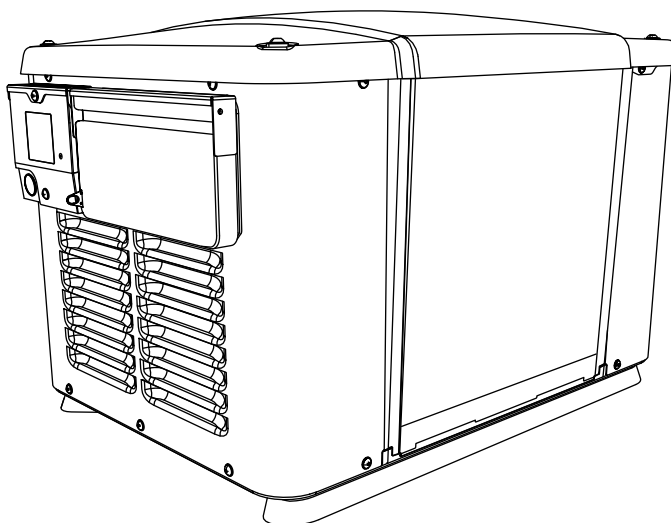


# *Installation Guidelines*

## *60 Hz Air-Cooled Generators*

7.5 kW PowerPact®

**WARNING**

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury. (000209b)

Register your Generac product at:  
**WWW.GENERAC.COM**  
1-888-GENERAC  
(888-436-3722)

Para español , visita: <http://www.generac.com/service-support/product-support-lookup>

Pour le français, visiter : <http://www.generac.com/service-support/product-support-lookup>

# ***SAVE THIS MANUAL FOR FUTURE REFERENCE***

**Use this page to record important information about this generator.**

Model:	
Serial:	
Prod Date Week:	
Volts:	
LPV Amps:	
NG Amps:	
Hz:	
Phase:	
Controller P/N:	

Record the information found on the unit data label on this page. The unit has a label plate affixed to the inside partition, above the battery access panel as shown in **Figure 2-3**. See the owner's manual for directions on how to open the top lid and remove the front panel.

Always supply the complete model number and serial number of the unit when contacting an Independent Authorized Service Dealer (IASD) about parts and service.

**Operation and Maintenance:** Correct maintenance and care of the unit ensures a minimum number of problems, and keeps operating expenses at a minimum. It is the operator's responsibility to perform all safety inspections, to verify all maintenance for safe operation is performed promptly, and to have the equipment inspected periodically by an IASD. Normal maintenance, service, and replacement of parts are the responsibility of the owner/operator and are not considered defects in materials or workmanship within the terms of the warranty. Individual operating habits and usage may contribute to the need for additional maintenance or service.

When the generator requires servicing or repairs, Generac recommends contacting an IASD for assistance. Authorized service technicians are factory-trained and are capable of handling all service needs. To locate the nearest IASD, please visit the dealer locator at: [www.generac.com/Dealer-Locator](http://www.generac.com/Dealer-Locator).



**WARNING**

**CANCER AND REPRODUCTIVE HARM**

[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

(000393a)

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# Section 1: Safety Rules & General Information

## Introduction

Thank you for purchasing this compact, high performance, air-cooled, engine-driven generator. It is designed to automatically supply electrical power to operate critical loads during a utility power failure.

This unit is factory installed in an all-weather, metal enclosure intended exclusively for outdoor installation. This generator will operate using either vapor withdrawn liquid propane (LP) or natural gas (NG).

**NOTE:** This generator is suitable for supplying typical residential loads such as induction motors (sump pumps, refrigerators, air conditioners, furnaces, etc.), electronic components (computer, monitor, TV, etc.), lighting loads, and microwaves, when sized correctly.

The information in this manual is accurate based on products produced at the time of publication. The manufacturer reserves the right to make technical updates, corrections, and product revisions at any time without notice.

## Read This Manual Thoroughly



### **WARNING**

Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury. (000100a)

If any section of this manual is not understood, contact the nearest Independent Authorized Service Dealer (IASD) or Generac Customer Service at 1-888-436-3722 (1-888-GENERAC), or visit [www.generac.com](http://www.generac.com) for starting, operating, and servicing procedures. The owner is responsible for correct maintenance and safe use of the unit.

This manual must be used in conjunction with all other supporting product documentation supplied with the product.

SAVE THESE INSTRUCTIONS for future reference. This manual contains important instructions that must be followed during placement, operation, and maintenance of the unit and its components. Always supply this manual to any individual that will use this unit, and instruct them on how to correctly start, operate, and stop the unit in case of emergency.

## Safety Rules

The manufacturer cannot anticipate every possible circumstance that might involve a hazard. The alerts in this manual, and on tags and decals affixed to the unit, are not all inclusive. If using a procedure, work method, or operating technique that the manufacturer does not specifically recommend, verify that it is safe for others and does not render the equipment unsafe.

Throughout this publication, and on tags and decals affixed to the unit, DANGER, WARNING, CAUTION, and NOTE blocks are used to alert personnel to special instructions about a particular operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully. Alert definitions are as follows:

### **DANGER**

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

(000001)

### **WARNING**

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

(000002)

### **CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

(000003)

**NOTE:** Notes contain additional information important to a procedure and will be found within the regular text of this manual.

These safety alerts cannot eliminate the hazards that they indicate. Common sense and strict compliance with the special instructions while performing the action or service are essential to preventing accidents.

## How to Obtain Service

When the unit requires servicing or repairs, contact Generac Customer Service at 1-888-GENERAC (1-888-436-3722) or visit [www.generac.com](http://www.generac.com) for assistance.

When contacting Generac Customer Service about parts and service, always supply the complete model and serial number of the unit as given on its data decal located on the unit. Record the model and serial numbers in the spaces provided on the front cover of this manual.

## General Hazards

### **⚠ DANGER**

Loss of life. Property damage. Installation must always comply with applicable codes, standards, laws and regulations. Failure to do so will result in death or serious injury. (000190)

### **⚠ DANGER**

Automatic start-up. Disconnect utility power and render unit inoperable before working on unit. Failure to do so will result in death or serious injury. (000191)



### **⚠ WARNING**

Electrocution. Potentially lethal voltages are generated by this equipment. Render the equipment safe before attempting repairs or maintenance. Failure to do so could result in death or serious injury. (000187)



### **⚠ WARNING**

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury. (000209b)

### **⚠ WARNING**

Accidental Start-up. Disconnect the negative battery cable, then the positive battery cable when working on unit. Failure to do so could result in death or serious injury. (000130)

### **⚠ WARNING**

Equipment damage. Only qualified service personnel may install, operate, and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage. (000182a)

### **⚠ WARNING**

Equipment damage. This unit is not intended for use as a prime power source. It is intended for use as an intermediate power supply in the event of temporary power outage only. Doing so could result in death, serious injury, and equipment damage. (000247a)

### **⚠ WARNING**

Electric shock. Only a trained and licensed electrician should perform wiring and connections to unit. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage. (000155a)



### **⚠ WARNING**

Moving Parts. Do not wear jewelry when starting or operating this product. Wearing jewelry while starting or operating this product could result in death or serious injury. (000115)



### **⚠ WARNING**

Moving Parts. Keep clothing, hair, and appendages away from moving parts. Failure to do so could result in death or serious injury. (000111)



### **⚠ WARNING**

Hot Surfaces. When operating machine, do not touch hot surfaces. Keep machine away from combustibles during use. Hot surfaces could result in severe burns or fire. (000108)

### **⚠ WARNING**

Equipment and property damage. Do not alter construction of, installation, or block ventilation for generator. Failure to do so could result in unsafe operation or damage to the generator. (000146)

### **⚠ WARNING**

Risk of injury. Do not operate or service this machine if not fully alert. Fatigue can impair the ability to operate or service this equipment and could result in death or serious injury. (000215a)

### **⚠ WARNING**

Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death, or serious injury. (000228)

### **⚠ WARNING**

Injury and equipment damage. Do not use generator as a step. Doing so could result in falling, damaged parts, unsafe equipment operation, and could result in death or serious injury. (000216)

- Inspect the generator regularly, and contact an IASD for parts needing repair or replacement.

## Exhaust Hazards



### **⚠ DANGER**

Asphyxiation. Carbon monoxide can kill in minutes. Operate this unit outdoors only. Failure to do so will cause death or serious injury.

(000525)



### **⚠ DANGER**

Asphyxiation. Running engines produce carbon monoxide, a colorless, odorless, poisonous gas. Carbon monoxide, if not avoided, will result in death or serious injury.

(000103)

### **⚠ WARNING**

Equipment and property damage. Do not alter construction of, installation, or block ventilation for generator. Failure to do so could result in unsafe operation or damage to the generator.

(000146)



### **⚠ WARNING**

Asphyxiation. Always use a battery operated carbon monoxide alarm indoors and installed according to the manufacturer's instructions. Failure to do so could result in death or serious injury.

(000178a)

## Electrical Hazards



### **⚠ DANGER**

Electrocution. Contact with bare wires, terminals, and connections while generator is running will result in death or serious injury.

(000144)



### **⚠ DANGER**

Electrocution. Never connect this unit to the electrical system of any building unless a licensed electrician has installed an approved transfer switch. Failure to do so will result in death or serious injury.

(000150)

### **⚠ DANGER**

Electrical backfeed. Use only approved switchgear to isolate generator from the normal power source. Failure to do so will result in death, serious injury, and equipment damage.

(000237)



### **⚠ DANGER**

Electrocution. Verify electrical system is properly grounded before applying power. Failure to do so will result in death or serious injury.

(000152)



### **⚠ DANGER**

Electrocution. Do not wear jewelry while working on this equipment. Doing so will result in death or serious injury.

(000188)



### **⚠ DANGER**

Electrocution. Water contact with a power source, if not avoided, will result in death or serious injury.

(000104)



### **⚠ DANGER**

Electrocution. In the event of electrical accident, immediately shut power OFF. Use non-conductive implements to free victim from live conductor. Apply first aid and get medical help. Failure to do so will result in death or serious injury.

(000145)

## Fire Hazards



### **⚠ WARNING**

Fire hazard. Do not obstruct cooling and ventilating airflow around the generator. Inadequate ventilation could result in fire hazard, possible equipment damage, death or serious injury.

(000217)



### **⚠ WARNING**

Fire and explosion. Installation must comply with all local, state, and national electrical building codes. Noncompliance could result in unsafe operation, equipment damage, death, or serious injury.

(000218)



### **⚠ WARNING**

Fire hazard. Use only fully-charged fire extinguishers rated "ABC" by the NFPA. Discharged or improperly rated fire extinguishers will not extinguish electrical fires in automatic standby generators.

(000219)



**⚠ WARNING**

Electrocution. Refer to local codes and standards for safety equipment required when working with a live electrical system. Failure to use required safety equipment could result in death or serious injury.

(000257)



**⚠ WARNING**

Risk of Fire. Unit must be positioned in a manner that prevents combustible material accumulation underneath. Failure to do so could result in death or serious injury. (000147)

Comply with regulations the Occupational Safety and Health Administration (OSHA) has established, or with equivalent standards. Also, verify that the unit is applied, used, and maintained in accordance with the manufacturer's instructions and recommendations. Do nothing that might alter safe application/usage and render the unit in noncompliance with the aforementioned codes, standards, laws, and regulations.

## Explosion Hazards



**⚠ DANGER**

Risk of fire. Allow fuel spills to completely dry before starting engine. Failure to do so will result in death or serious injury.

(000174)



**⚠ DANGER**

Explosion and fire. Fuel and vapors are extremely flammable and explosive. No leakage of fuel is permitted. Keep fire and spark away. Failure to do so will result in death or serious injury.

(000192)

**⚠ DANGER**

Explosion and fire. Connection of fuel source must be completed by a qualified professional technician or contractor. Incorrect installation of this unit will result in death, serious injury, and property and equipment damage.

(000151a)



**⚠ WARNING**

Risk of Fire. Hot surfaces could ignite combustibles, resulting in fire. Fire could result in death or serious injury.

(000110)

## Battery Hazards



**⚠ DANGER**

Electrocution. Do not wear jewelry while working on this equipment. Doing so will result in death or serious injury.

(000188)



**⚠ WARNING**

Explosion. Do not dispose of batteries in a fire. Batteries are explosive. Electrolyte solution can cause burns and blindness. If electrolyte contacts skin or eyes, flush with water and seek immediate medical attention.

(000162)



**⚠ WARNING**

Explosion. Batteries emit explosive gases while charging. Keep fire and spark away. Wear protective gear when working with batteries. Failure to do so could result in death or serious injury.

(000137a)



**⚠ WARNING**

Electrical shock. Disconnect battery ground terminal before working on battery or battery wires. Failure to do so could result in death or serious injury.

(000164)



**⚠ WARNING**

Risk of burns. Batteries contain sulfuric acid and can cause severe chemical burns. Wear protective gear when working with batteries. Failure to do so could result in death or serious injury.

(000138a)



**⚠ WARNING**

Risk of burn. Do not open or mutilate batteries. Batteries contain electrolyte solution which can cause burns and blindness. If electrolyte contacts skin or eyes, flush with water and seek immediate medical attention.

(000163a)

**⚠ WARNING**

Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death, or serious injury. (000228)

Always recycle batteries in accordance with local laws and regulations. Contact your local solid waste collection site or recycling facility to obtain information on local recycling processes. For more information on battery recycling, visit the Battery Council International website at: <http://batteryCouncil.org>.



## General Rules

### **DANGER**

Loss of life. Property damage. Installation must always comply with applicable codes, standards, laws and regulations. Failure to do so will result in death or serious injury.

(000190)

### **DANGER**

Electrical backfeed. Use only approved switchgear to isolate generator from the normal power source. Failure to do so will result in death, serious injury, and equipment damage.

(000237)

### **WARNING**

Equipment damage. Only qualified service personnel may install, operate, and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage.

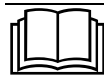
(000182a)



### **WARNING**

Electrocution. Refer to local codes and standards for safety equipment required when working with a live electrical system. Failure to use required safety equipment could result in death or serious injury.

(000257)



### **WARNING**

Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury.

(000100a)

- Follow all safety precautions in the owner's manual, installation guidelines manual, and other documents included with the equipment.
- Never energize a new system without opening all disconnects and breakers.
- Always consult local code for additional requirements for where unit is being installed.
- Incorrect installation can result in personal injury and damage to the unit. It may also result in the warranty being suspended or voided. All instructions listed below must be followed including location clearances and pipe sizes.
- See NFPA 70E for safety equipment required when working with a live system.

## Before You Begin

- Contact local inspector or city hall to be aware of all federal, state, and local codes which could impact installation. Secure all required permits before installing.

- Fully comply with all relevant NEC, NFPA, and OSHA standards, as well as all federal, state, and local building and electric codes. This unit must be installed in accordance with current NFPA 37 and NFPA 70 standards, and any other federal, state, and local codes for minimum distances from other structures.
- Verify capacity of NG meter or LP tank in regards to providing sufficient fuel for both the unit and other household and operating appliances.

## NEC Requirements

Local code enforcement may require Arc Fault Circuit Interrupters (AFCIs) to be incorporated into the transfer switch distribution panel. The transfer switch provided with this generator has a distribution panel which will accept AFCIs (pre-wired transfer switches only).

Siemens Part No. Q115AF - 15A or Q120AF - 20A can be obtained from a local electrical wholesaler and will simply replace any of the single pole circuit breakers supplied in the pre-wired transfer switch distribution panel.

## Standards Index



### **WARNING**

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury.

(000209b)

Strictly comply with all applicable national, state, and local laws, as well as codes or regulations pertaining to the installation of this engine-generator power system. Use the most current version of applicable codes or standards relevant to the local jurisdiction, generator used, and installation site.

**NOTE:** Not all codes apply to all products and this list is not all-inclusive. In the absence of pertinent local laws and standards, the following publications may be used as a guide (these apply to localities which recognize NFPA and IBC).

