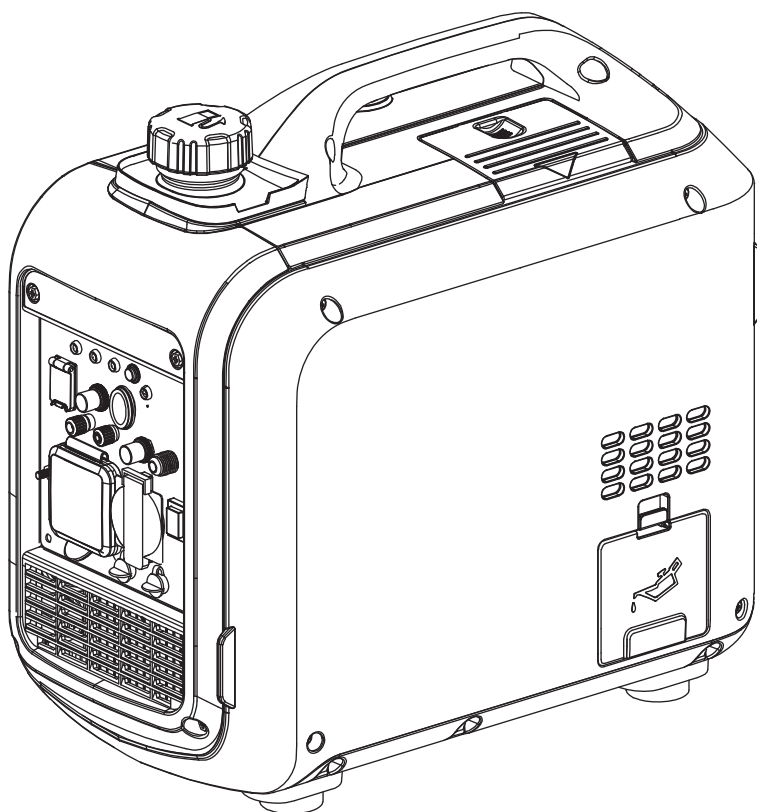


DieHard®

Model No. DHL2800BiSCO

2800 WATT DUAL FUEL INVERTER GENERATOR OPERATOR'S MANUAL



Warning: The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.



DO NOT RETURN TO STORE!

HAVE QUESTIONS OR NEED SERVICE?



866-591-8921

Table of Contents

Table of Contents	1
Introduction	1
Safety Warnings and Notices	1
Safety Instructions.....	2
Components.....	6
Control Panel.....	6
Specifications.....	7
Preparation	8

Adding Engine Oil.....	8
Add Gasoline.....	9
Connecting LPG Source	9
Grounding The Generator	10
Operation	11
Maintenance	14
Troubleshooting	18
Electrical Schematic.....	21

Introduction

Thank you for choosing Pulsar Products!

This manual provides instruction on how to operate and use your generator safely and correctly; be sure to read and understand this manual before using your generator. If you have ANY questions, please phone 866.591.8921 M-F for support BEFORE using your generator.

All details and images in this User's Manual are believed to be accurate at the time of publication.

This manual is a permanent part of the generator set. If the generator is resold, kindly include this manual with the generator.

Safety Warnings and Notices

WARNING: Save This Manual For Future Reference

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

Safety Definitions

The words DANGER, WARNING, CAUTION and NOTICE are used throughout this manual to highlight important information. Make sure that the meaning of this safety information is known to all who operate, perform maintenance on, or are near the generator.

 This safety alert symbol appears with most safety statements. It means to pay attention and be alert, your safety is involved! Please read and abide by the message that follows the safety alerts symbol.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE

Failure to follow the instruction may result in the damage to your generator and other property

Safety Definitions

Follow all safety information contained in this manual and on the.

Safety Instructions

Before operating your generator, you must read and understand the manual and familiarize yourself with the safe operation practices.

SYMBOL	DESCRIPTION
	Safety Alert Symbol
	Electrocution Hazard
	Asphyxiation Hazard
	Burn Hazard. DO NOT touch hot surfaces
	Electrical Shock Hazard
	Fire Hazard
	Maintain Safe Distance
	Lifting Hazard
	Read Manufacturer's
	DO NOT Operate in Wet Conditions
	GROUND: Consult with electrician to determine grounding requirements before

Safety Precautions

⚠ DANGER

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



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



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

⚠ WARNING

POISONOUS GAS HAZARD: Engine exhaust contains carbon monoxide, a poisonous gas that could kill you in minutes. You **CAN NOT** smell it, see it, or taste it. Even if you do not smell exhaust fumes, you could still be exposed to carbon monoxide gas.

Operate this product **ONLY** outside far away from windows, doors and vents to reduce the risk of carbon monoxide gas from accumulating and potentially being drawn towards occupied spaces.

Install battery-operated carbon monoxide alarms or plug-in carbon monoxide alarms with battery backup according to the manufacturer's instructions. Most smoke alarms cannot detect carbon monoxide gas.

DO NOT run this product inside homes, garages, basements, crawlspaces, sheds, or other partially enclosed spaces even if using fans or opening doors and windows for ventilation. Carbon monoxide can quickly build up in these spaces and can linger for hours, even after this product has shut off.

