OWNER'S MANUAL

MOTORCYCLE 90ST-3

~~100ST-3~~

110ST-3

1st Edition in, May, 2004

PRINTED IN JUN . 2004 (A)

CONTENTS

SAFE INFORMATION

Safe riding rules

⚠CAUTION: Read the instructions in the paragraph of "pre-operation checks" carefully before operation and follow the operation procedures described to ensure safety.

- This type of ATV is designed special for operators from 12 to 18 years old.
- Before starting the engine, you must check and make sure the ATV and all the fittings and fasteners are in safe operation conditions. Failure to check increases the possibility of an accident or equipment damage.
- It's illegal to ride an ATV on any public road or highway. If you want to get across a public road, you must get off your ATV and walk to push it across.
- Never operate an ATV after consuming alcohol or drugs, otherwise, your judgement may be affected to cause an accident.

Protective apparel

- Never operate an ATV without wearing a helmet that fits properly. For the safty sake, you should also wear protection such as face shield, goggles, gloves etc.
- While operating an ATV, the exhaust muffler becomes very hot, you should wear boots, clothing that fully covers your legs to avoid touching it and injury.
- Don't wear loose clothing that may disturb your safe operating, or cause an accident.

Refitting

⚠CAUTION: Arbitrarily refitting an ATV or replacing the original parts is illegal and unable to ensure the riding safty.You must obey national and local laws and regulations in relation to vehicle and traffic. If you have a good proposal concerning refitting of this ATV, please write us. The refitment can be done with permission of the Co. Otherwise, you will take upon yourself the consequences.

Cargo loading

⚠CAUTION: This ATV is designed just to carry one operator only.

Accessories

- All genuine accessories are designed and tested specially for use on this ATV. Because it's impossible to test all other accessories, you are responsible for your selecting, installing and using not genuine accessories by yourself. Please follow the instructions in "Safe operation rules" and do as follow:
- Check accessries carefully and make sure they do not obscure your eyeshot, reduce the ground clearance or banking angle, limit the suspension or steering mechanism moving, or controls operating.
- Don't add any other devices on this ATV for cooling the engine.
- Don't add any electrical equipment on this ATV , otherwise the capacitance may be overloaded and the fuse may blow out and cause the hazard that the headligt can't be lit while riding in the night.

DESCRIPTION AND IDENTIFICATION

Location of parts(Fig.1 - Fig.3)

Fig. 1 (left view)

① Front cover ② Front shock absorber ③ Gearshift pedal
④ Rear panel ⑤ taillight ⑥ side retro-reflector ⑦VIN
⑧Rear shock absorber ⑨ Engine code ⑩ Nameplate

Fig. 2 (right view)

① Exhaust muffler ② Seat ③ Rear brake pedal
④ Fuel tank ⑤ Front bumper ⑥ Front wheel
⑦ Footboard ⑧Dipstick ⑨ Rear wheel

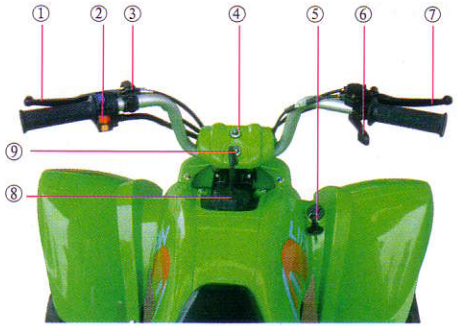


Fig. 3
① Rear brake lever
② Emergency cease switch
③ Parking brake
④ Reverse indicator
⑤ Ignition switch
⑥ Throttle lever
⑦ Front brake lever
⑧ Fuel tank cap
⑨ Neutral indicator

VIN records(Fig.4 - Fig.6)

Fig.4
① VIN

Fig.5
②Engine code

Fig.6
③Nameplate

〖Identification number record〗

VIN: ☆ ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ ☆

Engine code: ☆ ☐☐☐☐☐☐☐ ☆

Record the VIN and engine code information in the spaces provided for assistance when ordering spare parts from your dealer or for reference in case the ATV is stolen.

〖**Identification number locations**〗

①The VIN is stamped on the crossbeam into the rear frame.(Fig.4)

②The nameplat is affixed onto the left stem tube into the front frame.(Fig.5)

③The engine model and code are stamped on the left-bottom side of the crankcase.(Fig.6)

Selection of fuel and engine oil (EP)

Fuel selection

Fuel is a key factor in deciding the exhaust emission level .Selection of fuel must follow the rules described in this manual.. The selected fuel must be only unleaded gasoline with octane grade No. RQ-90 or higher.

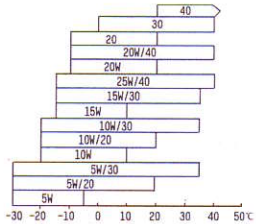


Fig.7

Engine oil selection (Fig.7)

Engine oil is a main factor in deciding the performance and service life of an engine and affects the exhaust emission level. Engine oil must be selected and changed as specified. Do not use ordinary oils, gear oils or vegetable oils instead.

This ATV has been added with a gasoline engine oil grade of 15W/40-SE from being delivered, which is effective at the temperature from-10℃ to +40℃.In case the oil mentioned above is not available, the equivalent oils such as SE, SF or SC gasoline engine oil grade of API may be used instead. If other lubricants are used instead, their qualities must be higher than the SE grade. The viscosity may vary in different areas and at different climate temperatures. Seletion may be done in reference to the Fig.7. Before changing the engine oil, drain the used oil from the crankcase thoroughly, then clean up with a kerosene detergent and then add the specified oil.

