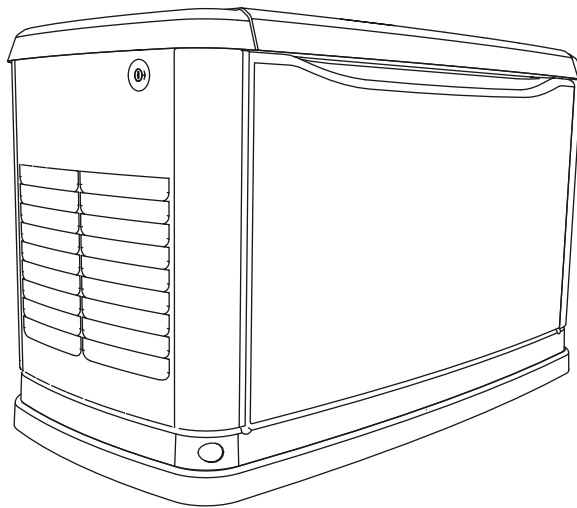




# *Owner's Manual*

## *50 Hz Air-Cooled Generators*

8 / 10 / 13 kVA



### **WARNING**

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.

(000209a)

Register your Generac product at:

WWW.GENERAC.COM

1-888-GENERAC

(1-888-436-3722)

**This manual must be used in conjunction with the appropriate Installation Manual.**

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

Найти версию на русском языке: <http://www.generac.com/service-support/product-support-lookup>

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

---

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

Model:	
Serial:	
Prod Date Week:	
Volts:	
LPV AMPS:	
NG AMPS:	
HZ:	
Phase:	
Controller P/N:	

Record the information found on your unit data label on this page. For the location of the unit data label, see [General Information](#). The unit has a label plate affixed to the inside partition, to the left of the control panel console as shown in [Figure 2-1](#) and [Figure 2-2](#). For directions on how to open the top lid and remove the front panel, see [Operation](#).

When contacting an Independent Authorized Service Dealer about parts and service, always supply the complete model number and serial number of the unit.

**Operation and Maintenance:** Proper maintenance and care of the generator ensures a minimum number of problems and keeps operating expenses at a minimum. It is the operator's responsibility to perform all safety checks, to make sure that all maintenance for safe operation is performed promptly, and to have the equipment checked periodically by an Independent Authorized Service Dealer. Normal maintenance, service and replacement of parts are the responsibility of the owner/operator and, as such, 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, contact an Independent Authorized Service Dealer for assistance. Authorized service technicians are factory-trained and are capable of handling all service needs. To locate the nearest Independent Authorized Service Dealer, please visit the dealer locator at:

[www.generac.com/Service/DealerLocator/](http://www.generac.com/Service/DealerLocator/).

---

**! WARNING**

California Proposition 65. Engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects, and other reproductive harm. (000004)

---

**! WARNING**

California Proposition 65. This product contains or emits chemicals known to the state of California to cause cancer, birth defects, and other reproductive harm. (000005)

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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 that is intended exclusively for outdoor installation. This generator will operate using either vapor withdrawn liquid propane (LP) or natural gas (NG).

**NOTE:** When sized properly, 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.

## 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 portion of this manual is not understood, contact the nearest Independent Authorized Service Dealer for starting, operating and servicing procedures.

This manual must be used in conjunction with the appropriate Installation Manual.

**SAVE THESE INSTRUCTIONS:** The manufacturer suggests that this manual and the rules for safe operation be copied and posted near the unit installation site. Safety should be stressed to all operators and potential operators of this equipment.

Throughout this publication and on tags and decals affixed to the generator, 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. Their 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 provide additional information important to a procedure or component.

These safety warnings cannot eliminate the hazards they indicate. Observing safety precautions and strict compliance with the special instructions while performing the action or service are essential to preventing accidents.

The operator is responsible for proper and safe use of the equipment. The manufacturer strongly recommends that if the operator is also the owner, to read the Owner's Manual and thoroughly understand all instructions before using this equipment. The manufacturer also strongly recommends instructing other users to properly start and operate the unit. This prepares them if they need to operate the equipment in an emergency.

## How to Obtain Service

When the generator requires servicing or repairs, contact an Independent Authorized Service Dealer for assistance. Service technicians are factory-trained and are capable of handling all service needs. For assistance locating a dealer, go to [www.generac.com/Service/DealerLocator/](http://www.generac.com/Service/DealerLocator/).

When contacting a dealer about parts and service, always supply the complete model number and serial number of the unit as given on its data decal, which is located on the generator. See [The Generator](#) for decal location.

## Safety Rules

Study these SAFETY RULES carefully before installing, operating or servicing this equipment. Become familiar with this Owner's Manual and with the unit. The generator can operate safely, efficiently and reliably only if it is properly installed, operated and maintained. Many accidents are caused by failing to follow simple and fundamental rules or precautions.

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

### 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**

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**

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

#### **⚠ WARNING**

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 damage to equipment or property. (000155)



#### **⚠ 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 service this equipment and could result in death or serious injury. (000215)

#### **⚠ 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)

Inspect the generator regularly, and contact the nearest Independent Authorized Service Dealer for parts needing repair or replacement.

**⚠ 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)

**⚠ WARNING**

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. (000209a)

**Exhaust Hazards****⚠ 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**

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)

Adequate, unobstructed flow of cooling and ventilating air is critical to correct generator operation. Do not alter the installation or permit even partial blockage of ventilation provisions, as this can seriously affect safe operation of the generator. The generator must be installed and operated outdoors only.

**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 when electrical utility is the primary power source. Failure to do so will result in death, serious injury, and equipment damage. (000131a)

**⚠ 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. Contact with bare wires, terminals, and connections while generator is running will result in death or serious injury. (000144)

**⚠ 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

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)



### ⚠️ WARNING

Risk of electrocution. Refer to NFPA 70E for safety equipment required when working with a live electrical system. Failure to use required safety equipment could result in death or serious injury. (000221)



### ⚠️ 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. Also, verify that the generator is installed in accordance with the manufacturer's instructions and recommendations. Following proper installation, do nothing that might alter a safe installation and render the unit in noncompliance with the aforementioned codes, standards, laws and regulations.

## Explosion Hazards



### ⚠️ 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

Connection of fuel source must be done by a qualified professional technician or contractor. Incorrect installation of this unit will result in death, serious injury, and damage to equipment and property damage. (000151)



### ⚠️ 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)

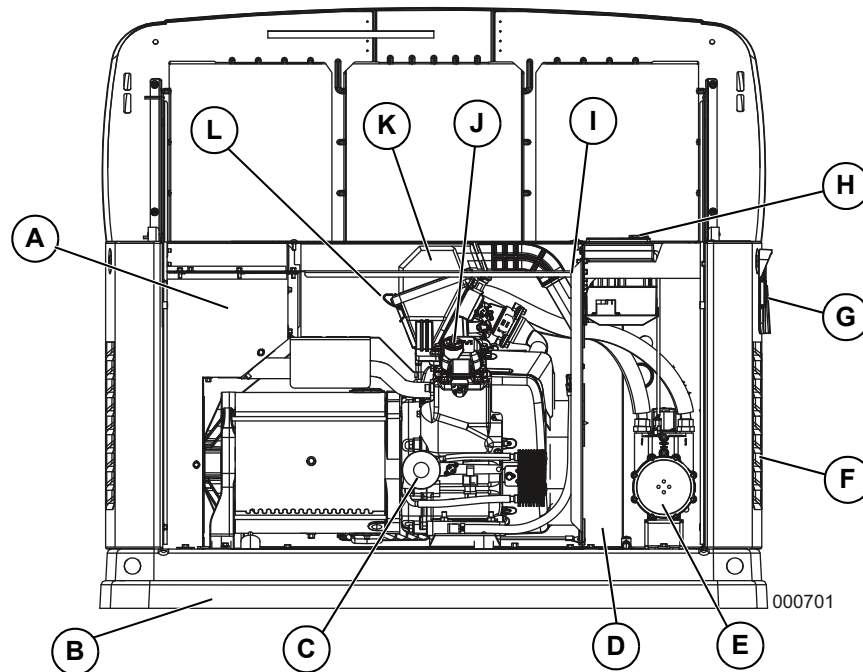


### ⚠️ WARNING

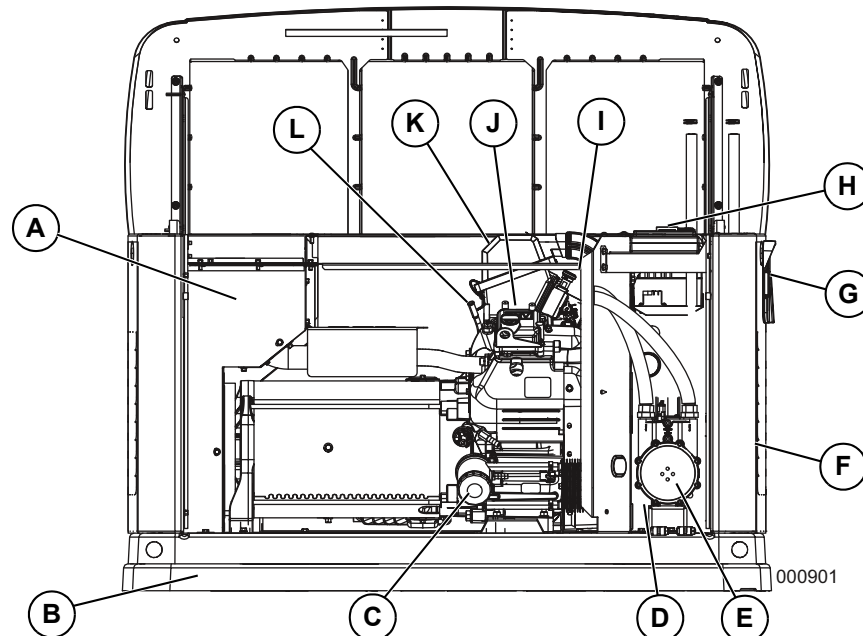
Risk of Fire. Hot surfaces could ignite combustibles, resulting in fire. Fire could result in death or serious injury. (000110)

