



# Operator Manual

Cummins **Onan**

Performance you rely on.™



## Home Standby Generator Set

GSAA (Spec A & C)

 **WARNING:**   
The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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# IMPORTANT SAFETY INSTRUCTIONS

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

**Before operating the generator set (genset),** read the Operator Manual (983–0104) and become familiar with it and the equipment.

**Note: Safe and efficient operation can be achieved only if the equipment is properly operated and maintained. Many accidents are caused by failure to follow fundamental rules and precautions.**

The following symbols, found throughout this manual, alert you to potentially dangerous conditions to the operator, service personnel, or the equipment.

**⚠ DANGER** *This symbol warns of immediate hazards which will result in severe personal injury or death.*

**⚠ WARNING** *This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.*

**⚠ CAUTION** *This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.*

## FUEL AND FUMES ARE FLAMMABLE

Fire, explosion, and personal injury or death can result from improper practices.

- All persons handling propane are required to be trained and qualified, according to NFPA code.
  - Natural gas is lighter than air, and will tend to gather under hoods. Propane is heavier than air, and will tend to gather in sumps or low areas.
- Be sure all fuel supplies have a positive shutoff valve.
- Be sure battery area has been well-ventilated prior to servicing near it.

- Lead-acid batteries emit a highly explosive hydrogen gas that can be ignited by arcing, sparking, smoking, etc.

## EXHAUST GASES ARE DEADLY

**⚠ WARNING** *Engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects, and other reproductive harm.*

- Be sure the unit is well ventilated.
  - Provide an adequate exhaust system to properly expel discharged gases away from enclosed or sheltered areas and areas where individuals are likely to congregate.
  - Exhaust height should be tall enough to help clear gases, avoid accumulation of snow or in accordance with local mechanical code.
- Do not use exhaust gases to heat a compartment.
- Visually and audibly inspect the exhaust daily for leaks per the maintenance schedule.
  - Make sure that exhaust manifolds are secured and not warped.

## MOVING PARTS CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Do not wear loose clothing or jewelry and keep your hands away from all moving parts.
  - Loose clothing and jewelry can become caught in moving parts.
  - If adjustment must be made while the unit is running, use extreme caution around hot manifolds, moving parts, etc.
- Before starting work on the generator set, disconnect battery charger from its AC source, then disconnect starting batteries, negative (-) cable first. This will prevent accidental starting.
- To prevent accidental air starting, make sure the air supply line is connected until the generator set is ready to start.
- Make sure that fasteners on the generator set are secure. Tighten supports and clamps, keep guards in position over fans, drive belts, etc.

## **BATTERIES CAN EXPLODE CAUSING SEVERE SKIN AND EYE BURNS AND RELEASE TOXIC ELECTROLYTES**

- Wear safety glasses.
- Do not smoke.
- Do not dispose of the battery in a fire.
  - The battery is capable of exploding.
- Do not open or mutilate the battery.
  - Released electrolytes has been known to be harmful to the skin and eyes, and be toxic.
- Remove watches, rings and other metal objects, and use tools with insulated handles.
  - Batteries present the risk of high short circuit current.
- To prevent arcing when disconnecting the battery, first disconnect the battery charger, then the negative (-) battery cable and finally the positive (+) cable.
- To prevent arcing when reconnecting the battery, first reconnect the positive (+) cable, then the negative (-) cable, and finally, reconnect the battery charger.
- When replacing the generator set battery, always use a 26 R, maintenance free, 12 volt battery with a minimum battery CCA of 530.

## **ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH**

**⚠ DANGER** *Use extreme caution when working on electrical components. High voltages can cause injury or death. DO NOT tamper with interlocks.*

- Follow all applicable state and local electrical codes. Have all electrical installations performed by a qualified licensed electrician. Tag and lock open switches to avoid accidental closure.
- Do not connect the generator set directly to any building electrical system.

**⚠ CAUTION** *Hazardous voltages can flow from the generator set into the utility line. This creates a potential for electrocution or property damage. Connect only through an approved*

*isolation switch or an approved paralleling device.*

- Remove electric power before removing protective shields or touching electrical equipment.
- Use rubber insulative mats placed on dry wood platforms over floors that are metal or concrete when around electrical equipment.
- Do not wear damp clothing (particularly wet shoes) or allow skin surface to be damp when handling electrical equipment.
- Do not wear jewelry.
  - Jewelry can short out electrical contacts and cause shock or burning.

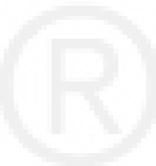
## **MEDIUM VOLTAGE GENERATOR SETS (601V to 15kV)**

**⚠ DANGER** *Improper use or procedures will result in severe personal injury or death.*

- Special equipment and training is required to work on or around medium voltage equipment. Operation and maintenance must be done only by persons trained and qualified to work on such devices.

**⚠ WARNING** *Do not work on energized equipment, as this can cause severe personal injury or death.*

- Plan the time for maintenance with authorized personnel so that the equipment can be de-energized and safely grounded.
  - Due to the nature of medium voltage electrical equipment, induced voltage remains even after the equipment is disconnected from the power source.
- Unauthorized personnel must not be permitted near energized equipment.



## GENERAL SAFETY PRECAUTIONS

**⚠WARNING** *DO NOT open a radiator or heat exchanger pressure cap while the engine is running.*

- Allow the generator set to cool and bleed the system pressure first.
  - Coolants under pressure have a higher boiling point than water.

**⚠WARNING** *Used engine oils have been identified by some state or federal agencies as causing cancer or reproductive toxicity.*

- When checking or changing engine oil, take care not to ingest, breathe the fumes, or contact used oil.
- Keep multi-class ABC fire extinguishers handy.
  - Class A fires involve ordinary combustible materials such as wood and cloth (ref. NFPA No. 10)
  - Class B fires, combustible and flammable liquid fuels and gaseous fuels (ref. NFPA No. 10)
  - Class C fires, live electrical equipment. (ref. NFPA No. 10)
- Make sure that rags are not left on or near the engine.

- Make sure generator set is mounted in a manner to prevent combustible materials from accumulating under the unit.
- Remove all unnecessary grease and oil from the unit.
  - Accumulated grease and oil can cause overheating and engine damage which present a potential fire hazard.
- Keep the generator set and the surrounding area clean and free from obstructions. Remove any debris from the set and keep the floor clean and dry.
- Do not work on this equipment when mentally or physically fatigued, or after consuming any alcohol or drug that makes the operation of equipment unsafe.

**⚠WARNING** *Substances in exhaust gases have been identified by some state or federal agencies as causing cancer or reproductive toxicity.*

- Take care not to breathe or ingest or come into contact with exhaust gases.
- Do not store any flammable liquids, such as fuel, cleaners, oil, etc., near the generator set. A fire or explosion could result.
- Wear hearing protection when going near an operating generator set.

**⚠WARNING** *Avoid contact with hot metal parts such as the radiator, turbo charger and exhaust system to prevent serious burns.*

**KEEP THIS MANUAL NEAR THE GENSET FOR EASY REFERENCE**



# 1. Introduction

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## ABOUT THIS MANUAL

This is the Operator Manual for the Model GSAA Generator Set. Each operator of this generator set should become thoroughly familiar with the information in this manual and observe all of its instructions and precautions.

Refer to *Appendix A. Operation* to operate and monitor the generator set.

Refer to *Section 2. Maintenance* for periodic maintenance that must be performed. The operator is responsible for generator set maintenance in accordance with the PERIODIC MAINTENANCE SCHEDULE (page 2-1).

Refer to *Section NO TAG. Troubleshooting* for steps that can be taken to diagnose and correct a problem that causes a generator set shutdown.

**⚠WARNING** *This generator set is not for life support. It can stop without warning. Children, persons with physical or mental limitations, and pets could suffer personal injury or death. A personal attendant, redundant power or alarm system must be used if power system operation is critical.*

## ABOUT THE GENERATOR SET

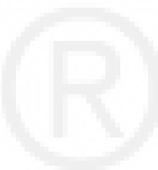
The Model GSAA Generator Set is an engine-powered generator set fueled by Natural Gas or Pro-

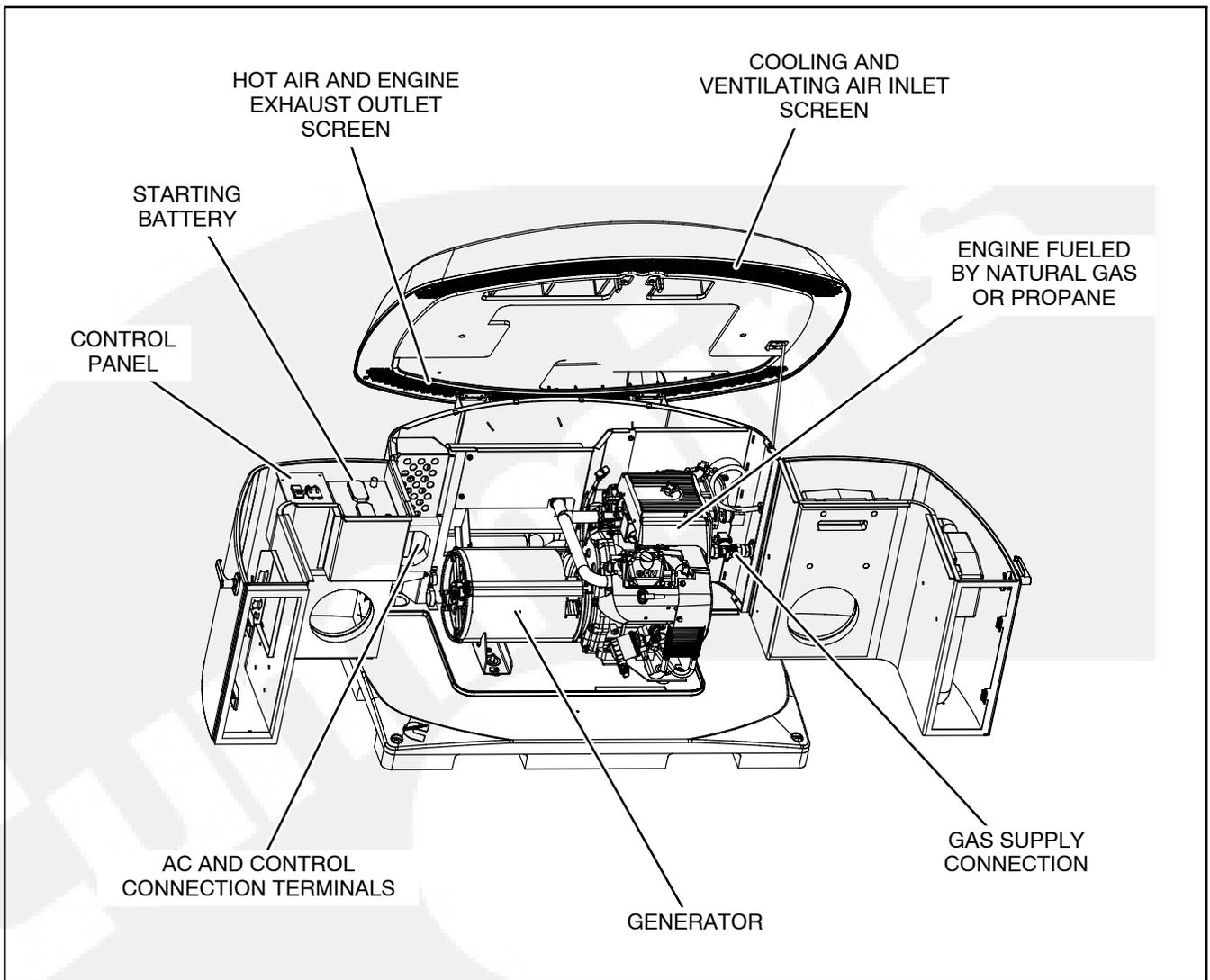
pane (Figure 1-1). It is for installation as a standby generator set only in conjunction with the Model RSS Automatic Transfer Switch produced under the Cummins® Power Generation brand name. See *Appendix E. Specifications* for specific information about the generator set.

**⚠CAUTION** *The Model GSAA generator set Warranty is void unless it is installed with the Model RSS automatic transfer switch by a trained and experienced electrician or authorized Cummins Onan service representative.*

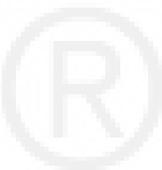
The generator set is intended as a back up to utility power. Whenever utility power is interrupted, the house electrical loads are automatically switched by the transfer switch from the utility (normal power source) to the generator set (emergency power source). When utility power is restored, the loads are automatically switched back to the utility. To do this, the generator set and transfer switch together perform the following functions:

1. Sense an interruption of utility power
2. Start the generator set
3. Transfer the load to the generator set when operation has stabilized and the generator set is ready to accept the loads
4. Sense the return of utility power
5. Retransfer the load to the utility
6. Stop the generator set.





**FIGURE 1-1. GENERATOR SET OPENED FOR MAINTENANCE AND SERVICE**



## GENERATOR SET NAMEPLATE

**⚠ WARNING** *Improper service or replacement of parts can lead to severe personal injury or death and to damage to equipment and property. Service personnel must be qualified to perform electrical and mechanical service.*

**⚠ CAUTION** *Unauthorized modifications or replacement of fuel, exhaust, air intake or speed control system components that affect engine emissions are prohibited by law in the State of California.*

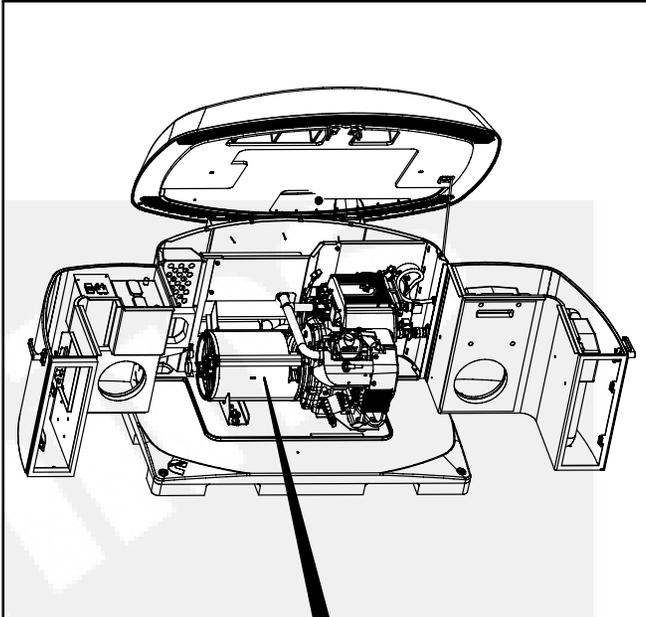
**Model, Spec and Serial Numbers:** Be ready to provide the model, spec and serial numbers on the generator set nameplate when contacting Cummins Onan for information, parts and service. Figure 1-2 illustrates the nameplate and its location.

**Federal Emissions Compliance Period:** The Federal Emissions Compliance Period referred to on the nameplate indicates the number of operating hours for which the engine has been shown to meet Federal emissions requirements. Category C = 250 hrs, B = 500 hrs, A = 1000 hrs.

### LOOSE PARTS SHIPPED WITH THE GENERATOR SET

The following loose parts are shipped with the GSAA generator set.

- Oil Drain Hose (P/N 0503-2151)
- Fuel Hose Assembly (P/N 0501-0776-06)
- Four Base Spikes (Ground Stakes) (P/N 0403-4365)
- Snap Bushing (P/N 0508-0208-05)
- In-Home Display (P/N 0300-6385)
- Pigtail Harness for In-Home Display (P/N 0338-5023)
- LP Orifice for LP Fuel Changeover (Wire tied to the engine lifting bracket) (P/N 0148-1385)
- Two Keys (P/N A026G567)
- Quick Connect Guide (located in the battery box)
- Literature – Operator Manual, Installation Manual, Setup Guide, and Warranty Statement



**IMPORTANT ENGINE INFORMATION**

**CUMMINS POWER GENERATION**  
1400 73rd Ave. NE  
Minneapolis, MN 55432

Model No: \_\_\_\_\_ Spec: \_\_\_\_\_ Made in U.S.A.

S/N: \_\_\_\_\_ PH: \_\_\_\_\_

AC Volts: \_\_\_\_\_ kVA: \_\_\_\_\_ kW: \_\_\_\_\_

Amps: \_\_\_\_\_ Pf: \_\_\_\_\_ RPM: \_\_\_\_\_

Fuel: \_\_\_\_\_ Hz: \_\_\_\_\_ Bat: \_\_\_\_\_

Options: \_\_\_\_\_ Wiring Diagram: \_\_\_\_\_

Insulation - NEMA Class  Ambient 40°C

*[The engine family designation, engine displacement, statement of compliance with the applicable EPA and / or California emissions regulations, including the compliance period or category, appear in this block on the actual nameplate on the genset.]*

98-2495

RECORD NUMBERS HERE

MODEL NUMBER:

SERIAL NUMBER:

**FIGURE 1-2. NAMEPLATE**

## HOW TO OBTAIN SERVICE

For parts, service, and product information (such as the Service Manual), contact the nearest authorized Cummins Onan distributor. You may go to Web site [www.cumminsonan.com](http://www.cumminsonan.com) for information on contacting our distributors worldwide.

### In North America

Call 1-800-888-6626 to contact the nearest Cummins Onan distributor in the United States or Canada. If you are unable to contact a distributor using the automated service, consult the Yellow Pages. Typically, our distributors are listed under:

GENERATORS – ELECTRIC

ENGINES – GASOLINE OR DIESEL

If you have difficulty arranging service or resolving a

problem, please contact the Service Manager at the nearest Cummins Onan distributor for assistance.

### Outside North America

If you are outside North America, call Cummins Onan at 1-763-574-5000 from 7:30 AM to 4:00 PM, Central Standard Time, Monday through Friday, or fax 1-763-528-7229.

### Information to Have Ready

Before calling for service, have the following information available:

1. *Complete model number and serial number (page 1-3)*
2. *Date of purchase*
3. *Nature of problem*



# 2. Maintenance

## CLEANING THE HOUSING TOP

The top surface of the generator set housing can be damaged by pressure washing or solvents and other cleaning agents. Only use soap and water or an “all citrus degreaser” to clean the top.

## EXERCISING THE GENERATOR SET

The generator set exerciser can automatically start the generator set and let it run for 20 minutes once every 28 days, or more often. See EXERCISER SETTINGS (page A-10).

Exercising the generator set drives off moisture, re-lubricates the engine and removes oxides from electrical contacts. The result is better starting, more reliable operation and longer engine life.

## COMPLETE SYSTEM TEST

A complete system test is recommended to verify that the standby electrical system is working properly. Testing the system once every three months is required to make sure the transfer switch will transfer

the load to the generator set, if there is a utility power failure.

Call an authorized Cummins Onan dealer to perform the testing.

## PERIODIC MAINTENANCE SCHEDULE

Periodic maintenance is essential for top generator set performance. Use Table 2-1 as a guide for normal periodic maintenance. In hot and dusty environments some maintenance procedures should be performed more frequently, as indicated by the footnotes in the table.

Maintenance, replacement or repair of emission control devices and systems may be performed by any engine repair establishment or individual. However, warranty work must be completed by an authorized Cummins Onan dealer.

**⚠️WARNING** *Accidental or remote starting of the generator set can cause severe personal injury or death. Disconnect the negative (-) battery cable and place the control switch in its OFF position before starting work.*

**TABLE 2-1. PERIODIC MAINTENANCE SCHEDULE**

MAINTENANCE OPERATION	MAINTENANCE FREQUENCY					
	Daily	After 1st 20 Hours	Yearly or Every 150 Hours	Every 300 Hours	Every 450 Hours	Page
Check Engine Oil Level	X	X				2-2
Change Engine Oil and Oil Filter		X	X <sup>1, 2, 3</sup>			2-2
Adjust Engine Valve Clearance (Lash)		X	X <sup>5</sup>			-
Replace Engine Air Filter			X			2-2
Clean and Check Starting Battery				X		2-4
Replace Spark Plugs and Cables					X <sup>4</sup>	2-4
Clean Engine Cooling Fins					X <sup>4</sup>	-

1. Perform more often when operating in dusty conditions.
- 2.. Perform first time at 24 hours.
3. Perform more often when operating in hot weather.
4. Perform sooner if engine performance deteriorates.
5. Must be performed by a qualified mechanic (authorized Cummins Onan dealer).

## RECOMMENDED ENGINE OIL

The generator set is shipped with engine oil. Verify that the oil level is between the FULL and ADD marks before starting the generator set.

Any 40W synthetic oil can be used. For cold weather operation (below -10 degrees F), **Mobil1 0W-40** synthetic engine oil is recommended.

## CHECKING ENGINE OIL LEVEL

**⚠WARNING** *State and federal agencies have determined that contact with used engine oil can cause cancer or reproductive toxicity. Avoid skin contact and breathing of vapors. Use rubber gloves and wash exposed skin.*

**Accidental or remote starting of the generator set can cause severe personal injury or death. Disconnect the negative (-) battery cable and place the control switch in its OFF position before starting work.**

1. Unscrew the oil fill cap, pull out the dip stick and wipe it clean. Reinsert the dip stick and secure the cap. Remove the cap and dipstick again to check the oil level (Figure 2-1).
2. Add or drain oil as necessary. See RECOMMENDED ENGINE OIL above. Keep the oil level between the FULL and ADD marks.

**⚠CAUTION** *Too much oil can cause high oil consumption. Too little oil can cause severe engine damage. Keep the oil level between the FULL and ADD marks.*

3. Reinsert the dipstick and secure the oil fill cap.

## CHANGING ENGINE OIL AND OIL FILTER

Refer to Table 2-1 for scheduled engine oil changes and to the control panel for the oil filter part number.

Change oil more often in hot and dusty environments.

1. Place a pan under the end of the oil drain hose attached to the drain valve (Figure 2-1), run the generator set until warm and shut it off.
2. Unscrew the oil fill cap, make sure the oil drain hose is connected to the oil drain valve and open the drain valve. Reclose the valve when oil stops draining.
3. Spin off the oil filter canister and clean the filter mounting surface on the engine block. Remove the old gasket if it remains.
4. Make sure the gasket is in place on the new filter and apply a thin film of clean oil to the gasket. Spin the new filter on until the gasket just touches the block. Turn it an additional 1/2 to 3/4 turn. Do not overtighten.
5. Refill with 1.7 quarts (1.6 liters) of oil and check oil level.

