YAMAHA

PW50J

OWNER'S SERVICE MANUAL

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LIT-11626-03-10

4X4-28199-12

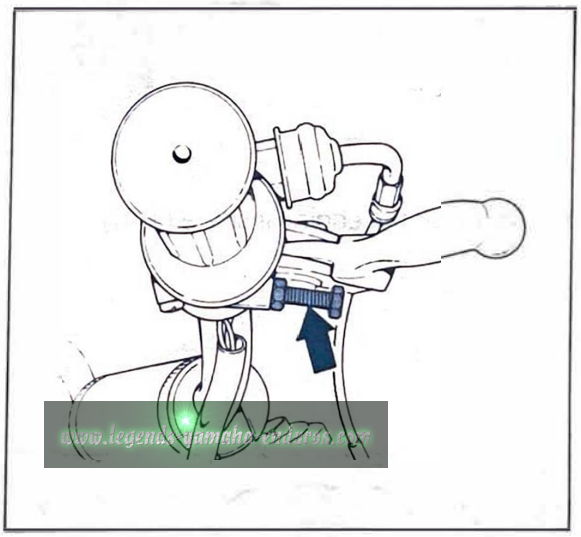
FOR THE PARENTS

Since this model is intended for beginning riders, it is equipped with two safety devices that let you limit the operating speed of the machine: the power limiter plate and the speed limiter. The speed limiter is located under the accelerator; it limits the top speed of the machine. Turning the bolt in decreases the top speed; turning the bolt out, increases the top speed.

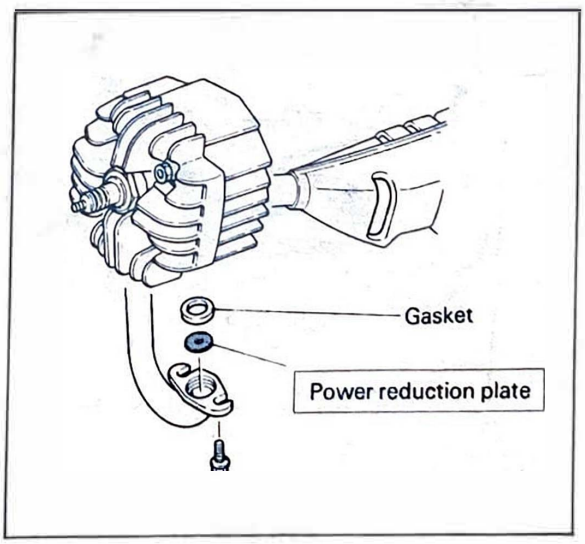
As your child's riding skills improve, you can gradually adjust the speed limiter to gradually increase the top speed of the machine. When the limiter has been removed, you can remove the power reduction plate. Since removal of this plate will result in a significant increase in power, reinstall the speed limiter; adjust it in stages as you did earlier.

Please use these two safety devices to match the machine's output to your child's riding skills.

- A speed limiter is furnished on the botton of the throttle grip. If this limiter is screwed in, it "limits" the degree of throttle opening; that is, controls the vehicle speed.
- After removing the adjuster, plug the adjuster hole with the plug. (contained in the carton).



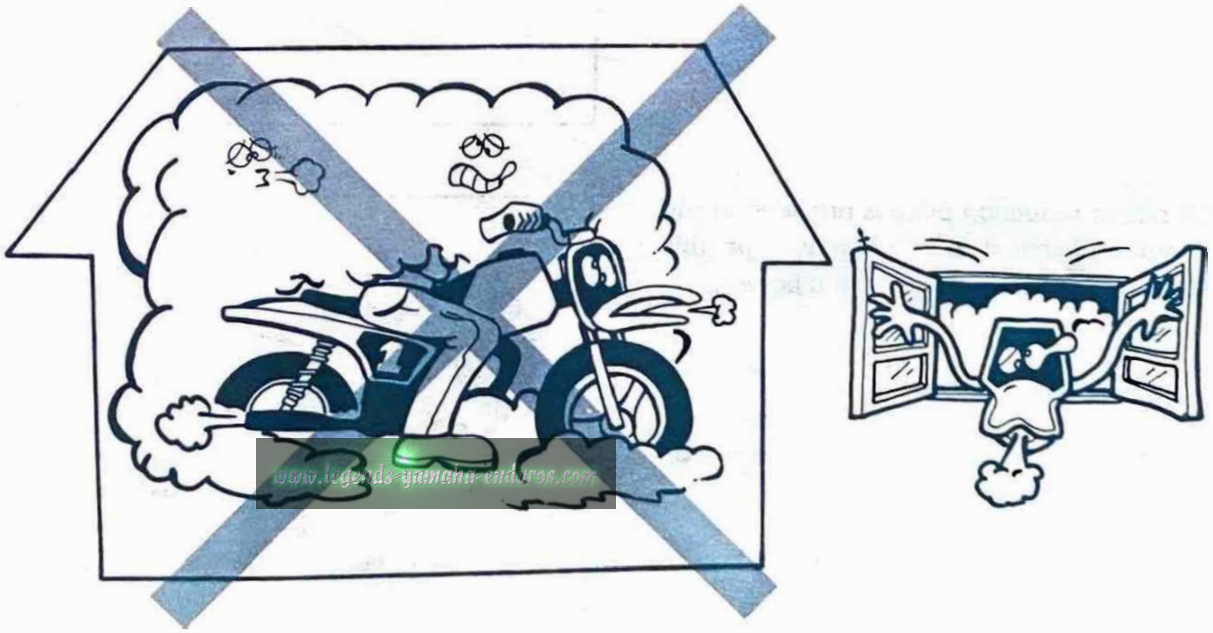
- A power reduction plate is provided in the cylinder exhaust port. Removal of this plate adds to the vehicle output power.



WARNING

1. Don't ride it on the street.

2. Don't run the engine inside a building.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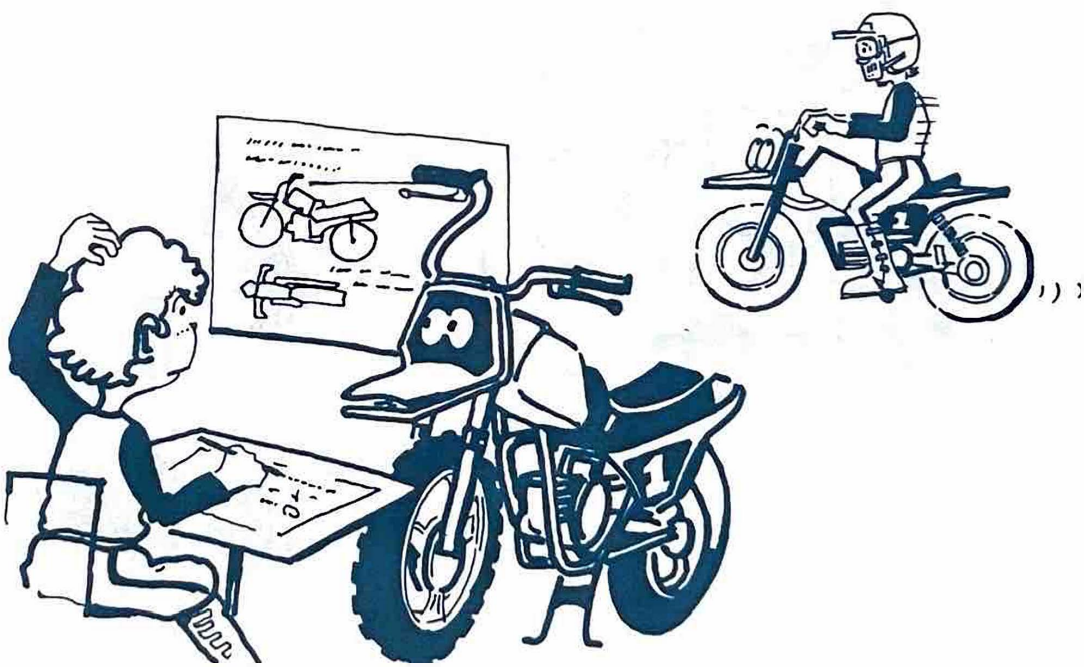
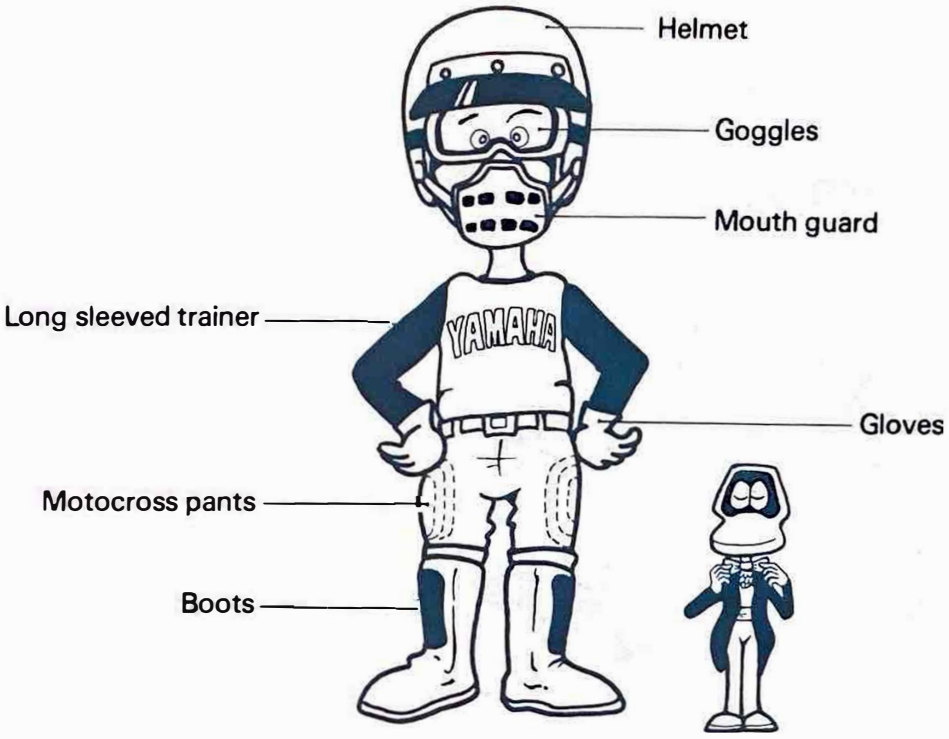
3. This is a one-seater motorbike. Don't give any person a ride.

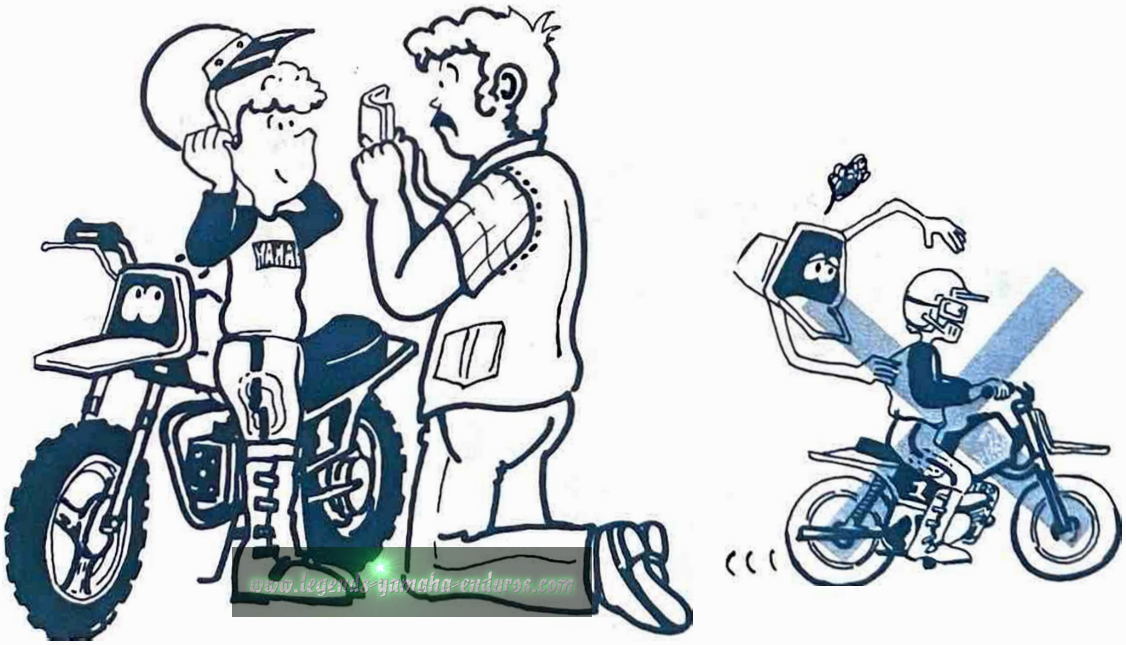
4. Let's learn how to ride properly. Ask your parents for any question.



5. When riding the machine, be sure to wear a helmet as illustrated.

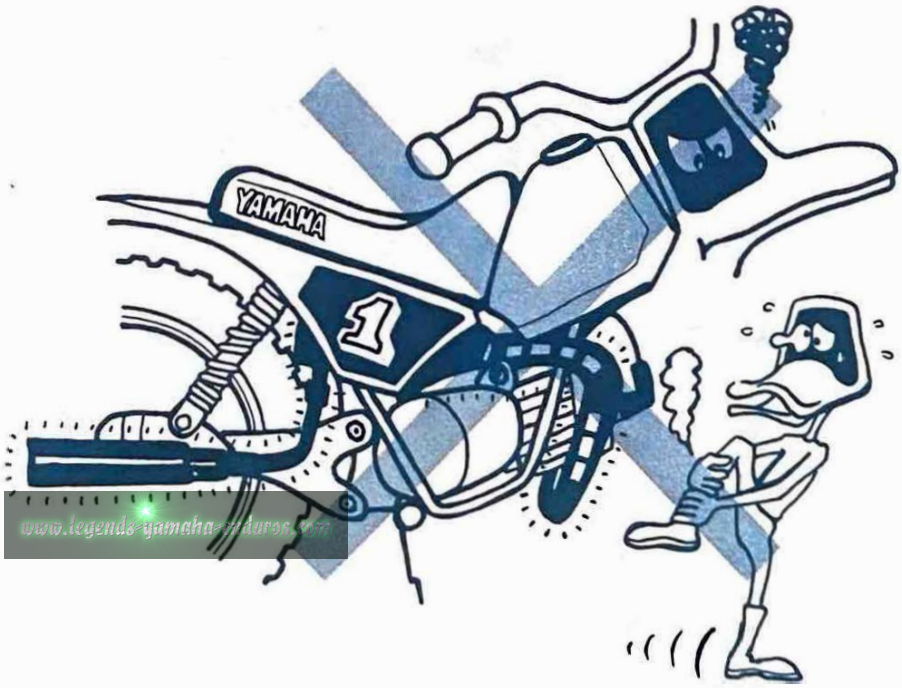


6. When going for riding, be sure to be with your family. Never go alone.



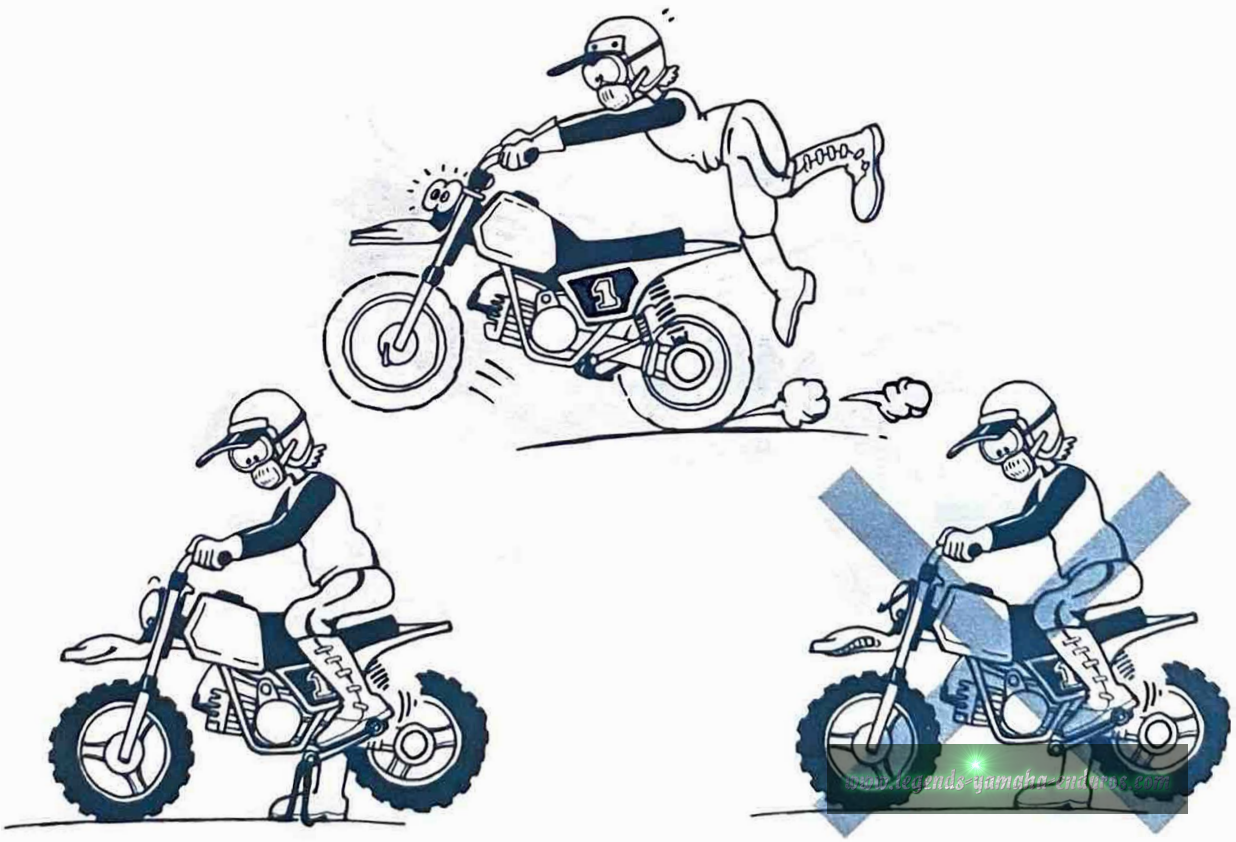
7. Before riding the machine, ask your parents to check the machine very carefully.

8. Don't touch the areas shown below, or you'll get burnt in the hand.



9. Don't touch rotating or moving parts.

10. Be sure to erect the stand when starting the engine.



WARNING:

- **READ OWNER'S MANUAL CAREFULLY BEFORE OPERATING THIS MACHINE.**
- **THIS MODEL IS PROVIDED WITH A SPEED LIMITER AND A POWER REDUCTION PLATE FOR A BEGINNER RIDER. DON'T REMOVE THEM UNTIL HE WILL GET USED TO RIDING THE MACHINE.**

  WEIGHT LIMIT: 25 kg (55 lb)

- **DO NOT TOUCH ANY MOVING OR HEATED AREAS.**
- **INSPECTION REQUIRED BEFORE OPERATING. REFER TO PAGE 8.**
- **ADULT SUPERVISION REQUIRED WHEN CHILDREN OPERATE THIS VEHICLE.**

IMPORTANT NOTICE

This machine is designed and manufactured strictly for off-road use only. It is illegal to operate this machine on street. Off-road use on public land may be illegal.

