Carrier

Installation Instructions

50DL
044 and 054

Carrier Corporation • Syracuse N Y 13221

Single-Package Cooling Units

380-Volts, 60-Hz Export

INDEX

MODEL 50DL	VOLTS-PH-HZ	ELECTRIC HEAT kW	ELECTRIC HEAT MODE	HEATING LABEL DIAGRAM	FIG.
044	380-3-60	38 50	Low Medium	50DD508234 50DD508224	2 3
054	380-3-60	50 63	Low Medium	50DD508224 50DD508254	3 4

MODEL 50DL	VOLTS-PH-HZ	COOLING WIRING DIAGRAMS			
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054	380-3-60	50DD507684	9	50DD508114	7, 8

ITEM	LABEL	FIG.
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SAFETY CONSIDERATIONS

The 50DL single-package cooling units are designed to provide safe and reliable service when operated within design specifications. However, due to system pressures, electrical components and equipment location, some aspects of installation, start-up and service can be hazardous.

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

When working on the equipment, observe all precautions on tags or labels attached to the unit, safety notes in the literature and any other safety precautions that apply.

- Follow all safety codes.
- Wear safety glasses and work gloves.
- Use care in handling, rigging and placing bulky equipment.

⚠ DANGER

NEVER reach into unit while fan is running. LOCK OPEN AND TAG fan motor power disconnect before working on a fan. Remove the fuses and take them with you after noting this on tag.

⚠ WARNING

BE SURE power to equipment is shut off before performing maintenance or service.

CHECK assembly and component weights to be sure rigging equipment can handle them safely. Note also any specific rigging instructions.

WHEN STEAM CLEANING COILS, be sure area is clear of personnel.

NOTES

1. Compressors and/or fan motors are thermally protected. Three-phase motors are protected under primary single-phasing conditions.
2. Screw terminals of printed-circuit board are suitable for connection of NEC Class 2 control circuit, 24 volts.
3. For replacement wire, use Type 90 C wire or equivalent.
4. Fuses must be supplied for field power supply.
5. All circuit breaker must-trip amps are equal to or less than 140% FLA.
6. Compressor no. 1 location is on unit right side, facing control box and bottom portion of indoor coil.
7. Transformers 1 and 2 are wired for 230 v on 380-v unit.

   Transformer 1 is wired to terminals marked as follows:

   380-v unit — wired to H3 (230-v) terminal.
8. TB4 terminals [9] and [10] are not used. TB4 terminals [6] and [8] are used only with energy management (night set-back) option.
9. Refer to label diagram on unit control box for cooling control circuit wiring, component connections and complete legend.

LEGEND (Fig. 1 — 15)

ATS	— Air Temperature Switch
BS	— Bypass Switch
C	— Contactor, Compressor
Cap.	— Capacitor
CB	— Circuit Breaker, Compressor
CCB	— Circuit Breaker, Control
CCSV	— Capacity Control Solenoid Valve
CH	— Crankcase Heater
CK	— Clock
Clg	— Cooling
CO	— Convenience Outlet
Comp	— Compressor Motor
CR	— Control Relay
CS	— Centrifugal Switch
DM	— Damper Motor (Day Mode, Fig 10-13)
DMAS	— Damper Motor Auxiliary Switch
DR	— Day Relay
DU	— Dummy Terminal
Econ	— Economizer
EMC	— Exhaust Motor Contactor
ENTH or EC	— Enthalpy Control
Equip Gnd	— Equipment Ground
Exh	— Exhaust
FL	— Fuse Link
FPT	— Freeze-Up Protection Thermostat
FTDR	— Fan Time-Delay Relay
Fu	— Fuse
HC	— Heater Contactor
HCB	— Heater Circuit Breaker
HPCT	— Head Pressure Control Thermostat
HPS	— High-Pressure Switch
HR	— Heater Relay
Htg	— Heating
HTR	— Heater
IFC	— Indoor Fan Contactor
IFCB	— Indoor Fan Circuit Breaker
IFM	— Indoor Fan Motor
IFR	— Indoor Fan Relay
IP	— Internal Protector
IR	— Interlock Relay
LAL	— Low Ambient Lockout
LPS	— Low-Pressure Switch
LS	— Limit Switch
MW	— Morning Warm-Up
NM	— Night Mode
NR	— Night Relay
OFC	— Outdoor Fan Contactor
OFM	— Outdoor Fan Motor
PCB	— Printed-Circuit Board
PER	— Power Exhaust Relay
PETC	— Power Exhaust Temperature Controller
Pl	— Plug
Pri	— Primary
QT	— Quad Terminal
Sec	— Secondary
SSM	— Set-up — Set-back Module
TB	— Terminal Board (Block)
TDR	— Time-Delay Relay
TM	— Timer Motor
TR	— Timer Relay
Tran	— Transformer, Potential
U	— Unloader
UR	— Unloader Relay
WR	— Warm-Up Relay

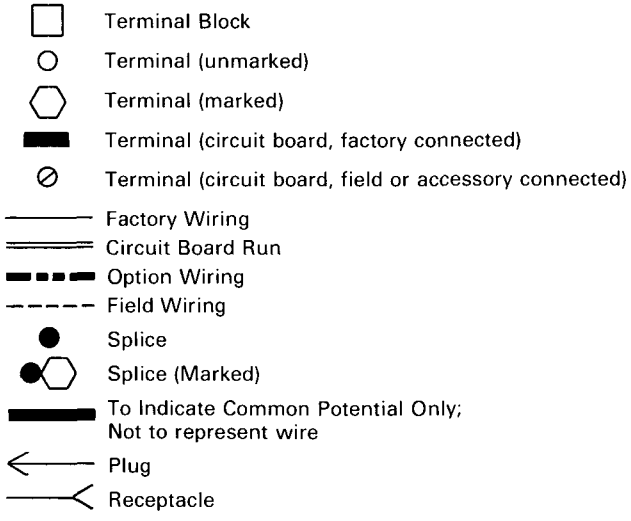


Table 1 — Electrical Data

MODEL NOMINAL VOLTS-PH-HZ	VOLTAGE RANGE		COMPR NO. 1		COMPR NO. 2		OUTDOOR FAN MOTORS		INDOOR FAN MOTOR		EXHAUST FAN MOTOR		HEATERS		POWER SUPPLY*	
	Min	Max	RLA	LRA	RLA	LRA	Qty	FLA	Hp	FLA	Hp	FLA	kW	FLA	MCA	MOCP
50DL044 380-3-60	342	418	40	191	40	191	3	7 6	15	25 4	—	—	—	—	123	150
									15	25 4	3	5 6	—	—	135	150
									20	32 7	—	—	—	—	131	150
									15	25 4	—	—	38	57	123	150
									15	25 4	—	—	50	76	127	150
									20	32 7	3	5 6	—	—	142	175
									15	25 4	3	5 6	38	57	135	150
									15	25 4	3	5 6	50	76	135	150
									20	32 7	—	—	38	57	131	150
									20	32 7	—	—	50	76	136	150
									20	32 7	3	5 6	38	57	142	150
									20	32 7	3	5 6	50	76	142	150
50DL054 380-3-60	342	418	63	280	40	191	4	7 6	20	32 7	—	—	—	—	167	225
									20	32 7	3	5.6	—	—	178	225
									25	41 2	—	—	—	—	176	225
									20	32 7	—	—	50	76	167	225
									20	32 7	—	—	63	95	167	225
									25	41 2	3	5 6	—	—	187	225
									20	32 7	3	5 6	50	76	178	225
									20	32 7	3	5 6	63	95	178	225
									25	41 2	—	—	50	76	176	225
									25	41 2	—	—	63	95	176	225
									25	41 2	3	5 6	50	76	187	225
									25	41 2	3	5 6	63	95	187	225

LEGEND

COMPR — Compressor
FLA — Full Load Amps
Hp — Nominal Horsepower
kW — Kilowatts
LRA — Locked Rotor Amps
MCA — Minimum Circuit Ampacity
MOCP — Maximum Overcurrent Protection
RLA — Rated Load Amps

*Fuse only

NOTES
1 All outdoor fan motors are single-phase motors
2 Exhaust fan motors (Qty 2) are 380v, 3phase
3 All heaters are 3-phase assemblies

