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 date code 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.

26d

PREDATOR®

11,500 WATT EFI DUAL FUEL GENERATOR

9,000 GAS RUNNING WATTS
11,500 MAX GAS STARTING WATTS

8,100 LPG RUNNING WATTS
11,500 MAX LPG STARTING WATTS

Visit our website at: https://www.harborfreight.com

For product assistance, visit harborfreight.com/customer-support/contact-us

71039

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.

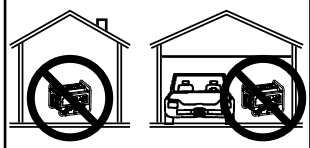
FOR YOUR SAFETY

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

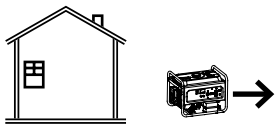
⚠ DANGER

Using a generator indoors CAN KILL YOU IN MINUTES.

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



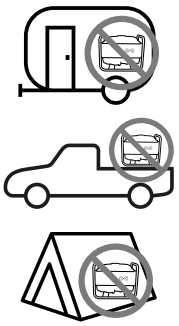
NEVER use inside a home or garage, EVEN IF doors and windows are open.



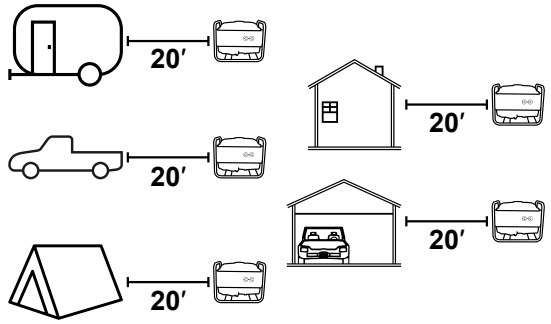
Only use OUTSIDE and far away from windows, doors, and vents.

⚠ 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 produce carbon monoxide when burning gas, LPG, or NG.



When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please visit harborfreight.com/customer-support/contact-us 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.

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Specifications

Generator	AC Output (Gasoline)	120/240VAC, 60Hz, 75/37.5A, 1 Phase 9000 Running Watts 11500 Maximum Starting Watts
	AC Output (LPG/Propane)	120/240VAC, 60Hz, 67.5/33.8A, 1 Phase 8100 Running Watts 11500 Maximum Starting Watts
	DC Output	USB-A: 5V, 3A USB-C: PD 24W (5/9/12V)
	Receptacles	2x 120VAC, 20A GFCI (NEMA 5-20R) 1x 120VAC, 30A Twist Lock (NEMA L5-30R) 1x 120/240VAC, 30A Twist Lock (NEMA L14-30R) 1x 120/240VAC, 50A RV (NEMA 14-50R) Parallel Connection Ports: 1x USB-A, 1x USB-C
Displacement		459cc
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 Capacity	6.2 Gallon / 23.4 Liter
	LPG/Propane Tank	40 lb tank minimum
Engine Oil	Type SAE	10W-30
	Capacity	1.2 Quart / 1.1 Liter
Run Time @ 25% Load with full gasoline tank		14 hours
Run Time @ 25% Load with LPG tank		14.5 hours (40 lb. tank) 40.2 hours (100 lb. tank)
Sound Level at 23 feet, 25% load		63.5 dB(A)
Bore x Stroke		92mm x 69mm
Spark Plug	Type	BPR6ES (NGK) or equivalent
	Gap	0.027"–0.031"
Valve Clearance	Intake	0.0039"–0.0059"
	Exhaust	0.0059"–0.0078"
Engine Speed		2400-3600 RPM
Electric Start Battery		12V–14Ah Lead-Acid Non-Spillable
Remote Control Battery		3V CR2032
Internal Battery		3V CR2032 Contains non-replaceable batteries
Battery Charger	Input: 100–240VAC, 50/60Hz, 0.5A Max • Output: 14VDC, 0.8A Cable Length: 5.9 feet, Green indicator: Charged, Red indicator: Charging	

The emissions control system for this Engine is warranted for standards set by the U.S. Environmental Protection Agency and by the California Air Resources Board (also known as CARB). 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: 2AWYP-TX0301

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.
⚠DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE CAUTION	Addresses practices not related to personal injury.

Symbol Definitions

Symbol	Property or Statement
RPM	Revolutions Per Minute
HP	Horsepower
EFI	Electronic Fuel Injection
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.

This manual contains important instructions that should be followed during installation and maintenance of the generator and any batteries.

SAVE THESE INSTRUCTIONS

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 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 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 your generator 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 propane.

GAS DETECTORS

Under some circumstances, you may not smell a propane. Propane detectors (not included) 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 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.

GENERATOR MAINTENANCE

LEAVE IT TO THE EXPERTS. Only a qualified service technician has the training to install, inspect, service, maintain, and repair your generator. Have your generator and propane system inspected annually.

DO NOT TRY TO MODIFY OR REPAIR valves, regulators, connectors, controls, or other generator 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 engine exhaust fumes, 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 area and call 911 or your local fire department.
2. If it is safe to do so, 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.

CO DETECTORS CAN IMPROVE SAFETY. For an extra measure of safety, consider installing a CO detector (not included) 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.
- **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.**
- 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.
- **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.

LPG/Propane Precautions

1. LPG/Propane system must be installed and used in strict conformance with NFPA 58 (Liquefied Petroleum Gas Code), NFPA 54 (National Fuel Gas Code), manufacturer's recommendations, and all relevant local, state, and federal codes and regulations.
2. LPG/Propane and 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.
3. 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.
4. 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.
5. 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.
6. Fire and explosion hazard. If there is a strong smell of Propane while operating the generator, fully close the LPG/Propane tank valve and shut down the Generator immediately. Once the LPG 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 system before using the generator.
7. Generator will produce carbon monoxide when burning gasoline or LPG.
8. When exchanging LPG/propane tanks, be sure the tank connector is the same size and thread.
9. LPG/Propane will freeze skin. Prevent leaking propane from contacting skin at all times.
10. LPG/Propane is highly flammable and explosive.
11. LPG/Propane is heavier than air and will accumulate in low places.
12. LPG/Propane has a distinctive odor added to help detect potential leaks. This odor can diminish over time or due to other factors.
13. Keep LPG/Propane tanks in an upright position.
14. In case of a LPG/Propane fire, do not attempt to extinguish unless the fuel supply can be shut off safely. Leave the area immediately and call 911 or your local fire department.
15. Keep the LPG/Propane tank and hose away from engine exhaust.
16. Do not insert any object other than the matching plug into the quick-disconnect coupling. This may cause the coupling to leak, disconnect, or otherwise fail.
17. Do not allow the hose to be kinked, pinched, twisted, or torqued during installation.
18. Protect hose and fittings from dust and dirt while disconnected.

Set up 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. Have multiple ABC class fire extinguishers nearby.
3. 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.
4. Set up and use only on a flat, level, well-ventilated surface.
5. 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.
6. 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.
7. A transfer switch should be installed by a licensed electrician in compliance with all applicable laws and electrical codes.
8. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during set up.
9. Use only lubricants and fuel recommended in the Specifications chart of this manual.
10. 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.
11. Do not operate the Generator before grounding. The Generator must be earth-grounded in accordance with all relevant electrical codes and standards before operation.
12. Install carbon monoxide alarm(s) with battery backup in nearby buildings according to manufacturer's instructions.

Parallel Kit Precautions (If available)

⚠WARNING

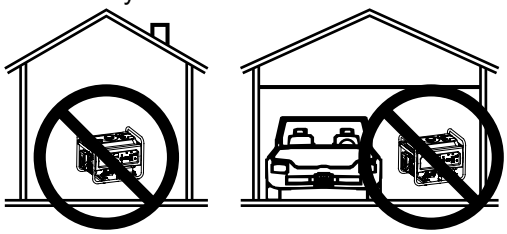
TO PREVENT SERIOUS INJURY, DEATH, AND GENERATOR AND/OR EQUIPMENT DAMAGE FROM ELECTRIC SHOCK AND FIRE:

1. Follow Parallel Kit instructions provided with Kit for connection and use of a Parallel Kit.
2. Only connect two identical 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.

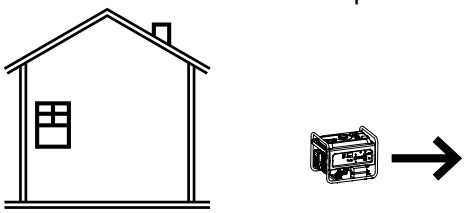
Operating Precautions

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.



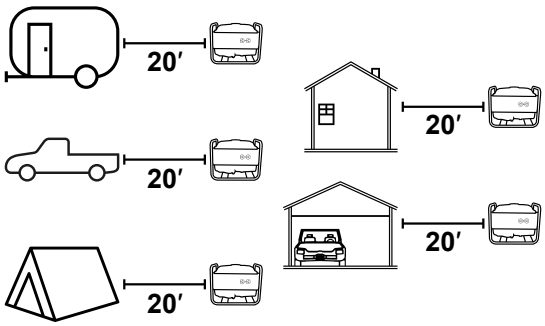
NEVER use inside a home or garage, EVEN IF doors and windows are open.



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. Engine will still produce carbon monoxide, even when burning other fuels.

CARBON MONOXIDE SHUTOFF

DANGER! TO PREVENT SERIOUS INJURY AND DEATH FROM CARBON MONOXIDE INHALATION:
The Carbon Monoxide sensor is <u>an additional layer of protection</u> 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 1-800-444-3353.

<u>NOTE:</u> 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.

2. 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.
3. 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.
4. 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.
5. Keep children away from the equipment, especially while it is operating.
6. Keep all spectators <u>at least six feet</u> from the Engine during operation.
7. Fire Hazard! Do not fill fuel 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.
8. Do not touch engine during use. Let engine cool down after use.
9. Never store fuel or other flammable materials near the engine.

10. 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.
11. 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.
12. Do not exceed the maximum power rating 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.
13. Avoid substantially overloading which will trip the circuit breaker. Slightly overloading the generator may not trip the circuit breaker, but will lead to premature generator failure.
14. Do not attempt to connect or disconnect load connections while standing in water, or on wet or soggy ground.
15. 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.
16. Connect the Generator only to a load or electrical system (120 volt or 240 volt) that is compatible with the electrical characteristics and rated capacities of the Generator.
17. GFCI PRECAUTIONS
    Test Ground Fault Circuit Interrupter (GFCI) receptacles (if equipped) before each use as follows:
    a. Disconnect all devices from the Generator.
    b. Start the engine.
    c. Press Test button on receptacle to trip the GFCI device.
    d. The Reset button should extend, cutting off electricity to the receptacle.
    e. If above test fails, do not use receptacle until it is repaired or replaced.
    f. Press Reset button in for use.
18. **The Generator must be grounded before use. An ungrounded Generator has an increased risk of electric shock.** Refer to *Grounding on page 13*.
19. Insulate all connections and disconnected wires.
20. Guard against electric shock. Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerators.

    Only use a suitable means of transport and lifting devices with sufficient weight bearing capacity when transporting the generator.
21. Secure the generator on transport vehicles to prevent it from rolling, slipping, and tilting.
22. Industrial applications must follow OSHA requirements.
23. 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.
24. The generator can produce high noise levels. Prolonged exposure to noise levels above 85 dBA is hazardous to hearing. Wear ear protection when operating thegenerator or when working nearby while it is operating.
25. Wear ANSI-approved safety glasses, hearing protection, and NIOSH-approved dust mask/respirator during use.
26. 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.
27. 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.
28. 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.
29. 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.
30. 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.
31. Parts, especially exhaust system components, get very hot during use. Stay clear of hot parts.
32. Do not cover the generator during operation.
33. 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.
34. Keep the engine, generator, and surrounding area clean at all times.
35. Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refuelling.
36. Use the generator, 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.
37. Do not operate the generator with known leaks in the engine's fuel system.

