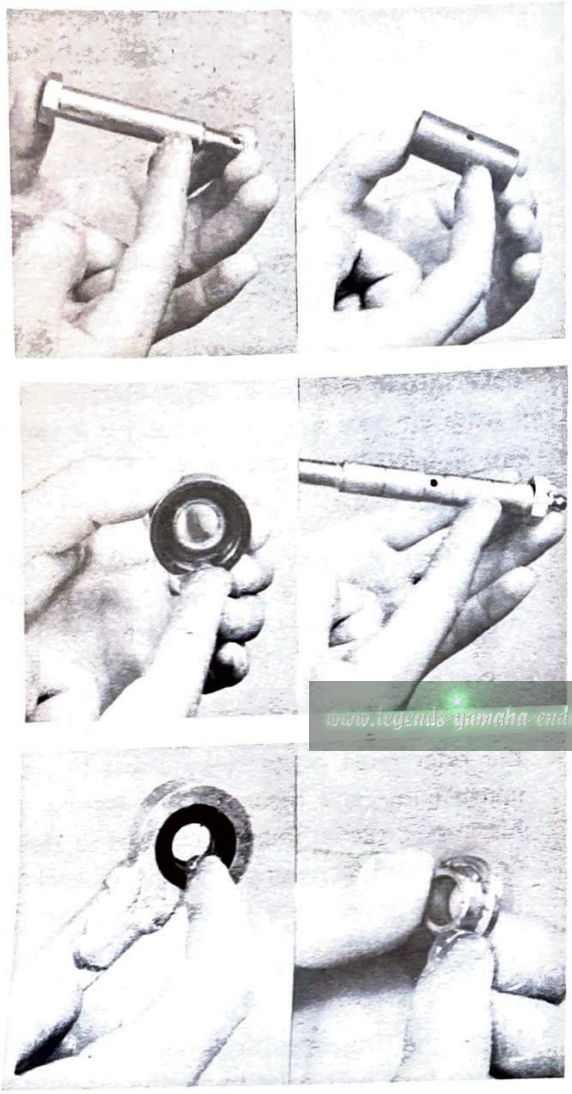
* Make setting changes in small increments; a little bit goes a long way, and it is very easy to overadjust a setting.

* The front and rear suspension should be balanced; when one is changed, the other might need to be changed similarly.

* When evaluating suspension performance, the rider must make every effort to ride consistently and recognize the effects of his imput; such things as changes in rider position and increasing fatigue may lead to incorrect judgements about necessary setting adjustments.

* When the proper settings have been determined for a particular track, they should be written down for reference upon returning to that track.

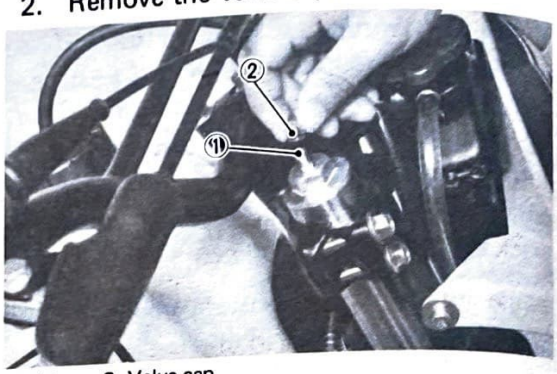
* Lubricate the bushings in the brake torque arm and backing plate as well as the shock mounting-eye pivots after break-in. and after every race to prevent excess friction from affecting suspension performance.



FRONT FORK

Fork oil replacement

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



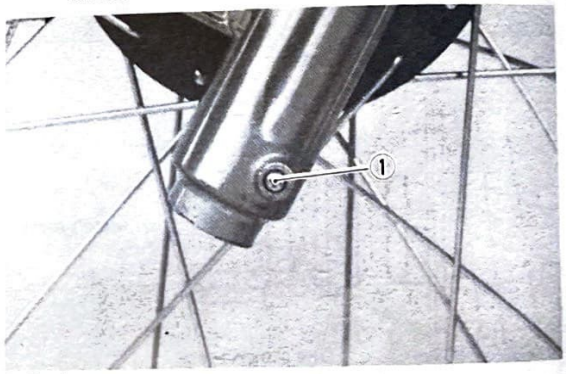
1. Valve 2. Valve cap

3. Using a slotted-head screwdriver, depress the air valve to allow the air to escape from the fork legs.

NOTE:

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

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



1. Drain screw

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

NOTE:

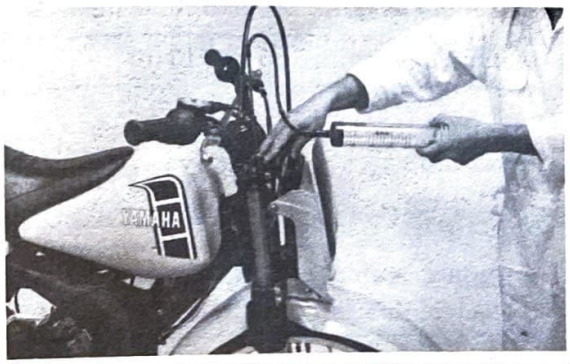
Check gasket, replace if damaged.

8. Measure the correct amount of oil and pour it into each leg. After filling, allow it a few minutes and slowly pump the

inner tube up and down 2 or 3 times so that air can be extracted from the oil.

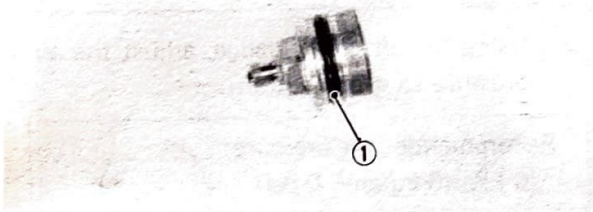
Recommended oil: Yamaha fork oil 10 wt or SAE #10 motor oil Oil quantity: 454 cm³ (16.0 Imp oz, 15.3 US oz)

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



Standard oil level: 150 mm (5.91 in)

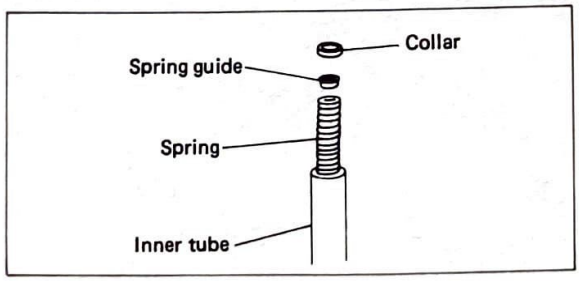
10. Inspect the O-ring on cap bolt and replace if damaged.



1. O-ring

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

Tightening torque: 23 Nm (2.3 m·kg, 17 ft·lb)



Fork oil weight

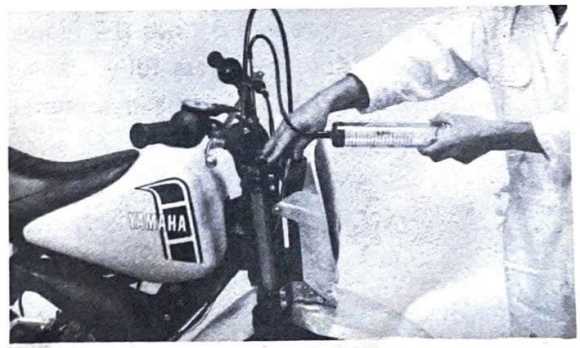
The weight, or viscosity, of the fork oil can be changed.

*Thicker oil (From #10 to #15):
damping is increased, and the fork moves slowly.

*Thinner oil (From #10 to #5):
damping is decreased, and the fork moves quickly.

Fork oil level

The height of the fork oil in the fork tube can be adjusted. The higher the oil level is, the stiffer the fork will be, etc. Adjust the oil level in 5 mm (0.2 in) or 10 mm (0.4 in) increments. The oil level is measured from the top of the fork tube, with the springs removed and the forks totally compressed and perpendicular to the ground.



STD level: 150 mm (5.91 in)
Minimum level (stiff): 130 mm (5.12 in)
Maximum level (soft): 250 mm (9.84 in)

Fork spring

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
STD	5X4-23141-L0	k = 0.285	⬭
Light duty	5X4-23141-10	k = 0.268	⬭
Heavy duty	5X4-23141-20	k = 0.310	⬭

NOTE:

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

* Using the heavy duty spring:

Increases the preload; the shock becomes stiffer and rebounds more quickly.

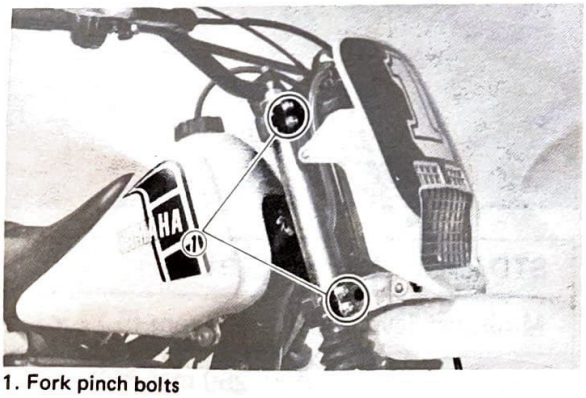
* Using the light duty spring:

Decreases the preload; the shock becomes softer and rebounds more slowly.

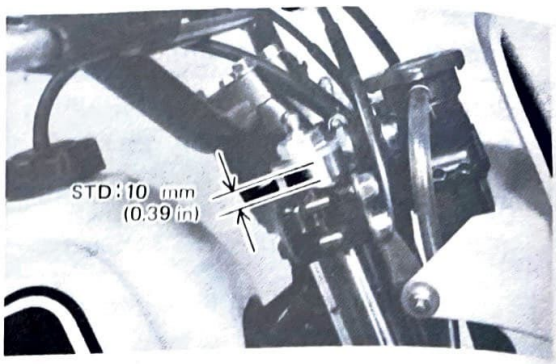
Fork clamp position

Steering qualities are greatly affected by the fork clamp position (the amount of the inner tube projection over the handle crown). When the projection is smaller, the front end becomes lighter due to change in weight bias. Also, it tends to understeer in turns and "wash out". When the projection is greater, the result is convers.

Be sure the front tire doesn't rub the fender when the fork tubes compress fully. Make this adjustment in 5 mm (0.2 in) increments.



1. Fork pinch bolts



Maximum length:	15 mm (0.59 in)
Minimum length:	0 mm (0 in)

Air pressure

CAUTION:

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

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:

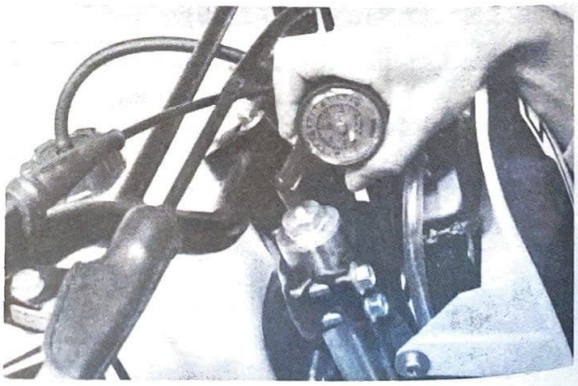
The gas pressure should not exceed 118 kPa (1.2 kg/cm², 17 psi). Excess gas pressure will cause damage to the forks.

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

Recommended air pressure:
0 kPa (0 kg/cm², 0 psi)

NOTE:

Each time the air gauge is installed, the air pressure decreases about 5 kPa (0.05 kg/cm², 0.7 psi) to 10 kPa (0.1 kg/cm², 1.4 psi).



4. The difference between both right and left tubes should be 10 kPa (0.1 kg/cm², 1.4 psi) or less.

CAUTION:

Use only air or nitrogen for filling. Never use any other gas. An explosion may result.

*Increase air pressure→
cause initial load to increase, and absorber becomes hard.
*Decrease air pressure→
cause initial load to decrease, and absorber becomes soft.

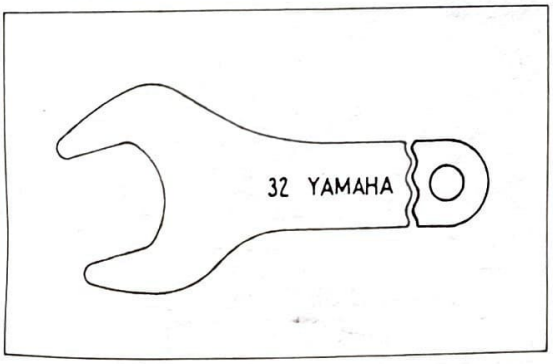
REAR SHOCK

MONOCROSS SUSPENSION " DE CARBON SYSTEM

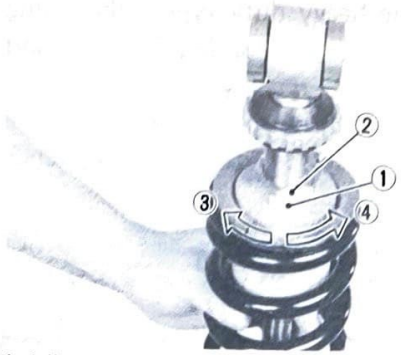
Spring preload

The preload is adjusted by changing the set length of the spring: a shorter set length increases the preload, a longer set length decreases the preload.

1. To adjust the preload, remove the shock absorber and loosen the lock nut.
2. Adjust the spring set length by turning the spring adjuster with the special wrench.



3. To increase the preload, turn the spring adjuster clockwise. To decrease the preload, turn the spring adjuster counterclockwise.
One complete turn of the adjuster will change the preload 1 mm. Make changes in increments of 2 mm(0.08 in)at a time.

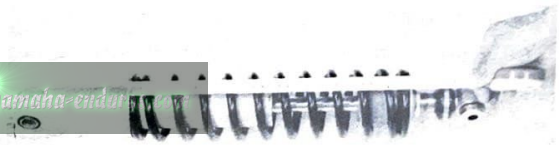


1. Adjuster 2. Lock nut 3. Increase spring preload 4. Decrease spring preload

Standard Length (installed):342 mm (13.46 in)
Minimum Length (installed): 325 mm (12.79 in)
Maximum Length (installed): 350 mm (13.78 in)

CAUTION:

Never attempt to turn the adjuster beyond the maximum or minimum setting.



NOTE:

Always tighten the lock nut against the spring adjuster and torque the lock nut to specification.

Tightening torque: 55 Nm (5.5 m·kg, 40 ft·lb)

* Shortening the set length: increases the preload; the shock becomes stiffer and rebounds more quickly.
* Lengthening the set length: decreases the preload; the shock becomes softer and rebounds more slowly.

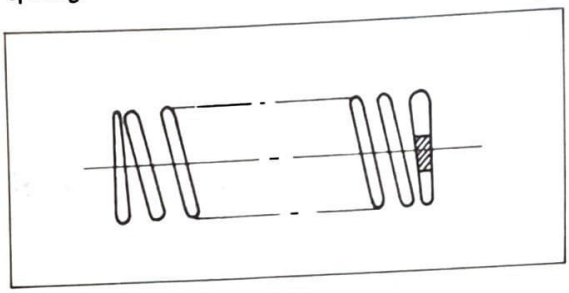
Shock spring

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

* Using the heavy duty type: the spring rate is higher; the spring is stiffer and rebounds more quickly.
* Using the light duty type: the spring rate is lower; the spring is softer and rebounds more slowly.

Type	Part No.	I.D. color	Spring rate
Light duty	5X4-22212-10	White/Pink	k = 2.75
Standard	5X4-22212-00	—	k = 3.0
Heavy duty	5X5-22212-10	White/Green	k = 3.25

Identification color is shown on right end of a spring.



Rebound damping

The rebound damping is adjustable by turning the adjusting ring next to the shock's rear mounting bracket.

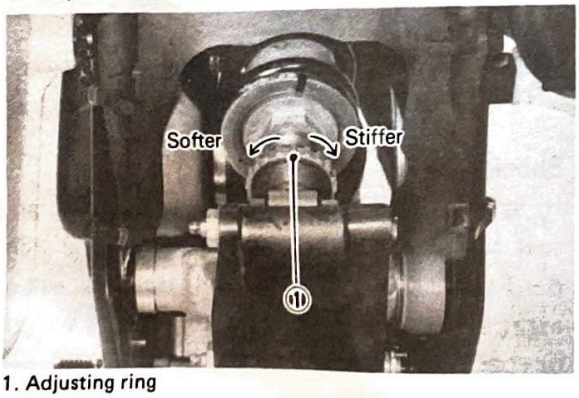
The adjuster has 25 positions.

* Shock rebounds the slowest when the adjusting ring is turned fully clockwise.
* Shock rebounds quickened by turning the adjusting ring counterclockwise.

CAUTION:

Adjust the damping in increments of 2 clicks. And test the performance by riding after adjustment.

When adjusting, always turn the adjusting ring all the way clockwise and then make the desired adjustment. For reference purposes, always record the settings for a cold shock.



1. Adjusting ring

STANDARD SETTING:
10 Clicks Out

* To set the damping, turn the damping adjuster clockwise until it bottoms; then back it out to the specified setting.

NOTE:

Turn the adjuster until it clicks.
Don't turn out the adjuster more than 25 clicks from the stiffest position.
Do not give any father turns.

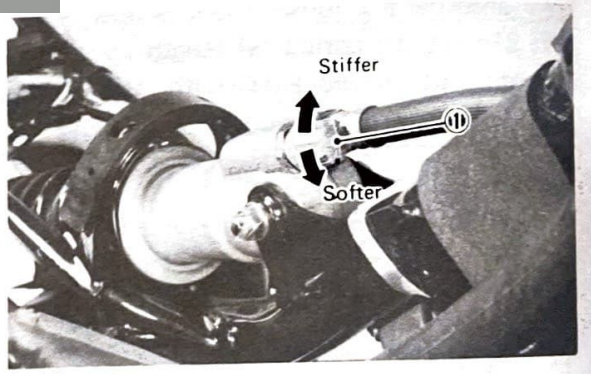
Compression damping

The compression damping can be adjusted by turning the adjuster at the front of the shock (under the fuel tank).
The adjuster has 20 positions.

* When turned fully counter-clockwise, the compression damping is the sofftest.
* When turned clockwise, the compression damping is the stiffest.

CAUTION:

Compression damping adjustments should be made in 2 clicks increments.



1. Adjuster

STANDARD SETTING:
5 clicks out

* To set the damping, turn the damping adjuster clockwise until it bottoms; then back it out to the specified setting.

NOTE:

Turn the adjuster until it clicks.
Don't turn out the adjuster more than 20 clicks from the stiffest position.
Do not give any father turns.

Nitrogen pressure

The gas pressure in the remote nitrogen chamber can be changed to make fine adjustments in the springing characteristics of the shock; higher pressure stiffens the shock slightly, and lower pressure makes it slightly softer. This adjustment is rarely needed, however, and it requires special equipment. Consult your Yamaha dealer if you wish to change the nitrogen pressure in the shock.

STD pressure: 784 kPa (8 kg/cm², 114 psi)
MIN. pressure: 686 kPa (7 kg/cm², 100 psi)
MAX. pressure: 980 kPa (10 kg/cm², 140 psi)

DETERMINING THE PROPER SETTINGS

Standard settings

From the factory, the machine is set up for a rider weighting approximately 65~70 kg (143~154 lb) and posessing intermediate riding ability. Hence, if the actual rider weight considerably more or less than 65~70 kg (143~154 lb), or if his riding experience and ability are quite greater or lesser than the intermediate level, it is likely that some rough adjustments can be made to put the suspension "in the ballpark."

1. Course condition

Sand	Heavy duty spring
Hard	Light duty spring

2. Rider's experience

Beginner	Use light duty spring and increase damping.
Experienced	Use heavy duty spring and decrease damping.

3. Rider weight

Light	Light duty spring
Heavy	Heavy duty spring

After making such preliminary adjustments, begin the actual on-track testing and evaluation.

Remember:

1. Always make changes in small increments.
2. Make sure the rider is consistent in his evaluation of improper suspension performance.
3. A change in the front suspension might require a change in the rear, and vice versa.

NOTE:

See troubleshooting improper settings.

Front and rear compatibility

Use this procedure to determine if the suspension is balanced reasonably well: Hold the bike upright with the sidestand up. While standing next to the machine, lightly pull on the front brake, place one foot on the footpeg closest to you, and push down hard. If the bike maintains its level attitude as the suspension is compressed, the bike is rather well balanced; or sit astride the bike and take a riding posture. Next, check to see that the bike is in a horizontal position.

If one end drops noticeably more than the other, however, the front and rear are not compatible and must be readjusted to achieve better balance.

NOTE:

After making this adjustment, take a riding posture on the bike and make sure it can keep a horizontal position like a machine with standard settings.

TROUBLESHOOTING IMPROPER SETTINGS

Listed below are some symptoms of improper suspension settings and the most likely means of correcting them. The proper settings can be achieved by applying the information in this chapter in a scientific, methodical manner; this does not mean, however, that you must be a scientist or trained technician to succeed. Simply take time to think about the changes you believe are necessary, check them against the symptoms and cures described here, make the changes in small increments, and take notes on the changes and their effects.

General symptoms and remedy

This is one of the most effective adjustment procedures but suspension settings should vary depending on the condition of racing courses or the rider's preference.

If the setting procedure explained below is found in effective, consult your Yamaha dealer.

1. Front end "knifes" or oversteers in turns.

   If the front end tends to "knife" inward or oversteer in turns, the fork is too soft.

	Front fork
Step 1	Increase fork oil level 10 mm (0.4 in).
Step 2	Decrease inner tube projection. 5 mm (0.2 in)

   Heavier or expert riders may need the heavy duty spring.

2. Front end pushes or "wash out" in turns:

   The front wheel tends to climb over berms in corners:

   When a front wheel tends to push outward rather than "bite" in a turn, the fork is probably too stiff.

	Front fork
Step 1	Decrease fork oil level 10 mm (0.4 in)
Step 2	Increase inner tube projection. 5 mm (0.2 in)

   The softer spring may be required for lighter or less experienced riders.

   Check the air pressure to find out any air inhaled into the fork.

3. Front end searches at high speed while on the gas.

   Try one of the following:

a. Increase the front fork oil level 10 mm (0.4 in).

b. Decrease the inner tube projection. 5 mm (0.2 in)

c. Decrease the rear shock spring preload 2 mm (0.08 in) and decrease the compression damping two click.

4. Front fork doesn't respond to small bumps in sweeping turns.

   Try one of the following:

a. Decrease the fork oil weight by one steps. (Standard spring is used)

b. Decrease the oil level 10 mm (0.4 in). (Standard oil is used)

c. Use light duty springs.

5. Rear end "skitters" when a braking over bumps:

   The shock probably has too much (too less) rebound damping in this case. Try reducting (increasing) the rebound damping in one or two-click increments.

6. Rear tire won't "hook up" out of corners:

   A lack of traction coming out of turns indicates that the monoshock may be too stiff;

a. Decrease the rear shock spring preload approximately 2 mm (0.08 in).

b. Decrease the compression damping by one or two click.

7. Bike lands on the front wheel off high-speed jumps:

   This may be due to an improper riding posture.

   If the bike always or frequently lands on the front wheel, try some of the following in combination:

a. Decrease the shock spring preload.

b. Increase the rebound damping by 2 clicks each time.

c. Decrease the compression damping.

8. Front and rear of the bike bottom off high-speed jumps.

   If this occurs one or twice per lap of the race, both front and rear suspension systems should be harden a little.

	Front fork	Rear shock
Step 1	Increase oil level 10 mm (0.4 in).	Increase the shock spring preload.
Step 2	Use heavy duty springs.	Use heavy duty spring or increase compression damping by 2 click.

9. Adjustments depending on bottoming condition (Rear shocks)

	Symptom	Remedy
a.	Bottoming sensation at high speeds	Decrease compression damping.
b.	Bottom at low speeds	Use heavy duty springs or increase spring preload.
c.	Bottom after successive 3 or 4 jumps	Decrease rebound damping.
d.	Bottoming sensation at big jump without storke of shock	Decrease compression damping.

NOTE:

The rear suspension on this machine may mislead some riders.

1. The rear shock bottoms when the spring and compression damping are overcome by the total weight of the machine and rider (due to full stroke).
2. A bottoming sensation may actually be the inability of rider and machine weight to overcome an overly stiff spring or excessive compression damping.

Observe the rear end off jumps; if it doesn't approach bottoming try lowering the spring preload and compression damping.

Standard setting table

Setting \ Type			Standard	Light duty
	Spring rate (kg/mm)		k = 0.285	k = 0.285
Front Fork	Initial collar		5 mm	5 mm
	Oil	Quantity (cm^3)	454	414
		Level (mm)	150 mm	200 mm
		Weight	10 wt	10 wt
	Clamp position		10 mm	10 mm
	Air pressure (kg/cm^2)		0	0
Rear Shock	Spring	Rate (kg/mm)	k = 3.0	k = 2.75
		Preload	342 mm	333 mm
	Damping	Compression	5	8
		Rebound	10	14
	Gas pressure (kg/cm^2)		8	8

4 ENGINE MAINTENANCE AND REPAIR

4 ENGINE MAINTENANCE AND REPAIR

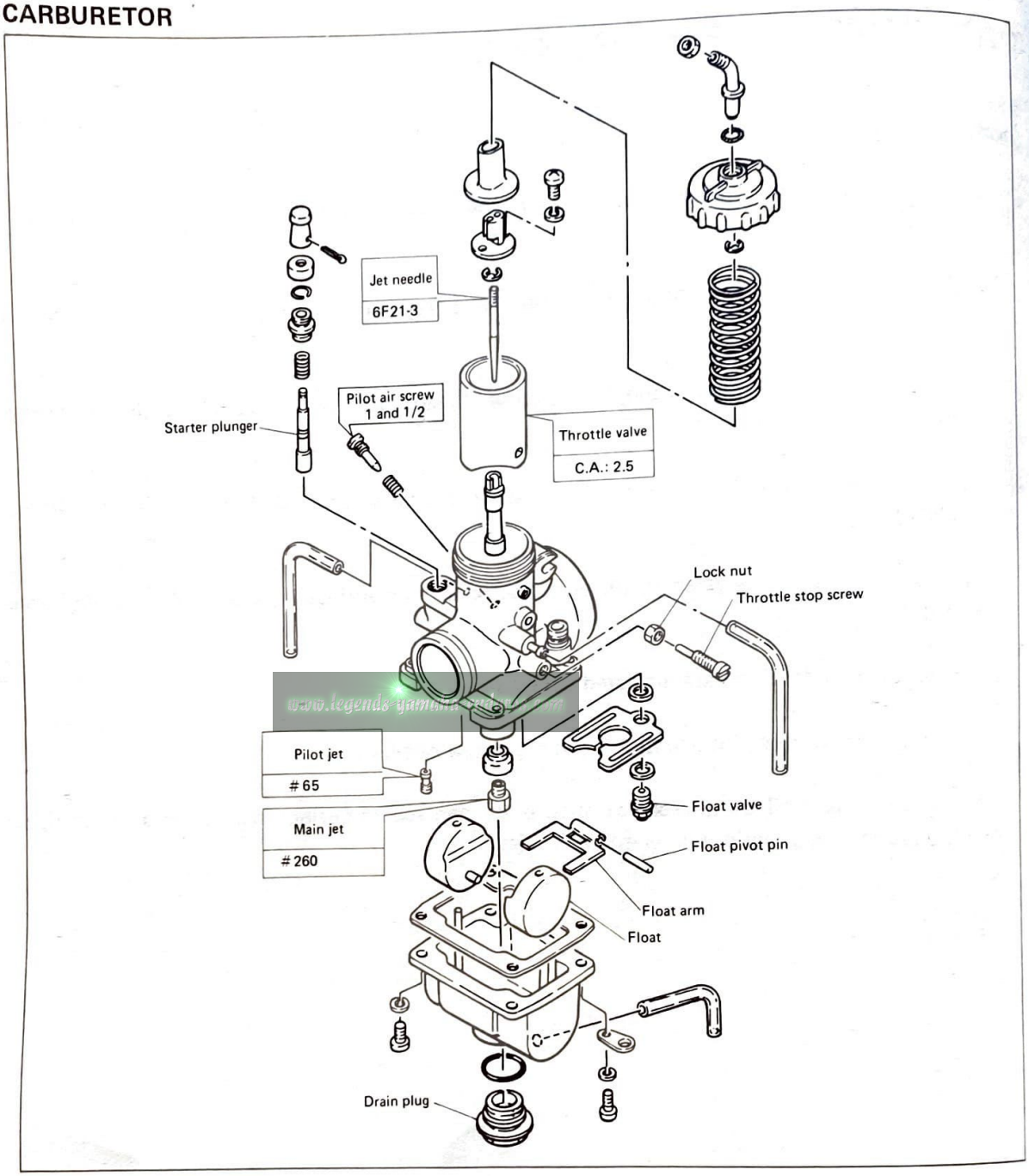
PREPARATION FOR SERVICE

Prior to beginning any work on the engine, take note of the following bits of advice; they will greatly facilitate your engine maintenance and repair:

- Clean your machine as described in the General Information section entitled, "Cleaning and Storage";
- Group the parts of each component on individual trays, and arrange the parts in the order of their removal;
- When replacing parts, always use the genuine Yamaha article to maintain optimum performance, durability, and safety;
- All gaskets and seals should be replaced during engine work, and all gasket surfaces should be clean;
- During reassembly, always apply oil or grease to bearing surfaces to protect them upon initial start-up;
- Replace all circlips which are distorted from use or disassembly;
- Always replace cotter pins and piston pin clips after one use;
- Always clean and oil the threads of nuts, bolts, and screws during assembly, and torque them to the proper specifications whenever possible.