TMI AND 2

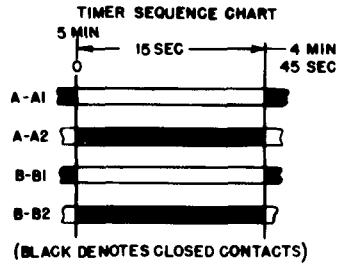


Fig. 1 — Time Guard Control Sequence

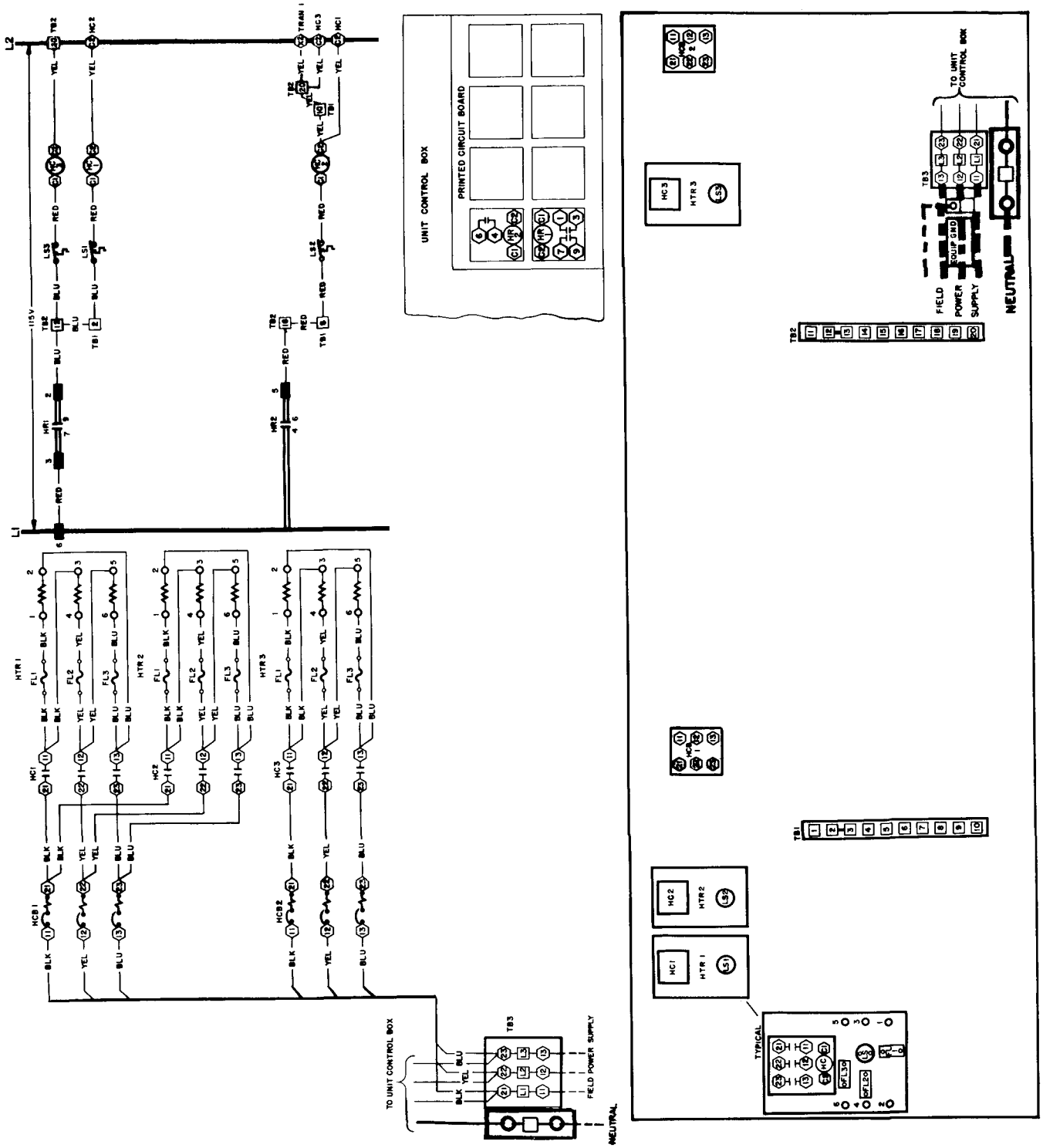


Fig. 2 — Label Diagram (38 kW Electric Heat); 50DL044; 380-3-60

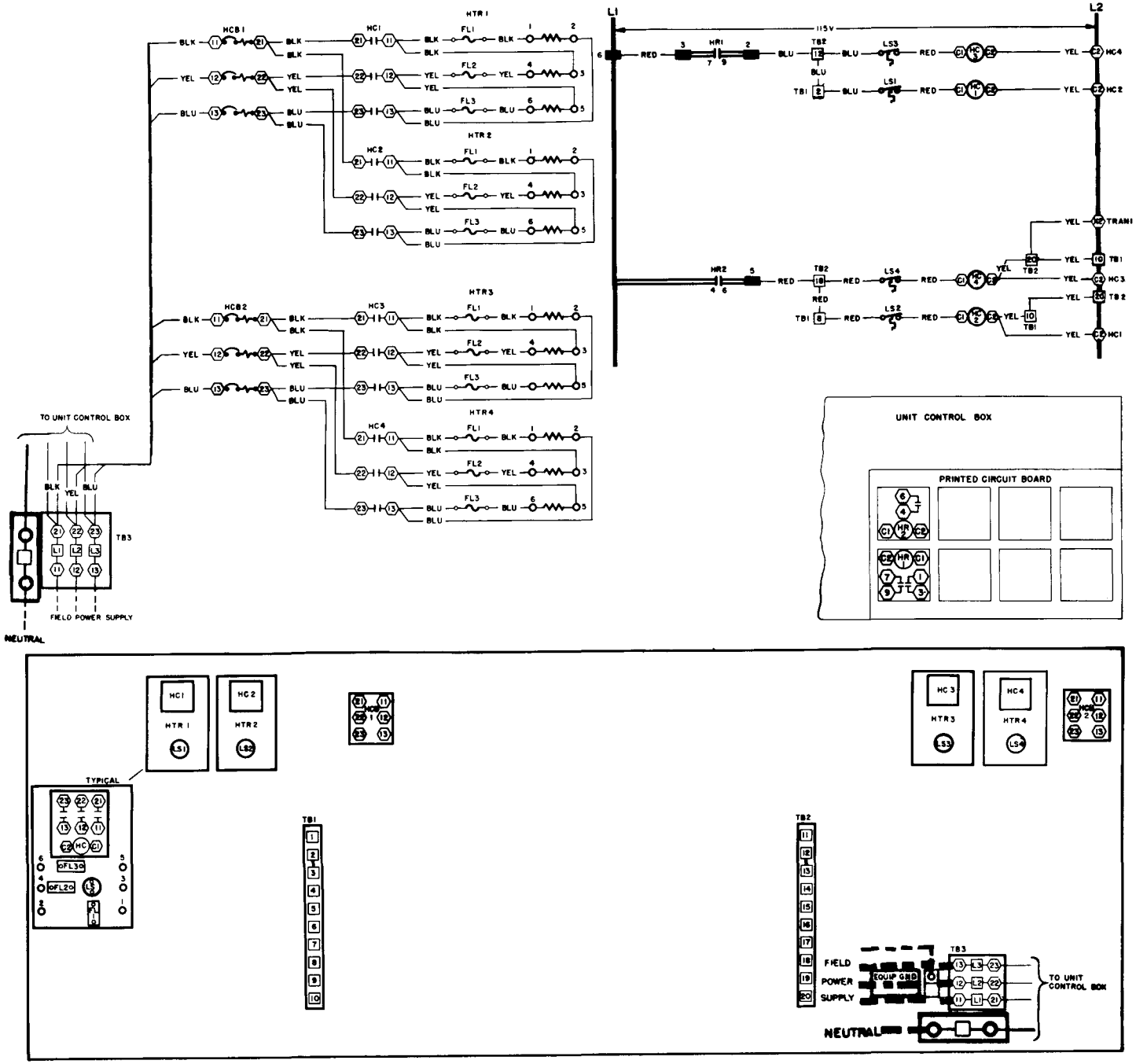


Fig. 3 — Label Diagram (50 kW Electric Heat); 50DL044,054; 380-3-60

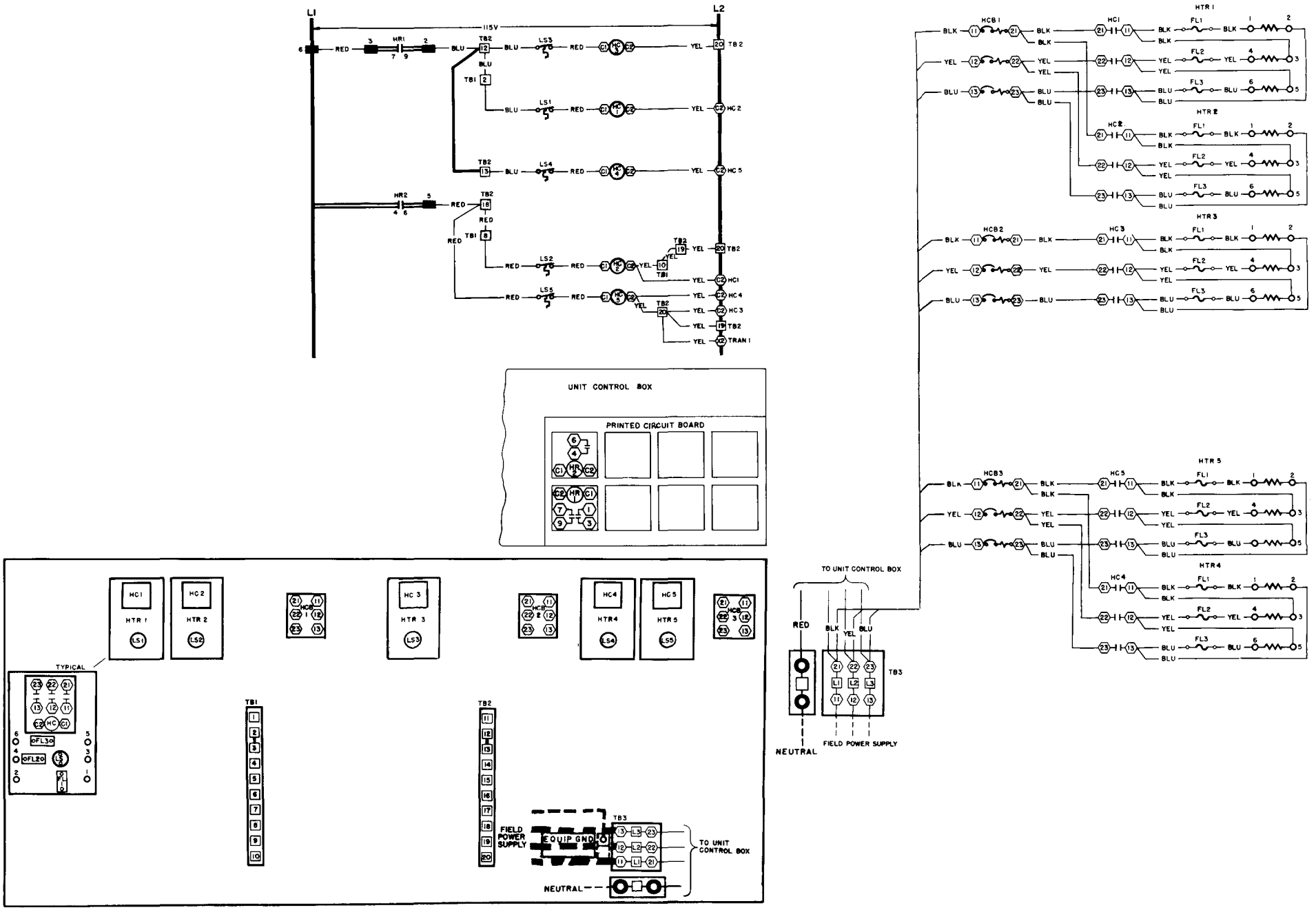


Fig. 4 — Label Diagram (63 kW Electric Heat); 50DL054; 380-3-60

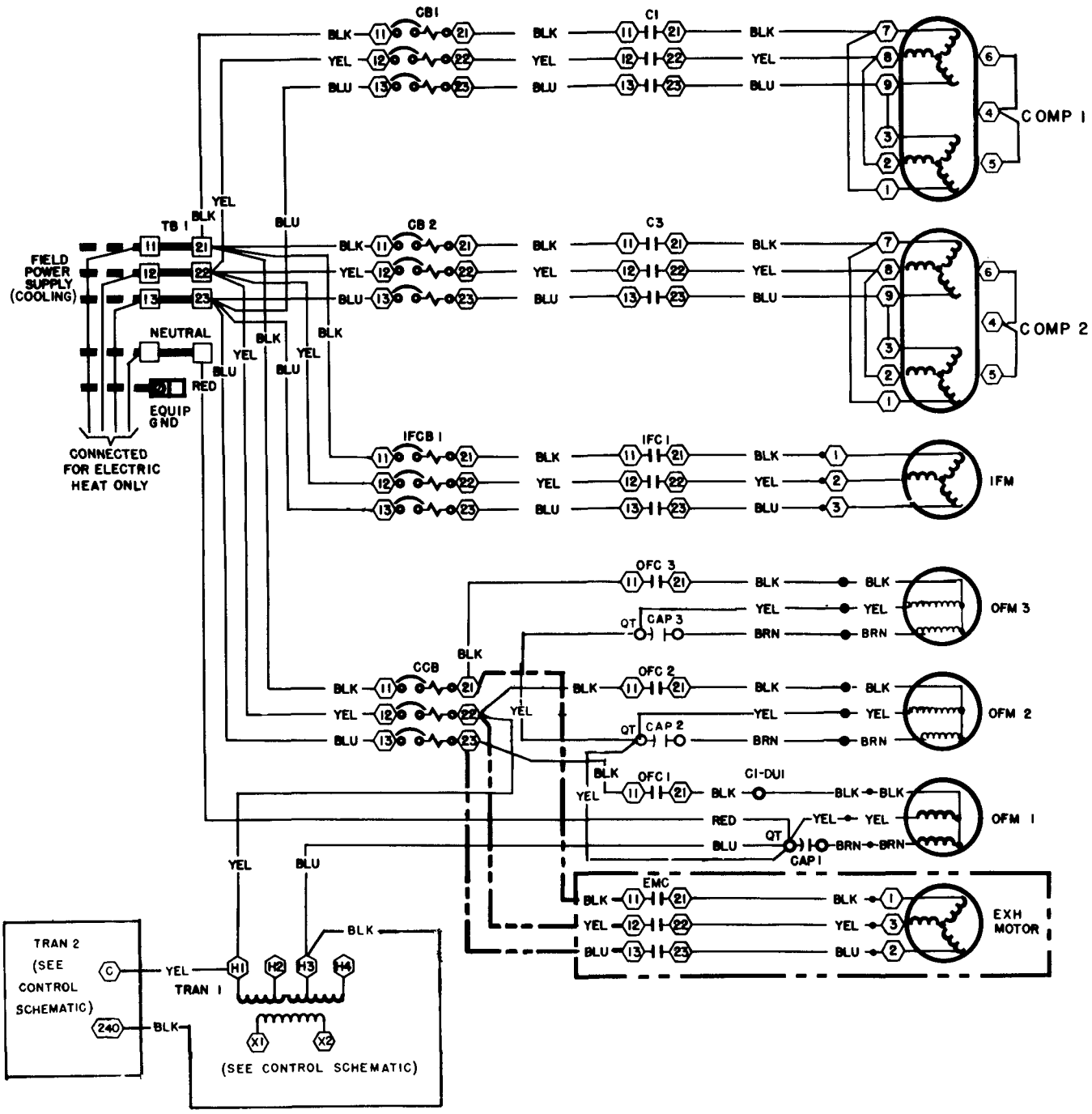
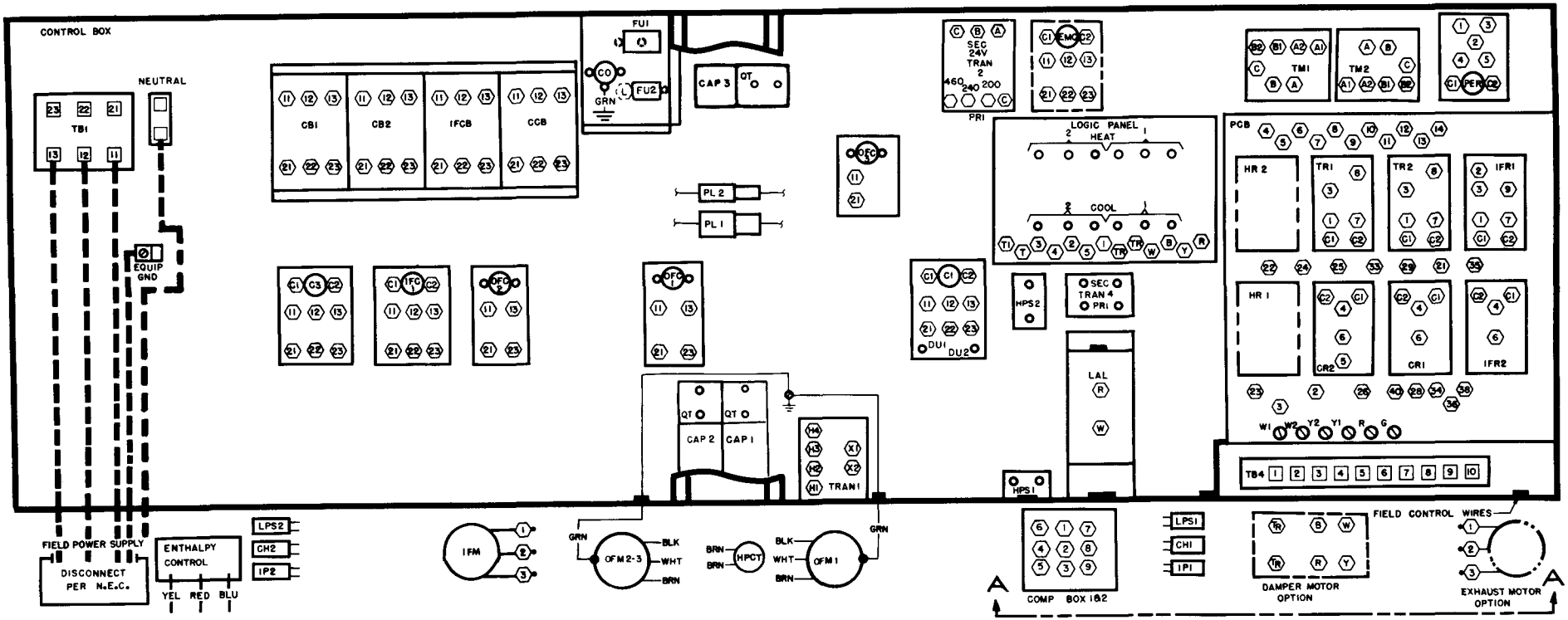
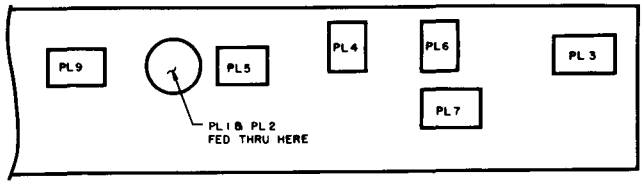


Fig. 5 — Power Wiring Schematic; 50DL044; 380-3-60



MODEL NO.	VOLTS	COMPR #1 CB MFG PT NO	MUST TRIP AMPS	COMPR #2 CB MFG PT NO	MUST TRIP AMPS	CCB MFG PT NO	MUST TRIP AMPS
		HEINEMANN		HEINEMANN		HEINEMANN	
		AIR PAX		AIR PAX		AIR PAX	
50DL044	380	CF3-Z33-74	56	CF3-Z33-74	56	CF3-Z33-9	27
		219-3-2600-454		219-3-2600-454		219-3-2600-408	
		15 HP STD MOTOR		20 HP ALT MOTOR			

MODEL NO.	VOLTS	IFCB MFG PT NO.	MUST TRIP AMPS	IFCB MFG PT NO.	MUST TRIP AMPS
		HEINEMANN		HEINEMANN	
		AIR PAX		AIR PAX	
50DL044	380	CF3-Z33-6	32	CF3-Z33-42	45
		219-3-2600-414		219-3-2600-446	



