YAMAHA

YZ250N

OWNER'S SERVICE MANUAL

LIT-11626-04-77

56A-28199-10

IMPORTANT NOTICE

THIS MACHINE IS DESIGNED STRICTLY FOR COMPETITION USE ONLY. IT IS ILLEGAL TO OPERATE THIS VEHICLE ON STREET. OFF ROAD USE ON PUBLIC LAND MAY BE ILLEGAL. PLEASE CHECK YOUR LOCAL RIDING AREA REGULATIONS. SUSPENSION ON THIS MACHINE CAN BE ADJUSTED. **FOR DETAILS OF TUNING, REFER TO THE RACE PREPARATION AND TUNING MANUAL.**

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, gloves, boots, trousers, and jacket for motocross riding.**
7. **The side stand should be removed whether in races or practice.**

YZ250N
OWNER'S SERVICE MANUAL

1st. edition, July 1984

Printed in Japan
P/N LIT-11626-04-77

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.

F.I.M. MOTORCYCLE WEIGHTS

Weights of motorcycles without fuel
The minimum weights for motocross motorcycles are:
for the class 125 cc . . . . . minimum 88 kg (194 lb)
for the class 250 cc . . . . . minimum 98 kg (216 lb)
for the class 500 cc . . . . . minimum 102 kg (225 lb)
In modifying your bike (e.g., for weight reduction), take note of the above limits of weight.

OVERSEAS SERVICE
OVERSEAS OPERATIONS
YAMAHA MOTOR CO.,LTD.

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1 GENERAL INFORMATION

1 GENERAL INFORMATION

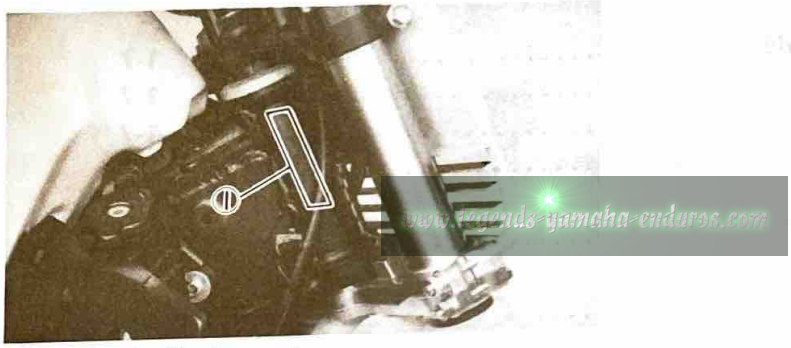
MACHINE IDENTIFICATION

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.

Vehicle identification number

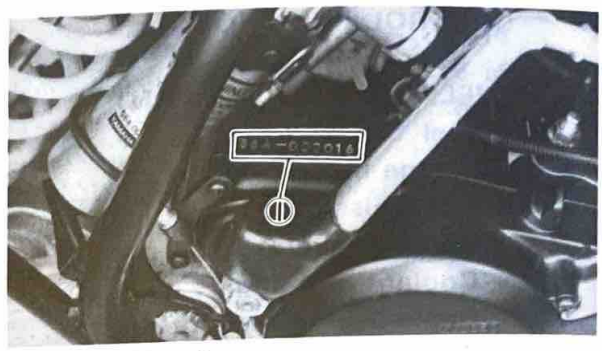
The vehicle identification number is stamped on the right of the steering head pipe.



1. Vehicle identification number

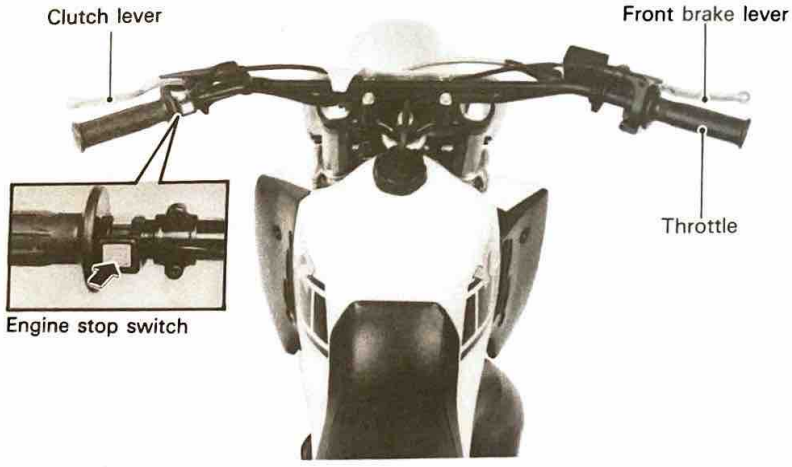
Engine serial number

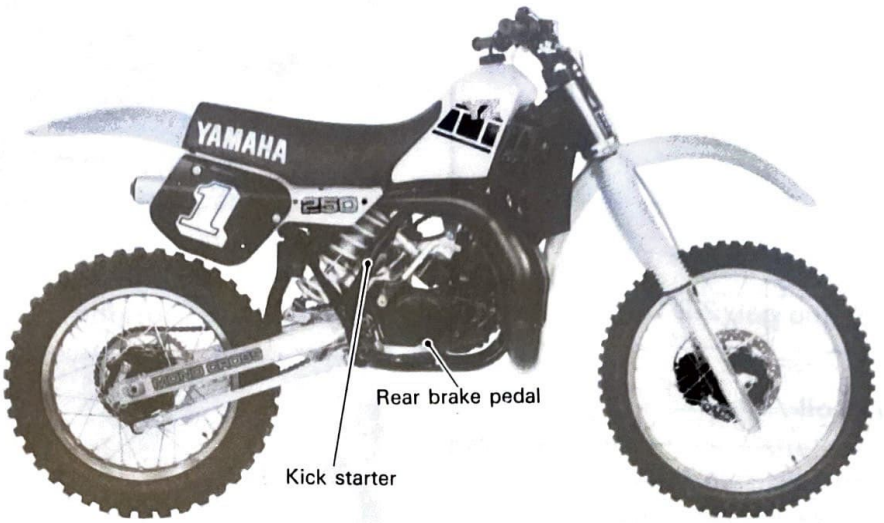
The engine serial number is stamped into the elevated part of the right rear section of the engine.

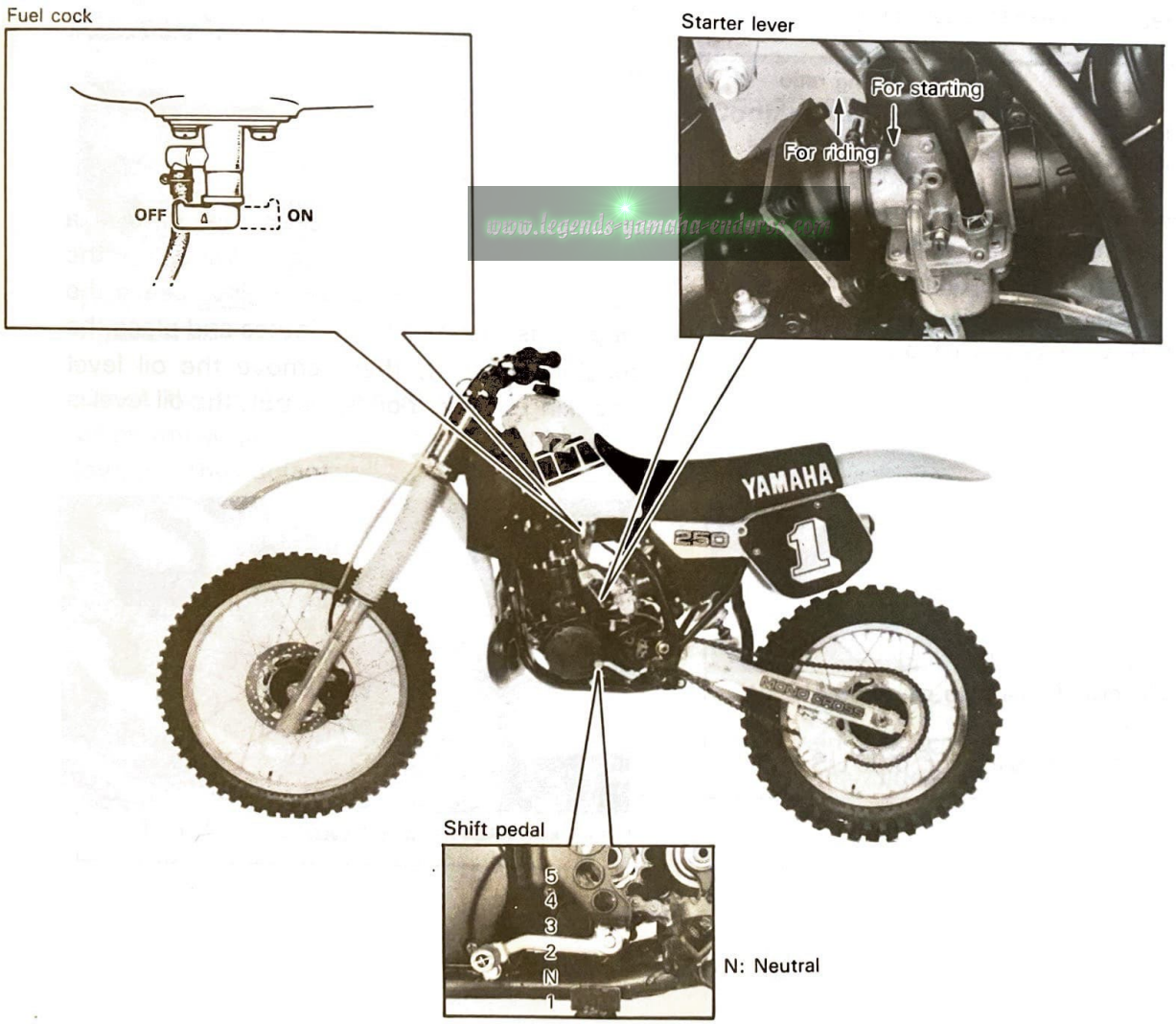


1. Engine serial number

CONTROL FUNCTIONS







FUEL, OIL AND COOLANT

Fuel

Recommended fuel:
Premium fuel with an octane rating of at least 90

Fuel tank capacity:
8.5 L (1.9 Imp gal, 2.2 US gal)

Engine mixing oil

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.

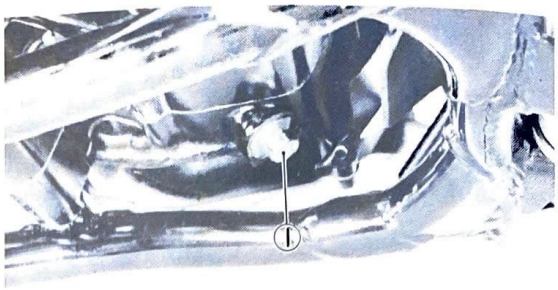
Recommended oil	Mixing ratio
Castrol R30 A545 A747	20 : 1

CAUTION:

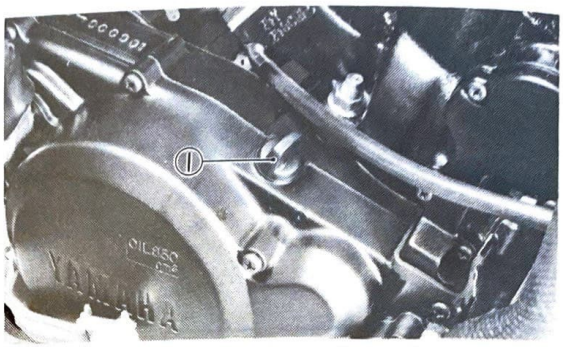
Never mix two types of oil in the same batch; clotting of the oil could result.

Transmission oil

Recommended oil:
Yamalube 4-cycle oil or SAE 10W 30 SE motor oil
Periodic oil change:
850 cm^3 (0.74 Imp qt, 0.89 US qt)
Overhaul:
900 cm^3 (0.79 Imp qt, 0.95 US qt)



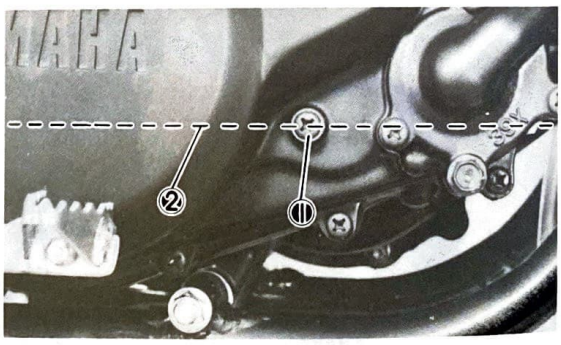
1. Drain plug



1. Filler plug

CHECKING OIL LEVEL

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

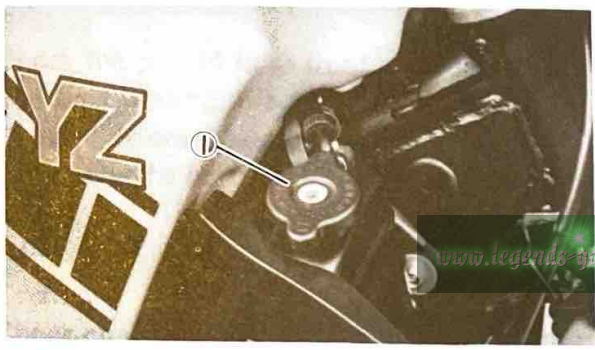


1. Checking screw 2. Oil level

Coolant level

WARNING:

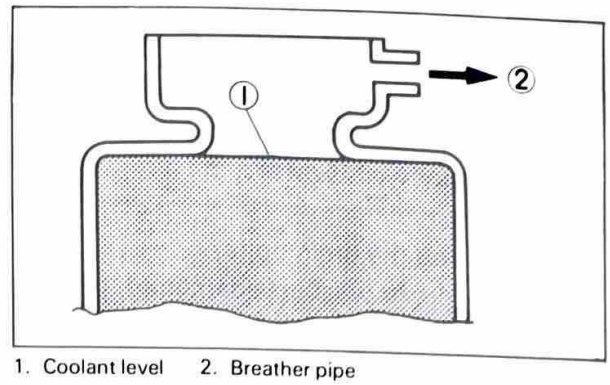
Do not remove the radiator cap, drain bolts and hoses when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, place a thick towel over the radiator cap, slowly rotate the cap counterclockwise to 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. Radiator cap

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

Recommended coolant:
High quality ethylene glycol antifreeze containing corrosion inhibitors for alminum engine
Capacity:
1.0 L (0.88 Imp qt, 1.057 US qt)
Mixed ratio:
1 : 1 (50% water, 50% coolant)



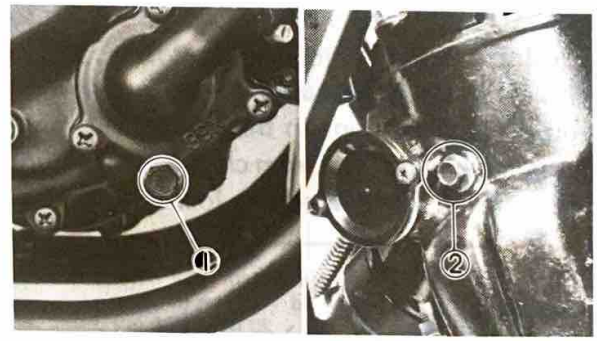
1. Coolant level 2. Breather pipe

CAUTION:

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

Coolant draining

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 remove the cylinder drain bolt.



1. Pump cover drain bolt 2. Cylinder drain bolt

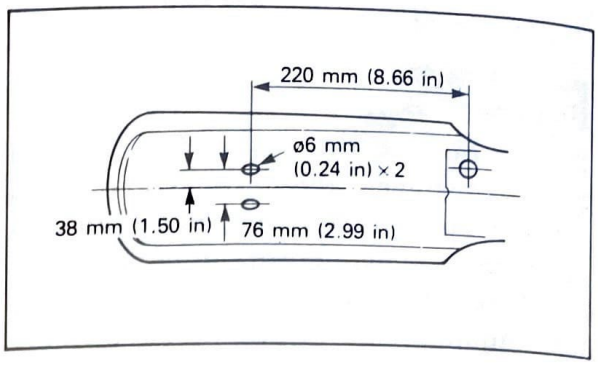
4. Drain the coolant completely. Thoroughly flush the cooling system with clean tap water.

CAUTION:

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

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

Drain bolt:
10 Nm (1.0 m·kg, 7.2 ft·lb)



Replenishing coolant

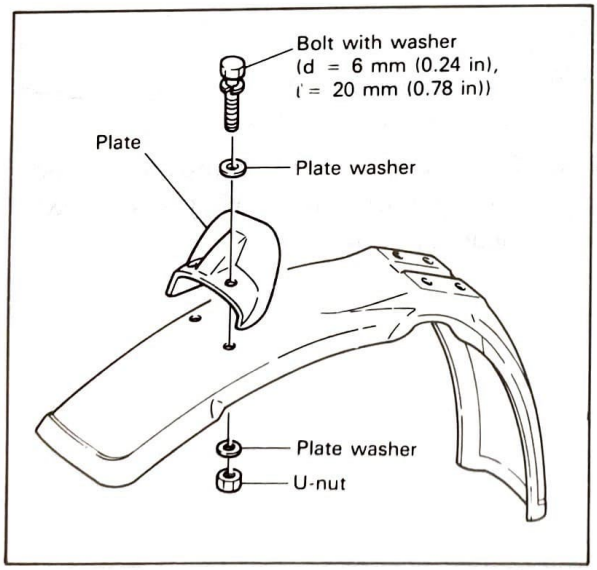
NOTE:

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.
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.

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

Before riding for break-in operation, practice or a race, make sure the machine is in good operating condition.

INSPECTION AND MAINTENANCE

Cooling water
Check that water is filled up to the radiator filler cap.

Fuel
Check that a fresh mixture of oil and gasoline is filled in the fuel tank.

Gear oil
Check that the gear oil level is correct.

Gear shifter and clutch
Check that gears can be shifted correctly in order and that the clutch operates smoothly.

Brakes
Check the play of both front and rear brakes and their braking effect.

Brake actuated suspension
Check that the brake pedal height and free play are correct. Then check that it operates correctly.

Chain
Check chain slack and alignment. Check that the chain is lubricated properly.

Wheels
Is the tire pressure correct?
Check for excessive wear. Check for loose spokes and have no excessive play.

Steering
Check that the handlebars can be turned smoothly and have no excessive play.

Front forks and rear shock
Check that they operate smoothly and there is no oil leakage.

Cables (Wires)
Check that the clutch and throttle cables move smoothly. Check that they are not caught when the handlebars are turned or when the front forks travel up and down.

Muffler
Check that the muffler is tightly mounted and has no cracks.

Sprocket
Check that the rear wheel sprocket tightening bolt is not loose.

Bolts and nuts
Check the chassis and engine for loose bolts and nuts.

Fuel, oil and coolant
Check the fuel tank, fuel cock, carburetor, engine bottom, and cooling system for leakage.

Lead wire connectors
Check that the CDI magneto, CDI unit, and ignition coil are connected tightly.

Settings
Is the machine set suitably for the condition of the racing course and weather or by taking into account the results of test-runs before racing? Is inspection and maintenance completely done?

*The machine should be checked and serviced regularly so that only a simple, minor adjustment of settings is required prior to a race.

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 cock and push the starter lever down on the carburetor. With the throttle completely closed, kickstart the engine with a smooth, firm stroke. Using the starter lever 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 lever raised completely.

CAUTION:

Do not warm up the engine for extended periods.

Starting a warm engine

Do not push the starter lever down. 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 full-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, remove the top end, and inspect the piston and cylinder; instructions for this are on page 3-5. 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. 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 AND 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

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MAINTENANCE INTERVALS

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 lubrication intervals. If you are a doubt as to what intervals to follow in maintaining and lubricating your machine, consult your Yamaha dealer.

Item	After break-in	Every race	Every third	Every fifth	As required	Remarks
PISTON Inspect and clean Replace	●	●		●	●	Inspect crack Remove carbon
PISTON RING Inspect Replace	●	●	●		●	Check ring end gap
PISTON PIN, SMALL END BEARING Inspect Replace				●	●	
CYLINDER HEAD Inspect and clean Retighten	● ●	● ●				Remove carbon Check gasket
CYLINDER Inspect and clean Replace	●	●			●	seizure wear
Y.P.V.S. Check operation and retighten	●	●				
CLUTCH Inspect and adjust Replace	●	●			●	Inspect friction plate, clutch plate and spring
TRANSMISSION Replace oil Inspect transmission	●			●	●	Yamalube 4-cycle oil or SAE 10W30 SE motor oil
SHIFT CAM, FORK Inspect					●	Inspect wear
ROTOR NUT Retighten				●		
MUFFLER Inspect Clean	●	●		●		
CRANK Inspect and clean				●	●	
CARBURETOR Inspect, adjust and clean	●	●				
SPARK PLUG Inspect and clean Replace	●	●			●	STD plug: N-86, N-86G, N-2G, N-2C, B8EG, B8EGV Gap: 0.5 ~ 0.6 mm (0.020 ~ 0.024 in)
DRIVE CHAIN Lubricate, slack, alignment Replace	●	●			●	Use chain lube Chain slack: 20 ~ 30 mm (0.8 ~ 1.2 in)

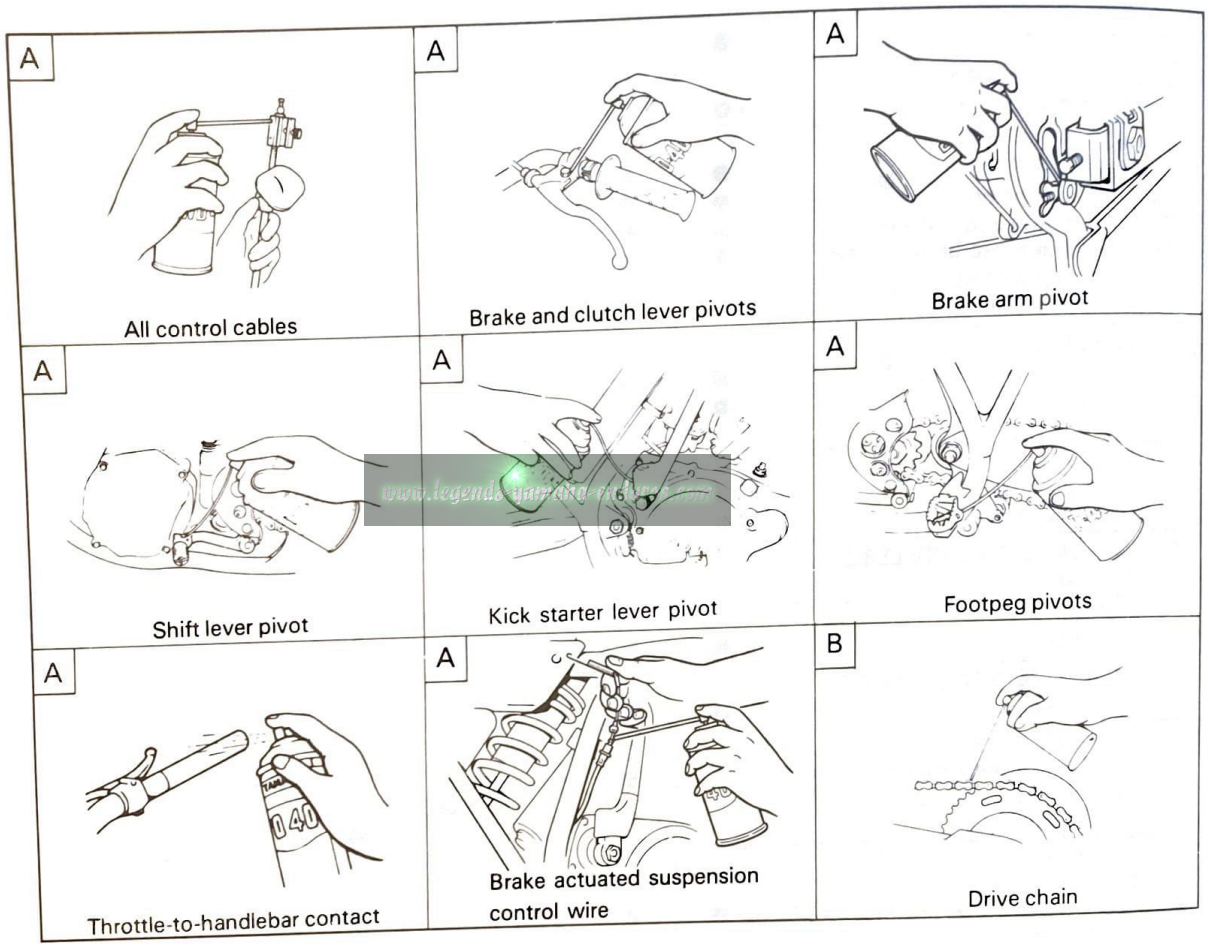
Item	After break-in	Every race	Every third	Every fifth	As required	Remarks
COOLING SYSTEM Check coolant level and leakage Check radiator cap operation Replace coolant Inspect hoses	●	● ●			 ● ●	Every two years
OUTSIDE NUTS AND BOLTS Retighten	●	●				
AIR FILTER Clean and oil Replace	●	●			 ●	Use Foam air-filter oil or SAE 10W30 motor oil
FRAME Clean and inspect	●	●				
FUEL TANK, PETCOCK Clean and inspect	●		●			
BRAKES Adjust free play Lubricate pivot point Check fluid level and leakage Retighten brake disc bolts, caliper bolts and union bolts Replace linings/pads	● ● ● ●	● ● ● ●			 ●	Brake pad wear limit: 0.8 mm (0.32 in) Lining wear limit: 2 mm (0.08 in)
FRONT FORKS Inspect and adjust Replace oil Replace oil seal	● ●	●		●	 ●	Fork oil 15 wt
REAR SHOCK Inspect and adjust lube and retighten	● ●	● ●				Lithium base grease
CHAIN GUARD AND ROLLERS Inspect and replace					●	
SWINGARM Inspect and retighten	●	●				
RELAY ARM, CONNECTING ROD Inspect and lube	●	●				Lithium base grease
STEERING HEAD Inspect free play and retighten Clean and lube Replace bearing	●	●		●	 ●	Medium weight wheel bearing grease
TIRE, WHEELS Inspect air pressure, wheel run-out, tire wear and spoke looseness Retighten sprocket bolt Inspect bearings Replace bearings Lubricate	● ●	● ●	 ● ●		 ● 	Medium weight wheel bearing grease
THROTTLE, CONTROL CABLE Check routing and connection Lubricate	● ●	● ●				Yamaha cable lube SAE 10W30 motor oil
OUTSIDE NUTS AND BOLTS Retighten	●	●				

LUBRICATION

To ensure smooth operation of all components, lubricate your machine during setup, after break-in, and after every race.
Before lubricating, thoroughly clean the machine of sand, dirt and water.

A. Use Yamaha cable lube or WD-40 on these areas.

B. Use racing chain lube.

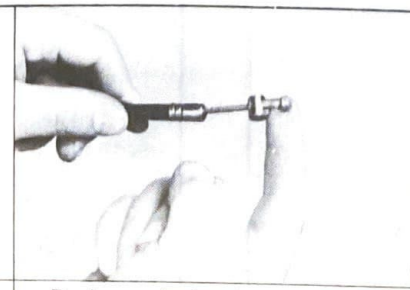


C. Lubricate the following areas with high-quality, lightweight lithium-soap base grease:

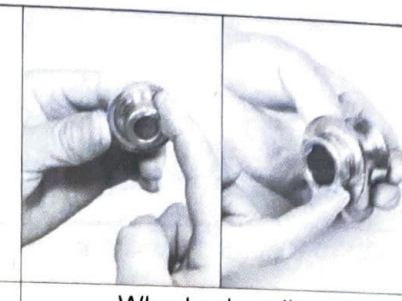
CAUTION:

Wipe off any excess grease, and avoid getting grease on the brake disc and brake shoes.

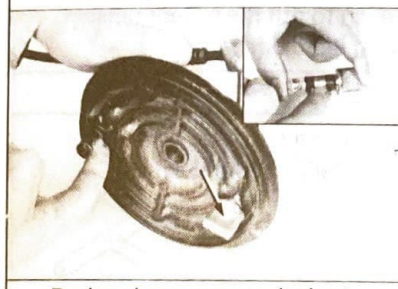
Throttle guide and wire end



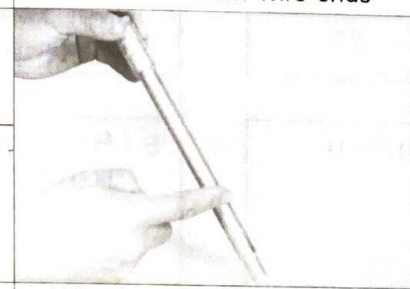
Brake and clutch wire ends



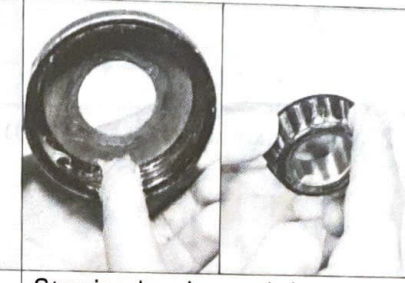
Wheel axle collar



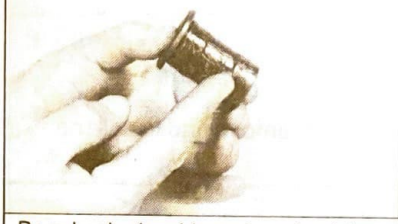
Brake shoe cam and pivot



Wheel axles and pivot shaft

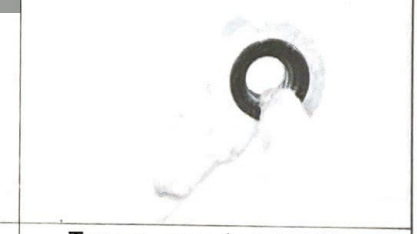


Steering bearing and dust cover

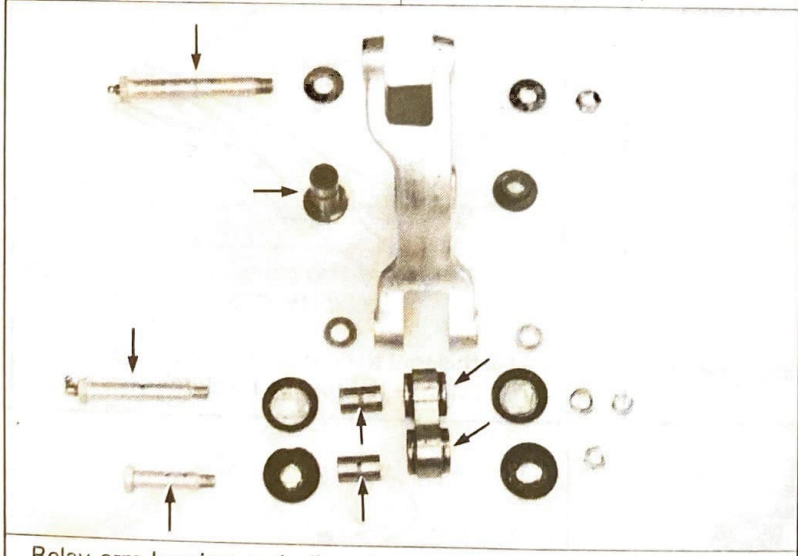


Rear brake backing plate bushing

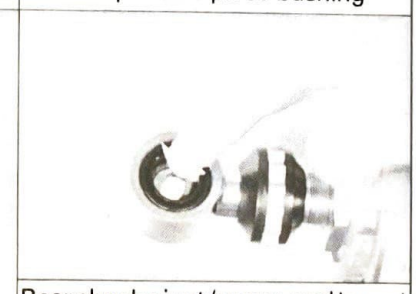
Brake pedal pivot



Torque arm pivot bushing



Relay arm bearing and oil seal
Connecting rod bearing and oil seal

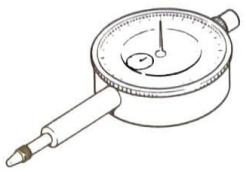


Rear shock pivot (upper and lower)

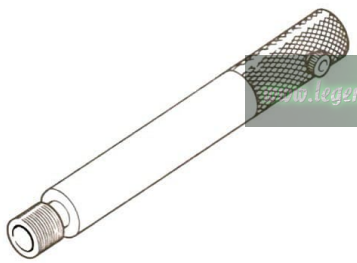
SPECIAL TOOLS

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

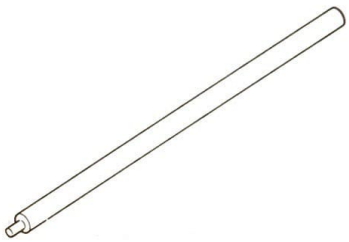
1 Dial gauge (T/No. YU-03097)



2 Dial gauge stand (T/No. YU-01256-1)

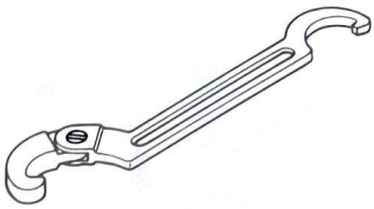


3 Dial gauge extension (T/No. YU-01256-2)



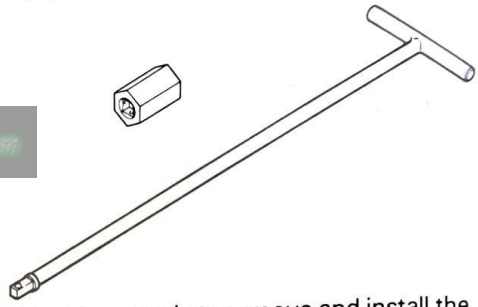
Tools 1,2, and 3 are used to set the ignition timing.

4 Steering nut wrench (T/No. YU-01268)



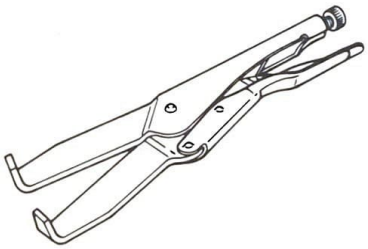
Use this wrench to put the proper tension on the steering head bearings.

5 Fork cylinder holder and adapter (T/No. YM-33962, YM-01326)



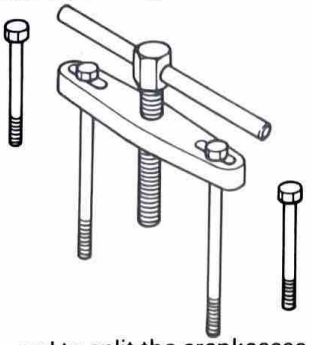
Use these tools to remove and install the fork cylinder.

6 Clutch holding tool (T/No. YM-91042)



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

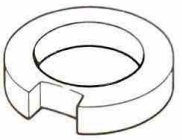
7 Crankcase separating tool (T/No. YU-01135)



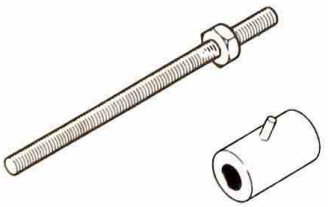
This tool is used to split the crankcases as well as remove the crankshaft from either case.

8 Crankshaft installing tool (YU-90058)

9 Spacer (YU-90059)

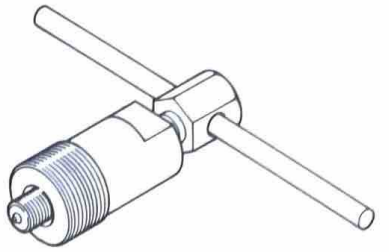


10 Crankshaft installing bolt and adapter (T/No. YU-90060, YU-90062)



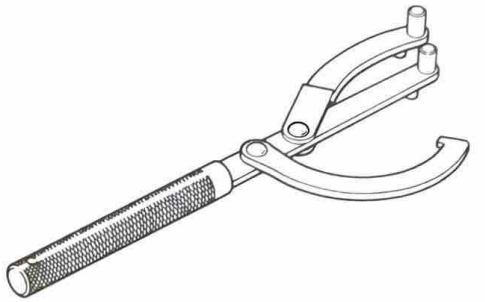
Tools 8, 9, and 10 are used to install the crankshaft.

11 Rotor puller (T/No. YM-01189)

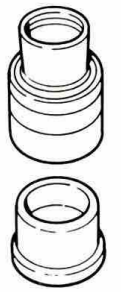


This tool is used to remove the magneto.

12 Universal Rotor holder (T/No. YU-01235)



13 Fork seal and bushing service tool (T/No. YM-08020)



This tool is used to install the fork oil seal.

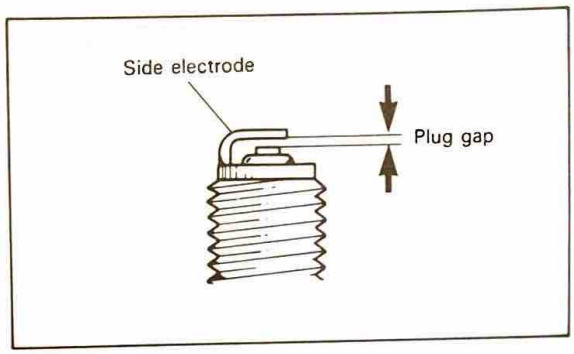
14 Yamaha pocket tester (YU-03112)

Use this tool to measure the coil resistance, output voltage and amperage.

Spark plug

Standard spark plug:
N-86 N-86G, N-2G, N-2C, (CHANPION)
B8EG B8EGV (NGK)

Spark plug gap:
0.5 ~ 0.6 mm (0.02 ~ 0.024 in)



1. Whenever a new spark plug is installed, the gap must be checked and adjusted 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)

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

Ignition timing

Checking

Ignition timing is checked with a timing light by observing the position of the case mark and rotor mark.

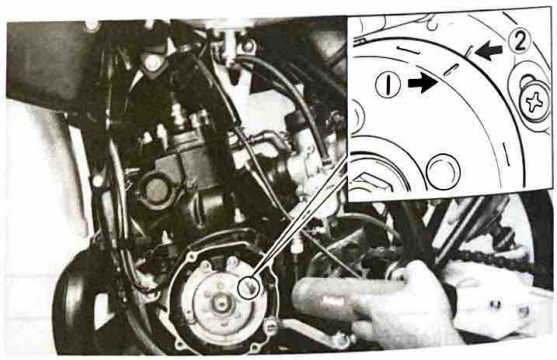
NOTE:

If no tachometer and timing light are available, make a check using a dial gauge in the manner specified in "AJUSTMENTS."

1. Remove the crankcase cover (L). When removing, press the shift pedal down.
2. Connect the timing light to the spark plug lead wire.
3. Start the engine and keep it running at the specified speed. Use a tachometer for checking.

Specified speed: 8,500 r/min

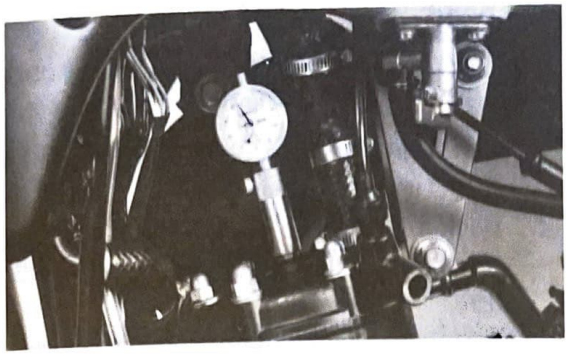
4. While keeping the engine running at a specified speed, check that the rotor mark is aligned with the case mark. If they are not aligned, adjust the ignition timing.



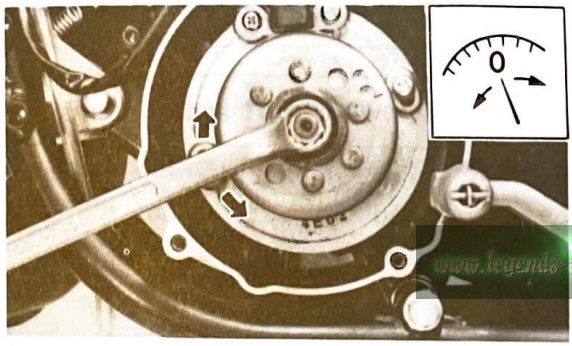
1. Rotor mark 2. Case mark

Adjustment

1. Remove the spark plug.
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.

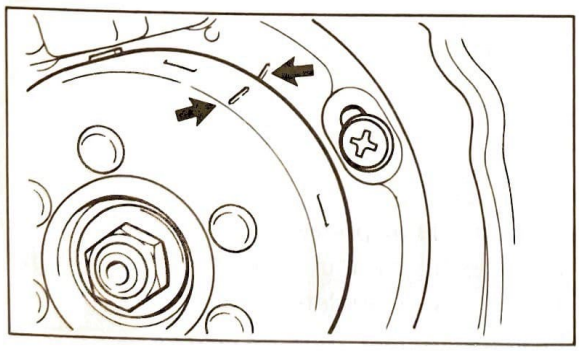


4. Rotate the magneto rotor until the piston reaches top dead center (TDC). When this happens, the needle on the dial gauge will stop and reverse directions even though the rotor is being turned in the same direction. Zero the dial gauge at TDC.