ALWAYS place this product downwind and point the engine exhaust away from occupied spaces. If you start to feel sick, dizzy, or weak while using this product, shut it off and get to fresh air **IMMEDIATELY** - then see a doctor; you may have carbon monoxide poisoning.

Safety Instructions

Correct Usage

Example location to reduce risk of carbon monoxide poisoning

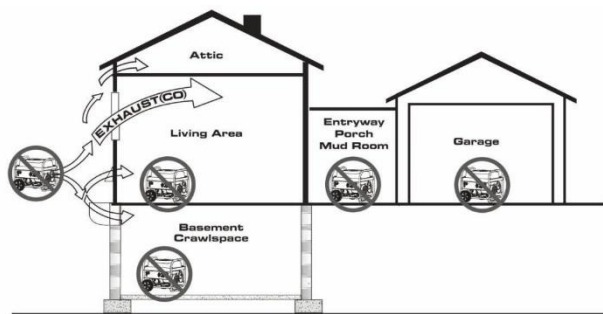
- **ONLY** use outside and downwind, far away from windows, doors, and vents.
- Direct exhaust away from occupied spaces.



Incorrect Usage

Do not operate in any of the following locations:

- Near any door, window, or vent
- Garage
- Basement
- Crawl Space
- Living Area
- Attic
- Entry Way
- Porch
- Mud Room



Fuel and its vapors are extremely flammable and explosive which could cause burns, fire, or explosion resulting in death or serious injury and/or property damage.

When Adding or Draining Gasoline

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

- Fill or drain fuel tank outdoors.
- **DO NOT** overfill the tank. Allow space for fuel expansion.
- If fuel spills, wipe it up and let the area dry before starting the engine.
- Keep fuel away from sparks, open flames, heat, and other ignition sources.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks; replace if necessary.
- **DO NOT** light a cigarette or smoke anything.

When Starting Equipment

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

When Operating Equipment

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

Safety Instructions

NOTE

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

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

Shut off the generator if:

- Electrical output is lost.
- Equipment sparks, smokes, or emits flames.
- Unit vibrates excessively.

Parallel Kit Precautions



To prevent serious injury, death, and generator and/or equipment damage from electric shock and fire:

1. Follow Parallel Kit instructions provided with it for connection and use of a Parallel Kit.
2. Only connect two identical Inverter Generators together using a Parallel Kit.
3. Connect Parallel Kit only to terminals marked "Parallel" 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.

Carbon Monoxide Safety

Carbon Monoxide

Generators are very convenient, but they can also be very dangerous. All fuel-burning appliances and equipment release a poisonous gas called carbon monoxide. Carbon monoxide (also known as CO) can be dangerous for humans and pets, even in small amounts, because it blocks oxygen from getting into your body. Carbon monoxide poisoning can lead to death in a very short time. It is odorless, tasteless and invisible, so you may be exposed without knowing it. That is why carbon monoxide is sometimes called "the silent killer."

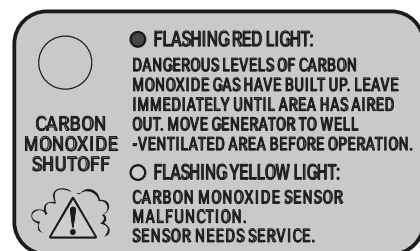
The CO sentry module monitors for the accumulation of poisonous CO gas found in engine exhaust when the generator is running. If CO sentry detects increasing levels of CO gas, it automatically shuts off the engine.

After an automatic shut-off, a red light will blink, notifying the user that the generator was shut-off due to excessive CO accumulation. The RED light will blink for at least five minutes after a CO shut-off. Immediately, move the generator to an open, outdoor area and point the exhaust away from people and occupied buildings.

If a CO sentry system fault has occurred the generator will shut off automatically and the YELLOW light will blink for five minutes in the CO sentry badge, informing the user of the fault. If this happens, please consult an authorized Pulsar Products Service Center.

CO Sentry Label

⚠ DANGER	⚠ DANGER	⚠ PELIGRO
Using a generator indoors CAN KILL YOU IN MINUTES. Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.	Utiliser un générateur à l'intérieur PEUT VOUS TUE EN QUELQUES MINUTES. Les gaz d'échappement du générateur contiennent du monoxyde de carbone. C'est un gaz toxique invisible et inodore.	Si usa un generador en interiores, MORIRÁ EN POCOS MINUTOS. El escape del generador contiene monóxido de carbono. Es un veneno que no tiene olor ni se puede ver.
 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.	 • NE JAMAIS utiliser à l'intérieur d'une maison ou d'un garage, MÊME Si les portes et les fenêtres sont ouvertes. • Utiliser UNIQUEMENT à l'EXTÉRIEUR et loin des fenêtres, portes et ventilations.
		 • NUNCA lo use dentro de una casa o garaje, AUN si las puertas y ventanas están abiertas. • Solo úsalo EN EXTERIORES y lejos de ventanas, puertas y ductos de ventilación.



Safety Instructions

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.	