38. 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.
39. Keep hands and feet away from moving parts. Do not reach over or across equipment while operating.
40. 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 generator serviced before using.** Many accidents are caused by poorly maintained equipment.
41. Use the correct generator for the application. Do not modify the generator or its engine, and do not use the generator for a purpose for which it is not intended.
42. 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)**	**Load @ 240V (WATTS)**	**20 ~ 50 ft**	**50 ~ 75 ft**	**75 ~ 100 ft**
2	240	480	18 AWG		
4	480	960	18 AWG		16 AWG
6	720	1440	18 AWG	16 AWG	14 AWG
8	960	1920	16 AWG		12 AWG
10	1200	2400	16 AWG	14 AWG	12 AWG
15	1800	3600	14 AWG	12 AWG	10 AWG
20	2400	4800	12 AWG	10 AWG	
25	3000	6000	12 AWG	10 AWG	8 AWG
30	3600	7200	10 AWG	8 AWG	
35	4200	8400	8 AWG	6 AWG	
40	4800	9600	6 AWG		

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

Battery Charger/Maintainer Precautions

1. Do not expose Battery Charger/Maintainer to rain or snow.
2. Use of an attachment not recommended or sold by the Battery Charger/Maintainer manufacturer may result in a risk of fire, electric shock, or injury to persons.
3. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting Charger/Maintainer.
4. Do not operate Charger/Maintainer with damaged cord or plug – replace the cord or plug immediately.
5. Do not operate Charger/Maintainer if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
6. Do not disassemble Charger/Maintainer – take it to a qualified technician when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
7. To reduce risk of electric shock, unplug Charger/Maintainer from outlet before attempting any maintenance or cleaning.
8. Locate Charger/Maintainer as far away from Generator as power cord permits.
9. Maintain labels and nameplates on the Charger/Maintainer. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
10. Unplug the Battery Charger/Maintainer from its electrical outlet before connecting its power cord to the Generator, or performing any inspection, maintenance, or cleaning procedures.
11. Do not use Charger/Maintainer while tired or under the influence of drugs, alcohol or medication.

Button/Coin Battery Safety

⚠WARNING

- **INGESTION HAZARD:** This product contains a button cell or coin battery.
- **DEATH** or serious injury can occur if ingested.
- A swallowed button cell or coin battery can cause **Internal Chemical Burns** in as little as **2 hours**.
- **KEEP** new and used batteries **OUT OF REACH OF CHILDREN**
- **Seek immediate medical attention** if a battery is suspected to be swallowed or inserted inside any part of the body.



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° Fahrenheit 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.

Service Precautions

1. **Before service, maintenance, or cleaning:**
   a. **Unplug all devices from the generator.**
   b. **Push the Power Switch to the "STOP" (OFF) position.**
   c. **Disconnect the battery.**
   d. **Allow the engine to completely cool.**
   e. **Then, remove the spark plug cap from the spark plug.**
   f. **Properly ground Engine/Equipment.** See *Grounding on page 13*.

WARNING! TO PREVENT SERIOUS INJURY FROM INJECTION, FIRE, AND EXPLOSION: Depressurize fuel system before servicing it. Remove ignition sources from area. Seek medical attention immediately after injection injury.

2. Depressurize fuel system before servicing it, Refer to *Depressurize Fuel System on page 35.*
3. 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.
4. Make sure the Power Switch is in its “OFF” position before moving the unit and before performing any service, maintenance, or cleaning procedures on the unit.
5. **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.
6. **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.**
7. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during service.
8. Maintain labels and nameplates on the equipment. These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.



SAVE THESE INSTRUCTIONS.

9. 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.
10. Store equipment out of the reach of children.
11. 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 running or hot.
2. Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refueling.
3. To prevent fuel leakage and fire hazard, **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**.
6. Do not connect LPG/Propane to the Generator while operating with gasoline. Shut down Generator and allow to cool before connecting alternate fuel type.

Starting Battery Service:

1. Starting battery service must be performed only by a qualified technician. Keep other people away from battery.
2. When replacing battery, use the following type battery: 12V, 14Ah sealed, lead-acid type.
3. Do not dispose of battery in a fire. The battery can explode.
4. Do not open or mutilate the battery. Battery contains acid which can cause blindness, burns, and is toxic.
5. Battery may explode or cause fire if shorted. When working around batteries:
   a. Remove watches, rings, or other metal objects,
   b. Use tools with insulated handles, and
   c. Do not lay tools or metal parts on top of batteries

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.

Note: For additional information regarding the parts listed in the following pages, refer to the Assembly Diagram near the end of this manual.

Grounding

WARNING! TO PREVENT SERIOUS INJURY: Properly ground Engine/Equipment before servicing fuel system.

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 into the ground according to the requirements in the National Electrical Code.
2. Connect a #6 AWG grounding wire (not included) from the Grounding Terminal to the buried electrode.

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

Note: There is a permanent conductor between the portable generator inverter module (Neutral Conductor) and the frame.

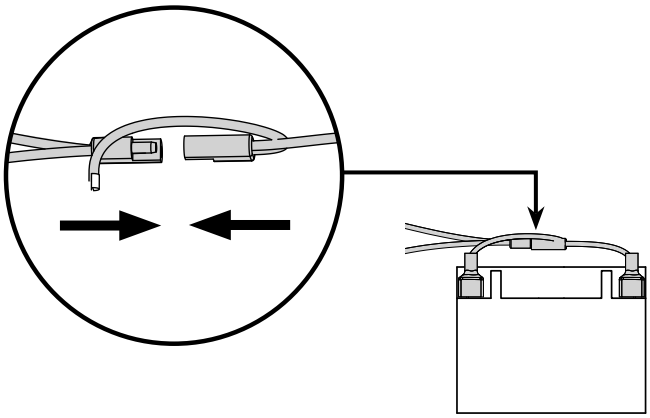
Note: Properly ground generator before servicing fuel system.

12VDC Battery Connection

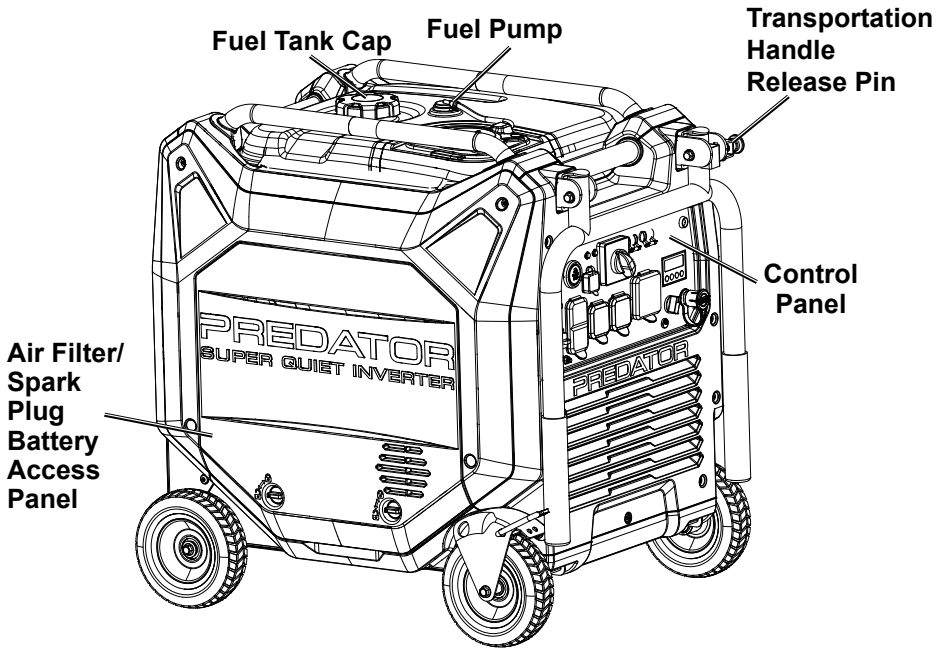
For the electric or manual start, and for EFI system, or to operate on LPG, the included 12VDC Battery must be connected and charged before first use.

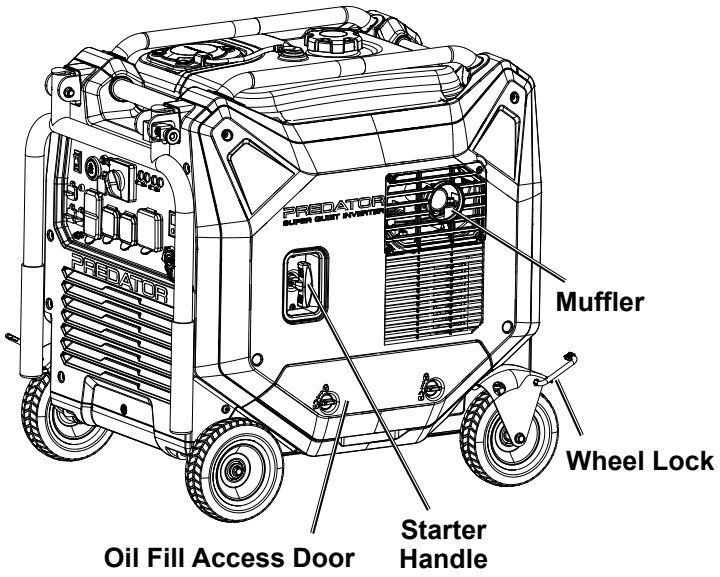
1. Push Power Switch to STOP (OFF) position.
2. Connect the two ends of the Battery Quick Connector together.

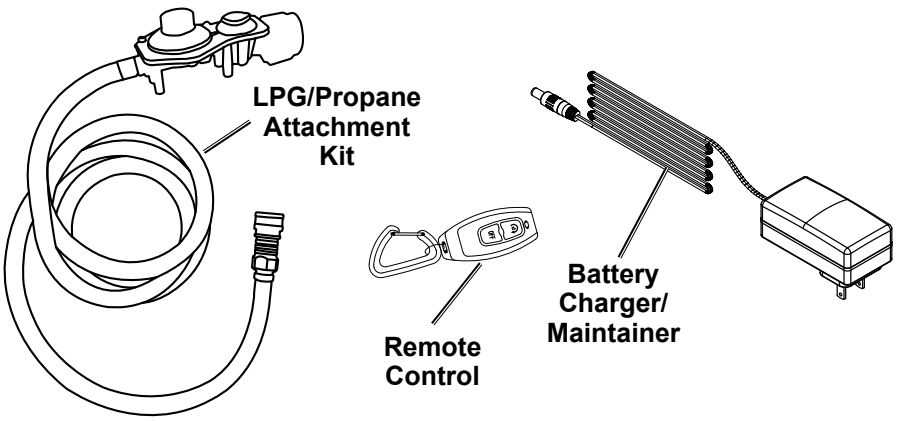
Note: The built-in charging circuit charges the Battery while the Engine is running. Turn the Power Switch off and use the Battery Charger/Maintainer to keep the Battery charged when the Generator is not in use or in storage. Refer to 12VDC Battery: in *Storage* on page 31.



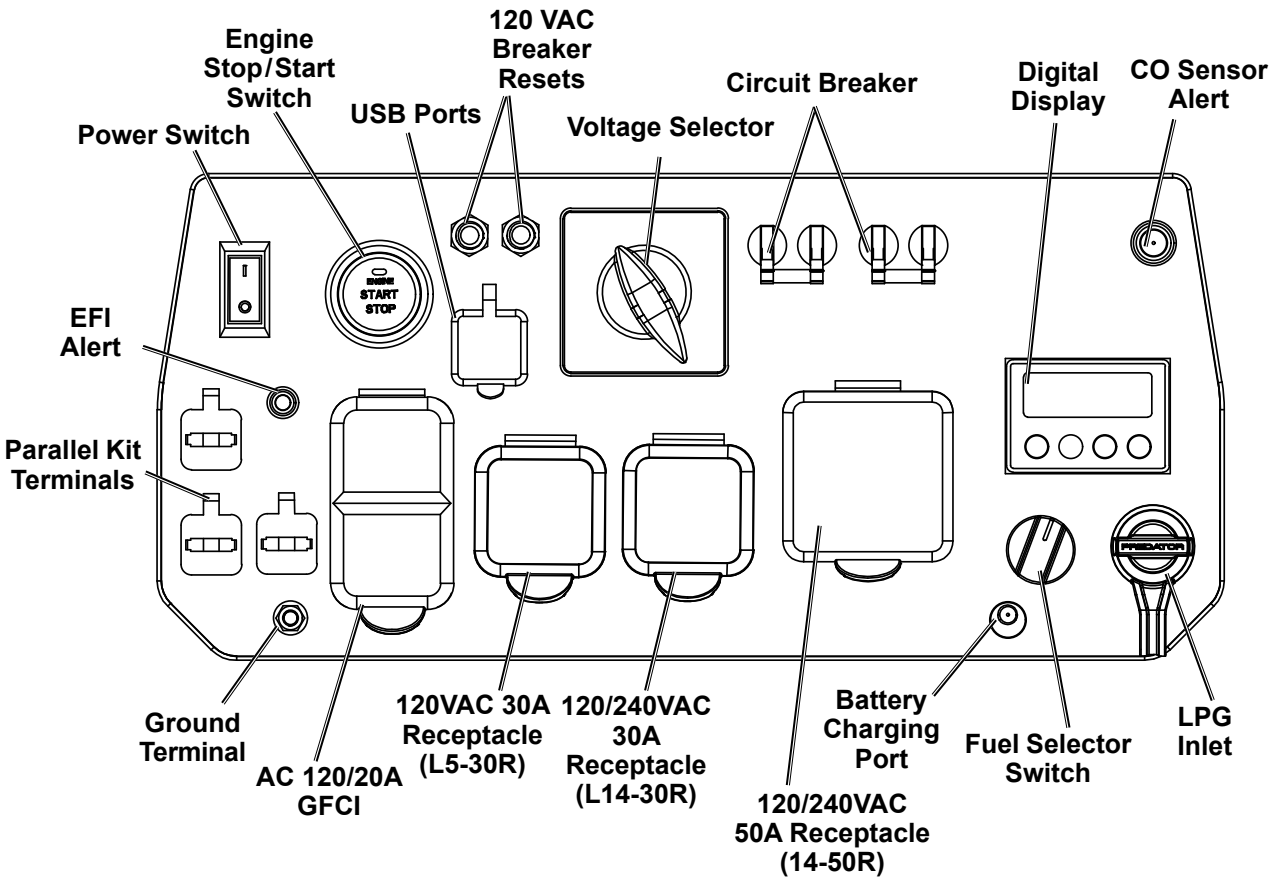
Components and Controls







Components and Controls (continued)



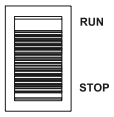
Control Panel

The following are descriptions of the controls on the Control Panel. Your Generator has sockets to power your products with circuit breakers to protect the voltage flow.

