



SCR200 SERIES INDUSTRIAL BATTERY CHARGERS INSTALLATION & OPERATING INSTRUCTIONS



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SCR200 SERIES INDUSTRIAL BATTERY CHARGERS

1. IMPORTANT OPERATING AND SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

- a) Before using the battery charger, read all the instructions in addition to the CAUTION, WARNING, and DANGER markings on the charger, battery, and all the associated equipment.
- b) Do not touch un-insulated parts of the DC output connector or the battery terminals, as there is a possibility of electric shock.
- c) Connect or disconnect the battery plug only when the charger output is off. **ALWAYS press the PAUSE pushbutton before unplugging the battery to prevent arcing or burning.**
- d) If the battery is unplugged during charging, the charger will indicate "F18". To restart the charger, plug in the next battery. Do not connect the next battery before you see indication "- - -" or "F18".
- e) Only qualified personnel should operate or service this equipment.
- f) De-energize all AC and DC power connections before servicing this unit. If injury does occur, apply the prescribed treatment for electrical shock and obtain medical attention immediately.
- g) The charger is NOT for outdoor use. Do not expose the charger to rain or snow.
- h) This charger is factory set to charge lead-acid batteries only. The operating environment should not contain any materials that may cause corrosion or contamination that would degrade the performance of a charger.
- i) Do not operate this unit if it has received a sharp blow, been dropped or otherwise damaged. Take it to a qualified GNB Industrial Power service center.
- j) Do not disassemble the charger. Have the charger examined by a GNB Industrial Power service representative or local qualified service facility. Incorrect re-assembly of the charger may result in an explosion, electric shock or fire.
- k) The charger profile is set at the factory for a charger DC cable length of 9 ft and a battery DC cable length of 25 in. If DC cable lengths are adjusted, please contact your local GNB Industrial Power service representative.

2. INTRODUCTION

The **GNB**[®] SCR200 battery chargers are fan cooled, solid state, microprocessor controlled, SCR regulated chargers designed to make battery charging simple. They are factory set to charge **ELEMENT**[®] valve-regulated lead-acid batteries, but a GNB Industrial Power service representative may configure it to charge **GNB**[®], **Tubular-HP**[®], or **Liberator**[®] flooded lead-acid batteries. The charger has a comprehensive self-checking diagnostic program to control all charger functions, monitor the quality of charge and check its own safety conditions. Large easy to read LEDs, two button keypad and LED display report on the charger and battery status.

3. RECEIVING CHARGER

Examine the charger thoroughly before using, to make sure that no parts have been loosened or damaged during shipment. Check the contents of the package against the delivery slip before disposing of the shipping package. If any shipping damage or partial loss is found, file a claim with the carrier without delay and take any necessary steps to protect your rights. Before installing, check that the charger nameplate data corresponds to the packing slip and to the model specified on the original sales order. The SCR200 chargers are delivered on skids for easy handling using a forklift truck.

4. LOCATION AND INSTALLATION OF CHARGER

Proper installation is important in order to achieve good charger performance and long trouble free operation and to prevent damage to the charger and batteries. The charger should be located in a clean, cool, normal ambient room temperature (between +32°F/0°C and 104°F/40°C), dry and well-ventilated area. In order to permit free air flow for convection cooling allow four inches minimum between the charger and any wall, six inches from other equipment, and never store anything beneath or on top of the charger.

5. STACKING

The following recommendations should be taken into consideration when stacking these units:

- a) The base unit should be secured to the floor or a solid base using appropriate bolts and with accordance to local building codes and regulations.
- b) These units can be stacked to a maximum 3 high.
- c) If a lifting sling is used, the sling should be placed under the unit where the base plate is located to avoid damage to the units.

Lifting Sequence is as follows: -

- a) Secure the base unit to the floor or solid base. The bolts can be accessed and secured from the underside of the unit at the front and rear or from inside the unit where the large holes are located directly above mounting holes (see appendix G

for mounting hole locations). When accessing the mounting holes from the inside, it is recommended you use a long handle hexagon key or screwdriver with the hexagon key inserted. This will allow you to go through the base plate to the bolts, which are located on the flange.

- b) Remove the bolts from the top cover of the base unit, but do not discard these, as they will be required to fix the two units together.
- c) Use an appropriate lifting sling to lift the second unit on to the base unit, inch the second unit over the base unit and align the holes before resting the second unit on top.
- d) Secure the two units together using the bolts removed from the top cover of the base unit. Use the access between the two units or inside the second unit using the tools as recommended above.
- e) If stacking three high, use the above procedure for stacking the third unit.

WARNING: THESE PROCEDURES MUST BE FOLLOWED EXACTLY TO AVOID INJURY OR RISK OF ELECTRIC SHOCK.

WARNING: TO REDUCE THE RISK OF FIRE, INSTALL BATTERY CHARGER ON A FLOOR OF NON-COMBUSTIBLE MATERIAL SUCH AS STONE, BRICK, CONCRETE OR METAL. IF THIS IS NOT AVAILABLE, A FLOOR PLATE OF AT LEAST 1.43mm GALVANIZED OR 1.6mm UNCOATED STEEL EXTENDED AT LEAST 150mm BEYOND THE EQUIPMENT ON ALL SIDES MUST BE INSTALLED.

6. AC ELECTRICAL SUPPLY

The charger must be connected to either a single phase or three phase, 60 Hertz ($\pm 2\%$) AC power source. Three phase chargers cannot be powered with a single phase source.

The following transformer options are available:

TABLE 1 – TRANSFORMER OPTIONS

Single phase	Three phase
120/208/240 VAC 60Hz*	208/240/480 VAC, 60Hz*
208/240/480 VAC, 60Hz*	240/480 VAC, 60Hz*
240/480 VAC, 60Hz*	480 VAC, 60Hz
600 VAC, 60Hz	600 VAC, 60Hz

*Only the AC input wire configuration for multi-input chargers can be changed. Follow Figure 1 (page 6) for single-phase input with 120/208/240 VAC transformers, Figure 2 (page 7) for single-phase input with 208/240/480 transformers or Figure 3 (page 8) for three-phase input transformers.

Use the 208/240/480 diagram for the 240/480 transformers. The 208 tap will be eliminated from the charger as a selection.

A qualified electrical contractor should perform this adjustment.

6.1 BRANCH CIRCUIT PROTECTION

The charger comes with an internal supplementary protective device rated to accommodate the highest possible current and voltage for that model.

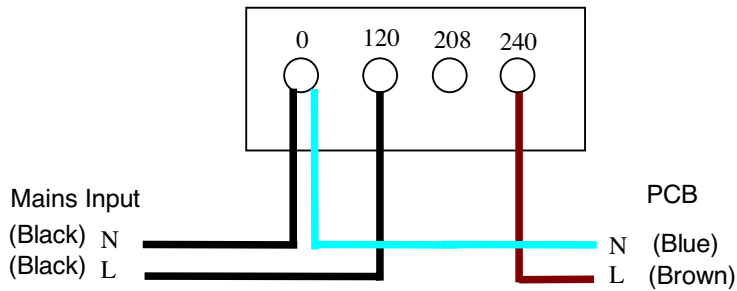
CAUTION: TO REDUCE THE RISK OF FIRE, USE ONLY ON CIRCUITS PROVIDED WITH BRANCH CIRCUIT PROTECTION CONSISTENT WITH THE CURRENT INDICATED ON THE FRONT PANEL-RATING LABEL AND IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ANSI/NFPA 70.