**⚠CAUTION** *Too much oil can cause high oil consumption. Too little oil can cause severe engine damage. Keep the oil level between the FULL and ADD marks.*

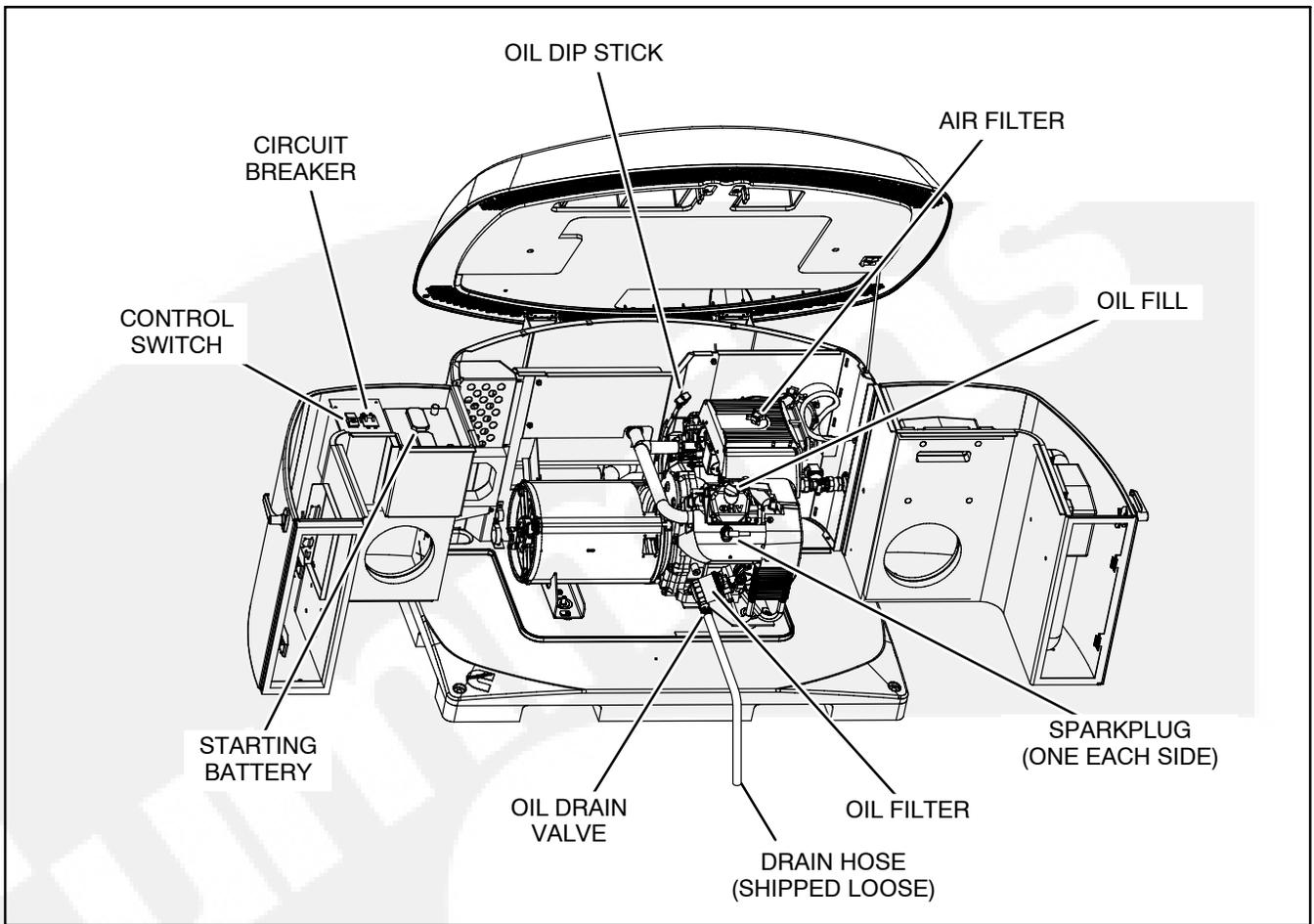
6. Dispose of the used oil and oil filter according to local environmental regulations.

## REPLACING THE AIR FILTER ELEMENT

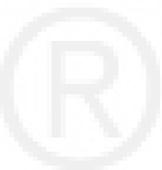
**⚠WARNING** *Accidental or remote starting of the generator set can cause severe personal injury or death. Disconnect the negative (-) battery cable and place the control switch in its OFF position before starting work.*

Refer to Table 2-1 for scheduled air filter replacements and to the control panel for the air filter part number. Replace it more often in dusty environments.

To change the filter element (Figure 2-1), remove the outer and inner cover and reassemble with a new air filter element. Turn the inner cover wingnut three to four clicks past seating. Make sure the outer cover is seated before tightening its wingnut.



**FIGURE 2-1. MAINTENANCE POINTS**



## BATTERY MAINTENANCE

**⚠WARNING** *Arcing at battery terminals or in light switches or other equipment, and flames or sparks, can ignite battery gas causing severe personal injury—Ventilate battery area before working on or near battery—Wear safety glasses—Do not smoke—Switch work light ON or OFF away from battery—Stop the generator set—Disconnect the negative (-) battery cable first and reconnect it last.*

Refer to Table 2-1 for scheduled battery maintenance, and follow the battery manufacturer's instructions. Have the battery charger in the transfer switch replaced if the battery keeps running down. Always:

1. Keep the battery case and terminals clean and dry and the terminals tight (Figure 2-1).
2. Remove battery cables with a battery terminal puller. Torque threaded stud battery terminals as recommended by the battery manufacturer.
3. Make sure which terminal is positive (+) and which is negative (-) before making battery connections, always removing the negative (-) cable first and reconnecting it last to reduce arcing.

## SPARK PLUGS

**⚠WARNING** *Accidental or remote starting of the generator set can cause severe personal injury or death. Disconnect the negative (-) battery cable and place the control switch in its OFF position before starting work.*

Set the genset control to the Off position before checking the spark plugs.

Refer to Table 2-1 for scheduled spark plug replacement. (The genset has two spark plugs: one on each side of the engine, Figure 2-1.) The spark plugs must be in good condition for proper engine starting and performance. A spark plug that fouls frequently or has heavy soot deposits indicates the need for engine service.

To prevent crossthreading a spark plug, always thread it in by hand until it seats. Torque the spark plug to 10 lb-ft (13.5 N-m).

Return the genset control to Auto when finished performing maintenance.

## NEW ENGINE BREAK-IN

Proper engine break-in on a new generator set or on one with a rebuilt engine is essential for top engine performance and acceptable oil consumption. To do this:

1. Change the engine oil if not appropriate for the ambient temperatures during break-in.
2. Run the generator set at half load (6 kilowatts) for two hours.
3. Check oil level every 4 hours during the first 20 hours of operation and change the oil.
4. Have the valve lash adjusted.

Proper engine oil and oil level are especially critical during break-in because of the higher engine temperatures that can be expected.

## ACCESSORY BATTERY HEATER AND CARBURETOR AND OIL HEATER KITS

**⚠WARNING** *Electrical connections must be made by a trained and experienced electrician. Improper installation can lead to electrocution and damage to property.*

*Automatic startup of the generator set during installation can cause severe personal injury or death. Push the control switch Off and disconnect the negative (-) cable from the battery to keep the generator set from starting.*

An optional thermostatically controlled battery heater (Battery Heater Kit 333-0770) is available for more reliable starting in ambient temperatures down to -20° F (-28.8° C). The heater wraps around the battery. The heater cord is connected to the 120V, accessory connection block.

An optional thermostatically controlled oil and carburetor heater (Heater Kit 333-0771) is also available for more reliable generator starting at low ambient temperatures. The heater cord is connected to the 120V, accessory connection block.

# 3. Troubleshooting

## TROUBLESHOOTING WITH THE IN-HOME OPERATOR PANEL

If a fault shutdown occurs the ACTION REQUIRED lamp on the in-home Operator Panel will come on and the LCD screen will display the a description of the Fault, the Fault Number, and the hour in total generator set running time when the Fault occurred.

The shutdown codes are listed below in numerical order along with step-by-step corrective actions. Dealers, contact an authorized Cummins Distributor if you are unable to resolve the problem after taking the corrective actions suggested. Distributors, contact the factory if you are unable to resolve the problem.

The shutdown codes are listed below in numerical order along with step-by-step corrective actions. If you are unable to resolve the problem after taking the corrective actions suggested, contact an authorized Cummins Dealer. See HOW TO OBTAIN SERVICE (page 1-4).

First note the following: Maintaining engine oil, keeping battery connections clean and tight, not overloading the generator set, keeping the air inlet and outlet openings clear, etc. will prevent most shutdowns.

## TROUBLESHOOTING WITH THE FLASHING INDICATOR LIGHT

The status indicator light on the Control Switch inside the generator set flashes the diagnostic fault code when a fault shutdown occurs. For a single-digit fault code (2 or 4), the light will flash 2 or 4 times and after a short pause will repeat.

For a two-digit fault code the light will flash the tens digit, pause and flash the units digit and repeat after a longer pause. Fault 36 would be flashed as follows:

flash-flash-flash—pause—flash-flash-flash-flash-flash—  
long pause—repeat

**Note:** For fault history, go to the in-home Operator Panel.

## FAULT CODE BLINKING

At fault shutdown, the status indicator light will repeatedly blink sets of 1, 2, 3 or 4 blinks.

- **One blink** indicates shutdown due to high engine coolant temperature.
- **Two blinks** indicate shutdown due to a loss of engine oil pressure.
- **Three blinks** indicate a service fault. Press **Stop** once to cause the two-digit, second-level shutdown code to blink. (Pressing **Stop** again will stop the blinking.) The two-digit code consists of 1, 2, 3, 4 or 5 blinks, a brief pause, and then 1 to 9 blinks. The first set of blinks represents the tens digit and the second set of blinks the units digit of the shutdown code number. For example, **shutdown code No. 36** appears as:

blink-blink-blink—pause—blink-blink-blink-blink-blink-blink—  
long pause—repeat

- **Four blinks** indicate that cranking time exceeded 35 seconds.
- *Fault Code Nos. 1, 2, 3, and 4 are first level faults. Pay close attention to the pause sequence to avoid interpreting first level faults as second-level Fault Codes Nos. 11, 22, 33, or 44.*
- *To avoid the possibility of anyone misinterpreting Code Nos. 3 and 4 as Code Nos. 33 and 44, the latter have not been assigned faults.*

## RESTORING FAULT CODE BLINKING

The fault code stops blinking after five minutes. Press **Stop** three times within three seconds to restore fault code blinking.

**Note:** The last fault logged will blink even though the condition that caused the shutdown may have been corrected.

**⚠WARNING** *Some Generator Set service procedures present hazards that can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform Generator Set service.*

### **NO RESPONSE – STATUS INDICATOR LIGHT DEAD**

**Possible Cause:** Low/No battery voltage, poor battery connection, faulty battery, open harness connection, faulty start/stop switch, faulty LED

**Corrective Actions:**

1. Try generator set Start Switch if the remote display Start Switch does not respond, and vice versa
2. Clean and tighten positive (+) and negative (–) battery cable connections at the battery.
3. Recharge or replace battery. Refer to the battery manufacturer’s recommendations.

### **STARTING BATTERY RUNS DOWN**

**Possible Cause:** Marginal battery connections, battery, charging system, excessive cranking

**Corrective Actions:**

1. Clean and tighten positive (+) and negative (–) battery cable connections at the battery.
2. Recharge or replace battery. Refer to the battery manufacturer’s recommendations.
3. Have battery charger serviced by an authorized Cummins location.

### **STARTER ENGAGES – DISENGAGES**

**Possible Cause:** Cranking voltage dips below 6 VDC – Battery connections, battery, charging system, start/stop switches

**Corrective Actions:**

1. Clean and tighten positive (+) and negative (–) battery cable connections at the battery.
2. Recharge or replace battery. Refer to the battery manufacturer’s recommendations.
3. Have the battery charger serviced by an authorized Cummins Onan dealer.

### **NO AC POWER – GENERATOR SET RUNNING, STATUS LED ON STEADY OR FLASHING RAPIDLY**

**Possible Cause:** Circuit breakers tripped to OFF, due to short circuit or overloading.

**Corrective Actions:**

1. Reset or turn on generator set circuit breaker.
2. Reset or turn on circuit breaker in the distribution panel.
3. Reduce number of loads.
4. Have the circuits from the generator set and distribution panel verified by an authorized electrician.

### **GENERATOR SET CRANKS BUT DOES NOT START – NO FAULT CODE**

**Possible Cause:** Not holding start switch long enough to cause fault

**Corrective Actions:**

1. Check and record last fault code.
2. Crank generator set and hold switch until control stops cranking and displays fault code (approximately 30 seconds): troubleshoot fault code and reference last fault code recorded above if necessary.

**⚠WARNING** *Some Generator Set service procedures present hazards that can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform Generator Set service.*

### **GENERATOR SET RUNS BUT STOPS WHEN SWITCH IS RELEASED – NO FAULT CODE**

**Possible Cause:** Not holding start switch long enough to cause fault

**Corrective Actions:**

1. Check and record last fault code.
2. Start generator set and hold switch until control shuts down and displays fault code (approximately 30 seconds): troubleshoot fault code and reference last fault code recorded above if necessary.

### **GENSET WARNING-TRANSFER SWITCH FAILED TO TRANSFER TO UTILITY – NO FAULT CODE**

**Possible Cause:** Transfer switch is faulty, or wire is disconnected or broken

**Corrective Actions:**

1. Have the utility switch-position wire, wire connections, and transfer switch checked by an authorized electrician.

### **GENSET WARNING-TRANSFER SWITCH SIGNAL FAILURE – NO FAULT CODE**

**Possible Cause:** Broken wire connections, or transfer switch stuck in neutral position.

**Corrective Actions:**

1. Have the utility switch-position wire, wire connections, and transfer switch checked by an authorized electrician.

### **LOW OIL PRESSURE FAULT – FAULT CODE 2**

**Possible Cause:** Oil Level too low/high, faulty switch, faulty oil pressure relief valve, faulty oil pump

**Corrective Actions:**

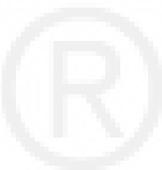
1. Check oil level: add or drain oil as necessary.

### **OVERCRANK – FAULT CODE 4**

**Possible Cause:** First-level shutdown code – Cranking exceeded 30 seconds after 3<sup>rd</sup> cycle crank.

**Corrective Actions:**

1. Open any closed fuel valves.
2. Secure spark plug leads to spark plugs.
3. Check and service air filter as necessary.
4. Replace spark plugs.



**⚠WARNING** *Some Generator Set service procedures present hazards that can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform Generator Set service.*

### **OVERVOLTAGE – FAULT CODE 12**

**Possible Causes:** Controller unable to maintain rated voltage.

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

### **UNDERVOLTAGE – FAULT CODE 13**

**Possible Causes:** Controller unable to maintain rated voltage.

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

### **OVERFREQUENCY – FAULT CODE 14**

**Possible Causes:** Engine governor unable to maintain rated frequency.

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

### **UNDERFREQUENCY – FAULT CODE 15**

**Possible causes:** Engine governor unable to maintain rated frequency.

**Corrective Actions:**

1. Reduce the number of connected loads especially loads that require higher starting current such as air conditioners.
2. Have unit serviced by an authorized Cummins Onan dealer.

### **GOVERNOR ACTUATOR SHUTDOWN – FAULT CODE 19**

**Possible causes:** Controller sensed governor actuator circuit open or shorted.

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

### **GOVERNOR ACTUATOR OVERLOAD – FAULT CODE 22**

**Possible causes:** Duration of operation at or near full duty-cycle beyond design limit

**Corrective Actions:**

1. Reduce the number of connected loads especially loads that require higher starting current such as air conditioners.
2. Check and service air filter as necessary.
3. Have unit serviced by an authorized Cummins Onan dealer.

### **VOLTAGE SENSE LOST – FAULT CODE 27**

**Possible Causes:** Control unable to sense output voltage

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

**⚠WARNING** *Some Generator Set service procedures present hazards that can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform Generator Set service.*

### **HIGH BATTERY VOLTAGE – FAULT CODE 29**

**Possible Causes:** Voltage across battery system is greater than 19 volts

**Corrective Actions:**

1. Have battery charger serviced by an authorized Cummins Onan dealer.

### **LOW CRANKING SPEED SENSE – FAULT CODE 32**

**Possible Causes:** Controller sensed generator set cranking speed less than 180 rpm for greater than 3 seconds.

**Corrective Actions:**

1. Clean and tighten positive (+) and negative (–) battery cable connections at the battery.
2. Recharge or replace battery. Refer to the battery manufacturer's recommendations.
3. Verify engine oil viscosity is correct for the ambient temperature. If not, refill and replace engine oil with correct viscosity.
4. Have unit serviced by an authorized Cummins Onan dealer.

### **CONTROL CARD FAILURE – FAULT CODE 35**

**Possible Causes:** Microprocessor EEPROM error during self-test.

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

### **GENERATOR SET STOPPED WITHOUT FAULT CONDITION – FAULT CODE 36**

**Possible Causes:** Generator stopped without command by controller.

**Diagnosis & Repair:**

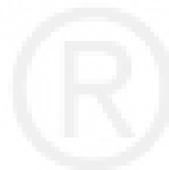
1. Open any closed fuel valves.
2. Secure spark plug leads to spark plugs.
3. Check and service air filter as necessary.
4. Replace spark plugs.
5. Check for mechanical damage.

### **INVALID SET CONFIGURATION – FAULT CODE 37**

**Possible Causes:** Wrong frequency / rpm ratio.

**Diagnosis & Repair:**

1. Have unit serviced by an authorized Cummins Onan dealer.



**⚠WARNING** *Some Generator Set service procedures present hazards that can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform Generator Set service.*

### **PROCESSOR FAULT – FAULT CODE 43**

**Possible Causes:** Microprocessor RAM error during self-test.

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

### **SPEED SENSE FAULT – FAULT CODE 45**

**Possible Causes:** Controller unable to sense quadrature frequency.

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

### **GENERATOR SET OVERLOAD – FAULT CODE 46**

**Possible causes:** Current is at 100% of rated operation at design limit.

**Corrective Actions:**

1. Reduce the number of connected loads especially loads that require higher starting current such as air conditioners.
2. Check and service air filter as necessary.
3. Have unit serviced by an authorized Cummins Onan dealer.

### **ALTERNATOR OVER TEMP – FAULT CODE 76**

**Possible Causes:** Temperature at generator alternator is greater than 170°F [76°C].

**Corrective Actions:**

1. Have unit serviced by an authorized Cummins Onan dealer.

### **LOW FUEL PRESSURE – FAULT CODE 78**

**Possible Causes:** Controller sensing fuel pressure switch closed.

**Corrective Actions:**

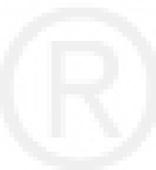
1. Open any closed fuel valves.
2. Have unit serviced by an authorized Cummins Onan dealer.

### **FAILURE TO TRANSFER TO GENERATOR SET – FAULT CODE 79**

**Possible Causes:** Controller unable to sense transfer switch position in standby power position.

**Diagnosis & Solution:**

1. Verify that the main AC circuit breaker on the generator set is to “On”.
2. Have unit serviced by an authorized Cummins Onan dealer.



# Appendix A. Operation

## IN-HOME OPERATOR PANEL

The in-home generator set Operator Panel (Figures A-1 and A-2) is intended for wall mounting at a convenient location inside the house. The Operator Panel must be hard-wired to the generator set for the generator system to operate. Refer to *Appendix B. Internet / Email Interface* for an alternative interface to operate and monitor the generator set. The in-home operator panel and Internet/Email interface can be used simultaneously.

The Operator Panel has two UTILITY status lamps, three GENERATOR status lamps, three action buttons (BACK, STANDBY ON/OFF and START/STOP) and an LCD display screen with four navigation buttons.

### BACK Button

When navigating through the LCD menus, press the BACK button to return to the main operating screen.

### STANDBY ON/OFF Button

See Page A-3 to enable / disable generator set STANDBY.

### START STOP Button

See Page A-3 to manually START / STOP the generator set.

## TYPICAL OPERATION

### Normal Operation—Utility Power Available and Connected

As long as utility power is available and connected, both of the green UTILITY lamps (PRESENT and CONNECTED) will stay on and the LCD screen will indicate “Genset Stopped”.

If the red GENERATOR **STANDBY OFF** light is on, the generator set will not start up automatically if utility power is interrupted. See Page A-3 to enable STANDBY so that the generator set will automatically supply power if utility power is interrupted.

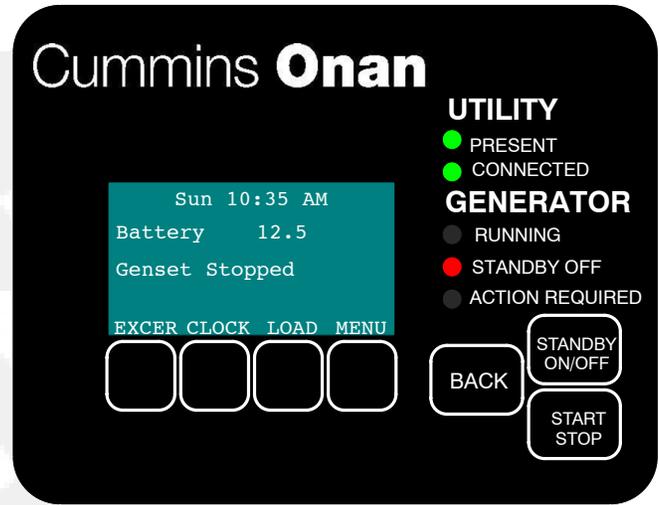
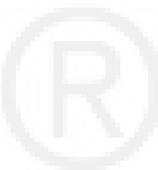


FIGURE A-1. UTILITY PRESENT AND CONNECTED—STANDBY OFF LAMP ON



## Emergency Operation—Utility Power Interrupted

If utility power is interrupted,

1. The green UTILITY PRESENT lamp will go out
2. The generator set will start automatically and the green GENERATOR RUNNING lamp will come
3. The UTILITY CONNECTED light will go out when the generator set is connected to supply power.