1. **Fuel Selector Switch:** Used to select from two fuel types - Gasoline or LPG/Propane.



2. **Power Switch:** Push to RUN position to enable starting remotely, electrically, or manually.

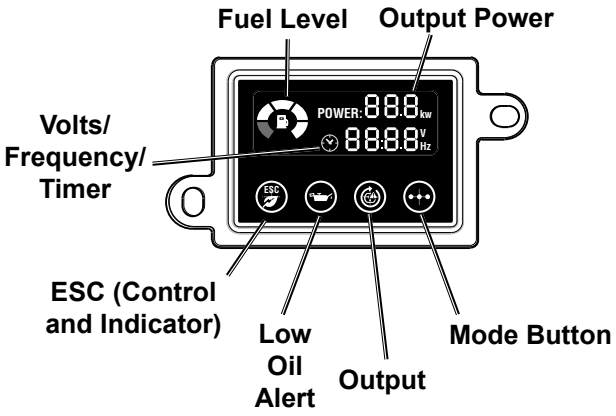


Note: The included 12VDC Battery must be connected and charged for system to operate.

3. **Engine Stop/Start Switch:** Used to start and stop the Engine.



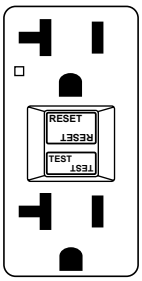
4. **Digital Display:**



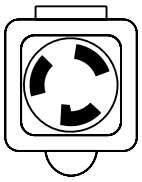
Output Button:
Green = normal output
Blinking Red = approaching overload
Solid Red = overload
Press button to reset after overload.

5. **CO Sensor Alert:** Flashing red light indicates dangerous levels of carbon monoxide gas have built up. Flashing yellow light indicates a carbon monoxide sensor malfunction. Refer to *Carbon Monoxide Shutoff* on page 22 for further information.

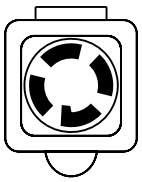
6. **AC Receptacles:** The Generator contains several AC Receptacles to power tools and equipment.



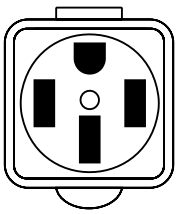
a. 3-Prong, duplex
120 volt GFCI receptacle
(NEMA 5-20R)



b. 3-Prong, twistlock,
120 volt 30A receptacle
(NEMA L5-30R)



c. 4-Prong, twistlock,
120/240 volt 30A receptacle
(NEMA L14-30R)



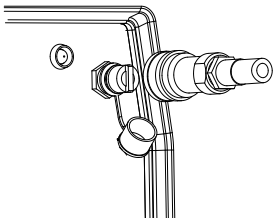
d. 4-Prong, 120/240 volt,
50A receptacle
(NEMA 14-50R)

⚠WARNING! TO PREVENT SERIOUS INJURY: Connect tools and equipment only to the Receptacle (120 volt or 240 volt) that is compatible with the electrical characteristics and rated capacities of the tools and equipment being used.

7. **Circuit Breakers:** The circuit breaker protects the Generator from overloading. The rating of the breaker and the load it protects are marked near the breaker. Should any of the Circuit Breakers trip, the Generator will stop the electricity output. If this happens, unplug all loads from the Generator. Then, turn the tripped Circuit Breaker to ON and re-attach loads gradually. **Note:** For push-type Circuit Breakers allow a few minutes for cool-down before resetting.



8. **LPG/Propane Connector:** Used to connect LPG hose to Generator.



9. **Grounding Terminal:** Prior to each use, set up the ground wire (not included) connection to the Grounding Terminal to properly ground the Generator. Refer to *Grounding* on page 13 for instructions on grounding the Generator.



10. **Battery Charging Port:** Used to charge the 12VDC Generator Battery using the provided Battery Charger/Maintainer.



Figure A:

11. **EFI Alert:** If a fault is detected in the EFI System, the EFI Alert will blink in a certain pattern to indicate the fault detected, see EFI Fault Indicator Codes on page 35.

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.

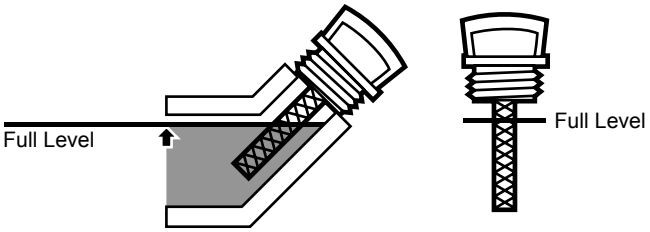
Pre-Start Checks

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. 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.

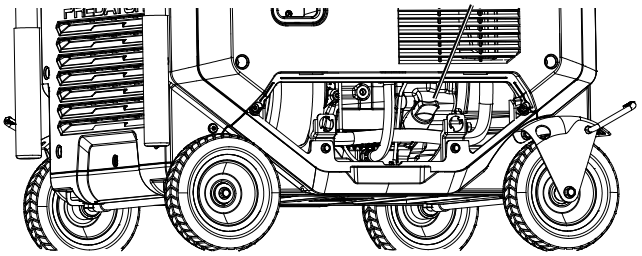
1. Make sure the Engine is stopped and is level.
2. Clean the top of the Oil Fill Cap/Dipstick and the area around it. Remove the Cap/Dipstick by turning it counterclockwise and wipe it off with a clean, lint free rag.
3. Add the appropriate type of oil until the oil level is at the proper level. SAE 10W-30 oil is recommended for general use.



4. Reinsert the Dipstick without threading it in and remove it to check the oil level. The oil level should be up to the edge of the hole as shown.
5. Thread the Oil Fill Cap/Dipstick back in clockwise.

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

Oil Fill Dipstick



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. **LPG/Propane system must be installed and used in strict conformance with NFPA 58 (Liquefied Petroleum Gas Code), NFPA 54 (National Fuel Gas Code), manufacturer's recommendations, and all relevant local, state, and federal codes and regulations.**

b. **The LPG/Propane tank capacity must be minimum 40 lb or larger to avoid tank freezing during use. 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.**

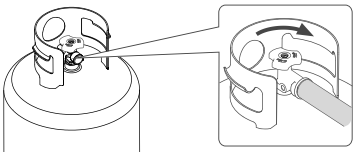
f. **All new tanks or used tanks that have not been plugged or kept closed must be purged of air and moisture by a propane supplier prior to filling.**

g. **Position the tank so the connection between the tank valve and the LPG Inlet will not cause sharp bends or kinks in the Hose.**

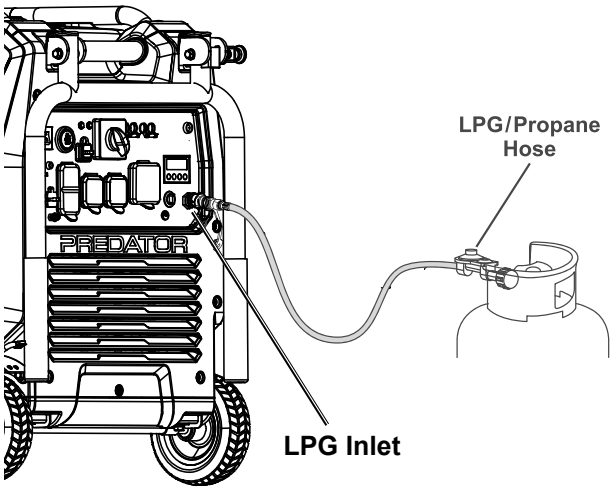
h. **Inspect the LPG/Propane Hose before every use. Do not use damaged equipment. If damage is detected, have the problem corrected before further use.**

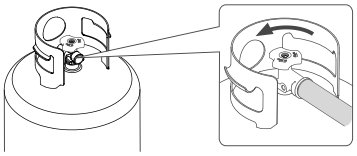
⚠WARNING! EXPLOSION HAZARD.
TO PREVENT SERIOUS INJURY:
Do not start the engine if the smell of LPG/Propane hangs in the air. Close the propane tank valve and disconnect the LPG/Propane hose from the Generator when not in use.

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. Attach the Quick Connect Adapter on the LPG/Propane Hose to the LPG Inlet on the Generator.
4. Remove the safety plug or cap from the propane tank valve.
5. 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.
6. 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

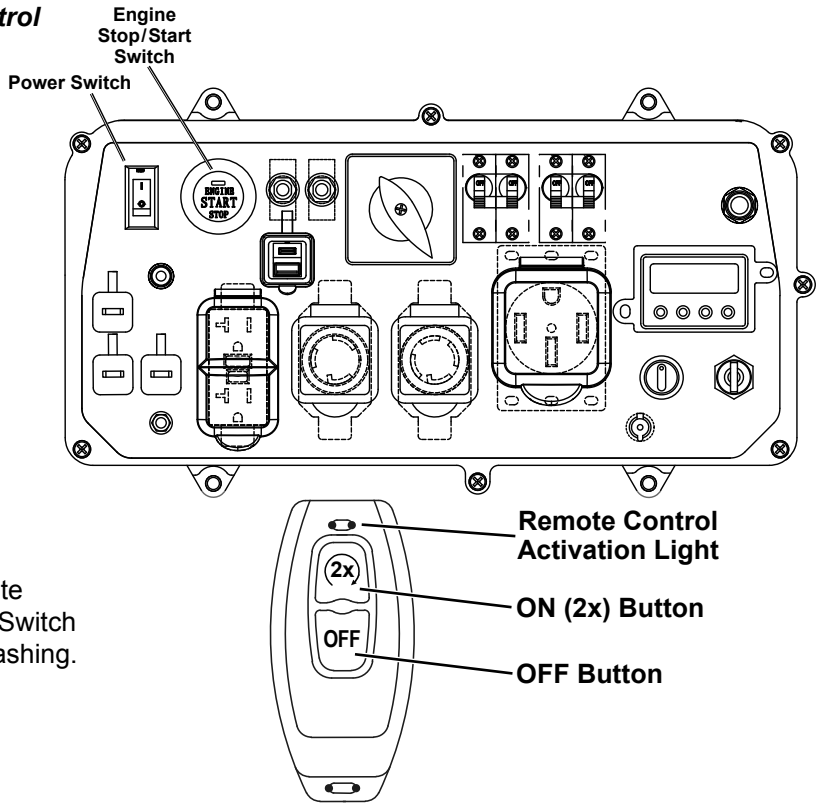
Reprogramming the Start/Stop Remote Control

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

1. Push the Power Switch to the RUN (ON) position.

2. Push and hold Engine Start/Stop Switch until Switch Indicator Light flashes green and red (hold for 10~15 seconds), then release 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.



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.

Remote replacement battery: CR2032

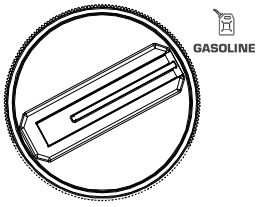
Note: The operational range of the Remote Control may decrease as the battery in the Remote becomes depleted.

Fuel Selector Switch

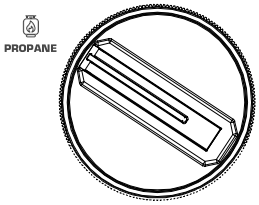
Turn the Fuel Selector Switch on the Control Panel to the desired fuel setting.