FIGURE 1: 120/208/240 VAC, SINGLE PHASE INPUT

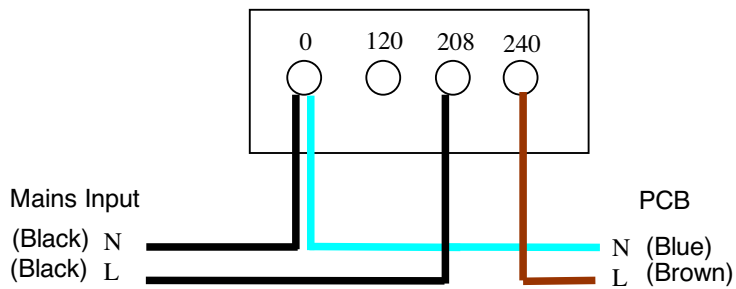
WARNING: IMPROPER WIRE AND JUMPER CONNECTION MAY CAUSE SEVERE DAMAGE TO THE CHARGER AND BATTERY

NOTE: Live connection 'L' Must be connected to the breaker. The mains input are the only user configurable connections. PCB connections must **NOT** be altered from factory setting.

120 VAC 60Hz CONFIGURATION (120/208/240VAC INPUT)



208 VAC 60Hz CONFIGURATION (120/208/240VAC INPUT)



240VAC 60Hz CONFIGURATION (120/208/240VAC INPUT)

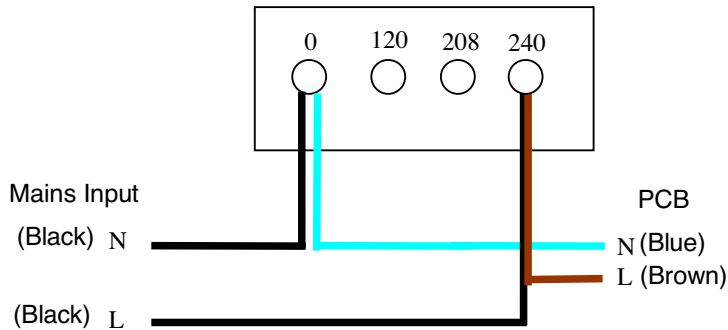
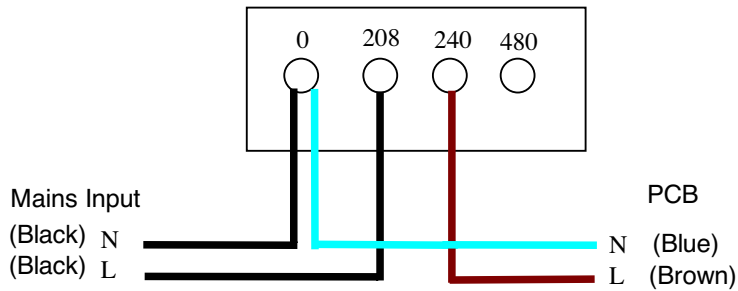


FIGURE 2: 208/240/480 VAC, SINGLE PHASE INPUT

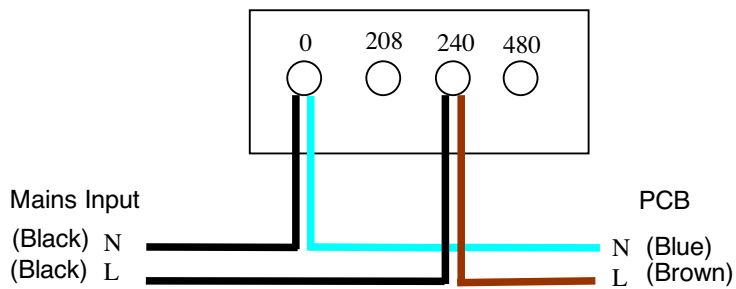
WARNING: IMPROPER WIRE AND JUMPER CONNECTION MAY CAUSE SEVERE DAMAGE TO THE CHARGER AND BATTERY

NOTE: Live connection 'L' Must be connected to the breaker. The mains input are the only user configurable connections. PCB connections must **NOT** be altered from factory setting.

208 VAC 60Hz CONFIGURATION (208/240/480V INPUT)



240 VAC 60Hz CONFIGURATION (208/240/480V INPUT)



480 VAC 60Hz CONFIGURATION (208/240/480V INPUT)

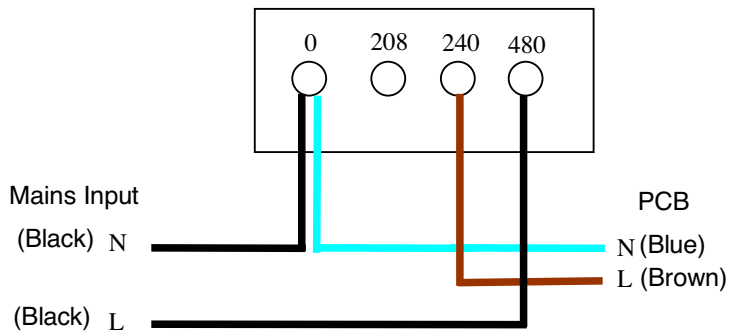
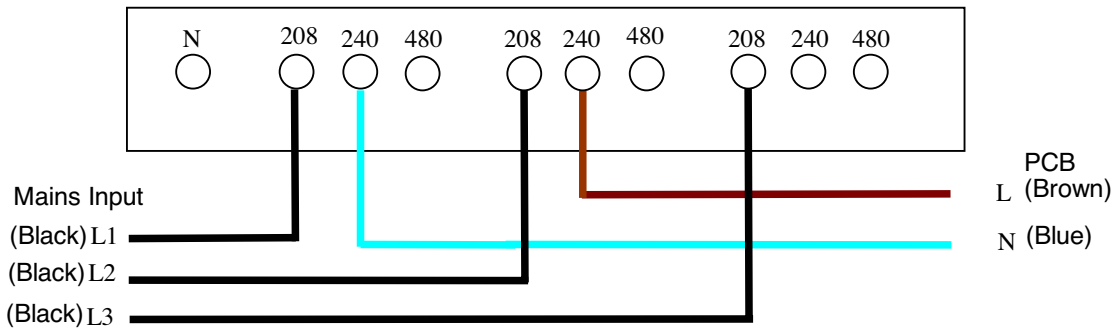


FIGURE 3: 208/240/480 VAC, THREE-PHASE INPUT

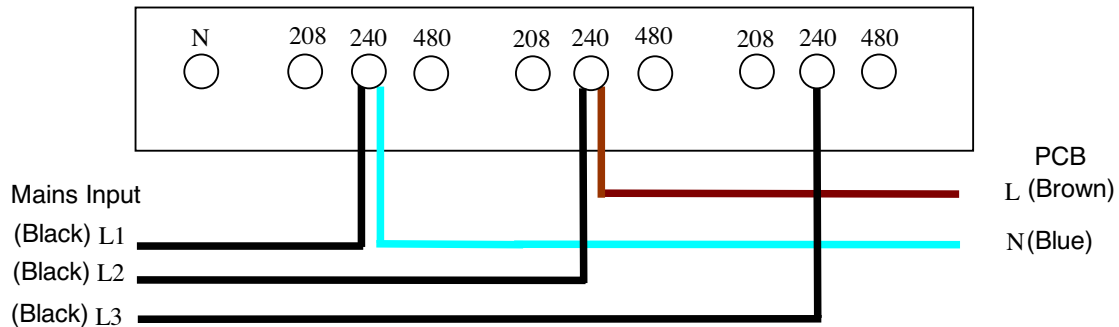
WARNING: IMPROPER WIRE AND JUMPER CONNECTION MAY CAUSE SEVERE DAMAGE TO THE CHARGER AND BATTERY

NOTE: PCB connections must **NOT** be altered from factory setting.

