

Owner's Manual *For* *Australian 50 Hz Air-cooled Generators*

⚠ DANGER!



ASPHYXIATION. RUNNING ENGINES PRODUCE CARBON MONOXIDE, A COLORLESS, ODORLESS, POISONOUS GAS. CARBON MONOXIDE, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.

⚠ 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.



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.

This manual should remain with the unit.

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.

Important!: To register your product, go to: register.generac.com

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 Section 2 General Information. The unit has a label plate affixed to the inside partition, to the left of the control panel console as shown in Figures 2-1, 2-2, and 2-3. For directions on how to open the top lid and remove the front panel, see Section 3 Operation.

When contacting an 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 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 Authorized Service Dealer for assistance. Authorized service technicians are factory-trained and are capable of handling all service needs.

To find your Local AUTHORIZED SERVICE DEALER

AUTHORIZED SERVICE DEALER LOCATION

For customer support please contact:

All Power - Australia
www.allpower.com.au

All Power - New Zealand
www.allpower.co.nz

Table of Contents

Section 1 Safety Rules & General Information

1.1 Introduction	1
1.1.1 Read This Manual Thoroughly	1
1.1.2 How to Obtain Service	1
1.2 Safety Rules	1
1.2.1 General Hazards	2
1.2.2 Exhaust Hazards	2
1.2.3 Electrical Hazards	3
1.2.4 Fire Hazards	3
1.2.5 Explosion Hazards	3

Section 2 General Information

2.1 The Generator	5
2.2 Protection Systems	6
2.3 Emission Information	6
2.4 Specifications	6
2.4.1 Generator	6
2.4.2 Engine	7
2.5 Fuel Requirements	7
2.6 Battery Requirements	7
2.7 Battery Charger	7
2.8 Engine Oil Requirements	7
2.9 Accessories	8

Section 3 Operation

3.1 Control Panel Interface	9
3.2 Using the Auto/Off/Manual Buttons	10
3.3 Interface Menu Displays	10
3.3.1 Menu System Navigation	10
3.4 Automatic Transfer Operation	12
3.5 Automatic Sequence of Operation	12
3.5.1 Utility Failure	12
3.5.2 Cranking	12
3.5.3 Load Transfer	12

3.6 Manual Transfer Operation	13
3.6.1 Transfer to Generator Power Source	13
3.6.2 Transfer Back to Utility Power Source	13
3.7 Side Compartment	13
3.7.1 Main Circuit Breaker (Generator Disconnect)	13
3.7.2 LED Indicator Lights	14
3.8 Battery Charger	14
3.9 Setting the Exercise Timer	14
3.10 Cold Smart Start	14

Section 4 Maintenance

4.1 Performing Scheduled Maintenance	15
4.2 Service Schedule	15
4.2.1 Maintenance Log	16
4.3 Checking Engine Oil Level	16
4.3.1 Engine Oil Recommendations	16
4.4 Changing the Oil and Oil Filter	17
4.5 Changing the Engine Air Cleaner	17
4.6 Spark Plugs	17
4.7 Valve Lash Adjustment	18
4.8 Battery Maintenance	18
4.9 Attention After Submersion	19
4.10 Corrosion Protection	19
4.11 Out of Service Procedure	19
4.11.1 Removal From Service	19
4.11.2 Return to Service	20

Section 5 Troubleshooting

5.1 System Diagnosis	21
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Section 6 Quick Reference Guide

6.1 System Diagnosis	23
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Section 1 Safety Rules & General Information

1.1 — 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 with-drawn 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.

1.1.1— 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 Dealer for starting, operating and servicing procedures.

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.

1.1.2— How to Obtain Service

When the generator requires servicing or repairs, contact a Dealer for assistance. Service technicians are factory-trained and are capable of handling all service needs. For assistance contact:

All Power - Australia
1800 333 428
www.allpower.com.au

All Power - New Zealand
+649256 0730
www.allpower.co.nz

When contacting All Power 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 section "The Generator" for decal location.

1.2 — 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, ensure that it is safe for others. Also, make sure the procedure, work method or operating technique utilized does not render the generator unsafe.

⚠ 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)



⚠ DANGER

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



⚠ 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

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



⚠ 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)



⚠ 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)

operator also must comply with all such codes, standards and regulations. Only an Authorized Service Dealer is allowed to perform warranty service on this unit.