## Section 2: General Information

### The Generator



**Figure 2-1. GTH-530 Engine 8 kVA Unit**



**Figure 2-2. GT-990 Engine, 10 & 13 kVA Units**

A.	Exhaust Enclosure	D.	Battery Compartment	G.	Circuit Breakers	J.	Oil Fill Cap
B.	Composite Base	E.	Fuel Regulator	H.	Control Panel	K.	Air Filter
C.	Oil Filter	F.	Fuel Inlet (Back)	I.	Data Label (See Sample)	L.	Oil Dipstick

## Specifications

### Generator

Model	8 kVA	10 kVA	13 kVA
Rated Voltage	220/230/240		
Rated Maximum Load Current (Amps) at Rated Voltage*	36.4 / 34.8 / 33.3	45.5 / 43.5 / 41.7	59.1 / 56.5 / 54.2
Main Circuit Breaker	40 Amp	50 Amp	63 Amp
Phase	1		
Rated AC Frequency	50 Hz		
Battery Requirement	Group 26R, 12 Volts and 540 CCA Minimum (See <a href="#">Replacement Parts</a> )		
Enclosure	Steel	Steel	Steel
Weight (lbs./ kilos)	387 / 175.4	435 / 197.3	471 / 213.6
Normal Operating Range	This unit is tested in accordance to UL 2200 standards with an operating temperature of -20 °F (-29 °C) to 122 °F (50 °C). For areas where temperatures fall below 32 °F (0 °C) a cold weather kit is recommended. When operated above 77 °F (25 °C) there may be a decrease in engine power. (Please reference the engine specifications section.		
These generators are rated in accordance with UL 2200, Safety Standard for Stationary Engine Generator Assemblies, and CSA-C22.2 No. 100-04 Standard for Motors and Generators. * Natural Gas ratings will depend on specific fuel BTU / joules content. Typical derates are between 10-20% off the LP gas rating. ** Circuits to be moved must be protected by same size breaker. For example, a 15 amp circuit in the main panel must be a 15 amp circuit in the transfer switch.			

### Engine

Model	8 kVA	10 & 13 kVA
Type of Engine	GTH-530	GT-990
Number of Cylinders	2	2
Displacement	32.3 in <sup>3</sup> (530 cc)	60.5 in <sup>3</sup> (992 cc)
Cylinder Block	Aluminum w/ cast iron sleeve	
Recommended Spark Plug	(See <a href="#">Replacement Parts</a> )	
Spark Plug Gap	0.030 in (0.76 mm)	0.040 in (1.02 mm)
Valve Clearance	0.002–0.004 in (0.05–0.1 mm)	0.002–0.004 in (0.05–0.1 mm)
Starter	12 VDC	
Oil Capacity Including Filter	Approx. 1.7 qt (1.6 L)	Approx. 1.9 qt (1.8 L)
Recommended Oil Filter	(See <a href="#">Replacement Parts</a> )	
Recommended Air Filter	(See <a href="#">Replacement Parts</a> )	
Engine power is subject to and limited by such factors as fuel BTU/joules, ambient temperature and altitude. Engine power decreases about 3.5 percent for each 1000 feet (304.8 meters) above sea level, and also will decrease about 1 percent for each 10 °F (1 °C) above 60 °F (15 °C) ambient temperature.		

The specification sheet for your generator was included in the documentation provided with the unit at the time of purchase. For additional copies, consult your local Independent Authorized Service Dealer for your specific generator model.

## Protection Systems

The generator may have to run for long periods of time with no operator present to monitor the engine/generator conditions. Therefore, the generator is equipped with a number of systems to automatically shut down the unit to protect it against potentially damaging conditions. Some of these systems are as follows

### Alarms:

- High Temperature
- Low Oil Pressure
- Overcrank
- Overspeed
- Overvoltage
- Undervoltage
- Overload
- Underspeed
- RPM Sensor Loss
- Controller Fault
- Wiring Error
- Fuse Problem
- Stepper Overcurrent

### Warnings:

- Charger Warning
- Charger Missing AC
- Low Battery
- Battery Problem
- Exercise Set Error
- USB Warning
- Download Failure

The control panel contains a display which alerts the operator when a fault condition occurs. The above list is not all inclusive. For more information about alarms and control panel operation, see Section 3 [Operation](#).

**NOTE:** A warning will indicate a condition on the generator that should be addressed but will not shut the generator down. An alarm will shut the generator down to protect the system from any damage. In the event of an alarm, an owner can clear the alarm and restart the generator prior to contacting an Independent Authorized Servicing Dealer. If the intermittent issue occurs again, contact an independent Authorized Servicing Dealer.

## Emission Information

The engine used in this generator is not certified to United States EPA emission standards, or any other emission standards. Sale or use of this generator is not legal in the U.S. or any country which has emission standards that are applicable to this product.

## Fuel Requirements



**⚠ DANGER**

Explosion and Fire. Fuel and vapors are extremely flammable and explosive. Add fuel in a well ventilated area. Keep fire and spark away. Failure to do so will result in death or serious injury. (000105)

The engine has been fitted with a dual fuel carburetion system. The unit will run on natural gas or LP gas (vapor), but it has been factory set to run on natural gas. The fuel system will be configured for the available fuel source during installation.

Recommended fuels should have a BTU (joules) content of at least 1000 BTUs per cubic foot (37.26 megajoules per cubic meter) for natural gas, or at least 2500 BTUs per cubic foot (93.15 megajoules per cubic meter) for LP gas (vapor).

**NOTE:** If converting to LP gas from natural gas, a minimum LP tank size of 250 gallons (946 liters) is recommended. See the Installation Manual for complete procedures and details.

## Battery Requirements

Group 26R, 12V, minimum 540 CCA.

For proper battery maintenance procedures, see Section 4 [Maintenance](#).

## Battery Charger

The battery charger is integrated into the control panel module in all models. It operates as a “Smart Charger” which ensures output charging levels are safe and continuously optimized to promote maximum battery life.

## Engine Oil Requirements

For proper oil viscosity, see chart in [Figure 4-1](#).

## Replacement Parts

Description	8 kVA	10 & 13 kVA
26R Exide Battery	0H3421S	
Spark Plug	0E9368 (BPR6HS)	0E7585A (RC14YC4)
Oil Filter	070185E	
Air Filter	0E9371A	0J8478
Control Panel Fuse	0D7178T	
Transfer Switch Fuses	073590A	

## Accessories

Performance enhancing accessories are available for air-cooled generators.

Accessory	Description
Cold Weather Kit	Recommended in areas where temperatures fall below 32 °F (0 °C).
Scheduled Maintenance Kit	Includes all pieces necessary to perform maintenance on the generator along with oil recommendations.
Auxiliary Transfer Switch Lockout	Enables any of the transfer switches to completely lock out one large electrical load by tying into its control system.
Fascia Base Wrap	The fascia base wrap snaps together around the bottom of the new air-cooled generators. This offers a sleek, contoured appearance as well as offering protection from rodents and insects by covering the lifting holes located in the base. Requires use of the mounting pad shipped with the generator.
Touch-Up Paint Kit	Very important to maintain the look and integrity of the generator enclosure. This kit includes touch-up paint and instructions.
Wireless Local Monitor	Completely wireless and battery powered, the Wireless Local Monitor provides you with 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 foot (182.9 meter) line of sight communication.

