

Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

231

PREDATOR®

5000 WATT DUAL FUEL SUPER QUIET INVERTER GENERATOR

5000 GASOLINE MAX STARTING WATT
3900 GASOLINE RUNNING WATTS
5000 LPG MAX STARTING WATTS
3600 LPG RUNNING WATTS

Visit our website at:
<http://www.harborfreight.com>

Email our technical support at:
productsupport@harborfreight.com

Email our engine support at:
predator@harborfreight.com

70143

WARNING: Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information consult a qualified service technician, service agency, manufacturer, or the gas supplier.

FOR YOUR SAFETY IF YOU SMELL GAS:

1. Don't touch electrical switches.
2. Extinguish any open flame.
3. Immediately call your gas supplier.

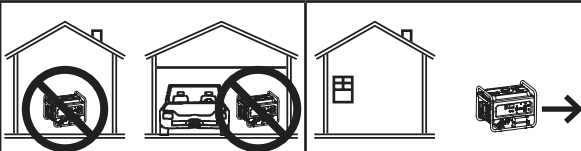
FOR YOUR SAFETY

Do not store gasoline or other flammable vapors and liquids in the vicinity of this or any other generator.

⚠ DANGER

Using a generator indoors CAN KILL YOU IN MINUTES.

Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.

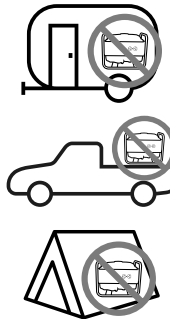


NEVER use inside a home or garage, **EVEN IF** doors and windows are open.

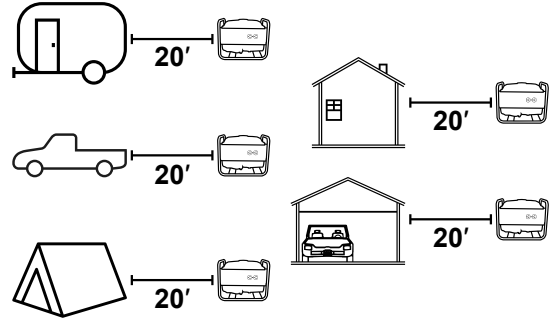
Only use **OUTSIDE** and far away from windows, doors, and vents.

⚠ DANGER

Do not use in trailers, truck beds, or tents.



Use at least 20 feet away from people, animals, and structures with exhaust pointed away. Generator will still produce carbon monoxide, even when burning propane.



When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein.

Tools required for assembly and service may not be included.

⚠ WARNING

Read this material before using this product. Failure to do so can result in serious injury. SAVE THIS MANUAL.



IF YOU SMELL GAS

- 1. NO FLAMES OR SPARKS!**
Immediately put out all smoking materials and other open flames. Do not operate lights, appliances, telephones, or cell phones. Flames or sparks from these sources can trigger an explosion or a fire.
- 2. LEAVE THE AREA IMMEDIATELY!**
Get everyone out of the building or area where you suspect gas is leaking.
- 3. SHUT OFF THE GAS.** Turn off the main gas supply valve on your propane tank if it is safe to do so. To close the valve, turn it to the right (clockwise).
- 4. REPORT THE LEAK.** From a neighbor's home or other nearby building away from the gas leak, call your propane retailer right away. If you can't reach your propane retailer, call 911 or your local fire department.
- 5. DO NOT RETURN TO THE BUILDING OR AREA** until your propane retailer, emergency responder, or qualified service technician determines that it is safe to do so.
- 6. GET YOUR SYSTEM CHECKED.** Before you attempt to use any of your propane appliances, your propane retailer or a qualified service technician must check your entire system to ensure that it is leak-free.

CAN YOU SMELL IT?

Propane smells like rotten eggs, a skunk's spray, or a dead animal. Some people may have difficulty smelling propane due to their age (older people may have a less sensitive sense of smell); a medical condition; or the effects of medication, alcohol, tobacco, or drugs.

ODOR LOSS. On rare occasions, propane can lose its odor. Several things can cause this including:

- The presence of air, water, or rust in a propane tank or cylinder
- The passage of leaking propane through the soil



Since there is a possibility of odor loss or problems with your sense of smell, you should respond immediately to even a faint odor of gas.

PROPANE GAS DETECTORS

Under some circumstances, you may not smell a propane leak. Propane gas detectors sound an alarm if they sense propane in the air. They can provide an additional measure of security. You should consider the purchase of one or more detectors for your home.

GUIDELINES regarding propane gas detectors:

- Buy only units that are listed under the latest Underwriters Laboratories (UL) standard.
- Follow the manufacturer's instructions regarding installation and maintenance.
- Never ignore the smell of propane, even if no detector is sounding an alarm.

APPLIANCE MAINTENANCE

LEAVE IT TO THE EXPERTS.

Only a qualified service technician has the training to install, inspect, service, maintain, and repair your appliances. Have your appliances and propane system inspected just before the start of each heating season.

DO NOT TRY TO MODIFY OR REPAIR valves, regulators, connectors, controls, or other appliance and cylinder/tank parts. Doing so creates the risk of a gas leak that can result in property damage, serious injury, or death.

CO AND YOUR SAFETY

WHAT IS CARBON MONOXIDE (CO)?

You can't taste or smell CO, but it is a very dangerous gas. High levels of CO can come from appliances that are not operating correctly, or from a venting system or chimney that becomes blocked.

CO CAN BE DEADLY! High levels of CO can make you dizzy or sick. In extreme cases, CO can cause brain damage or death. Symptoms of CO poisoning include: headache, dizziness, fatigue, shortness of breath, and nausea.



IF YOU SUSPECT CO IS PRESENT, ACT IMMEDIATELY!

1. If you or a family member shows physical symptoms of CO poisoning, get everyone out of the building and call 911 or your local fire department.
2. If it is safe to do so, open windows to allow entry of fresh air, and turn off any appliances you suspect may be releasing CO.
3. If no one has symptoms, but you suspect that CO is present, call your propane retailer or a qualified service technician to check CO levels and your propane equipment.

CO DETECTORS CAN IMPROVE SAFETY. For an extra measure of safety, consider installing a CO detector listed by UL on each level of your home.

TO HELP REDUCE THE RISK OF CO POISONING:

- Have a qualified service technician check your propane appliances and venting systems annually, preferably before the heating season.
- Install UL-listed CO detectors on every level of your home.
- Never use a gas oven or range-top burners to provide space heating.
- Never use portable generators indoors unless they are designed and approved for indoor use.
- Never use a barbecue grill (propane or charcoal) indoors for cooking or heating.
- Regularly check your appliance exhaust vents for blockage.

RUNNING OUT OF GAS



DON'T RUN OUT OF GAS. SERIOUS SAFETY HAZARDS, INCLUDING FIRE OR EXPLOSION, CAN RESULT.

- If an appliance valve or a gas line is left open, a leak could occur when the system is recharged with propane.
- If your propane tank runs out of gas, any pilot lights on your appliances will go out. This can be extremely dangerous.
- **A LEAK CHECK IS REQUIRED.** In many states, a propane retailer or a qualified service technician must perform a leak check of your propane system before turning on the gas.

LIGHTING PILOT LIGHTS

Note: This generator does not have a pilot light.

IF A PILOT LIGHT REPEATEDLY GOES OUT or is very difficult to light, there may be a safety problem. **DO NOT** try to fix the problem yourself. It is strongly recommended that only a **QUALIFIED SERVICE TECHNICIAN** light any pilot light that has gone out.

YOU ARE TAKING THE RISK of starting a fire or an explosion if you light a pilot light yourself. Carefully follow all of the manufacturer's instructions and warnings concerning the appliance before attempting to light the pilot.

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Specifications

Generator	AC Output (Gasoline)	120VAC, 60Hz, 32.5A, 1 Phase 3900 Running Watts 5000 Maximum Starting Watts
	AC Output (LPG/Propane)	120VAC, 60Hz, 30A, 1 Phase 3600 Running Watts 5000 Maximum Starting Watts
	DC Output	12VDC, 8A (Nominal) USB Ports, PD 24W, 5/9/12V
	Receptacles	2x 120VAC, 20A 1x 120VAC, RV TT-30R 1x 12VDC Two Pin Outlet 1x USB-A 1x USB-C Parallel Ports
Displacement		224cc
Compression Ratio		8.6:1
Engine Type		Horizontal Single Cylinder 4-stroke, OHV
Cooling System		Forced air cooled
Fuel	Type	87+ octane, stabilizer-treated unleaded gasoline or LPG/propane
	Gasoline Tank	3.7 Gallon / 14 Liter
	LPG/Propane Tank	20 lb tank minimum
Engine Oil	Type SAE	10W-30
	Capacity	0.64 Quart / 0.60 Liter
Run Time @ 25% Load with full gasoline tank		18.2 hours
Run Time @ 25% Load with 20 lb LPG/propane tank		14.6 hours
Sound Level at 23 feet, 25% load		60.5 dB(A)
Bore x Stroke		70mm x 58mm
Spark Plug	Type	F7TC (Torch) or equivalent
	Gap	0.028"–0.031"
Valve Clearance	Intake	0.003"–0.005"
	Exhaust	0.005"–0.007"
Engine Speed		2600–3800 RPM
Electric Start Battery		12V–6.5Ah Lead-Acid Non-Spillable
Remote Control Battery		3V CR2032
Internal Battery		CO Sensor: 3V CR2032 Display: 3V CR2032 Contains non-replaceable battery




The emissions control system for this Engine is warranted for standards set by the U.S. Environmental Protection Agency. For warranty information, refer to the last pages of this manual.





In reference to the remote: Changes or modifications not expressly approved by Harbor Freight Tools could void the user's authority to operate the equipment. FCC ID: 2AL6E-YKQT01

WARNING SYMBOLS AND DEFINITIONS

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	Addresses practices not related to personal injury.

Symbol Definitions

Symbol	Property or Statement
RPM	Revolutions Per Minute
HP	Horsepower
AWG	American Wire Gauge
	WARNING marking concerning Risk of Eye Injury. Wear ANSI-approved safety goggles with side shields.
	Read the manual before set-up and/or use.
	WARNING marking concerning Risk of Hearing Loss. Wear hearing protection.

Symbol	Property or Statement
	WARNING marking concerning Risk of Respiratory Injury. Operate engine OUTSIDE and far away from windows, doors, and vents.
	WARNING marking concerning Risk of Fire while handling fuel. Do not smoke while handling fuel.
	WARNING marking concerning Risk of Fire. Do not refuel while operating. Keep flammable objects away from engine.
	WARNING: Contains coin battery.

IMPORTANT SAFETY INSTRUCTIONS



WARNING! Read all instructions.

Failure to follow all instructions listed below may result in fire, serious injury and/or DEATH.

The warnings and precautions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

SAVE THESE INSTRUCTIONS

Setup Precautions

1. Gasoline fuel and fumes are flammable, and potentially explosive. Use proper fuel storage and handling procedures. Do not store fuel or other flammable materials nearby.
2. Fire and explosion hazard. Never use a gas container, LPG/propane connector hose, LPG/propane tank or any other fuel item that appears to be damaged.
3. Fire and explosion hazard. Only use approved LPG/propane tanks with an Overfilling Prevention Device (OPD) valve. Keep the tank in a vertical position with the valve on top and placed at ground level on a flat surface. Do not allow tanks to be near any heat source. When transporting and storing, turn the propane tank valve to the fully closed position and disconnect the tank. Make sure to always cover the generator inlet and tank outlet with protective plastic caps.
4. Connect LPG/propane tank using provided attachment kit only. Kit includes 1.5 meter (4.9 ft) hose. Place tank as far away from Generator as hose allows and away from engine exhaust. Do not place tank above Generator.
5. Fire and explosion hazard. If there is a strong smell of propane while operating the generator, fully close the LPG/propane tank valve immediately. Once the propane is off, use soapy water to check for leaks on the hose and connections on the tank valve and the generator. Do not smoke or light a cigarette or check for leaks using any open flame source such as a match or lighter. If a leak is found, contact a qualified technician to inspect and repair the LPG/propane system before using the generator.
6. Install carbon monoxide alarm(s) with battery backup in nearby buildings according to manufacturer's instructions.
7. Have multiple ABC class fire extinguishers nearby.
8. Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.
9. Set up and use only on a flat, level, well-ventilated surface.
10. All connections and conduits from the Generator to the load must only be installed by trained and licensed electricians, and in compliance with all relevant local, state, and federal electrical codes and standards, and other regulations where applicable.
11. Connections for standby power to a building electrical system must be made by a qualified electrician. The connection must isolate the Generator power from utility power, and must comply with all applicable laws and electrical codes.
12. A transfer switch should be installed by a licensed electrician in compliance with all applicable laws and electrical codes.
13. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during set up.
14. Use only lubricants and fuel recommended in the Specifications chart of this manual.
15. Improper connections to a building electrical system can allow electrical current from the Generator to backfeed into the utility lines. Such backfeed may electrocute utility company workers or others who contact the lines during a power outage, and the Generator may explode, burn, or cause fires when utility power is restored. Consult the utility company and a qualified electrician if intending to use the Generator for back up power.
16. Do not operate the Generator before grounding. The Generator must be earth-grounded in accordance with all relevant electrical codes and standards before operation.

Operating Precautions

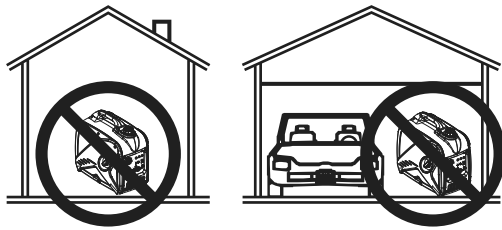
1.



CARBON MONOXIDE HAZARD

Using a generator indoors CAN KILL YOU IN MINUTES.

Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.



