



GENMAX GENERATOR

# INVERTER GENERATOR USER'S MANUAL



## GM4500iSAD

DUAL-FUEL INVERTER GENERATOR



**4500 / 4000**  
STARTING WATTS      RUNNING WATTS



**4000 / 3600**  
STARTING WATTS      RUNNING WATTS



### WARNING: SAVE THIS MANUAL FOR FUTURE REFERENCE



This manual contains important information regarding safety, Operation, maintenance and storage of this product. Before use, read carefully and understand all cautions, warnings, instructions and product labels. Failure to do so could result in serious personal injury and/or property damage.

## California Proposition 65 Warning

The engine exhaust from this product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

## California Proposition 65 Warning

Certain components in this product and its related accessories contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

### DISCLAIMERS:

All information, illustrations and specifications in this manual are based on the latest information available at the time of publishing. The illustrations used in this manual are intended as representative reference views only. Moreover, because of our continuous product improvement policy, we may modify information, illustrations and/or specifications to explain and/or exemplify a product, service or maintenance improvement. We reserve the right to make any change at any time without notice. Some images may vary depending upon which model is shown.

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## ⚠ DANGER



This manual contains important instructions for operating this inverter generator. For your safety and the safety of others, be sure to read this manual thoroughly before operating the generator. Failure to properly follow all instructions and precautions can cause you and others to be seriously hurt or killed.

## UNPACKING

### ⚠ CAUTION



Always have assistance when lifting the generator. The generator is heavy; lifting it could cause bodily harm.



Avoid cutting on or near staples to prevent personal injury.

### WHAT COMES IN THE BOX

Spark Plug Socket Wrench (1)  
Dual-Purpose Screwdriver (1)  
User Manual (1)  
Funnel (1)  
LPG Hose (1)  
Cigarette Lighter to USB-C&A Adapter (1)

**Tools required** - box cutter or similar device.

1. Carefully cut the packing tape on top of the carton.
2. Remove socket wrench, and oil funnel and save for later.
3. Carefully cut two sides of the carton to remove the generator.

## DESCRIPTION OF FITTINGS

**Spark Plug Socket Wrench**



Used in spark plug maintenance, inspection, and installation.

**Dual-Purpose Screwdriver**



Phillips and slot blade screwdriver used for generator maintenance.

**Funnel**



It's used to oil the generator.

**Cigarette Lighter to USB-C&A Adapter**

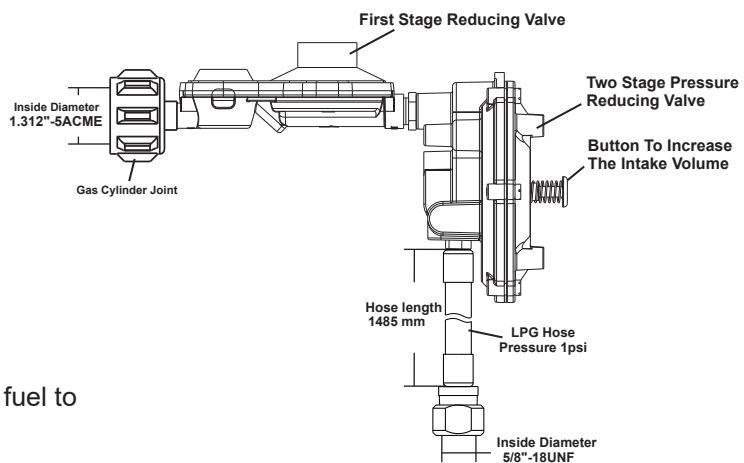


Convert the cigarette lighter socket to a USB-C&A socket.

**LPG Hose**



Connect the LPG tank to transmit LPG fuel to the generator.



**Note:** Actual tools may differ in appearance or design from image shown.

# WARRANTY CARD

## PERSONAL INFORMATION

Name: \_\_\_\_\_

Model Number: \_\_\_\_\_

Street Address: \_\_\_\_\_

Serial Number: \_\_\_\_\_

City, State, ZIP: \_\_\_\_\_

Date Purchased: \_\_\_\_\_

Country: \_\_\_\_\_

Purchased From: \_\_\_\_\_

Phone Number: \_\_\_\_\_

**GENMAX**®

E-Mail: \_\_\_\_\_

# TABLE OF CONTENTS

<b>SAFETY</b>	<b>5</b>
<b>NAMES OF COMPONENTS</b>	<b>10</b>
<b>CONTROL FUNCTIONS</b>	<b>11</b>
<b>PREPARATIONS</b>	<b>12</b>
Adding Engine Oil.....	12
Adding Gasoline.....	12
Connecting an LPG Tank.....	13
<b>OPERATION</b>	<b>15</b>
Generator Location.....	15
Starting the Generator.....	15
Shutting Down the Generator.....	18
<b>USING THE GENERATOR</b>	<b>19</b>
Service Environment of the Generator.....	19
Generator Wiring.....	19
Generator Grounding.....	20
<b>SERVICE AND MAINTENANCE</b>	<b>21</b>
Checking and Filling Fuel.....	22
Cleaning the generator.....	22
Spark Plug Inspection.....	22
Engine Oil Change.....	23
Cleaning/Replacing the air filter.....	24
Clean the Fuel Filter.....	25
<b>STORAGE AND TRANSPORT</b>	<b>26</b>
Generator Storage.....	26
Generator Transport.....	26
Preparation for Use After Storage.....	26
<b>TROUBLESHOOTING</b>	<b>27</b>
<b>TECHNICAL PARAMETERS</b>	<b>29</b>
<b>CHOOSING A GENERATOR</b>	<b>30</b>

# SAFETY



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**

Indicates a hazardous situation which, if not avoided, could result in death or 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.

## CO TECHNICAL WARNING

CO DETECT technology monitors the accumulation of carbon monoxide (CO), a poisonous gas produced by engine exhaust when the generator is running. If CO Sensor detects unsafe elevated levels of CO gas, it automatically shuts off the engine. CO Sensor is not a substitute for an indoor carbon monoxide alarm or for safe operation. DO NOT allow engine exhaust fumes to enter a confined area through windows, doors, vents or other openings. Generators must ALWAYS be used outdoors, far away from occupied buildings with engine exhaust pointed away from people and buildings. Meets the requirements of ANSI/PGMA G300-2018.