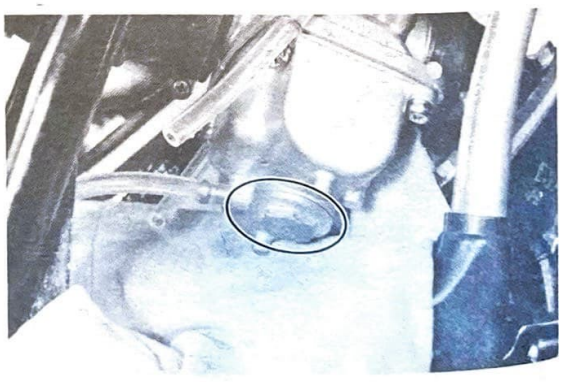
DISASSEMBLY, INSPECTION AND ASSEMBLY

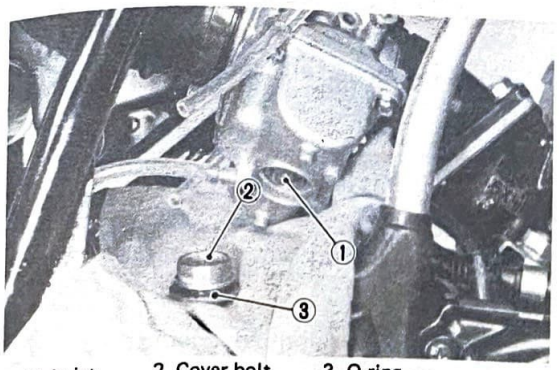
CARBURETOR



NOTE:

It is not necessary to remove the carburetor to replace the main jet: Loosen the hose clamps on the manifold and air cleaner joint, rotate the carb, and remove the main jet cover bolt from the float bowl. The main jet can thereby be removed and replaced.





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

Standard Main Jet Size: # 260

WARNING:

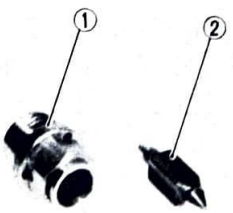
When the main jet cover bolt is removed, the fuel in the float bowl will drain. Do not remove the bolt when the engine is hot. Place a rag under the carb when removing the bolt to catch the fuel. Remove the bolt in a well-ventilated area, away from an open flame. Always clean and dry the machine after completing main jet changes.

IMPORTANT:

The carburetor has been set for operation at or near sea level; in most instances, it will not require changes. Some conditions, however, do demand carb setting changes to maintain performance. If this is the case, make the changes in small increments and check the results with a spark plug check. Improper settings can lead to poor performance or possible engine damage. If you are in doubt as to what setting changes to make, consult your Yamaha dealer.

Inspection

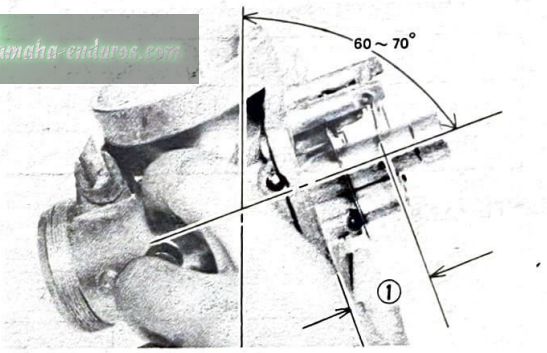
1. Examine carburetor body and fuel passages. If contaminated, wash carburetor in petroleumbased solvent. Do not use caustic carburetor cleaning solutions. Blow out all passages and jet with compressed air.
2. Examine condition of floats. If floats are damaged, they should be replaced.
3. Inspect inlet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



1. Valve seat 2. Float valve

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

Float height:
23.4 ± 1.0 mm (0.92 ± 0.04 in)
Level with carburetor base.

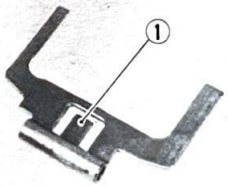


1. Float height

CAUTION:

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

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



1. Tang

Tuning guidance

When the carburetor is not set properly for the engine, poor engine performance will result from the following two causes; too rich or too lean mixture.

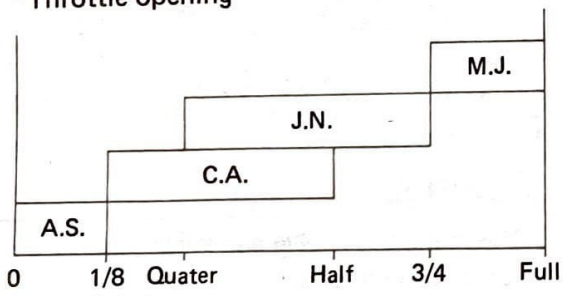
Mixture is too rich.	Mixture is too lean.
* Exhaust makes dull sound in an on-and-off way. * When starter is applied, engine runs more roughly. * When engine is warmed up, it runs roughly. * Spark plug is dark. * When cleaner case cover is removed, engine runs smoothly. * Exhaust is smoky.	* Engine overheats. * When starter is applied, engine runs smoothly. * Poor acceleration will result. * Spark plug is too light. * Engine runs roughly and lacks power.

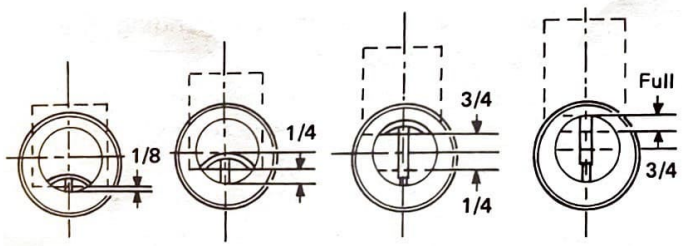
This carburetor is so designed that the parts to be adjusted differ depending on the throttle opening. Therefore, it is necessary to first check whether mixture is too rich or too lean, and then to find out what is the throttle opening.

*Machine speed

Low speed	Air screw, Cutaway
Medium speed	Jet needle-clip position
High speed	Main jet

*Throttle opening





It is wise practice to adjust the air screw, jet needle - clip position or main jet to eliminate the causes of trouble.

If the air-fuel mixture is too lean, the engine tends to overheat and seize up, and on the contrary, if too rich, the spark plug easily gets wet, thus causing misfires.
The proper strength of the mixture varies depending on atmospheric conditions (pressure, humidity, and temperature).
Taking these condition into consideration, adjust the carburetor settings properly.

TEST RUNS

Warm up the engine with the carburetor of the standard settings, and run two or three laps of the course while examining the operating condition of the spark plug.

Condition of spark plug	
Correct	Insulator is dry and light tan color.
Too hot	Insulator is whitish.
Too cold	Insulator is wet and sooty.

If spark plug is whitish, the fuel-air mixture is lean.

* Replace the main jet with a one step large type.

If spark plug is wet, the fuel-air mixture is rich.

* Replace the main jet with a one step smaller type.

MAIN JET (M.J.)

Standard setting: # 260

The larger the size No., the richer the mixture, and smaller the No., the leaner the mixture.

To RICH	#300	(137-14143-60)
	#290	-58)
	#280	-56)
	#270	-54
	#260	-52
To LEAN	#250	-50
	#240	-48

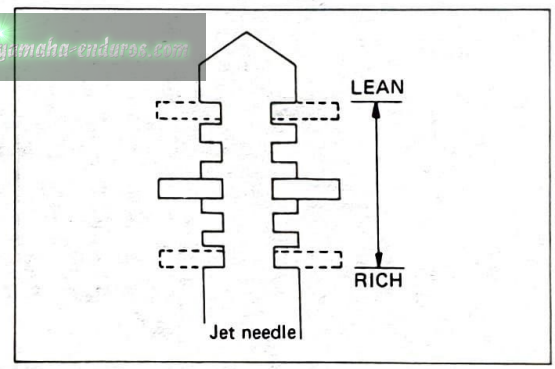
JET NEEDLE ADJUSTMENT

Jet needle should be changed only when the machine shows poor medium speed performance. If the mixture is too rich or too lean, acceleration will be slow.

* When rich at medium speeds:
  The engine runs roughly with slow throttle response.
  Raise the jet needle clip position one step to make the mixture lean.
* When lean at medium speed:
  The engine runs roughly.
  Lower the clip position one step to enrich the mixture.

The jet needle is provided with five grooves. When the clip position is moved up one or two steps, the mixture becomes leaner. When the clip position is moved down one or two steps, the mixture becomes richer.

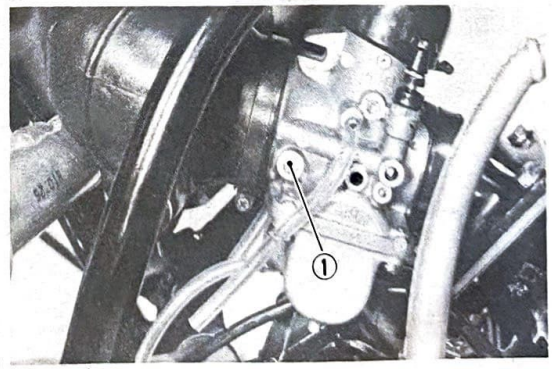
Standard setting:
6F21-3



AIR SCREW (A.S.)

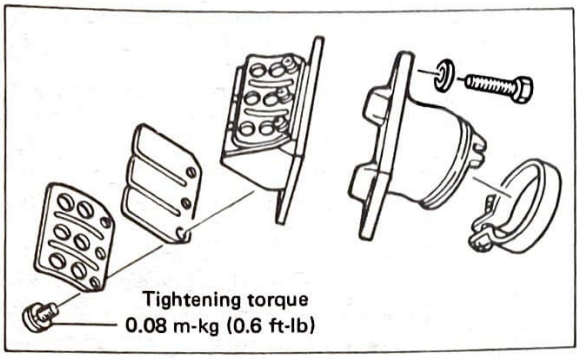
Standard setting:
1 and 1/2

Turning in the air screw decreases the air flow and makes the mixture richer, and turning out makes the mixture leaner with an increase in the air flow.



1. Pilot air screw

REED VALVE

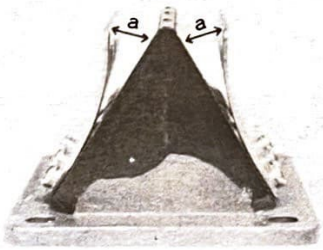


Inspection

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

Standard value "a":
7 mm (0.28 in)

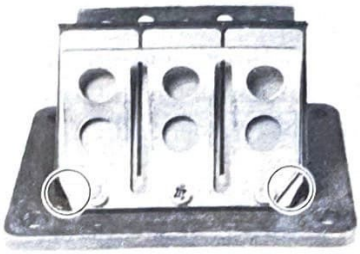
If it is 0.2 mm (0.008 in) more or less than specified, replace the valve stopper.



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

Reed valve bending limit:
1.4 mm (0.055 in)

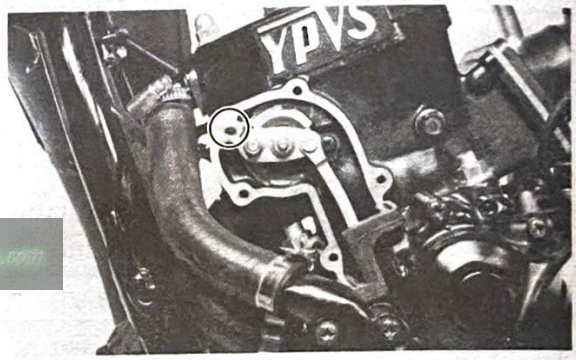
5. During reassembly, note the cut in the lower corner of the reed and stopper plate. Use as aid to direction of reed installation.



POWER VALVE SYSTEM

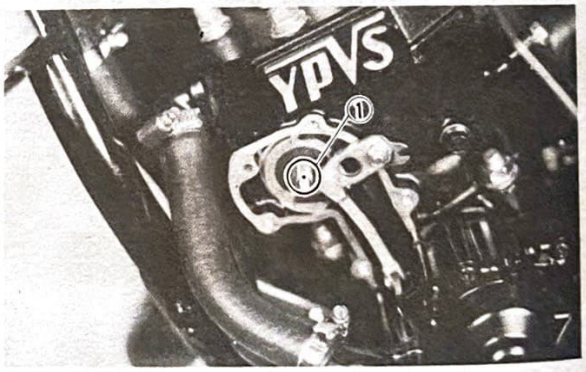
Checking

1. Make sure that as illustrated, the cut in the valve arm is aligned with the mark on the cylinder. If not aligned, make an adjustment.



Alignment

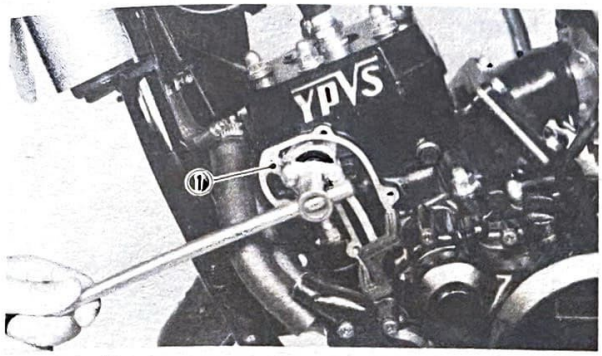
a. With the punch mark on the valve facing upward, install the lever boss and lever.



1. Punch mark

b. Lock the lever to the cylinder by inserting the pin into the holes.

c. Install the push rod bracket. Tighten the upper nut first and then, tighten the lower nut.



1. Knock pin

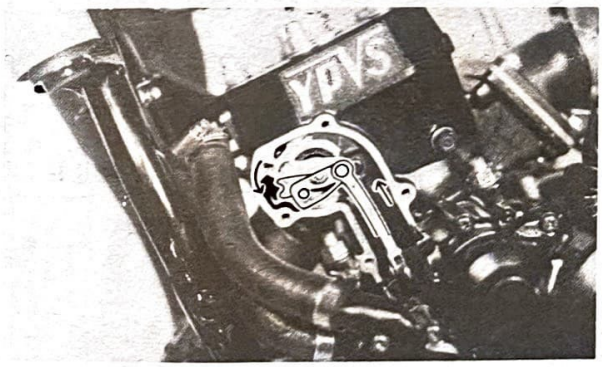
Tightening torque: 5 Nm (0.5 m·kg, 4 ft·lb)

d. After tightening the nuts, remove the locating pin.

CAUTION:

Don't forget to remove the locating pin. Or it will adversely affect valve operation, and the engine will lack power at high speeds.

2. After starting the engine, make sure that as illustrated, the arm operates smoothly while racing the engine.



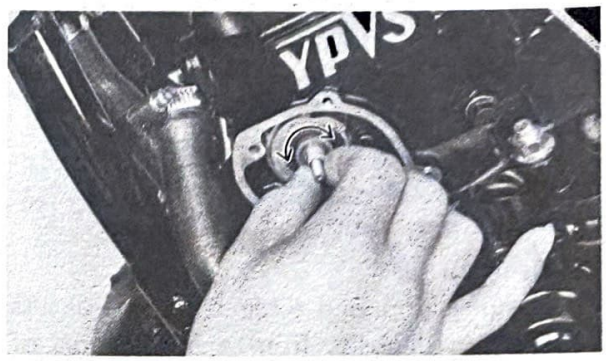
CAUTION:

Avoid racing the engine for more than two seconds.

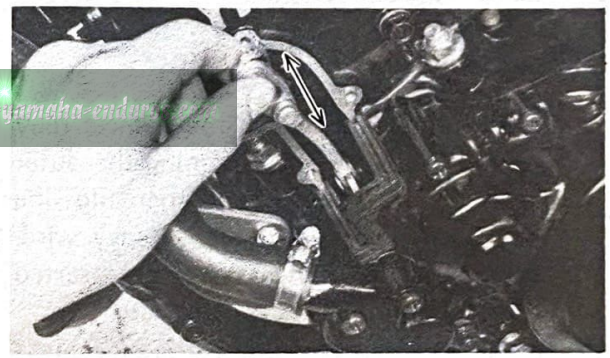
3. If the valve will not operate smoothly, check the following points:

a. Link assembly
Remove the link assembly from the valve and check it for bends or loose joint. If it is bent or has a loose joint, replace it as an assembly.

b. Power valve
By turning the power valve by hand, check that it moves smoothly. If not, consult your Yamaha dealer.



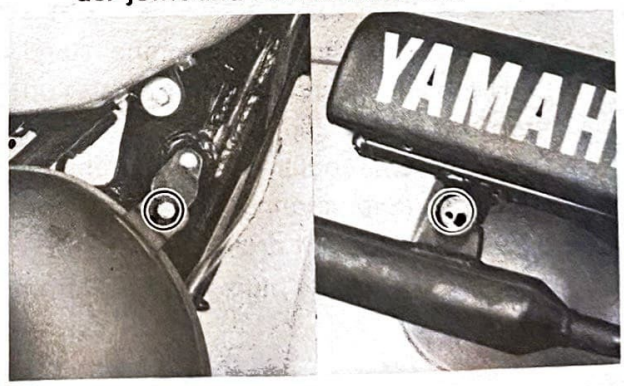
c. After removing the link assembly from the valve, secure the bracket (power valve) to the cylinder with the locating pin.
After starting the engine, race the engine a few times to check that the governor operates normally. If not, ask your Yamaha dealer for checking.

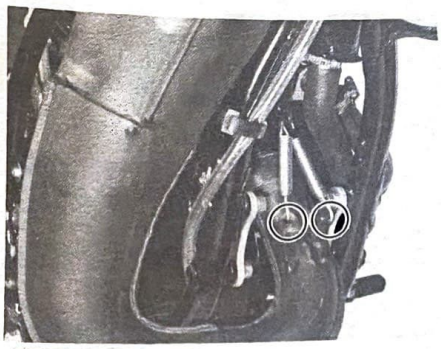


MUFFLER

Removal

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





Maintenance

1. Using a rounded scraper, remove excess carbon deposits from manifold area of exhaust pipe.

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

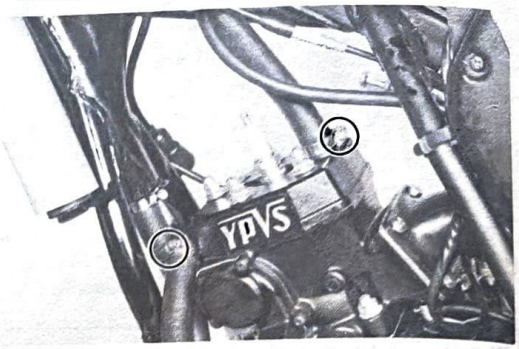
CYLINDER HEAD

Removal

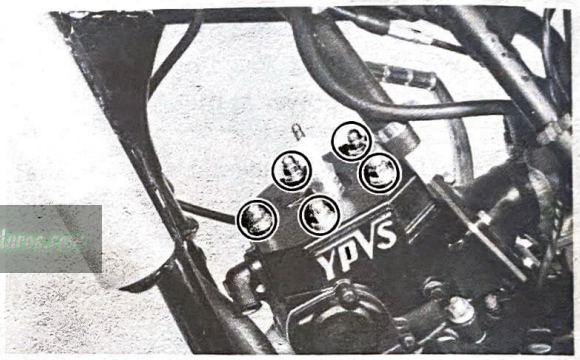
NOTE:

Before servicing the engine (disassembling of the cylinder head, cylinder, and clutch), thoroughly drain the coolant.

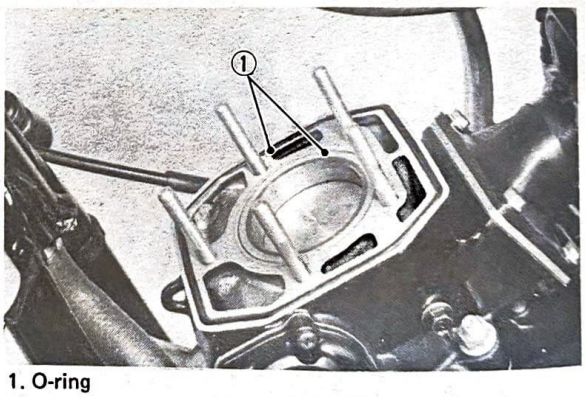
1. Place the machine on machine stand. Start the engine and allow it to warm up. Stop the engine and drain the engine oil.
2. Drain off the coolant from the cooling system. (See cooling system section, paragraph "Coolant drain" page 4-24.)
3. Remove the spark plug lead wire from the plug.
4. Loosen the spark plug, but do not remove it.
5. Disconnect radiator hose at cylinder head.



6. Loosen the five cylinder head nuts a quater turn each in a crisscross pattern, then remove the cylinder head nuts in the same pattern. Remove the cylinder head and head O-rings.



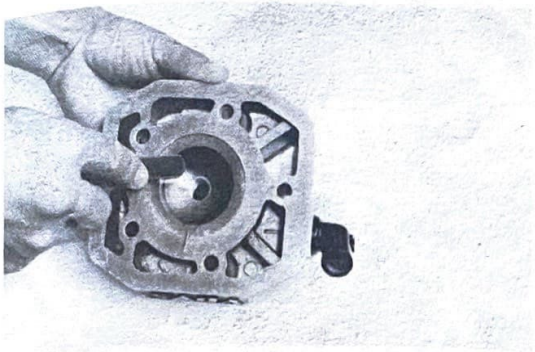
Cylinder head nut:
25 Nm (2.5 m·kg, 18 ft·lb)



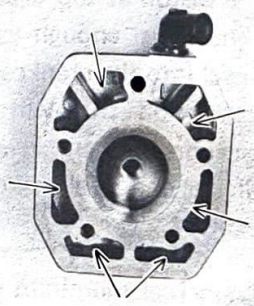
1. O-ring

Maintenance

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

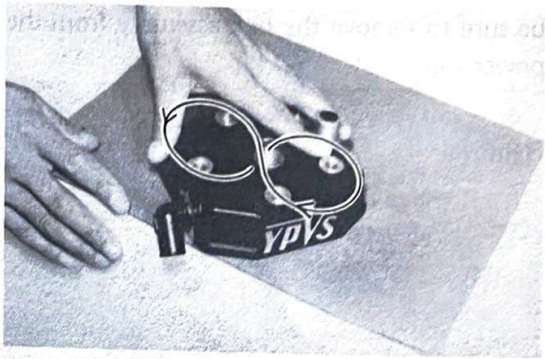


2. Check for a crust of minerals and rust in the cylinder head water jacket, and remove if necessary.



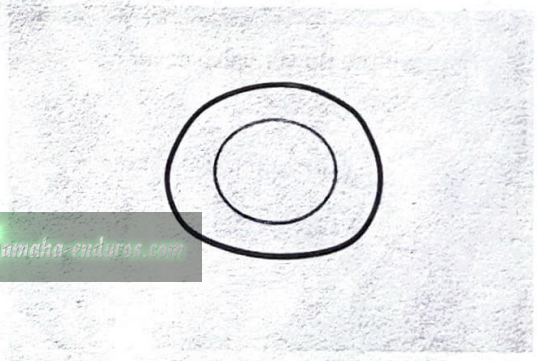
3. Place the head on a surface plate. There should be no warpage. Correct by resurfacing. Place 400 ~ 600 grit wet emery sandpaper on surface plate and resurface head using a figure-eight sanding pattern.

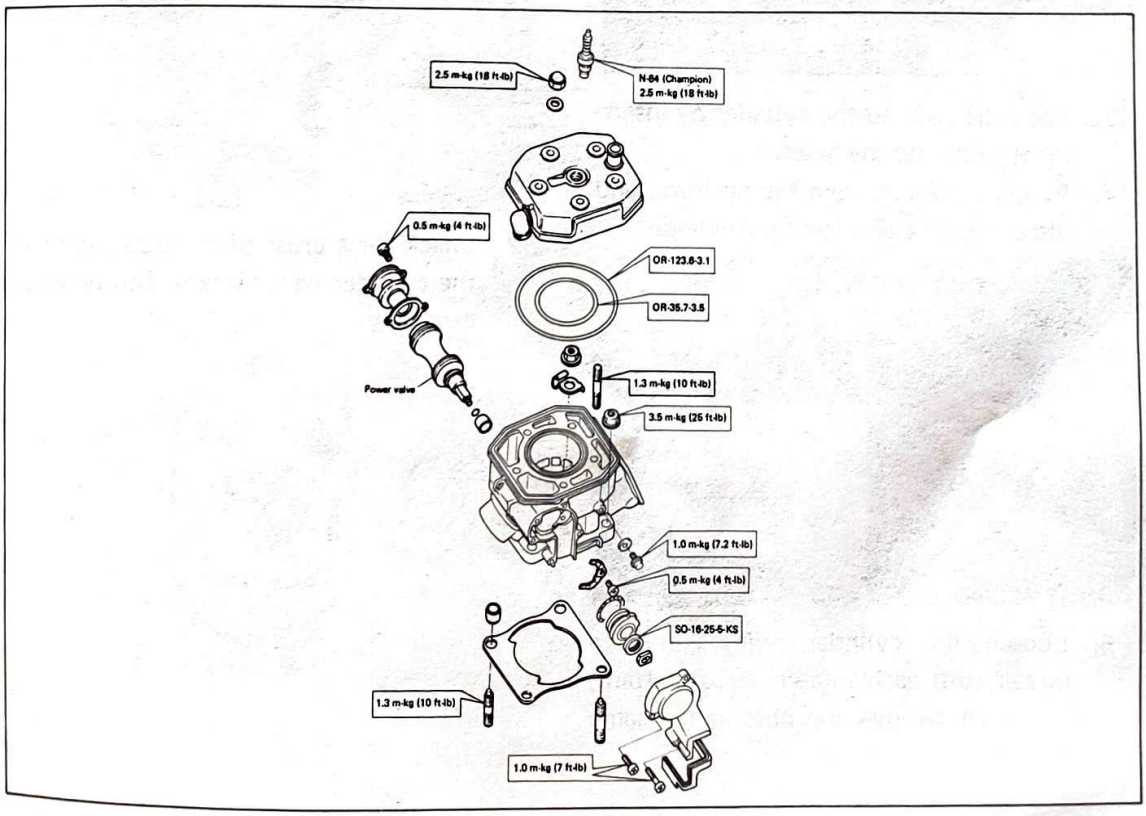
Rotate head several times to avoid removing too much material from one side.



Cylinder head O-rings

1. Check the cylinder head O-rings for damage or breakage, and replace them, as required.





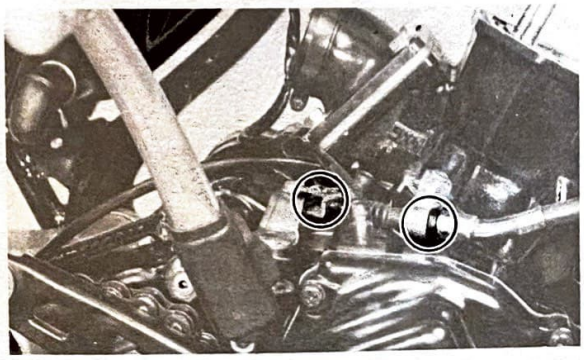
CYLINDER

NOTE:

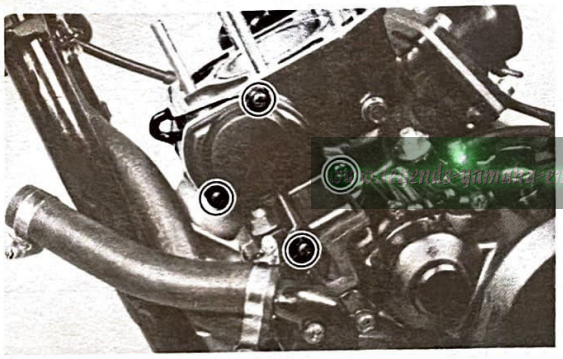
When removing the cylinder and clutch cover, be sure to remove the link assembly from the power valve first.

Removal

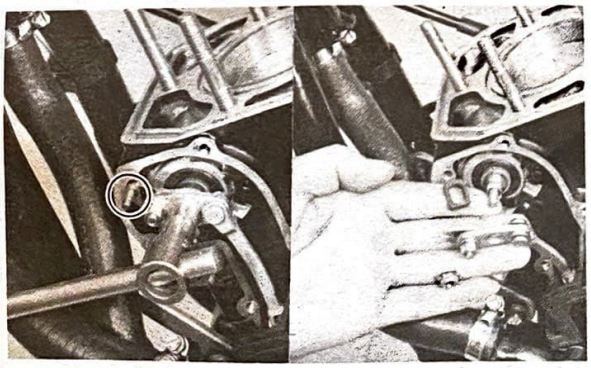
1. Remove the clutch wire.



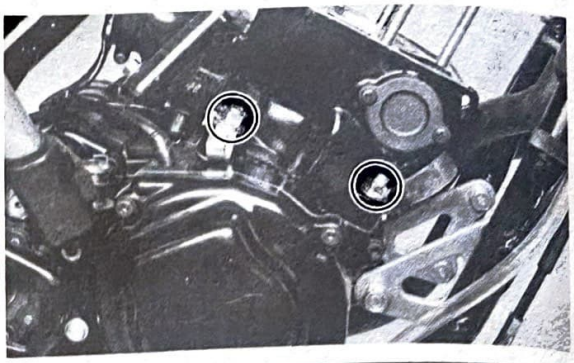
2. Remove the power valve cover.



3. Lock the lever to the cylinder by inserting the pin into the holes.
4. Remove the nut from the push rod and disconnect the arm from the cylinder.



5. Loosen the cylinder holding nuts a quater turn each in a crisscross pattern, and then remove the nuts in the same pattern.

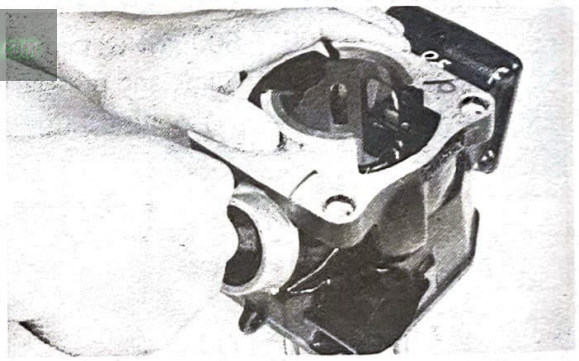


Cylinder holding nut:
35 Nm (3.5 m·kg, 25 ft·lb)

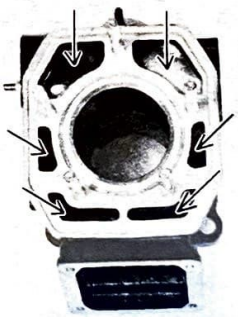
6. With the piston at top dead center, raise the cylinder just enough to stuff a clean shop towel into the crankcase around the connecting rod this will prevent dirt from enterin the crankcase. Remove the cylinder and base gasket and discard the gasket.