**NOTE:** Contact an Independent Authorized Servicing Dealer for additional information on accessories.

## Section 3: Operation

### Site Prep Verification

It is important that the generator is installed in such a way that the airflow into and out of the generator is not impeded. Verify that all shrubs or tall grasses have been removed within 3 ft. (0.91 m) of the intake and discharge louvers on the sides of the enclosure. It is also important that the generator is not subject to water intrusion. Verify that all potential sources such as water sprinklers, roof run-off, rain gutter down spouts and sump pump discharges are directed away from the generator enclosure.

#### **⚠ 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)

Turn the generator OFF before performing maintenance. Remove 7.5 Amp fuse, T1 and T2 battery charge fuses, and disconnect battery cables to prevent accidental start up. Disconnect the NEGATIVE (-) cable first, then disconnect the POSITIVE (+) cable. When connecting the cables, connect the POSITIVE cable first, the NEGATIVE cable last.

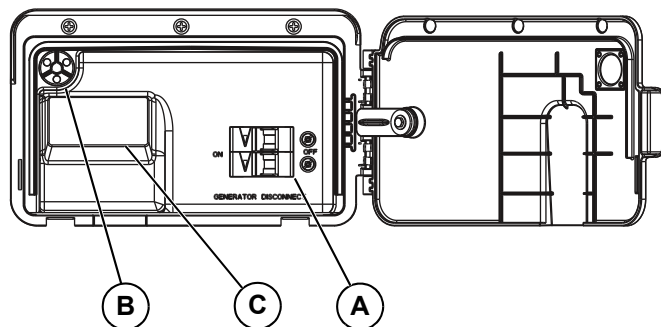
#### **⚠ WARNING**

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

(000182)

### Side Compartment

Local codes may require that the side compartment be locked. A hasp is provided so the owner/operator can secure the side compartment with a padlock. Check local codes for side compartment locking requirements.



001241

**Figure 3-1. Open Side Compartment**

### Main Circuit Breaker (Generator Disconnect)

This is a 2-pole breaker rated according to relevant specifications. See “A” in [Figure 3-1](#).

### LED Indicator Lights

See “B” in [Figure 3-1](#).

- Green LED “Ready” light is on when utility is present and the control panel button is in the AUTO position. This also indicates when the generator is running.
- Red LED “Alarm” light is on when the generator is OFF or a fault is detected. Contact an Independent Authorized Servicing Dealer.
- Yellow LED “Maintenance” light.

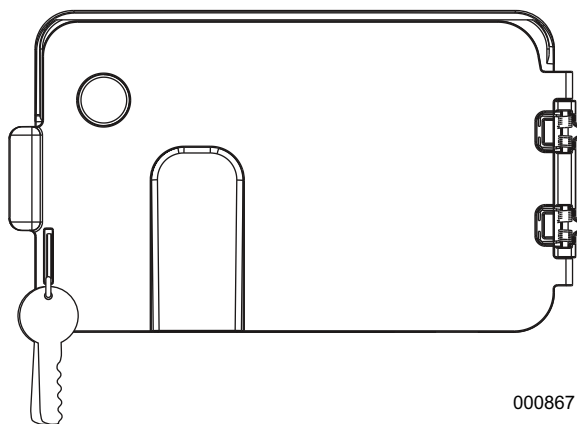
**NOTE:** Yellow LED may be on at the same time as either the Red or Green LED.

### Generator Enclosure

The lid is locked for shipping and remains locked while the generator is in normal operation. A set of keys is attached to the bottom left corner of the circuit breaker box door.

1. Cut the cable tie to remove the keys.
2. Use the keys to open the lid of the generator.

**NOTE:** The enclosed keys provided with this unit are intended for service personnel use only.



000867

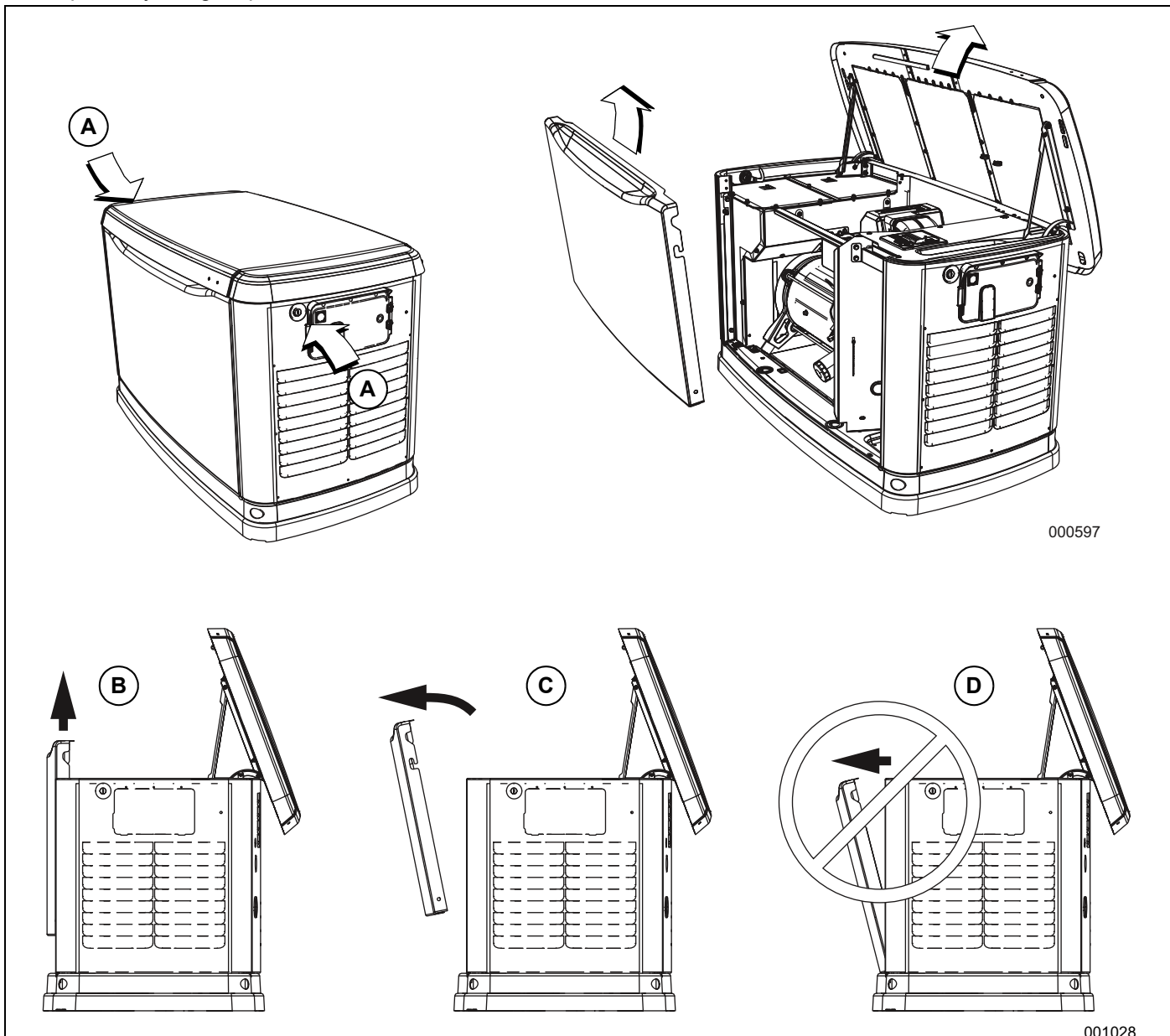
**Figure 3-2. Circuit Breaker Box and Keys (As Shipped)**

3. There are two locks securing the lid, one on each side (A in [Figure 3-3](#)). To properly open the lid, press down, on the lid, above the side lock and unlock the latch.
4. Repeat for the other side. If pressure is not applied from the top, the lid may appear stuck.

**NOTE:** Always verify that the side locks are unlocked before attempting to lift the lid.

5. Once the lid is open, remove the front access panel by lifting it up and out.

**NOTE:** Always lift the front access panel up before pulling away from enclosure (B and C in **Figure 3-3**). Do not pull the panel away from the enclosure before lifting up (D in **Figure 3-3**).



**Figure 3-3. Side Lock Location and Front Panel Removal**

**⚠ 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)

Before performing any maintenance on the generator, set to OFF, remove 7.5 Amp fuse, T1 and T2 battery charge fuses, and disconnect battery cables to prevent accidental start up. Disconnect the cable from the battery post indicated by a NEGATIVE, NEG or (–) first, then

remove the POSITIVE, POS or (+) cable. When reconnecting the cables, connect the POSITIVE cable first, the NEGATIVE cable last.

**⚠ WARNING**

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

(000182)

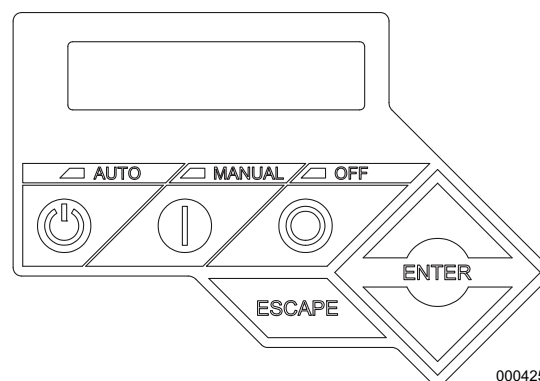
**NOTE:** The enclosed keys provided with this unit are intended for service personnel use only.

