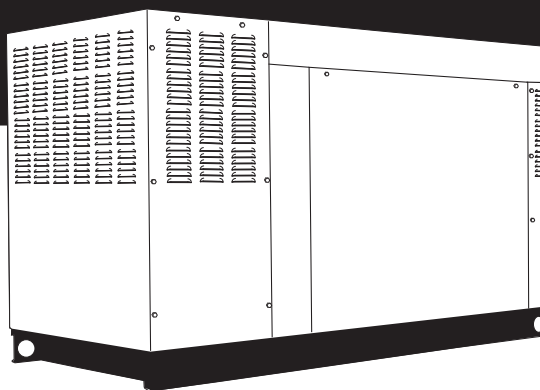


Serial Number

**2.4L
36kW
Models
EPA Certified**

STATIONARY EMERGENCY GENERATOR OWNER'S MANUAL



A new standard of reliability

⚠ Not intended for use in critical life support applications. ⚠

— ⚠ **CAUTION** ⚠ —

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

This manual should remain with the unit.

SECTION	PAGE
INTRODUCTION	1-1
Read this Manual Thoroughly.....	1-1
Operation and Maintenance.....	1-1
How to Obtain Service.....	1-1
SAFETY RULES	1-2
IDENTIFICATION RECORD	2-1
Data Label.....	2-1
EQUIPMENT DESCRIPTION	3-1
Equipment Description.....	3-1
Engine Oil Recommendations.....	3-1
Coolant Recommendations.....	3-1
ENGINE PROTECTIVE DEVICES	4-1
Engine Protective Devices.....	4-1
High Coolant Temperature Switch.....	4-1
Low Coolant Level Sensor.....	4-1
Low Oil Pressure Switch.....	4-1
Overcrank Shutdown.....	4-1
Overspeed Shutdown.....	4-1
RPM Sensor Loss Shutdown.....	4-1
DC Fuses.....	4-1
FUEL SYSTEMS	5-1
Fuel Requirements.....	5-1
Natural Gas Fuel System.....	5-1
Propane Vapor Withdrawal Fuel System.....	5-1
LP Liquid Fuel System.....	5-1
SPECIFICATIONS	6-1
Stationary Emergency Generator.....	6-1
Engine.....	6-1
Cooling System.....	6-1
Fuel System.....	6-1
Electrical System.....	6-1
Cold Weather Kit.....	6-2
Coolant Heater Kit.....	6-2
Reconfiguring the Fuel System.....	6-2
Fuel System.....	6-2
Control Panel.....	6-3
GENERAL INFORMATION	7-1
Alternator AC Lead Connections.....	7-1
Four-lead, Single-phase Stator.....	7-1
Alternator Power Winding Connections.....	7-1
3-phase Alternators.....	7-1
3-phase Alternators ("Delta" Configuration).....	7-2
INSTALLATION	8-1
Installation.....	8-1
Preparation Before Start-up.....	8-1
Transfer Switch.....	8-1
Fuel System.....	8-1
Generator Set Lubrication.....	8-1
Prior to Initial Start-up.....	8-1
Engine Coolant.....	8-1
Belt Tension.....	8-1
Electrical System.....	8-1
Initial Inspection for Genset Start-up.....	8-1
Start-up Checklist.....	8-2
Preparation for Start-up.....	8-2
OPERATION	9-1
Stationary Emergency Generator Control and Operation.....	9-1
Operating Unit with Manual Transfer Switch.....	9-1
Engine Start-up and Transfer.....	9-1
Retransfer and Shutdown.....	9-1
Operating Unit with Automatic Transfer Switch.....	9-1
MAINTENANCE	10-1
Maintenance Performed by Service Facilities.....	10-1
Every Three Months.....	10-1
Once Every Six Months.....	10-1
Once Annually.....	10-1
First 30 Operating Hours.....	10-1
First 100 Operating Hours.....	10-1
Every 500 Operating Hours.....	10-1
Cooling System.....	10-1
Overload Protection for Engine DC Electrical System.....	10-1
Checking Fluid Levels.....	10-1
Check Engine Oil.....	10-1
Battery Fluid.....	10-2
Engine Coolant.....	10-2
Maintenance Owner/Operator Can Perform.....	10-2
Check Engine Oil Level.....	10-2
Check Battery.....	10-2
Exercise System.....	10-2
Inspect Cooling System.....	10-2
Check Engine Coolant Level.....	10-2
Perform Visual Inspection.....	10-2
Inspect Exhaust System.....	10-2
Check Fan Belt.....	10-2
Inspect Engine Governor.....	10-3
Changing Engine Oil.....	10-3
Changing the Engine Air Filter.....	10-3
Spark Plugs.....	10-3
Coolant Change.....	10-4
Miscellaneous Maintenance.....	10-4
Cleaning the Stationary Emergency Generator.....	10-4
Battery.....	10-4
Battery Maintenance.....	10-4
Battery Replacement.....	10-5
SERVICE SCHEDULE	11-1
TROUBLESHOOTING	12-1
Troubleshooting Guide.....	12-1
EMISSIONS WARRANTY	13-1
NOTES	
EXPLODED VIEWS & PARTS LISTS	
WIRING DIAGRAMS & SCHEMATICS	

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

[illegible]

Every generator set includes DATA LABEL that contains important information pertinent to the generator. The data label is attached to the lower connection box on the generator and lists the unit serial number, rated voltage, amps, wattage capacity, phase, frequency, rpm, power factor, and production date.

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.

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.

GENERATOR UNIT			
GEN MODEL:			
MODEL:			
SERIAL:			
ALTERNATE			
PROD DATE:			
COUNTRY OF ORIGIN:			
GENERATOR DATA			
KW	KVA	HZ	PF
UPSIZE	ALT	KW	KVA
VOLT		/	AMP
ENG RPM		ALT RPM	
BREAKER	KW	AMP	
X"D	X"D		
3 PHASE DELTA			
UNBALANCED LOAD CAPACITY-25%			
ROTOR	STATOR	CLASS	
WINDINGS @	AMBIENT	TEMP	
MANUF. LOC.			

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!

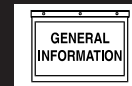
- ⚠ Do not use any chromate base rust inhibitor with ethylene glycol base anti-freeze or chromium hydroxide ("green slime") forms and will cause overheating. Engines that have been operated with a chromate base rust inhibitor must be chemically cleaned before adding ethylene glycol base anti-freeze. 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.



Stationary Emergency Generator Engine Protective Devices



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.

◆ HIGH COOLANT TEMPERATURE SWITCH

The switch will close if the temperature should exceed approximately 140° C (284° F), initiating an engine shutdown. The generator will automatically restart and the LED will reset once the temperature has returned to a safe operating level.

◆ LOW COOLANT LEVEL SENSOR

To prevent overheating, the engine has a low coolant level sensor. If the level of engine coolant drops below the level of the low coolant level sensor, the engine automatically shuts down.

◆ LOW OIL PRESSURE SWITCH

This switch has normally closed contacts that are held open by engine oil pressure during cranking and operating. Should oil pressure drop below the 8 psi range, switch contacts close, and the engine shuts down. The unit should not be restarted until oil is added, and the AUTO/OFF/MANUAL switch must be turned to OFF and then back to AUTO.

◆ OVERCRANK SHUTDOWN

After a prespecified duration of cranking, this function ends the cranking if the engine has failed to start. The overcrank LED will turn ON. Turn OFF the AUTO/OFF/MANUAL switch, then turn switch back to AUTO to reset the generator control board.

NOTE:

If the fault is not corrected, the overcrank feature will continue to activate.

Approximate Crank Cycle Times

- 15 seconds ON
 - 7 seconds OFF
 - 7 seconds ON
 - 7 seconds OFF
 - Repeat for 45 seconds
- Approximately 90 seconds total.

◆ 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 overspeed 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 FUSES

Fuse F1 (15 amp) 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.

Fuse F2 (25 amp) is located in the engine wire harness adjacent to the DC alternator. It is used to prevent circuit failure due to DC alternator failure. If this fuse is blown, battery charging will not occur while the engine is running. Replace these fuses with 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 (LPV) 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 100% load fuel consumption requirements identified in the Specifications section regardless of actual load.

NOTE:

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

NOTE:

It is the responsibility of the installer to make sure that only the correct recommended fuel is supplied to the generator fuel system. Thereafter, the owner/operator must make certain that only the proper fuel is supplied.

NATURAL GAS FUEL SYSTEM

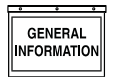
Natural gas is supplied in its vapor state. In most cases, the gas distribution company provides piping from the main gas distribution line to the standby generator site. The following information applies to natural gas fuel systems.

- 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 must never exceed approximately 14 inches water column (0.5 psi).

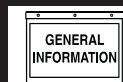
PROPANE VAPOR WITHDRAWAL FUEL SYSTEM

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:

- 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.



Stationary Emergency Generator Specifications



SPECIFICATIONS

◆ STATIONARY EMERGENCY GENERATOR

Type.....Synchronous
Rotor Insulation.....Class F
Stator Insulation.....Class H
Total Harmonic Distortion.....<5%
Telephone Interference Factor (TIF) < 50
Alternator Output Leads 3-phase 4-wire
Bearings Sealed Ball
Coupling Flexible Disc
Load Capacity (Standby Rating) 36kW*

* 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	Direct
Generator Output Voltage/kW - 60 Hz	<u>kW</u> <u>Amp</u> <u>CB Size</u>
120/240V, 1-phase, 1.0 pf	36 150 175
120/208V, 3-phase, 0.8 pf	36 125 150
120/240V, 3-phase, 0.8 pf	36 108 125
277/480V, 3-phase, 0.8 pf	36 54 60
Generator Locked Rotor KVA Available @ Voltage Dip of 35%	
Single-phase or 208, 3-phase (36kW)	59 KVA
480V, 3-phase (36kW)	68 KVA

◆ ENGINE

Make Generac
ModelIn Line
Cylinders and Arrangement.....4
Displacement.....2.4 Liter
Bore.....3.41 in.
Stroke.....3.94 in.
Compression Ratio.....9.5-to-1
Air Intake System..... Turbocharged/Aftercooled
Valve Seats Hardened
Lifter Type..... Hydraulic

Engine Parameters

Rated Synchronous RPM60 Hz, 1800
Gross HP at rated kW (36kW)62

Exhaust System

Exhaust Flow at Rated Output 60 Hz (36kW)300 cfm
Exhaust Temp. at Rated Output (36kW)1075° F

Combustion Air Requirements (Natural Gas)

Flow at rated power, 60 Hz (36kW)106 cfm

Governor

Type.....Electronic
Frequency Regulation.....Isochronous
Steady State Regulation ± 0.25%

Engine Lubrication System

Type of Oil PumpGear
Oil Filter Full Flow Spin-on, Cartridge
Crankcase Oil Capacity5.25 U.S. qts.
(including filter capacity)

◆ COOLING SYSTEM

Type..... Pressurized Closed Recovery
Water Pump Belt Driven
Fan Speed.....1500 rpm
Fan Diameter.....22 inches
Fan Mode..... Puller
Air Flow (inlet air including alternator and combustion air) 2200 ft³/min.
Coolant Capacity (2.5 U.S. gal.)
Heat Rejection to Coolant (36kW)145,000 Btu/h
Maximum Operating Air Temp. on Radiator..... 60° C (150° F)
Maximum Ambient Temperature 50° C (140° F)

◆ FUEL SYSTEM

Type of FuelNatural 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 - ft³/hr (Natural Gas/LPV)

	Exercise Cycle	25% Load	50% Load	75% Load	100% Load
36kW	48/19	156/62	282/112	392/156	503/200

◆ ELECTRICAL SYSTEM

Battery Charge Alternator 12V, 30 Amp
Static Battery Charger2.5 Amp
Recommended Battery.....Group 26, 525CCA
System Voltage 12 Volts

Voltage Regulator

Type.....Electronic
Sensing Single-phase
Regulation..... ± 1%
Features..... V/F Adjustable, Adjustable
Voltage and Gain LED Indicators

Power Adjustment for Ambient Conditions

Temperature Deration
3% for every 10° C above °C (36kW)25
1.65% for every 10° above °F (36kW)77
Altitude Deration
1% for every 100 m above m (36kW)915
3% for every 1000 ft. above ft. (36kW)3000

Controller R-200C

◆ COLD WEATHER KIT

For cold climates, optional cold weather kit (part number 0F6148) is recommended. The kit includes:

- Battery Warmer
- 4" Junction Box with hardware
- 6 qt. pack 5W-30 synthetic oil (engine)

◆ COOLANT HEATER KIT

The optional Coolant Heater Kit (part number 0H5154) is available to be used in conjunction with the Optional Cold Weather Kit. This kit includes:

- 1500 watt, 120 volt Engine Block Heater
- Heater Mounting Bracket
- All fittings, hoses and hardware to mount and plumb heater

RECONFIGURING THE FUEL SYSTEM

NOTE:

All models are configured to run on natural gas from the factory.

Before the generator can be operated using a LP fuel source, the fuel system and control panel (refer to the installation drawing for location) must be reconfigured. The steps to reconfigure the generator from a natural gas (NG) to a liquidified petroleum (LP) fuel source are as follows:

◆ FUEL SYSTEM

1. Turn the main gas supply off and disconnect the battery.
2. Remove the fuel hose from the outlet port of the demand regulator (see Figure 6.1).
3. Disconnect the power wires from the fuel solenoid located on top of the regulator assembly.
4. Loosen the spring clamp on the small fuel enrichment hose and remove it from the brass hose fitting.
5. Remove the black pipe assembly from the outlet port of the demand regulator (Figure 6.1).
6. Remove the NG fuel jet (loosen counter clockwise) from the outlet port.
7. Remove the LP fuel jet (loosen counter clockwise) from the jet keeper port on the side of the regulator housing. Install this jet into the outlet port in the regulator casting.

NOTE:

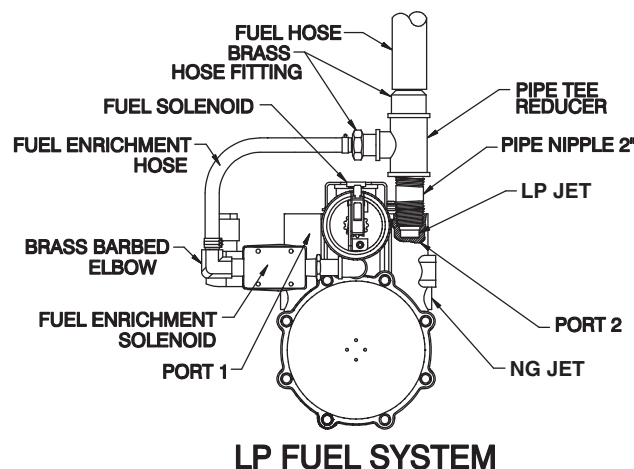
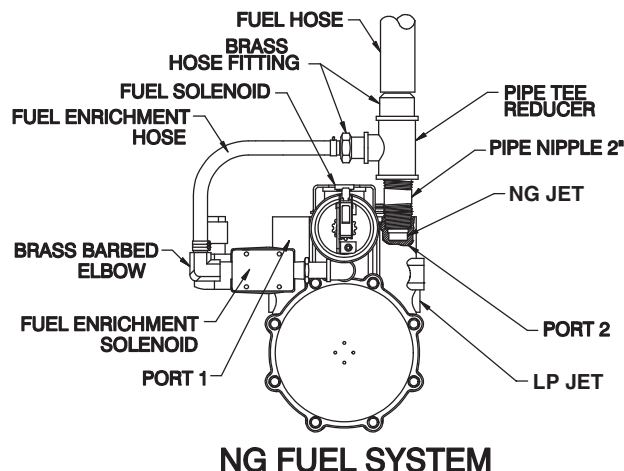
The jet sizes are stamped on the individual jets. The larger jet size is used for running on NG.

8. Install the previously removed NG jet into the jet keeper port on the side of the regulator housing.
9. Install the previously removed black pipe onto the outlet port of the demand regulator. Use pipe sealant on the pipe threads.
10. Reverse steps 1-4 in this procedure to reactivate the demand regulator.
11. Follow the instructions in the Control Panel section.

⚠ DANGER ⚠

⚠ **Serious injury or damage may occur if not configured properly. Please consult an Authorized Dealer with any questions.**

Figure 6.1 — Reconfigure the Fuel System



◆ CONTROL PANEL

A fuel select dipswitch is located in the control panel on the circuit board. Engine timing for Natural Gas (NG) Fuel is selected when dipswitch position 4 is set to "ON". Engine timing for LP Fuel is selected when this switch is set to "OFF". See the R-200C Control Panel manual for details.

⚠ CAUTION ⚠

⚠ **Whenever the Generator's Fuel Regulator is converted from one Fuel type to the other, make sure to configure the Fuel Select Dipswitch for the correct Fuel type.**

ALTERNATOR AC LEAD CONNECTIONS

See "Voltage Codes". This Stationary Emergency Generator may be rated at any one of three voltages, either single-phase or three-phase. 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. If there are any questions regarding lead connection, refer to the wiring diagrams at the back of this manual.

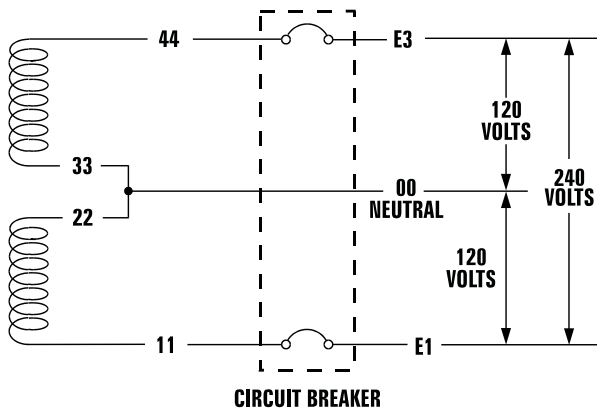
Voltage codes apply to the type of stator assembly installed on a particular generator.

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

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, 7.3 and 7.4.

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)

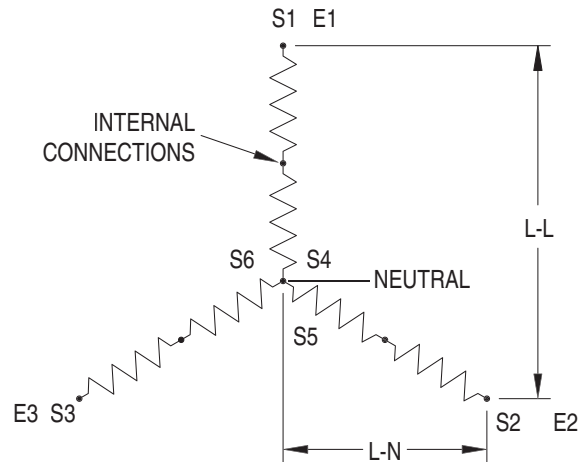


Figure 7.3 — Stator Power Winding Connections - 3-phase, 120/208V (6 Lead)

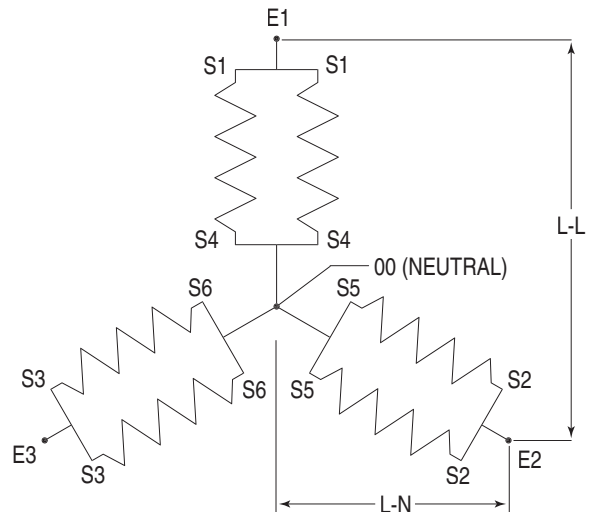
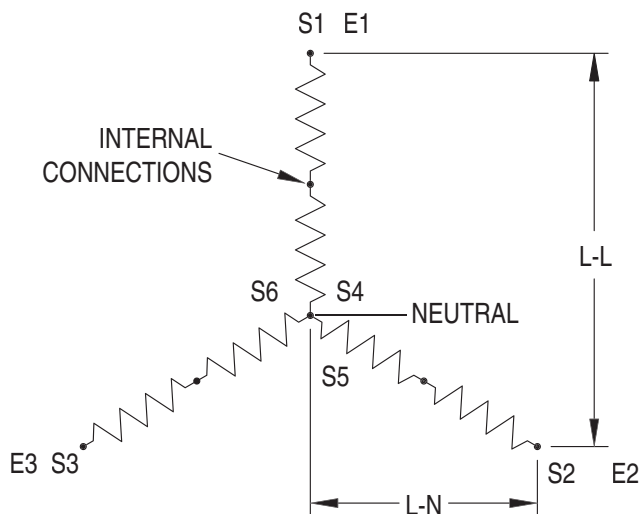


Figure 7.4 — Stator Power Winding Connections - 3-phase, 346/600V (6 Lead)



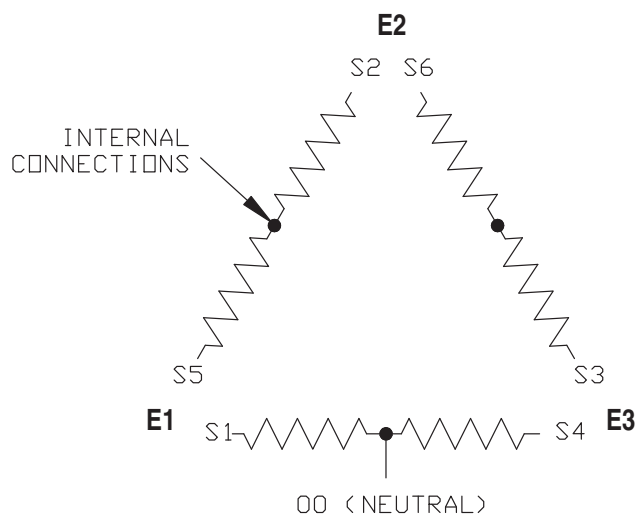
3-PHASE ALTERNATORS ("DELTA" CONFIGURATION)

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 7.5.

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



ALTERNATOR AC LEAD CONNECTIONS

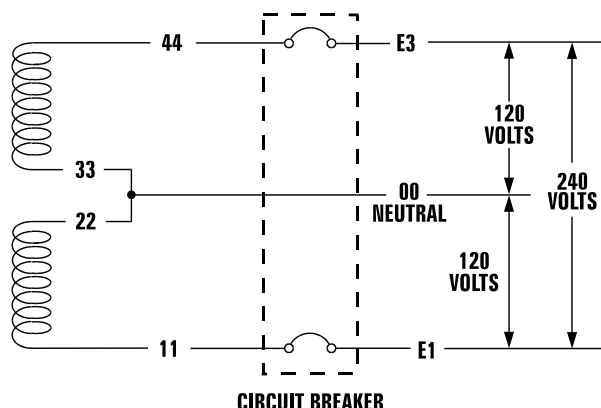
The electrical wires in the unit's AC connection (lower) panel should be installed according to the number of leads and the voltage/phase required for the application. The voltage and phase are described on the generator data label. The number of lead wires can be identified using the Specifications 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)

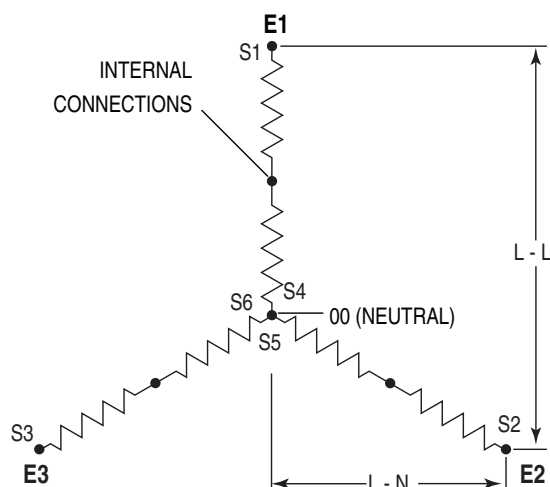


Figure 7.3 — Stator Power Winding Connections - 3-phase, 277/480V (12 Lead)

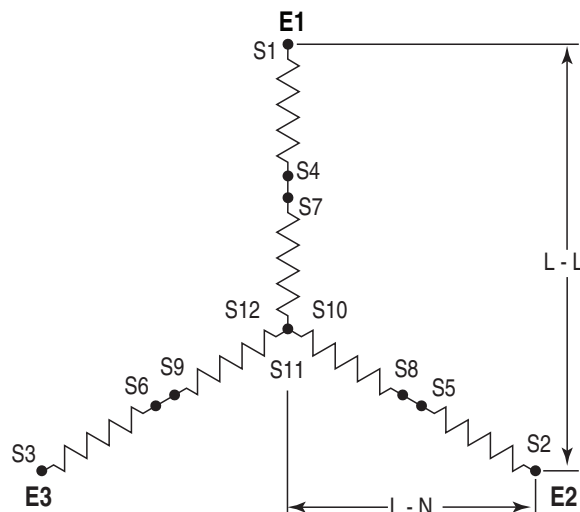


Figure 7.4 — Stator Power Winding Connections - 3-phase, 120/208V (6 Lead)

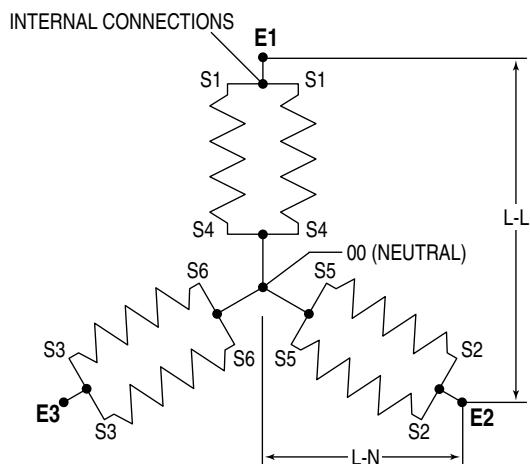


Figure 7.5 — Stator Power Winding Connections - 3-phase, 120/208V (12 Lead)

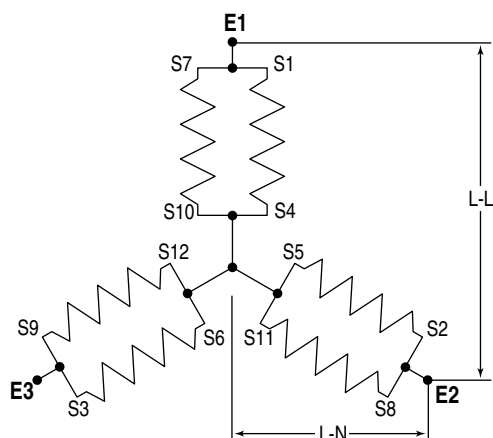
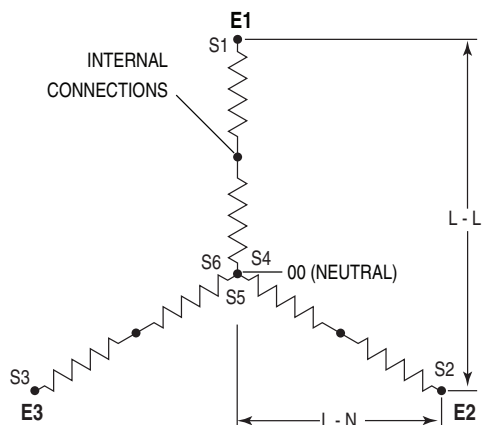


Figure 7.6 — Stator Power Winding Connections - 3-phase, 346/600V (6 Lead)



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 E2 and the neutral point 00 is 208V. The rated voltage E1-00 and E3-00 is approximately 120V.