CONTROL BOX BOTTOM VIEW A-A

Fig. 6 — Component Arrangement; 50DL044; 380-3-60

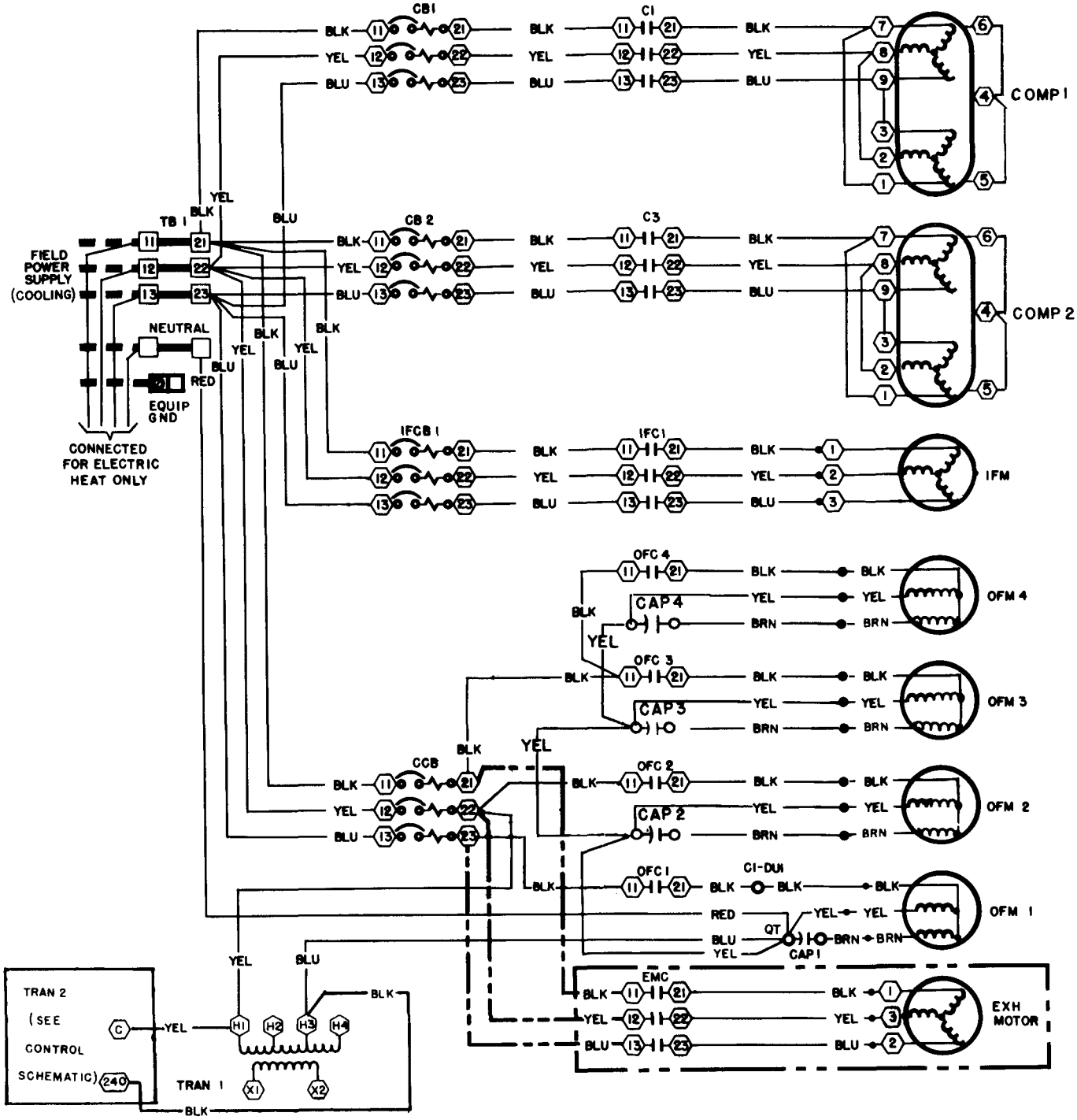
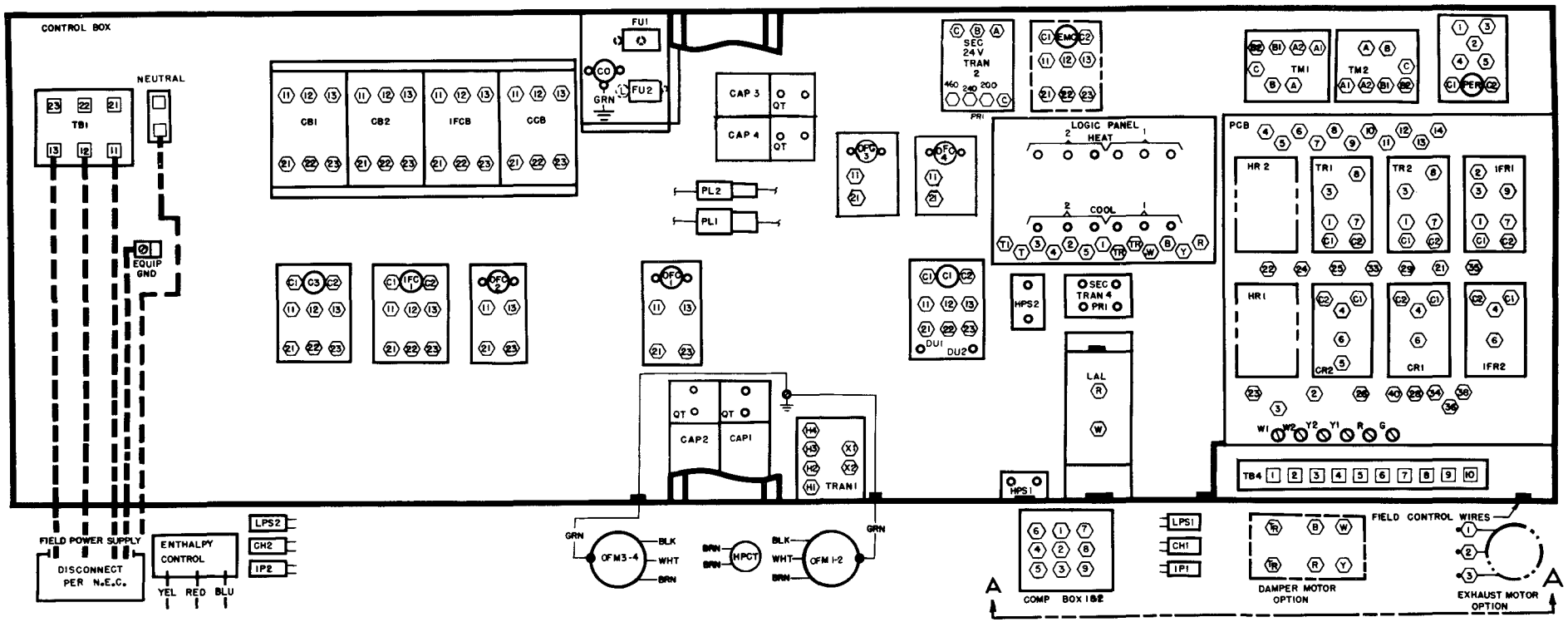
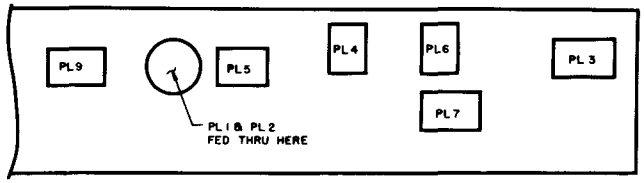