- The engine exhaust fumes contain carbon monoxide, which can be DEADLY. This dangerous gas, if breathed in sufficient concentrations, can cause unconsciousness or even death. Do NOT alter or add to the exhaust system or do anything that might render the system unsafe or in noncompliance with applicable codes and standards.
- Install a battery-operated carbon monoxide alarm indoors, according to manufacturer's instructions/recommendations.
- 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.
- Keep hands, feet, clothing, etc., away from drive belts, fans, and other moving or hot parts. Never remove any drive belt or fan guard while the unit is operating.
- When working on this equipment, remain alert at all times. Never work on the equipment when physically or mentally fatigued.
- Inspect the generator regularly, and contact the nearest Dealer for parts needing repair or replacement.
- Before performing any maintenance on the generator, set to OFF, remove 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.
- Never use the generator or any of its parts as a step. Stepping on the unit can stress and break parts, and may result in dangerous operating conditions from leaking exhaust gases, fuel leakage, oil leakage, etc.

1.2.1— General Hazards

- For safety reasons, the manufacturer recommends that this equipment be installed by a Service Dealer or other competent, qualified electrician or installation technician who is familiar with applicable codes, standards and regulations. The

1.2.2— Exhaust Hazards

- Generator engine exhaust contains DEADLY carbon monoxide, an odorless, colorless, poisonous gas. Breathing carbon monoxide can cause dizziness, throbbing temples, nausea, muscular twitching, headache, vomiting, weakness, sleepiness, inability to think clearly, fainting, unconsciousness or even death. If any

carbon monoxide poisoning symptom is experienced, move into fresh air and immediately seek medical attention.

- This generator is designed for outdoor installation ONLY. Never operate the generator inside any garage or other enclosed space.

1.2.3— Electrical Hazards

- All generators covered by this manual produce dangerous electrical voltages and can cause fatal electrical shock. Utility power delivers extremely high and dangerous voltages to the transfer switch, as does the standby generator when it is in operation. Avoid contact with bare wires, terminals, connections, etc., while the unit is running. Ensure all appropriate covers, guards and barriers are in place, secured and/or locked before operating the generator. If work must be done around an operating unit, stand on an insulated, dry surface to reduce shock hazard.
- Do not handle any kind of electrical device while standing in water, while barefoot, or while hands or feet are wet. DANGEROUS ELECTRICAL SHOCK MAY RESULT.
- The National Electrical Code (NEC) requires the frame and external electrically conductive parts of the generator to be connected to an approved earth ground. Local electrical codes also may require proper grounding of the generator electrical system.
- After installing this home standby electrical system, the generator may crank and start at any time without warning. When this occurs, load circuits are transferred to the STANDBY (generator) power source. To prevent possible injury if such a start and transfer occur, always set the generator to the OFF mode, remove the 7.5A fuse from the generator control panel, and disconnect the battery before working on equipment.
- In case of accident caused by electric shock, immediately shut down the source of electrical power. If this is not possible, attempt to free the victim from the live conductor. AVOID DIRECT CONTACT WITH THE VICTIM. Use a nonconducting implement, such as a dry rope or board, to free the victim from the live conductor. If the victim is unconscious, apply first aid and get immediate medical help.
- Never wear jewelry when working on this equipment. Jewelry can conduct electricity resulting in electric shock, or may get caught in moving components causing injury.

1.2.4— Fire Hazards

- For fire safety, the generator must be installed and maintained properly. Installation must always comply with applicable codes, standards, laws and regulations. Adhere strictly to local, state and national electrical and building codes. Comply with regulations the Occupational Safety and Health Administration (OSHA) has established. Also, ensure 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.
- Keep a fire extinguisher near the generator at all times. Extinguishers rated "ABC" by the National Fire Protection Association are appropriate for use on the standby electric system. Keep the extinguisher properly charged and be familiar with its use. Consult the local fire department with any questions pertaining to fire extinguishers.

1.2.5— Explosion Hazards

- Do not smoke around the generator. Wipe up any fuel or oil spills immediately. Ensure that no combustible materials are left in the generator compartment, or on or near the generator, as FIRE or EXPLOSION may result. Keep the area surrounding the generator clean and free from debris.
- Gaseous fluids such as natural gas and liquid propane (LP) gas are extremely EXPLOSIVE. Install the fuel supply system according to applicable fuel-gas codes. Before placing the home standby electric system into service, fuel system lines must be properly purged and leak tested according to applicable code. After installation, inspect the fuel system periodically for leaks. No leakage is permitted.

DANGER

Electrical backfeed. Use only approved switchgear to isolate generator when electrical utility is the primary power source. Failure to do so can result in generator damage and could result in death or serious injury.

