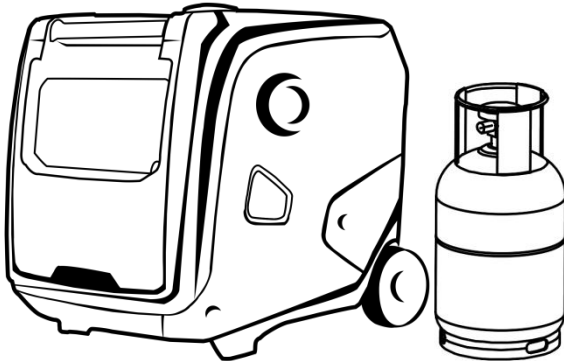


RED RHINO
PRODUCTS

**DUAL FUEL INVERTER GENERATOR
USER'S MANUAL**



Thank you for choosing a inverter generator.

This manual covers the right operation and maintenance. Before operating, please read it carefully, then you'll gain good rewards.

All technical data and drawings in this manual are consistent with the latest products while publication. As a result of revisions and other changes, the contents of this manual may be slightly different from the actual situation. We reserve the right to make changes at any time, without notice and without incurring any obligation, please understand.

The copyright of this instruction manual belongs to us. No reproduction is allowed without the written consent of ours. All rights reserved.

This manual is a permanent part of the generator set and will be resold together with the generator set if it is resold.

Safety Warning

The personal and property safety of you and others is very important. Please read carefully the extremely important safety warnings we have written in the manual and the label of the generator set.

Safety warnings can alert you to potential dangers that may harm you and others.

There is one of these three symbols: “Danger”, “Warning”, “Notice” in front of safety warning. Details as below:



If you do not follow the instructions, your life will be in danger or you will be seriously injured.



If you do not follow the instructions, your life will be in danger or you will be seriously injured.



If you do not follow the instructions, you will be slightly injured.

If you do not follow the instructions, your generator set and other property may be damaged.

Content

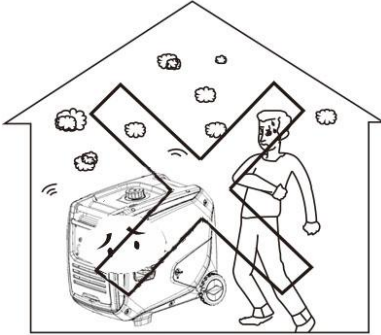
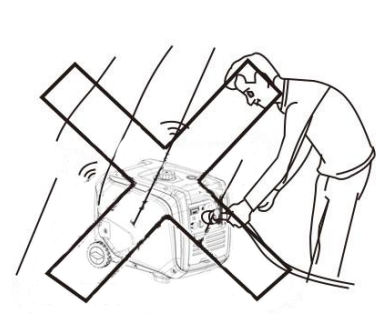
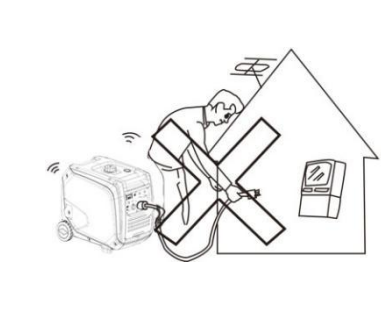

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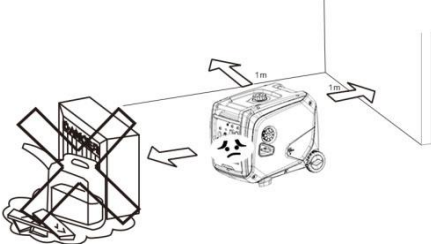
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1. Safety Instruction

1.1 Safety Specification

Please read and be well known about the manual before operating. Familiarity with the safe operating procedures of generators can help you avoid accidents.

	
<p>Don't use it indoor</p>	<p>Don't use it in damp environment.</p>
	
<p>Do not connect directly to household appliances.</p>	<p>No smoking while adding fuel</p>

	
<p>Do not spill fuel out when fueling.</p>	<p>Stop generator before filling fuel.</p>
	
<p>Be away from inflammable at least 1m.</p>	

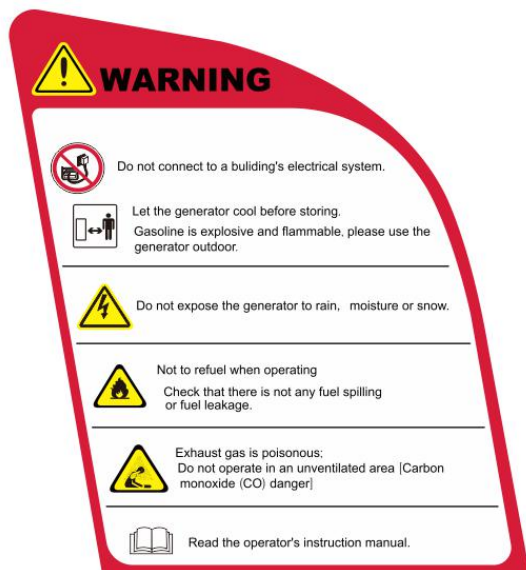
1.2 Special Request

- Electrical equipment includes unexposed wires and plugs.
- The protecting breaker should be matched with generator. The application parameters and performance should be totally matched if changing.
- Well grounded before using
- If need extension wire, it must meet the requests as below: 4mm², length no more than 100m.