If the engine oil of 15W/40-SE grade is not available, the oil of No. HQB-10(or No. HQB-6 suitable for areas at the climate temperature below -10℃) can be used instead. Ordinary oils, vegetable oils or the castor oil are strictly prohibited.

OPERATING AND CONTROLLING FUNCTIONS

Indicators (Fig.8)

① Reverse indicator:comes on when the gearshift is in the reverse position.

②Neutral indicator: comes on when the gearshift is in the neutral positon.

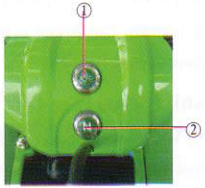


Fig.8

Ignition switch(Fig. 9)

the ignition switch is in the right side into the front body.

OFF: indicates all electrical circuits are switched off, the engine can not be started and the key can be removed in this position.

ON: indicates all electrical circuits are switched on, the engine can be started and the key can't be removed out in this position.

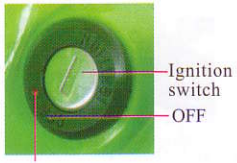


Fig. 9

Seat lock(Fig.10)

The seat lock ① is under the tail of seat. The seat springs out automatically when the buckle ② is pulled backward.To install the seat, place the seat on the holder and press it downwards until it is locked in position.

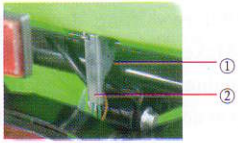


Fig.10
①Seat lock ②Buckle

Right handlebar controls (Fig.11)

Throttle lever

The throttle lever is used to control the engine speed. The input fuel will be increased when the throttle lever is pressed toward the right and be decreased as it is released.

Front brake lever

Pull the front brake lever toward the handlebar to apply the front brake to brake the front wheel.

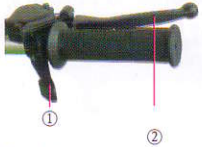


Fig. 11
①Throttle lever
②Front brake lever

Left handlebar controls (Fig.12)

Rear brake lever

Pull the rear brake lever to apply the rear brake to brake the rear wheel.

Headlight switch

The headlight switch has " HL "and" ● " positions.

HL:set the switch to this positon to turn on the headlight and taillight.● :set the switch to this position to turn off the headlight and taillight.

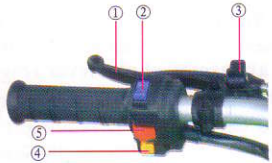


Fig.12

① Rear brake lever
② Headlight switch
③ Parking brake
④ Electric starter
⑤ Emergency cease switch

Parking brake

Push down the button to apply the parking brake to brake the rear wheel when you have to park this ATV. Squeeze the rear brake lever to release the parking brake when you re-start the engine.

Electric starter

Push down the electric starter and apply the brake switches simultaneously to start the engine.

Emergency cease switch

Under the normal condition, the emergency cease switch must be in the "RUN" position. When it is set to the "OFF" position, the ignition circuit will be turned off and the engine will stop.

Safety cease switch (Fig.13)

The safety cease switch is located into the left rear frame. Pull off the cap of the safety cease switch and the engine will stop automatically.

⚠**WARNING:** Never wrap the rider round with the rope of the safety switch. If necessary, the protector should pull backwards the rope to apply the safety cease switch to stop the engine in emergency.

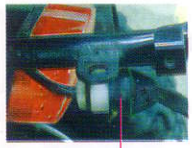


Fig.13
Safety cease switch

Speed limiter(Fig.14)

Turn out the locknut to adjust the adjusting screw (increase the speed in direction A and decrease the speed in direction B), then turn in the locknut.

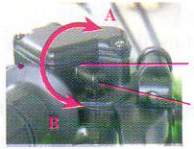


Fig.14
①Locknut
②Adjusting screw

⚠WARNING: Decrease the maximum speed of this ATV for a beginner or an imexperienced rider lest should cause an accident.

Carburetor choke lever (Fig.15)

The carburetor choke lever is in the right side of the carburetor. It is completely open at the position A, half open at the position B and closed at the position C.

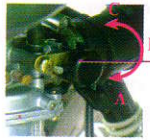


Fig.15

Refueller and fuel tank cap

Fuel tank (Fig.16)

The fuel tank is under the front of the seat. Itís capacity is 7 L.

The fuel tank cap has a overflow spigot with a fuel pipe. Without any key, it can be closed by turning it clockwise and vice versa.

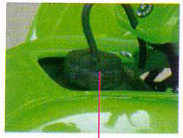


Fig.16

Fuel tank cap

⚠WARNING:

- Refuel the fuel not higher than the tank neck, then be sure to turn the cap in.
- Gasoline is extremely flammable and easy to cause an explosion or catch fire under certain condition. Always refuel in a well-ventilated area. Always turn off the engine when refuelling. Never refuel while smoking, while in the vicinity of sparks, open flames, or other sources of ignition.
- Be sure first to filter the fuel before refuelling, or refuel with a filter into the tank orifice.

