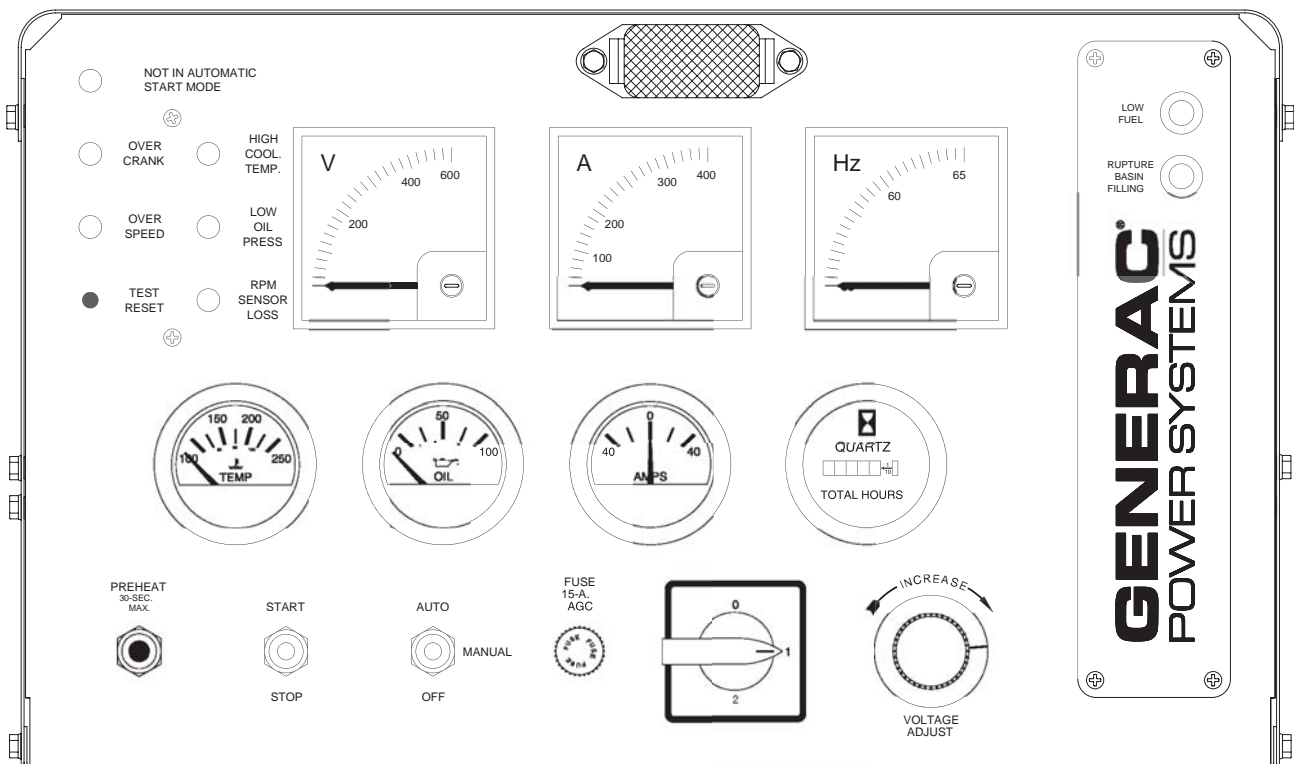


GENERAC®

POWER SYSTEMS, INC.

Operator's Manual

“C” Option Control Panel
with Sealed Connectors
400 kW & Below



This manual should remain with the unit.



Important Safety Instructions

"C" Option Control Panel with Sealed Connectors

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 and potential operators of this equipment.*

Study these SAFETY RULES carefully before installing, operating, or servicing this equipment. Become familiar with this manual and all literature pertaining to your generator set and related equipment. This equipment 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.

Generac cannot possibly anticipate every possible circumstance that might involve a hazard. The warnings in this manual, and on tags and decals affixed to your equipment, are, therefore, not all-inclusive. If you use a procedure, work method, or operating technique Generac does not specifically recommend, you must satisfy yourself that it is safe for you and others. You also must make sure the procedure, work method, or operating technique that you choose does not render the equipment unsafe.

GENERAL HAZARDS

- For safety reasons, Generac recommends that this equipment be installed and serviced by a Generac Authorized Service Dealer or other 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.
- When working on this equipment, remain alert at all times. Never work on the equipment when you are physically or mentally fatigued.
- Inspect the equipment regularly, and promptly repair or replace all worn, damaged or defective parts, using only factory-approved parts.
- Before performing any maintenance on the generator or any related equipment, disconnect the generator's battery cables to prevent accidental startup. Disconnect the cable from the battery post, indicated by a NEGATIVE, NEG, or (-) first. Reconnect that cable last.

ELECTRICAL HAZARDS

- Generators produce dangerous electrical voltages and can cause fatal electrical shock. Avoid contact with bare wires, terminals, connections, etc., while the generator and related equipment are running. Ensure all appropriate covers, guards, and barriers are in place before operating the equipment. If you must work 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.
- If people 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.
- Wire gauge sizes of electrical wiring, cables, and cord sets must be adequate to handle the maximum electrical current (amperage) to which they will be subjected.
- Before installing or servicing this 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.
- When installed with an automatic transfer switch, the generator may crank and start anytime, without warning. To prevent injuries caused by sudden start-up, disable the generator's automatic start circuit 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 an 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 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

- For fire safety, the generator and related equipment must be installed and maintained properly. Installation always must 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 equipment is installed in accordance with the manufacturer's instructions and recommendations. Following proper installation, do nothing that might alter a safe installation and render the unit in noncompliance with the aforementioned codes, standards, laws, and regulations.

Safety RulesInside Front Cover

Section 1 – General Information2

1.1 Overview2

1.2 Control Panel Components2

1.3 Optional Equipment2

 1.3.1 Remote Annunciator Panel.....2

 1.3.2 Remote Relay Panel2

 1.3.3 Additional Options.....2

1.4 Panel Face Components2

 1.4.1 AC Voltmeter2

 1.4.2 AC Ammeter2

 1.4.3 Frequency Meter2

 1.4.4 Line-Phase Selector Switch2

 1.4.5 Voltage Adjust Potentiometer2

 1.4.6 Coolant Temperature Gauge2

 1.4.7 Oil Pressure Gauge3

 1.4.8 DC Voltmeter3

 1.4.9 Hourmeter3

 1.4.10 Start/Stop Switch.....3

 1.4.11 Auto/Off/Manual Switch3

 1.4.12 Preheat Switch.....4

 1.4.13 Panel Fuse4

1.5 Engine Monitor Panel4

 1.5.1 Not in Automatic Start Mode Lamp4

 1.5.2 Overcrank Lamp4

 1.5.3 High Coolant Temperature Lamp.....4

 1.5.4 Overspeed Lamp4

 1.5.5 Low Oil Pressure Lamp4

 1.5.6 RPM Sensor Loss Lamp.....4

 1.5.7 Test/Reset Switch5

1.6 Optional Annunciator Panel5

1.7 Optional Remote Annunciator.....5

1.8 Standard Alarm Relay.....6

1.9 Preparation Before Startup6

 1.9.1 Prior to Initial Startup6

 1.9.2 Startup Inspection6

Section 2 – Operation6

2.1 Operating Unit with Manually-Operated Transfer Switch6

2.2 Operating Unit with Automatic Transfer Switch ..6

 2.2.1 Manual Startup and Transfer6

 2.2.2 Manual Retransfer and Engine Shutdown7

 2.2.3 Preventing Automatic Startup7

Section 3 – Electrical Data8

Section 4 – Exploded Views and Parts Lists14

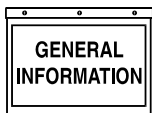
Section 5 – Interconnection Diagram18

**AUTHORIZED SERVICE
DEALER LOCATION**

To locate the GENERAC AUTHORIZED SERVICE
DEALER nearest you, please call this number:

1-800-333-1322

DEALER LOCATION INFORMATION
CAN BE OBTAINED AT THIS NUMBER.



1.1 OVERVIEW

The “C” option control panel is an analog generator set control panel designed for Generac’s range of standby generators. It allows for either manual (electric) or automatic startup and shutdown.

The panel is housed in a steel sheet metal enclosure that meets NEMA 1 specifications. The front face of the panel includes a number of analog meters and gauges that indicate generator operating conditions, several indicator lamps for annunciation of engine fault shutdowns, and various other generator set controls.

1.2 CONTROL PANEL COMPONENTS

The control panel contains one main printed-circuit board (PCB), the automatic voltage regulator (AVR), various discrete components, and terminal blocks for external connections.

To find locations of the circuit board, refer to Appendix 2 for the control panel exploded view. The PCB has the following defined functions.



Remove the 15-amp fuse from the front of the panel during all engine maintenance to guard against accidental or remote startup.

1.3 OPTIONAL EQUIPMENT

1.3.1 REMOTE ANNUNCIATOR PANEL

When connected to the generator via a 19 wire connection link, this multi-light remote indicator panel will display the generator’s status.

1.3.2 REMOTE RELAY PANEL

This panel is similar to the remote annunciator, but, in addition to indicator lights, it provides relay contact closures for status (e.g., alarms).

1.3.3 ADDITIONAL OPTIONS

The following are some of the more frequently requested optional accessories for the “C” option control panel:

- Emergency stop button
- Oil temperature gauge
- Engine run relay
- 100 dBa alarm horn
- Over/Under voltage relay
- Voltage adjust potentiometer (Standard on all units that do not use the Marathon alternator.)

1.4 PANEL FACE COMPONENTS

(FIGURE 1.1, PAGE 3)

1.4.1 AC VOLTMETER

This meter indicates the generator AC output voltage. (Also see “Line-phase Selector Switch” and “Voltage Adjust Potentiometer” in this section.) To determine the nominal rated AC voltage of your unit, refer to your unit’s data plate.

NOTE:

Some generators are reconnectable to a variety of voltages. Some units may be equipped with a rotary “Voltage Selector Switch.” Be sure to read the “Generator AC Lead Connections” section in your Owner’s Manual.

1.4.2 AC AMMETER

This meter indicates the current draw of connected electrical loads, in amps. Also, see “Line-phase Selector Switch.” For continuous operation, never exceed the rated maximum continuous current capacity of your generator.

1.4.3 FREQUENCY METER

This meter indicates the generator’s AC output frequency in “Hertz” (cycles per second).

1.4.4 LINE-PHASE SELECTOR SWITCH

This four-position switch permits you to select either line-to-line or line-to-neutral readings on the panel voltmeter and ammeter. Switch positions are as follows:

Switch	Single-phase Units	Three-phase units
1	Line E1 to Neutral	Line E1 to E2
2	Line E3 to Neutral	Line E2 to E3
3	Line E1 to E3	Line E3 to E1
O	No Reading	No Reading

1.4.5 VOLTAGE ADJUST POTENTIOMETER

This potentiometer permits the operator to “fine-adjust” the generator’s AC output voltage. Adjustment range is plus or minus 5 percent from the midpoint. Turn the knob clockwise to increase voltage, counter-clockwise to decrease voltage.

