

# TOMAHAWK

TG4500iEFI

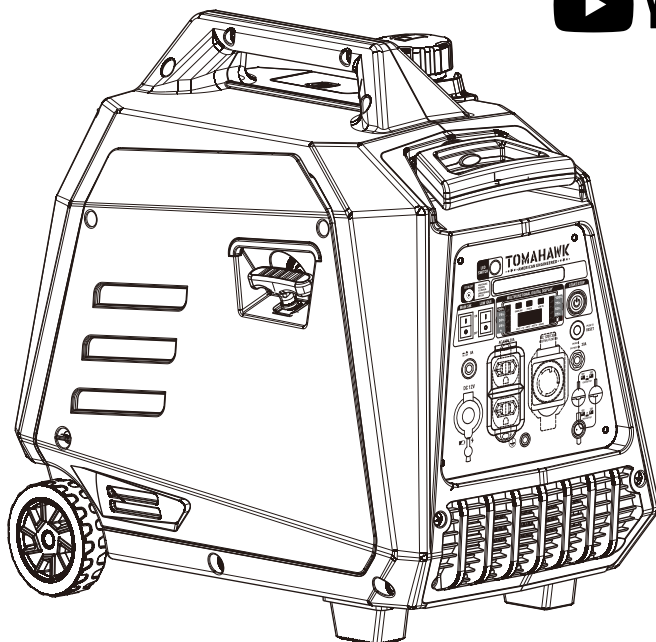
INVERTER GENERATORS

Operations Manual

**EFI** ELECTRIC  
FUEL INJECTION

FIND THE HOW TO GUIDE ON

 **YouTube**



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Thank you very much for choosing generator set product manufactured by our Company!

This Manual will instruct you how to operate and use the generator set safely and properly. Please be sure to read it carefully before using.

All technical data and diagrammatic presentations in this User's Manual are consistent with the latest product at the time of publication.

Due to the revision and other changes, contents of this Manual may be slightly different from actual situation. The Company is entitled to revise it at any time, and the revised version will be developed without prior notice, please understand that. The copyright of this User's Manual belongs to the Company, and this Manual is not allowed to be reproduced without written consent of the Company, violators must be prosecuted.

This Manual is a permanent part of the generator set. If the generator set is resold, the Manual will be resold together with the generator set.

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# SAFETY

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Personal and property safeties of you and others are very vital. Please read the Safety Warning in the User's Manual 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.

### **When Adding or Draining Gasoline**

Turn the generator engine OFF and let it cool for at least 2 minutes before removing the fuel cap. Loosen the cap slowly to relieve pressure in the tank.

- Fill or drain fuel tank outdoors.
- DO NOT overfill the tank. Allow space for fuel expansion.
- If fuel spills, wipe it up and let the area dry before starting the engine.

- Keep fuel away from sparks, open flames, heat, and other ignition sources.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks; replace if necessary.
- DO NOT light a cigarette or smoke anything.

### **When Starting Equipment**

- Ensure spark plug, muffler, fuel cap, and air cleaner are in place.
- DO NOT crank engine with spark plug removed.

### **When Operating Equipment**

- DO NOT operate this product inside any building, carport, porch, mobile enclosure, marine applications, or shed.
- DO NOT tip engine or equipment at an angle that causes fuel to spill.
- DO NOT stop the engine by moving the choke control the to "Start" position.
- DO NOT exceed the generator's wattage capacity.
- Start the generator and the let engine stabilize before connecting electrical loads.
- Connect electrical loads in the OFF position, then turn ON for operation.
- Turn electrical loads OFF and disconnect from the generator before stopping the generator.

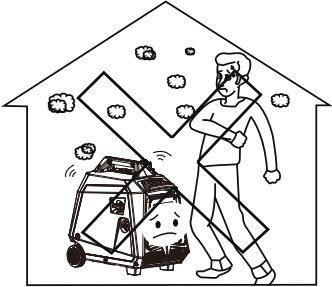
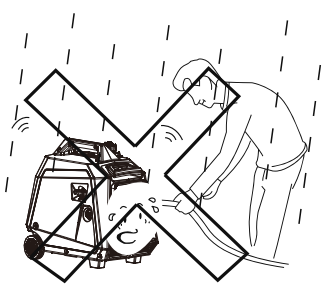
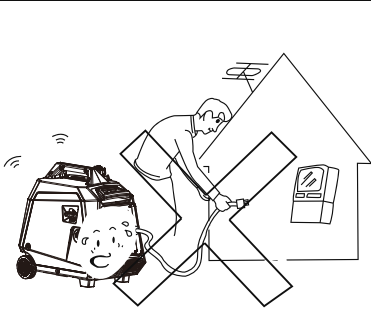
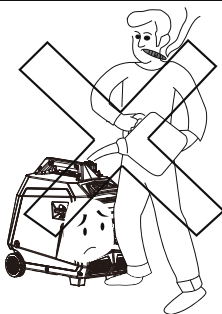
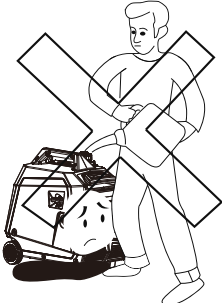
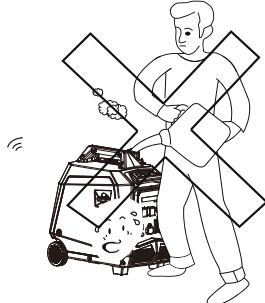
## **ATTENTION**

Improper treatment of the generator could damage it and shorten its life.

- Use generator only for intended applications.
- If you have questions about intended use, ask a dealer.
- Operate generator only on solid, level surfaces.
- DO NOT expose the generator to excessive moisture, dust, dirt, or corrosive vapors.
- DO NOT insert any objects through cooling slots.
- If connected devices overheat, turn them off and disconnect them from the generator.

