

**REDI POWER  
MOBILE  
DIESEL**



**RP25/B**

**INSTALLATION AND OPERATION MANUAL**

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## SAVE THESE INSTRUCTION

This manual contains important instructions that should be followed during installation and maintenance of the generator and batteries.

Read and understand all instructions in the manual before starting and operating the generator set.

## USING THIS MANUAL

Congratulations on your choice of a Winco generator set. You have selected a high-quality, precision-engineered generator set designed and tested to give you years of satisfactory portable service.

To get the best performance from your new engine generator set, it is important that you carefully read and follow the operating instructions in this manual.

Should you experience a problem please follow the "Things To Check" near the end of this manual. The warranty listed in this manual describes what you can expect from WINCO should you need service assistance in the future.

## PROPER USE AND INSTALLATION

You must be sure your new engine generator set is:

- \* Properly serviced before starting
- \* Operated in a well ventilated area
- \* Exhaust gases are dispersed safely
- \* Wired by a qualified electrician
- \* Operated only for its designed purposes
- \* Used only by operators who understand its operation
- \* Properly maintained

## COPY YOUR MODEL AND SERIAL NUMBER BELOW FOR FUTURE REFERENCE.

No other WINCO generator has the same serial number as yours. It is important that you record the number and other vital information here, if you should ever need to contact us on this unit it will help us to respond to your needs faster.

MODEL \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

PURCHASE DATE \_\_\_\_\_

DEALER \_\_\_\_\_

## TABLE OF CONTENTS

PRODUCT SAFETY	1
SPECIFICATIONS	2
PREPARATION	
UNPACKING	2
OIL REQUIREMENTS	2
FUEL REQUIREMENTS	2
COOLANT REQUIREMENTS	3
BATTERY CONNECTIONS	3
CONTROL PANEL LAYOUT & DESCRIPTION	
DSE7310 ENGINE CONTROL	4
FRONT PANEL DESCRIPTION	6
RECEPTACLE AND BREAKERS	7
FULL POWER CONNECTIONS	7
CAM-LOCK CONNECTIONS	8
OPERATIONS	
OUTPUT VOATAGE TABLE	9
SELECTING THE CORRECT VOLTAGE	10
START-UP CHECKLIST	10
ELECTRIC STARTING	10
REMOTE STARTING	11
CONNECTING THE LOADS	10
UNIT STORAGE	12
50 CYCLE OPERATION	12
MAINTENANCE	13
PREVENTIVE MAINTENANCE	11
WIRING DIAGRAMS	
DC ELECTRICAL SCHEMATIC	14
GENERATOR WIRING	15
SELECTOR SWITCH WIRING	16
CIRCUIT BREAKER WIRING	17
RECEPTACLE PANEL	17
WARRANTY	18

# GUIDE TO PRODUCT SAFETY

This engine generator set has been designed and manufactured to insure your personal safety. Improper use can result in potential deadly hazards, from electrical shock, exhaust gas asphyxiation, or fire. Please read all safety instructions carefully before installation or use. Keep these instructions handy for future reference. Take special note and follow all warnings on the unit and in the manuals.

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**CAUTION: Possible Damage to Equipment.**  
CAUTION notes indicate any condition or practice, which if not strictly observed or remedied, could result in damage or destruction of the equipment.

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**WARNING: Personal Danger.**  
WARNING notes indicate any condition or practice, which if not strictly observed, could result in personal injury or possible loss of life.

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1. **ELECTRIC SHOCK** - The output voltage present in this equipment can cause a fatal electric shock. This equipment must be operated by a responsible person.
  - A. Do not allow anyone to operate the generator without proper instruction.
  - B. Guard against electric shock.
  - C. Avoid contact with live terminals or receptacles.
  - D. Use extreme care if operating this unit in rain or snow.
  - E. Use only three-prong grounded receptacles and extension cords.
  - F. Be sure the unit is properly grounded to an external ground rod driven into the earth.

2. **FIRE HAZARD** - Diesel fuel and other fuels always present a hazard of possible explosion and/or fire.
  - A. Do not refuel when the engine is running or hot. Allow the engine to cool at least two minutes before refueling.
  - B. Keep fuel containers out of reach of children.
  - C. Do not smoke or use open flame near the generator set or fuel tank.
  - D. Keep a fire extinguisher nearby and know its proper use. Fire extinguishers rated ABC by NFPA are appropriate.
  - E. Store fuel only in an approved container, and only in a well-ventilated area.

3. **DEADLY EXHAUST GAS** - Exhaust fumes from any internal combustion engine contain carbon monoxide, an odorless and deadly gas that must be mixed with fresh air.
  - A. Operate only in well ventilated areas.
  - B. Never operate indoors.
  - C. Never operate the unit in such a way as to allow exhaust gases to seep back into closed rooms (i.e. through windows, walls or floors).

4. **NOISE HAZARD** - Excessive noise is not only tiring, but continual exposure can lead to loss of hearing.
  - A. Use hearing protection equipment when working around this equipment for long periods of time.
  - B. Always operate with the housing doors closed to reduce the operational noise level.

5. **CLEANLINESS** - Keep the generator and surrounding area clean.
  - A. Remove all grease, ice, snow or materials that create slippery conditions around the unit.
  - B. Remove any rags or other material that could create potential fire hazards.
  - C. Carefully wipe up any gas or oil spills before starting the unit.
  - D. Never allow leaves or other flammable material to build up around the engine exhaust area.

6. **SERVICING EQUIPMENT** - All service, including the installation or replacement of service parts, should be performed only by a qualified technician.
  - A. Use only factory approved repair parts.
  - B. Do not work on this equipment when fatigued.
  - C. Never remove the protective guards, cover or receptacle panels while the engine is running. Keep hands away from all moving parts.
  - D. Never wear neckties or other loose clothing that can be caught in moving parts while you are servicing or operating this equipment.
  - E. Use extreme caution when working on electrical components. High output voltages from this equipment can cause serious injury or death.
  - F. When servicing this unit always avoid hot mufflers, exhaust manifolds, and engine parts. They all can cause severe burns instantly.
  - G. Installing and wiring a mobile diesel generator is not a "do it yourself" project. Consult a qualified, licensed electrician or contractor. The installation must comply with all national, state, and local codes.

7. **LIFTING THE EQUIPMENT** - When lifting always make sure that the area under the equipment is kept clear.
  - A. Be certain rigging is designed to lift unit safely.
  - B. Never attempt to lift the equipment unless you are certain the lifting device has sufficient capacity.
  - C. Never allow the equipment to swing while suspended.
  - D. Be certain the supporting structure is adequate to handle the load.

8. **TOWING THE EQUIPMENT** - When towing this equipment always use a vehicle large enough for safe operation.
  - A. Never tow without the safety chains secured.
  - B. Always use the proper size hitch ball on the vehicle.
  - C. Never attempt to tow with a vehicle that does not have side mirrors installed.

## SPECIFICATIONS

### GENERATOR SPECIFICATIONS

	<b>RP25</b>
<b>KILOWATT</b>	20 kW
<b>KILOVOLT-AMPS</b>	(.8 PF)25 kVA
<b>AMPERAGE</b>	277/480 VOLT 3 PHASE 30 AMPS*
	120/240 VOLT 3 PHASE 60 AMPS*
	120/208 VOLT 3 PHASE 69 AMPS*
	120/240 VOLT 1 PHASE 70 AMPS**

\*Based on .8 power factor

\*\*Single Phase is limited by the circuit breaker to 150 Amps on the full power terminal block - The additional amperage is available through receptacles.

Derate 3% per 1000 feet (305 meters) between 300 feet (90 meters) and 7,500 feet (2,286 meters) above sea level. Contact the factory for rating data for operation in altitudes above 7,500 feet (2,286 meters).

For prime power application (24/7) derate all output rating by 10%

### GENERATOR RESISTANCE

	<b>RP25</b>
<b>Generator Make</b>	Stamford
<b>Generator Model</b>	PI144F
<b>Generator Winding</b>	#311
<b>Voltage Regulator</b>	AS480
<b>Main Stator</b>	0.265 ohms
<b>Main Rotor</b>	0.708 ohms
<b>Exciter Stator</b>	20.3 ohms
<b>Exciter Rotor</b>	0.201 ohms

### ENGINE SPECIFICATIONS

	<b>RP25/B</b>
<b>Make</b>	Isuzu
<b>Model</b>	4LE1
<b>Fuel Consumption</b>	Full Load 1.9 gal/hr 1/2 Load .9 gal/hr
<b>Starting System</b>	12 Volt DC
<b>Fuel</b>	Diesel
<b>Oil</b>	API CF - CH4 SAE 10W30 8.69 Liters
<b>Oil &amp; Filter Replacement</b>	250 HRS
<b>Coolant</b>	50/50 Mix 2.75 Gallons
<b>Battery 12 Volt (Group 24)</b>	650 CCA*

\*Battery is not included.

