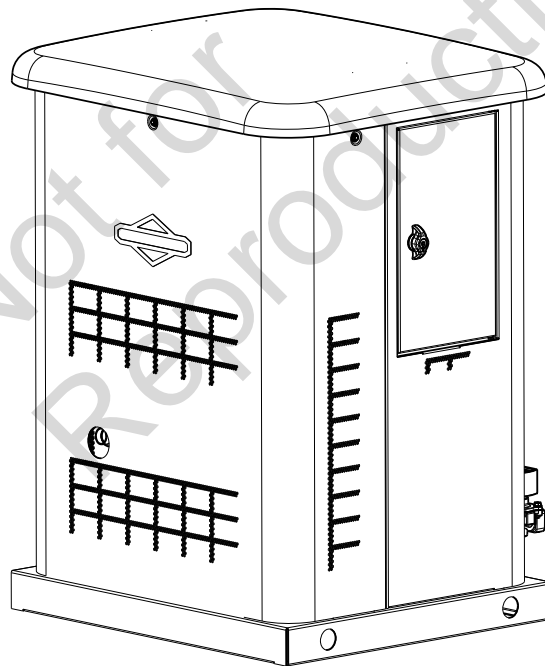




# Installation and Operation Manual

10kW

Single Phase Air-Cooled  
Standby Generator System



This generator is rated in accordance with UL (Underwriters Laboratories) 2200 (stationary engine generator assemblies) and CSA (Canadian Standards Association) standard C22.2 No. 100-4 (motors and generators).

**Thank you** for purchasing this quality-built Briggs & Stratton® home generator. We are pleased that you've placed your confidence in the Briggs & Stratton brand. When operated and maintained according to the instructions in the operator's manual, your home generator will provide many years of dependable service.

**This manual contains** safety information to make you aware of the hazards and risks associated with residential generator systems and how to avoid them. This generator system is designed and intended only for use as an optional home standby system that provides an alternate source of electric power and to serve loads such as heating, refrigeration systems, and communication systems that, when stopped during any power outage, could cause discomfort or inconvenience. **Save these original instructions for future reference.**

**This generator system requires professional installation before use.** The installer should follow the instructions completely.

### Where to Find Us

You never have to look far to find support and service for your generator. Consult your Yellow Pages. There are many Briggs & Stratton authorized service dealers worldwide who provide quality service. You can also contact Briggs & Stratton Customer Service by phone at **800-732-2989** between 8:00 AM and 5:00 PM CT., or click on Find a Dealer at BRIGGSandSTRATTON.COM, which provides a list of authorized dealers.

### For Future Reference

Please fill out the information below and keep with your receipt to assist in unit identification for future purchase issues.

<b>DATE OF PURCHASE</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>GENERATOR</b>							
<b>Model Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Model Revision</b>	<input type="text"/>	<input type="text"/>					
<b>Serial Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>ENGINE</b>							
<b>Model Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Serial Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**⚠ WARNING** This product can expose you to chemicals including used engine oil, which is known to the State of California to cause cancer, and carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

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Not for  
Reproduction

# Safety Rules

## Important Safety Instructions

**SAVE THESE INSTRUCTIONS** - This manual contains important instructions that should be followed during installation and maintenance of the generator and batteries.



Explosion



Fire



Electrical Shock



Toxic Fumes



Rotating Parts



Hot Surface



Auto Start



Lift Hazard



Chemical Burn



Read Manual



Wear Eye Protection

## Safety Symbols and Meanings

The safety alert symbol indicates a potential personal injury hazard. A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to designate a degree or level of hazard seriousness. A safety symbol may be used to represent the type of hazard. The signal word NOTICE is used to address practices not related to personal injury.

**DANGER** indicates a hazard which, if not avoided, *will* result in death or serious injury.


**WARNING** indicates a hazard which, if not avoided, *could* result in death or serious injury.

**CAUTION** indicates a hazard which, if not avoided, *could* result in minor or moderate injury.


**NOTICE** addresses practices not related to personal injury.

The manufacturer cannot possibly anticipate every possible circumstance that might involve a hazard. The warnings in this manual, and the tags and decals affixed to the unit are, therefore, not all-inclusive. If you use a procedure, work method or operating technique that the manufacturer does not specifically recommend, you must satisfy yourself that it is safe for you and others. You must also make sure that the procedure, work method or operating technique that you choose does not render the generator system unsafe.


- WARNING** Running engine gives off carbon monoxide, an odorless, colorless, poison gas.
- Breathing carbon monoxide could result in death, serious injury, headache, fatigue, dizziness, vomiting, confusion, seizures, nausea or fainting.
- Operate this product **ONLY** outdoors in an area that will not accumulate deadly exhaust gas.
  - Keep exhaust gas away from any windows, doors, ventilation intakes, soffit vents, crawl spaces, open garage doors or other openings that can allow exhaust gas to enter inside or be drawn into a potentially occupied building or structure.
  - Carbon monoxide detector(s) **MUST** be installed and maintained indoors according to the manufacturer's instructions/ recommendations. Smoke alarms cannot detect carbon monoxide gas.

 **WARNING** Storage batteries give off explosive hydrogen gas during recharging. Slightest spark will ignite hydrogen and cause explosion, resulting in death or serious injury. Battery electrolyte fluid contains acid and is extremely caustic. Contact with battery contents could cause severe chemical burns. A battery's high short circuit current could result in serious injury.


- DO NOT dispose of battery in a fire. Recycle battery.
- DO NOT allow any open flame, spark, heat, or lit cigarette during and for several minutes after charging a battery.
- DO NOT open or mutilate the battery.
- Wear protective goggles, rubber apron, rubber boots and rubber gloves.
- Remove watches, rings, or other metal objects.
- Use tools having insulated handles.

 **WARNING** Propane and Natural Gas are extremely flammable and explosive, which could cause burns, fire or explosion resulting in death or serious injury.

- Install the fuel supply system according to NFPA 37 and other applicable fuel-gas codes.
- Before placing the generator into service, the fuel system lines must be properly purged and leak tested.
- After the generator is installed, you should inspect the fuel system periodically.
- NO leakage is permitted.
- DO NOT operate engine if smell of fuel is present or other explosive conditions exist.
- DO NOT smoke around the generator. Wipe up any oil spills immediately. Ensure that no combustible materials are left in the generator compartment. Keep the area near the generator clean and free of debris.

 **WARNING** Generator produces hazardous voltage. Failure to properly ground generator could result in electrocution. Failure to isolate generator from utility power could result in death or serious injury to electric utility workers due to backfeed of electrical energy.

- When using generator for backup power, notify utility company.
- DO NOT touch bare wires or bare receptacles.
- DO NOT use generator with electrical cords which are worn, frayed, bare or otherwise damaged.
- DO NOT handle generator or electrical cords while standing in water, while barefoot, or while hands or feet are wet.
- If you must work around a unit while it is operating, stand on an insulated dry surface to reduce the risk of a shock hazard.
- DO NOT allow unqualified persons or children to operate or service generator.
- In case of an accident caused by electrical shock, immediately shut down the source of electrical power and contact the local authorities. **Avoid direct contact with the victim.**
- Despite the safe design of the residential generator, operating this equipment imprudently, neglecting its maintenance or being careless could cause possible injury or death.
- Remain alert at all times while working on this equipment. Never work on the equipment when you are physically or mentally fatigued.
- Before performing any maintenance on the generator, disconnect the battery cable indicated by a **NEGATIVE, NEG** or (-) first. When finished, reconnect that cable last.
- After your system is installed, the generator may crank and start without warning any time there is a power failure. To prevent possible injury, always set the generator's system switch to **OFF**, remove the service disconnect from the disconnect box AND remove the 15 Amp fuse BEFORE working on the equipment.


 **WARNING** Unintentional sparking could cause fire or electric shock resulting in death or serious injury.

#### **WHEN ADJUSTING OR MAKING REPAIRS TO YOUR GENERATOR**


- Disconnect the spark plug wire from the spark plug and place the wire where it cannot contact spark plug.

#### **WHEN TESTING FOR ENGINE SPARK**


- Use approved spark plug tester.
- DO NOT check for spark with spark plug removed.

 **WARNING** Exhaust heat/gases could ignite combustibles or structures resulting in death or serious injury. Contact with muffler area could cause burns resulting in serious injury.


- DO NOT touch hot parts and AVOID hot exhaust gases.
- Allow equipment to cool before touching.
- Exhaust outlet side of weatherproof enclosure must have at least 5 ft (1.5 m) minimum clearance from any structure, shrubs, trees or any kind of vegetation.
- Standby generator weatherproof enclosure must be at least 5 ft from windows, doors, any wall opening, shrubs or vegetation over 12 inches (30.48 cm) in height.
- Standby generator weatherproof enclosure must have a minimum of 5 ft (1.5 m) overhead clearance from any structure, overhang or trees.
- DO NOT place weatherproof enclosure under a deck or other type of structure that may confine airflow.
- USE ONLY flexible steel fuel line provided. Connect provided fuel line to generator, DO NOT use with or substitute any other flexible fuel line.
- Smoke detector(s) MUST be installed and maintained indoors according to the manufacturer's instructions/ recommendations. Carbon monoxide alarms cannot detect smoke.
- Keep at least minimum distances shown in *Generator Placement* to insure for proper generator cooling and maintenance clearances.
- It is a violation of California Public Resource Code, Section 4442, to use or operate the engine on any forest-covered, brush-covered, or grass-covered land unless the exhaust system is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order. Other states or federal jurisdictions may have similar laws. Contact the original equipment manufacturer, retailer, or dealer to obtain a spark arrester designed for the exhaust system installed on this engine.
- Replacement parts must be the same and installed in the same position as the original parts.

 **WARNING** Starter and other rotating parts could entangle hands, hair, clothing, or accessories resulting in serious injury.

- NEVER operate generator without protective housings, covers, or guards in place.
- DO NOT wear loose clothing, jewelry or anything that could be caught in the starter or other rotating parts.
- Tie up long hair and remove jewelry.
- Before servicing, remove 15 Amp fuse from control panel and disconnect **Negative (NEG or -)** battery cable.

 **CAUTION** Installing the 15 Amp fuse could cause the engine to start at any time without warning resulting in minor or moderate injury.

- Observe that the 15 Amp fuse has been removed from the control panel for shipping.
- DO NOT install this fuse until all plumbing and wiring has been completed and inspected.

 **CAUTION** Excessively high operating speeds could result in minor injury.

Excessively low speeds impose a heavy load on generator.

- DO NOT tamper with governed speed. Generator supplies correct rated frequency and voltage when running at governed speed.
- DO NOT modify generator in any way.

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

- Use generator only for intended uses.
- If you have questions about intended use, contact your authorized dealer.
- Operate generator only on level surfaces.
- Adequate, unobstructed flow of cooling and ventilating air is critical for correct generator operation.
- The access panels/door must be installed whenever the unit is running.
- DO NOT expose generator to excessive moisture, dust, dirt, or corrosive vapors.
- Remain alert at all times while working on this equipment. Never work on the equipment when you are physically or mentally fatigued.
- DO NOT start engine with air cleaner or air cleaner cover removed.
- DO NOT insert any objects through cooling slots.
- DO NOT use the generator or any of its parts as a step. Stepping on the unit could cause stress and break parts. This may result in dangerous operating conditions from leaking exhaust gases, fuel leakage, oil leakage, etc.
- If connected devices overheat, turn them off and disconnect them from generator.
- Shut off generator if:
  - electrical output is lost;
  - equipment sparks, smokes, or emits flames;
  - unit vibrates excessively.
  - unit makes unusual noises.

# Installation

This product is only for use as an optional generator system which provides an alternate source of electric power and to serve loads such as heating, refrigeration systems, and communication systems that, when stopped during any power outage, could cause discomfort or inconvenience.

**NOTICE** This product does NOT qualify for either an emergency standby or legally required standby system as defined by NFPA 70 (NEC).

- Emergency generator systems are intended to automatically supply illumination, power, or both, to designated areas and equipment in the event of failure of the normal supply. Emergency systems may also provide power for such functions as ventilation where essential to maintain life, where current interruption of the normal supply would produce serious life safety or health hazards.
- Legally Required standby generator systems are intended to automatically supply power to selected loads in the event of failure of the normal source which could create hazards or hamper rescue or fire-fighting operations.

Every effort has been made to ensure that information in this manual is accurate and current. However, we reserve the right to change, alter, or otherwise improve the product and this document at any time without prior notice.

Only current licensed electrical and plumbing professionals should attempt home generator system installations. Installations must strictly comply with all applicable codes, industry standards, laws and regulations.

## Home Owner Responsibilities

- Read and follow the instructions given in the operator's manual.
- Follow a regular schedule in maintaining, caring for and using your home generator, as specified in the operator's manual.
- Carbon monoxide detector(s) MUST be installed and maintained indoors according to the manufacturer's instructions/ recommendations. Smoke alarms cannot detect carbon monoxide gas.
- Smoke detector(s) MUST be installed and maintained indoors according to the manufacturer's instructions/ recommendations. Carbon monoxide alarms cannot detect smoke.

## Installing Dealer/Contractor Responsibilities

- Read and observe the safety rules.
- Install only an UL listed transfer switch that is compatible with the generator.
- Read and follow the instructions given in this installation and start-up manual.
- Installation must strictly comply with all applicable codes, industry standards, laws, and regulations.
- Allow sufficient room on all sides of the generator for maintenance and servicing.



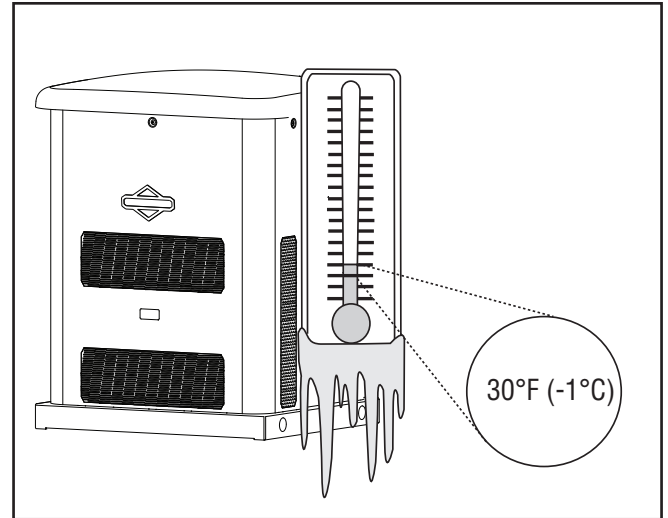
## Cold Weather Kit

If operating the generator below 30°F (-1°C), it is **HIGHLY RECOMMENDED** that a Model 6404 Cold Weather Kit be installed on the 10kW units.

These items are available at your local servicing dealer.

For cold weather areas (below 0°F (-18°C)) it is also recommended that a BCI, Size 24, wet lead-acid battery be used of 800 CCA minimum.

*If you need more information on this matter, please call 800 732-2989, between 8:00 AM and 5:00 PM CT.*



## Unpacking Precautions

Avoid damage from dropping, bumping, collision, etc. Store and unpack carton with the proper side up, as noted on the shipping carton.

## Delivery Inspection

After removing the carton, carefully inspect the generator for any damage that may have occurred during shipment. If loss or damage is noted at time of delivery, have the person(s) making delivery note all damage on the freight bill and affix his signature under the consignor's memo of loss or damage. If loss or damage is noted after delivery, separate the damaged materials and contact the carrier for claim procedures. Parts damaged in shipping are not warranted.

## Shipment Contents

### The home generator system is supplied with:

- Oil (5W30 Full Synthetic)
- Flexible steel fuel line
- Installation/Operation manual
- Product and emissions warranty booklet
- Spare access keys
- Spare 15 Amp ATO-type fuse
- Battery Tie Down Strap
- Tamper proof plug

### Optional Equipment (Sold Separately)

- Wireless Monitor

### Not included:

- Carbon monoxide detector(s)
- Smoke detector(s)
- Starting battery
- Connecting wire and conduit
- Fuel supply valves/plumbing
- Crane, lifting straps, chains or cables
- Two 60" lengths of 3/4" nominal minimum scheduled 40 steel pipe (NOT conduit)
- Torque screwdriver, 5 to 50 inch-pound range
- Voltage/frequency meter
- Two (2) AA batteries for remote wireless monitor

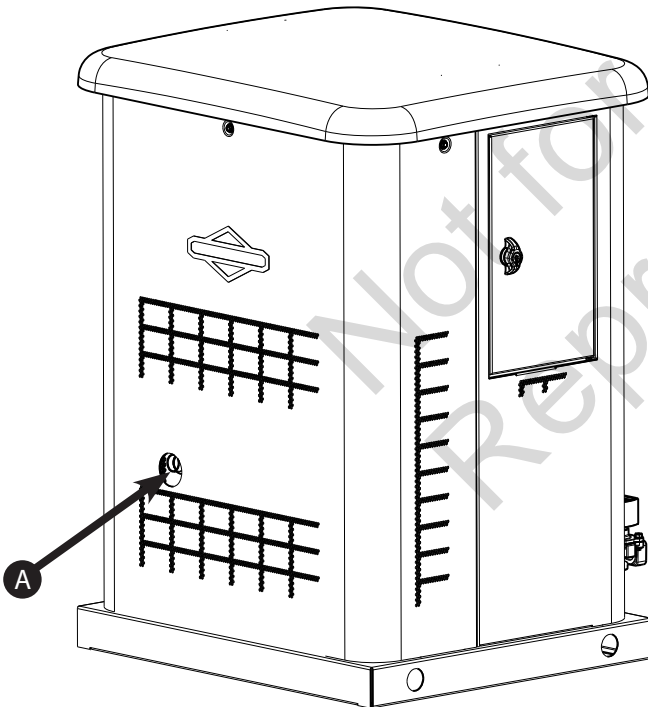
## Generator Placement

Before installing the generator, consult with the homeowner and convey the following requirements, which must be satisfied before the installation is complete.

There are two equally important safety concerns in regards to carbon monoxide poisoning and fire. There are also several general location guidelines that must all be met before the installation is considered complete.

- ⚠ WARNING** Running engine gives off carbon monoxide, an odorless, colorless, poison gas.
- ⚠** Breathing carbon monoxide could result in death, serious injury, headache, fatigue, dizziness, vomiting, confusion, seizures, nausea or fainting.
- Operate this product **ONLY** outdoors in an area that will not accumulate deadly exhaust gas.
  - Keep exhaust gas away from any windows, doors, ventilation intakes, soffit vents, crawl spaces, open garage doors or other openings that can allow exhaust gas to enter inside or be drawn into a potentially occupied building or structure.
  - Carbon monoxide detector(s) **MUST** be installed and maintained indoors according to the manufacturer's instructions/ recommendations. Smoke alarms cannot detect carbon monoxide gas.

## Exhaust Side of the Generator



**A** Exhaust outlet side of weatherproof enclosure.

## REDUCE THE RISK OF CARBON MONOXIDE POISONING

In high concentrations, carbon monoxide (CO) can be fatal in minutes. However, the effects of lower concentrations can also be lethal. This gas poses serious dangers to humans and their animals because no one can smell, see, or taste it. Symptoms of exposure to CO include:

- Watery, itchy eyes
- Throbbing temples
- Inability to think coherently
- Ringing in the ears
- Headache
- Incoherent or slurred speech
- Flushed appearance
- Inattentiveness
- Loss of physical coordination
- Tightness across the chest
- Drowsiness
- Nausea
- Dizziness
- Vomiting
- Fatigue
- Collapse
- Convulsions

If you (or someone nearby) suffers from any of the above symptoms, immediately seek fresh air and call for emergency medical help for possible carbon monoxide poisoning. If your carbon monoxide alarm sounds while using this product, immediately seek fresh air (even if you experience none of the previously mentioned symptoms).

### Potential CO Entry Points

Operation Guidelines:

*Note:* Operate this product **only** outdoors and in an area that will not allow this deadly exhaust gas to collect.

Never operate this product inside homes, garages, basements, crawl spaces, sheds, under a deck, or other partially enclosed areas and understand that using fans and opening doors in these areas may not provide adequate ventilation. Carbon monoxide can quickly accumulate in these forbidden spaces and can remain in the air for several hours after this product has shut off.

Installation Guidelines:

Follow all illustrations in this manual when placing an enclosure.

### Carbon Monoxide Detectors

*Note:* Installing functioning CO alarms indoors is the only way to recognize CO gas. Common smoke alarms do not detect CO gas and will not alert occupants of its presence.

A CO detector is an electronic device that detects hazardous levels of CO. When a buildup of CO occurs, the detector will alert the occupants by sounding an alarm and by flashing a visual indicator light.

By law many states require a home to have a functioning carbon monoxide (CO) detector. You **must** install and maintain carbon monoxide detector(s) indoors according to the manufacturer's instructions and recommendations.

Contact the local building inspection division for any relevant requirements regarding the use of CO detectors. See National Fire Alarm and Signaling Code (NFPA) 72 Code and Section R315 in the International Residential Code (ICC) for additional details.

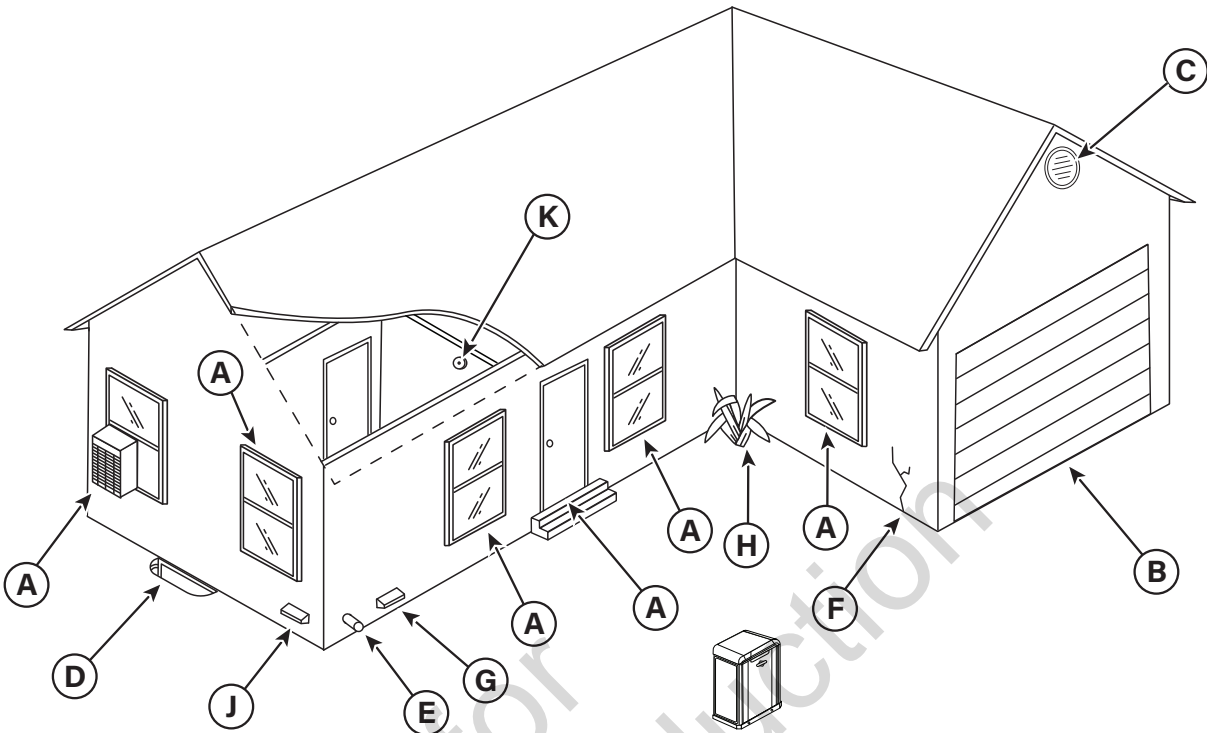
Always point the generator's engine exhaust away from occupied areas. Never expose your neighbors' homes to the engine exhaust flowing from your standby generator during the installation process.

Never place the standby generator in any area where leaves or debris can accumulate.

Generator exhaust can enter through windows, doors, and other openings of a structure. Understand that exhaust and CO can seep into a structure through the smallest openings.

## Protecting the Structure

Check the structure to ensure that the sealing and caulking remains adequate enough to prevent air from leaking in or out. Examine the structure for voids, cracks, or openings surrounding windows, doors, soffits, pipes, and vents, as these areas can permit exhaust gas and CO to enter the structure.



The following table includes some examples of potential entry points for CO gas.

LOCATION	ENTRY POINT	EXPLANATION
A	Windows and doors	Openings that are part of a structure's architecture can permit fresh air and CO into the structure, especially when open.
B	Garage door	An open or improperly unsealed garage door can allow CO to flow into a garage.
C	Attic vent	Generator exhaust can enter through attic vents and the vents for soffits, crawl spaces, and ridges or roofs.
D	Basement windows	Basement windows or hatches that permit ventilation to or from the structure's lower level also allow CO gas to enter the structure.
E	Furnace intake or exhaust vent	Air intakes and furnace exhaust pipes are common entry points for CO gas.
F	Wall cracks	Any cracks in a structure's walls, including the foundation and mortar, and any gaps around windows, doors, and pipes can let CO in.
G	Dryer vent	Sometimes the exhaust vent for the clothes dryer lets CO gas into the structure.
H	Airflow restrictions	Areas featuring structural corners and heavy vegetation restrict the airflow and collect exhaust gas.
J	Makeup air system	<i>Note:</i> Keep all mechanical and gravity outdoor air intake openings for HVAC supply air systems 10 ft (3,0488 m) horizontally from the generator's enclosure. Refer to section 401 in the ICC Mechanical Code for details on requirements.
K	Carbon monoxide detector(s)	<i>Note:</i> Installing functioning CO alarms indoors is the only way to recognize CO gas. Common smoke alarms do not detect CO gas and will not alert occupants of its presence.

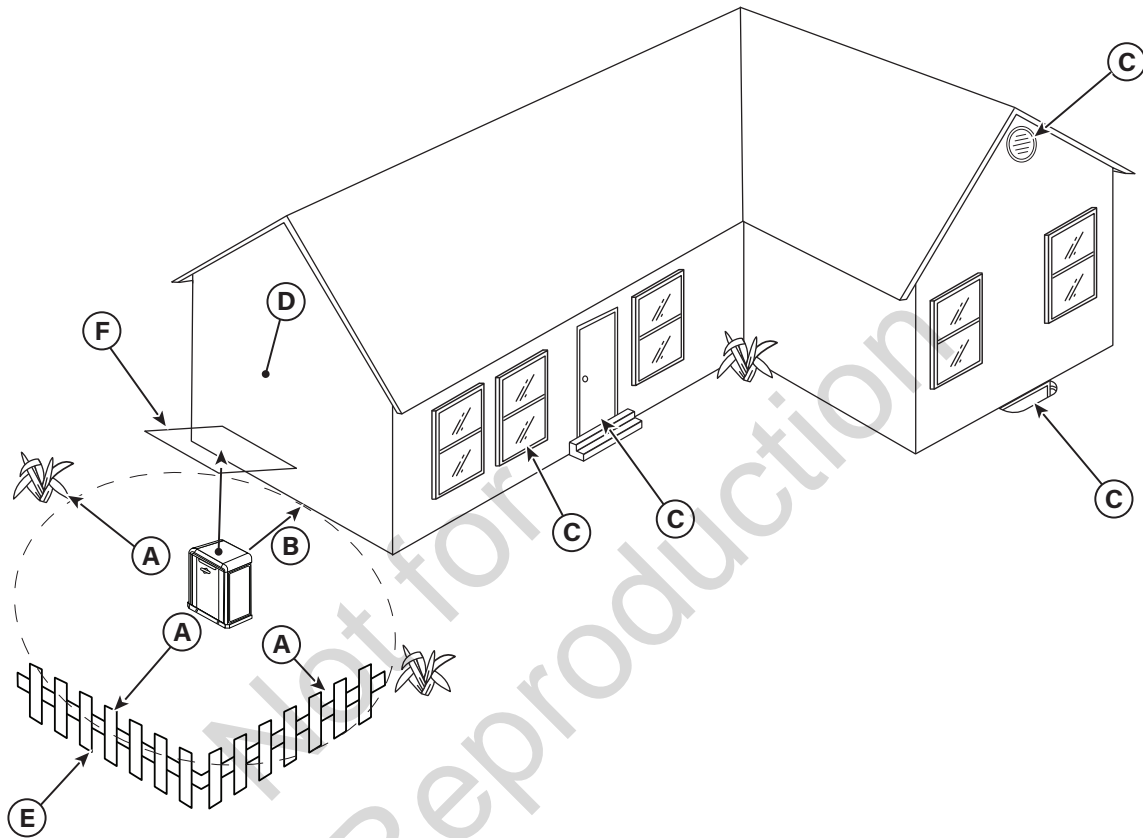
## REDUCING THE RISK OF FIRE

To help prevent fires, the generator must be installed a safe distance from all combustible materials. The unit's engine, alternator, and exhaust system components can become very hot during operation. Reduce the likelihood of a fire by keeping the unit properly ventilated, properly maintained, free of fuel leaks, and away from combustible materials. Also, flammable debris may collect within or outside the generator enclosure and may possibly ignite, causing a fire.

Federal and international standards describe the minimum safe clearances around and above the generator's enclosure.

### Distance Requirements

An owner must maintain minimum clearances around the generator enclosure. These clearances exist primarily for fire prevention, but they also ensure adequate space for maintenance tasks, such as removing the unit's front and end panels.



LOCATION	ITEM	EXPLANATION
A	Front and end clearance	Maintain a 3 ft (.91 m) minimum clearance from the front and ends of the generator. Keep shrubs, bushes, plants, and trees this same minimum distance from the unit and never use vegetation to conceal the unit.
B	Rear clearance	Since fuel and electrical connections occur here, keep 18 inches (45.70 cm) minimum clearance per independent testing laboratory, unless state codes tell you otherwise.
C	Windows, vents, and openings	Keep all operable windows, doors, vents, window wells, or openings in the wall away from the point of the generator. See Protecting the Structure section in this manual.
D	Existing wall	Keep the generator at least 18 inches (457 mm) away from existing walls.
E	Removable fence	Keep removable fences at least 3 ft (.91 m) away from the front of the generator. Removable fences include visual surrounds, fence panels, and temporary barriers without footings.
F	Overhead clearance	Maintain a 5 ft (1.52 m) minimum clearance from all structures, overhangs, and projections on a wall.
G (not shown)	Maintenance and servicing	Allow adequate space to perform routine maintenance, such as servicing the engine and replacing the battery. Never use shrubs, bushes, trees, or plants to conceal the generator.

## Other Location Requirements

- Place the standby generator in a prepared location that is flat and has provisions for water drainage.
- Install the standby generator in a location where sump pump discharge, rain gutter down spouts, roof run-off, landscape irrigation, or water sprinklers will not flood the unit or spray the enclosure and enter any air inlet or outlet openings.
- Install the standby generator where it will not affect or obstruct any services (including covered, concealed and underground), such as telephone, electric, fuel (natural gas / LPG vapor), irrigation, air conditioning, cable, septic, sewer, well and so forth.
- Install the standby generator where leaves, grass, snow, etc will not obstruct air inlet and outlet openings. If prevailing winds will cause blowing or drifting, you may need to construct a windbreak to protect the unit.

## National Fire Protection Association (NFPA) Standard NFPA 37 Requirements and Testing

### Requirements:

NFPA 37 2010, section 4. 1. 4, Engines Located Outdoors. Engines, and their weatherproof housings if provided, that are installed outdoors shall be located at least 1.5m (5 ft) from openings in walls and at least 1.5 m (5 ft) from structures having combustible walls. A minimum separation shall not be required where either of the following conditions exist:

1. The adjacent wall of the structure has a fire resistance rating of at least 1 hour.
2. The weatherproof enclosure is constructed of noncombustible materials and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure. \*

To comply with condition 2, the weatherproof enclosure has been constructed completely of non-combustible materials and full-scale fire tests have been conducted to demonstrate that a fire within the enclosure will not ignite combustible materials outside the enclosure.

### Annex A Explanatory Material

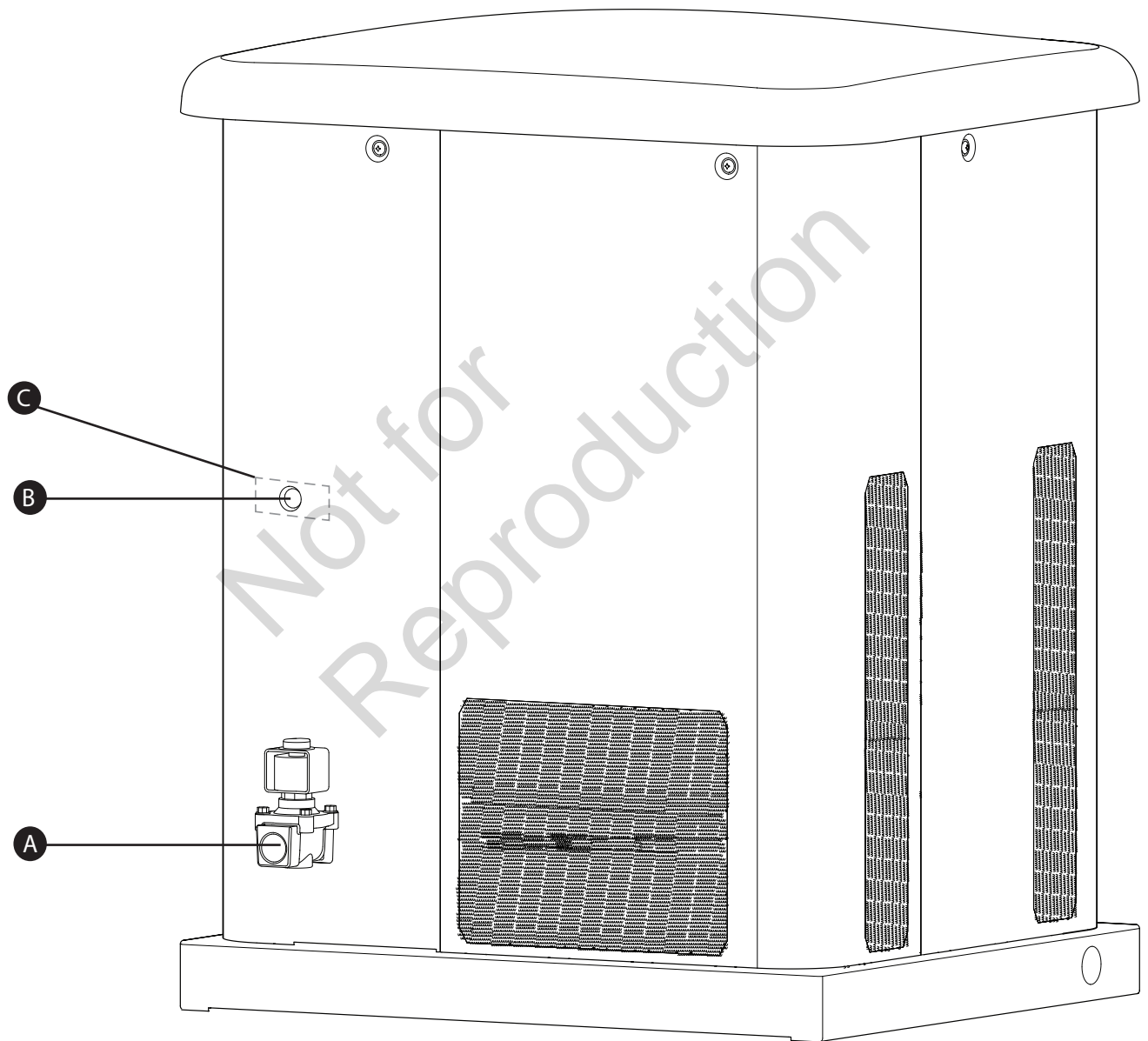
A.4.1.4 (2) Means of demonstrating compliance are by means of full-scale fire tests or by calculation procedures, such as those given in NFPA 555, *Guide on Methods for Evaluating Potential for Room Flashover*.