NOTE: The voltage measured from E2 to 00 can greatly vary when single phase load is placed on alternator.

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

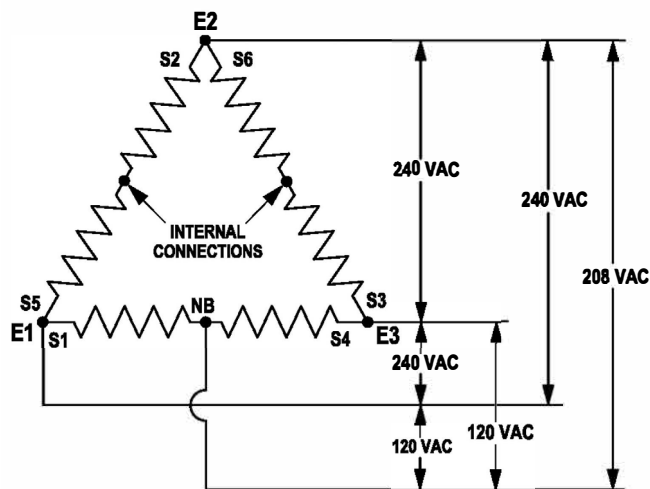
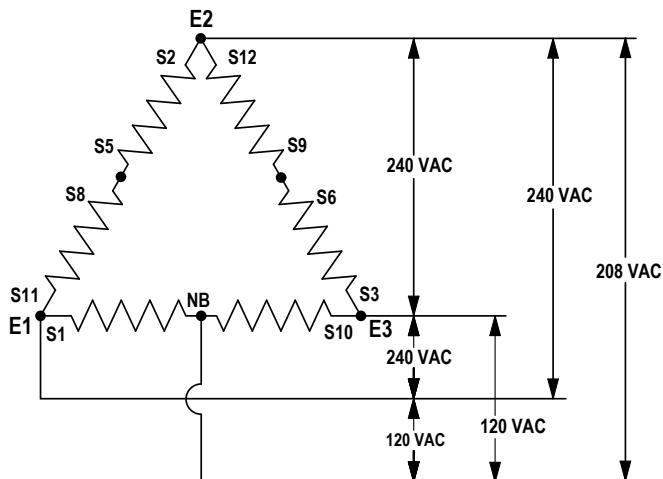


Figure 7.8 — Stator Power Winding Connections - 3-phase, 120/240V (12 Lead)





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



⚠ 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:

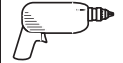
Battery charger must be connected to 120 VAC, 15 amp circuit to operate.

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 SERVICE FACILITIES

⚠ 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 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 filter.

FIRST 100 OPERATING HOURS

1. Change engine oil and oil filter. After initial change, service engine oil and filter at 100 operating hours or six months, whichever comes first.
2. Retorque intake and exhaust manifold.

EVERY 500 OPERATING HOURS

1. Service air filter.
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. (See the installation diagram.)

⚠ WARNING!



The exhaust system parts from this product get extremely hot and remains 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.

OVERLOAD PROTECTION FOR ENGINE DC ELECTRICAL SYSTEM

Engine cranking, start up and running are controlled by a solid state Engine Controller circuit board. Battery voltage is delivered to that circuit board via a 15 amp fuse. These overcurrent protection devices will open if the circuit is overloaded.

⚠ CAUTION!



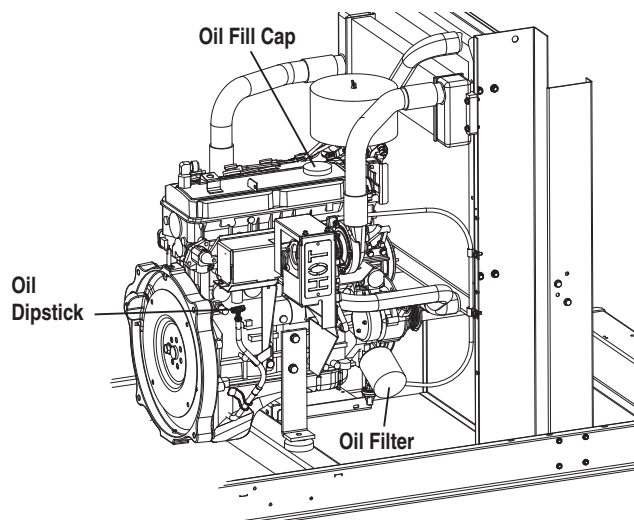
If a circuit breaker opens or a fuse element melts, find the cause of the overload before resetting the circuit breaker or replacing the fuse.

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.

Figure 10.1 - Oil Dipstick and Oil Fill Cap



Maintenance

- 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.

BATTERY FLUID

Check battery electrolyte fluid based on the Maintenance Schedule. 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 (only when engine has cooled down) 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 a Service Facility. 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 "Checking Fluid Levels".

CHECK BATTERY

- See "Checking 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. See "Maintenance Schedule".
- 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.

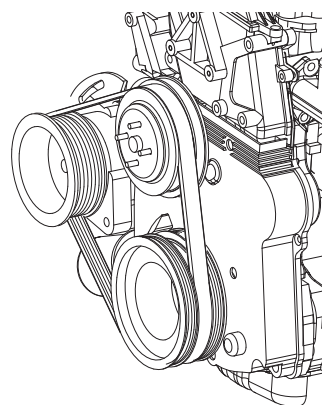
INSPECT EXHAUST SYSTEM

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 of an inch. Adjust belt tension as required.
- Check fan belt alignment (see Figure 10.2).

Figure 10.2 – Fan Belt



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!

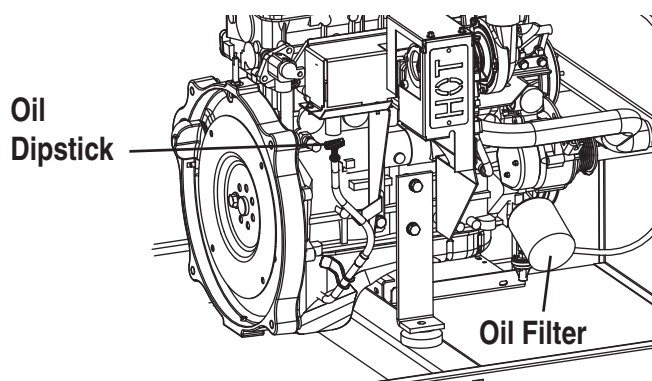
Hot oil may cause burns. Allow engine to cool before draining oil. Avoid prolonged or repeated skin exposure with used oil. Thoroughly wash exposed areas with soap.

Refer to maintenance performed by 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 the 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 secure drain hose with a new zip-tie.
4. Turn OIL FILTER (Figure 10.3) counterclockwise and remove. Properly dispose of old filter.

Figure 10.3 – Oil Filter



5. Apply light coating of new engine oil to seal of new oil filter. Install FILTER and tighten by hand only. DO NOT OVER TIGHTEN.
6. Remove OIL FILL CAP and add recommended oil. Crankcase oil capacity is listed in the "Specifications" section.

⚠ 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.

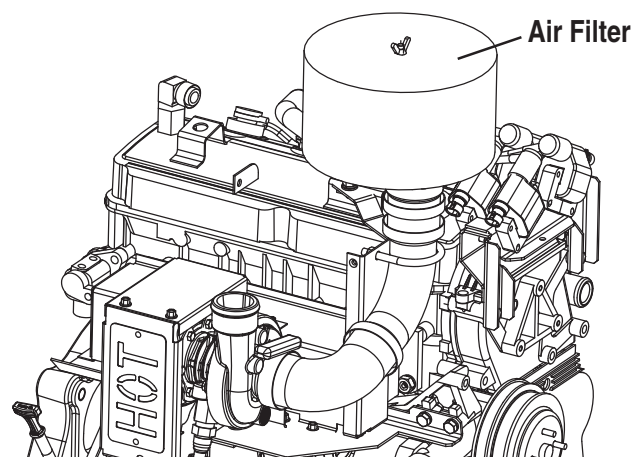
9. Dispose of used oil at a proper collection center.

CHANGING THE ENGINE AIR FILTER

To replace the engine air filter, remove the air filter cover and replace the air filter making sure it is positioned properly before reattaching the cover (Figure 10.4).

See the "Service Schedule," for air filter maintenance.

Figure 10.4 – Engine Air Filter

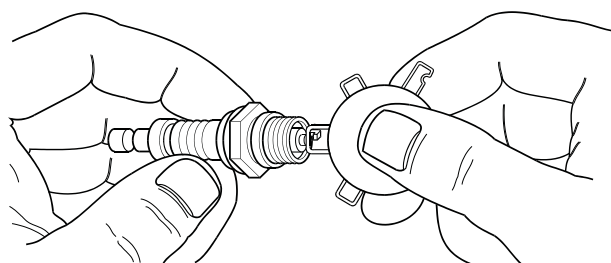


SPARK PLUGS

Reset the spark plug gap or replace the spark plugs as necessary (Figure 10.5).

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 0.71 mm (0.028 inch) by carefully bending the ground electrode (Figure 10.5).

Figure 10.5 – Setting the Spark Plug Gap



COOLANT CHANGE

Every year, have a service facility drain, flush and refill the cooling system. See "Specifications" 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 a 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.
- 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 "Scheduled Maintenance" 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 corrosive 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 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

NOTE:

Unit DOES NOT include battery.

When supplying or replacing the battery, the recommended number and type of battery is listed in the Specifications Section.

NOTE:

The BCI number should be located directly on the battery.



Stationary Emergency Generator Service Schedule



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.



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.



** 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.

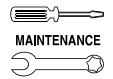
Performed annually or following each 100 hours of operation of the unit.

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.

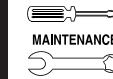
- 5 A comprehensive inspection of the generator set to insure it is properly serviced and ready to operate and carry the load when required, and to identify any potential problem areas.

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

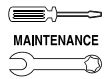
This inspection contains some maintenance tasks which require special tools, equipment, and/or knowledge to accomplish and should be performed only by a Service Dealer.



Stationary Emergency Generator Service Schedule



Maintenance Tasks	Level 1		Level 2		Level 3		Level 4		Level 5	
	Recom- mended 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.										

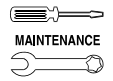


Stationary Emergency Generator Service Schedule

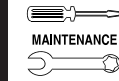



















Maintenance Tasks	Level 1		Level 2		Level 3		Level 4		Level 5	
	Recom- mended to be done monthly/ 10 hrs.	Task Comp. (Date- Initials)	Required to be done 3 months/ Break-in 30 hrs.	Task Comp. (Date- Initials)	Required to be done Semi- annually/ 50 hrs.	Task Comp. (Date- Initials)	Required to be done 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.



Stationary Emergency Generator Service Schedule



Maintenance Tasks	Level 1 Recom- mended to be done monthly/ 10 hrs.	Task Comp. (Date- Initials)	Level 2 Required to be done 3 months/ Break-in 30 hrs.	Task Comp. (Date- Initials)	Level 3 Required to be done Semi- annually/ 50 hrs.	Task Comp. (Date- Initials)	Level 4 Required to be done Annually/ 100 hrs.	Task Comp. (Date- Initials)	Level5 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.										



Stationary Emergency Generator Troubleshooting



TROUBLESHOOTING GUIDE

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

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

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 or 2500 hours of operation, whichever comes first, from the date of the engine being placed into service. For high-cost warranted components, the Emission Control System warranty is valid for 5 years or 3500 hours of operation, whichever comes first.

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 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., PO. Box 8, Waukesha, WI 53187, or call 1-800-333-1322 or 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 A) Spark Plug, B) Ignition Module, C) Ignition Coil, D) Spark Plug Wires |
| 1.1) Gasoline Carburetor Assembly and Internal Components
A) Fuel Filter, B) Carburetor, C) Fuel Pump | 4) Exhaust System
A) Catalyst Assembly*, B) Exhaust Manifold, C) Muffler, D) Exhaust Pipe, E) Muffler Gasket |
| 1.2) Carburetion Assembly and Its Components
A) Fuel Controller, B) Carburetor and Its Gaskets, C) Mixer and Its Gaskets, D) Primary Gas Regulator, E) Liquid Vaporizer | 5) Crankcase Breather Assembly Including
A) Breather Connection Tube, B) PCV Valve |
| 1.3) Fuel Regulator | 6) Oxygen Sensor |
| 2) Air Induction System Including A) Intake Pipe/Manifold, B) Air Cleaner | 7) Diagnostic Emission-Control System |

*High-Cost Warranted Component

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

Purchaser's/Owner's Record Keeping 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 record keeping requirements to demonstrate compliance: 1) Maintain documentation that the engine is certified to meet emission standards. 2) Record keeping of maintenance conducted. 3) Record keeping 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) Record keeping 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, record keeping of hours of operation begins January 1, 2009; engines are equipped with non-resettable hour meters to facilitate record keeping.

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.

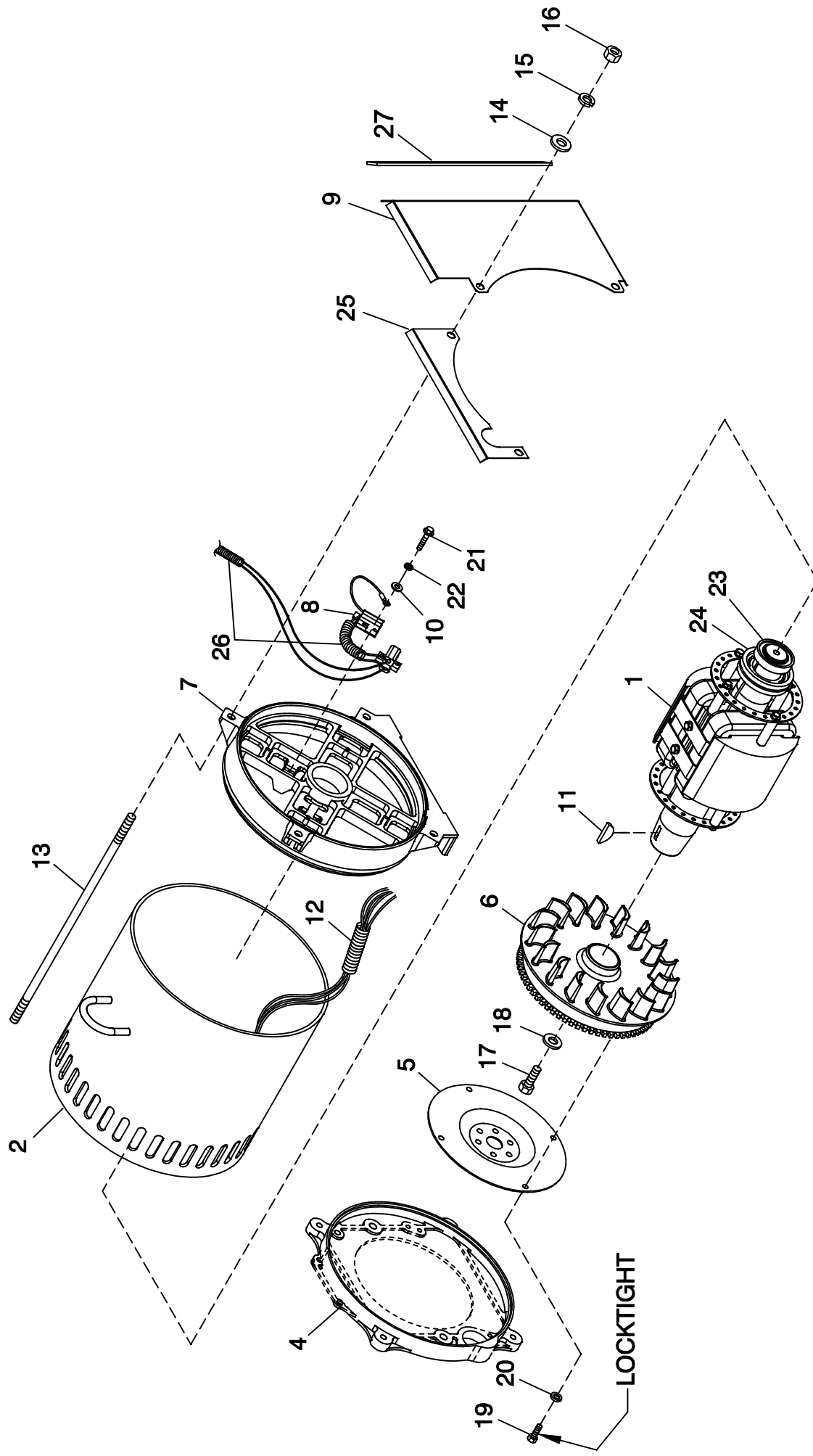
Emission-Related Installation Instructions

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 non-road 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



EXPLODED VIEW: CPL ALTERNATOR DIRECT EXCITATION
DRAWING #: 0F9803

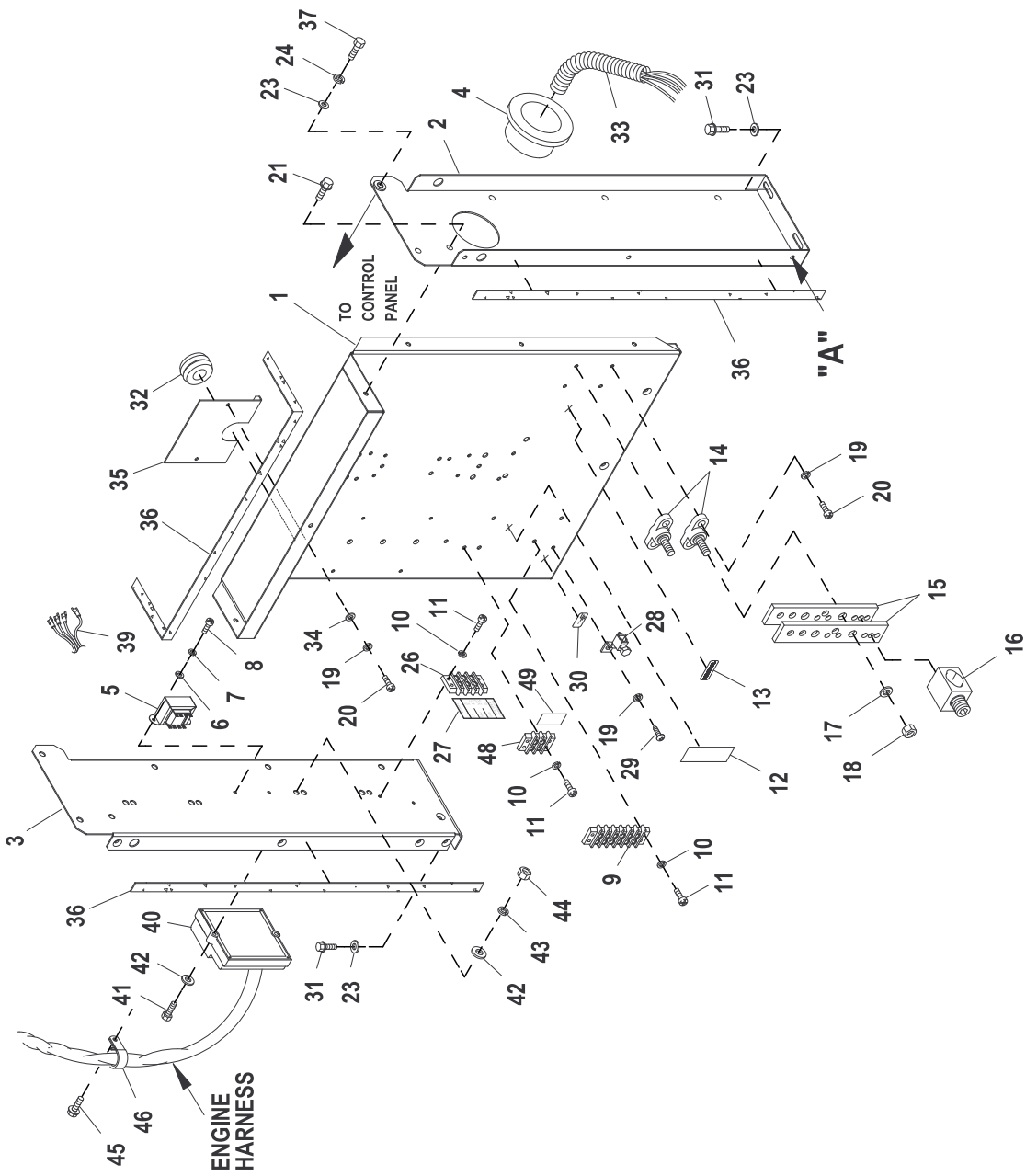
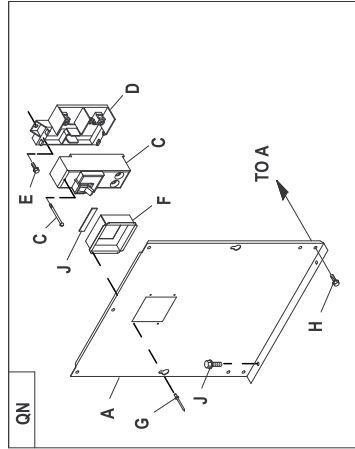
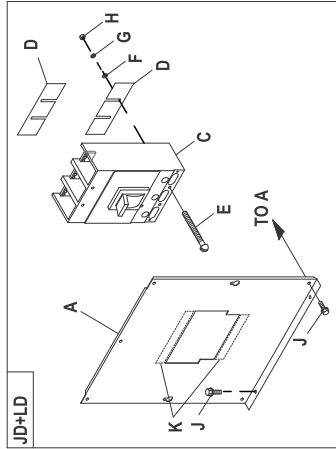
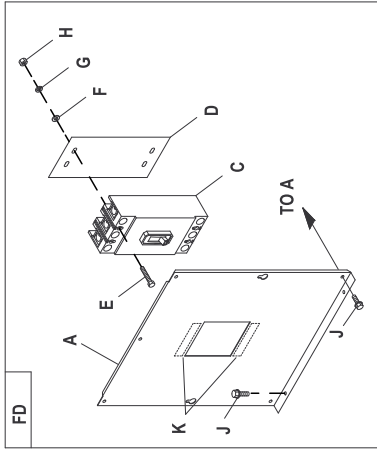
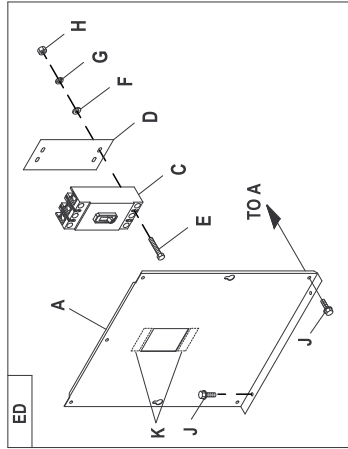
GROUP A

