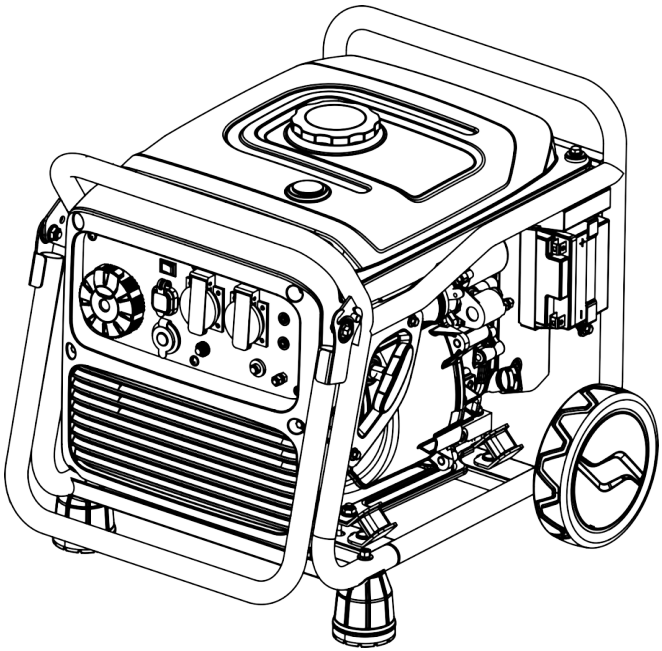
DUROLL®

GENERADOR *INVERTER*

Manual del Usuario



MODELO

H4500iD

Encuentre la versión en español en **herramientasduroll.com.ar**

Thank you for choosing a our 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 reverses the right to make changes at any time, without notice and without incurring any obligation, please understand.

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 are 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.

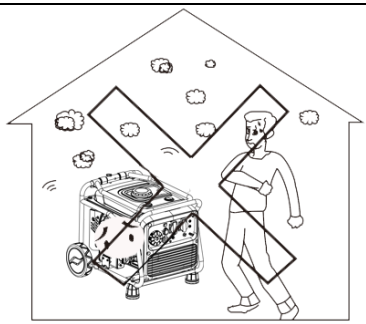
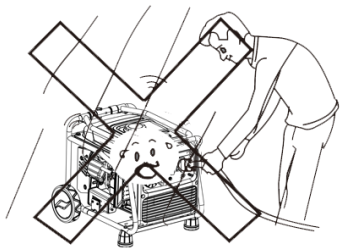
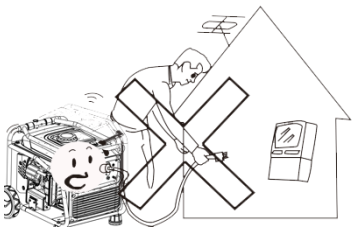
If you do not follow the instructions, your generator set and other property may will be damaged.

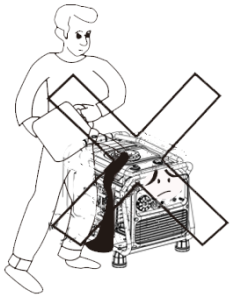
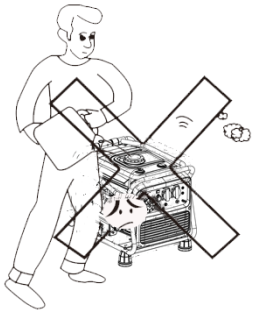
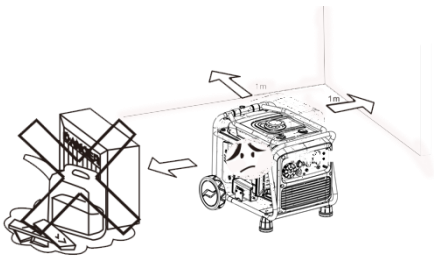
Content

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.

	
Don’t use it indoor.	Don’t use it in damp environment.
	
Do not connect directly to household appliances.	Don’t smoke while adding fuel oil.

	
Do not spill oil when fueling.	Please stop running before fueling.
	
Please remove the combustible materials away at least 1m.	