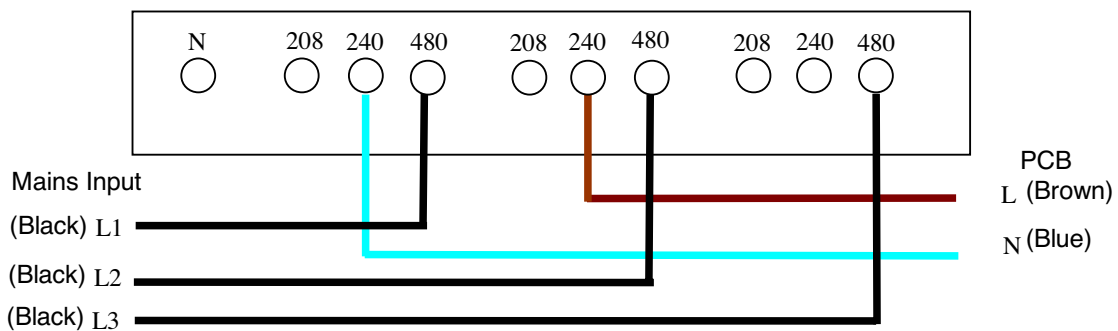
208VAC 60 Hz CONFIGURATION (208/240/480V INPUT)



240VAC 60 Hz CONFIGURATION (208/240/480V INPUT)



480VAC 60 Hz CONFIGURATION (208/240/480V INPUT)



6.2 AC VOLTAGE CONNECTIONS

To connect the input AC voltage, route the AC conduit through the knockout hole provided. Continue the AC wiring to the breaker terminals L1 (N) and L2 (L) (single phase input) or L1, L2, and L3 (three phase input). For proper connection, torque the screws to approximately 25 inch-pounds.

6.3 GROUND CONNECTION

It is a requirement to ground the chassis while the charger is connected to AC power. The charger comes with a threaded M6 hole, clearly marked on the chassis. To ensure good continuity, keep the contact area clean.

WARNING: DO NOT OPERATE THE UNIT WITHOUT PROPER GROUNDING. IMPROPER GROUNDING CAN RESULT IN THE RISK OF AN ELECTRIC SHOCK.

CAUTION: USE MINIMUM 75°C WIRING FOR SUPPLY CONNECTIONS. GROUND THE CHARGER PROPERLY USING THE THREADED M6 HOLE (GND) PROVIDED. USE COPPER-CLAD ALUMINUM, ALUMINUM OR COPPER CONDUCTORS ONLY.

After electrical connection is completed, the charger is ready for operation.

7. DC OUTPUT

The DC charging cable has a commonly used battery plug or receptacle. The polarity of the charger plug must be the same as the battery connector. The BLACK DC cable must be connected to the battery negative terminal (-) and the RED DC cable must be connected to the battery positive terminal (+). The charger will not operate in a reversed polarity condition. The DC output fuse is a "fast-acting" fuse used to protect the power semiconductors of a charger.

NOTE: Use only identical replacement fuses available from your GNB Industrial Power service representative. The DC fuse must be replaced with a fast acting fuse capable of protecting semiconductors. See Appendix C and D for correct fuse sizes.

8. FAULT AND DISPLAY CODES

Refer to **Appendix A and B** (on pages 16 and 17) for a complete list of fault codes.

9. OPTIONS

9.1 JIC SWITCH ASSEMBLY

All SCR200 battery chargers can come with a factory installed JIC switch assembly option for extra operator protection. In the "OFF" position, the door can be opened but only AC power at the input of the switch is present while everything downstream is dead. In the "ON" position, AC power is supplied to the charger but the door cannot be opened.

9.2 MOMENTARY REMOTE STOP OPERATION

The SCR200 charger has a complete remote control option, which can be factory installed or field retrofitted. Contact your local GNB Industrial Power representative for more details.

10. SCR200 STANDARD CHARGER OPERATION

CHARGE CONDITION	DISPLAY DEFAULT	FUNCTION BUTTON DISPLAY SELECTION	LED
I1	A	A, V, Ah, t, Ph	Y*
CONSTANT VOLTAGE	A / #StSt	A, V, Ah, t, Ph	Y
I2	A	A, V, Ah, t, Ph	Y
COOL DOWN PERIOD	Cool / rt	A, V, Ah, t, tr	G*
TERMINATION	rEdy	A, V, Ah, t, tr	G
TERMINATION/ FAULT CODE	rEdy / F	A, V, Ah, T, tr	R*, G
REFRESH CHARGE	A / rEfr	A, V, Ah, t, tr	G, Y
SETTING EQUALISE	EqAL	for 5 seconds then default display	Charge stage
EQUALISE CHARGE	A / EqAL	A, V, Ah, t, tr	G*, Y
AUTO BALANCE	StSt / A StSt / V	A, V, Ah, t, tr	G
Lobt CHARGE PERIOD	Lobt / A	A, V, Ah, t	Y*
Lobt OFF PERIOD	Lobt / V	A, V, Ah, t	
CRITICAL FAULT CODE	F		R
NONE CRITICAL FAULT CODE	F	Charge continues	R*
DELAYED START OF CHARGE	dELy / rt		

A = Output current
V = Volts per cell
Ah = Returned ampere hours
t = Time of recharge
F = Fault code, display will alternate with the two codes
Ph = Phase of charge i.e. 1, 2 and 3
StSt = Smart start
Cool = Cool down period
LoBt = low battery override
/ = Display will alternate with the two-displayed information
rt = Remaining time
tr = Termination method, tr1 = dv/dt, tr2 = I2 entered 3.5 hour timer operated
tr3 = Constant voltage stage entered 3.5 hour timer operated, tr4 = di/dt,
tr5 = Smart Start, tr6 = Autobalance timeout

* = flashing LED.

NOTE: In LoBt, StSt, Equalise and Termination charge function display will only be displayed for 10 seconds, not permanently.

Display if due to smart start.

R: Red = Fault, flashing red is a none critical fault.
Y: Yellow = Current flowing, flashing yellow when < 2.37VPC.
G: Green = charge complete.

11. CHARGER FUNCTIONAL DESCRIPTION

11.1 LED Descriptions

LED	Description
Yellow Flashing	High Rate Current
Yellow Solid	80% Charged
Green Flashing	Cool Down
Green Solid	Charge Complete
Red	Fault – See page 16 for codes

11.2 DISPLAY

The display by default shows the charging current during the charge cycle. The display may be changed to show voltage, time or Amp-Hours by pressing the **FUNCTION** button. The display may show additional messages as the charge cycle progresses or a fault occurs.

11.3 PAUSE PUSH BUTTON

This **PAUSE** push button will halt the charge cycle. The battery can then be safely unplugged for up to 10 minutes. If the battery is still connected after this time, the charger will continue with the present charge cycle.

11.4 SMART START STAGE

The charger begins the charge cycle at the high rate current and continues until the gassing voltage is reached. If the time to reach the gassing voltage level is equal to or less than 2 minutes, then the charge cycle will be suspended and a battery voltage test to determine if the battery was in a sulphated or heavily discharged condition will be instigated.

During the suspension, the decay in battery voltage is monitored. At this time, the display will show VPC only. If the battery voltage decays quickly the battery is determined to be sulphated and the charger will continue to Stage 1 High Rate or I1 current level with a 'sulphated battery' fault set. If the battery voltage does not fall quickly, the charger will terminate and Auto Balance stage will be entered.

If the time to reach the constant voltage level is greater than 2 minutes and less than 45 minutes, the gassing voltage is maintained until the current level is equal to the Finish Rate or I2 current level. Charge will then terminate and Auto Balance stage will be entered.

When the constant voltage stage U1 is entered then the display shows 'StSt' alternating with current.

When the Auto Balance stage is entered, the green LED will be illuminated and the display will show 'StSt'. The **FUNCTION** button can select charge information.

11.5 AUTO BALANCE

The charger maintains a current equal to 19% of the maximum output that is activated by voltage, on at 2.15VPC and off at 2.35VPC with a time limit of 2 hour if 2.35VPC is not reached. The **Liberator®** profile is 22% of maximum current output, on at 2.2VPC and off at 2.4VPC, Time limit of 2 hours.

When current is flowing, amps will be displayed and the yellow LED will be illuminated. When no current is flowing, the display will show 'StSt'. The **FUNCTION** button can select charge information. The green LED will remain illuminated.

11.6 EQUALIZE STAGE

Equalize charge provides 19% of maximum current for 3.5 hours. The Liberator profile is 22% of the maximum current for 12 hours.

The following table summarizes the action taken when Equalize is set manually during different charge modes...