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Section 2 General Information

2.1 — The Generator

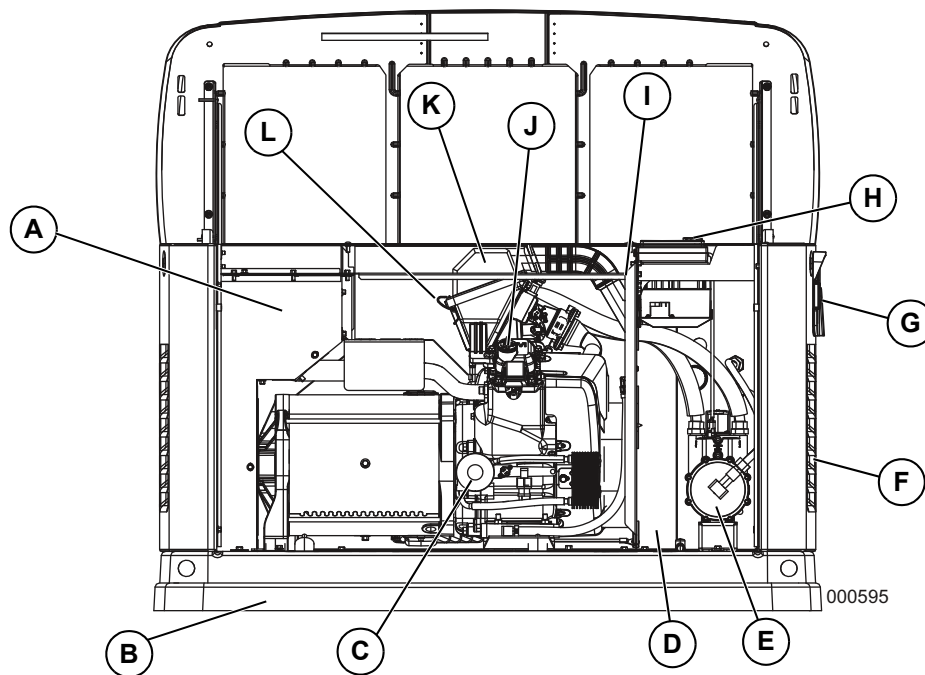


Figure 2-1. GH-530 Engine 8kVA Unit

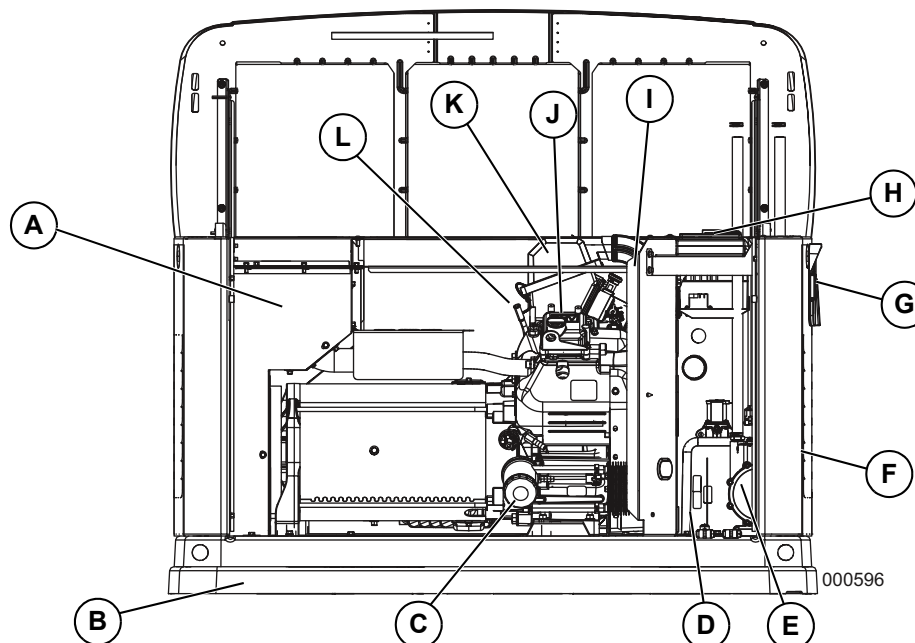


Figure 2-2. GT-990 Engine, 10 & 13kVA Units

- | | | | |
|----------------------|------------------------|----------------------------|-----------------|
| 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 |

2.2 — 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
- Underspeed
- RPM Sensor Loss
- Controller Fault
- Wiring Error

Warnings:

- Charger Warning
- Charger Missing AC
- Low Battery
- Exercise Set Error
- USB Warning
- Download Failure
- Overvoltage
- Undervoltage
- Fuse Problem
- Overload
- Stepper Overcurrent

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 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 servicing dealer. If the intermittent issue occurs again, contact an independent servicing dealer.

2.3 — 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.

2.4 — Specifications

2.4.1— Generator

Model	8kVA	10kVA	13kVA
Rated Voltage	220/230/240		
Rated Maximum Load Current (Amps) at 220 Volts (LP)*	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 525 CCA Minimum		
Weight (kilos/ lbs.)	175.4/387	197.3/435	213.6/471
Enclosure	Steel	Steel	Steel
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 joules/Btu 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.			

