RAINIER

DIGITAL INVERTER GENERATOR

1800 Running Watts | 2200 Peak Watts

⚠WARNING

Operating, servicing and maintaining this equipment can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your equipment in a well-ventilated area and wear gloves or wash your hands frequently when servicing your equipment. For more information go to www.P65Warnings.ca.gov.

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

⚠DANGER

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

SPECIFICATIONS

Model Number	Running Watts	Peak Watts	Fuel Tank Size (L/G)	Rated Speed (RPM)	Ignition Type	Spark plug	Engine Disp (cc)	Stroke X Bore	Oil Capacity (L)	Oil Type	THD
R2200i	1800	2200	5L/1.3G	5000	CDI	A5RTC	79 cc	49X43	0.4	10W30	<3%

NOTICE

This generator is NOT equipped with altitude carburetor modification. Even with a carburetor modification, engine horsepower will decrease about 3.5% for each 300 meter (1,000 foot) increase in altitude. The effect of altitude on horsepower will be greater if no carburetor modification is made. A decrease in engine horsepower will decrease the power output of the generator.

FOR YOUR RECORDS:

Date of Purchase:	
Inverter Model Number:	
Purchased from Store/Dealer:	
Inverter Serial Number:	

Have Questions? Email support@rainierpower.com

IMPORTANT: KEEP YOUR PURCHASE RECEIPT TO ENSURE TROUBLE-FREE WARRANTY COVERAGE.

PRODUCT REGISTRATION

To ensure trouble-free warranty coverage, it is important you register your Rainier inverter.
You can register your generator by either:

1. Filling in the product registration form below and mailing to:

   Product Registration
   Rainier Outdoor Power Equipment
   777 Manor Park Drive
   Columbus, Ohio 43228

2. Registering your product Online at **www.rainierpower.com/register**
   To register your generator you will need to locate the following information:

WHERE IS MY SERIAL NUMBER?

Serial Number which is located on bottom of muffler cover.

RAINIER PRODUCT REGISTRATION FORM

PERSONAL INFORMATION

First Name: _____

Last Name: _____

Street Address: _____

Street Address: _____

City, State, ZIP: _____

Country: _____

Phone Number: _____

E-Mail: _____

INVERTER INFORMATION

Model Number: _____

Serial Number: _____

Date Purchased: _____

Purchased From: _____

RAINIER

TABLE OF CONTENTS

SAFETY

SAFETY DEFINITIONS

The words DANGER, WARNING, CAUTION and NOTICE are used throughout this manual to highlight important information. Be certain that the meanings of these alerts are known to all who work on or near the equipment.

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

⚠ 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

Indicates a situation which can cause damage to the generator, personal property and/or the environment, or cause the equipment to operate improperly.

NOTE: Indicates a procedure, practice or condition that should be followed in order for the generator to function in the manner intended.

SAFETY SYMBOL DEFINITIONS

Symbol	Description
	Safety Alert Symbol
	Asphyxiation Hazard
	Burn Hazard
	Burst/Pressure Hazard
	Don't leave tools in the area
	Electrical Shock Hazard
	Explosion Hazard
	Fire Hazard
	Lifting Hazard
	Pinch-Point Hazard
	Read Manufacturer's Instructions
	Read Safety Messages Before Proceeding
	Wear Personal Protective Equipment (PPE)

SAFETY

GENERAL SAFETY RULES

⚠ DANGER

Never use the inverter in a location that is wet or damp. Never expose the inverter to rain, snow, water spray or standing water while in use. Protect the inverter from all hazardous weather conditions. Moisture or ice can cause a short circuit or other malfunction in the electrical circuit.

Never operate the inverter in an enclosed area. Engine exhaust contains carbon monoxide. Only operate the inverter outside and away from windows, doors and vents.

⚠ WARNING

Voltage produced by the inverter could result in death or serious injury.

- Never operate the inverter in rain or a flood plain unless proper precautions are taken to avoid being subject to rain or a flood.
- Never use worn or damaged extension cords.
- Always have a licensed electrician connect the inverter to the utility circuit.
- Never touch an operating inverter if the inverter is wet or if you have wet hands.
- Never operate the inverter in highly conductive areas such as around metal decking or steel works.
- Always use grounded extension cords. Always use three-wire or double-insulated power tools.
- Never touch live terminals or bare wires while the inverter is operating.
- Be sure the inverter is properly grounded before operating.

⚠ WARNING

Gasoline and gasoline vapors are extremely flammable and explosive under certain conditions.

- Always refuel the generator outdoors, in a well-ventilated area.
- Never remove the fuel cap with the engine running.
- Never refuel the inverter while the engine is running. Always turn engine off and allow the generator to cool before refueling.
- Only fill fuel tank with gasoline.
- Keep sparks, open flames or other form of ignition (such as match, cigarette, static electric source) away when refueling.
- Never overfill the fuel tank. Leave room for fuel to expand. Overfilling the fuel tank can result in a sudden overflow of gasoline and result in spilled gasoline coming in contact with HOT surfaces. Spilled fuel can ignite. If fuel is spilled on the inverter, wipe up any spills immediately. Dispose of rag properly. Allow area of spilled fuel to dry before operating the inverter.
- Wear eye protection while refueling.
- Never use gasoline as a cleaning agent.
- Store any containers containing gasoline in a well-ventilated area, away from any combustibles or source of ignition.
- Check for fuel leaks after refueling. Never operate the engine if a fuel leak is discovered.

⚠ WARNING

Never operate the inverter if powered items overheat, electrical output drops, there is sparking, flames or smoke coming from the inverter, or if the receptacles are damaged.

Never use the inverter to power medical support equipment.

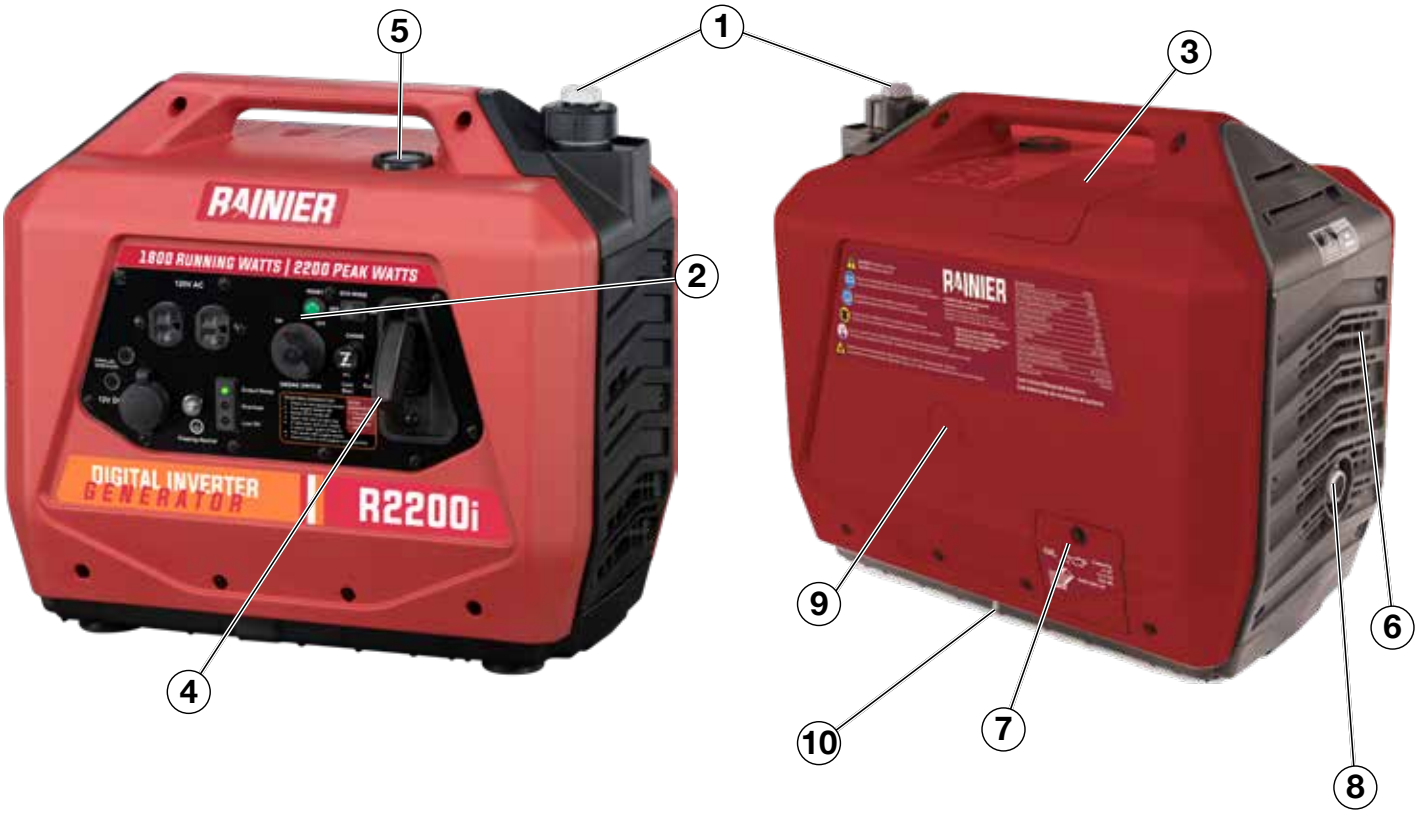
Always remove any tools or other service equipment used during maintenance from the inverter before operating.