Maintenance

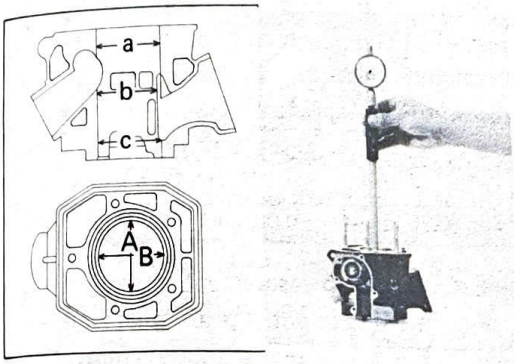
1. Using a rounded scraper, remove carbon deposits from the exhaust port.



2. Check for a crust of minerals and rust in the cylinder water jacket, and remove if necessary.



3. 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.
4. Using a cylinder gauge set to standard bore size, measure the cylinder. Measure front-to-rear and side-to-side at top, center and bottom just above exhaust port.



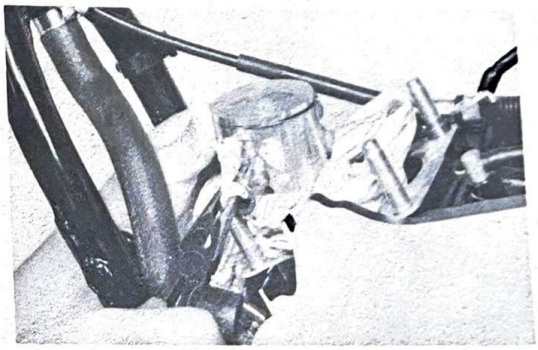
Compare minimum and maximum measurements. If over tolerance and not correctable by honing, rebore to next oversize.

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

PISTON ASSEMBLY

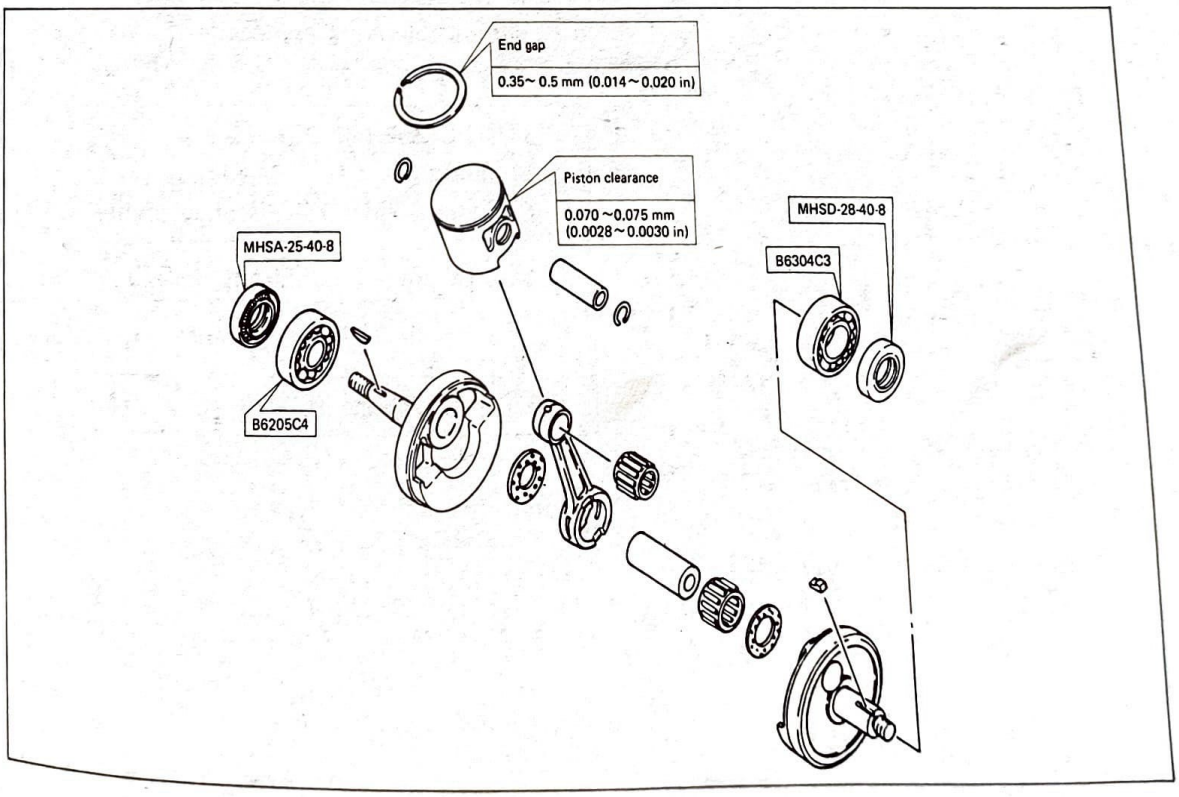
Removal

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



NOTE:

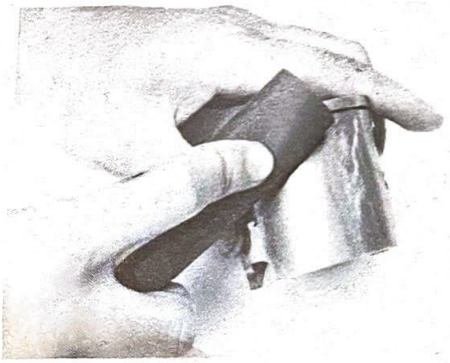
If the pin hangs up, use a piston pin puller. Do not hammer on pin as damage to rod, piston and bearing will result.



Maintenance

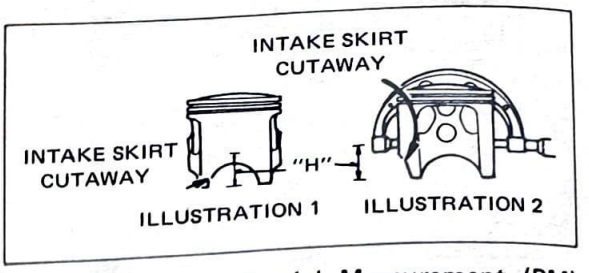
1. Using a rounded scraper, remove carbon deposite from piston crown and ring grooves.

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 outside diameter measurement

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



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

HEIGHT "H"	ADJUSTMENT AMOUNT (AA)
19 mm (0.75 in)	0.005 mm (0.0002 in)

Remember: Partial measurement + adjustment amount = piston diameter.

Example: 55.960 mm + 0.005 mm = 55.965 mm diameter.

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

3. To determine the piston-to-cylinder clearance, subtract the piston diameter from the minimum cylinder diameter. If the nominal piston clearance is not within tolerance, replace the piston or bore the cylinder as required.

PISTON CLEARANCE =
Minimum Cylinder Diameter – Maximum Piston Diameter

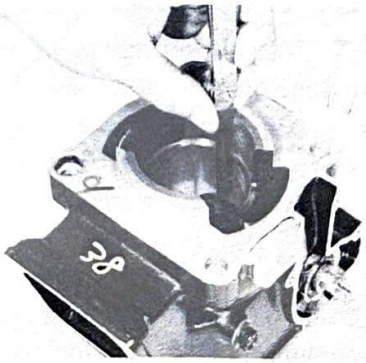
56.035 mm – 55.965 mm = 0.070 mm

Nominal piston clearance
0.070 ~ 0.075 mm (0.0028 ~ 0.0030 in)

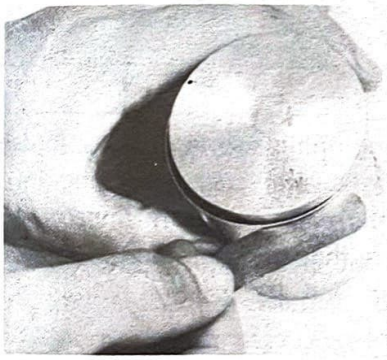
Piston rings

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
0.35 ~ 0.5 mm (0.012 ~ 0.020 in)
Wear limit: 0.8 mm (0.031 in)



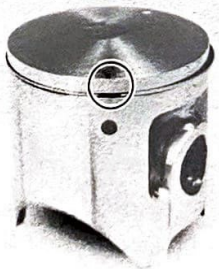
2. Holding cylinder towards light, check for full seating of ring around bore. If not fully seated, check cylinder. If cylinder is not out-of-round, replace piston ring.
3. Fit the piston rings in the grooves, and measure the side clearance. If it measures more than 0.1 mm (0.004 in), replace both piston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

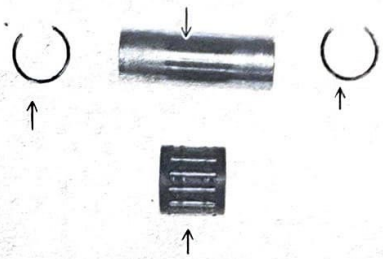
NOTE:

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



Piston pin, bearing

1. Check the pin for signs of wear. If any wear is evident, replace pin and bearing.
2. Check the pin and bearing for signs of heat discoloration. If excessive (heavily blued), replace both.
3. Check the bearing cage for excessive wear. Check the rollers for signs of flat spots. If found, replace pin and bearing.



Reassembling

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

NOTE:

Be sure to tighten the cylinder head bolts to specification.

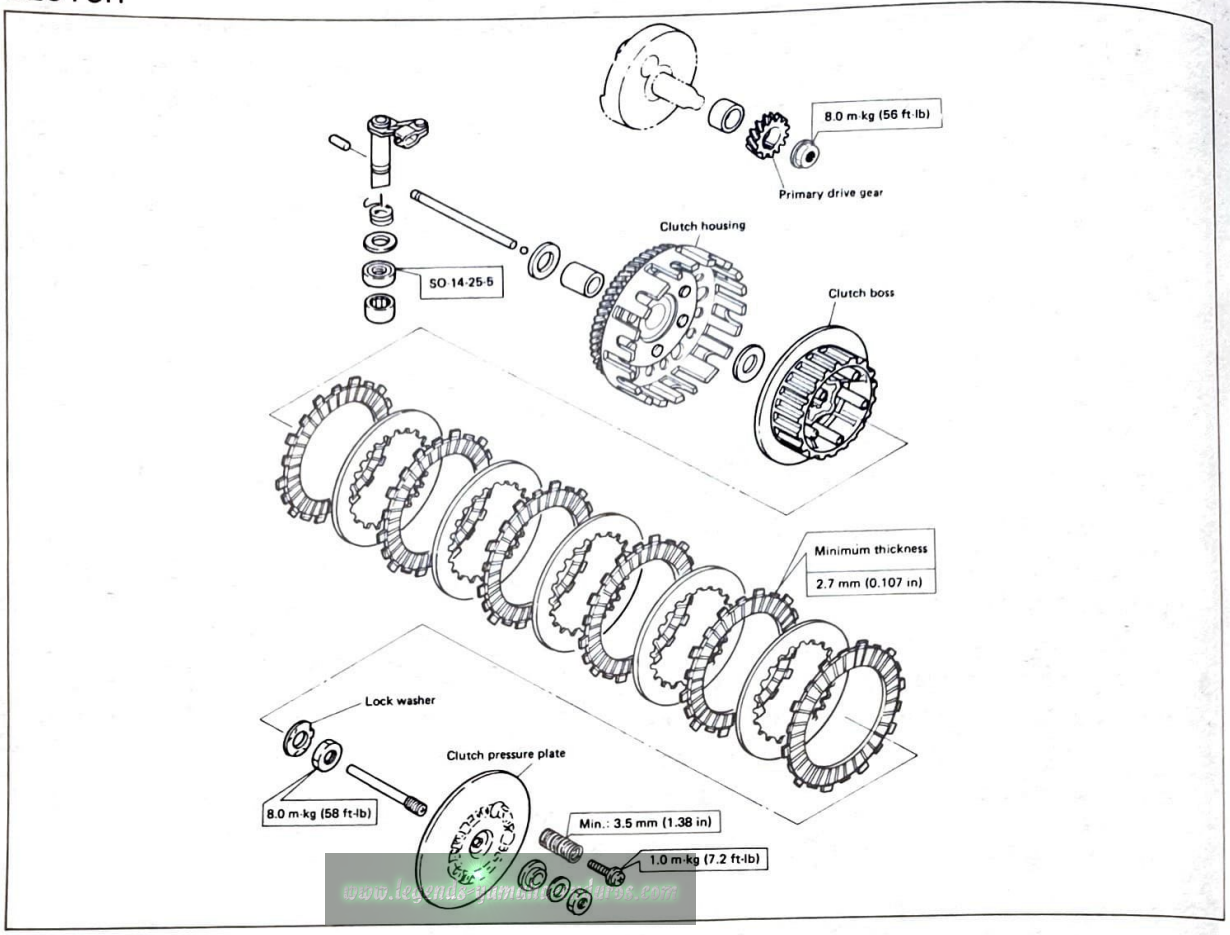
Cylinder nut torque:
35 Nm (3.5 m·kg, 25 ft·lb)
Cylinder head nut torque:
25 Nm (2.5 m·kg, 18 ft·lb)

2. During re-assembly, coat the piston skirt areas liberally with two-stroke oil.
3. Install new piston pin circlips and make sure they are fully seated within their grooves.
4. 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.

5. Add the transmission oil and coolant to specification.



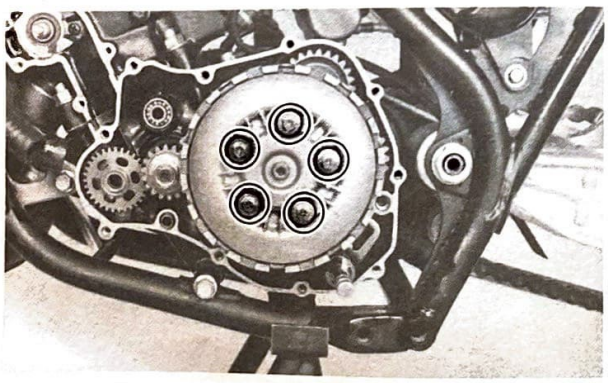
NOTE:
Clutch adjustment is covered in "Adjustments."

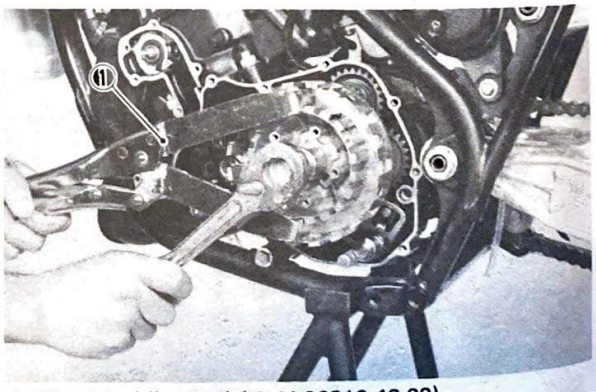
Removal

1. Remove the crankcase cover.
   For removal, refer to "2-11 Clutch adjustment".
2. Remove the phillips screws (5) holding the pressure plate. Remove the clutch springs, pressure plate and push rod. Remove the clutch plates and friction plates.

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

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





1. Clutch holding tool (TLM-90910-42-00)

Clutch lock nut torque:
80 Nm (8.0 m·kg, 58 ft·lb)

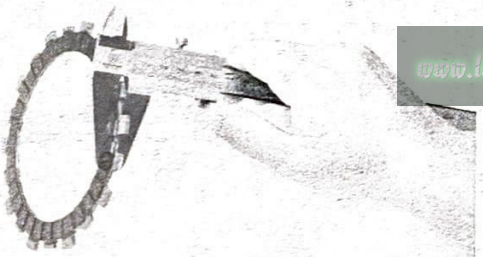
Primary drive gear nut torque:
80 Nm (8.0 m·kg, 58 ft·lb)

4. If the clutch housing spacer remains on the transmission main shaft, remove it. Remove the thrust plate.
5. Remove the primary drive gear and water pump drive gear.

Maintenance

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

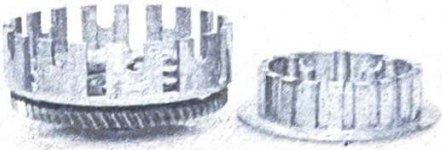
	New	Wear limit
Friction plate thickness	3.0 mm (0.12 in)	2.7 mm (0.106 in)



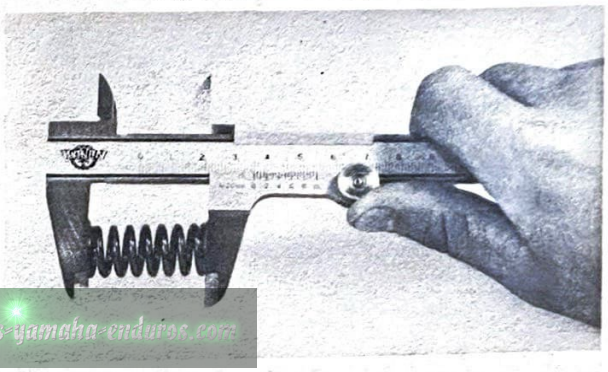
2. Place each clutch plate on a surface plate and check for warpage with a feeler gauge; if warpage exceeds 0.05 mm (0.002 in), replace the clutch plate.

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

3. Inspect the clutch hub and the outer clutch for wear as shown; if the wear is excessive, replace the component.

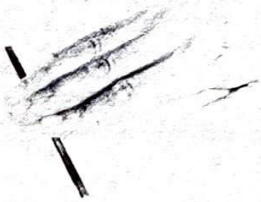


4. Measure each clutch spring; if the free length of a spring is less than 35 mm (1.38 in), replace the spring as a set.



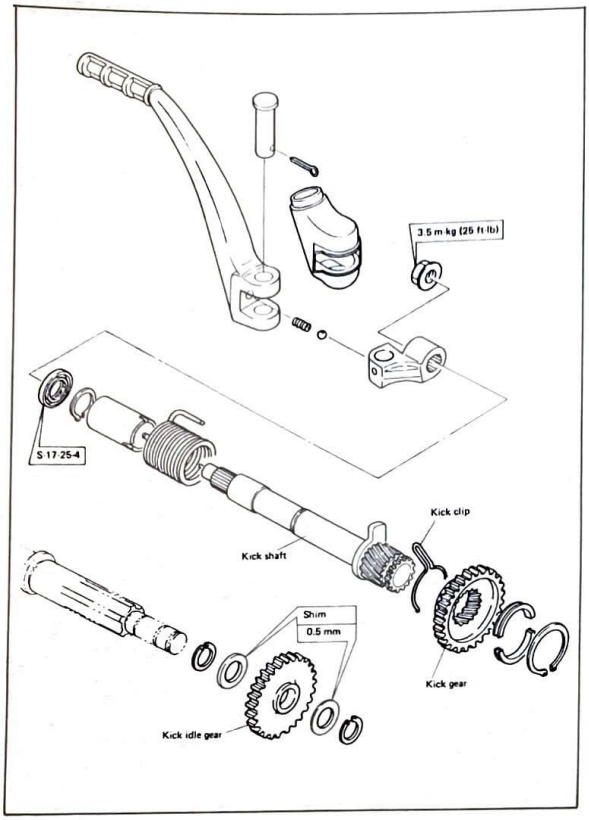
5. Roll the push rod across a surface plate. If rod is bent, replace.

Bend limit: 0.15 mm (0.006 in)



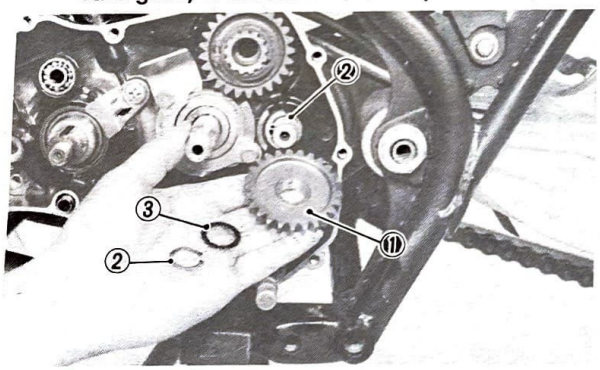
6. Primary drive and drive gears
If primary drive and driven gear produce excessive noise during operation, gear lash may be incorrect. Marks are scribed on the side of each gear.
And in replacement, a gear having the same mark as before must be used.

KICK STARTER



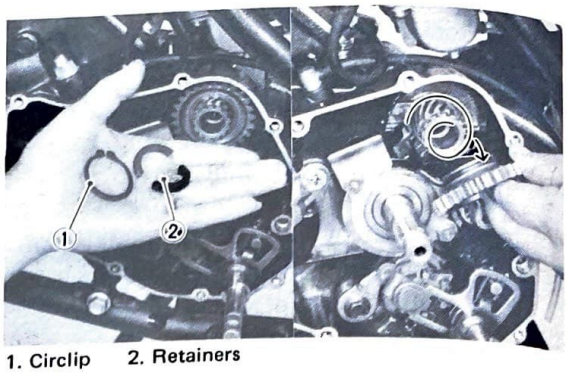
Removal

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



1. Kick idle gear 2. Circlip 3. Washer

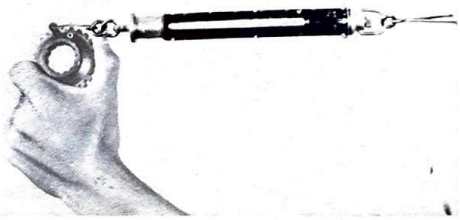
2. Remove the circlip and retainers. Remove the kick gear by rotating the kick crank counterclockwise and then pulling out the gear.



1. Circlip 2. Retainers

Inspection

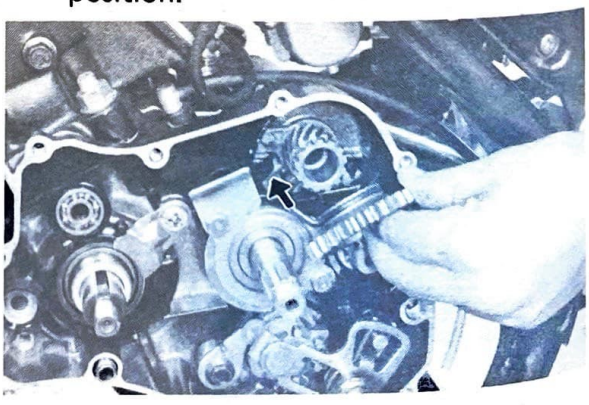
1. Inspect the teeth of the idle and kick gears for wear or damage, replace the gear if wear or damage is found.
2. The pressure required to move the kick clip on the kick gear should be about 1.0 kg (2.2 lb). If the pressure required is more or less than this amount, the kick starter will malfunction; the kick clip must be replaced.



3. Inspect the kick stopper on the end of kick axle; if it is damaged, replace the axle.

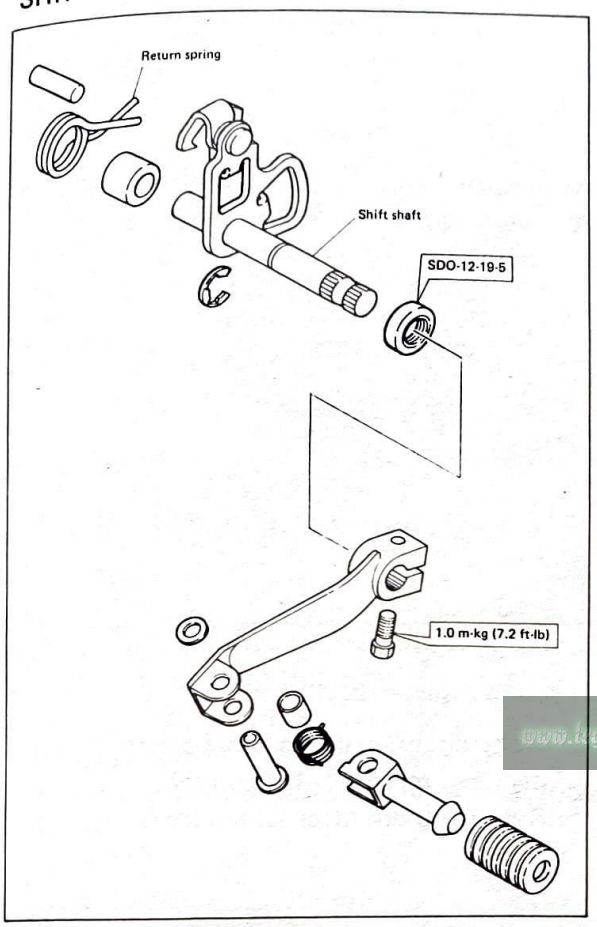
Reassembly

1. Engage the kick gear return spring with 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

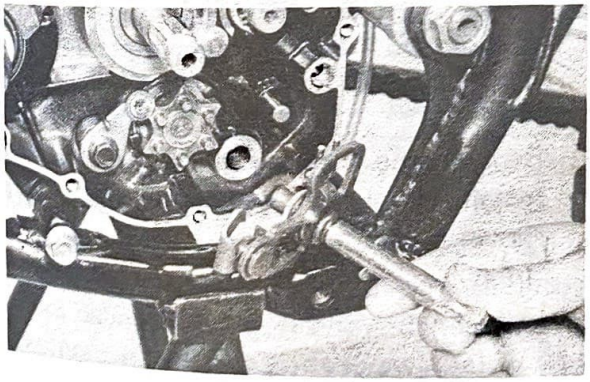


NOTE:

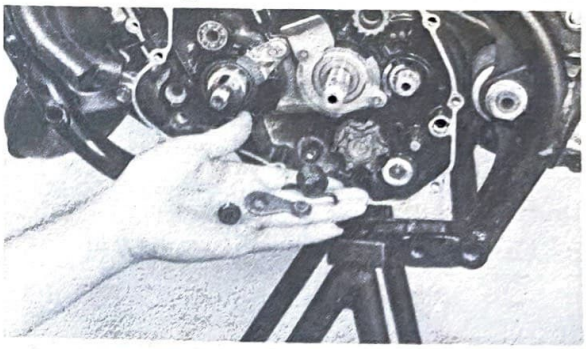
Shifter maintenance should be performed with clutch assembly removed.

Removal

1. Pull out change lever assembly.



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



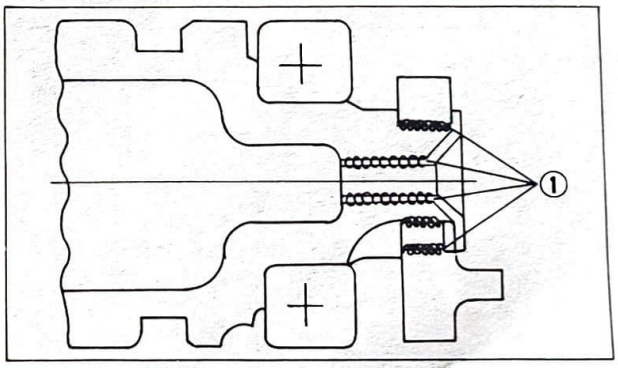
Tightening torque:
14 Nm (1.4 m·kg, 10 ft·lb)

Inspection

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

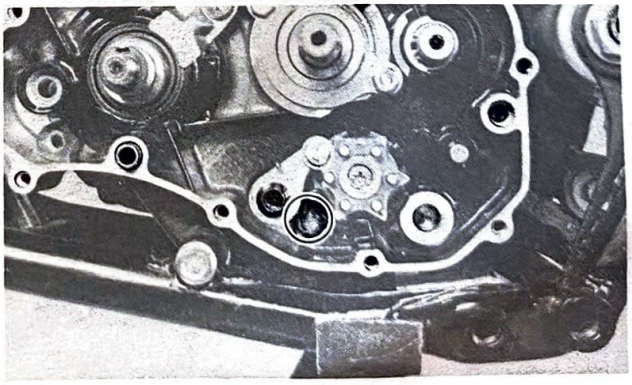
Installation

1. When replacing the segment, apply a holding agent, such as "Loctite® ", to the threads of flat head screw.



1. Apply Loctite®

2. Engage the shift return spring with its home position.



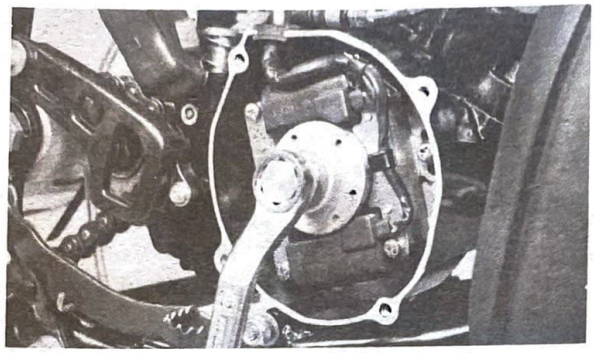
Engine removal

1. Remove the magneto base, and chain cover.

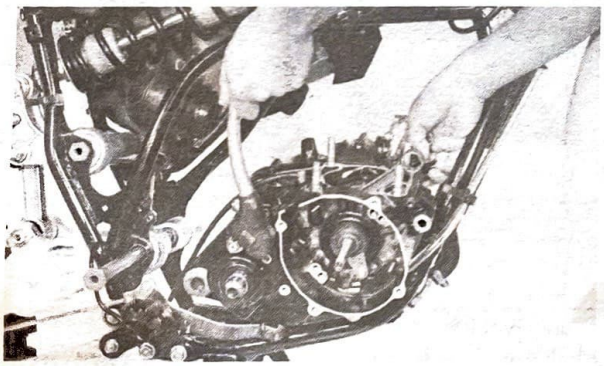
NOTE:

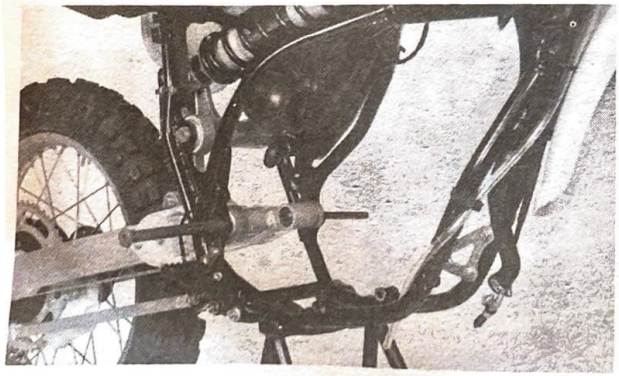
When removing the rotor, use the rotor puller.

a. Shift into second gear and press down on the brake pedal.
b. Remove the rotor holding nut.
c. Install the rotor puller and tighten it.