## Electrical and Fuel Inlet Locations

The 3/4 inch N.P.T. fuel inlet connector (**A**) and electrical inlet location (**B**) is shown below.

A 1/2 inch knock-out is provided for the electrical inlet. This inlet may be enlarged or supplemented to accommodate a maximum conduit size of 1 1/2 inches. Ensure that the installed conduit(s) enter the unit in the zone (**C**) shown in the drawing such that they properly enter the electrical box and do not interfere with the fully opened roof.

The home generator is supplied with a base that, unless mandated by local code, does not require a concrete slab.



## Lifting the Generator

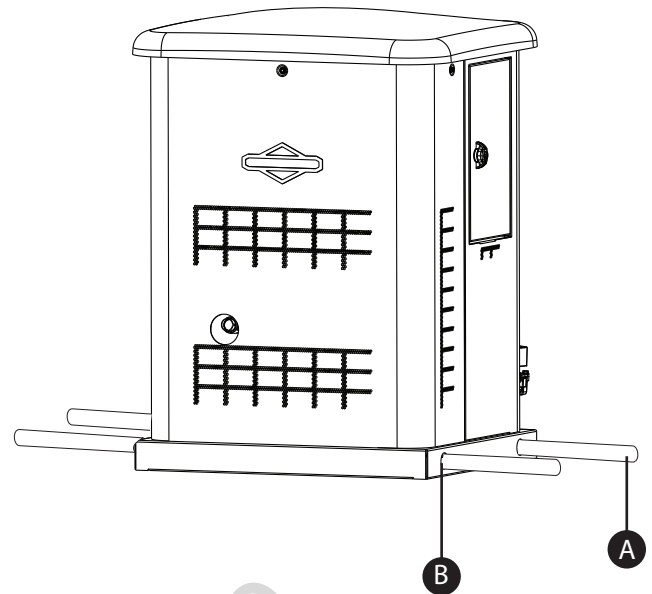
The generator weighs more than 330 pounds (150 kg). Proper tools, equipment and qualified personnel should be used in all phases of handling and moving the generator.

**⚠ WARNING** Hazardous Voltage - Contact with power lines could cause electric shock or burn, resulting in death or serious injury.  
Lifting Hazard / Heavy Object - Could result in serious injury.

- If lifting or hoisting equipment is used, DO NOT contact any power lines.
- DO NOT lift or move generator without assistance.
- Use lifting pipes as described in *Lifting the Generator*.
- DO NOT lift unit by roof as damage to generator will occur.

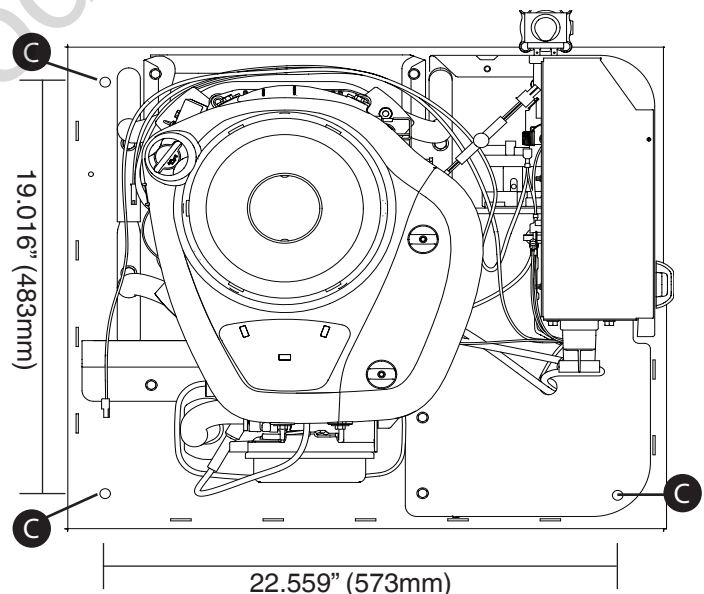
Two 60" lengths of 3/4" nominal minimum scheduled 40 steel pipe (A), supplied by the installer, are required to lift the generator manually. Insert pipes through the lifting holes (B) located near the unit's base.

You may also lift the unit using a "hook and hoist" method attached to the lifting pipes, provided that you use a spreader bar to ensure that the chains or cables DO NOT touch the generator's roof.



## Concrete Anchoring of Unit

In areas determined to be hurricane prone, it is recommended to anchor the standby generator to concrete. The concrete slab should be at least 3" (76mm) thick and 6" (152mm) longer and wider than the unit [32" (813mm) x 29" (737mm)]. Use 1/4" (6mm) diameter (minimum) by 3" (76mm) long (minimum) masonry anchor bolts to retain the unit. There are three 7/16" hole locations (C) in the base of the generator in which to anchor the unit.



**NOTICE** Unless mandated by local or state code, a concrete slab is not required.



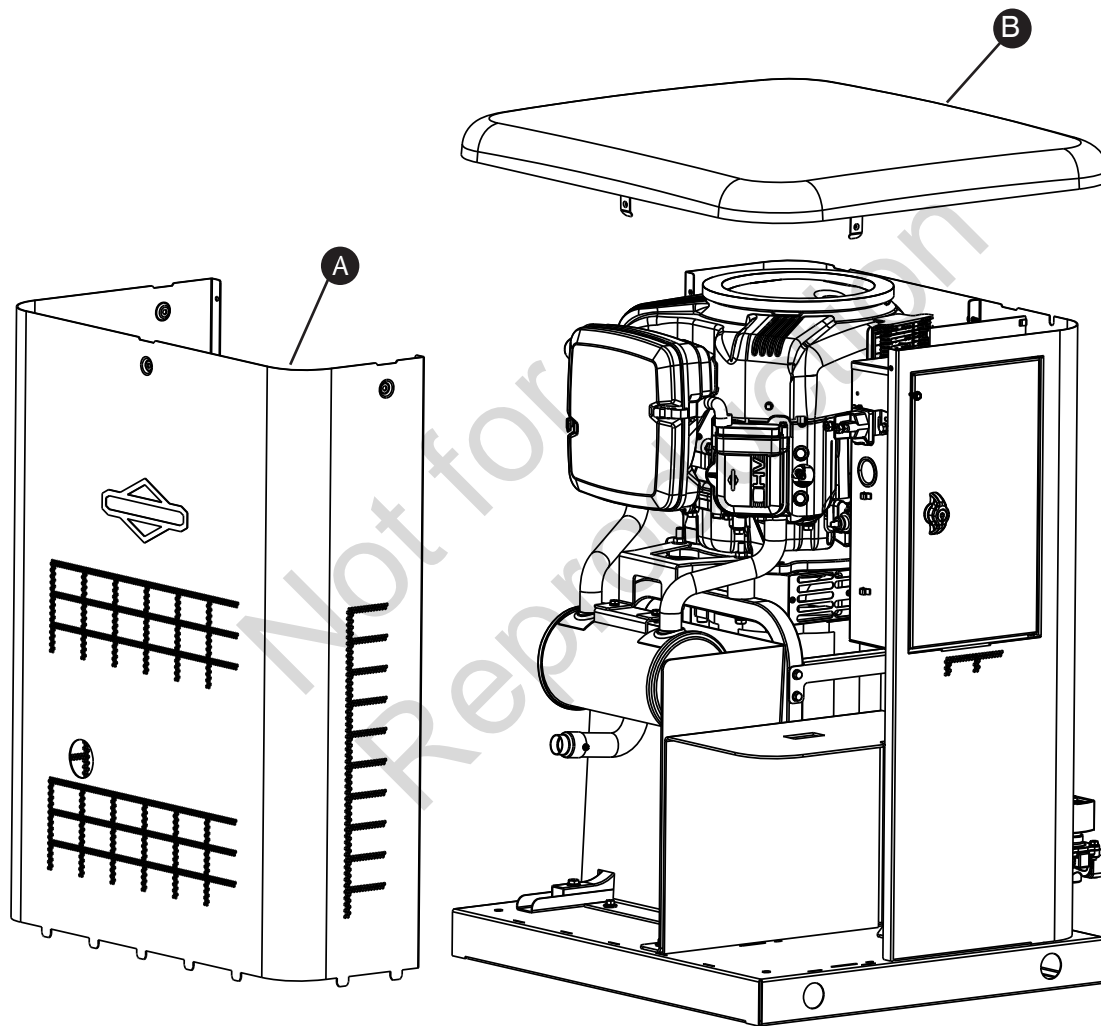
## Access Panels

The generator is equipped with an enclosure that has several access panels, as shown.

Front Panel (A) and roof (B) are used to access:

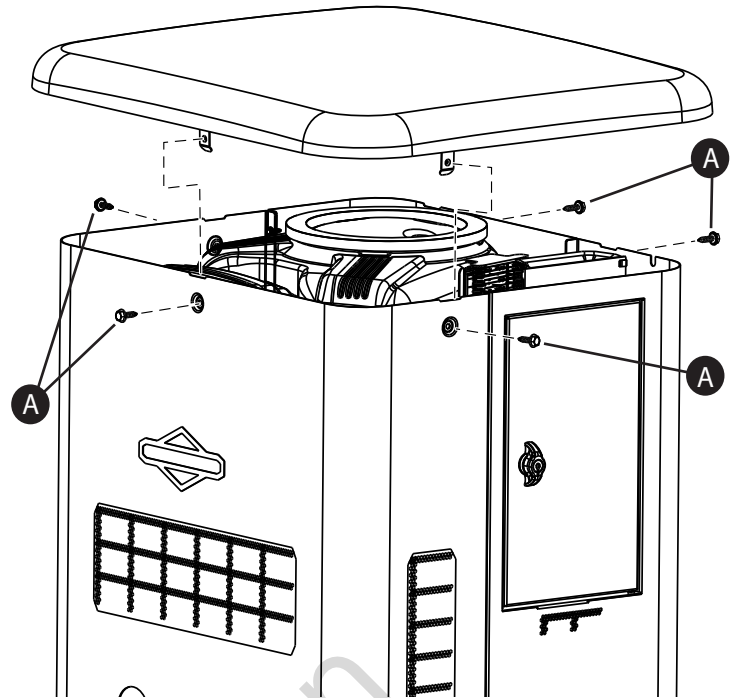
- Battery Compartment
- Engine Oil Drain Hose
- Engine Oil Filter
- Engine Valve Cover
- Spark Plugs

Each generator is shipped with a set of identical keys.



**To remove roof:**

1. Remove the five screws (A) that secure the roof to the unit.
2. Carefully lift and remove roof from unit.

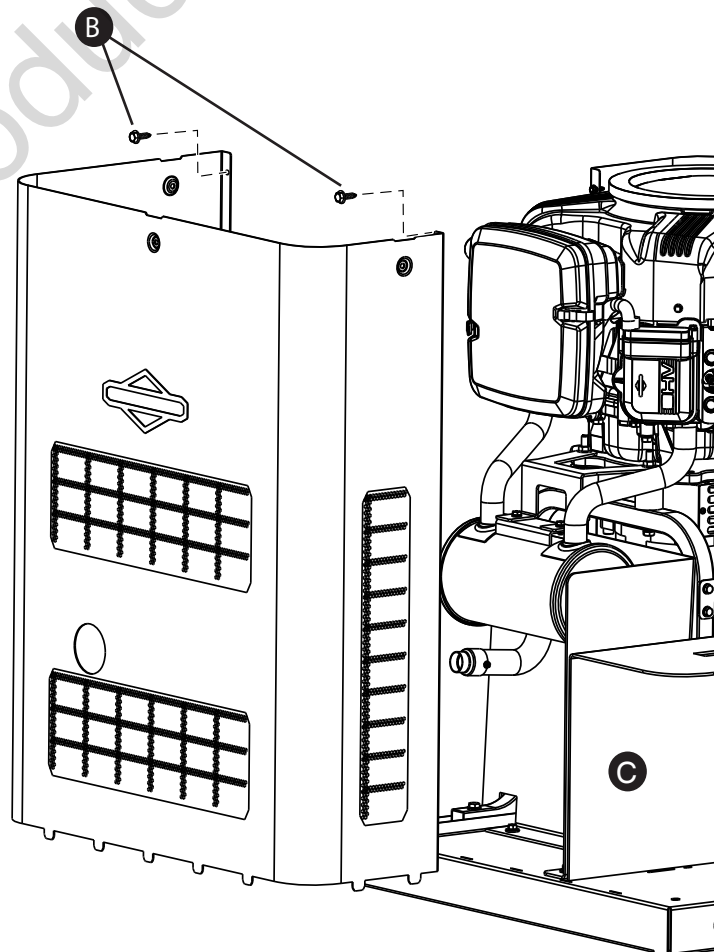


**To remove front panel:**

1. Remove the two screws (B) that secure the panel to the unit.
2. Lift and flex panel outward and off base. Use caution not to damage the battery box (C).

**To secure front panel:**

1. Place panel in unit.
2. Secure the panel with two screws.



## The Gaseous Fuel System

The information below is provided to assist gaseous fuel system technicians in planning installations. In no way should this information be interpreted to override applicable fuel gas codes. Consult with your local fuel supplier or Fire Marshall if questions or problems arise.

**⚠ WARNING** Propane and Natural Gas are extremely flammable and explosive, which could cause burns, fire or explosion resulting in death or serious injury.

- LP gas is heavier than air and will settle in low areas.
- Natural gas is lighter than air and will collect in high areas.
- The slightest spark could ignite these fuels and cause an explosion.
- DO NOT light a cigarette or smoke.

**TO THE INSTALLER:** Consult with the generator owner(s) and convey any technical considerations that might affect their installation plans before applying these general guidelines.

The following general rules apply to gaseous fuel system piping:

**⚠ WARNING** Propane and Natural Gas are extremely flammable and explosive, which could cause burns, fire or explosion resulting in death or serious injury.

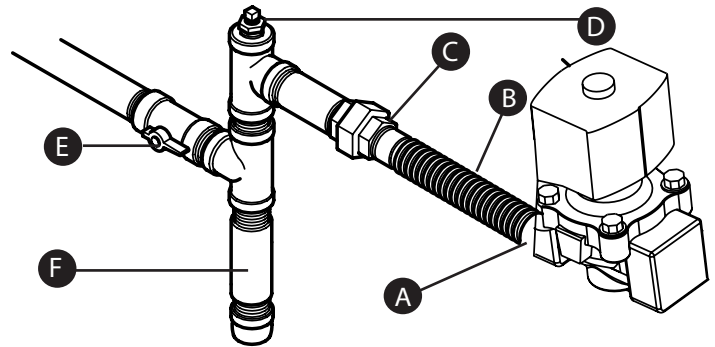
- Before placing the generator into service, the fuel system lines must be properly purged and leak tested.
- No leakage is permitted.

**NOTICE** The supplied flexible steel fuel line is not to be installed underground or in contact with the ground.

- The entire flexible steel fuel line must be visible for periodic inspection and must not be concealed within nor contact nor run through any wall, floor, or partition.
- The piping should be of a material that conforms to federal and local codes, rigidly mounted and protected against vibration.
- Piping should be protected from physical damage where it passes through flower beds, shrub beds, and other cultivated areas where damage could occur.

**NOTICE** The illustration is representative of a typical installation. Your installation may differ.

- Install the flexible steel fuel line (B) (supplied) between the generator fuel inlet port (A) and rigid piping to prevent thermal expansion, contraction, or any standby movement from causing excessive stress on the piping material.



- A union (C) or flanged connection shall be provided downstream to permit removal of standby.
- A manometer port should be provided (D). A digital manometer, P/N 19495, is available at your Briggs & Stratton service center. When the initial test runs are completed, the manometer is removed and the port is plugged. The manometer port permits temporary installation of a manometer to ensure that the engine receives the correct fuel pressure to operate efficiently throughout its operating range.
- Where the formation of hydrates or ice is known to occur, piping should be protected against freezing. The termination of hard piping should include a sediment trap (F) where condensate is not likely to freeze.
- A minimum of one accessible, approved manual shutoff valve (E) shall be installed in the fuel supply line within 6 ft. (180 cm) of the home generator.
- A manual fuel shut-off valve should be installed in the interior of the building.
- Where local conditions include earthquake, tornado, unstable ground, or flood hazards, special consideration shall be given to increase strength and flexibility of piping supports and connections.
- Piping must be of the correct size to maintain the required supply pressures and volume flow under varying generator load conditions with all gas appliances connected to the fuel system turned on and operating.
- Use a pipe sealant or joint compound approved for use with NG/LPG on all threaded fittings to reduce the possibility of leakage.
- Installed piping must be properly purged and leak tested, in accordance with applicable codes and standards.

## Fuel Factors

An important consideration affecting the entire installation is the type of fuel used by your generator. The system was factory tested and adjusted using natural gas, but can be converted to use LP vapor. For proper engine function, factors that are inherent to each of these fuels, your location and the duration of possible utility interruptions are important considerations in the following fuel guidelines:

- Use clean, dry fuel, free of moisture or any particulate material. Using fuels outside the following recommended values may cause performance problems.
- In engines set up to run on propane (LP), commercial grade HD5 propane with a minimum fuel energy of 2500 BTUs/ft<sup>3</sup> with maximum propylene content of 5% and butane and heavier gas content of 2.5% and minimum propane content of 90% is required.

Natural gas rating will depend on specific fuel but typical derates are between 10 to 20% off the LP gas rating.

Natural gas or LP engines are certified to operate on natural or liquid propane gas. The emissions control system for this engine is EM (Engine Modifications).

## Fuel Pressure

Both LP vapor and natural gas fuel supply pressure at the generator's fuel inlet port should be between the following levels at full load with all gas appliances turned on and operating.

- NG is 3.5-7" W.C.
- LP is 11-14" W.C.

Ensure that all gas line shutoff valves are OPEN and that adequate fuel pressure is available whenever automatic operation is desired.


## Power Loss



Air density is less at high altitudes, resulting in less available engine power. Specifically, engine power will decrease 3.5% for each 1,000 feet (300 m) above sea level and 1% for each 10° F (5.6°C) above 77°F (25°C). Generators located in these conditions must have their transfer switch adjusted appropriately for this power decrease. See Automatic Transfer Switch manual on how to adjust for the power decrease.

## Fuel Pipe Sizing

There are numerous on-line or otherwise-published references for fuel pipe sizing. For example, NFPA 54 - National Fuel Gas Code, 2006 (Item #: 320-6031-06) is a common resource.

The installer should consider the specific gravity of gas and compensate for a nominal amount of restriction from bends, fittings, etc. If an unusual number of fittings, bends, or other restrictions are used, refer to federal and local codes for guidance.

 **WARNING** Propane and Natural Gas are extremely flammable and explosive, which could cause burns, fire or explosion resulting in death or serious injury.

- The residential generator is equipped with an automatic safety gas "fuel shut-off" valve.
- DO NOT operate the equipment if the "fuel shut-off" valve is missing or inoperative.

## Fuel Conversion

The engine of your home generator system is factory Calibrated and set to operate on natural gas (NG). It may also be operated on liquefied petroleum (LP) vapor.

### To configure 10 kW units with factory installed fuel harness for LP use:

1. Press control panel "OFF" button.
2. Remove 15 Amp fuse from control panel.
3. Remove Roof.
4. Using a slotted screwdriver turn both (C) and (D) screws clockwise until it is snug (Over tightening can damage mixer port)
5. Using screwdriver turn screw (C) counter clockwise 2 and ½ turns.
6. Leave screw (D) seated.
7. Connect the fuel harness (A) to the engine solenoid (B) by joining the two-pin electrical connectors.
8. Reinstall 15 Amp fuse in control panel.
9. Press control panel "AUTO" button.
10. Reinstall Roof and Close access panels.

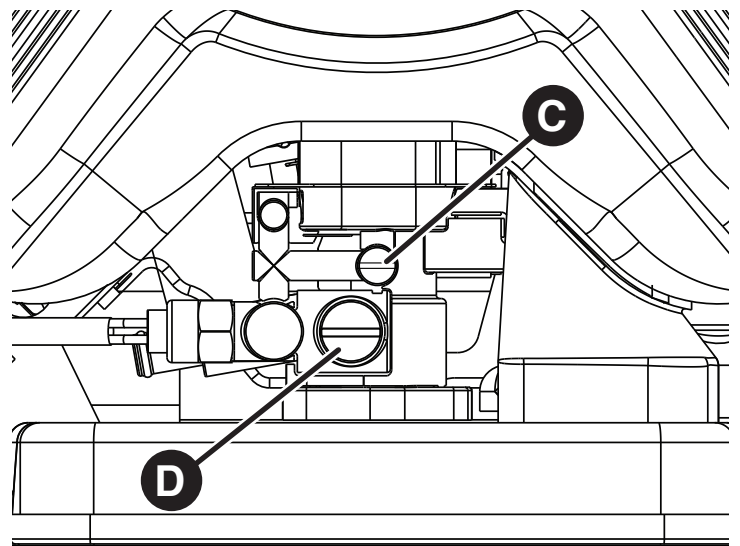
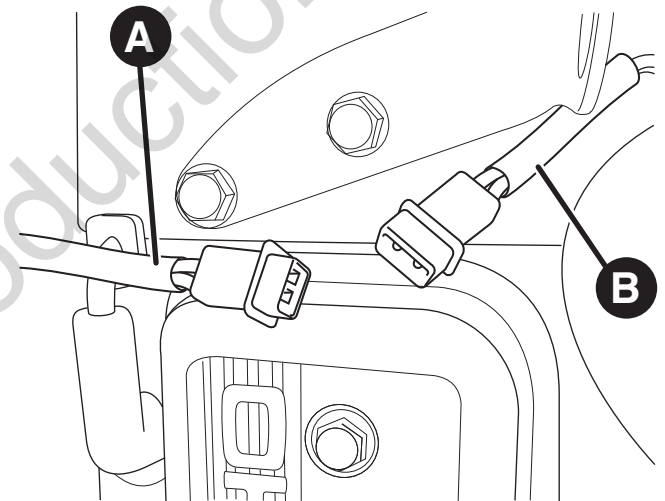
• **NOTE:** NG Settings from factory:

- Screw C: 4 - 4.5 turns
- Screw D: 1.5 - 2 turn

The system is now ready to operate automatically using LP vapor fuel.

### To configure 10 kW units without factory installed fuel harness for LP use:

1. Press control panel "OFF" button.
2. Remove 15 Amp fuse from control panel.
3. Remove Roof.
4. Using a slotted screwdriver turn both (C) and (D) screws clockwise until it is snug (Over tightening can damage mixer port)
5. Using screwdriver turn screw (C) counter clockwise 2 and ½ turns.
6. Leave screw (D) seated.
7. Reinstall 15 Amp fuse in control panel.
8. Press control panel "AUTO" button.
9. Reinstall Roof and Close access panels.



## Fuel Consumption

Estimated fuel supply requirements at half and full load for natural gas and LP vapor fuels are shown here.

### LP Vapor (Propane)

		10 kW
<b>Full Load</b>	Cu Ft/Hr	65.6
	Gal/Hr (liquid)	1.82
	BTU/Hr	164000
<b>1/2 Load</b>	Cu Ft/Hr	42.8
	Gal/Hr (liquid)	1.18
	BTU/Hr	107000
<b>Exercise</b>	Cu Ft/Hr	23.6
	Gal/Hr (liquid)	0.65
	BTU/Hr	59000

Recommended Energy Content of Fuel:	Natural Gas	Propane (LP Vapor)
<b>Heating Value:</b>		
<b>BTU per gallon liquid (gross*)</b>	N/A	91,547
<b>BTU per Cubic feet (vapor)</b>	1,000	2,500

### Natural Gas

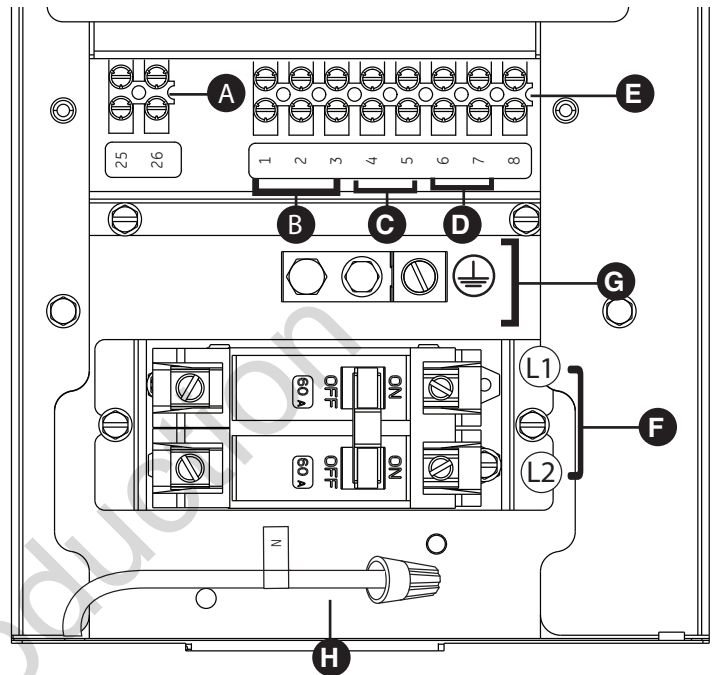
		10 kW
<b>Full Load</b>	Cu Ft/ Hr	169
	BTU / Hr	169000
<b>1/2 Load</b>	Cu Ft/ Hr	111
	BTU / Hr	111000
<b>Exercise</b>	Cu Ft/ Hr	60
	BTU / Hr	60000

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## System Connectors

Low Voltage connections to signal fault contacts, transfer switch communication and auxiliary 12VDC power are made via a field connection terminal block in control board area. Compare this illustration with your generator to familiarize yourself with the location of these connections.

- A - Two Pin Terminal Block** — Used to connect utility 240 VAC from fuse block in ATS to the control board. Connect only one wire per terminal. Use #14 [2.5mm<sup>2</sup>] AWG minimum 300 volt wire.
- B - Fault Contacts** — Use 1 (N.O.), 2 (COM) and 3 (N.C.) to hook up a siren, light, etc. to alert you in case of a fault. Contacts reverse state (1 [N.O.] goes to 3 [N.C.] and vice versa) upon a fault condition.
- C - Transfer Switch Communication (4 [TxRx] and 5 [TxRx GND])** — Connect to transfer switch control board for communication interface using 18AWG [1mm<sup>2</sup>] twisted pair wire.
- D - 6 (+LED) and 7 (GND) Connection** — Not required for wireless monitor included with unit. Available for optional hardwired remote system status panel accessory, #6154.
- E - Eight Pin Terminal Block** — Used to connect signal wires to the control board. Connect only one wire per terminal.
- F - Power Connection (Line 1 and Line 2)** — Power connection to transfer switch.
- G - Ground Connection** — Connect to transfer switch ground wire.
- H - Neutral Connection** — Connect to transfer switch neutral wire



- For power output connection (Line 1, Line 2, Neutral, and Ground), refer to the following table:

<b>≥ 300V, 75° C</b>	<b>10 kW</b>
	6 AWG [13 mm <sup>2</sup> ] min. Cu/Al

- \* Reference NEC 2014 table 310.15 • Use National Electric Code for correction factors and wire size calculations.
- For transfer switch communication use #18 AWG [1mm<sup>2</sup>] twisted pair conductors, no greater than 200 ft in length, 300 volt wire.
- When connecting to the terminal block, fasten only one wire to each connector screw.
- Torque terminal block screws to 4.4 in-lb [0.49 Newton meter].
- Torque circuit breaker connections to 45 in-lb [5 Newton meter].

\* Metric system rounded for simplicity

**NOTICE** Neutral wire (H) must be connected to the transfer switch Neutral wire.

DO NOT connect neutral and ground together within the generator.

## Communication Connections

Connect the applicable communication leads to the automatic transfer switch as shown in the table below.

Pin Number	Description	Wire Type	Connect To	Notes
1	Normally Open	18 AWG [1 mm <sup>2</sup> ] twisted pair conductors no longer than 61 m, 300V, 90°C copper wire		For Optional Alarm
2	Common	18 AWG [1 mm <sup>2</sup> ] twisted pair conductors no longer than 61 m, 300V, 90°C copper wire		For Optional Alarm
3	Normally Closed	18 AWG [1 mm <sup>2</sup> ] twisted pair conductors no longer than 61 m, 300V, 90°C copper wire		For Optional Alarm
4	Transfer Switch Communication	18 AWG [1 mm <sup>2</sup> ] twisted pair conductors no longer than 61 m, 300V, 90°C copper wire	4 (T/R) on transfer switch board	Must Connect
5	Transfer Switch Communication Ground	18 AWG [1 mm <sup>2</sup> ] twisted pair conductors no longer than 61 m, 300V, 90°C copper wire	5 (GND) Ground on transfer switch board	Must Connect
6	+LED	18 AWG [1 mm <sup>2</sup> ] twisted pair conductors no longer than 61 m, 300V, 90°C copper wire	Red wire on fault indicator plate	For Optional Fault Indication
7	Ground	18 AWG [1 mm <sup>2</sup> ] twisted pair conductors no longer than 61 m, 300V, 90°C copper wire	Black wire on fault indicator plate	For Optional Fault Indication Ground
8	Not Used	N/A	N/A	N/A
25	Utility	14 AWG [2.5 mm <sup>2</sup> ] minimum 300v wire	Transfer Switch Utility	Must Connect
26	Utility	14 AWG [2.5 mm <sup>2</sup> ] minimum 300v wire	Transfer Switch Utility	Must Connect

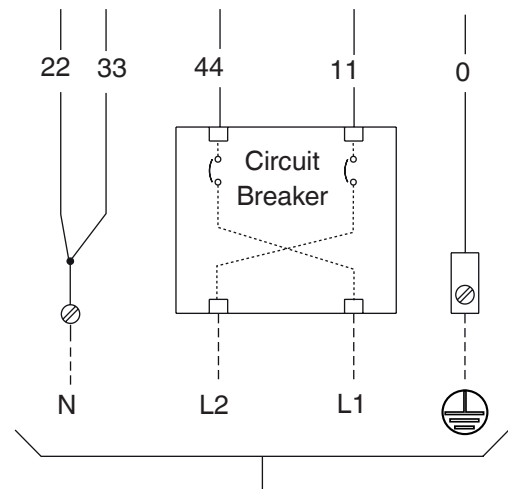
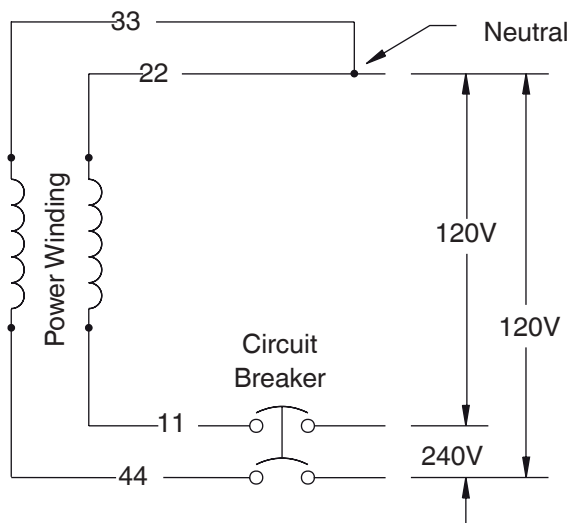
\* Metric system rounded for simplicity

## Generator AC Connection System

A single-phase, three-wire AC connection system is used in the home generator. The stator assembly consists of a pair of stationary windings with two leads brought out of each winding. The junction of leads 22 and 33 forms the neutral lead, as shown schematically and as a wiring diagram. A complete schematic and wiring diagram can be found later in this manual.

**NOTICE** Neutral is not bonded to ground at generator.

**NOTICE** Generator must be used with only an UL listed transfer switch that is compatible with the generator.





## Grounding the Generator

The home generator must be installed as part of a system that includes a listed transfer switch, with neutral to ground bonding at the transfer switch in accordance with installation instructions. Unless mandated by local code, additional grounding to earth at the generator is not required. Any

### Power Connections from Generator to Transfer Switch

#### Utility Circuit Connection

“240V Utility” leads must be routed in conduit. The “240V Utility” leads deliver power to the generator’s circuit board, optional battery warmer and optional oil warmer. This power also charges the battery. When power on these leads is lost, the generator will start.

#### Generator Power Connection

**For 10 kW Units:** Using installer supplied minimum 300V, wires and the table located on page 25, connect generator power output Line 1, Line 2, neutral, and ground to the corresponding Line 1, Line 2, neutral and ground in the transfer switch.