Fig. 7 — Power Wiring Schematic; 50DL054; 380-3-60



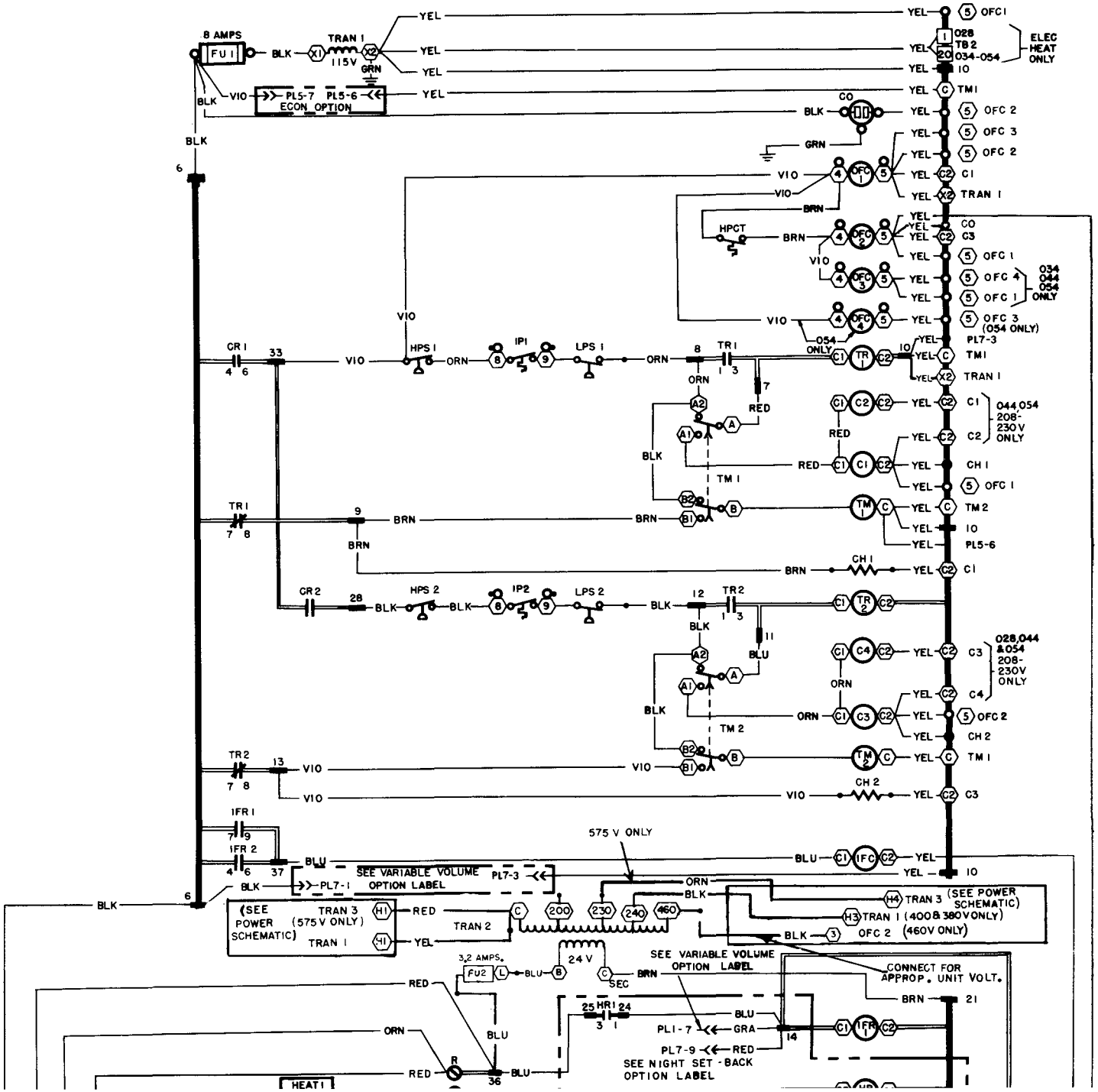


CONTROL BOX BOTTOM VIEW A-A

MODEL NO.	VOLTS	COMPR #1 CB MFG PT NO	MUST TRIP AMPS	COMPR #2 CB MFG PT NO.	MUST TRIP AMPS	CCB MFG PT NO	MUST TRIP AMPS
		HEINEMANN		HEINEMANN		HEINEMANN	
		AIR PAX		AIR PAX		AIR PAX	
50DL054	380	CF3-Z33- 219-3-2600-471	87	CF3-Z33-74 219-3-2600-454	56	CF3-Z33-27 219-3-2600-430	37

		20 HP STD MOTOR		25 HP ALT MOTOR	
MODEL NO.	VOLTS	IFCB MFG PT NO.	MUST TRIP AMPS	IFCB MFG PT NO	MUST TRIP AMPS
		HEINEMANN		HEINEMANN	
		AIR PAX		AIR PAX	
50DL054	380	CF3-Z33-42 219-3-2600-446	45	CF3-Z33- 219-3-2600-470	57

Fig. 8 — Component Arrangement; 50DL054; 380-3-60


8 AMPS
FU1
TRAN 1
115V
BLK
YEL
GRN
VIO
PL5-7
PL5-6
ECON. OPTION
CO
OFC 1
OFC 2
OFC 3
OFC 4
HPCT
CR 1
HPS 1
IP1
LPS 1
TR 1
CR 2
HPS 2
IP2
LPS 2
TR 2
IFR 1
IFR 2
CH 1
CH 2
TM 1
TM 2
C1
C2
C3
C4
ELEC HEAT ONLY
034-054
044-054 ONLY
054 ONLY
208-230V ONLY
028,044 &054
575 V ONLY
SEE VARIABLE VOLUME OPTION LABEL
PL7-3
PL7-1
(SEE POWER SCHEMATIC)
TRAN 3 (575V ONLY)
TRAN 1
TRAN 2
TRAN 3 (SEE POWER SCHEMATIC)
TRAN 1 (400 & 380V ONLY)
OFC 2 (460V ONLY)
3.2 AMPS.
FU2
24 V
SEC
CONNECT FOR APPROP. UNIT VOLT.
25 HR1
PL1-7
PL7-9
SEE NIGHT SET-BACK OPTION LABEL
HEAT