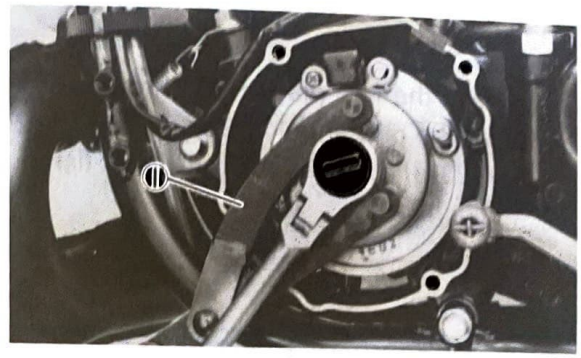


5. From TDC, rotate the rotor clockwise until the dial gauge indicates that the piston is at a specified distance from TDC. At this point, the scribed marks on the rotor and the stator plate should be aligned.

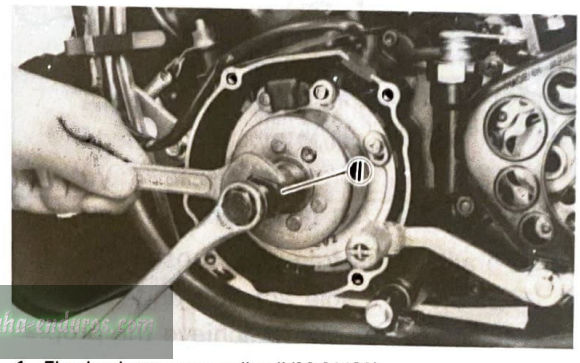
Ignition timing: B.T.D.C.
1.50 ± 0.1 mm (0.06 ± 0.004 in)



6. If the marks are not aligned, punch a new mark on the crankcase in line with the rotor mark.
7. Remove the flywheel magneto using the magneto holder and flywheel puller.

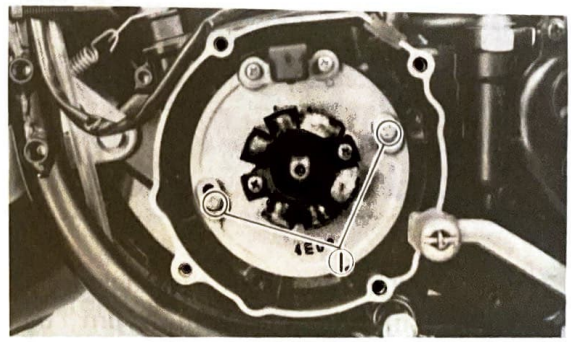


1. Rotor holding tool (YU-01235)



1. Flywheel magneto puller (YM-01189)

8. Loosen the base set screws and turn the base right or left until the base mark aligns the new mark. And tighten the base set screws.



1. Set screw

9. Reinstall the flywheel and tighten the nut.

Flywheel magneto:
85 Nm (8.5 m · kg, 61 ft · lb)

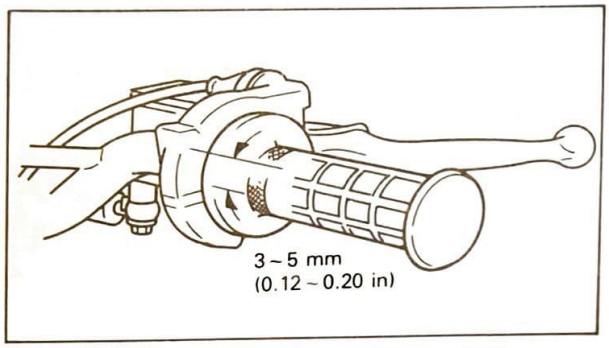
10. Remove the dial gauge assembly and stand, and reinstall the spark plug. Torque the plug to specification.

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

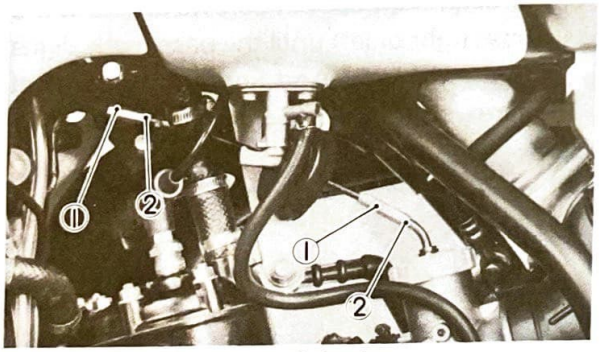
11. Reinstall the left-hand crankcase cover and the side cover.

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 locknut.



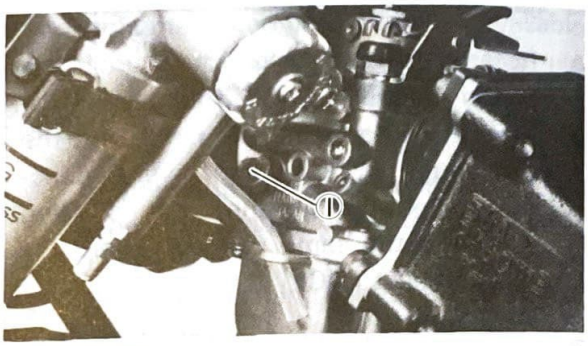
1. Adjuster 2. Locknut

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

*For carburetor tuning, refer to the Race preparation and Tuning manual.

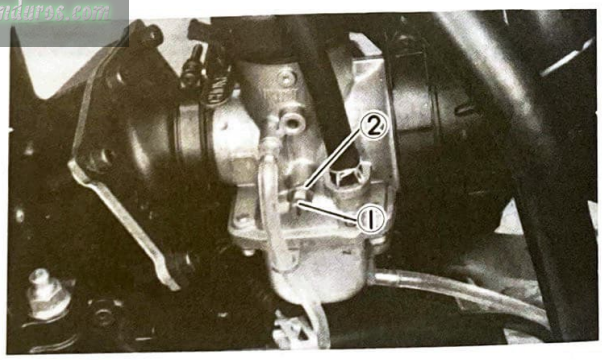
1. Screw in the pilot air screw until it is lightly seated.
2. Back out by the specified number of turns. Start the engine and let it warm up.



1. Pilot air screw

Pilot air screw setting: 1 and 1/2 turns out

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



1. Throttle stop screw 2. Locknut

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 locknut.

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.

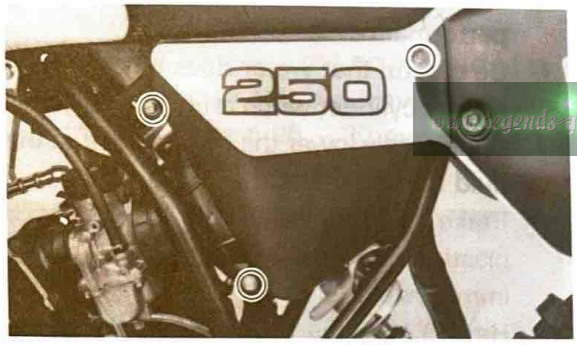
Air filter

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.

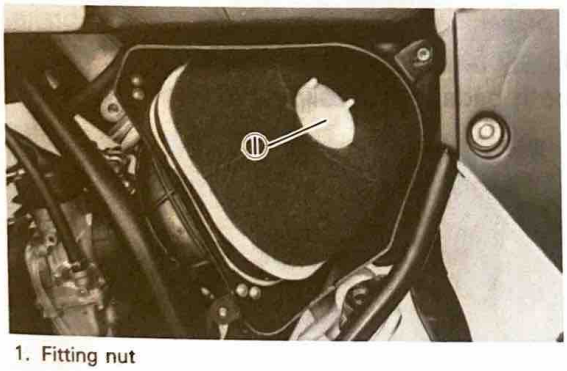
CAUTION:

Never run the engine without the air filter element 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 left side cover.

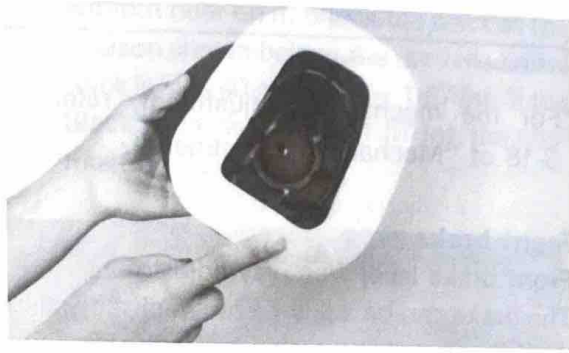


2. Remove the fitting nut and remove the air filter element, as shown below.



1. Fitting nut

3. Separate the element from the filter cage.
4. Wash the element gently but thoroughly in solvent, squeeze the solvent out of the element, and allow the element to dry.
5. Pour a small quantity of **foam-air-filter oil** on the element and work it thoroughly into the foam. Squeeze out the excess oil.
6. Reinstall the element on the filter cage, and coat the sealing edge of the element assembly with light grease to provide an airtight seal.



7. After checking the air inlet hose for any obstructions, carefully reinstall the element assembly in the air filter box. Reinstall the fitting nut and tighten it.

CAUTION:

Do not overtighten the fitting nut to avoid distorting the filter element cage.

8. Reinstall the left side cover.
9. Inspect the air filter joint and intake manifold rubber for tears and cracks. Replace them if any damage is found.

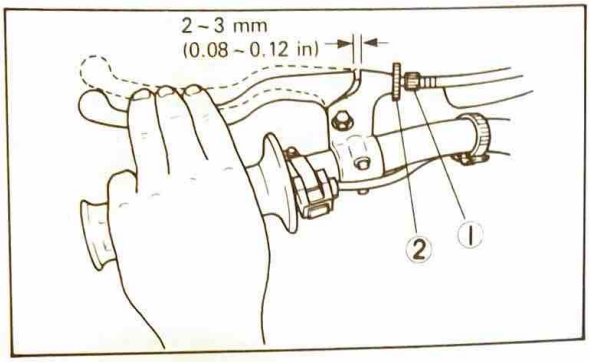
NOTE:

Each time filter element is serviced check inside air box for any signs of dirt or dust.

Clutch lever

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

1. 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 locknut.



1. Adjuster 2. Locknut

*For the mechanical adjustment, refer to 3-18 of "Mechanism adjustment".

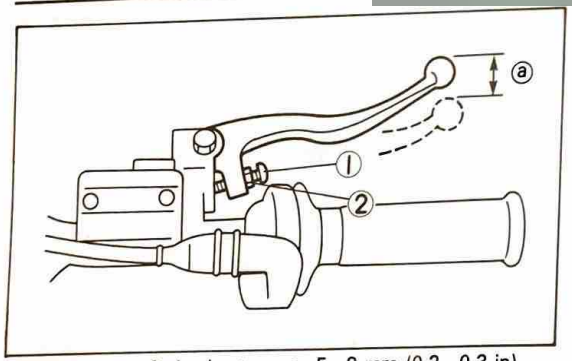
Front brake

Front brake lever free play adjustment

The brake can be adjusted by simply adjusting the free play of the brake lever. The piston in the caliper moves forward as a brake pad wears out, automatically adjusting the clearance between the brake pads and brake disc.

CAUTION:

Proper lever free play is essential to avoid excessive brake drag.



1. Adjuster 2. Locknut a. 5 ~ 8 mm (0.2 ~ 0.3 in)

1. Loosen the adjuster locknut on the brake lever.
2. Turn the adjuster so that the brake lever movement at the lever end is 5 ~ 8 mm (0.2 ~ 0.3 in) before the adjuster contacts the master cylinder piston.
3. After adjusting, tighten the locknut.

Brake fluid level

Insufficient brake fluid may let air enter the brake system, possibly causing the brakes to become ineffective.

Before riding, check the brake fluid level and replenish when necessary; observe these precautions:


1. Lower level

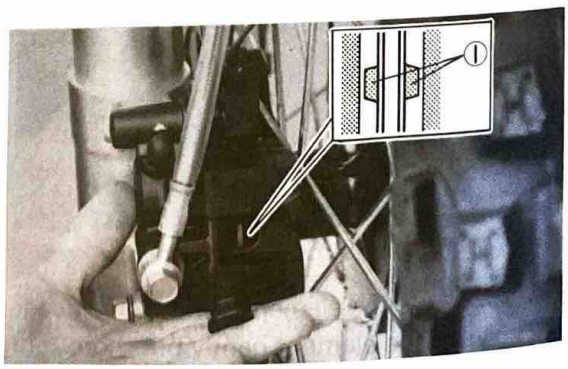
1. Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.

Brake fluid: DOT #3

2. Add the brake fluid to the reservoir so that all the air in it is completely expelled.
3. Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
3. Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.
5. Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.
6. Have a Yamaha dealer check the cause if the brake fluid level goes down.

Front brake pad

To check, examine the pads in the front brake. If any pad is worn to the wear limit, replace both pads in the caliper.



1. Wear indicator

Wear limit: 0.8 mm (0.03 in)

Rear brake

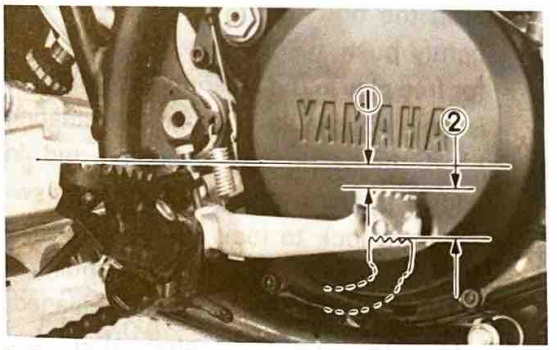
In adjusting the rear brake, the pedal height should first be set and then the free play should be adjusted.

CAUTION:

To permit the interlocking mechanism with the rear suspension to operate correctly, set the brake pedal height and free play properly.

Brake pedal hight:
0 ± 10 mm (0 ± 0.4 in)
Below the top of the footrest
Brake pedal free play:
20 ~ 30 mm (0.8 ~ 1.2 in)

1. Loosen the locknut on the brake pedal height adjuster, and turn the adjuster to achieve the desired pedal height according to rider preference. Tighten the locknut.
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. Brake pedal height 2. Free play

1. Adjusting nut

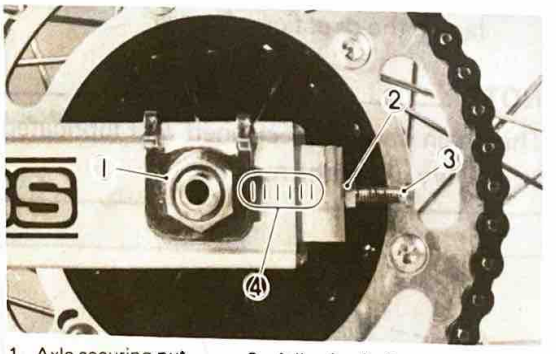
Drive chain

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 without rider on it, check the slack at the position shown below; the normal vertical slack is 30 ~ 40 mm (1.18 ~ 1.57 in). If the Slack exceeds 40 mm (1.57 in), the chain must be adjusted.

a. 20 ~ 30 mm (0.8 ~ 1.2 in)

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



1. Axle securing nut
2. Locknut
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 swing arm on each side to ensure proper axle alignment.
4. Tighten the locknuts on the adjusting bolts.

5. Tighten the axle securing nut to specification.

Axle nut:
100 Nm (10.0 m · kg, 70 ft · lb)

6. Adjust the brake pedal free play.

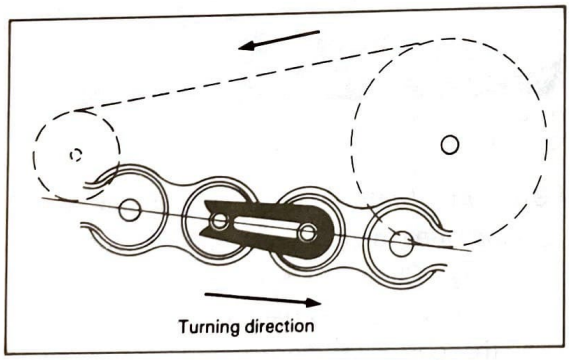
CAUTION:

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.
9. 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.

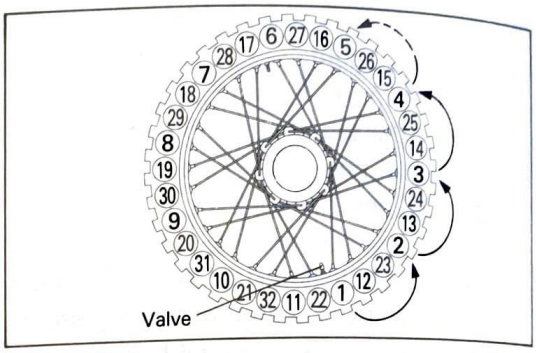


*For the maintenance of the sprocket and chain, refer to 4-4.

Spokes

Be sure to retighten these spokes before and after Break-in. After a practice or a race check spokes for looseness.

1. Perform the retightening at an interval of three spokes as shown below.
2. The retightening will be completed at No. 32 after three turns of the wheel. If there still spokes that are short of torque, then repeat the same procedure.

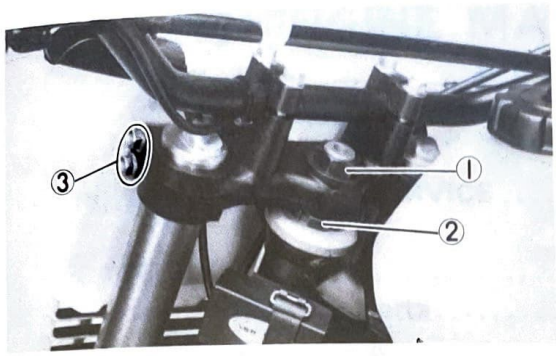


Nipple:
6 Nm (0.6 m · kg, 4.3 ft · lb)

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.

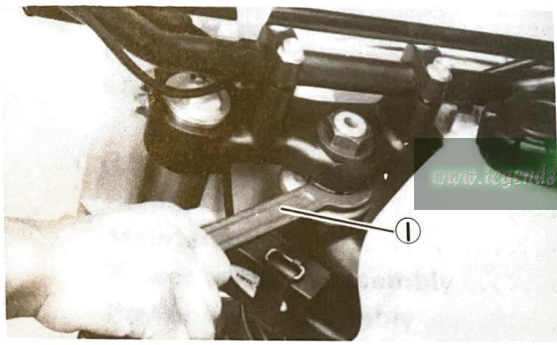
2. To adjust the bearings, first loosen the steering fitting nut and inner tube pinch bolts.



1. Steering fitting nut 2. Ring nut 3. Pinch bolts

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.

Steering ring nut:
10 Nm (1.0 m · kg, 7.2 ft · lb)



1. Steering nut wrench (YU-01268)

4. Torque the steering fitting nut and inner tube pinch bolts to specification.

Fitting nut:
85 Nm (8.5 m · kg, 61 ft · lb)
Pinch bolt:
23 Nm (2.3 m · kg, 17 ft · lb)

CAUTION:

After a short running period, check steering head for proper adjustment.

3 ENGINE MAINTENANCE AND REPAIR

3

3 ENGINE MAINTENANCE AND REPAIR

PREPARATION FOR SERVICE

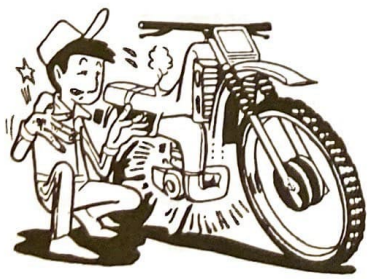
Prior to beginning any work on the engine, take note of the following bits of advice; they will greatly facilitate your engine maintenance and repair:

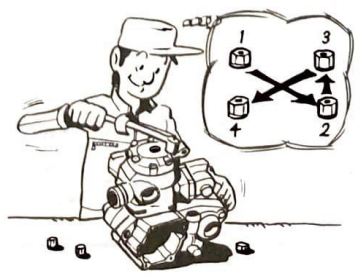
NOTE:

The engine removal is required for the servicing of the transmission, crankshaft, and bearings, oil seals, etc, of the crankcase. The procedures in page 3-2 to 3-22 are not accompanied by the engine removal.

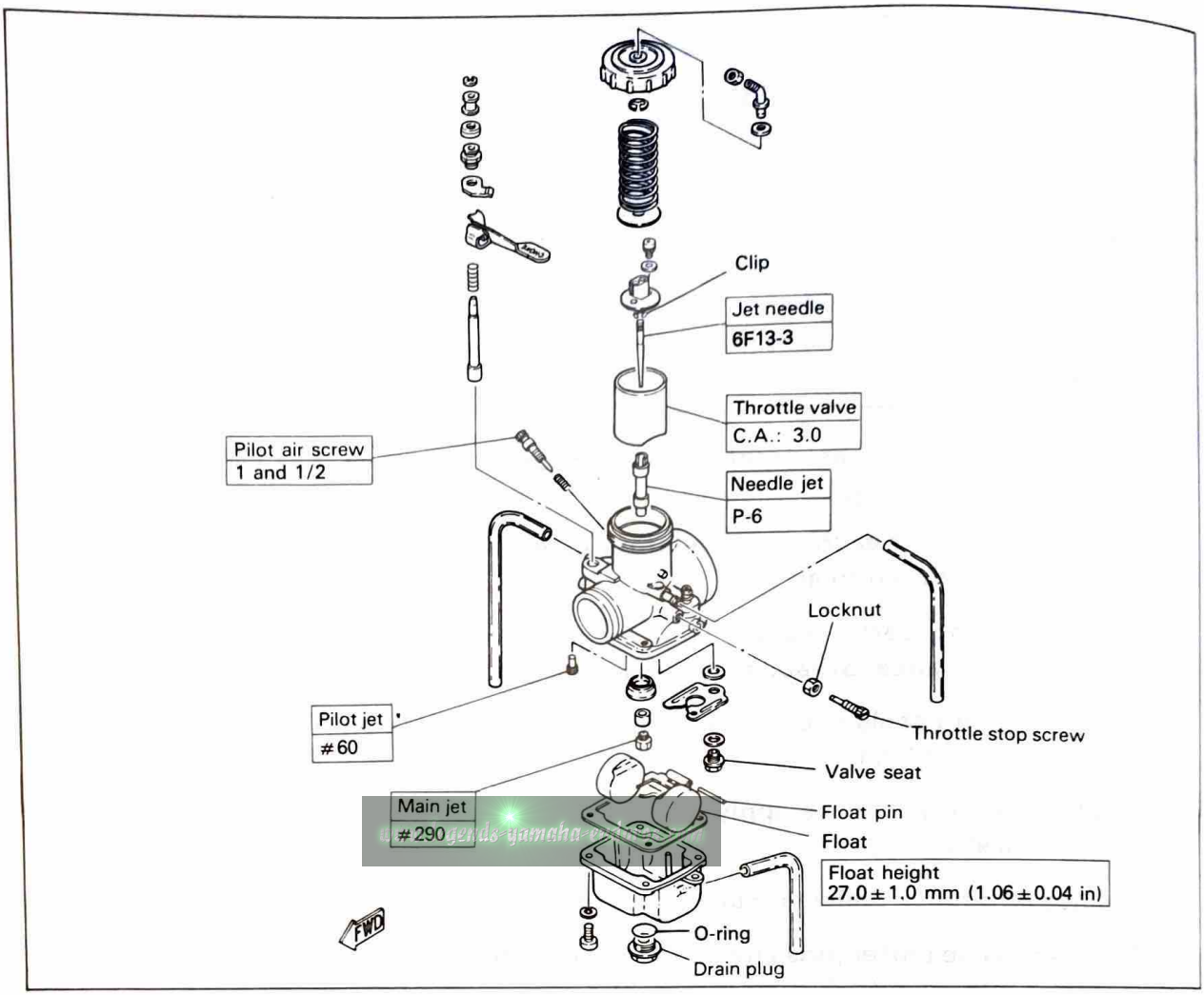
- **Clean your machine as described in the General Information section entitled, "Cleaning and Storage";**
- **Group the parts of each component on individual trays, and arrange the parts in the order of their removal;**
- **When replacing parts, always use the genuine Yamaha article to maintain optimum performance, durability, and safety;**
- **All gaskets and seals should be replaced during engine work, and all gasket surfaces should be clean;**
- **During assembly, 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.**



CARBURETOR



For details of carburetor tuning, refer to the Race Preparation and Tuning Manual.

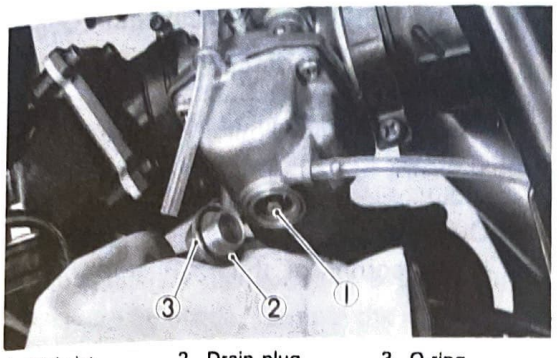
Tuning and repair parts

Part name	Size	Part number
Main jet	#280	137-14143-56
	(STD) #290	137-14143-58
	#300	137-14143-60
Pilot jet	#55	193-14142-55
	(STD) #60	193-14142-60
	#65	193-14142-65
Throttle valve	2.5	2X8-14112-25
	(STD) 3.0	2X8-14112-30
	3.5	2X8-14112-35
Needle jet	P-4	510-14141-44
	(STD) P-6	510-14141-46
	P-8	510-14141-48
Vale seat assembly	ø3.5	23X-14107-35

Main jet replacement

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 drain plug from the float bowl. The main jet can thereby be removed and replaced.



1. Main jet 2. Drain plug 3. O-ring

Standard Main Jet Size: #290

WARNING:

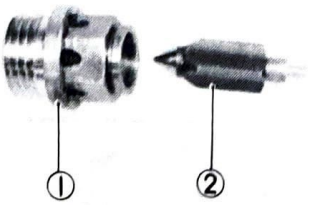
When the drain plug is removed, the fuel in the float bowl will drain. Do not remove the plug when the engine is hot. Place a rag under the carb when removing the plug to catch the fuel. Remove the plug in a well-ventilated area, away from any open flame. Always clean and dry the machine after completing 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 petroleum-based solvent. Do not use caustic carburetor cleaning solutions. Blow out all passages and jets 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.

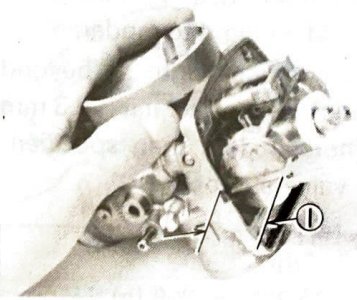


1. Valve seat 2. Float valve

Float height

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:
27.0 ± 1.0 mm (1.06 ± 0.04 in)
Level with carburetor base

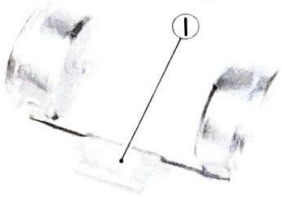


1. Float height

CAUTION:

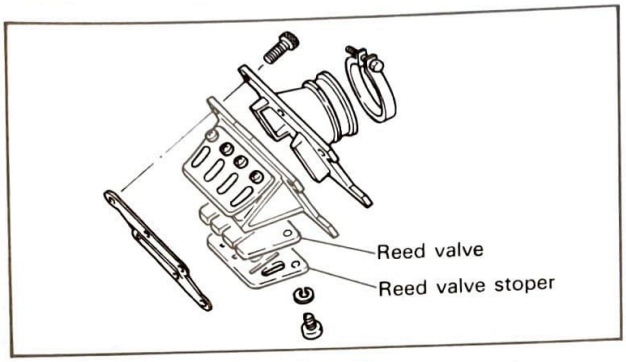
Check the float valve and valve seat for wear before adjustment.

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



1. Tang

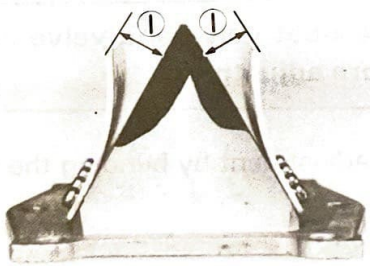
REED VALVE



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. Check valve stopper height. If beyond tolerance, adjust or replace. If it is 0.3 mm (0.012 in) more or less than specified, replace the valve stopper.

Valve stopper height:
8.6 ± 0.2 mm (0.339 ± 0.008 in)

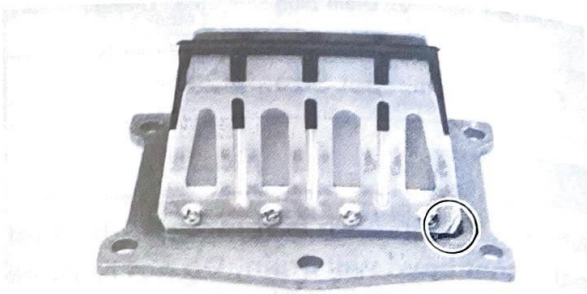


1. Valve stopper height

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

Reed valve bending limit:
0.6 mm (0.022 in)

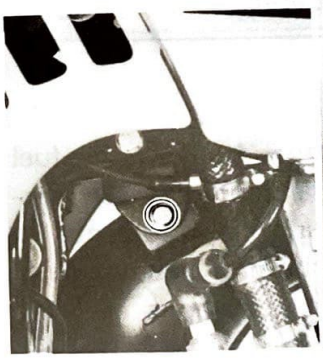
5. During reassembly, note the cut in the lower corner of the reed and stopper plate.

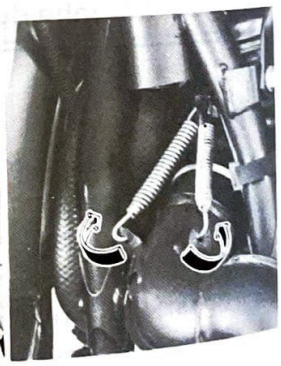


MUFFLER

Removal

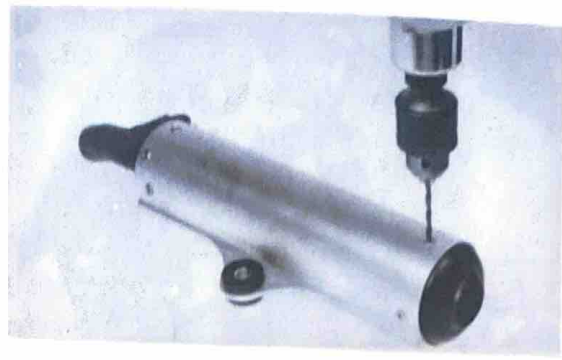
1. Remove the panhead screws and remove the side cover.
2. Loosen muffler mounting bolts
3. Unhook the coil springs and remove the muffler.



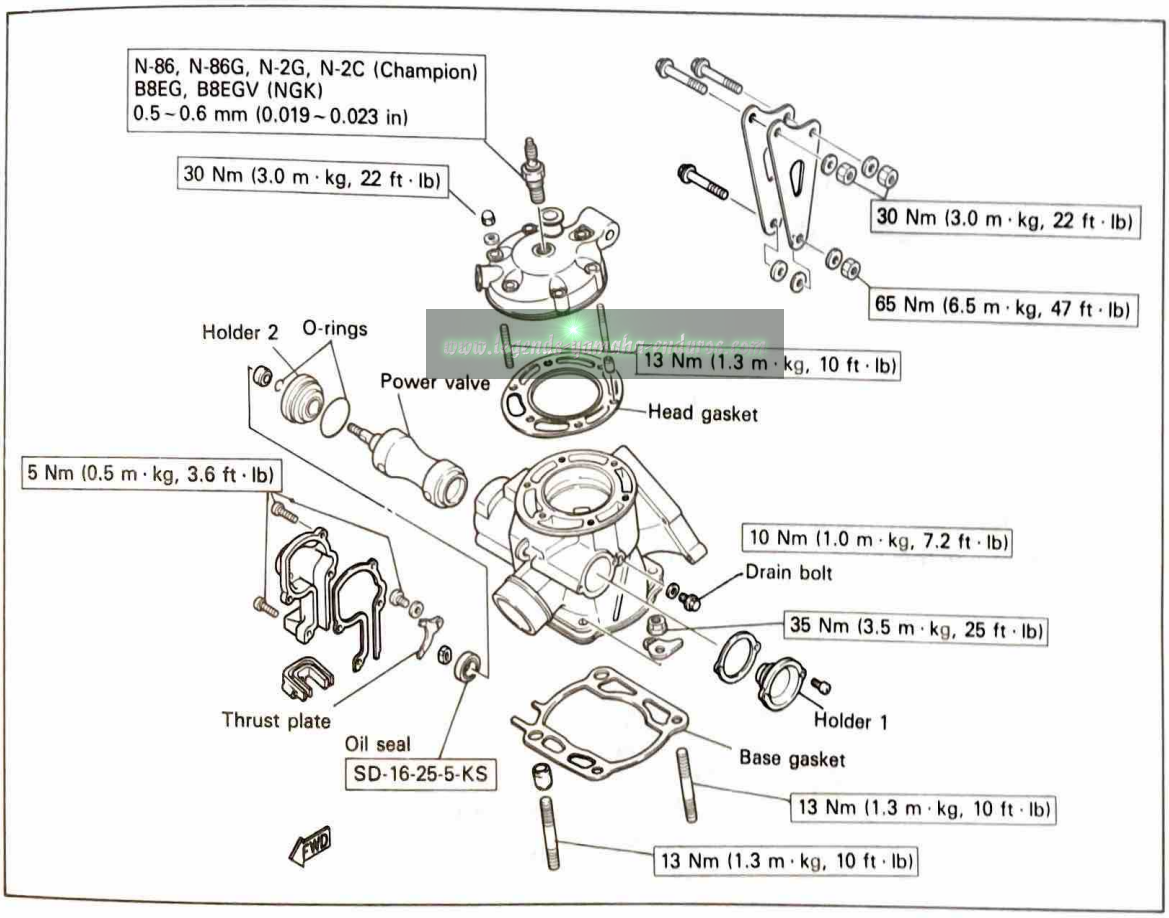


Maintenance

1. Using a rounded scraper, remove excess carbon deposits from manifold area of exhaust pipe.
2. Check the exhaust pipe and muffler mounting bracket for cracks. If it has excessive cracks repair or replace it.
3. When the silencer gets a large carbon build up inside, remove the rivets with a 4 mm (0.16 in) drill and replace the fiber in it. After the replacement, make sure that the silencer is secured by new rivets.



CYLINDER HEAD

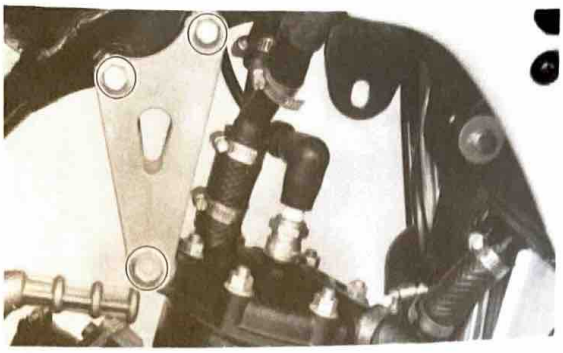


Removal

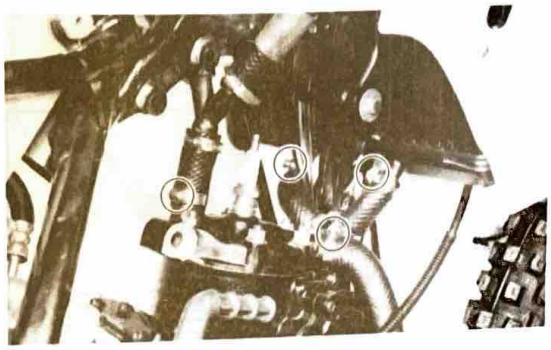
NOTE:

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

1. Drain off the coolant from the cooling system. (See, paragraph "Coolant draining" Page 1-4.)
2. Remove the spark plug cap from the plug. Loosen the spark plug, but do not remove it.
3. Remove the three bolts from the cylinder head holding brackets, and remove the brackets.

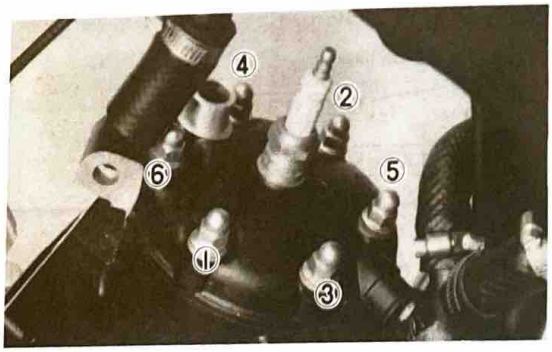


4. Disconnect radiator hoses at cylinder head and radiators.



Bracket to:
Frame 30 Nm (3.0 m · kg, 22 ft · lb)
Engine 65 Nm (6.5 m · kg, 47 ft · lb)

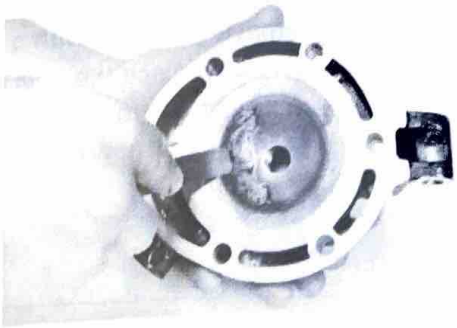
5. Loosen the six cylinder head nuts a quarter turn each in a crisscross pattern, then remove the cylinder head nuts in the same pattern.
Remove the cylinder head and head gasket. And discard the gasket.



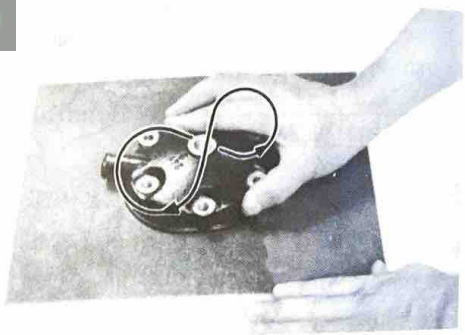
Cylinder head nut:
25 Nm (2.5 m · kg, 18 ft · lb)

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.



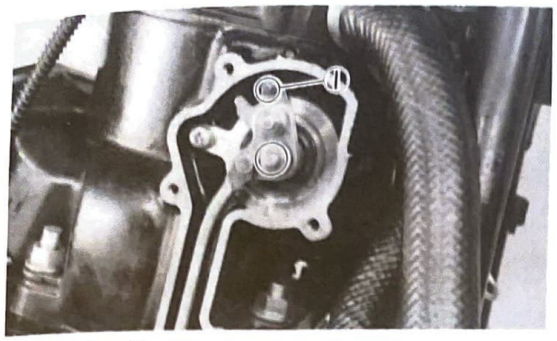
2. Place the head on a surface plate. There should be no warpage. Correct by resurfacing. Place 400 ~ 600 grit wet emery sandpaper on surface plate and resurface head using a figure-eight sanding pattern. Rotate head several times to avoid removing too much material from one side.



CYLINDER
Removal

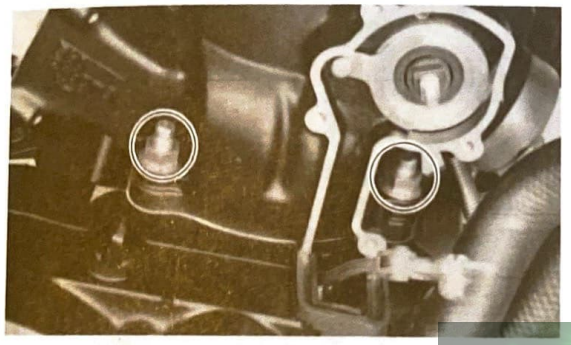
NOTE:
When removing the cylinder, be sure to remove the link assembly from the power valve first.