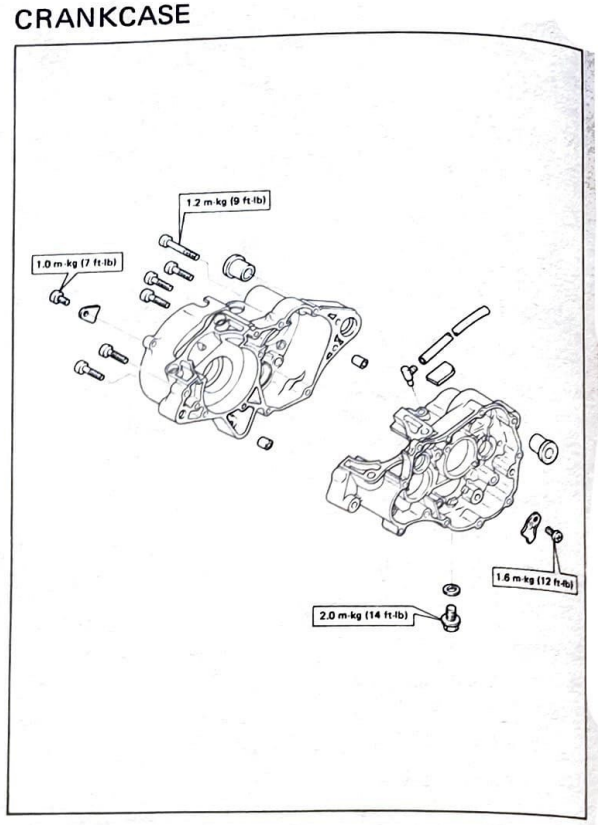


2. Remove the chain, sprocket and two engine mounting bolts.
3. Remove the nut from the swingarm pivot shaft, and pull the shaft out about two-thirds of its length; if the shaft is pulled all the way out, the swingarm will come loose. If possible, insert a shaft of similar diameter into the other side of the swingarm to support it.
4. Remove the engine from right side of frame.



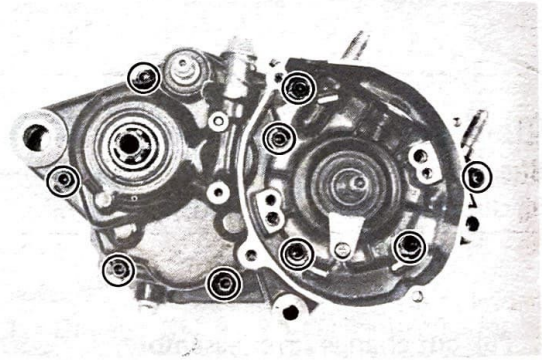


CRANKCASE



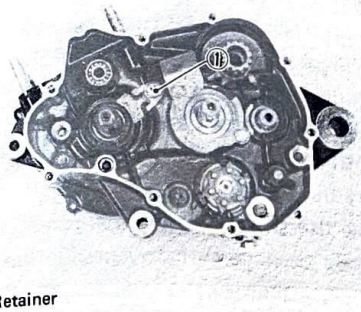
Crankcase disassembly

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



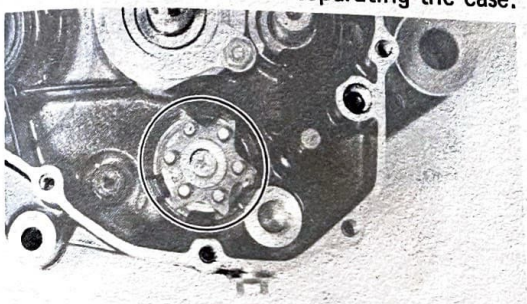
Tightening torque:
10 Nm (1.0 m·kg, 7 ft·lb)

2. Remove the oil seal retainer. Install crankcase separating tool as shown.



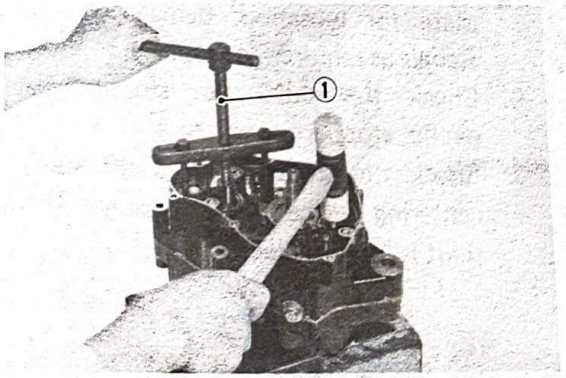
1. Retainer

2. Turn the shift cam to the position show in the figure so that it does not contact the crankcase when separating the case.



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.



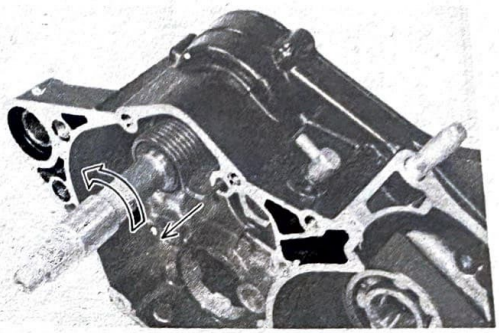
1. Crankcase separating tool

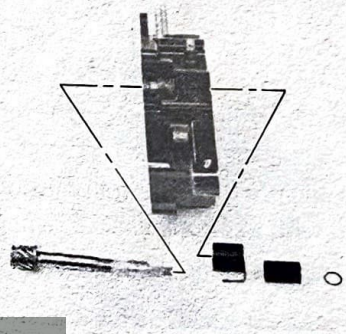
CAUTION:

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.

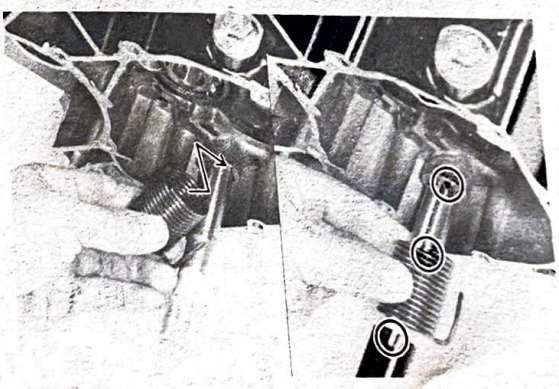
Kick axle

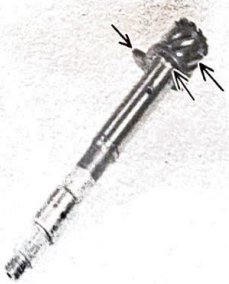
1. Remove the circlip and unhook the torsion spring from its post in the crankcase. Then remove the torsion spring. Pull out the kick axle assembly from other side.

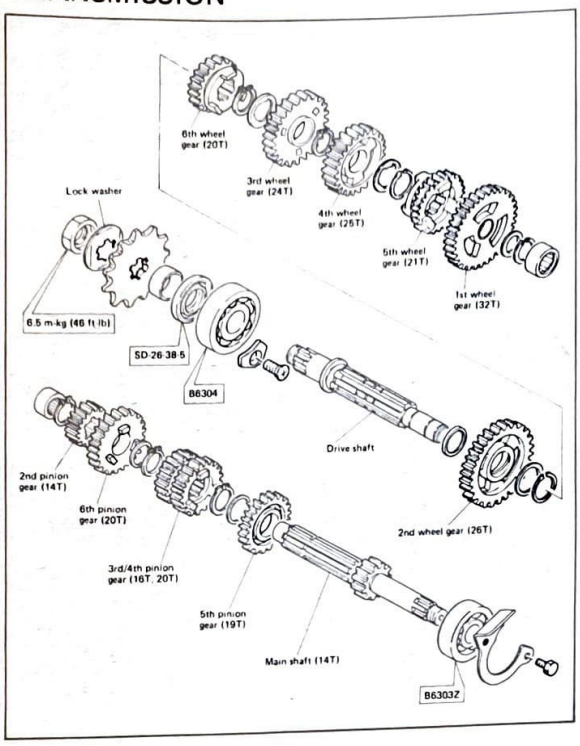




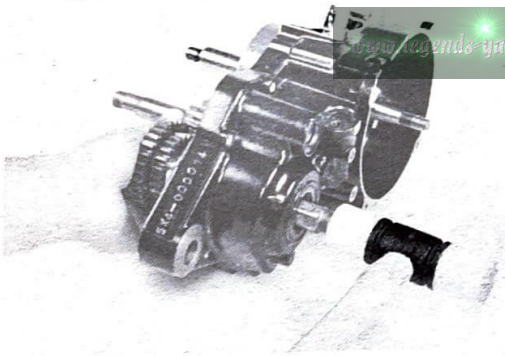
2. When installing the kick axle assembly, hook the torsion spring end to the hole of crankcase.







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



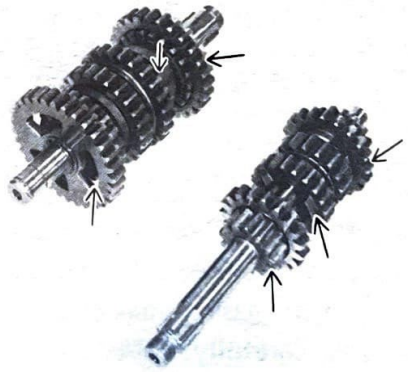
NOTE:

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

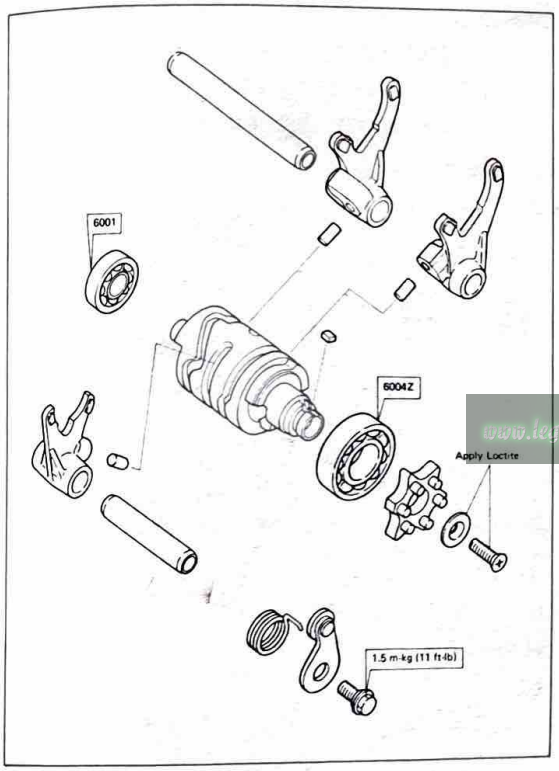
5. Check shift cam dowel pins and side plate for looseness, damage, or wear. Repair as required, or replace.
6. Check the shift cam stopper plate, circlip, stopper for wear.
7. Check the transmission shafts using a centering device and dial gauge. If any shaft is bent, replace.



8. Carefully inspect each gear. Look for signs of obvious heat damage (blue discoloration). Check the gear teeth for

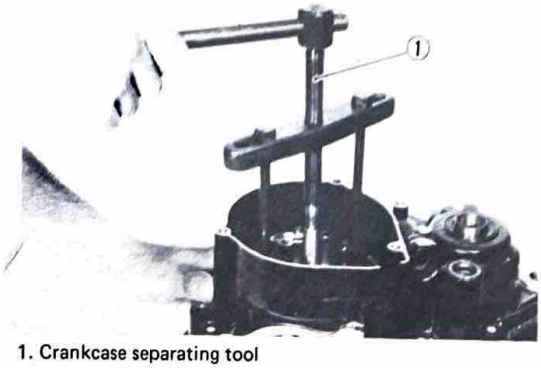
signs of pitting, galling, or other extreme wear. Replace as required.

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



CRANKSHAFT

1. Remove crankshaft assembly with crankcase separating tool.



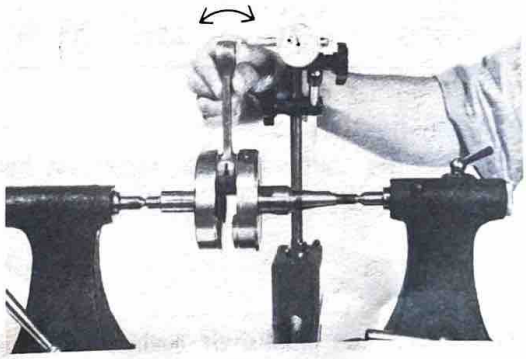
1. Crankcase separating tool

Inspection

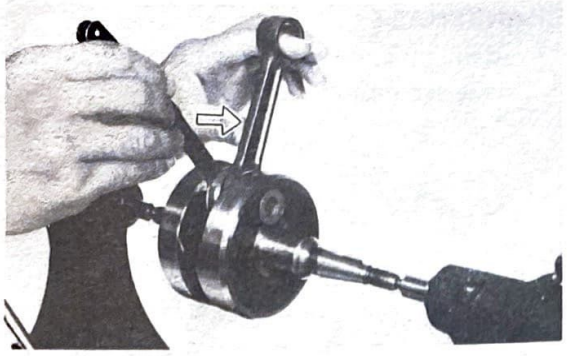
1. The crankshaft requires the highest degree of accuracy in engineering and servicing.
2. The crankshaft is susceptible to wear and therefore the crank bearing must be inspected with special care.
3. Check crankshaft components.

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 ~ 2.0 mm (0.031 ~ 0.079 in)

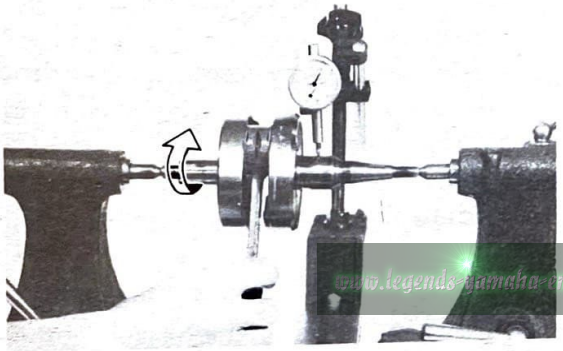


b. Remove the dial gauge and slide the connecting rod to one side. Insert a thickness gauge between the side of the connecting rod big end and the crank wheel. Measure clearance.



Connecting rod/crank side clearance (D):
0.20 ~ 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	$56^{-0.05}_{-0.10}$ mm
0.03 (0.0012)	0.03 (0.0012)	($2.205^{-0.002}_{-0.004}$ in)

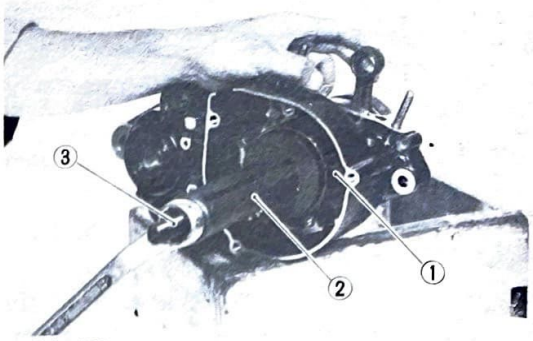
Crankshaft installation

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.

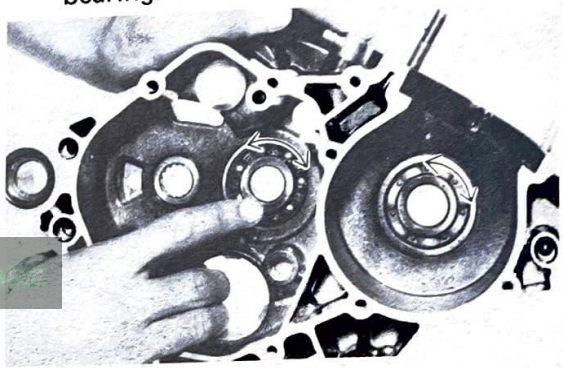
2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the other. Operate tool until crankshaft bottoms against bearing.



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

Bearings and oil seals

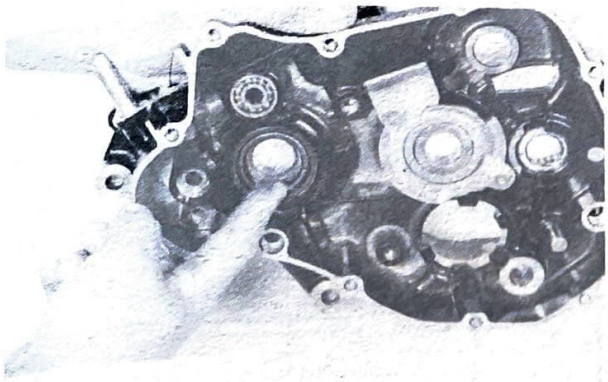
1. After cleaning and lubricating the bearings, rotate inner race with a finger. If rough spots are noticed, replace the bearing.



NOTE:

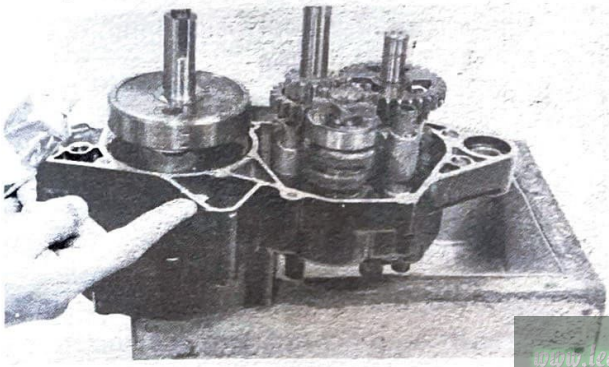
Bearing(s) are most easily removed or installed if the cases are first heated to approximately 90° ~ 120°C (194° ~ 248°F). Bring the case up to proper temperature slowly. Use an oven.

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).

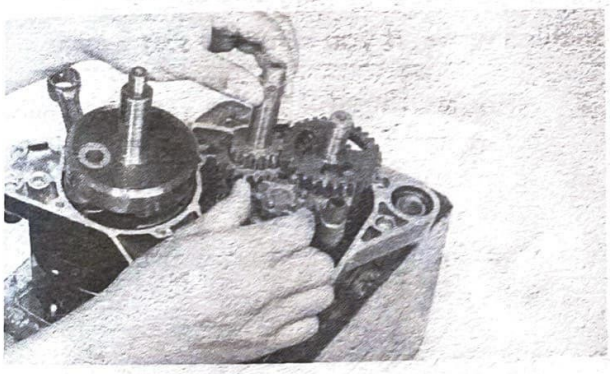


Transmission installation

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



2. 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.

3. After reassembly, apply a liberal coating of two-stroke oil to the crank pin and bearing and into each crankshaft bearing oil delivery hole.
4. Check crankshaft and transmission shafts for proper operation and freedom of movement.

Mounting

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

Bolt	Tightening torque
Upper bracket	30 Nm (3.0 m·kg, 22 ft·lb)
Upper frame	23 Nm (2.3 m·kg, 17 ft·lb)
Center, Lower	30 Nm (3.0 m·kg, 22 ft·lb)

Pivot shaft nut:
85 Nm (8.5 m·kg, 61 ft·lb)

2. Install drive sprocket.

Drive sprocket nut torque:
65 Nm (6.5 m·kg, 46 ft·lb)

3. Install inner rotor.

Rotor nut torque:
35 Nm (3.5 m·kg, 25 ft·lb)

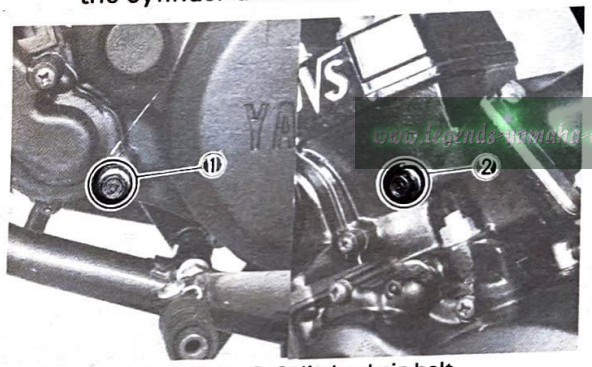
COOLING SYSTEM

Coolant draining

WARNING:

Do not remove the radiator cap, drain bolts and hoses especially when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, place a thick rag like a towel over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

1. Place a container under the engine.
2. Remove the radiator tank cap.
3. Gently loosen the pump cover drain screw to drain the coolant, and remover the cylinder drain bolt.



1. Pump cover drain bolt 2. Cylinder drain bolt

4. Drain the coolant completely. Throughly flush the cooling system with clean tap water.

CAUTION:

Take care so that coolant does not splashes to painted surfaces. If splashes, wash it away with water.

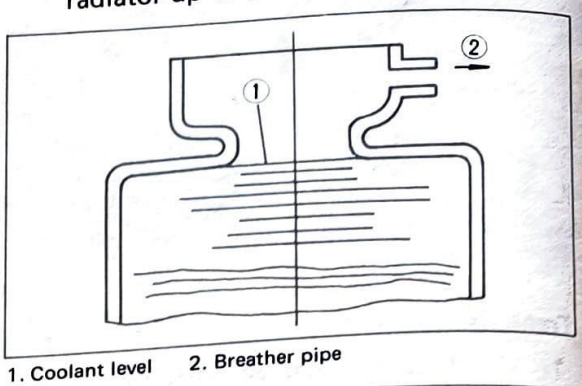
5. Retighten the drain bolts.
   If the gasket is damaged, replace it.

Replenishing coolant

NOTE:

Before pouring the coolant into the radiator, check the cooling system for damage, loose joints or leaks.

1. Pour the recommended coolant into the radiator up to the specified level.



1. Coolant level 2. Breather pipe

Recommended coolant:
High quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engine
Coolant and water mixed ratio:
50%/50%
Total amount: 1L (0.88 Imp qt, 1.06 US qt)

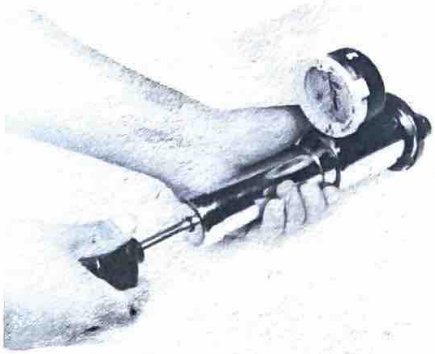
CAUTION:

Do not mix more than one type of ethlen glycol antifreeze containing corrosion for aluminum engine inhabitors.
Hard water or salt water is harmful to the engine parts. You may use boiled water or distilled water, if you can't get soft water.

2. After starting the engine, race the engine a few times and add the coolant again up to the specified level.
3. When the coolant level becomes stable, stop the engine and tighten the radiator cap.

Cooling system check

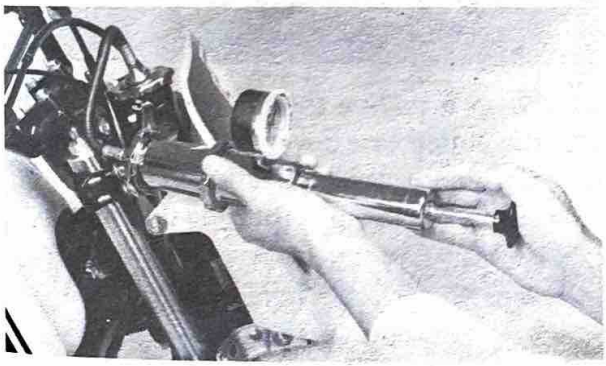
1. Using the cap tester, check that the radiator cap vacuum valve and pressure valve operate correctly. Measuring with a tester, apply the specified pressure for 10 seconds, and make sure there is no pressure drop.
   If the air pressure shows a drop, replace the radiator filler cap.



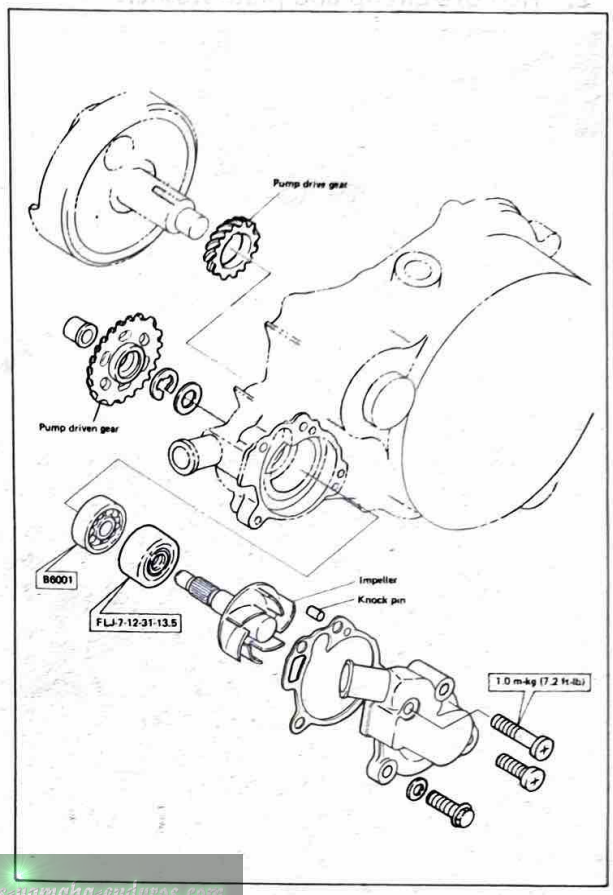
Valve opening pressure:
88 kPa (0.9 kg/cm², 12.8 psi)

2. Check the radiator core for clogged or flattened fins. If more than 20% of the radiator core area is flattened, repair or replace the radiator core.
   If the radiator is clogged, clean it by blowing it from its rear (engine side) with compressed air.
3. Check the coolant hoses for cracks and damage. Replace as required.
4. Inspect the cooling system for leaks. Attach the cap tester to the radiator and pump it to the specified pressure. If the pressure gauge drops, inspect all hoses, fittings and radiator for an external leak. If leakage is found, repair or replace defective parts.

Pressure: 98 kPa (1.0 kg/cm², 14.2 psi)



WATER PUMP

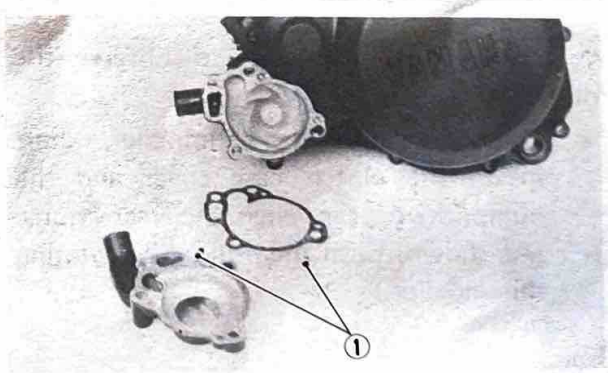


Disassembly

NOTE:
It is necessary to disassemble the water pump, unless there is no abnormarity such as excessive change in coolant level, discoloration of coolant, or milky transmission oil.

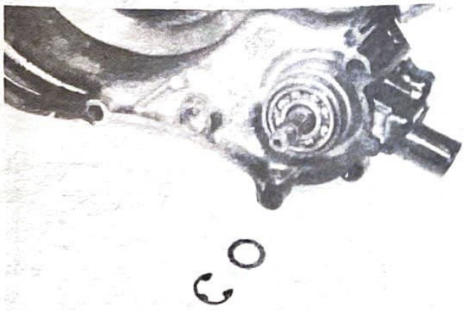
1. After removing the crankcase cover, remove the pump cover, gasket and knock pin. And remove crankcase cover left.

NOTE:
Be careful so that the knock pin is not lost.

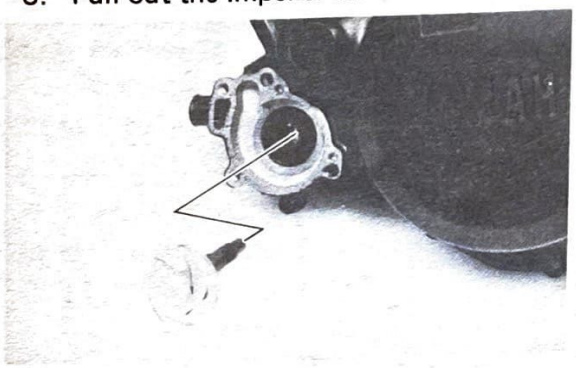


1. Knock pin

2. Remove circlip and plate washer.



3. Pull out the impeller shaft assembly.



Inspection

1. Remove the deposits from the impeller and water pump housing.
2. Check the impeller for cracks and damage. Replace if necessary.
3. Check for wear of the impeller, and replace it as required.
4. Check the oil seal and bearing for damage and wear. If damaged or worn excessively, replace the oil seal and bearing as a set.

