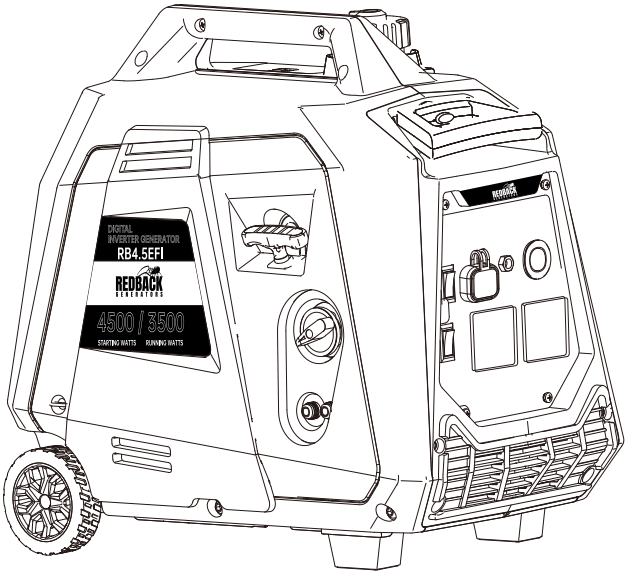
REDBACK
GENERATORS

INVERTER GENERATOR

User Manual

RB4.5EFI



Read this User Guide carefully before using. Operate under the premise of ensuring the safety and environmental protection!

Thank you for choosing the RB4.5EFI Generator Set from Redback Generators, an Australian family-owned company dedicated to providing exceptional customer support. Your trust in our product is truly valued, and we look forward to serving you with excellence.

Table of Contents

Safety warning

Personal and property safeties of you and others are very vital. Read the Safet Warning in the User Guide and the decals of the generator set carefully.

The Safety Warning can alert you to those potential hazards that could harm you and others. In front of each Safety Warning, there is one of four words “DANGER”, “WARNING”, “ATTENTION”, and “CAREFUL”. Details are as follows:

DANGER

Failure to follow the instruction will result in being in peril of your life or extremely serious injury.

WARNING

Failure to follow the instruction will result in being in peril of your life or very serious injury.

CAREFUL

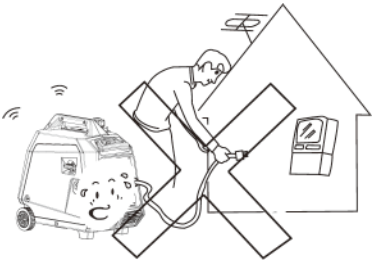
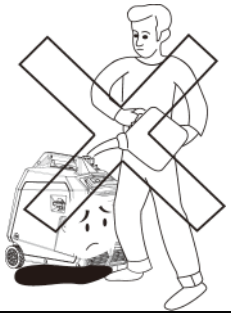
Failure to follow the instruction will result in minor injury.

ATTENTION

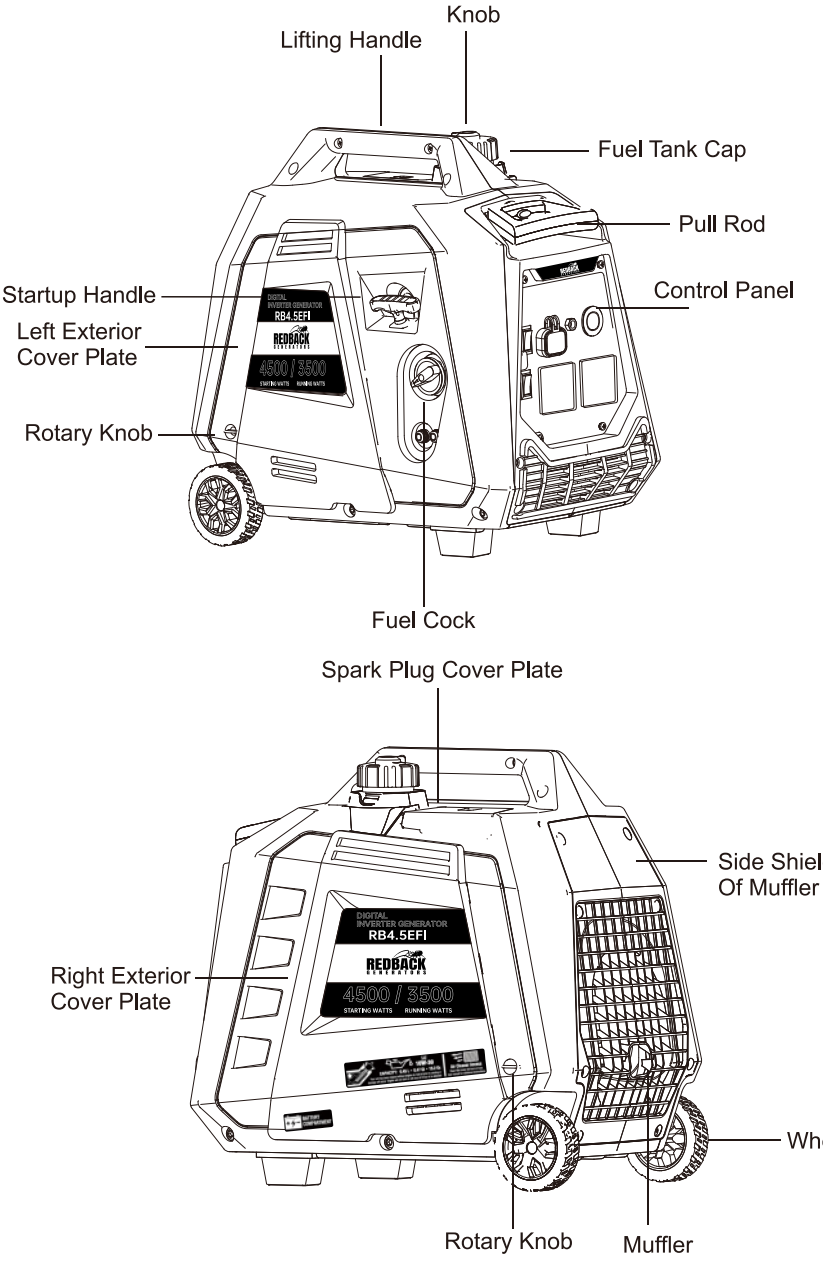
Failure to follow the instruction will result in the damage to your generator set and other properties.