*\*Use National Electric Code for correction factors and wire size calculations.*

#### Transfer Switch Communication

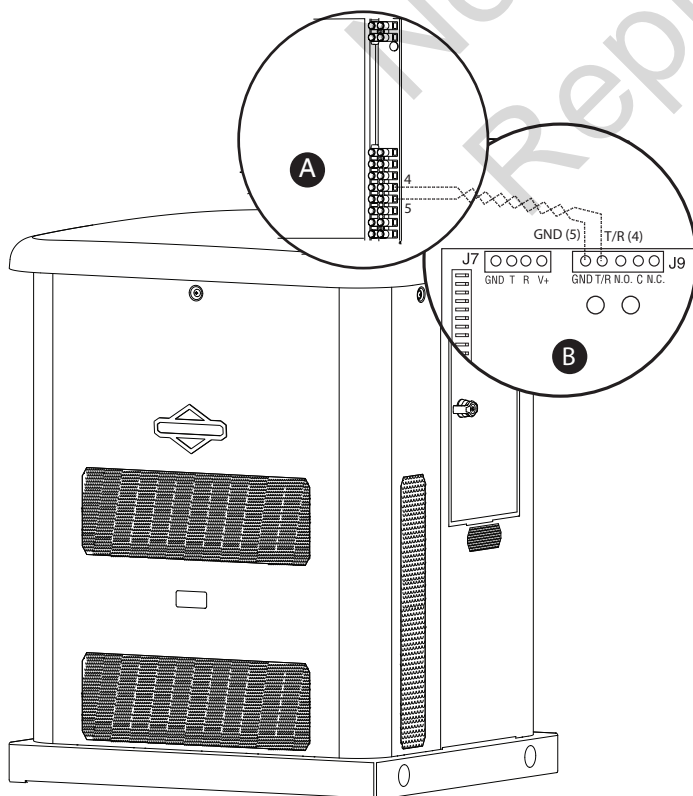
Using installer supplied #18 AWG [1 mm<sup>2</sup>] twisted pair conductors, no greater than 200 ft in length, connect 4 and 5 from the generator terminal block (A) to T/R (4) and GND (5) on the transfer switch control board (B).

grounding at generator must use metal piercing lock washers (or equal), UL listed terminals installed per terminal supplier’s instructions, and comply with national electrical codes and local requirements.

Using installer-supplied minimum 300V, 14 [2.5 mm<sup>2</sup>] AWG wire, connect each control circuit terminal in the generator (25 and 26) to the fuse block in the automatic transfer switch.

Reference illustration and chart on pages 24 and 25 for further information.

When making connections, obey wire type and torque specifications printed on the circuit breaker and neutral/ground connectors.



## System Control Board

The generator control board, located inside the generator, under the roof, is shown below. Brief descriptions of the controls used during installation are:

**A** - **Menu/Programming Navigation Buttons** — See *Menu* section for details

**B** - **Mini USB Port** — Authorized Dealer Service Use Only

**C** - **Generator Operation Control Buttons** —

- **“AUTO”** Normal operating position. Press and hold button to put unit into Automatic mode. If an utility power outage is sensed, the system will start the generator. When utility power is restored, auto lets the engine stabilize internal temperatures, shuts off the generator, and waits for the next utility outage.

- **“OFF”** Turns off running generator, prevents unit from starting, and resets any detected faults.

**OFF** must be pressed and held for more than 5 seconds in order to reset service codes.

- **“MANUAL”** Used to manually start the generator.

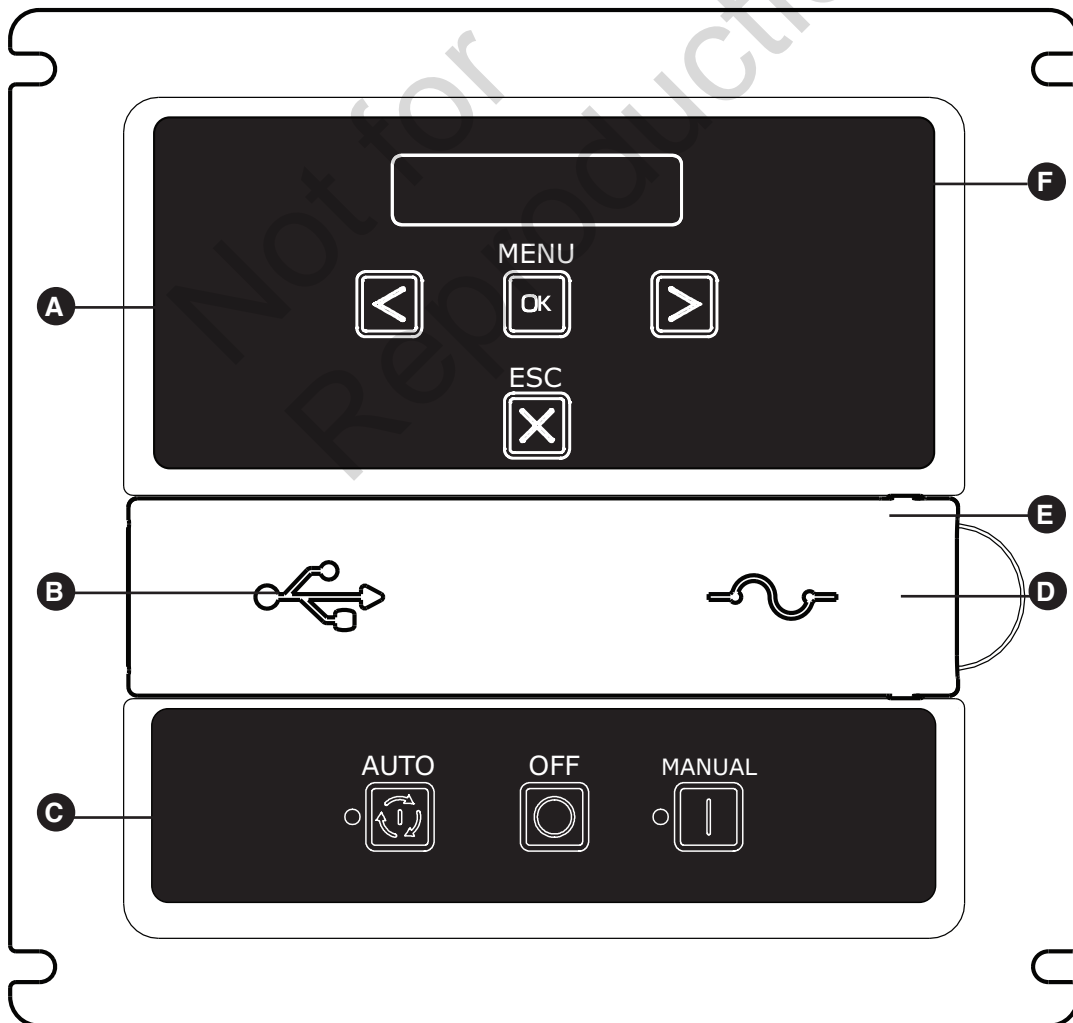
- **“AUTO” LED** — LED will light when unit is placed into Auto mode. LED will blink if exercise cycle is not set or set to OFF.

- **15 Amp Fuse** — Protects the home generator DC control circuits. If the fuse has ‘blown’ (melted open) or was removed, the engine cannot crank or start. Replace the fuse using only an identical ATO 15A fuse. One spare fuse is supplied with the unit.

- **Cover** — This protective cover must be opened to access the fuse and the USB port.








- **Digital Display** — Displays generator mode, menu options, service codes, and service engine indicators

More information may be found in *Controls* in the operator’s manual.



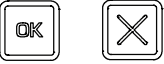


## Menu

The following chart shows the icons for the buttons that control the system control panel.

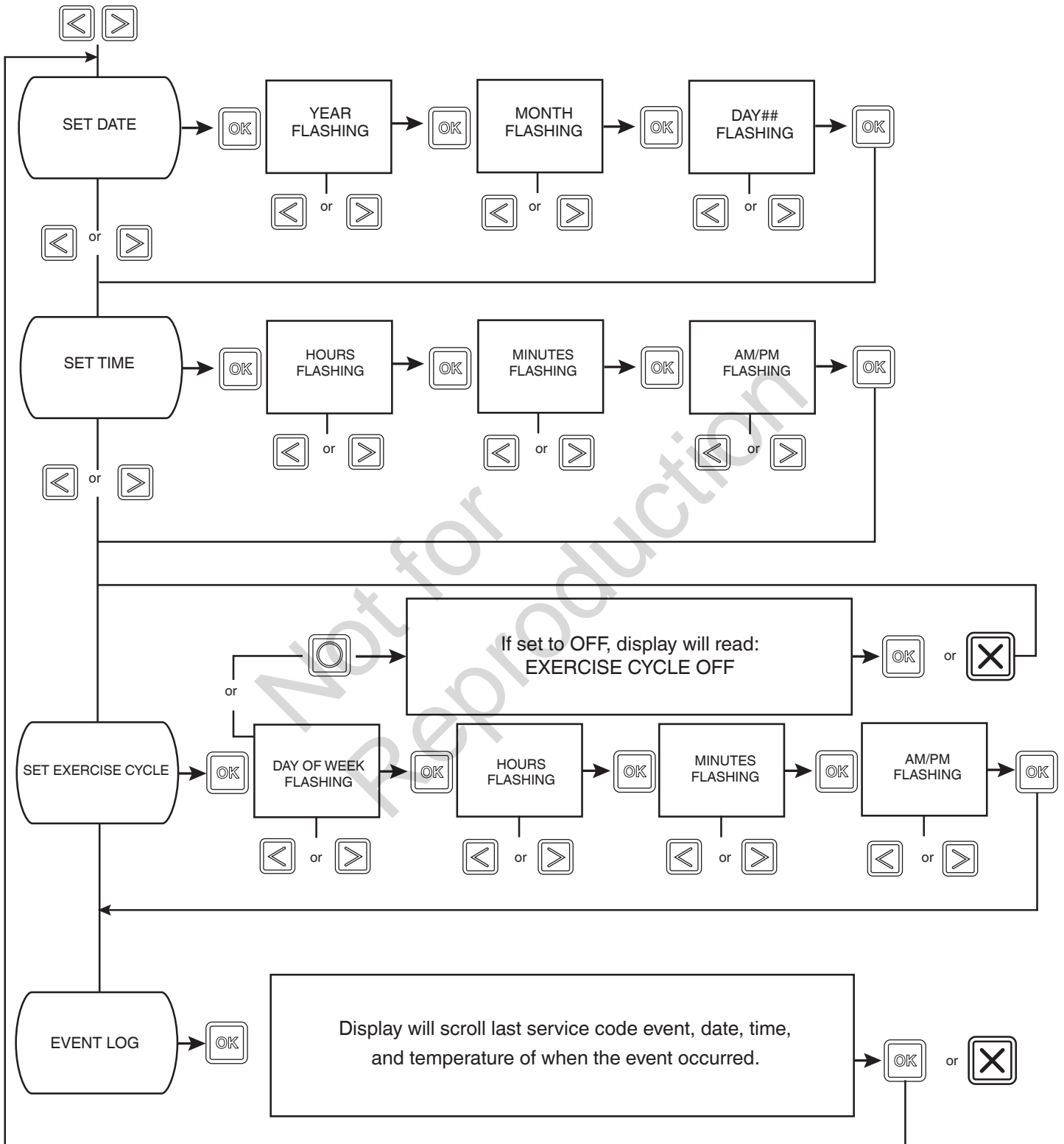
	<b>MENU</b>	ENTER THE MENU (VIEW SETTINGS) PRESS TO CONFIRM SELECTION WHEN PROGRAMMING.
	<b>ESCAPE (EXIT)</b>	RETURN TO LAST MENU ITEM
	<b>RIGHT ARROW</b>	TOGGLE THROUGH MENU OPTIONS SETTING SYSTEM PARAMETERS
	<b>LEFT ARROW</b>	TOGGLE THROUGH MENU OPTIONS SETTING SYSTEM PARAMETERS
	<b>MANUAL MODE</b>	USED TO MANUALLY START THE GENERATOR. PRESS AND HOLD BUTTON TO START THE GENERATOR.
	<b>OFF</b>	TURNS OFF RUNNING GENERATOR, PREVENTS UNIT FROM STARTING, AND RESETS ANY DETECTED FAULTS.
	<b>AUTOMATIC MODE</b>	NORMAL OPERATING POSITION. PRESS AND HOLD BUTTON TO PUT UNIT INTO AUTOMATIC MODE. IF A UTILITY POWER OUTAGE IS SENSED, THE SYSTEM WILL START THE GENERATOR. WHEN UTILITY POWER IS RESTORED, AUTO LETS THE ENGINE STABILIZE INTERNAL TEMPERATURES, SHUTS OFF THE GENERATOR, AND WAITS FOR THE NEXT UTILITY POWER OUTAGE.

The following chart describes key sequences for accessing different programming modes;

	<b>GENERAL SET-UP</b>	PRESS AND HOLD [ARROW LEFT AND ARROW RIGHT] UNTIL "GENERAL SET-UP" IS DISPLAYED TO ENTER THE PROGRAM MODE.
	<b>ADVANCED SETTINGS</b>	PRESS AND HOLD [ARROW LEFT, ARROW RIGHT AND ESC] UNTIL "ADVANCED SETTINGS" IS DISPLAYED OR PRESS AND HOLD EITHER [ARROW LEFT, ARROW RIGHT <b>OR</b> ESC] BUTTON UNTIL "++1++" IS DISPLAYED ON THE DIGITAL DISPLAY. NEXT PRESS AND HOLD A DIFFERENT KEY [ARROW LEFT, ARROW RIGHT OR ESC] BUTTON UNTIL "++2++" IS DISPLAYED. FINALLY, PRESS AND HOLD THE REMAINING BUTTON NOT SELECTED [ARROW LEFT, ARROW RIGHT OR ESC] UNTIL "ADVANCED SETTINGS" IS DISPLAYED.
	<b>WIRELESS LINK MODE</b>	PRESS AND HOLD [MENU AND ESC] FOR THREE SECONDS TO ENTER THE WIRELESS LINKING MODE. (ONLY APPLICABLE ON SOME MODELS).

## General Set Up Screen

For general set up, press and hold the left arrow and right arrow   for 3 seconds. Follow the prompts as outlined below.



IF NO BUTTONS ARE PRESSED FOR 30 SECONDS DURING PROGRAMMING, THE CONTROL PANEL WILL AUTOMATICALLY EXIT THE PROGRAM MODE.

## Control Panel Prompts

### Automatic Mode

In Automatic Mode, the display screen will display via scrolling text:

- GENERATOR READY - if the unit is in standby and utility power is present.
- GENERATOR ON - if the unit is running and utility power is not present.
- SERVICE CODE - if a system fault has been detected.

### General System Parameters

To view general system parameters, press the MENU button.

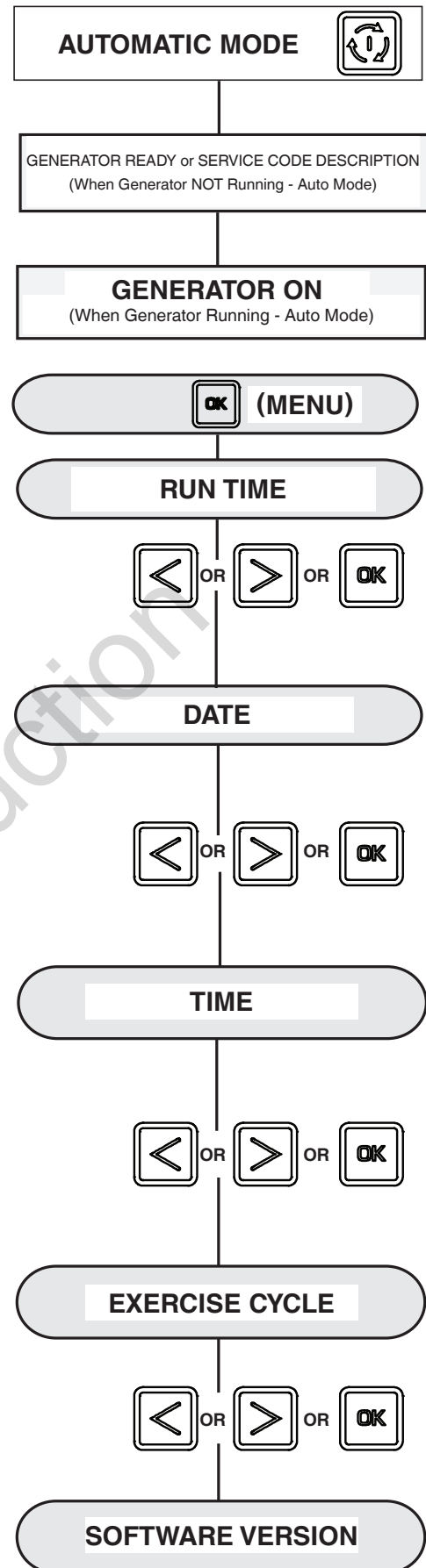
The following will scroll across the digital display and then move to the next item:

- Run time
- Date
- Time
- Exercise Cycle date and start time
- Software Version

The user can press the LEFT ARROW or RIGHT ARROW at any time to move to the next item.

The user can press ESCAPE to go back to GENERATOR READY.

If no user inputs are made for 40 seconds after all the items have been displayed, the control board digital scrolling display will reset to previous scrolling display.



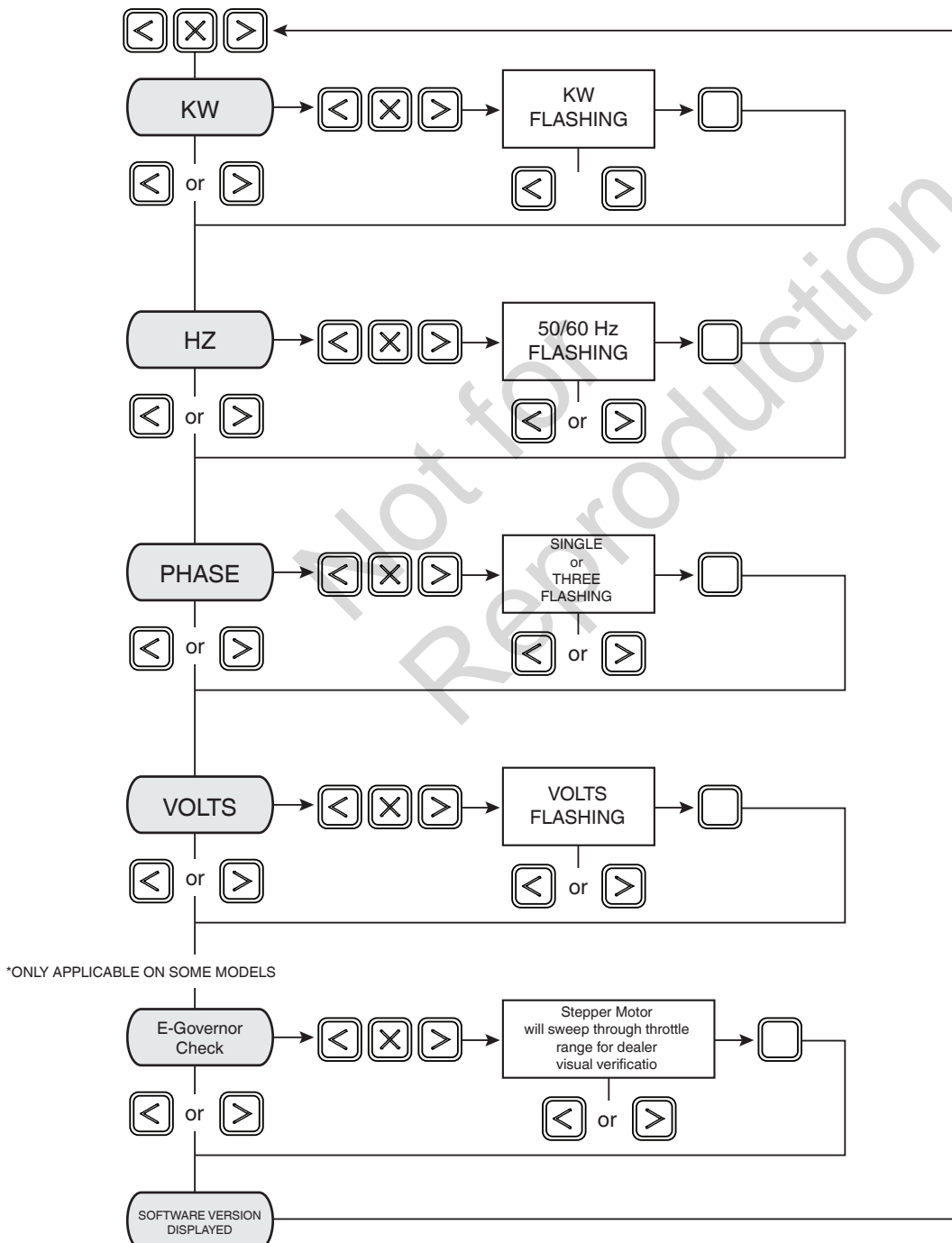
## Advanced Settings Screen

Advanced setting parameters are preset at the factory for a typical installation. To view Advanced Settings items and/or to change items, follow the instructions listed below.

**NOTICE** Advanced settings are critical to the operation of the unit. Careful consideration should be taken when working in the Advanced Settings menu. Exercise caution when selecting and verifying parameters for the generator and region where the generator is being operated. Confirm all settings before operating the generator for the first time.

For advanced menu items, press and hold the left arrow, right arrow, and escape key (◀▶⏏) for 3 seconds or see pg. 29 for additional key sequence. Follow the prompts as outlined below.

**NOTICE** In the Advanced Setting menu, a three button access code (left arrow, right arrow, and escape key (◀▶⏏) must be pressed once to enter the menu and again to change any setting. After each confirmation of a setting, the selection will display solid for 2 seconds before moving to the next program item.



## Service Code Detection System

The generator may have to run for long periods of time with no operator present. For that reason, the system is equipped with sensors that automatically shut down the generator in the event of potentially damaging conditions, such as low oil pressure, high temperature, over speed, and other conditions.

## Final Installation Considerations

### Engine Oil

**NOTICE** Any attempt to crank or start the engine before it has been properly serviced with the recommended oil will result in possible equipment failure and service codes.

- Refer to *Maintenance* in the operator's manual for oil fill information.
- Damage to equipment resulting from failure to follow this instruction will void engine and generator warranty.

### Battery

The installer must supply and install a rechargeable 12 volt starting battery. The starting battery **MUST** conform to the specifications shown in this chart.

Battery Specifications		
Specifications	Standard	Cold Start (less than 32°)
Volts	12 Volt DC	12 Volt DC
Amps (MIN)	540 CCA (cold cranking amps)	800 CCA (cold cranking amps)
Construction	Wet lead acid	Wet lead acid
Terminal Type	Top post type battery	Top post type battery
Dimensions (MAX):	BCI size 26 or BCI size 51	BCI size 24

Install the battery as described in Servicing the Battery in the Maintenance section of the operator's manual. Always make sure the **NEGATIVE** cable is connected last and that the red **POSITIVE** terminal insulator is fully in place.

Use the supplied tie-down strap (**A**) to secure the battery to the unit. Each end of the strap should be attached to the existing tabs in the base of the unit.

Refer to *Service Code Detection System* in the operator's manual for more detailed information.

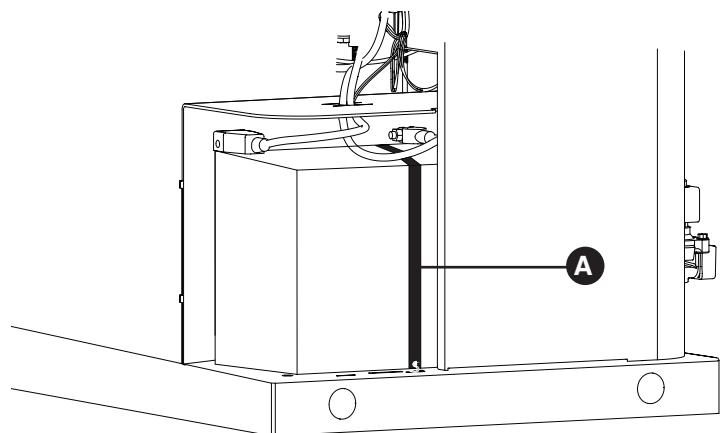
This engine is shipped from the factory pre-run and filled with full synthetic oil (API SJ/CF 5W-30). This allows for system operation in a wide range of temperature and climate conditions. Before starting the engine, check oil level as described in *Maintenance* of the Operator's Manual.

The use of synthetic oil does not alter the required oil change intervals described in the Operator's Manual.

For operation of temperatures below 30°F (-1°C), the use of fully synthetic oil (minimum API SJ) of viscosity 5W30 is required.

**WARNING** Storage batteries give off explosive hydrogen gas during recharging. Slightest spark will ignite hydrogen and cause explosion, resulting in death or serious injury. Battery electrolyte fluid contains acid and is extremely caustic. Contact with battery contents could cause severe chemical burns. A battery's high short circuit current could result in serious injury.

- DO NOT dispose of battery in a fire. Recycle battery.
- DO NOT allow any open flame, spark, heat, or lit cigarette during and for several minutes after charging a battery.
- DO NOT open or mutilate the battery.
- Wear protective goggles, rubber apron, rubber boots and rubber gloves.
- Remove watches, rings, or other metal objects.
- Use tools having insulated handles.



## Initial Start-up (No Load)

The unit has been set-up for NG operation at the factory. Fuel conversion, if needed, must be completed prior to performing these steps. See *Fuel Conversion*.

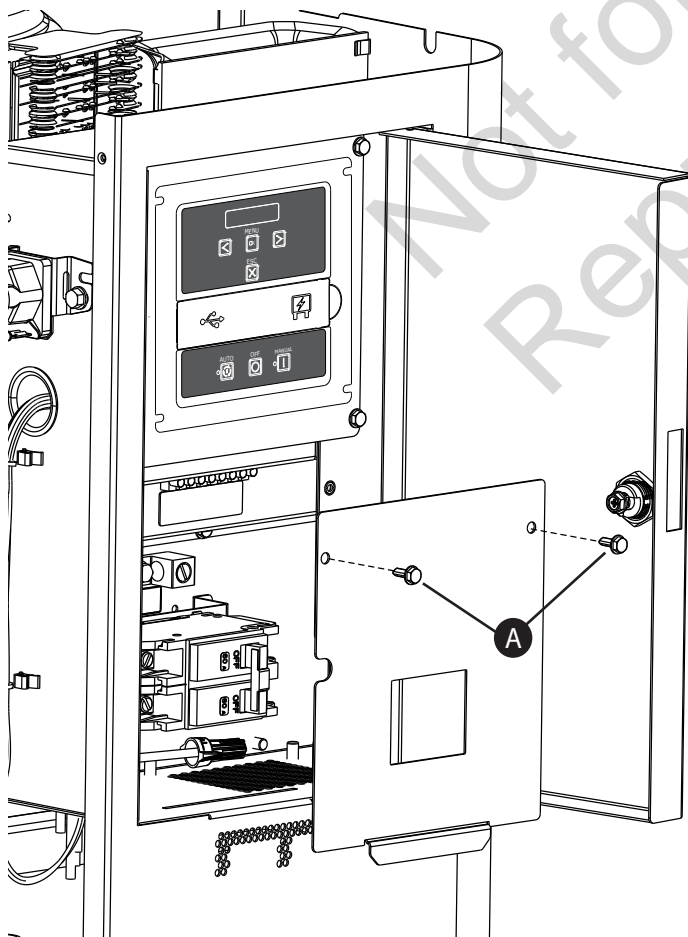
Before operating the home generator or placing it into service, inspect the entire installation carefully. Then begin testing the system without any electrical loads connected, as follows:

1. Remove two screws (**A**) that secure circuit breaker cover to expose unit's circuit breaker.
2. Connect an accurate frequency meter to line side of generator's main circuit breaker.
3. Set generator's main circuit breaker to **ON** (closed) position.
4. Install 15 Amp fuse in control board.
5. Press and hold **MANUAL** button on control board for 3 seconds. Engine will start.

When the generator is started for the very first time, it will require that air in the gaseous fuel lines be purged. This may cause the engine to run roughly for a few minutes.

6. Listen for unusual noises, vibration or other indications of abnormal operation. Check for oil leaks while engine runs.
7. Let engine warm up for about 5 minutes to allow internal temperatures to stabilize.

8. Check generator output at load side of circuit breaker. Voltage should be 239 - 262 Volts, frequency should be 62.0 - 62.5 Hz.
9. Check generator output between one generator connection lug and neutral lug, then between other generator connection lug and neutral lug. In both cases, voltage reading should be between 112 and 125 Volts.
10. Push and hold **OFF BUTTON** on control board until engine stops.
11. Reinstall control box cover.



- CAUTION** Installing the 15A fuse could cause the engine to start at any time without warning resulting in minor or moderate injury.
- Observe that the 15 Amp fuse has been removed from the control panel for shipping.
  - DO NOT install this fuse until all plumbing and wiring has been completed and inspected.



# Operation Set Up (Installer)

## Automatic Operation Sequence

The generator's control board constantly monitors utility voltage. Should utility voltage drop below a preset level, the control board will signal the engine to crank and start.

When utility voltage is restored above a preset voltage level, the engine is signaled to shut down.

The actual system operation is not adjustable and is sequenced by sensors and timers on the control board, as follows:

### Utility Voltage Dropout Sensor

- This sensor monitors utility source voltage.
- If utility source voltage drops below about 70 percent of the nominal supply voltage, the sensor energizes a 3 second timer. The timer is used to 'sense' brown-outs.
- Once the timer has expired, the engine will crank and start.

## Setting Exercise Timer

The generator is equipped with an exercise timer. During the exercise period, the unit runs for approximately 20 minutes and then shuts down. Electrical load transfer DOES NOT occur during the exercise cycle (unless an utility power outage occurs).

**The generator will only enter the exercise cycle if the unit is in the AUTO mode and this exact procedure is followed.**

### To set the exercise timer:

**NOTICE** The generator is set with a default exercise cycle setting of Tuesday at 2:00 P.M, Central Time. To change the cycle setting, proceed to the following steps:

1. Choose the day and time you want your generator to exercise.
2. Press and hold the left arrow and right arrow simultaneously for 3 seconds to enter the General Set-Up program mode. See *General Set-Up* flow chart in Menu Section.
3. Verify and/or set the time and date on the unit.
4. Go to the SET EXERCISE prompt and hit the "OK" button.

### Utility Voltage Pickup Sensor

This sensor monitors utility power voltage. When utility voltage is restored above 80 percent of the nominal source voltage, a time delay starts timing and the engine will go to engine cool-down.

### Engine Cool-down Timer

When utility power is sensed and the load transfers to the utility source, the engine will go into a cool down period as described below:

- If the generator has run for MORE than 5 minutes, once the utility transfer occurs, the engine will continue to run for about 1 minute before shutting down.
- If the generator has run for LESS than 5 minutes, once the utility transfer occurs, the engine will continue to run until 5 minutes has elapsed before shutting down.

**NOTICE** Items will flash until they are selected.

**SELECT DAY:** Use the left or right arrow to toggle through the days of the week, Once the day is selected, hit the "OK" button.

**SELECT HOUR:** Use the left or right arrow to toggle through between 1 and 12. Choose the hour of day you want the generator to exercise then hit the "OK" button.

**SELECT MINUTE:** Use the left of right arrow to toggle between :00 and :59. Choose the minute of the day you want the generator to exercise then hit the "OK" button.

**SELECT AM/PM:** Use the left of right arrow to toggle between AM and PM. Once chosen, hit the "OK" button.

**NOTICE** During the weekly exercise cycle, the generator will run for 20 minutes, but it will not supply power to the home. During the exercise cycle, the in-home monitor will continue blinking the GENERATOR READY green LED.

If you want to change the day and time the unit exercises, simply perform the procedure again.

To turn off the generator exercise cycle, go to the OFF selection within the day of the week menu and press OK. The display will then scroll: EXERCISE CYCLE OFF.

## Wireless Monitor (Optional)

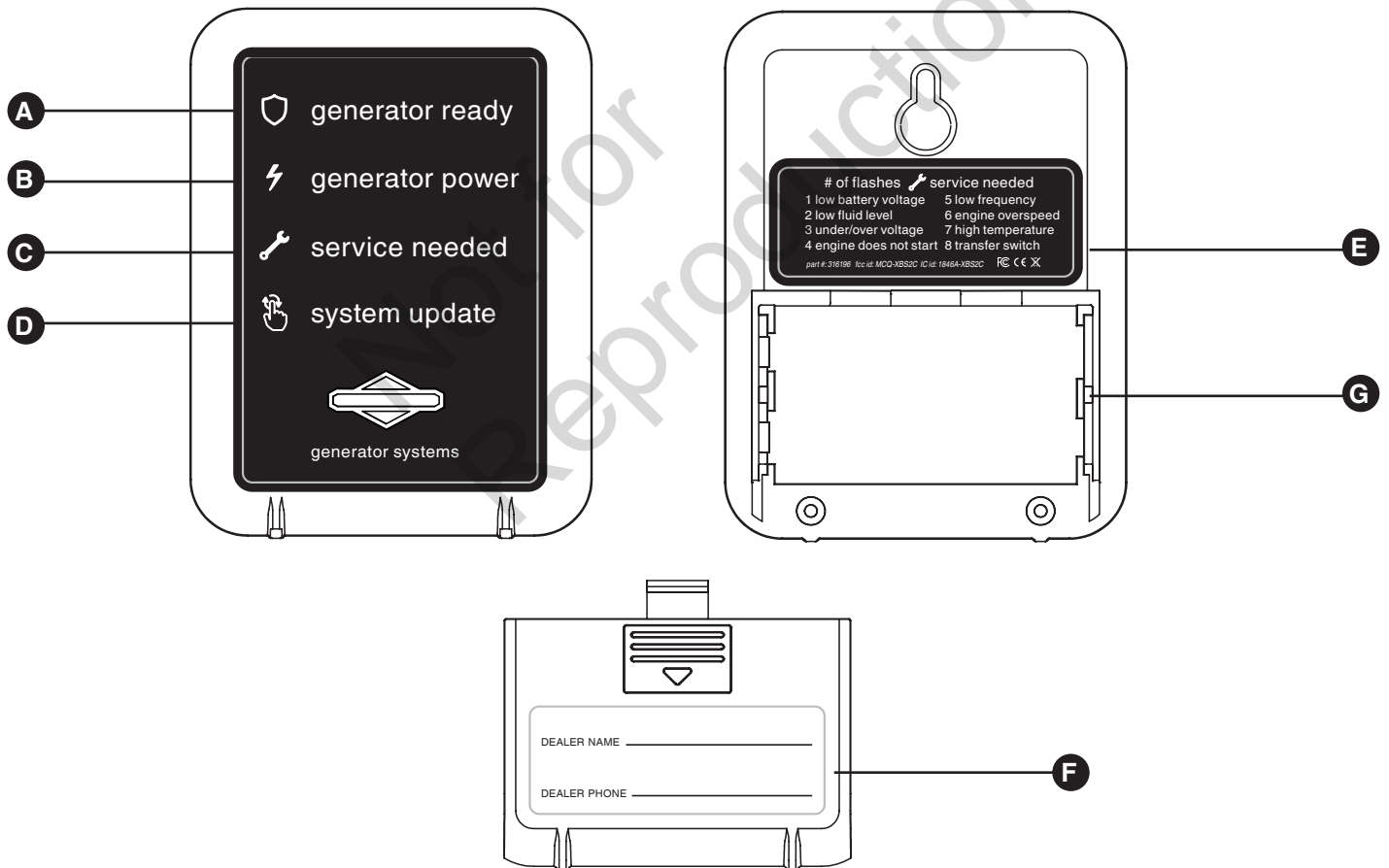
The generator is supplied with a battery-powered, wireless monitor.