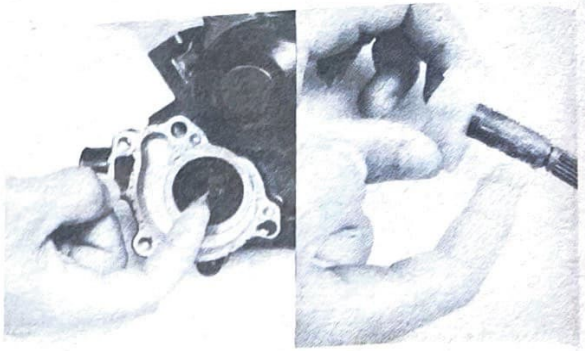
NOTE:

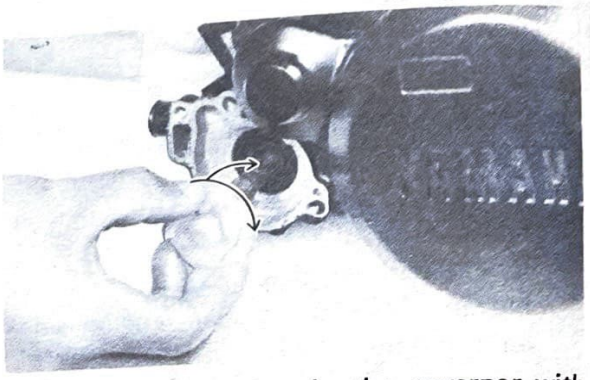
Install the oil seal, with the "WATER SIDE" mark is on the outside.

Reassembly

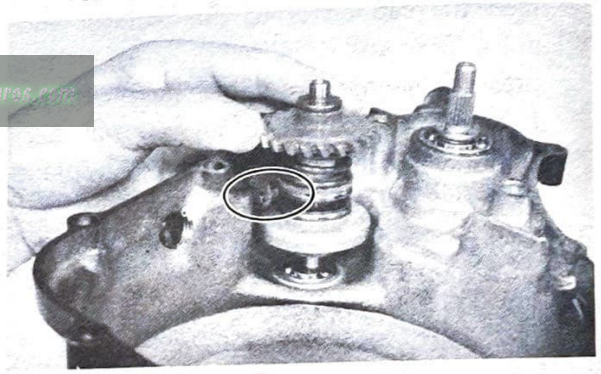
When assembling, be sure to observe the following:

1. When installing the impeller shaft inside the clutch case cover and the pump drive gear, align their serrations. (As shown, push them in while rotating the impeller.)

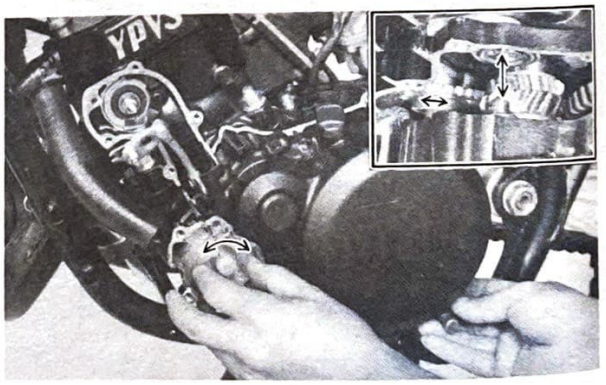




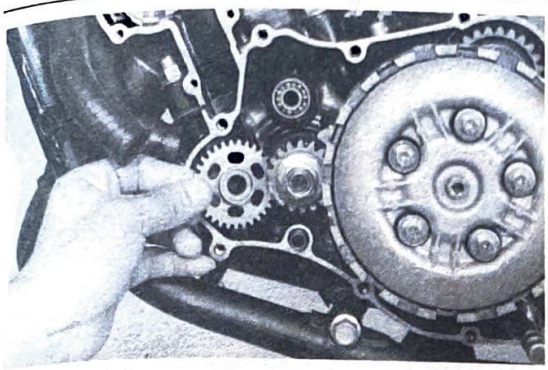
2. Align the groove in the governor with the case cover fork and fit the governor to the case cover.



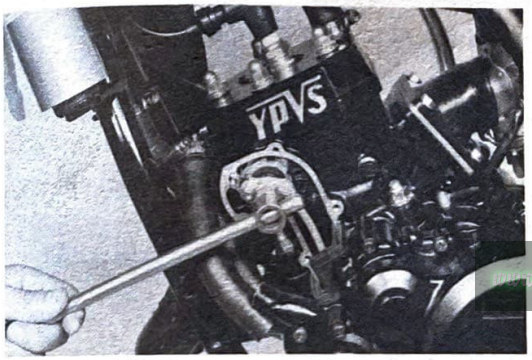
3. When installing the impeller shaft inside the clutch case cover and the pump drive gear, align their serrations. (As shown push them in while rotating the impeller.)



NOTE:
The water pump idle gear is a float type.



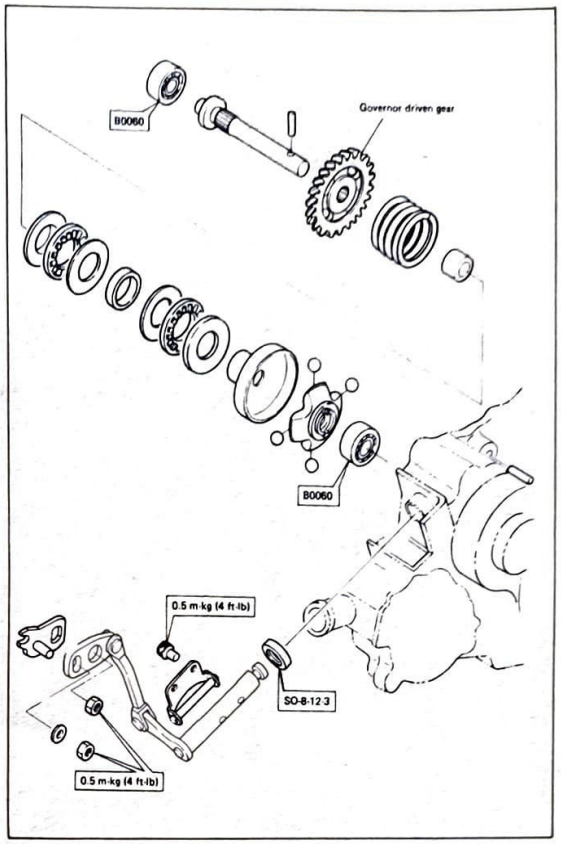
4. Install the power valve arm in the following way.
a. Using the locating pin (contained in the owner's tool), secure the cut portion of the arm to the cylinder head.



b. Tighten the bolt to specification.

Tightening torque: 5 Nm (0.5 m·kg, 4 ft·lb)

c. After tightening, don't forget to remove the locating pin.

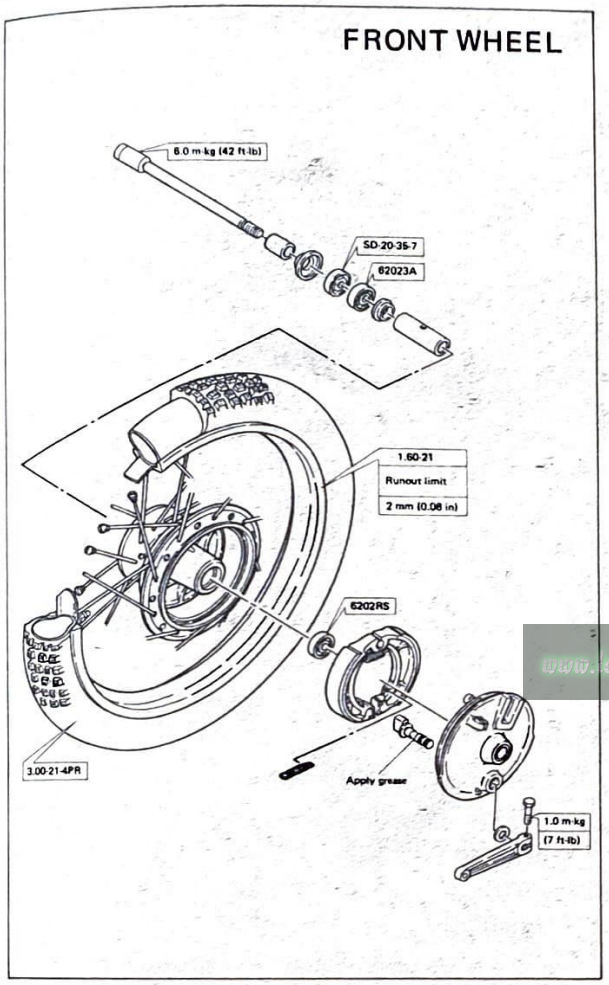


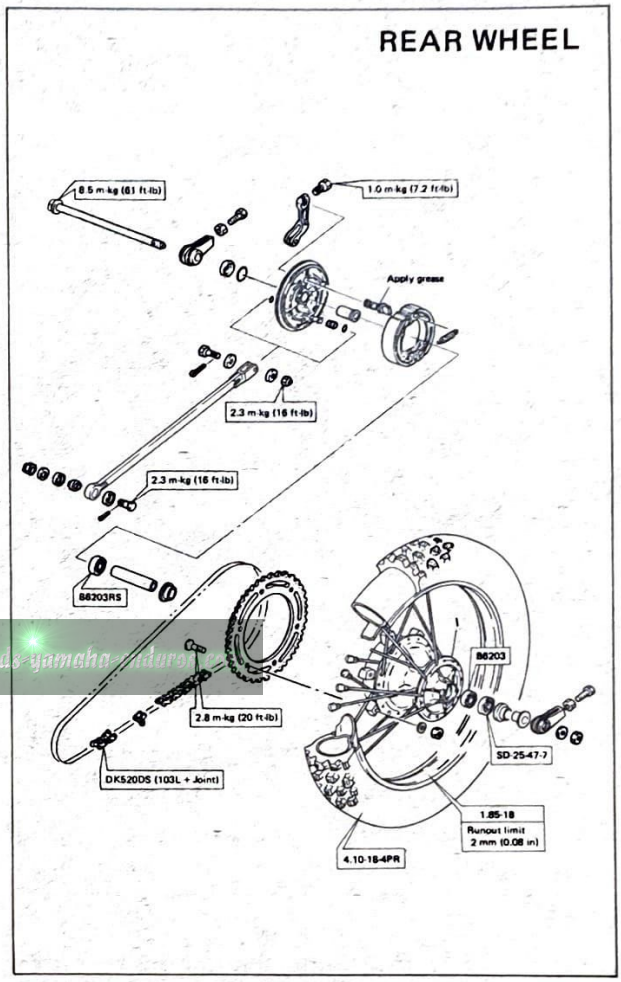
5 CHASSIS MAINTENANCE AND REPAIR

5 CHASSIS MAINTENANCE AND REPAIR

WHEELS

Whenever performing chassis work, always take extra care and double-check each step of each procedure. The wheels, brakes, suspension, steering, and frame must all be in top condition to provide optimum performance, reliability, and safety.





Front wheel removal

1. To remove the front wheel, first place a suitable stand under the machine to keep it stable while the front wheel is removed.
2. Loosen the axle holder nuts.
3. Support the front wheel and remove the
4. axle.

   Remove the front wheel from the forks, pull the brake backing plate assembly from the wheel, and remove the wheel.

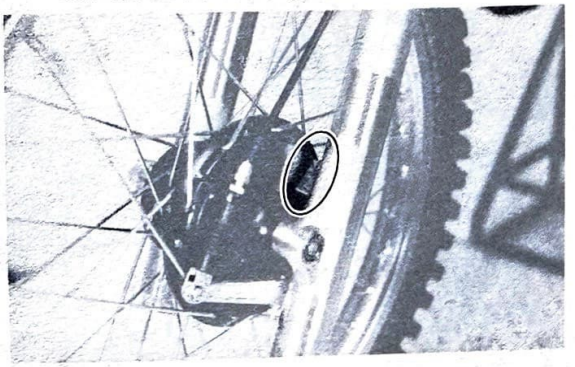
Rear wheel removal

1. To remove the rear wheel, place a suitable stand under the machine to keep the machine stable while the rear wheel is removed.
2. Remove the wing nut, and remove the rod from the brake cam lever.
3. Remove the torque arm from the backing plate; take care not to lose the seals or collar.
4. Remove the axle nut, support the rear wheel, and remove the axle.
5. Move the wheel forward and remove the chain from the sprocket. Remove the wheel from the machine.

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
   *oil seal and collar outer circumference from the torque arm.
2. Check for proper engagement of the boss on the outer tube with the locating slot on the brake shoe plate.

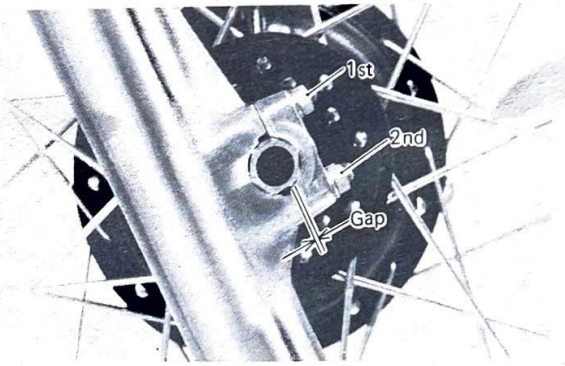


3. Always use a new cotter pins. Old pins should be discarded.
4. Make sure nuts are properly tightened.

Front wheel axle:	60 Nm (6.0 m·kg, 43 ft·lb)
Axle holder nuts:	10 Nm (1.0 m·kg, 7.2 ft·lb)
Rear wheel axle:	85 Nm (8.5 m·kg, 61 ft·lb)
Torque arm:	23 Nm (2.3 m·kg, 17 ft·lb)

NOTE:

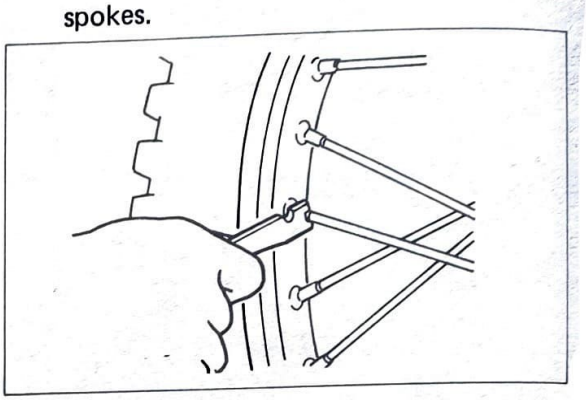
When tighten the axle holder nuts, first tighten the nuts on the upper side of axle holder and tighten the nuts on the lower side.



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

Rims and spokes

1. Block the wheels off the ground.
2. Spin the wheels and observe the amount of runout.
3. If the runout exceeds 2.0 mm (0.080 in), true the wheels.
4. Tap each spoke with a spoke wrench to determine if any spokes are loose; tighten all loose spokes and replace bent spokes.



5. If a rim is severely "dinged" or bent, replace the rim.

Bearings

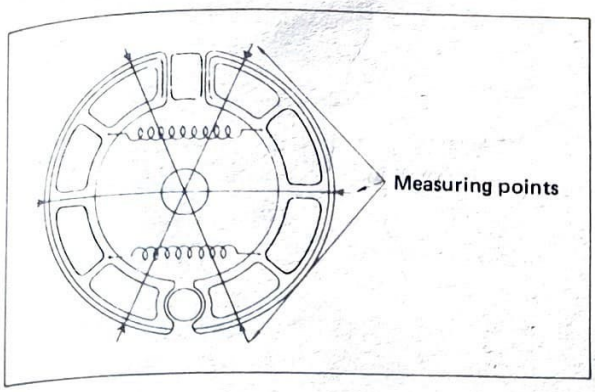
1. To inspect the wheel bearings, try to move the wheel sideways in relation to the fork in the front or the frame in the rear. If any movement is felt, the bearings must be replaced.
2. Block the wheels off the ground and spin each wheel. If the wheels do not spin freely with the brakes disengaged, the bearings must be replaced. If bearings need replacement, take the wheels to your Yamaha dealer for this service.

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)

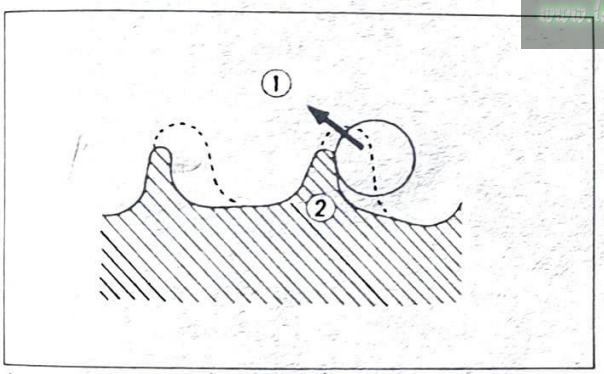


Brake drum

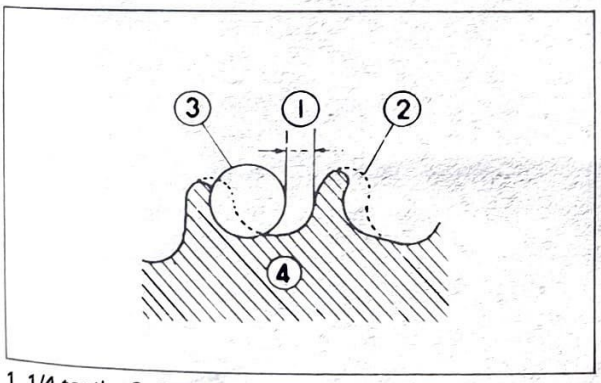
Inspect the brake drum; if there is any oil or dirt on the inner surface, wipe the drum clean with a rag dampened with lacquer thinner or solvent. If the drum is deeply grooved; the drum must be replaced.

Sprockets and chain (Adjustment begins on page 2-14)

1. Inspect the teeth on the rear sprocket; if they are worn as shown in the illustrations below, replace the sprockets and chain as a set.

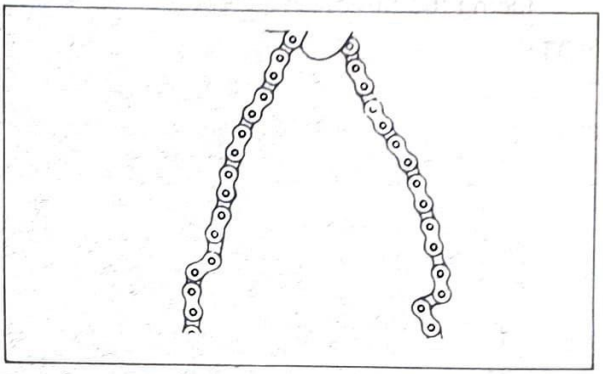


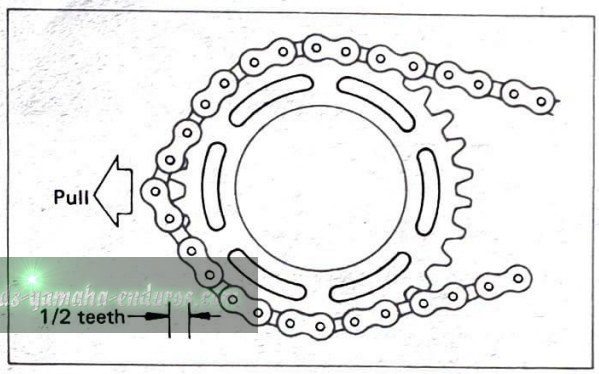
1. Slip off 2. Bend teeth



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

2. If the chain stays bent or kinked after cleaning and lubrication, or if the chain can be pulled away from the sprocket more than 1/2 the length of a sprocket tooth, the chain and sprockets should be replaced as a set.

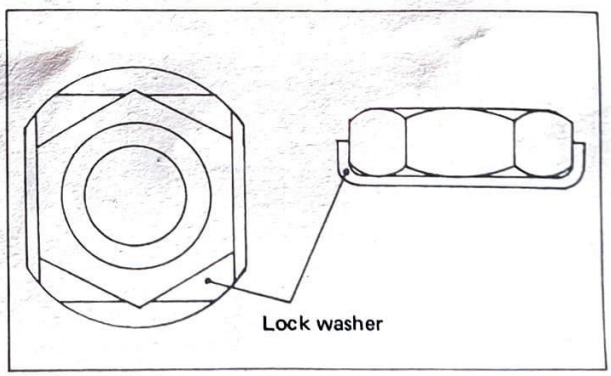




Drive sprocket securing nut torque:
65 Nm (6.5 m·kg, 46 ft·lb)

Driven sprocket securing nut torque:
30 Nm (3.0 m·kg, 22 ft·lb)

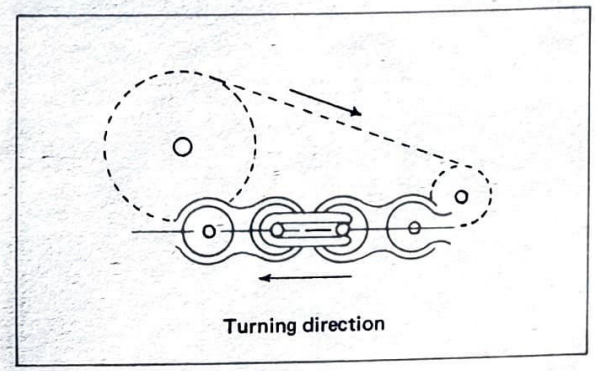
3. When replacing the drive sprockets, always use a new lock washer. After tightening the sprocket nut to the specification, be sure to lock it with the lock washer.



4. When installing the driven sprocket, lightly smear grease on the fitting bolts.
5. During reassembly, the master link clip must be installed with the rounded end facing the direction of travel.

NOTE:

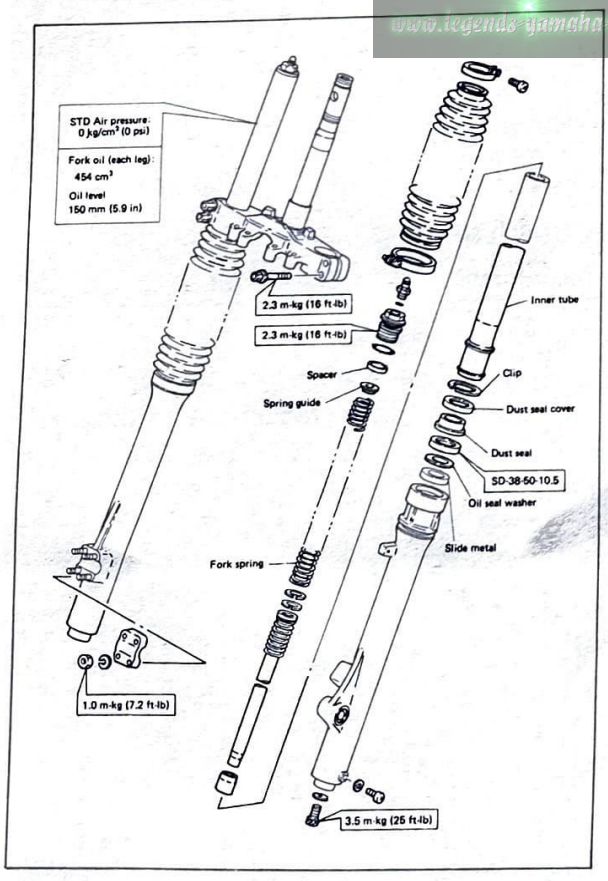
The chain should be cleaned and lubricated after every use of the machine.



Turning direction

FRONT FORK

(Tuning begins on chapter 3)



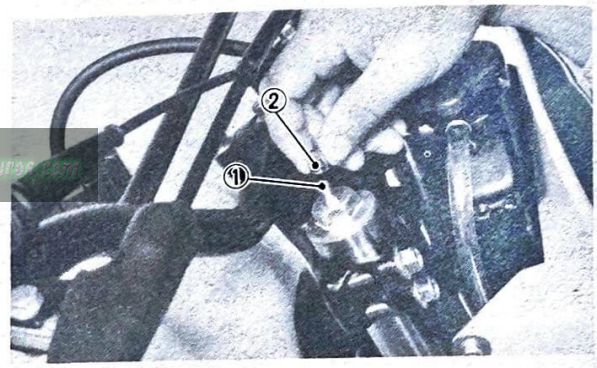
CAUTION:

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 front fork into fire.**
3. **Before removing the front fork, be sure to extract the air from the air chamber completely.**

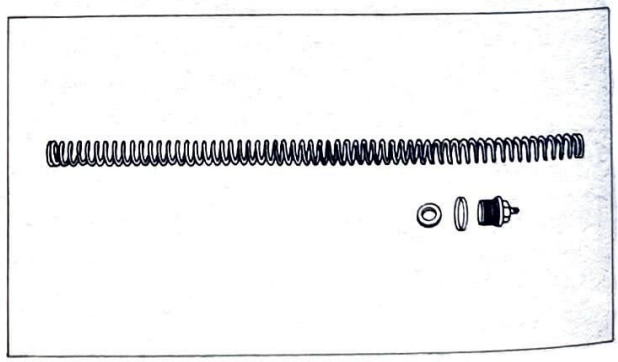
Disassembly and inspection

1. Place the machine on a suitable stand to keep it stable while the front wheel and forks are removed.
2. Remove the valve caps from the top of the fork legs, and depress the air valve to allow the air to escape from the fork legs.



1. Valve 2. Valve cap

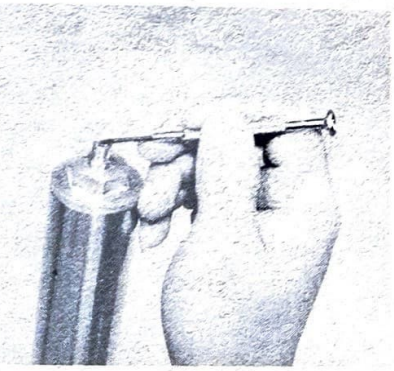
3. Loosen the cap bolts on each fork leg, but do not remove them yet.
4. Remove the front wheel.
5. Loosen the pinch bolts in the triple clamps, and slide the fork legs down and out of the clamps. Perform the following disassembly, and assembly procedures on one fork leg at a time.
6. Remove the cap bolt, spring guide, spacer, and spring from the fork tube.



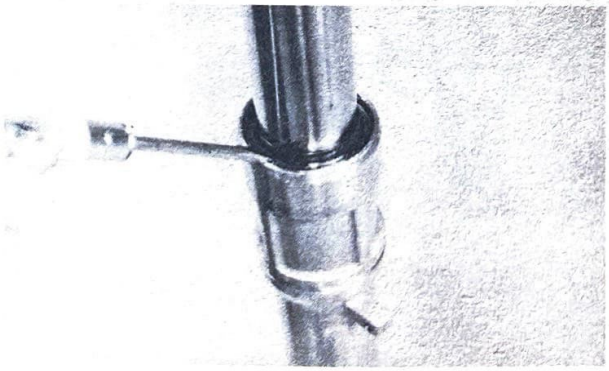
7. Inspect the O-ring on the cap bolt; if it is cut or otherwise damaged, replace the O-ring.

1. O-ring

8. The oil seal in the fork leg must be removed hydraulically. Fill the fork completely with fork oil and reinstall the cap bolt. Depress the air valve until oil flows out.



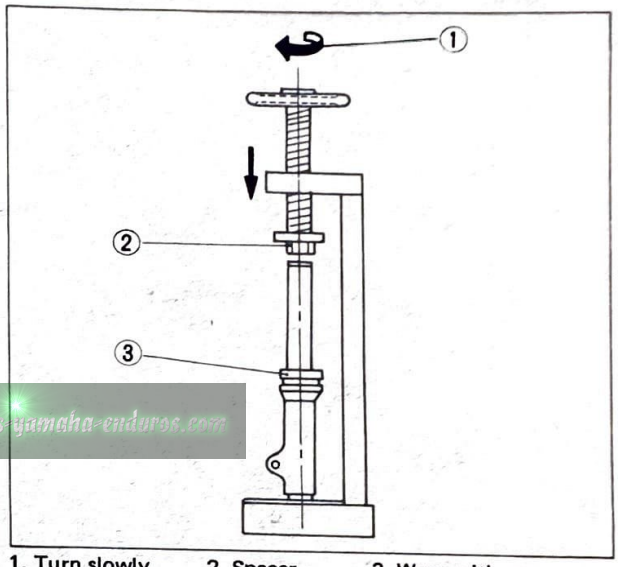
9. Remove the snap ring from the top of the slider.



10. Place a socket on top of the cap bolt, and place the fork leg in a hand press as illustrated. The socket will keep the press from contacting the air valve.

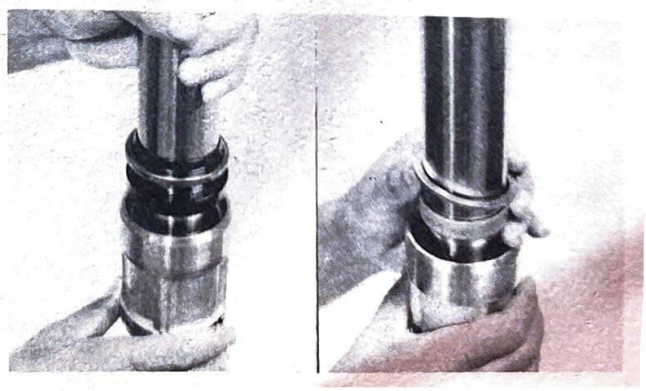
CAUTION:

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

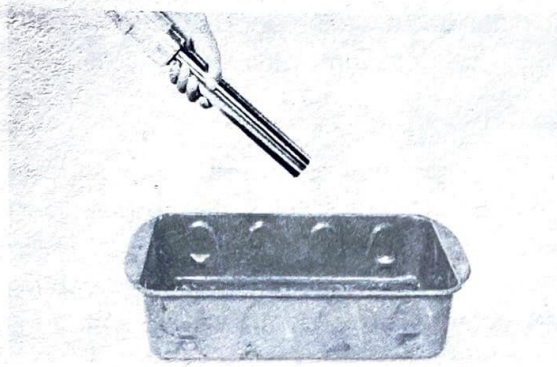


1. Turn slowly 2. Spacer 3. Wrap with rag

11. Wrap a rag around the top of the slider, and slowly turn the handle of the press until the oil seal is pushed out of the slider.
12. Remove the dust seal cover, dust seal, and oil seal. Discard the oil seal, as the seal must always be replaced whenever the fork is disassembled.
13. Remove the oil seal washer and slide metal, and inspect the slide metal; if it shows excessive wear, replace the slide metal.