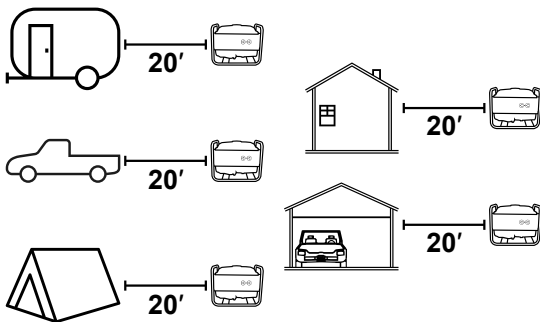
NEVER use inside a home or garage, EVEN IF doors and windows are open.



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



Do not use in trailers, truck beds, or tents.



Use at least 20 feet away from people, animals, and structures with exhaust pointed away. Generator will still produce carbon monoxide, even when burning propane.

2. CARBON MONOXIDE SHUTOFF

DANGER! TO PREVENT SERIOUS INJURY AND DEATH FROM CARBON MONOXIDE INHALATION:

The Carbon Monoxide sensor is an additional layer of protection only. Do not use the Generator in any area or situation that will allow carbon monoxide to accumulate.

- FLASHING RED LIGHT:
Dangerous levels of carbon monoxide gas have built up and generator will shutoff. 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. Do not use the Generator until the sensor is working properly. For technical questions, please call 1-888-866-5797.

NOTE: Yellow light flashes once after starting to indicate passing self-check and is functioning normally.

Carbon Monoxide sensor must only be serviced by qualified technician to restore it to original settings. Do not modify or tamper with the Carbon Monoxide sensor. Not following these instructions can result in death or serious injury due to Carbon Monoxide sensor malfunction.

3. Never use a generator indoors, including in garages, basements, crawl spaces and sheds. Opening doors and windows or using fans will NOT prevent carbon monoxide build up in the home.
4. When using generators, keep them outdoors and far away from open doors, windows, and vents to avoid toxic levels of carbon monoxide from building up indoors.
5. If you start to feel sick, dizzy, or weak while using a generator, get to fresh air right away. The carbon monoxide from generators can quickly lead to full incapacitation and death.
6. LPG/Propane is highly flammable and explosive.
7. Flammable gas under pressure can cause a fire or explosion if ignited.
8. LPG/Propane can settle in low places because it is heavier than air.
9. LPG/Propane has a distinctive odor added to help detect potential leaks. This odor can diminish over time or due to other factors.
10. Keep LPG/Propane tanks in an upright position.

11. Connect LPG/propane tank using provided attachment kit only. Kit includes 1.5 meter (4.9 ft) hose. Place tank as far away from Generator as hose allows and away from engine exhaust. Do not place tank above Generator.
12. When exchanging LPG/propane tanks, be sure the tank valve is the same type.
13. In case of a LPG/propane fire, do not attempt to extinguish unless the fuel supply can be shut off safely.
14. LPG/propane will burn the skin. Prevent skin contact at all times.
15. Keep the propane tank away from the generator exhaust.
16. Keep children away from the equipment, especially while it is operating.
17. Keep all spectators at least six feet from the engine during operation.
18. Fire Hazard! Do not fill gas tank while engine is running. Do not operate if gasoline has been spilled. Clean spilled gasoline before starting engine. Do not operate near pilot light or open flame.
19. Do not touch engine during use. Let engine cool down after use.
20. Never store fuel or other flammable materials near the engine.
21. If the plugged in product operates abnormally or unusually slow, immediately stop using the generator as a power source. Read and adhere to the instruction manual of the product to be powered to make sure that it can be safely and efficiently powered by a portable generator.
22. Before connecting an appliance or power cord to the generator: Make sure that it is in good working order. Faulty appliances or power cords can create a potential for electrical shock.
23. Do not exceed the running wattage of the generator. Make sure that the total electrical rating of the all of the tools or appliances plugged into the generator at the same time does not exceed that of the generator. Check that the startup surge will not be beyond the limit of the generator.
24. Do not overload the generator. Even a slight overload may lead to premature generator failure and a substantial overload will trip the circuit breaker.
25. Do not attempt to connect or disconnect load connections while standing in water, or on wet or soggy ground.
26. Do not touch electrically energized parts of the generator and interconnecting cables or conductors with any part of the body, or with any non-insulated conductive object.
27. Connect the generator only to a load that is compatible with the electrical characteristics and running wattage of the generator.
28. Insulate all connections and disconnected wires.
29. Guard against electric shock. Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerators.
30. Only use a suitable means of transport and lifting devices with sufficient weight bearing capacity when transporting the generator.
31. Secure the generator on transport vehicles to prevent it from rolling, slipping, and tilting.
32. Industrial applications must follow OSHA requirements.
33. Do not leave the generator unattended when it is running. Turn off the generator (and remove safety keys, if available) before leaving the work area.
34. The generator can produce high noise levels. Prolonged exposure to noise levels above 85 dBA is hazardous to hearing. Wear ear protection when operating the generator or when working nearby while it is operating.
35. Wear ANSI-approved safety glasses and hearing protection during use.
36. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to a heart pacemaker could cause pacemaker interference or pacemaker failure. Caution is necessary when near the engine's magneto or recoil starter.
37. Use only accessories that are recommended by Harbor Freight Tools for your model. Accessories that may be suitable for one piece of equipment may become hazardous when used on another piece of equipment.
38. Do not operate in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Gasoline-powered engines may ignite the dust or fumes.
39. Stay alert, watch what you are doing and use common sense when operating this generator. Do not use while tired or under the influence of drugs, alcohol or medication.
40. Dress properly. Do not wear loose clothing or jewelry. Keep hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.
41. Parts, especially exhaust system components, get very hot during use. Stay clear of hot parts.
42. Keep the stop/start remote control away from children. Do not place in tight spaces with other objects that may actuate the remote buttons and send an undesired start signal to the generator.
43. Do not cover the generator during operation.
44. Keep the generator and surrounding area clean at all times.
45. Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refuelling.

46. Use the equipment, accessories, etc., in accordance with these instructions and in the manner intended for the particular type of equipment, taking into account the working conditions and the work to be performed. Use of the equipment for operations different from those intended could result in a hazardous situation.
47. Do not operate the equipment with known leaks in the engine's fuel system.
48. When spills of fuel or oil occur, they must be cleaned up immediately. Dispose of fluids and cleaning materials as per any local, state, or federal codes and regulations. Store oil rags in a bottom-ventilated, covered, metal container.
49. Keep hands and feet away from moving parts. Do not reach over or across equipment while operating.
50. Before use, check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the equipment's operation. **If damaged, have the equipment serviced before using.** Many accidents are caused by poorly maintained equipment.
51. Use the correct equipment for the application. Do not modify the equipment and do not use the equipment for a purpose for which it is not intended.
52. Extension Cord - Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized extension cord will cause a drop in line voltage resulting in loss of power and overheating.

The table below shows the correct cord size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

RECOMMENDED MINIMUM WIRE GAUGE FOR EXTENSION CORDS				
Current (Amps)	Load @ 120V (Watts)	20 ~ 50 ft	50 ~ 75 ft	75 ~ 100 ft
2	240	18 AWG		
4	480	18 AWG		16 AWG
6	720	18 AWG	16 AWG	14 AWG
8	960	16 AWG		12 AWG
10	1200	16 AWG	14 AWG	12 AWG
15	1800	14 AWG	12 AWG	10 AWG
20	2400	12 AWG	10 AWG	
25	3000	12 AWG	10 AWG	8 AWG
30	3600	10 AWG	8 AWG	
40	4800	6 AWG		

Do not use extension cords less than 20 feet in length.

Parallel Kit Precautions

⚠️ WARNING

TO PREVENT SERIOUS INJURY, DEATH, AND GENERATOR AND/OR EQUIPMENT DAMAGE FROM ELECTRIC SHOCK AND FIRE:

1. **Follow Parallel Kit instructions provided with Kit for connection and use of a Parallel Kit.**
2. Only connect two identical Inverter Generators together using a Parallel Kit.
3. Connect Parallel Kit only to terminals marked "Parallel Outlets" on the front of the Generator.
4. Do not remove or connect a Parallel Kit while the Generator is running.
5. Do not use a Parallel Kit that is attached to only one Generator.

SAFETY

SETUP

OPERATION

MAINTENANCE

Service Precautions

1. **Before service, maintenance, or cleaning:**
 - a. **Unplug all devices from the generator.**
 - b. **Push the Engine/Battery Switch to its “OFF” position.**
 - c. **Turn the Fuel Selector Switch to its “OFF/STORAGE” position.**
 - d. **Allow the engine to completely cool.**
 - e. **Then, remove the spark plug cap from the spark plug.**
2. Keep all safety guards in place and in proper working order. Safety guards include muffler, air cleaner, mechanical guards, and heat shields, among other guards.
3. **Keep all electrical equipment clean and dry.** Replace any wiring where the insulation is cracked, cut, abraded, or otherwise degraded. Replace terminals that are worn, discolored, or corroded. Keep terminals clean and tight.
4. **Do not alter or adjust any part of the equipment or its engine that is sealed by the manufacturer or distributor. Only a qualified service technician may adjust parts that may increase or decrease governed engine speed.**
5. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during service.

6. Maintain labels and nameplates on the equipment. These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
7. Have the equipment serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the equipment is maintained. Do not attempt any service or maintenance procedures not explained in this manual or any procedures that you are uncertain about your ability to perform safely or correctly.
8. Store equipment out of the reach of children.
9. Follow scheduled engine and equipment maintenance.

Refueling:

1. Turn off the generator before refilling the fuel tank. Do not refill the fuel tank while the engine is hot.
2. Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refuelling.
3. **Do not fill fuel tank to the top.** Leave a little room for the fuel to expand as needed.
4. Refuel in a well-ventilated area only.
5. Wipe up any spilled fuel and allow excess to evaporate before starting engine.
To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

Button/Coin Battery Warnings

SAFETY

SETUP

OPERATION

MAINTENANCE

WARNING

INGESTION HAZARD:

This product contains a button cell or coin battery.



This symbol means:

INGESTION HAZARD: This product contains a button cell or coin battery.

1. Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.
2. Even used batteries may cause severe injury or death.
3. Call a local poison control center for treatment information.
4. Non-rechargeable batteries are not to be recharged.
5. Do not force discharge, recharge, disassemble, heat above 140°F or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.
6. Ensure the batteries are installed correctly according to polarity (+ and -).
7. Do not mix old and new batteries, different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.
8. Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations.
9. Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.



SAVE THESE INSTRUCTIONS.

Set Up



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

!WARNING

TO PREVENT SERIOUS INJURY AND FIRE: Operate only with proper spark arrestor installed.



Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

At high altitudes, the engine's carburetor, governor, and any other parts that control the fuel-air ratio will need to be adjusted by a qualified mechanic to allow efficient high-altitude use and to prevent damage to the engine and any other devices used with this product.

Grounding

The Generator must be properly grounded in accordance with all relevant electrical codes and standards before operation. In many locations, local code will not require this generator to be grounded when used with cord and plug equipment plugged directly into the receptacles on the generator. However, your local regulations may require the generator to be grounded. Contact a licensed electrician or consult local authorities regarding local grounding requirements. If grounding is required, have the unit grounded by a qualified electrician if you are not qualified to do so.

General grounding instructions are as follows:

Use one of the following as the grounding electrode:

Pipe or conduit, minimum 3/4 in. diameter, minimum 8 ft. long. If steel, it must have anti-corrosion coating.

Rod, stainless steel or copper- or zinc-coated steel, minimum 5/8 in. diameter, minimum 8 ft. long.

1. Drive electrode at least 8 ft. vertically into the ground.
 - a. If rock layer prevents vertical entry, drive at an angle not exceeding 45 degrees from vertical.
 - b. If rock layer prevents angle entry, bury electrode in horizontal trench at least 30 in. deep.
2. The upper end of electrode must be protected if above ground level.
3. Connect a #6 AWG grounding wire (not included) from the Grounding Terminal on the Generator Control Panel to the buried electrode.

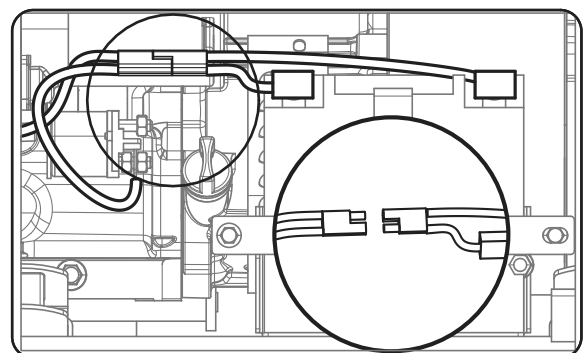
For additional information on grounding methods, please see the National Electrical Code.

NOTICE: The portable generator Neutral conductor is isolated from the frame and from the AC receptacle ground pin. Electrical devices that require a connection between one conductor pin and the grounded receptacle pin may not function properly.

Electric Starter Battery Connection

For the electric start function, the included 12VDC Battery must be connected before first use.

1. Turn Engine/Battery Switch to OFF position.
2. Remove the Battery and Oil Fill Access Panel.
3. Locate the battery pigtail and connect to the mating connector.
4. Make sure the battery harness is secured and routed properly.
5. Replace the Battery and Oil Fill Access Panel.



Note: The built-in charging circuit charges the Battery while the Engine is running. Turn the Engine/Battery Switch off when the Generator is not in use to prevent draining the Battery.