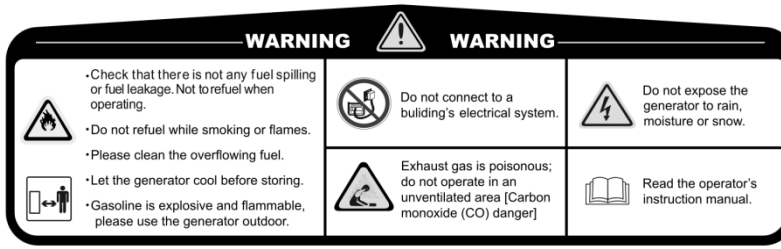
1.2 Special Request

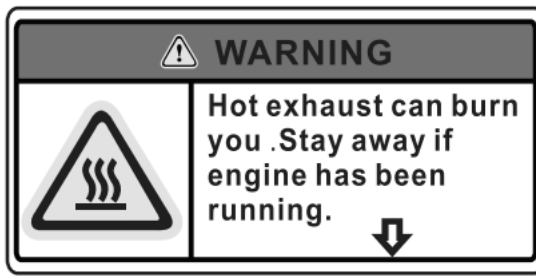
- Electrical equipment includes unexposed wires and plugs.
- The protecting breaker should be matched with generator. The application parameters and performance should be totally matched if changing.
- Well grounded before using.
- If need extension wire, it must meet the requests as below: $4mm^2$, length no more than 100m.

2. Safety Warning Label

Please read the manual carefully before using.