I. Safety Instructions

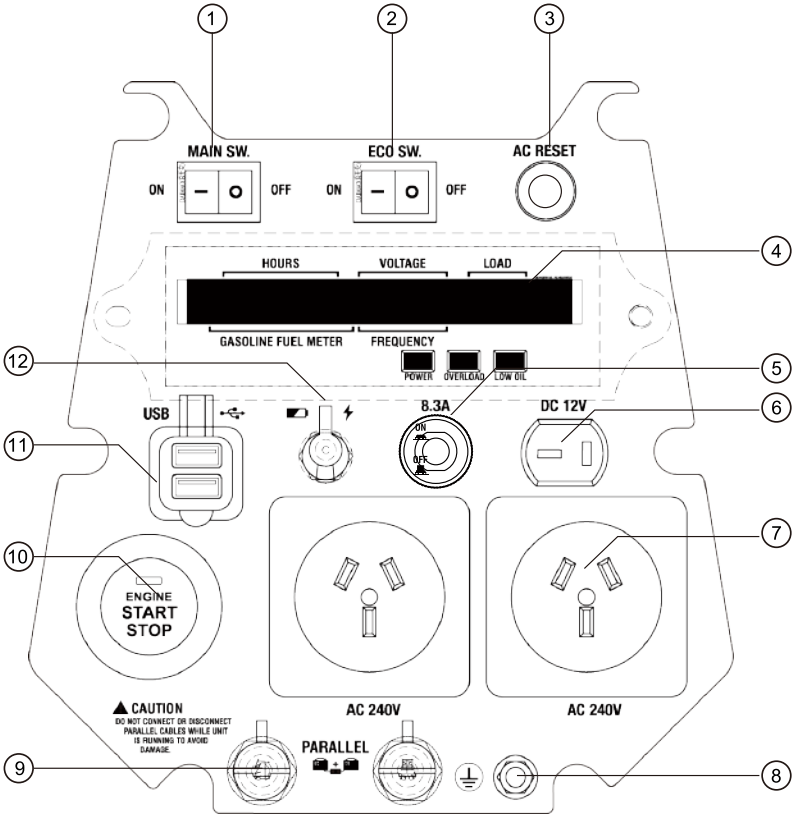
Before operating the generator, it will help you avoid accidents to read and understand the Guide and familiarize yourself with the safe operation procedures of the generator.

	
Do not use indoors	Do not use in humid environment
	
Do not connect it to utility power system directly	Do not smoke when refueling
	
Do not spill when refueling	Shut down the generator before refueling

II. Names of Components



Control Panel



① Main Switch	② Eco Switch	③ AC Reset	④ Digital Meter
⑤ DC Circuit Breaker	⑥ DC 12V/8.3A Output	⑦ AC Socket	⑧ Ground Terminal
⑨ Parallel Connector	⑩ Start Button	⑪ 5V USB Output	⑫ Battery Charging Port

III. Control Functions

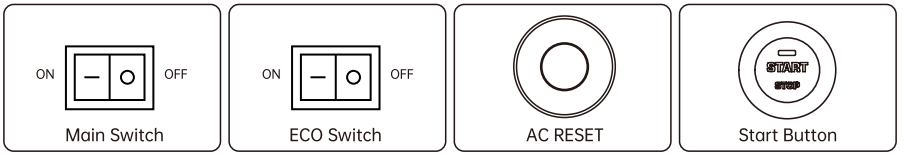
(1) Switch Function

① Main Switch: Manage DC circuit and shutdown.
Tip: Press the main switch to the "OFF" position to prevent the battery from running out when not in use more than 7 days.

② ECO Switch: When turned to the ON position, the engine will sense the load needed and run at a slower RPM to save fuel.

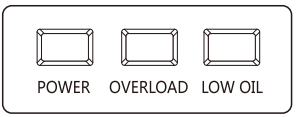
③ AC RESET: When overloaded, the reset breaker will trip. The engine will continue to run, but there will be no output from the inverter. Unplug the devices and reduce the load. Push in the reset button to reset.

④ Start Button: Press in this button,the engine can start or stop.



(2) Oil indicator (red)

When the oil in the crankcase drops below safety line, oil protection system will automatically shut down the engine, and oil alarm indicator lights up; the engine can be restarted up only after the oil is filled to oil level.



Tip: In the case of flame-out of the engine or being unable to be started up, pull startup handle. If oil indicator flashes a few seconds, the oil volume is insufficient, fill oil and restart.

(3) Overload indicator (red)

When the overload indicator lights up, the generator has detected that the output of connected electrical equipment has been overloaded, causing frequency converter to be overheated or AC voltage to rise. At this moment, AC protector works and stops generating to protect the generator and connected electrical equipment.Power indicator (green) is off and overload indicator (red) lights up, but the engine will not stop running.

When overload indicator is on and the generator has no output, take the following counter measures:

① Switch off electrical equipment connected, and shut down the generator.

② Reduce total power of electrical equipment connected to the range of rated output.

③ Check whether there is any foreign matter blocking in cooling air inlet, and whether there is any abnormality in related control components. If there is any problem, eliminate it immediately.

④ After checking, restart the engine.

Tip: When using electrical equipment with high starting current (such as compressors, submersible pump, etc.), the overload indicator may start to light up for a few seconds at the beginning, but this is not the failure mentioned earlier.

(4) Power indicator (green)

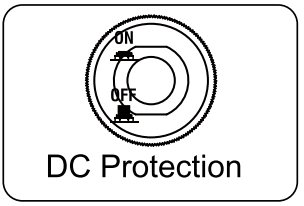
The Power indicator lights when the engine is started and output normally.

