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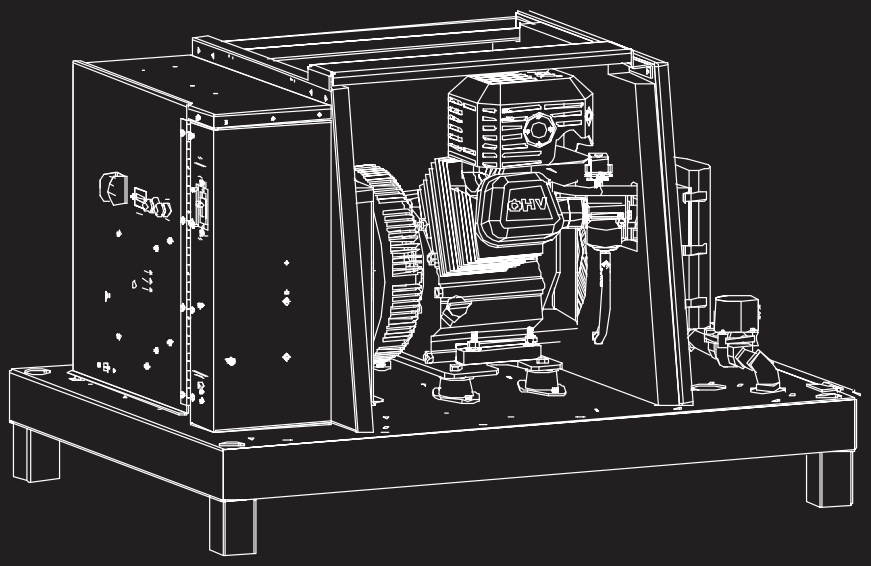
Power Generation

# Installation Manual

## DCathlon® Generator Sets



**Models**
**GCAA, GCAB, GCAC**

Printed in U.S.A.

965-0634B 01-02

**WARNING:**

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

# Table of Contents

# Safety Precautions

Thoroughly read the OPERATOR'S MANUAL before operating the genset. Safe operation and top performance can only be obtained when equipment is operated and maintained properly.

The following symbols in this manual alert you to potential hazards to the operator, service person and equipment.

**⚠ DANGER alerts you to an immediate hazard which will result in severe personal injury or death.**

**⚠WARNING alerts you to a hazard or unsafe practice which can result in severe personal injury or death.**

**⚠ CAUTION alerts you to a hazard or unsafe practice which can result in personal injury or equipment damage.**

Electricity, fuel, exhaust, moving parts and batteries present hazards which can result in severe personal injury or death.

## GENERAL PRECAUTIONS

- Keep ABC fire extinguishers handy.
- Make sure all fasteners are secure and torqued properly.
- Keep the genset and its compartment clean. Excess oil and oily rags can catch fire. Dirt and gear stowed in the compartment can restrict cooling air.
- Before working on the genset, disconnect the negative (±) battery cable at the battery to prevent accidental starting.
- Use caution when making adjustments while the genset is running—hot, moving or electrically live parts can cause severe personal injury or death.
- Used engine oil has been identified by some state and federal agencies as causing cancer or reproductive toxicity. Do not ingest, inhale, or contact used oil or its vapors.
- Do not work on the genset when mentally or physically fatigued or after consuming alcohol or drugs.
- Carefully follow all applicable local, state and federal codes.

## GENERATOR VOLTAGE IS DEADLY!

- Generator output connections must be made by a qualified electrician in accordance with applicable codes.
- Use caution when working on live electrical equipment. Remove jewelry, make sure clothing and shoes are dry and stand on a dry wooden platform.

## ENGINE EXHAUST IS DEADLY!

- Learn the symptoms of carbon monoxide poisoning in the Operator’s Manual.
- The exhaust system must be installed in accordance with the genset Installation Manual. Engine cooling air must not be used for heating the working or living space or compartment.
- Make sure there is ample fresh air when operating the genset in a confined area.

## FUEL IS FLAMMABLE AND EXPLOSIVE

- Do not smoke or turn electrical switches ON or OFF where fuel fumes are present or in areas sharing ventilation with fuel tanks or equipment. Keep flame, sparks, pilot lights, arc-producing equipment and all other sources of ignition well away.
- Fuel lines must be secured, free of leaks and separated or shielded from electrical wiring.
- Leaks can lead to explosive accumulations of gas. Natural gas rises when released and can accumulate under hoods and inside housings and buildings. LPG sinks when released and can accumulate inside housings and basements and other below-grade spaces. Prevent leaks and the accumulation of gas.

## BATTERY GAS IS EXPLOSIVE

- Wear safety glasses and do not smoke while servicing batteries.
- When disconnecting or reconnecting battery cables, always disconnect the negative (–) battery cable first and reconnect it last to reduce arcing.

## MOVING PARTS CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Do not wear loose clothing or jewelry near moving parts such as PTO shafts, fans, belts and pulleys.
- Keep hands away from moving parts.
- Keep guards in place over fans, belts, pulleys, etc.

telecom-1

# Introduction

## ABOUT THIS MANUAL

This manual is a guide for the installation of the Series GCAA, GCAB and GCAC generator sets (gensets) and covers the steps necessary to place the genset in service. Refer to the Table of Contents for the model-specific Outline Drawings and Wiring Diagrams in this manual.

## INSTALLATION OVERVIEW

Proper application and installation are essential for reliability and safety.

**Application:** The proper application of this genset requires the seasoned judgment of a professional engineer. This manual does not cover application. The end user must determine whether the genset selected will be the proper one for its needs.

**Installation:** The proper installation of the genset and all the other equipment included in the system requires the skill of qualified personnel such as electricians, mechanics and plumbers. This manual covers as specifically as possible each aspect of the installation of the genset and its connections. Call an authorized Onan Distributor if questions remain.

**Reliability and Safety:** It is essential for reliability and safety that these instructions be followed closely and that the system, as a whole, complies with all applicable codes at the time it is placed in service.

**⚠WARNING The improper application or installation of a genset can result in severe personal injury or death and property damage. The application must be made by a professional engineer and the installation by those trained and experienced in the required electrical and mechanical trades. The installation must comply with all applicable codes.**

**Standards for Safety:** You must find out which standards for safety are applicable. It is suggested that you obtain the following NFPA Standards: Nos. 37, 54, 58 and 70 (National Electrical Code).

IMPORTANT NOTICE: Depending on the locality, it may be necessary to obtain an air quality emissions permit before installation begins. Check with the local pollution control or air quality authority.

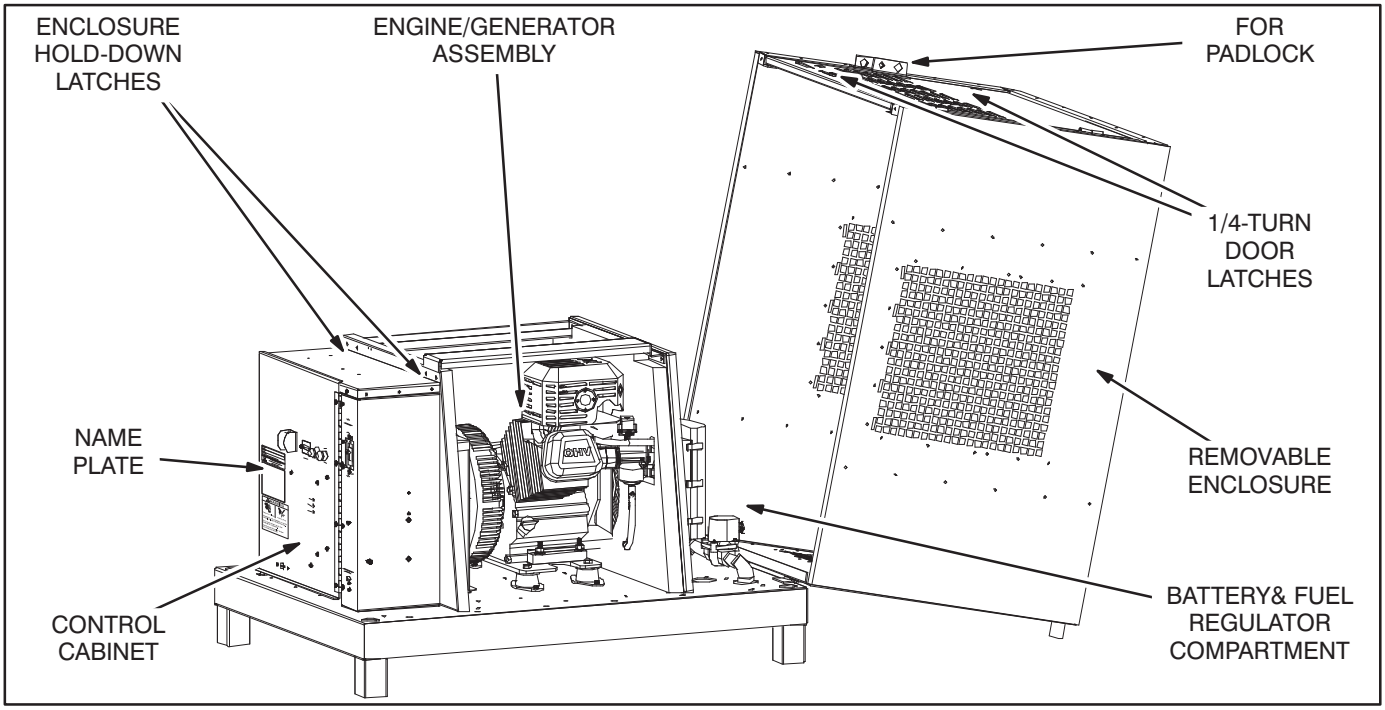



**FIGURE 1. TYPICAL GENSET (MODEL GCAA SHOWN)**

# Mechanical

## LOCATION

Genset location is a matter for system design and application. See Introduction.

**⚠WARNING EXHAUST GAS IS DEADLY! The genset must be installed out-of-doors, away from vents, windows, doors and sheltered spaces not having ample fresh air ventilation.**

These gensets are designed for installation out-of-doors only. They have weather-protective housings (Figure 1). Factors to consider when locating the genset include:

- Proximity of load equipment. To avoid excessive line loss, locate the genset such that the length of the high-current cable loop (total length of positive and negative cables between genset and load) is not greater than 100 feet (30 meters).
- Proximity of fuel supply lines and LPG tanks.
- Access for maintenance and service.
- Security from vandalism, flooding and vehicle traffic.
- Noise levels and proximity of property lines.
- Safe dispersal of engine exhaust and cooling air away from buildings and people.
- Possible obstructions to ventilation caused by snowdrifts, plant growth, lawn clippings and falling leaves.

## ACCESS AND MOUNTING

Provide at least 3 feet (1 meter) of clearance on all sides of the genset and enough clearance to swing the enclosure all the way open. See the appropriate outline drawings (Pages A-1 through A-6).

The foundation, floor or roof must be level and be able to support the weight of the genset, resist the dynamic loads and not transmit objectionable noise and vibration. Generally, additional vibration isolation is not required because the engine/generator assembly is mounted on rubber vibration isolators inside the housing. See the appropriate outline drawing (Pages A-1 through A-6) regarding anchor bolts and their locations. Also note where the stubups for electrical conduit and fuel piping must be located.

## ENGINE EXHAUST AND VENTILATION

There are no exhaust or ventilation connections to be made. Engine exhaust and cooling air exit through the louvers on the sides of the genset housing. The engine-mounted muffler discharges engine exhaust into the cooling air stream inside the engine compartment. The genset must therefore be installed out-of-doors, away from vents, windows, doors and sheltered spaces not having ample fresh air ventilation.

## FUEL

See the Operator's Manual for fuel recommendations, Specifications (Page 12) for fuel consumption rates and the appropriate outline drawing (Pages A-1 through A-6) for fuel connections.

**⚠WARNING Gaseous fuels are flammable and explosive and can cause severe personal injury or death. Do not smoke if you smell gas or are near fuel tanks or fuel-burning equipment or are in an area sharing ventilation with such equipment. Keep flames, sparks, pilot lights, electrical switches and arc-producing equipment and all other sources of ignition well away. Keep a type ABC fire extinguisher handy.**

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

## Fuel Changeover

**Model GCAA:** The genset was adjusted for natural gas at the factory. To adjust for LPG, initially turn the fuel mixer screw (Figure 2) clockwise 1-1/2 turns. Fine tune, as necessary, under full load. If you lose track, restart by turning the screw in gently by hand until it seats. Then turn it back out (counterclockwise): 2 turns for LPG, 3-1/2 turns for natural gas.

**Model GCAB, GCAC—Manual Changeover:** Open the control cabinet and push the fuel selector switch (Figure 3) to "N. G." to run on natural gas or to "PROPANE" to run on LPG.

**Model GCAB, GCAC—Auto Changeover:** A genset equipped for automatic fuel transfer will automatically transfer to LPG upon loss of natural gas supply and return to natural gas upon restoration. The position of the fuel selector switch (Figure 3) has no effect.

## Fuel Supply System

Gaseous fuel supply system design, materials, components, fabrication, assembly, installation, testing, inspection, operation and maintenance must comply with the applicable codes. See NFPA Standards No. 37, 54 and 58.

Gas supply piping must be sized such that the supply pressures specified in Specifications (Page 12) can be maintained under all conditions. The pipe size calculations must be based on the fuel consumption rate (Specifications, Page 12).

LPG tanks must be sized to provide the required number of hours of operation and the vaporization rate necessary to meet genset demand on the coldest days expected. In colder climates relatively large tanks may be required to obtain the necessary vaporization rate. Check with the local suppliers for recommendations.

**⚠WARNING High gas supply pressure can cause gas leaks which can lead to fire and severe personal injury or death. Gas supply pressure must be adjusted to Specifications by trained and experienced personnel.**

Install a dry-type fuel filter ahead of the service pressure regulator to protect valve seats and orifices from the rust and scale carried along by the gas.

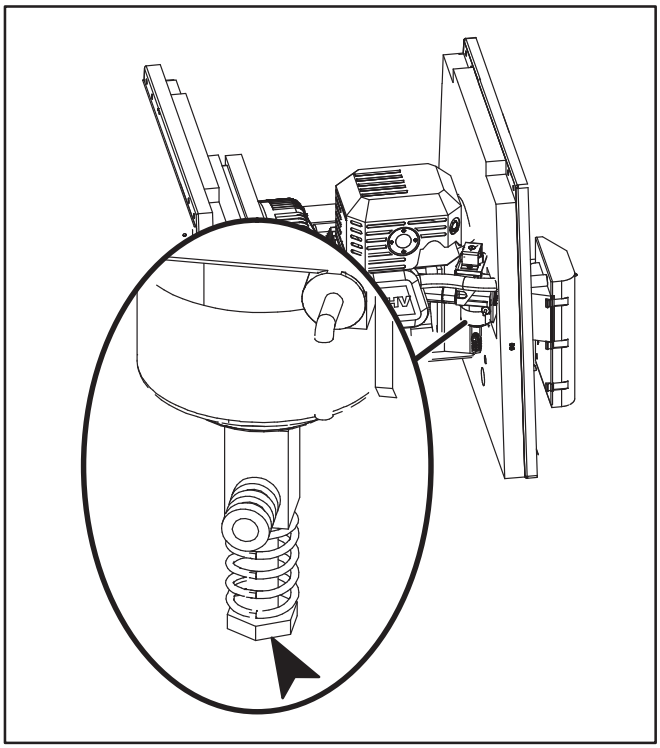


**FIGURE 2. FUEL MIXER SCREW (GCAA)**

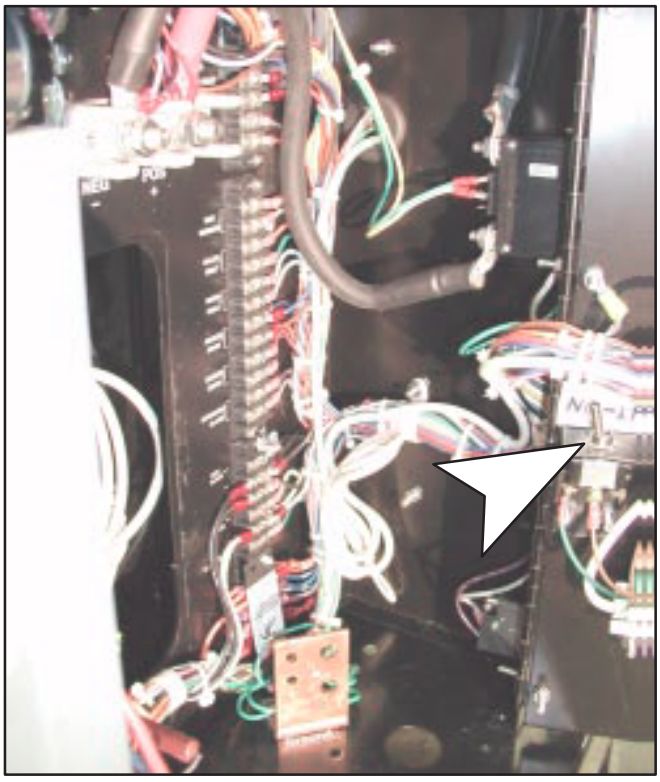


**FIGURE 3. FUEL SELECTOR SWITCH (GCAB, GCAC)**

# Electrical

**⚠WARNING Automatic startup of the genset can cause severe personal injury or death. Wait till Startup (Page 11) to install the engine starting battery.**

Make sure the genset output voltage (24 VDC or 48 VDC) is correct for the application.