### TRAILER/HOUSING

	<b>RP25</b>
<b>Capacity</b>	3500 lb.
<b>Fuel Capacity</b>	55 Gallons
<b>Axles</b>	Single
<b>Hitch Height</b>	Adjustable
<b>Tires</b>	P225/75R-15
<b>Tire Pressure</b>	35 psi
<b>Sound Attenuated</b>	ULTRA QUIET
<b>Housing</b>	Housing Standard

### PREPARATION

NOTE: This booklet covers the entire unit, EXCEPT THE ENGINE. See the engine manufacturer's operator manual for specific maintenance and care information regarding the engine. Read ALL instructions in the manuals provided before attempting to operate the generator set.

### UNPACKING

When receiving the unit, be sure to inspect it carefully for freight loss or damage. Check the nameplate to be sure it is what you ordered (proper kW, voltage, fuel, etc.). If you have questions, contact your local authorized dealer. If you see evidence of loss or damage at the time of delivery, have the driver sign and describe the loss or damage in the "memo of loss or damage" section on the freight bill. Then contact the carrier to get instructions on filing a claim.

When loss or damage is discovered after the equipment is delivered, but not seen at the time of delivery, it is referred to as "concealed damage." Separate any damaged material and contact the carrier for proper procedures to file a "concealed damage" claim.

### OIL REQUIREMENTS

This engine was filled at the factory. Before starting check the oil level and ensure it is full. If not, refill to the proper level. See engine manual for proper grade of oil.

<b>OIL QUANTITY</b>	<b>US Qt.</b>	<b>Liters</b>
<b>RP25</b>	9	8.7

### FUEL REQUIREMENTS

See your engine operator's manual for complete type and fuel grade information.

### **WARNING -NO BIODIESEL**

#### Filling the Fuel Tank

Standard Trailer - The standard trailer is equipped with a single 45 gallon fuel tank. Use caution when filling the tank so as not to overflow the tank into the trailer.

**WARNING PERSONAL DANGER**

*Never refuel a running engine. Always stop the engine and allow to cool before refueling.*

Never allow the fuel tank to run completely empty, as air may enter the fuel system making it necessary to bleed the engine when restarting.

**COOLANT REQUIREMENTS**

The cooling system of this engine has been filled at the factory with a 50% water and 50% ethylene-glycol anti-freeze and the proper amount of supplemental coolant additives. This mixture provides engine protection to -37 degrees F.

When replenishing coolant or changing coolant refer to your Isuzu engine manual for the proper type and mixture of water, antifreeze and supplemental coolant additives.

**WARNING: EQUIPMENT DAMAGE**

*Failure to properly follow Isuzu requirements for anti-freeze and supplemental coolant additives can lead to permanent damage to your engine cylinder liner walls.*

**BATTERY CONNECTION INSTRUCTIONS**

**WARNING! EQUIPMENT DAMAGE**

*FAILURE TO PUT THE GENERATOR CONTROL POWER SWITCH IN THE 'OFF' POSITION PRIOR TO CONNECTING THE BATTERY CABLES) MAY RESULT IN DAMAGE TO THE ECM (SOLID STATE ENGINE CONTROL MODULE).*

**INSTALLING THE BATTERY**

A customer supplied twelve-volt battery is required to complete the installation. Installation of the highest CCA rated battery, within the correct BCI group, will increase cold weather starting performance. *Gel batteries should not be used* with the battery tender installed in the generator enclosure.

Model	Voltage	MINIMUM	
		BCI Group	CCA Rating
RP25	12	24	650

Installation and servicing of batteries must be performed or supervised only by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries.

When installing or replacing batteries, use the proper group/size **starting** battery. The battery should be a Maintenance Free lead acid design. Deep cycle batteries will not work for this application.

**CAUTION – PERSONAL DANGER**

**NEVER** dispose of a battery in a fire. The battery is capable of exploding.

**DO NOT** open or mutilate the battery. Released electrolyte is known to be harmful to the skin and eyes and to be very toxic.

These engine generator sets are all **NEGATIVE** ground. Be very careful not to connect the battery in reverse polarity, as this may short circuit the battery charging system on the engine.

**CAUTION** – A battery presents a risk of electrical shock and high short circuit current. The following precautions must be observed when working with batteries:

1. Remove watches, rings and other metal objects.
2. Use tools with insulated handles.
3. Check both the battery cable ends and the battery posts to be sure they are free of corrosion.
3. Always connect the battery positive cable first and then connect the battery negative cable. When removing the battery cables from the battery reverse the procedure, disconnect the negative cable first and then the positive cable.
4. Be sure all connections are tight and coat the terminals and cable end with dielectric grease.

**WARNING** – The electrolyte is a diluted sulfuric acid that is harmful to the skin and eyes. It is electrically conductive and corrosive. The following precautions must always be taken:

- \* Always wear full eye protection and protective clothing.
- \* Where electrolyte contacts the skin, wash off immediately with water.
- \* If electrolyte contacts the eyes, flush thoroughly and immediately with water and seek immediate medical attention.
- \* Spilled electrolyte is to be washed down with an acid neutralizing agent. A common practice is to use a solution of one pound of bicarbonate of soda (baking soda) to one gallon of water. The bicarbonate of soda solution is to be added until the evidence of reaction, foaming, has ceased. The resulting liquid is to be flushed with water and the area dried.

**DANGER – Explosive Fire Risk**

- \* Never smoke when near batteries
- \* Do not cause a flame or spark in the battery area
- \* Always discharge static electricity from your body before touching batteries by first touching a grounded metal surface.

## SERVICING BATTERIES

Batteries used on these units may over time lose water. This is especially true if you are using a trickle charger to maintain your battery. When refilling the battery with water use only distilled water. Tap water will shorten the service life of the battery.

Never fill the battery above the fill line. Over filling above the upper level line may cause the electrolyte to overflow, resulting in corrosion to the engine or nearby parts. Immediately wash off any spilled electrolyte following the procedure above..

**CAUTION - NEVER ATTEMPT TO JUMP START THIS ENGINE.** *If the battery should accidentally become discharged disconnect the battery cables and recharge the battery before attempting to start the unit. Boost/jump starting this unit improperly will result in PERMANENT DAMAGE TO THE ENGINE CONTROL MODULE (ECM).*

## DESCRIPTION AND IDENTIFICATION

### 1. ENGINE CONTROL MODULE (DSE7310)

The DSE-7310 Automatic Start Control Module provides integrated engine-genset control, protection, and metering in a single package. Microprocessor based technology allows for exact measurement, set point adjustment, and timing functions. Front panel controls and indicators enable quick and simple DSE-7310 operation. Deep Sea communication software allows units to be easily customized for each application. A wide temperature-range liquid

crystal display (LCD) with backlighting can be viewed under a wide range of ambient light and temperature conditions.

## FEATURES

DSE Generator Controllers have the following features:

- Five-key Menu Navigation
- Engine and Generator Protection
- Programmable Analog Engine Senders
- ECU Communications
- Programmable Logic
- Automatic Transfer Switch Control (Mains Failure)
- User Selectable RS232 & RS485 communications
- Multiple configurable inputs & outputs
- Event Log 250 events
- UL/CSA Listed

## FUNCTIONS

DSE-7310 Generator Controllers perform the following functions:

### Generator Protection and Metering

Generator protection guards against over voltage, under voltage, under frequency, and over frequency. Over current and phase imbalance protection is available as an option at the time of manufacture. Each generator protection function has an adjustable pickup and time delay setting. Metered generator parameters include voltage, current, real power (watts), apparent power (VA), and power factor (PF).

# ENGINE CONTROL MODULE DSE-7310



## Engine Protection and Metering

Engine protection features include oil pressure and coolant temperature monitoring, over crank protection, ECU specific protection elements, and diagnostic reporting. Metered engine parameters include, oil pressure, coolant temperature, battery voltage, speed, fuel level, engine load, coolant level (from ECU), ECU specific parameters, and run-time statistics.

All metering functions are displayed on the liquid crystal display. The front panel display begins with the SUMMARY SCREEN. Pressing the Right arrow key will open the MAIN MENU screen. The MAIN MENU screen consists of METERING and SETTINGS

## DSE 7310 CONTROLLER LAYOUT

**A. MENU NAVIGATION BUTTONS** – Left and Right buttons select different grouping (i.e. Engine reading Generator reading, etc). Up and Down buttons scroll through the different reading for each group.