The LCD screen will provide a visual indication of “Genset Load” (bar graphs). The bar graphs indicate how much of the available power is being used in each supply line (L1 and L2).

If the red **ACTION REQUIRED** light comes on, either the generator shut down or periodic maintenance has come due. The LCD screen will indicate what maintenance is due or which fault occurred.

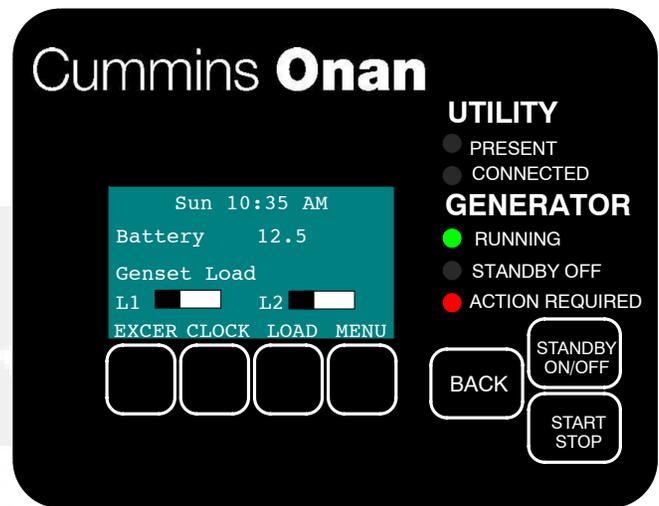


FIGURE A-2. GENERATOR SET RUNNING—ACTION REQUIRED LAMP ON

## TO ENABLE / DISABLE STANDBY

You should normally not have occasion to disable generator set STANDBY. STANDBY should always be enabled (ON) except during maintenance/service.

STANDBY will have to be re-enabled (STANDBY OFF light on) if the generator set is started or stopped manually (normally a maintenance/service function) or a fault shutdown has occurred.

**CAUTION** When STANDBY is disabled the generator set will NOT automatically start to supply power if utility power is interrupted.

To enable or disable generator set standby:

1. Press the STANDBY ON/OFF button on the Operator Panel (Figure A-1), which takes you to the Standby ON/OFF screen (Figure A-3).
2. Press the up or down arrow button to select ON or OFF.
3. **To enable STANDBY** select ON and press the BACK button. The STANDBY OFF lamp will go out and the display will state: "Standby ready enabled by user."
4. **To disable STANDBY** select OFF and press the BACK button. The STANDBY OFF lamp will come on and the display will state: "Standby ready disabled by user."

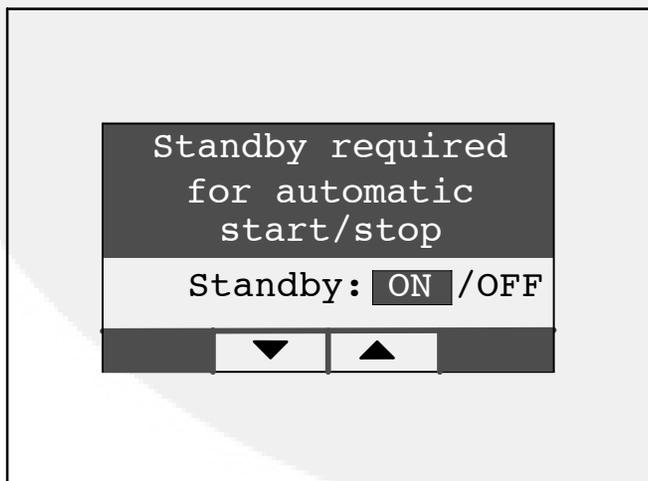


FIGURE A-3. ENABLE/DISABLE STANDBY SCREEN

## TO MANUALLY START / STOP GENERATOR SET

Normally only the maintenance/service technician has occasion to manually start and stop the generator set. Starting the generator set will result in the generator powering the house loads.

**CAUTION** Manually starting or stopping the generator set disables generator set STANDBY. The generator set will not automatically start to supply power if utility power is interrupted.

To manually start or stop the generator set:

1. Press the START STOP button on the Operator Panel (Figure A-1), which takes you to the Gen-set START/STOP screen (Figure A-4). The screen will display "Genset Stopped" or "Genset Running," as appropriate.
2. Press START to manually start the generator set and connect it to supply power to the house. The STANDBY OFF lamp will come on and the display will state: "Genset started manually (Standby Ready Disabled)."
3. Press STOP to manually stop the generator set and disconnect it. The STANDBY OFF lamp will come on and the display will state: "Genset stopped manually (Standby Ready Disabled)."

**Note:** To start the generator set without connecting loads pick Exercise Now on the Exerciser Clock screen (page A-10).

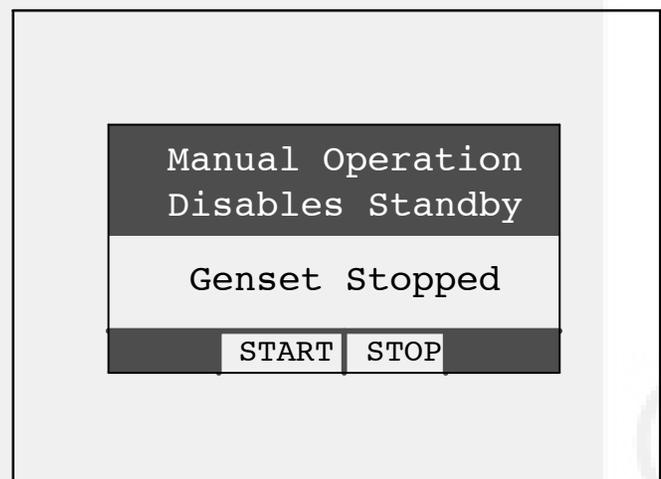


FIGURE A-4. GENSET START/STOP SCREEN

## FAULT, MAINTENANCE AND NEW EVENT SCREENS

Various warning and event screens may appear on the Operator Panel during Normal or Emergency Operation.

### Fault Screen

If a generator set shutdown fault occurs, a FAULT warning appears (Figure A-5) with the following information:

- Brief description of the warning or fault
- The two-digit Fault Code Number
- The time of occurrence of the fault

### Maintenance Due Screen

A maintenance due screen appears (Figure A-5) when a scheduled maintenance operation is due. Perform the maintenance due. The warning does not time out.

Press the BACK button to return to the home screen.

### New Event Screen

A New Event screen appears (Figure A-5) whenever system status changes, such as when there is an interruption of utility power. The screen provides a brief description of the event along with the time and date of the event.

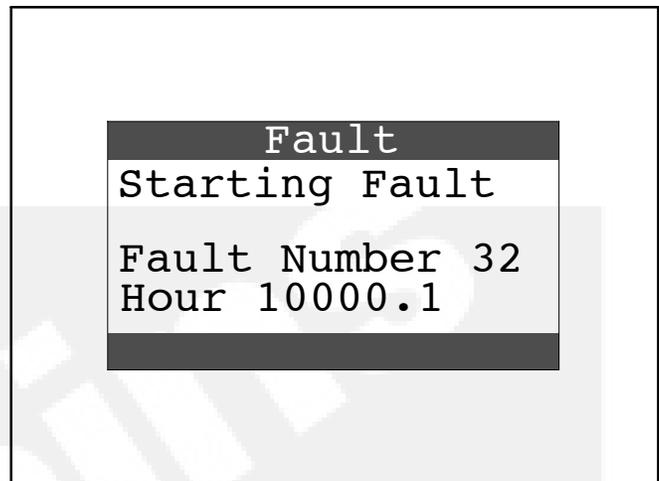


FIGURE A-5. TYPICAL FAULT SCREEN

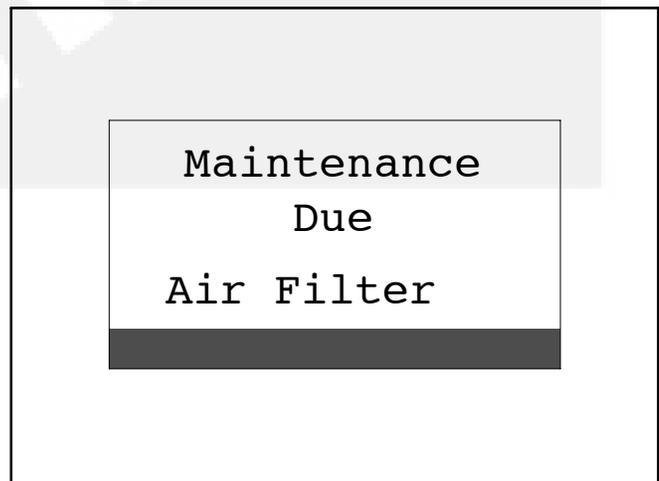


FIGURE A-6. TYPICAL MAINTENANCE DUE SCREEN

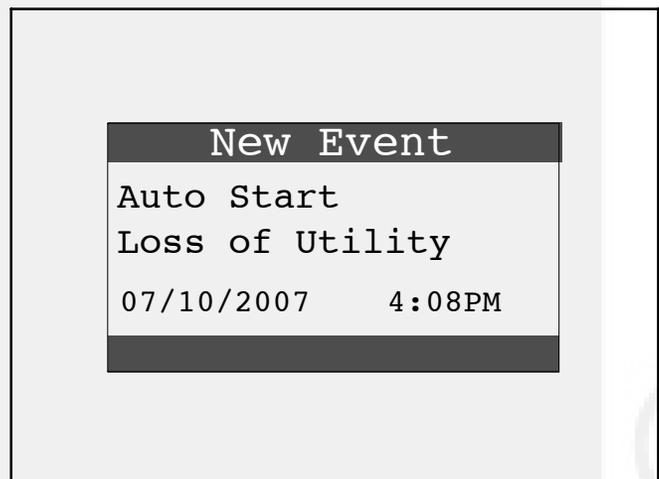


FIGURE A-7. TYPICAL NEW EVENT SCREEN

## GENSET STATUS

To check generator set output voltage and frequency and the total numbers of hours run:

1. Press the MENU button on the home screen.
2. Press the up or down arrow button on the menu screen to select Genset Status.
3. Press the ENTER button on the menu screen and note the values displayed on the Genset Status screen.
4. Press the BACK button to return to the home screen.

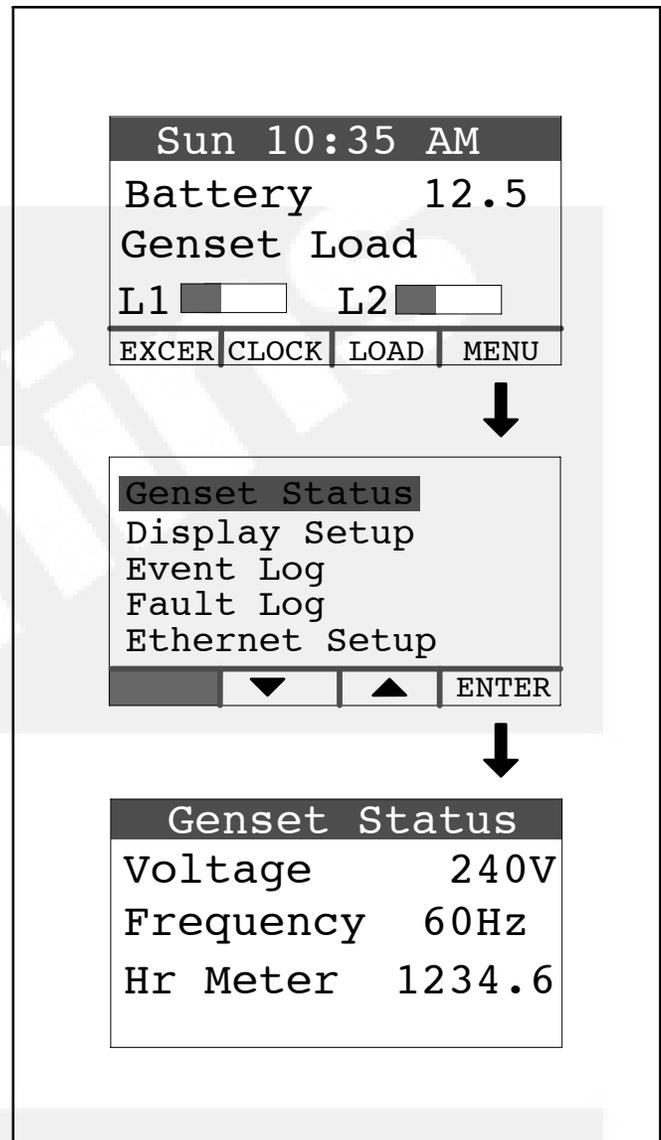


FIGURE A-8. GENERATOR SET STATUS SCREEN

## DISPLAY SETUP AND SOFTWARE INFO

### Brightness and Contrast

To change the Brightness and Contrast of the display screen:

1. Press the MENU button on the home screen.
2. Press the up or down arrow button on the menu screen to select Display Setup.
3. Press the ENTER button on the menu screen.
4. Press the NEXT button to select Brightness or Contrast.
5. Press the increase or decrease arrow button to increase or decrease brightness.
6. Change Contrast the same way as Brightness.
7. Press the BACK button to save the settings and return to the home screen.

### Software Info

To check on the generator set and display software:

1. Press the MENU button on the home screen.
2. Press the up or down arrow button on the menu screen to select Display Setup.
3. Press the ENTER button on the menu screen.
4. Press the INFO button on the Display Setup screen and note the values displayed on the Software Info screen.
5. Press the BACK button to return to the home screen.

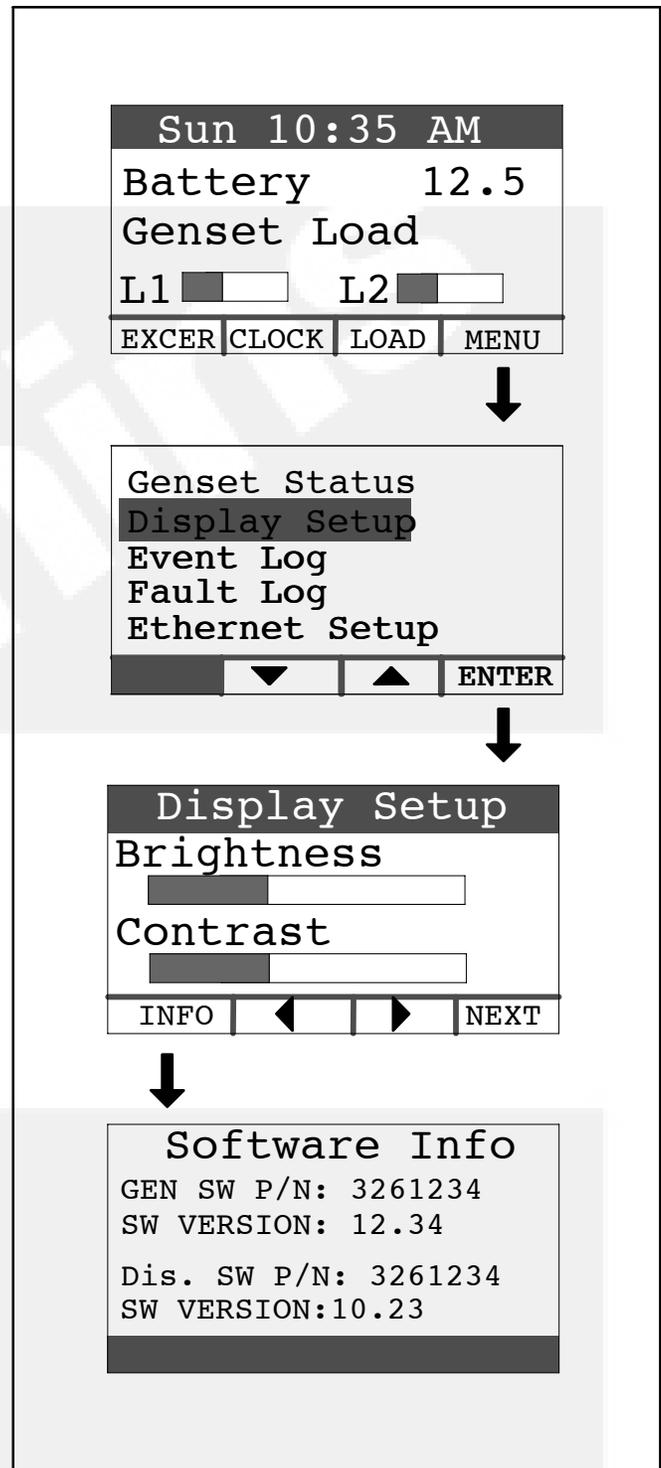


FIGURE A-9. DISPLAY SETUP AND SOFTWARE INFO SCREENS

## EVENT LOG

### To Check Log of Last 20 Events

1. Press the MENU button on the home screen.
2. Press the up or down arrow button on the menu screen to select Event Log.
3. Press the ENTER button on the menu screen.
4. Scroll through the event log with the up and down double-arrow buttons. Each screen provides a brief description of the event along with the time and date of the event.
5. Press the BACK button to return to the home screen.

### List of Recordable Events

1. "Genset started manually (Standby Ready Disabled)"
2. "Genset stopped manually (Standby Ready Disabled)"
3. "Genset exercise started"
4. "Genset exercise completed"
5. "Genset started due to loss of utility"
6. "Genset stopped with return of utility"
7. "Switch on genset moved to remote position"
8. "Switch on genset moved to run position"
9. "Switch on genset moved to off position"
10. "Standby ready disabled by user"
11. "Standby ready enabled by user"
12. "Utility lost – not in Standby Ready"
13. "Utility returned – not in Standby Ready"
14. "Maintenance reminder – Change oil and check valve lash"
15. "Maintenance reminder – Change oil & filter, air filter, adjust valve lash, clean and check battery & engine cooling fins"
16. "Genset fault – (Fault description appended)"
17. "Genset warning – Transfer Switch Signal Failure"
18. "Genset warning – Transfer Switch Failed to Transfer to Utility"
19. "Genset warning – Low Battery or Battery Charger Failure"

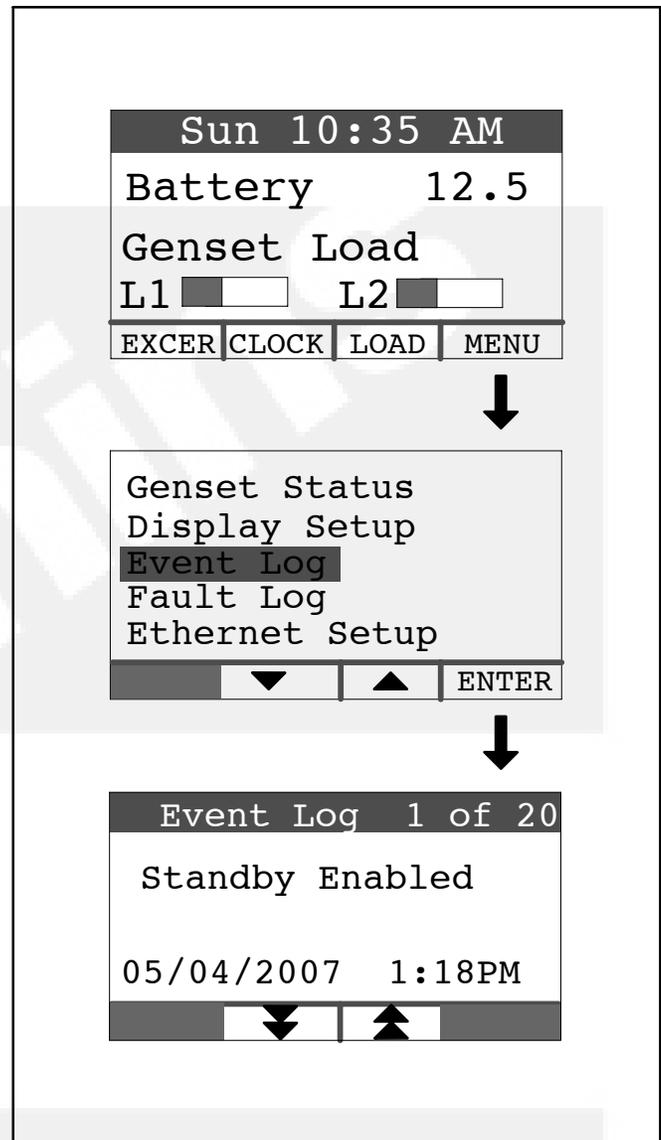


FIGURE A-10. EVENT LOG SCREEN

## FAULT LOG

To check the log of the last 5 faults:

1. Press the MENU button on the home screen.
2. Press the up or down arrow button on the menu screen to select Fault Log.
3. Press the ENTER button on the menu screen.
4. Scroll through the fault log with the up and down double-arrow buttons. Each screen provides a brief description of the fault, the fault code number and the time and date of the fault.
5. Press the BACK button to return to the home screen

**Note:** If there are no faults recorded, the “No Stored Faults” screen will appear.

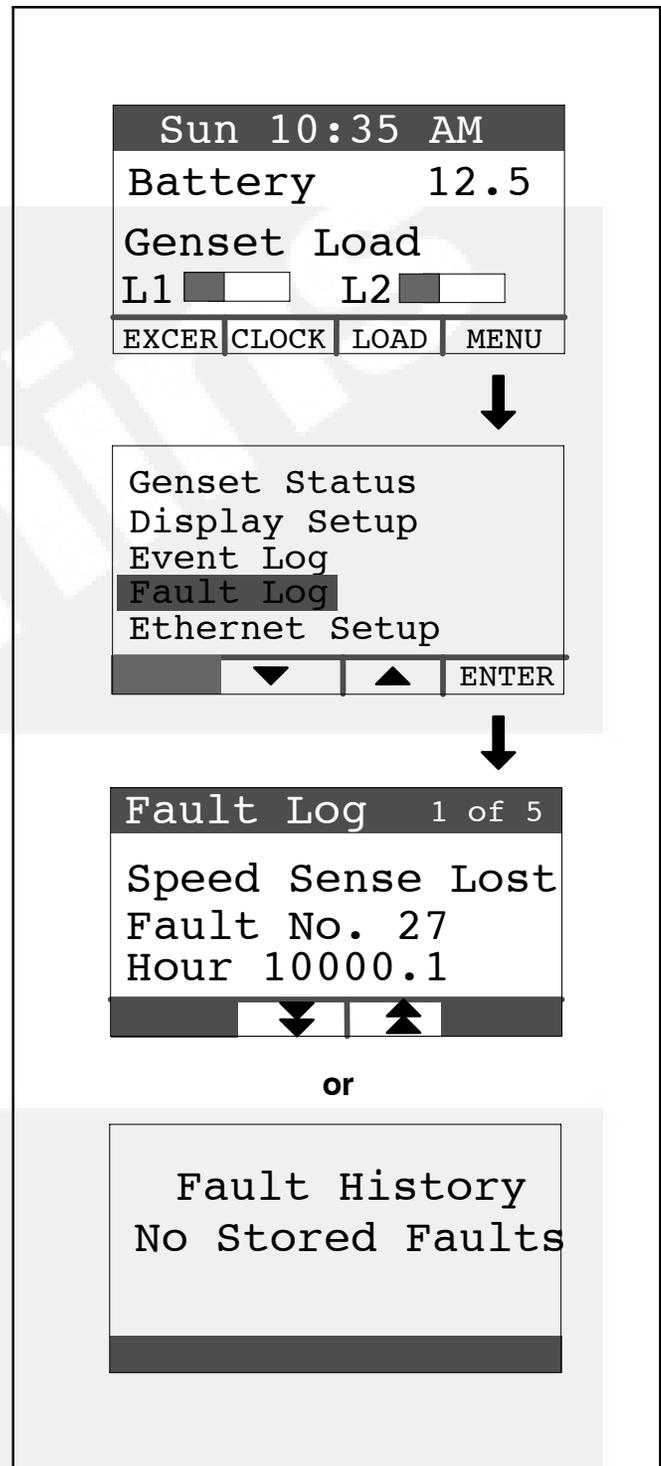


FIGURE A-11. FAULT LOG SCREEN

## ETHERNET SETTINGS

This feature allows for in-home or remote access to your generator set through a web page. On this web page, you can start or stop your generator set, adjust the exerciser day and time, determine if utility power is available, and view the last 20 events/faults on the generator set.