See the appropriate Outline Drawing (Pages A-1 through A-6) for wiring conduit stubups and Page A-13 for the customer wiring terminals. Use the National Electrical Code (NFPA No. 70) as a guide for all AC and DC wiring connections.

## AC CONNECTIONS

The AC connections at TB3 are for monitoring utility power and powering the engine sump heater and battery float charger. The optional exercise timer and battery heater are also powered through TB3.

See Page A-13 for customer connections at TB3. Use 14 AWG stranded copper conductors for loop lengths up to 50 feet (15 meters) and 12 AWG conductors for loop lengths up to 100 feet (30 meters). Run the wires in the AC conduit to the load equipment. Make sure to connect the green grounding conductor between TB3-6 and the AC grounding terminal in the load equipment.

**⚠WARNING Faulty grounding can lead to fire and electrocution, resulting in severe personal injury or death. The genset must be grounded in accordance with the applicable codes.**

## DC LOAD CONNECTIONS

See Page A-13 for the customer load connections at TB1 and Table 1 for recommended DC load cable sizes. Terminate the load cables with 3/8 inch crimp-type eyelet connectors. Make sure polarity is correct and then torque the load terminals to 20 lb-ft (27 N-m). Run the cables in the DC conduit to the load equipment. Make the hole for the conduit larger if 2 inch conduit is not large enough for the load cables.

## DC GROUNDING

See Page A-13 for the DC grounding terminal stud and Table 1 for minimum DC grounding cable sizes. Terminate the grounding cable with a 1/4 inch crimp-type eyelet connector. Torque the terminal to 20 lb-ft (27 N-m). Run the grounding cable with the load cables and make sure the other end of the cable is terminated in the load equipment according to the applicable codes.

**TABLE 1. DC LOAD AND GROUNDING CABLES**

| **24 VDC GENSETS** | | | |
|---|---|---|---|
| Genset Rating | 3 kW | 4.5 kW | 5.5 kW |
| Output Current (Amps) | 150 | 200 | 250 |
| 25 Foot Loop | 1 AWG | 2/0 AWG | 250 mcm |
| 50 Foot Loop | 2/0 AWG | 4/0 AWG | 250 mcm |
| 100 Foot Loop | 4/0 AWG | 250 mcm | 500 mcm |
| Grounding Conductor | 4 AWG | 4 AWG | 2 AWG |
| **48 VDC GENSETS** | | | |
| Genset Rating | 3 kW | 4.5 kW | 5.5 kW |
| Output Current (Amps) | 70 | 100 | 125 |
| 25 Foot Loop | 4 AWG | 1 AWG | 2 AWG |
| 50 Foot Loop | 1 AWG | 2 AWG | 2/0 AWG |
| 100 Foot Loop | 4/0 AWG | 4/0 AWG | 4/0 AWG |
| Grounding Conductor | 6 AWG | 6 AWG | 4 AWG |

## REMOTE START AND REMOTE ALARMS

See Page A-13 for customer connections at TB2. Use alarm devices rated as specified and 24 to 18 AWG stranded copper conductors having insulation rated for at least 125 VAC. Run the wires in 1 inch conduit to the remote control panel.

See the Operator's Manual regarding the major and minor alarms and associated faults.

## ANNUNCIATOR PANEL (OPTIONAL)

The annunciator panel (A2) has a terminal block (J3) for customer connections to remote annunciating devices See Page A-14. Use annunciator devices rated as specified and 24 to 18 AWG stranded copper conductors having insulation rated for at least 125 VAC. Run the wires in 3/4 inch conduit to the remote annunciator panel.

See the Operator's Manual regarding the faults annunciated.

## SHEAR PAD SWITCH (OPTIONAL)

A shear pad switch (S9) is available as an option along with the annunciator panel. Install the switch as instructed on Pages A-14 and A-15.

## GAS HAZARD MONITOR (OPTIONAL)

A pre-installed gas hazard monitor (A3) is available as an option along with the annunciator panel. See Page A-14.

## DC METERS (OPTIONAL)

Pre-installed DC output meters (amps, volts) are available as an option on the control panel.

## ENGINE OIL SUMP HEATER

The genset is equipped with a thermostatically controlled engine oil sump heater (HP) powered through the AC connections at TB3.

## REMOTE DC LOAD SENSE

The genset regulates output based on voltage sensed at TB1 (Page A-13). Due to voltage drop in the high-current cables between the genset and load, voltage at TB1 is not the same as at the load terminals. For regulation based on load terminal voltage, connect TB2-9 (Page A-13) to the Positive (**+**) Load Terminal and TB2-10 to the Negative (**–**) Load Terminal. Use 24 to 18 AWG twisted pair cable and run it in the same conduit as the load cables.

## ENGINE STARTING BATTERY

The genset is equipped with a battery mounting tray inside the enclosure and the cables are ready to be connected. See Specifications regarding battery requirements. **Wait till Startup to install the battery.**

The genset is equipped with an engine-driven battery charger (G2) and an AC-powered float charger (FC). The float charger is powered through the AC connections at TB3.

A pre-installed battery heater is available as an option and is recommended for colder climates. It is powered through the AC connections at TB3.

## RECONNECTING GENSET TO MATCH DC SYSTEM GROUNDING

The power section of a 24 VDC genset is wired at the factory for connection to a negative ground DC system. The power section of a 48 VDC genset is wired at the factory for connection to a positive ground DC system. If DC system grounding is opposite that of the genset (**+** versus **–**, **–** versus **+**), reconnect the power section of the genset to match the DC system by flip flopping the heavy cable at diode D1 with the one on the negative terminal on rectifier assembly CR1. (Page A-8, A-10 or A-12, respectively.) **Contactor K1 and circuit breaker CB1 must open the ungrounded side of the power circuit.**

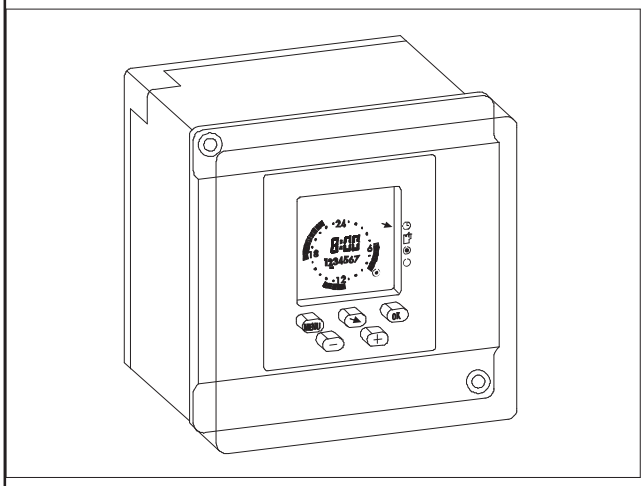
Torque the terminal screws to 35 lb-in (4 N-m) when reattaching the cables.

## EXERCISE TIMER (OPTIONAL)

A programmable 7-day, 1- to 8-week cycle (rhythm) timer (A4) is available for periodically starting and running the genset. To set day, cycle and duration of exercise, follow the timer manufacturer's instructions reproduced in Figures 4 and 5. A 4 week cycle of 30 minute exercise is recommended.

**Time switch**
**Rex2000 XW72/1**

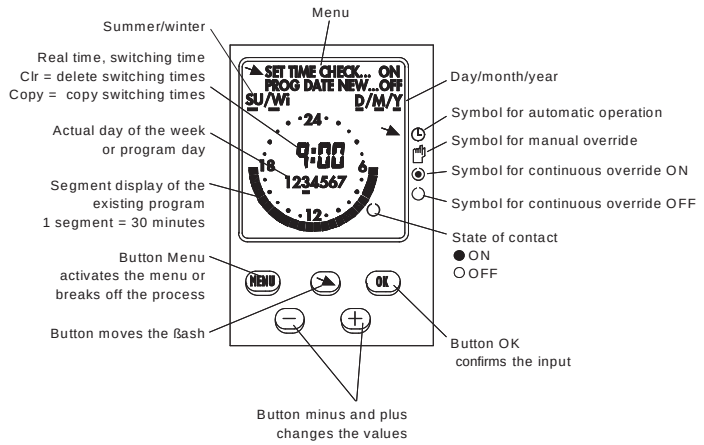
GB
Operating instructions



### Function

The Rex2000 XW72/1 is a digital 7 day and 1 to 8 week rhythm time switch with a circular segmented display for general rail mounting use. It is possible to set a 1 to 8 week rhythm. The 4 week rhythm is preset. The first week when week rhythm will be executed, is the week after the week rhythm is setted. 1 program picture can be set. A program picture incorporates both ON and OFF time. If no button is pressed for 60 seconds during programming the time switch goes back to the start position. Minimum switching time is 1 minute. The swit–ching times are protected but can be overlaid. The program will be displayed with a minimum segment size of 30 minutes. The time and the week days are presented digitally. The summer-/winter changeover can be programmed for hand or automatic operation.

### Presentation




### 1. Starting

**Reset 1** Switching program remains

Press MENU ⊖ ⊕ together.

**Reset 2** Switching program deleted

Press all 5 buttons together.

First release button MENU, then release all other buttons.

### 2. Setting actual time

Button MENU activates the menu.

Select **SET TIME...** with button ⊙ and confirm with button OK. Confirm once more **SET TIME** with button OK.


Set actual hour with buttons ⊖⊕ and confirm with button OK.

Set actual minute with buttons ⊖⊕ and confirm with button OK.


**FIGURE 4. INSTRUCTIONS FOR SETTING EXERCISE TIMER—STEPS 1 AND 2**

### 3. Setting actual date and summer / winter changeover

Button MENU activates the menu.
Select **SET TIME...** with button ⊖⊕ and confirm with button OK. Select **DATE...** with button ⊖⊕ and confirm with button OK.


Set year with buttons ⊖⊕ and confirm with button OK.
Set day and month with buttons ⊖⊕ and confirm with button OK.


**Summer/ winter changeover**
Summer / winter changeover can be made manually or automatically if set.
Choose the region of summer/ winter (see table below) with buttons ⊖⊕.
confirm with button OK.


If manual changeover is required choose **nonE** during the date input. Automatic changeover depends on your country / area. Choose the appropriate setting for your country / area.

| Choice | Beginning of summertime | End of summertime | Country / area |
|---|---|---|---|
| **Euro** | last Sunday in March | last Sunday in October | EU |
| **Gb** | last Sunday in March | last Sunday in October | GB |
| **US** | 1ST Sunday in April | last Sunday in October | only North America |
| **nonE** | No changeover | No changeover | |
| **FrEE** | **Freely programmable date with regard to the change from summer time to winter time**<br>**Nothern hemisphere**<br>Put in the date at which the summer time starts and ends at your location/in your country. The weekday is automatically allocated to the date.<br><br>**Southern hemisphere**<br>On the southern hemisphere the date at which the summer time starts/ends must be programmed for the **same** year.<br><br>Set year with buttons ⊖⊕ and confirm with button OK.<br><br>Set actual day and month of summertime with buttons ⊖⊕ and confirm with button OK.<br><br>Set actual day and month of real time with buttons ⊖⊕ and confirm with button OK. | | |

### 4. Setting switching times

Button MENU activates the menu. confirm **PROG...** with button OK.
confirm **PROG NEW...** with button OK.

Set week rhythm with buttons ⊖⊕ and confirm with button OK.


Select desired day with buttons ⊖⊕ and confirm with button OK.
If chosen day already contains a program, the program and Clr will be displayed.
To delete the program confirm with button OK.


Set **ON time** with buttons ⊖⊕ and confirm with button OK.


**Advice:**
**Setting advances in minutes.**
**Press once = 1 minute**
**Hold button = higher speed**

Set **OFF time** with buttons ⊖⊕


confirm with button OK.
To delete program press button OK.
New program can be set now.
**or**


**Terminating program input**

Press button MENU as required until the actual time appears.


### 5. Delete switching times

Button MENU activates the menu. confirm **PROG...** with button OK.
confirm **PROG NEW...** with button OK.

Select desired day with buttons ⊖⊕ and confirm with button OK.


To delete program press button OK.
New program can be set now (see ¤4).
If this day does not contain any program press button OK twice.
Press button MENU as required until the actual time appears.

### 6. Check switching times

Button MENU activates the menu. confirm **PROG...** with button OK.
Select **TIME CHECK...** with button ⊖⊕ and confirm with button OK.
The week rhythm will be displayed.
**left** 4 = week rhythm
**right** 1 = the rhythm starts in the next week
0 = the rhythm starts this week
2 = the rhythm starts in 2 weeks


Press button OK.
Select desired day with buttons ⊖⊕ and confirm with button OK.
With button OK check setting times one after another.
Not covered days will be displayed with **FrEE**.


**Terminating check switching times**
Press button MENU as required until the actual time appears.


### 7. Hand ON/OFF

◉
○ Select hand symbol with button ⊖⊕


State of contact set by program will be reversed.
= ON
= OFF

The next program automatically returns the switch to ON or OFF as programmed.

### 8. Continuous switching

Select with button ⊖⊕ the symbol ◉ for continuous override ON


or ○ continuous override OFF


**Terminating continuous switching**

Select symbol with button ⊖⊕ symbol ◷ for automatic operation.

### Mains failure

Mains failure will be displayed by **no U**.
Buttons are inoperative.
Reset is possible.


**FIGURE 5. INSTRUCTIONS FOR SETTING EXERCISE TIMER—STEPS 3 THROUGH 8**

# Installation Review and Startup

## INSTALLATION REVIEW

Before starting the genset inspect the installation and check off (√) each of the following questions if it can be answered "YES". If a question cannot be checked off, review the appropriate section in the manual.

[ ] Is the genset installed away from building vents, windows, doors and sheltered spaces not having ample fresh air ventilation?

[ ] Is there access to swing the housing all the way out for maintenance and service and to change oil, filters and spark plugs?

[ ] Is the genset securely bolted in place?

[ ] Are all housing openings free of obstructions?

[ ] Have all wiring connections been made properly?

[ ] Does genset DC grounding match DC system grounding?

[ ] Does the engine starting battery meet Specifications (Page 12)?

[ ] Is fuel supply pressure correct?

[ ] Are all fuel connections tight?

[ ] Has the exercise clock (optional) been set?

## STARTUP

Install the battery and connect the cables, negative (–) last, when all installation requirements have been met.