1. National Fire Protection Association (NFPA) 70: The NATIONAL ELECTRIC CODE (NEC) \*
2. NFPA 10: Standard for Portable Fire Extinguishers \*
3. NFPA 30: Flammable and Combustible Liquids Code \*
4. NFPA 37: Standard for Stationary Combustion Engines and Gas Turbines \*
5. NFPA 54: National Fuel Gas Code \*
6. NFPA 68: Standard On Explosion Protection By Deflagration Venting \*
7. NFPA 70E: Standard For Electrical Safety In The Workplace \*

8. NFPA 110: Standard for Emergency and Standby Power Systems \*
9. NFPA 211: Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances \*
10. NFPA 220: Standard on Types of Building Construction \*
11. NFPA 5000: Building Code \*
12. International Building Code \*\*
13. Agricultural Wiring Handbook \*\*\*
14. Article X, NATIONAL BUILDING CODE
15. International Code Council (ICC): International Fuel Gas Code (IFGC)
16. ASAE EP-364.2 Installation and Maintenance of Farm Standby Electric Power \*\*\*\*

This list is not all-inclusive. Check with the Authority Having Local Jurisdiction (AHJ) for any local codes or standards which may be applicable to your jurisdiction. The above listed standards are available from the following internet sources:

\* [www.nfpa.org](http://www.nfpa.org)

\*\* [www.iccsafe.org](http://www.iccsafe.org)

\*\*\* [www.nerc.org](http://www.nerc.org) Rural Electricity Resource Council P.O. Box 309 Wilmington, OH 45177-0309

\*\*\*\* [www.asabe.org](http://www.asabe.org) American Society of Agricultural & Biological Engineers 2950 Niles Road, St. Joseph, MI 49085

## Section 2: Unpacking and Inspection

### General

**NOTE:** Carefully inspect contents for damage after unpacking. Unpack and inspect unit immediately upon delivery to detect any damage which may have occurred in transit. Any claims for shipping damage need to be filed as soon as possible with freight carrier. This is especially important if unit will not be installed for a period of time.

- This standby generator is ready for installation with a factory supplied and pre-mounted base pad and has a weather protective enclosure intended for outdoor installation only.
- This UL listed standby generator may be packaged with an automatic transfer switch with built-in load center. This two-pole switch is rated at 35 A, rated at 250 volts maximum.
- If any loss or damage is noted at time of delivery, have delivery person(s) note all damage on freight bill or affix their signature under consignor's memo of loss or damage.
- If a loss or damage is noted after delivery, separate damaged materials and contact carrier for claim procedures.
- "Concealed damage" is understood to mean damage to contents of a package not evident at time of delivery, but discovered later.

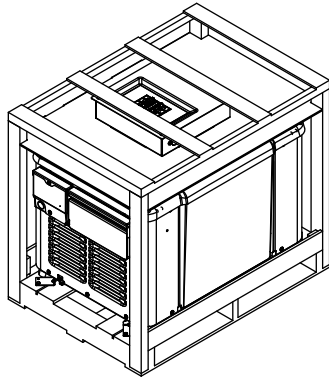
### Required Tools

- General SAE and Metric hand tools
  - Wrenches
  - Sockets
  - Screwdrivers
- Standard electrician's hand tools
  - Drill and bits for mounting and routing conduits
- 4 mm hex wrench (for access to customer connections)
- 6 mm hex wrench (for removing top lid)
- 3/16 in hex wrench (test port on fuel regulator)
- Manometer (for fuel pressure checks)
- Digital multimeter (DMM) capable of measuring AC/DC voltage and frequency
- Torque wrenches

## Unpacking

Proceed as follows to unpack unit:

1. Remove outer shipping carton. If equipped, the optional transfer switch will be visible on top of generator.
2. See [Figure 2-1](#). Remove wood frame. Lift transfer switch, if present, off generator.



001113

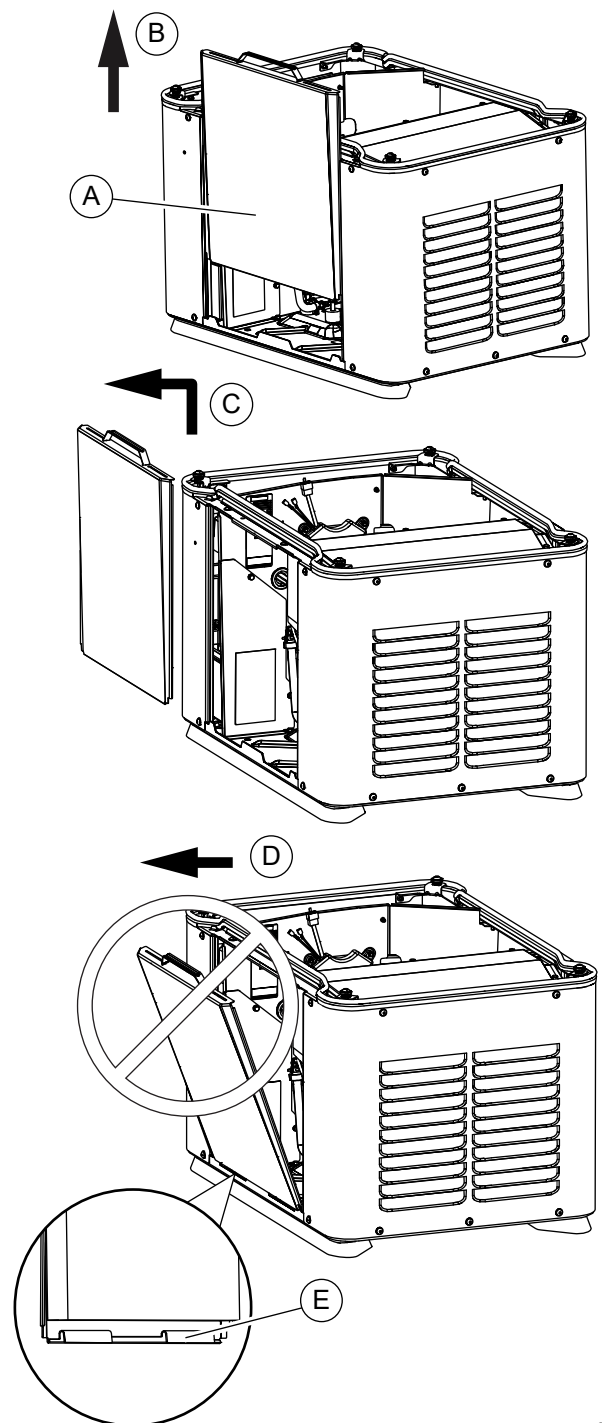
**Figure 2-1. Crated Generator**

**IMPORTANT NOTE: DO NOT** perform this step until the generator has been transported to the installation site. See [Transportation Recommendations](#).

3. Remove the four hex socket fasteners and lift top lid from generator enclosure.
4. See [Figure 2-2](#). Once lid is open, remove front panel (A) by lifting panel up and out (B and C). Open door covering customer connection area.

**NOTE:** Always lift front access panel straight up and completely clear the bottom door hinges (E) before pulling away from enclosure. Do not pull panel away from the enclosure if the bottom door hinges are not clear of the unit. Doing so may damage the hinges.

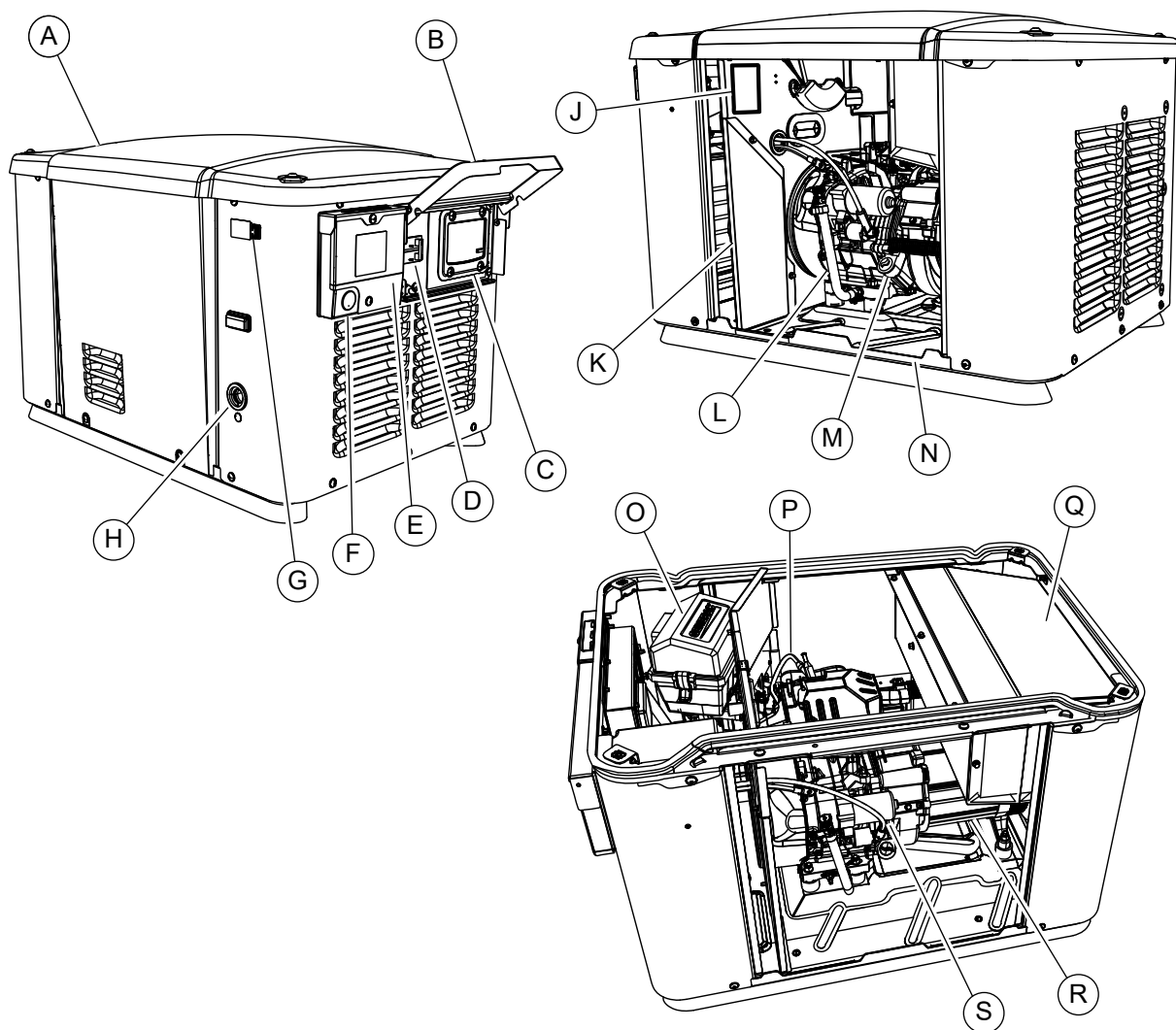
5. Inspect for any hidden freight damage.



009375

**Figure 2-2. Remove Front Access Panel**

## Features and Components



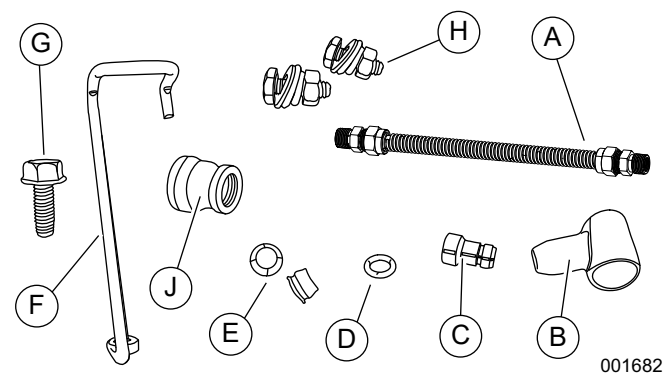
005568

**Figure 2-3. Features and Components**

A	Top lid	G	Generator emergency shutdown switch	N	Front panel (not shown)
B	Controller lid	H	Fuel connection hole	O	Air box
C	Control panel	J	Data label	P	Spark plug
D	Circuit breaker	K	Battery access panel	Q	Exhaust enclosure
E	Customer connection box	L	Oil drain hose	R	Alternator
F	Main AC/control wiring hole for 3/4 in conduit	M	Oil fill/dipstick	S	Starter motor

Parts Shipped Loose

See [Figure 2-4](#). Parts shipped loose are located in a clear plastic bag inside unit, in front of engine or under alternator. The flexible fuel line (A) is tied to either the battery wires or the alternator can.



Part	Description
A	Flexible fuel line
B	Battery terminal cap
C	LP fuel jet
D	Fuel jet O-ring
E	MLCB terminal caps
F	Battery bracket
G	M6 x 1-16mm thread forming screw (for battery bracket)
H	Two sets of bolts, nuts, and washer (for connecting battery cables)
J	Reducer coupling FNPT 3/4 in to 1/2 in
NS	Decal—Service Entrance
NS	Decal—Warning
NS	Owner's and installation manuals
*NS items are not shown.	

Figure 2-4. Parts Shipped Loose

Generator Emergency Shutdown Switch



Equipment Damage. The emergency shutdown switch is not to be used to power down the unit under normal operating circumstances. Doing so will result in equipment damage. (000399a)

All generators are provided with an external means to shut down the generator which complies with the 2017 NEC code requirement. The primary generator shutdown sequence is described in the owner's manual.

See [Figure 2-5](#). A generator emergency shutdown switch is located on the exterior of the generator back panel. This switch shuts down the generator and disables restarts.

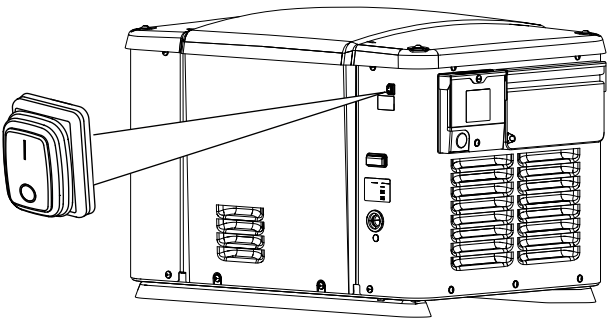


Figure 2-5. Emergency Shutdown Switch

**NOTE:** Whenever possible, perform primary shutdown procedure before disabling generator with emergency shutdown switch.

If emergency shutdown switch is OPEN (O), generator will not start. The controller displays a High Temperature alarm and the High Temperature LED on the controller flashes until emergency shutdown switch is CLOSED (I). Once emergency shutdown switch is CLOSED (I), generator will return to either AUTO or OFF.

## Section 3: Site Selection and Preparation

### Site Selection

Site selection is critical for safe generator operation. It is important to discuss these factors with the installer when selecting a site for generator installation:

- Carbon monoxide
- Fire prevention
- Fresh air for ventilation and cooling
- Water ingress prevention
- Proximity to utilities
- Suitable mounting surface
- Readily accessible for maintenance, repair, and first responders

The following pages describe each of these factors in detail.

**NOTE:** The term “structure” is used throughout this section to describe the home or building where generator is being installed. Illustrations depict a typical residential home. However, instructions and recommendations presented in this section apply to all structures regardless of type.

### Carbon Monoxide



**⚠ DANGER**

Asphyxiation. Running engines produce carbon monoxide, a colorless, odorless, poisonous gas. Carbon monoxide, if not avoided, will result in death or serious injury.

(000103)

**IMPORTANT NOTE:** Move to fresh air immediately and seek medical attention if you feel sick, dizzy, or weak while the generator is running or after it stops.

Generator exhaust contains carbon monoxide (CO)—a poisonous, potentially lethal gas that cannot be seen or smelled. The generator must be installed in a well ventilated area away from windows, doors, and openings. The selected location should not allow exhaust gases to be drawn into structures where people or animals may be present.

### Carbon Monoxide Detectors

See [Figure 3-1](#). CO detectors (K) must be installed and used to monitor for CO and to warn individuals about the presence of CO. CO detectors must be installed and tested in accordance with the CO detector manufacturer's instructions and warnings. Contact local building inspection department for any applicable requirements concerning CO detectors. See NFPA 72, National Fire Alarm and Signaling Code, and Section R315 in the ICC International Residential Code for more information.

**IMPORTANT NOTE:** Common smoke alarms do NOT detect CO gas. Do not rely on smoke alarms to protect residents or animals from CO. The only way to detect CO is to have functioning CO alarms.

