



Wiring Diagrams

DIAGRAM INDEX

POWER SCHEMATICS				
Unit 30GN,GT,GU	Voltage	Serial Number Effective	Label Diagram No. 30GT-	Figure No.
040-050	208/230PW,XL;346PW,XL;380/415PW;460PW;575PW	3197F	511749	1
	380XL;380/415XL;460XL;575XL	3197F	511602	2
060-070	208/230PW,XL;346PW,XL;380/415PW;460PW;575PW	3197F	511750	3
	380XL;380/415XL;460XL;575XL	3197F	511748	4
080,090,230B,245B	208/230PW,XL;346PW,XL;380/415PW;450PW;575PW	4996F	510570	5
	380XL;380/415XL;460XL;575XL	1897F	510518	6
100,110,255B-315B	208/230,230PW,XL;346PW,XL;380/415PW;460PW;575PW	1897F	510571	7
	380XL;380/415XL;460XL;575XL	1897F	510519	8
130,150,230A-255A	208/230PW,XL;230*PW,XL	4594F	513262	9
	346PW,XL	4594F	513834	10
	380PW;380/415PW;460PW;575PW	4594F	513264	11
	380XL;380/415XL;460XL;575XL	4594F	513266	12
170,190,270A,290A,330A/B,360A/B,390B	208/230PW,XL;230*PW,XL	4593F	513263	13
	346PW,XL	4594F	513835	14
	380PW;380/415PW;460PW;575PW	4594F	513265	15
170-210,270A-315A,330A/B-420A/B	380XL;380/415XL;460XL;575XL	4594F	513267	16
210,315A,390A,420A/B	208/230PW,XL;230*PW,XL	4593F	513854	17
	346PW,XL;380PW;380/415PW;460PW;575PW	4594F	513855	18
130-210,230A-315A,330A/B-420A/B	ALL	4093F	513269	19

CONTROL SCHEMATICS				
Unit 30	Voltage	Serial Number Effective	Label Diagram No. 30GT-	Figure No.
GN040-070	24	4197F	511754	20
	115,230	3197F	511753	21
GN080-110,230B-315B	24	4197F	511204	22
	115,230	3197F	511203	23
GN130-210,230A-315A,330A/B-420A/B	24	4197F	513274	24
	115,230	0898F	513273	25
GT,GU040-070	24	2395F	511752	26
	115,230	3197F	511751	27
GT,GU080-100,230B-315B	24	2395F	511202	28
	115,230	3197F	511201	29
GT,GU130-210,230A-315A,330A/B-420A/B	24	2395F	513272	30
	115,230	3395F	513271	31

LEGEND

PW — Part-Wind Start
XL — Across-the-Line Start

*Sizes 130-210 and 330A/B-420A/B only.

DIAGRAM INDEX (cont)

COMPONENT ARRANGEMENTS					
Unit 30	Voltage	Type	Serial Number Effective	Label Diagram No. 30GT-	Figure No.
GN040-070	All	Control/Power Box	4996F	511756	32
GN080-110,230B-315B	All	Control/Power Box	4197F	511206	33
GN130-210,230A-315A,330A/B-420A/B	All	Control Box	0898F	513273	34
GN,GT,GU130,150,230A-255A	208/230PW,XL;230*PW,XL	Power Box	4594F	513262	35
	346PW,XL	Power Box	4594F	513834	36
	380PW;380/415PW;460PW;575PW	Power Box	4594F	513264	37
	380XL;380/415XL;460XL;575XL	Power Box	4594F	513266	38
GN,GT,GU170,190,270A,290A, 330A/B,360A/B,390B	208/230PW,XL;230*PW,XL	Power Box	4593F	513263	39
	346PW,XL	Power Box	4594F	513835	40
	380PW;380/415PW;460PW;575PW	Power Box	4594F	513265	41
	380XL;380/415XL;460XL;575XL	Power Box	4594F	513267	42
GN,GT,GU210,315A,390A,420A/B	208/230PW,XL;230*PW,XL	Power Box	4593F	513854	43
	346PW,XL;380PW;380/415PW;460PW;575PW	Power Box	4594F	513855	44
	380XL;380/415XL;460XL;575XL	Power Box	4594F	513267	42
GT,GU040-070	All	Control/Power Box	3197F	511755	45
GT,GU080-110,230B-315B	All	Control/Power Box	1897F	511205	46
GT,GU130-210,230A-315A,330A/B-420A/B	All	Control Box	3395F	513271	47

DIAGNOSTICS					
Unit 30	Type	Voltage	Serial Number Effective	Label Diagram No. 30GT-	Figure No.
GN040-070	Channel Chart	All	1992F	512020	48
GN080-110,230B-315B	Channel Chart	All	0692F	511276	49
GN130-210,230A-315A,330A/B-420A/B	Channel Chart	All	—	—	50
	Start-Up and Diagnostics	All	4093F	513269	51
GT,GU040-070	Start-Up and Diagnostics	All	1992F	512073	52
GT,GU080-110,230B-315B	Start-Up and Diagnostics	All	0697F	510065	53
GT,GU130-210,230A-315A,330A/B-420A/B	Start-Up and Diagnostics	All	4093F	513268	54

FIELD WIRING			
Unit 30	Wiring Type	Voltage	Figure No.
GN040-070	Field Control and Power	All	55
GN080-110	Field Control and Power	All	56
GN130-210	Field Control	All	57
GN,GT,GU130-210	Field Power	All	58
GN230A/B-315A/B	Field Control and Power	All	59
GN330A/B-420A/B	Field Control and Power	All	60
GT,GU040-070	Field Control and Power	All	61
GT,GU080-110	Field Control and Power	All	62
GT,GU130-210	Field Control	All	63
GT,GU230A/B-315A/B	Field Control and Power	All	64
GT,GU330A/B-420A/B	Field Control and Power	All	65

MOTORMASTER® DEVICE WIRING				
Unit 30GN,GT,GU	Voltage	Serial Number Effective	Label Diagram No. 30GT-	Figure No.
040-050	575	2892F	512280	66
060,070	575	2892F	512281	67
080-110,230B-315B	575	2892F	512207	68
130-210,230A-315A,330A/B-420A/B	575	4593F	513270	69

Dual Set Point Wiring (30GT,GU) Fig. 70
 *Sizes 130-210 and 330A/B-420A/B only.

SAFETY CONSIDERATIONS

Installing, starting up, and servicing this equipment can be hazardous due to system pressures, electrical components, and equipment location (roofs, elevated structures, etc.).

Only trained, qualified installers and service mechanics should install, start up and service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When working on the equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment. Follow all safety codes. Wear safety glasses and work gloves. Use care in handling, rigging, and setting bulky equipment.

	ELECTRIC SHOCK HAZARD Open all remote disconnects before servicing this equipment.
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TERMINAL BLOCK DATA

Units have the following power wiring terminal blocks and parallel conductors:

UNIT SIZE	VOLTAGE	TERMINAL BLOCKS	PARALLEL CONDUCTORS
040 to 070	208/230	1	3 (040,045), 6 (050-070)
	460	1	3
	575	1	3
	380	1	3
	346	1	3
080 to 110, 230B to 315B	380/415	1	3
	208/230	1	6
	460	1	3
	575	1	3
	380	1	3
130 to 210, 230A to 315A 330A/B to 420A/B	346	1	3
	380/415	1	3
	208/230	3	9
	460	2	6
	575	2	6
	380	2	6
	230*	3	9
	346	2	6
	380/415	2	6

*130-210 and 330A/B-420A/B only.

MODULAR UNIT INFORMATION

Unit sizes 230-420 are modular units which are shipped in separate sections as modules A and B. Installation directions specific to these units are noted in base unit installation instructions. See Table 1 (above right) for a listing of unit sizes and modular combinations.

Table 1 — Unit Sizes and Modular Combinations

UNIT SIZE	NOMINAL TONS	MODULE A	MODULE B
040	40	—	—
045	45	—	—
050	50	—	—
060	60	—	—
070	70	—	—
080	80	—	—
090	90	—	—
100	100	—	—
110	110	—	—
130	125	—	—
150	145	—	—
170	160	—	—
190	180	—	—
210	200	—	—
230	220	150	080
245	230	150	090
255	240	150	100
270	260	170	100
290	280	190	110
315	300	210	110
330	325	170	170
360	350	190	190/170*
390	380	210	190
420	400	210	210

*60 Hz units/50 Hz units.

SEQUENCE OF OPERATION

30GN Units — During unit off cycle, crankcase heaters are energized.

The unit is started by putting the LOCAL/ENABLE-STOP-CCN switch in LOCAL/ENABLE or CCN position. When the unit receives a call for cooling (either from the internal control or CCN network command) the unit stages up in capacity to maintain the cooler fluid set point. The first compressor starts 1½ to 3 minutes after the call for cooling. See base unit installation instructions for compressor loading sequences.

The lead circuit can be specifically designated or randomly selected by the controls, depending on how the unit is field configured. A field configuration is also available to determine if the unit should stage up both circuits equally or load one circuit completely before bringing on the other.

When the lead circuit compressor starts, the unit starts with a pumpout routine. The compressor starts and continues to run with the electronic expansion valve (EXV) closed, to purge the refrigerant lines and cooler of refrigerant, until the saturated suction temperature is 10° F (5.5° C) below the saturated suction temperature at initiation, or is 10° F (5.5° C) below the leaving fluid temperature, or reaches a saturated suction temperature of -15 F (-26 C). No pumpout is necessary if the saturated suction temperature is below -15 F (-26 C). When this condition is satisfied, the EXV begins to modulate to feed refrigerant into the cooler.

The head pressure is controlled by fan cycling. The desired head pressure set point is entered, and is controlled by EXV position or saturated discharge temperature measurement. For proper operation, maintain set point as shipped from factory. The usual head pressure control method (also field configured) is EXV control, which maintains the lowest head pressure that provides enough pressure drop across the valve. Refer to unit Controls and Troubleshooting literature for head pressure control configurations.

If temperature reset is being used, the unit controls to a higher leaving fluid temperature (cooler fluid set point 2), as the building load reduces. If demand limit is used, the unit may temporarily be unable to maintain the desired leaving fluid temperature because of imposed power limitations.

When the occupied period ends, or when the building load drops low enough, the lag compressors shut down. The lead compressors continue to run as the EXV closes, and until the conditions of pumpout are satisfied. If a fault condition is signaled requiring immediate shutdown, pumpout is omitted.

NOTE: Temperatures and pressures are measured by thermistors and transducers. See base unit installation instructions for locations.

	ELECTRIC SHOCK HAZARD Turn off all power to unit before servicing. The LOCAL/ENABLE-STOP-CCN switch on control panel does not shut off control power; use <i>field disconnect</i>.
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30GT, GU Units — During unit off cycle, crankcase heaters are energized. If ambient temperature is below 36 F (2 C), cooler heaters and a microprocessor board heater are also energized.

When control ON-OFF switch is turned to ON, control first goes through a 2-minute initialization period, during which the display will continuously show **2 0**. Ninety (90) seconds after **2 0** leaves display, control begins to bring on compressors. Rate at which compressors are started depends on leaving chilled fluid temperature and rate of change of leaving fluid temperature.

On standard units, an automatic lead-lag feature in control system determines by random selection either circuit A or B to start first.

At first call for cooling, microprocessor starts first compressor, deenergizes crankcase heater, and starts one condenser fan.

All units have an electronic expansion valve (EXV). The EXV remains closed for 10 seconds to purge cooler and suction line of any liquid refrigerant that may have migrated to these areas during off period. After 10 seconds, EXV starts to open. As more cooling is required, control brings on additional stages of capacity. Loading sequence for compressors is shown in the base unit installation instructions. Automatic lead-lag control is provided on all units.

Once capacity has been satisfied, the lag compressor will shut down, and lead compressor will continue to run. After lag compressor has shut down, the EXV is signaled to close. Lead compressor remains on until EXV is less than 600 steps open, and the saturated suction temperature is less than 25 F (–4 C) as sensed by cooler thermistor T5 or T6, or one minute has elapsed.

Microprocessor controls EXV to maintain a superheat of 30° F (16.7° C) entering compressor cylinders. Microprocessor control also cycles condenser fans on and off to maintain an adequate pressure differential across expansion valves. Fans are controlled by position of EXV and saturated condensing temperature thermistors. When expansion valve is fully open and superheat is greater than 40 F (22 C), fan stages are removed; when the valve is approximately half open, fan stages are added. This allows unit to run at very low condensing temperatures at part load. Thus chiller has very high part-load EERs (energy efficiency ratios). Fan sequence is shown in the base unit installation instructions.

LOAD SHED — If load shed option is being used, control limits maximum capacity to load shed input value. Refer to Controls and Troubleshooting literature for details. If capacity is limited by a load shed signal, display shows a **2 2** when display button is pressed.

TEMPERATURE RESET — If temperature reset is being used, microprocessor adjusts leaving fluid temperature to obtain greater part-load efficiency. Refer to Controls and Troubleshooting book for details. If leaving fluid temperature is being reset, display shows a **2 1** when the display button is pressed.

LEGEND (FIG. 1-50, 66-69)

ALM	— Alarm	FIOP	— Factory-Installed Option	T1, T2, etc.	— Thermistor Numbers
C	— Contactor, Compressor	FM	— Fan Motor	TB	— Terminal Block
CB	— Circuit Breaker	FU	— Fuse	TDR	— Time Delay Relay
CCB	— Control Circuit Breaker	GFI-CO	— Ground Fault Interrupter — Convenience Outlet	TEMP	— Temperature
CCN	— Carrier Comfort Network	HG	— Hot Gas	TRAN	— Transformer
CGF	— Circuit Ground Fault	HGBPR	— Hot Gas Bypass Relay	TXV	— Thermostatic Expansion Valve
CH	— Crankcase Heater	HGBPS	— Hot Gas Bypass Solenoid	U	— Unloader
CHC	— Cooler Heater Cable	HPS	— High-Pressure Switch	VDC	— Volts Direct Current
CHT	— Cooler Heater Thermostat	HSIO, LID	— Keypad and Display Module	XL	— Across-the-Line Start
CIR, CKT	— Circuit	HTR	— Heater		Terminal Block Connection
CLHR	— Cooler Heater Relay	LCS	— Loss-of-Charge Switch		Marked Terminal
COM, COMM	— Communications	LID	— Local Interface Device		Unmarked Terminal
COMP	— Compressor	LLSR	— Liquid Line Solenoid Relay		Unmarked Splice
COND	— Condensing	LLSV	— Liquid Line Solenoid Valve		Marked Wire
CONT PWR	— Control Power	MMSN	— Motormaster® Control Sensor		Marked Splice
CPCS	— Compressor Protection Control Module	NC	— Normally Closed		Factory Wiring
CR	— Control Relay	NEC	— National Electrical Code (U.S.A.)		Field Control Wiring
CWFS	— Chilled Water (Fluid) Flow Switch	NO	— Normally Open		Field Power Wiring
CWP	— Chilled Water (Fluid) Pump	OA	— Outdoor Air		Indicates Common Potential
CWPI	— Chilled Water (Fluid) Pump Interlock	OPT	— Oil Pressure Transducer		Does not Represent Wiring.
DPT	— Discharge Pressure Transducer	P	— Potentiometer		Accessory or Option Wiring
DSIO (EXV)	— EXV Driver	PL	— Plug Assembly		
DSIO (LV)	— Relay Module, Low Voltage	PRI	— Primary		
DU	— Dummy Terminal	PS	— Power Supply		
EPROM	— Read-Only Memory	PSIO	— Processor Module		
EQUIP GND	— Equipment Ground	PW	— Part Wind Start		
EXV	— Electronic Expansion Valve	PWR	— Power		
FC	— Fan Contactor	RBPL	— Relay Board Plug		
FCB	— Fan Circuit Breaker	SEC	— Secondary		
		SN	— Sensor (Toroid)		
		SPT	— Suction Pressure Transducer		
		SW	— Switch		

NOTES

- Fan motors are thermally protected. Three-phase motors are protected against primary single phasing conditions.
- Replacement of original wires must be with type 105° C wire or its equivalent.
- Numbers on the right side of diagrams indicate the line location of applicable contacts. An underlined number signifies normally closed contacts; a plain number denotes normally open contacts. Line numbers are shown on the left side of the diagram.
- Factory wiring is in accordance with NEC. Field modifications or additions must be in compliance with all applicable codes.
- Wiring for main field power supply must be rated at 75° C minimum. All units may use copper conductors. Copper-clad aluminum or aluminum conductors for all units except 30GN,GT,GU110 346-3-50 (PW and XL) units, 30GN,GT,GU110 380/415-3-50 (PW) units, and 30GN,GT,GU210 208/230 v and associated modular units (PW and XL). Maximum incoming wire size for each terminal block is 500 MCM.
- Unit Sizes 040-070:** Power for control circuit should be supplied from a separate source through a field-supplied fused disconnect with 30 amp maximum protection for 115 v control circuits and 20 amp maximum protection for 230 v control circuit for a unit with cooler heaters, and 5 amp maximum protection for a unit without cooler heaters. Connect control circuit to power Terminals 1 and 2 of TB4. Connect neutral side of supply to Terminal 2 of TB4. Control circuit conductors for all units must be copper only.
30GT,GU080-110: Power for control circuit should be supplied from a separate source through a field-supplied fused disconnect with 30 amp maximum protection for 115 v control circuits and 15 amp maximum protection for 230 v control circuit for a unit with cooler heaters, and 5 amp maximum protection for a unit without cooler heaters. Connect control circuit to power Terminals 1 and 2 of TB4. Connect neutral side of supply to Terminal 2 of TB4. Control circuit conductors for all units must be copper only.
30GN080-420 and 30GT,GU130-420: Power for control circuit should be supplied from a separate source through a field-supplied fused disconnect with 30 amp maximum protection for 115 v control circuits and 15 amp maximum protection for 230 v control circuit. Connect control circuit to power Terminals 1 and 2 of TB4. Connect neutral side of supply to Terminal 2 of TB4. Control circuit conductors for all units must be copper only.
- 30GN Units:** Terminals 1, 2, 3, 4 of TB6 are for field external connection for remote on-off or CWPI and CWFS. The contacts must be rated for dry circuit application capable of handling a 5 VDC, 1 mA to 20 mA load. Remove jumper between 3 and 4 of TB6 if remote on-off is installed.
30GT,GU Units: Terminals 3 and 4 of TB6 are for field connection for remote on-off or CWPI and CWFS. The contacts must be rated for dry circuit application capable of reliably switching a 5 VDC, .5 mA load. Remove jumper between 3 and 4 of TB6 if remote on-off is installed.
- 30GN Units:** Terminals 1, 2, 3, 4 on TB3 are for chilled water pump and remote alarm control functions. The maximum allowable load for each of these circuits is 125 va sealed, 1250 va inrush at 115 or 230 v.
30GT,GU Units: The maximum allowable load for the remote alarm circuit is 75 va sealed, 360 va inrush at 115 or 230 v. Remove resistor across terminals 1 and 2 of TB3 when using remote alarm.
- Main power must be supplied to the unit through a field-supplied fused disconnect, within sight from the unit and easily accessible, in accordance with NEC.
- These units are suitable for use on electrical systems where the voltage supplied to the unit terminals is not outside the following limits:

NAMEPLATE VOLTAGE	SUPPLIED RANGE	
	Min	Max
208/230-3-60	187	253
230-3-50	207	253
380-3-60	342	418
380/415-3-50	342	440
460-3-60	414	506
346-3-50	325	380
575-3-60	518	633
- On 30GN040, 045 units with both brine option and TXV, only 1 accessory unloader can be added. It should be added to circuit B. If an accessory unloader is added to circuit A, or a second accessory unloader is added to circuit B, unit will not pump out when shutting down.

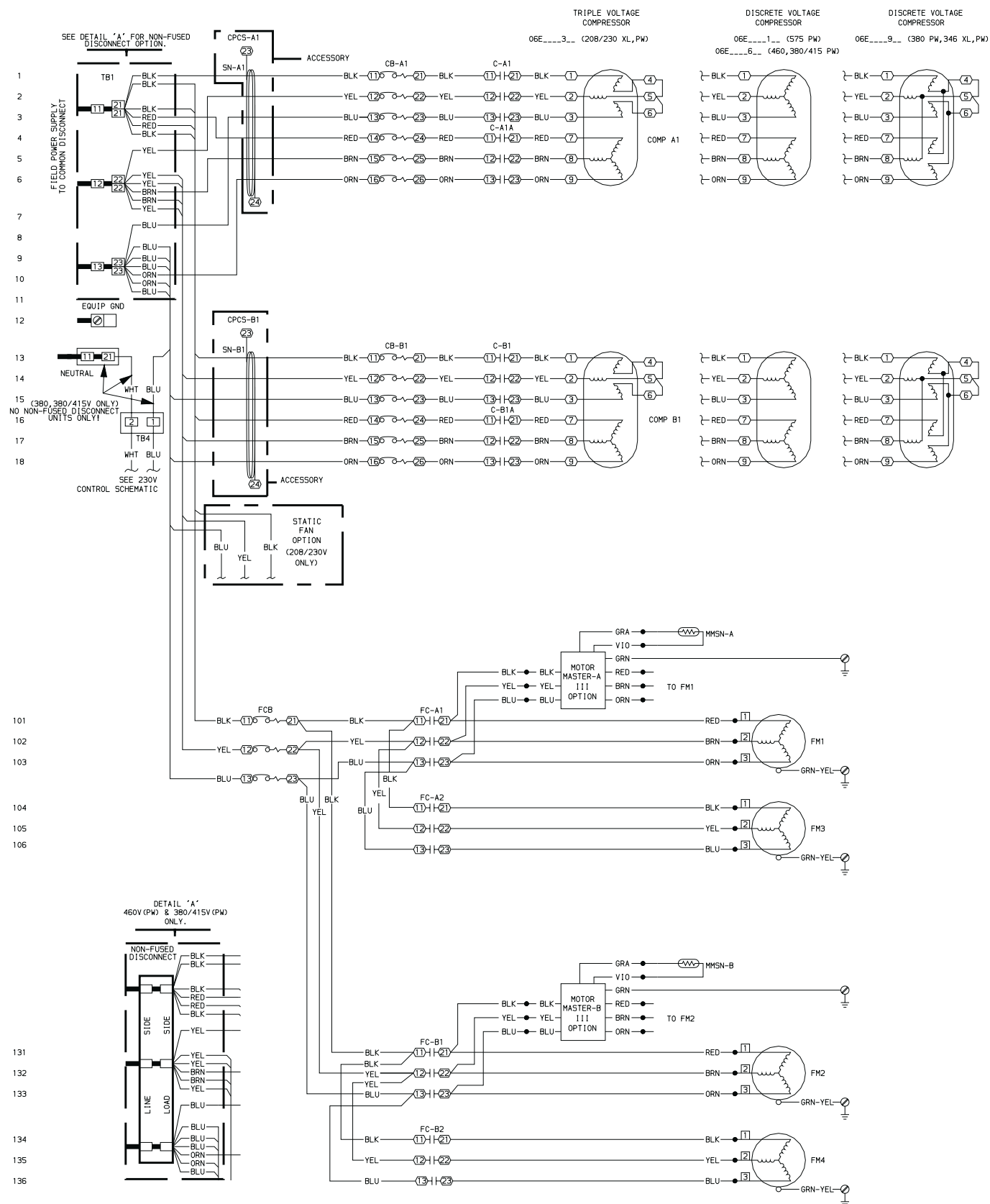
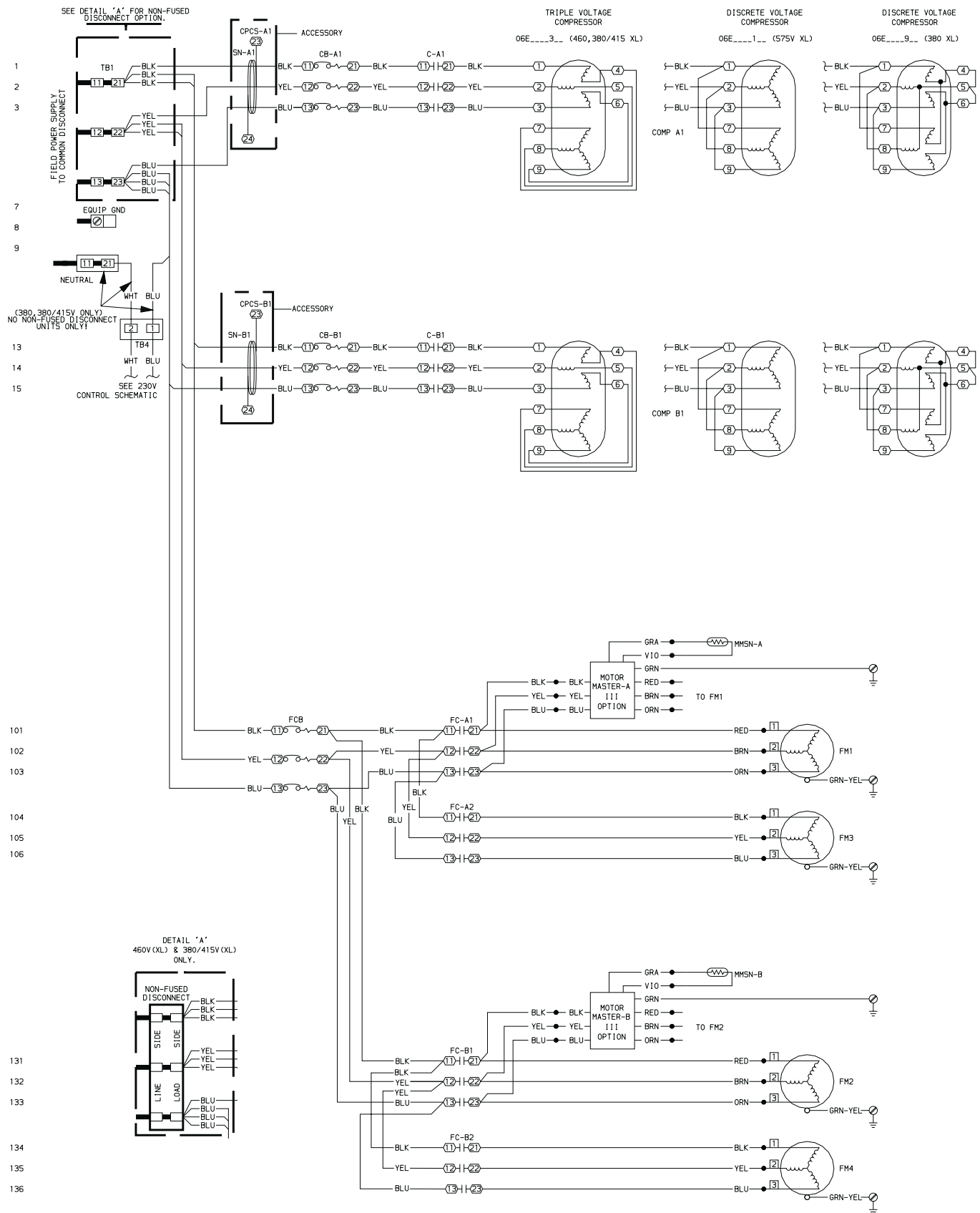
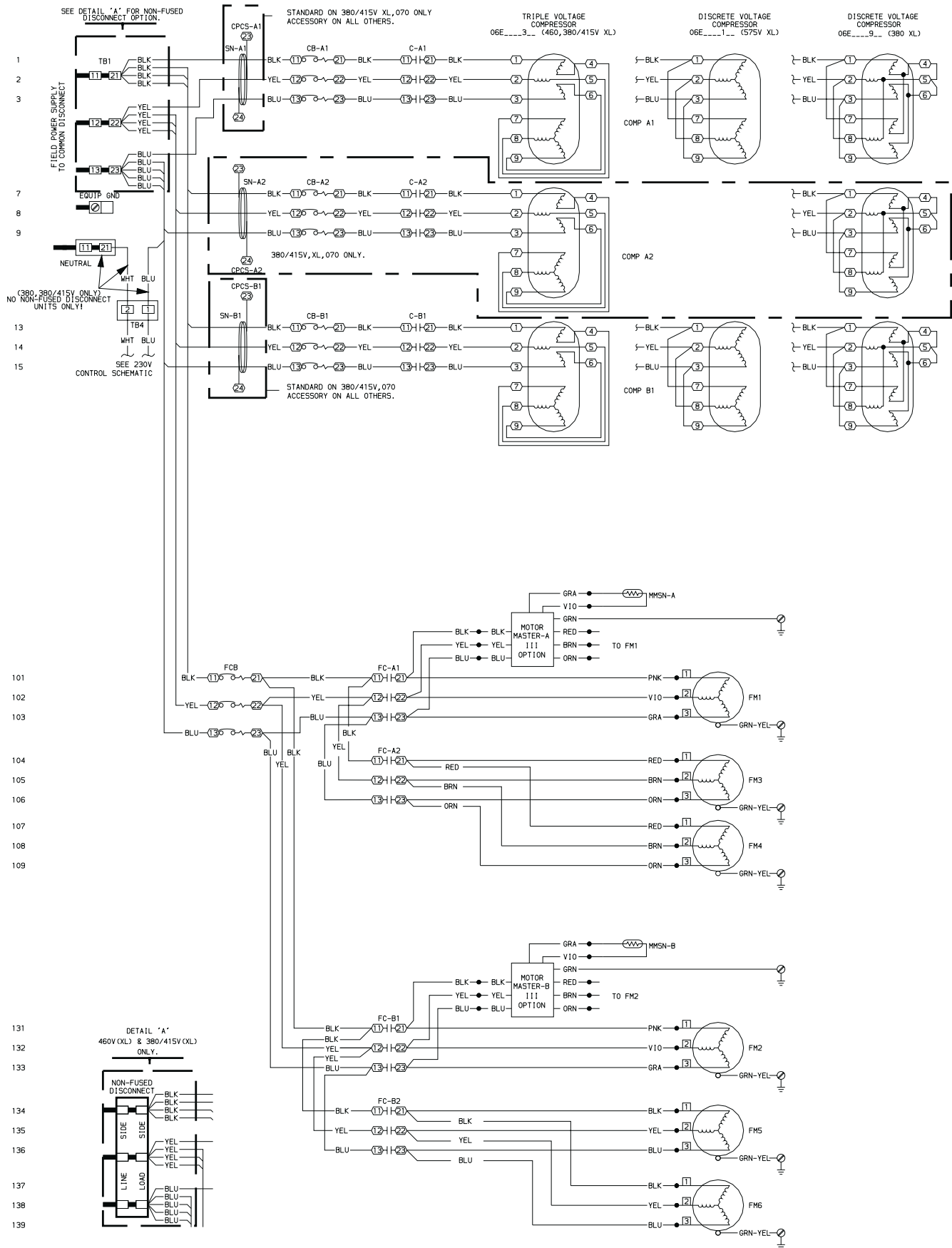


Fig. 1 — Power Schematic; 30GN,GT,GU040-050; 208/230, 346 V — PW, XL; 380, 380/415, 460, 575 V — PW



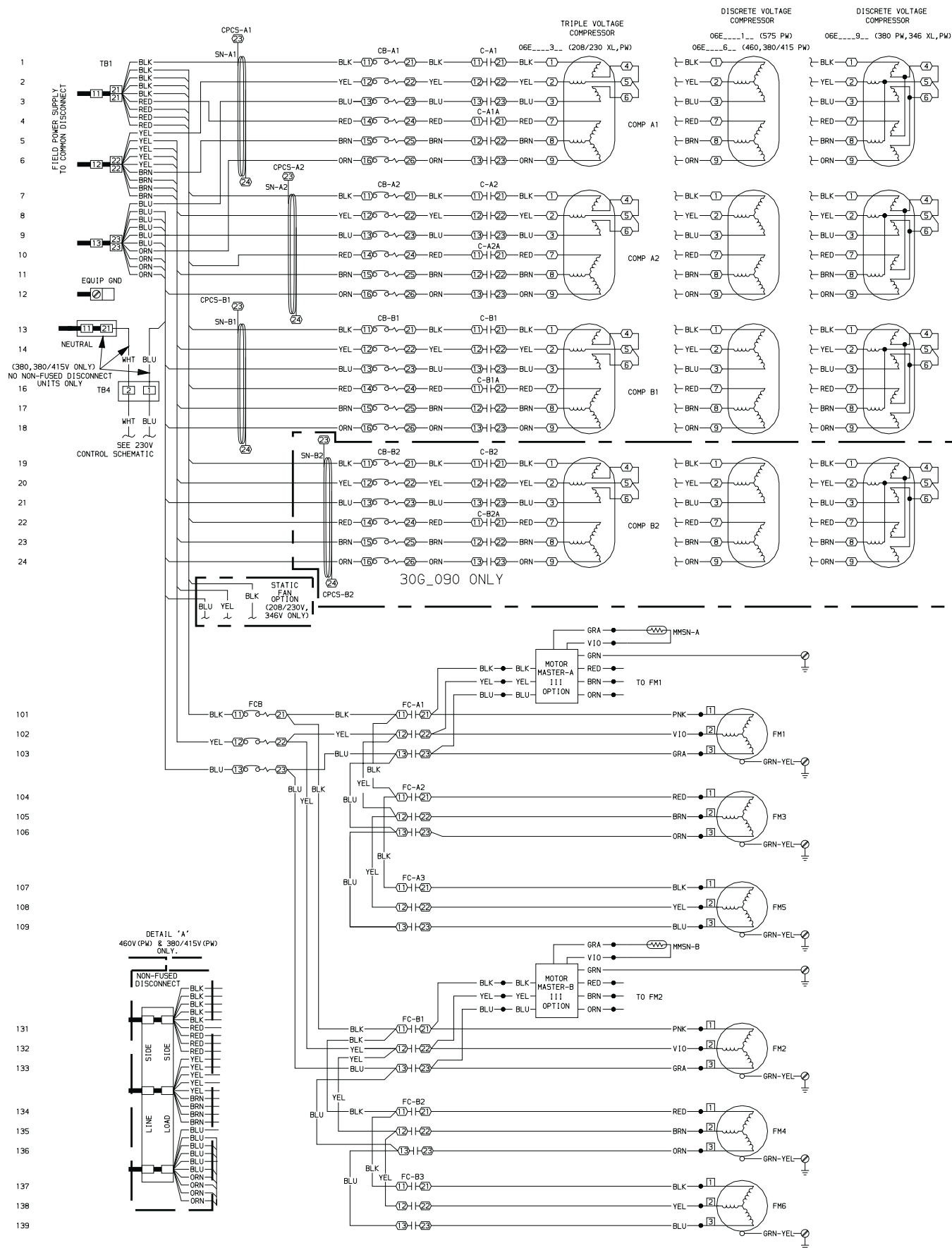
NOTE: For 575 v Motormaster® option wiring see Fig. 66.

Fig. 2 — Power Schematic; 30GN,GT,GU040-050; 380, 380/415, 460, 575 V — XL



NOTE: For 575 v Motormaster® option wiring see Fig. 67.

Fig. 4 — Power Schematic; 30GN,GT,GU060, 070; 380, 380/415, 460, 575 V — XL



NOTE: For 575 v Motormaster® option wiring see Fig. 68.