Components and Controls

SAFETY

SETUP

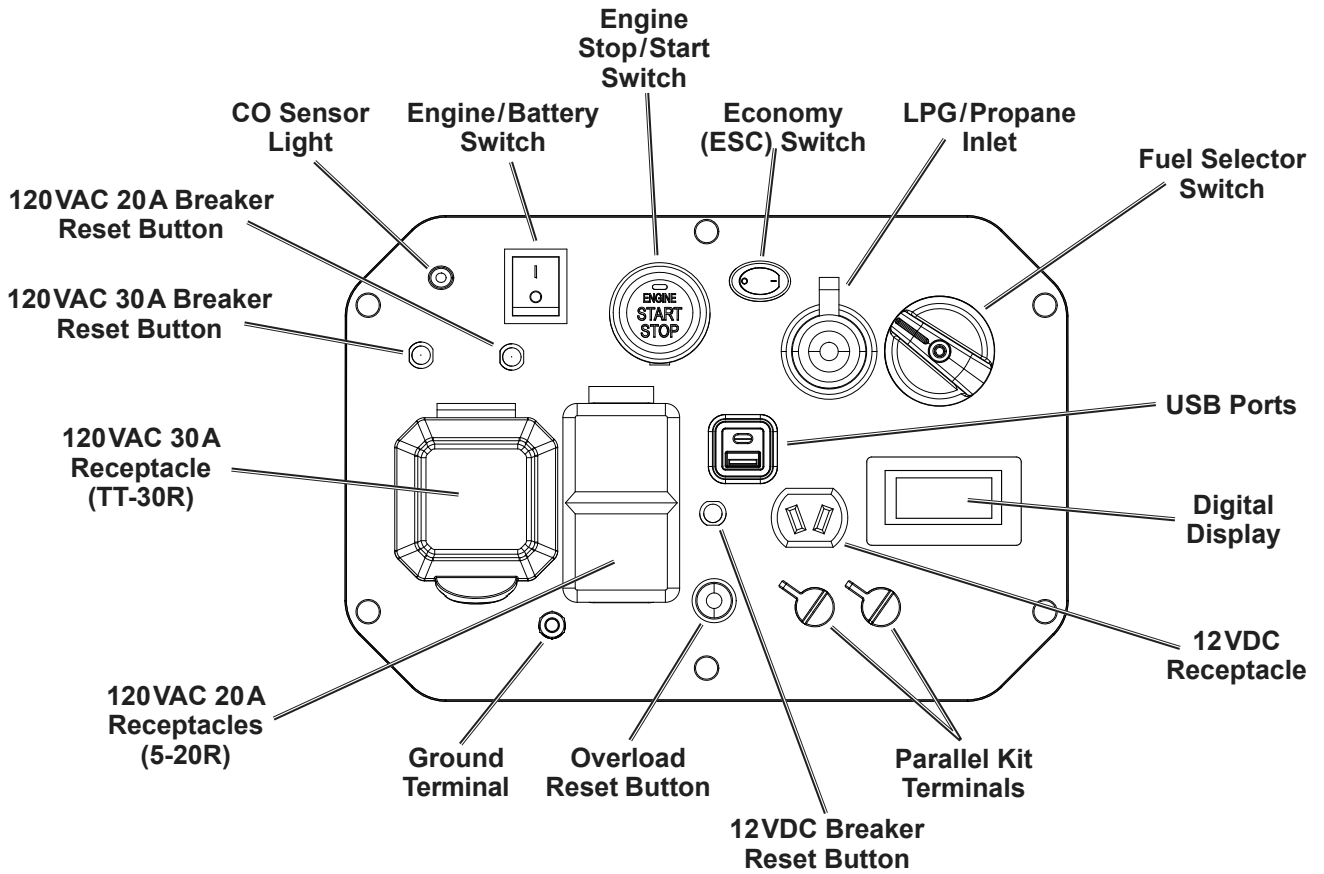


Figure A: Control Panel

WARNING! TO PREVENT SERIOUS INJURY: Follow Parallel Kit instructions for connection and use of a Parallel Kit (Parallel Kit and instructions sold separately).

OPERATION

MAINTENANCE

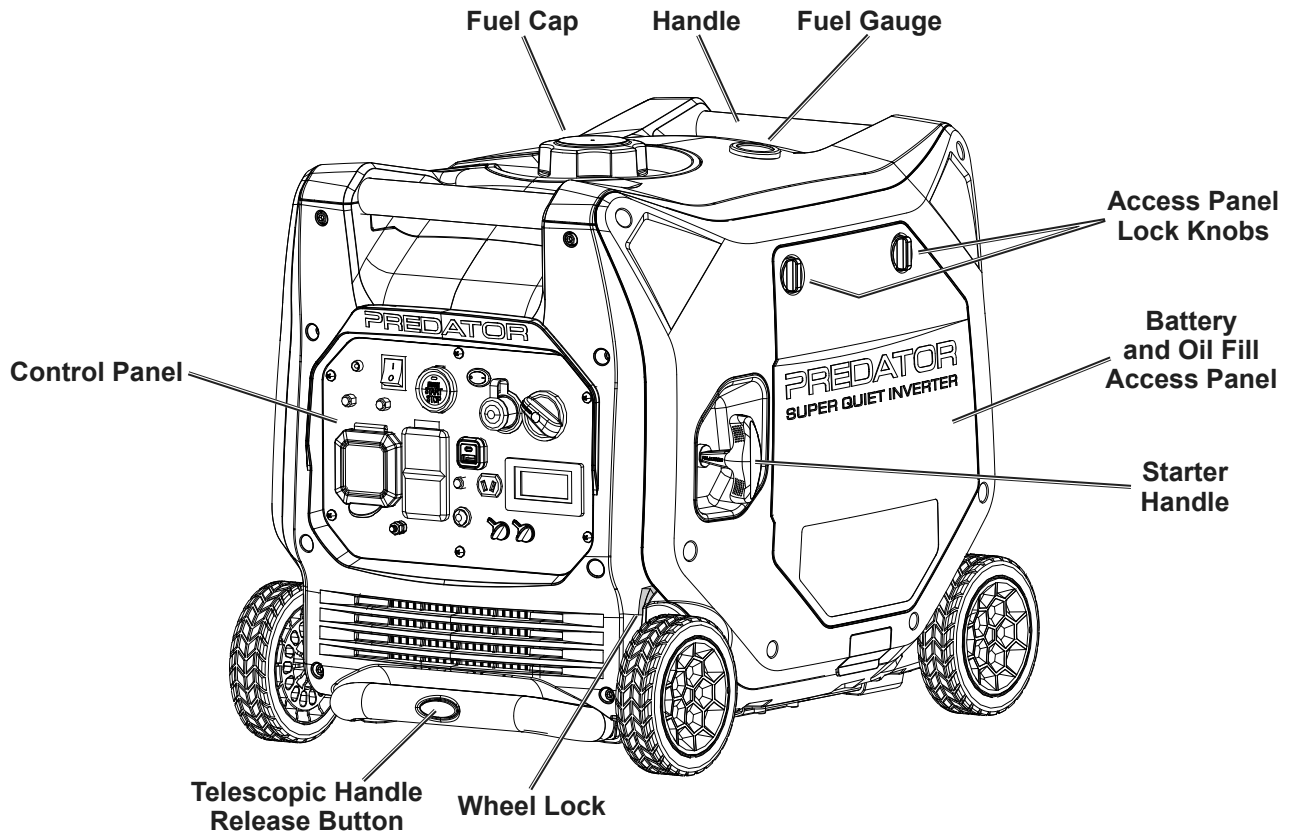


Figure B: Generator Front

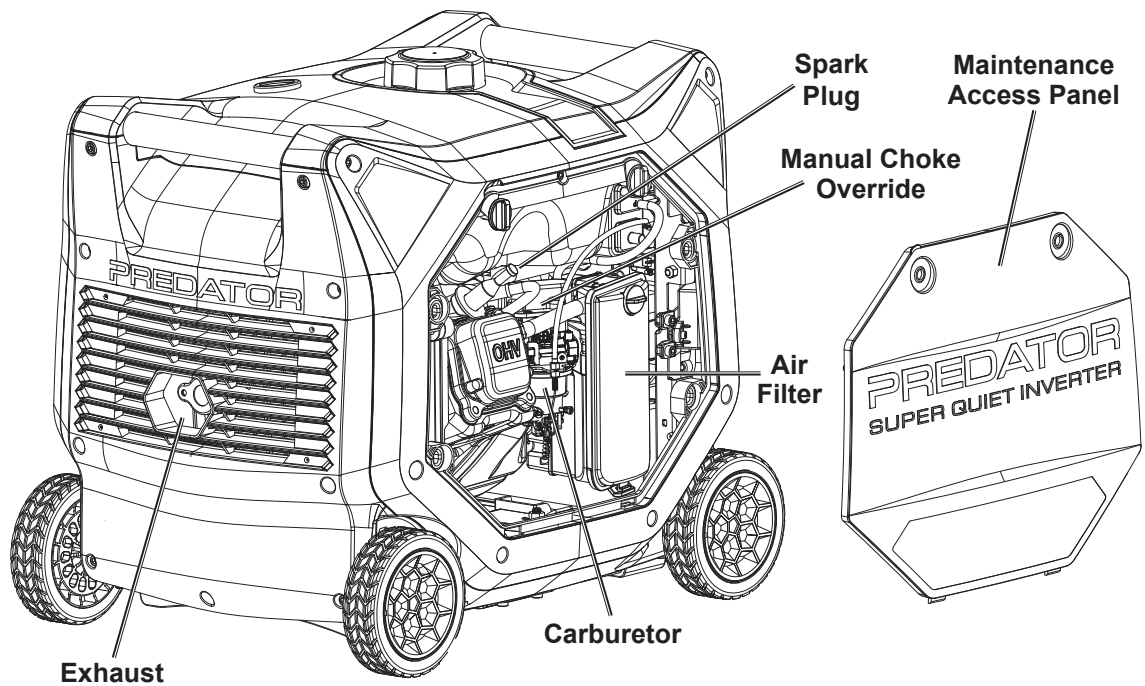
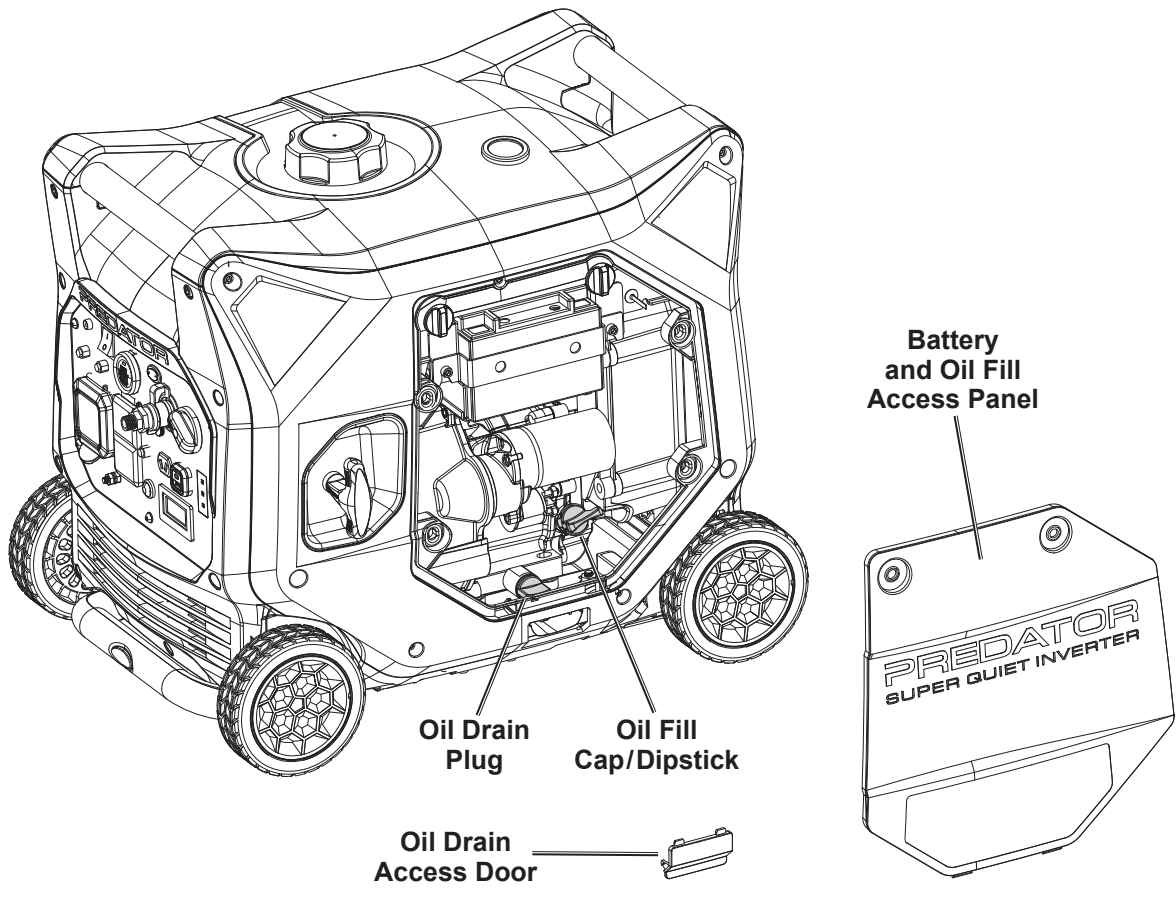


Figure C: Generator Rear and Interior



High Altitude Operation Above 2000 feet

SAFETY

⚠ WARNING! TO PREVENT SERIOUS INJURY FROM FIRE:

Follow instructions 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 proceeding. Do not smoke.

NOTICE: Warranty void if necessary adjustments are not made for high altitude use.

At high altitudes, the engine's carburetor, governor, and any other parts that control the fuel-air ratio will need to be adjusted by a qualified mechanic to allow efficient high-altitude use and to prevent damage to the engine and any other devices used with this product. The fuel system on this engine may be influenced by operation at higher altitudes. Proper operation can be ensured by installing an altitude kit at altitudes higher than 2000 ft. above sea level. At elevations above 7000 ft, the engine may experience decreased performance, even with the proper main jet. Operating this engine without the proper altitude kit installed may increase the engine's emissions and decrease fuel economy and performance. The kit should be installed by a qualified mechanic.

Note: Not all Generator models have a Solenoid. Skip those steps if a Solenoid is not present.