Safety warning label

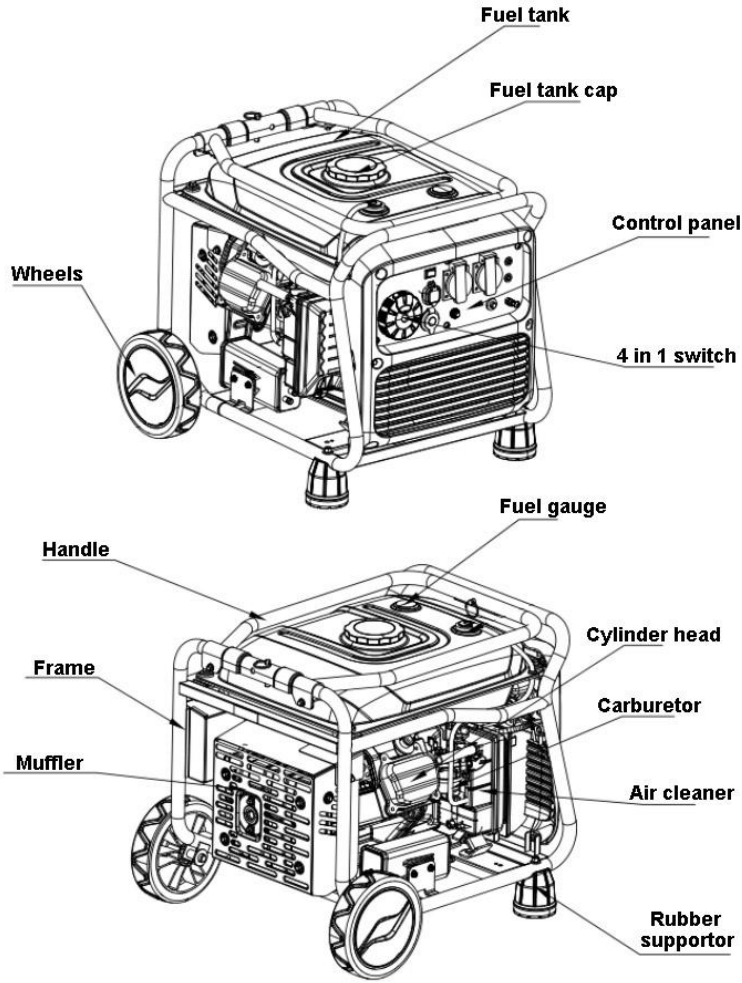




3.Components Identification

3.1 Components Feature

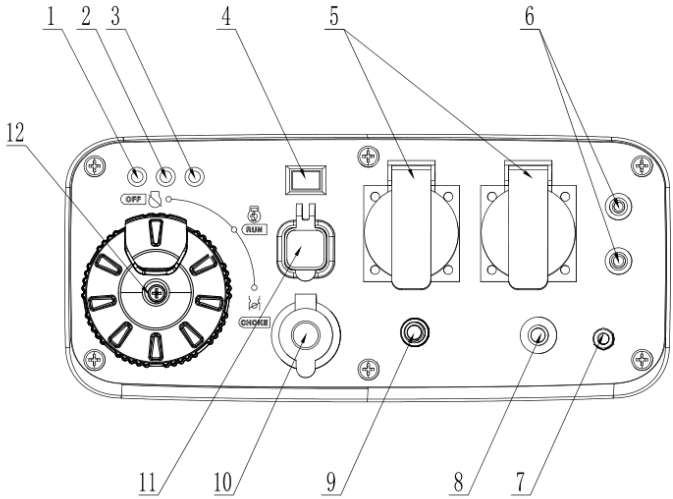
4500iD/4500i



3.2 Control Panel

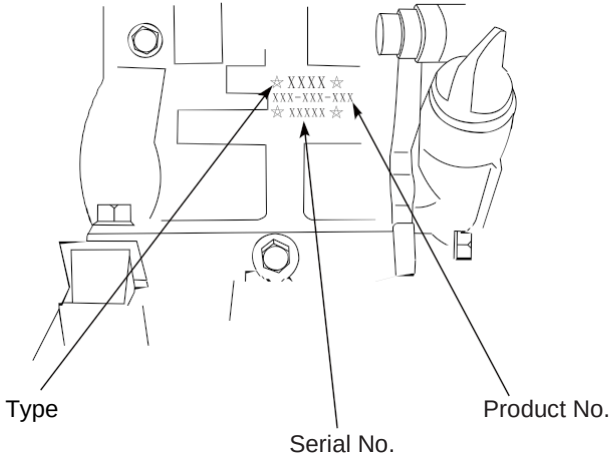
(Factory will adjust the panel according to different configuration. Please note that subject to change without prior notice.)

4500iD/4500i



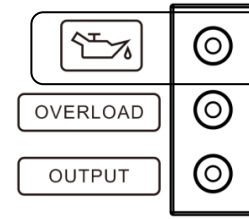
1	Engine oil indicating light	8	Overload protector
2	Overload indicating light	9	Overload protector
3	AC indicating light	10	Cigarette lighter
4	ECO(Economy system control)	11	Two USB outputs
5	AC socket	12	4 in 1 switch
6	DC socket		
7	Ground terminal		

3.3 Type and Serial Number



4. Control System

4.1 Engine Oil Alerting System(RED)

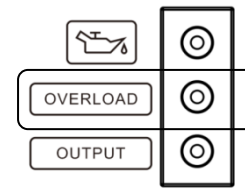


The engine oil protection system will stop the engine automatically, and the engine oil indicating lights, while the oil in crankcase is under safe line；Fill the engine oil to the oil level, it can be restart again.

NOTICE

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

4.2 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 will flash for few seconds. But this doesn't belongs to troubles as aforementioned.

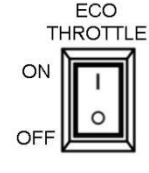
4.3 AC Indicating Light(GREEN)

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

4.4 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.



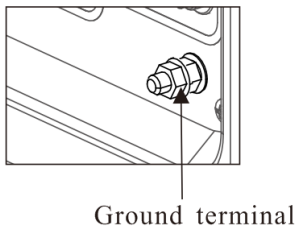
② “OFF”

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.

4.5 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.

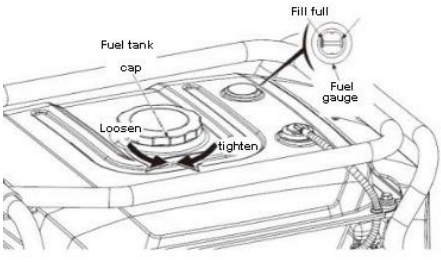


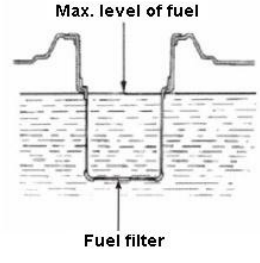
5. Preparation

5.1 Fuel Oil

DANGER

- **Fuel oil is flammable and toxic. Please read the safety instruction carefully before refueling.(See Page 7 for details.)**
- **Do not fill the tank with too much oil, or the oil will overflow when the tank gets warm.**
- **After refueling, make sure the fuel tank cover is tightened.**