## SAFETY PRECAUTIONS

### **DANGER**

**Using a generator indoors CAN KILL YOU IN MINUTES.**  
Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.



**NEVER use inside a home or garage, EVEN IF doors and windows are open.**



**Only use OUTSIDE and far away from windows, doors, and vents.**

## **WARNING**

## POISONOUS GAS HAZARD

Engine exhaust contains carbon monoxide, a poisonous gas that could kill you in minutes. You CANNOT smell it, see it, or taste it. Even if you do not smell exhaust fumes, you could still be exposed to carbon monoxide gas.

- Operate this product ONLY outside far away from windows, doors and vents to reduce the risk of carbon monoxide gas from accumulating and potentially being drawn towards occupied spaces.
- Install battery-operated carbon monoxide alarms or plug-in carbon monoxide alarms with battery back-up according to the manufacturer's instructions. Smoke alarms cannot detect carbon monoxide gas.

# SAFETY

- DO NOT run this product inside homes, garages, basements, crawlspaces, sheds, or other partially-enclosed spaces even if using fans or opening doors and windows for ventilation. Carbon monoxide can quickly build up in these spaces and can linger for hours, even after this product has shut off.
- ALWAYS place this product downwind and point the engine exhaust away from occupied spaces. If you start to feel sick, dizzy, or weak while using this product, shut it off and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.
- If you start to feel sick, dizzy or weak while using the portable generator, you may have carbon monoxide poisoning. Get out side to fresh air immediately and emergency medical assistance. Very high levels of CO can rapidly cause victims to lose consciousness before they can rescue themselves. DO NOT attempt to shut off the generator before moving to fresh air. Entering an enclosed space where a generator is or has been running may put you at greater risk of CO poisoning.

## CO Sentry Indicator Lights

### Red

Carbon monoxide has accumulated around the generator. After shut-off, the RED indicator light in the CO Sentry area of the control panel will flash to provide notification that the generator was shutdown due to an accumulating CO hazard. The RED light will flash for at least five minutes after a CO shut-off. Move the generator to an open, outdoor area far away from occupied spaces with exhaust pointed away. Once relocated to a safe area, the generator can be restarted. Introduce fresh air and ventilate the area where the generator had shut down.

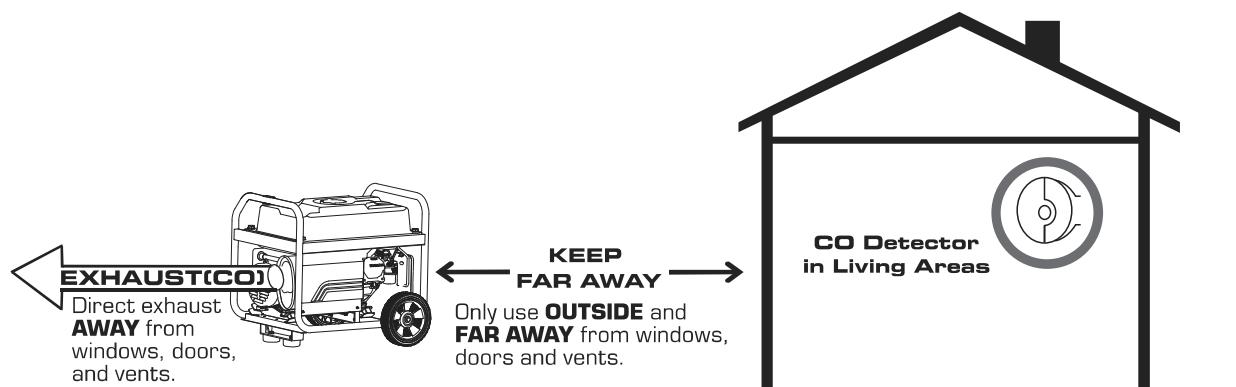
### Yellow

A CO Sentry system fault occurred. When a system fault occurs, the generator is automatically shut down and the YELLOW indicator light in the CO auto-shutoff area of the control panel will flash to provide notification that a fault has occurred. The YELLOW light will flash for at least five minutes after a fault. The generator can be re-started, but may continue to shutdown.

## CORRECT USAGE

### Example location to reduce risk of carbon monoxide poisoning

- ONLY use outside and downwind, far away from windows, doors and vents.
- Direct exhaust away from occupied spaces.



