Wiring Diagrams

INDEX

NOTE: For operating sequence, refer to the Controls, Start-Up, Operation, Service and Troubleshooting literature.

SAFETY CONSIDERATIONS

Installing, starting up, and servicing this equipment can be hazardous due to system pressures, electrical components, and equipment location (roof, elevated structures, etc.). Only trained, qualified installers and service technicians should install, start up, and service this equipment. When working on this equipment, observe precautions in the literature, and on tags, stickers, and labels attached to the equipment, and any other safety precautions that apply. Follow all safety codes. Wear safety glasses and work gloves. Use care in handling, rigging, and setting this equipment, and in handling all electrical components.

⚠ WARNING

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation and service. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed.

GENERAL

This publication contains Wiring Diagram information for the 30RB060-390 air-cooled liquid chillers with electronic controls. These chillers are equipped with *Comfort*Link™ controls and electronic expansion valves.

NOTE: Unit sizes 315-390 are modular units that are shipped in separate sections as modules A or B as noted in position 8 of the unit model nomenclature. See Table 1 for a listing of unit sizes and modular combinations.

NOTE: The nameplate for modular units contains only the first two digits in the model number. For example, 315A and 315B name plates read 31A and 31B.

Table 1 — Modular Unit Combinations

MODULAR UNITS	MODULE A	MODULE B
30RBA315	30RBA160	30RBA160
30RBA330	30RBA170	30RBA160
30RBA345	30RBA170	30RBA170
30RBA360	30RBA190	30RBA170
30RBA390	30RBA190	30RBA190

NOTE: An “A” in the fifth position of the model number indicates the design series. See Fig. 1.

LEGEND

ALM R — Alarm Relay
ALT R — Alert Relay
C — Contactor, Compressor
CB — Circuit Breaker/Disconnect
CCH — Compressor Crankcase Heater
CL-HT — Cooler Heater
COMP — Compressor
CWFS — Chilled Water Flow Switch
CWP — Chilled Water Pump
DPT — Discharge Pressure Transducer
EQUIP — Equipment
EXV — Electronic Expansion Valve
EMM — Energy Management Module
FB — Fan Board
FC — Fan Contactor
FEB — Field Electrical Box
FIOP — Factory-Installed Option
FM — Fan Motor
FN — Fan
FU — Fuse
GFI-CO — Ground Fault Interrupter — Convenience Outlet
GND — Ground
HOA — Hand/Off/Auto
HOA-A — Hand/Off/Auto, Auto Setting
HOA-H — Hand/Off/Auto, Hand Setting
HPS — High-Pressure Switch
LWT — Leaving Water Temperature
MBB — Main Base Board
MLV — Minimum Load Valve
MM — Low Ambient Temperature Head Pressure Control
MTR — Motor
NEC — National Electrical Code (U.S.A.)
OAT — Outdoor Air Temperature
PEB — Power Electrical Box
PMP — Pump, Chilled Water
PMPI — Chilled Water Pump Interlock
RDY R — Ready Relay
RRB — Reverse Rotation Board
RUN R — Run Relay
SHD R — Shutdown Relay
SPM — Scroll Protection Module
SPT — Suction Pressure Transducer
SW — Switch
T — Thermistor
TB — Terminal Block
TEMP — Temperature
TRAN — Transformer


Terminal Block Connection


Marked Terminal

Unmarked Terminal


Unmarked Splice

Factory Wiring

Optional Wiring

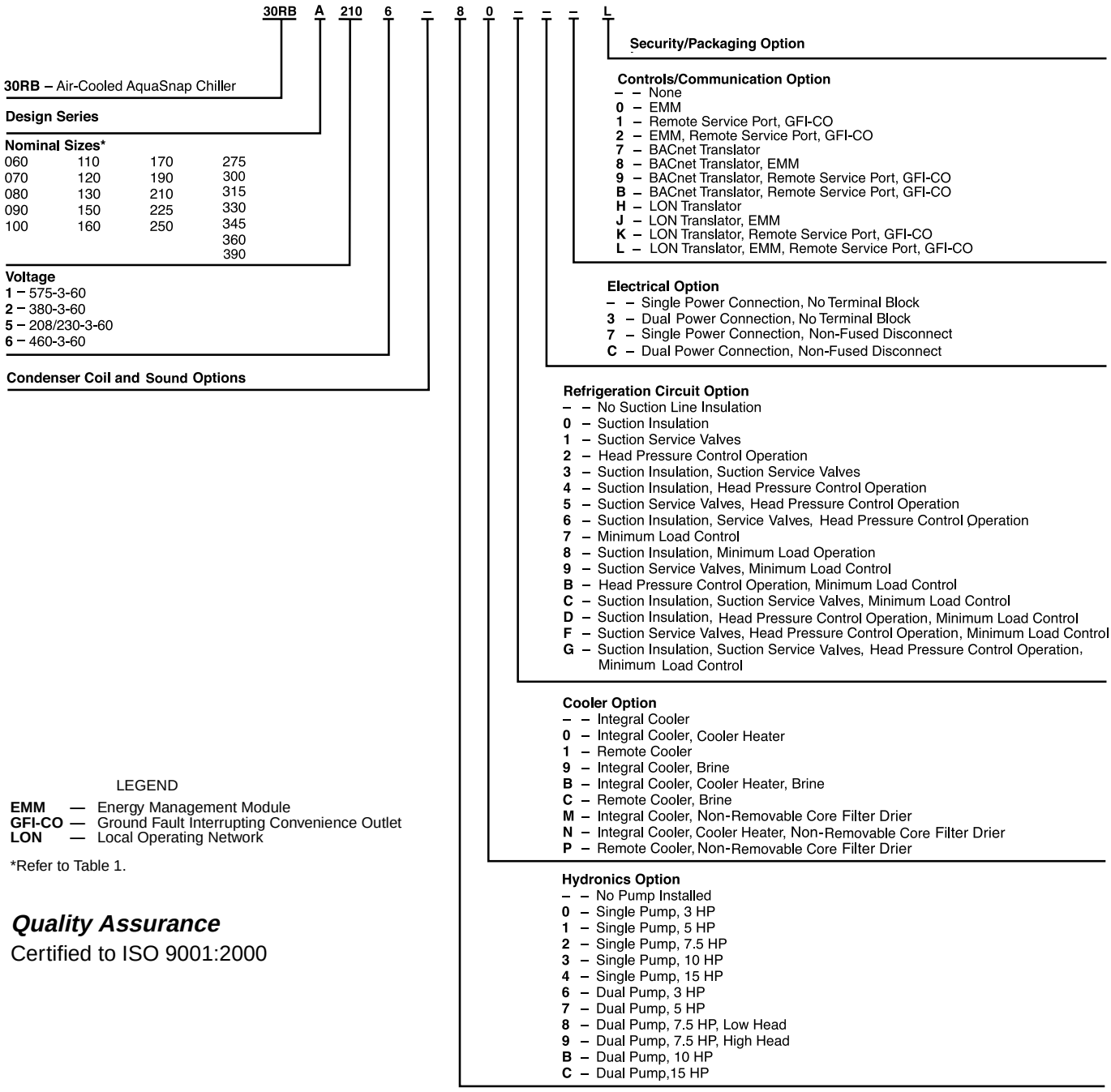
Indicates common potential. Does not represent wiring.

FIOP or Accessory


Wire Tag

NOTES

1. Factory wiring is in accordance with UL 1995 standards. Field modifications or additions must be in compliance with all applicable codes.
2. Wiring for main field supply must be rated 75 C minimum. Use copper for all units.
   Incoming wire size range for the terminal block is #4 AWG to 500 kcmil.
   Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.
   Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil.
   Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 to 500 kcmil.
3. Terminals 9 and 10 of TB5 are for field external connections for remote on-off. The contacts must be rated for dry circuit application capable of handling a 24 vac load up to 50 mA.
4. Terminals 1 and 2 of TB5 are for external connections of chilled water pump interlock. The contacts must be rated for dry circuit application capable of handling a 24 vac load up to 50 mA.
5. Terminals 11 and 13 of TB5 are for control of chilled water pump1 (PMP1) starter.
   Terminals 13 and 15 of TB5 are for control of chilled water pump2 (PMP2) starter.
   The maximum load allowed for the chilled water pump relay is a 5 va sealed, 10 va inrush at 24 v. Field power supply is not required.
6. For control of chilled water pumps, a set of normally open contacts rated for dry circuit application must be supplied from field supplied pump starter relay. Connect contacts to violet and pink wires in harness from main base board channel 18. Wires in harness are marked PMP1-13 and PMP1-14.
7. Terminals 12 and 13 of TB5 are for an alarm relay. The maximum load allowed for the alarm relay is 10 va sealed, 24 va inrush at 24 v. Field power supply is not required.
8. Make appropriate connections to TB6 as shown for energy management board options. The contacts for occupancy override, demand limit and ice done options must be rated for dry circuit application capable of handling a 24 vac load up to 50 mA.



LEGEND

EMM — Energy Management Module
GFI-CO — Ground Fault Interrupting Convenience Outlet
LON — Local Operating Network

*Refer to Table 1.

