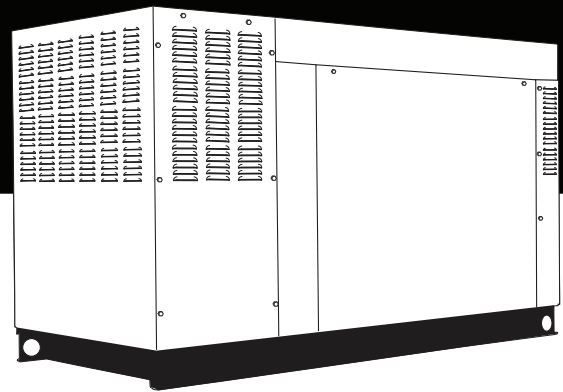


Serial Number

**5.4L**  
**Industrial**  
**55kW Models**  
**EPA Certified**

# STATIONARY EMERGENCY GENERATOR OWNER'S MANUAL



*A new standard of reliability*

— ⚠ **CAUTION** ⚠ —

ONLY QUALIFIED ELECTRICIANS OR CONTRACTORS SHOULD ATTEMPT INSTALLATION!  
DEADLY EXHAUST FUMES. OUTDOOR INSTALLATION ONLY!

This manual should remain with the unit.

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# Safety Instructions

 **SAVE THESE INSTRUCTIONS** – The manufacturer suggests that these rules for safe operation be copied and posted in potential hazard areas. Safety should be stressed to all operators, potential operators, and service and repair technicians for this equipment.

## INTRODUCTION

Thank you for purchasing this model of the stationary emergency generator product line.

Every effort was expended to make sure that the information and instructions in this manual were both accurate and current at the time the manual was written. However, the manufacturer reserves the right to change, alter or otherwise improve this product(s) at any time without prior notice.

## READ THIS MANUAL THOROUGHLY

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

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

### **DANGER!**

**INDICATES A HAZARDOUS SITUATION OR ACTION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.**

### **WARNING!**

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

### **CAUTION!**

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

#### **NOTE:**

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

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

Four commonly used safety symbols accompany the DANGER, WARNING and CAUTION blocks. The type of information each indicates is as follows:

 **This symbol points out important safety information that, if not followed, could endanger personal safety and/or property of others.**

 **This symbol points out potential explosion hazard.**



**This symbol points out potential fire hazard.**



**This symbol points out potential electrical shock hazard.**

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

**For safety reasons, the manufacturer recommends that this equipment be installed, serviced and repaired by a Service Dealer or other competent, qualified electrician or installation technician who is familiar with applicable codes, standards and regulations. The operator also must comply with all such codes, standards and regulations.**

## OPERATION AND MAINTENANCE

It is the operator's responsibility to perform all safety checks, to make sure that all maintenance for safe operation is performed promptly, and to have the equipment checked periodically by a Service Dealer. Normal maintenance service and replacement of parts are the responsibility of the owner/operator and, as such, are not considered defects in materials or workmanship within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service.

Proper maintenance and care of the generator ensure a minimum number of problems and keep operating expenses at a minimum. See a Service Dealer for service aids and accessories.

Operating instructions presented in this manual assume that the generator electric system has been installed by a Service Dealer or other competent, qualified contractor. Installation of this equipment is not a "do-it-yourself" project.

## HOW TO OBTAIN SERVICE

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

When contacting a dealer about parts and service, always supply the complete Model Number, Serial Number and Type Code (where applicable) from the DATA LABEL that is affixed to the unit.

# Safety Instructions

## SAFETY RULES

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

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

### **⚠ DANGER!**

**⚠ Despite the safe design of this generator, operating this equipment imprudently, neglecting its maintenance or being careless can cause possible injury or death. Permit only responsible and capable persons to install, operate or maintain this equipment.**

**⚠ Potentially lethal voltages are generated by these machines. Ensure all steps are taken to render the machine safe before attempting to work on the generator.**

**⚠ Parts of the generator are rotating and/or hot during operation. Exercise care near running generators.**

## GENERAL HAZARDS

- For safety reasons, the manufacturer recommends that this equipment be installed, serviced and repaired by a Service Dealer or other competent, qualified electrician or installation technician who is familiar with applicable codes, standards and regulations. The operator also must comply with all such codes, standards and regulations.
- Installation, operation, servicing and repair of this (and related) equipment must always comply with applicable codes, standards, laws and regulations. Adhere strictly to local, state and national electrical and building codes. Comply with regulations the Occupational Safety and Health Administration (OSHA) has established. Also, ensure that the generator is installed, operated and serviced in accordance with the manufacturer's instructions and recommendations. Following installation, do nothing that might render the unit unsafe or in noncompliance with the aforementioned codes, standards, laws and regulations.

- The engine exhaust fumes contain carbon monoxide gas, which can be DEADLY. This dangerous gas, if breathed in sufficient concentrations, can cause unconsciousness or even death. For that reason, adequate ventilation must be provided. This should be considered prior to installing the generator. The unit should be positioned to direct exhaust gasses safely away from any building where people, animals, etc., will not be harmed. Any exhaust stacks that ship loose with the unit must be installed properly per the manufacturer's instruction, and in strict compliance with applicable codes and standards.
- Keep hands, feet, clothing, etc., away from drive belts, fans, and other moving or hot parts. Never remove any drive belt or fan guard while the unit is operating.
- Adequate, unobstructed flow of cooling and ventilating air is critical in any room or building housing the generator to prevent buildup of explosive gases and to ensure correct generator operation. Do not alter the installation or permit even partial blockage of ventilation provisions, as this can seriously affect safe operation of the generator.
- Keep the area around the generator clean and uncluttered. Remove any materials that could become hazardous.
- When working on this equipment, remain alert at all times. Never work on the equipment when physically or mentally fatigued.
- Inspect the generator regularly, and promptly repair or replace all worn, damaged or defective parts using only factory-approved parts.
- Before performing any maintenance on the generator, disconnect its battery cables to prevent accidental start-up. Disconnect the cable from the battery post indicated by a NEGATIVE, NEG or (–) first. Reconnect that cable last.
- Never use the generator or any of its parts as a step. Stepping on the unit can stress and break parts, and may result in dangerous operating conditions from leaking exhaust gases, fuel leakage, oil leakage, etc.

## ELECTRICAL HAZARDS

- All stationary emergency generators covered by this manual produce dangerous electrical voltages and can cause fatal electrical shock. Utility power delivers extremely high and dangerous voltages to the transfer switch as well as the generator. Avoid contact with bare wires, terminals, connections, etc., on the generator as well as the transfer switch, if applicable. Ensure all appropriate covers, guards and barriers are in place before operating the generator. If work must be done around an operating unit, stand on an insulated, dry surface to reduce shock hazard.
- Do not handle any kind of electrical device while standing in water, while barefoot, or while hands or feet are wet. DANGEROUS ELECTRICAL SHOCK MAY RESULT.

## Safety Instructions

- If personnel must stand on metal or concrete while installing, operating, servicing, adjusting or repairing this equipment, place insulative mats over a dry wooden platform. Work on the equipment only while standing on such insulative mats.
- The National Electrical Code (NEC) requires the frame and external electrically conductive parts of the generator to be connected to an approved earth ground. This grounding will help prevent dangerous electrical shock that might be caused by a ground fault condition in the generator or by static electricity. Never disconnect the ground wire.
- Wire gauge sizes of electrical wiring, cables and cord sets must be adequate to handle the maximum electrical current (ampacity) to which they will be subjected.
- Before installing or servicing this (and related) equipment, make sure that all power voltage supplies are positively turned off at their source. Failure to do so will result in hazardous and possibly fatal electrical shock.
- Connecting this unit to an electrical system normally supplied by an electric utility shall be by means of a transfer switch so as to isolate the generator electric system from the electric utility distribution system when the generator is operating. Failure to isolate the two electric system power sources from each other by such means will result in damage to the generator and may also result in injury or death to utility power workers due to backfeed of electrical energy.
- Stationary emergency generators installed with an automatic transfer switch will crank and start automatically when normal (utility) source voltage is removed or is below an acceptable preset level. To prevent such automatic start-up and possible injury to personnel, disable the generator's automatic start circuit (battery cables, etc.) before working on or around the unit. Then, place a "Do Not Operate" tag on the generator control panel and on the transfer switch.
- In case of accident caused by electric shock, immediately shut down the source of electrical power. If this is not possible, attempt to free the victim from the live conductor. **AVOID DIRECT CONTACT WITH THE VICTIM.** Use a nonconducting implement, such as a dry rope or board, to free the victim from the live conductor. If the victim is unconscious, apply first aid and get immediate medical help.
- Never wear jewelry when working on this equipment. Jewelry can conduct electricity resulting in electric shock, or may get caught in moving components causing injury.

### **FIRE HAZARDS**

- Keep a fire extinguisher near the generator at all times. Do NOT use any carbon tetra-chloride type extinguisher. Its fumes are toxic, and the liquid can deteriorate wiring insulation. Keep the extinguisher properly charged and be familiar with its use. If there are any questions pertaining to fire extinguishers, consult the local fire department.

### **EXPLOSION HAZARDS**

- Properly ventilate any room or building housing the generator to prevent build-up of explosive gas.
- Do not smoke around the generator. Wipe up any fuel or oil spills immediately. Ensure that no combustible materials are left in the generator compartment, or on or near the generator, as FIRE or EXPLOSION may result. Keep the area surrounding the generator clean and free from debris.
- These generators may operate using one of several types of fuels. All fuel types are potentially FLAMMABLE and/or EXPLOSIVE and should be handled with care. Comply with all laws regulating the storage and handling of fuels. Inspect the unit's fuel system frequently and correct any leaks immediately. Fuel supply lines must be properly installed, purged and leak tested according to applicable fuel-gas codes before placing this equipment into service.
- Diesel fuels are highly FLAMMABLE. Gaseous fluids such as natural gas and liquid propane (LP) gas are extremely EXPLOSIVE. Natural gas is lighter than air, and LP gas is heavier than air; install leak detectors accordingly.

#### **CALIFORNIA PROPOSITION 65 WARNING**

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

#### **CALIFORNIA PROPOSITION 65 WARNING**

This product contains or emits chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

## General Information

### IDENTIFICATION RECORD

#### DATA LABEL

Every generator set has a DATA LABEL that contains important information pertinent to the generator. The data label, which can be found attached to the generator's lower connection box, lists the unit's serial number and its rated voltage, amps, wattage capacity, phase, frequency, rpm, power factor, production date, etc.

#### NOTE:

For actual information related to this particular model, please refer to the Manual Drawing Listing located at the end of this manual, or to the data label affixed to the unit.

#### Stationary Emergency Generator Model and Serial Number

This number is the key to numerous engineering and manufacturing details pertaining to your unit. Always supply this number when requesting service, ordering parts or seeking information.

#### *Data Label*

|                                                                                              |                                |                                          |                              |
|----------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------|------------------------------|
| MODEL                                                                                        | <input type="text"/>           | <input type="text"/>                     |                              |
| PROD DATE                                                                                    | <input type="text"/>           | SERIAL <input type="text"/>              |                              |
| KW <input type="text"/>                                                                      | KVA <input type="text"/>       | PHASE <input type="text"/>               | HERTZ <input type="text"/>   |
| VOLT <input type="text"/>                                                                    | AMP <input type="text"/>       | PWR FACT <input type="text"/>            | ALT RPM <input type="text"/> |
| ENG RPM <input type="text"/>                                                                 | TYPE CODE <input type="text"/> |                                          |                              |
| ALT SUBTRANS REACTANCE <input type="text"/>                                                  |                                | ALT TRANS REACTANCE <input type="text"/> |                              |
| CLASS <input type="checkbox"/> ROTOR <input type="checkbox"/> STATOR WINDING INS AT 25°C AMB |                                |                                          |                              |
| <input type="text"/>                                                                         |                                | <input type="text"/>                     |                              |
| MODEL NO (CAT/CUST NO)                                                                       |                                | SERIAL NO                                |                              |
| <input type="text"/>                                                                         |                                | <input type="text"/>                     |                              |
| <input type="text"/>                                                                         |                                | <input type="text"/>                     |                              |

0G2110 REV C

### EQUIPMENT DESCRIPTION

This equipment is a revolving field, alternating current Stationary Emergency Generator. It is powered by a gaseous fueled engine operating at 1800 rpm for 4-pole direct drive units, 3600 rpm for 2-pole direct drive units and 2300 - 3000 rpm for quiet drive gear units. See the Specifications section for exact numbers. The unit comes complete with a sound attenuated enclosure, internally mounted muffler, control console, mainline circuit breaker, battery charger, and protective alarms as explained in the following paragraph.

All AC connections, including the power leads from the alternator, 120 volt battery charger input and control connections to the transfer switch are available in the main connection box.

The Stationary Emergency Generator incorporates the following alternator features:

- Rotor and Stator insulation class is rated as defined by NEMA MG1-32.6, NEMA MG1-1.66. The generator is self ventilated and drip-proof constructed. Refer to the Specifications section or the data label for the class ratings.
- The voltage waveform deviation, total harmonic content of the AC waveform and telephone influence factor have been evaluated and are acceptable according to NEMA MG1-32.

### ENGINE OIL RECOMMENDATIONS

The unit has been filled with 5W-20 engine oil at the factory. Use a high-quality detergent oil classified "For Service SJ or SH." Detergent oils keep the engine cleaner and reduce carbon deposits. When changing the engine oil, be sure to use 5W-30 engine oil.

#### ⚠ CAUTION!

- ⚠ Any attempt to crank or start the engine before it has been properly serviced with the recommended oil may result in an engine failure.

#### NOTE:

If not already equipped, it is strongly recommended to use the optional Cold Weather Start Kit for temperatures below 32° F. The part number for the Cold Weather Start Kit can be found in the Specifications section or by contacting an authorized dealer. The oil grade for temperatures below 32° F is 5W-30 synthetic oil.

### COOLANT RECOMMENDATIONS

Use a mixture of half low silicate ethylene glycol base anti-freeze and deionized water. Cooling system capacity is listed in the specifications. Use only deionized water and only low silicate anti-freeze. If desired, add a high quality rust inhibitor to the recommended coolant mixture. When adding coolant, always add the recommended 50-50 mixture.

#### ⚠ CAUTION!

- ⚠ Do not use any chromate base rust inhibitor with ethylene glycol base anti-freeze or chromium hydroxide ("green slime") forms and will cause overheating. Engines that have been operated with a chromate base rust inhibitor must be chemically cleaned before adding ethylene glycol base anti-freeze. Using any high silicate anti-freeze boosters or additives will also cause overheating. The manufacturer also recommends that any soluble oil inhibitor is NOT used for this equipment.

#### ⚠ DANGER!

- ⚠ Do not remove the radiator pressure cap while the engine is hot or serious burns from boiling liquid or steam could result.
- ⚠ Ethylene glycol base antifreeze is poisonous. Do not use mouth to siphon coolant from the radiator, recovery bottle or any container. Wash hands thoroughly after handling. Never store used antifreeze in an open container because animals are attracted to the smell and taste of antifreeze even though it is poisonous to them.



## ENGINE PROTECTIVE DEVICES

The Stationary Emergency Generator may be required to operate for long periods of time without an operator on hand to monitor such engine conditions as coolant temperature, oil pressure or rpm. For that reason, the engine has several devices designed to protect it against potentially damaging conditions by automatically shutting down the unit when the oil pressure is too low, the coolant temperature is too high, the coolant level is too low, or the engine is running too fast.

### NOTE:

**Engine protective switches and sensors are mentioned here for the reader's convenience. Also refer to the applicable control panel manual for additional automatic engine shutdown information.**

### COOLANT TEMPERATURE SENSING

An analog Water Temperature Sender (WTS) is located in the engine's cooling system. This sender is connected to the panel and allows the panel to monitor and display the temperature of the coolant system.

The WTS is a resistive device whose resistance changes based on coolant temperature. The resistance of the sender results in a voltage being developed across the sender. As the Coolant temperature increases, the resistance will decrease, causing the voltage to decrease. This changing voltage is converted to 4-20mA signal by a signal conditioner module. The corresponding 4-20mA signal is read by the control panel and displayed as the coolant temperature.

The control panel will monitor and display the coolant temperature anytime the DC input to the control panel is present.

If the temperature exceeds approximately 140° C (284° F), the engine shutdown will be initiated. The generator will automatically restart and the display will reset once the temperature has returned to an operating level.

### LOW COOLANT LEVEL

A Low Coolant Level (LCL) sensor is placed in the generators coolant system. This sensor allows the panel to detect a Low Coolant Level condition.

The LCL is a resistive device whose resistance changes rapidly based on the presence or absence of coolant.

The resistance of the LCL results in a voltage being developed across the LCL. This voltage changes as the resistance changes. This changing voltage is converted to 4-20mA signal by a signal conditioner module. The corresponding 4-20mA signal is read by the control panel and displayed as the low coolant level.

If the level of the engine coolant drops below the level of the low coolant level sensor, the engine shutdown will be initiated.

### OIL PRESSURE SENSING

An analog Oil Pressure Sender (OPS) is used for monitoring the engine oil pressure. This sender allows the control panel to measure and display the Engine oil pressure.

The OPS is a resistive device, whose resistance changes based on engine oil pressure. The resistance of the sender results in a voltage being developed across the sender. As the oil pressure increases, the resistance will decrease, causing the voltage to decrease. This changing voltage is converted to 4-20mA signal by a signal conditioner module. The corresponding 4-20mA signal is read by the control panel and displayed as the oil pressure.

The control panel will monitor and display oil pressure anytime the DC input to the control panel is present.

Should the oil pressure drop below the 8 psi range, the engine shutdown is initiated. The unit should not be restarted until oil is added. Turn the AUTO/OFF/ MANUAL switch to the OFF position, then back to AUTO to restart.

### OVERCRANK SHUTDOWN

When the control panel receives a start signal, it initiates the programmed starting sequence. The start sequence consists of the number of crank attempts, the length of each crank attempt, and the rest time between each crank attempt. If the engine has not started by the end of the final crank attempt, an Overcrank alarm is generated, the control panel will sound the alarm and display the message "Failed to start".

### OVERSPEED SHUTDOWN

A speed circuit controls engine cranking, start-up, operation and shutdown. Engine speed signals are delivered to the circuit board whenever the unit is running. Should the engine over speed above a safe, preset value, the circuit board initiates an automatic engine shutdown. Contact the nearest Authorized Dealer if this failure occurs.

### RPM SENSOR LOSS SHUTDOWN

If the speed signal to the control panel is lost, engine shutdown will occur.

### DC FUSE

This fuse is located inside of the control panel. It protects the panel wiring and components from damaging overload. Always remove this fuse before commencing work on the generator. The unit will not start or crank if the fuse is blown. Replace the fuse with one of the same size, type, and rating. (See the exploded views and parts lists at the end of this manual for replacement part number.)



## FUEL SYSTEM

### FUEL REQUIREMENTS

The Stationary Emergency Generator may be equipped with one of the following fuel systems:

- Natural gas fuel system
- Propane vapor (PV) fuel system
- Liquid propane (LP) fuel system

Recommended fuels should have a Btu content of at least 1,000 Btu's per cubic foot for natural gas; or at least 2,520 Btu's per cubic foot for LP gas. Ask the fuel supplier for the Btu content of the fuel.

#### NOTE:

**The fuel consumption requirements are identified in the Specifications section of the Owner's Manual. Refer to the Installation Manual if assistance is required for the sizing of the pipe diameter for the generator. Any piping used to connect the generator to the fuel supply should be of adequate size to achieve the fuel consumption requirements.**

#### NOTE:

**The recommended fuel pressure is identified in the Specifications section this manual.**

### NATURAL GAS FUEL SYSTEM

Natural gas is supplied in its vapor state. In most cases, the gas distribution company provides piping from the main gas distribution line to the standby generator site. The following information applies to natural gas fuel systems.

- Gas pressure in a building is usually regulated by national, state and local codes.
- To reduce gas pressure to a safe level before the gas enters a building, a primary regulator is needed. The natural gas supplier may or may not supply such a regulator.
- It is the responsibility of the gas supplier to make sure sufficient gas pressure is available to operate the primary regulator.
- Gas pressure at the inlet to the fuel shutoff solenoid should not exceed approximately 14 inches water column (0.5 psi).

### PROPANE VAPOR WITHDRAWAL FUEL SYSTEM

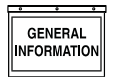
This type of system utilizes the vapors formed above the liquid fuel in the supply tank. Approximately 10 to 20 percent of the tank capacity is needed for fuel expansion from the liquid to the vapor state. The vapor withdrawal system is generally best suited for smaller engines that require less fuel. The installer should be aware of the following:

- The natural gas and LP gas systems are similar. However, the natural gas system delivers gas at a pressure of approximately five inches water column to the carburetor.
- When ambient temperatures are low and engine fuel consumption is high, the vapor withdrawal system may not function efficiently.
- Ambient temperatures around the supply tank must be high enough to sustain adequate vaporization, or the system will not deliver the needed fuel volume.
- In addition to the cooling effects of ambient air, the vaporization process itself provides an additional cooling effect.

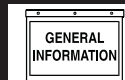
### LP FUEL SYSTEM

LP is supplied as a liquid in pressure tanks. It is usually made up of propane, butane, or a mixture of the two gases. Propane tends to vaporize readily even at temperatures as low as -20° F (-29° C). However, butane reverts to its liquid state when temperatures drop below 32° F (0° C).

LP in a liquid withdrawal system must be converted to its gaseous state before it is introduced into the engine carburetor. A vaporizer-converter is generally used to accomplish this. In such a converter, heated engine coolant is ported through the converter to provide the necessary heat for conversion of the fuel from a liquid to a gaseous state.



# Stationary Emergency Generator Specifications



## SPECIFICATIONS

### ◆ STATIONARY EMERGENCY GENERATOR

Type.....Synchronous  
Rotor Insulation..... Class F or Class H (see Data Label)  
Stator Insulation..... Class H  
Total Harmonic Distortion..... < 3.5%  
Telephone Interference Factor (TIF) ..... < 50  
Alternator Output Leads 1-phase ..... 4-wire  
Alternator Output Leads 3-phase ..... 6-wire  
Bearings ..... Sealed Ball  
Coupling ..... Flexible Disc  
Load Capacity (Standby Rating) ..... 55kW\*

\* NOTE: Generator rating and performance in accordance with ISO8528-5, BS5514, SAE J1349, ISO3046 and DIN 6271 Standards. KW rating is based on LPG fuel and may derate with natural gas.

|                                                           |           |            |                |
|-----------------------------------------------------------|-----------|------------|----------------|
| Excitation System .....                                   | Brushless |            |                |
| Generator Output Voltage/kW - 60 Hz                       | <u>kW</u> | <u>Amp</u> | <u>CB Size</u> |
| 120/240V, 1-phase, 1.0 pf                                 | 55        | 229        | 250            |
| 120/208V, 3-phase, 0.8 pf                                 | 55        | 191        | 225            |
| 120/240V, 3-phase, 0.8 pf                                 | 55        | 165        | 200            |
| 277/480V, 3-phase, 0.8 pf                                 | 55        | 83         | 100            |
| 600V, 3-phase, 0.8 pf                                     | 55        | 66         | 80             |
| Generator Locked Rotor KVA Available @ Voltage Dip of 35% |           |            |                |
| Single-phase.....                                         | 110 KVA   |            |                |
| 480V, 3-phase.....                                        | 146 KVA   |            |                |
| 208V, 3-phase.....                                        | 110 KVA   |            |                |
| 240V, 3-phase.....                                        | 110 KVA   |            |                |

### ◆ ENGINE

Make ..... Generac  
Model ..... V-type  
Cylinders and Arrangement..... 8  
Displacement..... 5.4 Liter  
Bore..... 3.55 in.  
Stroke..... 4.17 in.  
Compression Ratio..... 9-to-1  
Air Intake System..... Naturally Aspirated  
Valve Seats..... Hardened  
Lifter Type..... Hydraulic

#### Engine Parameters

Rated Synchronous RPM ..... 60 Hz, 1800  
Gross HP at rated kW ..... 60 Hz, 88

#### Exhaust System

Exhaust Flow at Rated Output 60 Hz..... 414 cfm  
Exhaust Temperature at Rated Output..... 800° F

#### Combustion Air Requirements (Natural Gas)

Flow at rated power, 60 Hz..... 163 cfm

#### Governor

Type..... Electronic  
Frequency Regulation..... Isochronous  
Steady State Regulation ..... ± 1/4 %

#### Adjustments

Speed ..... Yes  
Droop ..... Yes

#### Engine Lubrication System

Type of Oil Pump ..... Gear  
Oil Filter ..... Full Flow, Cartridge  
Crankcase Oil Capacity ..... 6.5 U.S. qts.

### ◆ COOLING SYSTEM

Type..... Closed  
Water Pump..... Belt Driven  
Fan Speed..... 2090  
Fan Diameter..... 22 inches  
Fan Mode..... Pusher  
Air Flow (inlet air including alternator and combustion air) ..... 4350 ft<sup>3</sup>/min.  
Coolant Capacity..... (4.0 U.S. gal.)  
Heat Rejection to Coolant..... 210,000 Btu/h  
Maximum Operating Air Temp. on Radiator..... 60° C (150° F)  
Maximum Ambient Temperature ..... 50° C (140° F)

### ◆ FUEL SYSTEM

Type of Fuel ..... Natural Gas, Propane Vapor\*  
Carburetor..... Down Draft  
Secondary Fuel Regulator..... Standard  
Fuel Shut-off Solenoid..... Standard  
Operating Fuel Pressure ..... 5 in. - 14 in. Water Column

#### Fuel Consumption - ft<sup>3</sup>/hr (Natural Gas/LPV)

| <u>Exercise</u> | <u>25%</u>  | <u>50%</u>  | <u>75%</u>  | <u>100%</u> |
|-----------------|-------------|-------------|-------------|-------------|
| <u>Cycle</u>    | <u>Load</u> | <u>Load</u> | <u>Load</u> | <u>Load</u> |
| 95/38           | 204/82      | 392/157     | 547/220     | 756/302     |

\* Engine is not field convertible between natural gas and propane. Jet size and ignition timing are factory set for the specific fuel.

### ◆ ELECTRICAL SYSTEM

Battery Charge Alternator ..... 12V, 30 Amp  
Static Battery Charger ..... 12V, 10 Amp  
Recommended Battery..... 24F 525CCA  
System Voltage ..... 12 Volts

#### Voltage Regulator

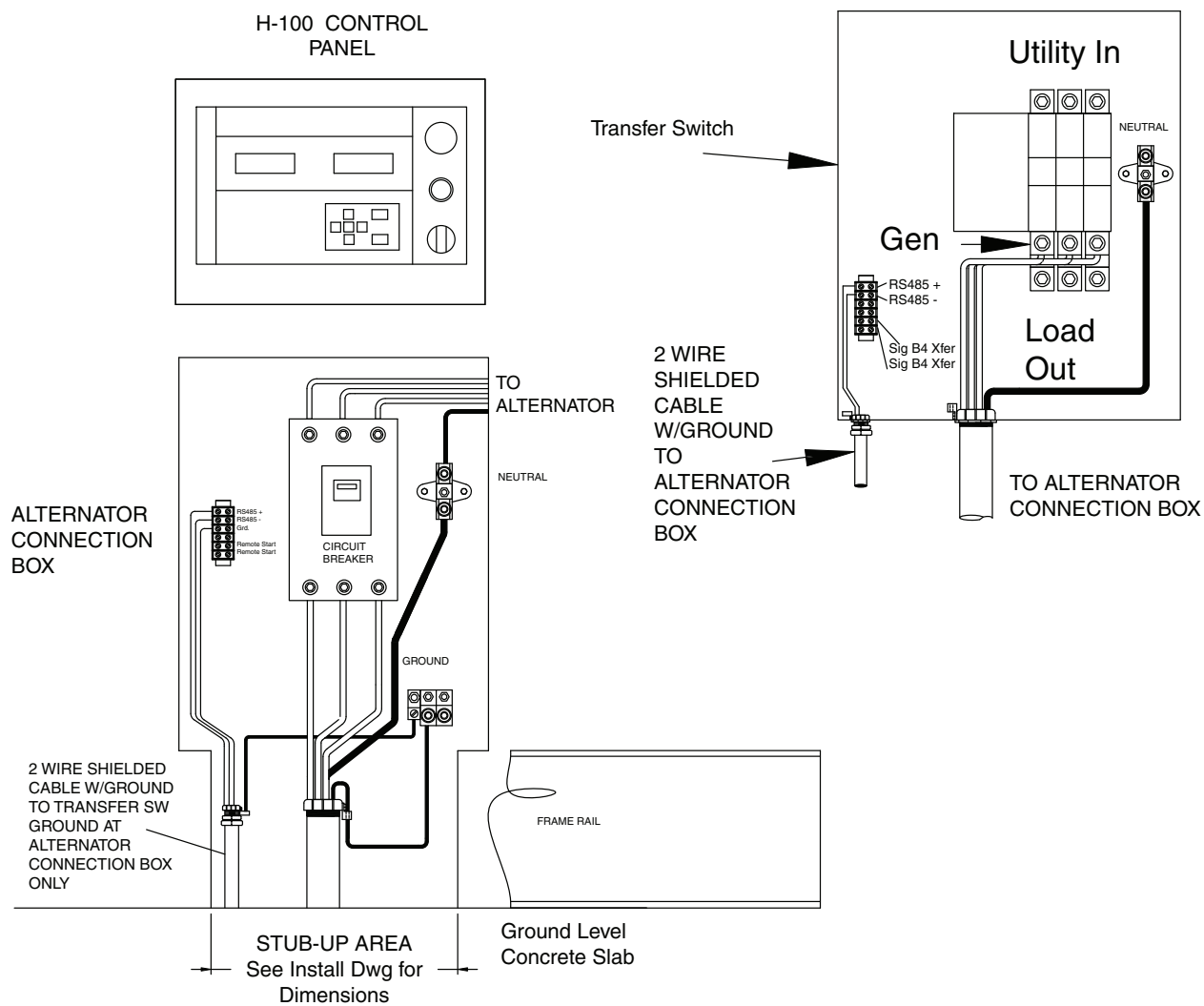
Type..... Full Digital  
Sensing ..... 3-phase  
Regulation..... ± 1/4%  
Features..... Built into H-100 Control Panel,  
V/F Adjustable, Adjustable Voltage and Gain

#### Power Adjustment for Ambient Conditions

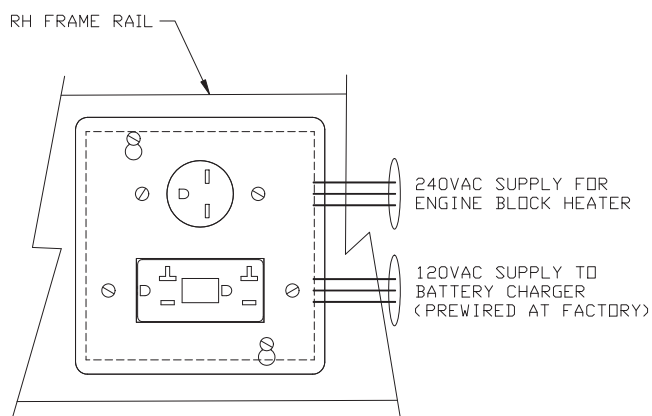
Temperature Deration  
3% for every 10° C above °C ..... 25  
1.65% for every 10° above °F ..... 77  
Altitude Deration  
1% for every 100 m above m..... 183  
3% for every 1000 ft. above ft. .... 600

Controller ..... H-panel

**Figure 1 — Interconnections**



**Figure 2 — AC Outlet for Block Heater and Battery  
Charger (to be wired by installer)**



## 5.4L IGNITION DESCRIPTION

The 5.4L Ignition Module operates with an 8-cylinder. The 5.4L engine uses a 36-1 crank sensor, a CAM sensor and coil-on-plug ignition coils for each spark plug.

### ◆ DIAGNOSTIC BLINK PATTERNS (RED LED LOCATED ON THE IGNITION CONTROL BOARD)

During normal ignition operation the RED LED, located on the ignition control board, flashes at a 0.5 second ON and a 0.5 second OFF rate. This is considered one (1) blink.

RED LED Fault Codes are listed below, with priority as shown:

1. Overspeed Shutdown: LED blinks 4 times, is OFF for 3 seconds and then repeats.
2. No Crank Signal; LED blinks 2 times, is OFF for 3 seconds and then repeats.
3. No Cam Signal; LED blinks 3 times, is OFF for 3 seconds and then repeats.

Only one LED fault code is displayed at a time.

If multiple fault codes exist then the highest priority fault must be resolved prior to a lower priority fault code being displayed.

The LED fault code blink pattern is displayed for a minimum of two minutes after a fault has occurred and then the ignition will power itself down.

If an Ignition fault occurs, a signal is sent to the H-panel and then the H-Panel will shut the Generator down and display on it's front panel that an ignition fault has occurred.

### ◆ WEATHER AND MAINTENANCE KITS

To keep the generator running at its peak, the following kits are offered:

- Cold Weather Kit
  - ~ Recommended for climates with temperatures below 32° F.
- Extreme Cold Weather Kit
  - ~ Recommended Block Heater Kit for protection in temperatures below 32° F. This kit comes pre-installed on all industrial gaseous units.
- Scheduled Maintenance Kit
  - ~ Kit includes recommended parts to maintain the generator. Refer to the Service Schedule for regular maintenance intervals.

For additional information, or to order any of these kits, please contact an Authorized Service Dealer or Customer Service Representative.

## ALTERNATOR AC LEAD CONNECTIONS

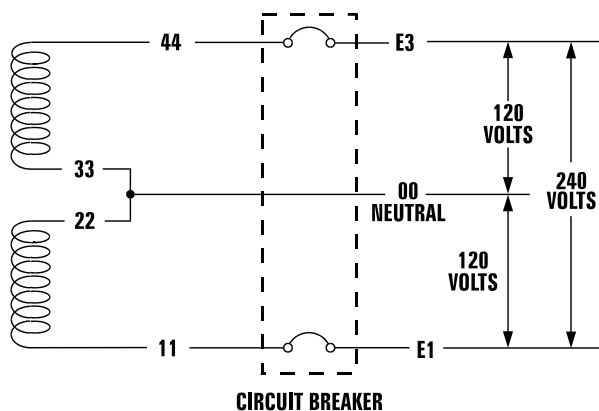
The electrical wires in the unit's AC connection (lower) panel should be installed according to the number of leads and the voltage/phase required for the application. The voltage and phase are described on the generator data label. The number of lead wires can be identified using the Specifications section and the power output rating on the generator data label. For example, if the generator produces 130kW, 277/480 Volt, 3-phase power, the generator has 12 alternator output leads. Figure 7.3 describes the stator power winding connection for the generator.

### FOUR-LEAD, SINGLE-PHASE STATOR

Four-lead alternators (see Figure 7.1) are designed to supply electrical loads with voltage code "A" (240V, 1-phase, 60 Hz). Electrical power is produced in the stator power windings. These windings were connected at the factory to the main circuit breaker as shown in Figure 7.1.

The rated voltage between each circuit breaker terminal is 240V. The rated voltage between each circuit breaker terminal and the neutral point 00 is 120V.

**Figure 7.1 — Four-lead, Single-phase Stator**



## ALTERNATOR POWER WINDING CONNECTIONS

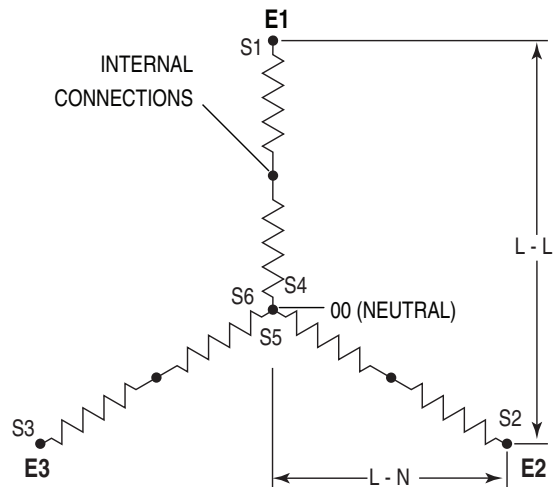
### 3-PHASE ALTERNATORS ("Y" CONFIGURATION)

The Stationary Emergency Generator is designed to supply 3-phase electrical loads. Electric power is produced in the alternator power windings. These windings were connected at the factory to the main circuit breaker with a "Y" configuration as shown in Figures 7.2 through 7.6.