Note: The included 12VDC Battery must be connected and charged for system operation

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



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



Starting the Engine – Gasoline Operation

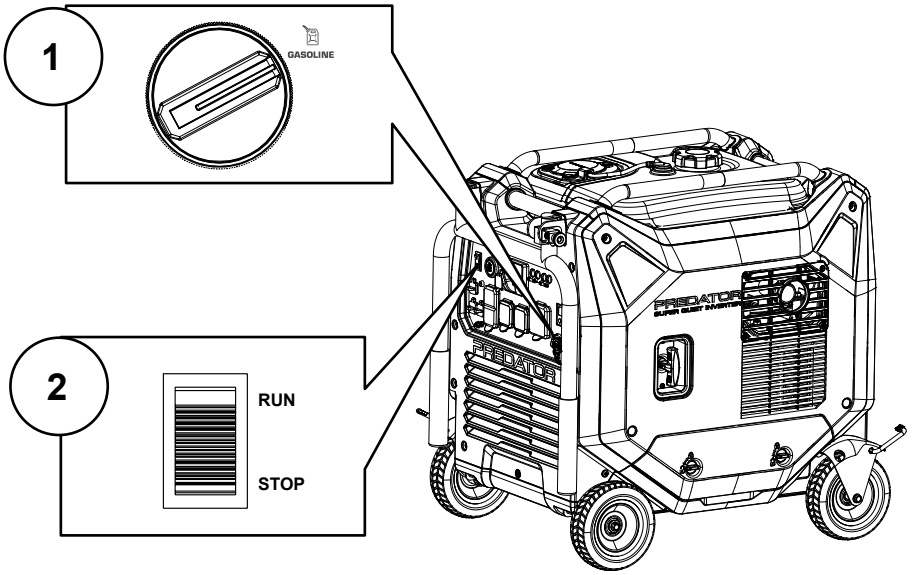
Before Starting the Engine

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.**
d. **Make sure Battery is connected and charged.**

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

2. Push the Power Switch to the RUN position.

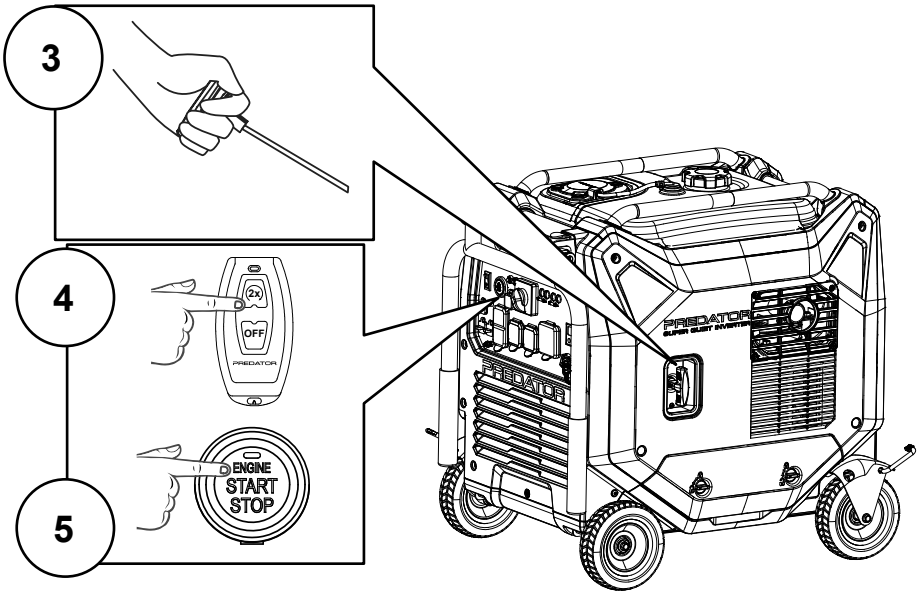
Note: For the EFI system Start, the included 12VDC Battery must be connected and charged.



Select a starting method:

3. **Manual Start:** 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.

4. **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.



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

If engine does not start:

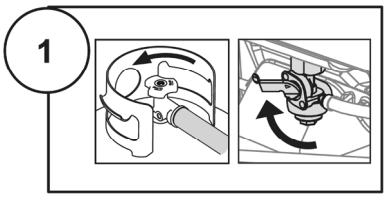
- **Check engine oil level**.
  Engine will not start with low or no engine oil.
- **Check spark arrestor cleanliness**.
  Engine will not start if spark arrestor is clogged.

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

Starting the Engine – LPG/Propane Operation

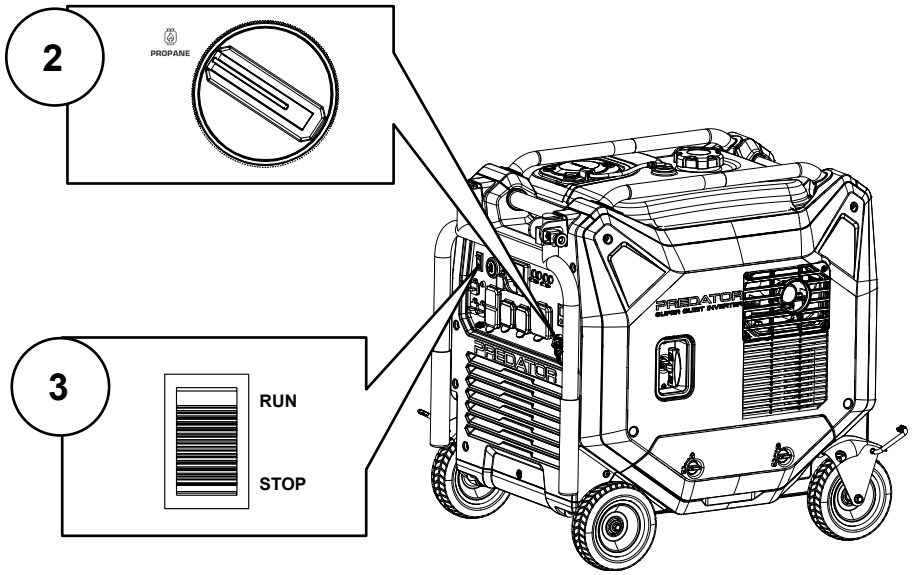
Before Starting the Engine

a. **Inspect the generator and engine.**
b. **Disconnect all electrical loads from the generator.**
c. **Make sure the LPG/Propane hose is correctly connected to the generator and propane tank.**
d. **Make sure Battery is connected and charged.**



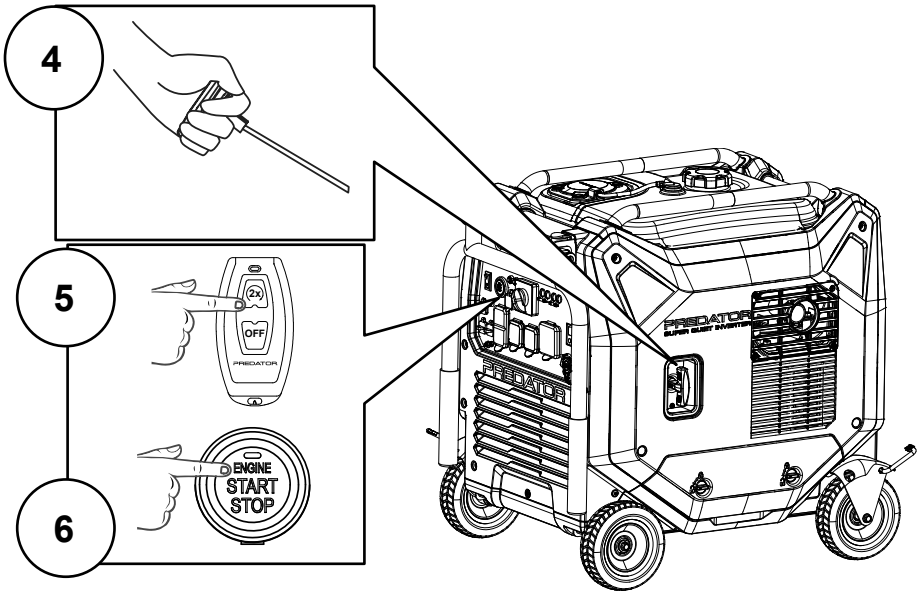
1. Fully open the valve on the LPG/Propane tank. Close Gasoline Valve if open.
2. Turn the Fuel Selector Switch to the PROPANE setting.
3. Push the Power Switch to the RUN position.

Note: The included 12VDC Battery must be connected and charged for system to operate.



Select a starting method:

4. **Manual Start:** 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.



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.
- **Check 12VDC Battery.** Engine will not start if battery is low or is disconnected.

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

DANGER! TO PREVENT SERIOUS INJURY AND DEATH FROM FIRE AND EXPLOSION HAZARD. DO NOT add gasoline to the fuel tank or connect a 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. Close the gasoline Gasoline Valve on the Engine.
4. 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. 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 1-800-444-3353 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.

Connecting Electrical Loads

Familiarize yourself with the engine controls, power panel and how to start the engine before using the Generator. Calculate the wattage of the products you will use with the Generator and verify that the Generator can handle the total load.

⚠**WARNING!** Connect only properly wired plugs to the Generator. A plug that is spliced onto a different cord may be hazardous. Only a qualified electrician should wire a plug onto a cord.

WARNING! Never exceed the rated capacity for this Generator, as serious damage to the Generator and/or appliances, tools, and equipment could result from an overload. Starting and running wattage requirements should always be calculated when matching this Generator's wattage capacity to the appliance, tool, or equipment.

Notice: Starting and running wattages vary depending on fuel used to operate Generator. Refer to specification tables.

⚠**WARNING! TO PREVENT SERIOUS INJURY:** Do not charge batteries without a proper charge controller. Do not overcharge.

a. Connect the items that require the most wattage first.

b. Connect "inductive" load appliances, tools, and equipment next. Inductive loads are small hand tools and some small appliances.

c. Connect any lights next.

d. Voltage sensitive appliances, tools, and equipment should be the last to be connected to the Generator. Plug voltage sensitive items such as TVs, DVD players, microwaves, and cordless telephones into a UL® Listed voltage surge protector (not included). Then, connect the surge protector into the Generator.

IMPORTANT! Failure to connect and operate appliances, tools, and equipment in this sequence can cause damage to the Generator, appliances, tools, and equipment and will **void** the Warranty of this Generator.

IF ANY CIRCUIT BREAKERS TRIP CHECK THE FOLLOWING:

1. Make sure that ALL circuit breakers are reset before starting the Generator again.
2. Adjust the plugs so the loads are shared across outlet circuits.

To achieve rated output from the Generator, distribute loads over outlets.

The generator uses a 2-circuit system to supply power to the receptacles. The loads must be evenly distributed across receptacles to prevent overload on a single circuit. If the loads being drawn are below the max rated wattage of the generator, yet the Outlet light begins blinking or the generator shuts off, try redistributing plugs across receptacles.

120V Only (3-wire) Adaptor Cord Connected to L5-30 Receptacle:

If the Outlet light begins blinking or the Generator shuts off, too much wattage is being drawn from one circuit even though the rated wattage of the Generator has not been reached.

Note: Only half the Generator's rated wattage, will be delivered through a 120V (3-wire) adaptor cord. Exceeding this may cause overload.

240V Cord Connected to L14-30 Receptacle and RV14-50R Receptacles:

The 240V cord will draw full wattage from both circuits. If further loads are possible, distribute them across receptacles.

Calculating Total Wattage of Devices Used with the Generator

Before using the Generator, check that the products you want to plug into the unit are below the rated and maximum wattage ratings of the Generator. Use the Wattage Calculation Table below, and the watts listed on your products, to help calculate multiple wattage totals.

To use the table:

1. Add up the Running Watts for all items you would like to use at any given time.
2. Make sure that this total is under the 9000 Gasoline or 8100 LPG running wattage of the Generator.
3. Find the single highest starting watts for the selected items and add to the total.
4. Make sure that this total is under the 11,500 max. starting wattage of the Generator.
5. Plug in and turn on products from largest wattage to smallest.

Wattage Calculation Table

Equipment	Running Watts
Total Running Watts (must be less than 9000 Gasoline - 8100 LPG)	
Largest Additional Start-up Watts	
Total Startup Watts needed for all loads (must be less than 11500)	

Example

Equipment	Running Watts
Electric Water Heater (2,000 + 0)	*2,000*
Television (400 + 0)	*400*
Lawn Mower (1,200 + 1,200)	*1,200*
Hand Drill (600 + 600)	*600*
Total Running Watts (must be less than 9000 Gasoline - 8100 LPG)	*4,200*
Largest Additional Start-up Watts	*1,200*
Total Startup Watts needed for all loads (must be less than 11500)	*5,400*

A generator that is rated more than the minimum required max. starting watts will last much longer than a generator that only supplies the exact watts needed.

To Calculate Wattage
Volts and amps can be multiplied together to get watts (volts x amps = watts).