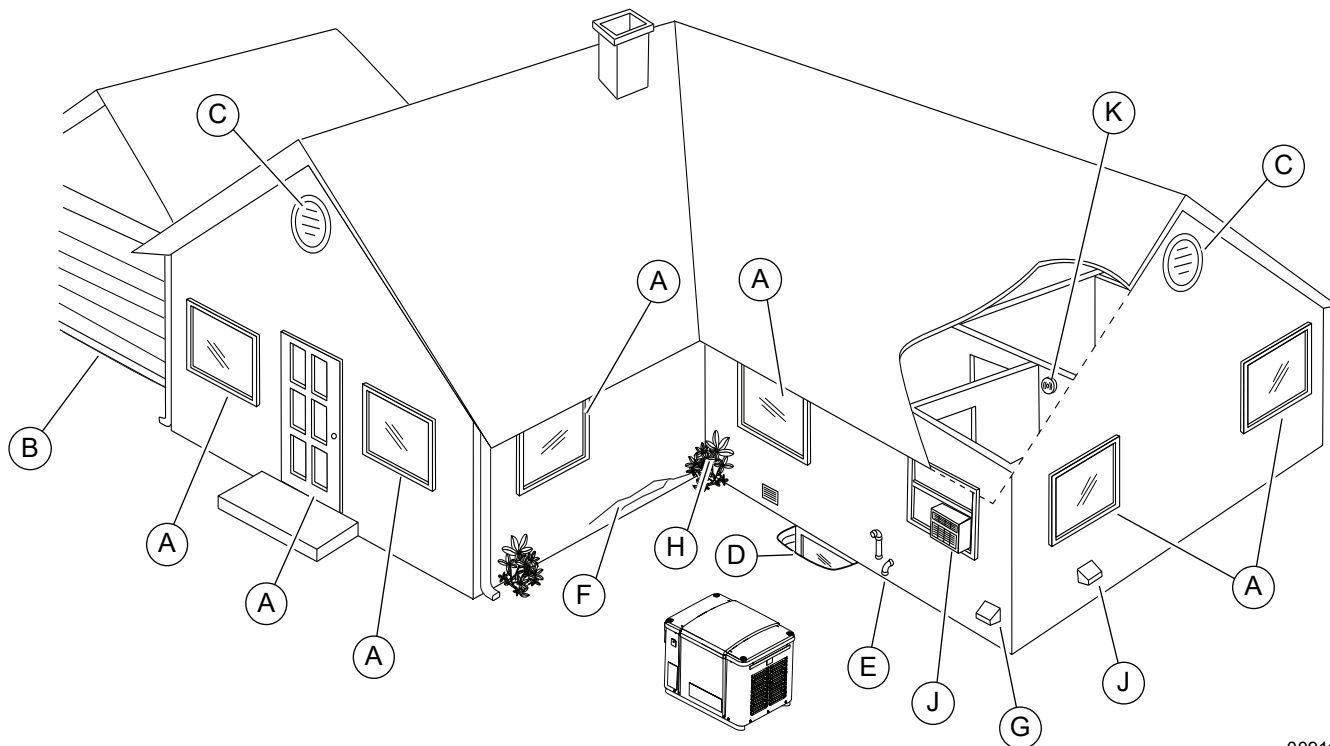
## Potential CO Entry Points

See [Figure 3-1](#). Generator exhaust can enter a structure through large openings, such as windows and doors. However, exhaust and CO can also seep into the structure through smaller, less obvious openings.

## Protect the Structure

Verify structure itself is correctly caulked and sealed to prevent air from leaking in or out. Voids, cracks, or openings around windows, doors, soffits, pipes, and vents can allow exhaust gas to be drawn into the structure.

Some examples of potential entry points are described and included in, but not limited to, the accompanying table.



009114

**Figure 3-1. Carbon Monoxide—Potential Entry Points**

ID	Entry Point	Description / Comments
A	Windows and doors	Architectural details which can be (or are) opened to admit fresh air into the structure.
B	Garage door	CO can leak into garage if door is open, or does not seal correctly when closed.
C	Attic vent	Attic vents, ridge vents, crawl space vents, and soffit vents can all admit generator exhaust.
D	Basement windows	Windows or hatches allowing ventilation to or from lower level of a structure.
E	Furnace intake / exhaust vent	Air intake and exhaust pipes for furnace.
F	Wall cracks	Includes (but not limited to) cracks in wall, foundation, mortar, or air gaps around doors, windows, and pipes. See <a href="#">Protect the Structure</a> .
G	Dryer vent	Exhaust duct for clothes dryer.
H	Airflow restrictions	Structural features, including but not limited to: corners, alcoves, fences, courtyards, and areas with heavy vegetation can restrict correct airflow around unit. Exhaust gases can be collected in these areas.
J	HVAC components	Do not direct generator discharge into HVAC components, including but not limited to: make up air systems, AC condensers, and window AC units. <b>IMPORTANT NOTE: Mechanical and gravity outdoor air intake openings for HVAC supply air systems shall be located according to Section 401 in the ICC Mechanical Code. See Section 401 in the ICC Mechanical Code for any additional requirements.</b>

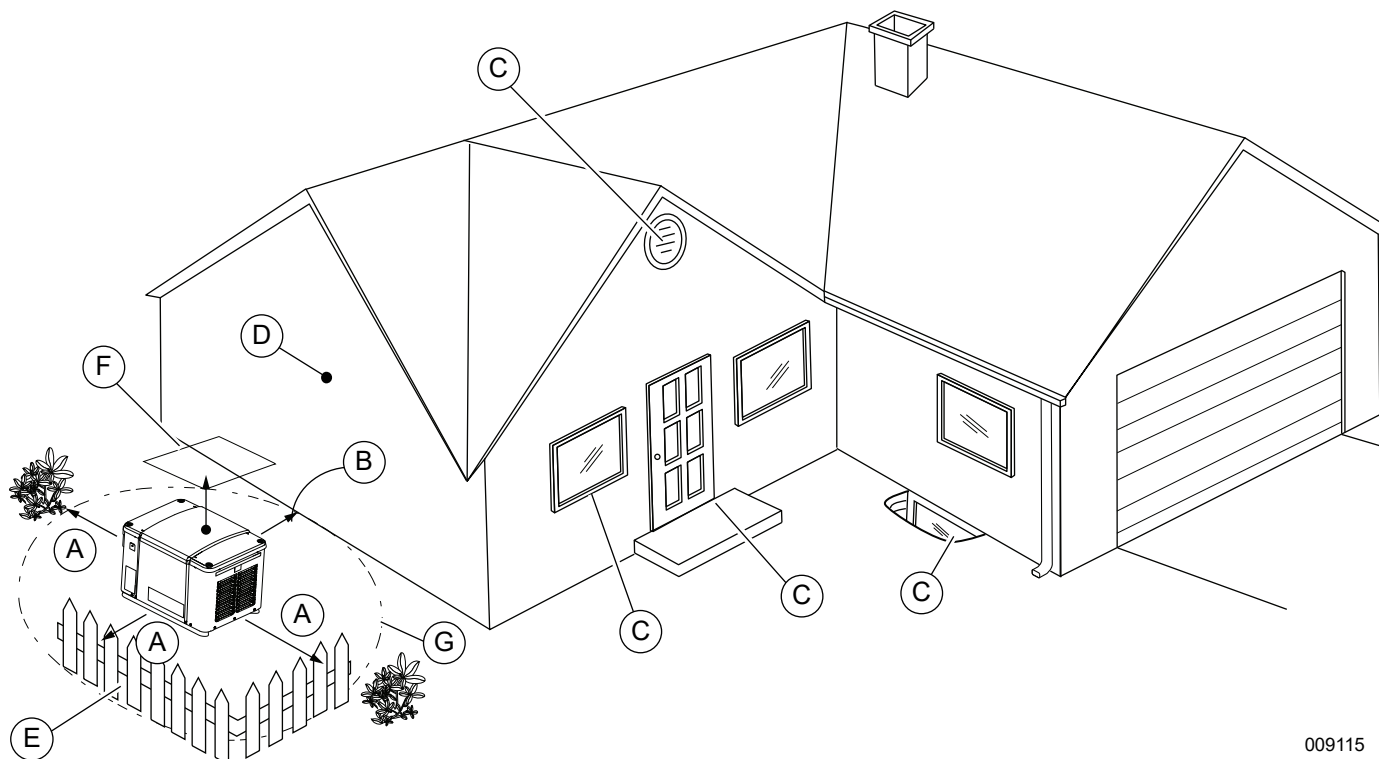


## Fire Prevention

The generator must be installed at a safe distance away from combustibles materials. Engine, alternator, and exhaust system components become very hot during operation. Fire risk increases if unit is not correctly ventilated, is not correctly maintained, operates too close to combustibles materials, or if fuel leaks exist. Also, accumulations of flammable debris within or outside the generator enclosure may ignite.

## Distance Requirements

See [Figure 3-2](#). Minimum clearances must be maintained around the generator enclosure. These clearances are primarily for fire prevention, but also to provide sufficient room for removing front and end panels for maintenance purposes.



009115

**Figure 3-2. Generator Distance Requirements**

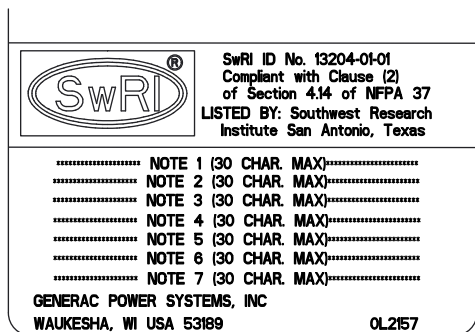
ID	Description	Definition
A	Front and end clearance	Minimum clearance from the front and ends of generator must be 3 ft (0.91 m). This includes shrubs, bushes, and trees.
B	Rear clearance	Fuel and electrical connections are made here. 18 in (457 mm) minimum clearance per SwRI testing, labeling, and listing, unless state or local codes dictate otherwise.
C	Windows, vents, and openings	No operable windows, doors, vents, window wells, or openings in the wall are permitted closer to any point of the generator than what is permitted by locally adopted codes. See <a href="#">Fire Codes, Standards, and Guidelines</a> for more information.
D	Existing wall	The generator should not be placed closer to from existing walls than what is permitted by locally adopted codes.
E	Removable fence	A removable barrier (non-permanent; without footings) installed as a visual surround. Removable fence panels for servicing cannot be placed less than 3 ft (0.91 m) in front of the generator.
F	Overhead clearance	5 ft (1.52 m) minimum distance from any structure, overhang, or projections from wall.
G	Maintenance and servicing	Maneuvering space around generator for performing routine maintenance tasks such as battery replacement and engine service. Do not attempt to conceal generator with shrubs, bushes, or plants. See NEC Article 110.26 for more information.

## Fire Codes, Standards, and Guidelines

Generator installation must comply strictly with ICC IFGC, NFPA 37, NFPA 54, NFPA 58, and NFPA 70 standards. These standards prescribe the minimum safe clearances around and above the generator enclosure.

### NFPA 37

NFPA 37 is the The National Fire Protection Association's standard for the installation and use of stationary combustion engines. Its requirements limit the spacing of an engine generator to a minimum of 5 ft (1.5 m) from an opening in a structure or a structure having combustible walls, and require generator to be located where it is readily accessible for maintenance, repair, and first responders. The standard contains an exception which allows an engine generator to be closer to a combustible wall when approved testing demonstrates a fire originating at the engine does not ignite the combustible structure.



002158

**Figure 3-3. Southwest Research Institute Marking**

**NOTE:** The Southwest Research Institute (SwRI) is a nationally recognized third party testing and listing agency. SwRI testing certifies a reduction of the minimum clearance from the engine generator to a structure having combustible walls.

The test criteria was to determine the worst case fire scenario within the generator and to determine the ignitability of items outside the engine enclosure at various distances. The enclosure is constructed of non-combustible materials, and the results and conclusions from the independent testing lab indicated that any fire within the generator enclosure would not pose any ignition risk to nearby combustibles or structures.

Based on this testing and the requirements of NFPA 37, Sec 4.1.4, the guidelines for installation of the generators listed above are changed to 18 in (457 mm) from the back side of the generator and 3 ft (914 mm) from the front and ends of the generator to a structure having combustible walls. This offset reduction does not apply to clearances from openings in the structure. For adequate maintenance and airflow clearance, the area above the generator should be at least 5 ft (1.52 m) with a minimum of 3 ft (0.91 m) at the front and ends of the enclosure. This includes trees, shrubs, and bushes. Vegetation not

in compliance with these clearance parameters could obstruct air flow. In addition, exhaust fumes from the generator could inhibit plant growth. See [Figure 3-2](#) and the accompanying descriptions.

## Generator Maintenance

Regular maintenance is crucial for minimizing exhaust emissions and reducing the risk of fire or equipment failure. For example:

- A dirty air filter or low engine oil level may cause engine to overheat.
- Incorrect spark plug gaps may cause engine back-firing and incomplete combustion.

**IMPORTANT NOTE:** See Maintenance section of generator owner's manual to view a table of scheduled maintenance tasks and procedures. Perform all maintenance tasks as directed.

## Fresh Air for Ventilation and Cooling

Install unit where air inlet and outlet openings will not become obstructed by leaves, grass, snow, etc. If prevailing winds will cause blowing or drifting, consider using a windbreak at a safe distance to protect the unit.

## Water Ingress Avoidance

- Select a location on high ground where water levels will not rise and flood the generator. This unit should not operate in, or be subjected to, standing water.
- Install unit where rain gutter downspouts, roof runoff, landscape irrigation, water sprinklers, or sump pump discharge does not flood unit or spray enclosure, including any air inlet or outlet openings.
- Excess moisture can cause excess corrosion and decrease life expectancy of the unit.

## Proximity to Utilities

- Contact local utility providers and verify proposed site selection meets all required utility placement requirements before installation. This could affect warranty coverage.
- Remember, laws and or codes may regulate distance and location of unit to specific utilities.
- It is recommended to pick a location where the generator is as close as possible to the transfer switch and the fuel supply, while verifying the site location conforms to the rest of the Site Selection section.

## Transportation Recommendations

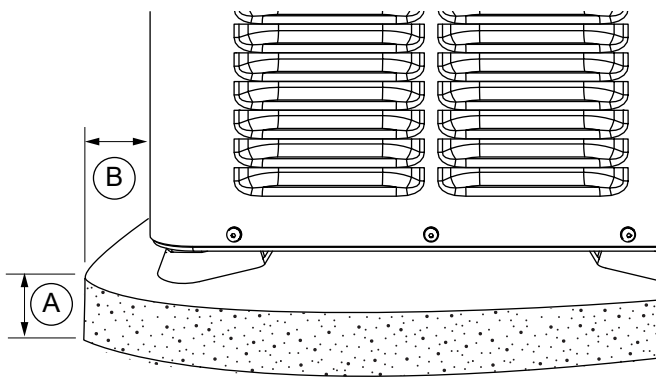
Use a suitable cart or equipment to carry generator, including wooden pallet, to installation site. Place cardboard between cart and generator to prevent any damage or scratches to generator.

**Do not lift, carry, or move generator by grasping the louvers. Doing so may bend or damage the sheet metal.**

## Suitable Mounting Surface

Select non-combustible base type as desired or as required by local laws or codes. The generator is typically approved to be placed on pea gravel, crushed stone, a concrete base pad, or an approved composite base pad. Follow all applicable codes if a concrete base pad is required. Verify any base pad meets or exceeds local codes and requirements for wind ratings.

See [Figure 3-4](#). Prepare a rectangular area approximately 5 in (127 mm) deep (A) and approximately 3 in (76.2 mm) longer and wider (B) than the generator on all sides.



005796

**Figure 3-4. Compacted Gravel or Concrete Pad**

Select base type as desired or as required by local laws or codes. The generator is typically placed on pea gravel, crushed stone, or a concrete pad. Follow all applicable codes if a concrete pad is required.

Verify surface where generator will be mounted is compacted, leveled, and will not erode over time. Generator must be level within 0.5 in (13 mm) all around.

## Placement on Roofs, Platforms, and Other Supporting Structures

Where required to place generator on a roof, platform, deck, or other supporting structure, generator must be placed in accordance with the requirements in NFPA 37, Section 4.1.3. See [Fire Codes, Standards, and Guidelines](#) for permissible clearance reductions. Surface beneath the generator and beyond must be noncombustible to a minimum distance of 12 in (30.5 cm). Contact

local building inspection department or fire department to determine which noncombustible materials are approved for installation.

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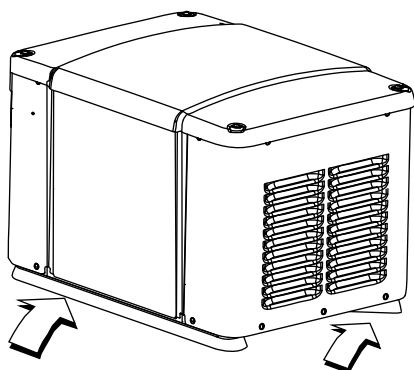
## Section 4: Generator Placement

### Generator Placement

See [Figure 4-1](#). This generator comes with two composite pads. These composite pads elevate the generator and help prevent water from pooling around the bottom of the generator. Therefore, they should not be removed from the generator under ANY circumstances.

The generator with composite pads can be placed on 4 in (10.2 cm) of compacted pea gravel, or on a concrete pad. See local codes to verify what type of site base is required. If a concrete pad is required, all federal, state, and local codes should be followed. Place generator, with composite pads attached, and position correctly as per dimensional information given in [Site Selection and Preparation](#).