Charge Mode	Action
During recharge	Equalize active after termination
After charge termination	Equalize active immediately
Smart Start termination	Equalize active after termination

11.7 EQUALIZE PUSHBUTTON

Equalize charge can be enabled/disabled, when the **FUNCTION** button is depressed > 5 second at anytime whilst a battery is connected. Only one equalize charge per recharge cycle is permitted. The equalize charge can be set in the service mode to be initiated at 'x' number of cycles. X = 0 to 255.

CAUTION: DO NOT EQUALIZE MORE OFTEN THAN REQUIRED BY THE CONDITION OF THE BATTERY, AS SPECIFIED IN THE BATTERY MAINTENANCE INSTRUCTIONS. EXCESSIVE EQUALIZING MAY DAMAGE THE BATTERY.

11.8 LOW BATTERY OVERRIDE/RECOVERY

11.8.1 CONFIGURATION

There is the ability to manually override the low 'Incorrect Battery' threshold of 1.70 VPC, down to a minimum of 1.00 VPC - the level at which the charger will recognize a battery connection. This is achieved by holding the **FUNCTION** push button for 5 seconds when the incorrect battery fault has been detected.

11.8.2 OPERATION

If 'Low Battery Override' has been enabled and a battery (voltage > 1.00 VPC) is connected to the charger, the charger will pass current at 75% of maximum current output the charger rated output current level.

If less than 3.0VPC, current will flow for 5 minutes and the charge will be suspended for 5 minutes. The cycle is repeated until the battery voltage is greater than 1.70 VPC at the end of the 5-minute rest period.

If the battery voltage is greater than 1.70 VPC at the end of the 5-minute rest period, the battery recovery mode will cease and charge will start from stage 1 with smart start disabled.

If 3.0 VPC is reached within the 5 minutes of charge, the charge will be suspended equal to the 'on' time, maximum of 5 minutes. During this period the display will show 'Lobt'. During the 5-minute off period the display will show the battery volts per cell alternating with 'Lobt'.

11.9 DELAYED START OF CHARGE

A charge delay can be set in the service mode. The time is 0 to 48 hours in 1-hour steps; this is permanently set for every charge cycle.

The display will show 'dELy' and alternate with the time remaining before charge starts.

11.10 BATTERY COOLDOWN OPERATION STAGE

The cool down period begins after charge termination and is equal to the time spent on charge.

During the cool down period, the green LED will flash and the display will show 'Cool' alternating with the remaining cool down time. The **FUNCTION** button can select charge information and display this momentarily.

Once the cool down period is complete, the charger will illuminate the green LED and enter the refresh stage.

If the battery is disconnected before completion of the cool down period, the countdown will cease and the display will show F19.

If equalize is activated during cool down, the cool down timer will be suspended until Equalize is complete, whereupon the cool down timer countdown will resume.

11.11 REFRESH CHARGE STAGE

The Refresh Charge activates every 24 hours after the standard charge cycle, if the battery remains connected to the charger. The Refresh Charge stage lasts for 10 minutes and consists of Finish Rate or 19% of the maximum output current.

The 24-hour refresh delay starts after termination of recharge or Equalize. During the refresh off period the display will show 'rEdy'. The green LED will remain illuminated. The **FUNCTION** button can select charge information.

During the 10-minute Refresh Charge period the display will toggle between 'rEFr ' and the output current. The yellow LED is illuminated and the green LED will remain illuminated and the **FUNCTION** button can select charge status.

The charger will remain in the Refresh Charge stage until the battery is disconnected.

11.12 CHARGE TIME

The amount of time a battery charges will vary depending on the depth of discharge (DOD). Once the battery has reached 80% charged, the cycle will be terminated after 3.5 hours or less if terminated by dV/dt . Normal charge cycles will average about 8 hours total.

11.13 INCORRECT BATTERY LIMITS

Incorrect battery detection limits will be < 1.70 VPC and > 2.25 VPC (off charge). If the battery voltage comes within this window the charger will automatically commence charging.

11.14 CHARGE CYCLE RESET

A charge cycle is reset when a battery is disconnected and a battery is reconnected.

11.15 AC POWER FAILURE

If the AC power fails during a charge cycle, the charger will resume the cycle at the point of termination as soon as AC power is restored.

12. MAINTENANCE

The charger requires minimum maintenance. ENSURE THE CHASSIS IS SECURELY GROUNDED per the local/federal Electrical Code. Do not allow excessive dust to accumulate on the components inside. Blow out with clean compressed air when necessary. The chargers are designed with a breaker and fuse for the AC input and DC output respectively. Should this fuse fail or breaker trip, the cause must be determined before they are corrected or replaced. Never replace the fuse or breaker with one of a higher capacity than the one originally fitted.

APPENDIX A – FAULT CODES

CODE	STATUS	DESCRIPTION
F01	<i>N</i>	Over discharged battery (<1.90vpc after 30 seconds of charge)
F02	<i>N</i>	Deep discharged battery (<1.90vpc after 30 seconds of charge > 1.90vpc)
F03	<i>N</i>	Sulphated battery
F04	<i>S</i>	Charger over heating
F05	<i>S</i>	Mains failed during charge
F06	<i>R</i>	No output current
F07	<i>C</i>	Incorrect battery < 1.70
F07 (+Y led on)	<i>C</i>	Incorrect battery > 2.25
F09	<i>C</i>	Bulk charge time-out
F10	<i>C</i>	Second stage time-out (Profile Dependant)
F11	<i>C</i>	Incorrect Mains Frequency
F12	<i>C</i>	Control hardware (MCU)
F13	<i>S</i>	Thermistor fault
F16	<i>S</i>	Battery overheating (if temp probe fitted)
F17	<i>C</i>	Auto balance charge time-out
F18	<i>C</i>	Battery disconnected without pausing charge
F19	<i>C</i>	Battery disconnected in cool down period

Key: -

C = critical fault ⇒ charge stopped ⇒ fault code displayed permanently

S = suspend fault ⇒ charge suspended until criteria fulfilled ⇒ fault code displayed permanently

R = retry fault ⇒ charge retries after 20 seconds ⇒ fault code display alternating with standard display

N = non-critical fault ⇒ charge continues ⇒ fault code display alternating with standard display

APPENDIX B – SCR200 TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE	EXPLANATION / ACTION
No Display	No AC Power	Check Input Power. Check Breaker. Mains fuse on Control Board
F01	Deeply Discharged Battery	Battery Voltage less than 1.9 volts per cell initially but rose above this level within the first minute. Check battery condition and Equalize.
F02	Over discharge	Battery less than 1.9 volts per cell after the first minute of charge. Check battery condition and Equalize
F03	Sulphated Battery	Make sure your battery gets a full charge every cycle. Check battery condition and Equalize.
F04	Charger Overheating	Check Fan for operation on initial power up. Ensure adequate ventilation. Contact your local GNB Industrial Power representative.
F05	Mains Failure	Electrical Supply failure during charge. (Power Cut)
F06	No Output Current	Check DC Fuse, SCRs. Connection to Battery.
F07	Incorrect Battery	Make sure the battery voltage matches the charger voltage.
	Low Voltage <1.70 vpc	Check battery voltage with a voltage meter. Make sure battery voltage matches charger. Battery may require servicing.
	High Voltage >2.25 vpc	Check battery voltage with a voltage meter. Make sure battery voltage matches charger.
F09	Battery Failure	Battery did not reach gassing volts within the time limit. Check battery for low voltage. Confirm charger capacity is correctly matched to battery. Check battery condition. Contact your local GNB Industrial Power representative.
F10	Second Stage Time-Out	I2 limit not reached within time limit. Check battery condition. Contact your local GNB Industrial Power representative.
F11	Incorrect Mains Frequency	Check the mains supply.
F12	Board Failure	Contact your local GNB Industrial Power representative.
F13	Temperature Sensor Failure	Contact your local GNB Industrial Power representative.
F17	Auto Balance Stage Time Out	Check battery condition.
F16	Battery Overheating	Check battery for High Temperature. Allow battery to cool. Check battery condition. Confirm charger capacity is correctly matched to battery
F18	Battery Disconnection	Press the PAUSE button before disconnecting the battery.
F19	Battery Disconnection in Cool Down	Allow the battery to cool before use.