To Calculate Additional Start-Up Watts (If They Are Not Listed)
For equipment with a motor: Use the rated watts amount as an estimate of additional Start-up Watts.

For most lights or heaters: there are no additional start-up watts.

Wattage Estimate Charts

Note: Wattages listed below are estimates for that type of equipment only. Check nameplate wattages on all loads before connecting to Generator.

EMERGENCY		
Device	**Running Watts**	**Additional Start-up Watts**
Refrigerator/Freezer	700	1500
Radio	100	0

JOB SITE		
Device	**Running Watts**	**Additional Start-up Watts**
Air Compressor - 1/2 HP	1000	1000
Table Saw - 10"	1700	1300
Belt Sander - 3"	1200	1200
Hand Drill - 1/2"	600	600
Halogen Work Light	1000	0
Recipricating Saw	900	900

RECREATION		
Device	**Running Watts**	**Additional Start-up Watts**
AM/FM Radio	100	0
Electric Grill	1700	0
Inflator Pump	50	100
CD/DVD Player	100	0
Box Fan - 20"	200	200
Coffee Maker	600	0

HOUSEHOLD		
Device	**Running Watts**	**Additional Start-up Watts**
Computer w/ Monitor	800	0
Electric Clothes Dryer	5500	500
Electric Range	2100	0
Electric Water Heater	2000	0
Light Bulb - 100 watts	100	0
Microwave - 1000 watts	1000	200
Sump Pump - 1/2 HP	1000	1100
Television	400	0
Washing Machine	1100	1100
Well Pump - 1/2 HP	1000	1000

LAWN & GARDEN		
Device	**Running Watts**	**Additional Start-up Watts**
Hedge Trimmer	400	400
Pressure Washer	1200	1200
Lawn Mower	1200	1200
Edger	1000	1000

HEATING & COOLING		
Device	**Running Watts**	**Additional Start-up Watts**
Central AC - 10,000 BTU	1500	1500
Furnace Fan - 1/2 HP	900	1400
Space Heater	1800	0
Window AC - 10,000 BTU	1200	600

Overload (Output) Indicator

Note: The Output Button may turn red 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 outlets on the Generator must not exceed the running power of the unit.
2. The Output Button will begin blinking red if the generator is approaching overload limit. If the Output Button stays solid red the Generator stops producing power, the generator 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 before starting the Generator again.
5. Press the Output Button to restore output.
6. Reconnect devices while being careful to not overload Generator.
7. Distribute loads evenly across receptacles to achieve rated output.

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) Button

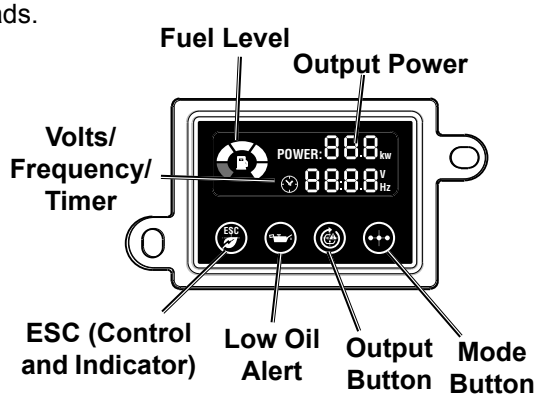
Note: Press ECS Button to turn ON (green) and OFF (no illumination).

1. Turn ON ESC Button to limit noise and fuel consumption for lighter Generator loads.
1. Turn OFF ESC Button to operate engine at full speed for heavy loads.

Digital Display

1. The Display Screen can be used to monitor the operating status of the Generator. Use the Display Control Button to toggle through the following indicators:
    - V - Voltage
    - Hz - Frequency
    - KW - Power
    - Hour - Current run time and accumulative run time.

Fuel Level Display - Always shown on screen.



Voltage Selector

The Voltage Selector allows more current to be available at 120V outlets if 240V output is not required:

- Place switch at 120V only - only 120V outlets can be used.
- Place switch at 120/240V: Both 120V and 240V outlets can be used.

NOTE: Do not change the switch while under load.

For parallel function, Switch position must be at 120/240V.

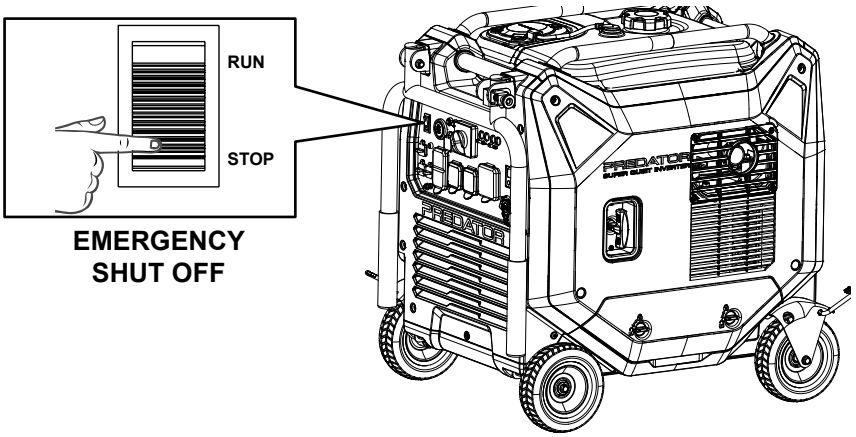
Circuit Breakers

The circuit breaker protects the Generator from overloading. The rating of the breaker and the load it protects are marked near the breaker. Should any of the Circuit Breakers trip, the Generator will stop the electricity output. If this happens, unplug all loads from the Generator. Then, turn the tripped Circuit Breaker to ON and re-attach loads gradually. Note: For push-type Circuit Breakers allow a few minutes for cool-down before restarting.

Stopping the Engine

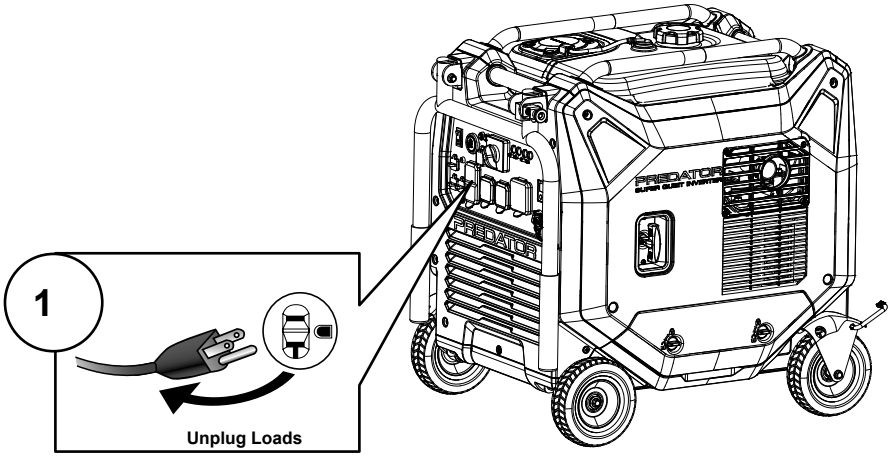
To stop the Engine in an emergency, push the Power Switch to STOP.

NOTICE: Generator shutoff under load may damage the Generator and attached equipment.



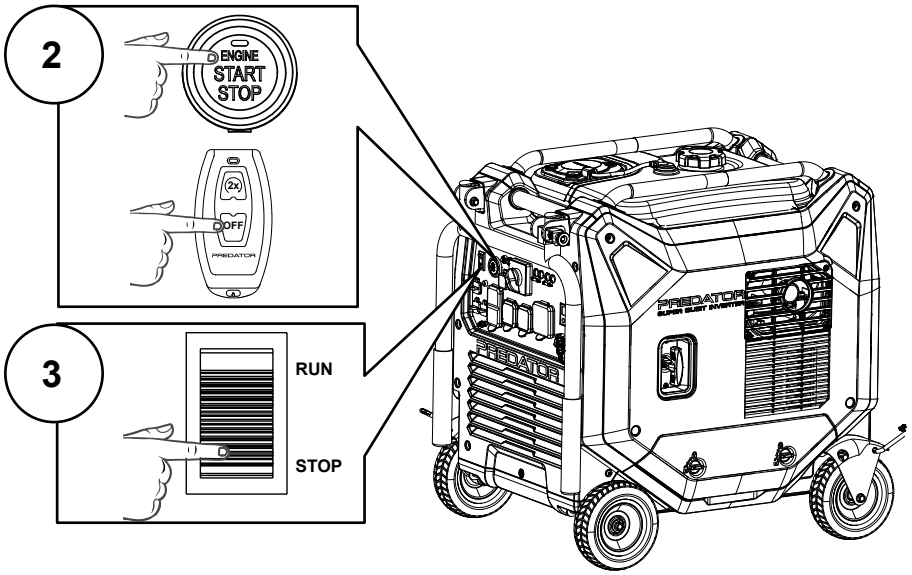
Under normal conditions, use the following procedure to shut off the Generator:

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.

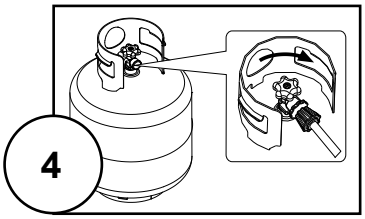
Note: When the Generator is turned OFF using the Stop/Start Switch or Remote Control, the Generator enters standby mode and can be restarted remotely using procedures indicated in starting section. If Generator is not started within 12 hours the Controller shuts down completely to save the battery. Push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



3. Push the Power Switch to the STOP position.

Note: Turn the Power 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 Power Switch of the equipment to the "STOP" (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

WARNING! TO PREVENT SERIOUS INJURY FROM INJECTION, FIRE, AND EXPLOSION: Depressurize fuel system before servicing it. Remove ignition sources from area. Seek medical attention after injection injury.

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 hose assembly	✓						
Change engine oil				✓			28
Clean/replace air cleaner			✓*				29
Check and clean spark arrestor				✓			30
Check and clean spark plug				✓			30
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						✓**	–
Change fuel filter at fuel pump.						✓**	–

*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.

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.

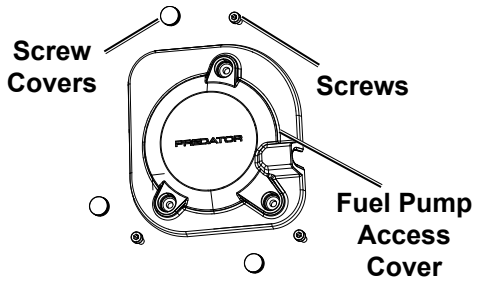
Depressurize Fuel System

WARNING! TO PREVENT SERIOUS INJURY FROM INJECTION, FIRE, AND EXPLOSION:
Depressurize fuel system before servicing it. Remove ignition sources from area. Seek medical attention immediately after injection injury.



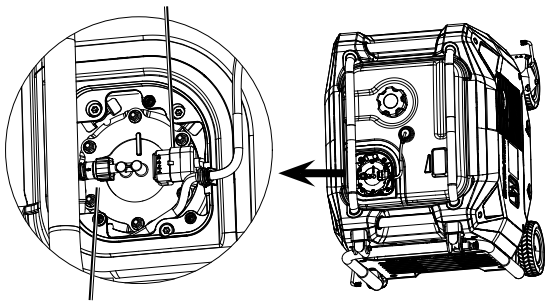
⚠WARNING! TO PREVENT SERIOUS INJURY FROM FIRE:
Service fuel system in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before servicing. Do not smoke. Have a dry chemical (class B) fire extinguisher nearby.

1. Turn engine off.
2. Unplug all devices from the generator.
3. Turn the Power Switch to its "OFF" position.
4. Allow the engine to completely cool.
5. **Properly ground Generator.** *See Grounding on page 13*
6. Remove three Screw Covers.
7. Remove three Screws from Fuel Pump Access Cover.
8. Remove Fuel Pump Access Cover.



9. Disconnect fuel pump power connector. **DO NOT DISCONNECT FUEL LINE YET.**

Power Connector



Fuel Line Connector

10. Turn Power Switch to its "ON" position.
11. Turn Fuel Selector Switch to Gasoline setting.
12. Try to start Engine. See *Starting the Engine – Gasoline Operation on page 20*. Engine may start briefly. Fuel System is now depressurized.

Note: Engine will shutdown immediately if started. EFI Alert indicator may indicate an error.