**NOTE:** Generator must be level within 0.5 in (13 mm).

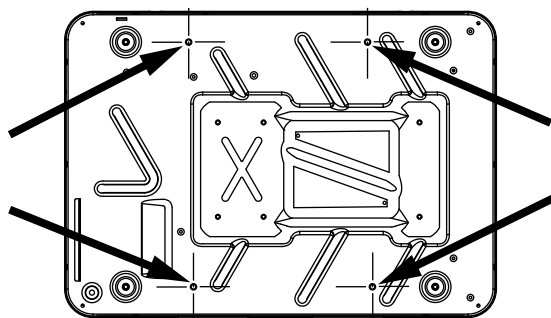


001119

**Figure 4-1. Composite Pads**

**NOTE:** See [Figure 4-2](#). There are four mounting holes inside the generator enclosure for securing generator to concrete. DO NOT remove composite pads while mounting generator to concrete.

The use of 5/16 in (or M8) lag bolts is recommended (not supplied) for securing generator to a concrete pad.



001122

**Figure 4-2. Mounting Hole Locations**

**NOTE:** The top of the generator carton has a template which can be used to mark the concrete pad to pre-drill the mounting holes.

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# Section 5: Fuel Conversion / Gas Connections

## Fuel Requirements and Recommendations



**⚠ DANGER**

Explosion and fire. Fuel and vapors are extremely flammable and explosive. No leakage of fuel is permitted. Keep fire and spark away. Failure to do so will result in death or serious injury. (000192)

**NOTE:** NG is lighter than air and collects in high areas. LP gas is heavier than air and settles in low areas.

LP gas should only use a vapor withdrawal system. This type of system uses vapors formed above liquid propane in the storage tank.

The unit will run on NG or LP gas, but has been factory-configured to run on NG.

**NOTE:** Should the primary fuel need to be changed to LP gas, the fuel system needs to be reconfigured. See [Fuel Conversion](#) for instructions on converting the fuel system.

### BTU Content

Recommended fuels should have a BTU content of at least 1,000 BTU/ft<sup>3</sup> (37.26 MJ/m<sup>3</sup>) for NG; or at least 2,500 BTU/ft<sup>3</sup> (93.15 MJ/m<sup>3</sup>) for LP gas.

**NOTE:** BTU fuel content information is available from fuel supplier.

### Fuel Pressure

Required fuel pressure for NG is 5–7 in water column (1.24–1.74 kPa). Required fuel pressure for LP gas is 10–12 in water column (2.49–2.99 kPa).

**NOTE:** The primary regulator for LP gas supply is NOT INCLUDED with generator.

**NOTE:** All pipe sizing, construction, and layout must comply with NFPA 54 or the ICC International Fuel Gas Code for NG and LP gas applications. Verify fuel pressure NEVER drops below required specification once generator is installed. See the NFPA website at [www.nfpa.org](http://www.nfpa.org) for further information regarding NFPA requirements.

Always contact local fuel suppliers or fire marshal to verify codes and regulations for correct installation. Local codes will mandate correct routing of gaseous fuel line piping around gardens, shrubs, and other landscaping.

Piping strength and connections should be given special consideration when installation takes place in areas at risk for; flooding, tornadoes, hurricanes, earthquakes, and unstable ground.

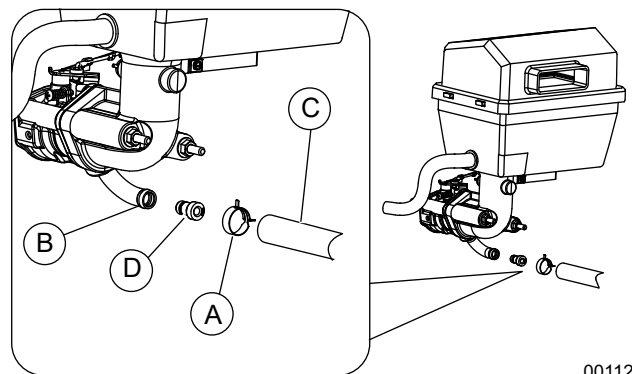
**IMPORTANT NOTE:** Use an approved pipe sealant or joint compound on all threaded fittings.

**NOTE:** All installed gaseous fuel piping must be purged and leak tested prior to initial startup in accordance with local codes, standards, and regulations.

## Fuel Conversion

Proceed as follows to convert fuel type:

1. Remove the four 6 mm hex head screws and lift top lid from generator enclosure.
2. Remove the two 4 mm hex head fasteners. Lift and remove rear panel.
3. See [Figure 5-1](#). Use a pliers to squeeze hose clamp (A) and slide from fuel inlet (B).



001123

**Figure 5-1. Fuel Conversion**

4. Remove hose (C) from fuel inlet.
5. Remove NG fuel jet (D) from fuel inlet. If nozzle is found to be inside the hose, remove it with a needle nose pliers.
6. Locate LP gas fuel jet (supplied). It has a smaller inside diameter than the NG jet.
7. Insert LP gas fuel jet into the end of fuel inlet.
8. Install hose on fuel inlet. Secure hose with clamp.
9. Verify hose has not been kinked in any way.
10. Install rear access panel by hooking it on the top of the unit. Verify alternator bellow is completely secure around frame provided on the access panel. Attach panel firmly to unit with the two shorter hex head screws.
11. Install top lid and secure with four long hex head screws.

## Fuel Consumption

Generator	Natural Gas		Propane	
	1/2 Load	Full Load	1/2 Load	Full Load
6 / 7.5 kW	73 / 2.07	117 / 3.31	0.87 / 3.29 / 31.6	1.42 / 5.37 / 51.6

\* Natural gas is in ft<sup>3</sup>/h / cm<sup>3</sup>/h

\*\* LP is in gal/h (LP) / L/h (LP) / ft<sup>3</sup>/h (LPV)

\*\*\* Values given are approximate. Use the appropriate spec sheet or owner's manual for specific values.

Verify gas meter is capable of providing enough fuel flow to include household appliances and all other loads.

**NOTE:** The gas supply and pipe MUST be sized at 100% load BTU / Megajoule rating.

Always see owner's manual for correct BTU/h or Megajoule/h, and required fuel pressures:

- Natural Gas:  
 $\text{BTU/h} = \text{ft}^3/\text{h} \times 1000$   
 $\text{Megajoules/h} = \text{m}^3/\text{h} \times 37.26$
- Liquid Propane Gas (Vapor):  
 $\text{BTU/h} = \text{ft}^3/\text{h} \times 2500$   
 $\text{Megajoules/h} = \text{m}^3/\text{h} / \text{hour} \times 93.15$

## Fuel Line Sizing

Selecting the correct size fuel line is crucial to correct operation of unit and to maintain warranty coverage.

**IMPORTANT NOTE: Generator inlet size DOES NOT dictate the size of gas pipe to be used!**

For further information on LP gas and NG installation requirements, see NFPA 54 or ICC IFGC.

Measure distance from generator to fuel source.

**IMPORTANT NOTE: Generator should be plumbed directly from fuel source, not off the end of an existing low pressure system.**

**NOTE:** When measuring the pipe length, add 2.5 ft (0.76 m) for every angle or bend in pipe to the overall required length of pipe needed.



## Natural Gas Pipe Sizing

See [Table 5-1](#). To determine correct NG pipe size, find desired pipe size in the first row of the table. The number below is maximum length, or run, (measured in ft / m) allowed for the selected pipe size. Pipe sizes are measured by trade size diameter to include any fittings, valves (must be full flow), elbows, tees, or angles.

**NOTE:** See Table B.3.2 in NFPA 54 or Table A.2.2 in the ICC IFGC, Equivalent Lengths of Pipe Fittings and Valves for the correct values to be added to overall fuel piping length. Tables are based on schedule 40 black pipe. If installing any other piping system, follow pipe sizing charts for selected piping system.

**Table 5-1. Natural Gas Pipe Sizing**

For 5–7 in Water Column (1.24–1.74 kPa)					
Pipe Size	0.5 in (13 mm)	0.75 in (19 mm)	1 in (25 mm)	1.25 in (32 mm)	1.5 in (38 mm)
Maximum Run	10 ft (3 m)	60 ft (15 m)	200 ft (16 m)	750 ft (183 m)	—

## LP Gas Pipe Sizing

See [Table 5-2](#). To determine correct LP gas pipe size, find the desired pipe size in the first row of the table. The number below is maximum length, or run, (measured in ft/m) allowed for the selected pipe size.

The pipe sizes are measured by trade size diameter to include any fittings, valves (must be full flow), elbows, tees, or angles. See Table B.3.2 in NFPA 54 or Table A.2.2 in the ICC IFGC, Equivalent Lengths of Pipe Fittings and Valves for the correct values to be added to overall fuel piping length.

**NOTE:** Pipe sizes are from the outlet of the second stage regulator to the fuel shutoff valve. Table is based on schedule 40 black pipe. If installing any other piping system, follow the pipe size charts for the selected piping system.

**NOTE:** A 1,050 lb (476 kg) vertical tank size minimum is required. Contact LP gas provider to correctly size LP tank to generator. Vertical tanks, which are measured in pounds (or kilograms), are permitted if correctly sized for the generator. Do not connect generator to a 20 or 30 lbs LP tank.

**Table 5-2. LP Gas Pipe Sizing**

LP Gas Pipe Size: 7.5 kW Units					
Pipe Size	0.5 in (13 mm)	0.75 in (19 mm)	1 in (25 mm)	1.25 in (32 mm)	1.5 in (38 mm)
Maximum Run	35 ft (11 m)	175 ft (53 m)	600 ft (183 m)	—	—

## Summary

Incorrect gas pipe sizing is one of the most commonly made mistakes. A correctly sized gas pipe is critical to correct operation of the generator. Generator inlet size cannot compensate for incorrect gas pipe size.

The fuel supply and pipe **MUST** be sized at 100% Load BTU / megajoule rating.

## Installing and Connecting Fuel Lines



### **⚠ DANGER**

Explosion and fire. Fuel and vapors are extremely flammable and explosive. No leakage of fuel is permitted. Keep fire and spark away. Failure to do so will result in death or serious injury. (000192)

**IMPORTANT NOTE:** NG and LP gas are highly volatile substances. Strictly adhere to all safety procedures, codes, standards, and regulations.

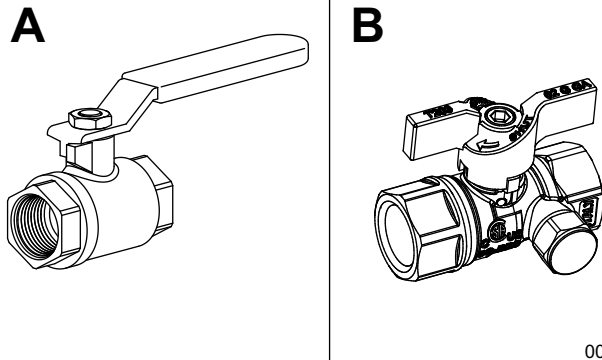
Fuel line connections should be made by a certified contractor familiar with local codes. Always use AGA-approved gas pipe and a quality pipe sealant or joint compound.

Verify capacity of NG meter or LP tank to provide sufficient fuel for both the generator and other operating appliances.

### Fuel Shutoff Valve

See [Figure 5-2](#). Most applications will require an external manual full flow fuel shutoff valve (A) on the fuel line. The valve must be easily accessible.

**NOTE:** Fuel shutoff valve must be installed at a readily accessible location, and within 6 ft (1.8 m) of generator fuel inlet.



001124

**Figure 5-2. Fuel Shutoff Valve with Manometer Port**

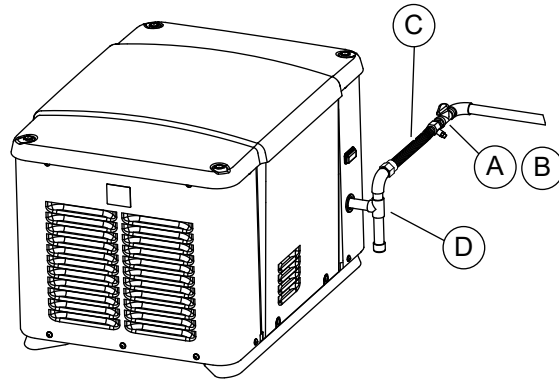
**NOTE:** [Figure 5-2](#) illustrates a fuel shutoff valve (B) with a manometer port for making fuel pressure checks. This fuel shutoff valve permits making pressure checks for diagnostic purposes without going into the generator enclosure.

Fuel shutoff valves available through an IASD:

- 1/2 in ball valve, part number 0K8752
- 3/4 in ball valve, part number 0K8754
- 1 in ball valve, part number 0K8184
- 1-1/4 in ball valve, part number 0L2844

### Flexible Fuel Line

See [Figure 5-3](#). When connecting flexible fuel line (C) to generator, use a listed assembly meeting the requirements of ANSI Z21.75/ CSA 6.27—Connectors for Outdoor Gas Appliances and Manufactured Homes or AGA-approved flexible fuel line in accordance with local regulations.



001125

**Figure 5-3. Fuel Line Connections**

Flexible fuel line must not be connected directly to generator fuel inlet. Always connect flexible fuel line to an approved gas fitting.

The purpose of flexible fuel line is to isolate vibration from the generator to reduce possibility of a gas leak at one of the connection points.

**NOTE:** Follow all installation instructions and warnings provided with flexible fuel line. Do not remove any labels or tags. Flexible fuel line must be installed horizontally, and must be installed between fuel shutoff valve and generator fuel inlet.

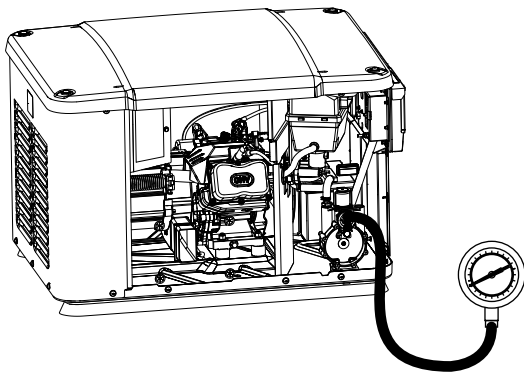
### Sediment Trap

Some local codes require a sediment trap (D). Install recommended sediment trap as illustrated.

## Checking Fuel Line Connections

Proceed as follows to check fuel line connections:

1. Remove top lid and rear panel.
2. Spray all connection points with a non-corrosive gas leak detection fluid to inspect for leaks. The solution should not be blown away or form bubbles.
3. Verify fuel pressure at the regulator in the generator by following these steps.
  - Close fuel supply valve.
  - See [Figure 5-4](#). Remove the top fuel pressure test port from the regulator and install the fuel pressure tester (manometer).



001117

**Figure 5-4. Checking Pressure with Manometer**

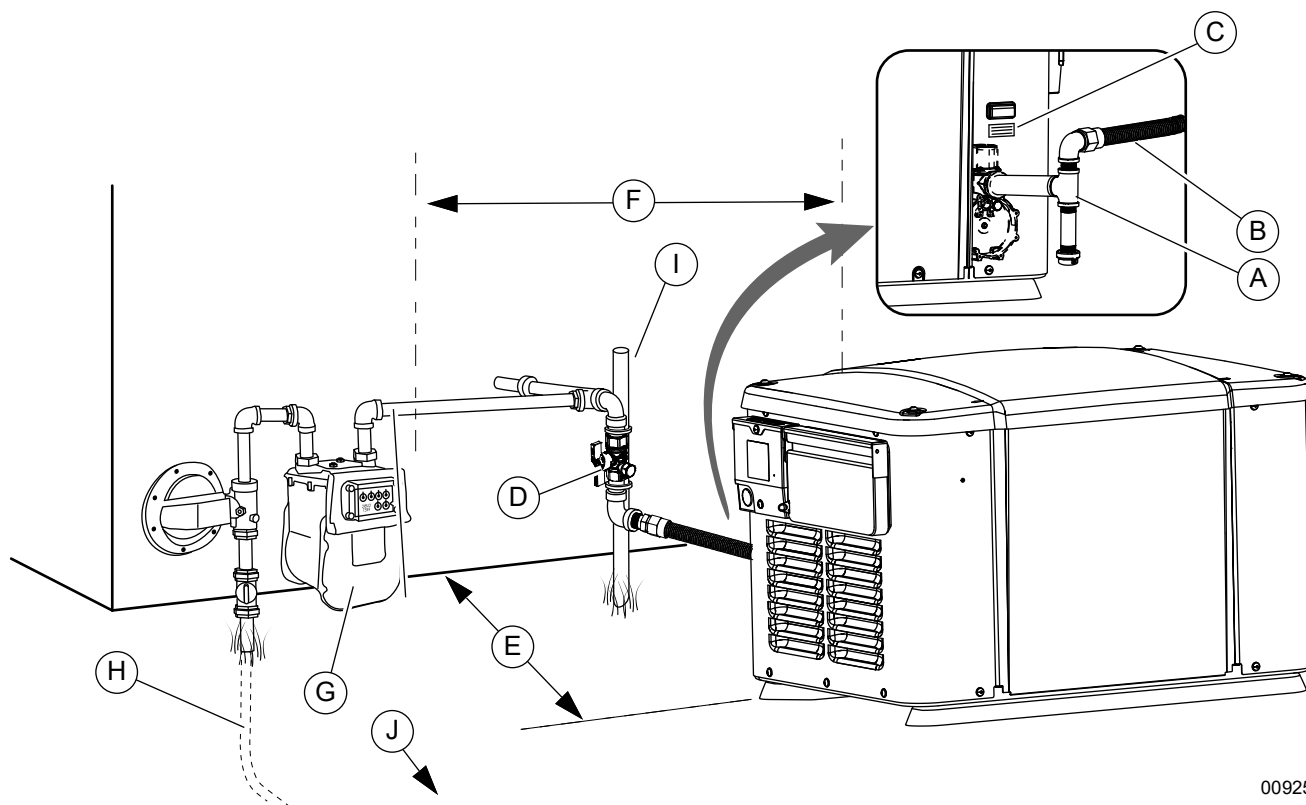
- Open fuel supply valve and verify fuel pressure is within the specified values.