**B. STOP/RESET** – This button places the module into its STOP/RESET mode. This will clear any alarm conditions for which the triggering criteria have been removed. If the engine is running and this button is pushed the module will shut off the fuel solenoid and the engine will come to a stop. If a remote start signal is received while this switch is activated, the unit will not start.

**C. MANUAL** - This mode allows manual control of the generator functions. Once in this mode the control module will allow you to start the unit using the START button. The unit will continue to run until either the STOP/RESET or AUTO button is pressed. If the unit receives a remote start signal during manual operation, the generator will remain running even after the remote start signal has been lost. You must use the STOP/RESET or AUTO button to stop the unit once you have started it in MANUAL mode.

\*\*\*\* **CAUTION** \*\*\*\*

*IF THE POWER FAILS WHILE RUNNING IN THE MANUAL MODE THE TRANSFER SWITCH WILL TRANSFER THE LOAD TO THE GENERATOR. TO PREVENT THIS THE MAINLINE CIRCUIT BREAKER ON THE GENERATOR MUST BE OPENED.*

**D. AUTO** – This button places the module into its AUTOMATIC mode. This module will monitor the remote start input for a relay closure. When the remote start signal is received it will time out the start delay (5 Seconds) and then start the engine generator set. When the remote start signal is lost (relay opened) the module will shut the engine generator set down after the cool down timer has time out. The module will return to the AUTOMATIC mode and await the next start signal.

**E. LAMP TEST/HORN RESET** - This button silences the audible alarm if it is sounding and illuminates all of the LEDs as a lamp test feature.

**F. START** – This button is active only in the MANUAL or mode. Pressing this button in the MANUAL mode will start the engine locally for testing. The engine will continue to run until either the STOP/RESET or the AUTO button is pressed.

**G. CLOSE GEN-SET** – NOT USED IN THIS APPLICATION

**H. OPEN GEN-SET** – NOT USED IN THIS APPLICATION

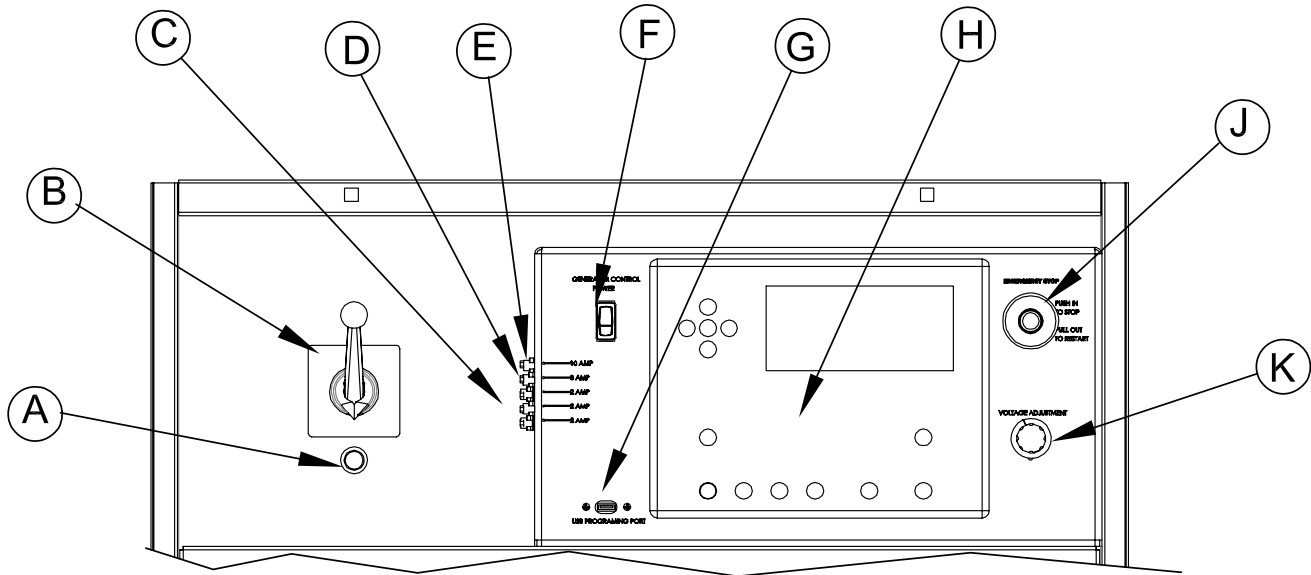
**J. SYSTEM INFORMATION LIGHTS** – These lights indicate the following conditions.

1. Low Battery
2. Low Fuel
3. Generator Available
4. Emergency Stop.

**K. LIQUID CRYSTAL DISPLAY (LCD)** -A wide temperature-range display with backlighting can be viewed under a wide range of ambient light and temperature conditions. All engine and generator reading are displayed here, including fault codes.

NOTE: STOP/RESET, MANUAL mode and AUTO mode buttons all have indicator lamps next to them to tell you what mode you are in. Pressing buttons out of sequence will cause the engine not to do what you may think it should be doing. See button operation sequencing above.

# FRONT PANEL LAYOUT



## 2. FRONT PANEL LAYOUT

**A - Selector Switch Safety Release.** This safety button must be depressed before you can change the selector switch. Depressing this will also kill the engine, this is to ensure the unit is not running when the selector switch is changed.

**B - Voltage Selector Switch.** This heavy duty four position switch allows the operator to quickly and safely reconnect the 12 lead generator to any one of four output voltages. Once the output voltage is selected, the switch will lock to prevent it from accidentally being changed during operation. (See "A" above)

**C - AC Control Fuses (3 each).** These 2 amp fuses limit the AC input into the DSE-7310 controller preventing it from being damaged.  
(Replacement Fuse 2 Amp ATO-ATC)

**D - DSE7310 Fuse.** This 3 amp DC fuse protects the DSE-7310 printed circuit board.  
(Replacement Fuse 3 Amp ATO-ATC)

**E - DC Control Circuit Fuse.** The 10 amp DC Circuit Fuse protects the 12 volt circuits and engine wiring harness against faults in wiring or control equipment. The fuse also prevents a discharge of the battery due to a circuit fault. (Replacement Fuse 10 Amp ATO-ATC)

**F - Generator Control Power Switch.** This switch disconnects all power to the DSE-7310 Engine Control. This switch should be turn off anytime the unit is going to be stored longer than over night with out the battery

charger plugged in. Storing the unit without the power switch turned off will cause the battery to drain as the DSE-7310 is powered up. This switch is bypassed when the unit is running to prevent the controller from being shutoff with the engine running.

**G - USB Port.** This port is used to program the DSE-7310 Controller from a computer using the DEEP SEA Software. If needed the DEEP SEA software can be down loaded for the their web site.  
([www.deepseapl.com](http://www.deepseapl.com))

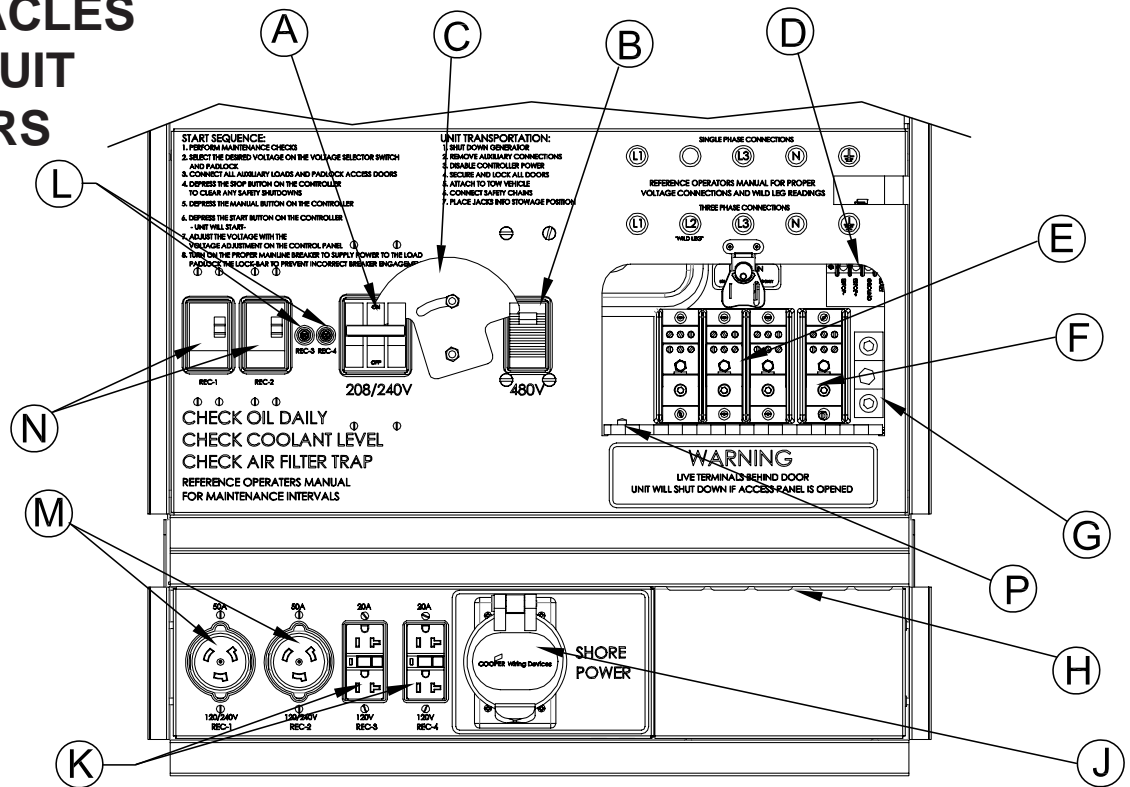
**H - DSE-7310 Generator Control.** See Explanation on page 4.