(5) DC protection

When electronic equipment connected to DC of the generator is running, if current is beyond overload current, DC protection automatically cuts out to "OFF" position. To operate the DC output again , press DC protection to "ON" position.

1) "ON" DC outputs normally.

2) "OFF" DC does not output.



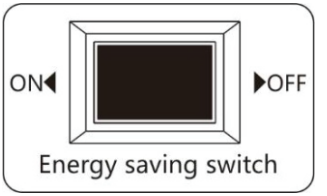
ATTENTION

If DC protection is in off status, reduce the load of electronic device connected to rated output range of the generator and press it to ON position. If it is still back to OFF status, stop using electrical equipment directly and consult your dealer.

(6) Energy-saving switch(ECO SWITCH)

1) “ON”

When energy-saving switch is set to “ON” position, the device controls engine speed based on the load connected, thus very good fuel consumption and low noise can be obtained.



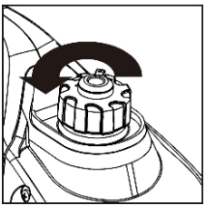
2) “OFF”

When the energy-saving switch is set to the “OFF” position, the engine will run at rated speed, regardless of whether being connected to a load.

Tip: When using inductive appliances such as air compressor and submersible pump etc, the energy-saving switch must be in “OFF” position, because it requires great startup current.

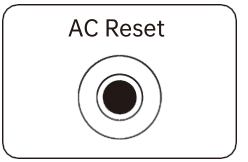
(7) Fuel tank cap

Remove fuel cap by unscrewing it counterclockwise. (Actual prevail)



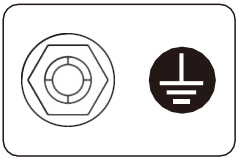
(8) AC recovery(AC RESET)

When the output is overloaded, the generator will protect automatically to cut out output. Reduce the load, press the AC recovery switch, and the generator will resume output.



(9) Grounding terminal

Grounding terminal shall be connected to grounding wire to prevent electric shock. When an electrical appliance is grounded, the generator must be grounded too.



IV. Preparations

(1) Fuel

DANGER

● Fuel is flammable and toxic, read the Safety Instruction carefully before refueling;

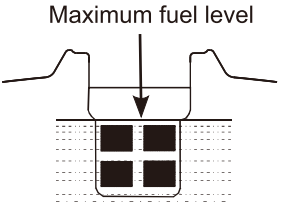
● Do not fuel too full, otherwise fuel will spill after fuel tank is warmed;

● After refueling, confirm that the fuel tank cap has been tightened.

ATTENTION

● After refueling, dry **petrol** residue with a clean and soft cloth in time to avoid damaging plastic enclosure;

● Unleaded **petrol** must be used, as leaded **petrol** can seriously damage internal parts of the generator;



● Remove fuel tank cap, and add **petrol** to red horizontal indicating line oil level.

● Fuel tank capacity: 6L

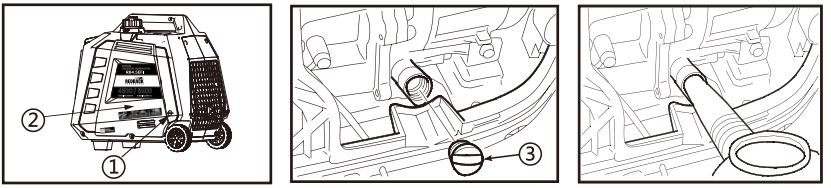
(2) Oil

No oil is filled into this generator when being delivered. Do not start up the generator without filing sufficient oil.

1) Place the generator onto a horizontal plane surface;

2) Loosen the knob ① and remove the right exterior cover ② ;

3) Unscrew oil dipstick ③;



4) Fill in 0.45L oil (SAE 10W/30 oil is recommended, of which the grade is API standard Type SE or higher);

5) Reinstall the right exterior cover and tighten the knob.

(3) Pre-use inspection

WARNING

Even if the generator is not in service, its important component may suddenly fail.Before the generator is started up, if any of following components is unable to work properly, inspect and repair carefully.

Tip: The condition of the generator shall be inspected before using every time.

Pre-operation inspection

Fuel

- Check fuel level in fuel tank of the generator, and fuel it if necessary.

Oil

- Check oil level of the generator, and fill oil if necessary;
- Check whether there is oil leaking.

Abnormal conditions during operation

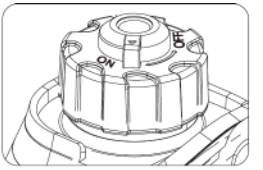
- Check operating condition of the generator;
- If there is any need, please do not hesitate to consult with us.

V. Starting up the Generator

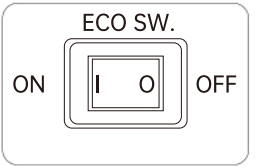
Hand starting

(1) Remove the load from all output ends;

(2) Turn the fuel tank cover ventilation knob to “ON”; (Actual prevail)



(3) Press the ECO switch to “OFF”;



(4) First gently pull startup handle, until guy cable is hooked tight, and then pull it with effort;

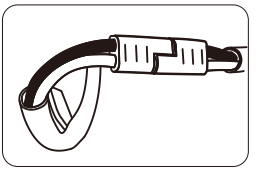
Tip: When pulling the hand starter, hold generator carrying handle firm, to prevent the generator from overturning.

Electric start

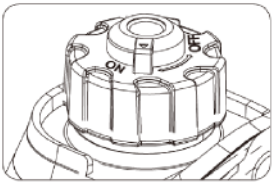
(1) Remove the load from all output ends;

(2) Connect battery line before first use:

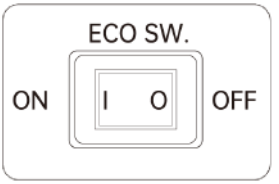
1. Loosen the knob on the right cover and remove the cover;
2. Connect the positive and negative electrodes of the battery.



