

Single-Package Cooling Units

→ INDEX

UNIT MODEL		V-PH-HZ	FIG. NO.	LABEL DIAGRAM NO.	REV.
50BJ, BK 016	500		2	50BA508724	B
	600	460-3-60	2	50BA508724	B
	100	575-3-60	2	50BA508724	B
50BJ, BK 024	500		3	50BA508804	C
	600	460-3-60	3	50BA508804	C
	100	575-3-60	3	50BA508804	C
50BJ, BK 028, 034	500		4	50BA508754	C
	600	460-3-60	4	50BA508754	C
	100	575-3-60	4	50BA508754	C
50BJ 044	501		6	50BJ500164	D
	601	460-3-60	6	50BJ500164	D
	101	575-3-60	6	50BJ500164	D
50BK 044	501		7	50BK500164	D
	601	460-3-60	6	50BJ500164	D
	101	575-3-60	6	50BJ500164	D
50BJ 054	501		8	50BJ500184	E
	601	460-3-60	10	50BJ500194	D
	101	575-3-60	10	50BJ500194	D
50BK 054	501		9	50BK500174	E
	601	460-3-60	10	50BJ500194	D
	101	575-3-60	10	50BJ500194	D
50BJ 064	501		11	50BK500214	E
	601	460-3-60	10	50BJ500194	D
	101	575-3-60	10	50BJ500194	D
50BK 064	501		11	50BK500214	E
	601	460-3-60	10	50BJ500194	D
	101	575-3-60	10	50BJ500194	D

 Extended Voltage Compressor

Simplified Wiring Schematic (Typical) Fig. 1
Accessory Timer Control Box
50BJ, BK016 thru 034 Fig. 5
50BJ, BK044 thru 064 Fig. 12

CONTROL SEQUENCE

A. Units 50BJ, BK016, 024, 028 and 034.

When unit power supply is on and circuit breakers are engaged, the accessory 7-day timer clock (if used) cycles the unit on and off at programmed times for a full 7-day cycle.

At each ON point, the indoor fans start immediately and remain on as long as the 7-day clock calls for cooling.

Upon initial start-up (with 7-day clock at unit operation position), there is a delay of from 20 to 30 minutes before the first stage of cooling starts. This time interval allows the microprocessor to develop a memory bank history and allows the fan to operate until a sensor can sense conditioned space temperature rather than initial unit ambients.

The microprocessor cycles compressors and unloaders to control discharge air temperature at a temperature close to a preselected setting.

On completion of the occupied mode on the time clock, the unit is switched to the unoccupied mode and indoor fan and compressor(s) stop.

The system can be placed temporarily in the occupied mode by means of a 5-hour spring driven bypass timer. This allows the building to be used during normally unoccupied hours without reprogramming the time clock.

→ B. Units 50BJ, BK044, 054 and 064

The indoor fan circuit breaker (IFCB) must be closed for the control circuit to be energized. When breaker is closed, the SYSTEM light will be energized.

All units are equipped with a switch labeled STANDBY. When switch is closed, the indoor fan contactor (IFC) is energized and the indoor fan will start and run continuously. A light labeled FAN will also be energized.

All units are equipped with the improved Honeywell W7100 discharge air controller. This controller is equipped with 3 control knobs: set point, reset and control band. Purpose of controller is to regulate the leaving air temperature to the set point. A setting below 50 F may decrease unit efficiency due to use of hot gas bypass at light loads. The reset knob is used to adjust reset control range from 5 F to 20 F. The control band allows controller to be adjusted for the required number of stages. The control band should be set at 8 F for 50BJ, BK044 units and 6 F for 50BJ, BK054 and 064 units. Increasing control band setting above these recommended settings will decrease compressor cycling and increase leaving air temperature variations. Decreasing setting will NOT reduce discharge air temperature variations but will increase compressor cycling.

The controller is also factory equipped with 2 fixed resistors. One resistor is used to correct for the number of steps. This is done by placing a 1/4-watt, 5% resistor across terminals **7** and **8** on microprocessor. A 4-stage, 400-ohm resistor is used on 044 units and a 600-ohm resistor is used on the 054 and 064 units. A second 510-ohm resistor is connected between terminals **9** and **Y** to indicate unit does not have an economizer. These units do not have a factory-supplied economizer. If a field-supplied economizer is to be added, remove the 510-ohm resistor. Consult Carrier for more details.

If the discharge air deviates 1°F above or below the control band while unit is running, a cooling capacity stage will either be added or removed according to the loading sequence table below. Additional capacity stages will either be turned on or off until discharge air temperature is within control band or changing at a rate that will allow it to be within control band within 10 minutes. The controller also has a fixed guaranteed minimum on and off time of 4 minutes to prevent compressor cycling.

These units are additionally equipped with a Timeguard® circuit. This circuit prevents compressor no. 1 from restarting until 4 minutes, 45 seconds have elapsed from last shutdown. Compressor no. 2 will not restart until 6 minutes, 10 seconds have elapsed.

Each compressor is equipped with a high-pressure switch (HPS), discharge gas thermostat (DGT) and low-pressure switch (LPS). If any of these trips, then the compressor will shut down. If after 4 minutes, 45 seconds for compressor no. 1 and 6 minutes, 10 seconds for compressor no. 2, the switch resets, the compressor will restart within 15 seconds for compressor no. 1 or 19 seconds for compressor no. 2.

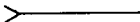
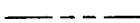
The 50BK condenserless units are equipped with a liquid line solenoid (LLS). When a stage calls for compressor shutdown, the liquid line solenoid will close first. The compressor will continue to run until the low-pressure switch opens.