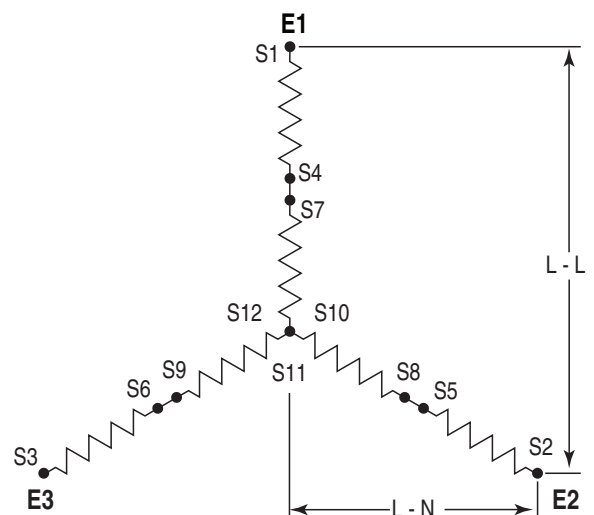
The rated voltage between circuit breaker terminals E1-E2, E1-E3 and E2-E3 is 480V, 208V or 600V depending on the model.

The rated voltage between each circuit breaker terminal and the neutral point 00 is 277V, 120V, or 346V depending on the model.

**Figure 7.2 — Stator Power Winding Connections - 3-phase, 277/480V (6 Lead)**

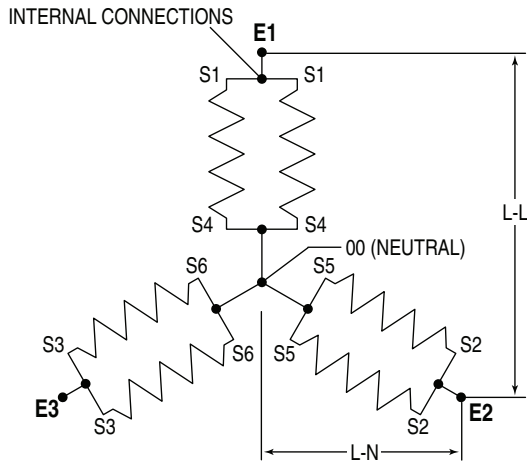


**Figure 7.3 — Stator Power Winding Connections - 3-phase, 277/480V (12 Lead)**

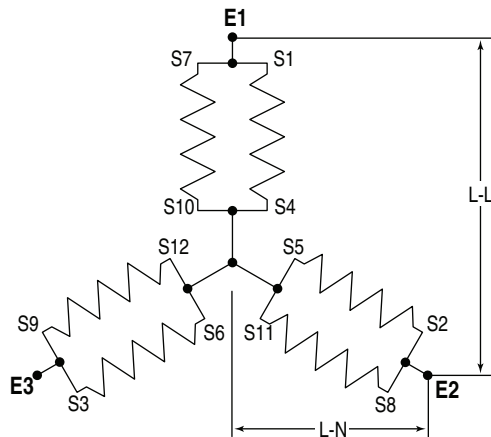


## General Information

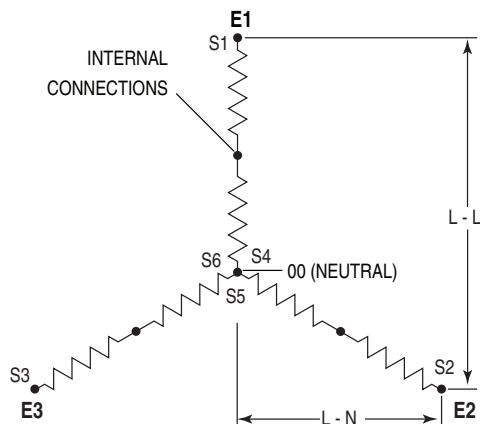
**Figure 7.4 — Stator Power Winding Connections - 3-phase, 120/208V (6 Lead)**



**Figure 7.5 — Stator Power Winding Connections - 3-phase, 120/208V (12 Lead)**



**Figure 7.6 — Stator Power Winding Connections - 3-phase, 346/600V (6 Lead)**



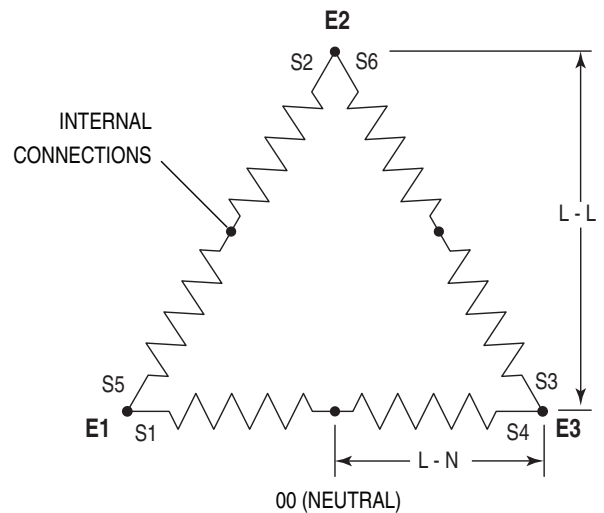
### 3-PHASE ALTERNATORS ("DELTA" CONFIGURATION)

The Stationary Emergency Generator is designed to supply 3-phase electrical loads. Electric power is produced in the alternator power windings. These windings were connected at the factory to the main circuit breaker with a "Delta" configuration as shown in Figures 7.7 and 7.8.

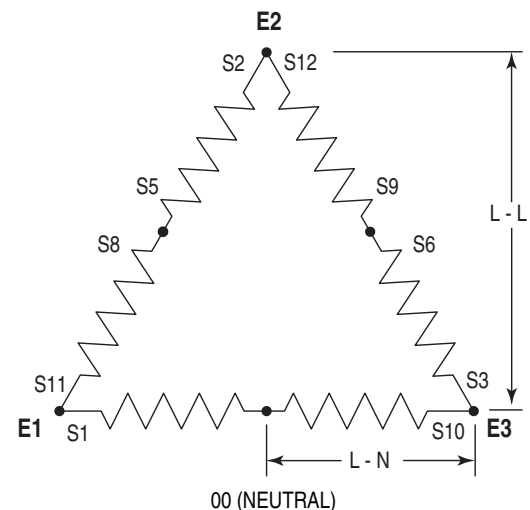
The rated voltage between circuit breaker terminals E1-E2, E1-E3 and E2-E3 is 240V.

The rated voltage between E1 or E3 and the neutral point 00 is 120V.

**Figure 7.7 — Stator Power Winding Connections - 3-phase, 120/240V (6 Lead)**



**Figure 7.8 — Stator Power Winding Connections - 3-phase, 120/240V (12 Lead)**





## INSTALLATION

Refer to the separate "Installation Guide" supplied with the unit.

For safety reasons, the manufacturer recommends that this equipment be installed, serviced and repaired by a Service Dealer or other competent, qualified electrician or installation technician who is familiar with applicable codes, standards and regulations. The operator also must comply with all such codes, standards and regulations.

## PREPARATION BEFORE START-UP

The instructions in this section assume that the Stationary Emergency Generator has been properly installed, serviced, tested, adjusted and otherwise prepared for use by a competent, qualified installation contractor. Be sure to read the "Safety Rules", as well as all other safety information in this manual, before attempting to operate this (and related) equipment.

Before starting the generator for the first time, the installer must complete the following procedures. For follow-up maintenance information and/or service intervals, please refer to the "Maintenance" section and the "Service Schedule".

### TRANSFER SWITCH

If this generator is used to supply power to any electrical system normally powered by an electric utility, the National Electrical Code requires that a transfer switch be installed. The transfer switch prevents electrical backfeed between two different electrical systems. (For additional information, see the applicable transfer switch manual for this unit.) The transfer switch, as well as the generator and other electrical components, must be properly located and mounted in strict compliance with applicable codes, standards and regulations.

### FUEL SYSTEM

Make sure the fuel supply system to the generator (a) delivers the correct fuel at the correct pressure and (b) is properly purged and leak tested according to code. No fuel leakage is permitted. See "Specifications" for more information.

### GENERATOR SET LUBRICATION

Check the engine crankcase oil level before operating and add oil to the proper level – the dipstick "FULL" mark. Never operate the engine with the oil level below the dipstick "ADD" mark. See "Specifications" and "Engine Oil Recommendations".

Check the oil level in the generator gearbox (if so equipped) prior to initial use and at the intervals indicated by the "Service Schedule." The recommended oil is SAE 90 gear lubricant.

#### NOTE:

**This engine is shipped from the manufacturer with "break-in" oil. This oil should be changed after 30 hours of operation.**

## PRIOR TO INITIAL START-UP

### ▲ CAUTION!

**▲ Prior to initially starting the generator, it must be properly prepared for use. Any attempt to crank or start the engine before it has been properly serviced with the recommended types and quantities of engine fluids (oil, coolant, fuel, etc.) may result in an engine failure.**

### ENGINE COOLANT

Have the engine cooling system properly filled with the recommended coolant mixture. Check the system for leaks and other problems. See "Specifications" and "Coolant" sections.

### BELT TENSION

Check the engine-fan belt tension and condition prior to placing the unit into service and at recommended intervals. Belt tension is correct when a force of approximately 22 pounds (10 kg), applied midway between pulleys, deflects the belt about 3/8- to 5/8-inch (10 to 16 mm).

### ELECTRICAL SYSTEM

Make sure the generator is properly connected to an approved earth ground.

Make sure the generator battery is fully charged, properly installed and interconnected, and ready for use.

#### NOTE:

**Battery charger must be connected to 120 VAC, 15 amp circuit to operate.**

Check to ensure that there are no loose electrical connections. Restrain any loose wires to keep them clear of any moving generator set components.

## INITIAL INSPECTION FOR GENSET STARTUP

Inspect for the following.

- Freight Damage.
- Manuals present.
- Fluid Levels (Oil, coolant, battery, Gear Drive).
- Correct fuel piping.
- Correct muffler installation for external applications (open units only).
- Adequate air flow, clearances and ventilation per installation drawings and applicable codes.
- Correct AC and DC wire size, connections and grounding. Control and communication wiring to/from the transfer switch must be run in a separate conduit from the AC power leads.
- **Battery charger connection to 120 VAC.**
- Unit secured to pad.

## START-UP CHECKLIST

### **WARNING!**

 **Before working on the Stationary Emergency Generator, ensure the following:**

- The AUTO/OFF/MANUAL switch is in the OFF position.
- The 120VAC supply to the battery charger is switched OFF.

### **PREPARATION FOR START-UP**

- Ensure that the 120VAC circuit breaker to the battery charger is open.
- Remove the fuse from the the control panel. Open the front door of the control box and remove the 15 Amp ATO fuse in the lower left-hand corner of the control box.
- Connect the battery cables to the battery. Attach negative battery cable last.
- Close the 120VAC circuit breaker to the battery charger.
- Measure the voltage at the battery before and after the charger is turned on.
- Verify all AC electrical connections are tight at the circuit breaker and transfer switch.
- Visually inspect entire area looking for loose paper, plastic wrappings, leaves, etc.
- Check all hoses clamps fittings for leaks or damage.
- Check all electrical plugs throughout the generator. Ensure each plug is seated correctly and fully inserted into its receptacle.
- Verify the AUTO/OFF/MANUAL switch is in OFF position.
- Open the valve to the engine fuel line.
- Bleed the fuel system of air. (necessary for long fuel lines).
- Open the generator main line circuit breaker.
- Connect a manometer to the gas line and record the static pressure. It must be as listed in the Specifications.
- Insert the fuse into the control panel.
- Move the AUTO/OFF/MANUAL switch to the manual position. The engine should now crank and start.
- Check voltage at the generator terminals.
- For 3-phase units, check phase rotation at the transfer switch terminals. The generator phase rotation must match the utility phase rotation.
- Check for coolant, fuel, oil, and exhaust leaks.
- Close the generators main line circuit breaker.
- Turn the generator set off.
- Connect the UTILITY supply to the transfer switch.
- Set the AUTO/OFF/MANUAL switch to AUTO.
- Disconnect utility power before the transfer switch.
  - Engine should start, transfer to load.
  - Run at least 15 minutes on generator power. Make certain all 3-phase loads are functioning correctly (correct phase rotation).
- Reconnect Utility power
  - Transfer switch will transfer back to Utility and engine will shut down within the given time parameters set up for the specific transfer switch and controller.
- Install all covers, access plates and door panels.
- Put the Owners Manual in a safe and accessible place.
- Make certain the AUTO/OFF/MANUAL switch is in the AUTO position.

## STATIONARY EMERGENCY GENERATOR CONTROL AND OPERATION

Refer to the appropriate control panel operator's manual for this unit.

### OPERATING UNIT WITH MANUAL TRANSFER SWITCH

If the Stationary Emergency Generator was installed in conjunction with a transfer switch capable of manual operation only, the following procedure applies. A manually operated transfer switch is one that will not provide automatic start-up and does not include an intelligence circuit.

#### ENGINE START-UP AND TRANSFER

For additional information, refer to the applicable control panel manual for this unit, as well as any literature pertaining to the specific transfer switch.

#### **⚠ DANGER!**

**⚠ The Maintenance Disconnect Switch and the AUTO/OFF/MANUAL switches (if so equipped) must be set properly, or the generator will crank and start as soon as the utility power to the transfer switch is turned off. Refer to applicable control panel and transfer switch manuals for more information.**

**⚠ Do not proceed until certain that utility source voltage is available to the transfer switch and the transfer switch main contacts are set to UTILITY.**

**⚠ Do not attempt manual operation until all power supplies to the transfer switch have been positively turned off, or extremely dangerous - possibly lethal - electrical shock will result.**

**⚠ Transfer switch enclosure doors should be kept closed and locked. Only authorized personnel should be allowed access to the transfer switch interior. Extremely high and dangerous voltages are present in the transfer switch.**

In order to transfer load from the utility source to the generator, follow these directions:

- Turn OFF or disconnect the utility power circuit to the transfer switch, using the means provided (such as the utility source main line circuit breaker).
- Set the transfer handle to its UTILITY (NORMAL) position with load circuits connected to the utility power supply.
- Set the generator's main line circuit breaker to its OFF (or OPEN) position.
- Start the generator.

#### **⚠ CAUTION!**

**⚠ Do not crank the engine continuously for longer than 30 seconds, or the heat may damage the starter motor.**

- Let engine stabilize and warm up.
- Check all applicable instrument and gauge readings. When certain that all readings are correct, move the transfer switch manual handle to the STANDBY (or EMERGENCY STANDBY) position, i.e., load circuits supplied by the generator.
- Set the generator's main line circuit breaker to its ON (or CLOSED) position.
- Load circuits are now powered by the generator.

#### **RETRANSFER AND SHUTDOWN**

For additional information, refer to the applicable control panel manual for this unit, as well as any literature pertaining to the specific transfer switch.

To transfer the load back to the utility power source and shut down the generator, follow these directions:

- Set the generator's main line circuit breaker to its OFF (or OPEN) position.
- Manually move the transfer switch handle to its UTILITY (NORMAL) position, i.e., load circuits connected to the utility.
- Turn ON the utility power supply to the transfer switch, using the means provided (such as the utility power source main line circuit breaker).
- Let the generator run at no-load for a few minutes to stabilize internal temperatures.
- Shut down the generator.

### OPERATING UNIT WITH AUTOMATIC TRANSFER SWITCH

If the Stationary Emergency Generator has been installed with an automatic transfer switch, the engine may be started and stopped automatically or manually.

#### **NOTE:**

**Refer to the applicable manual for your transfer switch and to "Transfer Switch Start Signal Connections". In addition, please note the dangers under "Engine Start-up and Transfer."**

## MAINTENANCE PERFORMED BY AUTHORIZED SERVICE DEALERS

### ⚠ WARNING!

⚠ Before working on the Stationary Emergency Generator, ensure the following:

- The AUTO/OFF/MANUAL switch is in the OFF position.
- The 15A fuse has been removed from the control box.
- The 120VAC supply to the battery charger is switched OFF.
- The negative battery cable has been removed.

### EVERY THREE MONTHS

1. Check battery state of charge and condition.
2. Inspect and test fuel system.
3. Check transfer switch.
4. Inspect exhaust system.
5. Check engine ignition system.
6. Check fan belts.

### ONCE EVERY SIX MONTHS

1. Test Engine Safety Devices (low oil pressure, low coolant level, high coolant temperature).

### ONCE ANNUALLY

1. Test engine governor. Adjust or repair, if needed.
2. Clean, inspect generator.
3. Flush cooling system.
4. Clean/re-gap spark plugs or replace as necessary.

### FIRST 30 OPERATING HOURS

1. Change engine "break-in" oil and oil filter.

### FIRST 100 OPERATING HOURS

1. Change engine oil and oil filter. (After initial change, service engine oil and filter at 150 operating hours or 6 months, whichever comes first.)

### EVERY 500 OPERATING HOURS

1. Service air cleaner.
2. Check starter.
3. Check engine DC alternator.

## COOLING SYSTEM

Air intake and outlet openings in the generator compartment must be open and unobstructed for continued proper operation. This includes such obstructions as high grass, weeds, brush, leaves and snow.

Without sufficient cooling and ventilating air flow, the engine/generator quickly overheats, which causes it to shut down.

### ⚠ WARNING!

⚠ The exhaust system parts from this product get extremely hot and remain hot after shut-down. High grass, weeds, brush, leaves, etc. must remain clear of the exhaust. Such materials may ignite and burn from the heat of the exhaust system.

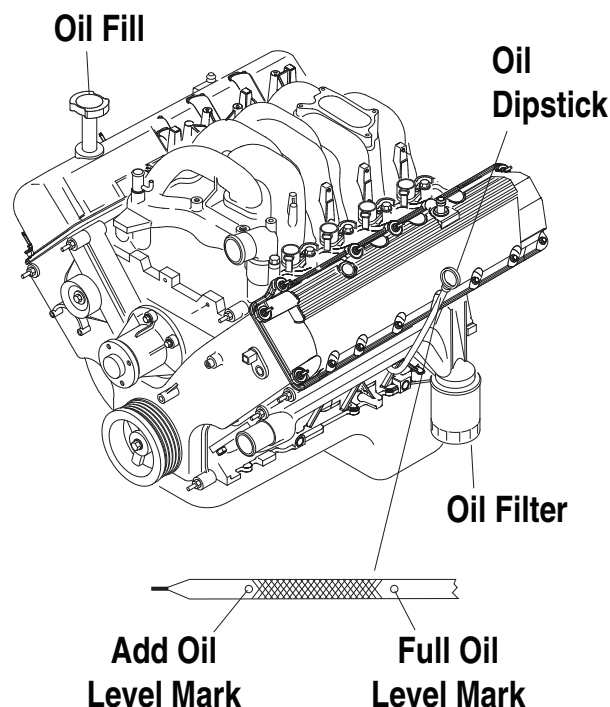
## CHECKING FLUID LEVELS

### CHECK ENGINE OIL

Check engine crankcase oil level (Figure 10.1) at least every 20 hours of operation, or prior to use.

- Remove oil dipstick and wipe dry with a clean, lint-free cloth.
- Install oil dipstick, then remove again.
- Oil should be between FULL and ADD marks.
- If oil level is below the dipstick ADD mark, remove oil fill cap. Add the recommended oil to bring oil level up to the FULL mark. DO NOT FILL ABOVE THE "FULL" MARK. See "Engine Oil Recommendations" for recommended oils.

Figure 10.1 - Oil Dipstick and Oil Fill Cap



### BATTERY FLUID

Check battery electrolyte fluid at least once weekly. Fluid should cover separators in all battery cells. If fluid level is low, add distilled water to cover tops of separators. DO NOT USE TAP WATER IN BATTERY.

## ENGINE COOLANT

Check coolant level in coolant recovery bottle. See the “Specifications” section.

- Add recommended coolant mixture as necessary.
- Periodically remove radiator pressure cap to make sure the coolant recovery system is functioning properly. Coolant should be at bottom of radiator filler neck. If coolant level is low, inspect gasket in radiator pressure cap. Replace cap, if necessary. To have pressure cap tested, contact an Authorized Service Dealer. Inspect cooling system and coolant recovery system for leaks.

## MAINTENANCE OWNER/ OPERATOR CAN PERFORM

### **WARNING!**

 **Before working on the generator, ensure the following:**

- The AUTO/OFF/MANUAL switch is in the OFF position.
- The 15A fuse has been removed from the control box.
- The 120VAC supply to the battery charger is switched OFF.
- The negative battery cable has been removed.

## CHECK ENGINE OIL LEVEL

Refer to the “Checking Fluid Levels” section.

## CHECK BATTERY

- Check battery fluid level each week as outlined under “Check Fluid Levels”.
- Check battery cables for condition, tightness, corrosion or damage. Clean, tighten or replace as necessary.

## EXERCISE SYSTEM

Start the Stationary Emergency Generator engine at least once every seven days and let it run at least 20 minutes. For more detailed exercise information, see the respective sections in the Control Panel Technical Manual that is supplied with the unit.

## INSPECT COOLING SYSTEM

- Inspect engine cooling system at least once each month.
- Check hoses for damage, deterioration, leaks, etc. Correct any discrepancies found.
- Check hose clamps for tightness.

## CHECK ENGINE COOLANT LEVEL

See the “Checking Fluid Levels” section.

## PERFORM VISUAL INSPECTION

Complete a thorough visual inspection of the entire engine-generator monthly. Look for obvious damage, loose, missing or corroded nuts, bolts and other fasteners. Look for fuel, oil or coolant leaks.

## INSPECT EXHAUST SYSTEM

Inspect the exhaust system at least once every three months. Check all exhaust system pipes, mufflers, clamps, etc. for condition, tightness, leaks, security, damage.

## CHECK FAN BELT

- Inspect fan belts every three months. Replace any damaged, deteriorated, worn or otherwise defective belt.
- Check fan belt tension. Thumb pressure, exerted midway between pulleys, should deflect about 3/8 to 5/8 inch. Adjust belt tension as required.
- Check fan belt alignment.

## INSPECT ENGINE GOVERNOR

Visually inspect electronic governor.

### **DANGER!**

 **Do not attempt to adjust the governor. Only qualified service facilities should adjust the governor. Excessively high operating speeds are dangerous and increase the risk of personal injury. Low speeds impose a heavy load on the engine when adequate engine power is not available and may shorten engine life. Correct rated frequency and voltage are supplied only at the proper governed speed. Some connected electrical load devices may be damaged by incorrect frequency and/or voltage. Only qualified service technicians should adjust the governed speed.**

## CHANGING ENGINE OIL

### **CAUTION!**

 **Hot oil may cause burns. Allow engine to cool before draining oil. Avoid prolonged or repeated skin exposure with used oil. Thoroughly wash exposed areas with soap.**

Refer to maintenance performed by authorized service facilities for engine oil and filter change frequencies.

Drain the oil while the engine is still warm from running. This means warm up the engine, shut it down and drain immediately as follows:

1. Remove OIL DRAIN HOSE from its retaining clip.
2. Loosen and remove OIL DRAIN HOSE CAP. Drain oil completely into suitable container.
3. When all oil has drained, install and tighten OIL DRAIN HOSE CAP, and re-install into its retaining clip.
4. Turn OIL FILTER (Figure 10.1) counterclockwise and remove. Dispose of old filter.
5. Apply light coating of new engine oil to seal of new oil filter. Install FILTER and tighten by hand only. DO NOT OVERTIGHTEN.



6. Remove OIL FILL CAP. Add recommended oil (see SPECIFICATIONS). DO NOT FILL ABOVE THE DIPSTICK "FULL" MARK. Crankcase oil capacity is listed in the "Specifications".

### ⚠ CAUTION!

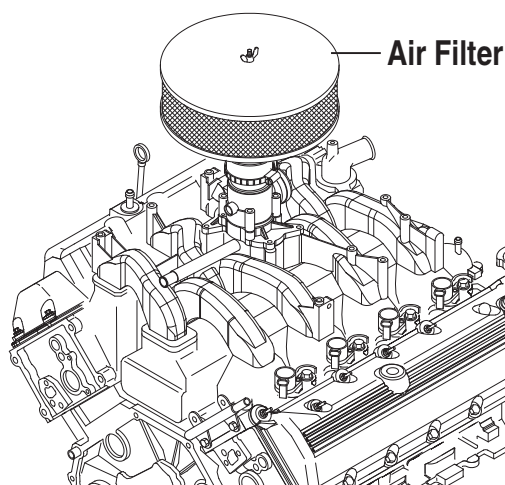
**⚠ After refilling the crankcase with oil, always check oil level on dipstick. NEVER OPERATE ENGINE WITH OIL BELOW THE DIPSTICK "ADD" MARK.**

7. Start engine and check for oil leaks.
8. Shut OFF engine and wait 10 minutes for the oil to settle down into the oil pan. Recheck oil level on dipstick. DO NOT fill above the dipstick "FULL" mark.
9. Dispose of used oil at a proper collection center.

### CHANGING THE ENGINE AIR CLEANER

To replace the engine air cleaner, remove the air cleaner cover and replace the air filter making sure it is positioned properly before reattaching the cover.

*Figure 10.2 — Engine Air Filter*



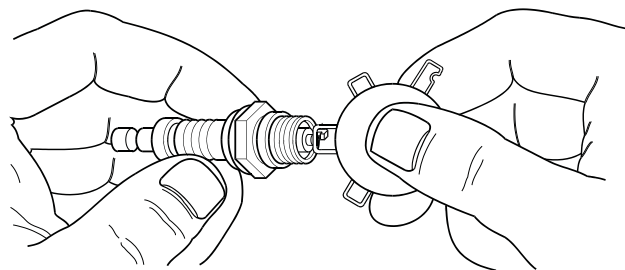
See the "Service Schedule" section for air cleaner maintenance.

### SPARK PLUGS

Reset the spark plug gap or replace the spark plugs as necessary.

1. Clean the area around the base of the spark plugs to keep dirt and debris out of the engine. Clean by scraping or washing using a wire brush and commercial solvent. Do not blast the spark plugs to clean.
2. Remove the spark plugs and check the condition. Replace the spark plugs if worn or if reuse is questionable. See the "Service Schedule" section for recommended inspection.
3. Check the spark plug gap using a wire feeler gauge. Adjust the gap to 1.29 - 1.45 mm (0.051 - 0.057 inch) by carefully bending the ground electrode (Figure 10.3).

*Figure 10.3 – Setting the Spark Plug Gap*



### COOLANT CHANGE

Every year, have an Authorized Service Facility drain, flush and refill the cooling system. See the "Specifications" section for cooling system recommendations.

## MISCELLANEOUS MAINTENANCE

### CLEANING THE STATIONARY EMERGENCY GENERATOR

Keep the generator as clean and as dry as possible. Dirt and moisture that accumulates on internal generator windings have an adverse effect on insulation resistance.

Periodically clean generator exterior surfaces. A soft brush may be used to loosen caked on dirt. Use a vacuum system or dry, low pressure air to remove any accumulations of dirt. The generator is housed inside an all-weather enclosure, clean the enclosure with a soft, damp cloth or sponge and water.

Once each year, have the generator cleaned and inspected by an Authorized Service Dealer. That dealer will use dry, low pressure air to clean internal windings. Parts inside the control console should be cleaned and inspected at this time as well.

Finally, have the insulation resistance of stator and rotor windings checked. If insulation resistances are excessively low, the generator may require drying.

### BATTERY

All lead-acid storage batteries discharge when not in use. Refer to specific instructions and warnings that accompany the battery. If such information is not available, observe the following precautions when handling a battery:

- DO NOT use jumper cables and a booster battery to crank or start the generator engine.
- DO NOT recharge a weak battery while it is installed in the generator. Remove battery from generator and recharge in a well-ventilated area, away from fuel vapors, sparks, heat or flames.
- Battery electrolyte fluid is an extremely caustic sulfuric solution that can cause severe burns. DO NOT permit fluid to contact eyes, skin, clothing, painted surfaces, wiring insulation, etc. If any battery fluid is spilled, flush the affected area with clear water immediately.

## Maintenance

- Always wear safety glasses, rubber apron and gloves when handling a battery.
- Batteries give off explosive hydrogen gas while charging. The gas can form an explosive mixture around the battery for several hours after charging. Any spark, heat or flames can ignite the gas and cause an explosion which can shatter the battery, causing blindness or other serious injury.

### ***BATTERY MAINTENANCE***

The battery should be inspected per the "Service Schedule" section. The following procedure should be followed for inspection:

1. Inspect the battery posts and cables for tightness and corrosion. Tighten and clean as necessary.
2. Check the battery fluid level of unsealed batteries and, if necessary, fill with DISTILLED WATER ONLY. DO NOT USE TAP WATER IN BATTERIES.
3. Have the state of charge and condition checked. This should be done with an automotive-type battery hydrometer.

#### **⚠ DANGER!**

 **Storage batteries give off explosive hydrogen gas. This gas can form an explosive mixture around the battery for several hours after charging. The slightest spark can ignite the gas and cause an explosion. Such an explosion can shatter the battery and cause blindness or other injury. Any area that houses a storage battery must be properly ventilated. Do not allow smoking, open flame, sparks or any spark producing tools or equipment near the battery.**

 **Battery electrolyte fluid is an extremely caustic sulfuric acid solution that can cause severe burns. Do not permit fluid to contact eyes, skin, clothing, painted surfaces, etc. Wear protective goggles, protective clothing and gloves when handling a battery. If the fluid is spilled, flush the affected area immediately with clear water.**

 **Do not use any jumper cables or booster battery to crank and start the generator engine. If the battery has completely discharged, remove it from the generator for recharging.**

#### **⚠ WARNING!**

 **Be sure the AUTO/OFF/MANUAL switch is set to the OFF position before connecting the battery cables. If the switch is set to AUTO or MANUAL, the generator can crank and start as soon as the battery cables are connected.**

 **Be sure the 120VAC power supply to the battery is turned OFF, or sparking may occur at the battery posts as the cables are attached and cause an explosion.**

### ***BATTERY REPLACEMENT***

When replacing batteries, use the same number and type of battery that was supplied with the unit, and is listed in the parts list in the back of this manual.

#### **NOTE:**

The BCI number should be located directly on the battery.



## SERVICE SCHEDULE

### 22 KW - 150 KW GASEOUS STATIONARY EMERGENCY GENERATOR

The following is a recommended maintenance schedule for Gaseous Stationary Emergency Generator sets from 22kW to 150 kW in size. The established intervals in the schedule are the maximum recommended when the unit is used in an average service application. They will need to be decreased (performed more frequently) if the unit is used in a severe application. Use calendar time, from the previous maintenance interval to determine the next required maintenance interval.

#### Service Maintenance Interval Information:

The various service maintenance intervals are designated by interval numbers as follows:

- 1 An early inspection of the generator set to insure it is ready to operate when required and to identify any potential problem areas.

#### ⚠ CAUTION!

***This inspection may be performed by the end user providing the following safety steps are taken to prevent the engine from starting automatically without warning:***

To prevent injury, perform the following steps in the order indicated before starting any maintenance:

- Disable the generator set from starting and/or connecting to the load by setting the control panel Auto/Off/Manual switch to the "OFF" position.
- Remove the 15 amp control panel fuse.
- Turn off the battery charger.\*
- Remove the negative battery cable.

#### ⚠ CAUTION!

***\* The battery charger must be turned off BEFORE removing the battery cable to prevent an over current condition from burning out sensitive control panel components and circuits.***

Following all maintenance, reverse these steps to insure the unit is returned to standby setup for normal operation when required.

- 2 A wear-in service inspection of the generator set to insure it is ready to operate and carry the load when required, and to identify any potential problem areas.

*Performed **ONLY ONCE** following the first three months or the first 30 hours of operation after purchase of the unit.*

*This inspection contains some maintenance tasks which require special tools, equipment, and/or knowledge to accomplish and should be performed only by a Service Dealer.*

- 3 An operational inspection of the generator set to insure it is ready to operate and carry the load when required, and to identify any potential problem areas.

*Performed semi-annually or following each 50 hours of operation of the unit.*

*This inspection contains some maintenance tasks which require special tools, equipment, and/or knowledge to accomplish and should be performed only by a Service Dealer.*

- 4 A mid-level inspection of the generator set to insure it is ready to operate and carry the load when required, and to identify any potential problem areas.

*Performed annually or following each 100 hours of operation of the unit.*

*This inspection contains some maintenance tasks which require special tools, equipment, and/or knowledge to accomplish and should be performed only by a Service Dealer.*

- 5 A comprehensive inspection of the generator set to insure it is properly serviced and ready to operate and carry the load when required, and to identify any potential problem areas.

*Performed annually or following each 250 hours of operation of the unit.*

*This inspection contains some maintenance tasks which require special tools, equipment, and/or knowledge to accomplish and should be performed only by a Service Dealer.*

## Service Schedule

| Maintenance Tasks                                                                                                                     | Level 1                                                                             |                            | Level 2                                                                             |                            | Level 3                                                                             |                            | Level 4                                                                               |                            | Level 5                                                                               |                            |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------|----------------------------|
|                                                                                                                                       | Recommended to be done monthly/ 10 hrs.                                             | Task Comp. (Date-Initials) | Required to be done 3 months/ Break-in 30 hrs.                                      | Task Comp. (Date-Initials) | Required to be done Semi-annually/ 50 hrs.                                          | Task Comp. (Date-Initials) | Required to be done Annually/ 100 hrs.                                                | Task Comp. (Date-Initials) | Required to be done Bi-annually/ 250 hrs.                                             | Task Comp. (Date-Initials) |
| 1. Disable the unit from operating per the first page warning.                                                                        |    |                            |    |                            |    |                            |    |                            |    |                            |
| 2. Check the engine oil level. Adjust as necessary.                                                                                   |    |                            |    |                            |    |                            |    |                            |    |                            |
| 3. Check the engine coolant level. Adjust as necessary.                                                                               |    |                            |    |                            |    |                            |    |                            |    |                            |
| 4. Check the engine coolant thermal protection level. Correct as necessary.                                                           |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |    |                            |    |                            |
| 5. Check the natural gas delivery system for leaks and correct pressure on gas engine driven units. Tighten connections as necessary. |   |                            |   |                            |   |                            |   |                            |   |                            |
| 6. Check the air inlets and outlets of the enclosure and radiator for debris. Clean as necessary.                                     |  |                            |  |                            |  |                            |  |                            |  |                            |
| 7. Check the battery electrolyte level and specific gravity if accessible. Adjust as necessary.                                       |  |                            |  |                            |  |                            |  |                            |  |                            |
| 8. Check the battery posts, cables, and charger for loose connections, corrosion, and proper operation. Correct as necessary.         |  |                            |  |                            |  |                            |  |                            |  |                            |
| 9. Check the unit wiring for loose connections, corrosion, and damage. Correct as necessary.                                          |  |                            |  |                            |  |                            |  |                            |  |                            |

## Service Schedule

| Maintenance Tasks                                                                                                                                                                                                      | Level 1                                                                             |                            | Level 2                                                                             |                            | Level 3                                                                             |                            | Level 4                                                                               |                            | Level 5                                                                               |                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------|----------------------------|
|                                                                                                                                                                                                                        | Recommended to be done monthly/ 10 hrs.                                             | Task Comp. (Date-Initials) | Required to be done 3 months/ Break-in 30 hrs.                                      | Task Comp. (Date-Initials) | Required to be done Semi-annually/ 50 hrs.                                          | Task Comp. (Date-Initials) | Required to be done Annually/ 100 hrs.                                                | Task Comp. (Date-Initials) | Required to be done Bi-annually/ 250 hrs.                                             | Task Comp. (Date-Initials) |
| 10. Check the engine accessory drive belts and fan coupling device if equipped for correct tension, wear, weather cracking, and damage. Replace as necessary.                                                          |                                                                                     |                            |    |                            |                                                                                     |                            |    |                            |    |                            |
| 11. Check the engine valve clearance/ lash. Adjust as necessary.**                                                                                                                                                     |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |    |                            |    |                            |
| 12. Visually inspect the unit looking for leaks, wear or damage, loose connections or components, and corrosion. Correct as necessary.                                                                                 |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |    |                            |    |                            |
| 13. Test the engine and transfer switch safety devices. Correct and/or adjust as necessary.                                                                                                                            |  |                            |  |                            |  |                            |  |                            |  |                            |
| 14. Initiate an automatic start and transfer of the unit to site load and exercise it for at least 1 hour looking for leaks, loose connections or components, and abnormal operating conditions. Correct as necessary. |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |  |                            |  |                            |
| 15. Replace the engine accessory drive belts.                                                                                                                                                                          |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |                                                                                       |                            |  |                            |
| 16. Check gearbox oil level (if equipped).                                                                                                                                                                             |  |                            |  |                            |  |                            |  |                            |  |                            |
| 17. Change gearbox oil (if equipped).                                                                                                                                                                                  |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |                                                                                       |                            |  |                            |

\*\* Not required for engines equipped with hydraulic lifters. See the "Specification" section for lifter type.