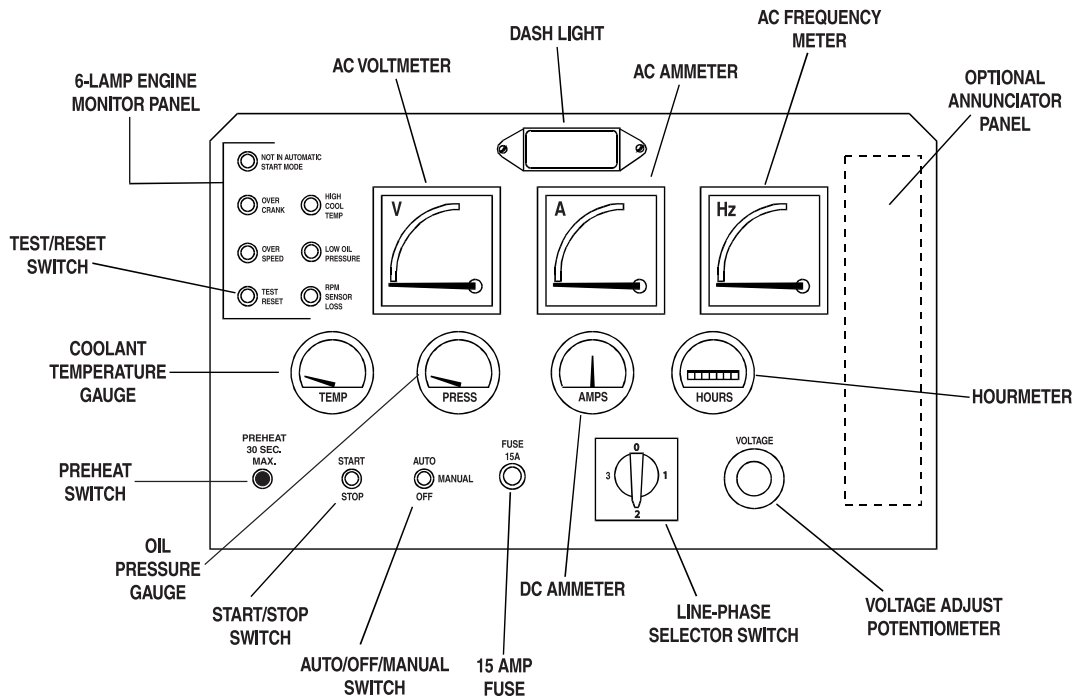
1.4.6 COOLANT TEMPERATURE GAUGE

This gauge indicates the engine coolant temperature. Normal operating temperature should read between 185° to 215°F (85° to 102°C). If coolant temperature exceeds a safe level, the engine shuts down automatically.

NOTE:

Actual coolant temperature reading may vary due to variables, such as, ambient temperature, applied load, or cooling system condition.

Figure 1.1 – "C" Option Panel Components



◆ 1.4.7 OIL PRESSURE GAUGE

This gauge indicates oil pressure during operation. After warm-up, oil pressure should be about 25-90 psi. Generac recommends that the operator record the normal oil pressure during initial startup. Sudden changes in oil pressure after first starting indicate a possible engine problem.

NOTE:

Engine oil pressure may vary, depending on oil viscosity, oil temperature, engine speed, ambient temperature, etc. The engine automatically shuts down if oil pressure drops below a safe level. (10 psi.)

◆ 1.4.8 DC AMMETER

The engine is equipped with a belt-driven DC alternator, which charges the battery while the unit is running. This ammeter indicates the rate of charge to the battery during operation. If the needle drops to the left of zero, battery is discharging. Investigate and correct this problem immediately. Erratic movement of the needle should also be corrected immediately.

◆ 1.4.9 HOURMETER

The hourmeter provides a continuous indication of engine/generator operating time, in hours and tenths of hours. Use the hourmeter with the periodic maintenance schedule (See "Maintenance" section).

◆ 1.4.10 START/STOP SWITCH

Use this switch to crank and start the engine manually, or to shut down an operating engine.

- To crank and start engine, first set the Auto/Off/Manual switch to its "Manual" position.
- Hold the Start/Stop switch at "Start." When the engine starts, release the switch to its center (run) position.
- To shut engine down, set the switch to its "Stop" position.

◆ 1.4.11 AUTO/OFF/MANUAL SWITCH

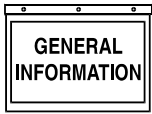
This safety switch should be used to prevent automatic startup of the engine when working on the engine/generator. Use the switch as follows:

► Auto Position

Always set switch to AUTO for automatic system operation. This means that, when this generator is installed with a GTS-type automatic transfer switch, the generator automatically cranks and starts when the utility source voltage drops below a preset level, or the unit exercises if programmed to do so.

► Off Position

The engine cannot be started either automatically or manually. Always set switch to OFF before working on, or around, the engine-generator.



Section 1 – General Information

"C" Option Control Panel with Sealed Connectors

► Manual Position

The engine can be cranked and started manually using the panel Start/Stop switch. The engine will not start automatically.

NOTE:

Also see "Engine Monitor Panel." With switch set to either OFF or MANUAL, a "Not in Automatic Start Mode" lamp lights up on the panel.

◆ 1.4.12 PREHEAT SWITCH

This switch is installed on diesel units only. When performing a manual start, this switch may be pressed for up to 30 seconds (before and during cranking) to preheat intake air for smoother, cleaner start-ups. This is important when the engine is cold.

◆ 1.4.13 PANEL FUSE

This fuse protects the control console's DC circuits against overload. If the fuse element melts open due to an overload, engine cranking and startup will not be possible. Should fuse replacement become necessary, use only an identical 15 amp fuse.

1.5 ENGINE MONITOR PANEL

This panel has five advisory shutdown lamps for separate engine fault conditions, plus a "Not in Automatic Start Mode" lamp. Cranking and starting will not be possible while any one, or more, of engine fault conditions lamps is lit, with the exception of "Not in Auto" illuminated in the manual mode. The following apply:

- A "lamp ON" condition indicates that fault condition has been "latched" by DC control/latch-crank circuit board.
- If any one of the lamps is ON (fault condition latched), the engine cannot be cranked either manually or automatically.
- To unlatch a fault (that is, to turn a lamp OFF) and permit cranking, push the Test/Reset switch in. Lamp goes OFF, allowing for additional cranking.

◆ 1.5.1 NOT IN AUTOMATIC START MODE LAMP

This lamp comes ON to indicate that automatic startup of the engine is not possible. The lamp lights up whenever the Auto/Off/Manual switch is set to OFF or MANUAL.

◆ 1.5.2 OVERCRANK LAMP

The control console houses a DC control/latch-crank circuit board that controls engine startup and shutdown. During automatic startup, the engine cranks for about five seconds, rests for about five seconds, and so on, until eight of the crank-rest cycles have occurred. At the end of eight attempts, cranking stops, and the overcrank lamp goes ON.

◆ 1.5.3 HIGH COOLANT TEMPERATURE LAMP

This lamp comes ON if coolant temperature is too high or coolant level is too low. The engine shuts down automatically when such unsafe conditions occur. The following apply:

- If the engine is started with an existing high coolant temperature or low coolant level condition, the engine shuts down, and lamp comes ON when engine speed reaches about 1000 rpm.
- If the engine starts normally but high temperature/low coolant level develops later, the engine shuts down, and light comes ON immediately.

◆ 1.5.4 OVERSPEED LAMP

An engine overspeed above a safe limit causes the engine to automatically shut down, which turns ON the indicator lamp. The overspeed lamp comes on when the unit is run at a 15% faster rpm than rated.

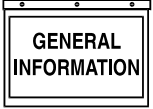
◆ 1.5.5 LOW OIL PRESSURE LAMP

This lamp lights up (latches) to indicate low oil pressure in the engine as follows:

- During cranking, after engine has reached 800 to 1000 rpm, the circuit allows four seconds for oil pressure to build.
- In auto mode, if the unit runs above 800-1000 rpm for more than four seconds, and oil pressure is below a safe level, the engine shuts down, but the lamp does NOT go ON. The system then actuates eight restart attempts; the engine shuts down, and the lamp goes ON.
- If the engine starts normally with good oil pressure, but oil pressure drops later, the system waits five seconds for oil pressure to be restored. If pressure is still low after a five-second delay, the engine shuts down, and the lamp goes ON immediately.

◆ 1.5.6 RPM SENSOR LOSS LAMP

Units with the "C" Option console are equipped with an rpm sensor, which is mounted directly over the engine flywheel gear teeth. This sensor is a magnetic pickup that emits an electrical pulse at the passage of each flywheel gear tooth. Sensor electrical signals are used by the DC control/latch-crank circuit board as engine speed (rpm) signals. The circuit board uses these rpm signals (a) to establish a starter lockout speed, and (b) to shut down the engine if the engine runs too fast (overspeed). If the rpm signals to the circuit board are lost, engine shutdown occurs, but the lamp will not light, (i.e., the condition will not latch), then, depending on whether the sensor signal loss occurred during a manual or an automatic start attempt, the following events occur:



► Manual Startup

If the engine starts within two seconds after cranking begins, shutdown occurs as soon as the Start/Stop switch is released, but without a lamp ON condition (latching does not occur). If engine does not start within two seconds after cranking begins, which disables starting, the rpm sensor loss light goes ON.

► Automatic Startup

The engine recranks within about one second after it has stopped. If sensor loss persists, engine shuts down, and lamp lights about two seconds after cranking has restarted.

If engine starts within two seconds after recrank has begun, the starter remains engaged until the two-second delay is over.

◆ 1.5.7 TEST/RESET SWITCH

To test all lamps, push this switch in. Following any fault shutdown with any monitor panel lamp illuminated, engine cranking is inhibited. To reset the system (unlatch a fault) and crank the engine again, push the switch in (lamp must go out). If the switch is actuated with the engine running, only the lamps will be tested. The engine will not shut down.

NOTE:

If engine shuts down due to some unmonitored problem (such as, out of fuel or failed ignition system), none of the lamps will come ON. If such an unmonitored shutdown occurs with the Auto/Off/Manual switch set to AUTO, engine recranks and attempts to start for any of the cycles remaining in the eight-crank limit. After all eight crank cycles have been used, the engine shuts down, and the OVERCRANK lamp goes ON.

1.6 OPTIONAL ANNUNCIATOR PANEL

Some units may come equipped with a factory-installed annunciator panel having one or two annunciator fault conditions displayed. This panel, used on diesel units equipped with a base tank, will indicate a low fuel condition and, if so equipped, a ruptured basin condition on a double-walled tank.

Figure 1.2 — Optional Annunciator Panel

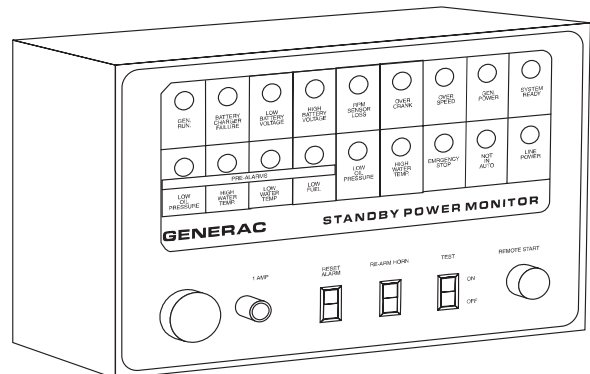


1.7 OPTIONAL REMOTE ANNUNCIATOR

An optional 18-light REMOTE annunciator panel you can mount on a wall (Figure 1.3) is also available. For information on the remote annunciator panels, ask your dealer/distributor or consult the factory. Ask for information on the Models 9555 and 9556 remote annunciator panels. The following apply to the remote annunciator panels:

- It is designed for use with installation having a Generac Power Systems GTS-type transfer switch and a "C" Option control panel.
- The panel is available in both flush-mounted (Model 9556) and surface-mounted (Model 9555) configurations.
- The panel has a built-in audible alarm horn, with a reset switch to turn off the horn without disturbing the lighted indication.
- Remote monitoring of the standby generator set provides enough information to avoid unnecessary maintenance trips to the generator site.