This feature is useful for homeowners who travel or have a second home and want to be able to remotely interface with their generator set. This feature can also help to reduce troubleshooting time and service calls when the service technician has access to the same web page.

Use of the ethernet is not required if you do not use web access. To set up your generator set for web access, complete installation instructions are included in the Network Setup Guide (Appendix C).

**Note: Ethernet setup must be done at the generator set location. It cannot be done via the web from a different location. An available Ethernet port and a high-speed internet are required for functionality.**

To reset the Internet and email interface IP address and password:

1. Press the MENU button on the home screen.
2. Press the up or down arrow button on the menu screen to select Ethernet Setup.
3. Press the ENTER button on the menu screen.
4. Press the NEXT button to select the field to change.
5. **To Reset Password** – If you have forgotten your password, select the Reset Password field and press an up or down arrow. The password will be reset to “cummins”. Press the BACK button to go back to the home screen.
6. **IP Address** – If DHCP is ON (factory setting), the modem/router will assign the generator set IP address displayed here. This is the address you enter in your internet browser address bar at the *http://* location (page B-1). The address assigned to the generator set may change over time. If, for example, the modem/router is unplugged, it will probably re-assign new addresses to all of the devices in the home that it serves. If the IP address you have been using does not work any longer, copy down the new address and enter it on the browser page.
7. **DHCP ON/OFF** – DHCP leaves the factory ON. If more advanced features are desired, the mo-

dem/router probably can be configured for DHCP to be OFF. Refer to the Network Setup Guide (Appendix C) regarding the permanent generator set IP address to assign.

8. **Manually Enter IP Address—DHCP OFF** – If DHCP is OFF, it will be necessary to manually enter the IP address, which consists of four three-digit numbers. To enter a number select the hundreds, tens or units field in each three digit number field by pressing the NEXT and PREV buttons. Push the up or down arrow to increase or decrease the number in the selected field. Numbers in the units fields will increase by one, in the tens fields by ten and in the hundreds field by one hundred. Refer to the Network Setup Guide in Appendix C to make sure setup is complete.

**Note: If utilizing a remote internet access to the generator set, it is recommended that a UPS battery backup be connected to your router and/or modem.**

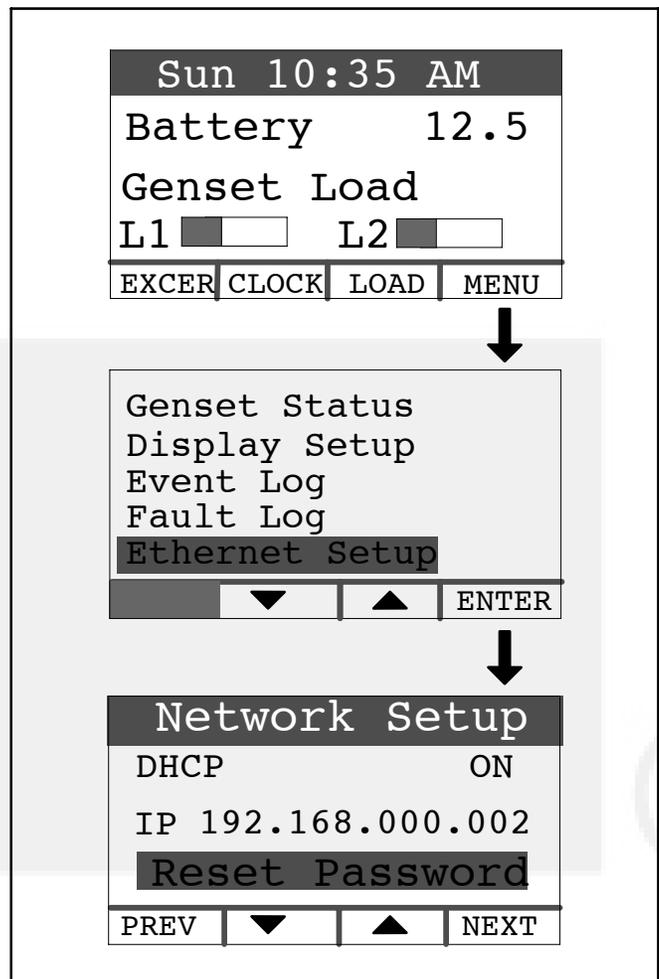


FIGURE A-12. NETWORK SETUP SCREEN

## EXERCISE SETTINGS

To set the generator set exercise schedule:

1. Press the EXCER button on the home screen.
2. Press the NEXT button on the Exerciser Clock screen to select the field to change.
3. Press the up or down arrow button to increase or decrease the frequency of exercise and the day of the week and time of day for exercise. Frequency selections are: Weekly, Bimonthly, Monthly or Never.
4. Press the BACK button to save the settings and return to the home screen.
5. If you want to exercise the generator set now, select "Exercise Now", and press either the up or down arrow.

**Note: Scheduled or prompted exercise does not transfer the house loads to the generator set.**

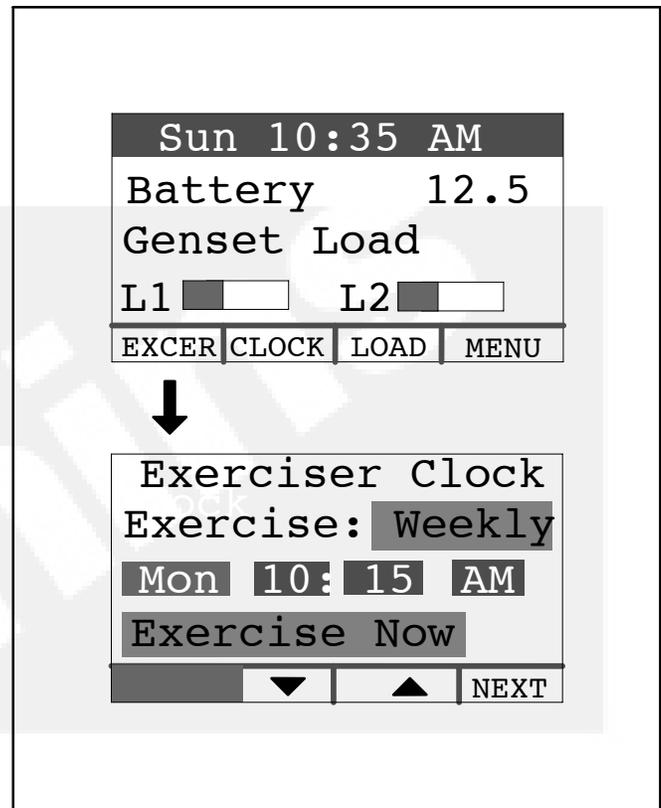


FIGURE A-13. EXERCISE CLOCK SCREEN



## TIME SETUP

To set up the generator set clock for the current date and time:

1. Press the CLOCK button on the home screen.
2. Press the NEXT button on the Time Setup screen to select the field to change.
3. Press the up or down arrow button to increase or decrease or change the date or time.
4. Press the BACK button to save the settings and return to the home screen.

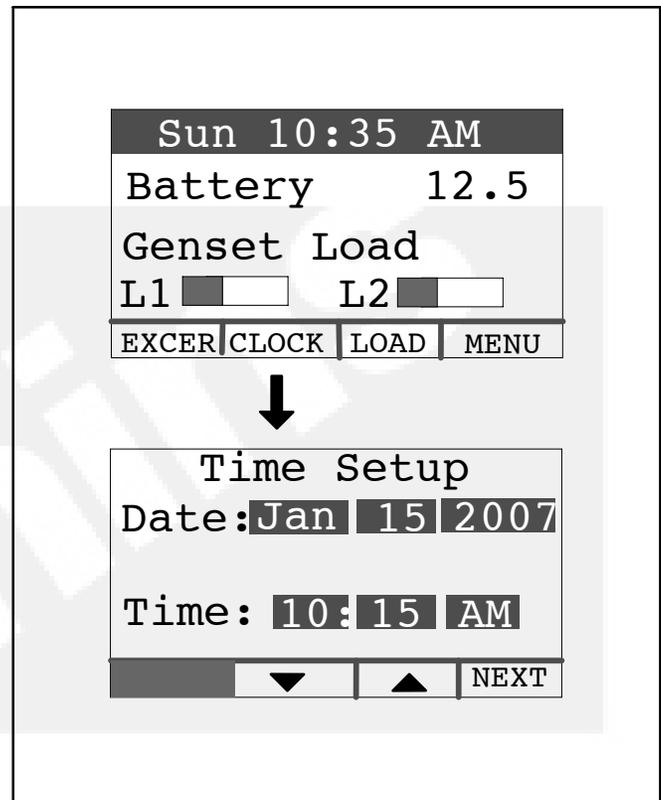


FIGURE A-14. TIME SETUP SCREEN

## LOAD MANAGEMENT

The generator set may have been set up at installation to connect and disconnect certain large loads, such as air conditioners, to manage the total load so as not to overload the generator set. This requires the installation of two relays which allow for the connection of two large loads. Load management can be set to operate in automatic or manual mode (Figure A-15).

Whether in automatic or manual mode, there is a delayed start. Load 1 is enabled three minutes after the generator set is connected to the house loads, and Load 2 is enabled six minutes after the generator set is connected to the house loads.

### Automatic Load Management

When set to automatic mode, the user takes no action and can only view which loads are connected. Three minutes after the generator starts, the load that is connected to genset load L1 is connected. After a delay of three more minutes, the load that is connected to genset load L2 is connected. If the connection of loads L1 and L2 exceeds 95% of the generator's load capacity, they are disconnected by the generator. Following another three minute delay, the control reconnects both loads following the same connection sequence used in the first attempt (three minutes apart). If generator load capacity is exceeded again, both loads are disconnected, and no further reconnection is tried.

To select automatic load management and view whether the selected loads are connected while the generator set is running:

1. Press the LOAD button on the home screen.
2. Press the up or down arrow button to select Automatic.
3. Note which loads are connected or disconnected.
4. Press the BACK button to return to the home screen.

## Manual Load Management

**⚠ CAUTION** *To reduce unnecessary loss of service, it is highly recommended that manual load management be undertaken only by an authorized Cummins Onan dealer.*

When set to manual mode, the user is able to view, connect, and disconnect loads. If the connection of loads L1 and L2 exceeds generator capacity, the AC circuit breaker trips.

To select manual load management when the generator is running:

1. Press the LOAD button on the home screen.
2. Press the up or down arrow button to select Manual.
3. Note which loads are connected or disconnected.
4. Press the double-down arrow button to go to the load connect/disconnect screen.
5. Connect or disconnect Load 1 or Load 2 as necessary by pressing either button under Load 1 or Load 2.
6. Press the BACK button to save the setting and return to the home screen.



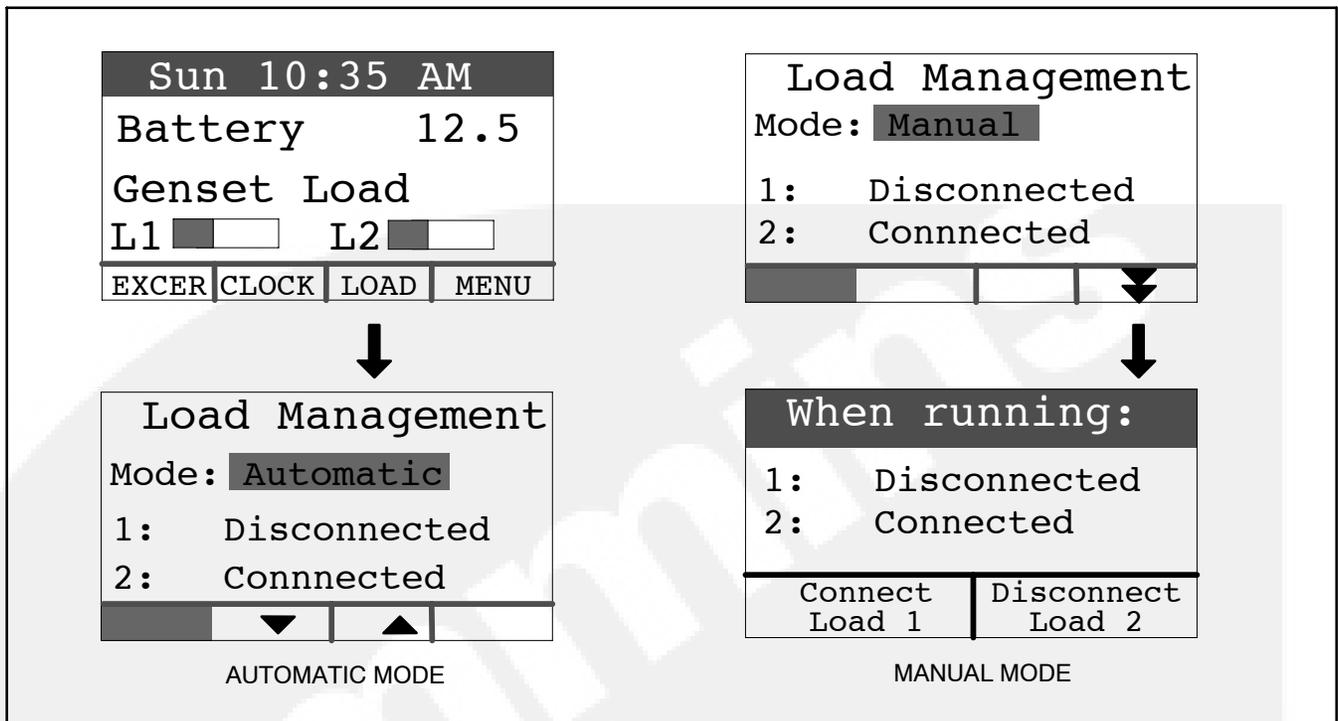
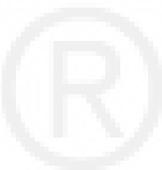


FIGURE A-15. LOAD MANAGEMENT SCREEN





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# Appendix B. Internet / Email Interface

## INTRODUCTION

Refer to *Section A. Operation* for use of the remote Operator Panel to operate and monitor the generator set. The Internet / Email Interface makes the same fault, maintenance and event notices available to you and to your generator set service contract agency wherever Internet Service is established.

## HOME PAGE

Enter the generator set IP address (listed on the My Cummins Onan Generator sheet, see page B-5) in

your internet browser address bar at the *http://* location. If you are on a computer that is connected to the same network as your generator set, use Generator In-Home IP address; otherwise, use the Public IP Address. Enter your User Name and Password in the browser dialog box that pops up. Use **admin** for the Username. The password set at the factory is **cummins**. See ETHERNET SETUP (p. A-9) to reset the password to “cummins” if you have forgotten the password you set up (p. B-4).

**Note: If the internet cable/dsl is out of order, communication with your generator set will be suspended until your internet connection is restored.**

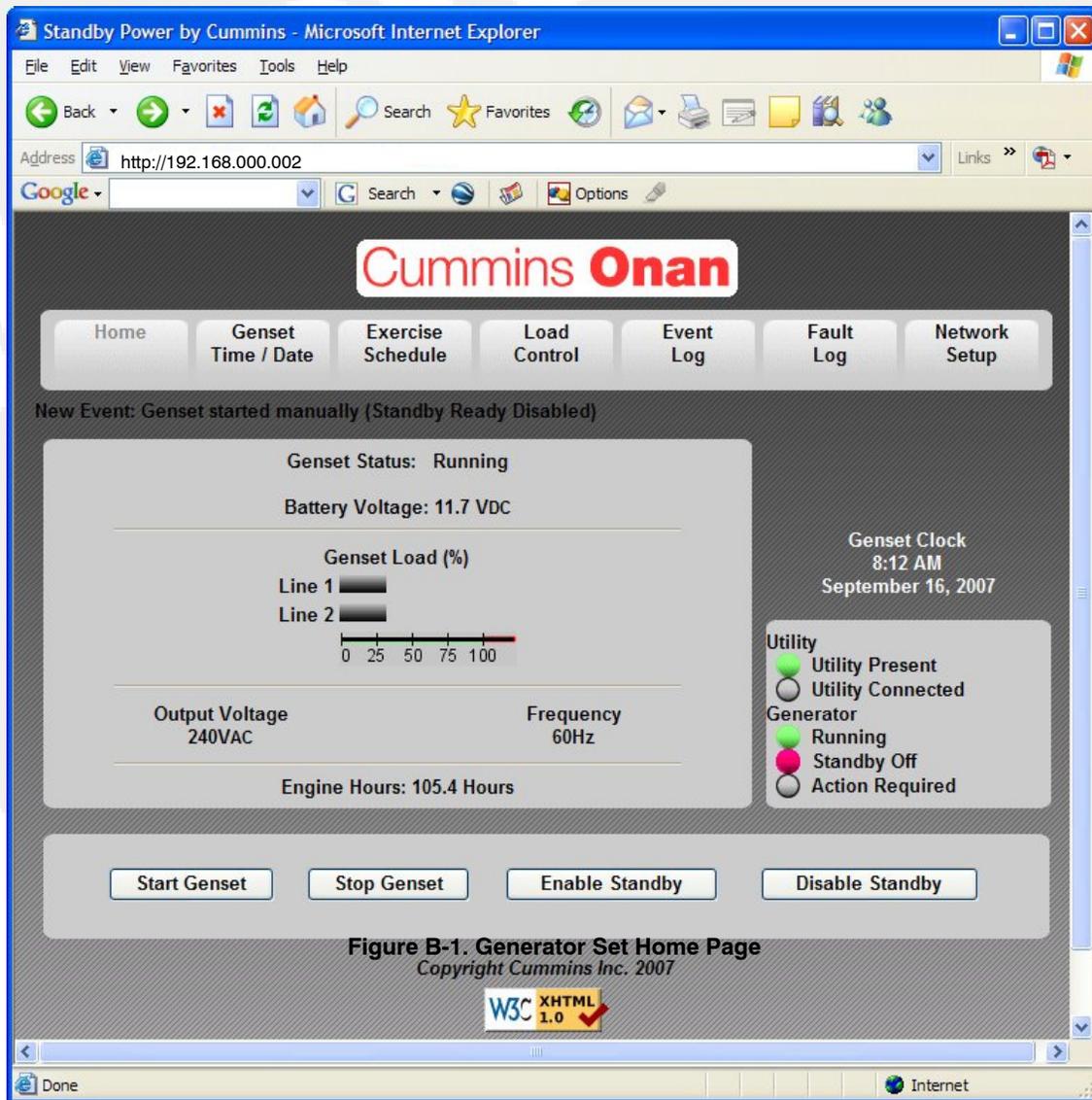


Figure B-1. Generator Set Home Page  
Copyright Cummins Inc. 2007

FIGURE B-2. HOME PAGE

See ETHERNET SETUP (p. A-9) to view and copy down the generator set IP address, if for some reason it has changed.

The home page displays the current status of the system. Use the tabs to navigate in the site.

### SETTING TIME AND DATE

Select the Genset Time/Date Tab on the Home Screen to set the time and date for the generator set control.



FIGURE B-3. SET GENSET TIME AND DATE

### SET EXERCISE SCHEDULE

Select the Exercise Schedule Tab on the Home Screen to set the generator set exercise schedule.

**Note:** The generator set will exercise on the first scheduled day for which it is programmed. After that it exercises on that day at the scheduled interval. For example, if the generator set is scheduled on a Wednesday for Saturdays with a monthly interval, the generator set starts on the next available Saturday. After that it exercises on Saturdays one month apart.