Quality Assurance

Certified to ISO 9001:2000

Fig. 1 — Model Number Nomenclature

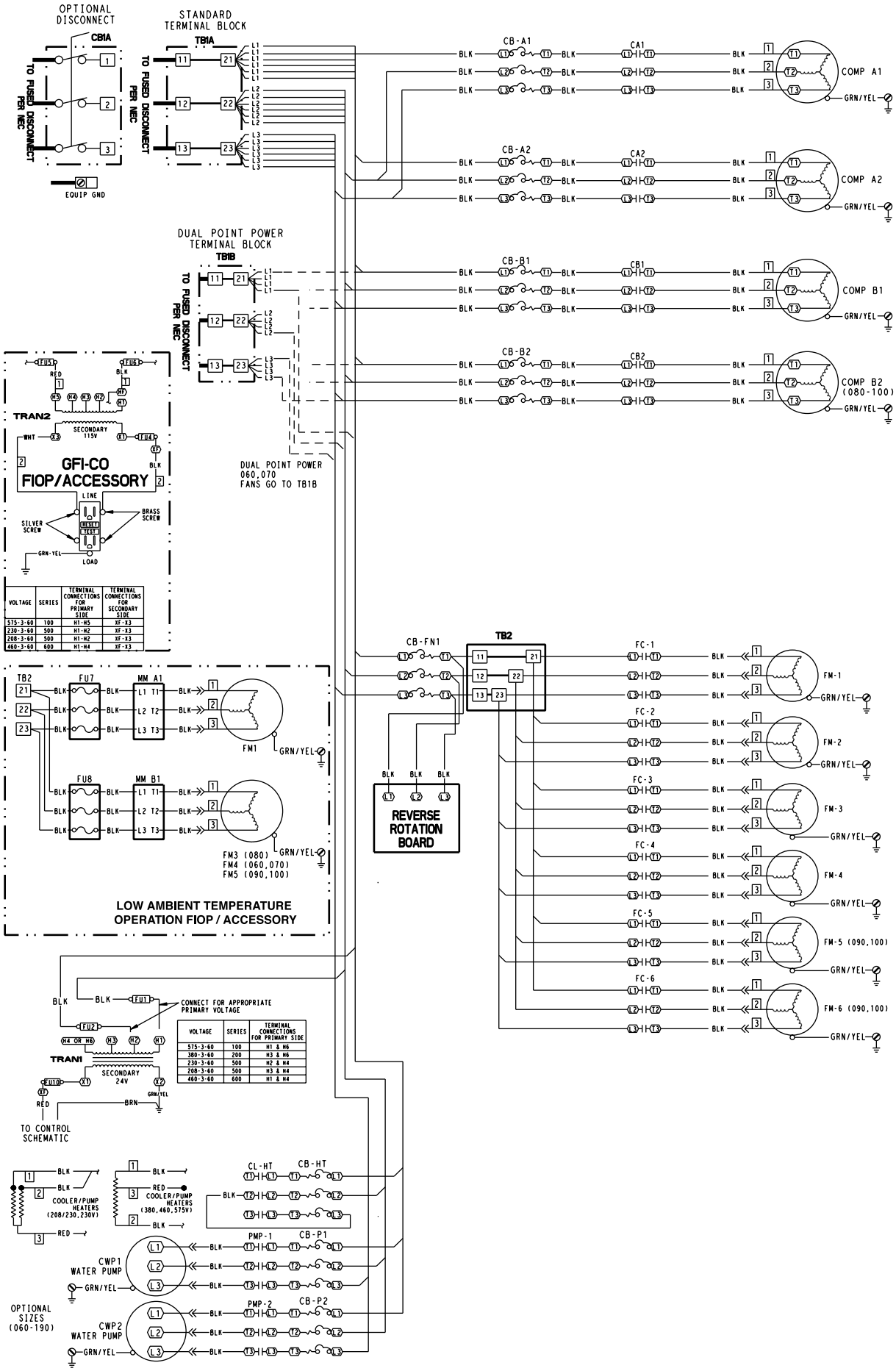


Fig. 2 — Power Schematic, 30RB060-100 (All Voltages)

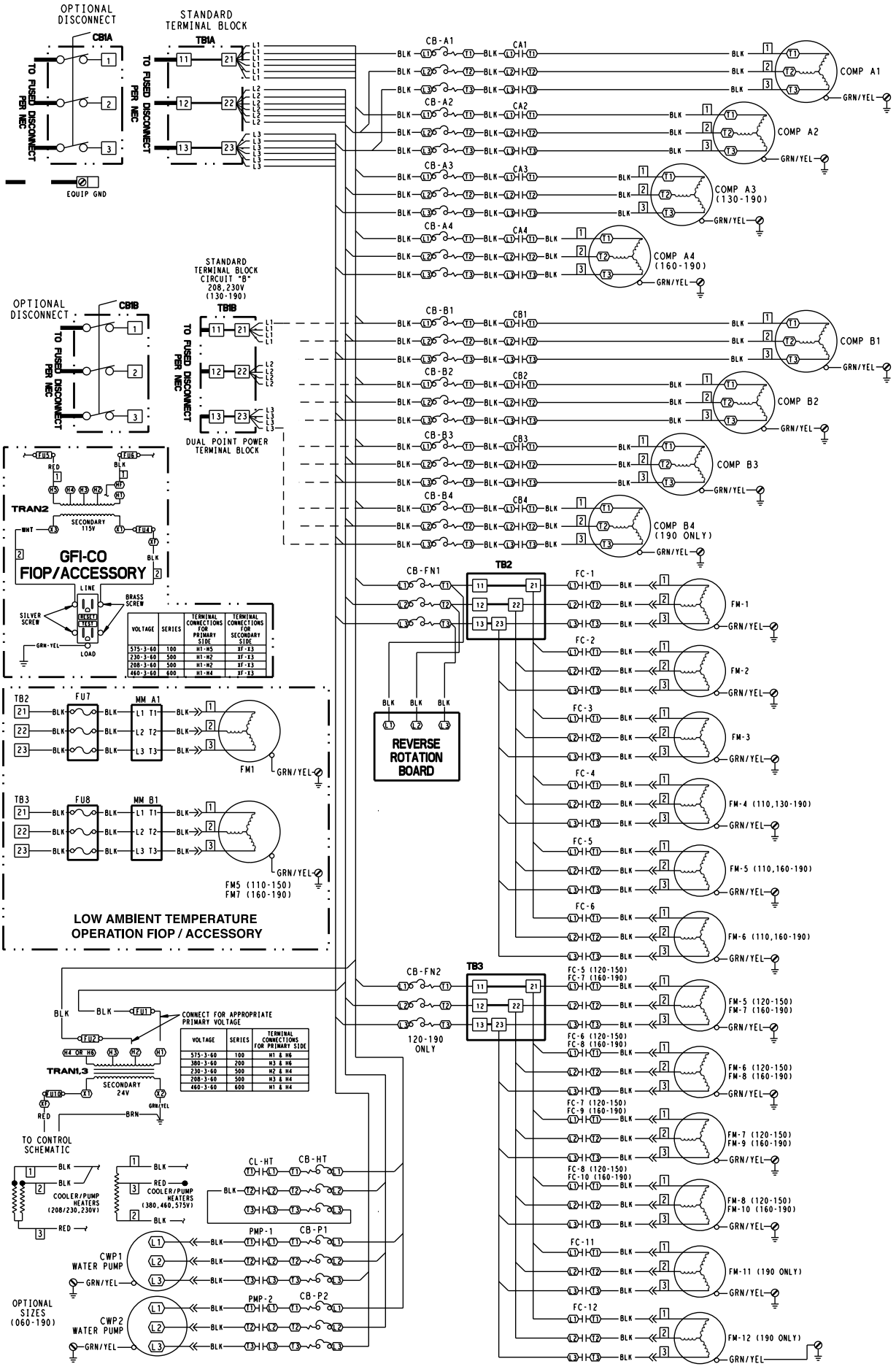


Fig. 3 — Power Schematic, 30RB110-190 (All Voltages)

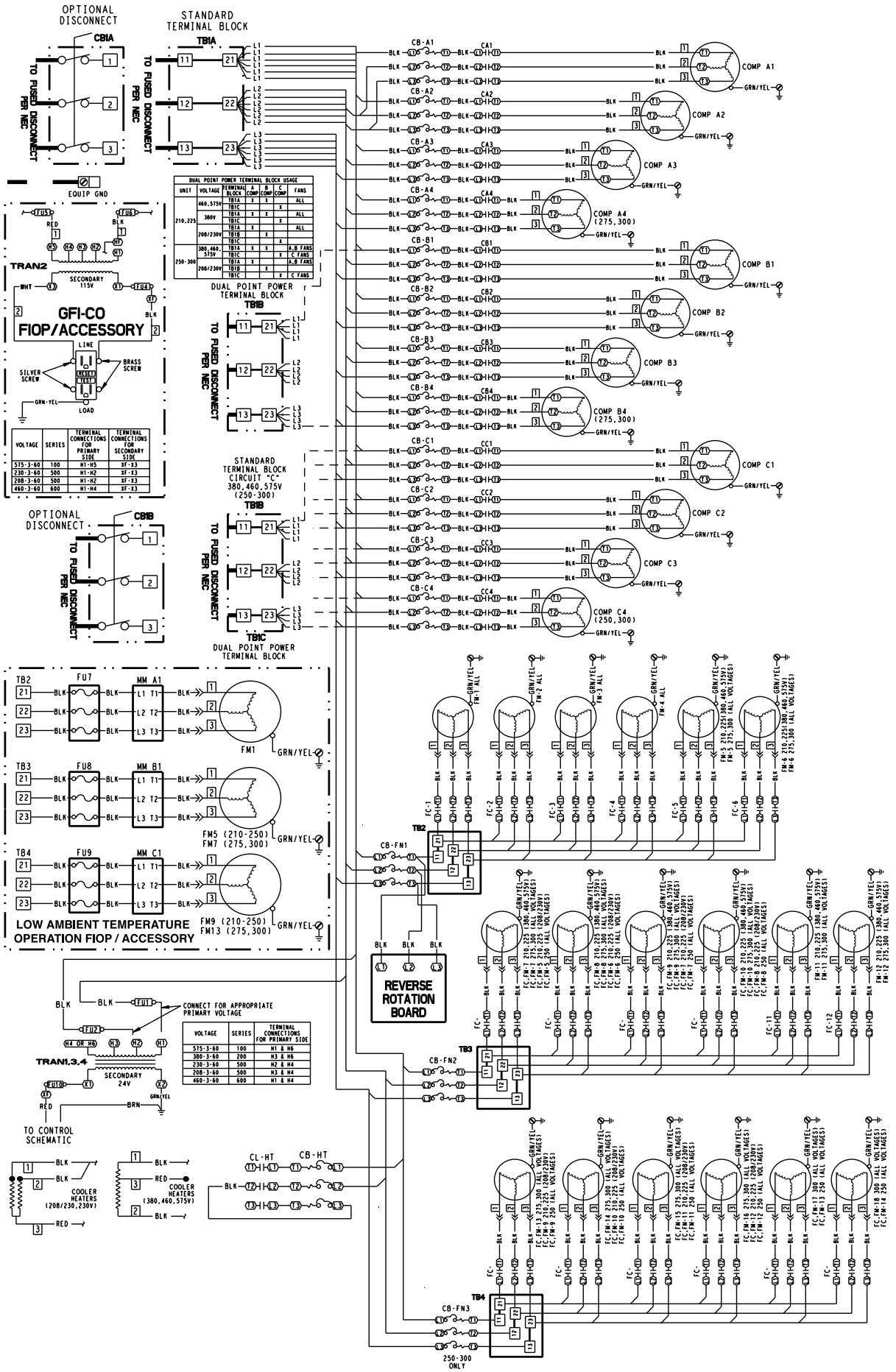


Fig. 4 — Power Schematic, 30RB210-300 (All Voltages)