(3) Turn the fuel tank cover ventilation knob to “ON”; (Actual prevail)



(4) Press the ECO switch to “OFF”;

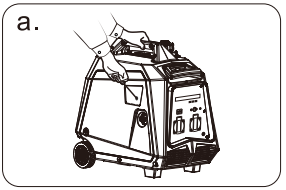


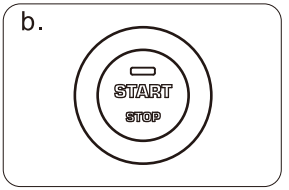
(5) Select Start Mode:

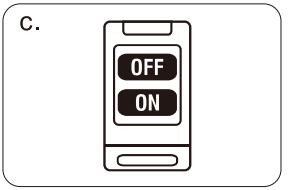
a. Hand Starting: Pull the starting handle to start the generator.

b. One Button Start: Press the one-click start button to start the generator.

c. Remote Start: Press the "ON" button on the remote control to start the generator.

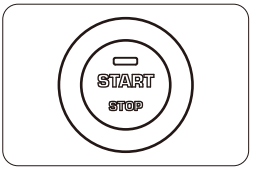




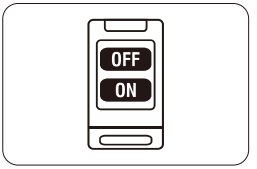


Remote Control Pairing

(1) Long press the one-key start button for 5 seconds until the green light is steady on;



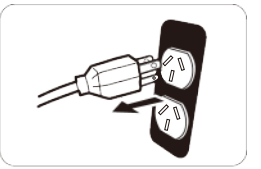
(2) Press the remote control ON or OFF the one-button start button turns OFF the green light and the remote control is paired successfully.



Tip: The remote control delivered with the generator has been paired successfully.

VI. Shutting Down the Generator

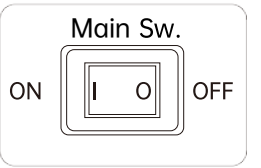
(1) Unload all loads;



(2) **Select Stop Mode**

Hand start generator:

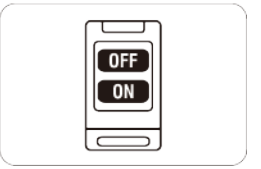
Switch the main switch to “OFF”.



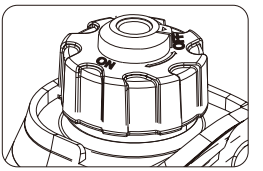
Electric start generator:

a. One Button to Start: Press the one-click start button to turn off the generator.

b. Remote Start: Press the "OFF" button on the remote control to turn off the generator.



(3) Turn the fuel tank cover ventilation knob to “OFF”; (Actual prevail)



VII. Using the Generator

(1) Service environment of the generator

● Applicable temperature: -5℃ ~ 40℃;

● Applicable humidity: below 95%;

● Applicable altitude: regions below 1,500 m (It shall be used by reducing power in regions above 1,000 m).

Standard atmospheric condition

● Ambient temperature Tr: 298k (25°C)

● Relative air humidity Φr: 30%.

● Absolute atmospheric pressure Pr: 100kPa

When actual environmental condition is inconsistent with the condition of output power of the generator set:

● Every 5°C of increase in ambient temperature will reduce the power of generator by about 2%.

● Every 30% of increase in relative humidity of air will reduce the power of generator by about 1.5%.

● Every 300 m rising of ASL will reduce the power the generator by about 4.5%.

(2) Generator wiring

● When the generator is connected to household power source as a backup power supply, the connection shall be carried out by a professional electrician or a person familiar with electricity.

● After connecting the load to the generator, check carefully whether electrical connection is safe and reliable. Improper electrical connection may cause generator damage, burning or fire.

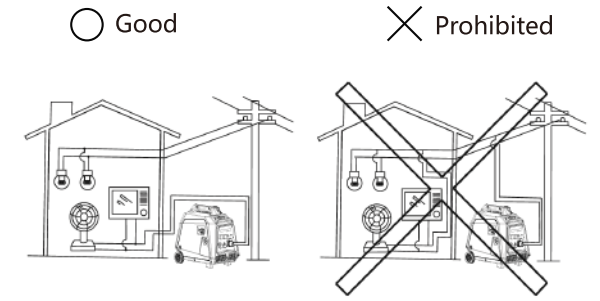
● Avoid connecting this generator to commercial power outlet.

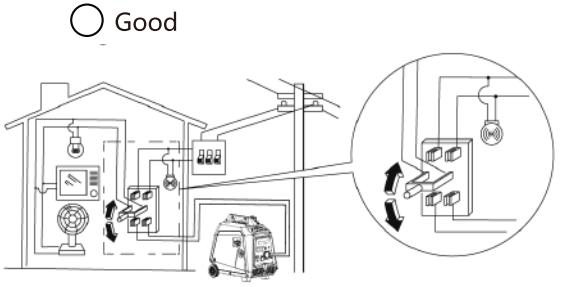
● When extending the cable, be sure not to exceed its length.

① 60m cross-section area is 1 .5mm^2

② 100m cross-section area is 2.5mm^2

● The appearance of extension cable shall be protected by a layer of tough and elastic rubber cover (IEC25) or other substitutes.





Connection of AC power

WARNING **All electrical equipment shall be disconnected before inserting the plug.**

ATTENTION

● Make sure that all electrical equipment, including wires and plugs, are in good condition before connecting to the generator;

● Make sure that all loads driven by the generator are within rated load range;

● Make sure that load current is within rated current range of rated socket.

Tip: Make sure that the generator set is grounded, and if electrical equipment requires grounding, the generator set must be grounded.