## Control Panel Interface

The control panel interface is located under the lid of the enclosure. Before attempting to lift the lid of the enclosure, verify that both left and right side locks are unlocked. To remove the front cover, lift the cover straight up to disengage the side hooks, then tilt and lift it away from the unit.

When closing the unit, ensure that both left and right side locks are securely locked.

**NOTE:** All appropriate panels must be in place during any operation of the generator. This includes operation by a servicing technician while conducting troubleshooting procedures.



**Figure 3-4. Generator Control Panel**

## Using the Auto/Off/Manual Buttons

Button	Description of Operation
Auto	Selecting this button activates fully automatic system operation. It also allows the unit to automatically start and exercise the generator according to the exercise timer (see <a href="#">Battery Charger</a> ).
Off	This button shuts down the engine and also prevents automatic operation of the unit.
Manual	This button will crank and start the generator. Transfer to standby power will not occur unless there is a utility failure.

**NOTE:** Damage caused by mis-wiring of the interconnect wires is not warrantable.

## Interface Menu Displays

### The LCD Display

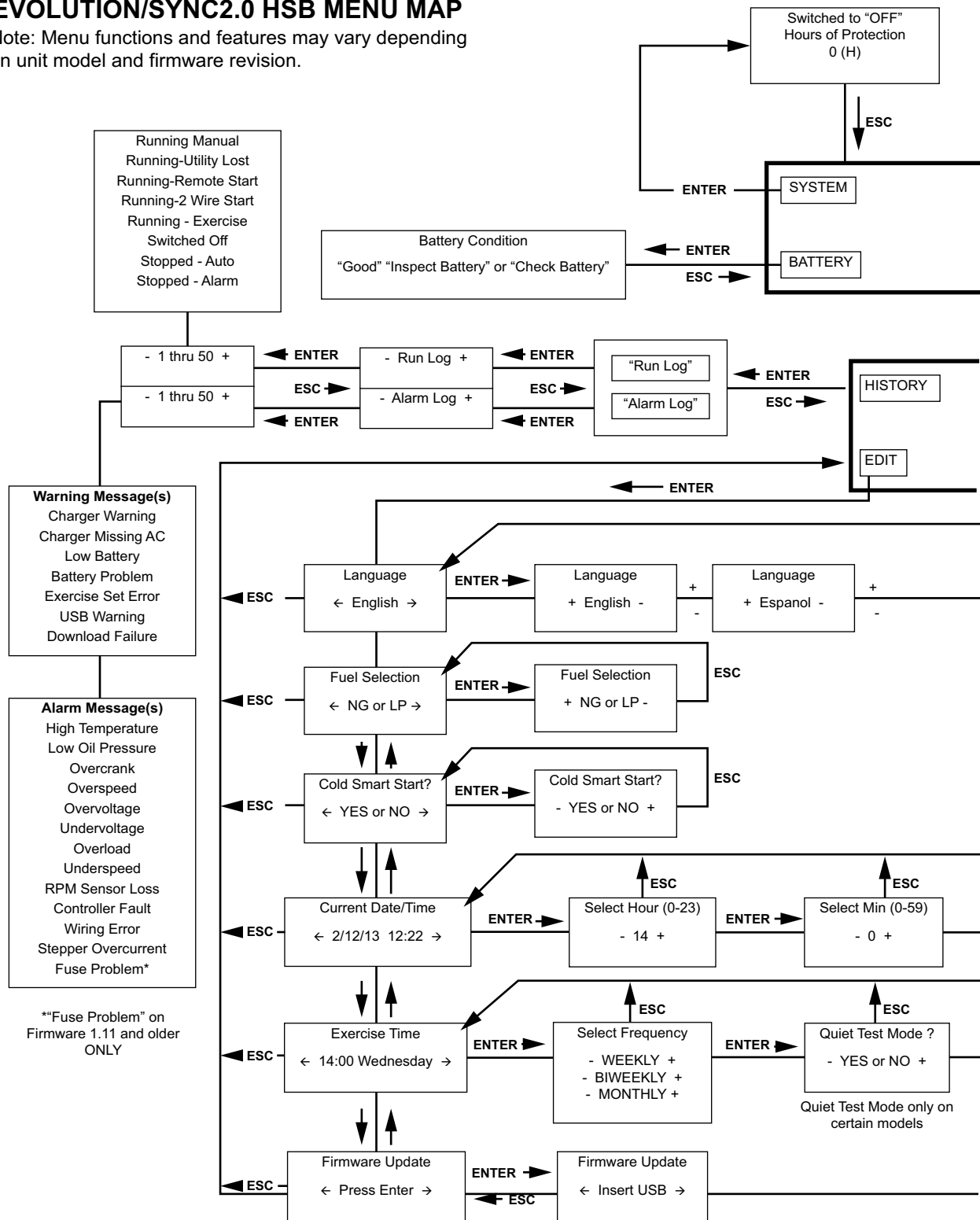
Feature	Description
HOME page	The default page which will be displayed if no buttons are pressed for 60 seconds. This page normally shows the current Status message and the current date and time. The highest priority active Alarm/Warning will be automatically posted on this page as well as flashing the backlight when such a condition is detected. In the case of multiple Alarms/Warnings, only the first message will be displayed. To clear an Alarm or Warning, press the OFF button and then press the ENTER key.
Display Backlight	Normally off. If the operator presses any button, the backlight will automatically light and remain on for 30 seconds.
MAIN MENU page	Allows the operator to navigate to all other pages or sub-menus by using the Arrows and Enter buttons. This page can be accessed at any time with several presses of the dedicated Escape button. Each press of the Escape button takes the operator to the previous menu until the MAIN MENU displays. This page contains information for—History; Status; Edit; Debug.

### Menu System Navigation

To get to the MENU, use the “Escape” button from any page. It may require pressing it many times before getting to the MENU page. Navigate to the desired menu by using the ↑/↓ buttons. When the desired menu is displayed and flashing, press the “Enter” button. See [Figure 3-5](#) and [Figure 3-6](#) Navigation Menu.

## EVOLUTION/SYNC2.0 HSB MENU MAP

Note: Menu functions and features may vary depending on unit model and firmware revision.



001479a

Figure 3-5. Navigation Menu (1 of 2)