## Service Schedule

| Maintenance Tasks                                                                                                                                                                                                                     | Level 1                                                                             |                            | Level 2                                                                             |                            | Level 3                                                                             |                            | Level 4                                                                               |                            | Level 5                                                                               |                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------|----------------------------|
|                                                                                                                                                                                                                                       | Recommended to be done monthly/ 10 hrs.                                             | Task Comp. (Date-Initials) | Required to be done 3 months/ Break-in 30 hrs.                                      | Task Comp. (Date-Initials) | Required to be done Semi-annually/ 50 hrs.                                          | Task Comp. (Date-Initials) | Required to be done Annually/ 100 hrs.                                                | Task Comp. (Date-Initials) | Required to be done Bi-annually/ 250 hrs.                                             | Task Comp. (Date-Initials) |
| 18. Start and exercise the unit at full rated load (use a load bank if the site load is not enough) for at least 2 hours looking for leaks, loose connections or components, and abnormal operating conditions. Correct as necessary. |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |                                                                                       |                            |    |                            |
| 19. Perform an engine oil analysis (send a sample to a lab for results). Change the engine oil and filters if the analysis results indicate this is required.                                                                         |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |  |                            |                                                                                       |                            |
| 20. Change the engine oil.                                                                                                                                                                                                            |                                                                                     |                            |  |                            |                                                                                     |                            |  |                            |  |                            |
| 21. Replace the engine oil filter(s).                                                                                                                                                                                                 |                                                                                     |                            |  |                            |                                                                                     |                            |  |                            |  |                            |
| 22. Replace engine spark plugs. Clean and re-gap or replace as necessary.                                                                                                                                                             |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |  |                            |                                                                                       |                            |
| 23. Replace the engine air filter(s).                                                                                                                                                                                                 |                                                                                     |                            |                                                                                     |                            |                                                                                     |                            |                                                                                       |                            |  |                            |
| 24. Perform a 5 minute no-load operational run of the unit looking for any post service problems.                                                                                                                                     |                                                                                     |                            |  |                            |                                                                                     |                            |                                                                                       |                            |  |                            |
| 25. Return the unit to standby setup for operation when required.                                                                                                                                                                     |  |                            |  |                            |  |                            |  |                            |  |                            |

# Troubleshooting

## TROUBLESHOOTING GUIDE

| <b>PROBLEM</b>                                         | <b>CAUSE</b>                                                                                                                                                                                                                                                                                                                                        | <b>CORRECTION</b>                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Engine won't crank.                                    | <ol style="list-style-type: none"> <li>1. 15 amp fuse blown.</li> <li>2. Loose or corroded or defective battery cables.</li> <li>3. Defective starter contactor.</li> <li>4. Defective starter motor.</li> <li>5. Dead or Defective Battery.</li> <li>6. 5 amp fuse blown.</li> </ol>                                                               | <ol style="list-style-type: none"> <li>1. Replace fuse.</li> <li>2. Tighten, clean or replace battery cables as necessary.</li> <li>3. Replace contactor.*</li> <li>4. Replace starter motor.*</li> <li>5. Remove, change or replace battery.</li> <li>6. Replace fuse.*</li> </ol>         |
| Engine cranks but won't start                          | <ol style="list-style-type: none"> <li>1. Out of fuel.</li> <li>2. Fuel solenoid (FS) is defective</li> <li>3. Open Wire #14A from Engine Control circuit board.</li> <li>4. Spark plugs defective.</li> <li>5. Door on tank not closed.</li> </ol>                                                                                                 | <ol style="list-style-type: none"> <li>1. Replenish fuel.</li> <li>2. Replace solenoid.*</li> <li>3. Reconnect wire.</li> <li>4. Clean, regap or replace plugs.</li> <li>5. Close door on tank.</li> </ol>                                                                                  |
| Engine starts hard, runs rough.                        | <ol style="list-style-type: none"> <li>1. Flame arrestor (air cleaner) plugged or damaged.</li> <li>2. Plugged fuel line.</li> <li>3. Defective spark plugs.</li> <li>4. Fuel pressure incorrect.</li> </ol>                                                                                                                                        | <ol style="list-style-type: none"> <li>1. Clean or replace as needed.</li> <li>2. Unclog fuel line.</li> <li>3. Clean, regap or replace plugs.</li> <li>4. Confirm fuel pressure to regulator is as recommended in SPECIFICATIONS.</li> </ol>                                               |
| Engine starts then shuts down.                         | <ol style="list-style-type: none"> <li>1. Engine oil level is low.</li> <li>2. Engine is overheated.</li> <li>3. Defective Low Oil Pressure Switch</li> <li>4. Defective Coolant Temperature Switch</li> <li>5. Defective Control Module circuit board.</li> <li>6. Coolant Level is Low.</li> <li>7. Defective Low Coolant Level Switch</li> </ol> | <ol style="list-style-type: none"> <li>1. Check oil and add oil as needed.</li> <li>2. Check cooling system for leaks.</li> <li>3. Replace switch.*</li> <li>4. Replace switch.*</li> <li>5. Replace board.*</li> <li>6. Repair leak - Add coolant.</li> <li>7. Replace Switch.*</li> </ol> |
| AUTO/OFF/MANUAL Switch at OFF, engine continues to run | <ol style="list-style-type: none"> <li>1. Defective AUTO/OFF/MANUAL switch</li> <li>2. Open/disconnected wire #15A between AUTO/OFF/MANUAL switch and Control Module circuit board.</li> <li>3. Defective Control Module circuit board</li> </ol>                                                                                                   | <ol style="list-style-type: none"> <li>1. Replace switch.*</li> <li>2. Reconnect/close wire.</li> <li>3. Replace board.*</li> </ol>                                                                                                                                                         |
| No AC output from generator.                           | <ol style="list-style-type: none"> <li>1. Check main line circuit breaker.</li> <li>2. Check circuit breaker &amp; fuses.</li> <li>3. Transfer switch set to NORMAL position</li> <li>4. Generator internal failure.</li> <li>5. Thermal circuit breaker open.</li> </ol>                                                                           | <ol style="list-style-type: none"> <li>1. Reset to ON or CLOSED.</li> <li>2. Reset and replace, if necessary.</li> <li>3. Set to GENERATOR position.</li> <li>4. *</li> <li>5. Auto-reset - Wait 5 min. and attempt restart.</li> </ol>                                                     |

**\*Contact the nearest Authorized Dealer for assistance.**

## Warranty

### United States Environmental Protection Agency Warranty Statement (Stationary Emergency Spark-Ignited Generators)

#### Warranty Rights, Obligations and Coverage

The United States Environmental Protection Agency (EPA) and Generac Power Systems, Inc. (Generac) are pleased to explain the Emission Control System Warranty on your new stationary emergency engine. If during the warranty period, any emission control system or component on your engine is found defective in materials or workmanship, Generac will repair your engine at no cost to you for diagnosis, replacement parts and labor provided it be done by a Generac Authorized Warranty Service Facility. Your emission control system may include parts such as the fuel metering, ignition, and exhaust systems and other related emission related components listed below. Generac will warrant the emissions control systems on your 2009 and later model year engines provided there has been no abuse, neglect, unapproved modification or improper maintenance of your engine. For engines less than 130 HP the warranty period is two years from the date of sale to the ultimate purchaser. For engines greater than or equal to 130 HP the warranty period is three years from the date of the engine being placed into service.

#### Purchaser's/Owner's Warranty Responsibilities

As the engine purchaser/owner you are responsible for the following. 1.) The engine must be installed and configured in accordance to the Generac's installation specifications. 2.) The completion of all maintenance requirements listed in your Owner's Manual. 3.) Any engine setting adjustment must be done in accordance and consistent with the instructions in the Owner's Manual. 4.) Any emission control system or component must be maintained and operated appropriately in order to ensure proper operation of the engine and control system to minimize emissions at all times.

Generac may deny any/or all Emission Control System Warranty coverage or responsibility of the engine, or an emission control system or component on your engine thereof, if it has failed due to abuse, neglect, unapproved modification or improper maintenance, or the use of counterfeit and/or 'gray market' parts not made, supplied or approved by Generac. Warranty service can be arranged by contacting either your selling dealer or a Generac Authorized Warranty Service dealer, 1-800-333-1322 for the dealer nearest you. The purchaser/owner shall be responsible for any expenses or other charges incurred for service calls and/or transportation of the product to/from the inspection or repair facilities. The purchaser/owner shall be responsible for any and/or all damages or losses incurred while the engine is being transported/shipped for inspection or warranty repairs. Contact Generac Power Systems Inc. for additional Emission Control System Warranty related information, Generac Power Systems, Inc. P.O. Box 8, Waukesha, WI 53187, or call 1-800-333-1322 or [www.generac.com](http://www.generac.com).

#### Important Note

This warranty statement explains your rights and obligations under the Emission Control System Warranty, which is provided to you by Generac pursuant to federal law. Note that this warranty shall not apply to any incidental, consequential or indirect damages caused by defects in materials or workmanship or any delay in repair or replacement of the defective part(s). This warranty is in place of all other warranties, expressed or implied. Specifically, Generac makes no other warranties as to the merchantability or fitness for a particular purpose. Any implied warranties which are allowed by law, shall be limited in duration to the terms of the express warranty provided herein. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

#### Emission Related Parts Include the Following (if so equipped)

- |                                                                                                                                                                       |                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1) Fuel Metering System                                                                                                                                               | 3) Ignition System Including                                                                                |
| 1.1) Gasoline Carburetor Assembly And Internal Components A) Fuel Filter, B) Carburetor, C) Fuel Pump                                                                 | A) Spark Plug, B) Ignition Module, C) Ignition Coil, D) Spark Plug Wires                                    |
| 1.2) Carburetion Assembly And Its Components A) Fuel Controller, B) Carburetor And Its Gaskets, C) Mixer And It Gaskets, D) Primary Gas Regulator E) Liquid Vaporizer | 4) Exhaust System A) Catalyst Assembly, B) Exhaust Manifold, C) Muffler, D) Exhaust Pipe, E) Muffler Gasket |
| 1.3) Fuel Regulator                                                                                                                                                   | 5) Crankcase Breather Assembly Including A) Breather Connection Tube, B) Pcv Valve                          |
| 2) Air Induction System Including A) Intake Pipe/Manifold, B) Air Cleaner                                                                                             | 6) Oxygen Sensor                                                                                            |
|                                                                                                                                                                       | 7) Diagnostic Emission-Control System                                                                       |



### **United States Environmental Protection Agency Compliance Requirements (Stationary Emergency Spark-Ignited Generators)**

#### **Purchaser's/Owner's Recordkeeping Responsibilities**

The United States Environmental Protection Agency (EPA) and Generac Power Systems, Inc. (Generac) are pleased to explain your record-keeping requirements for compliance with Subpart JJJJ- Standards of Performance for Stationary Spark Ignition Internal Combustion Engines as listed in the Electronic Code of Federal Regulations Title 40 Part 60. As the engine purchaser/owner who operates and maintains their certified emergency stationary engine and emission control system according to applicable emission related guidelines as specified in this Owner's Manual, you are required to meet the following notification and recordkeeping requirements to demonstrate compliance. 1.) Maintain documentation that the engine is certified to meet emission standards. 2.) Recordkeeping of maintenance conducted. 3.) Recordkeeping of the provision allowing natural gas engines to operate using propane for a maximum of 100 hours per year as an alternate fuel solely during emergency operations provided the engine is not certified to operate on propane. 4.) Meet all compliance notifications submitted to the purchaser/owner and maintain all supporting documentation. 5.) Recordkeeping of hours of operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. For emergency engines greater than or equal to 130 HP, recordkeeping of hours of operation begins January 1, 2011. For emergency engines less than 130 HP, recordkeeping of hours of operation begins January 1, 2009; Engines are equipped with non-resettable hour meters to facilitate recordkeeping.

Specific Air Quality Management or Air Pollution Control Districts may have different and additional record keeping/reporting requirements. Your permit to construct and/or operate the engine may be contingent upon compliance with those requirements. Check with your local Air Quality Management or Air Pollution Control District for specific requirements.

Emergency stationary internal combustion engines (ICE) may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, Generac, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The purchaser/owner may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing.

The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. For purchaser/owner of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section is prohibited.

If you operate and maintain your certified emergency stationary SI internal combustion engine and emissions control systems in accordance to the specifications and guidelines in this Owner's Manual EPA will not require engine performance testing. If not, your engine will be considered non-certified and you must demonstrate compliance according to Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines as listed in the Electronic Code of Federal Regulations Title 40 Part 60.

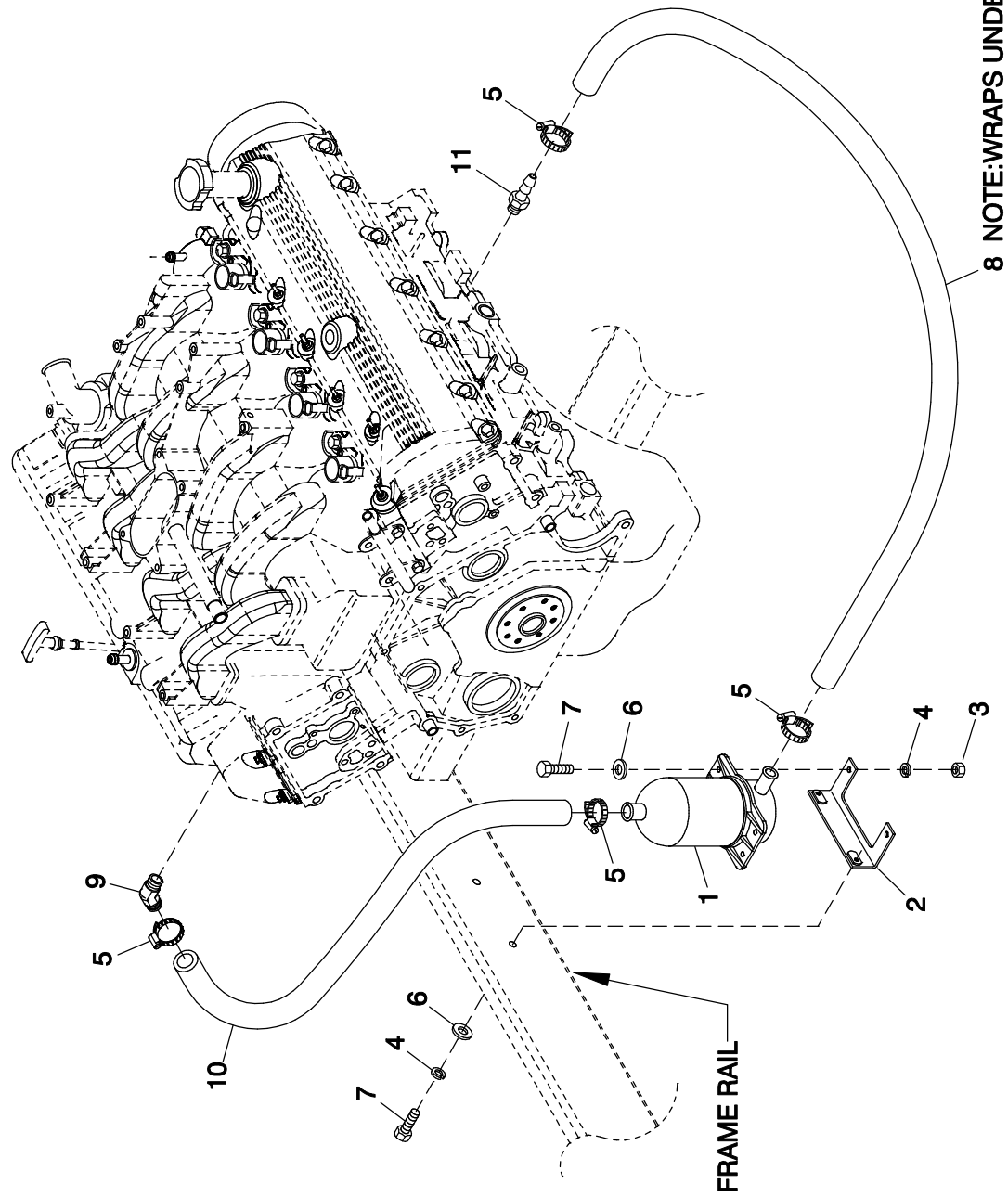
#### **Emission-Related Installation Instructions**

Your certified emergency stationary engine has pre-set emission control systems or components that require no adjustment. Inspection and replacement of an emissions related component is required to be done so in accordance with the requirements cited in the United States Environmental Protection Agency Warranty Statement or can be arranged by contacting either your selling dealer or a Generac Authorized Warranty Service dealer, 1-800-333-1322 for the dealer nearest you. Failing to follow these instructions when installing a certified engine in a piece of nonroad equipment violates federal law 40 CFR 1068.105 (b), subject to fines or penalties as described in the Clean Air Act.

## Notes

[illegible]

GROUP A



NOTE: HOSES MAY BE SHOWN WITH BENDS AND ELEVATIONS THAT DO NOT REFLECT OPTIMUM INSTALLATION AND ARE SHOWN FOR ILLUSTRATION PURPOSES ONLY.

BLOCK HEATER MOUNTED  
ON RIGHT HAND FRAME RAIL  
5.4L

8 NOTE:WRAPS UNDER ENGINE.

EXPLODED VIEW:  
BLOCK HEATER 5.4L C3  
DRAWING #: 0G0877D

EXPLODED VIEW: BLOCK HEATER 5.4L C3  
DRAWING #: 0G0877D

GROUP A

APPLICABLE TO:

| ITEM | PART #  | QTY. | DESCRIPTION                    |
|------|---------|------|--------------------------------|
| 1    | 084918N | 1    | HEATER BLOCK 2000W 240V        |
| 2    | 084427  | 1    | BRACKET HEATER W/WELDNUTS      |
| 3    | 049813  | 2    | NUT HEX M6 X 1.0 G8 YEL CHR    |
| 4    | 022097  | 4    | WASHER LOCK M6-1/4             |
| 5    | 057822  | 4    | CLAMP HOSE #8 .53-1.00         |
| 6    | 022473  | 4    | WASHER FLAT 1/4-M6 ZINC        |
| 7    | 042568  | 4    | SCREW HHC M6-1.0 X 20 G8.8     |
| 8    | 050967  | 1    | HOSE COOL 5/8 ID 20R3 (24" LG) |
| 9    | 0C4905  | 1    | BARBED EL 45 3/8 NPT X 5/8 OD  |
| 10   | 0A6283  | 1    | HOSE PREFORMED BLOCK HEATER    |
| 11   | 044117  | 1    | BARBED STR 3/8 NPT X 5/8       |

**GROUP A**

TO ENGINE ADAPTER

LEADS

LOCKTIGHT

TIE-WRAPS & SLEEVE (I/N:37) IN PLACE

SEE HUB DETAIL

REF.

FLEXPLATE (REF.)

ENGINE ADAPTER (REF.)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42

\*\* \*\* \*\* \*\* \*\* \*\* \*\* \*\* \*\*

PAGE 1 OF 2

REVISION: H-9107-G  
DATE: 6/16/11

EXPLODED VIEW: CPL ALTERNATOR BRUSHLESS 70KW 4-POLE  
DRAWING #: 0G1571

GROUP A

APPLICABLE TO:

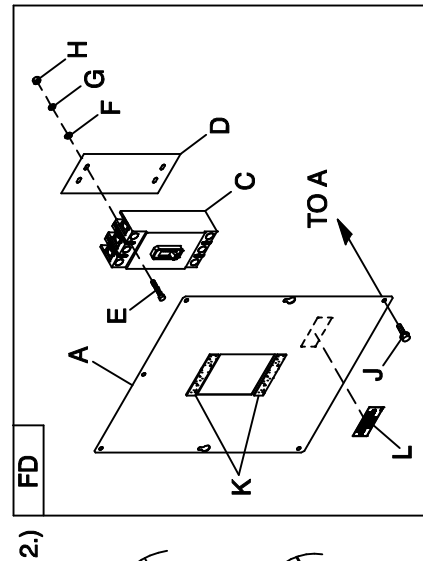
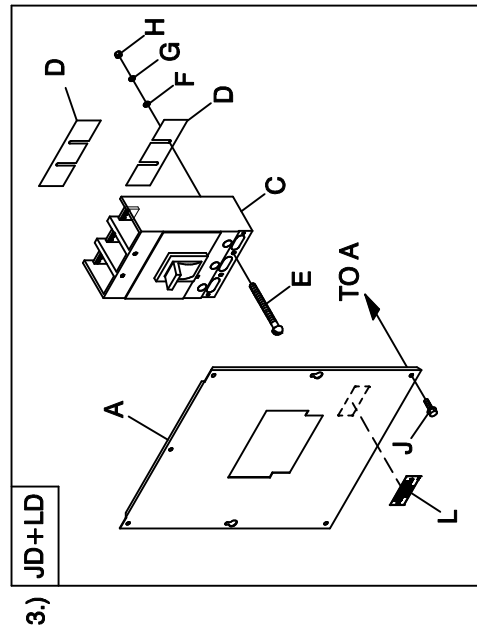
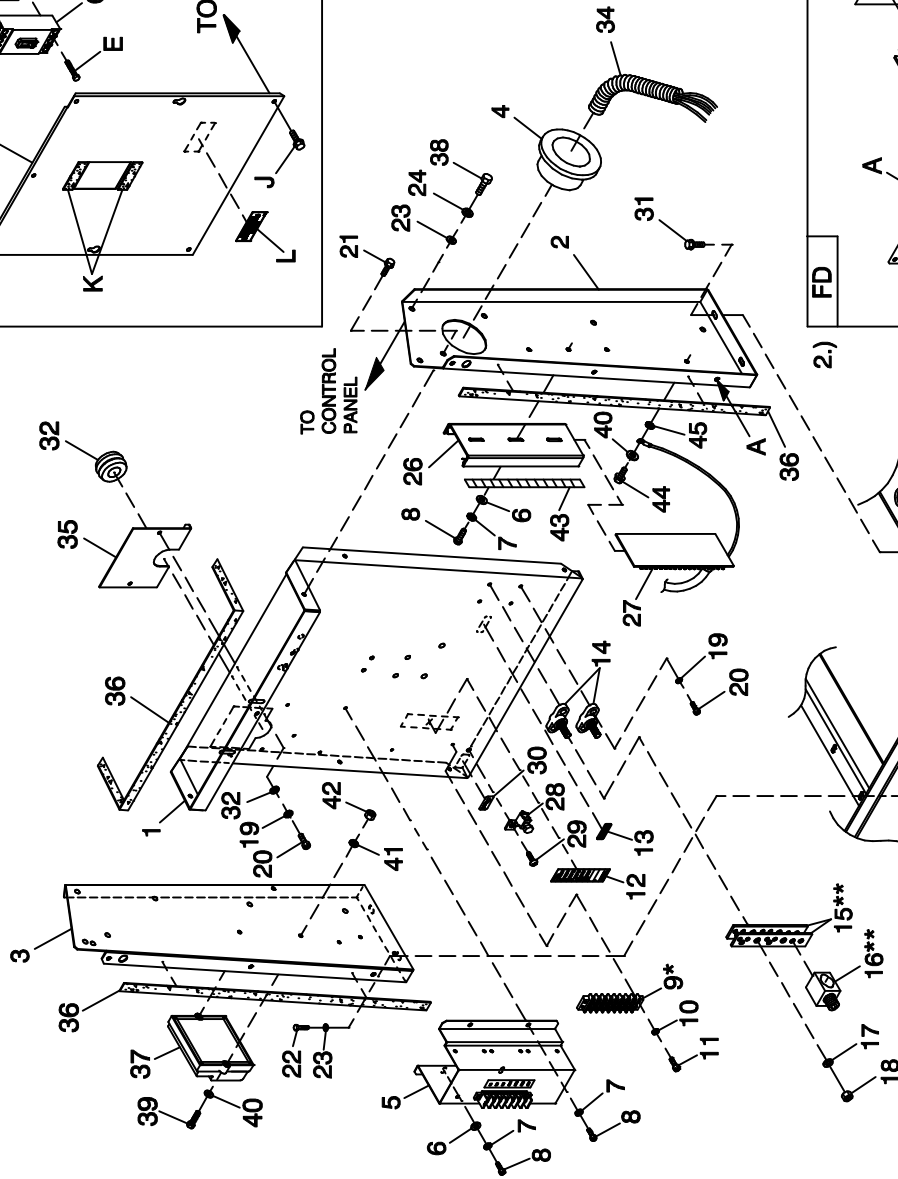
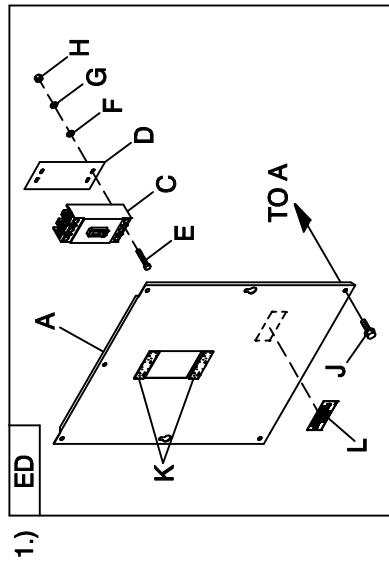
| ITEM | PART #     | QTY. | DESCRIPTION                    |
|------|------------|------|--------------------------------|
| 1    | 0F3182     | 1    | ROTOR 390 70AB3 CPL            |
|      | 0F6194     | 1    | ROTOR 390 70KB3 CPL            |
|      | 0G0993     | 1    | ASSY RTR 390 45AB3 CPL         |
|      | 0G0998     | 1    | ASSY RTR 390 45KB3 CPL         |
|      | 0G0991     | 1    | ASSY RTR 390 55KB3 CPL         |
|      | 0G0997     | 1    | ASSY RTR 390 55AB3 CPL         |
| 2    | 0F3183     | 1    | STATOR 390 70AB3 CPL           |
|      | 0F6195     | 1    | STR 390 70KB3 CPL              |
|      | 0F6203     | 1    | STR 390 70GB3 CPL              |
|      | 0G0994     | 1    | ASSY STR 390 45GB3 CPL         |
|      | 0G0996     | 1    | ASSY STR 390 45KB3 CPL         |
|      | 0G1000     | 1    | ASSY STR 390 45AB3 CPL         |
|      | 0G1048     | 1    | ASSY STR 390 45JB3 CPL         |
|      | 0G1049     | 1    | ASSY STR 390 45 LB3 CPL        |
|      | 0G0992     | 1    | ASSY STR 390 55GB3 CPL         |
|      | 0G0995     | 1    | ASSY STR 390 55KB3 CPL         |
|      | 0G0999     | 1    | ASSY STR 390 55AB3 CPL         |
|      | 0G1094     | 1    | ASSY STR 390 55JB3 CPL         |
|      | 0G1095     | 1    | ASSY STR 390 55LB3 CPL         |
| 3    | 068405C    | 1    | EXITER FIELD 2"LG SPD CONN     |
| 4    | 087272     | 1    | ASSY EXCITER 2.00" STK         |
| 5    | 072878     | 1    | KEY SQ 3/8 X 3-1/4 STEEL       |
| 6    | 0C9708     | REF  | INSTR HYPOT TEST (NOT SHOWN)   |
| 7    | 0F3726B    | 1    | ASSY FLYWHEEL CPL              |
| 8    | 0C2454     | 9    | SCREW THF M6-1 X 16 N WA Z/JS  |
| 9    | 023454     | 1    | KEY WOODRUFF #E                |
| 10   | 0F8408     | 4    | SCREW HHC M10-1.50 X 16 G10.9  |
| 11   | 046526     | 4    | WASHER LOCK M10                |
| 12   | 0A2601     | 1    | SCREW HHC M16-2.0 X 45 G8.8    |
| 13   | 072879     | 1    | SPACER .69 X 2.75 X .37 ST/ZNC |
| 14   | 052646     | 4    | WASHER FLAT M14                |
| 15   | 043123     | 4    | WASHER LOCK M14                |
| 16   | 051779     | 4    | NUT HEX M14-2.0 G8 YEL CHR     |
| 17   | 092950     | 1    | COLLAR SLIP FIT 390 MM         |
| 18   | 04576100CJ | 4    | STUD M14-2.0 X 650 G5 ZINC     |
| 19   | 022155     | 2    | WASHER LOCK #6                 |
| 20   | 0C2428     | 2    | SCREW PHTT #6-32 X 1/2 ZYC     |
| 21   | 023484N    | 1    | BUSHING SNAP SB-2.5-31         |
| 22   | 022392     | 2    | PIN DOWEL 1/2 X 1-1/4          |
| 23   | 052259     | 2    | WASHER FLAT M12                |
| 24   | 051769     | 3    | WASHER LOCK M12                |
| 25   | 0E7230     | 3    | SCREW HHC M12-1.75 X 80 G10.9  |
| 26   | 0F3033     | 1    | SHIELD ALT EXCITER 390         |
| 27   | 0F2722     | 1    | COVER EXCITER SHIELD           |
| 28   | 083549     | 4    | SLEEVE RUBBER                  |
| 29   | 020151     | 1    | CLAMP VINYL .312 X .203 Z      |
| 30   | 023365     | 3    | WASHER SHAKEPROOF INT #8       |
| 31   | 033133     | 1    | SCREW HHM #8-32 X 3/8          |
| 32   | 033143     | 2    | SCREW HHM #8-32 X 7/8          |
| 33   | 086032     | 2    | LUG RT-ANG #10/10-12           |
| 34   | 090063     | 1    | BRIDGE SUPPORT DIODE 15"       |
| 35   | 090064     | 1    | CAP END ROTOR 390MM            |
| 36   | 090152     | 1    | ASSY BRIDGE RECTIFIER          |
| 37   | 022661L    | 1    | SLEEVING UL #0 .330 ID (3" LG) |
| 38   | 028739A    | 2    | TIE WRAP UL 3.9" X .10" BLK    |
| 39   | 085662D    | 1    | TIE WRAP UL 17.7 X .35 BLK HT  |
| 40   | 068113     | 1    | REAR BEARING CARRIER           |
| 41   | 068406     | 1    | SCREW HHC M12-1.75 X 60 G10.9  |
| 42   | 0F6834     | 1    | MOUNT CT'S 5.4L & 6.8L         |
| 43   | 023484N    | 1    | BUSHING SNAP SB-2.5-31         |
| 44 * | 052624     | 1    | BEARING BALL 6212 SEALED       |

\* ROTOR REPLACEMENT PARTS.

\*\* PARTS INCLUDED WITH TRANSFORMER.