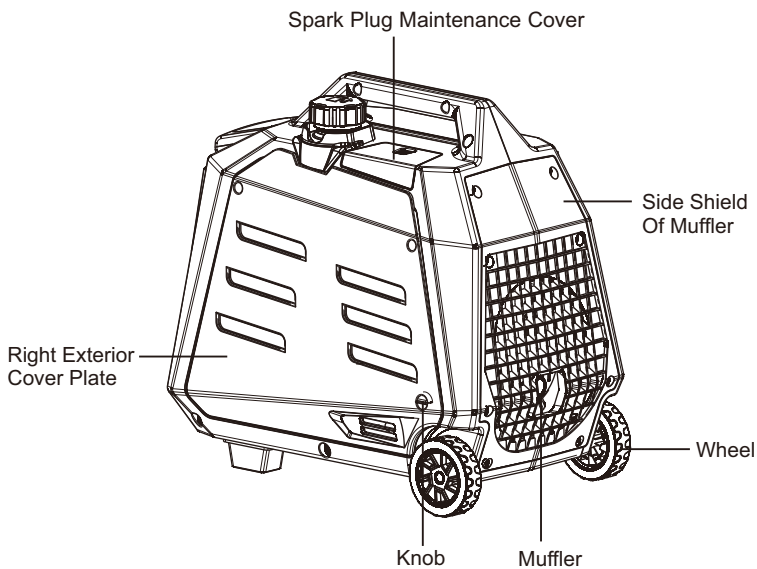
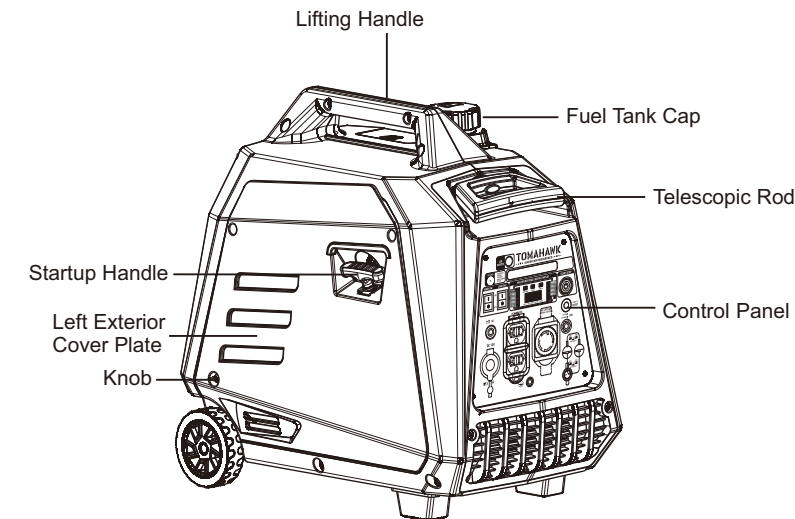
# SAFETY

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

	
Please do not use indoors	Please do not use in humid environment
	
Do not directly connect to the household power supply system	Please do not smoke when refueling
	
Please do not spill when refueling	Please shut down the generator before refueling

# NAMES OF COMPONENTS

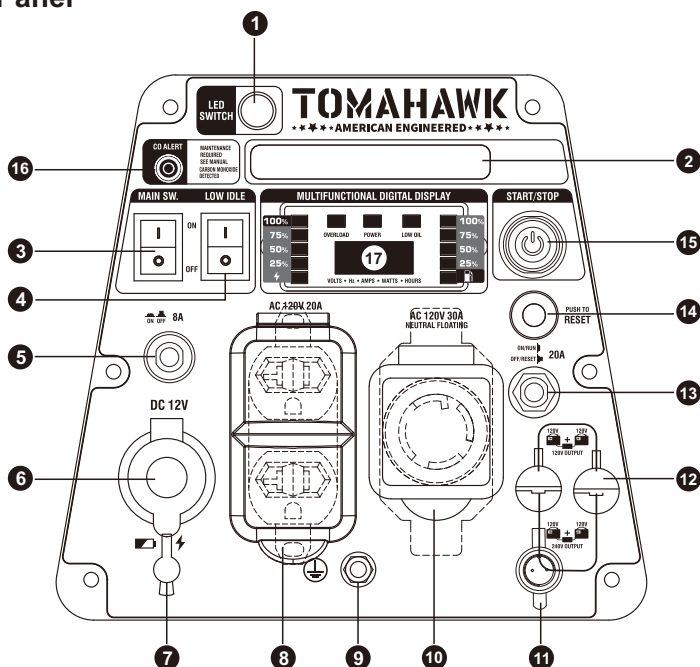
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**STATEMENT:** The illustrations used in this manual are intended as representative reference views only.