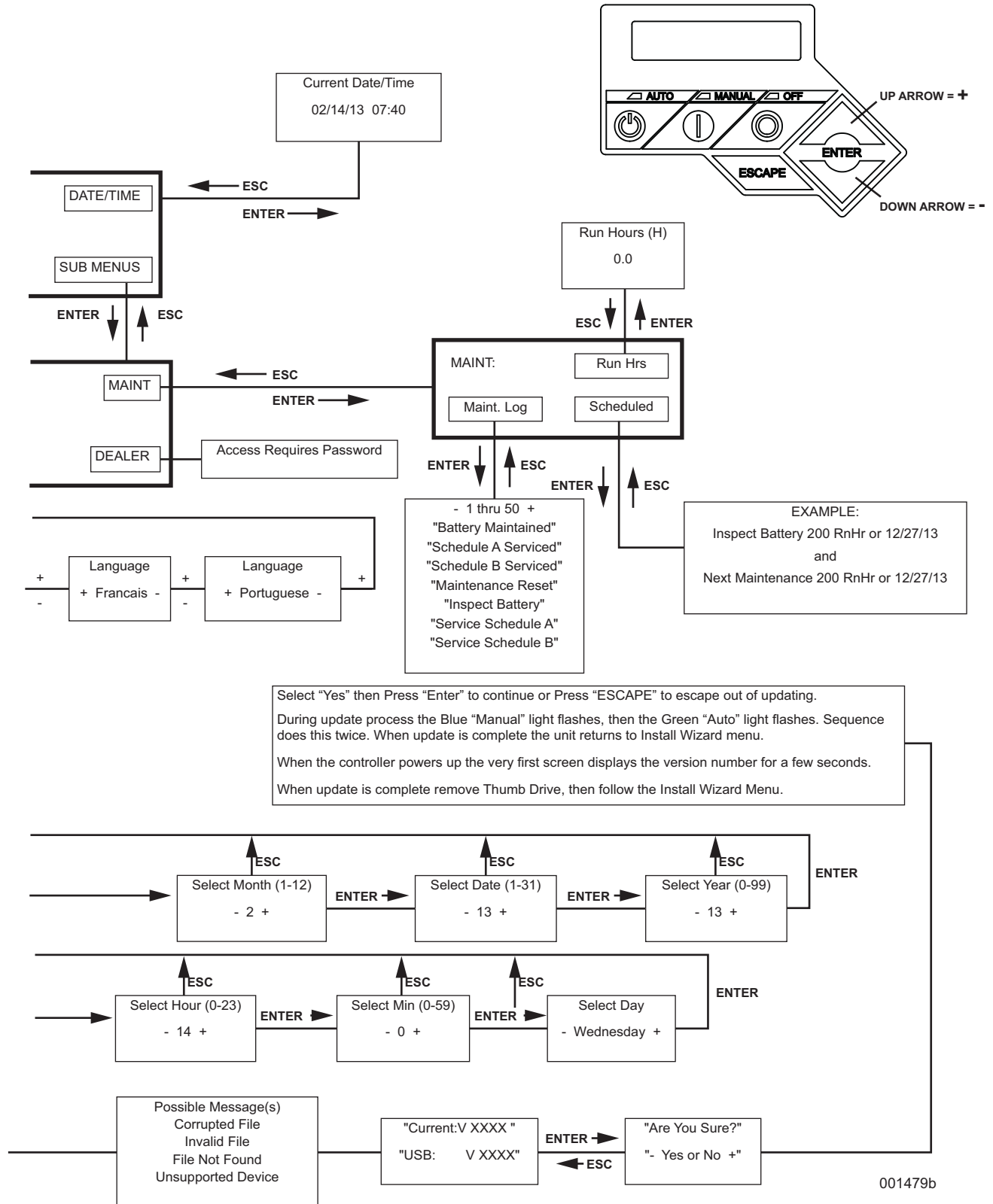


Figure 3-6. Navigation Menu (2 of 2)

## Battery Charger

**NOTE:** The battery charger is integrated into the control module in all models.

The battery charger operates as a “Smart Charger” that ensures:

- Output is continually optimized to promote maximum battery life.
- Charging levels are safe.

**NOTE:** A warning is displayed on the LCD when the battery needs service.

## Manual Transfer Operation



**⚠ DANGER**

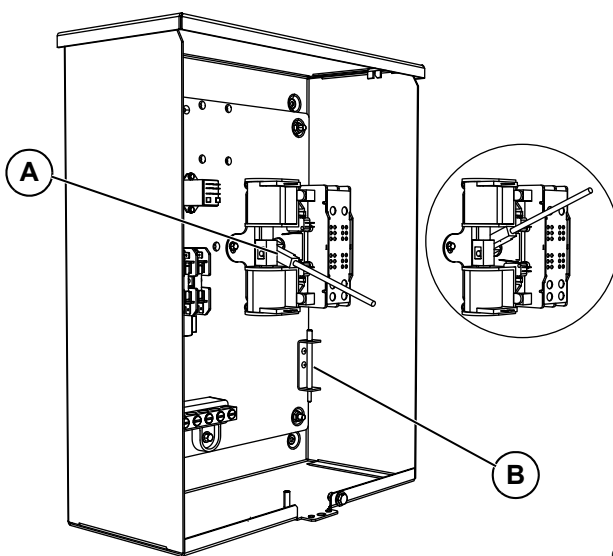
Electrocution. Do not manually transfer under load. Disconnect transfer switch from all power sources prior to manual transfer. Failure to do so will result in death or serious injury, and equipment damage. (000132)

Prior to automatic operation, manually exercise the transfer switch to verify that there is no interference with proper operation of the mechanism. Manual operation of the transfer switch is required if electronic operation should fail.

### Transfer to Generator Power Source

1. Verify that the generator is in the OFF mode.
2. Set the main circuit breaker (Generator Disconnect) to OFF or OPEN.

3. Turn off the utility power supply to the transfer switch using the means provided (such as a utility main line circuit breaker).
4. Use the manual transfer handle (A in [Figure 3-7](#)) inside the transfer switch to move the main contacts to the STANDBY position (loads connected to the standby power source).
5. To crank and start the engine, press the control panel MANUAL button.
6. Allow the engine to stabilize and warm up for a few minutes.
7. Set the main circuit breaker (Generator Disconnect) to ON or CLOSED. The standby power source now powers the loads.



000228

**Figure 3-7. Manual Transfer Switch Operation**

MANUAL	<ul style="list-style-type: none"> <li>• Will not transfer to generator if utility is present.</li> <li>• Will transfer to generator if utility fails (below 65% of nominal for five consecutive seconds).</li> <li>• Will transfer back when utility returns for 15 consecutive seconds. The engine will continue to run until removed from the MANUAL mode.</li> </ul>
AUTO	<ul style="list-style-type: none"> <li>• Will start and run if utility fails for five consecutive seconds. (factory default)</li> <li>• Will start a 5 second engine warm-up timer (or 30 seconds; refer to <a href="#">Cold Smart Start</a>).               <ul style="list-style-type: none"> <li>–Will not transfer if utility subsequently returns.</li> <li>–Will transfer to generator if utility is not present.</li> </ul> </li> <li>• Will transfer back to utility once utility returns (above 80% of nominal) for 15 seconds.</li> <li>• Will not transfer back to utility unless utility returns. The generator will shut down if the OFF button is pressed or a shutdown alarm is present.</li> <li>• Once utility power is returned, the generator will shut down after one minute cool-down time.</li> </ul>
EXERCISE	<ul style="list-style-type: none"> <li>• Will not exercise if generator is already running in either AUTO or MANUAL mode.</li> <li>• During exercise, the controller will only transfer if utility fails during exercise for five seconds (or 30 seconds; refer to <a href="#">Cold Smart Start</a>), and will switch to AUTO.</li> </ul>

## Transfer Back to Utility Power Source

When utility power has been restored, transfer back to utility source and shut down the generator. To manually transfer back to utility power and shut down the generator:

1. Set the Main Circuit Breaker (Generator Disconnect) to OFF or OPEN.
2. Allow the engine to run for two minutes at no-load to stabilize the internal temperatures.
3. Press the control panel OFF button. The engine should shut down.
4. Ensure that utility power supply to the transfer switch is turned off.
5. Use the manual transfer handle (A in [Figure 3-7](#)) inside the transfer switch to move the main contacts back to the UTILITY position (loads connected to the utility power source).
6. Turn on the utility power supply to the transfer switch using the means provided.
7. Press the control panel AUTO button.

## Automatic Transfer Operation

To select automatic operation:

1. Make sure the transfer switch main contacts are set to the UTILITY position (loads connected to the utility power source).
2. Be sure that normal UTILITY power source voltage is available to transfer switch terminal lugs N1 and N2.
3. Press the AUTO button on the control panel interface.
4. Set the main circuit breaker (Generator Disconnect) to the ON (Closed) position.

With these steps complete, the generator will start automatically when utility source voltage drops below a preset level. After the unit starts, loads are transferred to the standby power source.

## Automatic Sequence of Operation

### Utility Failure

With the generator set to AUTO, when utility fails (below 65% of nominal) a five second (dealer programmable) line interrupt delay time is started. If utility is still gone when the timer expires, the engine will crank and start. Once started, a five second engine warm-up timer will be initiated (or a 30 second warm-up timer; refer to [Cold Smart Start](#)). When the warm-up time expires, the controller will transfer the load to the generator. If the utility power is restored (above 80% nominal) at any time from the initiation of the engine start until the generator is ready to

accept load (five second warm-up time has not elapsed), the controller will complete the start cycle and run the generator through its normal cool down cycle, however, the load will remain on the utility source.

### Cranking

The system will control the cyclic cranking as follows:

- Five cranking cycles as follows: 16 second crank, seven (7) second rest, 16 second crank, seven (7) second rest, followed by three (3) additional cycles of seven (7) second cranks followed by seven (7) second rests.

### Cold Smart Start

The Cold Smart Start feature can be enabled in the EDIT menu. With Cold Smart Start enabled, the generator will monitor ambient temperature and the warm-up delay will be adjusted based on prevailing conditions.

On a startup in AUTO mode, if the ambient temperature is below a fixed temperature (based on model) the generator will warm up for 30 seconds. This allows the engine to warm before a load is applied. If the ambient temperature is at or above the fixed temperature, the generator will startup with the normal warm-up delay of 5 seconds.

When the generator engine is started, a check for proper output voltage build up will be performed.

If some condition impedes normal voltage creation, such as frost crystals or dust/dirt prevent a good electrical connection, the start sequence will be interrupted so that a cleaning cycle of the internal electrical connections can be attempted.

The cleaning cycle is an extended “Warming Up” period which lasts for several minutes while the normal generator voltage output is determined to be low. During this cycle, the generator controller will display the “Warming Up” on its display screen.

If the cleaning cycle fails to clear the obstruction, the generator controller display will show the “Under Voltage” message.

After several minutes, the alarm message can be cleared, and a restart of the generator attempted.

If the problem persists, make no further attempts to start. Contact an Independent Authorized Service Dealer.