Fuel cock (Fig.17)

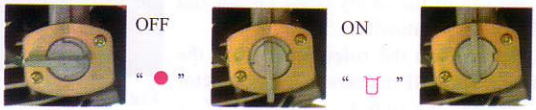


Fig.17

- The fuel cock left beneath the fuel tank supplies the fuel from the fuel tank to the carburetor. With the lever in the " ● " position, the fuel will not flow. Allways turn the lever to this position when the engine is not running.
- With the lever in the "⊔" position, the fuel will flow to the carburetor. Normal riding is done with the lever in this position. The " ⊔ " position indicates reserve. If you run out of fuel while riding, turn the lever to this position and the fuel in the reserve tank will flow and then fill the fuel tank at the first opportunity.

⚠CAUTION: After refulling, return the fuel cock lever to the "⊔" position. Do not remain the lever in the " ⊔ " position, otherwise you will run out of the reserve fuel.

Gearshift pedal (Fig.18& Fig.19)

This ATV are equipped with a four gearshifts transmission N indicates neutral, R indicates reverse. Shift by stepping the gearshift pedal.

The shifting positions are as shown in the Fig.19:


Gearshift pedal Fig.18

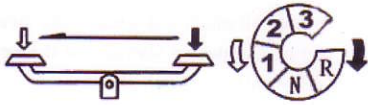


Fig.19

NOTE:

- Before shifting, decease the throttle first.
- Make sure that the gearshift pedal is completely shifted into position by stepping it lightly.
- Do not keep both feet on the pedal while riding lest the pedal should be shifted suddenly to damage the clutch.

Rear brake pedal (Fig.20)

Push down on the pedal to apply the rear brake to brake the rear wheel and the rear brake light will be lit simultaneously.

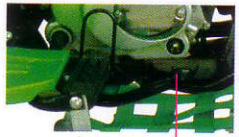


Fig.20 Rear brake pedal

OPERATION GUIDE

Pre-operation checks

Before using this ATV, must check the ATV as below. Although the following points will just take you a few minutes, the time to solve the problems during riding can be reduced and the riding safety will be kept.

1. Check the engine oil level —— Fill with oil if necessary. Check for oil leakage.
2. Check the fuel level —— Fill with fuel if necessary and check for fuel leakage.
3. Check performances of the front and the rear brakes —— Check operation and correct free play. If the free play is incorrect, adjust it.
4. Check tires —— Check tire pressures, wear and damage.
5. Check throttle operation —— Chech throttle operation, cable connection and lever free play. Correct or replace if necesary.
6. Check steering mechanism operation —— Check the agileness and stableness.
7. Check all fittings and fasteners —— Check for correct tightening torque.

Starting an engine

If the ATV has been unused a long time, or just refuelled, you have to take a litttle more time than usual to push down the start switch lightly.

⚠CAUTION:

- Park the ATV on smooth terrain and lock the rear brake.
- Set the ignition switch into the "ON" position.
- Set the cease switch into the "RUN" position.
- Press the electric starter on the left handlebar and

lightly push the throttle lever simultaneously. Release the electric starter as soon as the engine is running.

- If starting a cold engin, set the choke lever to the fully closed position.(refer to the Fig.15 on the page 5)

Rear brake lever

Fig.21

Fig.22

Throttle lever

⚠WARNING: Never start or run the engine in a closed area.Exhaust fumes contain poisonous carbon monoxide and may cause loss of consciousness and death within a short time.

NOTE: Do not use the electric starter more than 5 seconds each time. If the engine fails to start, release the electric starter and pause about 10 senconds before reusing the electric sarter with the throttle opened slightly.

- The throttle should be slightly open when starting and warming up the engine.
- Be sure to warm up the engine befor riding.

⚠WARNING: Do not open or close the throttle quickly, otherwise the ATV may suddenly go forwards and cause loss of control for it. Keep the ATV in a watch when warming up the engine.

- Return the choke lever into the half open positon as soon as the engine is running.(refer to the Fig. 15 in the page 5).
- Warm up the engine at an idle speed of 1400r/m until the choke lever returns into the fully open position and the engine is running normally.

Engine break-in

During the first 1000km of running for your brand new ATV, you should not put an excessive load on the engine and not drive it at a higher speed than 60% of the maximum speed of each gearshift. Be sure to avoid full throttle operation which might result in an excessive load on the engine. Break in the engine carefully during the first of running. After break-in, serve the engine one time to repair the first slight wear so that the engine serve lift might be evidently prolonged.

Riding an ATV

⚠**WARNING**: Before you are going to ride your ATV, be sure you have read this manual completely and understand the operation of controls. Pay particular attention to the safety information for riding.

1. Release braking.

⚠**WARNING**:Always keep both hands on the handbar during operation, otherwise your ATV may be out of control.

2. The ATV will rush forwards with the throttle opened gradually.

⚠**WARNING**:Do not open or close the throttle quickly, otherwise the ATV will rush forwards suddenly and be out of control.

3. Shifting method: Please read the relative contents of ìgearshift pedalî on the page 5.

4. Decelerate the ATV when decreasing the throttle.

5. It is very important to harmonize the operation of the throttle deceasing with the action of the front and rear brakes.

⚠**WARNING**: Apply the front brake and the rear brake simultaneously. If one of them is applied only, the braking effect may be decreased. The wheels may be locked and the control of the ATV may be lost if applying the brakes excessively.

Braking and parking an ATV

When parking, stop the engine by closing the throttle and applying the front and rear brakes, then shift into neutral. Turn the ignition key into the "OFF" position and remove it. Set the emergency cease switch into "OFF" positon. Turn the fuel cock to the "●" position and apply the parking brake.