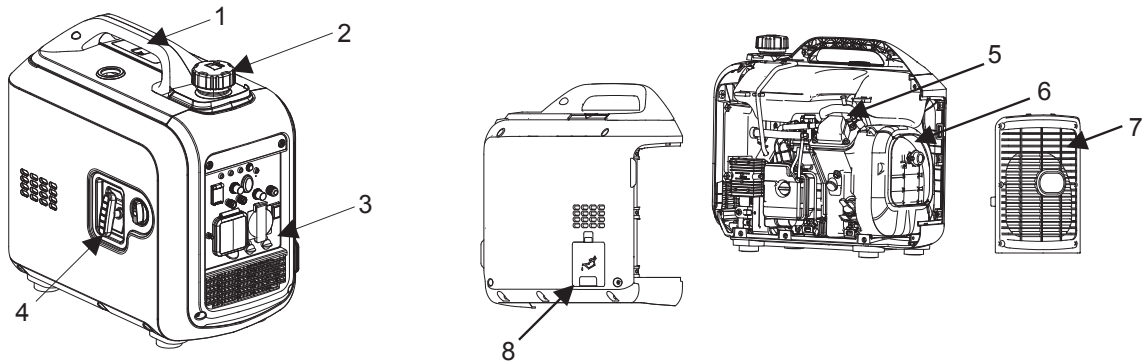
This symbol means:

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. The voltage of battery CR2032 is usually 3V or 3.1V, for more information, please check the generator manual or dealer.
5. Non-rechargeable batteries are not to be recharged.
6. Do not force discharge, recharge, disassemble, heat above 60 °C (140 °F) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.

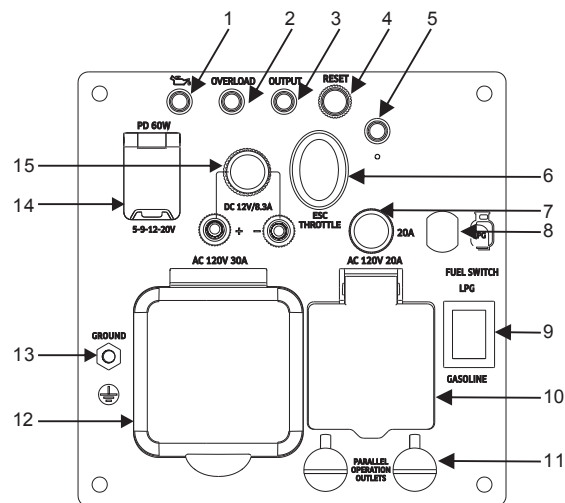
NOTE: THIS PRODUCT CONTAINS NON-REPLACEABLE BATTERIES

Components



- | | | | |
|------------------|-------------------|---------------|-------------------|
| 1. Handle | 3. Control Panel | 5. Spark Plug | 7. Louver |
| 2. Fuel Tank Cap | 4. Recoil Starter | 6. Muffler | 8. Oil Filler Cap |

Control Panel



- | | |
|-----------------------------|-----------------------|
| 1. Oil Warning Light | 9. Fuel Switch |
| 2. Overload Indicator Light | 10. AC Receptacle |
| 3. AC Pilot Light | 11. Parallel Outlets |
| 4. Inverter Reset | 12. AC Receptacle |
| 5. CO Sentry lamp | 13. Ground Terminal |
| 6. Low Idle Switch | 14. USB Charging Port |
| 7. AC Breaker | 15. DC Protection |
| 8. LPG Connection | |

Specifications

Model No.			DHL2800BiSCO
Generator	Type		Inverter
	Rated frequency /Hz		60
	Rated voltage /V		120
	Peak output power /kW		2.8(Gasoline) / 2.6(LPG)
	Rated output power /kW		2.3(Gasoline) /2.05 (LPG)
	Power factor		1.0
	AC output quality		ISO8528 G2
	THD/%		≤5
	Noise Level dB/LpA/7m (1/2 load)		62
	DC Output/ V-A		12-8.3
	Type-C / V-A		5-3 / 9-3 / 12-3 / 15-3 / 20-3
	USB-A / V-A		5-3 / 9-2 / 12-1.5
	Overload Protect	DC	Non-fuse Protector
		AC	Control by inverter overload protect program
Engine	Engine		HM100G
	Engine type		Single cylinder, 4-Stroke, forced air cooling, OHV
	Displacement/cc		98
	Fuel type		Gasoline / LPG
	Fuel Tank capacity/Gallons		1.58
	Continue Running Time (at 50% power) / h		9
	Engine oil Capacity/L		0.35
	Spark Model No.		A5RTC
	Starting mode		Recoil start
Generator	Length×Width×Height/mm		500×295×475
	Net weight/lbs.		45

Preparation

Preparation

Your generator requires some assembly. This unit ships from our factory without oil; it must be properly filled with oil before operation.

Unpacking

1. Set the shipping carton on a solid flat surface, then cut the 4 corner edges and fold down the carton walls
2. Remove everything from the carton except the generator.
3. Using the carrying handles of the unit, carefully remove the generator from the box (two people lifting is required).

Add Engine Oil

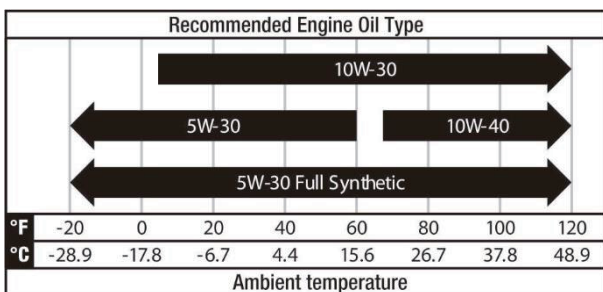
⚠ CAUTION

DO NOT attempt to crank or start the engine before it has been properly filled with the recommended type and amount of oil. Damage to the generator because of failing to follow these instructions will void your warranty.