Fig. 5 — Power Schematic; 30GN,GT,GU080, 090; 230B, 245B; 208/230, 230, 346 V — PW, XL; 380, 380/415, 460, 575 V — PW

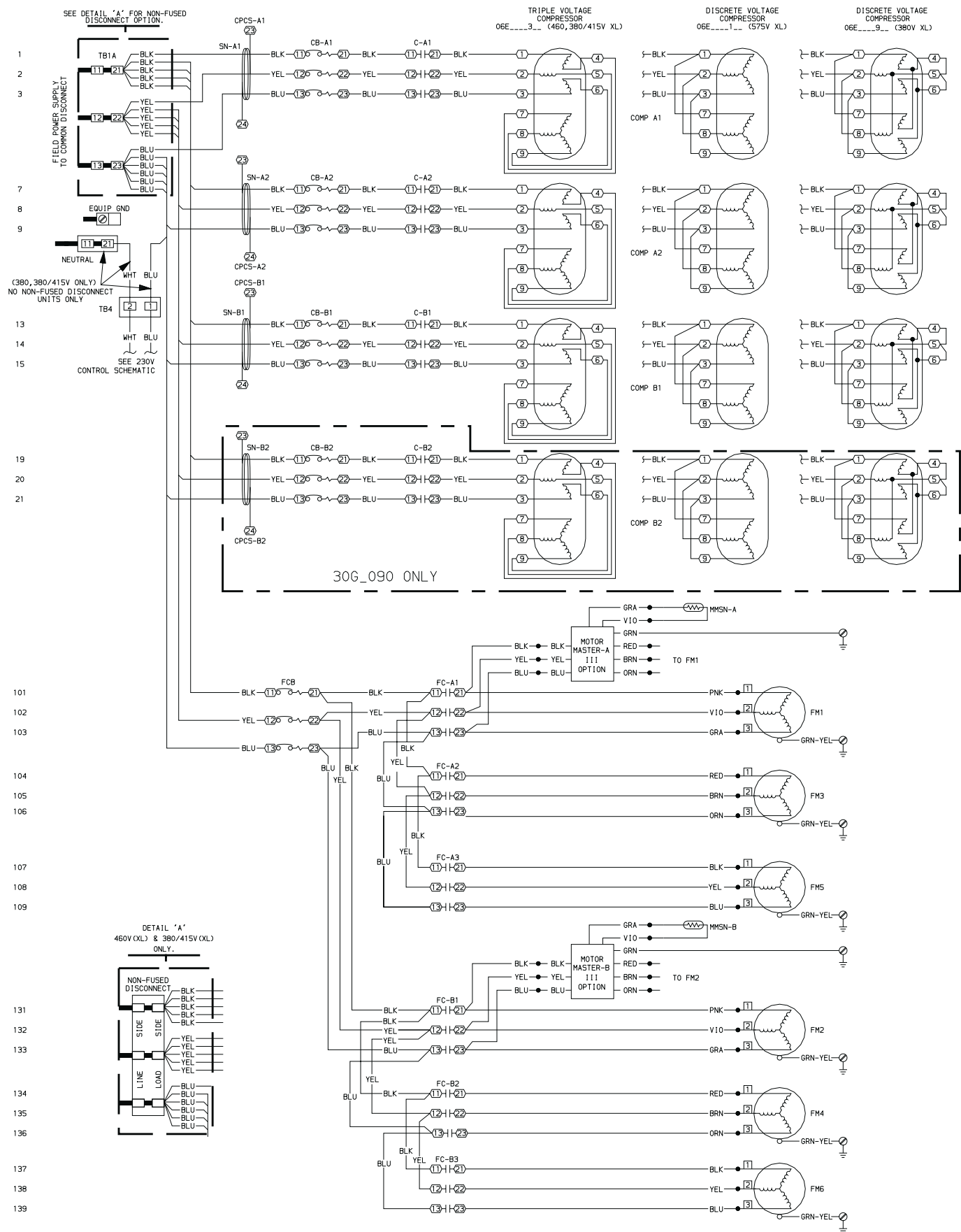


**Fig. 6 — Power Schematic; 30GN,GT,GU080, 090, 230B, 245B;
380, 380/415, 460, 575 V — XL**

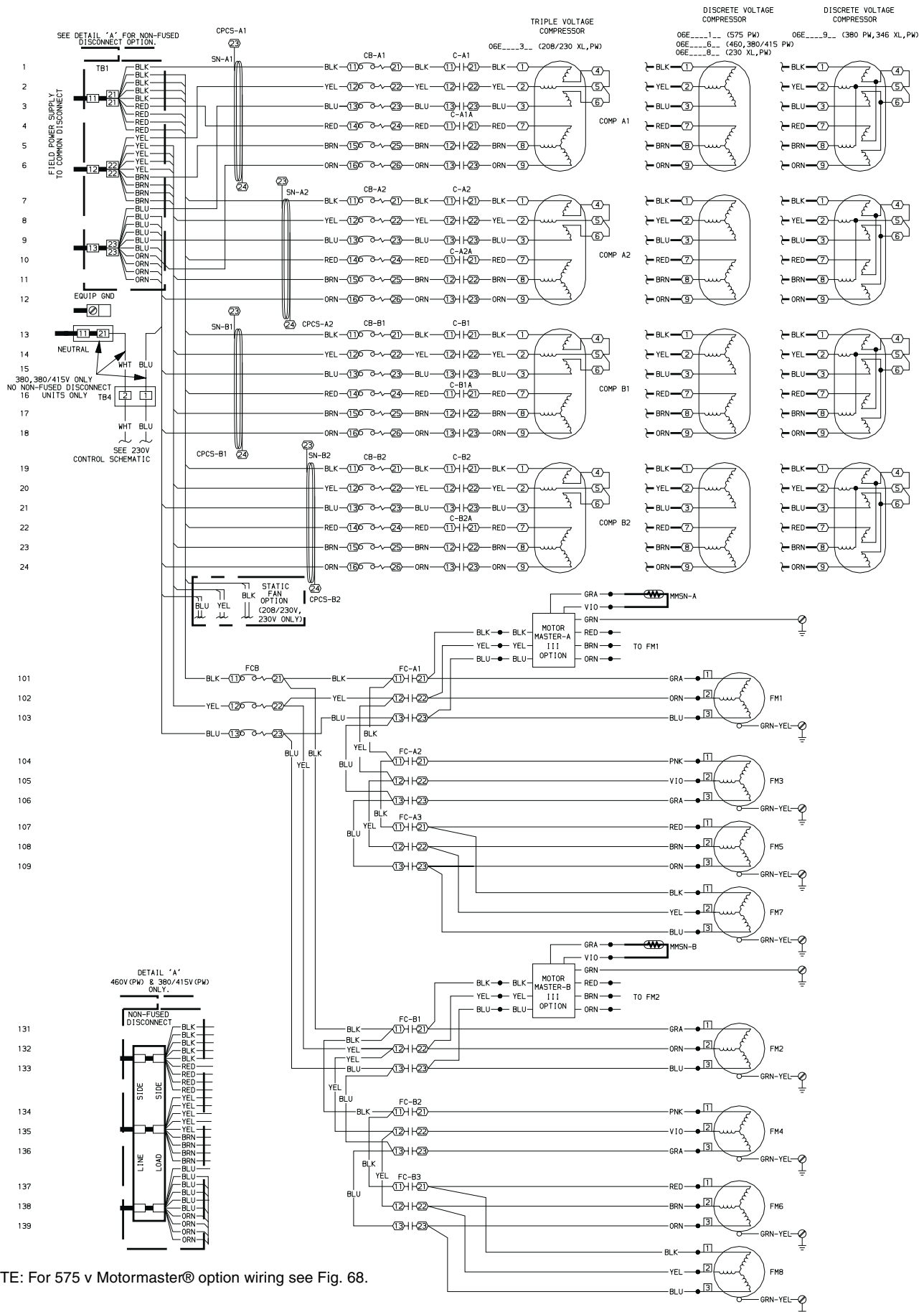


Fig. 7 — Power Schematic; 30GN,GT,GU100, 110, 255B-315B; 208/230, 230, 346 V — PW, XL; 380, 380/415, 460, 575 V — PW



13

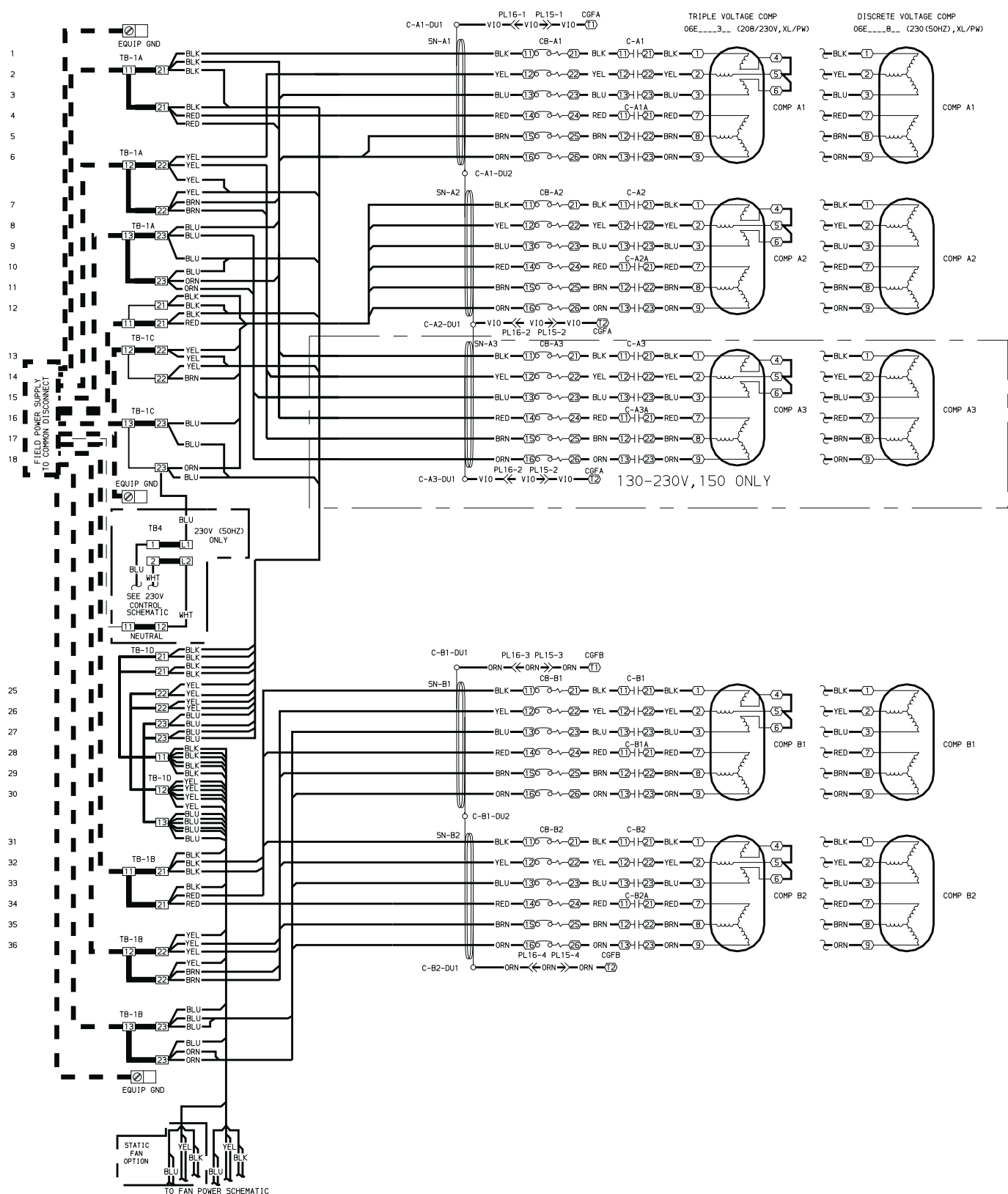
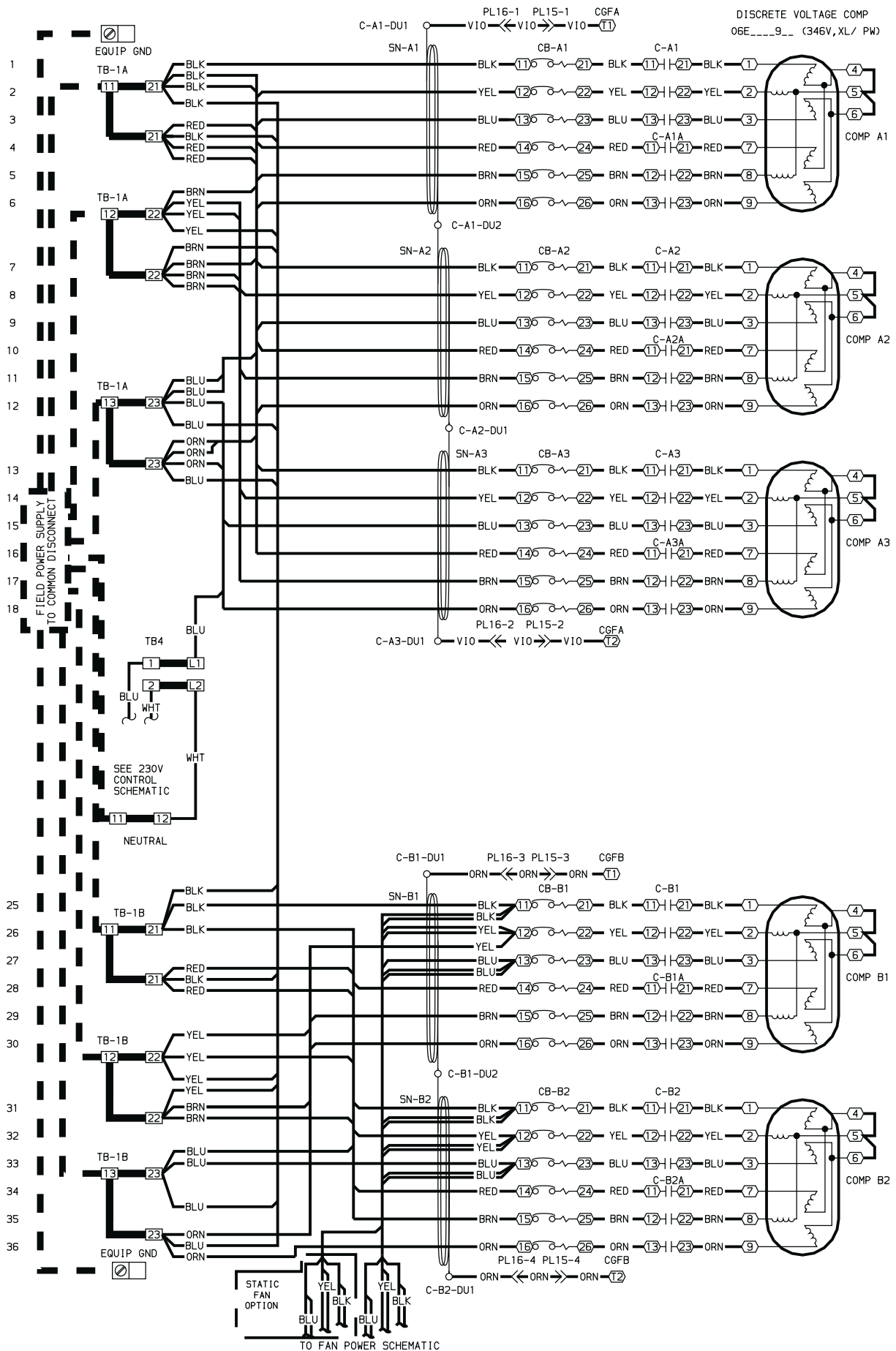
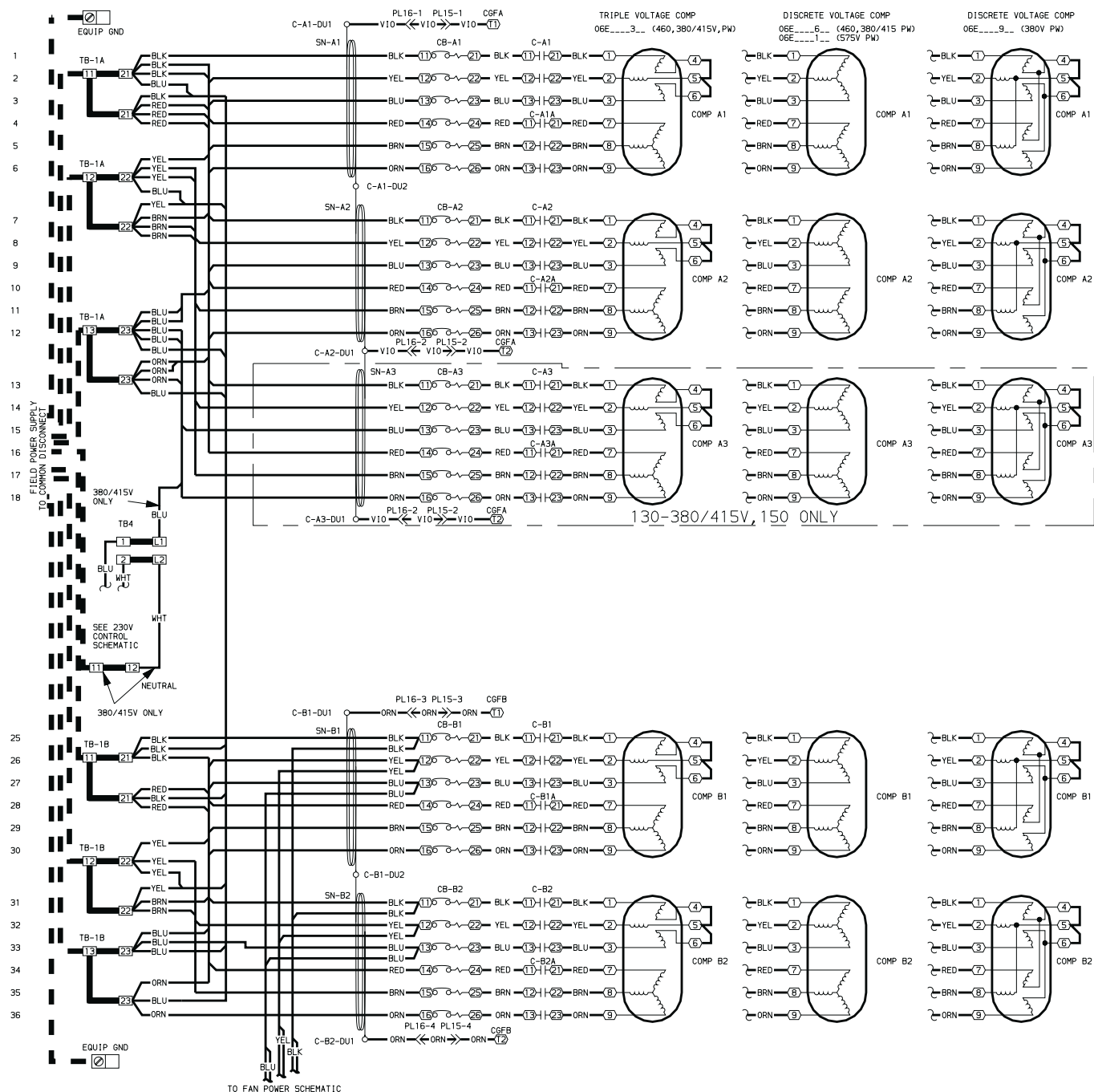


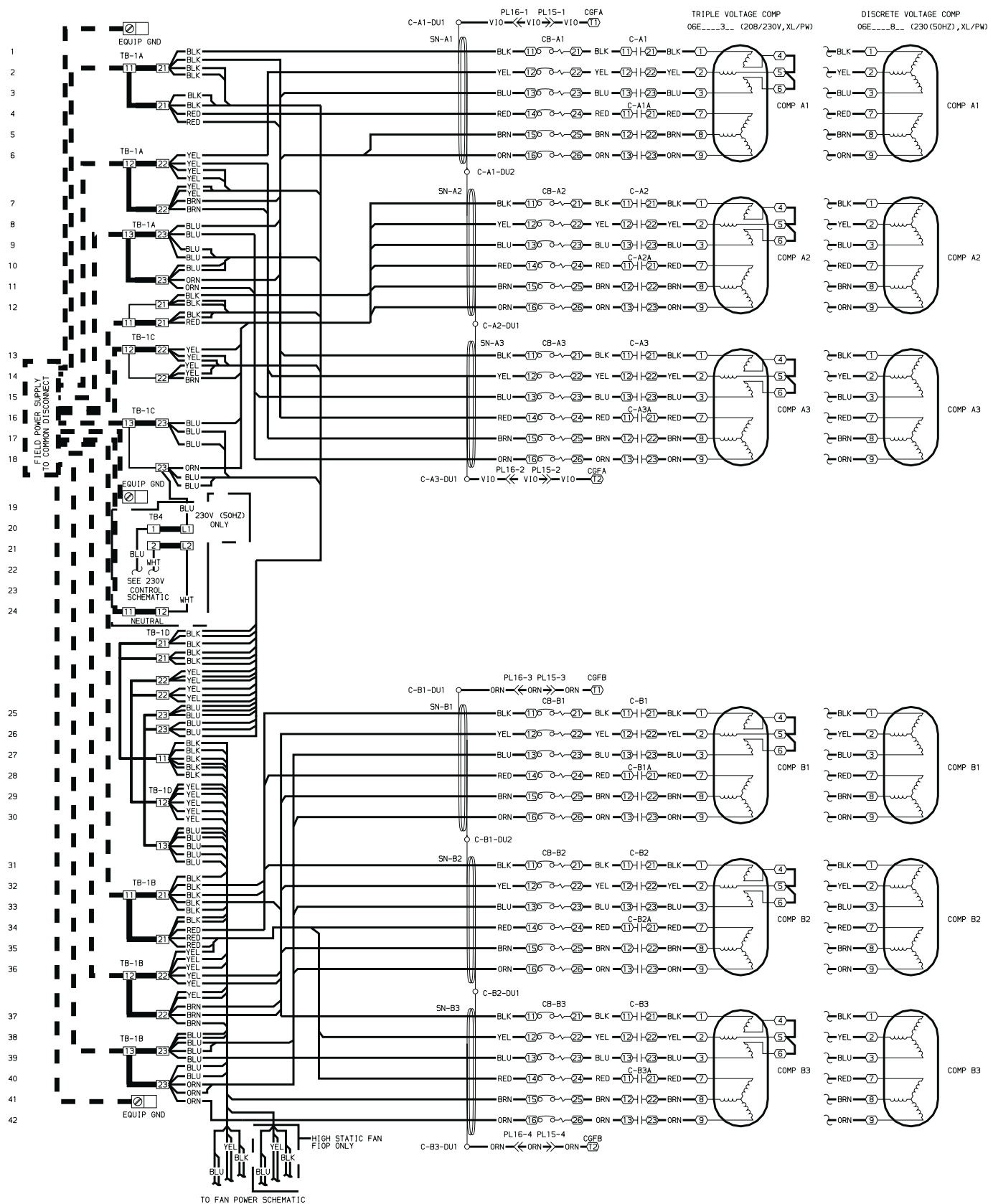
Fig. 9 — Power Schematic; 30GN,GT,GU130, 150, 230A-255A; 208/230, 230 V — PW, XL

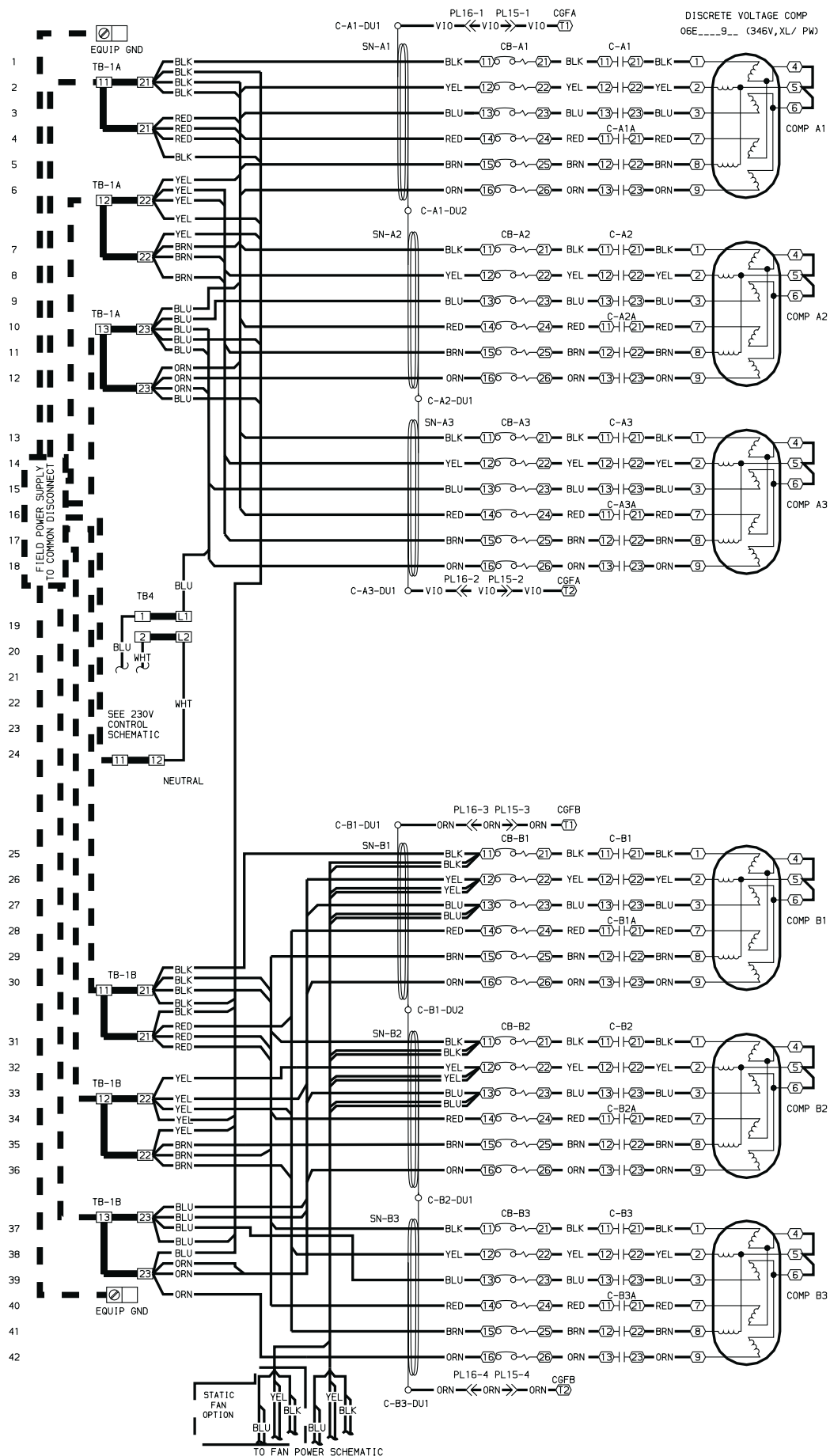


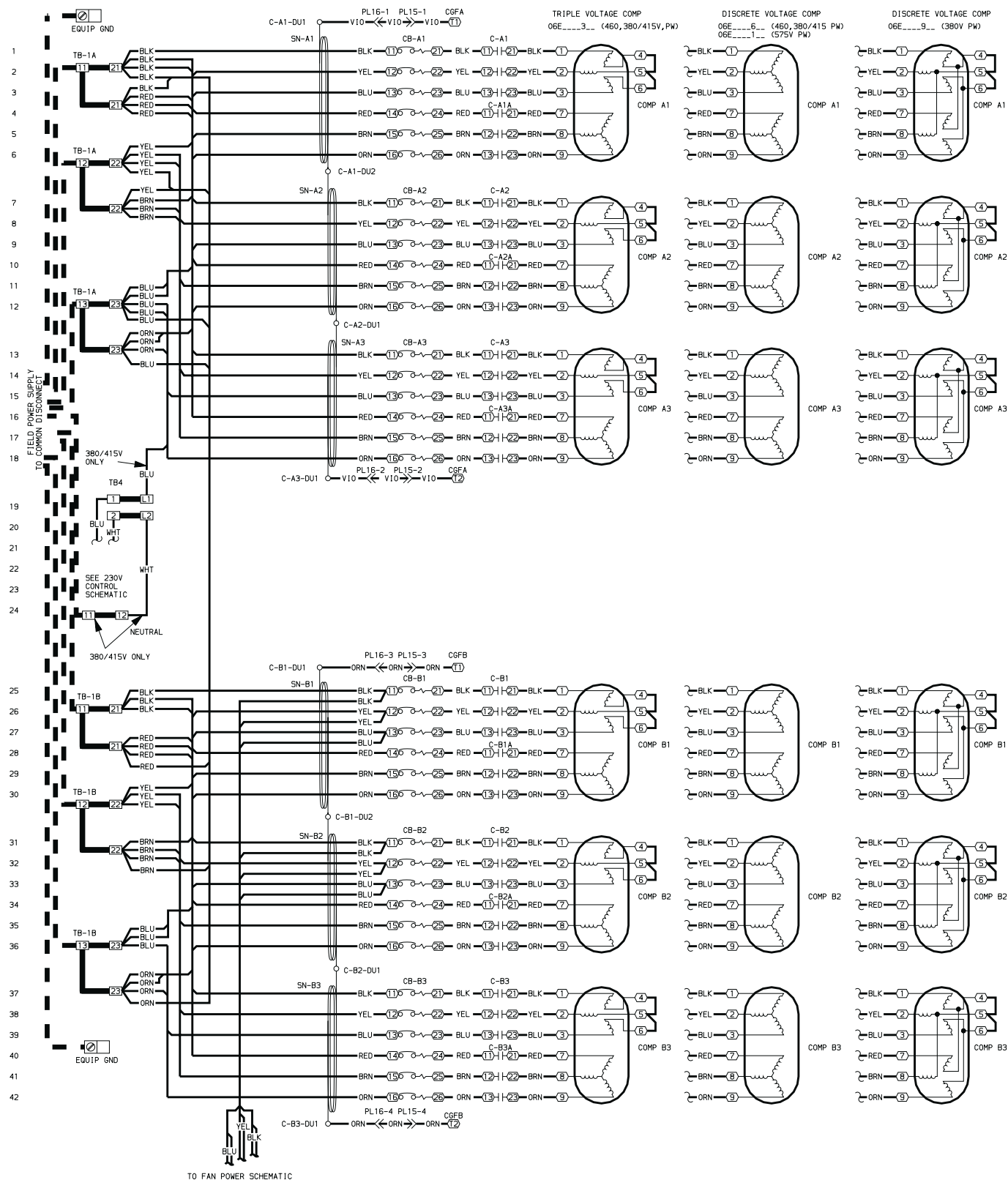


NOTE: For 575 v Motormaster® option wiring see Fig. 69.

Fig. 11 — Power Schematic; 30GN,GT,GU130, 150, 230A-255A; 380, 380/415, 460, 575 V — PW







NOTE: For 575 v Motormaster® option wiring see Fig. 69.

**Fig. 15 — Power Schematic; 30GN,GT, GU170, 190, 270A, 290A, 330A/B, 390B;
380, 380/415, 460, 575 V — PW**

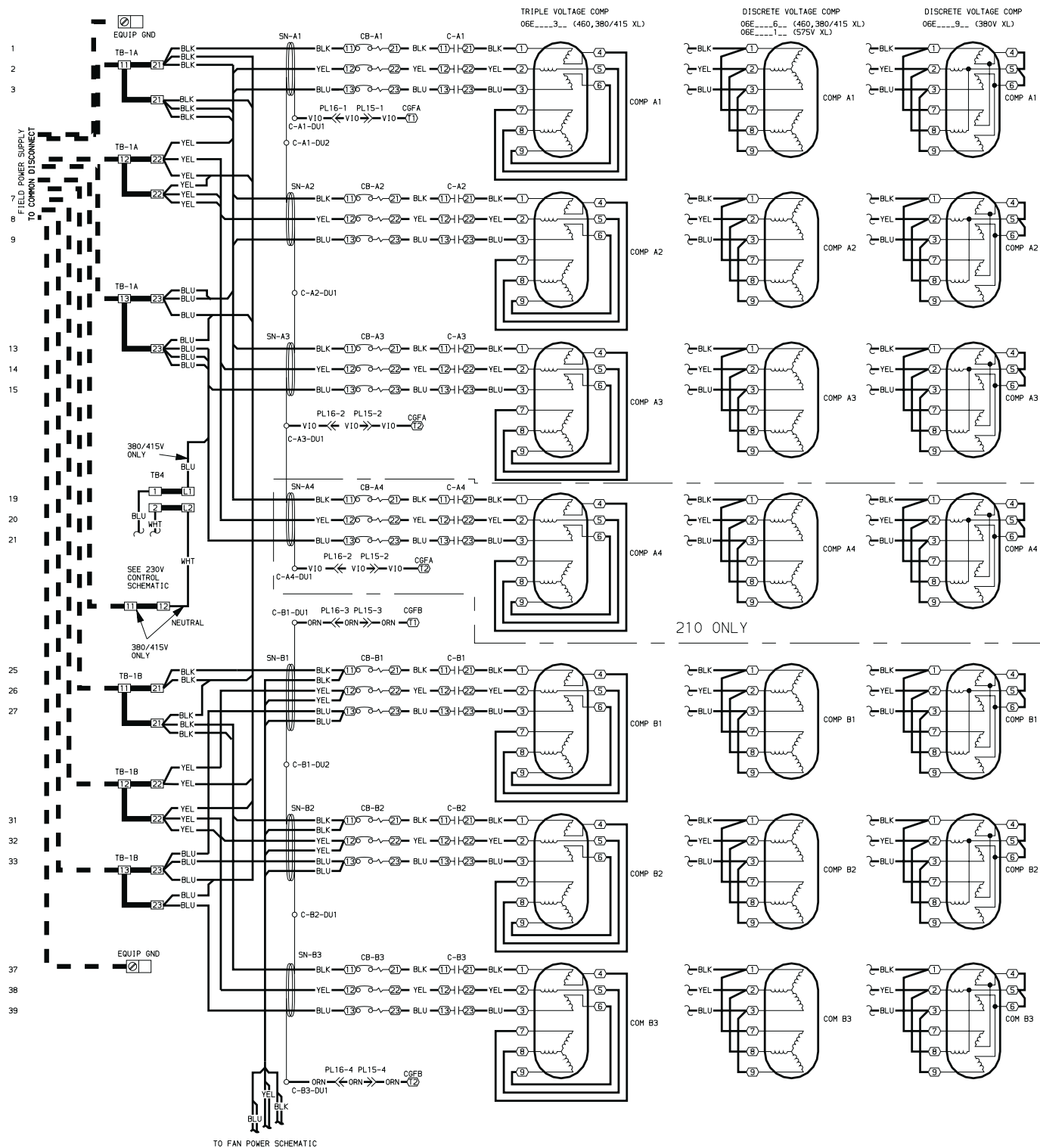


Fig. 16 — Power Schematic; 30GN,GT,GU170-210, 270A-315A, 330A/B-420A/B; 380, 380/415, 460, 575 V — XL