INSPECTION AND MAITENANCE

Tool kit(Fig.23)

Some roadside repairs, small adjustment or parts replacement can be performed with the following tools in the kit.

① Ebonite handle
② Plus-minus screw driver
③ Plug wrench (16# × 18#)
④ Open end spanner 8 × 10mm
⑤ Open end spanner13 × 15mm
⑥ Open end spanner18 × 21mm
⑦ Tool bag

Fig.23

Periodic maintenance schedule

Maintain your ATV according to the periodic maintenance schedule specified. The letters in the schedule indicate as follows:

I、Inspect, clean, adjust, lubricate or replace
C: Clean, R: Replace, A: Adjust, L: Lubricate

NOTE:

① Clean frequently if riding your ATV in a dusty or dirty area.
② When the odometer reading is over the given maximum value, still periodically maintain your ATV according to the kilometrage intervals specified in the schedule.

Item \ Routine	Initial (First week)	Every 30 days	Annual
Fuel line	I	I	
Throttle operation		I	
Air cleaner		C	
Spark plug		I	
Carburetor idle speed	I	I	
Axle-drive system	I , L	I , L	
Brake shoes wear			I
Brakes	I	I	
Fittings and fasteners	I	I	
Wheels	I	I	I
Steering system			I
Suspension systems		I	I

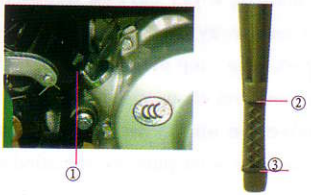
Check and change of engine oil (EP)

To check the engine oil level(Fig.24)

The oil level should be checked before each ride.

Measure the oil level with the dipstick ① located into the rear of the right crankcase cover. The oil level should be between the upper mark ② and the lower mark ③.

- Place the ATV on a level groud. Remove and clean the dipstick. Insert it into the oil and remove it again to check the oil level.



① Dipstick ② Upper mark
③ Lower mark Fig.24

● Add the oil of 15W/40-SE to the specified level. Do not exceed the upper mark ②.

● Install the dipstick and check for leakage.

⚠**WARNING:** The engine runs with insufficient oil could cause the engine damage.

Fig.25 Drain bolt

To change the lubricanting oil(Fig.25)

Drain the used oil when the engine is still warm.

● Place an empty oil pan beneath the engine and remove the oil drain bolt.

● Press the electric starter several times to drain the used oil completely.

● Re-install and tighten the oil drain bolt.

※ Add about 1 litre of gasoline engine oil 15W/40-SE. Run the engine for several minutes. Then stop the engine and check the oil level again. Add the oil again if necessary.

NOTE: Add the oil more times due to the dust-pollution situation.

Cleaning away carbon deposits (EP)

Clean away carbon depoits in the relevant parts such as spark plug, top of the piston, piston rings and grooves and combustion chamber etc.

Selection and replacement of spark plug (EP)

Select the spark plug as specified in the " specifications " . (Fig.26)

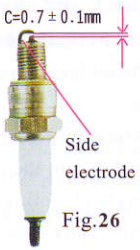


Fig.26

To check and replace the spark plug

● The spark plug is located in the right front of the cylinder head. Remove and clean the spark plug cap. Remove the spark plug with the spark plug wrench in the tool kit.

● Inspect the electrode and center magnetic pole. If grime and deposits are excessive and the insulaor cracks or breaks down, Replace the spark plug with the specified plug. Clear away carbon or any other deposits with a spark plug cleaner or a cast-steel wire brush.

● Bend the side electrode and measure the electrode gap with a wire thickness gauge and, if necessary, adjust the gap to **0.7±0.1mm**.

Cleaning and fitting of air filter (EP) (Fig.27)

After every **4,000km**, clean and sink the air filter into solvent at least one time. Maintain your ATV more times if riding in a dusty area. The authorized service station will help you establish the correct periodic maintenance for your ATV according to the riding conditions.

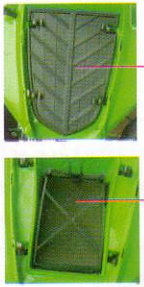


Fig.27

● Remove the front panel and the air filter case cover.

● Dismantle the air filter and remove the air filter element.

● Wash the element gently and thoroughly in solvent and dry it.

● Dip the element into the gasoline engine oil of **15W/40SE** saturantly and squeeze the excess oil out of the element.

● Wash and clean the out and inner surfaces of the air filter case, and let it dry with a dry rag.

● Assemble the air filter. The element must be fit well.

● Install the air filter case cover.

⚠**WARNING:**

● Never operate the engine with the air filter element removed. Otherwise, it will cause the piston and sylinder excessive wear.

● The air filter element must be integrated and not be damaged.

● Avoid water to enter into the air filter when washing the ATV.

Valve clearance inspection and adjustment (Fig.28)

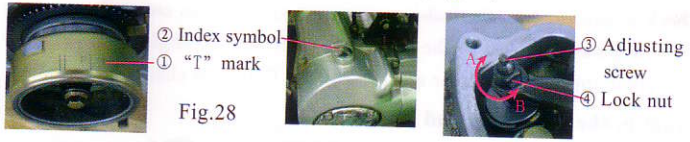


Fig.28

The engine must be cold when inspecting or adjusting the valve clearance.