**⚠WARNING Flames, sparks or arcing at the battery terminals, light switches or other equipment can ignite battery gas causing severe personal injury. Do not smoke—Ventilate the area before working on or near a battery—Wear safety glasses—Switch work lamps ON and OFF away from the battery—Do not disconnect battery cables while the genset is running or a battery charger is on—Always disconnect the negative (–) cable first and reconnect it last.**

Read through the Operator's Manual and perform the maintenance and pre-start checks instructed. The genset is shipped from the factory with the proper level of engine oil, which should, nevertheless, be checked before the genset is started. Start and operate the genset, following all the instructions and precautions in the Operator's Manual.

**⚠WARNING EXHAUST GAS IS DEADLY! Do not operate the genset indoors unless there is ample fresh air ventilation.**

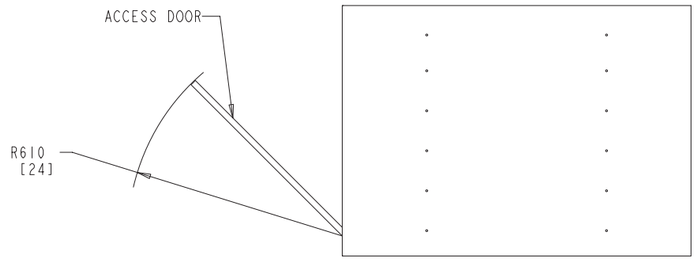
Check for fuel and exhaust leaks and unusual noises. Repair fuel leaks immediately. Do not place the genset in service until all leaks have been fixed and operation is satisfactory.

Push the control switch to **Auto** when the genset is ready to provide automatic standby service.

**⚠CAUTION The genset will not be available for automatic standby service unless you push the control panel switch to AUTO before leaving the site.**

# Specifications

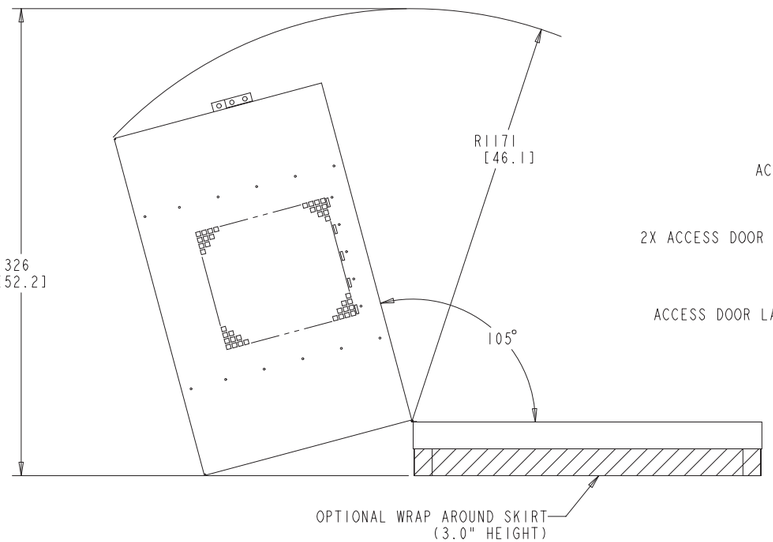
| | GCAA | GCAB | GCAC |
|---|---|---|---|
| **GENERATOR:** Bearingless, 3-Phase, Permanent Magnet Alternator with Full-Wave Rectified DC Output Regulated by Engine Speed | | | |
| Power | 3.0 kW | 4.5 kW | 5.5 kW |
| Voltage | 24 VDC or 48 VDC | 24 VDC or 48 VDC | 24 VDC or 48 VDC |
| DC Output Circuit Breaker Rating | 150 amp for 24 VDC<br>70 amp for 48 VDC | 200 amp for 24 VDC<br>100 amp for 48 VDC | 250 amp for 24 VDC<br>125 amp for 48 VDC |
| **FUEL CONSUMPTION:** | | | |
| LPG (Full load) | 3.6 lbs/h | 5.6 lbs/h | 6.6 lbs/h |
| Natural Gas (Full load) | 78 $ft^3$/h | 121 $ft^3$/h | 143 $ft^3$/h |
| **ENGINE:** Air-Cooled, 4-Cycle, Spark-Ignited, OHV | | | |
| Model | Briggs & Stratton Vanguard 296cc | Briggs & Stratton Vanguard 480cc | Briggs & Stratton Vanguard 570cc |
| Type | 1-Cylinder | V-Twin | V-Twin |
| Displacement | 18.0 $in^3$ | 29.3 $in^3$ | 34.7 $in^3$ |
| Speed | Controller Regulated: 2200-4100 rpm | Controller Regulated: 2200-4100 rpm | Controller Regulated: 2200-4100 rpm |
| Oil Capacity | 2-1/2 pints (no filter) | 1-1/2 Quarts<br>1-3/4 Quarts with filter | 1-1/2 Quarts<br>1-3/4 Quarts with filter |
| Oil Filter | none | Briggs & Stratton 492932 or 5049 | Briggs & Stratton 491056 or 492932 |
| Air Filter Element | Briggs & Stratton 710266 | Briggs & Stratton 349018 | Briggs & Stratton 349018 |
| Air Filter Pre-Cleaner | Briggs & Stratton 710268 | Briggs & Stratton 272490 | Briggs & Stratton 272490 |
| Spark Plug | Briggs & Stratton 491055 | Briggs & Stratton 491055 | Briggs & Stratton 491055 |
| Spark Gap | 0.030 inch | 0.030 inch | 0.030 inch |
| **DC CONTROL AND CRANKING SYSTEM:** | | | |
| Battery Voltage | 12 volt | 12 volt | 12 volt |
| Battery Specs | BCI Group MF26/70<br>675 CCA @ 0°F | BCI Group MF26/70<br>675 CCA @ 0°F | BCI Group MF26/70<br>675 CCA @ 0°F |
| **INSTALLATION:** | | | |
| Fuel Connections | 3/4 inch NPT | 3/4 inch NPT | 3/4 inch NPT |
| Fuel Supply | 7-13 inch WC (Water Column) | 7-13 inch WC (Water Column) | 7-13 inch WC (Water Column) |
| Size (L x W x H) | 39.1 x 28 x 31 inch | 39.1 x 28 x 31 inch | 39.1 x 31 x 36.1 inch |
| Weight | 325 lb | 350 lb | 450 lb |



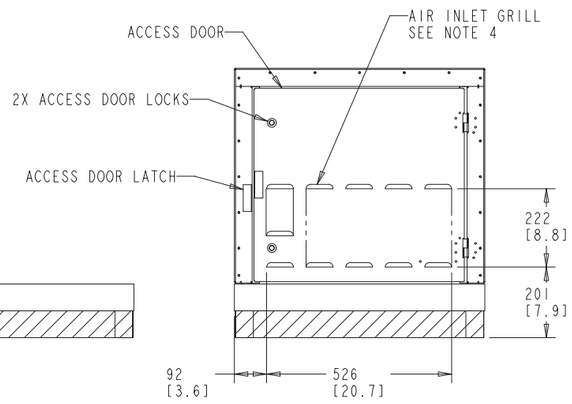

TOP VIEW

NOTES:

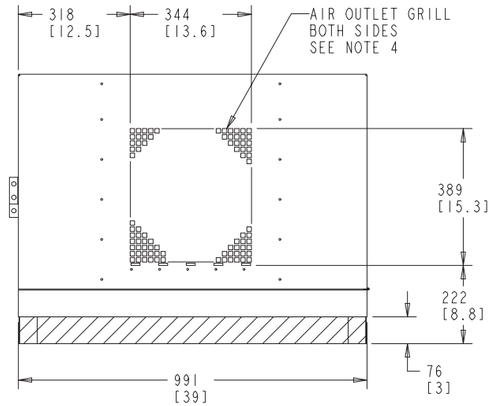
1. DIMENSIONS IN [ ] ARE IN INCHES.
2. UNIT WEIGHT (DRY): 147 Kg [325 LBS]
3. FOR ELECTRICAL NOTES, SEE SHEET 3.
4. DO NOT BLOCK INLET AND OUTLET GRILLS.



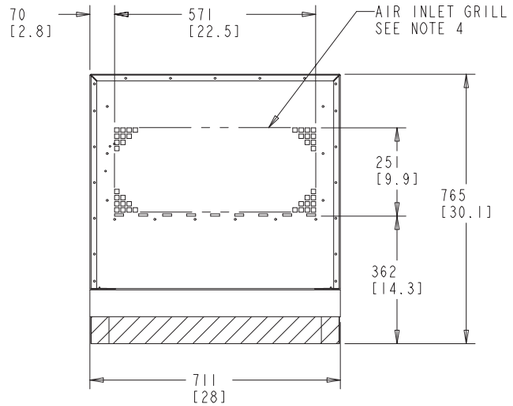

LEFT SIDE




FRONT VIEW



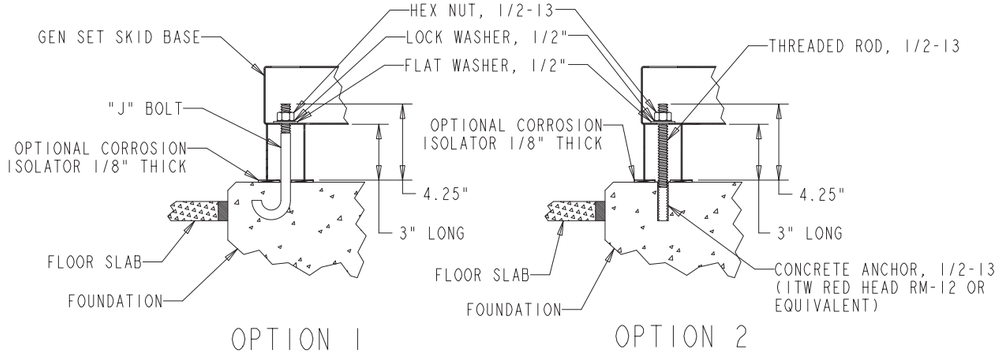

RIGHT SIDE



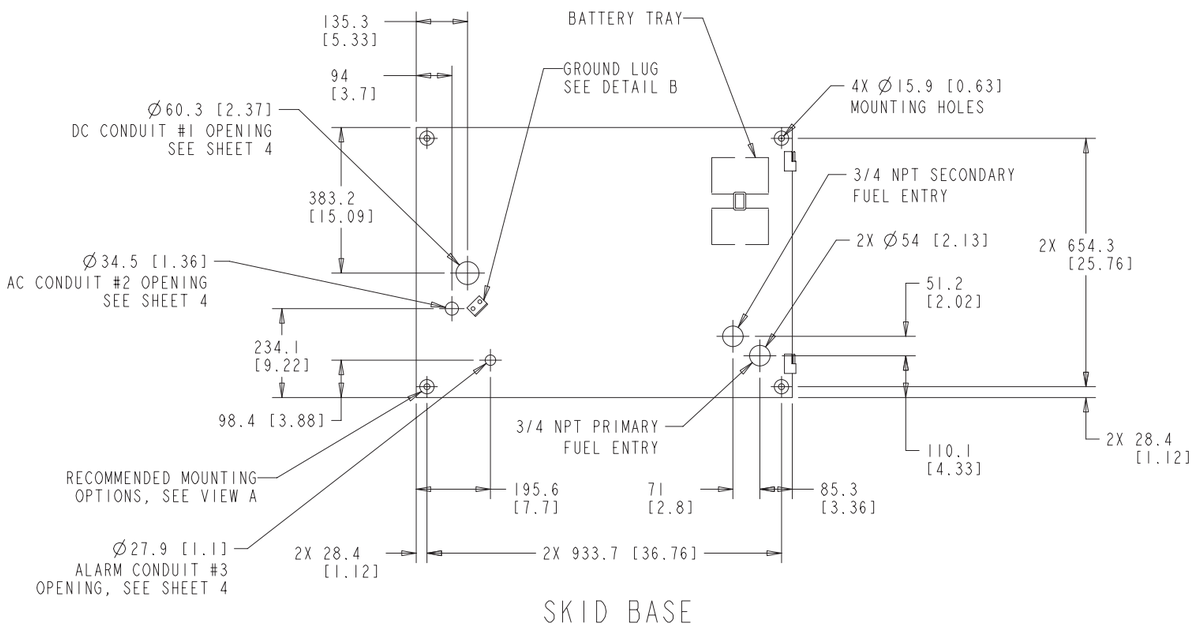

REAR VIEW

500–3199

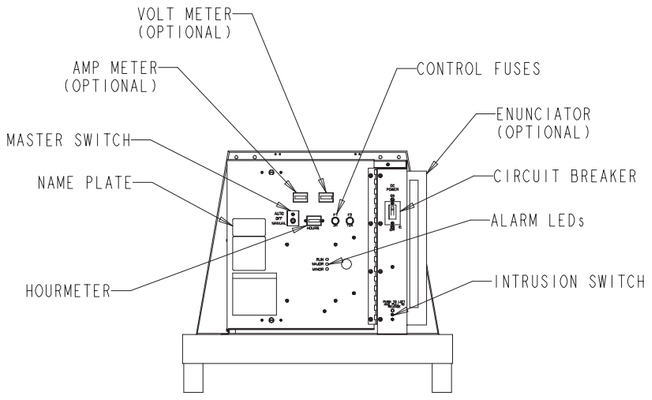
**GCAA OUTLINE DRAWING (SHEET 1 OF 2)**



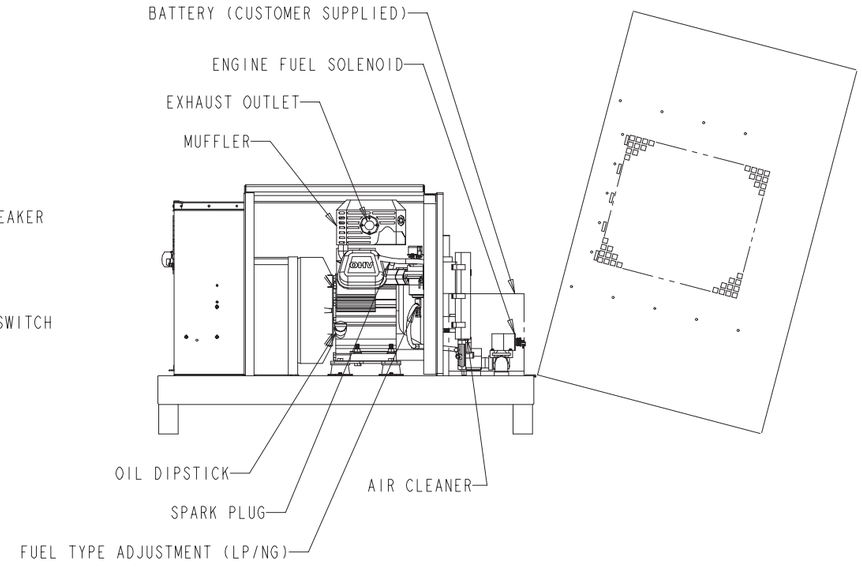

VIEW A
SCALE: 1/4



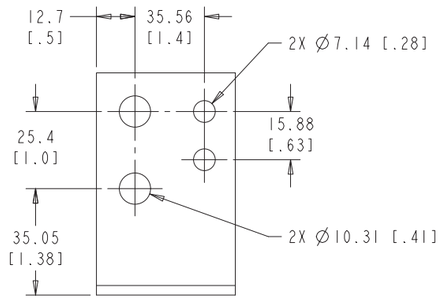

SKID BASE



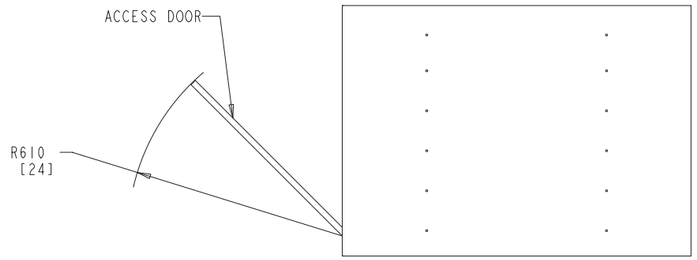

FRONT




RIGHT SIDE



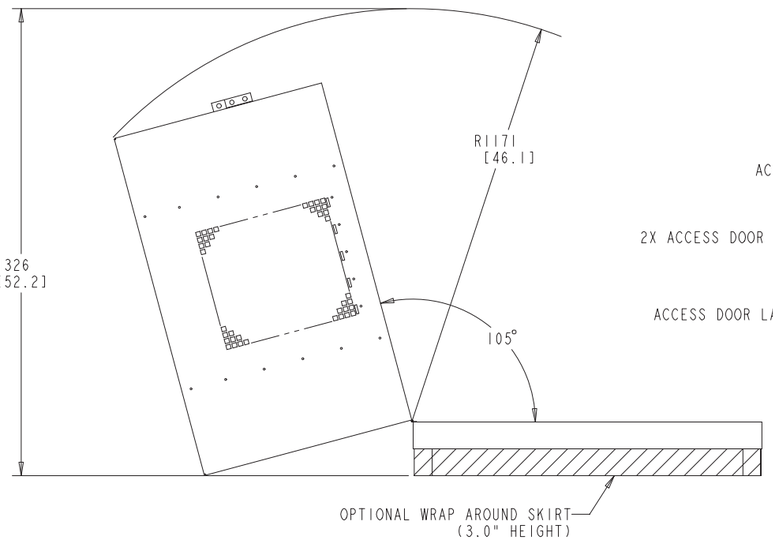

DETAIL B
GROUND LUG
SCALE: 1/1



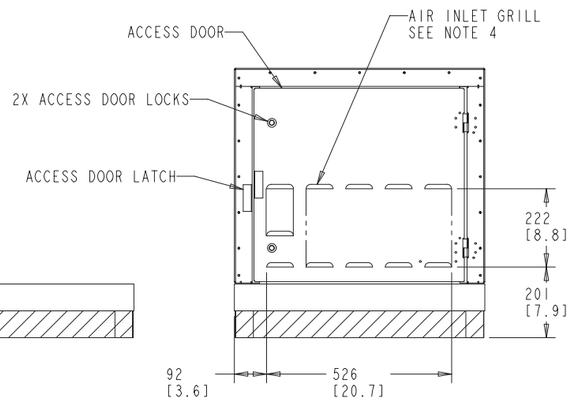

TOP VIEW

NOTES:

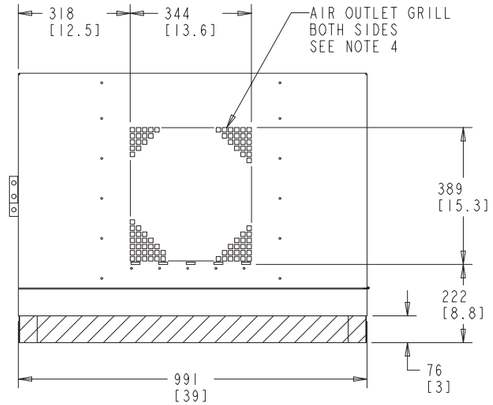
1. DIMENSIONS IN [ ] ARE IN INCHES.
2. UNIT WEIGHT (DRY): 159 Kg [350 LBS]
3. FOR ELECTRICAL NOTES, SEE SHEET 3.
4. DO NOT BLOCK INLET AND OUTLET GRILLS.



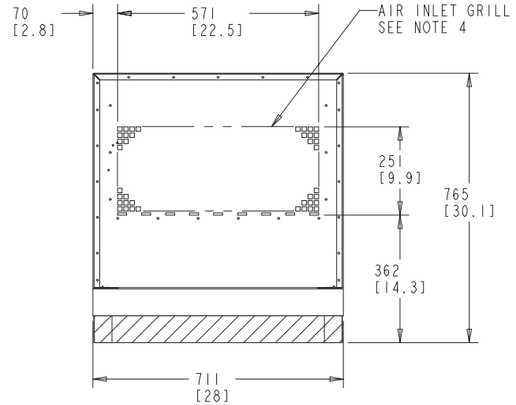

LEFT SIDE




FRONT VIEW



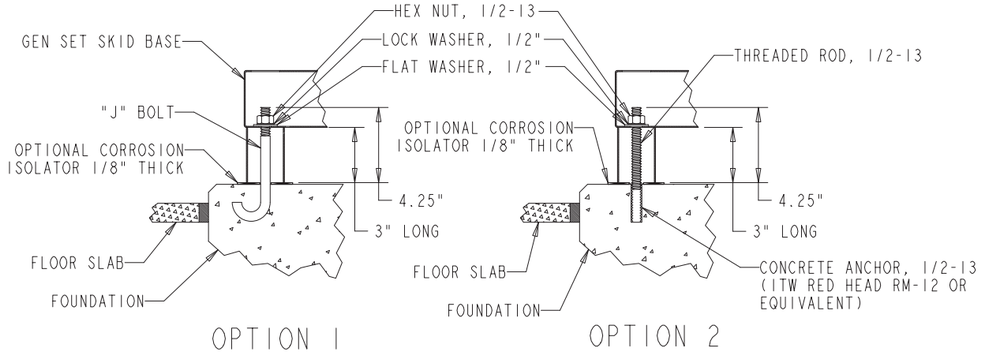

RIGHT SIDE



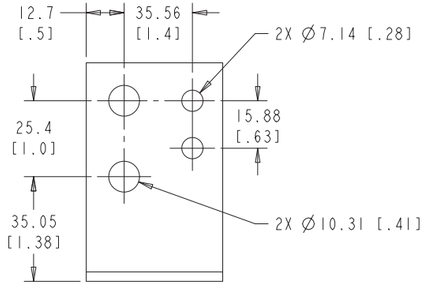

REAR VIEW

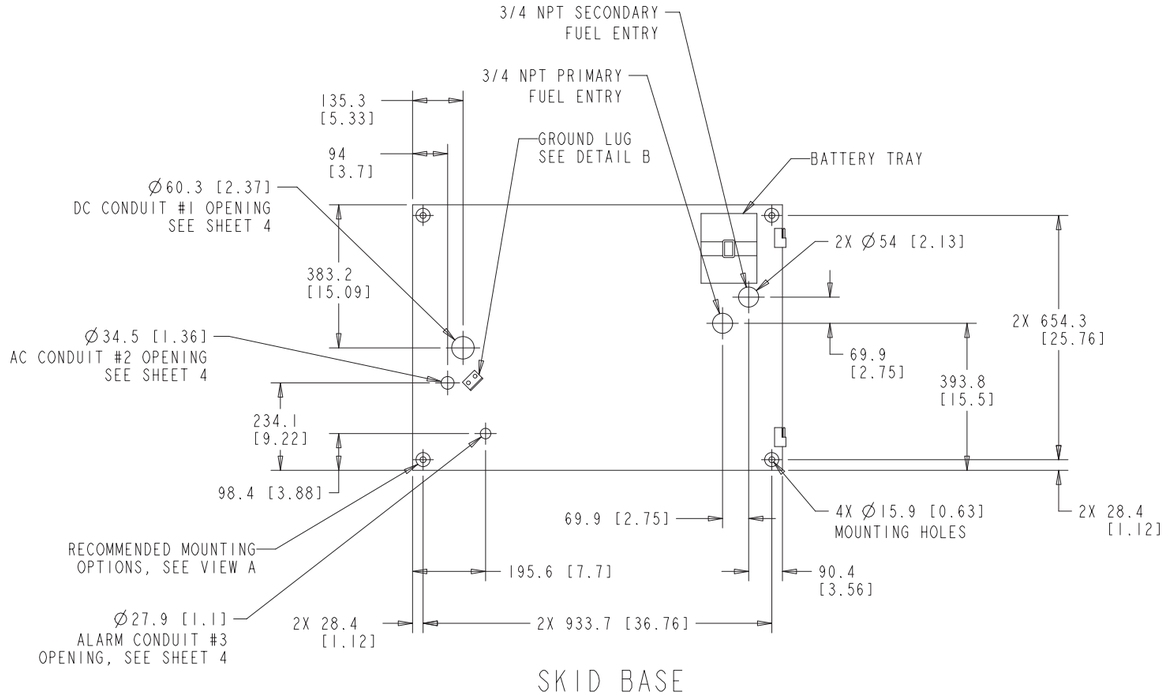
500–3200

**GCAB OUTLINE DRAWING (SHEET 1 OF 2)**



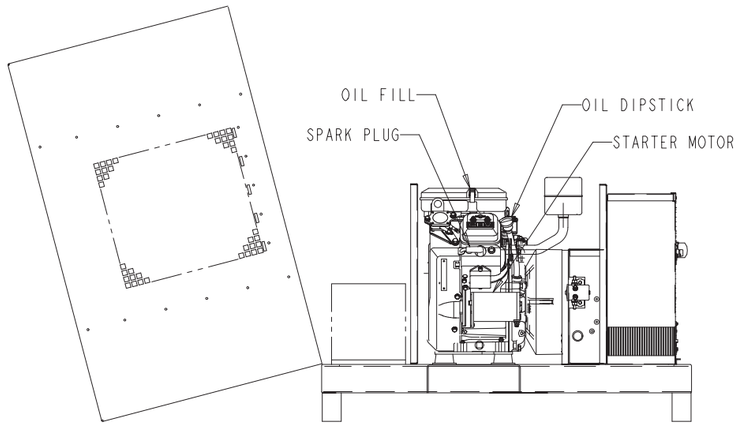

VIEW A
SCALE: 1/4



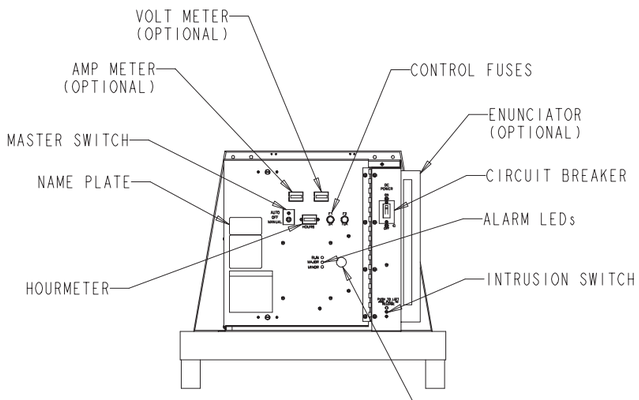




SKID BASE

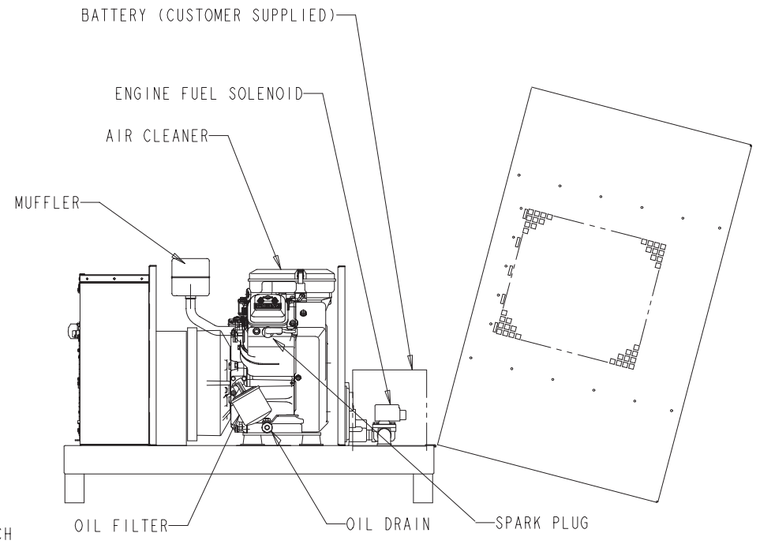
DETAIL B
GROUND LUG
SCALE: 1/1




LEFT SIDE

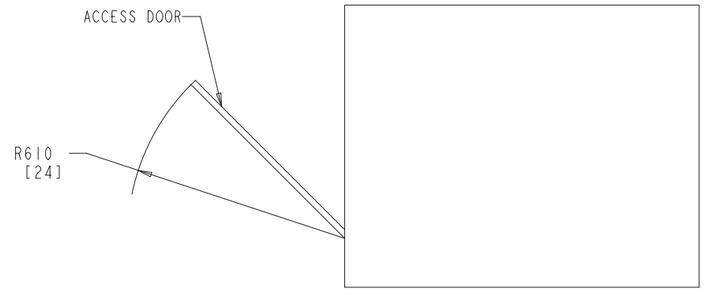



FRONT




RIGHT SIDE

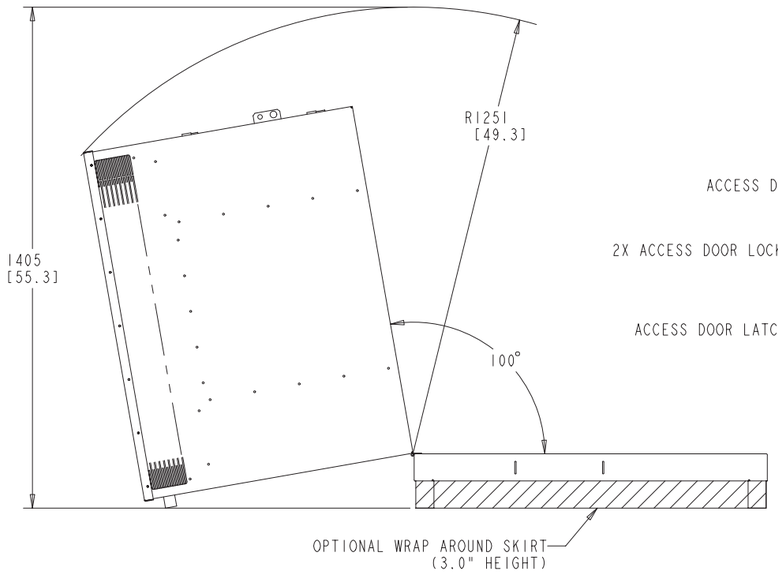
500–3200



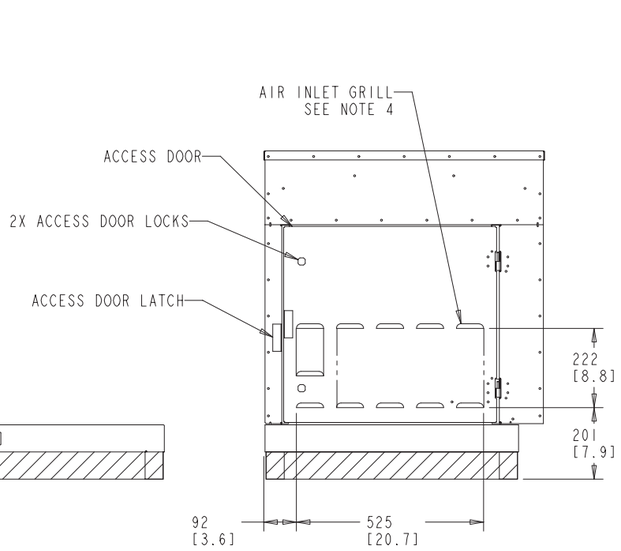

TOP VIEW

NOTES:

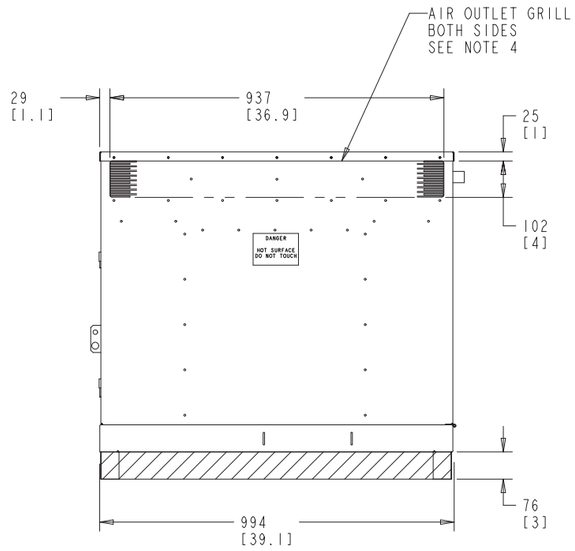
1. DIMENSIONS IN [ ] ARE IN INCHES.
2. UNIT WEIGHT (DRY): 204 Kg [450 LBS]
3. FOR ELECTRICAL NOTES, SEE SHEET 3.
4. DO NOT BLOCK INLET AND OUTLET GRILLS.