2. Safety Warning Label

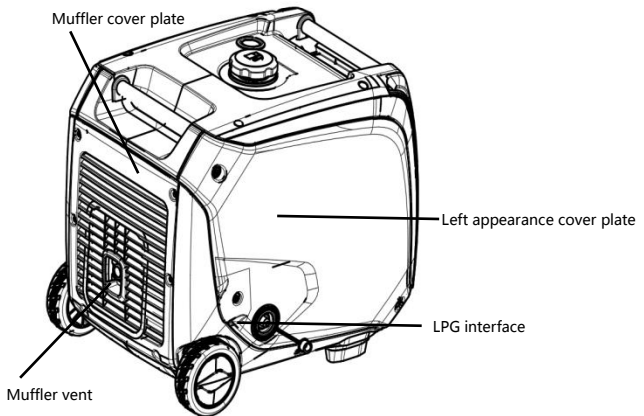
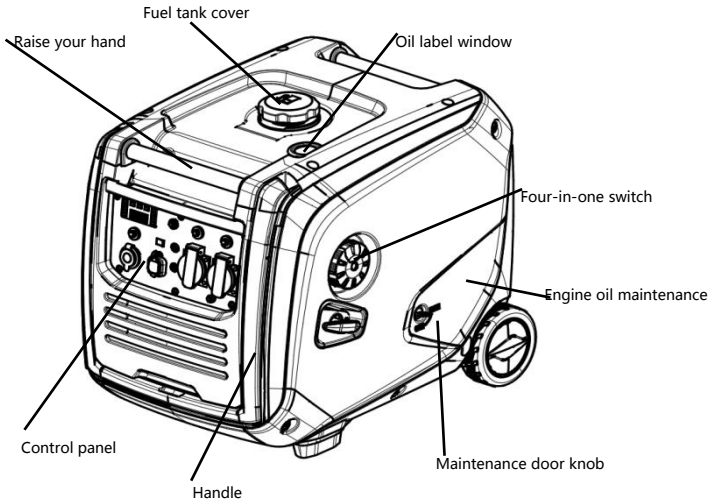
Please read the manual carefully before using.

Safety warning label



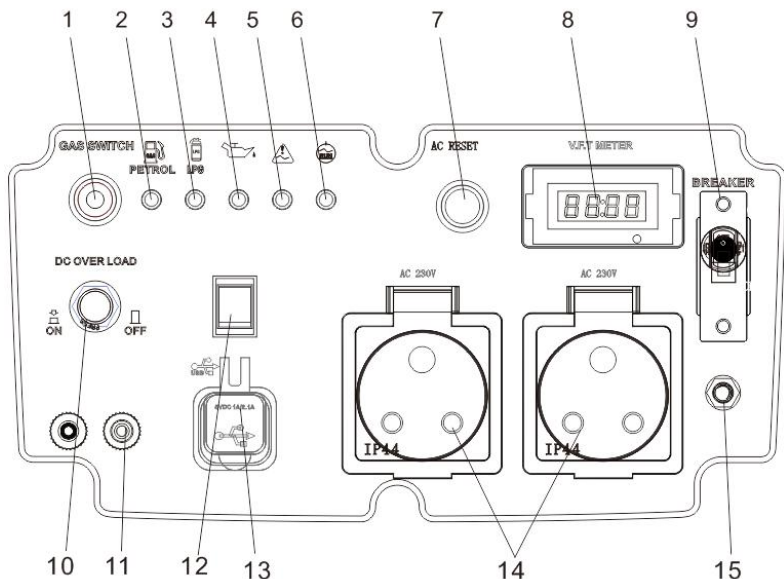
3. Components Identification

3.1. Components Feature



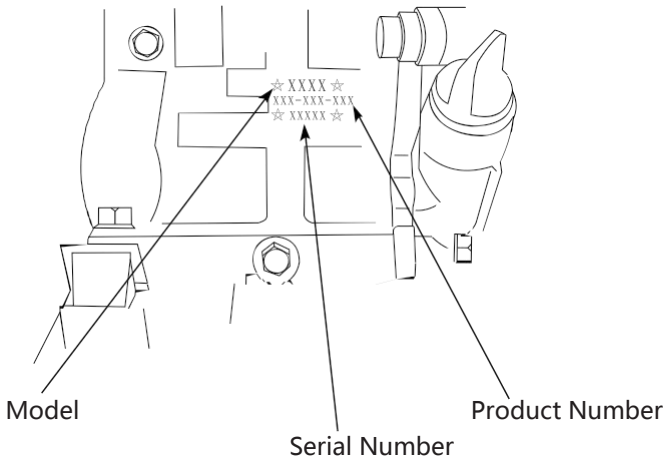
3.2 Control Panel

(Factory will adjust the panel according to different configuration. Please note that subject to change without prior notice.)