The monitor communicates wirelessly with the generator control panel. The monitor may be placed in a suitable location in the home. The system has a line-of-sight range of about 200 feet, but this distance will decrease if the signal has to pass through walls or other objects.

The wireless monitor communicates with the generator, every 10 minutes and will display the status via LED lights on the front of the monitor.

Compare the illustration below with your monitor to familiarize yourself with these important components.

- Generator Ready (**A**) - Green LED
- Generator Power (**B**) - Green LED
- Service Needed (**C**) - Red LED
- System Update (**D**) - Press for current system update with generator.
- Service code descriptions (**E**) - Name and number of flashes are listed on the backside of the wireless monitor.
- Battery Access Cover (**F**) - Record the dealer name and phone number on the label provided. Once opened, two AA batteries are installed in the compartment (**G**)..

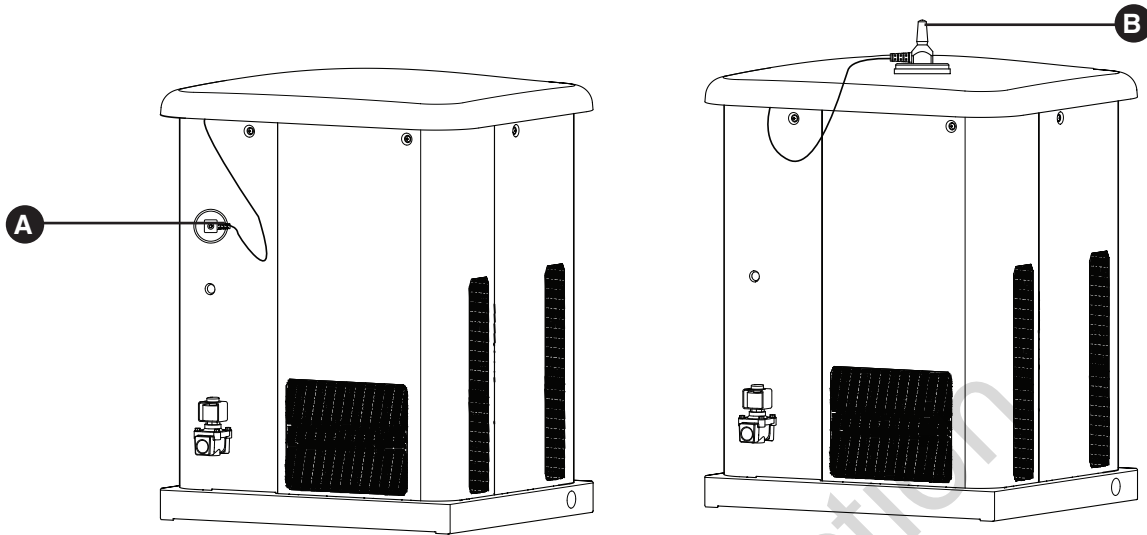


## Antenna Placement

The wireless monitor includes an antenna that was installed at the factory.

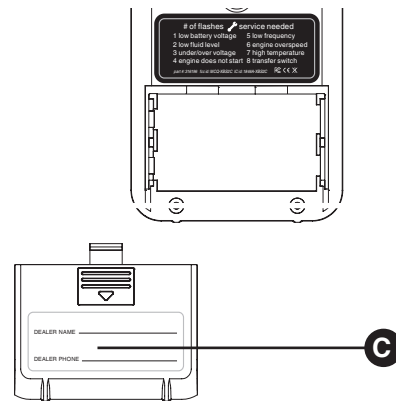
Before shipping, the magnetic-backed antenna was moved to the side of the generator to prevent damage (A).

Before starting the wireless monitor, mount the antenna on the top of the unit (B).



## Wireless Monitor Operation

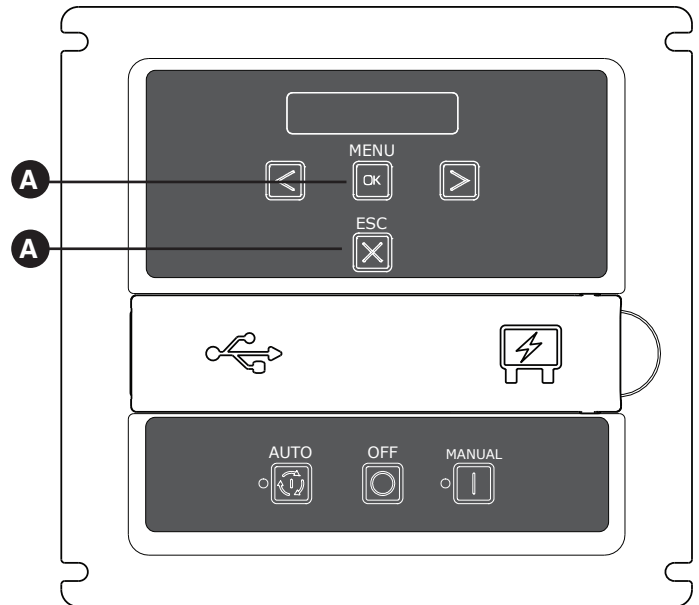
1. Remove battery access cover (C) on back of monitor and install 2 AA batteries. (Observe correct battery polarity which is embossed in the bottom of the battery compartment). Replace battery access cover.
2. The wireless monitor does not have an on/off switch. When batteries are installed correctly, the GENERATOR READY green LED light will flash once every 7 seconds indicating the status of the generator.



**NOTICE** The wireless monitor was linked to the generator at the factory. Communication will begin upon the installation of the batteries and the generator being placed in AUTO mode. You may need to press System Update one time.

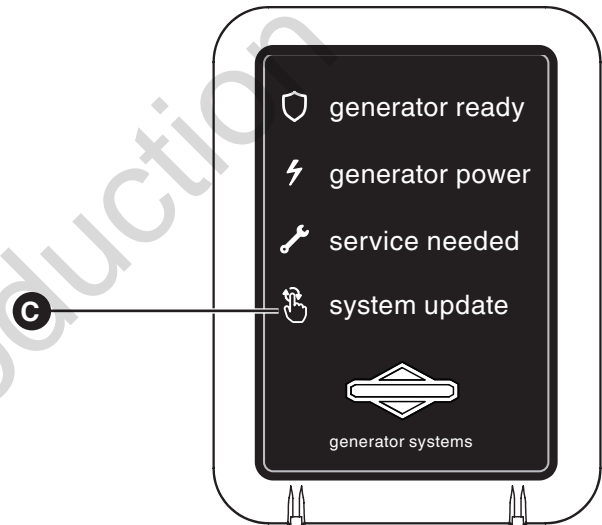
**NOTICE** If communication does not begin upon placing the generator in AUTO, installing batteries, and pressing System Update, the monitor may need to be re-linked. To link, follow Steps 3 through 6.

3. Locate the MENU AND ESCAPE buttons on the control panel (A). Press and hold for 3 seconds to enter the linking mode.
4. "LINKING MODE" will scroll across the generator control panel.



5. Locate and hold the SYSTEM UPDATE button (B) on the wireless monitor for 5 seconds. All 3 LEDs will flash until the monitor links to the generator. Once it links, the monitor will display the current state. The monitor will try to link for 1 minute. (This step can only be completed when the generator is in Linking Mode).
6. Once the link has been confirmed, press the OK button on the generator control panel to exit or the control board will turn off linking after 5 minutes. The generator will now communicate with the wireless monitor.

**NOTICE** It may take up to 1 minute for the monitor to begin displaying the generator status correctly.



## Standard Operation:

### Wireless Monitor Status LED's

- The wireless monitor receives data from the generator every 10 minutes and displays the generator status through 3 LED's.
- Pressing the SYSTEM UPDATE button will provide current generator status by flashing the status LED's. When pressed, all 3 LEDs will flash until the generator status is received.

**NOTICE** Generator control panel must be in AUTO mode or no communication with monitor will occur.

- In order to conserve power and to extend battery life, the LED's are not lit continuously; instead they are briefly flashed as indicated below.

**NOTICE** During the weekly exercise cycle, the generator will run for 20 minutes, but it will not supply power to the home. During the exercise cycle, the monitor will continue blinking the GENERATOR READY green LED.

- **GENERATOR READY** - When active, the green LED will flash once every 7 seconds. The green LED indicates that the generator is in AUTO mode and that it is ready to run in the event of a loss of utility power.
- **GENERATOR POWER** - When active, the green LED will flash every 7 seconds. The green LED indicates that the generator is supplying power.
- **SERVICE NEEDED** - When active, the red LED will flash in a sequence that corresponds to the service code. For example, when Low Frequency scrolls across the control board, the red LED will flash 5 times with a 3 second pause between series of blinks until it is reset or the condition is corrected. Contact the nearest authorized service dealer if the problem can not be fixed.

**NOTICE** Service conditions will only be displayed on the basic monitor when the control board is placed in AUTO mode.

## Installation Inspection

Before placing the generator system into service, inspect the entire installation carefully, utilizing the Installation Checklist that comes separately inside the literature pack that is included this manual.

This completes the installation and start-up instructions. The operator's manual provides full details on Operation, Maintenance and Troubleshooting for this generator system.

## Other:

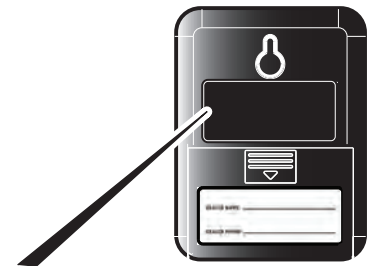
### LED Lighting Codes

- No status LEDs illuminated - Generator in OFF mode or check and replace batteries.

Wireless communication lost issues can typically be resolved by moving the wireless monitor closer, within the home, to the standby generator. See Optional Router Accessory Kit

- **Batteries Inserted** - the shield LED will light for 5 seconds.
- **Linking Error or Not Linked** - Each LED will light then turn off in one direction, then the other direction until a successful link is completed.
- **During the weekly exercise cycle**, the generator will run for 20 minutes, but it will not supply power to the home. During the exercise cycle, the monitor will continue blinking the green shield LED.

Service Code Descriptions - name and number of flashes are listed on the back side of the wireless monitor.



# of flashes	service needed
1 low battery voltage	5 low frequency
2 low fluid level	6 engine overspeed
3 under/over voltage	7 high temperature
4 engine does not start	8 transfer switch

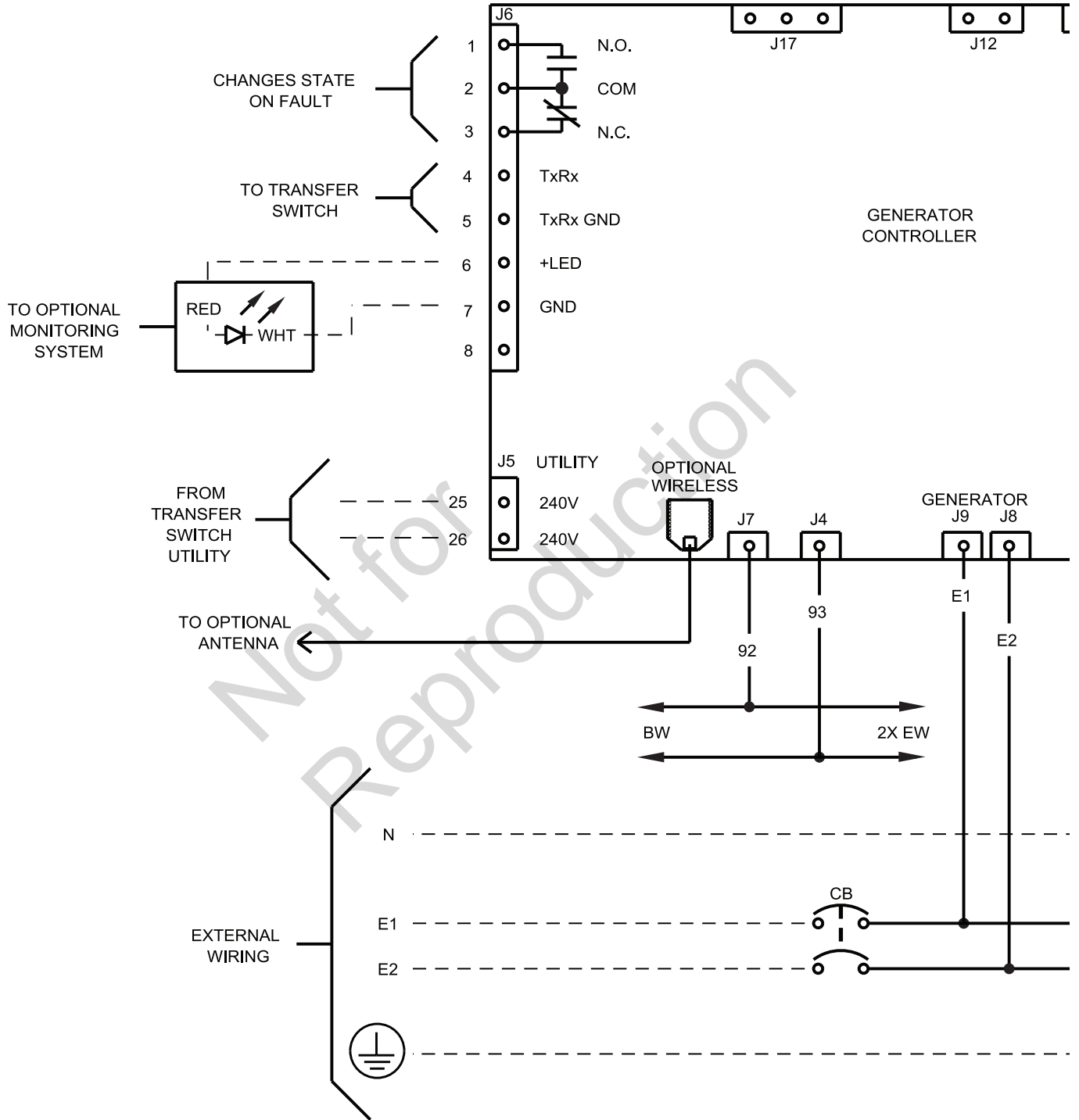
part #: xxxxxx fcc id: xxxxxx IC id: xxxxxx

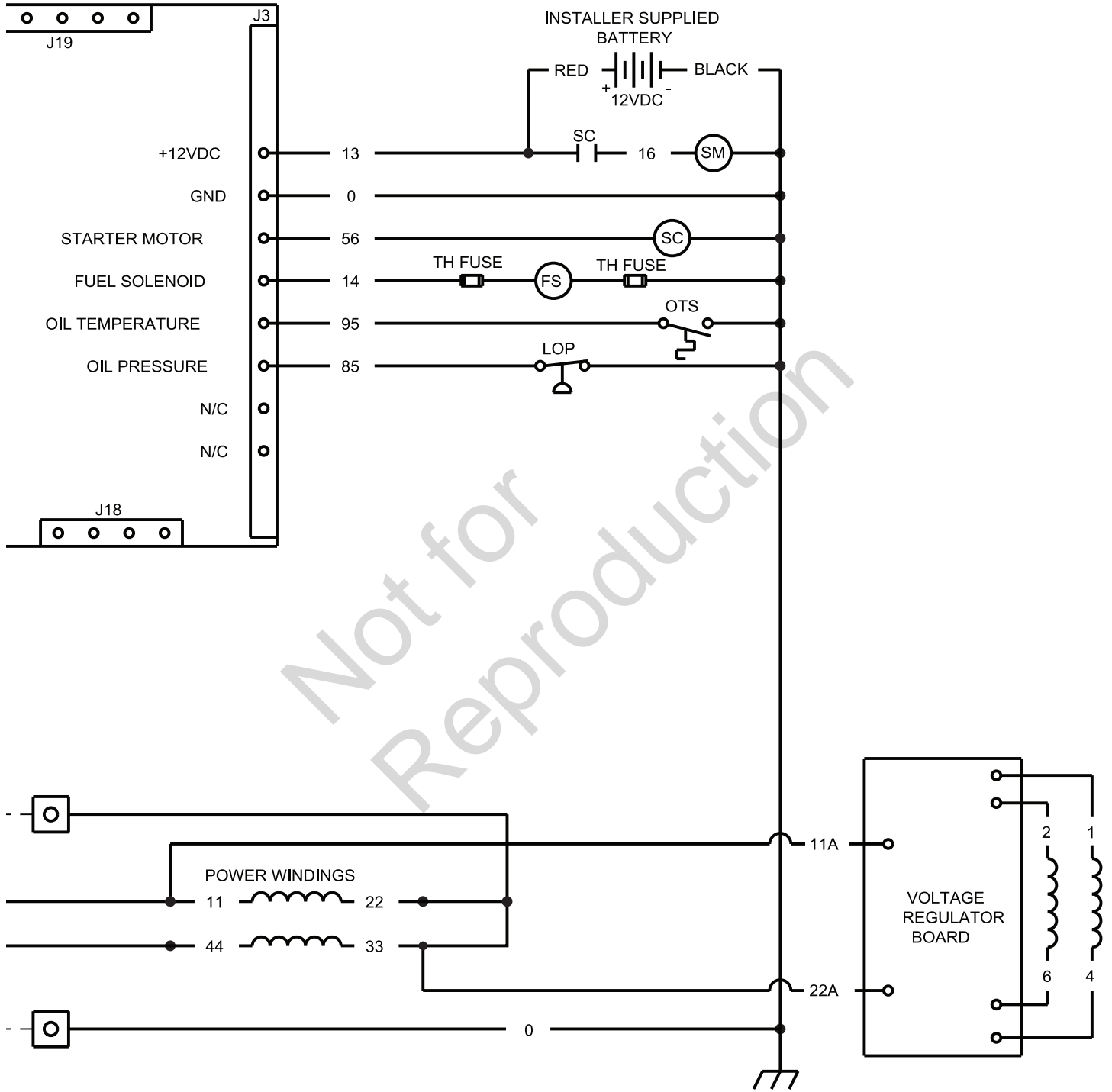
FC CE X

None of the service needed codes are cleared at the wireless monitor. All alerts must be cleared at the generator control panel.

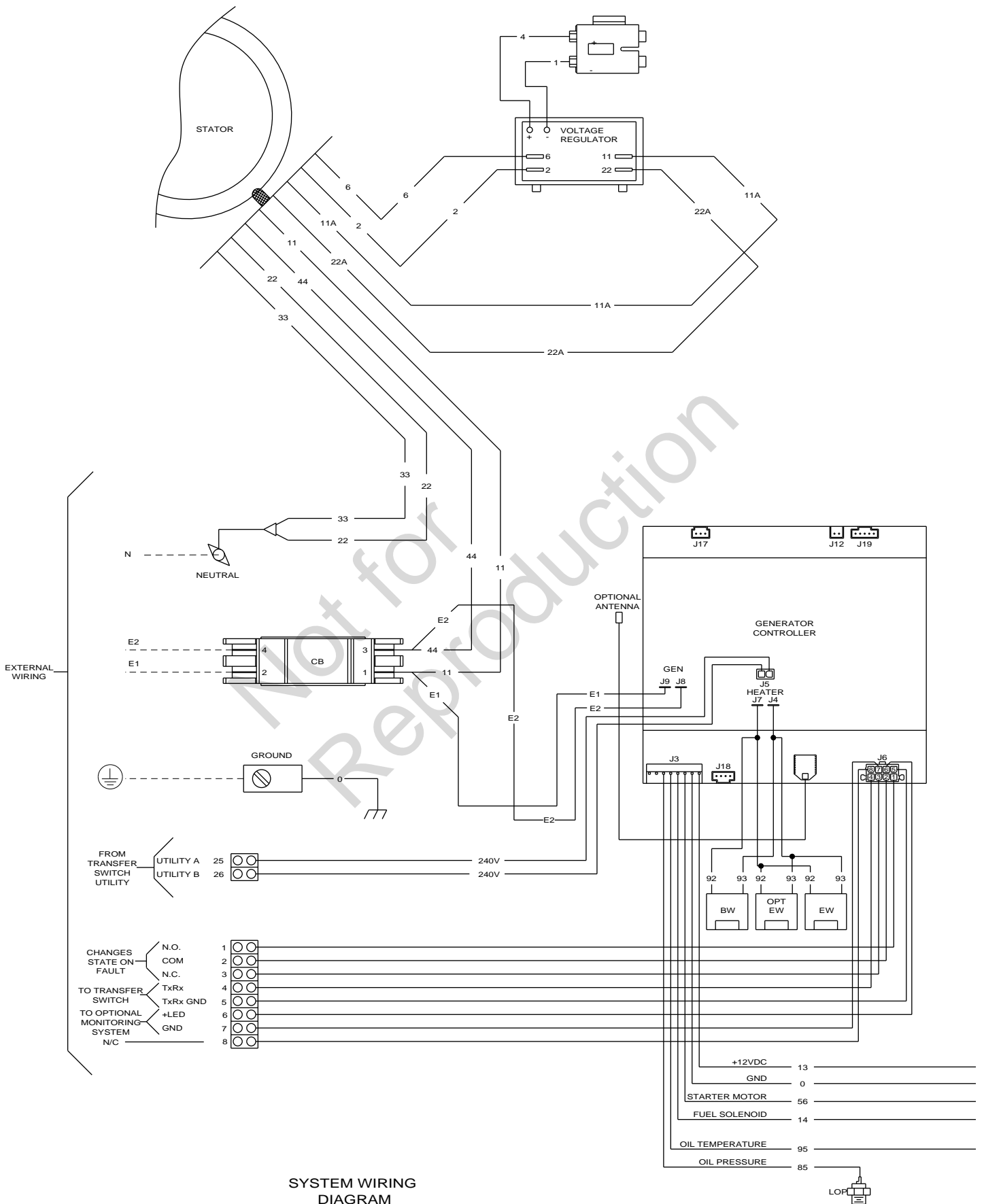
# Schematic / Wiring Diagrams

## Schematic Diagram - 10kW



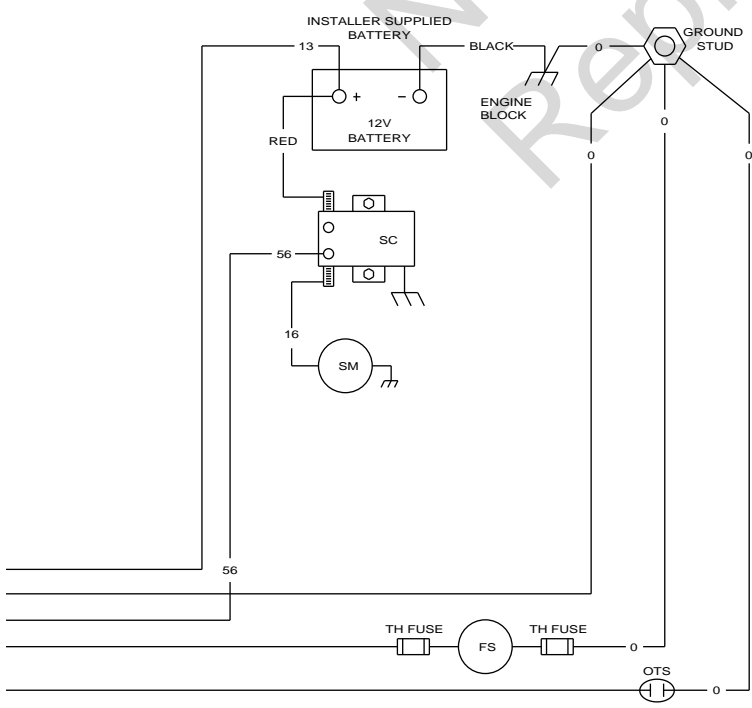


# Wiring Diagram - 10kW





Not for Reproduction



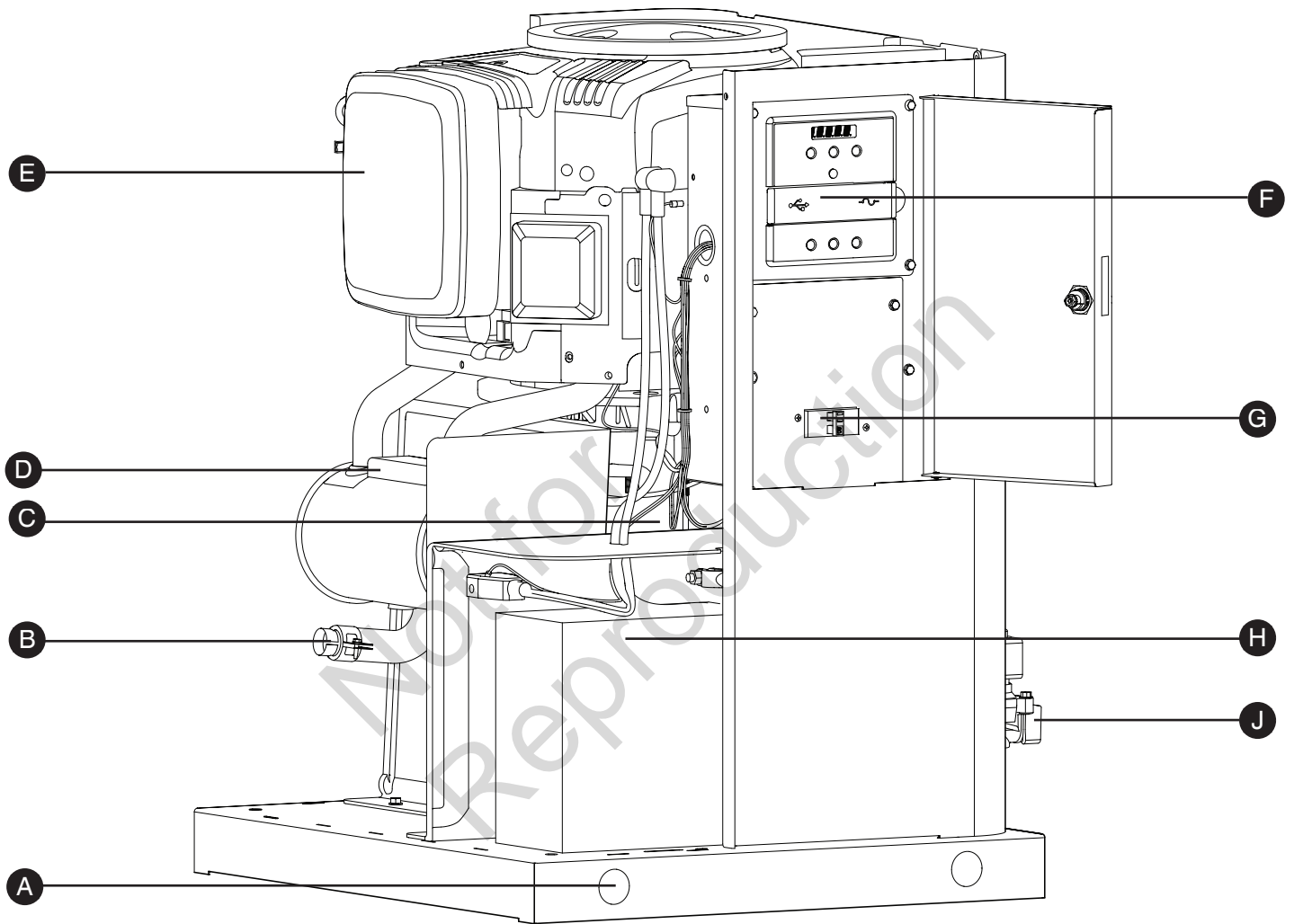
LEGEND:  
 BW - PLUG FOR OPTIONAL BATTERY WARMER  
 CB - CIRCUIT BREAKER  
 COM - COMMON  
 EW - PLUG FOR OPTIONAL ENGINE OIL WARMER  
 FS - FUEL SOLENOID  
 GND - GROUND  
 LOP - LOW OIL PRESSURE SWITCH (CLOSES ON LOW PRESSURE)  
 N.C. - NORMALLY CLOSED  
 N/C - NOT CONNECTED  
 N.O. - NORMALLY OPEN  
 OTS - OIL TEMPERATURE SWITCH  
 SM - STARTER MOTOR  
 SR - STARTER RELAY  
 SS - STARTER SOLENOID  
 TH FUSE - THERMAL FUSE  
 FSS-FUEL SELECT SOLENOID.  
 TH FUSE - THERMAL FUSE  
 +LED - POSITIVE SIDE OF DIAGNOSTIC LED  
 ----- EXTERNAL WIRING  
 \*\*NOTE\*\*  
 REMOVE 15AMP FUSE BEFORE SERVICING.

# Operator's Section



## Controls

### 10kW Generator



Generator is shown with roof and access covers removed for clarity.

- A** - **Lifting Holes** — Provided at each corner for lifting generator.
- B** - **Exhaust Port** — High-performance muffler lowers engine noise to comply with most residential codes.
- C** - **Alternator** — An electrical machine that generates an alternating current.
- D** - **Muffler** — A device to reduce engine noise.
- E** - **Air Cleaner** — Uses a dry type filter element and foam precleaner to protect engine by filtering dust and debris out of intake air.

- F** - **Control Panel** — Used for various test, operation and maintenance functions. See *System Control Panel*.
- G** - **Circuit Breaker** — Protects the system from shorts and other over-current conditions.
- H** - **Battery** — (installer supplied) — 12 Volt DC, sealed battery provides power to start the engine.
- J** - **Fuel Inlet Port** — Attach appropriate fuel supply to generator here.

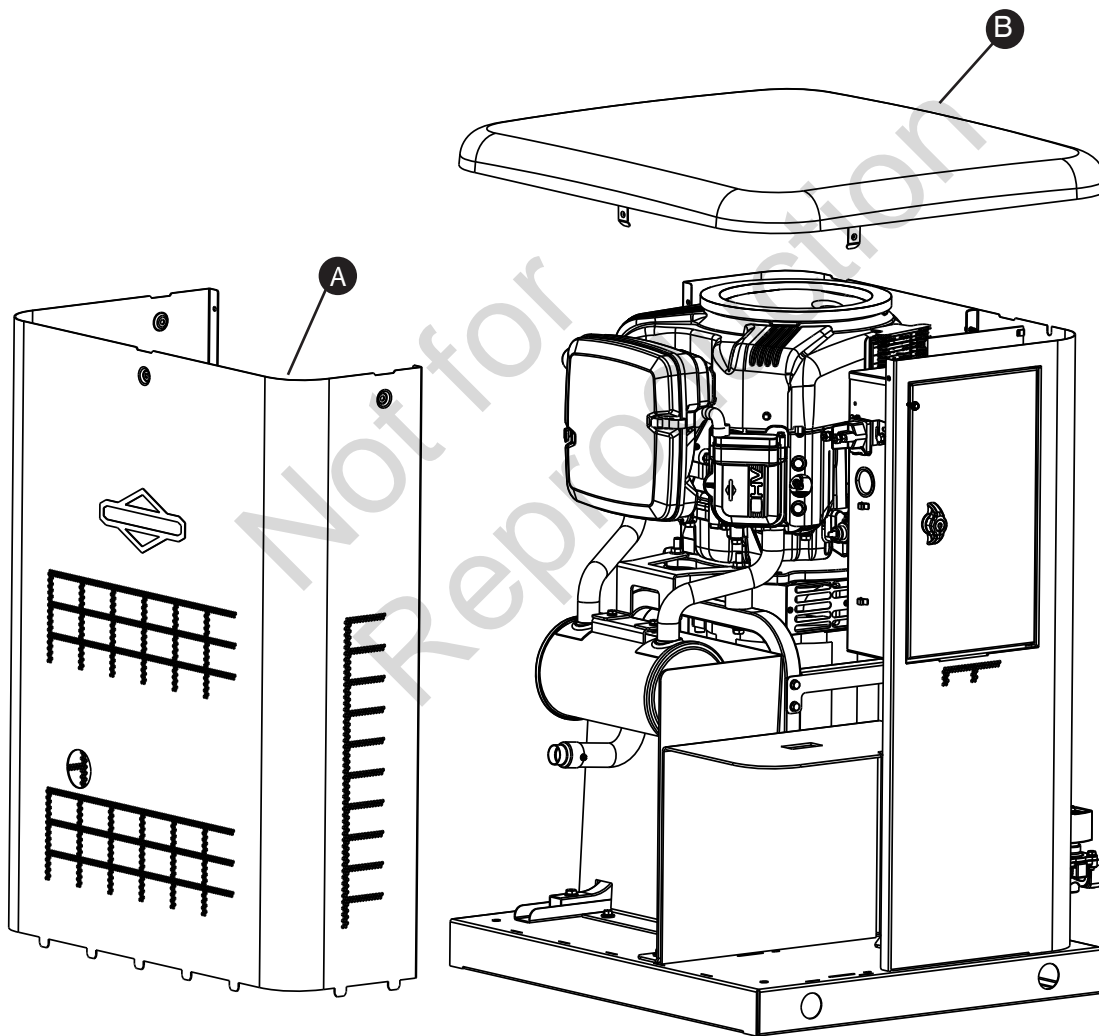
## Access Panels

The generator is equipped with an enclosure that has several access panels, as shown.

Front Panel (A) and roof (B) are used to access:

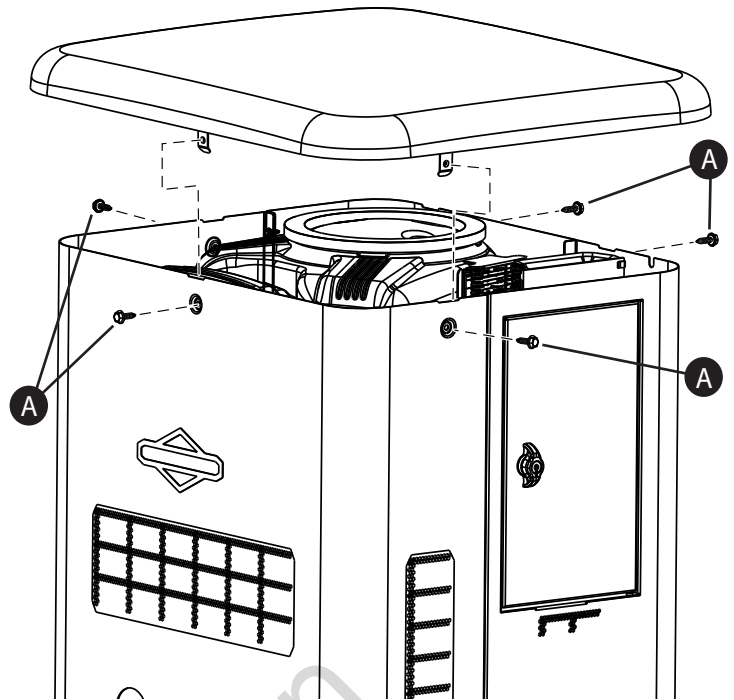
- Battery Compartment
- Engine Oil Drain Hose
- Engine Oil Filter
- Engine Valve Cover
- Spark Plugs

Each generator is shipped with a set of identical keys.