2.4.2— Engine

Model	8kVA	10 & 13kVA
Type of Engine	GT-530	GT-990
Number of Cylinders	2	2
Displacement	530 cc	992 cc
Cylinder Block	Aluminum w/ cast iron sleeve	
Recommended Spark Plug	BPR6HS	RC12YC
Spark Plug Gap	0.76 mm (0.030 in)	1.02 mm (0.040 in)
Valve Clearance	0.05 - 0.1 mm (0.002 - 0.004 in)	0.05 - 0.1 mm (0.002 - 0.004 in)
Starter	12 VDC	
Oil Capacity Including Filter	Approx. 1.5 l/ 1.7 qt	Approx. 1.8 l/ 1.9 qt
Recommended Oil Filter	Part # 070185E	
Recommended Air Filter	Part #0E9371A	Part #0J8478
Engine power is subject to and limited by such factors as fuel joules/Btu, ambient temperature and altitude. Engine power decreases about 3.5 percent for each 304.8 meters (1000 feet) above sea level, and also will decrease about 1 percent for each 1 °C (10 °F) above 15 °C (60 °F) 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 Authorized Service Dealer for your specific generator model.

2.5 — 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 carbureted 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 joules (Btu) content of at least 37.26 megajoules per cubic meter (1000 Btus per cubic foot) for natural gas, or at least 93.15 megajoules per cubic meter (2500 Btus per cubic foot) for LP gas (vapor).

NOTE: If converting to LP gas from natural gas, a minimum LP tank size of 946 liters (250 gallons) is recom-

mended. See the Installation Manual for complete procedures and details.

2.6 — Battery Requirements

Group 26R, 12V, minimum 525 CCA.

For proper battery maintenance procedures, see Section 4 Maintenance.

2.7 — 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.

2.8 — Engine Oil Requirements

For proper oil viscosity, see Figure 4-1: Recommended Oil Based on Temperature.

2.9 — 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.

NOTE: Contact an independent Authorized Dealer for additional information on accessories

Section 3 Operation

3.1 — Control Panel Interface

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.

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.

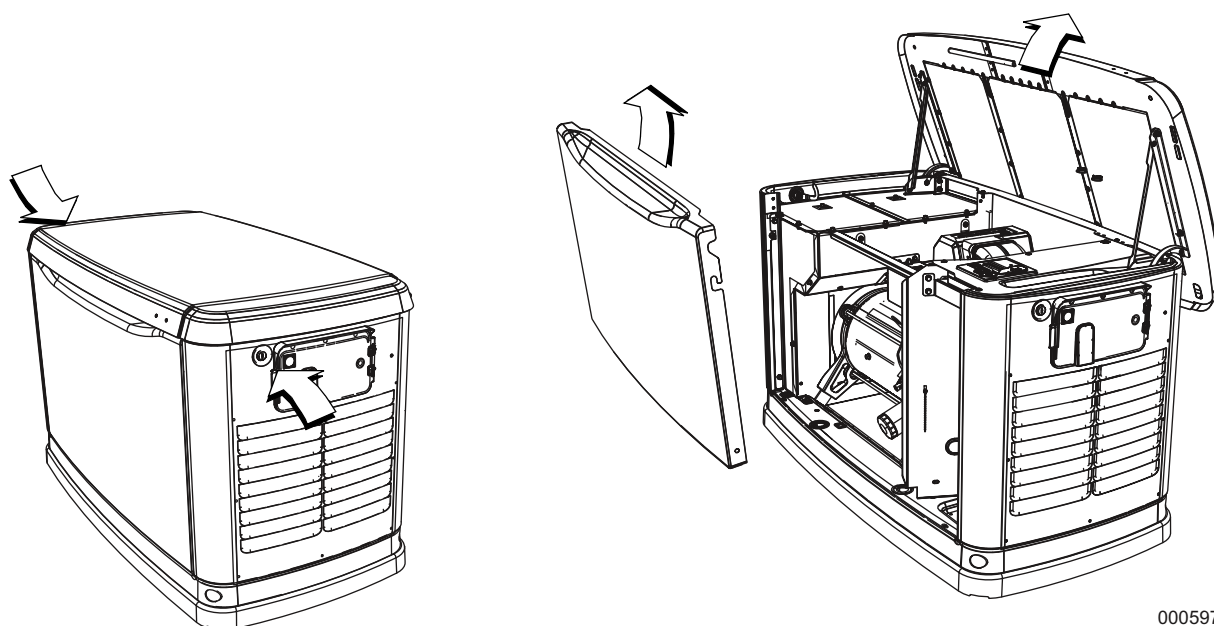


Figure 3-1. Side Lock Location and Front Panel Removal

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.