1	Gas Switch	8	Gas indicator light
2	Gas indicator light	9	Circuit Breaker
3	LPG indicator light	10	DC Overload indicator
4	Oil warning light	11	DC POLAR
5	AC Indicator Light	12	ECO switch
6	Run indicator Light	13	USB interface
7	AC Reset	14	AC socket
		15	Ground Terminal

3.3 Model and Serial Number



4.Control System

4.1 Petrol, LPG converting system

This is an automatic converting function between petrol fuel and LPG fuel. When petrol and LPG are both filled to power the generator, the LPG is priority to be consumed. When the LPG is used up or shut down manually, the converting system detects that the pressure is too low to meet run the generator, it will automatically switch to the use of petrol fuel.

When converting the LPG in the process of using petrol fuel, press the switch button on the control panel for 3 seconds and the conversion will be completed.



If your dual fuel generator is not equipped with electric start, or the battery capacity is too low to start the generator normally, your generator can not be started directly by using LPG at this time, you must ensure that there is enough petrol fuel in the fuel tank, start the generator by petrol fuel first, if you want to run the generator by LPG, then press the switch button on the control panel for 3 seconds to complete the conversion.

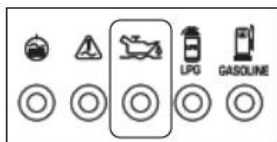
When using the LPG fuel, make sure the external pipe, the interface and the bottle must be tightened effectively. After tightening, double check if there is any leakage.



Petrol fuel and LPG are inflammable and explosive. Any leakage may cause damage to personal and property safety.

4.2 Engine oil alerting system (YELLOW)

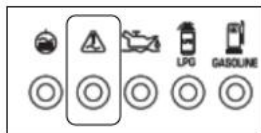
The engine oil protection system will stop the engine automatically, and the engine oil indicating lights, while the oil in crankcase is under safe line; Fill the engine oil to the oil level, it can be restart again.



If the engine oil alerting light flashes for few seconds, it means the oil capacity is insufficient. Refill the oil and restart the engine.

4.3 Overload Indicating Light (RED)

When the overload indicating light is on, the generator detects that the output of the phase-side electrical equipment has been overloaded, causing the converter to overheat or the AC voltage to rise. Then the AC protector works and stops the generator to protect the generator and the equipment which connects with it. The AC indicating light(GREEN) is off, but overload indicating light (RED)is on,engine will not stop working.



While the overload light is on, and the generator has no output, please take following measures:

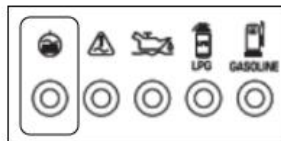
1. Turn off the connected electrical equipment and stop engine.
2. Reduce the total power rate of connected electrical equipment within the rated output range.
3. Check whether the cool air inlet is blocked by foreign matters and whether the relevant control parts are abnormal. If there is any problem, remove it immediately.

4. Restart the engine after checking.

Notice: When using the electrical equipment with high starting current (like compressor and sinking pump...), the overload indicating light may flash for few seconds. But this doesn't belong to troubles as before mentioned.

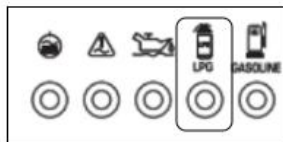
4.4 AC Indicating Light (GREEN)

The AC indicating light will be on while the engine starts and keep normal output.



4.5 Gas indicator light (blue)

when the generator fuel uses gas, the gas indicator light is on.



4.6 Gas indicator light (green)

when the generator fuel is used, the fuel indicator light is on



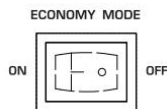
4.7 Eco Switch

① "ON"

While the Eco switch is on position of "ON", the equipment will control rotating speed according to the connected load, so as to get good fuel

oil consumption and low noise.