# SAFETY

## INCORRECT USAGE

**Do not operate in any of the following locations:**

Near any door, window or vent

Garage

Basement

Crawl Space

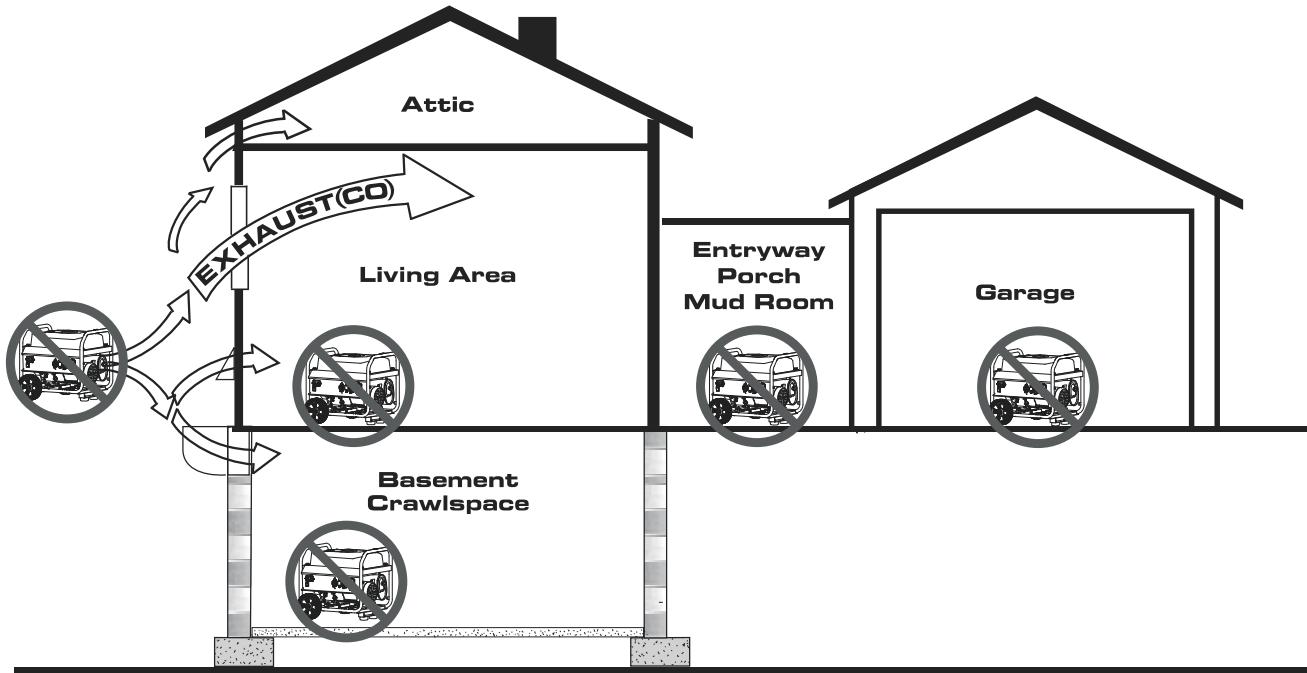
Living Area

Attic

Entry Way

Porch

Mudroom



## BEFORE USING THE GENERATOR

- In order to operate the generator correctly, be familiar with the operation of the various components and master the method of shutting down the generator quickly.
- Never use the generator to power medical support equipment.
- Please never modify the generator.
- Please do not use in rain or in areas with water. There is a risk of electric shock when using generators and connected appliances that have been soaked in rain or water, or when operating with wet hands.
- Please never connect wires from the power company. It can cause malfunctions in the machine and connected electrical equipment, becoming the cause of fire or personal accidents.

- The use of generators has laws and regulations, please comply with labor safety and health regulations, fire protection laws, electrical industry laws, etc.
- Please do not connect parallel operation terminals except for dedicated wires. There is a risk of electric shock.

## 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.

# SAFETY

- 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 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.

- Connect Parallel Kit only to terminals marked "Parallel Outlets" on the front of the Generator.
- Do not remove or connect a Parallel Kit while the Generator is running.
- Do not use a Parallel Kit that is attached to only one Generator.

## SAFETY PRECAUTIONS FOR GASOLINE AND GASOLINE VAPOR

- Fire and explosion hazard. Gasoline is highly explosive and flammable and can cause severe burns or death.
- Fire and Burn Hazard. NEVER loosen or remove the fuel cap while the generator is running. Turn the unit off and allow it to cool for at least five minutes before adding gasoline. Loosen the fuel cap slowly.
- In case of a gasoline fire, do not attempt to extinguish the flame unless the engine/fuel control switch is in the OFF position. Introducing an extinguisher to a generator with an open fuel valve could create an explosion hazard.

## 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.

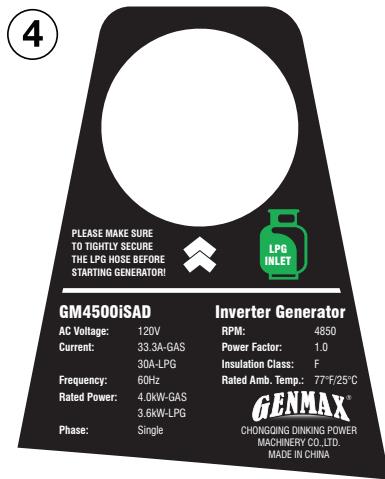
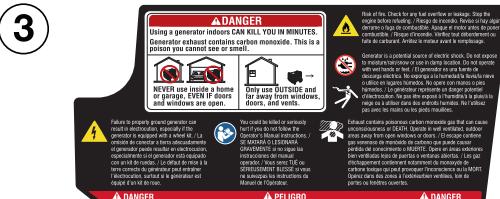
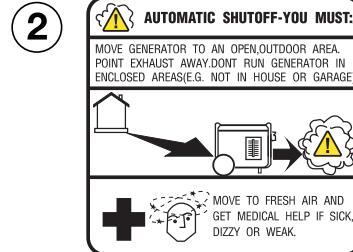
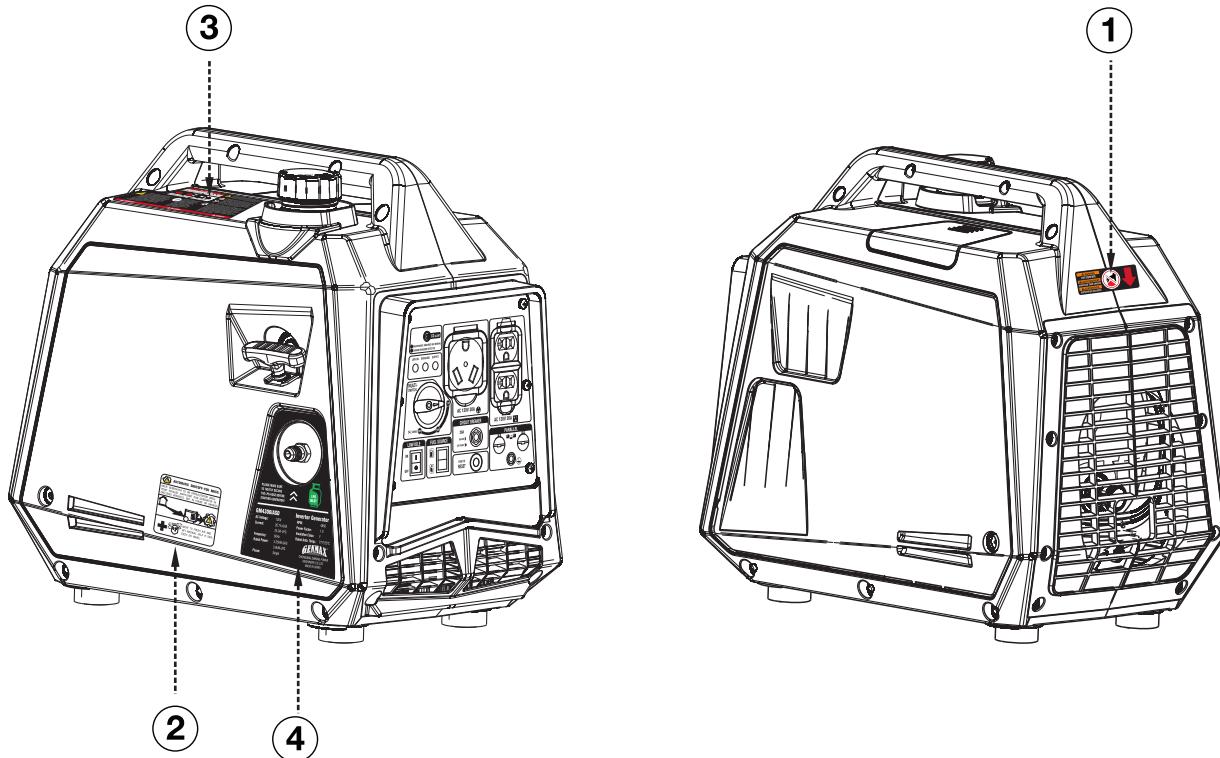
## PARALLEL KIT PRECAUTIONS