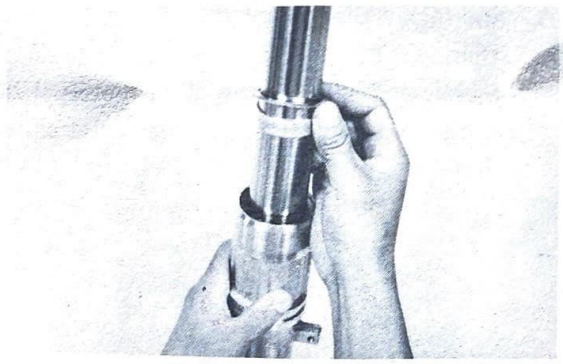


14. Remove the cap bolt and drain the oil into a drain pan; pump the fork to remove all the oil.



15. Clamp the axle lug in a vise, and push the inner tube all the way into the slider.
16. Use the damping-cylinder holding tool to remove the holding bolt from the bottom of the slider.

17. Remove the fork leg from the vise and hold it parallel to the ground while removing the slider from te inner tube.
18. Remove the tapered spindle from the end of the inner tube, and tilt the inner tube to allow the damping cylinder to slide out of the other end. Be sure to prevent the cylinder from dropping on the ground.

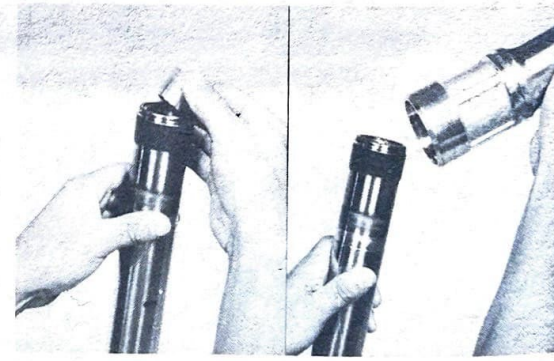


19. Inspect the O-rings on the damping cylinder, and replace them if they are damaged.
20. Inspect the bushing on the bottom end of the inner tube; if it is excessively worn, replace the inner tube.

Reassembly

The assembly procedure is the reverse of the disassembly procedure.

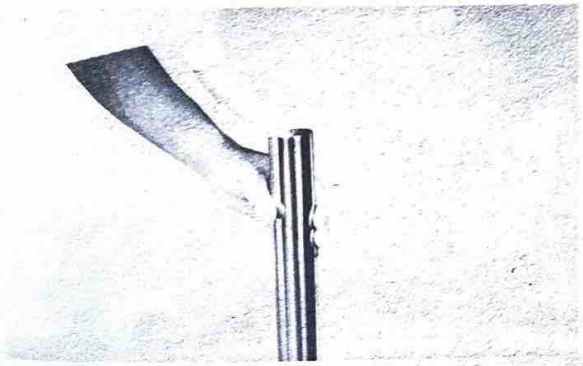
1. Make sure all components are clean before assembly. Always install a new fork seal. Do not re-use a seal.
2. Hold the inner tube parallel to the ground, and insert the damping cylinder into the tube. Tilt the tube slightly to allow the cylinder to slide slowly down to the end of the tube. Do not hold the inner tube vertically while inserting the damping cylinder, as the cylinder and valve might be damaged.
3. While holding the inner tube parallel to the ground, install the tapered spindle on the damping cylinder and install the slider on the inner tube. Screw the holding bolt into the bottom of the slider, but do not tighten it at this time.



4. Clamp the axle lug of the fork leg into a vise so the fork leg is vertical.
5. Install the slide metal, oil seal washer, and oil seal. Carefully tap around the oil seal until it is at the proper depth in the slider.
6. Install the dust seal, dust seal cover, and snap ring.
7. Remove the holding bolt from the bottom of the slider, apply Loctite to the threads of the bolt, and reinstall the bolt.
8. Using the damping-cylinder holding tool, torque the holding bolt to specification.

Holding bolt torque:
35 Nm (3.5 m·kg, 25 ft·lb)

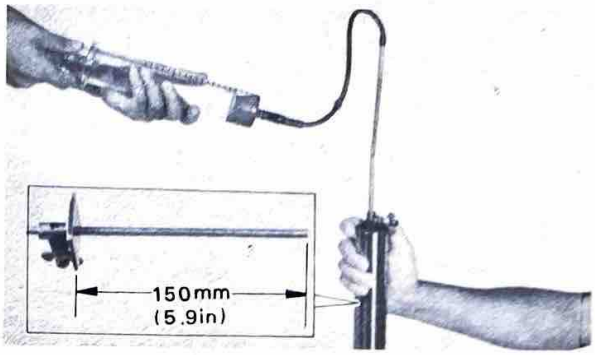
9. Pour the correct amount of fork oil into the fork leg, and pump the inner tube up and down to remove all air from the valving mechanism.



Recommended oil:
Yamaha fork oil 10 wt or
SAE # 10 motor oil

Standard oil quantity:
454 cm³ (16.0 Imp oz, 15.3 US oz)

10. Use the fork oil level tool to attain the proper oil level with the tube pushed down.



Standard oil level: 150 mm (5.91 in)

11. Pull the inner tube all the way up, and install the fork spring, spring guide, spacer, and cap bolt. Torque the cap bolt to specification.

Cap bolt torque:
23 Nm (2.3 m·kg, 17 ft·lb)

12. Install the fork boot and boot bands.
13. Check the air pressure in the fork, and set it to specification.

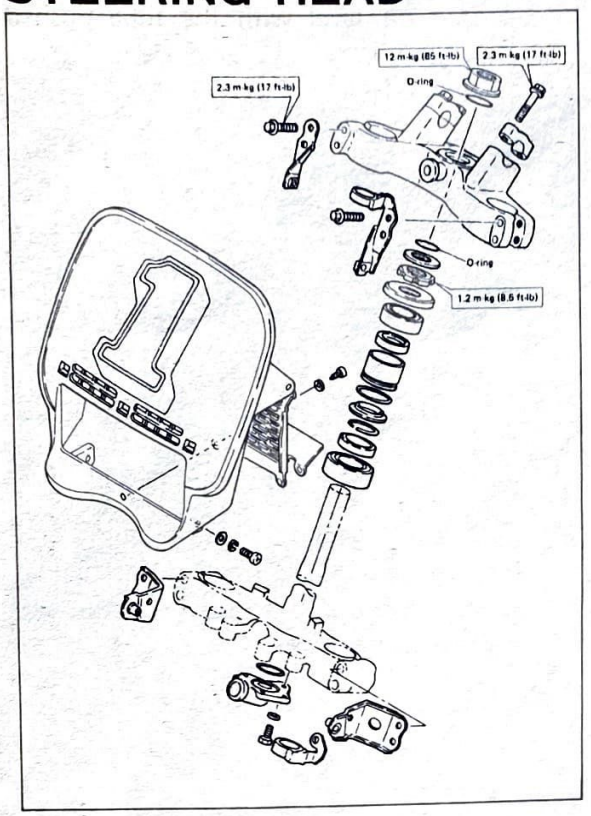
Standard fork air pressure:
0 kPa (0 kg/cm², 0 psi)

14. Install the fork legs in the triple clamps, and torque the pinch bolts to specification.

Pinch bolt torque:
23 Nm (2.3 m·kg, 17 ft·lb)

15. Reinstall the front wheel, taking care to compress the forks several times before tightening the axle holder nuts; this will center the fork legs properly on the axle.

STEERING HEAD

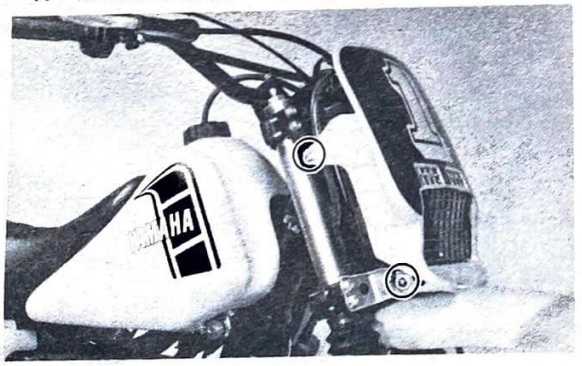


Disassembly

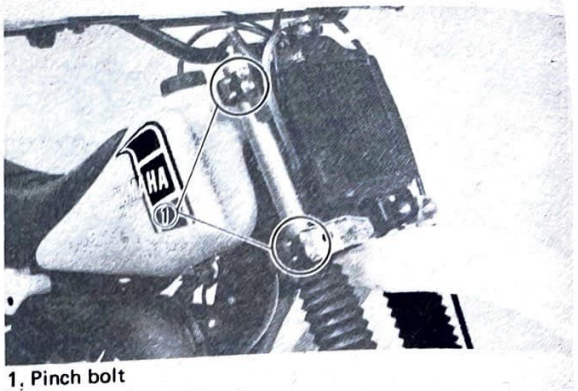
NOTE:

So far as there is no water leakage in the steering head, no disassembly is necessary.

1. Remove the number plate.

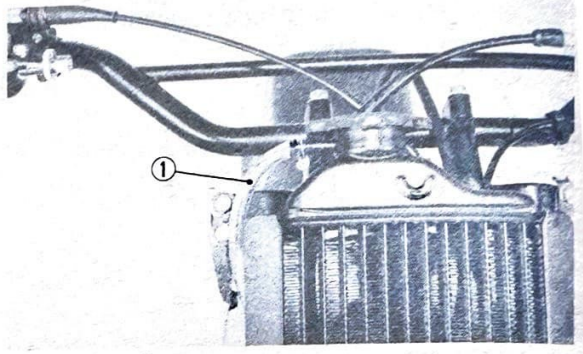


2. Remove the front wheel, front fork and front fender.



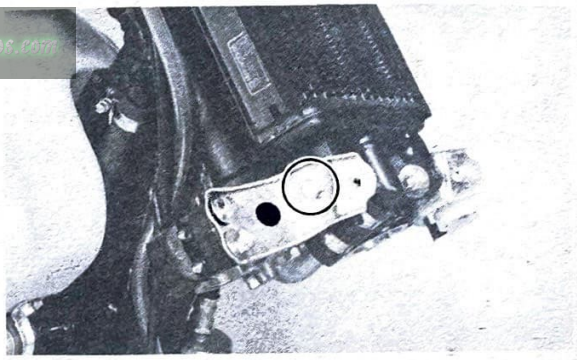
1. Pinch bolt

3. Remove the over flow pipe.

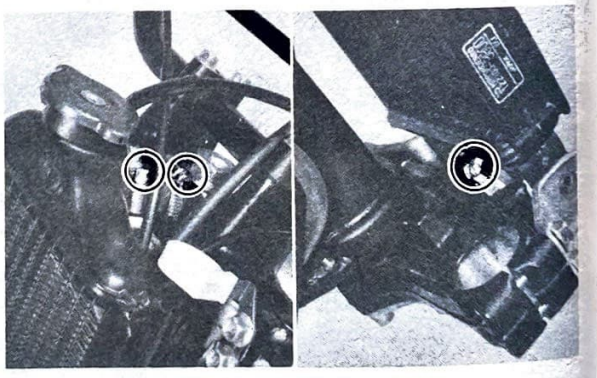


1. Over flow pipe

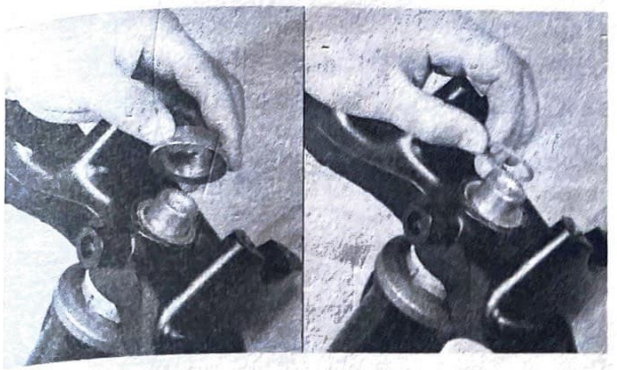
4. Remove the radiator fitting bolts.



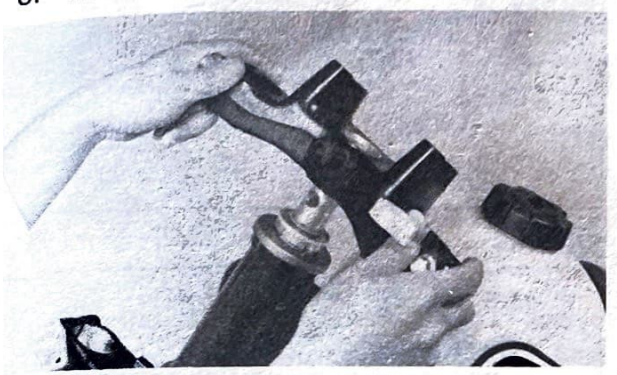
5. Loosen the hose clamps and remove the radiator.



6. Remove the handlebar.
7. Remove the steering fitting nut and O-ring.

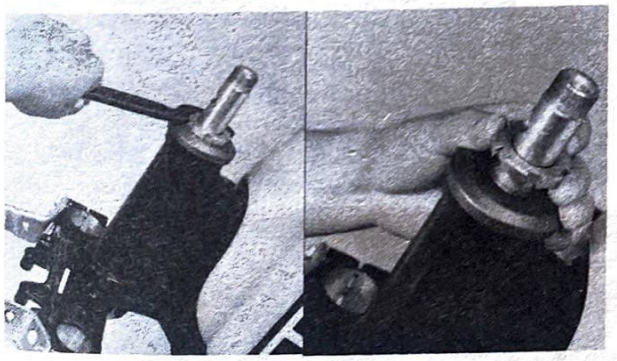


8. Remove the handle crown.



9. Remove the O-ring and plate washer.

10. Remove the steering nut with steering nut wrench.



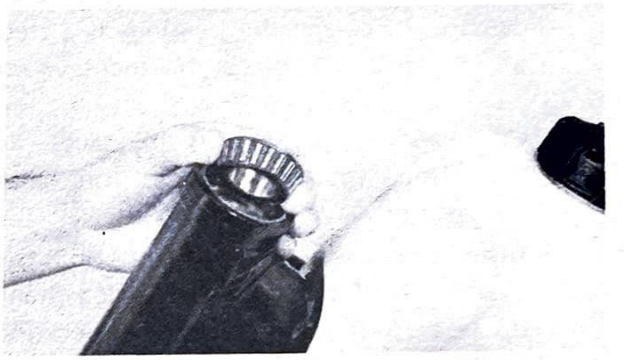
11. While still supporting the under bracket, carefully lift off the upper bearing cover.

12. Remove the under bracket, lower bearing and oil seal.

NOTE:

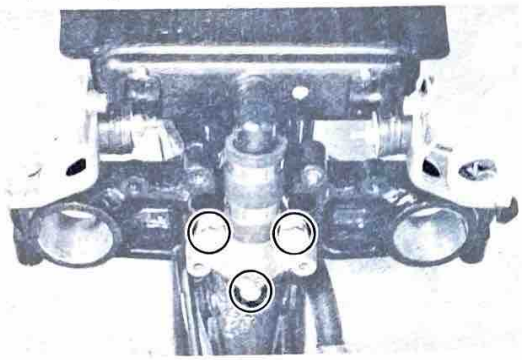
Replace the oil seal(s) and O-ring(s) every time the steering system is disassembled.

13. Lift off the bearing and race from the steering head pipe.



Checking the pipe joint

After removing the radiator and fender, check the O-ring for damage or breakage, and replace it, as required.



Inspection

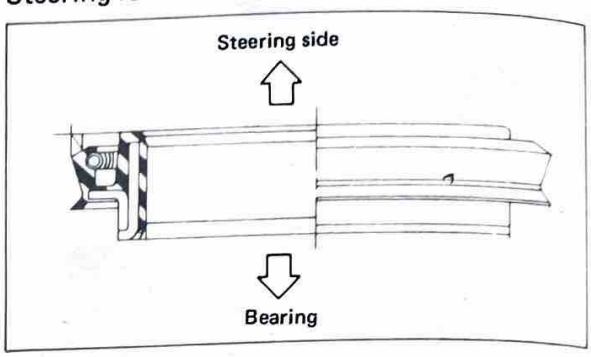
1. Wash the bearings in solvent.
2. Inspect the bearings for pitting or other damage. Replace the bearings if pitted or damaged. Replace the races when bearings are replaced.
3. Clean and inspect the bearing races. If races are damaged, replaces the races and bearings.
4. Install the bearings in the 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.

Reassembly

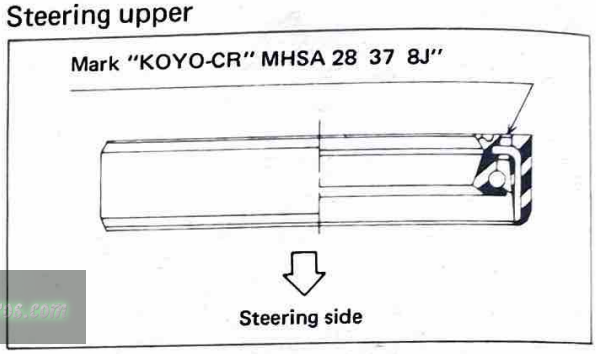
For assembly, reverse the procedure for disassembly but take the following precautions:

1. Install the oil seal so that its identification mark faces outward.

Steering lower



Steering upper



2. Coat the oil seal(s) and bearing(s) with heat-resistant grease (Shell Retinax A) before installing.

3. Take special care so that the steering nut and plate washer are installed facing correctly.

Steering nut

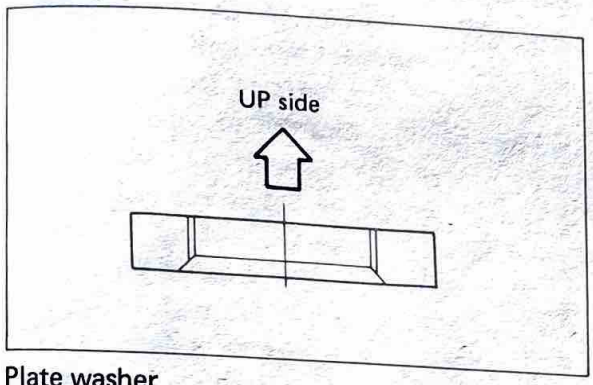
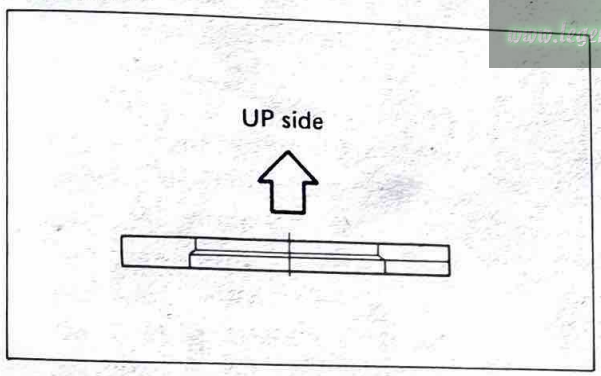
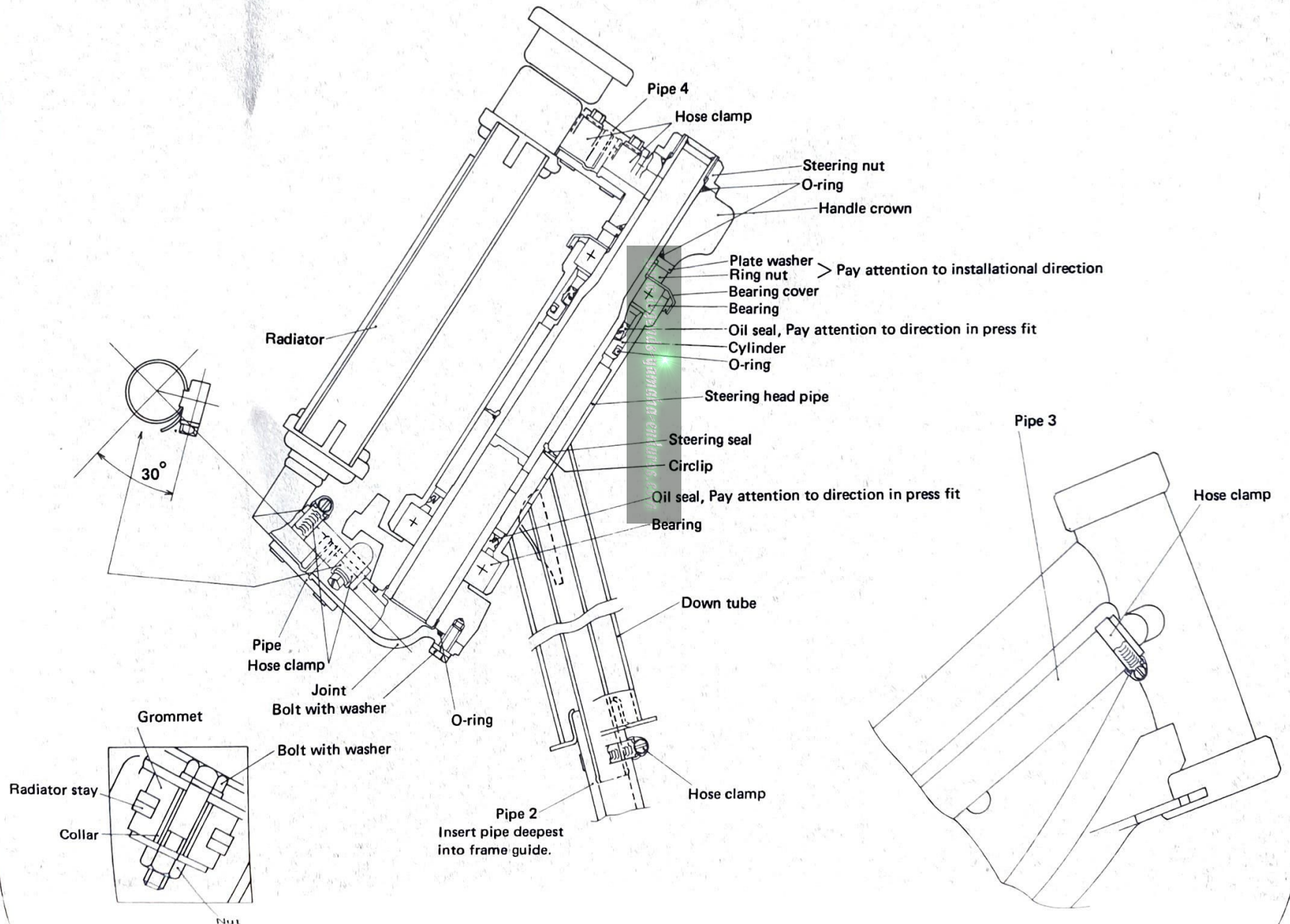


Plate washer



4. When installing the steering shaft, wind or wrap the threaded portion with a vinyl tape or vinyl sheet.


Pipe 4
Hose clamp
Steering nut
O-ring
Handle crown
Plate washer
Ring nut
Pay attention to installational direction
Bearing cover
Bearing
Oil seal, Pay attention to direction in press fit
Cylinder
O-ring
Steering head pipe
Steering seal
Circlip
Oil seal, Pay attention to direction in press fit
Bearing
Down tube
Hose clamp
Pipe 2
Insert pipe deepest into frame guide.
Radiator
30°
Pipe
Hose clamp
Joint
Bolt with washer
O-ring
Grommet
Bolt with washer
Radiator stay
Collar
Nut
Pipe 3
Hose clamp

REAR SHOCK

MONOCROSS SUSPENSION "DE CARBON" SYSTEM

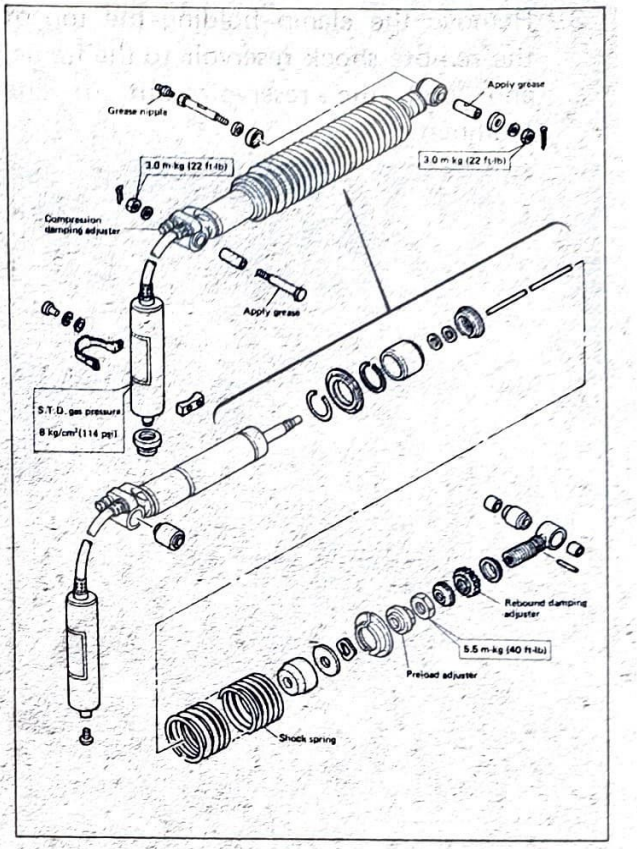
(Tuning begins on page 3-5 of chapter 3.)

WARNING:

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

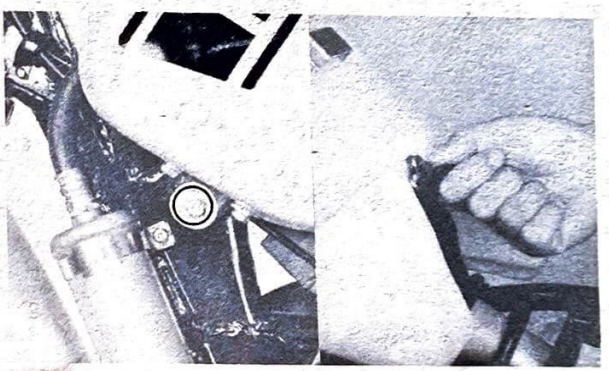
The manufacturer can not be held responsible for property damage or personal injury that may result from improper handling.

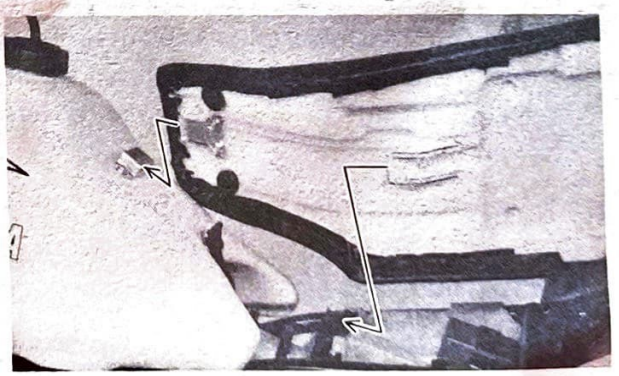
1. Never tamper or attempt to disassemble the cylinder or the tank. Never tamper with the nut securing the hose to the cylinder assembly; otherwise, oil will spurt from the cylinder due to the high pressure in the nitrogen gas tank.
2. Never throw the shock absorber into an open flame or other high heat. The shock absorber may explode as a result of nitrogen gas expansion and/or damage to the hose.
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.



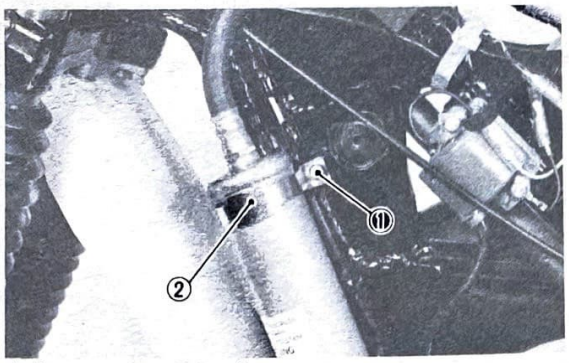
Removal

1. To remove the shock absorber, place the machine on a suitable stand to keep the bike stable while the shock absorber is removed.
2. Remove the seat and fuel tank.

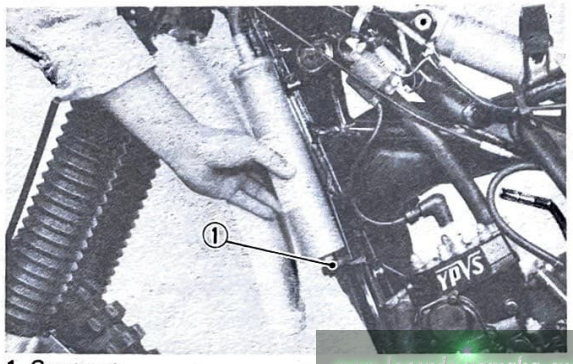




3. Remove the clamp holding the top of the remote shock reservoir to the frame, and pull the reservoir out of the grommet.

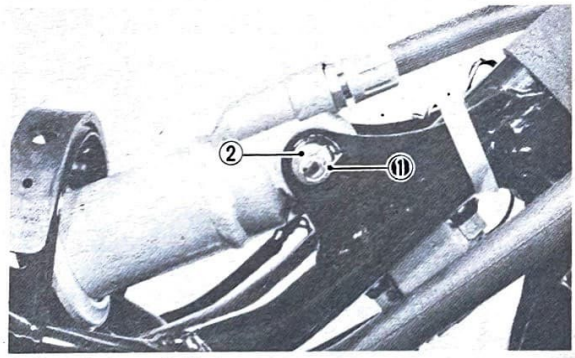


1. Fitting screw 2. Band



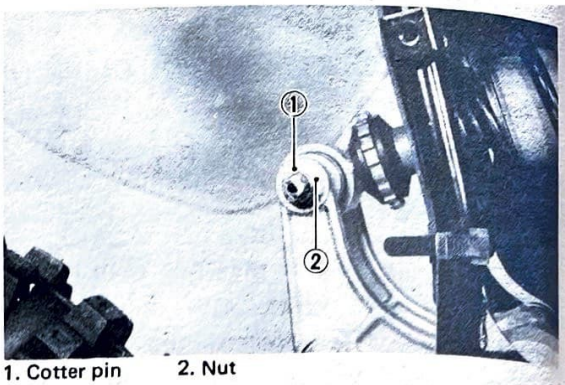
1. Grommet

4. Remove the cotter pin and nut holding the upper securing bolt to the frame, and remove the bolt.



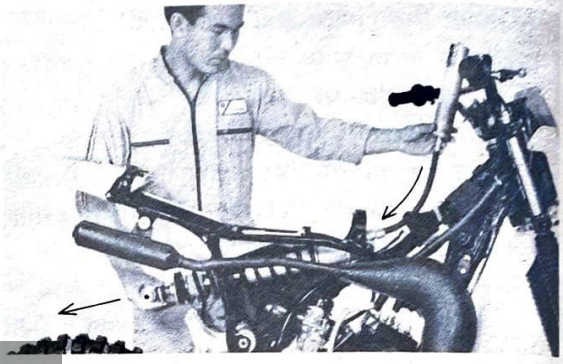
1. Cotter pin 2. Nut

5. Remove the cotter pin, nut and washer holding the lower shock pivot bolt to arm, and remove the washers and bolt; take care not to lose the thrust covers.