② “OFF”

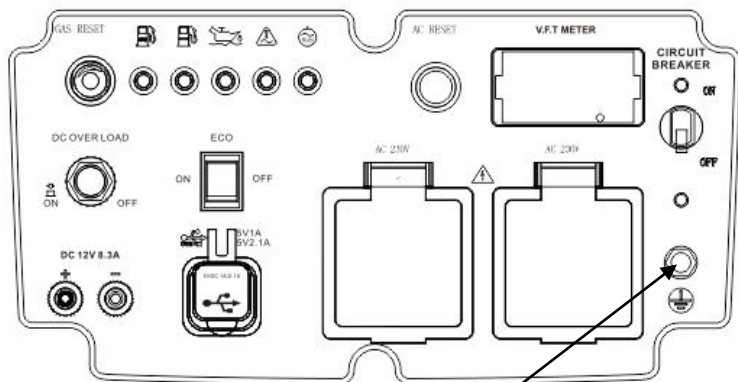


While the Eco switch is on position of “OFF”, whether it connects with load, the engine also runs at a rated rotating speed. (3600r/min)

NOTICE: Cause it needs heavy start current, ECO switch must be off while using compressor.

4.8 Ground Terminal

The ground terminal is connected to the ground wire to prevent electric shock. The generator should be connected to ground while the electrical equipment connecting to ground.



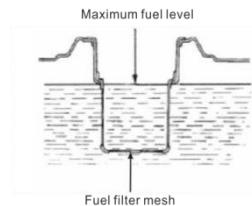
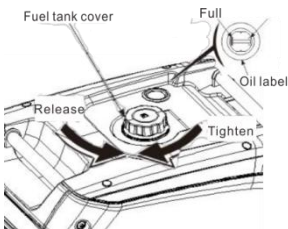
Ground Terminal

5. Preparation

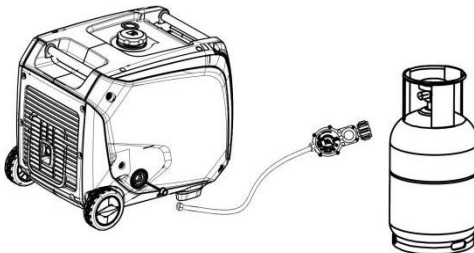
5.1 Fill Petrol Fuel, LPG



- The petrol fuel and LPG are flammable and toxic. Please read the safety instruction carefully before refueling. (See Page6 for details.)
- Do not fill the tank with too much fuel, or the fuel will overflow when the tank gets warm.
- After refueling, make sure the fuel tank cap is properly tightened.



- Before connecting the LPG pipe, make sure that the connection is reliable. Turn off the LPG immediately and repair it In case of any leakage or pipeline damage.



NOTICE

- To avoid damage the plastic outer case, please wipe off residual petrol with a clean, soft cloth after refueling.
- You must use unleaded petrol. The leaded one would damage the internal parts of the engine.

Suggested Fuel Type: unleaded petrol

Fuel Tank Capacity: 12L(H4500iER)

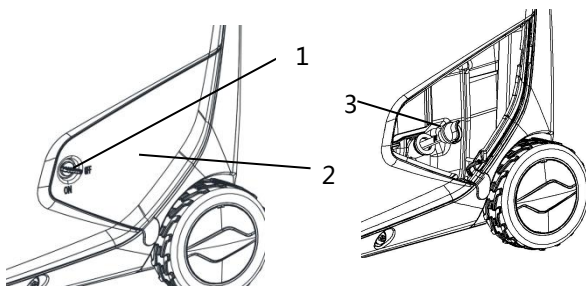
Suggested LPG: Commercial propane gas

5.2 Engine Oil

NOTICE

The generator is not injected with engine oil during delivery. Do not start the generator before injecting enough oil

1. Please place the generator on the horizontal plane.
2. Turn the knob ① to the ON position, and remove the oil maintenance door ②.
3. Open the oiling cover ③.



5.3 Fuel Tap

Fuel tap is a device that controls the flow of fuel from the tank to the

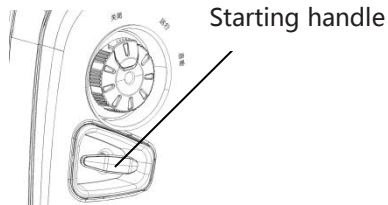
carburetor. Please make sure it is on position of "OFF" after stop working.

5.4. Starting handle

Pull the starting handle gently until you feel there is resistance, and then pull it out suddenly.

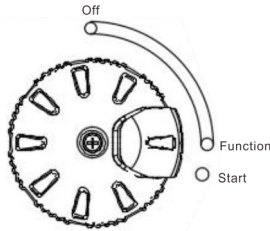


Do not let the starting handle bounce back suddenly after starting, but gently put the handle back.



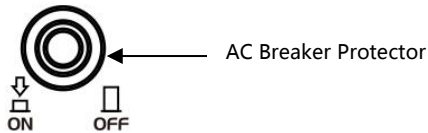
5.5. Windshield door

The air barrier door is a mixed gas that provides oil-rich to the petrol engine when the cold engine starts. When the petrol engine starts cold, rotate the start switch to place the Start button in the "start" position. When the petrol engine starts hot, rotate the start switch to place the Start button in the "running" position.