LOADING SEQUENCE

MODEL	STAGE					
	1	2	3	4	5	6
044	25%	50%	75%	100%	—	—
054	19%	38%	57%	63%	84%	100%
064	17%	34%	50%	67%	84%	100%

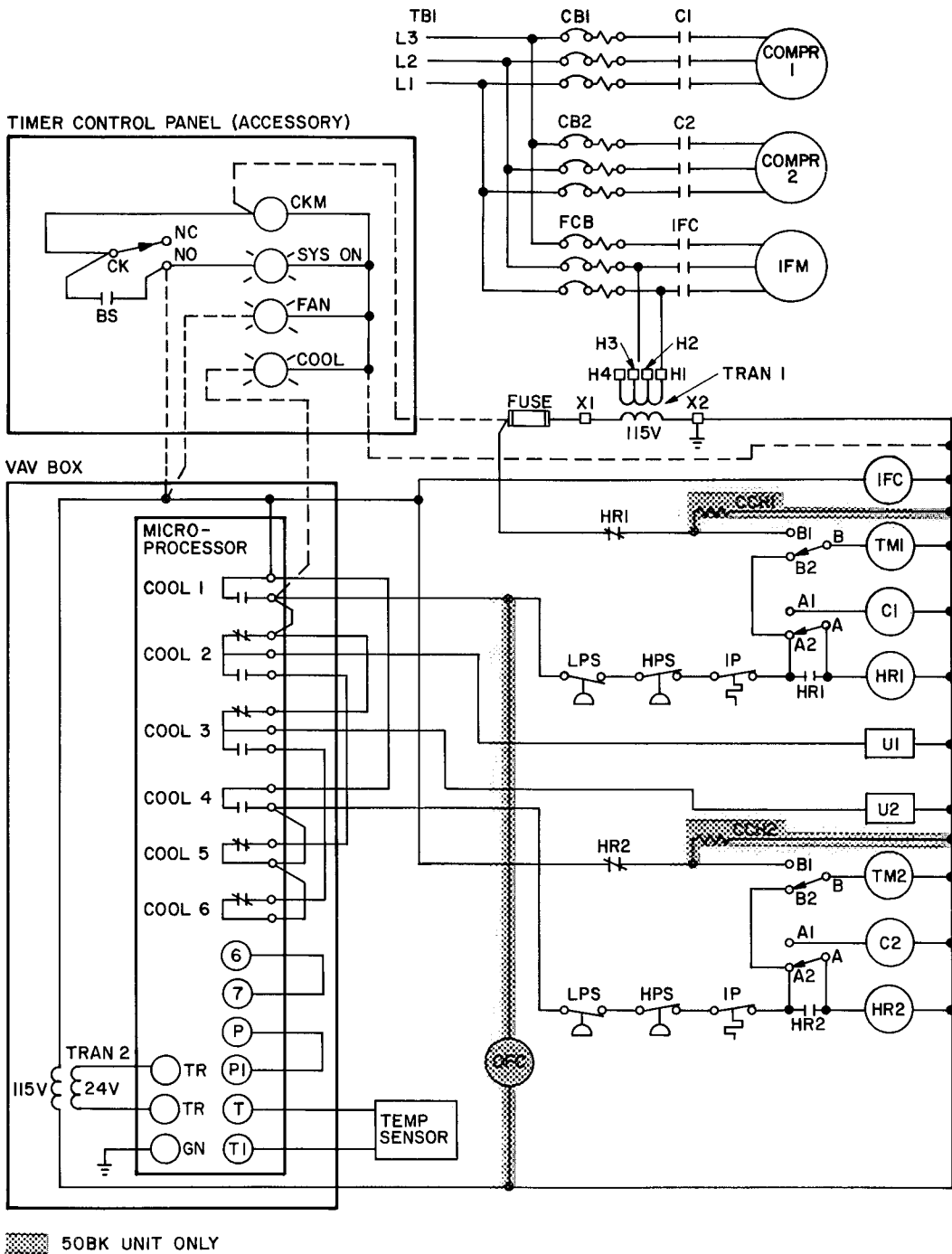
A	— Amber
Access.	— Accessory
BS	— Bypass Switch
C	— Compressor Contactor
CB	— Circuit Breaker, Compressor
CCH or CH	— Crankcase Heater
CK	— Clock
CKM	— Clock Motor
Clg	— Cooling
Comp	— Compressor
CR	— Control Relay
DGT	— Discharge Gas Thermostat
DU	— Dummy Terminal
Equip	— Equipment
FC	— Fan Contactor
FCB	— Fan Circuit Breaker
FM	— Fan Motor
Fu	— Fuse
Gn or Gnd	— Ground
HPS	— High-Pressure Switch
HR	— Holding Relay
IFC	— Indoor Fan Contactor
IFCB	— Indoor Fan Circuit Breaker
IFM	— Indoor Fan Motor
IP	— Internal Protector
IT	— Internal Thermostat
LLS	— Liquid Line Solenoid
LPS	— Low-Pressure Switch
PI	— Plug

LEGEND

Pri	— Primary
Sec	— Secondary
Sw	— Switch
Sys ON	— System ON
TB	— Terminal Block
TM	— Timer Motor
TR	— Timer Relay
Tran	— Transformer
U	— Unloader
UR	— Unloader Relay
	Terminal (Marked)
	Terminal (Unmarked)
	Terminal Block
	Splice
	Splice (Marked)
	Microprocessor Terminal
	Plug
	Receptacle
	Factory Wiring
	Field Power Wiring
	Accessory or Optional Wiring
	Common potential only; does not represent actual wire

→ NOTES

- Numbers at right of diagram indicate line location of used contracts. Bracket over 2 numbers signifies that contact is single pole, double throw. Underlined number signifies that contact is normally closed. Plain number (no line) signifies normally open contact.
- Compressor and fan motors are thermally protected. All 3-phase motors are protected against primary single-phasing conditions.
- If any of the original wire must be replaced, use Type 90 C or its equivalent.
- The circuit breaker (CB) and fan circuit breaker (FCB) must trip amps (MTA) are equal to or less than 140% full load amps (FLA).
- On transformer, yellow wire is connected to terminal H4 for 460 v, and to terminal H2 for 575 and 208 v. If 208/230-volt unit is to be operated on 230 volts, the yellow wire on transformer terminal H2 must be removed and connected to H3.
- To control remote condenser outdoor fan motor (BK units) or remote condenser water pump (BJ units), connect pilot relay (Carrier Part No. HN61KK041) across terminals 6 and 7 on TB-2. Pilot relay can be mounted inside control box using factory pre-drilled holes. Pilot relay (double-pole, double-throw) can carry a maximum of 125 va at 120/250 volts, 60-Hz.



SCHEMATIC

See page 2 for Notes and Legend

For detailed wiring diagram, refer to Fig. 2 thru 13

Fig. 1 — Simplified Wiring Schematic (Typical)