Charger Output Current (Amps)	DC Fuse Rating (Amps) (LET/LMT)
40	63
75	100
95	125
115	180
135	180
150	200
165	200
185	250
225	250
265	355

APPENDIX C – SINGLE PHASE TECHNICAL DATA

SINGLE PHASE FLX or SCR Model Numbers	Amp Hour	DC Volts	DC Amps	MAXIMUM AC AMPS (RMS)					SHIPPING DATA			
				120	208	240	480	600	Cabinet Size	WEIGHT		
				VAC	VAC	VAC	VAC	VAC		Lbs	KG	
200-06-260S1	260	12	40	11.6	6.7	5.8	2.9	2.3	M4	79	36	
200-06-475S1	475	12	75	21.0	12.5	10.8	5.4	4.3	M4	97	44	
200-06-600S1	600	12	95	28.0	16.2	14.0	7.0	5.6	M4	101	46	
200-06-865S1	865	12	135		22.6	19.6	9.8	7.8	M4	125	57	
200-06-965S1	965	12	150		25.2	21.8	10.9	8.7	M4	154	70	
200-09-475S1	475	18	75		16.9	14.6	7.3	5.8	M4	114	52	
200-09-600S1	600	18	95		21.5	18.6	9.3	7.4	M4	119	54	
200-09-865S1	865	18	135		30.5	26.4	13.2	10.6	M4	143	65	
200-09-965S1	965	18	150		33.9	29.4	14.7	11.8	M4	178	80	
200-12-260S1	260	24	40	19.7	11.3	9.8	4.9	4.0	M4	95	43	
200-12-475S1	475	24	75		21.2	18.4	9.2	7.4	M4	134	61	
200-12-600S1	600	24	95		27.0	23.4	11.7	9.4	M4	145	66	
200-12-750S1	750	24	115		32.6	28.2	14.1	11.3	M4	163	74	
200-12-865S1	865	24	135		38.3	33.2	16.6	13.3	M4	169	77	
200-12-965S1	965	24	150		42.5	36.8	18.4	14.7	M4	198	90	
200-18-260S1	260	36	40		16.0	13.8	6.9	5.5	M4	136	62	
200-18-475S1	475	36	75		30.0	26.0	13.0	10.4	M4	158	72	
200-18-600S1	600	36	95		37.9	32.9	16.4	13.1	M4	163	74	
200-18-750S1	750	36	115		45.9	39.8	19.9	15.9	M5	216	98	
200-18-865S1	865	36	135			46.6	23.3	18.7	M5	238	108	
200-24-260S1	260	48	40		20.6	17.8	8.9	7.2	M5	132	60	
200-24-475S1	475	48	75		38.6	33.4	16.7	13.4	M5	198	90	
200-24-600S1	600	48	95		48.9	42.4	21.2	16.9	M5	242	110	

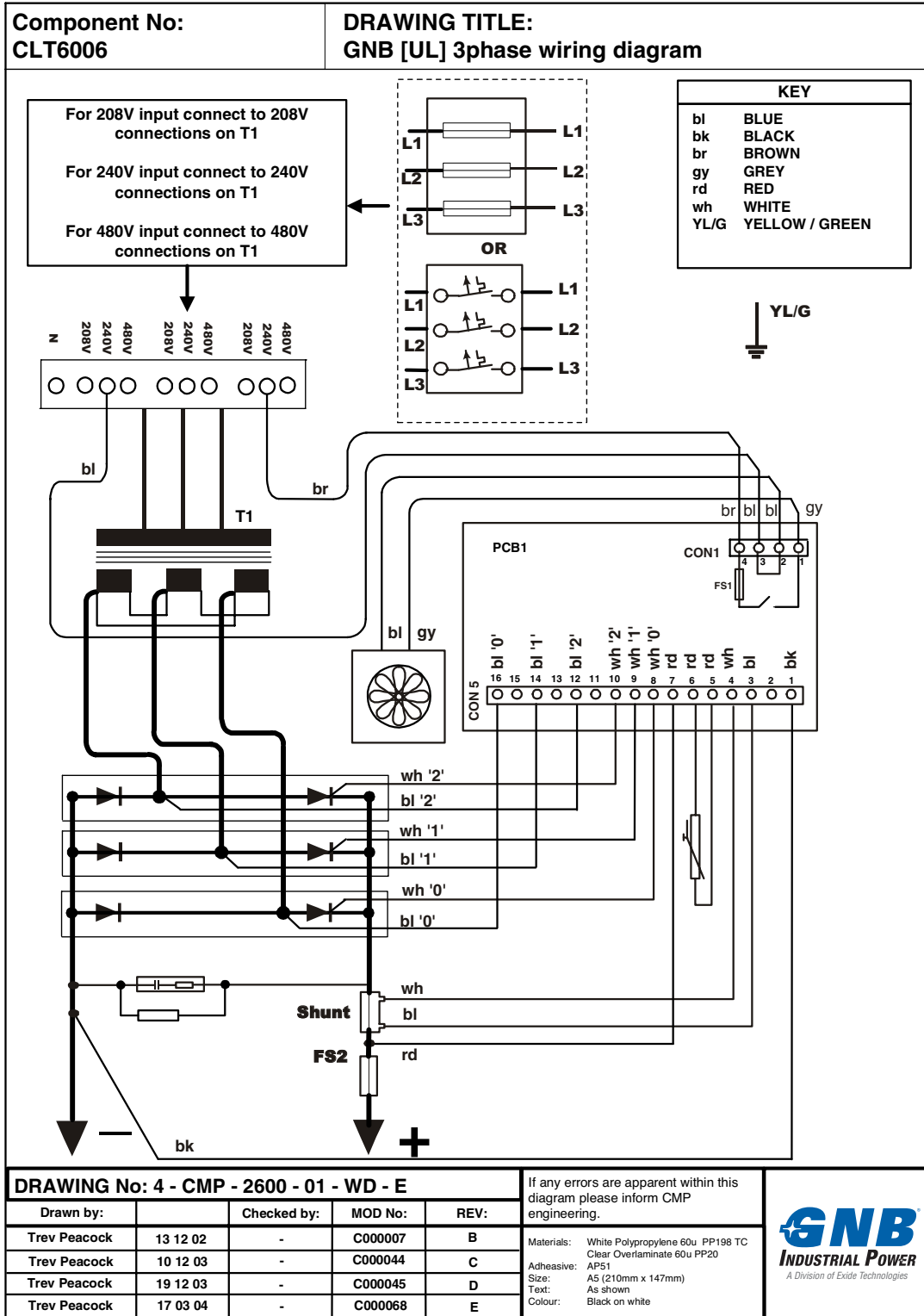
*DC FUSE MUST BE A FAST ACTING FUSE CAPABLE OF PROTECTING SEMICONDUCTORS.