- Remove the view hole cover in the left front of case, the motor cover and the cylinder head cover.
- Spin the motor rotor counter-clockwise and align the " T " mark ① with the index symbol ②. Make sure the pistin is in the TDC of compression stroke by touching the swingarms with fingers. If the swingarms are movable, it means the piston is in the TDC of compression stroke. Otherwise, spin the motor rotor at **360°**, and align the "**T**" mark again.
- Clearance should be 0.05mm for the intake and exhaust valves.
- Adjust the valve clearances if necessary. Loosen the lock nut ④ and the valve clearances may be increased by turning the adjusting screw ③ in direction A or decreased in direction B. Check the valve clearances again after tighten the lock nut ④.

Maintenance and replacement of exhaust muffler (EP)

Clear away the carbon deposits inside the exhaust pipe as specified. Check loosening inside the exhaust pipe and gaskets damages. Replace , retighten or repair if necessary.

3-way catalytic converter (Optional) (EP) (Fig.29)

The 3-way catalytic converter is installed in the exhaust system of the ATV. Contaminations such as CO, HC and NOx etc. will be obviously decreased by redox reaction with catalyst when exhaust gases go through the 3-way catalytic converter. Emission pollution from the ATV can be controlled by using the catalyst, that is, before the emissions are emitted into air, first let them go through the converter that contains a catalyst, so that a chemical reaction will be taken place. The catalyst is a kind of noble metal that has chemical adsorption and can speed up the chemical reaction on it's surface but do not occur any chemical changes itself. When the reactants in exhaust gases flow toward the catalyst, first diffuse into micro-holes and perform adsorption reaction on the surface of catalyst. By redox reactions, the resutants such as CO_2、H_2O、N_2, etc. are resolved and diffuse outwards. The decontaminative efficiency varies with the temperature, density, and speed of gases entered.

During the use and maintenance, pay attention to the following.

1. Handle the catalyst gentlely. Do not dash or squeeze it. Keep away oil and dust. Store it in a dry and good ventilation place.
2. Do not let any acid fuid or electrolyte enter into the exhaust muffler lest that the catalyst can not work.
3. Always use unleaded gasoline.

Note: The 3-way catalytic convertor is optional. It is just equipped in the exhaust mufflers with the mark "**LC-X**". Refer to the below table.

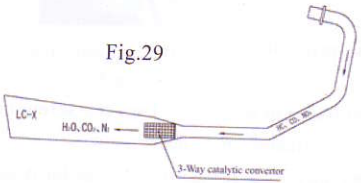


Fig.29

Mark	Engine model
LC-2A	1P39QMB, 1P50FMG(1P50QMG)
LC-2	1P52FMH, 1P50FMG, 1P47FMF, 152FMH, 1P53FMH
LC-3	162FMJ, 161MJ, 156FMI, 161FMJ
LC-3A	1P52QMI
LC-4	2V49FMM
LC	161FMJ, 162FMJ

Cleaning and fitting of fuel filter (EP) (Fig.30)

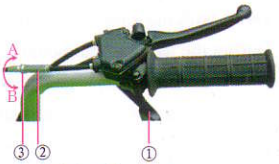
The fuel filter is fitted in the fuel hose between the fuel cock and the carburetor.

The fuel filter is just one-off. Must replace it every 6 months.

Fig.30 Fuel filter

Throttle operation and adjustment(Fig.31)

- Check to see that the throttle lever ① operates correctly. It must spring back smoothly when released.
- Check the free play of the throttle lever. The standard free play is 2-6mm.The method is as below. Loosen the locknut ③, then turn the adjusting bolt ② in direction A to increase the free play and in direction B to decrease the free play. Finally tighten the locknut.



① Trottle lever
② Adjusting bolt
③ Locknut Fig.31

Carburetor idle speed adjustment (EP) (Fig.32)

The idle speed must be sophisticatedly adjusted at the normal temperature of the engine.

1. Start the engine and warm up it.
2. A tachometer must be used for this procedure(for example: a remote speed gauge).

Throttle stop screw
Fig.32

3. Set the idle speed by adjusting the throttle stop screw ①. Turn the screw in direction A to increase the idle speed and in direction B to decrease it.

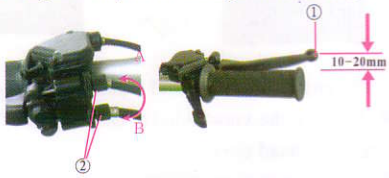
⚠WARNING: Check the carburetor balance pipe frequently. Never let it be jammed with mud or other objects. Lest should cause an accident.

NOTE: The carburetor is a precision assembly, do not disassemble it without the professional knowledge.

Checking leakage along air supply line (EP)

Check as specified for the leakage where air supply pipes connects, specially for the leakage at the joints of the exhaust muffler and the engine, the air filter and the carburetor, the carburetor and the engine. Repair or change if necessary.

Front brake inspection and adjustment



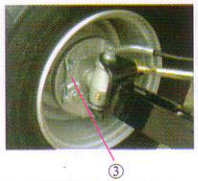


Fig.33
① Front brake lever
②Adjusting bolt
③ Front brake

The procedures to set the front brake are as below:(Fig.3 3)

Pull the front brake lever toward the handlebar until the counterforce is obviously felt. The free play of the lever should be 10-20mm. Set it if necessary.

1. Set the free play of the lever by turning the adjusting bolt ②, in direction A to increase the free play and in direction B to decrease the free play. Pull and release the front brake lever several times. Then release it, check to see if the wheel turns smoothly.

