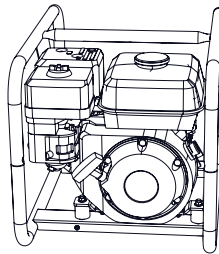
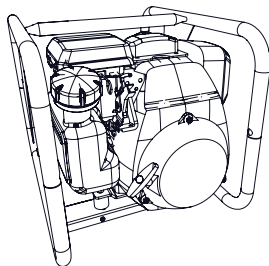


WALLENSTEIN

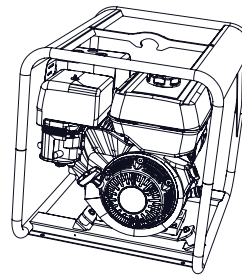
EMB Manufacturing Inc.
4144 Boomer Line · St. Clements, On · N0B 2M0 · Canada
Ph: (519) 699-9283 · Fax: (519) 699-4146
www.embmfg.com

COMPACT PORTABLE GENERATORS OPERATOR'S MANUAL

WCC2500
WHC2500



WCC3000
WHC3000



WCC5000
WHC5000



BACKUP POWER SERIES
SÉRIE POUR ALIMENTATION D'URGENCE

WHC2500
WHC3000
WHC5000



JOBSITE RATED SERIES
SÉRIE POUR CHANTIERS

WCC2500
WCC3000
WCC5000



FIRST USE: DO NOT attempt to crank or start the engine before it has been properly filled with the recommended amount and type of oil. Damage to the generator as a result of failure to follow these instructions will void your warranty. **See the engine owners manual for detailed instructions.**

Thoroughly review this manual and the engine manual for safe and proper operation.

Keep this manual with the Generator at all times



TABLE OF CONTENTS

WARRANTY	3	4.6	ELECTRICAL LOAD	26
WALLENSTEIN	4	4.6.1	WATTAGE AND LOAD.....	26
SERIAL NUMBER LOCATION	5		REACTIVE LOAD.....	26
LABEL INFORMATION	5		RESISTIVE LOAD	26
1 INTRODUCTION	6		CONTINUOUS WATTAGE	26
2 SAFETY	7		MAXIMUM WATTAGE	26
2.1 SAFETY DO'S & DON'TS'	8	4.6.2	CALCULATING LOAD	26
2.2 EQUIPMENT SAFETY GUIDELINES	9	4.6.4	WATTAGE CHART.....	27
2.3 SAFETY TRAINING	10	5	FIELD OPERATION.....	28
2.4 PREPARATION.....	11	5.1	PREPARE	28
2.5 MAINTENANCE SAFETY.....	12	5.2	START.....	29
2.6 REFUELING SAFETY	12	5.2.1	STARTING THE GENERATOR:.....	29
2.7 OPERATING SAFETY	13	5.2.2	STOPPING:	29
2.9 STORAGE SAFETY.....	14	5.2.3	EMERGENCY STOPPING:	29
2.10 ELECTRICAL SAFETY	14	5.2.4	TERRAIN:	29
2.8 TRANSPORT SAFETY	14	5.2.5	WEATHER:	29
2.11 GAS MOTOR SAFETY	15	5.2.6	ELECTRICAL LOADS:.....	29
2.12 SIGN-OFF FORM	16	5.2.7	COMPONENT CONDITION:	29
3 SAFETY SIGNS	17	5.2.8	ELECTRICAL HAZARDS:.....	29
3.1 HOW TO INSTALL SAFETY SIGNS:	17	5.3	RESIDENTIAL.....	30
3.2 SAFETY SIGN EXPLANATIONS:.....	17	5.4	MOVING	30
4 OPERATION & FEATURES	19	5.4.1	TRANSPORTING:	30
4.1 TO THE NEW OPERATOR OR OWNER	19	5.4.2	WHEEL KIT:	30
4.1.1 SAFE CONDITION	19	5.5	STORAGE	31
4.2 MACHINE COMPONENTS.....	20	5.5.1	PLACING IN STORAGE	31
4.3 MACHINE BREAK-IN	21	5.5.2	REMOVING FROM STORAGE	31
4.4 PREOPERATION CHECKLIST.....	21	6	SERVICE AND MAINTENANCE	32
4.5 CONTROLS	22	6.1	SERVICE	32
4.5.1 ENGINE CONTROLS	22	6.1.1	FLUIDS AND LUBRICANTS	32
4.5.2 ELECTRICAL PANEL.....	23	6.2	MAINTENANCE	33
WHC2500	23	6.2.1	GENERAL MAINTENANCE.....	33
WCC2500	23	6.2.2	ENGINE MAINTENANCE	33
WHC3000	23	6.2.3	ALTERNATOR MAINTENANCE	33
WCC3000	23	7	SPECIFICATIONS	34
WHC5000	24	7.1	MECHANICAL.....	34
WCC5000	24	7.2	BOLT TORQUE.....	35
CIRCUIT BREAKERS:.....	24	8	TROUBLE SHOOTING.....	36
GFCI OUTLETS:	25	9	ACCESSORIES	37
OPERATING HINTS:.....	25	10	INDEX	38



WARRANTY

Effective on products rebilled on or after January 1, 2015.

Register your product online at www.embmfg.com
within 30 days of purchase to activate warranty.

This product is warranted to be free of defects in materials and workmanship under normal use and service, for a period of

Five (5) Years for Consumer
Two (2) Year for Commercial/Rental

from the date of purchase, when operated and maintained in accordance with the Operating and Maintenance Instructions supplied with this unit. Warranty is limited to the repair of the product and/or replacement of parts.

This warranty does not cover the following items:

- 1) Machines or parts lost or damaged during shipment,
- 2) Normal maintenance or adjustments after initial pre-service and set up is completed
- 3) Normal replacement of service items.
- 4) Accessory items / parts not supplied by EMB MFG INC.
- 5) Damages resulting from:
 - misuse, negligence, accident, theft or fire
 - use of improper or insufficient fuel, fluids or lubricants
 - use of parts or after market accessories other than genuine EMB MFG INC. parts
 - modifications, alteration, tampering or improper repair performed by parties other than an authorized dealer
 - any device or accessories installed by parties other than an authorized EMB dealer or distributor

Engines are covered by the manufacturer of the engine and covered by the warranty period specified by that manufacturer. Engine warranty must be registered at the engine manufacturer's website. For service contact your local engine dealer.

Under no circumstances will the manufacturer be liable for any consequential damage or expense of any kind, including loss of profits. The manufacturer is under no circumstances liable for tow vehicle of any kind. The manufacturer is not liable for the maintenance of the product.

This warranty is extended only to the original purchaser and is not transferable. Warranty is void if repairs are attempted by anyone other than a Wallenstein Authorized Service Centre.

If a difficulty develops with the product, contact the local dealer from which you purchased the unit. Only Wallenstein authorized dealers are authorized to make repairs to the product or effect the replacement of defective parts, which will be done at no charge within a reasonable time after the receipt of the product. Unit or parts shall be returned at the customer's expense to the Authorized Service Centre. Damage in transit is not covered by warranty. Include the original purchase receipt with any claim (keep a copy of the receipt for your files).

The distributor's liability under warranty is limited to the repair of the product and/or replacement of parts and is given to the purchaser in lieu of all other remedies including incidental and consequential charges. There are no warranties, expressed or implied, other than those specified herein.

EMB MFG Inc
4144 Boomer Line, St Clements, ON N0B 2M0 Canada
Phone: 519-880-8283 Fax: 519-880-4146 : attention to Warranty Dept
Email: warranty@embmfg.com

rev230115

WARRANTY IS VOID IF NOT REGISTERED

Wallenstein
Backup Power Series: WHC2500, WHC3000, WHC5000
Jobsite Rated Series: WCC3000, WCC3000, WCC5000
DELIVERY INSPECTION REPORT
 To activate warranty, register your product online at
www.embmfg.com

 Customer's Name

 Contact Name

 Dealer Name

(_____) _____
 Phone Number

 Serial Number

_____/_____/_____
 Delivery Date

✓	Pre-Delivery Inspection
	Inspect for damage from shipping, immediately contact the shipping company if damage is found.
Portable Generator	
	Check Electrical Connections
	Check Function of Generator
	Check that Fasteners are tight
	Check Engine Fluid Levels
	Review Operating and Safety Instructions
Safety Checks	
	All Safety Decals Installed
	Guards and Shields Installed and Secured
	Test GFCI outlets
	Review Operating and Safety Instructions

I have thoroughly instructed the buyer on the equipment care, adjustments, safe operation and applicable warranty policy and reviewed the manual.

 Dealer's Rep. Signature

_____/_____/_____
 Date

The product manuals have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

 Owner's Signature

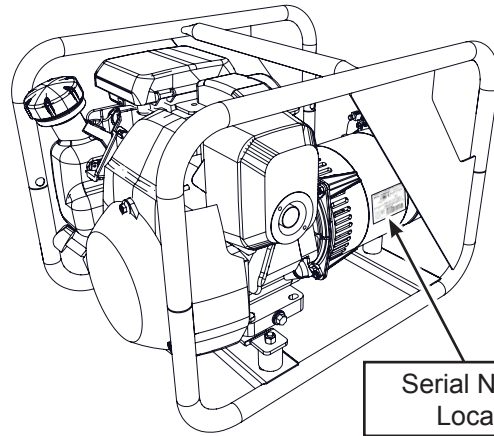
_____/_____/_____
 Date

SERIAL NUMBER LOCATION

Always reference the serial number of your Wallenstein generator when ordering parts or requesting service or other information.

The serial number plate is located where indicated. Please mark the numbers in the spaces provided for easy reference. (Serial label location is the same for ALL models)

SERIAL NUMBER LOCATION



Serial Number
Location



JOBSITE RATED SERIES
SÉRIE POUR CHANTIERS



BACKUP POWER SERIES
SÉRIE POUR ALIMENTATION D'URGENCE

Backup Power Series or Jobsite Rated Series Portable Gas Generator

Model Number _____

Serial Number _____

LABEL INFORMATION

As you begin to get familiar with your Wallenstein product, you will notice that there are numerous labels located on the machine. Here is a brief explanation of what they are for and how to read them.

There are three different types of labelling: safety, informative and product labels.

Safety Labels are pictorial with a yellow background and generally 2 panel. The top panel shows the safety alert (the potential hazard) and the bottom panel shows the message (how to avoid the hazard).

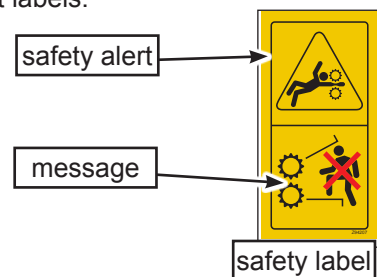
Safety Notice Labels are pictorial with a blue background and generally rectangular with single or multiple symbols. The label illustrates requirements for safe operation (safety equipment, housekeeping etc). These labels are accompanied by detailed instructions in the owners manual, with the label illustrated along side.

Informative Labels are generally pictorial with a white background and can vary to the number of panels. The label will illustrate the function of a feature and is accompanied by detailed instructions in the owners manual, with the label illustrated along side.