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

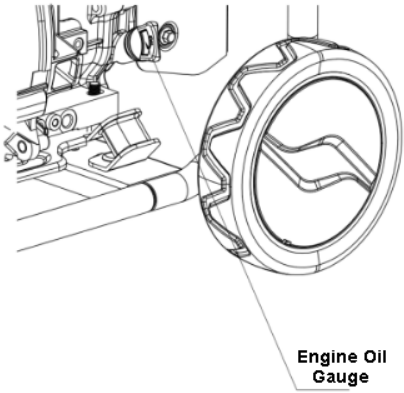
Suggestion: unleaded gasoline

Fuel oil tank capacity: 12.5L

5.2 Engine Oil

NOTICE

The generator is not injected with engine oil when leaving the factory. Please do not start it before injecting enough engine oil.

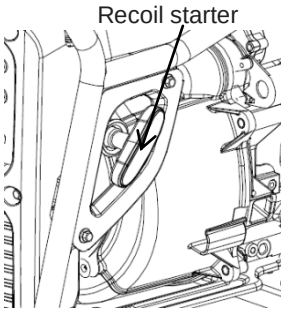


5.3 Recoil Starter

Pull the starter handle up gently until resistance is felt, then pull it out suddenly.

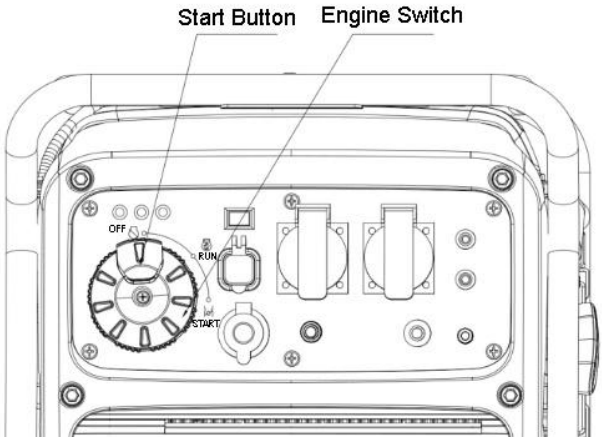
NOTICE

After starting, please do not let the starting handle spring back suddenly, but gently put the handle back.



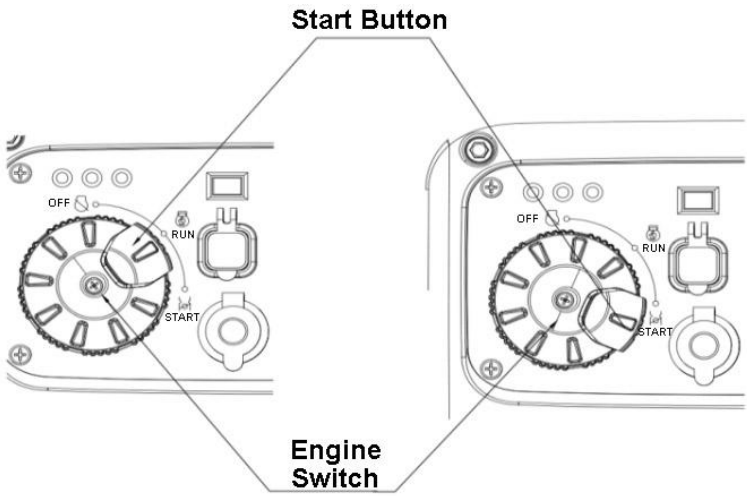
5.4 Fuel Tap

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.



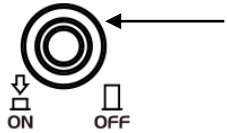
5.5 Choke Valve

Choke valve is used to provide a rich mixture of oil to a gasoline engine when the cold engine is started. When the cold gasoline engine starts, rotate the start switch to put the start button in the "START" position. When the gasoline engine starts up warmly, the starting switch is rotated to put the starting button in the "RUN" position.