23

FLOTRONIC II
(24V) CONTROL SCHEMATIC

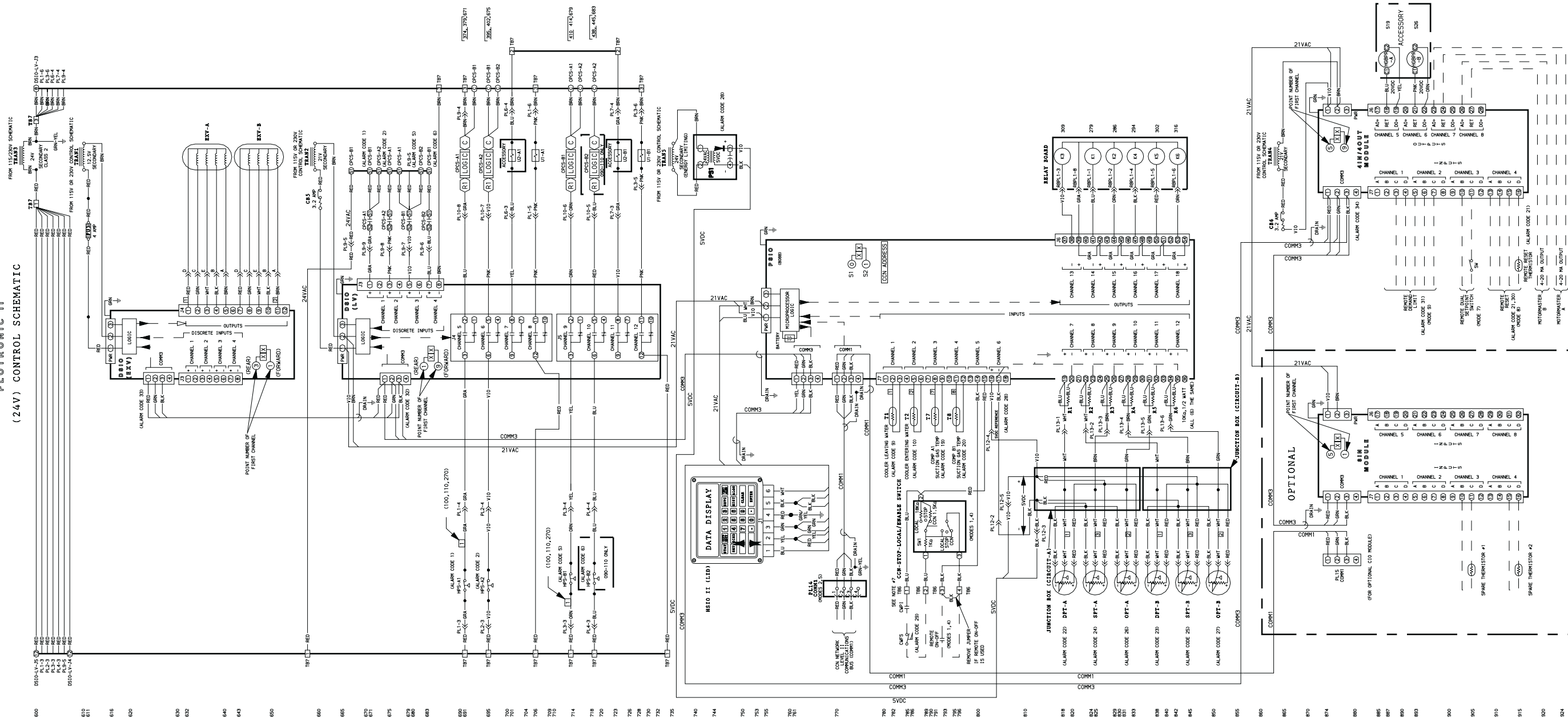
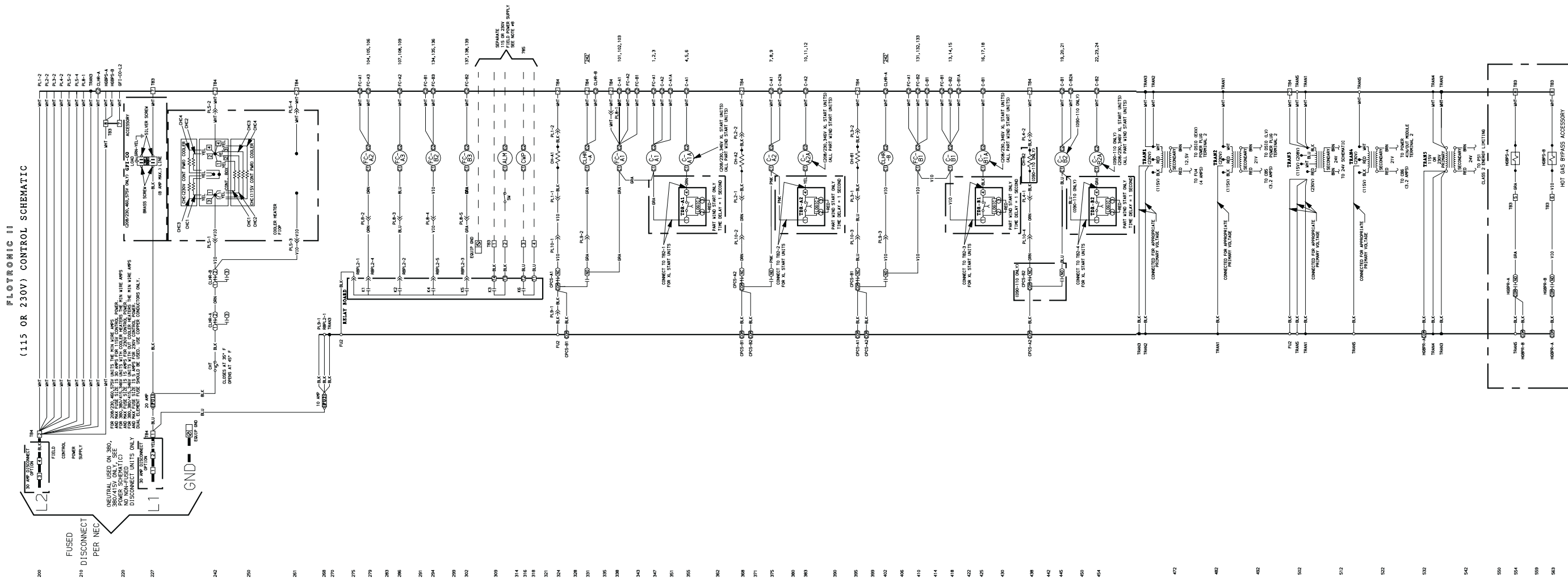


Fig. 22 — Control Label; 30GN080-110, 230B-315B; 24 V



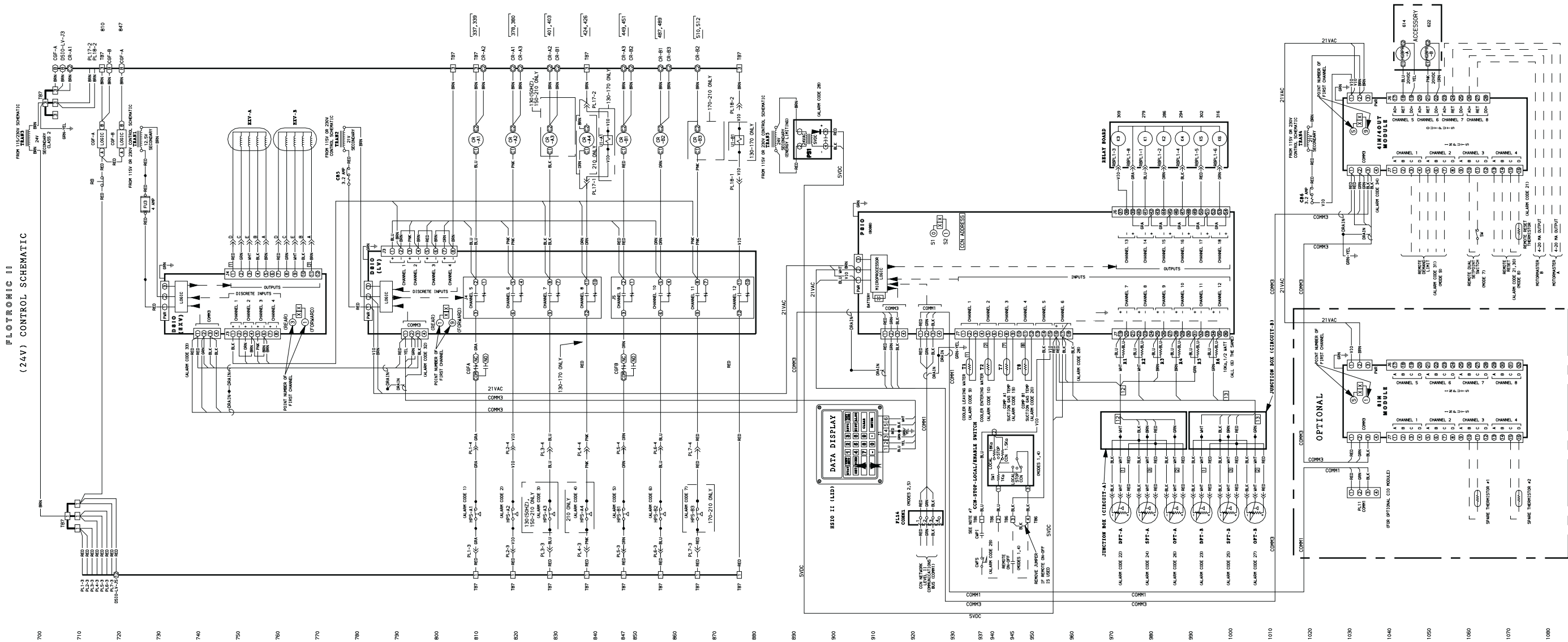


Fig. 24 — Control Label; 30GN130-210, 230A-315A, 330A/B-420A/B; 24 V

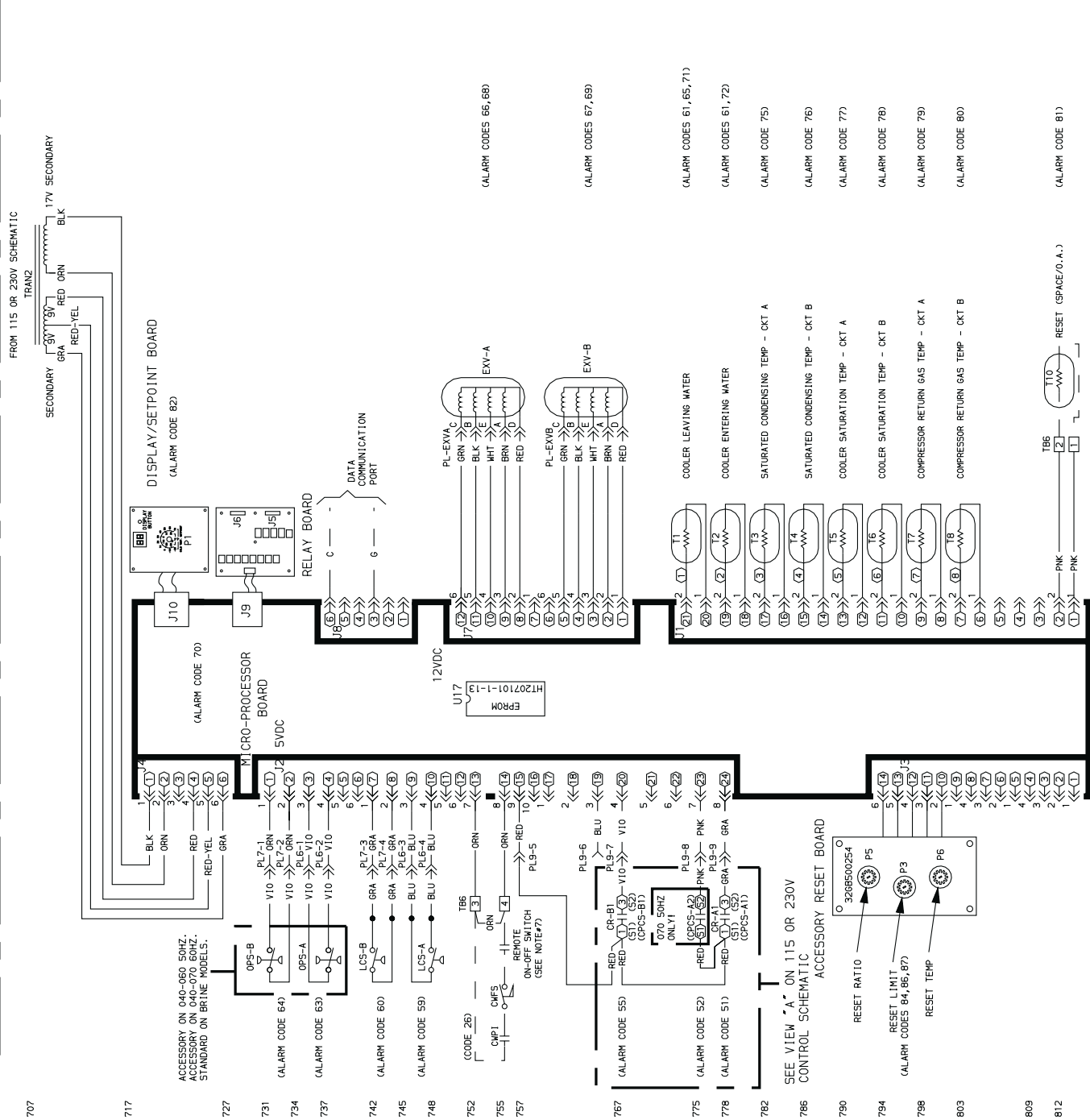
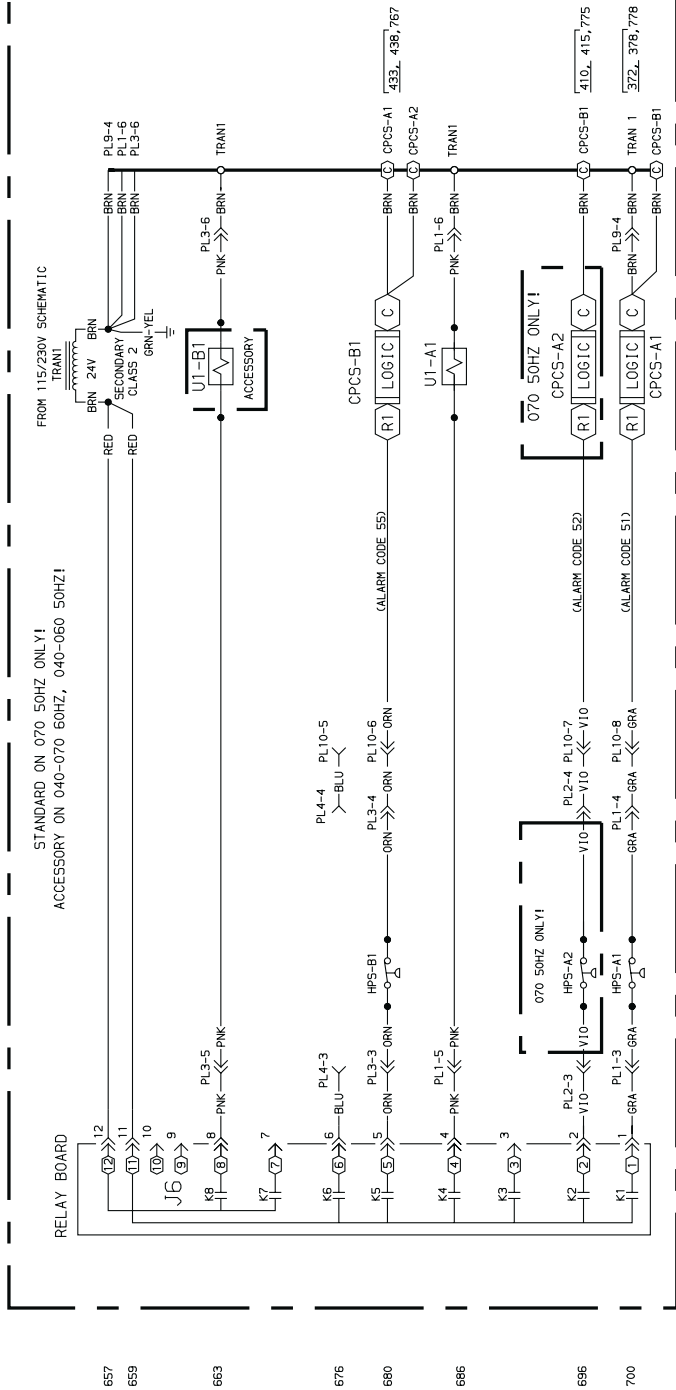
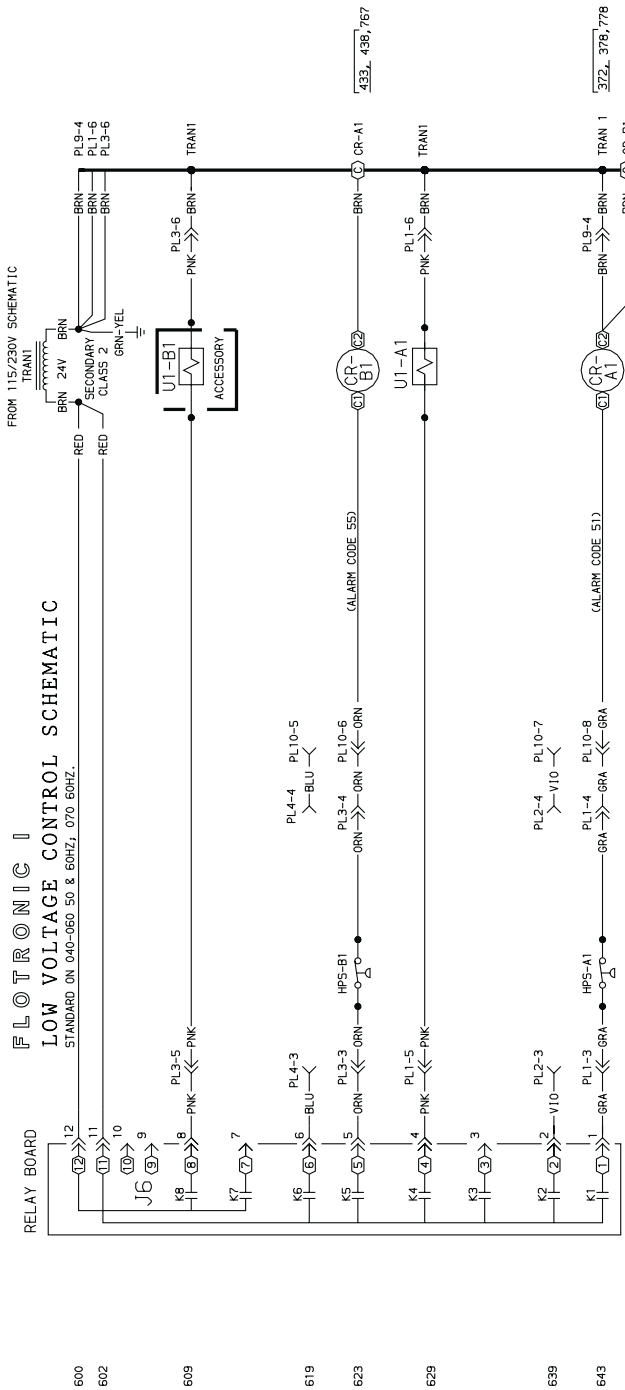
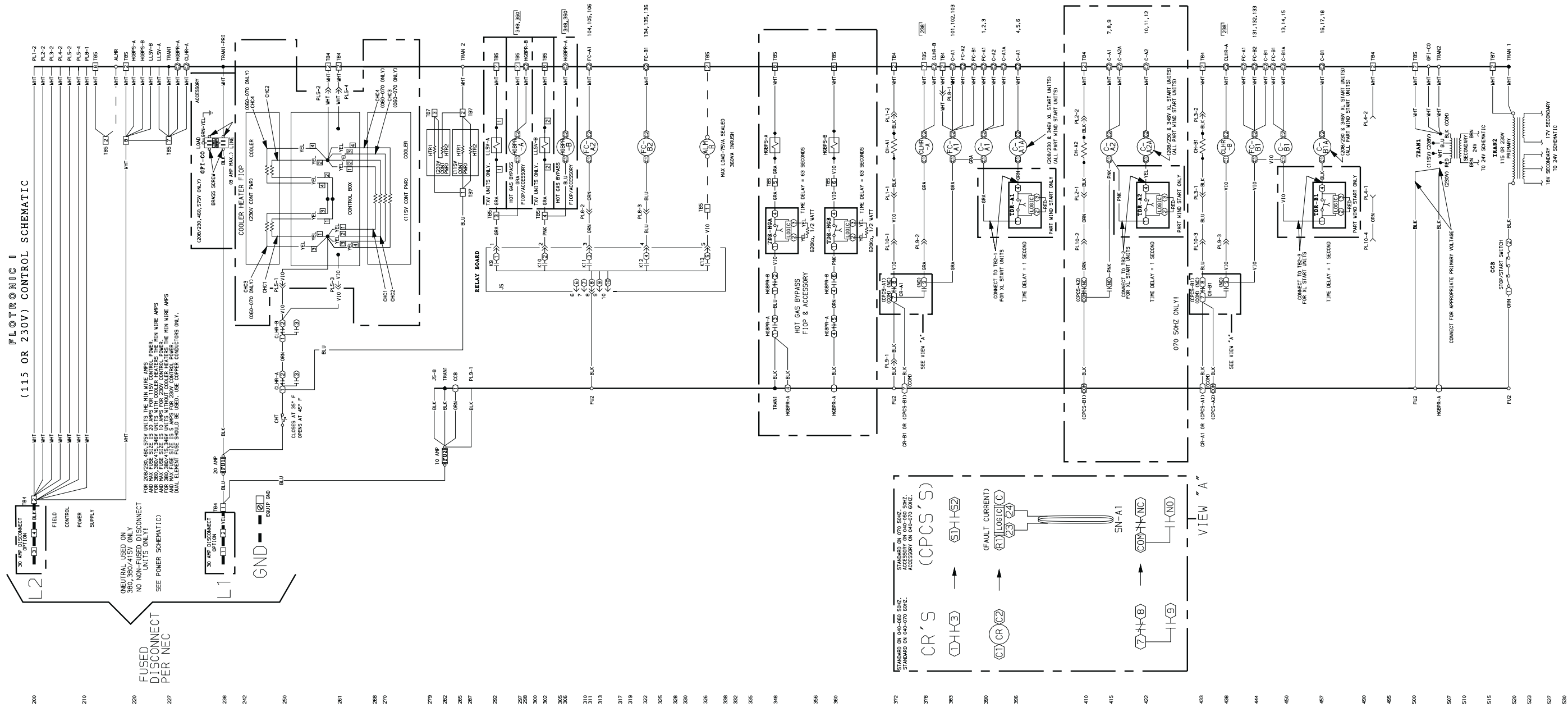


Fig. 26 — Control Label; 30GT, GU040-070; 24 V



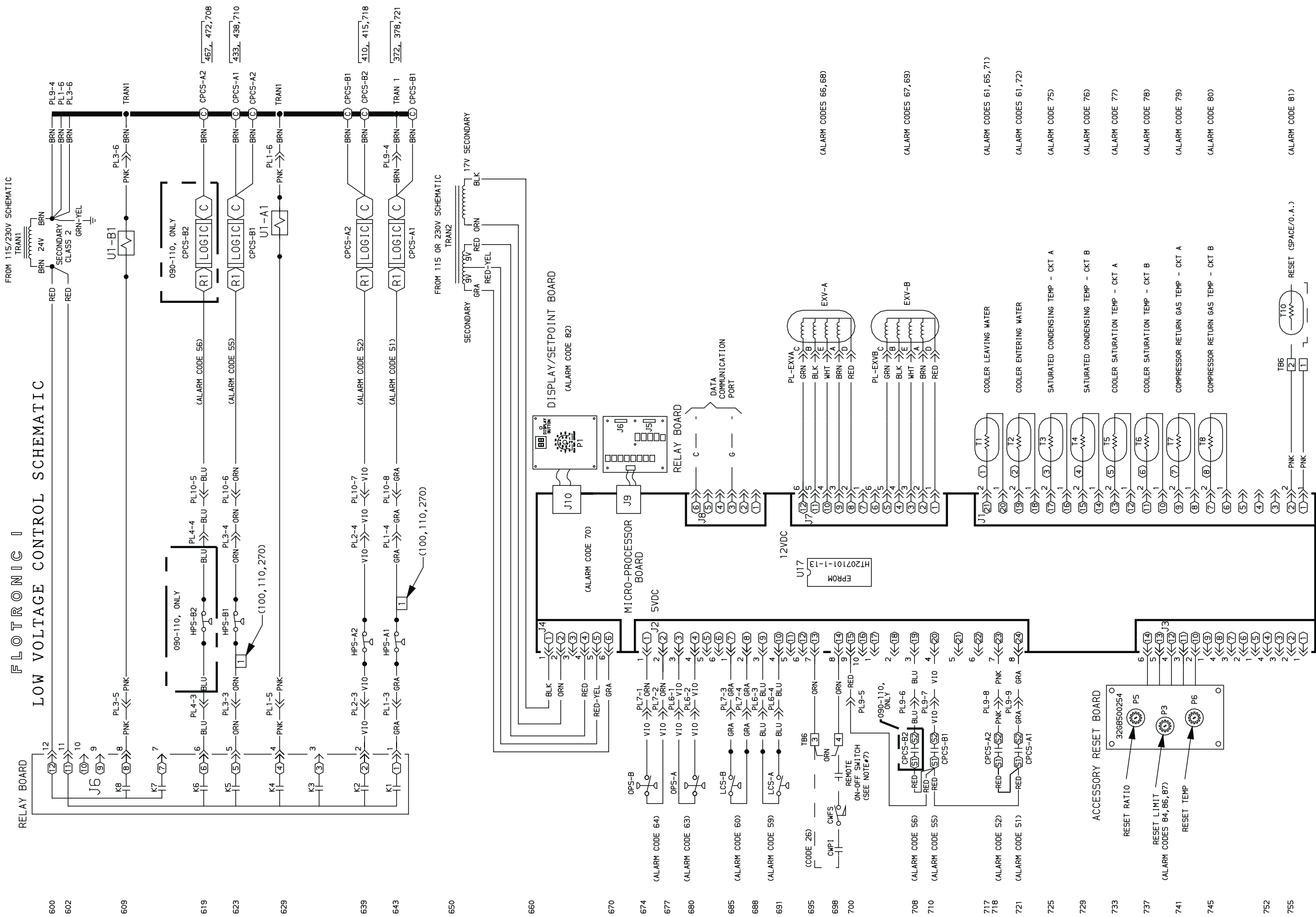
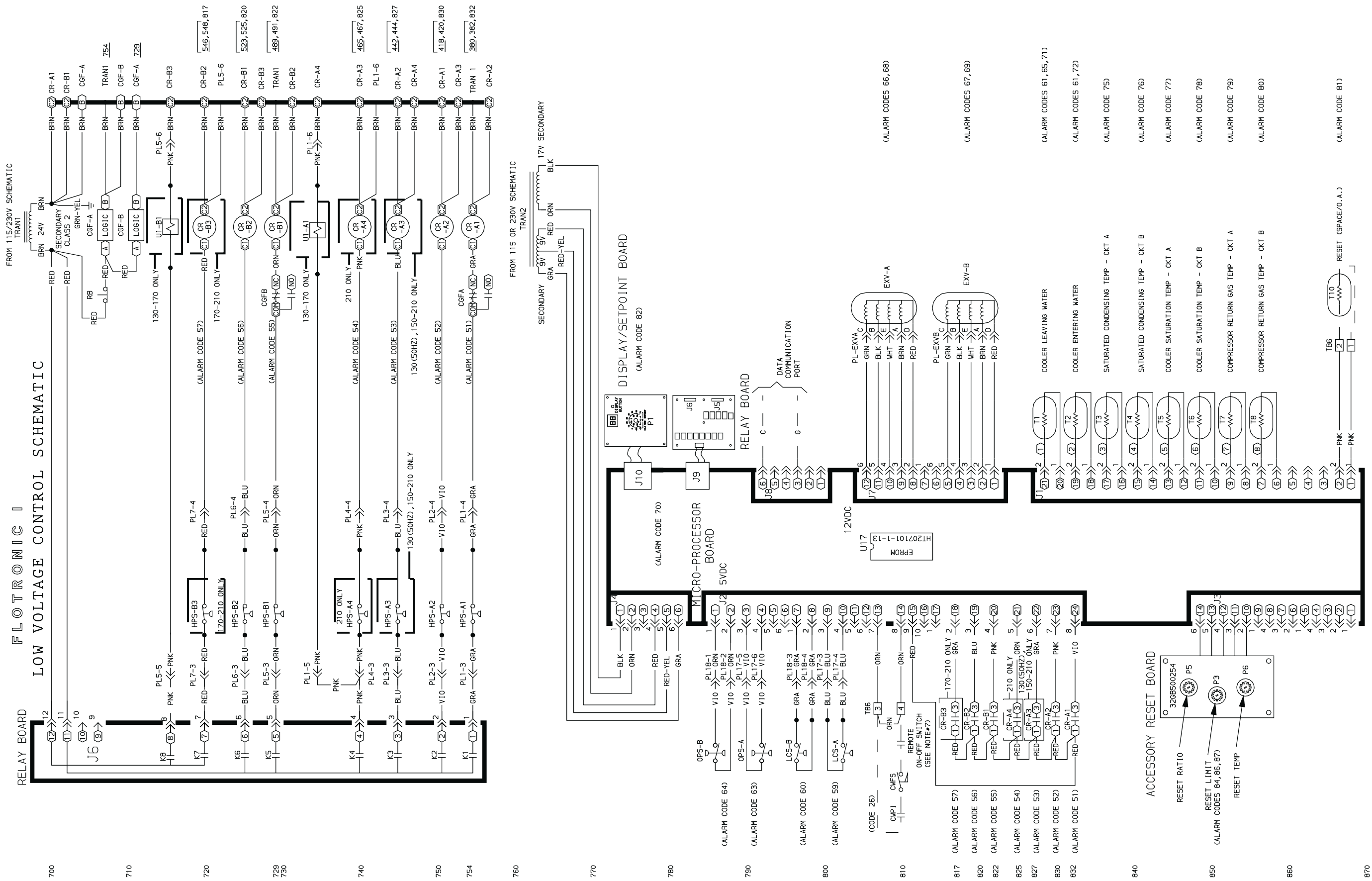


Fig. 28 — Control Label; 30GT, GU080-100, 230B-315B; 24 V



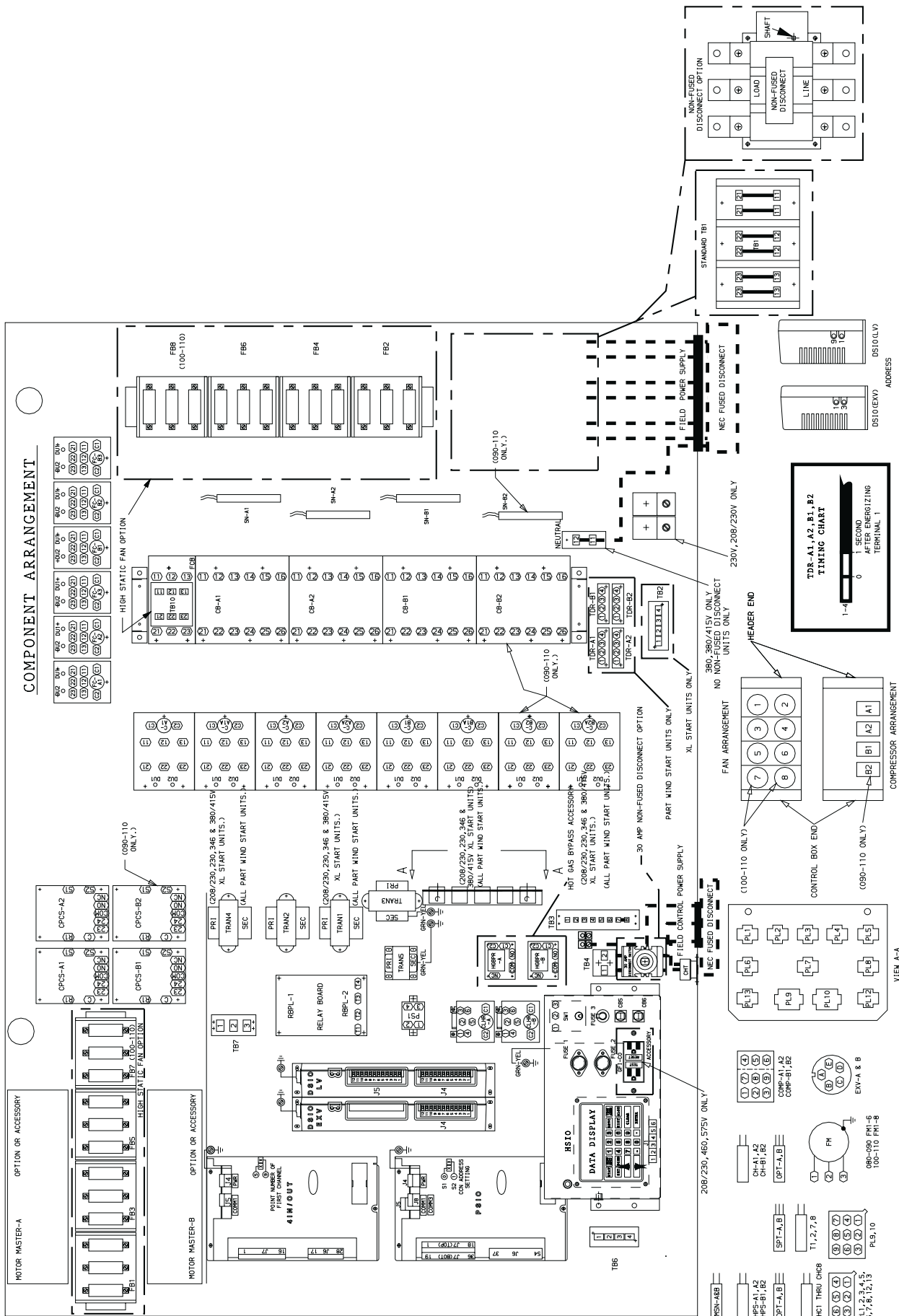


Fig. 33 — Component Arrangement; 30GN080-110, 230B-315B

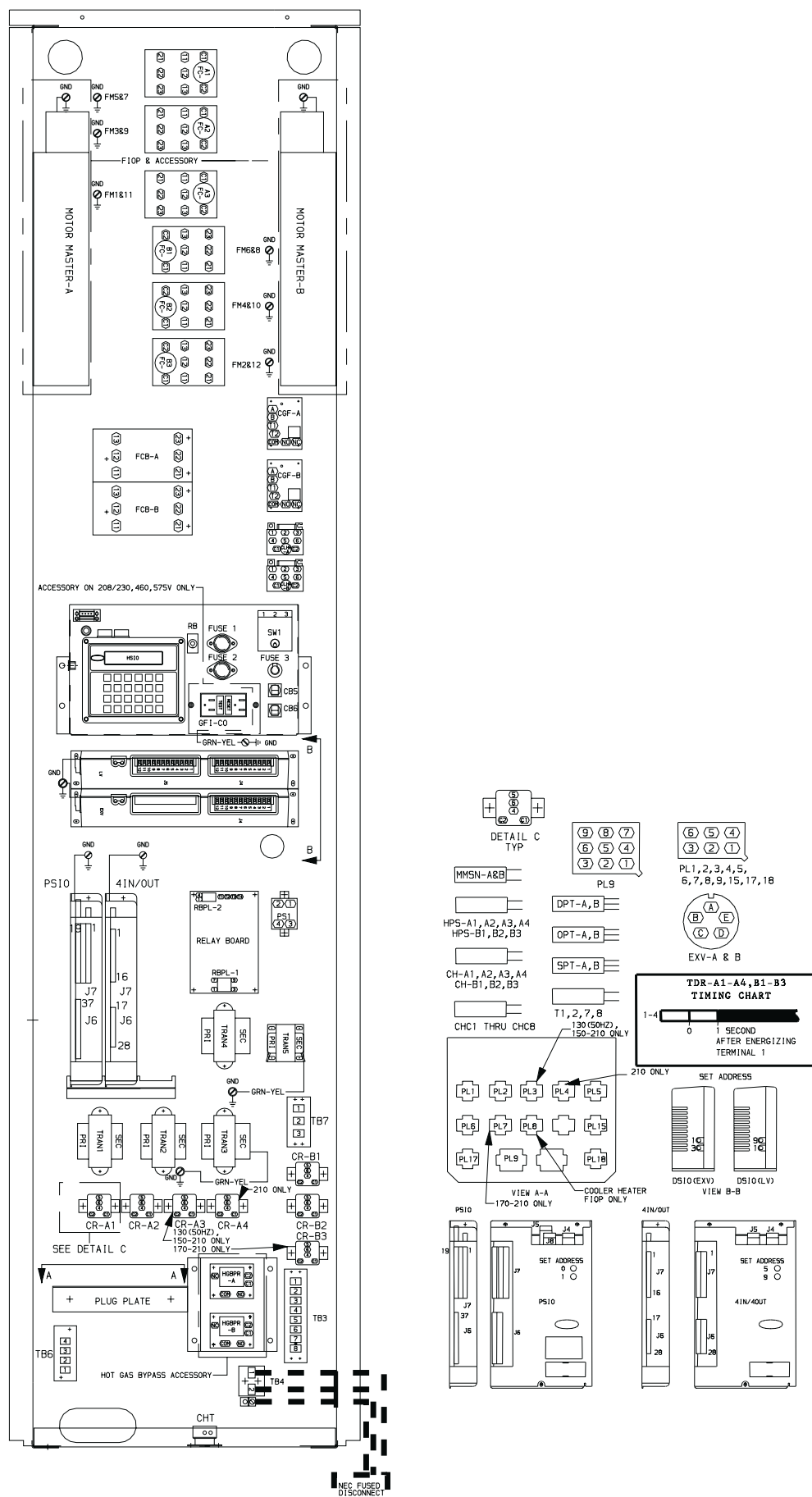


Fig. 34 — Control Box Component Arrangement; 30GN130-210, 230A-315A, 330A/B-420A/B Units