Product Labels are associated with the product and carry various messages (model, serial, etc).

Maintenance Labels are associated with the product and carry various messages. They are generally pictorial. They may be round or rectangular, have a green background and can vary to the number of panels. The label may illustrate the type maintenance and frequency in time between services. Labels are accompanied by detailed instructions in the owners manual, with the label illustrated along side.

See the section on safety signs for safety label definitions. For a complete illustration of labels and label locations, download the parts manual for your model product at www.embmfg.com.



1 INTRODUCTION

Congratulations on your choice of the **Wallenstein Generator**. This equipment has been designed and manufactured to meet the needs of a home owner, business operator or industry that needs electric power during power outage, at a remote location or any time remote power is needed.

Safe, efficient and trouble free operation of your Wallenstein Generator requires that you and anyone else who will be using or maintaining the generator, review this Wallenstein Operators manual and read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within this Manual.

All Wallenstein generators are CSA certified and are "**neutral bonded to frame**" this is a safety feature that means that the neutral line of the electrical circuit has been bonded to the frame of the generator. The purpose is to make full advantage of the overcurrent protection device to prevent shocks & electrocution due to a short circuit from a defective cord or device. In effect this will cause the current from a short circuit to travel back to the generator and activate the breaker, instead of through a person to ground



BACKUP POWER SERIES SÉRIE POUR ALIMENTATION D'URGENCE

The Wallenstein Backup **Power Series** generator is designed to be a reliable source of continuous power for the home owner, or recreational use. Utilizing robust pull start gas powered engines to provide a steady and dependable source of power, in case of power outage, or when the need arises. The Backup Power series is intended to be connected directly to the appliance/equipment requiring electrical power. It is **not** recommended to connect these generators to a home electrical system without appropriate equipment and a qualified electrician to make the connections.



JOBSITE RATED SERIES SÉRIE POUR CHANTIERS

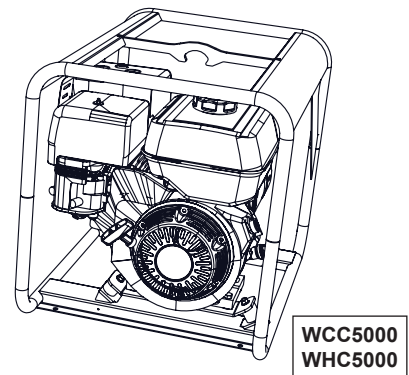
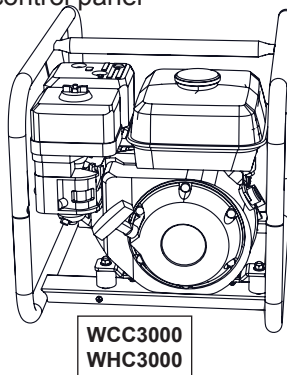
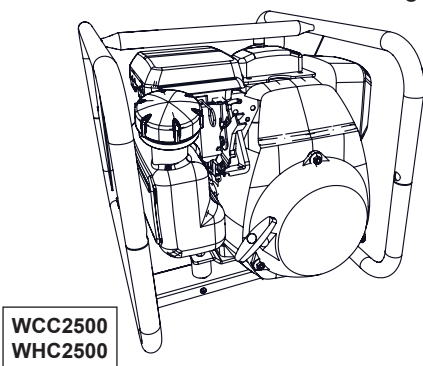
The Wallenstein **Jobsite Rated Series** generator are designed with the contractor in mind. Equipped with GFCI protected outlets, these generators are a safe and dependable source of continuous power on the job site. Small and portable, the pull start gas powered engines produce a steady and dependable source of power, for all your power tools. As well having the neutral conductor bonded to the frame, **Jobsite Rated** generators feature GFCI outlet protection, an OSHA requirement when using portable electrical equipment on job sites.

From home owners, recreational use campers, hunters, snowmobilers, to jobsite contractors, decks, docks, & fence builders, rugged roll-cage frame to stand-up to jobsite demands, the Wallenstein line-up of generators will get you up and running.

Optional Kits: available are the WK210 & WK214 Wheel Kits, which make it a one person job to easily move your generator into position.

Use the Table of Contents or Index as a guide to locate required information. Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Wallenstein dealer or the Distributor if you need assistance, information or additional copies of the manuals.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout this manual, are determined when facing the control panel



2 SAFETY

SAFETY ALERT SYMBOL

This Safety Alert symbol means
ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!



The Safety Alert symbol identifies important safety messages on the Wallenstein Generator and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill
Accidents Cost
Accidents Can Be Avoided

SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING - Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

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


If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or Wallenstein, 4144 Boomer Line, St. Clements, ON, N0B 2M0. Phone (519) 699-9283 or Fax (519) 699-4146.

SAFETY

YOU are responsible for the SAFE operation and maintenance of your Wallenstein Portable Generator. **YOU** must ensure that you and anyone else who is going to use, maintain or work around the generator be familiar with the use and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be used while using the Generator.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** using this equipment is familiar with the recommended use and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

2.1 SAFETY DO'S & DON'TS'

- **DO** give operating instructions to operators or employees before allowing them to operate the machine, and REVIEW annually thereafter.
- **DO NOT** run a generator indoors, a generator's exhaust contains toxic carbon monoxide, which you cannot smell or see. Breathing carbon monoxide can be lethal.
- **DO** read and understand ALL Safety and Operating instructions in the manual and follow them. Most accidents can be avoided. The most important safety device on this equipment is a SAFE operator. 
- **DO NOT** expect a person who has not read and understood all use and safety instructions to operate the machine. An untrained operator is not qualified and exposes himself and bystanders to possible serious injury or death. It is the owners responsibility to the operator to ensure familiarity and understanding of the machine.
- **DO NOT** modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- **DO NOT** risk injury or death by ignoring good safety practices.

- **DO** review safety related items annually with all personnel who will operating or maintaining the generator

- **DO** have a first-aid kit available for use should the need arise and know how to use it.



- **DO** read and understand all safety signs located on the machine before using, maintaining, adjusting or cleaning the generator

- **DO** have a fire extinguisher suitable for electrical fires available, should the need arise and know how to use it.



- **DO** inspect and secure all guards before starting.

- **DO** wear appropriate protective gear. This list includes but is not limited to:

- Heavy gloves
- Hearing protection
- Protective shoes with slip resistant soles
- Protective glasses, goggles or face shield



- **DO** prepare before servicing, adjusting, repairing or unplugging:

- stop the machine, disconnect load
- shut off the engine,
- wait for all moving parts to stop
- clear the area of people, especially small children.

- **DO** wear suitable ear protection for prolonged exposure to excessive noise.

- **DO** operate on dry level ground away from combustibles.

- **DO NOT** touch hot engine parts, muffler, muffler cover, engine body, engine oil, etc. during operation and after the engine has been shut off. Contact may cause burns.



- **DO NOT** modify the control panel wiring or any grounding on the generator

- **DO** think SAFETY! Work SAFELY!


2.2 EQUIPMENT SAFETY GUIDELINES

Safety of the operator and bystanders is one of the main concerns in designing and developing equipment. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them.

1. In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be used in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.
2. Replace any safety sign or instruction sign that is not readable or is missing. Location of such safety signs is indicated in this manual.
3. Never use alcoholic beverages or drugs which can hinder alertness or coordination while using this equipment. Consult your doctor about using this machine while taking prescription medications.
4. **Under no circumstances should young children be allowed to work with this equipment. Do not allow persons to use this until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works.** Review the safety instructions with all users annually.
5. This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with machinery and familiar with this equipment's operations. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.
6. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - **DON'T TRY IT.**
7. Never run a generator indoors, a generator's exhaust contains toxic carbon monoxide, which you cannot smell or see. Breathing carbon monoxide can be lethal.
8. Do not modify the equipment in any way. Unauthorized modification may result in serious injury or death and may impair the function and life of the equipment.
9. In addition to the design and configuration of this equipment, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the engine and machine manuals. Pay close attention to the Safety Signs affixed to the machine.
10. **Safe condition** involves the following procedure:
 - Flip main switch "off" or disconnect all loads
 - Shut off the engine.
 - Ensure all components have stopped moving.Safe Condition procedure should be performed before any service, maintenance work or storage preparation.



2.3 SAFETY TRAINING

1. Train all new personnel and review instructions frequently with existing workers. Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
2. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.
3. It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Use instructions in the manual and to follow these. Accidents can be avoided.
4. **Working with unfamiliar equipment can lead to careless injuries. Read this manual before assembly or using, to acquaint yourself with the machine. If this machine is used by any person other than yourself, or is loaned or rented, it is the machine owner's responsibility to make certain that the operator, prior to using:**
 - **Reads and understands the operator's manuals.**
 - **Is instructed in safe and proper use of the equipment.**
 - **Understands and knows how to perform the "safe condition" procedure:**
 - Flip main switch "off" or disconnect all loads
 - Shut off the engine.
 - Ensure all components have stopped moving.
5. Know your controls and how to stop the engine and machine quickly in an emergency. Read this manual and the one provided with your engine.
6. Be certain only a properly trained and physically able person will use the machinery. A person who has not read and understood all using and safety instructions is not qualified to use the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with the work, their physical limitations need to be recognized and accommodated.

2.4 PREPARATION

1. Never use the engine and machine until the operators have been adequately trained in the safe operation of the machine and have read and completely understand:
 - Safety, Operation and Feature sections of this manual,
 - Engine Operator's Manual
 - Each of the Safety Messages found on the safety signs on the engine and machine.
2. Personal protection equipment including:

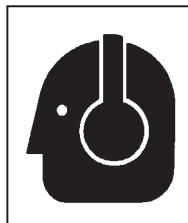
- safety glasses
- safety shoes
- gloves
- hearing protection

are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, cleaning, or moving the generator. Do not allow long hair, loose fitting clothing or jewellery to be around equipment.



3. PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!

Power equipment can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis. Noise over 85dB on a long-term basis can cause severe hearing loss. Noise over 90db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss.



Caution: Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.

4. Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing injury or damage.
5. Use only in daylight or good artificial light.
6. Be sure machine is properly mounted, adjusted and in good operating condition.
7. Ensure that all safety shielding and safety signs are properly installed and in good condition.
8. If fuel is on site, store it well away from the machine and flammable materials.
9. Perform the "PreOperation Checklist" procedure before starting work.

2.5 MAINTENANCE SAFETY

1. Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
2. Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.



3. Make sure there is plenty of ventilation. Never operate the machine or the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
4. Put the machine in **safe condition** before working on this machine:
 - Flip main switch "off" or disconnect all loads
 - Shut off the engine.
 - Ensure all components have stopped moving.
5. Allow the engine to cool before performing maintenance, engine components and oil may be hot enough to cause injury.
6. Never work under equipment unless it is blocked securely.
7. When performing any service or maintenance work always use personal protection devices such as
 - safety glasses,
 - hand protection - gloves
 - hearing protectors
 - safety shoes
8. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.

9. An appropriate fire extinguisher (electrical fires) and first aid kit should be kept readily accessible while performing maintenance on this equipment.