5.6. Fuel switch

Overload current can turn off the breaker protector automatically. The load shortened and overload should be avoided. If the breaker protector closed automatically, please must test the loading before opening.



5.7 Ground Terminal

Ground terminal connect the ground for prevention of electric shock. When the electric device is grounded, be sure to ground the generator also.



6. How to Use Generator

- Applicable temperature : $-5^{\circ}\text{C} \sim 40^{\circ}\text{C}$
- Applicable humidity: below 95%

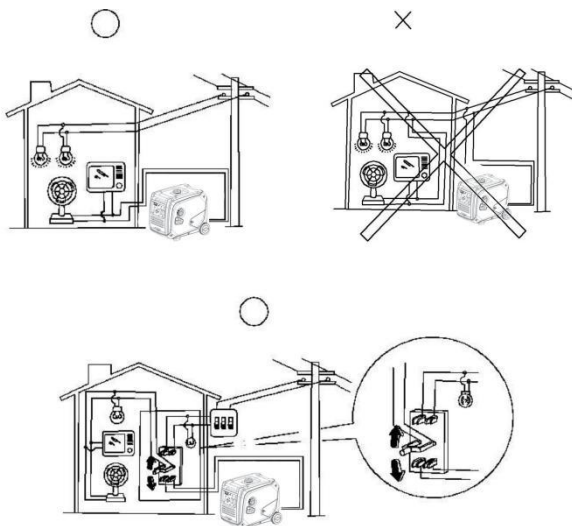
· Applicable altitude : areas below 1000 meters (If you operate your engine at altitudes above 1000 meters, reduce the engine power or modify the carburetor by contacting the suppliers.

6.1 Connect to Household Power Supply



When the generator is connected to the household power supply as a standby power supply, it should be connected by a special electrician or someone familiar with the electricity.

After connecting the load to the generator, carefully check whether the electrical connection is safe and reliable. If there is incorrect electrical connection, it may cause generator damage, combustion or fire.



6.2 Generator Grounding

In order to prevent the generator from being damaged by electric shock or misuse of inferior electrical appliances, the generator should be grounded by a good insulated conductor.



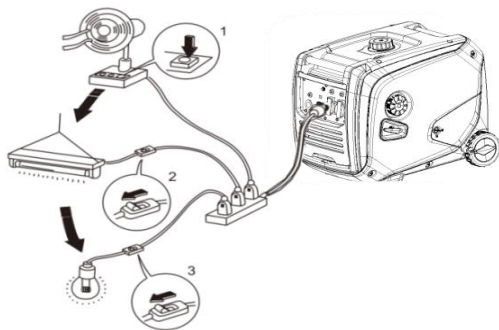
6.3 AC Power

Before starting the generator, it should be confirmed :

The total power of all electrical appliances (the sum of resistance, capacitance and inductive load) shall not exceed the rated power of the generator.



Overload operation will lead to generator stalling or greatly shorten the life of the generator. If there are multiple loads or electrical equipment connected to the generator set, please keep in mind that: first turn on the highest starting load, then turn on the second, and finally turn on the lowest starting load



Generally speaking, capacitive and inductive loads, especially motor drive devices, will cause large starting current when starting.

The following table is for your reference when connecting these electrical appliances to the generator set.

Type	Power		Typical Device	Example		
	Max.	Rated		Device	Max.	Rated
<ul style="list-style-type: none"> ● Lamp ● Heating devices 	*1	*1	100W lamp TV	100W lamp	100VA (W)	100VA (W)
<ul style="list-style-type: none"> ● Fluorescent lamp 	*2	*1.5	40W Fluorescent lamp	40W Fluorescent lamp	80VA (W)	60VA (W)
<ul style="list-style-type: none"> ● Electrical devices 	*3-5	*2	Fridge 150W Fan	150W Fridge	450-750VA (W)	300VA (W)

6.4 Used at High Altitudes

This engine may require a high altitude carburetor kit to ensure correct engine operation at altitudes above 1000 meters. The performance of a

petrol engine can be improved by replacing a slightly smaller main nozzle on the carburetor or by adjusting the adjustment screw. If you often use generators in areas over 1000 meters, you can buy special high-altitude components for replacement. Otherwise , reduce load power when using generator.

Even with a suitable carburetor, the power of the petrol engine will decrease by about 3.5% for every 300 meters above sea level. If the carburetor is not replaced properly, the decline will be even greater.



If carburetors suitable for use at high altitudes are equipped with petrol engines at low altitudes, excessive lean mixture will reduce the output power of petrol engines, cause overheating and even cause serious damage.