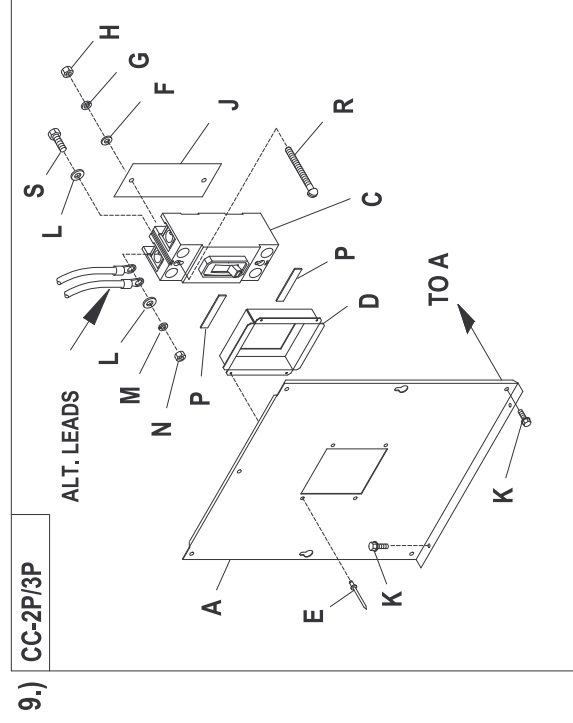
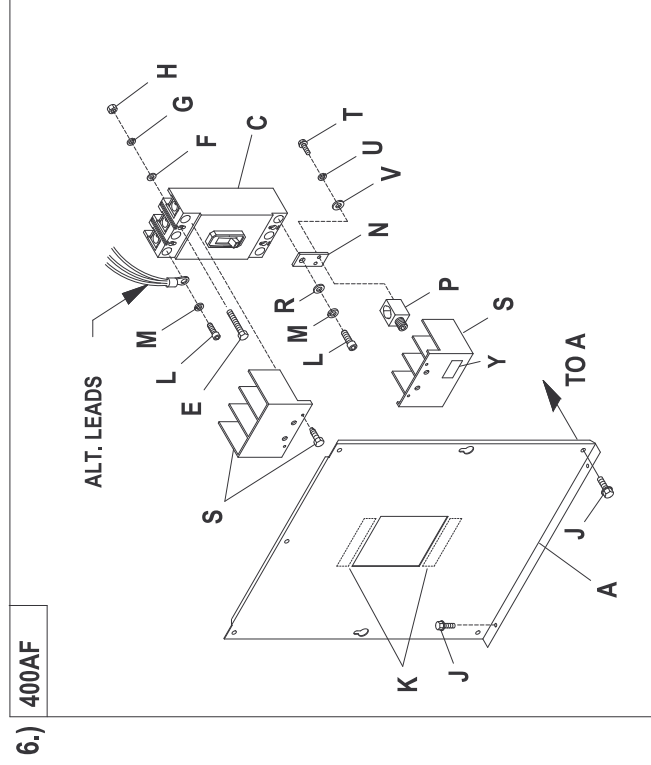
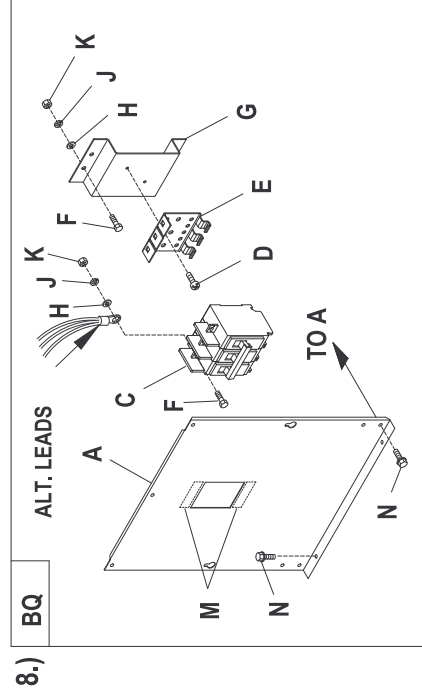
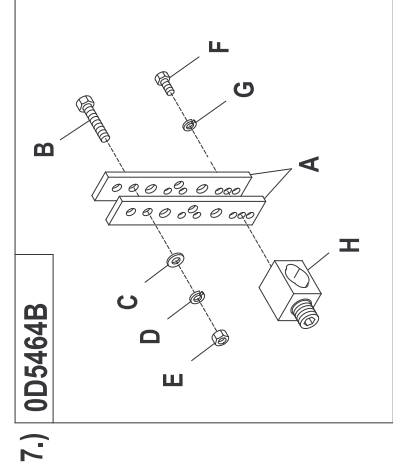
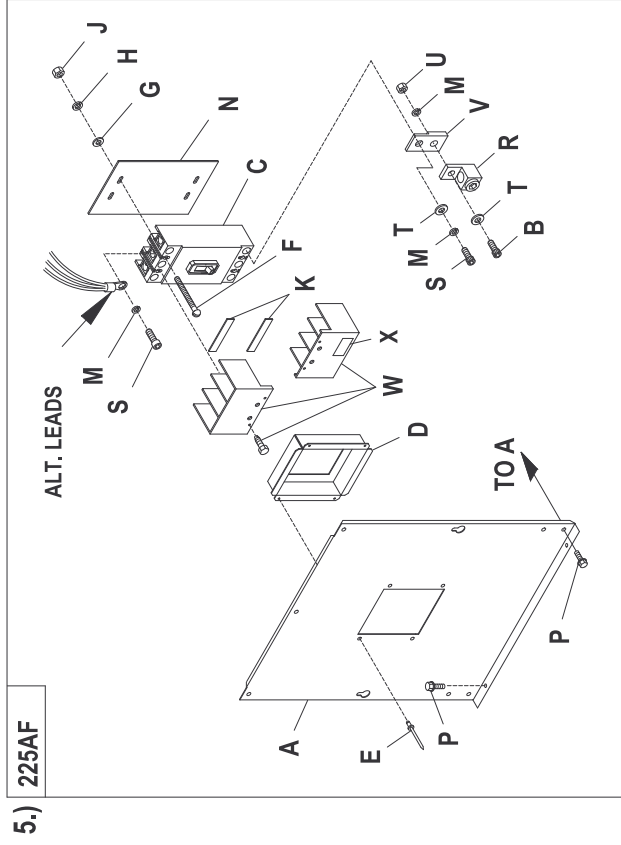
APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0F9677	1	ROTOR-2390-45KD1 CPL
	0G0056	1	ROTOR-2390-35KD1 CPL
	0G0959	1	ROTOR-2390-45KD1 CPL (G2)
	0G1155	1	ROTOR-2390-35KD1 CPL (G2)
	0G1931	1	ROTOR 25KW 3PH DIRECT 390 1800
	0G2101	1	ROTOR 25KW 1PH DIRECT 390 1800
	0G3734	1	RTR-2390-60KD2 CPL
	0G6562	1	RTR 390 35AD1 CPL
	0G6564	1	RTR 390 35KD1 CPL
2	0F9664	1	STATOR-390 45K 2P 1PH DIRECT
	0G0057	1	STATOR-2390-35AD1 CPL
	0G0058	1	STATOR-2390-35KD1 CPL
	0G0059	1	STATOR-2390-35GD1 CPL
	0G0183	1	STATOR-2309-45KW 2P 3PH 208V
	0G0184	1	STATOR-2309-45-KD1 CPL
	0G1932	1	ASSY STR 390 25GD3 CPL
	0G2098	1	ASSY STR 390 25AD1 CPL
	0G2099	1	ASSY STR 390 25KD3 CPL
	0G2100	1	ASSY STR 390 25JD3 CPL
	0G3736	1	ASSY STR 2390 60AD2 CPL
	0G3737	1	ASSY STR 390 60KW 2P 3PH 208V
	0G3738	1	ASSY STR 390 60KW 2P 3PH 480V
	0G6104	1	STR-2390--45JD1 CPL
	0G6563	1	STR 390 35AD1 CPL
	0G6565	1	STR 390 35GD1 CPL
	0G6566	1	STR 390 35KD1 CPL
	0G6567	1	STR 390 35JD1 CPL
	0H0201	1	STR-2390--60JD2 CPL
	0H1299	1	ASSY STR 390 36AD1 CPL
	0H1300	1	ASSY STR 390 36JD1 CPL
	0H1301	1	ASSY STR 390 36 GD1 CPL
3	0C9708	REF	INSTR HYPOT TEST (NOT SHOWN)
4	SEE ENGINE EV	REF	ENGINE ADAPTER
5	SEE ENGINE EV	REF	FLEXPLATE
6	0F5767B	1	ASSY FLYWHEEL CPL W/40MM FAN B
7	0E5706	1	REAR BEARING CARRIER 390/DRCT
8	0F7874	1	ASSY BRUSH HOLDER 390/HSB
	0F7874A	1	ASSY BRUSH HOLDER 390/HSB
9	0G0587	1	GUARD REAR BEARING CARRIER
10	038150	4	WASHER FLAT #8 ZINC
11	023454	1	KEY WOODRUFF #E
12	077043E	1	CONDUIT FLEX 1.0" ID (35" LG)
13	04576100BU	4	STUD M14-2.0 570 G5 ZINC
14	052646	4	WASHER FLAT M14
15	043123	4	WASHER LOCK M14
16	051779	4	NUT HEX M14-2.0 G8 YEL CHR
17	0A2601	1	SCREW HHC M16-2.0 X 45 G8.8
18	072879	1	SPACER .69 X 2.75 X .37 ST/ZNC
19	0F8408	4	SCREW HHC M10-1.50 X 16 G10.9
20	046526	4	WASHER LOCK M10
21	0C3992	4	SCREW HHTT M4-0.7 X 16 BP
22	022264	4	WASHER LOCK #8-M4
23 *	047248	1	BALL BEARING-45 MM
24 *	070892	1	SLIP RING MACHINED
25	0G0588	1	GUARD REAR BEARING CARRIER
26	077043A	1	CONDUIT FLEX .38" ID (60")
27	056326	1	TRIM VINYL BLACK 1/8GP (16.5"LG)

* ROTOR REPLACEMENT PARTS

GROUP A

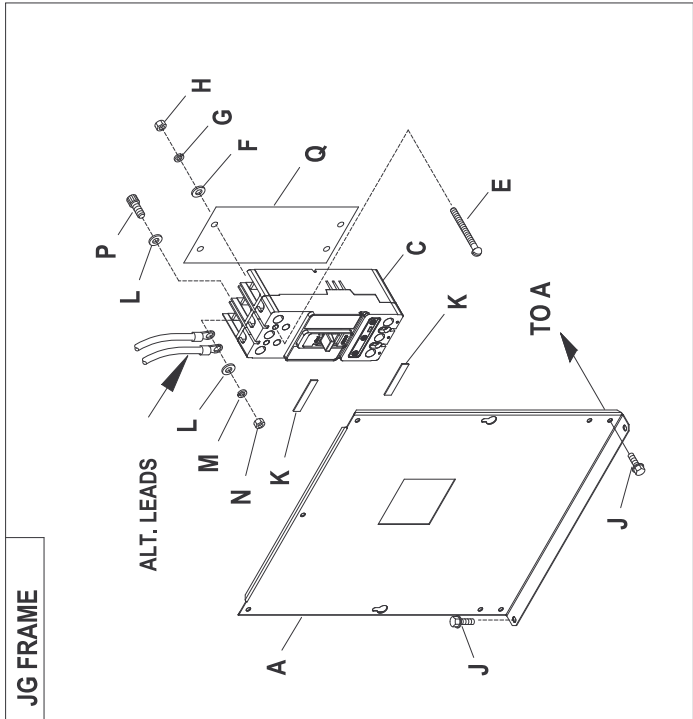




GROUP A

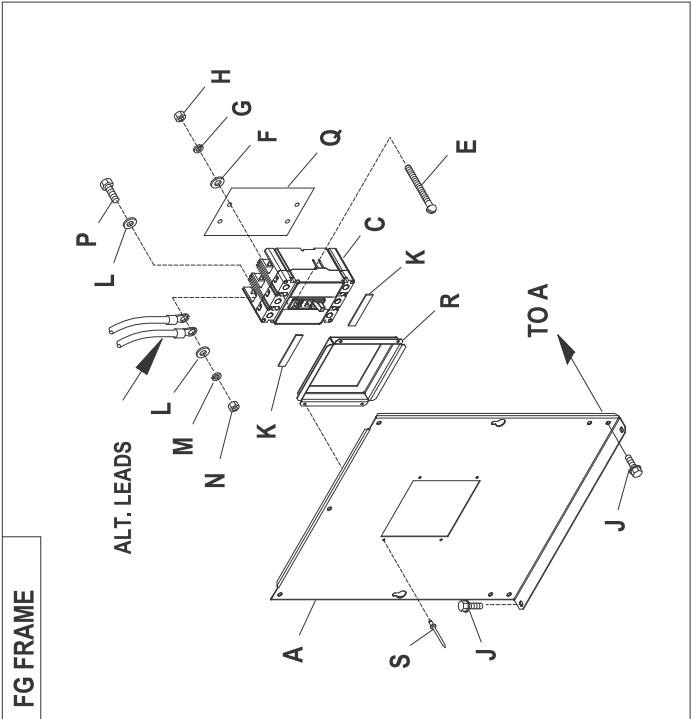
10.)

JG FRAME



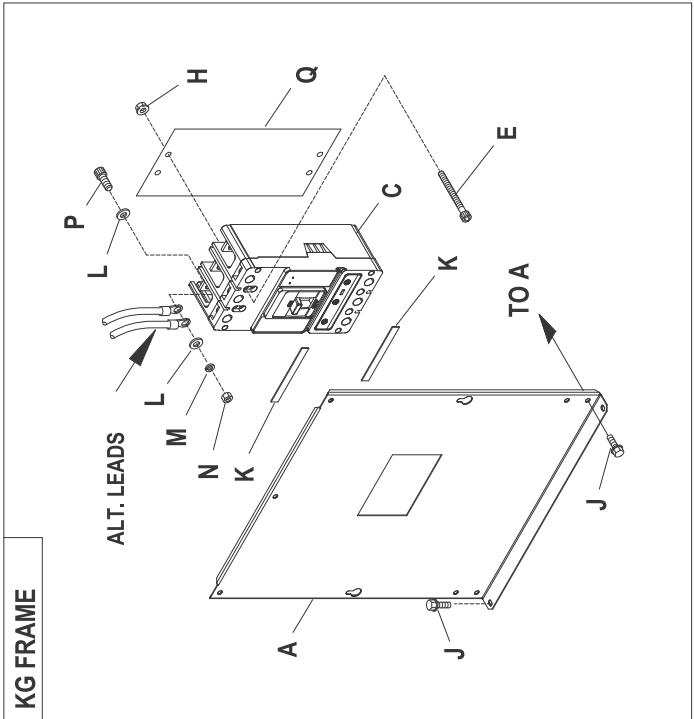
12.)

FG FRAME



11.)

KG FRAME



EXPLODED VIEW: EV CPL C2&C4 R200C CB CONN

DRAWING #: 0H1730

GROUP A

ITEM	PART#	QTY.	DESCRIPTION
PAGE 1			
1	0F3137	1	PAN CB CONN BOX
2	0F3188	1	STAND RH CONTROL
3	0F3189	1	STAND LH CONTROL
4	023484N	1	BUSHING SNAP SB-2.5-31
5	0F6366B	1	XFMR DUAL 120V/16V (FOR 120/240V & 277/480V UNITS)
	0F6366A	1	XFMR DUAL 104V/16V (FOR 120/208V UNITS)
6	043180	2	WASHER FLAT M4
7	022264	2	WASHER LOCK #8-M4
8	0C3990	2	SCREW PHTT M4-0.7 X 10 ZYC
(1) 9	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
10	022155	6	WASHER LOCK #6
11	0C2428	6	SCREW PHTT #6-32 X 1/2 ZYC
12	0G7992	1	DECAL RTS CUSTOMER CONNECTION
13	0A9457	1	DECAL NEUTRAL
14	057073	2	JUNCTION BLOCK 3/8-16
(2) 15	0D5466	REF	BUS BAR NEUTRAL BLOCK 390
(2) 16	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
23	022473	8	WASHER FLAT 1/4-M6 ZINC
24	022097	4	WASHER LOCK M6-1/4
(1) 26	0D4698	REF	BLOCK TERM 20A 6 X 3 X 1100V
27	0H0026	1	DECAL CHARGER POWER 120VAC C2
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	081008	1	GROMMET 1.25 X .25 X .75
33	077043J	1	CONDUIT FLEX 2.0" ID (36" LG)
34	051713	2	WASHER FLAT M5
35	0F6156	1	PLATE WIRE SNGL GALV
36	029289	1	TAPE ELEC 1/2 FOAM (AS REQ'D)
37	047411	4	SCREW HHC M6-1.0 X 16 G8.8
(3) 39	0G0770	1	HARNESS, TRANSFORMER ADAPTER
(4) 40	0H0348	1	PCB ENCLOSURE ASSY 4.2L IGN MD
(4) 41	036943	2	SCREW PPHM #10/32 X 2
(4) 42	023897	4	WASHER FLAT #10 ZINC
(4) 43	022152	2	WASHER LOCK #10
(4) 44	022158	2	NUT HEX #10-32 STEEL
45	0C2454	1	SCREW THF M6-1 X 16 N WA Z/JS
46	055934D	1	CLAMP VINYL 1.06 X .406 Z
47	0F6145	A/R	SEAL WEATHER .45"DIA
48	048766	REF	BLOCK TERM 20A 2 X 6 X 1100V
49	0G7991	1	DECAL GTS CUSTOMER CONNECTION
1)	UL CIRCUIT BREAKER (ED)		
A	0F3328	1	COVER ED CB SHORT STND
C	0D5552	REF	CB 0050A 3P 480V S ED4 LL
	0D5553	REF	CB 0060A 3P 480V S ED4 LL
	0D5554	REF	CB 0070A 3P 480V S ED4 LL
	0D5556	REF	CB 0090A 3P 480V S ED4 LL
	0D9693	REF	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	9	SCREW THF M6-1 X 16 N WA Z/JS
K	029289	1	TAPE ELEC 1/2 FOAM (AS REQ'D)

EXPLODED VIEW: EV CPL C2&C4 R200C CB CONN

DRAWING #: 0H1730

GROUP A

ITEM	PART#	QTY.	DESCRIPTION
2)			UL CIRCUIT BREAKER (FD)
A	0F3138	1	COVER CB CONN BOX
C	0D5572	REF	CB 0150A 3P 600V S FD6 LL
	0D5573	REF	CB 0175A 3P 600V S FD6 LL
	0D5574	REF	CB 0200A 3P 600V S FD6 LL
	0D5575	REF	CB 0225A 3P 600V S FD6 LL
	0D5576	REF	CB 0250A 3P 600V S FD6 LL
D	0F0199	1	INSULATOR CB FD FRAME 30MIL
E	081320	4	SCREW SHC 1/4-20 X 4.5 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	9	SCREW THF M6-1 X 16 N WA Z/JS
K	029289	1	TAPE ELEC 1/2 FOAM (AS REQ'D)
3)			UL CIRCUIT BREAKER (JD+LD)
A	0F3329	1	COVER JD/LD CB SHRT STAND
C	0D5577	REF	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	9	SCREW THF M6-1 X 16 N WA Z/JS
K	029289	1	TAPE ELEC 1/2 FOAM (AS REQ'D)
4)			UL CIRCUIT BREAKER (QN)
A	0F8135	1	COVER QN FRM CB
C	0E7283	REF	CB 0150A 2P 240V S QN2 LL
	0E7284	REF	CB 0175A 2P S QN2 LL 240V
	0E3628	REF	CB 0200A 2P 240V S QN2 LL
D	0E3664	1	BASE, QN CIRCUIT BREAKER
E	074908	2	SCREW HHTT M5-0.8 X 10 BP
F	0F8140	1	COVER QN CB DISH
G	036261	4	RIVET POP .125 X .275 SS
H	0C2454	11	SCREW THF M6-1X16 N WA Z/JS
J	029289	1	TAPE ELEC 1/2 FOAM (AS REQ'D)

- (1) ITEM INCLUDED WITH HARNESS
 (2) ITEM INCLUDED WITH 0D5464B
 (3) ITEM USED WITH EARLY MODEL 208V UNITS ONLY
 (4) ITEMS USED ON 4.2L MODELS ONLY.

PAGE 2

5)			UL CIRCUIT BREAKER (225AF) (2P & 3P)
A	0F4185	1	COVER CB C2-C4 (225AF)
B	058306	3	SCREW SHC M8-1.25 X 25 G12.9
C	0F4165\$	REF	CIRCUIT BREAKERS 200A FRAME (3P)
	0F4143	REF	CB 0040A 3P 480V 225AF (3P)
	0F4148	REF	CB 0125A 3P 480V G 225AF
	0F4149	REF	CB 0150A 3P 480V G 225AF
	0F4151	REF	CB 0200A 3P 480V G 225AF
	0G5247\$	REF	CB 200A FRAME G 240V (2P)
	0G5250	REF	CB 175A 2 POLE 240V 225AF (2P)
	0G4478	REF	CB 200A 2 POLE 240V 225AF (2P)
	0F4145	REF	CB 0060A 3P 480V G 225AF (3P)
D	0F4186	1	COVER CB DISH 225AF (3P)
	0F4186AGS0R	1	COVER CB DISH 225AF (2P)
E	036261	4	RIVET POP .125 X .275 SS
(2) F	053640	2/4	SCREW RHM #8-32 X 3-1/4
(2) G	038150	2/4	WASHER FLAT #8 ZINC
(2) H	022264	2/4	WASHER LOCK #8-M4
(2) J	022471	2/4	NUT HEX #8-32 STEEL
K	029289	2	TAPE ELEC 1/2 FOAM
(2) M	022129	6/9	WASHER LOCK M8-5/16
N	0F8432	1	INSULATOR CB 225AF (3P)

EXPLODED VIEW: EV CPL C2&C4 R200C CB CONN

DRAWING #: 0H1730

GROUP A

ITEM	PART#	QTY.	DESCRIPTION
	0F8432A	1	INSULATOR CB 225AF (2P)
P	0C2454	11	SCREW THF M6-1 X 16 N WA Z/JS
(2) R	0F8451	2/3	LUG SLDLSS 300 MCM-6 AL/CU
(2) S	049821	4/6	SCREW SHC M8-1.25 X 30 C12.9
(2) T	022145	4/6	WASHER FLAT 5/16-M8 ZINC
(2) U	045771	2/3	NUT HEX M8-1.25 G8 CLEAR ZINC
(2) V	0F8843	2/3	BUS BAR 200A LUG ADAPTOR
(1) W	W/CB	2	TERMINAL COVER CB
X	0G3259	1	DECAL TERMINAL SHOCK HZD BI
6)	UL CIRCUIT BREAKER (400AF)		
A	0F4187	1	COVER CB C2-C4 400AF
C	0F4166\$	REF	CIRCUIT BREAKERS 400A FRAME
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	9	SCREW THF M6-1 X 16 N WA Z/JS
K	029289	1	TAPE ELEC 1/2 FOAM
(2) L	052647	2/3	SCREW SHC M10-1.5 X 25 G12.9
(2) M	046526	2/3	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
(1) S	W/CB	2	TERM COVER CB
T	023334	6	SCREW HHC 1/4-28 X 1/2 G5
U	022097	6	WASHER LOCK M6-1/4
V	022473	6	WASHER FLAT 1/4-M6 ZINC
(2) W	W/CB	2/3	SCREW SHC M10-1.5 X 25 G12.9
(2) X	W/CB	2/3	WASHER LOCK M10
Y	0G3259	1	DECAL TERMINAL SHOCK HZD BI
7)	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	083896	2	WASHER LOCK 1/4-M6 SS
H	0A7822	1	LUG SLDLSS 600/250-1/0 X 1/4-28
8)	UL CIRCUIT BREAKER (BQ)		
A	0G1968	1	COVER BQ CIR BREAKER CPL 3P
	0G1970	REF	COVER BQ CIR BREAKER CPL 2P
C	0A2077	REF	CB 0125A 2P 240V S BQ2 LL
	040532	REF	CB 0100A 3P 240V S BQ3 LL
D	0C3990	2	SCREW PHTT M4-0.7 X 10 ZYC
E	0E7890	1	BRKT CB MTG BACK
	0E6002	REF	MTG TRACK BQ SIEMENS CB 3P
F	022859	6	SCREW RHM #10-32 X 3/4
G	0G0008	1	BRKT BQ CB STANDOFF
H	023897	6	WASHER FLAT #10 ZINC
J	022152	6	WASHER LOCK #10
K	022158	6	NUT HEX #10-32 STEEL
M	029289	1	TAPE ELEC 1/2 FOAM
N	0C2454	11	SCREW THF M6-1 X 16 N WA Z/JS
9)	UL CIRCUIT BREAKER (CC-2P/3P)		
A	0F4185	1	COVER CB C2-C4 (225AF)
C	0H4748	REF	CB 0175A 2P 240V E CC LL
	0H4749	REF	CB 0200A 2P 240V E CC LL
	0H4913	REF	CB 0100 3P 240V E CC LL
	0H4914	REF	CB 0125 3P 240V E CC LL
	0H4915	REF	CB 0150 3P 240V E CC LL
	0H4916	REF	CB 0175 3P 240V E CC LL
	0H4917	REF	CB 0200 3P 240V E CC LL
D	0H4823A	1	COVER CB DISH 2P E CC
	0H4823B	1	COVER CB DISH 3P E CC

EXPLODED VIEW: EV CPL C2&C4 R200C CB CONN

DRAWING #: 0H1730

GROUP A

ITEM	PART#	QTY.	DESCRIPTION
E	036261	4	RIVET POP .125 X .275 SS
(2) F	038150	2/4	WASHER FLAT #8 ZINC
(2) G	022264	2/4	WASHER LOCK #8-M4
(2) H	022471	2/4	NUT HEX #8-32 STEEL
J	0H4698	1	INSULATOR CB 2P E TYPE CC
	0H4698A	1	INSULATOR CB 3P E TYPE CC
K	0C2454	11	SCREW HWHT M6-1 X 16 N WA Z/JS
(2) L	023897	4/6	WASHER FLAT #10 ZINC
(2) M	049226	2/3	WASHER LOCK M5
(2) N	051716	2/3	NUT HEX M5-0.8 G8 CLEAR ZINC
P	029289	2	TAPE ELEC 1/2 FOAM
(2) R	053640	2/4	SCREW RHM #8-32 X 3-1/4
(2) S	052619	2/3	SCREW HHC M5-0.8 X 20 G8.8

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

(2) QTY. REQ'D FOR "2POLE / 3POLE" BREAKER

PAGE 3

10)	UL CIRCUIT BREAKER (JG)		
A	0H5629	1	COVER JG E CB C2 STAND
C	0H5580	REF	CB 0250 3P 600V E JG LL
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	2	NUT HEX 1/4-20 STEEL
J	0C2454	9	SCREW THF M6-1 X 16 N WA Z/JS
K	029289	1	TAPE ELEC 1/2 FOAM
L	022145	6	WASHER FLAT 5/16-M8 ZINC
M	022129	3	WASHER LOCK M8-5/16
N	045771	3	NUT HEX M8-1.25 G8 CLEAR ZINC
P	049897	3	SCREW SHC M8-1.25 X 20 G8
Q	0H5576A	1	INSULATOR CB E 3P JG