Figure 1.3 — Optional 18-Light Remote Annunciator

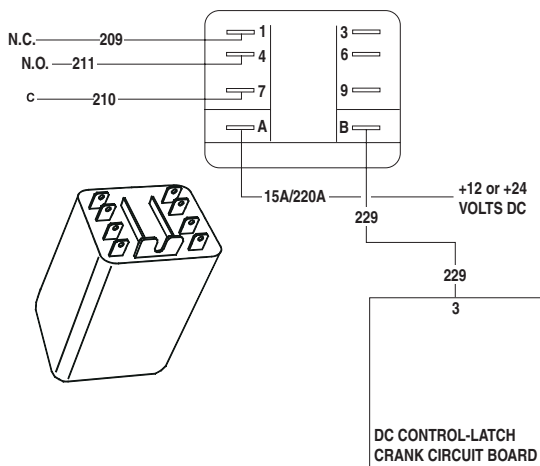


1.8 STANDARD ALARM RELAY

The generator's DC control/latch-crank circuit board is equipped with an alarm relay "driver". All units with "C" Option control panels are equipped with an alarm relay that is connected to the circuit board driver (Figure 1.4). If any one or more of the five annunciated shutdown faults occur, the circuit board driver energizes the optional alarm relay.

A remote-mounted alarm or annunciator device may be connected across the relay contacts so that a failure will turn on the remote alarm or device. The connected alarm device may range from an alarm horn to a warning light to a telephone dialer with a pre-recorded message. The alarm relay normally-open, normally-closed, and common contacts are shown in Figure 1.4.

Figure 1.4 — Standard Alarm Relay



1.9 PREPARATION BEFORE STARTUP

The instructions in this section assume that the standby generator has been properly installed, serviced, tested, adjusted, and otherwise prepared for use by a competent, qualified installation contractor. Be sure to read RULES FOR SAFE OPERATION on the inside of the front cover carefully, before attempting to operate this (and related) equipment.

◆ 1.9.1 PRIOR TO INITIAL STARTUP

Before starting the generator for the first time, the installer must complete the following:

- Properly locate and properly mount the generator, transfer switch, and other standby system components, in strict compliance with applicable codes, standards, and regulations.
- 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.

- Have the engine crankcase properly filled to the correct level with the recommended oil.
- Have engine cooling system properly filled with recommended coolant mixture. Check the system for leaks and other problems.
- If engine is equipped with a mechanical governor, make sure the governor is properly filled with oil. Use crankcase oil to fill.
- Check engine v-belt tension and belt condition.
- Make sure the generator is properly connected to an approved earth ground.
- The generator battery must be fully charged, properly installed and interconnected, and ready for use.

◆ 1.9.2 STARTUP INSPECTION

A standard, three-part form entitled "Startup Inspection for Standby Power Systems" (Part No. 67377) should be completed by the installation technician or engineer. As stated on the form, inspections are to be performed only by factory-trained personnel. The installer should complete the form and distribute copies as follows:

- White copy: Mail to Generac Service Department, P.O. Box 310, Eagle, WI 53119.
- Pink copy: For service file of installing dealer.
- Yellow copy: For the customer's records.

2.1 OPERATING UNIT WITH MANUALLY OPERATED TRANSFER SWITCH

If your generator was installed with a transfer switch capable of manual operation only, the following applies. A manually-operated transfer switch is one that will not provide automatic startup and does not include the intelligence circuit.

2.2 OPERATING UNIT WITH AUTOMATIC TRANSFER SWITCH

If your generator has been installed with a Generac "GTS"-type automatic transfer switch, the engine may be started and stopped either automatically or manually.

IMPORTANT: BE SURE TO READ THE APPLICABLE AUTOMATIC TRANSFER SWITCH MANUAL CAREFULLY. DIFFERENCES EXIST BETWEEN TRANSFER SWITCHES.

◆ 2.2.1 MANUAL STARTUP AND TRANSFER

To crank and start the engine and to transfer electrical loads to the STANDBY power source, proceed as follows:

- See applicable transfer switch instructions. If so equipped, set the Safety Disconnect Switch to MANUAL.

- On the generator's Meter and Control Panel, set the Auto/Off/Manual switch to MANUAL.



The safety disconnect switch and the Auto/Off/Manual switches must be set as instructed above, or the generator will crank and start as soon as the utility power to the transfer switch is turned OFF.

- Turn OFF both the NORMAL (utility) and EMERGENCY (standby) power supplies to the transfer switch, using whatever means is provided (such as, the main-line circuit breakers).



DO NOT attempt manual operation until all power voltage supplies to the transfer switch have been positively turned OFF; otherwise, extremely dangerous---possibly lethal--- electrical shock will result.

- Refer to the instructions that correspond to the installed transfer switch. Manually actuate the switch main contacts to their STANDBY (emergency) position, as outlined in the corresponding manual. LOAD circuit must be connected to the STANDBY power supply before proceeding.
- On the generator console, hold the Start/Stop switch START to crank the engine. Hold it until it begins running, then release the switch to its centered (RUN) position.
- Let the engine warm up and stabilize at no-load.
- Turn ON the STANDBY power supply to the transfer switch, using whatever means provided (such as, STANDBY source main-line circuit breaker).
- The generator now powers the load circuits.

◆ 2.2.2 MANUAL RETRANSFER AND ENGINE SHUTDOWN

To retransfer LOAD circuits back to the NORMAL (utility) power source and to stop the engine, proceed as follows:

- Turn OFF both the UTILITY and STANDBY power supplies to the transfer switch, using whatever means provided, i.e., the power source main-line circuit breakers.



DO NOT attempt manual operation until all power voltage supplies to the transfer switch have been positively turned OFF; otherwise, extremely dangerous---possibly lethal---electrical shock will result.

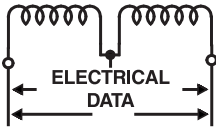
- Refer to the applicable transfer switch instructions. Manually actuate the transfer switch main contacts to their utility position (LOAD connected to UTILITY power supply).
- Turn ON the UTILITY power supply to the transfer switch, using whatever means are provided (such as, the UTILITY main-line circuit breakers).
- Check that the UTILITY voltage is available to the transfer switch (see appropriate transfer switch instructions).
- Let the generator engine run at no-load for a few minutes. Then, set the generator Start/Stop switch to STOP. Wait for the engine to come to a complete stop.
- Reset the system for fully automatic operation.

◆ 2.2.3 PREVENTING AUTOMATIC STARTUP



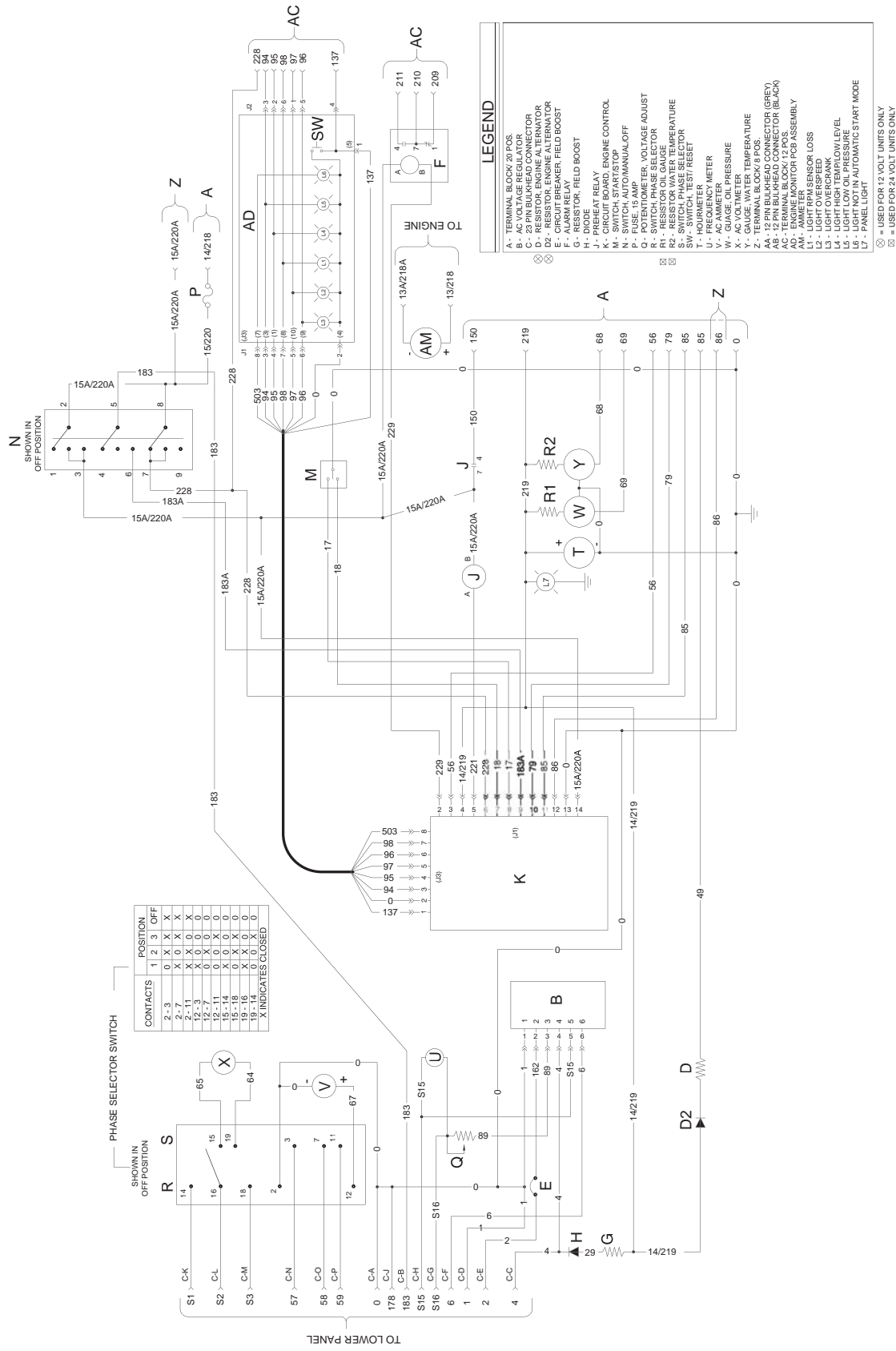
When installed with an automatic transfer switch, Generac standby generators can crank and start suddenly, without warning, when UTILITY source voltage drops below a preset value. To prevent possible injuries caused by such sudden starts, disable the automatic transfer switch before working on, or around, the generator. Use any one, or more, of the following methods to disable the automatic start function:

- Set the generator's Auto/Off/Manual switch to OFF. Neither a manual nor an automatic start can be accomplished with this switch set to OFF.
- Remove the fuse from the generator control panel. To remove the fuse, push fuse holder cap in and turn cap counterclockwise. Remove cap and fuse element.
- Refer to the automatic transfer switch instructions. If the transfer switch is so equipped, set its Safety Disconnect switch to MANUAL position to prevent automatic startup and transfer.
- Disconnect battery cable from generator battery post, indicated by a negative, NEG, or (-).