To prevent serious injury, death and damage to generators and/or equipment due to electric shock and fire:

- Follow Parallel Kit instructions provided with Kit for connection and use of a Parallel Kit.
- Only connect two identical Inverter Generators together using a Parallel Kit.

# SAFETY

## SAFETY LABELS AND DECALS



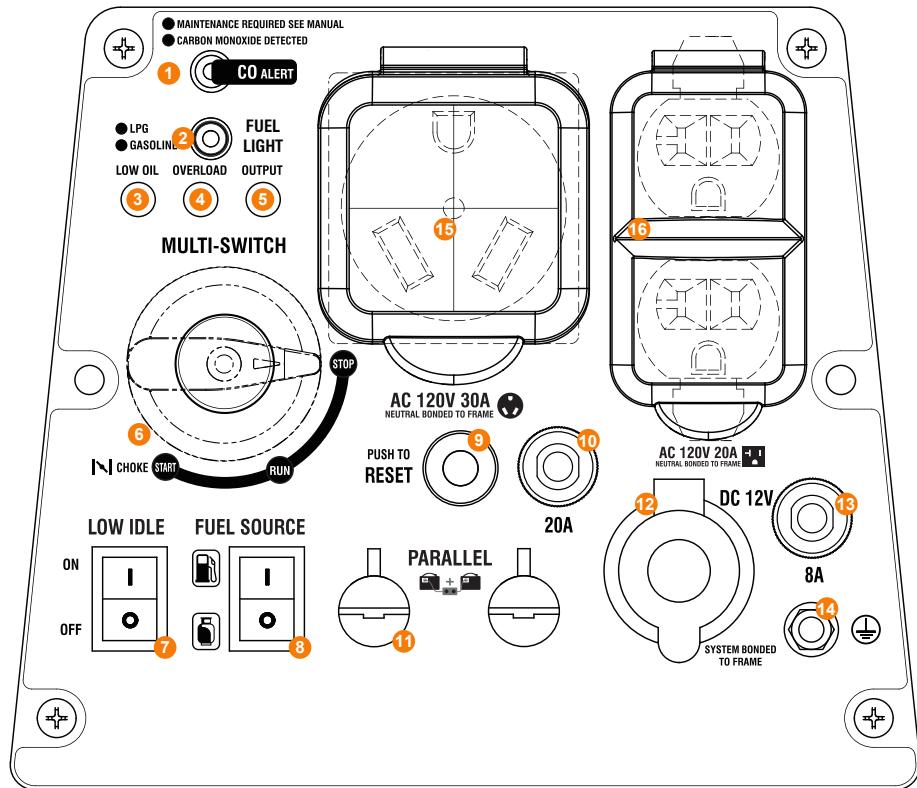
# NAMES OF COMPONENTS



- ① Fuel Tank Cap:** Open the fuel tank cap and fill with proper amount of gasoline.
- ② Recoil Handle:** Pull to start the engine.
- ③ LPG Inlet:** Connect LPG (propane) as fuel.
- ④ Left Exterior Cover**
- ⑤ Control Panel:** Contains the reset breaker, outlets and warning lights.
- ⑥ Engine Cooling Vents:** Helps move airflow in unit to regulate engine temperatures.

- ⑦ Right Exterior Cover:** Unscrew the bolts to remove the outer cover, add or replace the oil and maintain the air filter.
- ⑧ Muffler:** Avoid contact until the engine is cooled down. The spark arrestor prevents sparks from exiting the muffler. It must be removed for servicing.
- ⑨ Spark Plug Access Cover:** Remove the cover to service the spark plug.

# CONTROL FUNCTIONS



## CONTROL PANEL FEATURES

- ① **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.
- ② **Fuel Light:** LPG green light is steady on, gasoline blue light is steady on.
- ③ **Low Oil Alarm:** Indicates low oil level.
- ④ **Overload Alarm:** Indicates that the inverter is overloaded.
- ⑤ **Output Indicator:** Indicates the inverter is ready to be used.
- ⑥ **Multi-Switch:** Turn position to CHOKE to start the engine, and turn to RUN position once the engine is running. Switch to OFF to stop inverter.
- ⑦ **Low Idle Switch:** When turned to the ON position, the engine will sense the load needed and run at a slower RPM to save fuel.
- ⑧ **Fuel Source:** Choose gasoline or LPG as fuel.
- ⑨ **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.
- ⑩ **Circuit Breaker:** If the generator is overload, the circuit breaker will trip to block current.
- ⑪ **Parallel Connectors (120V OUTPUT):** To increase AC power output, the connector sockets are used to connect the two same type generators with special parallel kit sold by GENMAX. The connector sockets is only used to connect two inverter generators. They can not be used for AC power output. The special paralleling kit shall be purchased separately, and they shall be approved by certification body.
- ⑫ **DC Cigarette Lighter Outlet:** 12V DC 8.3A.
- ⑬ **DC Protector:** If the generator is overload, the DC protector will trip to block current.
- ⑭ **Ground Terminal:** The ground terminal is used to externally ground the inverter.
- ⑮ **120V AC 30A TT-30R Outlet:** The outlet is capable of carrying a maximum of 30 amps.
- ⑯ **120V AC 20A 5-20R Outlet:** The outlet is capable of carrying a maximum of 20 amps.