NOTICE

Never modify the inverter. Never operate the inverter if it vibrates at high levels, if engine speed changes greatly or if the engine misfires often. Always disconnect tools or appliances from the inverter before starting.

FEATURES

BASIC INVERTER FEATURES



1. **Fuel Cap and Vent:** Open the vent to run the engine and close the vent when the engine is off.
2. **Control Panel:** Contains the reset breaker, outlets and warning lights.
3. **Spark Plug Access Cover:** Remove the cover to service the spark plug.
4. **Recoil Handle:** Pull to start the engine.
5. **Fuel Gauge:** Lets you know how much fuel is left in the gas tank.
6. **Air Filter Access Cover:** Remove to perform maintenance on the air filter.
7. **Oil Access Cover:** Remove the panel to access the oil reservoir for maintenance.
8. **Muffler and Spark Arrestor:** Avoid contact until the engine is cooled down. The spark arrestor prevents sparks from exiting the muffler. It must be removed for servicing.
9. **Fuel Drain Access Cover:** Access to draining gas out of the fuel tank
10. **Fuel Drain Hose:** Drains fuel out of tank.

FEATURES

CONTROL PANEL FEATURES

1. **120-Volt, 20-Amp Duplex Outlet (NEMA 5-20R):** The outlet is capable of carrying a maximum of 20 amps.

2. **Generator Reset Button:** Press and hold down this button to reset the generator's electrical output when safe to do so after reducing the applied load or rectifying the electrical fault that has caused an overload trip.

3. **Eco Mode Switch:** When turned to the ON position, the engine will sense the load needed and run at a slower RPM to save fuel.

4. **Choke:** Pull the choke knob out to the START position if starting a cold engine. To re-start a warm engine, leave the choke knob pushed in to the RUN position.

5. **Parallel Cord Outlets:** Double your power with another inverter generator (Parallel kit and additional inverter solder separate).

6. **Output Ready LED:** Indicates the inverter is ready to be used.

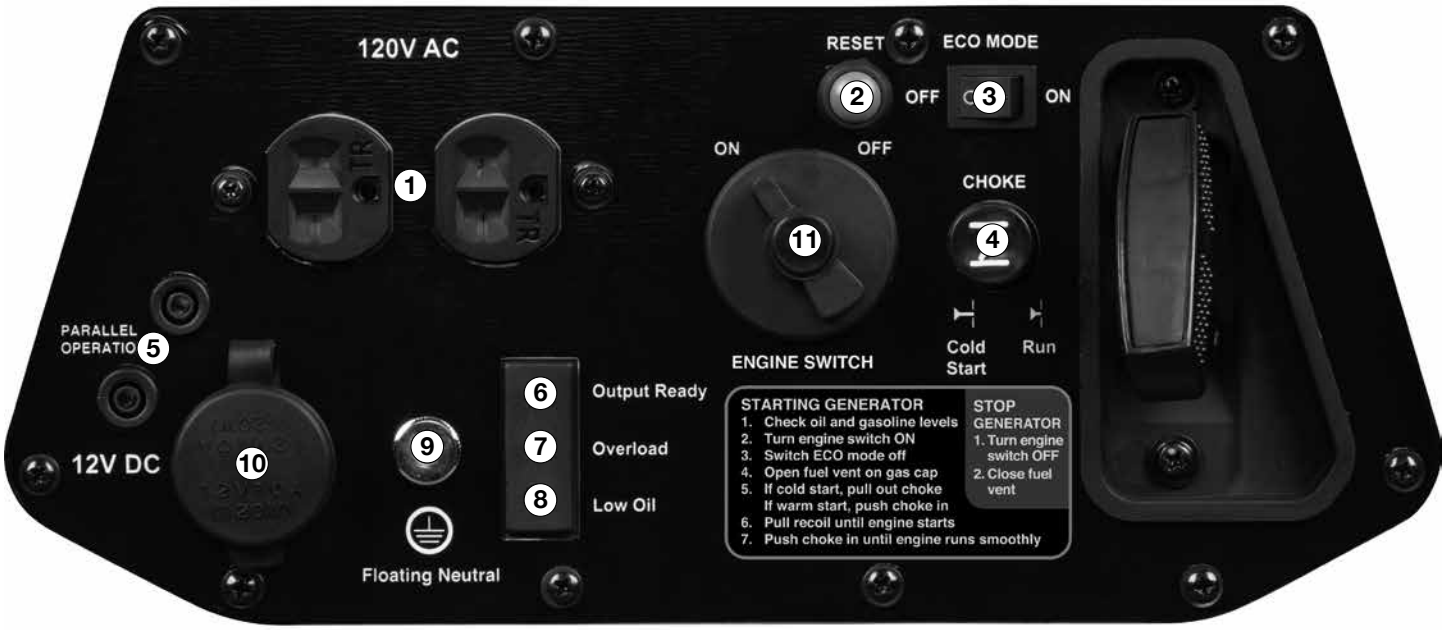
7. **Overload LED:** The red warning light will illuminate if the generator's AC output is overloaded or short-circuited. A brief small overload may be tolerated, but the connected load should be reduced. An extended large overload or short circuit will trip the overload protection feature and disconnect the generator's AC output even though the engine is still running; reduce the connected load or rectify the electrical fault before pressing the generator reset button to restore AC output.

8. **Low Oil LED:** The red warning light will illuminate and the engine will automatically shut down if the oil level becomes too low. Add oil to the correct level before re-starting the engine.

9. **Ground Terminal:** The ground terminal is used to externally ground the inverter.

10. **12-Volt DC Accessory Socket:** Can be used for 12-Volt DC powered devices up to a maximum demand of 100 Watts (i.e. 8 Amps).

11. **Engine Switch:** Turn the knob to the ON position before starting the generator. Turn to OFF position to shut down generator.



OPERATION

BEFORE STARTING THE INVERTER

BEFORE STARTING THE INVERTER, REVIEW SAFETY SECTION STARTING ON PAGE 5.

Location Selection – Before starting the inverter, avoid exhaust and location hazards by verifying:

- You have selected a location to operate the inverter that is outdoors and well ventilated.
- You have selected a location with a level and solid surface on which to place the inverter.
- You have selected a location that is at least 15 feet (4.5 m) away from any building, other equipment or combustible material.
- If the inverter is located close to a building, make sure it is not located near any windows, doors and/or vents.

⚠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.

Avoid other generator hazards.
READ MANUAL BEFORE USE.