**J -Emergency Stop Switch (3)-** When depressed this switch will disconnect all the 12 volt power to the DSE-7310 shutting the engine down. The lamp in the emergency stop switch will light up when the switch is depressed showing that the power to the panel has been disconnected.

**K - Voltage Adjust Rheostat.** Controls the output voltage of the generator by varying voltage regulators reference voltage. This trim pot is used to adjust the voltage after you switch between the different voltages on the Selector Switch. A wide range of voltages are available with 4 position selector switch and rheostat.



# RECEPTACLES and CIRCUIT BREAKERS



## 3. RECEPTACLES and CIRCUIT BREAKERS

**NOTICE - CLASS 1 WIRING METHODS ARE TO BE USED FOR ALL FIELD WIRING CONNECTIONS TO TERMINALS OF A CLASS 2 CIRCUIT. ALL WIRING MUST BE DONE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE NFPA 70**

**A - 208/240 VOLT MAINLINE CIRCUIT BREAKER.** This is the low voltage mainline circuit breaker feeding the full output terminal block (Ref E) below. This circuit breaker is used when the selector switch in the 120/208 volt three phase or 120/240 volt single phase switch position.

**B - 480 VOLT MAINLINE CIRCUIT BREAKER.** This is the high voltage mainline circuit breaker feeding the full output terminal block (Ref E) below. This circuit breaker is used when the selector switch is in the 277/480 volt three phase position.

**C - CIRCUIT BREAKER LOCKING BAR.** Select and turn on either the high voltage breaker (480 V) or the low voltage breaker (208 or 240 Volt) depending on which position you have the selector switch in. This bar prevents both breakers from being turned on at the same time

**D - REMOTE START/E-STOP TERMINAL BLOCK.** This terminal block provides the customer two different connections. **Torque Screws to 9.6 in. lb. using 14 to 16 awg copper wire with lugs.**

1. **Emergency stop connection for installing a remote emergency stop switch.** This emergency stop switch connection point must be closed during normal operation, this is done at the factory by installing a jumper lead between the two connection points. If you have an application (i.e.. gas station) that requires a remote stop switch be installed, remove the jumper and install a normally closed emergency stop switch between the two terminals. When the emergency stop switch is opened the generator will immediately shut down, requiring the switch to be reclosed before the generator can be restarted.
2. **Remote start contact connections for starting the unit from a remote location.** This can be either an automatic transfer switch or just a remote switch in a job trailer. This feature requires a relay closure between the two connections on the terminal block to put the unit into an auto-start mode. The Auto mode has both a start delay and a cooldown delay built into the DSE-7310.

**E - FULL POWER OUTPUT TERMINAL BLOCK.** The full power terminal block is capable of handling full generator output at any of the selected voltages. Be very careful when using 240 volt three phase that you properly account for the wild leg (208 Volt) coming from the generator. **This unit has it in the L2 position.** For single phase 120/240 connect to L1 and L3, the third leg L2 is not powered or used. **Lugs will handle up to 2/0 wire. Torque lugs to 150 in. lbs. using #1 & #2 wire and 180 in. lbs. for 1/0 & 2/0 wire.**

**F - NEUTRAL TERMINAL BLOCK.** This is the neutral connection point for the customer's full power output connections. This terminal block also has the neutral to ground bond attached. If you need to operate an isolated ground system this jumper must be removed. Generally this is only required when the generator is being used as backup or being wired into an existing wiring system that already has one neutral to ground bond in it. **Lugs will handle up to 2/0 wire. Torque lugs to 150 in. lbs. using #1 & #2 wire and 180 in. lbs. for 1/0 & 2/0 wire.**

**G - GROUND TERMINAL BLOCK.** This is the ground connection point for the customer's full power output connections. This terminal block also has the neutral to ground bond attached to it. If you need to operate an isolated ground system this jumper must be removed. Generally this is only required when the generator is being used as backup or being wired into an existing wiring system that already has one neutral to ground bond in it. **Lugs will handle up to 2/0 wire. Torque lugs to 150 in. lbs. using #1 & #2 wire and 180 in. lbs. for 1/0 & 2/0 wire.**

**H - WIRE ENTRANCE HOLES.** These holes have been specifically provided for you to route your full power leads through to the output lugs. The routing holes were provided to insure that no small child or curious adult can reach inside and come into contact with the main output lugs with the unit running.

**J - 120 VOLT 20 AMP 3 WIRE RECESSED SHORE POWER PLUG,** NEMA Spec 5-20. This panel mounted plug is designed to plug directly in a standard 20 amp receptacle on an extension cord. The plug when connected will provide power to the block heater and the battery trickle charger mounted inside the generator enclosure. This can be used when the set is used in a standby application to keep the engine warm and the battery charged or in your rental yard to keep the battery charged up. This receptacle is to be powered by a GFCI circuit and installed in accordance with the United States National Electric Code.

**K - TWO - 120 VOLT 20 AMP GROUND FAULT INTERRUPTER DUPLEX.** These duplex receptacles are protected by 20 Amp circuit breakers mounted just above the duplexes. With the "T" slot design both 15 and 20 amp 120 volt cords can be plugged in.

**L - 120 VOLT 20 AMP CIRCUIT BREAKERS.** These two push button 20 amp circuit breakers protect the two GFCI receptacles (Ref K) mounted below. If you are not able to reset these breakers, check the load plugged into the GFCI receptacle or the receptacle itself for a fault.

**M - TWO 120/240 VOLT 50 AMP 4 WIRE TWISTLOCK.** These receptacles are rated for dual voltage, 120 or 240 volt use. It is a four wire receptacle, with a center grounding pin. Four wire drop cords plugged into this receptacle may be split into 120 volt receptacles at a dis-

tribution box. Each receptacle is protected by a two pole 50 amp circuit breaker mounted just above it. THIS RECEPTACLE UTILIZES A HUBBELL PLUG PART NUMBER "CS 6365".

**N - 250 VOLT 50 AMP CIRCUIT BREAKERS.** These circuit breakers protect the two 50 amp twistlock receptacles (Ref M) mounted in the panel below.

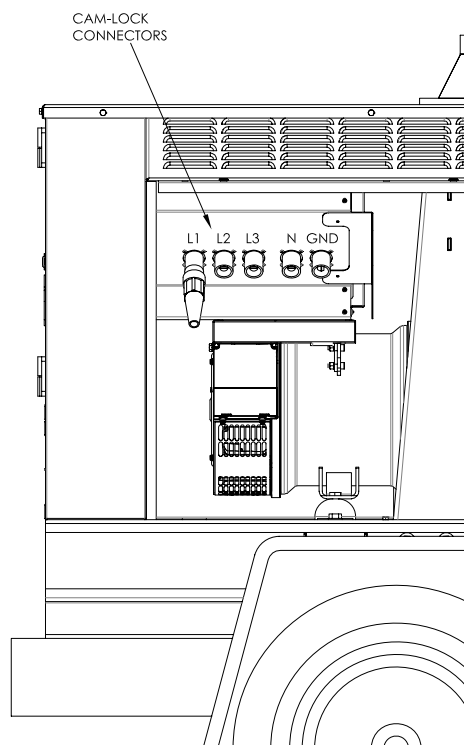
**P - DOOR SAFETY SWITCH.** This safety switch is connected to the DSE-7310 engine control and will shut the unit down any time door is opened with the unit running. This prevents someone from accidentally contacting the main power connection with the unit running. This unit will not start if the door is not closed and latched.