**NOTE:** Fuel pressure can also be tested at the manometer port on the fuel shutoff valve shown in [Figure 5-2](#).

**NOTE:** See [Fuel Requirements and Recommendations](#) for correct fuel pressure specifications. If fuel pressure is not within specifications, contact local fuel supplier.

4. Close fuel valve when completed, but keep manometer connected for future tests of generator while starting, running, and under loads.
5. After installation is complete and manometer is removed, install rear access panel by hooking it on top of unit. Verify alternator bellows are completely secure around frame provided on the access panel. Attach panel firmly to unit with two shorter hex socket screws.
6. Install top lid firmly with four long hex socket screws.

## Natural Gas Installation (Typical)

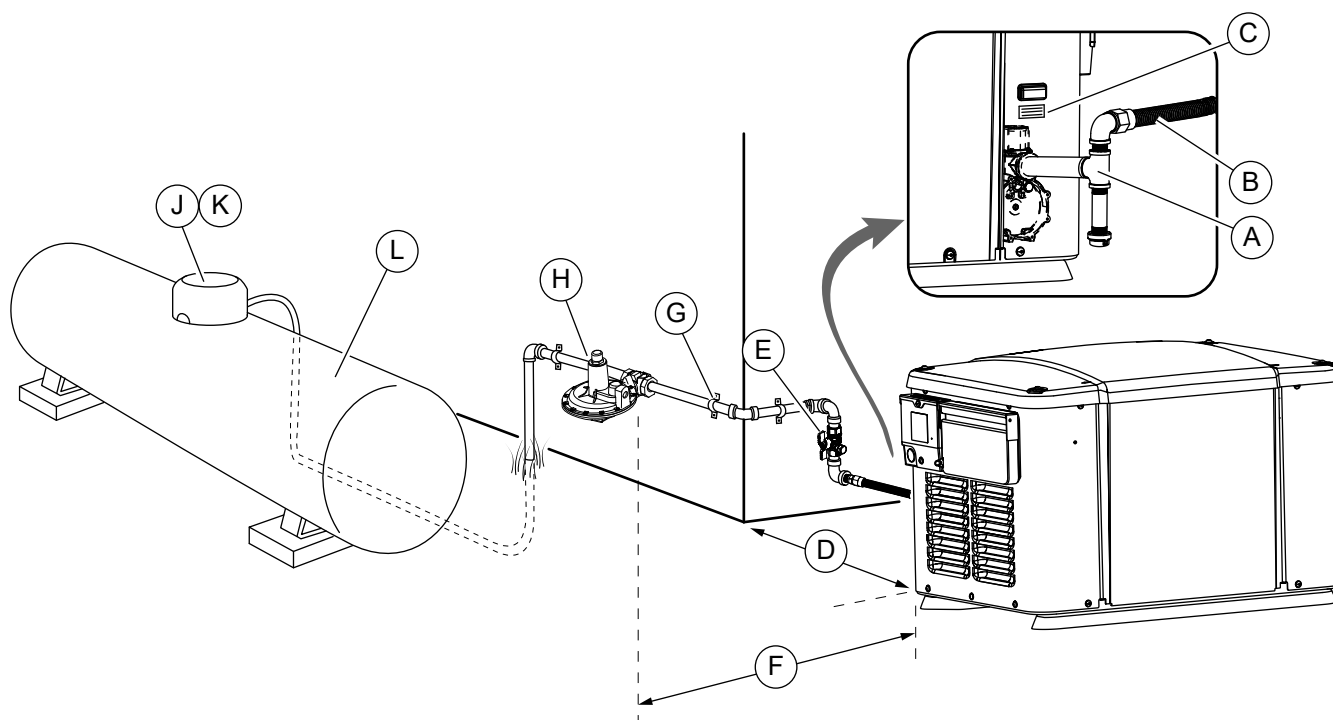


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NG BTU = $\text{ft}^3/\text{h} \times 1000$ Megajoules = $\text{m}^3/\text{h} \times 37.26$	
A	Sediment trap
B	Flexible fuel line
C	BTU and pressure decal
D	Manual fuel shutoff valve with pressure port
E	Minimum distance from rear obstruction—see <a href="#">Distance Requirements</a>
F	Verify minimum distance requirements for regulator vent according to local gas codes. Regulator should be a minimum of 5 ft (1.5 m) from generator. Local codes and regulator manufacturer may have further clearance requirements.
G	Size gas meter for generator operating at FULL load plus all appliance loads
H	For underground installations, verify piping system for code compliance
I	Reinforcing rod with clamps
J	Gas main

**Figure 5-5. Natural Gas Installation (Typical)**

## LP Vapor Installation (typical)



009294a

LP BTU = $\text{ft}^3/\text{h} \times 2500$ Megajoules = $\text{m}^3/\text{h} \times 93.15$	
A	Sediment trap
B	Flexible fuel line
C	BTU and pressure decal
D	Minimum distance from side obstruction—see <a href="#">Site Selection and Preparation</a>
E	Manual shutoff valve (pressure port optional)
F	Verify minimum distance requirements for regulator vent according to local gas codes. Regulator should be a minimum of 5 ft (1.5 m) from generator. Local codes and regulator manufacturer may have further clearance requirements.
G	Clamp
H	Secondary fuel pressure regulator
J	Manual fuel shutoff valve (pressure port optional)
K	Primary fuel pressure regulator
L	Size fuel tank large enough to provide required MJ/BTUs for generator operating at FULL load and ALL connected appliance loads. <b>NOTE:</b> Compensate for weather evaporation.

**Figure 5-6. LP Vapor Installation (typical)**

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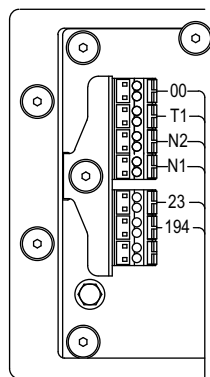
# Section 6: Electrical Connections

## Control Wiring

Control Wire Recommended Length and Size	
Maximum Wire Length	Recommended Wire Size
1–115 ft (0.3–35 m)	No. 18 AWG
116–185 ft (36–56 m)	No. 16 AWG
186–295 ft (57–89 m)	No. 14 AWG
296–460 ft (90–140 m)	No. 12 AWG

Customer Wiring Connections Integrated PCB (non-SACM)	
Terminal Numbering Decal	Wire Numbers
WHITE*	NEU/00 Neutral—Neutral for battery charger
BLUE*	T1—Fused 120 VAC for battery charger
YELLOW	N1—Fused 240 VAC Sensing for utility dropout and pickup
YELLOW WITH BLACK STRIPE	N2—Fused 240 VAC Sensing for utility dropout and pickup
BLACK	0—DC (-) <b>Not required</b>
RED	194—DC (+) 12 VDC for transfer controls
WHITE	23—Transfer control signal wire

\* Must be connected to keep battery charged whether unit is running or not.



001131

**Figure 6-1. Control Wiring**

**NOTE:** Control wiring must be in accordance with local jurisdiction and codes.

## Installing the Control Wiring

Proceed as follows to install control wiring:

1. Remove plug from field connection box.
2. Remove the two hex socket screws to remove electrical access panel. The access panel will hang off of the grounding wire.

**NOTE:** Do not pull the panel. This will cause ground wire to detach from the grounding bus bar.

3. See **Figure 6-2**. Install conduit and Main AC and Control Wires between the generator and transfer switch. Route conduit through a NEMA 3 rated external connection box (not supplied).

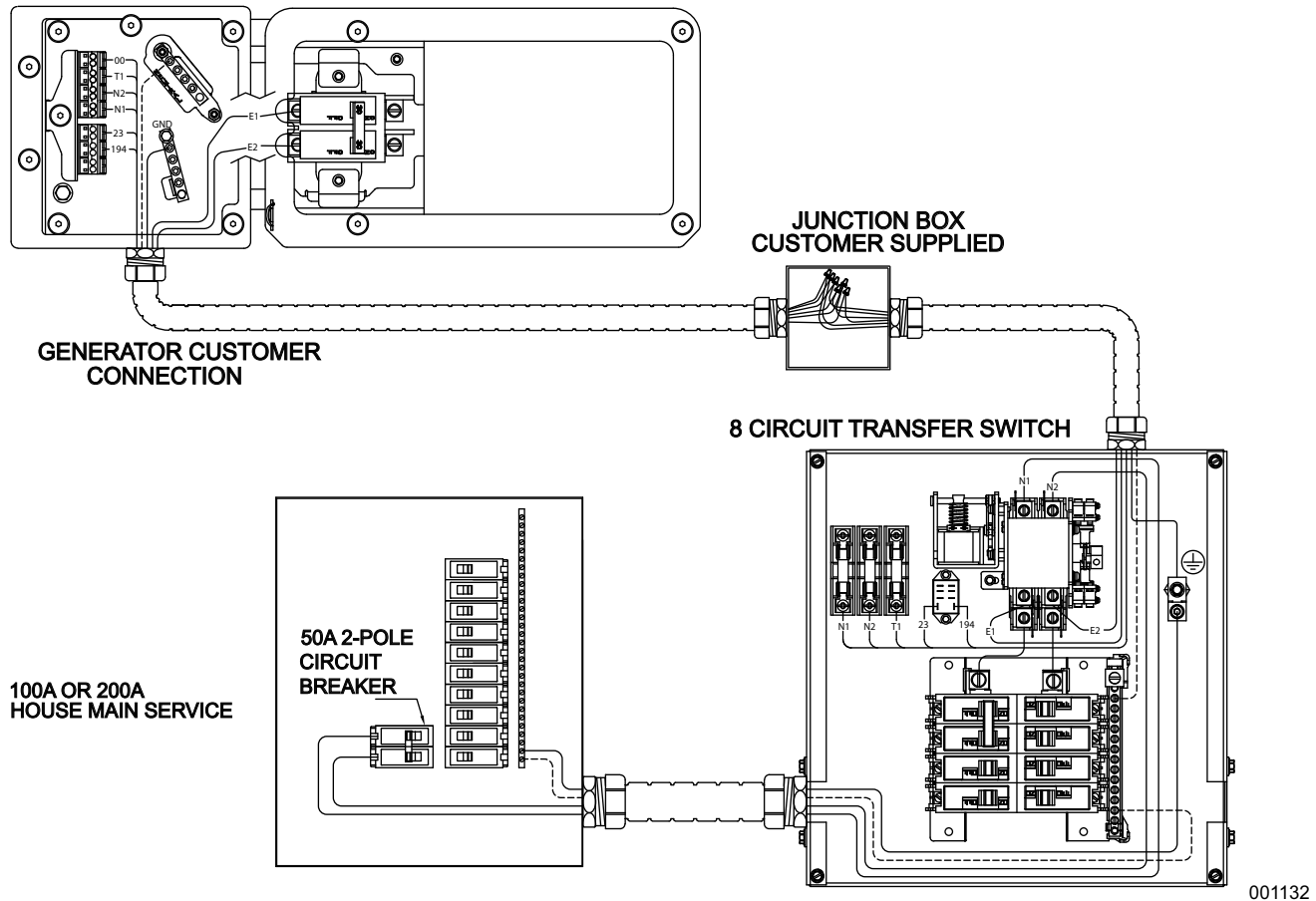
**NOTE:** The electrical access panel is grounded to the ground bar through a grounding wire. Verify integrity of this connection before closing the panel back.

**NOTE:** This wiring can be run in the same conduit if the appropriate insulation rated wire is used.

4. Seal conduit at the generator and in compliance with any codes.
5. Strip insulation from wire ends. Do not remove excessive insulation.
6. To connect control wires, push down on the spring loaded connection point with a flat head screwdriver, insert wire, and release.

**NOTE:** No wire insulation should be in the connection point; only bare wire.

## Main AC Wiring



**Figure 6-2. Main AC Wiring**

**NOTE:** Main AC wiring must be in accordance with local jurisdiction and codes.

**NOTE:** Generator lugs are rated at 167 °F (75 °C), copper or aluminum.

Proceed as follows to connect main AC wiring:

1. Strip insulation off wire ends. Do not remove excessive insulation.
2. Open controller access panel and latch it. Loosen lugs of main breaker through the access holes.
3. Insert a power wire (E1 or E2) into bottom lug of main breaker. Tighten to required specification.
4. See [Figure 6-2](#). Connect neutral wire to neutral bar and tighten to the required specification.
5. Connect ground wire to the ground bar. Tighten to required specification.
6. See [Figure 2-4](#). Plug breaker access hole with the cap plugs provided.
7. Unlatch controller access panel by pulling towards you and then close lid.
8. Verify integrity of ground wire connection between the electrical access panel and the ground lug

while closing customer connection box using two short hex socket screws.

**NOTE:** Neutral Bonding – For installations requiring neutral to be bonded to the ground, this is done on the customer connections terminals inside the generator.

Connect a suitably sized wire from neutral bar to ground bar. Tighten to required specification. This is required when generator is installed as a separately derived system. Generator will also require a connection to a grounding electrode system in accordance with NEC Article 250.64. It is not required when generator is a backup source in a utility supplied electrical system with a 2-pole transfer switch. Installation must be made in accordance with NEC Articles 250.30 and 250.35(A) if generator will be installed as a separately derived system.

**NOTE:** Tighten all wiring lugs, bus bars, and connection points to the required torque specifications. Torque specifications for the main line circuit breaker (MLCB) can be found on a decal located on the inside of the electrical access panel.



## Utility Service Circuit Breaker (not supplied)

This switch is listed for use with the following 1 in (25.4 mm) breakers:

- Siemens\*
- Murray\*
- Eaton
- Square D

\*Including GFCI, AFCI, and tandem breakers up to 50A.

**NOTE:** For branch circuits over 50A, only listed Siemens or Murray circuit breakers should be used.

## Battery Requirements

Group U1, 12V, minimum 300 CCA (Generac Part No. 0D4575).

## Battery Installation



### ⚠ WARNING

Explosion. Batteries emit explosive gases while charging. Keep fire and spark away. Wear protective gear when working with batteries. Failure to do so could result in death or serious injury.

(000137a)



### ⚠ WARNING

Risk of burns. Batteries contain sulfuric acid and can cause severe chemical burns. Wear protective gear when working with batteries. Failure to do so could result in death or serious injury.

(000138a)



### ⚠ WARNING

Electrical shock. Disconnect battery ground terminal before working on battery or battery wires. Failure to do so could result in death or serious injury.

(000164)

Fill battery with the correct electrolyte fluid if necessary and have battery fully charged before installing it.

Complete the following steps before installing and connecting the battery:

1. Verify generator is in OFF mode.
2. Turn off utility power supply to transfer switch.
3. Remove 7.5A fuse from generator control panel.

## Connecting Battery



### ⚠ WARNING

Explosion. Batteries emit explosive gases. Always connect positive battery cable first to avoid spark. Failure to do so could result in death or serious injury.

(000133)

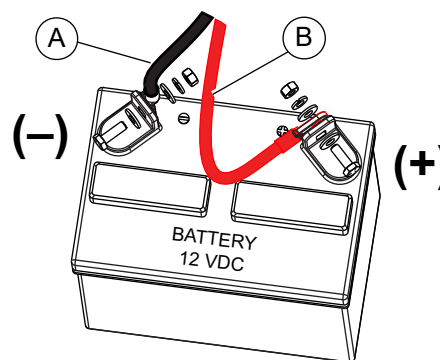


### ⚠ CAUTION

Equipment damage. Do not make battery connections in reverse. Doing so will result in equipment damage.