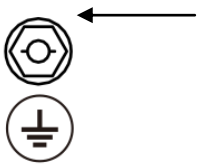
5.6 AC Breaker Protector

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 is a special terminal used to ground the entire generator.



6. Generator Use

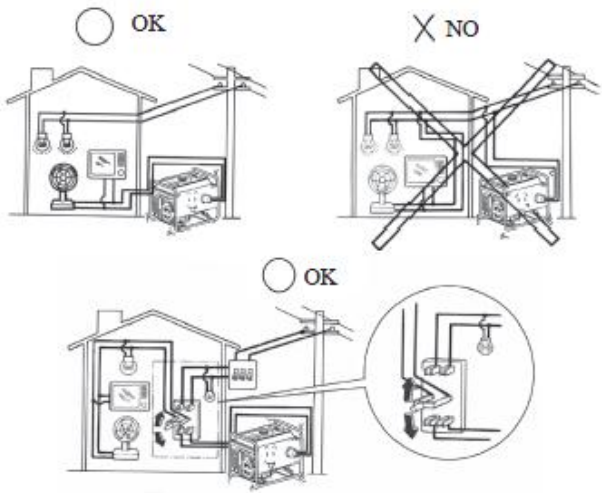
- Applicable temperature：-5℃～40℃
- Applicable humidity ： below 95%
- Applicable altitude: below 1000m (Lower power should be used in the area above 1000m or contact the dealer to adjust the carburetor.)

6.1 Connect to House Power Supply

NOTICE

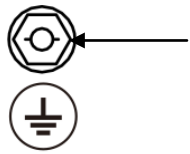
While connecting the generator as a house power supply, it should be operated by a specialist electrician or someone familiar with electricity.

Please check the safety of connecting while connect load with generator. It may would be damaged, burned or fired if connected incorrectly.



6.2 Generator Grounded

In order to prevent electrical appliances from being damaged by electric shock or the wrong use of electricity, it is recommended to ground the generator with good conductors covered with insulation.



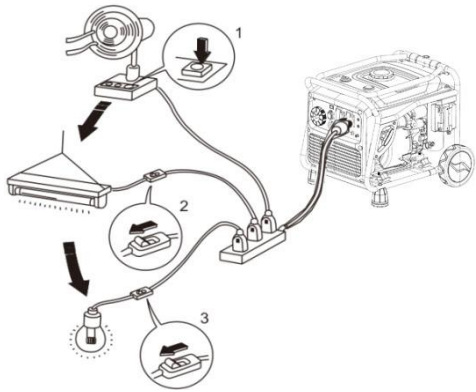
6.3 AC Output

Before starting the generator, please confirm:

The total power of the load appliances (the sum of the resistive, capacitive and inductive loads) shall not exceed the rated power of the generator.

NOTICE

Overuse can cause a generator to shut down or significantly shorten its life. If the generator set is connected with several load or electric equipment, please remember: First switch on the starting load with the highest, then in turn, and finally switch on the starting current with the lowest.



Generally speaking, In general, capacitive and inductive loads, especially motor drives, produce a large starting current during 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
●Lamp ●Heating devices	*1	*1	100W lamp TV	100W lamp	100VA (W)	100VA (W)
●Fluorescent lamp	*2	*1.5	40W Fluorescent lamp	40W Fluorescent lamp	80VA (W)	60VA (W)
●Electrical devices	*3-5	*2	Fridge 150W Fan	150W Fridge	450-750VA (W)	300VA (W)

5.4 Used in High Altitude Areas

At high altitudes, a standard carburetor will make the gasoline engine mixture too strong, reduce the output power and increase the fuel consumption rate. The performance of a gasoline engine can be improved by replacing the carburetor with a smaller main nozzle or by adjusting the adjusting screw. If you always use the generator at high altitudes among 1000m from sea level, you can come to our authorized dealer to replace a carburetor. Otherwise, the load power should be reduced by using the generator.

Even with the right carburetor, each 300m rise in altitude reduces the power of a gasoline engine by about 3.5%. This decline would have been greater if the carburetor had not been replaced properly.