1. Turn off the Engine.
2. Close the Fuel Valve by turning the Fuel Selector Switch to the OFF/STORAGE position.
3. Remove the Maintenance Access Panel to access the Carburetor.
4. Place a bowl under the Fuel Cup to catch any spilled fuel.
5. Unthread the screws holding the Solenoid in place.

CAUTION! Carburetor bowl may have gas in it which will leak upon removing the Solenoid/Bolt.

6. Disconnect the Solenoid and Solenoid Seal from the Bolt.
7. Unthread the Bolt holding the Fuel Cup.
8. Remove the Bolt, Bolt Seal, Fuel Cup, Fuel Cup Seal and Main Jet from the body of the Carburetor assembly. A carburetor screwdriver (not included) is needed to remove and install the Main Jet.

Note: The mixing tube is held in place by the Main Jet and might fall out when it is removed. If it falls out, replace it in the same orientation before replacing the Main Jet.

9. Replace the Main Jet with the replacement Main Jet needed for your altitude range (part 1a, 2a, or 3a).

Note: The Fuel Cup Seal and Bolt Seal may be damaged during removal and should be replaced with the new ones from the kit.

10. Replace the Fuel Cup Seal (5a), Fuel Cup, Bolt Seal (4a), and Bolt. Tighten in place.

NOTICE: Do not cross thread bolt when tightening. Finger tighten first and then use a wrench to make sure the bolt is properly threaded.

11. Replace the Solenoid and Solenoid Seal (6a), and tighten in place with screws.
12. Replace the Maintenance Access Panel.
13. Wipe up any spilled fuel and allow excess to evaporate before starting Engine. To prevent FIRE, do not start the Engine while the smell of fuel hangs in the air.

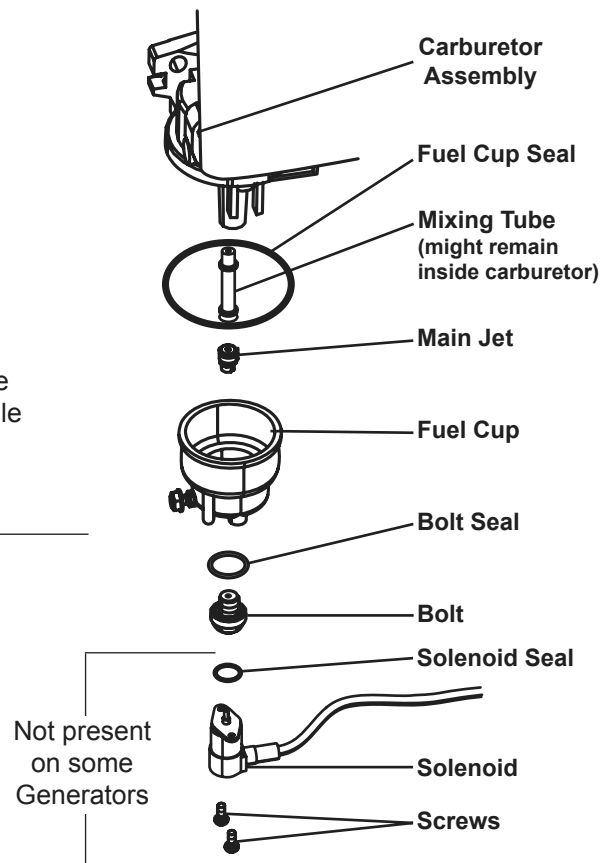
SETUP

OPERATION

MAINTENANCE

High Altitude Kit Parts List - A

Part	Description	Qty
1a	Main Jet 2000-3000 ft.	1
2a	Main Jet 3000-6000 ft.	1
3a	Main Jet 6000-7000 ft.	1
4a	Bolt Seal	1
5a	Fuel Cup Seal	1
6a	Solenoid Seal	1



Operation



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

Pre-Start Checks

Only operate the generator outside and at least 20 feet away from people, animals, and structures, with exhaust pointed away. Inspect Engine and Generator looking for damaged, loose, and missing parts before set up and starting. Keep generator maintenance access panels in place and secured during operation. If any problems are found, do not use equipment until fixed properly.

Checking and Filling Engine Oil

NOTICE: Generator is shipped without engine oil. Engine's crankcase **MUST** be filled with oil before first use. Your Warranty is **VOID** if the Engine's crankcase is not properly filled with oil before first use and before each use thereafter. Before each use, check the oil level. Engine will not start with low or no engine oil.

1. Make sure the Engine is stopped and is level.
2. On the right side of the Generator, loosen the Access Panel Lock Knobs and remove the Battery and Oil Fill Access Panel, as shown to the right.
3. Clean the top of the Oil Fill Cap/Dipstick and the area around it. Remove the Cap/Dipstick, turning it counterclockwise.
4. Check the oil level. The oil level should be up to the edge of the hole as shown.
5. 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.
6. Thread the Oil Fill Cap/Dipstick back in clockwise and replace the Battery and Oil Fill Access Panel.

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

For Gasoline Operation: Checking and Filling Fuel

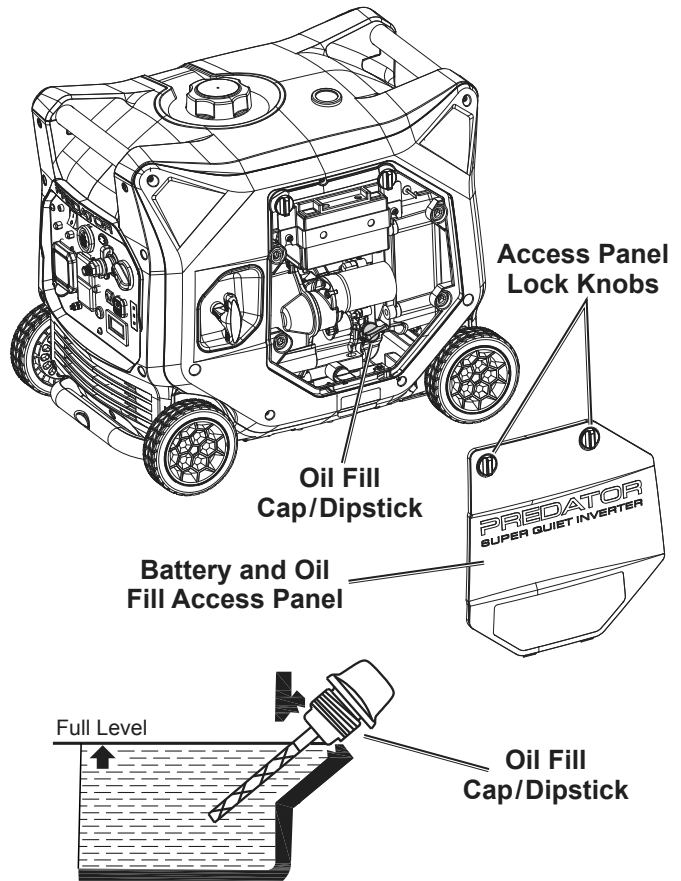


WARNING! TO PREVENT SERIOUS INJURY FROM FIRE:

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. Add fuel stabilizer to the gasoline or the Warranty is **VOID**.



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 inch under the fill neck of the Fuel Tank with 87 octane or higher 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 engine. To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

For LPG Operation: Connecting LPG/Propane Tank



- a. The LPG/Propane tank must have a minimum capacity of 20lb.
- b. The LPG/Propane tank must conform to the standard as listed in Setup Precautions section.
- c. Propane tanks that use a liquid withdrawal system cannot be used with this Generator.
- d. Verify the re-qualification date on the tank has not expired.
- e. Connect LPG/Propane tank using provided attachment kit only. Kit includes 1.5 meter (4.9 ft) Hose. Place tank as far away from Generator as Hose allows and away from engine exhaust. Do not place tank above Generator. Do not use included LPG/Propane Hose with any other appliances.
- f. All new tanks or used tanks that have not been plugged or kept closed must be purged of air and moisture by a propane supplier prior to filling.
- g. Position the tank so the connection between the tank valve and the LPG/Propane Inlet will not cause sharp bends or kinks in the Hose.
- h. Inspect the LPG/Propane Hose before every use. Do not use damaged equipment. If damage is detected, have the problem corrected before further use.

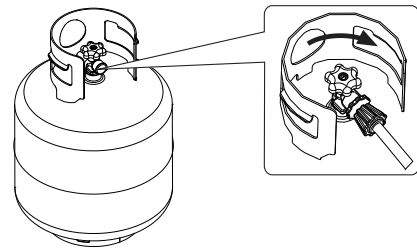


⚠ WARNING! EXPLOSION HAZARD. TO PREVENT SERIOUS INJURY:

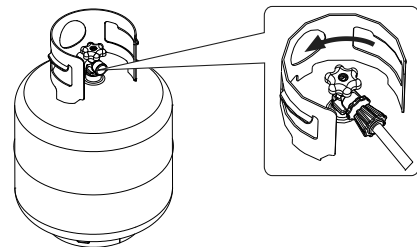
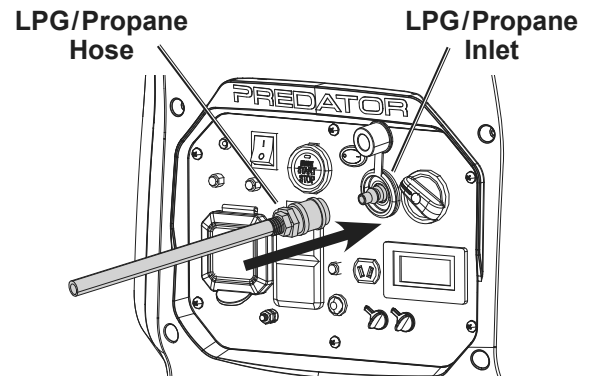
Do not start the engine if the smell of LPG/Propane hangs in the air. Close the propane tank valve and disconnect the

LPG/Propane 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 propane tank valve is in the fully closed position.
3. Remove the cover on the LPG/Propane Inlet.
4. Align the finger on the female hose fitting on the LPG/Propane Hose with the slot next to the male coupling on the Generator.
5. Insert the female hose fitting into the coupling and push in until it clicks into place.
6. Remove the safety plug or cap from the propane tank valve.
7. Attach the other end of the Hose to the LPG/Propane connector on the tank. Hand tighten clockwise to a positive stop. To prevent damage, do not use a wrench or tool to tighten the connector.
8. Turn the propane tank valve to the fully open position. Check for leaks by applying soapy water to all connections. Look for bubbles. If bubbles are present at connections, close the propane tank valve and tighten connections. Open the valve and recheck connections. If a leak continues or is not at a connection do not use the Generator. Have the problem corrected before further use.



Close Tank Valve



Open Tank Valve

Remote Start

The Start/Stop Remote Control will operate up to approximately 100 feet in distance from the Generator. The distance at which the Remote will function may be adversely affected by obstructions between the Generator and the Remote Control.

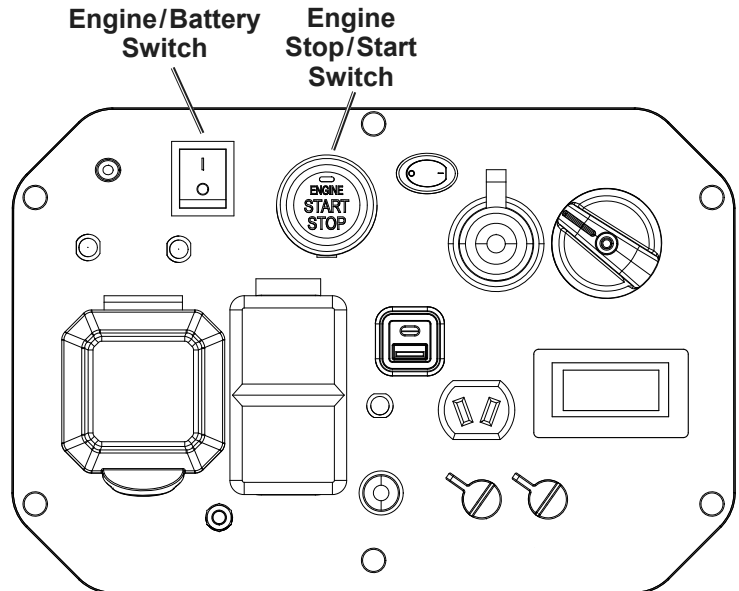
Note: The operational range of the Remote Control may decrease as the battery in the Remote become depleted.

Remote replacement battery: 3V CR2032

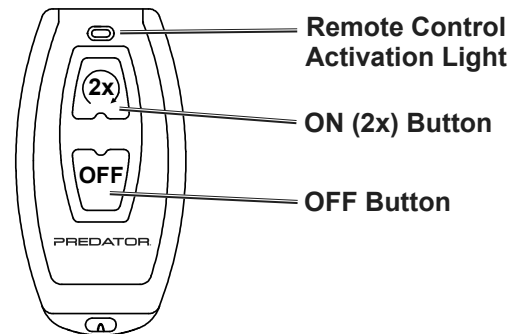
Reprogramming the Start/Stop Remote Control

If the Start/Stop Remote Control is replaced or needs to be paired to the generator, follow this procedure:

1. Push the Engine/Battery Switch to the ON position.
2. Push and hold the Engine Start/Stop Switch for 10 seconds until the Switch Indicator Light flashes green, then release the Switch.



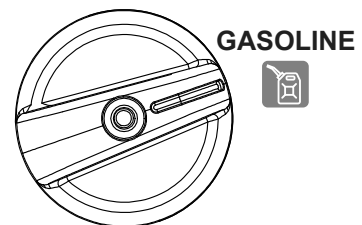
3. Push the 2x button on the Stop/Start Remote Control. It will pair with Generator and the Switch Indicator Light on the Generator will stop flashing.



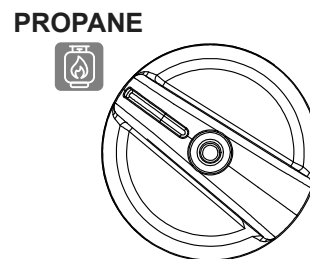
Fuel Selector Switch

Turn the Fuel Selector Switch on the Control Panel to the desired fuel setting.