COMPONENT ARRANGEMENT POWER BOX

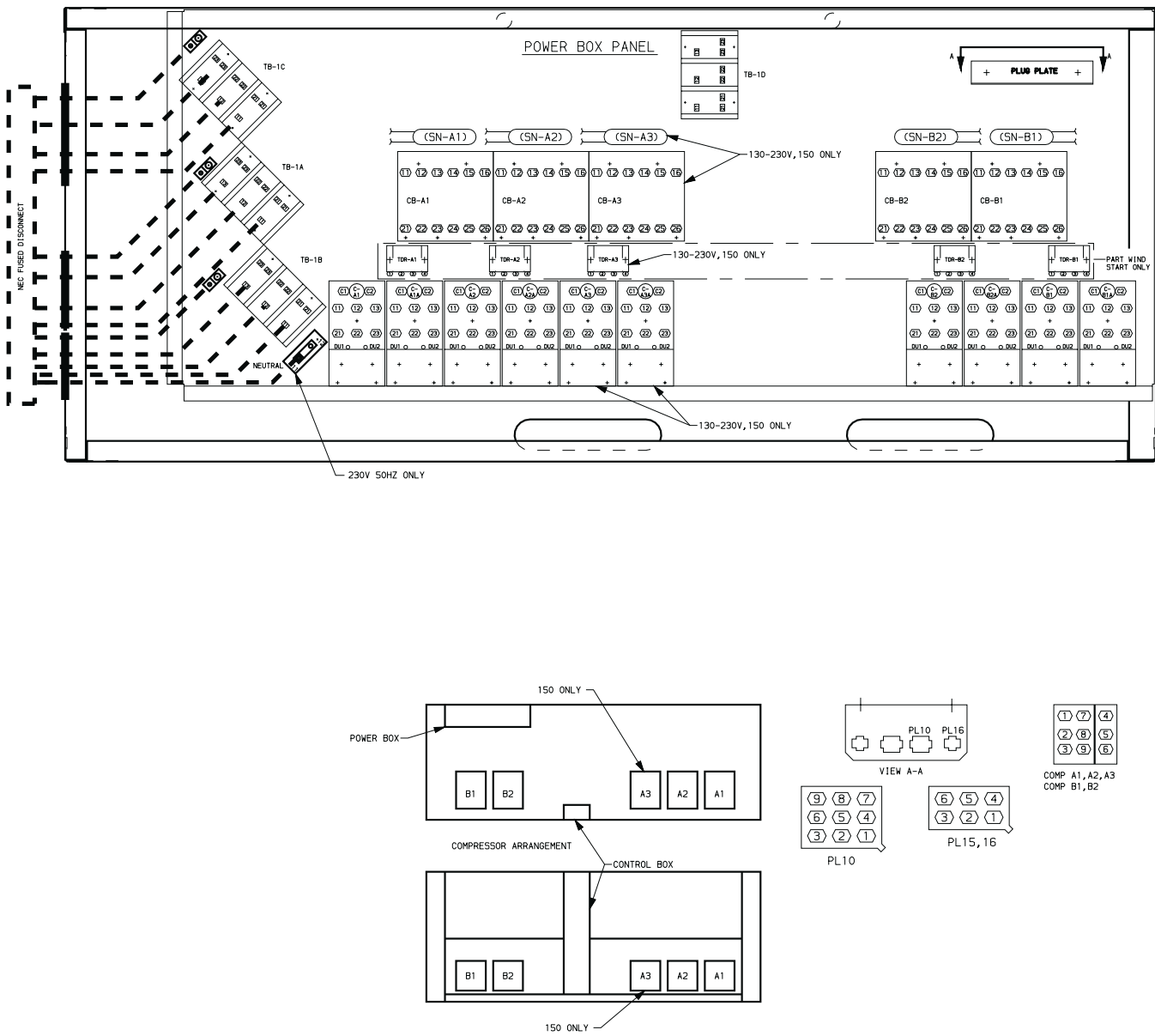


Fig. 35 — Power Box Location and Component Arrangement; 30GN,GT,GU130, 150, 230A-255A; 208/230, 230 V — PW, XL

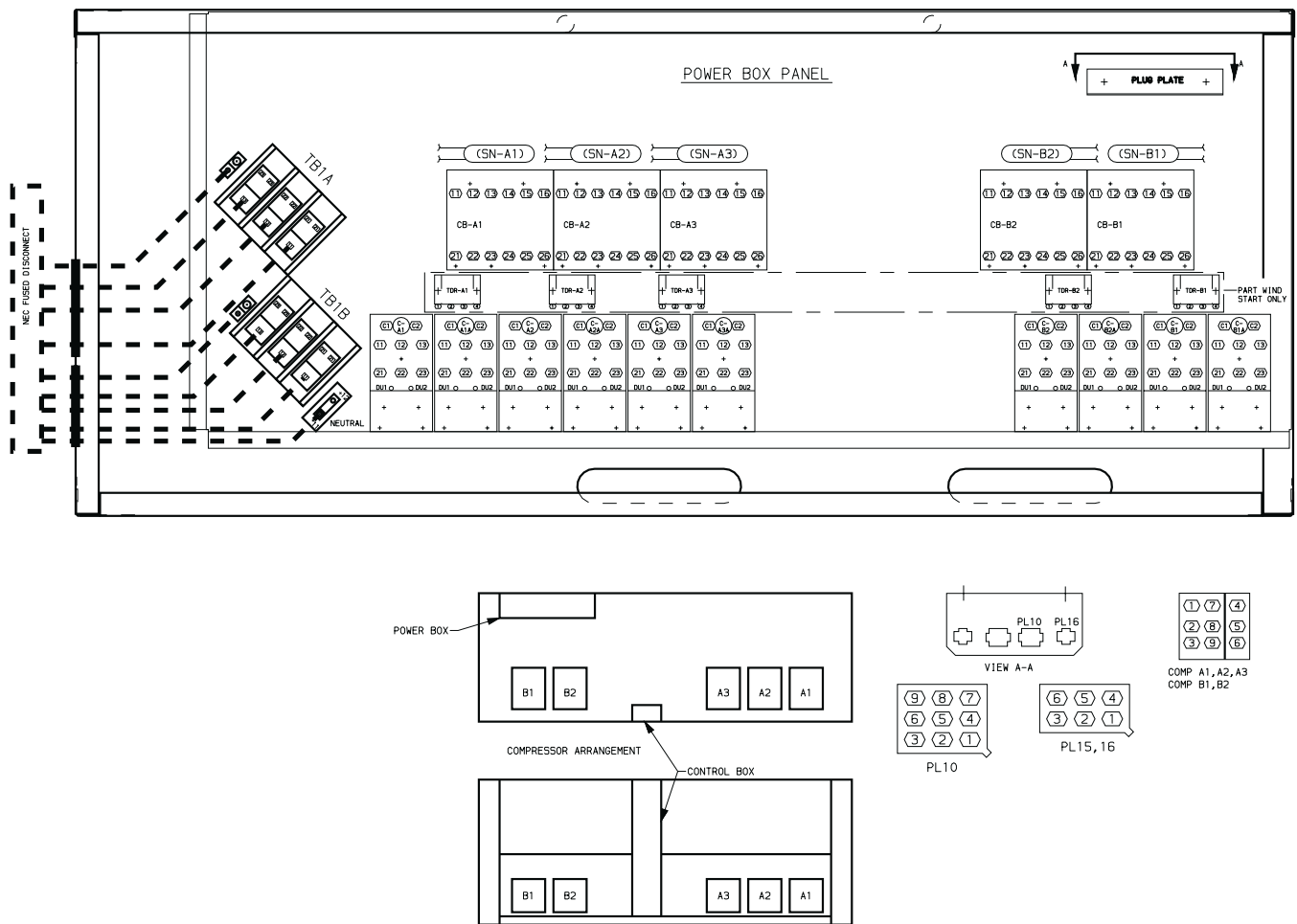
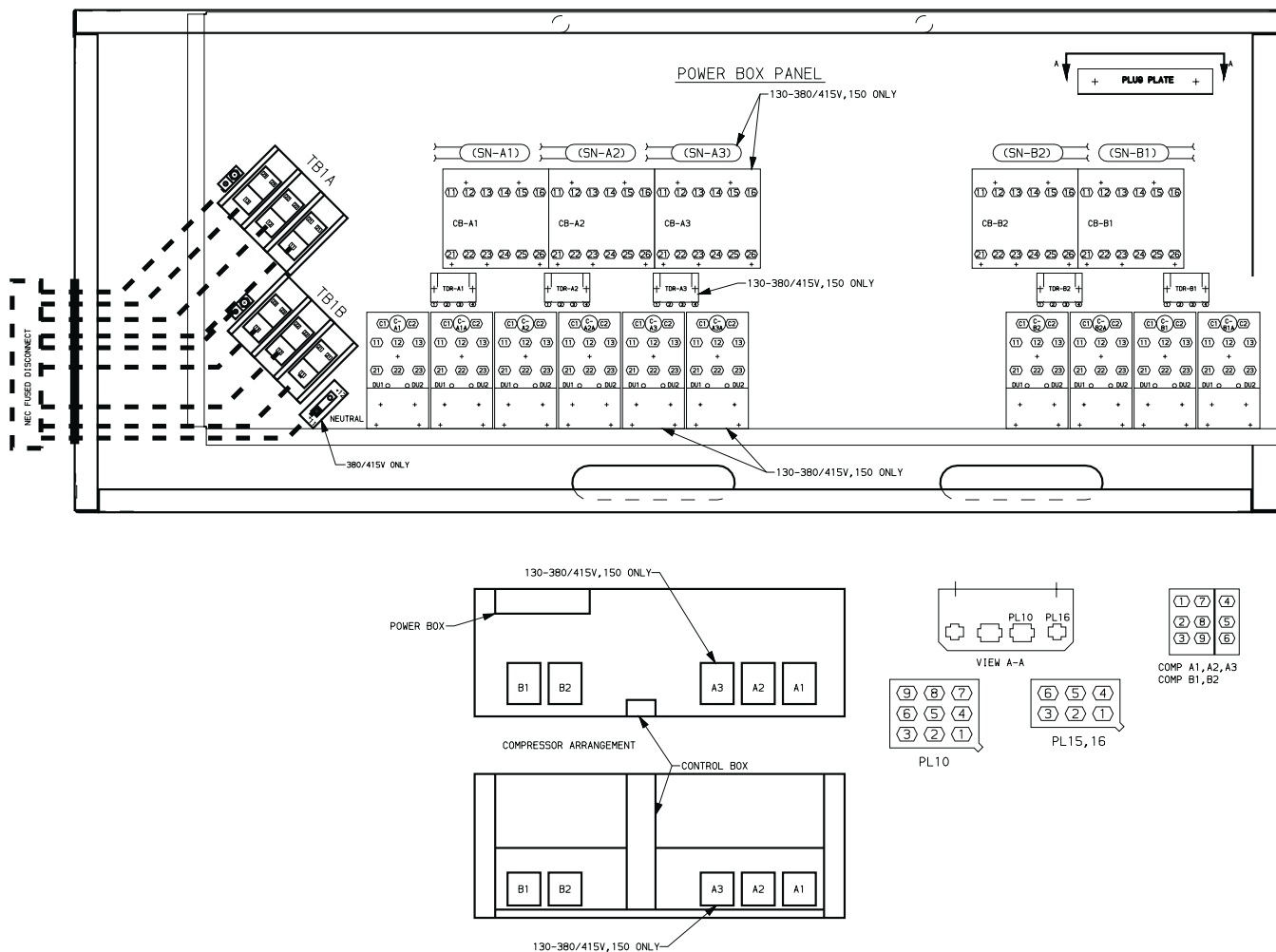
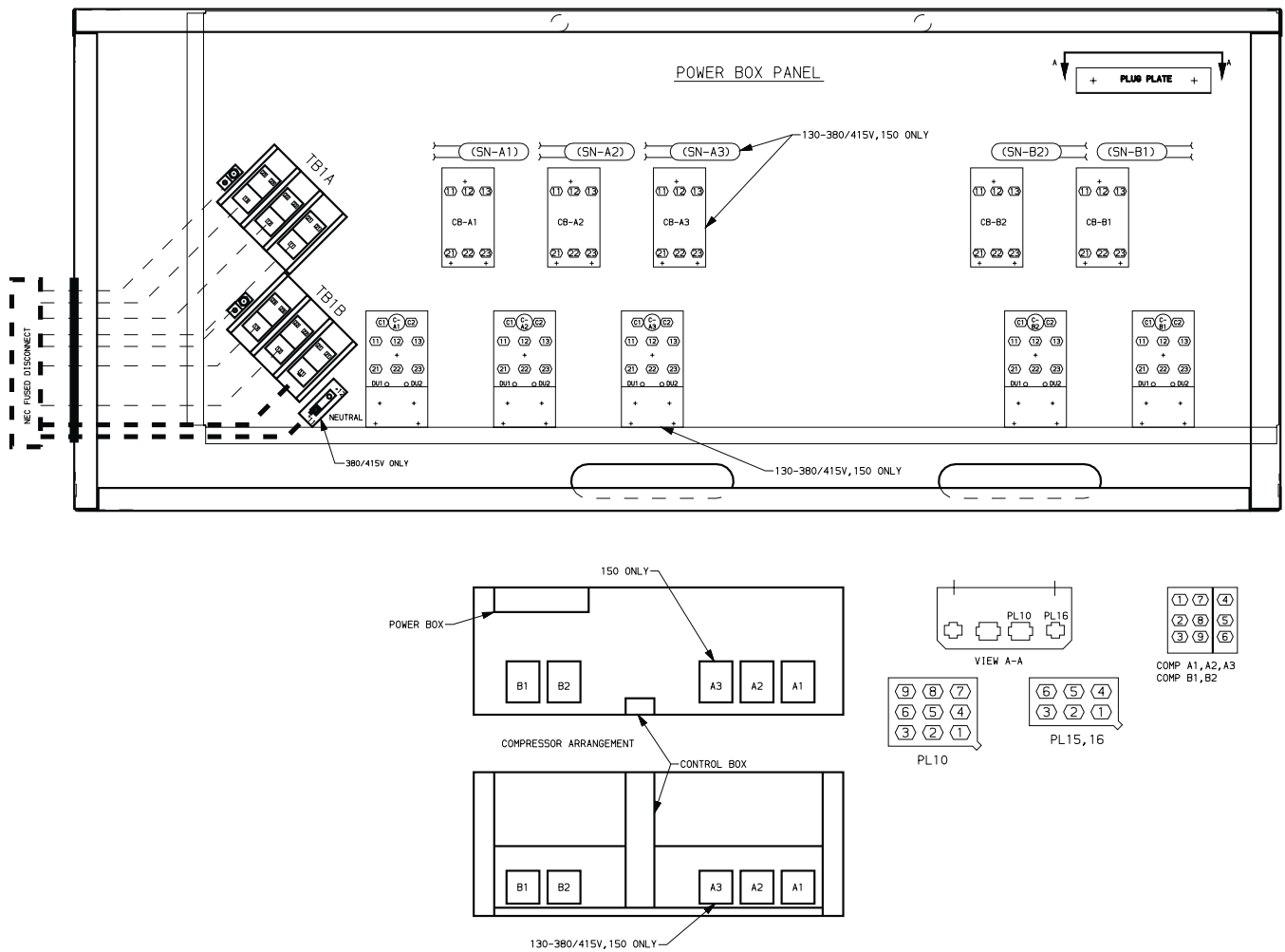


Fig. 36 — Power Box Location and Component Arrangement; 30GN,GT,GU130, 150, 230A-255A; 346 V — PW, XL



NOTE: For 575 v Motormaster® option wiring see Fig. 69.

Fig. 37 — Power Box Location and Component Arrangement; 30GN,GT,GU130, 150, 230A-255A; 380, 380/415, 460, 575 V — PW



NOTE: For 575 v Motormaster® option wiring see Fig. 69.

Fig. 38 — Power Box Location and Component Arrangement; 30GN,GT, GU130, 150, 230A-255A; 380, 380/415, 460, 575 V — XL

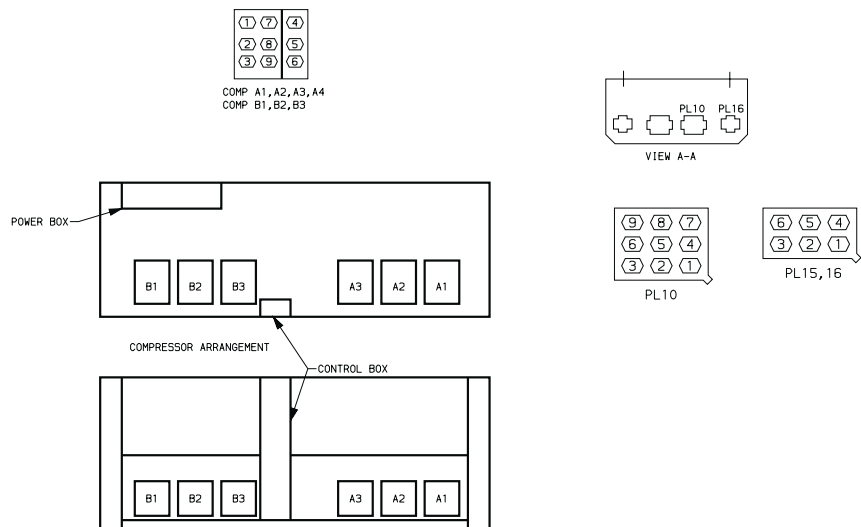
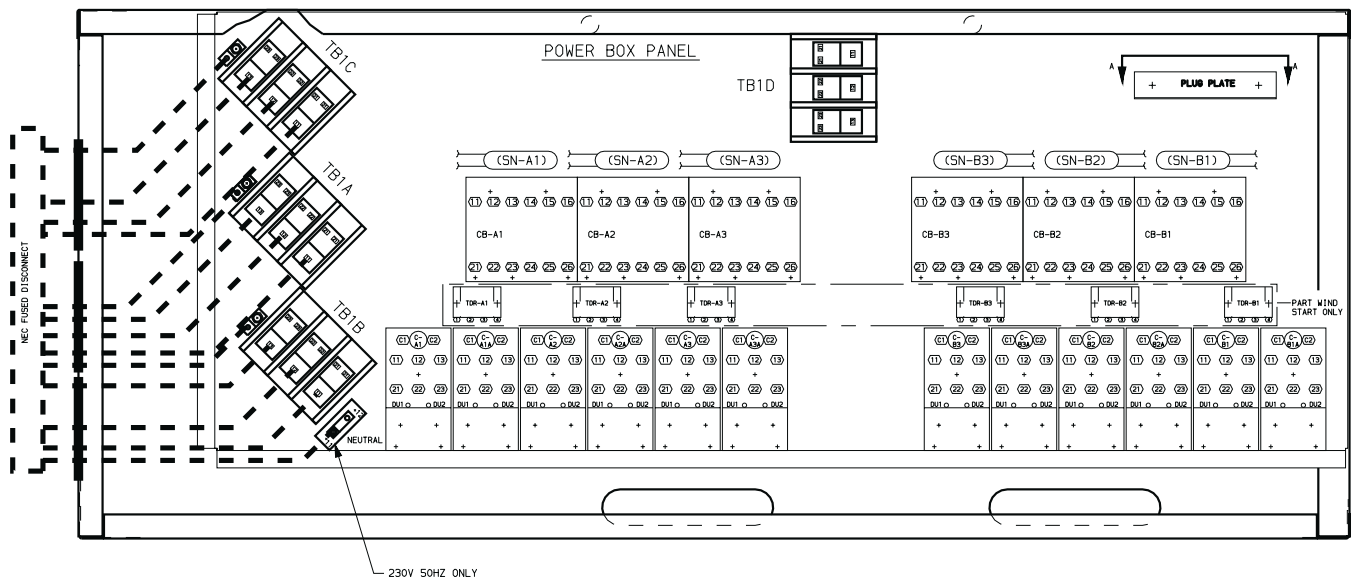


Fig. 39 — Power Box Location and Component Arrangement; 30GN,GT,GU170, 190, 270A, 290A, 330A/B, 360A/B, 390B; 208/230, 230 V — PW, XL

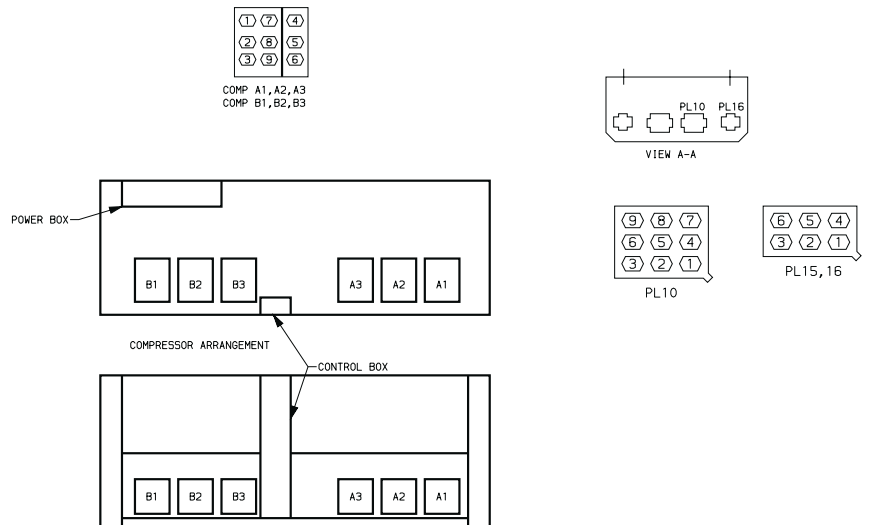
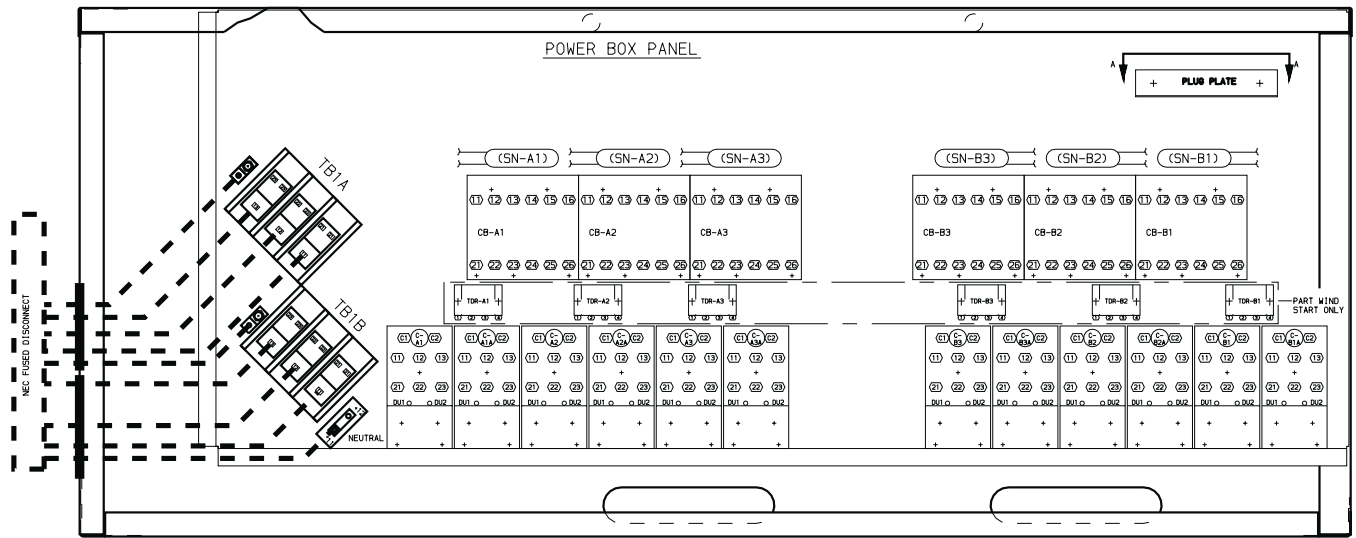
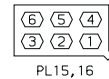
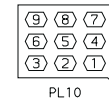
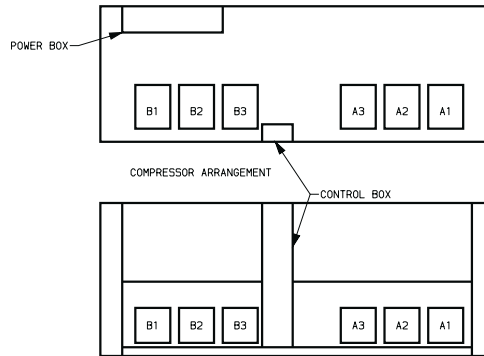
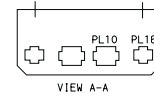
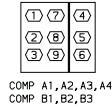
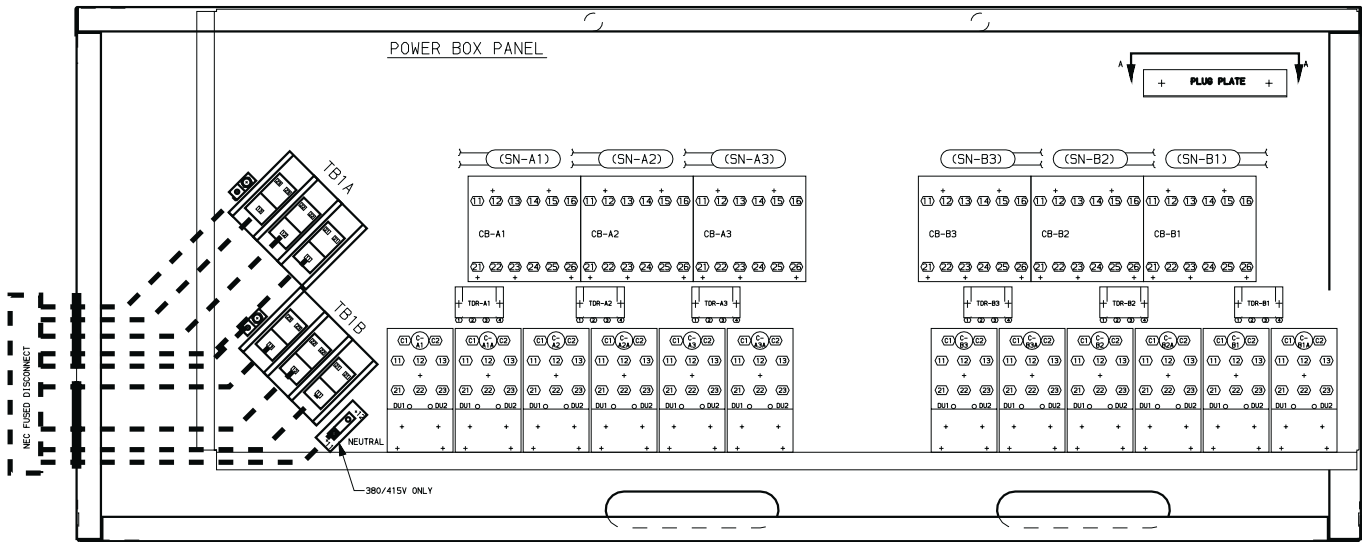
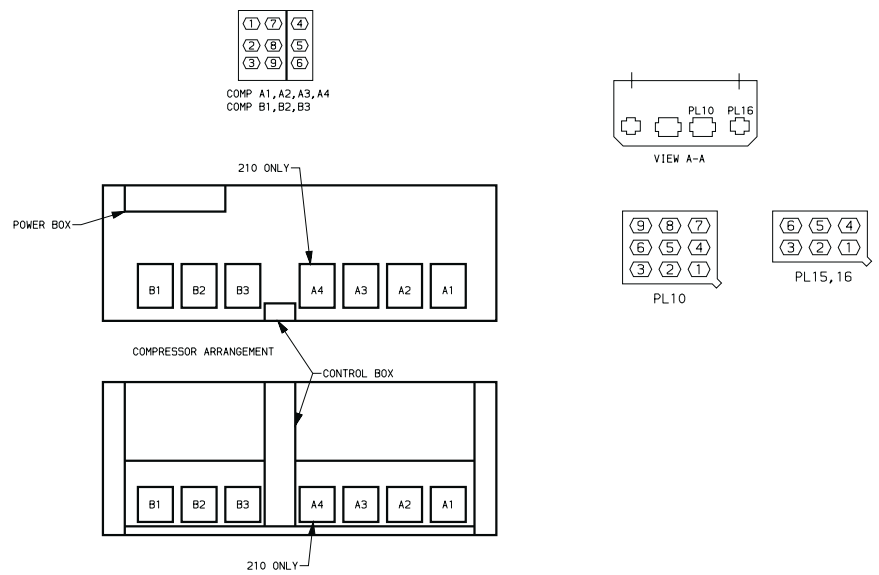
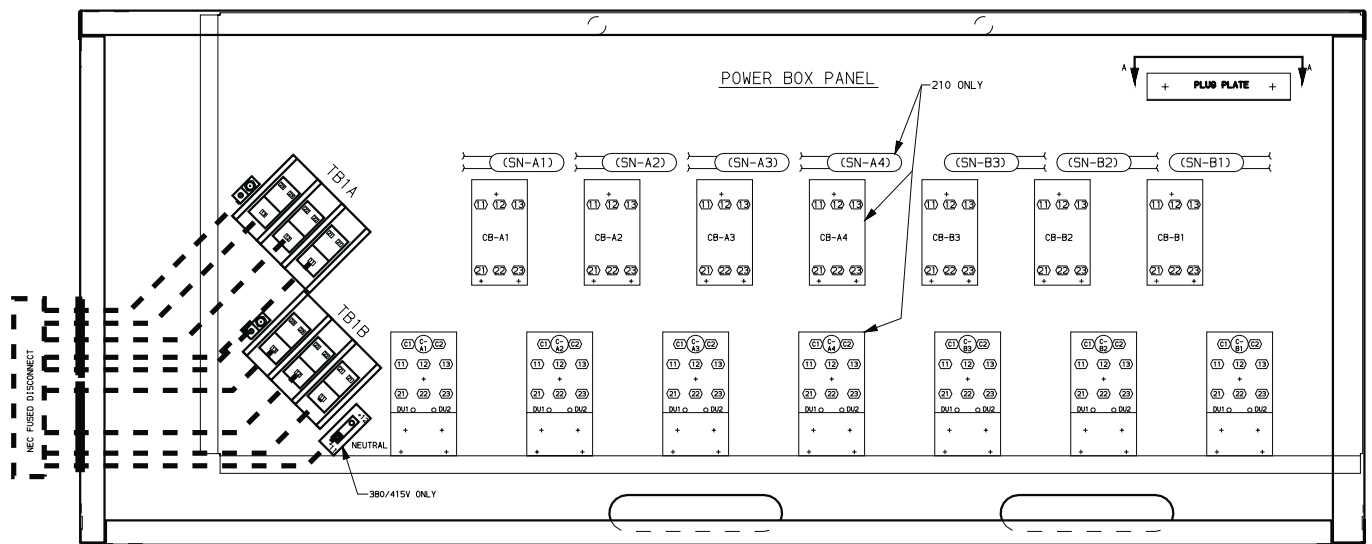


Fig. 40 — Power Box Location and Component Arrangement; 30GN,GT,GU170, 190, 270A, 290A, 330A/B, 360A/B, 390B; 346 V — PW, XL



NOTE: For 575 v Motormaster® option wiring see Fig. 69.

Fig. 41 — Power Box Location and Component Arrangement; 30GN,GT,GU170, 190, 270A, 290A, 330A/B, 360A/B, 390B; 380, 380/415, 460, 575 V — PW



NOTE: For 575 v Motormaster® option wiring see Fig. 69.

Fig. 42 — Power Box Location and Component Arrangement; 30GN,GT, GU170-210, 270A-315A 330A/B-420A/B; 380, 380/415, 460, 575 V — XL

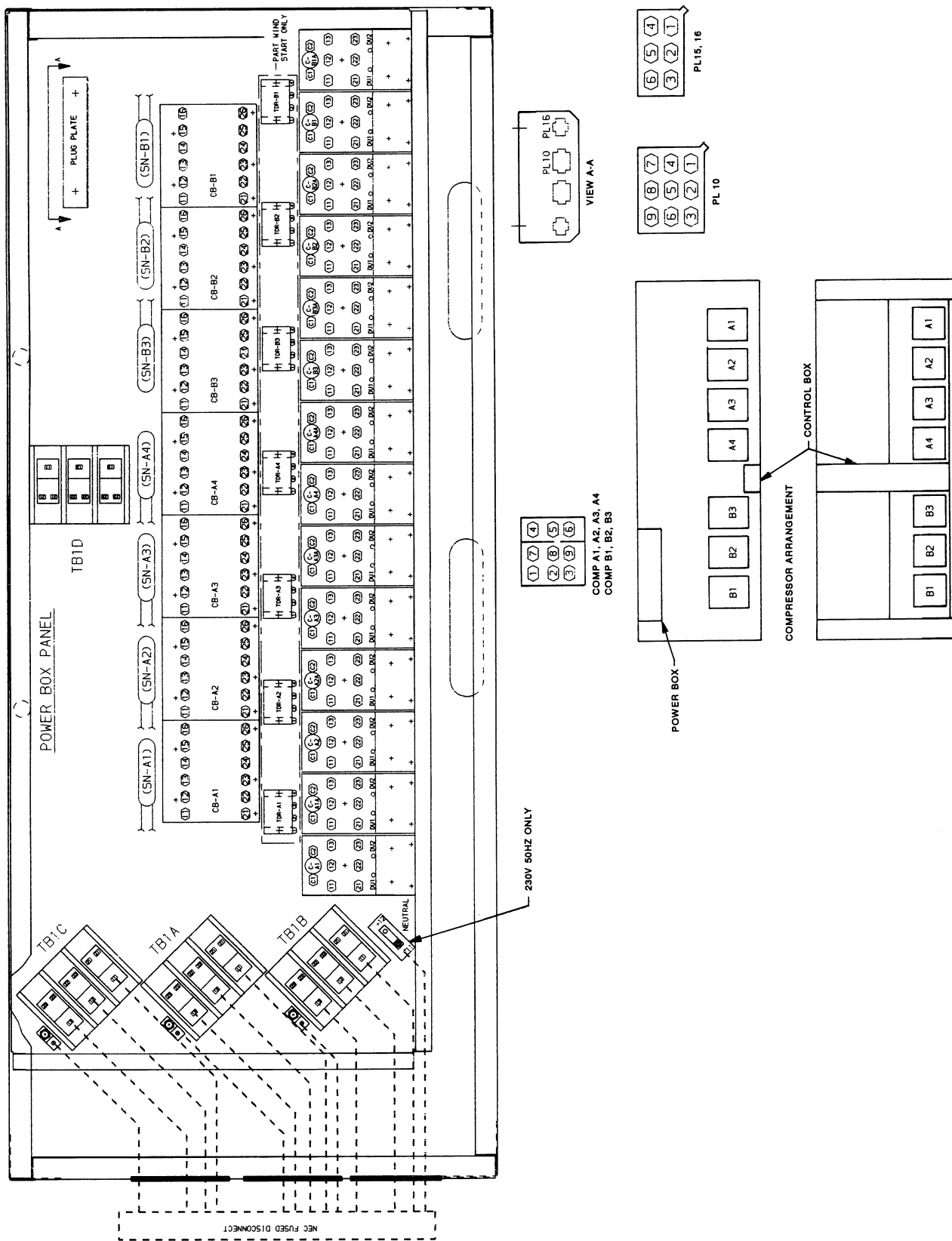
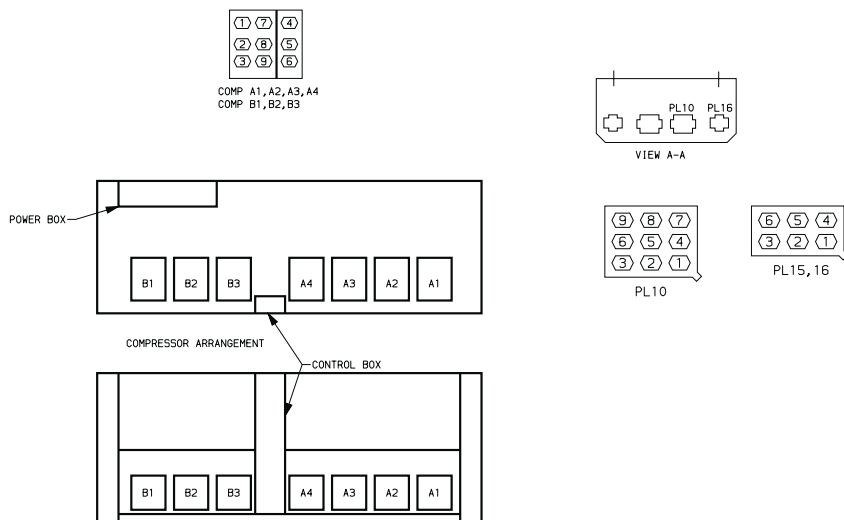
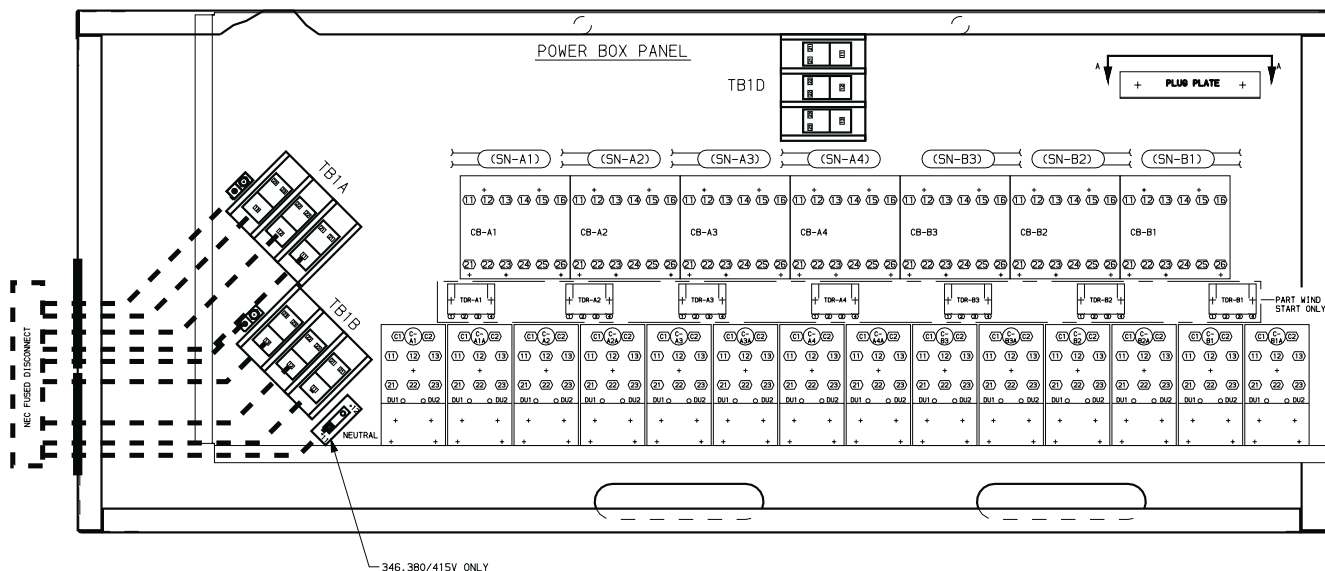


Fig. 43 — Power Box Location and Component Arrangement; 30GN,GT, GU210, 315A, 390A, 420A/B; 208/230, 230 V — PW, XL



NOTE: For 575 v Motormaster® option wiring see Fig. 69.