⚠ WARNING

Always operate the inverter on a level surface. Placing the inverter on non level surfaces can cause the inverter to tip over, causing fuel and oil to spill. Spilled fuel can ignite if it comes in contact with an ignition source such as a very hot surface.

NOTICE

Only operate the inverter on a solid, level surface. Operating the inverter on a surface with loose material such as sand or grass clippings can cause debris to be ingested by the inverter that could:
• Block cooling vents
• Block air intake system

Weather – Never operate your inverter outdoors during rain, snow or any combination of weather conditions that could lead to moisture collecting on, in or around the generator.

Dry Surface – Always operate the inverter on a dry surface free of any moisture.

No Connected Loads – Make sure the inverter has no connected loads before starting it. To ensure there are no connected loads, unplug any electrical extension cords that are plugged into the control panel receptacles.

NOTICE

Starting the inverter with loads already applied to it could result in damage to any appliance being powered off the inverter during the brief start-up period.

Grounding the Inverter
Consult with your local municipalities for your grounding codes.

⚠ WARNING

Be sure the inverter is properly connected to earth ground before operating.

NOTICE

During the first five hours of operating the generator make sure to not exceed 50% of the rated running watts until the unit is broken in properly. Make sure to vary to load occasionally to allow stator windings to heat and cool. Adjusting the load will also help seat piston rings. Check oil more often during the first couple times of operating the generator.

NOTICE

Weather will affect engine oil performance. Change the type of engine oil used based on weather conditions to suit the engine needs.

OPERATION

POWER OUTPUT AND DEMAND

120-Volt AC devices have two different electric power demands that must be taken into consideration, namely the running power and the starting/peak power. Both are measured in Watts (typically abbreviated as “W”). The steady state continuous load is the running power demand and this is often marked on the device near its model number or serial number. Sometimes the device might only be marked with its voltage (i.e. 120 V) and current draw (e.g. 6 Amp or 6 A), in which case the running power demand in Watts can be obtained by multiplying the voltage times the current, e.g. 120 V × 20 A = 2,400 W.

Simple resistive 120-Volt AC devices such as incandescent bulbs, toasters, heaters, etc. have no extra power demand when starting, and so their starting power demands are the same as their running power demands.

More complex120-Volt AC devices containing inductive or capacitive elements such as electric motors have a momentary extra power demand when starting, which can be up to seven times the running power demand or more. Manufacturers of such devices rarely publish this starting power demand and so it’s often necessary to estimate it. A rule of thumb for devices fitted with an electric motor is to apply a starting power multiplier of 1.2 for small hand-held or portable devices and a value of 3.5 for larger stationary devices. For example, a 900 W angle grinder can be assumed to have a starting power demand of at least 1.2 × 900 W, which equals 1,080 W. Similarly, a 1,650 W air compressor can be assumed to have a starting power demand of at least 3.5 × 1,650 W, which equals 5,775 W.

To prevent overloading of the generator’s 120-Volt AC system:

1. Add up the running power demand of all the 120-Volt AC devices that will be connected to the generator at one time. This total must not be greater than the generator’s specified running power output.
2. Add up the running power demand again, but for the largest motor-driven device use the value of its starting power demand instead of its running power demand. This total must not be greater than the generator’s specified starting power output.
3. The total running power demand of all the devices that will be connected to any one of the generator’s outlets must not exceed the generator’s specified running power output or 3,700 W, whichever is the lesser.

TRANSPORTING THE GENERATOR

The generator should be stopped and both the fuel control switch and fuel cap vent should be turned to the OFF position before transporting the generator. Keep the unit level during transport to minimize the possibility of fuel leakage or, if possible, drain out the fuel prior to transport.

If the generator has been operating, allow the unit to cool down before loading it onto the transport vehicle.

OPERATION

ADDING/CHECKING ENGINE FLUIDS AND FUEL

BEFORE ADDING/CHECKING ENGINE FLUIDS AND FUEL, REVIEW SAFETY SECTION STARTING ON PAGE 5.

⚠ DANGER

Filling the fuel tank with gasoline while the inverter is running can cause gasoline to leak and come in contact with hot surfaces that can ignite the gasoline.

Before starting the inverter, always check the level of:
- Engine oil
- Gasoline in the fuel tank

Once the inverter is started and the engine gets warm, it is not safe to add gasoline to the fuel tank or engine oil to the engine while the engine is running or the engine and muffler are hot.

CHECKING AND / OR ADDING ENGINE OIL

⚠ WARNING

Internal pressure can build in the engine crankcase while the engine is running. Removing the oil fill plug/dipstick while the engine is hot can cause extremely hot oil to spray out of the crankcase and can severely burn skin. Allow engine oil to cool for several minutes before removing the oil fill plug/dipstick.

The unit as shipped does not contain oil in the engine. You must add engine oil before starting the inverter for the first time.

NOTICE

The engine does not contain engine oil as shipped. Attempting to start the engine without adding engine oil will permanently damage internal engine components.

The engine is equipped with a low oil shutdown switch. If the oil level becomes low, the engine may shut down and not start until the oil is filled to the proper level.

The owner of the inverter is responsible to ensure the proper oil level is maintained during the operation of the generator. Failure to maintain the proper oil level can result in engine damage.

ADDING GASOLINE TO THE FUEL TANK

⚠ WARNING

Never refuel the inverter while the engine is running.

Always turn the engine off and allow the inverter to cool before refueling.

⚠ CAUTION

Avoid prolonged skin contact with gasoline. Avoid prolonged breathing of gasoline vapors.

Required Gasoline – Only use gasoline that meets the following requirements:
- Unleaded gasoline only
- Gasoline with maximum 10% ethanol added
- Gasoline with an 87 octane rating or higher

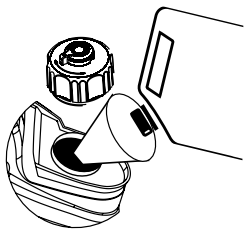
Filling the Fuel Tank – Follow the steps below to fill the fuel tank:

1. Shut off the inverter.
2. Allow the inverter to cool down so all surface areas of the muffler and engine are cool to the touch.
3. Move the inverter to a flat surface.
4. Clean area around the fuel cap.
5. Remove the fuel cap by rotating counterclockwise.

NOTICE

Do not overfill the fuel tank. Spilled fuel will damage some plastic parts.

6. Slowly add gasoline into the fuel tank. Be very careful not to overfill the tank. The gasoline level should NOT be higher than the red ring.
7. Install the fuel cap by rotating clockwise.



OPERATION

STARTING THE INVERTER

BEFORE STARTING THE INVERTER, REVIEW SAFETY SECTION STARTING ON PAGE 5.

For proper starting and operation of the inverter, make sure you review the inverter features and their descriptions starting on page 7.

Before attempting to start the inverter, verify the following:

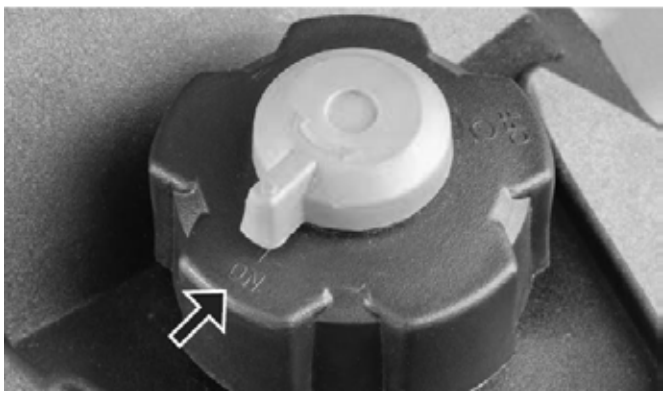
- The engine is filled with engine oil.
- The inverter is situated in a proper location.
- The inverter is on a dry surface.
- All loads are disconnected from the inverter.
- The inverter is properly grounded.

⚠ DANGER	
	Never use the inverter in a location that is wet or damp. Never expose the inverter to rain, snow, water spray or standing water while in use. Protect the inverter from all hazardous weather conditions. Moisture or ice can cause a short circuit or other malfunction in the electrical circuit.
	Never operate the inverter in an enclosed area. Engine exhaust contains carbon monoxide. Only operate the inverter outside and away from windows, doors and vents.