**To remove roof:**

1. Remove the five screws (A) that secure the roof to the unit.
2. Carefully lift and remove roof from unit.

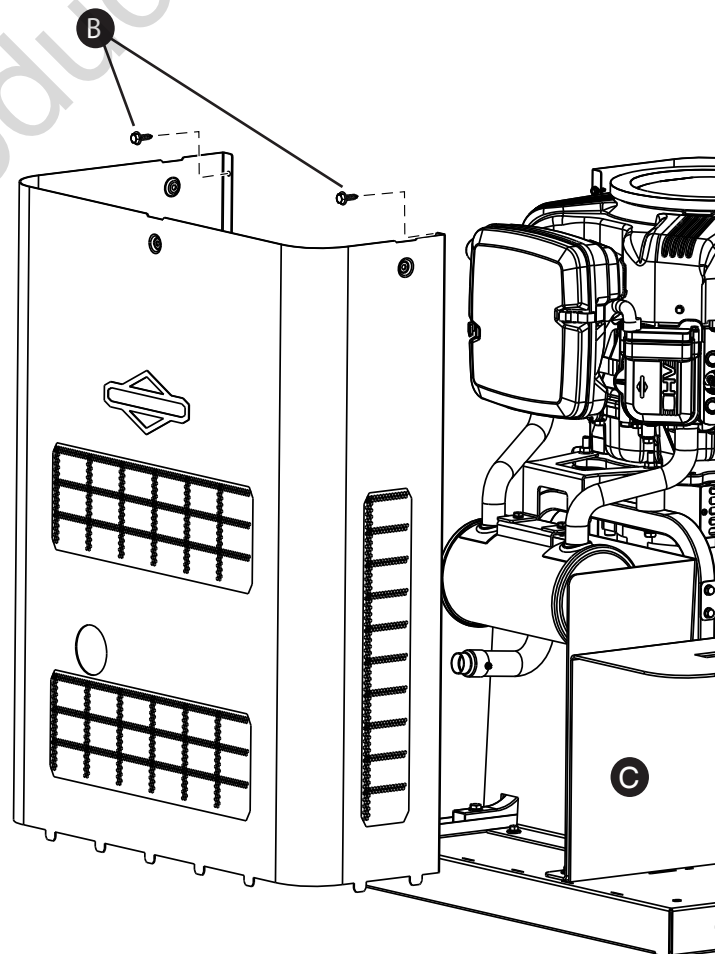


**To remove front panel:**

1. Remove the two screws (B) that secure the panel to the unit.
2. Lift and flex panel outward and off base. Use caution not to damage the battery box (C).

**To secure front panel:**

1. Place panel in unit.
2. Secure the panel with two screws.



# Operation

## Important Owner's Considerations

### Engine Oil

The engine is shipped from the factory pre-run and filled with full synthetic oil (API SJ/CF 5W-30). This allows for system operation in a wide range of temperature and climate conditions. Before starting the engine, check oil level as described in *Maintenance*.

**NOTICE** Any attempt to crank or start the engine before it has been properly serviced with the recommended oil will result in equipment failure.

- Damage to equipment resulting from failure to follow this instruction will void engine and generator warranty.

### Battery

**⚠ WARNING** Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

The installer must supply a rechargeable 12 volt DC starting battery. See *Battery* in *Final Installation Considerations* in the installation manual.

With the battery installed, all wiring to transfer switch and home generator completed, utility power supplied to the automatic transfer switch, and the unit in **AUTO** mode, the battery receives a trickle charge while the engine is not running. The trickle charge cannot be used to recharge a battery that is completely discharged.

**NOTICE** A battery booster should never be used to quick charge a low battery.

### 15 Amp Fuse

The generator's 15 Amp fuse is critical to correct system operation. The 15 Amp fuse was removed at the factory. Your installer will ensure the fuse is properly installed upon completion of the installation.

## Automatic Operation

The generator's control board constantly monitors utility voltage. Should utility voltage drop below a preset level, the control board will signal the engine to crank and start.

When utility voltage is restored above a preset voltage level, the engine is signaled to shut down.

The actual system operation is not adjustable and is sequenced by sensors and timers on the control board, as follows:

### Utility Voltage Dropout Sensor

- This sensor monitors utility source voltage.
- If utility source voltage drops below about 70 percent of the nominal supply voltage, the sensor energizes a 3 second timer. The timer is used to 'sense' brown-outs.
- Once the timer has expired, the engine will crank and start.

## Setting Exercise Timer

The generator is equipped with an exercise timer. During the exercise period, the unit runs for approximately 20 minutes and then shuts down. Electrical load transfer DOES NOT occur during the exercise cycle (unless an utility power outage occurs).

**The generator will only enter the exercise cycle if the unit is in the AUTO mode and this exact procedure is followed.**

### To set the exercise timer:

**NOTICE** The generator is set with a deservice code exercise cycle setting of Tuesday at 2:00 P.M, Central Time. To change the cycle setting, proceed to the following steps:

1. Choose the day and time you want your generator to exercise.
2. Press and hold the left arrow and right arrow simultaneously for three seconds to enter the General Set-Up program mode. See *General Set-Up* flow chart in Menu Section.
3. Verify and/or set the time and date on the unit.
4. Go to the SET EXERCISE prompt and hit the "OK" button.

**NOTICE** Items will flash until they are selected.

### Utility Voltage Pickup Sensor

This sensor monitors utility voltage. When utility voltage is restored above 80 percent of the nominal source voltage, a time delay starts timing and the engine will go to engine cool-down.

### Engine Cool-down Timer

When utility power is sensed and the load transfers back to the utility source, the engine will go into a cool down period as described below:

- If the generator has run for MORE than 5 minutes, once the utility transfer occurs, the engine will continue to run for about 1 minute before shutting down.
- If the generator has run for LESS than 5 minutes, once the utility transfer occurs, the engine will continue to run until 5 minutes has elapsed before shutting down.

**SELECT DAY:** Use the left or right arrow to toggle through the days of the week, Once the day is selected, hit the "OK" button.

**SELECT HOUR:** Use the left or right arrow to toggle through between 1 and 12. Choose the hour of day you want the generator to exercise then hit the "OK" button.

**SELECT MINUTE:** Use the left of right arrow to toggle between :00 and :59. Choose the minute of the day you want the generator to exercise then hit the "OK" button.

**SELECT AM/PM:** Use the left of right arrow to toggle between AM and PM. Once chosen, hit the "OK" button.

**NOTICE** During the weekly exercise cycle, the generator will run for 20 minutes, but it will not supply power to the home. During the exercise cycle, the in-home monitor will continue blinking the GENERATOR READY green LED.

If you want to change the day and time the unit exercises, simply perform the procedure again.

To turn off the generator exercise cycle, go to the OFF selection within the day of the week menu and press OK. The display will then scroll: EXERCISE CYCLE OFF.

# Maintenance

## Servicing the System

**Before performing any generator maintenance, always perform the following steps:**

1. Set generator's circuit breaker to its OFF position.
2. Press and hold the control board OFF button.
3. Remove 15 Amp fuse from control board.
4. Utility voltage is present at generator control board. Disconnect power before servicing control board by removing the fuses from the transfer switch.
5. After all servicing has been completed, replace fuses in transfer switch, replace 15 Amp fuse in control board, set circuit breaker **ON** and press and hold control board **AUTO** button.

## Service Code Detection System

The generator may have to run for long periods of time with no operator present. For that reason, the system is equipped with sensors that automatically shut down the generator in the event of potentially damaging conditions, such as low oil pressure, high temperature, over speed, and other conditions.

The generator's control board shows service code descriptions scrolling across the digital display. The service code descriptions are listed below:

- Low Battery Voltage
- Low Oil Pressure
- Under Voltage
- Over Voltage
- Engine Does Not Start
- Low Frequency
- Engine Overspeed
- High Oil Temperature
- Transfer Switch Service code
- No Wireless Communication
- Battery Charge Circuit

## Reset Service code Detection System

The operator must reset the service code detection system each time it activates. To do so, press the control board OFF button for 5 seconds. Once the display turns off, leave it off for at least 30 seconds. Remedy the service code condition, then return the home generator to service by pressing and holding the control board AUTO button and installing the 15 Amp fuse (if removed).

## Low Battery Voltage

This service code is indicated by *Low Battery Voltage* scrolling across the digital display and a single flash on the wireless monitor. This condition occurs if the battery voltage drops below the preset value. Causes for this problem may be a service code battery or battery charge circuit. See *Battery Charge Circuit*,

Remove the 15 Amp fuse and disconnect the battery from the generator. Test the battery voltage. If voltage meets specifications, take the battery to a local battery store for analysis. Or contact your local service center for assistance.

Reinstall the battery (replace if necessary - see *Battery in Final Installation Considerations* in the installation manual). Then reset the service code detection system, as described earlier.

## Low Oil Pressure

This service code is indicated by *Low Oil Pressure* scrolling across the digital display and two flashes on the wireless monitor. The unit is equipped with an oil pressure switch that uses normally closed contacts held open by engine oil pressure during operation. Should oil pressure drop below the 8 psi range, switch contacts close and the engine will shut down.

To remedy the low oil pressure condition, add the recommended oil to the FULL mark on the dipstick.

If the low oil pressure condition still exists, the engine will start, then shut down again. The service code will appear. In this case, contact an authorized dealer.

## Under Voltage

This service code is indicated by *Under Voltage* scrolling across the digital display and three flashes on the wireless monitor. This condition is caused by a restriction in the fuel flow, the electronic governing system not functioning properly, a broken or disconnected signal lead, a failed alternator winding, the control board circuit breaker is open, or the generator is overloaded.

To remedy the problem, contact your installer or an authorized dealer.

## Over Voltage

This service code is indicated by *Over Voltage* scrolling across the digital display and three flashes on the wireless monitor. This feature protects devices connected to the transfer switch by shutting the generator down if the generator output voltage happens to increase above the preset limit.

This condition is most likely caused by a failed voltage regulator, alternator excitation circuit or a load imbalance. To remedy the problem, contact your installer or an authorized dealer.

## Engine Does Not Start

This service code is indicated by *Engine Does Not Start* scrolling across the digital display and four flashes on the wireless monitor. This feature prevents the generator from damaging itself if it continually attempts to start in spite of another problem, such as no fuel supply. Each time the system is directed to start, the unit will crank for 10 seconds, pause for 10 seconds, and repeat. If the system does not begin producing electricity after approximately 2 minutes, the unit will stop cranking.

The most likely cause of this problem is no fuel supply or incorrect fuel selector setting. See *Fuel Selection Switch* in the installation manual. Check the internal and external fuel shut off valves to ensure they are fully open. Other causes could be failed spark plug(s), a loose electronic governor connection, a failed engine ignition, or the engine air filter is clogged. You may need to contact your installer for assistance if you can't remedy these problems.

## Low Frequency

This service code is indicated by *Low Frequency* scrolling across the digital display and five flashes on the wireless monitor. This feature protects devices connected to the transfer switch by shutting the generator down if the engine runs slower than 55 Hz for three seconds. This condition is caused by a failed engine component, electronic governor system, or by excessive loads on the generator. To resolve the problem, contact your installer or an authorized dealer.

## Engine Overspeed

This service code is indicated by *Engine Overspeed* scrolling across the digital display and six flashes on the wireless monitor. This condition can be caused by a problem within the electronic governor system.

To resolve the problem, contact your installer or an authorized dealer.

## High Oil Temperature

This service code is indicated by *High Oil Temperature* scrolling across the digital display and seven flashes on the wireless monitor. The contacts of the temperature switch are normally open. If the engine temperature exceeds a predetermined temperature, the service code is detected and the engine shuts down.

Common causes for this condition include running the unit with an access doors removed, obstructed air inlet or exhaust port, or debris in the engine compartment or running unit with roof open.

To resolve the problem, let the engine cool down and remove any accumulated debris and obstructions. Ensure that the access doors are installed and the roof is closed whenever the unit is running. If problem persists, contact your installer or an authorized dealer.

## Transfer Switch Service code

This service code is indicated by *Transfer Switch Service code* scrolling across the digital display (if transfer switch is equipped with service code detection) and eight flashes on the wireless monitor.

The most likely cause of this service code is a blown fuse in the transfer switch. To remedy the problem, contact your installer or an authorized dealer.

## No Wireless Communication

This service code is indicated by *No Monitor Communication* scrolling across the digital display. The SERVICE NEEDED red LED on the wireless monitor will flash 20 fast pulses, pause 5 seconds, and repeat if there is a loss in communication between the wireless monitor and the generator.

To resolve the problem, move the wireless monitor closer to generator. Re-link if necessary.

## Battery Charge Circuit

This service code is indicated by *Battery Charge Circuit* scrolling across the digital display. The most likely cause is an electrical problem with the control panel. To remedy the problem, contact your installer or an authorized dealer.



## Maintenance Schedule

Follow the hourly or calendar intervals of operation, whichever occurs first.

<b>First 5 Hours</b>
Change Engine Oil
<b>Every 8 Hours or Daily</b>
Clean Debris
Check Engine Oil Level
<b>Every 100 Hours or Annually</b>
Change Air Filter
Change Engine Oil and Filter
Replace Spark Plugs
Check Valve Clearance
Check Circuit Breaker Torques
<b>Annually</b>
Clean Oil Cooler Fins

## Generator Maintenance

The generator's warranty does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, the operator must maintain the generator as instructed in this manual.

Some adjustments will need to be made periodically to properly maintain your generator.

All service and adjustments should be made at least once each season. Follow the requirements in the *Maintenance Schedule* chart.

Generator maintenance consists of keeping the unit clean. Operate the unit in an environment where it will not be exposed to excessive dust, dirt, moisture or any corrosive vapors. Cooling air louvers on the enclosure must not become clogged with snow, leaves, or any other foreign material. To prevent generator damage caused by overheating, keep the enclosure cooling inlets and outlets clean and unobstructed at all times.

Check the cleanliness of the unit frequently and clean when dust, dirt, oil, moisture or other foreign substances are visible on its exterior/interior surface. Inspect the air inlet and outlet openings inside and outside the enclosure to ensure air flow is not blocked.

DO NOT use direct spray from a garden hose to clean generator. Water can enter the engine and generator and cause problems.

Regular maintenance will improve the performance and extend the life of the generator. See any authorized dealer for service.

## Emissions Control

**Maintenance, replacement, or repair of the emissions control devices and systems may be performed by any non-road engine repair establishment or individual.** However, to obtain "no charge" emissions control service, the work must be performed by a factory authorized dealer. See the *Emissions Warranty*.

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

- DO NOT expose generator to excessive moisture, dust, dirt, or corrosive vapors.
- DO NOT insert any objects through cooling slots.

### Clean the generator as follows:

1. Press and hold the control board OFF button.
2. Remove 15 Amp fuse from control board.
3. Clean generator as desired.
  - Use a damp cloth to wipe exterior surfaces clean.
  - Use a soft, bristle brush to loosen caked on dirt, etc.
  - Use a vacuum cleaner to pick up loose dirt and debris.
  - Use low pressure air (not to exceed 25 psi) to blow away dirt. Inspect cooling air slots and openings on the generator. These openings must be kept clean and unobstructed.
4. Reinstall 15 Amp fuse in control board.
5. Press and hold the control board **AUTO** button.

# Battery

Servicing of the battery is to be performed or supervised by personnel knowledgeable of the battery and the required precautions. Keep unauthorized personnel away from battery.

## Servicing the Battery

If it is necessary to service the battery, proceed as follows:

1. Press and hold the control board OFF button.
2. Remove 15 Amp fuse from control panel.
3. Service or replace battery as required. See *Battery in Final Installation Considerations* in the installation manual for specific battery needed.
4. Connect red battery cable to battery positive terminal (indicated by **POSITIVE**, **POS**, or **(+)**).


## Charging the Battery

If it is necessary to charge the battery, proceed as follows:


1. Press and hold the control board **OFF** button.
2. Remove 15 Amp fuse from control board.
3. Disconnect negative battery cable from negative battery terminal (indicated by **NEGATIVE**, **NEG**, or **(-)**).

**NOTICE** Failure to disconnect negative battery cable could result in equipment failure.

- DO NOT attempt to jump start the generator.
- Damage to equipment resulting from failure to follow this instruction will void engine and generator warranty.

 **WARNING** Storage batteries give off explosive hydrogen gas during recharging. Slightest spark will ignite hydrogen and cause explosion, resulting in death or serious injury. Battery electrolyte fluid contains acid and is extremely caustic. Contact with battery contents could cause severe chemical burns. A battery's high short circuit current could result in serious injury.

- DO NOT dispose of battery in a fire. Recycle battery.
- DO NOT allow any open flame, spark, heat, or lit cigarette during and for several minutes after charging a battery.
- DO NOT open or mutilate the battery.
- Wear protective goggles, rubber apron, rubber boots and rubber gloves.
- Remove watches, rings, or other metal objects.
- Use tools having insulated handles.

 **WARNING** Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

5. Connect black negative battery cable to negative battery terminal (indicated by **NEGATIVE**, **NEG**, or **(-)**).
6. Ensure hardware on both positive and negative battery terminals is secure.
7. Reinstall 15 Amp fuse in control panel.
8. Press and hold the control board **AUTO** button.




**DON'T POLLUTE. CONSERVE RESOURCES, RETURN USED BATTERY TO RECYCLING COLLECTION CENTER.**

4. **Charge battery with battery charger at 2 Amps until battery holds 12 Volts. DO NOT exceed 13.7 volts when charging.**

**NOTICE** DO NOT use a battery booster to quick charge a low battery.

5. Connect negative battery cable to negative battery terminal (indicated by **NEGATIVE**, **NEG**, or **(-)**).
6. Ensure hardware on both positive and negative battery terminals is secure.
7. Reinstall 15 Amp fuse in control board.
8. Press and hold the control board **AUTO** button.

 **CAUTION** With the system switch set to AUTO, the engine could crank and start at any time without warning, resulting in minor or moderate injury.

- To prevent possible injury that could be caused by such sudden starts, always set the system switch to OFF if performing maintenance on the system.
- Remove the 15 Amp fuse before working on or around the generator or transfer switch.

## Engine Maintenance

**⚠ WARNING** Unintentional sparking could cause fire or electric shock resulting in death or serious injury.



### WHEN ADJUSTING OR MAKING REPAIRS TO YOUR GENERATOR

- Disconnect the spark plug wire from the spark plug and place the wire where it cannot contact spark plug.

### WHEN TESTING FOR ENGINE SPARK

- Use approved spark plug tester.
- DO NOT check for spark with spark plug removed.

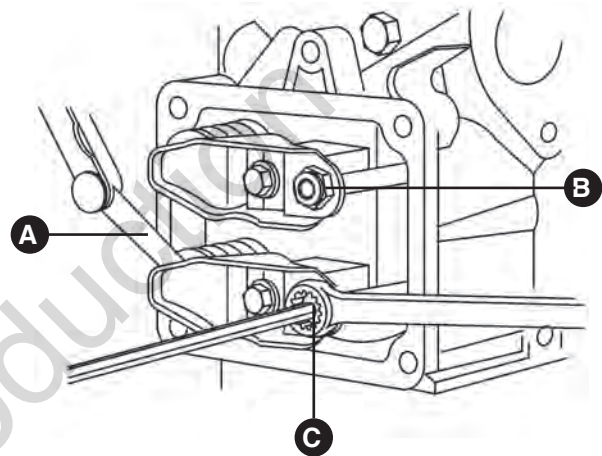
When all engine servicing is complete, replace 15 Amp fuse in control board and reset exercise timer.

## Adjust Valve Lash

The valve lash must be checked every 100 hours of operation. Measure valve clearance with the engine cold.

To adjust the valve lash, proceed as follows:

1. Press and hold the control board **OFF** button.
2. Remove 15 Amp fuse from control board.
3. Remove spark plug(s) to ease manual rotation of engine crankshaft.
4. Turn crankshaft counterclockwise until the piston is at Top Dead Center on the compression stroke.
5. Insert a narrow screwdriver or rod into spark plug hole as a gauge, then slowly turn crankshaft counterclockwise until the piston has moved down the bore by 1/4".
6. For the Model 35 Engine:
  - Use a feeler gauge (**A**) to measure the valve clearance.
  - Adjust the clearance by loosening the lock nut (**B**) then turn the adjusting screw (**C**) to obtain the following measurement:  
Intake: 0.005 in. (0.013 mm)  
Exhaust: 0.008 in. (0.020 mm)
  - Once the clearance is properly set, hold the adjusting screw while torquing the lock nut to 70 in/lbs. (8 Nm).
7. Repeat for the other valve, if applicable.



When all servicing is complete, replace 15 Amp fuse in control board and reset exercise timer.

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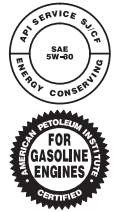
# Engine Oil

The engine is filled with full synthetic oil (API SJ/CF 5W-30). This allows for system operation in the widest range of temperature and climate conditions.

We recommend the use of Briggs & Stratton Warranty Certified oils for best performance. Other high-quality detergent oils are acceptable if classified for service SJ or higher. DO NOT use special additives.

**NOTICE** An acceptable oil at all temperatures includes full synthetic oil that:

- Meets International Lubricant Specification Advisory Committee (ILSAC) GF-2 standards
- Carries the API certification mark
- Features an API service symbol with “SJ/CF energy conserving” or higher
- TEST



Using full synthetic oil does not alter the required oil change intervals described in the Operation section.

## Changing Engine Oil and Oil Filter

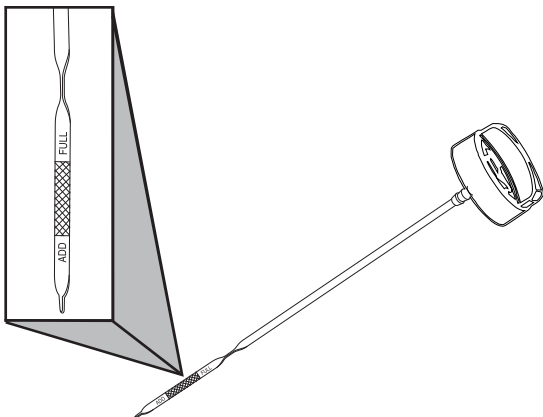
Open roof and remove front panel to access the oil filter and to add engine oil.

## Checking/Adding Engine Oil

1. Open roof to access dipstick and oil fill area.
2. Clean the oil fill area of any debris.
3. Remove the dipstick and wipe with a clean cloth.
4. Fully insert dipstick into oil fill.
5. Remove dipstick and check oil level. Verify oil is at Full mark on dipstick.
6. If needed, slowly pour recommended oil into oil fill opening. DO NOT overfill. After adding oil, wait one minute and recheck oil level.
7. Replace oil dipstick.
8. Close roof and secure.

**NOTICE** Overfilling with oil could cause the engine to not start, or hard starting.

- DO NOT overfill.
- If over the FULL mark on dipstick, drain oil to reduce oil level to FULL mark on dipstick.



## Changing Engine Oil and Oil Filter

- CAUTION** Avoid prolonged or repeated skin contact with used motor oil.
- Used motor oil has been shown to cause skin cancer in certain laboratory animals.
  - Thoroughly wash exposed areas with soap and water.



KEEP OUT OF REACH OF CHILDREN. DON'T POLLUTE. CONSERVE RESOURCES. RETURN USED OIL TO COLLECTION CENTERS.

**NOTICE** Any attempt to crank or start the engine before it has been properly serviced with the recommended oil will result in equipment failure.

- DO NOT attempt to crank or start the engine before it has been properly serviced with the recommended oil. This may result in an engine failure.
- Damage to equipment resulting from failure to follow this instruction will void engine and generator warranty.

Change the oil while the engine is still warm from running, as follows:

1. Press and hold the control board **OFF** button.
2. Remove 15 Amp fuse from control board.
3. Place oil drain hose into an approved container.
4. Remove brass fitting from end of drain hose and drain oil into an approved container.
5. When oil has drained, replace brass fitting on hose.
6. Place oil absorbing towels under oil filter.
7. Remove oil filter and dispose of properly.
8. Before installing a new oil filter, lightly lubricate the oil filter gasket with fresh, clean oil.
9. Install the oil filter by hand until the gasket contacts the oil filter adapter, then tighten the oil filter 1/2 to 3/4 turn.
10. Add oil.
11. Remove container from under oil filter and clean up any spilled oil.
12. Start and run engine. As engine warms up, check for oil leaks.
13. Stop engine, wait for oil to settle, check oil level and add if necessary.

## Service Air Cleaner

Your engine will not run properly and may be damaged if you run it with a dirty air cleaner. Clean or replace more often if operating under dusty or dirty conditions.

To service the air cleaner, follow these steps:

1. Press and hold the control board **OFF** button.
2. Remove 15 Amp fuse from control board.
3. Remove the knobs and the cover.
4. Remove air filter.
3. To loosen debris, gently tap air cleaner on a hard surface. If air cleaner is excessively dirty, replace with a new air cleaner.
5. Install the air filter.
6. Install the cover and secure with knobs.

When all servicing is complete, replace 15 Amp fuse in control board and reset exercise timer.

**NOTICE** Replacement parts must be the same and installed in the same position as the original parts.

## Fuel System Inspection and Maintenance

### Natural Gas / Propane Fuel System

The fuel system installed on this industrial engine has been designed to various standards to ensure performance and reliability. To ensure compliance to these standards, follow the recommended maintenance schedule contained in this section.

### Pressure Regulator Maintenance and Inspection

If the regulator fails to operate or develops a leak, it should be repaired or replaced with the OEM recommended replacement parts.

### Venturi / Throttle Control Device Maintenance and Inspection

**NOTICE** The venturi and throttle body components have been specifically designed and calibrated to meet the fuel system requirements of the engine.

**NOTICE** A dirty air cleaner may significantly alter the venturi performance.

When inspecting the venturi and throttle body, check for the following items:

- Leaks at all fittings.
- Ensure the venturi and throttle body are securely mounted.

### Exhaust System Maintenance and Inspection

When inspecting the exhaust system, check for the following items:

- Inspect exhaust manifold at the cylinder head for leaks and that all retaining bolts and shields (if used) are in place.
- Inspect manifold to exhaust pipe fasteners to ensure they are tight and that there are not exhaust leaks. Repair as necessary.

### Engine Exterior

Periodically inspect the engine exterior for contamination and potential damage from dirt, leaves, rodents, spider webs, insects, etc. and remove.

**NOTICE** The fuel system components have been specifically designed and calibrated to meet the fuel system requirements of the engine. If a fuel system component fails to operate or develops a leak, it should be repaired or replaced with the OEM recommended replacement parts.

When inspecting the regulator, check for the following items:

- Check for any fuel leaks at the inlet and outlet fittings.
- Check for any fuel leaks in the regulator body.
- Check to ensure the regulator is securely mounted and the mounting bolts are tight.
- Check the regulator for external damage.

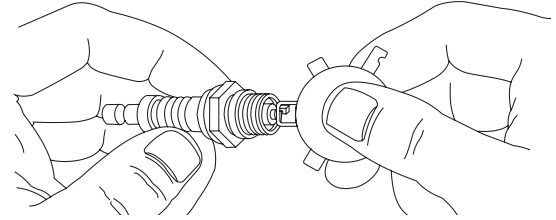
- Inspect air cleaner element according to the recommended maintenance schedule found in this section.
- Check fuel lines for cracking, splitting, or chaffing. Replace if any of these conditions exist.
- Check for leaks at the throttle body and intake manifold.

- Inspect exhaust pipe connection for leaks. Repair as necessary.

## Service Spark Plugs

Changing the spark plugs will help your engine to start easier and run better.

1. Press and hold the control board **OFF** button.
2. Remove 15 Amp fuse from control board.
3. Clean area around spark plugs.
4. Remove and inspect spark plugs.
5. Check electrode gap with wire feeler gauge and reset spark plug gap to recommended gap if necessary (see *Specifications*).
6. Replace spark plugs if electrodes are pitted, burned or porcelain is cracked. Use the recommended replacement spark plugs. See *Specifications*.
7. Install spark plugs and tighten to 180 in/lbs (20 Nm).



When all servicing is complete, replace 15 Amp fuse in control board and reset exercise timer.

## Clean Air Cooling System and Oil Cooler Fins

Over time debris may accumulate in cylinder cooling fins and cannot be observed without partial engine disassembly. Unobstructed air flow is critical for correct generator operation. For this reason, we recommend you have an authorized service dealer clean the cooling system per recommended intervals (see *Maintenance Schedule* in the *Maintenance* section). Equally important is to keep top of engine free from debris. Make sure the oil cooler fins are free of dirt and debris. Also see *Cleaning*.

## When Calling for Assistance

**You must have the following information at hand if it is necessary to contact a local service center regarding service or repair of this unit:**

1. Obtain the unit Model Number and Serial Number from the unit ID label. Refer to the information recorded on the inside front cover of the this manual.
2. Obtain the engine identification numbers from the engine label. See *Controls* for location of the label or refer to the information recorded on the inside front cover of the installation manual.

## Storage

The home generator system is designed for long term service as a backup generator. There is no need to take any storage precautions. However, if it becomes necessary to take the system out of service for an extended period, call Technical Services at **800 732-2989**, between 8:00 AM and 5:00 PM CT for specific recommendations.



# Troubleshooting

Problem	Cause	Correction
<b>Engine is running, but no AC output is available.</b>	<ol style="list-style-type: none"> <li>1. Circuit breaker open or defective.</li> <li>2. Service code in generator control board.</li> <li>3. Poor wiring connections or defective transfer switch.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset or replace circuit breaker.</li> <li>2. Contact local service facility.</li> <li>3. Check and repair or contact local service facility.</li> </ol>
<b>Engine runs well at no-load but “bogs down” when loads are connected.</b>	<ol style="list-style-type: none"> <li>1. Generator is overloaded.</li> <li>2. Short circuit in a connected load.</li> <li>3. Shorted generator circuit.</li> <li>4. Fuel pressure or mixture is incorrect.</li> <li>5. Kinked fuel line between regulator and engine.</li> <li>6. Clogged air filter.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove one or more loads.</li> <li>2. Disconnect shorted electrical load.</li> <li>3. Contact local service facility.</li> <li>4. See <i>Gaseous Fuel System</i> in the installation manual.</li> <li>5. Remove kink. Replace if necessary.</li> <li>6. Remove clog. Replace if necessary.</li> </ol>
<b>Engine will not start; or starts and runs rough.</b>	<ol style="list-style-type: none"> <li>1. 15 Amp fuse missing or blown.</li> <li>2. Thermal fuse(s) blown.</li> <li>3. Fuel supply turned off or depleted.</li> <li>4. Incorrect fuel selection.</li> <li>5. Failed battery.</li> <li>6. Clogged air filter.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install (new) 15 Amp fuse. See <i>System Control Board</i></li> <li>2. Replace thermal fuse(s).</li> <li>3. Open fuel valve(s); check propane tank.</li> <li>4. Check fuel selector switch and set to proper setting. (If applicable)</li> <li>5. Replace battery.</li> <li>6. Clean or replace air filter.</li> </ol>
<b>Engine shuts down during operation.</b>	<ol style="list-style-type: none"> <li>1. Fuel supply turned off or depleted.</li> <li>2. Control board digital display shows a service code.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check fuel valves, fill propane tank.</li> <li>2. Refer to <i>Service code Detection System</i>.</li> </ol>
<b>Loss of power on circuits.</b>	<ol style="list-style-type: none"> <li>1. Generator circuit breaker is open.</li> <li>2. Transfer switch problems.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset circuit breaker.</li> <li>2. See transfer switch manual.</li> </ol>
<b>Unit will not exercise.</b>	<ol style="list-style-type: none"> <li>1. Control board not set to AUTO.</li> <li>2. Exercise timer not set or set to OFF.</li> <li>3. Unit date and time not set.</li> <li>4. Failed battery.</li> <li>5. 15 Amp fuse missing or blown.</li> </ol>	<ol style="list-style-type: none"> <li>1. Press AUTO button on control board.</li> <li>2. Set exercise timer.</li> <li>3. Set unit date and time.</li> <li>4. Replace battery.</li> <li>5. Install (new) 15 Amp fuse. See <i>System Control Board</i>.</li> </ol>
<b>Excessive Vibration</b>	<ol style="list-style-type: none"> <li>1. Loose mechanical fastener.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and repair or contact local service facility.</li> </ol>
<b>Odor of fuel</b>	<ol style="list-style-type: none"> <li>1. Fuel leak.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn off manual shutoff fuel valve. Contact local service facility.</li> </ol>
<b>Utility power returns, unit does not stop</b>	<ol style="list-style-type: none"> <li>1. Blown fuses in transfer switch.</li> <li>2. 5 minute minimum runtime not lapsed.</li> <li>3. Poor wire connection or defective controllers.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install (new) fuses.</li> <li>2. Wait 5 minutes.</li> <li>3. Check, repair or contact local service facility.</li> </ol>

# Wireless Monitor Troubleshooting

Problem	Cause	Correction
<b>Monitor not flashing status LED's</b>	<ol style="list-style-type: none"> <li>1. Batteries inserted incorrectly</li> <li>2. Low battery power</li> <li>3. Conditions too bright to see flashes</li> <li>4. Communication from generator is within 10 minute update sequence</li> <li>5. Immersed in liquid</li> <li>6. Monitor not linked.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify correct battery orientation</li> <li>2. Replace batteries</li> <li>3. Move monitor to a less lit area</li> <li>4. Press "System Update" button</li> <li>5. Allow to dry for 24 hours, replace batteries. If problem persists order Wireless Monitor (part number 316196GS)</li> <li>6. Follow linking procedure.</li> </ol>
<b>Linking error</b>	<ol style="list-style-type: none"> <li>1. Generator control board not in "Linking Mode"</li> <li>2. Monitor "System Update" button not pressed for 5 seconds during generator control board "Linking Mode"</li> </ol>	<ol style="list-style-type: none"> <li>1. On generator control board press and hold the MENU and ESCAPE buttons for 3 seconds until "Linking Mode" scrolls across screen. Press and hold "System Update" button on Monitor for 5 seconds.</li> <li>2. Press and hold "System Update" button on Monitor for 5 seconds.</li> </ol>
<b>Wireless communication lost</b>	<ol style="list-style-type: none"> <li>1. Monitor is too far from generator</li> <li>2. Building materials are blocking wireless signal (i.e. - steel studs, aluminum siding, radiant barrier foil insulation)</li> </ol>	<ol style="list-style-type: none"> <li>1. Move monitor closer to generator</li> <li>2. Order Symphony Wireless router (model 6220) to increase signal strength</li> </ol>
<b>Service Needed red LED flashing</b>	<ol style="list-style-type: none"> <li>1. Generator system needs service</li> <li>2. Wireless communication lost</li> <li>3. Linking error</li> </ol>	<ol style="list-style-type: none"> <li>1. Refer to Service code Detection System in manual</li> <li>2. See Correction section for "Wireless communication lost" in Troubleshooting Guide</li> <li>3. See Correction section for "Linking error" in Troubleshooting Guide</li> </ol>

# Specifications

## Generator Specifications

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### 10 kW

Rated Maximum Load Current (at 25°C/77°F, LP):

at 240 Volts .....41.7 Amps

Rated AC Voltage ..... 120/240 Volts

Phase .....Single phase

Rated Frequency ..... 60 Hertz

Generator Breaker ..... 50 Amp

Normal Operating Range -20°F (-28.8°C) to 104°F (40°C)

Output Sound Level72.3 dB(A) at 23 ft. (7 m) at normal load

Shipping Weight.....330 lb (149 kg)

## Engine Specifications

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Displacement..... 35 ci. (570 cc)

Bore .....2.83 in. (71.9 mm)

Stroke .....2.76 in. (70.1 mm)

Spark Plug Gap .....0.020 in. (0.51 mm)

Spark Plug Torque ..... 180 lb-in. (20 Nm)

Armature Air Gap.....0.005 - 0.008 in. (0.13 - 0.20 mm)

Intake Valve Clearance0.004 - 0.006 in. (0.10 - 0.15 mm)

Exhaust Valve Clearance 0.006 - 0.008 in. (0.15 - 0.20 mm)

Oil Type..... 5W30 Full Synthetic

Oil Capacity (including oil filter)..42 - 45 oz. (1.24 - 1.33 L)

This generator is rated in accordance with UL (Underwriters Laboratories) 2200 (stationary engine generator assemblies) and CSA (Canadian Standards Association) standard C22.2 No. 100-4 (motors and generators).