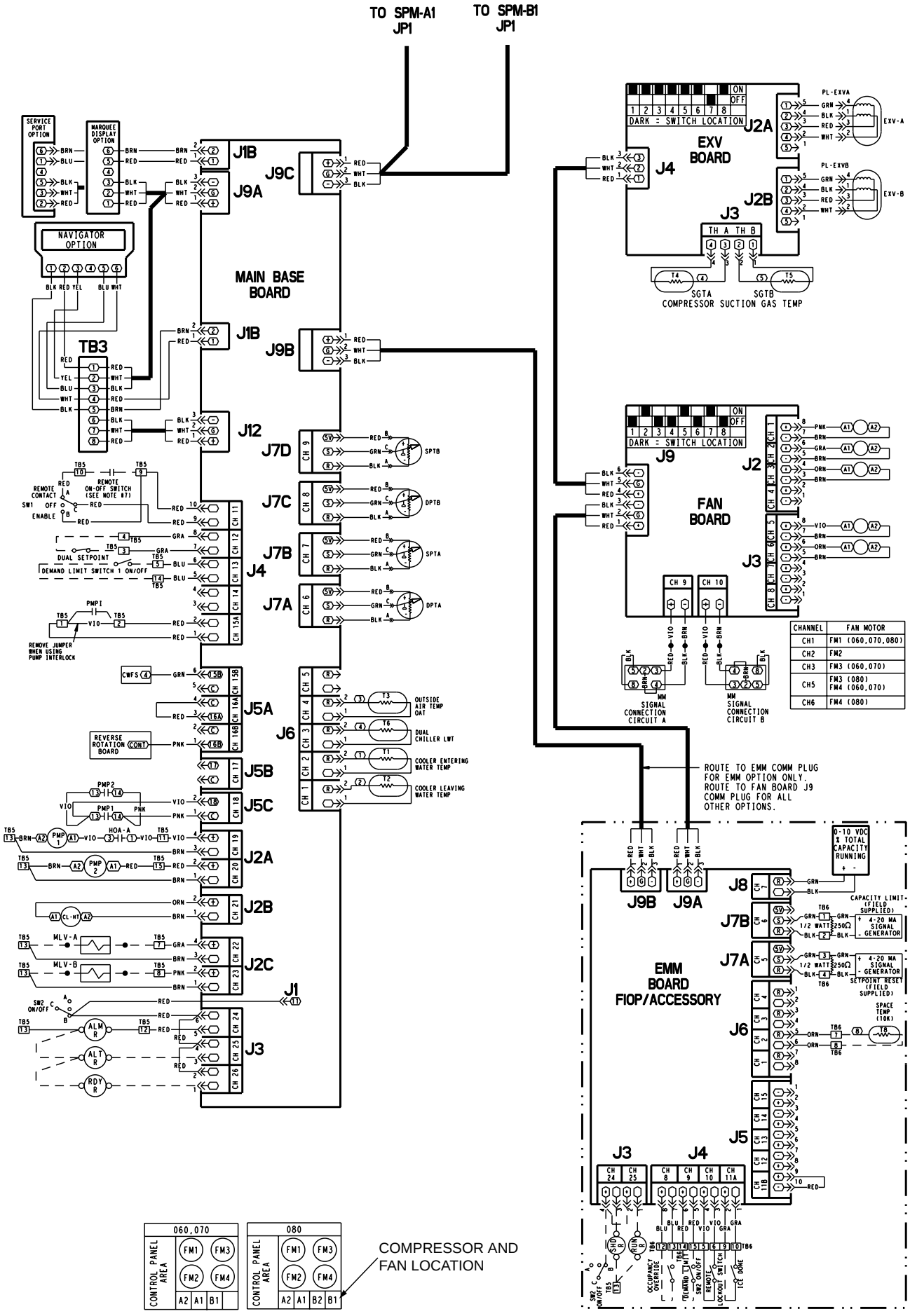


Fig. 5 — Control Schematic, 30RB060-080 (All Voltages)

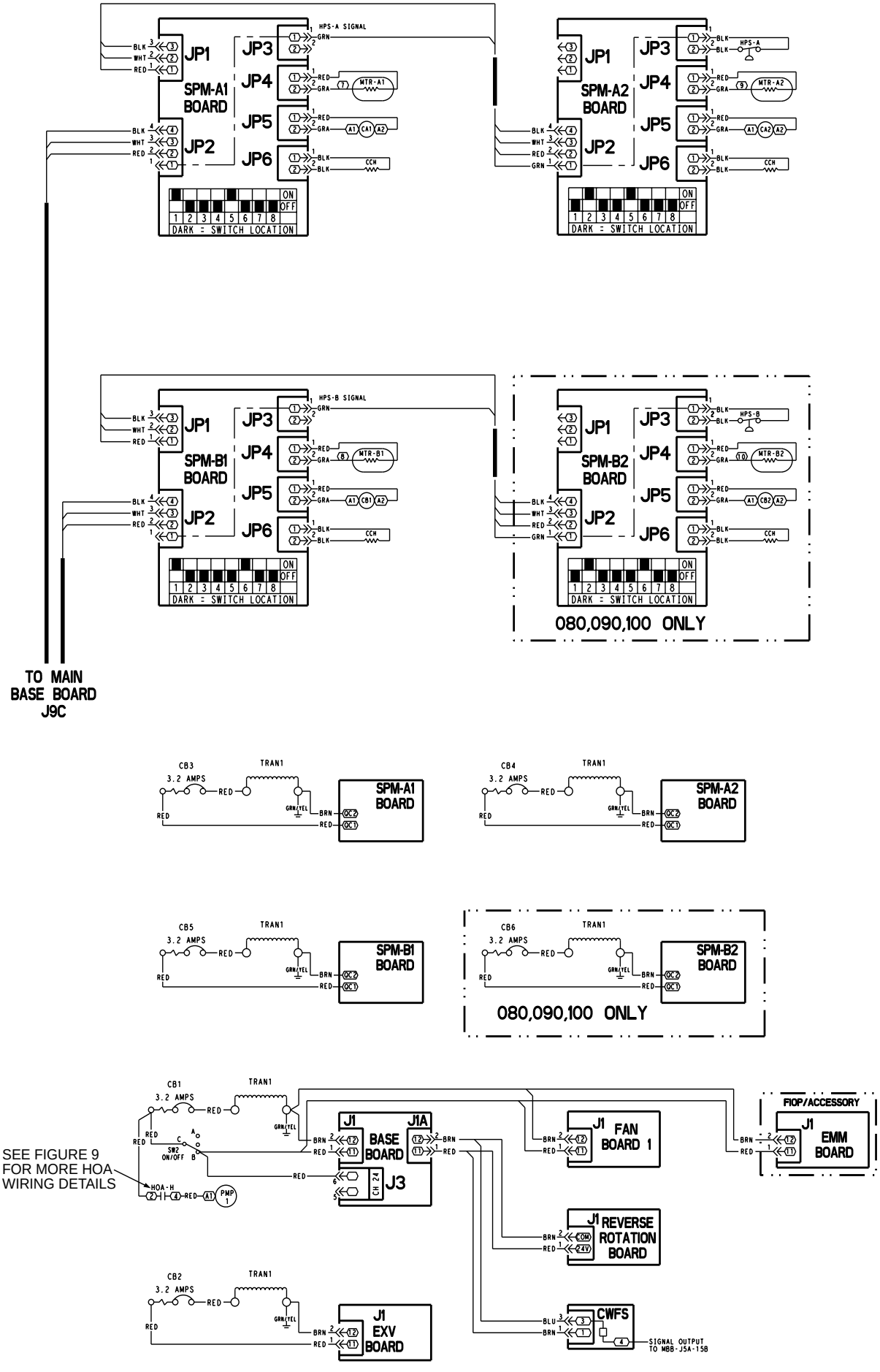


Fig. 6 — Control Schematic, 30RB060-100 (All Voltages)