10. Inspect and tighten all bolts, nuts and screws and check that all electrical and fuel connections are properly secured to ensure generator is in a safe condition.
11. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing the generator in service.
12. When performing maintenance on this equipment always have at least 2 workers present. Do not work alone in case an emergency should arise.
13. When cleaning any parts, do not use gasoline but use regular cleanser.
14. Always use proper tools, that are in good condition. Make sure you understand how to use them, before performing any service work.

2.6 REFUELING SAFETY

1. Allow the engine to cool if the generator has been in operation.
2. Refuel only outdoors in a well-ventilated area with the engine off.
3. Never smoke near fuel, and keep other flames and sparks away.
4. Do not overfill the fuel tank.
5. Always store fuel in an approved container. Make sure that any spilled fuel has been wiped up before starting the engine.



2.7 OPERATING SAFETY

1. Please remember it is important that you read and heed the safety signs on the generator. Clean or replace all safety signs if they cannot be clearly read and understood. They are there for your safety, as well as the safety of others. The safe use of this machine is strictly up to you, the operator.
2. All things with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes potential hazards and follows reasonable safety practices. The manufacturer has designed this generator to be used with all its safety equipment properly attached, to minimize the chance of accidents. Read and understand operator's manual before starting, to make sure you have all safety equipment attached and operational.
3. Close and secure all covers, guards, deflectors and shields before starting and operating.
4. Personal protection equipment including hearing protection, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, or moving.
5. Inspect electrical harness, and controller to ensure they are in good condition before operating to maintain control.
6. Keep the generator dry. Operate on a dry surface under an open well ventilated, covered structure.
7. Never run a generator indoors, a generator's exhaust contains toxic carbon monoxide, which you cannot smell or see. Breathing carbon monoxide can be lethal.
8. Do not operate near openings to any building that can be occupied in order to help avoid the exhaust hazard.
9. Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
10. Never allow children or unauthorized people to operate or be around this machine.



11. Plug appliances directly into generator or use a heavy-duty outdoor-rated extension cord. Make sure entire extension cord is free of cuts or tears and the plug has all 3 prongs, especially a grounding pin.
12. If necessary to connect generator to house wiring to power appliances, have a qualified electrician install appropriate equipment. Or, your utility company may be able to install an appropriate transfer switch.
13. Keep the working area clean and free of debris to prevent tripping. Operate only on level ground.
14. Parts of a generator become very hot during operation and remain hot for a time after stopping the engine. Be careful not to touch the muffler while it is hot. Let the engine cool before storing the generator indoors.
15. To prevent a possible fire, keep the generator at least 3 feet (1 meter) away from building walls and other equipment during operation. Do not place flammable objects close to the engine.
16. **NEVER** plug the generator into a wall outlet. This practice, known as backfeeding, can cause an electrocution risk to utility workers and others served by the same utility transformer.



2.8 TRANSPORT SAFETY

1. Comply with Provincial / state and local laws governing safety and transporting of machinery on public roads.
2. Do not exceed a safe travel speed. Slow down for rough terrain and cornering.
3. Do not transport or move the generator with the engine running.
4. Inspect all access panels and guards to ensure they are secured.
5. If the generator has been running, allow the engine to cool for at least 15 minutes before loading the generator on the transport vehicle. A hot engine and exhaust system can burn you and may ignite some materials.
6. Ensure the fuel tank cap is on tight and keep the generator level when transporting to reduce the possibility of fuel leakage.
7. Move the fuel valve lever to the OFF position.
8. When using ropes or tie-down straps to secure the generator for transportation, be sure to only use the frame bars as attachment points. Do not fasten ropes or straps to any portions of the generator body.
9. Do not drink and drive.
10. Just before transport, perform a circle check to ensure everything is safe and secure.

2.9 STORAGE SAFETY

1. Store the unit in a well vented area away from human activity.
2. If possible, store in a dry area, avoid storage areas with high humidity, because that promotes rust and corrosion.
3. Avoid any area where power tools are operated or spark-producing electric motors.
4. Do not allow children to play on or around the stored machine.
5. Place the generator on a level surface. Tilting or laying it on its side can cause fuel or oil leakage. Support the frame with planks if required.
6. Allow the engine / exhaust to cool. A hot engine and exhaust system can ignite or melt some materials.
7. With the engine and exhaust system cool, cover the generator to keep out dust.
8. Do not use a nonporous sheet as a dust cover. A nonporous cover will trap moisture around the generator, promoting rust and corrosion.

2.10 ELECTRICAL SAFETY

1. The generator produces enough electric power to cause a serious shock or electrocution if misused.
2. Using a generator or electrical appliance in wet conditions (rain or snow), or near a pool or sprinkler system, or when your hands are wet, could result in electrocution. Keep the generator and the immediate area dry.
3. If the generator has been outdoors, unprotected from the weather, check all of the electrical components on the control panel before each use. Moisture can cause a short circuit in electrical components that could result in electrocution.
4. Do not connect to a building's electrical system unless a transfer / isolation switch has been installed by a qualified electrician.
5. **NEVER** tamper with the factory settings of the engine or engine governor. Engine speed controls the frequency portion of the electrical output (60Hz). Personal injury or damage to the engine or equipment can result if operating in speed ranges above the maximum or below the minimum allowable.



2.11 GAS MOTOR SAFETY

BEFORE STARTING ENGINE, READ AND UNDERSTAND THE OPERATING AND MAINTENANCE INSTRUCTIONS THAT CAME WITH YOUR ENGINE.

WARNING: DO NOT

1. DO NOT run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odourless and deadly poison.
2. DO NOT place hands or feet near moving or rotating parts.
3. DO NOT store, spill, or use gasoline near an open flame, or devices such as a stove, furnace, or water heater which use a pilot light or devices which can create a spark.
4. DO NOT refuel indoors where area is not well ventilated. Outdoor refuelling is preferred.
5. DO NOT refuel while engine is running. Allow engine to cool for 5 minutes before refuelling. Store fuel in approved safety containers.
6. DO NOT remove fuel tank cap while engine is running.
7. DO NOT operate engine if gasoline is spilled. Move machine away from the spill and avoid creating any ignition until gasoline has evaporated.
8. DO NOT smoke while filling fuel tank.
9. DO NOT choke carburetor to stop engine. Whenever possible, gradually reduce engine speed before stopping.
10. DO NOT run engine above rated speeds. This may result in injury.
11. DO NOT tamper with governor springs, governor links or other parts which may increase the governed speed.
12. DO NOT tamper with the engine speed selected by the original equipment manufacturer.
13. DO NOT check for spark with spark plug or spark plug wire removed.
14. DO NOT crank engine with spark plug removed. If engine is flooded, crank until engine starts.
15. DO NOT strike flywheel with a hard object or metal tool as this may cause flywheel to shatter in operation. Use proper tools to service engine.
16. DO NOT operate engine without a muffler. Inspect periodically and replace, if necessary. If engine is equipped with a muffler deflector, inspect periodically and replace, if necessary with correct deflector.
17. DO NOT operate engine with an accumulation of grass, leaves, dirt or other combustible materials in the muffler area.
18. DO NOT use this engine on any forest covered, brush covered, or grass covered unimproved land unless a spark arrester is installed on the muffler. The arrester must be maintained in effective working order by the operator. In the state of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal land.
19. DO NOT touch hot muffler, cylinder or fins because contact may cause burns.
20. DO NOT run engine with air cleaner or air cleaner cover removed.

WARNING: DO

1. ALWAYS DO remove the wire from the spark plug when servicing the engine or equipment to prevent accidental starting. Disconnect the negative wire from the battery terminal if equipped with a 12 volt starting system.
2. DO keep cylinder fins and governor parts free of grass and other debris which can affect engine speed.
3. DO examine muffler periodically to be sure it is functioning effectively. A worn or leaking muffler should be repaired or replaced as necessary.
4. DO use fresh gasoline. Stale fuel can gum carburetor and cause leakage.
5. DO check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.

2.12 SIGN-OFF FORM

Wallenstein follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be using and/or maintaining the Portable Generator must read and clearly understand ALL Safety, Usage and Maintenance information presented in this manual.

Do not use or allow anyone else to use this generator until such information has been reviewed. Annually review this information before the season start-up.

Make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment. We feel that an untrained operator is unqualified to use this machine.

A sign-off sheet is provided for your record keeping to show that all personnel who will be working with the equipment have read and understand the information in the Operator's Manual and have been instructed in the operation of the equipment.

SIGN-OFF FORM

DATE	EMPLOYEES SIGNATURE	EMPLOYERS SIGNATURE

3 SAFETY SIGNS

1. Keep safety signs clean and legible at all times,
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs in Section 3 each have a part number displayed with it. Use this part number when ordering replacement parts.
5. Safety signs are available from your authorized Distributor or Dealer Parts Department or the factory.

3.1 HOW TO INSTALL SAFETY SIGNS:

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Determine exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

3.2 SAFETY SIGN EXPLANATIONS:



Caution: A generator produces enough electrical power to cause serious shock or electrocution. Using a generator in wet conditions such as in rain or snow, or with wet hands could result in electrocution. Keep the generator dry.



Caution: Parts of a generator become very hot during operation and remain hot for a time after stopping the engine. Be careful not to touch the muffler while it is hot. Let the engine cool before storing the generator indoors.



Danger: Never run a generator indoors, a generator's exhaust contains toxic carbon monoxide, which you cannot smell or see. Breathing carbon monoxide can be lethal.



Caution: Do not refuel the machine while smoking or when near open flame or sparks. Fuel is highly flammable, handle with care.



Caution: Read and understand ALL safety and operating instructions in the manual, read and understand ALL safety labels located on the machine. The most important safety device on this equipment is an informed SAFE operator.



Note: This is a safety feature and indicates that the neutral line of the electrical circuit has been bonded to the frame of the generator.

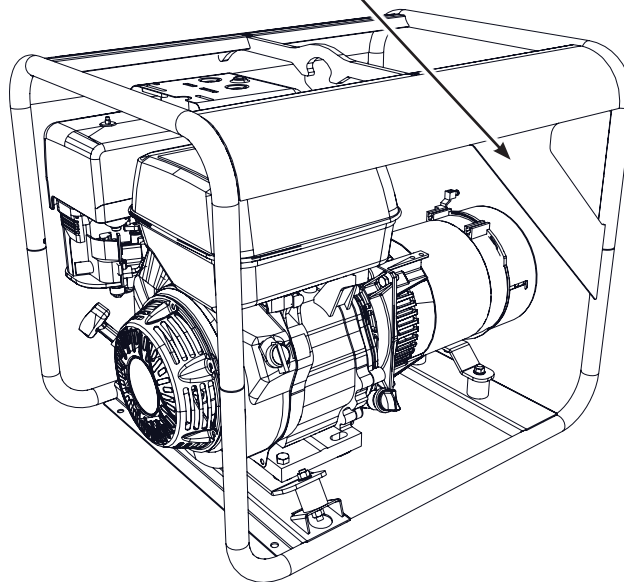
3 SAFETY SIGN LOCATIONS

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!