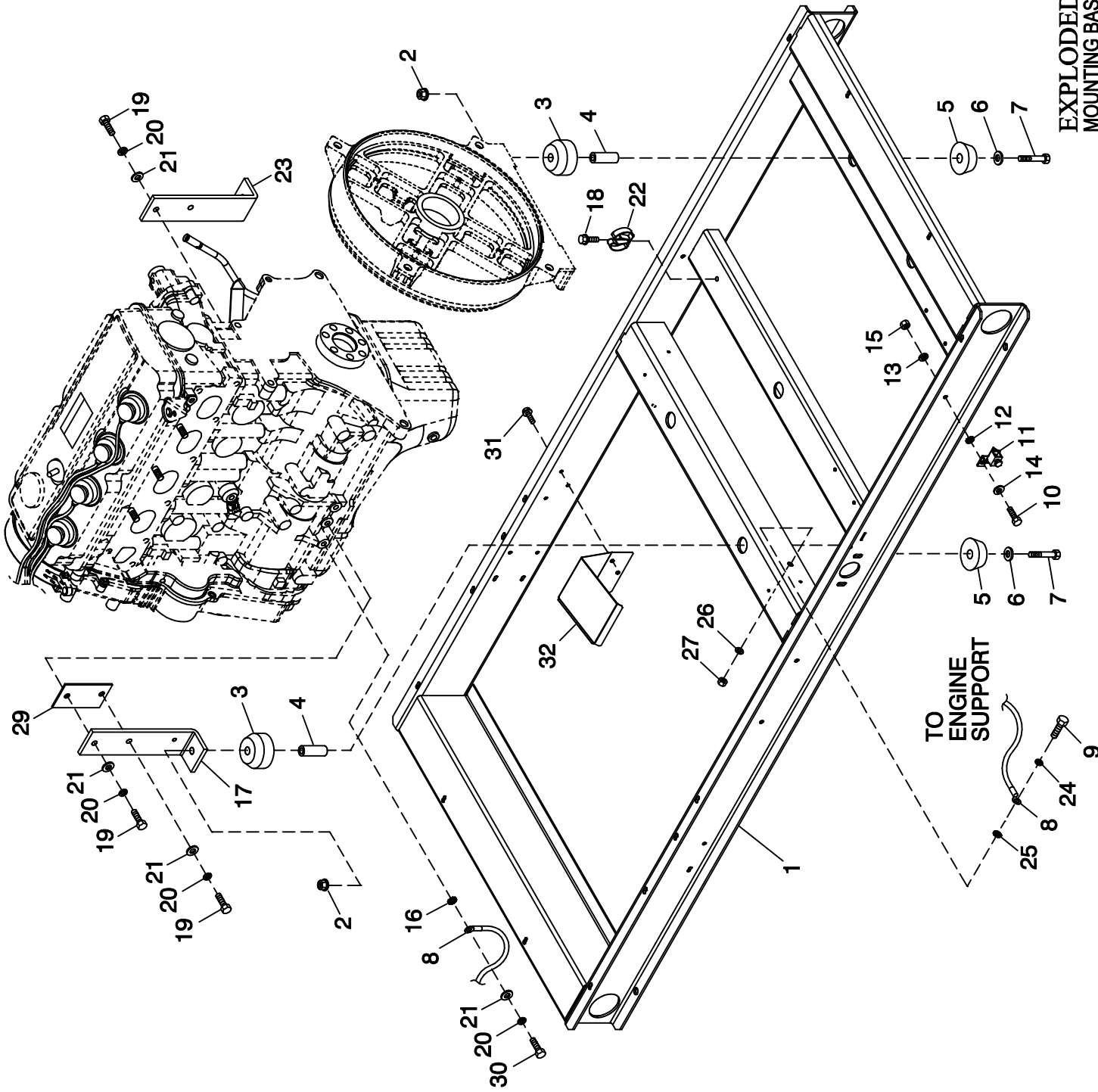
11)	UL CIRCUIT BREAKER (KG)		
A	0H5630	1	COVER KG E CB C2 STAND
C	0H5582	REF	CB 0300 3P 600V E KG LL
E	0D2157	4	SCREW SHC M6-1.0 X 50 C8.8
H	0D3700	4	NUT FLANGE M6-1.0 NYLOK
J	0C2454	9	SCREW THF M6-1 X 16 N WA Z/JS
K	029289	1	TAPE ELEC 1/2 FOAM
L	022145	6	WASHER FLAT 5/16-M8 ZINC
M	022129	3	WASHER LOCK M8-5/16
N	045771	3	NUT HEX M8-1.25 G8 CLEAR ZINC
P	049821	3	SCREW SHC M8-1.25 X 30 C12.9
Q	0H5581A	1	INSULATOR CB E 3P KG

12)	UL CIRCUIT BREAKER (3P FG)		
A	0F4185	1	COVER CB G 225AF C2-C4
C	0H5486	REF	CB 0060 3P 480V E FG LL
	0H5488	REF	CB 0080 3P 480V E FG LL
	0H5490	REF	CB 0100 3P 480V E FG LL
E	0H5721	4	SCREW PPHM #8-32 X 1-3/4 ZINC
F	038150	4	WASHER FLAT #8 ZINC
G	022264	4	WASHER LOCK #8-M4
H	022471	4	NUT HEX #8-32 STEEL
J	0C2454	9	SCREW THF M6-1 X 16 N WA Z/JS
K	029289	1	TAPE ELEC 1/2 FOAM
L	023897	6	WASHER FLAT #10 ZINC
M	049226	3	WASHER LOCK M5
N	051716	3	NUT HEX M5-0.8 G8 CLEAR ZINC
P	052619	3	SCREW HHC M5-0.8 X 20 G8.8
Q	0H4698A	1	INSULATOR CB 3P E TYPE CC/FG
R	0H5560	1	COVER CB DISH 3P E FD
S	036261	4	RIVET POP .125 X .275 SS

ITEM	PART#	QTY.	DESCRIPTION
------	-------	------	-------------

This page left blank intentionally

GROUP C



EXPLODED VIEW:
MOUNTING BASE 2.4L C2
DRAWING #: 0F9807

EXPLODED VIEW: MOUNTING BASE 2.4L C2

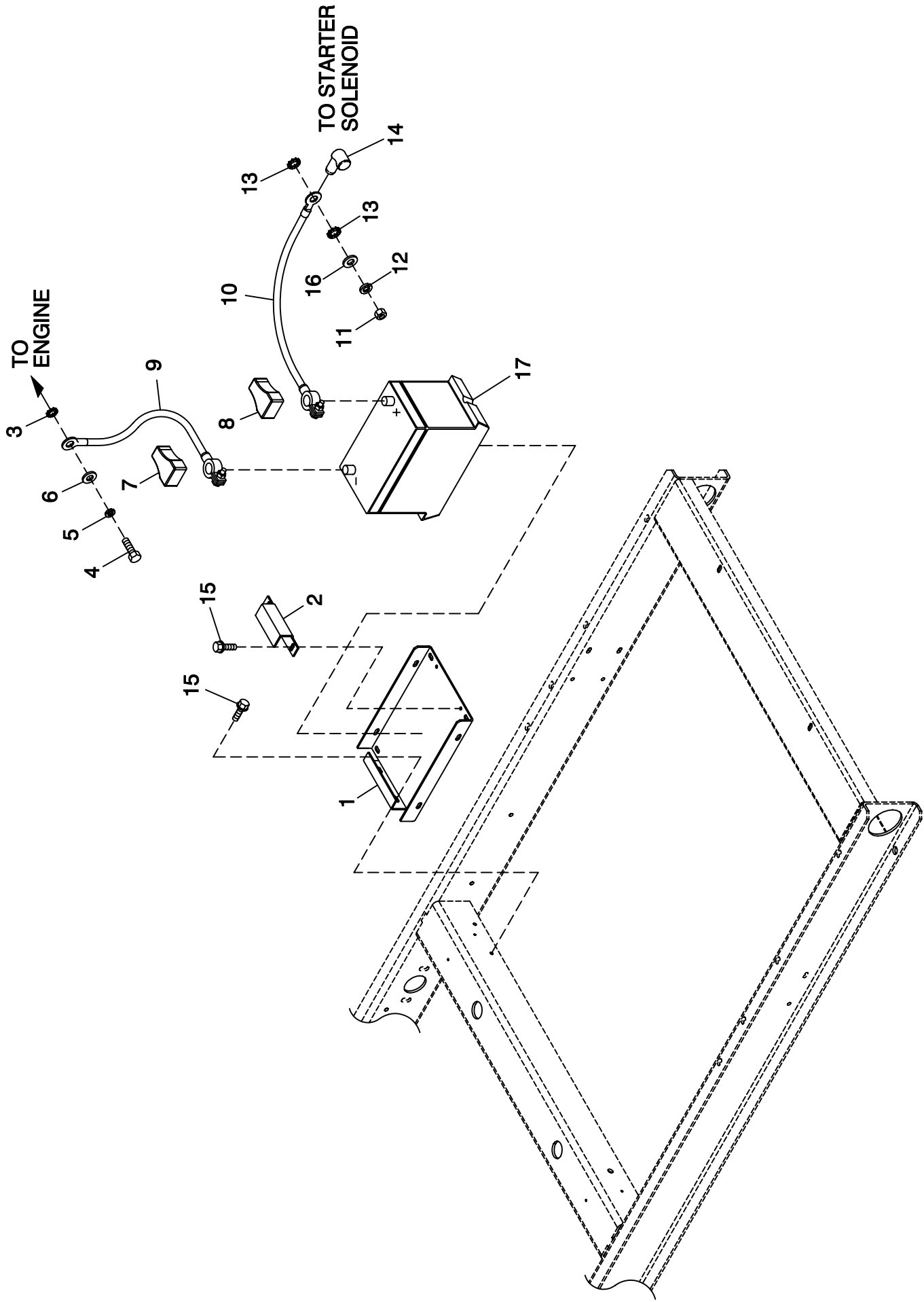
DRAWING #: 0F9807

GROUP C

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0F9517	1	WELDMENT FRAME 2.4L C2
2	052860	4	NUT FLANGED HEX M12-1.75
3	052251	4	DAMPENER VIBRATION 40 BLUE
4	052257	4	SPACER .49 X .62 X 1.87 PWDR/ZNC
5	052252	4	DAMPENER VIBRATION
6	052259	4	WASHER FLAT M12
7	052891	4	SCREW HHC M12-1.75 X 80 G8.8
8	0536210410	1	ASSY WIRE 14.00"
9	042909	1	SCREW HHC M8-1.25 X 30 G8.8
10	047411	1	SCREW HHC M6-1.0 X 16 G8.8
11	055414	1	LUG SLDLSS #2-#8 X 17/64 CU
12	022447	1	WASHER SHAKEPROOF INT 1/4
13	022097	1	WASHER LOCK M6-1/4
14	022473	2	WASHER FLAT M6-1/4 ZINC
15	049813	1	NUT HEX M6 -1.0 G8 YEL CHR
16	022261	1	WASHER SHAKEPROOF INT 3/8
17	0F9597A	1	SUPPORT LH ENGINE 2.4L
18	045764	1	SCREW HHTT M4-0.7 X 8 BP
19	062963	4	SCREW HHC M10-1.25 X 30 G8.8
20	022302	5	WASHER LOCK 7/16
21	022131	5	WASHER FLAT 3/8-M10 ZINC
22	065852	1	SPRING CLIP HOLDER .37-.62
23	0F9597	1	SUPPORT RH ENGINE 2.4L
24	022129	1	WASHER LOCK M8-5/16
25	026204	1	WASHER SHAKEPROOF INT 5/16
26	022145	1	WASHER FLAT 5/16-M8 ZINC
27	045771	1	NUT HEX M8-1.25 G8 CLEAR ZINC
29	0F9596	1	SPACER ENGINE MOUNT (2.4L G1)
	0F9596A	1	SPACER LH ENGINE MOUNT (2.4L G2)
30	052212	1	SCREW HHC M10-1.25 X 25 C8.8
31	0C2454	3	SCREW HWHT M6-1 X 16 N WA Z/JS
32	0H5718	1	HEAT SHIELD 2.4L G2

GROUP C



EXPLODED VIEW:
BATTERY 2.4L CPL
DRAWING #: 0F9813

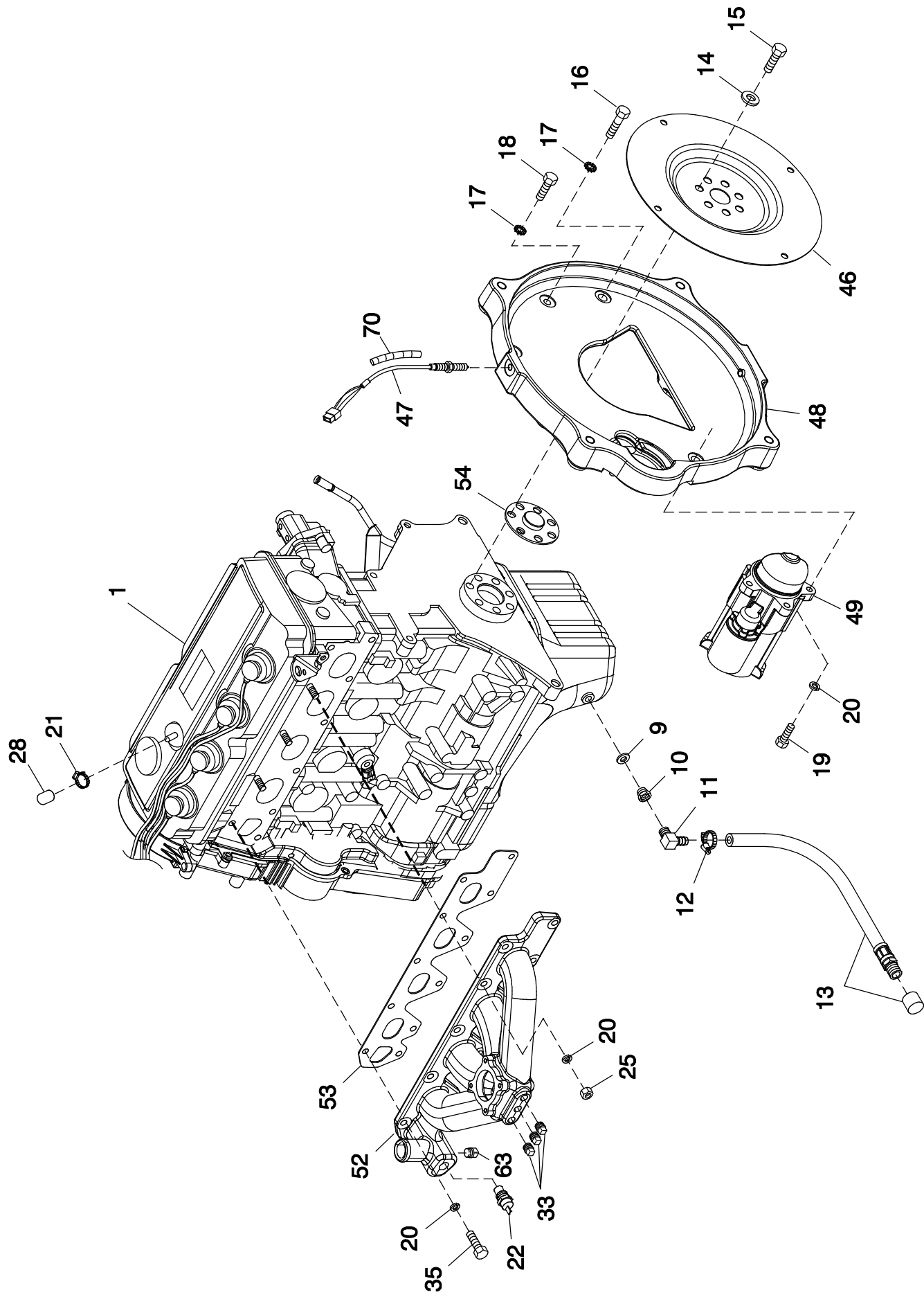
EXPLODED VIEW: BATTERY 2.4L CPL
DRAWING #: 0F9813

GROUP C

APPLICABLE TO:

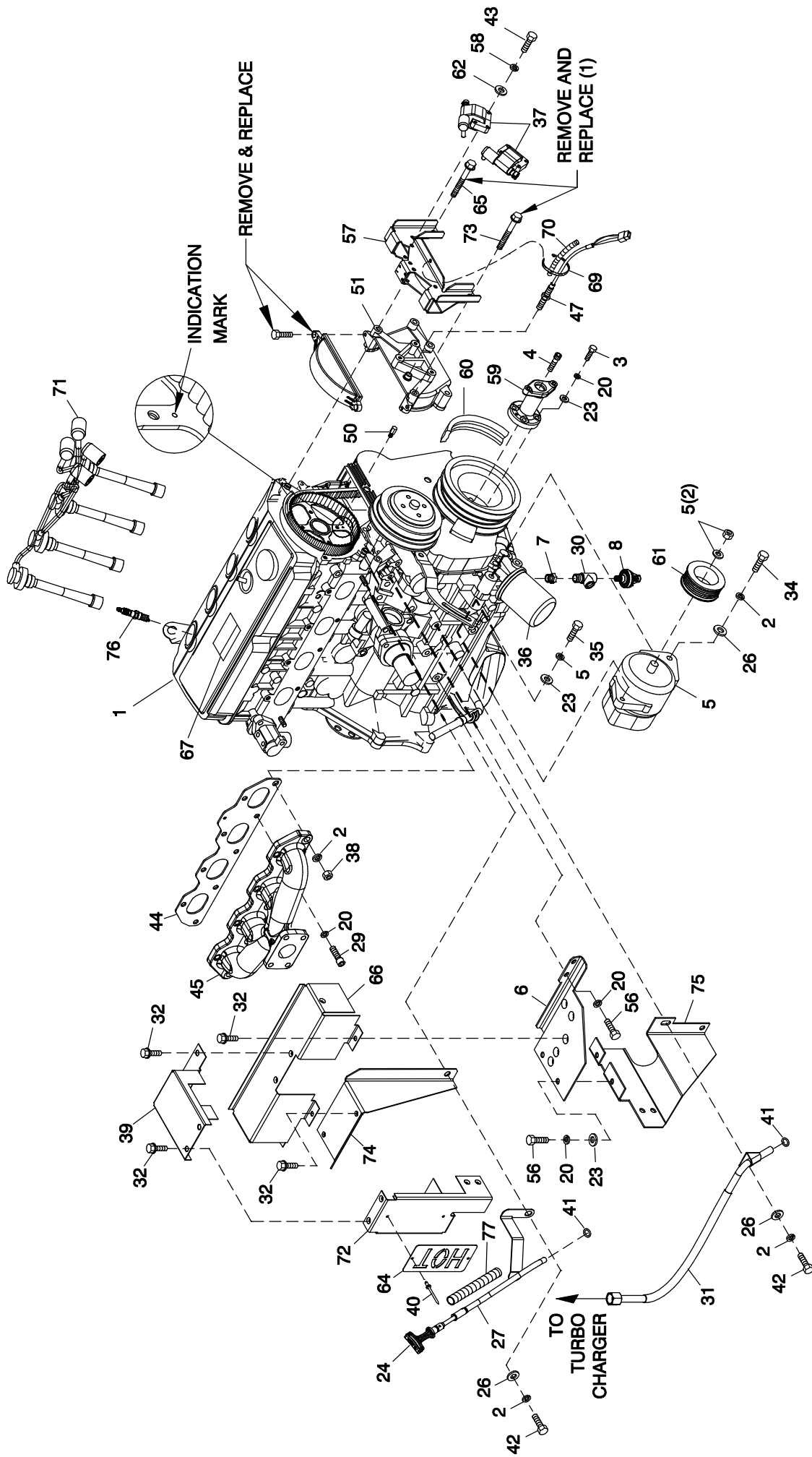
ITEM	PART #	QTY.	DESCRIPTION
1	0F3408B	1	BATTERY TRAY C1 CPL
2	0F3411	1	STRAP BATTERY RETAINMENT
3	025507	REF	WASHER SHAKEPROOF EXT 7/16 STL
4	052212	REF	SCREW HHC M10-1.25 X 25 G8.8
5	046526	REF	WASHER LOCK M10
6	022131	REF	WASHER FLAT 3/8-M10 ZINC
7	050331A	REF	BATTERY POST COVER RED +
8	050331	REF	BATTERY POST COVER BLACK -
9	038805Y	1	CABLE BATTERY BLACK #1 X 18.00
10	03880400AE	1	CABLE BATT RED #1 X 18.00
11	045771	REF	NUT HEX M8-1.25 G8 YEL CHR
12	022129	REF	WASHER LOCK M8-5/16
14	0F3976	1	BOOT CONTACTOR CABLES
15	0C2454	4	SCREW THF M6-1 X 16 N WA Z/JS
16	022145	REF	WASHER FLAT 5/16-M8 ZINC
17	077483	REF	BATTERY 12VDC 75-AH 26

GROUP D



EXPLODED VIEW:
ENG COMMON PARTS 2.4L G2 TURBO
DRAWING #: 0H0134

GROUP D



EXPLODED VIEW:
ENG COMMON PARTS 2.4L G2 TURBO
DRAWING #: 0H0134

EXPLODED VIEW: ENG COMMON PARTS 2.4L G2 TURBO

DRAWING #: 0H0134

GROUP D

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0G0408A	1	ENGINE 2.4L G2
	0H1619	1	ENGINE 2.4L G2 CERTIFIED
2	046526	6	WASHER LOCK M10
3	039414	4	SCREW HHC M8-1.25 X 35 G8.8
4	0G0149	1	SCREW SHC M14-1.5 X 35 G10.9
5	0E9868A	1	ALTERNATOR DC W/OUT PULLEY
6	0H0723AST03	1	UPR BRKT HEAT SHIELD 2.4L 36KW
7	042574	1	ADAPTOR 1/8NPTF TO 1/8BSPT
8	0A8584	1	SWITCH OIL PRESSURE 10 PSI 2 POL (R-PANEL)
9	057772	1	WASHER NYLON .565
10	057765	1	ADAPTER M14-1.50 X 3/8 NPT
11	043790	1	BARBED EL 90 3/8 NPT X 3/8
12	0C7649	1	CLAMP HOSE .38-.87
13	069860E	1	HOSE DRAIN ASSY 28"
14	063076	7	WASHER FLAT .531 ID X 1.062 OD
15	0G1394	7	SCREW HHC M12-1.25 X 20 G10.9
16	052830	2	SCREW HHC M10-1.25 X 45 G8.8
17	025507	5	WASHER SHAKEPROOF EXT 7/16 STL
18	062963	3	SCREW HHC M10-1.25 X 30 G8.8
19	049821	3	SCREW SHC M8-1.25 X 30 G12.9
20	022129	30	WASHER LOCK M8-5/16
21	035472	1	CLAMP HOSE #6 .43-.78
22	0A6751	1	SWITCH HI-TEMP 245D X 3/8 NPT (R-PANEL)
	0E0502	1	TEMPERATURE SENDER

ITEM	PART #	QTY.	DESCRIPTION
23	022145	7	WASHER FLAT 5/16-M8 ZINC
24	0F2664H	1	ASSY DIPSTICK W/TEXT GTH-530
25	045771	3	NUT HEX M8-1.25 G8 CLEAR ZINC
26	022131	4	WASHER FLAT 3/8-M10 ZINC
27	0G8427A	1	ASSY DIPSTICK TUBE 2.4 G2
28	0G1738	1	CAP ANTIFREEZE RUBBER 9.5DIA
29	058306	7	SCREW SHC M8-1.25 X 25 G12.9
30	052233A	1	TEE STREET 1/8NPT BRASS W/VS
31	0H0935	1	TUBE TURBO OIL RETURN G2 36KW
32	090388	9	SCREW HHTT M6-1.0 X 12 ZINC
33	026073A	3	PLUG STD PIPE 1/4 STEEL SQ HD
34	052243	1	SCREW HHC M10-1.5 X 60 G8.8
35	0A8258	9	SCREW HHC M8-1.25 X 25 G10.9
(1) 36	0A45310244	1(REF)	FILTER 1.5L/2.4L G2 OIL
37	0G8853	4	COIL-2.4L G2 IGNITION
38	046525	2	NUT HEX M10-1.25 G8 YEL CHR
39	0H0593A	1	HEAT SHIELD INNER 2.4L G2 36K
40	0F0710	2	RIVET POP .125 X 0.337 STEEL
41	0G3823	2	O-RING SIZE 9.0MM X 2.0MM NITR
42	052213	3	SCREW HHC M10-1.25 X 20 C8.8
43	034413	8	SCREW HHM #10-32 X 1-1/4
(1) 44	0G0951	1(REF)	GASKET EXHAUST MANIFOLD
45	0H0679A	1	MANF-EXH (MACH. CASTING)
46	0G6093E	1	FLEX PLATE 2 POLE 2.4L G2
47	0D2244M	2	ASSY MAGPICKUP(3/8-24 MALE)
48	0F9420	1	ADAPTER ENGINE 2.4L MACHINE
49	0G7461	1	MOTOR STARTER
50	0G1472A	1	CAM SENSOR PIN ASSY
51	0G1476	1(REF)	COVER CAM GEAR G2 REWORKED
52	0G0707	1	MANIFOLD INTAKE (USE HOSE 0G0816)
	0G8488	1	MANIFOLD INTAKE (MACHINED) (USE HOSE 0H1546)
(1) 53	0G0950	1(REF)	GASKET INTAKE MANIFOLD
54	0F9583	1	SPACER 2.4L G2 FLEX PLATE
56	042907	4	SCREW HHC M8-1.25 X 16 C8.8
57	0G8852	1	BRACKET ASM-2.4L COIL G2
58	022152	8	WASHER LOCK #10
59	0F9501	1	ADAPTER 2.4L CRANKSHAFT MACH
(1) 60	0D3488S	1	BELT SERPENTINE 37.0" (1800 RPM)
61	0G2750	1	PULLEY 69 OD DC ALTERNATOR (1800 RPM)
62	023897	8	WASHER FLAT #10 ZINC
63	026925	1	PLUG STD PIPE 3/8 STEEL SQ HD
64	0D3701	1	PLATE "HOT"
(1) 65	052203	1(REF)	SCREW HHC M8-1.25 X 70 G8.8
66	0H0593	1	SHIELD-MANIFOLD 2.4L G2 36KW
67	0G7313	REF	DECAL EMISSION CTRL INFO 2.4L
68	0G8877A	1	HARN ENG 2.4L R-200B 1800 TURB (NOT SHOWN)
	0H1275	1	HARN ENG 2.4L R-200C 1800 RPM (NOT SHOWN)
69	029333A	3	TIE WRAP UL 7.4"X .19" BLK
70	077043H	2	CONDUIT FLEX .25"ID
71	0G8854	1	SPARK PLUG WIRE SET 2.4L G2 IG
72	0H0593B	1	HEAT SHIELD OUTER 2.4L G2 36K
73	052265	1(REF)	SCREW HHC M8-1.25 X 65 C8.8
74	0H07280ST03	1	BRKT-EXH MANF 2.4L 36KW
75	0H0723BST03	1	LWR BRKT ASM HT SHIELD G2 36KW
76	084750	4	PLUG SPARK
77	0H2574	1	CONDUIT THERMAL FLEX 13MM ID

(1) SUPPLIED WITH ENGINE.

(2) APPLY MEDIUM STRENGTH BLUE THREAD LOCKING FLUID TO THE THREADS.