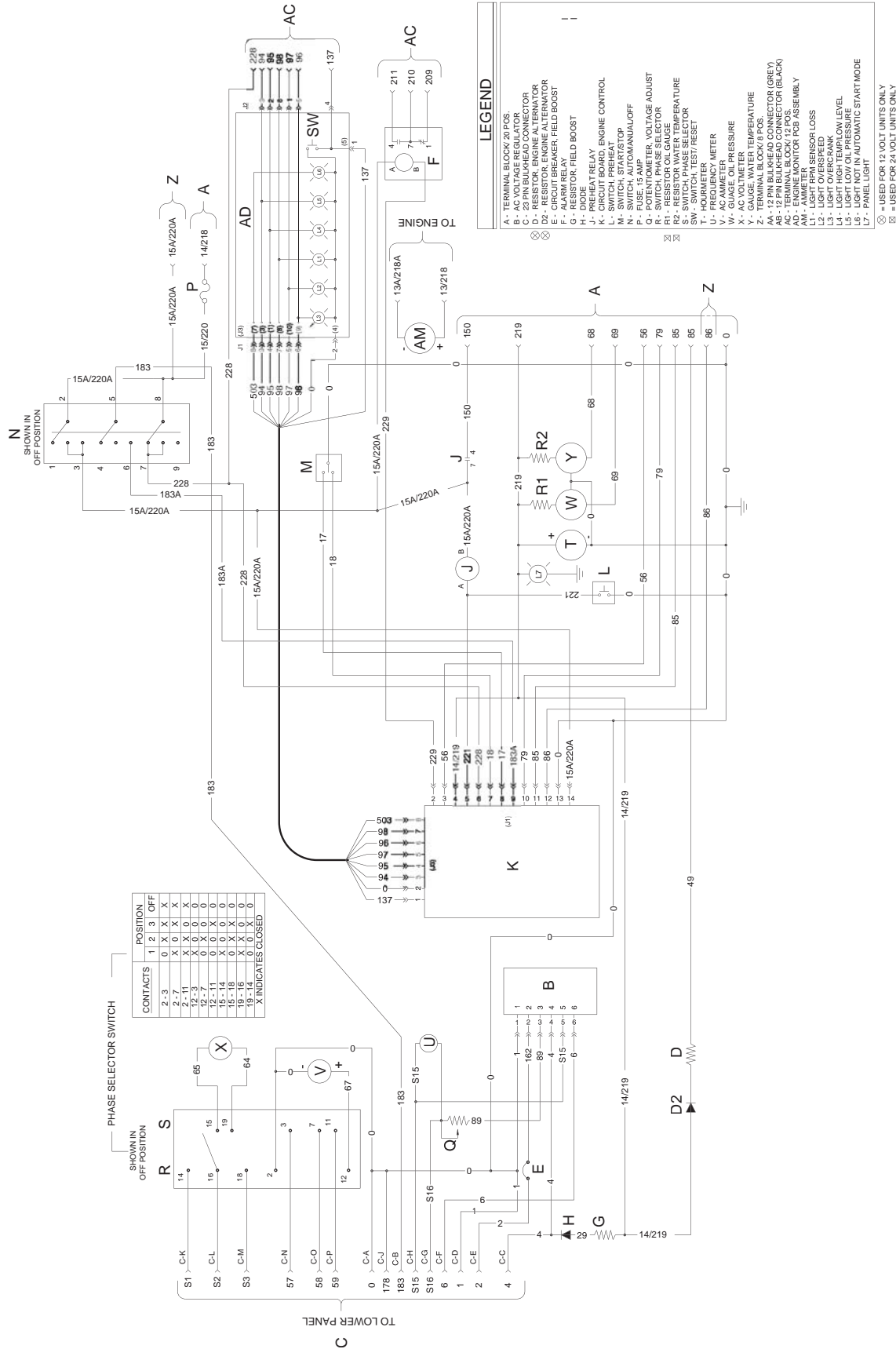
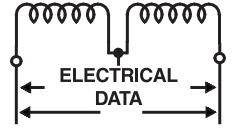
Section 3 – Electrical Data

"C" Option Control Panel with Sealed Connectors 12V & 24V Gas Control Panel Electrical Schematic – Drawing No. 0E1579



Section 3 – Electrical Data

"C" Option Control Panel with Sealed Connectors 12V & 24V Diesel, Less than 400 kW Control Panel Electrical Schematic – Drawing No. 0E0037

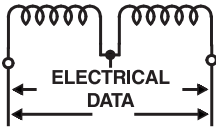


PHASE SELECTOR SWITCH

CONTACTS	POSITION			
	1	2	3	OFF
2-3	0	X	X	X
2-7	0	X	X	X
2-11	0	X	X	X
12-3	0	0	0	0
12-7	0	X	0	0
12-11	0	X	0	0
15-14	0	X	0	0
15-18	0	X	0	0
19-16	0	X	0	0
19-20	0	X	0	0

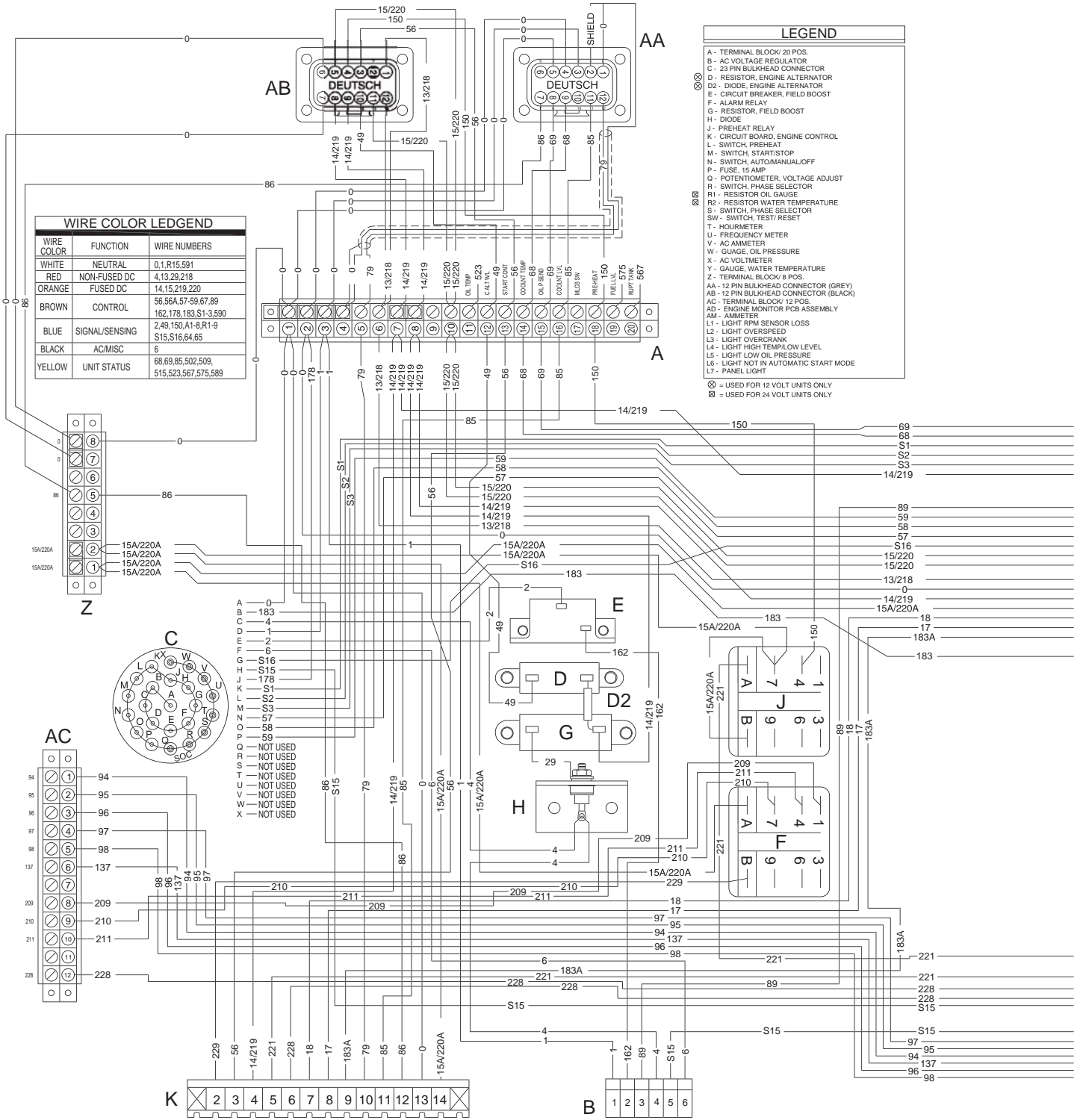
X INDICATES CLOSED

- LEGEND**
- A - TERMINAL BLOCK 20 POS.
 - B - AC VOLTAGE REGULATOR
 - C - AC VOLTAGE REGULATOR
 - D - RESISTOR, ENGINE ALTERNATOR
 - D2 - RESISTOR, ENGINE ALTERNATOR
 - E - CIRCUIT BREAKER, FIELD BOOST
 - F - CIRCUIT BREAKER, FIELD BOOST
 - G - RESISTOR, FIELD BOOST
 - H - DIODE
 - J - PREHEAT RELAY, ENGINE CONTROL
 - K - TERMINAL BLOCK 30 POS.
 - L - SWITCH, PREHEAT
 - M - SWITCH, STARTSTOP
 - N - SWITCH, AUTOMANUAL/OFF
 - O - POTENTIOMETER, VOLTAGE ADJUST
 - R - SWITCH, PHASE SELECTOR
 - R1 - RESISTOR OIL GAUGE
 - R2 - RESISTOR OIL GAUGE
 - S - SWITCH, PHASE SELECTOR
 - SW - SWITCH, TEST/RESET
 - T - HOURMETER
 - U - HOURMETER
 - V - AC AMMETER
 - W - GAUGE, OIL PRESSURE
 - X - AC VOLT METER
 - Y - AC VOLT METER
 - Z - TERMINAL BLOCK 8 POS.
 - AA - 12 PIN BULLHEAD CONNECTOR (GREY)
 - AB - 12 PIN BULLHEAD CONNECTOR (BLACK)
 - AC - TERMINAL BLOCK 12 POS.
 - AD - ENGINE MONITOR PCB ASSEMBLY
 - AM - AMMETER
 - AN - LIGHT IRM SENSOR LOSS
 - L1 - LIGHT IRM SENSOR LOSS
 - L2 - LIGHT OVERSPEED
 - L3 - LIGHT OVERCRANK/LOW LEVEL
 - L4 - LIGHT OVERSPEED
 - L5 - LIGHT LOW OIL PRESSURE
 - L6 - LIGHT NOT IN AUTOMATIC START MODE
 - L7 - PANEL LIGHT
- ⊗ = USED FOR 12 VOLT UNITS ONLY
⊠ = USED FOR 24 VOLT UNITS ONLY



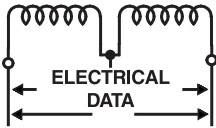
Section 3 – Electrical Data

"C" Option Control Panel with Sealed Connectors 12V & 24V Diesel, Less than 400 kW Control Panel Wiring Diagram – Drawing No. 0E0036-A