① Start up the engine;

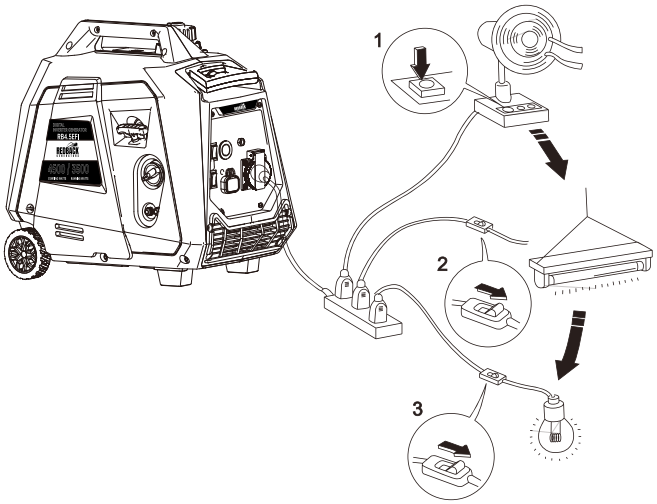
② Turn energy-saving switch to “ON” ;

③ Insert the plug into AC outlet;

④ Make sure that AC indicator is lit up;

⑤ Switch on electrical equipment.

Tip: Before increasing engine speed, energy-saving switch must be switched to “OFF”. If the generator set supplies power to multi loads or electrical equipment, start from large to small according to the size of each electrical equipment.



(3) Generator grounding

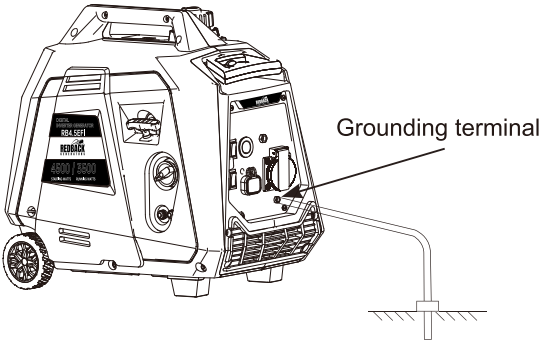
In order to prevent any damage to the generator caused by electric shock or improper electrical application, it is recommended that the generator is grounded with good conductor with insulating sheath.

①Use grounding wire with sufficient electrical energy capacity;

② Connect one end of grounding wire reliable to grounding bolt on control panel of the generator set;

③ Insert grounding body (iron rod with a diameter of 5 ~ 10mm) 200mm deep into the earth and lead it out with conductor;

④ Connect the other end of the grounding wire reliable to the lead wire of grounding body.



(4) Battery charging

Tip:

● Rated DC voltage of this generator is 12V;

● After the generator is started up, connect the battery to the generator;

● Before charging, make sure that DC protector has been switched on.

① Start up the generator.

② Connect red conductor of the battery to positive (+) terminal of the battery

③ Connect black conductor of the battery to negative (-) terminal of the battery

ATTENTION

● Make sure that red wire of the charger is connected to positive terminal (+) of the battery, and black wire and negative terminal shall not be connected reversely.

● The connection between charger cable and battery terminal shall be reliable to prevent the generator from moving or loosening.

● Follow steps in the User Guide for proper operation.

● In the process of charging, if current exceeds the value of rated current, DC protector will switch off the output. Press DC protector to "ON" to restart charging. If the DC protector switches off again, stop charging immediately and contact your dealer.

● The generator is supplied with Lithium-Ion battery for electric start. It has a longer lifespan than lead-acid batteries.

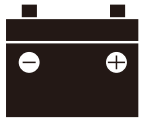
WARNING

Never smoke, and never connect or disconnect the connection to the battery during charging. The spark generated will ignite gas around the battery.

- Do not disassemble, crush, or puncture a battery.
- Do not short the external contacts on a battery.
- Do not dispose of a battery in fire or water.
- Do not expose a battery to temperatures above 60 °C.
- Keep the battery away from children.
- Do not use a damaged battery.
- If a battery has leaking fluids, do not touch any fluids. Dispose of a leaking battery as appropriate.
- In case of eyes contact with fluid, do not rub eyes. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the fluid remains. Seek medical attention.
- Charge or discharge the battery to approximately 50% of capacity before storage.
- Charge the battery to approximately 50% of capacity at least once every six months.
- Remove the battery and store it separately from the product.
- Store the battery at temperatures between 5 °C and 20 °C if possible.
- Lithium-Ion batteries are subject to disposal and recycling regulations that vary by country and region. Always check and follow your applicable regulations before disposing of any battery.
- keep the battery out of the reach of children.

(5) Range of application

Before using the generator, make sure that total load is within rated load range of the generator, otherwise the generator may be damaged.

AC				DC 
Power Factor	1	0.8~0.95	0.4~0.75 (Efficiebcy0.85)	
Output Power	⩽3500W	⩽2800W	⩽1400W	Rated Voltage 12V

Tip:

● AC and DC can be used at the same time, but total power amount shall not exceed rated output power.

● When total power exceeds rated power, overload indicator will light up.

VIII. Service and Maintenance

Good maintenance and service is the best guarantee for safe, economical and reliable operation. It also contributes to environmental protection.

In order to keep the generator in good condition, you must inspect and maintain it regularly. The maintenance schedule is as follows: (Record on separate log book)

Item \ Maintenance cycle		Each	First in 1 month or 20 hours	Then every three months or every 50 hours	100 hours per year or use
Engine oil	Check-fill	√			
	Replace		√	√	
Gearbox gear Oil (if any)	Check oil	√			
	Replace		√	√	
Air filter	Inspection	√			
	Clean		√		
	Replace			√	
Settling cup (if any)	Clean				√
Spark plug	Clean-adjust				√*
Spark eliminator	Clean			√	
Idle speed (if any)**	Check-adjust				√
Valve clearance**	Check-adjust				√
Fuel tank and fuel filter***	Clean				√
Fuel line	Inspection	Every two years (Replace if necessary)			
Cylinder head, piston	Remove carbon deposit**	Displacement < 225cc, every 125 hours; displacement capacity ≥ 225cc, every 250 hours.			

* These items shall be replaced if necessary;
** These items shall be maintained by the dealer authorized by the Company, unless the user has proper tools and maintenance ability.

ATTENTION

● If it often works under high temperature or high load, oil shall be changed every 25 hours;

● If it often works in dusty or harsh environment, air filter element shall be cleaned every 10 hours. If necessary, the air filter element shall be replaced every 25 hours;

● It shall be maintained on spot-inspection or on regularly scheduled inspections;

● If maintenance cycle time has elapsed, perform the maintenance as soon as possible as per the table above.