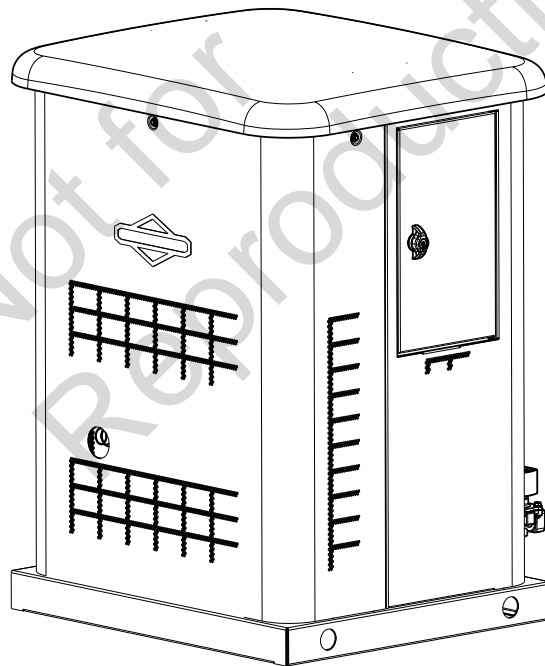
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# Manual de operación e instalación

10kW

Generador de energía de emergencia  
monofásico refrigerado por aire



Este generador está homologado de acuerdo con la norma 2200 de UL (Underwriters Laboratories) (conjuntos de generadores con motor estacionario) y la norma CSA (Canadian Standards Association) C22.2 No. 100-4 (motores y generadores).

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80106080  
Revisión B

**Gracias** por comprar este generador para el hogar Briggs & Stratton® de calidad. Nos complace que haya depositado su confianza en la marca Briggs & Stratton. Cuando se opera y se mantiene de acuerdo con las instrucciones del manual del operador, su generador residencial proporcionará muchos años de servicio confiable.

**Este manual contiene** información de seguridad para que sea consciente de los peligros y riesgos asociados con los sistemas generadores residenciales y cómo evitarlos. Este sistema generador está diseñado y solamente se puede utilizar como sistema de reserva residencial opcional que proporciona una fuente alternativa de energía eléctrica y para dar servicio a cargas como la calefacción, los sistemas de refrigeración y los sistemas de comunicación que, al detenerse durante cualquier corte de energía, podrían causar molestias o inconvenientes. **Conserve estas instrucciones originales para futuras consultas.**

**Este sistema generador requiere una instalación profesional antes de su uso.** El instalador debe seguir completamente las instrucciones.

### Dónde encontrarnos

Nunca tendrá que buscar mucho para encontrar soporte y servicio para su generador. Consulte las Páginas Amarillas. Hay muchos agentes de servicio autorizados de Briggs & Stratton en todo el mundo que ofrecen un servicio de calidad. También puede comunicarse con el Servicio al cliente de Briggs & Stratton por teléfono al **800-732-2989** entre las 8:00 a. m. y las 5:00 p. m., hora Central, o haga clic en Buscar un distribuidor en BRIGGSandSTRATTON.COM, lo cual proporciona una lista de los distribuidores autorizados.

### Para futuras referencias

Complete la siguiente información y guárdela con su recibo para ayudar a la identificación de la unidad para futuras compras.

<b>DATE OF PURCHASE</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>GENERATOR</b>							
<b>Model Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Model Revision</b>	<input type="text"/>	<input type="text"/>					
<b>Serial Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>ENGINE</b>							
<b>Model Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Serial Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**⚠ ADVERTENCIA** Este producto puede exponerlo a sustancias químicas entre las que se incluyen aceite de motor, reconocido por el estado de California como causante de cáncer; y monóxido de carbono, reconocido por el estado de California como causante de defectos de nacimiento u otros problemas reproductivos. Para obtener más información, visite [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

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# Normas de seguridad

## Instrucciones de seguridad importantes

**GUARDE ESTAS INSTRUCCIONES** - Este manual contiene instrucciones importantes que deben seguirse durante la instalación y el mantenimiento del generador y las baterías.



Explosión



Incendio



Descarga eléctrica



Humos tóxicos



Partes giratorias



Superficie caliente



Arranque automático



Peligro al elevar



Quemadura con químicos



Lea el manual



Use protección para los ojos

## Símbolos de seguridad y significados

⚠ El símbolo de alerta de seguridad indica un posible riesgo para su integridad física. Una palabra de señalización (PELIGRO, ADVERTENCIA o PRECAUCIÓN) se utiliza con el símbolo de alerta para designar un grado o nivel de gravedad del peligro. Se puede usar un símbolo de peligro para representar el tipo de riesgo. La palabra de señalización AVISO se utiliza para hacer referencia a las prácticas no relacionadas con lesiones corporales.

⚠ **PELIGRO** indica un peligro que, si no se evita, ocasionará la muerte o lesiones graves.


⚠ **ADVERTENCIA** indica un peligro que, si no se evita, podría ocasionar la muerte o lesiones graves.

⚠ **PRECAUCIÓN** indica un peligro que, si no se evita, podría ocasionar lesiones menores o moderadas.

**AVISO** hace referencia a las prácticas no relacionadas con las lesiones corporales.

El fabricante no puede prever todas las circunstancias posibles que podría implicar un peligro. Las advertencias de este manual, así como las etiquetas y calcomanías que se han fijado a la unidad, no son, por lo tanto, exhaustivas. Si utiliza un procedimiento, método de trabajo o técnica de operación que el fabricante no recomiende específicamente, debe asegurarse de que sea seguro para usted y para los demás. También debe asegurarse de que el procedimiento, método de trabajo o técnica operativa que elija no haga que el sistema generador sea inseguro.

- ⚠ **ADVERTENCIA** Los motores emiten monóxido de carbono, un gas venenoso, incoloro e inodoro.
- ⚠ La inhalación de monóxido de carbono puede provocar la muerte, lesiones graves, dolor de cabeza, fatiga, mareos, vómitos, confusión, convulsiones, náuseas o desmayos.
- Opere este producto ÚNICAMENTE al aire libre en un área que no acumulará gases de escape mortales.
  - Mantenga el gas de escape alejado de ventanas, puertas, tomas de aire de ventilación, ventilaciones del soffito, espacios reducidos, puertas de garajes abiertas u otras aberturas que pueden permitir que el gas de escape entre o circule hacia estructuras o edificios potencialmente habitados.
  - SE DEBEN instalar y mantener detectores de monóxido de carbono en interiores de acuerdo con las instrucciones o recomendaciones del fabricante. Los detectores de humo no detectan el gas de monóxido de carbono.


 **ADVERTENCIA** Las baterías almacenadas emiten gas hidrógeno explosivo durante las recargas. La más pequeña chispa encenderá el hidrógeno y causará una explosión, lo que puede provocar la muerte o lesiones graves.

El fluido de electrolito de las baterías contiene ácido y es extremadamente cáustico.


El contacto con el contenido de la batería podría producir quemaduras químicas graves.

La alta corriente de cortocircuito de una batería puede provocar lesiones graves.

- NO elimine una batería en el fuego. Recicle la batería.
- NO permita que se produzca ninguna llama abierta, chispa o calor, ni encienda un cigarrillo mientras carga la batería o durante varios minutos después de la carga.
- NO abra ni altere la batería.
- Use gafas de protección, así como delantal, botas y guantes de goma.
- Quitese el reloj, los anillos u otros objetos metálicos.
- Use herramientas con mangos aislados.

 **ADVERTENCIA** El gas propano y el gas natural son extremadamente inflamables y explosivos, y pueden causar quemaduras, incendios o explosiones que podrían ocasionar lesiones graves o la muerte.


- Instale el sistema de suministro de combustible de acuerdo con NFPA 37 y otros códigos de gas combustible aplicables.
- Antes de poner en funcionamiento el generador, las líneas del sistema de combustible se deben purgar correctamente y se debe verificar que no haya ninguna pérdida.
- Una vez instalado el generador, debe inspeccionar el sistema de combustible periódicamente.
- NO puede haber ninguna pérdida.
- NO arranque el motor si hay olor a combustible o si hay otras condiciones explosivas.
- NO fume cerca del generador. Limpie inmediatamente los derrames de aceite. Asegúrese de que no queden materiales combustibles en el compartimento del generador. Mantenga el área cercana al generador limpia y libre de desechos.

 **ADVERTENCIA** El generador produce voltaje peligroso.

Si el generador no se conecta a tierra correctamente, se podría provocar una electrocución.

Si el generador no se aísla de la red de energía, se podría provocar la muerte o lesiones graves a los trabajadores del servicio eléctrico debido a la inversión de energía eléctrica.

- Si utiliza un generador como energía de respaldo, notifíquelo a la compañía eléctrica.
- NO toque cables ni receptáculos pelados.
- NO use el generador con cables eléctricos desgastados, deshilachados, pelados o con otro tipo de daño.
- NO manipule el generador ni los cables eléctricos si está parado en el agua, si está descalzo o si tiene las manos o los pies húmedos.
- Si debe trabajar en una unidad que está en operación, párese en una superficie seca aislada para reducir el riesgo de descarga eléctrica.
- NO deje que personas no calificadas o niños utilicen o reparen el generador.
- En caso de un accidente ocasionado por una descarga eléctrica, apague inmediatamente la fuente de energía eléctrica y comuníquese con las autoridades locales. **Evite el contacto directo con la víctima.**
- A pesar del diseño seguro del generador residencial, utilizar este equipo de forma imprudente, no cumplir con el mantenimiento o ser poco cuidadoso podría provocar lesiones o la muerte.
- Esté alerta en todo momento mientras utiliza este equipo. Nunca utilice el equipo si tiene cansancio físico o mental.
- Antes de realizar cualquier mantenimiento en el generador, desconecte primero el cable de la batería indicado con un **NEGATIVO, NEG** o (-). Cuando termine, reconecte ese cable al final.
- Después de instalar el sistema, el generador podría girar y arrancar sin previo aviso en cualquier momento que se produzca una falla eléctrica. Para evitar posibles lesiones, coloque siempre el interruptor del sistema del generador en la posición **APAGADO (OFF)**, retire la desconexión de servicio de la caja de desconexión Y retire el fusible de 15 amp **ANTES** de trabajar en el equipo.


 **ADVERTENCIA** Cualquier chispa generada involuntariamente podría causar incendios o descargas eléctricas, lo que podría provocar lesiones graves o incluso la muerte.

#### **AL AJUSTAR O REPARAR EL GENERADOR**


- Desconecte el cable de la bujía y colóquelo en un lugar donde no pueda entrar en contacto con la bujía.

#### **AL PROBAR LA BUJÍA DEL MOTOR**


- Use un probador de bujías aprobado.
- NO revise si hay chispas con la bujía extraída.

 **ADVERTENCIA** El calor/los gases de escape podrían encender combustibles o estructuras, lo que podría ocasionar lesiones graves o la muerte. El contacto con el área del silenciador podría causar quemaduras que podrían ocasionar lesiones graves.

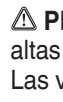
- NO toque las piezas calientes y EVITE los gases de escape calientes.
- Deje que el equipo se enfríe antes de tocarlo.
- El lateral de la salida de escape del gabinete resistente a la intemperie debe estar a al menos 5 pies (1,5 m) de distancia de cualquier estructura, arbusto, árbol u otro tipo de vegetación.
- El gabinete resistente a la intemperie del generador de energía de emergencia debe estar al menos a 5 pies (1,5 m) de distancia de ventanas, puertas, aberturas, arbustos u otro tipo de vegetación de más de 12 pulgadas (30,48 cm) de alto.
- El gabinete resistente a la intemperie del generador de energía de emergencia debe estar a una distancia mínima de 5 pies (1,5 m) por encima de cualquier estructura, obstáculo colgante o árbol.
- NO coloque el gabinete impermeable debajo de una plataforma u otro tipo de estructura que podría obstaculizar el flujo de aire.
- USE ÚNICAMENTE la línea de combustible flexible de acero provista. Conecte la línea de combustible suministrada al generador, NO la utilice ni la sustituya por ninguna otra línea de combustible flexible.
- SE DEBEN instalar y mantener detectores de humo en interiores de acuerdo con las instrucciones o recomendaciones del fabricante. Los detectores de monóxido de carbono no detectan el humo.
- Mantenga las distancias mínimas que figuran en *Colocación del generador* para garantizar los espacios libres apropiados de enfriamiento y mantenimiento del generador.
- Es una infracción del California Public Resource Code, Sección 4442, utilizar u operar el motor en cualquier terreno forestal o cubierto por árboles o césped, a menos que el sistema de escape esté equipado con un supresor de chispas, en virtud de la Sección 4442, el cual se debe mantener en buenas condiciones de operación. Otros estados o jurisdicciones federales establecen leyes similares. Póngase en contacto con el vendedor, el distribuidor o el fabricante del equipo original para obtener un extintor de chispas diseñado para el sistema de escape instalado en este motor.
- Las piezas de repuesto deben ser del mismo diseño y deben ser instaladas en la misma posición que las piezas originales.

 **ADVERTENCIA** El arrancador y otras piezas giratorias podrían atrapar las manos, el cabello, la ropa o los accesorios, lo que podría ocasionar lesiones graves.

- NUNCA opere el generador si los protectores o los elementos o tapas de protección no están en su lugar.
- NO use ropa suelta, joyas ni accesorios que podrían quedar atrapados en el arrancador o en otras piezas giratorias.
- El cabello largo debe estar recogido y quítese las joyas.
- Antes de realizar el mantenimiento, retire el fusible de 15 amp del panel de control y desconecte el cable **Negativo (NEG o -)** de la batería.

 **PRECAUCIÓN** La instalación del fusible de 15 amp podría hacer que el motor arrancara en cualquier momento sin previo aviso, provocando lesiones leves o moderadas.

- Observe que el fusible de 15 amp ha sido retirado del panel de control para su envío.
- NO instale este fusible hasta que se hayan completado e inspeccionado todas las tuberías y el cableado.

 **PRECAUCIÓN** Velocidades de operación excesivamente altas podrían provocar lesiones leves.

Las velocidades excesivamente bajas aplican una carga pesada en el generador.

- NO altere la velocidad regulada. El generador suministra la frecuencia y el voltaje nominal correctos cuando funciona a la velocidad regulada.
- NO modifique el generador de ninguna manera.

**AVISO** Un tratamiento inadecuado del generador podría dañarlo y acortar su vida.

- Utilice el generador sólo para los usos previstos.
- Si tiene preguntas sobre el uso previsto, comuníquese con su distribuidor autorizado.
- Opere el generador sólo en superficies planas.
- El flujo adecuado y sin obstrucciones del aire de refrigeración y ventilación es fundamental para la correcta operación del generador.
- Los tableros de acceso/puertas deben estar instalados siempre que la unidad esté en operación.
- NO exponga el generador a una excesiva humedad, polvo, suciedad o vapores corrosivos.
- Esté alerta en todo momento mientras utiliza este equipo. Nunca utilice el equipo si tiene cansancio físico o mental.
- NO arranque el motor con el filtro de aire o la tapa del filtro de aire removidos.
- NO inserte ningún objeto a través de las ranuras de refrigeración.
- NO utilice el generador o cualquiera de sus partes como un escalón. Pisar la unidad podría causar tensión y romper partes. Esto puede dar lugar a condiciones de funcionamiento peligrosas por fugas de gases de escape, fugas de combustible, fugas de aceite, etc.
- Si los dispositivos conectados se sobrecalientan, apáguelos y desconéctelos del generador.
- Apague el generador si:
  - hay pérdida de salida eléctrica;
  - el equipo echa chispas, humo o emite llamas;
  - la unidad vibra excesivamente;
  - la unidad hace ruidos inusuales.

# Instalación

Este producto solamente se puede utilizar como un sistema generador opcional que proporciona una fuente alternativa de energía eléctrica y para servir a cargas como la calefacción, los sistemas de refrigeración y los sistemas de comunicación que, al detenerse durante cualquier corte de energía, podrían causar molestias o inconvenientes.

**AVISO** Este producto NO reúne los requisitos de un sistema de reserva de emergencia o un sistema de reserva cómo lo requiere la ley, tal como se define en el NFPA 70 (NEC).

- Los sistemas generadores de emergencia se destinan a suministrar automáticamente iluminación, energía, o ambas cosas, a las áreas y equipos designados en caso de que falle el suministro normal. Los sistemas de emergencia también pueden proporcionar energía para funciones tales como la ventilación cuando sea esencial para mantener la vida, en los casos en que la interrupción actual del suministro normal produciría graves peligros para la seguridad de la vida o la salud.
- Los sistemas generadores de energía de reserva exigidos por la ley tienen por objeto suministrar automáticamente energía a las cargas seleccionadas en caso de que se produzca una falla de la fuente normal que pudiera crear peligros o dificultar las operaciones de rescate o de lucha contra incendios.

Se han hecho todos los esfuerzos para garantizar que la información de este manual sea precisa y actualizada. Sin embargo, nos reservamos el derecho de cambiar, alterar o mejorar el producto y este documento en cualquier momento sin previo aviso.

Solamente los profesionales de la electricidad y la fontanería con licencia vigente deben intentar instalar sistemas de generadores residenciales. Las instalaciones deben cumplir estrictamente con todos los códigos, normas de la industria, leyes y reglamentos aplicables.

## Responsabilidades del propietario de la vivienda

- Lea y siga las instrucciones del manual del operador.
- Siga un programa regular de mantenimiento, cuidado y uso del generador residencial, como se especifica en el manual del operador.
- SE DEBEN instalar y mantener detectores de monóxido de carbono en interiores de acuerdo con las instrucciones o recomendaciones del fabricante. Los detectores de humo no detectan el gas de monóxido de carbono.
- SE DEBEN instalar y mantener detectores de humo en interiores de acuerdo con las instrucciones o recomendaciones del fabricante. Los detectores de monóxido de carbono no detectan el humo.

## Responsabilidades del distribuidor/contratista instalador

- Lea y respete las normas de seguridad.
- Instale solamente un interruptor de transferencia con certificación UL que sea compatible con el generador.
- Lea y siga las instrucciones de este manual de instalación y puesta en funcionamiento.
- La instalación debe cumplir estrictamente con todos los códigos, estándares de la industria, leyes y regulaciones aplicables.
- Deje suficiente espacio en todos los lados del generador para el mantenimiento y el servicio.

## Kit para clima frío

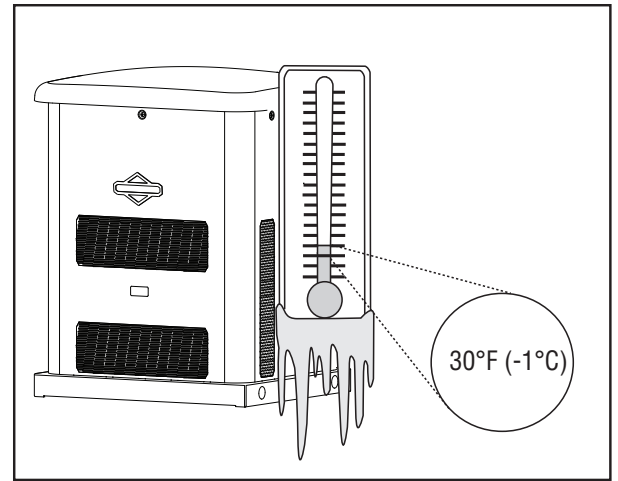
Si se opera el generador por debajo de los 30 °F (-1 °C), es **MUY**

**RECOMENDABLE** que se instale un kit de clima frío modelo 6404 en las unidades de 10kW.

Estos artículos están disponibles en su distribuidor autorizado de servicio local.

Para las zonas de clima frío (por debajo de 0 °F [-18 °C]) también se recomienda utilizar una batería húmeda de plomo, tamaño del BCI 24, de 800 CCA como mínimo.

*Si necesita más información, por favor llame al 800 732-2989, entre las 8:00 a. m. y las 5:00 p. m., hora del Centro.*



## Precauciones al desembalar

Evite daños por caídas, golpes, colisiones, etc. Almacene y desembale la caja con el lado correcto hacia arriba, como se indica en la caja de envío.

## Inspección de entrega

Después de retirar el cartón, inspeccione cuidadosamente el generador para ver si hay algún daño que pudo ocurrir durante el envío.

Si se evidencia la pérdida o daño en el momento de la entrega, haga que la(s) persona(s) que hace(n) la entrega anote(n) todos los daños en la factura de flete y ponga(n) su firma bajo la anotación del consignatario respecto a la pérdida o daño. Si se observan pérdidas o daños después de la entrega, separe los materiales dañados y comuníquese con el transportador para los procedimientos de reclamación. Las piezas dañadas durante el envío no tienen garantía.

## Contenido del envío

### El sistema generador residencial se suministra con:

- Aceite (5W30 totalmente sintético)
- Línea de combustible flexible de acero
- Manual de instalación/operación
- Folleto de garantía de productos y emisiones
- Llaves de acceso de repuesto
- Fusible de repuesto tipo ATO de 15 amp
- Correa de sujeción de la batería
- Tapón a prueba de manipulaciones

### Equipo opcional (se vende por separado)

- Monitor inalámbrico

### No se incluye:

- Detector(es) de monóxido de carbono
- Detector(es) de humo
- Batería de arranque
- Cable y conducto de conexión
- Válvulas de suministro de combustible/plomería
- Grúa, correas de elevación, cadenas o cables
- Dos tramos de 60 pulg de 3/4 pulg mínimo nominal de tubería de acero Schedule 40 (NO de conducto)
- Destornillador de par de apriete, rango de 5 a 50 pulgadas-libra
- Medidor de voltaje/frecuencia
- Dos (2) baterías AA para el monitor remoto inalámbrico

## Ubicación del generador

Antes de instalar el generador, consulte con el propietario de la vivienda y comuníquese los siguientes requisitos, los cuales deben cumplirse antes de completar la instalación.

Hay dos preocupaciones de seguridad igualmente importantes en relación con la intoxicación por monóxido de carbono y el fuego. También hay varias directrices generales de localización que deben cumplirse en su totalidad antes de que la instalación se considere completa.

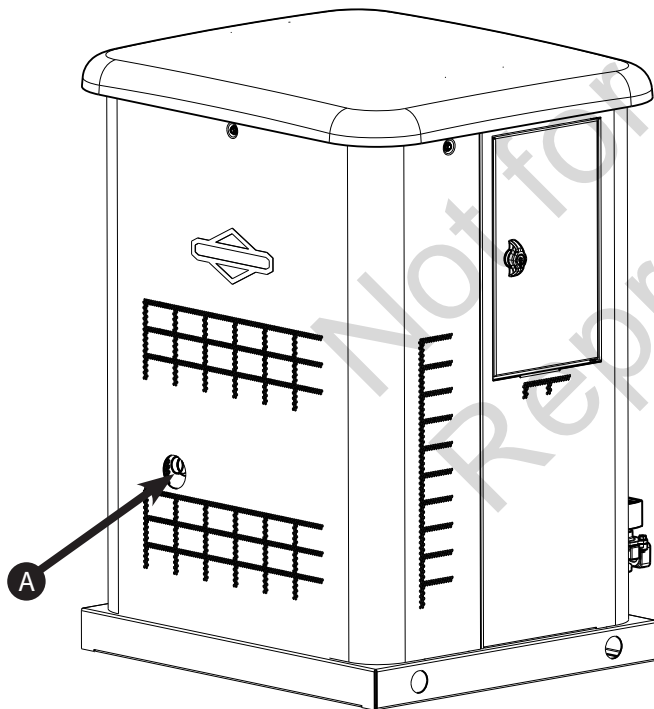
**⚠ ADVERTENCIA** Los motores emiten monóxido de carbono, un gas venenoso, incoloro e inodoro.



La inhalación de monóxido de carbono puede provocar la muerte, lesiones graves, dolor de cabeza, fatiga, mareos, vómitos, confusión, convulsiones, náuseas o desmayos.

- Opere este producto ÚNICAMENTE al aire libre en un área que no acumulará gases de escape mortales.
- Mantenga el gas de escape alejado de ventanas, puertas, tomas de aire de ventilación, ventilaciones del soffito, espacios reducidos, puertas de garajes abiertas u otras aberturas que pueden permitir que el gas de escape entre o circule hacia estructuras o edificios potencialmente habitados.
- SE DEBEN instalar y mantener detectores de monóxido de carbono en interiores de acuerdo con las instrucciones o recomendaciones del fabricante. Los detectores de humo no detectan el gas de monóxido de carbono.

## Lado del escape del generador



- A** Lado de la salida de escape del gabinete resistente a la intemperie.

## REDUCIR EL RIESGO DE INTOXICACIÓN POR MONÓXIDO DE CARBONO

En concentraciones elevadas, el monóxido de carbono (CO) puede ser mortal en minutos. Sin embargo, los efectos de concentraciones más bajas también pueden ser letales. Este gas representa un grave peligro para los seres humanos y sus animales porque nadie puede olerlo, verlo o probarlo. Los síntomas de la exposición al CO incluyen:

- Ojos llorosos y con picazón
- Sienes palpitantes
- Incapacidad de pensar coherentemente
- Zumbidos en los oídos
- Dolor de cabeza
- Habla incoherente o arrastrada
- Aspecto sonrojado
- Falta de atención
- Pérdida de coordinación física
- Opresión en el pecho
- Somnolencia
- Náuseas
- Mareos
- Vómito
- Fatiga
- Desmayo
- Convulsiones

Si usted (o alguien que esté cerca) sufre alguno de los síntomas anteriores, busque inmediatamente aire fresco y pida ayuda médica de urgencia por una posible intoxicación por monóxido de carbono. Si su alarma de monóxido de carbono suena mientras usa este producto, salga inmediatamente a tomar aire fresco (incluso si no experimenta ninguno de los síntomas mencionados anteriormente).

### Posibles puntos de entrada de CO

Pautas para la operación:

*Nota:* Opere este producto **únicamente** al aire libre y en un área que no permita la acumulación de este gas de escape mortal.

No utilice nunca este producto en el interior de casas, garajes, sótanos, semisótanos, cobertizos, debajo de una cubierta u otras áreas parcialmente cerradas y tenga en cuenta que el uso de ventiladores y la apertura de puertas en estas áreas pueden no proporcionar una ventilación adecuada. El monóxido de carbono puede acumularse rápidamente en estos espacios prohibidos y puede permanecer en el aire durante varias horas después de que este producto se haya apagado.

Indicaciones de instalación:

Siga todas las ilustraciones de este manual cuando coloque un gabinete.

### Detector(es) de monóxido de carbono

*Nota:* Instalar alarmas de CO que funcionen en interiores es la única manera de reconocer el gas CO. Los detectores de humo comunes no detectan el gas CO y no alertan a los ocupantes de su presencia.

Un detector de CO es un dispositivo electrónico que detecta niveles peligrosos de CO. Cuando se presente acumulación de CO, el detector alertará a los ocupantes haciendo sonar una alarma y hará parpadear una luz indicadora visual.

Por ley, muchos estados exigen que una vivienda tenga un detector de monóxido de carbono (CO) en funcionamiento. Usted **debe** instalar y mantener detectores de monóxido de carbono en interiores de acuerdo con las instrucciones y recomendaciones del fabricante.

Comuníquese con la división local de inspección de edificios para conocer los requisitos pertinentes relativos al uso de detectores de CO. Ver el Código Nacional de Alarma de Incendios y Señalización (National Fire Alarm and Signaling Code, NFPA) 72 y la Sección R315 del Código Residencial Internacional (International Residential Code, ICC) para obtener más detalles.

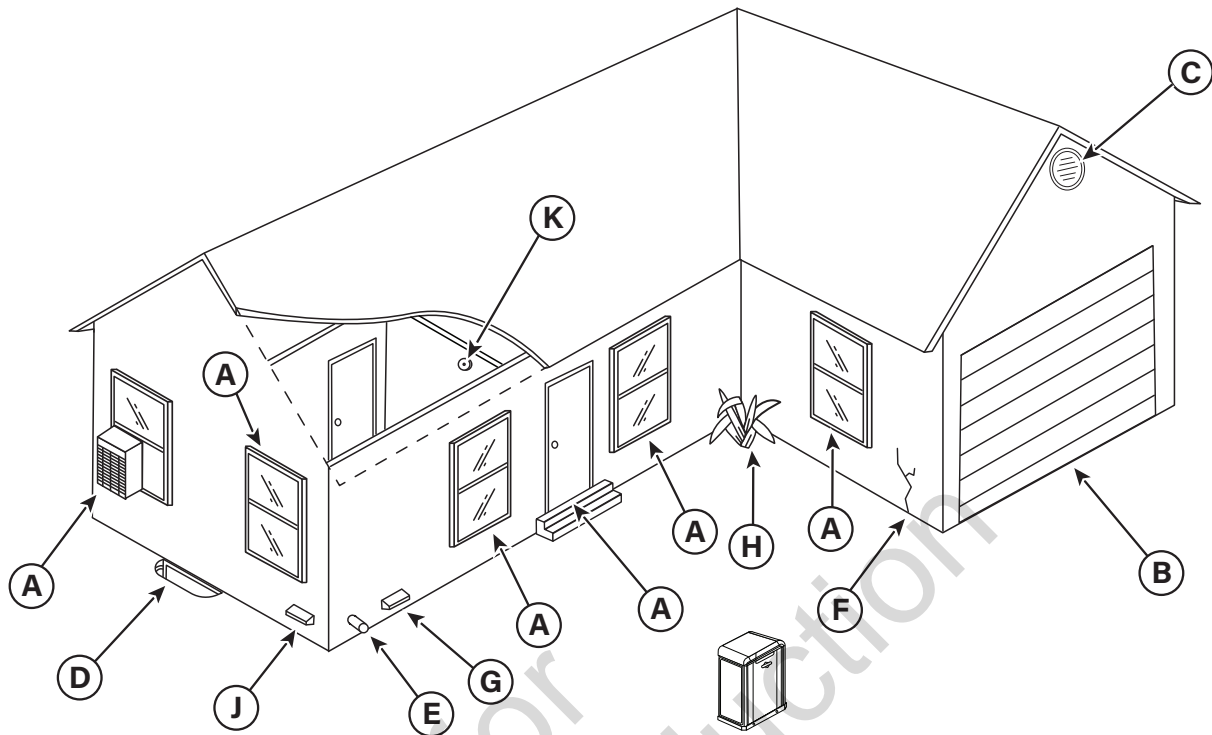
Apunte siempre el escape del motor del generador lejos de las áreas ocupadas. Nunca exponga las viviendas de sus vecinos a los gases de escape del motor que sale de su generador de energía de emergencia durante el proceso de instalación.

Nunca coloque el generador de energía de emergencia en ningún lugar donde se puedan acumular hojas o residuos.

Los gases de escape del generador pueden entrar por las ventanas, puertas y otras aberturas de una estructura. Comprenda que los gases de escape y el CO pueden filtrarse en una estructura a través de las más pequeñas aberturas.

## Protección de la estructura

Verifique la estructura para asegurarse de que el sellado y el enmasillado sigan siendo lo suficientemente adecuados como para evitar la entrada o salida de aire. Examine la estructura en busca de espacios vacíos, grietas o aberturas alrededor de las ventanas, puertas, plafones, tuberías y rejillas de ventilación, ya que estas áreas pueden permitir que los gases de escape y el CO penetren en la estructura.



La siguiente tabla incluye algunos ejemplos de posibles puntos de entrada de gas CO.

UBICACIÓN	PUNTO DE ENTRADA	EXPLICACIÓN
A	Puertas y ventanas	Las ventanas que forman parte de la arquitectura de una estructura pueden permitir la entrada de aire fresco y CO en la misma, especialmente cuando están abiertas.
B	Puerta del garaje	Una puerta de garaje abierta o mal sellada puede permitir la entrada de CO en el garaje.
C	Ventilación del ático	Los gases de escape del generador pueden entrar a través de las rejillas de ventilación del ático y de las rejillas de ventilación de los soffits, los semisótanos y las cumbreras o tejados.
D	Ventanas del sótano	Las ventanas o escotillas del sótano que permiten la ventilación hacia o desde el nivel inferior de la estructura también permiten que el gas CO penetre en la estructura.
E	Toma de aire o escape del horno	Las tomas de aire y los tubos de escape de los hornos son puntos de entrada habituales del gas CO.
F	Grietas en las paredes	Cualquier grieta en las paredes de una estructura, incluyendo los cimientos y el mortero, y cualquier espacio alrededor de las ventanas, puertas y tuberías puede dejar pasar el CO.
G	Ventilación de la secadora	A veces, el conducto de escape de la secadora de ropa deja entrar gas CO en la estructura.
H	Restricciones del flujo de aire	Las áreas con esquinas estructurales y vegetación tupida restringen el flujo de aire y recogen los gases de escape.
J	Sistema de aire de reposición	<i>Nota:</i> Mantenga todas las aberturas de entrada de aire exterior mecánicas y por gravedad para los sistemas de aire de suministro de climatización a 10 pies (3,0488 m) del gabinete del generador. Consulte la sección 401 del Código Mecánico del ICC para obtener detalles sobre los requisitos.
K	Detector(es) de monóxido de carbono	<i>Nota:</i> Instalar alarmas de CO que funcionen en interiores es la única manera de reconocer el gas CO. Los detectores de humo comunes no detectan el gas CO y no alertan a los ocupantes de su presencia.