# PREPARATIONS

## ADDING ENGINE OIL

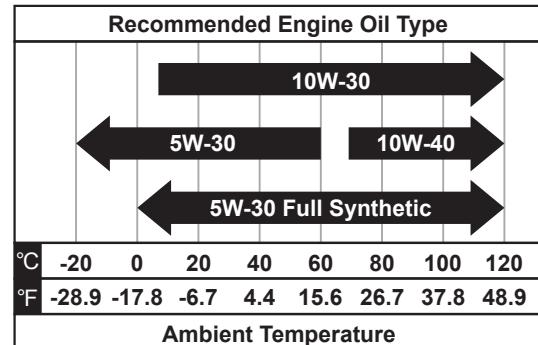
### **⚠️ WARNING**

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

### **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.

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.



1. Please place the generator onto a horizontal plane surface.

2. Open the right exterior cover, unscrew oil dipstick.



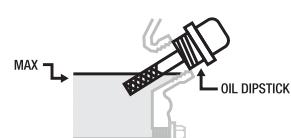
3. Using a funnel, as needed, add the appropriate type of oil until the oil level is at the proper level.

SAE 10W-30 oil is recommended for general use. DO NOT OVERFILL.  
Replace oil dipstick and secure maintenance cover.



4. Check engine oil level daily and add as needed.

Reinsert the dipstick, but do not tighten it, and remove it again to check the oil level. The oil level should reach the full liquid level as shown in the figure.



5. After refueling, tighten the oil dipstick, wipe off the surrounding oil, and reassemble the exterior cover plate.

## ADDING GASOLINE

### **⚠️ WARNING**



TO PREVENT SERIOUS INJURY FROM FIRE:

Fill the gasoline tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding gasoline. Do not smoke.

# PREPARATIONS

1. Make sure the generator is on a solid, flat, level surface.
2. Unscrew the fuel cap and set it aside.
3. Slowly add gasoline to the fuel tank. Be careful not to overfill.
4. Replace the fuel cap and wipe up any spilled gasoline with a dry cloth then remove the cloth from the area.



## **⚠ DANGER**

Do not overfill the gasoline the tank. Overfilling can result in a fire, explosion, or death.

## **⚠ WARNING**

Gasoline can expand. Do not fill the gasoline tank to the top. Leave a minimum of 1.5 inches open space. Gasoline fumes are highly flammable. Do not fill the tank near an open flame. Always check for gasoline spills.



- ALWAYS use CLEAN, FRESH, unleaded gasoline (87–93 octane) in this unit. NEVER use OLD, STALE, or CONTAMINATED gasoline.
- Never use an oil/gasoline mixture.
- Avoid getting dirt or water in the gasoline tank.
- Gasoline can age in the tank and make it hard to start the generator in the future.
- Never store generator for extended periods of time with gasoline in the tank.
- Wipe up any spilled fuel and allow excess to evaporate before starting the engine. To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

## CONNECTING AN LPG TANK

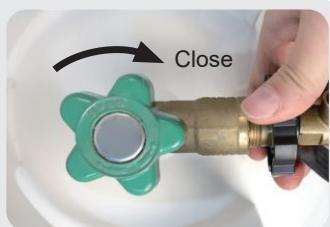
## **ATTENTION**

- Confirm that the re-qualification date on the tank has not expired.
- All new propane tanks must be purged of air and moisture prior to filling. Used propane tanks that have not been plugged or kept closed must also be purged. The purging process should be done by a propane tank supplier (propane tanks from an exchange supplier should have been purged and filled properly).
- ALWAYS position the propane tank so the connection between the valve and the gas inlet will not cause sharp bends or kinks in the hose.

## **⚠ DANGER**

Explosion hazard. DO NOT start generator if you smell propane. ALWAYS fully close the propane tank valve and disconnect the LPG hose from the generator when not in use.

1. Turn the generator OFF and place on a flat surface in a well ventilated area.
2. Verify that the LPG tank valve is in the fully closed position.



# PREPARATIONS

3. Remove the cover on the generator LPG/propane inlet.



4. Tighten the LPG hose to the LPG inlet of the generator.

**IMPORTANT:** DO NOT use thread seal tape or any other type of sealant to seal the LPG hose connection.



5. Remove the safety plug or cap from the LPG tank valve and attach the other end of the hose to the LPG connector on the tank. Hand-tighten.



6. Turn the LPG tank valve to the fully open position.

Check all connections for leaks by wetting the fittings with a solution of soap and water. Bubbles which appear or bubbles which grow indicate that a leak exists. If a leak exists at a fitting, turn the LPG tank valve to the fully closed position and tighten the fitting. Open the LPG tank valve and recheck the fitting with the soap and water solution.



# OPERATION

## GENERATOR LOCATION

### ⚠ WARNING

- **NEVER** operate the generator inside any building, garage, basement, crawlspace, shed, or enclosure, including the generator compartment of a recreational vehicle.
- **NEVER** operate or start the generator in the back of an SUV, camper, trailer, truck bed (regular sides, flat or other configuration), under staircases, stairwells, next to walls or buildings, or any other location that could limit airflow or trap exhaust.
- **DO NOT** operate or store the generator in wet weather conditions such as rain or snow. Using a generator in wet conditions could result in serious injury or death due to electrocution.
- Generators must have a minimum of 5 feet (1.5 m) of clearance from all combustible material.
- Generators must also have a minimum of 5 feet (1.5 m) of airflow clearance on all sides to allow for adequate cooling, maintenance, and service.
- Always place the generator in a well-ventilated area. NEVER place the generator near air intake vents or where exhaust fumes could be drawn into occupied or confined spaces.
- Always carefully consider wind and air currents when positioning the generator.
- Always allow generators to properly cool before transport or for storage purposes.
- Failure to follow proper safety precautions may result in personal injury, damage to the generator, and void your warranty.