### Load Transfer

The transfer of load when the generator is running is dependent upon the operating mode.

## Shutting Generator Down While Under Load

**Important!** To turn the generator off during utility outages to perform maintenance, or conserve fuel, follow these steps:

**To turn the generator OFF (while running in AUTO and online):**

1. Turn the main utility disconnect OFF.
2. Turn the main line circuit breaker (MLCB) on the generator to OFF (OPEN).
3. Turn the generator OFF.

**To turn the generator back ON:**

1. Put the generator back into AUTO and allow to start and warm-up for a few minutes.
2. Set the MLCB on the generator to ON.

The system will now be operating in automatic mode. The main utility disconnect can be turned ON (CLOSED). To shut the unit off, this complete process must be repeated.

## Section 4: Maintenance

### Maintenance

Regular maintenance will improve performance and extend engine/equipment life. Generac Power Systems, Inc. recommends that all maintenance work be performed by an Independent Authorized Service Dealer (IASD). Regular maintenance, replacement or repair of the emissions control devices and systems may be performed by any repair shop or person of the owner's choosing. However, to obtain emissions control warranty service free of charge, the work must be performed by an IASD. See the emissions warranty.

#### **WARNING**

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

### Performing Scheduled Maintenance

It is important to perform maintenance as specified in the [Service Maintenance Schedule](#) for proper generator operation. Service and repairs may be performed by any qualified service person or repair shop.

Engine oil and filter must be changed and valve clearance adjusted after the first 25 hours of operation.

The controller will prompt for Schedule A or Schedule B maintenance to be performed. Schedule A maintenance consists of the oil, oil filter and tune-up. Schedule B maintenance includes the oil, oil filter, tune-up, air cleaner, spark plug(s) and valve clearance.

**NOTE:** Since most maintenance alerts will occur at the same time (most have two year intervals), only one will appear on the control panel display at any one time. Once the first alert is cleared, the next active alert will be displayed.

### Before Servicing

Follow the steps below prior to inspecting, maintaining, or servicing this unit:

1. Allow the generator to cool thoroughly before removing battery connections for maintenance or other service.
2. Unlock left and right side locks. Open lid.  
**NOTE:** For best results, press down on lid directly above each side lock, and while holding the lid down, use key to unlock latches.
3. Press OFF on the control pad. A red LED illuminates to confirm that the system is in the OFF mode.
4. Move the Generator Disconnect Circuit Breaker switch to the OFF (Open) position.
5. Pull up rubber flap covering fuse holder and remove 7.5 Amp fuse.
6. Remove T1 fuse from transfer switch.

### Maintenance Kits

To maintain the warranty, genuine Generac replacement parts **MUST** be used, including Generac oil kits (which include both an oil filter and an air filter). Generac oil kits can be obtained through an Independent Authorized Dealer or purchased on-line. To purchase on-line, access the maintenance kits page through [www.generac.com](http://www.generac.com). Follow the prompts to enter delivery information and complete the purchase.

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

## Service Schedule

**Table 4-1. Service Maintenance Schedule**

Service	Daily If Running Continuously or Before Each Use	Every Year	Schedule A Every Two Years or 200 Hours	Schedule B Every Four Years or 400 Hours
Check Enclosure Louvers for Dirt and Debris *	●			
Check Lines and Connections for Fuel or Oil Leaks	●			
Check Engine Oil Level	●			
Check for Water Intrusion **		●		
Check Battery Condition, Electrolyte Level, and State of Charge		●	●	●
Replace Engine Oil and Oil Filter †			●	●
Replace Engine Air Filter				●
Check Gap / Replace Spark Plugs				●
Inspect / Adjust Valve Clearance ‡				●
<p><b>Contact the nearest independent Authorized Service Dealer for assistance if necessary.</b></p> <p>* Remove any shrubs or tall grasses which have grown within 3 ft. (0.91m) of the intake and discharge louvers on the sides of the enclosure. Clean any debris (dirt, grass clippings, etc.) which have accumulated inside the enclosure.</p> <p>** Verify that all sources of potential water intrusion such as water sprinklers, roof run-off, rain gutter down spouts and sump pump discharges are directed away from the generator enclosure.</p> <p>† Change engine oil and filter after the first 25 hours of operation. In cold weather conditions (ambient below 40 °F / 4.4 °C), or if unit is operated continuously in hot weather conditions (ambient above 85 °F / 29.4 °C), change engine oil and filter every year or 100 hours of operation.</p> <p>‡ Check / adjust valve clearance after the first 25 hours of operation.</p>				

## Maintenance Log

### Battery inspection and charge check

Dates Performed:


### Oil, oil filter, air filter and spark plug replacement

Dates Performed:


### Valve Adjustment

Dates Performed:


## Checking Engine Oil Level



### ⚠ WARNING

Risk of burns. Allow engine to cool before draining oil or coolant. Failure to do so could result in death or serious injury.

(000139)

### ⚠ WARNING

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

(000210)

### ⚠ 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)

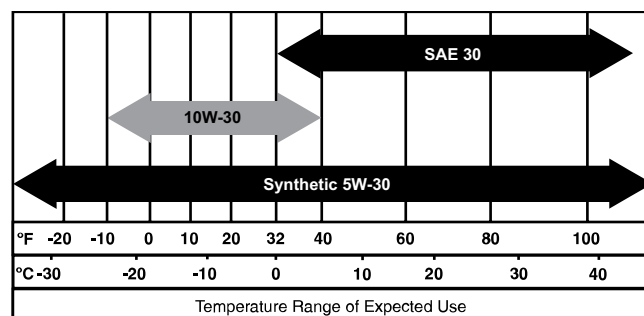
When power outages necessitate running the generator for extended periods, the oil level should be checked daily. To check the engine oil level:

1. If the generator is running during a utility outage, first turn OFF all associated loads running in the residence using the electrical panel main disconnect. Then, turn the generator main circuit breaker to the OFF position.
2. Press the control panel OFF button. Wait five minutes.
3. Remove the dipstick and wipe it dry with a clean cloth.
4. Completely insert the dipstick and again remove it.
5. Observe the oil level. The level should be at the "FULL" mark on the dipstick.
6. If necessary, remove the oil fill cap and add oil to the engine until the level reaches the "FULL" mark and reinsert the dipstick and fill cap.
7. Press the control panel AUTO button.
8. If the generator was running during a utility outage, first turn the main circuit breaker to the ON position. Then, turn ON the needed loads in the residence.

## Engine Oil Recommendations

To maintain the product warranty, the engine oil should be serviced in accordance with the recommendations of this manual. For your convenience, Generac Maintenance Kits are available that include engine oil, oil filter, air filter, spark plug(s), a shop towel and funnel. These kits can be obtained from an Independent Authorized Service Dealer (IASD).

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



000399

**Figure 4-1. Recommended Oil Based on Temperature**

- SAE 30 above 32 °F (0 °C)
- SAE 10W-30 between 40 ° and -10 °F (4 ° and -23 °C)
- Synthetic SAE 5W-30 for all temperature ranges

### ⚠ CAUTION

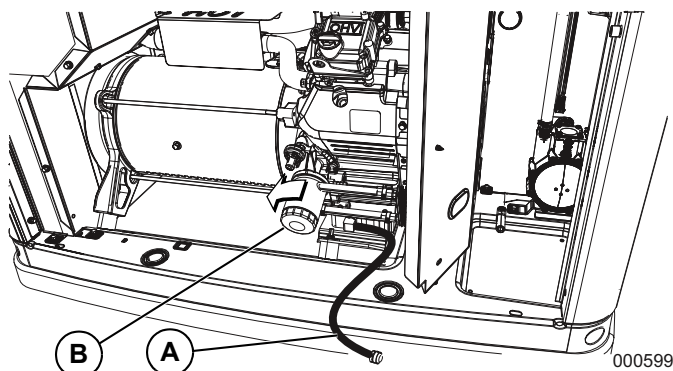
Engine damage. Verify proper type and quantity of engine oil prior to starting engine. Failure to do so could result in engine damage.

(000135)

## Changing the Oil and Oil Filter

1. Start the engine by pressing the MANUAL button on the control panel and allow the engine to run until it is thoroughly warmed up. Then, press the Control Panel OFF button to shut down the engine.
2. A few minutes after the engine shuts OFF, when it has cooled slightly, lift the lid and remove the front panel. Pull the oil drain hose free of its retaining clip. See (A) in [Figure 4-2](#). Remove the cap from the hose and drain the oil into a suitable container.
3. After the oil has drained, replace the cap onto the end of the oil drain hose. Reposition and secure the hose with the retaining clip.