Fig. 44 — Power Box Location and Component Location; 30GN,GT,GU210, 315A, 390A, 420A/B; 346 V — PW, XL; 380, 380/415, 460, 575 V — PW

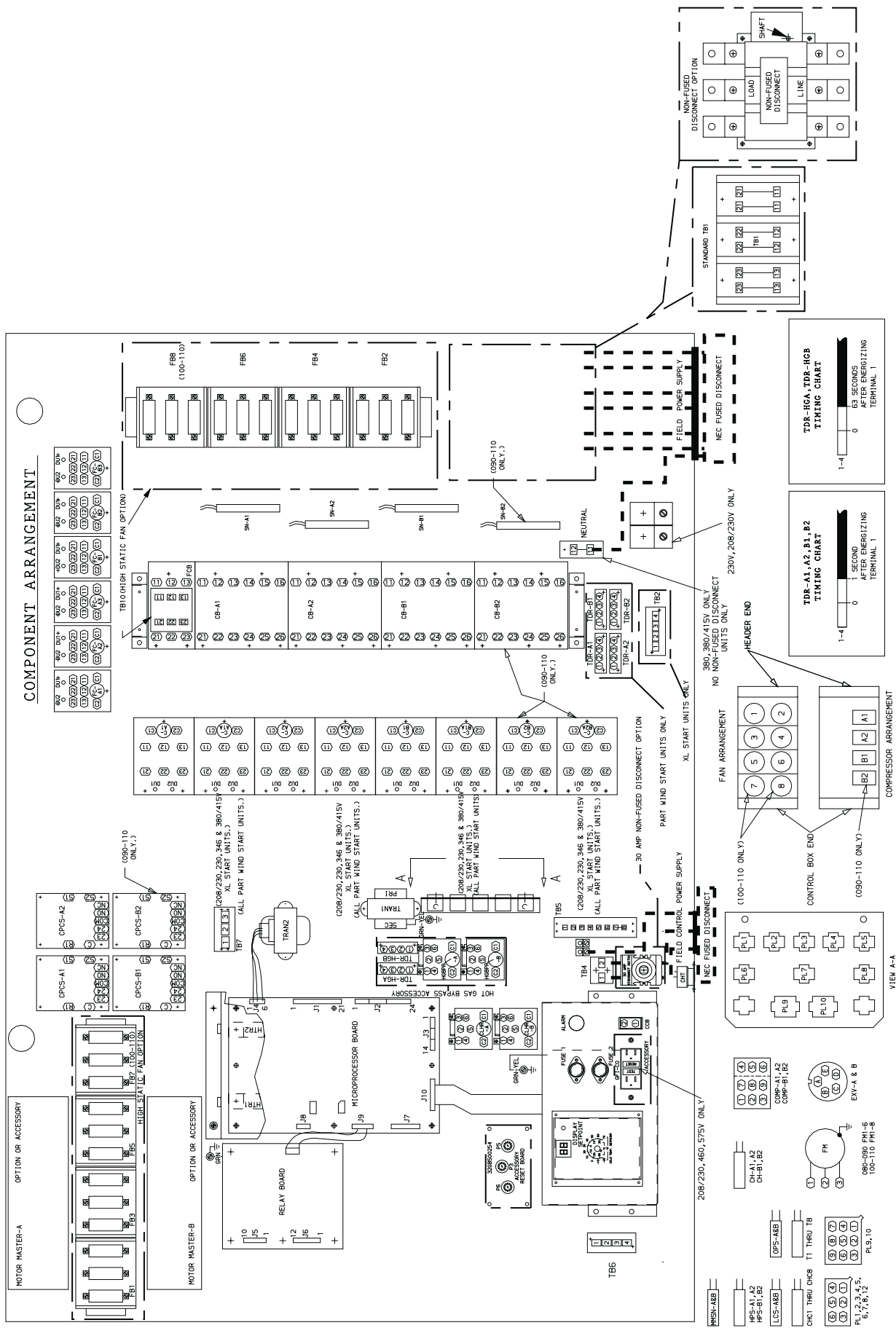


Fig. 46 — Component Arrangement; 30GT, GU080-110, 230B-315B

Fig. 47 — Control Box Component Arrangement; 30GT, GU130-210, 230A-315A, 330A/B-420A/B

COMPONENT NAME		SOFTWARE POINT NO.	HARDWARE CHANNEL NO.	30GN040 (60HZ)	30GN040 (50HZ), 30GN045 (60HZ)
PSIO (12/6 MODULE)	12 INPUTS	1	1	FUNCTION (2) COMPRESSOR	FUNCTION (2) COMPRESSOR
		2	2	CHILLED WATER SUPPLY TEMPERATURE	CHILLED WATER SUPPLY TEMPERATURE
		3	3	CHILLED WATER RETURN TEMPERATURE	CHILLED WATER RETURN TEMPERATURE
		4	4	COMP A1 SUCTION GAS TEMPERATURE	COMP A1 SUCTION GAS TEMPERATURE
		5	5	COMP B1 SUCTION GAS TEMPERATURE	COMP B1 SUCTION GAS TEMPERATURE
		6	6	REMOTE ON/OFF, CMP INTERLOCK, LOCAL/ENABLE - STOP - CON, CWFS	REMOTE ON/OFF, CMP INTERLOCK, LOCAL/ENABLE - STOP - CON, CWFS
	6 OUTPUTS	7	7	SVDC REFERENCE INPUT	SVDC REFERENCE INPUT
		8	8	DISCH PRESS CKT A	DISCH PRESS CKT A
		9	9	DISCH PRESS CKT B	DISCH PRESS CKT B
		10	10	SUCT PRESS CKT A	SUCT PRESS CKT A
		11	11	SUCT PRESS CKT B	SUCT PRESS CKT B
		12	12	OIL PRESS CKT A	OIL PRESS CKT A
DSIO (LV)	4 INPUTS	13	13	OIL PRESS CKT B	OIL PRESS CKT B
		14	14	K3 RELAY - ALARM RELAY	K3 RELAY - ALARM RELAY
		15	15	K1 RELAY - FAN RELAY (STAGE 2)	K1 RELAY - FAN RELAY (STAGE 2)
		16	16	K2 RELAY - FAN RELAY (STAGE 3)	K2 RELAY - FAN RELAY (STAGE 3)
		17	17	--NOT USED--	--NOT USED--
		18	18	--NOT USED--	--NOT USED--
	8 OUTPUTS	19	19	K6 RELAY - CHILLED WATER PUMP RELAY	K6 RELAY - CHILLED WATER PUMP RELAY
		20	20	COMPR A1 FEEDBACK	COMPR A1 FEEDBACK
		21	21	--NOT USED--	--NOT USED--
		22	22	COMPR B1 FEEDBACK	COMPR B1 FEEDBACK
		23	23	--NOT USED--	--NOT USED--
		24	24	COMPR A1 SAFETIES, COMPR A1 RELAY, FAN CONTRICIR A, STAGE 1)	COMPR A1 SAFETIES, COMPR A1 RELAY, FAN CONTRICIR A, STAGE 1)
DSIO (EXV)	4 INPUTS	25	25	--NOT USED--	--NOT USED--
		26	26	--NOT USED--	--NOT USED--
		27	27	UNLOADER U1-A1	UNLOADER U1-A1
		28	28	COMPR B1 SAFETIES, COMPR B1 RELAY, FAN CONTRICIR B, STAGE 1)	COMPR B1 SAFETIES, COMPR B1 RELAY, FAN CONTRICIR B, STAGE 1)
		29	29	--NOT USED--	--NOT USED--
		30	30	UNLOADER U1-B1 (ACCESSORY)	UNLOADER U1-B1 (ACCESSORY)
	8 OUTPUTS	31	31	--NOT USED--	--NOT USED--
		32	32	--NOT USED--	--NOT USED--
		33	33	--NOT USED--	--NOT USED--
		34	34	--NOT USED--	--NOT USED--
		35	35	--NOT USED--	--NOT USED--
		36	36	EXV-A	EXV-A
BIN MODULE (OPTIONAL)	8 INPUTS	37	37	EXV-B	EXV-B
		38	38	--NOT USED--	--NOT USED--
		39	39	--NOT USED--	--NOT USED--
		40	40	--NOT USED--	--NOT USED--
		41	41	--NOT USED--	--NOT USED--
		42	42	--NOT USED--	--NOT USED--
	4 INPUTS	51	51	--NOT USED--	--NOT USED--
		52	52	--NOT USED--	--NOT USED--
		53	53	SPARE TEMPERATURE SENSOR #1	SPARE TEMPERATURE SENSOR #1
		54	54	SPARE TEMPERATURE SENSOR #2	SPARE TEMPERATURE SENSOR #2
		55	55	--NOT USED--	--NOT USED--
		56	56	--NOT USED--	--NOT USED--
41N/4OUT MODULE	4 INPUTS	57	57	--NOT USED--	--NOT USED--
		58	58	--NOT USED--	--NOT USED--
		59	59	DEMAND LIMIT BY SN STAGE #2	DEMAND LIMIT BY SN STAGE #2
		60	60	DEMAND LIMIT BY SN STAGE #1 OR DEMAND LIMIT BY 4-20 MA	DEMAND LIMIT BY SN STAGE #1 OR DEMAND LIMIT BY 4-20 MA
		61	61	REMOTE DUAL SETPOINT SWITCH	REMOTE DUAL SETPOINT SWITCH
		62	62	REMOTE RESET THERMISTOR OR REMOTE RESET BY 4-20 MA	REMOTE RESET THERMISTOR OR REMOTE RESET BY 4-20 MA
	4 OUTPUTS	63	63	HOT GAS BYPASS RELAY A (ACCESSORY OR FLOP)	HOT GAS BYPASS RELAY A (ACCESSORY OR FLOP) (ACCESSORY ONLY ON 045 60HZ)
		64	64	HOT GAS BYPASS RELAY B (ACCESSORY OR FLOP)	HOT GAS BYPASS RELAY B (ACCESSORY OR FLOP) (ACCESSORY ONLY ON 045 60HZ)
		65	65	MOTORMASTER* A 4-20 MA CONTROL	MOTORMASTER* A 4-20 MA CONTROL
		66	66	MOTORMASTER B 4-20 MA CONTROL	MOTORMASTER B 4-20 MA CONTROL

Fig. 48 — Channel Chart; 30GN040-070

COMPONENT NAME			SOFTWARE POINT NO.		HARDWARE CHANNEL NO.		30GN045-060 (50HZ), 30GN050-070 (60HZ)	30GN070 (50HZ)
							FUNCTION (2) COMPRESSOR	FUNCTION (3) COMPRESSOR
PS10 (12/5 MODULE)	12 INPUTS		1	1	1	1	CHILLED WATER SUPPLY TEMPERATURE	CHILLED WATER SUPPLY TEMPERATURE
			2	2	2	2	CHILLED WATER RETURN TEMPERATURE	CHILLED WATER RETURN TEMPERATURE
			3	3	3	3	COMP A1 SUCTION GAS TEMPERATURE	COMP A1 SUCTION GAS TEMPERATURE
			4	4	4	4	COMP B1 SUCTION GAS TEMPERATURE	COMP B1 SUCTION GAS TEMPERATURE
			5	5	5	5	REMOTE ON/OFF, CMP INTERLOCK, LOCAL/ENABLE - STOP - CON. CWFS	REMOTE ON/OFF, CMP INTERLOCK, LOCAL/ENABLE - STOP - CON. CWFS
			6	6	6	6	SVDC REFERENCE INPUT	SVDC REFERENCE INPUT
	6 OUTPUTS		7	7	7	7	DISCH PRESS CKT A	DISCH PRESS CKT A
			8	8	8	8	DISCH PRESS CKT B	DISCH PRESS CKT B
			9	9	9	9	SUCT PRESS CKT A	SUCT PRESS CKT A
			10	10	10	10	SUCT PRESS CKT B	SUCT PRESS CKT B
			11	11	11	11	OIL PRESS CKT A	OIL PRESS CKT A
			12	12	12	12	OIL PRESS CKT B	OIL PRESS CKT B
	6 OUTPUTS		13	13	13	13	K3 RELAY - ALARM RELAY	K3 RELAY - ALARM RELAY
			14	14	14	14	K1 RELAY - FAN RELAY (STAGE 2)	K1 RELAY - FAN RELAY (STAGE 2)
			15	15	15	15	K2 RELAY - FAN RELAY (STAGE 3)	K2 RELAY - FAN RELAY (STAGE 3)
			16	16	16	16	--NOT USED--	--NOT USED--
			17	17	17	17	--NOT USED--	--NOT USED--
			18	18	18	18	K6 RELAY - CHILLED WATER PUMP RELAY	K6 RELAY - CHILLED WATER PUMP RELAY
DS10 (LV)	4 INPUTS		19	1	1	1	COMPR A1 FEEDBACK	COMPR A1 FEEDBACK
			20	2	2	2	--NOT USED--	COMPR A2 FEEDBACK
			21	3	3	3	COMPR B1 FEEDBACK	COMPR B1 FEEDBACK
			22	4	4	4	--NOT USED--	--NOT USED--
	8 OUTPUTS		23	5	5	5	COMPR A1 SAFETIES, COMPR A1 RELAY, FAN CONTR/CIR A, STAGE 1)	COMPR A1 SAFETIES, COMPR A1 RELAY, FAN CONTR/CIR A, STAGE 1)
			24	6	6	6	--NOT USED--	COMPR A2 SAFETIES, COMPR A2 RELAY
			25	7	7	7	UNLOADER U2-A1 (ACCESSORY)	UNLOADER U2-A1 (ACCESSORY)
			26	8	8	8	UNLOADER U1-A1	UNLOADER U1-A1
			27	9	9	9	COMPR B1 SAFETIES, COMPR B1 RELAY, FAN CONTR/CIR B, STAGE 1)	COMPR B1 SAFETIES, COMPR B1 RELAY, FAN CONTR/CIR B, STAGE 1)
			28	10	10	10	--NOT USED--	--NOT USED--
			29	11	11	11	UNLOADER U2-B1 (ACCESSORY)	UNLOADER U2-B1 (ACCESSORY)
			30	12	12	12	UNLOADER U1-B1 (ACCESSORY)	UNLOADER U1-B1 (ACCESSORY)
DS10 (EXV)	4 INPUTS		31	1	1	1	--NOT USED--	--NOT USED--
			32	2	2	2	--NOT USED--	--NOT USED--
			33	3	3	3	--NOT USED--	--NOT USED--
			34	4	4	4	--NOT USED--	--NOT USED--
	8 OUTPUTS		35	5	5	5	EXV-A	EXV-A
			36	6	6	6		
			37	7	7	7		
			38	8	8	8		
			39	9	9	9		
			40	10	10	10	EXV-B	EXV-B
			41	11	11	11		
			42	12	12	12		
B1N MODULE (OPTIONAL)	8 INPUTS		51	1	1	1	--NOT USED--	--NOT USED--
			52	2	2	2	--NOT USED--	--NOT USED--
			53	3	3	3	SPARE TEMPERATURE SENSOR #1	SPARE TEMPERATURE SENSOR #1
			54	4	4	4	SPARE TEMPERATURE SENSOR #2	SPARE TEMPERATURE SENSOR #2
	4 OUTPUTS		55	5	5	5	--NOT USED--	--NOT USED--
			56	6	6	6	--NOT USED--	--NOT USED--
			57	7	7	7	--NOT USED--	--NOT USED--
			58	8	8	8	--NOT USED--	--NOT USED--
41N/4OUT MODULE	4 INPUTS		59	1	1	1	DEMAND LIMIT BY SW STAGE #2	DEMAND LIMIT BY SW STAGE #2
			60	2	2	2	DEMAND LIMIT BY SW STAGE #1 OR DEMAND LIMIT BY 4-20 MA	DEMAND LIMIT BY SW STAGE #1 OR DEMAND LIMIT BY 4-20 MA
			61	3	3	3	REMOTE DUAL SETPOINT SWITCH	REMOTE DUAL SETPOINT SWITCH
			62	4	4	4	REMOTE RESET THERMISTOR OR REMOTE RESET BY 4-20 MA	REMOTE RESET THERMISTOR OR REMOTE RESET BY 4-20 MA
	4 OUTPUTS		63	5	5	5	HOT GAS BYPASS RELAY A (ACCESSORY)	HOT GAS BYPASS RELAY A (ACCESSORY)
			64	6	6	6	HOT GAS BYPASS RELAY B (ACCESSORY)	HOT GAS BYPASS RELAY B (ACCESSORY)
			65	7	7	7	MOTORMASTER A 4-20 MA CONTROL (OPTIONAL)	MOTORMASTER A 4-20 MA CONTROL (OPTIONAL)
			66	8	8	8	MOTORMASTER B 4-20 MA CONTROL (OPTIONAL)	MOTORMASTER B 4-20 MA CONTROL (OPTIONAL)

Fig. 48 — Channel Chart; 30GN040-070 (cont)

COMPONENT NAME		SOFTWARE POINT NO.	HARDWARE CHANNEL NO.	30GN080, 230B FUNCTION (3) COMPRESSOR	30GN090-110, 245B-315B FUNCTION (4) COMPRESSOR
PS10 (12/5 MODULE)	12 INPUTS	1	1	CHILLED WATER SUPPLY TEMPERATURE	CHILLED WATER SUPPLY TEMPERATURE
		2	2	CHILLED WATER RETURN TEMPERATURE	CHILLED WATER RETURN TEMPERATURE
		3	3	COMP A1 SUCTION GAS TEMP	COMP A1 SUCTION GAS TEMP
		4	4	COMP B1 SUCTION GAS TEMP	COMP B1 SUCTION GAS TEMP
		5	5	REMOTE ON/OFF, CMP INTERLOCK, LOCAL/ENABLE - STOP - CON. CWFS	REMOTE ON/OFF, CMP INTERLOCK, LOCAL/ENABLE - STOP - CON. CWFS
		6	6	SVDC REFERENCE INPUT	SVDC REFERENCE INPUT
	6 OUTPUTS	7	7	DISCH PRESS CKT A	DISCH PRESS CKT A
		8	8	DISCH PRESS CKT B	DISCH PRESS CKT B
		9	9	SUCT PRESS CKT A	SUCT PRESS CKT A
		10	10	SUCT PRESS CKT B	SUCT PRESS CKT B
		11	11	OIL PRESS CKT A	OIL PRESS CKT A
		12	12	OIL PRESS CKT B	OIL PRESS CKT B
	6 OUTPUTS	13	13	K3 RELAY - ALARM RELAY	K3 RELAY - ALARM RELAY
		14	14	K1 RELAY - FAN RELAY (CIRCUIT A, STAGE 2)	K1 RELAY - FAN RELAY (CIRCUIT A, STAGE 2)
		15	15	K2 RELAY - FAN RELAY (CIRCUIT A, STAGE 3)	K2 RELAY - FAN RELAY (CIRCUIT A, STAGE 3)
		16	16	K4 RELAY - FAN RELAY (CIRCUIT B, STAGE 2)	K4 RELAY - FAN RELAY (CIRCUIT B, STAGE 2)
		17	17	K4 RELAY - FAN RELAY (CIRCUIT B, STAGE 3)	K4 RELAY - FAN RELAY (CIRCUIT B, STAGE 3)
		18	18	K6 RELAY - CHILLED WATER PUMP RELAY	K6 RELAY - CHILLED WATER PUMP RELAY
DS10 (LV)	4 INPUTS	19	1	COMPR A1 FEEDBACK	COMPR A1 FEEDBACK
		20	2	COMPR A2 FEEDBACK	COMPR A2 FEEDBACK
		21	3	COMPR B1 FEEDBACK	COMPR B1 FEEDBACK
		22	4	--NOT USED--	COMPR B2 FEEDBACK
	8 OUTPUTS	23	5	COMPR A1 SAFETIES, COMPR A1 RELAY, FAN CONTR (CIR A, STAGE 1)	COMPR A1 SAFETIES, COMPR A1 RELAY, FAN CONTR (CIR A, STAGE 1)
		24	6	COMPR A2 SAFETIES, COMPR A2 RELAY	COMPR A2 SAFETIES, COMPR A2 RELAY
		25	7	UNLOADER RELAY U2-A1 (ACCESSORY)	UNLOADER RELAY U2-A1 (ACCESSORY)
		26	8	UNLOADER U1-A1 RELAY	UNLOADER U1-A1 RELAY
		27	9	COMPR B1 SAFETIES, COMPR B1 RELAY, FAN CONTR (CIR B, STAGE 1)	COMPR B1 SAFETIES, COMPR B1 RELAY, FAN CONTR (CIR B, STAGE 1)
		28	10	--NOT USED--	COMPR B2 SAFETIES, COMPR B2 RELAY
		29	11	UNLOADER RELAY U2-B1 (ACCESSORY)	UNLOADER RELAY U2-B1 (ACCESSORY)
		30	12	UNLOADER U1-B1 RELAY	UNLOADER U1-B1 RELAY
DS10 (EXV)	4 INPUTS	31	1	--NOT USED--	--NOT USED--
		32	2	--NOT USED--	--NOT USED--
		33	3	--NOT USED--	--NOT USED--
		34	4	--NOT USED--	--NOT USED--
	8 OUTPUTS	35	5	EXV-A	EXV-A
		36	6		
		37	7		
		38	8		
		39	9		
		40	10		
		41	11		
		42	12	EXV-B	EXV-B
8IN MODULE (OPTIONAL)	8 INPUTS	51	1	--NOT USED--	--NOT USED--
		52	2	--NOT USED--	--NOT USED--
		53	3	SPARE TEMPERATURE SENSOR #1	SPARE TEMPERATURE SENSOR #1
		54	4	SPARE TEMPERATURE SENSOR #2	SPARE TEMPERATURE SENSOR #2
	8 OUTPUTS	55	5	--NOT USED--	--NOT USED--
		56	6	--NOT USED--	--NOT USED--
		57	7	--NOT USED--	--NOT USED--
		58	8	--NOT USED--	--NOT USED--
4IN/4OUT MODULE	4 INPUTS	59	1	DEMAND LIMIT BY SW STAGE #2	DEMAND LIMIT BY SW STAGE #2
		60	2	DEMAND LIMIT BY SW STAGE #1 OR DEMAND LIMIT BY 4-20 MA	DEMAND LIMIT BY SW STAGE #1 OR DEMAND LIMIT BY 4-20 MA
		61	3	REMOTE DUAL SETPOINT SWITCH	REMOTE DUAL SETPOINT SWITCH
		62	4	REMOTE RESET THERMISTOR OR REMOTE RESET BY 4-20 MA	REMOTE RESET THERMISTOR OR REMOTE RESET BY 4-20 MA
	4 OUTPUTS	63	5	HOT GAS BYPASS RELAY A (ACCESSORY)	HOT GAS BYPASS RELAY A (ACCESSORY)
		64	6	HOT GAS BYPASS RELAY B (ACCESSORY)	HOT GAS BYPASS RELAY B (ACCESSORY)
		65	7	MOTORMASTER* A 4-20 MA CONTROL (OPTIONAL)	MOTORMASTER A 4-20 MA CONTROL (OPTIONAL)
		66	8	MOTORMASTER B 4-20 MA CONTROL (OPTIONAL)	MOTORMASTER B 4-20 MA CONTROL (OPTIONAL)

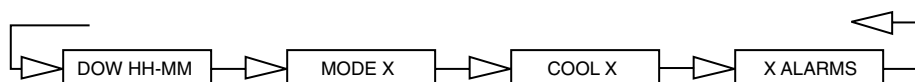
Fig. 49 — Channel Chart; 30GN080-110; 230B-315B

COMPONENT NAME	INPUTS/OUTPUTS	SOFTWARE POINT NO.	HARDWARE CHANNEL NO.	FUNCTION	UNIT SIZE				
					130*	150*	170*	190*	210*
PSIO (12/6 Module)	12 Inputs	1	1	Chilled Water Supply Temperature	X	X	X	X	X
		2	2	Chilled Water Return Temperature	X	X	X	X	X
		3	3	Compressor A1 Suction Gas Temperature	X	X	X	X	X
		4	4	Compressor B1 Suction Gas Temperature	X	X	X	X	X
		5	5	Remote ON/OFF; CWP Interlock; LOCAL/ENABLE-STOP-CCN, CWFS	X	X	X	X	X
		6	6	5 vdc Reference Input	X	X	X	X	X
		7	7	Discharge Pressure, Circuit A	X	X	X	X	X
		8	8	Discharge Pressure, Circuit B	X	X	X	X	X
		9	9	Suction Pressure, Circuit A	X	X	X	X	X
		10	10	Suction Pressure, Circuit B	X	X	X	X	X
		11	11	Oil Pressure, Circuit A	X	X	X	X	X
		12	12	Oil Pressure, Circuit B	X	X	X	X	X
	6 Outputs	13	13	K3 Relay — Alarm Relay	X	X	X	X	X
		14	14	K1 Relay — Fan Relay (Stage 2, Circuit A)	X	X	X	X	X
		15	15	K2 Relay — Fan Relay (Stage 3, Circuit A)	X	X	X	X	X
		16	16	K4 Relay — Fan Relay (Stage 2, Circuit B)	X	X	X	X	X
		17	17	K5 Relay — Fan Relay (Stage 3, Circuit B)	X	X	X	X	X
		18	18	K6 Relay — Chilled Water Pump Relay	X	X	X	X	X
DSIO (LV)	4 Inputs	19	1	Compressor A1 Feedback	—	—	—	—	—
		20	2	Compressor A2 Feedback	—	—	—	—	—
		21	3	Compressor B1 Feedback	—	—	—	—	—
		22	4	Compressor B2 Feedback	—	—	—	—	—
	8 Outputs	23	5	Compressor A1 Safeties; Compressor A1 Relay; Fan Contactor (Stage 1, Circuit A)	X	X	X	X	X
		24	6	Compressor A2 Safeties; Compressor A2 Relay	X	X	X	X	X
		25	7	Unloader U2-A1 Relay (Accessory)	X (60 Hz)	—	—	—	—
				Compressor A3 Safeties; Compressor A3 Relay	X (50 Hz)	X	X	X	X
		26	8	Unloader U1-A1 Relay	X	X	—	X	—
				Compressor A4 Safeties; Compressor A4 Relay	—	—	—	—	X
		27	9	Compressor B1 Safeties; Compressor B1 Relay; Fan Contactor (Stage 1, Circuit B)	X	X	X	X	X
		28	10	Compressor B2 Safeties; Compressor B2 Relay	X	X	X	X	X
		29	11	Unloader U2-B1 Relay (Accessory)	X (60 Hz)	—	—	—	—
				Compressor B3 Safeties; Compressor B3 Relay	—	—	X	X	X
		30	12	Unloader U1-B1 Relay	X	X	X	—	—
DSIO (EXV)	4 Inputs	31	1	Not Used	X	X	X	X	X
		32	2	Not Used	X	X	X	X	X
		33	3	Not Used	X	X	X	X	X
		34	4	Not Used	X	X	X	X	X
	8 Outputs	35	5	EXV-A	X	X	X	X	X
		36	6						
		37	7						
		38	8						
		39	9	EXV-B	X	X	X	X	X
		40	10						
		41	11						
		42	12						
BIN MODULE (Optional)	8 Inputs	51	1	Not Used	X	X	X	X	X
		52	2	Not Used	X	X	X	X	X
		53	3	Spare Temperature Sensor No. 1	X	X	X	X	X
		54	4	Spare Temperature Sensor No. 2	X	X	X	X	X
		55	5	Not Used	X	X	X	X	X
		56	6	Not Used	X	X	X	X	X
		57	7	Not Used	X	X	X	X	X
		58	8	Not Used	X	X	X	X	X
4 IN/4 OUT MODULE	4 Inputs	59	1	Demand Limit by Switch Stage No. 2	X	X	X	X	X
		60	2	Demand Limit by Switch No. 1 or by 4-10 mA Signal	X	X	X	X	X
		61	3	Remote Dual Set Point Switch	X	X	X	X	
		62	4	Remote Reset Thermistor or Remote Reset by 4-20 mA Signal	X	X	X	X	X
	4 Outputs	63	5	Hot Gas Bypass Relay (Accessory)	X	X	X	X	X
				Unloader Relay A (Accessory)	X (50 Hz)	X	X	X	X
		64	6	Hot Gas Bypass Relay B (Accessory)	X	X	X	X	X
				Unloader Relay B (Accessory)	X (50 Hz)	X	X	X	X
		65	7	Motormaster® Device A 4-20 mA Control (Accessory)	X	X	X	X	X
		66	8	Motormaster Device B 4-20 mA Control (Accessory)	X	X	X	X	X

*And associated modular units. See Table 1.

Fig. 50 — Channel Chart; 30GN130-210; 230A-315A, 330A/B-420B

AUTOMATIC DISPLAY OPERATION/DEFAULT DISPLAY



In this mode, the keypad displays the current time (24-hour format), current operating modes, cooling capacity stages, and total number of alarms.

The default display is displayed every 2 seconds if there has been no manual input from the keypad for 10 minutes. To return to automatic display, at any time, press **1** **STAT**.

LEGEND

DOW — Day-of-the-Week
EXV — Electronic Expansion Valve
HH — Hour
MM — Minute
MOP — Maximum Overcurrent Protection

KEYPAD OPERATING INSTRUCTIONS

NOTES:

- The white keys on left side of keypad are denoted by boxes in the instructions. For example, keypad entry **1** **SRVC** means press the “1” then the white key marked SRVC.
- The standard display uses abbreviations. Expanded information will scroll through the display whenever **EXPN** is pressed.
- All functions are made up of a group of subfunctions. To enter a subfunction, press the number of the subfunction desired, then press the function key in which the subfunction resides.
To move within that subfunction, press the up **↑** or down **↓** arrows.
For example, a **6** **STAT**, enters the temperature information subfunction.
- Another subfunction may be entered at any time by pressing the subfunction number, then the function key.
- Prior to starting unit, check leaving fluid set point for correct setting.
- Depending on chiller model and configuration, all displays may not be shown. Displays will be displayed all the time unless marked with the following symbol (*), which indicates:
Must be configured.
For a more detailed explanation of keypad operation and for start-up procedure of unit, refer to the base unit Installation, Start-Up, and Service instructions.

STATUS FUNCTION

SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
1 AUTOMATIC DISPLAY	1 STAT	Refer to Automatic Display Operation described above.	
2 ALARMS	2 STAT	X ALARMS	Numbers of Tripped Alarms
	↓	ALARM X	Displays Tripped Alarms
	↓	ALARM X	
	↓	ALARM X	
	↓	ALARM X	
	↓	ALARM X	
3 MODES	3 STAT	X MODES	Number of Modes in Effect
	↓	MODE X	Displays Mode in Effect
	↓	MODE X	
	↓	MODE X	
	↓	MODE X	

Fig. 51 — Start-Up and Diagnostic Information; 30GN130-210, 230A-315A, 330A/B-420A/B

STATUS FUNCTION (cont)			
SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
4 STAGE	4 STAT	STAGE	Capacity Staging Information
	↓	STAGE X	Number of Requested Stages
	↓	CAPT X	Percent of Total Capacity
	↓	CAPA X	Percent Circuit A Capacity
	↓	CAPB X	Percent Circuit B Capacity
	↓	LMT X*	Demand Limit Set Point
	↓	LOAD X*	Load Limit Set Point
	↓	CIRA X	Circuit A Compressor Relay Status
	↓	CIRB X	Circuit B Compressor Relay Status
	↓	SMZ X	Load/Unload Factor for Compressors
			Factor = 1 Unloader Factor = 0.6
5 SET POINT	5 STAT	SET POINT	Fluid Set Point Information
	↓	SP X	Set Point
	↓	MSP X	Modified Set Point = Set Point + Reset
	↓	TW X	Cooler Leaving Fluid Temperature
6 TEMPERATURE	6 STAT	TEMPS	Temperature Information
	↓	EWT X	Cooler Entering Fluid Temperature
	↓	LWT X	Cooler Leaving Fluid Temperature
	↓	SCTA X	Circuit A Saturated Condenser Temperature
	↓	SSTA X	Circuit A Saturated Suction Temperature
	↓	CTA X	Compressor A1 Suction Temperature
	↓	SHA X	Circuit A Suction Superheat
	↓	SCTB X	Circuit B Saturated Condenser Temperature
	↓	SSTB X	Circuit B Saturated Suction Temperature
	↓	CTB X	Compressor B1 Suction Temperature
	↓	SHB X	Circuit B Suction Superheat
	↓	RST X*	Reset Temperature
7 PRESSURE	7 STAT	PRESSURE	Refrigerant System Pressure (psig)
	↓	DPA X	Circuit A Discharge Pressure
	↓	SPA X	Circuit A Suction Pressure
	↓	XXXX	Circuit A Discharge/Suction
	↓	OPA X	Circuit A Oil Pressure Differential
	↓	DPB X	Circuit B Discharge Pressure
	↓	SPB X	Circuit B Suction Pressure
	↓	XXXX	Circuit B Discharge/Suction
	↓	OPB X	Circuit B Oil Pressure Differential

*Must be configured.