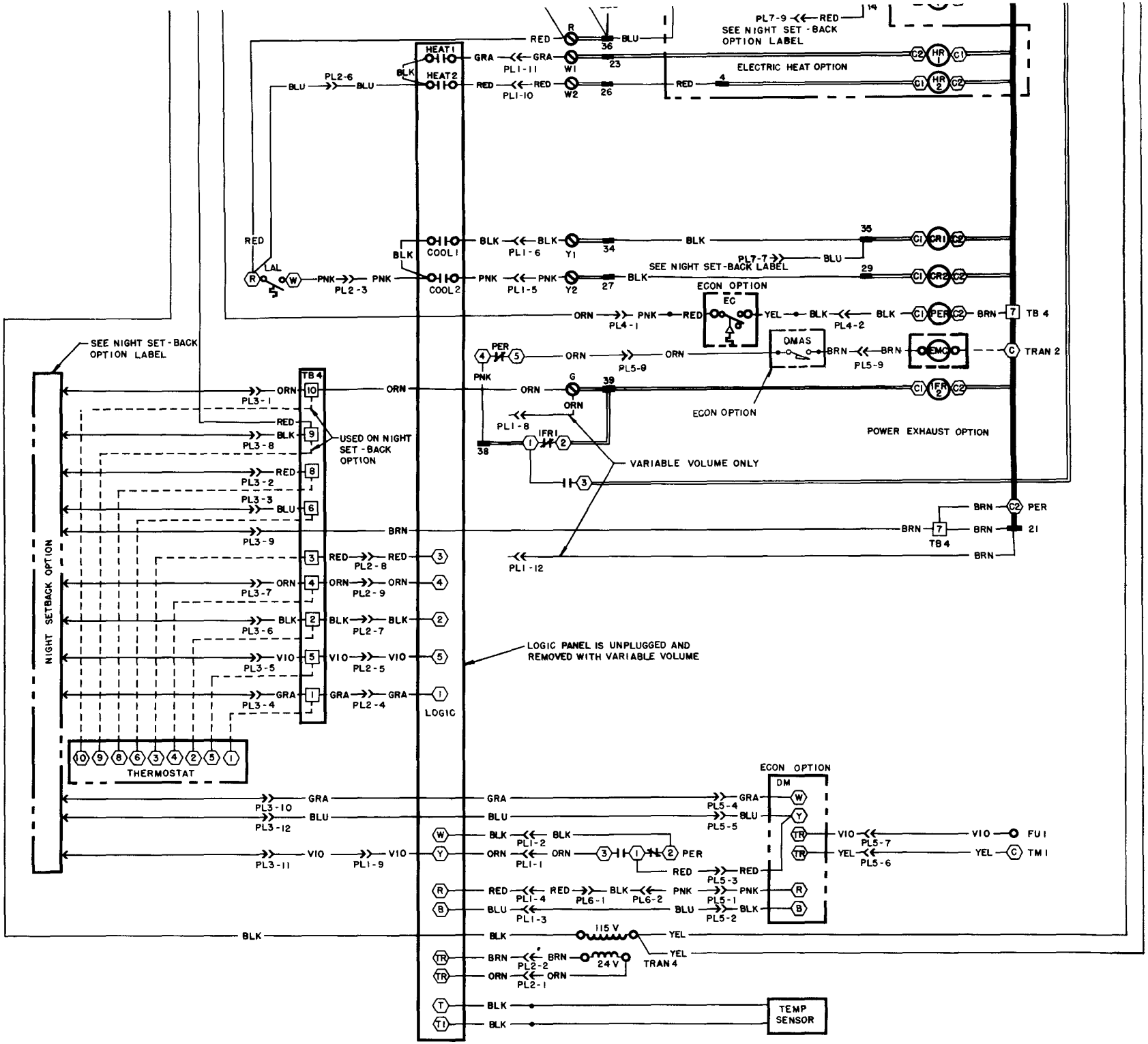
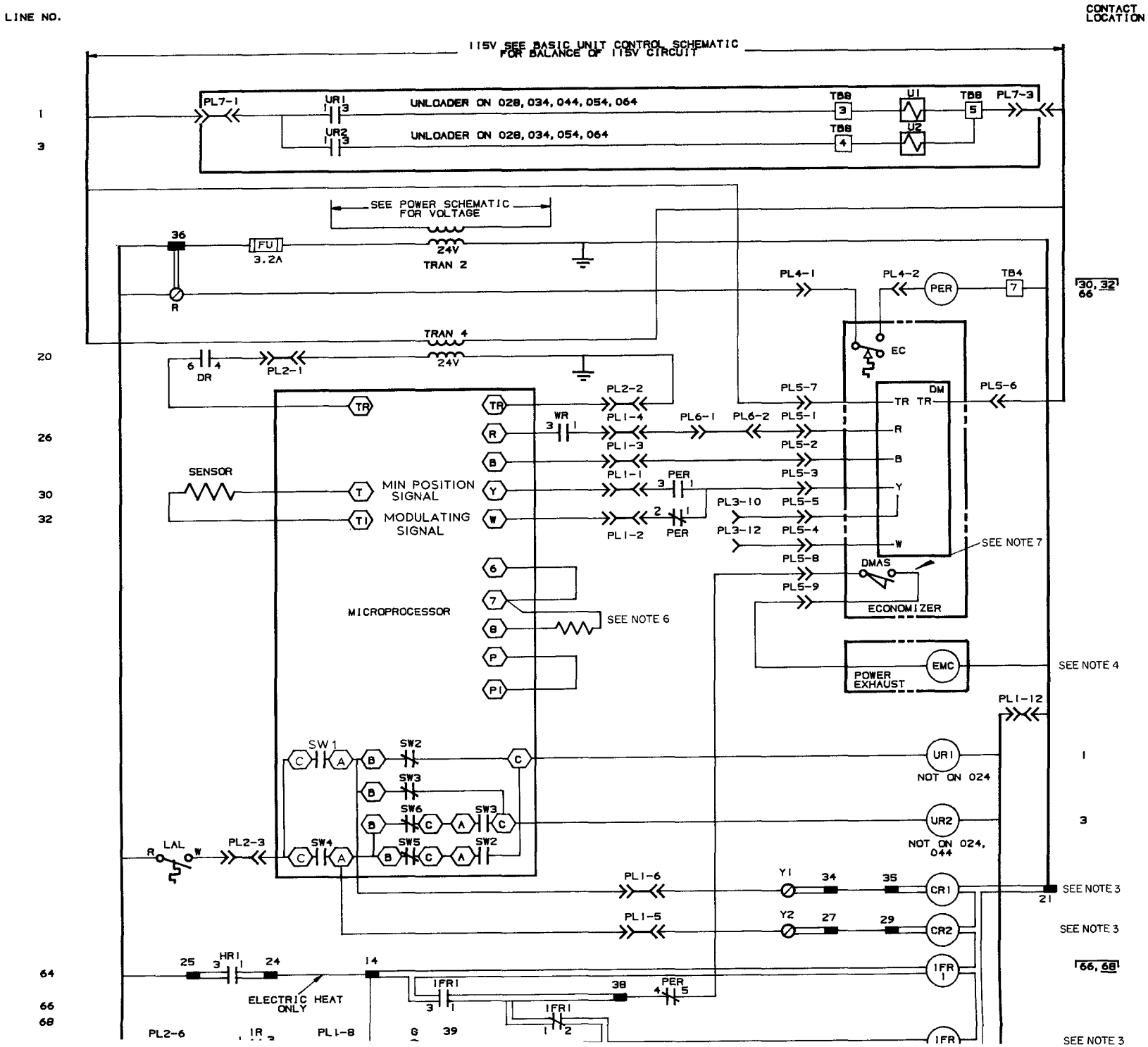
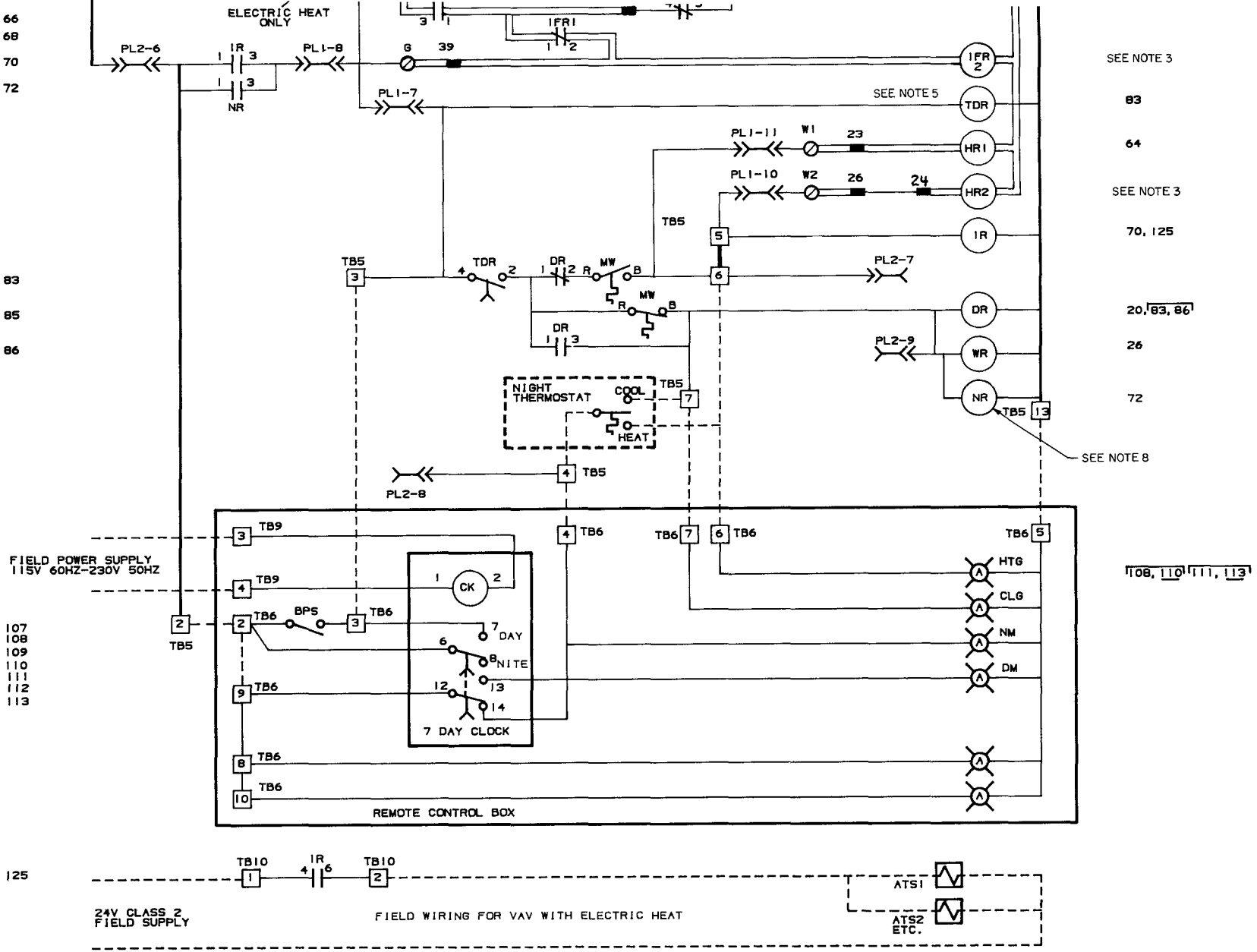


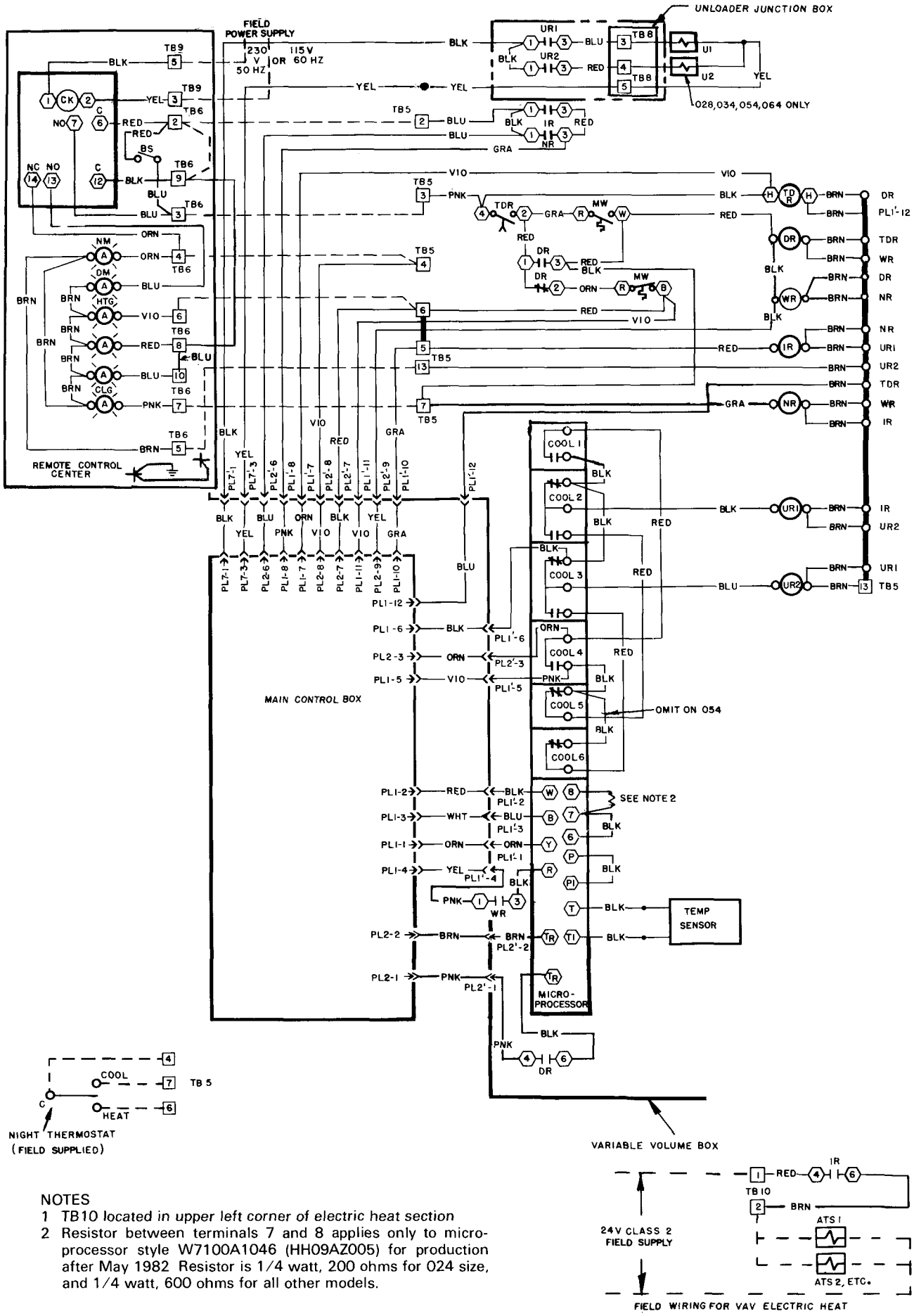
Fig. 9 — Control Wiring Schematic w/Standard Fan; 50DL044,054; 380-3-60