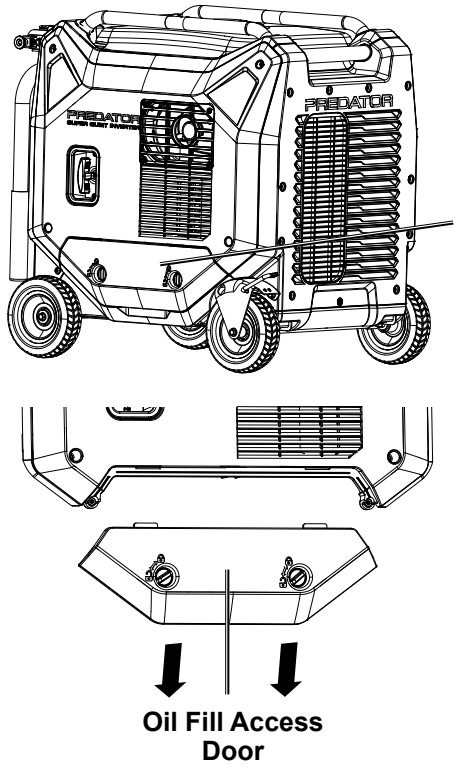
13. Turn Power Switch to its "OFF" position.
14. Service fuel system as needed.
15. After service:
    a. Connect Fuel Pump Power Connector.
    b. Replace Fuel Pump Access Cover.
    c. Replace three Screws onto Fuel Pump Access Cover.
    d. Replace three Screw Covers to Fuel Pump Access Cover.

WARNING! TO PREVENT SERIOUS INJURY:
Assemble Generator fully before use.

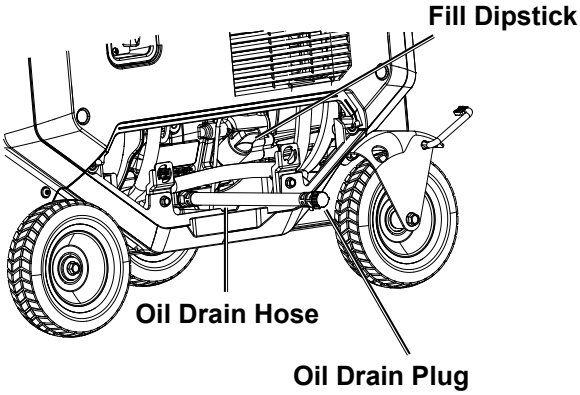
Engine Oil Change

⚠**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 Locking Knobs and remove the Oil Fill Access Door.



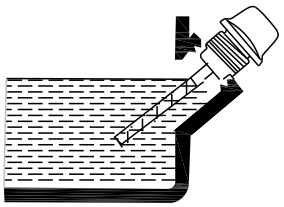
3. Clean the top of the Oil Fill Plug/Dipstick and the area around it. Remove the Cap/Dipstick, turning it counterclockwise.



4. Place an oil drain pan under the Oil Drain Hose opening.
5. Remove the Oil Drain Plug and allow the oil to drain completely. Tilt the Generator slightly to facilitate drainage and wait for oil to drain completely. Recycle used oil.
6. Replace the Oil Drain Plug. Put the Oil Drain Hose back into the Generator.
7. 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.

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

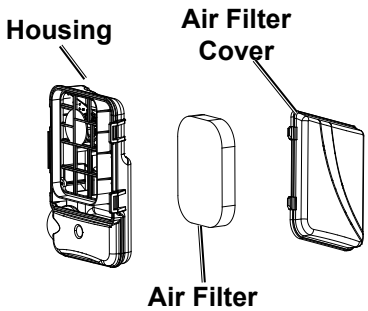


Air Filter Element Maintenance

1. Loosen Locking Knobs and remove the Air Filter Access Panel on the left side of the Generator.



2. Unsnap the Air Filter Cover Clips and remove Air Filter Cover.
3. Remove Air Filter.



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

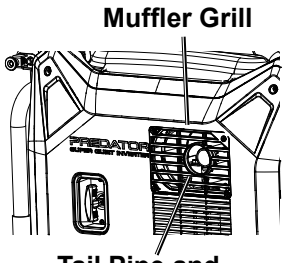
Spark Arrestor Maintenance

⚠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. Push Power Switch to the STOP position.
2. Allow the Generator to cool completely.
3. Remove the Screws from the Muffler Grill.
4. Remove Muffler Grill.
5. Remove the Tail Pipe and Spark Arrestor.
6. Clean the Spark Arrestor using a wire brush (sold separately). Replace arrestor if damaged.



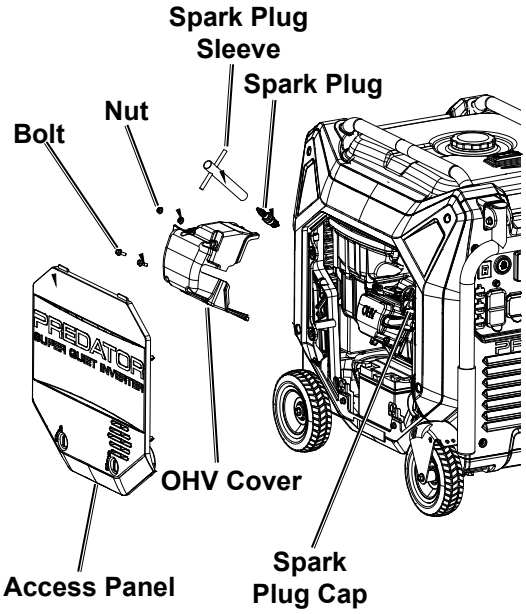
WARNING! TO PREVENT SERIOUS INJURY FROM ACCIDENTAL BRUSH FIRE, secure Spark Arrestor back in place immediately after cleaning and before further operation.

Remote Control Battery Replacement

1. Loosen screw(s) and open battery compartment.
2. Remove battery and dispose of properly.
3. Insert battery in correct polarity, close compartment and tighten screw(s).

Spark Plug Maintenance

1. Push Power Switch to the STOP position.
2. Allow the Generator to cool completely.
3. Loosen the Lock Knobs and remove the Access Panel on the left side of the Generator.
4. Use socket wrench (not provided) to remove the bolts and nut from the OHV cover.
5. Remove the spark plug cap by hand.
6. Use the provided spark plug wrench to remove the spark plug.
7. Check the spark plug for damage and clean electrode before installation.
8. Replace if damaged or broken.
9. Check the gap of the electrode, the use gap is 0.028-0.031". To expand, carefully bend the ground electrode. To reduce, gently tap the grounding electrode on a hard surface.
10. Carefully screw the spark plug by hand to avoid damaging the thread of the cylinder head. If reinstalling a used spark plug, tighten 1/8-1/4 turns after pressing the washer. If a new spark plug is installed, tighten 1/2 turn after pressing the washer.
11. Reinstall the spark plug cap.
12. Use the Spark Plug Sleeve to tighten the bolts and nuts on the cylinder head air deflector.
13. Re-install the access panel.



Storage

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

1. **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: Keep the LPG covered during cleaning and storage.

2. **FUEL:**
   Gasoline Treatment

   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 32*.

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

   Draining the Fuel Tank



   ⚠WARNING! To prevent serious injury from fire:
   Drain 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 draining fuel. Do not smoke.

Warning! Wear ANSI-approved safety goggles and heavy-duty, chemical resistant work gloves before setting up transfer pump.

   a. You will need a gasoline-safe transfer pump - sold separately.
   b. Insert the suction tube to the deepest point of the Generator's Fuel Tank.
   c. Place the delivery hose into a gasoline-safe container (not included) in which to pump fuel. Do not place receiving container higher than the pump location. Do not overfill container.

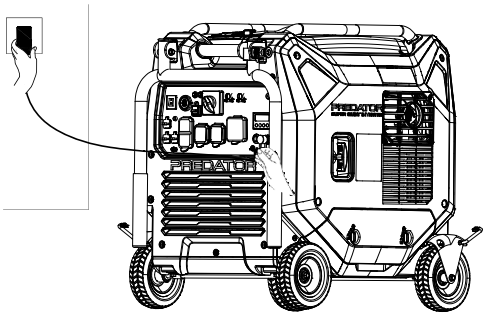
Note: Know and obey city and state laws for proper disposal of oil and gasoline. Dispose of properly in accordance with all local laws and regulations.

   Draining the Carburetor

   After closing the Gasoline Valve, place an appropriate container under the Carburetor and carefully remove the Drain Bolt from the bottom of the Carburetor Bowl, allowing the fuel to drain completely. Replace the Drain Bolt after draining.

3. **LUBRICATION:**
   a. Change engine oil.
   b. Clean out area around spark plug. Remove spark plug and pour one tablespoon of engine oil into cylinder through spark plug hole.
   c. Replace spark plug, but leave spark plug cap disconnected.
   d. 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).

4. **12VDC BATTERY:**
   When Generator is not in use or will be stored for extended periods, use the Battery Charger/Maintainer provided to maintain the Battery:
   a. Plug the Charger/Maintainer power cord into the Battery Charging Port on the Generator.
   b. Plug the Charger/Maintainer into an electrical outlet.
   c. Disconnect the Charger/Maintainer before using the Generator.



5. **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.

6. **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:	FUEL RELATED:
	1. No fuel in tank or Fuel Pump failure.	1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded gasoline and Check fuel pump operation. **Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).**
	2. No fuel flow.	2. Move Fuel Selector Switch to desired fuel type. For LPG, make sure LPG tank valve is fully open.
	3. Battery depleted – must be charged and connected to start.	3. Battery must be connected and charged for generator operation
	4. Gasoline with more than 10% ethanol used. (E15, E20, E85, etc.)	4. 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.).**
	5. Low quality or deteriorated, old gasoline.	5. Use fresh 87+ octane stabilizer-treated unleaded gasoline. **Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.).**
	6. Clogged Fuel Filter.	6. Replace Fuel Filter at Fuel Pump.
	7. Dirty fuel passageways.	7. Clean out passageways using fuel additive. Heavy deposits may require further cleaning.
	8. LPG/Propane tank is too small or empty.	8. Use 40 lb. tank or larger; make sure tank is full and fully open valve.
	IGNITION (SPARK) RELATED:	IGNITION (SPARK) RELATED:
	1. Power Switch at STOP position.	1. Push Power Switch to RUN position.
	2. Disconnected Battery.	2. Make sure battery is connected and charged
	3. Low Oil	3. Make sure the oil level is at proper level.
	4. Spark plug cap not connected securely.	4. Connect spark plug cap properly.
	5. Spark plug electrode wet or dirty.	5. Clean spark plug.
	6. Incorrect spark plug gap.	6. Correct spark plug gap.
	7. Spark plug cap broken.	7. Replace spark plug cap.
	8. Incorrect spark timing or faulty ignition system.	8. Have qualified technician diagnose/ repair ignition system.
	COMPRESSION RELATED:	COMPRESSION RELATED:
	1. Cylinder not lubricated. Problem after long storage periods.	1. Pour tablespoon of oil into spark plug hole. Crank engine a few times and try to start again.
	2. Loose or broken spark plug. (Hissing noise will occur when trying to start.)	2. Tighten spark plug. If that does not work, replace spark plug. If problem persists, may have head gasket problem–see #3.
	3. Loose cylinder head or damaged head gasket. (Hissing noise will occur when trying to start.)	3. Tighten head. If that does not remedy problem, replace head gasket.
	4. Engine valves or tappets mis-adjusted or stuck.	4. Have qualified technician adjust/ repair valves and tappets.
	ENGINE OIL RELATED:	ENGINE OIL RELATED:
	1. Low engine oil.	1. Fill engine oil to proper level. Check engine oil before EVERY use.
	2. Engine is over filled with oil.	2. Remove excess oil. Fill engine oil to proper level. See Checking and Filling Engine Oil on page
	3. Engine mounted on slope, triggering low oil shutdown.	3. Operate engine on level surface. Check engine oil level.

Problem	Possible Causes	Probable Solutions
Engine will not start (continued)	SPARK ARRESTOR RELATED: Spark Arrestor clogged with soot.	SPARK ARRESTOR RELATED: Clean and replace Spark Arrestor.
	ELECTRIC OR REMOTE START RELATED: 1. No battery or defective battery installed. 2. Engine Start/Stop Switch flashes red – Battery is low. 3. Electric start fuse (10A) 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. 7. EFI System Related.	ELECTRIC OR REMOTE START RELATED: 1. Install a new battery. 2. Charge battery with Battery Charger/Maintainer 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 Reprogramming the Start/Stop Remote Control on 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. 7. EFI Alert Indicator Flashes: See EFI Alert Indicator Light pattern table to identify the root cause
Engine misfires	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.	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	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. EFI Alert Indicator flashes. 7. Faulty magneto. 8. Disconnected or improperly connected spark plug cap. 9. Unintentional shutdown signal sent from Stop/Start Remote Control. 10. If using LPG/Propane: LPG tank empty or LPG tank too small.	1. Leave area immediately and allow area to ventilate thoroughly. Only operate generator outside. 2. Carbon monoxide sensor malfunction. Sensor needs service. Call 1-800-444-3353 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. See EFI Alert Indicator Light pattern table to identify the root cause 7. Have qualified technician service magneto. 8. Secure spark plug cap. 9. Store the Remote Control in a safe location and away from children. 10. Replace empty LPG tank with full tank. Replace small LPG tank with correct tank size. Refer to Specifications on page 3.
Engine stops when under heavy load	1. Dirty air filter 2. Engine running cold.	1. Clean or replace element. 2. Allow engine to warm up prior to operating equipment.