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.**
   - *** 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. **Always turn off the engine before leaving the machine unattended. When parking the machine, note the following:**
   - *** The engine and exhaust pipe(s)/muffler(s) may be hot. 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 may overturn.**
4. **When transporting the machine in another vehicle, be sure it is kept upright and that the fuel cock 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 may 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.**

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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.

This Owner's Service Manual is included to provide basic information for operation and maintenance.
Additional information regarding major repairs, such as crankcase disassembly, can be found within the QT50G Service Manual (3L8-28197-10) and various other information and training manuals available from your Authorized Yamaha Dealer.

INTRODUCTION

Congratulations on your purchase of the Yamaha PW50J.
This manual will provide you with a good basic understanding of the features, operation, and basic maintenance and inspection items of this vehicle. If you have any questions regarding the operation or maintenance of your machine, please consult your Yamaha dealer.
This manual will provide you with a good basic understanding of the features, operation, and basic maintenance and inspection items of this vehicle. If you have any questions regarding the operation or maintenance of your machine, please consult your Yamaha dealer.

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

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

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

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

PW50J OWNER'S SERVICE MANUAL
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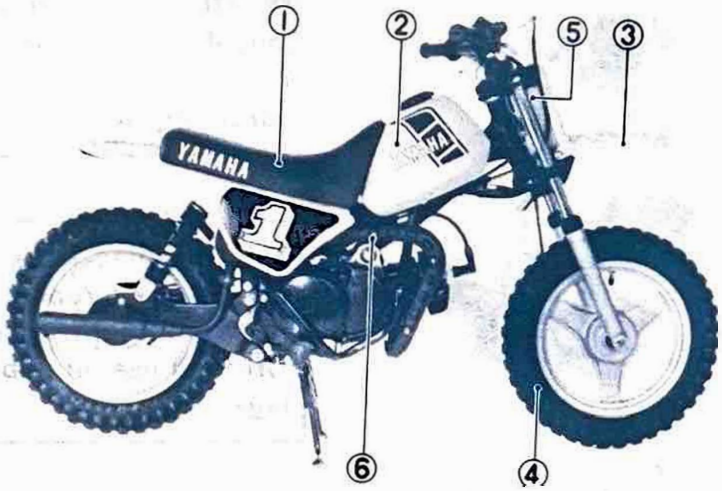
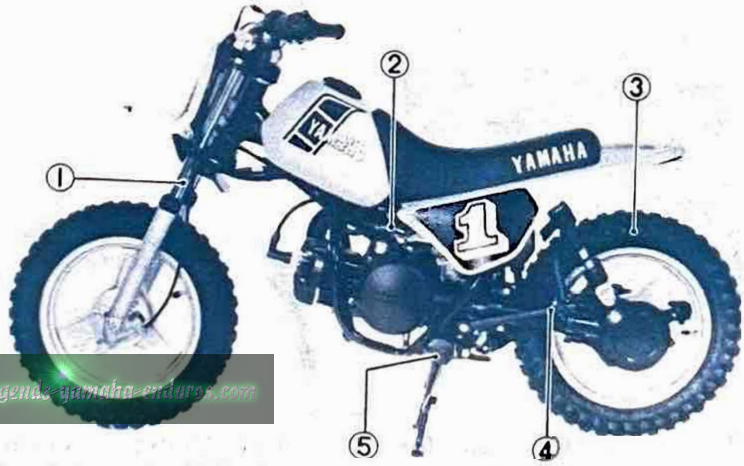
GENERAL INFORMATION

DESCRIPTION



1. Seat
2. Fuel tank
3. Front fender
4. Front wheel
5. Oil tank
6. Muffler



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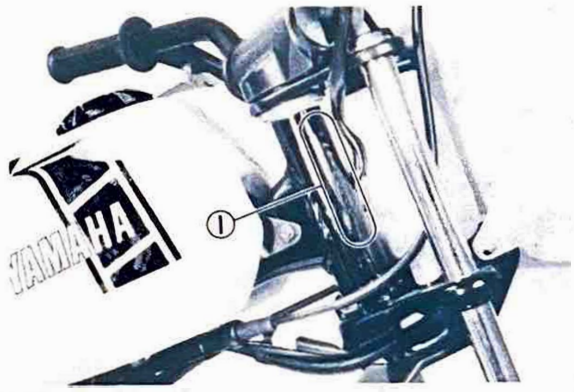
1. Front fork
2. Fuel petcock
3. Rear wheel
4. Kick crank
5. Footrest

1. Rear brake lever
2. Front brake lever
3. Throttle grip
4. Ignition control switch

MACHINE IDENTIFICATION

Frame serial number

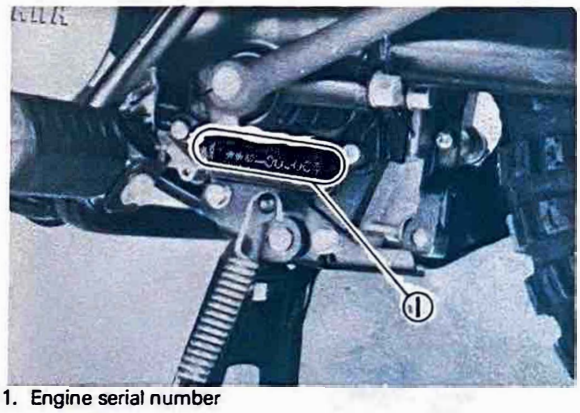
The frame serial number is located on the right side of the head pipe assembly.



1. Frame serial number

Engine serial number

The engine serial number is located on a raised boss on the lower left side of the engine.



1. Engine serial number

NOTE:

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

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

CONTROL FUNCTIONS

WARNING:

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

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

NOTICE:

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

Ignition control switch

This switch is located on the right handlebar.

OFF: The engine can not be started.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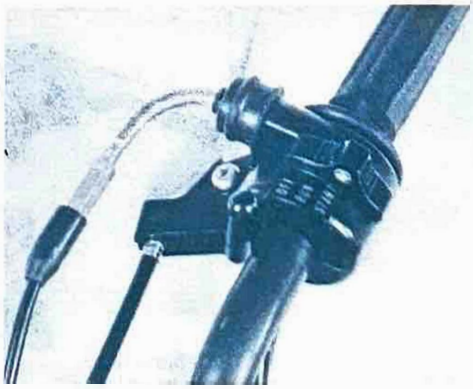
START: With the knob in this position;

1) The engine can be started.
2) The engine revs cannot be increased with throttle opening.



RUN: With the knob turned to this position;

1) The machine can be run with throttle opening.
2) The engine can not be started with the knob in this position.

WARNING:

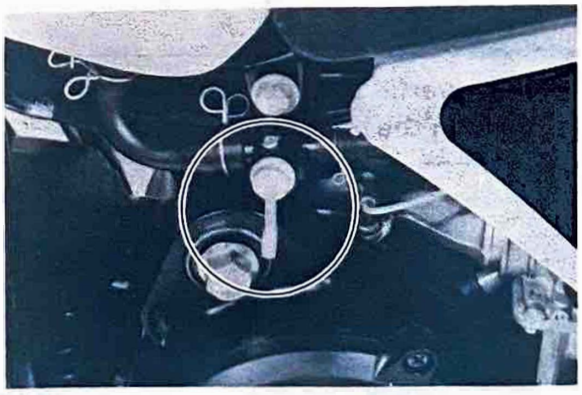
Before you slide the knob to the "RUN" position, make sure the throttle is closed, otherwise the machine may jump off.

Fuel petcock

The fuel petcock functions to supply fuel from the tank to the carburetor.

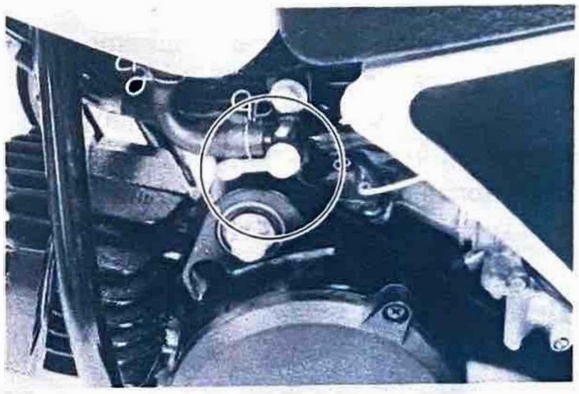
The fuel petcock has the following two positions:

OFF: With the lever in this position fuel will not flow. Return the lever to this position when the engine is not running.



OFF

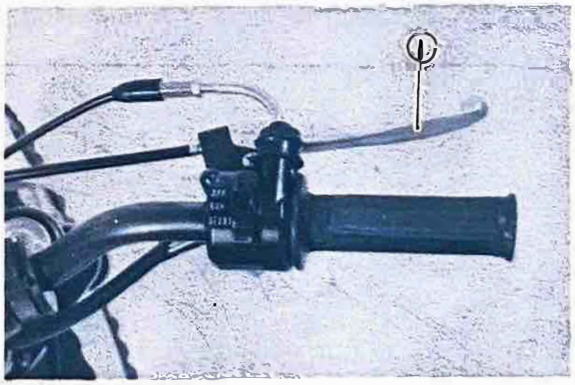
ON: With the lever in this position fuel flows to the carburetor. Normal riding is done with the lever in this position.



ON

Front brake lever

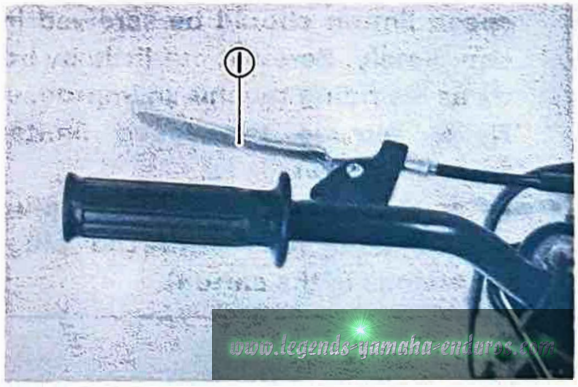
The front brake lever is located on the right handlebar, pull it toward the handlebar to activate the front brake.



1. Front brake lever

Rear brake lever

The rear brake lever is located on the left handlebar, pull it toward the handlebar to activate the rear brake.



1. Rear brake lever

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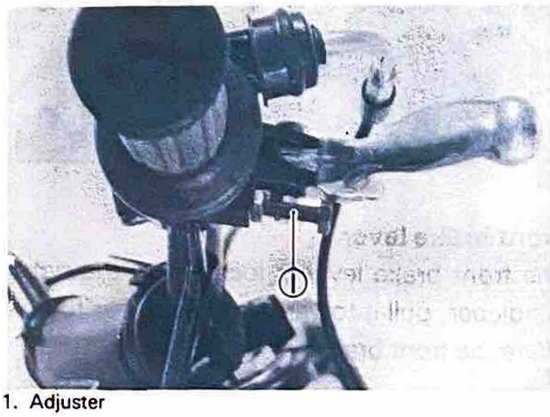
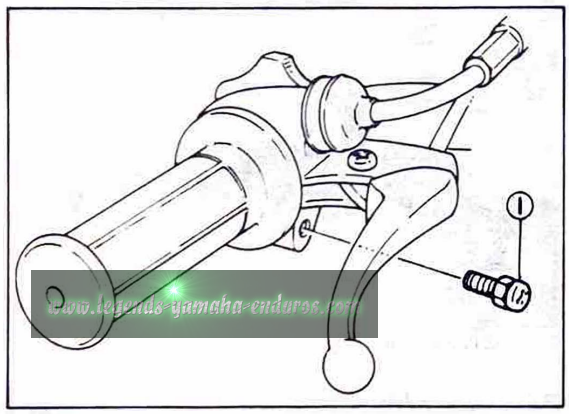
Speed limiter

The speed limiter keeps the carburetor throttle from becoming full-open even when the throttle grip is turned to a maximum. Screwining in the adjuster stops the engine speed from increasing.



1. Adjuster



1. Plug

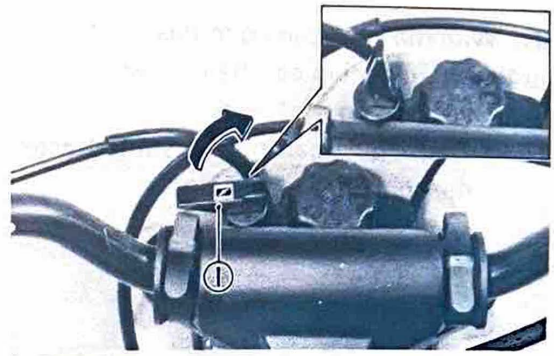
WARNING:

- **Particularly for a beginner rider, the speed limiter should be screwed in completely. Screw it out little by little as his riding technique improves. Never remove the speed limiter from the outset.**
- **After removing the adjuster, plug the adjuster hole with the plug. (contained in the carton).**

Starter lever (choke)

When cold, the engine requires a richer air/fuel mixture for starting. A separate starter circuit, which is controlled by the starter lever, supplies this mixture.

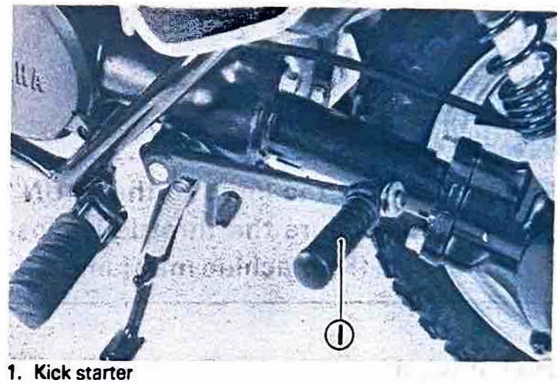
Pull the lever out to open the circuit (for starting) and push the lever in to close the circuit.



1. Starter lever

Kick starter

To start the engine, rotate the kick crank, push down lightly with foot until gears engage, and then kick briskly.



1. Kick starter

WARNING:

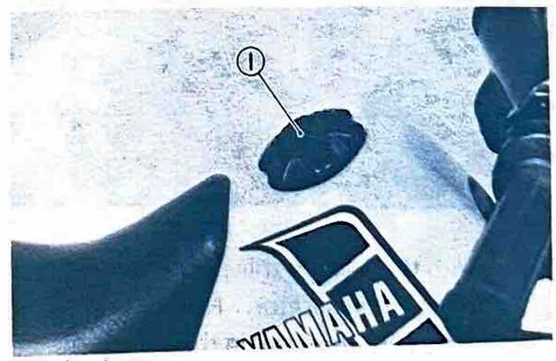
Before starting the engine, be sure to use the centerstand for safety.

Fuel tank cap

Remove the fuel tank cap by turning counterclockwise.

WARNING:

Do not overfill the fuel tank. Avoid spilling fuel on the hot engine.



1. Fuel tank cap

FUEL AND OIL

Fuel

Use regular gasoline. Always use fresh, name brand gasoline.

Recommended fuel: Regular gasoline
Fuel tank capacity: 2.0 lit (0.53 US gal)

Engine oil (oil tank)

Make sure there is sufficient engine oil in the oil tank. If necessary add oil.

Recommended oil:
Yamalube 2-cycle oil or air-cooled 2-stroke engine oil
Oil tank capacity: 0.3 lit (0.32 US qt)

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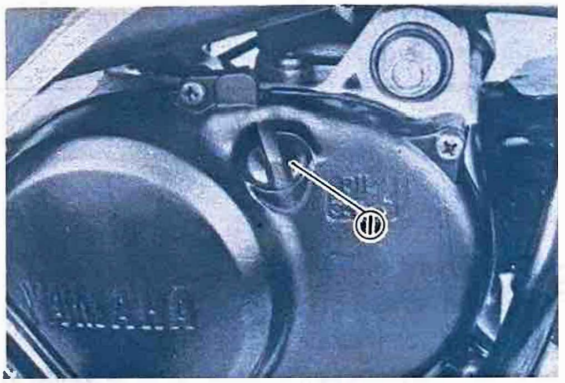
Transmission oil

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

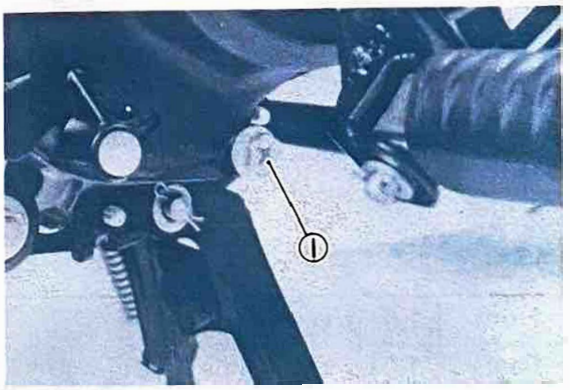
Oil replacement

To drain the oil, warm the engine up and remove the drain plug and drain all transmission oil. Reinstall the drain plug (make sure it is secure). Add oil through the dipstick hole.

Transmission oil capacity:
Periodic oil change:
300 cc (0.32 US qt)
Overhaul:
350 cc (0.37 US qt)



1. Filler cap



1. Drain plug

PRE-OPERATION CHECKS

Item	Routine	Page
Brake	Check operation/lever adjustment	3, 28
Transmission	Change oil as required	5
Spark plug	Check color/condition	10
Throttle	Check for proper throttle cable operation	4, 12
Air filter	Clean and damp with oil always	11
Wheels and tires	Check pressure/runout/axle nuts	28, 29
Fittings/fasteners	Check all — tighten as necessary	—

NOTE:

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

Brake (Front and rear)

Check for correct play in the brake levers and make sure they are working properly. Check the brakes at low speed shortly after starting out. If the play is incorrect, make an adjustment.

Tires

Check the tire pressure and check the tires for wear.

Tire pressure

Front	1.0 kg/cm² (14 psi)
Rear	1.0 kg/cm² (14 psi)

Throttle grip

Turn the throttle grip to see that it operates properly and that the play is normal. Make certain the throttle springs are closed when released.

Safety switch

Start the engine and make sure the safety switch functions properly.

STARTING AND OPERATION

CAUTION:

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

WARNING:

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

Starting a cold engine

1. Turn the fuel petcock to "ON".
2. Operate the carburetor starter (choke) lever and completely close the throttle grip.