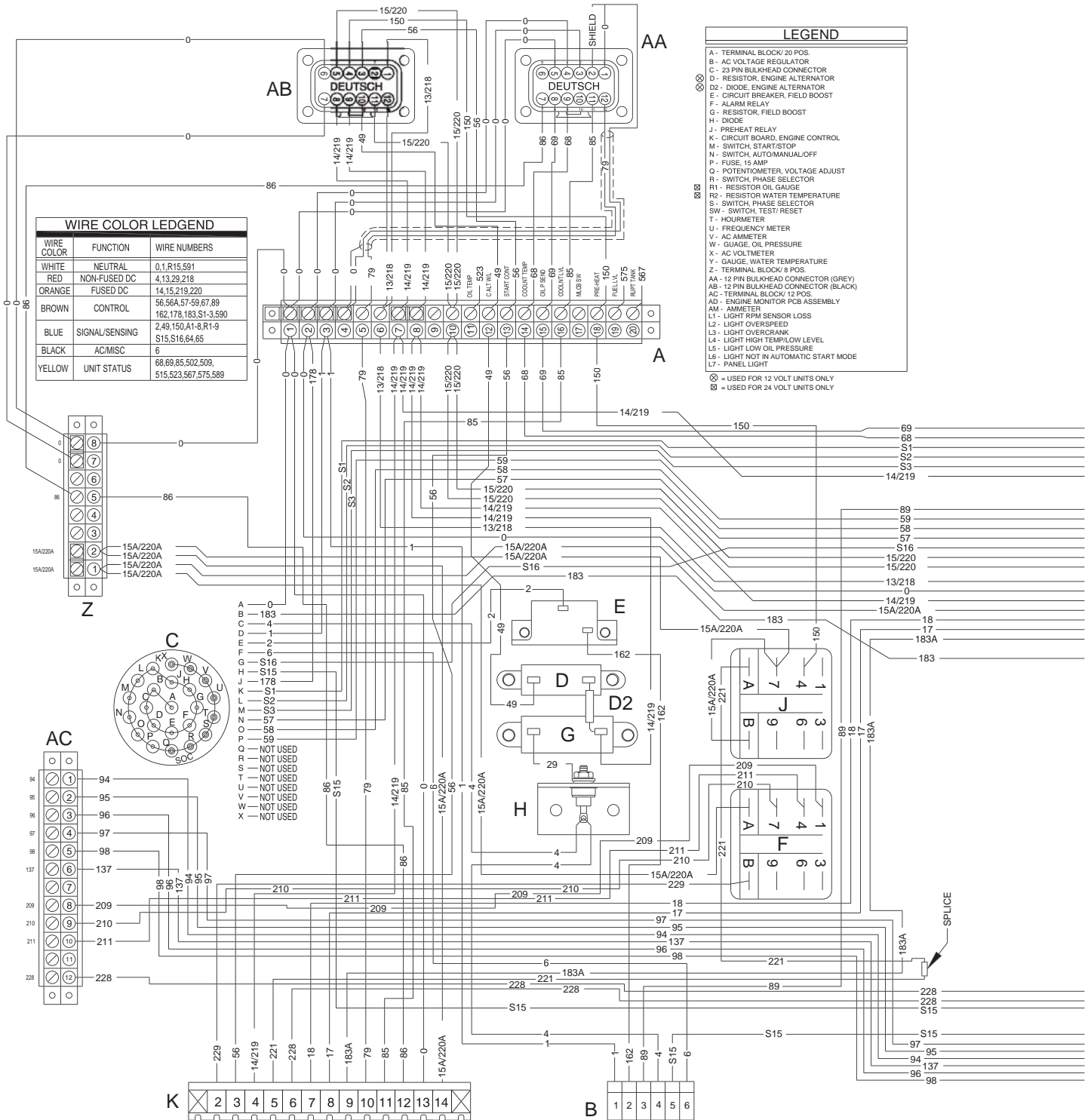
WIRE COLOR	FUNCTION	WIRE NUMBERS
WHITE	NEUTRAL	0.1, R15, 591
RED	NON-FUSED DC	4, 13, 29, 218
ORANGE	FUSED DC	14, 15, 219, 220
BROWN	CONTROL	56, 56A, 57-59, 67, 89, 162, 178, 183, S1-3, 590
BLUE	SIGNAL/SENSING	2, 49, 150, A1-8, R1-9, S15, S16, 64, 65
BLACK	AC/MISC	6
YELLOW	UNIT STATUS	68, 69, 85, 502, 509, 515, 523, 567, 575, 589

LEGEND	
A	TERMINAL BLOCK/ 20 POS.
B	AC VOLTAGE REGULATOR
C	23 PIN BULKHEAD CONNECTOR
D	RESISTOR, ENGINE ALTERNATOR
D2	DIODE, ENGINE ALTERNATOR
E	CIRCUIT BREAKER, FIELD BOOST
F	ALARM RELAY
G	RESISTOR, FIELD BOOST
H	DIODE
J	PREHEAT RELAY
K	CIRCUIT BOARD, ENGINE CONTROL
L	SWITCH, PREHEAT
M	SWITCH, START/STOP
N	SWITCH, AUTOMANUAL/OFF
P	FUSE, 15 AMP
Q	POTENTIOMETER, VOLTAGE ADJUST
R	SWITCH, PHASE SELECTOR
R1	RESISTOR OIL GAUGE
R2	RESISTOR WATER TEMPERATURE
S	SWITCH, PHASE SELECTOR
SW	SWITCH, TEST/RESET
T	HOURMETER
U	FREQUENCY METER
V	AC AMMETER
W	GAUGE, OIL PRESSURE
X	AC VOLT/METER
Y	GAUGE, WATER TEMPERATURE
Z	TERMINAL BLOCK/ 8 POS.
AA	12 PIN BULKHEAD CONNECTOR (GREY)
AB	12 PIN BULKHEAD CONNECTOR (BLACK)
AC	TERMINAL BLOCK/ 12 POS.
AD	ENGINE MONITOR PCB ASSEMBLY
AM	AMMETER
L1	LIGHT RPM SENSOR LOSS
L2	LIGHT OVERSPEED
L3	LIGHT OVERCRANK
L4	LIGHT HIGH TEMP/LOW LEVEL
L5	LIGHT LOW OIL PRESSURE
L6	LIGHT NOT IN AUTOMATIC START MODE
L7	PANEL LIGHT
⊗	USED FOR 12 VOLT UNITS ONLY
⊗	USED FOR 24 VOLT UNITS ONLY



Section 3 – Electrical Data

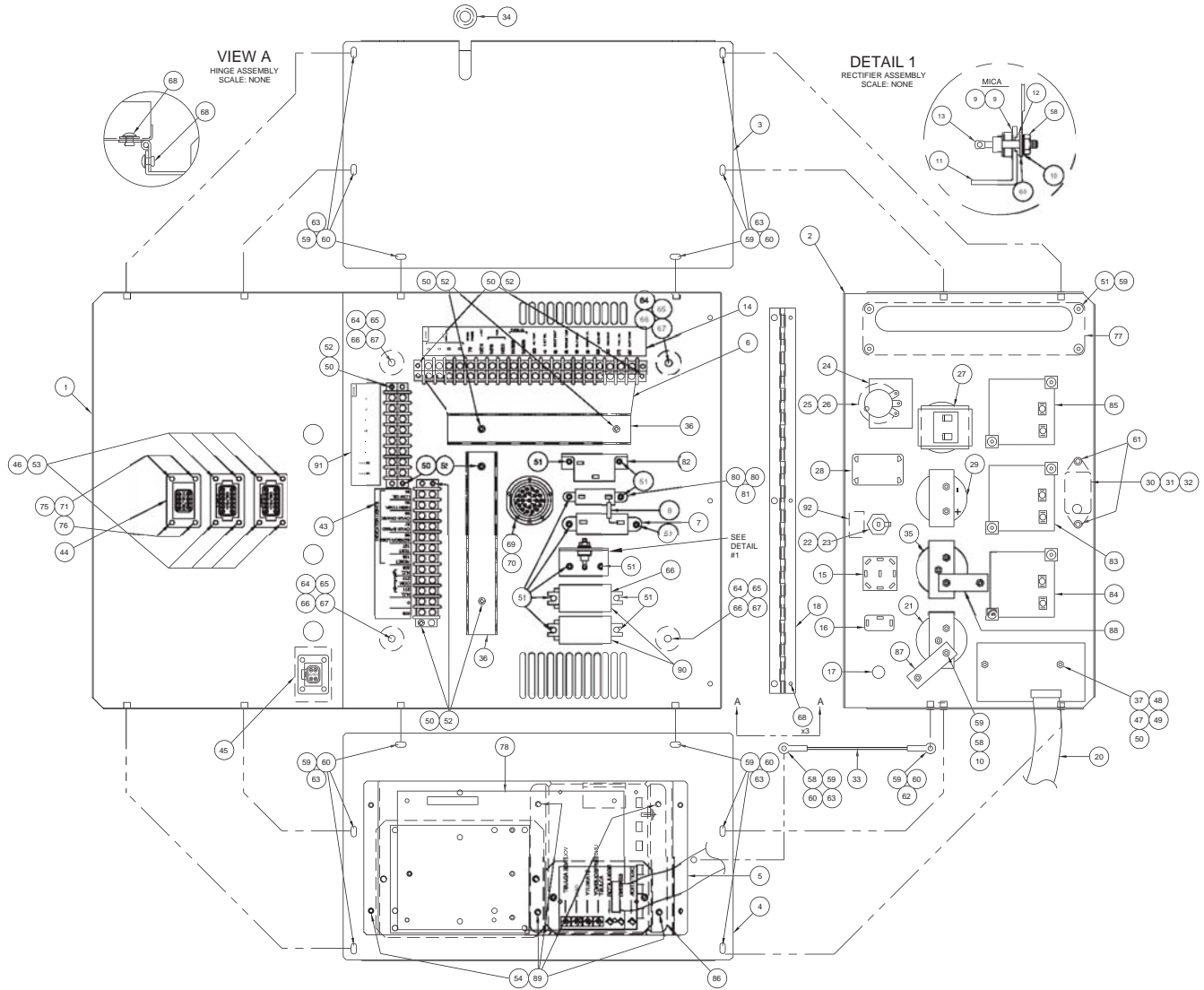
"C" Option Control Panel with Sealed Connectors 12V & 24V Gas Control Panel Wiring Diagram – Drawing No. 0E1578-A





Section 4 – Exploded Views

"C" Option Control Panel with Sealed Connectors 12V & 24V Diesel Control Panel – Drawing No. 0E0035-H

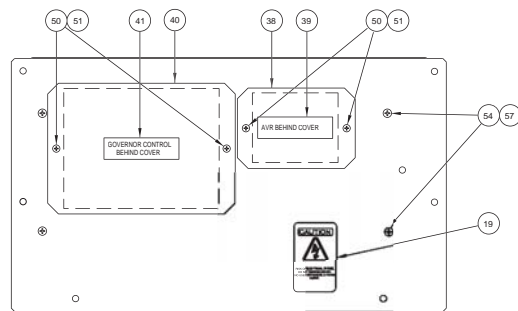


ALL DIRECTLY EXCITED MACHINES	5 OHM 25W
UPTO 100KW WITH 12 OR 24V DC SYSTEMS	P/N: 048352
ALL BRUSHLESS & PME MACHINES	25 OHM 25W
UPTO 100KW WITH 12V DC SYSTEMS	P/N: 057405
ALL BRUSHLESS & PME MACHINES	50 OHM 25W
UPTO 100KW WITH 24V DC SYSTEMS	P/N: 083364
ALL BRUSHLESS & PME MACHINES	75 OHM 25W
OVER 100KW WITH 12 OR 24V DC SYSTEMS	P/N: 086266