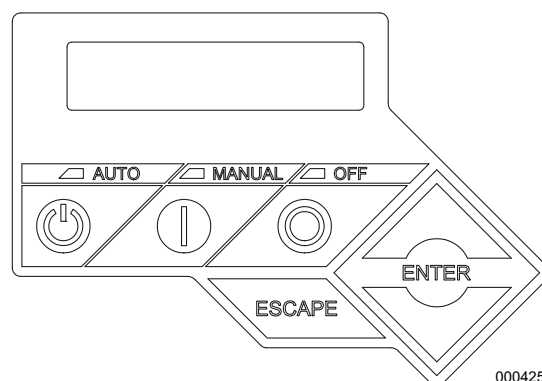


Figure 3-2. Generator Control Panel

3.2 — 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 the Setting the Exercise Timer section).
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.

3.3 — 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.

3.3.1— 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 3-3.



3.4 — 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.

3.5 — Automatic Sequence of Operation

3.5.1— Utility Failure

With the generator set to AUTO, when utility fails (below 65% of nominal) a 5 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 5 second engine warm-up timer will be initiated. 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 (5 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.

3.5.2— Cranking

The system will control the cyclic cranking as follows:

- 5 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.

3.5.3— Load Transfer

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

MANUAL	• Will not transfer to generator if utility is present. • Will transfer to generator if utility fails (below 65% of nominal for 5 consecutive seconds). • Will transfer back when utility returns for 15 consecutive seconds. The engine will continue to run until removed from the MANUAL mode.
AUTO	• Will start and run if utility fails for 10 consecutive seconds. (factory default) • Will start a 5 second engine warm-up timer. –Will not transfer if utility subsequently returns. –Will transfer to generator if utility is not present. • Will transfer back to utility once utility returns (above 80% of nominal) for 15 seconds. • 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. • Once utility power is returned, the generator will shut down after 1 minute cool-down time.
EXERCISE	• Will not exercise if generator is already running in either AUTO or MANUAL mode. • During exercise, the controller will only transfer if utility fails during exercise for 5 seconds, and will switch to AUTO.

NOTE: Important! If it is necessary to turn off the generator during prolonged utility outages to perform maintenance or conserve fuel, follow these steps.

To turn OFF the generator (while running in AUTO and on-line):

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

3. Turn the generator OFF.
4. To turn the generator back ON:
5. Put the generator back into AUTO and allow to start and warm-up for several minutes.
6. Turn ON (or CLOSE) the MLCB on the generator.

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

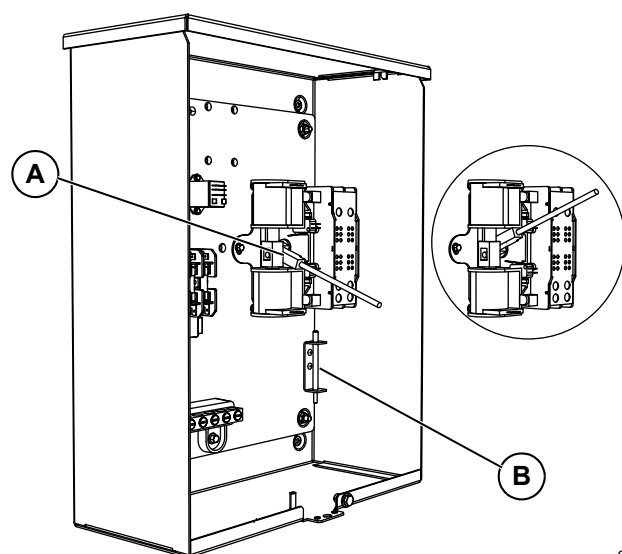
3.6 — Manual Transfer Operation



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.



000228

Figure 3-4. Manual Transfer Switch Operation

3.6.1— Transfer to Generator Power Source

1. Ensure 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 3-4.) 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.

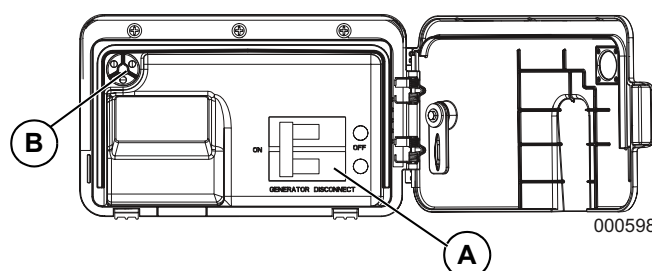
3.6.2— Transfer Back to Utility Power Source

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 2 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 3-4.) 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.