(000167a)

See **Figure 6-3**. Battery cables (A, B) were factory connected at the generator.



001126

**Figure 6-3. Battery Cable Connections**

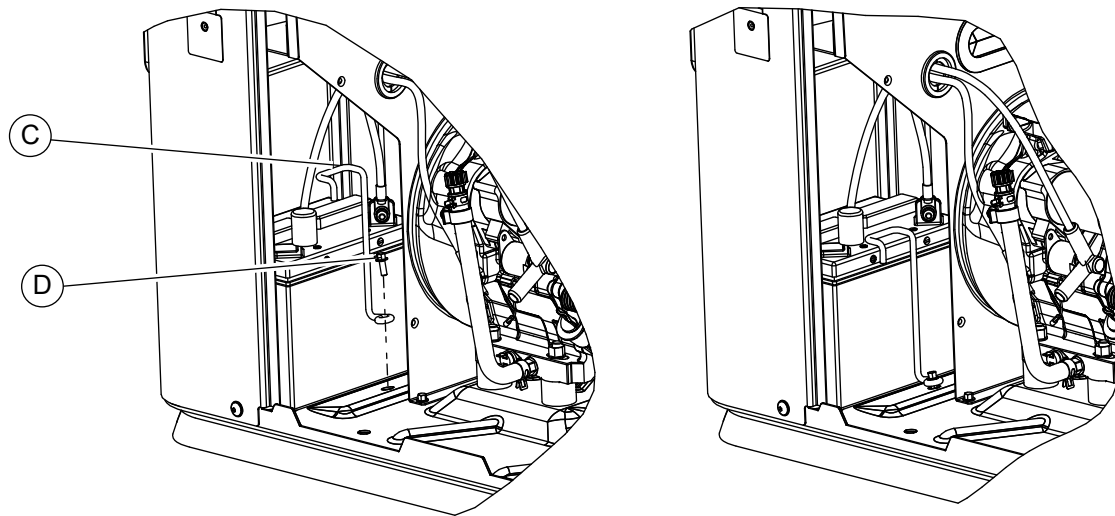
Proceed as follows to connect battery cables to battery posts:

1. See **Figure 6-3**. Connect red positive battery cable (B) (from starter contactor) to positive (POS or (+)) battery post, using the fastener set provided.
2. Connect black negative battery cable (A) (from frame ground) to negative (NEG or (-)) battery post, using fastener set provided.
3. See **Figure 2-4**. Install red battery terminal cap (included).

**NOTE:** Dielectric grease should be used on battery posts to aid in the prevention of corrosion.

**NOTE:** In areas where temperatures fall below 32 °F (0 °C), a pad type battery heater is recommended to aid in cold climate starting. This is available as a cold weather kit through an IASD.

4. See **Figure 6-4**. Install battery bracket (C) and screw (D). The installed bracket is shown on the right side of the figure.



**Figure 6-4. Battery Installation**

001134

5. Install the 7.5A fuse in the generator control panel.
6. Assemble battery access panel with two hex head screws and tighten securely.
7. Assemble front door by hooking it to the base and aligning slots to the hooks on top of enclosure.
8. Assemble top lid with four hex socket screws and secure in place.

## Battery Disposal

### **⚠ WARNING**

Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death, or serious injury. (000228)

Always recycle batteries in accordance with local laws and regulations. Contact your local solid waste collection site or recycling facility to obtain information on local recycling processes. For more information on battery recycling, visit the Battery Council International website at: <http://batteryCouncil.org>.

# Section 7: Control Panel Startup / Testing

## Control Panel Interface

See [Figure 2-3](#). The control panel interface (C) is located on the left side of the unit. Lift controller lid (B) to access.

### Using the AUTO/OFF/MANUAL Interface

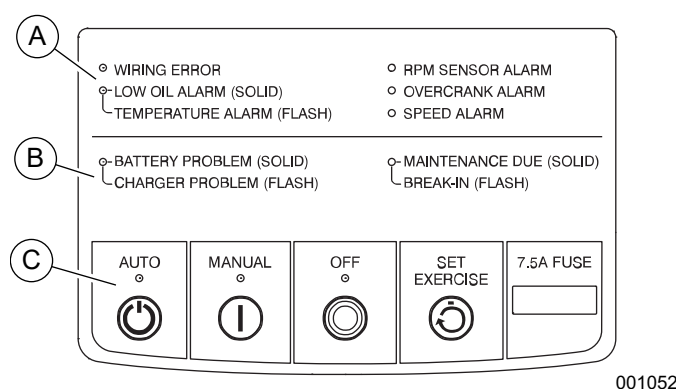
Button	Description of Operation
AUTO (GREEN)	Activates fully automatic system operation. Allows unit to automatically start and exercise engine every seven days with setting of exercise timer (see <a href="#">Setting The Exercise Timer</a> ).
MANUAL (BLUE)	Cranks and starts generator. Transfer to standby power will not occur unless there is a utility failure.
OFF (RED)	Shuts down engine and prevents automatic operation of unit.
SET EXERCISE (GREY)	Establishes generator exercise time. Hold button for three seconds at new exercise time desired. <b>NOTE:</b> Exercise time can only be set at time you wish exercise to actually take place.

**NOTE:** Loss of utility power will cause either the AUTO, OFF, or MANUAL button to flash depending on which mode the generator is in at the time of utility loss.

## Control Panel

See [Figure 7-1](#). The AUTO/OFF/MANUAL interface located on the control panel has the following features:

- Alarm LEDs (A)
- Warning LEDs (B)
- Operation Mode Buttons and LEDs (C)



**Figure 7-1. Generator Control Panel and LEDs**

## Generator Setup

When battery power is applied to the generator during the installation process, the controller will light up. However, the generator still needs to be activated before it will automatically run in the event of a power outage.

### Generator Activation

To receive the activation code, obtain the unit serial number and go to: [www.activategen.com](http://www.activategen.com). The activation code can also be obtained by calling 1-888-9ACTIVATE (1-888-922-8482).

Activating the generator is a simple, one-time process. The controller will not prompt you to activate again once unit is activated, even if you disconnect generator battery, fuse, and battery charge circuit (T1 60 Hz).

The activation code consists of a sequence of six button presses using the AUTO, OFF, and SET EXERCISE buttons. See [Figure 7-1](#). These MUST be entered in the exact and correct sequence in order to activate the generator.

Proceed as follows after obtaining activation code:

1. Press and hold OFF button for three seconds. All LEDs will flash twice, indicating activation mode has begun.

**NOTE:** Unit will “time out” after 60 seconds and not accept the activation code if not entered correctly. Begin the activation sequence again if this occurs.

2. Enter activation code by pressing the AUTO, OFF, and SET EXERCISE buttons in the 6 press sequence given. (Example: AUTO / OFF / OFF / SET EXERCISE / SET EXERCISE / SET EXERCISE). The yellow maintenance LED will blink each time a button is pressed.
3. The AUTO/OFF/MANUAL buttons will flash three times simultaneously if sequence is entered incorrectly. Return to Step 2 and continue.
4. All the LEDs will scroll from bottom to top five times if sequence is entered correctly. The OFF button will illuminate. Activation process has been performed successfully and generator is ready to operate.

## Before Initial Startup

### ⚠ CAUTION

Engine damage. Verify proper type and quantity of engine oil prior to starting engine. Failure to do so could result in engine damage.

(000135)

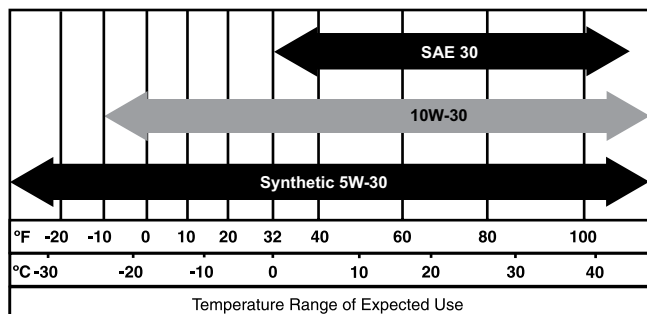
**NOTE:** The unit has been run and tested at the factory prior to being shipped and does not require any type of break-in.

**NOTE:** The unit comes filled with 5W-30 oil from the factory. Verify oil level and add the appropriate viscosity and amount of oil if necessary.

**NOTE:** Do not use or add synthetic oil until generator has operated for a minimum of 20 hours.

### Engine Oil Recommendations

To maintain the warranty, engine oil must meet minimum American Petroleum Institute (API) Service Class SJ, SL, or better. Use no special additives. Select the appropriate viscosity oil grade according to expected operating temperature. Synthetic oil also can be used in the appropriate weight as standard.



005799

**Figure 7-2. Recommended Oil Based on Temperature**

- SAE 30: above 32 °F (0 °C)
- SAE 10W-30: -10 °F (4 °C) and above
- Synthetic SAE 5W-30: all temperature ranges

### Before starting, complete the following:

1. Verify generator is in OFF mode.
2. Set generator MLCB (generator disconnect) to OFF (OPEN).
3. Turn off all breakers to be powered by generator.
4. Check engine crankcase oil level and, if necessary, fill to oil dipstick FULL mark with recommended oil. Do not fill above FULL mark.
5. Inspect fuel supply. Gaseous fuel lines must have been correctly purged and leak tested in accor-

dance with applicable fuel-gas codes. All fuel shut-off valves in the fuel supply lines must be open.

During initial startup only, generator may exceed normal number of start attempts and experience an "OVER-CRANK" fault. This is due to accumulated air in the fuel system during installation. Reset control board by pushing OFF button twice, and restart up to two more times if necessary. Contact an IASD for assistance if unit fails to start.

### Setting The Exercise Timer

The generator is equipped with an exercise timer. Once set, the generator will start and exercise every seven days, on day of the week and time of day specified. During this exercise period, unit runs for approximately 12 minutes and then shuts down. Transfer of loads to generator output does not occur during exercise cycle unless utility power is lost.

**NOTE:** The exercise timer does not correct for Daylight Saving Time.

**NOTE:** The exerciser will only work in AUTO, and will default to exercise weekly at the time the control panel was last powered on, unless this procedure is performed. Exercise function will need to be reset every time the 12 volt battery and T1 power to generator are disconnected and then reconnected, and/or when fuse is removed and T1 power is removed from generator.

1. Place generator in AUTO mode.
2. Hold SET EXERCISE button for three seconds. Generator will start, run an exercise cycle, and verify setting. Exercise time must be established at time desired for exercise to take place.
3. Exercise time is now established. Generator will exercise each week at this time.

To change exercise time once it has been set, hold SET EXERCISE button on generator for three seconds at the new desired exercise time.

## Checking Manual Transfer Switch Operation



### ⚠ DANGER

Electrocution. High voltage is present at transfer switch and terminals. Contact with live terminals will result in death or serious injury.

(000129)

See Manual Transfer Operation section of owner's manual for procedures.

## Electrical Checks



### **⚠ DANGER**

Electrocution. High voltage is present at transfer switch and terminals. Contact with live terminals will result in death or serious injury.

(000129)

Proceed as follows to complete electrical checks:

1. Verify generator is in OFF mode.
2. Set generator MLCB (generator disconnect) to OFF (OPEN).
3. Turn off all circuit breakers/electrical loads to be supplied by generator.
4. Turn on utility power supply to transfer switch using the means provided (such as a utility MLCB).
5. Use an accurate AC voltmeter to verify utility power source voltage across transfer switch terminals N1 and N2. Nominal line-to-line voltage should be 240 volts AC. If voltage is incorrect, verify AC output and wiring from utility source to N1 and N2 lugs at transfer switch.
6. Verify utility power source voltage across terminals N1 and transfer switch neutral lug; then across terminal N2 and neutral. Nominal line-to-neutral voltage should be 120 volts AC (if wired with a neutral). If voltage is incorrect, verify AC output and wiring from utility source to N1 and N2 lugs at transfer switch.
7. Turn off utility power supply to transfer switch when utility supply voltage is compatible with transfer switch and load circuit ratings.
8. Push MANUAL button on generator panel. Engine will crank and start.
9. Allow engine to warm up for approximately five minutes to allow internal temperatures to stabilize. Then set generator MLCB (generator disconnect) to ON (CLOSED).
10. Connect an accurate AC voltmeter and a frequency meter across transfer switch terminal lugs E1 and E2. At no load, voltage should be 236–240V at a frequency of 62–63 Hz. If voltage is incorrect, verify generator MLCB (generator disconnect) is closed and verify AC output and frequency (Hertz or Hz) at generator MLCB (generator disconnect). Verify wiring from generator to E1 and E2 lugs at transfer switch.
11. Connect AC voltmeter test leads across terminal lugs E1 and neutral, then across E2 and neutral (if wired with a neutral). Voltage reading should be 118–120 volts AC in both cases. If voltage is incorrect, verify generator MLCB (generator disconnect) is closed and verify AC output between E1 and E2

of generator MLCB (generator disconnect) and neutral at the generator.

12. Verify wiring from generator to E1, E2, and Neutral lugs at transfer switch.
13. Set generator MLCB (generator disconnect) to OFF (OPEN).
14. Push generator OFF button. Engine will shut down.

**NOTE:** Do not proceed until generator AC voltage and frequency are correct and within stated limits.

## Generator Tests Under Load



### **⚠ DANGER**

Electrocution. Do not manually transfer under load. Disconnect transfer switch from all power sources prior to manual transfer. Failure to do so will result in death or serious injury, and equipment damage.

(000132)

Proceed as follows to test generator with electrical loads applied:

1. Verify generator is in OFF mode.
2. Turn off all circuit breakers/electrical loads to be supplied by generator.
3. Turn off utility power supply to transfer switch, using the means provided (such as a utility MLCB).
4. Manually set transfer switch to STANDBY; e.g. load terminals connected to generator's E1/E2 terminals. Transfer switch operating lever should be down.
5. Push generator MANUAL button. Engine should crank and start immediately.
6. Allow engine to stabilize and warm up for a few minutes.
7. Set generator MLCB (generator disconnect) to ON (CLOSED). Loads are now powered by generator.
8. Turn on circuit breaker/electrical loads powered by generator one by one.
9. Connect a calibrated AC voltmeter and a frequency meter across terminal lugs E1 and E2. Voltage should be approximately 240 volts and frequency should be 60 Hz. If voltage and frequency are rapidly dropping as loads are applied, generator may be overloading or there may be a fuel issue. Verify amperage value of loads and/or fuel pressure.
10. Allow generator to run at full rated load for 20–30 minutes. Listen for unusual noises, vibration, or other indications of abnormal operation. Inspect for oil leaks, evidence of overheating, etc.
11. Verify fuel pressure while under full load.
12. Turn off circuit breaker/electrical loads when testing under load is complete.
13. Set generator MLCB (generator disconnect) to OFF (OPEN).



14. Allow engine to run at no load for 2–5 minutes.
15. Push generator OFF button. Engine will shut down.

## Checking Automatic Operation

Proceed as follows to check system for correct automatic operation:

1. Verify generator is in OFF mode.
2. Install front cover of transfer switch.
3. Turn on utility power supply to transfer switch using the means provided (such as a utility MLCB).

**NOTE:** Transfer switch will transfer to utility position.

4. Set generator MLCB (generator disconnect) to ON (CLOSED).
5. Press generator AUTO button. The system is now ready for automatic operation.
6. Turn off utility power supply to transfer switch.

The generator is ready for automatic operation. Engine will crank and start when utility source power is turned off after a five second delay (factory default setting). After starting, transfer switch will connect load circuits to standby side after a six second delay (or a 30 second delay in cold weather). Allow system to operate through entire automatic sequence of operation.

**NOTE:** Transfer delay may change depending on environmental conditions. See Utility Failure section in owner's manual for more information.

**NOTE:** Loss of utility power will cause either the AUTO, OFF, or MANUAL button(s) to flash depending on which mode generator is in at time of utility loss.

With generator running and loads powered by generator AC output, turn on utility power supply to transfer switch. The following should occur:

- After approximately 15 seconds, transfer switch should transfer loads back to utility power source.
- Approximately one minute after transfer, engine will shut down.

## Installation Summary

1. Verify installation has been performed correctly as outlined by the manufacturer and that it meets all applicable laws and codes.
2. Test and verify correct operation of the system as outlined in the appropriate installation and owner's manuals.
3. Educate end-user on correct operation, maintenance, and service call procedures.

## Shutting Generator Down While Under Load or During a Utility Outage



Automatic start-up. Disconnect utility power and render unit inoperable before working on unit. Failure to do so will result in death or serious injury.