Fig. 51 — Start-Up and Diagnostic Information; 30GN130-210, 230A-315A, 330A/B-420A/B (cont)

STATUS FUNCTION (cont)			
SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
8 ANALOG	 	ANALOG	Status of Analog Inputs
		REF X*	Transducer Supply Voltage
		LMT X*	Demand 4-20 mA Signal
		RST X*	Reset 4-20 mA Signal
9 INPUTS	 	INPUT	Status of Switch Inputs
		SPW X*	Dual Set Point Switch
		OPSA X*	Oil Pressure Switch 1
		OPSB X*	Oil Pressure Switch 2
		DL1 X*	Demand Limit Switch 1
		DL2 X*	Demand Limit Switch 2
10 OUTPUTS	 	OUTPUTS	Status of Outputs
		ALMR X	Alarm Relay K3
		FRA1 X	Fan Relay K1
		FRA2 X	Fan Relay K2
		FRB1 X	Fan Relay K4
		FRB2 X	Fan Relay K5
		CHWP X*	Cooler Water Pump Relay K6
		ULA1 X*	Unloader A1
		ULA2 X*	Unloader A2
		ULB1 X*	Unloader B1
		ULB2 X*	Unloader B2
		EXVA X	EXVA Percent Open
		EXVB X	EXVB Percent Open
		HGBA X*	Hot Gas Bypass Relay Circuit A
		HGBB X*	Hot Gas Bypass Relay Circuit B
		MMA X*	Motormaster® A Output Percent
		MMB X*	Motormaster B Output Percent

*Must be configured.

Fig. 51 — Start-Up and Diagnostic Information; 30GN130-210, 230A-315A, 330A/B-420A/B (cont)

TEST FUNCTION			
SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
To use Test function, LOCAL/ENABLE-STOP-CCN switch must be in STOP position. To operate a test, scroll to desired test, then press  to start test. Press  to stop test.			
1 OUTPUTS	 	OUTPUTS	Test Outputs
		8.8.8.8.8.8.8.8	Display Check
		ALMR X	Energize Alarm Relay K3
		FRA1 X	Energize Fan Relay A1 K1
		FRA2 X	Energize Fan Relay A2 K2
		FRB1 X	Energize Fan Relay B1 K4
		FRB2 X	Energize Fan Relay B2 K5
		CHWP X*	Energize Cooler Water Pump K6
		EXVA X	Enter Desired EXVA Position
		EXVB X	Enter Desired EXVB Position
		HGBRA X*	Energize Hot Gas Bypass Relay
		HGBRB X*	Energize Hot Gas Bypass Relay
		MMA X*	Enter Desired Motormaster® Device A Output Signal
		MMB X*	Enter Desired Motormaster Device B Output Signal

WARNING

During compressor test, compressors will start and run for 10 seconds. Compressor service valves and liquid line valves must be open. Energize crankcase heaters 24 hours prior to performing compressor tests.

2 COMPRESSORS	 	COMP	Compressor and Unloader Test
		CPA1 X	Test Compressor A1
		CPA2 X*	Test Compressor A2
		CPA3 X*	Test Compressor A3
		CPA4 X*	Test Compressor A4
		CPB1 X	Test Compressor B1
		CPB2 X*	Test Compressor B2
		CPB3 X*	Test Compressor B3
		CPB4 X*	Test Compressor B4
		ULA1 X*	Energize Unloader A1
		ULA2 X*	Energize Unloader A2
		ULB1 X*	Energize Unloader B1
		ULB2 X*	Energize Unloader B2

*Must be configured.

Fig. 51 — Start-Up and Diagnostic Information; 30GN130-210, 230A-315A, 330A/B-420A/B (cont)

SCHEDULE FUNCTION

The Schedule function key  is used to configure the unit occupancy schedule. The clock select subfunction can be used for unoccupied shutdown or unoccupied setback depending on the cooling set point control configuration. The Schedule function described is for clock 1, which is the internal clock. Password required for all subfunctions except override.

SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
1 OVERRIDE	 	OVRD X	Number of Override Hrs (0 - 4 Hrs)
For example: To extend current occupied mode for 3 hrs, press:			
	 	OVRD 3	Extended Occupied Time
2 CLOCK SELECT	 	CLOCK XX	Type of Clock Control 0 = No Clock, 1 = Clock 1 (Internal)
3 PERIOD 1	 	PERIOD 1	Period 1 Time Schedule
Yes = Schedule Operational for that day		OCC HH.MM	Occupied Time
		UNO HH.MM	Unoccupied Time
		MON X	Monday Flag
		TUE X	Tuesday Flag
		WED X	Wednesday Flag
		THU X	Thursday Flag
		FRI X	Friday Flag
		SAT X	Saturday Flag
		SUN X	Sunday Flag
		HOL X	Holiday Flag

To toggle between inputs (Yes/No) Press:  

4 PERIOD 2	 	PERIOD 2	Period 2 Time Schedule
5 PERIOD 3 ... 9 PERIOD 7	  ...  	PERIOD 3 ... PERIOD 7	Period 3 ... Period 7 Time Schedule
10 PERIOD 8	 	PERIOD8	Period 8 Time Schedule
11 HOLIDAYS	 	HOLIDAYS	Define Calendar Holidays
New = Unassigned Holiday Date MM = Month DD = Day of Month NN = Duration of Holiday Period in Days		MM.DD.NN	Holiday 1 Start Date and Duration
		MM.DD.NN	Holiday 2 Start Date and Duration
		MM.DD.NN	Holiday 29 Start Date and Duration
		MM.DD.NN	Holiday 30 Start Date and Duration

For example: To enter July 4th holiday press: 07.04.01  . Display will show Jul 04 01. For further information on the Schedule function and its operation, refer to the base unit Installation, Start-Up, and Service instructions.

Fig. 51 — Start-Up and Diagnostic Information; 30GN130-210, 230A-315A, 330A/B-420A/B (cont)

SERVICE FUNCTION

To view and modify configurations, the password must be entered under the log on subfunction.

SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
1 LOG ON		PASSWORD	Enter Password/Disable Password Protection
		LOGGEDON	Logged On
	At this time, configurations may be modified. When finished viewing and/or modifying configurations, log out as follows:		
		LOGGEDON	Logged On
		LOG OFF	Disable Password Protection
2 VERSION		EXIT LOG	Logged OFF/ENABLE Password Protection
		VERSION	Software Information
		XXXXXXXX	Version No. of Software (CESRXX)
		X	Language Options

The next 3 subfunctions provide the ability to modify configurations. Refer to base unit Installation, Start-Up, and Service Instructions for further information on changing configurations.

To change a configuration, enter the new configuration and press while on the correct configuration.

3 FACTORY CONFIGURATION		FACT CFG	Factory Configuration Codes
		X	Configuration Code 1
		X	Configuration Code 2
		X	Configuration Code 3
		X	Configuration Code 4
		X	Configuration Code 5
		X	Configuration Code 6
4 FIELD CONFIGURATION		FLD CFG	Adjustable Field Configurations
		ENO X	CCN Element Address
		BUS X	CCN Bus Number
		BAUD X	CCN Baud Rate
		FLUID X	Cooler Fluid Select
		UNITS X	Display Unit Select
		LANG X	Display Language Select
		NULA X	No. Circuit A Unloaders
		NULB X	No. Circuit B Unloaders
		HGB X	Hot Gas Bypass Select
		SEQT X	Loading Sequence Select
		SEQF X	Lead/Lag Sequence Select
		OPS X	Oil Pressure Switch Select
		HEADT X	Head Pressure Control Type
		HEADM X	Head Pressure Control Method

Fig. 51 — Start-Up and Diagnostic Information; 30GN130-210, 230A-315A, 330A/B-420A/B (cont)

SERVICE FUNCTION (cont)			
SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
4 FIELD CONFIGURATION (cont)		MM X	Motormaster® Device Select
		CSPTYP X	Cooling Set Point Control Select
		CRTYP X	Cooling Reset Control Select
		ERTYP X	External Reset Sensor Select
		LSTYP X	Demand Limit Control Select
		RAMP X	Ramp Load Select
		LOCK X	Cooler Pump Interlock Select
		CPC X	Cooler Pump Control Select
5 SERVICE CONFIGURATION		SRV CFG	Service Configurations
		X	Configuration Code 7
		X	Configuration Code 8
		REFRIG X	Refrigerant
		TDTYP X	Pressure Transducer Select
		OPS X	Oil Transducer Set Point
		LPS X	Low Pressure Set Point
		FANTYP X	Fan Staging Select
		SH X	EXV Superheat Set Point
		MOP X	EXV MOP Set Point
HISTORY FUNCTION			
SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
1 RUN TIME		RUN TIME	Run Time Information
		HR X	Total Hrs Unit Has a Comp Operating
		HRA X	Circuit A Run Time
		HRB X	Circuit B Run Time
2 STARTS		STARTS	Starts Information
		CY X	Cycles from Stage 0 to Stage 1
		CYA X	Circuit A Starts
		CYB X	Circuit B Starts
3 ALARM HISTORY		ALRMHIST	Last 5 Alarms
		ALARM X	Alarm Description
		ALARM X	
		ALARM X	
		ALARM X	
		ALARM X	

Fig. 51 — Start-Up and Diagnostic Information; 30GN130-210, 230A-315A, 330A/B-420A/B (cont)

SET POINT FUNCTION

To read a set point, go to the proper subfunction and read desired set point. To change a set point, enter the new set point value, then press

 LOCAL/ENABLE-STOP-CCN switch must be in LOCAL or STOP position.

SUBFUNCTION	KEYPAD ENTRY	DISPLAY	COMMENT
1 SET POINTS	 	SET POINT	Unit Set Point
		CSP1 X	Chiller Fluid Set Point 1
		CSP2 X	Chiller Fluid Set Point 2
		HSPA X	Head Pressure Set Point Circuit A
		HSPB X	Head Pressure Set Point Circuit B
		CRAMP X	Pulldown Limit
2 RESET SET POINTS	 	RESET	Reset Set Points
		CRST2 X*	Cooling Max Reset
		CREF2 X*	Max Reset Occurs at X mA or Degree
		CRST1 X*	Cooling Minimum Reset
3 DEMAND SET POINTS	 	DEMAND	Demand Set Points
		DLS X*	Demand Switch 1 Set Point
		DLS2 X*	Demand Switch 2 Set Point
		DMAX X*	4-20 mA Maximum Demand Limit
		RMAX X*	Maximum Demand Limit Occurs at X mA
		DMIN X*	4-20 mA Minimum Demand Limit
		RMIN X*	Minimum Demand Limit Occurs at X mA
		SHED X*	CCN Loadshed Amount
4 DATE AND TIME	 	DATE.TIME	Date, Time and Day of Week
		DAY.HR.MIN	Day 1 = Mon, 2 = Tues. . . 7 = Sun
			Hours are displayed in 24-hr time. Decimal point serves as colon.
		MM.DD.YR	Month.Day.Year. When entering date, enter a decimal point between entries. Each entry must be 2 numbers.

*Must be configured.

Fig. 51 — Start-Up and Diagnostic Information; 30GN130-210, 230A-315A, 330A/B-420A/B (cont)

To start the unit the ON/OFF switch must be moved to the ON position. The control will then proceed to the initialization mode and will remain in this mode for approximately 2 minutes. During this time period the number "20" will be displayed at the display LEDs (light-emitting diode) on the set point board. If the display button is pushed during this time period, the control will go into the quick test mode, which is indicated by the number "88" being displayed in the display LEDs on the set point board. For more information on the quick test, see the unit Controls and Troubleshooting literature.

After the initial time delay has passed, the "20" will be removed from the display and the display will be turned off. To view the display, the display button must be held in. The numbers shown in the display will have the following significance.

Codes	Category
0 - 12	Stage Number
20 - 26	Operating Status Information
51 - 87	Overload Information

Under normal operation only the stage number will be displayed. If status codes or overload codes are being displayed, then the display will rotate every two seconds and will display up to 3 codes.

The stage number represents the stage of capacity at which the unit is running. For more information on unit actual capacity, refer to the base unit installation instructions.

The operating status information codes inform the operator of special controls that are in effect. For example, load shed or temperature reset. For more information on installation and operation of these special controls, refer to the Controls and Troubleshooting instructions. Table A below lists all operating status codes.

The overload information codes indicate why a circuit, compressor, or the unit is shut off. For a more detailed explanation of the failures, action taken by the microprocessor, and the possible causes of the failure, see the Controls and Troubleshooting instructions. A summary of the codes is listed in Table B.

THERMISTORS

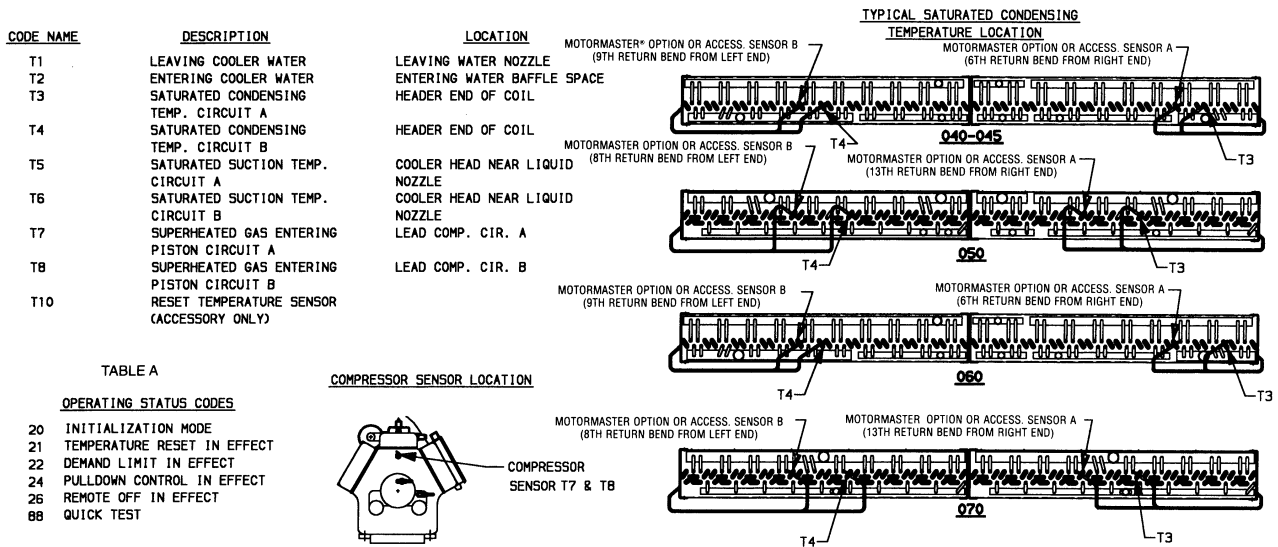


Fig. 52 — Start-Up and Diagnostic Information; 30GT, GU040-070

TABLE B									
DISPLAY	DESCRIPTION OF FAILURE					ACTION TAKEN BY CONTROL	RESET METHOD	PROBABLE CAUSE	
	UNIT SIZE 040-070 (60HZ) 040-060 (50HZ) 070 (50HZ)								
51	COMP.	A1	A1	A1	FAILURE	CIRCUIT A SHUT OFF	MANUAL	HIGH PRESSURE SWITCH TRIP, OR HIGH DISCHARGE GAS TEMP. SWITCH TRIP, OR COMP. GROUND CURRENT > 2.5 AMP	
52	COMP.	NA	NA	A2	FAILURE	COMP. SHUT OFF	MANUAL		
53	COMP.	NA	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL		
54	COMP.	NA	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL		
55	COMP.	B1	B1	B1	FAILURE	CIRCUIT B SHUT OFF	MANUAL		
56	COMP.	NA	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL		
57	COMP.	NA	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL		
58	COMP.	NA	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL		
59	LOSS OF CHARGE				CIRCUIT A	CIRCUIT A SHUT OFF	MANUAL	LOW REFRIGERANT CHARGE, OR LOSS OF CHARGE PRESSURE SWITCH FAILURE	
60	LOSS OF CHARGE				CIRCUIT B	CIRCUIT B SHUT OFF	MANUAL		
61	LOW COOLER FLOW					UNIT SHUT OFF	MANUAL	NO COOLER FLOW OR REVERSED COOLER FLOW	
63	LOW OIL PRESSURE CIRCUIT A					CIRCUIT A SHUT OFF	MANUAL	OIL PUMP FAILURE OR LOW OIL LEVEL, OR SWITCH FAILURE	
64	LOW OIL PRESSURE CIRCUIT B					CIRCUIT B SHUT OFF	MANUAL		
65	FREEZE PROTECTION					UNIT SHUT OFF	AUTO	LOW COOLER FLOW	
66	HIGH SUCTION SUPERHEAT CIRCUIT A					CIRCUIT A SHUT OFF	MANUAL	LOW CHARGE, OR EXV FAILURE, OR PLUGGED FILTER DRIER	
67	HIGH SUCTION SUPERHEAT CIRCUIT B					CIRCUIT B SHUT OFF	MANUAL		
68	LOW SUCTION SUPERHEAT CIRCUIT A					CIRCUIT A SHUT OFF	MANUAL	EXV FAILURE	
69	LOW SUCTION SUPERHEAT CIRCUIT B					CIRCUIT B SHUT OFF	MANUAL		
70	ILLEGAL UNIT CONFIGURATION					UNIT WILL NOT START	MANUAL	CONFIGURATION ERROR (SEE NOTE 2)	
71	LEAVING WATER THERMISTOR FAILURE					UNIT SHUT OFF	AUTO	THERMISTOR FAILURE, OR WIRING ERROR, OR THERMISTOR NOT CONNECTED TO PROCESSOR BOARD.	
72	ENTERING WATER THERMISTOR FAILURE					USE DEFAULT VALVE	AUTO		
75	SAT. COND. THERMISTOR FAILURE CIR. A					UNIT SHUT OFF	AUTO		
76	SAT. COND. THERMISTOR FAILURE CIR. B					UNIT SHUT OFF	AUTO		
77	COOLER THERMISTOR FAILURE CIR. A					UNIT SHUT OFF	AUTO		
78	COOLER THERMISTOR FAILURE CIR. B					UNIT SHUT OFF	AUTO		
79	COMPRESSOR THERMISTOR FAILURE CIR. A					UNIT SHUT OFF	AUTO		
80	COMPRESSOR THERMISTOR FAILURE CIR. B					UNIT SHUT OFF	AUTO		
81	RESET TEMPERATURE FAILURE					STOP RESET	AUTO	POTENTIOMETER IMPROPERLY CONNECTED, OR POTENTIOMETER SETTING OUT OF RANGE, OR POTENTIOMETER FAILURE, OR WIRING ERROR.	
82	LEAVING WATER SET POINT POT FAILURE					USE DEFAULT VALUE	AUTO		
84	RESET LIMIT SET POINT POT FAILURE					STOP RESET	AUTO		
85	DEMAND LIMIT POT FAILURE					STOP DEMAND LIMIT	AUTO		
86	RESET RATIO POT FAILURE					STOP RESET	AUTO		
87	RESET SET POINT POT FAILURE					STOP RESET	AUTO		
LEGEND									
CIR — Circuit		EXV — Electronic Expansion Valve							
COMP — Compressor		POT — Potentiometer							
COND — Condensing		SAT — Saturated							
NOTES:									
1. Freeze protection trips at 35 F for water and 6 F below set point for brine units. Resets at 6 F above set point.									
2. Illegal unit configuration caused by missing programmable header, or both unloader DIP switches are on.									
3. All automatic reset failures that cause the unit to stop will restart the unit when the error has been corrected.									
4. All manual reset errors must be reset by turning the control switch to OFF, then ON position.									
5. Valid resistance range for thermistors is 362,939 ohms to 216.65 ohms.									

Fig. 52 — Start-Up and Diagnostic Information; 30GT, GU040-070 (cont)

To start the unit the ON/OFF switch must be moved to the ON position. The control will then proceed to the initialization mode and will remain in this mode for approximately 2 minutes. During this time period the number "20" will be displayed at the display LED (light-emitting diode) on the set point board. If the display button is pushed during this time period, the control will go into the quick test mode, which is indicated by the number "88" being displayed in the display LEDs on the set point board. For more information on the quick test, see the unit Controls and Troubleshooting literature.

After the initial time delay has passed, the "20" will be removed from the display and the display will be turned off. To view the display, the display button must be held in. The numbers shown in the display will have the following significance.

<u>Codes</u>	<u>Category</u>
0 - 12	Stage Number
20 - 26	Operating Status Information
51 - 87	Overload Information

Under normal operation only the stage number will be displayed. If status codes or overload codes are being displayed, then the display will rotate every two seconds and will display up to 3 codes.

The stage number represents the stage of capacity at which the unit is running. For more information on unit actual capacity, refer to the base unit installation instructions.

The operating status information codes inform the operator of special controls that are in effect. For example, load shed or temperature reset. For more information on installation and operation of these special controls, refer to the Controls and Troubleshooting instructions. Table A below lists all operating status codes.

The overload information codes indicate why a circuit, compressor, or the unit is shut off. For a more detailed explanation of the failures, action taken by the microprocessor, and the possible causes of the failure, see the Controls and Troubleshooting instructions. A summary of the codes is listed in Table B.

<u>THERMISTORS</u>			<u>TABLE A</u>	
<u>CODE NAME</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>	<u>OPERATING STATUS CODES</u>	
T1	LEAVING COOLER WATER	LEAVING WATER NOZZLE	20	INITIALIZATION MODE
T2	ENTERING COOLER WATER	ENTERING WATER BAFFLE SPACE	21	TEMPERATURE RESET IN EFFECT
T3	SATURATED CONDENSING	HEADER END OF COIL	22	DEMAND LIMIT IN EFFECT
T4	TEMP. CIRCUIT A	HEADER END OF COIL	24	PULLDOWN CONTROL IN EFFECT
T5	SATURATED CONDENSING	HEADER END OF COIL	26	REMOTE OFF IN EFFECT
T6	TEMP. CIRCUIT B	HEADER END OF COIL	88	QUICK TEST
T7	SATURATED SUCTION TEMP.	COOLER HEAD NEAR LIQUID		
T8	CIRCUIT A	NOZZLE		
T9	SATURATED SUCTION TEMP.	COOLER HEAD NEAR LIQUID		
T10	CIRCUIT B	NOZZLE		
T11	SUPERHEATED GAS ENTERING	LEAD COMP. CIR. A		
T12	PISTON CIRCUIT A	LEAD COMP. CIR. B		
T13	SUPERHEATED GAS ENTERING	LEAD COMP. CIR. B		
T14	PISTON CIRCUIT B	LEAD COMP. CIR. B		
T15	RESET TEMPERATURE SENSOR	ACCESSORY ONLY)		

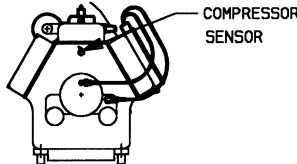
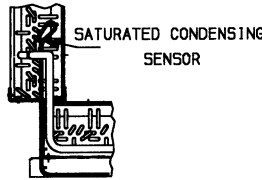
<u>COMPRESSOR SENSOR LOCATION</u>	<u>TYPICAL SATURATED CONDENSING TEMPERATURE LOCATION</u>
	
	080-110 TON UNIT

Fig. 53 — Start-Up and Diagnostic Information; 30GT, GU080-110, 230B-315B

DISPLAY	DESCRIPTION OF FAILURE				ACTION TAKEN BY CONTROL	RESET METHOD	PROBABLE CAUSE
	UNIT SIZE 080* 090-110*						
51	COMP.	A1	A1	FAILURE	CIRCUIT A SHUT OFF	MANUAL	HIGH PRESSURE SWITCH TRIP, OR HIGH DISCHARGE GAS TEMP. SWITCH TRIP, OR COMP. GROUND CURRENT > 2.5 AMP
52	COMP.	A2	A2	FAILURE	COMP. SHUT OFF	MANUAL	
53	COMP.	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL	
54	COMP.	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL	
55	COMP.	B1	B1	FAILURE	CIRCUIT B SHUT OFF	MANUAL	
56	COMP.	NA	B2	FAILURE	COMP. SHUT OFF	MANUAL	
57	COMP.	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL	
58	COMP.	NA	NA	FAILURE	COMP. SHUT OFF	MANUAL	
59	LOSS OF CHARGE			CIRCUIT A	CIRCUIT A SHUT OFF	MANUAL	LOW REFRIGERANT CHARGE, OR LOSS OF CHARGE PRESSURE SWITCH FAILURE
60	LOSS OF CHARGE			CIRCUIT B	CIRCUIT B SHUT OFF	MANUAL	
61	LOW COOLER FLOW				UNIT SHUT OFF	MANUAL	NO COOLER FLOW OR REVERSED COOLER FLOW
63	LOW OIL PRESSURE CIRCUIT A				CIRCUIT A SHUT OFF	MANUAL	OIL PUMP FAILURE OR LOW OIL LEVEL, OR SWITCH FAILURE
64	LOW OIL PRESSURE CIRCUIT B				CIRCUIT B SHUT OFF	MANUAL	
65	FREEZE PROTECTION				UNIT SHUT OFF	AUTO	LOW COOLER FLOW
66	HIGH SUCTION SUPERHEAT CIRCUIT A				CIRCUIT A SHUT OFF	MANUAL	LOW CHARGE, OR EXV FAILURE, OR PLUGGED FILTER DRIER
67	HIGH SUCTION SUPERHEAT CIRCUIT B				CIRCUIT B SHUT OFF	MANUAL	
68	LOW SUCTION SUPERHEAT CIRCUIT A				CIRCUIT A SHUT OFF	MANUAL	EXV FAILURE
69	LOW SUCTION SUPERHEAT CIRCUIT B				CIRCUIT B SHUT OFF	MANUAL	
70	ILLEGAL UNIT CONFIGURATION				UNIT WILL NOT START	MANUAL	CONFIGURATION ERROR (SEE NOTE 2)
71	LEAVING WATER THERMISTOR FAILURE				UNIT SHUT OFF	AUTO	THERMISTOR FAILURE, OR WIRING ERROR, OR THERMISTOR NOT CONNECTED TO PROCESSOR BOARD.
72	ENTERING WATER THERMISTOR FAILURE				USE DEFAULT VALVE	AUTO	
75	SAT. COND. THERMISTOR FAILURE CIR. A				UNIT SHUT OFF	AUTO	
76	SAT. COND. THERMISTOR FAILURE CIR. B				UNIT SHUT OFF	AUTO	
77	COOLER THERMISTOR FAILURE CIR. A				UNIT SHUT OFF	AUTO	
78	COOLER THERMISTOR FAILURE CIR. B				UNIT SHUT OFF	AUTO	
79	COMPRESSOR THERMISTOR FAILURE CIR. A				UNIT SHUT OFF	AUTO	
80	COMPRESSOR THERMISTOR FAILURE CIR. B				UNIT SHUT OFF	AUTO	
81	RESET TEMPERATURE FAILURE				STOP RESET	AUTO	POTENTIOMETER IMPROPERLY CONNECTED, OR POTENTIOMETER SETTING OUT OF RANGE, OR POTENTIOMETER FAILURE, OR WIRING ERROR.
82	LEAVING WATER SET POINT POT FAILURE				USE DEFAULT VALVE	AUTO	
84	RESET LIMIT SET POINT POT FAILURE				STOP RESET	AUTO	
85	DEMAND LIMIT POT FAILURE				STOP DEMAND LIMIT	AUTO	
86	RESET RATIO POT FAILURE				STOP RESET	AUTO	
87	RESET SET POINT POT FAILURE				STOP RESET	AUTO	

LEGEND

COMP — Compressor
COND — Condensing
EXV — Electronic Expansion Valve
POT — Potentiometer
SAT — Saturated

*And associated modular units.

NOTES:

- Freeze protection trips at 35 F for water and 6 F below set point for brine units. Resets at 6 F above set point.
- Illegal unit configuration caused by missing programmable header, or both unloader DIP switches are on.
- All automatic reset failures that cause the unit to stop will restart the unit when the error has been corrected.
- All manual reset errors must be reset by turning the control switch to OFF, then ON position.
- Valid resistance range for thermistors is 362,939 ohms to 216.65 ohms.

Fig. 53 — Start-Up and Diagnostic Information; 30GT, GU080-110, 230B-315B (cont)

To start the unit, the START/STOP switch must be moved to the START position. The control will then proceed to the initialization mode and will remain in this mode for approximately 2 minutes. During this time period, the number **20** will be displayed at the LED on the set point board. If the display button is pushed during this time period, the control will go into the quick test mode, which is indicated by the number **88** being displayed in the display LED on the set point board. For more information on the quick test, see the base unit Controls and Troubleshooting book.

After the initial time delay has passed, the **20** will be removed from the display and the display will be turned off. To view the display, hold in the display button. The numbers shown in the display will have the following significance.

CODES	CATEGORY
0-12	Stage Number
20-26	Operating Status Information
51-87	Overload Information

Under normal operation only the stage number will be displayed. If status codes or overload codes are being displayed, then the display will rotate every 2 seconds and will display up to 3 codes.

The stage number represents the stage of capacity at which the unit is running. For more information on unit actual capacity, refer to the base unit Installation and Start-Up instructions.

The operating status information codes inform the operator of special controls that are in effect (for example, load shed or temperature reset). For more information on installation and operation of these special controls, refer to the Controls and Troubleshooting instructions. Table A below lists all operating status codes.

The overload information codes indicate why a circuit, compressor, or the unit is shut off. For a more detailed explanation of the failures, action taken by the microprocessor, and the possible causes of the failure, see the Controls and Troubleshooting instructions. A summary of the codes is listed in Table B.

Table A — Operating Status Codes

CODES	CATEGORY
20	Initialization Mode
21	Temperature Reset in Effect
22	Demand Limit in Effect
24	Pulldown Control in Effect
26	Remote Off in Effect
88	Quick Test

THERMISTORS

CODE NAME	DESCRIPTION	LOCATION
T1	Leaving Cooler Water	Leaving Water Nozzle
T2	Entering Cooler Water	Entering Water Baffle Space
T3	Saturated Condensing Temperature — Circuit A	Header End of Coil (Fig. B)
T4	Saturated Condensing Temperature — Circuit B	Header End of Coil (Fig. B)
T5	Saturated Suction Temperature — Circuit A	Cooler Head Near Liquid Nozzle
T6	Saturated Suction Temperature — Circuit B	Cooler Head Near Liquid Nozzle
T7	Superheated Gas Entering Piston — Circuit A	Lead Compressor — Circuit A (Fig. A)
T8	Superheated Gas Entering Piston — Circuit B	Lead Compressor — Circuit B (Fig. A)
T10	Reset Temperature Sensor (Accessory Only)	—

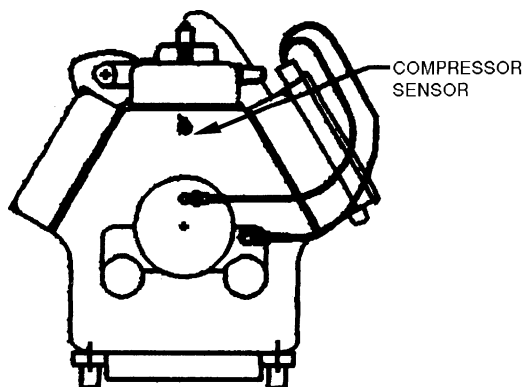
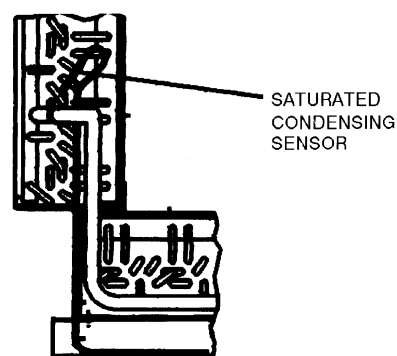


FIG A — COMPRESSOR SENSOR LOCATION



130-210 TON AND ASSOCIATED MODULAR UNITS.

FIG. B — TYPICAL SATURATED CONDENSING TEMPERATURE LOCATION

Fig. 54 — Start-Up and Diagnostic Information; 30GT, GU130-210, 230A-315A, 330A/B-420A/B

Table B — Overload Information Codes

DISPLAY	DESCRIPTION OF FAILURE		ACTION TAKEN BY CONTROL	RESET METHOD	PROBABLE CAUSE
	Unit 30GT, GU*	Compressor No. Failure			
51	130 (60 Hz)	A1	Circuit A Shut Off	Manual	HPS or CGF on Circuit A (any Compressor in Circuit A)
	130 (50 Hz), 150	A1			
	170, 190	A1			
	210	A1			
52	130 (60 Hz)	A2	Compressor Shut Off	Manual	HPS
	130 (50 Hz), 150	A2			
	170, 190	A2			
	210	A2			
53	130 (60 Hz)	—	Compressor Shut Off	Manual	HPS
	130 (50 Hz), 150	A3			
	170, 190	A3			
	210	A3			
54	130 (60 Hz)	—	Compressor Shut Off	Manual	HPS
	130 (50 Hz), 150	—			
	170, 190	—			
	210	A4			
55	130 (60 Hz)	B1	Circuit B Shut Off	Manual	HPS or CGF on Circuit B (any Compressor in Circuit B)
	130 (50 Hz), 150	B1			
	170, 190	B1			
	210	B1			
56	130 (60 Hz)	B2	Compressor Shut Off	Manual	HPS
	130 (50 Hz), 150	B2			
	170, 190	B2			
	210	B2			
57	130 (60 Hz)	—	Compressor Shut Off	Manual	HPS
	130 (50 Hz), 150	—			
	170, 190	B3			
	210	B3			
58	130 (60 Hz)	—	—	—	—
	130 (50 Hz), 150	—			
	170, 190	—			
	210	—			
59	Loss-of-Charge — Circuit A		Circuit A Shut Off	Manual	Low Refrigerant Charge, or Loss-of-Charge Pressure Switch Failure
60	Loss-of-Charge — Circuit B		Circuit B Shut Off	Manual	
61	Low Cooler Flow		Unit Shut Off	Manual	No Cooler Flow or Reversed Cooler Flow
63	Low Oil Pressure — Circuit A		Circuit A Shut Off	Manual	Oil Pump Failure or Low Oil Level, or Switch Failure
64	Low Oil Pressure — Circuit B		Circuit B Shut Off	Manual	
65	Freeze Protection		Unit Shut Off	Auto.	Low Cooler Flow
66	High Suction Superheat — Circuit A		Circuit A Shut Off	Manual	Low Charge, or EXV Failure, or Plugged Filter Drier
67	High Suction Superheat — Circuit B		Circuit B Shut Off	Manual	
68	Low Suction Superheat — Circuit A		Circuit A Shut Off	Manual	EXV Failure
69	Low Suction Superheat — Circuit B		Circuit B Shut Off	Manual	
70	Illegal Unit Configuration		Unit Will Not Start	Manual	Configuration Error (See Note 2)
71	Leaving Water Thermistor Failure		Unit Shut Off	Auto.	Thermistor Failure, Wiring Error, or Thermistor Not Connected to Processor Board.
72	Entering Water Thermistor Failure		Use Default Value	Auto.	
75	Saturated Condenser Thermistor Failure — Circuit A		Unit Shut Off	Auto.	
76	Saturated Condenser Thermistor Failure — Circuit B		Unit Shut Off	Auto.	
77	Cooler Thermistor Failure — Circuit A		Unit Shut Off	Auto.	
78	Cooler Thermistor Failure — Circuit B		Unit Shut Off	Auto.	
79	Compressor Thermistor Failure — Circuit A		Unit Shut Off	Auto.	
80	Compressor Thermistor Failure — Circuit B		Unit Shut Off	Auto.	
81	Reset Temperature Failure		Stop Reset	Auto.	Potentiometer Improperly Connected, Potentiometer Setting Out of Range — Potentiometer Failure, or Wiring Error.
82	Leaving Water Set Point POT Failure		Use Default Value	Auto.	
84	Reset Limit Set Point POT Failure		Stop Reset	Auto.	
85	Demand Limit POT Failure		Stop Demand Limit	Auto.	
86	Reset Ratio POT Failure		Stop Reset	Auto.	
87	Reset Set Point POT Failure		Stop Reset	Auto.	