# NAMES OF COMPONENTS

## Control Panel



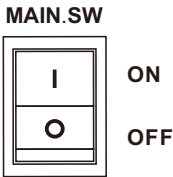
- ① **Light Switch:** Press the first time to turn on the LED light and press the second time to turn off the LED light.
- ② **LED Light:** LED lighting
- ③ **Main switch:** Manages battery power and shutdown.  
Tip: If your generator has not been used for a long time, please press the main switch to the "OFF" position to prevent battery depletion.
- ④ **Low Idle:** Press the button to turn green and enter low idle mode, where the engine will sense the required load and run at a slower RPM to save fuel.
- ⑤ **DC Protector:** If the generator is overloaded, the DC protector will trip to block current.
- ⑥ **DC Cigarette Lighter Outlet:** 12V DC 8.3A.
- ⑦ **Battery Charging Port:** Charge the generator battery.
- ⑧ **120V AC 20A 5-20R Outlet:** The outlet is capable of carrying a maximum of 20 amps.
- ⑨ **Ground Terminal:** The ground terminal is used to externally ground the generator.
- ⑩ **120V AC 30A L5-30R Outlet:** The outlet is capable of carrying a maximum of 30 amps.
- ⑪ **Series Connectors (120/240V OUTPUT):** When using parallel kits, two 120V generators can output 240V by connecting this interface.
- ⑫ **Parallel Connectors:** To increase AC power output, connect two generators of the same type using a parallel kit. Connector sockets are only used to connect two inverter generators. They cannot be used for AC power output. Special parallel kits need to be purchased separately and approved by a certification body.
- ⑬ **AC Protector:** If the generator is overloaded, the AC protector will trip to block current.
- ⑭ **Reset:** If the generator is overloaded, the reset breaker will trip. The engine will continue to run, but there will be no output from the generator. Unplug the devices and reduce the load. Push in the reset breaker to reset it.
- ⑮ **START/STOP Switch:** Press this button, the engine can start and stop.
- ⑯ **CO Alarm:** Flashing red light: dangerous levels of carbon monoxide gas have built up leave immediately until area has aired out. Move generator to well-ventilated area before operation. Flashing yellow light: carbon monoxide sensor malfunction. Sensor needs service.
- ⑰ **Multifunctional Digital Display:** red light indicates low oil level, red light indicates machine overload, and green light indicates normal operation; The percentage of operating power on the left side is realistic, and the fuel level on the right side is displayed; Scroll display mode, which displays cumulative operating time, output voltage, frequency, current, and operating power respectively.

# CONTROL FUNCTIONS

## Main Switch (Engine Switch)

**OFF** - Ignition circuit is off, the engine stopped running.

**ON** - Ignition circuit is on, the start the engine.



## Oil Indicator (red)



When the oil in the crankcase drops below safety line, oil protection system will automatically shut down the engine, and low oil 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, turn the combination switch to "RUN" position, and then pull startup handle. If low oil indicator flashes a few seconds, the oil volume is insufficient, fill oil and restart it.

## 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. AC indicator (green) is off and overload indicator (red) lights up, but the engine will not stop running.

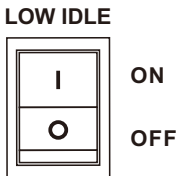
When overload indicator is on and the generator has no output, please take following counter measures:

- 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.

## Output Indicator (green)

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

## Energy-Saving Switch (LOW IDLE)



### 1) "ON"

When energy saving switch is switched to "ON" position engine speed is reduced when the generator is under light load. This feature will reduce fuel consumption and noise.

# CONTROL FUNCTIONS

## 2) "OFF"

When the energy saving switch is set to the "OFF" position, the engine will run at rated speed, regardless of connected load.

### Reset

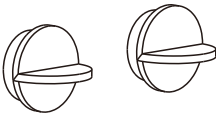
If the inverter is overloaded, the reset breaker will trip. The engine will continue to run, but there will be no output from the inverter. Unplug the devices and reduce the load. Push in the reset breaker to reset it.

RESET



### Parallel Connector

To increase AC power output, the connector sockets are used to connect the two same type generator with special paralleling cords. The connector sockets is only used to the communication between the inverters, they can not used for AC power output. The special paralleling cords shall be purchase separately, and they shall be approved by certification body.



PARALLEL CONNECTOR

### Ground Terminal

The ground terminal is used to externally ground the generator.



## AC protection

When electronic equipment connected to AC of the generator is running, if current is beyond rated current, AC switch automatically switches off to "OFF" position. When operating the generator again, please press AC switch to "ON" position.

- 1) "ON" AC normal output.
- 2) "OFF" AC does not output.

# PREPARATIONS

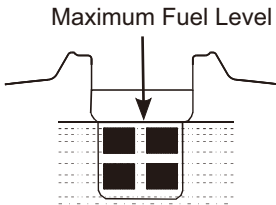
## Fuel

### **DANGER**

- Fuel is flammable and toxic, please 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**

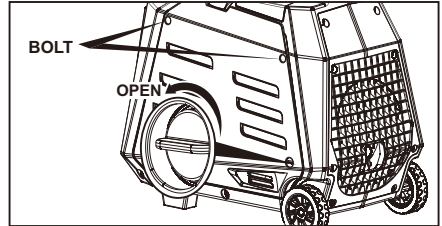
- After refueling, dry gasoline residue with a clean and soft cloth in time to avoid damaging plastic enclosure;
- Unleaded gasoline must be used, as leaded gasoline can seriously damage internal parts of the generator;
- Remove fuel tank cap, and add gasoline to red horizontal indicating line oil level.
- Fuel tank capacity: 5.8L



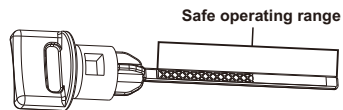
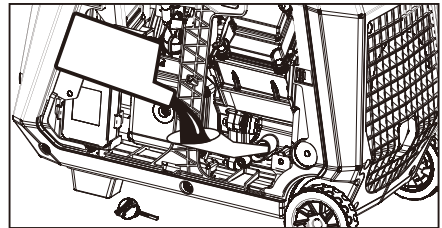
## Oil

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

1. Please place the generator onto a horizontal plane surface;
2. Loosen the knob and bolt on the right exterior cover and remove the right exterior cover;



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



*The oil level should be between the ruler grid, the best state is the middle of the upper.*

5. After filling the oil, remember to install and tighten the oil ruler.
6. Reinstall the right exterior cover and tighten the knob.