WARNING

Shut down the engine first before performing any maintenance. The engine shall be placed in a horizontal position. In order to prevent the engine from starting up, separate spark plug cap shall be separated from spark plug.

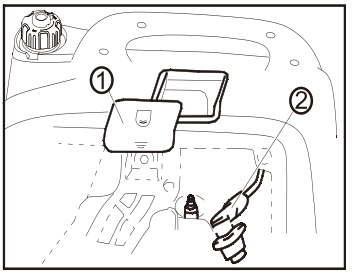
Do not use it indoors or use it in a tunnel, cave or other places ventilated poorly. Make sure that work area is well ventilated. Exhaust gas from the engine contains toxic gases, carbon oxides, and the inhalation can cause shock, loss of consciousness, and even death.

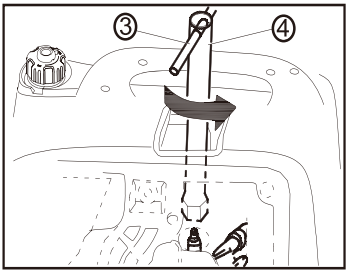
(1) Spark plug inspection

Spark plug is an important part of the generator, which must be inspected regularly.

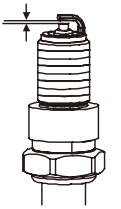
① Remove decorative cover and spark plug cap of the generator;

② Insert the screwdriver into the sleeve, screw it counterclockwise,then remove the spark plug;





③ Check whether there is discoloration, and remove carbon deposits. Check whether there is little pale to moderate brown on ceramic cores around center electrode of the spark plug;



④ Check the model of spark plug and clearance.

Standard spark: A5RTC Spark plug gap: 0.7-0.8mm

Tip: The spark plug clearance is required to be measured by line thickness gauge, which shall be adjusted if necessary.

⑤ Installation of spark plug

Sqark cold torque: 12. 5 N.m

Tip: If there is no torque wrench when installing the spark plug, a better estimation method is to screw it 1/4-1/2 turns by force after screwing it in place, but the spark plug shall be screwed to specified torque as soon as possible.

(2) EFI system

Your generator is equipped with Electronic Fuel injected(EFI) Engine. Its automotive technology allows for easy and reliable starting and it greatly reduces bad gas emissions such as CO and is advantageous for long-term storage and fuel savings.The electronic engine control is responsive to deliver more reliable power.In case there is a problem with the EFI system,the adjustment shall be carried out by a dealer with professional knowledge,professional data and equipment to ensure that the adjustment is proper.

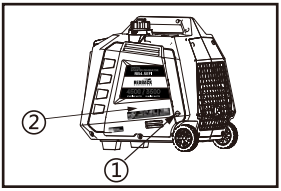
(3) Replacement of oil

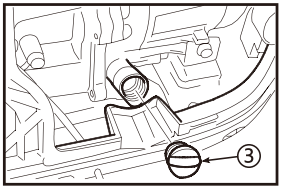
WARNING Do not drain the oil immediately after turning off the generator. During operation, the oil is very hot and can cause serious burns.

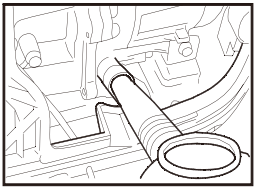
1). Place the generator on a horizontal plane and start the generator for several minutes to increase its temperature, then stop the engine and turn the oil switch knob to “OFF”;

2). Loosen the knob ① and remove the right exterior cover ② ;

3). Unscrew oil dipstick③;







4). Place an oil pan under the engine, tilt the generator to quickly pour out oil;

5). Place the generator to a flat horizontal surface.

ATTENTION: When filing oil, do not tilt the generator frequently to prevent damage to the power by filing too much oil.

6). Refill oil to a proper level;

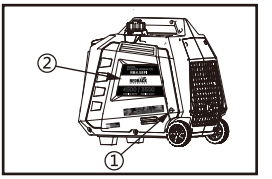
Recommended oil: SAE S10W/30 Oil grade: API standard Model SJ or higher Volume:0.45L

7). Tighten the oil ruler, cover the right exterior cover and tighten the removal knob.

(4) Air filter

Dirty air filter may prevent air from flowing into the EFI system. In order to prevent failure of the EFI system, maintain air filter regularly. If being used in a dusty environment, it shall be maintained frequently.

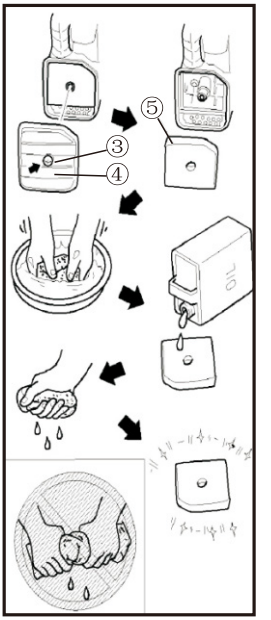
1). Loosen the knob ① and remove the right exterior cover ② ;



2). Remove screws③, to remove cover plate of air filter ④ ;

3). Remove foam filter element⑤ ;

4). Clean foam filter element with cleaning solvent and blow it dry;



5). Drip a few drops of oil to foam filter element and squeeze off excess oil. The foam filter element shall be wet, but there shall not be oil dripping;

ATTENTION Be sure not to twist the foam filter element forcibly to avoid damage.

6). Put foam cleaner element into air filter ;

Tip: Make sure that the surface of foam filter element is in close contact with air cleaner, and there shall be no gap leaking air.

Be sure not to start the engine before air filter is assembled, because it will generate excessive toxic gas and wear the cylinder;

7). Reassemble empty air filter cap back to original position, and tighten screws;

8). Assemble air filter cover and tighten the knob.

(5) Fuel filter screen

WARNING Be sure not to open fuel tank of the generator in a place where smoking or with flame.