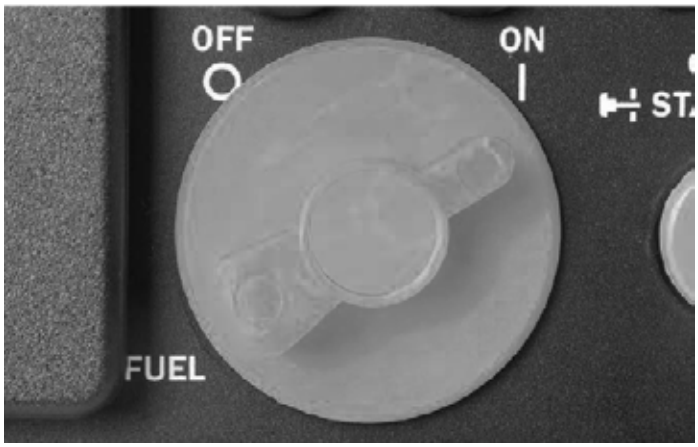
Starting the R2200i

Be sure to check oil levels before starting. If it is the first time starting make sure to add oil.

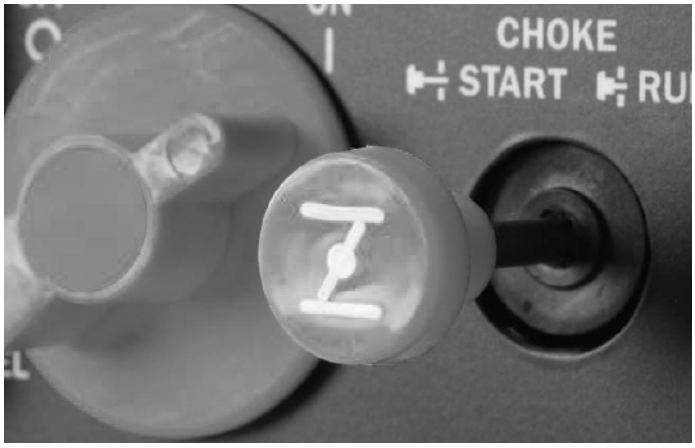
1. Make sure nothing is plugged into the outlets.
2. Turn the fuel tank vent on top of the gas cap to the **ON** position.



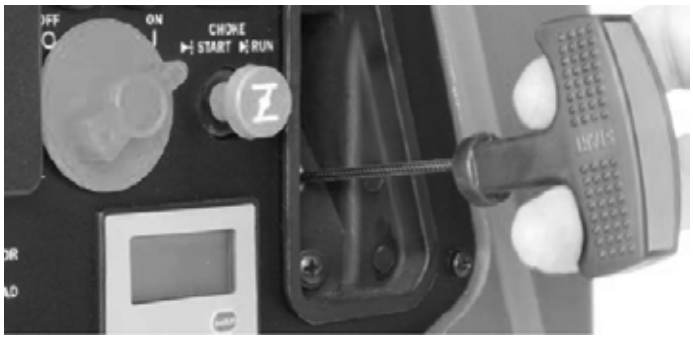
3. Turn the engine switch to the **ON** position.



4. Pull the choke knob out to the **START** position if starting a cold engine. To re-start a warm engine, leave the choke knob pushed in to the **RUN** position.



5. Whilst holding the generator down with one hand, firmly grasp the recoil starter handle with your other hand and pull it slowly until you feel increased resistance. At this point, pull it briskly up and away from the generator. Do not allow the starter handle to snap back against the engine, but instead return it gently to prevent starter damage.



6. As the engine starts and stabilizes, push the choke switch back in to the **RUN** position.
7. Plug in electronic devices.

OPERATION

STOPPING THE INVERTER

Normal Operation

During normal operation, use the following steps to stop the generator:

1. Unplug any electrical cords or devices from the 120-Volt AC and 12-Volt DC receptacles on the control panel.
2. Allow the generator to run unloaded for at least one minute to cool and stabilize the engine and alternator temperatures.
3. Turn the engine control switch to the **OFF** position.
4. Turn the fuel cap vent to the **OFF** position.

During an Emergency

If there is an emergency and the generator must be stopped quickly, press and hold down the engine stop button immediately.

USING ECO THROTTLE

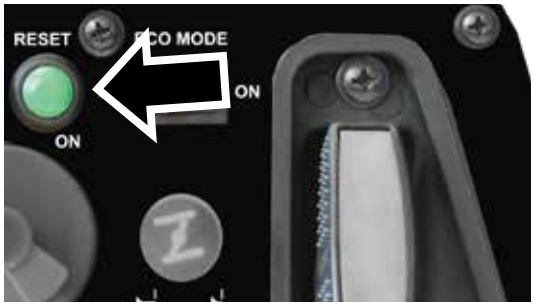
The generator is equipped with ECO Throttle Control to minimize fuel consumption. In ECO mode, the generator senses the electrical load demand and adjusts the engine speed and power output to match it; if there is no electrical load connected, the engine speed drops down to idle. ECO mode should only be used once the generator has reached normal operating temperature after running for at least five minutes. When starting large inductive loads such as an air conditioner, compressor or pump, ECO mode should be switched off so that the engine speed will be kept higher for maximum electrical starting power availability.

To activate ECO mode, move the ECO throttle switch to the **ON** position.

OVERLOAD RESET

An electrical overload or short circuit will trip the overload protection system by disconnecting the generator's AC output even though the engine is still running. If this occurs, the overload alarm light will be illuminated red and the output indicator light will be off. The AC output can be restored as follows:

1. Turn off and unplug any electrical devices or cords from the 120-Volt AC and 12-Volt DC receptacles on the control panel.
2. Press the generator reset button on the control panel until the overload alarm light goes off and the output indicator light is illuminated green.



3. Check that the intended electrical running and starting loads do not exceed the generator's capacity or have a licensed electrician rectify any fault causing a short circuit in the load.
4. Reconnect any electrical devices or cords to the 120-Volt AC and 12-Volt DC receptacles on the control panel and then turn on the electrical loads as required.

MAINTENANCE

BEFORE PERFORMING MAINTENANCE ON THE INVERTER, REVIEW THE SAFETY SECTION STARTING ON PAGE 5, AS WELL AS THE FOLLOWING SAFETY MESSAGES.

⚠ WARNING

Avoid accidentally starting the inverter during maintenance by removing the spark plug boot from the spark plug. For electric start inverters, also disconnect the battery cables from the battery (disconnect the black negative (-) cable first) and place the cables away from the battery posts to avoid arcing.

Allow hot components to cool to the touch prior to performing any maintenance procedure.

Internal pressure can build in the engine crankcase while the engine is running. Removing the oil fill plug/ dipstick while the engine is hot can cause extremely hot oil to spray out of the crankcase and can severely burn skin. Allow engine oil to cool for several minutes before removing the oil fill plug/dipstick.

Always perform maintenance in a well-ventilated area. Gasoline fuel and fuel vapors are extremely flammable and can ignite under certain conditions.

⚠ CAUTION

Avoid skin contact with engine oil or gasoline. Prolonged skin contact with engine oil or gasoline can be harmful. Frequent and prolonged contact with engine oil may cause skin cancer. Take protective measures and wear protective clothing and equipment. Wash all exposed skin with soap and water.

⚠ WARNING

Failure to perform periodic maintenance or not following maintenance procedures can cause the inverter to malfunction and could result in death or serious injury.

NOTICE

Periodic maintenance intervals vary depending on inverter operating conditions. Operating the inverter under severe conditions, such as sustained high-load, high-temperature, or unusually wet or dusty environments, will require more frequent periodic maintenance. The intervals listed in the maintenance schedule should be treated only as a general guideline.

Following the maintenance schedule is important to keep the inverter in good operating condition. The following is a summary of maintenance items by periodic maintenance intervals.