### ⚠ WARNING

During operation, the muffler and exhaust fumes will become hot. If there is inadequate cooling space or if the generator is blocked or enclosed, temperatures can rise quickly and may lead to a fire.

## STARTING 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. Turn the Fuel Switch to desired fuel source.

#### To switch to gasoline

- Add gasoline.
- Turn off the flow of propane gas.
- Select fuel to gasoline position.

#### To switch to propane

- Open the cylinder valve on the LPG cylinder to start the flow of propane.
- Select fuel to LPG position.

**Tip:** If the cold engine fails to start many times, press the thickening valve button on the secondary pressure reducing valve for 2-3 seconds to thicken the gas.



# OPERATION

4. Press the LOW IDLE Switch to "OFF".



5. Turn Multi-Switch to "CHOKE" position.

**Tip:** When hot engine is started up, it is unnecessary to close the choke valve, but turn the combination switch to "RUN".



6. 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.



7. After the generator starts, turn the Multi-Switch to "RUN".



8. After 1-2 minutes of normal operation of the generator, connect the required equipment.



## ATTENTION

**For gasoline restarts with hot engine in hot ambient temperature >86°F (30°C):** Rotate the Multi-Switch to the "START" position for only one pull of the recoil cord. If generator does not start after first pull, rotate the Multi-Switch to the "RUN" position for the next three pulls. Too much choke leads to spark plug fouling and engine flooding. This will cause the engine not to start.

## ATTENTION

**For gasoline starting in standard ambient temperature >59°F(15°C):** Keep Multi-Switch in "START" position for three pulls of the recoil cord. If generator does not start after three pulls, rotate the Multi-Switch to the "RUN" position for the next three pulls. Too much choke leads to spark plug fouling and engine flooding. This will cause the engine not to start.

# OPERATION

## ATTENTION

**For gasoline starting in cold ambient temperature < 59°F (15°C):** Keep the Multi-Switch in the “START” position until engine starts. As soon as the engine starts and runs smoothly turn the Multi-Switch to the “RUN” position. In extreme cold temperatures, this may take several seconds.

## ATTENTION

If the engine starts but does not continue to run make certain that the generator is on a flat, level surface. The engine is equipped with a low oil sensor that will prevent the engine from running when the oil level falls below a critical threshold.

## DANGER

Fire and explosion hazard. Always turn the propane tank valve to the fully closed position if not running the generator on propane.

## WARNING

When using the generator with propane, make sure there is no possible ignition source close to the generator.

### Gasoline to LPG/NG

**IMPORTANT:** Load capacity is reduced when running on LPG. Make sure the generator can supply enough (running) and surge (starting) watts for the items you are powering before switching to LPG.

1. Turn the LPG tank valve to the fully open position.
2. Turn the fuel selector switch to LPG operation.

### LPG/NG to Gasoline

1. Turn the fuel selector switch to gasoline operation.
2. Turn the LPG tank valve to the fully closed position.

**NOTE:** When switching to another fuel operation, the engine may run violently for a few seconds.

If the engine stops when switching fuel sources, disconnect all loads then restart the unit on the fuel source of choice.

### 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.

# OPERATION

## 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 mode 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.

## 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.**

**2. Turn the Multi-Switch to "OFF" position.**

**3. Stop the flow of fuel.**

- For propane, close the cylinder valve on the LPG cylinder.



**4. After the generator has completely cooled down, remove LPG hose if applicable and store the generator in a cool, dry, sheltered storage area.**

**5. 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

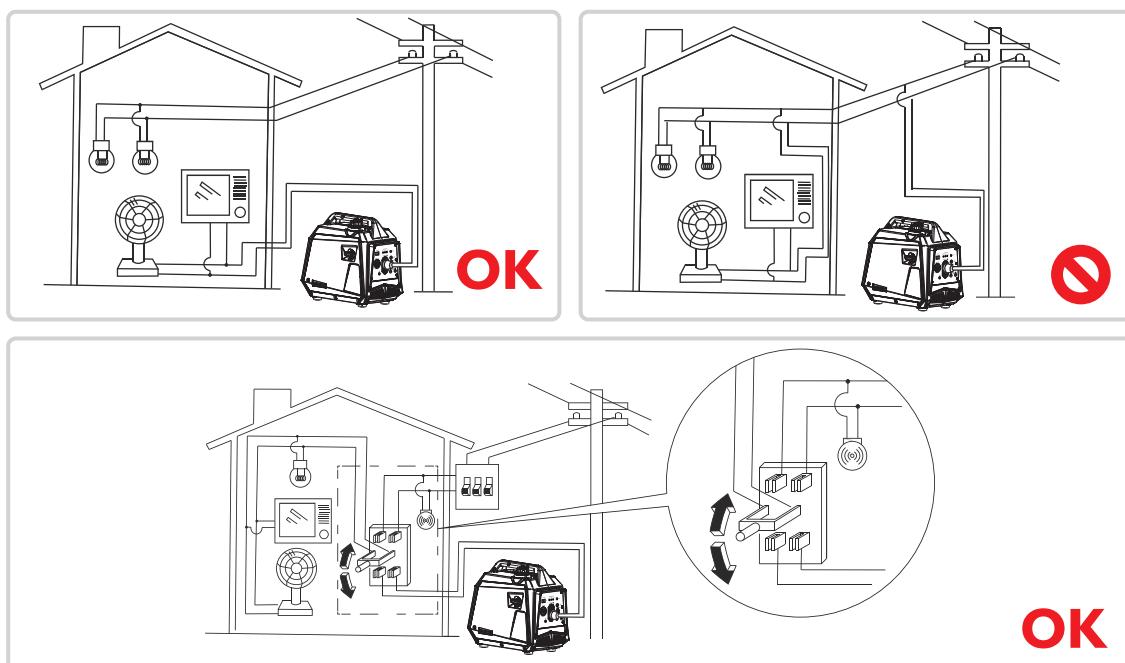
- Ambient temperature  $T_r$ : 298k (77°F/25°C)
- Relative air humidity  $\Phi_r$ : 30%
- Absolute atmospheric pressure  $P_r$ : 100kPa

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

- Every 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 of 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.



# USING THE GENERATOR

## Connection of AC power

### ⚠ WARNING

All electrical equipment shall be disconnected before inserting the plug.