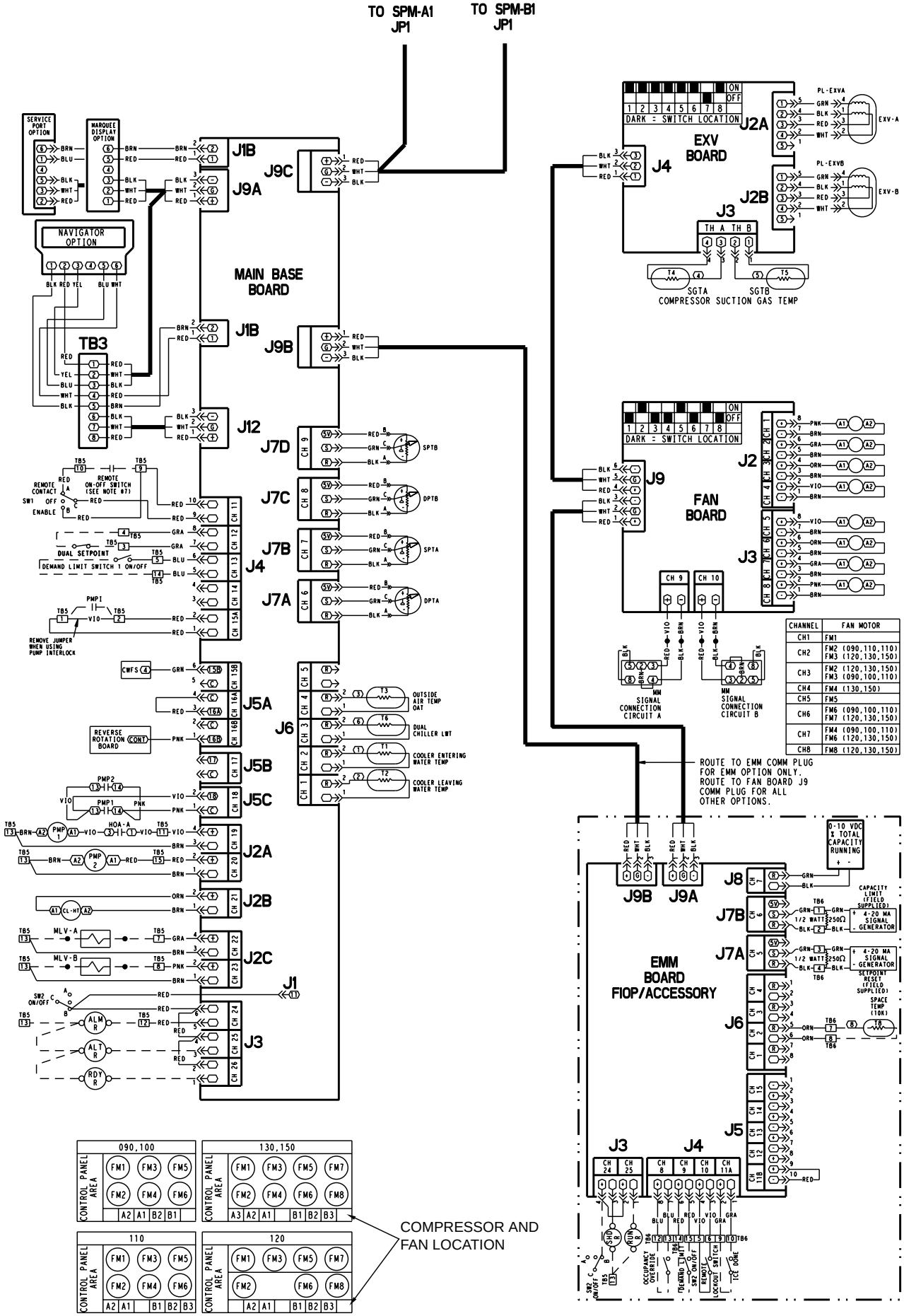
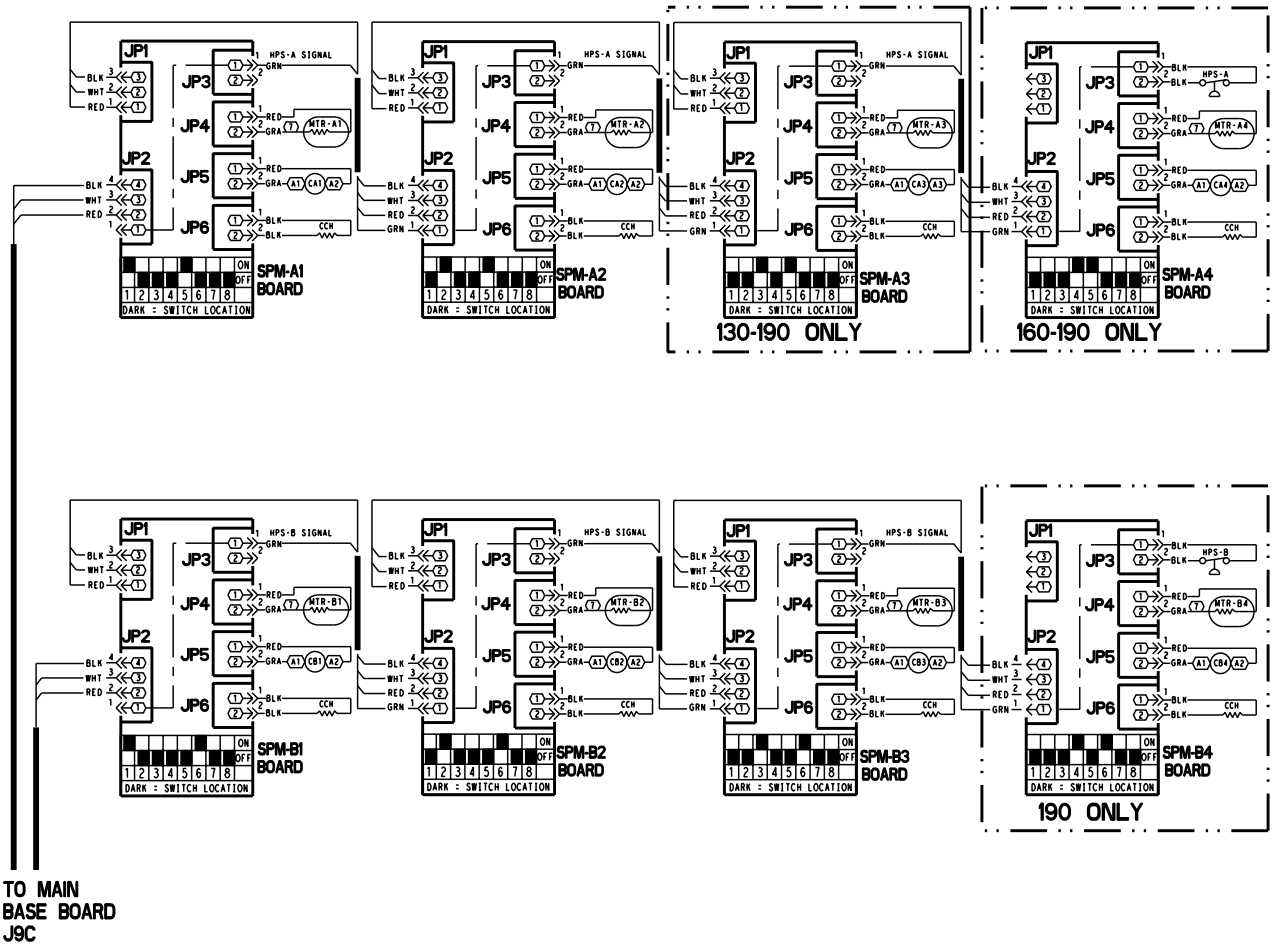
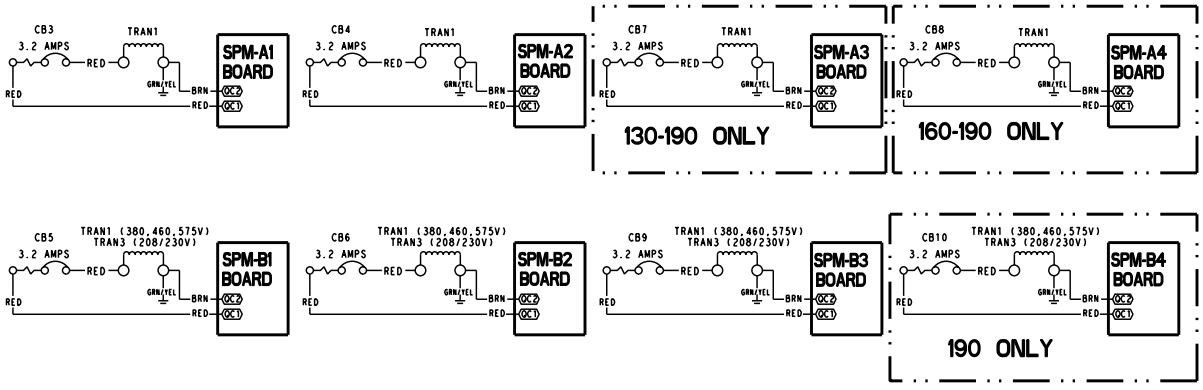


Fig. 7 — Control Schematic, 30RB090-150 (All Voltages)





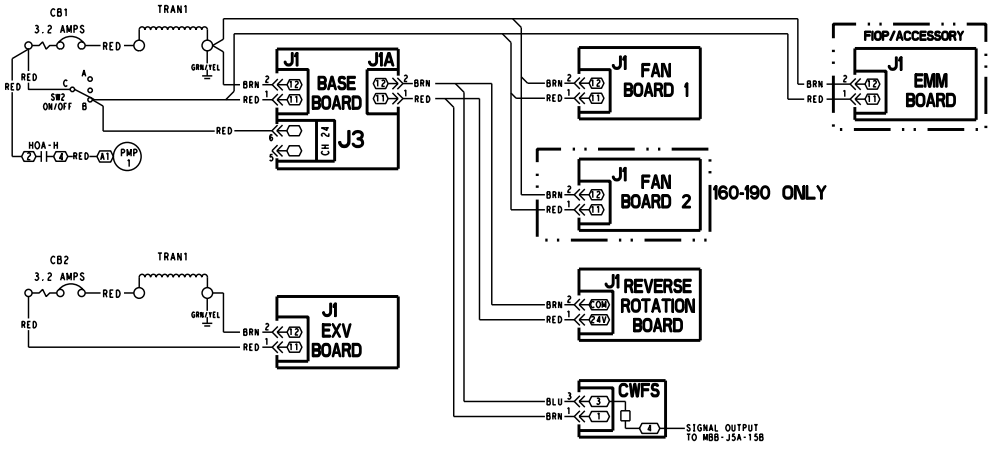


Fig. 8 — Control Schematic, 30RB100-190 (All Voltages)

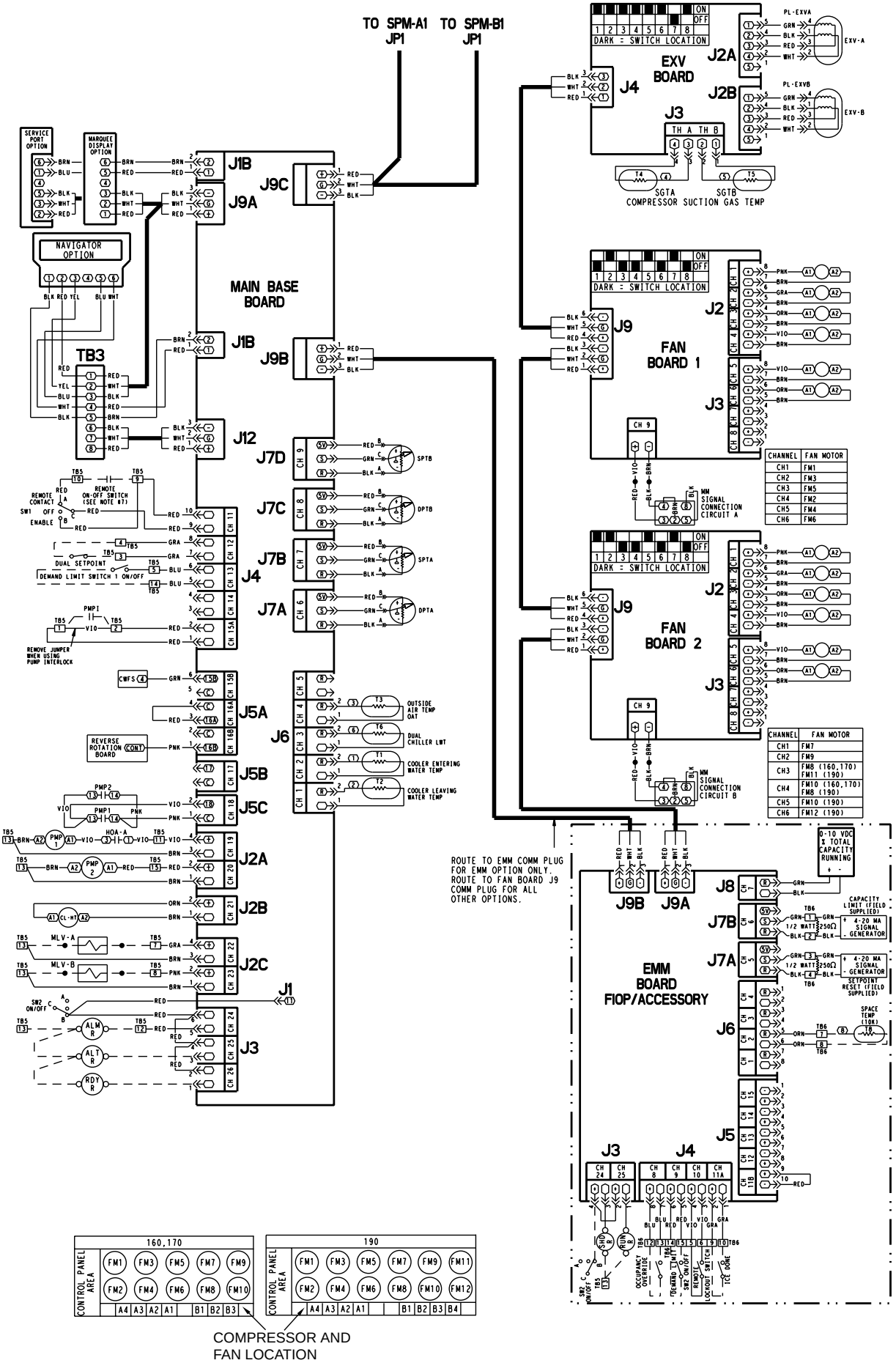
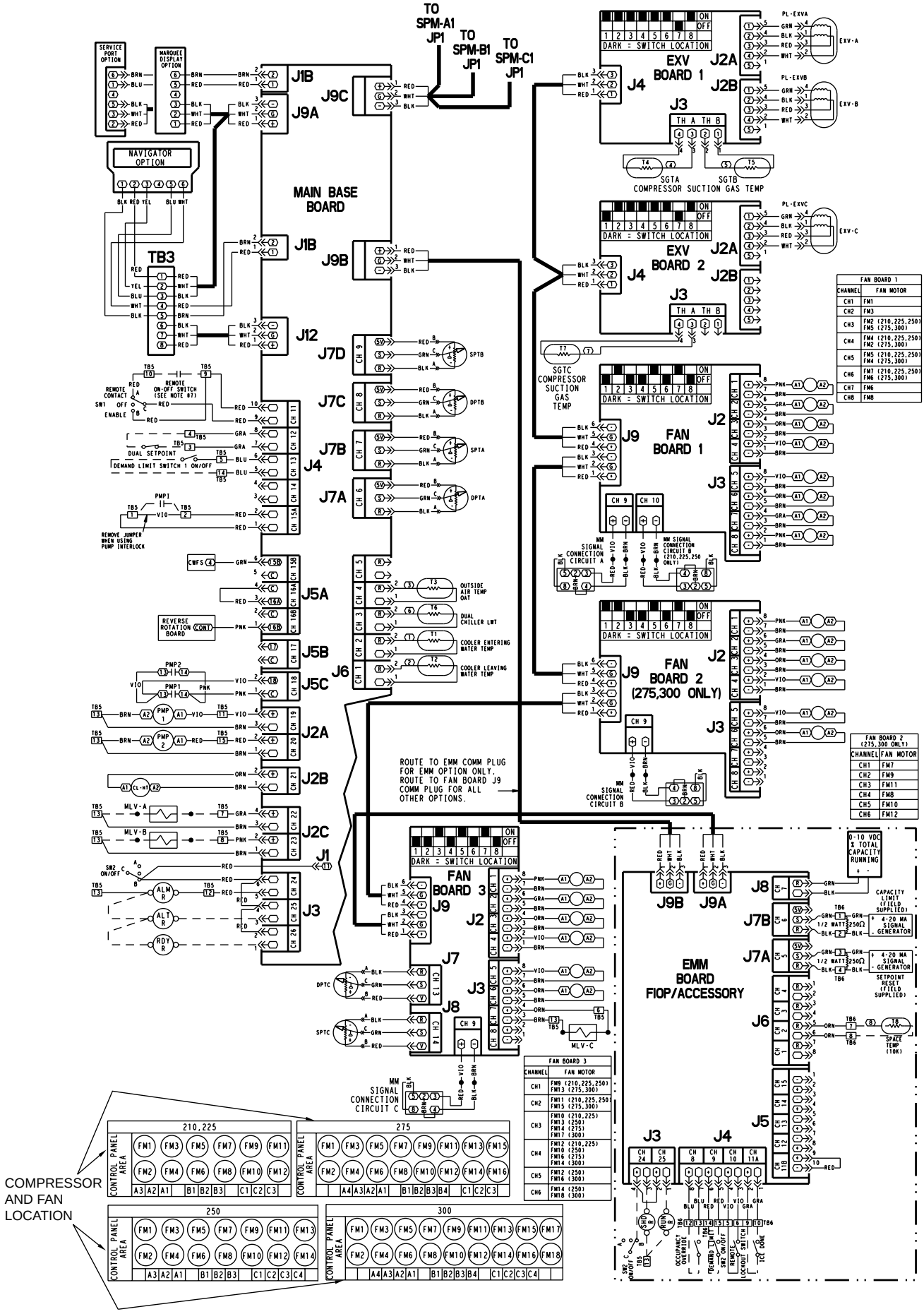