NOTE: If such adjustment is still unsatisfactory, see your dealer for help.

⚠CAUTION: Be sure to check and let the front brake lever and the front brake arm be in a good operation condition.

Rear brake inspection and adjustment(Fig.35)

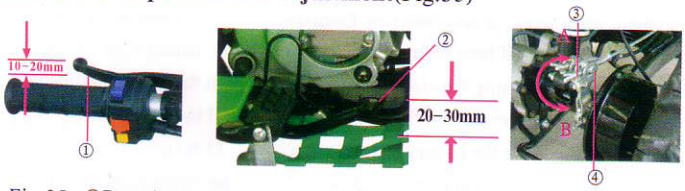


Fig.35 ①Rear brake lever ②Rear brake pedal ③Adjusting nut ④Pin

Adjustment should follow the below procedures:

1. Before the rear brake operation, measure the free plays of the rear brake lever ① and the rear brake pedal ②. The free play of the lever should be 10-20mm and the free play of the pedal should be 20-30mm.
2. Adjust the free play by turning the adjusting nut ③ on the brake arm in direction A to increase the free play and in direction B to decrease the free play.

NOTE:

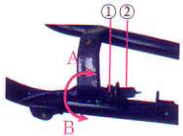
●After adjustment of the free play, be sure to let the curved slot in the adjusting nut engage with the brake arm pin ④.

● If such adjustment is still unsatisfactory, see your dealer for help.

3.Pull and release the rear brake lever several times. Then release it, check to see if the wheel turns smoothly.

Adjusting the rear brake light switch

The rear brake light switch is located into the frame right-behind the engine. If necessary, set the light as follows. To make the brake light come on earlier, turn the adjusting nut ② in direction A. To make the brake light come on later, turn the adjusting nut ② in direction B.



① Adjusting nut
② Rear brake light switch

Fig.36

Inspections of front and rear shock absorbers and suspension

1.Observational check. Check for abnormal cases such as oil leakage, crooking and deformation, etc.

2.Operation check. Place the ATV on a level ground. Then brake the front wheel and make the front fork go up and down several times. Check to see if the front fork springs back correctly, if there is any abnormal sound and if the handlebar turns agilely when turning.

NOTE: The front fork should be repaired or changed immediately if necessary.

Tires

The correct tire pressure will keep the best riding stableness, comfortable riding and make the tires wear well.

Cold tire pressure	Fr. wheel 100kPa	Rr. wheel : 100kPa
Tire size	Fr. wheel 19 × 7-8	Rr. wheel : 18 × 9.5-8

⚠WARNING: It is hazardous by using tires excessively worn. It will still affect the pulling force, stableness and operation performances.

NOTE: Before operation, check the tire pressures when the tires are cold. Check the tyres for cuts, embedded nails, or other sharp objects. Check the rims for dents or deformation. If necessary, have your dealer repair or change.

⚠WARNING: Improper tire pressures could cause abnormally wearing treads and an accident. The pressure below the minimum specified could cause the tire to be damaged or to dislodge from the rim.

Replace the tire when the tread depth in the tire middle section reaches the limits in the below table.

Minimum tread depth			
Fr. tire	2.0mm	Rr. tire	2.0mm

Fuse cartridge (Fig.37)

The fuse cartridge is located beside the battery, near the battery bracket. It will be fused automatically in case the electric circuit is short or overloaded. If a fuse is blown, check for the circuit,and then install a new fuse of the specified amperage in the cartridge.

Fig.37

Battery maintenance (EP) (Fig.38)

The battery is under the seat. Be sure to inspect according to the mileage intervals described in the chapters of "Periodic maintenace schedule" and the "Pre-operation checks" in this manual. When checking, keep the electrolyte level between the upper mark and the lower mark. If the electrolyte level is too low, add proper distilled water in not over the upper mark, otherwise, the electrolyte is possible to overflow and cause erosion.

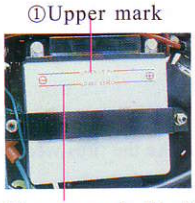


Fig.38

⚠**CAUTION:** When washing, let the battery keep away the water. The electrolyte and the used battery must be treated as specified relevantly. Do not discard them randomly.

⚠**WARNING:** When disconnecting the battery cable, first disconnect the minus terminal, and then the plus terminal. When connecting the cable, first connect the plus terminal, then the minus terminal. Be sure to avoid the plus terminal catching the frame. Must tighten the cable terminal, or it might cause sparks and catch fire. When installation, ensure that the battery ventilated pipe should be straightway. Otherwise, might cause an explosion of the battery. Be sure to equip a used gas pipe, or, the electrolyte which contains sulfuric acid might outflow to erode your ATV and the main electric cable and catch fire caused by short circuit.

⚠**WARNING:** The battery electrolyte contains sulfuric acid which is corrosive. If it contact with skins or eyes, might cause severe burns. In that case, must flush with water for 5 minutes and see a doctor immediately. Must wear protective gear and a face shield when working near batteries. Keep out of reach of children. A new battery can begin to work in half hour after adding the fluid. If the neutral light becomes dim and can not start when using the electric starter, restart with the kick starter pedal. For elongating the battery service life, Use the kick starter pedal to start when the temperature is too low. Recharge the battery at 1A current for 10-15 hours if necessary. Check the correct electrolyte level every month. Strictly follow the instructions in this manual to guarantee the battery life.