REVISION: H-5089-H

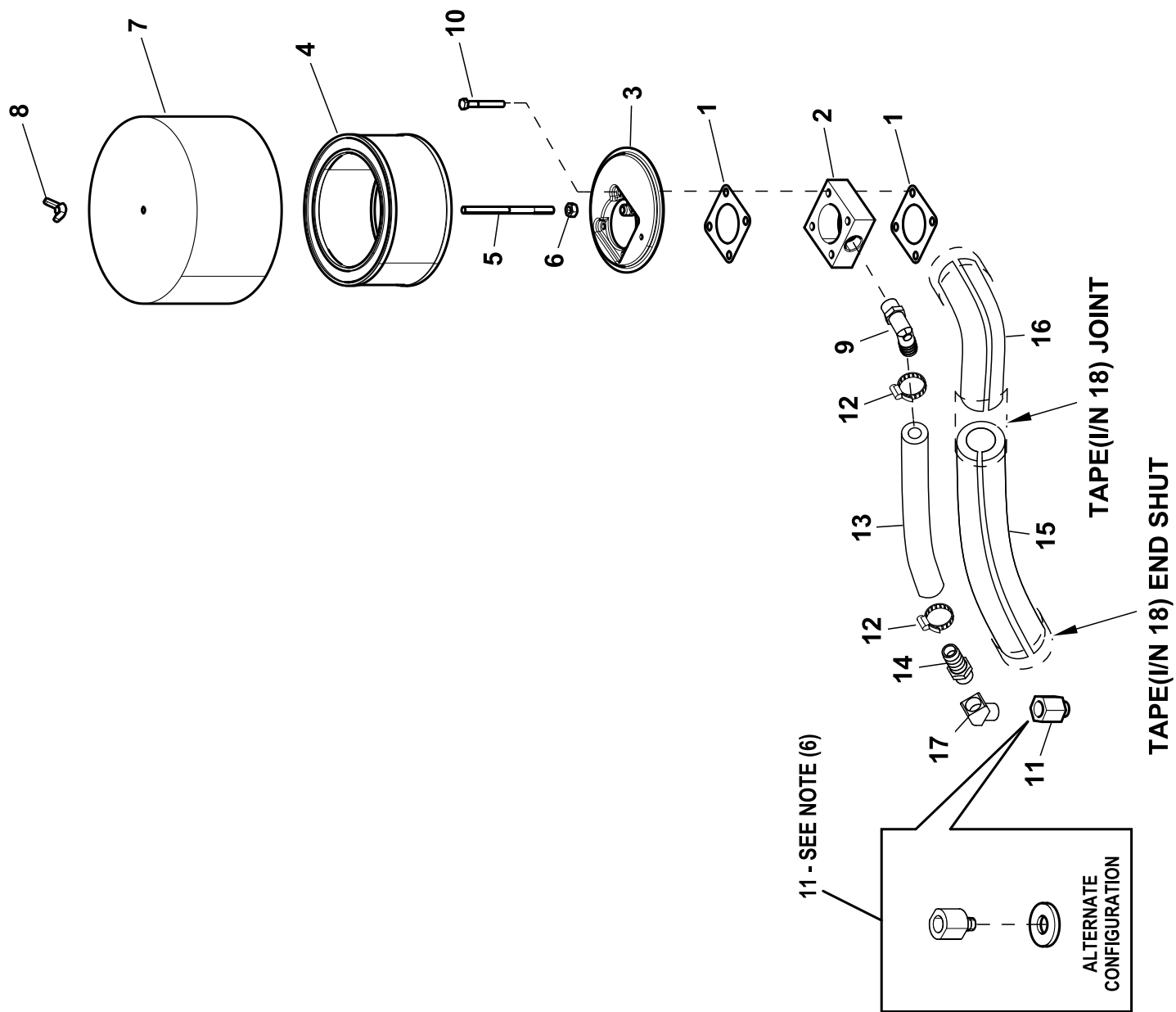
DATE: 9/23/09

PAGE 3 OF 4

APPLICABLE TO:

THIS PAGE IS LEFT INTENTIONALLY BLANK

GROUP D

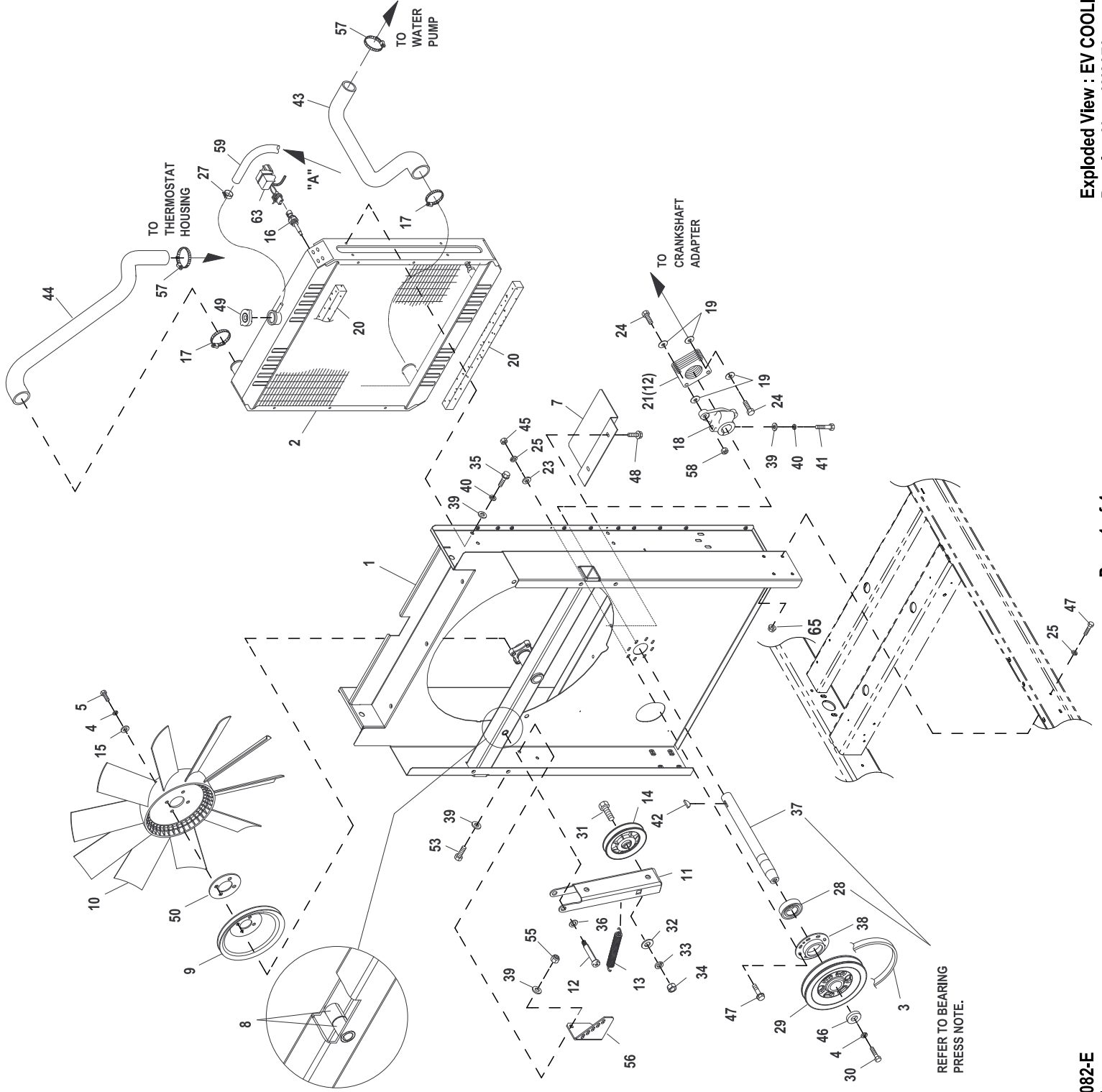


EXPLODED VIEW: AIR CLEANER 2.4L G2 TURBO**DRAWING #: 0H1955****GROUP D****APPLICABLE TO:**

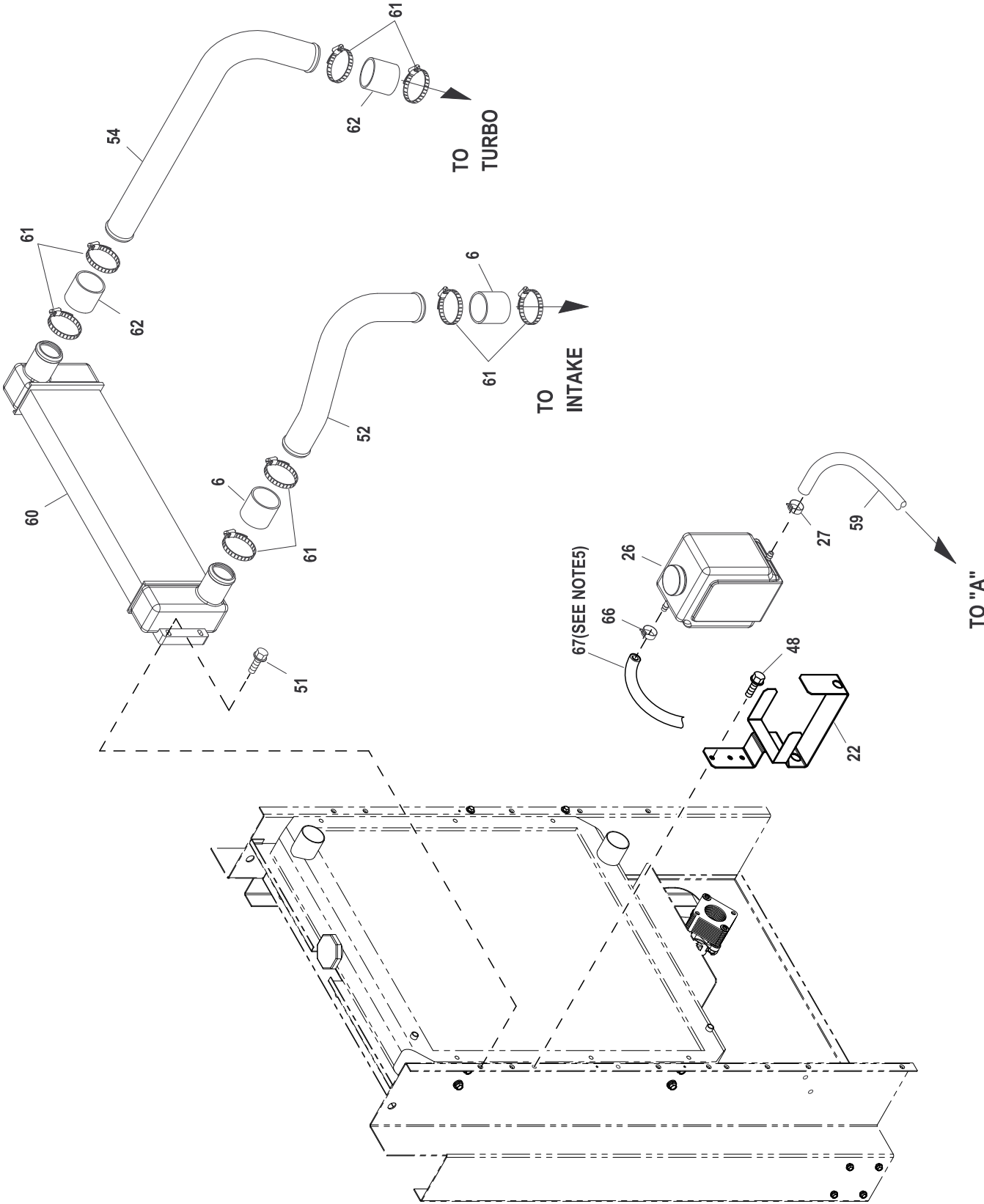
ITEM	PART#	QTY.	DESCRIPTION
1	0E6586	2	GASKET BOSCH 32 & 40
2	0H0295	1	ADAPTOR PCV INTAKE
3	0A6593	1	ADAPTOR - CARBURETOR
4	0C8127	1	ELEMENT, AIR CLEANER
5(1)	062974	1	STUD TH 1/4-20 X 4-1/2 G2 ZNC
6	022127	1	NUT HEX 1/4-20 STEEL
7	0G0190	1	PLATE, AIR CLEANER TOP 2.4L
8	037561	1	NUT WING 1/4-20 W/NY INS ST ZN
9(2)	0H1712	1	BARBED EL 90D 1/2NPT X 3/4
10	050830	4	SCREW HHC M5-0.8 X 40 G8.8
11(3)	0H0896	1	FITTING VENT VALVE COVER
	0H1644 (6)	1	FTG VNT VALVE COVER 36/60KW G2
	0G10080103 (6)	1(REF)	GASKET, PCV VALVE
12	057822	2	CLAMP HOSE #8 .53-1.00
13	059057	1	HOSE 3/4 ID SAE-30R2 (17.5"LG)
14	047527	1	BARBED STR 1/2NPT X 3/4
15(5)	0H1787	1	PIPE INSULATION (17"LG)
16(4)(5)	0H1787A	1	PIPE INSULATION ELBO
17	0E8286	1	ELBOW 45D STREET 1/2NPT BRASS
18(5)	0H1801	1	PIPE INSULATION TAPE (14"LG)

- (1) APPLY MEDIUM STRENGTH BLUE THREAD LOCKING FLUID TO THE THREADS ON THE END OF STUDS (I/N 5) THAT SCREWS INTO THE CARB ADAPTER (I/N 2).
- (2) APPLY PIPE SEALANT COMPOUND TO THREADS.
- (3) APPLY RETAINING COMPOUND (P/N 078637-LOCTITE 620) BEFORE INSTALLING I/N 11 INTO THE ENGINE VALVE COVER.
- (4) TRIM INSULATION ELBOW TO FIT.
- (5) INSULATION SHALL COMPLETELY COVER I/N'S 17, 14, 13 & 9.
- (6) ALTERNATE CONFIGURATION REQUIRES ALL NOTED PARTS.

GROUP D



GROUP D



EXPLODED VIEW: EV COOLING SYSTEM 2.4L G2

DRAWING #: 0H3079

GROUP D

ITEM	PART#	QTY.	DESCRIPTION
1	0H30830ST03	1	WELDMENT RADIATOR SUPPORT C2
2	0F2608	1	RADIATOR 598 X 568 X 49 CPL RH
3	0E3256	1	V-BELT A58 (60IN O.C.) DDC S60
4	046526	5	WASHER LOCK M10
(1) 5	059981	4	SCREW HHC M10-1.5 X 30 G10.9
6	0A5259A	2	HOSE 2"ID X 3.0"LG
7	0F5050A	1	SHIELD RADIATOR C4
(3) 8	0H2844	2 (REF)	BEARING SLEEVE 1/2 X 3/4 X 1
9	0F2573	1	PULLEY FAN V-GROOVE 9"
10	0F4011	1	FAN COOL 22" DIA 10 BLADE LH
11	0H20620ST03	1	ARM BELT TENSIONER
(1) 12	0H2051	1	SHOULDER BOLT 1/2 X 2-1/4"
13	0F2862	1	SPRING TENSION CPL
14	0F2560	1	PULLEY V-BELT 4" FLANGED
15	022131	4	WASHER FLAT 3/8-M10 ZINC
16	0E2507	1	PROBE COOLANT LEVEL 3/8 NPTF
	0H1827	1	PROBE COOLANT LEVEL 3/8-18NPTF
17	035685	2	CLAMP HOSE #28 1.32-2.25
18	0F2561	1	HUB FLEX PLATE
19	0C8145	8	WASHER FLEX (THIN)
20	052250	2	TAPE FOAM 1 X 1 (26.75" LG)
21	0C7043	12	DISK FLEX
22	0L01050ST0R	1	BRACKET COOLANT TANK
23	022473	8	WASHER FLAT 1/4-M6 ZINC
(1) 24	0C8146	4	SCREW HHC 5/16-24 X 1.124
25	022097	16	WASHER LOCK M6-1/4
26	076749	1	TANK COOLANT RECOVERY
(2) 27	048031C	2(REF)	CLAMP HOSE BAND 1/4
28	031971	1	BEARING #6205 2NSE C3 E SRI2 S
29	0H0696	1	PULLEY 7.5" DIA MACHINED
(1) 30	042911	1	SCREW HHC M10-1.5 X 30 G8.8
31	0F2872	1	SCREW HHC 1/2-13 X 2" G8
32	022304	1	WASHER FLAT 1/2 ZINC
33	022195	1	WASHER LOCK 1/2
34	022196	1	NUT HEX 1/2-13 STEEL
35	0F8651	8	SCREW HHFC M8-1.25 X 20 W/M6
36	052677	1	WASHER NYLON .50 X .87 X .06
37	0F9867	1	SHAFT FAN DRIVE
38	0F2461	1	RETAINER BEARING
39	022145	13	WASHER FLAT 5/16-M8 ZINC
40	022129	9	WASHER LOCK M8-5/16
(1) 41	039287	1	SCREW HHC M8-1.25 X 45 C8.8
42	082774	1	KEY WOODRUFF 4 X 19D
43	0G0795	1	HOSE LOWER RADIATOR G2
44	0G0816	1	HOSE UPPER RADIATOR G2 (USED WITH MANFLD P/N 0G0707)
	0H1546	1	HOSE UPPER RADIATOR G2 (USED WITH MANFLD P/N 0G8488)
45	049813	8	NUT HEX M6 X 1.0 G8 YEL CHR
46	052644	1	SPACER .5 X 1.5 X .25 STL/ZINC
47	0C8566	16	SCREW HHFC M6-1.0 X 20 G8.8
48	0C2454	4	SCREW THF M6-1 X 16 N WA Z/JS
49	090283	1	CAP RADIATOR 13 PSI
50	0G53150AL0R	1	SPACER CPL COOLING FAN 1/8"
51	0C2454B	4	SCREW THF M6-1 X 30 N WA DELTA
52	0G3989	1	TUBE CAC OUT G2 TURBO
53	039253	2	SCREW HHC M8-1.25 X 20 C8.8
54	0H0750	1	TUBE CAC IN
55	049820	2	NUT HEX LOCK M8-1.25 NY INS
56	0H30880ST03	1	BRACKET TENSIONER SPRING
57	099502	2	CLAMP HOSE #24 B1.06-2.00
58	0C8165	2	NUT HEX LOCK 5/16-24 NY INS
59	029032	1	HOSE 9/32 ID (36"LG)
60	0G3762	1	CAC 504W X 152H X 50D 2.4L G2
61	0G1285C	8	CLAMP CNST TENSION 1.75-2.625
62	071296A	2	HOSE 2"ID X 3.0"LG
(4) 63	0H1851	1	ASSY PCB LCL SENSOR (USE WITH I/N 16, P/N 0H1827 ONLY)

EXPLODED VIEW: EV COOLING SYSTEM 2.4L G2**DRAWING #: 0H3079****GROUP D**

ITEM	PART#	QTY.	DESCRIPTION
64	029333A	9	TIE WRAP UL 7.4" X .19" BLK (NOT SHOWN)
65	0D3700	8	NUT FLANGE M6-1.0 NYLOK
66	048031C	1	CLAMP HOSE BAND .50
67	029032	1	HOSE 9/32 ID (27"LG)
68	085662	2	TIE WRAP UL 14.6 X .14 BLK(NOT SHOWN)

BEARING PRESS NOTE:

APPLY LOCTITE 620 BEARING RETAINMENT COMPOUND TO BEARING SURFACE ON ITEM 37 PRIOR TO PRESSING ITEM 28 ONTO ITEM 37.

ALSO APPLY LOCTITE 620 BEARING RETAINMENT COMPOUND TO THE OUTSIDE OF 28 PRIOR TO INSTALLING ITEM 28 INTO ITEM 38.

(1) APPLY MEDIUM STRENGTH BLUE THREAD LOCKING FLUID TO THREADS.

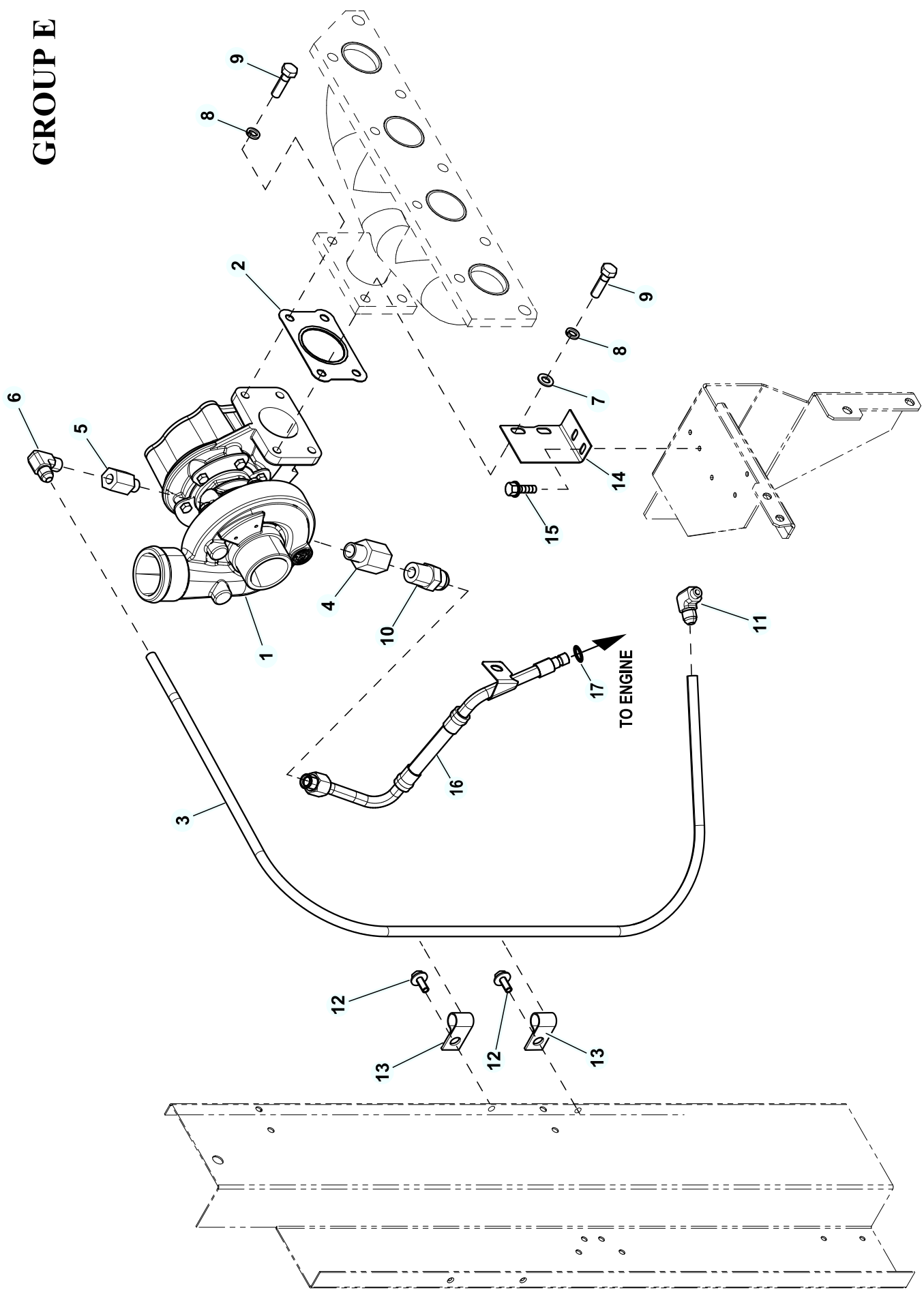
(2) INCLUDED WITH I/N 26.

(3) ITEM 8 IS INCLUDED WITH ITEM 1.

(4) USE WITH R-200 CONTROL PANEL ONLY.

(5) FASTEN HOSE TO RADIATOR SUPPORT USING TIE WRAP I/N 68. DIRECT HOSE TOWARD BASE OF UNIT.