SCHEMATIC

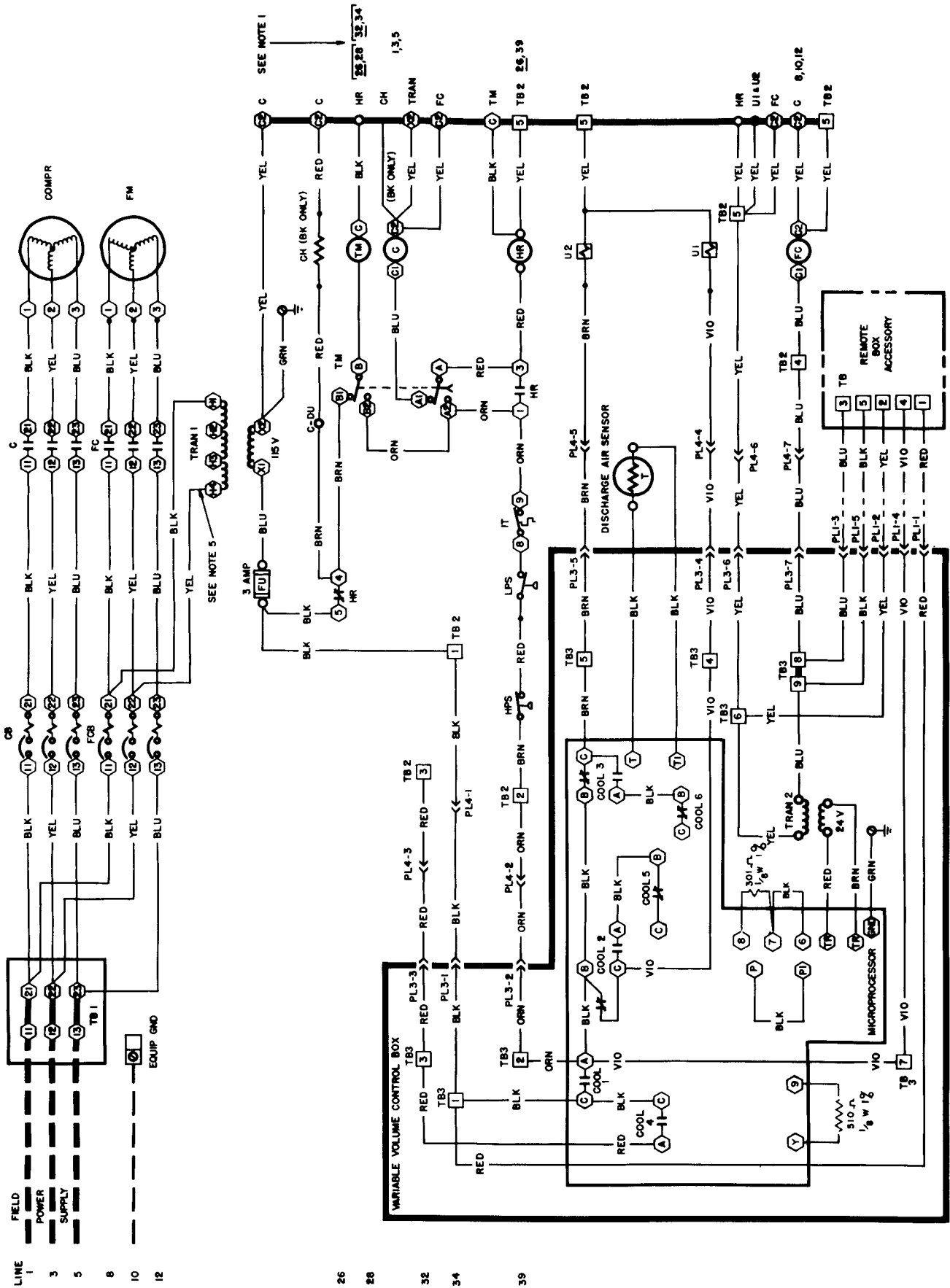


Fig. 2 — Label Diagram, 50BJ, BK016; 208/230, 460, 575-3-60

COMPONENT ARRANGEMENT

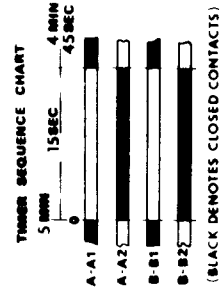
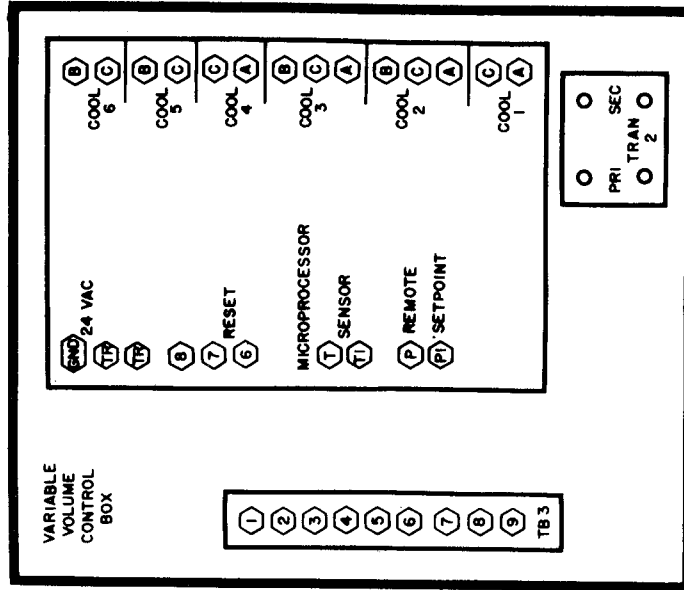
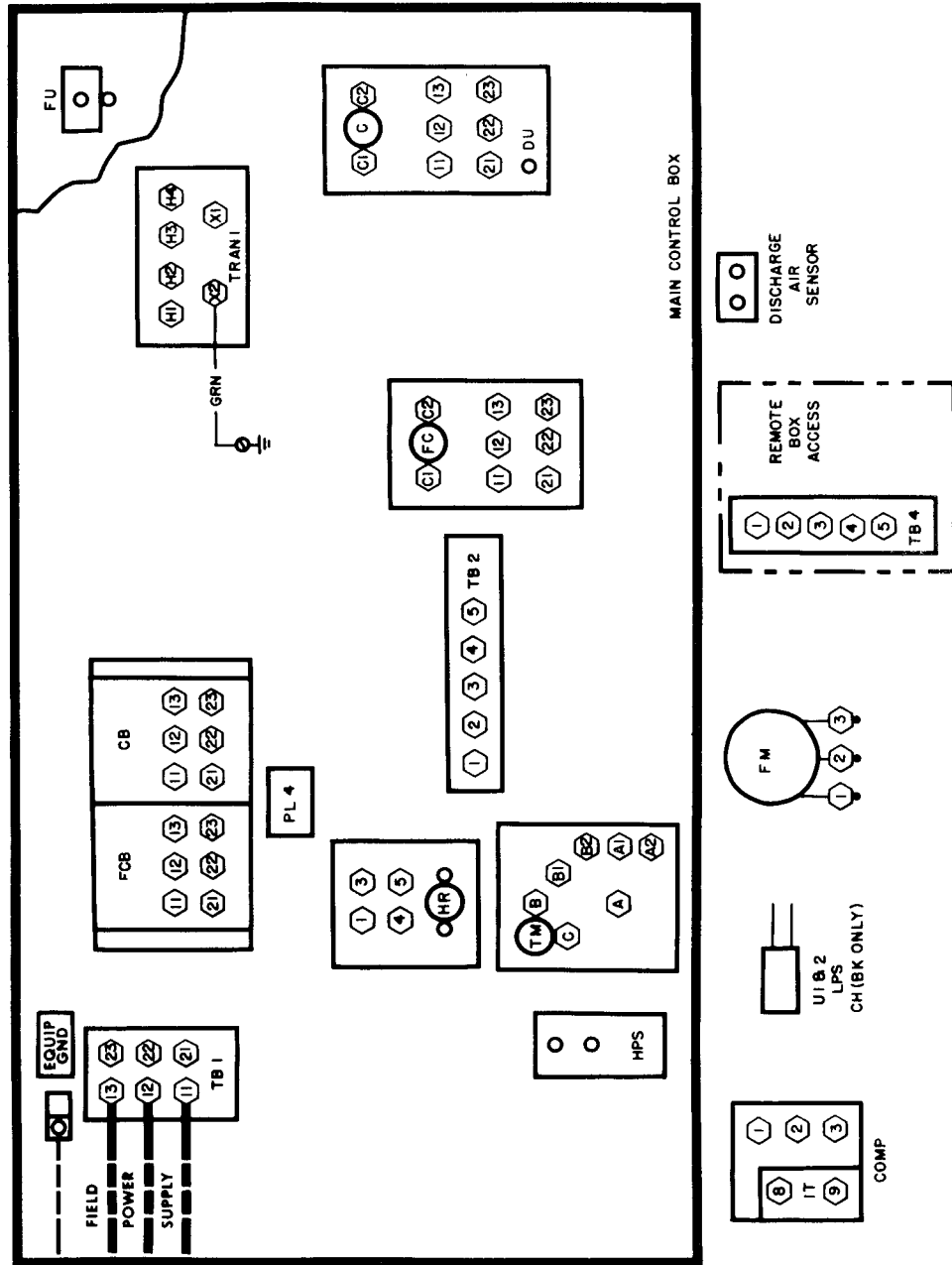