# GROUP A



EXPLODED VIEW:  
CPL C3 H CONTROL  
DRAWING #: 0H5678

EXPLODED VIEW: CPL C3 H CONTROL  
DRAWING #: 0H5678

GROUP A

APPLICABLE TO:

| ITEM   | PART #     | QTY. | DESCRIPTION                     |
|--------|------------|------|---------------------------------|
| 1      | 0F3137     | 1    | PAN CB CONN BOX                 |
| 2      | 0F3135     | 1    | STAND RH CONTROL                |
| 3      | 0F3136     | 1    | STAND LH CONTROL                |
| 4      | 023484N    | 1    | BUSHING SNAP SB-2.5-31          |
| 5      | 0F4677     | 1    | ASSY PCB INTERFACE 1PH 240V     |
|        | 067617030A | -    | INTERFACE 3PHS 416/480V         |
|        | 067617030B | -    | INTERFACE 3PHS 208/240V         |
| 6      | 043180     | 4    | WASHER FLAT M4                  |
| 7      | 022264     | 6    | WASHER LOCK #8-M4               |
| 8      | 0C3990     | 6    | SCREW PHTT M4-0.7 X 10 ZYC      |
| 9 (1)  | 057701     | REF. | BLOCK TERM 20A 8 X 6 X 1100V    |
| 10     | 022155     | 2    | WASHER LOCK #6                  |
| 11     | 0C2428     | 2    | SCREW PHTT #6-32 X 1/2 ZYC      |
| 12     | 0F3618     | 1    | DECAL CPL CUST CONN H CTRL      |
| 13     | 0A9457     | 1    | DECAL NEUTRAL                   |
| 14     | 057073     | 2    | JUNCTION BLOCK 3/8-16           |
| 15 (2) | 0D5466     | REF. | BUS BAR NEUTRAL BLOCK 390       |
| 16 (2) | 0A7822     | REF. | LUG SLDLSS 600/250-1/0 X 1/4-28 |
| 17     | 022237     | 2    | WASHER LOCK 3/8                 |
| 18     | 022241     | 2    | NUT HEX 3/8-16 STEEL            |
| 19     | 049226     | 6    | WASHER LOCK M5                  |
| 20     | 0C2266     | 6    | SCREW PHTT M5-0.8 X 16 ZYC      |
| 21     | 0C2454     | 8    | SCREW THF M6-1 X 16 N WA Z/JS   |
| 22     | 042568     | 4    | SCREW HHC M6-1.0 X 20 G8.8      |
| 23     | 022473     | 12   | WASHER FLAT 1/4-M6 ZINC         |
| 24     | 022097     | 8    | WASHER LOCK M6-1/4              |
| 25     | 049813     | 4    | NUT HEX M6 X 1.0 G8 YEL CHR     |
| 26 (4) | 0E9764     | 6"   | RAIL SNAPTRACK PCB HOLDER BULK  |
| 27     | 0G6962B    | 1    | ASSY RELAY PCB 12VDC            |
| 28     | 025433     | 1    | LUG SLDLSS #6-14 X 13/64 CU     |
| 29     | 024469     | 1    | SCREW HHTT #10-32 X 3/8 CZ      |
| 30     | 067210A    | 1    | DECAL GROUND LUG                |
| 31     | 0D6029     | 4    | SCREW HHTT M6-1.0 X 16 ZYC      |
| 32     | 051713     | 2    | WASHER FLAT M5                  |
| 33     | 081008     | 1    | GROMMET 1.25 X .25 X .75        |
| 34     | 077043J    | 3    | CONDUIT FLEX 2.0" ID            |
| 35     | 0F6156     | 1    | PLATE WIRE SNGL GALV            |
| 36     | 029289     | A/R  | TAPE ELEC 1/2 FOAM (AS REQ'D)   |
| 37 (3) | 0H5631     | REF  | ASSY PCB 5.4L IGN MOD PRGRMMED  |
| 38     | 047411     | 4    | SCREW HHC M6-1.0 X 16 G8.8      |
| 39     | 033526     | 2    | SCREW PHM #8-32 X 2-3/4 ZINC    |

| ITEM | PART # | QTY. | DESCRIPTION                   |
|------|--------|------|-------------------------------|
| 40   | 023897 | 3    | WASHER FLAT #10 ZINC          |
| 41   | 022152 | 2    | WASHER LOCK #10               |
| 42   | 022158 | 2    | NUT HEX #10-32 STEEL          |
| 43   | 0F8565 | 1    | DECAL H-100 RB3 CUST CONN     |
| 44   | 045764 | 1    | SCREW HHTT M4-0.7 X 8 ZP      |
| 45   | 023762 | 1    | WASHER SHAKEPROOF EXT #10 STL |
| 46   | 055519 | 2    | SPACER .31 X .75 X 1 ST/ZNC   |
| 1)   |        |      | UL CIRCUIT BREAKER (ED)       |
| A    | 0F4810 | 1    | COVER ED CB STAND C3          |
| C    | 0D5556 | 1    | CB 0090A 3P 480V S ED4 LL     |
|      | 0D5566 | -    | CB 0060A 3P 600V S ED6 LL     |
|      | 0D5568 | -    | CB 0080A 3P 600V S ED6 LL     |
|      | 0D9693 | -    | CB 0125A 3P 480V S ED4 LL     |
| D    | 0F0492 | 1    | INSULATOR CB S (ED-3P)        |
| E    | 048927 | 4    | SCREW RHM #10-32 X 4-1/2      |
| F    | 023897 | 4    | WASHER FLAT #10 ZINC          |
| G    | 022152 | 4    | WASHER LOCK #10               |
| H    | 022158 | 4    | NUT HEX #10-32 STEEL          |
| J    | 0C2454 | 7    | SCREW THF M6-1 X 16 N WA Z/JS |
| K    | 029289 | 1    | TAPE ELEC 1/2 FOAM (AS REQ'D) |
| L    | 0F1733 | 1    | DECAL CUSTOMER CONNECT INSIDE |
| 2)   |        |      | UL CIRCUIT BREAKER (FD)       |
| A    | 0F4811 | 1    | COVER FD CB STAND C3          |
| C    | 0D5573 | -    | CB 0175A 3P 600V S FD6 LL     |
|      | 0D5574 | -    | CB 0200A 3P 600V S FD6 LL     |
|      | 0D5576 | -    | CB 0250A 3P 600V S FD6 LL     |
| D    | 0F0199 | 1    | INSULATOR CB FD FRAME 30MIL   |
| E    | 065960 | 4    | SCREW SHC 1/4-20 X 4 G8.8 NZ  |
| F    | 022473 | 4    | WASHER FLAT 1/4-M6 ZINC       |
| G    | 022097 | 4    | WASHER LOCK M6-1/4            |
| H    | 022127 | 4    | NUT HEX 1/4-20 STEEL          |
| J    | 0C2454 | 7    | SCREW THF M6-1 X 16 N WA Z/JS |
| K    | 029289 | 1    | TAPE ELEC 1/2 FOAM (AS REQ'D) |
| L    | 0F1733 | 1    | DECAL CUSTOMER CONNECT INSIDE |
| 3)   |        |      | UL CIRCUIT BREAKER (JD+LD)    |
| A    | 0F4812 | 1    | COVER JD/LD CB STAND C3       |
| C    | 0D5577 | 1    | CB 0300A 3P 600V S JD6 LL     |
| D    | 0F2353 | 2    | INSULATOR CIRCUIT BR. JD/LD   |
| E    | 022770 | 4    | SCREW RHM 1/4-20 X 3          |
| F    | 022473 | 4    | WASHER FLAT 1/4-M6 ZINC       |
| G    | 022097 | 4    | WASHER LOCK M6-1/4            |
| H    | 022127 | 4    | NUT HEX 1/4-20 STEEL          |
| J    | 0C2454 | 7    | SCREW THF M6-1 X 16 N WA Z/JS |
| K    | 029289 | 1    | TAPE ELEC 1/2 FOAM (AS REQ'D) |
| L    | 0F1733 | 1    | DECAL CUSTOMER CONNECT INSIDE |

(1) ITEM INCLUDED WITH HARNESS

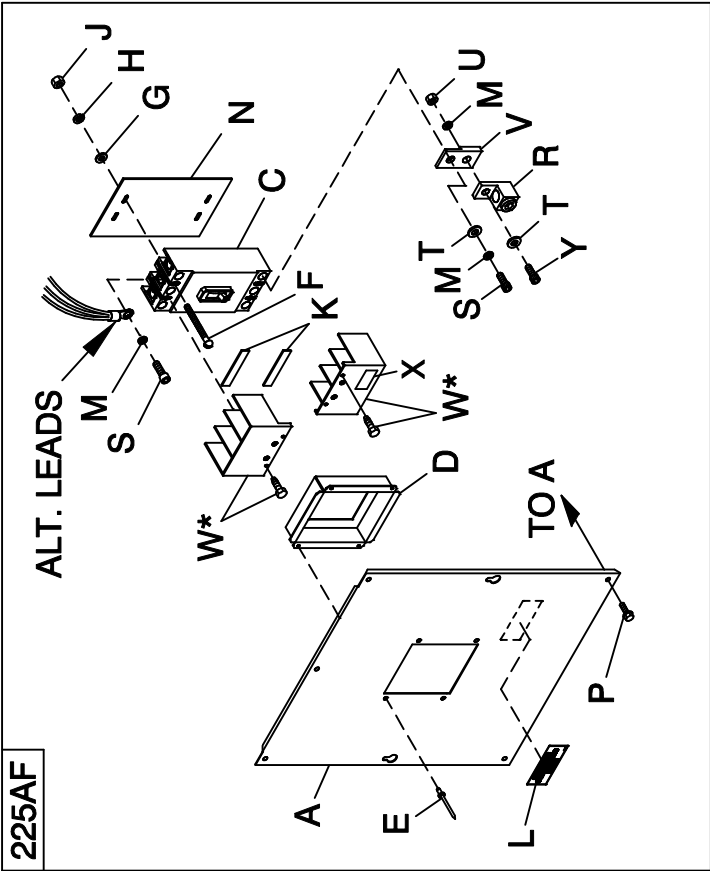
(2) ITEM INCLUDED WITH 0D5464B

(3) ITEM IS PART OF 9R.

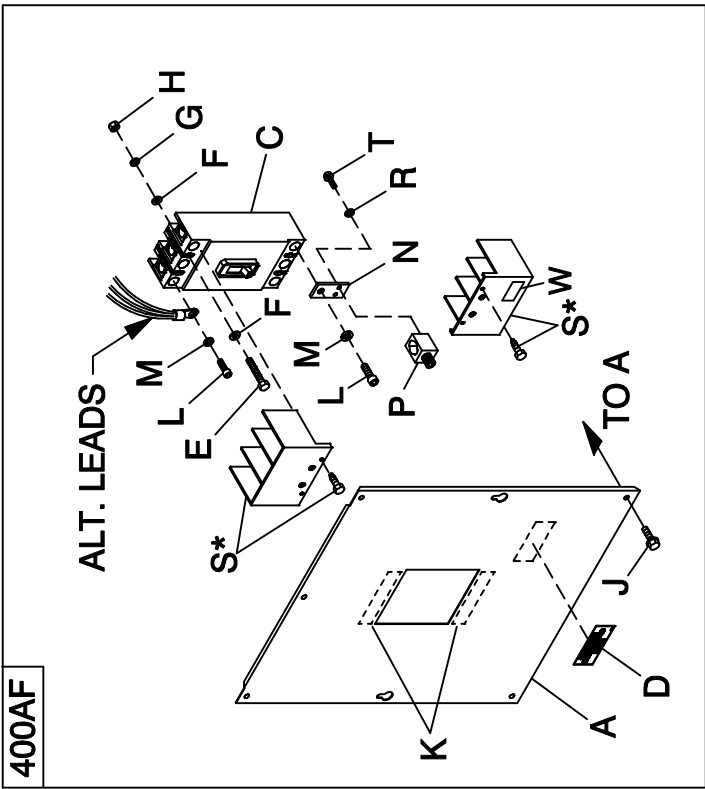
(4) ITEM IS PART OF 5R.

GROUP A

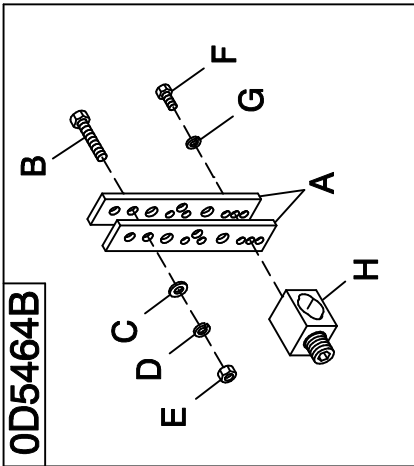
4.) 225AF



5.) 400AF



6.) 0D5464B



EXPLODED VIEW:  
CPL C3 H CONTROL  
DRAWING #: 0H5678

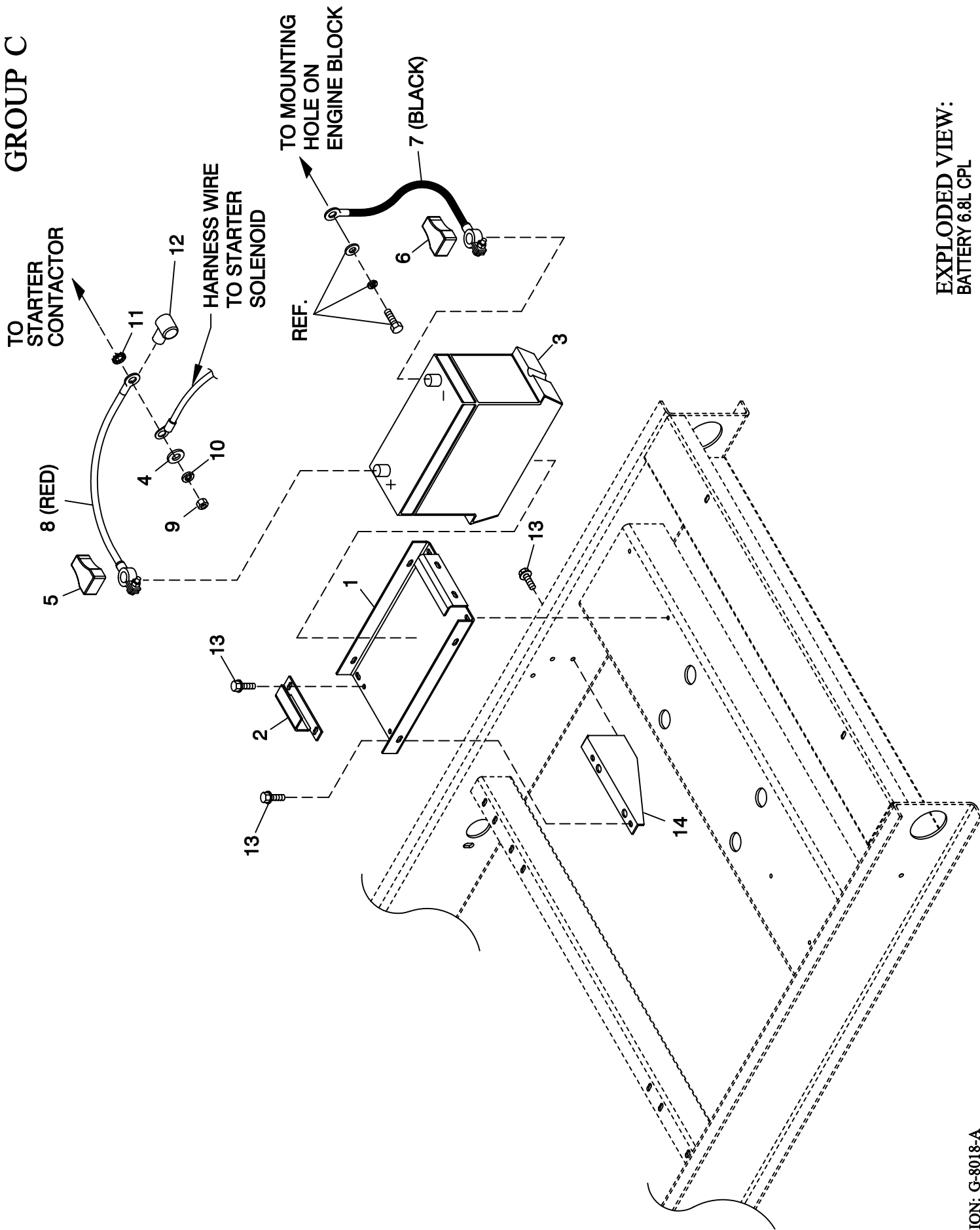
APPLICABLE TO:

| ITEM  | PART #   | QTY. | DESCRIPTION                     |
|-------|----------|------|---------------------------------|
| 4.)   |          |      | UL CIRCUIT BREAKER (225AF)      |
| A     | 0F8453   | 1    | COVER CB C3 225AF               |
| C     | 0F4165\$ | REF  | CIRCUIT BREAKERS 200A FRAME     |
| D     | 0F4186   | 1    | COVER CB DISH 225AF             |
| E     | 036261   | 4    | RIVET POP .125 X .275 SS        |
| F     | 053640   | 8    | SCREW RHM #8-32 X 3-1/4         |
| G     | 038150   | 4    | WASHER FLAT #8 ZINC             |
| H     | 022264   | 4    | WASHER LOCK #8-M4               |
| J     | 022471   | 4    | NUT HEX #8-32 STEEL             |
| K     | 029289   | 2    | TAPE ELEC 1/2 FOAM              |
| L     | 0F1733   | 1    | DECAL CUSTOMER CONNECT INSIDE   |
| M     | 022129   | 9    | WASHER LOCK M8-5/16             |
| N     | 0F8432   | 1    | INSULATOR CB 225AF              |
| P     | 0C2454   | 7    | SCREW THF M6-1 X 16 N WA Z/JS   |
| R     | 0F8451   | 3    | LUG SLDLSS 300 MCM-6 AL/CU      |
| S     | 049897   | 6    | SCREW SHC M8-1.25 X 20 G8       |
| T     | 022145   | 6    | WASHER FLAT 5/16-M8 ZINC        |
| U     | 045771   | 3    | NUT HEX M8-1.25 G8 CLEAR ZINC   |
| V     | 0F8843   | 3    | BUS BAR 200A LUG ADAPTOR        |
| W (1) | W/CB     | 2    | TERMINAL COVER CB               |
| X     | 0G3259   | 1    | DECAL TERMINAL SHOCK HZD BI     |
| Y     | 058306   | 3    | SCREW SHC M8-1.25 X 25 G12.9    |
| 5.)   |          |      | UL CIRCUIT BREAKER (400AF)      |
| A     | 0F8454   | 1    | COVER CB C3 400AF               |
| C     | 0F4166\$ | REF  | CIRCUIT BREAKERS 400A FRAME     |
| D     | 0F1733   | 1    | DECAL CUSTOMER CONNECT INSIDE   |
| E     | 042419   | 4    | SCREW RHM 10-32 X 4             |
| F     | 023897   | 4    | WASHER FLAT #10 ZINC            |
| G     | 022152   | 4    | WASHER LOCK #10                 |
| H     | 022158   | 4    | NUT HEX #10-32 STEEL            |
| J     | 0C2454   | 7    | SCREW THF M6-1 X 16 N WA Z/JS   |
| K     | 029289   | 1    | TAPE ELEC 1/2 FOAM              |
| L     | 052647   | 3/2  | SCREW SHC M10-1.5 X 25 G12.9    |
| M     | 046526   | 3/2  | WASHER LOCK M10                 |
| N     | W/CB     | 3    | BUS BAR CB ADAPTER 225-400 A    |
| P     | 0A7822   | 3    | LUG SLDLSS 600/250-1/0 X 1/4-28 |
| R     | 022131   | 3    | WASHER FLAT 3/8-M10 ZINC        |
| S (1) | W/CB     | 2    | TERM COVER CB                   |
| T     | 023334   | 6    | SCREW HHC 1/4-28 X 1/2 G5       |
| U (2) | W/CB     | 3/2  | SCREW SHC M10-1.5 X 25 G12.9    |
| V (2) | W/CB     | 3/2  | WASHER LOCK M10                 |
| W     | 0G3259   | 1    | DECAL TERMINAL SHOCK HZD BI     |
| 6.)   |          |      | NEUTRAL BLOCK 390 / 200-400A    |
| A     | 0D5466   | 2    | BUS BAR NEUTRAL BLOCK 390       |
| B     | 039287   | 1    | SCREW HHC M8-1.25 X 45 G8.8 FT  |
| C     | 022145   | 1    | WASHER FLAT 5/16-M8 ZINC        |
| D     | 022129   | 1    | WASHER LOCK M8-5/16             |
| E     | 045771   | 1    | NUT HEX M8-1.25 G8 YEL CHR      |
| F     | 045335   | 2    | SCREW HHC 1/4-28 X 3/4 G5       |
| G     | 022097   | 2    | WASHER LOCK M6-1/4              |
| H     | 0A7822   | 1    | LUG SLDLSS 600/250-1/0X1/4-28   |

(1) HARDWARE FOR MTG. CB TERMINAL COVERS IS SUPPLIED WITH CIRCUIT BREAKERS.

(2) 3/2 QTY. 3 POLE &amp; 2 POLE

GROUP C



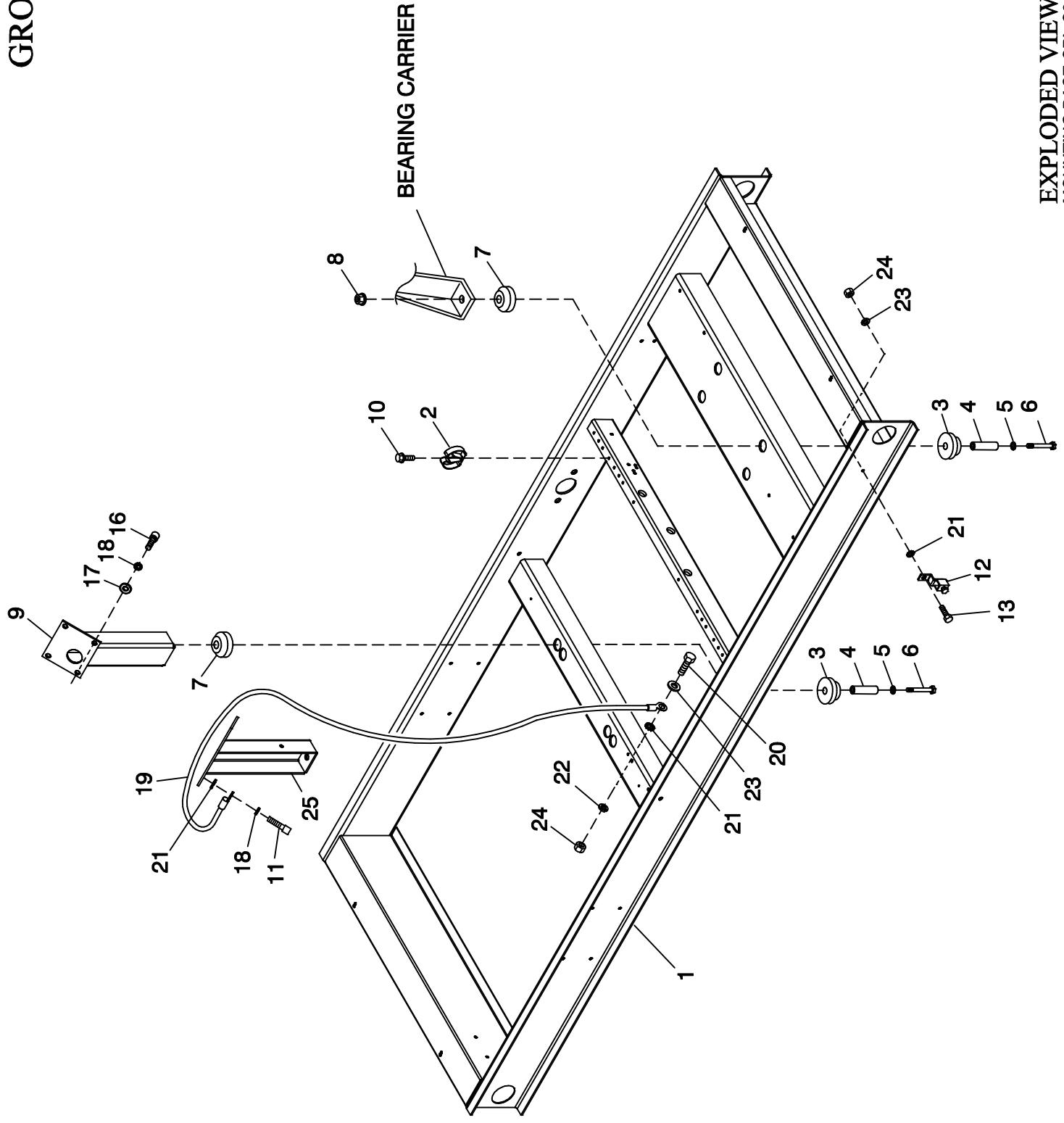
EXPLODED VIEW: BATTERY 6.8L CPL  
DRAWING #: 0F3677

GROUP C

APPLICABLE TO:

| ITEM | PART #  | QTY. | DESCRIPTION                    |
|------|---------|------|--------------------------------|
| 1    | 0F3408  | 1    | TRAY BATTERY                   |
| 2    | 0F3411  | 1    | STRAP BATTERY RETAINMENT       |
| 3    | 058208  | 1    | BATT 12VDC 24F 625             |
| 4    | 022131  | 1    | WASHER FLAT 3/8-M10 ZINC       |
| 5    | 050331A | 1    | BATT POST COVER RED +          |
| 6    | 050331  | 1    | BATT POST COVER BLK -          |
| 7    | 038805T | 1    | CABLE BATT BLK #1 X 40.00      |
| 8    | 038804Y | 1    | CABLE BATT RED #1 X 35.00      |
| 9    | 045771  | 1    | NUT HEX M8-1.25 G8 YEL CHR     |
| 10   | 022129  | 1    | WASHER LOCK M8-5/16            |
| 11   | 027482  | 1    | WASHER SHAKEPROOF EXT 5/16 STL |
| 12   | 075763  | 1    | BOOT BATTERY CABLE             |
| 13   | 0C2454  | 8    | SCREW THF M6-1X16 N WA Z/JS    |
| 14   | 0F3409  | 1    | SUPPORT BATTERY TRAY           |

## GROUP C



**EXPLODED VIEW:  
MOUNTING BASE CPL C3  
DRAWING #: 0H5677**



## EXPLODED VIEW: MOUNTING BASE CPL C3

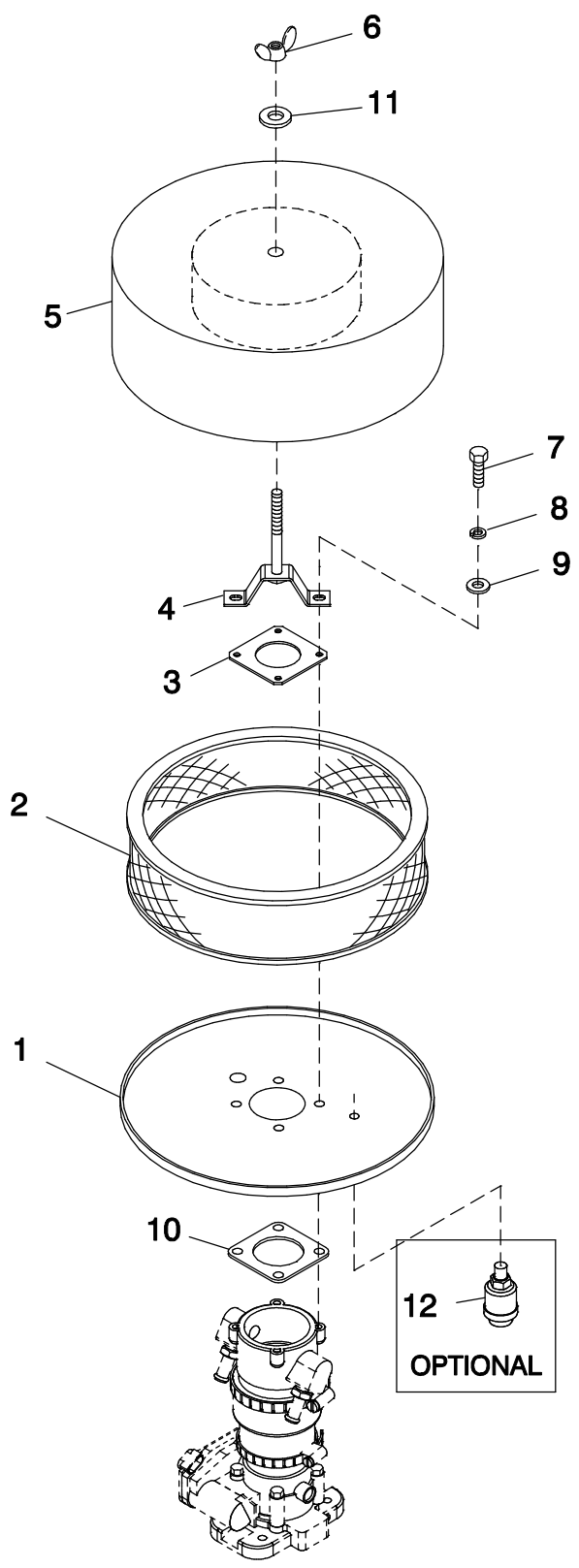
DRAWING #: 0H5677

GROUP C

APPLICABLE TO:

| ITEM  | PART #      | QTY.  | DESCRIPTION                         |
|-------|-------------|-------|-------------------------------------|
| 1     | 0F3150      | 1     | BASE CP 6.8L70KW/5.4L 55KW DD       |
| 2     | 065852      | 1     | SPRING CLIP HOLDER .37-.62          |
| 3     | 052252      | 4     | DAMPENER VIBRATION                  |
| 4     | 052257      | 4     | SPACER .49 X .62 X 1.87 PWDR/ZINC   |
| 5     | 052259      | 4     | WASHER FLAT M12                     |
| 6     | 055597      | 4     | SCREW HHC M12-1.75 X 85 G8.8        |
| 7     | 052251A     | 4     | DAMPENER VIBRATION 50 WHITE         |
| 8     | 052860      | 4     | NUT LOCKING M12-1.75                |
| 9     | 0F2895      | 1     | SUPPORT ENG 5.4L LH/RH 6.8L RH      |
| 10    | 045764      | 1     | SCREW HHTT M4-0.7 X 8 BP            |
| (1)11 | 090502      | 3 / 4 | SCREW SHC M10-1.5 X 60 G12.9 (6.8L) |
| 12    | 061383      | 1     | LUG SOLDERLESS 3/0-#4 X 13/32 CU    |
| 13    | 043107      | 1     | SCREW HHC M8-1.25 X 25 G8.8         |
| 16    | 057192      | 4     | SCREW SHC M10-1.5 X 30 G12.9        |
| (1)17 | 022131      | 7 / 8 | WASHER FLAT 3/8-M10 ZINC            |
| (1)18 | 046526      | 7 / 8 | WASHER LOCK M10                     |
| 19    | 0536210410  | 1     | ASSY WIRE 14.00"                    |
| 20    | 042909      | 1     | SCREW HHC M8-1.25 X 30 G8.8         |
| 21    | 022261      | 2     | WASHER SHAKEPROOF INT 3/8           |
| 22    | 022129      | 1     | WASHER LOCK M8-5/16                 |
| 23    | 022145      | 2     | WASHER FLAT 5/16-M8 ZINC            |
| 24    | 045771      | 2     | NUT HEX M8-1.25 G8 YEL CHR          |
| 25    | 0H52350ST03 | 1     | SUPPORT ENGINE LH (5.4L ONLY)       |
|       | 0F2910      | 1     | SUPPORT ENGINE LH (6.8L ONLY)       |

(1) QTY. REQ. FOR 5.4L / QTY. REQ. FOR 6.8L



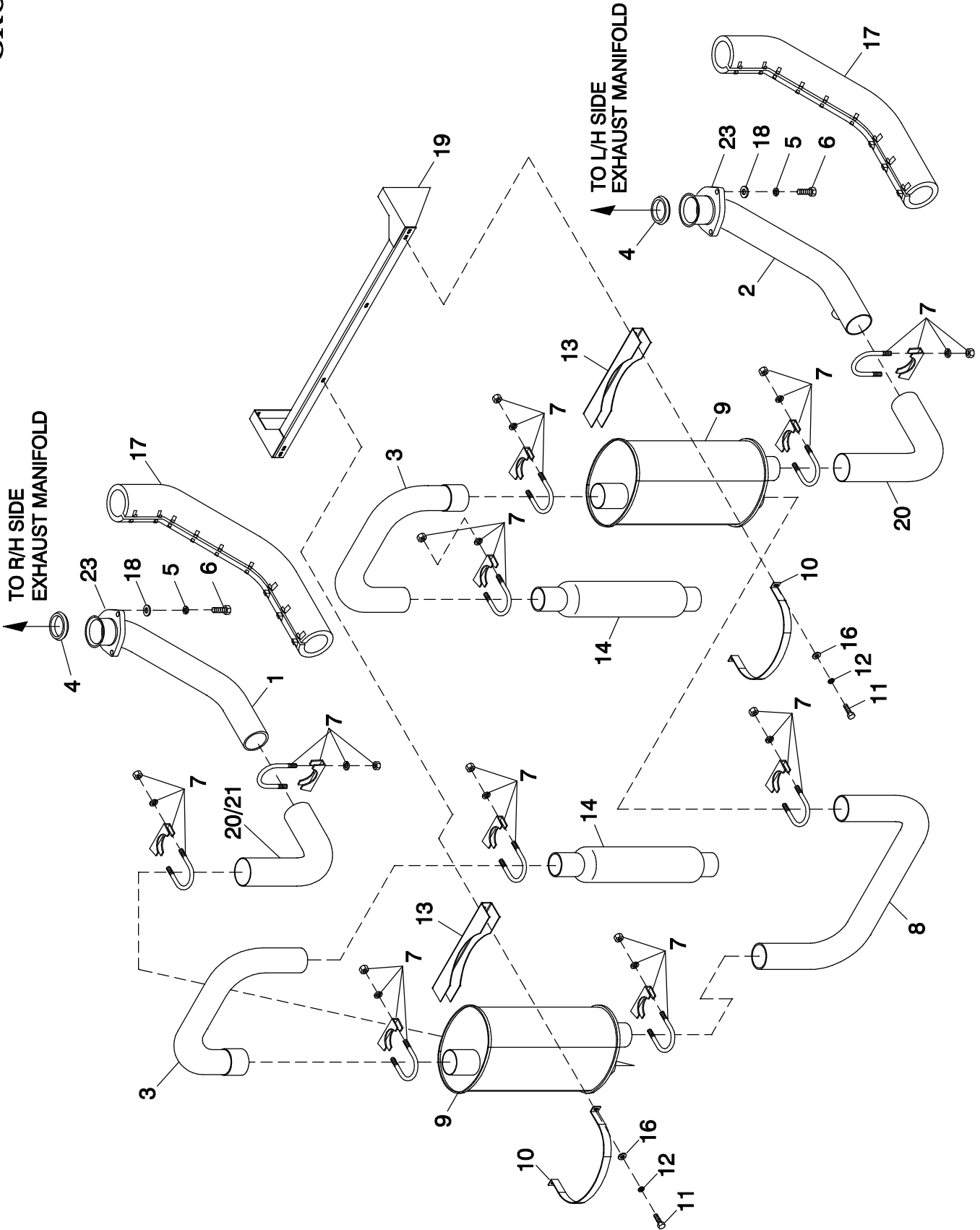
EXPLODED VIEW: AIR CLEANER 5.4L/6.8L FORD  
DRAWING #: 0F3569

GROUP D

APPLICABLE TO:

| ITEM | PART #  | QTY. | DESCRIPTION                   |
|------|---------|------|-------------------------------|
| 1    | 0D2513D | 1    | AIR CLNR BTM PLT W/CPLR 8.1L  |
|      | 0D2513E | 1    | PLATE AIR CLEANER W/COUPLER   |
| 2    | 0F5419  | 1    | ELEMENT AIR FILTER            |
| 3    | 0F4268  | 1    | TOP PLATE VENTURI             |
| 4    | 0F4270A | 1    | HOLD DOWN AIR CLEANER PLATED  |
| 5    | 0F6977  | 1    | PLATE AIR CLEAN TOP 5.4L/6.8L |
| 6    | 037561  | 1    | NUT WING 1/4-20 NYLK          |
| 7    | 047411  | 4    | SCREW HHC M6-1.0 X 16 G8.8    |
| 8    | 022097  | 4    | WASHER LOCK M6-1/4            |
| 9    | 049811  | 4    | WASHER FLAT M6                |
| 10   | 0F4269  | 1    | GASKET MIXER BODY             |
| 11   | 022473  | 1    | WASHER FLAT 1/4-M6 ZINC       |
| 12   | 0A4256  | 1    | INDICATOR FILTER MINDER       |

GROUP D



EXPLODED VIEW:  
MUFFLER 5.4L/6.8L CPL EXHAUST C3  
DRAWING #: 0F3601

**EXPLODED VIEW: MUFFLER 5.4L/6.8L CPL EXHAUST C3**  
**DRAWING #: 0F3601**

**GROUP D**

APPLICABLE TO:

| ITEM   | PART #      | QTY.   | DESCRIPTION                               |
|--------|-------------|--------|-------------------------------------------|
| 1      | 0F3224B     | 1      | PIPE, EXH MANIFOLD 6.8L C3 RH (6.8L 70KW) |
|        | 0F3224C     | 1      | PIPE EXH MANIFOLD 5.4L C3 RH (5.4L 55KW)  |
| 2      | 0F3231      | 1      | PIPE EXH MANIFOLD 6.8L C3 LH (6.8L 70KW)  |
|        | 0F3231A     | 1      | PIPE EXH MANIFOLD 5.4L C3 LH (5.4L 55KW)  |
| (3)3   | 0F2808B     | 2      | PIPE EXHAUST MUFFLER OUT                  |
| 4      | 0A6765      | 2      | RING GASKET, 2.5DIA                       |
| 5      | 0F4710      | 6      | WASHER LOCK M10 SS                        |
| 6      | 0F7200      | 6      | SCREW HHC M10-1.5 X 50 SS FTH             |
| (4) 7  | 080762      | 10 / 6 | BOLT U 3/8-16 X 2.62                      |
| 8      | 0F2809      | 1      | PIPE EXHAUST CROSSOVER                    |
| 9      | 0F2981A     | 2      | MFLR 7" X 9" X 25" (2) 2.5" IN/2.5" OUT   |
| 10     | 0F2962      | 2      | MUFFLER STRAP                             |
| 11     | 047411      | 4      | SCREW HHC M6-1.0 X 16 G8.8                |
| 12     | 022097      | 4      | WASHER LOCK M6-1/4                        |
| 13     | 0F2830      | 2      | MUFFLER BRACKET STIFFENER                 |
| (3) 14 | 0F4505      | 2      | GLASS PACK 23.5" LG 2.5" IN/OUT           |
| 16     | 022473      | 4      | WASHER FLAT 1/4-M6 ZINC                   |
| 17     | 0F2773D     | 2      | EXHAUST BLANKET 800MM LG (6.8L 70KW)      |
|        | 0F2773E     | 2      | EXHAUST BLANKET 750MM LG (5.4L 55KW)      |
| 18     | 088775      | 6      | WASHER FLAT 3/8 SS                        |
| 19     | 0F5447      | 1      | BRKT MUFFLER                              |
| 20     | (1) 0F6166  | 2      | PIPE LH MUFFLER SIDE                      |
|        | (2) 0F6166  | 1      | PIPE LH MUFFLER SIDE                      |
| 21     | (2) 0F6166A | 1      | PIPE RH MUFFLER SIDE                      |
| 23     | 0D3159      | 1      | FLANGE, EXHAUST                           |