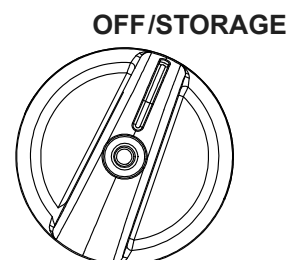
1. To operate the Generator on gasoline turn the Fuel Selector Switch fully to the right to the GASOLINE setting.



2. To operate the Generator on LPG/Propane turn the Fuel Selector Switch fully to the left to the PROPANE setting.



3. When the Generator is not in use turn the Fuel Selector Switch to the OFF/STORAGE position to turn off gasoline and LPG/Propane fuel flow to Engine.



Starting the Engine – Gasoline Operation

Before Starting the Engine

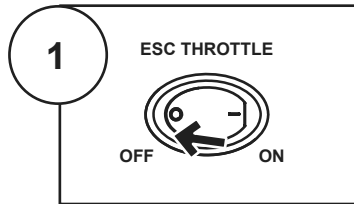


- a. Inspect the generator and engine.
- b. Disconnect all electrical loads from the generator.
- c. Fill the engine with the proper amount and type of both stabilizer-treated unleaded gasoline and oil.

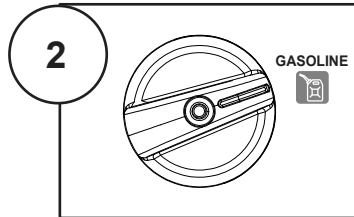
SAFETY

SETUP

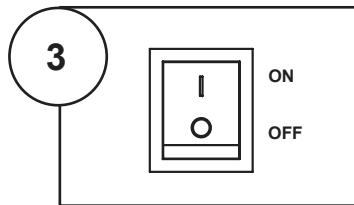
1. Move the Economy (ESC) Switch to the OFF position.



2. Turn the Fuel Selector Switch to the GASOLINE setting.

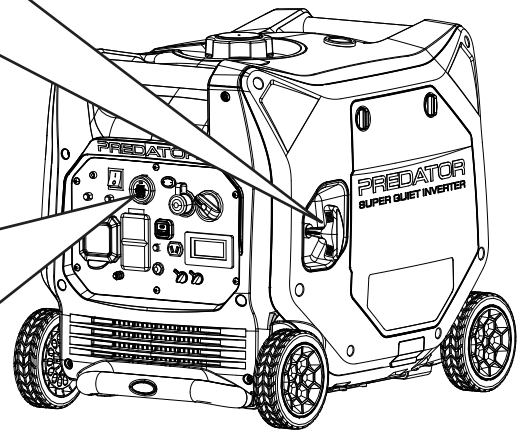
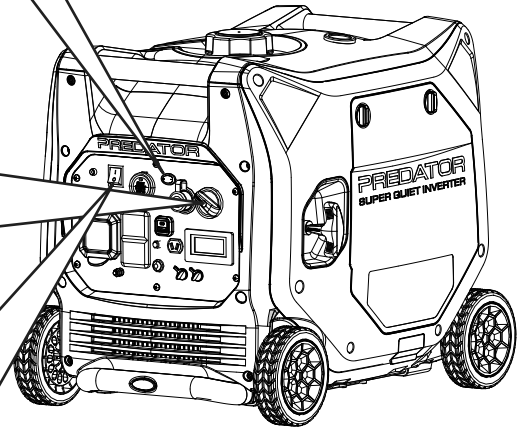
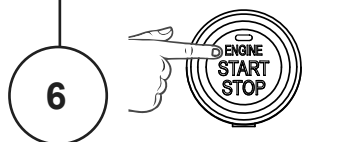
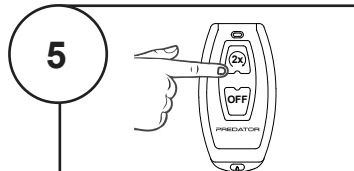
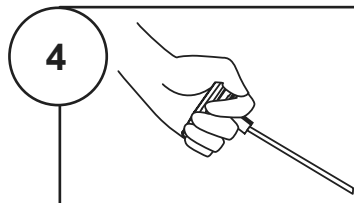


3. Push the Engine/Battery Switch to the ON position.



Select a starting method:

4. **Manual Start:** Grip the Starter Handle of the Engine loosely and pull it slowly several times to allow gasoline to flow into the Engine's carburetor. Then pull the Starter Handle gently until resistance is felt. Allow Cable to retract fully and then pull it quickly. Repeat until the Engine starts. Do not let the Starter Handle snap back against the housing. Hold it as it recoils so it doesn't hit the housing.
5. **Remote Start:** Slowly press and release the 2x Button on the Stop/Start Remote Control twice.
Note: If a CO shutoff event has occurred the remote start capability will be disabled until the Generator Engine has been restarted by another method.
6. **Electric Start:** Slowly press and release the Engine Start/Stop Switch twice.



Note: The Engine is equipped with an auto-choke system. In the case of a dead battery, there is a mechanical choke override located above the carburetor which can be used to manually choke and unchoke the Engine.

If engine does not start:

- **Check engine oil level.**
Engine will not start with low or no engine oil.
- **Check spark arrestor cleanliness.**
Engine will not start if spark arrestor is clogged.

IMPORTANT: Allow the Engine to run at no load for five minutes after each start-up so that the Engine can stabilize.

OPERATION

MAINTENANCE

Starting the Engine – LPG/Propane Operation

Before Starting the Engine

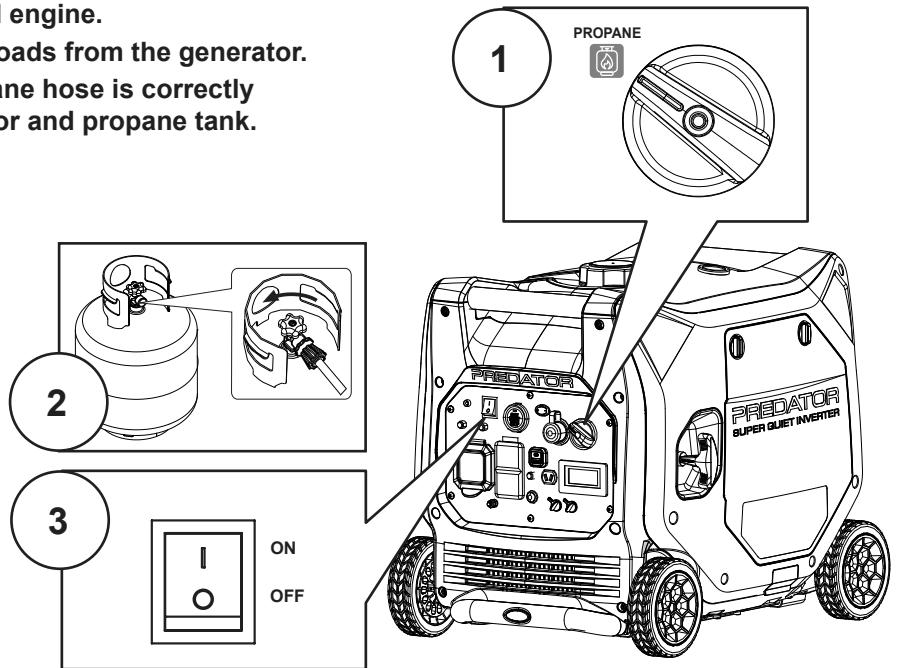


- Inspect the generator and engine.
- Disconnect all electrical loads from the generator.
- Make sure the LPG/Propane hose is correctly connected to the generator and propane tank.

1. Turn the Fuel Selector Switch to the PROPANE setting.

2. Fully open the valve on the LPG/Propane tank.

3. Push the Engine/Battery Switch to the ON position.

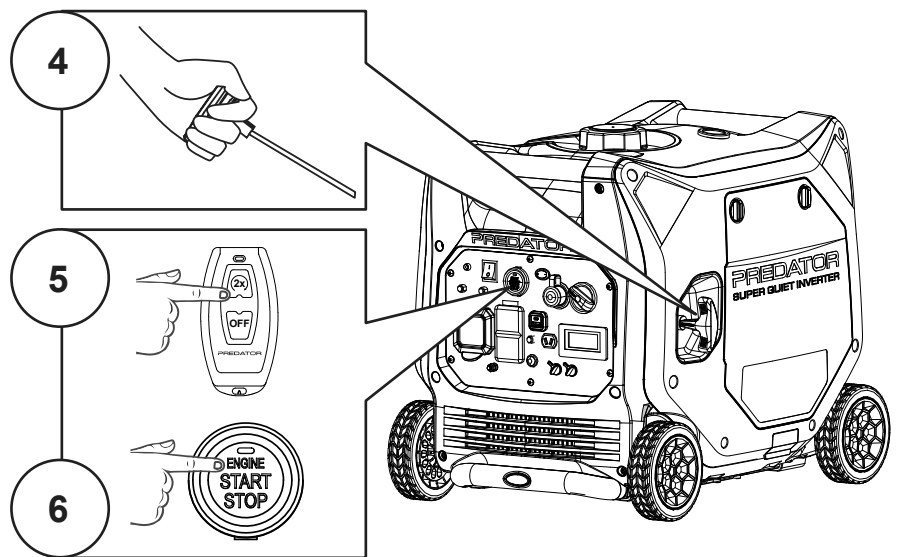


Select a starting method:

4. **Manual Start:** Grip the Starter Handle of the Engine loosely and pull it slowly several times to allow gasoline to flow into the Engine's carburetor. Then pull the Starter Handle gently until resistance is felt. Allow Cable to retract fully and then pull it quickly. Repeat until the Engine starts. Do not let the Starter Handle snap back against the housing. Hold it as it recoils so it doesn't hit the housing.

5. **Remote Start:** Slowly press and release the 2x Button on the Stop/Start Remote Control twice.
Note: If a CO shutoff event has occurred the remote start capability will be disabled until the Generator Engine has been restarted by another method.

6. **Electric Start:** Slowly press and release the Engine Start/Stop Switch twice.



Note: The Engine is equipped with an auto-choke system. In the case of a dead battery, there is a mechanical choke override located above the carburetor which can be used to manually choke and unchoke the Engine.

If engine does not start:

- Check engine oil level.**
Engine will not start with low or no engine oil.
- Check spark arrestor cleanliness.**
Engine will not start if spark arrestor is clogged.

IMPORTANT: Allow the Engine to run at no load for five minutes after each start-up so that the Engine can stabilize.

Switching Fuel Sources



Fire and explosion hazard. DO NOT add gasoline to the fuel tank or connect LPG/Propane Hose to the generator while the generator is in operation.

The fuel source can be switched while the Engine is running if a propane tank is connected to the Generator BEFORE operation.

Switching from Gasoline to LPG/Propane

1. **IMPORTANT: Disconnect all electrical loads from the Generator before switching from one fuel type to another.**
2. Fully open the valve on the LPG/Propane tank.
3. Turn the Fuel Selector Switch to the PROPANE setting.

Note: When switching from gasoline to LPG/Propane operation the Engine may run rough for a few seconds while it purges gasoline in the carburetor. If the Engine stops when switching fuel sources, the unit may be restarted using either fuel source.

Switching from LPG/Propane to Gasoline

1. **IMPORTANT: Disconnect all electrical loads from the Generator before switching from one fuel type to another.**
2. Turn the Fuel Selector Switch to the GASOLINE setting.
3. Turn the LPG/Propane tank valve to the fully closed position.

Break-in Period

- a. Breaking-in the Engine will help to ensure proper equipment and Engine operation.
- b. The break-in period will last about 30 hours of use.
DO NOT exceed 75% of the Generator's running wattage during this period.
 - Change the engine oil after this period.

Under normal operating conditions subsequent maintenance follows the schedule explained in the **MAINTENANCE** section.

CARBON MONOXIDE SHUTOFF

DANGER! TO PREVENT SERIOUS INJURY AND DEATH FROM CARBON MONOXIDE INHALATION:

The Carbon Monoxide sensor is an additional layer of protection only.

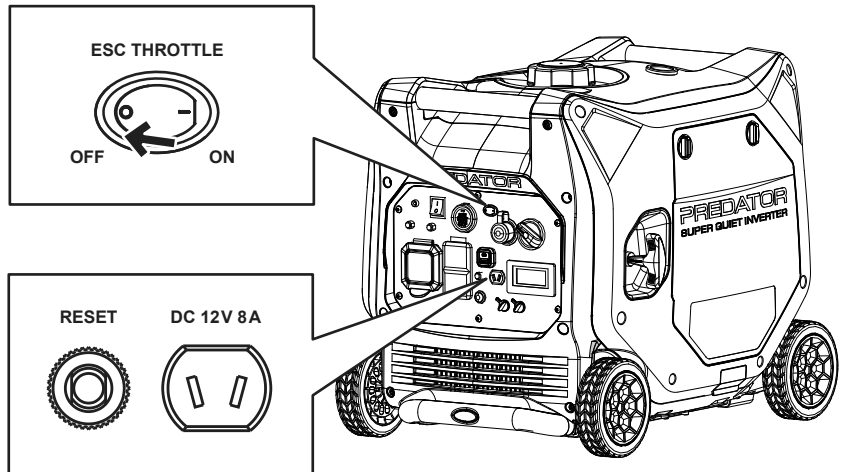
DO NOT USE THE GENERATOR INDOORS OR IN ANY ENCLOSED SPACE OR IN ANY OTHER AREA OR SITUATION THAT WILL ALLOW CARBON MONOXIDE TO ACCUMULATE.

- **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. Call 1-888-866-5797 as soon as possible. Do not use the Generator until the sensor is working properly.
NOTE: Yellow light flashes once after starting to indicate passing self-check and is functioning normally.

The Carbon Monoxide sensor must only be serviced by a qualified technician to restore it to original settings. Do not modify or tamper with the Carbon Monoxide sensor. Not following these instructions can result in death or serious injury due to Carbon Monoxide sensor malfunction.