Problem	Possible Causes	Probable Solutions
Engine knocks	1. Old or low quality gasoline.	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. Engine overloaded.	2. Do not exceed equipment's load rating.
	3. Incorrect spark timing, deposit buildup, worn engine, or other mechanical problems.	3. Have qualified technician diagnose and service engine.
Engine backfires	1. Impure or low quality gasoline.	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. Engine too cold.	2. Use cold weather fuel and oil additives to prevent backfiring.
	3. Intake valve stuck or overheated engine.	3. Have qualified technician diagnose and service engine.
	4. Incorrect timing.	4. Check engine timing.
Attached device doesn't have power	1. Device not plugged in properly.	1. Turn off and unplug the device, then plug it back in again and turn on.
	2. Circuit Breaker tripped.	2. Turn off and unplug device, reset Circuit Breaker, plug in device and turn on.
	3. GFCI activated.	3. Turn off and unplug device. Test GFCI receptacle. If functioning properly reset GFCI, plug in device and turn on.
	4. Product needs service.	4. Have product repaired.
Attached device begins to operate abnormally	1. Problem with device.	1. Immediately unplug device. Have device repaired by a qualified technician, or replace device.
	2. Rated load capacity exceeded.	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.

EFI Fault Indicator Codes

The EFI Alarm Light flashes indicating a fault with the engine. The Fault Code can be identified by the flashing frequency of the EFI Alarm Light. The following table describes the Blink Pattern of a Fault Code:

Note: The EFI Alarm Light turns ON 4 seconds and OFF 2 seconds before and after displaying the Fault Code(s) Blink Pattern.

Note: "·" indicates short blink (0.25 seconds) and "-" indicates long blink (1.2 seconds).

Note: For multiple faults, a 2 second pause occurs between codes.

Blink Pattern	Fault Code	Fault Description
· ·	2	TPS (Throttle Position Sensor) Error.
· · ·	3	Hall (Engine Position and Speed) Sensor Error.
· · · · · ·	6	EFI System voltage is too high.
- ·	11	Fuel Injector Error.
- · · ·	13	Fuel Pump Error.
- · · · · ·	15	Ignition Module Error.
- · · · · · · ·	17	Oxygen Sensor Error.
- - · · · · · · ·	27	Throttle Stepper Motor Error.

For additional support, please call 1-800-444-3353.

Generator Component List

Part	Description	Qty
1	Engine	1
2	Side Beam Of The Fuel Tank	2
3	Hex Flange Bolt, M6x16	29
4	Quick Plug Battery Cable	1
5	Left Side Housing Assembly	1
6	Rubber Sleeve	4
7	Hex Socket Bolt, M6x16	41
8	Self-Tapping Bolt ST4.2/13	38
9	Knob Mounting Plate	8
10	Maintenance Cover Plate	1
11	Cover Plate Switch	4
12	Column A	2
13	Column B	2
14	Bolt M6x50	4
15	Handle Sealant Sleeve A	2
16	Handle Sealant Sleeve B	2
17	Battery	1
18	Handle Tube	2
19	Fuel Tank Front/Rear Beam	2
20	Rear Cover Assembly	1
21	Inverter Air Hood	1
22	Control Panel Assembly	1
23	Inverter Mounting Lug(Left)	1
24	Inverter Mounting Lug(Right)	1
25	Bolt M6x16	8
26	Inverter Module	1
27	Panel Sealing Rubber Ring	1
28	Front Cover Assembly	1
29	Handle Mounting Seat A	1
30	Handle Retaining Pin	1
31	Bolt M8x20	6
32	Handle Mounting Seat B	1
33	Handle Stop Block	1
34	Fastening Spring	1
35	Movable Pin	1
36	Handle Assembly	1
37	Bolt M5	1
38	Handle Retaining Pin	1
39	Nut	2
40	Handle Welding Assembly	1
41	Rubber Cover For Handle	2
42	Mounting Plate	1
43	Bolt M6x20	4
44	DC Power Module	1
45	Muffler Component	1
46	Spring Washer	2
47	Nut M8	2
48	Muffler Gasket	2
49	Motor Exhaust Rubber Sleeve	1
50	Muffler Exhaust Rubber Sleeve	1

Part	Description	Qty
51	Exhaust Casing	1
52	Handle Assembly	1
53	Oxygen Sensor M12	1
54	Bolt M8x16	4
55	Flat Gasket	4
56	Oil Port Cover Plate	1
57	Fuel Tank Cover	1
58	Fuel Tank Gasket	1
59	Tube Sealant Jacket A	2
60	Tube Sealant Jacket B	2
61	Handle Elbow Pipe	2
62	Fuel Tank Cover Support	4
63	Bolt M6x25	4
64	Fuel Tank Assembly	1
65	Bolt M6x25	6
66	Flat Gasket	10
67	Muffler Upper Cover Assembly	1
68	Muffler Lower Cover Assembly	1
69	Muffler Lower Cover Plate	1
70	Bolt M6x12	2
71	Shock Absorber Seat	2
72	Clamping Nut	6
73	Base Plate	1
74	Switch Card Board	4
75	Bolt M6x16	4
76	Base Plate Support Frame	1
77	Nut M8	16
78	Wheel Axle	2
79	Bolt M8x16	8
80	Caster	4
81	Shaft Sleeve	2
82	Brake Assembly	2
83	Bolt M8x20	4
84	Wave Washer	2
85	Bolt M8x20	4
86	Inverter Shock-Absorbing Pad	2
87	Carbon Canning Bracket	1
88	Canister Press Plate A	1
89	Canister Press Plate B	1
90	Carbon Canister 750cc	1
91	Nylon Braided	1
92	Ventilation Tube	1
93	Ventilation Tube	1
94	Ventilation Tube	1
95	Oil Pipe Protective Cover	1
96	Fuel Hose Assembly EFI	1
97	Dump Valve Assembly	1
98	Fuel Pump Assembly	1
99	Oil Pump Pressure Plate	1
100	Nut M5	6

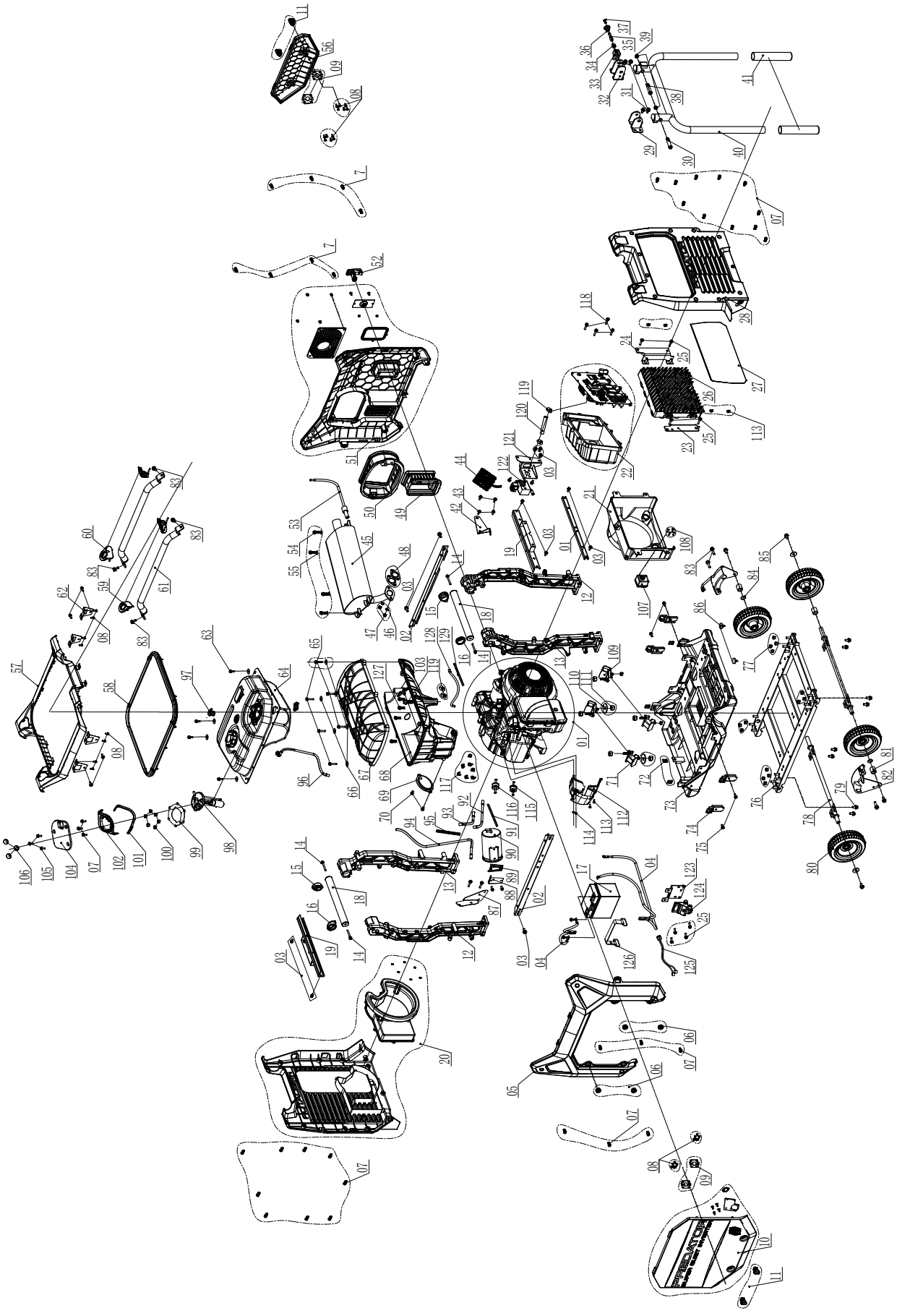
Generator Component List (continued)

Part	Description	Qty
101	Hood Seal Strip	1
102	Oil Pump Guard	1
103	Bolt M10x30	1
104	Oil Pump Guard Plate	1
105	Bolt M5x12	3
106	Cap	3
107	CO Alarm	1
108	Self-Tapping Screw M4x14	4
109	Shock Absorber Seat	2
110	Flat Gasket	2
111	Nut M10	6
112	Cylinder Head Air Hood	1
113	Bolt M6x20	2
114	Nut M6	6
115	Check Valve	1
116	Two-Way Valve	1

Part	Description	Qty
117	Clamp	7
118	Nut M6	4
119	Clamps	4
120	Gas Pipe	1
121	Gas Solenoid Valve Mounting Bracket	1
122	Gas Solenoid Valve	1
123	ECU Mounting Bracket	1
124	ECU	1
125	EFI Wiring Harness	1
126	Battery Strap	1
127	Bolt M8x30	4
128	Gas Pipe	1
129	Nylon Braided	1
130	Remote (Not Shown)	1
131	LPG Connector Kit (Not Shown)	1
132	Battery/Maintainer (Not Shown)	1

The component list and assembly diagram are shown for reference only.
To view all currently available replacement parts, please visit harborfreight.com/parts

Assembly Diagram (Generator)