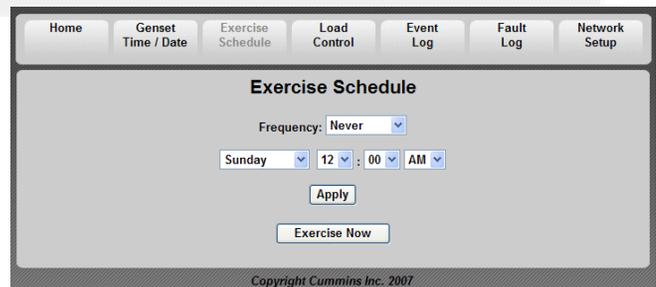


FIGURE B-4. SET EXERCISE SCHEDULE

### LOAD CONTROL (MANAGEMENT)

Select the Load Control Tab on the Home Screen to enable Automatic or Manual Load Control. In Automatic mode, the user can only view which loads are connected. In Manual mode, the user can view loads and also connect or disconnect them. See LOAD MANAGEMENT (p. A-12) for details.

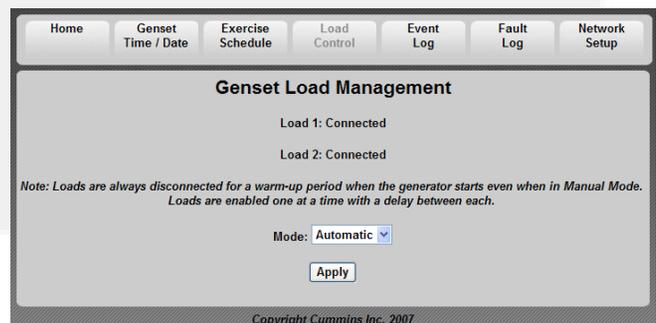


FIGURE B-5. GENSET LOAD MANAGEMENT

## EVENT LOG

Select the Event Log Tab on the Home Screen to review the last 20 events. See EVENT LOG (p. A-7) for a list of all of the recordable events.

Event Description	Time/Date
Genset started manually (Standby Ready Disabled)	September 13 2007 6:56 PM
Standby ready enabled by user	September 14 2007 3:21 PM
Genset stopped manually (Standby Ready Disabled)	September 14 2007 3:21 PM
Genset started manually (Standby Ready Disabled)	September 14 2007 2:22 PM
Standby ready enabled by user	September 14 2007 2:08 PM
Genset stopped manually (Standby Ready Disabled)	September 14 2007 2:02 PM
Genset started manually (Standby Ready Disabled)	September 14 2007 1:58 PM
Standby ready disabled by user	September 14 2007 1:58 PM
Standby ready enabled by user	September 14 2007 1:37 PM
Genset stopped manually (Standby Ready Disabled)	September 14 2007 1:37 PM
Genset started manually (Standby Ready Disabled)	January 4 2006 4:28 AM
Standby ready enabled by user	January 2 2006 7:14 PM
Genset stopped manually (Standby Ready Disabled)	January 2 2006 7:14 PM
Maintenance reminder - Change oil and check valve lash	January 2 2006 12:23 PM
Genset started manually (Standby Ready Disabled)	January 1 2006 4:24 PM
Genset stopped manually (Standby Ready Disabled)	January 1 2006 4:23 PM
Genset stopped with return of utility	January 1 2006 4:21 PM
Standby ready enabled by user	January 1 2006 4:21 PM
Genset started manually (Standby Ready Disabled)	January 1 2006 4:20 PM
Switch on genset moved to remote position	January 1 2006 12:00 AM

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FIGURE B-6. EVENT LOG

## FAULT LOG

Select the Fault Log Tab on the Home Screen to review the last 5 faults.

Fault Description	Engine Hours

Copyright Cummins Inc. 2007

FIGURE B-7. FAULT LOG

## NETWORK SETUP

Select the Network Setup Tab on the Home Screen to set up the network parameters. Click on [“Click here to start Network Setup”](#) to go to the first of three screen pages to setup network and email parameters. Press the NEXT button to go to the next page and the Done button on the last page to save the settings on all three pages. Click on [“Click here to continue...”](#) to go back to the Home Page.

### Change Password

You may change the password by entering 8 characters in the password field and clicking on “Save Password”. See ETHERNET SETUP (p. A-9) to reset the password to “cummins.”

### Network Setup Parameters

Refer to Appendix C for complete setup instructions and Appendix D for troubleshooting.

**DHCP ON** – All of the fields will be filled in by the modem/router.

**Assess From Internet** – To access your generator set Internet site from anywhere on the Internet, ask your Internet Service Provider (ISP) for your Internet IP address. Alternatively, enter the Gateway address that appears on Page 1 of the Network Setup screens (Figure B-9).

**DHCP OFF** – If more advanced features are desired, the modem/router probably can be configured for DHCP to be OFF. Refer to the manufacturer’s instructions regarding the permanent generator set IP address to assign.

### Email Setup Parameters

**Set Alert Level** – Click on Alert Level drop-down box arrow. Select “Never”, “All Events”, “Maintenance and Attention Required”, or “Attention Required Only”. This will determine which events will initiate emails to the selected addresses.

**Outgoing Server (SMTP) Settings** – Ask your Internet Service Provider (ISP) for the Server Name, User Name and Password to enter.

**Note:** An Email account capable of SMTP authentication via port 25 is required. The User Name must include the domain name (i.e. username@domain-name).

## Email Addresses

You may enter up to three Email addresses to whom to send generator set status and event messages.

The screenshot shows the Network Setup screen with a navigation bar at the top containing Home, Genset Time / Date, Exercise Schedule, Load Control, Event Log, Fault Log, and Network Setup. The main content area includes a link to start Network Setup, a password field with 'cummins' entered and a 'Save Password' button, a MAC address field with '00 - 1C - E8 - 23 - 00 - 01', and software information: 'Software Part Number: 3267344' and 'Software Version: 0.56'. The footer reads 'Copyright Cummins Inc. 2007'.

FIGURE B-8. NETWORK SETUP SCREEN

The screenshot shows the Network Setup Parameters screen. It features a DHCP status indicator set to 'On'. Below this are input fields for IP configuration: IP Number (192.168.1.4), Subnet Mask (255.255.255.0), Gateway (192.168.1.1), Static DNS #1 (205.171.3.65), and Static DNS #2 (205.171.2.65). A 'Next' button is at the bottom, and the page is labeled 'page 1'. The footer reads 'Copyright Cummins Inc. 2007'.

FIGURE B-9. NETWORK SETUP PARAMETERS

The screenshot shows the Email Setup Parameters screen. It includes an 'Alert Level' dropdown menu set to 'Maintenance and Attention Required' and a label for 'Outgoing Server (SMTP)'. Below are input fields for 'Server Name (max 42 chars)', 'User Name (max 48 chars)', and 'Password (max 16 chars)'. A 'Next' button is at the bottom, and the page is labeled 'page 2'. The footer reads 'Copyright Cummins Inc. 2007'.

FIGURE B-10. EMAIL SETUP PARAMETERS

The screenshot shows the Email Addresses screen. It features a 'Destination Email Addresses (max 48 chars each)' section with three input fields labeled 'Address #1:', 'Address #2:', and 'Address #3:'. A 'Done' button is at the bottom, and the page is labeled 'page 3'. The footer reads 'Copyright Cummins Inc. 2007'.

FIGURE B-11. EMAIL ADDRESSES

The screenshot shows a confirmation message: 'Settings saved successfully...' with a link to [Click here to continue...](#). The background is a solid grey color.

FIGURE B-12. RETURN TO HOME PAGE

# My Cummins **Onan** Generator

Generator Model Number: \_\_\_\_\_  
Generator Serial Number: \_\_\_\_\_  
Transfer Switch Model Number: \_\_\_\_\_  
Transfer Switch Serial Number: \_\_\_\_\_

## Internet Access to Generator Set-up Information:

1. Public IP Address: \_\_\_\_\_  
2. Generator In-Home IP Address: \_\_\_\_\_  
3. Password (default: cummins): \_\_\_\_\_

## Email Alerts from Generator Set-up Information:

4. Alert Level: \_\_\_\_\_  
5. Server Name: \_\_\_\_\_  
6. User Name: \_\_\_\_\_  
7. Password: \_\_\_\_\_  
8. Address #1: \_\_\_\_\_  
9. Address#2: \_\_\_\_\_  
10. Address#3: \_\_\_\_\_

-----Cut Here-----

## My Customer's Cummins **Onan** Generator

Customer's Name: \_\_\_\_\_  
Customer's Address: \_\_\_\_\_  
Customer's Phone Number: \_\_\_\_\_

Generator Model Number: \_\_\_\_\_  
Generator Serial Number: \_\_\_\_\_  
Transfer Switch Model Number: \_\_\_\_\_  
Transfer Switch Serial Number: \_\_\_\_\_

## Internet Access to Generator Set-up Information:

1. Public IP Address: \_\_\_\_\_  
3. Password (default: cummins): \_\_\_\_\_  
4. Alert Level: \_\_\_\_\_  
8. Address#1: \_\_\_\_\_

FIGURE B-13. MY CUMMINS ONAN GENERATOR INFORMATION SHEET



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# Appendix C. Cummins Onan Model RS12000 Generator Set Network Setup Guide

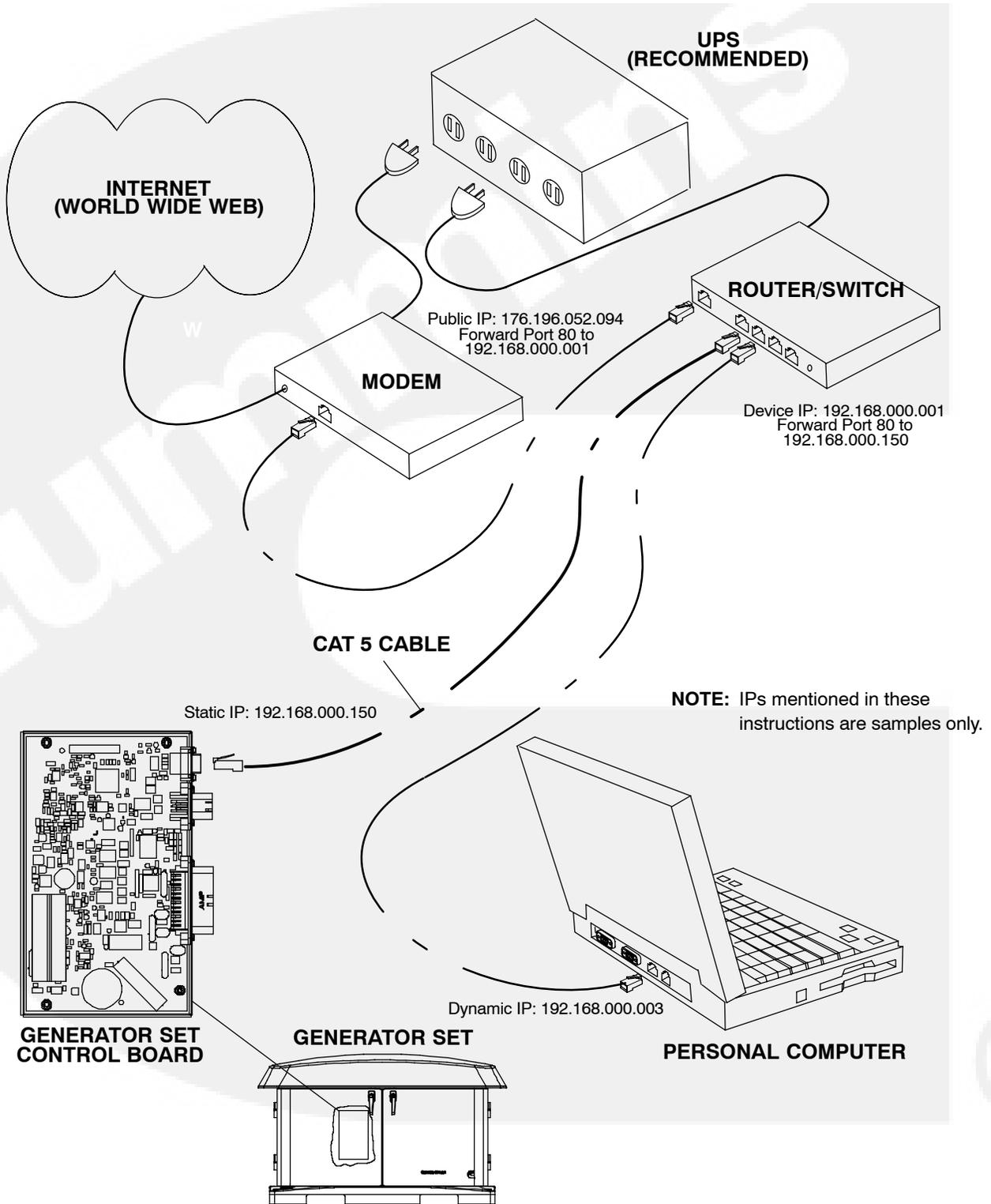


FIGURE C-1. NETWORK CONNECTIONS

## SETTING UP IN-HOME NETWORK ACCESS TO THE GENERATOR SET

1. Connect an Ethernet cable\* from the generator set control board to a router that has enough ports to connect the generator set and a computer.
2. Write down the IP Address shown on the Network Setup screen (Figure C-2) on the generator set's in-home Operator Panel. (Note: Leave DHCP on.) Add this *Generator In-Home IP Address* to the Information Sheet located on page B-5 of the Operator Manual or page C-5 of the Installation Manual under "Internet Access to Generator Set-up Information" only if remote access to the generator is not utilized.
3. Type the IP address in the address bar of the web browser of a computer established on the same in-home network as the generator set. The computer's web browser will display the generator set's web page (Figure C-3).

\* If you are making your own ethernet connections, follow the ethernet cable instructions in the Installation Manual.

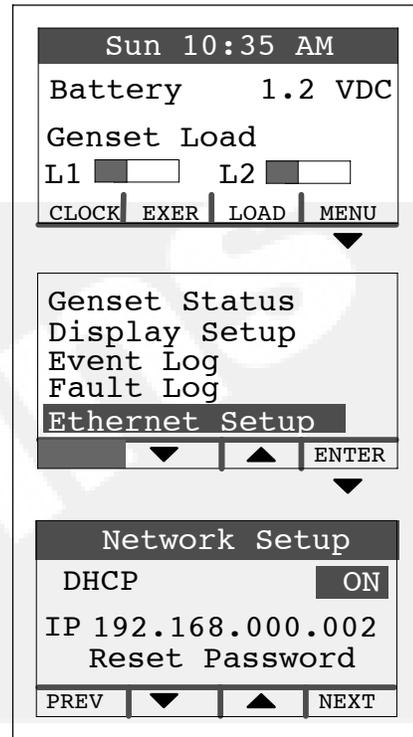


FIGURE C-2. NETWORK SETUP SCREEN ON THE IN-HOME OPERATOR PANEL

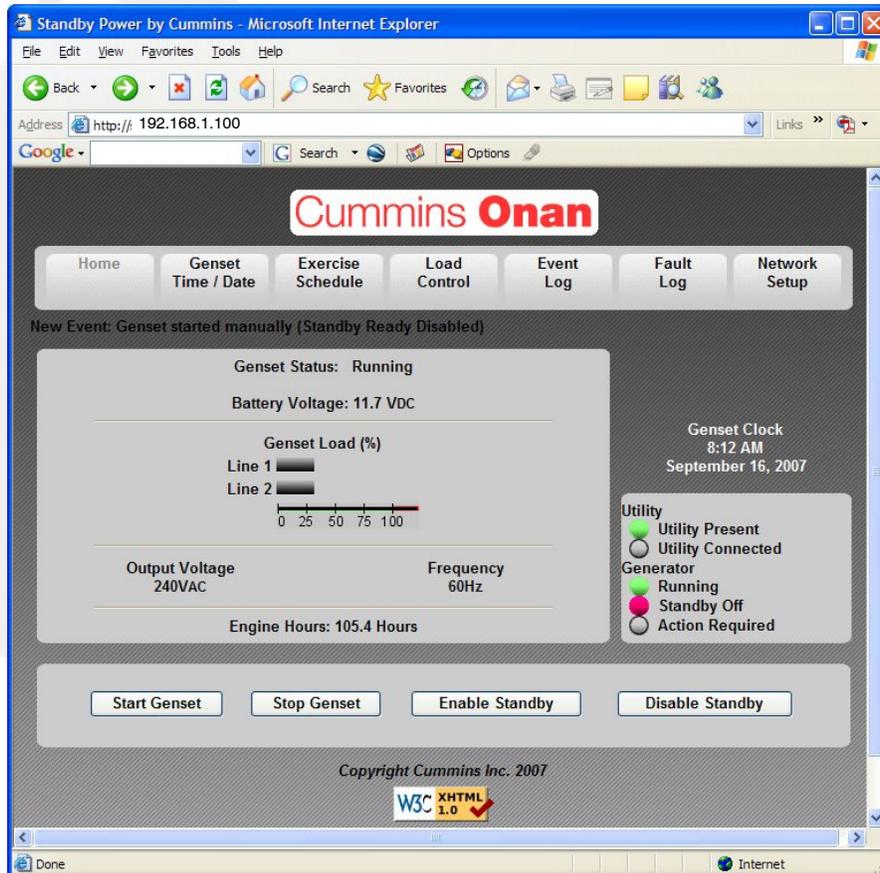


FIGURE C-3. GENERATOR SET HOME PAGE

## SETTING UP CONSOLE INTERNET ACCESS TO THE GENERATOR SET

1. Have a public IP address established for the in-home computer network. Typically, it will be necessary to contact the customer's ISP (Internet Service Provider). Note: The ISP might take several days to establish the IP address and an additional service cost may be incurred. Add this *Public IP Address* to the Information Sheet located on page B-5 of the Operator Manual or page C-5 of the Installation Manual under "Internet Access to Generator Set-up Information."
2. Set up in-home computer access to the generator set. See Figure C-1.
3. Click **Network Setup** on the home page (Figure C-3).
4. Change the password and click **Save Password** (Figure C-4)<sup>1</sup>. Add this *Password* to the Information Sheet located on page B-5 of the Operator Manual or page C-5 of the Installation Manual under "Internet Access to Generator Set-up Information."
5. Click **[Click here to start Network Setup](#)** (Figure C-4).
6. Click **Off** to turn off generator set **DHCP** (Figure C-5).
7. In the **IP Number** fields enter a unique in-home network address for the generator set (the 192.168.000.150 in this example) that is not likely to have been assigned to any other device. Note: You must use the same first nine digits as the router (192.168.000 in this example). Add this *Generator In-Home IP Address* to the Information Sheet located on page B-5 of the Operator Manual or page C-5 of the Installation Manual under "Internet Access to Generator Set-up Information".
8. The **Subnet Mask**, **Static DNS #1 and #2**, and **Gateway** numbers establish the connections between the modem/router and generator set and do not need to be changed.
9. Press **Next** on the subsequent screens to get to page 3 of the setup screens or continue by setting up the email alerts.
10. Press **Done** to complete set up and save the settings. (Note: The web page will eventually time out unless the new IP address is entered.)
11. Follow the router setup instructions to forward port 80 to the IP Address entered in Step 7. Typically, this is done on a Port Forwarding or Virtual Server setup screen. (Note: To maintain connections to all devices connected to the modem/router, do not turn off modem/router DHCP.)
12. Follow the modem setup instructions to forward port 80 to the router IP Address (192.168.000. 001 in this example). Typically, this is done on a Port Forwarding or Virtual Server setup screen. (Note: To maintain connections to all devices connected to the modem/router, do not turn off modem/router DHCP.) (Note: If the router is capable of being set up as a switch, plug the input from the modem into one of the open router outputs instead of accomplishing this step.)
13. To access the generator set's web page on any computer or wireless device not connected to the same modem/router as the generator set, type in the customer's public IP Address (179.196.052.094 in this example)<sup>2</sup>.
14. To access the generator set's web page on any computer or wireless device connected to the same modem/router as the generator set, type in the unique in-home network address of the generator set (192.168.000.150 in this example).

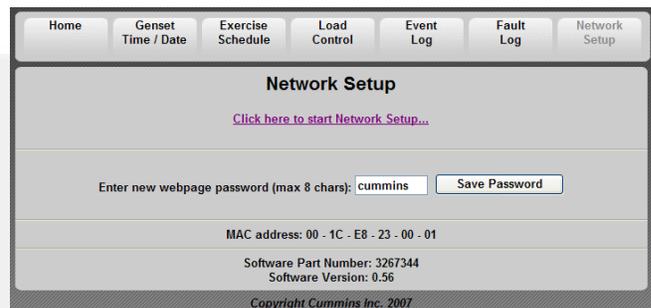


FIGURE C-4. NETWORK SETUP SCREEN

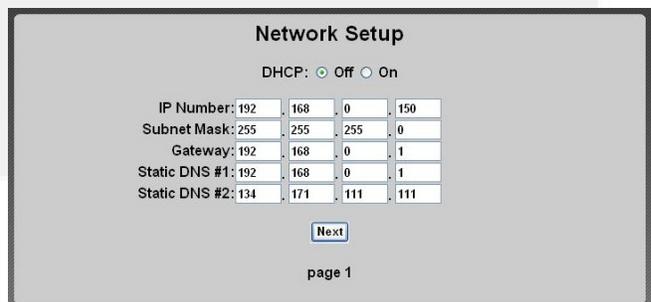


FIGURE C-5. NETWORK SETUP (PAGE 1)

**FIGURE C-6. EMAIL SETUP SCREEN (PAGE 2)**

### SETTING UP EMAIL ALERTS FROM THE GENERATOR SET

1. Set up in-home computer access to the generator set. See C-2.
2. Click **Network Setup** on the home page (Figure C-3).
3. Continue to the **Email Setup** screen (Figure C-6).
4. Select the **Alert Level** you would like to receive. Add this Alert Level to the Information Sheet located on page B-5 of the Operator Manual or page C-5 of the Installation Manual under “Email Alerts from Generator Set-up Information.”
5. Enter your email **Server Name**, **User Name** (inclusive of domain – for example, user name@yahoo.com), and **Password** (Figure C-6). Typically, it will be necessary to contact the customer’s email service provider. (Note: The email account must allow SMTP via port 25; verify with your ISP). Add this information to the Information Sheet located on page B-5 of the Operator Manual or page C-5 of the

Installation Manual under “Email Alerts from Generator Set-up Information.”

6. Continue to the **Destination Email Addresses** screen (Figure C-7). Add these addresses to the Information Sheet located on page B-5 of the Operator Manual or page C-5 of the Installation Manual under “Email Alerts from Generator Set-up Information.”
7. Enter up to three different email addresses to receive generator set alerts.
8. Press **Done**. (Note: The web page will eventually time out if a new IP address was entered in Step 7 while setting up Internet access.)