LINE NO.
CONTACT LOCATION
115V SEE BASIC UNIT CONTROL SCHEMATIC FOR BALANCE OF 115V CIRCUIT
PL7-1
UR1
UNLOADER ON 028, 034, 044, 054, 064
UR2
UNLOADER ON 028, 034, 054, 064
TB8
U1
U2
PL7-3
SEE POWER SCHEMATIC FOR VOLTAGE
36
FU
3.2A
24V
TRAN 2
R
PL4-1
PL4-2
PER
TB4
30, 32
66
TRAN 4
DR
PL2-1
EC
DM
PL5-6
PL2-2
PL5-7
TR
WR
PL1-4
PL6-1
PL6-2
PL5-1
PL1-3
PL5-2
SENSOR
MIN POSITION SIGNAL
MODULATING SIGNAL
PL1-1
PL5-3
PL1-2
PL3-10
PL5-5
PL3-12
PL5-4
PL5-8
PL5-9
DMAS
SEE NOTE 7
ECONOMIZER
MICROPROCESSOR
SEE NOTE 6
POWER EXHAUST
EMC
SEE NOTE 4
PL1-12
SW1
SW2
SW3
SW6
SW5
SW4
LAL
PL2-3
UR1
NOT ON 024
UR2
NOT ON 024, 044
PL1-6
PL1-5
Y1
Y2
CR1
CR2
SEE NOTE 3
HR1
ELECTRIC HEAT ONLY
IFR1
IFR
66, 68
PL2-6
PL1-8
SEE NOTE 3



NOTES.
1 See page 2 for Legend.
2. Numbers indicate the line location of used contacts. A bracket over (2) numbers signifies a single pole, double throw contact. An underlined number signifies a normally closed contact. Plain (no line) number signifies a normally open contact.
3. Contacts are in the 115-v schematic.
4. Contacts are in the power schematic.
5. TDR — 65 seconds on, 25 seconds off.
6. Resistor between terminals 7 and 8 applies only to microprocessor style W7100A1046 (HH09AZ005) for production after May 1982. Resistor is 1/4 watt, 200 ohms for 024 size, and 1/4 watt, 600 ohms for all other models.
7 DMAS (Damper Motor Auxiliary Switch) was PETC for 50DF units built prior to December 1981
8. For units prior to April 1982, NR was wired to step 1 of microprocessor.

Fig. 10 — Integrated Schematic (Simplified); Variable Air Volume



NOTES

1 TB10 located in upper left corner of electric heat section

2 Resistor between terminals 7 and 8 applies only to microprocessor style W7100A1046 (HH09AZ005) for production after May 1982 Resistor is 1/4 watt, 200 ohms for 024 size, and 1/4 watt, 600 ohms for all other models.