LEGEND

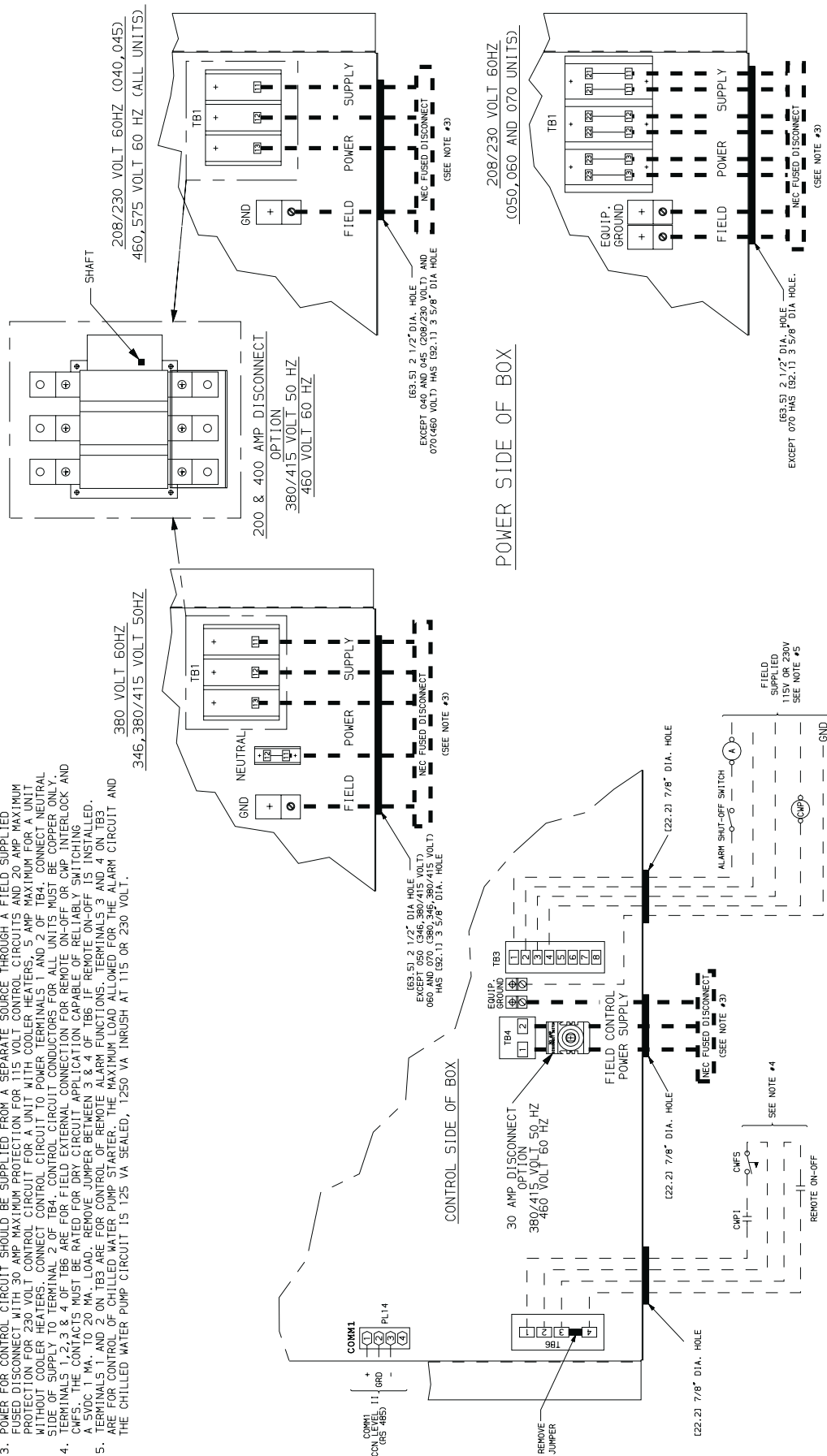
CGF — Circuit Ground Fault
EXV — Electronic Expansion Valve
HPS — High-Pressure Switch
POT — Potentiometer

NOTES:

- Freeze protection trips at 35 F for water and 6° F below set point for brine units. Resets at 6° F above set point.
- Illegal unit configuration caused by missing programmable header or both unloader DIP switches on.
- All Auto. reset failures that cause the unit to stop will restart the unit when the error has been corrected.
- All manual reset errors must be reset by turning the control switch off and on.
- Valid resistance range for thermistors is 362,939 ohms to 216.65 ohms.

*And associated modular units. See Table 1.

Fig. 54 — Start-Up and Diagnostic Information; 30GT, GU130-210, 230A-315A, 330A/B-410A/B (cont)



NOTES:

1. FACTORY WIRING IS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC). FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES.
2. WIRING FOR MAIN FIELD POWER SUPPLY MUST BE RATED 75°C MINIMUM. USE COPPER, COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS FOR ALL UNITS EXCEPT USE COPPER CONDUCTORS ONLY FOR THE 30GN110 346 VOLT UNIT (XL & PW), AND THE 30GN110 380/415 VOLT PART WINDING START UNIT.
3. POWER FOR CONTROL CIRCUIT SHOULD BE SUPPLIED FROM A SEPARATE SOURCE THROUGH A FIELD SUPPLIED FUSED DISCONNECT WITH 30 AMP MAXIMUM PROTECTION FOR 115 VOLT CONTROL CIRCUITS AND 15 AMP MAXIMUM PROTECTION FOR 230 VOLT CONTROL CIRCUIT. CONNECT CONTROL CIRCUIT POWER TO TERMINALS 1 AND 2 OF TB4. CONNECT NEUTRAL SIDE OF SUPPLY TO TERMINAL 2 OF TB4. CONTROL CIRCUIT CONDUCTORS FOR ALL UNITS MUST BE COPPER ONLY.
4. TERMINALS 1, 2, 3 & 4 OF TB6 ARE FOR FIELD EXTERNAL CONNECTION FOR REMOTE ON-OFF OR CWP INTRUSION. TERMINALS 1, 2, 3 & 4 OF TB6 MUST BE FIELD WIRING. A JUMPER ON WIRELESS ON-OFF SWITCHING A JUMPER MUST BE REMOVED. A JUMPER BETWEEN 3 & 4 OF TB6 REMOVE REMOTE ON-OFF SWITCHING. A JUMPER MUST BE REMOVED. A JUMPER BETWEEN 3 & 4 OF TB6 REMOVE REMOTE ON-OFF SWITCHING.
5. TERMINALS 1, 2, 3, 4 OF TB3 ARE FOR CHILLED WATER PUMP AND REMOTE ALARM CONTROL FUNCTIONS. THE MAXIMUM LOAD ALLOWED FOR THE ALARM CIRCUIT AND THE CHILLED WATER PUMP CIRCUIT IS 125 VA SEALED, 1250 VA INRUSH AT 115 OR 230 VOLT.

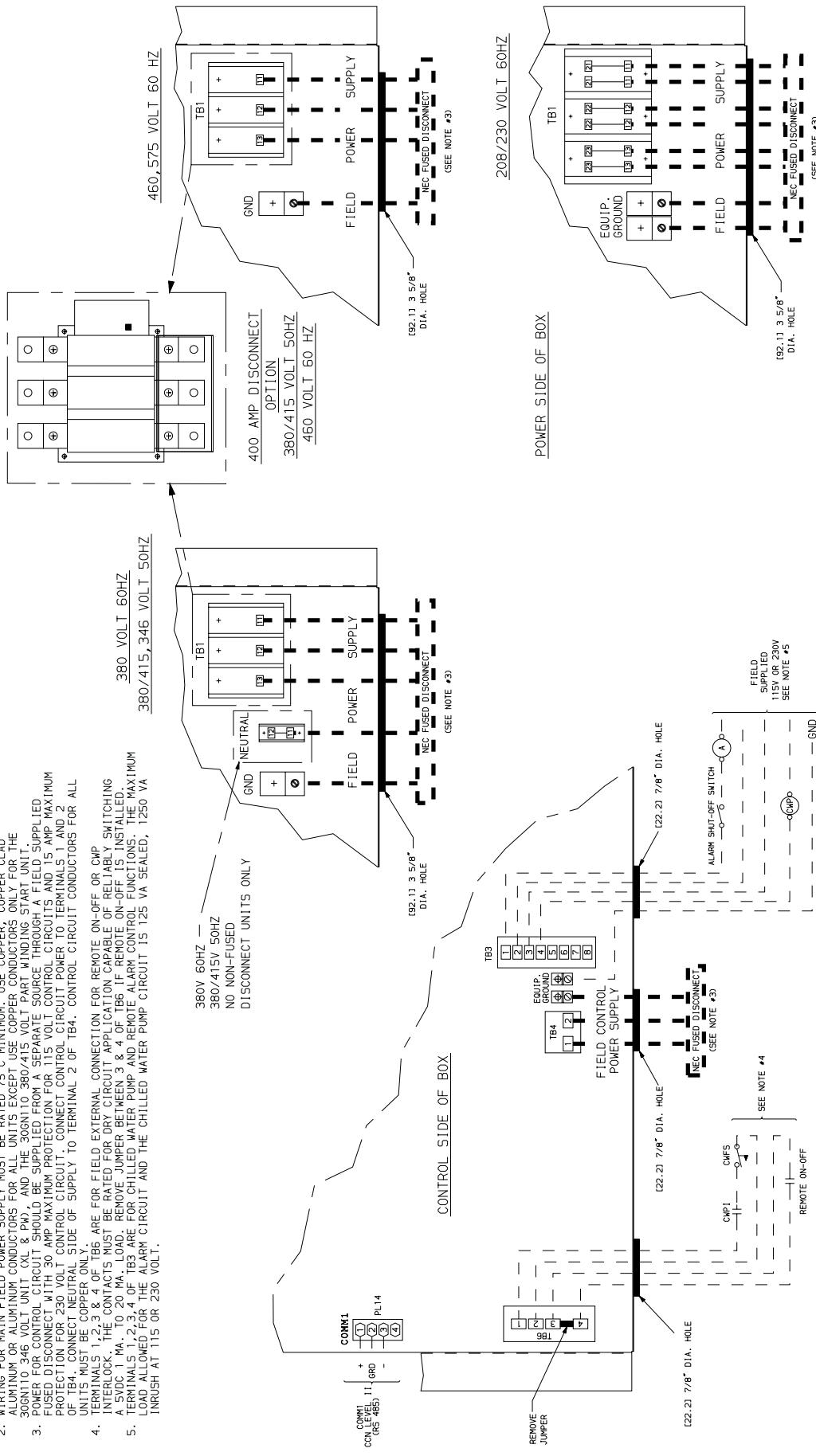
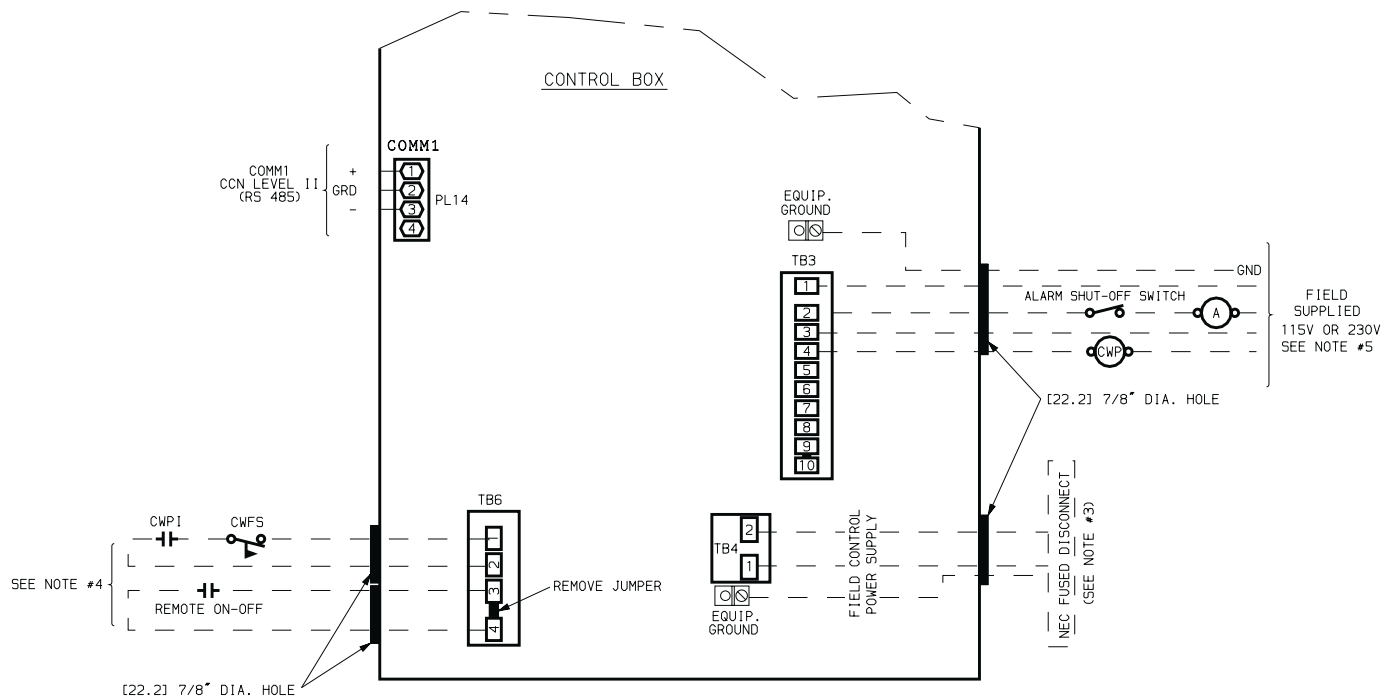


Fig. 56 — Field Wiring; 30GN080-110; All Voltages



NOTES:

1. FACTORY WIRING IS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC). FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES.
2. WIRING FOR MAIN FIELD POWER SUPPLY MUST BE RATED 75°C MINIMUM. USE COPPER, COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS FOR ALL UNITS EXCEPT USE COPPER CONDUCTORS ONLY FOR THE 30GN210 208/230 VOLT UNIT (XL & PW).
3. POWER FOR CONTROL CIRCUIT SHOULD BE SUPPLIED FROM A SEPARATE SOURCE THROUGH A FIELD SUPPLIED FUSED DISCONNECT WITH 30 AMP MAXIMUM PROTECTION FOR 115 VOLT CONTROL CIRCUITS AND 15 AMP MAXIMUM PROTECTION FOR 230 VOLT CONTROL CIRCUIT. CONNECT CONTROL CIRCUIT POWER TO TERMINALS 1 AND 2 OF TB4. CONNECT NEUTRAL SIDE OF SUPPLY TO TERMINAL 2 OF TB4. CONTROL CIRCUIT CONDUCTORS FOR ALL UNITS MUST BE COPPER ONLY.
4. TERMINALS 1,2,3 & 4 OF TB6 ARE FOR FIELD EXTERNAL CONNECTION FOR REMOTE ON-OFF OR CWP INTERLOCK. THE CONTACTS MUST BE RATED FOR DRY CIRCUIT APPLICATION CAPABLE OF RELIABLY SWITCHING A 5VDC 1 MA. TO 20 MA. LOAD. REMOVE JUMPER BETWEEN 3 & 4 OF TB6 IF REMOTE ON-OFF IS INSTALLED.
5. TERMINALS 1,2,3,4 OF TB3 ARE FOR CHILLED WATER PUMP AND REMOTE ALARM CONTROL FUNCTIONS. THE MAXIMUM LOAD ALLOWED FOR THE ALARM CIRCUIT AND THE CHILLED WATER PUMP CIRCUIT IS 125 VA SEALED, 1250 VA INRUSH AT 115 OR 230 VOLT.

Fig. 57 — Field Control Wiring; Unit Sizes 30GN130-210

NOTES:

1. FACTORY WIRING IS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC). FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES.
2. WIRING FOR MAIN FIELD POWER SUPPLY MUST BE RATED 75°C MINIMUM. USE COPPER, COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS FOR ALL UNITS EXCEPT USE COPPER CONDUCTORS ONLY FOR THE 30GN210 208/230 VOLT UNIT (XL & PW).
3. POWER FOR CONTROL CIRCUIT SHOULD BE SUPPLIED FROM A SEPARATE SOURCE THROUGH A FIELD SUPPLIED FUSED DISCONNECT WITH 30 AMP MAXIMUM PROTECTION FOR 115 VOLT CONTROL CIRCUITS AND 15 AMP MAXIMUM PROTECTION FOR 230 VOLT CONTROL CIRCUIT. CONNECT CONTROL CIRCUIT POWER TO TERMINALS 1 AND 2 OF TB4. CONNECT NEUTRAL SIDE OF SUPPLY TO TERMINAL 2 OF TB4. CONTROL CIRCUIT CONDUCTORS FOR ALL UNITS MUST BE COPPER ONLY.
4. TERMINALS 1,2,3 & 4 OF TB6 ARE FOR FIELD EXTERNAL CONNECTION FOR REMOTE ON-OFF OR CWP INTERLOCK. THE CONTACTS MUST BE RATED FOR DRY CIRCUIT APPLICATION CAPABLE OF RELIABLY SWITCHING A 5VDC 1 MA. TO 20 MA. LOAD. REMOVE JUMPER BETWEEN 3 & 4 OF TB6 IF REMOTE ON-OFF IS INSTALLED.
5. TERMINALS 1,2,3,4 OF TB3 ARE FOR CHILLED WATER PUMP AND REMOTE ALARM CONTROL FUNCTIONS. THE MAXIMUM LOAD ALLOWED FOR THE ALARM CIRCUIT AND THE CHILLED WATER PUMP CIRCUIT IS 125 VA SEALED, 1250 VA INRUSH AT 115 OR 230 VOLT.

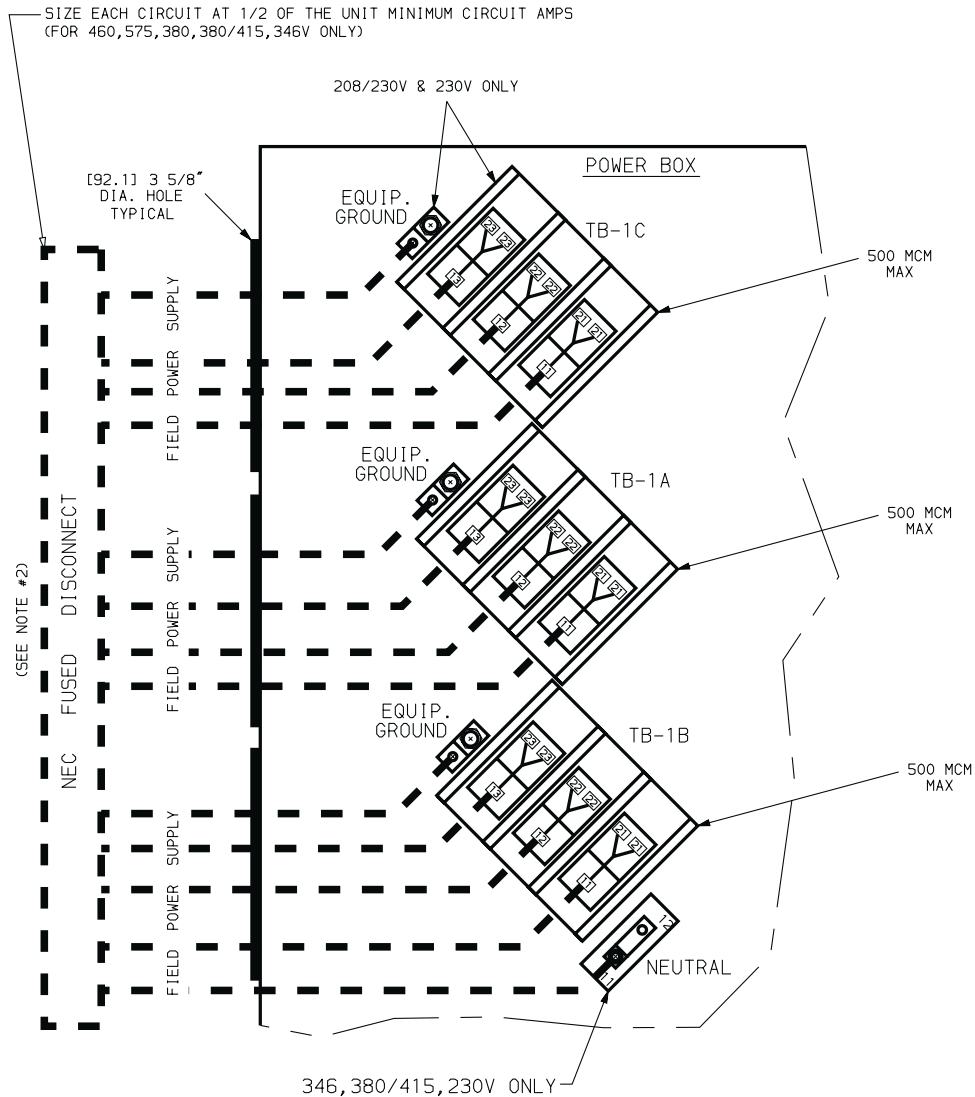


Fig. 58 — Field Power Wiring; Unit Size 30GN,GT,GU130-210; All Voltages

- | LEGEND: | A | CON | CNFS | CWP | CWP1 | CBP | — | — | — |
|---------|---|-----|------|-----|------|-----|---|---|---|
| 1. | FACTORY WIRING IS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC). FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES. | | | | | | | | |
| 2. | WIRING FOR MAIN FIELD POWER SUPPLY MUST BE RATED 75°C MINIMUM. USE COPPER, COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS FOR ALL UNITS EXCEPT USE COPPER CONDUCTORS ONLY FOR THE 306/390A, 420A & 420B 208/230 VOLT UNITS (XL & PW). | | | | | | | | |
| 3. | POWER FOR CONTROL CIRCUIT SHOULD BE SUPPLIED FROM A SEPARATE SOURCE THROUGH A FIELD SUPPLIED DISCONNECT WITH 30 AMP MAXIMUM PROTECTION FOR 115 VOLT CONTROL CIRCUITS AND 15 AMP MAXIMUM PROTECTION FOR 230 VOLT CONTROL CIRCUIT. CONNECT CONTROL CIRCUIT POWER TO TERMINALS 1 AND 2 OF T84.1, CONNECT NEUTRAL SIDE OF SUPPLY TO TERMINAL 2 OF T84. CONTROL CIRCUIT CONDUCTORS FOR ALL TERMINALS 115 VOLT CONTROL CIRCUITS ARE FOR FIELD. EXTERNAL CONNECTION FOR REMOTE ON-OFF OR CWP INTERLOCK. THE CONTACTS MUST BE RATED FOR DRY CIRCUIT APPLICATION, CAPABLE OF RELIABLY SWITCHING A 5VDC 1 MA, TO 20 MA. LOAD. REMOVE JUMPER BETWEEN 3 & 4 OF T86 IF REMOTE ON-OFF IS INSTALLED. | | | | | | | | |
| 5. | TERMINALS 1,2,3, 4 OF T83 ARE FOR CHILLED WATER PUMP AND REMOTE ALARM CONTROL FUNCTIONS. THE MAXIMUM LOAD ALLOWED FOR THE ALARM CIRCUIT AND THE CHILLED WATER PUMP CIRCUIT IS 125 VA SEALED, 1250 VA INRUSH AT 115 OR 230 VOLT. | | | | | | | | |

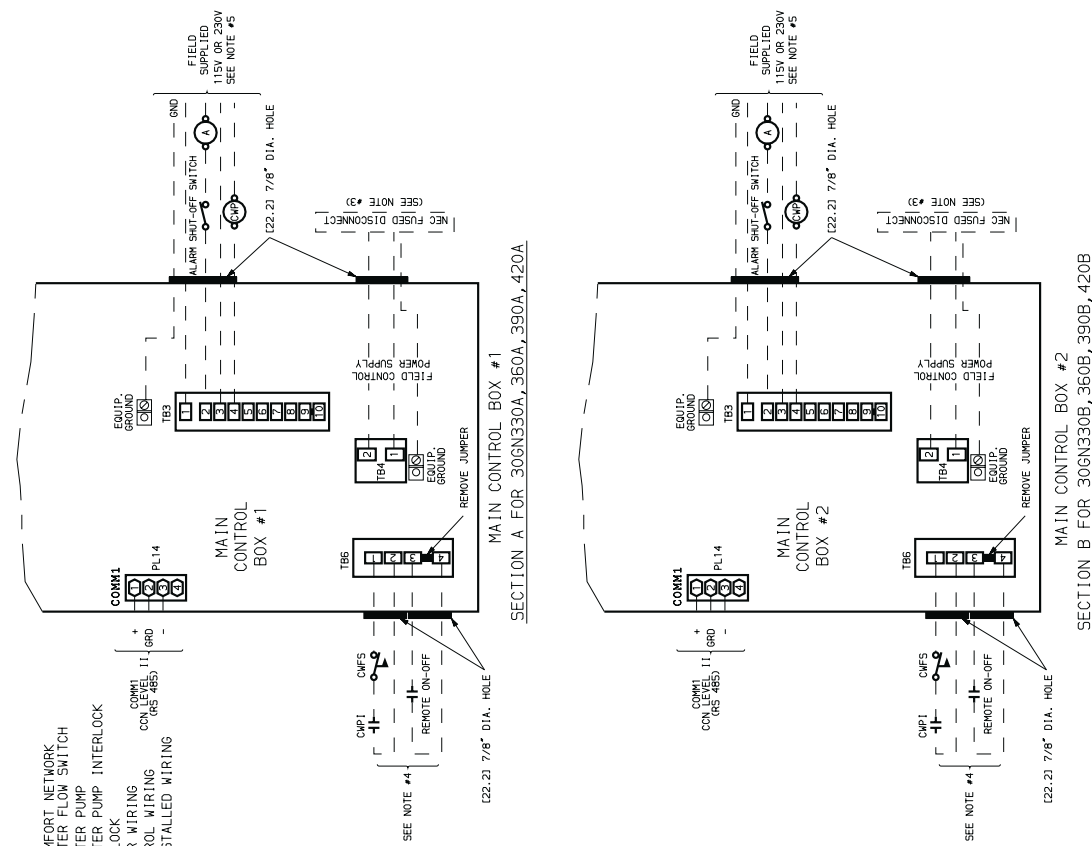
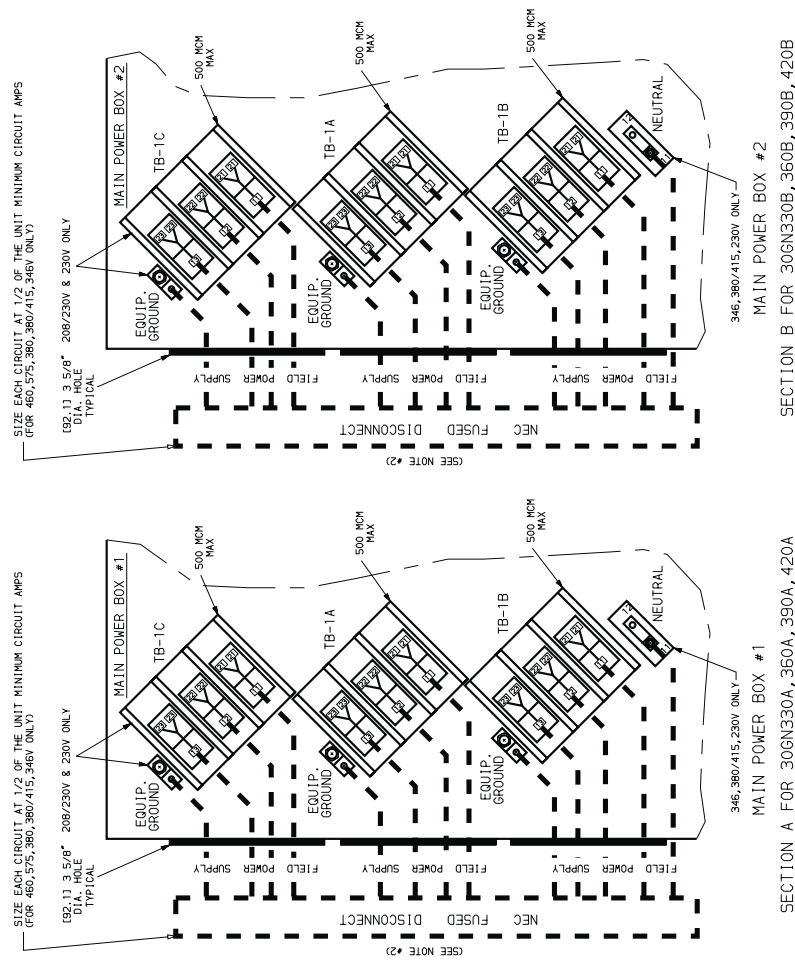
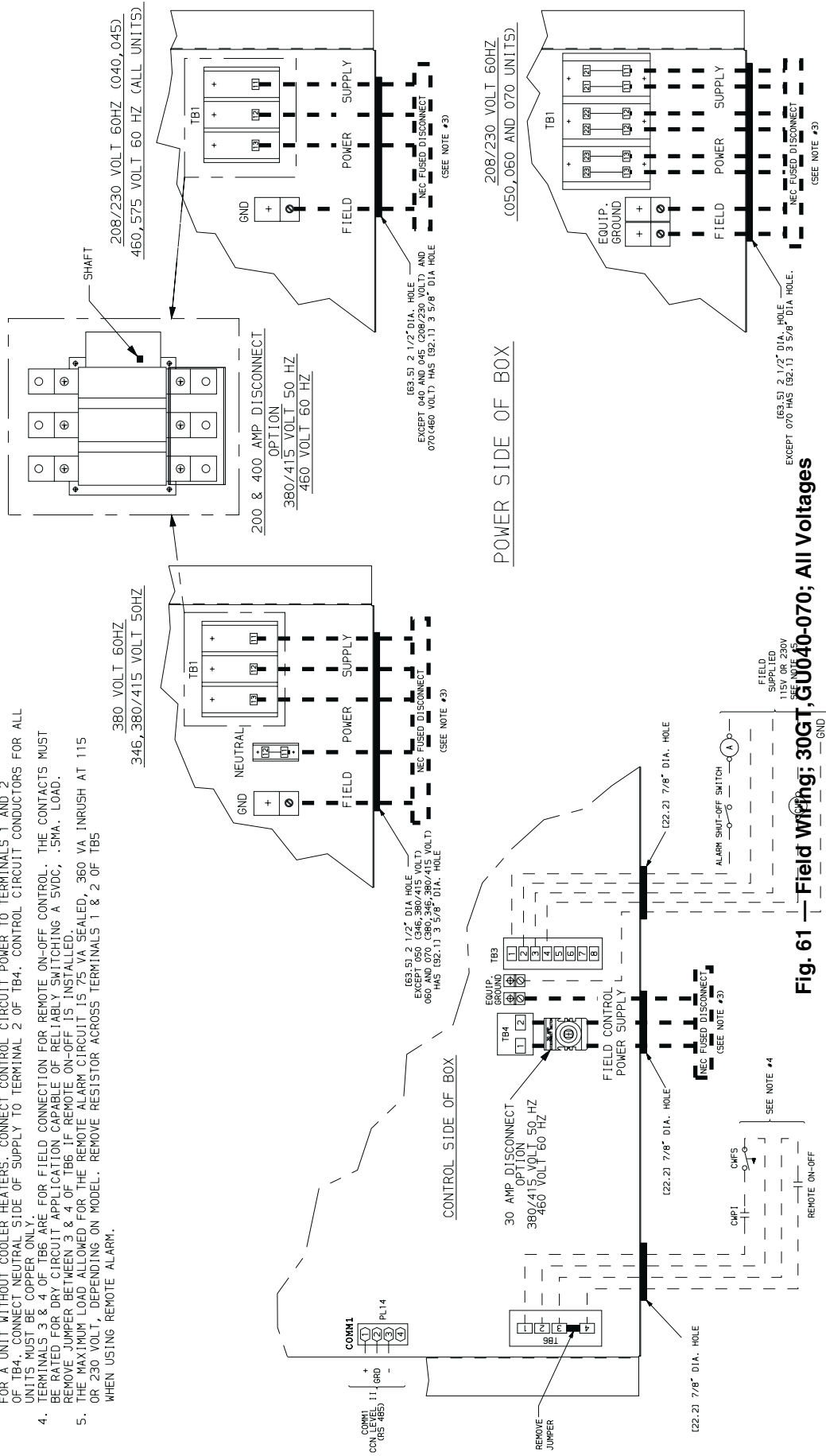
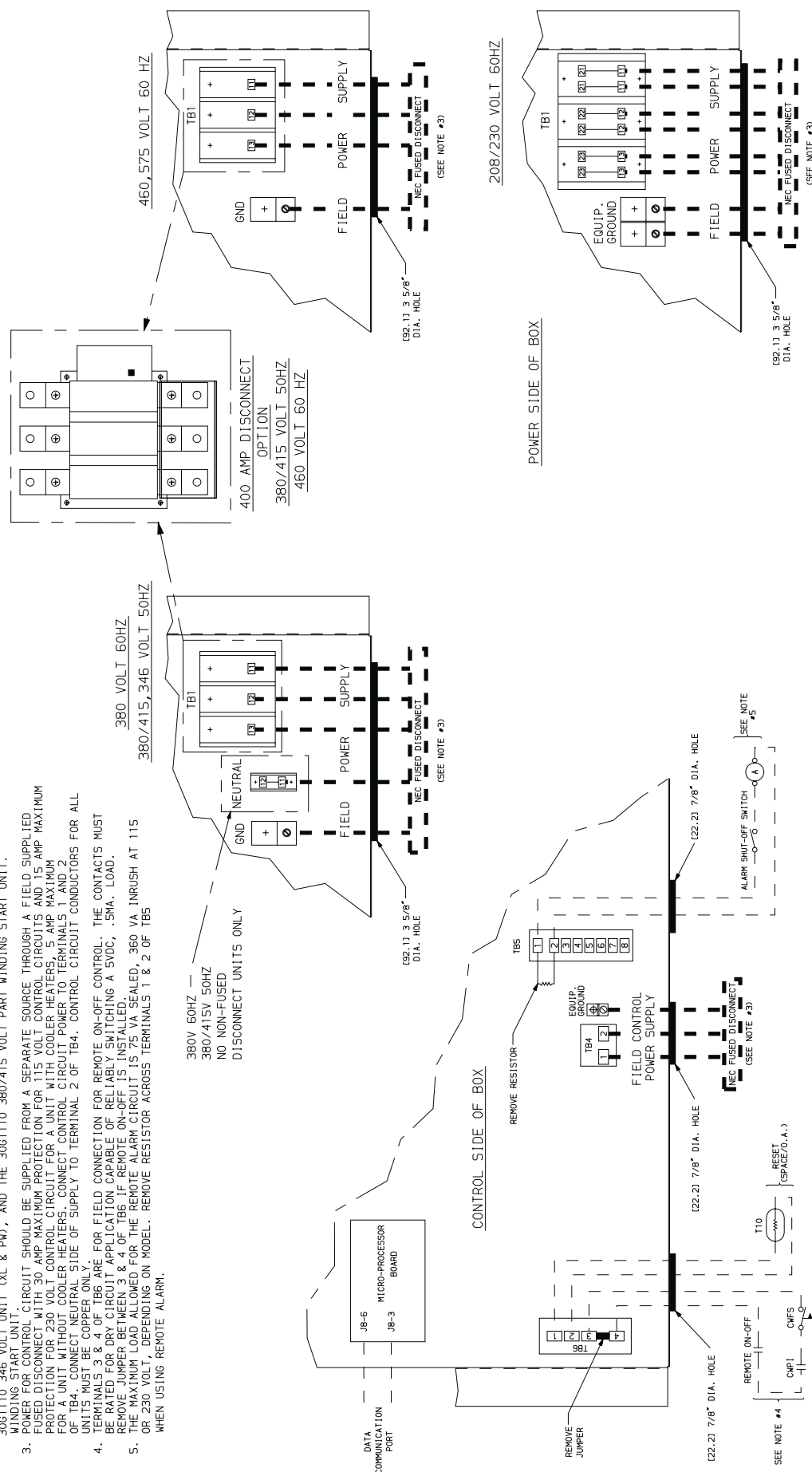


Fig. 60 — Field Wiring; 30GN330A/B-420A/B; All Voltages

NOTES:

1. FACTORY WIRING IS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC). FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES.
2. WIRING FOR MAIN FIELD POWER SUPPLY MUST BE RATED 75°C MINIMUM. USE COPPER, COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS FOR ALL UNITS.
3. POWER FOR CONTROL CIRCUIT SHOULD BE SUPPLIED FROM A SEPARATE SOURCE THROUGH A FIELD SUPPLIED FUSED DISCONNECT WITH 30 AMP MAXIMUM PROTECTION FOR 115 VOLT CONTROL CIRCUITS AND 20 AMP MAXIMUM PROTECTION FOR 230 VOLT CONTROL CIRCUIT FOR A UNIT WITH COOLER HEATERS, 5 AMP MAXIMUM FOR A UNIT WITHOUT COOLER HEATERS. CONNECT CONTROL CIRCUIT POWER TO TERMINALS 1 AND 2 OF TB4. CONNECT NEUTRAL SIDE OF SUPPLY TO TERMINAL 2 OF TB4. CONTROL CIRCUIT CONDUCTORS FOR ALL UNITS MUST BE COPPER ONLY.
4. TERMINALS 3 & 4 OF TB6 ARE FOR FIELD CONNECTION FOR REMOTE ON-OFF CONTROL. THE CONTACTS MUST BE RATED FOR DRY CIRCUIT APPLICATION CAPABLE OF RELIABLY SWITCHING A 5VDC, .5MA. LOAD. REMOVE JUMPER BETWEEN 3 & 4 OF TB6 IF REMOTE ON-OFF IS INSTALLED.
5. THE MAXIMUM LOAD ALLOWED FOR THE REMOTE ALARM CIRCUIT IS 75 VA SEALED, 360 VA INRUSH AT 115 OR 230 VOLT, DEPENDING ON MODEL. REMOVE RESISTOR ACROSS TERMINALS 1 & 2 OF TB5 WHEN USING REMOTE ALARM.