4. With the oil drained, remove the old oil filter by turning it counterclockwise. For filter location, see (B) in [Figure 4-2](#).
5. Apply a light coating of clean engine oil to the gasket of the new filter.
6. Screw the new filter on by hand until its gasket lightly contacts the oil filter adapter. Then, tighten the filter an additional 3/4 to one full turn.
7. Refill the engine with the proper recommended oil. For recommended oil, see [Figure 4-1](#).
8. Start the engine, run for one minute, and check for leaks.
9. Shut down the engine and recheck the oil level. Add oil as needed. **DO NOT OVERFILL.**
10. Re-insert dipstick and/or reattach fill cap.
11. Press the Control Panel AUTO button.
12. Dispose of the used oil and filter at a proper collection center.



**Figure 4-2. Oil Filter and Drain Location**

## Changing the Engine Air Filter

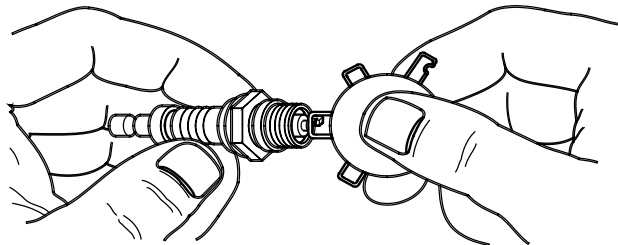
1. With the generator shut down, lift the lid and remove the front panel.
2. Remove the cover clips and air cleaner cover.
3. Pull out the old air filter and discard.
4. Thoroughly clean the air cleaner enclosure of any dust or debris.
5. Install a new air cleaner.
6. Install the air cleaner cover and cover clips.

## Spark Plugs

Reset the spark plug(s) gap or replace the spark plug(s) as necessary:

1. With the generator shut down, lift the lid and remove the front panel.
2. Clean the area around the base of the spark plug(s) to keep dirt and debris out of the engine.
3. Remove the spark plug(s) and check the condition. Install a new plug(s) if the old plug is worn or if reuse is questionable.

4. Clean the plug(s) by scraping or washing with a wire brush and commercial solvent. Do not blast the plug(s) to clean.
5. See [Figure 4-3](#). Check the spark plug gap using a wire feeler gauge and compare with the figure provided in Section 2—[Specifications](#). If the gap is out of specification, replace the spark plug. See Section 2—[Replacement Parts](#).



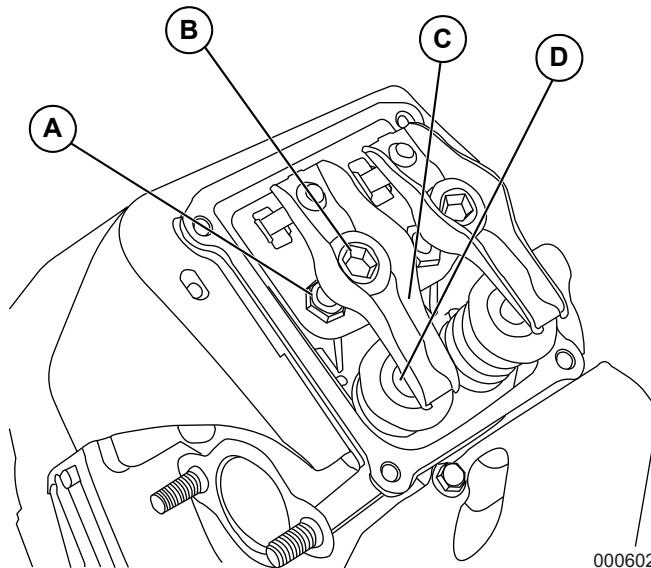
000211

**Figure 4-3. Spark Plug Gap Adjustment**

## Valve Clearance Adjustment

Check the valve clearance after the first 25 hours of operation, then after 400 hour intervals. Adjust if necessary.

**Important:** Please contact a dealer for service assistance. This is a very important step to ensure longest life for the engine.



000602

**Figure 4-4. Valve Clearance Adjustment**

To check valve clearance:

- The engine should be cool before checking. Adjustment is not needed if valve clearance is within the specification in Section 2—[Engine](#).
- Remove spark plug wires and position wires away from plugs.
- Remove spark plugs.

- Make sure the piston is at top dead center (TDC) of its compression stroke (both valves closed). To get the piston at TDC, remove the intake screen at the front of the engine to gain access to the flywheel nut. Use a large socket and socket wrench to rotate the nut and hence the engine in a clockwise direction. While watching the piston through the spark plug hole. The piston should move up and down. The piston is at TDC when it is at its highest point of travel.

To adjust valve clearance (see [Figure 4-4](#)):

- The engine should be cool before adjustment.
- Remove spark plug wires and position wires away from plugs.
- Remove spark plugs.
- Remove the four screws attaching the valve cover. Remove and discard gasket.
- Loosen the rocker jam nut (A). Using a 10mm Allen wrench (530 cc engine) or a 13mm Allen wrench (990 cc engines).
- Turn the pivot ball stud (B) while checking clearance between the rocker arm (C) and the valve stem (D) with a feeler gauge. Correct clearance is in the specification in Section 2— [Engine](#).

**NOTE:** Hold the rocker arm jam nut in place as the pivot ball stud is turned.

- When valve clearance is correct, hold the pivot ball stud in place with the Allen wrench and tighten the rocker arm jam nut. Tighten the jam nut to 174 **in-lbs** (19.68 Nm) torque. After tightening the jam nut, recheck valve clearance to make sure it did not change.
- Install new valve cover gasket.
- Install the valve cover. Tighten fasteners in a cross pattern, torquing to 48 **in-lbs** (5.4 Nm).

**NOTE:** Start all four screws before tightening or it will not be possible to get all the screws in place. Make sure the valve cover gasket is in place.

- Install spark plugs.
- Re-attach the spark plug wire to the spark plug.
- Repeat the process for the other cylinder, if necessary.

## Battery Maintenance

The battery should be regularly inspected per the [Service Schedule](#):

1. With the generator shut down, lift the lid and remove the front panel.
2. Inspect the battery posts and cables for tightness and corrosion. Tighten and clean as necessary.
3. Check the battery fluid level of unsealed batteries, and, if necessary, fill with distilled water only. DO NOT use tap water. Also, have the dealer or a

qualified Service Technician check the state of charge and condition.



### ⚠ 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

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)

Strictly observe the following precautions when working on batteries:

- Remove the 7.5 Amp fuse from the generator control panel.
- Remove all jewelry—watches, rings, metal objects, etc.
- Use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not place tools or metallic objects on top of the battery.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.
- Wear full eye protection and protective clothing.
- Where electrolyte contacts the skin, wash it off immediately with water.
- Where electrolyte contacts the eyes, flush thoroughly and immediately with water and seek medical attention.
- Wash down spilled electrolyte with an acid neutralizing agent. A common practice is to use a solution of one pound (500 grams) bicarbonate of soda to one gallon (four liters) of water. The bicarbonate of soda solution is

to be added until the evidence of reaction (foaming) has ceased. The resulting liquid is to be flushed with water and the area dried.

- DO NOT smoke when near the battery.
- DO NOT cause flame or spark in the battery area.
- Discharge static electricity from the body before touching the battery by first touching a grounded metal surface.

## Attention After Submersion

If the generator has been submerged in water, it **MUST NOT** be started and operated. Following any submersion in water, have an Independent Authorized Service Dealer thoroughly clean, dry, and inspect the generator. If the structure (home) has been flooded, it should be inspected by a certified electrician to prevent electrical problems during generator operation or when utility power is returned.

## Corrosion Protection

Inspect the unit regularly for visible signs of corrosion. Inspect all metal components of the generator; for example: base frame, enclosure, brackets, alternator can, the entire fuel system (inside and outside of the generator) and fastener locations. If there is corrosion found on generator components (e.g. regulator, engine/alternator mounts, fuel plenum, etc.), replace parts as necessary.

Periodically wash and wax the enclosure using automotive type products. Do not spray the unit with a hose or power washer. Use warm, soapy water and a soft cloth. Frequent washing is recommended in salt water/coastal areas. Spray engine linkages with a light oil such as WD-40.

## Out of Service Procedure

### Removal From Service

If the generator cannot be exercised every seven days and will be out of service longer than 90 days, prepare the generator for storage:

1. Start the engine and let it warm up.
2. Close the fuel shutoff valve in the fuel supply line and allow the unit to shut down.
3. Once the unit has shut down, set the generator main circuit breaker (Generator Disconnect) to OFF (OPEN).
4. Turn off the utility power to the transfer switch.
5. Remove the 7.5 Amp fuse from the generator's control panel.
6. Disconnect the battery cables. Remove negative cable first.
7. Remove battery charger AC input T1/Neutral cable (has white sleeve) at controller.
8. While the engine is still warm, drain the oil completely, and then refill the crankcase with oil.

9. Attach a tag to the engine indicating the viscosity and classification of the new oil in the crankcase.
10. Remove the spark plug(s) and spray a fogging agent into the spark plug(s) threaded openings. Reinstall and tighten the spark plug(s).
11. Remove the battery and store it in a cool, dry room on a wooden board.
12. Clean and wipe down the entire generator.