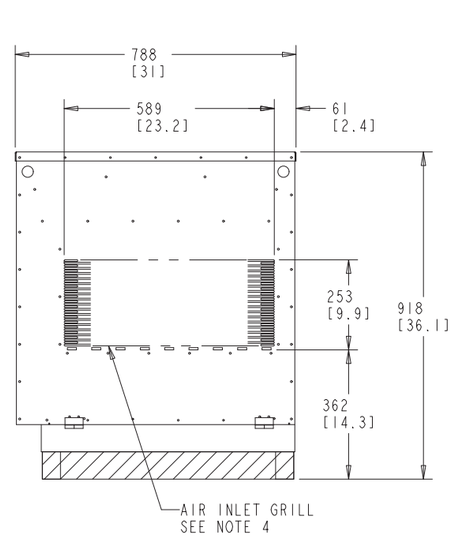

LEFT SIDE




FRONT VIEW



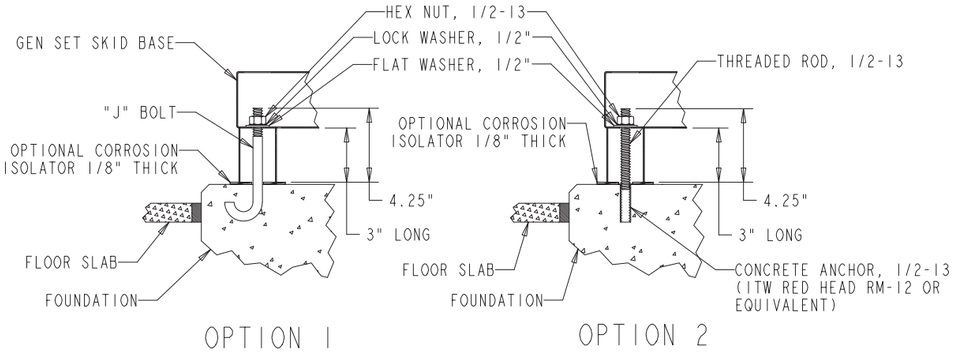

RIGHT SIDE



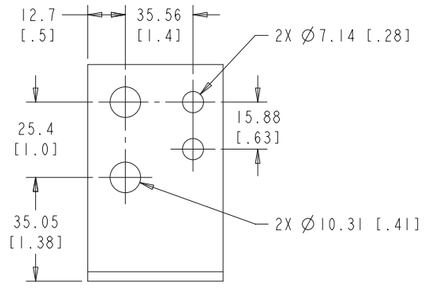

REAR VIEW

500–3201

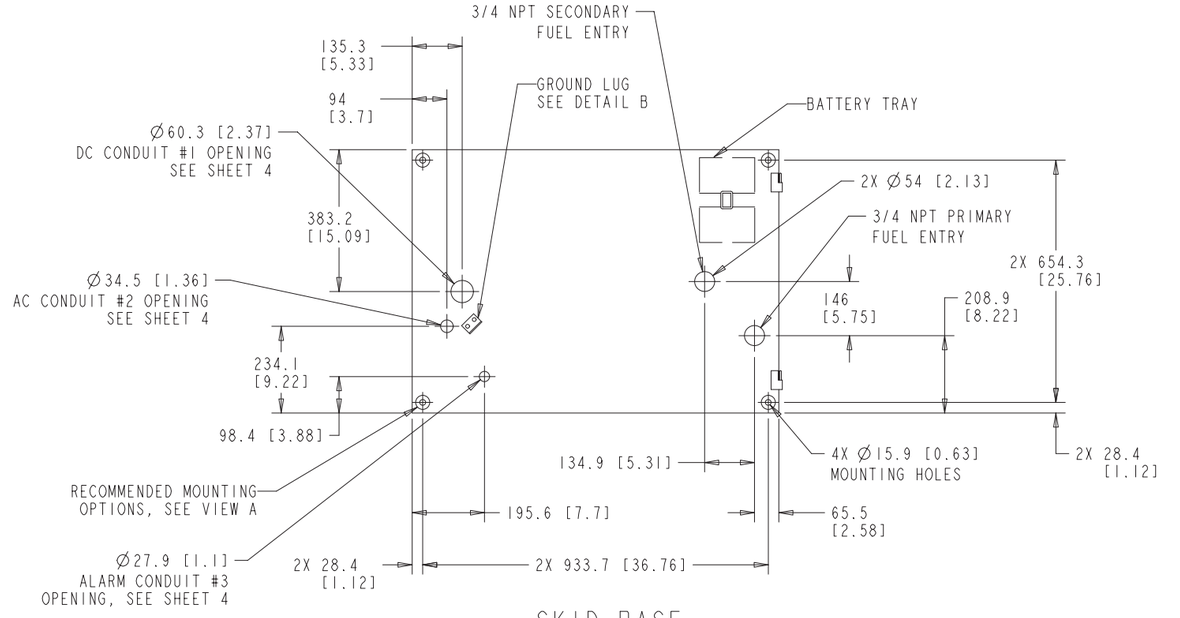
**GCAC OUTLINE DRAWING (SHEET 1 OF 2)**



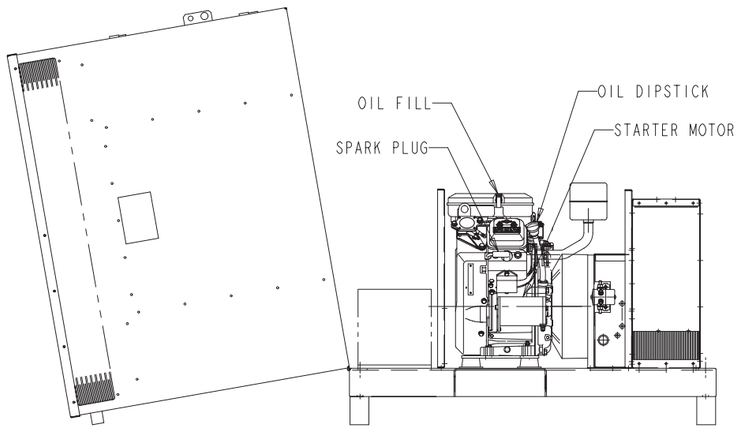

VIEW A
SCALE: 1/4



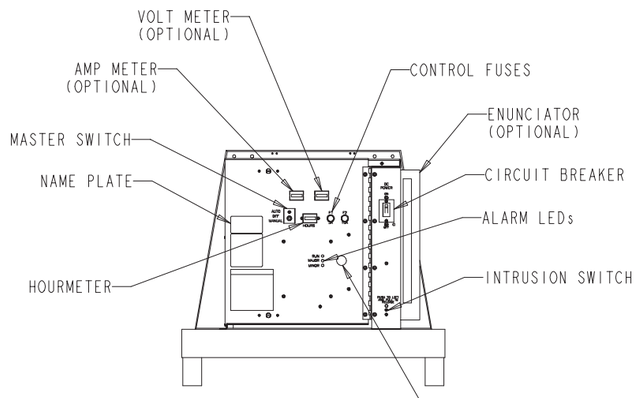

DETAIL B
GROUND LUG
SCALE: 1/1



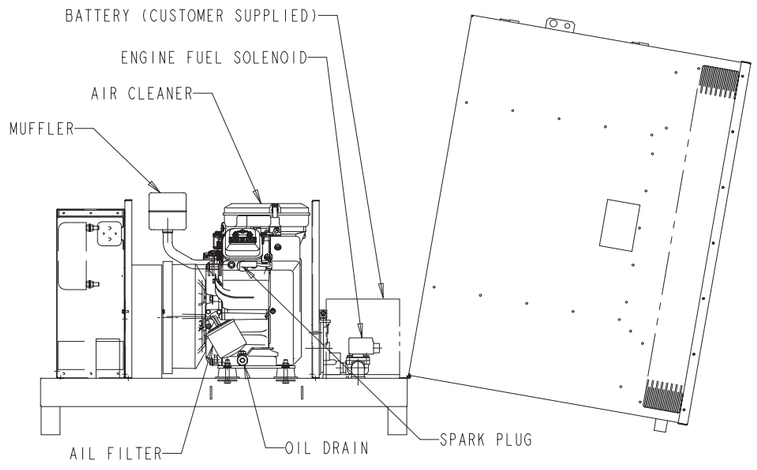

SKID BASE




LEFT SIDE




FRONT

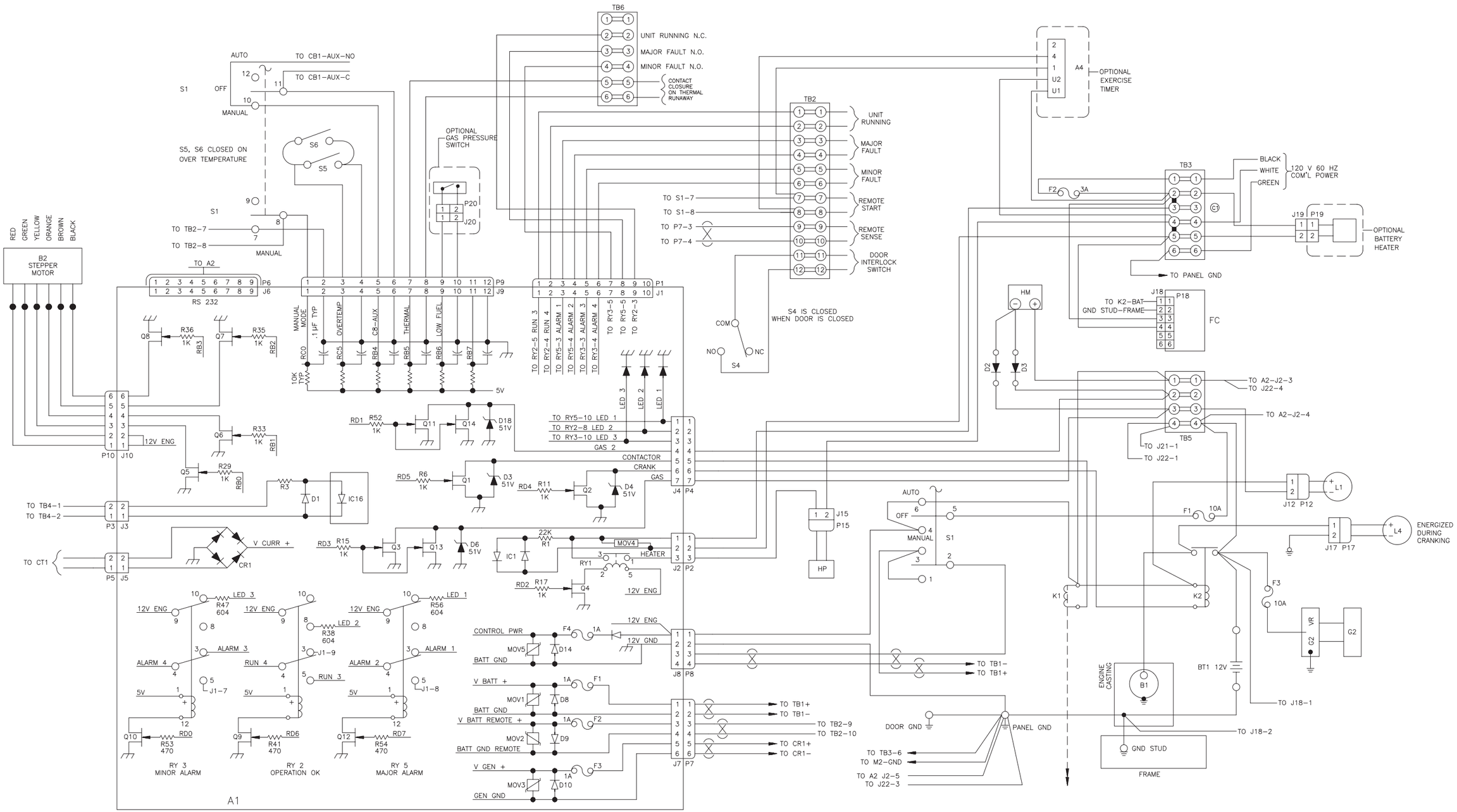



RIGHT SIDE

500–3201



**GCAC OUTLINE DRAWING (SHEET 2 OF 2)**

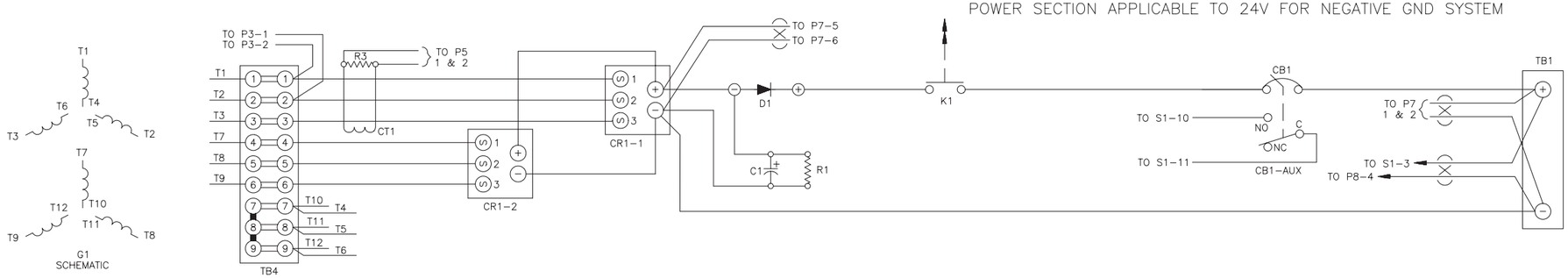



**SEE SHEET 2 FOR COMPONENT LEGEND**

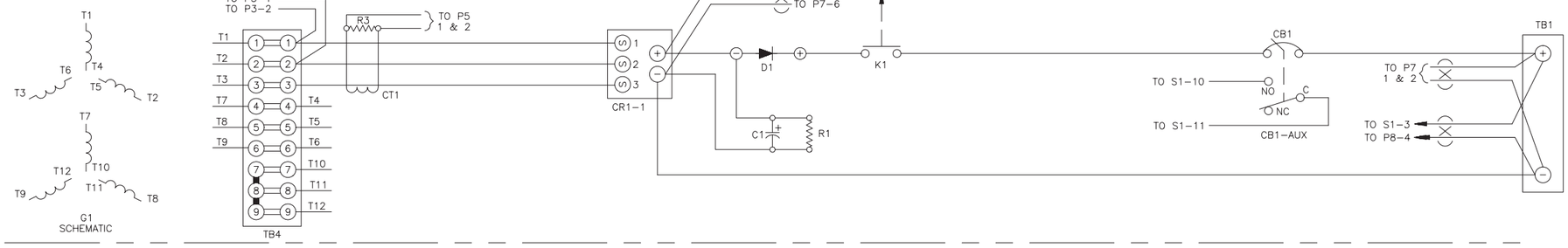
612–6753

## GCAA WIRING DIAGRAM (SHEET 1 OF 2)

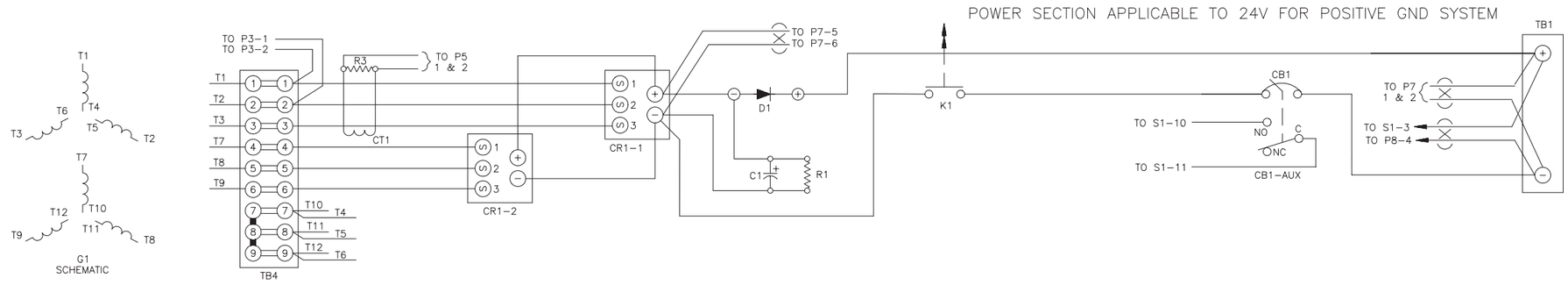
POWER SECTION APPLICABLE TO 24V FOR NEGATIVE GND SYSTEM



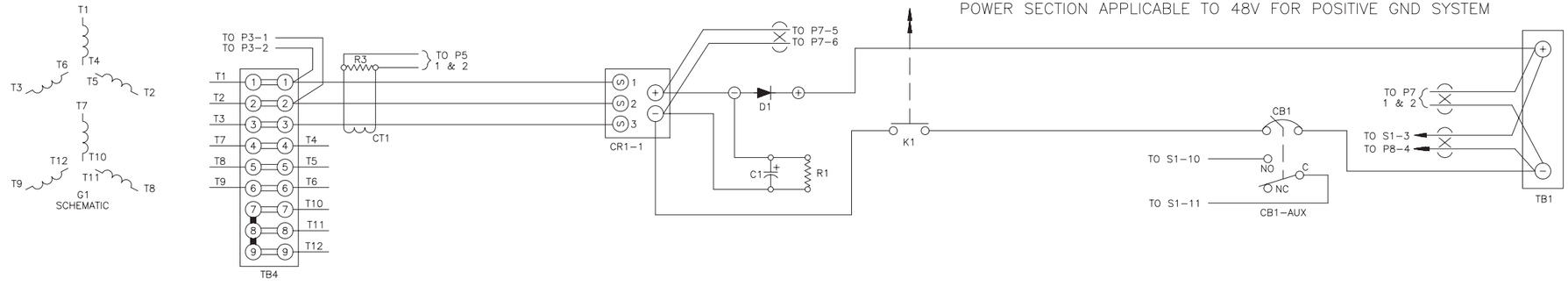

POWER SECTION APPLICABLE TO 48V FOR NEGATIVE GND SYSTEM



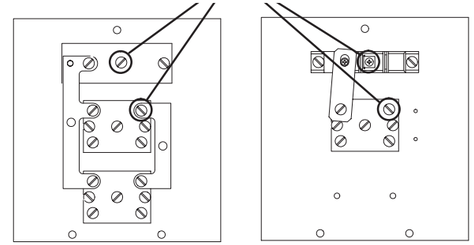

POWER SECTION APPLICABLE TO 24V FOR POSITIVE GND SYSTEM




POWER SECTION APPLICABLE TO 48V FOR POSITIVE GND SYSTEM




TO REVERSE DC GROUND POLARITY FLIP FLOP THE CABLES AT THESE TWO TERMINALS



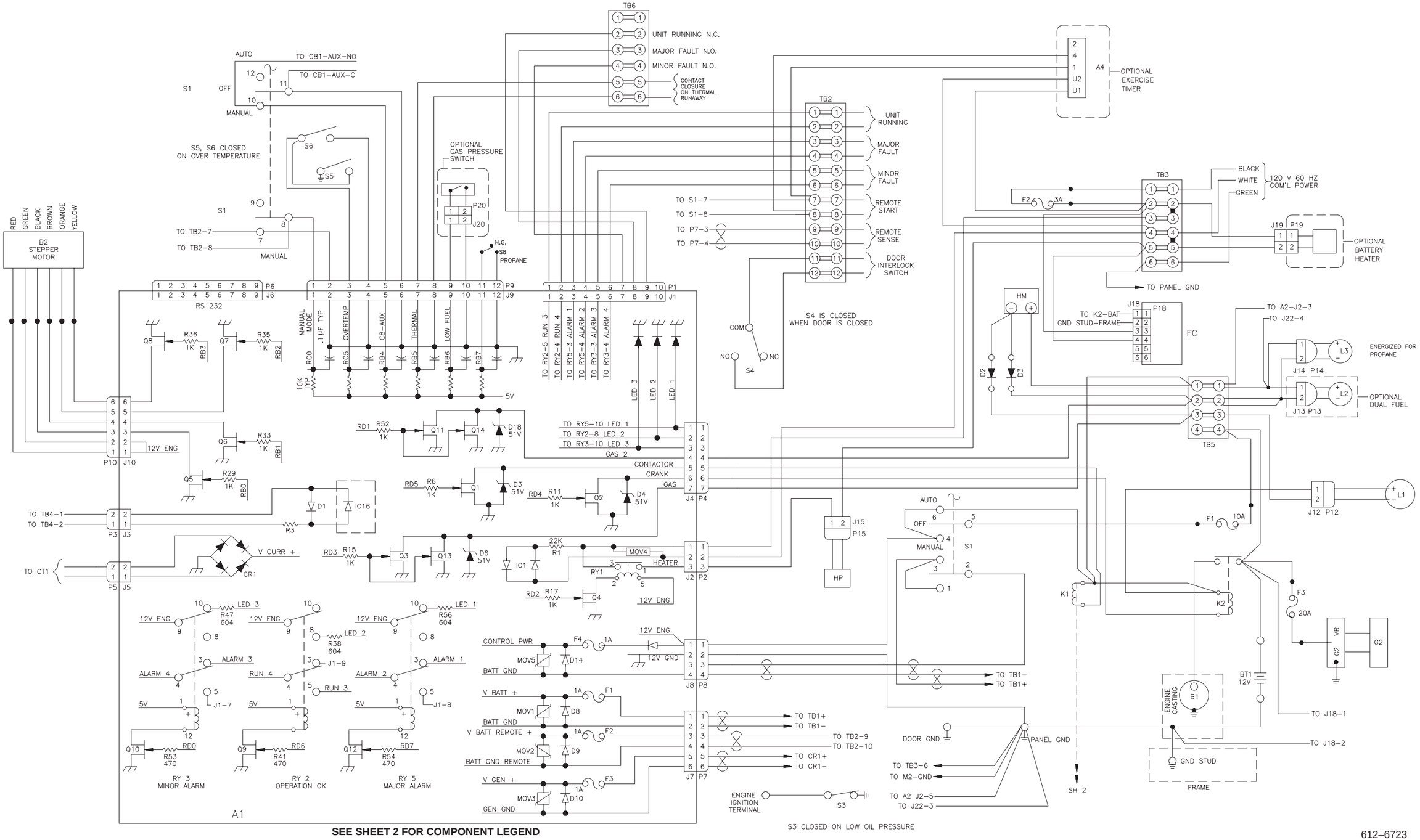
24 VOLT 48 VOLT

**RECTIFIER ASSEMBLIES**

| Reference | Description |
|---|---|
| A1 | Telecom control PC board |