#### **DANGER: PERSONAL INJURY**

*This unit may start as soon as the door is closed if the engine control happens to be the correct mode. Do not use the switch on this door to shutdown a unit to connect to the full load terminal block, this is a safety switch only.*

## **4. CAM-LOCK CONNECTIONS**

This unit is equipped with Cam-Lock connectors, located behind the rear right hand door panel. These Cam-Lock are connected to the full load terminal blocks and are capable of providing full generator output in all voltage configurations. The mating connectors are model CL2FB, which are available with different wire size capabilities.



The table below show the voltages at the terminal lug as well as the receptacles for all four voltage patterns available through the selector switch.

<b>VOLTAGE SELECTOR SWITCH POSITION</b>	<b>TERMINALS</b>	<b>MINIMUM VOLTAGE</b>	<b>NORMAL VOLTAGE</b>	<b>MAXIMUM VOLTAGE</b>
<b>120/240 SINGLE PHASE</b>				
LINE TO LINE	L1 TO L3	220	240	260
120/240 VOLT RECEPTACLES		110/220	120/240	130/260
LINE TO NEUTRAL	L1 TO N	110	120	130
	L2 TO N	-0-	-0-	-0-
	L3 TO N	110	120	130
120 VOLT RECEPTACLES		110	120	130
<b>120/208 THREE PHASE</b>				
LINE TO LINE	ALL	200	208	220
120/240 VOLT RECEPTACLES		110/200	120/208	127/220
LINE TO NEUTRAL	ALL	115	120	127
120 VOLT RECEPTACLES	ALL	115	120	127
	G3 TO N	115	120	127
<b>120/240 THREE PHASE</b>				
LINE TO LINE	ALL	220	240	260
120/240 VOLT RECEPTACLES		110/220	120/240	130/260
<b>LINE TO NEUTRAL USE CAUTION THIS CONFIGURATION HAS A HIGH VOLTAGE LEG</b>				
	G1 TO N	110	120	130
<b>HIGH VOLTAGE LEG</b>	G2 TO N	191	208	225
	G3 TO N	110	120	130
120 VOLT RECETPACLES		110	120	130
<b>277/480 THREE PHASE</b>				
LINE TO LINE	ALL	416	460	480
120/240 VOLT RECEPTACLE		NONE	NONE	NONE
LINE TO NEUTRAL	ALL	240	265	277
120 VOLT RECETPACLE		NONE	NONE	NONE

**WARNING - POTENTIAL EQUIPMENT DAMAGE**

THE 120/240 VOLT THREE PHASE POSITION HAS A WILD LEG THAT PRODUCES 208 VOLTS LINE TO NEUTRAL ON G2. BE SURE WHEN CONNECTING TO YOUR PANEL OR LOAD THAT YOU MATCH THE WILD PHASE ON THE GENERATOR TO THE WILD PHASE IN YOUR PANEL OR LOAD. FAILURE TO DO SO WILL RESULT IN 120 VOLT DEVICES RECEIVING 208 VOLTS. YOU MUST ALSO MATCH YOUR ROTATION.

# OPERATING THE UNIT

## A. SETTING THE JACKS

1. Move the two rear jacks from the transport position to the run position.
2. Rotate the front jack from the transport position to the run position.
3. Level the unit using the three jacks before starting the unit up.

### WARNING - POTENTIAL EQUIPMENT DAMAGE

*Be sure to return the jacks to the transport position before trying to move the unit. If you don't the jacks maybe damaged, rendering them useless.*

## B. SELECTING THE CORRECT VOLTAGE

A variety of voltages are available from the four position selector switch. The four basic connection patterns are, Delta (120/240), Low or Parallel WYE (120/208), High WYE (277/480) and Single phase 120/240. See page 9 for the different voltages available in each of the voltage configurations.

Before starting this unit be sure you have the selector switch set for the right voltage. You must depress the safety switch below the selector switch to change the position of the voltage selector switch. If the unit is running depressing this switch will kill the engine generator set.

If you have any doubts as to the voltage in your area compare your incoming power or load name plates to the voltage table below.

## CIRCUIT BREAKER SELECTION

After you have selected the correct voltage for your application and locked the selector switch, do the same with the main line circuit breakers. The left hand circuit breaker is used for all voltage selections except 480 volt in which case you would use the right hand breaker. Failure to use the correct breaker will either give you no breaker protection at all or cause the breaker to trip early.

## C. STARTUP CHECKLIST

Before initial start up and each subsequent start complete the following checklist:

1. Check oil level, refill with proper grade oil.
2. Check coolant level, refill with proper mixture of coolant. See engine manual.
3. Check for loose bolts or hardware.
4. Check tire pressure. (35 psi)
5. Trailer level to within 15 degrees.
6. Battery securely fastened, connection clean and tight, and proper fluid level.

7. Fuel tank filled with the proper grade of diesel fuel.
8. Check the fan belt for tightness and excessive wear.
9. Check hoses and clamps for leakage.
10. Check the air cleaner indicator. Service only when indicated. Do not over-service.
11. Clean out dust cup on the air cleaner.

## D. ELECTRIC STARTING (Normal portable use)

### CAUTION: EQUIPMENT DAMAGE

*DO NOT ATTEMPT TO JUMP/BOOST START THIS UNIT. TO DO SO MAY DAMAGE THE ELECTRONIC MICROPROCESSOR IN THE ENGINE CONTROL. RE-CHARGE THE BATTERY WITH A BATTERY CHARGER.*

1. Select the desired voltage on the voltage selector switch.
2. Turn off both main line circuit breakers.
3. Depress the MANUAL mode button on the control panel. The small LED light next to it should come on.
4. Press the START button- The DSE-7310 will send a signal to the glow plug solenoid on the engine. Pre-heating the engine for about 10 seconds at the end of that time it will engage the fuel rack solenoid and the starter. This will start the cranking cycle (10 seconds on and 10 seconds off).

NOTE: There is no start delay in this mode of operation.

If the engine fails to start during this cranking period the starter motor is disengaged and goes into a rest mode after which a second attempt is made to start the engine. Should this sequence continue through 3 cranking cycles the start sequence will be stopped and the display will show "FAILED TO START".

All engine functions are controlled by the DSE-7310 controller. Once the unit is running the control will display the engine information as well as the generator information by scrolling down through the controller. See page 5 for instructions on moving through the DSE-7310 display screens.

The AC output readings displayed on the DSE-7310 are collected through the AC interface harness wired in the generator control box. Any shutdowns related to the AC output are a function of the controller are based on information collected in the DSE-7310 via this AC harness.

5. After the engine is running at proper speed, adjust the voltage to the desired level using the external voltage trim rheostat.
6. Turn on the proper main line breaker (either high or low voltage) and padlock the lock bar to prevent the incorrect breaker from being turned on.

## WARNING: EQUIPMENT DAMAGE

NEVER APPLY A LOAD TO THE GENERATOR UNTIL YOU HAVE FIRST CHECKED THE VOLTAGE AT THE TERMINAL BLOCKS OR THE CAM-LOCKS.

7. With the engine running smoothly check the no load voltage and frequency on the digital display. The voltage should be 208/240/480 AC depending on which model you have and a frequency of 59.5 to 60.5 hertz (Hz).

If you have the proper voltage at the generator the next step is to check the voltage at the customer connection points, wither the terminal block or the Cam-Lock, that you intend to use. The voltage between the L1, L2 and the L3 terminals should be the same as it was on the generator front panel. The voltage should also be checked between the hot terminals (L1, L2 and L3) and the N to be certain of a balanced voltage output and a solid neutral connection. See the voltage table on page 9 for proper voltage reading in each selector switch position. WHEN USING THE 120/240 VOLT THREE PHASE (DELTA) SYSTEMS BE SURE YOU KNOW WHERE THE HIGH VOLTAGE "WILD" LEG IS. IT MUST BE IN THE SAME LOCATION ON THE GENERATOR SIDE AS IT IS ON THE LOAD SIDE.

### \*\* Notice \*\*

*If for any reason during the check out procedure the voltage and frequency are not correct, depress the STOP/RESET button and correct the problem before proceeding.*

8. Stopping - There are two ways to stop the unit when it is in the manual mode. Pressing the STOP/RESET button will stop the unit immediately. Pressing the AUTO mode button will stop the unit but only after the cool down timers have timed out and there is no remote start signal being sent to the unit.

## E. REMOTE STARTING AND CONNECTION (Standby applications)

1. Complete the manual starting procedure above to ensure the system is set up properly.
2. Ensure the engine control is in the "off" position during installation of the remote start connections.
3. Locate the remote start terminal block. This terminal block is located next to the full power connections, behind the access door on the control panel.
4. Locate the remote start terminals in your remote automatic transfer switch (ATS). The ATS terminal block and wire numbers will vary with each ATS manufacturer. The RP25 requires a contact closure for start.