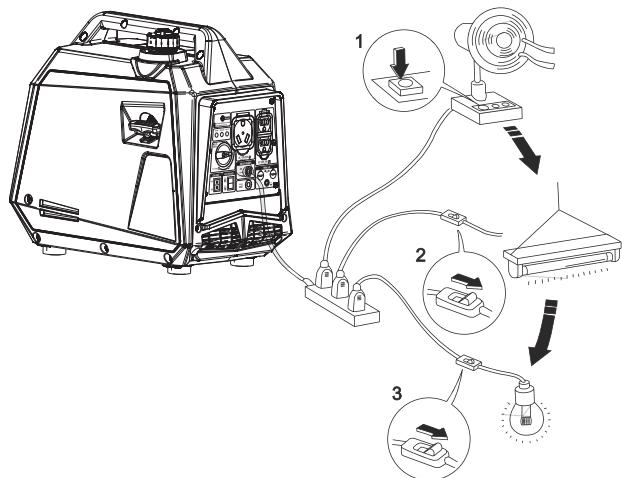
### ATTENTION

- 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, 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.



## 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.



# SERVICE AND MAINTENANCE

Good maintenance and service is the best guarantee for safe, economical and zero-failure 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:

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 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.					

## 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 cycle and time, whichever is earlier;
- If maintenance cycle time has elapsed, perform the maintenance as soon as possible as per the table above.

# SERVICE AND MAINTENANCE

## **⚠️ 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.

## CHECKING AND FILLING FUEL

## **⚠️ WARNING**

### **TO PREVENT SERIOUS INJURY FROM FIRE:**

Fill the fuel tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding fuel. Do not smoke.

1. Clean the Fuel Cap and the area around it.
2. Unscrew and remove the Fuel Cap.
3. Remove the strainer and remove any dirt and debris. Then replace the strainer.

**Note:** Do not use gasoline containing more than 10% ethanol (E10). Do not use E85 ethanol.

**Note:** Do not use gasoline that has been stored in a metal fuel container or a dirty fuel container. It can cause particles to enter the carburetor, affecting engine performance and/or causing damage.

4. If needed, fill the Fuel Tank to about 1.5 inch under the fill neck with 87 octane unleaded gasoline that has been treated with a fuel stabilizer additive. Follow fuel stabilizer manufacturer's recommendations for use.
5. Replace the Fuel Cap.
6. Wipe up any spilled fuel and allow excess to evaporate before starting the engine. To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

## CLEANING THE GENERATOR

Do not store or operate your generator in dirty, dusty, or corrosive environments. Do not allow foreign materials and debris to clog the vents on the unit.

NEVER clean the generator with a garden hose. Water can damage the generator's fuel system and electrical components. If the unit needs to be cleaned, use a soft brush and damp cloth to clean the exterior and use low pressure air (no greater than 25 psi) to clean the vents.

**Never use gasoline as a cleaning agent.**

## SPARK PLUG INSPECTION

**The spark plug is important for proper engine operation. A good spark plug should be intact, free of deposits, and properly gapped.**

**Improper maintenance may cause reduced fuel economy, misfires, trouble starting, or damage to the spark plug threads.**

## **⚠️ WARNING**

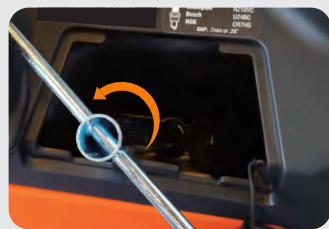
Turn off the generator and wait for the generator to completely cool down.

1. Remove spark plug cap of the generator.



# SERVICE AND MAINTENANCE

2. Unscrew the spark plug from the generator using the spark plug wrench included with this product.



## 3. Inspect the Spark Plug

If the electrode is oily, clean it using a clean, dry rag. If the electrode has deposits on it, clean it with a brass wire brush. If the white insulator is cracked or chipped, replace the spark plug.



## 4. Check the model of spark plug and clearance.

**Spark Plug Gap: 0.7-0.8mm**

**Standard Spark:**

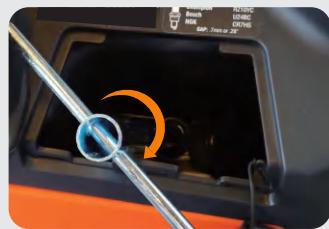
BRAND	MODEL
NGK	C7HSA
	CR6HSA
TORCH	A5RTC



## 5. Reinstall the spark plug.

**Spark cold torque:  $14\pm1\text{N.m}(123.9\pm8.8\text{in-lb})$**

**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.



## 6. Replace Spark Plug Cap.



## ENGINE OIL CHANGE

### **⚠ WARNING**

Do not drain the oil immediately after turning off the generator. Oil temperature is very high, when operating, take care to avoid scalding.

**NOTE:** Change the oil while the engine is warm but not hot. Warm engine oil drains more quickly and thoroughly than cool lubricant. Contact with hot lubricant will cause serious burns.

# SERVICE AND MAINTENANCE

1. The oil dipstick is on the right side of the generator.
2. Unscrew oil dipstick.



3. Drain engine oil.

Place an oil pan under the engine, tilt the generator to quickly pour out oil;  
After discharging the oil, put the generator back on level ground.



4. Follow the procedure of "Adding Engine Oil" to add new engine oil and check the oil level.



5. After refueling, tighten the dipstick and wipe off the surrounding oil stains.

## CLEANING/REPLACING THE 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. Turn off the generator and let the engine cool down.
2. The air filter is located on the right side of the generator. Remove screws, to remove cover plate of air cleaner.



3. Remove the air filter element.



# SERVICE AND MAINTENANCE

## 4. Clean the components with cleaning agent.

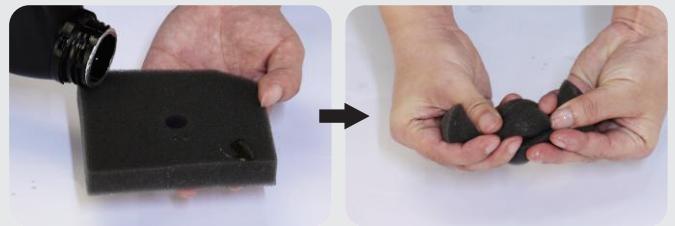
After cleaning, wrap the components in a cloth and screw them dry.