NOTICE

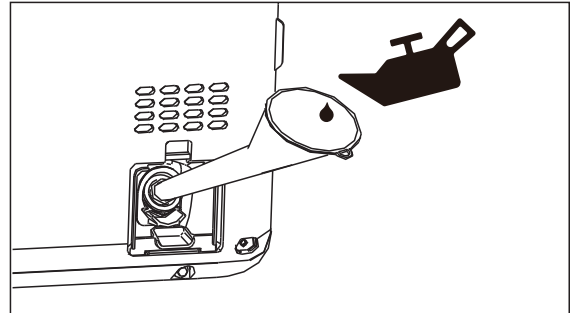
Failure to follow the instruction may result in damage to your generator and other property.

If running the generator in extreme temperatures, refer to the following chart for recommended oil type.

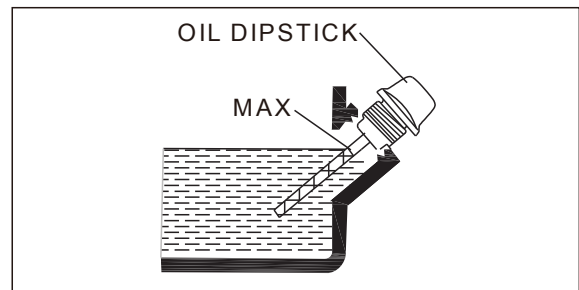


1. Place the generator on a solid, flat, level surface.
2. Remove oil dipstick to add oil.

3. Using a funnel, as needed, add the appropriate type of oil until the oil level is at the proper level. SAE 10W-30 oil is recommended for general use. DO NOT OVERFILL. Replace oil dipstick and secure maintenance cover.



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



NOTICE

Once the oil has been added, a visual check should show oil about 1-2 threads from running out of the fill hole. When using the dipstick to check the oil level, DO NOT screw in the dipstick while checking.

NOTICE

Check oil level often during the break-in period. Refer to the Maintenance section for recommended service intervals.

⚠ CAUTION

This engine is equipped with a low oil shut-off and will stop when the oil level in the crankcase falls below a critical level.

Preparation

NOTICE

The first 5 hours of run time are the break-in period for the unit. During the break-in period stay at or below 50% of the running watt rating and vary the load occasionally to allow stator windings to heat and cool. Adjusting the load will also cause engine speed to vary slightly and help seat piston rings. After the 5-hour break-in period, change the oil.

NOTICE

Synthetic oil may be used after the 5-hour initial break-in period. Using synthetic oil does not increase the recommended oil change interval. Full synthetic 5W-30 oil will aid in starting in cold ambient < 41°F (5°C) temperatures.

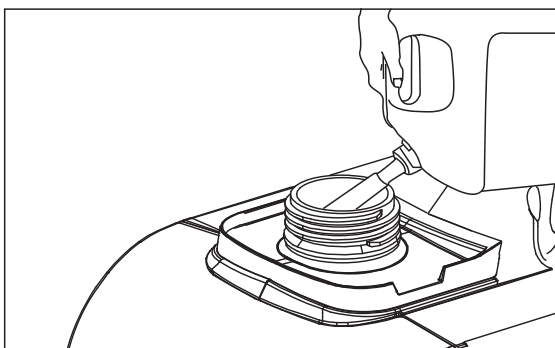
Add Gasoline

⚠ WARNING



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

1. Make sure the generator is on a solid, flat, level surface.
2. Unscrew the fuel cap and set it aside.
3. Slowly add gasoline to the fuel tank. Be careful not to over fill.



4. Replace the fuel cap and wipe up any spilled gasoline with a dry cloth then remove the cloth from the area.

⚠ DANGER

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

⚠ WARNING

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

- To ensure that the generator runs smoothly use only **FRESH UNLEADED GASOLINE WITH AN OCTANE RATING OF 87 OR HIGHER.**
- Never use an oil/gasoline mixture. Never use old gasoline.
- Avoid getting dirt or water in the gasoline tank.
- Gasoline can age in the tank and make it hard to start up the generator in the future.
- Never store generator for extended periods of time with gasoline in the tank.

Connecting an LPG Source

NOTICE

Gasoline and LPG cannot be used simultaneously. When using LPG, the fuel switch must turn to LPG position, otherwise it may cause damage to the generator and reduce its service life.

When preparing to use propane as a fuel, all loads must be removed, the generator must be turned off, and the fuel switch must be turned off.

NOTICE

- Propane tanks that use liquid withdrawal system can not be used on these models.
- Confirm that the re-qualification date on the tank has not expired.
- **DO NOT** use included LPG hose for any other appliances.

NOTICE

- All new propane tanks must be purged of air and moisture prior to filling. Used propane tanks that have not been plugged or kept closed must also be purged. The purging process should be done by a propane tank supplier (propane tanks from an exchange supplier should have been purged and filled properly).

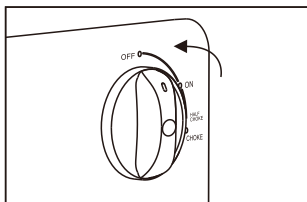
Preparation

- ALWAYS position the propane tank so the connection between the valve and the gas inlet will not cause sharp bends or kinks in the hose.