TROUBLESHOOTING AND STORAGE

Usual troubles shooting

If the engine could not be started, inspect as follows:

(1) Check to see if the fuel in the fuel tank is sufficient.

(2) Check to see if the fuel flows from the fuel cock to the carburetor.

(3) Remove the fuel supply pipe at the carburetor, and turn the fuel cock into the "ℸ" position, check to see if the fuel outflows free.

(4) If assuring that the fuel can flow into the carburetor, then check the ignition system.

⚠**WARNING:** Do not spill the fuel on the ground. Collect the spilled fuel with a container. Never let the fuel be near to the hot engine or the hot exhaust pipe. Do not smoke when checking and make sure there are no open flames or sparks in the area.

(1) Remove the spark plug and install the spark plug cap on the spark plug.

(2) Fix the spark plug into the body frame. Turn the ignition switch into the "ON" position and the cease switch into the "RUN" position, then press the electric starter. If blue sparks occurs, shows the spark plug is correct, otherwise, have the authorized service station repair.

⚠**WARNING:** Do not affix the spark plug near the cylinder to perform the above inspection, or the gasified fuel in the cylinder might be ignited due to sparks. To avoid causing electric shocks, the metallic part of the spark plug had better touch the unpainted part of the frame. Any person who has heart dieases or has equipped the cardiac-musle frequency modulator had better not do this work.

Cleaning and storage

Cleaning

1. Before cleaning the ATV, make sure the spark plug and all filler caps are properly installed.

2. Rinse the dirt and degrease off with a garden hose.

3. Dry all surfaces with a clean towel or soft absorbent cloth.

4.Dry and grease the chain to prevent erosion.

5.Run the engine at the idle speed for several minutes.

⚠**WARNING:** Excessive water pressure may cause water seepage and looseness or damage of wheel bearings, front fork, brakes, transmission seals and electrical devices. When rinsing, prevent the exhaust muffler from water and do not wet the spark plug.

Storage:

After thoroughly cleaning the ATV, follow the below procedures for a long term storage(60days or more), if necessary.

1. Thoroughly drain the fuel in the fuel tank, fuel pipe, carburetor and other fuel lines.

2. Remove the spark plug, and pour proper quantity of SAE15W/40SE lubricating oil in the spark plug hole. Turn off the emergency cease switch. Turn the engine over several times to coat the cylinder wall with oil.

3. Lubricate all controlling cables.

4. Block up the frame to raise all wheels off the ground.

5. Tie a plastic bag over the exhaust pipe outlet to prevent moisture from entering.

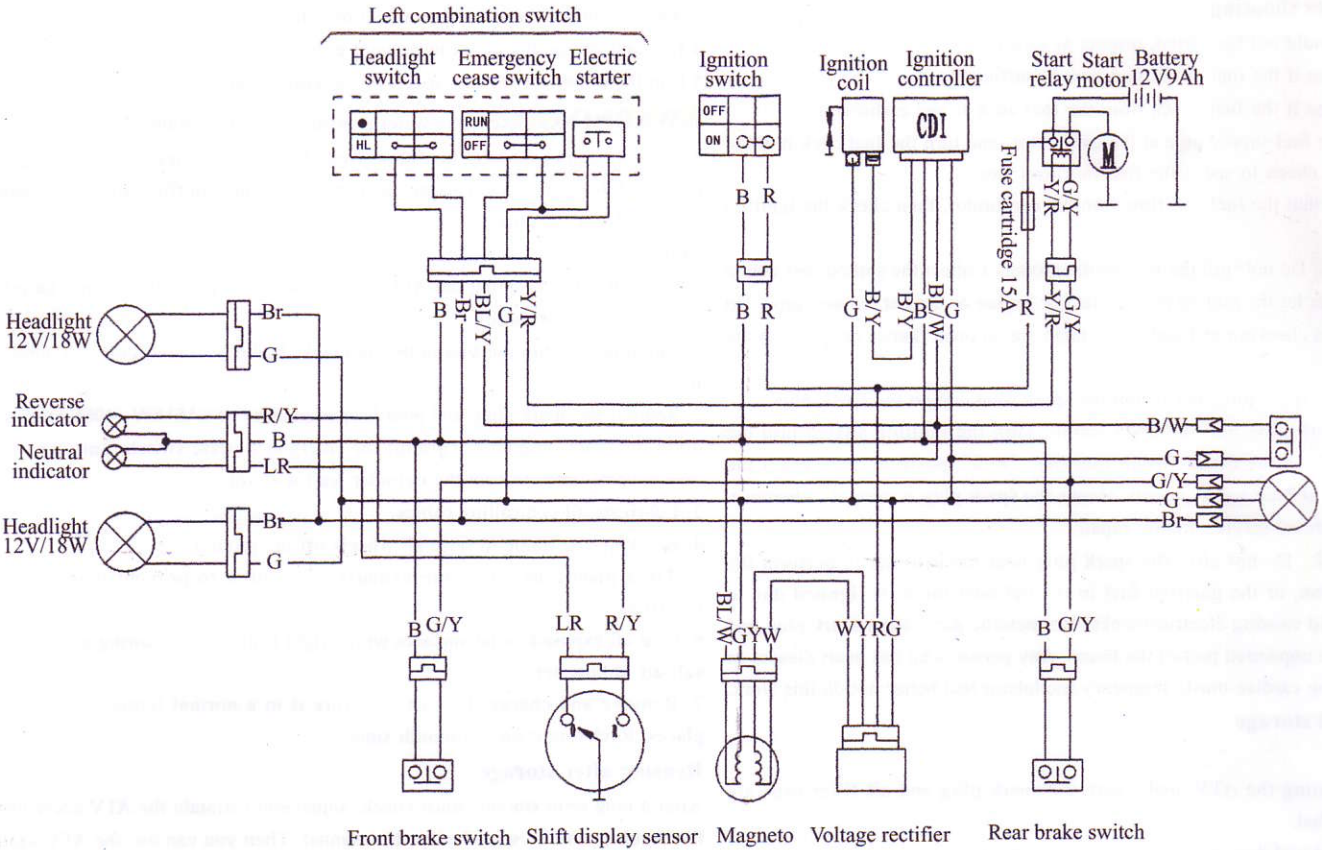
6. Coat all exposed metal surfaces with a light film of oil if storing in a humid or salt-air atmosphere.