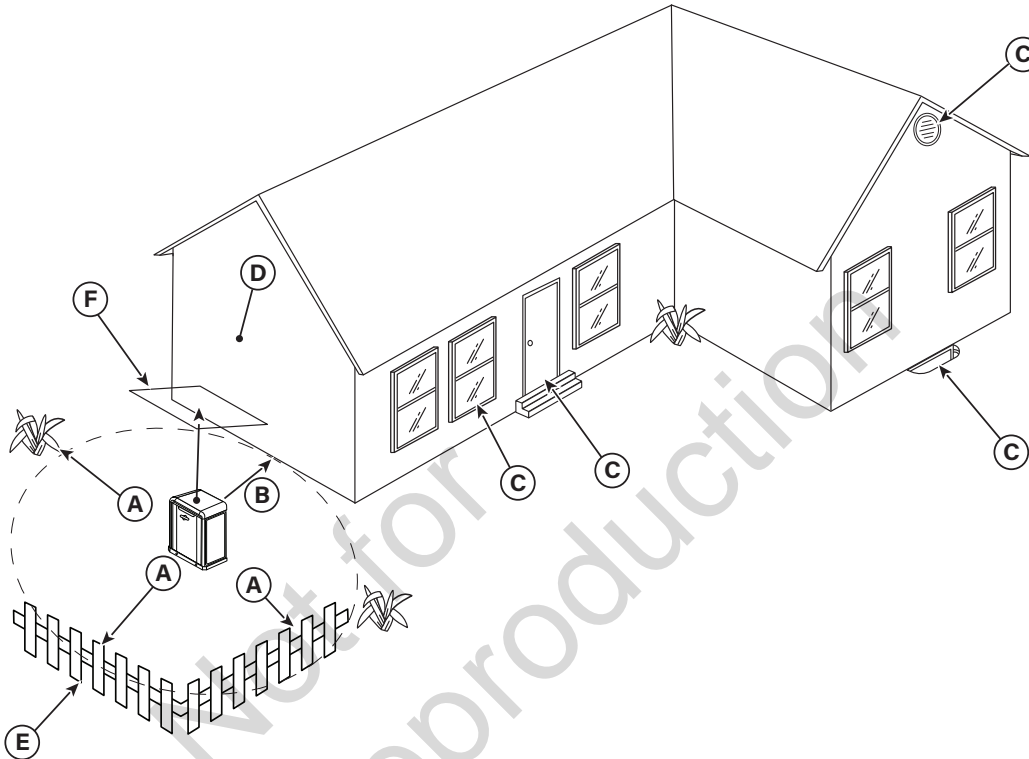
## REDUCCIÓN DEL RIESGO DE INCENDIO

Para ayudar a prevenir incendios, el generador debe instalarse a una distancia segura de todos los materiales combustibles. El motor, el alternador y los componentes del sistema de escape de la unidad pueden calentarse mucho durante la operación. Reduzca la probabilidad de que se produzca un incendio manteniendo la unidad bien ventilada, con un mantenimiento adecuado, sin fugas de combustible y alejada de materiales combustibles. Además, pueden acumularse residuos inflamables dentro o fuera del gabinete del generador y pueden inflamarse, provocando un incendio.

Las normas federales e internacionales describen las distancias mínimas de seguridad alrededor y por encima del gabinete del generador.

### Requisitos de espacios libres

El propietario debe mantener unos espacios libres mínimos alrededor del gabinete del generador. Estos espacios libres son principalmente para la prevención de incendios, pero también garantizan un espacio adecuado para las tareas de mantenimiento, como la retirada de los paneles frontales y traseros de la unidad.



UBICACIÓN	ÍTEM	EXPLICACIÓN
A	Espacio libre frontal y lateral	Mantenga un espacio libre mínimo de 3 pies (0,91 m) desde el frente y los lados del generador. Mantenga los arbustos, matas, plantas y árboles a esta misma distancia mínima de la unidad y no utilice nunca la vegetación para ocultar la unidad.
B	Espacio libre en la parte trasera	Dado que las conexiones eléctricas y de combustible se encuentran aquí, mantenga un espacio libre de 18 pulgadas (45,70 cm) según el laboratorio de pruebas independiente, a menos que los códigos del estado le indiquen lo contrario.
C	Ventanas, respiraderos y aberturas	Mantenga todas las ventanas accionables, puertas, rejillas de ventilación, huecos de ventanas o aberturas en la pared lejos del punto del generador. Ver la sección Protección de la estructura en este manual.
D	Pared existente	Mantenga el generador a una distancia mínima de 18 pulgadas (457 mm) de las paredes presentes.
E	Cerca desmontable	Mantenga las cercas desmontables a una distancia mínima de 3 pies (0,91 m) de la parte delantera del generador. Las cercas desmontables incluyen los cerramientos visuales, los paneles de vallas y las barreras temporales sin cimentación.
F	Espacio aéreo por encima	Mantenga un espacio libre mínimo de 5 pies (1,52 m) desde todas las estructuras, voladizos y salientes de una pared.
G (no se muestra)	Mantenimiento y servicio	Deje espacio suficiente para realizar el mantenimiento rutinario, como la revisión del motor y el cambio de la batería. No utilice nunca arbustos, matorrales, árboles o plantas para ocultar el generador.

## Otros requisitos del sitio

- Ubique el generador de energía de emergencia en un lugar plano preparado y que esté adecuado para el drenaje de agua.
- Instale el generador de energía de emergencia en un lugar donde la descarga de la bomba del sumidero, el bajante del desagüe de lluvia, el escurrimiento del techo, el riego del jardín o los rociadores de agua no inundan la unidad o rocíen el gabinete y entren en las aberturas de entrada o salida de aire.
- Instale el generador de energía de emergencia en un lugar donde no afecte ni obstruya ninguno de los servicios (incluidos la cubierta, la oculta y la subterránea), como el teléfono, la electricidad, el combustible (gas natural/vapor de GLP), el riego, el aire acondicionado, el cable, la fosa séptica, el alcantarillado, el pozo, etc.
- Instale el generador de energía de emergencia donde las hojas, la hierba, la nieve, etc. no obstruyan las aberturas de entrada y salida de aire. Si los vientos predominantes provocan sacudidas o desviaciones, puede que sea necesario construir un cortavientos para proteger la unidad.

## Norma de la Asociación Nacional de Protección contra Incendios (National Fire Alarm and Signaling Code, NFPA) Requisitos y pruebas de la NFPA 37

### Requisitos:

NFPA 37 2010, sección 4. 1. 4, Motores ubicados en exteriores. Los motores, y sus carcasas resistentes a la intemperie, si han sido proporcionadas, que se instalen en el exterior deberán estar situados a una distancia mínima de 1,5 m (5 pies) de las aberturas de las paredes y a una distancia mínima de 1,5 m (5 pies) de las estructuras con paredes combustibles. No se exigirá una separación mínima cuando se dé alguna de las siguientes condiciones:

1. La pared adyacente de la estructura tenga una clasificación de resistencia al fuego de al menos 1 hora.
2. El gabinete resistente a la intemperie esté construido con materiales no combustibles y se haya demostrado que un incendio dentro del gabinete no encenderá materiales combustibles fuera del mismo. \*

### Anexo A: material explicativo

A.4.1.4 (2) Los medios para demostrar la conformidad son las pruebas de fuego a escala real o los procedimientos de cálculo, como los indicados en la NFPA 555, *Guía de métodos para la evaluación del potencial de combustión súbita generalizada en un cuarto*.

Para cumplir con la condición 2, el gabinete resistente a la intemperie se ha construido completamente con materiales no combustibles y se han realizado pruebas de incendio a escala real para demostrar que un incendio dentro del gabinete no encenderá materiales combustibles fuera del mismo.

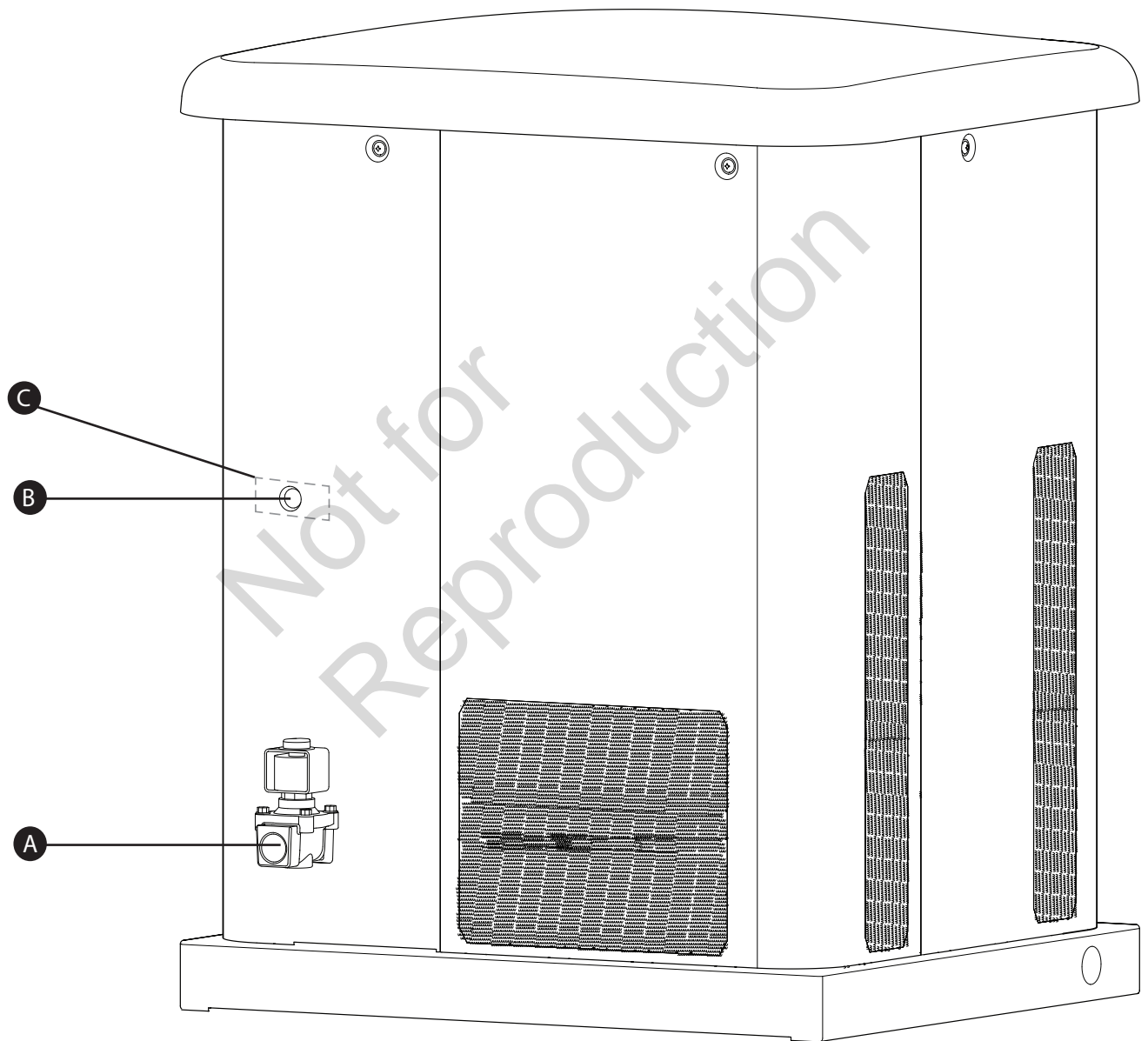
## Ubicaciones de las entradas de electricidad y combustible

El conector de entrada de combustible N.P.T. de 3/4 de pulgada (A) y la ubicación de la entrada eléctrica (B) se muestran a continuación.

Se proporciona un knock-out de 1/2 pulgada para la entrada eléctrica. Esta entrada se puede ampliar o complementar para acomodar un conducto de un tamaño máximo de 1 1/2 pulgadas. Asegúrese de que el(los) conducto(s) instalado(s) entre(n) en la unidad en el área (C) como se muestra en el dibujo para que entre(n)

correctamente en la caja eléctrica y no interfiera(n) con el techo totalmente abierto.

El generador residencial se suministra con una base que, a menos que lo exija el código local, no requiere una losa de hormigón.



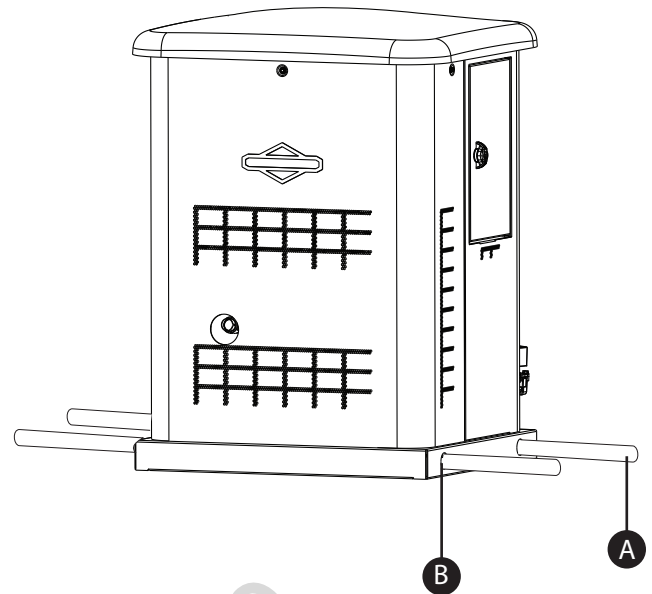
## Elevación del generador

El generador pesa más de 330 libras (150 kg). En todas las fases de la manipulación y el movimiento del generador deben utilizarse las herramientas, el equipo y el personal calificado adecuados.

**⚠️ ADVERTENCIA** Voltaje peligroso: el contacto con las líneas de alta tensión podría provocar una descarga eléctrica o quemaduras, lo que podría ocasionar la muerte o lesiones graves.

Peligro al elevar/objeto pesado - Podría provocar lesiones graves.

- Si se utiliza equipo de elevación o izado, el mismo NO debe entrar en contacto con las líneas de alta tensión.
- NO levante ni mueva el generador sin ayuda.
- Utilice los tubos de elevación como se describe en *Elevación del generador*.
- NO eleve la unidad por el techo porque se ocasionarán daños en el generador.

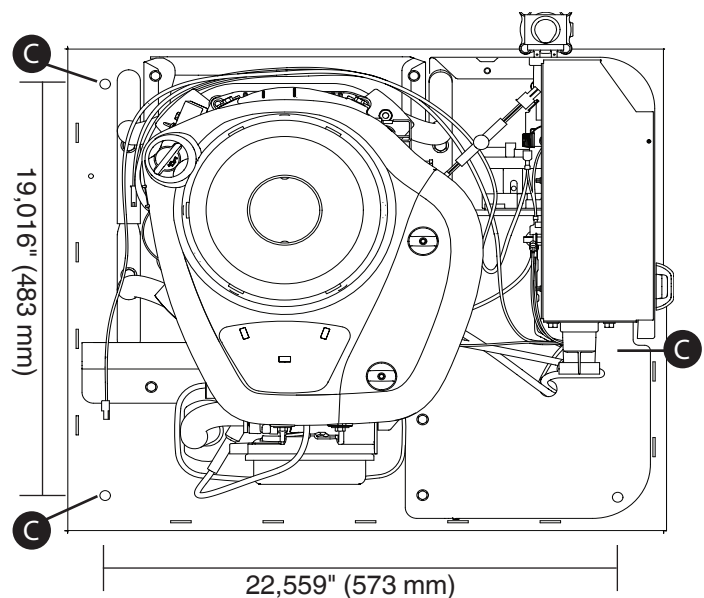


Se requieren dos tramos de 60" de 3/4" mínimo nominal de tubería de acero Schedule 40 (A), suministrados por el instalador, para levantar de manera manual el generador. Inserte los tubos a través de los orificios de elevación (B) ubicados cerca de la base de la unidad.

También puede levantar la unidad utilizando un método de "enganchar y elevar" unido a los tubos de elevación, siempre y cuando utilice una barra separadora para asegurarse de que las cadenas o los cables NO toquen el techo del generador.

## Anclaje de hormigón de la unidad

En las áreas determinadas como propensas a los huracanes, se recomienda anclar el generador de energía de emergencia al hormigón. La losa de hormigón debe tener un grosor mínimo de 3" (76 mm) y ser 6" (152 mm) más larga y ancha que la unidad (32" [813 mm] x 29" [737 mm]). Utilice pernos de anclaje para mampostería de 1/4" (6 mm) de diámetro (mínimo) por 3" (76 mm) de largo (mínimo) para sujetar la unidad. Hay tres agujeros de 7/16" (C) en la base del generador en los que fijar la unidad.



**AVISO** A menos que lo exijan los códigos locales o estatales, no se requiere una losa de hormigón.

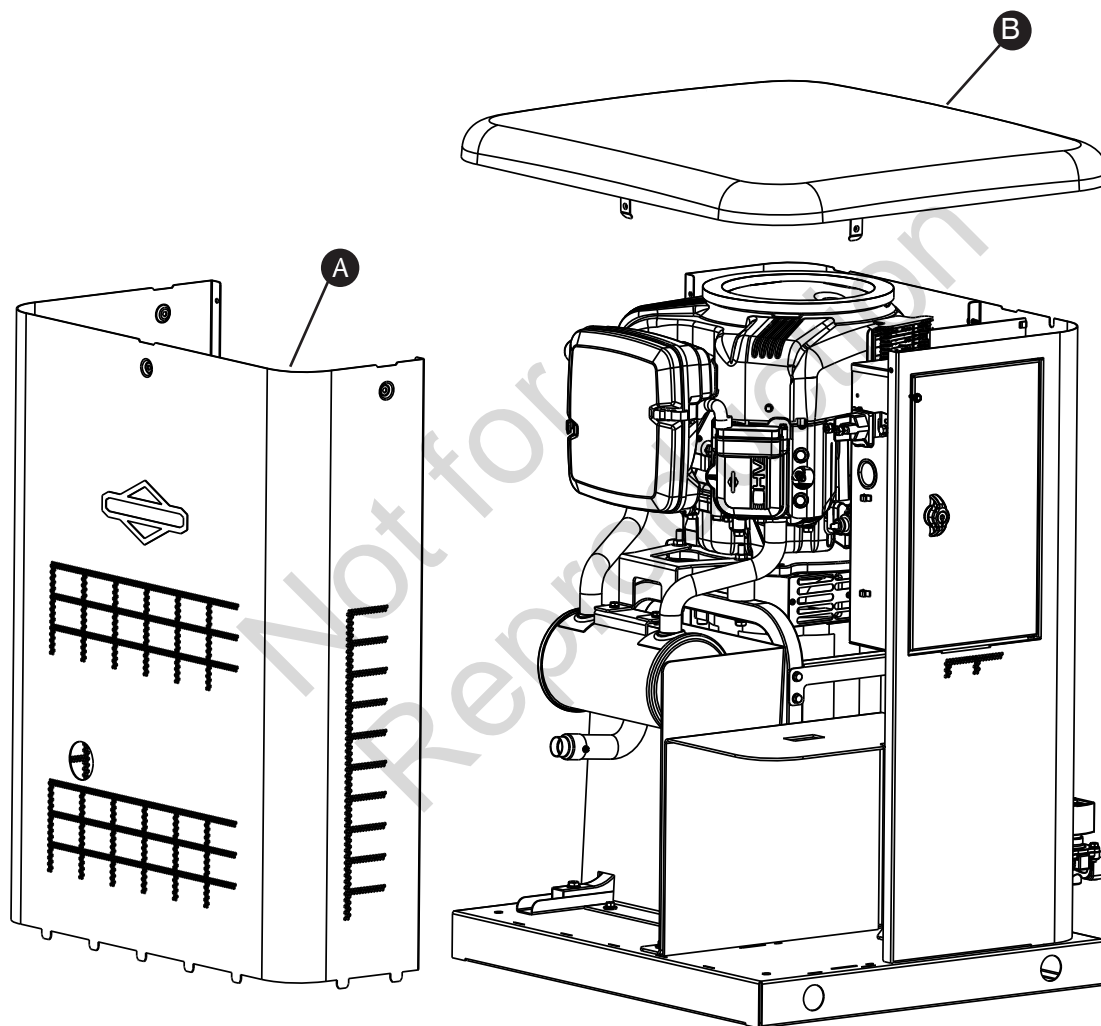
## Tableros de acceso

El generador está equipado con un gabinete que tiene varios paneles de acceso, como se muestra.

El panel frontal (A) y el techo (B) se utilizan para tener acceso a:

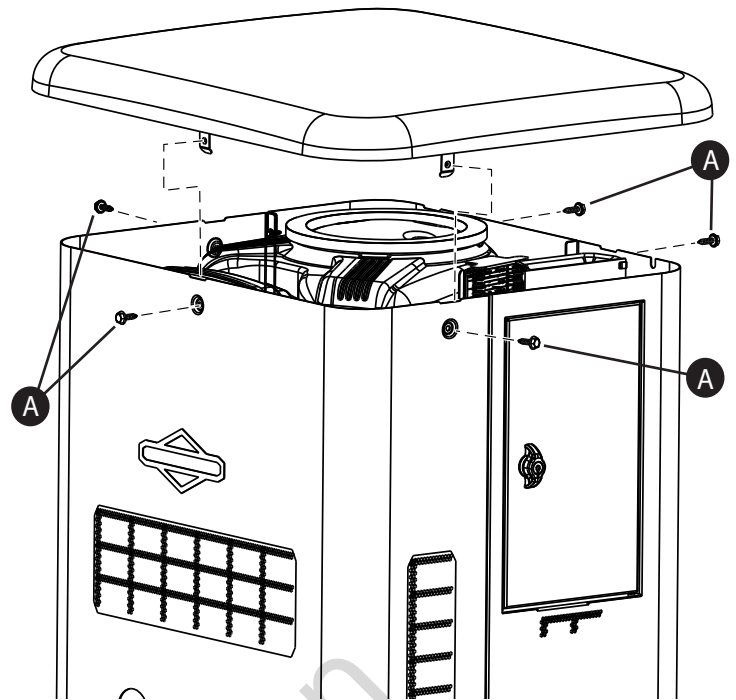
- Compartimiento de la batería
- Manguera de drenaje de aceite del motor
- Filtro de aceite de motor
- Tapa de las válvulas del motor
- Bujías

Cada generador se envía con un juego de llaves idénticas.



**. Para remover el techo:**

1. Retire los cinco tornillos (A) que fijan el techo a la unidad.
2. Levante y retire el techo de la unidad con cuidado.

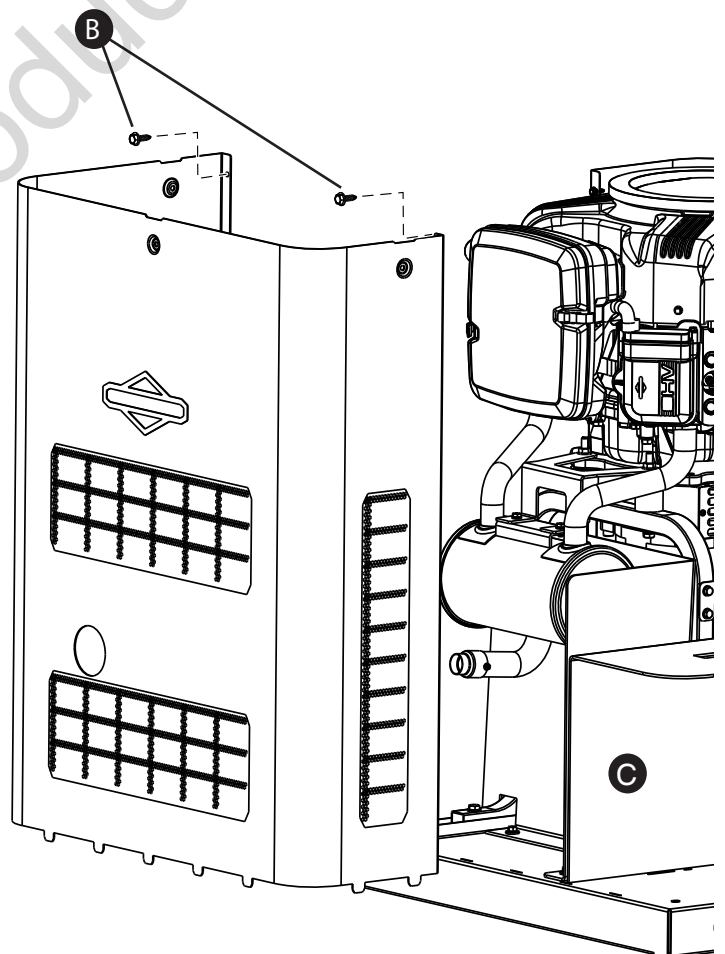


**Para retirar el panel frontal:**

1. Retire los dos tornillos (B) que fijan el panel a la unidad.
2. Levante y flexione el panel hacia fuera y fuera de la base. Tenga precaución de no dañar la caja de la batería (C).

**Para asegurar el panel frontal:**

1. Coloque el panel en la unidad.
2. Asegure el panel con los dos tornillos.



## Sistema de combustible gaseoso

La siguiente información se proporciona para ayudar a los técnicos de sistemas de combustible gaseoso a planificar las instalaciones. Esta información no debe interpretarse en ningún caso como una anulación de los códigos de gas combustible aplicables. Consulte con su proveedor local de combustible o con el jefe de bomberos si surgen preguntas o problemas.

- ⚠ ADVERTENCIA** El gas propano y el gas natural son extremadamente inflamables y explosivos y pueden causar quemaduras, incendios o explosiones que podrían ocasionar lesiones graves o la muerte.
- El gas LP es más pesado que el aire y se asentará en áreas bajas.
  - El gas natural es más liviano que el aire y se acumulará en áreas altas.
  - La más pequeña chispa podría encender estos combustibles y causar una explosión.
  - NO encienda cigarrillos ni fume.

**PARA EL INSTALADOR:** Consulte con el propietario(s) del generador y comuníquelo(s) cualquier consideración técnica que pudiese afectar a sus planes de instalación antes de aplicar estas directrices generales.

Las siguientes reglas generales se aplican a las tuberías del sistema de combustible gaseoso:

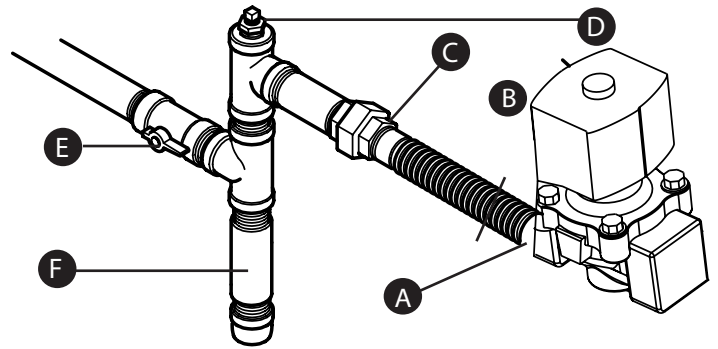
- ⚠ ADVERTENCIA** El gas propano y el gas natural son extremadamente inflamables y explosivos y pueden causar quemaduras, incendios o explosiones que podrían ocasionar lesiones graves o la muerte.
- Antes de poner en funcionamiento el generador, las líneas del sistema de combustible se deben purgar correctamente y se debe verificar que no haya ninguna pérdida.
  - No puede haber ninguna fuga.

**AVISO** La línea de combustible flexible de acero suministrada no debe instalarse bajo tierra o en contacto con el suelo.

- Toda la línea de combustible flexible de acero debe estar visible para su inspección periódica y no debe estar oculta dentro de ninguna pared, suelo o tabique, ni entrar en contacto con ellos.
  - La tubería debe ser de un material que cumpla con los códigos federales y locales, estar rígidamente montada y protegida contra la vibración.
  - La tubería debe protegerse de los daños físicos cuando pasa por materas, macizos de arbustos y otras áreas cultivadas donde podrían producirse daños.

**AVISO** La ilustración representa una instalación típica. Su instalación puede ser diferente.

- Instale la línea de combustible flexible de acero (B) (suministrada) entre el puerto de entrada de combustible del generador (A) para evitar que la expansión y la contracción térmicas o cualquier movimiento del generador de reserva causen una tensión excesiva en el material de la tubería.



- Se debe proporcionar una unión (C) o una conexión con bridas aguas abajo para permitir la remoción del generador de emergencia.
- Se debe proporcionar un puerto de manómetro (D). Un manómetro digital, P/N 19495, está disponible en su centro de servicio Briggs & Stratton. Cuando se completan las pruebas iniciales, se retira el manómetro y se enchufa el puerto. El puerto del manómetro permite la instalación temporal de un manómetro para garantizar que el motor reciba la presión de combustible correcta para funcionar eficazmente en todo su rango de operación.
- Cuando se sepa que se produce la formación de hidratos o hielo, la tubería debe protegerse contra la congelación. La terminación de la tubería dura debe incluir una trampa de sedimentos (F) donde no sea probable que el condensado se congele.
- Se instalará como mínimo una válvula de cierre manual (E) accesible y aprobada en la línea de suministro de combustible a menos de 6 pies (180 cm) del generador residencial.
- Se debe instalar una válvula de corte de combustible manual en el interior del edificio.
- Cuando las condiciones locales incluyan riesgos de terremoto, tornados, un suelo inestable o peligros de inundación, se prestará especial atención al aumento de la resistencia y la flexibilidad de los soportes y conexiones de la tubería.
- La tubería deben tener el tamaño correcto para mantener las presiones de suministro y el flujo de volumen necesarios en condiciones de carga de generador variables con todos los aparatos de gas conectados al sistema de combustible encendidos y en operación.
- Utilice un sellador de tuberías o un compuesto para juntas aprobado para su uso con GN/GLP en todos los acoples roscados para reducir la posibilidad de fugas.
- La tubería instalada debe ser debidamente purgada y sometida a pruebas de fugas, de acuerdo con los códigos y normas aplicables.

## Factores de los combustibles

Una consideración importante que afecta a toda la instalación es el tipo de combustible utilizado por su generador. El sistema fue probado y ajustado en fábrica usando gas natural, pero puede ser convertido para usar vapor de LP. Para la apropiada operación del motor, los factores inherentes a cada uno de estos combustibles, como su ubicación y la duración de las posibles interrupciones de la red pública, son consideraciones importantes en las siguientes directrices sobre combustibles:

- Use combustible limpio y seco, libre de humedad o cualquier material particulado. El uso de combustibles fuera de los siguientes valores recomendados puede ocasionar problemas de rendimiento.
- En los motores que funcionan con propano (LP), se requiere propano de grado comercial HD5 con una energía de combustible mínima de 2500 BTU/pie<sup>3</sup> con un contenido máximo de propileno del 5 % y butano y un contenido de gas más pesado del 2,5 % y un contenido mínimo de propano del 90 %.

La clasificación del gas natural dependerá de un combustible específico, pero las típicas desviaciones están entre el 10 y el 20 % de la clasificación del gas LP.

Los motores de gas natural o LP se certifican para funcionar con gas natural o propano líquido. El sistema de control de emisiones para este motor es EM (modificaciones del motor).

## Presión del combustible

Tanto el vapor licuado del petróleo (LP) como el gas natural suministran presión en el puerto de entrada de combustible del generador y debe estar entre los siguientes niveles a plena carga con todos los aparatos de gas encendidos y en operación.

- GN es 3,5-7 pulg W.C.
- LP es 11-14 pulg W.C.

Asegúrese de que todas las válvulas de cierre de las líneas de gas estén en la posición ABIERTO y de que se disponga de la presión de combustible adecuada siempre que se desee una operación automática.


## Pérdida de potencia

La densidad del aire es menor a grandes altitudes, lo que resulta en una menor potencia de motor disponible. Específicamente, la potencia del motor disminuirá un 3,5 % por cada 1000 pies (300 m) sobre el nivel del mar y un 1 % por cada 10 °F (5,6 °C) por encima de los 77 °F (25 °C). Los generadores que se ubicaron en estas condiciones deben tener su interruptor de transferencia que se ajuste apropiadamente para esta disminución de potencia. Ver en el manual Interruptor de Transferencia Automática para saber cómo ajustar la disminución de la potencia.

## Tamaño de la tubería de combustible

Existen numerosas referencias en línea o publicadas de otro modo para el dimensionamiento de los tubos para combustible. Por ejemplo, NFPA 54 - National Fuel Gas Code, 2006 (Artículo #: 320-6031-06) es un recurso común.

El instalador debe considerar la gravedad específica del gas y compensar una cantidad nominal de restricción de los codos, acoples, etc. Si se utiliza un número inusual de acoples, codos u otras restricciones, consulte los códigos federales y locales para obtener orientación.

 **ADVERTENCIA** El gas propano y el gas natural son extremadamente inflamables y explosivos, y pueden causar quemaduras, incendios o explosiones que podrían ocasionar lesiones graves o la muerte.



- El generador residencial está equipado con una válvula de "cierre de combustible" de seguridad automática.
- NO utilice el equipo si falta la válvula de "cierre de combustible" o si no funciona.



## Conversión de combustible

El motor de su sistema de generador residencial viene calibrado de fábrica

y ajustado para operar con gas natural (GN). También puede funcionar con vapor de petróleo licuado (LP).

### Para configurar las unidades de 10 kW con el arnés de combustible instalado de fábrica para el uso de LP:

1. Presione el botón “**APAGADO**” (OFF) en el panel de control.
2. Retire el fusible de 15 amp del panel de control.
3. Retire el techo.
4. Con un destornillador de ranura, gire los tornillos (C) y (D) en el sentido de las agujas del reloj hasta que queden ajustados (apretarlos demasiado puede dañar el puerto del mezclador)
5. Con un destornillador, gire el tornillo (C) 2 y 1/2 vueltas en sentido contrario a las agujas del reloj.
6. Deje el tornillo (D) ajustado.
7. Conecte el arnés de combustible (A) al solenoide del motor (B) uniendo los conectores eléctricos de dos pines.
8. Vuelva a instalar el fusible de 15 amp en el panel de control.
9. Presione el botón “**AUTOMÁTICO**” (AUTO) en el panel de control.
10. Vuelva a instalar el techo y cierre los paneles de acceso.