Fig. 2 — Label Diagram, 50BJ, BK016; 208/230, 460, 575-3-60 (Cont.)

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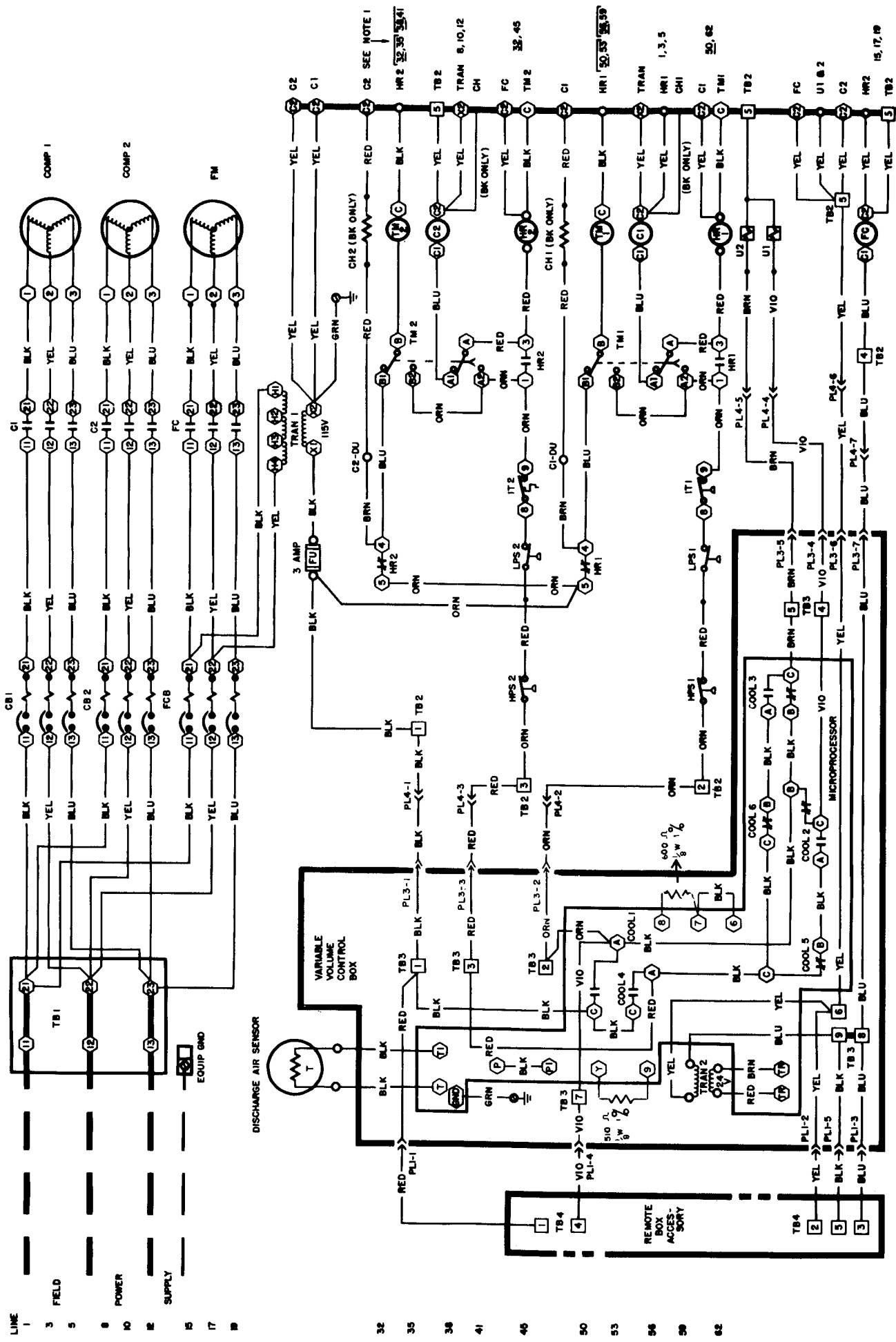