**NOTES:**

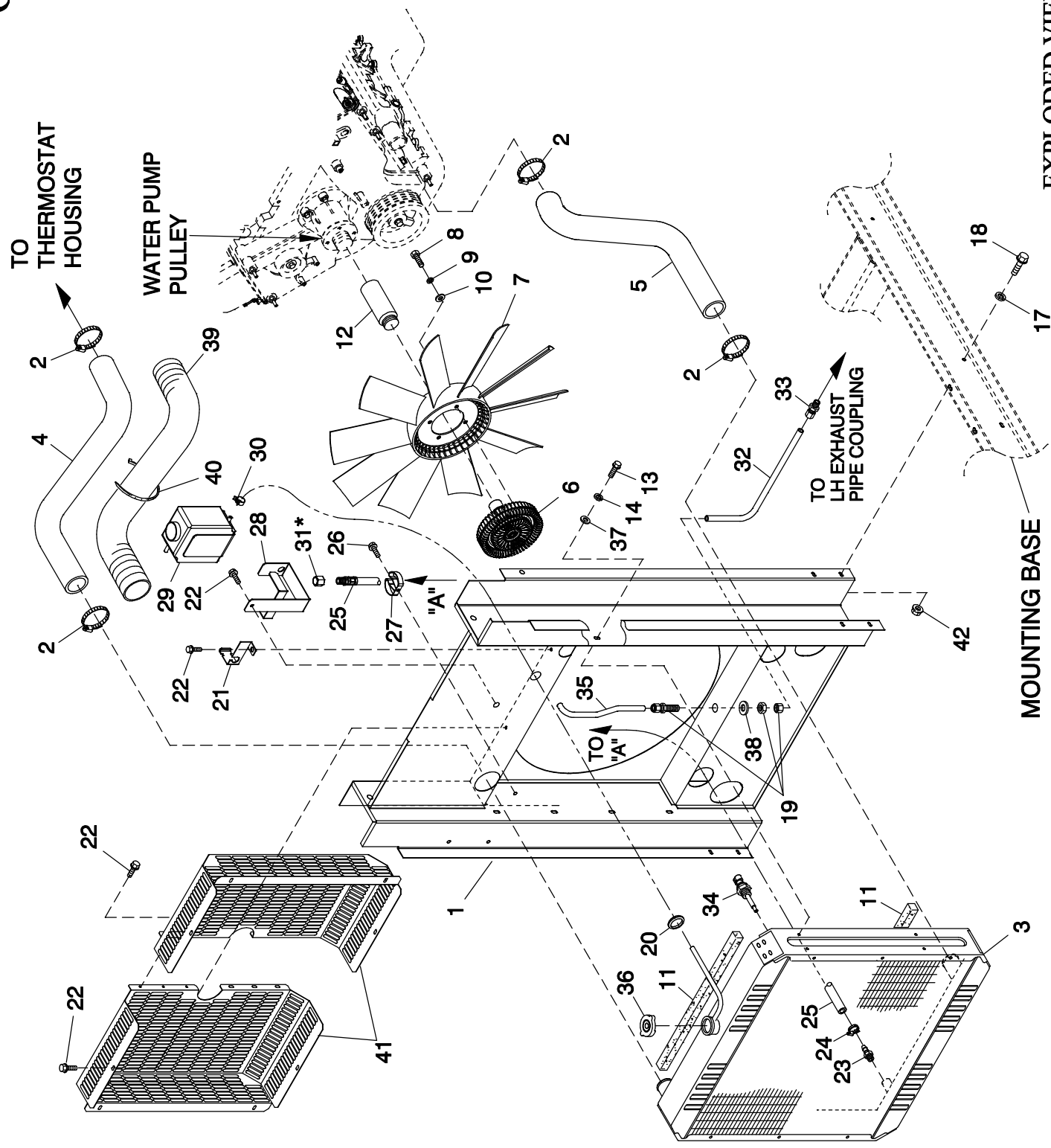
(1) 6.8L ONLY

(2) 5.4L ONLY

(3) ENCLOSED UNITS ONLY

(4) QTY REQUIRED FOR ENCLOSED / QTY REQUIRED FOR OPEN SET

# GROUP D



EXPLODED VIEW:  
COOLING SYSTEM 5.4L/6.8L O/S C3  
DRAWING #: 0G1346

EXPLODED VIEW: COOLING SYSTEM 5.4L/6.8L O/S C3  
DRAWING #: 0G1346

GROUP D

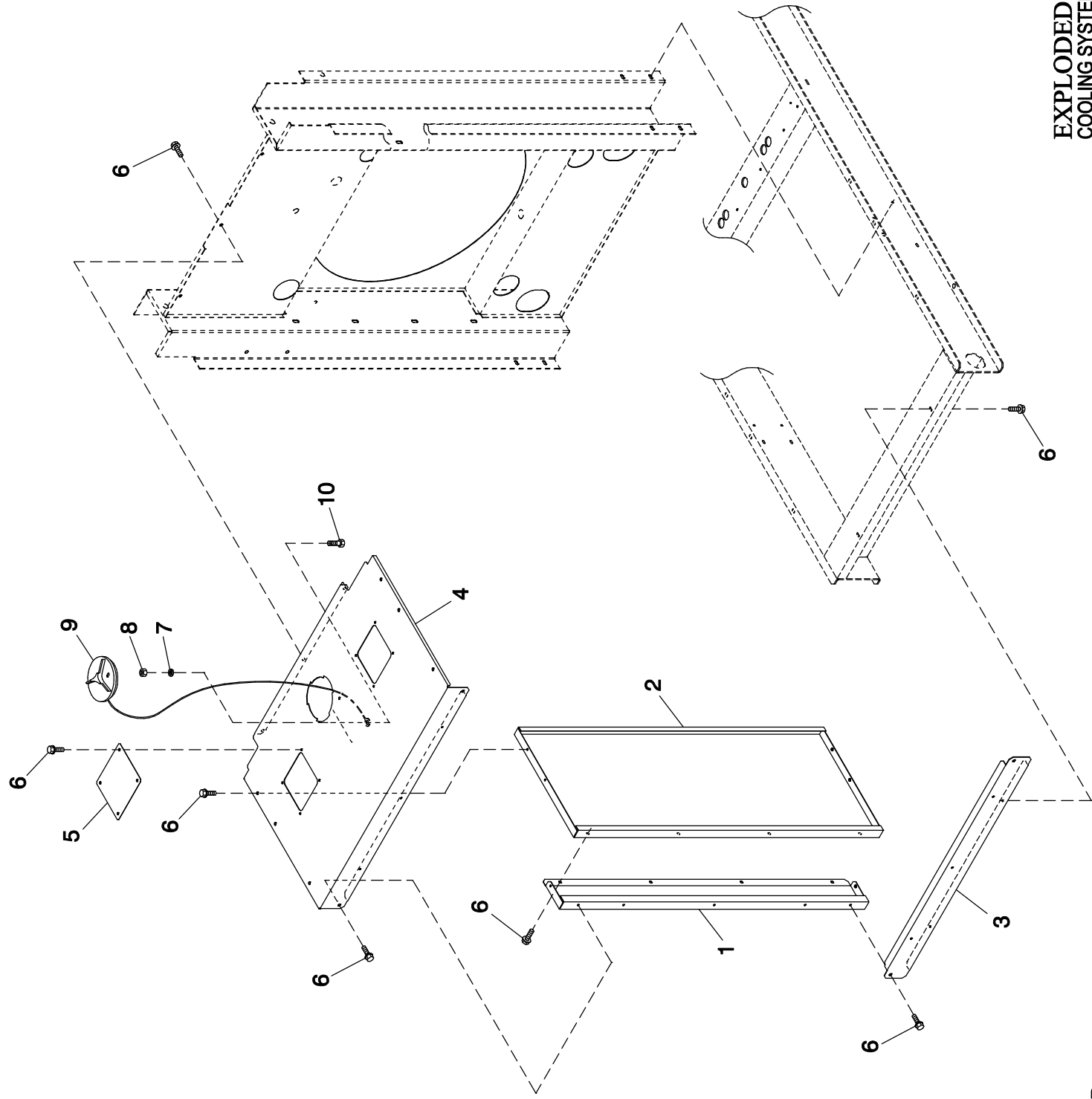
APPLICABLE TO:

| ITEM   | PART #  | QTY.   | DESCRIPTION                                                        |
|--------|---------|--------|--------------------------------------------------------------------|
| 1      | 0F3144  | 1      | WELDMENT RAD SUPPORT C3 (22")                                      |
| 2      | 035685  | 4      | CLAMP HOSE #28 1.32-2.25                                           |
| 3      | 0F2857A | 1      | RADIATOR 581 X 585 X 70 CPL LH                                     |
| 4      | 0F4168  | 1      | HOSE UPPER RADIATOR C3                                             |
| 5      | 0F4169  | 1      | HOSE LOWER RADIATOR C3                                             |
| 6      | 0E7854  | 1      | CLUTCH COOLING FAN                                                 |
| 7      | 0F2820  | 1      | FAN 22" DIA 10 BLADE                                               |
| 8      | 051756  | 4      | SCREW HHC M10-1.5 X 20 G8.8                                        |
| 9      | 046526  | 4      | WASHER LOCK M10                                                    |
| 10     | 022131  | 4      | WASHER FLAT 3/8-M10 ZINC                                           |
| 11     | 052250  | 2      | TAPE FOAM 1 X 1 (23" LG)                                           |
| 12     | 0F4412  | 1      | SPACER FAN 6.8L                                                    |
|        | 0F4412A | 1      | SPACER FAN 5.4L                                                    |
| 13     | 039253  | 8      | SCREW HHC M8-1.25 X 20 G8.8                                        |
| 14     | 022129  | 8      | WASHER LOCK M8-5/16                                                |
| 17     | 022097  | 8      | WASHER LOCK M6-1/4                                                 |
| 18     | 0C8566  | 8      | SCREW HHFC M6-1.0 X 20 G8.8                                        |
| 19     | 0F4765  | 1      | FTG CMPN BLKHD 3/8" OD TUBE BRS                                    |
| 20     | 089685  | 1      | GROMMET .75 X .12 X .50                                            |
| 21     | 0F2776A | 1      | BRACKET SIGNAL CONDITIONER                                         |
| (3) 22 | 0C2454  | 15 / 1 | SCREW THF M6-1 X 16 N WA Z/JS                                      |
| 23     | 055596  | 1      | BARBED STR 3/8 NPT X 3/8                                           |
| 24     | 0C7649  | 1      | CLAMP HOSE .38-.87                                                 |
| 25     | 069860E | 1      | HOSE DRAIN ASSY 28"                                                |
| 26     | 045764  | 1      | SCREW HHTT M4-0.7 X 8 BP                                           |
| 27     | 065852  | 1      | SPRING CLIP HOLDER .37-.62                                         |
| 28     | 080712  | 1      | BRKT COOLANT RECOVERY TANK                                         |
| 29     | 076749  | 1      | TANK COOLANT RECOVERY                                              |
| 30     | 048031C | 1      | CLAMP HOSE BAND 1/4                                                |
| 31(1)  | 069811  | REF    | CAP HEX 1/4 NPT BRASS                                              |
| 32     | 0F4770  | 1      | TUBE FAN CLUTCH PREHTR LOWR C3                                     |
| 33     | 089514  | 1      | FTG CMPR 3/8TUBE X 3/8 NPT W/FERL                                  |
| 34     | 0E2507  | 1      | PROBE COOLANT LEVEL 3/8 NPTF (USE WITH HARN P/N 0F5990 & 0F5991)   |
|        | 0H1827  | 1      | PROBE COOLANT LEVEL 3/8-18NPTF (USE WITH HARN P/N 0H2595 & 0H3072) |
| 35     | 0F4767  | 1      | TUBE FAN CLUTCH PREHTR UPPR C2                                     |
| 36     | 090283  | 1      | CAP RADIATOR 13 PSI                                                |
| 37     | 022145  | 8      | WASHER FLAT 5/16-M8 ZINC                                           |
| 38     | 022132  | 1      | WASHER FLAT 9/16 ZINC                                              |
| 39     | 077043J | 1      | CONDUIT FLEX 2.0"ID                                                |
| 40     | 085662  | 5      | TIE WRAP UL 14.6 X .14 BLK                                         |
| (2)41  | 0F5589  | 2      | GUARD FAN C3 CPL                                                   |
| 42     | 0D3700  | 8      | NUT FLANGE M6-1.0 NYLOK                                            |

(1) ITEM 31 IS INCLUDED WITH ITEM 25.

(2) ENCLOSED SETS ONLY

(3) QTY. REQUIRED FOR ENCLOSED UNITS / QTY. REQUIRED FOR OPEN UNITS.





EXPLODED VIEW: COOLING SYSTEM 5.4L/6.8L O/S C3  
DRAWING #: 0G1346

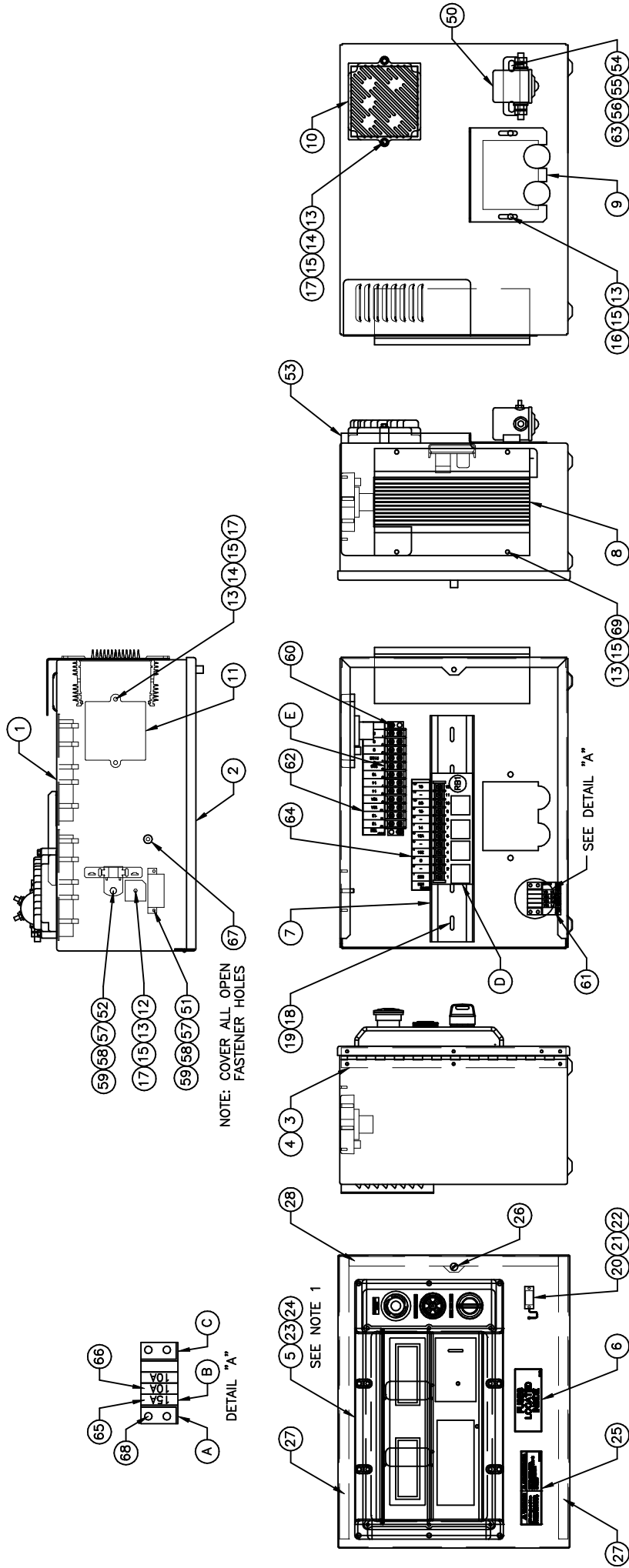
GROUP D

APPLICABLE TO:

| ITEM | PART #      | QTY. | DESCRIPTION                   |
|------|-------------|------|-------------------------------|
| 1    | 0G16140GS0R | 2    | PANEL C3 FRONT SIDES          |
| 2    | 0G16150GS0R | 2    | PANEL C3 REAR SIDES           |
| 3    | 0G15300GS0R | 1    | PANEL LOWER FRONT             |
| 4    | 0G16130GS0R | 1    | PANEL C3 TOP                  |
| 5    | 0D3215B     | 2    | ACCESS COVER 160 X 170 GALV   |
| 6    | 0C2454      | 32   | SCREW THF M6-1 X 16 N WA Z/JS |
| 7    | 022097      | 1    | WASHER LOCK M6-1/4            |
| 8    | 049813      | 1    | NUT HEX M6 X 1.0 G8 YEL CHR   |
| 9    | 0C2634A     | 1    | ASSY ACCESS COVER             |
| 10   | 047411      | 1    | SCREW HHC M6-1.0 X 16 G8.8    |

OPEN SETS ONLY

# GROUP C



NOTE 1: ITEM 29 ATTACHES TO CONTACT ON REAR OF ITEM 5

EXPLODED VIEW:  
BATTERY CHARGER H-PANEL 10A 12V  
DRAWING #: 0G4140D

REVISION: H-4623-C  
DATE: 6/8/09

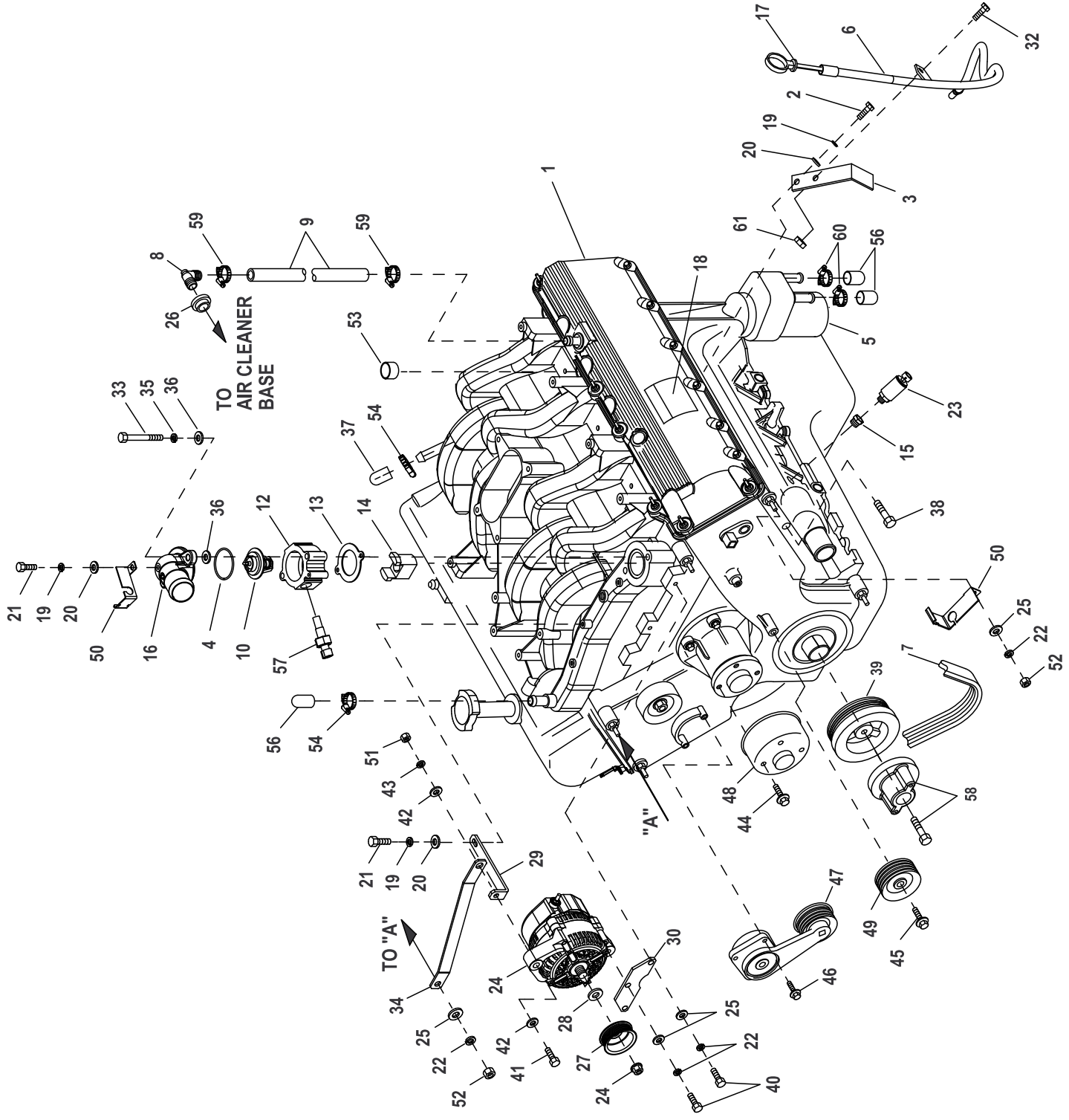
**EXPLODED VIEW: BATTERY CHARGER H-PANEL 10A 12V**  
**DRAWING #: 0G4140D**

**GROUP C**

**APPLICABLE TO:**

| ITEM                                               | PART #      | QTY. | DESCRIPTION                             |
|----------------------------------------------------|-------------|------|-----------------------------------------|
| COMPONENTS INCLUDED IN 0G4140E                     |             |      |                                         |
| 1                                                  | 0F1823CST03 | 1    | ENCL H/G CONTROL PANEL                  |
| 2                                                  | 0F1824AST03 | 1    | COVER CONTROL PANEL                     |
| 3                                                  | 0F2606      | 1    | HINGE CONTINUOUS H PANEL                |
| 4                                                  | 036261      | 7    | RIVET POP .125 X .275 SS                |
| 5                                                  | 0F5763      | 1    | ASSY PROGRAMMED H-100                   |
| 6                                                  | 0F1732      | 1    | DECAL FUSES LOCATED INSIDE              |
| 7                                                  | 0E9764      | 1    | RAIL SNAPTRACK PCB HOLDER BULK (12" LG) |
| 8                                                  | 0F1740C     | 1    | ASSY PCB 10A UL BATT CHRGR 12V          |
| 9                                                  | 0F1958      | 1    | PLATE HARNESS CLAMP                     |
| 10                                                 | 0F2256      | 1    | ASSY PCB PWR AVR W/AMP HEADER           |
| 11                                                 | 0E3161      | 1    | ASSY PCB BOSCH GOV DRIVER               |
| 12                                                 | 029673      | 1    | DIO BRIDGE 25A 600V                     |
| 13                                                 | 049226      | 11   | WASHER LOCK M5                          |
| 14                                                 | 079224      | 4    | SCREW PPHM M5-0.8 X 30 SS               |
| 15                                                 | 051713      | 11   | WASHER FLAT M5                          |
| 16                                                 | 0F5886      | 6    | SCREW HHPM M5-0.8 X 12                  |
| 17                                                 | 051716      | 5    | NUT HEX M5-0.8 G8 YEL CHR               |
| 18                                                 | 043180      | 3    | WASHER FLAT M4                          |
| 19                                                 | 0C3990      | 3    | SCREW PHTT M4-0.7 X 10 ZYC              |
| 20                                                 | 0F4333      | 1    | CONN DUST CAP W/CHAIN DB9               |
| 21                                                 | 0F5883      | 1    | WASHER FLAT M3.5                        |
| 22                                                 | 0F5884      | 1    | SCREW PHTT M3.5-0.6 X 10                |
| 23                                                 | 055014      | 10   | SCREW PPHM M4-0.7 X 8 BLX OX            |
| 24                                                 | 022264      | 10   | WASHER LOCK #8-M4                       |
| 25                                                 | 0G3546      | 1    | DECAL WRN BATT CHR 12/24V BI            |
| 26                                                 | 0G3648      | 1    | M5-0.8 CAPTIVE PANEL KNLD HD            |
| 27                                                 | 0F6305      | 2    | SEAL COVER 3.18 X 12.7 X 382            |
| 28                                                 | 0F6305A     | 1    | SEAL COVER 3.18 X 12.7 X 283            |
| 29                                                 | 0G4329      | 1    | HARNESS H-PNL INTEGRATED SW (NOT SHOWN) |
| COMPONENTS INCLUDED IN WIRE HARNESS                |             |      |                                         |
| A                                                  | 0F1263      | 1    | ADPTR RH SIDE WICKMANN 178.6191         |
| B                                                  | 0F1262      | 4    | HOLDER FUSE WICKMANN 178.6150           |
| C                                                  | 0F1264      | 1    | ADPTR LH SIDE WICKMANN 178.6192         |
| D                                                  | 0E9049B     | 1    | ASSY PCB G-PANEL RELAY 12VDC            |
| E                                                  | 055911      | 1    | BLOCK TERM 20A 12X 6 X 1100V            |
| COMPONENTS NOT INCLUDED IN 0G4140E OR WIRE HARNESS |             |      |                                         |
| 50                                                 | 056739      | 1    | RELAY CONTACTOR 12VDC                   |
| 51                                                 | -           | 1    | DPE BREAKER SEE DRAWING 0F9280          |
| 52                                                 | -           | 1    | BOOST RESISTOR SEE DRAWING 0F9280       |
| 53                                                 | 0F2627B     | 1    | COVER CONTROL PANEL SIDE                |
| 54                                                 | 022287      | 2    | SCREW HHC 1/4-20 X 3/4 G5               |
| 55                                                 | 022473      | 4    | WASHER FLAT M6-1/4                      |
| 56                                                 | 022097      | 2    | WASHER LOCK M6-1/4                      |
| 57                                                 | 043182      | 3    | WASHER LOCK M3                          |
| 58                                                 | 051714      | 3    | NUT HEX M3-0.5 G8 YEL CHR               |
| 59                                                 | 052777      | 3    | WASHER FLAT M3                          |
| 60                                                 | 0C2323      | 2    | SCREW PHTT #6-32 X 5/8 ZYC              |
| 61                                                 | 0F5459      | 1    | DECAL CPL CONTROL PANEL FUSES           |
| 62                                                 | 0F5461      | 1    | DECAL CPL 5A/6.8L TB3                   |
| 63                                                 | 022127      | 2    | NUT HEX 1/4-20 STEEL                    |
| 64                                                 | 0F5460      | 1    | DECAL CPL 5A/6.8L RELAY BOARD           |
| 65                                                 | 0E7403C     | 1    | FUSE ATO TYPE 15 AMP (BLUE)             |
| 66                                                 | 0E7403B     | 2    | FUSE ATO TYPE 10 AMP (RED)              |
| 67                                                 | 0F6145      | A/R  | SEAL WEATHER .45"DIA                    |
| 68                                                 | 0C2699      | 2    | SCREW PHTT #6-32 X 3/8 ZYC              |
| 69                                                 | 0C2266      | 4    | SCREW PHTT M5-0.8 X 16 ZYC              |

# GROUP D



**EXPLODED VIEW: EV ENGCOMPRT 5.4L CPL L/H****DRAWING #: 0H5628B****GROUP D****APPLICABLE TO:**

| ITEM     | PART#       | QTY. | DESCRIPTION                            |
|----------|-------------|------|----------------------------------------|
| 1        | 0F1960A     | 1    | ENGINE G5.4L G3 2009                   |
|          | 0F1960B     | 1    | ENGINE G5.4L G3 2011                   |
| 2        | 042568      | 1    | SCREW HHC M6-1.0 X 20 C8.8             |
| (1)(2)3  | 0H56090ST03 | 1    | BRACKET DIPSTICK TUBE                  |
| 4        | 0F2843      | REF  | GASKET THERMOSTAT HOUSING              |
| 5        | 0D5419      | REF  | OIL FILTER V-10 ENGINE                 |
| (1)(2)6  | 0F7316C161  | 1    | TUBE DIPSTICK                          |
| 7        | 0D3488G     | 1    | BELT SERPENTINE 65.0" (1800 RPM)       |
|          | 0D3488J     | 1    | BELT SERPENTINE 65.3" (2650 RPM)       |
| 8        | 057795A     | 1    | BARBED EL 90 3/4 PLASTIC               |
| 9        | 059057      | 1    | HOSE 3/4 ID SAE-30R2 (16.75"LG)        |
| 10       | REF         | 1    | THERMOSTAT ASSY                        |
| (1)(2)12 | 0G5515B     | 1    | ADAPTER THERMOSTAT 4.6L G3             |
| (1)(2)13 | 0G5511      | 1    | GASKET THERMOSTAT 4.2L                 |
| (1)(2)14 | 0H3920      | 1    | SPACER COOLANT BYPASS                  |
| 15       | 035579      | 1    | BSHG RDCR HEX 1/4 TO 1/8               |
| 16       | REF         | 1    | CONNECTION WATER OUTLET                |
| (1)(2)17 | 0F7316C160  | 1    | DIPSTICK                               |
| (1)(2)18 | 0H0550      | 1    | DECAL EPA STATIONARY EMERGENCY         |
| 19       | 022097      | 2    | WASHER LOCK M6-1/4                     |
| 20       | 022473      | 2    | WASHER FLAT 1/4 ZINC                   |
| 21       | 042568      | 2    | SCREW HHC M6-1.0 X 20 G8.8             |
| 22       | 022129      | 5    | WASHER LOCK M8-5/16                    |
| 23       | 0F4612      | 1    | SENDER OIL PRESSURE 1/8"NPT            |
| 24       | 0E9868A     | 1    | ALTERNATOR DC W/OUT PULLEY             |
| 25       | 022145      | 5    | WASHER FLAT 5/16 ZINC                  |
| 26       | 057796      | 1    | GROMMET                                |
| 27       | 0F3216      | 1    | PULLEY 80 OD DC ALTERNATOR (1800RPM)   |
|          | 0F3216B     | 1    | PULLEY 117 OD DC ALTERNATOR (2650 RPM) |
|          | 0F3216D     | 1    | PULLEY 160 OD DC ALTERNATOR (3600 RPM) |
| 28       | 0F3217      | 1    | SPACER DC ALTERNATOR PULLEY            |
| 29       | 0F3287      | 1    | BRKT DC ALTERNATOR UPPER               |
| 30       | 0F3017      | 1    | BRKT DC ALTERNATOR LOWER               |
| (4)31    | 0H5475      | 1    | HARN ENG G5.4L G3 H-PANEL CPL          |
| 32       | 0E3257      | 1    | SCREW HWHTF M6-1.0 X 16                |
| (1)(2)33 | 0G5148      | 2    | SCREW HHC M8-1.25 X 140 G8.8           |
| 34       | 0F4308      | 1    | BRACKET DC ALT STABILIZER              |
| (1)(2)35 | 022129      | 2    | WASHER LOCK M8-5/16                    |
| (1)(2)36 | 022145      | 4    | WASHER FLAT 5/16-M8 ZINC               |
| 37       | 077996      | 1    | CAP ANTIFREEZE 5/8"ID X 1.2"LG         |
| 38       | 052243      | 1    | SCREW HHC M10-1.5 X 60 C8.8            |
| (1)39    | 0H5406A     | 1    | REWORK HARMONIC BALANCER 5.4L          |
| 40       | 039253      | 3    | SCREW HHC M8-1.25 X 20 G8.8            |
| 41       | 064416      | 1    | SCREW HHC M10-1.5 X 45 G8.8 FT         |
| 42       | 022131      | 2    | WASHER FLAT 3/8-M10 ZINC               |
| 43       | 046526      | 1    | WASHER LOCK M10                        |
| 44       | 0D8027      | REF  | SCREW WP PULLEY M8-1.25 X 19           |
| 45       | 0D8025      | 1    | BOLT HEX FL HD M8-1.25 X 28            |
| 46       | 0D8026      | 3    | BOLT HEX FL HD M8-1.25 X 31            |
| 47       | 0D8030      | 1    | TENSIONER ENG. AUTOMATIC BELT          |
| 48       | 0F2846      | 1    | PULLEY WATER PUMP                      |
| 49       | 0D8028      | 1    | PULLEY GROOVED ENGINE IDLER            |

**EXPLODED VIEW: EV ENGCOMPRT 5.4L CPL L/H****DRAWING #: 0H5628B****GROUP D****APPLICABLE TO:**

| ITEM      | PART#   | QTY. | DESCRIPTION                   |
|-----------|---------|------|-------------------------------|
| 50        | 0F2776A | 2    | BRACKET SIGNAL CONDITIONER    |
| 51        | 045772  | 1    | NUT HEX M10-1.5 G8 YEL CHR    |
| 52        | 045771  | 2    | NUT HEX M8-1.25 G8 YEL CHR    |
| (4)(1)53  | 0E0992A | 8    | PLUG EXPANSION 14 OD          |
| (1)(2)54  | 057823  | 1    | CLAMP HOSE #10 .56-1.06       |
| (4)(3) 55 | 029333A | 2    | TIE WRAP UL 7.4" X .19" BLK   |
| (1)(2)56  | 0F6151  | 3    | CAP RUBBER                    |
| 57        | 0E0502  | 1    | TEMPERATURE SENDER, DELPHI    |
| (1)58     | REF     | 1    | REWORK HARMONIC BALANCER 5.4L |
| 59        | 057823  | 2    | CLAMP HOSE #10 .56-1.06       |
| (1)(2)60  | 035473  | 2    | CLAMP HOSE #12 .50-1.25       |
| (1)(2)61  | 045771  | 1    | NUT HEX M8-1.25 G8 CLEAR ZIN  |

(1) PART OF 80KW ENGINE MAKE

A) ENGINE 0F1960A = ENGINE MAKE 0H5610.

B) ENGINE 0F1960B = ENGINE MAKE 0J5608.

(2) PART OF 55KW ENGINE MAKE

A) ENGINE 0F1960A = ENGINE MAKE 0H5610A.

B) ENGINE 0F1960B = ENGINE MAKE 0J5608A.

(3) I/N 55 IS FOR HOLDING SENSOR TO I/N 50.