TABLE 1: MAINTENANCE SCHEDULE - OWNER PERFORMED

Maintenance Item	Before Every Use	After First 20 Hours or First Month of Use	After 50 Hours of Use or Every 6 Months	After 100 Hour of Use or Every 6 Months	After 300 Hours of Use or Every Year
Engine Oil	Check Level	Change	Change	-	-
Cooling Features	Check/Clean	-	-	-	-
Air Filter	Check	-	Clean*	-	Replace
Spark Plug	-	-	-	Check/Clean	Replace
Spark Arrestor	-	-	-	Check/Clean	-
Valve Clearance**	-	-	-	Check/Adjust	

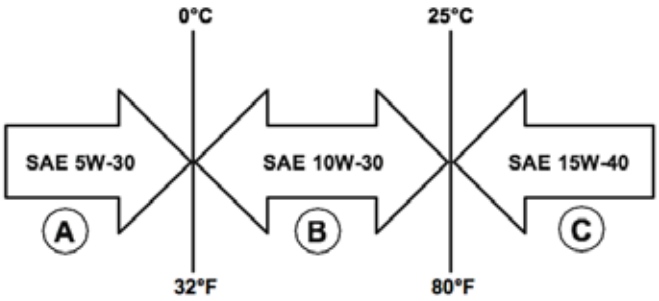
*Service more frequently if operating in dry and dusty conditions
**Recommend to have service done by authorized Rainier service dealer

MAINTENANCE

ENGINE OIL MAINTENANCE

Engine Oil Specification

1. Only use the engine oil specified in chart below.
2. Only use 4-stroke/cycle engine oil. **NEVER USE 2-STROKE/CYCLE OIL**. Synthetic oil is an acceptable substitute for conventional oil.



CHECKING ENGINE OIL

NOTICE

Always maintain proper engine oil level. Failure to maintain proper engine oil level could result in severe damage to the engine and/or shorten the life of the engine.

Always use the specified engine oil. Failure to use the specified engine oil can cause accelerated wear and/or shorten the life of the engine.

Engine oil level should be checked before every use.

1. Always operate or maintain the inverter on a flat surface.
2. Stop engine if running.
3. Let engine sit and cool for several minutes (allow crankcase pressure to equalize).
4. Remove the oil service panel to access the oil fill/drain plug.

5. With a damp rag, clean around the oil fill/drain plug.
6. Remove the oil fill/drain plug.
7. Check oil level: When checking the engine oil, remove the oil fill plug/dipstick and wipe it clean.

Thread the oil fill plug/dipstick all the way back in and then remove and check the oil level on the oil fill plug/dipstick.

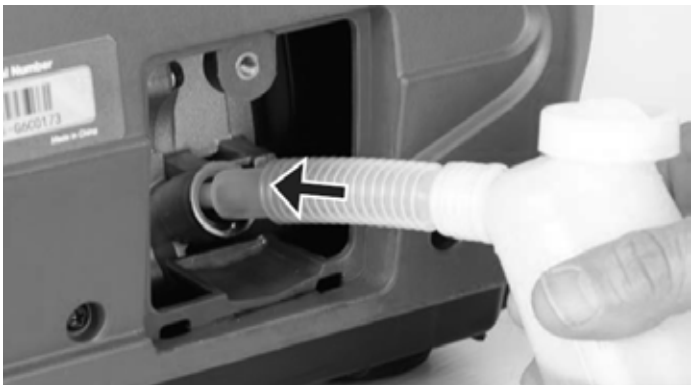
- **Acceptable Oil Level** – Oil is visible on the crosshatches between the H and L lines on the oil fill plug/dipstick.
- **Low Oil** – Oil is below the L line on the oil fill plug/dipstick.

NOTICE

Engine oil must always be checked and added when the inverter is on a flat, level surface, or an inaccurate reading may result, causing serious engine damage.

ADDING ENGINE OIL

1. Always operate or maintain the inverter on a flat surface.
2. Stop engine if running.
3. Let engine sit and cool for several minutes (allow crankcase pressure to equalize).
4. Remove the oil service panel to gain access to the oil fill/drain plug.
5. Thoroughly clean around the oil fill/drain plug.
6. Remove the oil fill/drain plug.
7. Select the proper engine oil.
8. Using the supplied oil funnel, slowly add engine oil to the engine. Stop frequently to check the oil level and avoid overfilling.



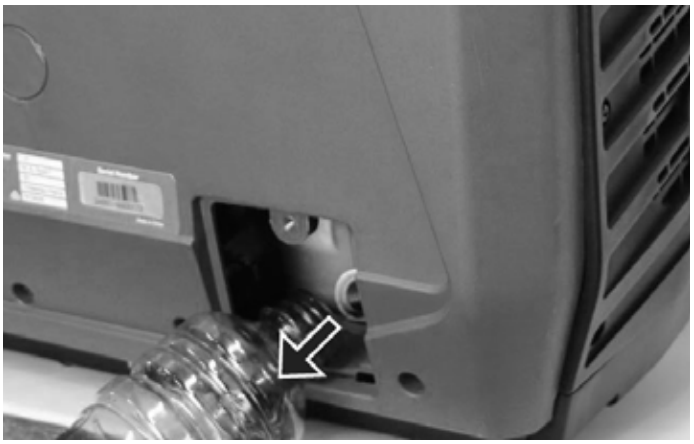
9. Continue to add oil until the oil is at the correct level.
10. Replace oil fill/drain plug when you have finished.

MAINTENANCE

CHANGING ENGINE OIL

1. Stop the engine.
2. Let engine sit and cool for several minutes (allow crankcase pressure to equalize).
3. Remove the oil service panel to gain access to the oil fill/drain plug.

4. Place oil pan (or suitable container) under the oil fill/drain plug.
5. With a damp rag, thoroughly clean around the oil fill/drain plug.
6. Carefully tilt the inverter so the oil drains down through into the container.



7. Allow oil to completely drain.
8. Fill crankcase with oil following the steps outlined in *Adding Engine Oil*.
9. Dispose of used engine oil properly.

NOTICE

Never dispose of used engine oil by dumping the oil into a sewer, on the ground, or into groundwater or waterways. Always be environmentally responsible. Follow the guidelines of the EPA or other governmental agencies for proper disposal of hazardous materials. Consult local authorities or reclamation facility.

AIR FILTER MAINTENANCE

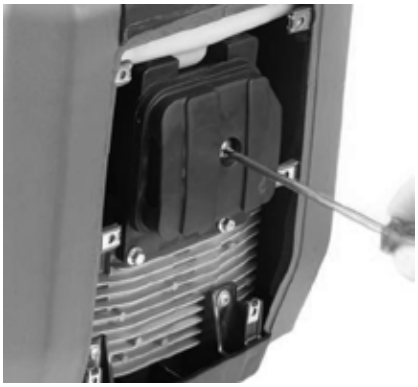
⚠ WARNING

Never use gasoline or other flammable solvents to clean the air filter. Use only household detergent soap to clean the air filter.

Cleaning the Air Filter

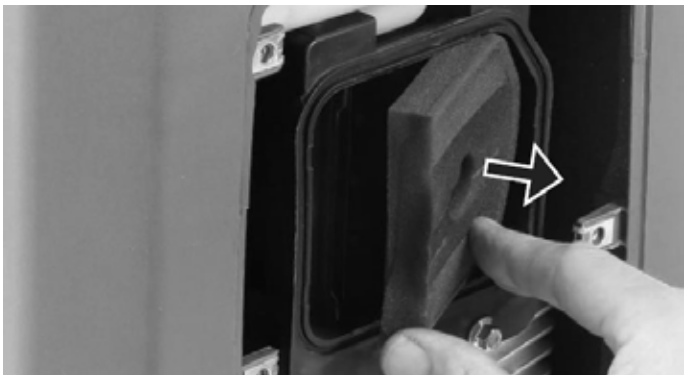
The air filter must be cleaned after every 50 hours of use or 3 months (frequency should be increased if inverter is operated in a dusty environment).