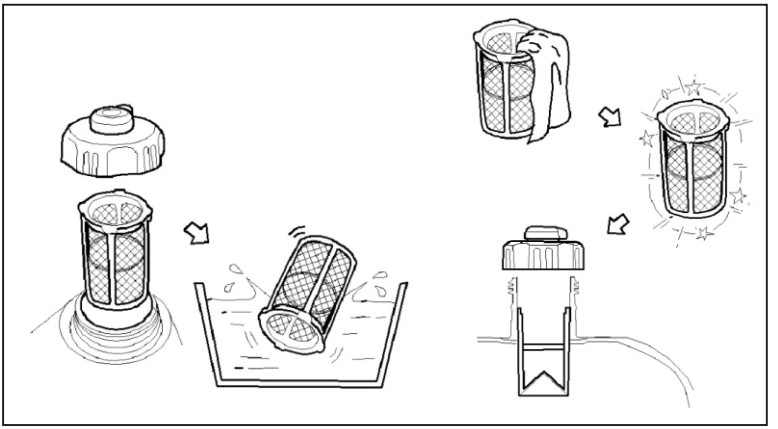
1. Remove fuel tank cap and fuel tank filter screen;

2. Clean fuel tank filter screen with gasoline;

3. Wipe filter screen dry, and put it back into fuel tank;

4. Refit fuel tank cap.

ATTENTION: Be sure to screw fuel tank cap tightly.



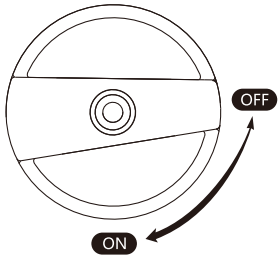
IX. Storage and Transport

(1) Generator storage

For long term storage, take measures as follows to prevent aging:

1). Shut down generator.

2). Open fuel tank cap, take out fuel filter screen. Pump all fuel in fuel tank into special fuel tank, then refit fuel tank cap;



3). Start up the engine to burn off fuel in the system ,then shut it down;

Tip: Do not connect any electrical equipment. Running time of the engine depends on remaining fuel in the fuel tank.

4). After the engine is completely cooled down,unscrew oil dipstick, and drain oil in the crankcase off. Fill new oil to upper oil limit, then refit oil dipstick.

5). Gently pull startup handle until you feel resistance, allowing both inlet valve and exhaust valve to be closed;

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

(2) Generator transport

● When the generator set is transported, it shall be ensured that there is no fuel spiling;

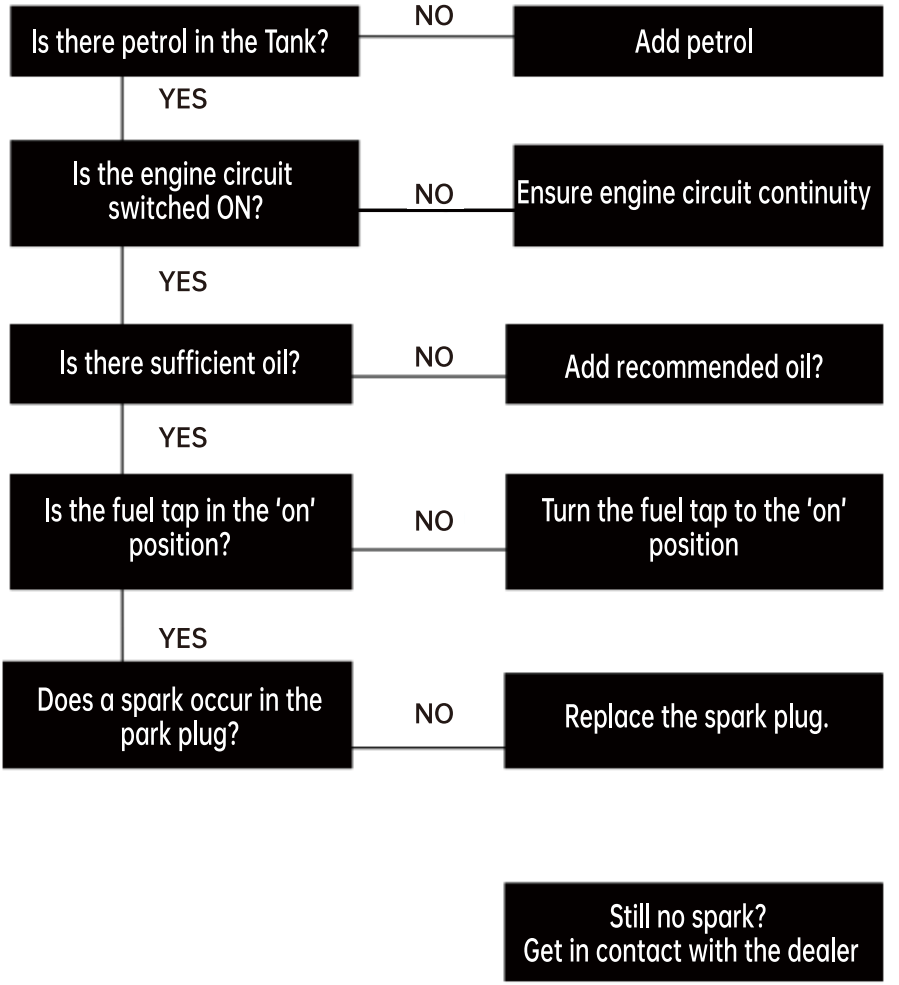
● Do not fill excessive fuel Into fuel tank;

● Do not run the generator, and avoid direct sunlight;