Z94901



REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

4 OPERATION & FEATURES



OPERATING SAFETY

- Read and understand operator's manual before starting. Review safety instructions annually.
- Stop and disable engine, and wait for all moving parts to stop before servicing, adjusting or repairing.
- To prevent electrical shocks, do not operate this generator in the rain or with wet hands. Generator should be kept dry and not operated on wet or damp surfaces.
- Close and secure all guards, deflectors and shields before starting and operating.
- Do not connect the generator to a commercial power line.
- Do not operate with damaged or defective extension cords, or power cords. Protect the cord from getting pinched or crushed if it passes through a window or doorway.
- Use properly rated, grounded 3-prong extension cords, tools, and appliances.
- Do not operate this generator indoors, or in areas with poor ventilation. The exhaust fumes contain carbon monoxide, a poisonous, odourless, invisible gas. Prolonged exposure can lead to unconsciousness and death.
- Do not refuel the engine while it is in operation or still hot. Do not refuel the engine near open flames, pilot lights or sparking electrical devices (e.g. power tools, welders or grinders).
- To prevent a possible fire, keep the generator at least 1 meter (3 feet) away from building walls and other equipment during operation.
- Do not place flammable objects close to the engine.
- The engine should be refuelled in a well-lit, adequately vented area. Avoid fuel spillage.
- Never allow children or unauthorized people to operate or be around this machine.
- Keep the working area clean and free of debris to prevent tripping. Operate only on level ground.
- Do not cover the generator while in operation. Overheating can result in damaged equipment.
- For storage, do not cover the generator until it has cooled down completely.
- The ambient temperature should not exceed 100° F/40° C.

DO NOT attempt to crank or start the engine

before it has been properly filled with the recommended amount and type of oil.

4.1 TO THE NEW OPERATOR OR OWNER

The Wallenstein Portable Generators are designed to provide portable electrical power to equipment that is not connected to the electrical grid system.

It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the work site. Untrained operators are not qualified to use the machine.

Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to use the Generator safely and how to set it to provide maximum field efficiency. By following these instructions in conjunction with a good maintenance program, your Portable Generator will provide many years of trouble-free service.

4.1.1 SAFE CONDITION



Ensure all operators understand how to put the machine in safe condition before working with this machine,

- Flip main switch "off" or disconnect all loads
- Shut off the engine.
- Ensure all components have stopped moving.

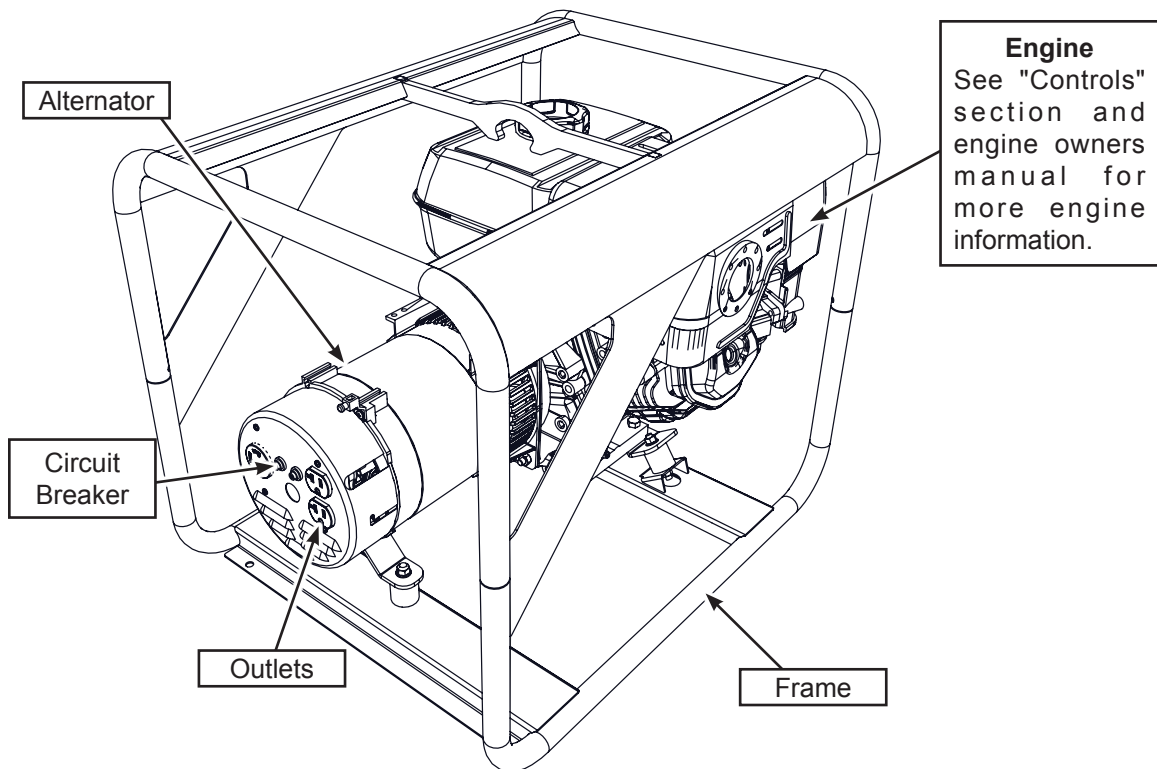
4.2 MACHINE COMPONENTS

Wallenstein Portable Generators consists of several models of generators. Although slightly different for each model, controls and power outlets are mounted in similar locations for convenient access and operation.

The unit is designed to provide electrical power for work (Jobsite Rated series) or home (Backup Power series). Each outlet is designed with a circuit breaker to protect against overload. For protection against electrical shocks from short circuits, the machine is neutral bonded to the frame. The entire assembly is mounted within the frame for added protection and convenient access.

Series	Model	Engine cc	Alternator kW	Continuous wattage	Maximum wattage
 BACKUP POWER SERIES SÉRIE POUR ALIMENTATION D'URGENCE	WHC2500	160cc	2.9	2000	2400
	WHC3000	163cc	2.9	2100	2500
	WHC5000	270cc	4.9	4250	5000
 JOBSITE RATED SERIES SÉRIE POUR CHANTIERS	WCC2500	160cc	2.9	2000	2400
	WCC3000	163cc	2.9	2100	2500
	WCC5000	270cc	4.9	4250	5000

Note:
All Wallenstein generators are CSA certified and have the safety feature of the neutral conductor bonded to the frame, an OSHA requirement when using portable electrical equipment on job sites.



4.3 MACHINE BREAK-IN

Although there are no operational restrictions on the portable generator when used for the first time, it is recommended that the following mechanical items be checked:

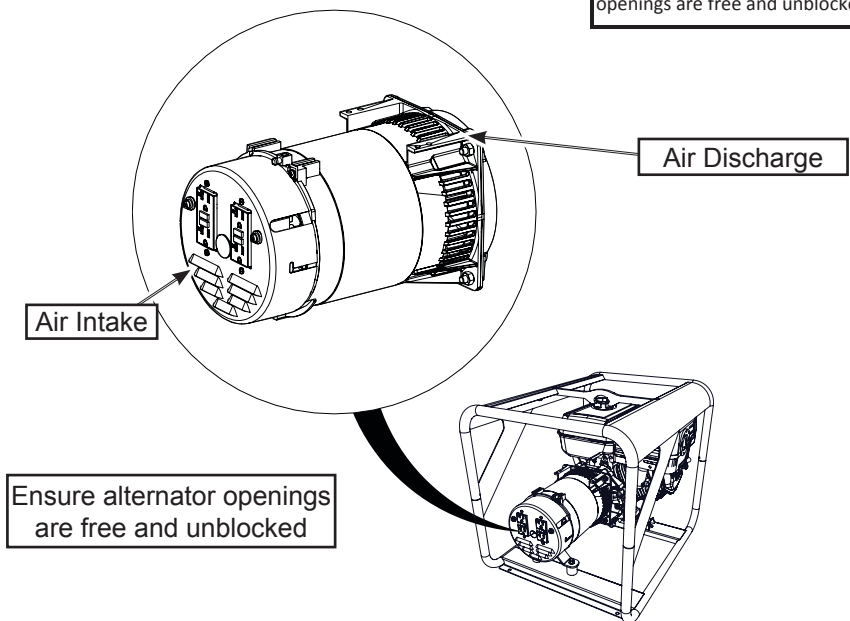
DO NOT attempt to crank or start the engine before it has been properly filled with the recommended amount and type of oil.

A. After operating for 1 hour:

1. Ensure the machine is in **safe condition** before checking any components. (see 4.1.1)
2. Review the engine operators manual for break-in.
3. Inspect the axle, tires, and wheels (if installed) .
4. Torque all fasteners and hardware.
5. Check that the alternator cooling air intake and discharge openings are free and unblocked
6. Check condition of electrical components and connectors. Keep all components/ connectors in good condition.

B. After operating for 8 hours:

1. Repeat steps 1 through 6 listed above. (Section A)
2. Go to the normal servicing and maintenance schedule as defined in the Maintenance Section.



4.4 PREOPERATION CHECKLIST

Efficient and safe operation of the Wallenstein Portable Generator requires that each operator reads and understands the use procedures and all related safety precautions outlined in this section.

A PreOperation checklist is provided for the operator. It is important for both the personal safety and maintaining good mechanical condition that this checklist is followed.

Before operating the Wallenstein Portable Generator and each time thereafter, the following areas should be checked off:

Pre-Operation Checklist	✓
Check and lubricate the machine per the schedule outline in the Maintenance Section.	
Exhaust gas contains poisonous carbon monoxide. Never run the generator in an enclosed area. Be sure there is adequate ventilation in the work area.	
Check all electrical connections. Replace, repair or clean as required.	
Make sure that all lids, guards and shields are in place, secured and functioning as designed.	
Check condition of the battery and other electrical components. Keep all components in good condition.	
Check the fuel level, Starting with a full tank will help to eliminate or reduce operating interruptions for refueling.	
Check engine fluid levels. Top up as required. Refer to the engine operators manual.	
Check the air filter	
Check all power cords that will be used, ensure they are in good repair.	
Check that the alternator cooling air intake and discharge openings are free and unblocked	