NOTES:

1. FACTORY WIRING IS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC). FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES.
2. WIRING FOR MAIN FIELD POWER SUPPLY MUST BE RATED 75°C MINIMUM. USE COPPER, COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS FOR ALL UNITS EXCEPT USE COPPER CONDUCTORS ONLY FOR 30GT390A, 420A & 420B 208/230 VOLT UNITS (XL & PW).
3. POWER FOR CONTROL CIRCUIT SHOULD BE SUPPLIED FROM A SEPARATE SOURCE THROUGH A FIELD SUPPLIED FUSED DISCONNECT WITH 30 AMP MAXIMUM PROTECTION FOR 115 VOLT CONTROL CIRCUITS AND 15 AMP MAXIMUM PROTECTION FOR 230 VOLT CONTROL CIRCUIT. CONNECT CONTROL CIRCUIT POWER TO TERMINALS 1 AND 2 OF TB4. CONNECT NEUTRAL SIDE OF SUPPLY TO TERMINAL 2 OF TB4. CONTROL CIRCUIT CONDUCTORS FOR ALL UNITS MUST BE COPPER ONLY.
4. TERMINALS 3 & 4 OF TB6 ARE FOR FIELD CONNECTION FOR REMOTE ON-OFF CONTROL. THE CONTACTS MUST BE RATED FOR DRY CIRCUIT APPLICATION CAPABLE OF RELIABLY SWITCHING A 5VDC, .5MA. LOAD. REMOVE JUMPER BETWEEN 3 & 4 OF TB6 IF REMOTE ON-OFF IS INSTALLED.
5. THE MAXIMUM LOAD ALLOWED FOR THE REMOTE ALARM CIRCUIT IS 75 VA SEALED, 360 VA INRUSH AT 115 OR 230 VOLT, DEPENDING ON MODEL. REMOVE RESISTOR ACROSS TERMINALS 1 & 2 OF TB3 WHEN USING REMOTE ALARM.

LEGEND:

- A - ALARM
- CWFS - CHILLED WATER FLOW SWITCH
- CWPI - CHILLED WATER PUMP INTERLOCK
- TB - TERMINAL BLOCK
- FIELD POWER WIRING
- FIELD CONTROL WIRING
- FACTORY INSTALLED WIRING

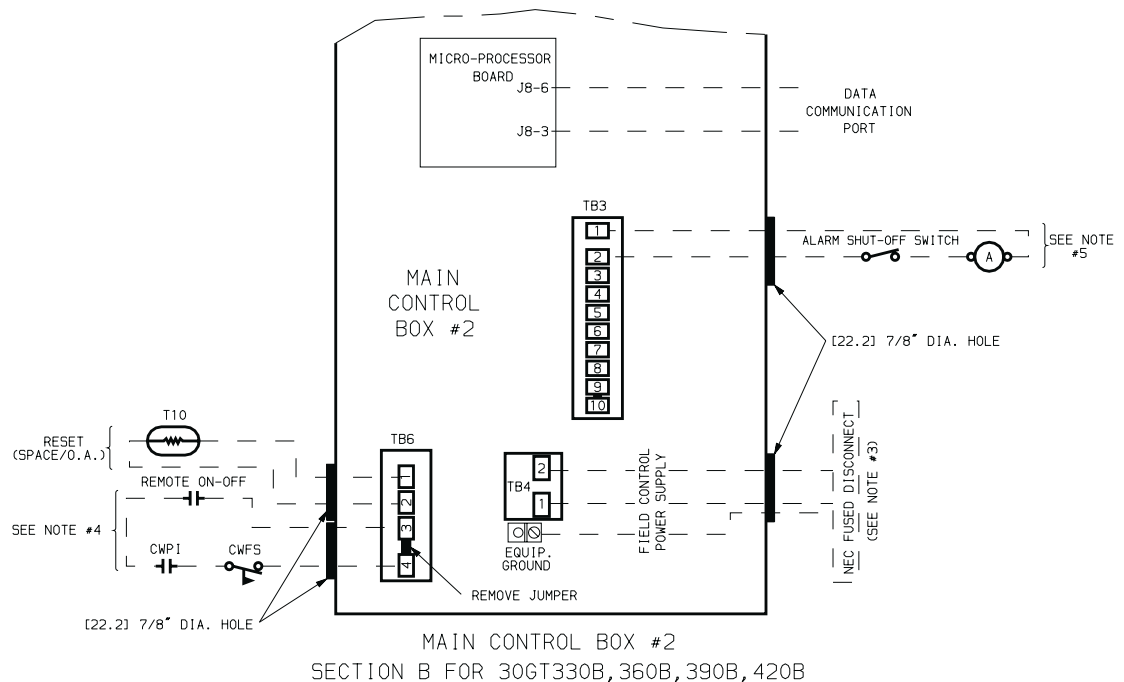
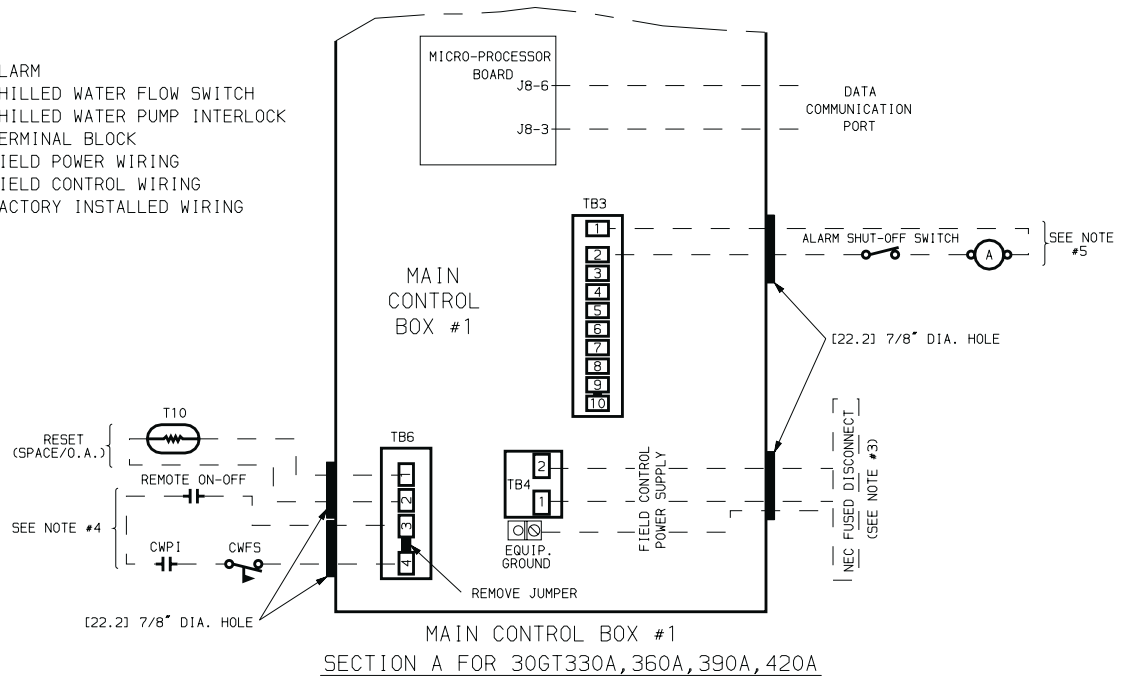


Fig. 63 — Field Control Wiring; 30GT, GU130-210; All Voltages

NOTES:

1. FACTORY WIRING IS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC). FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES.
2. WIRING FOR MAIN FIELD POWER SUPPLY MUST BE RATED 75°C MINIMUM. USE COPPER, COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS FOR ALL UNITS EXCEPT USE COPPER CONDUCTORS ONLY FOR 30GT390A, 420A & 420B 208/230 VOLT UNITS (XL & PW).
3. POWER FOR CONTROL CIRCUIT SHOULD BE SUPPLIED FROM A SEPARATE SOURCE THROUGH A FIELD SUPPLIED FUSED DISCONNECT WITH 30 AMP MAXIMUM PROTECTION FOR 115 VOLT CONTROL CIRCUITS AND 15 AMP MAXIMUM PROTECTION FOR 230 VOLT CONTROL CIRCUIT. CONNECT CONTROL CIRCUIT POWER TO TERMINALS 1 AND 2 OF TB4. CONNECT NEUTRAL SIDE OF SUPPLY TO TERMINAL 2 OF TB4. CONTROL CIRCUIT CONDUCTORS FOR ALL UNITS MUST BE COPPER ONLY.
4. TERMINALS 3 & 4 OF TB6 ARE FOR FIELD CONNECTION FOR REMOTE ON-OFF CONTROL. THE CONTACTS MUST BE RATED FOR DRY CIRCUIT APPLICATION CAPABLE OF RELIABLY SWITCHING A 5VDC, .5MA, LOAD.
5. REMOVE JUMPER BETWEEN 3 & 4 OF TB6 IF REMOTE ON-OFF IS INSTALLED.
6. THE MAXIMUM LOAD ALLOWED FOR THE REMOTE ALARM CIRCUIT IS 75 VA SEALED, 360 VA INRUSH AT 115 VDC 230 VOLT, DEPENDING ON MODEL. REMOVE RESISTOR ACROSS TERMINALS 1 & 2 OF TB3 WHEN USING REMOTE ALARM.

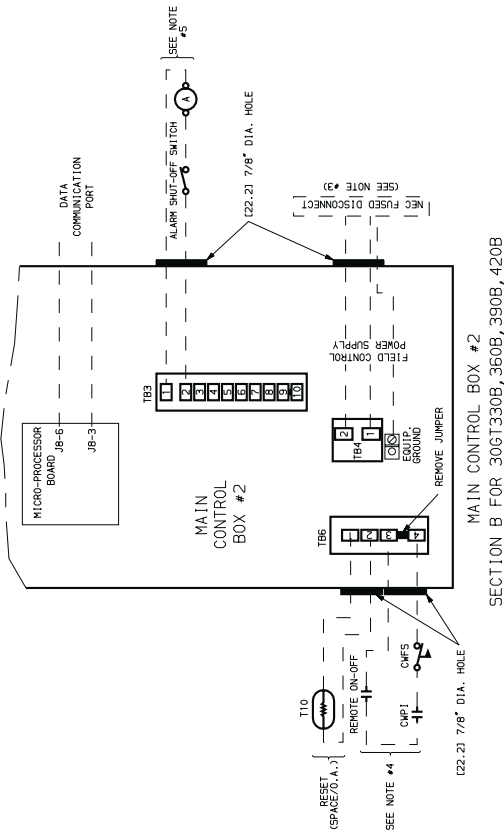
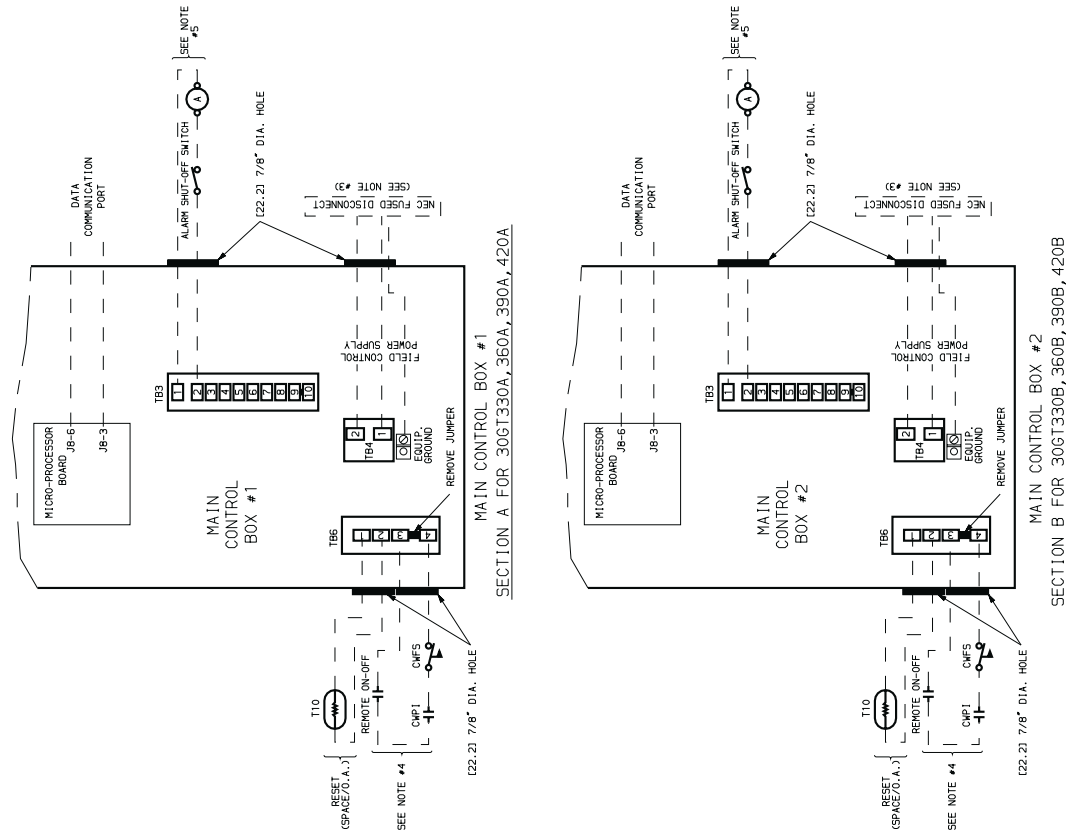
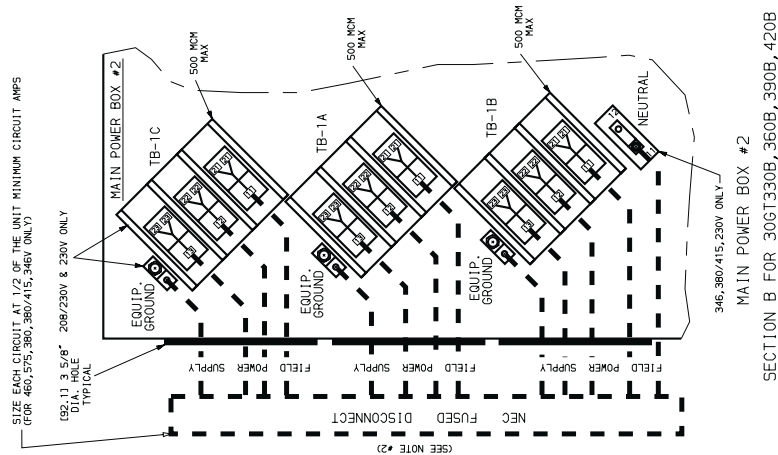
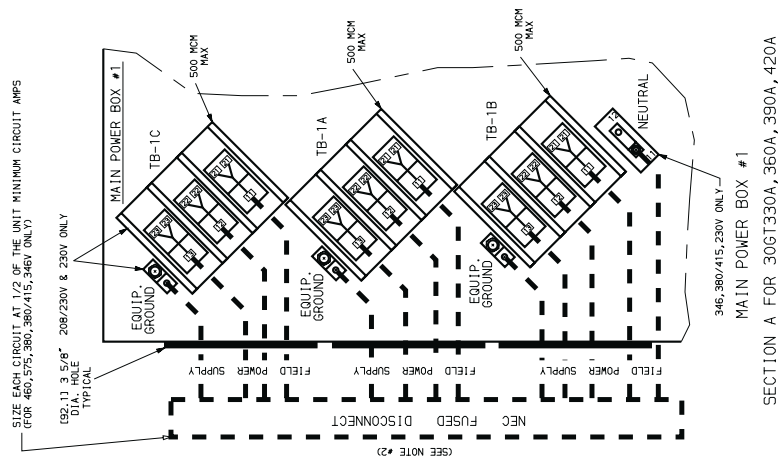


Fig. 65 — Field Wiring; 30GT, GU330A/B-420A/B; All Voltages

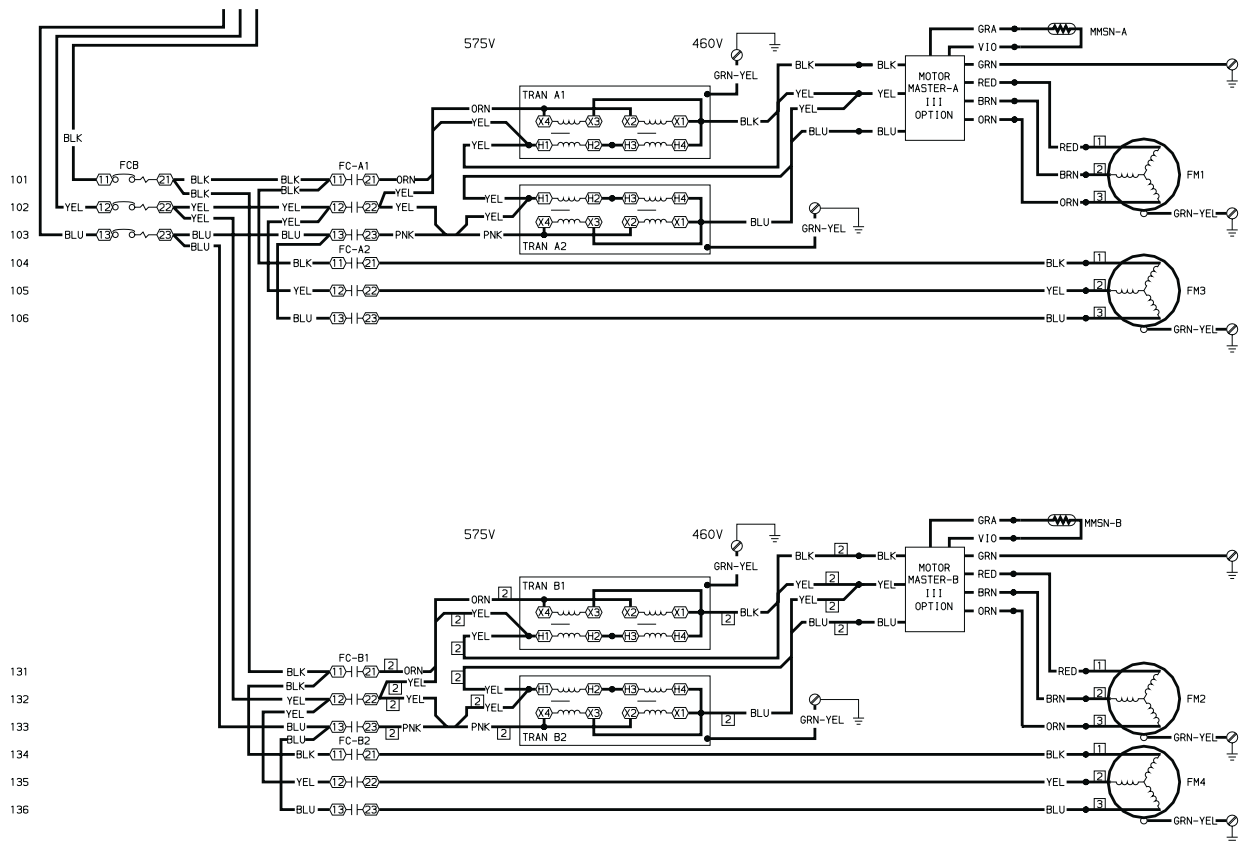


Fig. 66 — 30GN,GT,GU040-050; 575 V Motormaster® Control Units

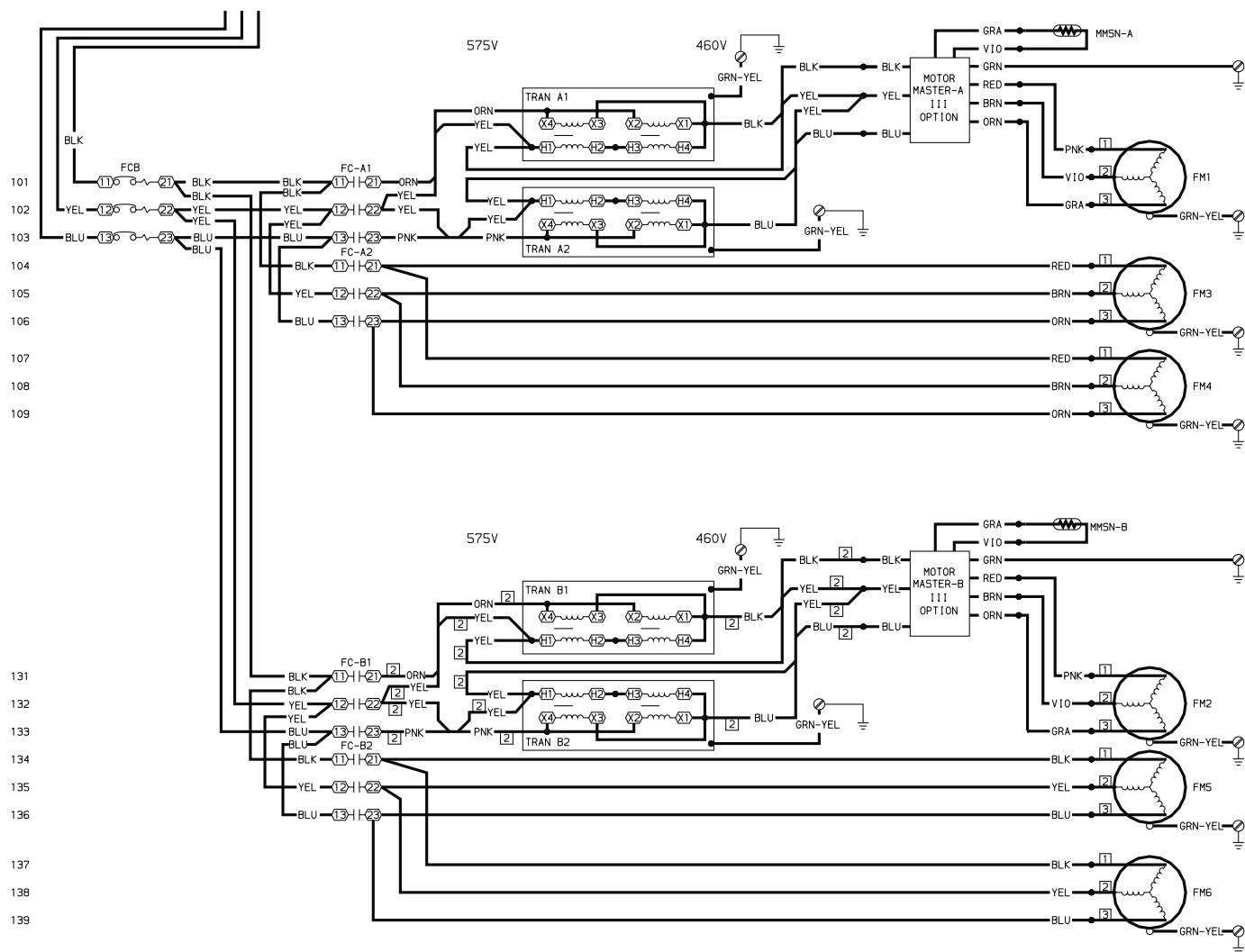


Fig. 67 — 30GN,GT,GU060, 070; 575 V Motormaster® Control Units

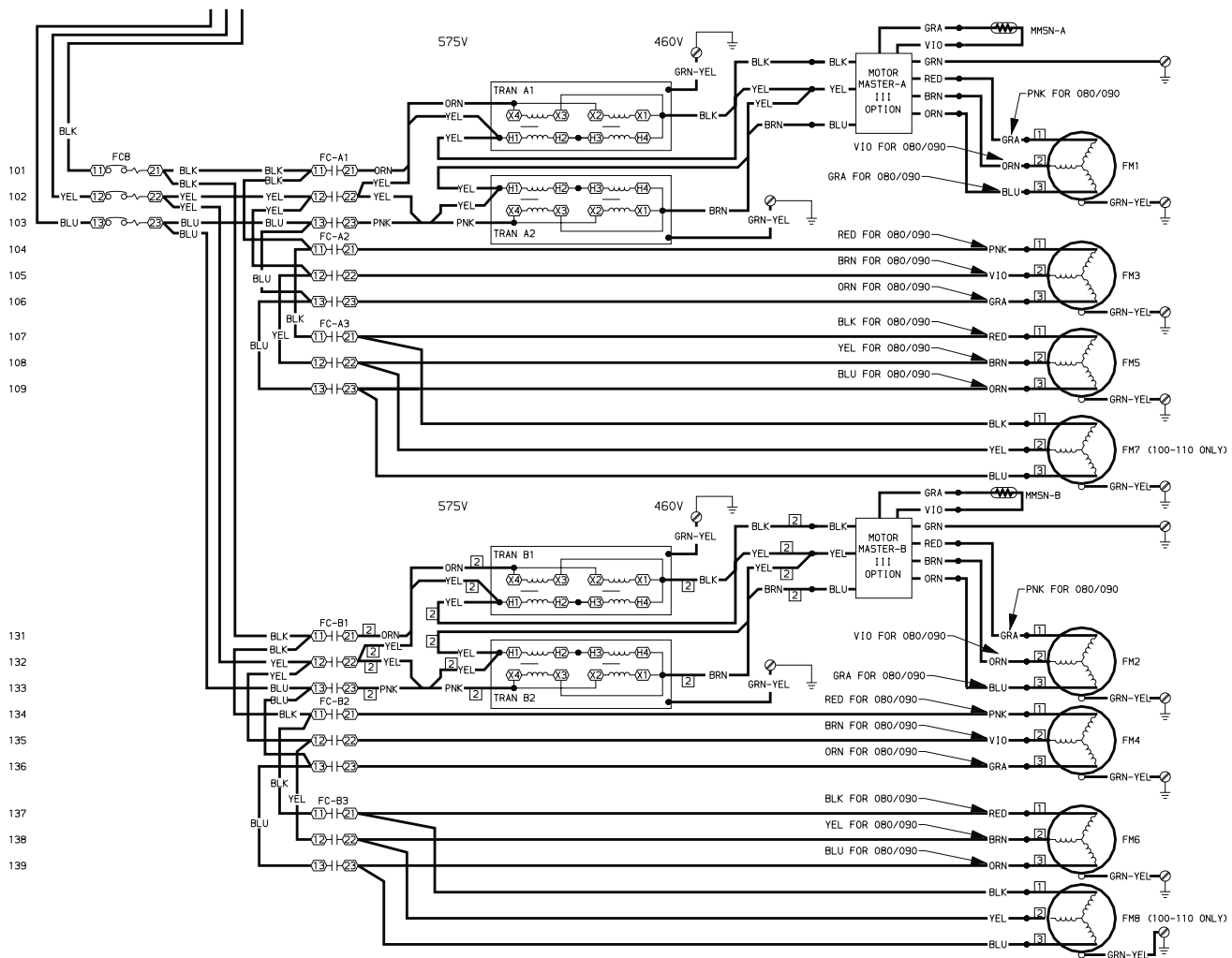


Fig. 68 — 30GN,GT,GU080-110, 230B-315B; 575 V Motormaster® Control Units

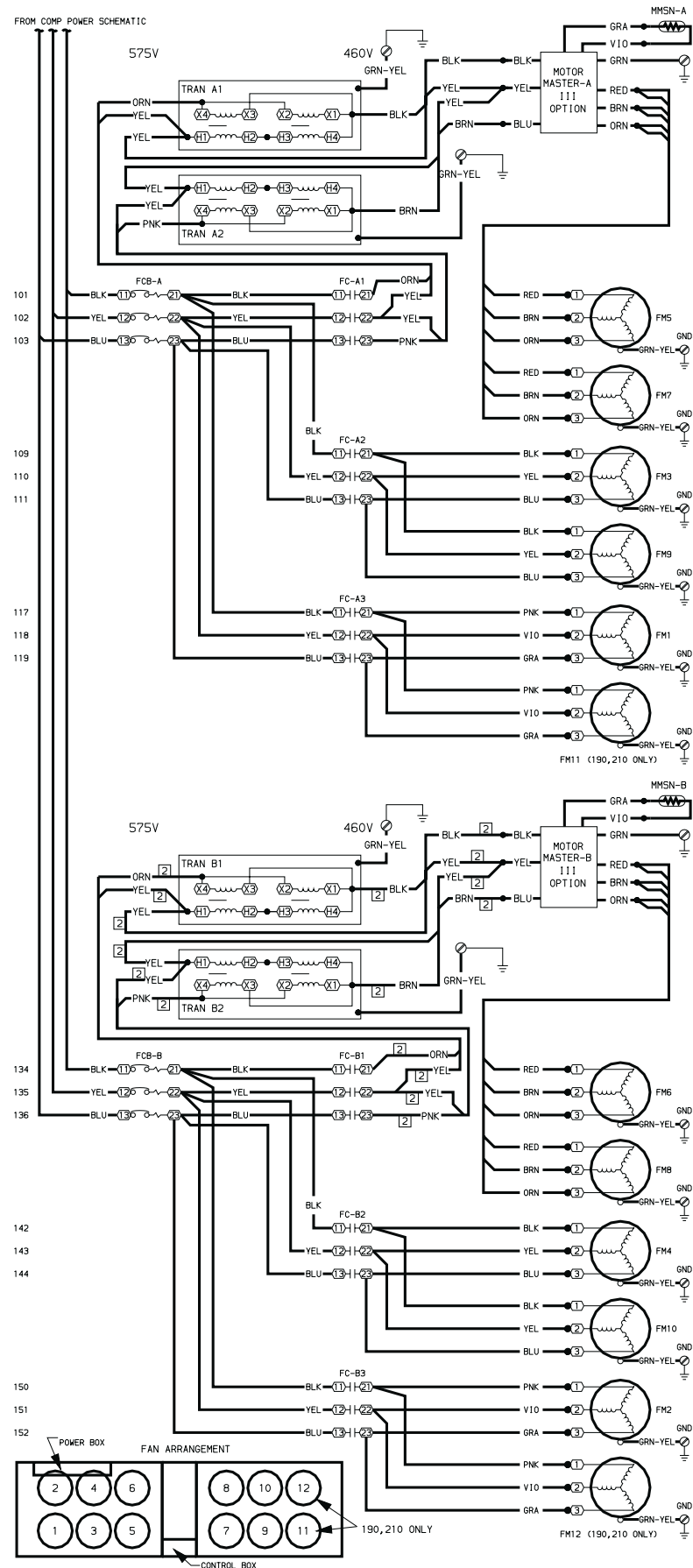


Fig. 69 — 30GN,GT,GU130-210, 230A-315A, 330A/B-420A/B; 575 V Motormaster® Control Units

DUAL SET POINT REQUIREMENT

30GT, GU Only — For installations requiring dual set point capability, the accessory reset board is required.

To operate the chiller with a dual set point, the fluid should be properly chosen for temperature application. The chilled fluid set point is achieved by field installation of a single-pole, double-throw relay of the appropriate control voltage, with a single-pole, single-throw switch and resistors wired to TB6-1 and -2 as shown in Fig. 70.

On the processor board, remove the cover to the DIP (dual in-line package) switches. Set DIP switch no. 1 to OFF position, and set DIP switch no. 2 to ON position to enable reset. ON-OFF switch must be in OFF position before changing the setting of the DIP switch.

The chilled liquid set point must be set to the lower of the 2 temperatures selected.

ACCESSORY RESET BOARD — Chilled reset temperature potentiometer should be set between 90 and 95 F (32 and 35 C). If a fault code of **87** is displayed on the LED (light-emitting diode), reduce the value slightly to eliminate the

fault code. The reset limit potentiometer must be set to the difference between the low and high set point temperature. The chiller reset ratio potentiometer should be set at 100%. If a fault code of **86** is displayed on the LED, reduce the value slightly to eliminate the fault code.

OPERATION — The chiller will supply fluid at the higher set point when no power is supplied to the dual set point relay (DSPR). When power is applied to the DSPR, the chiller will supply fluid at the lower temperature. For example: For a dual set point temperature of 44 F (6.7 C) and 26 F (–3.3 C) fluid, the chiller will supply fluid at 26 F (–3.3 C) when the relay DSPR is energized, and 44 F (6.7 C) when it is not — with the necessary accessories installed and the following control devices set at these values:

	F	C
Chilled Liquid Set Point:	26	–3.3
Chiller Reset Temperature:	95	35
Reset Limit Potentiometer:	18°	10°
Reset Ratio	100%	

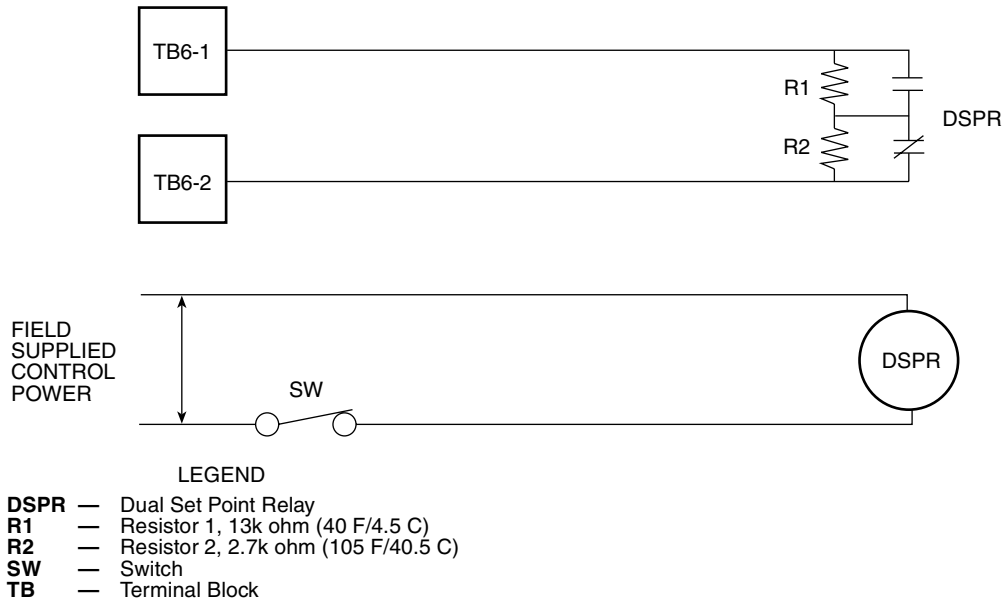


Fig. 70 — Dual Set Point Wiring