### Return to Service

To return the unit to service after storage:

1. Verify that utility power is turned off.
2. Check the tag on the engine for oil viscosity and classification. If necessary, drain and refill with proper oil.
3. Check the state of the battery. Fill all cells of unsealed batteries to the proper level with distilled water. DO NOT use tap water. Recharge the battery to 100% state of charge. If defective, replace the battery.
4. Clean and wipe down the entire generator.
5. Make sure the 7.5 Amp fuse is removed from the generator Control Panel.
6. Reconnect the battery. Observe battery polarity. Damage may occur if the battery is connected incorrectly. Install positive cable first.
7. Reconnect the battery charger AC input T1/Neutral cable (has white sleeve) at controller.
8. Open the fuel shutoff valve.
9. Insert the 7.5 Amp fuse into the generator control panel.
10. Start the unit by pressing the MANUAL button. Allow the unit to warm up for a few minutes.
11. Stop the unit by pressing the control panel OFF button.
12. Turn on the utility power to the transfer switch.
13. Set the control panel to AUTO.

The generator is ready for service.

**NOTE:** When a battery is dead or has been disconnected, the exercise timer and current date and time must be reset.

# Section 5: Troubleshooting / Quick Reference Guide

## Troubleshooting

**Table 5-1. Troubleshooting**

Problem	Cause	Correction
Engine will not crank.	<ol style="list-style-type: none"> <li>1. Fuse blown.</li> <li>2. Loose, corroded or defective battery cables.</li> <li>3. Defective starter contact.</li> <li>4. Defective starter motor.</li> <li>5. Dead battery.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct short circuit condition by replacing 7.5 Amp fuse in generator control panel.</li> <li>2. Tighten, clean or replace as necessary.*</li> <li>3. *See #2.</li> <li>4. *See #2.</li> <li>5. Charge or replace battery.</li> </ol>
Engine cranks but will not start.	<ol style="list-style-type: none"> <li>1. Out of fuel.</li> <li>2. Defective fuel solenoid (FS).</li> <li>3. Open Wire 14 from engine control board.</li> <li>4. Defective spark plug(s).</li> <li>5. Valve clearance out of adjustment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replenish fuel / Turn on fuel valve.</li> <li>2. *</li> <li>3. *</li> <li>4. Clean or replace plug(s).</li> <li>5. Reset valve clearance.</li> </ol>
Engine starts hard and runs rough.	<ol style="list-style-type: none"> <li>1. Air cleaner plugged or damaged.</li> <li>2. Defective spark plug(s).</li> <li>3. Fuel pressure incorrect.</li> <li>4. Fuel selector in wrong position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check / replace air cleaner.</li> <li>2. Clean or replace spark plug.</li> <li>3. Confirm fuel pressure to regulator is 10–12 in. water column (19–22 mm mercury) for LP, and 3.5–7 in. water column (9–13 mm mercury) for natural gas.</li> <li>4. Turn fuel conversion valve to correct position.</li> </ol>
Generator is set to OFF, but the engine continues to run.	<ol style="list-style-type: none"> <li>1. Controller wired incorrectly</li> <li>2. Defective control board.</li> </ol>	<ol style="list-style-type: none"> <li>1. *</li> <li>2. *</li> </ol>
No AC output from generator.	<ol style="list-style-type: none"> <li>1. Main line circuit breaker is in the OFF (or OPEN) position.</li> <li>2. Generator internal failure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset circuit breaker to ON (or CLOSED).</li> <li>2. *</li> </ol>
No transfer to standby after utility source failure.	<ol style="list-style-type: none"> <li>1. Main line circuit breaker is in the OFF (or OPEN) position.</li> <li>2. Defective transfer switch coil.</li> <li>3. Defective transfer relay.</li> <li>4. Transfer relay circuit open.</li> <li>5. Defective control logic board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset circuit breaker to ON (or CLOSED).</li> <li>2. *</li> <li>3. *</li> <li>4. *</li> <li>5. *</li> </ol>
Unit consumes large amounts of oil.	<ol style="list-style-type: none"> <li>1. Engine overfilled with oil.</li> <li>2. Engine breather defective.</li> <li>3. Improper type or viscosity of oil.</li> <li>4. Damaged gasket, seal or hose.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust oil to proper level.</li> <li>2. *</li> <li>3. See <a href="#">Engine Oil Requirements</a>.</li> <li>4. Check for oil leaks.</li> </ol>
* Contact an Independent Authorized Service Dealer for assistance.		

# Quick Reference Guide

**Table 5-2. Quick Reference Guide**

Active Alarm	LED	Problem	Things to Check	Solution
NONE	GREEN	Unit running in AUTO but no power in house.	Check MLCB.	Check if the MLCB is in the ON position. If it is in the ON position, contact an Independent Authorized Servicing Dealer.
HIGH TEMPERATURE	RED	Unit shuts down during operation.	Check the LEDs / Screen for alarms.	Check ventilation around the generator, intake, exhaust and rear of generator. If no obstruction, contact an Independent Authorized Servicing Dealer.
OVERLOAD REMOVE LOAD	RED	Unit shuts down during operation.	Check the LEDs / Screen for alarms.	Clear alarm and remove household loads from the generator. Put back in AUTO and restart.
RPM SENSE LOSS	RED	Unit was running and shuts down, attempts to restart.	Check the LEDs / Screen for alarms.	Clear alarm and remove household loads from the generator. Put back in AUTO and restart. If generator does not start, contact an Independent Authorized Servicing Dealer.
NONE	GREEN	Unit will not start in AUTO with utility loss.	Check screen for start delay countdown.	If the start up delay is greater than expected, contact an Independent Authorized Servicing Dealer to adjust from 2 to 1500 seconds.
LOW OIL PRESSURE	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Check oil level / add oil; see <a href="#">Checking Engine Oil Level</a> . If oil level is correct, contact an Independent Authorized Servicing Dealer.
RPM SENSE LOSS	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Clear alarm. Using the control panel, check the battery by navigating to the BATTERY MENU option from the MAIN MENU. If it states battery is GOOD, contact an Independent Authorized Servicing Dealer. If it states CHECK BATTERY, replace the battery.
OVERCRANK	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Check if fuel line shutoff valve is in the ON position. Clear alarm. Attempt to start the unit in MANUAL. If it does not start, or starts and runs rough, contact an Independent Authorized Servicing Dealer.
LOW VOLTS REMOVE LOAD	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Clear alarm and remove household loads from the generator. Put back in AUTO and restart.
FUSE PROBLEM	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Check the 7.5amp fuse. If it is bad, replace it with an ATO 7.5Amp fuse. If not, contact an Independent Authorized Servicing Dealer.
OVERSPEED	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Contact an Independent Authorized Servicing Dealer.
UNDERVOLTAGE	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Contact an Independent Authorized Servicing Dealer.

**Table 5-2. Quick Reference Guide (Continued)**

<b>Active Alarm</b>	<b>LED</b>	<b>Problem</b>	<b>Things to Check</b>	<b>Solution</b>
UNDERSPEED	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Contact an Independent Authorized Servicing Dealer.
STEPPER OVERCURRENT	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Contact an Independent Authorized Servicing Dealer.
MISWIRE	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Contact an Independent Authorized Servicing Dealer.
OVERVOLTAGE	RED	Unit will not start in AUTO with utility loss.	Check the LEDs / Screen for alarms.	Contact an Independent Authorized Servicing Dealer.
LOW BATTERY	YELLOW	Yellow LED illuminated in any state.	Check the screen for additional information.	Clear alarm. Using the control panel, check the battery by navigating to the BATTERY MENU option from the MAIN MENU. If it states battery is GOOD, contact an Independent Authorized Servicing Dealer. If it states CHECK BATTERY, replace the battery.
BATTERY PROBLEM	YELLOW	Yellow LED illuminated in any state.	Check the screen for additional information.	Contact an Independent Authorized Servicing Dealer.
CHARGER WARNING	YELLOW	Yellow LED illuminated in any state.	Check the screen for additional information.	Contact an Independent Authorized Servicing Dealer.
SERVICE A	YELLOW	Yellow LED illuminated in any state.	Check the screen for additional information.	Perform SERVICE A maintenance. Press ENTER to clear.
SERVICE B	YELLOW	Yellow LED illuminated in any state.	Check the screen for additional information.	Perform SERVICE B maintenance. Press ENTER to clear.
INSPECT BATTERY	YELLOW	Yellow LED illuminated in any state.	Check the screen for additional information.	Inspect Battery. Press ENTER to clear.

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Generac Power Systems, Inc.  
S45 W29290 Hwy. 59  
Waukesha, WI 53189  
1-888-GENERAC (1-888-436-3722)  
[generac.com](http://generac.com)