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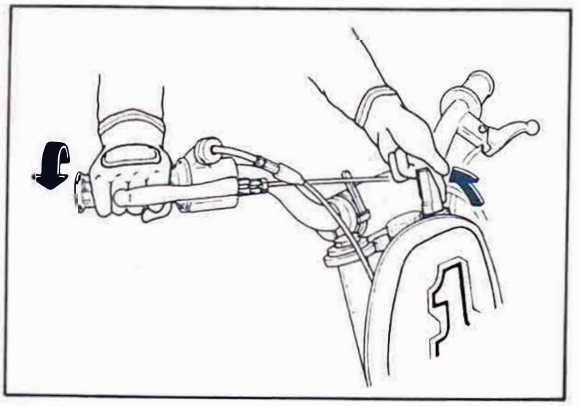
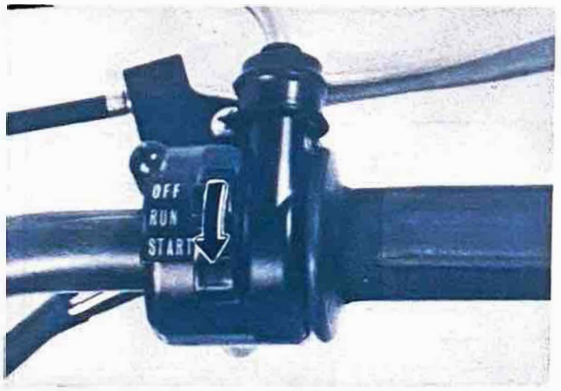


3. Slide the safty switch to the "START" bosition.



4. Kick the kick crank briskly to start the

WARNING:

Be sure to erect the stand when starting the engine.

5. After the engine starts, warm up for one or two minutes. Make sure the starter (choke) lever is returned to the original potision before riding.
6. Slide the safty switch knob to "RUN" position and open the throttle grip slowly.

WARNING:

Fully close the throttle grip when slide the safty switch knob to "RUN" position.

Starting a warm engine

To start a warm engine, refer to the "Starting a cold engine" section. The starter (choke) lever should not be used. The throttle should be opened slightly.

CAUTION:

See "Break-in Section" prior to operating engine for the first time.

Warming up

To get maximum engine life, always "warm-up" the engine before starting off. Never accelerate hard with a cold engine! To see whether or not the engine is warm, see if it responds to throttle normally with the starter (choke) turned off.

Engine break-in

1. Prior to starting, fill fuel tank with gasoline and oil tank with specified oil.
2. Allow engine to warm up. Check engine idling speed. Check operating controls and safety switch operation.
3. Operate machine is lower gears at moderate throttle setting for 8 ~ 10 minutes. Check spark plug condition.
4. Allow engine to cool. Repeat procedure, running for 5 minutes. Check full throttle response. Check spark plug condition.
5. Check entire unit for loose or mis-adjusted fittings/controls/fasteners.
6. Re-start engine and check through entire operating range thoroughly. Stop. Check spark plug condition. Re-start. After 10 ~ 15 minutes operation, machine is ready to ride.

PERIODIC MAINTENANCE AND ADJUSTMENT

MAINTENANCE AND LUBRICATION SCHEDULE CHART

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

A. Maintenance Intervals

Unit: km (mi)

Item	Remarks	Initial			Thereafter every	
		1 Month	3 Months	6 Months	6 Months	1 Year
Cylinder head/Exhaust system	Decarbonize		O	O	O	
Spark plug	Inspect/Cleaning or replace as required	O	O	O	O	
Air filter	Wet type-Must be washed and damped with Yamalube 2-cycle oil or air cooled 2-cycle engine oil		O	O	O	
Carburetor	Check operation/Fittings		O	O	O	
	Clean/Refit/Adjust			O		O
Autolube pump	Check/Adjust/Air bleeding	O	O	O	O	
* Brake system (complete)	Check/Adjust as required-Repair as required	O	O	O	3 Months	
* Wheels and tires	Check pressure/Wear/Balance/Run out	O	O	O	O	
* Suspension system	Check operation/Repair as required	O	O	O	O	
Fuel petcock	Clean/Flush tank as required	O	O	O	O	
* Fittings/Fasteners	Tighten before each trip and/or ...	O	O	O	O	

* Indicates pre-operation check items.

B. Lubrication Intervals

Unit: km (mi)

Item	Remarks	Type	Initial			Thereafter every	
			1 Month	3 Months	6 Months	6 Months	1 Year
* Transmission oil	Replace/Warm engine before draining	Yamalube 4-cycle oil or SAE 10W/30 type "SE" motor oil	O	Check	O		O
* Control and meter cables	Apply thoroughly	SAE 10W/30 motor oil		O	O		O
Throttle grip and housing	Apply lightly	Lithium base grease			O	O	
Brake lever	Apply lightly	Lithium base grease		O	O	O	
Brake cam shaft	Apply lightly	Lithium base grease		O	O	O	
Steering bearings	Inspect thoroughly/pack moderately	Medium-weight wheel bearing grease			Check		2 Years
Wheel bearings	Do not over-pack yearly or ...	Medium-weight wheel bearing grease					O
Middle and final gear	See Service Manual (QT50G, 3L8-28197-10)	Lithium base wheel bearing grease (EX. SHELL LETHINAX A)					2 Years

* Indicates pre-operation check items.

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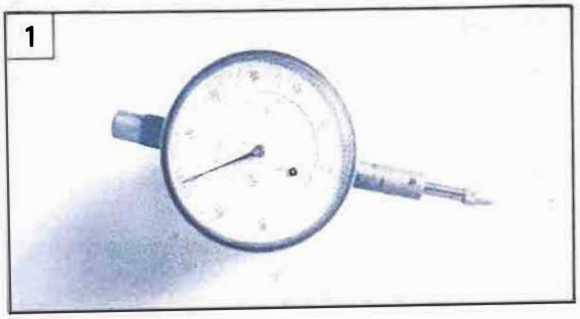
SPECIAL TOOLS

No.	Part name	Part No.
1	Dial gauge	90890-03097
2	Dial gauge stand	90890-01195
3	Dial gauge needle	90890-03098
4	Pocket tester	90890-03112
5	Cylinder gauge	90890-03016
6	Micro meter	90890-03007
7	Magnetic base	90890-03019
8	Vernier caliper	—

1


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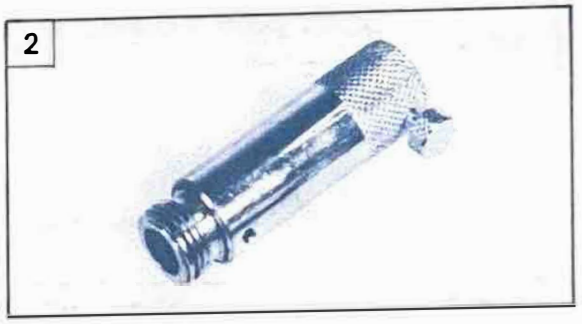

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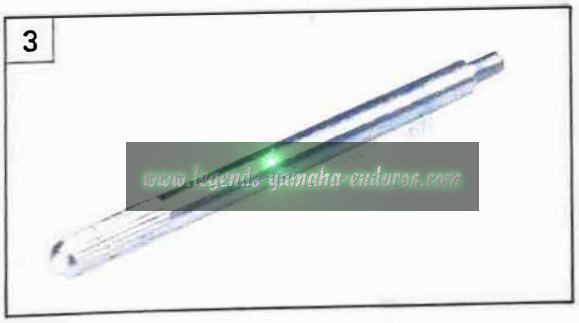
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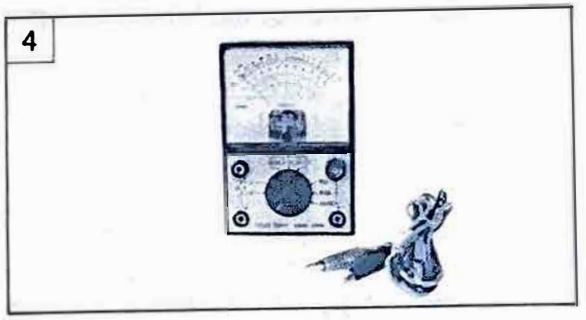

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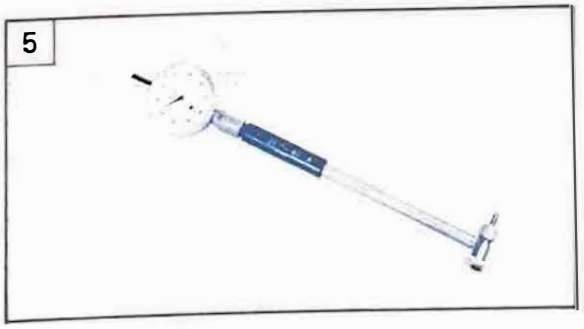

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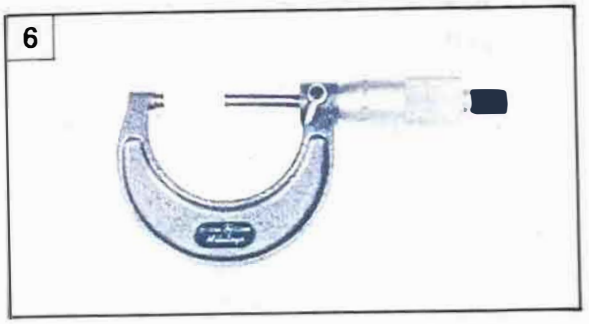

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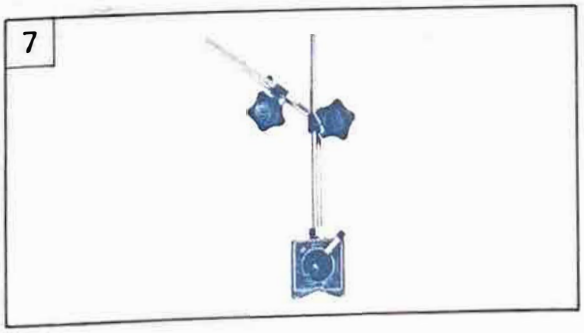

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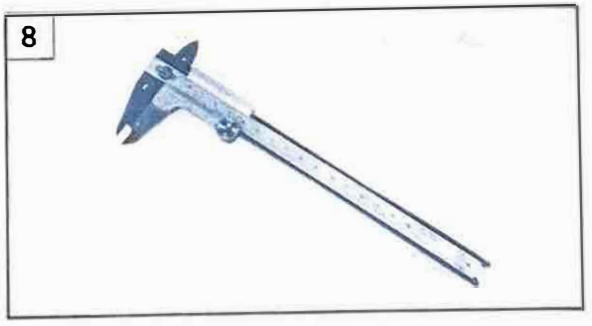
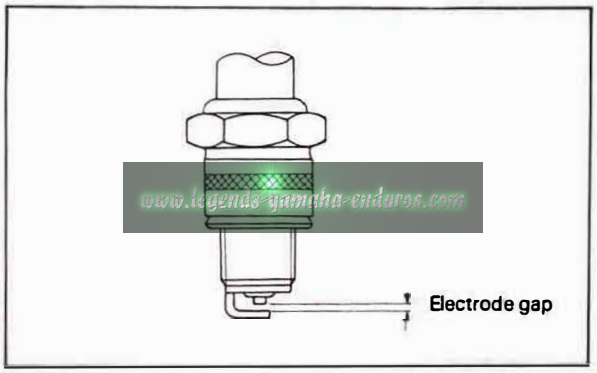


ADJUSTMENT

Spark plug

Standard spark plug:
BP4HS (N.G.K.), W-14FPL (NIPPON DENSO)

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



Adjustment can be made by bending the side electrode.

Electrode gap:
0.6 ~ 0.7 mm (0.024 ~ 0.027 in)

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

Spark plug torque: 2.0 m-kg (14 ft-lb)

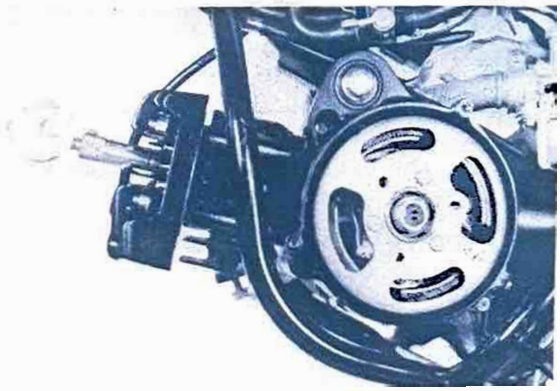
2. The insulator must be a medium-to-light tan color. If not, check carburetion, ignition timing and gas-oil mixing ratio.
   If the porcelain is a very dark brown or black color, then a plug with a hotter heat range may be required.
   This situation is quite common during the engine break-in period.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

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

Ignition timing

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

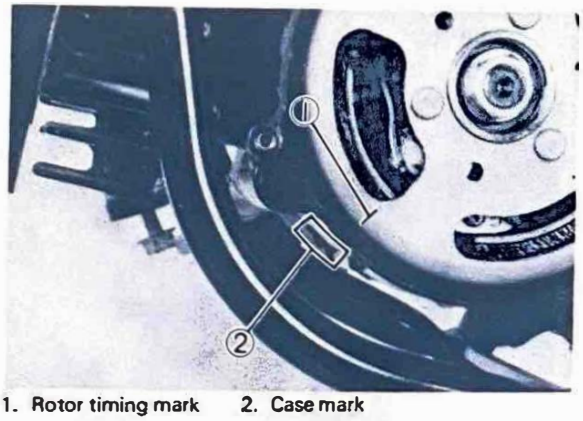
1. Screw Dial Gauge Stand into spark plug hole.
2. Insert Dial GAuge Assembly with a 56 mm (2.2 in) extension (needle) into stand.
3. Remove left engine crankcase cover.



4. Rotate rotor until piston is at top-dead-center (T.D.C.). Tighten set screw on dial gauge stand to secure dial gauge assembly. Set the zero on dial gauge face to line up exactly with dial gauge needle. Rotate rotor back and forth to be sure that gauge needle does not go past zero.
5. Starting at T.D.C., rotate rotor clockwise until dial indicator reads 0.94 mm (0.037 in) before top-dead-center (B.T.D.C.).

Ignition timing: 0.94 ± 0.15 mm
(0.037 ± 0.006 in) B.T.D.C.

6. Check to see that the rotor timing mark aligns with the case mark.



1. Rotor timing mark 2. Case mark

7. Remove dial gauge assembly and stand. Install spark plug and muffler.

Spark plug torque: 2.0 m-kg (14 ft-lb)

8. Install engine crankcase cover.

Air filter cleaning

1. Remove the seat and element cover.

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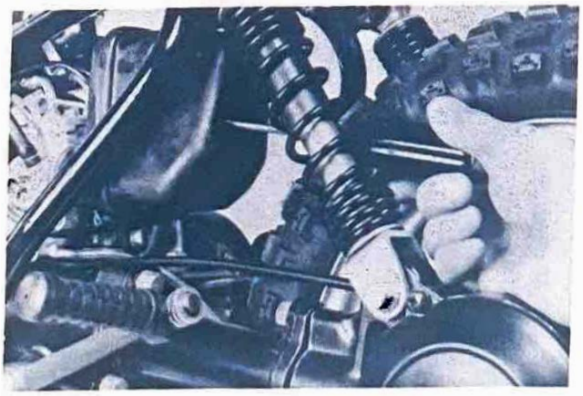
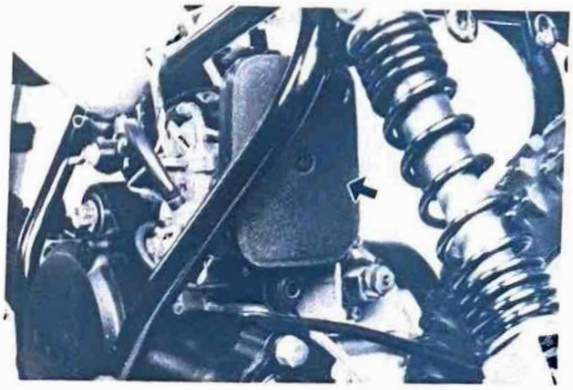




2. Wash the element gently, but thoroughly, in solvent.
3. Squeeze the excess solvent out of the element and let dry.
4. Pour a small quantity of air cooled 2-cycle engine oil onto the filter element and work thoroughly into the porous foam material.

NOTE:

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

5. Reinstall the element assembly and parts removed for access.

NOTE:

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

CAUTION:

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

Throttle cable adjustment

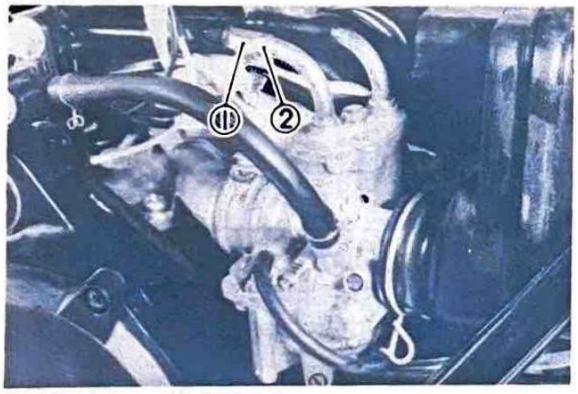
a. Throttle cable 2

Loosen cable adjuster lock nut (at top of carburetor) and turn cable adjuster until specified free play is obtained. Retighten lock nut.

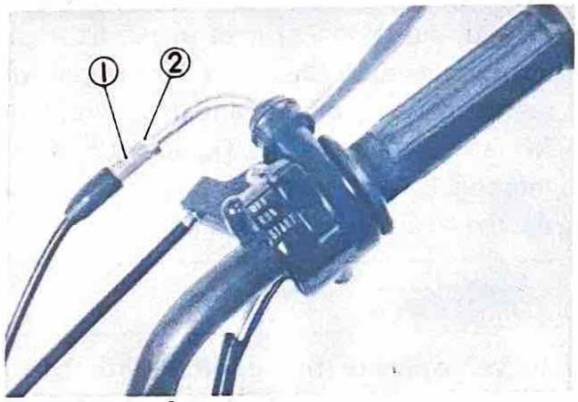
Free play: 1.0 mm (0.04 in)

b. Throttle cable 1

After engine idle speed and throttle cable 2 are set, check play in tuning direction of throttle grip. The play should be 2 ~ 3 mm (0.08 ~ 0.12 in) at grip flange. Loosen the lock nut and turn the wire adjuster to make the necessary adjustment. After adjusting, be sure to tighten the lock nut properly.



1. Adjuster 2. Lock nut



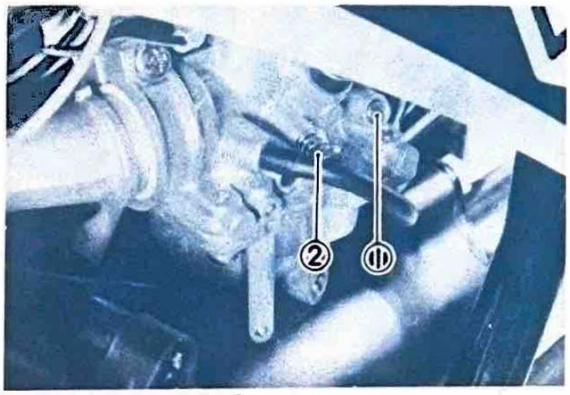
1. Adjuster 2. Lock nut

Idle speed adjustments

1. Turn pilot air screw in until lightly seated.
2. Back out 1 and 3/8 turns. Start the engine and warm it up.

Pilot air screw (turns out): 1 and 3/8 turns.