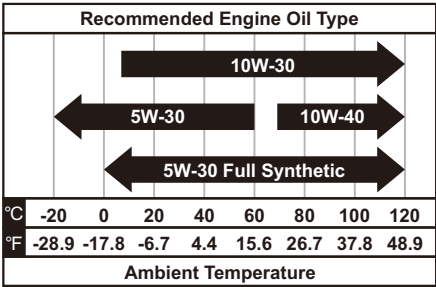
# PREPARATIONS

## ATTENTION

Your generator was functionally tested in the factory and may contain minimum residual oil. Additional oil is required to operate the unit. Do not overfill.

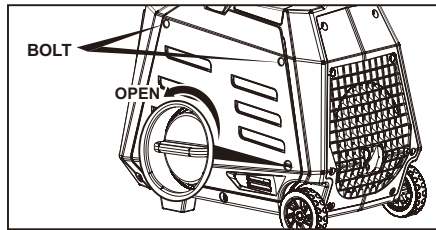
## ATTENTION

The recommended oil type for typical use is 10W-30 automotive oil. However, using the listed conventional oils shown in the "Recommended Engine Oil Type" chart may be used for typical use including the first 5 hours of the break-in run time period of the engine. If running generator in extreme temperatures, refer to the "Recommended Engine Oil Type" chart.

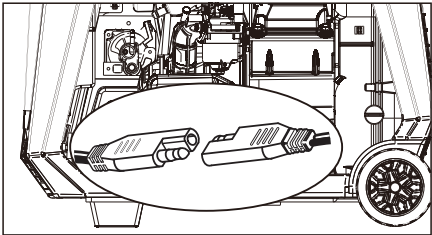


## Connecting The Battery

1. Loosen the knob and bolt on the right exterior cover and remove the right exterior cover;



2. A quick-connect battery plug is pre-installed on the battery. Remove the cable tie securing the plugs, align colors, then push firmly to connect them.



**Note:** The generator is equipped with a battery charging feature. Once the engine is running, a small current will slowly recharge the battery.

## Pre-use Inspection

### WARNING

Even if the generator is not in service, its important component may suddenly fails. Before the generator is started up, if any of following components is unable to work properly, please 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.

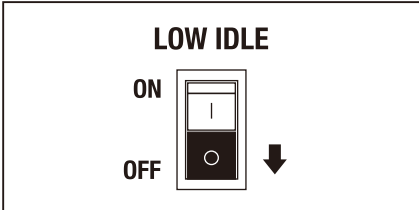
## Abnormal conditions during operation

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

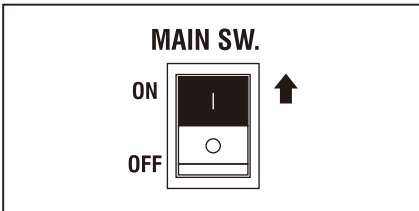
# OPERATION

## Starting up the Generator

1. Make sure the generator is on a solid, flat, level surface.
2. Disconnect all electrical loads from the generator. Never start or stop the generator with electrical devices plugged in or turned on.
3. Press LOW IDLE to "OFF".



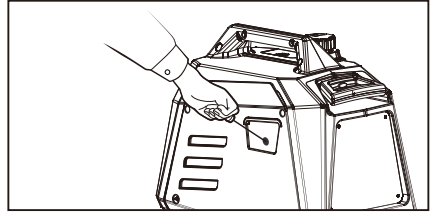
4. Press Main Switch (Engine Switch) to "ON".



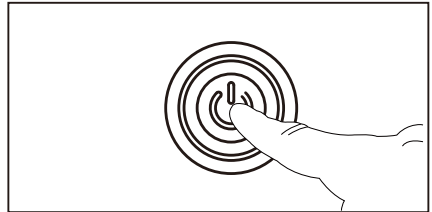
### 5. Choose the Starting Method

- a. Recoil Start:** Firmly grasp and pull the recoil handle slowly until you feel increased resistance, then pull rapidly.

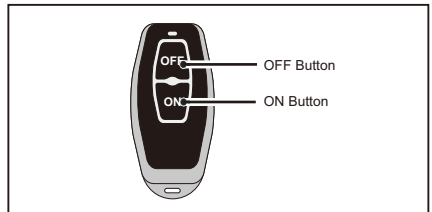
**Tip:** When pulling the hand starter, hold the generator carrying handle firmly, to prevent the generator from overturning.



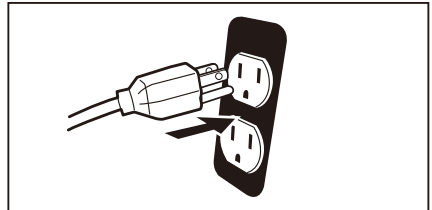
- b. Button Start:** Press the start button down for 1-3 seconds, then release, to start the generator.



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



6. Plug in devices.



# OPERATION

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## Parallel Operation

The parallel connection ports allow you to connect two generators to increase the total available electrical power. Follow the instructions included with your parallel connection kit for proper installation and operation.

## Overload Indicator

Note: The OVERLOAD light may turn on for a few seconds as a large device starts. This is normal for loads approaching the capacity of this generator.

1. The total combined load through the outlets on the generator must not exceed the running power of the unit.
2. If the OVERLOAD light turns on and the generator stops producing power, it has been overloaded.
3. Turn off and disconnect all electrical devices and stop the engine. Compare device requirements to generator rating and reduce the total wattage of connected devices if necessary. Move anything that may be limiting generator ventilation away.
4. Check if any circuit breakers have tripped and make sure that ALL circuit breakers are reset before starting the generator again.
5. Restart the engine and reconnect devices while being careful to not overload the generator.