1. Remove the power valve housing.
2. Lock the lever to the cylinder with the locating pin, and remove the nut.



1. Locating pin

3. Disconnect the clutch cable.
4. Loosen the cylinder holding nuts a quarter turn each in a crisscross pattern, and then remove the nuts in the same pattern.

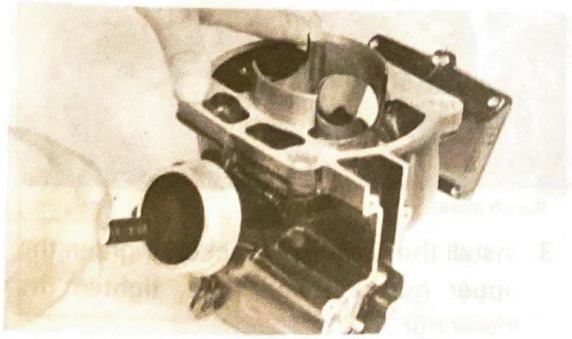


Cylinder nut:
35 Nm (3.5 m·kg, 25 ft·lb)

5. 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 entering 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.

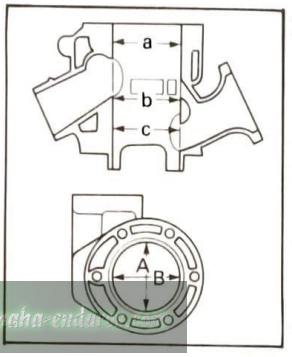


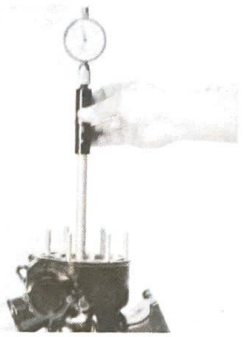
2. Check cylinder bore. Using a cylinder hone, remove any scoring. Hone lightly, using smooth stones. Hone no more than required to avoid excess piston clearance.

NOTE:

Before honing the cylinder, remove the power valve from it.

3. 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.





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

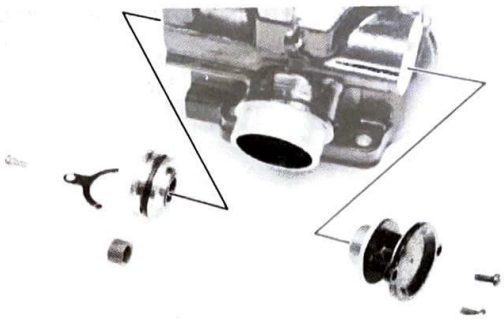
Max. allowable taper:
0.05 mm (0.0020 in)
Max. allowable out-of-round:
0.01 mm (0.0004 in)

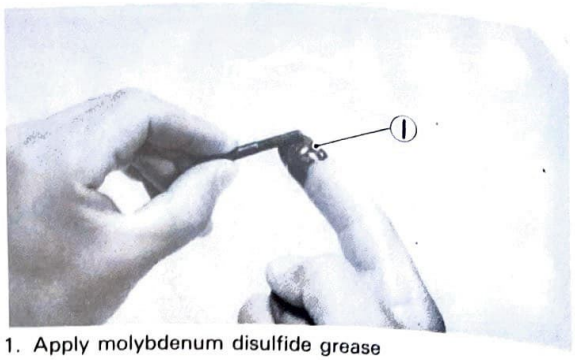
Power valve disassembly

NOTE:

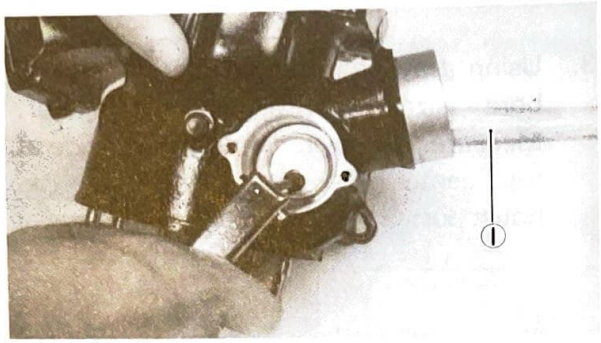
The power valve removal is not reguired to drain the coolant and remove the cylinder.

1. After removing the housing cover stopper holder and valve holder, set the power valve with its punched dot upward.
2. Use a piece of wood through the exhaust port to steady the power valve.
3. Loosen the allen head screw and separate the power valve.

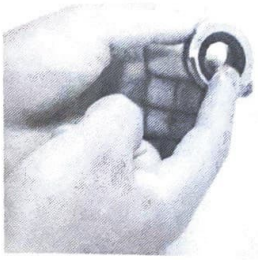


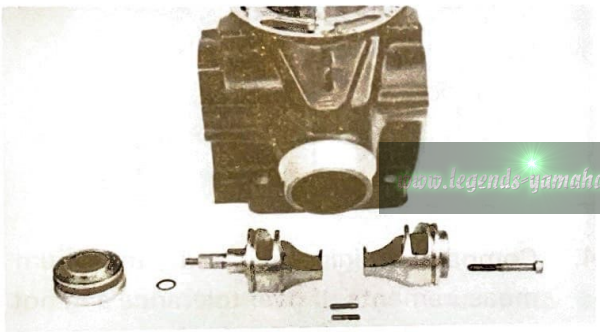


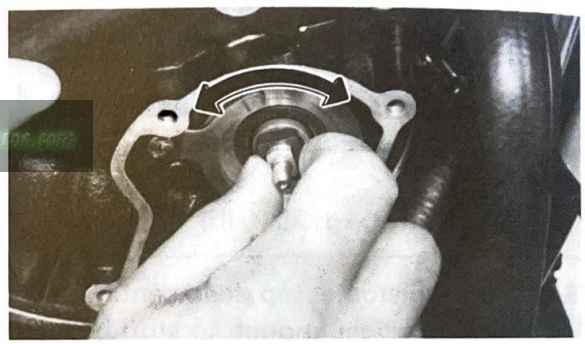
1. Apply molybdenum disulfide grease



1. Wooden piece







Power valve assembly

For reassembly, reverse the procedure for disassembly. Take care of the following precautions.

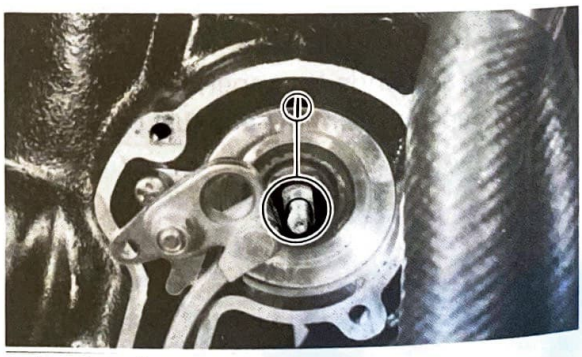
1. Apply molybdenum grease to the allen head screw.

Power valve:
6 Nm (0.6 m · kg, 5 ft · lb)

2. Apply grease to the O-ring and oil seal.
3. After installing the valve, check it moves smoothly.

Power valve alignment

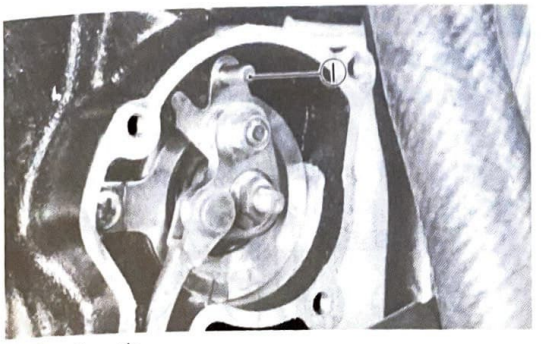
1. With the punch mark on the valve facing upward, install the push rod and lever.
2. Lock the lever to the cylinder by inserting the locating pin into the holes.



1. Punch mark

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

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



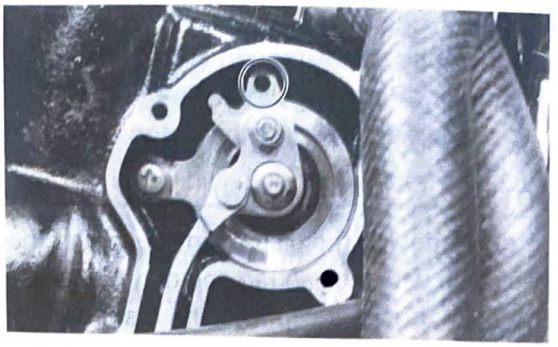
1. Locating pin

4. After thghtening the nuts, remove the locating pin.

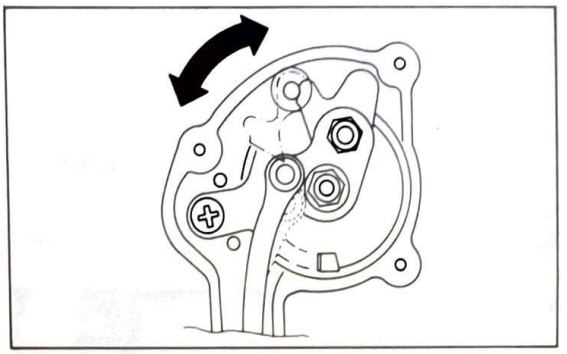
CAUTION:

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

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



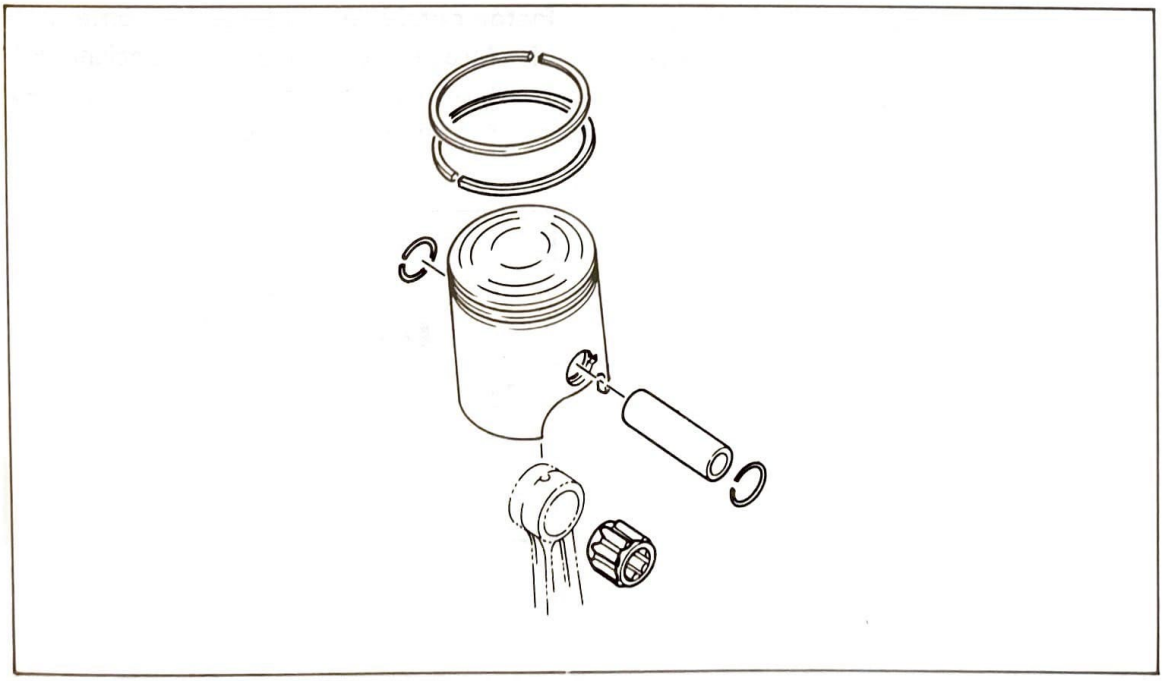
6. After starting the engine, make sure that as illustrated, the arm operates smoothly while racing the engine.



CAUTION:

Avoid racing the engine for more than two seconds.

PISTON ASSEMBLY

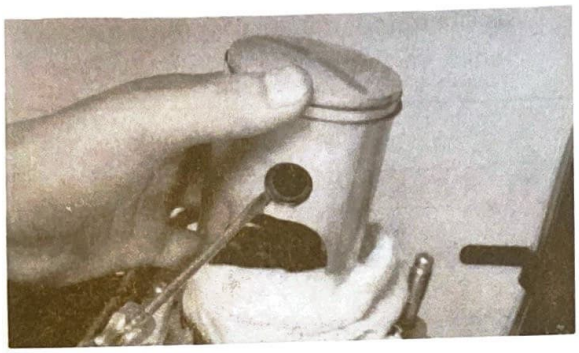


Removal

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

NOTE:

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

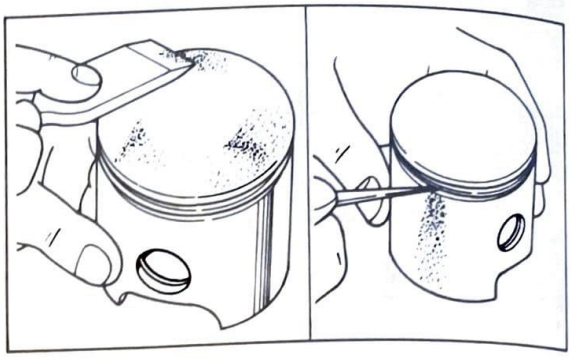


NOTE:

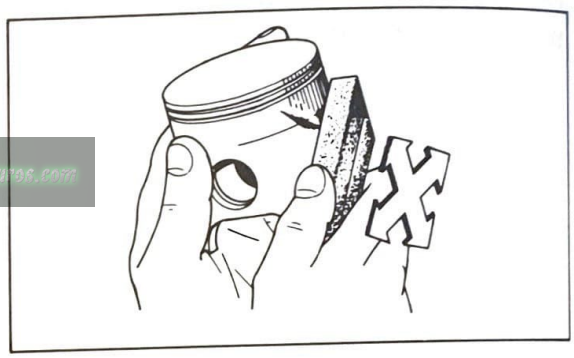
If the pin hangs up, use a piston pin puller. Do not hammer on pin as damage to rod, piston and bearing will result.

Maintenance

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

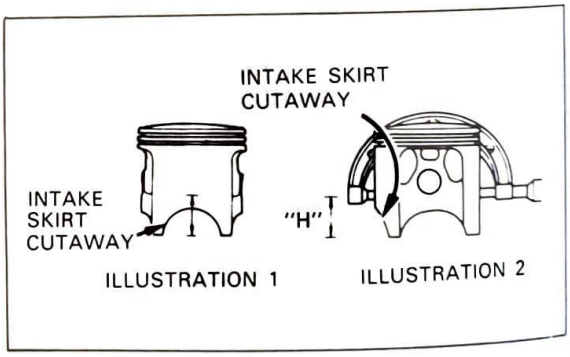


2. Using 400 ~ 600 grit wet sandpaper, lightly sand score marks and lacquer deposits from sides of piston. Sand in crisscross pattern. Do not sand excessively.



Piston outside diameter measurement

1. Measure across the skirts at height "H" (just above the intake skirt cutaway) as shown in illustrations 1 and 2.



HEIGHT "H": 31 mm (1.22 in)

2. 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

Example

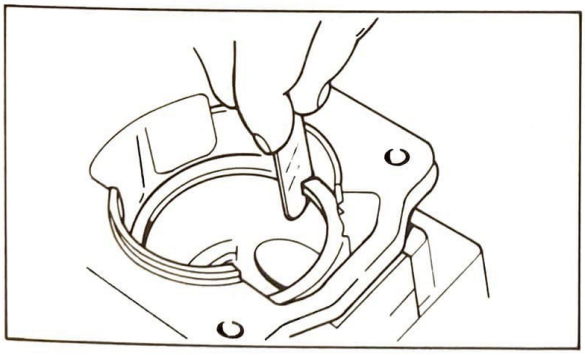
68.035 mm (2.679 in) – 67.965 mm (2.676 in) = 0.070 (0.003 in)

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.

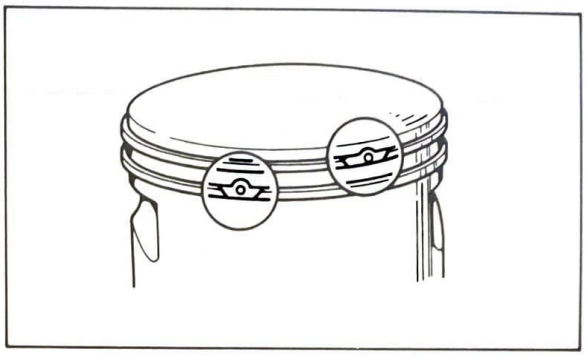
Ring end gap installed
0.55 ~ 0.70 mm (0.022 ~ 0.028 in) Limit: 1.0 mm (0.04 in)



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. 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.

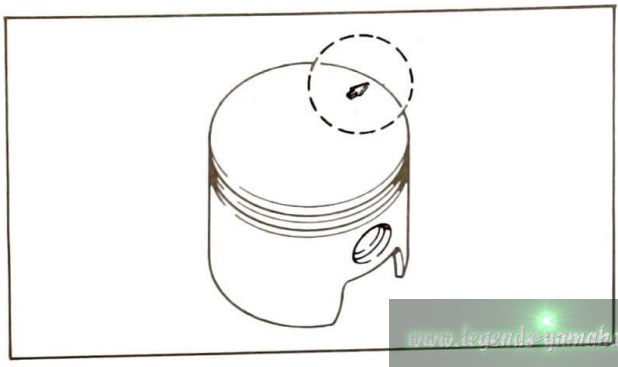


Piston pin, bearing

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.

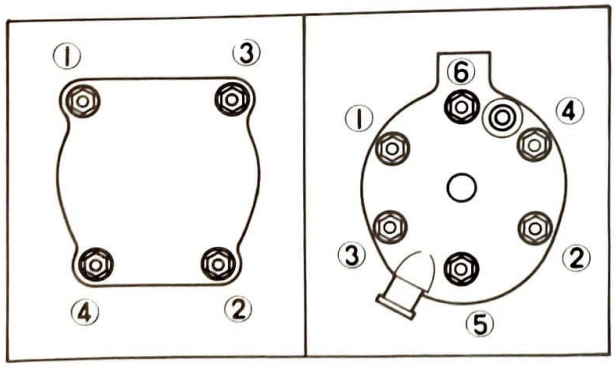
Reassembly

1. During re-assembly, always use a new cylinder base gasket.
2. Install new piston pin clips and make sure they are fully seated within their grooves.
3. During re-assembly, coat the piston skirt areas clinder wall, piston pin and bearing liberaly with two-stroke oil.
4. Take care during installation to avoid damaging the piston skirts against the crankcase as the cylinder is installed.
5. The arrow on piston dome must face forward.



6. Tighten the cylinder and cylinder head in sequence as shown and torque in two stage.

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



7. Add the coolant to specification.

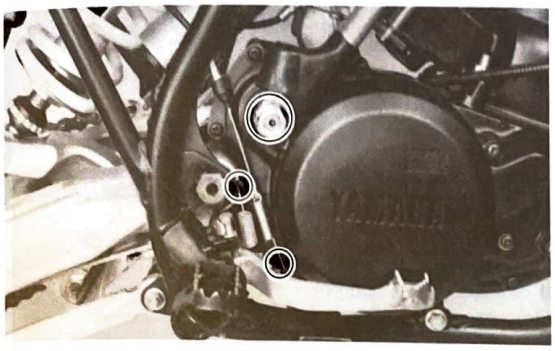
Recommended coolant: High quality ethylene glycol antifreeze containing corrosion inhibitors for alminum engine
Capacity: 1.0 L (0.88 Imp qt, 1.057 US qt)
Mixed ratio: 1 : 1 (50% water, 50% coolant)

CRANKCASE COVER

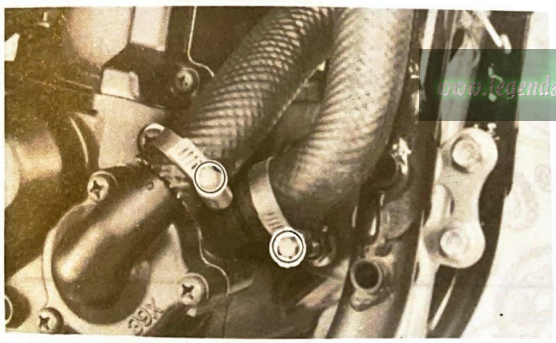
Removal

1. Remove the brake adjuster, return spring and control wire.

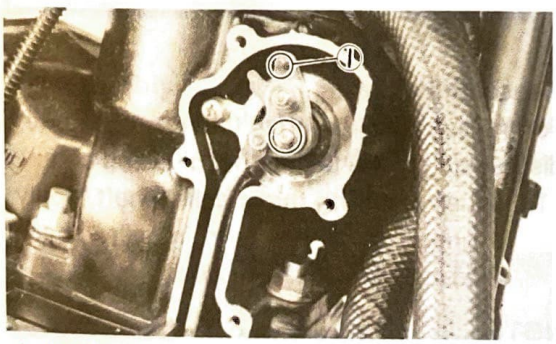
2. Remove the kickstart lever.



3. Drain off the transmission oil and coolant. (See page 1-3 and 1-4)
4. Loosen the hose clamp and disconnect the hoses.

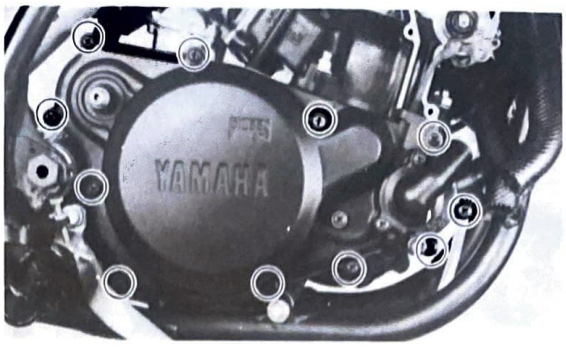


5. Remove the power valve cover and disconnect the valve arm. (See page 3-7)



1. Locating pin

6. Remove the right hand crankcase cover.

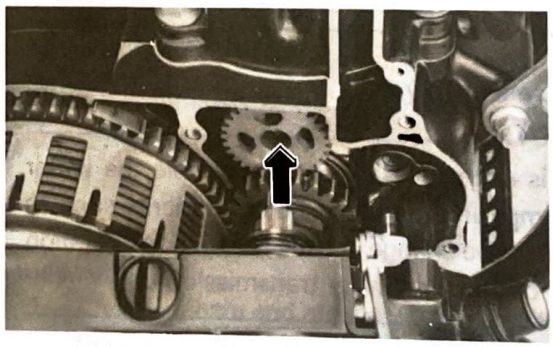


Installation

For installation, reverse the procedure for removal while taking the following care:

1. Align the groove in the govornor with the fork and set the govornor in the case.

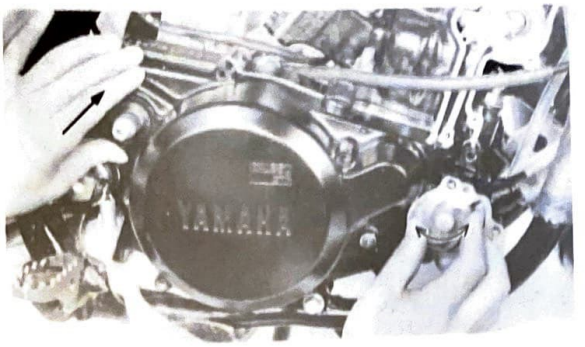
2. Bring the serrations of the governor shaft and driven gear to align.



NOTE:

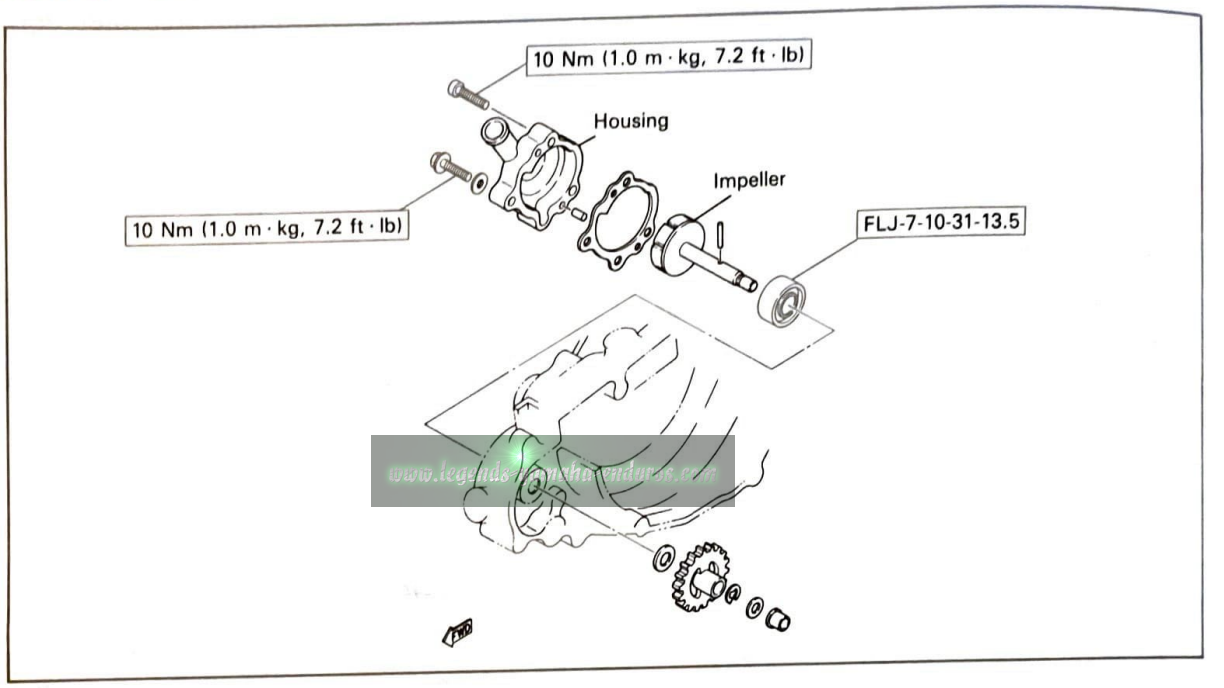
Be careful not to install the driven gear front side back. Otherwise, the case cover cannot achieve a full-faced contact with the case.

3. Engage the serrations of the pump drive gear and driven gear by turning the impeller by hand.



4. Install the power valve lever. (See page 3-8)

WATER PUMP



Disassembly

NOTE:

It is not 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.

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:

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

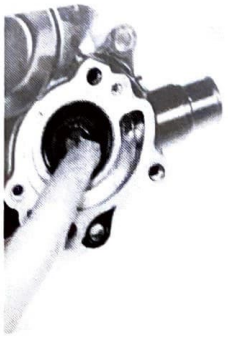
Reassembly

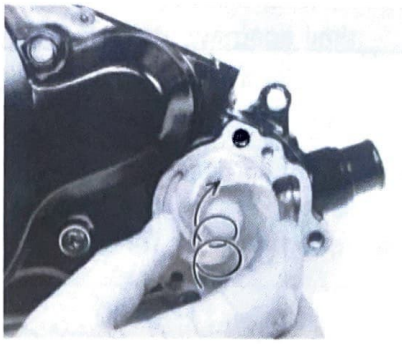
For reassembly, reverse the procedure for disassembly while taking the following care:

1. When installing the impeller shaft, apply a grease to oil seal and impeller shaft. And install the shaft while turning it.

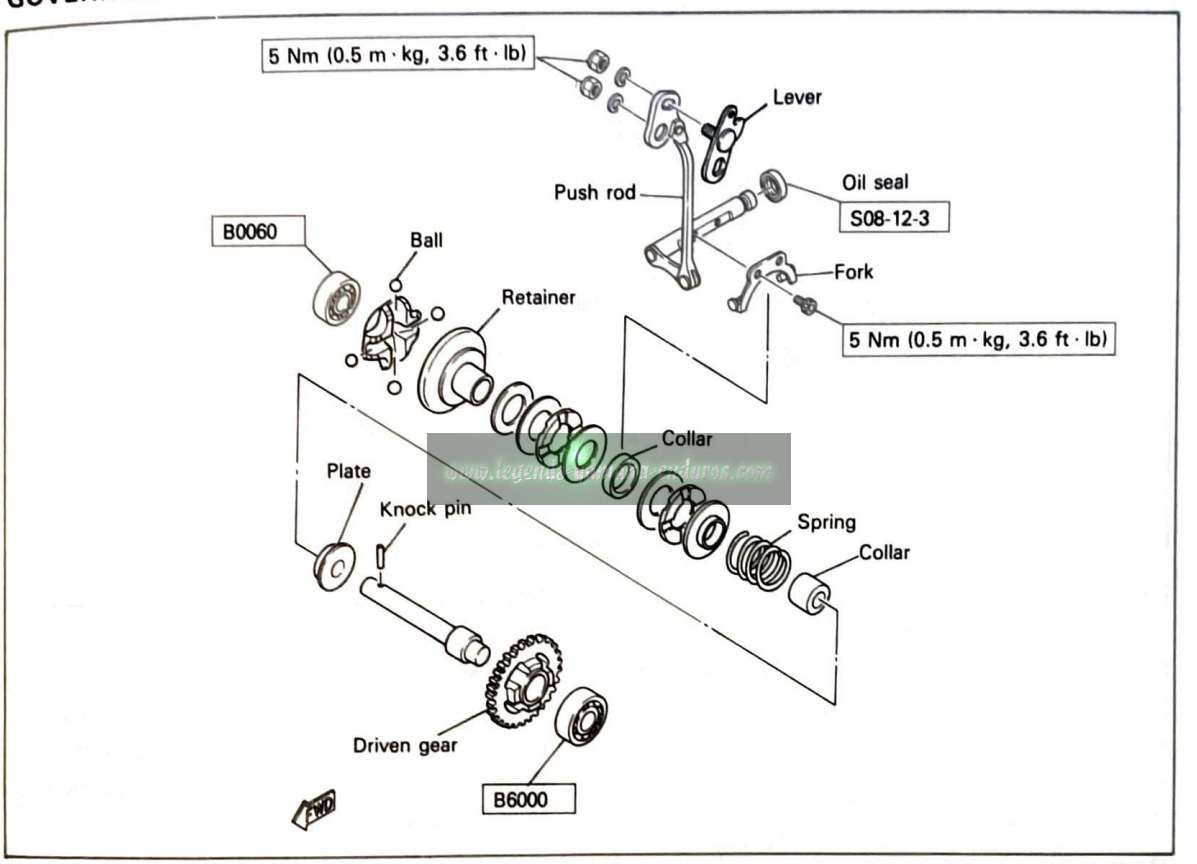
NOTE:

Take care so that the oil seal lip is not damaged or the spring does not slip off its position.



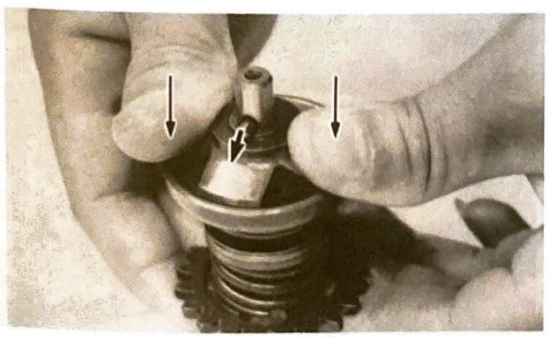


GOVERNOR



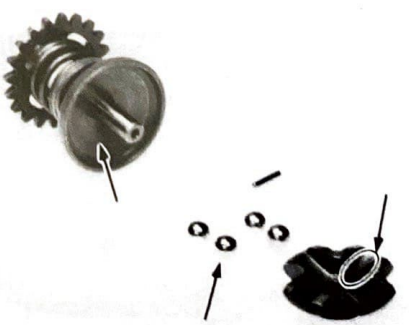
Disassembly

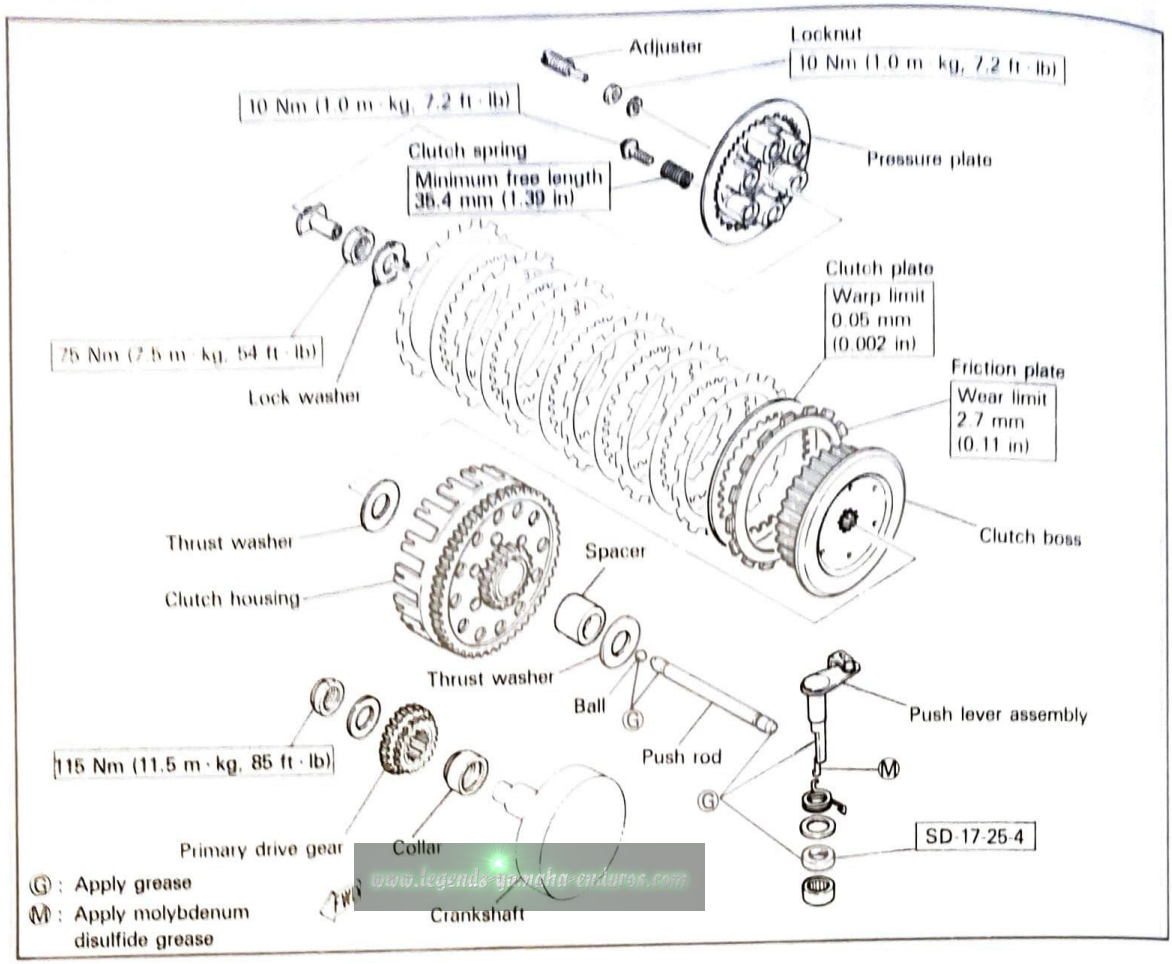
1. To disassemble the governor, remove the knock pin while depressing down the retainer plate as shown.



Inspection

1. Check for cam and retainer wear. Replace the cam or retainer, if necessary.





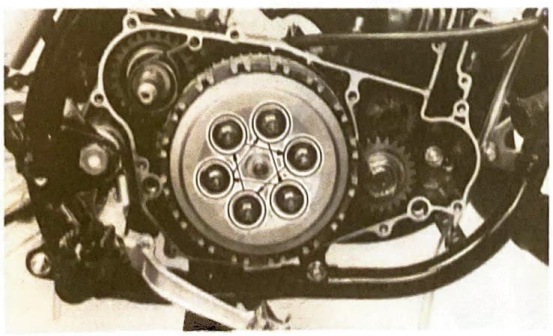
Primary drive and driven gears

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.

Removal

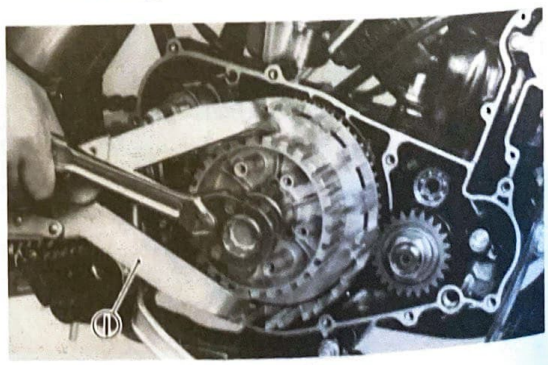
1. Remove the phillips screws (6) holding the pressure plate. Remove the clutch springs, pressure plate, ball and push rod. Remove the clutch plates and friction plates.



NOTE:

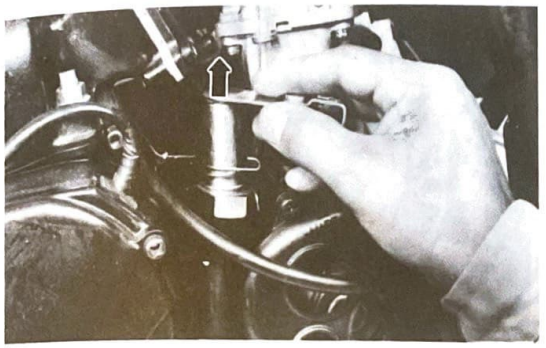
When removing phillips spring screws, loosen each screw in several stages working in a crisscross pattern to avoid any unnecessary warpage. Note the condition of each piece as it is removed and its location within the assembly.

2. 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 (YM-91042)

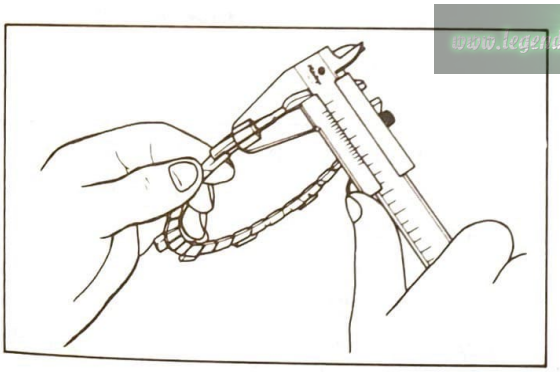
3. Remove the primary drive gear and water pump drive gear.
4. Pull out the clutch push lever assembly.



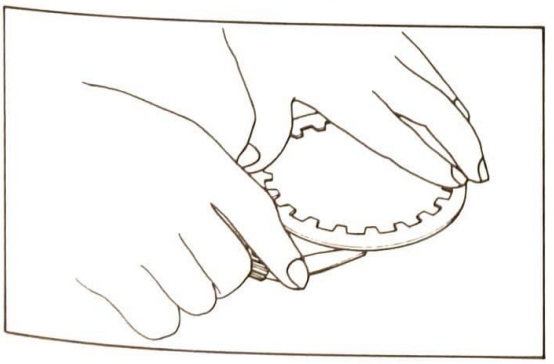
Maintenance

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

Friction plate thickness:
New 3.0 mm (0.12 in)
Limit 2.7 mm (0.106 in)

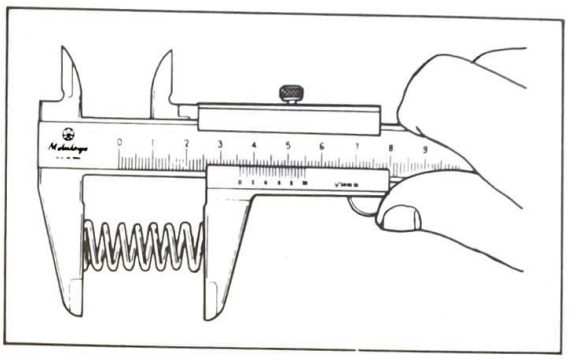


2. Place each clutch plate on a surface plate and check for warpage with a feeler gauge; if warpage exceeds 0.05 mm (0.002 in), replace the clutch plate.