| A2 | Annunciator |
| A3 | Gas hazard detector |
| A4 | Exercise timer |
| B1 | Engine starter motor |
| B2 | Stepper motor (throttle control) |
| BT1 | Genset battery (12 volts) |
| C1 | Output filter capacitor |
| CB1 | Output circuit breaker |
| CB1–aux | Auxiliary switch on circuit breaker |
| CR1 | Power rectifier module |
| CR2 | Power rectifier module |
| CT1 | Current transformer |
| D1 | Power diode |
| D2 | Blocking diode |
| Fan | Engine cooling fan |
| F1 | Set control fuse |
| F2 | AC input fuse |
| F3 | Engine battery charger fuse |
| FC | Battery float charger |
| G1 | Genset output power alternator |
| G2 | Engine battery alternator |
| G2–VR | Engine battery voltage regulator |
| HM | Hour meter |
| HP | Engine heater pad |
| K1 | Output power contactor |
| K2 | Engine starter contactor |
| K3 | Output power contactor driver (5.5kW) |
| L1 | Fuel control solenoid |
| L2 | Fuel control solenoid (optional secondary fuel) |
| L3 | Carburator solenoid (energized for propane) |
| L4 | Start fuel priming solenoid (3.0kW) |
| S1 | Set control master switch |
| S3 | Low oil pressure switch (4.5 & 5.5kW) |
| S4 | Enclosure door alarm switch |
| S5 | Engine over temperature switch |
| S6 | Heatsink over temperature switch |
| S7 | Cooling fan switch–high speed (5.5kW) |
| S8 | Fuel type select switch (4.5 & 5.5kW) |