**FIGURE C-7. EMAIL ADDRESSES (PAGE 3)**

### HELP HOTLINE

1-800-888-6626 option 1  
Available Monday-Friday 9-5 CST

- 1 – If you can’t remember your password, reset it to “cummins” by selecting **Reset Password** on the Network Setup screen on the in-home Operator Panel and pressing the up or down arrow (Figure C-1).
- 2 – The customer’s public IP address must be a static IP address. If the customer’s public IP address is dynamic, the customer must either obtain a static IP address from their service provider or set up a domain name that manages the dynamic IP address.

## FREQUENTLY ASKED QUESTIONS

**Question:** Do I need another router?

**Answer:** Yes, a router or switch is required to allow for the connection of more than one device (computer, generator set, etc.) with each other and the Internet. Typically, your Internet modem also serves as a router. If you have an available ethernet connection on your router-enabled modem, you may not need to add an additional router.

**Question:** Do I need another modem?

**Answer:** A modem is required if you want to utilize the email and remote Internet access features of the generator set. If you already have an Internet connection, you have a modem. Only one modem is required.

**Question:** What is an IP address?

**Answer:** An IP address, or Internet Protocol address, is a unique address that devices such as a computer or your home generator set use to communicate with each other, both on your in-home network (LAN network) or with the World Wide Web.

**Question:** What is the difference between Static and Dynamic IP addresses?

**Answer:** On your in-home network, the router (with DHCP enabled) will assign a dynamic IP address to all devices (computer, home generator set, etc.) connected to the router. As devices are added and removed from the router, the devices are automatically updated with new IP addresses. This means that your computer and generator set IP addresses will not always be the same unless static IP addresses are assigned. A static IP address is an unique address that is permanently assigned to a device. On the World Wide Web, your typical ISP (internet service provider) assigns a dynamic IP address to your Internet connection. This is the IP address you type into your Internet browser to access your generator set from the World Wide Web. A static IP address is required for you to establish a constant address you can always access from the World Wide Web. Contact your ISP to set up a static IP address for your Internet connection.

**Question:** What is DHCP?

**Answer:** DHCP, or Dynamic Host Configuration Protocol, automatically assigns IP addresses, subnet masks, and gateways to devices, allowing them to communicate with each other. Your router and generator set are equipped with DHCP. Default is for DHCP to be on.

**Question:** Why do I need a static IP address?

**Answer:** As discussed in the question about “differences between Static and Dynamic IP addresses”, this is required for your generator to access the World Wide Web.

**Question:** What is a UPS device and why is it recommended?

**Answer:** A UPS (Uninterruptible Power Supply) device is battery backup to keep devices such as computers and modems powered during short-term power outages. We recommend that the modem/router be powered through a UPS device to ensure that your generator set is able to send emails and be remotely accessed at all times. For example, if your generator set shuts down during a utility power outage, the generator set can still send you an email letting you know that the power has failed and that the generator set shut down.

**Question:** When do I need to use a Static IP address?

**Answer:** Static IP addresses are required if you plan to access your generator set remotely via the Internet.

**Question:** I used the IP addresses shown on the front of this guide, but why was I not able to access the generator set?

**Answer:** The IP addresses shown in this guide are only examples and are not likely to be the ones that will work on your network setup.

**Question:** The IP address consists of four numbers ranging from 0 to 255 which are separated by dots; 179.168.052.094, for example. Are leading zeros necessary?

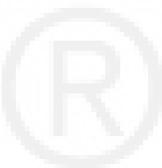
**Answer:** No, the IP address, 192.168.0.1, for example, is equivalent to 192.168.000.001. The address can be entered either way.

**Question:** How do I get my IP number, Subnet Mask, and Gateway?

**Answer:** On a PC: 1) disable the PC's wireless function, 2) establish an ethernet connection between the computer and generator set via a common modem, 3) on the computer, Click Start>Run, 4) on the run menu that appears type "**cmd**" and click ok, 5) type "**ipconfig**" on the DOS window that appears.

**Question:** Why do I need two IP addresses to access my generator set?

**Answer:** You can access your generator set from two networks, your in-home or local network, and from the World Wide Web, thus requiring two addresses. Your local IP address is different from your World Wide Web IP address. From your in-home network you use the generator set's Static IP address. From the World Wide Web you first need to access your modem, which is accomplished by typing in the Static IP address of your Internet connection. Your modem will then automatically forward you to your generator set on the local network.



# Appendix D. Communication Troubleshooting

## IN-HOME NETWORK ACCESS TO GENERATOR SET TROUBLESHOOTING

**⚠️WARNING** *Some Generator Set service procedures present hazards that can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform Generator Set service.*

**Possible Causes:** Bad connections or bad communications

**Corrective Actions:**

1. Check connections.
  - a. Verify that the Ethernet cable is plugged into the generator set control and the router.
  - b. Verify that the computer is connected to the same router as the generator set via an Ethernet cable.
  - c. Verify that the wireless card on the computer is turned off.
  - d. Check to see if both ends of the Ethernet cable are assembled and crimped as described in the installation instructions. If not, reassemble and crimp as described in the installation instructions.
  - e. Verify that the Ethernet cable connections between the generator set and the router are solid and correct.
  - f. Proceed to “Check communications.”
2. Check communications.
  - a. Check to see if you can access a standard web page with the computer connected to the same router as the generator set. If not, contact your router manufacturer for troubleshooting information.
  - b. Check to see if the green and orange lights are illuminated at the Ethernet connection port on the generator set control board (see Figure D-1). If not, disconnect the Ethernet cable from the generator control board and connect it to the computer. Check to see if you can access a standard web page with the computer connected to the generator side of the Ethernet cable.
    - 1) If you can access a standard web page, call Cummins Support at 1-800-888-6626 and select option 1.
    - 2) If you cannot access a standard web page, go to “Check connections” above.
  - c. Check to see if the correct generator IP address has been entered, as described in step 3 (page C-2) of the Network Setup Guide (i.e. <http://xxx.xxx.xxx.xxx>). If not, enter the correct IP address.
  - d. Check to see if you can access the generator set via the in-home network. If not, call Cummins Support at 1-800-888-6626 and select option 1.

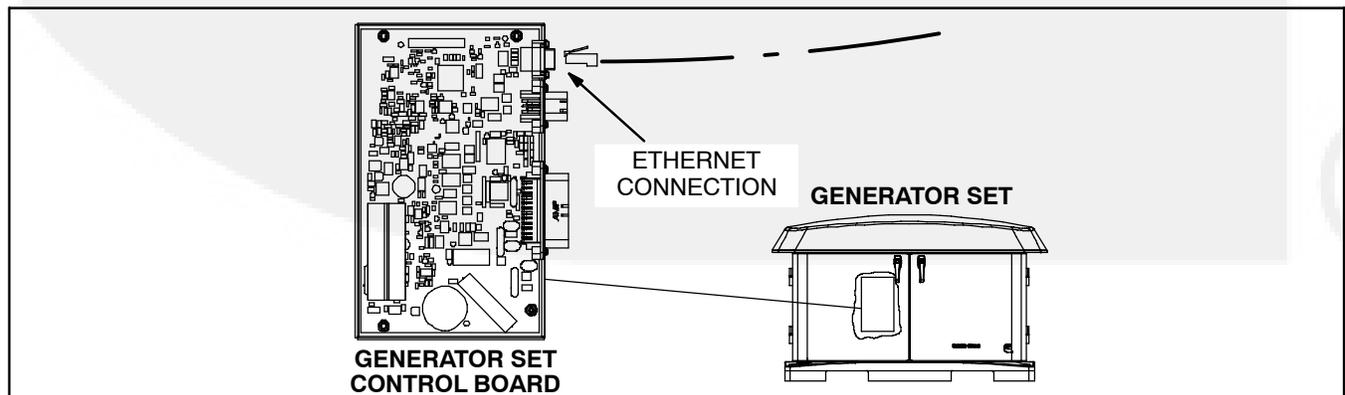


FIGURE D-1. NETWORK CONNECTIONS

## REMOTE INTERNET ACCESS TO GENERATOR SET TROUBLESHOOTING

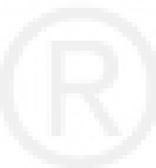
**⚠WARNING** *Some Generator Set service procedures present hazards that can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform Generator Set service.*

**Possible Causes:** An improper setup, no high-speed internet connection, the public IP address is not active or properly set up, an incorrect IP address is entered, the computer is connect to the same router or network and the generator set, or the internet connection is bad,

### **Corrective Actions:**

1. Check to see if you are able to access the generator set with your in-home computer. If not, refer to the “In-home Network Access Troubleshooting” procedures.
2. Verify that you followed the network setup procedures. Refer to the Network Setup Guide in Appendix C.
3. Verify that you are using a high-speed internet connection.
4. Verify that the public IP address is active and set up properly with the ISP (Internet Service Provider). If necessary, contact the ISP to verify your setup.\*
5. Verify that the correct public IP address is entered into the web browser of the computer (i.e. xxx.xxx.xxx.xxx).
6. Verify that the computer is not connected to the same router or network as the generator set. The computer used for internet access must be connect to a different internet connection than the generator set.
7. Check to see if you can access a standard web page from a computer. If not, contact the ISP to troubleshoot the internet connection.
8. Verify all settings, as described in the Network Setup Guide.
9. If the previous steps do not correct the problem, contact a computer network specialist to diagnose.

\* To verify your IP address, access “whatismyipaddress.com” from the browser of a computer connected to the internet and on the same network as the generator set. This web page displays your current IP address which should match the IP address assigned to you by your ISP.



## EMAIL ALERT TROUBLESHOOTING

**⚠️WARNING** *Some Generator Set service procedures present hazards that can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform Generator Set service.*

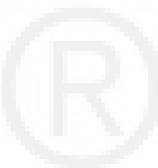
**Possible Causes:** An improper setup, the alert level is not set to “all events,” emails cannot be received, the outgoing email address is not included in your contact list, the email account is not capable of using port 25 with plain SMTP for the outgoing SMTP server setup, the domain name is not included in the user name filed of the Network Setup screen, or the DNS #1 and #2 values are incorrect on the Network Setup screen.

### **Corrective Actions:**

1. Check to see if you are able to access the generator set with your in-home computer. If not, refer to “In-Home Computer Access Troubleshooting.”
2. Verify that you followed the network setup instructions. Refer to the Network Setup Guide in Appendix C.
3. Verify that the alert level is set to “All Events” (see Figure D-4). To verify that your generator set can send emails, select “Disable Standby” (see Figure D-3) and wait several minutes to verify that you did receive an email. Then select “Enable Standby” and wait a few more minutes to verify that you did receive a second email.
4. Send an email to the destination email address and check to see if you received this email. If not, contact your email service provider or your ISP (internet service provider) to diagnose.
5. Check to see if the destination email accounts have spam filtering.
  - a. If spam filtering is present, add the outgoing email address to your contact list.
  - b. If spam filtering is not present, proceed to step 6.
6. Check to see if you are using an email account capable of using port 25 with plain authentication SMTP server setup (see Figure D-4). If necessary, obtain an email account capable of using port 25 with plain authentication SMTP and enter detail into the network setup screen (see Figure D-4).
7. Verify that the domain name is included in the user name field of the Network Setup screen shown in Figure D-4 (i.e. username@domainname).\*\*
8. Verify with your ISP that the Static DNS (Domain Name Server) #1 and #2 are correct (see Figure D-2).
9. If the previous steps do not correct the problem, contact a computer network specialist to diagnose.

\*\* “No authentication” is possible by leaving the username and password fields blank.

**IMPORTANT NOTE:** Changes are not saved unless you navigate through all three Network Setup screens and click on “Done” (see Figure D-5). The message “Settings Saved Successfully” is then displayed.



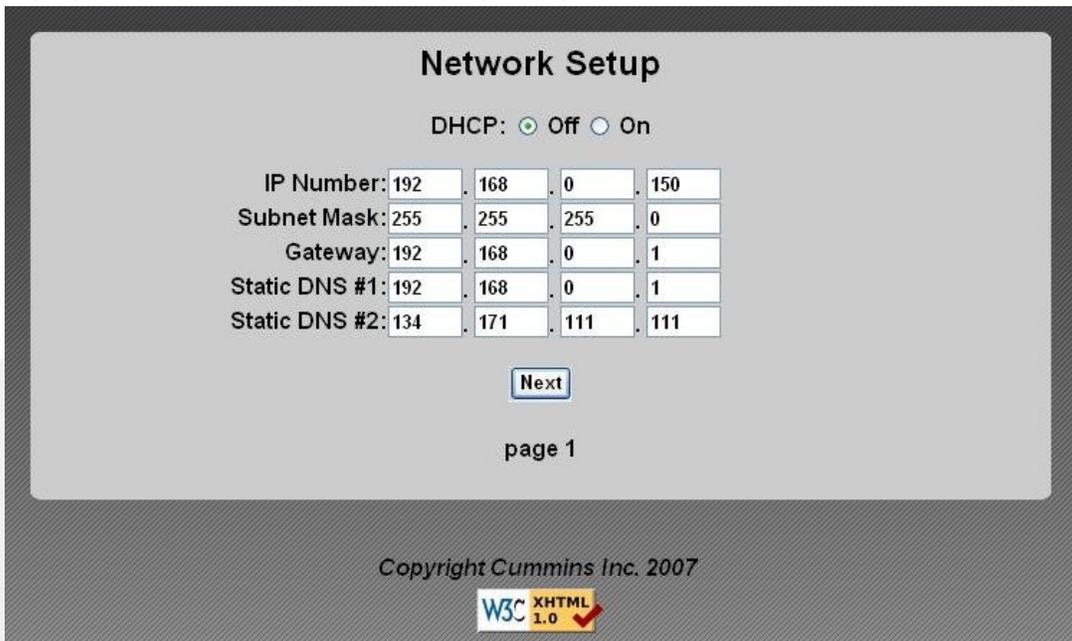


FIGURE D-2. NETWORK SETUP – PAGE 1

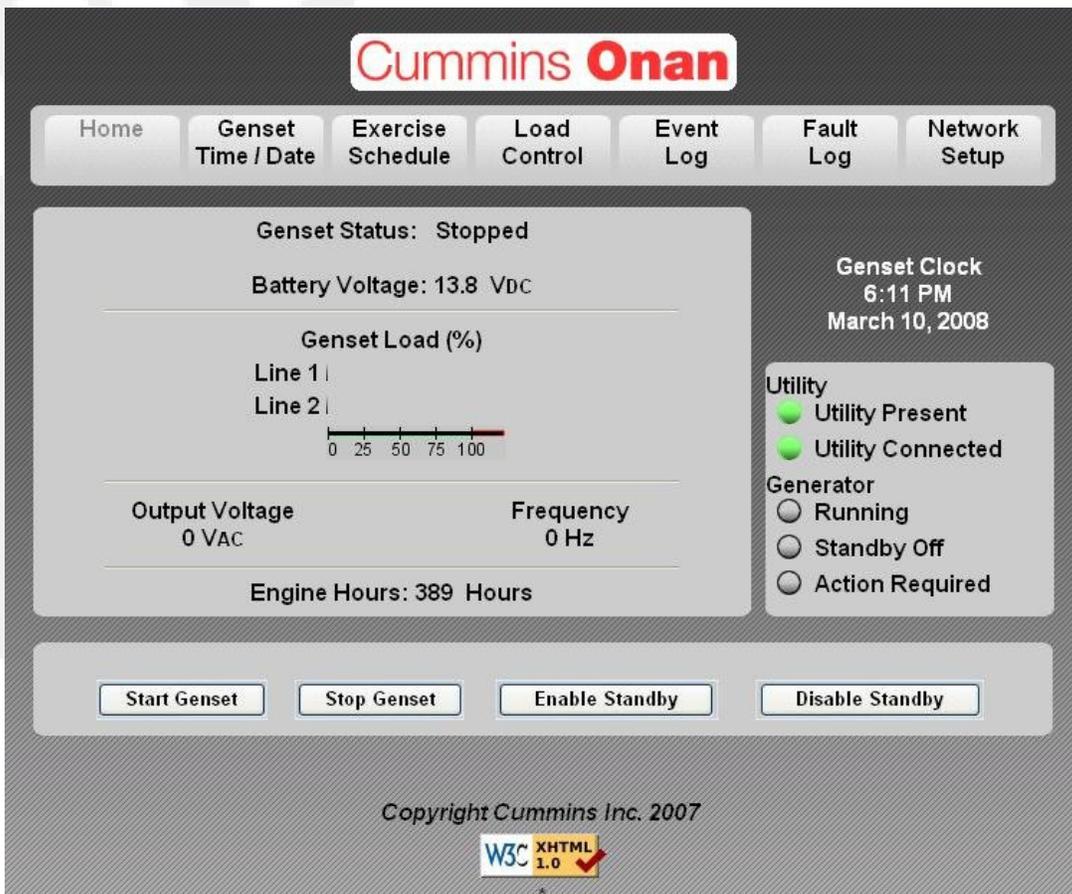


FIGURE D-3. GENERATOR SET HOME PAGE

**Network Setup**

**Email Setup**

Alert Level:

**Outgoing Server (SMTP)**

Server Name (max 42 chars):

User Name (max 48 chars):

Password (max 16 chars):

page 2

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FIGURE D-4. NETWORK SETUP – PAGE 2

**Network Setup**

**Destination Email Addresses (max 48 chars each)**

Address #1:

Address #2:

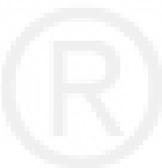
Address #3:

page 3

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FIGURE D-5. NETWORK SETUP – PAGE 3





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# Appendix E. Specifications

<b>FUEL CONSUMPTION:</b>	Natural Gas Installation (1000 BTU/ft <sup>3</sup> )	Propane Installation (2500 BTU/ft <sup>3</sup> )
@ 1/2 Load	122 ft <sup>3</sup> /hr (3.5 m <sup>3</sup> /hr)	53 ft <sup>3</sup> /hr (1.5 m <sup>3</sup> /hr)
@ Full Load	191 ft <sup>3</sup> /hr (5.4 m <sup>3</sup> /hr)	88 ft <sup>3</sup> /hr (2.5 m <sup>3</sup> /hr)
Fuel Supply Pressure	5–11 H <sub>2</sub> O	7–11 H <sub>2</sub> O
<b>GENERATOR:</b> Brush-Type, 2-Pole Rotating Field, Single-Bearing		
Power (@1.0 power factor)	10.5 kW	12 kW
Voltage	120/240	120/240
Frequency	60 Hz	60 Hz
Number of Phases	1	1
Output Current	87.5/43.75 Amps	100/50 Amps
Circuit Breaker	50 amp, 2-pole	50 amp, 2-pole
<b>ENGINE:</b> 2-Cylinder-V, OHV, Air-Cooled, 4-Stroke, Spark Ignited, 3600 RPM		
Displacement	40.9 in <sup>3</sup> (720 cc)	
Compression Ratio	8.3:1	
Spark Plug Gap	0.030 in (0.76 mm)	
Spark Plug Type	NGK-BPR6ES (P/N 167–1658)	
Spark Plug Tightening Torque	10 ft-lbs (13.5 N-m)	
Cylinder Compression Test	180 psi (12.4 bar)	
Valve Lash: Intake & Exhaust (cold)	0.004in (0.10 mm)	
Oil Capacity	1.7 quart (1.6 liter)	
<b>CONTROLLER:</b> Integrated Microprocessor-Based Engine, Generator and Transfer Switch Controller		
<b>DC SYSTEM:</b>		
Nominal Battery Voltage	12 volts	
Battery Group	26 R	
Battery Type	Maintenance Free	
Minimum Battery CCA (Cold Cranking Amps)	530	
<b>WEIGHT (WET):</b> 460 lbs (209 kg)		
<b>SIZE (L x W x H):</b> 48 x 43 x 31.5 in (1219 x 864 x 800 cm)		
<b>SOUND LEVEL:</b> Less than 64 dB(A) @ 23 ft (7 meters)		





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# Appendix G. Outline and System Drawings

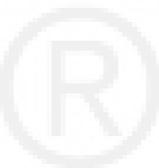
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SCHEMATIC	PAGE
WIRING DIAGRAM (SHEET 1 OF 2) .....	F-3
WIRING DIAGRAM (SHEET 2 OF 2) .....	F-4
CONNECTIONS TO TRANSFER SWITCH RSS100-6868 OR RSS200-6869 .....	F-5
CONNECTIONS TO TRANSFER SWITCH RSS100-6634 OR RSS200-6635 .....	F-6
OUTLINE DRAWING .....	F-7
WIRING HARNESS .....	F-8