7. Starting the Engine



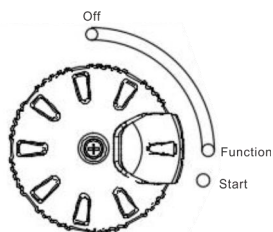
If your dual fuel generator is not equipped with electric start, or the battery capacity is too low to start the generator normally, your generator can not be started directly by using LPG at this time, you must ensure that there is enough petrol fuel in the fuel tank, start the generator by petrol fuel first, if you want to run the generator by LPG, then press the switch button on the control panel for 3 seconds to complete the conversion.

7.1 Preparation

1) remove all loads from the output.

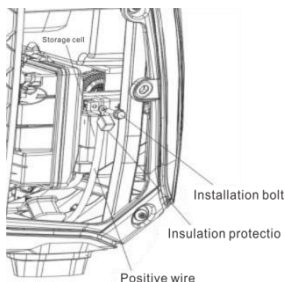
2) rotate the start switch to place the Start button in the "start" position.

3) place the AC circuit breaker protector in the "closed" position.



7.2 Electric Start

1) connect the positive wire to the positive extreme of the starting battery before starting, and then fasten it with tools. After fastening the positive wire, please install the insulation case to the wiring of the positive wire. (The generator set with mute Shell needs to remove the appearance cover plate to perform the above operation





When the petrol engine starts in the hot engine status, please rotate the start switch to place the start button in the "running" position.

- 4) Press the "ON" button.
- 5) After starting the engine, rotate the engine switch to place the start button in the "run" position.
- 6) To use electrical equipment, AC circuit breaker protector should be placed in "on" position.



Don't turn the generator switch to the electric starting position for more than 5 seconds, otherwise the starting motor will be damaged. If starting is unsuccessful, 10 seconds should be interval between multiple starting.

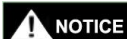
If the speed of the starting motor decreases more after a period of time, it means that the battery should be charge

8. Petrol fuel and LPG conversion

This is an automatic converting function between petrol fuel and LPG fuel. When petrol and LPG are both filled to power the generator, the LPG is priority to be consumed until the LPG runs out, and then automatic converting to petrol fuel. If you want to use the petrol fuel at this time, just turn off the LPG and the conversion is done.

When converting the LPG in the process of using petrol fuel, press the switch button on the control panel for 3 seconds and the conversion will be

completed.



If your dual fuel generator is not equipped with electric start, or the battery capacity is too low to start the generator normally, your generator can not be started directly by using LPG at this time, you must ensure that there is enough petrol fuel in the fuel tank, start the generator by petrol fuel first, if you want to run the generator by LPG, then press the switch button on the control panel for 3 seconds to complete the conversion.

9. Stopping the Engine

- 1) Turn the Eco switch to "OFF" ;
- 2) Turn off the AC Breaker ;
- 3) Turn the engine switch to "OFF";
- 4) Disconnect any electric devices and turn off the LPG.



To stop the engine in an emergency, turn the Engine Switch to the "OFF" position.

10. Maintenance

Safety is an obligation of the owner. Periodic inspection, adjustment and lubrication will keep your generator in the safest and most efficient condition possible. In order to keep the engine in good

condition, you must check and maintain it regularly. Please follow the schedule below.

Period		Each Use	First month or 20 hours	Each 3 months or 50 hours	Each year or 200 hours
Engine Oil	Check-Refill	√			
	Change		√	√	
Reduction Gear Oil (If have)	Check level	√			
	Change		√	√	
Air Filter Element	Check	√			
	Clean		√		
	Change			√	
Fuel Settling Cup (If have)	Clean				√
Spark Plug	Clean-Adjust				√*
Spark Arrester	Clean			√	
Ideal Speed (If have)	Check-Adjust				√
Valve Clearance	Check-Adjust				√
Fuel Tank and Fuel Filter	Clean				√
Fuel Line	Check	2 Years (Please change if necessary)			

- If you often work at high temperature or high load, you should replace the engine oil every 10 hours.
- If you work in dusty or harsh environments, clean the filter element of the air filter every 10 hours. If necessary, air filter elements should be replaced every 25 hours.
- The inspection period and time should be maintained on a first-come basis.
- If the maintenance cycle has passed, the maintenance should be carried out as soon as possible according to the above table.



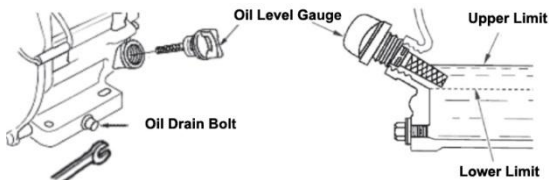
- Stop the engine before starting maintenance work. The engine should be placed horizontally. To prevent the engine from starting, separate the spark plug cap from the spark plug.
- Never operate the engine in a closed area or it may cause unconsciousness and death within a short time. Operate the engine in a well ventilated area.

10.1 Engine Oil Replacement

Please drain the engine oil after starting the petrol engine. It can ensure that the oil is discharged quickly and cleanly.