ALL DIRECTLY EXCITED MACHINES	7A
19 TO 45KW	P/N: 048467
ALL BRUSHLESS & PME MACHINES	5.5A
19 TO 26KW	P/N: 054450
ALL BRUSHLESS & PME MACHINES	6.0A
21 TO 41KW	P/N: 048505
ALL BRUSHLESS & PME MACHINES	7A
45 TO 100KW	P/N: 048467
ALL BRUSHLESS & PME MACHINES	4.5A
OVER 100KW	P/N: 048476

AMMETER P/N:	AMMETER RANGE
070056	0-150A
070057	0-300A
070058	0-400A
070059	0-600A
070060	0-800A
075323	0-1000A
075324	0-1600A
075325	0-2000A
075326	0-3000A
070045	0-200A

VOLT. CODE	VOLTAGE	VOLTAGE METER P/N:	VOLTAGE METER RANGE
A	120/240V 1 PHASE	070043	0-300V
D	120/240V 1.3 PHASE	070043	0-300V
G	120/240V 3 PHASE	070043	0-300V
J	120/240V 3 PHASE	070043	0-300V
K	277/480V 3 PHASE	070044	0-600V
M	110/220V 1 PHASE	070043	0-300V
N	115/220V 1 PHASE	070043	0-300V
P	100/200V 3 PHASE	070043	0-300V
R	231/400V 3 PHASE	070044	0-600V
L	600V 3 PHASE	082404	0-750V

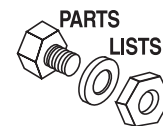


CONTROL PANEL LEFT SIDE

UNITS WITHOUT BASE TANKS	P/N: 070030
UNITS WITH BASE TANKS	P/N: 0D9750

Section 4 – Exploded Views

"C" Option Control Panel with Sealed Connectors 12V & 24V Diesel Control Panel – Drawing No. 0E0035-H

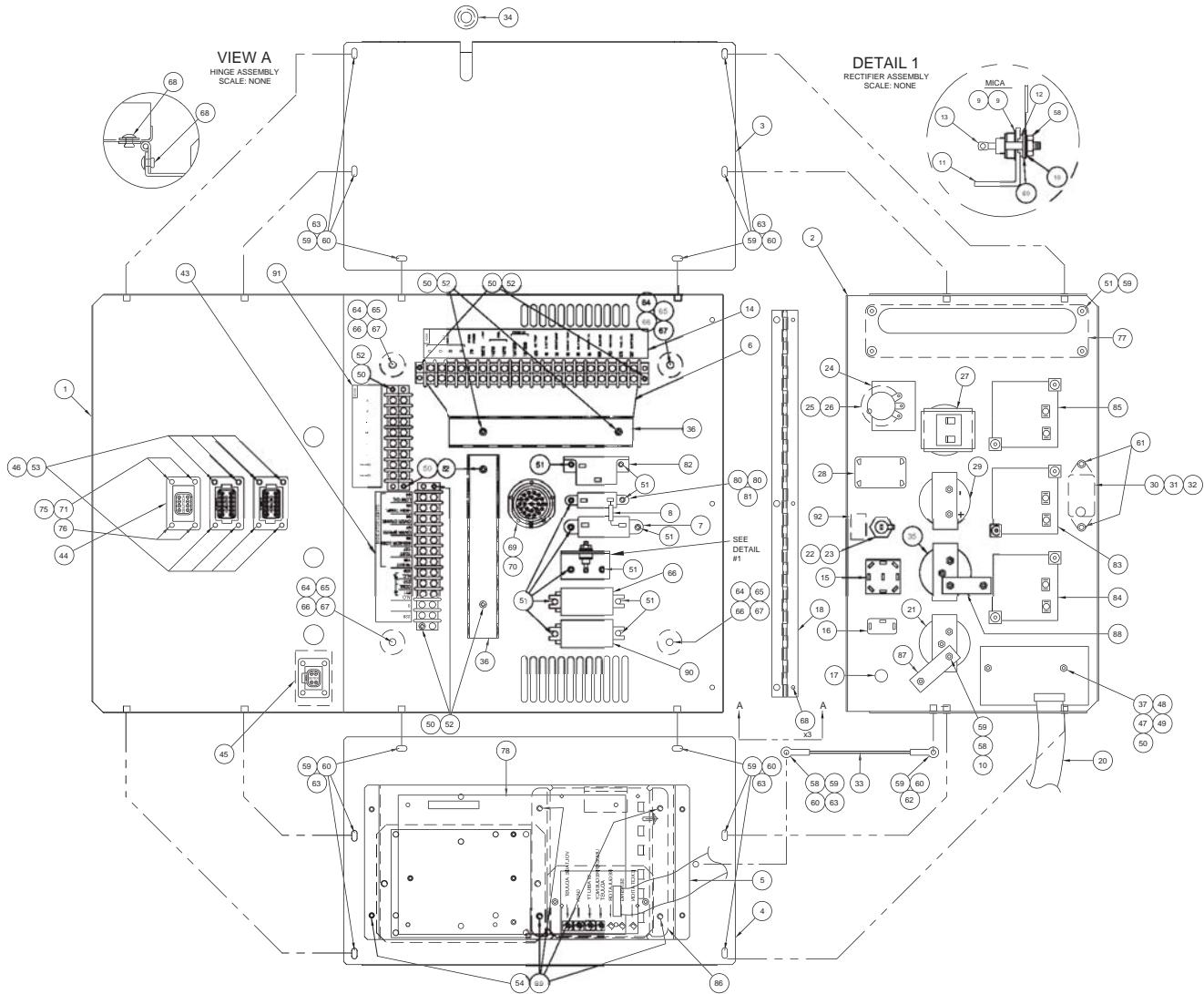


ITEM	PART NO.	QTY.	DESCRIPTION	ITEM	PART NO.	QTY.	DESCRIPTION
1	0D9687	1	"C" PANEL BOTTOM/BACK PANEL	52	0C2428	10	SCREW TAPTITE PH 6-32 X 1/2 Z/YC
2	0E0282	1	PANEL FRONT "C" W/SLKSCRN	53	074908	8	SCREW HHTT M5-0.8 X 10 BP
3	0A6322	1	PANEL RIGHT SIDE E	54	022264	8	WASHER LOCK M4
4	0A6321	1	PANEL LEFT SIDE E	55	038150	8	WASHER FLAT #8 ZINC
5	0E3550	1	CHASSIS, UNIVERSAL	58	022158	2	NUT HEX #10-32 STEEL
6	0D9720	1	HARNESS SEALED "C" PANEL STANDARD	59	022152	14	WASHER LOCK #10
7	086266	1	RES WW LUG 75R 5% 25W	60	023897	15	WASHER FLAT #10 ZINC
8 *	025192	1	RECTIFIER MSC 2A 600V 1N5062	61	024469	2	SCREW TAPTITE #10-32 X 3/8 BP
9	070370	2	WASHER MICA .203	62	033120	1	SCREW HHC #10-32 X 3/8
10	023762	4	WASHER SHAKEPROOF EXT #10 STL	63	033121	13	SCREW HHC #10-32 X 1/2
11	055444	1	HEATSINK 13.3L	64	022507	4	SCREW HHC 1/4-20 X 1/2 G5
12	030468	1	WASHER STEP NYLON .20	65	022097	4	WASHER LOCK M6-1/4
13	049939	1	RECTIFIER MSC 12A 600V 1N1206R	66	022473	4	WASHER FLAT 1/4 ZINC
14	0A3392	1	DECAL TERMINAL BLOCK	67	040479	4	VIB MNT 1.0 X 1.0 X 1/4-20
15	067625	1	SWITCH TOGGLE 3P3T 15/10A	68	036261	6	RIVET POP .125 X .129-.133/#30
16	055867	1	SWITCH TOG SPDT 15A SPD MOM	69	0C8243	1	WASHER LOCK HDPDEUTSCH
17	055920	1	SWITCH SPST SPADE PANEL MNT	70	0C8244	1	NUT, HDP DEUTSCH
18	0D6947	1	HINGE CONTINUOUS	--	ADDITIONAL PARTS (BASE TANK UNITS)		
19	0C1229	1	DECAL CUST CONN BOX	71	022471	4	NUT HEX #8-32 STEEL
20	084787	1	CABLE RIBBON 16"	75	0E0044	1	HARNESS BASETANK FOR C PANEL
21	055406	1	GAUGE COOLANT TEMPERATURE	76	0C5141	1	CONN DEUTSCH GASKET 8/12POS DT
22	032300	1	HOLDER FUSE	--	PANEL SPECIAL PARTS		
23	022676	1	FUSE 15A X AGC15	80	064733	2	BRACKET RESISTOR MOUNTNG FOR 25W
24	055349	1	INSULATOR	81 *	SEE TABLE A	1	RESISTOR #2
25	071361	1	POT 5K 10% 2.25W PNL	82	SEE TABLE B	1	FIELD CIRCUIT BREAKER
26	050123	1	KNOB PLASTIC .25 SHAFT	83	SEE TABLE C	1	AMMETER
27	070081	1	HOURMETER	84	SEE TABLE D	1	VOLTMETER AC
28	061945	1	SWITCH SELECTOR 6A AMP/V	85	070042	1	METER FREQUENCY 55-65HZ
29	062304	1	AMMETER 40-0-40 DC		070042A	1	FREQUENCY METER 240V 45-55HZ
30	0E3703	1	LIGHT PANEL WITH LUG	86	067680	1	ASSY VOLTAGE REGULATOR 60HZ
31	0C8481	1	BULB-PANEL LIGHT-12V		092952	1	ASSY VOLTAGE REGULATOR 50HZ
	083288	1	LIGHT 28VDC .17A MIN BAYNT MNT	37	029187	2	SPACER .19 X .31 X .50 PL
32	070082	1	BLOCKER LIGHT	43	082984	1	RES 120R 10% 2W ASSEMBLY 55406
33	0A2275	1	DOOR-STOP RAM PANEL	47	036908	2	SCREW PPHM #6-32 X 1-1/4
34	030809	1	GROMMET 11/16 X 1/8 X 7/16	48	022985	2	WASHER FLAT #6 ZINC
35	055405	1	GAUGE OIL PRESSURE	49	022188	2	NUT HEX #6-32 STEEL
36	0A2400A	2	TRUNKING 180MM	77	SEE TABLE E	1	OPTION PANEL
38	0A1441B	1	COVER PLATE, AVR	78	083089	1	ASSY PCB "C" CONTROL 12/24V
39	0C1127	1	DECAL AVR COVER	87 **	082984	1	RES 120R 10% 2W ASSEMBLY 55406
40	0A1441C	1	COVER PLATE EGOV	88 **	082985	1	RES 100R 5% 5W ASSEMBLY 55405
41	0A3394	1	DECAL ELEC GOVERNOR	89	024911	8	SCREW HHTT #8-32 X 3/8 CZ
42	0A5705	REF.	FUSE 5A X LTTL215005 (NOT SHOWN)	90 *	063617	2	RELAY PNL 12VDC DPDT 10A@240VA
43	066040	1	DECAL TERMINAL STRIP	**	081767	2	RELAY PNL 24VDC DPDT 10A
44	0D3471	2	DECAL COVER DEUTSCH (RECT)	91	0E1092	1	DECAL 8 POS TS SEALED C PANEL
45	0D3471	2	DECAL COVER DEUTSCH (RECT) (ELECTRONIC GOVERNOR HARNESS IF EQUIPPED)	92	0E3783	1	DECAL WARNING REMOVE FUSE
46	0C5141	2	CONN DEUTSCH GASKET 8/12POS DT	* USED ONLY FOR 12V UNITS.			
50	022155	14	WASHER LOCK #6	** USED ONLY FOR 24V UNITS.			
51	0C2699	14	SCREW PHTT #6-32 X 3/8 ZYC				