1. Turn off the inverter and let it cool for several minutes if running.
2. Move the generator to a flat, level surface.
3. Remove the air filter access cover by undoing the six screws affixing it to the generator casing. Clean the cover and especially its vent holes with a rag or brush and place it aside.
4. Remove the air filter cover by undoing the central fixing screw. Clean the air filter cover with a rag and place it aside.



5. Remove the foam air filter element while taking care to note the position of the beveled corner. The air filter element must be re-installed later in the same position.

MAINTENANCE



6. Wash the foam air filter element by submerging the element in a solution of household detergent soap and warm water. Slowly squeeze the foam to thoroughly clean.

NOTICE

NEVER twist or tear the foam air filter element during cleaning or drying. Only apply slow but firm squeezing action.

7. Rinse in clean water by submerging the air filter element in fresh water and applying a slow squeezing action.

NOTICE

Never dispose of soap cleaning solution used to clean the air filter by dumping the solution into a sewer, on the ground, or into ground water or waterways. Always be environmentally responsible. Follow the guidelines of the EPA or other governmental agencies for proper disposal of hazardous materials. Consult local authorities or reclamation facility.

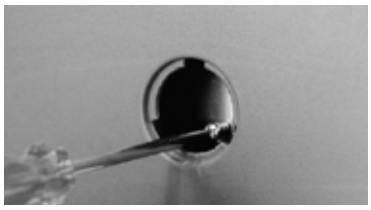
8. Dispose of used soap cleaning solution properly.
9. Dry the air filter element by again applying a slow firm squeezing action.
10. Return the air filter element to its position in the air cleaner housing.
11. Re-install the air filter element inside the air filter housing with the beveled corner of the foam correctly located.
12. Re-install the air filter cover and air filter access cover.

DRAINING FUEL

Occasionally it may be necessary to drain all of the fuel out of the generator. For example, to remove contaminated or stale fuel or to prepare the generator for transport or storage. Tools required – Flat blade screwdriver, Phillips head screwdriver, fuel siphon hand pump (not included) and fuel storage container.

1. Turn the fuel cap vent clockwise to the **ON** position.
2. Remove the fuel cap by unscrewing it anticlockwise.
3. Clean the fuel strainer, but do not re-install it.
4. Pour or siphon the contents of the fuel tank into a fuel storage container.
5. Turn the fuel control switch clockwise to the **ON** position.
6. Using a flat blade screwdriver, remove the fuel drain access cover.
7. Position a fuel storage container to collect fuel discharged from the drain hose.

8. Using a Phillips head screwdriver, loosen the fuel drain screw by turning it anti-clockwise.



9. Carefully drain the fuel into a storage container. Take care to wipe up any spills immediately.
10. When all of the fuel has been drained out, tighten the fuel drain screw by turning it clockwise. Move the storage container and any fuel soaked rags away from the generator. It is preferable to consume the fuel in another engine-powered device straight away or dispose of it properly rather than storing it for a long time with fuel stabilizer for later re-use.

NOTICE

Never dispose of fuel by dumping fuel into a sewer, on the ground, or into groundwater or waterways. Always be environmentally responsible. Follow the guidelines of the EPA or other governmental agencies for proper disposal of hazardous materials. Consult local authorities or reclamation facility.

11. Re-install the fuel drain access cover.
12. Turn the fuel control switch anti-clockwise to the **OFF** position.
13. Re-install the fuel cap.
14. Turn the fuel cap vent anti-clockwise to the OFF position.

MAINTENANCE

SPARK PLUG MAINTENANCE

Tools required – Spark plug socket wrench (included), spark plug gap tool or feeler gauge (not included) and wire brush (not included).

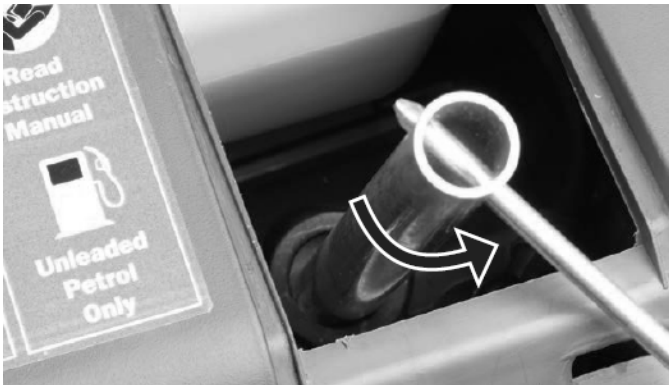
The spark plug should be checked and cleaned after every 100 hours of use or 6 months and then replaced after 250 hours of use or every year.

1. Stop the generator and let it cool for several minutes if it's been running.
2. Move the generator to a flat, level surface.
3. Slide open and remove the spark plug access cover.
4. Remove the spark plug boot by firmly pulling it up and away from the engine.

NOTICE

Never apply any side load or move the spark plug laterally when removing the spark plug. Applying a side load or moving the spark plug laterally may crack and damage the spark plug boot.

5. Clean area around the spark plug.
6. Use a spark plug socket wrench to remove the spark plug from the cylinder head by unscrewing it anti-clockwise.



7. Place a clean rag over the opening created by the removal of the spark plug to make sure no dirt can get into the combustion chamber.
8. Inspect the spark plug for:
   - Cracked or chipped insulator; replace the spark plug.
   - Excessive wear of the electrodes; replace the spark plug
   - Excessive carbon or oil fouling of the electrodes; clean the electrodes with a wire brush or replace the spark plug.
   - Spark plug gap within the acceptable limits of 0.6 – 0.7 mm or 0.024 – 0.028 inch; after cleaning with a wire brush, check using a spark plug gap tool or feeler gauge and adjust by carefully bending the ground electrode. Always check the gap of a new spark plug before installing it.
9. When replacing the spark plug, use only a Torch A5RTC or equivalent.
10. Install the spark plug by following the steps outlined below:
    - Carefully insert the spark plug back into the cylinder head. Hand screw the spark plug clockwise until it bottoms out (seats).
    - Use a spark plug socket wrench to finish tightening the spark plug. If re-installing a used spark plug, tighten 1/8 to 1/4 of a turn after the spark plug seats. If installing a new spark plug, tighten 1/2 turn after the spark plug seats. The tightening torque should not exceed 12 Nm (9 lb-ft).
11. Replace the spark plug boot, making sure the boot fully engages onto the spark plug's terminal.
12. Re-install the spark plug access cover.

Recommended Spark Plug Replacement:

Torch	Champion	Bosch	Autolite
A5RTC	RL12Y	W6B	284

A - Gap
B - Ground Electrode
C - Gasket
D - Insulator
E - Terminal
F - Thread
G - Centre Electrode

MAINTENANCE

CLEANING THE SPARK ARRESTOR

Check and clean the spark arrestor after every 100 hours of use or 6 months.

Tools required – Phillips head screwdriver and wire brush.

1. Stop the generator and let it cool for several minutes if it's been running.
2. Move the generator to a flat, level surface.
3. Remove the muffler access cover by undoing the eight screws affixing it to the generator casing. Clean the cover and especially its vent holes with a rag or brush and then place it aside.
4. Loosen the spark arrester band clamp by turning the adjusting screw anti-clockwise and slide the spark arrester band clamp off the spark arrester screen.

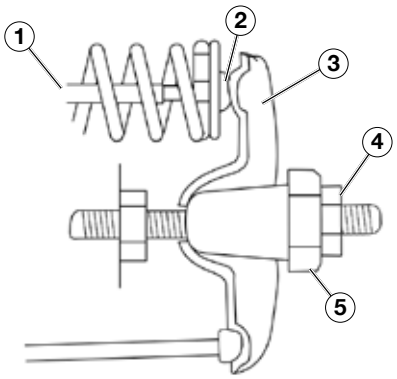
5. Pull the spark arrester screen off the muffler exhaust pipe.
6. Use a wire brush to remove any dirt and debris that may have collected on the spark arrester screen.
7. If the spark arrester screen shows signs of wear such as rips, tears or large openings, it should be replaced.
8. Re-install the spark arrester components in the following order:
   - Place spark arrester screen over the muffler exhaust pipe. Push on the screen until it fully bottoms out.
   - Place the spark arrester band clamp over the screen and tighten the adjusting screw clockwise.
9. Re-install the muffler access cover.