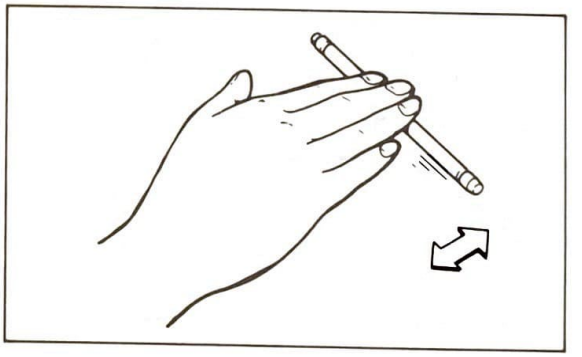
Clutch plate warpage limit:
0.05 mm (0.002 in)

3. Measure each clutch spring; if the free length of a spring is less than 35.4 mm (1.39 in), replace the spring as a set.



Clutch spring free length:
New 36.4 mm (1.43 in)
Limit 35.4 mm (1.39 in)

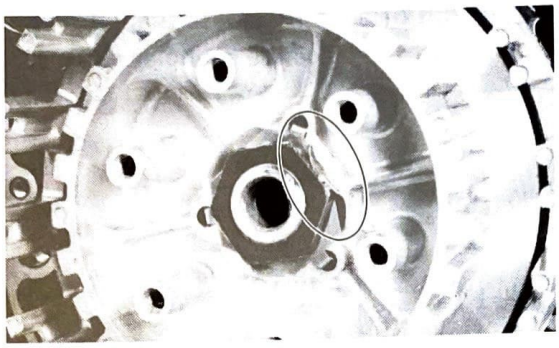
4. Roll the push rod across a surface plate. If rod is bent, replace.



5. Inspect the clutch push lever. If excessively worn, repair using 300 ~ 400 grit sandpaper or replace.

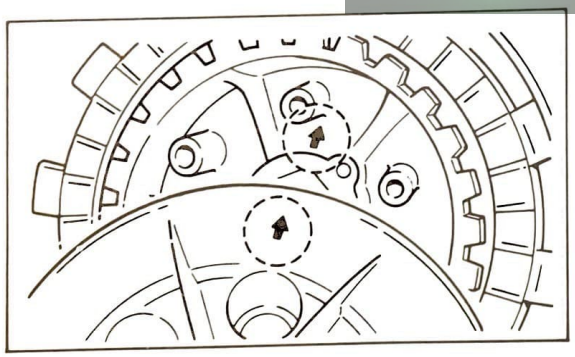
Installation

1. When installing the clutch locknut, always use a new lock washer. After tightening the locknut to the specification, be sure to lock it with the lock washer.

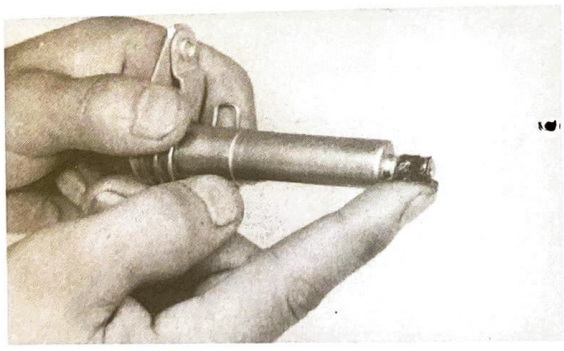


Clutch Locknut:
75 Nm (7.5 m · kg, 54 ft · lb)
Primary drive gear:
115 Nm (11.5 m · kg, 85 ft · lb)

2. When installing the clutch pressure plate, align arrow mark on clutch boss and pressure plate mark.

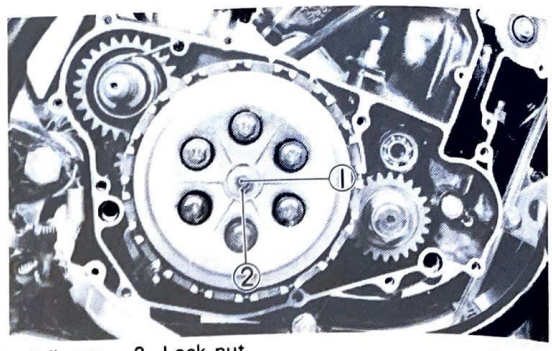


3. Apply molybdenum disdfide grease to the push lever.



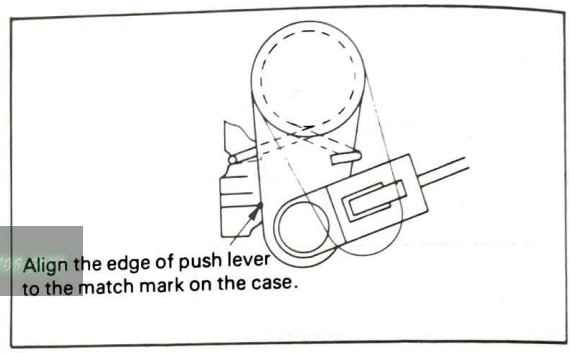
Mechanism adjustment

1. Loosen the clutch mechanism adjuster locknut, and loosen the adjusting screw.



1. Adjuster 2. Lock nut

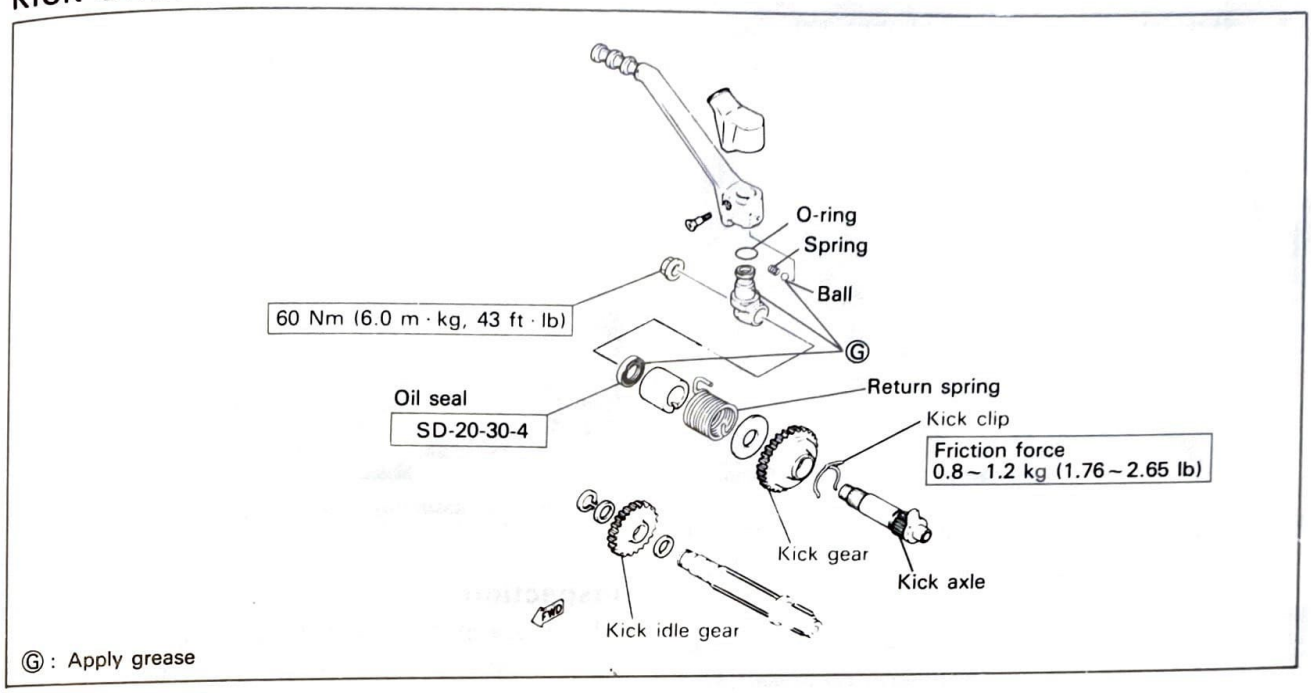
2. At the handle lever, loosen the cable adjuster locknut and adjust the cable length to align the match mark on the left-hand crankcase with the edge of the push lever.



Align the edge of push lever to the match mark on the case.

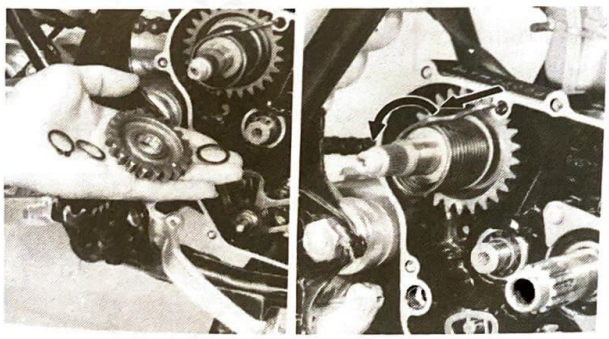
3. Turn the clutch mechanism adjusting screw in until resistance is felt, and tighten the adjuster locknut.
4. Adjust the cable adjuster at the handle lever to provide 2 ~ 3 mm (0.08 ~ 0.12 in) of free play at the clutch lever pivot; tighten the locknut.

KICK STARTER



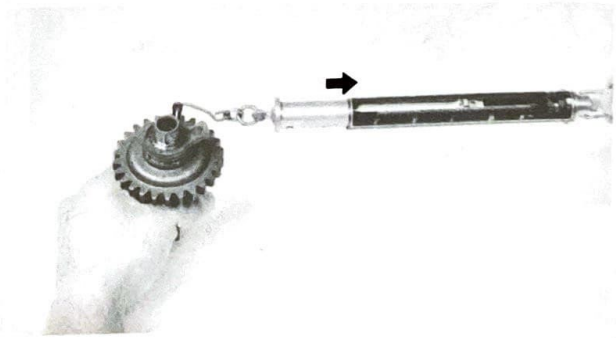
Removal

1. Remove circlip, kick idle gear and washers.
2. Unhook the kick return spring from its post in the crankcase. Then remove the kick axle assembly by rotating the shaft counterclockwise and then pulling out the entire assembly.



Inspection

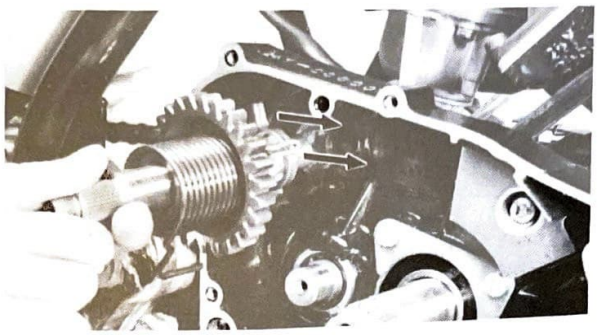
1. Inspect the teeth of the idle and kick gears for wear or damage, replace the gear if wear or damage is found.
2. The pressure required to move the kick clip on the kick gear should be about 1.0 kg (2.2 lb). If the pressure is more or less than this amount, the kick starter will malfunction; the kick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



Kick clip friction force:
0.8 ~ 1.2 kg (1.76 ~ 2.65 lb)

Reassembly

1. Slide the axle assembly into the case; make sure the kick clip and kick axle stopper fit into their home positions.

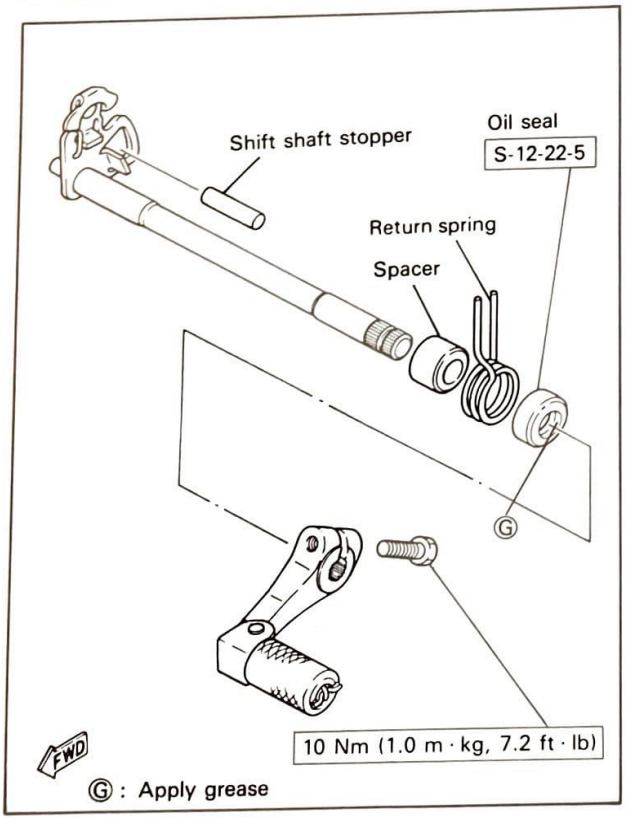


2. Turn the kick starter return spring clockwise and hook into the proper hole in the crankcase.
3. After installing, make sure the kick gear engages and disengages properly with the idle gear.

SHIFTER

NOTE:

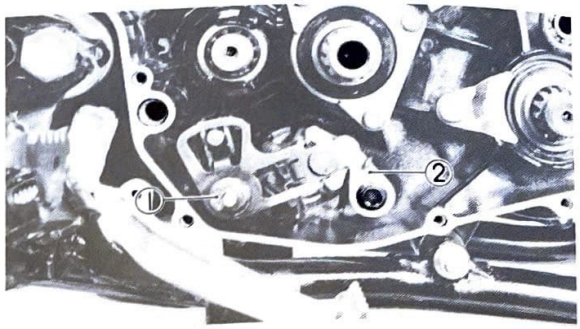
Shift shaft maintenance should be performed with clutch assembly removed.



Ⓖ : Apply grease

Removal

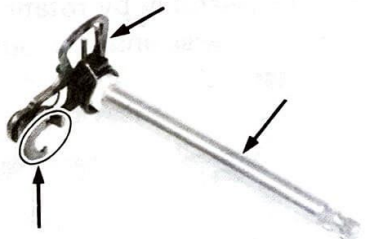
1. Pull out the shift shaft assembly.
2. Remove the flange bolt, stopper lever and spring.



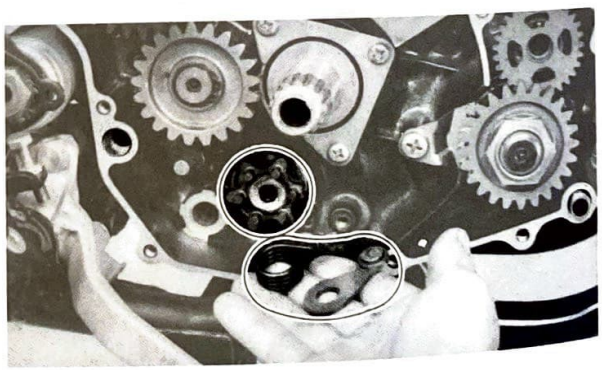
1. Shift shaft assembly 2. Stopper lever

Inspection

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

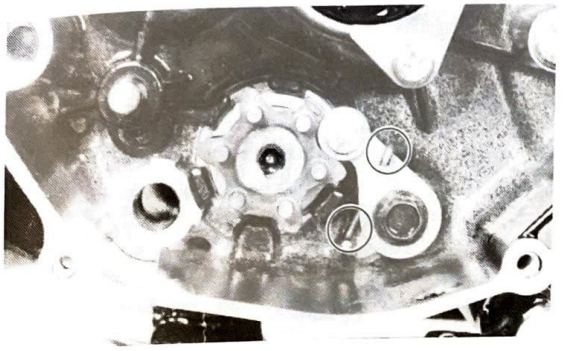


3. Inspect the segment and stopper lever for wear or damage, replace as reuired.



Installation

1. Engage the stopper lever return spring with its home positon.



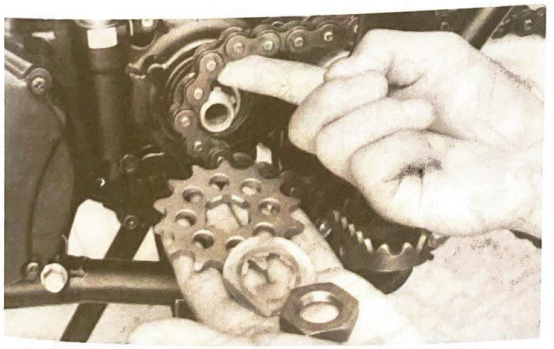
ENGINE REMOVAL AND MOUNTING

Removal

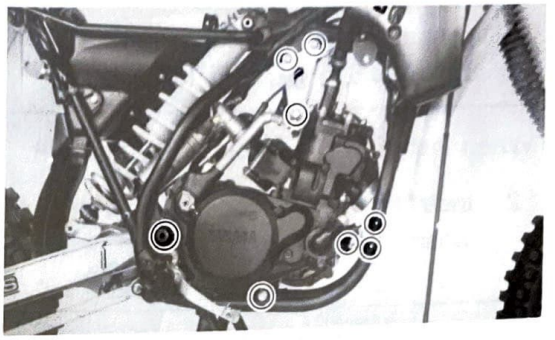
NOTE:

The engine removal is required for the servicing of the transmission, crankshaft, and bearings, oil seals, etc, of the crank case.
The procedures in page 3-2 to 3-22 are not accompanied by the engine removal.

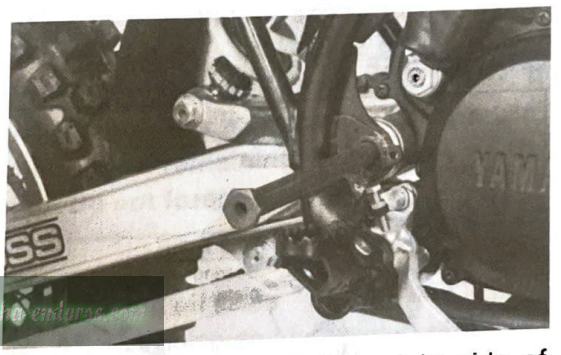
1. Drain off the transmission oil and coolant.
2. Remove the seat and fuel tank.
3. Disconnect the radiator hoses, clutch cable, spark plug cap, magneto leads.
4. Remove the muffler and carburetor.
5. Remove the cylinder head holding brackets.
6. Remove the shift pedal and chain cover.
7. Loosen the drive sprocket nut applying the rear brake and remove the sprocket.



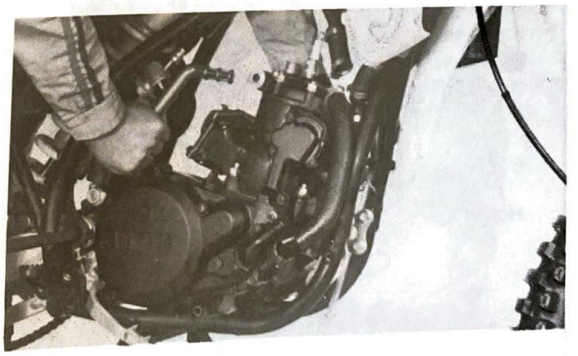
8. Remove the rear brake adjuster and return spring.
9. Remove the two engine mounting bolts and mount brackets.



10. 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.



11. Remove the engine from right side of frame.



Mounting

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

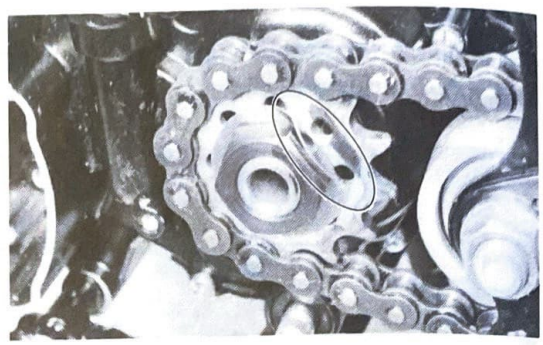
Engine mounting bolt:	
Upper bracket to engine:	65 Nm (6.5 m · kg, 47 ft · lb)
Others:	30 Nm (3.0 m · kg, 22 ft · lb)
Pivot shaft:	85 Nm (8.5 m · kg, 61 ft · lb)

Pivot shaft nut:
85 Nm (8.5 m · kg, 60 ft · lb)

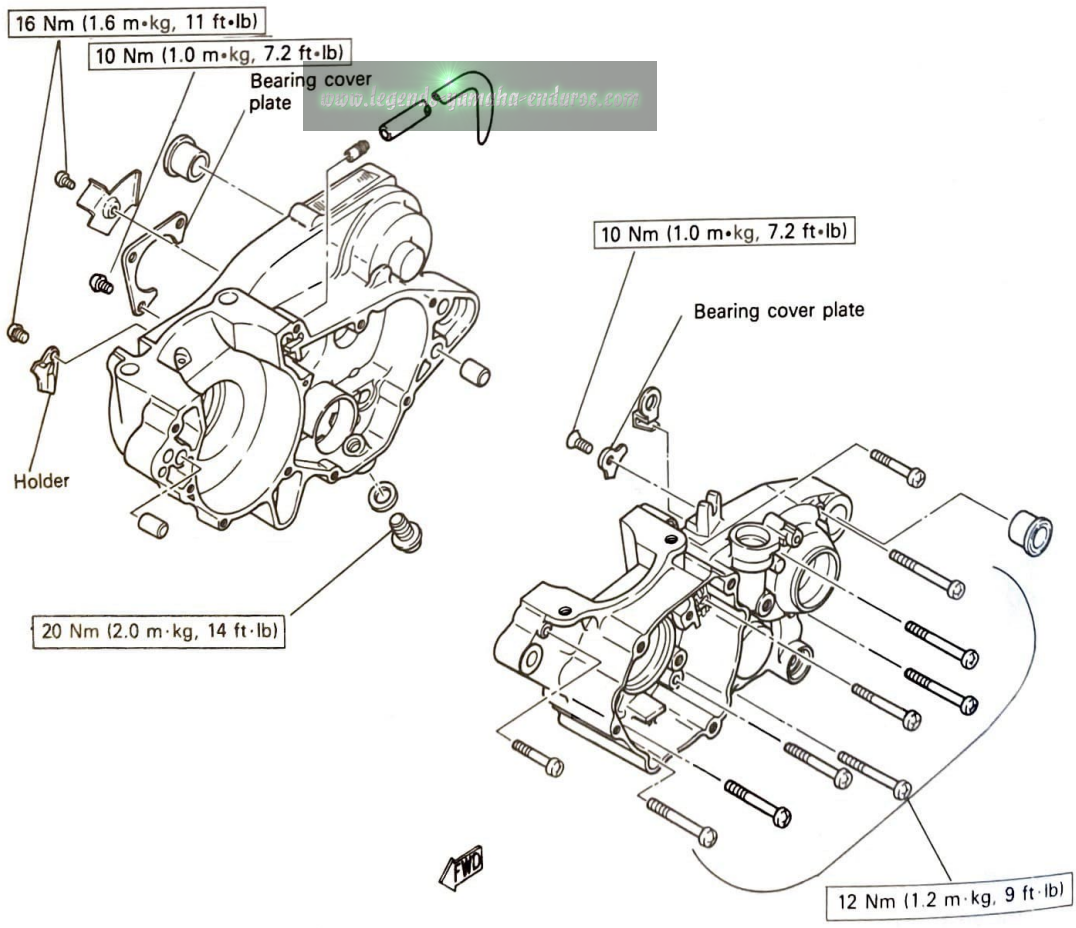
When installing the pivot shaft, grease it.

2. Install drive sprocket and bend the Lock washer tab against nut flat.

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

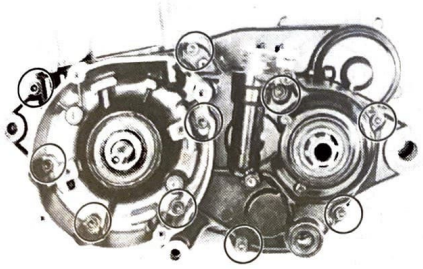


CRANKCASE

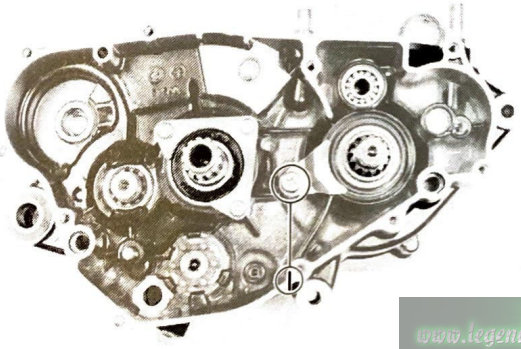


Disassembly

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

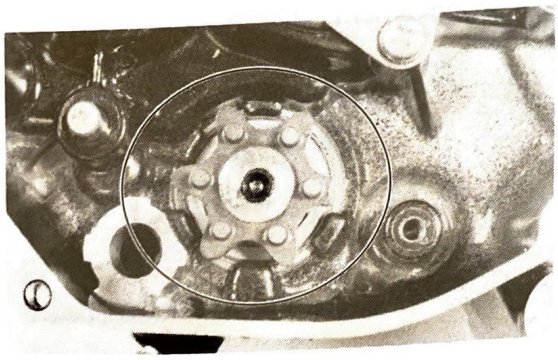


2. Remove the oil seal holder.



1. Holder

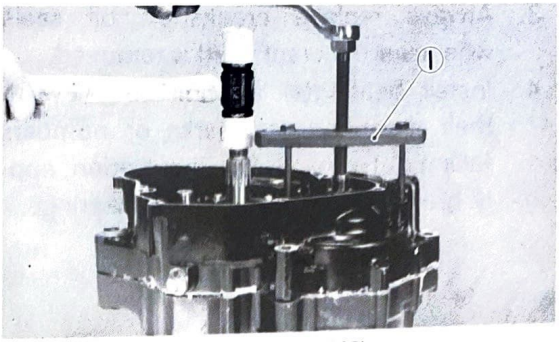
3. Before separating the crankcase, turn the segment to the position shown in the figure so that it does not contact the crankcase.



4. Install crankcase separating tool on the right side as shown.

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.



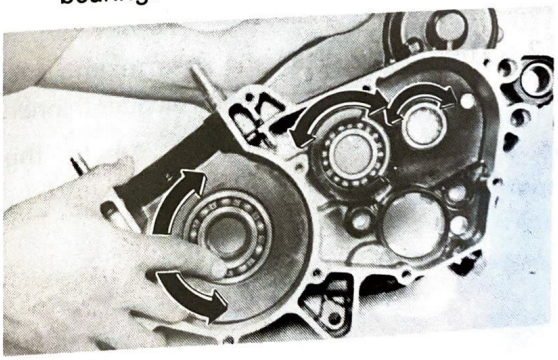
1. Crankcase separating tool (YU-01135)

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 forece.

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.

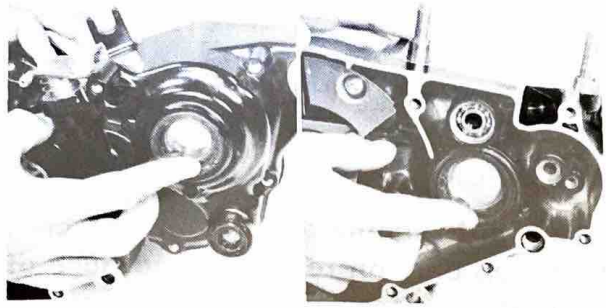


NOTE:

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.

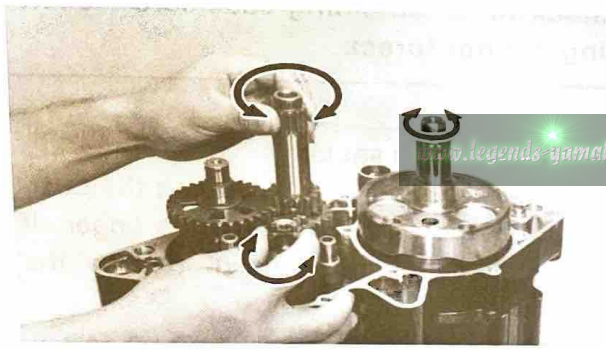
2. Check oil seal lips for damage or wear. Replace as required.

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 lips and bearings.

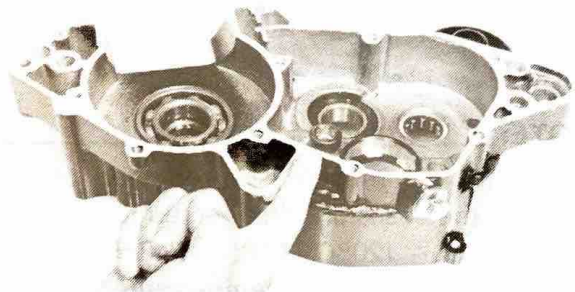


Assembly

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



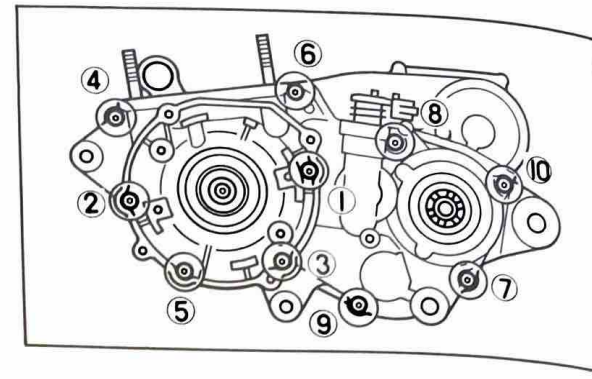
2. Thoroughly clean the case mating surfaces of oil or grease with lacquer thinner. Apply YAMAHA BOND #4 to the mating surfaces of both case halves.



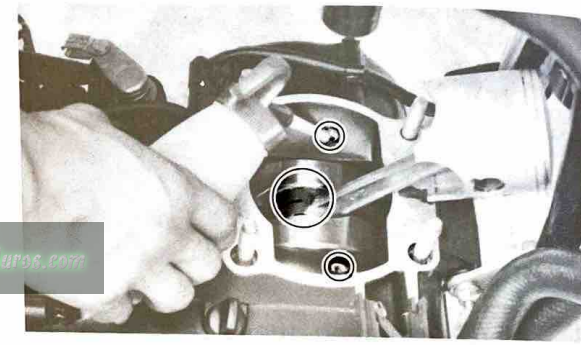
NOTE:

a. Do not tap on machined surface or end of crankshaft.
b. Before installing the crankshaft, check the crankshaft oil seal for damage.

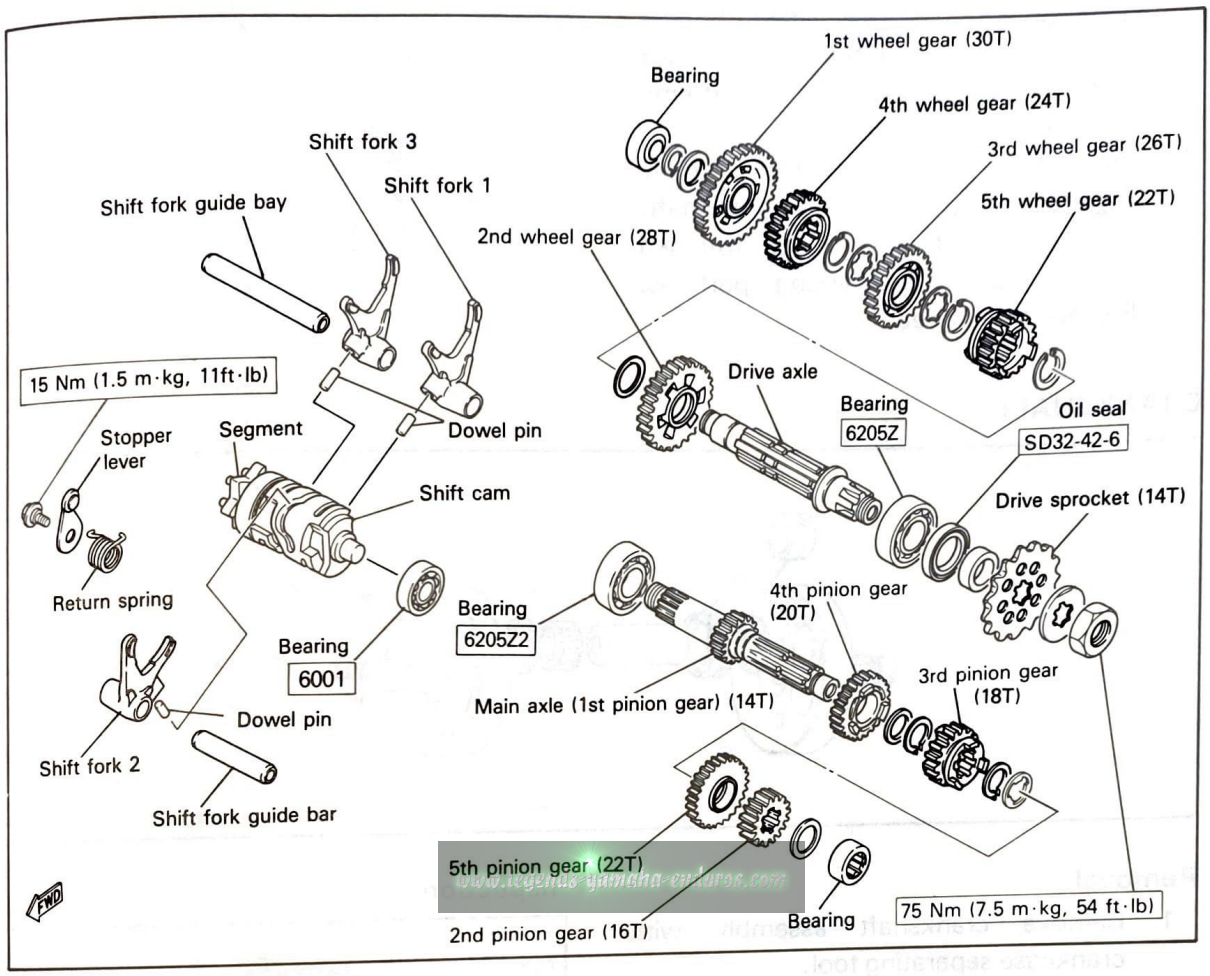
3. Tighten the crankcase tightening screws in numerical order as shown.



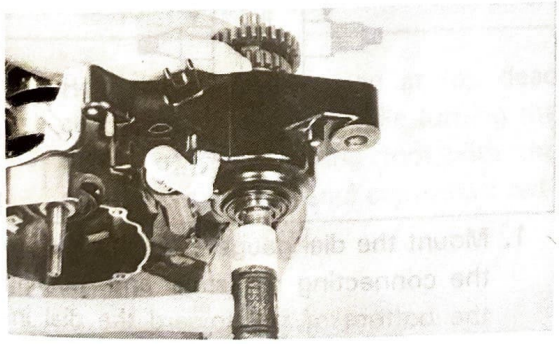
4. After reassembly, apply a liberal coating of two-stroke oil to the crank pin and bearing and into each crankshaft bearing oil delivery hole.



5. Check crankshaft and transmission shafts for proper operation and freedom of movement.



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

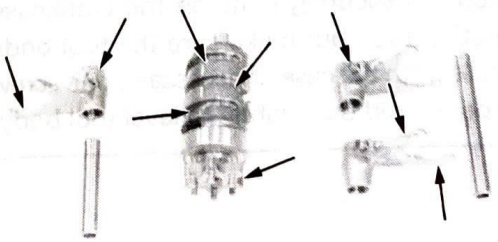


NOTE:

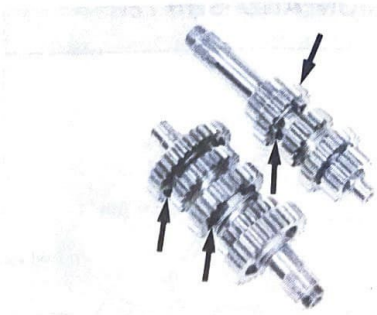
Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.

Inspection

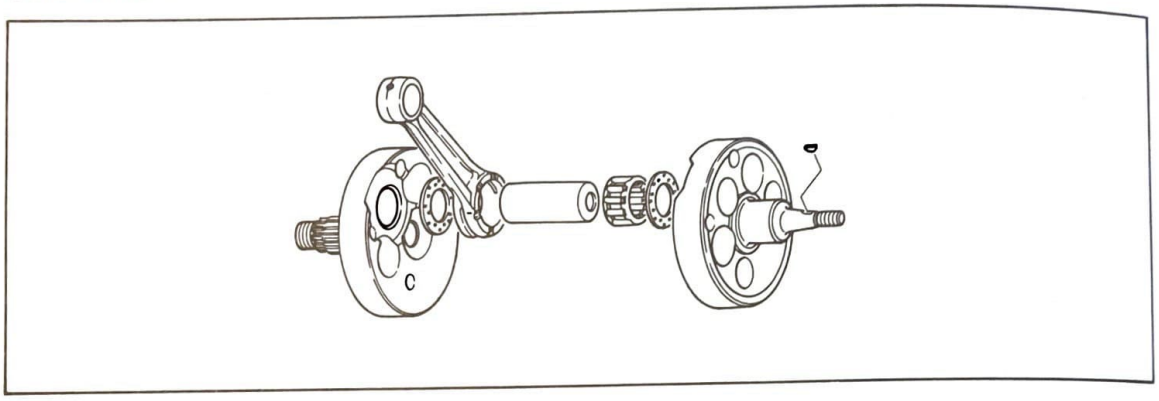
1. Inspect each shift fork for signs of galling on gear contact surfaces. Check for bending. Make sure each fork slides freely on its guide bar.
2. Check the shift cam grooves for signs of wear or damage. If any profile has excessive wear and/or any damage, replace cam.
3. Check the cam followers (dowel pin) 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.



4. 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.
5. 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.

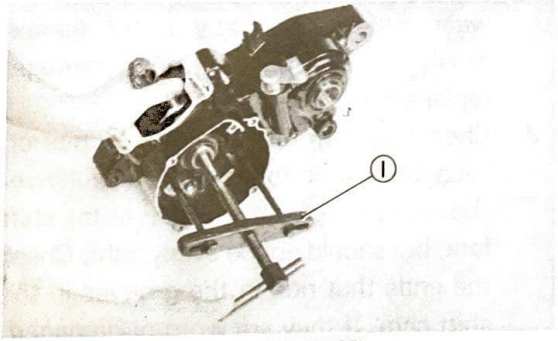


CRANKSHAFT



Removal

1. Remove crankshaft assembly with crankcase separating tool.

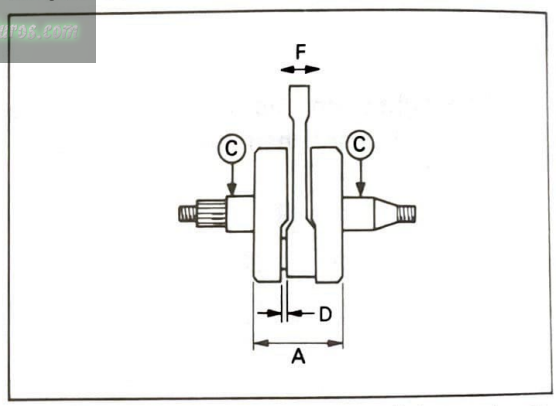


1. Crankcase separating tool (YU-01135)

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.

Inspection



1. 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.

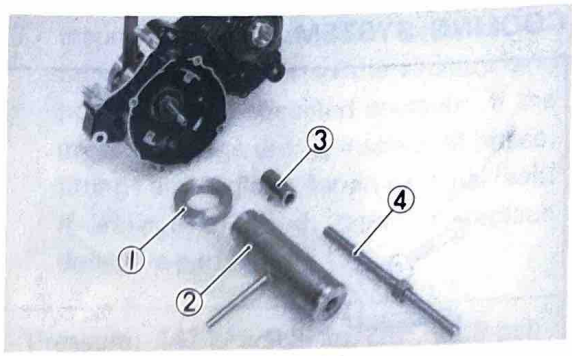
Small end free play (F):
0.4 ~ 1.0 mm (0.031 ~ 0.079 in)
Limit <2.0 mm (0.08 in)>

2. 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.

Big end side clearance (D):
0.25 ~ 0.75 mm (0.01 ~ 0.029 in)

Run out limit (C):
0.03 mm (0.0012 in)
Crank width (A):
$62^{+0}_{-0.05}$ mm ($2.44^{+0}_{-0.002}$ in)

3. If any of the above measurements exceed tolerance, crankshaft repair is required. Take the machine to your authorized Yamaha dealer.