Fig. 11 — Label Diagram, Variable Air Volume, Panel and Remote Box Schematic

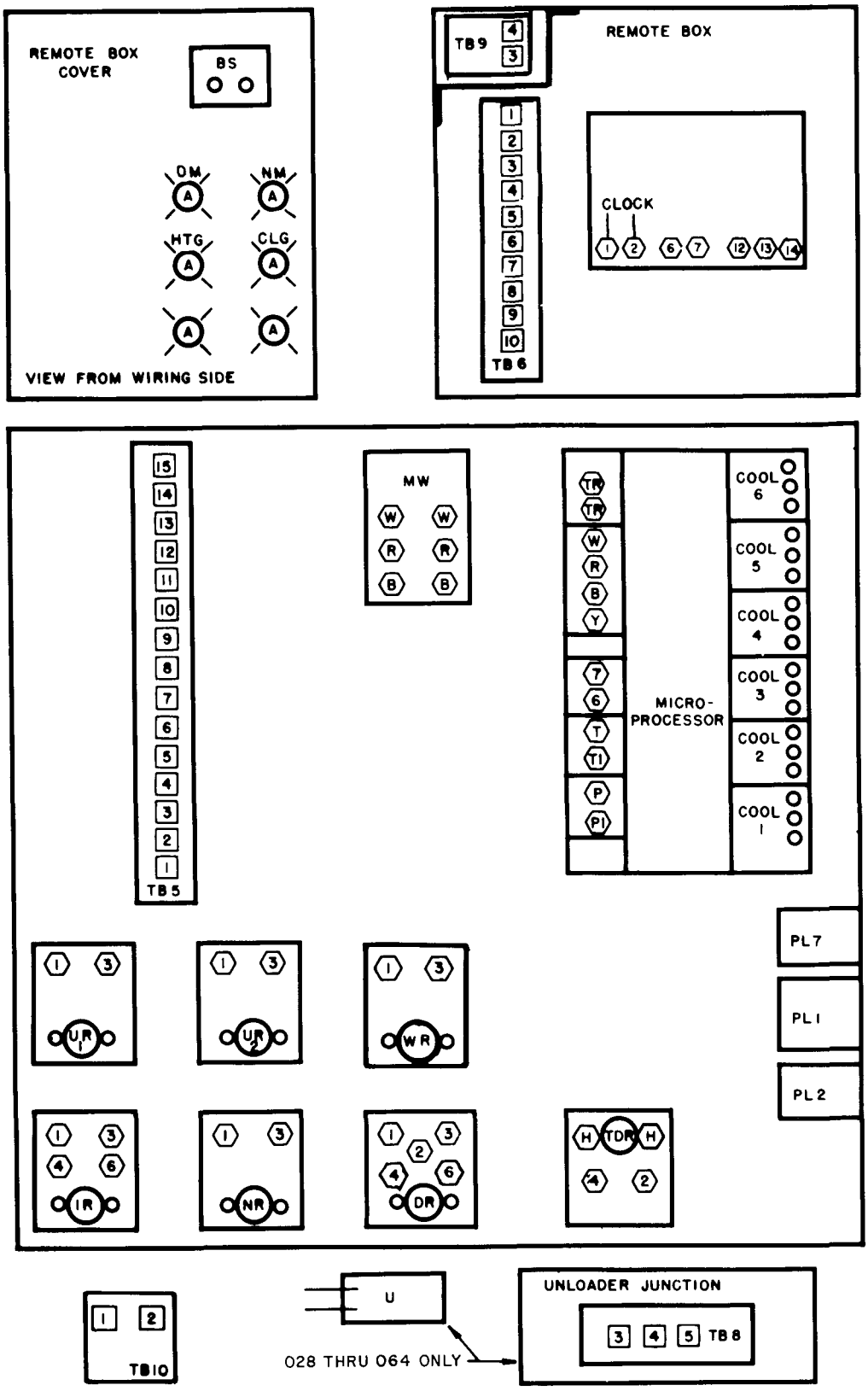


Fig. 12 — Label Diagram, Variable Air Volume, Component Arrangement

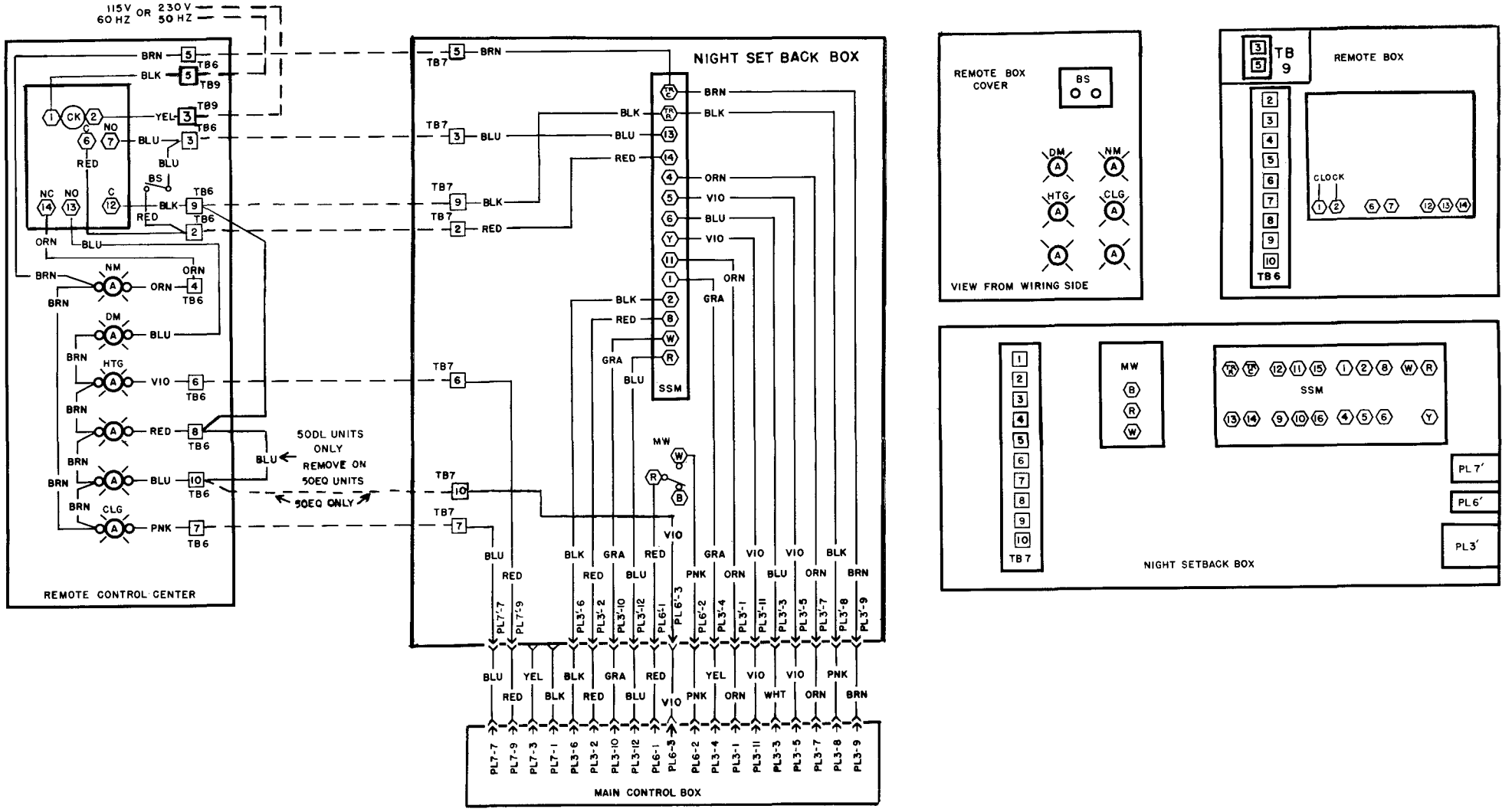


Fig. 13 — Label Diagram, Energy Management (Night Set-Back) Option

MOTORMASTER CONTROL WIRING

Use the following data, plus Installation Instructions packaged with Model 32LT Motormaster solid-state head pressure control, to apply Motormaster to 50DF or DL cooling units. Certain modifications must be made to the standard units:

1. **Outdoor Fan Motor**
   On 380-volt, 3-phase units, install special one-hp, 200-230-volt outdoor fan motor (Carrier Part No. HC52TE230) in place of factory-installed motor OFM1. Wire fan motor for 220-volt, one-phase, 60-Hz operation, the same as motor replaced.
2. **Run Capacitors**
   Install 30.0 MFD, 440-volt run capacitor (Carrier Part No. HC90BB030) in place of CAP. 1.
3. **Power Wiring** must be checked to ensure it is as specified and is in compliance with local and national code requirements. Wire Motormaster control in series with fan motor black lead. Use Motormaster unit (Carrier Part No. 32LT900300) for 200-230 volts.
   Figure 14 shows the Motormaster control wired into the condenser fan motor circuit for 200-230-volt, single-phase, 60-Hz power.
4. **Winter Start Control** is required on all 50DF/DL units. Jumper low-pressure switch to make it inactive. DO NOT RELOCATE. Install new liquid line low-pressure switch at liquid line service valve and reset it for 5 psig. (Low-pressure switch, Carrier Part No. HK02AB026, preset at 5 psig, is recommended.) When required by the application, install a defrost thermostat (Carrier Part No. 50BB900001 or HH22UA025) on evaporator coil to provide freeze-up protection lost by jumpering low-pressure switch. (See Fig. 15.)
5. **Locate Motormaster Control** as shown in Fig. 16 using the mounting template provided in the 32LT Installation Instructions.
6. **Locate Motormaster Control Sensor** as shown in Fig. 17. Route sensor wire from bottom of Motormaster control to bottom of control box, thru a connector in the bottom of the control box and across the partition to the specified sensor location. Connector is field supplied. If necessary, drill hole in control box for connector.
7. **Wind Baffles** are required for Motormaster control application to 50DF/DL units to prevent wind cross-currents from causing abnormal operation as fan speed control is modulated. Construct baffles as shown in Fig. 18.

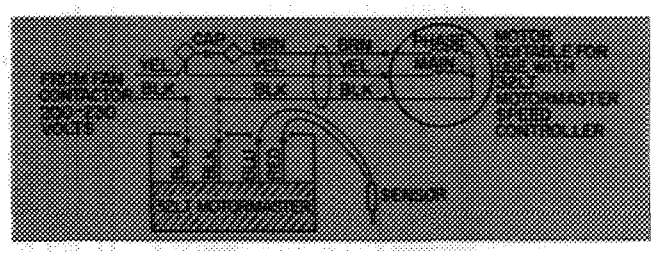


Fig. 14 — Power Wiring for 200-230-Volt Units

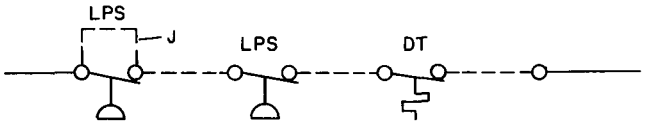


Fig. 15 — Defrost Thermostat with Jumper on Low-Pressure Switch and New Liquid Line Low-Pressure Switch Installed

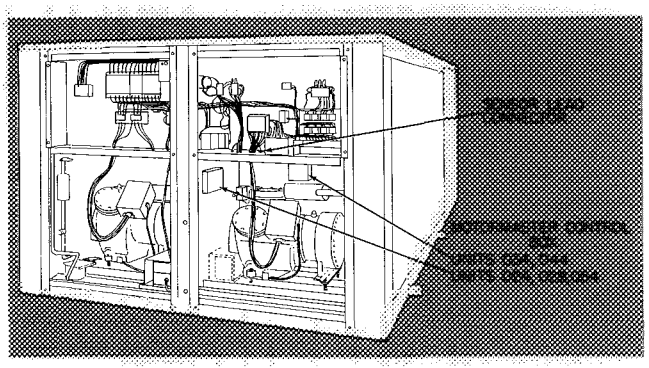


Fig. 16 — Motormaster Control Location

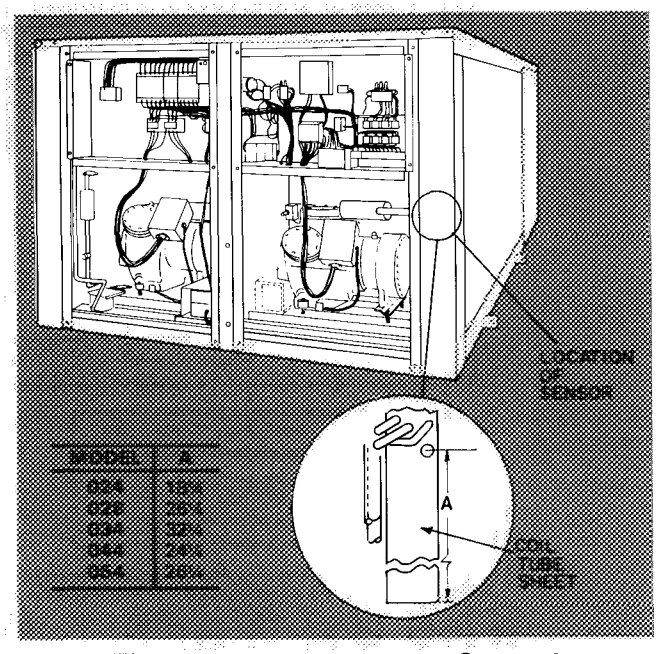


Fig. 17 — Motormaster Control Sensor Location

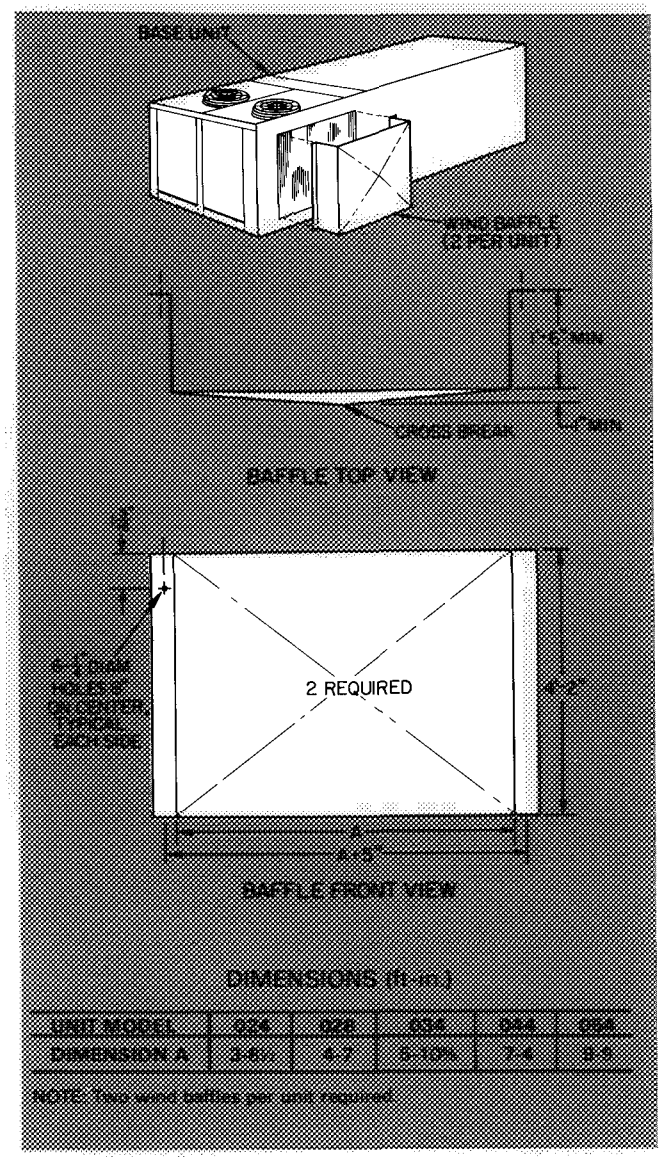


Fig. 18 — Wind Baffles

Form 50DL-2SIC New Printed in U S A 12-83 Catalog No 005-061