## Low Oil Indicator

1. If the engine oil level is too low, the LOW OIL light turns on and the engine will automatically shut off.
2. The engine cannot be restarted until the proper amount of oil has been added. Add the appropriate type of oil until the oil level is at the proper level. SAE 10W-30 oil is recommended for general use.

## ATTENTION

Do not run the engine with too little oil. Engine will shut off if engine oil level is too low.

## Low Idle

1. Turn on a Low Idle Switch to limit noise and fuel consumption with a light generator load.
2. Turn off the low idle mode to run the engine at full speed under the following conditions:
  - Starting the generator.
  - If the load exceeds 50%, it is recommended to turn off the low idle mode.

## Remote Control Pairing

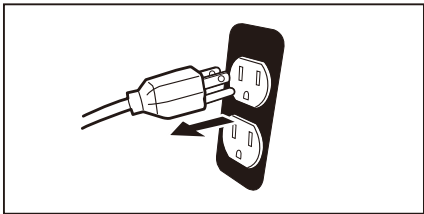
1. Long press the START UP/STOP button for 5 seconds, and release when the START UP/STOP button indicator lights up;
2. Press any key on the remote control;
3. The red indicator of the START UP/STOP button blinks for 2-3 times and then goes off, indicating that the remote start pairing is successful.

**Tip:** The remote control provided by the generator factory has been successfully paired.

## Shutting Down the Generator

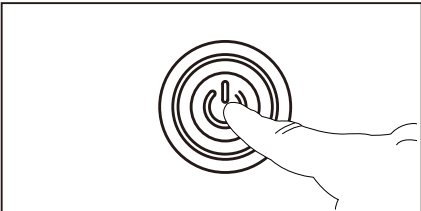
1. Turn off and unplug all connected electrical loads. Never start or stop the generator with electrical devices plugged in or turned on.

# OPERATION

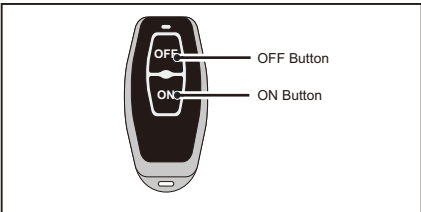


## 2. Select the Stopping Mode:

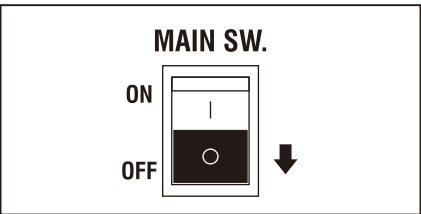
**a. Button Stop:** Press the button to turn off the generator.



**b. Remote Stop:** Hold down the OFF button on the remote start key for one second.



3. Press Main Switch (Engine Switch) to "OFF".



4. Remove or consume all untreated gasoline if you plan to store the generator longer than 3 months.

# USING THE GENERATOR

## Service Environment of the Generator

- Applicable temperature: 23°F (-5°C) ~ 104°F (40°C);
- 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  $T_r$ : 298k (77°F)(25°C)
- Relative air humidity  $\Phi_r$ : 30%.
- Absolute atmospheric pressure  $P_r$ : 100kPa

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

- Every 41°F (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%

## Generator Wiring

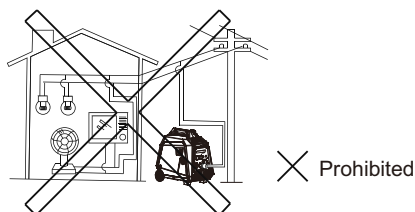
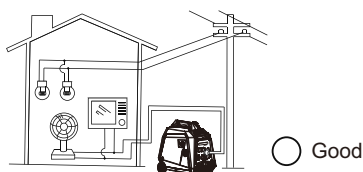
- When the generator is connected to household power source as a backup power supply, the connection shall be carried out by a professional electrician or a person familiar with electricity.
- After connecting the load to the generator, check carefully whether electrical connection is safe and reliable. 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<sup>2</sup>

② 100m cross-section area is 2.5mm<sup>2</sup>

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



○ Good



# USING THE GENERATOR

## Connection of AC power

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

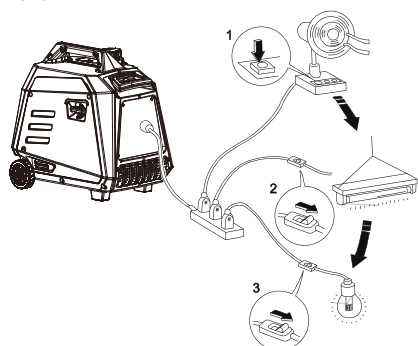
### ATTENTION

- 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.

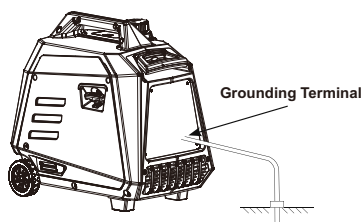
**Tip:** Before increasing engine speed, low idle switch must be switched to "OFF". If the generator set supplies power to multi loads or electrical equipment, start from large to small according to the size of each electrical equipment.



## 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.

- ① Please use 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 below into the earth and lead it out with conductor;
- ④ Connect the other end of the grounding wire reliable to the led wire of grounding body.



## Range of Application

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

### 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.

## 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:

Maintenance cycle		Each	First in 1 month or 20 hours	Then every three months or every 50 hours	100 hours per year or use
Item					
Engine oil	Check-fill	√			
	Replace		√	√	
Gearbox gear Oil (if any)	Check oil	√			
	Replace		√	√	
Air cleaner element	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 (Please 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.					