CHECKING AND ADJUSTING VALVE LASH

⚠ CAUTION

Checking and adjusting valve lash must be done when the engine is cold.

1. Remove the rocker arm cover and carefully remove the gasket. If the gasket is torn or damaged, it must be replaced.
2. Remove the spark plug so the engine can be rotated more easily.
3. Rotate the engine to top dead center (TDC) of the compression stroke. Looking through the spark plug hole, the piston should be at the top.
4. Both the rocker arms should be loose at TDC on the compression stroke. If they are not, rotate the engine 360°.
5. Insert a feeler gauge between the rocker arm and the push rod and check for clearance. See Table 2 for valve lash specifications



(1) Push Rod, (2) Feeler Gauge Area
(3) Rocker Arm, (4) Jam Nut, (5) Adjusting Nut

Table 2: Standard Valve Lash

	Intake Valve	Exhaust Valve
Valve Lash	.0023-.0039in (.06-.10mm)	.0031-.0048in (.08-.12mm)
Bolt Torque	8-12N.m	8-12N.m

6. If an adjustment is required, hold the adjusting nut and loosen the jam nut.
7. Turn the adjusting nut to obtain the correct valve lash. When the valve lash is correct, hold the adjusting nut and tighten the jam nut to 106 in-lb (12 N•m).
8. Recheck the valve lash after tightening the jam nut.
9. Perform this procedure for both the intake and exhaust valves.
10. Install the rocker arm cover, gasket and spark plug.

MAINTENANCE

CLEANING THE INVERTER

It is important to inspect and clean the inverter before every use.

Clean All Engine Air Inlet and Outlet Ports – Make sure all engine air inlet and outlet ports are clean of any dirt and debris to ensure the engine does not run hot.

STORAGE

⚠ WARNING

Never store an inverter with fuel in the tank indoors or in a poorly ventilated area where the fumes can come in contact with an ignition source such as a: 1) pilot light of a stove, water heater, clothes dryer or any other gas appliance; or 2) spark from an electric appliance.

NOTICE

Gasoline stored for as little as 60 days can go bad, causing gum, varnish and corrosive buildup in fuel lines, fuel passages and the engine. This corrosive buildup restricts the flow of fuel, preventing an engine from starting after a prolonged storage period.

Proper care should be taken to prepare the inverter for any storage

1. Clean the inverter.
2. Siphon all gasoline from the fuel tank as best as possible.
3. Start the engine and allow the inverter to run until all the remaining gasoline in the fuel lines and carburetor is consumed and the engine shuts off.
4. Drain any remaining fuel from the float bowl.
5. Change the oil.
6. Remove the spark plug and place about 1 tablespoon of oil in the spark plug opening. While placing a clean rag over the spark plug opening, slowly pull the recoil handle to allow the engine to turn over several times. This will distribute the oil and protect the cylinder wall from corroding during storage.
7. Replace the spark plug.
8. Move the inverter to a clean, dry place for storage.

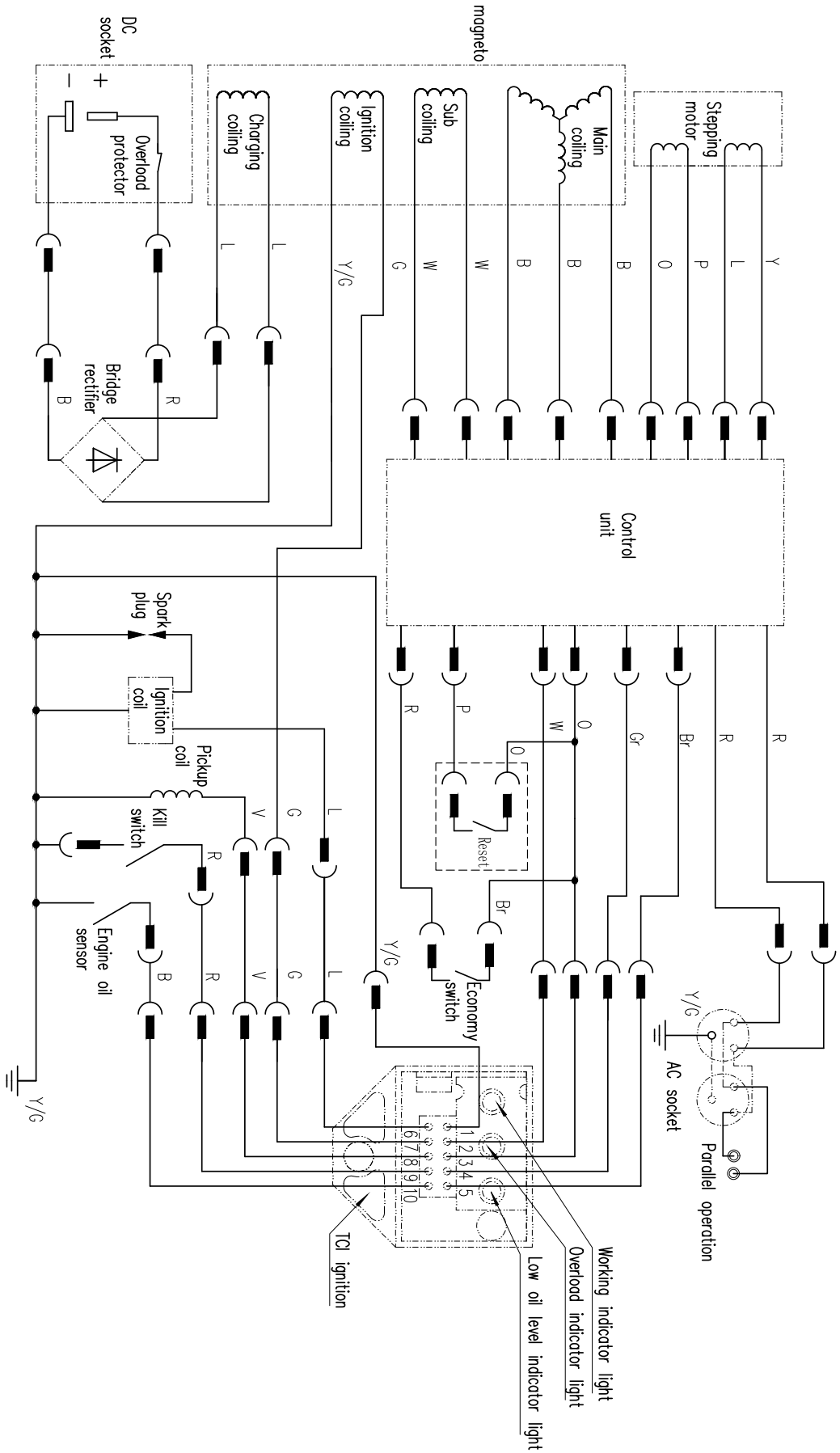
TROUBLESHOOTING

⚠ WARNING

Before attempting to service or troubleshoot the generator, the owner or service technician must first read the owner's manual and understand and follow all safety instructions. Failure to follow all instructions may result in conditions that can lead to voiding of the EPA certification or product warranty, serious personal injury, property damage or even death.