3.7 — Side Compartment

Local codes may require this compartment to be locked. A hasp is provided so the owner/operator can secure the compartment with his or her own padlock. Check local codes for side compartment locking requirements.



000598

Figure 3-5. Open Side Compartment

3.7.1— Main Circuit Breaker (Generator Disconnect)

This is a 2-pole breaker rated according to relevant specifications. See "A" in Figure 3-5.

3.7.2— LED Indicator Lights

See “B” in Figure 3-5.

- 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 authorized servicing dealer.
- Yellow LED “Maintenance” light.

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

3.8 — 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.

3.9 — Setting the Exercise Timer

This generator is equipped with a configurable exercise timer. There are two settings for the exercise timer.

Day/Time: Once set, the generator will start and exercise for the period defined, on the day of the week and at the time of day specified. During this exercise period, the unit runs for approximately 5 or 12 minutes, depending on the model, and then shuts down.

Exercise frequency (how often the exercise will take place): It can be set to WEEKLY, BIWEEKLY or MONTHLY. If MONTHLY is selected, the day of the month must be selected from 1-28. The generator will exercise on that day each month. Transfer of loads to the generator output does not occur during the exercise cycle unless utility power is lost.

NOTE: If the installer tests the generator prior to installation, press the “enter” button to skip setting up the exercise timer.

NOTE: The exercise feature will operate only when the generator is placed in the AUTO mode and will not work unless this procedure is performed. The current date/time will need to be reset every time the 12 volt battery is disconnected and then reconnected, and/or when the fuse is removed.

3.10 — 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.

Section 4 Maintenance

NOTE: Proper maintenance and proper and safe operation is crucial to the life of the generator. Genuine Generac parts **MUST** be used to ensure warranty coverage.

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.

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)

4.1 — Performing Scheduled Maintenance

It is important to perform maintenance as specified in the Service Schedule for proper generator operation and to ensure that the generator complies with the applicable emission standards for the duration of its useful life. Service and repairs may be performed by any qualified service person or repair shop. Additionally, emissions critical maintenance must be performed as scheduled in order for the Emissions Warranty to be valid. Emissions critical maintenance consists of servicing the air filter and spark plugs in accordance with the Service Schedule. 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.

4.2 — Service Schedule

ATTENTION: All service work must be performed by a qualified service person only.

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 Battery Condition, Electrolyte Level, and State of Charge		○	○	○
Replace Engine Oil and Oil Filter *			○	○
Replace Engine Air Filter				○
Replace/Gap Spark Plugs				○
Inspect/Adjust Valve Clearance **				○
Contact the nearest independent Authorized Service Dealer for assistance if necessary. * 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. ** Check/adjust valve clearance after the first 25 hours of operation.				

4.2.1— Maintenance Log

Battery inspection and charge check

Dates Performed:

Oil, oil filter, air filter and spark plug replacement

Dates Performed:

Valve Adjustment

Dates Performed:

4.3 — 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)

CAUTION

Avoid prolonged or repeated skin contact with used motor oil.

(000127)

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:

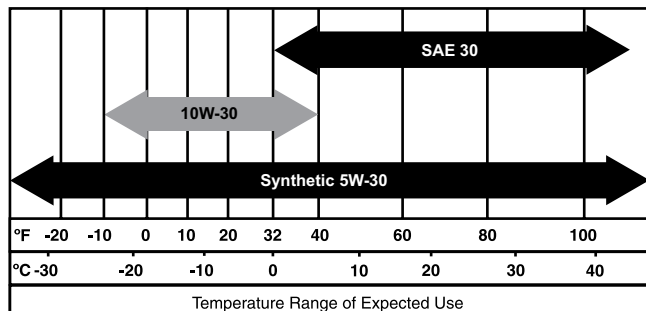
1. If the generator is running during a utility outage, first turn OFF all associated loads running in the residence using the electrical panel main disconnect. Then, turn the generator main circuit breaker to the OFF position.
2. Press the control panel OFF button. Wait 5 minutes.
3. Remove the dipstick 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.

4.3.1— Engine Oil Recommendations

To maintain the warranty, genuine Generac replacement parts **MUST** be used, including Generac Preventative Maintenance Kits (which include Generac oil, an oil and air filter, spark plugs, a shop towel and funnel). Generac

Preventative maintenance kits can be obtained through an Authorized Dealer.