Section 4 – Exploded Views

"C" Option Control Panel with Sealed Connectors 12V & 24V Gas Control Panel – Drawing No. 0E1577-F

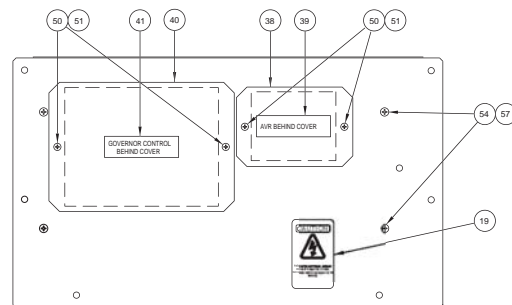


ALL DIRECTLY EXCITED MACHINES	5 OHM 25W
UPTO 100KW WITH 12 OR 24V DC SYSTEMS	P/N: 048352
ALL BRUSHLESS & PME MACHINES	25 OHM 25W
UPTO 100KW WITH 12V DC SYSTEMS	P/N: 057405
ALL BRUSHLESS & PME MACHINES	50 OHM 25W
UPTO 100KW WITH 24V DC SYSTEMS	P/N: 083364
ALL BRUSHLESS & PME MACHINES	75 OHM 25W
OVER 100KW WITH 12 OR 24V DC SYSTEMS	P/N: 086266

ALL DIRECTLY EXCITED MACHINES	7A
19 TO 45KW	P/N: 048467
ALL BRUSHLESS & PME MACHINES	5.5A
19 TO 28KW	P/N: 054450
ALL BRUSHLESS & PME MACHINES	6.0A
21 TO 41KW	P/N: 048505
ALL BRUSHLESS & PME MACHINES	7A
45 TO 100KW	P/N: 048467
ALL BRUSHLESS & PME MACHINES	4.5A
OVER 100KW	P/N: 048476

AMMETER P/N:	AMMETER RANGE
070056	0-150A
070057	0-300A
070058	0-400A
070059	0-600A
070060	0-800A
075323	0-1000A
075324	0-1600A
075325	0-2000A
075326	0-3000A
070045	0-200A

VOLT. CODE	VOLTAGE	VOLTAGE METER P/N:	VOLTAGE METER RANGE
A	120/240V 1 PHASE	070043	0-300V
D	120/240V 1.3 PHASE	070043	0-300V
G	120/208V 3 PHASE	070043	0-300V
J	120/240V 3 PHASE	070043	0-300V
K	277/480V 3 PHASE	070044	0-600V
M	110/220V 1 PHASE	070043	0-300V
N	115/200V 3 PHASE	070043	0-300V
P	100/200V 3 PHASE	070043	0-300V
R	231/400V 3 PHASE	070044	0-600V
L	600V 3 PHASE	082404	0-750V

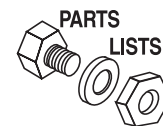


CONTROL PANEL LEFT SIDE

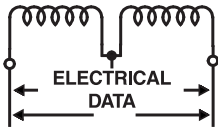
UNITS WITHOUT BASE TANKS	P/N: 070030
UNITS WITH BASE TANKS	P/N: 0D9750

Section 4 – Exploded Views

"C" Option Control Panel with Sealed Connectors 12V & 24V Gas Control Panel – Drawing No. 0E1577-F



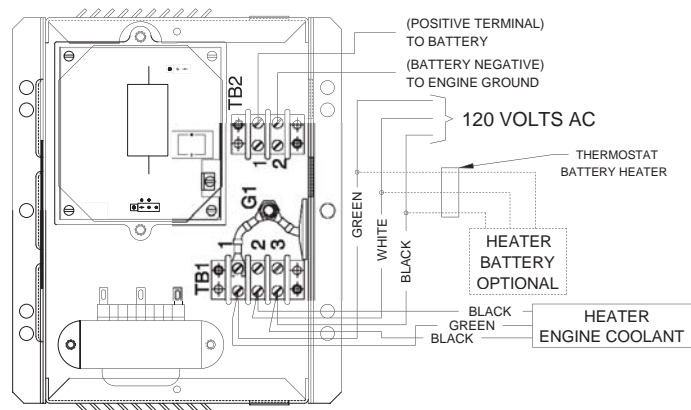
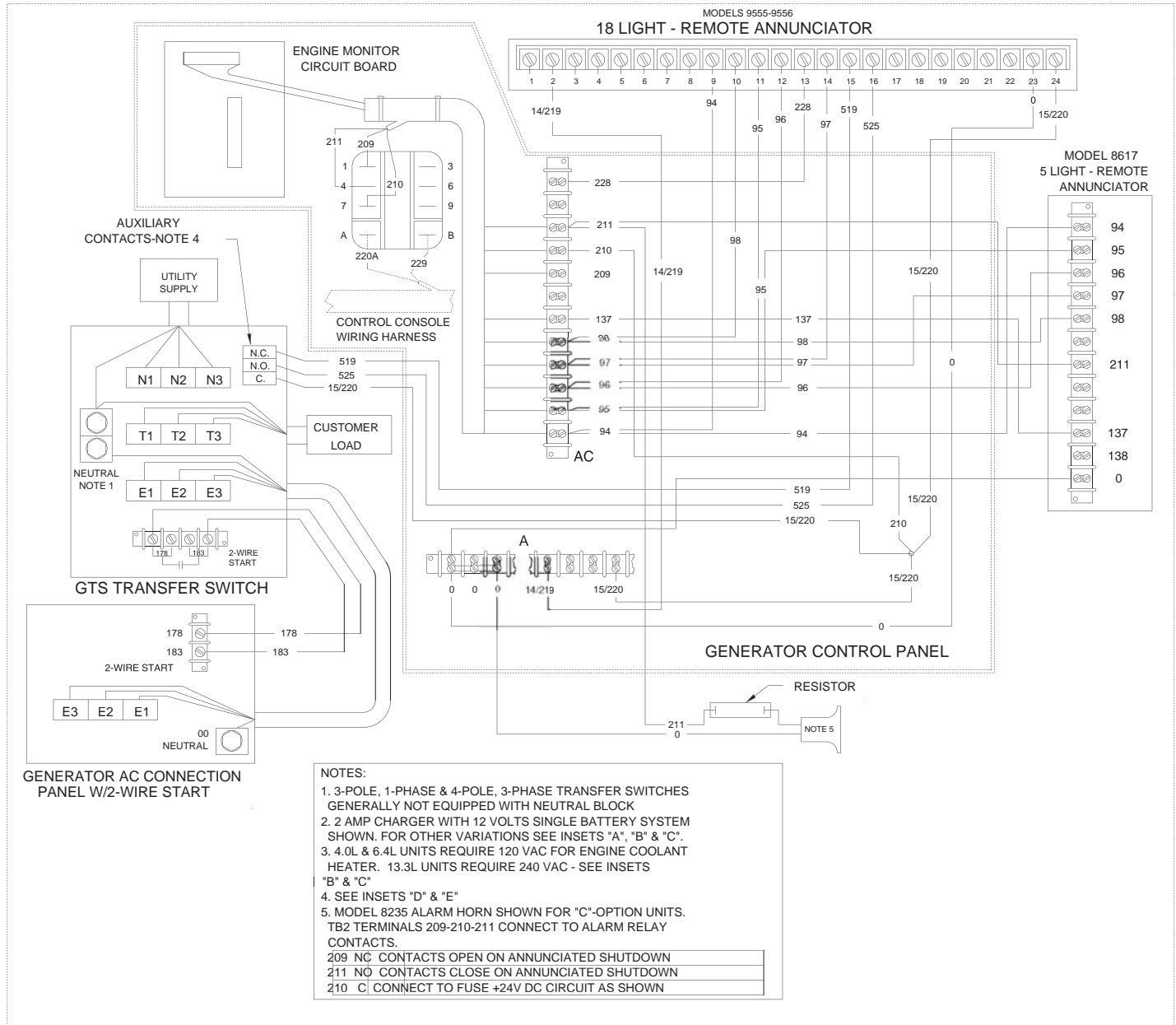
ITEM	PART NO.	QTY.	DESCRIPTION	ITEM	PART NO.	QTY.	DESCRIPTION
1	0D9687	1	"C" PANEL BOTTOM/BACK PANEL	52	0C2428	10	SCREW TAPTITE PH 6-32 X 1/2 Z/YC
2	0E0282	1	PANEL FRONT "C" W/SLKSCRN	53	074908	8	SCREW HHTT M5-0.8 X 10 BP
3	0A6322	1	PANEL RIGHT SIDE E	54	022264	8	WASHER LOCK M4
4	0A6321	1	PANEL LEFT SIDE E	57	0A2284	4	SCREW SWAGE 8-32 X 1/2 Z/YC
5	0E3550	1	CHASSIS, UNIVERSAL	58	022158	2	NUT HEX #10-32 STEEL
6	0D9720	1	HARNESS SEALED "C" PANEL STANDARD	59	022152	14	WASHER LOCK #10
7	086266	1	RES WW LUG 75R 5% 25W	60	023897	15	WASHER FLAT #10 ZINC
8 *	025192	1	RECTIFIER MSC 2A 600V 1N5062	61	024469	2	SCREW TAPTITE #10-32 X 3/8 BP
9	070370	2	WASHER MICA .203	62	033120	1	SCREW HHC #10-32 X 3/8
10	023762	4	WASHER SHAKEPROOF EXT #10 STL	63	033121	13	SCREW HHC #10-32 X 1/2
11	055444	1	HEATSINK 13.3L	64	022127	4	NUT HEX 1/4-20 STEEL
12	030468	1	WASHER STEP NYLON .20	65	022097	4	WASHER LOCK M6-1/4
13	049939	1	RECTIFIER MSC 12A 600V 1N1206R	66	022473	4	WASHER FLAT 1/4 ZINC
14	0A3392	1	DECAL TERMINAL BLOCK	67	027831	4	DAMPNER VIBRATION
15	067625	1	SWITCH TOGGLE 3P3T 15/10A	68	036261	6	RIVET POP .125 X .129-.133/#30
16	055867	1	SWITCH TOG SPDT 15A SPD MOM	69	0C8243	1	WASHER LOCK HDP DEUTSCH
17	026536	1	PLUG STEEL 0.5	70	0C8244	1	NUT, HDP DEUTSCH
18	0D6947	1	HINGE CONTINUOUS	--	ADDITIONAL PARTS (BASE TANK UNITS)		
19	0C1229	1	DECAL CUST CONN BOX	71	074908	4	SCREW HHTT M5-0.8 X 10 BP
20	084787	1	CABLE RIBBON 16"	75	0E0044	1	HARNESS BASETANK FOR C PANEL
21	055406	1	GAUGE COOLANT TEMPERATURE	76	0C5141	1	CONN DEUTSCH GASKET 8/12POS DT
22	032300	1	HOLDER FUSE	--	PANEL SPECIAL PARTS		
23	022676	1	FUSE 15A X AGC15	80	064733	2	BRACKET RESISTOR MOUNTNG FOR 25W
24	055349	1	INSULATOR	81 *	SEE TABLE A	1	RESISTOR #2
25	071361	1	POT 5K 10% 2.25W PNL	82	SEE TABLE B	1	FIELD CIRCUIT BREAKER
26	050123	1	KNOB PLASTIC .25 SHAFT	83	SEE TABLE C	1	AMMETER
27	070081	1	HOURMETER	84	SEE TABLE D	1	VOLTMETER AC
28	061945	1	SWITCH SELECTOR 6A AMP/V	85	070042	1	METER FREQUENCY 55-65HZ
29	062304	1	AMMETER 40-0-40 DC		070042A	1	FREQUENCY METER 240V 45-55HZ
30	0E3703	1	LIGHT PANEL WITH LUG	86	067680	1	ASSY VOLTAGE REGULATOR 60HZ
31	0C8481	1	BULB-PANEL LIGHT-12V		092952	1	ASSY VOLTAGE REGULATOR 50HZ
	083288	1	LIGHT 28VDC .17A MIN BAYNT MNT	--	-----	--	
32	070082	1	BLOCKER LIGHT	37	029187	2	SPACER .19 X .31 X .50 PL
33	0A2275	1	DOOR-STOP RAM PANEL	47	036908	2	SCREW PPHM #6-32 X 1-1/4
34	030809	1	GROMMET 11/16 X 1/8 X 7/16	48	022985	2	WASHER FLAT #6 ZINC
35	055405	1	GAUGE OIL PRESSURE	49	022188	2	NUT HEX #6-32 STEEL
36	0A2400A	2	TRUNKING 180MM	77	SEE TABLE E	1	OPTION PANEL
38	0A1441B	1	COVER PLATE, AVR	78	083089	1	ASSY PCB "C" CONTROL 12/24V
39	0C1127	1	DECAL AVR COVER	87 **	082984	1	RES 120R 10% 2W ASSEMBLY 55406
40	0A1441C	1	COVER PLATE EGOV	88 **	082985	1	RES 100R 5% 5W ASSEMBLY 55405
41	0A3394	1	DECAL ELEC GOVERNOR	89	024911	8	SCREW HHTT #8-32 X 3/8 CZ
42	0A5705	REF.	FUSE 5A X LTLT215005 (NOT SHOWN)	90 *	063617	2	RELAY PNL 12VDC DPDT 10A@240VA
43	066040	1	DECAL TERMINAL STRIP	**	081767	2	RELAY PNL 24VDC DPDT 10A
44	0D3471	2	DECAL COVER DEUTSCH (RECT)	91	0E1092	1	DECAL 8 POS TS SEALED C PANEL
45	0D3471	2	DECAL COVER DEUTSCH (RECT) (ELECTRONIC GOVERNOR HARNESS IF EQUIPPED)	92	0E3783	1	DECAL, WARNING REMOVE FUSE
46	0C5141	2	CONN DEUTSCH GASKET 8/12POS DT	* USED ONLY FOR 12V UNITS.			
50	022155	14	WASHER LOCK #6	** USED ONLY FOR 24V UNITS.			
51	0C2699	16	SCREW PHTT #6-32 X 3/8 ZYC				