(4) NOT SHOWN

**EXPLODED VIEW: EV ENGCOMPRT 5.4L CPL L/H**

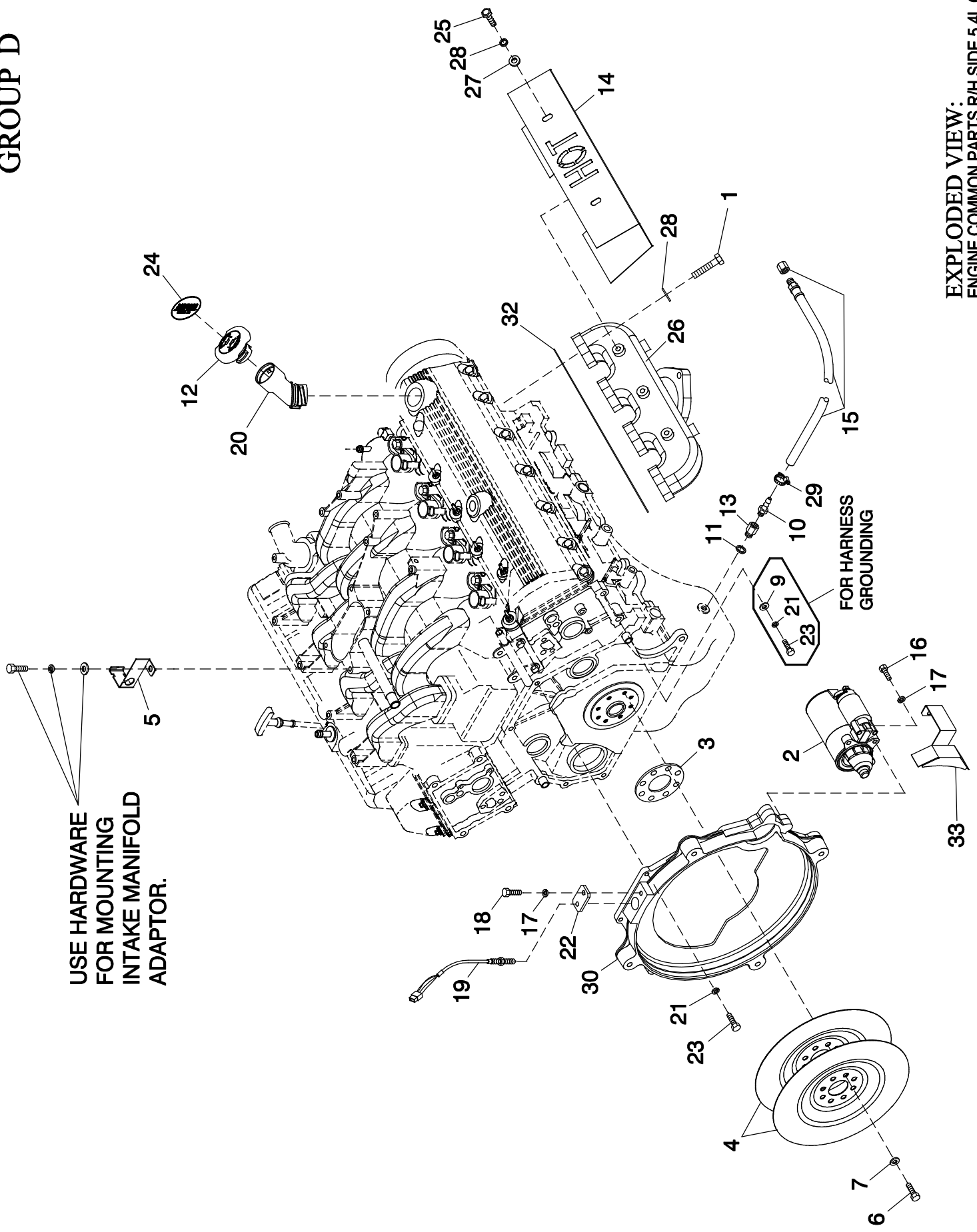
**DRAWING #: 0H5628B**

**APPLICABLE TO:**

**GROUP D**

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# GROUP D



EXPLODED VIEW:  
ENGINE COMMON PARTS R/H SIDE 5.4L CPL  
DRAWING #: 0H5665A



**EXPLODED VIEW: ENGINE COMMON PARTS R/H SIDE 5.4L CPL**  
**DRAWING #: 0H5665A**

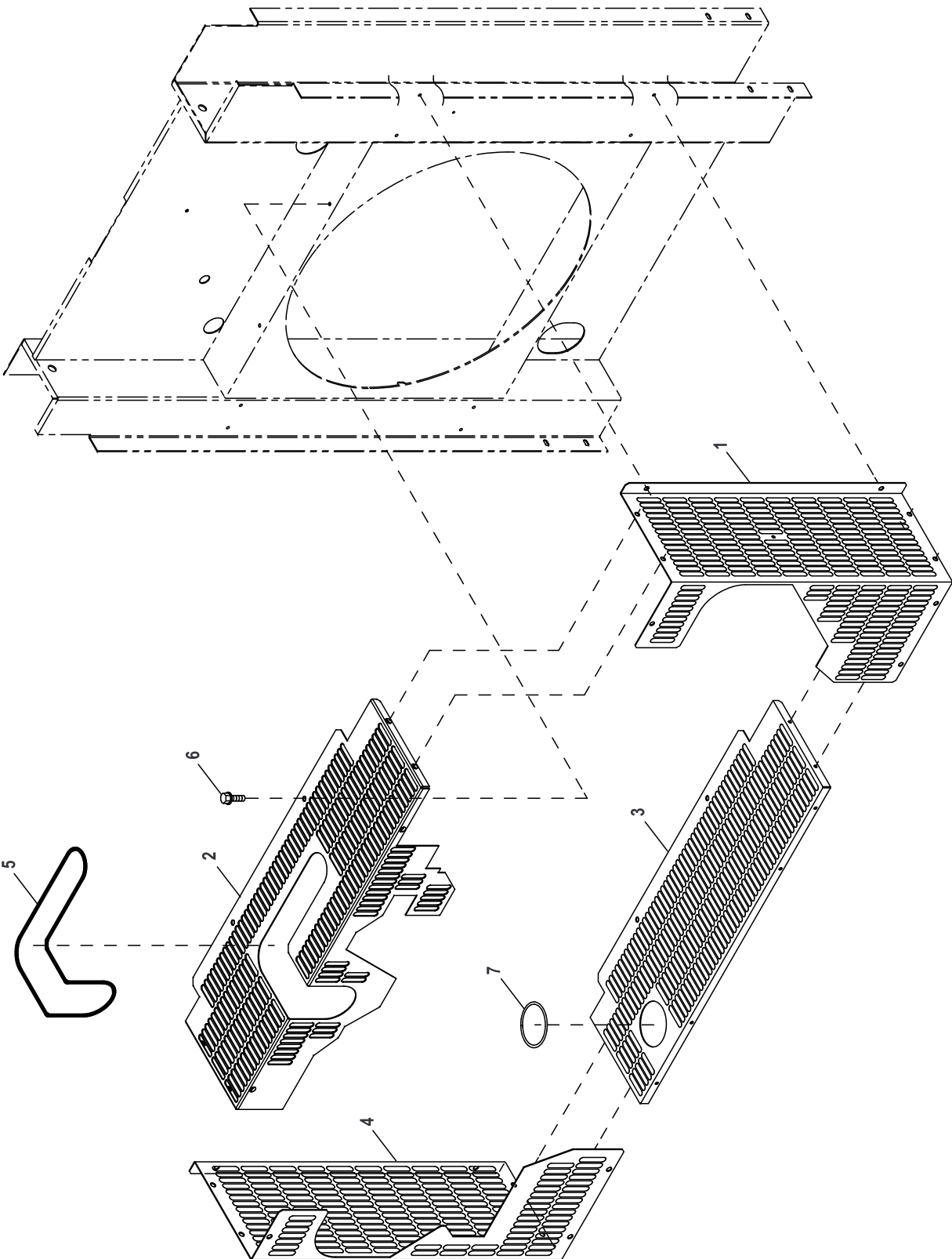
**GROUP D**

APPLICABLE TO:

| ITEM   | PART #     | QTY. | DESCRIPTION                                       |
|--------|------------|------|---------------------------------------------------|
| 1      | 0D9913     | 16   | SCREW SHC M8-1.25 X 35 SS                         |
| 2      | 0G7461     | 1    | STARTER MOTOR 12V                                 |
| 3      | 0F3514     | 1    | SPACER FLEXPLATE 5.4L/6.8L (1800 RPM ONLY)        |
| 4      | 0F9965C    | 1    | FLEX PLATE 2 POLE 5.4L/6.8L (1800 RPM UNITS ONLY) |
|        | 0F9965C    | 2    | FLEX PLATE 2 POLE 5.4L/6.8L (3600 RPM UNITS ONLY) |
| 5      | 0F2776A    | 1    | BRACKET, SIGNAL CONDITIONER                       |
| 6      | 0D5417     | 8    | SCREW HHC M10-1.0 X 25 G10.9                      |
| 7      | 0F3844     | 8    | WASHER FLAT .43 X 1.00                            |
| (1) 8  | 029333A    | 1    | TIE WRAP UL 7.4" X .19" BLK (NOT SHOWN)           |
| 9      | 022131     | 1    | WASHER FLAT 3/8-M10 ZINC                          |
| 10     | 055596     | 1    | BARBED STR 3/8 NPT X 3/8                          |
| 11     | 057772     | 1    | WASHER NYLON .565                                 |
| (2) 12 | 0F7316C150 | 1    | CAP, OIL FILLER                                   |
| 13     | 057765     | 1    | ADAPTER M14-1.50 X 3/8 NPT                        |
| 14     | 0F3534     | 2    | HEAT SHLD EXHAUST MANIFOLD                        |
| 15     | 069860E    | 1    | HOSE DRAIN ASSY 28"                               |
| 16     | 049821     | 2    | SCREW SHC M8-1.25 X 30 G12.9                      |
| 17     | 022129     | 4    | WASHER LOCK M8-5/16                               |
| 18     | 039253     | 1    | SCREW HHC M8-1.25 X 20 G8.8                       |
| 19     | 0D2244M    | 1    | ASSY MAGPICKUP(3/8-24 MALE)                       |
| (2) 20 | 0H5393     | 1    | NECK OIL FILLER                                   |
| 21     | 046526     | 6    | WASHER LOCK M10                                   |
| 22     | 0F5454     | 1    | PLATE MAG PICK-UP ADAPTOR                         |
| 23     | 071623     | 4    | SCREW SHC M10-1.5 X 55 G12.9                      |
| (2) 24 | 0F5114     | 1    | DECAL REFER TO OWNERS MANUAL                      |
| 25     | 0D2608     | 8    | SCREW HHC 5/16-18 X 1/2 SSTL                      |
| 26     | 0F1820     | 2    | MACHINED MANIFOLD EXHAUST 5.4L                    |
| 27     | 070008     | 8    | WASHER FLAT M8 SS                                 |
| 28     | 070006     | 24   | WASHER LOCK M8 SSTL                               |
| 29     | 0C7649     | 1    | CLAMP HOSE .38-.87                                |
| 30     | 0F2929     | 1    | ENGINE ADAPTER 5.4L/6.8L                          |
| 32     | 0F1818     | REF  | GASKET, EXHAUST MANIFOLD                          |
| 33     | 0F6104     | 1    | COVER STARTER 5.4/6.8L G3                         |

(1) I/N 8 IS FOR HOLDING SENSOR TO I/N 5.

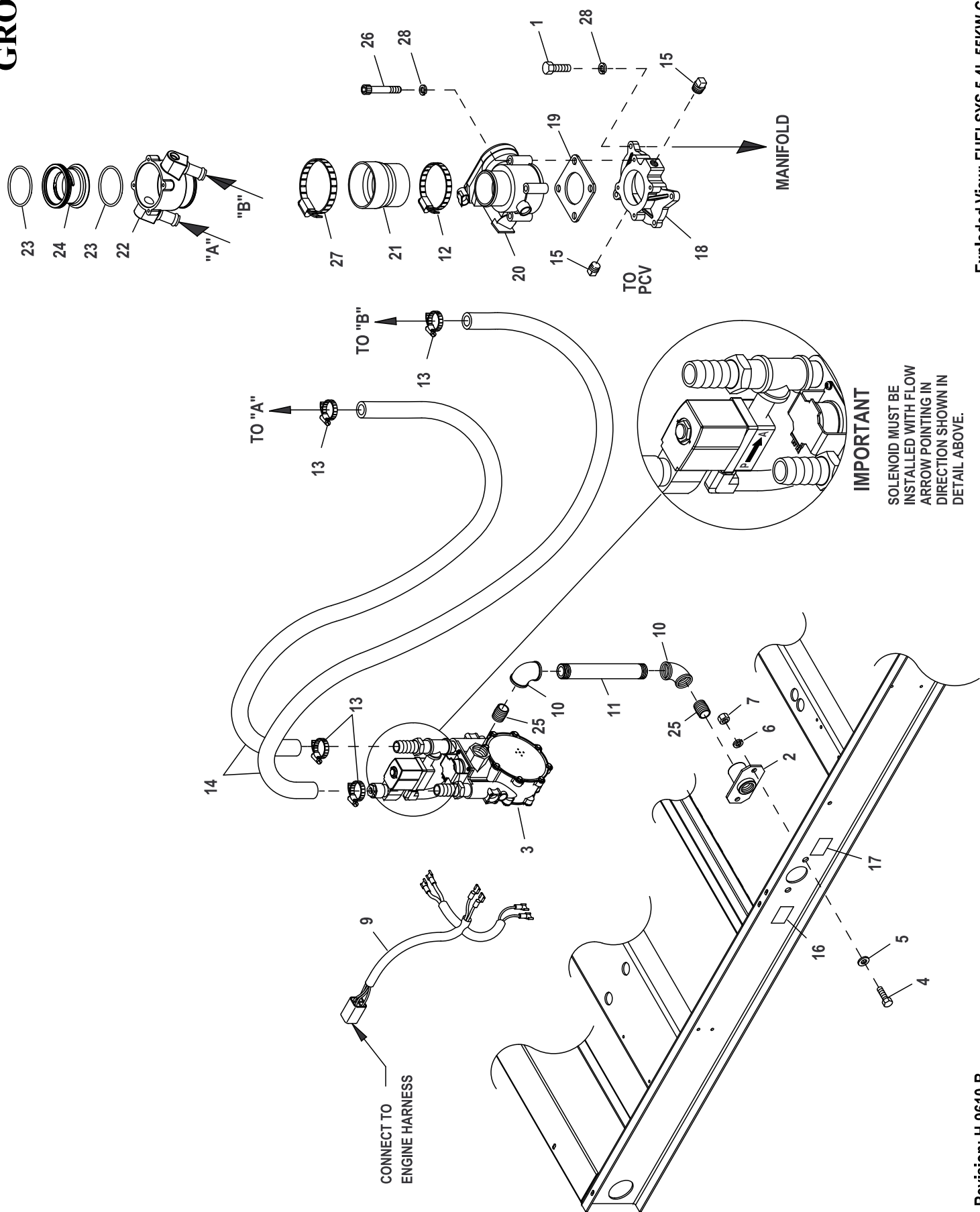
(2) PART OF ENGINE MAKE P/N 0H5610 & 0H 5610A



**EXPLODED VIEW: LVL 1 GUARD 5.4 C3****DRAWING #: 0H9236****GROUP D****APPLICABLE TO:**

| ITEM | PART#       | QTY. | DESCRIPTION                         |
|------|-------------|------|-------------------------------------|
| 1    | 0G17420GS0R | 1    | GUARD BELT RIGHT HAND C3            |
| 2    | 0H9012      | 1    | BELT TOP C3                         |
| 3    | 0G17400GS0R | 1    | GUARD BELT BOTTOM C3                |
| 4    | 0G17410GS0R | 1    | GUARD BELT LEFT HAND C3             |
| 5    | 056326      | 1    | TRIM VINYL BLACK 1/8GP (39" LG)     |
| 6    | 0C2454      | 22   | SCREW THF M6-1 X 16 N WA Z/JS       |
| 7    | 056326      | 1    | TRIM VINYL BLACK 1/8GP (10 .37" LG) |

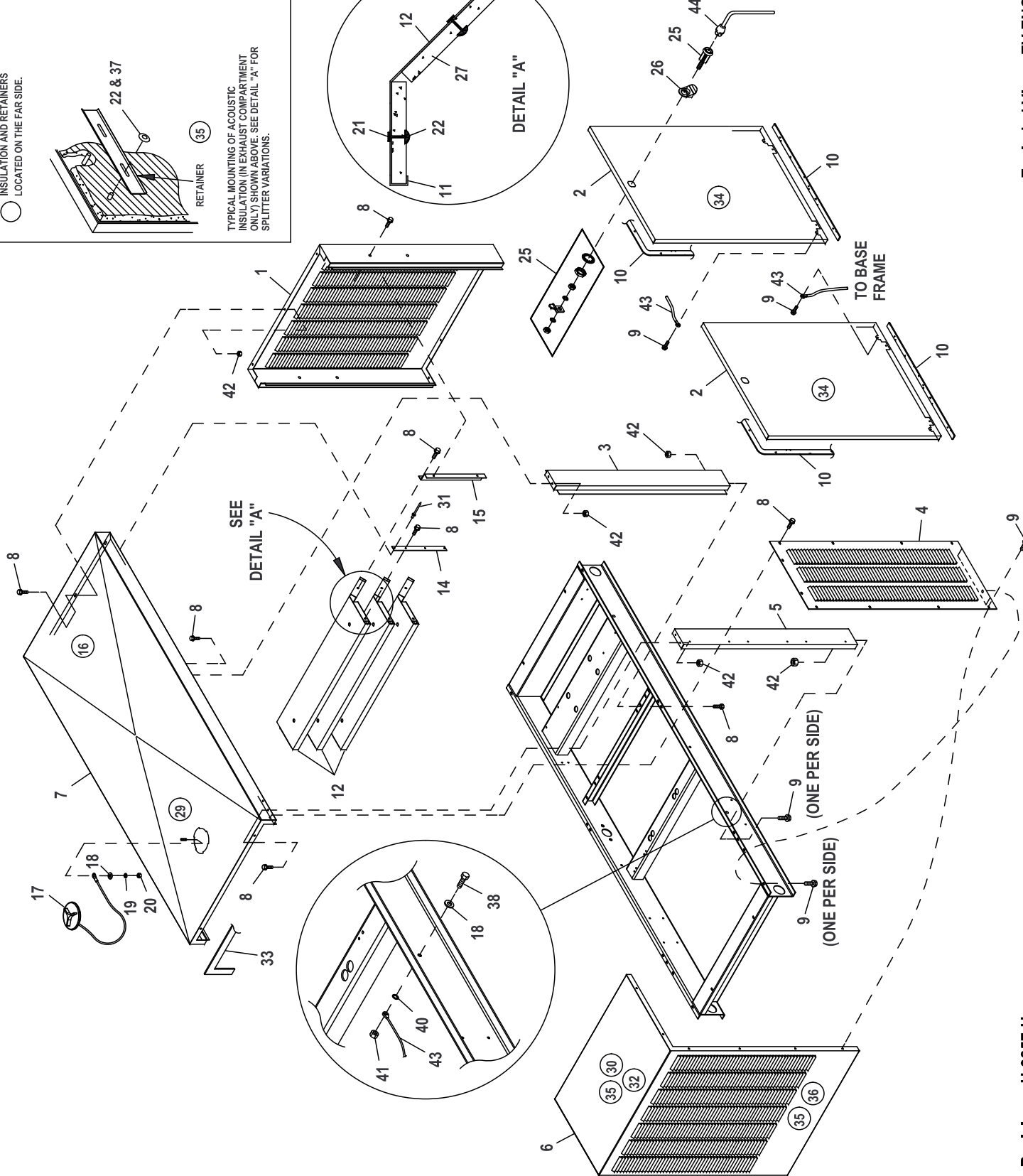
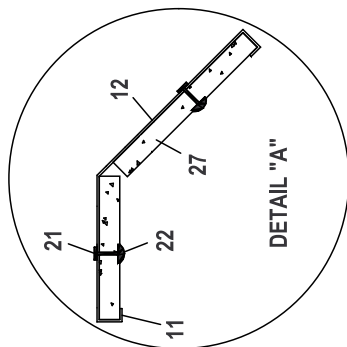
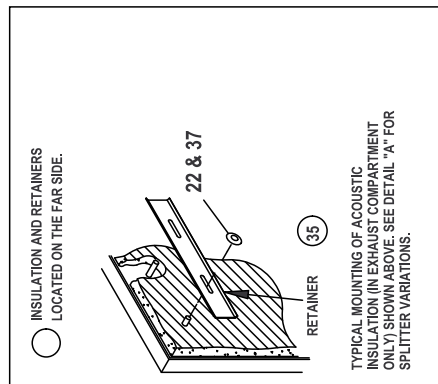
GROUP E



**EXPLODED VIEW: FUELSYS 5.4L 55KW CPL 2009****DRAWING #: 0H5680****GROUP E****APPLICABLE TO:**

| ITEM | PART#   | QTY. | DESCRIPTION                                   |
|------|---------|------|-----------------------------------------------|
| 1    | 045757  | 4    | SCREW HHC M6-1.0 X 25 G8.8                    |
| 2    | 075580  | 1    | FLANGE FUEL INLET                             |
| 3    | 0G9242B | 1    | REG ASSY 5.4L 55KW NG CPL                     |
|      | 0G9942C | 1    | REG ASSY 5.4L 55KW LP CPL 2009                |
| 4    | 039253  | 2    | SCREW HHC M8-1.25 X 20 G8.8                   |
| 5    | 022145  | 2    | WASHER FLAT 5/16-M8 ZINC                      |
| 6    | 022129  | 2    | WASHER LOCK M8-5/16                           |
| 7    | 045771  | 2    | NUT HEX M8-1.25 G8 CLEAR ZINC                 |
| 9    | 0H5476  | 1    | HARN FUEL JUMPER SINGLE REG                   |
| 10   | 026812  | 2    | ELBOW 90D 3/4 NPT                             |
| 11   | 0F8379  | 1    | NIPPLE PIPE 3/4 NPT X 7"                      |
| 12   | 042561  | 1    | CLAMP HOSE #36 1.88-2.75                      |
| 13   | 057823  | 4    | CLAMP HOSE #10 .56-1.06                       |
| 14   | 057147  | 2    | HOSE 3/4 ID LPG & NG (40" LG)                 |
| 15   | 026073A | 2    | PLUG STD PIPE 1/4 STEEL SQ HD                 |
| 16   | 0D1509  | 1    | DECAL INLET PRESSURE                          |
| 17   | 050279  | 1    | DECAL FUEL INLET NG (NATURAL GAS APPLICATION) |
|      | 050280  | 1    | DECAL FUEL INLET LPG (LP VAPOR APPLICATION)   |
| 18   | 0F2756  | 1    | MACHINING INTAKE ADAPTOR 40MM                 |
| 19   | 0E6586  | 1    | GASKET BOSCH 32 & 40                          |
| 20   | 0E4394  | 1    | ACTUATOR BOSCH 40 GOVERNOR                    |
| 21   | 0F3857  | 1    | REDUCER RUBBER 3.0"-2.00"                     |
| 22   | 0F3885  | 1    | MIXER, 40/60MM ACTUATOR ASSY                  |
| 23   | 0G3167  | 2    | O-RING 2-3/4 X 3/32 X 2-15/16                 |
| 24   | 0F3691  | 1    | VENTURI THROTTLE 32MM                         |
| 25   | 026915  | 2    | NIPPLE CLOSE 3/4 X 1.375                      |
| 26   | 0D2157  | 4    | SCREW SHC M6-1.0 X 50 C8.8                    |
| 27   | 039294  | 1    | CLAMP HOSE #44 2.31-3.25                      |
| 28   | 022097  | 8    | WASHER LOCK M6-1/4                            |

# GROUP F



## EXPLODED VIEW: EV ENCLOSURE C3

DRAWING #: 0G2898

## GROUP F

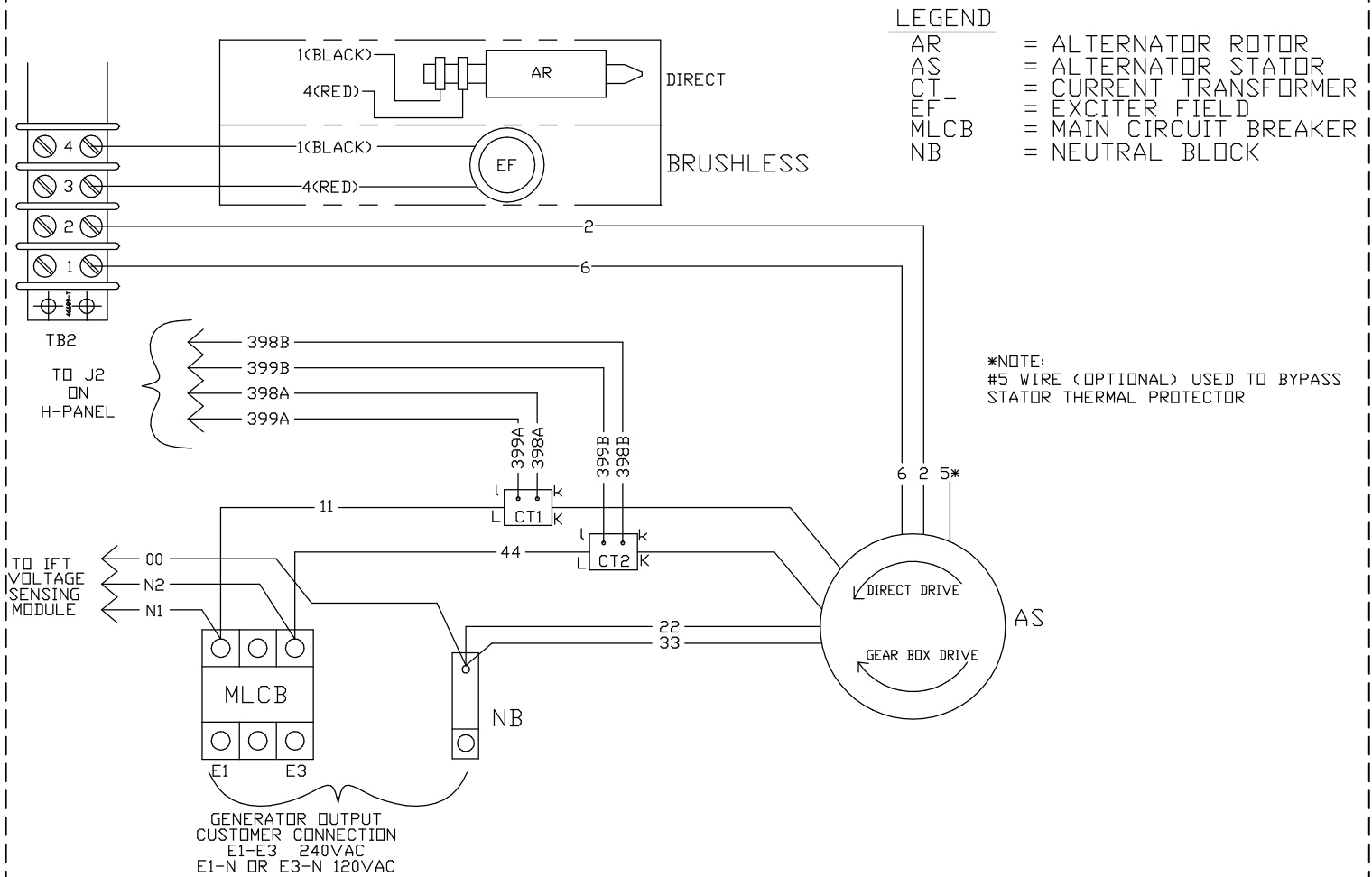
| ITEM   | PART#       | QTY. | DESCRIPTION                     |
|--------|-------------|------|---------------------------------|
| (2) 1  | 0F58660AL0R | 1    | REAR WRAP AL                    |
| (2) 2  | 0F5861AAL0R | 4    | DOOR AL                         |
| (2) 3  | 0F58650AL0R | 2    | CENTER SUPPORT AL               |
| (3) 4  | 0F58640AL0R | 2    | DUCT, DISCHRG AL                |
| (2) 5  | 0F58620AL0R | 2    | FRONT CRNR AL                   |
| (2) 6  | 0F58630AL0R | 1    | DUCT, CNTR DISCHRG AL           |
| (2) 7  | 0F58600AL0R | 1    | ROOF, AL                        |
| (1) 8  | 0C2454      | 60   | SCREW THF M6-1 X 16 N WA Z/JS   |
| (1) 9  | 0E3257      | 16   | SCREW TH-FRM M6 W/CAP SHKPRF W  |
| 10     | 0E5968      | 1    | GASKET EXTRUDED TRIM (547" LG)  |
| 11     | 0J2624A     | 3    | INSUL SPLITTER SMALL            |
| 12     | 0F2766      | 3    | SPLITTER                        |
| 14     | 0F3185      | 2    | STRINGER SPLITTER C3            |
| 15     | 0F3416      | 2    | SUPPORT SPLITTER C5 130KW       |
| 16     | 0J2624B     | 1    | INSUL ROOF TOP REAR             |
| 17     | 0F4487A     | 1    | ASSEMBLY COVER ACCESS           |
| 18     | 022473      | 5    | WASHER FLAT 1/4-M6 ZINC         |
| 19     | 022097      | 1    | WASHER LOCK M6-1/4              |
| 20     | 022127      | 1    | NUT HEX 1/4-20 STEEL            |
| 21     | 0F3072      | 12   | INSULATION RETAINMENT HANGER    |
| 22     | 078115      | 30   | WASHER SELF LOCKING DOME #4-40  |
| 25     | 0F5048D     | 4    | WISE-ACTION LATCH SLOTTED CIR   |
| 26     | 0F5049      | 4    | TAB PULL                        |
| 27     | 0J2624      | 3    | INSULATION SPLITTER             |
| 29     | 0J2624D     | 1    | INSULATION ROOF TOP             |
| 30     | 0F4073F     | 1    | INSULATION DUCT TOP             |
| 31     | 087233      | 2    | RIVET POP .1875 X .450 SS       |
| 32     | 0G0257      | 1    | REFLECTIVE HEAT SHIELD 2.4L     |
| 33     | 066760      | 1    | STRIP SEALANT 1/8 X 1 (44.5"LG) |
| 34     | 0J2624C     | 4    | INSULATION DOOR                 |
| 35     | 0F3890B     | 3    | RETAINER INSULATION (820)       |
| 36     | 0F4073B     | 1    | INSULATION DUCT FRONT           |
| 37     | 078115A     | 10   | WASHER SELF LOCKING DOME #8-32  |
| 38     | 042568      | 4    | SCREW HHC M6-1.0 X 20 G8.8      |
| 40     | 022447      | 4    | WASHER SHAKEPROOF INT 1/4       |
| 41     | 049813      | 4    | NUT HEX M6 X 1.0 G8 YEL CHR     |
| (1) 42 | 077992      | 29   | NUT HEX LOCK M6-1.0 SS NY INS   |
| 43     | 0912970094  | 4    | ASSY WIRE 14 AWG 34.8" GRN/YEL  |
| 44     | 0F8869D     | 1    | KEY WISE-ACTION LATCH SLOT CIR  |

(1) ENCLOSURE NOTE: ALL PANELS THAT FASTEN TO THE BASEFRAME MUST BE SECURED USING I/N 8 & 9 (*THREAD FORMING FASTENERS*) AND I/N 42 (*LOCK NUT*). LOCK NUT IS TO BE INSTALLED AFTER THREAD FORMING FASTENER HAS PENETRATED THROUGH EXTRUSIONS IN ENCLOSURE PANELS. ALL PANEL TO PANEL CONNECTIONS TO INCLUDE AT LEAST ONE CONNECTION POINT USING I/N 9 (*THREAD FORMING FASTENER*).

(2) SHEET METAL PARTS LISTED IN THE BOM TABLE ARE REPRESENTING GENERIC PARTS (NO COLOR)

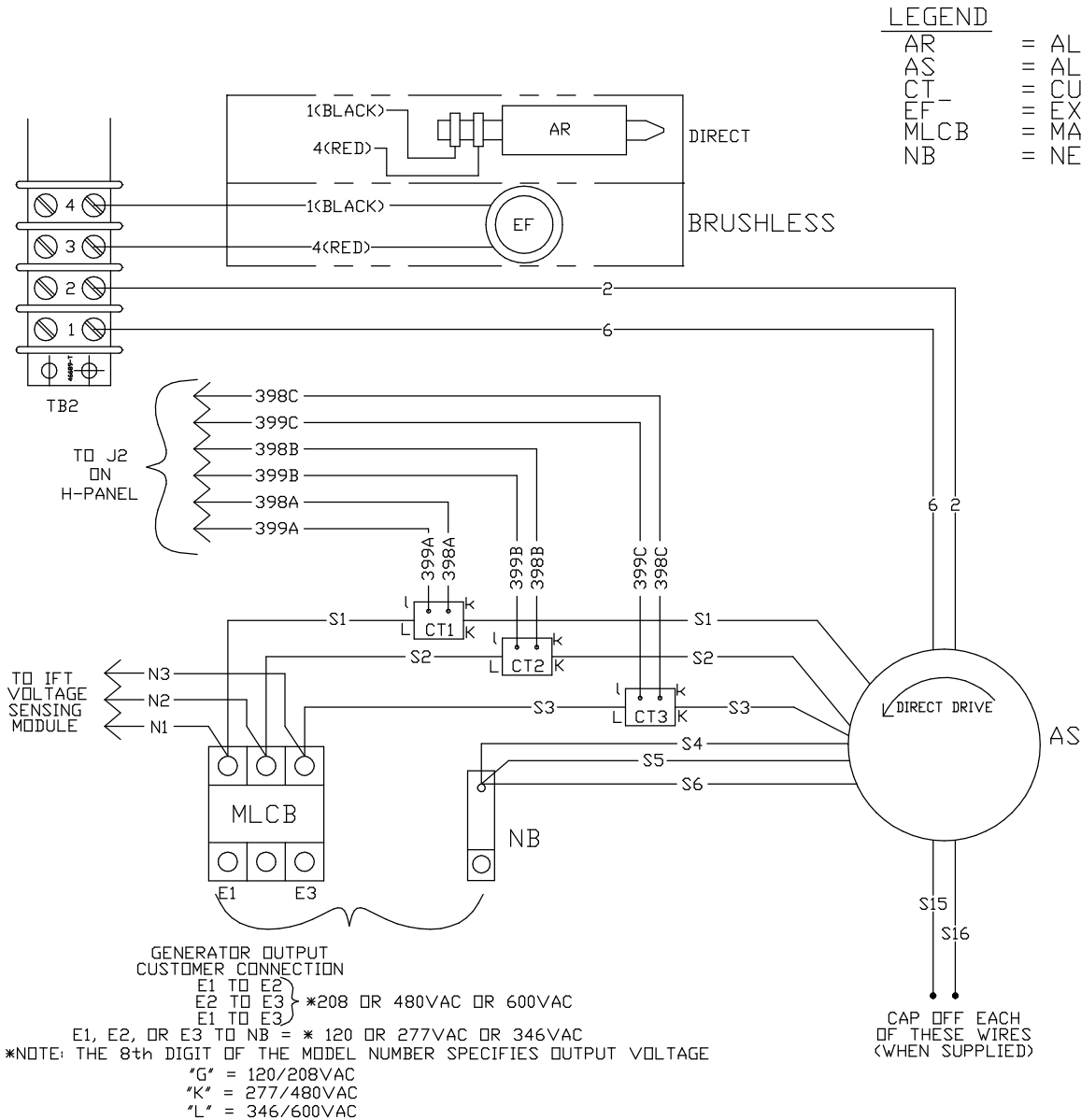
- MANUFACTURING: FOR CORRECT MATERIAL AND COLOR REFER TO AS400 BOM.
- CUSTOMER: WHEN ORDERING REPLACEMENT PARTS ENTER BASE NUMBER (FIRST 6 DIGITS ONLY) IN THE SYSTEM FOR CORRECT MATERIAL AND COLOR (FOR REFERENCE SEE GUIDELINE 0H7169).