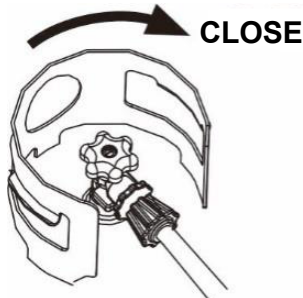
⚠ DANGER

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

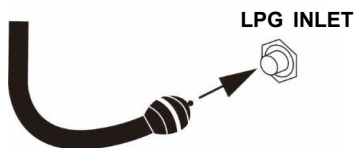
1. Turn the generator OFF and place on a flat surface in a well ventilated area.
2. Rotate the Combination Switch to the "OFF" position.



3. Verify that the propane tank valve is in the fully closed position.

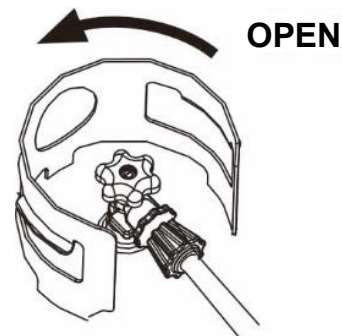


4. Remove the cover on the generator propane inlet.
5. Connect the LPG hose (including) to the propane inlet on the generator.



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

6. Remove the safety plug or cap from the propane tank valve and attach the other end of the hose to the LPG connector on the tank.
7. Turn the propane tank valve to the fully open position. Check all connections for leaks by wetting the fittings with a solution of soap and water. Bubbles which appear or bubbles which grow indicate that a leak exists. If a leak exists at a fitting, turn the propane tank valve to the fully closed position and tighten the fitting. Open the propane tank valve and recheck the fitting with the soap and water solution. If the leak continues or if the leak is not at a fitting then DO NOT use the generator and contact an authorized Pulsar service center.



Grounding The Generator

Attach grounding wire (if required by code)

- Ground the generator by tightening the grounding nut against a grounding wire.
- Connect the other end to a copper or brass grounding rod that's driven into the earth.

A generally acceptable grounding wire is a No. 12 AWG (American Wire Gauge) stranded copper wire.

Grounding codes can vary by location. Please contact a local electrician to check the grounding regulations for your area.

⚠ WARNING

Failure to properly ground the generator can result in electrocution.

NEVER operate the generator inside any building, garage, basement, crawlspace, shed, or enclosure, including the generator compartment of a recreational vehicle.

Operation

Grounding The Generator

WARNING

NEVER operate or start the generator in the back of an SUV, camper, trailer, truck bed (regular sides, flat or other configuration), under staircases, stairwells, next to walls or buildings, or in any other location that will not allow for adequate cooling of the generator or for the proper exit of the exhaust flow.

DO NOT operate or store the generator in wet weather conditions such as rain or snow. Using a generator in wet conditions could result in serious injury or death due to electrocution.

Generators must have a minimum of 5 feet (1.5 m) of clearance from all combustible material.

Generators must also have a minimum of 3 feet (1M) of airflow clearance on all sides to allow for adequate cooling, maintenance, and service.

Always place the generator in a well-ventilated area. NEVER place the generator near air intake vents or where exhaust fumes could be drawn into occupied or confined spaces.

Always carefully consider wind and air currents when positioning the generator.

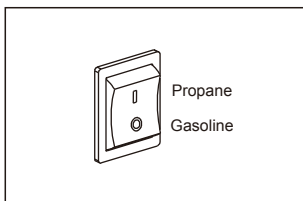
Always allow generators to properly cool before transport or for storage purposes.

WARNING

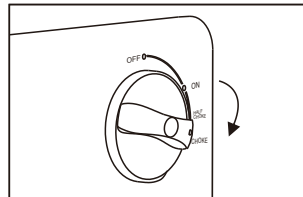
During operation, the muffler and exhaust fumes will become hot. If there is inadequate cooling space or if the generator is blocked or enclosed, temperatures can rise quickly and may lead to a fire.

Starting The Generator Gasoline:

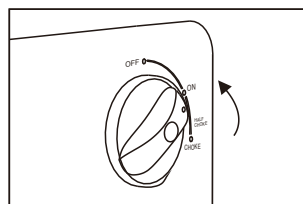
1. Turn the Propane switch to "Gasoline".



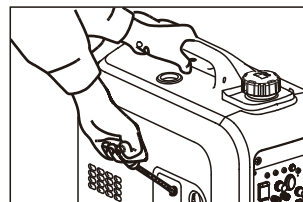
- 2a. If the engine is cold, turn the 4-in-1 switch to the "CHOKE" position.



- 2b. If the engine is already warm, turn the 4-in-1 switch to the "ON" position.



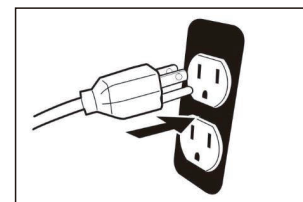
3. Place one hand on the generator to hold it in place, and pull on the recoil starter handle slowly until a slight resistance is felt. Then pull quickly to start the engine. Return cord gently into the machine. Never allow the cord to snap back.



4. Turn the 4-in-1 switch to the "ON" position.

5. Allow the generator to run for several minutes before attempting to connect any electrical devices. This allows the generator to stabilize its speed and temperature.