Section 5 – Interconnection Diagram

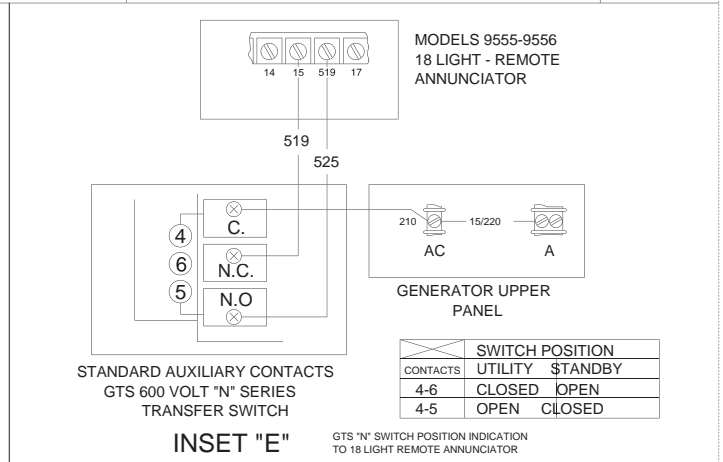
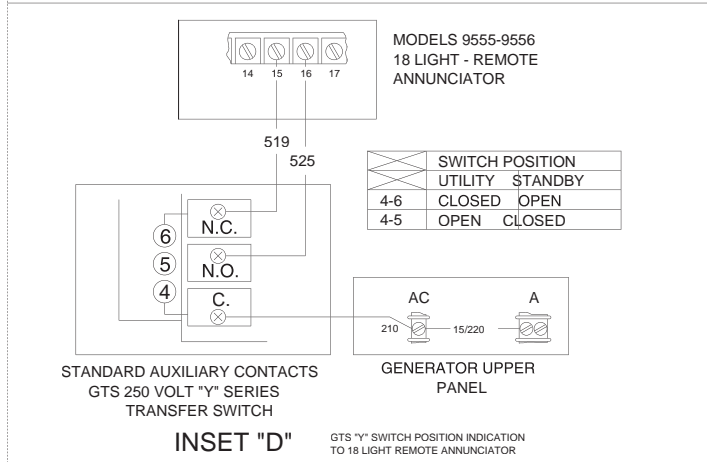
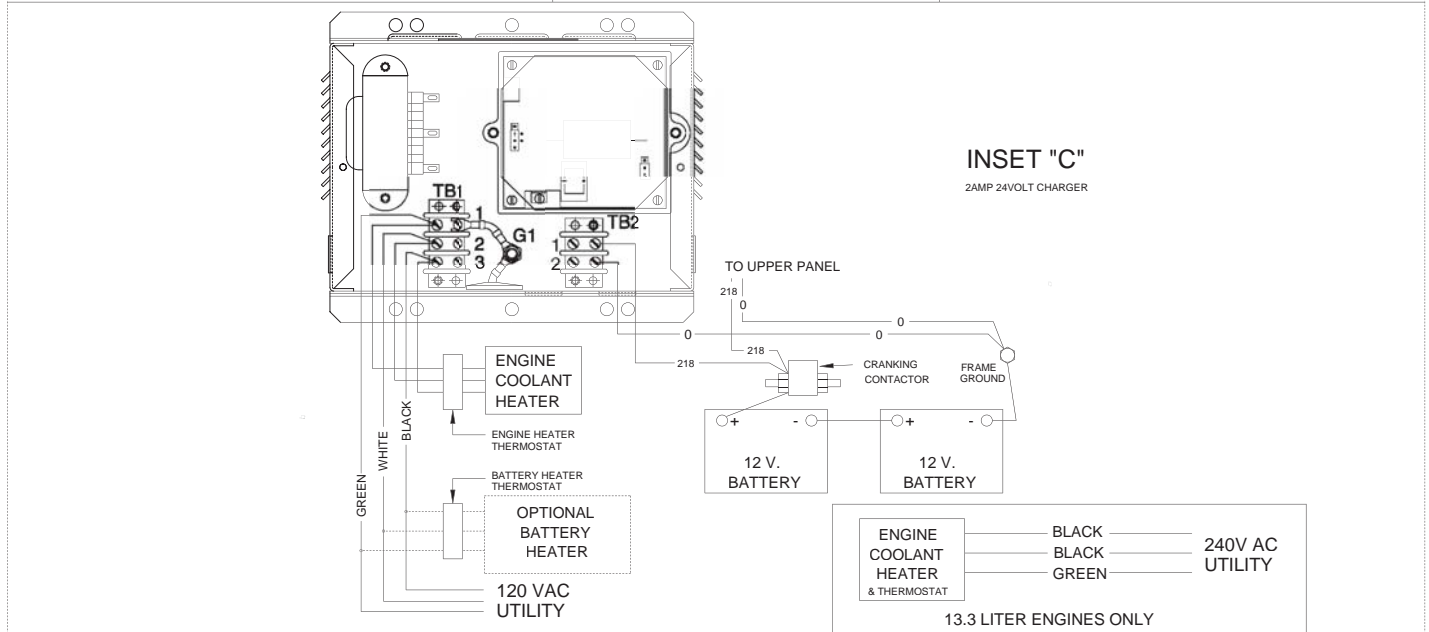
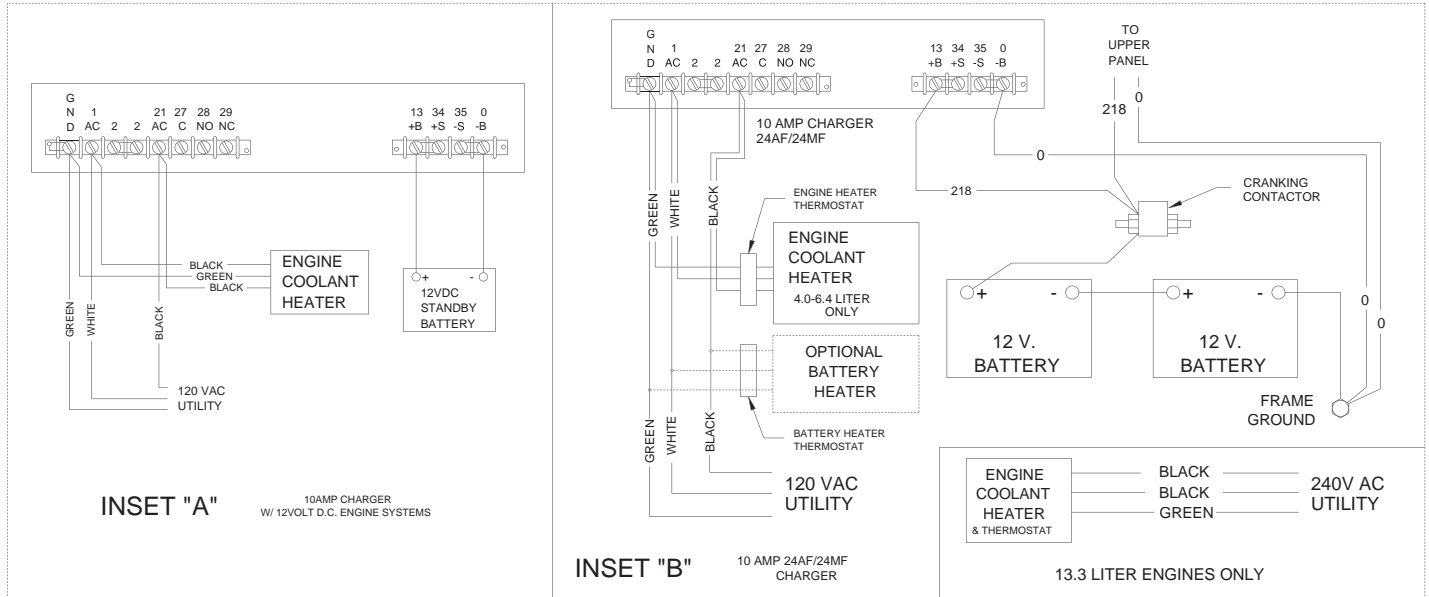
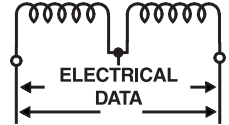
"C" Option Control Panel 12 Volt Gas

Interconnection Diagram – Drawing No. 0E2148



Section 5 – Interconnection Diagram

"C" Option Control Panel 12 Volt Gas Interconnection Diagram – Drawing No. 0E2148



GENERAC® POWER SYSTEMS, INC.

P.O. BOX 8
WAUKESHA, WI 53187

Part No. OE1581

Revision A (06/23/03)

Printed in U.S.A.