1. Cotter pin 2. Nut

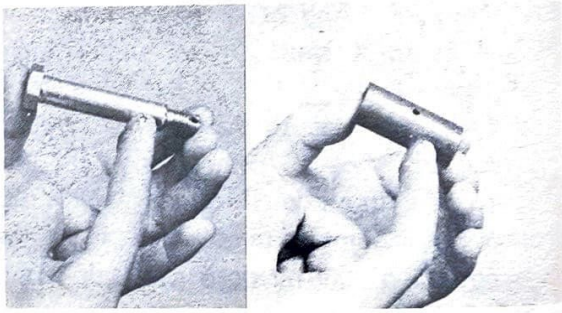
6. Carefully remove the shock assembly from the machine; take care to avoid damaging the rubber hose or the shock reservoir.

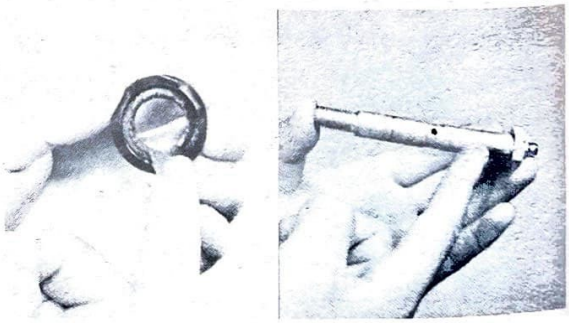


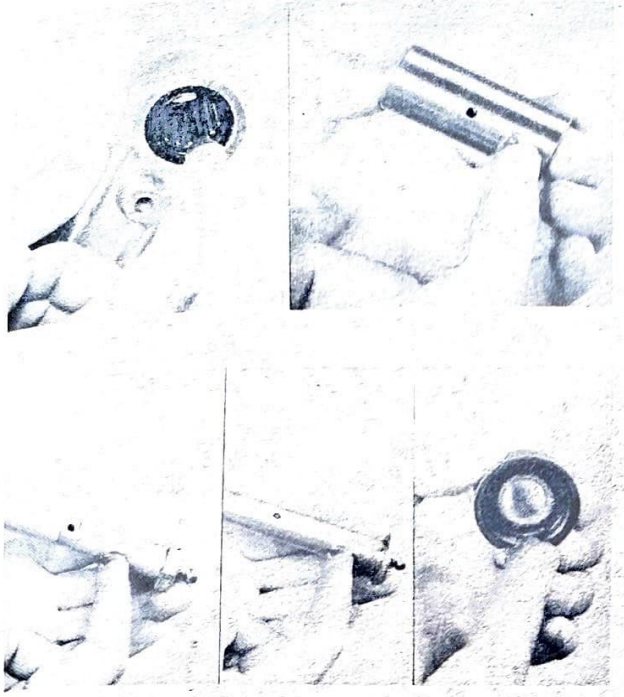
7. For reassembly, reverse the procedure for disassembly while taking the following precautions:

a. Make sure the thrust covers and washers are positioned as illustrated.

b. Before installing, lubricate the following areas with lithium base grease.



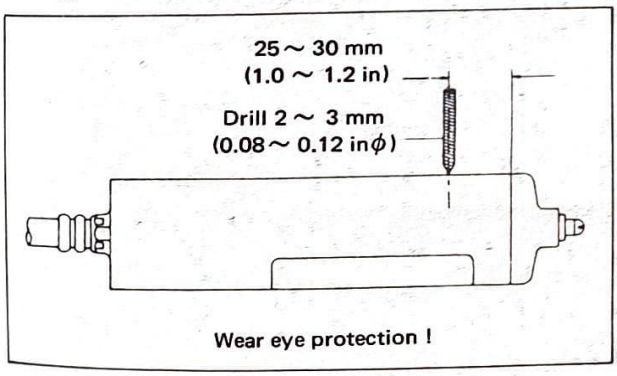




c. Tighten the nut to specification.
d. Always use a new cotter pin.

Upper bolt:	30 Nm (3.0 m·kg, 22 ft·lb)
Lower bolt:	30 Nm (3.0 m·kg, 22 ft·lb)

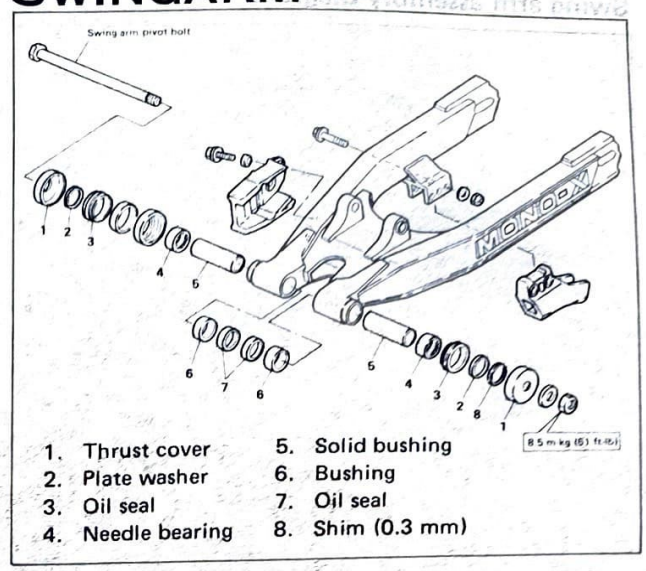
Notes on disposal (Yamaha dealers only)
Before disposing the shock absorber, be sure to extract the nitrogen gas. To do so, drill a 2 or 3 mm (0.08 ~ 0.12 in) hole through the tank at a position 25 ~ 30 mm (1.0 ~ 1.2 in) from the bottom end of the tank. At this time, wear eye protection to prevent eye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



WARNING:

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

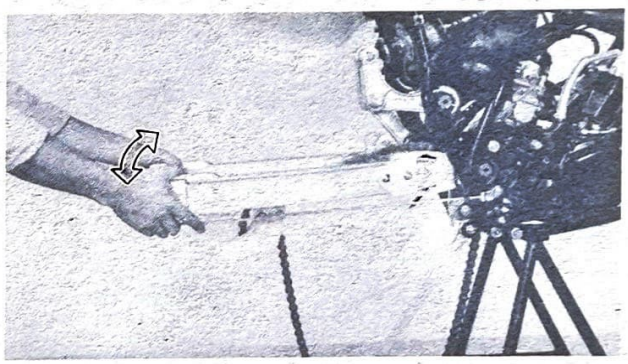
SWINGARM



1. Thrust cover
2. Plate washer
3. Oil seal
4. Needle bearing
5. Solid bushing
6. Bushing
7. Oil seal
8. Shim (0.3 mm)

Inspection

1. To check the swingarm bearings, remove the pin from the shock connecting rod and disconnect the shock from the swingarm.
2. Grasp the ends of the swingarm and try to move the arm sideways; if the free play exceeds tolerance, remove the swingarm and take it to your Yamaha dealer for bearing replacement.

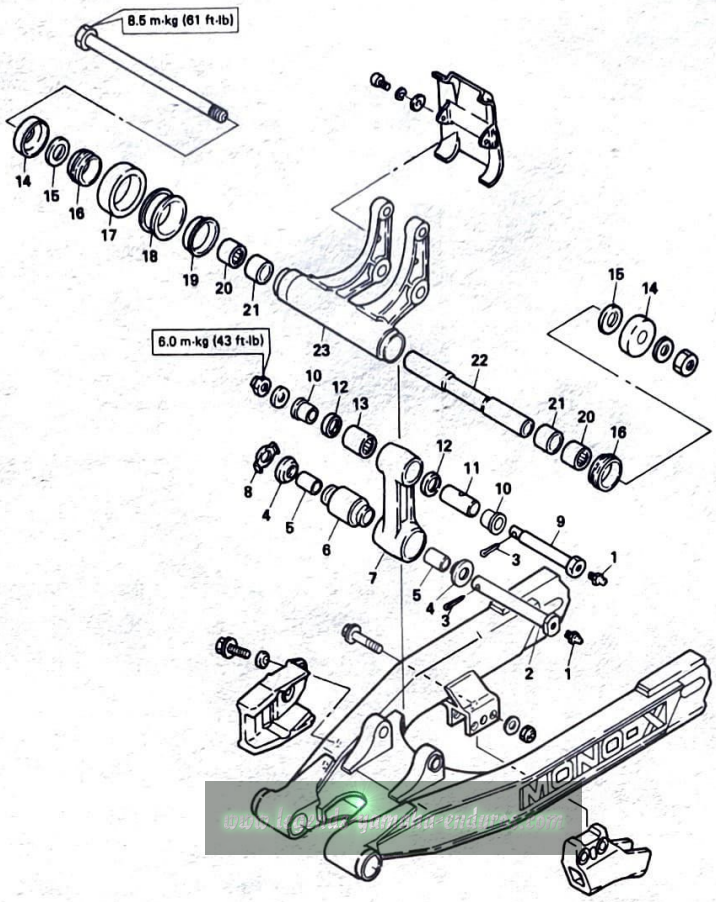


Swingarm free play:
0 ~ 1 mm (0 ~ 0.04 in)

3. Closely inspect the swingarm for cracks or other damage, and repair or replace it as required.
4. When reinstalling the swingarm, be sure to grease the bearings, bushings, and oil seal lips.
5. Grease the pivot shaft, install it and its nut, and torque the nut to specification.

Pivot shaft nut torque:
85 Nm (8.5 m·kg, 61 ft·lb)

Swing arm assembly diagram



1. Grease nipple
2. Pin
3. Cotter pin
4. Dust cover
5. Bushing
6. Bushing
7. I-shaped arm
8. Lock washer
9. Bolt
10. Bushing
11. Solid bushing
12. Oil seal
13. Needle bearing
14. Thrust cover
15. Plate washer
16. Oil seal
17. Guard seal 1.
18. Guard seal 2.
19. Washer
20. Needle bearing
21. Bushing
22. Collar
23. L-shaped arm

6 ELECTRICAL TROUBLESHOOTING

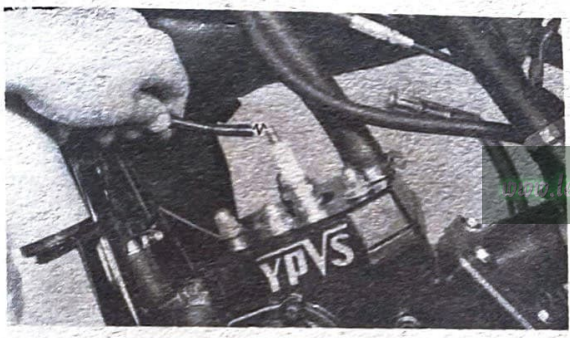
6 ELECTRICAL TROUBLESHOOTING

IGNITION SYSTEM

If the ignition spark is of poor quality or if there is no spark at all, use the following procedure, to locate and repair the problem.

1 Spark gap test

Remove the spark plug cap and check the spark.

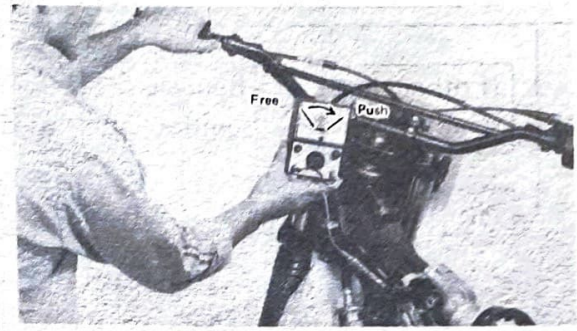


Hold the high tension lead 5 mm (0.20 in) from the head, and kick the engine through.

- Good spark → 1. Check plug cap. 2. Check spark plug.
- No spark

2 Connectors check-up

1. Check the connectors and couplers for loseness of joining ends.
2. Keep the connectors and couplers from dirt or rust.
3. Check the engine stop switch and ground lead.

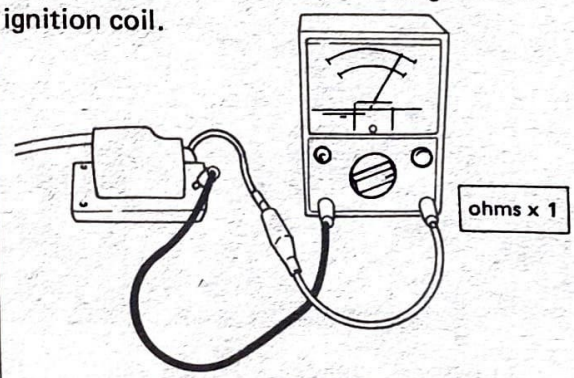


Connect the pocket tester leads as shown, and check switches for continuity.

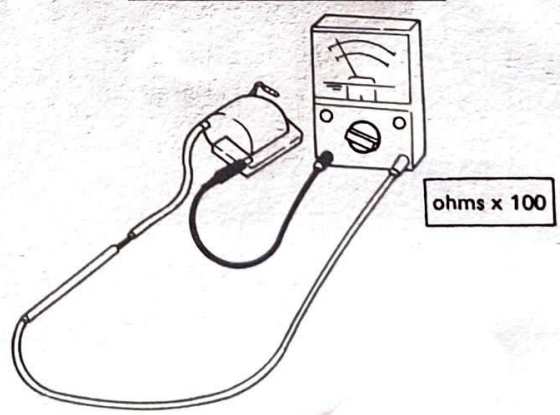
- Broken or no continuity → Replace switch.
- OK

3 Ignition coil test

Use the pocket tester to check the resistance of primary and secondary windings of the ignition coil.



Primary coil resistance:
0.6 Ω ± 10%



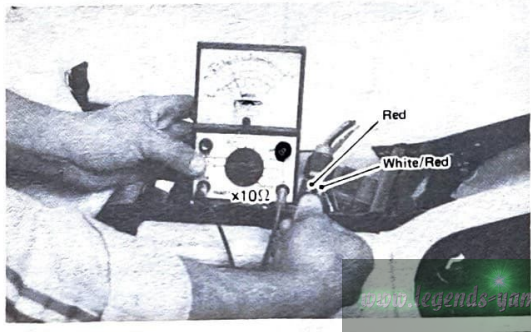
Secondary coil resistance:
6.2KΩ ± 20%

If other than specified → Replace ignition coil

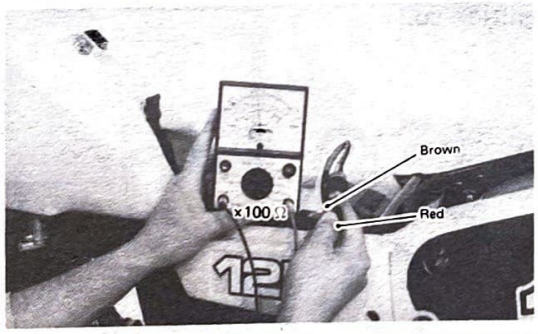
OK

4 C.D.I. Magnet (Charge coil) test

Disconnect the magneto leads, and use the Pocket tester to check the resistance of the magneto coils.



High speed charge coil resistance:
White/Red to Red: 270Ω ± 10%



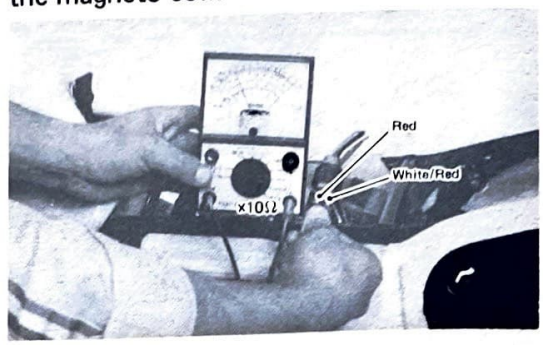
Low-speed charge coil resistance:
Red to Brown:1,4370Ω ± 10%

If other than specified → Replace charge coil.

OK

5 C.D.I. Magneto (Pulser coil) test

Disconnect the magneto leads, and use the pocket tester to check the resistance of the magneto coil.

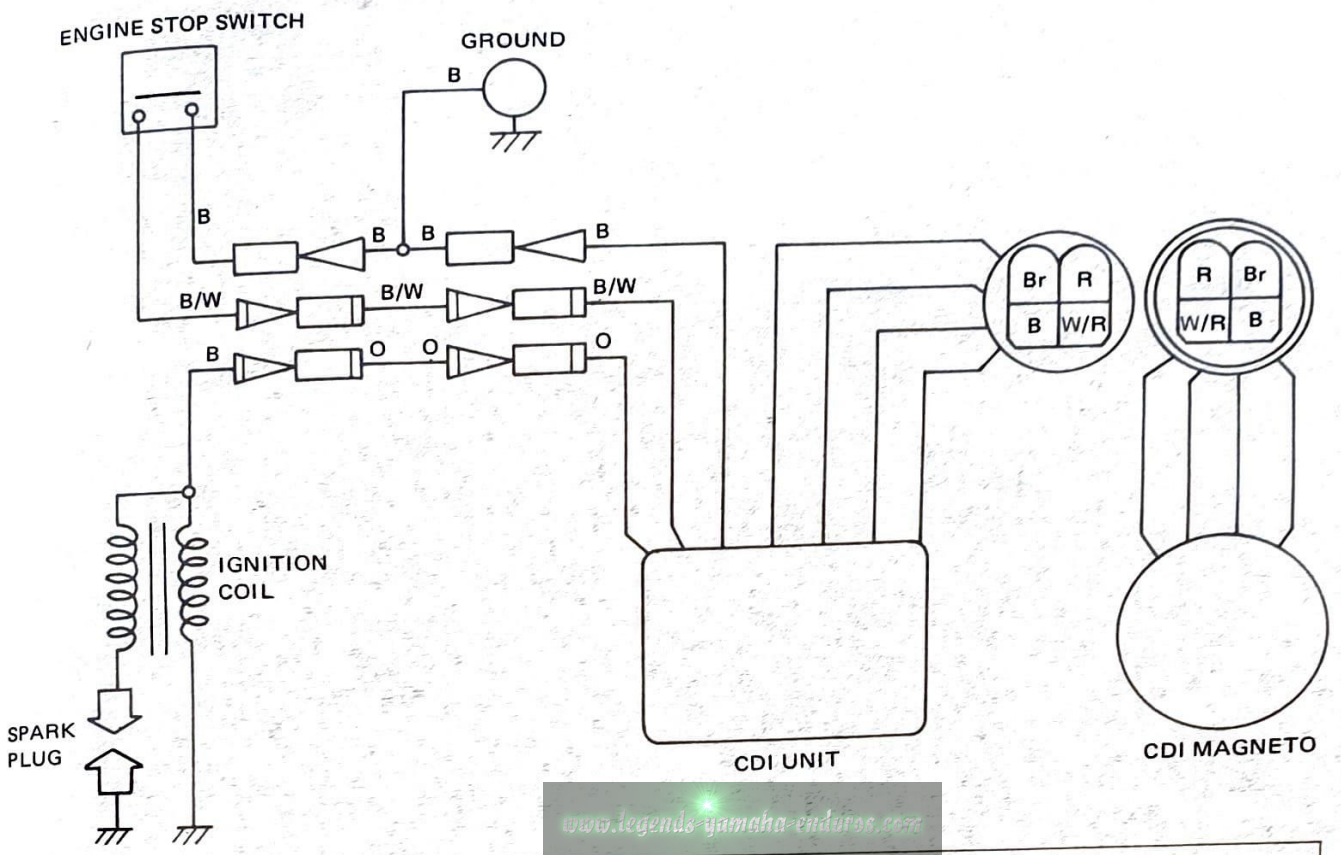


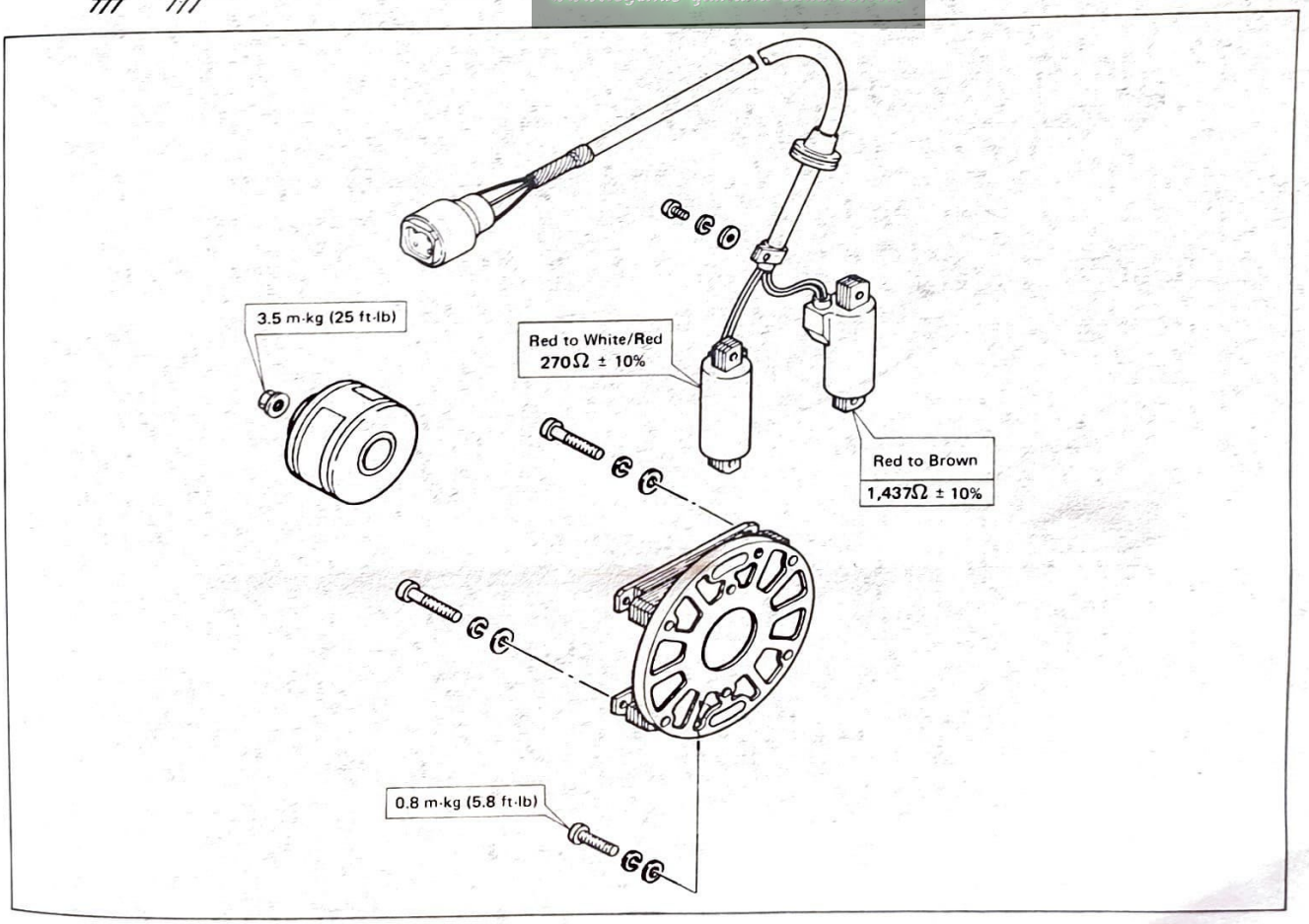
Pulser coil resistance:
Red to White/Red: 270Ω ± 10%

If other than specified. → Replace pulser coil

OK → Replace C.D.I. unit

WIRING DIAGRAM





7 APPENDICES

7 APPENDICES

TROUBLE SHOOTING GUIDE

Engine is hard to start or does not start.

Ignition System	
Possible Cause	Remedy
1. Spark plug is wet.	• Clean or replace
2. Ignition coil is faulty.	• Replace
3. C.D.I. unit is faulty.	• Replace
4. C.D.I. magneto is faulty (Pulser coil, source coil)	• Replace
5. Ignition timing is incorrect.	• Adjust
6. Wire is broken, shorted or disconnected.	• Repair, replace or connect
7. Engine stop switch is shorted.	• Repair or replace

Compression System	
Possible Cause	Remedy
1. Piston rings are sticking or worn.	• Replace
2. Cylinder or piston is worn or scratched.	• Repair or replace
3. Compression leaks past cylinder head gasket. (Head is distorted.)	• Replace (or repair)
4. Crankshaft side oil seal is faulty.	• Replace
5. Air leaks past crankcase sealing surfaces.	• Repair

Air/Fuel System	
Possible Cause	Remedy
1. Carburetor pilot jet is clogged.	• Clean
2. Fuel petcock or pipe is clogged.	• Clean
3. Float valve is faulty. (Float height is too high or too low.)	• Replace (remove gasoline from crankcase)
4. Reed valve is broken or deformed.	• Replace
5. Fuel tank filler cap or carburetor breather pipe is clogged.	• Clean
6. Air screw is improperly adjusted.	• Adjust
7. Fuel is deteriorated.	• Replace
8. Oil-gas mixing ratio is incorrect.	• Replace
9. Air leakes through carburetor joints.	• Retighten or replace gasket.

Poor high speed performance

Ignition System	
Possible Cause	Remedy
1. Spark plug is dirty or plug gap is too narrow.	• Clean, repair or replace
2. C.D.I. unit is faulty.	• Replace
3. C.D.I. magneto is faulty.	• Replace
4. Ignition coil is faulty.	• Replace
5. Ignition timing is incorrect.	• Adjust
6. Loose wire connection.	• Repair
Compression System	
Possible Cause	Remedy
1. Piston rings are sticking or worn.	• Replace
2. Cylinder or piston is worn or scratched.	• Repair or replace
3. Compression leaks past crankcase sealing surfaces or crankshaft side oil seal.	• Repair or replace
4. Carbon deposits in combustion chamber (Piston, Cylinder head).	• Decarbonize
5. Power valve system is malfunction.	• Repair
Air/Fuel System	
Possible Cause	Remedy
1. Clogged carburetor jets.	• Clean
2. Improperly adjusted main jet (High speed)	• Adjust
3. Improperly adjusted jet needle (Medium speed)	• Adjust
4. Incorrect fuel level	• Adjust
5. Dirty or clogged air cleaner element	• Clean
6. Clogged fuel tank filler cap or carburetor breather pipe.	• Clean
7. Clogged fuel petcock or kinked fuel pipe.	• Clean or repair
8. Deteriorated fuel.	• Replace
9. Improper oil-gas mixing ratio	• Replace
10. Cracked or broken exhaust pipe (Leakage of exhaust gases).	• Replace

Overheat

Possible Cause	Remedy
1. Incorrect air-fuel mixture	• Adjust
2. Air leaks through carburetor joint.	• Repair or replace
3. Incorrect ignition timing	• Adjust
4. Carbon builds up in cylinder head or on piston head.	• Decarbonize
5. Improper spark plug heat range(tooth hot)	• Replace
6. Fuel is deteriorated or oil-gas mixing ratio is incorrect.	• Replace

Overheating	
Possible cause	Remedy
1. Coolant of inferior quality.	• Replace with specified type.
2. Coolant level is low.	• Add upto specified line.
3. Water pump is faulty.	• Repair or replace.
4. Cooling passage is clogged.	• Clean passage.
5. Radiator is clogged.	• Clean radiator.
Low coolant level	
1. Radiator is leaky.	• Repair or replace.
2. Hose is damaged or joint is loose.	• Replace hose or retighten joint.
3. Steering head is leaky.	• Retighten steering nut or replace oil seal.
4. Water pump cover is leaky.	• Repair or replace.
5. Cylinder head O-ring is faulty.	• Replace.