If the carburetor suitable for high-altitude use is equipped with the gasoline engine suitable for low-altitude use, the thin mixture will cause the output power of the gasoline engine to drop, overheat and even cause serious damage.

7. Starting the Generator

7.1 Recoil Start

1) Remove all loads from the output.

2) Rotate the start switch to put the start button at the "start" position.

3) Put the AC breaker protector at the “OFF”position.

NOTICE

Please rotate the start switch to put the start button at the “RUN” position while starting the gasoline engine in a hot state.

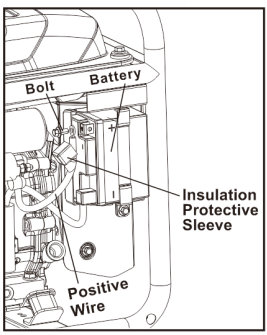
4) Pull the starter handle up gently until you feel resistance and pull it out quickly.

5) When the generator is started, rotate the starting switch to put the starting button in the "RUN" position.

6) Put the AC breaker protector to “ON” position before using the electrical load.

7.2 Electric Start

1） Before starting the generator, connect the positive wire with the positive terminal of battery, fasten it with proper tool and cover the connector with insulation protective sleeve. Refer to the below picture.



2) Remove all loads from the output.

3) Rotate the start switch to put the start button at the "START" position.

4) Put the AC breaker protector at the “OFF” position.

WARNING

Please rotate the start switch to put the start button at the “RUN” position while starting the gasoline engine in a hot state.

5）Press the start button.

6）Rotate the start switch to put the start button at the "RUN" position，after starting the generator.

7）Put the AC breaker protector to “ON” position before using the electrical load.

WARNING

Switch the generator to the starting position for no more than 5 seconds, otherwise the starting motor will be damaged. If the starting is not successful, the interval of multiple starts should be 10 seconds.

Starting engine in use for a period of time if the speed of decline more, which means that the battery should be removed to charge.

8. Stopping the Generator

1）Rotate the ECO switch to “OFF”.

2）Turn off AC breaker protector.

3）Turn off the switch of generator.

4）Turn off the fuel oil switch.

5）Disconnect all electrical equipment.

To stop the generator in an emergency, put the generator switch in the "OFF" position.

9. Maintenance

Good maintenance is the best guarantee for safe, economical and zero fault operation, also contribute to environment protection.

In order to keep the engine in good condition, you must check and maintain it regularly. Please follow the schedule below.

Item \ Maintenance period		Each use	First month or 20 hrs	Every 3 months or 50 hrs	Every year
Engine oil	Check-Refill	√			
	Replace		√	√	
Gearbox gear oil (If any)	Check oil level	√			
	Replace		√	√	
Air filter element	Check	√			
	Clean		√		
	Replace			√	
Precipitation cup (if any)	Clean				√
Spark plug	Check-Adjust				√*
Spark arrester	Clean		√	√	
Idle (if any)**	Check-Adjust				√
Fuel tank & filter**	Clean				√
Fuel oil pipe	Check	Every 2 years (Please replace it if necessary.)			
Cylinder head、Piston	Remove carbon deposition**	Displacement ﹤225cc，every 125 hrs; Displacement ≧225cc，every 250 hrs.			

* These items should be replaced if necessary.

** These items should be maintained by our authorized dealers unless the user has the appropriate tools and repair capacity.

- The engine oil should be replaced every 10 hours if working frequently at high temperatures or loads.
- The air filter element should be cleaned every 10 hours if working frequently at dusty or bad environment.If necessary,please replace it every 25 hours.

NOTICE

- Spot inspection cycle and time, should be the first to carry out maintenance.
- If the maintenance cycle time has passed, the maintenance should be carried out as soon as possible according to the above table.

WARNING

Please stop the generator before any maintenance. Place it in a horizontal position. To prevent engine starting, separate the spark plug cap from the spark plug.
Please do not use it indoors or or in places with poor ventilation such as tunnels and caves. Make sure the working area is well ventilated. Exhaust from engines contains the toxic gas carbon monoxide, which can cause shock, loss of consciousness and even death when inhaled.

9.1 Replace Engine Oil

Discharging the oil after starting the engine ensures a quick and clean process.