1. Spacer
2. Crankshaft installing pot
3. Adapter
4. Crankshaft installing bolt

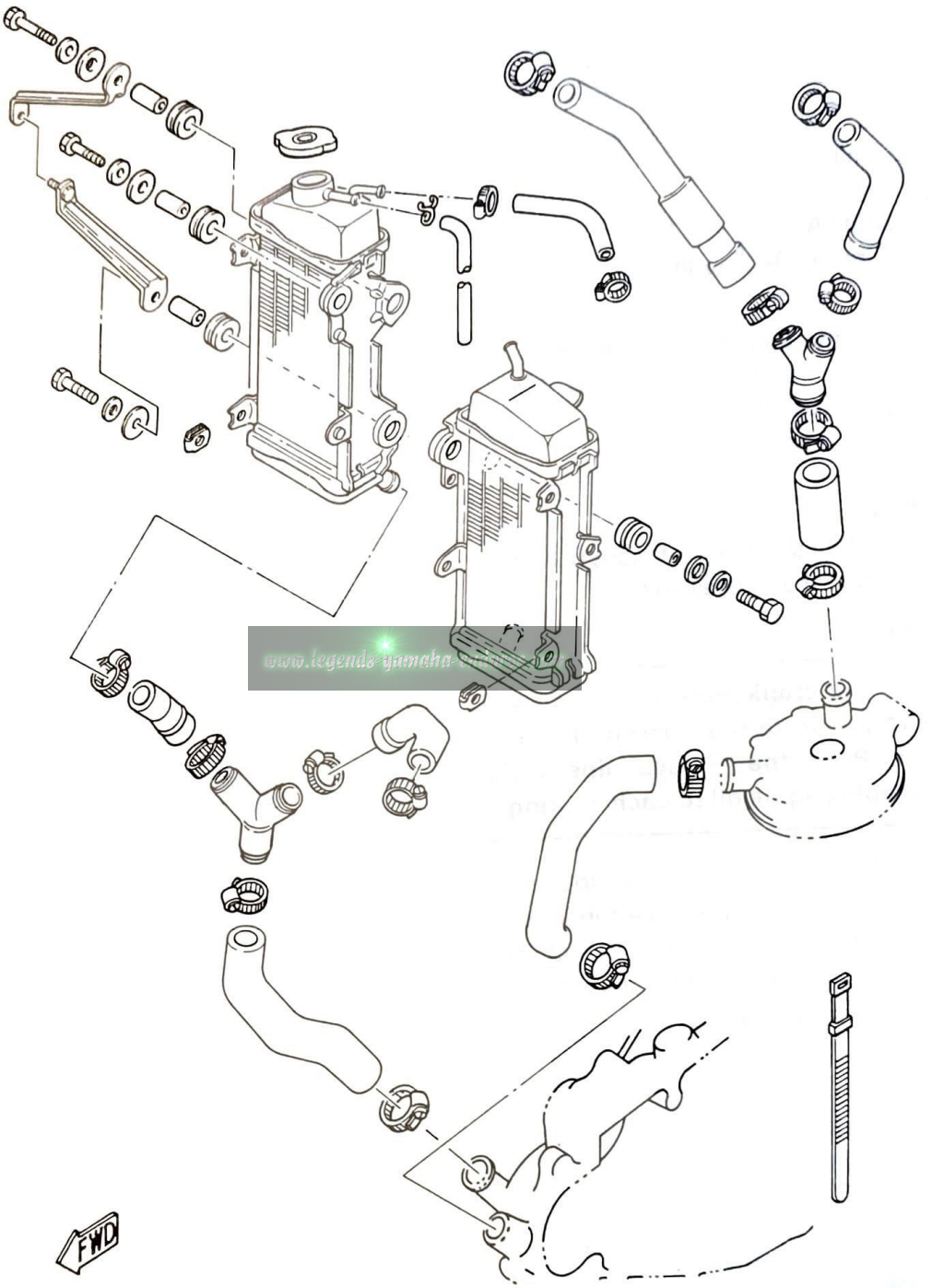
Installation

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

CAUTION:

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

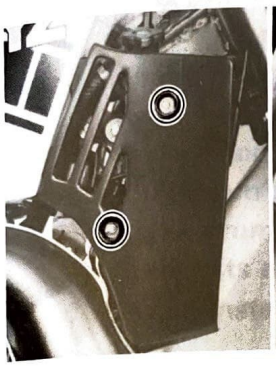
2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the other. Operate tool until crankshaft bottoms against bearing.

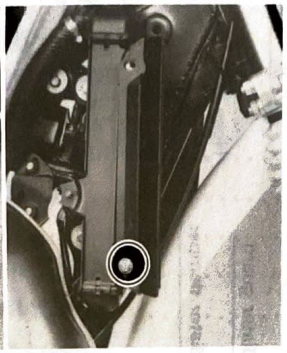


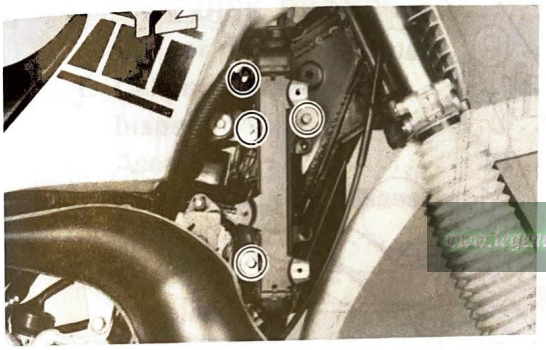
Radiator removal

Before servicing the radiator, it should be drained off.

1. Remove the pan head screws and remove the side cover and air deflector panel.
2. Remove the three bolts, remove the radiator hose, and remove the radiator.

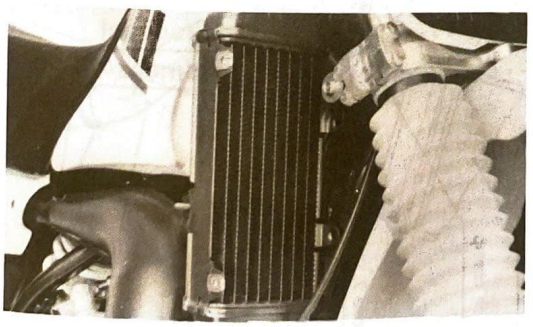






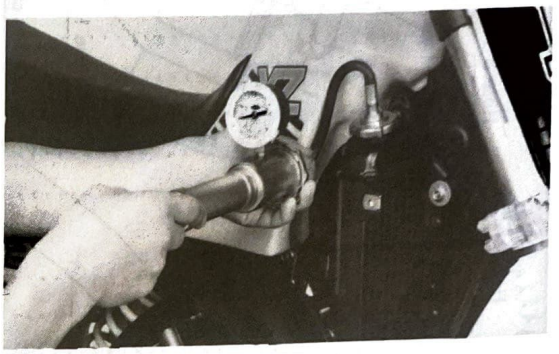
Inspection

1. 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.

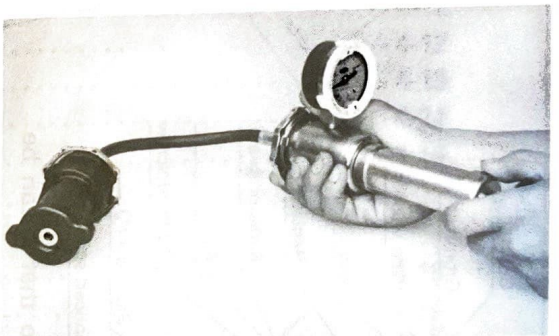


2. Check the coolant hoses for cracks and damage. Replace as required.
3. Inspect the cooling system for leaks. Attach the cap tester to the radiator and pump it to the specified pressure. If the pressure gauge drops, inspect all hoses, fittings and radiator for an external leak. If leakage is found, repair or replace defective parts.

Pressure: 147 kPa (1.5 kg/cm^2, 21.3 psi)



4. 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.

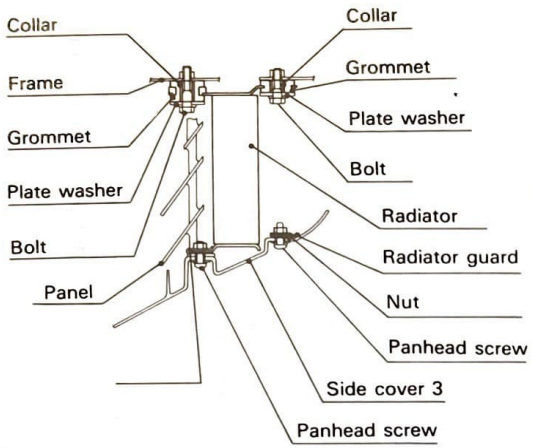


Valve opening pressure: 88.3 kPa (0.9 kg/cm^2, 12.8 psi)

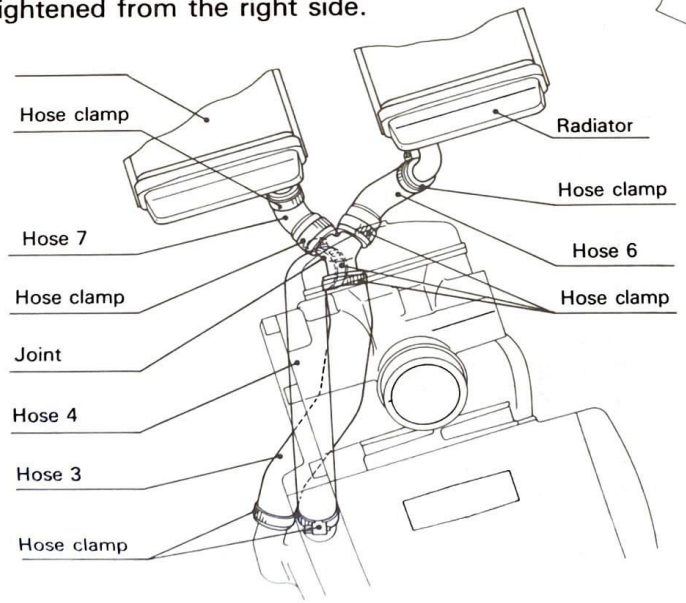
Radiator installation

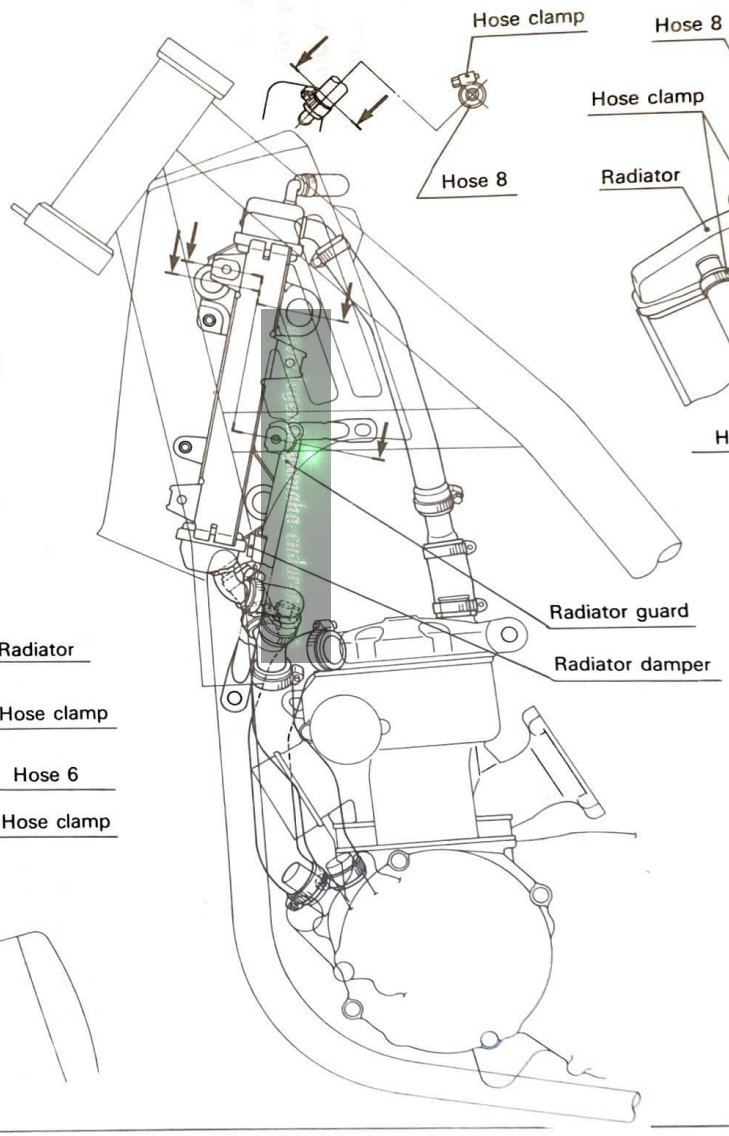
When installing the radiator, keep in mind the following:

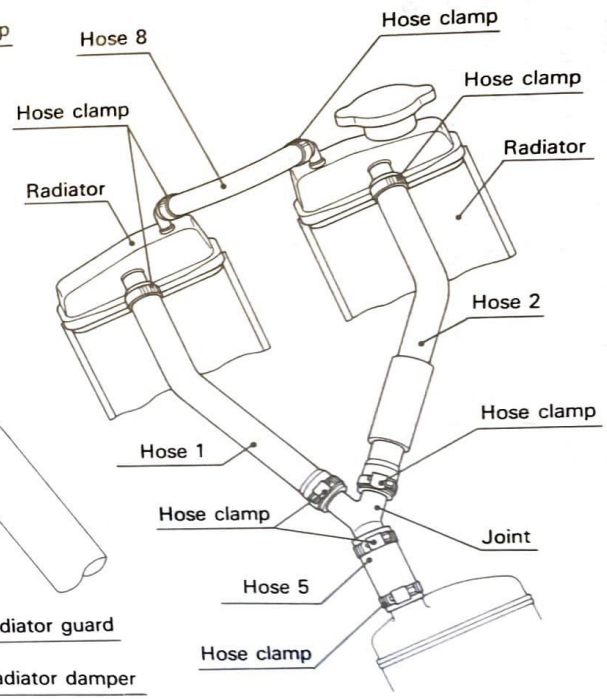
1. Insert the air deflector stays firmly into the holes in the radiator.
2. Insert the side cover stay into the fuel tank.

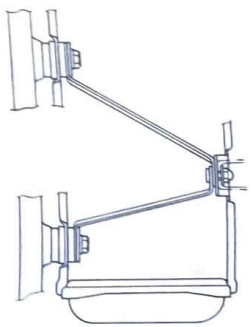


Set the clamp for hose 7 so that it can be tightened from the right side.









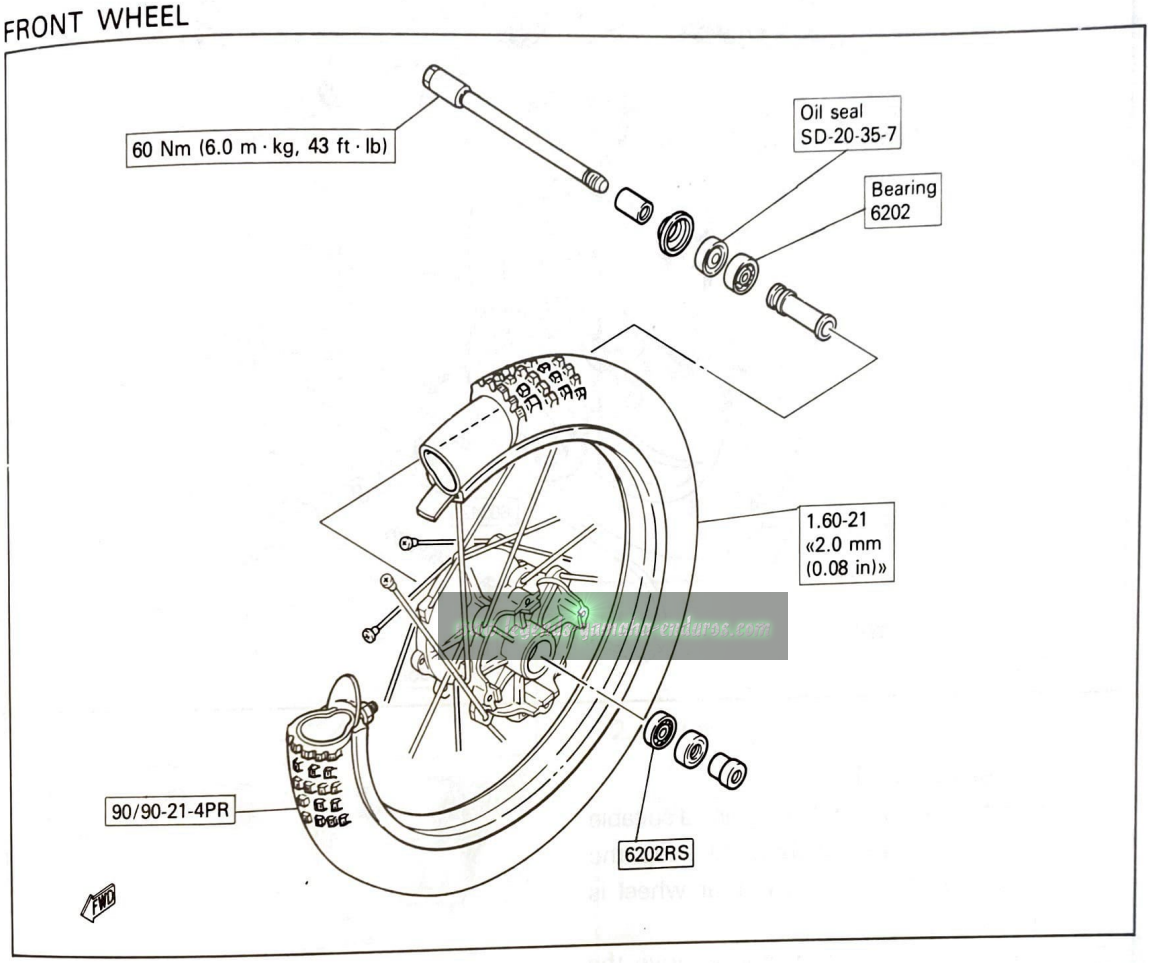
4 CHASSIS MAINTENANCE AND REPAIR

4 CHASSIS MAINTENANCE AND REPAIR

WHEEL ASSEMBLIES, SPROCKETS AND CHAIN

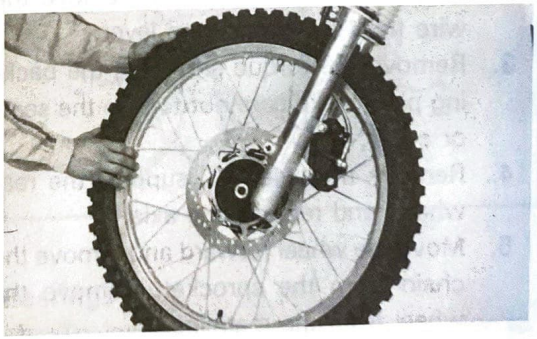
Whenever performing chassis work, always take extra care and double-check each step of each procedure. The wheels, brakes, suspension, steering, and frame must all be in top condition to provide optimum performance, reliability, and safety.

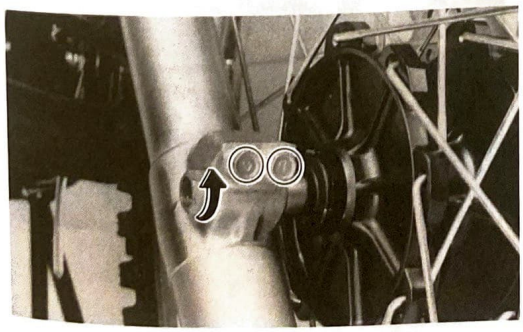
FRONT WHEEL



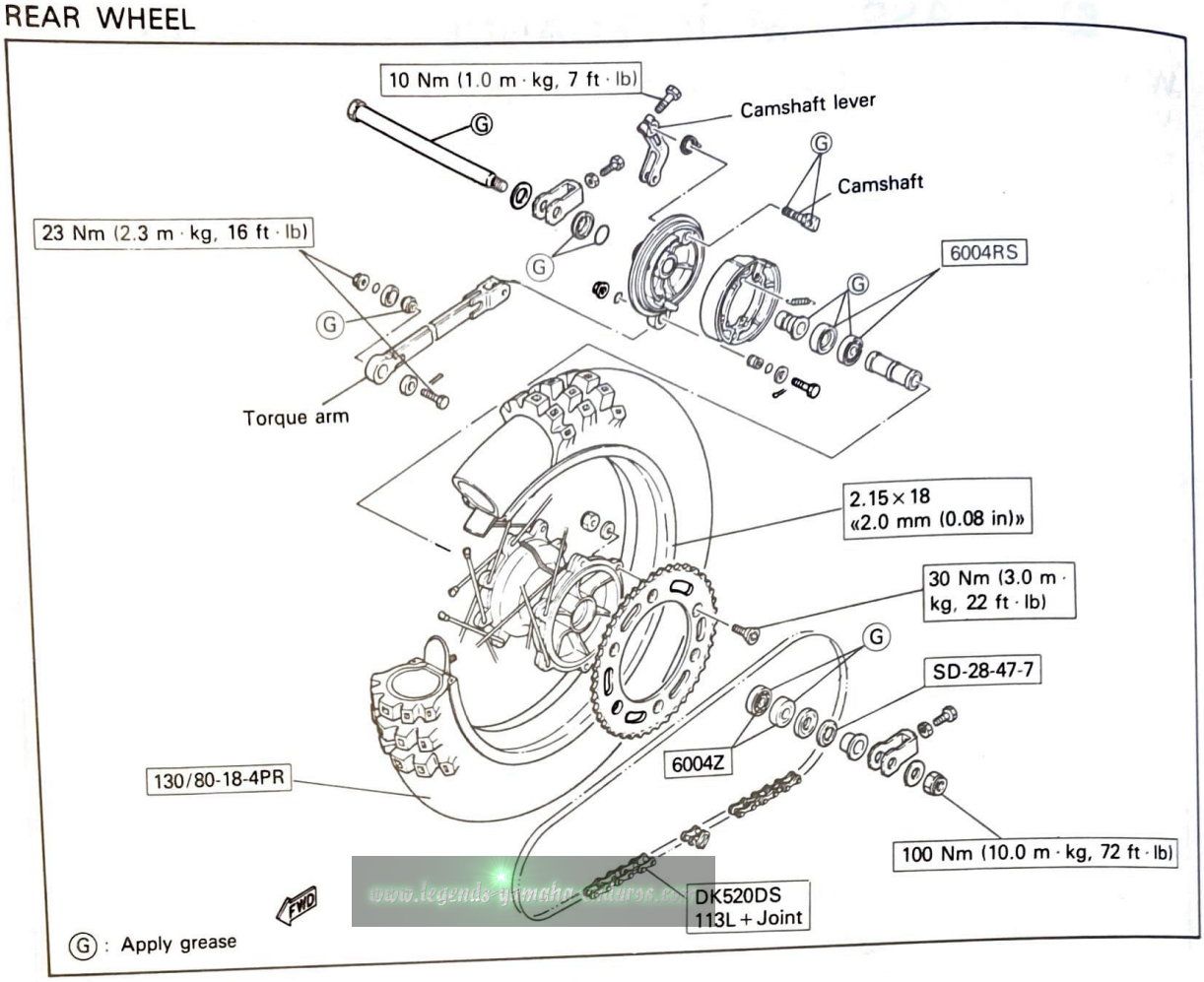
Front wheel removal

1. Elevate the front wheel by placing a suitable stand under the engine.
2. Unscrew the axle from the left-hand fork leg, and support the front wheel while removing the axle.
3. Remove the front wheel.



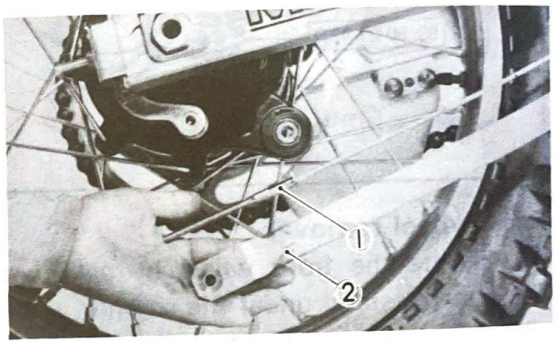


REAR WHEEL



Rear wheel removal

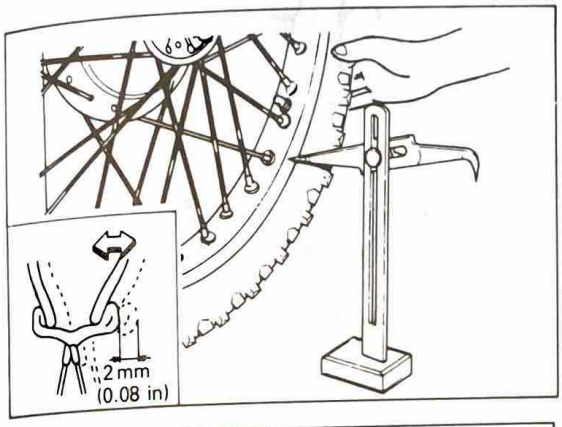
1. To remove the rear wheel, place a suitable stand under the machine to keep the machine stable while the rear wheel is removed.
2. Remove the wing nut, and remove the wire from the brake cam lever.
3. Remove the torque arm from the backing plate; take care not to lose the seals or collar.
4. Remove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

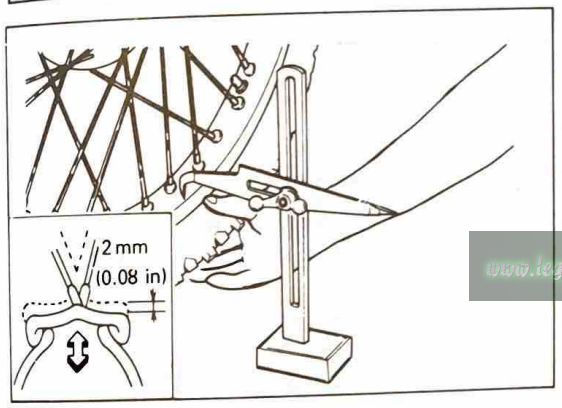


1. Brake cable 2. Torque arm

Rims and spokes

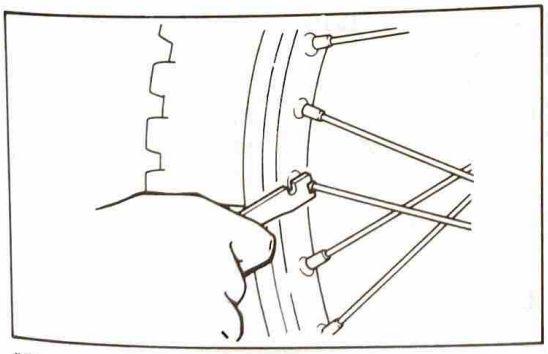
1. Block the wheels off the ground.
2. Spin the wheels and observe the amount of runout.
3. If the runout exceeds 2.0 mm (0.080 in), true the wheels.





4. Tap each spoke with a spoke wrench to determine if any spokes are loose; tighten all loose spokes and replace bent spokes.

   Tightening procedures are on page 2-13 "Spokes".



*The nipple wrench must be of the correct size. Use care not to over-tighten.

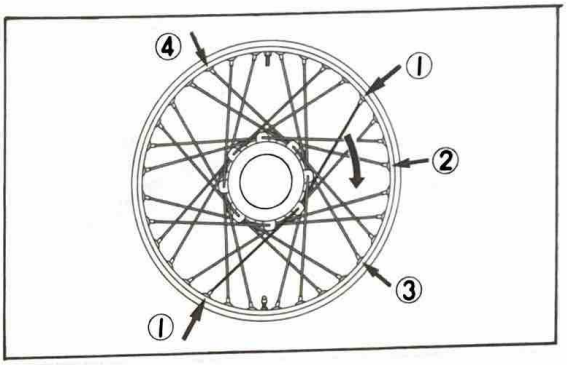
CAUTION:

If a rim or spokes are severely "dinged" or bent, replace them.

Sopke replacemant

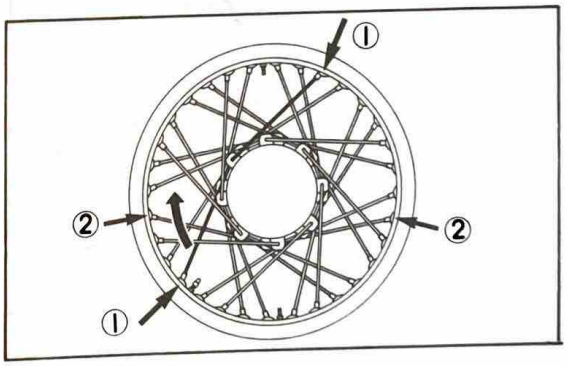
[Front]

1. When replacing the spoke ①, remove the nipples ①, ②, ③ and ④.
2. Turn the spoke ① up to ③. Then pull the spoke out.
3. Install and fit a new spoke.



[Rear]

1. When replacing the spoke ①, remove the nipples ① and ②.
2. Turn the sopke ① up to ②. Then pull the spoke out.
3. Install and fit a new spoke.



Bearings

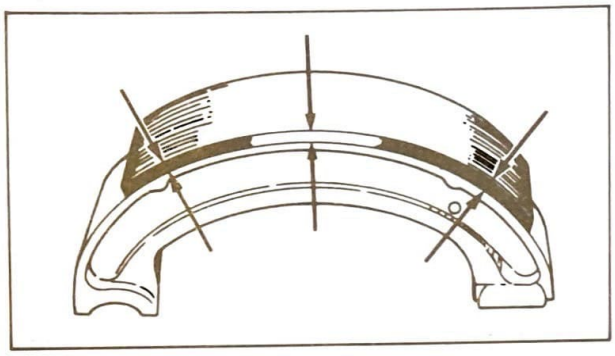
1. To inspect the wheel bearings, try to move the wheel sideways in relation to the fork in the front or the frame in the rear. If any movement is felt, the bearings must be replaced.

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.

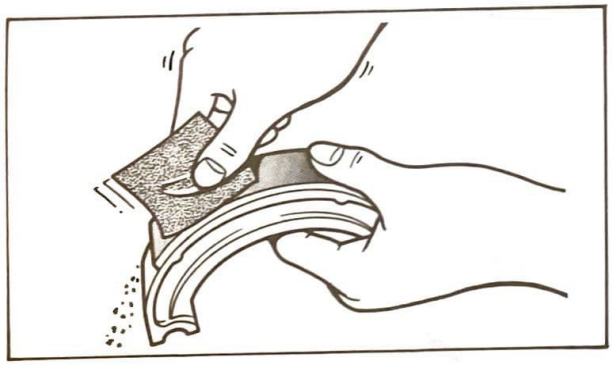
Brake shoe inspection

Measure the shoe thickness with slide calipers.

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

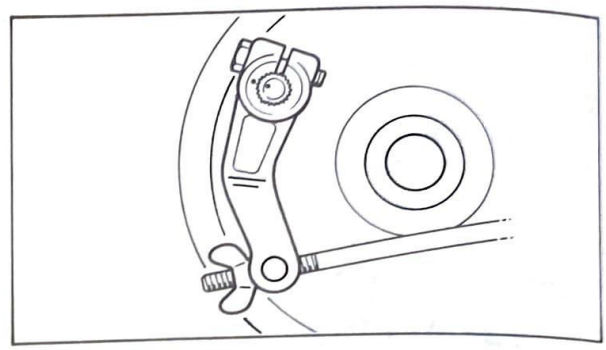


Brake lining thickness:
New 4.0 mm (0.16 in)
Limit 2.0 mm (0.08 in)



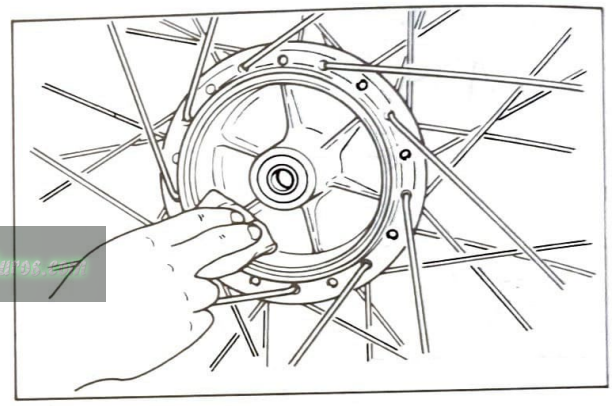
Brake cam lever

When removing the brake cam lever from the shaft, put match marks on both the cam lever and the shaft. The marks will be of great help when the brake is reassembled.



Brake drum

1. 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.
2. If the drum is deeply grooved, the drum must be replaced.

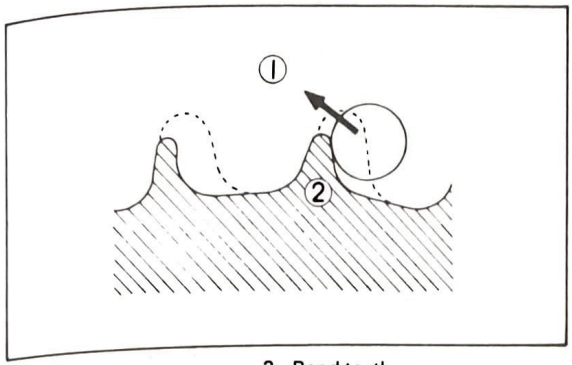


Sprockets and chain (Adjustment begins on page 2-12)

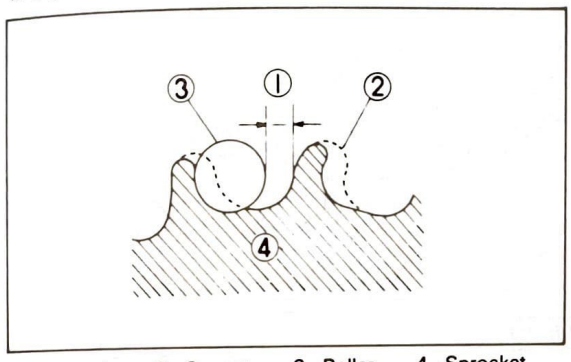
Tuning and repair parts

Part name	Size	Part number
Drive sprocket (STD)	13T	23X-17461-30
	14T	23X-17461-40
	15T	23X-17461-50
Lock washer		90215-21239
Driven sprocket	44T	39W-25444-01
	45T	39W-25445-00
	46T	39W-25446-00
	48T	39W-25448-00
(STD)	50T	39W-25450-00
	52T	39W-25452-00
Chain	113L + joint	94585-20113
Chain joint		94685-20001

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.

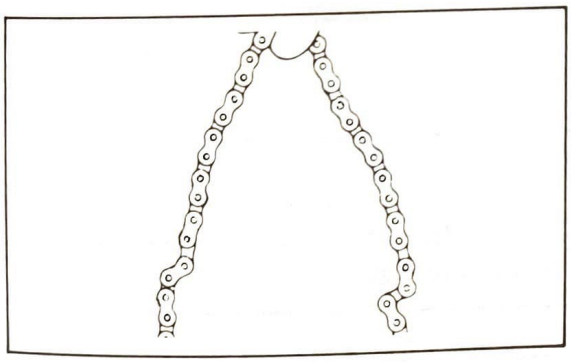


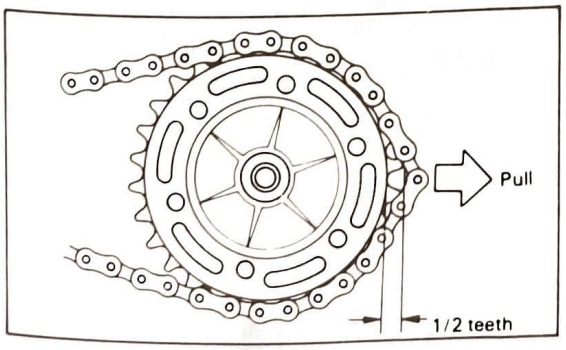
1. Slip off 2. Bend teeth



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.





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.

Drive sprocket securing nut torque:
75 Nm (7.5 m · kg, 54 ft · lb)

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

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

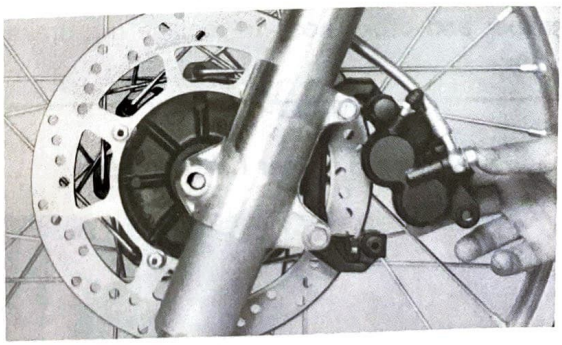
Wheel installation

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

1. Lightly smear grease on:
   * The shafts
   * The bearings and oil seal lips
   * The O-ring and dust cover interior for the rear brake shoe plate
   * The oil seal and collar outer circumference from the torque arm.
2. Make sure nuts are properly tightened.

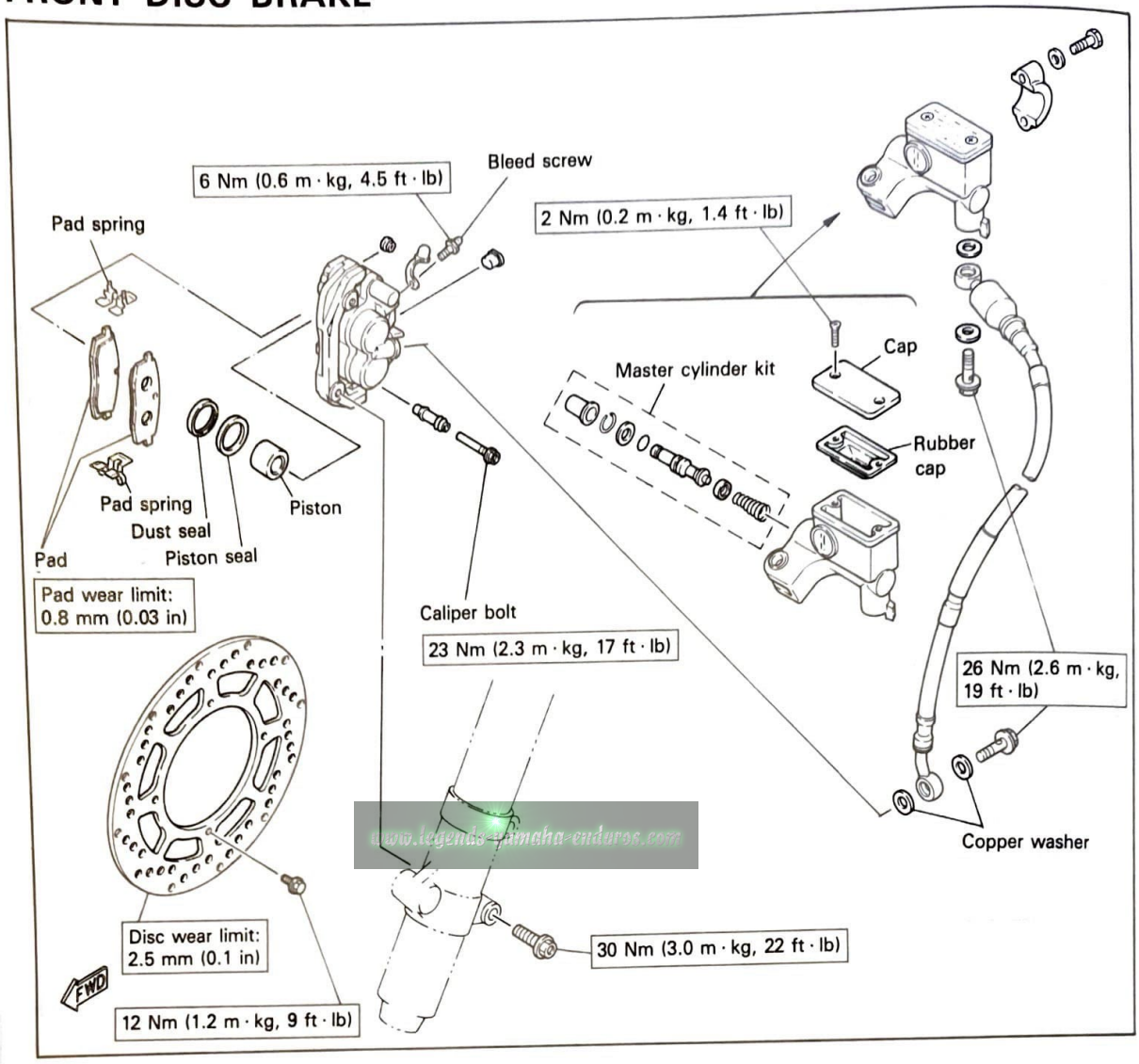
Front wheel axle:
60 Nm (6.0 m · kg, 43 ft · lb)
Axe pinch bolts:
20 Nm (2.0 m · kg, 14 ft · lb)
Rear wheel axle:
100 Nm (10.0 m · kg, 72 ft · lb)
Torque arm:
23 Nm (2.3 m · kg, 16 ft · lb)

3. When installing the front wheel, remove the brake pads as required.



4. Be sure to adjust the chain slack (Refer to Page 2-12 of "Drive chain".)
5. Adjust the play in the brake lever and pedal.