Fig. 3 — Label Diagram, 50BJ, BK024; 208/230, 460, 575-3-60

COMPONENT ARRANGEMENT

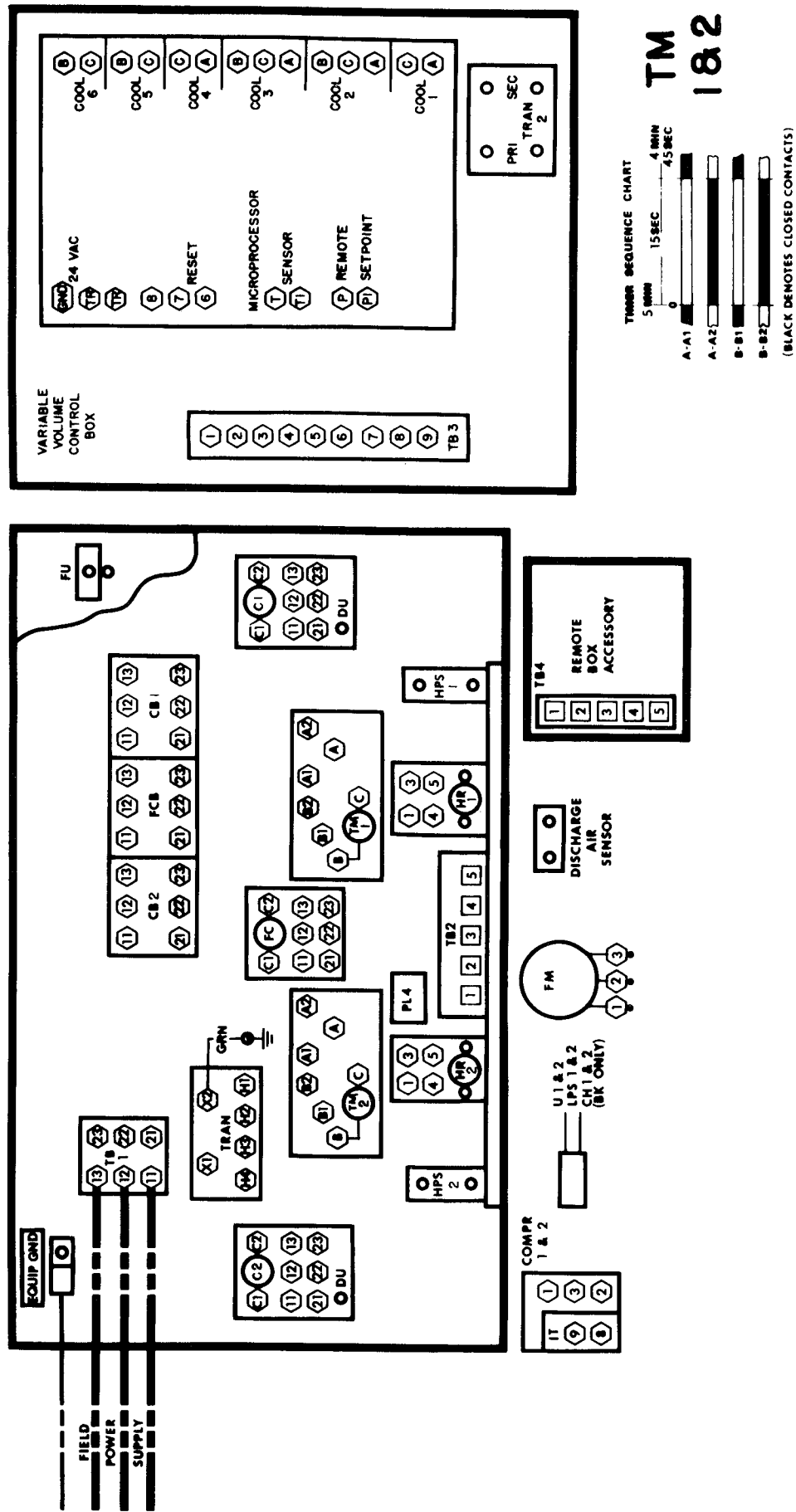


Fig. 3 — Label Diagram, 50BJ, BK024; 208/230, 460, 575-3-60 (Cont.)

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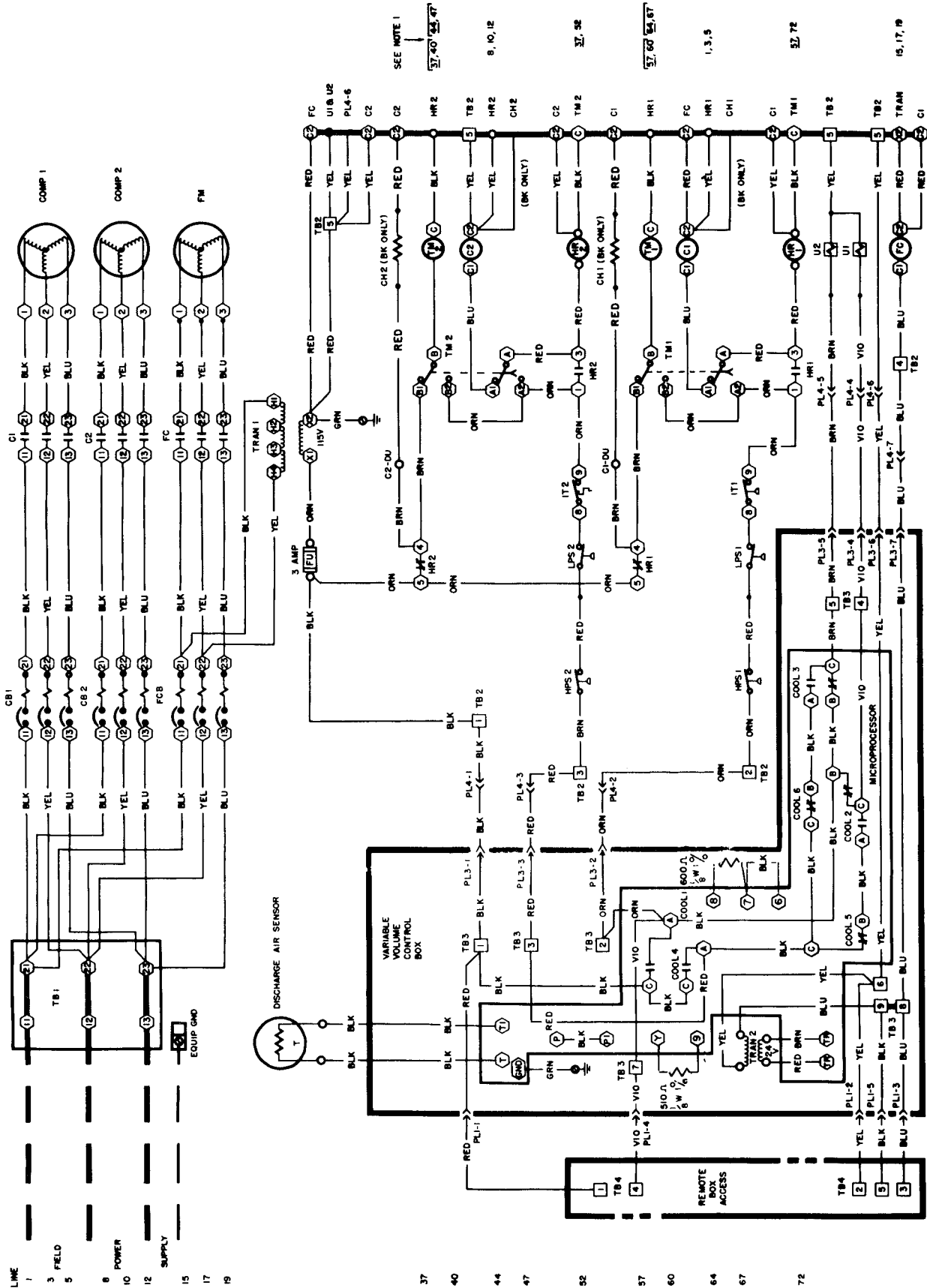