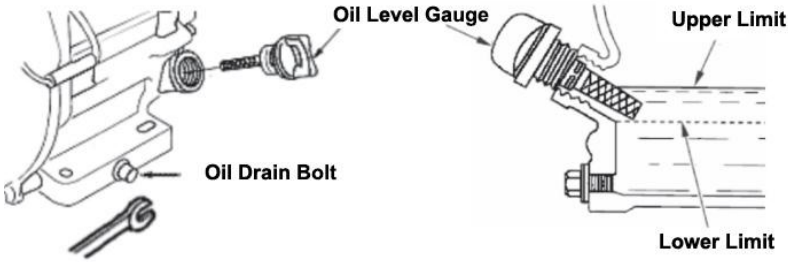
① Remove the oil gauge.Screw open oil bolt to drain oil.

② Install the drain bolt and tighten it.

③ Fill oil and check oil level.

④ Install the oil gauge.

Engine oil capacity: 4500i/4500iD	0.6 L



Prolonged and frequent exposure to oil can lead to skin cancer.While this is not a given, it is still recommended that you use soap and water to immediately and thoroughly wash any skin that has been exposed to oil.

From an environmental point of view, please properly handle the waste oil produced after use.We strongly recommend that you put the oil in a sealed container and take it to your local service station or oil recycling center. Please remember: don't throw it in the trash or dump it on the ground or in a ditch.

9.2 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.

⚠ WARNING

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

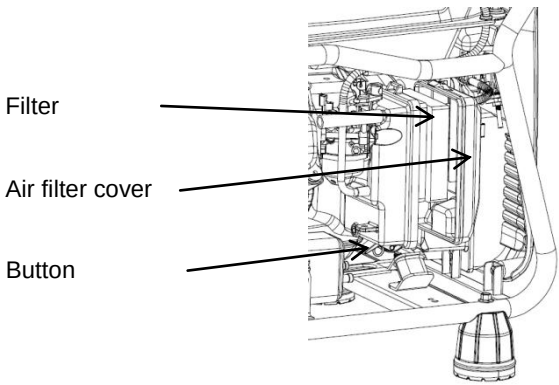
NOTICE

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

1) 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。

2) 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.

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



9.3 Spark Plug

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

1） Remove the spark plug cap.

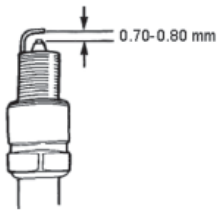
2） Use the spark plug socket wrench to remove the spark plug.

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.



NOTICE

Please use spark plugs with appropriate calorific value.

10. Storing

WARNING

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.**

WARNING

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

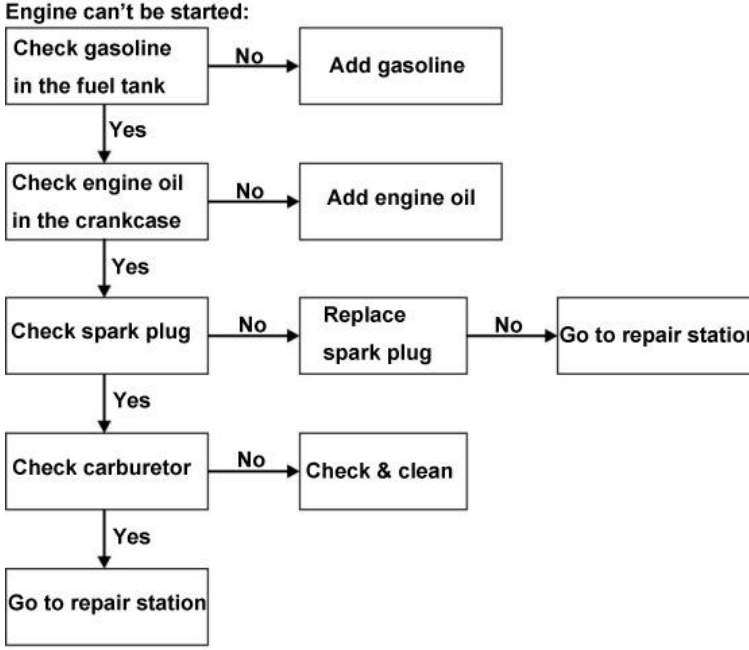
2) Unscrew the oil gauge and Oil drain bolt on the crankcase, and drain the oil in the crankcase. Then tighten the drain bolts, add new oil to the upper limit, and then install the oil gauge.