APPENDIX D - THREE PHASE TECHNICAL DATA

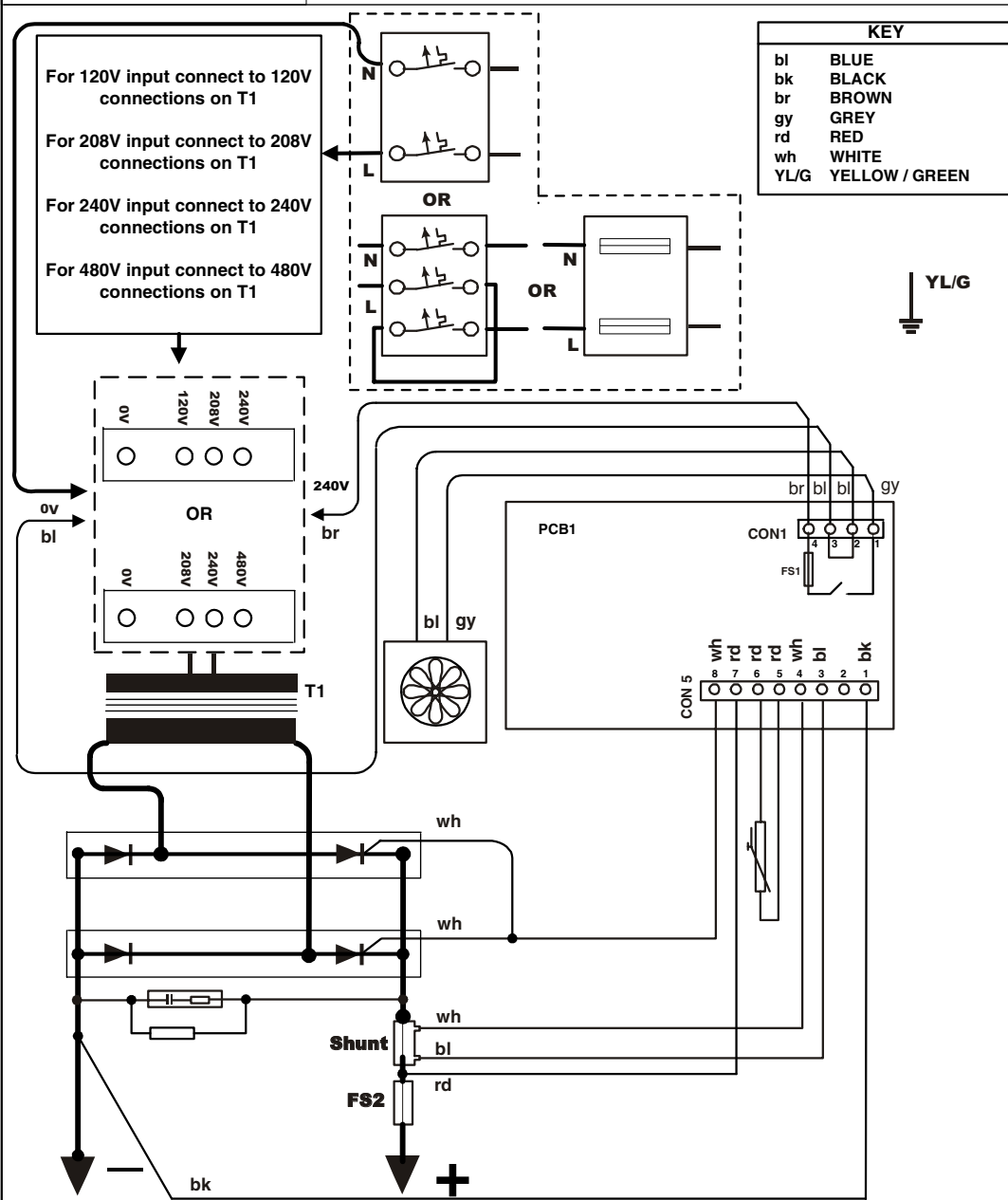
THREE PHASE FLX or SCR Model Numbers	Amp Hour	DC Volts	DC Amps	MAXIMUM AC AMPS (RMS)					SHIPPING DATA		
				120	208	240	480	600	Cabinet Size	WEIGHT	
				VAC	VAC	VAC	VAC	VAC		Lbs	Kg
200-06-475T1	475	12	75		6.0	5.2	2.6	2.1	M4	101	46
200-06-600T1	600	12	95		7.6	6.6	3.3	2.6	M4	101	46
200-06-750T1	750	12	115		9.2	8.0	4.0	3.2	M4	123	56
200-06-865T1	865	12	135		10.9	9.4	4.7	3.8	M4	132	60
200-06-965T1	965	12	150		12.9	11.2	5.6	4.5	M4	143	65
200-06-1050T1	1050	12	165		13.8	12.0	6.0	4.8	M4	163	74
200-06-1200T1	1200	12	185		15.0	13.0	6.5	5.2	M5	246	112
200-06-1450T1	1450	12	225		18.2	15.8	7.9	6.3	M5	299	136
200-12-475T1	475	24	75		11.5	10.0	5.0	4.0	M4	134	61
200-12-600T1	600	24	95		14.5	12.6	6.3	5.0	M4	145	66
200-12-750T1	750	24	115		17.6	16.2	7.6	6.1	M4	145	66
200-12-865T1	865	24	135		20.6	17.8	8.9	7.1	M4	180	82
200-12-965T1	965	24	150		22.6	19.6	9.8	7.8	M5	238	108
200-12-1050T1	1050	24	165		24.9	21.6	10.8	8.6	M5	238	108
200-12-1200T1	1200	24	185		27.9	24.2	12.1	9.7	M5	288	131
200-12-1450T1	1450	24	225		33.9	29.4	14.7	11.8	M5	365	166
200-18-260T1	260	36	40		8.5	7.4	3.7	2.9	M4	158	72
200-18-475T1	475	36	75		15.9	13.8	6.9	5.5	M4	180	82
200-18-600T1	600	36	95		20.3	17.6	8.8	7.0	M4	180	82
200-18-750T1	750	36	115		23.3	20.6	10.6	8.5	M4	209	95
200-18-865T1	865	36	135		28.9	25.0	12.5	10.0	M5	275	125
200-18-965T1	965	36	150		32.1	27.8	13.9	11.1	M5	275	125
200-18-1050T1	1050	36	165		35.3	30.6	15.3	12.2	M5	297	135
200-18-1200T1	1200	36	185		39.5	34.2	17.1	13.7	M5	321	146
200-18-1450T1	1450	36	225		48.0	40.6	20.8	16.6	M5	398	180
200-18-1700T1	1700	36	265			45.6	24.5	19.6	M6	466	212
200-24-475T1	475	48	75		21.0	18.2	9.1	7.3	M5	242	110
200-24-600T1	600	48	95		26.8	23.4	11.6	9.3	M5	264	120
200-24-750T1	750	48	115		32.3	27.0	14.0	13.0	M5	288	130
200-24-865T1	865	48	135		37.9	31.5	16.4	15.0	M5	299	136
200-24-965T1	965	48	150		42.0	34.8	18.2	17.0	M5	304	138
200-24-1050T1	1050	48	165		46.2	40.0	20.0	18.0	M5	326	148
200-24-1200T1	1200	48	185			44.6	22.3	17.8	M5	363	165
200-24-1450T1	1450	48	225				27.1	25.0	M5	464	211
200-36-475T1	475	72	75		31.6	27.4	13.7	11.0	M5	330	150
200-36-750T1	750	72	115		48.5	42.0	21.0	16.8	M5	352	160
200-36-865T1	865	72	135			49.0	24.6	19.7	M5	374	170
200-36-965T1	965	72	150				27.3	21.8	M5	396	180

*DC FUSE MUST BE A FAST ACTING FUSE CAPABLE OF PROTECTING SEMICONDUCTORS.