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



1. Pilot air screw 2. Throttle stop screw

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

Idle speed: As desired (1,700 r/min)

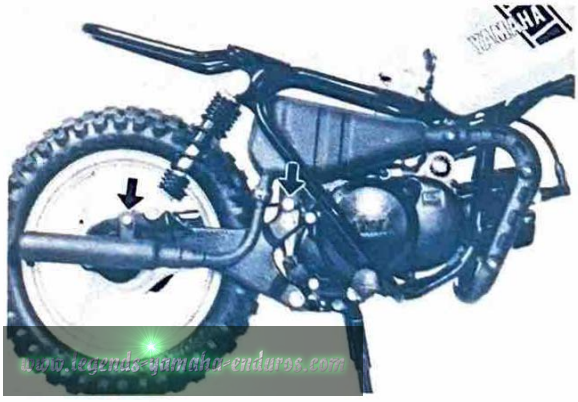
If the engine, when warm, hesitates after adjusting as described, turn the pilot air screw in or out in 1/4 turn increments until the problem is eliminated.

NOTE:

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

Autolube Pump

Before serving the oil pump, remove the muffler.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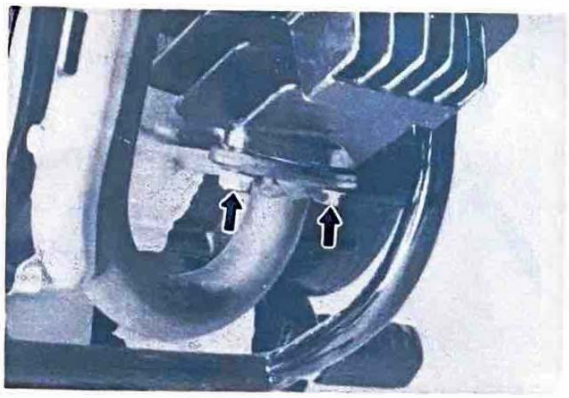
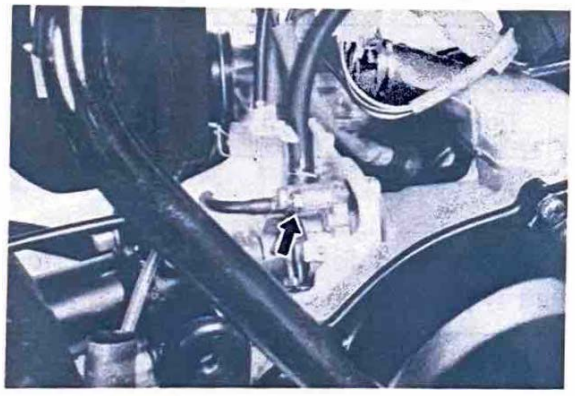
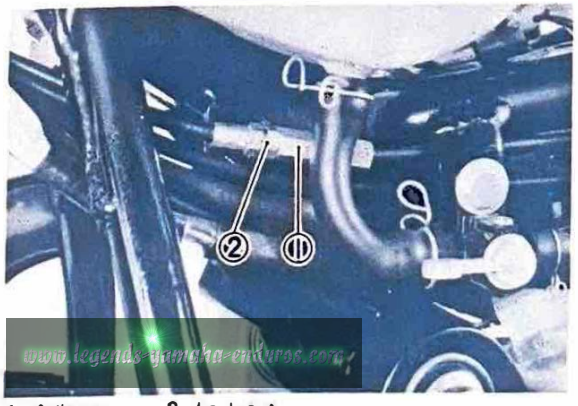


1. Air bleeding
   To bleed the oil pump, first remove the bleed screw. Start engine and run at idling speed. Then pull the oil pump wire as much as possible, and continue to run the engine until all air bubbles disappear from the oil flowing out from the bleeder hole.



   Reinstall bleed screw.
2. Oil pump wire adjustment
   a. Remove the slack in throttle wire 2 by turning the adjusting screw attached to the carburetor.
   b. Loosen the lock nut.
   c. Turn the adjusting screw so that the mark on the adjusting pulley is aligned with the Phillips head screw attached to the adjusting plate.



1. Adjuster 2. Lock nut

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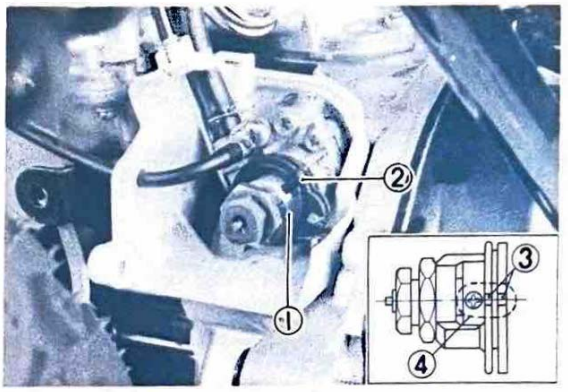
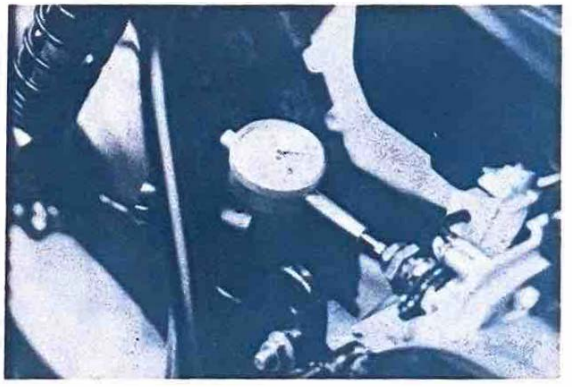
   d. Screw in the lock nut until tight.
3. Minimum pump stroke adjustment
   Remove the seat ass'y and air cleaner case assembly, set the magnetic stand and dial gauge, and measure the pump stroke while keeping the engine idle.



1. Adjusting pulley 3. Mark
2. Phillips head screw 4. Set position



   a. To adjust the plunger stroke, first loosen the lock nut.
   b. Turn the adjusting bolt in or out for proper adjustment.
      Turning the adjusting bolt clockwise decreases the plunger stroke; while turning counterclockwise increases the plunger stroke.
   c. When the correct stroke is attained, tighten the lock nut.

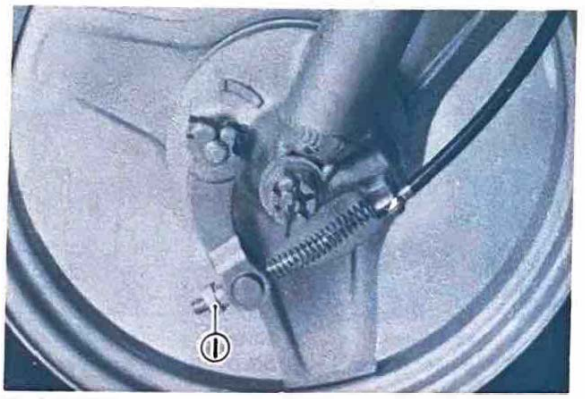
Minimum stroke	0.25 ~ 0.30 mm (0.010 ~ 0.012 in)
Maximum stroke	1.00 ~ 1.15 mm (0.039 ~ 0.045 in)
Pulley color code	Yellow
Pulley adjust mark	

Brake adjustment

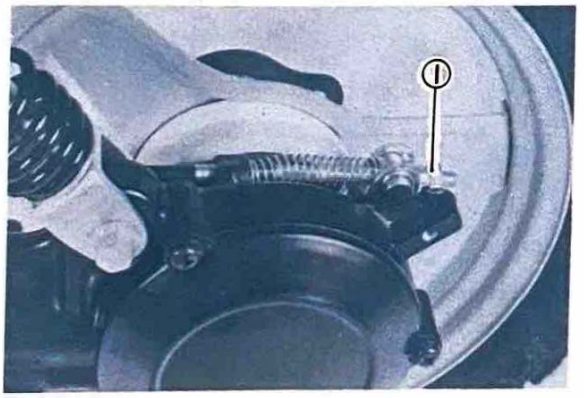
Brake cable free play can be adjusted to suit rider preference, but a minimum free play of 5 ~ 8 mm (0.2 ~ 0.3 in) should be maintained.

Free play can be adjusted at brake shoe plates.

Turn the adjuster in or out until proper adjustment is achieved.



1. Adjuster



1. Adjuster

Steering inspection

Periodically inspect the condition of the steering. Worn out or loose steering bearings may be dangerous.

Place a block under the engine to hold the front wheel of the motorcycle off the ground; then hold the lower end of the front fork and try to move forward and backward.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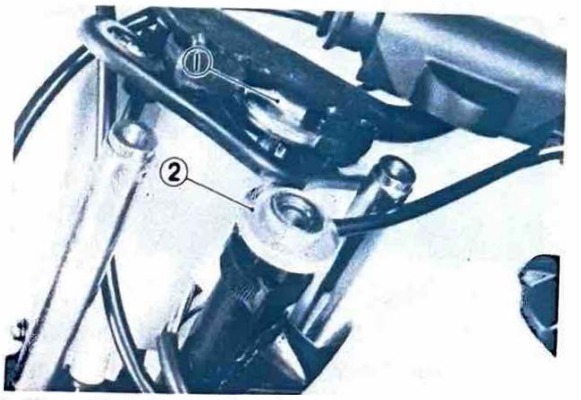
Steering adjustment

1. To adjust, loosen stem bolt and tighten ring nut.



1. Stem bolt 2. Ring nut

CAUTION:

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

2. Tighten stem bolt.

Tightening torque: 3.0 m-kg (22 ft-lb)

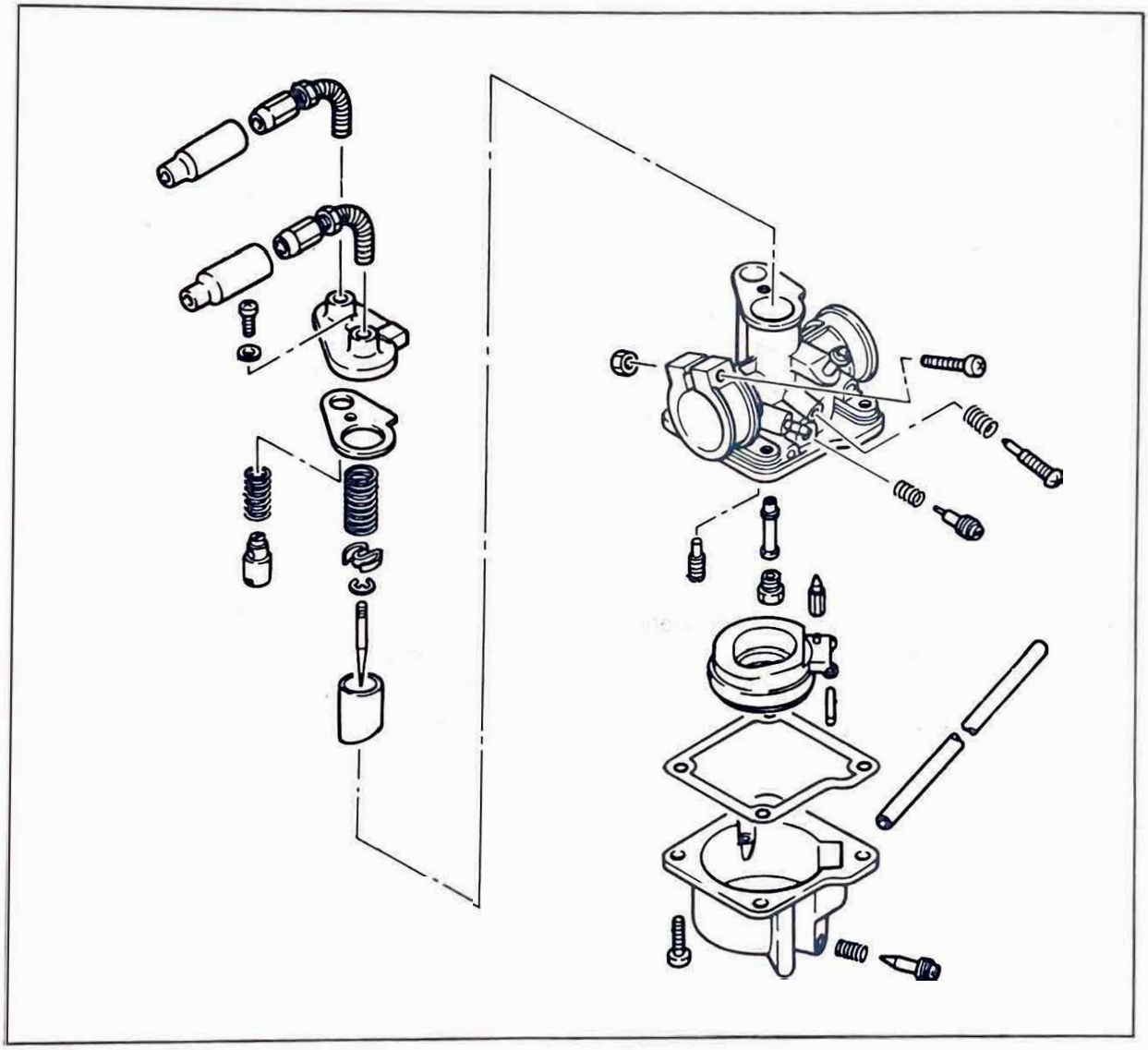
NOTE:

Steering head disassembly must be performed by your Yamaha dealer.

MAINTENANCE AND MINOR REPAIRS

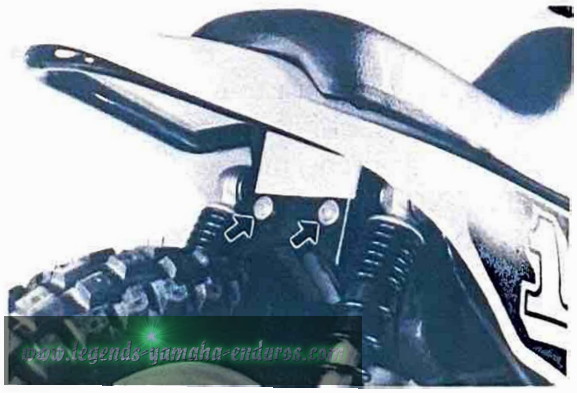
ENGINE

CARBURETOR

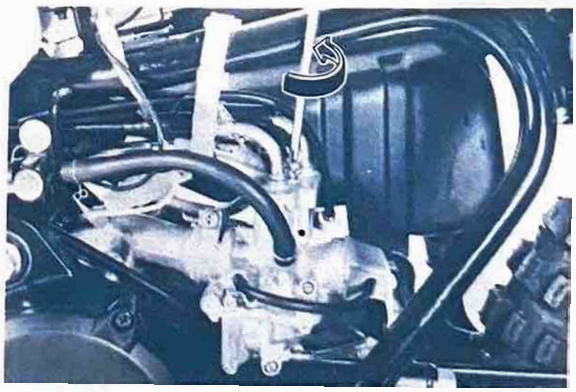


Removal

1. Remove the seat.



2. Remove the two bolts, cleaner joint band and oil delivery pipe.



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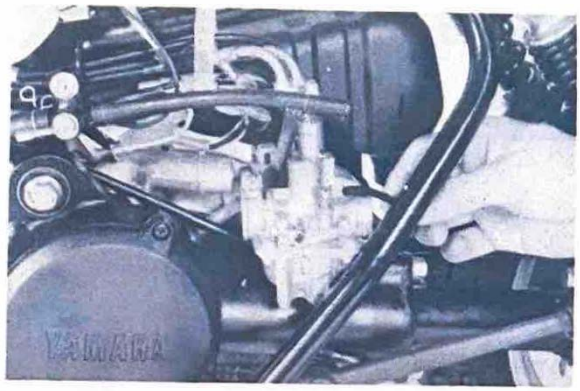
3. Loosen the joint bolt, take out the carburetor.



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 leaking or damaged, they should be replaced.
3. Inspect float valve and seat for wear or contamination. Replace these components as a set.
   If wear is excessive, replace float valve and mixing chamber as a set.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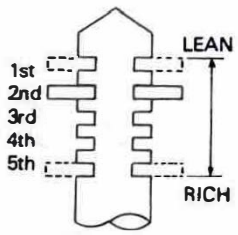
Adjustment

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

Jet needle type: 3X1
Clip position: No. 2 Groove



Jet needle

Troubleshooting

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

The following list gives each of the major components of the carburetor that can be readily changed in order to modify performance if required. If you are unfamiliar with carburetor theory, we suggest you refrain from making changes. Quite often, a performance problem is caused by another related component, such as the exhaust system, ignition timing or combustion chamber compression.

NOTE:
See MECHANICAL ADJUSTMENTS for additional carburetor adjustments.

Pilot air screw

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

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

Pilot jet

Controls the ratio of fuel to air in the idle circuit.

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

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

Throttle valve (slide)

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

OPERATING RANGE MOST AFFECTED BY THE THROTTLE VALVE: 1/8 TO 1/4 THROTTLE.

Jet needle

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

OPERATING RANGE MOST AFFECTED BY THE JET NEEDLE: 1/4 TO 3/4 THROTTLE.

Main jet

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

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

NOTE:

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

CAUTION:

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

IMPORTANT:

The PW50J Carburetor has been set for normal sea level conditions. The standard setting is the result of extensive testing and does not usually require changing. However, under conditions of high atmospheric pressure or heavy load (deep sand or mud) the standard main jet should be replaced with another main jet should be replaced with another main jet. If the carburetor requires any other setting changes to suit local conditions of altitude, weather, etc., the change must be made with great care. Improper carburetor setting changes will cause poor engine performance and possible engine damage.

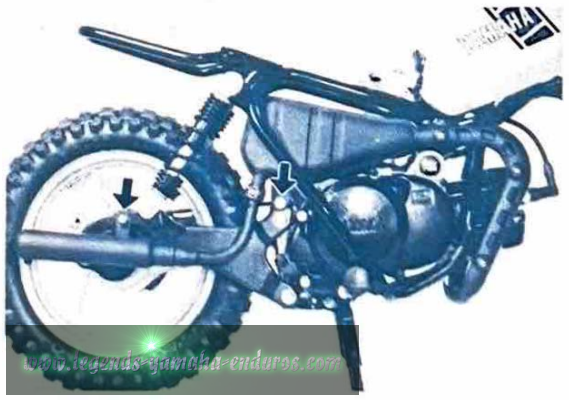
Please consult your Yamaha dealer about any carburetor setting changes before actually going about then.

Muffler

Remove the silencer, then muffler assembly.