## WARNING: EQUIPMENT DAMAGE

THE REMOTE "SIGNAL" MUST BE A "DRY" (NON-POWERED) CONTACT CLOSURE. USING A POWER CONTACT WILL CAUSE PERMANENT DAMAGE TO THE ENGINE CONTROL MODULE.

5. For most installations 16-gauge wire is sufficient to handle the control signal. On extremely long runs increase wire size to minimize voltage drop.
6. Locate the neutral and full power output load connection terminal on the generator.
7. Locate and identify the "neutral" and "generator" connections in the automatic transfer switch.
8. Connect the load block to the transfer switch using the proper wire sizes. Refer to the National Electric Code Handbook (NFPA 70) for proper wire type and sizing. Use Table 310-16 for wiring run through conduit and table 310-17 for free air wiring.

Use extreme caution when installing the delta voltage pattern. One power leg of this 3 phase pattern produces 208 volts measured from line to neutral. Be sure to match the location of the generator wild leg to the location of the wild leg on the incoming power service. Failure to do so will cause equipment damage to any 120 volt load incorrectly connected to this line.

9. Connect the neutral to the transfer switch using the same wire size.
10. For isolated neutral operation remove the jumper wire between the ground lug and neutral connection block. Then route a ground lead back to system ground.
11. Ground the Mobile Diesel Generator set using an 8 ft. copper ground rod or other approved grounding system. Connect #4 Awg Copper cable from the ground lug on the generator to the ground rod.
12. Depress the "RUN" button on the RP25 control panel to start the generator set.
13. Check the voltage at the transfer switch. Verify that it matches the incoming power line voltage line-to-line and line-to-neutral on each leg.
14. Check the three phase rotation pattern. Ensure that you have the same rotation, with both the generator and the normal power source.
15. Depress the "STOP" button on the front of the engine control. Let the unit stop and then depress the "AUTO" button. The unit is now in AUTOMATIC mode. Also be sure the "AUTO" light is lighted on the control, this light tells you it is in automatic mode. See control panel layout for additional information.

16. If the transfer switch has a test button use it to test the complete system. The unit should start up and the transfer switch should transfer the load to the generator.
17. Compare the amperage reading from each leg on the generator and ensure that none of the legs is exceeding the nameplate rating on the generator.
18. Upon completion of the test, leave all control mode switches in the "AUTO" position.
19. The system is now ready to start and power the loads should the power fail.

#### F. CONNECTING THE LOADS FOR STAND ALONE OPERATION

**WARNING -ALL WIRING MUST BE DONE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE NFPA 70**

There are three ways the loads may be connected to Mobile Diesel Generator.

1. **FRONT PANEL** - A variety of receptacles have been provided for your convenience on the front panel. The 120 volt receptacles are powered when the voltage selector switch is in the 120/240 single and three phase and 120/208 three phase volt position. The 240 volt receptacles are only usable in the 120/240 volt single and three phase position. In the 120/208 volt three phase position the 240 volt receptacles have only 208 volts at them. See table on page 9 for voltage outputs.
2. **FULL POWER LOAD CONNECTION TERMINAL BLOCK** - For remote connections and connecting load distribution boxes, heavy duty terminal blocks have been provided. These terminal blocks are located on the rear of the unit just below the Engine Control. The neutral and ground are connected together at this panel. For use with an isolated neutral, remove the jumper strap between the neutral connection block and the ground lug. This will isolate the neutral from the ground and allow you single point grounding at a distribution panel. When using these terminal blocks be sure to use wire rated large enough to carry your full load or the full rated load of the generator.
3. **FULL POWER CAM-LOCK CONNECTIONS** - For ease of connecting and disconnecting loads these units have been equipped with Cam-Locks located behind the right hand rear door. See page 8 The same instructions for connection #2 applies. If you need to run a isolated neutral system, the jumper between the neutral and ground must be removed at the terminal block.

4. **GROUNDING THE UNIT** - To comply with current safety standards this generator set must be properly grounded. Ground the Mobile Diesel Generator set by driving an 8 ft. copper ground rod into the earth. Then connect a #4 AWG ground cable from the grounding lug on the generator to the ground rod.

#### G. UNIT STORAGE

Certain precautions must be taken if a Mobile Diesel Generator set is to be stored for a long period of time. The unit must be stored in a dry location to prevent the generator winding from drawing moisture. The unit should also be thoroughly cleaned prior to storage.

For engine storage procedures consult your local Isuzu engine dealer. There are procedures that must be followed in order to prevent engine damage, i.e. cylinder rust and injector deterioration.

#### 50 CYCLE (HZ) OPERATION

With a couple of minor changes these Mobile Diesel Generators are capable of producing 50 Hz power. Two changes must be made:

- A. The engine must be reduced to 1500 RPM governed speed. Consult your local Isuzu Service Center for the proper procedure for reducing the engine speed and setting up the governor to operate at 1500 RPM.
- B. The automatic volt/hertz regulator must also be reset to operate at 50 HZ instead of the standard 60 HZ. Refer to the Stamford generator manual for instructions.

#### MAINTENANCE

The ultimate aim of a preventive maintenance program is to maintain the equipment in optimum condition, for the maximum amount of time during it's useful life. The detection of faults before they develop into major problems will decrease downtime. A regular schedule of cleaning and inspection will help assure trouble-free operation. Personnel responsible for maintenance should set up a schedule for inspection, and cleaning at intervals calculated to keep the equipment in good condition. In making up a schedule, keep the following in mind:

- A. New equipment must be carefully monitored until extended operation has demonstrated that it is performing satisfactorily.
- B. Old equipment requires more frequent inspection (and possibly servicing) than similar equipment that has lower hours
- C. Time spent in cleaning, inspecting and correcting minor defects before they become major troubles saves time in overhaul and repair.

## PREVENTIVE MAINTENANCE

### A. Daily Maintenance Checklist

\*\* Oil level is between the "L" low mark and the "H" high mark on the dipstick

\*\* Fuel tank full of proper grade of diesel fuel

\*\* Water and sediment drained from water separator

\*\* Radiator filled with the proper coolant mixture

\*\* Check air cleaner service indicator. Change the filter element when the red indicator flag is at the raised position

\*\* Inspect for any fluid leaks

\*\* Look for any loose or damaged parts

\*\* Check belts for cracks or frays

\*\* Check trailer hitch and safety chains for fitness

\*\* Check tires for proper pressure

\*\* Check battery for proper fluid level

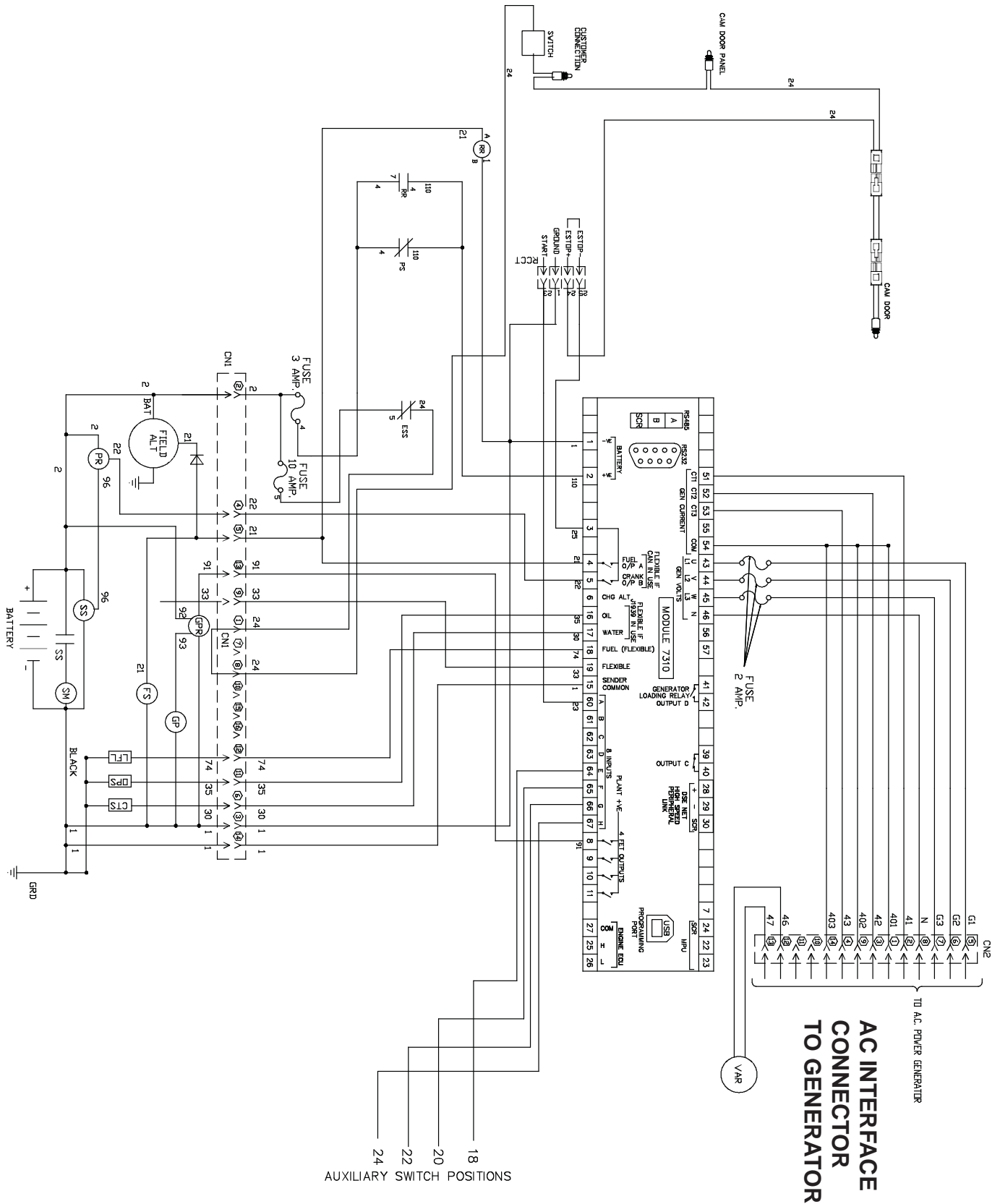
\*\* Check the generator control panel for loose or damaged parts