## OPTION 1 - SINGLE PHASE, H-100 CONTROL PANEL

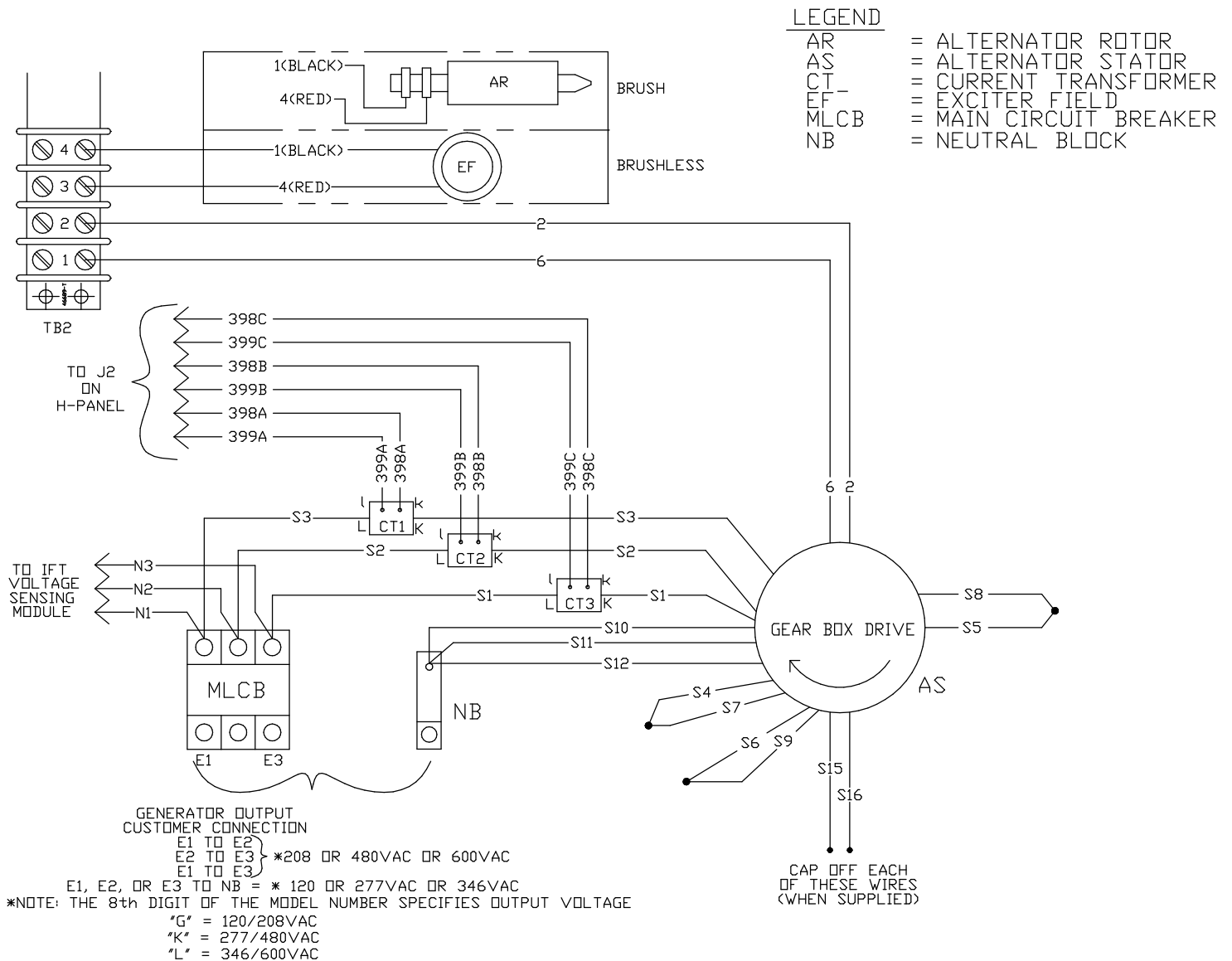




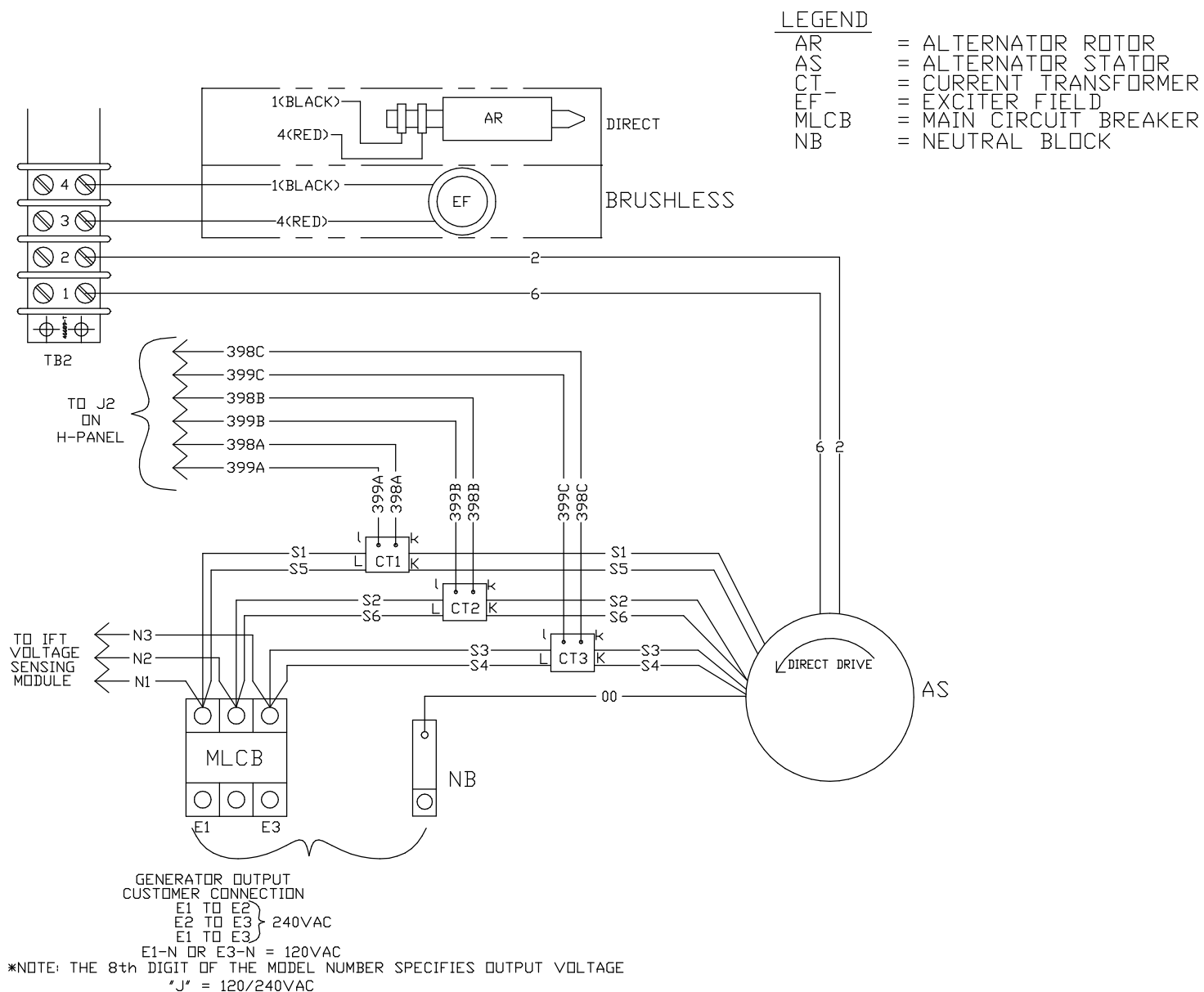
## OPTION 2 - THREE PHASE, H-100 CONTROL PANEL DIRECT DRIVE, 6 LEAD



## OPTION 3 - THREE PHASE, H-100 CONTROL PANEL GEAR BOX (REVERSE ROTATION)



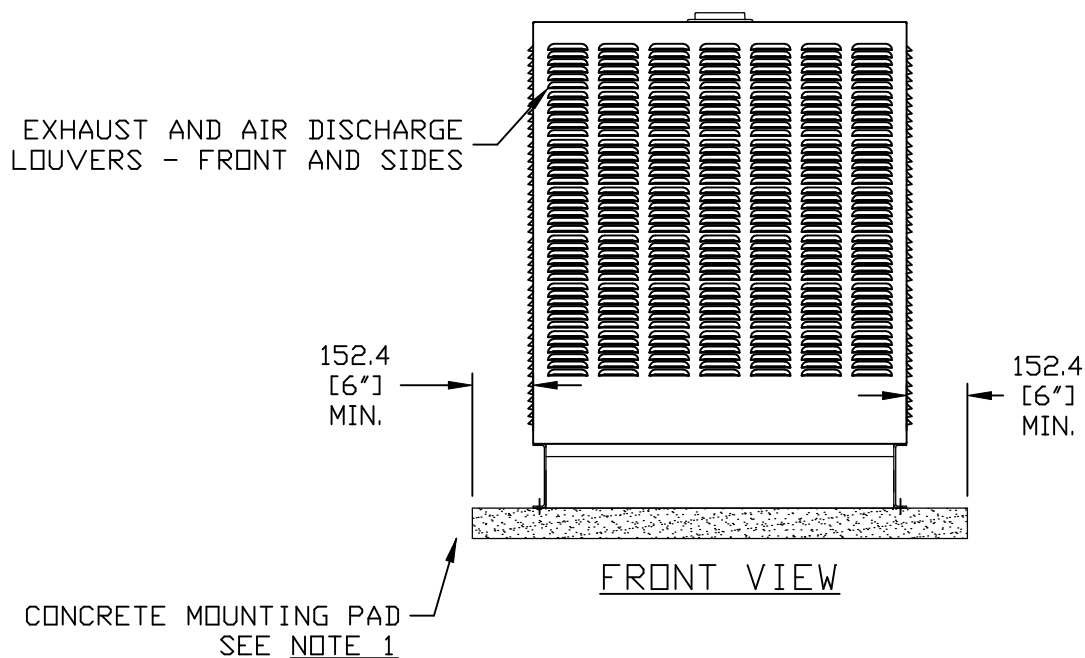
## OPTION 4 - THREE PHASE DELTA, H-100 CONTROL PANEL DIRECT DRIVE, 7 LEAD



APPLICABLE TO:

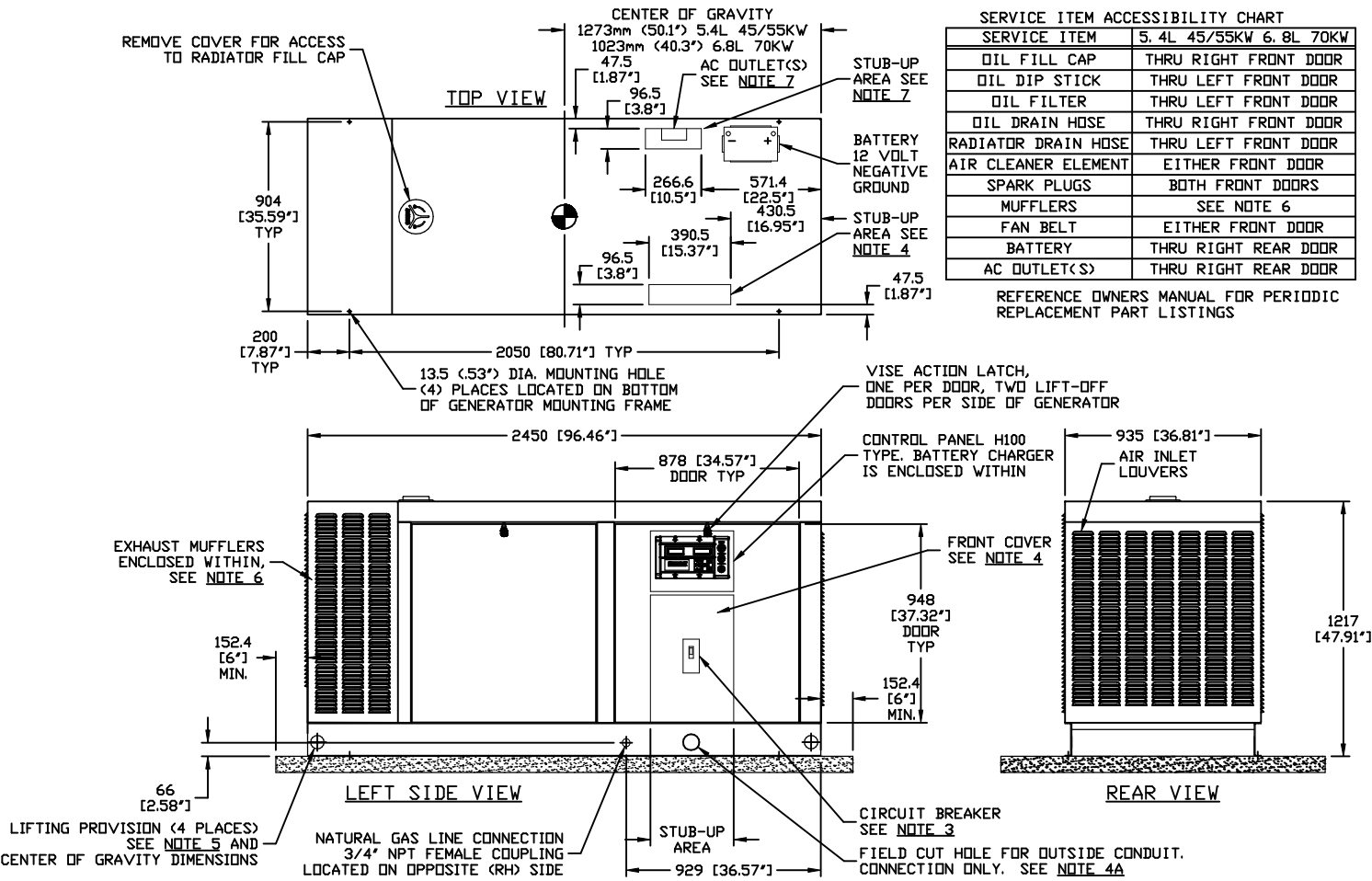
NOTES:

- 1) MINIMUM RECOMMENDED CONCRETE PAD SIZE: 1240 (48.8") WIDE X 2756.2 (108.5") LONG.
- 2) GENERATOR MUST BE LOCATED A MINIMUM DISTANCE OF 5 FEET FROM A WALL OR FENCE. ALLOW A 5 FOOT MINIMUM PERIMETER OF OPEN SPACE AROUND THE ENTIRE GENERATOR.
- 3) CIRCUIT BREAKER INFORMATION:  
SEE SPECIFICATION SHEET WITHIN OWNERS MANUAL.
- 4) INSIDE STUB-UP AREA FOR AC LOAD LEAD CONDUIT CONNECTION, NEUTRAL CONNECTION, AUXILIARY OUTPUT RELAYS AND ACCESS TO TRANSFER SWITCH CONTROL WIRES. REMOVE COVER FOR ACCESS.
- 4A) FIELD CUT HOLE IS ONLY REQUIRED FOR MOUNTING OF GENERATOR ON AN EXISTING PAD.
- 5) REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
- 6) REMOVE EITHER LEFT OR RIGHT HAND SIDE PANEL TO ACCESS EXHAUST MUFFLERS.
- 7) INSIDE ACCESS TO 120VAC, 20A GFCI OUTLET PREWIRED TO SUPPLY POWER TO BATTERY CHARGER.  
5.4L ONLY: 15A, 240VAC OUTLET FOR ENGINE BLOCK HEATER.  
6.8L ONLY: USE 20A GFCI OUTLET FOR ENGINE BLOCK HEATER.



| WEIGHT DATA                                                |                 |
|------------------------------------------------------------|-----------------|
| 5.4L 45/55KW -                                             | 895KG (1973 LB) |
| 6.8L 70KW -                                                | 991KG (2185 LB) |
| WOODEN SHIPPING SKIDS INCREASE OVERALL WEIGHT 79KG (175LB) |                 |

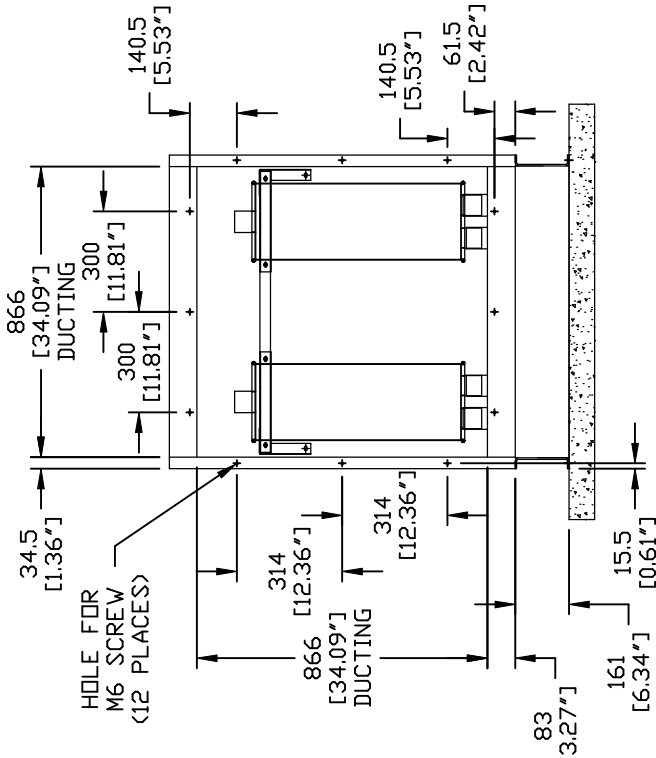
APPLICABLE TO:



GROUP G

NOTES:

- 1) MINIMUM RECOMMENDED CONCRETE PAD SIZE: 1240 (48. 8") WIDE X 2755 (108. 5") LONG.
- 2) ALLOW SUFFICIENT ROOM ON ALL SIDES OF THE GENERATOR FOR MAINTENANCE AND SERVICING. THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 & NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE AND LOCAL CODES FOR MINIMUM DISTANCES FROM OTHER STRUCTURES.
- 3) CIRCUIT BREAKER INFORMATION:  
SEE SPECIFICATION SHEET WITHIN OWNERS MANUAL.
- 4) INSIDE STUB-UP AREA FOR AC LOAD LEAD CONDUIT CONNECTION, NEUTRAL CONNECTION, AUXILIARY OUTPUT RELAYS, AND ACCESS TO TRANSFER SWITCH CONTROL WIRES. REMOVE COVER FOR ACCESS.
- 4A) FIELD CUT HOLE IS ONLY REQUIRED FOR MOUNTING OF GENERATOR ON AN EXISTING PAD.
- 5) REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
- 6) REMOVE EITHER LEFT OR RIGHT HAND SIDE PANEL TO ACCESS EXHAUST MUFFLERS.
- 7) INSIDE ACCESS TO 120VAC, 20A GFCI OUTLET PREWIRED TO SUPPLY POWER TO BATTERY CHARGER.  
6. 8L ONLY: USE 20A GFCI OUTLET FOR ENG BLOCK HEATER.  
5. 4L ONLY: 15A, 240VAC OUTLET FOR ENG BLOCK HEATER.



FRONT VIEW

| WEIGHT DATA                                                |  |
|------------------------------------------------------------|--|
| 5. 4L 45/55KW - 753KG (1661 LB)                            |  |
| 6. 8L 70KW - 850KG (1873 LB)                               |  |
| WOODEN SHIPPING SKIDS INCREASE OVERALL WEIGHT 79KG (175LB) |  |

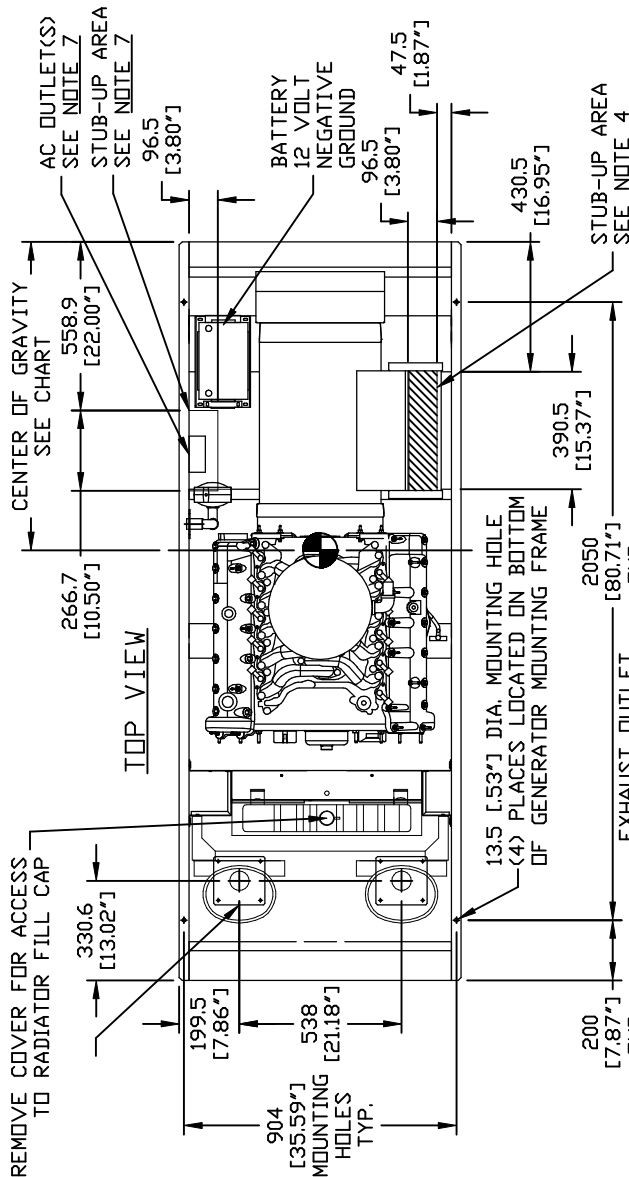
EXPLODED VIEW:  
INSTALL 5.4L/6.8L IND C3 OPEN  
DRAWING #: 0G1539

# GROUP G

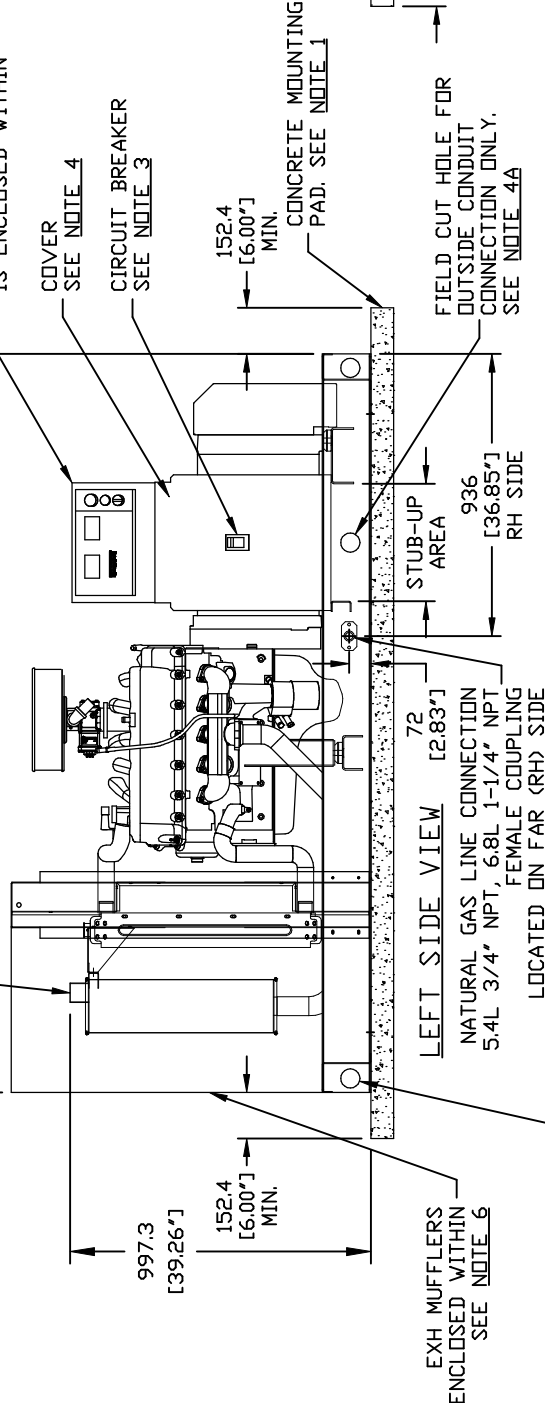
| SERVICE ITEM        | 5. 4L/6. 8L |
|---------------------|-------------|
| OIL FILL CAP        | RIGHT SIDE  |
| OIL DIP STICK       | LEFT SIDE   |
| OIL FILTER          | LEFT SIDE   |
| OIL DRAIN HOSE      | RIGHT SIDE  |
| RADIATOR DRAIN HOSE | LEFT SIDE   |
| AIR CLEANER ELEMENT | EITHER SIDE |
| SPARK PLUGS         | EITHER SIDE |
| MUFFLERS            | SEE NOTE 6  |
| FAN BELT            | EITHER SIDE |
| BATTERY             | RIGHT SIDE  |
| AC OUTLET(S)        | RIGHT SIDE  |

REFERENCE OWNERS MANUAL FOR PERIODIC  
REPLACEMENT PART LISTINGS

| CENTER OF GRAVITY | 5. 4L         | 6. 8L        |
|-------------------|---------------|--------------|
|                   | 1273 [50.12"] | 1023 [40.3"] |



CONTROL PANEL H100 TYPE, BATTERY CHARGER IS ENCLOSED WITHIN

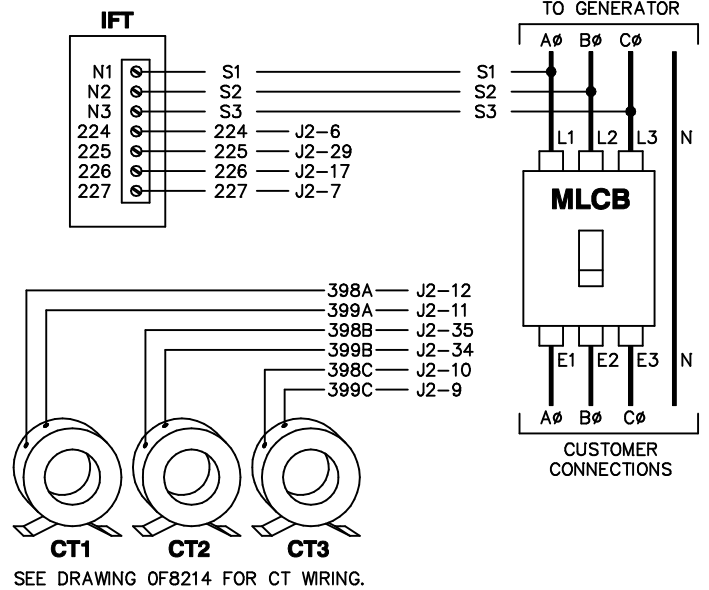
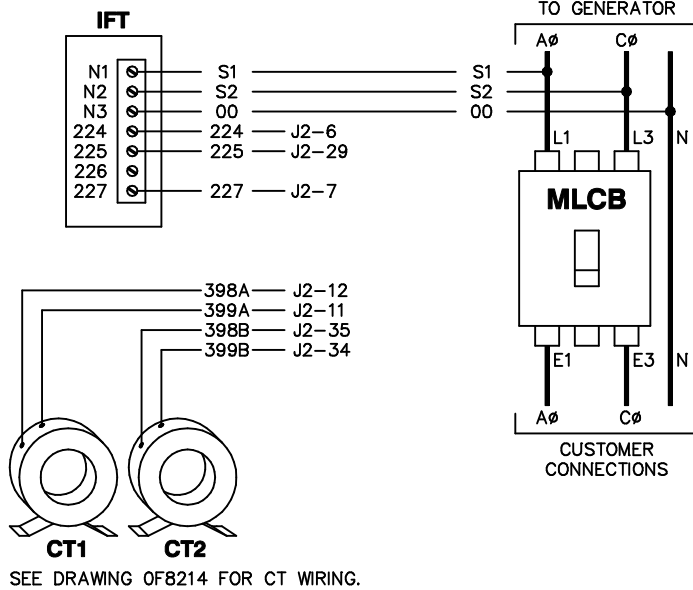


**EXPLODED VIEW:**  
INSTALL 5.4L/6.8L IND C3 OPEN  
DRAWING #: 0G1539

## COMPONENTS LOCATED IN CIRCUIT BREAKER STAND

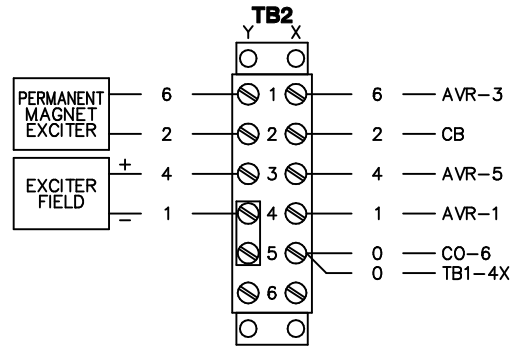
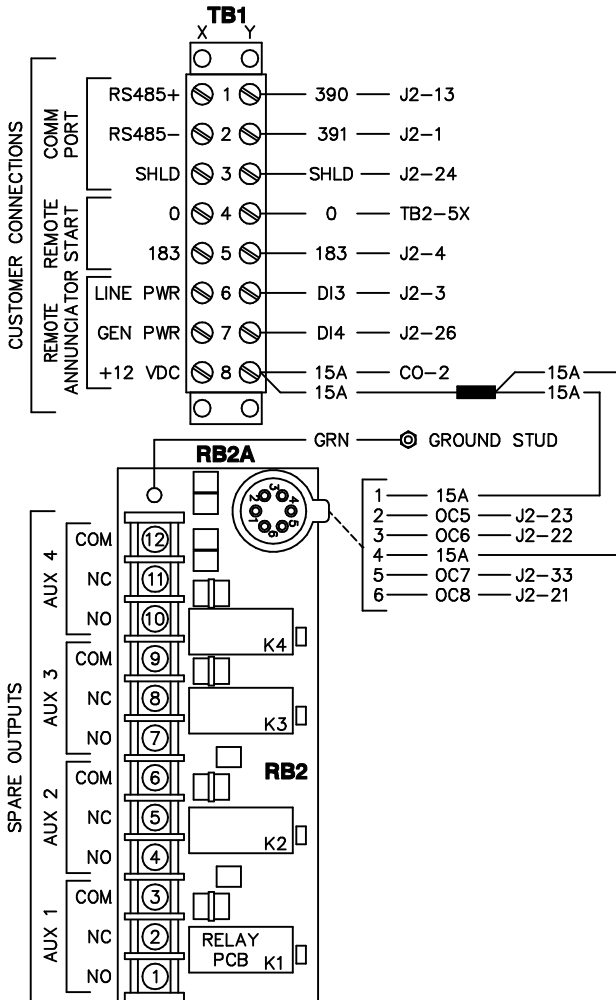
### CONNECTIONS FOR 1Ø UNIT

### CONNECTIONS FOR 3Ø UNIT

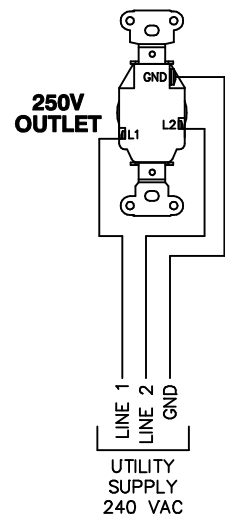
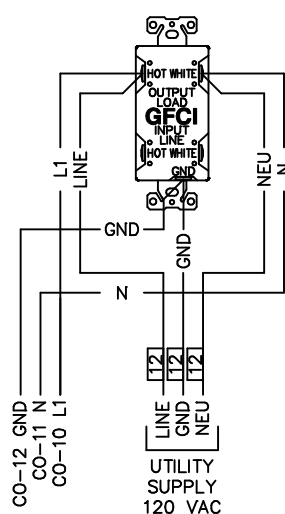


## COMPONENTS LOCATED IN CIRCUIT BREAKER STAND

## COMPONENTS LOCATED IN EXCITER SHIELD



## COMPONENTS LOCATED RIGHT SIDE OF ALT. CONN BOX ON THE FRAME RAIL

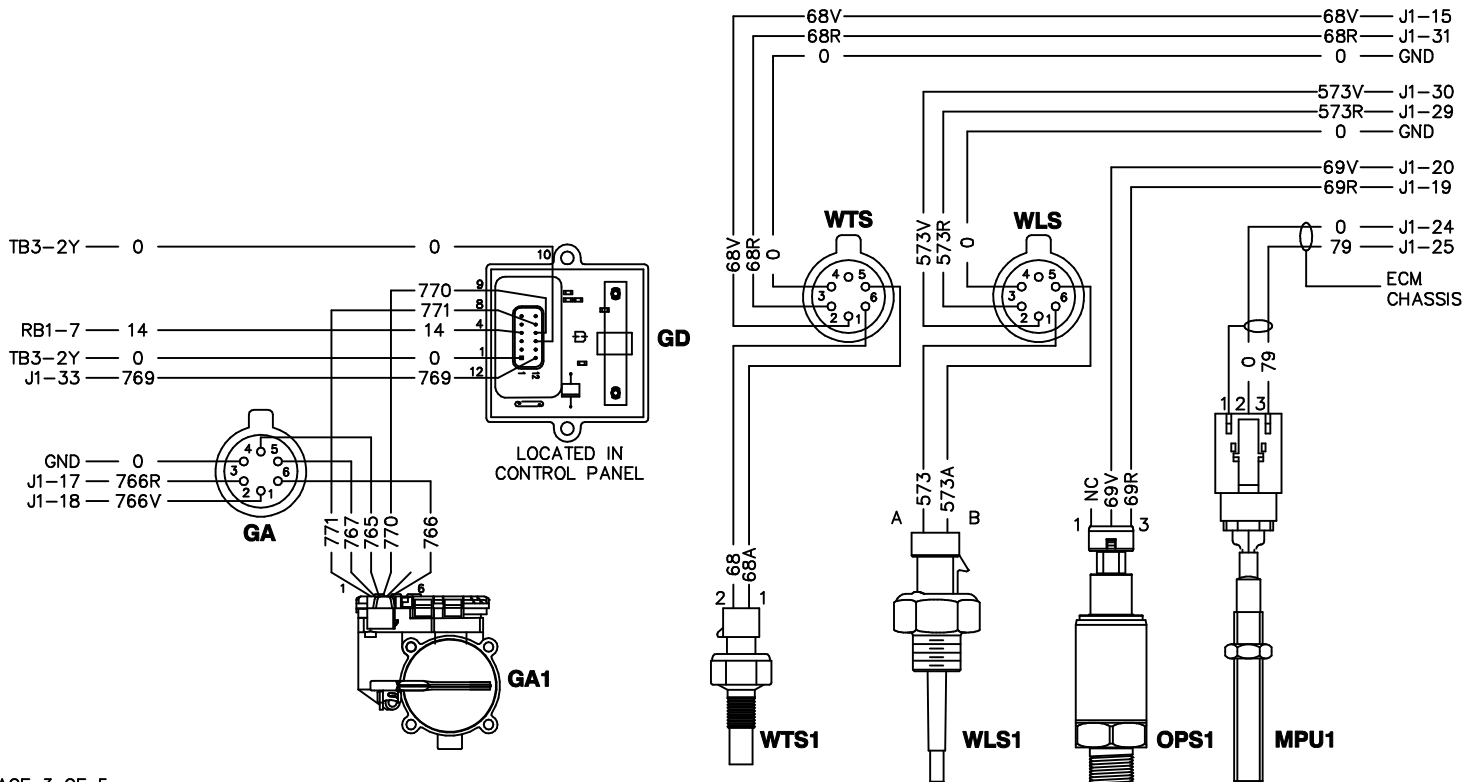
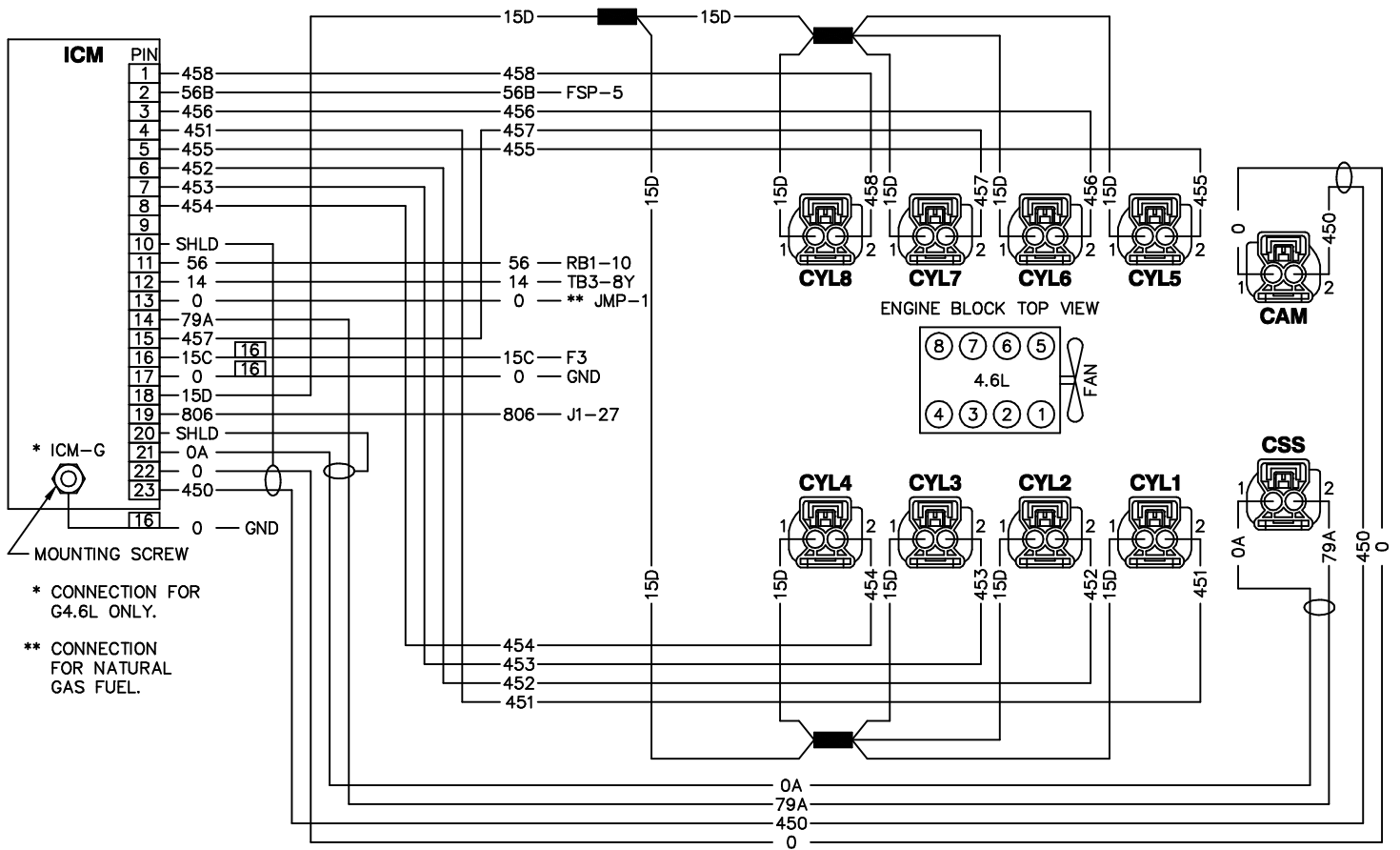