# SERVICE AND MAINTENANCE

## 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 cleaner element shall be cleaned every 10 hours. If necessary, the air cleaner 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

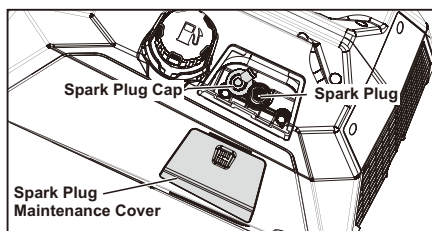
Please shut down the engine first before performing any maintenance. The engine shall be placed in a horizontal position. In order to prevent the engine from starting up, separate spark plug cap shall be separated from spark plug.

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.

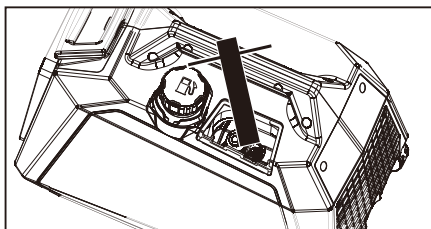
## Spark Plug Inspection

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

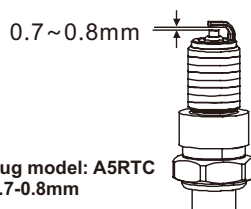
1. Remove spark plug maintenance cover and spark plug cap of the generator.



2. Insert the screwdriver into the sleeve, to screw it counterclockwise, and 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.



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

5. When installing a new spark plug, adjust the plug's gap to the specification on the Specifications Chart. Do not pry against the center electrode, the spark plug can be damaged.

## SERVICE AND MAINTENANCE

6. Apply anti-seize material to Spark Plug threads. Install the new spark plug or the cleaned spark plug into the engine.

**Spark cold torque: 12.5 N.m**

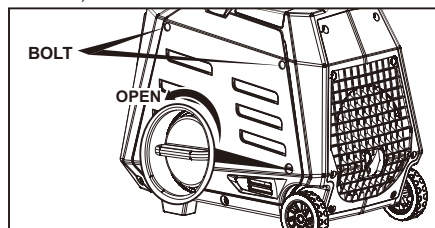
**Tip:** If there is no torque wrench when installing the spark plug, a better estimation method is to screw it 1/4-1/2 turns by force after screwing it in place, but the spark plug shall be screwed to specified torque as soon as possible.

### Replacement of Oil

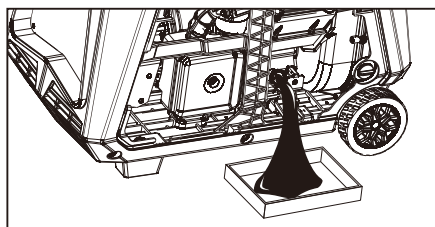
#### WARNING

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

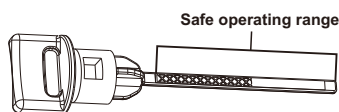
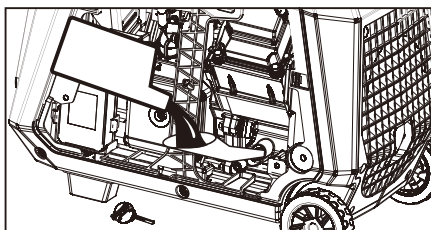
1. Place the generator on a horizontal plane and start the generator for several minutes to increase its temperature, then stop the generator;
2. Loosen the knob and bolt on the right exterior cover and remove the right exterior cover;



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



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



*The oil level should be between the ruler grid, tie best state is tie middle of the upper.*

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

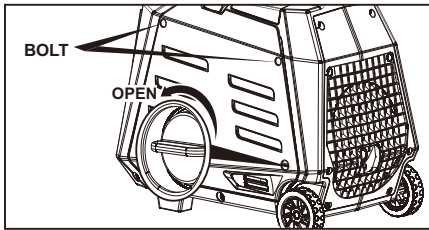
6. Tighten the oil dipstick and clean up spilled oil.
7. Reinstall the right exterior cover and tighten the knob and bolt.

### Air Filter

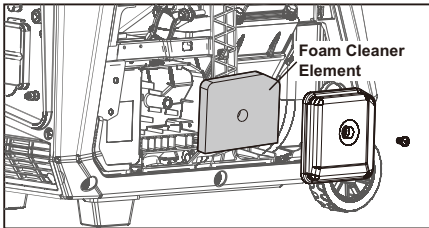
Dirty air cleaner may prevent air from flowing into the carburetor. In order to prevent failure of the carburetor, please maintain air cleaner regularly. If being used in a dusty environment, it shall be maintained frequently.

1. Loosen the knob and bolt on the right exterior cover and remove the right exterior cover.

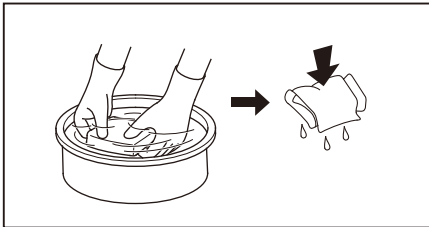
## SERVICE AND MAINTENANCE



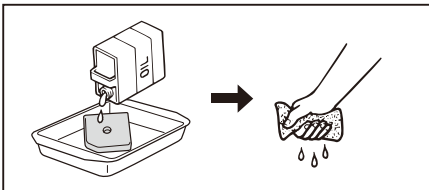
2. Remove screws, to remove cover plate of air cleaner.
3. Remove foam cleaner element.



4. Clean the components with cleaning agent. After cleaning, wrap the components in a cloth and screw them dry.



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



### ATTENTION

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

6. Put foam cleaner element into air cleaner.

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

7. Reassemble empty air cleaner cap back to original position, and tighten screws.
8. Assemble right exterior cover plate and tighten the knob and bolt.