- ① Remove oil level gauge and ten turn open the oil drain bolt and drain the oil.
- ② Install the oil drain bolt and tighten it.
- ③ Add engine oil to the correct level.
- ④ Install the oil level gauge.

Oil Capacity: RGLIV4500	0.6L
-------------------------	------



Long-term and frequent skin exposure to engine oil may lead to skin cancer. Soap and water are recommended to wash the oil-exposed skin thoroughly and immediately.

To protect environment, please properly deal with the waste oil after use. We strongly recommend that: put waste oil into sealed containers (bottle or cans), and then send it to your local service station or waste oil recycling center. Keep in mind: don't throw it into the garbage dump or dump it on the ground or in the ditch.

10.2 Air Filter Maintenance

Dirty air filters will affect the flow of air into carburetors. To prevent carburetor breakdown, air filters should be regularly maintained. If it is used in dusty environment, it should be maintained more frequently.



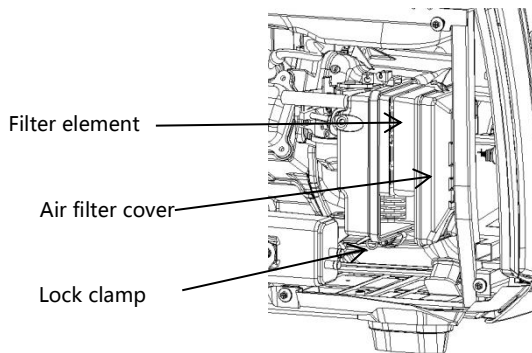
Cleaning the filter element with petrol or flammable solvents may cause fire or explosion. Please use soapy water or non-flammable solvent to clean the filter element.



It is strictly forbidden to start the generator without air filter, otherwise it will lead to rapid wear and tear of the petrol engine.

- 1) Make the knob of maintenance door to the position of "On" , take off the maintenance door.
- 2) Open the connecting button of the air filter cover and open the air filter cover. Check the filter element and ensure it's in good condition and clean.
- 3) If the foam filter is dirty, please clean it. Wash in hot water with household detergent or in non-flammable or high flash solvent. Then rinse with clean water and squeeze. Then drop a few drops of oil and squeeze evenly.

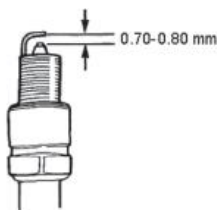
4) Fill in the filter element and cover the air filter cover.



10.3 Spark plug

Please replace the spark plug according to the original type: F7TC

- 1) Remove the spark plug cap.
- 2) Use the spark plug socket wrench to remove the spark plug.
- 3) Visually inspect whether the spark plug insulator is damaged.
Replace the spark plug if it is damaged.
- 4) Measure spark plug clearance with thickness gauge. Bend the side electrodes to adjust the clearance. The clearance shall be between 0.70 and 0.80mm.
- 5) Check that if the spark plug gasket is in good condition.
- 6) Install the spark plug, tighten it with the spark plug socket wrench, and press down the spark plug gasket. Cover the spark plug cap.



WARNING

Please use spark plugs with appropriate calorific value.

11. Storing



To avoid combustion or misfire due to contact with high-temperature components of the generator, the generator must be cooled before packaging and storage.

If long-term storage is required, please make sure the storage area is clean and dry.

1) Drain fuel from the fuel tank.Clean the fuel filter, O - ring seal and precipitation cup after the assembly.Unscrew the carburetor drain bolt, drain the fuel from the carburetor entirely, then reinstall and tighten the carburetor drain bolt.



In ordinary circumstances, petrol is flammable and explosive. Please discharge oil in well-ventilated condition after stop. No fireworks during oil discharge.

2) Unscrew the oil gauge and Oil drain bolt on the crankcase, and drain the oil in the crankcase. Then tighten the drain bolts, add new oil to the upper limit, and then install the oil gauge.

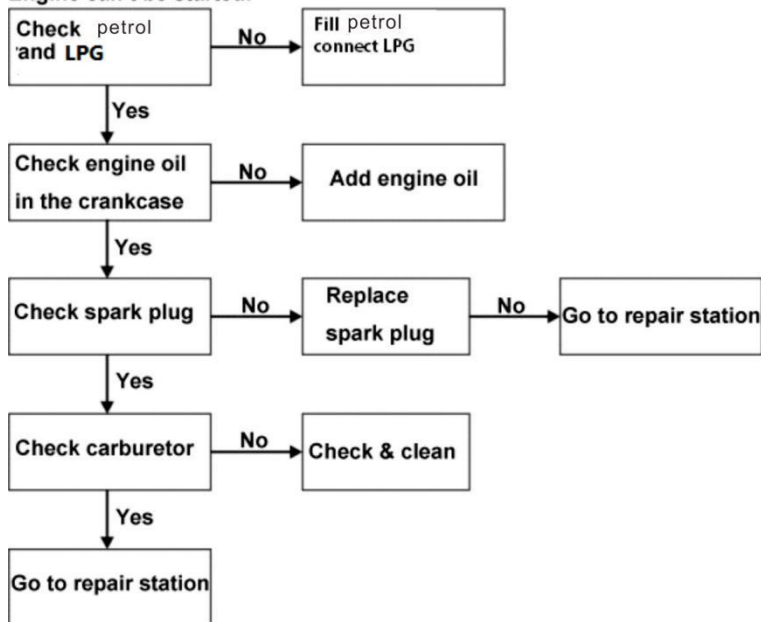
3) Remove the spark plug and pour a tablespoon of clean engine oil into the combustion chamber. Turn the crankshaft several times to distribute the oil. Reinstall the spark plugs.