Transmission and shifter

Trouble	Possible Cause	Remedy
Gears slip off	1. Gear dogs are worn.	• Replace
	2. Shift forks are bent. (burnt or worn)	• Replace
	3. Shift cam stopper spring is fatigued.	• Replace
Gear shifts skipping over the next	1. Shift cam stopper spring is fatigued.	• Replace
	2. Shift forks are bent. (burnt or worn)	• Replace
Gear does not shift correctly.	1. Shift cam is worn. (broken)	• Replace
	2. Change shaft is bent.	• Replace
	3. Shifter spring is broken.	• Replace
	4. Gears are broken.	• Replace
Shift pedal does not return.	1. Change return spring is broken.	• Replace
	2. Change shaft is bent.	• Replace

Clutch

Trouble	Possible Cause	Remedy
Clutch slips	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.	• Replace • Replace • Replace • Replace • Adjust • Adjust • Reassemble
Clutch drags	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.	• Replace • Replace • Replace • Adjust • Replace

Chassis

Steering head is loose	
Possible Cause	Remedy
1. Roller is worn. 2. Steering lock nut is loose.	• Replace • Retighten

Wheels have excessive run-out	
Possible Cause	Remedy
1. Bearing is worn. 2. Rim has dent. 3. Spokes are loose (or broken). 4. Axle nut is loose.	• Replace • Repair or replace • Retighten or replace • Retighten

Brakes		
Problem	Possible Cause	Remedy
Faulty	1. Brake shoes are worn. 2. Brake is improperly adjusted. 3. Brake drum contains water. 4. Lining is greasy.	• Replace • Adjust • Clean • Degrease or replace
Not return smoothly	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	• Grease or replace • Grease • Replace • Grease

Frame and Swingarm	
Possible Cause	Remedy
1. Frame is cracked. 2. Rear arm is bent. 3. Rear arm is cracked. 4. Bushing is worn.	Weld, reinforce or replace Repair or replace Replace Replace

SPECIFICATIONS

A. General

MODEL	YZ125J
Model:	
Model (I.B.M. No.)	5X4
Frame I.D. and Starting Number	5X4-000101
Engine I.D. and Starting Number	5X4-000101
Dimension:	
Overall length	2,150 mm (84.65 in)
Overall width	870 mm (34.25 in)
Overall height	1,255 mm (49.41 in)
Seat height	940 mm (37.0 in)
Wheelbase	1,465 mm (57.68 in)
Minimum ground clearance	350 mm (13.78 in)
Weight:	
Net weight	91 kg (200 lb)

B. Engine

MODEL	YZ125J
Description:	
Engine type	Liquid cooled, 2-stroke, Gasoline Torque induction system
Engine model	5X4
Displacement	123 cm^3
Bore x Stroke	56 mm x 50 mm (2.2 in x 1.97 in)
Compression ratio	7.7 ~ 9.8 : 1
Starting system	Primary kick starter
Ignition system	Capacitor Discharge Ignition
Lubrication system	Mixed Gas 24 : 1 (Yamalube "R") 20 : 1 (Castrol R30, A545)
Cylinder head:	
Cylinder head volume	11.2 cm^3
Combustion chamber type	Dome + Squish
Head gasket material/thickness	O-rings
Cylinder.	
Material	Aluminum cylinder with cast iron sleeve
Bore size	56 mm (2.205 in)
Wear limit	56.1 mm (2.208 in)
Taper limit	0.08 mm (0.003 in)
Out of round limit	0.05 mm (0.002 in)
Piston:	
Piston skirt clearance	0.070 ~ 0.075 mm (0.0028 ~ 0.0030 in)
Measuring point	19 mm (0.75 in)
Piston oversize	56.25, 56.50, 56.75, 57.00 mm (2.215, 2.224, 2.234, 2.244 in)

MODEL	YZ125J
Piston ring: Ring design Ring end gap, installed Ring groove side clearance	 Plain ring 0.35~0.5 mm (0.014~0.0197 in) ≪0.8 mm≫ 0.03~0.07 mm (0.0012~0.0028 in)
Small end bearing Type	 Needle bearing (16 x 20 x 19.5)
Big end bearing. Type	 Needle bearing (22 x 29 x 16)
Crankshaft: Crank width (F) Crank shaft deflection (D) Con-rod small end deflection (S) Big end side clearance (C) Crank bearing type, L R Crank oil seal, L R	 $56^{-0.05}_{-0.10}$ mm ($2.205^{-0.002}_{-0.004}$ in) 0.03 mm (0.0012 in) 0.8~2.0 mm (0.032~0.079 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
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 62/18 (3.444) 3.0 mm/2.7 mm (0.12 in/0.006 in) 1.6 mm/0.05 mm (0.063 in/0.0020 in) 36.0 mm/35.0 mm (1.42 in/1.38 in) 0.20~0.25 mm (0.008~0.009 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) Drive axle oil seal type (R) Secondary reduction method ratio	 Constant mesh, 6-speed return 32/13 (2.461) 26/14 (1.857) 24/16 (1.500) 25/20 (1.250) 21/19 (1.105) 20/20 (1.000) Total: 850 cm^3 (0.75 Imp qt, 0.90 US qt) Exchange: 800 cm^3 (0.70 Imp qt, 0.85 US qt) Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil 6303Z Needle bearing (25 x 15 x 12) Needle bearing (25 x 15 x 12) 6304 SD 26 x 38 x 5 Chain 46/12 (3.833)

MODEL	YZ125J
Shifting mechanism:	
Type	Guide bar type
Oil seal type	S12 x 21 x 4
Shift fork finger thickness/limit	4.85 mm/4.45 mm (0.191 in/0.175 in)
Intake:	
Air cleaner, type	Oiled foam rubber
Oil grade	Foam-air-filter oil
Reed valve, type	"V" type
Bending limit	1.4 mm (0.055 in)
Valve lift	7.0 ± 0.2 mm (0.28 ± 0.008 in)
Carburetor:	
Type and manufacturer	VM34SS/MIKUNI
I.D. mark	5X400
Main jet (M.J.)	# 260
Jet needle- clip position (J.N.)	6F21-3
Needle jet (N.J.)	Q-0
Cutaway (C.A.)	2.5
Pilot jet (P.J.)	#65
Air screw turns out (A.S.)	1 and 1/2
Starter jet (G.S.)	80
Float height	23.4 mm ± 1.0 mm (0.92 in ± 0.04 in)
Cooling:	
Radiator core size	
– Width	160 mm (6.3 in)
– Height	100 mm (3.94 in)
– Thickness	32 mm (1.26 in)
Radiation capacity	5,200 kcal/h
Radiator cap opening pressure	0.9 kg/cm^2
Coolant capacity (Total)	1.0L (0.88 Imp qt, 1.06 US qt)
Recommended coolant mixing ratio	50%
Water pump	
– Type	Single-suction centrifugal pump
– Bearing type	6001
– Oil seal type	SW12-31-13.5
– Reduction ratio	31/20 (1.55)

C. Chassis

MODEL	YZ125J
Frame:	
Design	Tubular steel semi double cradle
Steering:	
Caster	27.5°
Trail	118 mm (4.65 in)
Head pipe bearing type	Taper roller bearing

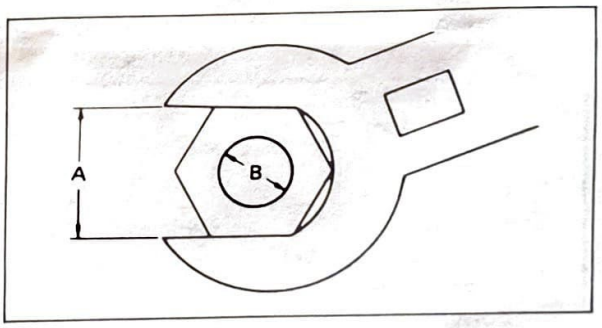
MODEL	YZ125J
Front suspension:	
Type	Telescopic fork
Damper type	Coil, air spring, and oil damper
Fork travel	300 mm (11.8 in)
Front fork spring, free length	658 mm (25.9 in)
	K = 0.285 kg/mm
Fork oil quantity	454 cm^3 (16.0 Imp oz, 15.3 US oz)
Oil level	150 mm (5.9 in)
type	Fork oil 10 wt
Oil seal type	SD-38-50-10.5
Air pressure	0 kPa (0 kg/cm^2, 0 psi)
Rear suspension:	
Type	Monocross suspension (De Carbon system)
Damper type	Coil, gas spring + Oil damper
Gas pressure	784 kPa (8 kg/cm^2, 114 psi)
Gas properties	Nitrogen gas
Rear shock absorber spring:	
Free length	355 mm (13.98 in)
Fitting length	342 mm (13.46 in)
Spring rate (Taper coil spring)	K = 3.0 kg/mm
Rear shock absorber travel	137 mm (5.39 in)
Rear wheel travel	310 mm (12.20 in)
Swing arm:	
deflection (rear end)	0 ~ 1.0 mm (0 ~ 0.039 in)
free play (pivot shaft)	0 ~ 0.2 mm (0 ~ 0.0079 in)
Pivot shaft - bearing type	Needle bearing + TA2210Z/2
Fuel tank:	
Capacity	8.2 L (1.8 IMP gal, 2.2 US gal)
Wheels:	
Tire size (F)	3.00-21-4PR
(R)	4.10-18-4PR
Pattern	Nobby
Pressure (Normal)	
Front	98 kPa (1.0 kg/cm^2, 14 psi)
Rear	98 kPa (1.0 kg/cm^2, 14 psi)
Rim size (F)	1.60-21
(R)	1.85-18
Run out (vert.)	
Front — limit	2 mm (0.08 in)
Rear — limit	2 mm (0.08 in)
Run out (horiz.)	
Front — limit	2 mm (0.08 in)
Rear — limit	2 mm (0.08 in)
Bearing type and size	
Front wheel (L)	6202-RS
(R)	6202
Rear wheel (L)	6203
(R)	6203RS, 6203
Oil seal type and size	
Front wheel (R)	SD-20-35-7
Rear wheel (L)	SD-25-47-7

MODEL	YZ125J
Drive chain: Type Number of links Free play	 DK520DS 103L + Joint 15.875 mm (0.625 in) 30~35 mm (1.18~1.38 in)
Brakes (Front and Rear): Type Brake drum I.D. Brake shoe dia. x width (F) (R) Lining length Lining thickness/wear limit Shoe springs free length	 Drum brake (Leading/trailing) 130 mm (5.12 in) 130 mm x 22 mm (5.12 in x 0.87 in) 130 mm x 28 mm (5.12 in x 1.12 in) 136 mm (5.35 in) 4 mm/2 mm (0.16 in/0.079 in) 36.5 mm (1.44 in)

D. Electrical

MODEL	YZ125J
Ignition system: System Manufacture Model Charge coil resistance Low speed: High speed/ Pulser coil resistance	 Capacitor Discharge Ignition Hitachi M100-32 1,437Ω ± 10% Red to Brown 270Ω ± 10% Red to White/Red
Ignition timing (B.T.D.C.)	1.88 ± 0.15 mm (0.074 ± 0.006 in)
Ignition coil: Manufacture Model Spark gap Primary winding resistance Secondary winding resistance	 Hitachi CM61-20C 6 mm (0.28 in) or more/300 r/min 0.6Ω ± 10% 6.2kΩ ± 20%
Spark plug: Manufacture and type Gap	 Champion N-84 0.5~0.6 mm (0.020~0.024 in)
C.D.I. unit: Manufacture Model	 Hitachi TIA01-39

A (NUT)	B (BOLT)	TORQUE SPECIFICATION	
		m-kg	ft-lb
10 mm	6 mm	0.6	4.3
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



Tightening torque

Engine		Torque
Spark plug:	M14	25 Nm (2.5 m·kg, 18 ft·lb)
Cylinder head, stud	M8	13 Nm (1.3 m·kg, 10 ft·lb)
, nut	M8	25 Nm (2.5 m·kg, 18 ft·lb)
Cylinder drain bolt	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Cylinder - nut	M10	35 Nm (3.5 m·kg, 25 ft·lb)
stud	M10	13 Nm (1.3 m·kg, 10 ft·lb)
Power valve - allen bolt	M5	6 Nm (0.6 m·kg, 5 ft·lb)
- bolt	M5	8 Nm (0.8 m·kg, 6 ft·lb)
- panhead screw	M5	5 Nm (0.5 m·kg, 4 ft·lb)
- flange nut	M5	5 Nm (0.5 m·kg, 4 ft·lb)
- thrust plate	M5	5 Nm (0.5 m·kg, 4 ft·lb)
- bracket	M5	5 Nm (0.5 m·kg, 4 ft·lb)
- governer fork	M5	5 Nm (0.5 m·kg, 4 ft·lb)
- housing	M5	5 Nm (0.5 m·kg, 4 ft·lb)
Housing cover - panhead screw	M6	10 Nm (1.0 m·kg, 7 ft·lb)
- bolt	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Intake manifold	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Crankcase	M6	12 Nm (1.2 m·kg, 9 ft·lb)
Crankcase cover	M6	10 Nm (1.0 m·kg, 9 ft·lb)
Crankcase cover 1	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Chain case cover	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Bearing cover plate	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Holder	M8	16 Nm (1.6 m·kg, 12 ft·lb)
Plate	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Oil drain bolt	M12	20 Nm (2.0 m·kg, 14 ft·lb)
Kickstarter lever	M10	35 Nm (3.5 m·kg, 25 ft·lb)
Primary drive gear	M12	80 Nm (8.0 m·kg, 58 ft·lb)
Clutch	M14	80 Nm (8.0 m·kg, 58 ft·lb)
Push rod 1	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Clutch spring	M5	5 Nm (0.5 m·kg, 4 ft·lb)
Drive sprocket	M16	65 Nm (6.5 m·kg, 46 ft·lb)
Shift pedal	M6	10 Nm (1.0 m·kg, 7 ft·lb)
Stopper lever	M6	15 Nm (1.5 m·kg, 11 ft·lb)
Magneto rotor	M10	35 Nm (3.5 m·kg, 26 ft·lb)
Magneto backing plate	M6	8 Nm (0.8 m·kg, 6 ft·lb)
Chassis		
Front wheel axle	M14	60 Nm (6.0 m·kg, 43 ft·lb)
Handle crown:		
Inner tube	M8	23 Nm (2.3 m·kg, 17 ft·lb)
Steering shaft	M22	120 Nm (12 m·kg, 85 ft·lb)
Handle holder	M8	23 Nm (2.3 m·kg, 17 ft·lb)
Front fork:		
Cap bolt	M34	23 Nm (2.3 m·kg, 17 ft·lb)
Under bracket	M8	23 Nm (2.3 m·kg, 17 ft·lb)
Damper unit	M12	35 Nm (3.5 m·kg, 25 ft·lb)
Axle holder	M6	10 Nm (1.0 m·kg, 7.2 ft·lb)
Steering bearing	M25	10 Nm (1.0 m·kg, 7.2 ft·lb)
Engine mount:		
Front upper bracket	M8	28 Nm (2.8 m·kg, 20 ft·lb)
Upper frame	M8	23 Nm (2.3 m·kg, 17 ft·lb)
Lower	M8	28 Nm (2.8 m·kg, 20 ft·lb)

Rear wheel axle	M16	85 Nm (8.5 m·kg, 61 ft·lb)
Driven sprocket	M8	28 Nm (2.8 m·kg, 20 ft·lb)
Rear shock:		
Frame	M10	30 Nm (3.0 m·kg, 22 ft·lb)
Link arm	M10	30 Nm (3.0 m·kg, 22 ft·lb)
Pivot shaft	M16	85 Nm (8.5 m·kg, 61 ft·lb)
Foot peg	M10	65 Nm (6.5 m·kg, 47 ft·lb)
	M12	80 Nm (8.0 m·kg, 58 ft·lb)
Torque arm:		
Frame	M8	23 Nm (2.3 m·kg, 17 ft·lb)
Brake plate	M8	23 Nm (2.3 m·kg, 17 ft·lb)
Brake shoe cam	M6	9 Nm (0.9 m·kg, 6.5 ft·lb)
Axle holder	M6	10 Nm (1.0 m·kg, 7.2 ft·lb)
L arm:		
Frame	M16	85 Nm (8.5 m·kg, 61 ft·lb)
I arm:	M12	60 Nm (6.0 m·kg, 43 ft·lb)

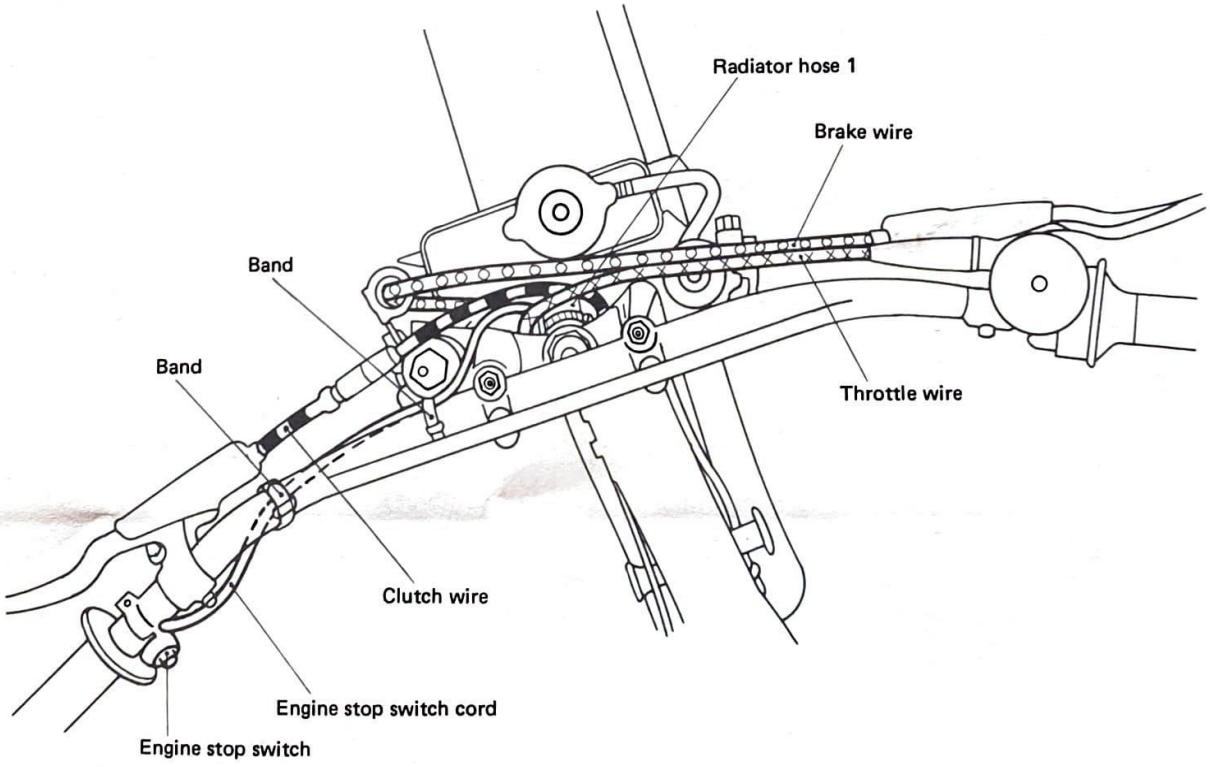
CONVERSION TABLE

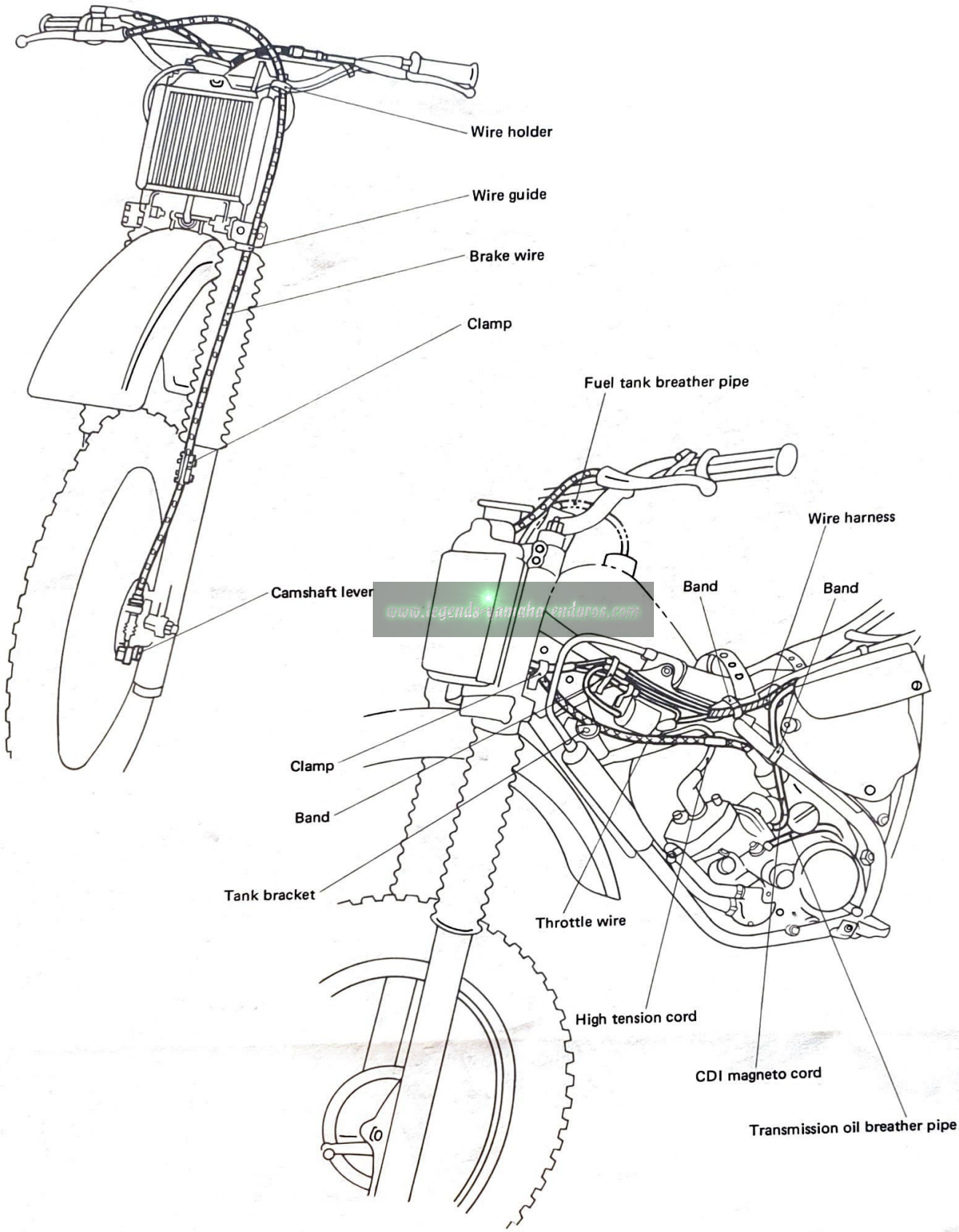
METRIC TO INCH SYSTEM			
	KNOWN	MULTIPLIER	RESULT
TORQUE	m-kg	7.233	ft-lb
	m-kg	86.80	in-lb
	cm-kg	0.0723	ft-lb
	cm-kg	0.8680	in-lb
WT.	kg	2.205	lb
	g	0.03527	oz
FLOW/DISTANCE	km/ℓ	2.352	mpg
	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
VOL./CAPACITY	cc (cm^3)	0.03382	oz (US liq)
	cc (cm^3)	0.06102	cu.in
	ℓ(liter)	2.1134	pt (US liq)
	ℓ(liter)	1.057	qt (US liq)
	ℓ(liter)	0.2642	gal (US liq)
MISC.	kg/mm	56.007	lb/in
	kg/cm^2	14.2234	psi (lb/in^2)
	Centigrade(℃)	9/5(℃)+32	Fahrenheit (℉)

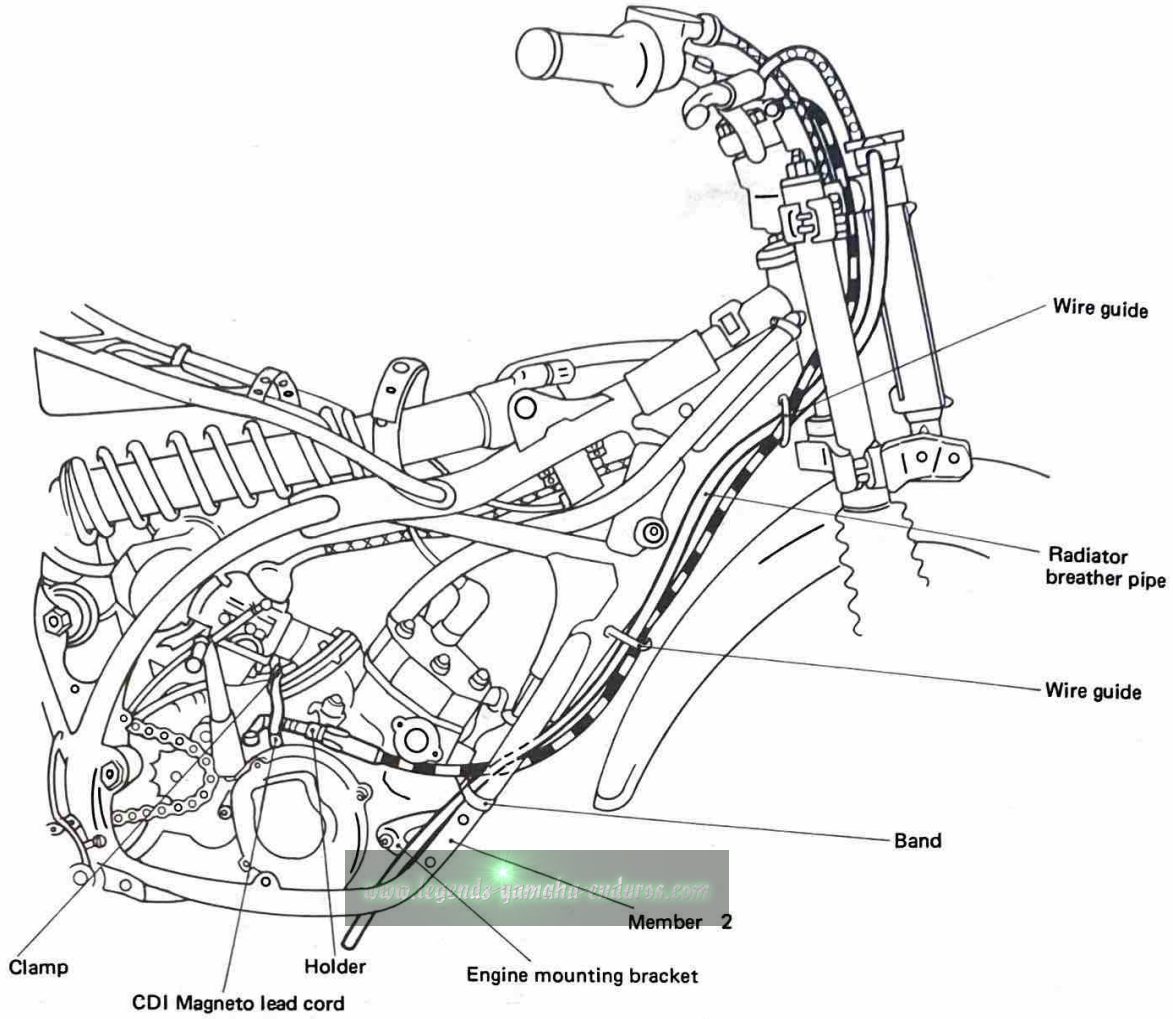
INCH TO METRIC SYSTEM			
	KNOWN	MULTIPLIER	RESULT
TORQUE	ft-lb	0.13826	m-kg
	in-lb	0.01152	m-kg
	ft-lb	13.831	cm-kg
	in-lb	1.1521	cm-kg
WT.	lb	0.4535	kg
	oz	28.352	g
FLOW/DISTANCE	mpg	0.4252	km/ℓ
	mph	1.609	km/hr
	mi	1.609	km
	ft	0.3048	m
	yd	0.9141	m
	in	2.54	cm
	in	25.4	mm
VOL./CAPACITY	oz (US liq)	29.57	cc (cm^3)
	cu.in	16.387	cc (cm^3)
	pt (US liq)	0.4732	ℓ(liter)
	qt (US liq)	0.9461	ℓ(liter)
	gal (US liq)	3.785	ℓ(liter)
MISC.	lb/in	0.017855	kg/mm
	psi(lb/in^2)	0.07031	kg/cm^2
	Fahrenheit(℃)	5/9(℉−32)	Centigrade(℉)

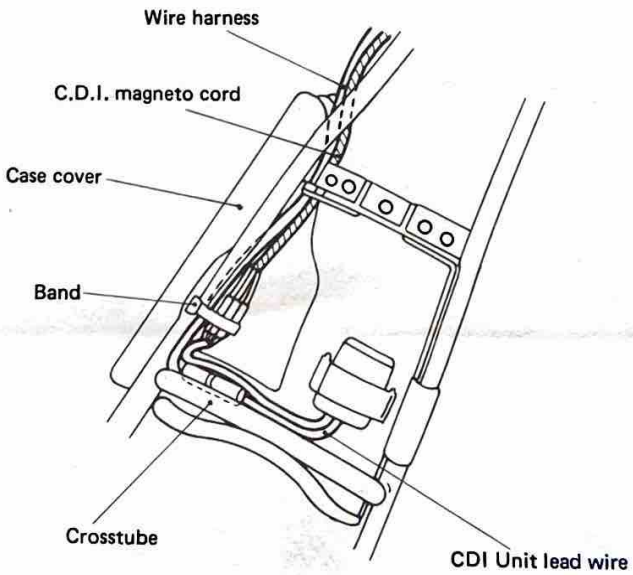
CABLE ROUTING DIAGRAM

1. Brake wire
   Lever (right) – Wire holder (clamp to handle crown) – Wire guide (under-bracket) – Clamp (outer tube) – Cam-shaft lever
2. Clutch wire
   Lever (left) – Behind the brake wire – Right side of radiator hose – Wire guide (lower right of head pipe) – Wire guide (down-tube) – Inner side of member 2 – Holder (clamp to cylinder) – Clutch axle lever.
3. Throttle wire
   Grip cap – Behind the clutch wire – Left side of radiator hose 1 – Clamp (lower left of head pipe) – Rear shock remote tank – Inner side of hose – Over the fuel tank bracket – Carburetor
4. Tank cap breather pipe
   Tank cap – Under the handle tension pipe – Left side of radiator hose 1 (between radiator and handle crown)






Wire guide
Radiator breather pipe
Wire guide
Band
Member 2
Clamp
Holder
Engine mounting bracket
CDI Magneto lead cord


Wire harness
C.D.I. magneto cord
Case cover
Band
Crosstube
CDI Unit lead wire

WARRANTY INFORMATION

STATEMENT OF PURCHASER'S RESPONSIBILITY

This (model) Yamaha motorcycle is sold AS IS, WITHOUT ANY WARRANTIES EXPRESSED OR IMPLIED REGARDLESS OF THE INTENDED USE.
THE PURCHASER OF THIS MOTORCYCLE, which is intended for competition purposes, IS RESPONSIBLE FOR ALL COSTS OF SERVICE AND/REPAIR.

YAMAHA MOTOR CO.,LTD.
IWATA, JAPAN