Fig. 9 — Control Schematic, 30RB160-190 (All Voltages)



FAN BOARD 1	
CHANNEL	FAN MOTOR
CH1	FM1
CH2	FM3
CH3	FM2 (210,225,250) FM5 (275,300)
CH4	FM4 (210,225,250) FM2 (275,300)
CH5	FM5 (210,225,250) FM4 (275,300)
CH6	FM7 (210,225,250) FM6 (275,300)
CH7	FM6
CH8	FM8

FAN BOARD 2 (275,300 ONLY)	
CHANNEL	FAN MOTOR
CH1	FM7
CH2	FM9
CH3	FM11
CH4	FM8
CH5	FM10
CH6	FM12

FAN BOARD 3	
CHANNEL	FAN MOTOR
CH1	FM9 (210,225,250) FM13 (275,300)
CH2	FM11 (210,225,250) FM15 (275,300)
CH3	FM10 (210,225) FM13 (250) FM14 (275) FM17 (300)
CH4	FM12 (210,225) FM10 (250) FM16 (275) FM14 (300)
CH5	FM12 (250) FM16 (300)
CH6	FM14 (250) FM18 (300)

Fig. 10 — Control Schematic, 30RB210-300 (All Voltages)

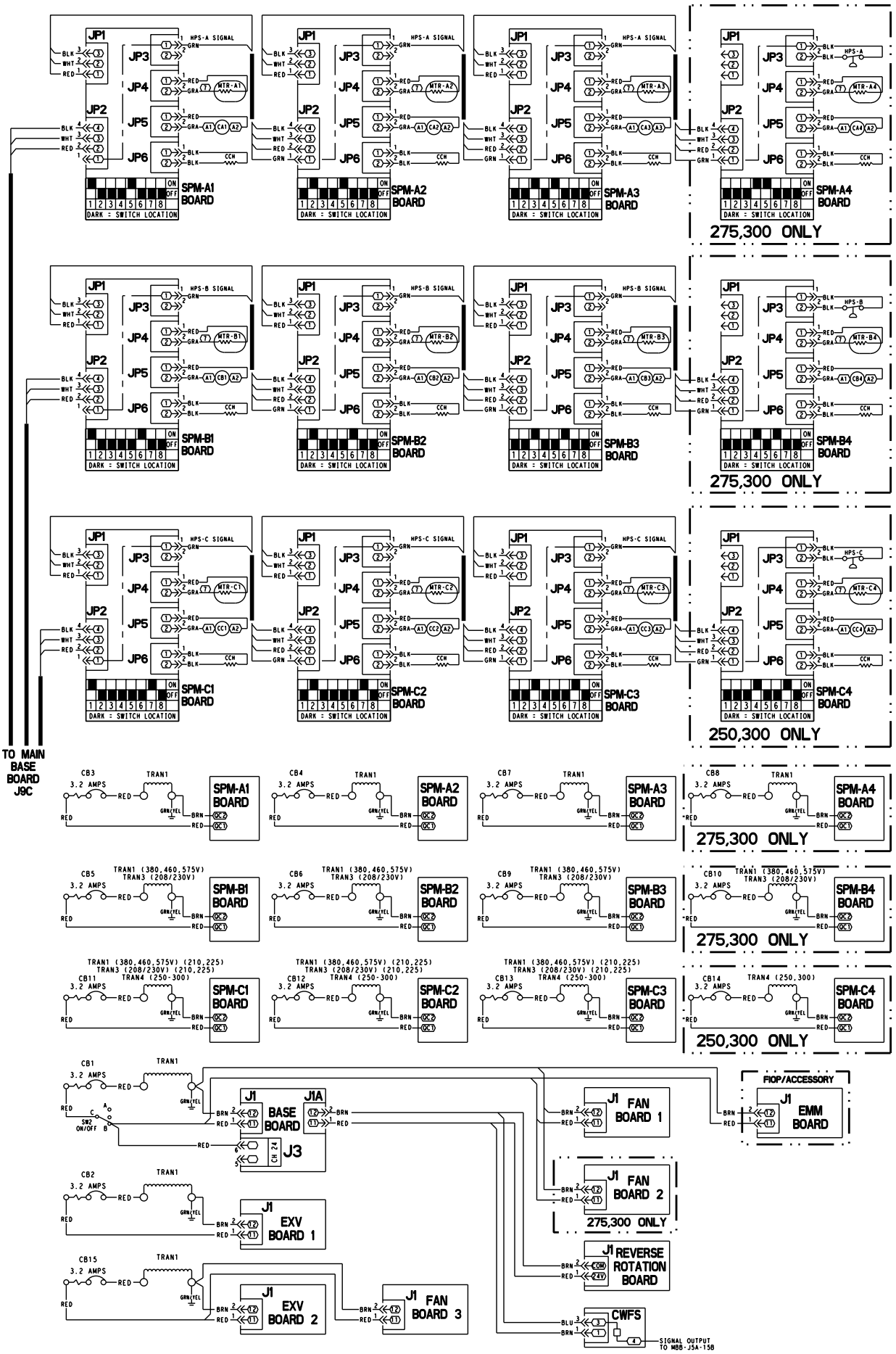


Fig. 10 — Control Schematic, 30RB210-300 (All Voltages) (cont)