REVISION: H-6418-C  
DATE: 4/6/10



## COMPONENTS LOCATED ON ENGINE

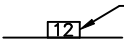




## LEGEND:

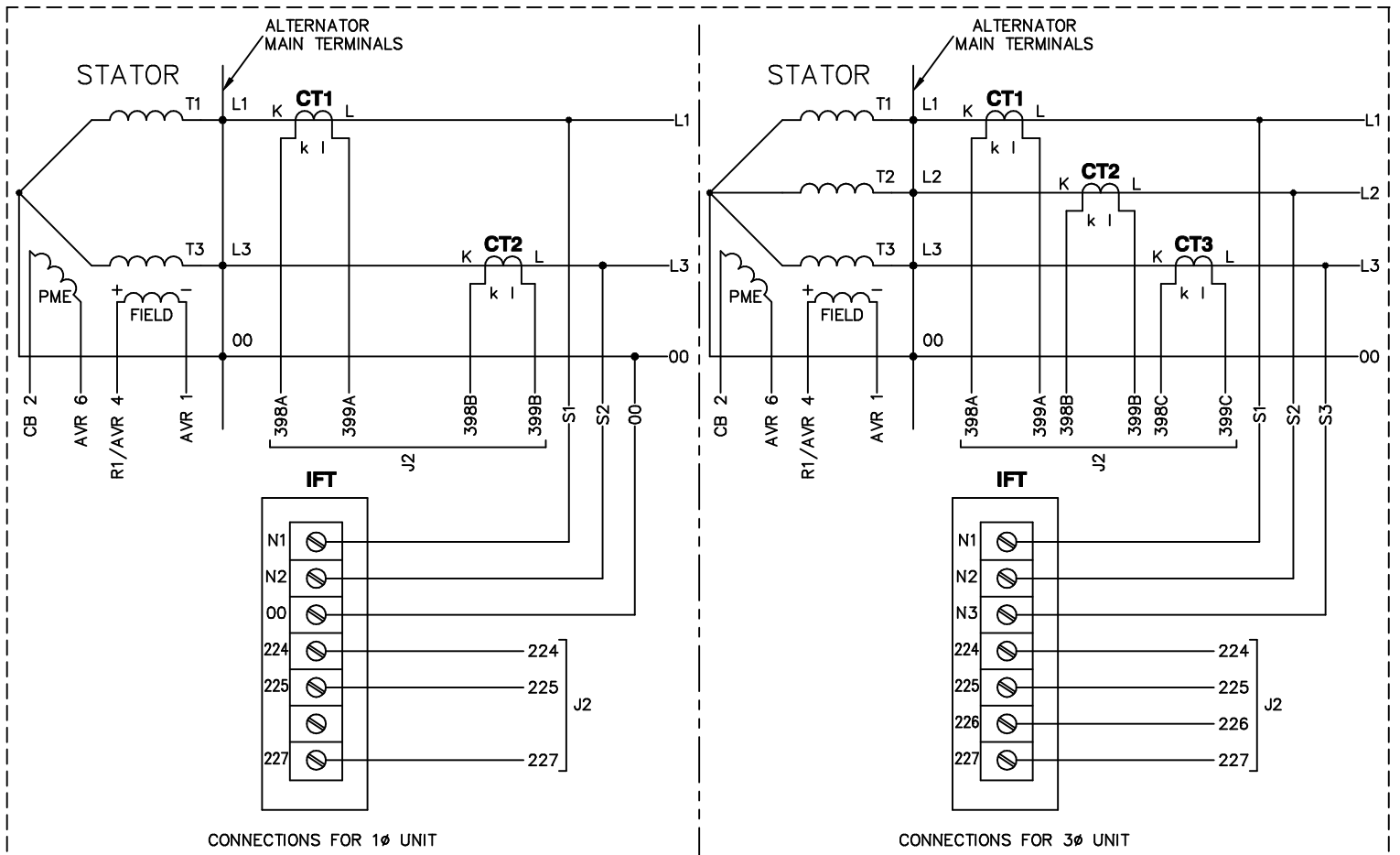
|                                   |                                         |
|-----------------------------------|-----------------------------------------|
| AFS - AIR/FUEL SOLENOID           | GFCI - GROUND FAULT CIRCUIT INTERRUPTER |
| AH1 - ALARM HORN                  | GND - GROUND BAR CONNECTION             |
| ALT - DC CHARGE ALTERNATOR        | ICM - IGNITION CONTROL MODULE           |
| AVR - AUTOMATIC VOLTAGE REGULATOR | IFT - INTERFACE TRANSFORMER             |
| BCC - BATTERY CHARGER CONNECTOR   | J_ - ENGINE CONTROL MODULE CONNECTIONS  |
| BCH - BATTERY CHARGER             | JMP - JUMPER CONNECTION FOR NATURAL GAS |
| CAM - CAMSHAFT SENSOR             | LFP - LOW FUEL PRESSURE SWITCH          |
| CB - CIRCUIT BREAKER              | MLCB - MAIN LINE CIRCUIT BREAKER        |
| CO - CROSSOVER CONNECTOR          | MOD - MODEM CONNECTOR                   |
| COM - COMMUNICATIONS PORT         | MPU1 - MAGNETIC PICK UP                 |
| CSS - CRANKSHAFT SENSOR           | OPS1 - OIL PRESSURE SENDER              |
| CT_ - CURRENT TRANSFORMER         | OS - OXYGEN SENSOR                      |
| CYL_ - CYLINDER IGNITION COIL     | R1 - RESISTOR                           |
| DB - DIODE BRIDGE                 | RB_ - RELAY BOARD                       |
| EC - EMISSIONS CONNECTOR          | RB_A - RELAY BOARD CONNECTOR            |
| ECM - ELECTRONIC CONTROL MODULE   | SC - START CONTACTOR                    |
| ES1 - EMERGENCY STOP SWITCH       | SM - STARTER MOTOR                      |
| F - FUSE                          | SW1 - AUTO/MANUAL SELECTOR SWITCH       |
| FS_ - FUEL SOLENOID               | SWC - OPERATOR SWITCH CONNECTOR         |
| FSP - FUEL SOLENOID PLUG          | TB_ - TERMINAL BLOCKS                   |
| FSR - FUEL SOLENOID RECEPTACLE    | WLS_ - COOLANT LEVEL SENDER             |
| GA_ - GOVERNOR ACTUATOR           | WTS_ - COOLANT TEMPERATURE SENDER       |
| GD - GOVERNOR DRIVER              |                                         |

NOTE: ALL WIRES 18 AWG  
300V UL LISTED UNLESS  
SHOWN OTHERWISE

 AWG SIZE

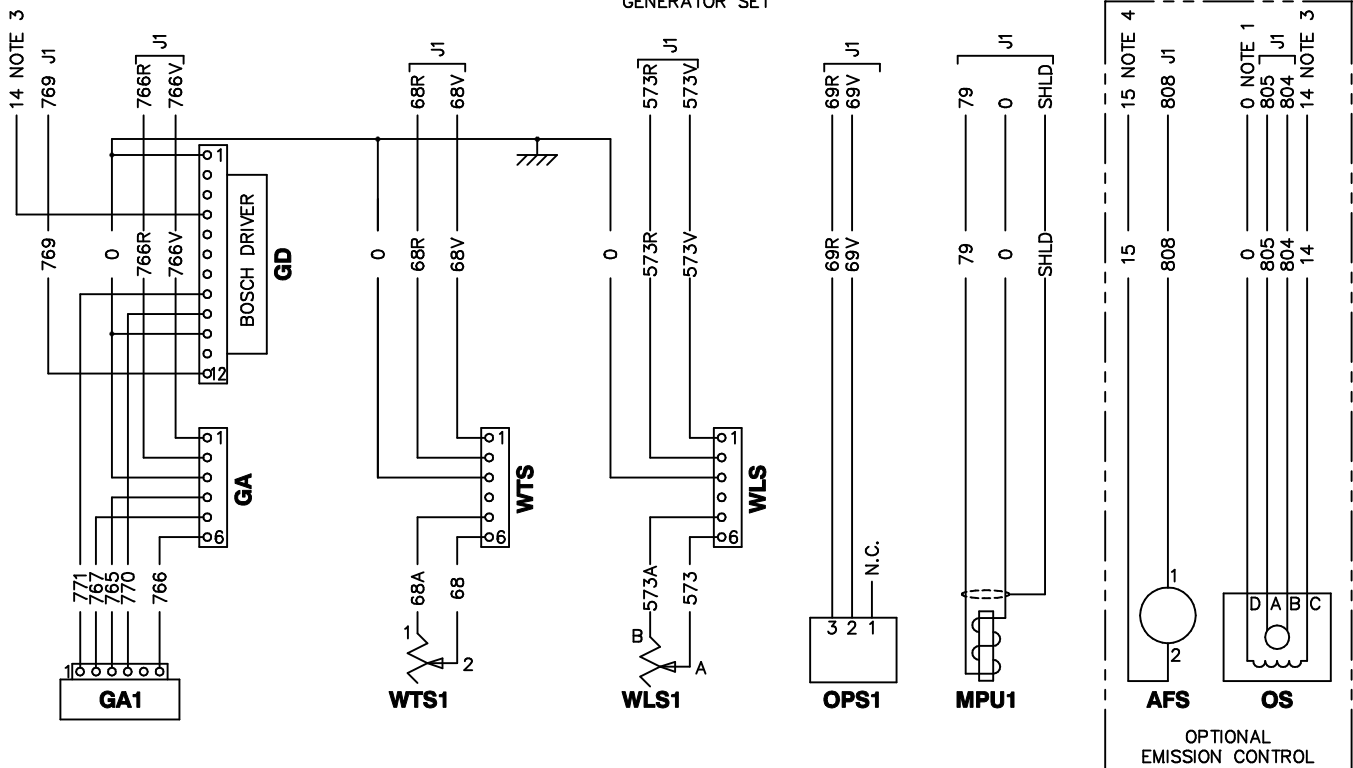
S1, S2 & S3 ARE 600V  
UL LISTED

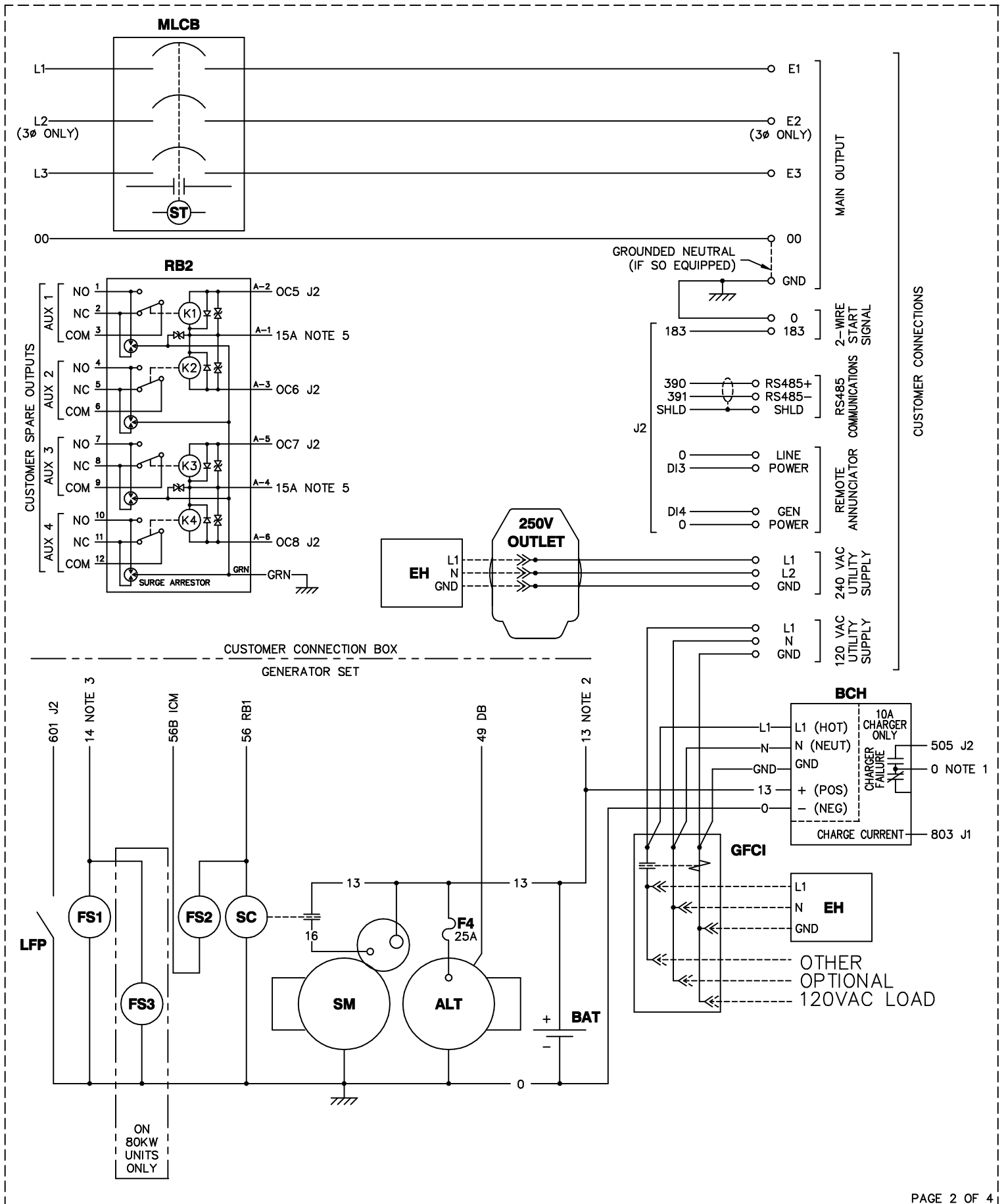
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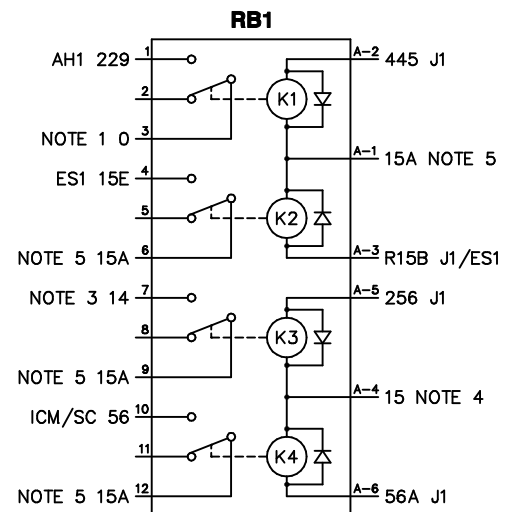
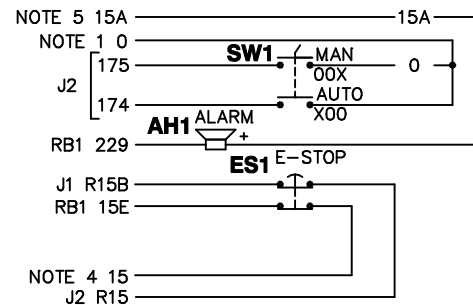
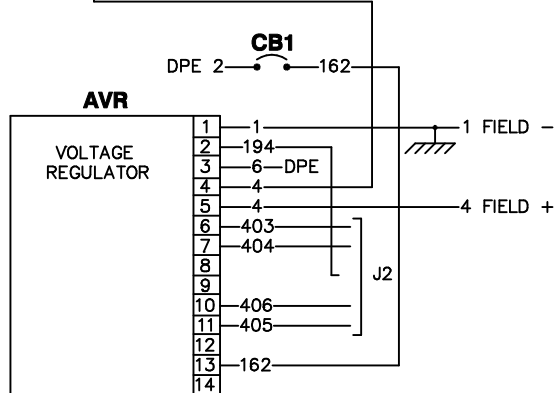
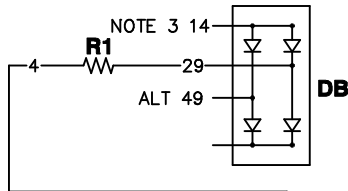
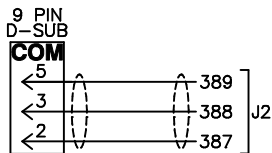
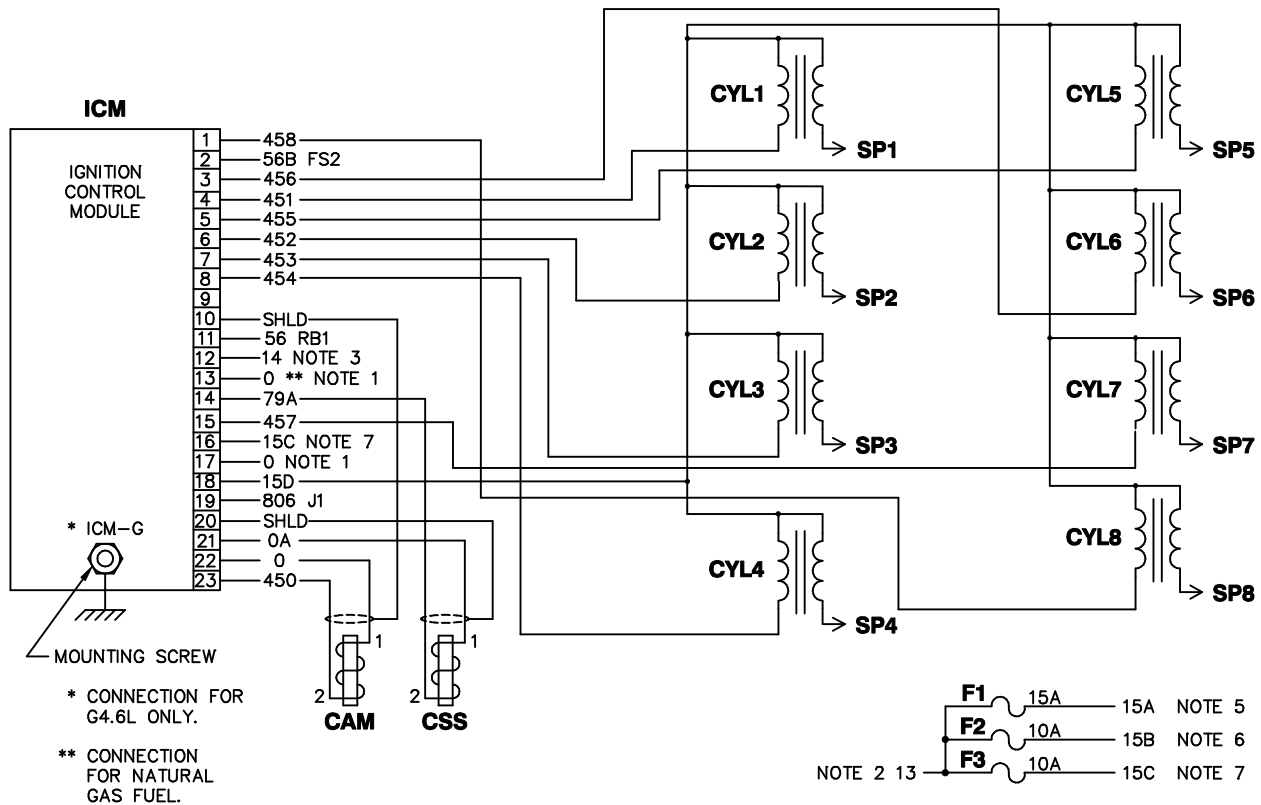


## ALTERNATOR CONNECTION BOX

### GENERATOR SET









**NOTES:**

- 1) WIRE# 0 IS CHASSIS GROUND (BATTERY-) UNLESS NOTED OTHERWISE.
- 2) WIRE# 13 IS UNFUSED +12VDC (BATTERY+).
- 3) WIRE# 14 IS FUSED +12VDC WHEN GENERATOR IS CRANKING OR RUNNING.
- 4) WIRE# 15 IS FUSED +12VDC WHEN E-STOP IS NOT ACTIVATED.
- 5) WIRE# 15A IS FUSED +12VDC FOR GENERAL USE.
- 6) WIRE# 15B IS FUSED +12VDC FOR THE ENGINE CONTROL MODULE.
- 7) WIRE# 15C IS FUSED +12VDC FOR THE IGNITION.

**GD CONNECTOR**

| PIN | WIRE | TO    | FUNCTION          |
|-----|------|-------|-------------------|
| 1   | 0    | GND   | NOTE 1            |
| 4   | 14   | RB1-7 | NOTE 3            |
| 8   | 771  | GA1-1 | THROTTLE DRIVE LO |
| 9   | 770  | GA1-4 | THROTTLE DRIVE HI |
| 10  | 0    | GND   | NOTE 1            |
| 12  | 769  | J1-33 | THROTTLE PWM      |

**AVR CONNECTOR**

| PIN | WIRE | TO    | FUNCTION              |
|-----|------|-------|-----------------------|
| 1   | 1    | FIELD | - FIELD               |
| 2   | 194  | J2-31 | +12VDC                |
| 3   | 6    | PME   | PME OUTPUT            |
| 4   | 4    | R1    | + FIELD               |
| 5   | 4    | FIELD | + FIELD               |
| 6   | 403  | J2-8  | GATE TRIGGER B        |
| 7   | 404  | J2-20 | GATE TRIGGER A        |
| 10  | 406  | J2-30 | ZERO CROSSING I/P     |
| 11  | 405  | J2-19 | GROUND (ISO)          |
| 13  | 162  | CB    | PME OUTPUT (AFTER CB) |

**ICM CONNECTOR**

| PIN | WIRE | TO        | FUNCTION                |
|-----|------|-----------|-------------------------|
| 1   | 458  | CYL8      | IGNITION COIL DRIVE 8   |
| 2   | 56B  | FS2       | FUEL SOLENOID           |
| 3   | 456  | CYL6      | IGNITION COIL DRIVE 6   |
| 4   | 451  | CYL1      | IGNITION COIL DRIVE 1   |
| 5   | 455  | CYL5      | IGNITION COIL DRIVE 5   |
| 6   | 452  | CYL2      | IGNITION COIL DRIVE 2   |
| 7   | 453  | CYL3      | IGNITION COIL DRIVE 3   |
| 8   | 454  | CYL4      | IGNITION COIL DRIVE 4   |
| 10  | SHLD | CUT       | CAMSHAFT SENSOR DRAIN   |
| 11  | 56   | RB1-10    | STARTER RELAY OUT       |
| 12  | 14   | RB1-7     | NOTE 3                  |
| 13  | 0    | GND       | NOTE 1                  |
| 14  | 79A  | CSS-2     | CRANKSHAFT SENSOR +     |
| 15  | 457  | CYL7      | IGNITION COIL DRIVE 7   |
| 16  | 15C  | F3        | NOTE 7                  |
| 17  | 0    | GND       | NOTE 1                  |
| 18  | 15D  | CYL1-CYL8 | IGNITION COIL PWR       |
| 19  | 806  | J1-27     | IGNITION ALARM          |
| 20  | SHLD | CUT       | CRANKSHAFT SENSOR DRAIN |
| 21  | 0A   | CSS-1     | CRANKSHAFT SENSOR -     |
| 22  | 0    | CAM-1     | CAMSHAFT SENSOR -       |
| 23  | 450  | CAM-2     | CAMSHAFT SENSOR +       |

**ENGINE CONTROL MODULE CONNECTIONS****J1**

| PIN | WIRE | TO         | FUNCTION                   |
|-----|------|------------|----------------------------|
| 3   | 810  | MOD-2      | EXTERNAL MODEM GROUND      |
| 4   | 805  | OS         | OXYGEN SENSOR RTN (OPTION) |
| 5   | 804  | OS         | OXYGEN SENSOR + (OPTION)   |
| 10  | R15B | RB1A-3/ES1 | OVERSPEED/WATCHDOG         |
| 11  | 256  | RB1A-5     | FUEL RELAY                 |
| 12  | 0    | GND        | NOTE 1                     |
| 14  | 811  | MOD-3      | DCD                        |
| 15  | 68V  | WTS-1      | COOLANT TEMP +             |
| 16  | 803  | BCH        | BAT CHARGER CURRENT        |
| 17  | 766R | GA-2       | THROTTLE POS RTN           |
| 18  | 766V | GA-1       | THROTTLE POS +             |
| 19  | 69R  | OPS-3      | OIL PRESS RTN              |
| 20  | 69V  | OPS-1      | OIL PRESS +                |
| 21  | 808  | AFS        | AIR/FUEL SOLENOID (OPTION) |
| 23  | 56A  | RB1A-6     | STARTER RELAY              |
| 24  | 0    | MPU1-2     | MPU1 SIGNAL (-)            |
| 25  | 79   | MPU1-3     | MPU1 SIGNAL (+)            |
| 26  | 812  | MOD-4      | ENABLE                     |
| 27  | 806  | ICM-19     | IGNITION ALARM             |
| 29  | 573R | WLS-2      | COOLANT LVL RTN            |
| 30  | 573V | WLS-1      | COOLANT LVL +              |
| 31  | 68R  | WTS-2      | COOLANT TEMP RTN           |
| 32  | 809  | MOD-1      | +12                        |
| 33  | 769  | GD-12      | THROTTLE PWM               |
| 34  | 445  | RB1A-2     | ALARM RELAY                |
| 35  | 15B  | F2         | NOTE 6                     |

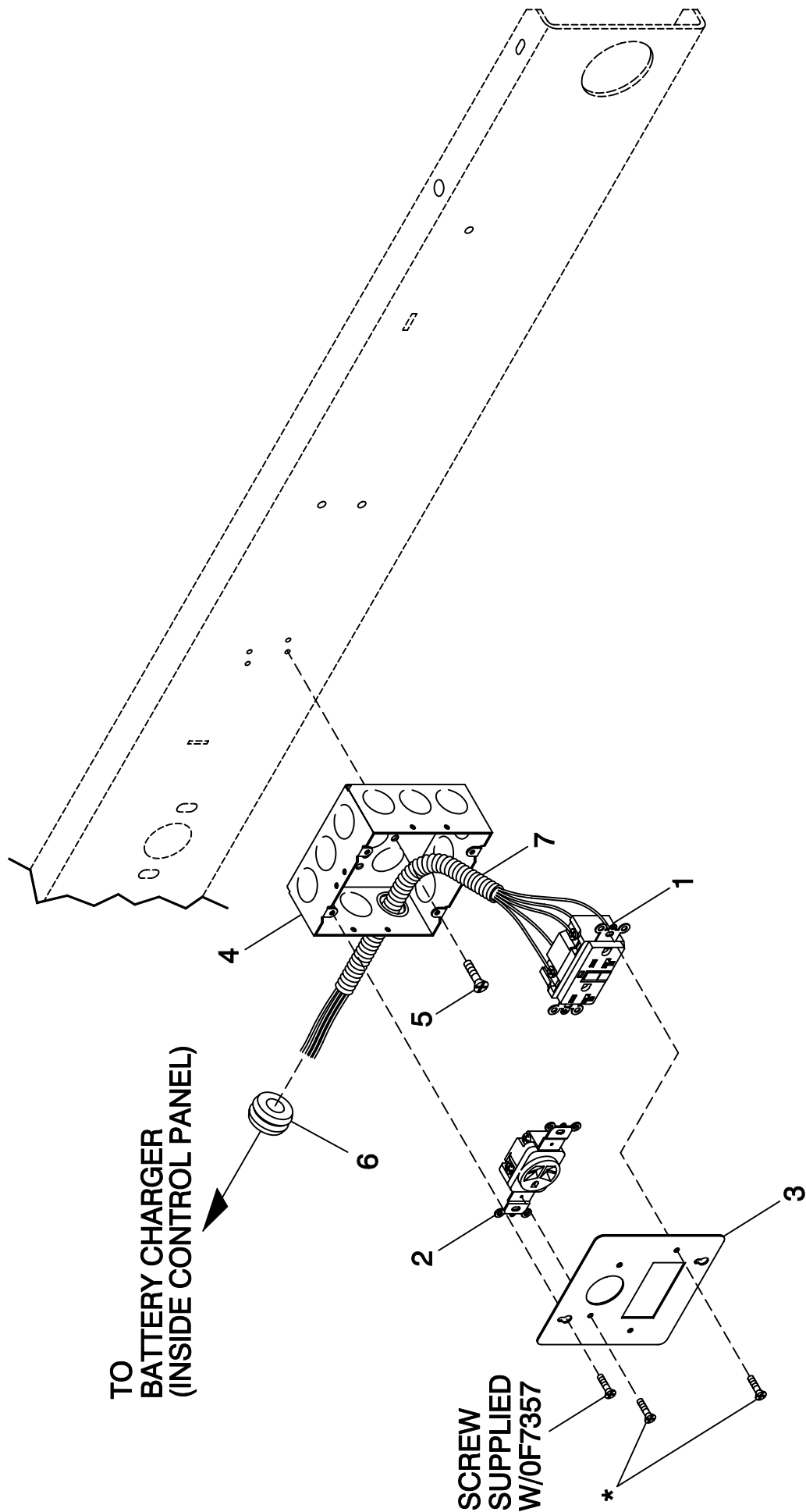
**J2**

| PIN  | WIRE | TO       | FUNCTION              |
|------|------|----------|-----------------------|
| 1    | 391  | CUST CON | RS485- (XFER SW)      |
| 2    | 388  | COM-3    | RS232 TX (GENLINK)    |
| 3    | DI3  | CUST CON | LINE POWER SIGNAL     |
| 4    | 183  | CUST CON | REMOTE START          |
| 5    | 174  | SW1      | "AUTO" START          |
| 6    | 224  | IFT      | V SENSE GEN A PH      |
| 7    | 227  | IFT      | V SENSE RTN           |
| 8    | 403  | AVR-6    | AVR GATE TRIGGER B    |
| * 9  | 399C | CT3      | GEN C PH CURRENT -    |
| * 10 | 398C | CT3      | GEN C PH CURRENT +    |
| 11   | 399A | CT1      | GEN A PH CURRENT -    |
| 12   | 398A | CT1      | GEN A PH CURRENT +    |
| 13   | 390  | CUST CON | RS485+ (XFER SW)      |
| 14   | 387  | COM-2    | RS232 RX (GENLINK)    |
| 15   | 601  | LFP      | LOW FUEL PRESSURE     |
| 16   | R15  | ES1      | EMERGENCY STOP        |
| * 17 | 226  | IFT      | V SENSE GEN C PH      |
| 19   | 405  | AVR-11   | AVR GROUND            |
| 20   | 404  | AVR-7    | AVR GATE TRIGGER A    |
| 24   | SHLD | CUST CON | RS485 DRAIN (XFER SW) |
| 25   | 389  | COM-5    | RS232 COM (GENLINK)   |
| 26   | DI4  | CUST CON | GEN POWER SIGNAL      |
| 27   | 505  | BCH      | BAT CHARGER FAIL      |
| 28   | 175  | SW1      | "MANUAL" START        |
| 29   | 225  | IFT      | V SENSE GEN B PH      |
| 30   | 406  | AVR-10   | AVR ZERO CROSSING I/P |
| 31   | 194  | AVR-2    | AVR +12VDC            |
| 34   | 399B | CT2      | GEN B PH CURRENT-     |
| 35   | 398B | CT2      | GEN B PH CURRENT+     |

\* - CONNECTIONS NOT USED IN 1Ø UNITS.

**LEGEND**

|                                   |                                |                                         |                                   |
|-----------------------------------|--------------------------------|-----------------------------------------|-----------------------------------|
| 00 - NEUTRAL                      | CSS - CRANKSHAFT SENSOR        | GD - GOVERNOR DRIVER                    | R1 - RESISTOR                     |
| AFS - AIR/FUEL SOLENOID           | CT_ - CURRENT TRANSFORMER      | GFCI - GROUND FAULT CIRCUIT INTERRUPTER | RB_ - RELAY BOARD                 |
| AH1 - ALARM HORN                  | CUST CON - CUSTOMER CONNECTION | ICM - IGNITION CONTROL MODULE           | SC - STARTER CONTACTOR            |
| ALT - DC CHARGE ALTERNATOR        | CYL_ - CYLINDER IGNITION COIL  | IFT - INTERFACE TRANSFORMER             | SHLD - SHIELD                     |
| AVR - AUTOMATIC VOLTAGE REGULATOR | DB - DIODE BRIDGE              | ISO - ISOLATED (ELECTRICALLY)           | SM - STARTER MOTOR                |
| BAT - BATTERY (12VDC)             | DPE - EXCITER                  | J_ - ENGINE CONTROL MODULE CONN.        | SP_ - SPARK PLUG                  |
| BCH - BATTERY CHARGER             | EH - ENGINE BLOCK HEATER       | LFP - LOW FUEL PRESSURE SWITCH          | ST - SHUNT TRIP                   |
| CAM - CAMSHAFT SENSOR             | ES1 - EMERGENCY STOP SWITCH    | MLCB - MAIN LINE CIRCUIT BREAKER        | SW1 - AUTO/MANUAL SELECTOR SWITCH |
| CB1 - CIRCUIT BREAKER             | F_ - FUSE                      | MPU1 - MAGNETIC PICK UP                 | WLS_ - COOLANT LEVEL SENDER       |
| COM - COMMUNICATION CONNECTOR     | FS_ - FUEL SOLENOID            | OPS1 - OIL PRESSURE SENDER              | WTS_ - COOLANT TEMPERATURE SENDER |
|                                   | GA_ - GOVERNOR ACTUATOR        | OS - OXYGEN SENSOR                      |                                   |



EXPLODED VIEW:  
120V/240V UTIL CONN IQT  
DRAWING #: 0G1067

EXPLODED VIEW: 120V/240V UTIL CONN IQT  
DRAWING #: 0G1067

GROUP H

APPLICABLE TO:

| ITEM | PART # | QTY. | DESCRIPTION                    |
|------|--------|------|--------------------------------|
| 1    | 0F6207 | 1    | OUTLET 20A GFCI                |
| 2    | 0F4776 | 1    | OUTLET 15A 250V NEMA 6-15R IVY |
| 3    | 0F7357 | 1    | BOX SQUARE 4-11/16 W/KNO'S     |
| 4    | 025393 | 2    | SCREW HHTT #10-24 X 3/8 CZ     |
| 5    | 0F7278 | 1    | COVER DUAL RECEPT 120/240      |
| 6    | 070208 | 1    | GROMMET .87 X .25 X .62        |
| 7    | 0G0896 | REF  | HARN ALT CON BOX 1PH QT        |
|      | 0G0897 | REF  | HARN ALT CON BOX 3PH QT        |