### ATTENTION

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

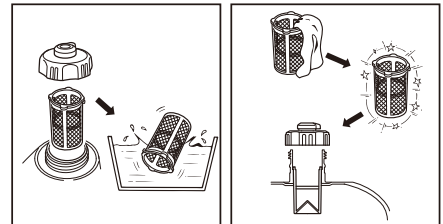
## Fuel Filter Screen

### 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. Reassemble fuel tank cap.

**ATTENTION:** Be sure to screw fuel tank cap tight.

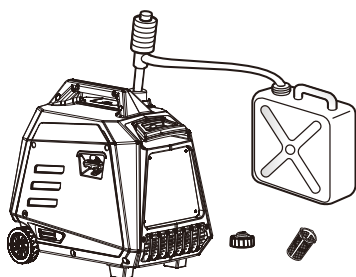


# STORAGE AND TRANSPORT

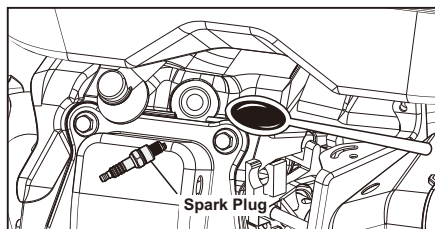
## Generator Storage

If it is stored long-term, in order to prevent aging, you shall take some storage measures.

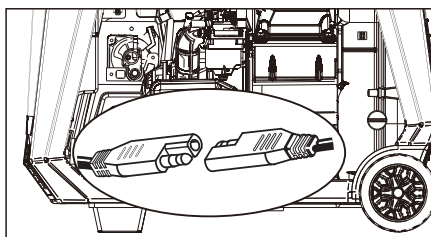
1. Turn off the generator.
2. Open fuel tank cap, to take out fuel filter screen. Pump all fuel in fuel tank into special fuel tank, and then reassemble fuel tank cap back.



3. Unscrew oil dipstick, and drain oil in the crankcase off. Fill new oil to upper oil limit, and then assemble oil dipstick.
4. Remove the spark plug and pour 5-10ml of clean oil into the combustion chamber. Turn the crankshaft a few times to distribute the oil, then reassemble the spark plug.



5. Gently pull startup handle until you feel resistance, allowing both inlet valve and exhaust valve to be closed.
6. Disconnect the battery cable.



7. Place the generator set in a clean and dry area.

## Generator Transport

- When the generator set is transported, it shall be ensured that there is no fuel spilling.
- 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.

# TROUBLESHOOTING

Problem	Possible Causes	Probable Solutions
Engine will not start	<b>FUEL RELATED:</b> <ol style="list-style-type: none"> <li>1. No fuel in tank or fuel valve closed.</li> <li>2. Choke not in START position, cold engine.</li> <li>3. Gasoline with more than 10% ethanol used. (E15, E20, E85, etc.)</li> <li>4. Low quality or deteriorated, old gasoline.</li> <li>5. Carburetor not primed.</li> <li>6. Dirty fuel passageways.</li> <li>7. Carburetor needle stuck. Fuel can be smelled in the air.</li> <li>8. Too much fuel in chamber. This can be caused by the carburetor needle sticking.</li> <li>9. Clogged Fuel Filter.</li> </ol>	<b>FUEL RELATED:</b> <ol style="list-style-type: none"> <li>1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded gasoline and open fuel valve. <b>Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).</b></li> <li>2. Move Choke to START position.</li> <li>3. Clean out ethanol rich gasoline from fuel system. Replace components damaged by ethanol. Use fresh 87+ octane stabilizer-treated unleaded gasoline only. <b>Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).</b></li> <li>4. Use fresh 87+ octane stabilizer-treated unleaded gasoline. <b>Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).</b></li> <li>5. Pull on Starter Handle to prime.</li> <li>6. Clean out passageways using fuel additive. Heavy deposits may require further cleaning.</li> <li>7. <b>Gently</b> tap side of carburetor float chamber with screwdriver handle.</li> <li>8. Turn Choke to RUN position. Remove spark plug and pull the start handle several times to air out the chamber. Reinstall spark plug and set Choke to START position.</li> <li>9. Replace Fuel Filter.</li> </ol>
	<b>IGNITION (SPARK) RELATED:</b> <ol style="list-style-type: none"> <li>1. Power Switch at OFF position.</li> <li>2. Spark plug cap not connected securely.</li> <li>3. Spark plug electrode wet or dirty.</li> <li>4. Incorrect spark plug gap.</li> <li>5. Spark plug cap broken.</li> <li>6. Circuit breaker tripped (electric start models only).</li> <li>7. Incorrect spark timing or faulty ignition system.</li> </ol>	<b>IGNITION (SPARK) RELATED:</b> <ol style="list-style-type: none"> <li>1. Turn Power Switch to ON.</li> <li>2. Connect spark plug cap properly.</li> <li>3. Clean spark plug.</li> <li>4. Correct spark plug gap.</li> <li>5. Replace spark plug cap.</li> <li>6. Reset circuit breaker. Check wiring and starter motor if breaker continues to trip.</li> <li>7. Have qualified technician diagnose/repair ignition system.</li> </ol>
	<b>COMPRESSION RELATED:</b> <ol style="list-style-type: none"> <li>1. Cylinder not lubricated. Problem after long storage periods.</li> <li>2. Loose or broken spark plug. (Hissing noise will occur when trying to start.)</li> <li>3. Loose cylinder head or damaged head gasket. (Hissing noise will occur when trying to start.)</li> <li>4. Engine valves or tappets mis-adjusted or stuck.</li> </ol>	<b>COMPRESSION RELATED:</b> <ol style="list-style-type: none"> <li>1. Pour tablespoon of oil into spark plug hole. Crank engine a few times and try to start again.</li> <li>2. Tighten spark plug. If that does not work, replace spark plug. If problem persists, may have head gasket problem, see #3.</li> <li>3. Tighten head. If that does not remedy problem, replace head gasket.</li> <li>4. Have qualified technician adjust/repair valves and tappets.</li> </ol>
	<b>ENGINE OIL RELATED:</b> <ol style="list-style-type: none"> <li>1. Low engine oil.</li> <li>2. Engine mounted on slope, triggering low oil shutdown.</li> </ol>	<b>ENGINE OIL RELATED:</b> <ol style="list-style-type: none"> <li>1. Fill engine oil to proper level. Check engine oil before EVERY use.</li> <li>2. Operate engine on level surface. Check engine oil level.</li> </ol>
	<b>SPARK ARRESTOR RELATED:</b> <ol style="list-style-type: none"> <li>1. Spark Arrestor clogged with soot.</li> </ol>	<b>SPARK ARRESTOR RELATED:</b> <ol style="list-style-type: none"> <li>1. Clean and replace Spark Arrestor.</li> </ol>