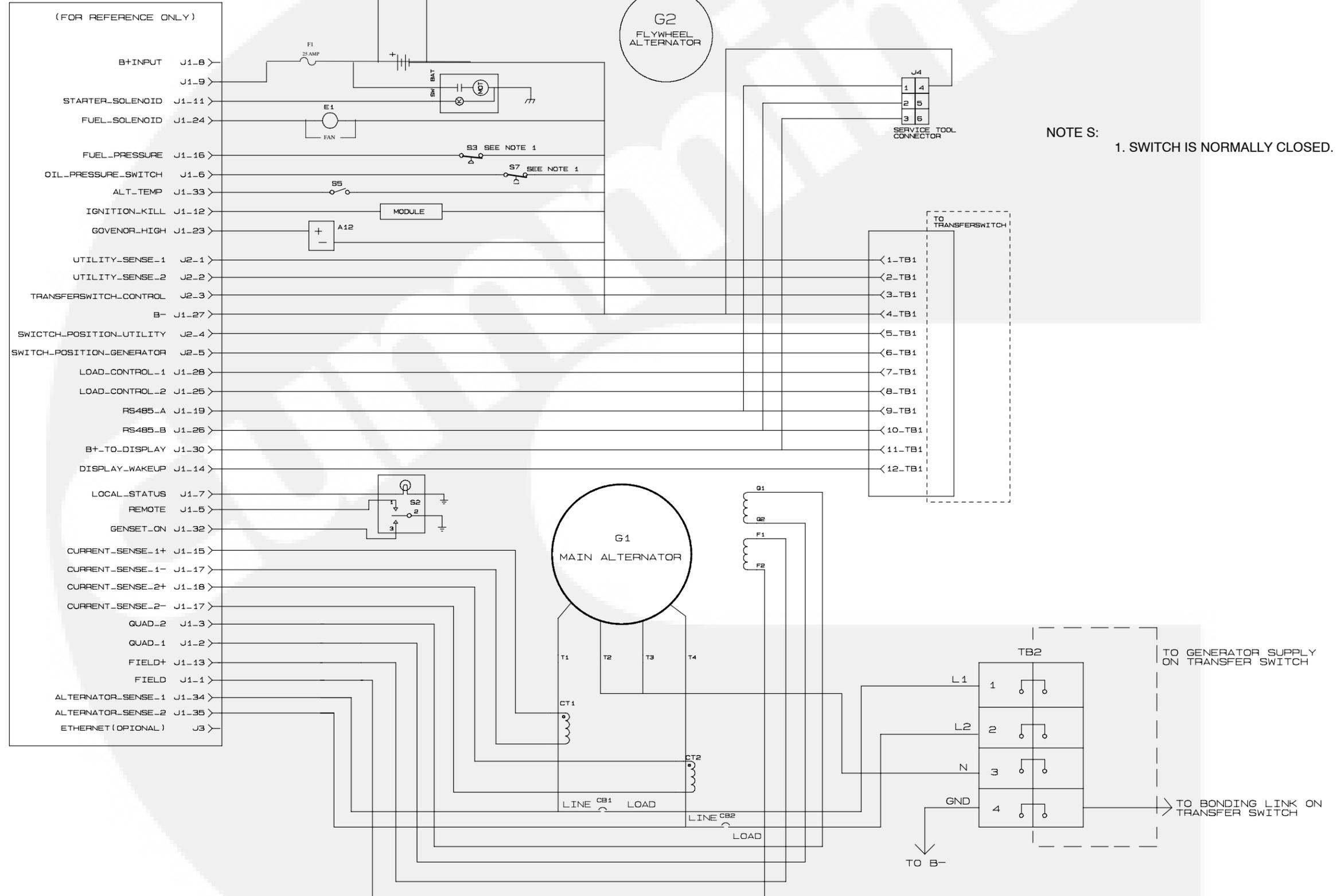




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# GENERATOR CONTROL



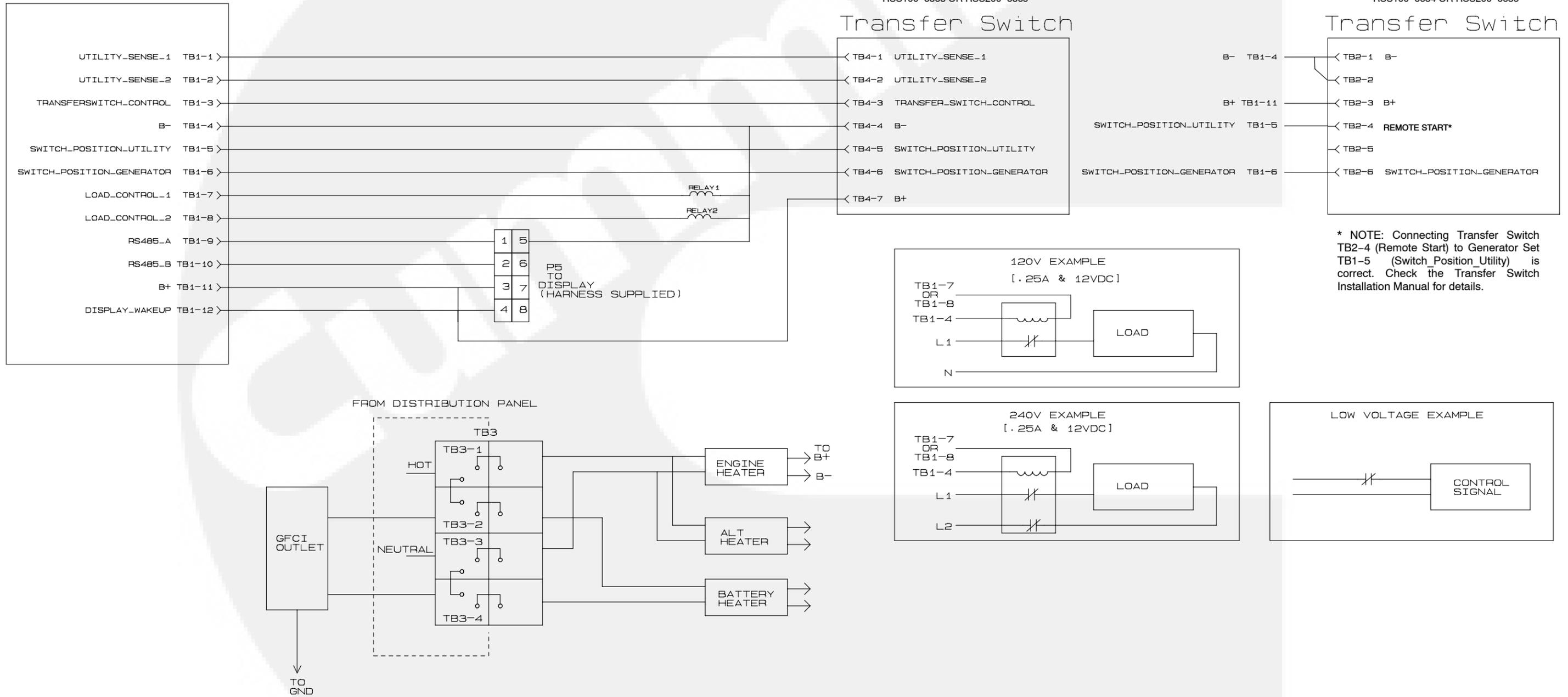
630-3514



NOTES:

1. ALL WIRING AND RELAYS ON THIS PAGE ARE CUSTOMER SUPPLIED.

# Generator

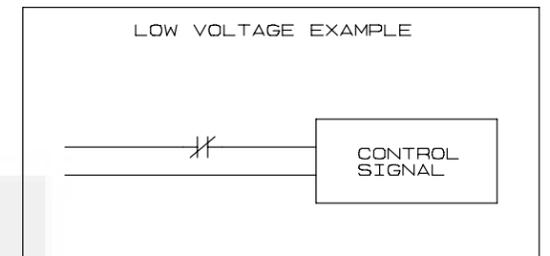
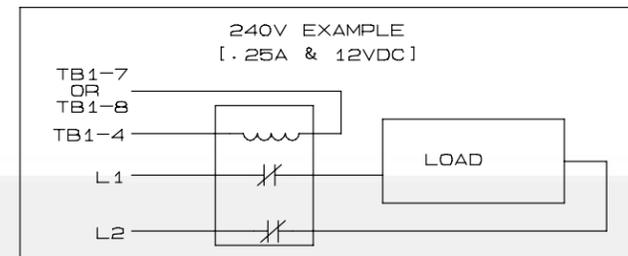
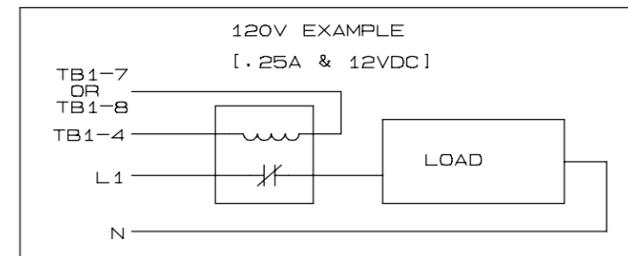


RSS100-6868 OR RSS200-6869

RSS100-6634 OR RSS200-6635

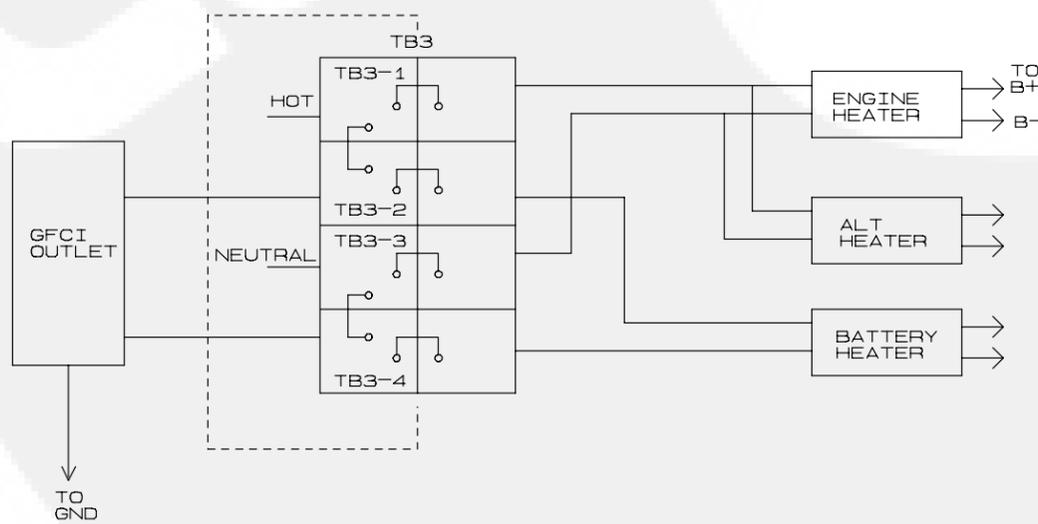
## Transfer Switch

## Transfer Switch



\* NOTE: Connecting Transfer Switch TB2-4 (Remote Start) to Generator Set TB1-5 (Switch Position Utility) is correct. Check the Transfer Switch Installation Manual for details.

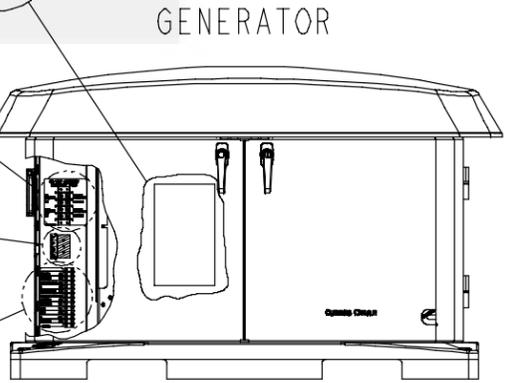
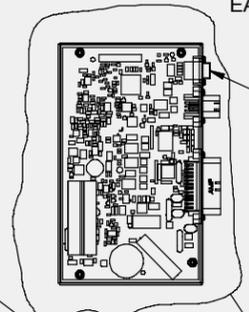
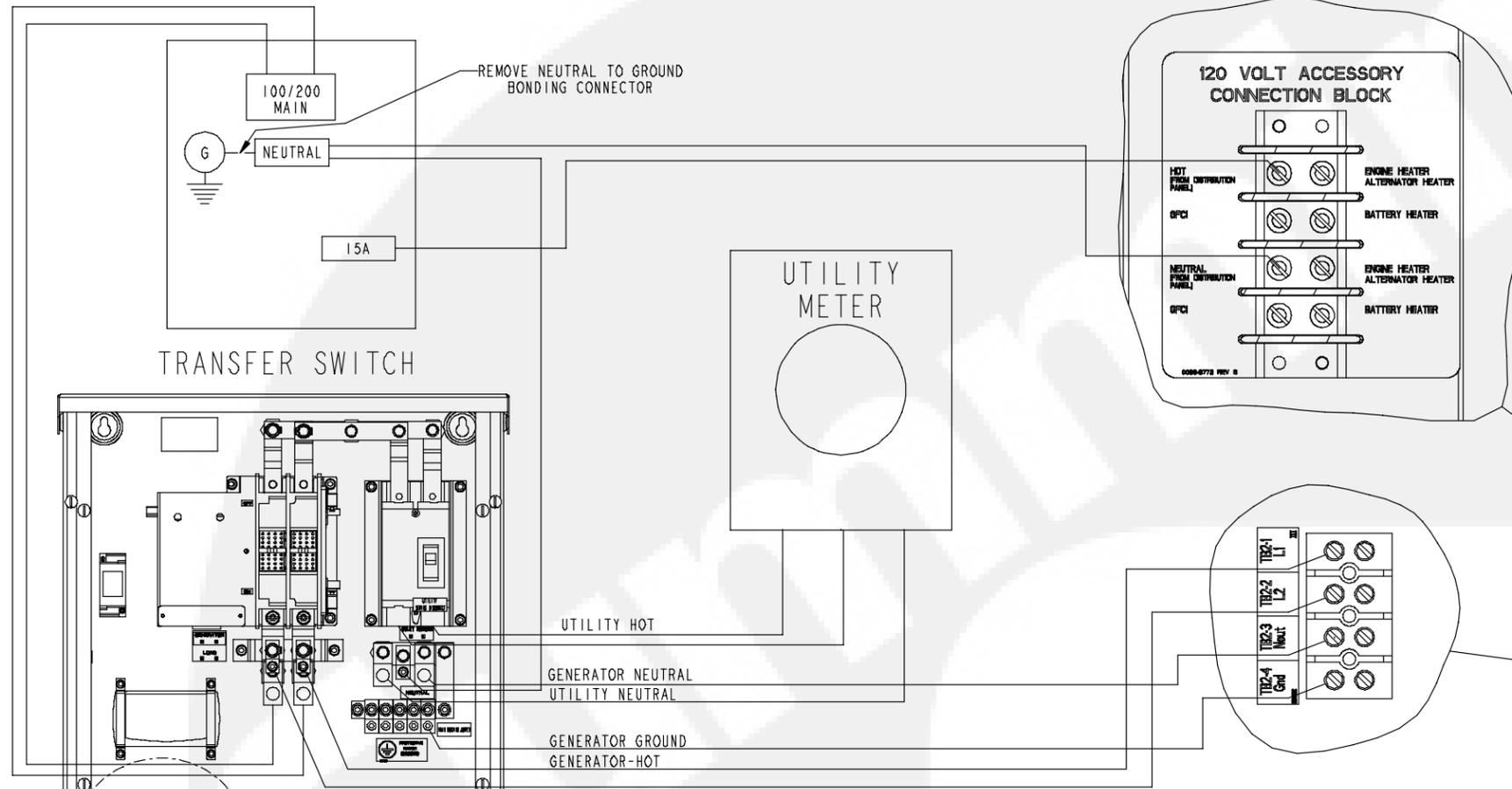
FROM DISTRIBUTION PANEL



DISTRIBUTION PANEL

QUICK CONNECT GUIDE FOR USE WITH

GENERATOR: 12GSAA-6707  
 AND  
 TRANSFER SWITCH: RSS100-6868  
 OR  
 RSS200-6869

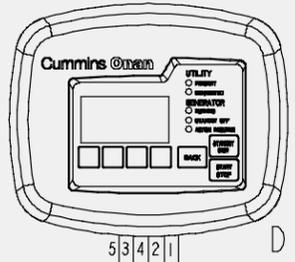
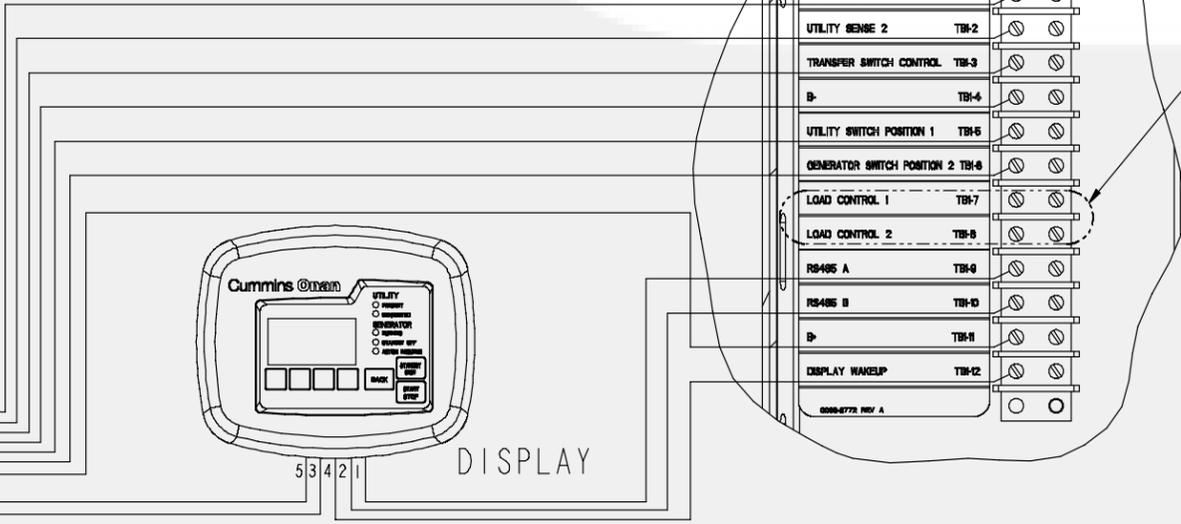
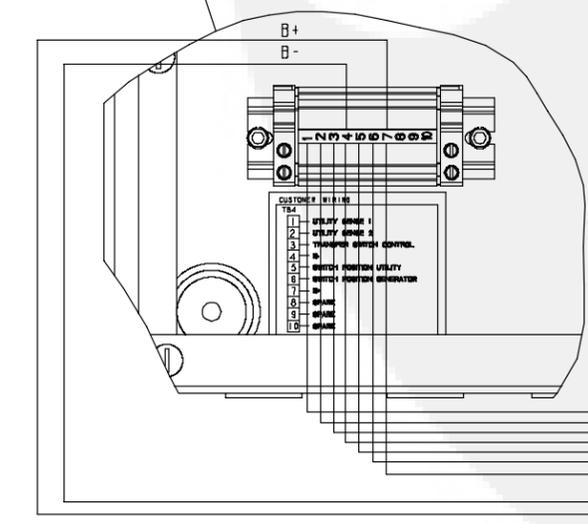


GENERATOR

OPTIONAL LOAD MANAGEMENT RELAY CONTROL SIGNALS (B+ OUTPUTS)

MINIMUM MATERIAL REQUIRED: (SEE INSTALLATION MANUAL FOR COMPLETE MATERIAL LIST AND INSTALLATION INSTRUCTIONS)

- QTY (10) 18-20 GAUGE WIRES FOR COMMUNICATIONS CONNECTIONS. CUMMINS RECOMMENDS THE USE OF TWISTED PAIR WIRES FOR TB1-9 AND TB1-10. 12 WIRES IF OPTIONAL LOAD CONTROL IS UTILIZED.
  - QTY (4) 8 GAUGE (FOR UP TO 125 FT) 90C WIRE FOR AC CONNECTIONS.
  - QTY (2) 12 GAUGE (FOR UP TO 125 FT) 90C WIRE FOR GFCI AND AC DISTRIBUTION BLOCK.
  - QTY (10) UL LISTED FORK TERMINAL FOR 18 GAUGE WIRES (CUMMINS PART NUMBER 0332-2527).
  - AC CONDUIT (FOR LOAD CABLES AND 15 AMP CIRCUIT CABLES).
  - DC CONDUIT (FOR ALL COMMUNICATION AND ETHERNET CABLES).
  - 4 WALL ANCHORS AND 4 BLACK SCREWS FOR DISPLAY MOUNTING.
  - CAT 5 ETHERNET CABLE (OPTIONAL).
  - 12 VOLT RELAY (OPTIONAL, CUMMINS PART NO. 0307-3172 OR ANY 12 VDC COIL WITH A MINIMUM CONTACT RATING OF 1 AMP AT 24 VAC).
  - CONDUIT SEALING PUTTY.
  - GAS LINE AND STEP DOWN REGULATOR (AS REQUIRED) FOR GAS CONNECTIONS
- MAX FULL LOAD BTU ON NATURAL GAS = 191,000 BTU/HOUR AND ON PROPANE = 220,000 BTU/HOUR OR 2.4 GALLON/HOUR - 5-11" WC PRESSURE AT GENERATOR REQUIRED.
- UL LISTED PIPE DOPE.
  - BATTERY REQUIREMENT: 12 VOLT, GROUP 26R, 530CCA



DISPLAY

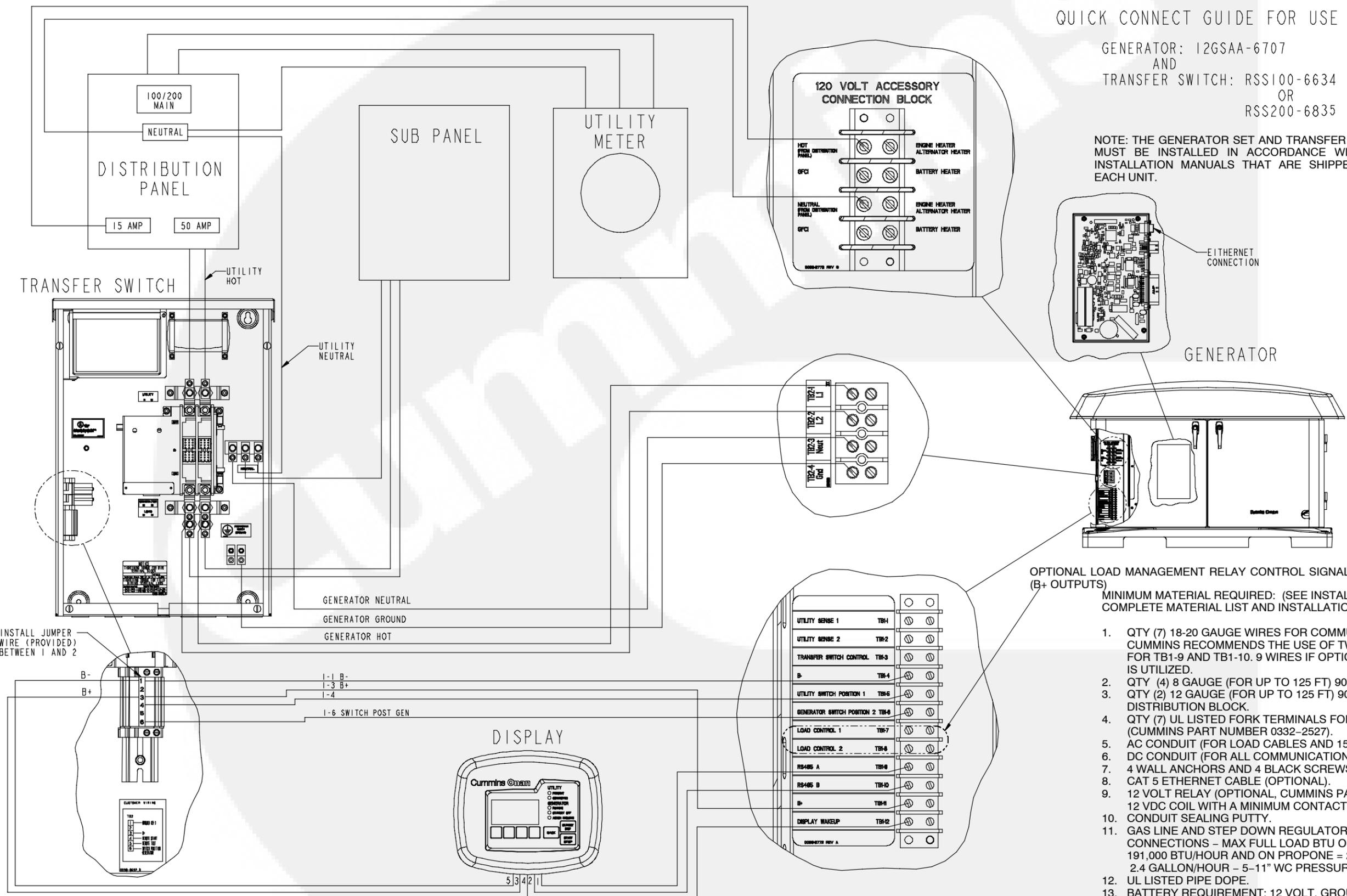
CONNECTIONS TO TRANSFER SWITCH  
 RSS100-6868 OR RSS200-6869



QUICK CONNECT GUIDE FOR USE WITH

GENERATOR: 12GSAA-6707  
 AND  
 TRANSFER SWITCH: RSS100-6634  
 OR  
 RSS200-6835

NOTE: THE GENERATOR SET AND TRANSFER SWITCH MUST BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION MANUALS THAT ARE SHIPPED WITH EACH UNIT.