WARNING:

The silencer joint band should be installed with its projection facing inward.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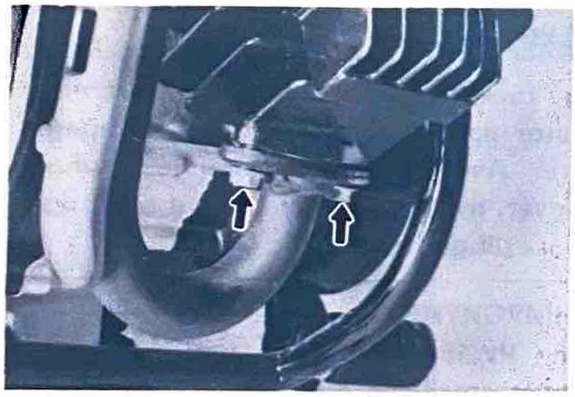
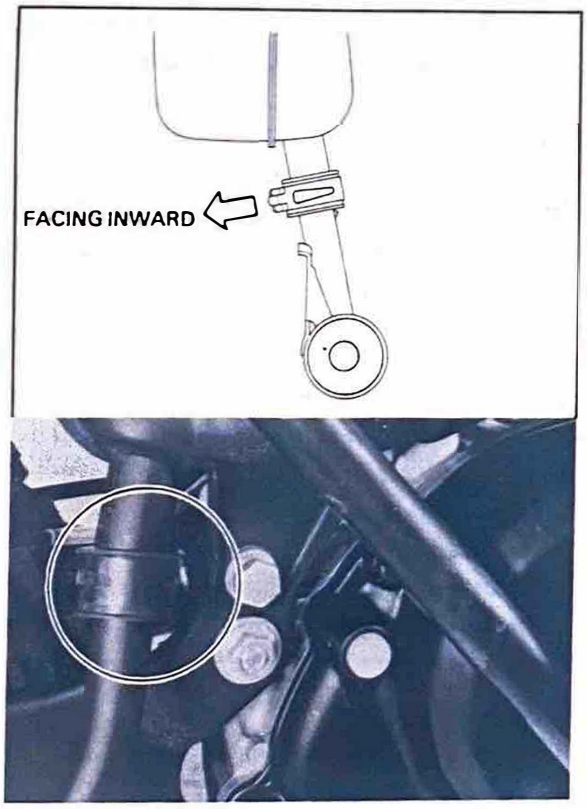




Maintenance

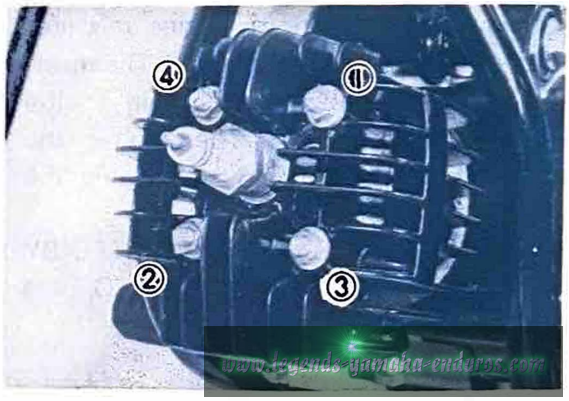
1. Using a rounded scraper, remove excess carbon deposits from manifold area of exhaust pipe. Check muffler gasket condition. The gasket seat is located around the cylinder exhaust port.
2. Carbon deposits within the silencer may be removed by lightly tapping the outer shell with a hammer and then blowing out with compressed air. Heavy wire, such as a coat hanger, may be inserted to break loose deposits. Use care.

TOP END

Removal

1. Remove spark plug lead wire. Loosen, but do not remove spark plug.
2. Remove nuts securing cylinder and head (4 nuts).
   Remove cylinder head and gasket.

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



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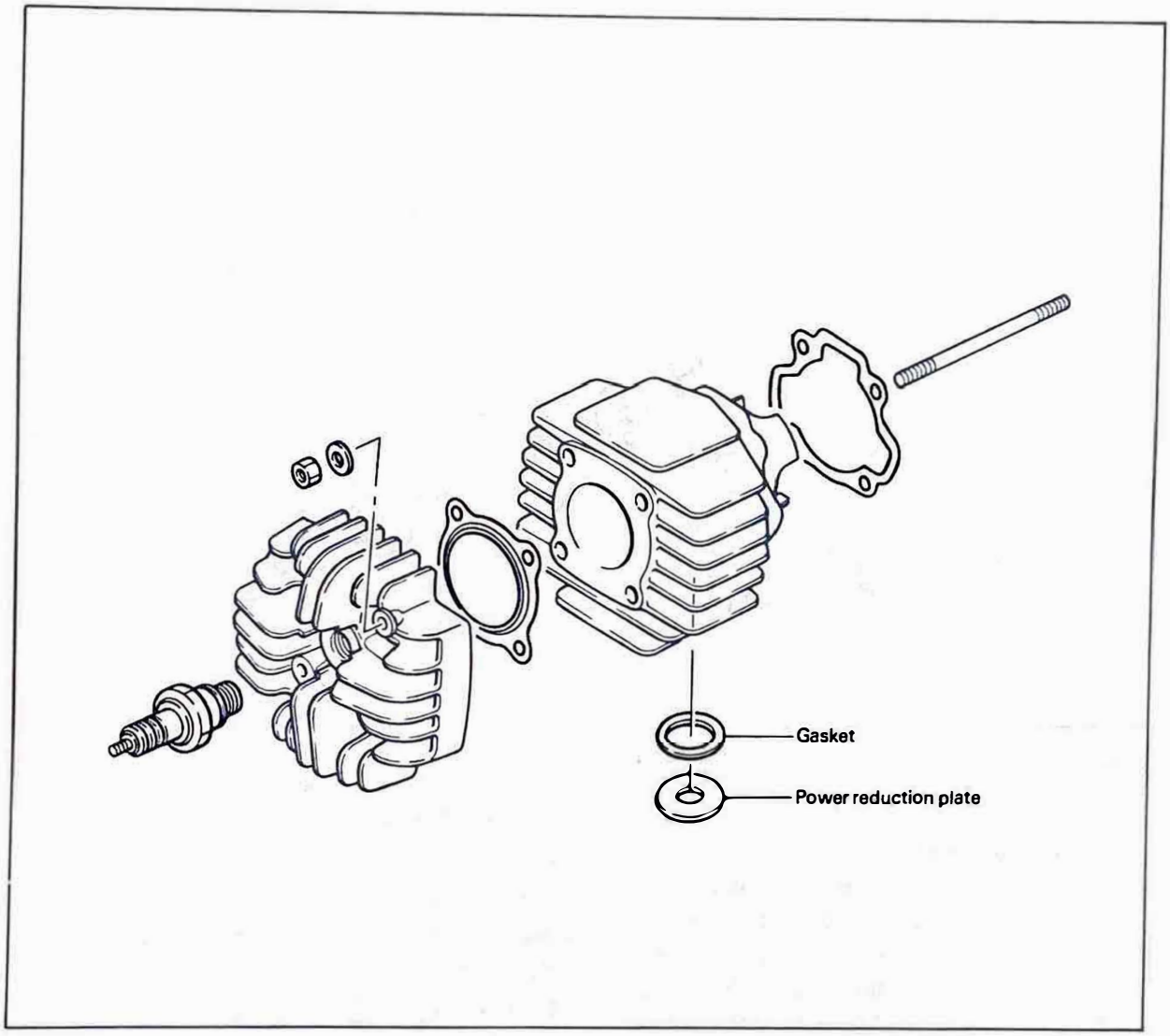
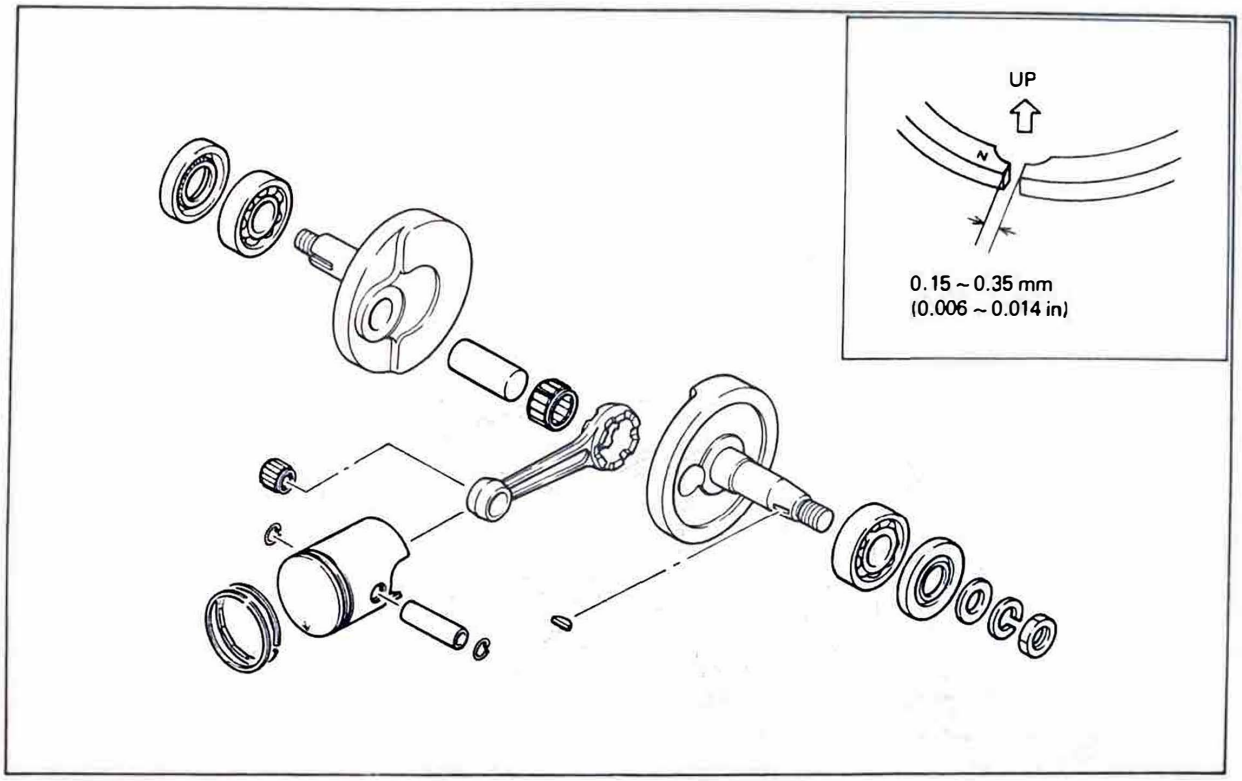


3. With the piston at top dead center, rise the cylinder until the cylinder skirts clear crankcase. Stuff a clean shop rag into crankcase cavity, around rod, to prevent dirt and other foreign particles from entering. Remove cylinder.
4. Remove the piston pin clip (1) from the piston. Push the piston pin out from opposite side. Remove the piston.

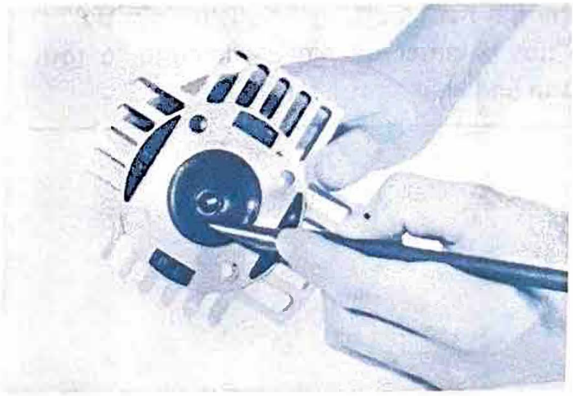
NOTE:
If the pin hangs up, use a piston pin puller. Do not hammer on pin as damage to rod, piston and bearing will result.



Maintenance

Cylinder head

1. Remove spark plug.
2. 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.



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

Cylinder

NOTE:

This model has a power reduction plate in the exhaust pipe outlet so that a beginner child rider can practice with the machine safely.

1. Remove reed valve assembly.
2. Using a rounded scraper, remove carbon deposits from exhaust port.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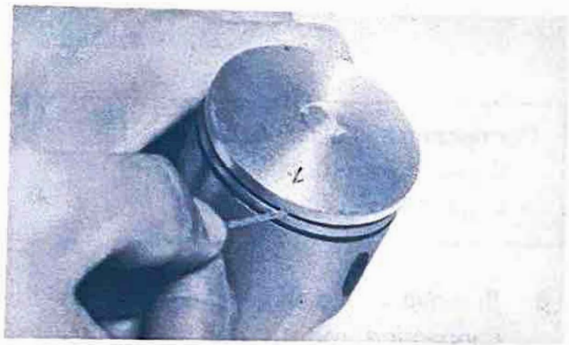
3. Check cylinder bore. Using a cylinder hone, remove any scoring. Hone lightly, using smooth stones. Hone no more than required to avoid excess piston clearance.

Piston

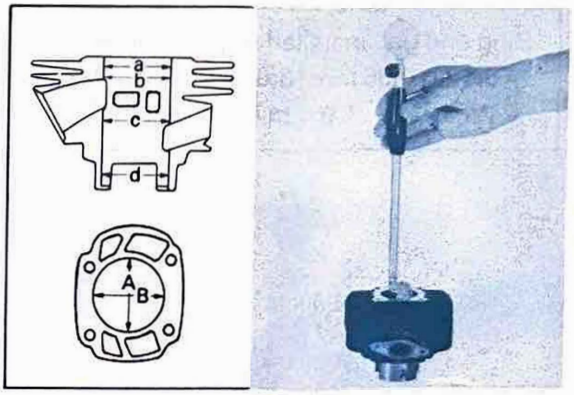
1. Using a rounded scraper, remove carbon deposits from piston crown.
2. Break a used piston ring in two. File end square. De-burr edges to avoid scraching ring groove and clean carbon deposits from ring grooves.



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

Piston clearance

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

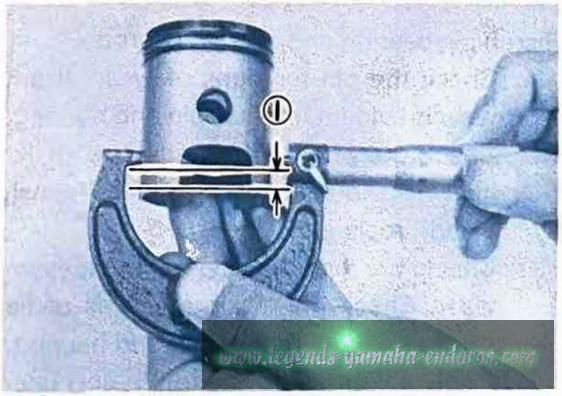


2. Piston outside diameter measurement
   Using an outside micrometer, measure piston diameter. The measuring point is at right-angles to the piston pin holes, about 5 mm (0.2 in) from the bottom of the piston skirts.
   PISTON CLEARANCE
   = Minimum Cylinder Diameter
   − Maximum Piston Diameter

Example:
40.020 mm − 39.985 mm = 0.035 mm
(1.576 in − 1.574 in = 0.002 in)

Nominal piston clearance:
0.034 ~ 0.047 mm (0.0014 ~ 0.0018 in)

If beyond tolerance replace piston or rebore cylinder as required.

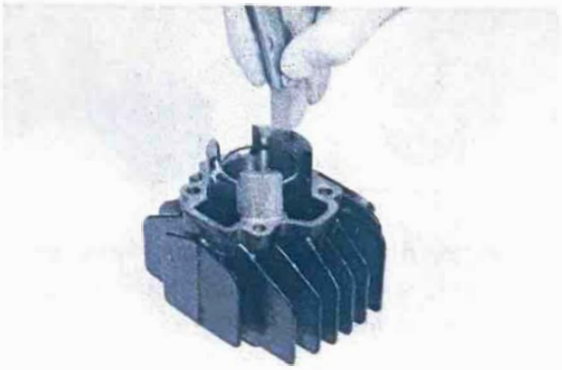


1. 5 mm (0.2 in)

Piston rings

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

Ring end gap installed (top and 2nd):
0.15 ~ 0.35 mm (0.006 ~ 0.014 in)
Wear limit: 1.0 mm (0.04 in)

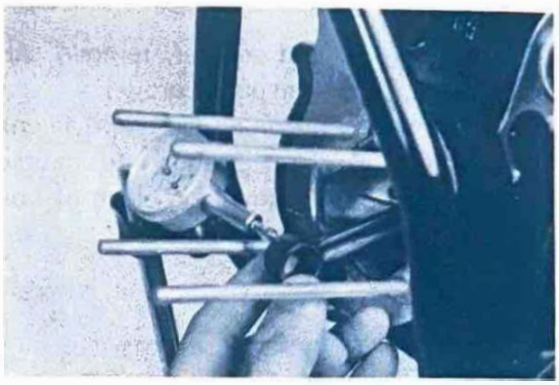


3. Holding cylinder towards light, check for full seating of ring around bore. If not fully seated, check cylinder. If cylinder is not out-of-round, replace piston ring.
4. During installation, make sure ring ends are properly fitted around ring locating pin in piston groove. Apply liberal coating of two-stroke oil to ring.

NOTE:
New rings require break-in. Follow first portion of new machine break-in procedure.

Piston pin bearing and connecting rod

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.
4. Apply a light film of oil to pin and bearing surfaces. Install in connecting rod small end. Check for play. There should be no noticeable vertical play. If play exists, check connecting rod small end diameter for wear. Replace pin and bearing or all as required.
5. Mount the dial gauge at right angles to connecting rod small end holding the bottom of rod toward the dial indicator, rock top of rod and measure axial play.



Connecting rod axial play:
0.4 ~ 0.8 mm (0.04 ~ 0.08 in)
Limit: 1.5 mm (0.15 in)

6. Remove the dial gauge and slide the connecting rod to one side. Insert a feeler gauge between the side of the connecting rod big end and the crank wheel. Measure clearance.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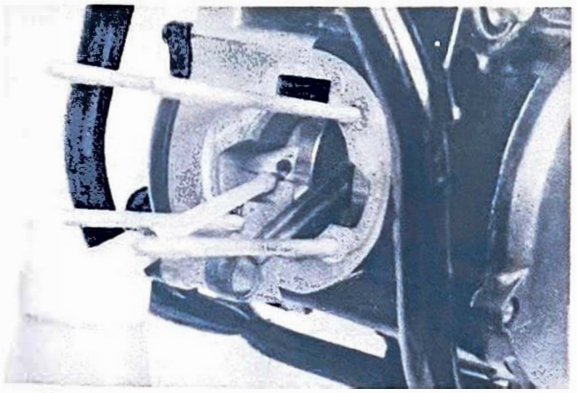
Connecting rod/crank side clearance:
0.35 ~ 0.55 mm (0.008 ~ 0.028 in)
Limit: 1.0 mm (0.04 in)

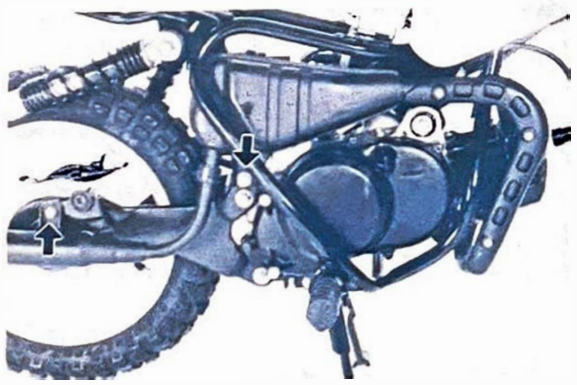
7. If any of the above measurements exceed tolerance, crankshaft repair is required. Take the machine to your authorized dealer.
8. During reassembly apply a liberal coating of two-stroke oil to the piston pin and bearing. Apply several drops of oil to the connecting rod big end. Apply several drops of oil into each crankshaft bearings oil delivery hole.