Follow all safety precautions whenever diagnosing or servicing the generator or engine.

# TROUBLESHOOTING

Problem	Possible Causes	Probable Solutions
Engine misfires	<ol style="list-style-type: none"> <li>1. Spark plug cap loose.</li> <li>2. Incorrect spark plug gap or damaged spark plug.</li> <li>3. Defective spark plug cap.</li> <li>4. Old or low quality gasoline.</li> <li>5. Incorrect compression.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check cap and wire connections.</li> <li>2. Re-gap or replace spark plug.</li> <li>3. Replace spark plug cap.</li> <li>4. Use only fresh 87+ octane stabilizer-treated unleaded gasoline. <b>Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).</b></li> <li>5. Diagnose and repair compression. (Use <b>Engine will not start: COMPRESSION RELATED</b> section.)</li> </ol>
Engine stops suddenly	<ol style="list-style-type: none"> <li>1. Carbon Monoxide level high. Red light on Carbon Monoxide Sensor illuminates.</li> <li>2. CO Sensor Alarm flashes yellow continually shortly after starting.</li> <li>3. CO Sensor Alarm flashes yellow continually after longer period of operation.</li> <li>4. Low oil shutdown.</li> <li>5. Fuel tank empty or full of impure or low quality gasoline.</li> <li>6. Defective fuel tank cap creating vacuum, preventing proper fuel flow.</li> <li>7. Faulty magneto.</li> <li>8. Disconnected or improperly connected spark plug cap.</li> </ol>	<ol style="list-style-type: none"> <li>1. Leave area immediately and allow area to ventilate thoroughly. Only operate generator outside.</li> <li>2. Carbon monoxide sensor malfunction. Sensor needs service. Do not use the Generator until the sensor is working properly.</li> <li>3. Make sure to operate generator within rated ambient temperature; maintain minimum 5 ft. clearance from all sides.</li> <li>4. Fill engine oil to proper level. Check engine oil before EVERY use.</li> <li>5. Fill fuel tank with fresh 87+ octane stabilizer treated unleaded gasoline. Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).</li> <li>6. Test/replace fuel tank cap.</li> <li>7. Have qualified technician service magneto.</li> <li>8. Secure spark plug cap.</li> </ol>
Engine stops when under heavy load	<ol style="list-style-type: none"> <li>1. Dirty air filter</li> <li>2. Engine running cold.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean element.</li> <li>2. Allow engine to warm up prior to operating equipment.</li> </ol>
Engine knocks	<ol style="list-style-type: none"> <li>1. Old or low quality gasoline.</li> <li>2. Engine overloaded.</li> <li>3. Incorrect spark timing, deposit buildup, worn engine, or other mechanical problems.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded gasoline. <b>Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).</b></li> <li>2. Do not exceed equipment's load rating.</li> <li>3. Have qualified technician diagnose and service engine.</li> </ol>
Engine backfires	<ol style="list-style-type: none"> <li>1. Impure or low quality gasoline.</li> <li>2. Engine too cold.</li> <li>3. Intake valve stuck or overheated engine.</li> <li>4. Incorrect timing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded gasoline. <b>Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).</b></li> <li>2. Use cold weather fuel and oil additives to prevent backfiring.</li> <li>3. Have qualified technician diagnose and service engine.</li> <li>4. Check engine timing.</li> </ol>
Attached device doesn't have power	<ol style="list-style-type: none"> <li>1. Device not plugged in properly.</li> <li>2. Circuit Breaker tripped.</li> <li>3. Product needs service.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn off and unplug the device, then plug it back in again and turn on.</li> <li>2. Turn off and unplug device, reset Circuit Breaker, plug in device and turn on.</li> <li>3. Have product repaired.</li> </ol>
Attached device begins to operate abnormally	<ol style="list-style-type: none"> <li>1. Problem with device.</li> <li>2. Rated load capacity exceeded.</li> </ol>	<ol style="list-style-type: none"> <li>1. Immediately unplug device. Have device repaired by a qualified technician, or replace device.</li> <li>2. Lower the number of items plugged into the generator to stay within the rated capacity, or use a more powerful generator.</li> </ol>



Follow all safety precautions whenever diagnosing or servicing the generator or engine.

# TECHNICAL PARAMETERS

Engine	Engine Model	165F/P-EFI
	Engine Type	Single Cylinder, Four Stroke, Air Cooled, Overhead Valve
	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)	4.8/4500
	Starting Mode	Manual Recoil Starting / Electric Starting / Remote Starting
	Fuel Tank Capacity(L)	5.8
	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)	62
	Rated Power(kW)	3.8
	Max Power(kW)	4.5
	Rated Voltage(V)	120
	Rated Frequency(Hz)	60
	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)		540*310*505
Net Weight(kg)		28



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