APPENDIX E



Component No: CLT6005 **DRAWING TITLE:** GNB [UL] Single phase wiring diagram Fuse / Breakers



DRAWING No: 4 - CMP - 2600 - 02 - WD - E

Drawn by:	Checked by:	MOD No:	REV:
Trev Peacock	17 04 03	-	C000007 B
Trev Peacock	10 12 03	-	C000044 C
Trev Peacock	19 12 03	-	C000045 D
Trev Peacock	17 03 04	-	C000068 E

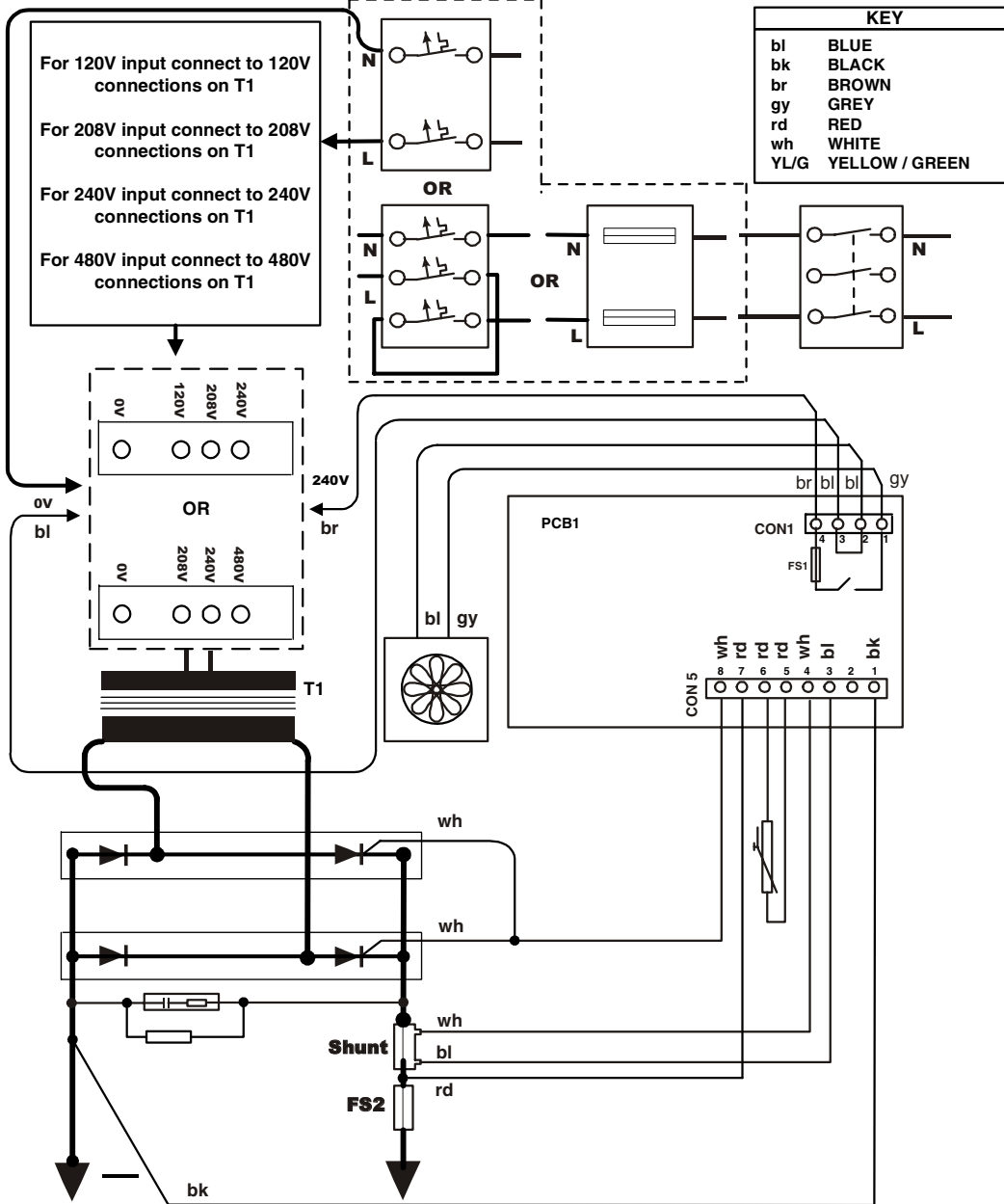
If any errors are apparent within this diagram please inform CMP engineering.

Materials: White Polypropylene 60u PP198 TC
 Clear Overlaminatate 60u PP20
 Adhesive: APS1
 Size: A5 (210mm x 147mm)
 Text: As shown
 Colour: Black on white



Component No:
CLT6005JIC

DRAWING TITLE:
GNB [UL] Single phase wiring diagram single phase JIC



DRAWING No: 4 - CMP - 2600 - 04 - WD - C

Drawn by:	Checked by:	MOD No:	REV:
Trev Peacock	01 10 03	-	A
Trev Peacock	01 10 03	C000045	B
Trev Peacock	17 03 04	C000068	C

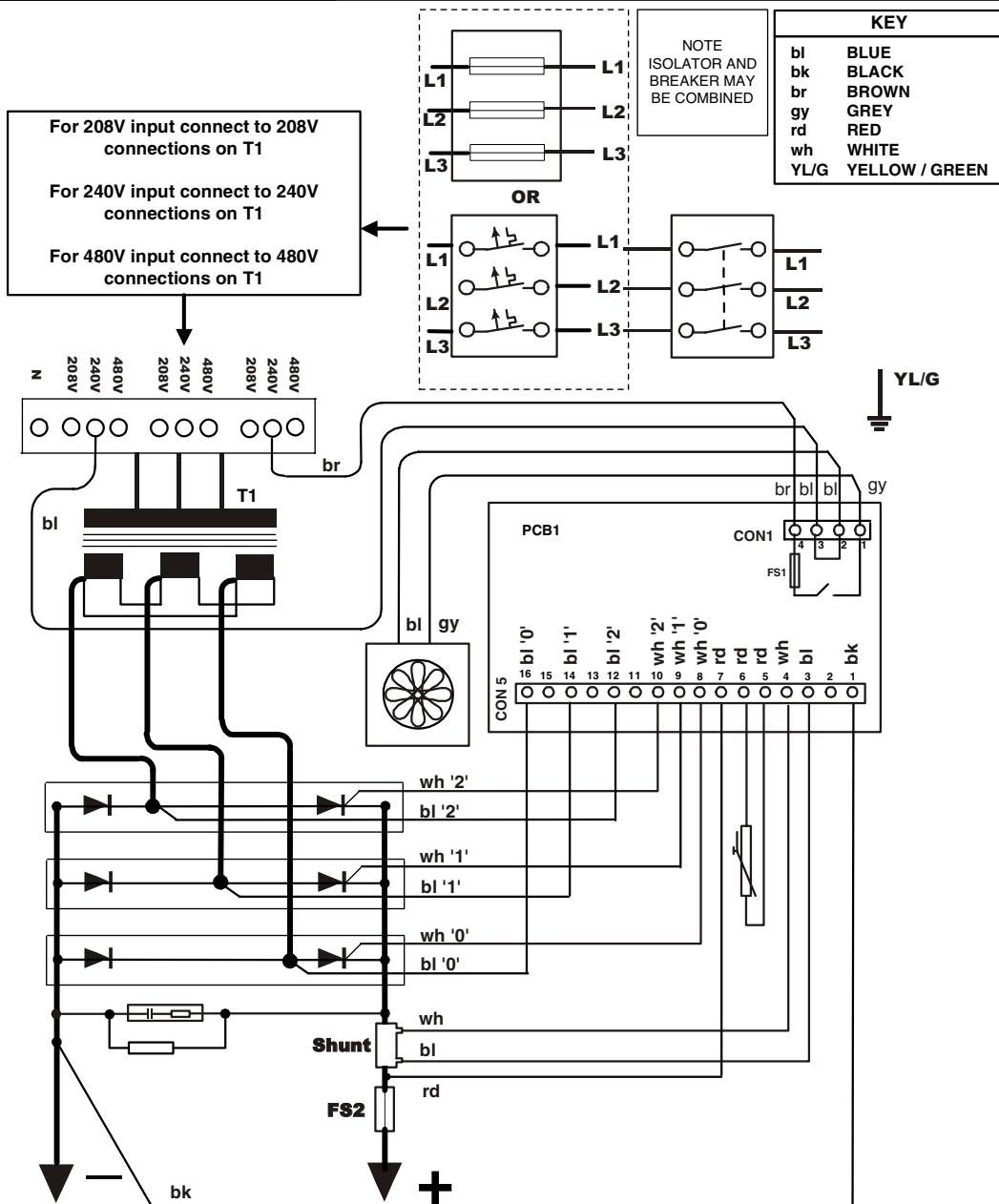
If any errors are apparent within this diagram please inform CMP engineering.