6. Plug in devices.

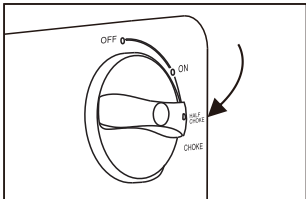


When starting your generator in cold temperatures (below 32° F):

1. Turn the 4-in-1 switch to the "CHOKE" position.
2. Use the recoil starter handle to start the generator.

Operation

3. Turn the 4-in-1 switch to the "HALF CHOKE" position for about 15 seconds. This allows the generator to run stably, and the engine to warm up. **NOTE:** This is only required if you are operating in cold temperatures below freezing (32° F).



4. Turn the 4-in-1 switch to the "ON" position.

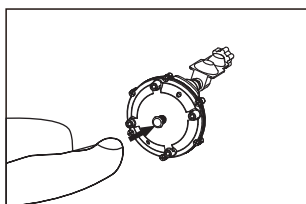
Propane:

NOTICE

Gasoline and propane cannot be used simultaneously, when using gasoline, please keep the propane valve close or remove the propane hose, otherwise engine will shut down, otherwise it may cause damage to the generator and reduce its service life.

When preparing to use propane as a fuel, all loads must be removed, the generator must be turned off, and the fuel selector valve must be turned off.

1. Turn the Propane switch to "Propane".
2. Turn the 4-in-1 switch to the "ON" position.
3. Press the priming button 3 -5 times.



4. Place one hand on the generator to hold it in place, and pull on the recoil starter handle slowly until a slight resistance is felt. Then pull quickly to start the engine. Return cord gently into the machine. Never allow the cord to snap back .

5. Allow the generator to run for several minutes before attempting to connect any electrical devices. This allows the generator to stabilize its speed and temperature.

⚠ DANGER

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

⚠ WARNING

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

Parallel Operation

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

Overload Indicator

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

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

Low Oil Indicator

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

NOTICE

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

Low Idle Switch

1. Turn the low idle Switch ECONOMY to limit noise and fuel consumption for lighter generator loads.

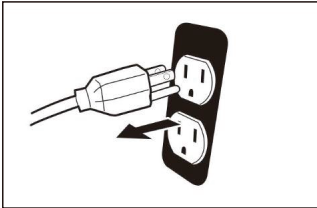
Operation

2. Switch low idle STANDARD/MAX to operate engine at full speed when:

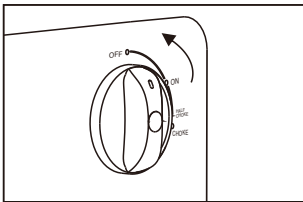
- Starting the generator
- A heavy load is applied

Stop The Generator

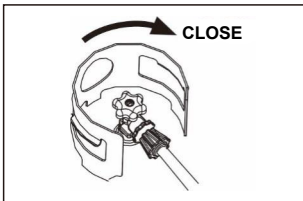
1. Turn off and unplug all connected electrical loads. Never start or stop the generator with electrical devices plugged in or turned on.



2. Rotate the Combination Switch to the "OFF" position.



3. Close the propane tank valve.



4. After the generator has completely cooled down, remove the propane hose if applicable and store the generator in a cool, dry, sheltered storage area.
5. Remove or consume all untreated gasoline if you plan to store the generator longer than 3 months.

Generator Capacity

NOTICE

Do not overload the generator's capacity. Exceeding your generator's wattage capacity can damage the generator and/or electrical devices connected to it.

Make sure the generator can supply enough continuous (running) and surge (starting) watts for the items you will power at the same time.

The total power requirements (Volts × Amps=Watts) of all appliances connected must be considered. Appliance and power tool manufacturers usually list rating information near the model or serial number. To determine power requirements:

1. Select the items you will power at the same time.
2. Total the continuous (running) watts of these items. This is the amount of power the generator must produce to keep the items running. See the wattage reference chart on the next page.
3. Estimate how many surge (starting) watts you will need. Surge wattage is the short burst of power needed to start electric motor-driven tools or appliances such as a circular saw or refrigerator. Not all motors start at the same time, total surge watts can be estimated by adding only the item(s) with the highest additional surge watts to the total rated watts from step 2.

Example:

Tool or Appliance	Running	Starting
	Watts*	Watts*
RV Air Conditioner (13,000 BTU)	1100	1800
TV (Flat Screen)	150	150
RV Refrigerator	180	600
Radio	50	50
Light (75 Watts)	75	75
Coffee Maker	600	600
2155 Total		3275
Running		Highest
Watts*		Starting
		Watts*

*Wattages listed are approximate. Verify actual wattage.

Maintenance

WARNING

ACCIDENTAL STARTING: Turn the fuel selector to the "OFF" position, wait for the engine to cool, and disconnect the spark plug cable before performing any inspection, maintenance, or cleaning procedures.

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

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.
You may phone 866.591.8921 for a service center referral.

Power

Cleaning, Maintenance, and Lubrication Schedule

Note: This maintenance schedule is intended 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
1. Brush off outside of engine 2. Check engine oil level 3. Check air filter	√					
Change engine oil				√		
Clean/replace air cleaner			√			
1. Check and clean spark plug 2. Check and clean spark arrestor				√		
1. Check/adjust idle speed 2. Check/adjust valve clearance 3. Clean fuel tank, strainer and carburetor 4. Clean carbon build-up from combustion chamber					√	
Replace fuel line if necessary						√

Maintenance

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 a 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.