**NOTE:** If the air filter element is damaged, replace it with a new one.



## 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.

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



## 6. Return the air filter element to its original position. Reinstall the air filter cover.

**NOTE:** Make sure that the surface of foam cleaner 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 cleaner is assembled, because it will generate excessive toxic gas and wear the cylinder.

## CLEAN THE FUEL FILTER

### **⚠ 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.



# 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 and let it cool completely.**
- 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. Start up the engine to burn off fuel in the carburetor, and then shut it down.**

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

- 4. Unscrew oil dipstick, and drain oil in the crankcase off. Fill new oil to upper oil limit, and then assemble oil dipstick.**
- 5. 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.**
- 6. Gently pull startup handle until you feel resistance, allowing both inlet valve and exhaust valve to be closed.**
- 7. Clean the generator.**  
**NOTE:** Please do not rinse the generator with water. There is a possibility of causing malfunctions and short circuits in electrical components.
- 8. Place the generator set in a clean and dry area.**

### ATTENTION

#### Placing the Generator

- After the generator cools down, place it upright and cover it with a layer of dust cloth. The generator should be placed in a well ventilated and dry place.
- Do not pile up debris on the generator.

## 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.

## PREPARATION FOR USE AFTER STORAGE

- Slowly pull the starter cord a few times to clean oil from the cylinder or to eject any pump protector from the pump which may have been added prior to storage.
- Remove the spark plug from the cylinder. Wipe oil from the spark plug and return it to the cylinder and re-tighten.
- Reconnect the spark plug wire.
- Refuel engine per earlier instructions in this manual.

# TROUBLESHOOTING

Problem	Possible Causes	Probable Solutions
Engine will not start	<p>FUEL RELATED:</p> <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>	<p>FUEL RELATED:</p> <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>
	<p>IGNITION (SPARK) RELATED:</p> <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>	<p>IGNITION (SPARK) RELATED:</p> <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>
	<p>COMPRESSION RELATED:</p> <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>	<p>COMPRESSION RELATED:</p> <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>
	<p>ENGINE OIL RELATED:</p> <ol style="list-style-type: none"> <li>1. Low engine oil.</li> <li>2. Engine mounted on slope, triggering low oil shutdown.</li> </ol>	<p>ENGINE OIL RELATED:</p> <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>
	<p>SPARK ARRESTOR RELATED:</p> <ol style="list-style-type: none"> <li>1. Spark Arrestor clogged with soot.</li> </ol>	<p>SPARK ARRESTOR RELATED:</p> <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

Item	GM4500iSAD
Rated Power (kW)	4.0(GAS.)/3.6(LPG)
Max. Power (kW)	4.5(GAS.)/4.0(LPG)
Engine Model	164F/P-2
Valve Clearance	Input valve:0.03~0.08mm, Output valve:0.03~0.08mm
Stroke x Bore (mm)	64x45
Engine Type	4-stroke
Displacement (cc)	145
Gas Distribution Mode	OHV
Cooling Mode	Forced cooling wind
Rated Speed (RPM)	4850
Starting Method	Recoil start
Fuel Tank Volume gal(L)	0.9(3.6)
Fuel Type and Grade	Vehicle-use unleaded gasoline
Lubricating Oil Capacity gal(L)	0.12(0.45)
Lubricating Oil Model	SAE 10W/30
Noise dB (at 7m)(25% load)	62
Rated Voltage (V)	120
Rated Frequency (Hz)	60
Rated Power Factor	1
Phase Number	Single Phase
Run Time @ 25% (h)	4.8
Fuel Consumption Rate (25% load)(L/h)	0.75
Fuel Consumption Rate (100% load)(L/h)	1.9
LPG Consumption Rate (25% load)(kg/h)	0.45
LPG Consumption Rate (100% load)(kg/h)	1.22
THD	≤3%
Overall Dimension in.(mm)	19.1×11.2×17.9(485×285×455)
Net Weight lb.(kg)	51.4(23.3kg)

### QUICK REFERENCE WATTAGE

Power Rating	Tool or Appliance	Running Watts	Starting Watts
<b>1200 - 1800</b> Running Watts	Blender	300	650
	Coffee Maker	1500	
	Drill	600	900
	Fan	200	
	Furnace 1/4 hp	600	1000
	Game console	150	
	Hand sander	600	1200
	Hedge trimmer	450	1200
	Lamp	100	
	Laptop	800	
	LED/LCD TV	150	
	Microwave	1000	
	Modem/router	20	
	Paint sprayer	600	600
	Radio	100	
	Slow cooker	200	200
	String trimmer	350	875
	Sump Pump 1/3 hp	800	1300
	Work light	1000	
<b>5500 - 12,000</b> Running Watts	Belt sander	1200	2400
	Chainsaw	1200	2400
	Circular saw	1200	2000
	Edger	950	2400
	Electric grill	1650	
	Lawn mower	1200	2400
	Pressure washer	1200	2400
	Refrigerator	700	2200
	Washing machine	1150	2250
	Well pump	1000	2100
	Window AC 13k BTU	1800	2800
	Air compressor 1 hp	1600	4500
	Central AC 3 ton	5400	7200
	Electric Dryer	5400	6750
	Heat Pump 3 ton	3400	6500
	Water heater	4000	

†Chart for reference only. Check your device for ACTUAL wattage requirements.

### HOW TO CALCULATE

#### Running Watts needed:

Total Running Watts of ALL items to be powered by the generator.

#### Starting Watts needed:

Add highest SINGLE Starting Watt to Total Running Watts needed above.

### EXAMPLE

#### 1 Calculate Running Watts:

Furnace	600
Lamp	100
Microwave	1000
Refrigerator	700

**Total Running Watts** **2400**

#### 2 Calculate Starting Watts:

Total Running Wattage	2400
Refrigerator	2200
<b>Total Starting Watts</b>	<b>4600</b>





In production management, based on orderly, efficient, scientific principles. trying to do as better as possible in product design, development, production, inspection, etc. to make our production can keep orderly. And will continue to make improvement to make sure that keep the competitiveness.

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