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

CAUTION

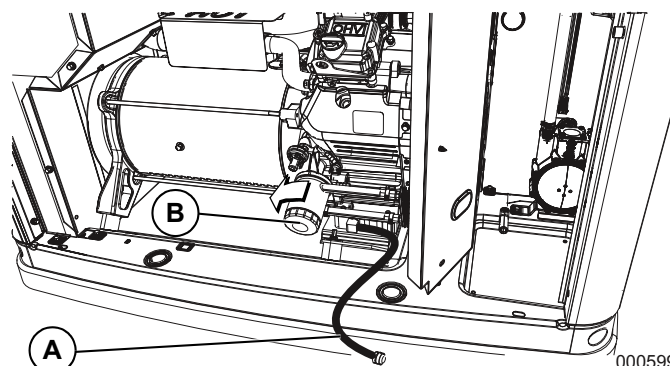
Engine damage. Verify proper type and quantity of engine oil prior to starting engine. Failure to do so could result in engine damage.

(000135)

4.4 — 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 1 minute, and check for leaks.
9. Shutdown the engine and recheck the oil level. Add oil as needed. DO NOT OVER FILL.
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.



000599

Figure 4-2. Oil Filter and Drain Location

4.5 — Changing the Engine Air Cleaner

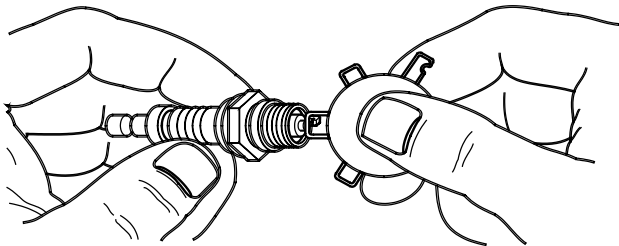
1. With the generator shut down, lift the lid and remove the front panel.
2. Remove the cover clips and air cleaner cover.
3. Pull out the old air filter and discard.
4. Thoroughly clean the air cleaner enclosure of any dust or debris.
5. Install a new air cleaner.
6. Install the air cleaner cover and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

4.6 — 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. Check the spark plug gap using a wire feeler gauge. See Figure 4-3. Adjust the gap by carefully bending the ground electrode to the specification in Section 2.4.2 — Engine.



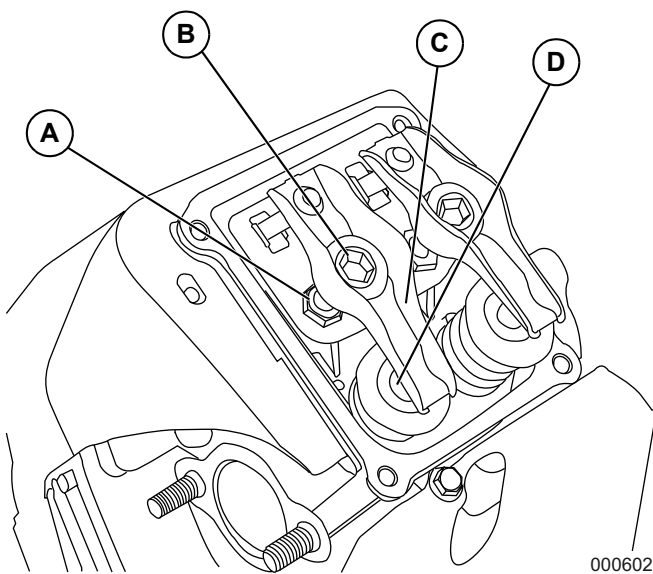
000211

Figure 4-3. Spark Plug Gap Adjustment

4.7 — Valve Lash 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 2.4.2 — 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 2.4.2 — 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 19.68 Nm (174 **in-lbs**) 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 5.4 Nm (48 **in-lbs**).

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.

4.8 — 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

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 cause death or serious injury. (000138)



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

Explosion. Batteries emit explosive gases while charging. Keep fire and spark away. Wear protective gear when working with batteries. Failure to do so could cause death or serious injury. (000137)



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)

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 lay 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 aid neutralizing agent. A common practice is to use a solution of 500 grams (1 pound) bicarbonate of soda to 4 liters (1 gallon) 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.

4.9 — Attention After Submersion

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

4.10 — Corrosion Protection

Periodically wash and wax the enclosure using automotive type products. Frequent washing is recommended in salt water/coastal areas. Spray engine linkages with a light oil such as WD-40.

4.11 — Out of Service Procedure

4.11.1— Removal From Service

If the generator cannot be exercised every 7 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. Never store the battery on any concrete or earthen floor.
12. Clean and wipe down the entire generator.