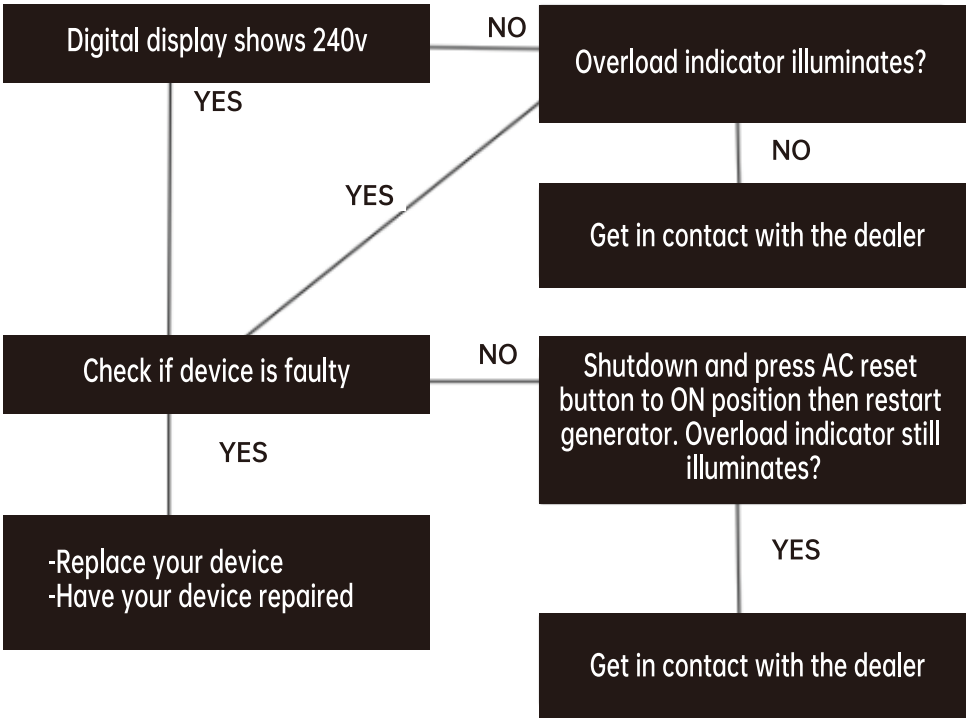
● Do not transport the generator set on rough road for long time.

X. Troubleshooting

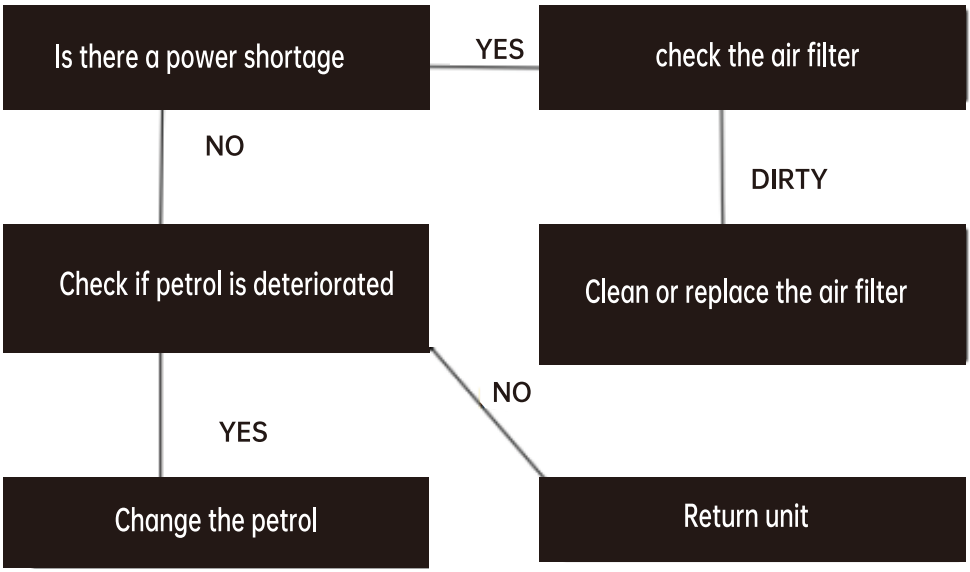
Engine does not start



Connected device does not work



Power Insufficient



XI. Technical Parameters

Engine	Engine Type	Single Cylinder, Four Stroke, Air Cooled, Overhead Valve, Gasoline Engine Cylinder Center Inclined 25 °
	Cylinder Diameter×Stroke (mm)	65x48
	Displacement(cc)	159
	Compression Ratio	8.5±0.2
	Gas Distribution Mode	OHV
	Cooling Mode	Forced Cold Air
	Output Power(kW/r/min)	4.8/4850
	Starting Mode	Manual Recoil Starting / Electric Starting
	Fuel Tank Capacity(L)	5.5
	Type And Grade Of Fuel	Unleaded Gasoline For Vehicles
	Lubricating Oil Capacity(L)	0.45
	Lubricating Oil Model	SAE 10W/30
	Lubrication Way	Splash Lubrication
Generator	Noise dB(7m)	54-59
	Rated Power(kW)	3.5
	Max Power(kW)	4.5
	Rated Voltage(V)	240
	Rated Frequency(Hz)	50
	Power Factor	1
	Number of Phase	Single phase
	DC Output	12V/8.3A
Configure	Electric Machinery	Permanent Magnet
	Voltage Regulation	Controller Regulation
	Frequency regulation	Controller Regulation
Dimensions(mm)		530x310x500
Net Weight(kg)		27.5

XII. Warranty

YOUR RECEIPT MUST BE RETAINED AT ALL TIMES FOR WARRANTY.

Responsibilities of The Consumer Under This Warranty

Deliver or ship the REDBACK Generator covered under this warranty to iTechworld.

12-month warranty or 500 hours whichever comes first. Not for commercial use, domestic use only. Must be serviced in line with the maintenance schedule provided in this user guide by a third party that is a qualified small engine mechanic. Receipts must be maintained with full details of work carried out as proof to maintain the warranty.

Freight costs, if any, to and from iTechworld will be paid by the owner. Use reasonable care in operation, and storage of the product as explained in this user guide.

The benefits provided under this warranty are in addition to other rights and remedies which are available to you under law. The warranty covers manufacturer defects in materials, workmanship and finish under normal use.

Our goods come with guarantees that cannot be excluded under Australian Consumer law and Consumer Guarantees Act 1993 (NZ).

CONTACT

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REDBACK
GENERATORS