\*\* Check the unit for general appearance and cleanliness

## DC ELECTRICAL SCHEMATIC LEGEND

AFI	AIR FILTER INDICATOR
ALT	ALTERNATOR
CN1	16 PIN (LARGE CONNECTOR) ENGINE CONTROL HARNESS
CN2	14 PIN GENERATOR HARNESS
CN3	16 PIN (SMALL CONNECTOR) CONTROL PANEL HARNESS
CTS	COOLANT TEMPERATURE SENDER
ESS	EMERGENCY STOP SWITCH
FS	FUEL SOLENOID
GRD	GROUND (CHASSIS OR FRAME)
GP	ENGINE GLOW PLUGS
GPR	ENGINE GLOW PLUGS RELAY(50AMP)
LCL	LOW COOLANT LEVEL
LFL	LOW FUEL LEVEL
OPS	OIL PRESSURE SENDER
RCCT	REMOTE CUSTOMER CONNECTION TERMINALS
RR	RUN RELAY
SM	ENGINE STARTER MOTOR
SS	START SOLENOID
VAR	VOLTAGE ADJUSTMENT RHEOSTAT
PR	PILOT RELAY
PS	POWER SWITCH
IA	AUX INPUT A
IB	AUX INPUT B
IC	AUX INPUT C
ID	AUX INPUT D
IE	AUX INPUT E
OE	AUX OUTPUT E
OF	AUX OUTPUT F
OG	AUX OUTPUT G
ESS R	EMERGENCY STOP RELAY