COMBINATION BOX, 30RB060,070 FOR 208/230 V

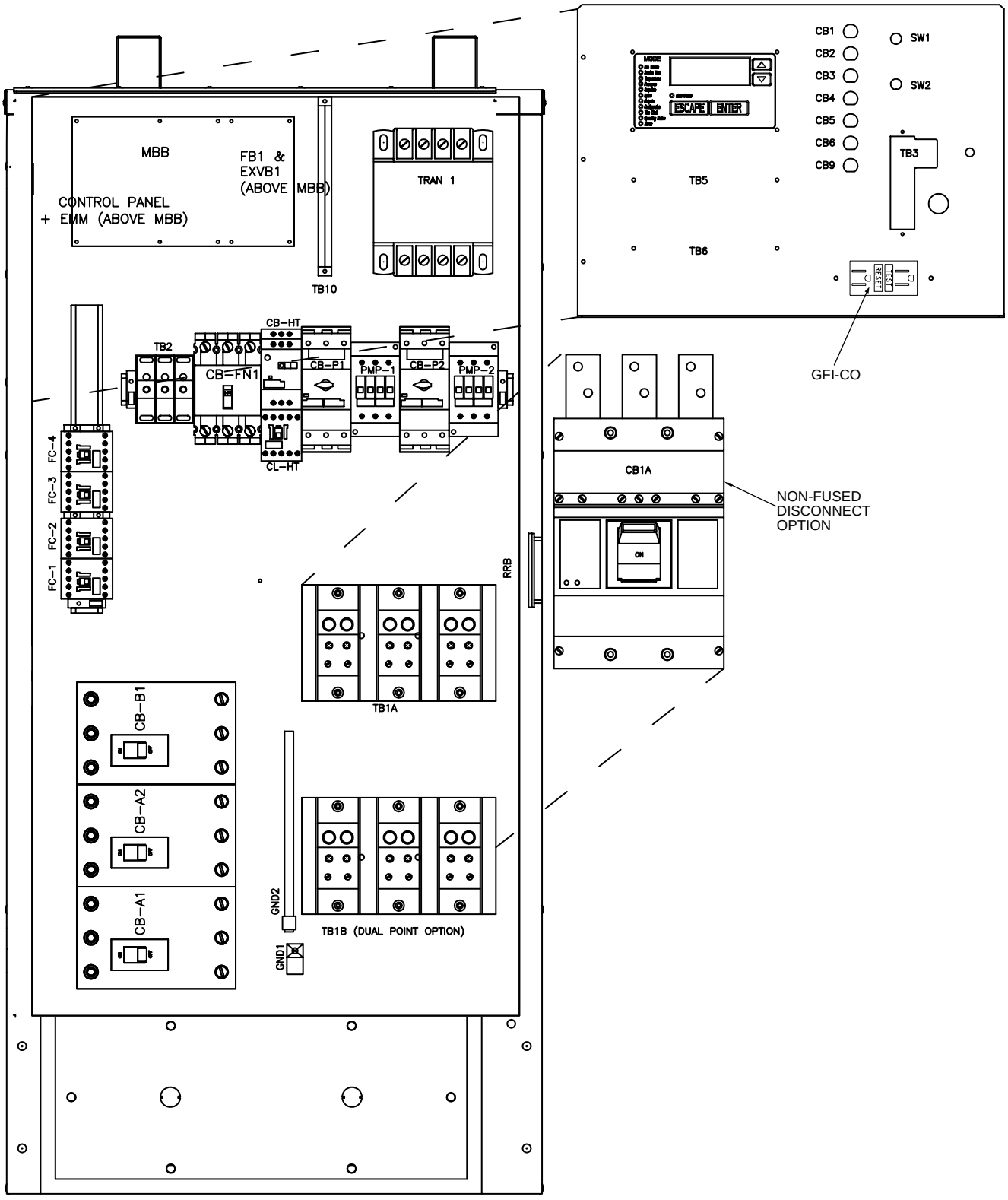


Fig. 11 — Component Arrangement, 30RB060,070, 208/230 V

COMBINATION BOX, 30RB060-120 FOR 380/460/575 V

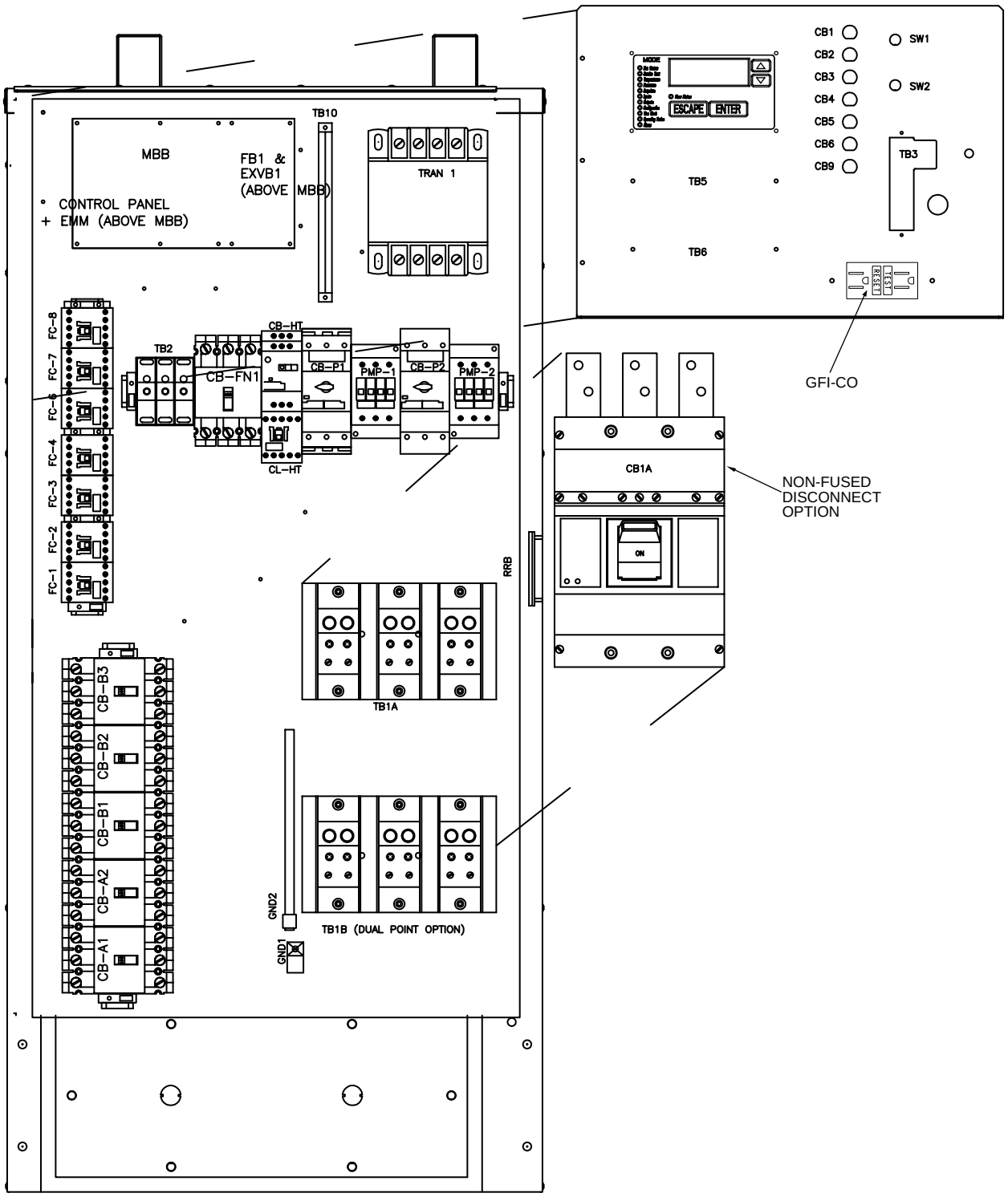


Fig. 12 — Component Arrangement, 30RB060-120, 380/460/575 V

COMBINATION BOX, 30RB080-120 FOR 208/230 V

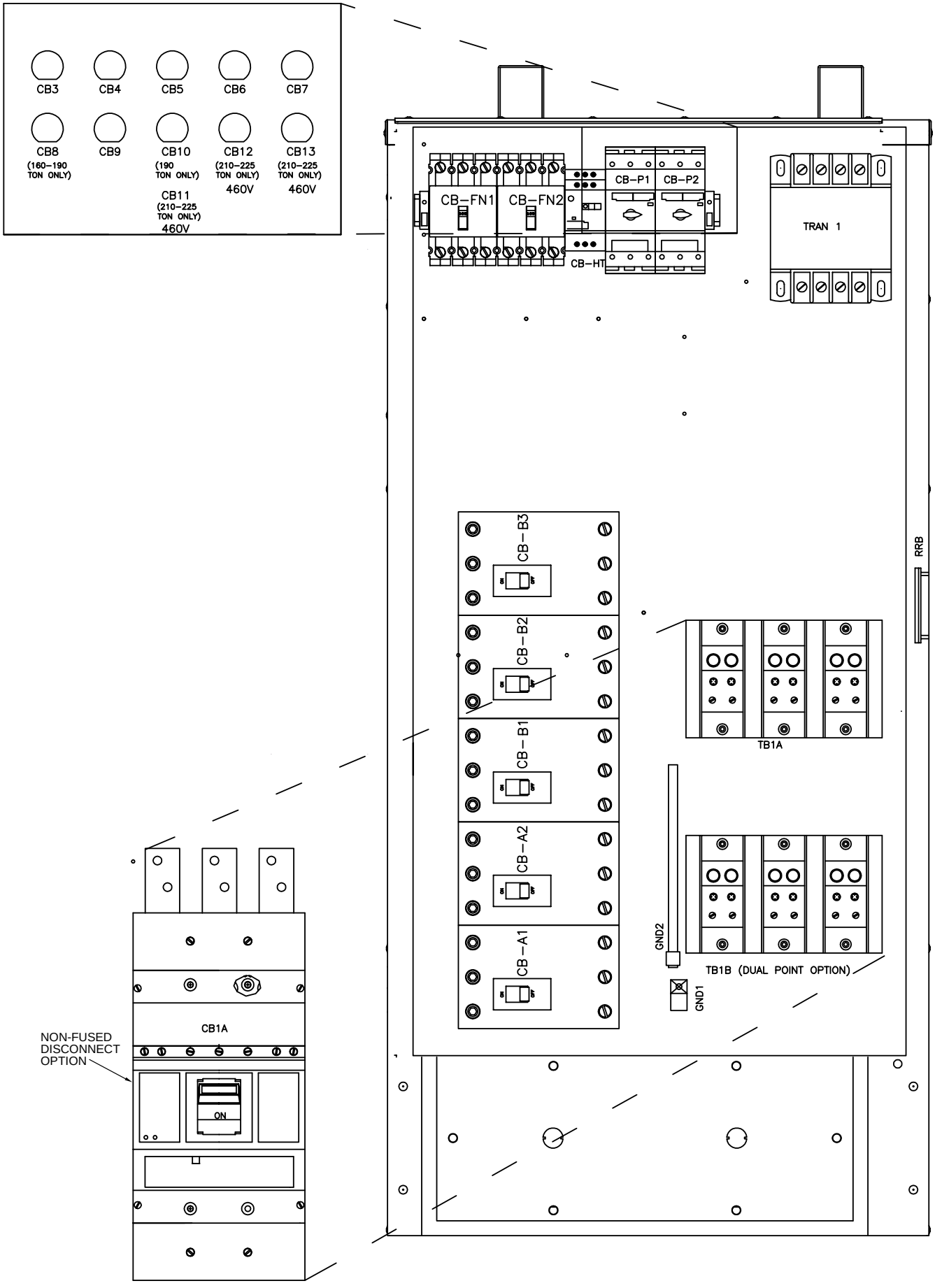


Fig. 13 — Component Arrangement, 30RB080-120, 208/230 V