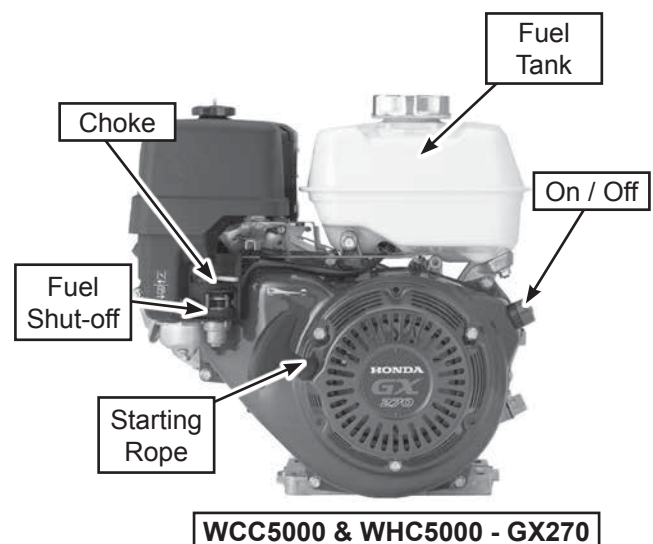
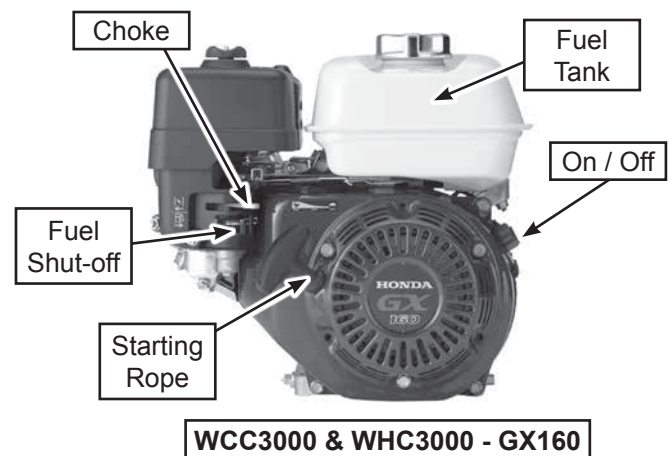
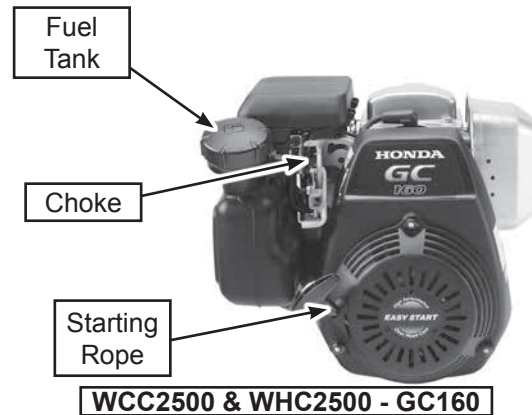
4.5 CONTROLS

Please review this section to familiarize yourself with the location and function of each control before starting. The controls of the Wallenstein generators are laid out so that they are easy to see and use. Familiarizing yourself with the controls will enable you to take advantage of all the features available on the Wallenstein generators and apply them as conditions demand.

4.5.1 ENGINE CONTROLS

Always read the engine operator's manual supplied with the machine to familiarize yourself with its operating and starting procedure details.

1. **Ignition Switch:** This switch controls the electric power to the engine.
2. **Throttle:** The throttle is preset and locked to run at optimum RPM and is not adjustable. Engine RPM directly affects output from the alternator, and therefore the RPM should never be adjusted.
3. **Choke:** This push/pull ring (GC160) or slide lever (GX160 & 270) controls the position of the choke. Close the choke for starting when the engine is cold. Open the choke as the engine warms. Always fully open the choke when operating the machine.
4. **Starting Rope:** Pull sharply on the starting rope T bar when starting the engine. Release the T bar when engine is running.
5. **Fuel Shut-Off Valve:** (GX270 only) This valve controls the flow of fuel to the engine. Turn the valve on when running the engine and off when refuelling or not in use.



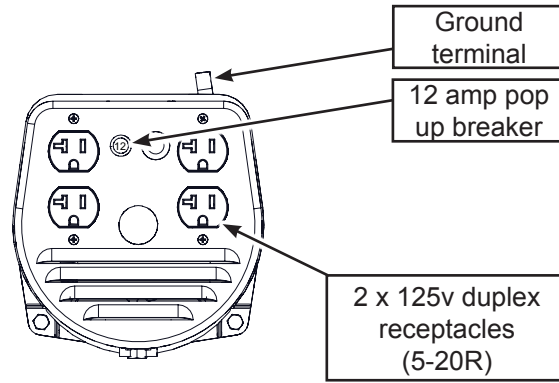
4.5.2 ELECTRICAL PANEL

WHC2500



BACKUP POWER SERIES
SÉRIE POUR ALIMENTATION D'URGENCE

Two duplex receptacles provide 120v, protected by one 12 amp pop up breaker.

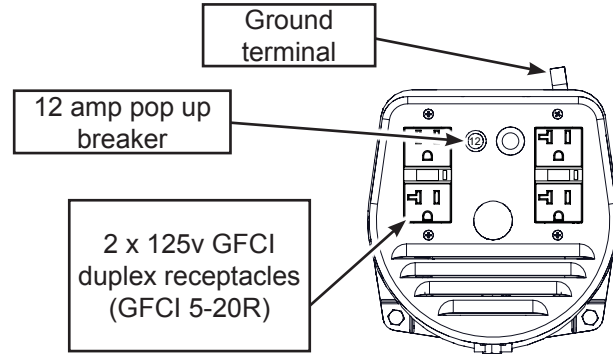


WCC2500



JOBSITE RATED SERIES
SÉRIE POUR CHANTIERS

Two duplex GFCI outlets provide 120v, protected by one 12 amp pop up breaker.

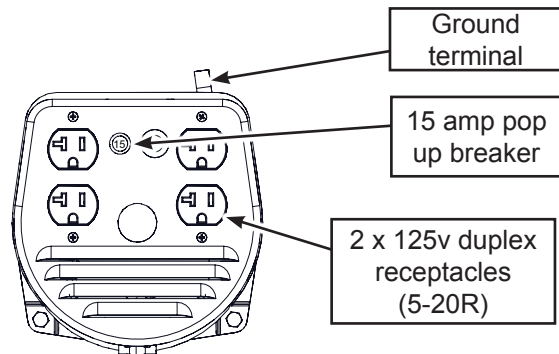


WHC3000



BACKUP POWER SERIES
SÉRIE POUR ALIMENTATION D'URGENCE

Two duplex receptacles provide 120v, protected by one 15 amp pop up breaker.

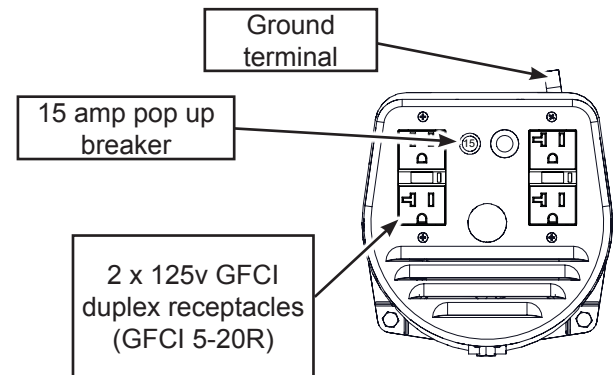


WCC3000



JOBSITE RATED SERIES
SÉRIE POUR CHANTIERS

Two duplex GFCI outlets provide 120v, protected by one 15 amp pop up breaker.



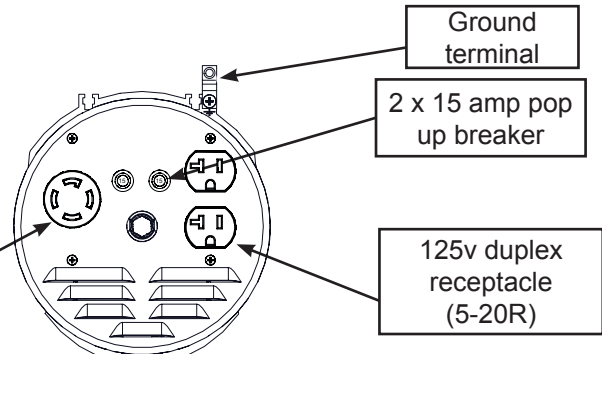
WHC5000



BACKUP POWER SERIES

One four prong twist lock outlet is used to provide 120/240v power, protected by a 15 amp pop up breaker. One duplex outlet for 120v, protected by a 15 amp pop up breaker.

125/250v
L14-30R
receptacle



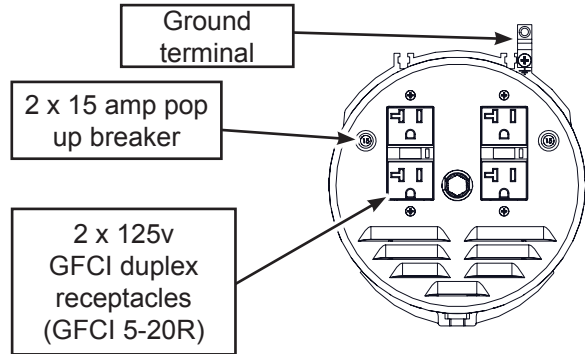
WCC5000



JOBSITE RATED SERIES

SÉRIE POUR CHANTIERS

Two GFCI duplex receptacles for 120v power, each protected by a 15 amp pop up breaker.



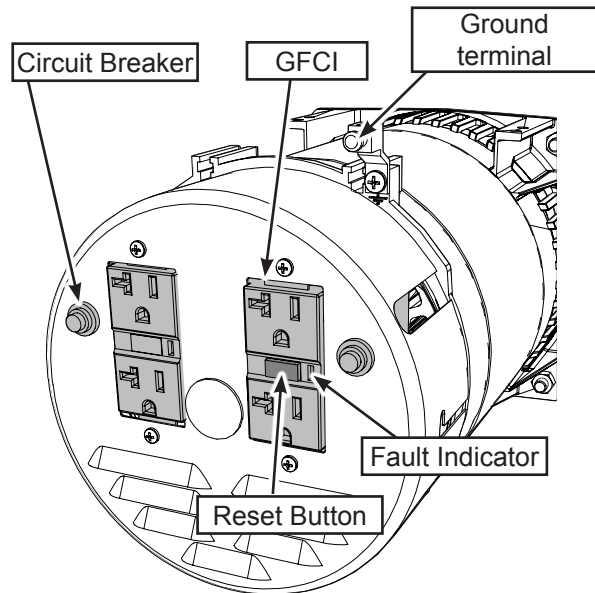
CIRCUIT BREAKERS:

Outlets on the electrical panel are protected with circuit breakers to prevent overloading the circuit. If a breaker trips, reduce the load before re-setting the breaker.

- If a breaker trips,:
 - the breaker reset pops out
 - switch off or disconnect the load, determine the source of the over load and correct,
 - allow the breaker to cool,
 - depress the breaker button to reset,
 - turn on or reconnect the load

GROUND TERMINAL:

The generator ground terminal is connected to the ground terminals of each receptacle and the frame of the generator. Before using the ground terminal, consult a qualified electrician or electrical inspector for any local codes that apply to the intended use of the generator. Ground and neutral are bonded to the frame.



IMPORTANT

A circuit breaker that trips repeatedly indicates a problem.

GFCI OUTLETS:

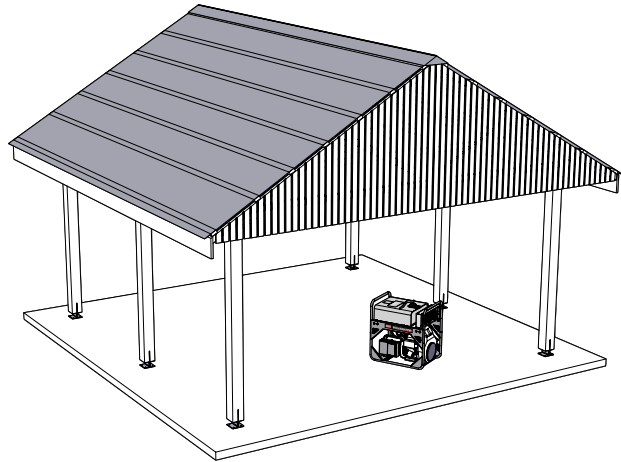
GFCI outlets main purpose is to protect people from electric shock. GFCI equipped outlets monitor the amount of current flowing from hot to neutral. If there is any imbalance, it trips the circuit. It is able to detect an imbalance as small as 4 or 5 milliamps, and it can react almost instantly to trip the circuit.