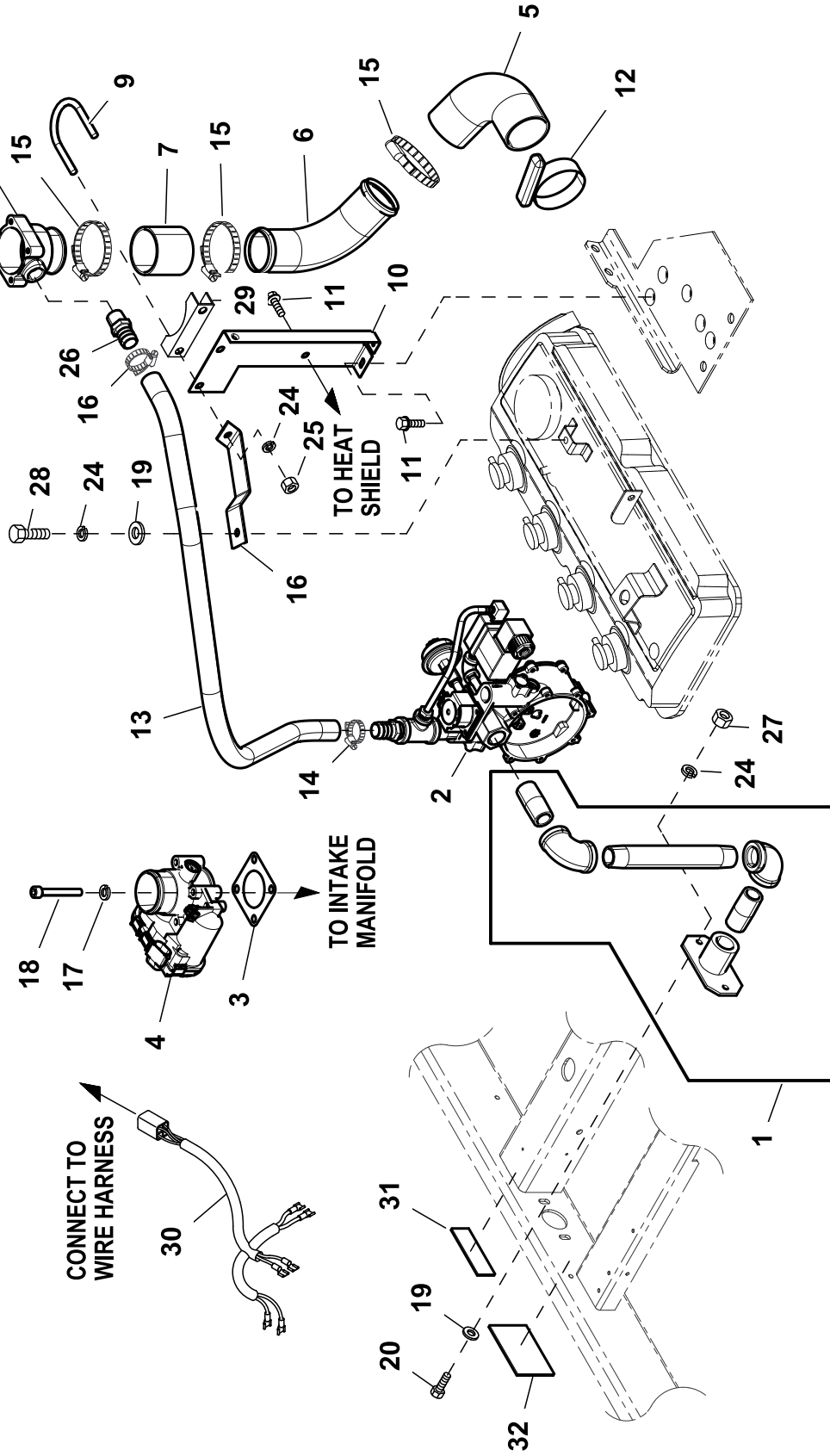
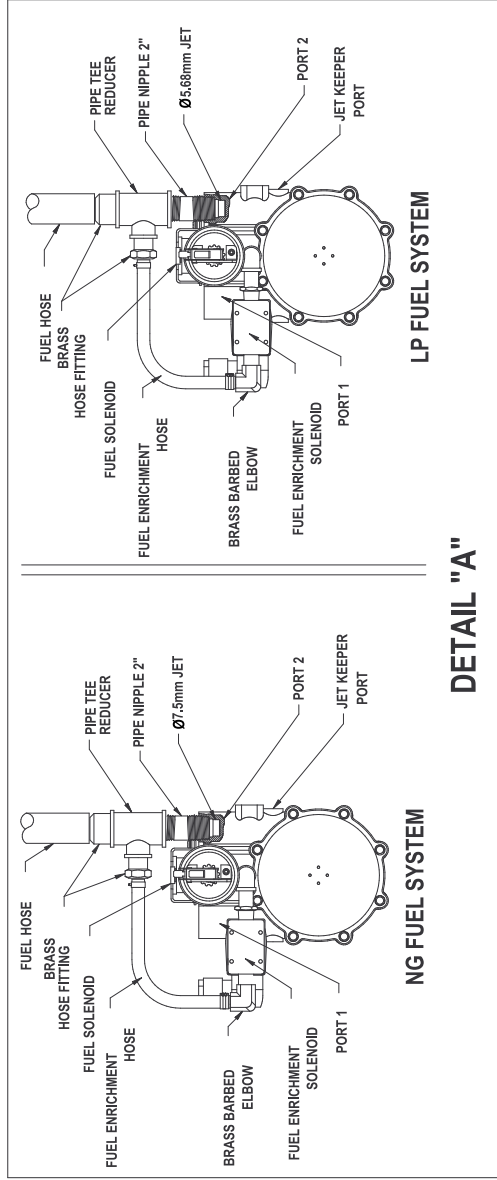
GROUP E



EXPLODED VIEW: EV TURBO 2.4L G2 36KW**DRAWING #: 0G9646****GROUP E**

ITEM	PART#	QTY.	DESCRIPTION
1	0G9936	1	TURBOCHARGER 2.4L 36KW 1800RPM
2	0H0788	1	GASKET EXH MAN/TURBO
3	064096B	1	OIL SUPPLY 3LHA(38")
4	0A4707F	1	ADAPTER 1/2NPT X M16-1.5
5	0A4707B	1	ADAPTER 1/4NPT X M12-1.5
6	0C4973C	1	ADAPTER 90D JIC37 1/4NPT X 1/2
7	0A8830	2	WASHER FLAT .34ID X .75OD
8	070006	4	WASHER LOCK M8 SS
9	070010	4	SCREW HHC M8-1.25 X 35 SS FTH
10	0C4975	1	ADAPTOR 1/2 NPT X 37JIC 3/4-16
11	064094	1	ADAPTER 90D JIC37 1/8NPT X 1/2
12	0C2454	2	SCREW THF M6-1 X 16 N WA Z/JS
13	055934C	2	CLAMP STL/VNL .5 X .406 Z
14	0H0746	1	BRKT-EXH MANF 2.4L G2 36KW
15	090388	2	SCREW HHTT M6-1.0 X 12 ZINC
16	0H0935	REF	TUBE TURBO OIL RETURN G2 36KW
17	0G3823	REF	O-RING SIZE 9.0MM X 2.0MM NITR

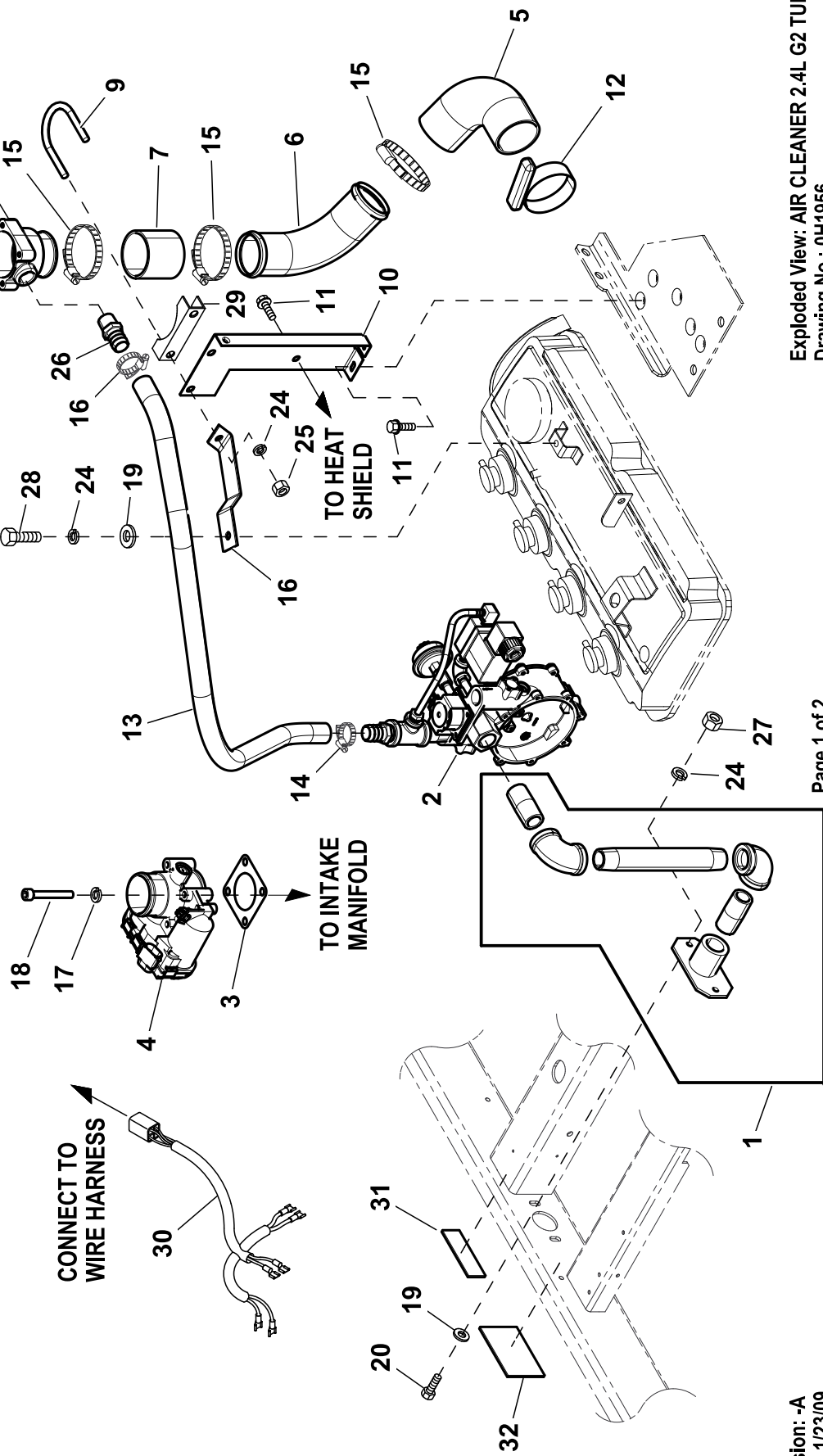
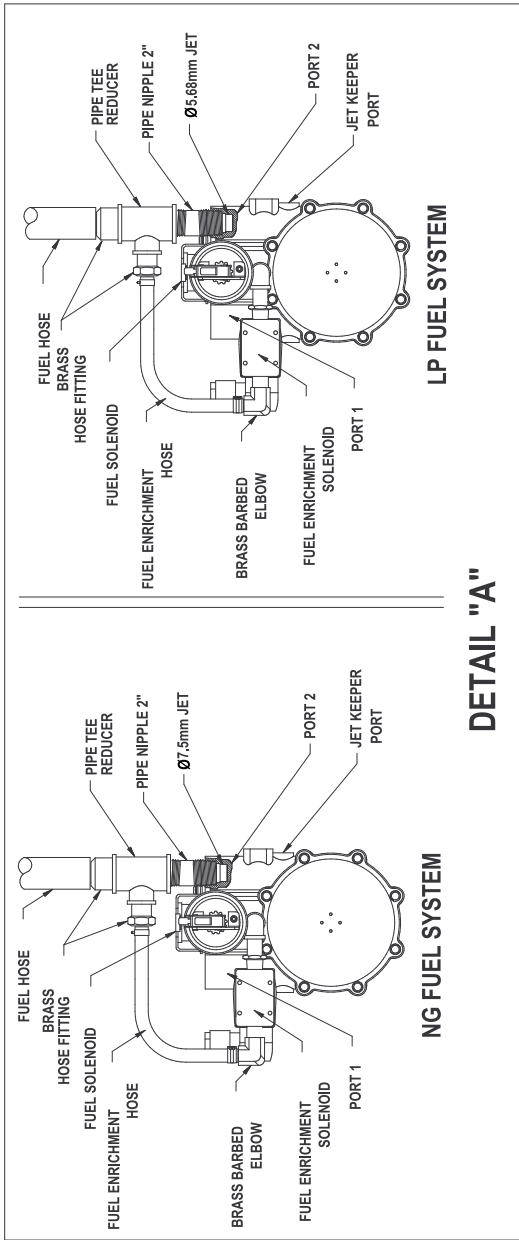
GROUP E



EXPLODED VIEW: EV FUEL SYSTEM NG 2.4L G2 TURB**DRAWING #: 0H1956****GROUP E**

ITEM	PART#	QTY.	DESCRIPTION
1	0F8274	1	ASSY RGLTR INLET NPT FITTINGS
2	0F6390K	1	REGULATOR ASSY 2.4L 36KW
3	0E6586	1	GASKET, BOSCH 32 & 40
4	0E4394	1	ACTUATOR BOSCH 40, GOVERNOR
5	063225	1	ELBOW RUBBER 90 2" ID
6	0H0749A	1	INTAKE TUBE 2.4L G2 36KW
7	0K9704	1	HOSE COOLING 2IN ID 20R4 (2IN)
8	0G4573B	1	MIXER ACTUATOR
9	036434	1	BOLT U 5/16-18 X 2.09
10	0H07470ST03	1	BRACKET INTAKE MANIFOLD
11	090388	3	SCREW HHTT M6-1.0 X 12
12	0G1285C	1	CLAMP CNST TENSION 1.75-2.625
13	059057	1	HOSE 3/4 ID SAE-30R2 (35"LG)
14	057822	2	CLAMP HOSE #8 .53-1.00
15	086133C	3	CLAMP HI TORQUE 1.75 - 2.625
16	0H09080ST03	1	BRACKET-INTAKE REINFORCEMENT
17	022097	4	WASHER LOCK M6-1/4
18	046580	4	SCREW SHC M6-1.0 X 45
19	022145	3	WASHER FLAT 5/16-M8 ZINC
20	039253	2	SCREW HHC M8-1.25 X 20 G8.8
21	0F7790C	1	VENTURI THROTTLE 24MM
22	0E7121	1	O-RING 47.625 ID X 2.38 WIDTH
23	0F2119	1	O-RING 45.63 ID X 2.62 WIDTH
24	022129	5	WASHER LOCK M8-5/16
25	022259	2	NUT HEX 5/16-18 STEEL
26	047527	1	BARBED STR 1/2NPT X 3/4
27	045771	2	HEX NUT-METRIC
28	042907	1	SCREW HHC M8-1.25 X 16 G8.8
29	036449	1	SADDLE 2 INCH
30	0F6155	1	HARNESS FUEL JUMPER SINGLE REG
31	0D1509	1	DECAL INLET PRESSURE
32	050279	1	DECAL FUEL INLET NG
	050280	1	DECAL FUEL INLET LPG

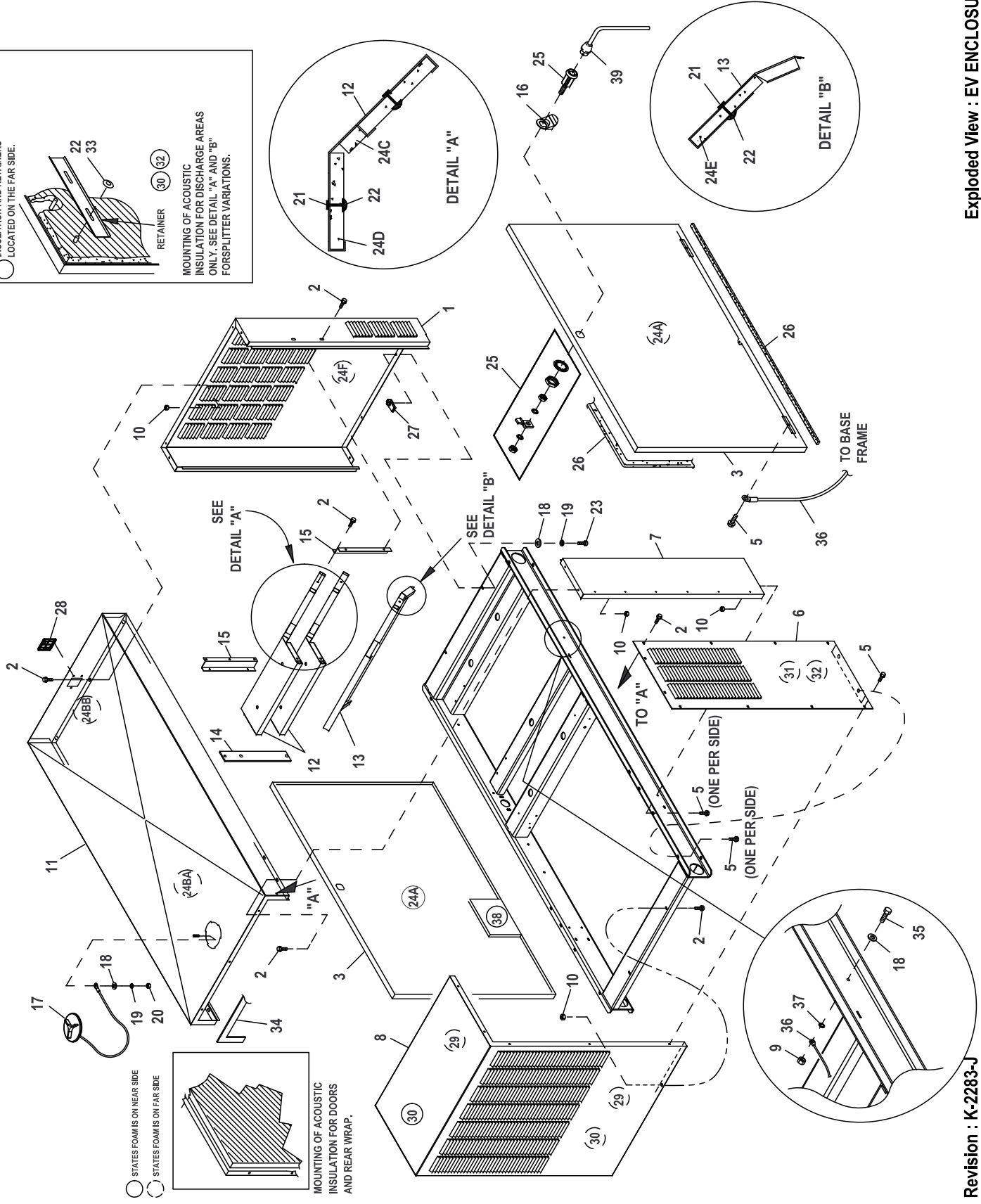
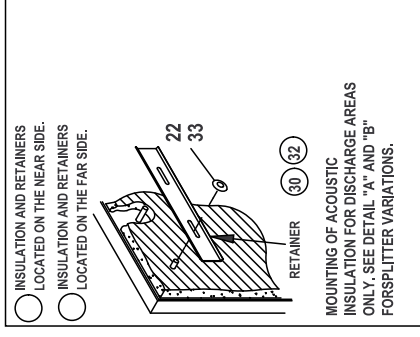
GROUP D



EXPLODED VIEW: FUEL SYSTEM NG 2.4L G2 TURB**DRAWING #: 0H1956****GROUP E****APPLICABLE TO:**

ITEM	PART#	QTY.	DESCRIPTION
1	0F8274	1	ASSY RGLTR INLET NPT FITTINGS
2	0F6390K	1	REGULATOR ASSY 2.4L 36KW
3	0E6586	1	GASKET, BOSCH 32 & 40
4	0E4394	1	ACTUATOR BOSCH 40, GOVERNOR
5	063225	1	ELBOW RUBBER 90 2" ID
6	0H0749A	1	INTAKE TUBE 2.4L G2 36KW
7	040105	1	HOSE COOL 2IN ID 20R4 (3FT)
8	0G4573B	1	MIXER ACTUATOR
9	036434	1	BOLT U 5/16-18 X 2.09
10	0H07470ST03	1	BRACKET INTAKE MANIFOLD
11	090388	3	SCREW HHTT M6-1.0 X 12
12	0G1285C	1	CLAMP CNST TENSION 1.75-2.625
13	059057	1	HOSE 3/4 ID SAE-30R2 (35"LG)
14	057822	2	CLAMP HOSE #8 .53-1.00
15	086133C	3	CLAMP HI TORQUE 1.75 - 2.625
16	0H09080ST03	1	BRACKET-INTAKE REINFORCEMENT
17	022097	4	WASHER LOCK M6-1/4
18	046580	4	SCREW SHC M6-1.0 X 45
19	022145	3	WASHER FLAT 5/16-M8 ZINC
20	039253	2	SCREW HHC M8-1.25 X 20 G8.8
21	0F7790C	1	VENTURI THROTTLE 24MM
22	0E7121	1	O-RING 47.625 ID X 2.38 WIDTH
23	0F2119	1	O-RING 45.63 ID X 2.62 WIDTH
24	022129	5	WASHER LOCK M8-5/16
25	022259	2	NUT HEX 5/16-18 STEEL
26	047527	1	BARBED STR 1/2NPT X 3/4
27	045771	2	HEX NUT-METRIC
28	042907	1	SCREW HHC M8-1.25 X 16 G8.8
29	036449	1	SADDLE 2 INCH
30	0F6155	1	HARNESS FUEL JUMPER SINGLE REG
31	0D1509	1	DECAL INLET PRESSURE
32	050279	1	DECAL FUEL INLET NG
	050280	1	DECAL FUEL INLET LPG

GROUP F



EXPLODED VIEW: EV ENCLOSURE C2**DRAWING #: 0H0004****GROUP F**

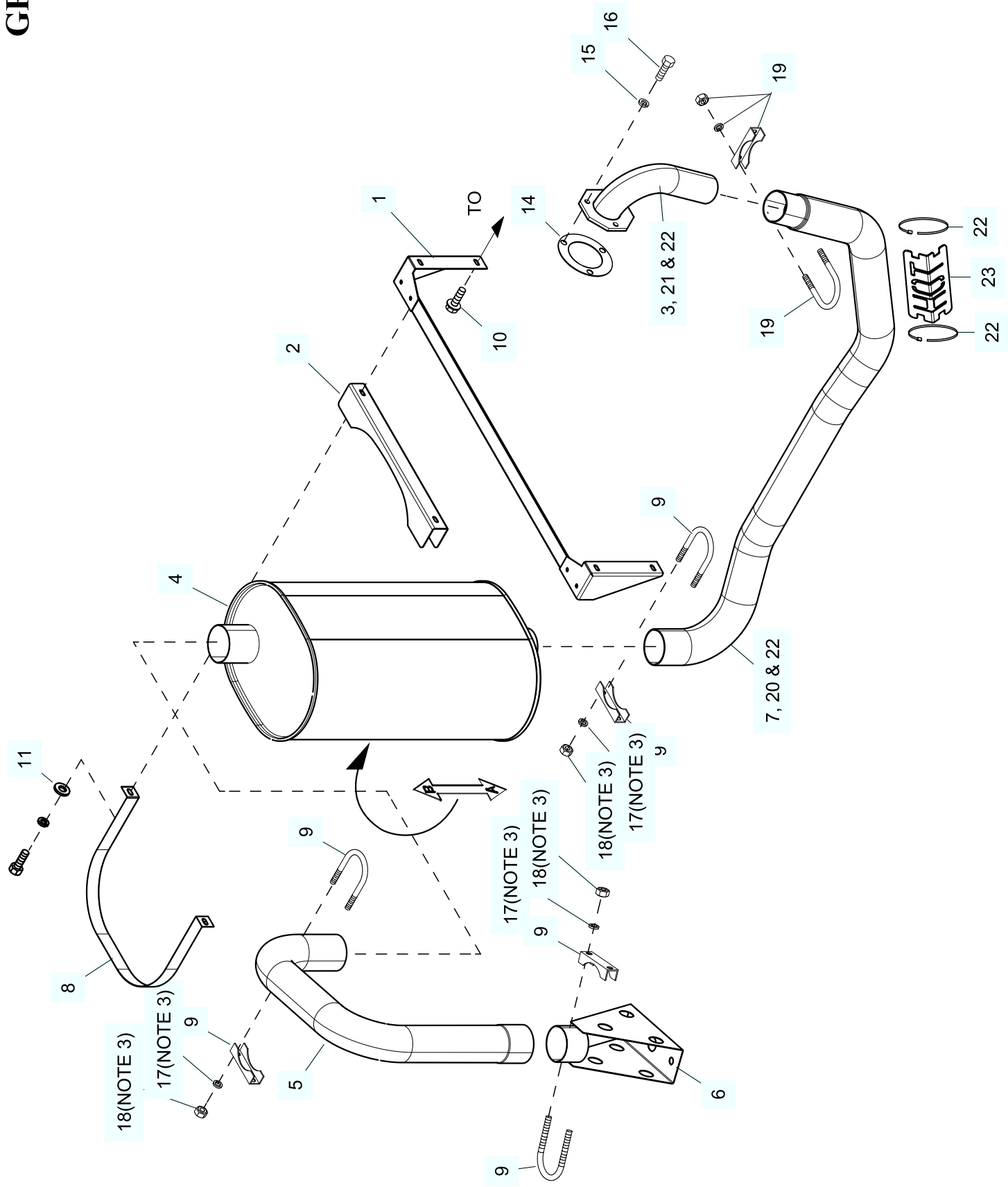
ITEM	PART#	QTY.	DESCRIPTION
(2)1	0G00450AL0R	1	REAR WRAP C2 CPL
(1)2	0C2454	44	SCREW THF M6-1 X 16 N WA Z/JS
(2)3	0F58490AL0R	2	DOOR C2
4	087233	2	RIVET POP .1875 X .450 SS
(1)5	0E3257	10	SCREW TH-FRM M6 W/CAP SHKPRF W
(2)6	0F58520AL0R	2	DISCHARGE DUCT LH & RH SIDE C2
(2)7	0F98330AL0R	2	FRONT CORNERS C2
(2)8	0F58510AL0R	1	DISCHARGE CENTER DUCT C2
9	049813	2	NUT HEX M6 X 1.0 G8 YEL CHR
(1)10	077992	17	NUT HEX LOCK M6-1.0 SS NY INS
(2)11	0F98350AL0R	1	ROOF C2
12	0F2786	2	SPLITTER C4
13	0F2785	1	SPLITTER LOWER C4
14	0F3364	1	SPLITTER STINGER C2
15	0F4880	2	SUPPORT SPLITTER LH C2
16	0F5049B	2	PULL TAB DOOR LOCK SS
17	0F4487A	1	ASSEMBLY COVER ACCESS
18	022473	7	WASHER FLAT 1/4-M6 ZINC
19	022097	5	WASHER LOCK M6-1/4
20	022127	1	NUT HEX 1/4-20 STEEL
21	0F3072	10	INSULATION RETAINMENT HANGER
22	078115	26	WASHER SELF LOCKING DOME #4-40
23	0C8566	4	SCREW HHFC M6-1.0 X 20 G8.8
24	0G6001	1	KIT INSULATION C2
24A	0G5892	2	INSULATION DOOR C2
24B	0L3103	1	KIT INSULATION C2
24BA	0G5892A	1	INSULATION ROOF TOP
24BB	0G5892F	1	INSULATION ROOF TOP
24C	0G5892C	2	INSULATION SPLITTER
24D	0G5892D	2	INSULATION SPLITTER
24E	0G5892E	1	INSULATION LOWER SPLITTER
24F	0G5892B	1	INSULATION REAR WRAP
25	0F5048D	2	WISE-ACTION LATCH SLOTTED CIR
26	0E5968	1	GASKET EXTRUDED TRIM (328" LG)
27	0H0412	4	NUT U M6-1.0 GEOMET
28	0H1208A	1	RF COVER PLATE-PLASTIC-BISQUE
	0H1208B	1	RF COVER PLATE-PLASTIC-GREY
29	0F4051C	2	INSULATION DUCT
30	0F3890B	4	RETAINER INSULATION (820)
31	0F4051B	2	INSULATION DUCT SIDES
32	0F3890	4	RETAINER INSULATION (450)
33	078115A	6	WASHER SELF LOCKING DOME #8-32
34	066760	1	STRIP SEALANT 1/8 X 1 (44.52"LG)
35	042568	2	SCREW HHC M6-1.0 X 20 G8.8
36	0912970090	2	ASSY WIRE 14AWG GRN/YEL
37	022447	2	WASHER SHAKEPROOF INT 1/4
38	0E5298L	1	FOAM 300 X 300 THERMAL ACO (APPLIES TO 4.2L UNITS ONLY)
39	0F8869D	1	KEY WISE-ACTION LATCH SLOT CIR

(1) ENCLOSURE NOTE: PANELS THAT FASTEN TO THE BASEFRAME (EXCEPT ITEM 1) MUST BE SECURED USING I/N 2 & 5 (THREAD FORMING FASTENERS) AND I/N 10 (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 5 (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).