7. Remove and charge the battery. Store it in a normal temperature and dry places. Recharge it once a month since.

Reusing after storage

After a long term storage, must check, adjust and maintain the ATV according to the requirements as specified in this manual. Then you can use the ATV again.

ELECTRIC DIAGRAM



SPECIFICATIONS

Model	90ST-3	100ST-3	110ST-3
1.BASIC DATA			
Overall dimensions (L × B × H) mm	1500 × 840 × 970		
Steering angle,°	30		
Minimum ground clearance,mm	160		
Minimum turning diameter,mm	4000		
Tread,mm	670		
Wheelbase,mm	1030		
Kerb mass,kg	140		
Rated max. loading mass,kg	90		
Top speed,km/h	40	42	45
Economical fuel consumption,L/100km	⩽ 2.1	⩽ 2.1	⩽ 2.2
Grade ability (°)	⩾ 22		
Front tire size	19 × 7-8		
Rear tire size	18 × 9.5-8		
Front shock absorber type	Coil spring/ hydraulic drive		
Rear shock absorber type	Coil spring /hydraulic drive		
Front brake type	Drum/hand operation		
Rear brake type	Drum/hand and foot operation		
Fuel tank capacity,L	7		
2.ENGINE			
Engine model	1P47FMF-H	1P50FMG-H	1P52FMH-H
Engine type	Single sylinder,air-cooled,4-stroke		
Bore (mm) × stroke(mm)	47 × 49.5	50 × 49.5	52.4 × 49.5
displacement,ml	85.9	97.2	106.7
Compression ratio	8.5:1	8.6:1	9.0:1

Starting system	Electric starter		
Ignition system	CDI		
Max. power /rev. kW/r/min	4.4/7500	4.5/7500	5.2/7500
Rated power/rated speed kW/r/min	3.8/7500	4.1/7500	4.5/7500
Max. torque/rev. N·m/r/min	5.5/4500	6.2/5000	7.0/5000
Engine oil type	SAE15W/40-SE		
Engine oil capacity,L	0.9		
Lubrication type	Pressure splash		
Fuel type	Unleaded gasoline, RQ-90 or higher		
Clutch type	Wet, multi-plates		
Transmission type	4-speed, constant mesh		
Reverse gear ratio	2.583		
Primary reduction gear ratio (Ip)	4.059		
1st gear ratio (I_1)	3.182		
2nd gear ratio (I_2)	1.765		
3rd gear ratio(I_3)	1.043		
Final gear ratio(If)	4.143		
3.ELECTRICAL SYSTEM			
Battery type	12V9Ah		
Spark plug model	A7TC		
Headlight	2-12V18W		
Taillight/rear brake light	12V5W/21W		
Fuse	15A		

PREFACE

Congratuations on your purchase of ATV. May you enjoy your riding all the time.

This manual will provide you with a good basic understanding of the features and operation of this ATV. **This manual includes important safety information. It provides information about special techniques and skills necessary to ride your ATV.** It also includes basic maintenance and inspection procedures. **BE SURE TO READ IT CAREFULLY AND COMPLETELY BEFORE OPERATING YOUR ATV**. Proper operation and maintenance can guarantee a safe riding to minimize troubles of an ATV and keep it in a sound condition, which can elongate its service life.

All informations in this manual are latest. Equipments shown in it may vary and are subject to change without notice. if any differences from the actual ATV, please do as the real. If you have any questions regarding the operation or maintenance of your ATV, please consult a dealer.

IMPORTANT NOTICE

- **Operator and Passenger**

An ATV can just carry an operator and NEVER CARRY PASSENGERS.The load limit including one operator and cargo is 90kg.

- **Surface**

This ATV is designed just for OFF-ROAD use only.

Particularly important is distinguished in this manual by the following notations that should be paid special attention to:

⚠**WARNING:**indicates that failure to follow WARNING instructions could result in severe injury or death.

⚠**CAUTION:**indicates that failure to follow CAUTION instructions could resul in personal injury or damage to the machine.

NOTE: provides helpful informations.

EP : indicates special precautions that must be taken to meet environment protection laws and regulations and complies with exhaust emissions level. Improper use of an ATV may cause environment pollution. Pay attention to the texts followed by EP notations.

Never take any actions on your ATV if it requires any repair, take it to a professional or an authorized service station, otherwise, you may take upon yourself the consequences.

The manual should be considered as a permanent part of the ATV and should remain with the ATV when resold.