If the GFCI trips:

- reset button pops out, indicator lights up.
- switch off or disconnect the load,
- determine the source of the imbalance and correct,
- depress the extended GFCI button to reset,
- turn on or reconnect the load.

OPERATING HINTS:

- Position frame on a level area to minimize the chance of spilling fuel and maximize the fuel capacity of the tank. Spilled fuel can be ignited by a spark from the electrical power system.
- Do not refuel while the engine is running. Wait until the unit has cooled before refuelling.
- Keep the working area neat and clean to prevent slipping and tripping. Prevent accidents at the work site.
- Always keep the generator and connections dry, do not let water pool around the generator or connections to prevent potential electrocution hazard.
- Position the generator under cover to protect it from rain or bad weather.
- Do not operate when the ambient temperature exceeds 100°F (40°C) to prevent overheating.
- Do not cover the unit during operation to prevent overheating.



Generator in optimum working conditions



DANGER

Carbon Monoxide Hazard:

Never run a generator indoors. A generator's exhaust contains toxic carbon monoxide, which you cannot smell or see. Breathing carbon monoxide can be lethal.



4.6 ELECTRICAL LOAD

4.6.1 WATTAGE AND LOAD

Your Wallenstein generator has two wattage (power) specifications that need to be considered when you are connecting loads: continuous watts and maximum watts.

At the same time there are two different types of loads, resistive and reactive.

REACTIVE LOAD

Generally a tool or appliance that contains an **electric motor** is a reactive load, Reactive loads have two modes of operation: startup and running.

An electric motor **starting watts** (reactive load) could possibly require up to 3 x its **running watts** at start up.

In other words wattage will spike at starting and level off to running (continuous) wattage when it is operating normally. (See wattage chart)

RESISTIVE LOAD

A resistive load is **lighting, hot plate, TV, etc**, Resistive loads generally will not spike and starting wattage is the same as running wattage. (See wattage chart)

CONTINUOUS WATTAGE

Continuous wattage is the wattage range that can be safely generated by the alternator for an extended period.

MAXIMUM WATTAGE

Maximum wattage is the wattage range the generator can produce but for only short periods of time (electric motor starting). Drawing maximum wattage for extended periods will cause the breaker to trip.

4.6.2 CALCULATING LOAD

When calculating load in watts, you will need to determine two wattage values:

- **running wattage + starting wattage:** determine the starting wattage of your reactive loads and add them to the running wattage of your resistive loads.
- **running wattage only:** add up the running wattage of both the resistive and reactive loads.

Load Calculation Example			
Generator Spec: 2000 maximum watt, 1500 continuous watt			
Qty	Load	Starting Watts	Running Watts
1	Refrigerator/Freezer	1200	192
1	Furnace Fan (1/8 hp)	500	300
6	Lighting (40w ea)	240	240
Totals		1940	732

The example totals match the second combination on the chart, and shows that the run status is OK.

Wattage Combination	Status
total starting wattage + total running wattage is within the continuous rating	OK
total starting wattage is over the continuous rating but below maximum, and total running wattage is within continuous rating	OK
total starting wattage is over the continuous & maximum rating, and total running wattage is within continuous rating	Stop
total starting wattage is over the continuous & maximum rating, and total running wattage is over continuous rating	Stop
both the total starting wattage and total running wattage are over the continuous rating but below maximum	Stop

4.6.4 WATTAGE CHART

The chart below contains general wattage information, and is intended to be used as a guide only.

For some electrical, and electronic appliances, you can determine the power needed by looking at the data tag supplied by the manufacturer.

Most products and all electrical motors should have a data tag attached to their bodies that give volts and amps and may contain wattage information.

To determine the wattage, use this formulae:

Amps x Volts = Watts

(See wattage chart)

Household Wattage Approx.	Starting	Running
Coffee Maker	600	600
Dish Washer	540	216
Electric Frying Pan	1500	1500
Electric Range 8" Element	2100	2100
Microwave Oven (650 watts)	1000	1000
Refrigerator/Freezer (Energy Star)	1200	132-192
Automatic Washer	3400	1200
Clothes Dryer (Electric)	6750	5400
Furnace Fan (1/8 hp)	500	300
Furnace Fan (1/6 hp)	750	500
Furnace Fan (1/4 hp)	1000	600
Furnace Fan (1/3 hp)	1400	700
Furnace Fan (1/2 hp)	2350	875
Lighting	add up various wattages	
Radio	50-200	50-200
Sump Pump (1/3 hp)	1300	800
Sump Pump (1/2 hp)	2150	1050
Television: tube / 43" flat screen	300 / 190	300 / 190
Air Conditioner (10000 BTU)	2200	1500
Laptop Computer	200-250	200-250
Desktop Computer	600-800	600-800
Monitor (LCD style)	30	30
Printers		
Ink Jet / Ink Jet Multi Function	20 / 250	20 / 250
Laser	400-850	400-850
DVD Player	350	350
Satellite Receiver	250	250
Fan (portable)	120	40

Industrial Motors Approx.	Starting	Running
Split Phase ¼ hp	1700	400
Split Phase ½ hp	2600	600
Capacitor Start Induction Run ⅓ hp	975	450
Capacitor Start Induction Run 1 hp	2300	1000
Capacitor Start Capacitor Run 1-½ hp	4200	1600
Fan - ¼ hp	1200	650

Contractor Approx.	Starting	Running
Air Compressor (½ hp)	1600	975
Air Compressor (1 hp)	4500	1600
Bench Grinder (8")	2500	1400
Hand Drill (½")	900	600
Pressure Washer (1 hp)	3600	1200
Circular Saw (7 - ¼")	2300	1400
Electric Chain Saw (14", 2hp)	1100	1100
230 Amp AC (at 100 amp)	7800	7800
Table Saw (10 Inches)	4500	1800
Drill (3/8", 4 amps)	600	440
Drill (1/2", 5.4 amps)	900	600

Farm Equipment Approx.	Starting	Running
Electric Fence (25 miles)		250
Milk Cooler	1800	1100
Milker (Vacuum Pump, 2hp)	2300	1000
Portable Heater(Kerosene / Diesel		
50,000 BTU	600	400
90,000 BTU	725	500
150,000 BTU	1000	625
Battery Charger		
15 Amp	380	380
60 Amp w/ 250 Amp Boost	1500/5750	1500/5750
100 Amp w/ 300 Amp Boost	2400/7800	2400/7800
Electric Welder (200 Amp AC)	9000	9000

5 FIELD OPERATION



OPERATING SAFETY

- Read and understand operator's manual before starting. Review safety instructions annually.
- Stop and disable engine, remove ignition key and place in your pocket and wait for all moving parts to stop before servicing, adjusting or repairing.
- To prevent electrical shocks, do not operate this generator in the rain or with wet hands. Generator should be kept dry and not operated on wet or damp surfaces.
- Close and secure all guards, deflectors and shields before starting and operating.
- Do not connect the generator to a commercial power line.
- Do not operate with damaged or defective extension cords, or power cords. Protect the cord from getting pinched or crushed if it passes through a window or doorway.
- Use properly rated, grounded 3-prong extension cords, tools, and appliances.
- Do not operate this generator indoors, or in areas with poor ventilation. The exhaust fumes contain carbon monoxide, a poisonous, odourless, invisible gas. Prolonged exposure can lead to unconsciousness and death.
- Do not refuel the engine while it is in operation or still hot. Do not refuel the engine near open flames, pilot lights or sparking electrical devices (e.g. power tools, welders or grinders).
- To prevent a possible fire, keep the generator at least 1 meter (3 feet) away from building walls and other equipment during operation.
- Do not place flammable objects close to the engine.
- The engine should be refuelled in a well-lit, adequately vented area. Avoid fuel spillage.
- Never allow children or unauthorized people to operate or be around this machine.
- Keep the working area clean and free of debris to prevent tripping. Operate only on level ground.
- Do not cover the generator while in operation. Overheating can result in damaged equipment.
- For storage, do not cover the generator until it has cooled down completely.
- The ambient temperature should not exceed 100° F/40° C.

The operator has the responsibility of being familiar with all operating and safety procedures and following them.

Although the Portable Generator is easy to use, each operator should review this section to familiarize himself with the detailed safety and operating procedures. When using this machine, follow this procedure:

5.1 PREPARE

- Clear the area of bystanders, especially small children.
- Each operator must be trained and familiar with the set up and operation of the generator and its components.
- Review the machine components. (see Section 4.2)
- Review and follow the PreOperation Checklist. (see Section 4.4).
- Review operation and function of the controls. (see section 4.5)
- Survey the work site, move to a clear, level work area and position at the work site. Do not start the generator until it is in position.
- Review loads section. (see section 4.6).

Ensure all operators understand how to put the machine in safe condition before working with this machine,

- Flip main switch "off" or disconnect all loads
- Shut off the engine.
- Ensure all components have stopped moving.

5.2 START

5.2.1 STARTING THE GENERATOR:

- Ensure the main power switch / breaker is in the "off" position or turn all the appliances or electrical loads off.
- Plug in power cords from appliances or loads.
- Ensure the cooling vents around the alternator are free and not blocked
- Turn on the ignition switch, pull sharply on the starting rope T bar to start the engine. (Refer to engine manual for detailed engine starting procedure.)
- Run the engine for a few moments until it warms up.
- Flip the main switch / breaker to "on", or switch appliances or electrical loads on.

5.2.2 STOPPING:

- Flip the main power switch / breaker to the "off" position or turn all the appliances or electrical loads off.
- Run the engine for a few moments to allow the engine to cool.
- Switch engine off, unplug all appliances or loads.

5.2.3 EMERGENCY STOPPING:

- Immediately flip off the main breaker
- Turn the engine off.
- Correct the emergency condition before resuming work and re-starting the engine.

5.2.4 TERRAIN:

The generator works well in a wide variety of operating conditions but it should always be positioned on a level surface. When the frame is level, fuel spillage is minimized and the gas tank capacity is maximized. Do not operate unless the frame is level.

5.2.5 WEATHER:

- Do not operate in the rain, in damp wet conditions or with wet hands. Keep the generator and work area dry to prevent shocks and shorts. Use properly rated, grounded 3-prong extension cords, tools, and appliances.
- Do not operate at temperatures above 100° F (40° C) to prevent overheating of the engine or generator. Always run for a few minutes without an electrical load to help cool the components before shutdown.

5.2.6 ELECTRICAL LOADS:

The generator is ideally suited to camping, farm, household, workshop, construction site or anywhere that back-up power is required. In order to determine the power requirements of your appliance, refer to section 4.6.