FRONT DISC BRAKE

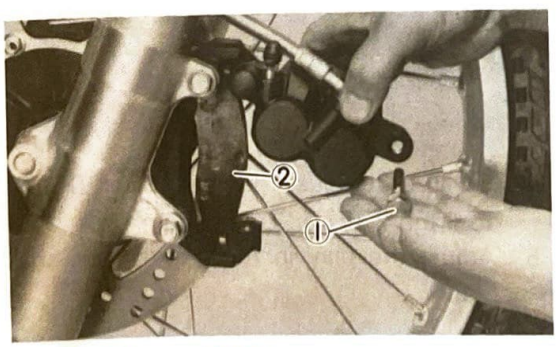


Caliper pad replacement

NOTE:

It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.

1. Remove the caliper bolt and pads.



1. Caliper bolt 2. Pads

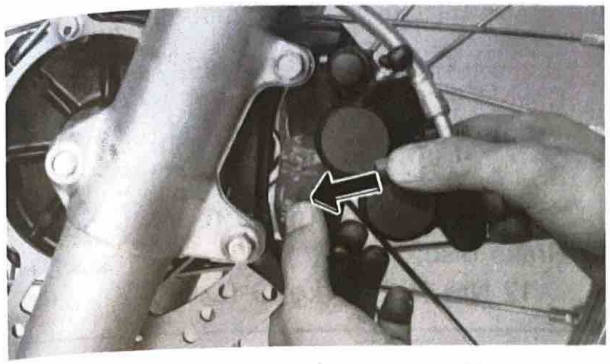
NOTE:

Replace the pads as a set if either is found to be worn to wear limit.

Pad wear limit:
0.8 mm (0.03 in)

1. Wear indicator

2. Hold the pads in the caliper bracket and turn the caliper body clockwise.

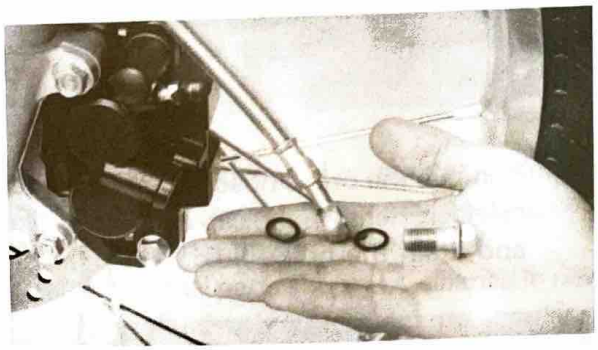


3. Tighten the caliper bolt to specification.

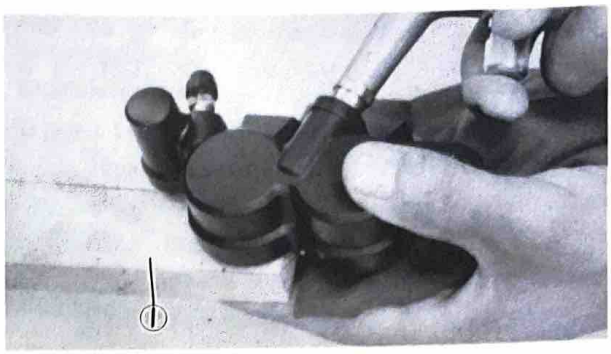
Caliper bolt:
23 Nm (2.3 m · kg, 17 ft · lb)

Caliper disassembly

1. Remove the caliper brake hose. Allow the caliper assembly to drain into a container.
2. Place the open hose end into the container and pump the old fluid out of the master cylinder.



3. Remove the caliper bolt and pads as in Caliper Pad Replacement Procedure.
4. Insert a piece of wooden block into the caliper to lock one caliper piston.
5. Carefully force the piston out of the caliper cylinder with compressed air. Never try to pry out the piston.

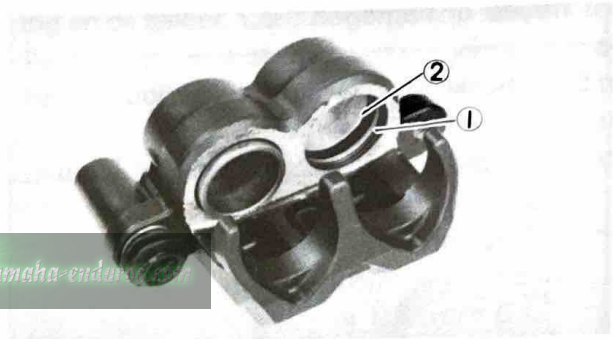


1. Wooden piece

NOTE:

In the first place, remove one piston and inspect. After inserting the piston, remove remaining one.

6. Remove the dust seal and piston seal.



1. Dust seal 2. Piston seal

Inspection

1. Replace the caliper piston if it is scratched.

2. Replace any brake pad worn beyond limits. Replace the brake pads as a set.

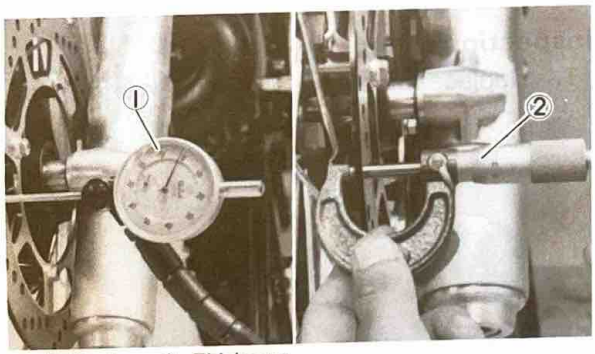
Pad wear limit: 0.8 mm (0.03 in)

3. Inspect the caliper cylinder body. Replace if scratched. Clean all passages with new brake fluid.
4. Inspect the brake hoses.

Replace every four years or if cracked, frayed or damaged.

5. Check for wear and deflection of disc.

Maximum deflection: 0.15 mm (0.006 in) Minimum disc thickness: 2.5 mm (0.1 in)



1. Deflection 2. Thickness

Assembly

When reassembling the caliper, reverse the disassembly procedure taking care of the following points.

1. All internal parts should be cleaned in new brake fluid only. Internal parts should be lubricated with brake fluid when installed. Replace the piston seal and dust seal whenever a caliper is disassembled:

Brake fluid: DOT #3

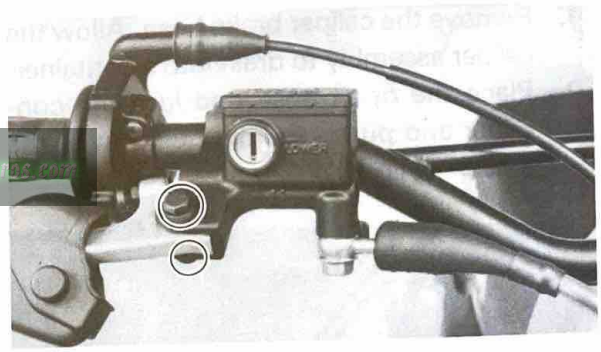
2. Tighten each bolts to specification.

Caliper bolt: 23 Nm (2.3 m · kg, 17 ft · lb) Brake hose: 26 Nm (2.6 m · kg, 19 ft · lb) Brake disc: 12 Nm (1.2 m · kg, 9 ft · lb)

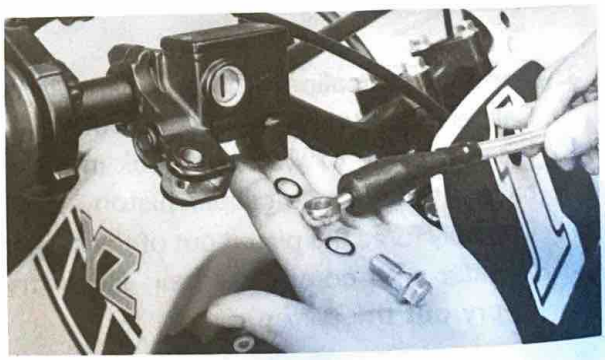
3. Bleed the air completly from the brake system.

Master cylinder disassembly

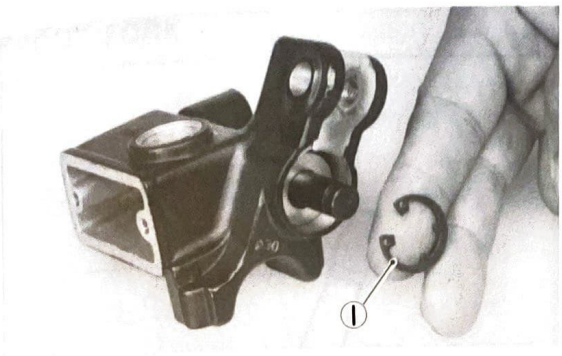
1. Remove the brake lever, spring and dust boot.



2. Romove the brake hose and then master cylinder. Remove the cap and rubber cap, and drain the brake fluid.



3. Remove the circlip and master cylinder kit.



1. Circlip

Inspection

1. Inspect the master cylinder body. Replace if scratched. Clean all passages with new brake fluid.
2. Inspect the master cylinder kit. If worn or damaged, replace as an assembly.

Assembly

When reassembling the master cylinder, reverse the disassembly procedure taking care of the following points.

1. All internal parts should be cleaned in new brake fluid only. Internal parts should be lubricated with brake fluid when installed.

Brake fluid: DOT #3

2. Tighten each bolts to specification.

Cap: 2 Nm (0.2 m · kg, 1.4 ft · lb) Brake hose: 26 Nm (2.6 m · kg, 19 ft · lb)

3. Bleed the air completely from the brake system.

Air bleeding

WARNING:

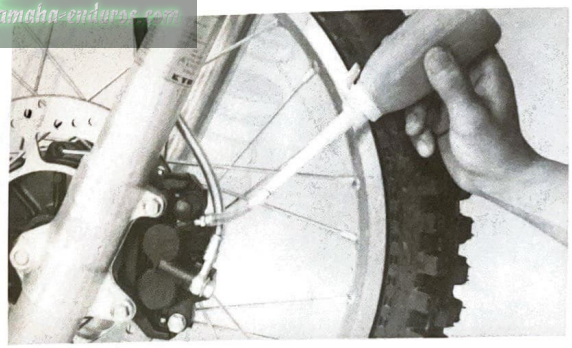
Bleed the brake system if:

- **The system has been disassembled.**
- **A brake hose has been loosened or removed.**
- **The brake fluid is very low.**
- **The brake operation is faulty.**

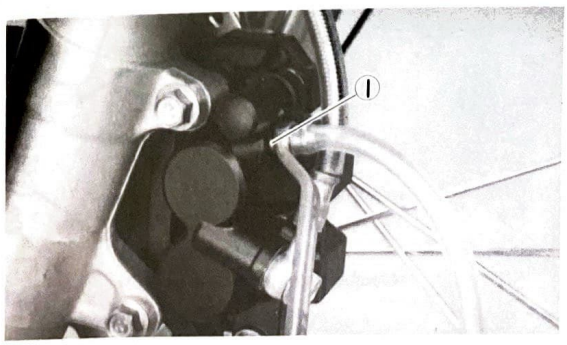
A dangerous loss of braking performance may occur if the brake system is not properly bled.

NOTE:

If the caliper and/or the master cylinder are drained of its brake fluid, inject fluid through the air bleed screw into the master cylinder using an oil feeder. Continue injecting oil until the fluid coming out at the master cylinder is free from air. While doing this, take care not to allow the fluid overflow. Then, bleed the air trapped in the caliper top by the following procedure.



1. Add proper brake fluid to the reservoir.
2. Connect the clear plactic tube tightly to the caliper bleed screw. Put the end of the tube into a container.

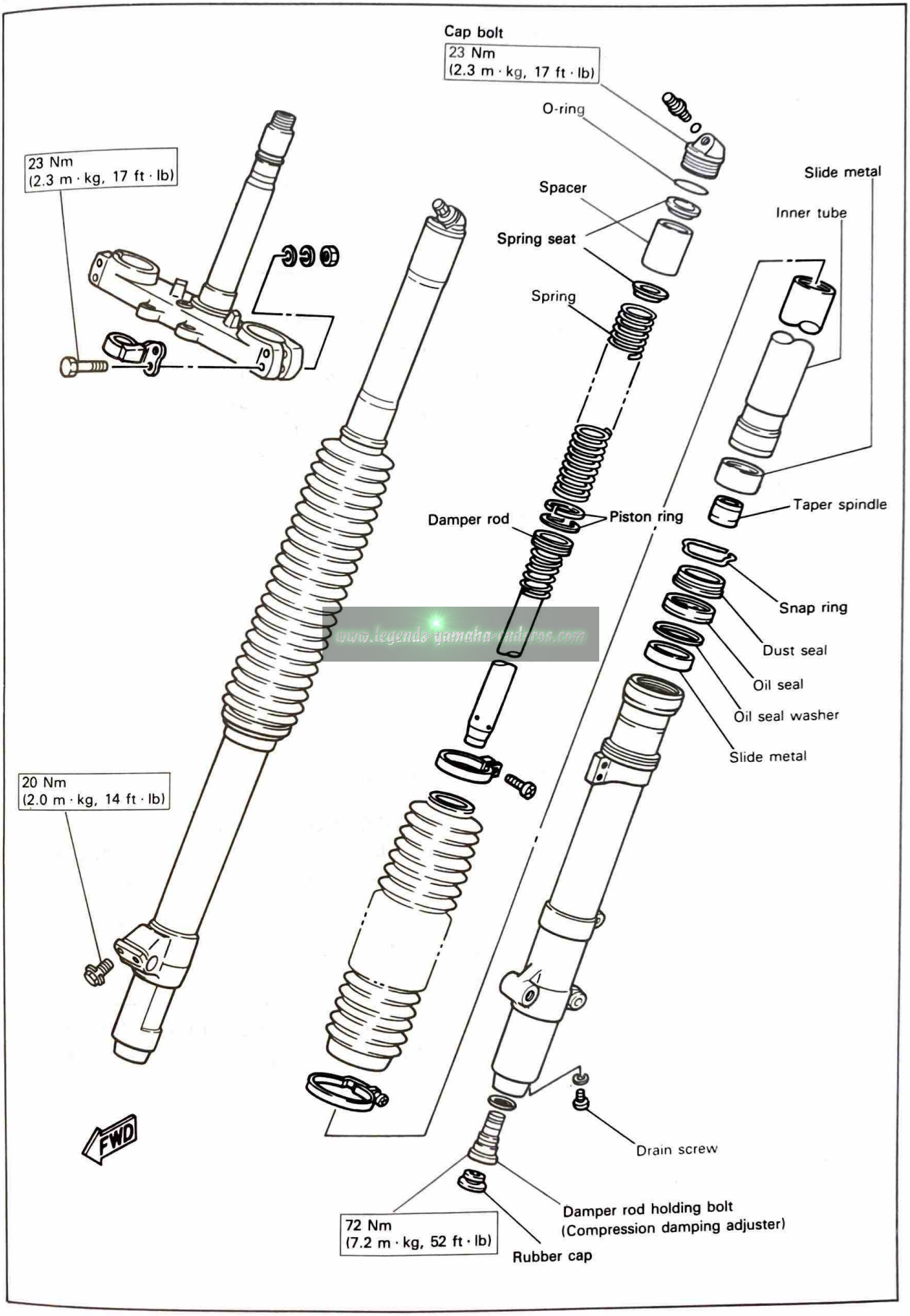


1. Bleed screw

3. Slowly apply the brake lever several times. Pull in lever. Hold the lever in "on" position. Loosen the bleed screw. Allow the lever to travel slowly toward its limit. When the limit is reached, tighten the bleed screw.
4. Continue step (3) until all air bubbles are removed from system.

Bleed screw: 6 Nm (0.6 m · kg, 4.5 ft · lb)

5. Add the brake fluid to the reservoir so that all the air in it is completely expelled.



Front fork setting

For details of front fork setting, refer to the Race Preparation and Tuning Manual. It is advisable to take a note of the standard setting data and specified range of adjustment.

Fork oil

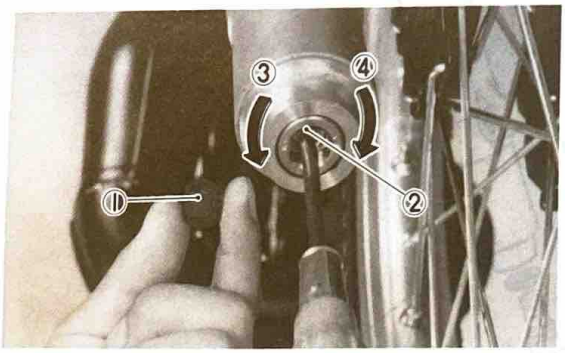
Recommended oil:
Fork oil 15 wt
Oil quantity:
528 cm^3 (18.6 Imp oz, 17.9 US oz)
Oil level:
STD ..... 180 mm (7.09 in)
MIN. ..... 190 mm (7.5 in)
MAX. ..... 140 mm (5.5 in)
(From top of inner tube fully compressed without spring.)

Compression damping

STD SETTING: 4 clicks in
[MIN.~MAX.]: [0~16]

CAUTION:

1. **Be sure to fit the rubber cap to prevent malfunction due to dust, lint, etc.**
2. **Use a torque below 10 Nm (1.0 m · kg, 7.2 ft · lb) for turning the adjuster.**



1. Rubber cap 2. Compression damping adjuster
3. Soft 4. Hard

Fork spring

FREE LENGTH: 542.5 mm (21.36 in)

Type	Spring rate kg/mm	Part number	I.D. mark
STD	0.305	39X-23141-00	–
SOFT	0.275	39X-23141-10	1 slit
HARD	0.325	39X-23141-20	2 slits

Fork tube height

STD 6.0 mm (0.24 in)
MIN. 0 mm (0 in)
MAX. 10 mm (0.39 in)

Air pressure

STD 0 kPa (0 kg/cm^2, 0 psi)
MAX. 245 kPa (2.5 kg/cm^2, 35 psi)

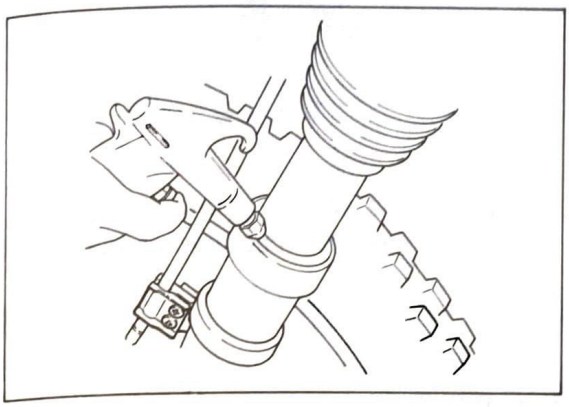
Handling note

CAUTION:

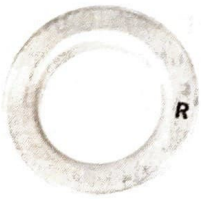
To prevent an accidental explosion of air, the following instructions should be observed:

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 cap bolts or front forks, be sure to extract the air from the air chamber completely.**

1 After running over a dusty or sandy course, remove the dust cover and remove the dust around the front forks. This cleaning will protect the fork oil seals against damage.

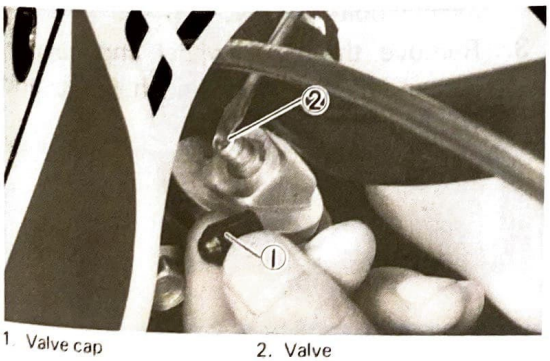


2. Before removing the front forks, put the marks, R and L, on the tops of cap bolts and spring seats so you will not be confused when reinstalling the front forks.



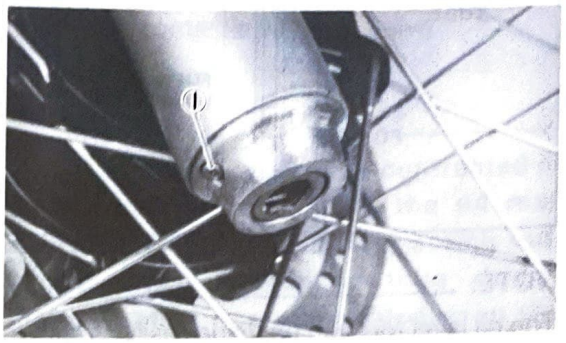
Fork oil replacement

1. Place a suitable stand under the engine to keep the front of machine raised off the floor.
2. Remove the valve cap and depress the air valve to allow the air to escape from the fork legs.



1. Valve cap 2. Valve

3. Place an open container beneath each drain hole and remove the drain screws.



1. Drain screw

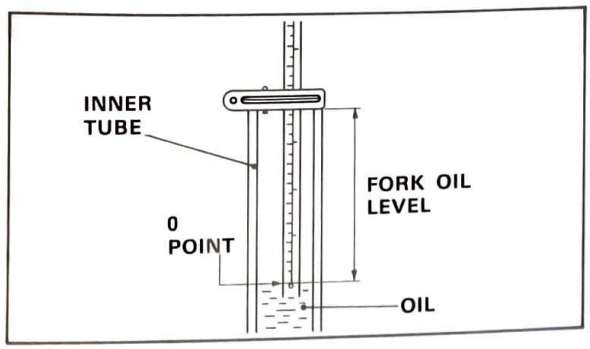
4. After most of oil has drained, slowly raise and lower outer tubes to pump out remaining oil.
5. Install drain screws.

NOTE:

Check gasket, replace if damaged.

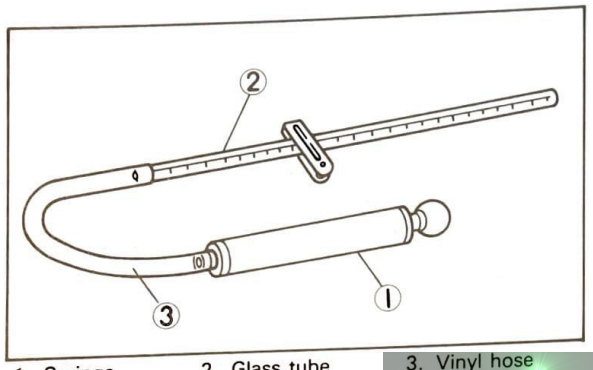
6. Remove the handleber and the cap bolt assembly.
   Remove the spacer, spring seats and fork spring.

7. 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.
8. Measure the oil level from top of the fork tube with the oil level tool or the tape measure roll.



NOTE:

The oil level tool can be made easily as shown in illust. Fork tube must be fully bottomed.



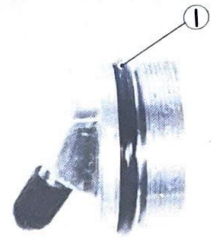
1. Syringe 2. Glass tube 3. Vinyl hose

Recommended oil:
Fork oil 15 wt
Oil quantity:
528 cm^3 (18.6 Imp oz, 17.9 US oz)
Oil level:
180 mm (7.09 in)

NOTE:

Unless the specified amount oil conforms to the oil level marking on the machine, have recourse to the marked level. Also check that both oil amount levels are the same.

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



1. O-ring

10. Install the spring, spring seat, spacer, spring seat, and cap bolt, and torque to specification.

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

11. Set the air pressure to specification or your preference.

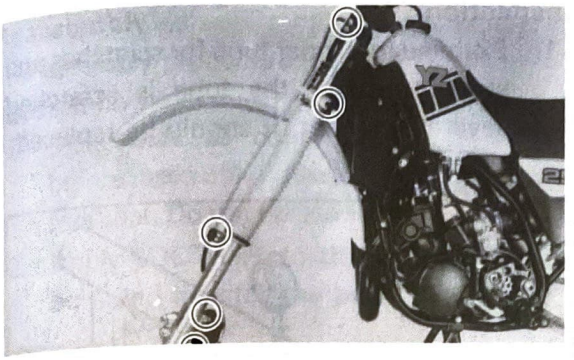
STD air pressure:
OK Pa (0 kg/cm^2, 0 psi)
MAX air pressure:
245 kPa (2.5 kg/cm^2, 35 psi)

12. Install the handlebar.

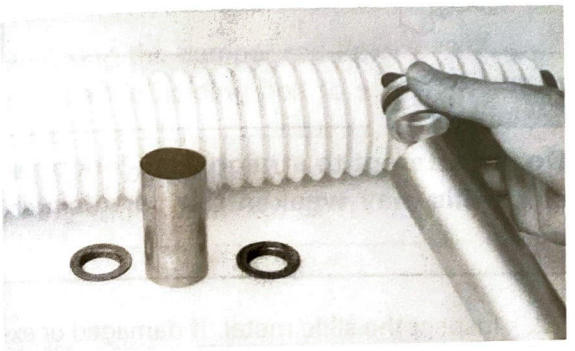
Handleber:
23 Nm (2.3 m · kg, 17 ft · lb)

Removal and disassembly

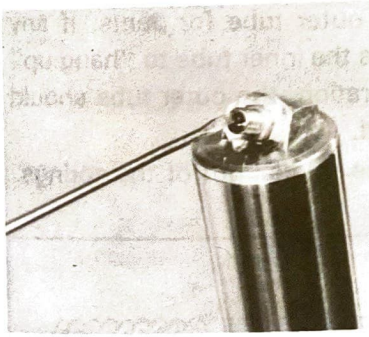
1. Place the machine on a suitable stand to keep it stable while the front wheel and forks are removed.
2. Let the air out of the forks, and loosen the cap bolts slightly.
3. Remove the front wheel and caliper, loosen the fork tube pinch bolts, and remove the forks.



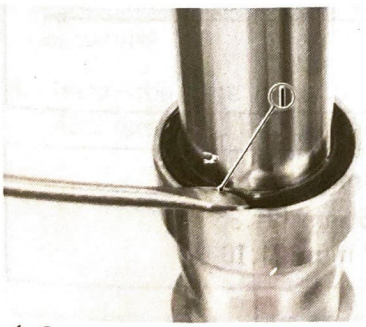
4. Remove the rubber boot, spacer, spring seats.



5. Fill the fork completely with fork oil and reinstall the cap bolt. Depress the air valve until oil flows out.



6. Remove the snap ring from the top of the outer tube.

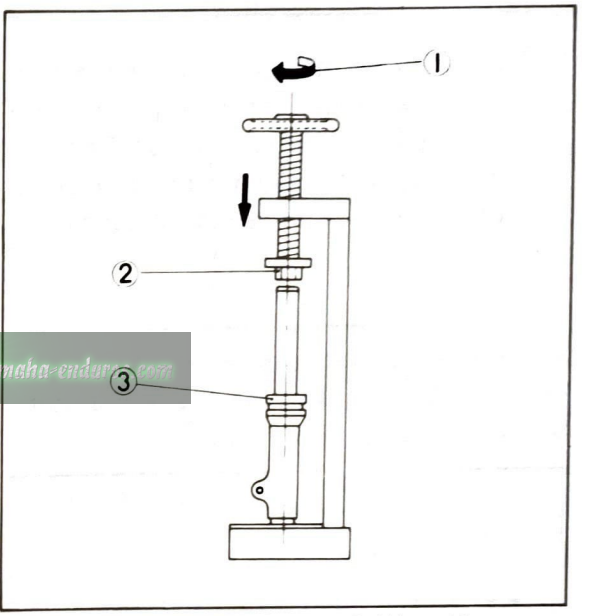


1. Snap ring

7. Place a spacer on top of the cap bolt, and place the fork leg in a hand press as illustrated. The spacer 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.



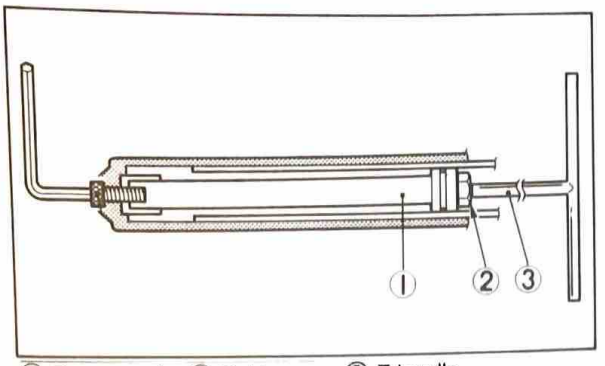
1. Turn slowly 2. Spacer 3. Wrap with rag

8. 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.
9. Remove the dust seal, and oil seal. Discard the oil seal, as the seal must always be replaced whenever the fork is disassembled.

NOTE:

For oil seal replacement alone, the following steps can be left out.

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



① Damper rod ② Holder ③ T-handle

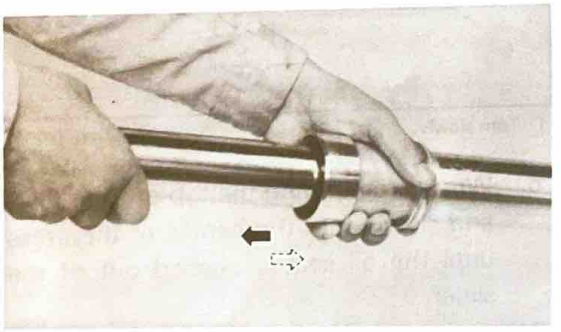
NOTE:

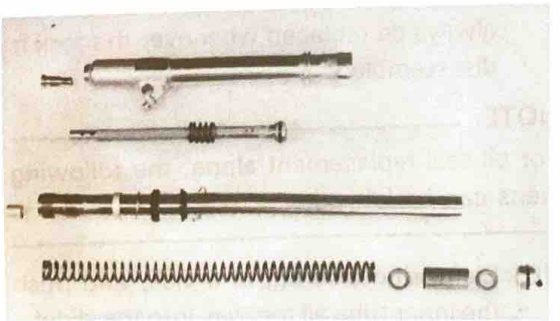
The holding bolt is locked with LOCTITE®. To remove it, top it with a hammer several times so that it can be loosened.

12. Slowly push the inner fork tube into the outer fork tube, and then pull the fork back quickly until it tops out. The slide metal will be dislodged from the outer fork tube after doing this several times.

CAUTION:

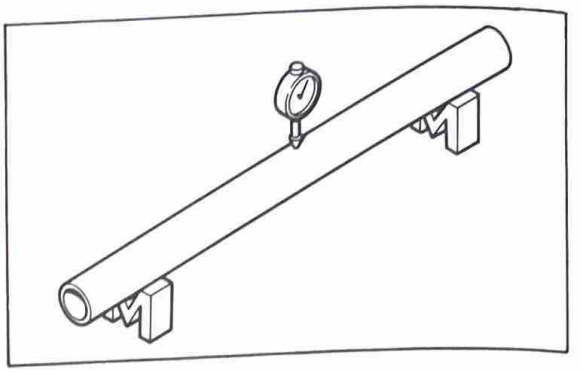
Avoid bottoming the inner fork tube in the outer fork tube. The taper spindle could be damaged.





Inspection

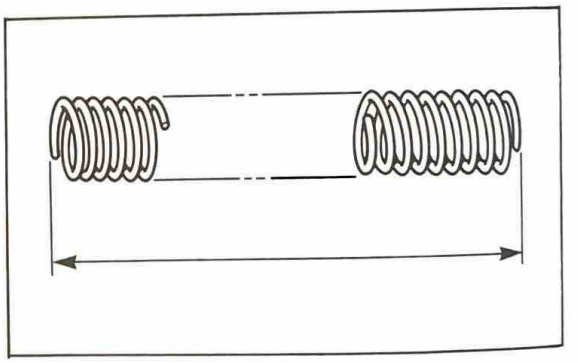
1. Examine fork inner tube for scratches and straightness. If the tube is scratched severely or bent, it should be replaced.



WARNING:

Do not attempt to straighten a fork tube, since this may weaken the part dangerously.

2. Inspect the slide metal. If damaged or excessively worn, replace it.
3. Inspect the damper rod and piston ring. If damaged or excessively worn, replace it.
4. Check the outer tube for dents. If any dent causes the inner tube to "hang up" during operation, the outer tube should be replaced.
5. Measure the free length of the springs.



Fork spring free length:
STD 542.5 mm (21.36 in)
Limit: 537 mm (21.16 in)

6. Check the O-ring on the cap bolt. If damaged, replace it.

Reassembly

The assembly procedure is the reverse of the disassembly procedure.

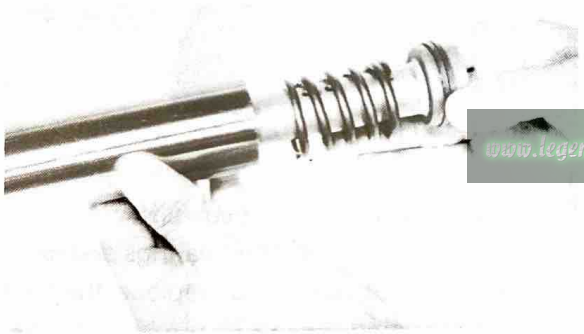
1. Make sure all components are clean before assembly. Always install a new fork seal. Do not re-use a seal.
2. Apply LOCTITE® to the threads of the bolt, and reinstall the bolt.

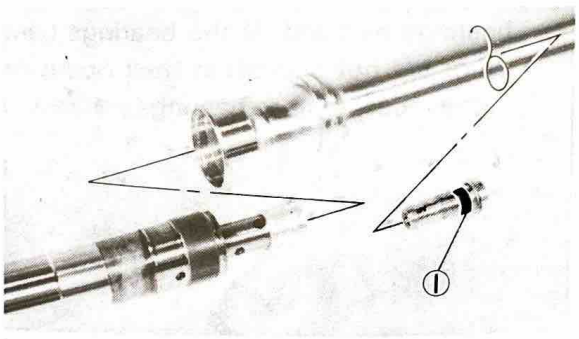
NOTE:

Apply LOCTITE® to the five threads from the bolt head side. Be careful not to apply excessively.

3. Using the damper rod holding tool, torque the holding bolt to specification.

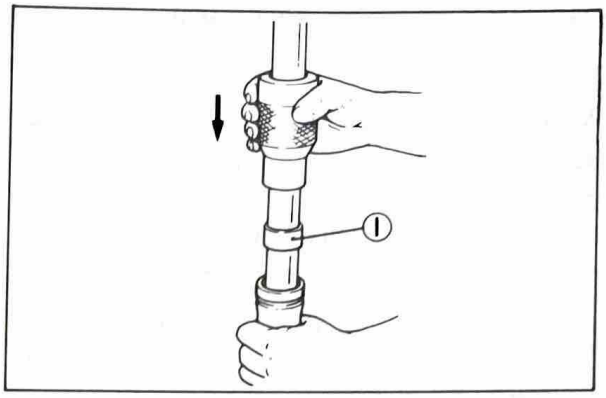
Holding bolt torque:
72 Nm (7.2 m · kg, 52 ft · lb)





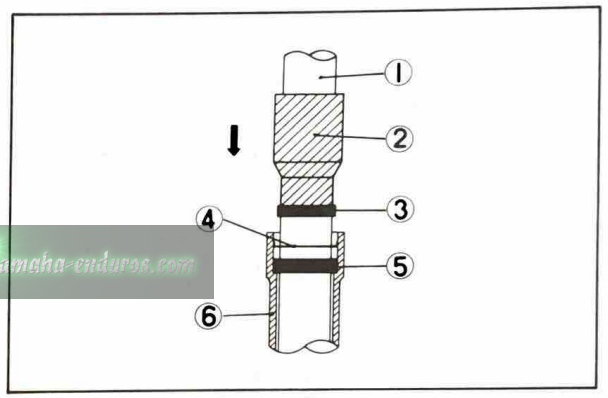
1. Apply LOCTITE®

4. Install the slide metal using the special 43.2 mm (1.70 in) fork tool (YM-08020).



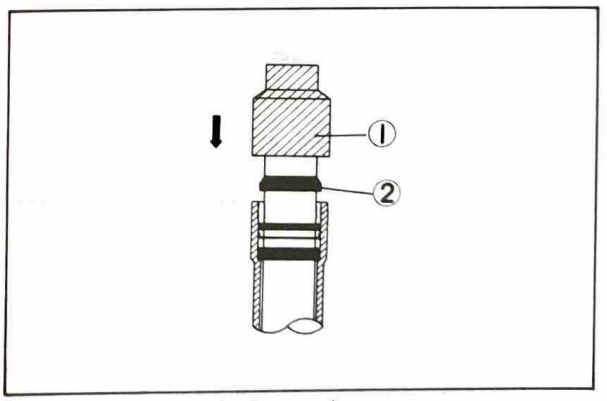
1. Slide metal

5. Install the seal washer, making sure the beveled edge faces upward.
6. Oil and install a new oil seal in the top of the slider with the special tool. (see illustration.)



1. Inner tube
2. Special tools
3. Oil seal
4. Oil seal washer
5. Slide metal
6. Outer tube

7. Gently tap the dust seal into place with the special tool and install the snap ring.



1. Special tool
2. Dust seal

8. Pour the specified amount of recommended fork oil into the inner fork tube.

(See page 4-13 "Fork oil replacement")

9. Install the spring, spring seat, spacer and the cap bolt.

NOTE:

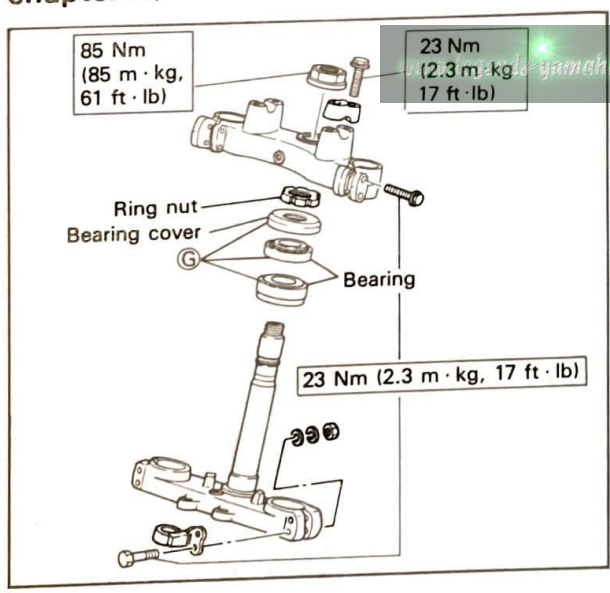
When installing the fork springs, the greater pitch should be at the bottom. The main fork spring has a small coil diameter at the bottom.

10. Install the fork assembly into the triple clamps, and torque the pinch bolts to specification.

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

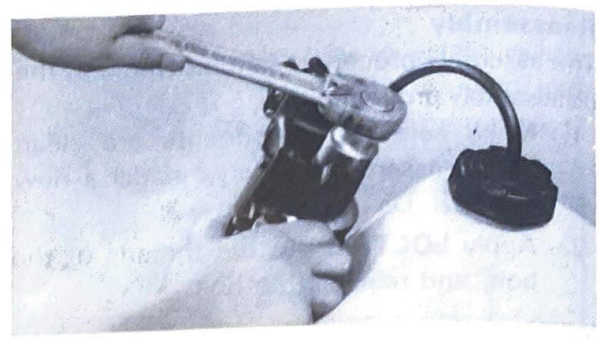
STEERING HEAD

(Adjustment begins on page 2-13 of chapter 2.)