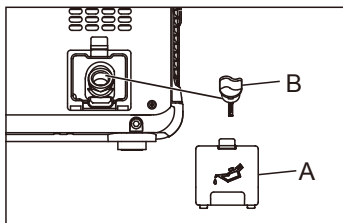
4. If needed, fill the Fuel Tank to about 1.5 inches under the fill neck with unleaded gasoline that has been treated with a fuel stabilizer additive. Follow fuel stabilizer manufacturer's recommendations for use.
5. Replace the Fuel Cap.
6. Wipe up any spilled fuel and allow excess to evaporate before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

Engine Oil Change

CAUTION

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

1. Make sure the engine is stopped and is level.
2. Remove the cover "A" and remove the oil filler cap "B".



3. Place an oil pan under the engine. Tilt the generator to drain the oil completely.
4. Replace the generator to a level surface.

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

5. Add the appropriate type of oil until the oil level is at the proper level. SAE 10w-30 oil is recommended for general use.

6. Wipe the cover clean, and wipe up any spilled oil.

Note: Be sure no foreign material enters the crankcase.

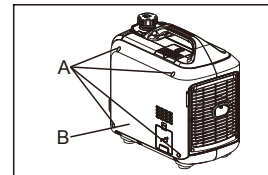
6. Wipe the cover clean, and wipe up any spilled oil.
7. Install the oil filler cap.
8. Install the cover and tighten the screws.

NOTICE

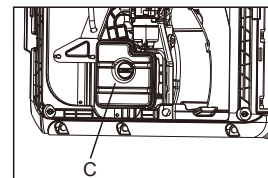
Do not attempt to run the engine with too little oil. The engine will not start with low or no engine oil.

Air Filter Element

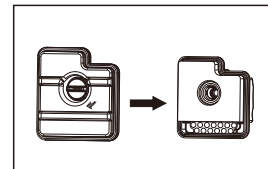
1. Remove the screw "A" and then remove the cover "B".



2. Remove the air filter case cover "C".



3. Remove the foam element.



4. Wash the foam element in solvent dry it.
5. Oil the foam element and squeeze out excess oil. The foam element should be wet but not dripping.
6. Insert the foam element into the air filter case.

Note: Be sure the foam element seals properly against the air filter holder to avoid air leakage. The engine should never run without the foam element; excessive piston and cylinder wear may result.

7. Install the air filter case cover in its original position.
8. Install the cover and tighten the screws.

Maintenance

Spark Arrestor Maintenance

WARNING

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

WARNING

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

1. Allow the generator to cool completely.
 2. Remove the Spark Arrestor.
 3. Clean the Spark Arrestor using a wire brush (sold separately).
- Replace the spark arrestor.

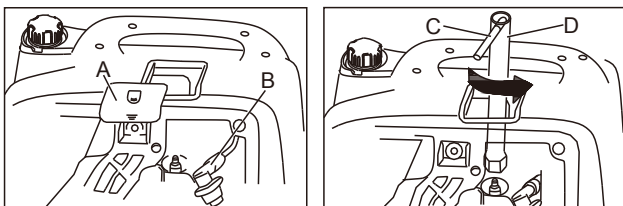
WARNING

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

Spark Plug Maintenance

The spark plug is important engine components, which should be checked periodically.

1. Remove the cap "A" and spark plug cap "B", Insert the tool "D" through the hole from the outside of the cover.
2. Insert the handlebar "C" in to the tool "D" and turn it counterclockwise to remove the spark plug.

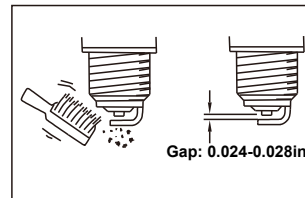


3. Check for discoloration and remove any carbon deposits. The porcelain insulator around the center electrode of spark plug should be a medium to light tan color.
4. Check the spark plug type and gap.

NOTICE

Use only A5RTC type spark plug or equivalent. Using an incorrect spark plug may damage the engine.

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



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

NOTICE

Plug will cause the engine to overheat. If overtightened, the threads in the cylinder head will get damaged.

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

NOTICE

If a torque wrench is not available when installing a spark plug, a good estimate of the correct torque is 1/4-1/2 turn past finger tight. However, the spark plug should be tightened to the specified torque as soon as possible.

Storage

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

1.CLEANING:

Wait for the engine to cool, then clean the engine with a dry cloth.

NOTICE

Do not clean using water. The water will gradually enter the engine and cause damage.

Maintenance

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.

WARNING

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

Draining the Carburetor

After closing the Fuel Valve, 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.

Aged gasoline that has not been treated with stabilizer ahead of time must be safely drained and disposed of, never run old gasoline through the engine.

WARNING

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

3. Lubrication:

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

4. Storage Area:

Cover and store your generator in a dry, level, well-ventilated area out of reach of children. The storage area should also be away from ignition sources, such as water heaters, clothes dryers, and furnaces.

NOTICE

During extended storage periods the engine should be started every 3 months and allowed to run for 15-20 minutes.

5. After Storage:

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 stored beyond the fuel stabilizer's recommended time, or if the engine does not start.