GROUP F



EXPLODED VIEW: MUFFLER EXH 2.4L G2 TURBO**DRAWING #: 0H0139****GROUP F**

ITEM	PART#	QTY.	DESCRIPTION
(1)1	0G86870ST0R	1	BRACKET MUFFLER
2	0G8686	1	BRACKET STIFFENER
3	0G3919	1	UPPER EXHAUST PIPE ASM
4	0K7782	1	MFLR 8.5"X11.5"X19" 2.5"IN/OUT
5	0F2808D	1	EXHAUST PIPE
6	0G0007	1	DIFFUSER EXHAUST WELDMENT
7	0H0748	1	EXHAUST PIPE
8	0G8685	1	STRAP MUFFLER
9	080762	3	BOLT U 3/8-16 X 2.62
10	0C2454	4	SCREW THF M6-1 X 16 N WA Z/JS
11	022473	2	WASHER FLAT 1/4-M6 ZINC
12	022097	2	WASHER LOCK M6-1/4
13	049721	2	SCREW HHC M6-1.0 X 35 G8.8 BLK
14	0H0789	1	GASKET TURBO/EXHAUST 2.4L 36KW
15	070006	3	WASHER LOCK M8 SS
16	070002	3	SCREW HHC M8-1.25 X 25 SS
17	022237	6	WASHER LOCK 3/8
18	022241	6	NUT HEX 3/8-16 STEEL
19	0H1310	1	BOLT U 3/8-16 X 2.30 W/SADDLE
(2)20	0G3770	1	EXHAUST BLANKET 737MM (NOT SHOWN)
(2)21	0G3770A	1	EXHAUST BLANKET 432MM (NOT SHOWN)
22	0K1526	5	TIE WRAP, 14.3" STAINLESS STL
23	0D3701A	1	PLATE HOT 50 X 110

NOTES (UNLESS OTHERWISE SPECIFIED):

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

- MANUFACTURING: FOR CORRECT MATERIAL AND COLOR REFER TO XA 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).

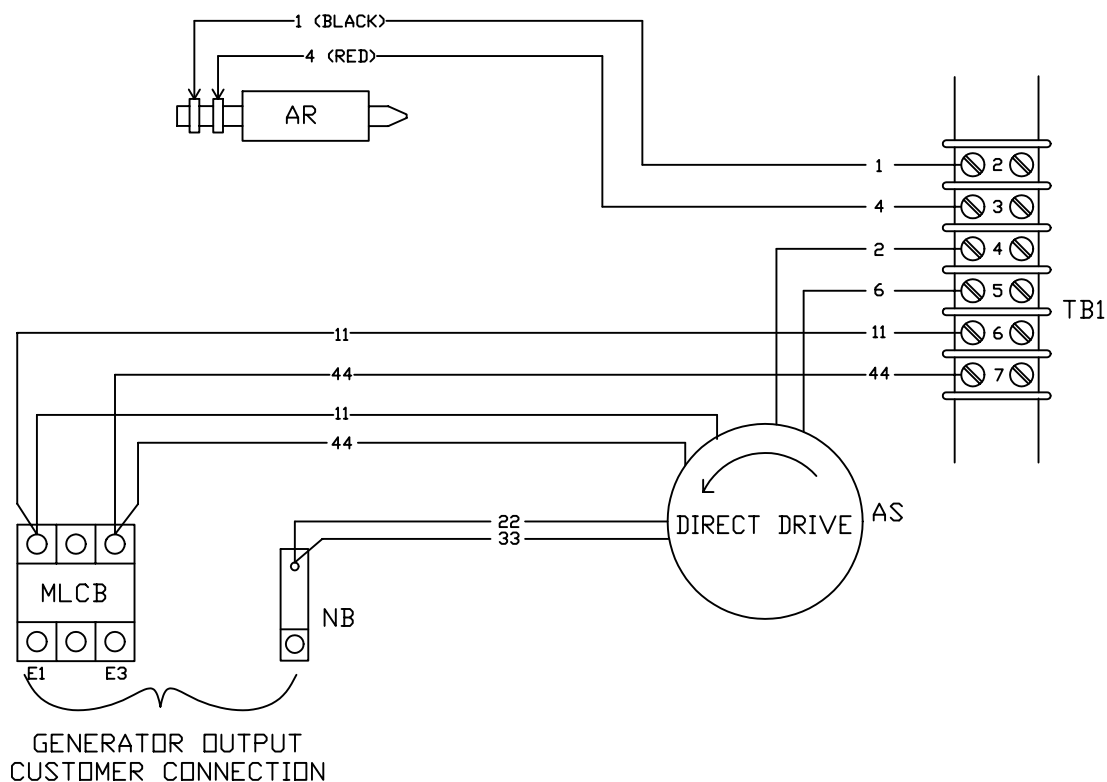
(2) TWO TIE WRAPS ARE INCLUDED WITH EACH EXHAUST BLANKET, ONE AT EACH END.

(3) INCLUDED WITH I/N 9, P/N 080762.

OPTION 1 - SINGLE PHASE, R-SERIES CONTROL PANEL, 240V

LEGEND

AR = ALTERNATOR ROTOR
 AS = ALTERNATOR STATOR
 MLCB = MAIN CIRCUIT BREAKER
 NB = NEUTRAL BLOCK

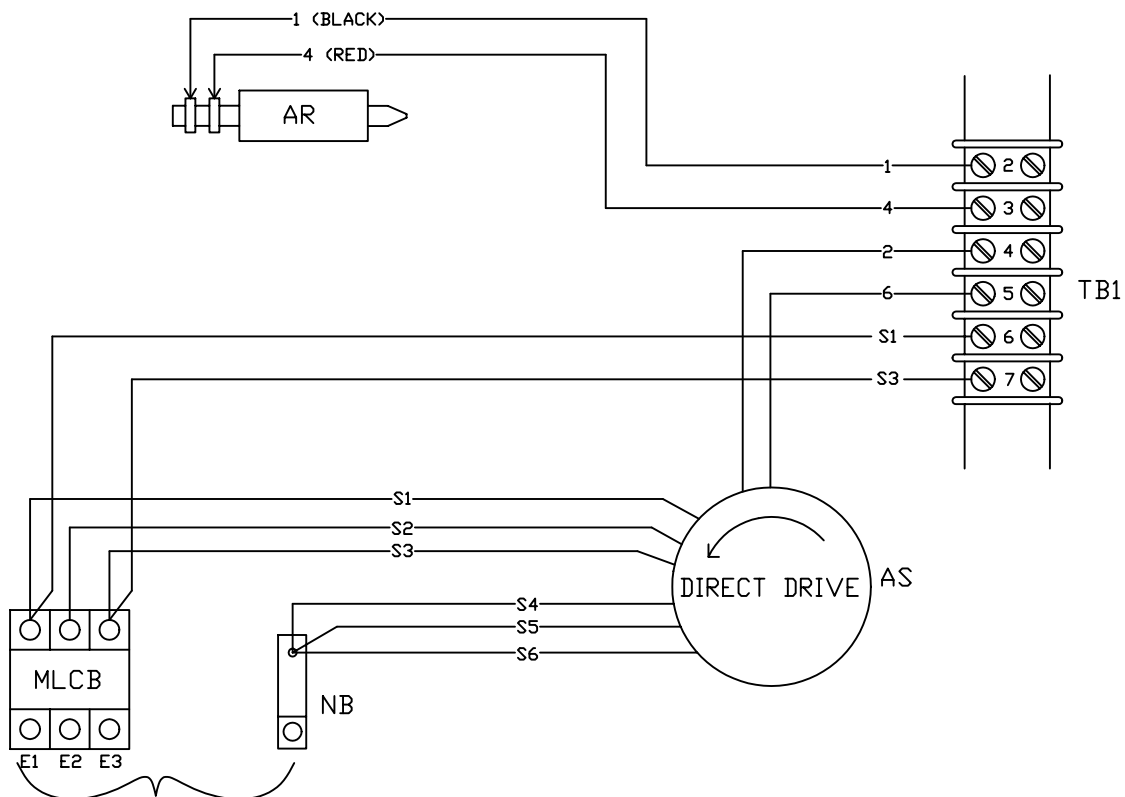


E1 - E3 = 240VAC
 E1 - NB = 120VAC
 E3 - NB = 120VAC

OPTION 2 - THREE PHASE, R-SERIES CONTROL PANEL, 6-WIRE 120/208V

LEGEND

AR = ALTERNATOR ROTOR
 AS = ALTERNATOR STATOR
 MLCB = MAIN CIRCUIT BREAKER
 NB = NEUTRAL BLOCK



GENERATOR OUTPUT
 CUSTOMER CONNECTION

E1 TO E2
 E2 TO E3 *208VAC
 E1 TO E3

E1, E2, OR E3 TO NB = * 120VAC

*NOTE: THE 8th DIGIT OF THE MODEL NUMBER SPECIFIES OUTPUT VOLTAGE

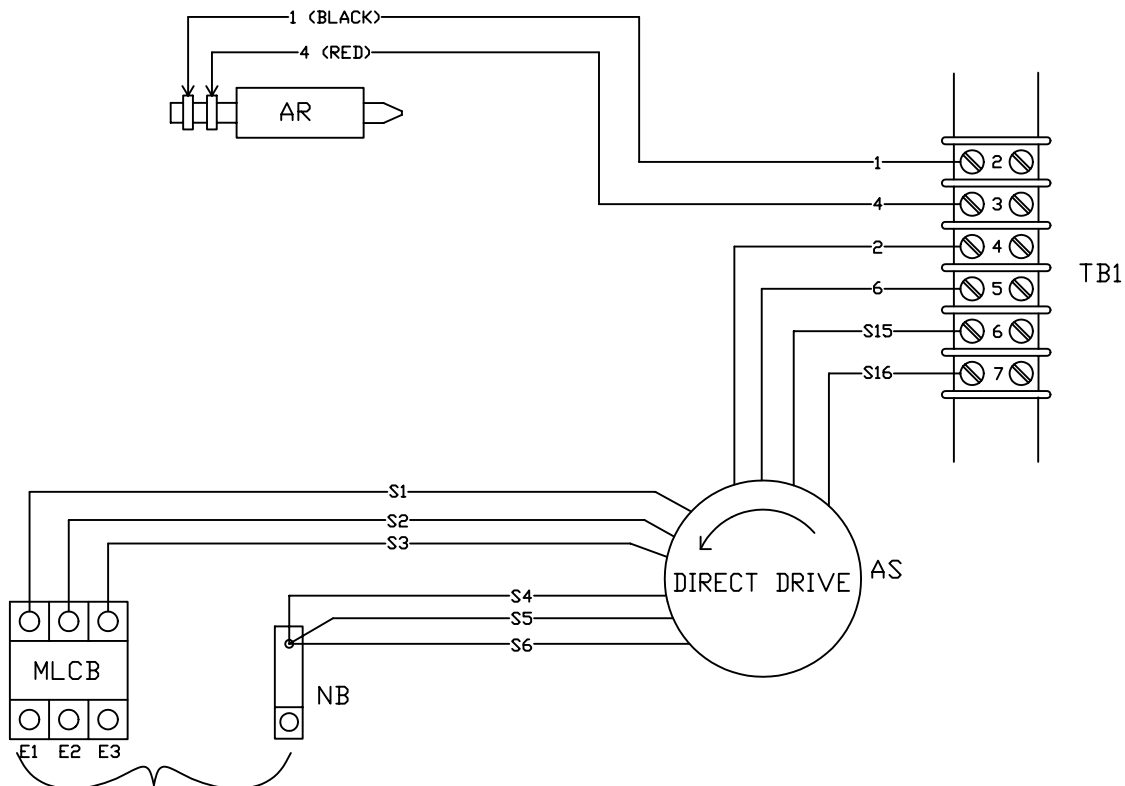
"G" = 120/208VAC

GROUP G

OPTION 3 - THREE PHASE, R-SERIES CONTROL PANEL, 6-WIRE 277/480V

LEGEND

AR	= ALTERNATOR ROTOR
AS	= ALTERNATOR STATOR
MLCB	= MAIN CIRCUIT BREAKER
NB	= NEUTRAL BLOCK



GENERATOR OUTPUT
CUSTOMER CONNECTION

E1 TO E2
E2 TO E3*480VAC
E1 TO E3

E1, E2, OR E3 TO NB = * 277VAC

*NOTE: THE 8th DIGIT OF THE MODEL NUMBER SPECIFIES OUTPUT VOLTAGE

"K" = 227/480VAC

OPTION 4 - THREE PHASE, R-SERIES CONTROL PANEL, 12-WIRE 120/208

LEGEND

AR	= ALTERNATOR ROTOR
AS	= ALTERNATOR STATOR
MLCB	= MAIN CIRCUIT BREAKER
NB	= NEUTRAL BLOCK

GENERATOR OUTPUT CUSTOMER CONNECTION

E1 TO E2
E2 TO E3*208VAC
E1 TO E3

E1, E2, OR E3 TO NB = * 120VAC

*NOTE: THE 8th DIGIT OF THE MODEL NUMBER SPECIFIES OUTPUT VOLTAGE

"G" = 120/208VAC

PAGE 4 OF 4

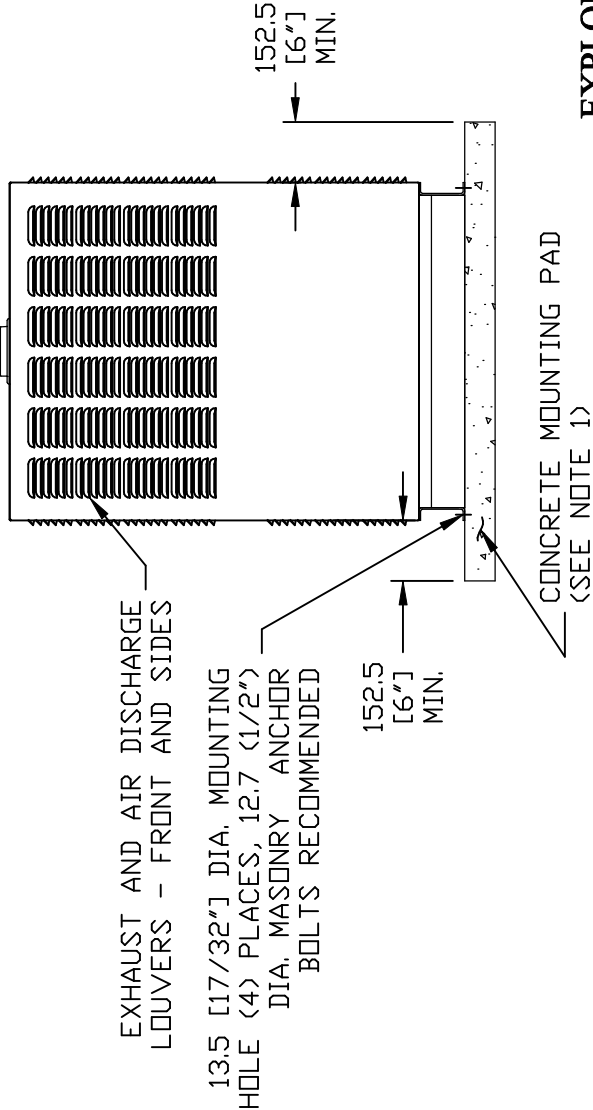
REVISION: G-7501-B
DATE: 02/22/06

WIRING - DIAGRAM
R-SERIES CPL ALTERNATOR
DRAWING #: 0F6839

WEIGHT DATA			
ENCLOSURE MATERIAL	WEIGHT <GENSET ONLY> KG [LBS]	WEIGHT <WOODEN SHIPPING CRATE/SKID> KG [LBS]	SHIPPING WEIGHT <SKID AND GENSET> KG [LBS]
ALUMINUM	577 [1271]	44 [98]	621 [1369]

NOTES:

- 1> MINIMUM RECOMMENDED CONCRETE PAD SIZE: 1155 [45 1/2"] WIDE X 2255 [88 7/8"] LONG. REFERENCE INSTALLATION GUIDE SUPPLIED WITH UNIT FOR CONCRETE PAD GUIDELINES.
- 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 AND 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, BATTERY CHARGER 120 VOLT AC (.5 AMP MAX.) CONNECTION, AND ACCESS TO TRANSFER SWITCH CONTROL WIRES. REMOVE FRONT 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 MUFFLER AND FAN BELT.



EXPLODED VIEW:
INSTLTN DRAWING QT 36 2.4L 36KW G2
DRAWING #: 0H0841

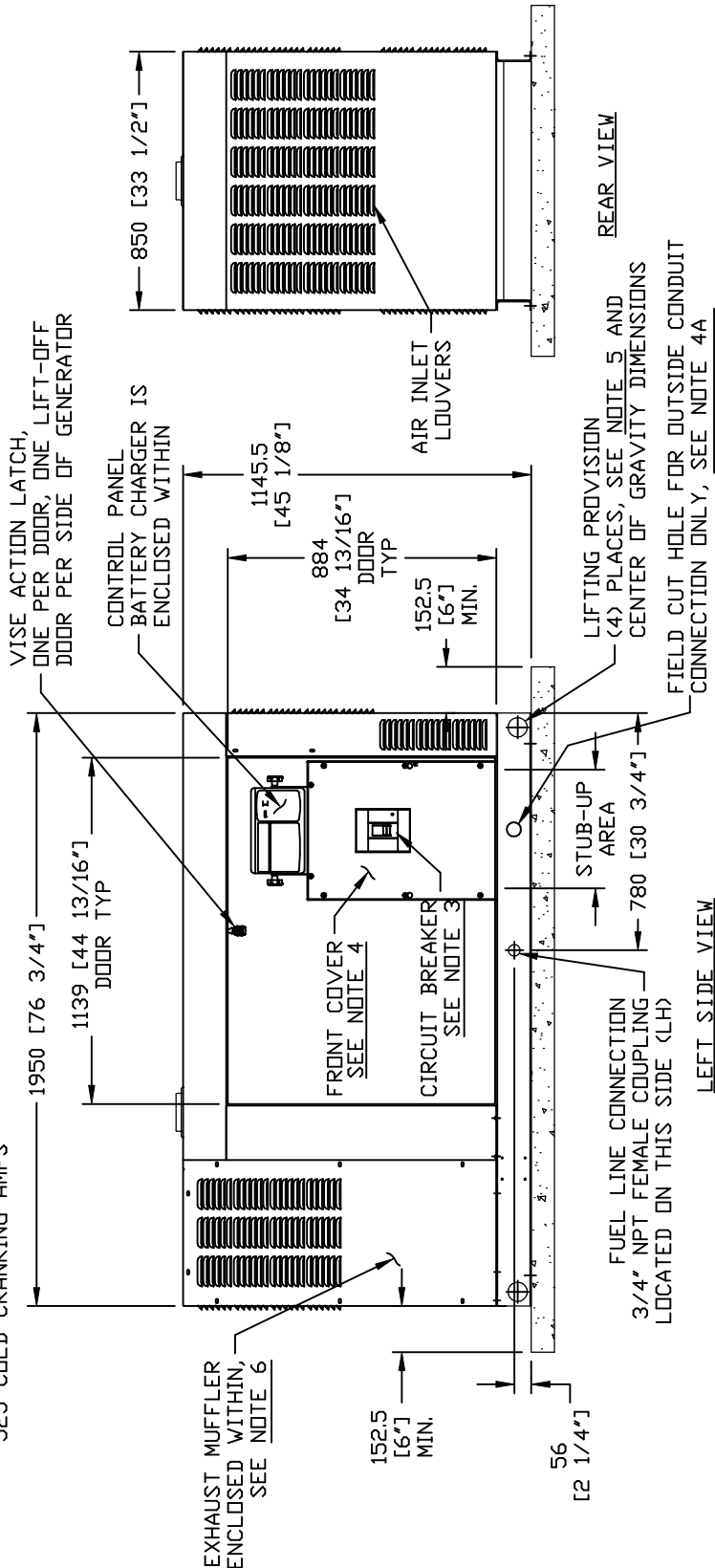
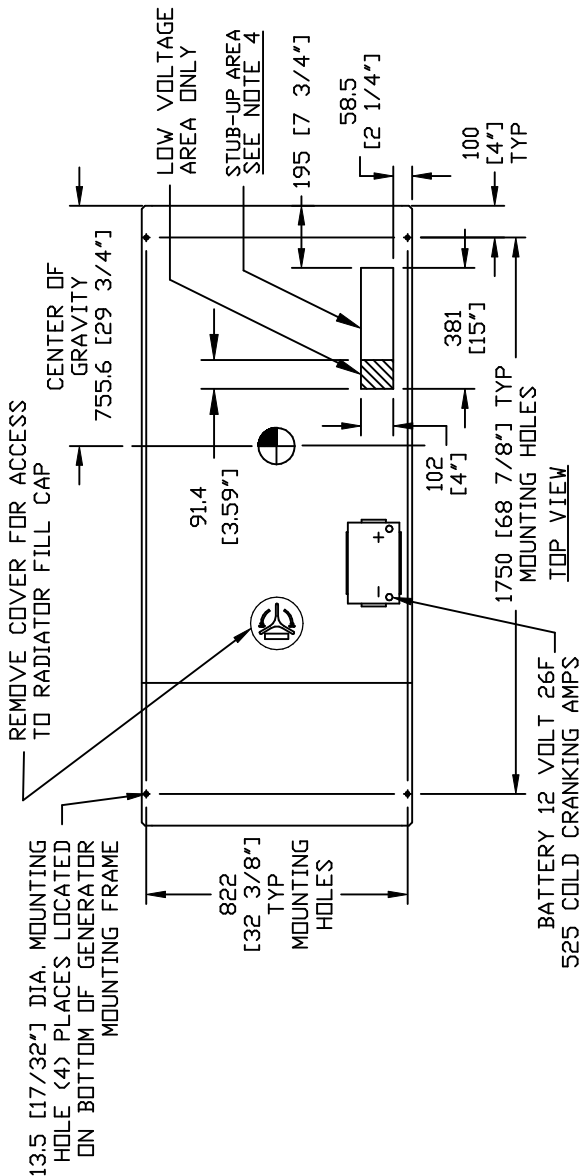
FRONT VIEW

GROUP G

SERVICE ITEM ACCESSIBILITY CHART

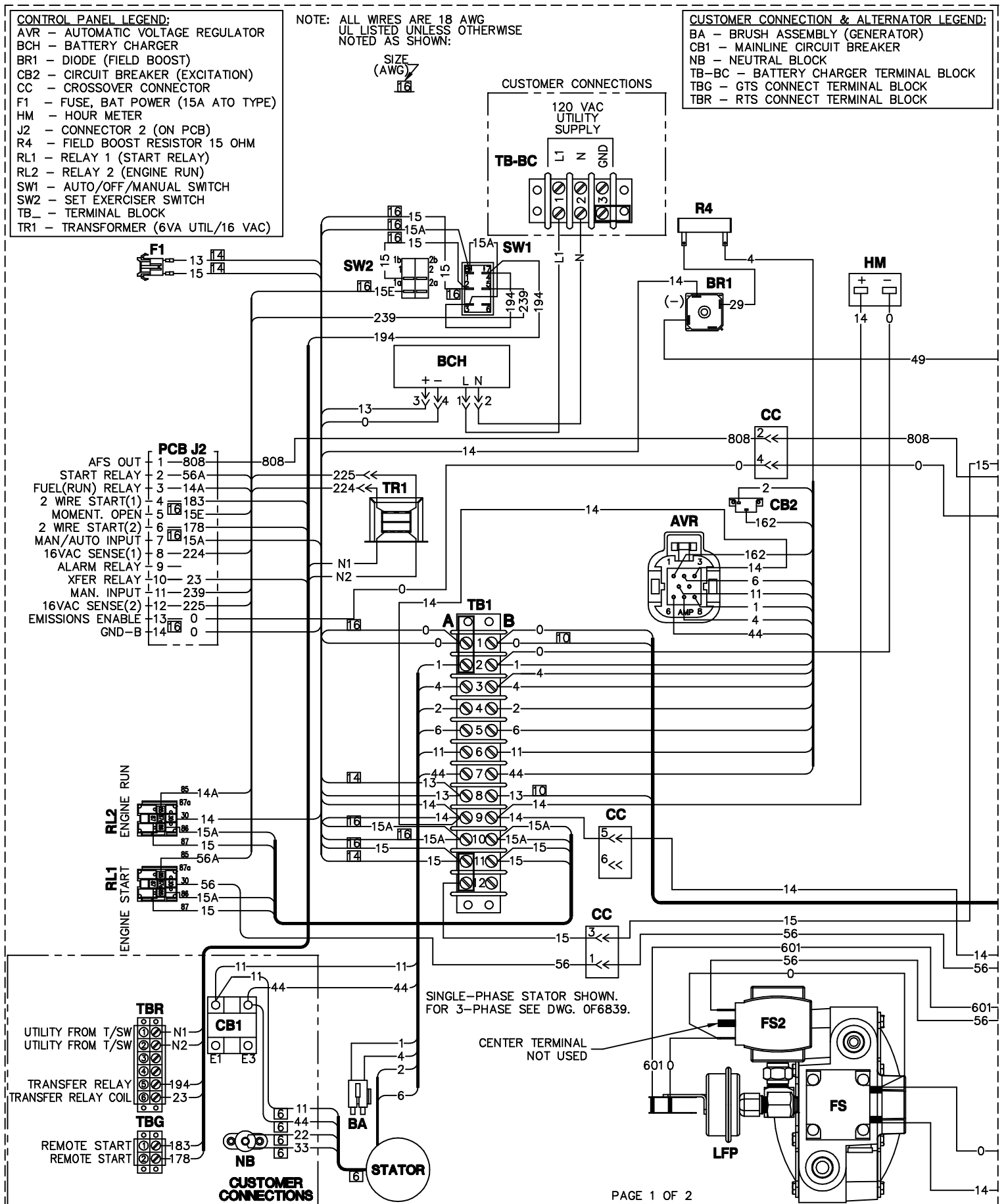
SERVICE ITEM	2. 4L
OIL FILL CAP	EITHER DOOR
OIL DIP STICK	THRU RIGHT DOOR
OIL FILTER	THRU RIGHT DOOR
OIL DRAIN HOSE	THRU RIGHT DOOR
RADIATOR DRAIN HOSE	THRU LEFT DOOR
AIR CLEANER ELEMENT	THRU RIGHT DOOR
SPARK PLUGS	THRU LEFT DOOR
MUFFLER	SEE NOTE 6
FAN BELT	SEE NOTE 6
BATTERY	THRU LEFT DOOR