Fig. 4 — Label Diagram, 50BJ, BK028 and 034; 208/230, 460, 575-3-60

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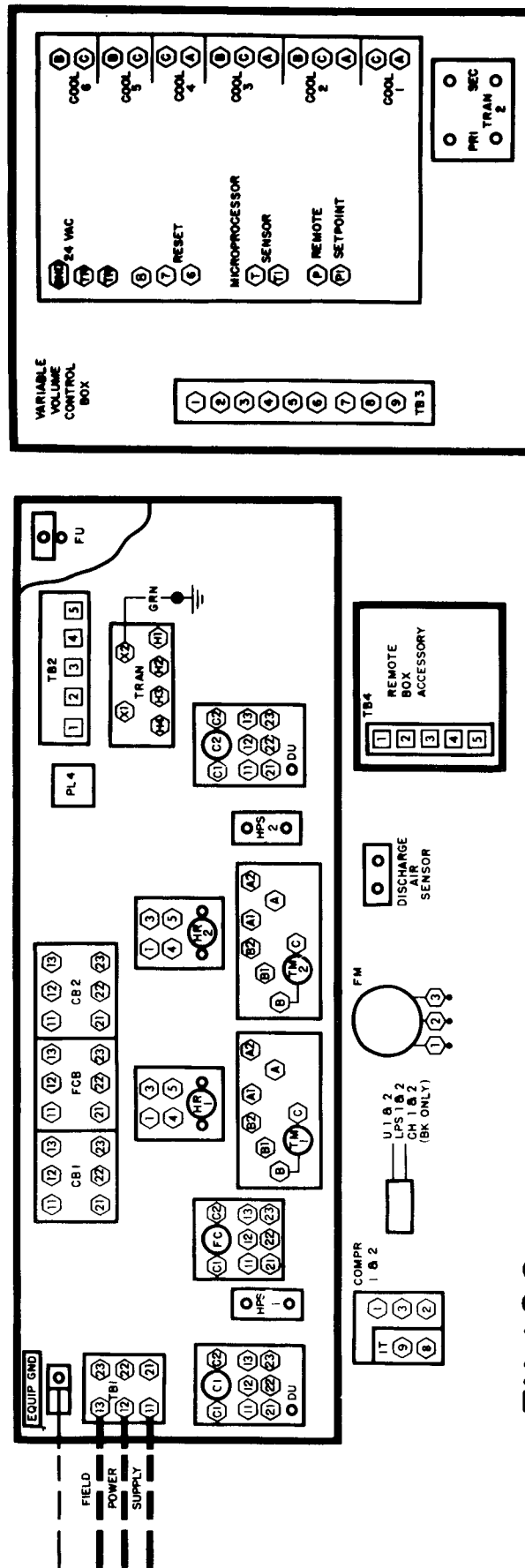
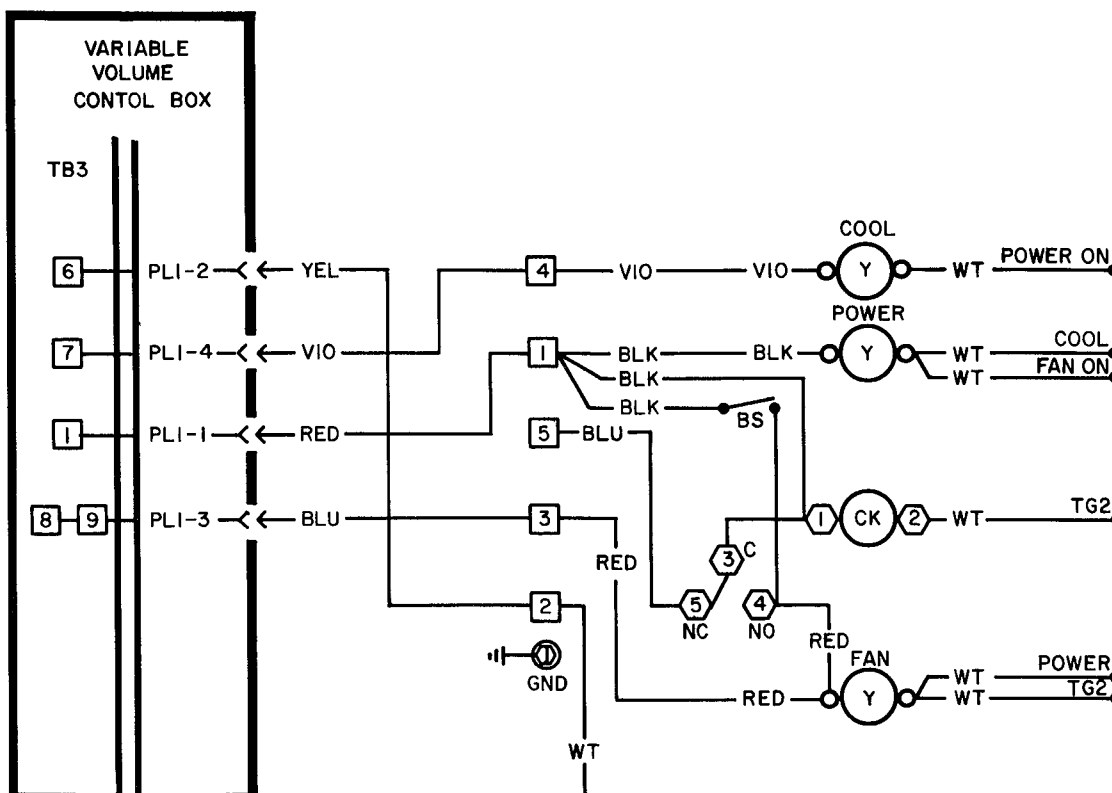


Fig. 4 — Label Diagram, 50BJ,BK028 and 034; 208/230, 460, 575-3-60 (Cont.)