FAN ELECTRICAL BOX (FEB), 30RB080-120 FOR 208/230 V AND 30RB130-300 FOR ALL VOLTAGES

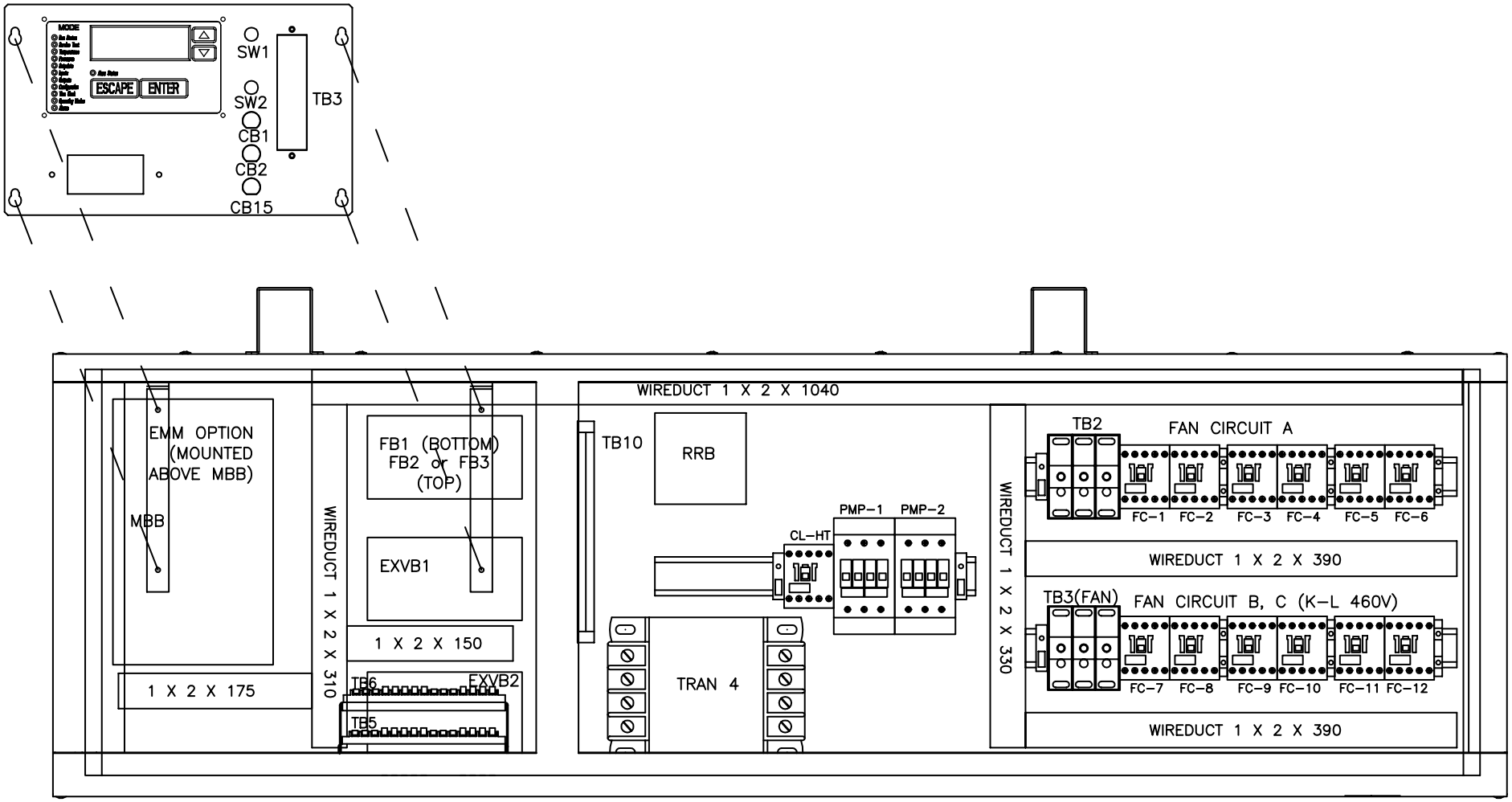


Fig. 14 — Component Arrangement, 30RB080-120 for 208/230 V and 30RB130-300 for All Voltages

POWER ELECTRICAL BOX (PEB1), 30RB130-300 FOR 208/230 V

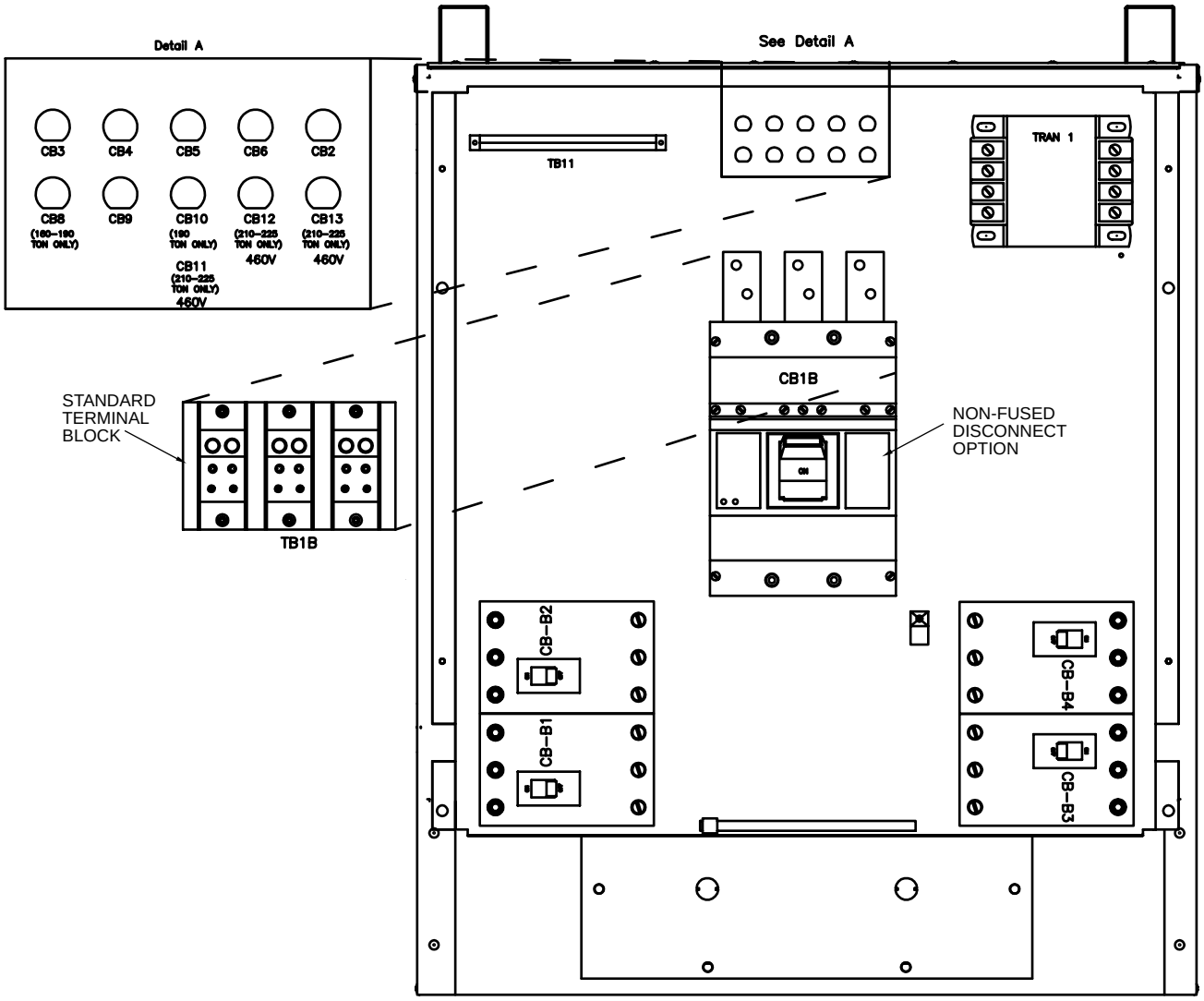


Fig. 15 — Component Arrangement, 30RB130-300, 208/230 V

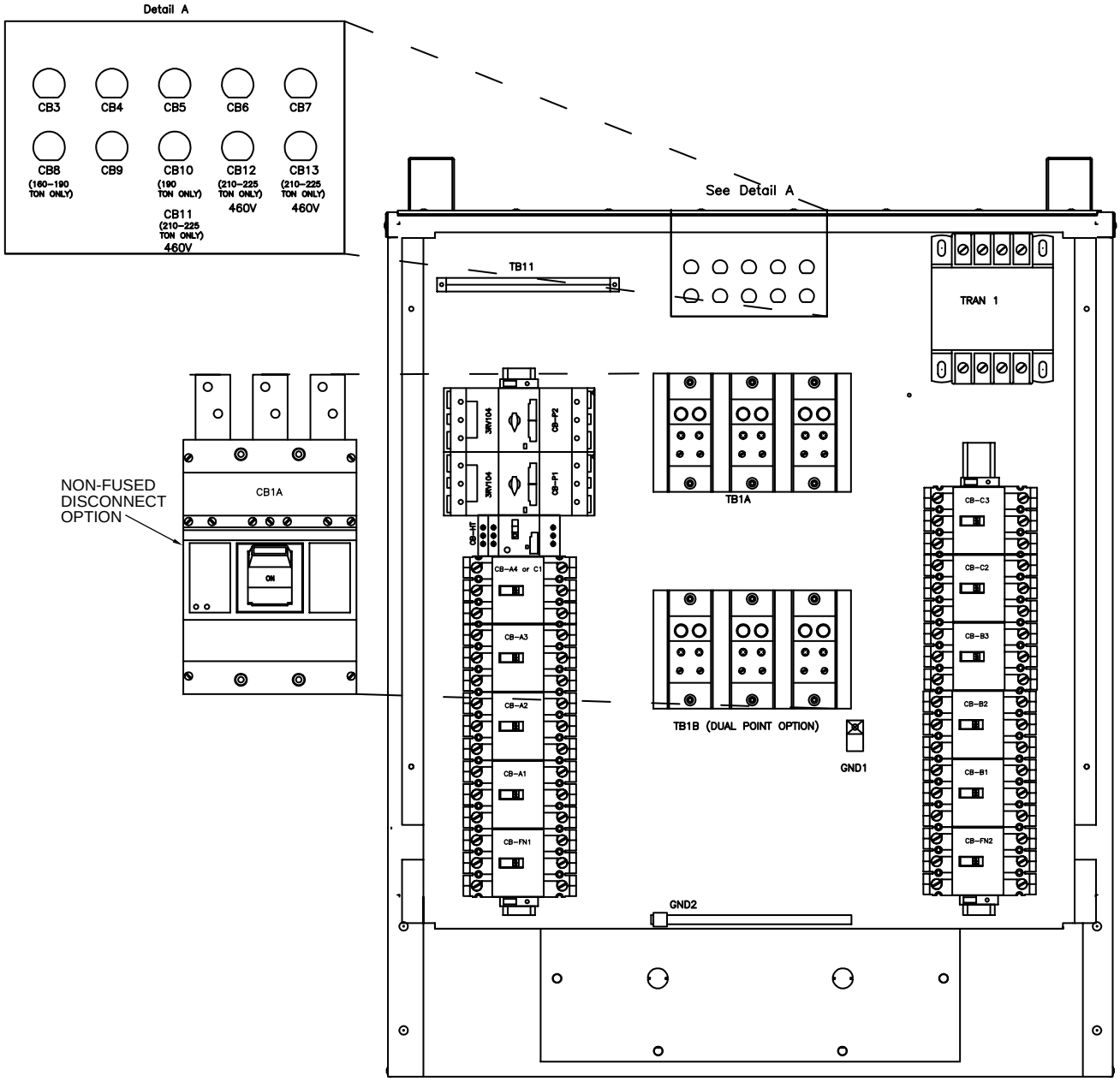


Fig. 16 — Component Arrangement, 30RB130-190,380, 460/575 V and 30RB210,225, 460/575 V