If the power draw for the appliance exceeds the outlet capacity, **the circuit breaker will be tripped**. Reduce the current draw and reset the breaker before resuming operation.

5.2.7 COMPONENT CONDITION:

Always use electrical components that are in good condition. Do not use electrical cords, plugs and connectors that are frayed, damaged, cracked or not in good condition. Electrical components that are not in good condition can lead to shocks, shorts or sparking. Any of these conditions can create and lead to an undesirable or unsafe situation.

5.2.8 ELECTRICAL HAZARDS:

The generator is designed to generate an electrical current at a high enough power level to get meaningful work done. However, power at these levels also includes the possibility of electrical hazards. Some things to remember about electrical hazards include but are not limited to:

- Keep all electrical components in good condition.
- Do not operate with frayed, cracked or damaged parts.
- Do not operate if operating in damp or wet conditions.
- Do not operate with wet hands.

5.2.9 ELECTRICAL CORDS

Power cords are rated by AWG number. The lower the AWG number, the thicker the wire (gauge). The thicker the wire the more wattage can travel through it.

Using underrated power cords to supply power to electrical devices may cause over current draw, trip a breaker and potentially damage your device.

Depending on the amp draw or wattage of your appliance, the gauge of the wire in your extension cords becomes a factor in the length of the cord you can use.

Because a wire can cause resistance to the power flow, the thinner the wire, the more the resistance. Similarly, the longer the wire, the more the resistance.

Resistance due to the cord thickness or length

keeps the device from getting the power it needs. You may have to increase the thickness of the wire (lower number AWG), or shorten the cord.

5.3 RESIDENTIAL

The most economical way to supply power during a power outage is to use a portable generator and run extension cords into the house to power chosen appliances.

Never connect a generator to a house electrical system without an appropriate transfer switch. Known as "backfeeding" it is illegal, extremely dangerous and potentially lethal.

A safer option is to use your generator in a standby configuration. This requires an electrician to install a generator sub panel, connected to the house's main electrical panel. Prepare the generator, run a single extension cord into the sub panel, flip the switch and power the circuits you need.

This eliminates the risk of electrical "back feed", potentially injuring or killing utility workers repairing downed power lines.

For standby installation: please note that Wallenstein generators have a "**neutral bonded to frame**" feature, and requires connection by a certified electrician when connecting the generator to a house electrical system.

A portable electric generator can provide power for fridges, freezers, sump pump, furnace fan small kitchen appliances, power tools, lights and other comforts of civilization when you are experiencing a power outage.

When not required for home, portable generators can be used to power recreational vehicles, or put to work on construction sites that have no electrical service, providing clean, reliable power to operate saws, drills, air compressors, heaters, paint sprayers and other AC-powered tools.

5.4 MOVING

5.4.1 TRANSPORTING:

When transporting from location to location, keep the following points in mind:

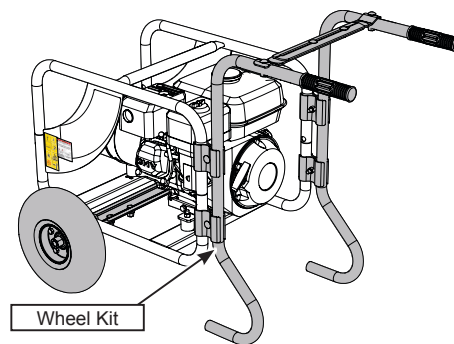
- If the generator has been running, allow the engine to cool for at least 15 minutes before loading the generator on the transport vehicle. A hot engine and exhaust system can burn you and can ignite some materials.
- Keep the generator level when transporting to reduce the possibility of fuel leakage. Move the fuel valve lever to the OFF position.
- Do not lay the generator on its side when moving,

storing, or during operation. A hazardous condition may be created by oil or fuel leaking.

- Transport when the fuel tank is empty or nearly empty. Turn the fuel line off.
- When using ropes or tie-down straps to secure the generator for transportation, be sure to only use the frame bars as attachment points. Do not fasten ropes or straps to any portions of the engine or alternator.

5.4.2 WHEEL KIT:

A wheel kit is available to make movement around the work area easier. Kit consist of handles and axle with tires The kit is easy to install and simply clamps on to the existing frame. Available with 10" tires (WK210) or 14" tires (WK214).



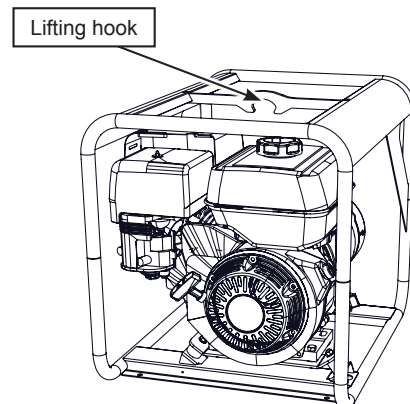
5.4.3 LIFTING HOOK:



Some Wallenstein compact generators feature a "sky hook" lifting hook location for lifting with a crane. Lifting locations are indicated by lift hook labels and are located at the centre of balance for the generator.

Lifting at this point is the safest way to lift the generator. Have an extra person with a guide rope attached to the generator to prevent swaying.

Generators without sky hook location are not designed to be lifted by crane.



5.5 STORAGE



STORAGE SAFETY

- Store the unit in an area away from human activity, or children playing
- Do not store near any tool, machine, appliance that produces flame or sparks.
- Store the unit in a level area.

5.5.1 PLACING IN STORAGE

After use or when the machine will not be used for a period of time, completely inspect all major systems of the Portable Generator. Replace or repair any worn or damaged components to prevent any unnecessary down time at next use. PLEASE REFER TO THE ENGINE OWNERS MANUAL TO PREPARE THE ENGINE FOR STORAGE

Follow this procedure before storing:

1. Remove all plugs or electrical loads from the electrical panel.
2. Thoroughly clean the machine with a damp cloth to remove all dirt, mud or debris. Ensure all the vents on the alternator are clean and clear.
3. Touch up all paint nicks and scratches to prevent rusting.
4. Turn fuel valve off.
5. If the generator is to be stored for longer periods, (over 6 months) follow the engine manufacturers recommendations for storage preparation
6. Store the machine inside in cool dry area. Avoid storage areas with high humidity, because that promotes rust and corrosion.
7. Use a canvas tarp or similar material to keep it covered and free of dust. Avoid plastic or nonporous cover that will trap moisture and promote corrosion.
8. If stored outside (not recommended), keep it sheltered, store it on wooden blocks or a wooden pallet, cover with a waterproof tarpaulin and tie down securely.
9. Store in an area away from human activity.
10. Do not allow children to play around the stored unit.

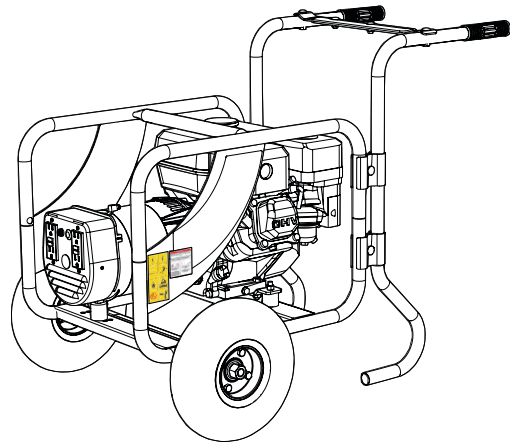
5.5.2 REMOVING FROM STORAGE

When removing this machine from storage, follow this procedure:

1. Remove the tarpaulin if covered.
2. Review and follow the pre-operation checklist.
3. Check engine operators manual for engine startup after storage.

IMPORTANT

If the machine has been stored for more than 12 months with fuel, to prevent hard starting, drain the fuel tank and replace with fresh fuel.



**Cleaned , prepared & ready for storage
(Typical)**

6 SERVICE AND MAINTENANCE



MAINTENANCE SAFETY

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Read the instructions before you begin, and make sure you have the tools and skills required. Do not smoke or have sources of ignition nearby while performing maintenance.
- Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
- Make sure there is plenty of ventilation. Never operate the engine in a closed building. The exhaust fumes may cause asphyxiation.
- Before working on this machine, shut off the engine, disconnect all loads, and turn fuel valve off.
- Never work under equipment unless it is blocked securely.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
- Periodically tighten all bolts, nuts and screws and check that all electrical and fuel connections are properly secured to ensure unit is in a safe condition.
- When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.
- Caution: Burns from hot parts. Let the engine, alternator and exhaust system cool before touching.
- Use only a non-flammable solvent, not gasoline, to clean parts.

6.1 SERVICE

6.1.1 FLUIDS AND LUBRICANTS

1. **Engine Oil:**
See engine owners manual for full detail on oil type specific to operating conditions and capacity.
2. **Engine Fuel:**
See engine owners manual for full detail on fuel types and limitations.

Fuel Tank Capacity:

WHC2500 & WCC2500	1.8 L (1.9 US qt)
WHC3000 & WCC3000	3.1 L (3.3 US qt)
WHC5000 & WCC5000	6.0 L (1.6 US gal)

3. **Storing Lubricants:**
Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

6.2 MAINTENANCE

By following a careful service and maintenance program for your machine, you will enjoy many years of trouble free operation.

Ensure all operators understand how to put the machine in safe condition before working with this machine,

- Flip main switch "off" or disconnect all loads
- Shut off the engine.
- Ensure all components have stopped moving.



WARNING

Use caution when performing maintenance.
Only you can decide whether or not you should perform a given task.

Good maintenance is essential for safe, economical, and trouble free operation. It will also help reduce air pollution.

To properly care for your generator, it is recommended to perform maintenance procedures on a regular basis. Other service tasks that are more difficult or require special tools are best handled by professionals and are normally performed by your small engine technician or other qualified mechanic.

If you operate your generator under unusual conditions, such as sustained high-load or high-temperature operation, or use it in dusty conditions, consult your service technician for recommendations applicable to your individual needs and use.

Improper maintenance, or failure to correct a problem before operation, can cause a malfunction which may void your warranty. Always follow the inspection and maintenance recommendations.

Remember that your service technician knows your generator best and is fully equipped to maintain and repair it. To ensure the best quality and reliability, use only new, genuine parts for repair and replacement.

Genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.

6.2.1 GENERAL MAINTENANCE

On a regular basis check all nuts, bolts and screws and ensure they are all properly secured. Ensure the machine is clean free of oil and fuel spills. Inspect fuel line connections between the engine and fuel tank.

NEVER attempt to adjust or modify the factory settings of the engine or engine governor. Engine speed controls frequency portion of the electrical output (60Hz) Personal injury or damage to the engine or equipment can result if operating in speed ranges above the maximum or below the minimum allowable. Only qualified technicians with the proper equipment should to make adjustments to the engine settings.

6.2.2 ENGINE MAINTENANCE

Review the engine owners manual periodic maintenance section. Follow the recommendations for service and maintenance as outlined in your engine owners manual. Always follow the safety procedures and precautions in the owner's manual.

6.2.3 ALTERNATOR MAINTENANCE

Review the alternator owners manual maintenance section. Follow the recommendations for service and maintenance as outlined in your alternators owners manual. Always follow the safety procedures and precautions in the owner's manual.