Nominal 12VDC Output

1. Move the Economy (ESC) Switch to the OFF position.
2. Only use the 12VDC receptacle and provided charging cable with clamps to charge a 12 volt lead-acid type battery. Do not overcharge.
3. Do not connect any device to the 12VDC terminal that draws more than 8 amps.
4. If this 12VDC circuit protection is tripped, reduce the load, and press the Reset Button next to the outlet.



Connecting 120VAC Loads to the Generator

SAFETY

Calculate Power Draw:

Power draw can be calculated by multiplying *volts* and *amps*. The resulting number is *wattage*.

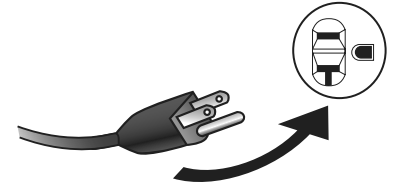
- Never exceed the running wattage for the Generator or any outlet amperage rating.
- Refer to appliance/tool owner's manuals to determine the wattage of electrical load devices.
- Long power cords and extension cords draw additional power. Keep cord length at a minimum.

Wattage Estimates

Refer to your device documentation for start-up and running wattage requirements. Check nameplate wattages on all loads before connecting to Generator.

Plug the power cord of the 120 volt appliance/tool into the 120VAC Outlet on the Generator. Plug in appliances from largest to smallest load.

Note: Do not allow the Generator to completely run out of fuel with devices attached. A Generator's output may sharply spike as it runs out of fuel, causing damage to attached devices.



Plug Load In

SETUP

Overload Indicator

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

1. The total combined load through the outlet on the Generator must not exceed the running power of the unit.
2. When approaching maximum running power, the OVERLOAD light will blink. If the OVERLOAD light turns on continuously and the Generator stops producing power, it has been overloaded.
3. Turn off and disconnect all electrical devices. 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.
5. Press the OVERLOAD RESET button to restore Generator power output and reconnect devices while being careful to not overload 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.

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

Economy (ESC) Switch







1. Turn the Economy (ESC) Switch ON to limit noise and fuel consumption for lighter generator loads.
2. Turn the Economy (ESC) Switch OFF to operate engine at full speed:
 - a. when starting
 - b. when a heavy load is applied
 - c. when using the 12VDC output

Digital Display Screen

The Display Screen can be used to monitor the operating status of the Generator. Use the Display Control Button to scroll through the following indicators and symbols:

- V – Voltage
- A – Amperage
- VA – Volt Amps/Watts
- Hour – current run time and accumulative run time

Display Screen Symbology

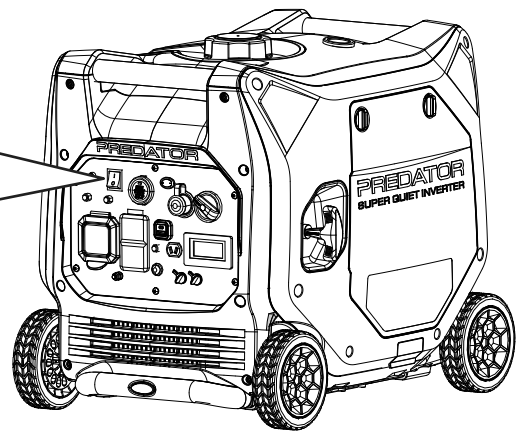
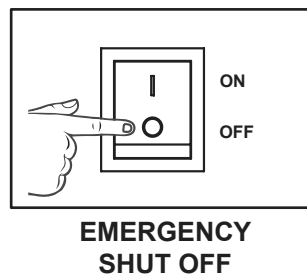
Symbol	Meaning
	Normal
	AC Overvoltage
	AC Undervoltage
	Generator Output Overcurrent
	Generator Output Short Circuit
	Inverter Overheating

OPERATION

MAINTENANCE

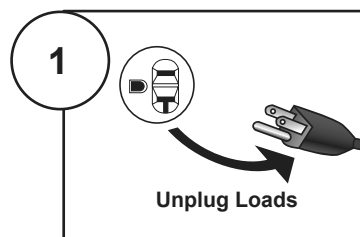
Stopping the Engine

To stop the Engine in an emergency, turn the Engine/Battery Switch OFF.



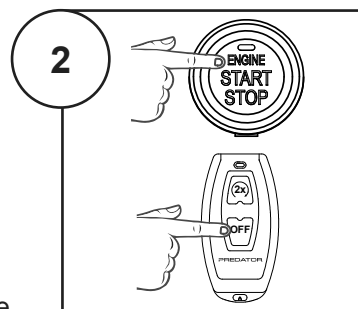
Under normal conditions, use the following procedure to shut off the Generator:

1. Turn all electrical load devices off and unplug them from the Generator.



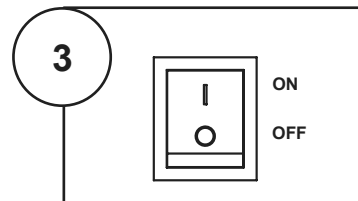
2. Slowly press and release the Engine Start/Stop Switch. Or slowly press and release the OFF button on the Stop/Start Remote Control. Turn the Fuel Selector Switch to the OFF/STORAGE position.

Note: When the Generator is turned OFF using the Stop/Start Switch or Remote Control, the Generator enters standby mode and can be restarted remotely using procedures indicated in starting section. If Generator is not started within 12 hours the Controller shuts down completely to save the battery. Turn the Engine/Battery Switch OFF then ON to reactivate standby mode.

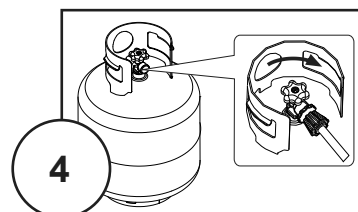


3. Push the Engine/Battery Switch to the OFF position.

Note: Turn the Engine/Battery Switch off when the Generator is not in use to prevent draining the Battery.



4. If operating on LPG/Propane, turn the propane tank valve to the fully closed position.



⚠️ WARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL STARTING:

Push the Engine/Battery Switch of the equipment to the “OFF” position, wait for the engine to cool, and disconnect the spark plug cap before performing any inspection, maintenance, or cleaning procedures.

TO PREVENT SERIOUS INJURY FROM EQUIPMENT FAILURE:

Do not use damaged equipment. If abnormal noise, vibration, or excess smoking occurs, have the problem corrected before further use.

Follow all service instructions in this manual. The engine may fail critically if not serviced properly.



Many maintenance procedures, including any not detailed in this manual, will need to be performed by a qualified technician for safety. If you have any doubts about your ability to safely service the equipment or engine, have a qualified technician service the equipment instead.

Cleaning, Maintenance, and Lubrication Schedule

Note: This maintenance schedule is intended solely as a general guide. If performance decreases or if equipment operates unusually, check systems immediately. The maintenance needs of each piece of equipment will differ depending on factors such as duty cycle, temperature, air quality, fuel quality, and other factors.

Note: The following procedures are in addition to the regular checks and maintenance explained as part of the regular operation of the engine and equipment.

Procedure	Before Each Use	Monthly or every 8 hr. of use	Every 3 mo. or 50 hr. of use	Every 6 mo. or 100 hr. of use	Yearly or every 300 hr. of use	Every 2 Years	Page
1. Brush off outside of engine 2. Check engine oil level 3. Check air filter 4. Check LPG/Propane hose assembly	✓						
Change engine oil				✓			27
Clean/replace air cleaner			✓*				28
Check and clean spark arrestor				✓			28
Check and clean spark plug				✓			29
1. Check/adjust valve clearance 2. Clean fuel tank, strainer and carburetor 3. Clean carbon build-up from combustion chamber					✓**		-
Replace fuel line if necessary						✓**	-

*Service more frequently when used in dusty areas.

**These items should be serviced by a qualified technician.

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. Add fuel stabilizer to the gasoline or the Warranty is VOID.

Engine Oil Change

⚠️ CAUTION! Oil is very hot during operation and can cause burns. Wait for engine to cool before changing oil.

1. Make sure the Engine is stopped and is level.
2. On the right side of the Generator, loosen the Lock Knobs and remove the Access Panel and Oil Drain Door, as shown to the right.
3. Place an oil drain pan under the Generator and center under the Oil Drain Door opening. Remove the Oil Drain Plug, tilt the Generator slightly to facilitate drainage and wait for oil to drain completely. Recycle used oil.
4. Tilt the Generator and replace the Oil Drain Plug, then set the Generator back down on a level surface.
5. Clean the top of the Oil Fill Cap/Dipstick and the area around it. Remove the Cap/Dipstick, turning it counterclockwise.
6. Add the appropriate type of oil until the oil level is at the proper level. SAE 10W-30 oil is recommended for general use.

Note: Make sure Generator is level when adding oil to prevent overfilling which could cause engine damage.

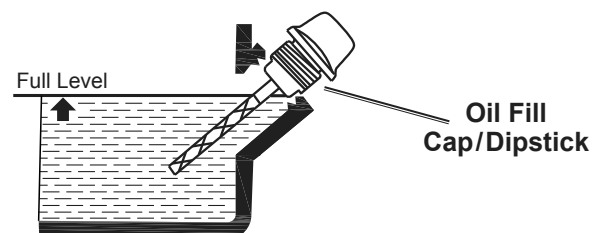
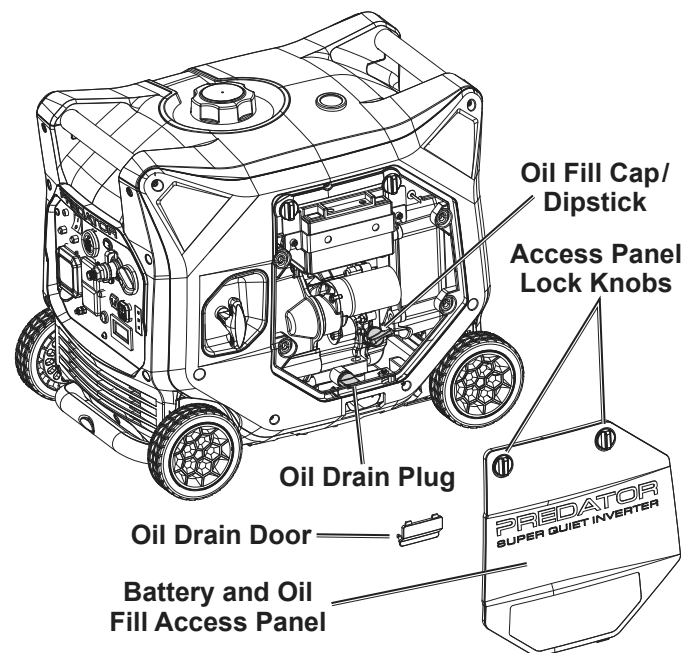
7. Check the oil level. The oil level should be up to the edge of the hole as shown.

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 inch under the fill neck of the Fuel Tank with 87 octane or higher 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 engine. To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

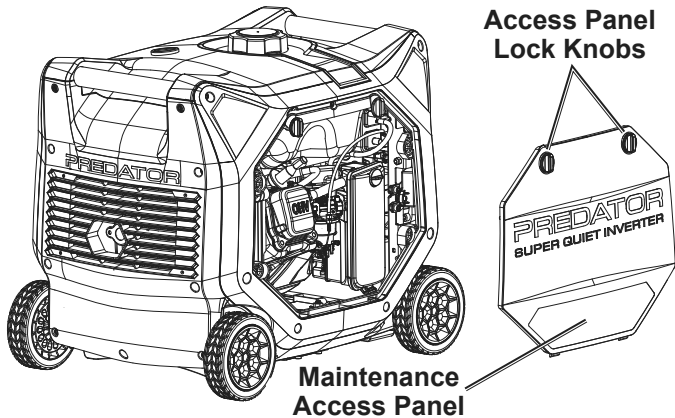
8. Thread the Oil Fill Cap/Dipstick back in clockwise and replace the Access Panel and Oil Drain Door.

NOTICE: Do not run the engine with too little oil. Engine will not start with low or no engine oil.

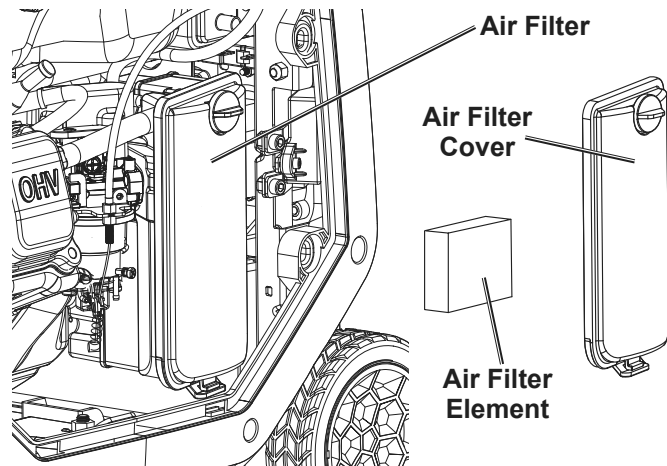


Air Filter Element Maintenance

1. Loosen two Lock Knobs and remove the Access Panel on the left side of the Generator.



2. Remove the Air Filter Cover and the air filter elements and check for dirt. Clean as described below.



3. **Cleaning:**

- For “paper” filter elements:
To prevent injury from dust and debris, wear ANSI-approved safety goggles, NIOSH-approved dust mask/respirator, and heavy-duty work gloves. In a well-ventilated area away from bystanders, use pressurized air to blow dust out of the air filter.
- For foam filter elements:
Wash the element in warm water and mild detergent several times. Rinse. Squeeze out excess water and allow it to dry completely. Soak the filter in lightweight oil briefly, then squeeze out the excess oil.