Troubleshooting

Problem	Possible Causes	Probable Solutions
THE ENGINE WILL NOT START	FUEL RELATED: 1. fuel in tank or fuel valve closed. 2. Choke not in START position, cold engine. 3. Gasoline with more than 10% ethanol used. (E15, E20, E85, etc.) 4. Low quality or deteriorated, old gasoline. 5. Carburetor not primed. 6. Dirty fuel passageways. 7. Carburetor needle stuck. Fuel can be smelled in the air. 8. Too much fuel in the chamber. This can be caused by the carburetor needle sticking. 9. Clogged Fuel Filter.	FUEL RELATED: 1. Fill fuel tank with fresh 87+octane stabilizer-treated unleaded gasoline and open fuel valve. Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.). 2. Move Choke to START position. 3. Clean out ethanol-rich gasoline from the 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.). 4. Use fresh 87+octane stabilizer-treated unleaded gasoline. Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.). 5. Pull on Starter Handle to prime. 6. Clean out passageways using a fuel additive. Heavy deposits may require further cleaning 7. Gently tap the side of the carburetor float chamber with a screwdriver handle. 8. Shut off the fuel valve, move the generator to a safe, outdoor location and contact a certified Service Center before using the generator again. 9. Replace Fuel Filter.
	IGNITION (SPARK) RELATED: 1. Power Switch at OFF position. 2. Spark plug cap not connected securely. 3. Spark plug electrode wet or dirty. 4. Incorrect spark plug gap. 5. Spark plug cap is broken. 6. Circuit breaker tripped (electric start models only). 7. Incorrect spark timing or faulty ignition system.	IGNITION (SPARK) RELATED 1. Turn the Power Switch to ON. 2. Connect the spark plug cap properly. 3. Clean spark plug. 4. Correct spark plug gap. 5. Replace the spark plug cap 6. Reset circuit breaker. Check wiring and starter motor if the breaker continues to trip. 7. Have qualified technician diagnose/repair ignition system.

Troubleshooting

Problem	Possible Causes	Probable Solutions
THE ENGINE WILL NOT START	COMPRESSION RELATED: 1. Cylinder not lubricated. Problem after long storage periods. 2. Loose or broken spark plug. (Hissing noise will occur when trying to start.) 3. Loose cylinder head or damaged head gasket. (Hissing noise will occur when trying to start.) 4. Engine valves misadjusted or stuck.	COMPRESSION RELATED: 1. Pour a tablespoon of oil into the spark plug hole. Crank the engine a few times and try to start again. 2. Tighten spark plug. If that does not work, replace the spark plug. If the problem persists, may have a head gasket problem, see #3. 3. Have a qualified technician service the cylinder head. 4. Have a qualified technician adjust/repair valves and tappets.
	ENGINE OIL RELATED: 1. Low engine oil. 2. Engine mounted on a slope, triggering low oil shutdown.	ENGINE OIL RELATED: 1. Fill engine oil to the proper level. Check engine oil before EVERY use. 2. Operate the engine on a level surface. Check engine oil level.
	SPARK ARRESTOR RELATED: 1. Spark Arrestor clogged with soot.	SPARK ARRESTOR RELATED: 1. Clean and replace Spark Arrestor.
ENGINE MISFIRES	1. The spark plug cap is 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 the spark plug. 3. Replace the 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. Low oil shutdown.	1. Fill engine oil to the proper level. Check engine oil before EVERY use.

Troubleshooting

Problem	Possible Causes	Probable Solutions
ENGINE STOPS SUDDENLY	1. Fuel tank empty or full of impure or low-quality gasoline. 2. Defective fuel tank cap creates a vacuum and prevents proper fuel flow. 3. Faulty magneto. 4. Disconnected or improperly connected spark plug cap.	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. Test/replace fuel tank cap. 3. Have qualified technician service magneto. 4. Secure spark plug cap.
ENGINE STOPS WHEN UNDER HEAVY LOAD	1. Dirty air filter 2. Engine running cold.	1. Clean element. 2. Allow the engine to warm up prior to operating equipment.
ENGINE KNOCKS	1. Old or low-quality gasoline. 2. Engine overloaded. 3. Incorrect spark timing, deposit buildup, worn engine, or other mechanical problems.	1. Fill fuel tank with fresh 87+octane stabilizer treated unleaded gasoline. Do not use gasoline with more than 10% ethanol (E15 E20, E85, etc.). 2. Do not exceed the equipment's load rating. 3. Have a qualified technician diagnose and service the engine.
ENGINE BACKFIRES	1. Impure or low-quality gasoline. 2. Engine too cold. 3. Intake valve stuck or an overheated engine. 4. Incorrect timing.	1. Fill fuel tank with fresh 87+ octane stabilizer treated unleaded gasoline Do not use gasoline with more than 10% ethanol (E15, E20, E85, etc.) 2. Use cold weather fuel and oil additives to prevent backfiring. 3. Have a qualified technician diagnose and service the engine. 4. Check engine timing.
THE ATTACHED DEVICE DOESNT HAVE POWER	1. Device not plugged in properly 2. Circuit Breaker tripped. 3. Product needs service.	1. Turn off and unplug the device, then plug it back in again and turn it on. 2. Turn off and unplug the device, reset the Circuit Breaker, plug in the device and turn on. 3. Have the product repaired.



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

Electrical Schematic