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COMPONENT ARRANGEMENT

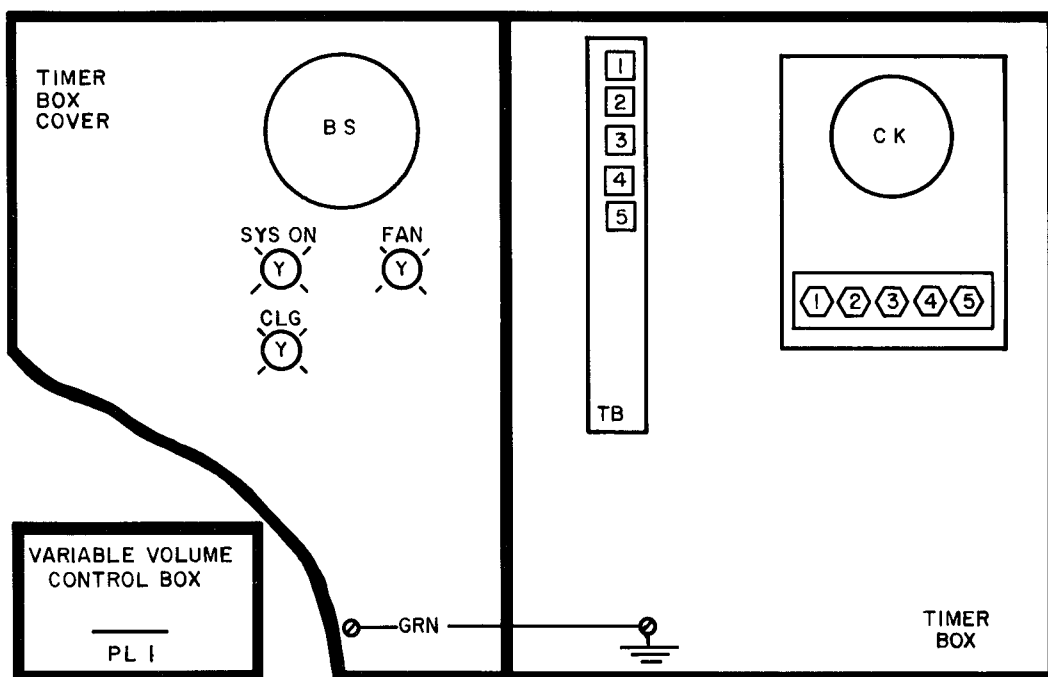


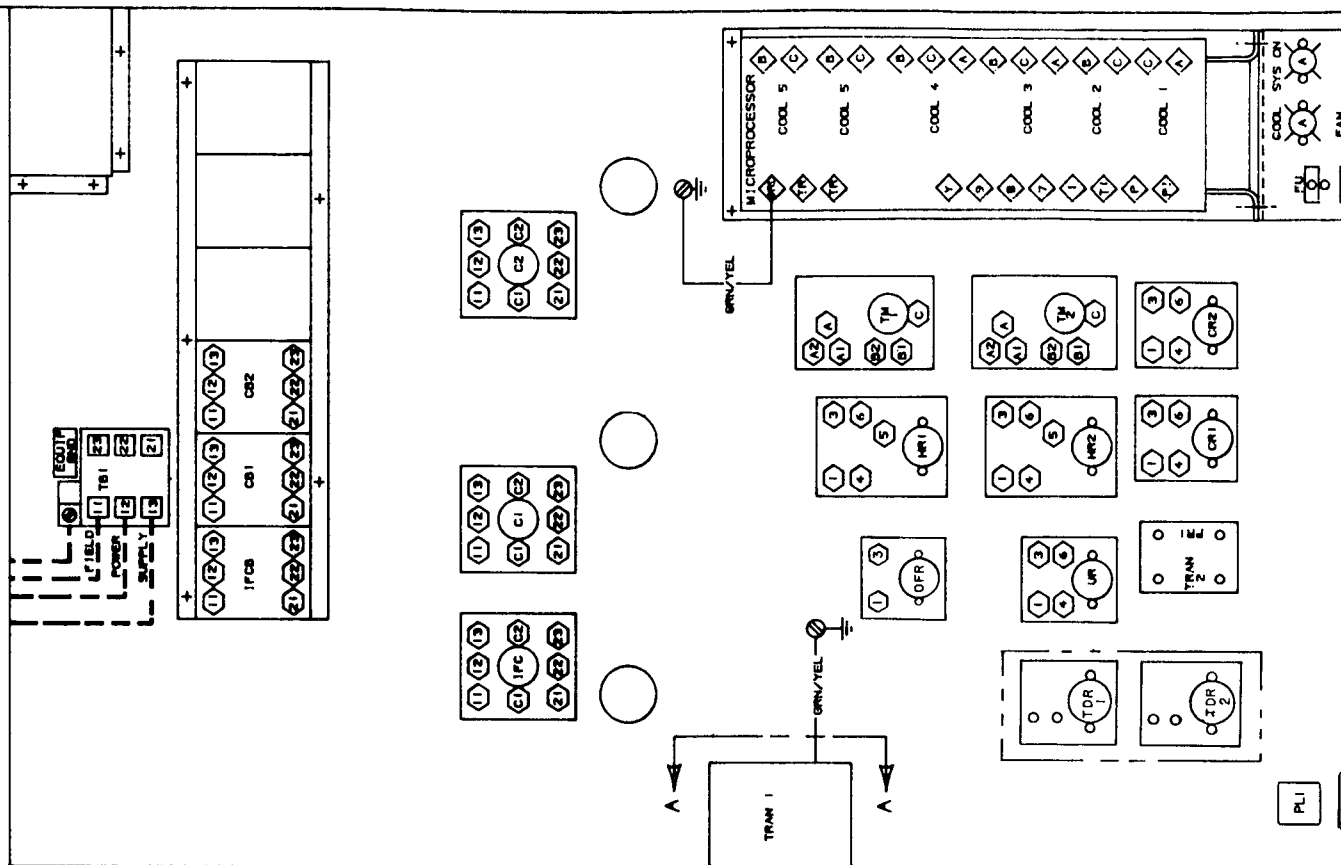
Fig. 5 — Label Diagram, Accessory Timer Control Box (60-Hz)
— Units 50BJ, BK016, 024, 028 and 034