612–6753

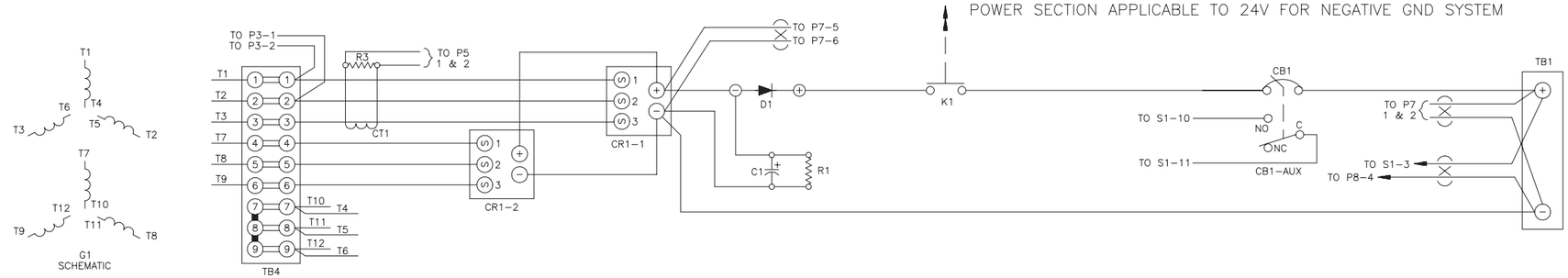
**GCAA WIRING DIAGRAM (SHEET 2 OF 2)**

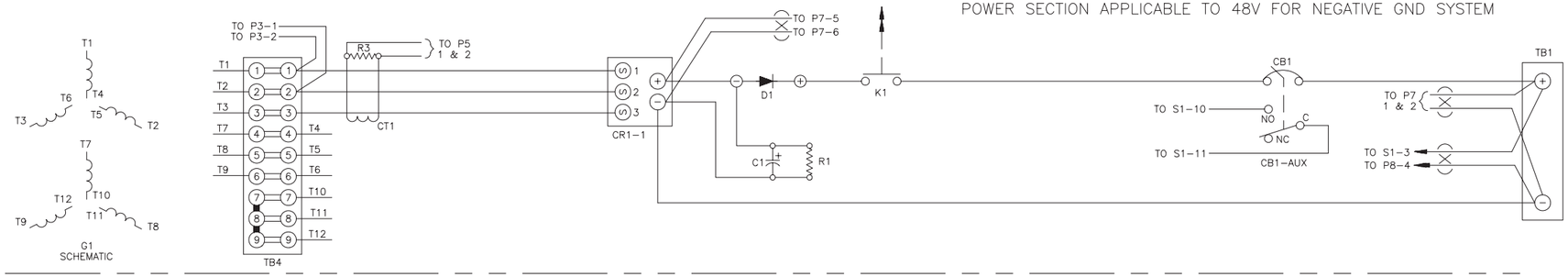


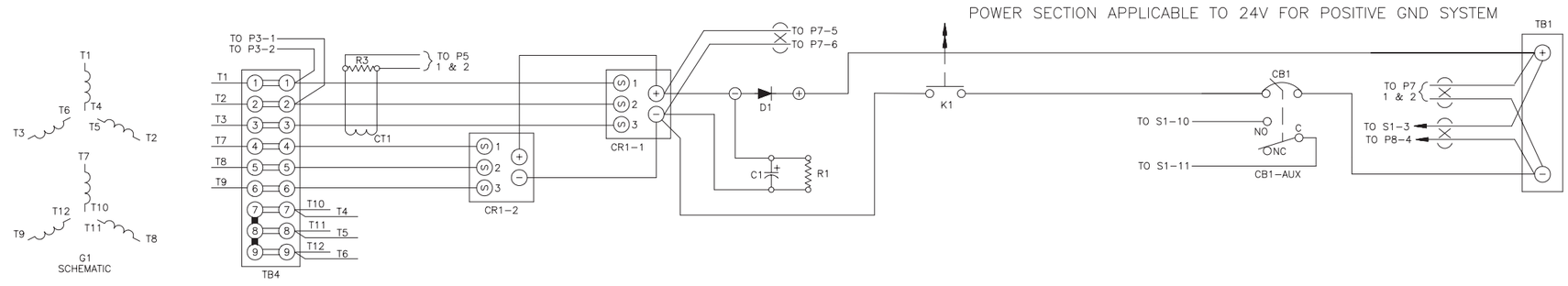

**SEE SHEET 2 FOR COMPONENT LEGEND**

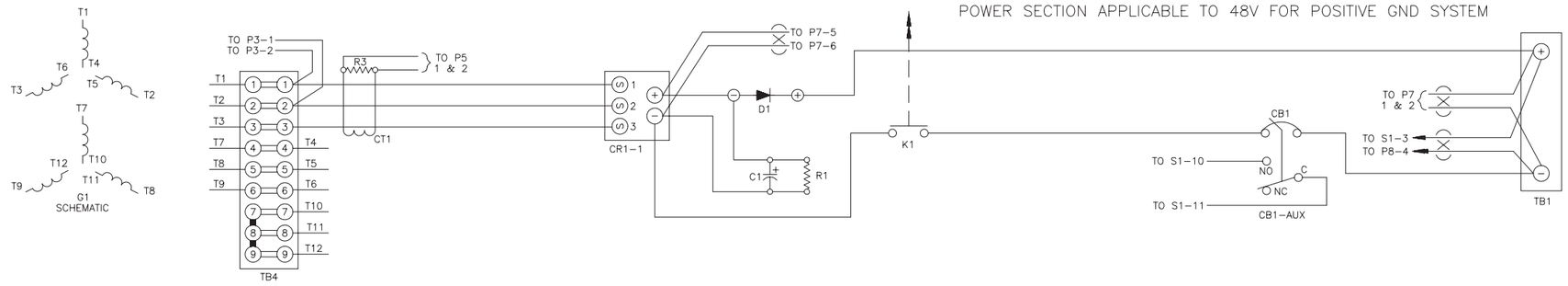
612–6723

## GCAB WIRING DIAGRAM (SHEET 1 OF 2)

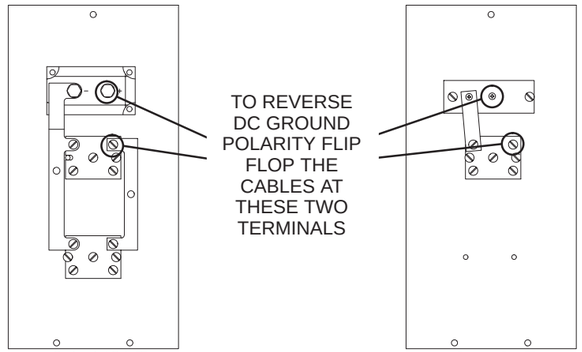


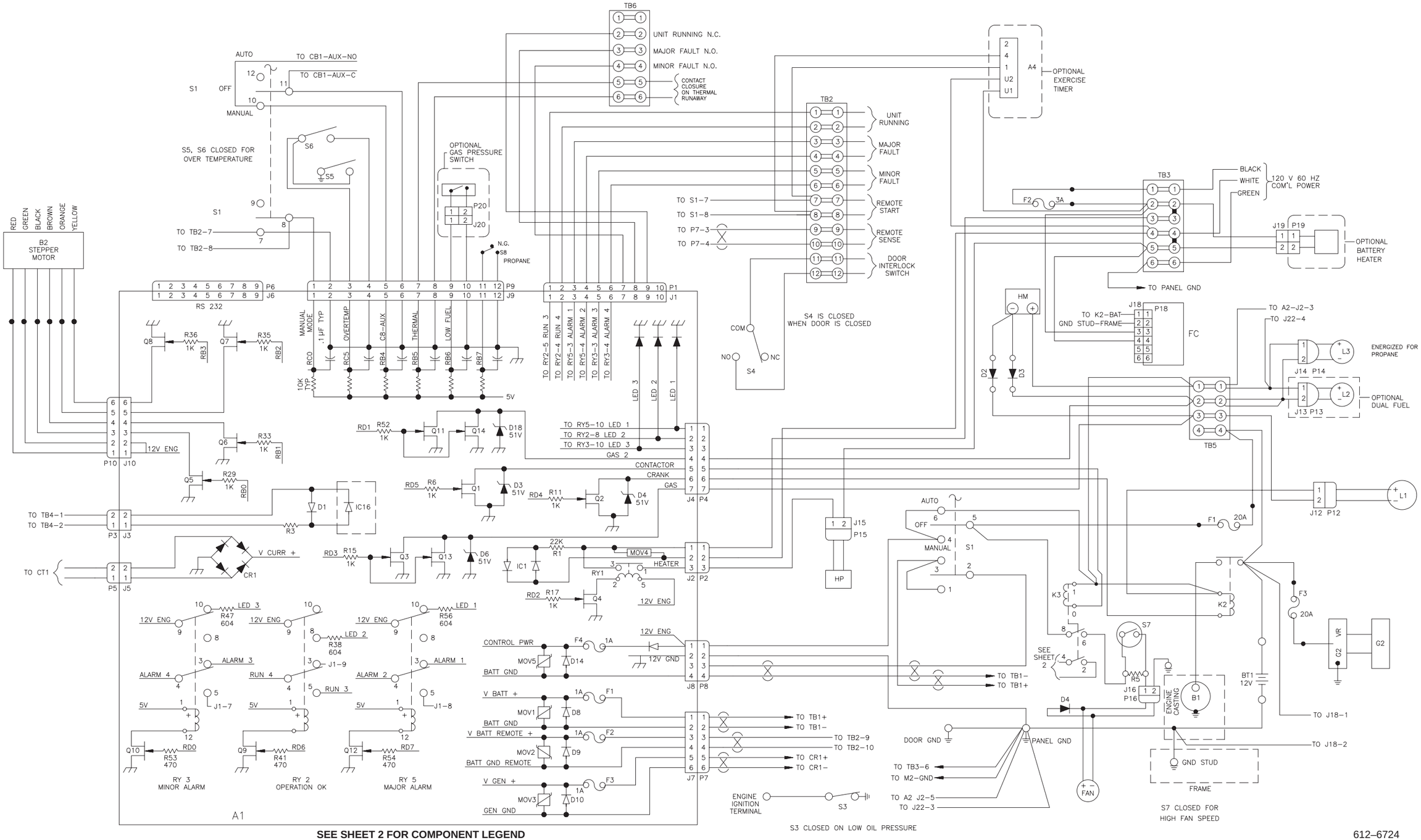

## RECTIFIER ASSEMBLIES




| Reference | Description |
|---|---|
| A1 | Telecom control PC board |
| A2 | Annunciator |
| A3 | Gas hazard detector |
| A4 | Exercise timer |
| B1 | Engine starter motor |
| B2 | Stepper motor (throttle control) |
| BT1 | Genset battery (12 volts) |
| C1 | Output filter capacitor |
| CB1 | Output circuit breaker |
| CB1–aux | Auxiliary switch on circuit breaker |
| CR1 | Power rectifier module |
| CR2 | Power rectifier module |
| CT1 | Current transformer |
| D1 | Power diode |
| D2 | Blocking diode |
| Fan | Engine cooling fan |
| F1 | Set control fuse |
| F2 | AC input fuse |
| F3 | Engine battery charger fuse |
| FC | Battery float charger |
| G1 | Genset output power alternator |
| G2 | Engine battery alternator |
| G2–VR | Engine battery voltage regulator |
| HM | Hour meter |
| HP | Engine heater pad |
| K1 | Output power contactor |
| K2 | Engine starter contactor |
| K3 | Output power contactor driver (5.5kW) |
| L1 | Fuel control solenoid |
| L2 | Fuel control solenoid (optional secondary fuel) |
| L3 | Carburator solenoid (energized for propane) |
| L4 | Start fuel priming solenoid (3.0kW) |
| S1 | Set control master switch |
| S3 | Low oil pressure switch (4.5 & 5.5kW) |
| S4 | Enclosure door alarm switch |
| S5 | Engine over temperature switch |
| S6 | Heatsink over temperature switch |
| S7 | Cooling fan switch–high speed (5.5kW) |
| S8 | Fuel type select switch (4.5 & 5.5kW) |

612–6723

**GCAB WIRING DIAGRAM (SHEET 2 OF 2)**

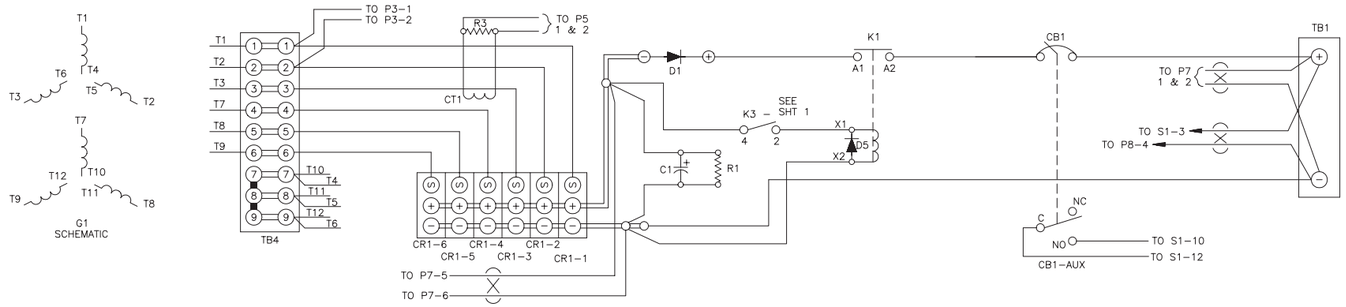



SEE SHEET 2 FOR COMPONENT LEGEND

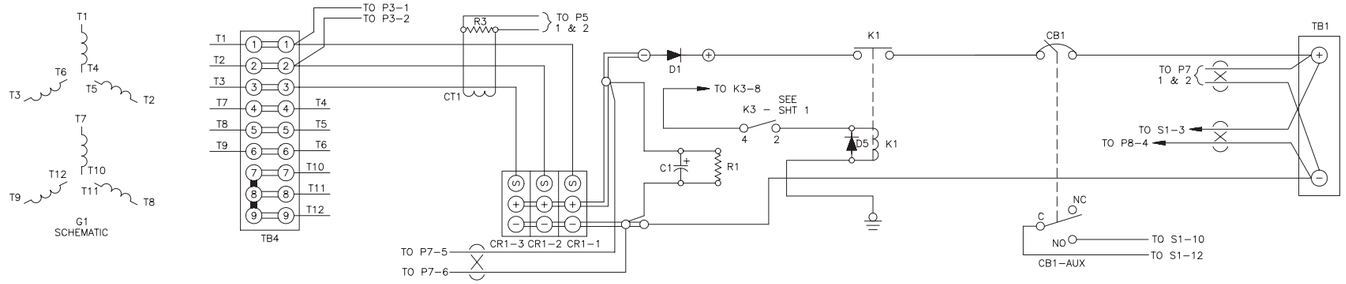
612–6724

## GCAC WIRING DIAGRAM (SHEET 1 OF 2)

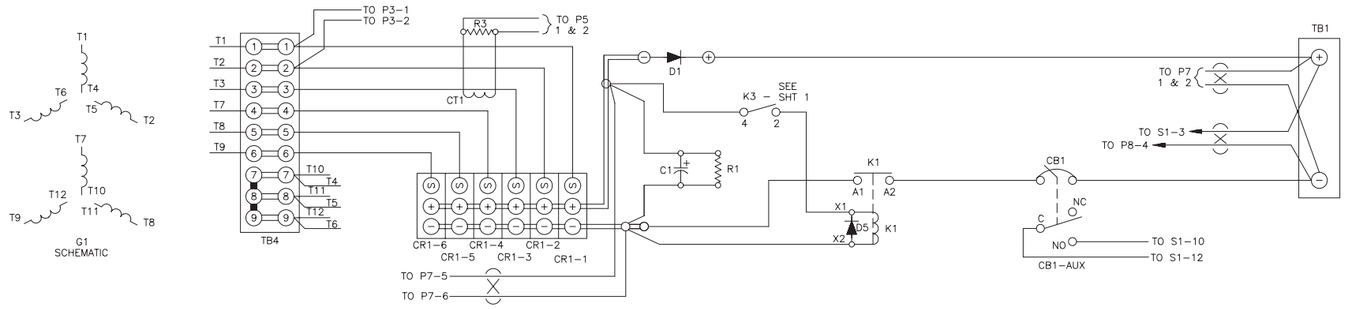
POWER SECTION APPLICABLE TO 24V NEGATIVE GND SYSTEM



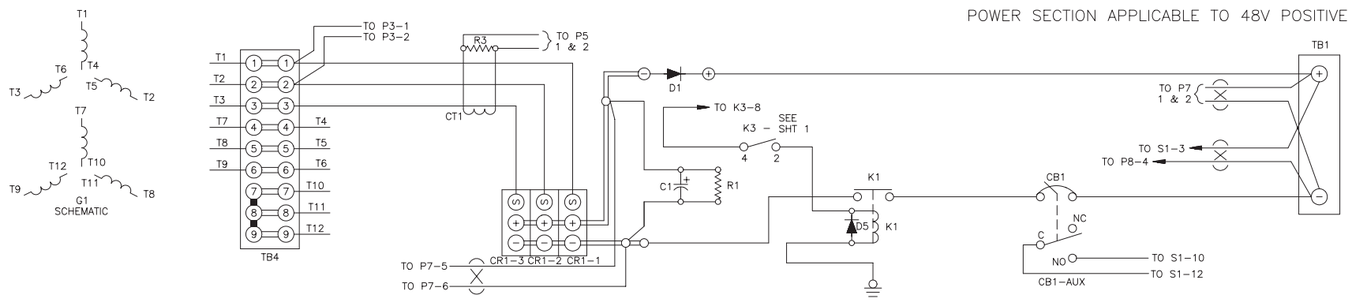

POWER SECTION APPLICABLE TO 48V NEGATIVE GND SYSTEM




POWER SECTION APPLICABLE TO 24V POSITIVE GND SYSTEM

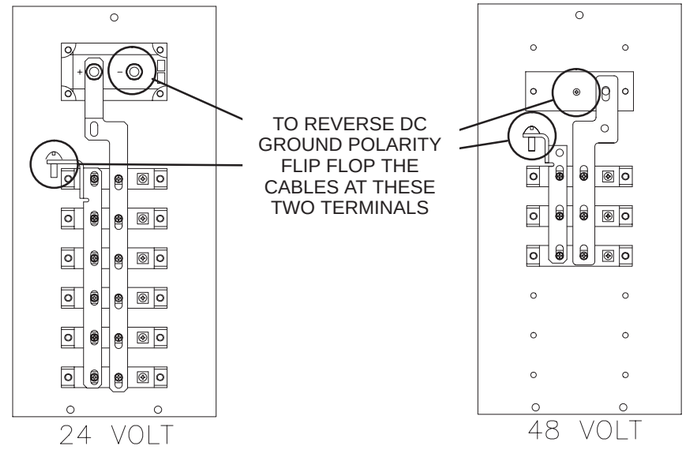



POWER SECTION APPLICABLE TO 48V POSITIVE GND SYSTEM

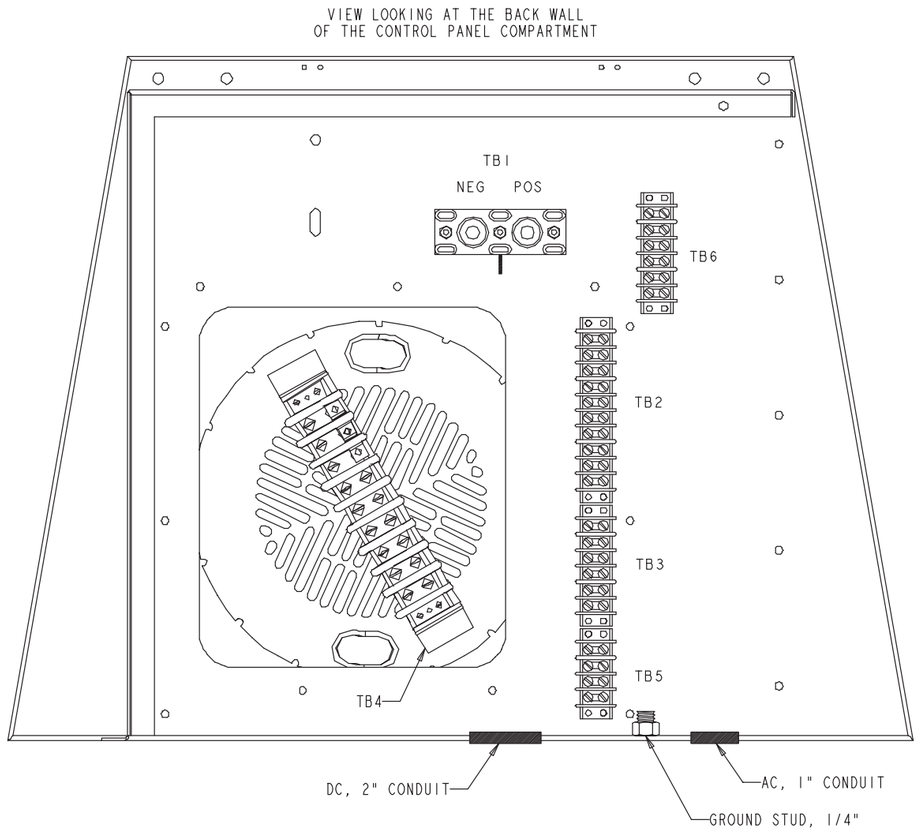


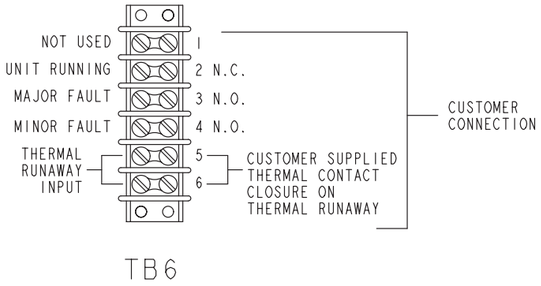



## RECTIFIER ASSEMBLIES




| Reference | Description |
|---|---|
| A1 | Telecom control PC board |
| A2 | Annunciator |
| A3 | Gas hazard detector |
| A4 | Exercise timer |
| B1 | Engine starter motor |
| B2 | Stepper motor (throttle control) |
| BT1 | Genset battery (12 volts) |
| C1 | Output filter capacitor |
| CB1 | Output circuit breaker |
| CB1–aux | Auxiliary switch on circuit breaker |
| CR1 | Power rectifier module |
| CR2 | Power rectifier module |
| CT1 | Current transformer |
| D1 | Power diode |
| D2 | Blocking diode |
| Fan | Engine cooling fan |
| F1 | Set control fuse |
| F2 | AC input fuse |
| F3 | Engine battery charger fuse |
| FC | Battery float charger |
| G1 | Genset output power alternator |
| G2 | Engine battery alternator |
| G2–VR | Engine battery voltage regulator |
| HM | Hour meter |
| HP | Engine heater pad |
| K1 | Output power contactor |
| K2 | Engine starter contactor |
| K3 | Output power contactor driver (5.5kW) |
| L1 | Fuel control solenoid |
| L2 | Fuel control solenoid (optional secondary fuel) |
| L3 | Carburator solenoid (energized for propane) |
| L4 | Start fuel priming solenoid (3.0kW) |
| S1 | Set control master switch |
| S3 | Low oil pressure switch (4.5 & 5.5kW) |
| S4 | Enclosure door alarm switch |
| S5 | Engine over temperature switch |
| S6 | Heatsink over temperature switch |
| S7 | Cooling fan switch–high speed (5.5kW) |
| S8 | Fuel type select switch (4.5 & 5.5kW) |