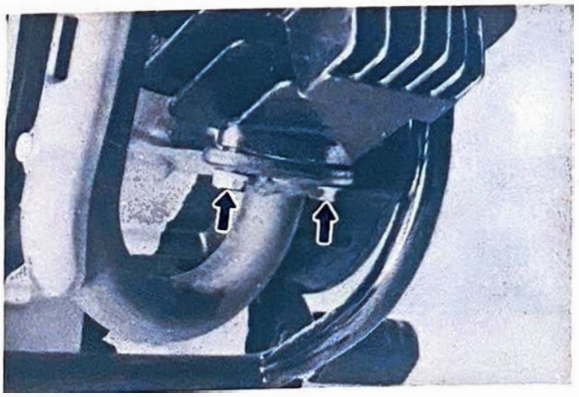


CLUTCH

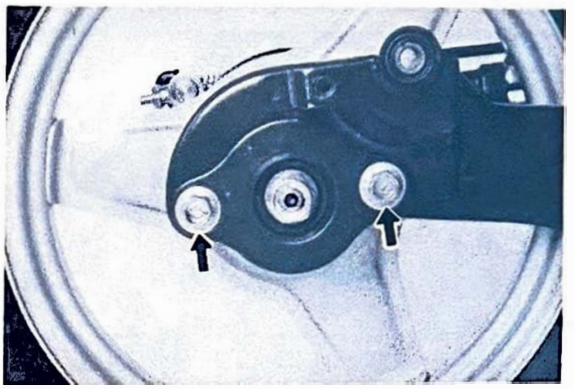
When servicing the clutch, the engine must be removed. For engine removal, proceed as follow:

1. Rear arm (R) removal
   a. Remove the rear shock absorber holding bolt (lower side).
   b. Remove the muffler holding bolts (rear).

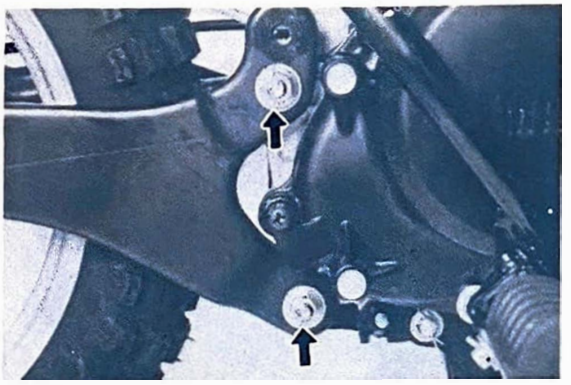




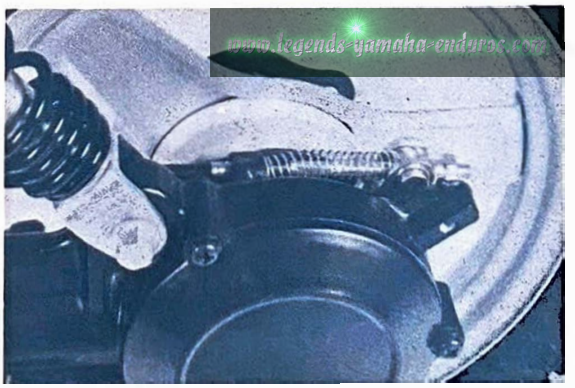
c. Remove the bearing holding bolts.



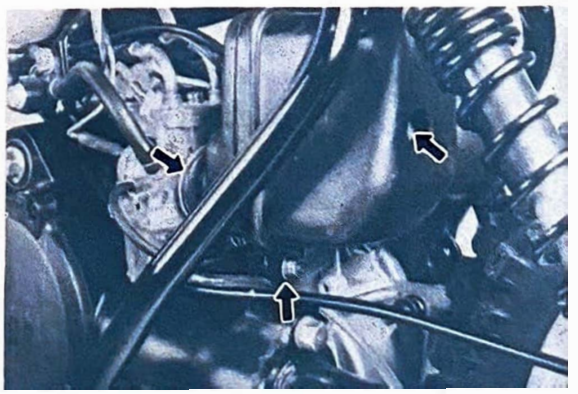
d. Remove the rear arm holding bolts.



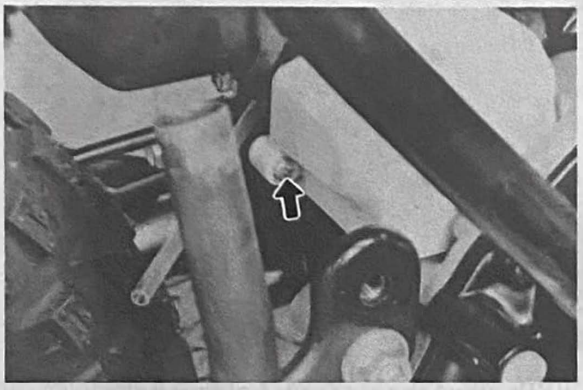
2. Remove the rear brake cable from cam lever.



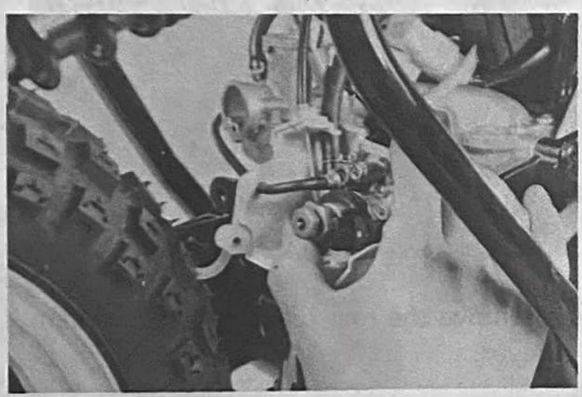
3. Remove the air cleaner case assembly.

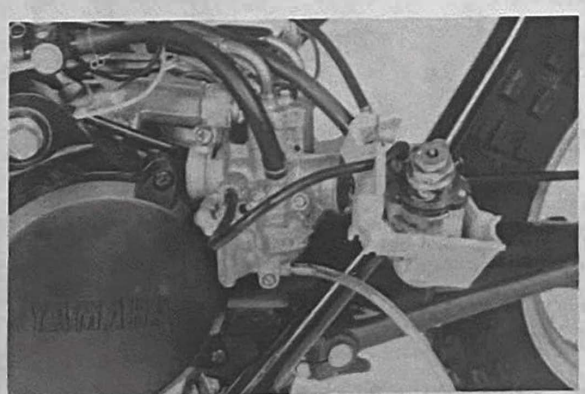


4. Remove the oil pump and carburetor.
   a. Remove the oil pump cover (1).

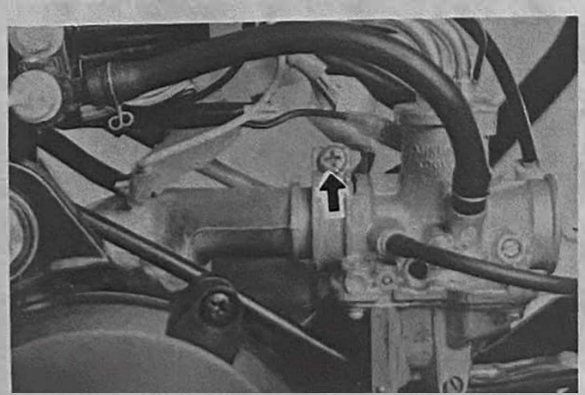


   b. Remove the oil pump complete with pump cover (2).
      It is not necessary to disconnect the oil pipe and oil delivery pipe.

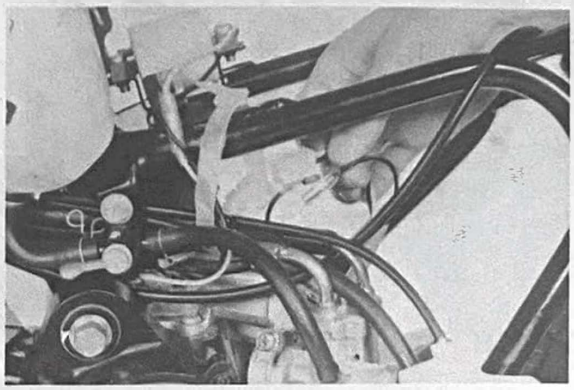




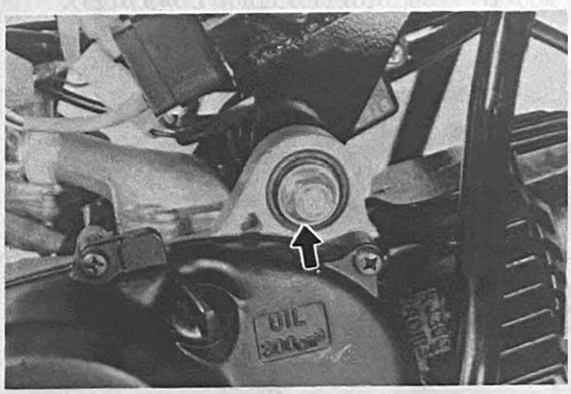
   c. Remove the carburetor.

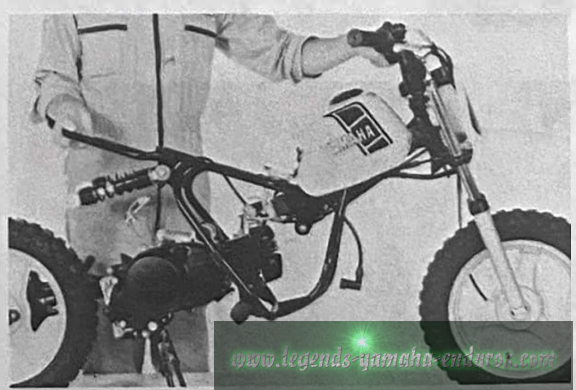


5. Disconnect the magneto harness from main wire harness.



6. Remove the spark plug cap.
7. Remove the shock absorber (L) holding bolt (lower side).
8. Remove the pivot shaft and "pull out" the frame assembly from the engine assembly.





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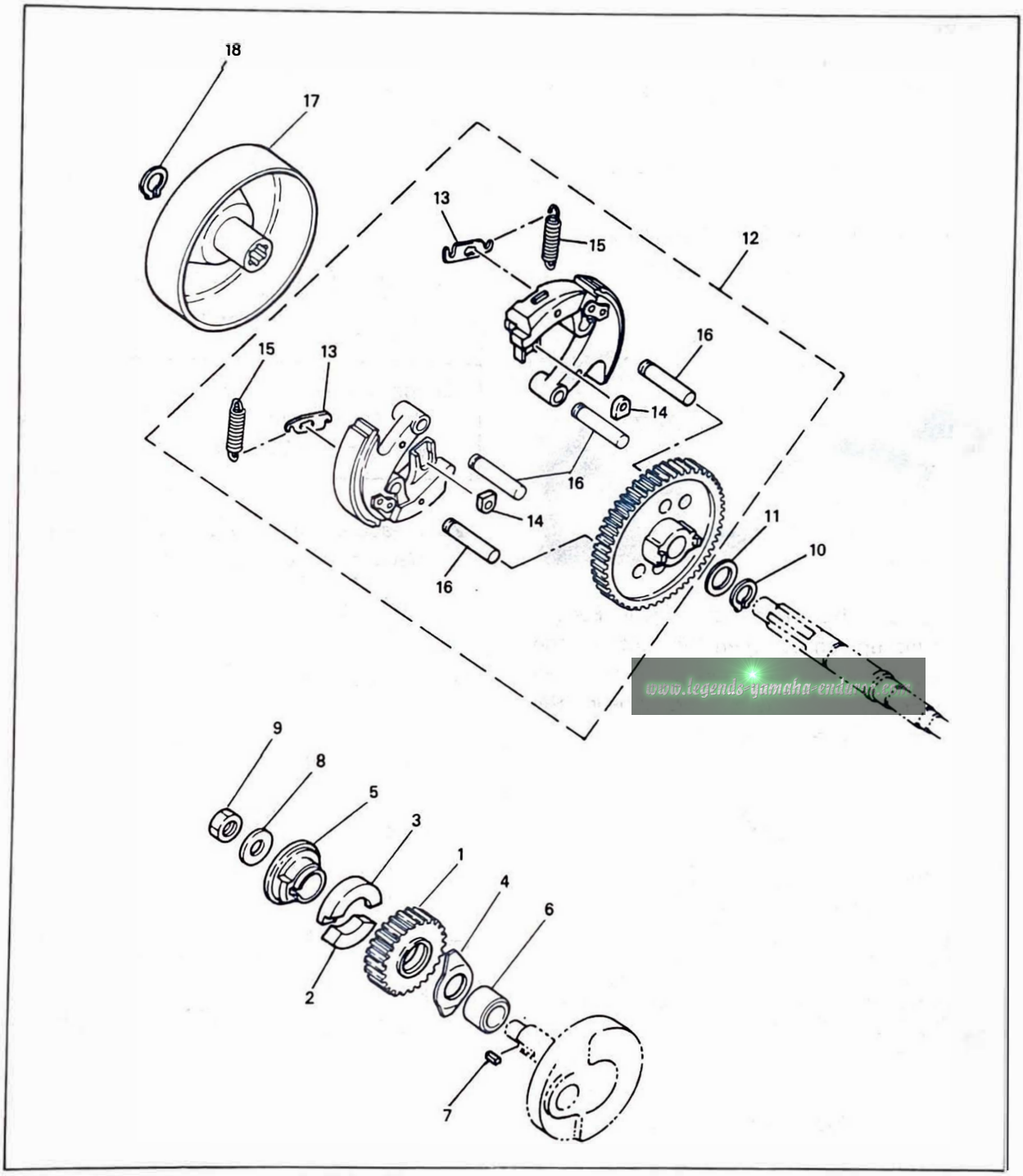

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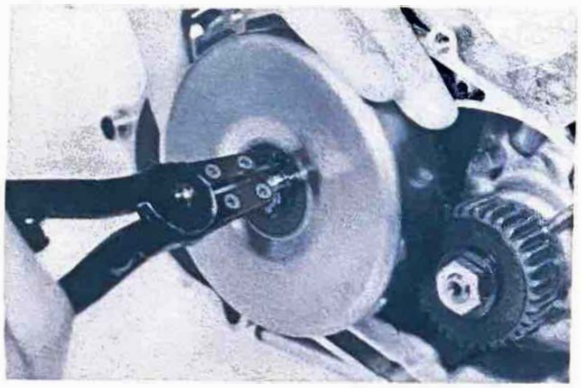
1. Primary drive gear
2. Absorber 1
3. Absorber 2
4. Thrust plate
5. Spacer
6. Collar
7. Straight key
8. Plate washer
9. Hexagon nut
10. Circlip
11. Plate washer
12. Clutch carrier assembly
13. Washer
14. Clutch weight damper
15. Spring
16. Clutch weight shaft
17. Clutch housing comp
18. Circlip

Removal

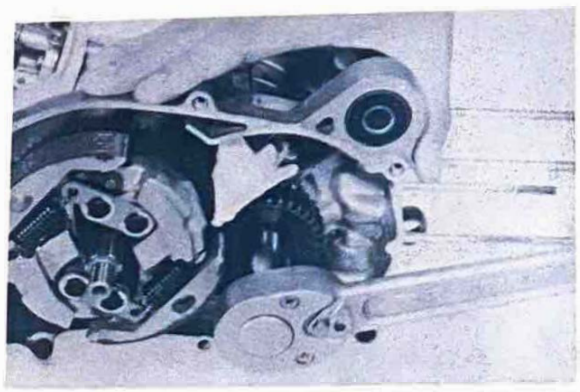
NOTE:

Drain transmission oil before remaining cover.

1. Remove right crankcase cover screws and cover.
2. Remove circlip and clutch housing.



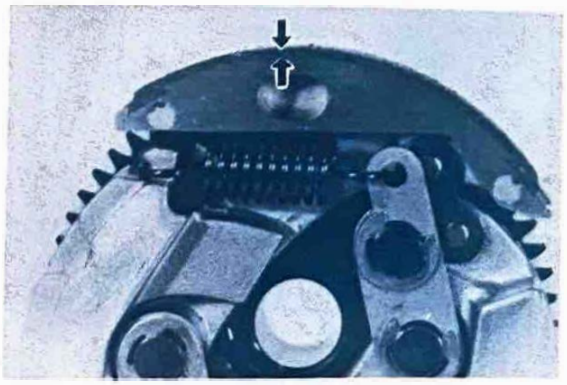
Remove the primary drive gear. Feed a rolled-up rag between the tooth of the primary drive gear and primary driven gear to lock them and loosen the primary drive gear lock nut.



3. Remove clutch carrier assembly.

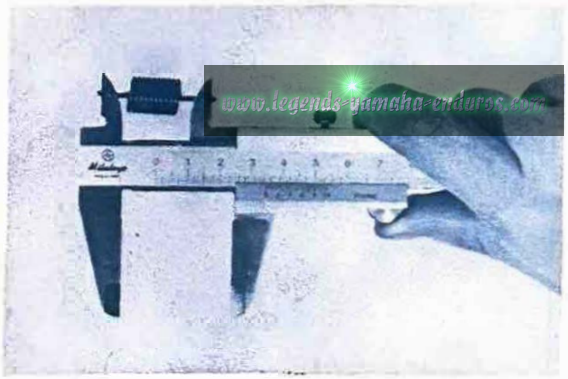
Inspection

1. Measure the clutch shoes lining thickness. If their minimum thickness exceeds tolerance, replace.
   If any sign of seizure are found, replace them.