(000191)

**IMPORTANT NOTE:** To avoid equipment damage, follow these steps, in order, during utility outages. Shutdowns may be required during utility outages to perform routine maintenance or to conserve fuel.

### To turn generator OFF:

1. Set utility MLCB to OFF (OPEN).
2. Set generator MLCB (generator disconnect) to OFF (OPEN).
3. Allow generator to run for cool-down for approximately one minute.
4. Set generator to OFF at the controller.
5. Remove 7.5A fuse from controller.

### To turn generator back ON:

1. Install 7.5A fuse in controller.
2. Verify generator MLCB (generator disconnect) is OFF (OPEN).
3. Set generator to AUTO mode at the controller.
4. Generator will start and run. Allow generator to run and warm up for a few minutes.
5. Set generator MLCB (generator disconnect) to ON (CLOSED).
6. Set utility MLCB to ON (CLOSED).

The system now operates in automatic mode.

# Section 8: Troubleshooting

## Troubleshooting Guide

Problem	Cause	Correction
Engine will not crank	Blown fuse.	Correct short circuit condition by replacing 7.5 A fuse in generator control panel. Contact an IASD if issue persists.
	Loose, corroded, or faulty battery cables.	Tighten, clean or replace as necessary. Contact an IASD.
	Faulty starter contact.	
	Faulty starter motor.	
	Discharged battery.	Charge or replace battery.
	Emergency shutdown switch OPEN (O).	Set emergency engine shutdown switch to CLOSED (I).
Engine cranks but will not start	No fuel.	Replenish fuel / turn on fuel valve.
	Faulty fuel solenoid (FS).	Contact an IASD.
	Faulty spark plug(s).	Clean, inspect gap, or replace plug(s).
	Valve clearance out of adjustment.	Reset valve clearance.
	Cold weather condition.	Install recommended cold weather kit.
Engine starts hard and runs rough	Air cleaner plugged or damaged.	Inspect air cleaner. Clean or replace.
	Faulty spark plug(s).	Clean, re-gap, or replace plug(s).
	Incorrect fuel pressure.	Verify fuel pressure to regulator is 10–12 in water column (2.49–2.99 kPa) for LP gas, and 5–7 in water column (1.24–1.74 kPa) for NG.
	Incorrect fuel jet used.	Change fuel jet to recommended part for the fuel used.
Unit is set to OFF, but engine continues to run	Controller wired incorrectly.	Repair wiring. Contact an IASD.
	Faulty control panel.	Replace control panel. Contact an IASD.
No AC output from generator	Generator MLCB (generator disconnect) is OFF (OPEN).	Set generator MLCB (generator disconnect) to ON (CLOSED).
	Generator internal fault.	Contact an IASD.
No transfer to standby after utility source failure	Generator MLCB (generator disconnect) is OFF (OPEN).	Set generator MLCB (generator disconnect) to ON (CLOSED).
	Faulty transfer switch coil.	Contact an IASD.
	Faulty transfer relay.	
	Transfer relay circuit open.	
	Faulty control logic board.	

Problem	Cause	Correction
Unit consumes large amounts of oil	Excessive engine oil.	Adjust oil to correct level.
	Faulty engine breather.	Contact an IASD.
	Incorrect type or viscosity of oil.	See <a href="#">Engine Oil Recommendations</a> .
	Damaged gasket, seal, or hose.	Inspect for oil leaks.

**NOTE:** IASD must have an active Tech ID and be air-cooled certified to perform any warrantable repairs and submit warranty claims related to air-cooled products.



## Section 9: Quick Reference Guide

### System Diagnosis

Press the OFF button twice and then press AUTO to clear an active alarm. Contact an air-cooled certified IASD if the alarm reoccurs.

Active Alarm	Problem	Action	Solution
NONE	Unit running in AUTO but no power in house.	Check generator MLCB (generator disconnect).	Check generator MLCB (generator disconnect). If it is ON, contact an IASD.
HIGH TEMPERATURE	Unit shuts down during operation.	Check controller for alarms.	Inspect ventilation around generator, intake, exhaust, and rear of generator. If no obstructions are present, contact an IASD.
HIGH TEMPERATURE	Emergency shutdown switch OPEN (O).	Verify emergency shutdown switch position.	Set emergency shutdown switch to CLOSED (I).
HIGH TEMPERATURE	Unit will not start.	Verify emergency shutdown switch position.	Set emergency shutdown switch to CLOSED (I).
RPM SENSE LOSS	Unit was running and shuts down, attempts to restart.	Check controller for alarms.	Clear alarm and remove household loads from generator. Put back in AUTO and restart. Contact an IASD if generator does not start.
NOT ACTIVATED	Unit will not start in AUTO with utility loss.	Verify if all six alarm and warning LEDs are blinking simultaneously.	See <a href="#">Generator Activation</a> .
LOW OIL PRESSURE	Unit will not start in AUTO with utility loss.	Check controller for alarms.	Inspect oil level and add oil per owners manual. Contact an IASD if oil level is correct.
OVERCRANK	Unit will not start in AUTO with utility loss.	Check controller for alarms.	Verify fuel line shutoff valve is ON. Clear alarm. Attempt to start unit in MANUAL. Contact an IASD if it does not start, or starts and runs rough.
NO LEDs LIT	Unit will not start in AUTO with utility loss.	Check controller for alarms.	Inspect 7.5 amp ATO® fuse. Replace with same type fuse if bad. Contact an IASD if fuse is good.
SPEED ALARM	Unit will not start in AUTO with utility loss.	Check controller for alarms.	Contact an IASD.
WIRING ERROR	Unit will not start in AUTO with utility loss.	Check controller for alarms.	Contact an IASD.
BATTERY PROBLEM	Yellow LED steadily illuminated.	Check controller for additional information.	Contact an IASD.
CHARGER PROBLEM	Yellow LED flashes.	Check controller for additional information.	Contact an IASD.
BREAK-IN MAINTENANCE DUE	Control panel indicates break-in maintenance due. LED flashes.	None.	Perform break-in maintenance. Clear Maintenance Due light.
1 YEAR / 100 HOUR MAINTENANCE DUE	Control panel indicates scheduled maintenance due. LED illuminates.	None.	Perform scheduled maintenance. Clear Maintenance Due light.
NONE	Utility present. Generator running. Active mode LED (AUTO/MANUAL/OFF) is flashing.	Check utility sense lines/utility disconnect.	Contact an IASD. Close utility disconnect.

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## Section 10: Accessories

Performance enhancing accessories are available for air-cooled generators.

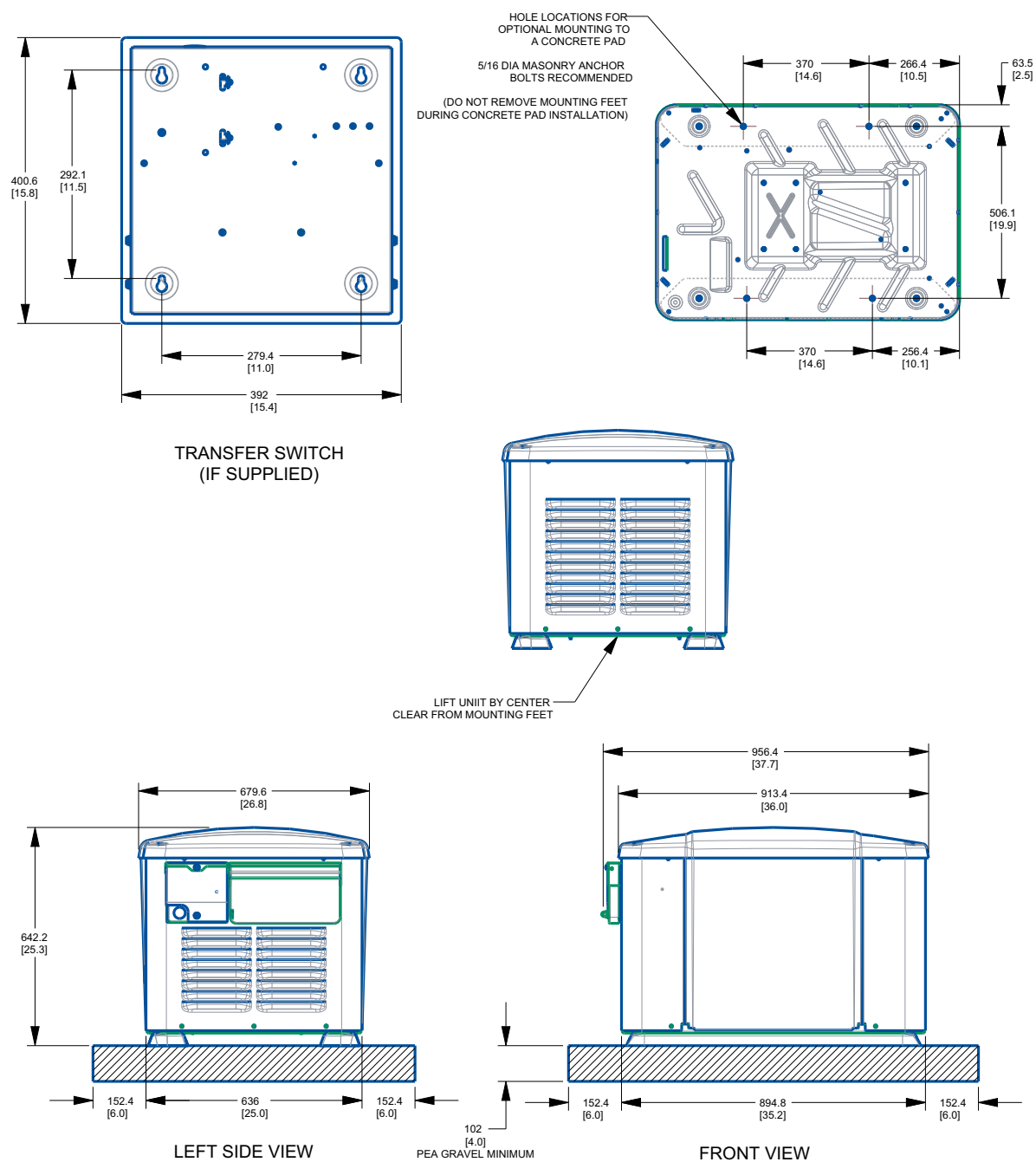
Accessory	Description
Cold Weather Kit G006808-1	Recommended in areas where temperatures fall below 32 °F (0 °C).
Scheduled Maintenance Kit G006806-0	Includes all pieces necessary to perform routine maintenance on generator, along with oil recommendations (oil not included).
Touch-Up Paint Kit G005703-0	If the generator enclosure is scratched or damaged, it is important to touch-up the paint to protect from future corrosion. The touch-up paint kit includes the necessary paint to correctly maintain or touch-up a generator enclosure.
Wireless Local Monitor G006664-0	Completely wireless and battery powered, the Wireless Local Monitor provides instant status without ever leaving the house. Status lights (red, yellow, and green) alert owners when the generator needs attention. Magnetic backing permits refrigerator mounting and gives a 600 ft (183 m) line of sight communication.
Extended Warranty Coverage (Available only in U.S. and Canada)	Extend generator warranty coverage by purchasing extended warranty coverage. Covers both parts and labor. Extended coverage can be purchased within 12 months of the end-users purchase date. This extended coverage is applicable to registered units and end-user proof of purchase must be available upon request. Available for Generac®, Guardian® and PowerPact® products. Not available for Corepower™ and EcoGen™ products or all international purchases.
LTE LP Fuel Level Monitor G007009-0	The LTE enabled LP fuel level monitor provides constant monitoring of the connected LP fuel tank. Monitoring the LP fuel tank's fuel level is an important step in verifying the generator is ready to run during an unexpected power failure. Status alerts are available through a free application informing the user when the LP tank is in need of a refill.

**NOTE:** Contact an IASD or visit [www.generac.com](http://www.generac.com) for additional information on accessories and extended warranties.

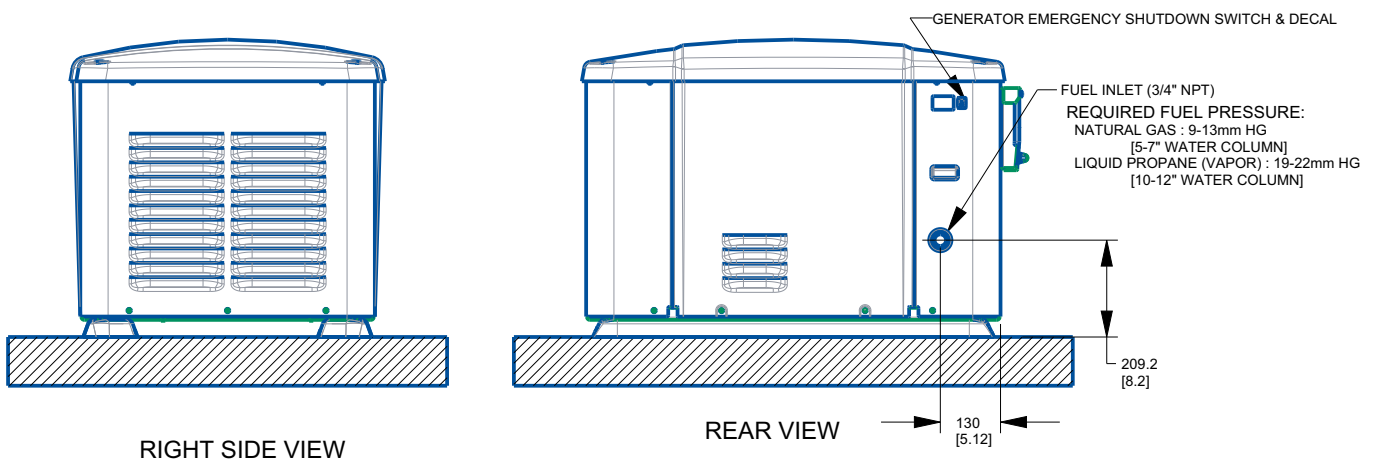
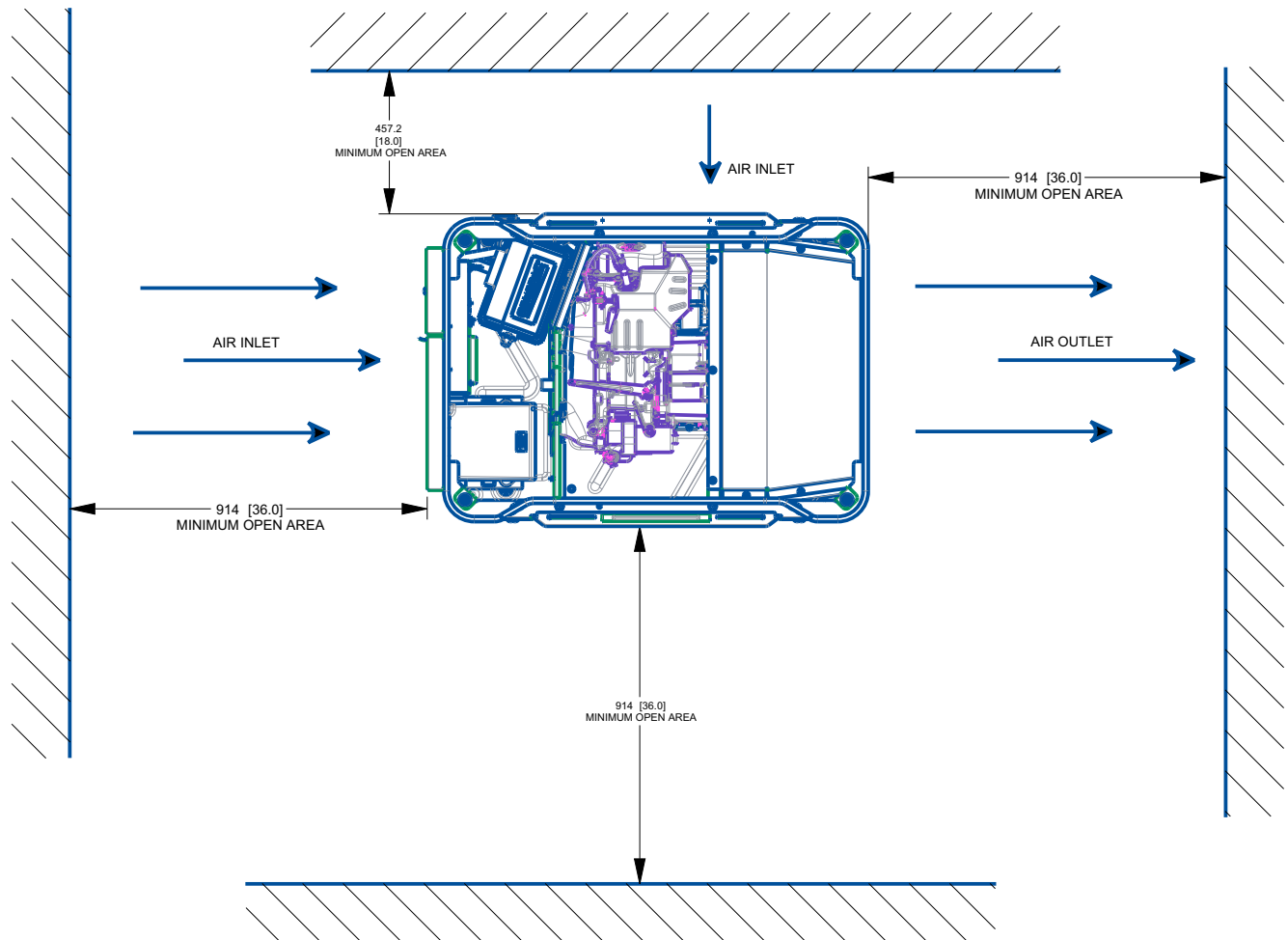
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# Section 11: Diagrams