4) Gently pull the starting handle until resistance is felt, leaving the inlet and exhaust doors close.

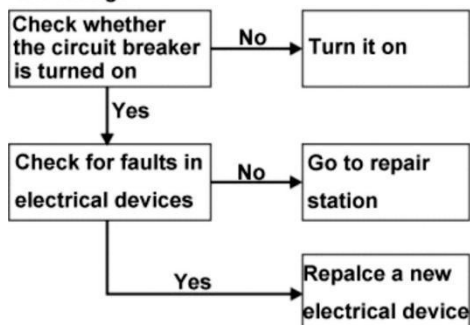
5)Place the generator set in a clean and dry area.

12. Troubleshooting

Engine can't be started:

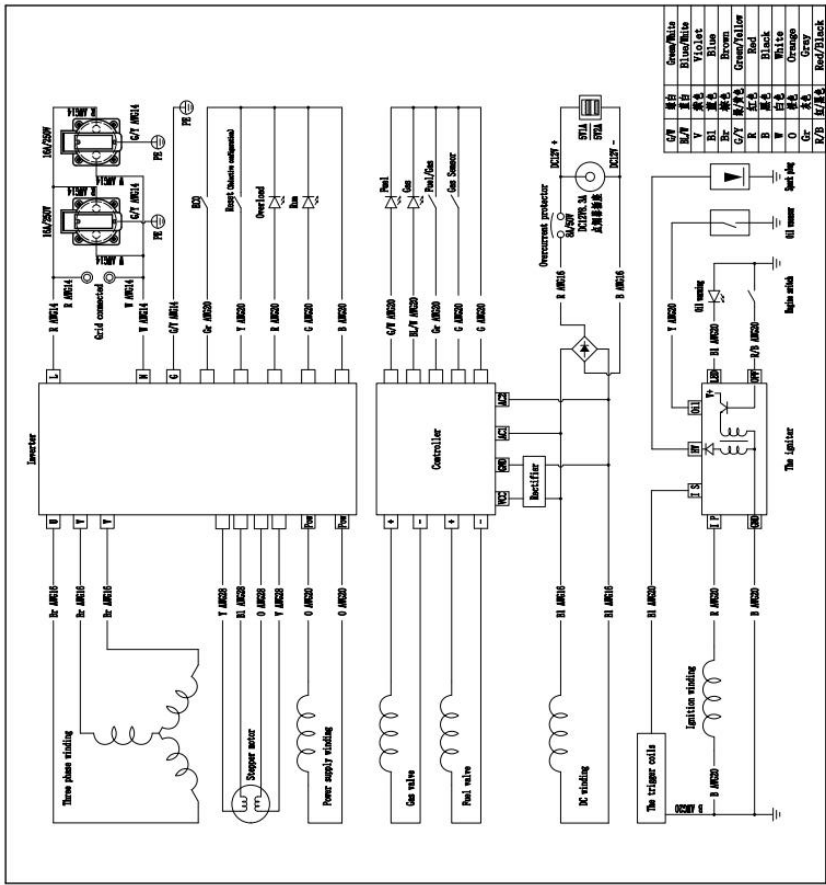


No voltage



13. Electrical Diagrams

According to different features , factory may adjust without prior notification.)



14. Specification

	Model#	RGLIV4500
Engine	Engine Type	Single Cylinder、 4 stroke、 Air-cooling、 Cylinder center is tilted 25°
	Displacement(cc)	223
	Ignition System	E.D.I.
	Starting Type	Recoil Start
	Fuel Tank Capacity (L)	12.5L
	Engine Oil Capacity(L)	0.6L
Generator	Frequency (Hz)	50Hz
	Phase	Single Phase
	Voltage(V)	230V
	Rated Output(kW)	3.5kW(petrol)/3.2kW(LPG)
	Max Output(kW)	4.0kW(petrol)/3.5kW(LPG)
	DC Output	12V/8.3A
	Length(mm)	595
	Width(mm)	440
	Height(mm)	415