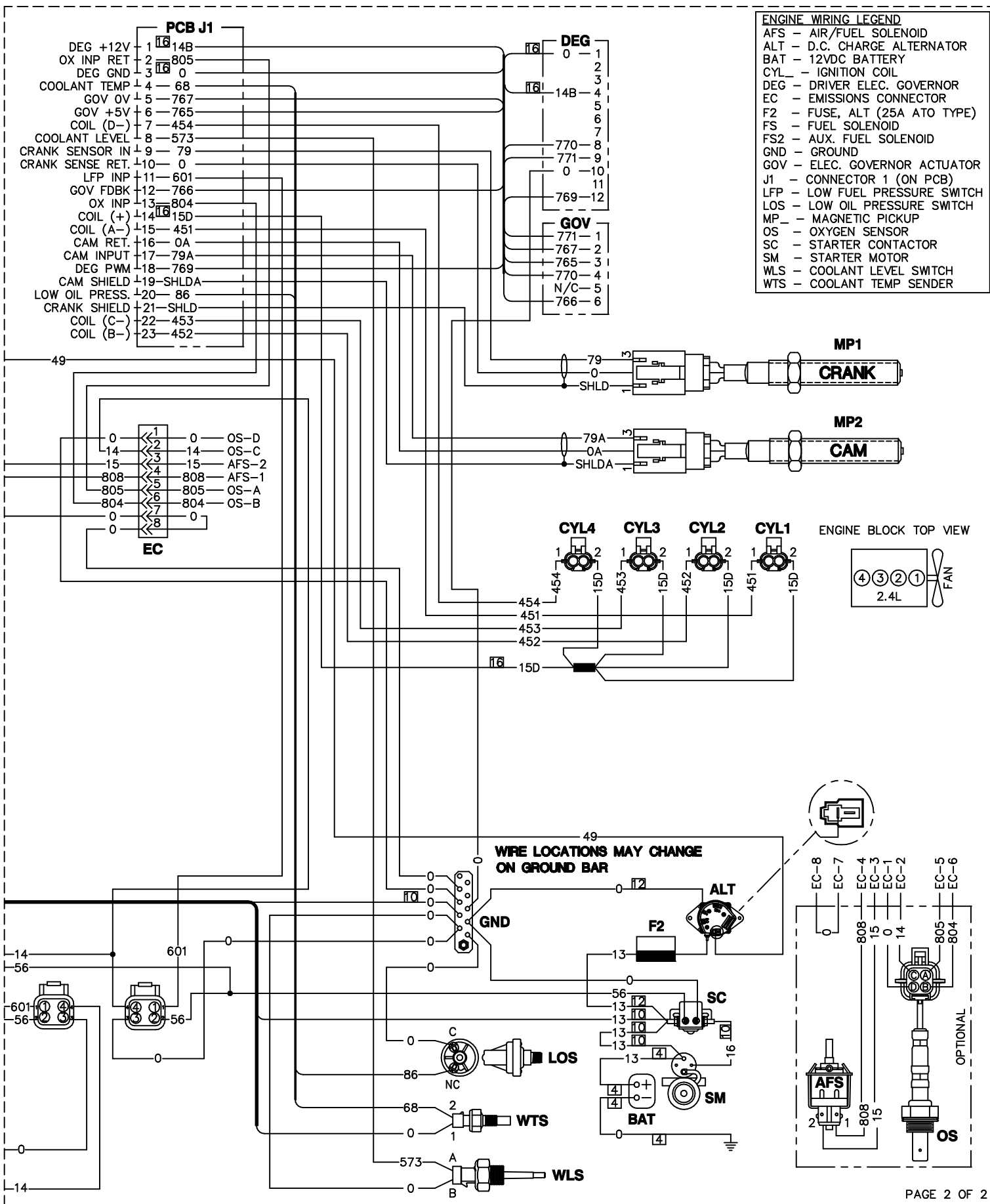
REFERENCE OWNERS MANUAL FOR PERIODIC
REPLACEMENT PART LISTINGS



EXPLODED VIEW:
INSTLN DRAWING QT 36 2.4L 36KW
DRAWING #: 0H0841

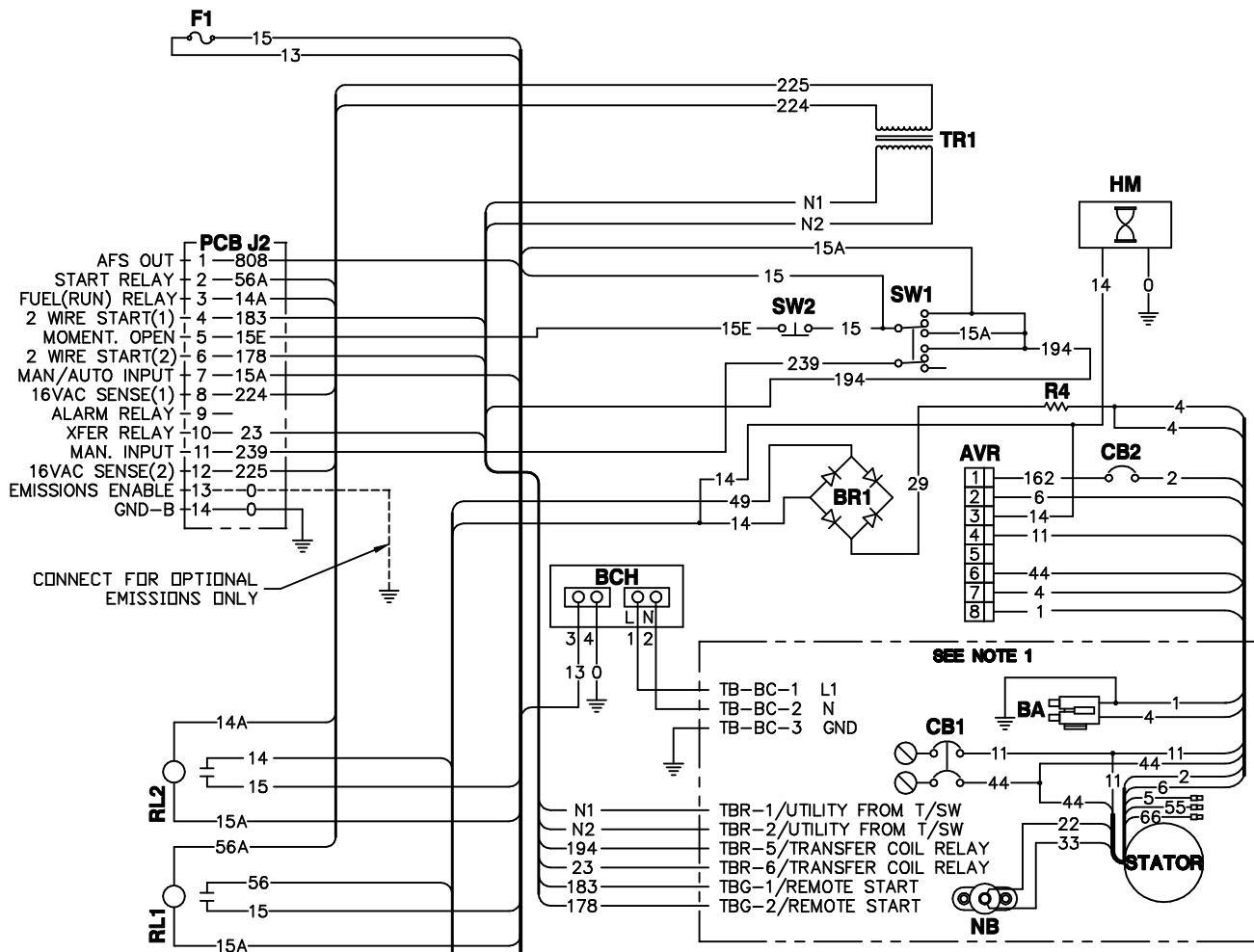
GROUP G





CONTROL PANEL LEGEND:

AVR - AUTOMATIC VOLTAGE REGULATOR
 BCH - BATTERY CHARGER
 BR1 - DIODE (FIELD BOOST)
 CB2 - CIRCUIT BREAKER (EXCITATION)
 F1 - FUSE BAT POWER (15A ATO TYPE)
 HM - HOUR METER
 J2 - CONNECTOR 2 (ON PCB)
 R4 - FIELD BOOST RESISTOR 15 OHM
 RL1 - RELAY 1 (START RELAY)
 RL2 - RELAY 2 (ENGINE RUN)
 SW1 - AUTO/OFF/MANUAL SWITCH
 SW2 - SET EXERCISER SWITCH
 TR1 - TRANSFORMER (6VA UTIL/16 VAC)



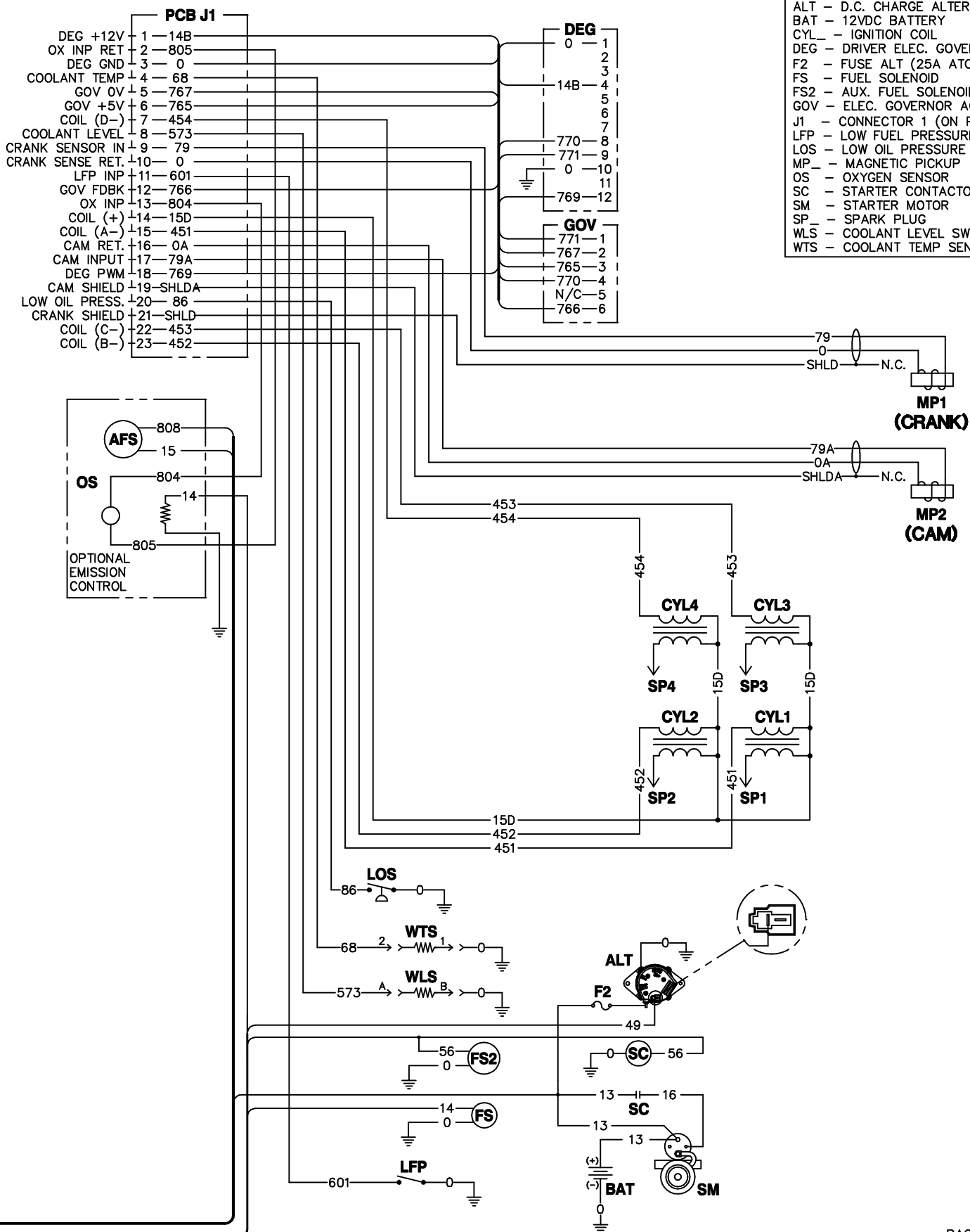
NOTE 1: WIRING SHOWN FOR CB1, NB, BA AND STATOR IS TYPICAL FOR SINGLE PHASE. FOR 3-PHASE, SEE DWG #0F6839.

CUSTOMER CONNECTION & ALTERNATOR LEGEND:

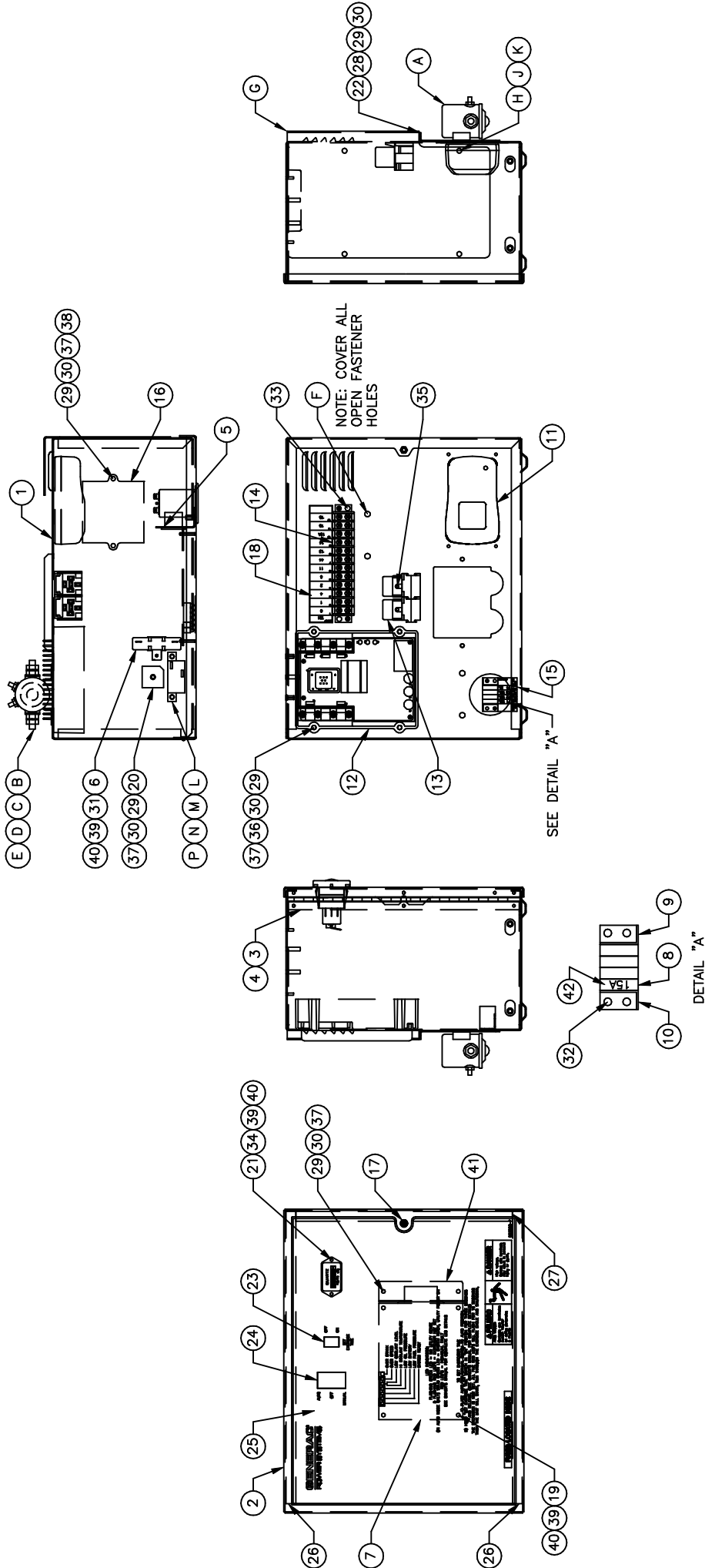
BA - BRUSH ASSEMBLY (GENERATOR)
 CB1 - MAINLINE CIRCUIT BREAKER
 NB - NEUTRAL BLOCK
 TB-BC - BATTERY CHARGER TERMINAL BLOCK
 TBG - GTS CONNECT TERMINAL BLOCK
 TBR - RTS CONNECT TERMINAL BLOCK

ENGINE WIRING LEGEND

AFS - AIR/FUEL SOLENOID
 ALT - D.C. CHARGE ALTERNATOR
 BAT - 12VDC BATTERY
 CYL - IGNITION COIL
 DEG - DRIVER ELEC. GOVERNOR
 F2 - FUSE ALT (25A ATO TYPE)
 FS - FUEL SOLENOID
 FS2 - AUX. FUEL SOLENOID
 GOV - ELEC. GOVERNOR ACTUATOR
 J1 - CONNECTOR 1 (ON PCB)
 LFP - LOW FUEL PRESSURE SWITCH
 LOS - LOW OIL PRESSURE SWITCH
 MP - MAGNETIC PICKUP
 OS - OXYGEN SENSOR
 SC - STARTER CONTACTOR
 SM - STARTER MOTOR
 SP - SPARK PLUG
 WLS - COOLANT LEVEL SWITCH
 WTS - COOLANT TEMP SENDER



GROUP G



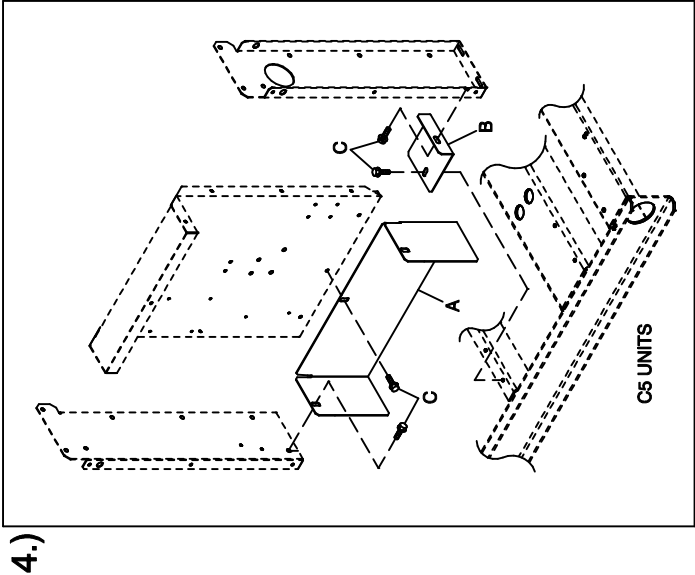
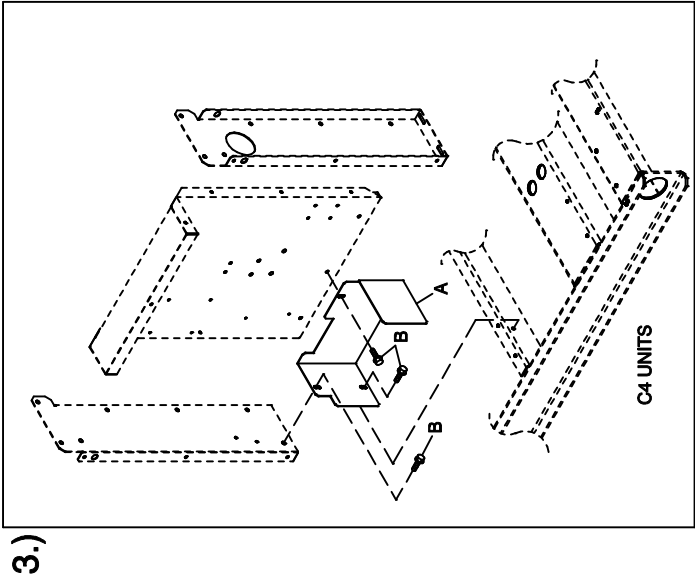
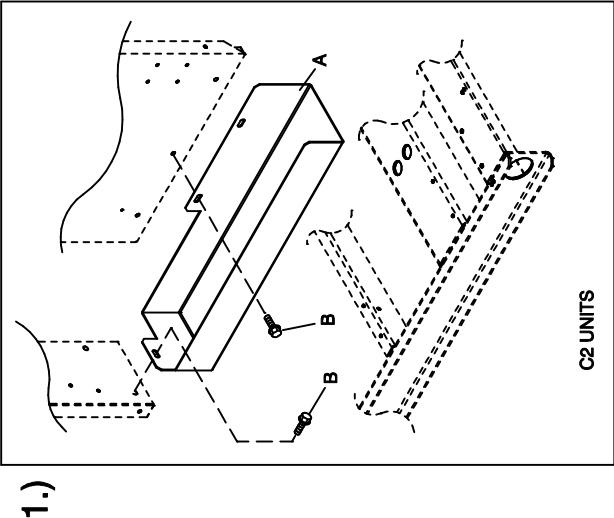
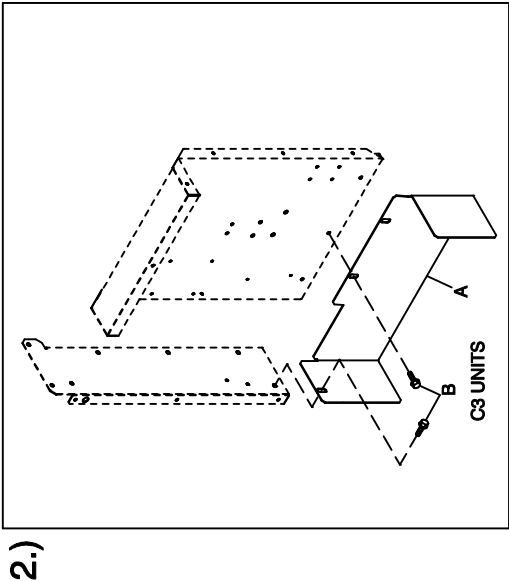
EXPLODED VIEW:
R-200C 1800 RPM 2.4L TURBO
DRAWING #: 0H1435D

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
COMPONENTS INCLUDED IN 0H1435E			
1	0F1823B	1	ENCL HSB CONTROL PANEL
2	0F3078BST03	1	COVER CONTROL PANEL R-200B
3	0F2606	1	HINGE CONTINUOUS H-PANEL
4	036261	7	RIVET POP .125 X .275 SS
5	0E7358	4	SCREW PPPH HI-LO #4-24 X 3/8
6	052777	1	WASHER FLAT M3
7	0H1176A	1	ASSY PCB R-200C CNTRL 1800 RPM
*8	0F1262	REF.	HOLDER FUSE WICKMANN 178.6150
*9	0F1263	REF.	ADPTR RH SIDE WICKMANN 178.6191
*10	0F1264	REF.	ADPTR LH SIDE WICKMANN 178.6192
11	0G8023A	1	BAT C 13.4VDC 2.5A W/4POS PLUG
12	0G2885A	1	ASSY PCB 15A HIGH DROOP AVR
13	0E6875A	2	RELAY 12VDC C FORM W/DIODE
*14	055911	REF.	BLOCK TERM 20A 12X 6 X 1100V
15	0F5459	1	DECAL CPL CNT PNL FUSES
16	0E3161	1	ASSY PCB BOSCH GOV DRIVER
17	0G3648	1	M5X0.8 CAPTIVE PANEL KNLD HD
18	0F5462	1	DECAL CPL 39L TB1
19	0A5062J	4	SPACER 9.5H 3.2 ID
20	029673	1	DIO BRIDGE 25A 600V
21	0C1457A	1	HOUR METER 10-80VDC
22	0F1958	1	PLATE HARNESS CLAMP
23	082573	1	SWITCH RKRPDPST 125V SPD
24	0E4494	1	SWITCH RKRPDPST ON-OFF-ON
25	0G8997	1	DECAL CONTROL FLEX R-200B
26	0F6305	2	SEAL COVER 3.18X12.7X382
27	0F6305A	1	SEAL COVER 3.18X12.7X283
28	0F5886	2	SCREW HHPM M5-0.8 X 12
29	051713	11	WASHER FLAT M5
30	049226	11	WASHER LOCK M5
31	0F5752F	1	RES WW 15R 5% 25W QK CONN
32	0F5884	2	SCREW PHTT M3.5-0.6 X 10
33	0F5896	2	SCREW PHTT M3.5-0.6 X 16
34	074076	2	SCREW PHM M3-0.5 X 10 BLACK
35	0C3990	2	SCREW PHTT M4-0.7 X 10 ZYC
36	080823	4	SCREW PPHM M5-0.8 X 50 ZNC
37	051716	9	NUT HEX M5-0.8 G8 YEL CHR
38	079224	2	SCREW PPHM M5-0.8 X 30 SS
39	043182	7	WASHER LOCK M3
40	051714	7	NUT HEX M3-0.5 G8 YEL CHR
41	0F3192	1	SUPPORT ANGLE PCB
42	0E7403C	1	FUSE ATO TYPE 15 AMP (BLUE)
43	0G9056	1	HARN CTRL PNL R-200B 2.4L/4.2L (NOT SHOWN)
COMPONENTS INSTALLED PER THIS DRAWING			
A	056739	1	RELAY SOLENOID 12VDC PNL MNT
B	022287	2	SCREW HHC 1/4-20 X 3/4 G5
C	022473	4	WASHER FLAT 1/4-M6 ZINC
D	022097	2	WASHER LOCK M6-1/4
E	022127	2	NUT HEX 1/4-20 STEEL
F	0F6145	A/R	SEAL WEATHER .45"DIA
G	0F2627A	1	COVER CONTROL PANEL SIDE
H	091526	4	SCREW PPHM M5-0.8 X 12 ZNC
J	049226	4	WASHER LOCK M5
K	051713	4	WASHER FLAT M5
L	054450	1	CB 5.5A X 1P AUTO
M	052777	2	WASHER FLAT M3
N	043182	2	WASHER LOCK M3
P	051714	2	NUT HEX M3-0.5 G8 YEL CHR

NOTE: ITEMS MARKED BY * ARE PART OF WIRE HARNESS.

GROUP H



EXPLODED VIEW:
C4 CB CONNECTION BOX SHIELDING C2/C4
DRAWING #: 0G0258D

EXPLODED VIEW: C4 CB CONNECTION BOX SHIELDING C2/C4
DRAWING #: 0G0258D

GROUP H

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1.)	C2 UNITS		
A	0F9832	1	SHIELD CONN BOX C2
	0F9832GGS0R	1	SHIELD CONTROL STAND C2
B	0C2454	4	SCREW THF M6-1 X 16 N WA Z/JS
2.)	C3 UNITS		
A	0F9832B	1	SHIELD CONTROL STAND C3
	0F9832KGS0R	1	SHIELD CONTROL STAND C3
B	0C2454	3	SCREW THF M6-1 X 16 N WA Z/JS
3.)	C4 UNITS		
A	0F9832A	1	SHIELD CONTROL STAND C4
B	0C2454	3	SCREW THF M6-1 X 16 N WA Z/JS
4.)	C5 UNITS		
A	0F9832C	1	SHIELD CONTROL STAND C5
	0F9832D	1	SHIELD CONTROL STAND C5
	0F9832EGS0R	1	SHIELD CONTROL STAND C5
	0F9832HGS0R	1	SHIELD CONTROL STAND C5
	0F9832JGS0R	1	SHIELD CONTROL STAND C5
B	0F9832FGS0R	1	SHIELD CONTROL STAND C5
C	0C2464	3	SCREW THF M6-1 X 16 N WA Z/JS