4. Install the cleaned filter.
5. Secure the Air Filter Cover and replace the Maintenance Access Panel before use.

Spark Arrestor Maintenance

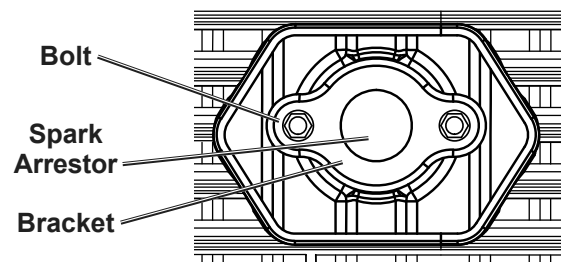
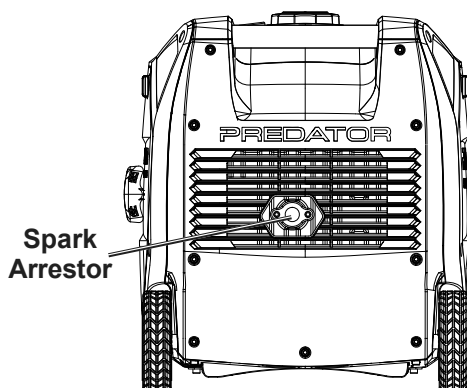
⚠ WARNING

TO PREVENT SERIOUS INJURY AND FIRE: Operate only with proper spark arrestor installed.



Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

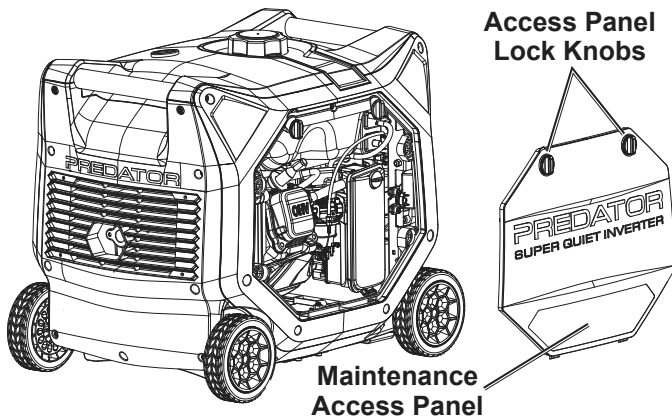
1. Allow the Generator to cool completely.
2. Remove the two Bolts holding the Spark Arrestor Bracket in place.
3. Clean the Spark Arrestor using a wire brush (sold separately). Replace Arrestor if damaged.



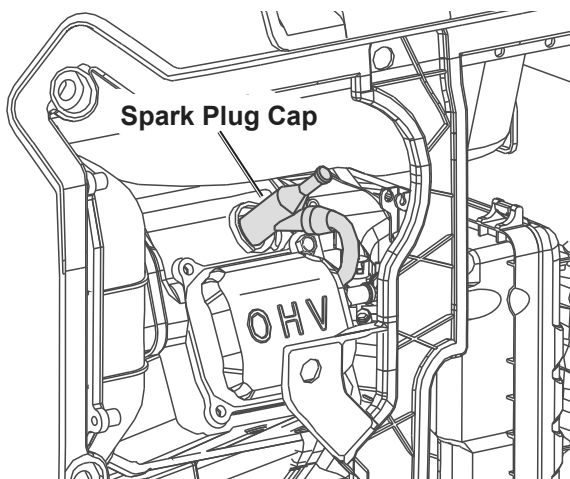
4. **WARNING! TO PREVENT SERIOUS INJURY FROM ACCIDENTAL BRUSH FIRE, secure Spark Arrestor back in place immediately after cleaning and before further operation.**

Spark Plug Maintenance

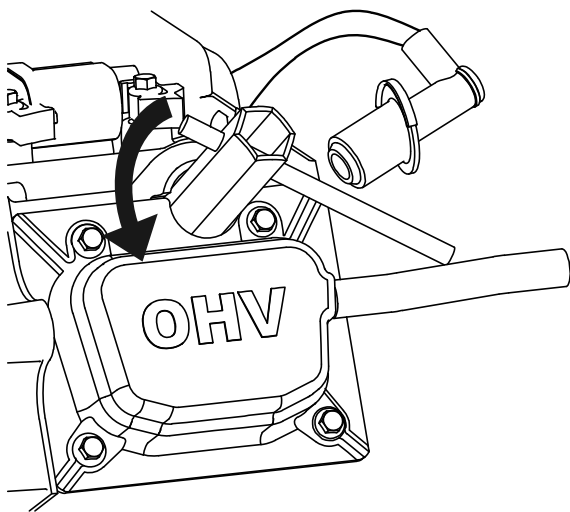
1. Loosen the Maintenance Access Panel Lock Knobs and remove the Access Panel on the left side of the Generator.



2. Disconnect Spark Plug Cap from end of plug. Clean out debris from around Spark Plug.



3. Use the included spark plug wrench to remove the Spark Plug.



Remote Control Battery Replacement

1. To replace battery, remove screw(s) and open battery compartment.
2. Install new CR2032 battery in correct polarity, close compartment and replace screw(s).

4. Inspect the Spark Plug:
If the electrode is oily, clean it using a clean, dry rag. If the electrode has deposits on it, polish it using emery paper. If the white insulator is cracked or chipped, the Spark Plug needs to be replaced.

NOTICE: Use only F7TC type spark plug or equivalent. Using an incorrect spark plug may damage the engine.

5. When installing a new spark plug, adjust the plug's gap to the specification on the Specifications chart. Do not pry against the electrode—the spark plug can be damaged.
6. Apply anti-seize material to Spark Plug threads. Install the new spark plug or the cleaned spark plug into the engine.

- **Gasket-style:**

Finger-tighten until the gasket contacts the cylinder head, then tighten about 1/2-2/3 turn more.

- **Non-gasket-style:**

Finger-tighten until the plug contacts the cylinder head, then tighten about 1/16 turn more.

NOTICE: Tighten the spark plug properly.

If loose, the spark plug will cause the engine to overheat.

If overtightened, the threads in the engine block will be damaged.

7. Apply dielectric spark plug boot protector (not included) to the end of the spark plug and reattach the cap securely.

8. Replace the Maintenance Access Panel before use.

Storage

When the equipment is to remain idle for longer than 20 days, prepare the engine for storage as follows:

- CLEANING:**
Wait for engine to cool, then clean engine with dry cloth. **NOTICE: Do not clean using water.** The water will gradually enter the engine and cause damage.

Note: Cover the LPG/Propane Inlet with the provided cap during cleaning and storage.

- FUEL:**
Gasoline Treatment/Draining the Fuel Tank

To protect the Fuel Tank during storage, fill the Tank with fresh gasoline that has been treated with a fuel stabilizer additive. Follow fuel stabilizer manufacturer's recommendations for use. Refer to *Checking and Filling Fuel* on page 17.

Aged gasoline that has not been treated with stabilizer ahead of time must be safely drained away and not run through the Engine.



⚠ WARNING! TO PREVENT SERIOUS INJURY FROM FIRE:

Fill 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.

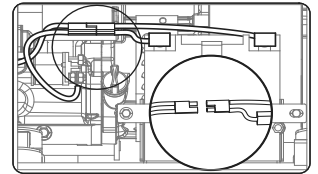
Draining the Carburetor

After closing the Fuel Valve by turning the Fuel Selector Switch to the OFF/STORAGE position, place an appropriate container under the Carburetor. Route the fuel drain hose on the Carburetor to the container, then carefully loosen the Drain Bolt and allow the fuel to drain completely. Replace the Drain Bolt after draining.

WARNING! To prevent serious injury and fire, close the Fuel Valve before draining the Carburetor.

- LUBRICATION:**
 - Change engine oil.
 - Clean out area around spark plug. Remove spark plug and pour one tablespoon of engine oil into cylinder through spark plug hole.
 - Replace spark plug, but leave spark plug cap disconnected.
 - Pull Starter Handle to distribute oil in cylinder. Stop after one or two revolutions when you feel the piston start the compression stroke (when you start to feel resistance).

- BATTERY:**
Disconnect the Battery Cable during extended storage periods to help prevent draining the Battery.



- STORAGE AREA:**
Cover and store in a dry, level, well-ventilated area out of reach of children. Storage area should also be away from ignition sources, such as water heaters, clothes dryers, and furnaces.

NOTICE: During extended storage periods the Engine must be started every 3 months and allowed to run for 15–20 minutes or the Warranty is VOID.



⚠ WARNING! To prevent serious injury from product malfunction: Store the Generator standing on its wheels. Do not store the unit on its side or in a vertical position.

- AFTER STORAGE:**
Before starting the Engine after storage, keep in mind that untreated gasoline will deteriorate quickly. Drain the Fuel Tank and change to fresh fuel if untreated gasoline has been sitting for a month, if treated gasoline has been sitting beyond the fuel stabilizer's recommended time period, or if the Engine does not start.

Troubleshooting

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

SAFETY

SETUP

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

Problem	Possible Causes	Probable Solutions
Engine will not start (continued)	<p>ELECTRIC OR REMOTE START RELATED:</p> <ol style="list-style-type: none"> 1. No battery or defective battery installed. 2. Engine Start/Stop Switch flashes red – Battery is low. 3. Electric start fuse (5A) is blown. 4. Stop/Start Remote Control is not paired with Generator. 5. Generator not picking up Stop/Start Remote Control signal consistently. 6. Engine not restarting remotely after CO shutdown event. 	<p>ELECTRIC OR REMOTE START RELATED:</p> <ol style="list-style-type: none"> 1. Install a new battery. Refer to page 13. 2. Charge battery with external charger or start Generator manually and allow to run for 5 hours. 3. Replace fuse with similar size fuse. 4. Pair Remote Control to Generator. Refer to page 19. 5. Replace the Remote Control battery; press on Remote Button longer; stay within operational range of Remote. 6. After a CO shutdown event, the remote start capability will be disabled until the Engine has been first restarted non-remotely.
Engine misfires	<ol style="list-style-type: none"> 1. Spark plug cap loose. 2. Incorrect spark plug gap or damaged spark plug. 3. Defective spark plug cap. 4. Old or low quality gasoline. 5. Incorrect compression. 	<ol style="list-style-type: none"> 1. Check cap and wire connections. 2. Re-gap or replace spark plug. 3. Replace spark plug cap. 4. Use only fresh 87+ octane stabilizer-treated unleaded gasoline. Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.). 5. Diagnose and repair compression. Use Engine will not start: COMPRESSION RELATED section.
Engine stops suddenly	<ol style="list-style-type: none"> 1. Carbon Monoxide level high. Red light on Carbon Monoxide Sensor illuminates. 2. CO Sensor Alarm flashes yellow continually shortly after starting. 3. CO Sensor Alarm flashes yellow continually after longer period of operation. 4. Low oil shutdown. 5. Fuel tank empty or full of impure or low quality gasoline. 6. Faulty magneto. 7. Disconnected or improperly connected spark plug cap. 8. Unintentional shutdown signal sent from Stop/Start Remote Control. 	<ol style="list-style-type: none"> 1. Leave area immediately and allow area to ventilate thoroughly. Only operate generator outside. 2. Carbon monoxide sensor malfunction. Sensor needs service. Call 1-888-866-5797 as soon as possible. Do not use the Generator until the sensor is working properly. 3. Make sure to operate Generator within rated ambient temperature; maintain minimum 5 ft. clearance from all sides. 4. Fill engine oil to proper level. Check engine oil before EVERY use. 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.). 6. Have qualified technician service magneto. 7. Secure spark plug cap. 8. Store the Remote Control in a safe location and away from children.
Engine stops when under heavy load	<ol style="list-style-type: none"> 1. Dirty air filter 2. Engine running cold. 	<ol style="list-style-type: none"> 1. Clean element. 2. Allow engine to warm up prior to operating equipment.
Engine knocks	<ol style="list-style-type: none"> 1. Old or low quality gasoline. 2. Engine overloaded. 3. Incorrect spark timing, deposit buildup, worn engine, or other mechanical problems. 	<ol style="list-style-type: none"> 1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded gasoline. Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.). 2. Do not exceed equipment's load rating. 3. Have qualified technician diagnose and service engine.



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

Problem	Possible Causes	Probable Solutions
Engine backfires	<ol style="list-style-type: none"> 1. Impure or low quality gasoline. 2. Engine too cold. 3. Intake valve stuck or overheated engine. 4. Incorrect timing. 	<ol style="list-style-type: none"> 1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded gasoline. Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.). 2. Use cold weather fuel and oil additives to prevent backfiring. 3. Have qualified technician diagnose and service engine. 4. Check engine timing.
Attached device doesn't have power	<ol style="list-style-type: none"> 1. Device not plugged in properly. 2. Circuit Breaker tripped. 3. Product needs service. 	<ol style="list-style-type: none"> 1. Turn off and unplug the device, then plug it back in again and turn on. 2. Turn off and unplug device, reset Circuit Breaker, plug in device and turn on. 3. Have product repaired.
Attached device begins to operate abnormally	<ol style="list-style-type: none"> 1. Problem with device. 2. Rated load capacity exceeded. 	<ol style="list-style-type: none"> 1. Immediately unplug device. Have device repaired by a qualified technician, or replace device. 2. Lower the number of items plugged into the Generator to stay within the rated capacity, or use a more powerful generator.



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

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LISTS AND ASSEMBLY DIAGRAMS IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

Record Product's Serial Number Here: _____

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts. Specify UPC 193175516077 when ordering parts.