Engine Component List

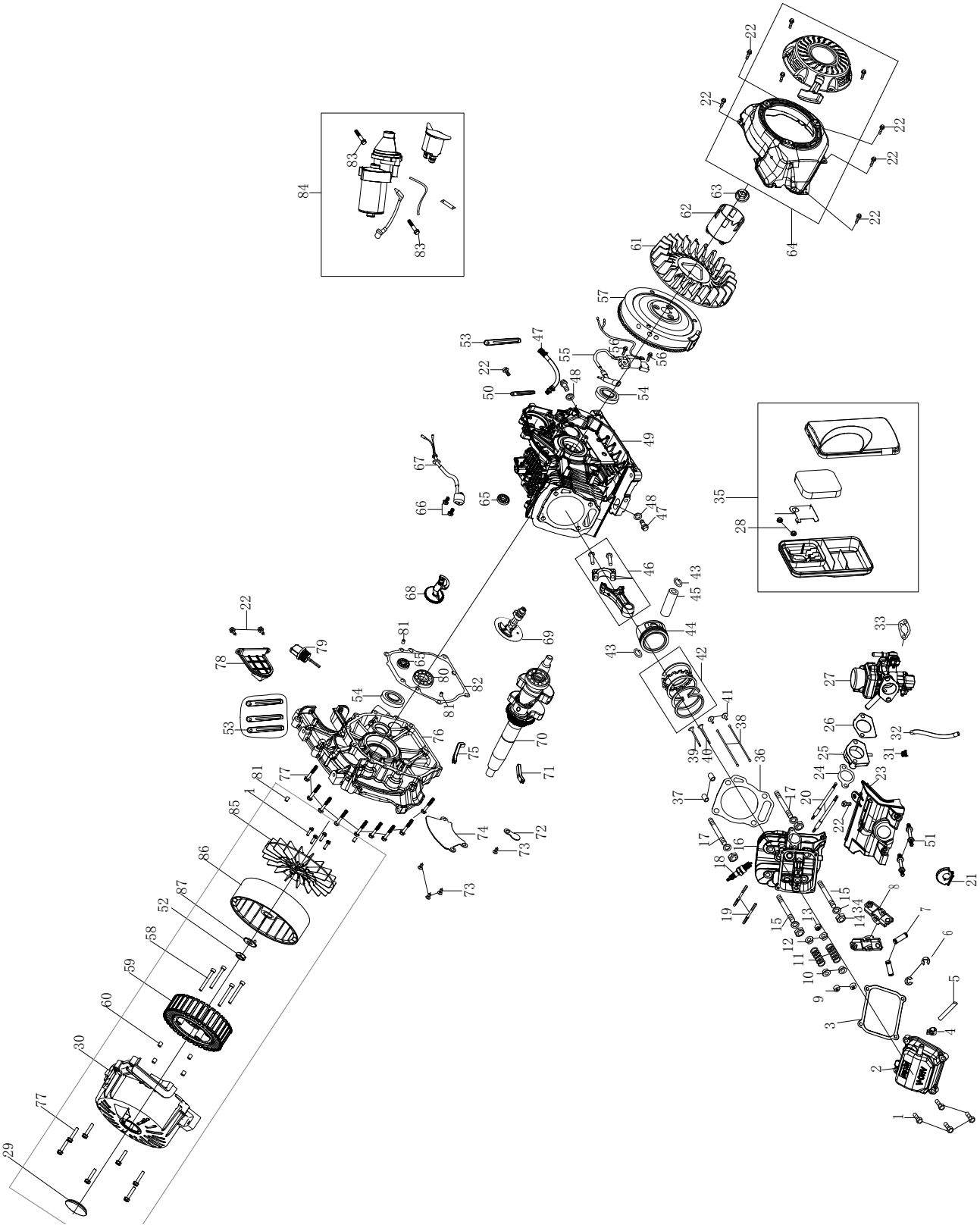
Part	Description	Qty
1A	Hex Flange Bolt M6x40	4
2A	Cylinder Head Assembly	1
3A	Cylinder Head Gasket	1
4A	Clamp	1
5A	Exhaust Pipe	1
6A	Retaining Rings For Shafts	2
7A	Rocker Arm Shaft	2
8A	Valve Rocker Arm Assembly	2
9A	Valve Lock Clip	2
10A	Valve Spring Seat	4
11A	Valve Spring Seat	4
12A	Valve Spring Lower Seat	2
13A	Valve Seal	2
14A	Nut M10x1.25	4
15A	Stud Bolt M10x110	2
16A	Cylinder Head Assembly	1
17A	Stud Bolt M10x110	4
18A	Spark Plug Assembly	1
19A	Exhaust Studs	2
20A	Air Intake Studs	2
21A	Clamp	1
22A	Hex Flange Bolt M6x12	13
23A	Wind Shield	1
24A	Air Inlet Gasket	1
25A	Throttle Connecting Block	1
26A	Throttle Body Gasket	1
27A	ECU/Throttle Body Assembly	1
28A	Hex Flange Nut M6	2
29A	Rubber Sleeve	1
30A	Motor Tail Cover	1
31A	Clamp	1
32A	Gas Pipe	1
33A	Air Filter Gasket	1
34A	Flat Washer	4
35A	Air Filter Assembly	1
36A	Cylinder Head Gasket	1
37A	Positioning Pin	2
38A	Valve Pushrod	2
39A	Exhaust Valve	1
40A	Intake Valve	1
41A	Valve Lifter	2
42A	Piston Ring Assembly	1
43A	Piston Pin Clamp Ring	2
44A	Piston	1

Part	Description	Qty
45A	Piston Pin	1
46A	Connecting Rod Assembly	1
47A	Oil Drain Bolt M12x16	2
48A	Aluminum Gasket	2
49A	Crankcase	1
50A	Metal Wire Clip	1
51A	Stud	2
52A	Hex Flange Nut M18	1
53A	Metal Wire Clip	4
54A	Oil Seal	1
55A	Ignition Coil Assembly	1
56A	Hex Flange Bolt M6	2
57A	Flywheel Assembly	1
58A	Hex Socket Head Screw	4
59A	Variable Frequency Motor Rotor	1
60A	Positioning Pin	4
61A	Flywheel Fan	1
62A	Startup Cup	1
63A	Flywheel Nut M16	1
64A	Recoil Starter Assembly	1
65A	Deep Groove Ball Bearing	2
66A	Hex Flange Bolt M6x16	2
67A	Oil Sensor	1
68A	Balance Shaft	1
69A	Camshaft Assembly	1
70A	Crankshaft Assembly	1
71A	Cylinder Head Air Guide Sealing Strip	1
72A	Pressure Plate Assembly	1
73A	Cross Recessed Countersunk Head Screw M6x12	4
74A	Pressure Plate Assembly	1
75A	Cylinder Head Air Guide Sealing Strip	1
76A	Crankcase Cover	1
77A	Hex Flange Bolt	7
78A	Crankcase Cover Baffle	1
79A	Oil Dipstick Assembly	1
80A	Deep Groove Ball Bearing 6307	1
81A	Positioning Pin	3
82A	Crankcase Cover Gasket	1
83A	Hex Flange Bolt M8x32	3
84A	Starter Motor Assembly	1
85A	Fan/Inverter	1
86A	Alternator End Cover	1
87A	Flat Washer	1

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

The component list and assembly diagram are shown for reference only.
To view all currently available replacement parts, please visit harborfreight.com/parts

Assembly Diagram (Engine)



PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE COMPONENT 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.

R**ecord Product's Date Code Here:**_____

Note: If product has no date code, 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 193175526076 when ordering parts.

FCC STATEMENT FOR THE REMOTE

CAUTION! The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Limited 90 Day Warranty (Retail)

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.

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. HFT also 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.

Emissions Control System Warranty

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board, the United States Environmental Protection Agency, and Harbor Freight Tools (HFT) are pleased to explain the emissions control system warranty on your 2025 Small Off-Road Engine and engine powered equipment. In California, new equipment that uses small off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. HFT must warrant the emissions control system on your Small Off-Road Engine and engine powered equipment for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small off-road engine or equipment leading to the failure of the emissions control system. HFT also 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.

Your emissions control system may include parts such as the carburetor or fuel-injection system, the ignition system, catalytic converter, fuel tanks, fuel lines (for liquid fuel and fuel vapors), fuel caps, valves, canisters, filters, clamps and other associated components. Also included may be hoses, belts, connectors, and other emission-related assemblies.

Where a warrantable condition exists, HFT will repair your Small Off-Road Engine and engine powered equipment at no cost to you, including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE

This emissions control system is warranted for two years. If any emission-related part on your Small Off-Road Engine and engine powered equipment is defective, the part will be repaired or replaced by HFT.

OWNER'S WARRANTY RESPONSIBILITIES

As the Small Off-Road Engine and engine powered equipment owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. HFT recommends that you retain all receipts covering maintenance on your small off-road engine/equipment, but HFT cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the Small Off-Road Engine and engine powered equipment owner, you should however be aware that HFT may deny you warranty coverage if your Small Off-Road Engine or engine powered equipment or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.

You are responsible for presenting your Small Off-Road Engine or engine powered equipment to HFT as soon as the problem exists. To obtain warranty repair or replacement, either:

(a) contact HFT Product Support at 1-800-444-3353 or productsupport@harborfreight.com; or

(b) bring the Small Off-Road Engine or engine powered equipment to your nearest Harbor Freight Tools retail store. The nearest Harbor Freight Tools retail store can be found on the internet at https://www.harborfreight.com. The warranty repairs or replacement should be completed in a reasonable amount of time, not to exceed 30 days.

If you have a question regarding your warranty coverage, you should contact HFT Product Support at 1-800-444-3353 or productsupport@harborfreight.com.

GENERAL EMISSIONS WARRANTY COVERAGE

a) The warranty period begins on the date the engine or equipment is delivered to an ultimate purchaser. The warranty period is two years.

b) HFT warrants to the ultimate purchaser and each subsequent owner that the engine is:
   1. Designed, built, and equipped so as to conform with the applicable United States Environmental Protection Agency's (EPA) emissions requirements in effect at the time of manufacture and all applicable regulations adopted by the California Air Resources Board; and
   2. Free from defects in materials and workmanship that cause the failure of a warranted part to be identical in all material respects to the part as described in the engine manufacturer's application for certification for a period of two years.

c) The warranty on emissions-related parts is as follows:
   1. Any warranted part that is not scheduled for replacement as required maintenance in the written instructions provided is warranted for the warranty period stated above. If any such part fails during the period of warranty coverage, it will be repaired or replaced by HFT. Any such part repaired or replaced under the warranty will be warranted for the remaining warranty period.
   2. Any warranted part that is scheduled only for regular inspection in the written instructions is warranted for the warranty period stated above. A statement in the written instructions to the effect of "repair or replace as necessary" does not reduce the period of warranty coverage. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.
   3. Any warranted part that is scheduled for replacement as required maintenance in the written instructions will be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part will be repaired or replaced by HFT. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.
   4. Repair or replacement of any warranted part under the warranty will be performed at no charge to the owner at a retail store or by HFT paying for shipping the product for repair.
   5. Notwithstanding the provisions herein, warranty services or repairs will be provided at all retail stores or by contacting HFT Product Support at 1-800-444-3353 or productsupport@harborfreight.com.
   6. The owner will not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a retail store.
   7. HFT is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.
   8. Throughout the engine's and emission control system's warranty period stated above, HFT will maintain a supply of warranted parts sufficient to meet the expected demand for such parts and will obtain additional parts if that supply is exhausted.
   9. Any replacement part may be used in the performance of any warranty maintenance or repairs and will be provided without charge to the owner. Manufacturer-approved replacement parts that do not increase emissions will be used in the performance of any warranty maintenance or repairs and will be provided without charge to the owner. Such use will not reduce the warranty obligations of HFT.
   10. Add-on or modified parts that are not exempted by the California Air Resources Board may not be used. The use of any non-exempted add-on or modified parts will be grounds for disallowing a warranty claim. HFT is not liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.
   11. HFT will provide any documents that describe its warranty procedures or policies upon request of the Executive Officer.

d) Emission Warranty Parts List.

1. Fuel Metering System
   a. Carburetor and its internal parts (and/or pressure regulator or fuel injection system).
   b. Fuel tank.
   c. Cold start enrichment system.
   d. Air/fuel ratio feedback and control system.
2. Air Induction System
   a. Controlled hot air intake system.
   b. Intake manifold.
   c. Air filter.
3. Ignition System
   a. Spark plugs.
   b. Magneto ignition system.
   c. Spark advance/retard system.
4. Catalyst System (if so equipped)
   a. Exhaust pipe stud/exhaust manifold.
   b. Thermal reactor.
   c. Catalytic converter (if so equipped).
5. Particulate Controls
   a. Traps, filters, precipitators, and any other device used to capture particulate emissions.
6. Miscellaneous Items Used in Above Systems
   a. Vacuum, temperature and time sensitive valves and switches.
   b. Hoses, belts, connectors, and assemblies.
7. Evaporative Emission Control System
   a. Fuel tank.
   b. Fuel cap.
   c. Fuel Lines (for liquid fuel and fuel vapors).
   d. Fuel Line Fittings.
   e. Clamps.*
   f. Pressure Relief Valves.*
   g. Control Valves.*
   h. Control Solenoids.*
   i. Electronic Controls.*
   j. Vacuum Control Diaphragms.*
   k. Control Cables.*
   l. Control Linkages.*
   m. Purge Valves.*
   n. Gaskets.*
   o. Liquid/Vapor Separator.
   p. Carbon Canister.
   q. Canister Mounting Brackets.
   r. Carburetor Purge Port Connector.
8. Air Injection System (if so equipped)
   a. Air pump or pulse valve.
   b. Valves affecting distribution of flow.
   c. Distribution manifold.

* Note: As they relate to the evaporative emission control system.

HFT will furnish with each new small off-road engine/equipment written instructions for the maintenance and use of the engine/equipment by the owner.

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