Clutch shoe lining thickness:
S.T.D.: 1.0 mm (0.040 in)
Wear limit: 0.7 mm (0.03 in)

2. Measure each clutch shoes spring. If beyond tolerance, replace.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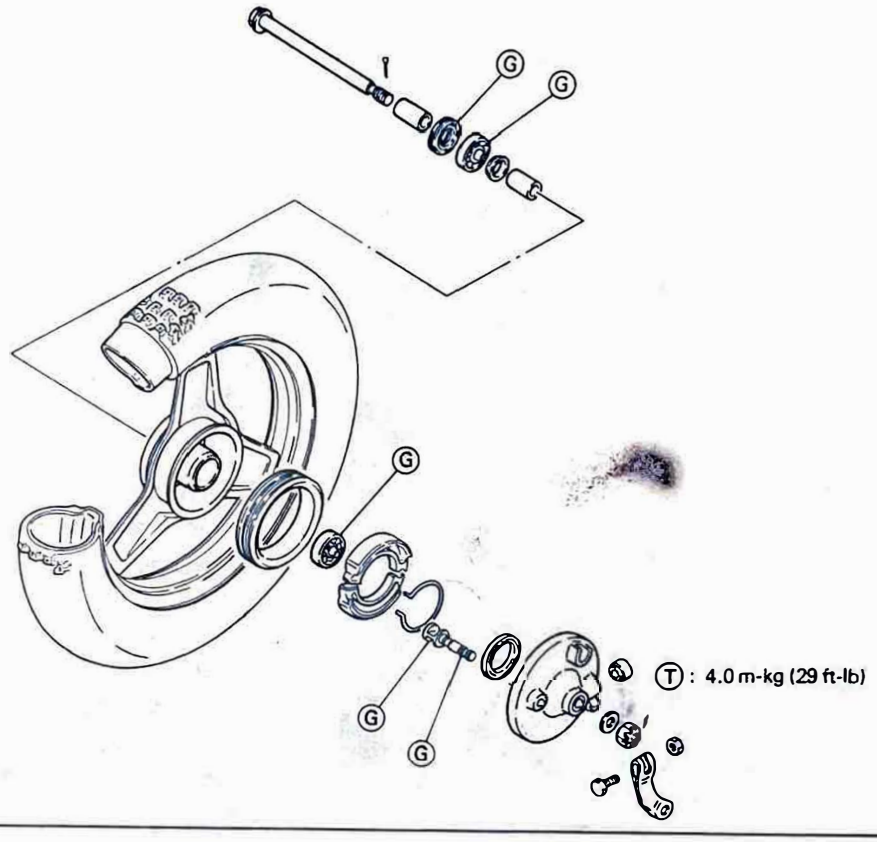
	New	Limit
Clutch shoe spring free length	34.5 mm (1.36 in)	35.5 mm (1.39 in)

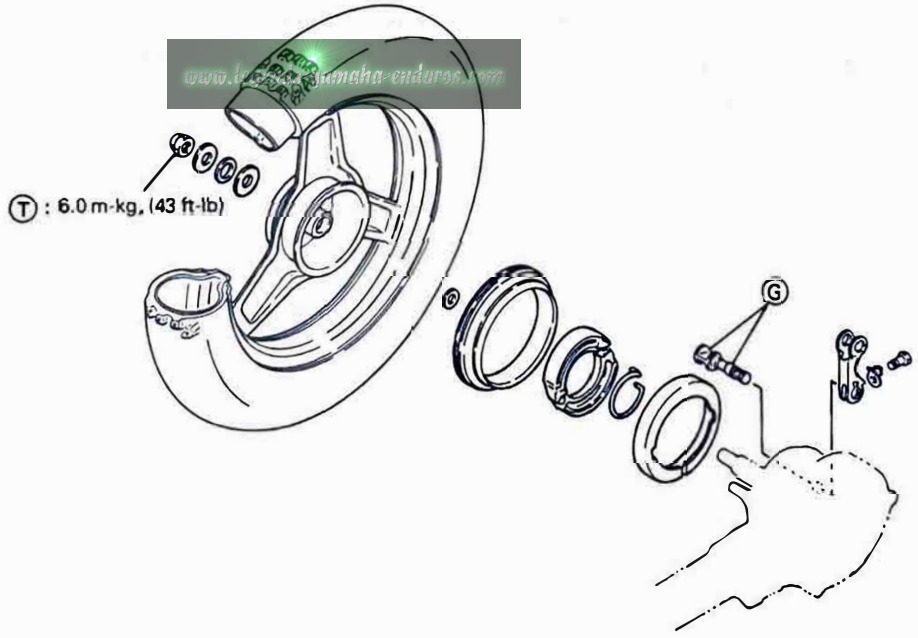
CHASSIS

FRONT WHEEL



T : Tightening torque
G : Apply grease

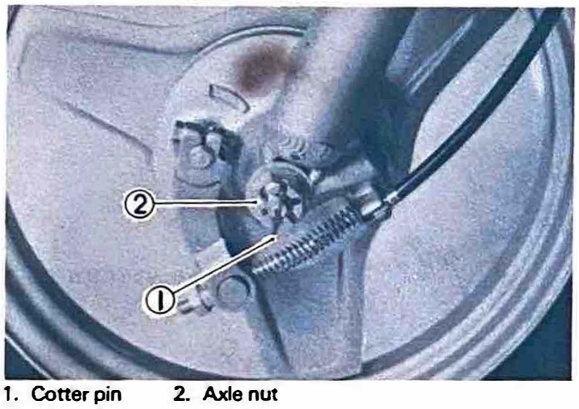
REAR WHEEL



T : Tightening torque
G : Apply grease

Front wheel removal

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

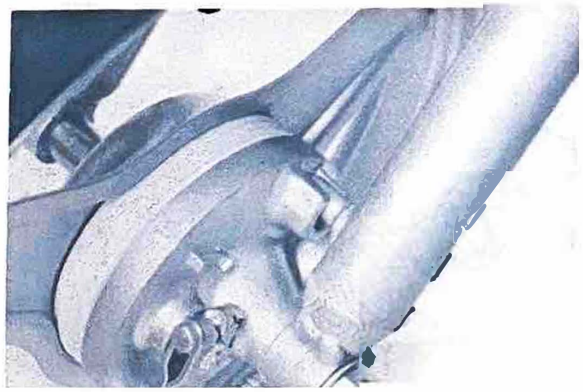


1. Cotter pin 2. Axle nut

Front wheel installation

When installing front wheel, reverse the removal procedure taking the following steps:

1. Check for proper engagement of the boss on the outer fork tube with the locating slot on the brake shoe plate.

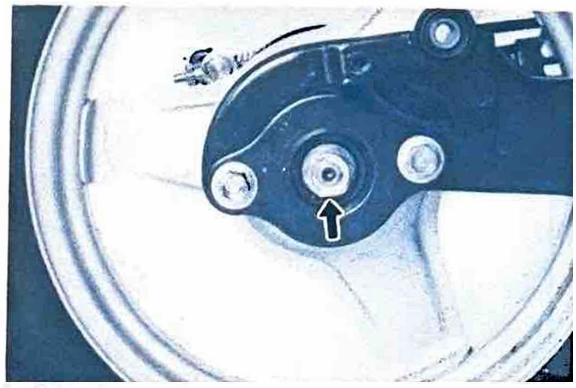


2. Always use a new cotter pin. Old pin should be discarded.

Axle nut torque: 4.0 m-kg (29 ft-lb)

Rear wheel removal

1. Remove the rear arm and axle nut.



1. Axle nut

2. The rear wheel assembly can be removed from the motorcycle by pulling the wheel axle.

Brake shoe inspection

Measure the outside diameter of the brake shoe set with slide calipers.
If they measure less than replacement limit, replace them. Smooth out any rough spots on shoe surface with sandpaper.

	Front	Rear
Brake shoe diameter	80 mm (3.15 in)	80 mm (3.15 in)
Replacement limit	77 mm (3.03 in)	77 mm (3.03 in)

Brake drum inspection

Check the inner surface of the brake drum and remove any scratches with emery cloth. Remove any oil with a cloth dipped in solvent. If damage is more extensive, have a Yamaha dealer replace the wheel hub.

Tire removal and tire repair

1. Remove the wheel from the machine.
2. Remove lock nut from valve stem and release as much air as possible from the tire.
3. Starting opposite the valve stem on one side, use two round-ended tire irons to work the bead off the rim.

NOTE:

Use a tire removal lubricant and be careful not to pinch the tube with the tire irons.

4. Remove the valve stem from its hole and remove the tube.
5. If the tire is to be changed, remove the second bead from the rim using the tire irons and tire lubricant.

Inspection

1. Use a cloth to check for nails or other sharp objects in the tire.

CAUTION:

Always use a cloth to avoid cutting your hand.

2. Check for faults in the side wall. If there is any fault, the tire should be replaced as a damaged tire may burst at high speeds, which is extremely dangerous.
3. Inflate the tube with air and check the valve stem and the tube for damage and leakage replace as required. Some leaks can be patched in an emergency, but it is best to replace tube.

Reassembly

1. Install one tire bead on the rim using tire irons and lubricant and then install the tube.
2. Inflate tube with air to about one-third the specified pressure. Hit the outer circumference of the tire with a soft hammer to make certain the tube is not caught between tire and rim. Release air from tube.
3. Inspect rim band and replace if damaged.
4. Install second tire bead starting opposite the valve stem using tire irons and tire mounting lubricant.
5. Inflate tire to approximately 2.0 kg/cm² (28 psi) and then reduce pressure to specified setting.

NOTE:

Check the valve stem; it must be pointing directly at center of wheel hub. If angled in any direction, release air and adjust tube position.

Tire air pressure

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

Replacing wheel bearings

If the bearings allow excessive play in the wheel or if it does not turn smoothly have your dealer replace the wheel bearings.

Checking rim

1. Check for cracks, bends or warpage of rim. If a rim is deformed or cracked, it must be replaced.
2. Check wheel run-out
   If deflection exceeds tolerance, check wheel bearing or replace wheel as required.

Rim run-out limits:
Vertical — 1.0 mm (0.04 in)
Lateral — 1.0 mm (0.04 in)

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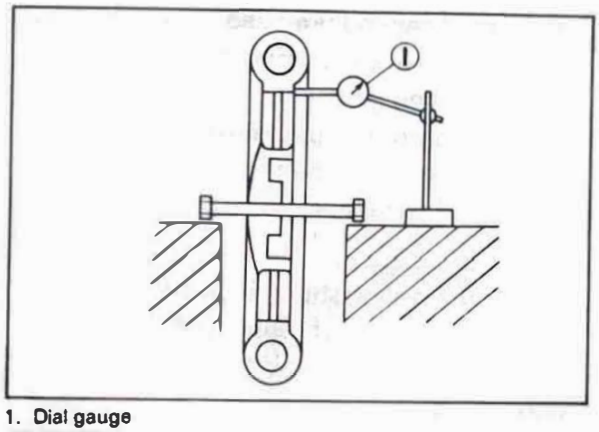

1. Dial gauge

Cable inspection and lubrication

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

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

Throttle cable and grip lubrication

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

Lubrication of levers

1. Lubricate the pivoting parts of the brake levers with Yamaha Chain and Cable Lube or SAE 10W/30 motor oil.

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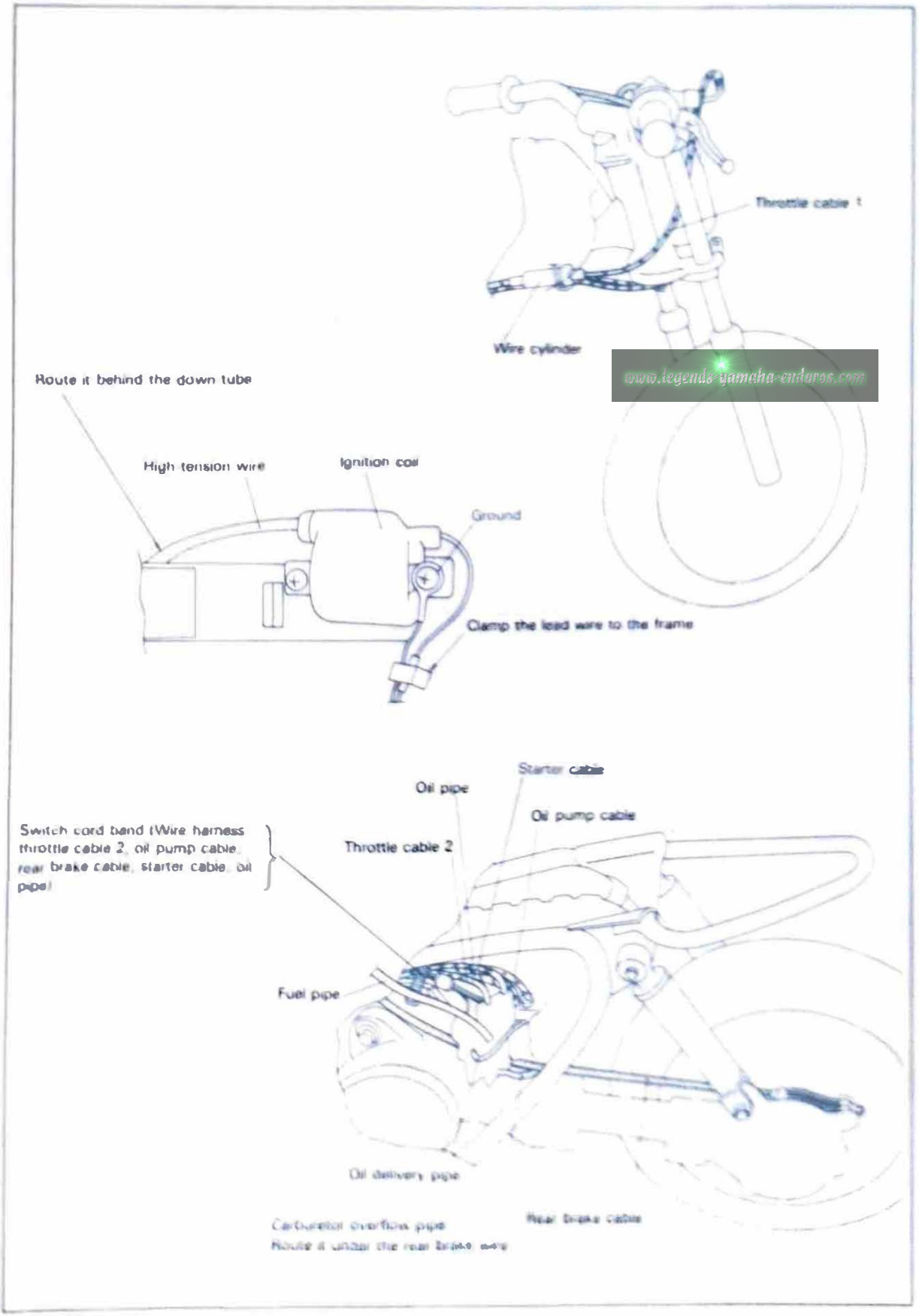
MISCELLANEOUS

CABLE ROUTING



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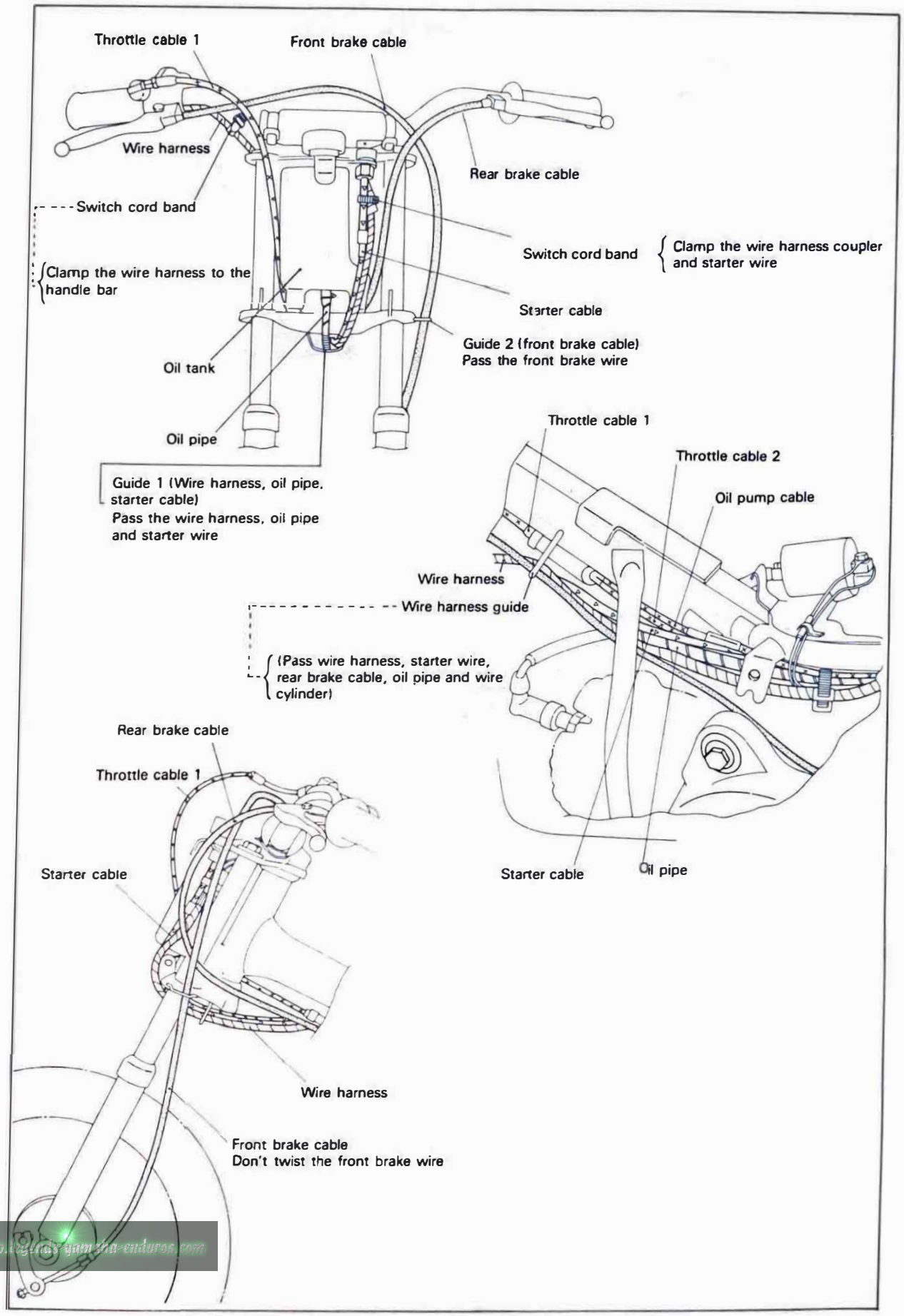

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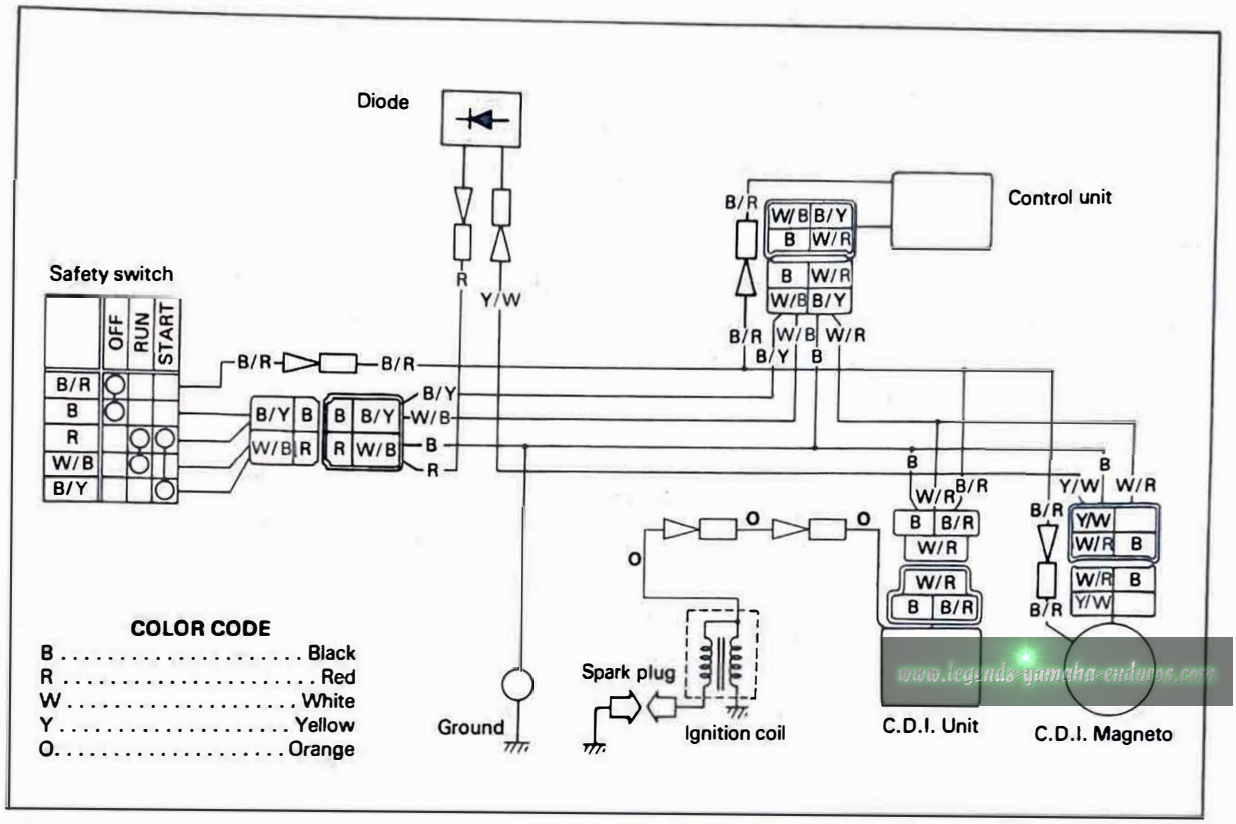
WIRING DIAGRAM



Troubleshooting

1. No spark is produced or weak.

Check connections . . . . Check lead wire connections or short circuits.
- OK → Spark test . . . . . Disconnect high-tension cord from spark plug and check if spark takes place between the cord and ground.
  - No spark → Charge coil test . . . . . Measure coil resistance.
    - OK → Pulser coil test . . . . . Measure coil resistance.
      - OK → Ignition coil test . . . . . Check ignition coil.
        - OK → C.D.I. . . . . In case of ignition failure with all the above checkups providing in good order, replace the C.D.I. unit.
        - Faulty → Replace
      - Faulty → Replace
    - Faulty → Replace
  - Spark → Plug is faulty.
- Faulty → Correct

2. The engine starts but will not pick up speed.

Spark plug . . . . . Clean or replace.
- OK → Charge coil . . . . . Make continuity test.
  - OK → Ignition timing . . . . . Check ignition timing.
    - OK → C.D.I. unit . . . . . In case of ignition failure with all the above checkups providing in good order, replace the C.D.I. unit.