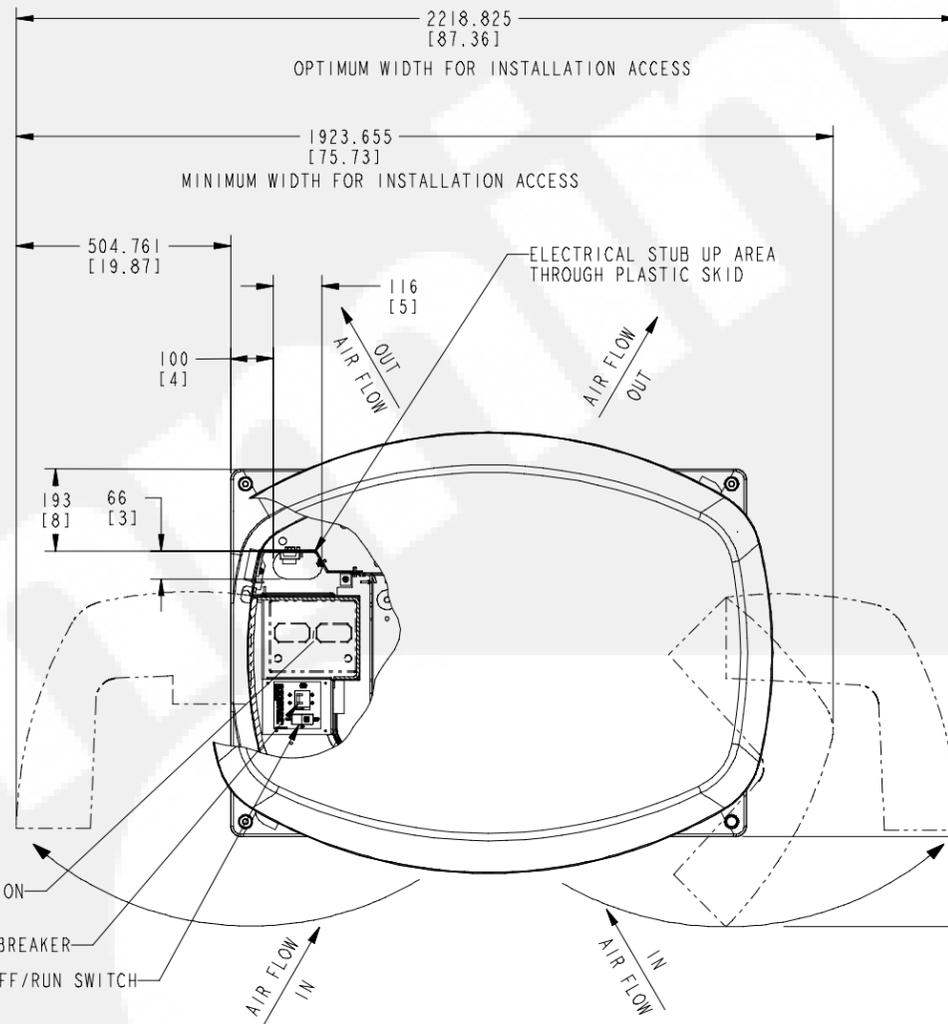
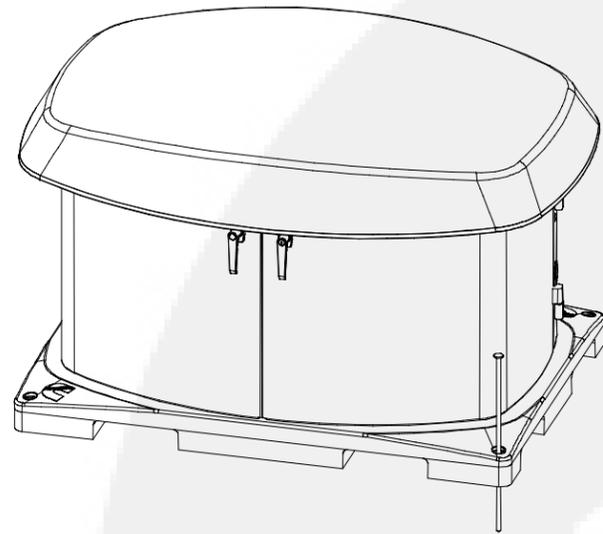


OPTIONAL LOAD MANAGEMENT RELAY CONTROL SIGNAL (B+ OUTPUTS)

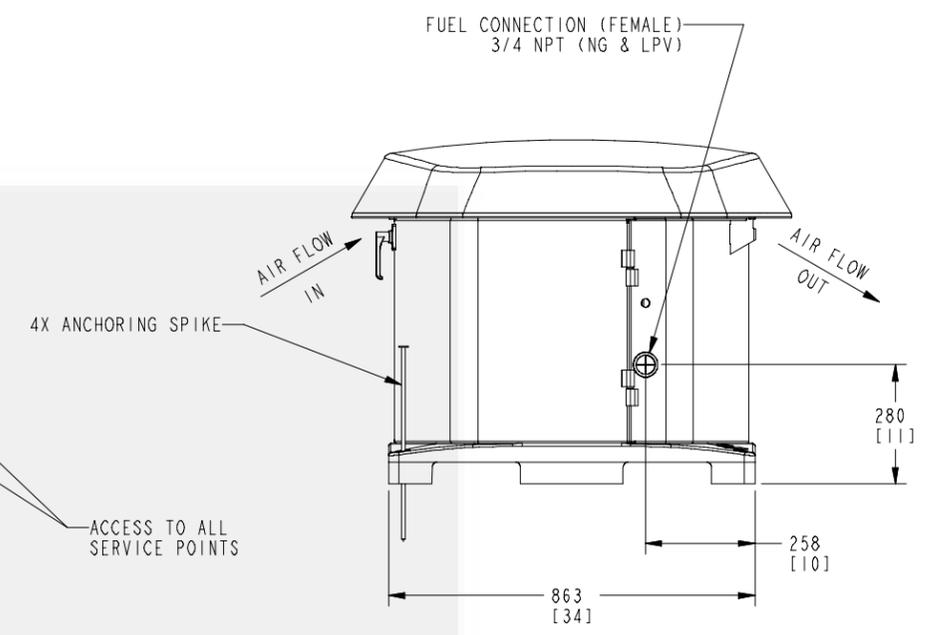
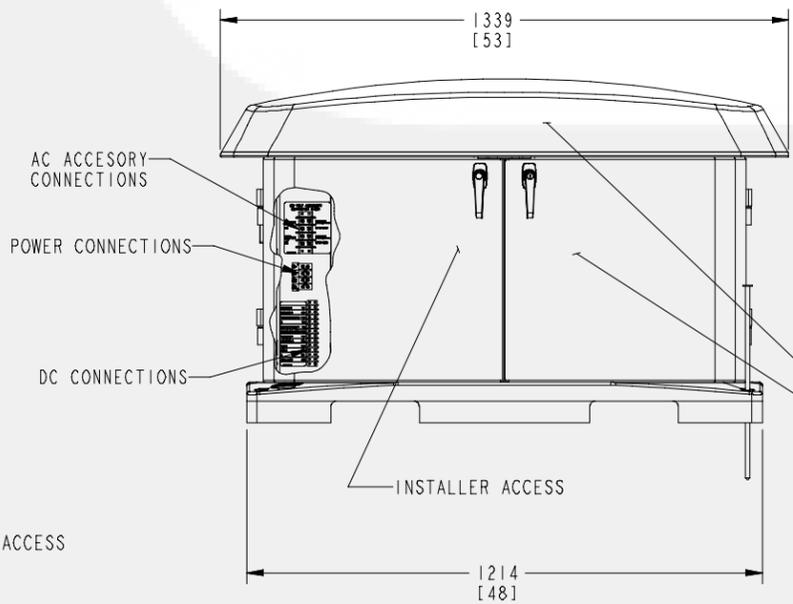
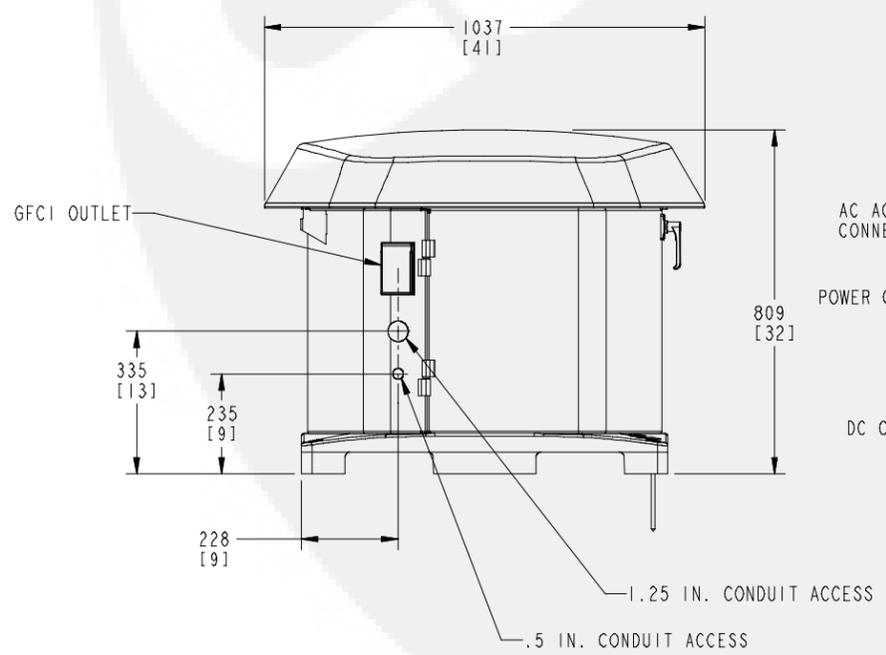
MINIMUM MATERIAL REQUIRED: (SEE INSTALLATION MANUAL FOR COMPLETE MATERIAL LIST AND INSTALLATION INSTRUCTIONS)

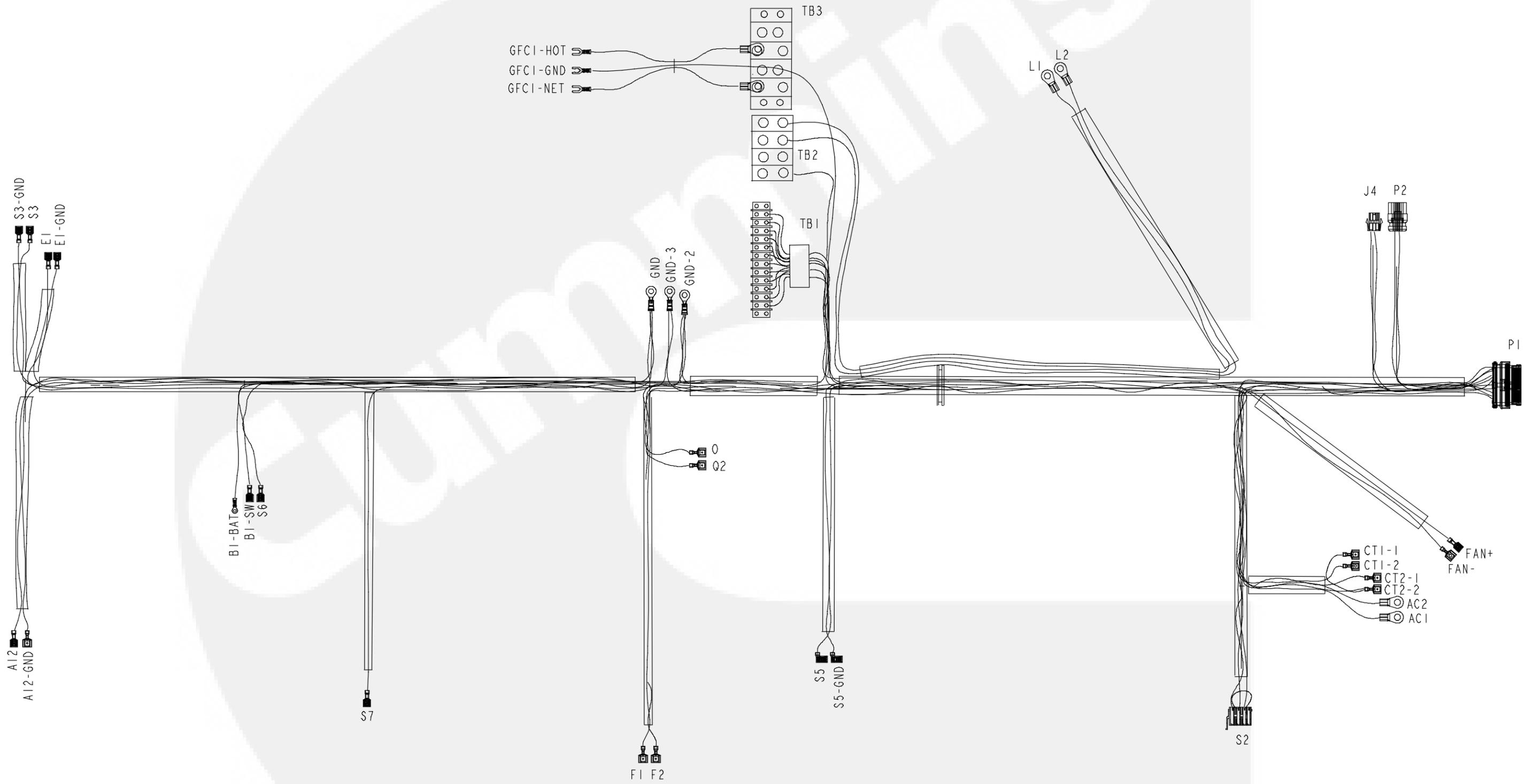
1. QTY (7) 18-20 GAUGE WIRES FOR COMMUNICATIONS CONNECTIONS. CUMMINS RECOMMENDS THE USE OF TWISTED PAIR WIRES FOR TB1-9 AND TB1-10. 9 WIRES IF OPTIONAL LOAD CONTROL IS UTILIZED.
2. QTY (4) 8 GAUGE (FOR UP TO 125 FT) 90C WIRE FOR AC CONNECTIONS.
3. QTY (2) 12 GAUGE (FOR UP TO 125 FT) 90C WIRE FOR GFCI AND AC DISTRIBUTION BLOCK.
4. QTY (7) UL LISTED FORK TERMINALS FOR 18 GAUGE WIRES (CUMMINS PART NUMBER 0332-2527).
5. AC CONDUIT (FOR LOAD CABLES AND 15 AMP CIRCUIT CABLES).
6. DC CONDUIT (FOR ALL COMMUNICATION AND ETHERNET CABLES).
7. 4 WALL ANCHORS AND 4 BLACK SCREWS FOR DISPLAY MOUNTING.
8. CAT 5 ETHERNET CABLE (OPTIONAL).
9. 12 VOLT RELAY (OPTIONAL, CUMMINS PART NO. 0307-3172 OR ANY 12 VDC COIL WITH A MINIMUM CONTACT RATING OF 1 AMP AT 24 VAC). CONDUIT SEALING PUTTY.
10. GAS LINE AND STEP DOWN REGULATORS (AS REQUIRED) FOR GAS CONNECTIONS - MAX FULL LOAD BTU ON NATURAL GAS = 191,000 BTU/HOUR AND ON PROPANE = 220,000 BTU/HOUR OR 2.4 GALLON/HOUR - 5-11" WC PRESSURE AT GENERATOR REQUIRED.
11. UL LISTED PIPE DOPE.
12. BATTERY REQUIREMENT: 12 VOLT, GROUP 26R, 530CCA

0630-3707



NOTES:  
1. GENSET WEIGHT: 460 LBS.

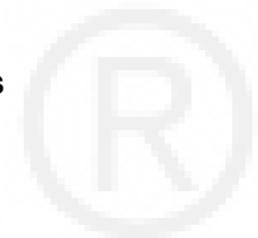




0338-4902

WIRING HARNESS

F-8





Cummins

## Cummins **Onan**

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## PROPANE FUEL SYSTEM

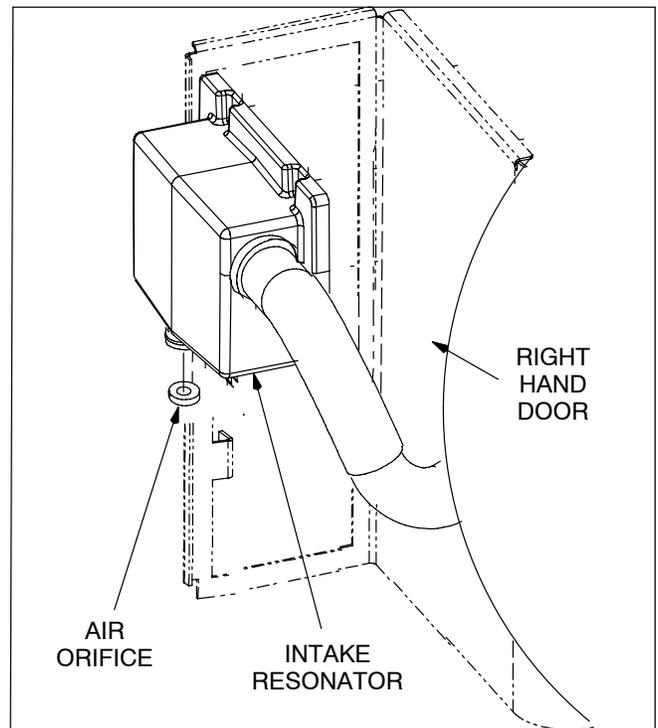
**⚠WARNING** *NFPA Standard No. 58 requires all persons handling and operating Propane to be trained in proper handling and operating procedures.*

**⚠WARNING** *Fuel leaks can lead to explosive accumulations of gas. Propane sinks in air and can accumulate inside housings, basements and other below-grade spaces. Prevent gas leaks and the accumulation of gaseous fuel in the event of a leak.*

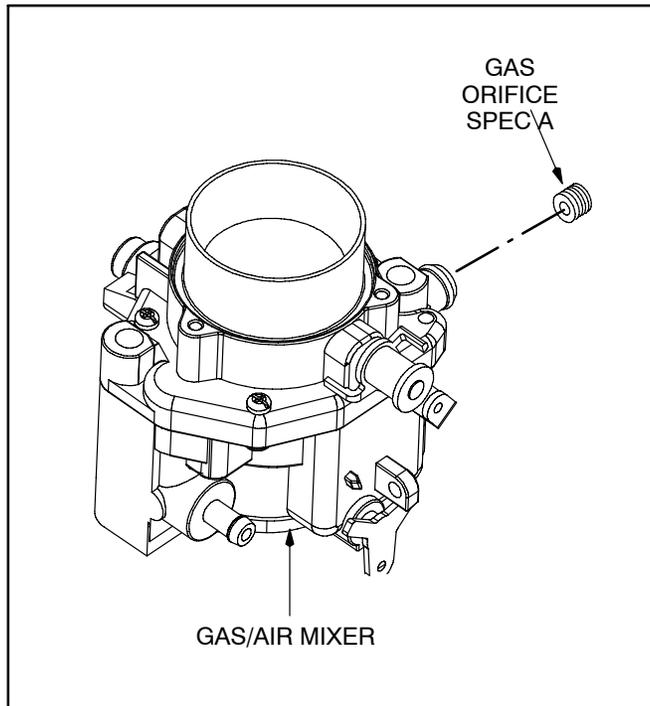
### Converting from Natural Gas to Propane (Vapor Withdrawal)

The generator set leaves the factory set up for Natural Gas. The generator set must be converted as follows for use with Propane vapor:

1. Disconnect the fuel hose at the gas/air mixer and thread in the gas orifice wire-tied to the engine lifting bracket (Figure F-1).
2. Insert the air orifice supplied with the flexible gas hose into the inlet of the air intake resonator (Figure F-2). (Orifice used only on spec A units)
3. Configure the control for Propane (page 5-1).



**FIGURE F-2. INSTALLING THE AIR ORIFICE (SPEC A ONLY)**



**FIGURE F-1. INSTALLING THE PROPANE GAS ORIFICE (SPEC C ONLY)**