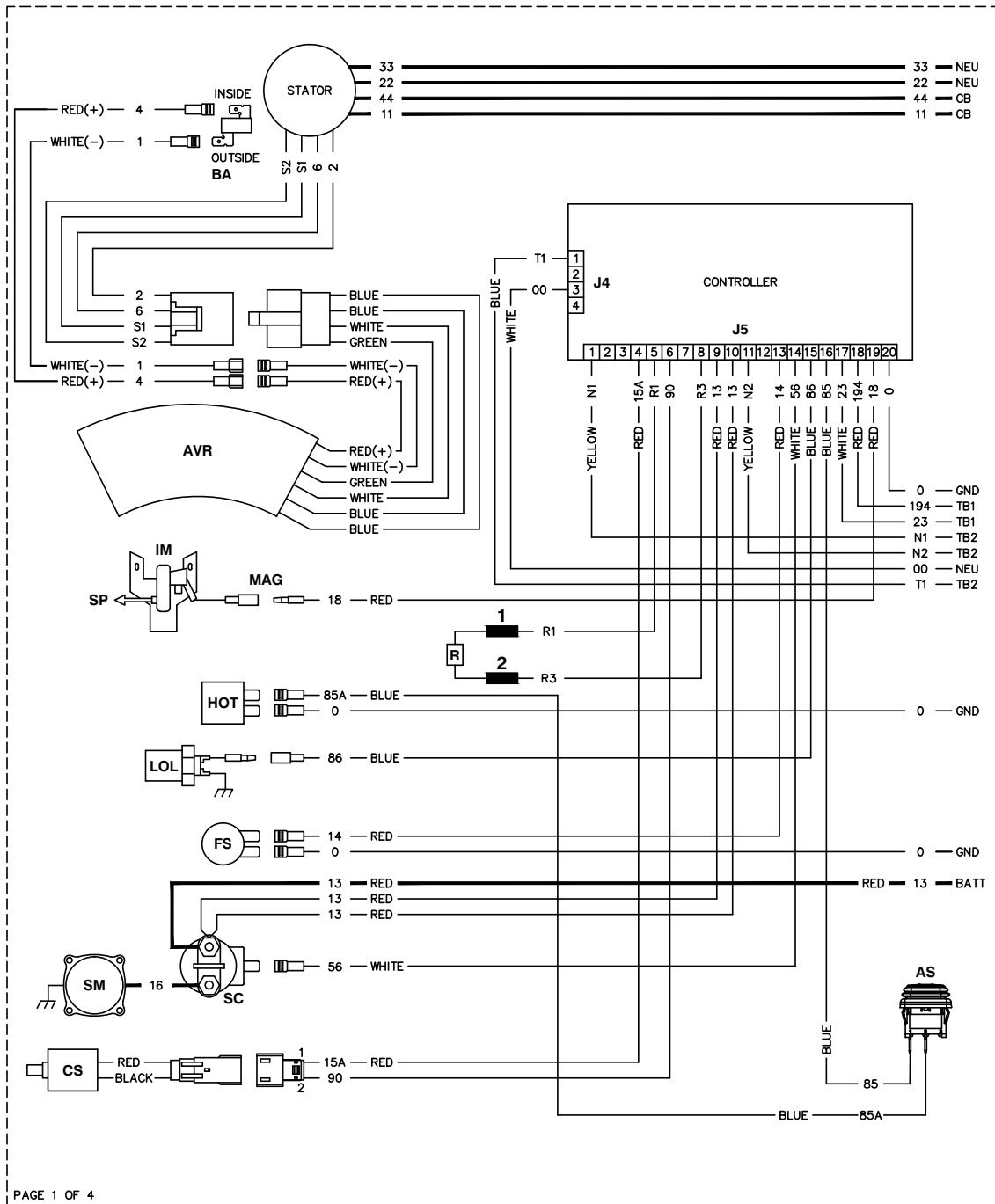
## Installation Drawing (10000022108-B, page 1 of 2)



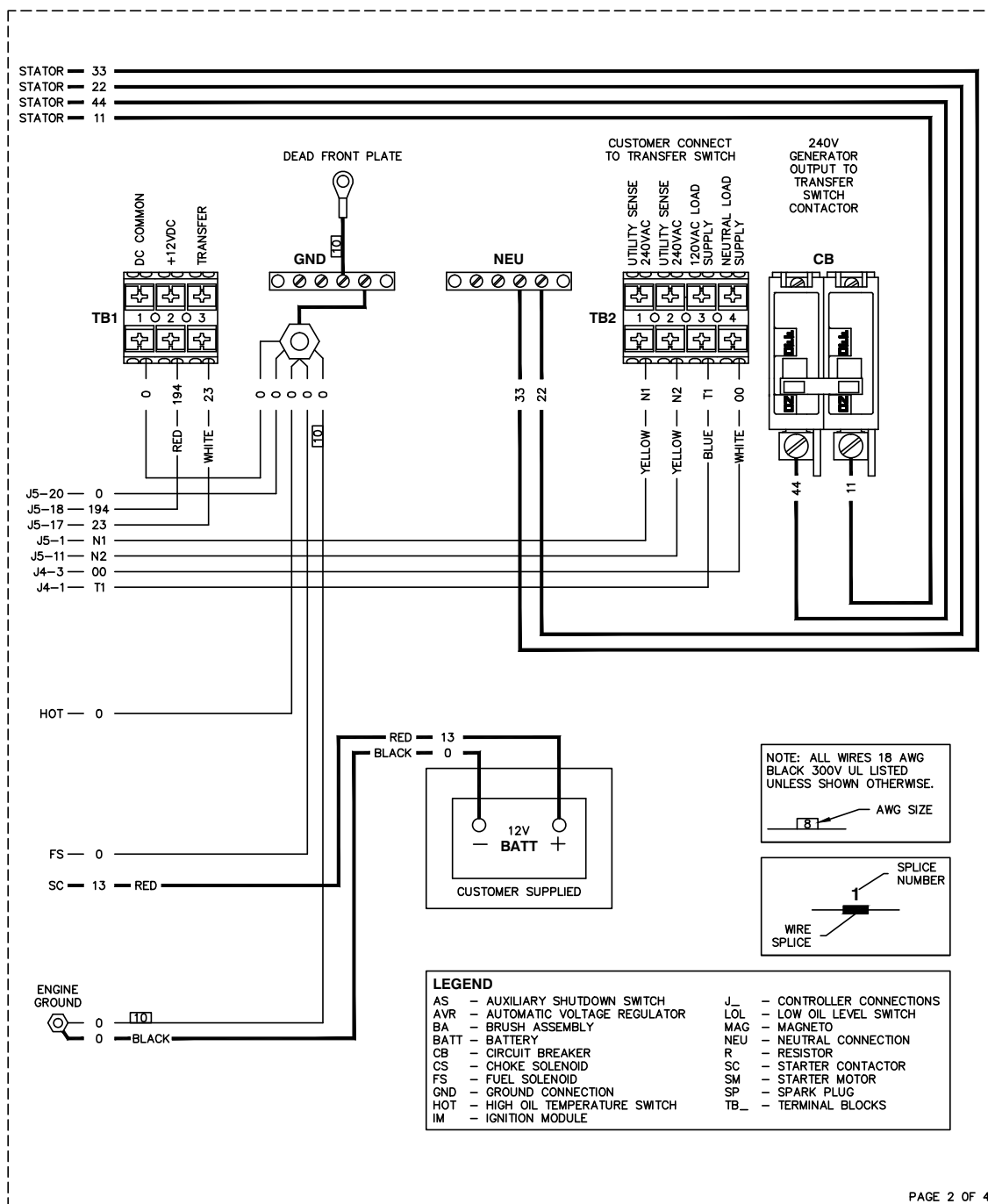
Installation Drawing (10000022108-B, page 2 of 2)



## Wiring Diagram (A0003423406-A, page 1 of 4)

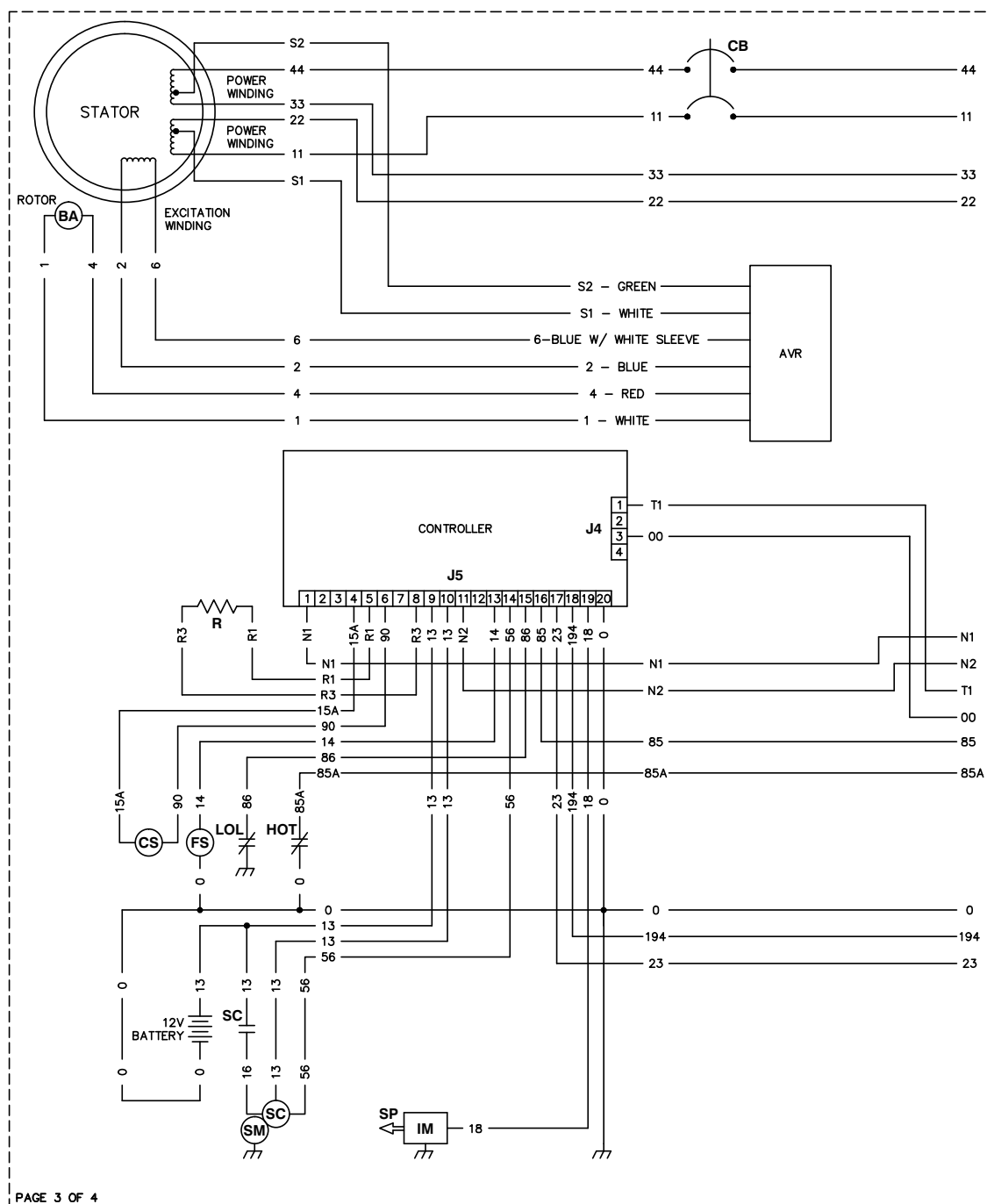


## Wiring Diagram (A0003423406-A, page 2 of 4)

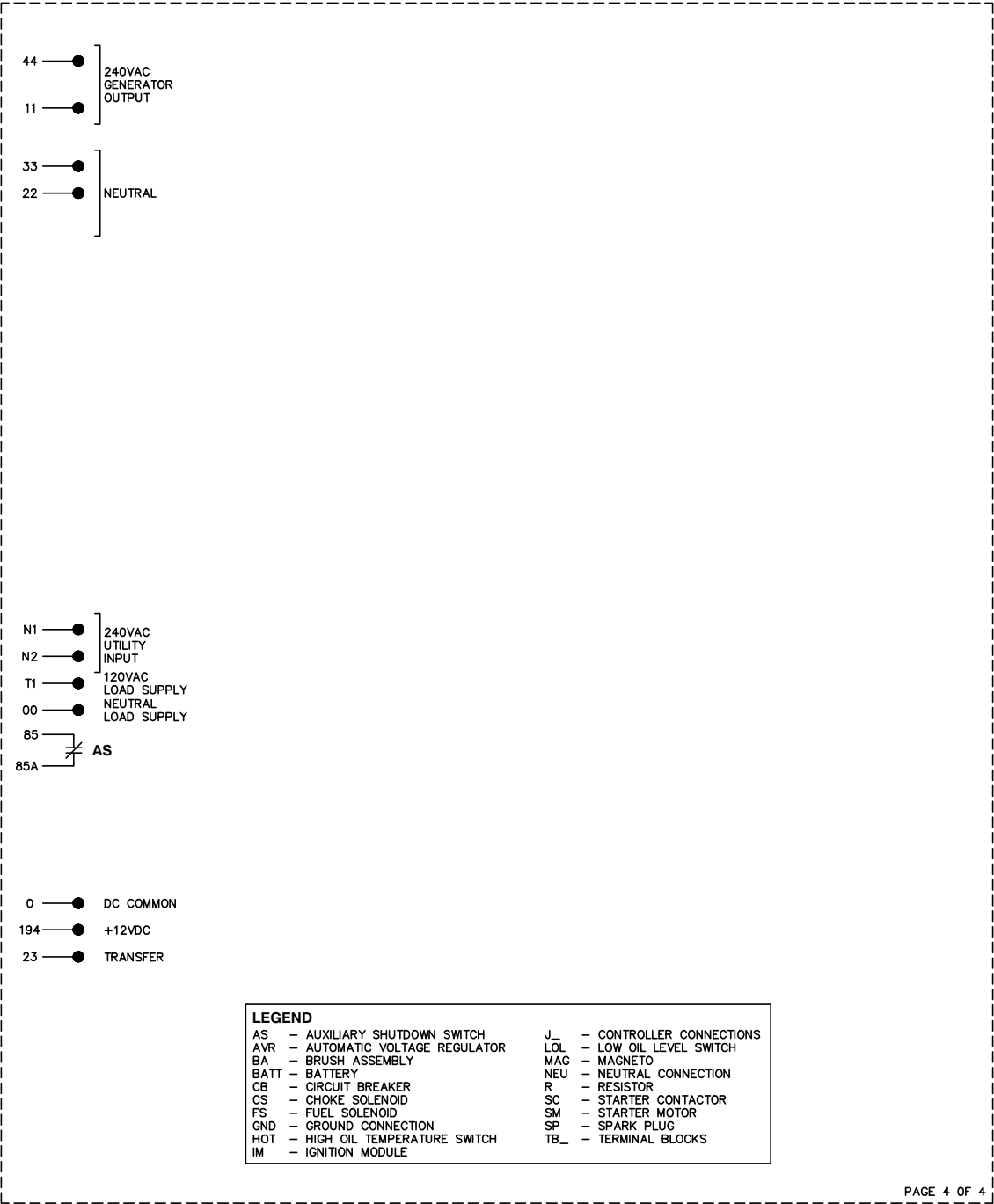




## Wiring Diagram (A0003423406-A, page 3 of 4)



Wiring Diagram (A0003423406-A, page 4 of 4)





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