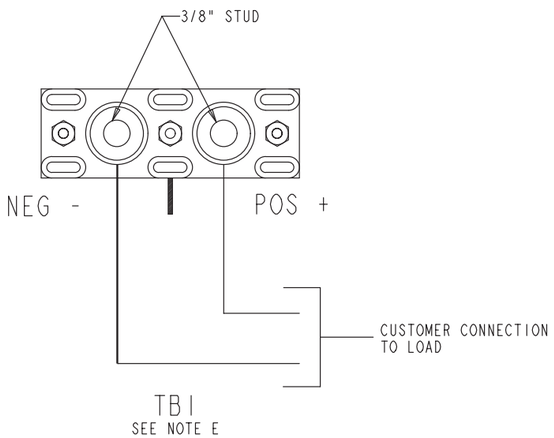

ELECTRICAL NOTES:

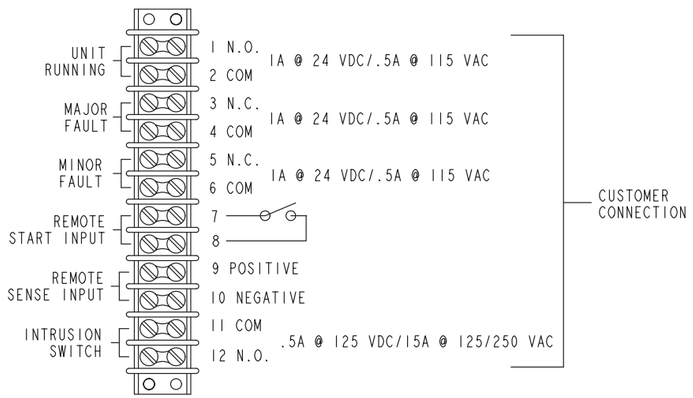
A. THE GENERATOR SET DC POWER CONNECTION IS LOCATED AT TERMINAL BOARD TB1.

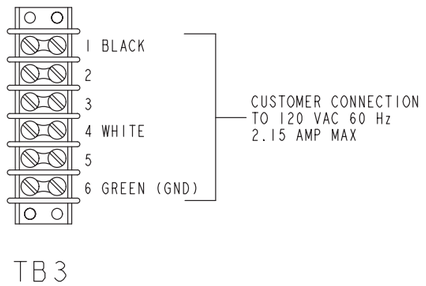
B. DC LOAD CONDUCTORS SHOULD BE TERMINATED WITH 3/8 INCH CRIMP TYPE EYELETS.

C. THE USE OF ALUMINUM SINGLE BARREL LUGS IS NOT RECOMMENDED DUE TO INCREASED MAINTAINANCE.

D. TO INSTALL THE DC POWER CONNECTORS, REMOVE THE STUD HARDWARE PROVIDED AND PLACE THE 3/8 INCH EYELET OVER THE STUD. REPLACE THE STUD HARDWARE AND TORQUE NUT TO 20 FT-LBS.

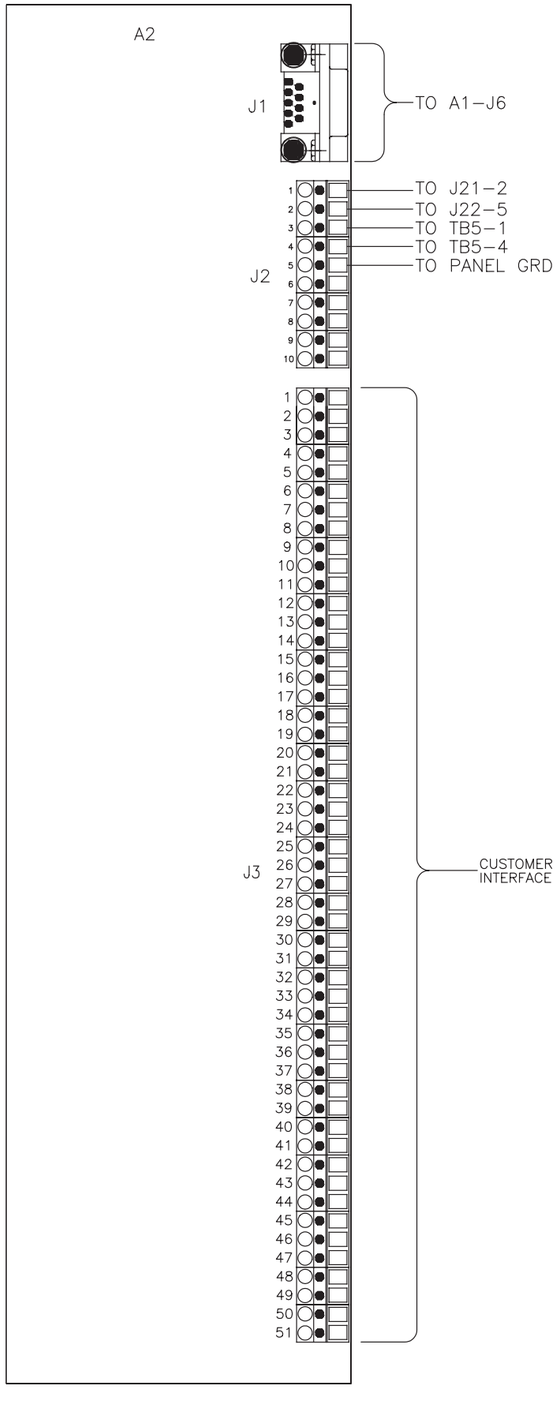



500–3199

**CUSTOMER WIRING TERMINALS—GENSET**

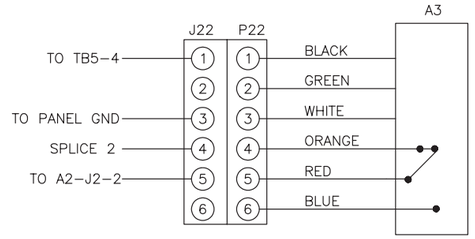



| | | |
|---|---|---|
| 1 | NC | OVERCRANK |
| 2 | C | |
| 3 | NO | |
| 4 | NC | OVERVOLT |
| 5 | C | |
| 6 | NO | |
| 7 | NC | OVERSPEED |
| 8 | C | |
| 9 | NO | |
| 10 | NC | CIRCUIT BREAKER TRIP |
| 11 | C | |
| 12 | NO | |
| 13 | NC | OVERTEMP |
| 14 | C | |
| 15 | NO | |
| 16 | NC | ENGINE SHUTDOWN |
| 17 | C | |
| 18 | NO | |
| 19 | NC | LOW VOLTAGE SHUTDOWN |
| 20 | C | |
| 21 | NO | |
| 22 | NC | GAS HAZARD |
| 23 | C | |
| 24 | NO | |
| 25 | NC | PAD SHEAR |
| 26 | C | |
| 27 | NO | |
| 28 | NC | COMM POWER FAIL |
| 29 | C | |
| 30 | NO | |
| 31 | NC | SYSTEM CHARGE |
| 32 | C | |
| 33 | NO | |
| 34 | NC | START LOW VOLTAGE |
| 35 | C | |
| 36 | NO | |
| 37 | NC | LOW FUEL |
| 38 | C | |
| 39 | NO | |
| 40 | NC | SWITCH NOT IN AUTO |
| 41 | C | |
| 42 | NO | |
| 43 | NC | LOW START BATT |
| 44 | C | |
| 45 | NO | |
| 46 | NC | SPARE 1 |
| 47 | C | |
| 48 | NO | |
| 49 | NC | SPARE 2 |
| 50 | C | |
| 51 | NO | |

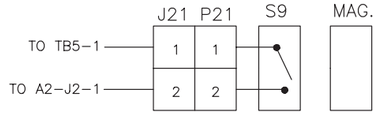
**CONNECT DEVICES RATED NOT MORE THAN:**
**1 AMP @ 24 VDC OR 0.5 AMP @ 115 VAC**

**THESE ARE FORM C DRY CONTACT SETS**

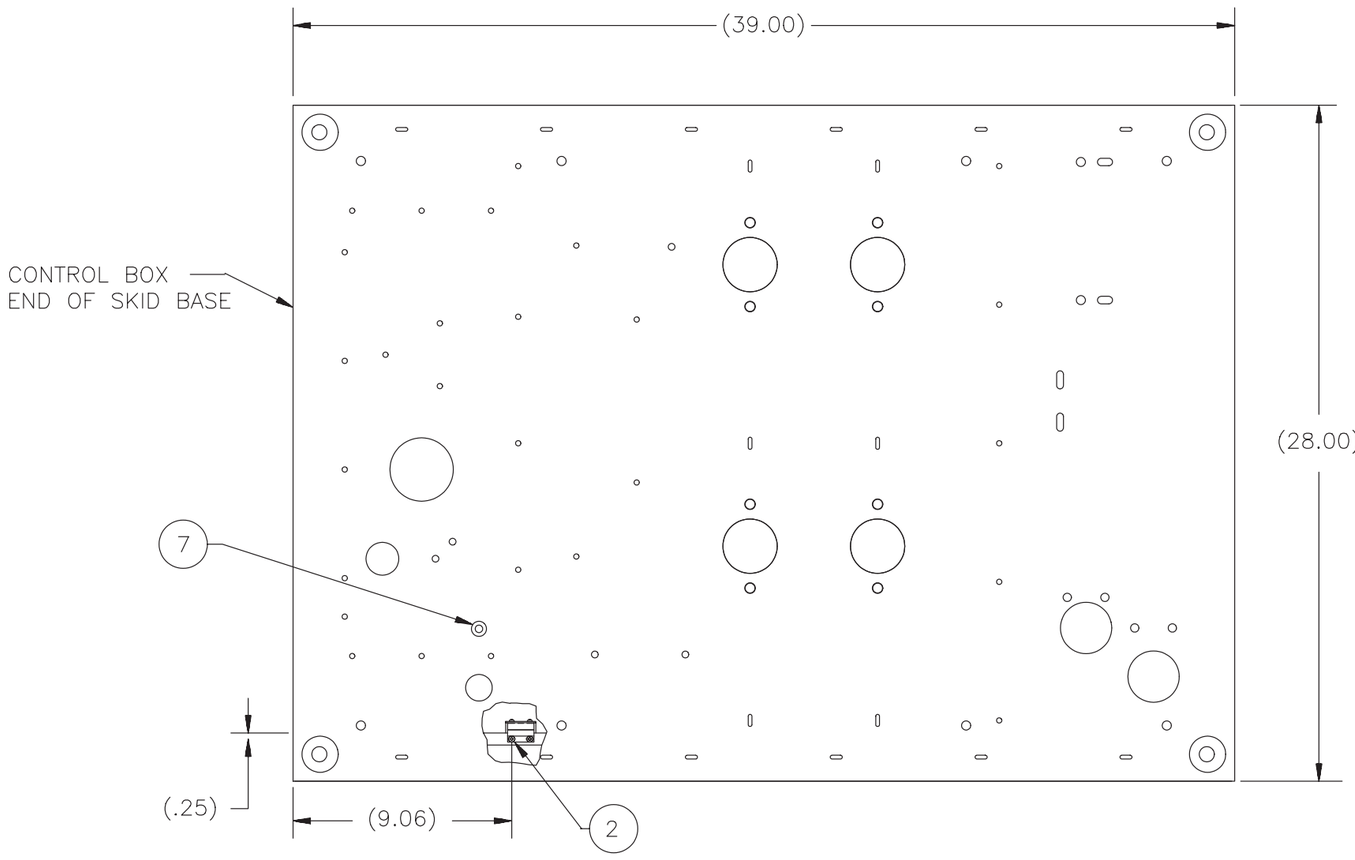
## GAS HAZARD

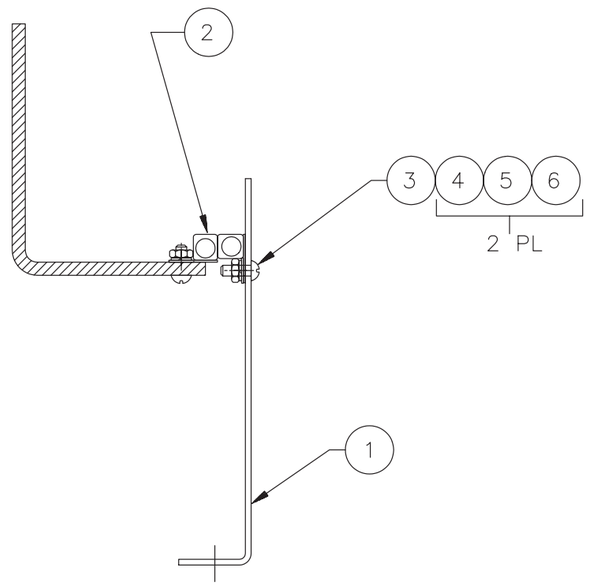



## PAD SHEAR

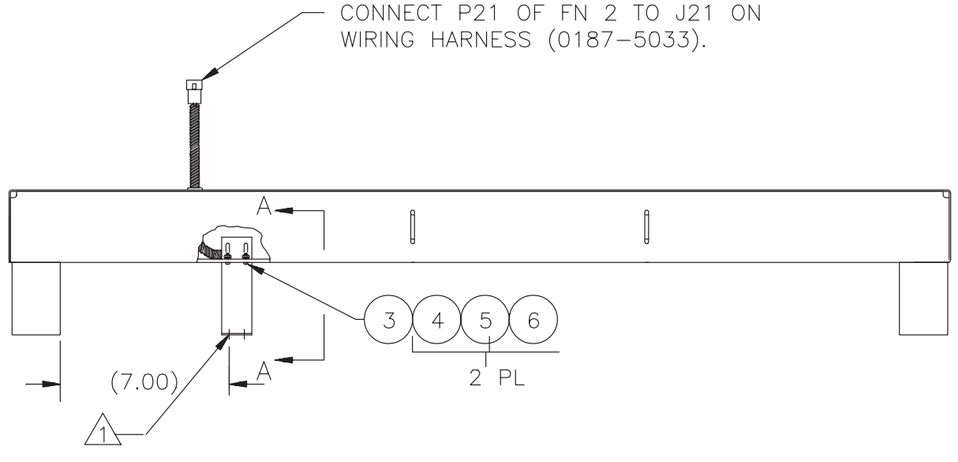



612–6756




VIEW A




**SHEAR PAD SWITCH INSTALLATION**

NOTES:

1. USE GENERATOR MOUNTING TEMPLATE TO LOCATE AND DRILL (2) MOUNTING HOLES FOR SECURING SHEAR PAD BRACKET (FN 1) TO CONCRETE PAD.
2. AFTER BRACKET IS INSTALLED, MAGNETS (FN 2) SHOULD BE ADJUSTED AS REQUIRED FOR PROPER ALIGNMENT.

| QTY | ITEM | DESCRIPTION OR MATERIAL |
|---|---|---|
| 1 | 7 | GROMMET |
| 4 | 6 | NUT-HEX MACH .112-40 |
| 4 | 5 | WASHER-LOCK SPR HELICAL #4 |
| 4 | 4 | WASHER-FLAT #4 |
| 4 | 3 | SCREW-MACH PAN HD SLOTTED .112--40 X .375L |
| 1 | 2 | SWITCH ASSY-SHEAR PAD |
| 1 | 1 | BRACKET-SHEAR PAD |

300-5412

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**Minneapolis, MN 55432**
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**763-574-5000 International Use**
**Fax: 763-528-7229**



Power Generation