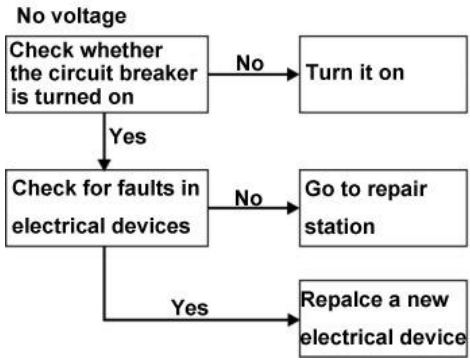
3) Remove the spark plug and pour a tablespoon of clean engine oil into the combustion chamber. Turn the crankshaft several times to distribute the oil. Reinstall the spark plugs.

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.

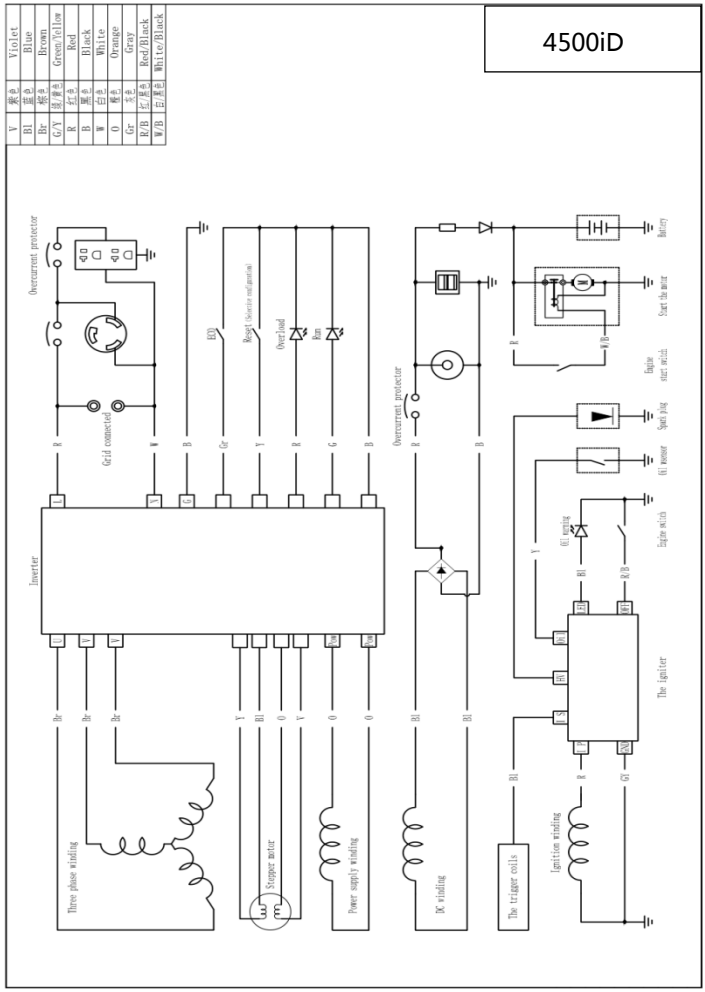
11. Trouble Shooting





12. Circuit Diagram

（The factory will adjust according to the different configuration, subject to change without prior notice.）



13. Technical Specifications

	Item	4500i（D）	
Gasoline engine	Engine type	Single head.4-stroke.Air cooling. OHV 25°	
	Displacement(cc)	223	
	Ignition system	C.D.I	
	Starting type	Recoil start	Electric start
	Fuel tank capacity (L)	12.5L	
	Engine oil(L)	0.6L	
Generator set	Rated frequency (Hz)	50Hz	
	Phase	Single	
	Rated voltage (V)	220V	
	Rated output power(kW)	3.6kW	
	Max. output power(kW)	4.0kW	
	DC	12V/8.3A	
	Length(mm)	530	
	Width(mm)	405	
	Height(mm)	420	