Disassembly

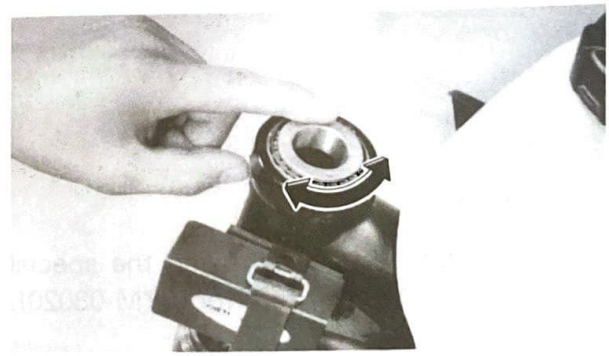
1. Remove the front wheel, number plate and front fender.
2. Remove the handlebar and put aside.
3. Remove the stem fitting nut, front forks handle crown and brake hose holder.



4. Supporting the under bracket, remove the steering ring nut with the steering nut wrench.
5. Remove the under bracket.

Inspection

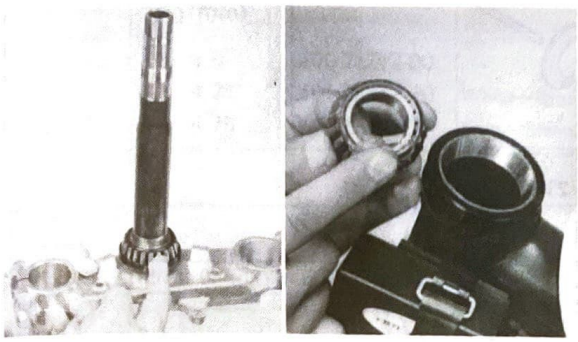
1. Wash the bearings in solvent.
2. Clean and inspect the bearings and races. If pitted or damaged, replace the races and bearing.
3. Install the bearings in the races. Spin the bearings by hand. If the bearings hang up or are not smooth in their operation in the races, replace bearings and races.



Assembly

For installation, reverse the procedure for removal. Take care following precautions.

1. Coat the bearings and bearing cover with lithium base grease before installing.

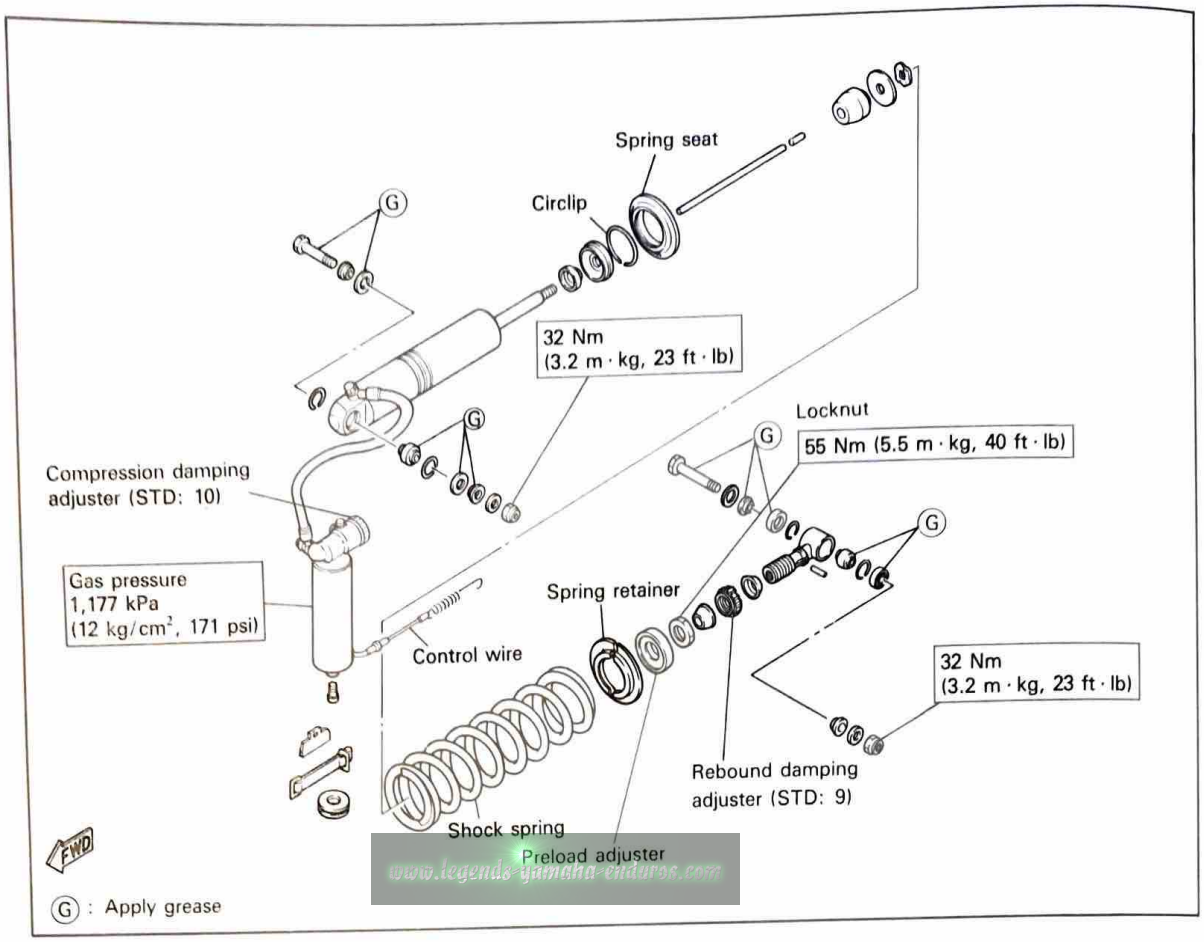


2. Tighten the steering fitting nut and front fork pinch bolts with specified torque.

Steering fitting nut: 85 Nm (8.5 m · kg, 61 ft · lb) Pinch bolt: 23 Nm (2.3 m · kg, 17 ft · lb)

3. Recheck steering adjustment to make sure there is no binding when the forks are moved from lock to lock. If necessary, repeat the adjustment procedure.

REAR SHOCK (MONOCROSS SUSPENSION "DE CARBON" SYSTEM)



Rear shock setting

For details of rear shock setting, refer to the Race Preparation and Tuning Manual. It is advisable to take a note of the standard setting and specified range of adjustment.

Spring preload (Installed length)

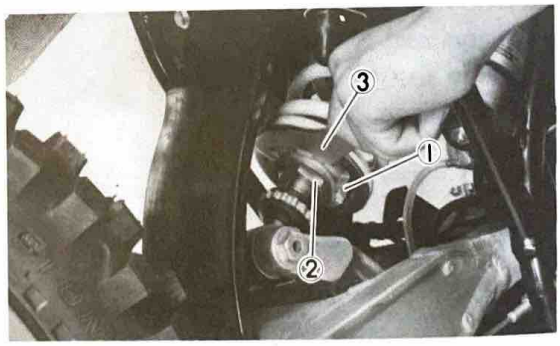
STD	268 mm (10.55 in)
MIN	253 mm (9.96 in)
MAX	283 mm (11.14 in)

The length of the spring (installed) changes 1 mm (0.04 in) per turn of the adjuster and 7.5 mm (0.295 in) per groove of the upper spring seat.

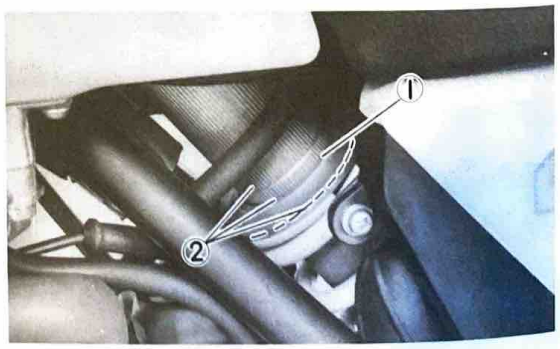
CAUTION:

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

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



1. Adjuster 2. Locknut 3. Special wrench

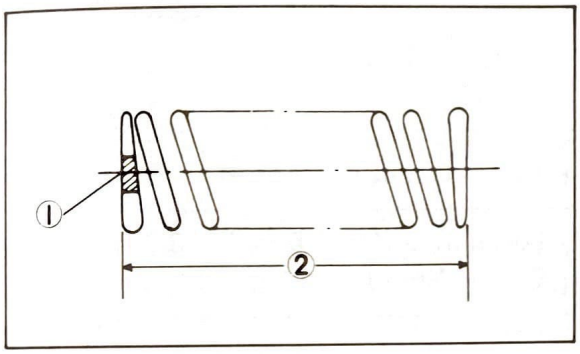


1. Circlip 2. Groove

Shock spring

FREE LENGTH: 288 mm (11.34 in)

Type	Spring rate (kg/mm)	Part number	I.D. color
STD	K = 4.5	39X-22212-00	—
SOFT	K = 4.25	39X-22212-10	White—Green
HARD	K = 4.75	39X-22212-20	Blue—Green



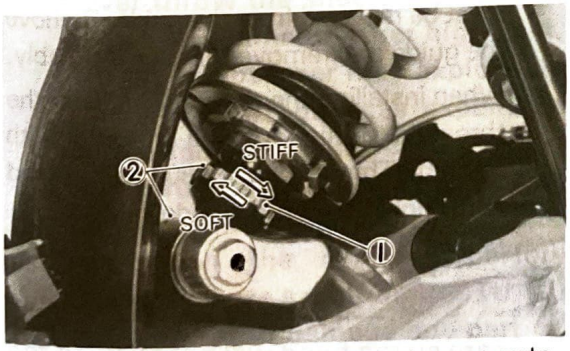
1. I.D. color 2. Free length

Rebound damping

STD SETTING: 9 clicks out
MAX.~MIN.: 0~25

CAUTION:

Don't turn out the adjuster more than 25 clicks from the stiffest postion.



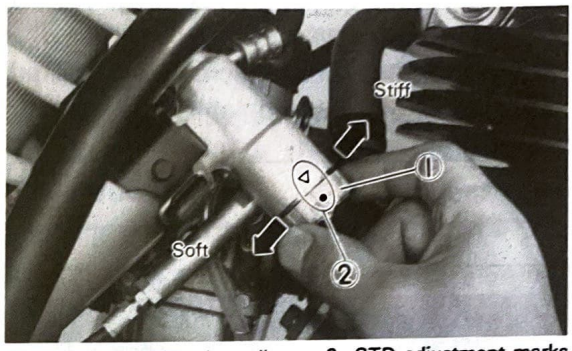
1. Rebound damping adjuster 2. STD adjustment marks

Compression damping

STD SETTING: 10 clicks in
MAX.~MIN.: 28~0

CAUTION:

Don't turn in the adjuster more than 28 clicks from the soffest postition.



1. Compression damping adjuster 2. STD adjustment marks

WARNING:

The compression damping adjuster is very hot immediately after a run.
Never allow your bare hand or part of your body to touch it.

Nitrogen gas pressure

STD 1,177 kPa (12 kg/cm^2, 171 psi)
MIN. 686 kPa (7 kg/cm^2, 100psi)
MAX. 1,480 kPa (15 kg/cm^2, 213 psi)

Brake actuated suspension

This system is so designed that when the rear brake pedal is depressed, the compression damping force of the rear suspension can be reduced.
Thanks to this system, the hopping of the rear wheel on rough terrain can be controlled to ensure safe braking.

STD setting: 4 turns out
MIN setting: 0.5 turns out
(There is no change in damping force.)
MAX setting: 4 turns out
(Damping force can be minimized)

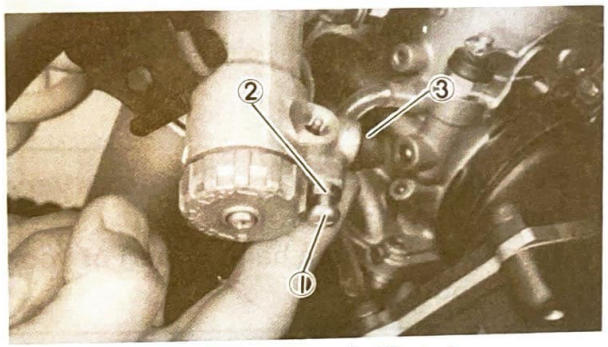
CAUTION:

With the adjuster backed out 0 to 0.5 turns, the compression damping force will be excessive, except when brakes are applied. Therefore, avoid setting the adjuster in this range.

Setting the variation range of damping force

1. Loosen the compression damping adjuster to the softest position.
2. Tighten the damping force range setting screw completely.
3. Back out the setting screw your desired number of turns and tighten the locknut.

Locknut:
4 Nm (0.4 m•kg, 2.9 ft•lb)



1. Setting screw 2. Locknut 3. Blind plug

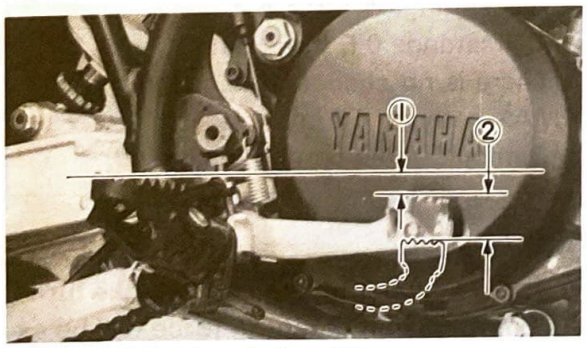
4. Back out the compression damping adjuster to its original set position.

CAUTION:

Never remove the blind plug.

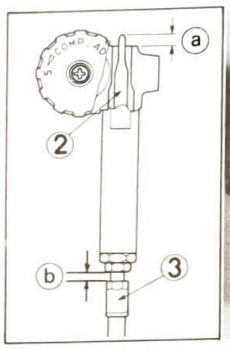
Control wire adjustment

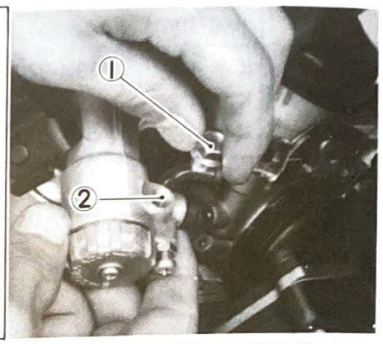
1. Set the brake pedal height within ± 10 mm (0.4 in) from the footrest top and adjust the brake pedal play to 20 ~ 30 mm (0.8 ~ 1.2 in). The adjustments are required to allow the interlocking mechanism to operate properly.



1. Brake pedal height 2. Free play

2. Remove the cap on top of the housing and turn the adjuster so that the top end of the rod in the housing projects out 2.5 mm (0.1 in), and that distance ⓑ is 5 ~ 10 mm (0.2 ~ 0.4 in).

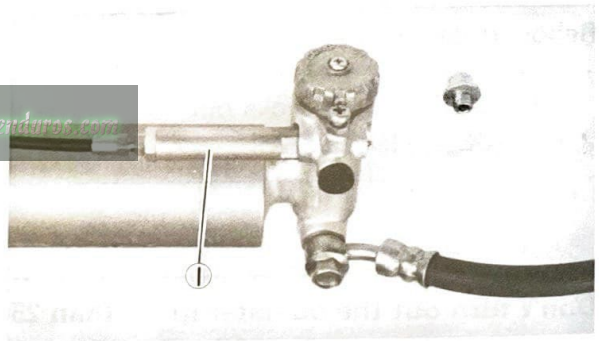




1. Cap 2. Rod 3. Adjuster a. 2.5 mm (0.098 in)
b. 5 ~ 10 mm (0.2 ~ 0.4 in)

Locknut: 5 Nm (0.5 m · kg, 3.6 ft · lb)
Cap: 6 Nm (0.6 m · kg, 4.3 ft · lb)

Control wire replacement



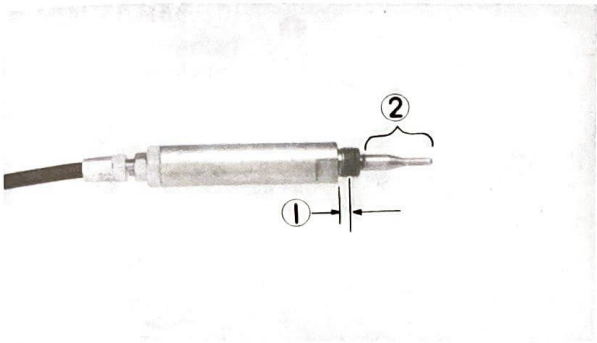
1. Housing

1. To replace the wire, housing assembly must be replaced from the guide. Remove the guide and remove the wire assembly.
2. When installing the control wire, coat the threaded portion of the housing with Yamaha Three-Bond # 1303 and the rod with molybdenum disulfide grease.

CAUTION:

Use care so the bond will not stick on the rod.

Housing:
12 Nm (1.2 m · kg, 8.7 ft · lb)



1. Apply Three-bond #1303
2. Apply molybdenum disulfide grease

Handling notes

WARNING:

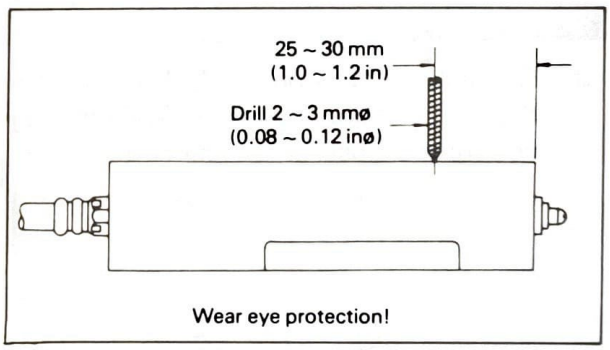
This shock absorber is provided with a separate type tank filled with high-pressure nitrogen gas. To prevent the danger of explosion, read and understand the following information before handling the shock absorber.
The manufacturer can not be held responsible for property damage or personal injury that 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. **Never attempt to remove the banjo bolts where the hose attaches to the monoshock and sub tank.**
8. **When scrapping the shock absorber, follow the instructions on disposal.**

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.

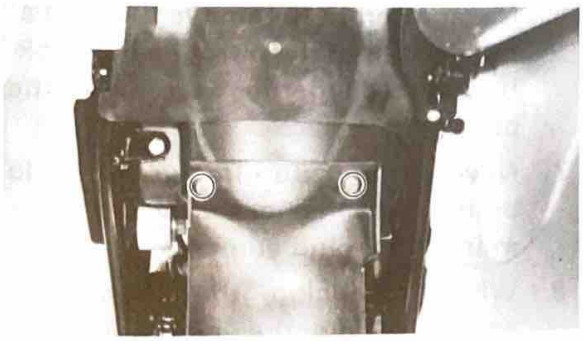
WARNING:

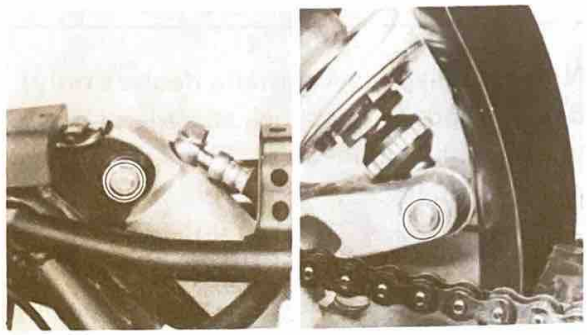
To dispose of a damaged or worn-out shock absorber, take the unit to your Yamaha dealer for this disposal procedure.

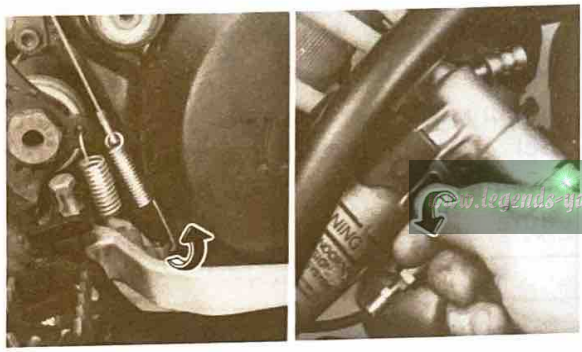


Removal

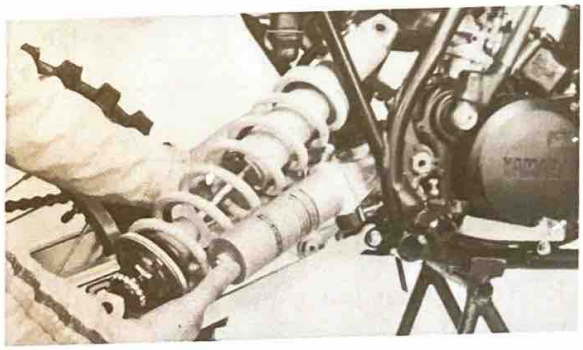
1. To remove the shock absorber, place the machine on a suitable stand to keep the bike stable while the shock absorber is removed.
2. Remove the bolts and unhook the band and control wire as shown below.







3. Carefully remove the shock absorber from the frame; take care to avoid damaging the rubber hose or the shock reservoir.



4. Loosen the locknut and loosen the adjuster. This will make it easy to remove the spring.
5. Push down the spring, remove the spring retainer, and remove the spring.

1. Retainer

Installation

1. Install the spring and spring retainer, and set the spring preload to specification or your preference.

STD	268 mm (10.55 in)
MIN	253 mm (9.96 in)
MAX	283 mm (11.14 in)

The length of the spring (installed) changes 1 mm (0.04 in) per turn of the adjuster.

CAUTION:

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

2. Tighten the locknut.

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

3. Apply grease to the pivot shafts.

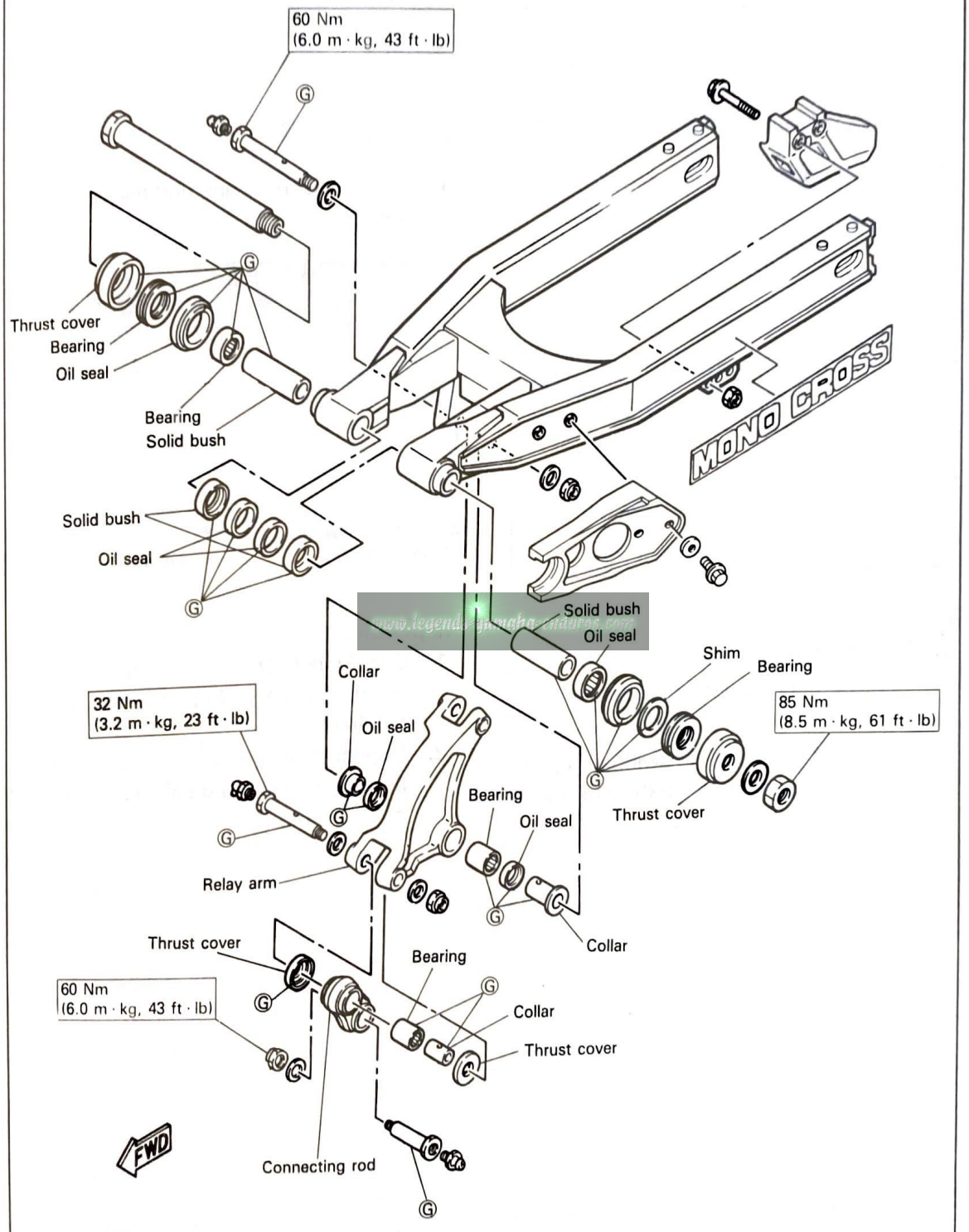
CAUTION:

Wipe off any excessive grease, and avoid getting grease on the brake shoes.

4. Install the shock absorber on the machine.
5. Tighten the nut to specification.

Tightening torque:
32 Nm (3.2 m · kg, 23 ft · lb)

6. After installing, make sure all these parts move smoothly.



Apply grease to all bearings, bushes, collars, oil seals, thrust covers and shafts.

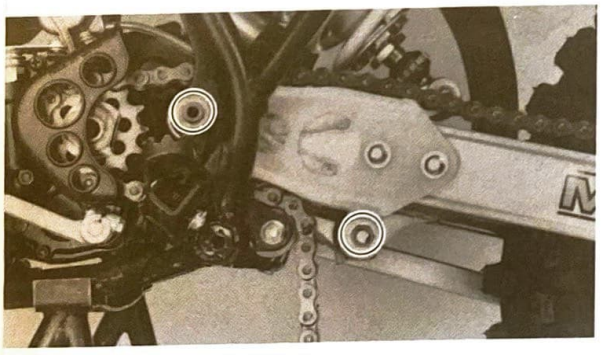
Swingarm free play inspection

1. To check the swingarm free play, remove the rear wheel and disconnect the shock from the relay arm.
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)

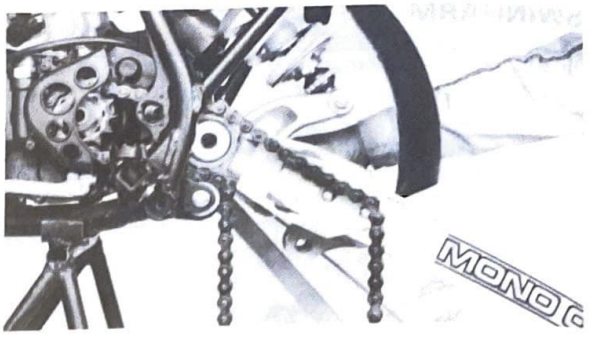
Removal

1. Remove the rear wheel assembly.
2. Remove the pivot bolt which connecting the relay arm with the swing arm.
3. Remove the nut on the swing arm pivot shaft and tap out the shaft with a long aluminum or brass rod.

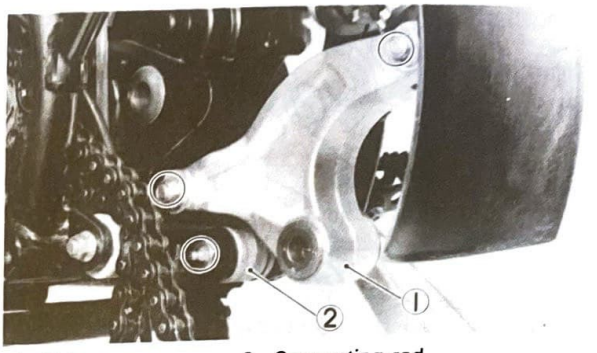


NOTE:

Carefully remove the arm while noting the location of spacing washers and shims. They must be reinstalled in the same positions.



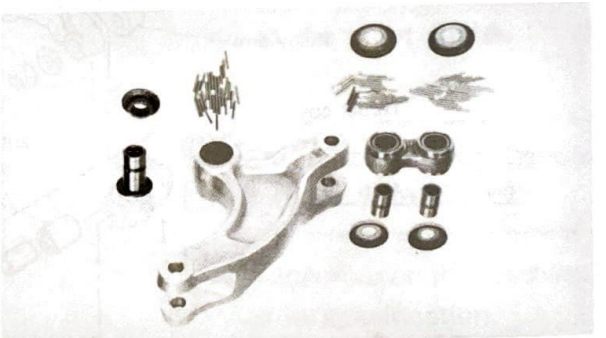
4. Remove the relay arm and the connecting rod.



1. Relay arm 2. Connecting rod

Inspection

1. Closely inspect the swingarm for cracks or other damage. Repair or replace it as required.
2. Inspect the thrust covers, bearings, bushes, oil seals and collars. If damaged or worn, replace.



Assembly

Assemble the swingarm by reversing the removal procedure. Take care of the following precautions.

1. Apply grease to the portions of the swingarm.

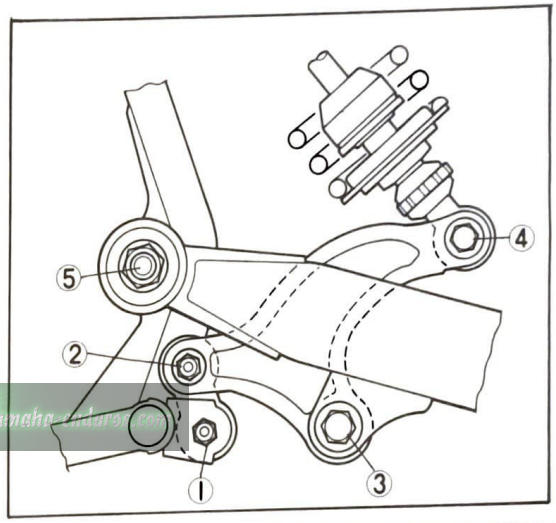
Bush:
Coat all inside surface of bushes with grease.
Oil seal:
Fill the lip portion of oil seals with grease.
Dust cover:
Coat inside and outside surface of dust seals with grease.
Thrust cover:
Fill inside of thrust cover with grease.
Pivot shaft:
Coat outside surface of shaft with grease.
Grease nipple:
Using a grease gun lubricate the swingarm pivot point.

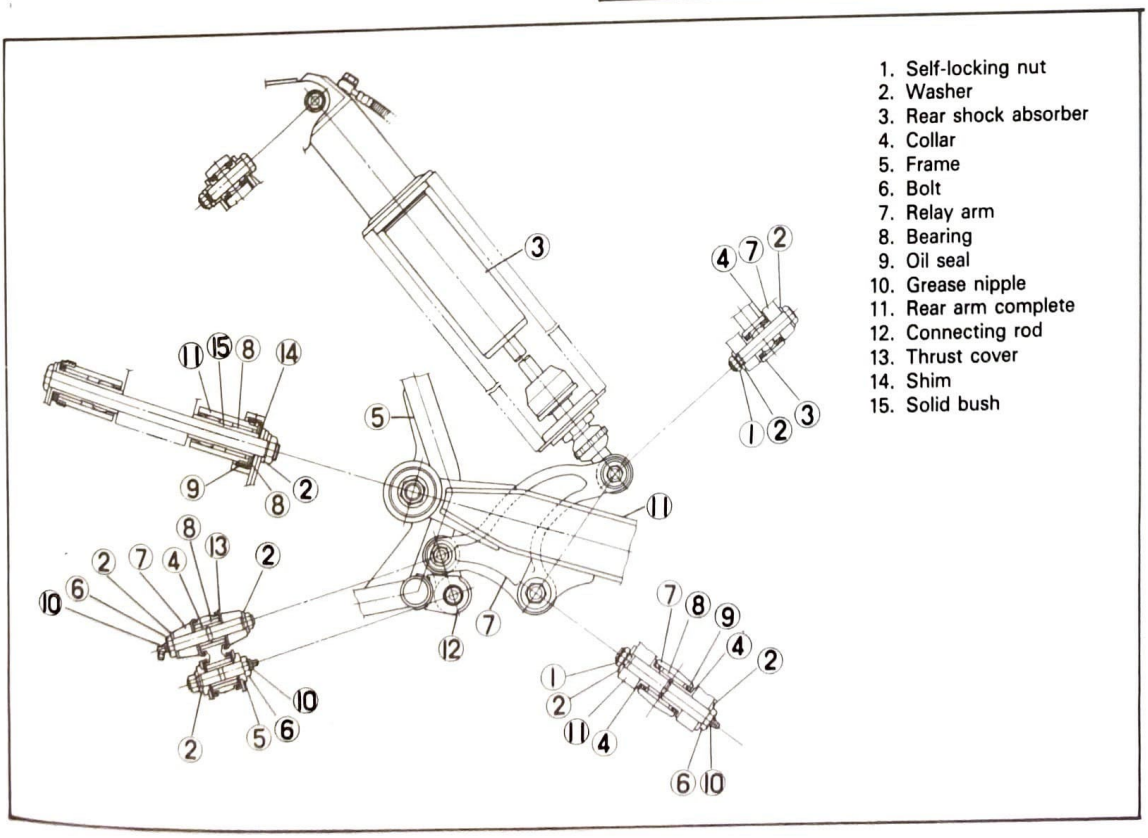
CAUTION:

Wipe off any excess grease, and avoid getting grease of the brake shoes.

2. Tighten the nuts to specification.

Tightening torque:
① Connecting rod - Frame:
60 Nm (6.0 m · kg, 43 ft · lb)
② Connecting rod - Relay arm:
32 Nm (3.2 m · kg, 23 ft · lb)
③ Relay arm - Swingarm:
④ 60 Nm (6.0 m · kg, 43 ft · lb)
Relay arm - Suspension:
32 Nm (3.2 m · kg, 23 ft · lb)
⑤ Pivot shaft:
85 Nm (8.5 m · kg, 61 ft · lb)



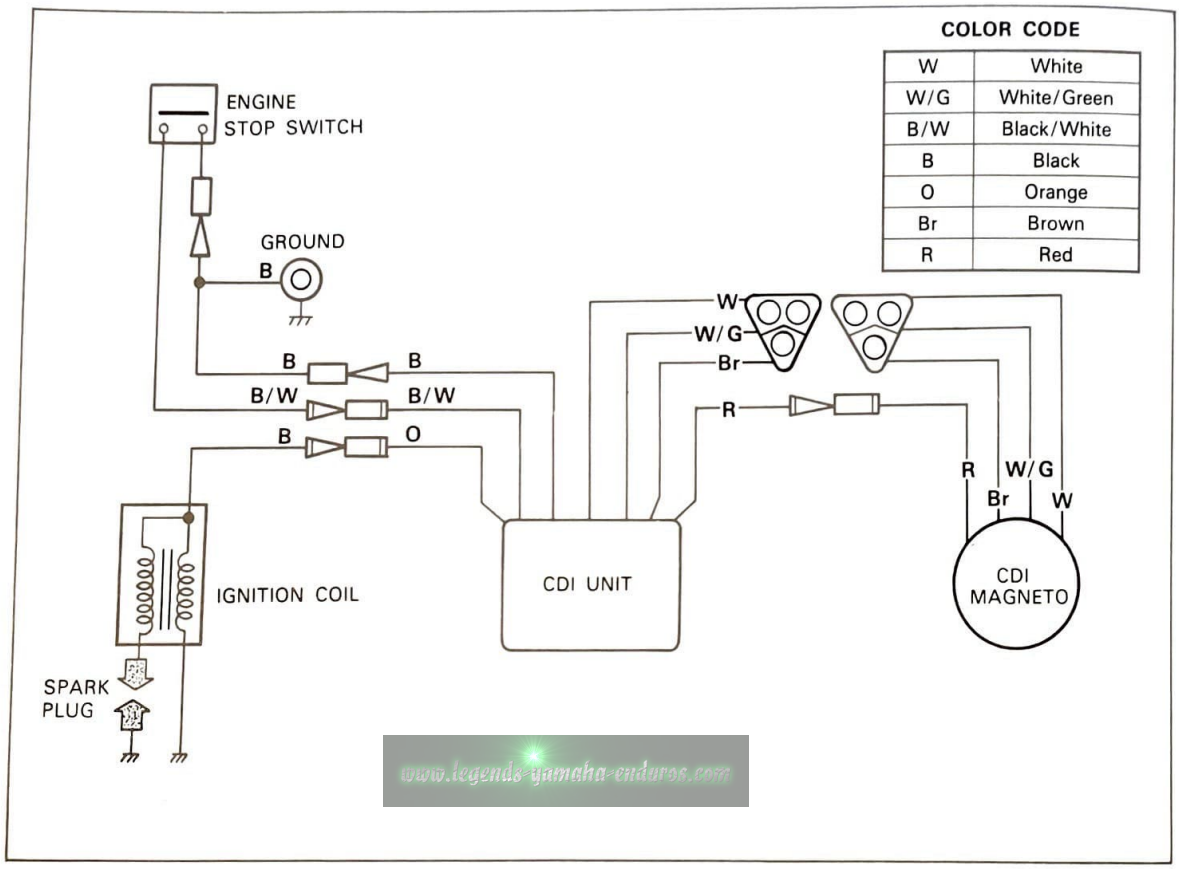


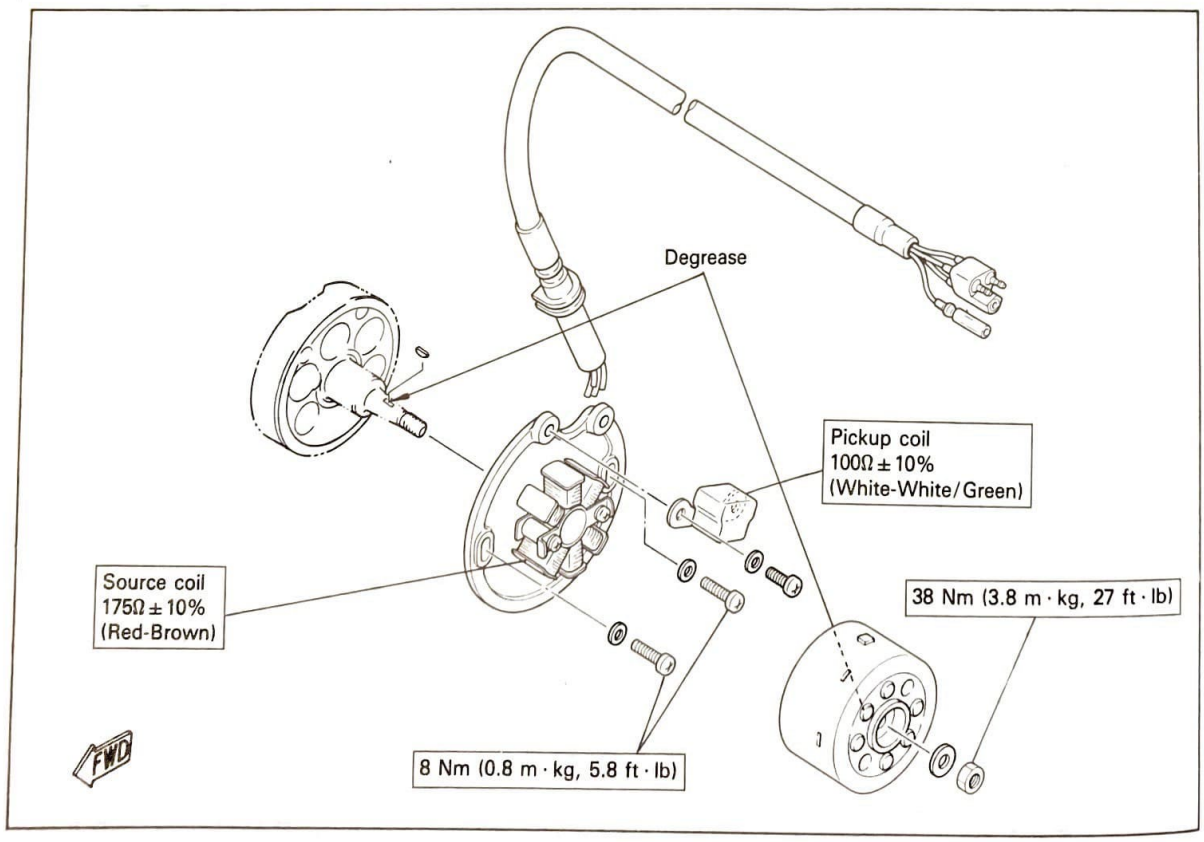
1. Self-locking nut
2. Washer
3. Rear shock absorber
4. Collar
5. Frame
6. Bolt
7. Relay arm
8. Bearing
9. Oil seal
10. Grease nipple
11. Rear arm complete
12. Connecting rod
13. Thrust cover
14. Shim
15. Solid bush

5 ELECTRICAL TROUBLESHOOTING

5 ELECTRICAL TROUBLESHOOTING

WIRING DIAGRAM





IGNITION SYSTEM

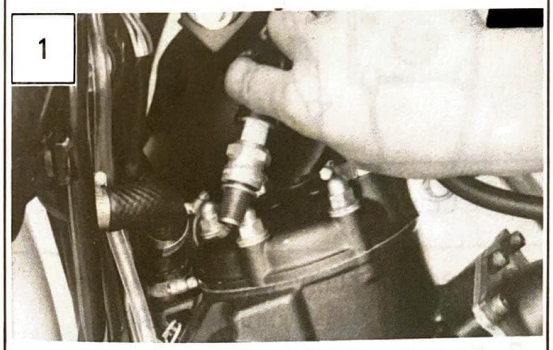
Make sure the wire harness is in a position it will not make contact with exhaust pipe, which could short out C.D.I. unit.