Generator Parts List

SAFETY

SETUP

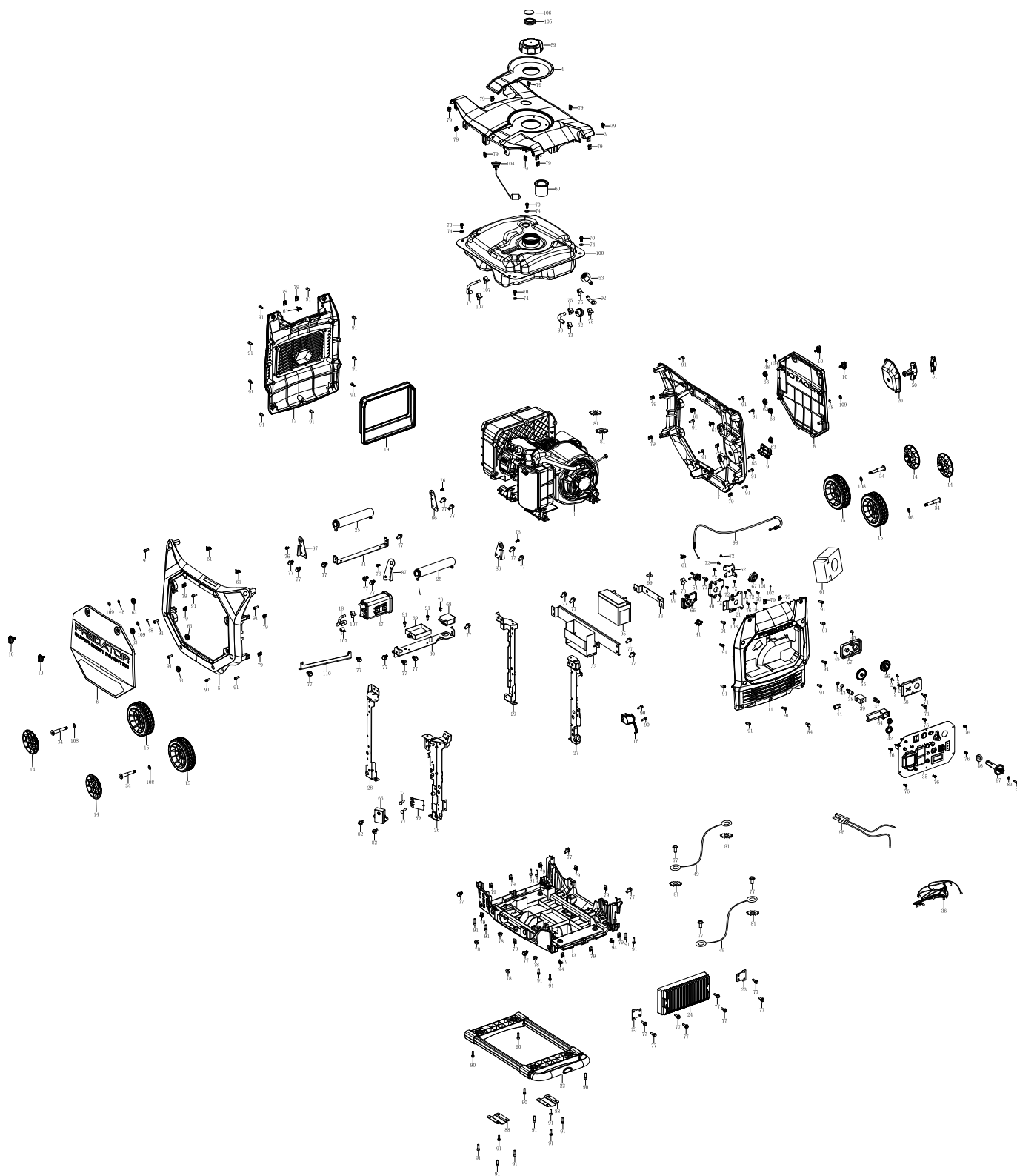
OPERATION

MAINTENANCE

Part	Description	Qty
1	Engine Assembly	1
2	Screw M4x8	4
3	Decorative Board	1
4	Sealing Ring	1
5	Left Housing	1
6	Maintenance Access Panel	1
7	Right Housing	1
8	Battery and Oil Fill Access Panel	1
9	Cover	1
10	Side Cover Knob	4
11	Panel Rear Cover	1
12	Muffler Baffle	1
13	Engine Bottom Plate	1
14	Hub Cap	4
15	Wheel	4
16	Brake Assembly	1
17	Carbon Canister/Fuel Tank Connecting Pipe	1
18	Carbon Canister/Air Filter Connecting Pipe	1
19	Exhaust Sealant	1
20	Handle Decoration Block	1
21	Oil Switch Bracket	1
22	Rod Components	1
23	Inverter Bracket	2
24	Inverter	1
25	Handle	2
26	Left Front Pillar	1
27	Right Front Pillar	1
28	Left Rear Pillar	1
29	Right Rear Pillar	1
30	Tank Front Bracket	1
31	Tank Back Bracket	1
32	Tank Right Support	1
33	Battery Holder	1
34	Axle	4
35	Panel Comp	1
36	Wiring Harness	1
37	Intake Connector	1
38	Switch Axis	1
39	Tee	1
40	Front Shroud	1
41	Microswitch	1
42	Plug	1
43	Sealing Ring	2
44	Outlet Connector	1
45	Self-Tapping Screw M4x16	2
46	Knob Plug	1
47	Carbon Canister Assembly	1
48	Circlip Ø6	4
49	Grounding Wire	2
50	Starter Grip	1
51	Starter Grip Cover	1
52	Fuel Filter	1
53	Connector	1
54	Fuel Cock	1
55	Gear	1
56	Gear	1

Part	Description	Qty
57	Upper Cover	1
58	Lower Lid	1
59	Fuel Tank Cap	1
60	Fuel Filter	1
61	Clip	6
62	Oil Switch Bracket	1
63	Rubber Gasket	8
64	Jacket	1
65	CO Module	1
66	Back Shroud	1
67	Cable Tray	1
68	DC Voltage Regulator	1
69	Control Module	1
70	Bolt M6x20	4
71	Bolt M6x25	2
72	Pan Head Tapping Screw ST4.2x13	8
73	Fuel Line Clip Ø9.5x0.8	2
74	Rotor Bolt Gasket	4
75	Fuel Hose Clip Ø10	3
76	Screw M5x12	14
77	Bolt M6x12	38
78	Nut M8	4
79	Locking Clip	32
80	Screw M4x16	1
81	Tooth Washer	5
82	Inner Hexalobular Tooth Tamper Proof Bolt	2
83	Flat Gasket Ø4	1
84	Wire Sleeve	1
85	Adhesive Strip	1
86	Left Handle Bracket	2
87	Right Handle Bracket	2
88	Pull Rod Pressing Plate	2
89	CO Bracket	1
90	Bolt M6x25	6
91	Bolt M6x16	50
92	Fuel Pipe	1
93	Fuel Pipe	1
94	Foot Pad	2
95	Battery	1
96	Battery Wiring Assembly	1
97	Knob	1
98	Cable	1
99	Butterfly Bolt M6x12	2
100	Fuel Tank	1
101	Spring	1
102	Steel Ball	1
103	Conical Countersunk Head Screw 4.2x13	1
104	Fuel Gauge	1
105	Rubber Sleeve	1
106	Filter	1
107	Fuel Hose Clip Ø8.5	4
108	Flat Gasket Ø10xØ20x2	4
109	Flat Gasket Ø8	4
110	Fuel Tank Lower Beam Bracket	1
111	Remote Control (Not Shown)	1
112	LPG Connection Kit (Not Shown)	1

Generator Assembly Diagram



SAFETY

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Engine Parts List

SAFETY

SETUP

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MAINTENANCE

Part	Description	Qty
1A	Crankcase	1
2A	Ball Bearing	2
3A	Oil Seal	1
4A	Bolt M6x16	11
5A	Drain Plug Bolt	1
6A	Drain Plug Washer	2
7A	Crankcase Cover Dowel Pin	4
8A	Piston	1
9A	Piston Ring Set	1
10A	Connecting Rod Assembly	1
11A	Piston Pin	1
12A	Piston Clip	2
13A	Crankcase Cover Assembly	1
14A	Dipstick	1
15A	Intake Valve	1
16A	Exhaust Valve	1
17A	Intake Valve Returner	1
18A	Valve Spring	2
19A	Valve Spring Seat	2
20A	Valve Lock Clamp	4
21A	Rotator	2
22A	Stud Bolt	2
23A	Nut M6	2
24A	Crankshaft Assembly	1
25A	Valve Lifter	2
26A	Crankcase Cover Gasket	1
27A	Camshaft Assembly	1
28A	Dowel Pin	2
29A	Bolt M8x30	6
30A	Cylinder Head Gasket	1
31A	Bolt M8x60	4
32A	Spark Plug	1
33A	Push Rod	2
34A	Bolt M6x12	5
35A	Cylinder Head Cover Gasket	1
36A	Cylinder Head Cover	1
37A	Nut	1
38A	Intake Gasket	1
39A	Carburetor Gasket	1
40A	Bolt M5x12	2
41A	Temperature Sensor	1
42A	Rocker Assembly	2
43A	Adjuster Rocker Arm	2
44A	Recoil Starter Assembly	1
45A	Rotor	1
46A	Bolt M6x60	3
47A	Stator	1
48A	Recoil Starter Fan	1
49A	Starter Pulley	1
50A	Ignition Coil	1
51A	Wind Deflector Shroud	1
52A	Bracket	1

Part	Description	Qty
53A	Bolt M6x35	1
54A	Carburetor Insulator	1
55A	Carburetor Assembly	1
56A	Stepper Motor	1
57A	Breather Tube	1
58A	Stud Bolt	2
59A	Fuel Line Clip Ø12	1
60A	Recoil Starter Components	1
61A	Carburetor Spacer	1
62A	Oil Level Switch Assembly	1
63A	Push Rod Guide Plate	1
64A	Waterproof Cover	1
65A	Bottom Plate Guide Hood	1
66A	Cylinder Head	1
67A	Bolt M6x25	4
68A	Wind Deflector	1
69A	Bolt M6x8	2
70A	Air Cleaner Assembly	1
71A	Fuel Line Clip	1
72A	Inner Cylinder Head Cover	1
73A	Bolt	1
74A	Starter Motor Assembly	1
75A	Fuel Line Clip Ø9.5x0.8	1
76A	Fuel Line	1
77A	Bolt M6x20	17
78A	Stepper Motor	1
79A	Bolt M4x20	1
80A	Crossing Screw M4x6	4
81A	Polyurethane Screen	3
82A	Stepper Motor Bracket	1
83A	Low Pressure Hose	1
84A	Exhaust Sealant	1
85A	Muffler Back Cover	1
86A	Muffler Front Cover	1
87A	Left Power Base Plate	1
88A	Right Power Base Plate	1
89A	Muffler Junction Plate	1
90A	Vibration	4
91A	Muffler	1
92A	Bolt M8x45	4
93A	Crossing Screw M4x25	2
94A	Nut M8	2
95A	Spring Washer Ø8	2
96A	Nut M8	8
97A	Drain Tube	1
98A	Oil Plug	1
99A	Bolt M6x28	1
100A	Bolt M6x30	2
101A	Wire Harness Clip	4
102A	Low Pressure Hose Hoop	1
103A	Wire Harness Clip	1

When ordering replacement parts from this list, the "A" suffix must be included in order to get the correct part.

Engine Assembly Diagram



SAFETY

SETUP

OPERATION

MAINTENANCE

Limited 90 Day Warranty (Retail)

SAFETY

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS, EXCEPT FOR THE EMISSIONS CONTROL SYSTEM WARRANTY BELOW.

SETUP

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

OPERATION

MAINTENANCE

Emissions Control System Warranty

Harbor Freight Tools (HFT) is pleased to explain the emissions control system warranty on your Small Off-Road Engine produced after January 1, 2024 (engine), in addition to the Retail Warranty above. HFT warrants that the emissions control system on your engine is designed, built, and equipped so that it conforms to the United States Environmental Protection Agency's (EPA) emissions requirements in effect at the time of manufacture. HFT also warrants that the emissions control system on your engine will be free from defects in material and workmanship for two (2) years, provided there has been no improper maintenance, misuse, or abuse of your engine.

Your emissions control system may include parts such as the carburetor or fuel-injection system, and the ignition system. Also included may be hoses, belts, connectors and other emissions-related assemblies.

WHAT WE WILL DO

Where a warrantable condition exists, HFT will repair or replace, at our option, any emissions-related part on your engine if it becomes defective, malfunctions, or otherwise fails to conform with this warranty under normal use and service during the two (2) year term of this warranty at no cost to you, including diagnosis, parts and labor. This warranty applies to the original purchaser and any subsequent owner within the two year warranty period.

WHAT IS COVERED?

The following parts are examples of components of the emissions control system and are covered by this two (2) year warranty. For a full list of emissions control components covered by this warranty, please see 40 CFR §1068, Appendix I.

1. Fuel Metering System
 - a. Carburetor and its internal parts.
 - b. Fuel pump (if so equipped).
 - c. Cold start enrichment system.
2. Air Induction System
 - a. Intake pipe/manifold.
 - b. Air cleaner.
3. Ignition System
 - a. Spark plug.
 - b. Magneto ignition system.
4. Catalyst System (if so equipped)
 - a. Exhaust pipe stud.
 - b. Muffler.
 - c. Catalytic converter (if so equipped).
5. Miscellaneous Items Used in Above Systems
 - a. Vacuum, temperature and time sensitive valves and switches.
 - b. Hoses, belts, connectors, and assemblies.

This warranty does not cover normal maintenance services or replacement of maintenance items such as filters, oils, or spark plugs.

WHAT YOU MUST DO TO OBTAIN WARRANTY SERVICE

As the engine owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. HFT may deny you warranty coverage if your engine or a part has failed due to abuse (including failure to follow the fuel use instructions contained in this manual), neglect, improper maintenance, or unapproved modifications.

In order to obtain warranty repair or replacement, you may either (a) contact HFT product support at 1-888-866-5797 or productsupport@harborfreight.com; or (b) bring the engine/equipment to your nearest Harbor Freight Tools retail store. When going to the retail store or contacting product support, you must indicate the specific emissions control part or defect that you are claiming and the date this was originally purchased. The nearest Harbor Freight Tools retail store can be found on the internet at <http://www.harborfreight.com>.

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