PROBLEM	POTENTIAL CAUSE	SOLUTION
Engine is running, but no electrical output.	1. Reset breaker is tripped.	1. Reset the reset breaker.
	2. The power cord's plug connector is not fully engaged in the inverter's outlet.	2. Verify plug connector is firmly engaged in the inverter's outlet.
	3. Faulty or defective power cord	3. Replace power cord.
	4. Faulty or defective electrical appliance	4. Try connecting a known good appliance to verify the inverter is producing electrical power.
Engine will not start or remain running while trying to start.	1. Inverter is out of gasoline.	1. Add gasoline to the inverter.
	2. Fuel flow is obstructed.	2. Inspect and clean fuel delivery passages.
	3. Dirty air filter	3. Check and clean the air filter.
	4. Low oil level shutdown switch is preventing the unit from starting.	4. Check oil level and add oil if necessary.
	5. Spark plug boot is not fully engaged with the spark plug tip.	5. Firmly push down on the spark plug boot to ensure the boot is fully engaged.
	6. Spark plug is faulty.	6. Remove and check the spark plug. Replace if faulty.
	7. Dirty/plugged spark arrestor	7. Check and clean the spark arrestor.
	8. Stale fuel	8. Drain fuel and replace with fresh fuel.
Inverter suddenly stops running.	1. Inverter is out of fuel.	1. Check fuel level. Add fuel if necessary.
	2. The low oil shut down switch has stopped the engine.	2. Check oil level and add oil if necessary.
	3. Too much load	3. Restart the inverter and reduce the load.
Engine runs erratic; does not hold a steady RPM.	1. Choke was left in the **CHOKE** position.	1. Move choke to the **RUN** position
	2. Dirty air filter	2. Clean the air filter.
	3. Applied loads maybe cycling on and off	3. As applied loads cycle, changes in engine speed may occur; this is a normal condition.

SCHEMATIC


magneto
DC socket
Overload protector
Bridge rectifier
Charging coiling
Ignition coiling
Sub coiling
Main coiling
Stepping motor
Control unit
Spark plug
Ignition coil
Pickup coil
Kill switch
Engine oil sensor
Reset
Economy switch
AC socket
Parallel operation
TCI ignition
Low oil level indicator light
Overload indicator light
Working indicator light

MAINTENANCE NOTES

WARRANTY

RAINIER OUTDOOR POWER EQUIPMENT'S RESPONSIBILITY
Rainier Outdoor Power Equipment warrants to the original purchaser that its Rainier line of generators will be free from defects in material and workmanship. Under normal use and maintenance from the date of purchase, Rainier Outdoor Power Equipment agrees to repair or replace at Rainier Outdoor Power Equipment's discretion, any defective product free of charge at any authorized Rainier Outdoor Power Equipment Authorized Service Dealer within the below listed applications, time periods, limitations, and exclusions. **THIS LIMITED WARRANTY IS EXTENDED TO THE ORIGINAL PURCHASER ONLY AND IS NOT TRANSFERABLE TO SUBSEQUENT OWNERS EXCEPT FOR EMISSION RELATED PARTS**. This warranty is separate from the Emission Control Warranty Statement supplied with your new product. Please consult the Emission Control Warranty Statement for details regarding emission related parts.

OWNER'S RESPONSIBILITY
To ensure trouble free warranty coverage it is important that you register your Rainier generator. You may register on-line at **www.rainierpower.com/register**, or by filling out and returning to Rainier Outdoor Power Equipment the warranty registration card supplied with your generator. Registering your product confirms your warranty coverage and provides a direct link between you and Rainier Outdoor Power Equipment if we find it necessary to contact you. Transportation charges on product submitted for repair or replacement under this warranty are the sole responsibility of the purchaser.

Your receipt for purchase including date, model and serial number must be maintained and presented to an Rainier Outdoor Power Equipment Authorized Service Dealer for warranty service. Proof of purchase rests solely with you, the original purchaser.

You must demonstrate reasonable care and use, and follow preventive maintenance, storage, fuel and oil usage as prescribed in the operator's manual for your Rainier generator. Should a product difficulty occur, you must, at your expense, deliver or ship your Rainier generator to an Rainier Outdoor Power Equipment Authorized Service Dealer for warranty repairs (which must occur within the applicable warranty period), and arrange for pick-up or return of your generator after the repairs have been made.

PRODUCT WARRANTY APPLICATIONS AND PRODUCT WARRANTY PERIODS
Consumer Application
For the purpose of this limited warranty "Consumer Application" means usage by the original purchaser for the purpose of personal residential household or recreational use.

- Replacement parts will be covered for a period of three years from the date of purchase.
- If proof of purchase is not available to establish the purchase date nor is the equipment registered as suggested herein, the date of manufacturing as recorded by Rainier Outdoor Power Equipment will start the product warranty period.

Commercial or Rental Applications
For the purpose of this limited warranty "Commercial Application" means usage by the original purchaser for the purpose of income producing, business related use. Once a generator has been used for income producing and business related purposes, it shall thereafter be considered a "Commercial Application" and the following warranty will apply.

- Replacement parts will be covered for a period of six months from the date of purchase.
- If proof of purchase is not available to establish the purchase date nor is the equipment registered as suggested herein, the date of manufacturing as recorded by Rainier Outdoor Power Equipment will start the product warranty period.

NON-WARRANTABLE APPLICATIONS
THE RAINIER OUTDOOR POWER EQUIPMENT LINE OF GENERATORS IS EXPRESSLY NOT RECOMMENDED FOR NOR WARRANTED FOR THE FOLLOWING APPLICATIONS:

Medical and Life Support Uses – This product is not recommended for and is NOT warranted for the use to power Medical and Life Support equipment or devices.

Prime Power – This warranty does not apply to generators used for Prime Power (primary source of power) in place of utility power where utility power service is present or where utility power service does not normally exist, regardless of whether a Consumer Application or Commercial Application is involved.

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WARRANTY

Exclusions:

- Cosmetic defects such as paint, decals, etc.
- Rainier Outdoor Power Equipment portable generators that utilize non-Rainier Outdoor Power Equipment replacement parts.
- Costs of normal maintenance and adjustments.
- Failures caused by any contaminated fuels, oils, or lack of proper oil levels.
- Repairs or diagnostics performed by individuals other than Rainier Outdoor Power Equipment authorized dealers not authorized in writing by Rainier Outdoor Power Equipment.
- Failures due to normal wear and tear, accident, misuse, abuse, negligence or improper use. As with all mechanical devices, the Rainier Outdoor Power Equipment engines need periodic part(s) service and replacement to perform as designed. This warranty will not cover repair when normal use has exhausted the life of a part(s) or engine.
- Failures caused by any external cause or act of God, including but not limited to, collision, theft, vandalism, riot, war, fire, freezing, lightning, earth-quake, windstorm, hail, water, flood, tornado, or hurricane.
- Damage related to rodent and/or insect infestation.
- Products that are modified or altered in a manner not authorized in writing by Rainier Outdoor Power Equipment.
- Any incidental, consequential or indirect damages caused by defects in materials or workmanship, or any delay in repair or replacement of the defective part(s).
- Failure due to misapplication.
- Telephone, cellular phone, facsimile, Internet access, or other communication expenses.
- Expenses related to “customer instruction” or troubleshooting where no manufacturing defect is found.
- Overnight freight or special shipping costs for replacement part(s).
- Overtime, holiday or emergency labor.
- Starting battery, fuses, light bulbs and engine fluids.

DISCLAIMER OF IMPLIED WARRANTIES

This limited warranty is in lieu of all other expressed or implied warranties, including any warranty of **FITNESS FOR A PARTICULAR PURPOSE OR USE** and any implied warranty of **MERCHANTABILITY** otherwise applicable to Rainier Outdoor Power Equipment’s line of generators. Rainier Outdoor Power Equipment and its affiliated companies shall not be liable for any special, incidental or consequential damage, including lost profits. There are no warranties extended other than as provided herein. This limited warranty may be modified only by Rainier Outdoor Power Equipment. Any implied warranties allowed by law shall be limited in duration to the terms of the express warranty provided herein. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights. You also have other rights from state to state. Rainier Outdoor Power Equipment’s **ONLY LIABILITY SHALL BE THE REPAIR OR REPLACEMENT AS STATED ABOVE. IN NO EVENT SHALL Rainier Outdoor Power Equipment BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF SUCH DAMAGES ARE A DIRECT RESULT OF** Rainier Outdoor Power Equipment’s **NEGLIGENCE**. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights from state to state.

This limited warranty is given by Rainier Outdoor Power Equipment, 777 Manor Park Drive, Columbus, OH 43228

RAINIER