POWER ELECTRICAL BOX2 (PEB2), 30RB210-300 FOR 208/230 V

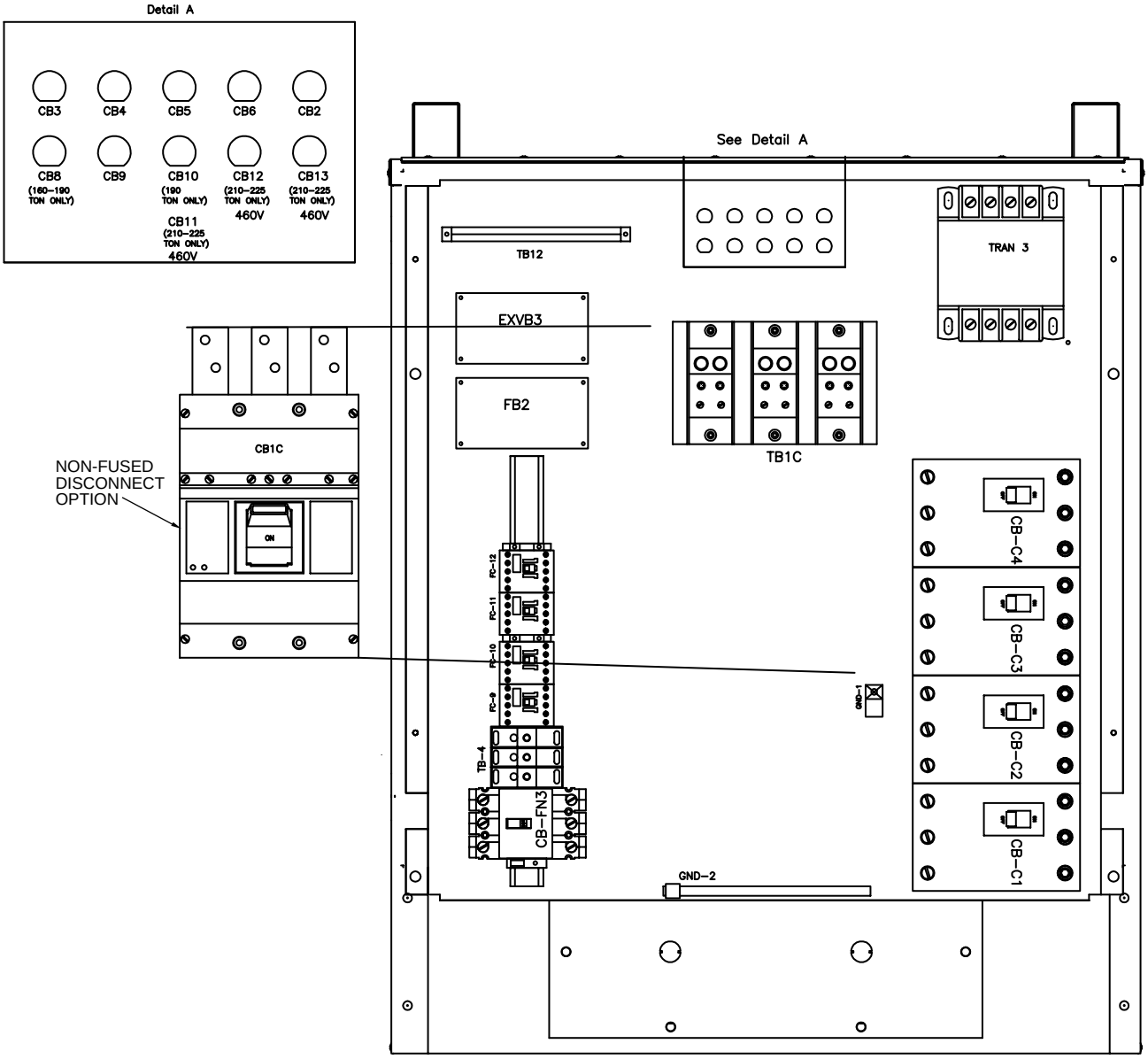


Fig. 17 — Component Arrangement, 30RB210-300, 208/230 V

POWER ELECTRICAL BOX2 (PEB2), 30RB250-300 FOR 380, 460/575 V AND 30RB210-300 FOR 380 V

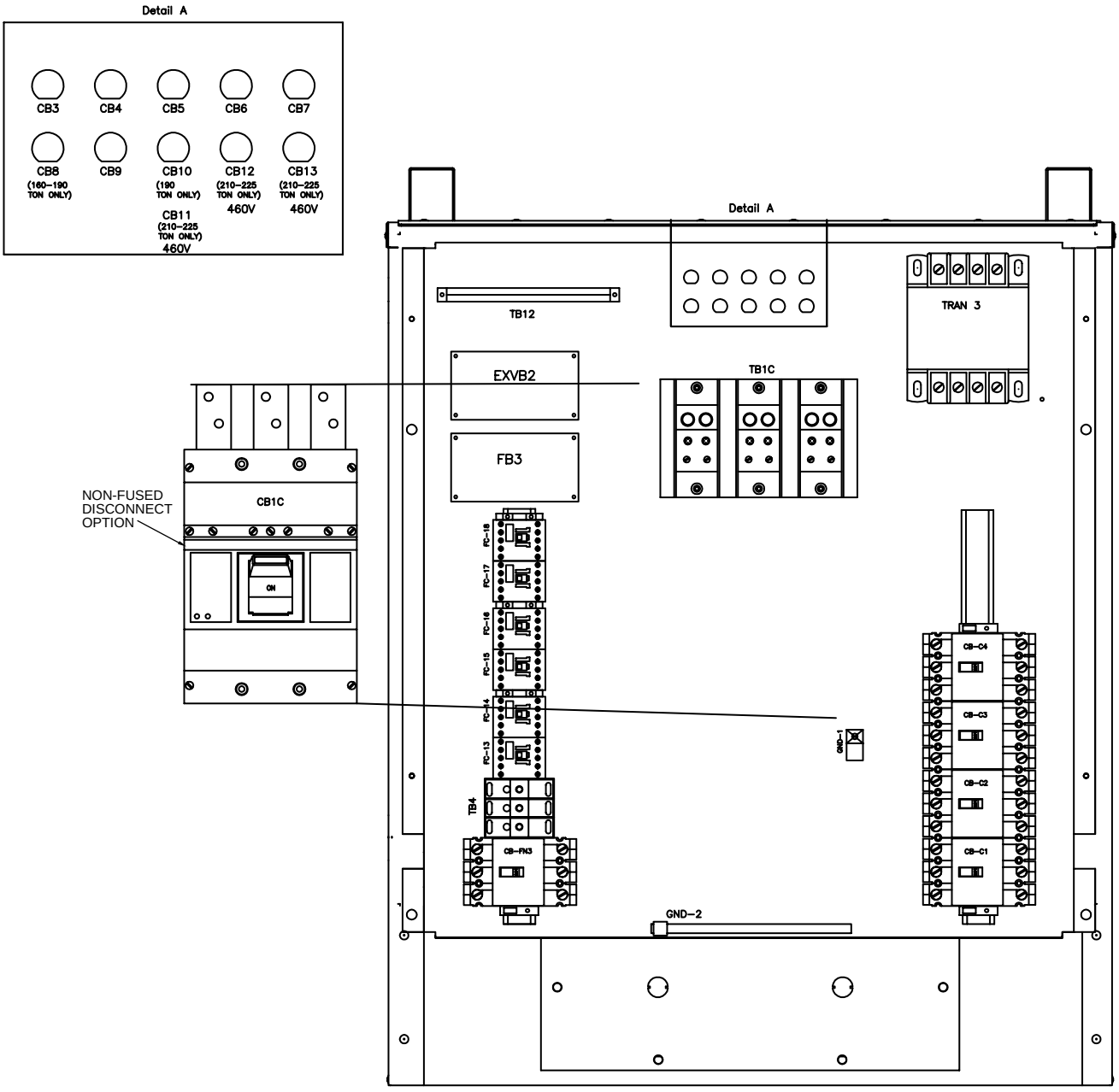


Fig. 18 — Component Arrangement, 30RB250-300, 460/575 V and 30RB210-300, 380 V

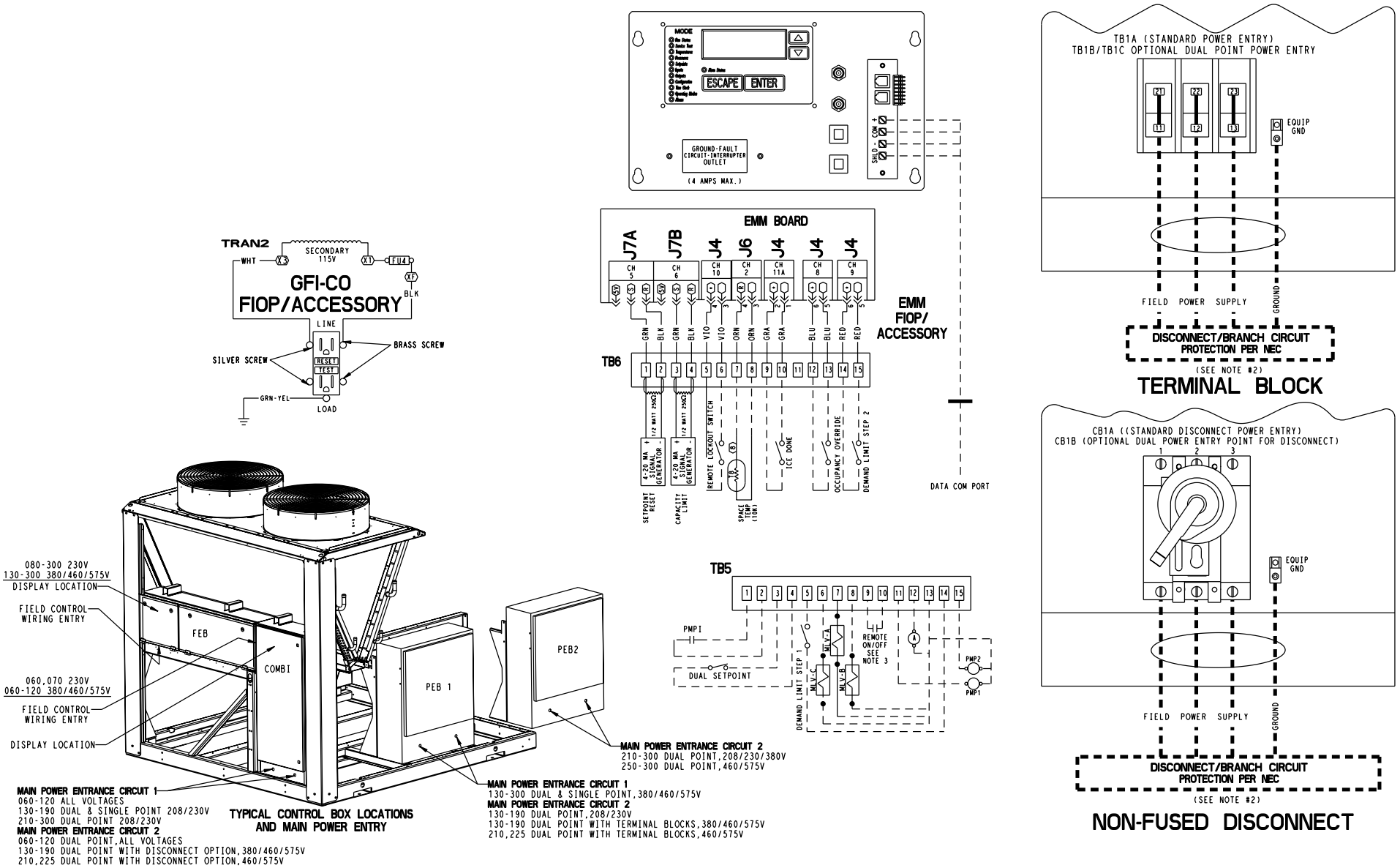


Fig. 19 — Field Wiring Schematic, 30RB060-390