Troubleshooting

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 plug test

Remove the spark plug and check the spark.



Ground the spark plug to the cylinder head, and kick the starter.

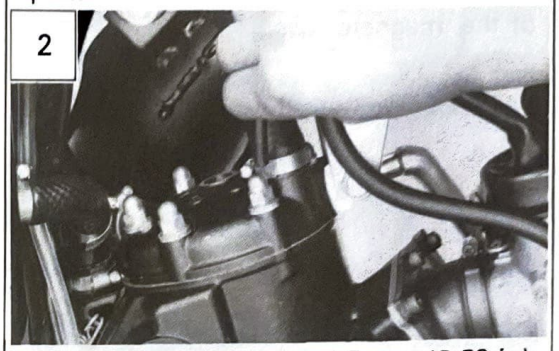
NOTE:

If the spark plug is oily or has carbon deposits, clean or replace it.

→ No spark.

2	Spark gap test

Remove the spark plug cap and check the spark.



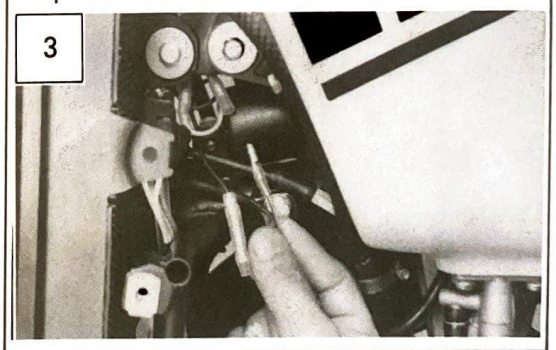
Hold the high tension lead 5 mm (0.20 in) from the head, and kick the engine through.

→ Good spark
1. Check plug cap.
2. Check saprk plug.

→ No spark

3	Engine stop switch

Disconnect the Black/White lead of engine stop switch at C.D.I. unit.

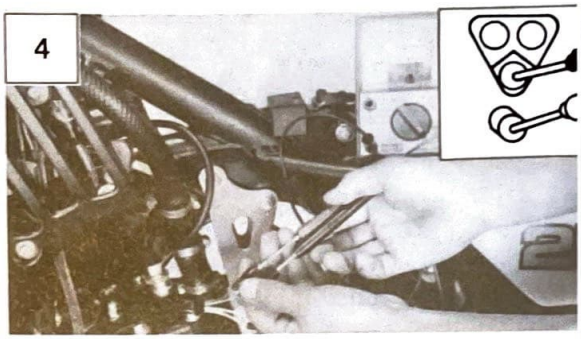


→ If start, engine stop switch is shorted.

→ Engine does not start.

4	C.D.I. Magneto (Source coil)test

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



Source coil resistance:
Red to Brown:
150Ω ± 10%

If other than specified → Replace source coil

OK

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

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

Pickup coil resistance:
White to White/Green:
100Ω ± 10%

If other than specified → Replace Pickup coil

OK

6	Connectors check-up

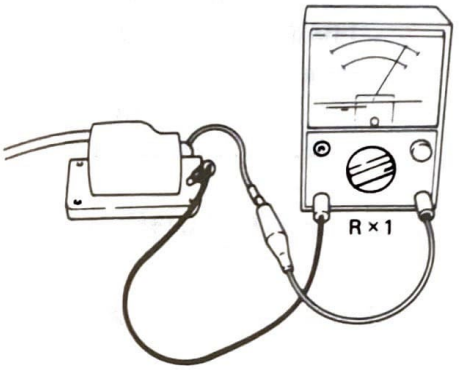
1. Check the connectors and couplers for looseness of joining ends.
2. Keep the connectors and couplers from dirt or rust.

Wrong connection → Correct

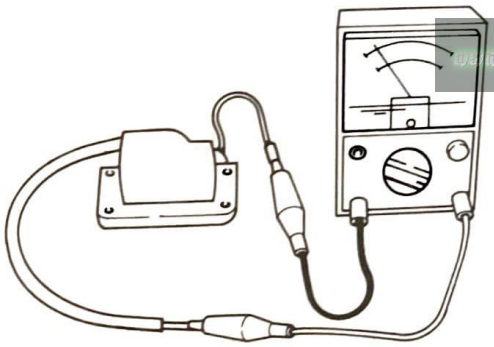
OK

7	Ignition coil test

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



Primary coil resistance:
0.22Ω ± 10%



Secondary coil resistance:
4.4 KΩ ± 20%

If other than specified → Replace ignition coil

OK → Replace C.D.I. unit

CAUTION:

Make sure the wire harness is in a position it will not make contact with exhaust pipe, which could short out C.D.I. unit.

6 APPENDICES

6 APPENDICES

TROUBLESHOOTING 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 (Pickup 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 passing cylinder head gasket. (Head is distorted.)	• Replace (or repair)
4. Crankshaft side oil seal is faulty.	• Replace
5. Air leaks through 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 leakage through crankcase sealing surfaces or crankshaft side oil seal.	• Repair or replace
4. Carbon deposits in combustion chamber (Piston, Cylinder head).	• Decarbonize
5. Power valve malfunctions.	• Repair or replace

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 (too hot)	• Replace
6. Fuel is deteriorated or oil-gas mixing ratio is incorrect.	• Replace
7. Coolant of inferior quality.	• Replace with specified type.
8. Coolant level is low.	• Add upto specified line.
9. Water pump is faulty.	• Repair or replace.
10. Cooling passage is clogged.	• Clean passage.
11. Radiator is clogged.	• Clean radiator.

Low coolant level

Possible Cause	Remedy
1. Radiator is leaky.	• Repair or replace.
2. Hose is damaged or joint is loose.	• Replace hose or retighten joint.
3. Water pump cover is leaky.	• Repair or replace.
4. Cylinder head O-ring is faulty.	• Replace.

Transmission and shifter

Trouble	Possible Cause	Remedy
Gears slip off	1. Gear dogs are worn. 2. Shift forks are bent. (burnt or worn) 3. Shift cam stopper spring is fatigued.	• Replace • Replace • Replace
Gear shifts skipping over the next.	1. Shift cam stopper spring is fatigued. 2. Shift forks are bent. (burnt or worn)	• Replace • Replace
Gear does not select	1. Shift cam is worn. (broken) 2. Change shaft is bent. 3. Shift arm spring is broken. 4. Gears are broken.	• Replace • Replace • Replace • Removal (Replace)
Shift pedal does not return.	1. Shift return spring is broken. 2. Shift shaft is bent.	• Replace • 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 paly is too small. 6. Clutch adjustment is incorrect. 7. Match marks of clutch boss and pressure plate does not aligned.	• Replace • Replace • Replace • Replace • Adjust • Adjust • Reassemble
Clutch drags	1. Clutch plate is worped. 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 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		
Trouble	Possible Cause	Remedy
Faulty	1. Brake pad or shoes are worn. 2. Brake is improperly adjusted. 3. Brake drum contains water. 4. Brake disc, pad or 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 bend. 3. Rear arm is cracked. 4. Bushing is worn. 5. Bushing lacks oil.	• Weld, reinforce or replace • Repair or replace • Replace • Replace • Lubricate

SPECIFICATIONS

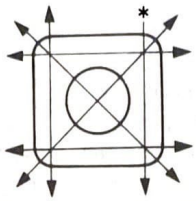
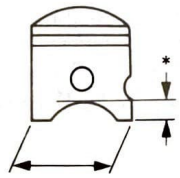
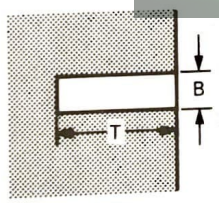
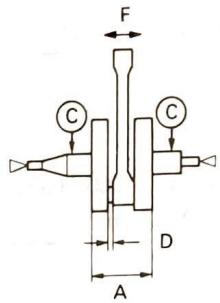
I. GENERAL SPECIFICATIONS

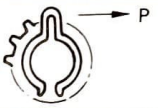
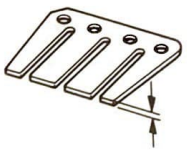
Item \ Model	YZ250N
Model Code Number	56A
Vehicle Identification Number	JYA56A00*FA000101
Engine Starting Number	56A-000101
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	 2,170 mm (85.4 in) 850 mm (33.5 in) 1,220 mm (48.0 in) 965 mm (38.0 in) 1,470 mm (57.9 in) 340 mm (13.4 in)
Basic Weight: With Oil and Full Fuel Tank	 105 kg (231.5 lb)
Engine: Engine Type Cylinder Arrangement Displacement Bore × Stroke Compression Ratio Starting System	 Liquid, cooled 2-stroke, gasoline, torque induction Single cylinder, forward inclined 246 cm^3 68 × 68 mm (2.677 × 2.677 in) 8.21 ~ 9.58 : 1 Kick starter
Lubrication System	Premix (24 : 1) (Yamalube R) Premix (20 : 1) (Castrol R30) (Castrol A545) (Castrol A747)
Oil Type or Grade (2-Cycle): Transmission Oil Periodic Oil Change Total Amount	 Yamalube 4-cycle oil or SAE 10W30 type SE motor oil or GL gear oil 0.85 L (0.75 Imp qt, 0.90 US qt) 0.90 L (0.79 Imp qt, 0.95 US qt)
Radiator Capacity (Including All Routes)	1.0 L (0.88 Imp qt, 1.06 US qt)
Air Filter	Wet type element
Fuel: Type Tank Capacity	 Premix Premium gasoline with an octane rating of at least 90 8.5 L (1.87 Imp gal, 2.25 US gal)
Carburetor: Type/Manufacturer	 VM38SS/MIKUNI
Spark plug: Type/Manufacturer Gap	 N-86, N-86G, N-2G, N-2C/CHAMPION, B8EG B8EGV/NGK 0.5 ~ 0.6 mm (0.020 ~ 0.024 in)
Clutch Type	Wet, multiple-disc

Item \ Model	YZ250N
Transmission:	
Primary Reduction System	Spar gear
Primary Reduction Ratio	63/24 (2.625)
Secondary Reduction System	Chain drive
Secondary Reduction Ratio	50/14 (3.571)
Transmission Type	Constant mesh, 5-speed
Operation	Left foot operation
Gear Ratio 1st	30/14 (2.143)
2nd	28/16 (1.750)
3rd	26/18 (1,444)
4th	24/20 (1,200)
5th	22/22 (1,000)
Chassis:	
Frame Type	Semi double cradle
Caster Angle	28°
Trail	119 mm (4.69 in)
Tire:	
Type	With tube
Size (F)	90/90-21-4PR
Size (R)	130/80-18-4PR
Brake:	
Front Brake Type	Disc brake
Operation	Right hand operation
Rear Brake Type	Drum brake
Operation	Right foot operation
Suspension:	
Front Suspension	Telescopic fork (Pneumo-mechanical)
Rear Suspension	Swingarm (New monocross suspension)
Shock Absorber:	
Front Shock Absorber	Air, coil spring, oil damper
Rear Shock Absorber	Gas, coil spring, oil damper
Wheel Travel:	
Front Wheel Travel	300 mm (11.8 in)
Rear Wheel Travel	320 mm (12.6 in)
Electrical:	
Ignition System	C.D.I. Magneto

II. MAINTENANCE SPECIFICATIONS

A. Engine

Item \ Model	YZ250N
Cylinder Head: Warp Limit 	<0.03 mm (0.0012 in)> *Lines indicate straightedge measurement.
Cylinder: Bore Size Wear Limit Taper Limit Out of Round Limit	$68^{0}_{+0.020}$ ($2.678^{0}_{+0.0008}$ in) <68.1 mm (2.681 in)> <0.05 mm (0.0020 in)> <0.01 mm (0.0004 in)>
Piston: Piston Size/ Measuring Point* Piston Clearance <Limit> Oversize 1st 2nd 3rd 4th Piston offset 	$68^{0}_{-0.06}$ mm ($2.68^{0}_{-0.002}$ in)/31 mm (1.22 in) 0.070 ~ 0.075 mm (0.0028 ~ 0.0030 in) <0.1 mm (0.004 in)> 68.25 mm (2.69 in) 68.50 mm (2.70 in) 68.75 mm (2.71 in) 69.00 mm (2.72 in) 1.5 mm (0.059 in), EX-side
Piston Ring: Sectional Sketch Top/2nd Ring End Gap (Installed) Top/2nd Ring Side Clearance (Installed) Top/2nd Ring 	Plain B = 1.0 mm (0.039 in) T = 2.9 mm (0.114 in) 0.55 ~ 0.70 mm (0.022 ~ 0.028 in) 0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)
Crankshaft: Crank Width "A" Run Out Limit "C" Connecting Rod Big End Side Clearance "D" Small End Free Play "F" <Limit> 	 $62^{0}_{-0.05}$ mm ($2.44^{0}_{-0.002}$ in) <0.03 mm (0.0012 in)> 0.25 ~ 0.75 mm (0.0098 ~ 0.0295 in) 0.4 ~ 1.0 mm (0.016 ~ 0.04 in) <2.0 mm (0.08 in)>

Item \ Model	YZ250N
Clutch:	
Friction Plate Thickness/Quantity	3.0 mm (0.12 in) × 7
<Wear Limit>	<2.7 mm (0.11 in)>
Clutch Plate Thickness/Quantity	1.6 mm (0.063 in) × 6
<Warp Limit>	<0.05 mm (0.002 in)>
Clutch Spring Free Length/Quantity	36.4 mm (1.433 in) × 6
<Limit>	<35.4 mm (1.39 in)>
Clutch Housing Thrust Clearance	0.17 ~ 0.23 mm (0.0067 ~ 0.0090 in)
Clutch Housing Radial Clearance	0.03 ~ 0.55 mm (0.0012 ~ 0.0217 in)
Clutch Release Method	Inner push, cam push
Push Rod Bending Limit	<0.2 mm (0.008 in)>
Transmission:	
Main Axle Deflection Limit	<0.01 mm (0.0004 in)>
Drive Axle Deflection Limit	<0.01 mm (0.0004 in)>
Shifter:	
Shifting Type	guide bar
Guide Bar Bending Limit	<0.05 mm (0.0020 in)>
Kick Starter Type: 	Kick and mesh type
Kick Clip Friction Force	P = 0.8 ~ 1.2 kg (1.76 ~ 2.65 lb)
Air Filter Oil Grade (Oiled Filter)	Foam-air-filter oil
Carburetor:	
Type/Manufacturer	VM38SS/MIKUNI
I.D. Mark	56A-00
Main Jet (M.J.)	#290
Main Air Jet (M.A.J.)	ø2.5
Jet Needle-clip Position (J.N.)	6F13-3
Needle Jet (N.J.)	P-6
Cutaway (C.A.)	3.0
Pilot Jet (P.J.)	#60
Pilot Air Screw (P.A.S.)	1 and 1/2 ± 1/4
Valve Seat Size (V.S.)	ø3.5
Starter Jet (G.S.)	#90
Float Height (F.H.)	27 ± 1.0 mm (1.06 ± 0.04 in)
Reed Valve:	
Thickness* 	0.42 mm (0.0165 in)
Valve Stopper Height	8.6 ± 0.2 mm (0.339 ± 0.008 in)
Valve Bending Limit	0.6 mm (0.022 in)
Cooling:	
Radiator Core Size	
-Width	123 mm (4.84 in)
-Height	273 mm (10.7 in)
-Thickness	32 mm (1.26 in)
Radiator Cap Opening Pressure	88.3 kPa (0.9 kg/cm², 12.8 psi)
Coolant Capacity (Total)	1.0 L (0.88 Imp qt, 1.06 US qt)
Water Pump	
-Type	Single-Suction Centrifugal Pump
-Oil Seal Type	FLJ-7-10-31-13.5
-Reduction Ratio	18/24 (0.75)

Tightening Torque	Thread Size	Q'ty	Nm	m•kg	ft•lb
Spark plug	M14×1.25	1	25	2.5	18
Cylinder head (Nut)	M8 ×1.25	6	30	3.0	22
(Stud)	M8 ×1.25	6	13	1.3	9.4
Coolant drain bolt	M6 ×1.0	2	10	1.0	7.2
Cylinder (Nut)	M10×1.25	4	35	3.5	25
(Stud)	M10×1.25	4	13	1.3	9.4
Power valve	M5 ×0.8	1	6	0.6	4.3
Holder	M5 ×0.8	2	5	0.5	3.6
Thrust plate	M5 ×0.8	1	5	0.5	3.6
Lever-Push rod	M5 ×0.8	1	5	0.5	3.6
Push rod-Power valve	M5 ×0.8	1	5	0.5	3.6
Governor fork-Push rod	M5 ×0.8	2	5	0.5	3.6
Housing	M5 ×0.8	4	5	0.5	3.6
Water pump housing	M6 ×1.0	3	10	1.0	7.2
Intake manifold	M6 ×1.0	6	12	1.2	8.7
Reed valve	M3 ×0.8	8	1	0.1	0.7
Crankcase	M6 ×1.0	10	12	1.2	8.7
Crankcase cover	M6 ×1.0	11	10	1.0	7.2
Magneto cover	M6 ×1.0	4	10	1.0	7.2
Chain case cover	M6 ×1.0	2	10	1.0	7.2
Bearing cover plate	M6 ×1.0	4	10	1.0	7.2
Holder	M8 ×1.25	1	16	1.6	11
Plate	M6 ×1.0	1	10	1.0	7
Oil drain bolt	M12×1.5	1	20	2.0	14
Kickstarter lever	M12×1.0	1	60	6.0	42
Primary drive gear	M18×1.0	1	115	11.5	85
Clutch	M20×1.0	1	75	7.5	54
Push lever	M6 ×1.0	1	10	1.0	7.2
Clutch spring	M6 ×1.0	6	10	1.0	7.2
Drive sprocket	M20×1.0	1	75	7.5	54
Shift pedal	M6 ×1.0	1	10	1.0	7.2
Stopper lever	M6 ×1.0	1	15	1.5	11
Magneto rotor	M10×1.25	1	38	3.8	27
Startor	M6 ×1.0	2	8	0.8	5.8

II. MAINTENANCE SPECIFICATIONS

B. Chassis

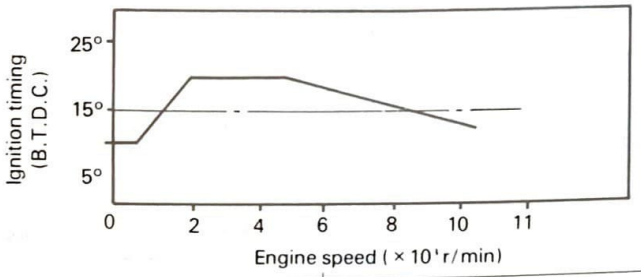
Item \ Model	YZ250N
Steering System:	
Steering Bearing Type	Taper roller bearing
Front Suspension	
Front Fork Travel	300 mm (11.8 in)
Fork Spring Free Length	542.5 mm (21.36 in)
Collor Length	70 mm (2.76 in)
Spring Rate/Stroke	K = 3.0 N/mm (0.305 kg/mm, 17.1 lb/in)
Optional Spring	
Spring Rate, Soft (1 slit)	K = 2.7 N/mm (0.275 kg/mm, 15.4 lb/in)
Hard (2 slits)	K = 3.2 N/mm (0.325 kg/mm, 18.2 lb/in)
Oil Capacity	528 cm^3 (18.6 Imp oz, 17.9 US oz)
Oil Level	180 mm (7.09 in) (From top of inner tube fully compressed without spring.)
Oil Grade	Fork oil 15 wt
Enclosed Air Pressure	0 kPa (0 kg/cm^2, 0 psi)
<Min. ~ Max.>	<24.5 kPa (0 ~ 2.5 kg/cm^2, 0 ~ 35 psi)>
Rear Suspension:	
Shock Absorber Travel	116 mm (4.57 in)
Spring Free Length	288 mm (11.34 in)
Fitting Length	268 mm (10.55 in)
<Min ~ Max>	<253 ~ 283 mm (9.96 ~ 11.14 in)>
Spring Rate	K = 45 N/mm (4.5 kg/mm, 252 lb/in)
Optional Spring	
Spring Rate, Soft (White Green)	K = 42.5 N/mm (4.25 kg/mm, 238 lb/in)
Hard (Blue Green)	K = 47.5 N/mm (4.75 kg/mm, 266 lb/in)
Enclosed Gas Pressure	1,177 kPa (12 kg/cm^2, 170.7 psi)
<Max. ~ Min.>	<686 ~ 1,480 kPa (7 ~ 15 kg/cm^2, 100 ~ 213 psi)>
Rear Arm:	
Swingarm Free Play Limit	
End	<1.0 mm (0.04 in)>
Side	<0.3 mm (0.012 in)>
Wheel:	
Front Wheel Type	Spoke wheel
Rear Wheel Type	Spoke wheel
Front Rim Size/Material	1.60 × 21/Aluminum
Rear Rim Size/Material	2.15 × 18/Aluminum
Rim Runout Limit	
Vertical	<2 mm (0.08 in)>
Lateral	<2 mm (0.08 in)>
Drive Chain:	
Type/Manufacturer	DK520DS/DAIDO
Number of Links	113 links + Joint
Chain Slack	20 ~ 30 mm (0.8 ~ 1.2 in)
Front Disk Brake:	
Disc Outside Dia × Thickness	240 × 3.0 mm (9.45 × 0.12 in)
Pad Thickness	4.0 mm (0.16 in)
<Limit>	<0.8 mm (0.03 in)>
Master cylinder Inside Dia	11.0 mm (0.433 in)
Caliper cylinder Inside Dia	27.0 mm (1.061 in)
Brake Fluid Type	DOT #3

Item \ Model	YZ250N
Reav Drum Brake:	
Type	Leading and trailing
Drum Inside Dia	130 mm (5.12 in)
<Limit>	<131 mm (5.16 in)>
Lining Thickness	4 mm (0.16 in)
<Limit>	<2 mm (0.08 in)>
Shoe Spring Free Length	36.5 mm (1.44 in)
Brake Lever & Brake Pedal:	
Brake Lever Free Play/Position	10~20 mm (0.4~0.8 in)/at lever pivot
Brake Pedal Free Play/Position	20~30 mm (0.8~1.2 in)/0±10 mm (0±0.4 in) (Vertical height below footrest top.)
Clutch Lever Free Play/Position	2~3 mm (0.08~0.12 in)/at lever pivot

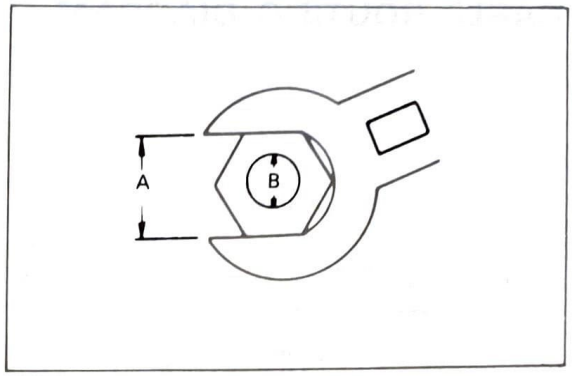
Tightening Torque:	Thread Size	Q'ty	Nm	m•kg	ft•lb
Front wheel axle	M14×1.5	1	60	6.0	43
Axle holder	M8 ×1.25	2	20	2.0	14
Handle crown -Inner tube	M8 ×1.25	4	23	2.3	17
-Steering shaft	M22×1.0	1	85	8.5	61
-Handle holder	M8 ×1.25	4	23	2.3	17
Steering nut	M25×1.0	1	10	1.0	7.2
Cap bolt	M40×1.0	2	23	2.3	17
Damper rod holding bolt	M18×1.0	2	72	7.2	52
Caliper bracket	M8 ×1.25	2	30	3.0	22
Brake disc	M6 ×1.0	4	12	1.2	9
Caliper bolt	M8 ×1.25	1	23	2.3	17
Brake hose	M10×1.25	2	26	2.6	19
Air bleed	M8 ×1.25	1	6	0.6	4.3
Engine mount -Front, Frame	M8 ×1.25	2	30	3.0	22
-Front, Engine	M8 ×1.25	1	30	3.0	22
-Lower	M8 ×1.25	1	30	3.0	22
-Rear, Upper	M8 ×1.25	2	30	3.0	22
-Rear, Engine	M10×1.25	1	65	6.5	47
Rear wheel axle	M18×1.5	1	100	10.0	72
Sprocket wheel -Hub	M8 ×1.25	6	30	3.0	22
Rear shock -Frame	M10×1.25	1	32	3.2	23
Pivot shaft	M16×1.5	1	85	8.5	61
Torque arm	M8 ×1.25	2	23	2.3	17
Brake cam lever	M6 ×1.0	1	10	1.0	7.2
Relay arm -Swingarm	M12×1.25	1	60	6.0	43
-Rear shock	M10×1.25	1	32	3.2	23
-Connecting rod	M10×1.25	1	32	3.2	23
Frame -Connecting rod	M10×1.25	1	60	6.0	43

C. Electrical

Item \ Model	YZ250N
Ignition System:	
Ignition Timing (B.T.D.C.)	15°/8,500 rpm 1.5 ± 0.1 mm (0.06 ± 0.004 in)
Advancer Type	Electrical
C.D.I.	
Magneto-Model/Manufacture	O5N/KOKUSAN DENKI
Pickup Coil Resistance (Color)	100Ω ± 10% at 20°C (68°F) (White — White/Green)
Source Coil Resistance (Color)	175Ω ± 10% at 20°C (68°F) (Brown — Red)
C.D.I. Unit-Model/Manufacturer	K3E71/HITACHI
Ignition Coil:	
— Model/Manufacturer	CM61-29/HITACHI
Minimum Spark Gap	10 kV or more at 500 r/min 15 kV or less at 8,000 r/min 6 mm (0.24 in) at 1,500
Primary Winding Resistance	0.22 Ω ± 10% at 20°C (68°F)
Secondary Winding Resistance	4.4 kΩ ± 10% at 20°C (68°F)



A (Nut)	B (Bolt)	TORQUE SPECIFICATION		
		Nm	m·kg	ft·lb
10 mm	6 mm	5	0.6	4.5
12 mm	8 mm	15	1.5	11.0
14 mm	10 mm	30	3.0	22.0
17 mm	12 mm	55	5.5	40.0
19 mm	14 mm	85	8.5	61.0
22 mm	16 mm	130	13.0	94.0



A: Distance across flats
B: Outside thread diameter

CONVERSION TABLES

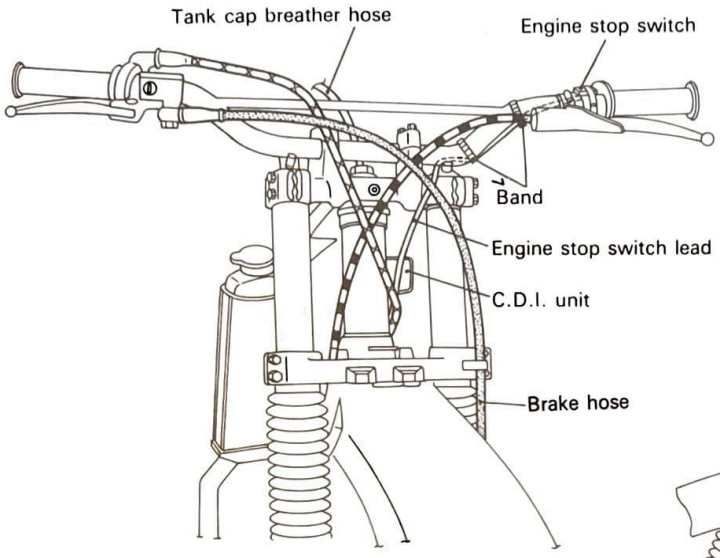
METRIC TO INCH SYSTEM			
	KNOWN	MULTIPLIER	RESULT
TORQUE	m·kg	7.233	ft·lb
	m·kg	86.80	in·lb
	cm·kg	0.0723	ft·lb
	cm·kg	0.8680	in·lb
WT.	kg	2.205	lb
	g	0.03527	oz
FLOW/DISTANCE	km/ℓ	2.352	mpg
	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
VOL./CAPACITY	cc (cm³)	0.03382	oz (US liq)
	cc (cm³)	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/cm²	14.2234	psi (lb/in²)
	Centigrade(°C)	9/5(°C) + 32	Fahrenheit(°F)

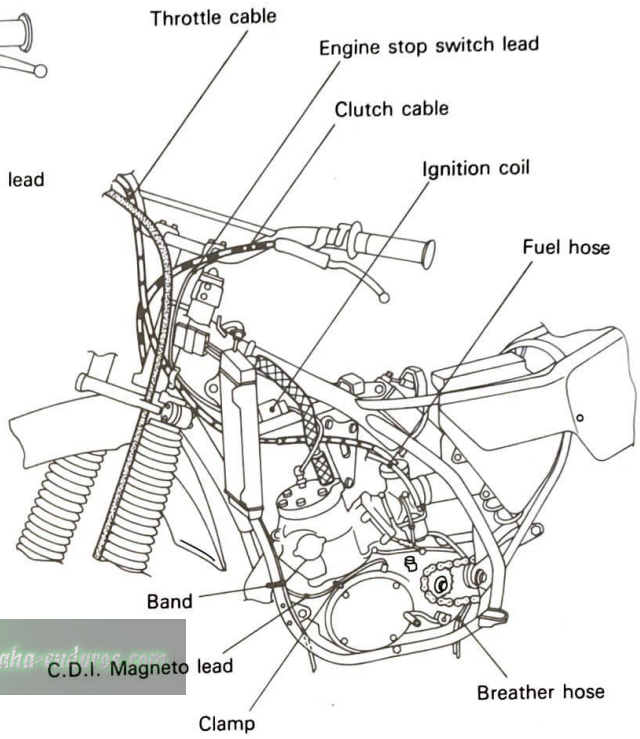
INCH TO METRIC SYSTEM			
	KNOWN	MULTIPLIER	RESULT
TORQUE	ft·lb	0.13826	m·kg
	in·lb	0.01152	m·kg
	ft·lb	13.831	cm·kg
	in·lb	1.1521	cm·kg
WT.	lb	0.4535	kg
	oz	28.352	g
FLOW/DISTANCE	mpg	0.4252	km/ℓ
	mph	1.609	km/hr
	mi	1.609	km
	ft	0.3048	m
	yd	0.9141	m
	in	2.54	cm
	in	25.4	mm
VOL./CAPACITY	oz (US liq)	29.57	cc (cm³)
	cu.in	16.387	cc (cm³)
	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/in²)	0.07031	kg/cm²
	Fahrenheit(°C)	5/9(°F−32)	Centigrade(°F)

DEFINITION OF UNITS

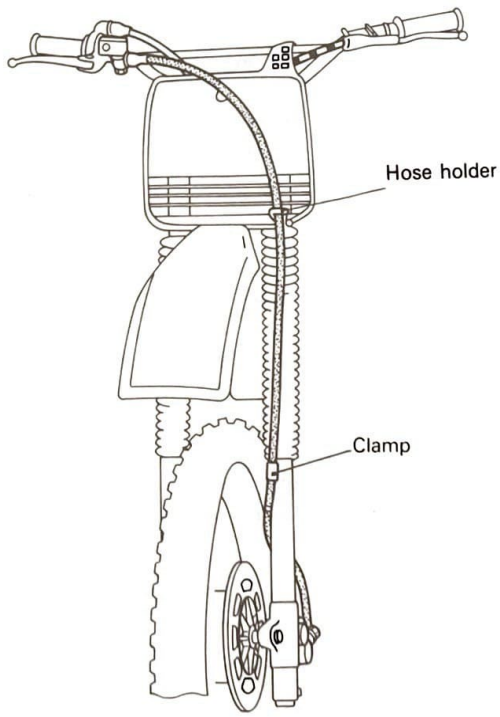
Unit	Read	Definition	Measure
mm	millimeter	10^{-3} meter	Length
cm	centimeter	10^{-2} meter	Length
kg	kilogram	10^{3} gram	Weight
N	Newton	1 kg × m/sec²	Force
Nm	Newton meter	N × m	Torque
m·kg	Meter kilogram	m × kg	Torque
Pa	Paskal	N/m²	Pressure
N/mm	Newton per millimeter	N/mm	Spring rate
L	Liter	—	Volume or Capacity
cm³	Cubic centimeter		
r/min	Rotation per minute	—	Engine speed

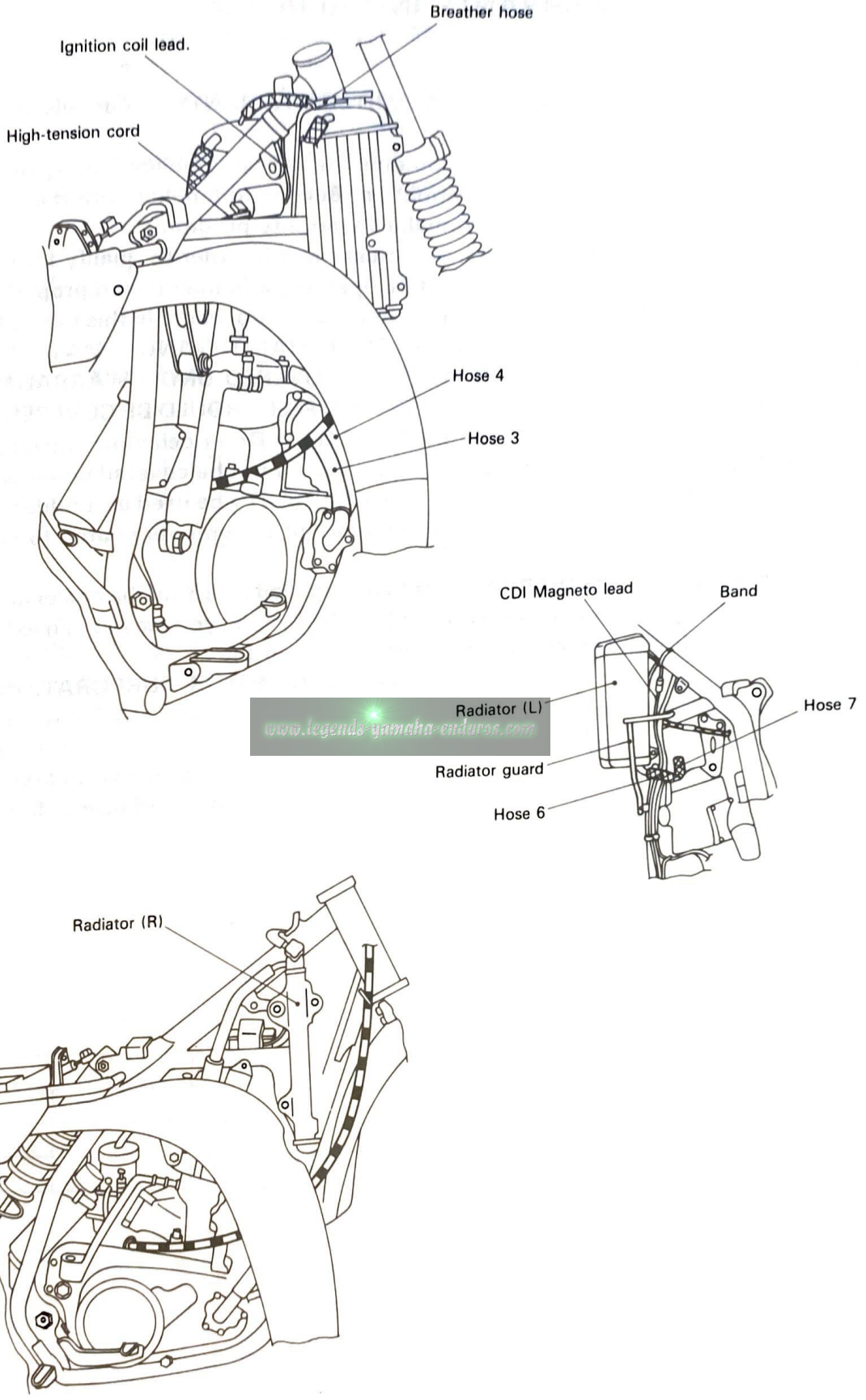
CABLE ROUTING DIAGRAM





1. **Throttle cable**
   Grip cap→Behind the brake hose→In front of clutch cable → Clamp the left side of reinforcement down tube → Between radiator and frame → C.D.I. lead, right side of radiator breather hose → Under the radiator guard → Between the hose joints (hose 1 and hose 2) → Left side of engine upper stay → Carburetor
2. **Front brake hose**
   Master cylinde→In front of throttle cable and clutch cable→In front of the number plate→Holder (left side of under bracket)→Clamp and tighten the screw (outer tube)→Caliper
3. **Clutch cable**
   Lever (left) → Behind the number plate → Behind the throttle cable → Inside of clamp on the gusset → Under right of the radiator, between radiator hose and muffler → Holder on the crankcase





WARRANTY INFORMATION

Please refer to your copy of the YAMAHA LIMITED WARRANTY* for details of the warranty offered on your new Yamaha.
The YAMAHA LIMITED WARRANTY contains the warranty policy, an explanation of the warranty, and other important information. Becoming familiar with these policies will help you make the best use of Yamaha's warranty programs.
There are certain requirements which you must meet in order to qualify for warranty coverage. FIRST, your new Yamaha must be operated and maintained properly, as explained in this manual. If you have any questions about procedure in this manual, please consult a dealer. ABUSE AND NEGLECTED MAINTENANCE MAY LEAD TO MECHANICAL FAILURES WHICH CANNOT BE COVERED UNDERWARRANTY.
SECOND, IF ANY PROBLEMS OCCUR WHICH YOU FEEL SHOULD BE COVERED UNDER WARRANTY, NOTIFY YOUR DEALER IMMEDIATELY. Don't delay, as small problems left unrepaired can become large problems which may not be covered under warranty.
We recommend that the YAMAHA LIMITED WARRANTY be used as a folder in which you may keep your registration and other important documents related to your new Yamaha.

* The YAMAHA LIMITED WARRANTY is to be supplied by a Yamaha dealer at the time of purchase. If you did not receive one, or have lost yours, you may obtain extracopies upon request from your Yamaha daler or by writing to:

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

NOISE REGULATION

TEMPERING WITH NOISE CONTROL SYSTEM PROHIBITED:

Federal law prohibits the following acts or the causing thereof: (1)
The removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

"AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS USTED BELOW."

These acts include tampering with the following systems; i.e., modification, removal, etc.

Exhaust system	Muffler Exhaust pipe Silencer
Intake system	Air cleaner case Air cleaner element Intake duct

MAINTENANCE RECORD

Make sure whoever performs the maintenance completes this record.

MILEAGE	DATE OF SERVICE	MAINTENANCE	SERVICING DEALER NAME AND ADDRESS	REMARKS

YAMAHA MOTOR CO.,LTD.
IWATA, JAPAN

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