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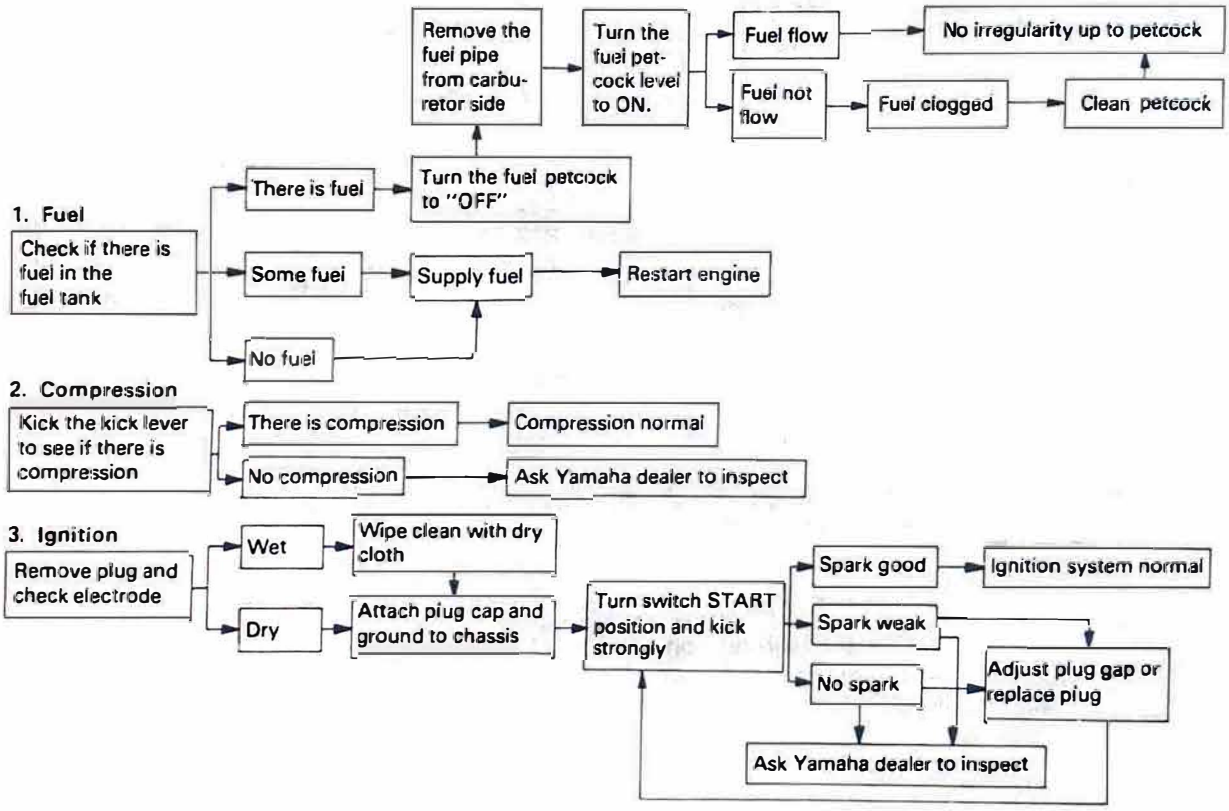
TROUBLESHOOTING

Although Yamaha machines are given a rigid inspection before shipment from the factory, trouble may occur in operation. If this happens, check the machine in accordance with the procedures given in the troubleshooting chart below. If repair is necessary, ask your Yamaha dealer.

The skilled technicians at your Yamaha dealer provide excellent service. For replacement parts, use only genuine Yamaha parts. Imitation parts are similar in shape but often inferior in quality of materials and workmanship; consequently, service life is shorter and more expensive repairs may be necessitated.

Any fault in the fuel, compression or ignition system can cause poor starting or loss of power while riding. The troubleshooting chart describes quick and easy procedures for checking these systems.



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CLEANING AND STORAGE

A. CLEANING

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

1. Before cleaning the machine:
   a. Block off end of exhaust pipe to prevent water entry; a plastic bag and strong rubber band may be used.
   b. Remove air cleaner or protect it from water with plastic covering.
   c. Make sure spark plug(s), fuel tank cap, and transmission oil filler cap are properly installed.
2. If engine case is excessively greasy, apply degreaser with a paint brush. Do not apply degreaser to wheel axles.
3. Rinse dirt and degreaser off with garden hose, using only enough hose pressure to do the job. Excessive hose pressure may cause water seepage and contamination of wheel bearings, front forks, brake drums, and transmission seals. Many expensive repair bills have resulted from improper high pressure detergent applications such as those available in coin-operated car washers.
4. Once the majority of the dirt has been hosed off, wash all surfaces with warm water and mild, detergent-type soap. An old tooth brush or bottle brush is handy to reach hard-to-get-to places.
5. Rinse machine off immediately with clean water and dry all surfaces with a chamois, clean towel, or soft absorbent cloth.
6. Chrome-plated parts such as handlebars, rims, spokes, forks, etc., may be further cleaned with automotive chrome cleaner.
7. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.
8. Automotive-type wax may be applied to all painted and chrome-plate surfaces. Avoid combination cleaner-waxes. Many contain abrasive which may mar paint or protective finish on fuel and oil tanks.
9. After finishing, start the engine immediately and allow to idle for several minutes.

NOTE:

Water may enter the air cleaner case during washing the machine. Be sure to remove the grommet attached to the lower left part of the case and drain the water, as required.

B. STORAGE

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

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

NOTE:

Make any necessary repairs before storing the machine.

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SPECIFICATIONS

General

Model	PW50J
Model (I.B.M. No.)	4X4
Frame I.D. & Starting Number	4X4-020101
Engine I.D. & Starting Number	4X4-020101
Dimension:	
Overall length	1,245 mm (49.0 in)
Overall width (standard)	575 mm (22.6 in)
Overall height (standard)	715 mm (28.1 in)
Seat height	485 mm (19.1 in)
Wheelbase	855 mm (33.7 in)
Minimum ground clearance	105 mm (4.1 in)
Weight:	
With oil and full fuel tank	39 kg (86 lb)

Engine

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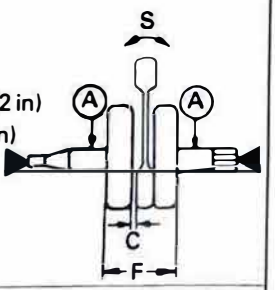
Description:	
Engine type	Air cooled 2-stroke gasoline torque induction
Engine model	4X4
Displacement	49 cc (3.0 cu.in)
Bore × Stroke	40 × 39.2 mm (1.575 × 1.543 in)
Compression ratio	6.0 : 1
Starting system	Kick starter
Ignition system	C.D.I. ignition
Lubrication system	Separate lubrication (Yamaha Autolube)
Cylinder head:	
Combustion chamber volume	7.0 cc (0.43 cu.in)
Combustion chamber type	Dome + Squish
Head gasket thickness	0.3 mm (0.01 in)
Cylinder:	
Material	Cast iron
Bore size	40 mm (1.575 in)
Taper limit	0.05 mm (0.002 in)
Out of round limit	0.01 mm (0.004 in)
Piston:	
Piston skirt clearance	0.034 ~ 0.047 mm (0.0014 ~ 0.0019 in)
Piston over size	40.25, 40.50 mm (1.585, 1.594 in)
Piston rings:	
Piston ring design (Top/ Second)	Keystone
Ring end gap (Installed) (Top/ Second)	0.15 ~ 0.35 mm (0.006 ~ 0.014 in)
Ring groove side clearance (Top/ Second)	0.03 ~ 0.05 mm (0.0012 ~ 0.002 in)
Small end bearing: Type	Needle bearing
Big end bearing: Type	Needle bearing

Model	PW50J
Crankshaft:	
Crankshaft assembly width (F)	$38^{0}_{-0.05}$ mm (1.50 $^{0}_{-0.002}$ in)
Crankshaft deflection (A)	0.03 mm (0.0012 in)
Connecting rod big end side clearance (C)	0.35 ~ 0.55 mm (0.014 ~ 0.022 in)
Connecting rod small end deflection (S)	0.4 ~ 0.8 mm (0.016 ~ 0.031 in)
Crank bearing type (Left)	6203C$_3$
(Right)	6203C$_3$
Crank oil seal type (Left)	SD17-35-7
(Right)	SD23-35-7
Clutch:	
Clutch type	Wet, Centrifugal automatic
Primary reduction ratio & Method	63/33 (1.909), gear
Clutch shoe — Thickness	1.0 mm (0.040 in)
Clutch shoe spring — Free length	34.5 mm (1.36 in)
Clutch shoe spring — Set weight	3.6 kg (7.94 lb)
Clutch-in revolution	2,700 r/min
Clutch-stall revolution	3,500 r/min
Transmission:	
Secondary reduction ratio & Method	19/15 × 54/11 (1.266 × 4.909), bevel wheel gear
Transmission gear oil quantity & Type	Exchange 300 cc (0.32 US. qt) Total: 350 cc (0.37 US. qt) Yamalube 4-cycle oil or SAE 10W/30 "SE" motor oil
Reduction ratio & Method	57/10 (5.700), bevel wheel gear
Kick starter:	
Type	Ratchet type
Intake:	
Air cleaner — Type/ Quantity	Wet-foam rubber/ 1 pc.
— Oil grade	SAE 10W/30 "SE" motor oil
Induction system	Reed valve
Reed valve:	
Bending limit	0.8 mm (0.031 in)
Valve lift	4.8 ± 0.2 mm (0.19 ± 0.008 in)
Carburetor:	
Type & Manufacturer/ Quantity	VM12SC, MIKUNI/ 1 pc.
I.D. mark	4X400
Main jet (M.J.)	#70
Air jet (A.J.)	ø2.5
Jet needle-clip position (J.N.)	3X1-2
Needle jet (N.J.)	E-2 (330)
Cutaway (C.A.)	4.0
Pilot jet (P.J.)	#40
Air screw (turns out) (A.S.)	1 and 3/8
Starter jet (G.S.)	#30
Float height (F.H.)	16.5 ± 1 mm (0.65 ± 0.04 in)



Chassis

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Frame:	
Frame design	Tubular backbone

Model	PW50J
Steering system:	
Caster	25°30'
Trail	50 mm (1.97 in)
Number & size of balls in steering head:	
Upper race	5/32 in × 26 pcs.
Lower race	5/32 in × 26 pcs.
Lock to lock angle	96°
Front suspension:	
Type	Telescopic fork
Damper type	Coil spring
Front fork travel	60 mm (2.4 in)
Front fork springs:	
Free length	115 mm (4.53 in)
Spring constant	K = 0.4 kg/mm (22.4 lb/in)
Rear suspension:	
Type	Unit swing
Absorber stroke	30 mm (1.2 in)
Wheel travel	50 mm (2.0 in)
Compression spring:	
Free length	149.5 mm (5.58 in)
Spring constant	K_1 = 1.30 kg/mm (72.8 lb/in)
	K_2 = 3.17 kg/mm (177.5 lb/in)
Swing arm free play	0 mm (0 in)
Fuel tank:	
Capacity	2.0 lit (0.53 US. gal)
Fuel grade	Regular
Oil tank:	
Capacity	0.3 lit (0.32 US. qt)
Oil grade	Yamalube 2-cycle, air cooled 2-stroke engine oil
Wheel:	
Tire size (Front)	2.50—10—4PR
(Rear)	2.50—10—4PR
Tire pressure (STD) (Front)	1.0 kg/cm² (14 psi)
(Rear)	1.0 kg/cm² (14 psi)
Rim run out limit (Front/Rear) — Vertical	1 mm (0.04 in)
— Lateral	1 mm (0.04 in)
Brake:	
Front brake:	
Type	Leading trailing
Drum diameter (Limit)	80 mm (3.15 in)
Shoe diameter × Width	80 × 17 mm (3.15 × 0.67 in)
Shoe spring free length	44.5 mm (1.75 in)
Lining thickness/Wear limit	3.5 mm/2.0 mm (0.14 in/0.08 in)
Rear brake:	
Type	Leading trailing
Drum diameter	80 mm (3.15 in)
Shoe diameter × Width	80 × 17 mm (3.15 × 0.67 in)
Shoe spring free length	44.5 mm (1.75 in)
Lining thickness/Wear limit	3.5 mm/2.0 mm (0.14 in/0.08 in)

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Electrical

Model	PW50J
Ignition system:	
Type	C.D.I. magneto
— Model/Manufacturer	F4X4/Yamaha
— Charge coil (Low speed) resistance	300Ω ± 10% (Brown/Red to Black)
— Pulser coil	20Ω ± 10% (Black to White/Red)
— Control unit resistance	0.9Ω ± 10% (Yellow/White to Black)
— Flywheel puller thread size × P.td	27 mm (1.06 in) × 1.0 mm (0.04 in)
Ignition timing:	0.94 mm (0.037 in) B.T.D.C.
Ignition coil:	
Model/Manufacturer	C2T4/Yamaha
Spark gap	6 mm (0.24 in) or more
Primary winding resistance	1.6Ω ± 10% at 20°C (68°F)
Secandary winding resistance	6.6kΩ ± 20% at 20°C (68°F)
Spark plug:	
Type/Manufacturer	BP4HS, (NGK), W-14FPL (NIHON DENSO)
Spark plug gap	0.6 ~ 0.7 mm (0.024 ~ 0.027 in)
C.D.I. unit:	
Type/Manufacturer	2E9/Yamaha

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Tightening torque

	Tightening torque	
Engine:		
Cylinder head holding nut	M6	1.0 m-kg (7 ft-lb)
Spark plug	M14	2.0 m-kg (14 ft-lb)
Oil pump	M5	0.4 m-kg (3 ft-lb)
Primary drive gear	M10	3.0 m-kg (22 ft-lb)
Kick crank	M6	1.0 m-kg (7 ft-lb)
Reed valve — Manifold	M6	0.9 m-kg (6.5 ft-lb)
Generator (Rotor)	M12	4.0 m-kg (30 ft-lb)
Generator (Stator)	M6	0.9 m-kg (6.5 ft-lb)
Exhaust pipe	M6	1.0 m-kg (7 ft-lb)
Cover plate (Main axle)	M6	1.0 m-kg (7 ft-lb)
Screw (Middle driven pinion)	M45	6.0 m-kg (43 ft-lb)
Cover plate (Ring gear)	M6	1.0 m-kg (7 ft-lb)
Screw (Drive pinion)	M35	5.0 m-kg (36 ft-lb)
Chassis:		
Front wheel axle	M10	4.0 m-kg (29 ft-lb)
Handle	M8	2.0 m-kg (14 ft-lb)
Handle crown — Steering shaft	M10	3.0 m-kg (22 ft-lb)
— Handle holder	M8	2.0 m-kg (14 ft-lb)
— Inner tube	M10	3.0 m-kg (22 ft-lb)
Steering shaft nut	—	3.0 m-kg (22 ft-lb)
Engine mounts	M10	5.0 m-kg (36 ft-lb)
Rear wheel axle	M12	6.0 m-kg (43 ft-lb)
Rear shock, Upper	M6	1.0 m-kg (7 ft-lb)
Under (L)	M8	2.2 m-kg (15 ft-lb)
Under (R)	M8	2.2 m-kg (15 ft-lb)
Rear arm (L) — Engine	M8	2.5 m-kg (18 ft-lb)
— Gear housing	M8	2.5 m-kg (18 ft-lb)
Rear arm (R) — Engine	M8	2.5 m-kg (18 ft-lb)
— Bearing housing	M8	3.2 m-kg (22 ft-lb)
Rear whel axle nut	M12	6.0 m-kg (43 ft-lb)

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WARRANTY INFORMATION

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

The Warranty Guide contains the warranty policy, an explanation of the warranty, and other important information. Becoming familiar with these policies will be to your advantage in making the best use of Yamaha's 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 any procedure in this manual, please consult your dealer. ABUSE AND NEGLECTED MAINTENANCE MAY ALSO LEAD TO MECHANICAL FAILURES WHICH CANNOT BE COVERED UNDER WARRANTY.

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

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

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

YAMAHA MOTOR CORPORATION, U.S.A.
P.O. BOX 6555
6555 KATELLA AVE.
CYPRESS, CALIFORNIA 90630
ATTN: WARRANTY DEPARTMENT

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