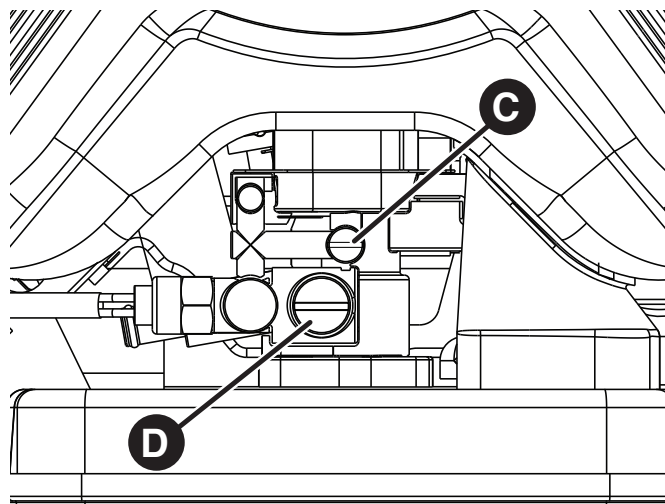
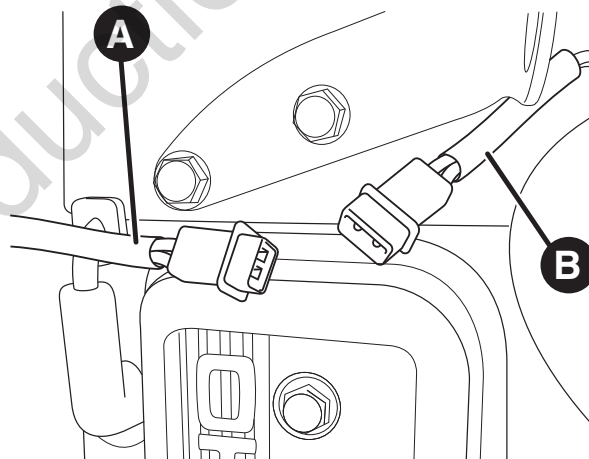
• **NOTA:** ajustes de GN de fábrica:

- Tornillo C: 4 - 4,5 vueltas
- Tornillo D: 1,5 - 2 vueltas

El sistema está ahora listo para operar automáticamente utilizando combustible de vapor de LP.

### Para configurar las unidades de 10 kW sin el arnés de combustible instalado de fábrica para el uso de LP:

1. Presione el botón “**APAGADO**” (OPEN) en el panel de control.
2. Retire el fusible de 15 amp del panel de control.
3. Retire el techo.
4. Con un destornillador de ranura, gire los tornillos (C) y (D) en el sentido de las agujas del reloj hasta que queden ajustados (apretarlos demasiado puede dañar el puerto del mezclador)
5. Con un destornillador, gire el tornillo (C) 2 y 1/2 vueltas en sentido contrario a las agujas del reloj.
6. Deje el tornillo (D) ajustado.
7. Vuelva a instalar el fusible de 15 amp en el panel de control.
8. Presione el botón “**AUTOMÁTICO**” (AUTO) en el panel de control.
9. Vuelva a instalar el techo y cierre los paneles de acceso.



## Consumo de combustible

Las necesidades estimadas de suministro de combustible a media y plena carga para el gas natural y los combustibles de vapor de petróleo se indican aquí.

### Vapor de LP (Propano)

		10 kW
<b>Carga completa</b>	Cu Ft/Hr	65,6
	Gal/Hr (líquido)	1,82
	BTU/Hr	164000
<b>1/2 de carga</b>	Cu Ft/Hr	42,8
	Gal/Hr (líquido)	1,18
	BTU/Hr	107000
<b>Ejercicio</b>	Cu Ft/Hr	23,6
	Gal/Hr (líquido)	0,65
	BTU/Hr	59000

Contenido energético recomendado del combustible:	Gas Natural	Propano (Vapor de LP)
<b>Valor calorífico:</b>		
<b>BTU por galón de líquido (bruto*)</b>	N/A	91.547
<b>BTU por pies cúbicos (vapor)</b>	1000	2500

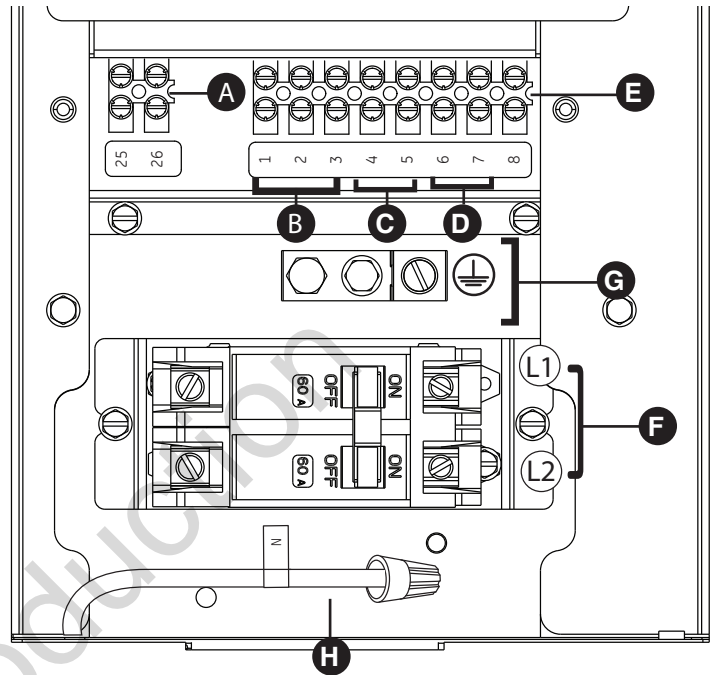
### Gas Natural

		10 kW
<b>Carga completa</b>	Cu Ft/Hr	169
	BTU/Hr	169000
<b>1/2 de carga</b>	Cu Ft/Hr	111
	BTU/Hr	111000
<b>Ejercicio</b>	Cu Ft/Hr	60
	BTU/Hr	60000

## Conectores del sistema

Las conexiones de bajo voltaje para señalar los contactos defectuosos, la comunicación del interruptor de transferencia y la alimentación auxiliar de 12 VDC se realizan a través de un bloque de terminales de conexión de campo en el área de la tarjeta de control. Compare esta ilustración con su generador para familiarizarse con la ubicación de estas conexiones.

- A** - **Bloque de terminales de dos clavijas:** se utiliza para conectar la red pública de 240 VAC del bloque de fusibles del ATS a la tarjeta de control. Conecte solamente un cable por terminal utilice cable #14 AWG [2.5 mm<sup>2</sup>] mínimo de 300 voltios.
- B** - **Contactos de fallas:** utilice 1 (N.O.), 2 (COM) y 3 (N.C.) para conectar una sirena, una luz, etc. para alertar en caso de falla. Los contactos invierten su estado (1 [N.O.] pasa a 3 [N.C.] y viceversa) en caso de falla.
- C** - **Comunicación del interruptor de transferencia (4 [TxRx] y 5 [TxRx GND]):** conecte a la tarjeta de control del interruptor de transferencia para la interfaz de comunicación utilizando un cable de par trenzado #18 AWG [1 mm<sup>2</sup>].
- D** - **Conexión 6 (+LED) y 7 (GND):** no es necesaria para el monitor inalámbrico incluido en la unidad. Disponible para el accesorio opcional de panel de estado del sistema remoto cableado, n.º 6154.
- E** - **Bloque de terminales de ocho pines:** se utiliza para conectar los cables de señal a la tarjeta de control. Conecte sólo un cable por terminal.
- F** - **Conexión de energía (Línea 1 y Línea 2):** conexión de energía al interruptor de transferencia.
- G** - **Conexión a tierra:** conecte al cable de tierra del interruptor de transferencia.
- H** - **Conexión neutra:** conecte al cable neutro del interruptor de transferencia



• Para la conexión de la salida de potencia (Línea 1, Línea 2, Neutro y Tierra), consulte la siguiente tabla:

<b>≥ 300 V, 75 °C</b>	<b>10 kW</b>
	6 AWG [13 mm <sup>2</sup> ] min. Cu/Al

\* Consulte la tabla 310.15 del NEC 2014 • Utilice el National Electric Code para los factores de corrección y los cálculos del tamaño de los cables.

- Para la comunicación con el interruptor de transferencia use conductores de par trenzado #18 AWG [1 mm<sup>2</sup>], de no más de 200 pies de largo, cable de 300 voltios.
  - Al conectarlo al bloque de terminales, solamente hay que sujetar un cable a cada tornillo del conector.
  - El bloque de terminales se atornilla a 4,4 pulg-lb [0,49 Newton metro].
  - Las conexiones del disyuntor de circuito se aprietan a 45 pulg-lb [5 Newton metros].

\* Sistema métrico redondeado para simplificar

**AVISO** El cable neutro (H) debe estar conectado al cable neutro del interruptor de transferencia.

NO conecte el neutro y la tierra juntos dentro del generador.

## Conexiones para la comunicación

Conecte los cables de comunicación aplicables al interruptor de transferencia automática como se indica en la siguiente tabla.

Número de pin	Descripción	Tipo de cable	Conectar a	Notas
1	Normalmente abierto	Conductores de par trenzado #18 AWG [1 mm <sup>2</sup> ] de largo no superior a 61 m, cable de cobre de 300 V, 90 °C		Para alarma opcional
2	Común	Conductores de par trenzado #18 AWG [1 mm <sup>2</sup> ] de largo no superior a 61 m, cable de cobre de 300 V, 90 °C		Para alarma opcional
3	Normalmente cerrado	Conductores de par trenzado #18 AWG [1 mm <sup>2</sup> ] de largo no superior a 61 m, cable de cobre de 300 V, 90 °C		Para alarma opcional
4	Comunicación con el interruptor de transferencia	Conductores de par trenzado #18 AWG [1 mm <sup>2</sup> ] de largo no superior a 61 m, cable de cobre de 300 V, 90 °C	4 (T/R) en el tablero del interruptor de transferencia	Se debe conectar
5	Puesta a tierra de la comunicación con el interruptor de transferencia	Conductores de par trenzado #18 AWG [1 mm <sup>2</sup> ] de largo no superior a 61 m, cable de cobre de 300 V, 90 °C	5 (GND) Tierra en el tablero del interruptor de transferencia	Se debe conectar
6	+LED	Conductores de par trenzado #18 AWG [1 mm <sup>2</sup> ] de largo no superior a 61 m, cable de cobre de 300 V, 90 °C	Cable rojo en la placa indicadora de fallas	Para la indicación opcional de fallas
7	Conexión a tierra	Conductores de par trenzado #18 AWG [1 mm <sup>2</sup> ] de largo no superior a 61 m, cable de cobre de 300 V, 90 °C	Cable negro en la placa indicadora de fallas	Para puesta a tierra de la indicación de falla opcional
8	No se usa	N/A	N/A	N/A
25	Red pública	Cable #14 AWG [2,5 mm <sup>2</sup> ] mínimo de 300 voltios	Interruptor de transferencia de la red pública	Se debe conectar
26	Red pública	Cable #14 AWG [2,5 mm <sup>2</sup> ] mínimo de 300 voltios	Interruptor de transferencia de la red pública	Se debe conectar

\* Sistema métrico redondeado para simplificar

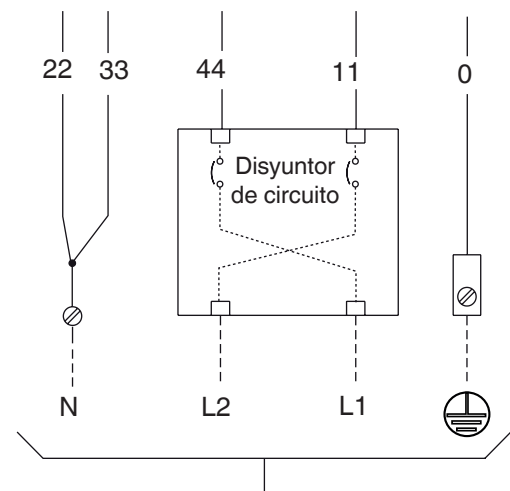
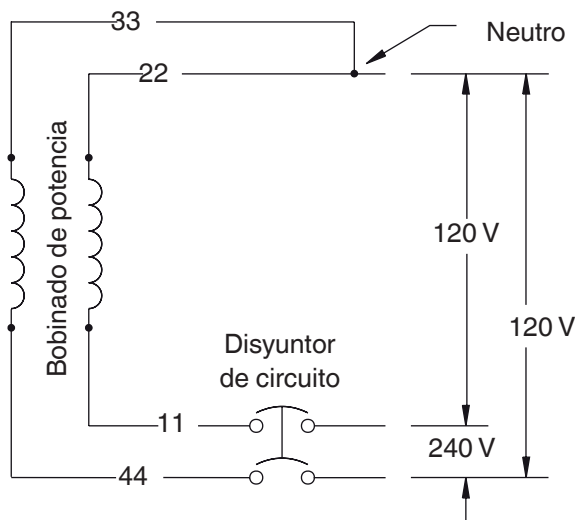
## Sistema de conexión de AC del generador

En el generador residencial se utiliza un sistema de conexión de CA monofásico de tres cables. El ensamblaje del estátor se compone de un par de bobinas estacionarias con dos cables que salen de cada bobina. La unión de los cables 22 y 33 forma el cable neutro, como se muestra esquemáticamente y como un diagrama

de cableado. El esquema completo y el diagrama de cableado se encuentran más adelante en este manual.

**AVISO** El neutro no está unido a la tierra en el generador.

**AVISO** El generador debe usarse solamente con un interruptor de transferencia con certificación UL que sea compatible con el generador.



## Puesta a tierra del generador

El generador residencial debe instalarse como parte de un sistema que incluya un interruptor de transferencia certificado, con conexión de neutro a tierra en el interruptor de transferencia de acuerdo con las instrucciones de instalación. A menos que lo exija el código local, no es necesaria la puesta a tierra adicional en el generador.

## Conexiones de energía del generador al interruptor de transferencia

### Conexión del circuito de la red pública

Los cables de la “red pública de 240 V” deben enrutarse por un conducto. Los cables de la “red pública de 240 V” suministran energía a la placa de circuito del generador, al calentador de batería opcional y al calentador de aceite opcional. Esta energía también carga la batería. Cuando

### Conexión de la energía del generador

**Para unidades de 10 kW:** Utilizando los cables de 300 V como mínimo suministrados por el instalador y la tabla situada en la página 25, conecte la salida de energía del generador Línea 1, Línea 2, neutro y tierra a la correspondiente Línea 1, Línea 2, neutro y tierra en el interruptor de transferencia.

*\*Utilice el National Electric Code para los factores de corrección y los cálculos del tamaño de los cables.*

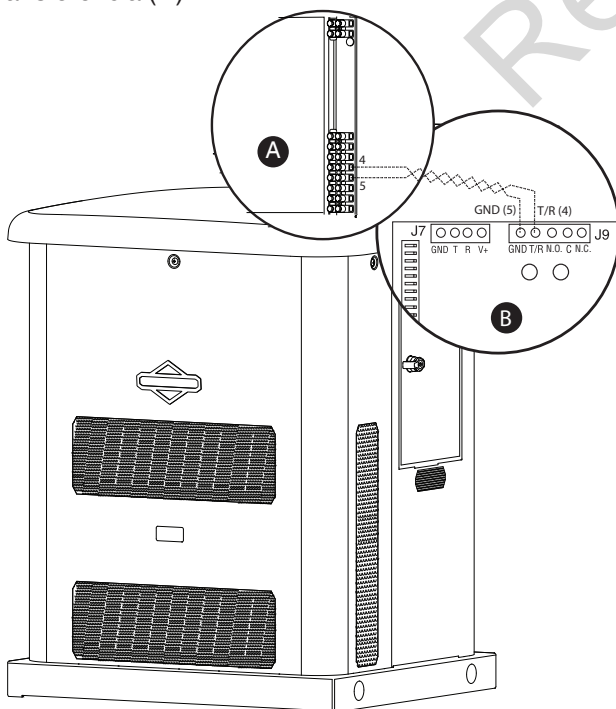
### Comunicación con el interruptor de transferencia

Utilizando conductores de par trenzado #18 AWG [1 mm<sup>2</sup>], de no más de 200 pies de largo, conecte 4 y 5 desde el bloque de terminales del generador (A) a T/R (4) y GND (5) en la tarjeta de control del interruptor de transferencia (B).

Cualquier puesta a tierra en el generador debe utilizar arandelas de bloqueo con perforación metálica (o equivalente), terminales con certificación UL instaladas según las instrucciones del proveedor de la terminal, y cumplir con los códigos eléctricos nacionales y los requisitos locales.

se pierda la energía de estos cables, el generador se pondrá en marcha.

Utilice el cable de mínimo 300 V, #14 AWG [2,5 mm<sup>2</sup>] que suministra el instalador, conecte cada terminal del circuito de control del generador (25 y 26) al bloque de fusibles del interruptor de transferencia automática.



Consulte la ilustración y el cuadro de las páginas 24 y 25 para obtener más información.

Al realizar las conexiones, siga las especificaciones sobre el tipo de cable y el par de torsión impresas en el disyuntor de circuito y en los conectores de neutro/tierra.

## Tarjeta de control del sistema

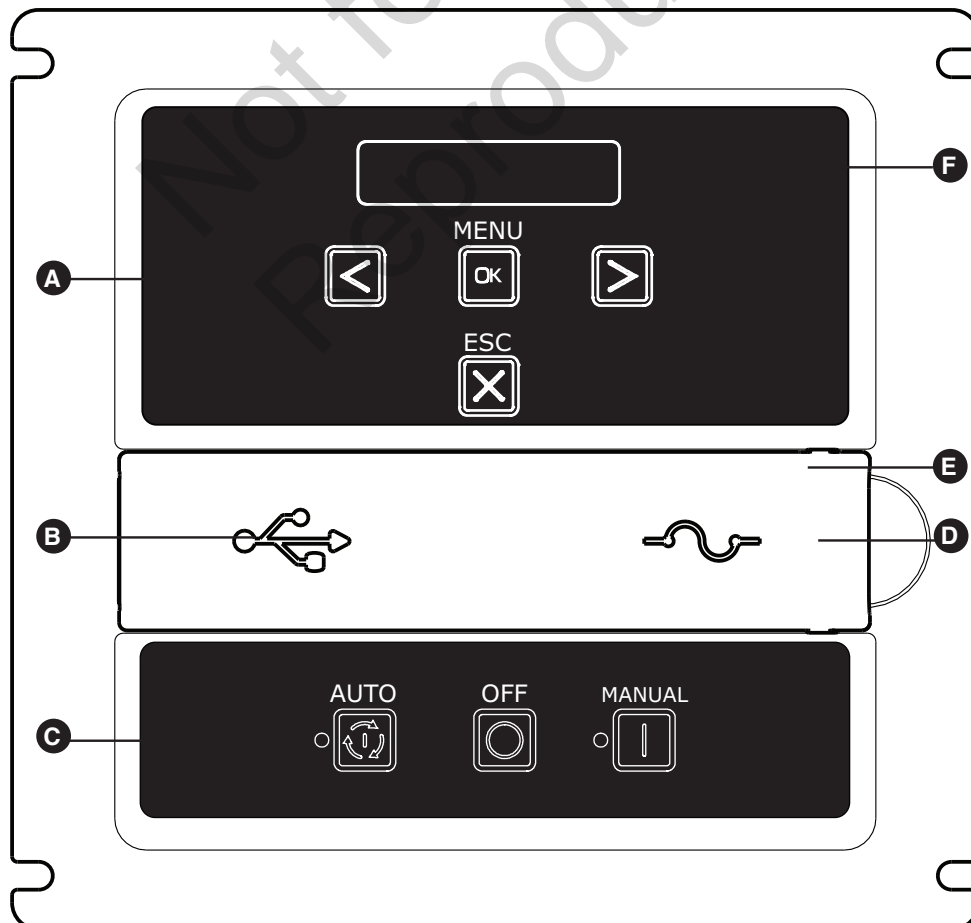
La tarjeta de control del generador, situada en el interior del generador, bajo el techo, se muestra a continuación. Las descripciones breves de los controles utilizados durante la instalación son:

- A** - **Botones de navegación del menú/programación:** ver la sección *Menú* para conocer los detalles
- B** - **Puerto mini USB:** uso únicamente por parte del distribuidor de servicio autorizado
- C** - **Botones de control de la operación del generador:**
  - **“AUTO”** Posición normal de operación. Mantenga presionado el botón para poner la unidad en modo Automático. Si se detecta un corte de energía de la red pública, el sistema pondrá en marcha el generador. Cuando se restablece la energía de la red pública, el sistema automático deja que el motor estabilice las temperaturas internas, apaga el generador y espera el siguiente corte de energía de la red pública.
  - **“APAGADO” (OFF)** Apaga el generador en funcionamiento, evita que la unidad se ponga en marcha y restablece las fallas detectadas.

El botón **APAGADO (OFF)** debe mantenerse presionado durante más de 5 segundos para restablecer los códigos de servicio.








- **“MANUAL”** Se utiliza para arrancar manualmente el generador.
- \* - LED “AUTOMÁTICO” (AUTO):** el LED se encenderá cuando la unidad esté en modo Automático. El LED parpadeará si el ciclo de prueba no está ajustado o si está puesto en APAGADO (OFF).
- D - Fusible de 15 amp:** protege los circuitos de control de DC del generador residencial. Si el fusible se ha “fundido” (se ha abierto) o ha sido retirado, el motor no puede arrancar. Reemplace el fusible utilizando solamente un fusible ATO 15A idéntico. Se suministra un fusible de repuesto con la unidad.
- E - Tapa:** esta tapa protectora debe abrirse para acceder al fusible y al puerto USB.
- F - Pantalla digital:** muestra el modo del generador, las opciones de menú, los códigos de servicio y los indicadores de mantenimiento del motor

Puede encontrar más información en *Controles* en el manual del operador.






## Menú



El siguiente cuadro muestra los iconos de los botones que controlan el panel de control del sistema.

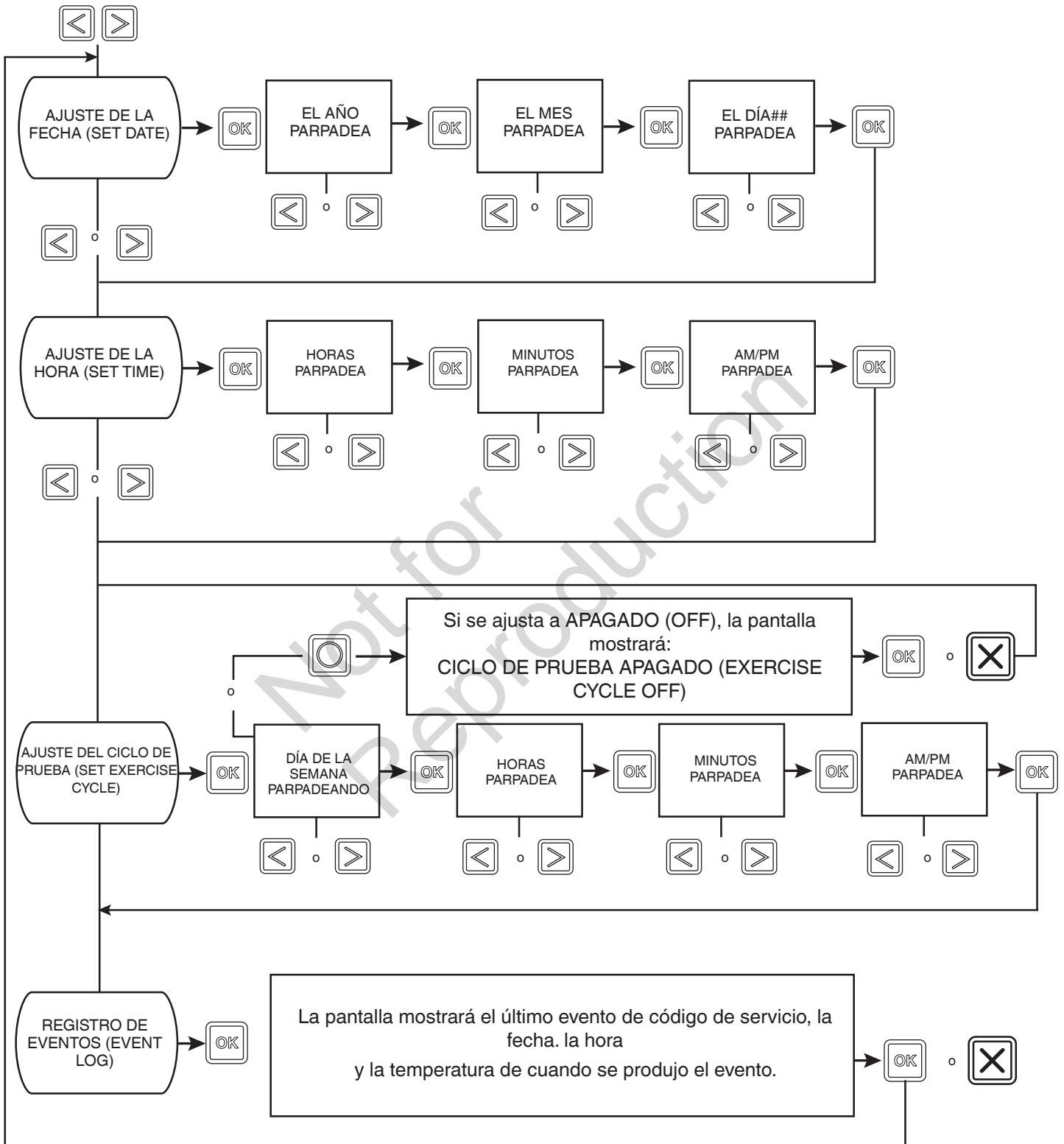
	<b>MENÚ</b>	ACCEDE AL MENÚ (VER AJUSTES) OPRIMA PARA CONFIRMAR LA SELECCIÓN AL HACER LA PROGRAMACIÓN.
	<b>ESCAPE (SALIR)</b>	REGRESA AL ÚLTIMO ELEMENTO DEL MENÚ
	<b>FLECHA DERECHA</b>	CAMBIA ENTRE LAS OPCIONES DEL MENÚ AJUSTA LOS PARÁMETROS DEL SISTEMA
	<b>FLECHA IZQUIERDA</b>	CAMBIA ENTRE LAS OPCIONES DEL MENÚ AJUSTA LOS PARÁMETROS DEL SISTEMA
	<b>MODO MANUAL</b>	UTILIZADO PARA ARRANCAR MANUALMENTE EL GENERADOR. MANTENGA PRESIONADO EL BOTÓN PARA PONER EN MARCHA EL GENERADOR.
	<b>APAGADO</b>	APAGA EL GENERADOR EN FUNCIONAMIENTO, IMPIDE QUE LA UNIDAD SE PONGA EN MARCHA Y RESTABLECE LAS FALLAS DETECTADAS.
	<b>MODO AUTOMÁTICO</b>	POSICIÓN NORMAL DE OPERACIÓN. MANTENGA PRESIONADO EL BOTÓN PARA PONER LA UNIDAD EN MODO AUTOMÁTICO. SI SE DETECTA UN CORTE DE ENERGÍA DE LA RED PÚBLICA, EL SISTEMA ARRANCARÁ EL GENERADOR. CUANDO SE RESTABLECE LA ENERGÍA DE LA RED PÚBLICA, EL MODO AUTO PERMITE QUE EL MOTOR ESTABILICE LAS TEMPERATURAS INTERNAS, APAGA EL GENERADOR Y ESPERA EL SIGUIENTE CORTE DE ENERGÍA DE LA RED PÚBLICA.

El siguiente cuadro describe las secuencias de teclas para acceder a los diferentes modos de programación;

	<b>CONFIGURACIÓN GENERAL</b>	MANTENGA PRESIONADAS LAS TECLAS [FLECHA IZQUIERDA Y FLECHA DERECHA] HASTA QUE APAREZCA "CONFIGURACIÓN GENERAL" (GENERAL SET-UP) PARA ENTRAR EN EL MODO DE PROGRAMACIÓN.
  	<b>AJUSTES AVANZADOS</b>	MANTENGA PRESIONADO [FLECHA IZQUIERDA, FLECHA DERECHA Y ESC] HASTA QUE APAREZCA "AJUSTES AVANZADOS" (ADVANCED SETTINGS) O MANTENGA PRESIONADO CUALQUIERA DE LOS BOTONES [FLECHA IZQUIERDA, FLECHA DERECHA O ESC] HASTA QUE "++1++" APAREZCA EN LA PANTALLA DIGITAL. A CONTINUACIÓN, MANTENGA PRESIONADA OTRA TECLA [FLECHA IZQUIERDA, FLECHA DERECHA O ESC] HASTA QUE "++2++" SE MUESTRE. POR ÚLTIMO, MANTENGA PRESIONADO EL BOTÓN RESTANTE NO SELECCIONADO [FLECHA IZQUIERDA, FLECHA DERECHA O ESC] HASTA QUE APAREZCA LA OPCIÓN "AJUSTES AVANZADOS" (ADVANCED SETTINGS).
	<b>MODO DE ENLACE INALÁMBRICO</b>	MANTENGA PRESIONADO [MENU Y ESC] DURANTE TRES SEGUNDOS PARA ENTRAR EN EL MODO DE ENLACE INALÁMBRICO. (SOLAMENTE APLICABLE EN ALGUNOS MODELOS).

## Pantalla de configuración general

Para la configuración general, mantenga presionadas las flechas izquierda y derecha   durante 3 segundos. Siga las indicaciones que se describen a continuación.



SI NO SE PRESIONA NINGÚN BOTÓN DURANTE 30 SEGUNDOS DURANTE LA PROGRAMACIÓN, EL PANEL DE CONTROL SALDRÁ AUTOMÁTICAMENTE DEL MODO DE PROGRAMACIÓN.



## Avisos del panel de control

### Modo automático

En el Modo Automático (Auto Mode), la pantalla de visualización se mostrará a través de un texto que se desplaza:

- **GENERADOR LISTO (GENERATOR READY):** si la unidad está en modo de espera y hay energía de la red pública.
- **GENERADOR ENCENDIDO (GENERATOR ON):** si la unidad está en funcionamiento y no hay energía de la red pública.
- **CÓDIGO DE SERVICIO (SERVICE CODE):** si se ha detectado una falla en el sistema.

### Parámetros generales del sistema

Para ver los parámetros generales del sistema, presione el botón MENU.

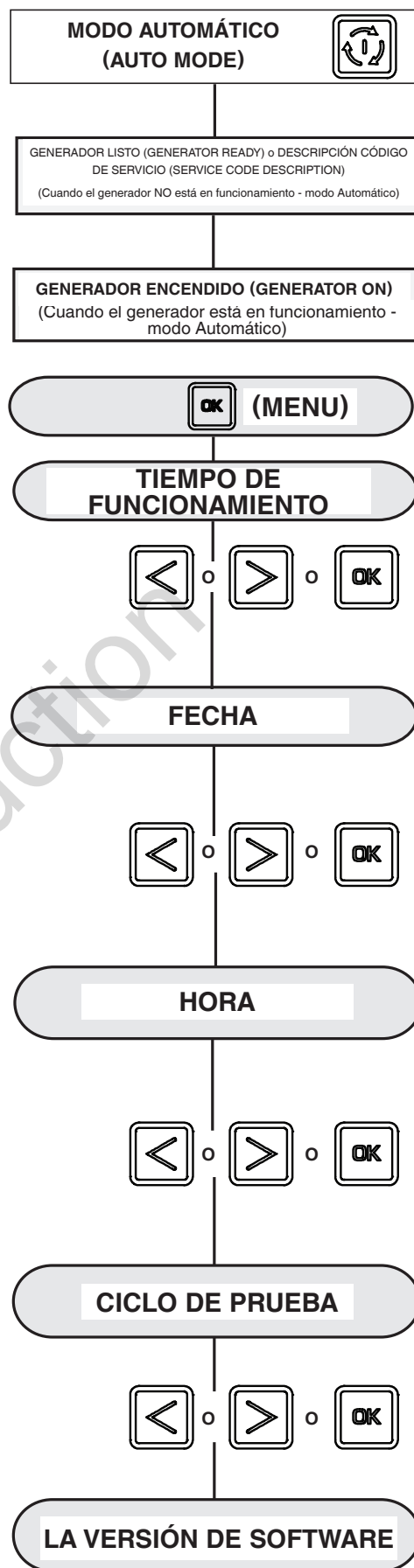
Lo siguiente se desplazará por la pantalla digital y luego pasará al siguiente elemento:

- Tiempo de funcionamiento
- Fecha
- Hora
- Fecha y hora de inicio del ciclo de prueba
- Versión de software

El usuario puede presionar la FLECHA IZQUIERDA o la FLECHA DERECHA en cualquier momento para pasar al siguiente elemento.

El usuario puede presionar ESCAPE para regresar a GENERADOR LISTO (GENERATOR READY).

Si no se realiza ninguna entrada por parte del usuario durante 40 segundos después de que se hayan mostrado todos los elementos, la pantalla digital de desplazamiento de la tarjeta de control se restablecerá a la pantalla de desplazamiento previa.



## Pantalla de ajustes avanzados

Los parámetros de ajuste avanzado vienen preconfigurados de fábrica para una instalación típica. Para ver los elementos de los ajustes avanzados y/o cambiarlos, siga las instrucciones que se indican a continuación.

**AVISO** Los ajustes avanzados son fundamentales para la operación de la unidad. Hay que tener mucho cuidado cuando se trabaja en el menú Ajustes Avanzados (Advanced Settings). Tenga precaución al seleccionar y verificar los parámetros para el generador y la región donde se está operando el generador. Confirme todos los ajustes antes de poner en operación el generador por primera vez.

Para los elementos del menú avanzados, mantenga presionada la flecha izquierda, la flecha derecha y la tecla Escape (◀ ▶ ⏏) durante 3 segundos o consulte la pág. 29 para ver la secuencia de teclas adicional. Siga las indicaciones que se describen a continuación.

**AVISO** En el menú Ajustes Avanzados (Advanced Settings), hay que introducir un código de acceso de tres botones (flecha izquierda, flecha derecha y tecla Escape (◀ ▶ ⏏)) una vez para entrar en el menú y otra vez para cambiar cualquier ajuste. Después de cada confirmación de un ajuste, la selección se mostrará sólida durante 2 segundos antes de pasar al siguiente elemento del programa.