4.11.2— 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 8 *Troubleshooting*

8.1 — System Diagnosis

Problem	Cause	Correction
Engine will not crank.	1. Fuse blown. 2. Loose, corroded or defective battery cables. 3. Defective starter contact. 4. Defective starter motor. 5. Dead Battery.	1. Correct short circuit condition by replacing 7.5 Amp fuse in generator control panel. 2. Tighten, clean or replace as necessary.* 3. *See #2. 4. *See #2. 5. Charge or replace battery.
Engine cranks but will not start.	1. Out of fuel. 2. Defective fuel solenoid (FS). 3. Open Wire 14 from engine control board. 4. Defective spark plug(s). 5. Valve lash out of adjustment.	1. Replenish fuel / Turn on fuel valve. 2. * 3. Repair wiring 3. Clean, re-gap or replace plug(s). 4. Reset valve lash.
Engine starts hard and runs rough.	1. Air cleaner plugged or damaged. 2. Defective spark plug(s). 3. Fuel pressure incorrect. 5. Fuel selector in wrong position.	1. Check / replace air cleaner. 2. Clean, re-gap or replace plug(s). 3. Confirm fuel pressure to regulator is 10-12 inches water column (19-22 mm mercury) for LP, and 3.5 - 7 inches water column (9-13 mm mercury) for natural gas. 5. Turn fuel conversion valve to correct position.
Generator is set to OFF, but the engine continues to run.	1. Controller wired incorrectly 2. Defective control board.	1. Repair wiring or replace controller* 2. Replace controller
No AC output from generator.	1. Main line circuit breaker is in the OFF (or OPEN) position. 2. Generator internal failure.	1. Reset circuit breaker to ON (or CLOSED). 2. *
No transfer to standby after utility source failure.	1. Main line circuit breaker is in the OFF (or OPEN) position. 2. Defective transfer switch coil. 3. Defective transfer relay. 4. Transfer relay circuit open. 5. Defective control logic board.	1. Reset circuit breaker to ON (or CLOSED). 2. * 3. * 4. * 5. *
Unit consumes large amounts of oil.	1. Engine over filled with oil. 2. Engine breather defective. 3. Improper type or viscosity of oil. 4. Damaged gasket, seal or hose.	1. Adjust oil to proper level. 2. * 3. See "Engine Oil Recommendations". 4. Check for oil leaks.
* Contact an independent Authorized Service Dealer for assistance.		

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Section 9 Quick Reference Guide

9.1 — System Diagnosis

Table 9-1. System Diagnosis

Active Alarm	LED	Problem	Things to Check	Solution
NONE	GREEN	Unit running in AUTO but no power in house.	Check MLCB.	Check MLCB if the MLCB is in the ON position. If it is in the ON position contact the servicing dealer.
HIGH TEMPERATURE	RED	Unit shuts down during operation.	Check the LED's / Screen for alarms.	Check ventilation around the generator, intake, exhaust and rear of generator. If no obstruction contact servicing dealer.
OVERLOAD REMOVE LOAD	RED	Unit shuts down during operation.	Check the LED's / 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 LED's / Screen for alarms.	Clear alarm and remove household loads from the generator. Put back in AUTO and restart. If generator does not start, contact 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 servicing dealer to adjust from 2 to 1500 seconds.
LOW OIL PRESSURE	RED	Unit will not start in AUTO with utility loss.	Check the LED's / Screen for alarms.	Check Oil Level / Add Oil Per Owners Manual. If oil level is correct contact servicing dealer.
RPM SENSE LOSS	RED	Unit will not start in AUTO with utility loss.	Check the LED's / 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 servicing dealer. If it states CHECK BATTERY, replace the battery.
OVERCRANK	RED	Unit will not start in AUTO with utility loss.	Check the LED's / Screen for alarms.	Check 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 servicing dealer.
LOW VOLTS REMOVE LOAD	RED	Unit will not start in AUTO with utility loss.	Check the LED's / 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 LED's / Screen for alarms.	Check the 7.5amp fuse. If it is bad replace it with an ATO 7.5Amp fuse, if not contact servicing dealer.
OVERSPEED	RED	Unit will not start in AUTO with utility loss.	Check the LED's / Screen for alarms.	Contact servicing dealer.
UNDERVOLTAGE	RED	Unit will not start in AUTO with utility loss.	Check the LED's / Screen for alarms.	Contact servicing dealer.
UNDERSPEED	RED	Unit will not start in AUTO with utility loss.	Check the LED's / Screen for alarms.	Contact servicing dealer.
STEPPER OVERCURRENT	RED	Unit will not start in AUTO with utility loss.	Check the LED's / Screen for alarms.	Contact servicing dealer.

Table 9-1. System Diagnosis (Continued)

Active Alarm	LED	Problem	Things to Check	Solution
MISWIRE	RED	Unit will not start in AUTO with utility loss.	Check the LED's / Screen for alarms.	Contact servicing dealer.
OVERVOLTAGE	RED	Unit will not start in AUTO with utility loss.	Check the LED's / Screen for alarms.	Contact 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 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 servicing dealer.
CHARGER WARNING	YELLOW	Yellow LED illuminated in any state.	Check the screen for additional information.	Contact 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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