7 SPECIFICATIONS

7.1 MECHANICAL



BACKUP POWER SERIES
SÉRIE POUR ALIMENTATION D'URGENCE



JOBSITE RATED SERIES
SÉRIE POUR CHANTIERS

Compact Generators	Backup Power Series			Jobsite Rated Series		
	WHC2500	WHC3000	WHC5000	WCC2500	WCC3000	WCC5000
Decibel Rating @7 meters (22ft)	68dBA		70.5dBA	68dBA		70.5dBA
Maximum watts	2400	2500	5000	2400	2500	5000
Continuous watts	2000	2100	4250	2000	2100	4250
Continuous amps (120-V)	16.5	18.75	35.5	16.5	18.75	35.5
Continuous amps (240-V)	--	--	17.75	--	--	--
Voltage 1	120			120		
Voltage 2	--	--	240	--	--	--
Frequency	60 Hz					
Engine	Honda GC160 160 CC	Honda GX160 163 CC	Honda GX270 270 CC	Honda GC160 160 CC	Honda GX160 163 CC	Honda GX270 270 CC
Fuel	Gasoline					
Full tank capacity	1.8 L 1.9 US qt	3.1 L 3.3 US qt	6.0 L 1.6 US gal	1.8 L 31.9 US qt	3.1 L 3.3 US qt	6.0 L 1.6 US gal
Estimated Run time (hours) Half load	1.8	3	4		3	4
Full load	1.5	2.5	3		2.5	3
Weight lbs	71	80	118	71	80	118
kg	32	36	54	32	36	54
Dimensions length / width / height	Inch 22 x 16 x 16	Inch 22 x 16 x 16	Inch 25.5 x 20 x 21.5	Inch 22 x 16 x 16	Inch 22 x 16 x 16	Inch 25.5 x 20 x 21.5
cm	55.8 x 40.6 x 40.6	55.8 x 40.6 x 40.5	64.7 x 50.8 x 54.6	55.8 x 40.6 x 40.6	55.8 x 40.6 x 40.5	64.7 x 50.8 x 54.6
Starting System	Pull start					
Receptacles	2 x Duplex 5-20R		1 x L14-30 1 x Duplex 5-20R	2 x GFCI Duplex 5-20R		
Options	WK210 10" Wheel Kit WK214 14" Wheel Kit G20211 • 10' Power Cord • one male, one female • L14-30 30A Twistlock G20212 • 20' Power Cord • one male, one female • L14-30 30A Twistlock G20213 • 25' Power Cord • one male, one female • L14-30 30A Twistlock					
Details:	Honda Engines: Oil Alert WCC5000 & WHC5000 feature lift / security hook. All generators incorporate "neutral bonding to generator frame" safety feature. CSA Certified EPA Certified					

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

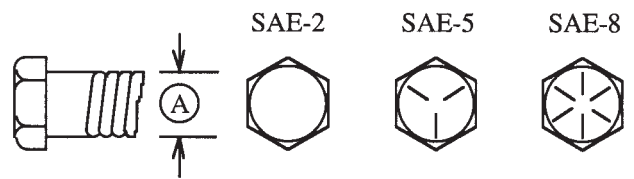
7.2 BOLT TORQUE

CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

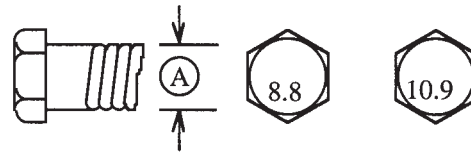
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*					
	SAE 2 (N.m) (lb-ft)		SAE 5 (N.m) (lb-ft)		SAE 8 (N.m) (lb-ft)	
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290	540	400
7/8"	230	170	570	420	880	650
1"	345	225	850	630	1320	970



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*			
	8.8 (N.m) (lb-ft)		10.9 (N.m) (lb-ft)	
M3	.5	.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710


















Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

* Torque value for bolts and capscrews are identified by their head markings.

8 TROUBLE SHOOTING

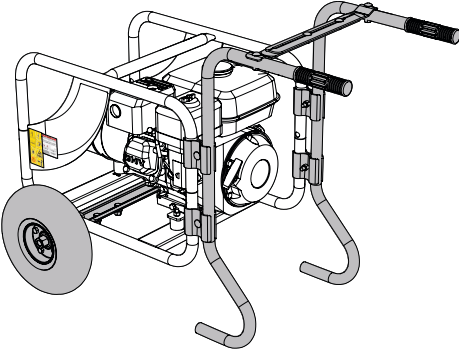
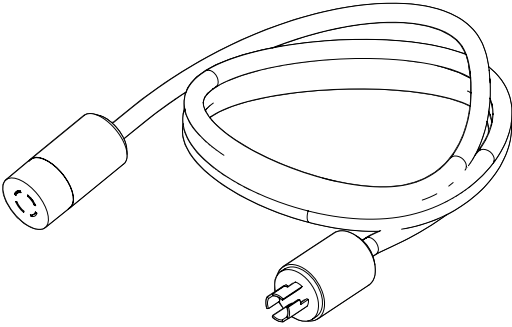
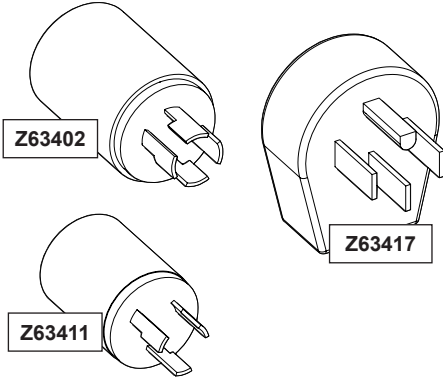
Wallenstein generators are designed with high quality engines combined with tested and tough 120 / 240v alternators to produce a system that very reliable and robust.

In the following page, we have listed many of the causes and solutions to the problems that you may encounter. If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local distributor or dealer. Before you call, please have this Operator's Manual and serial number ready.

PROBLEM	CAUSE	SOLUTION	CAUTION	
Engine will not start	Fuel valve OFF	Turn lever ON		
	Choke on	Ensure choke is open		
	Out of fuel	Refuel		Ensure machine is off
	Bad fuel (generator stored without treating or draining fuel)	Drain fuel tank , refuel with fresh fuel		Ensure machine is off
	Low oil level caused Oil Alert to stop engine	Add oil, turn engine switch to OFF and then restart the engine		Ensure machine is off
	Fuel filter restricted	Replace filter		Ensure machine is off
	Load connected	Flip off main switch, or unplug load		
	Ignition malfunction, valves stuck, etc	Take the generator to an authorized servicing dealer for repair		Ensure machine is off / Call technician
Breakers tripping	Electrical load too high	Reduce electrical load		Ensure machine is off
	Load or cord defective	Check appliance, tool, any load connected to generator for damage, shorting		Ensure machine is off
	Incorrect residential connection	Call electrician		Ensure machine is off
	GFCI	Some induction motors will cause GFCI to trip, switch to non GFCI receptacle		
	Electrical cords damaged	Check cord and connections for damage, replace		Ensure machine is off
Erratic or No Power 120 / 240 v	Breaker tripped	Reset breaker / GFCI, correct reason for breaker trip, replace if defective		Ensure machine is off
	Alternator problem	Check connections / receptacles at control panel, inspect alternator		Ensure machine is off / Call technician
	Electrical cords damaged / cut	Check cord and connections for damage, replace		Ensure machine is off
	Defective capacitor	Have capacitor tested and replaced		Ensure machine is off / Call technician
	Broken / worn receptacle	Check receptacle / GFCI for function, damage, or bad connections, replace		Ensure machine is off
	Engine RPM too low	Have engine tuned / maintenance (3600 RPM - 60HZ)		Ensure machine is off / Call technician

9 ACCESSORIES

Call your dealer for pricing and availability

 <p>#WK210</p>	<p>#WK210 TWO WHEEL KIT WITH 10" TIRES #WK214 TWO WHEEL KIT WITH 14" TIRES</p> <p>For all models: A must have add on kit for true portability!</p>
 <p>#G20211</p>	<p>Generator Extension cord, the right length and size, to make the most of your generator.</p> <ul style="list-style-type: none"> • Heavy Duty SJTW Cable • -40° cold weather jacket • Nema L14-30P 30a 125/250v Plug • Nema L14-30R 30a 125/250v Connector • Water & Flame Resistant • UL, OSHA compliant <p>Availalbe in three sizes.</p> <p>G20211 • 10' Power Cord G20212 • 20' Power Cord G20213 • 25' Power Cord</p>
 <p>Z63402</p> <p>Z63411</p> <p>Z63417</p>	<p>Replacement Plugs.</p> <p>Z63417 • 125/250V</p> <ul style="list-style-type: none"> • Universal Style 3 pole 4 wire • Configure for 14-30P (30A)or 14-50P (50A) • 4 Prong <p>Z63402 • 125/250V</p> <ul style="list-style-type: none"> • 30A Twistlock 3 pole 4 wire • L14-30P • 4 Prong <p>Z63411 • 125V</p> <ul style="list-style-type: none"> • 30A Twistlock 2 pole 3 wire • L5-30P • 3 Prong

10 INDEX

Symbols

5-20R24

A

ACCESSORIES37

AFTER OPERATING FOR 1 HOUR21

AFTER OPERATING FOR 8 HOURS21

AIR DISCHARGE21

AIR INTAKE21

B

BACKFEEDING 13, 30

C

CAUTION7

CHOKE22

CONTINUOUS WATTAGE26

D

DANGER7

E

ELECTRICAL COMPONENT CONDITION29

ELECTRICAL HAZARD29

ELECTRICAL LOADS29

EMERGENCY29

EMERGENCY STOPPING29

ENGINE GOVERNOR14

ENGINE OIL32

F

FAULT INDICATOR 24, 30

FIRST USE 1

FUEL32

FUEL SHUT-OFF VALVE22

FUEL TANK CAPACITY32

G

G2021137

G2021237

G2021337

GFCI24

GFCI 5-20R 23, 24

H

HAZARDS29

I

IGNITION SWITCH22

IMPROPER MAINTENANCE33

INSPECTION4

L

LABEL INFORMATION5

LOAD CALCULATION EXAMPLE26

LUBRICANTS32

M

MAXIMUM WATTAGE26

N

NEUTRAL BONDED TO FRAME 6, 30

NOISE 11

O

OIL32

OIL ALERT22

OPERATING HINTS25

ORIENTATION6

P

POP UP BREAKER23

R

REACTIVE LOAD26

RESISTIVE LOAD26

RESPONSIBLE8

RUNNING (CONTINUOUS) WATTAGE26

S

SAFE CONDITION9, 10, 12, 19, 28, 33

SERIAL5

SERIAL NUMBER5

SIGNAL WORDS7

SPECIFICATIONS34

STARTING29

STARTING ROPE22

STARTING WATTS26

STOPPING29

T

TERRAIN29

THROTTLE22

TRANSPORTING30

W

WARNING7

WATTAGE CHART27

WATTAGE INFORMATION27

WEATHER29

WHEEL KIT30

WK210 30, 37

WK21330

WK214 30, 37

Z

Z6340237

Z6341137

Z6341737