Materials: White Polypropylene 60u PP198 TC
 Clear Overlaminiate 60u PP20
 Adhesive: AP51
 Size: A5 (210mm x 147mm)
 Text: As shown
 Colour: Black on white



Component No:
CLT6006JIC

DRAWING TITLE:
GNB [UL] 3phase wiring diagram JIC



DRAWING No: 4 - CMP - 2600 - 05 - WD - C

Drawn by:	Checked by:	MOD No:	REV:
Trev Peacock	01 10 03	-	A
Trev Peacock	01 10 03	C000045	B
Trev Peacock	17 03 04	C000068	C

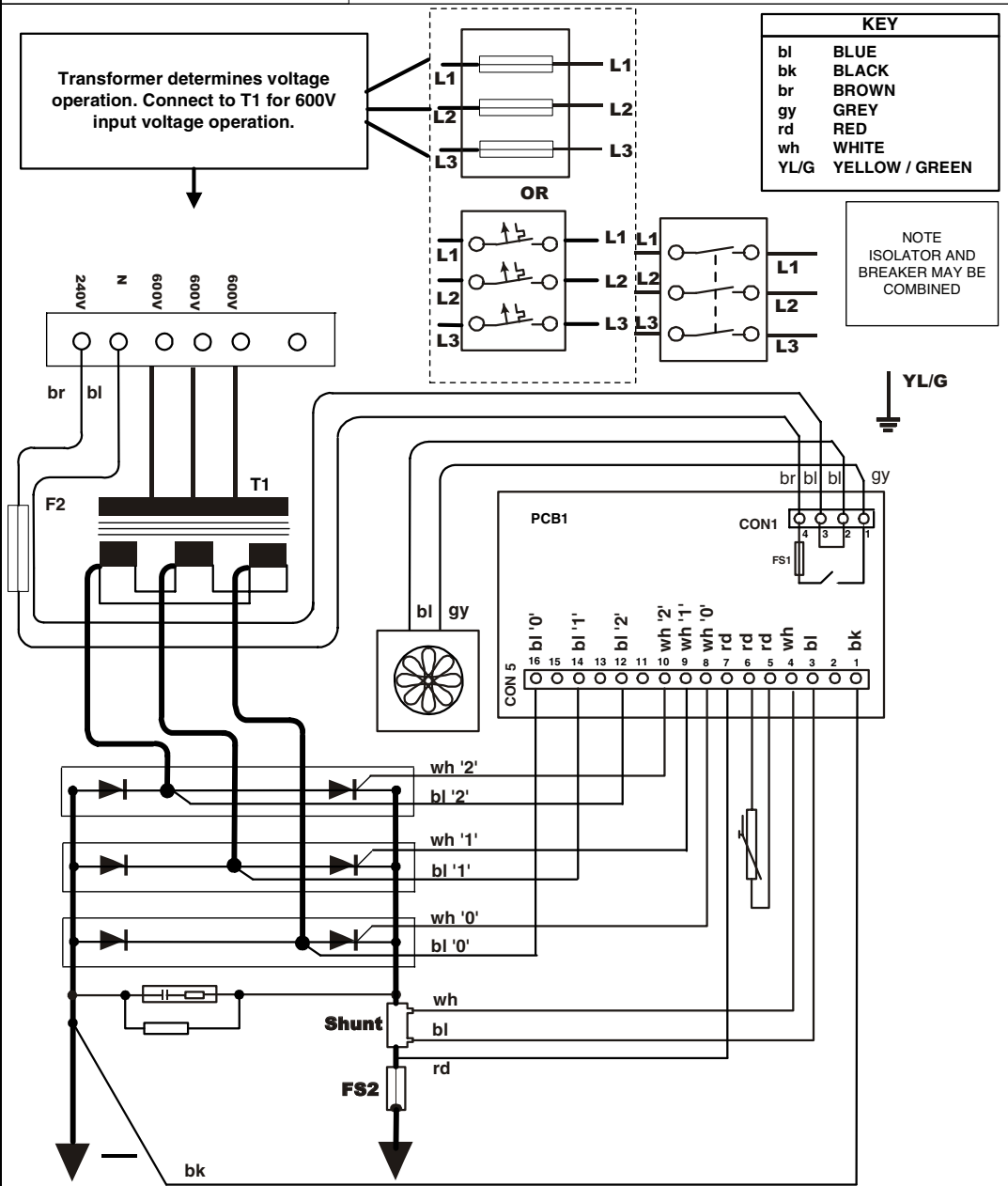
If any errors are apparent within this diagram please inform CMP engineering.


Materials: White Polypropylene 60u PP198 TC
Clear Overlaminat 60u PP20
Adhesive: APS1
Size: A5 (210mm x 147mm)
Text: As shown
Colour: Black on white



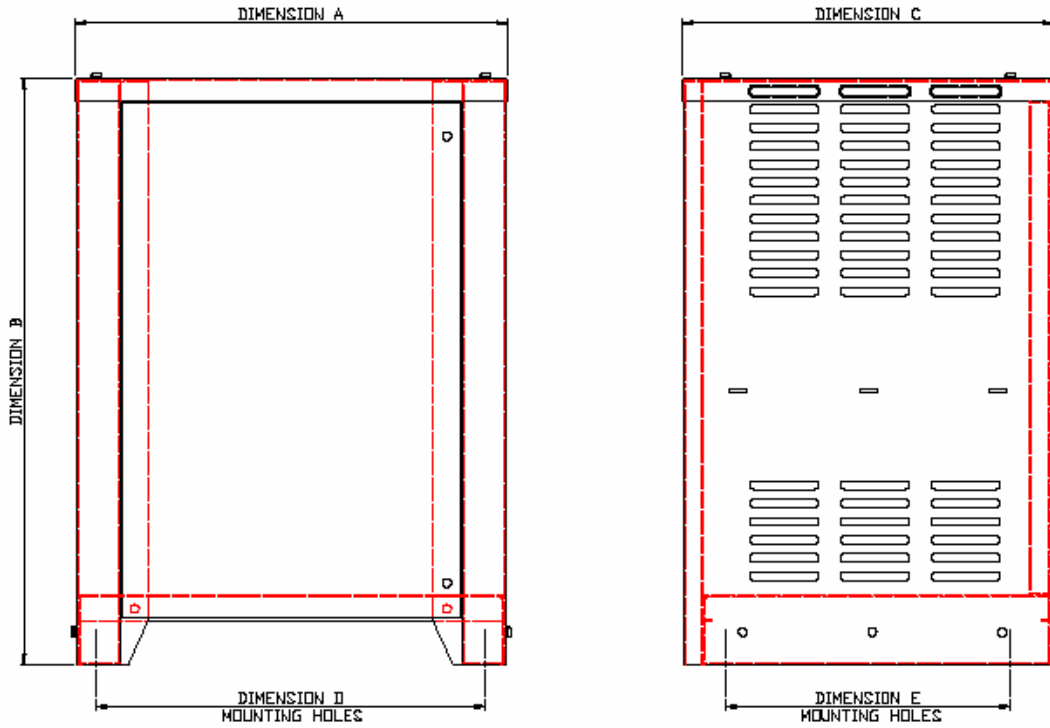
Component No:
CLT6006CJIC

DRAWING TITLE:
GNB [UL] 3phase wiring diagram 600V JIC



DRAWING No: 4 - CMP - 2600 - 06 - WD - C					If any errors are apparent within this diagram please inform CMP engineering.	 <p>GNB INDUSTRIAL POWER A Division of Exide Technologies</p>
Drawn by:	Checked by:	MOD No:	REV:			
Trev Peacock	01 10 03	-	-	A	Materials: White Polypropylene 60u PP198 TC Clear Overlaminat 60u PP20	
Trev Peacock	19 12 03	-	C000045	B	Adhesive: AP51 Size: A5 (210mm x 147mm) Text: As shown Colour: Black on white	
Trev Peacock	17 03 04	-	C000068	C		

APPENDIX F – DIMENSIONS



CABINET	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E
Size M4	19.69"	26.65"	16.93"	17.54"	12.99"
Size M5	23.62"	26.65"	20.87"	21.48"	16.93"
Size M6	23.62"	42.00"	23.62"	21.48"	19.69"



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