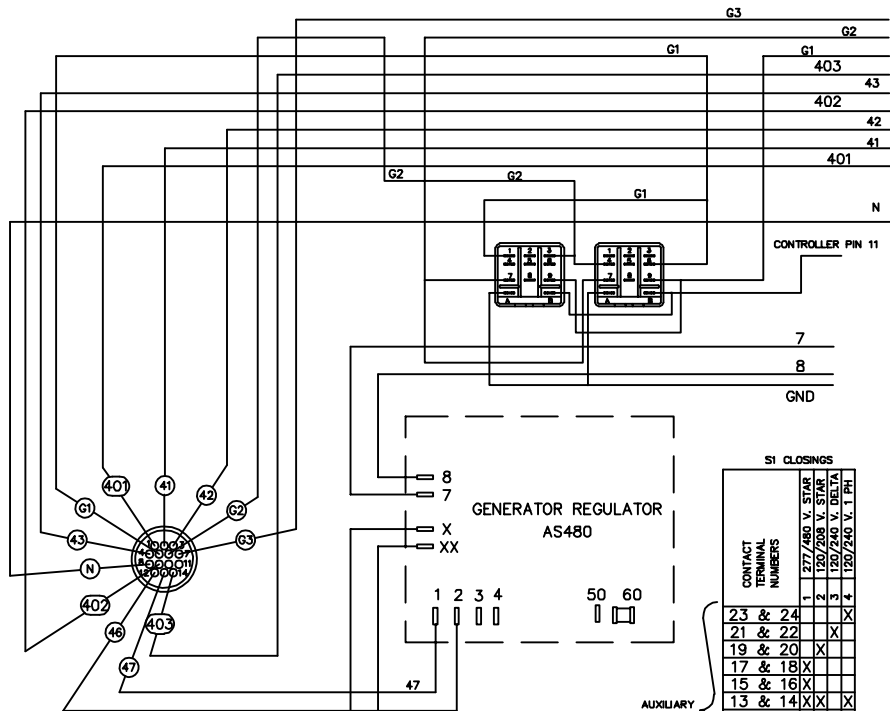
# DC ELECTRICAL SCHEMATIC





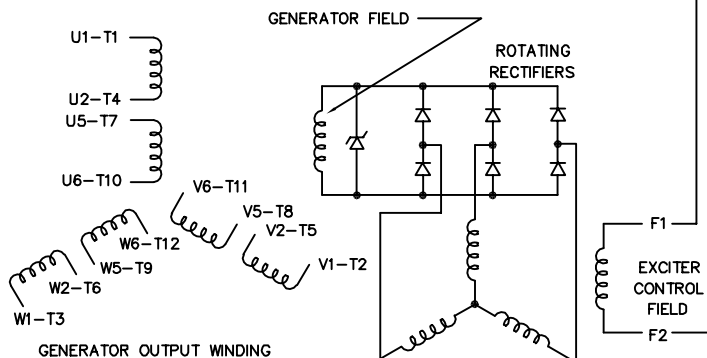
# GENERATOR WIRING

**AC INTERFACE  
CONNECTOR  
TO DSE-7310**

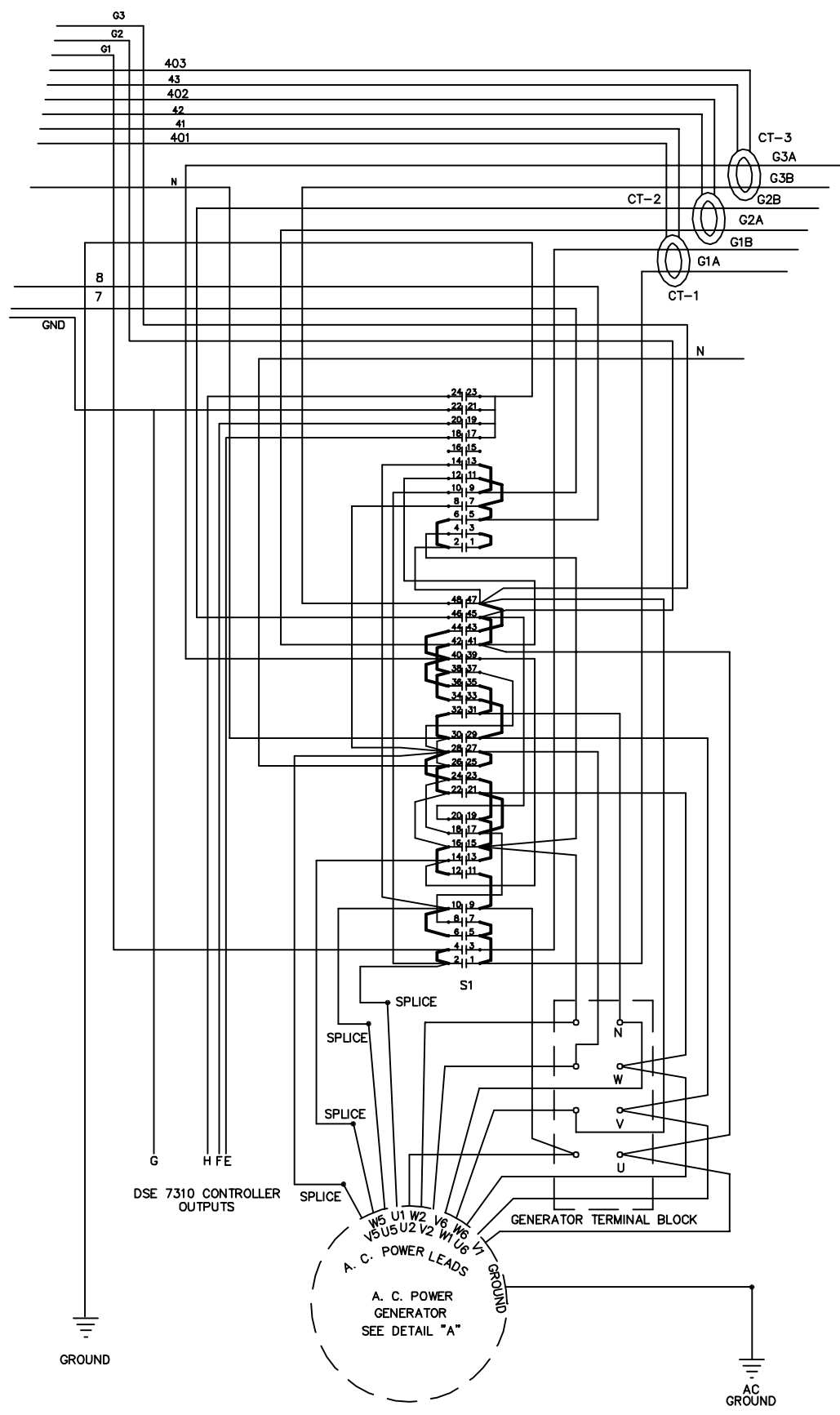


**VOLTAGE  
REGULATOR**

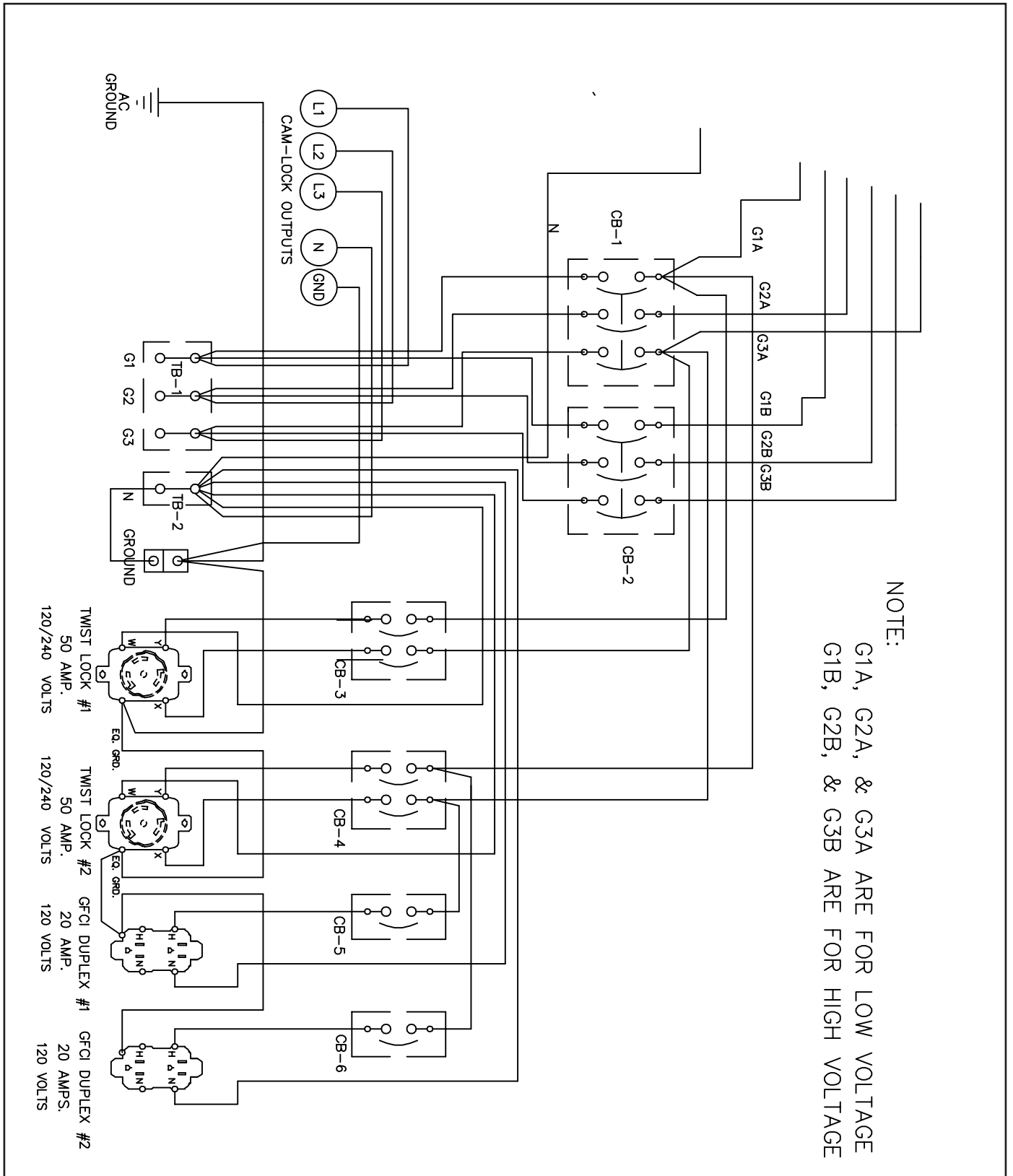
S1 CLOSINGS		CONTACT TERMINAL NUMBERS	1 217/480 V. STAR	2 120/208 V. STAR	3 120/240 V. DELTA	4 120/240 V. T. PH.
23 & 24	X					
21 & 22	X					
19 & 20	X					
17 & 18	X					
15 & 16	X					
13 & 14	X	X	X	X	X	X
11 & 12	X					
9 & 10	X					
7 & 8	X	X	X	X	X	X
5 & 6	X					
3 & 4	X	X	X	X	X	X
1 & 2	X	X	X	X	X	X
47 & 48	X					
45 & 46	X					
43 & 44	X	X	X	X	X	X
41 & 42	X	X	X	X	X	X
39 & 40	X	X	X	X	X	X
37 & 38	X					
35 & 36	X					
33 & 34	X					
31 & 32	X	X	X	X	X	X
29 & 30	X	X	X	X	X	X
27 & 28	X					
25 & 26	X					
23 & 24	X					
21 & 22	X	X	X	X	X	X
19 & 20	X					
17 & 18	X					
15 & 16	X	X	X	X	X	X
13 & 14	X	X	X	X	X	X
11 & 12	X					
9 & 10	X	X	X	X	X	X
7 & 8	X					
5 & 6	X	X	X	X	X	X
3 & 4	X	X	X	X	X	X
1 & 2	X	X	X	X	X	X



# VOLTAGE SELECTOR SWITCH WIRING



# CIRCUIT BREAKER/FULL POWER TERMINAL BLOCK WIRING



# **WINCO INC**<sup>®</sup>

*A Division of **DTE** Dyna Technology Inc*

## **12 MONTH LIMITED WARRANTY**

WINCO, Incorporated warrants to the original purchaser for 12 months or 1000 hours which ever occurs first, that goods manufactured or supplied by it will be free from defects in workmanship and material, provided such goods are installed, operated and maintained in accordance with WINCO written instructions.

WINCO's sole liability, and Purchaser's sole remedy for a failure under this warranty, shall be limited to the repair of the product. At WINCO's option, material found to be defective in material or workmanship under normal use and service will be repaired or replaced. For warranty service, return the product within 12 months or 1000 hours which ever occurs first from the date of purchase, transportation charges prepaid, to your nearest WINCO Authorized Service Center or to WINCO, Inc. at LeCenter Minnesota.

THERE IS NO OTHER EXPRESS WARRANTY.

To the extent permitted by law, any and all warranties, including those of merchantability and fitness for a particular purpose, are limited to 12 months or 1000 hours which ever occurs first, from date of purchase. In no event is WINCO liable for incidental or consequential damages.

Note: Some states do not allow limitation on the duration of implied warranty and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply in every instance. This warranty gives you specific legal rights which may vary from state to state.

WINCO reserves the right to change or improve its products without incurring any obligations to make such changes or improvements on products purchased previously.

### EXCLUSIONS:

WINCO does not warrant Engines. Engines are covered exclusively by the warranties of their respective manufacturers, see enclosed warranties.

WINCO does not warrant Batteries, or Other Component Parts that are warranted by their respective manufacturers.

WINCO does not warrant modifications or alterations which were not made by WINCO Inc.

WINCO does not warrant products which have been subjected to misuse and/or negligence or have been involved in an accident.

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