IFCB

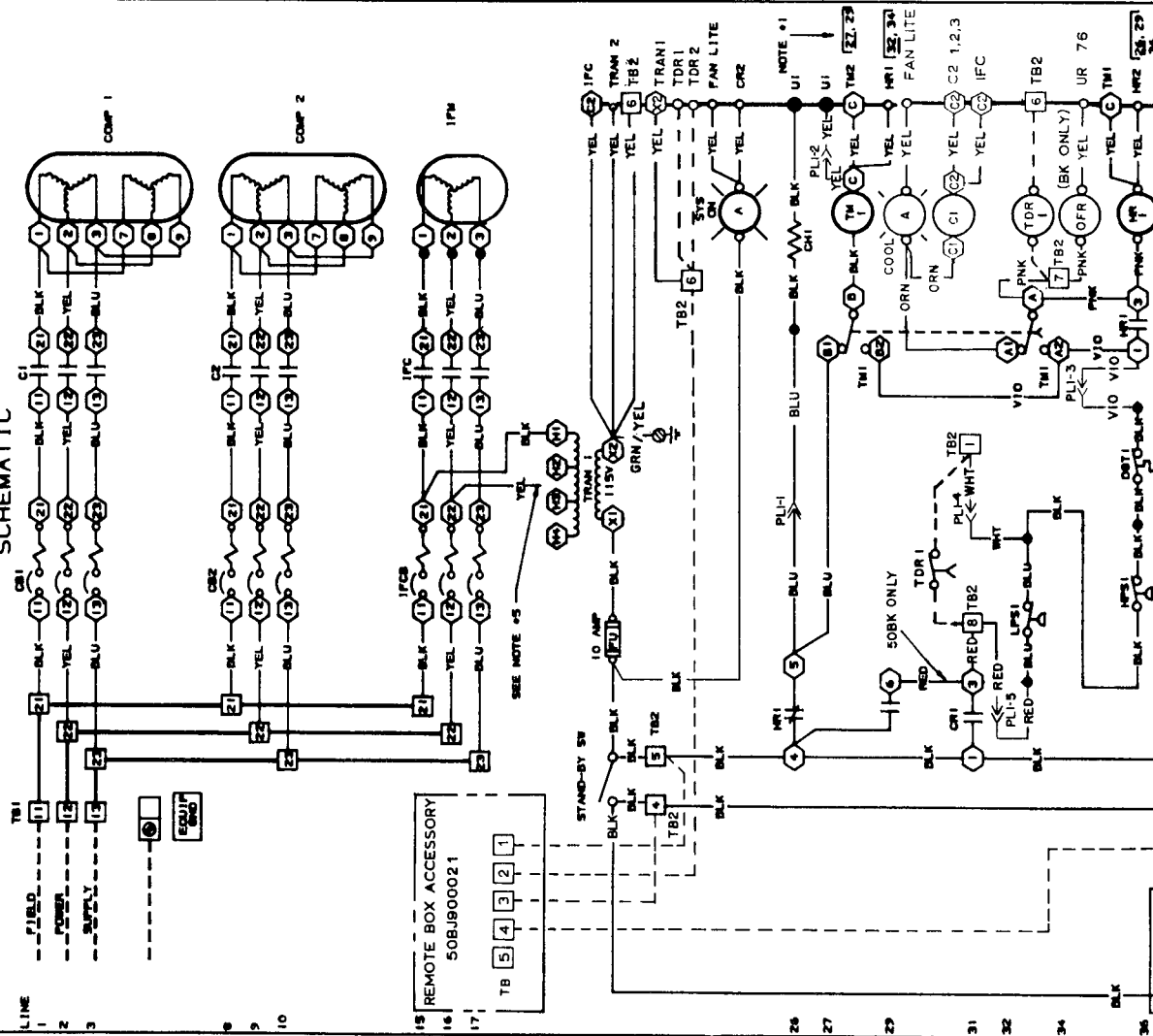
CBI

CB2

COMPONENT ARRANGEMENT



SCHEMATIC



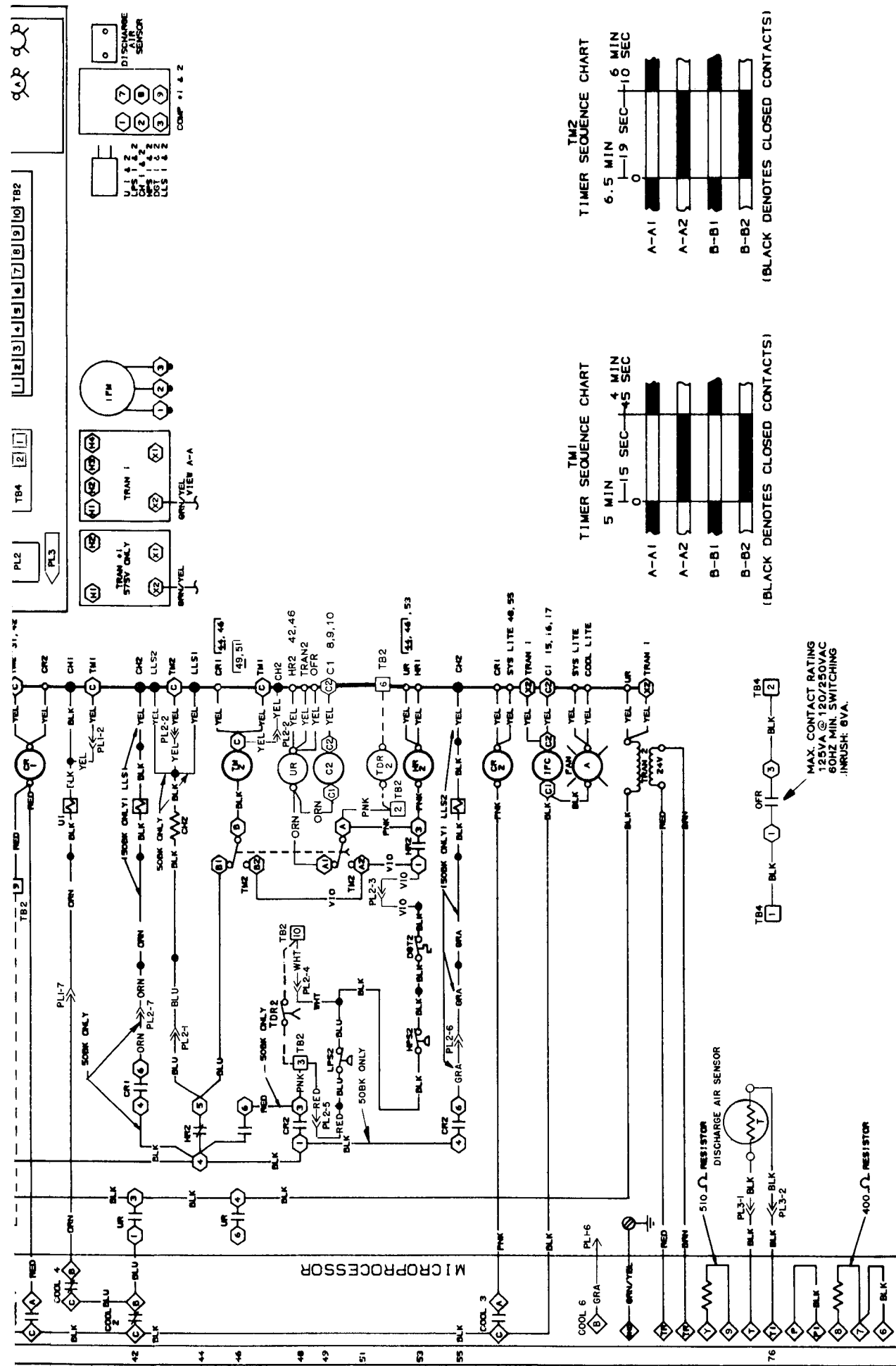


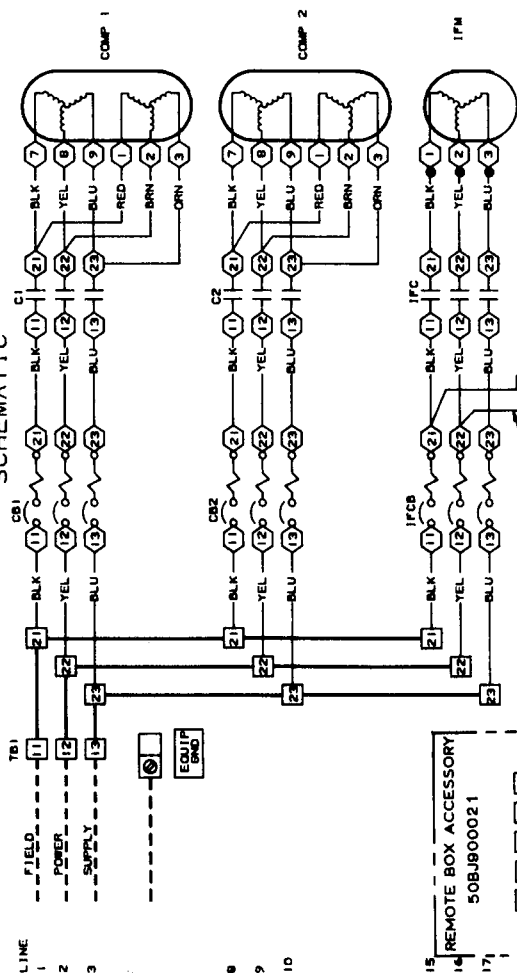
Fig. 6 — Label Diagram, 50BJ044; 208/230, 460, 575-3-60 and 50BK044; 460, 575-3-60

IFCB

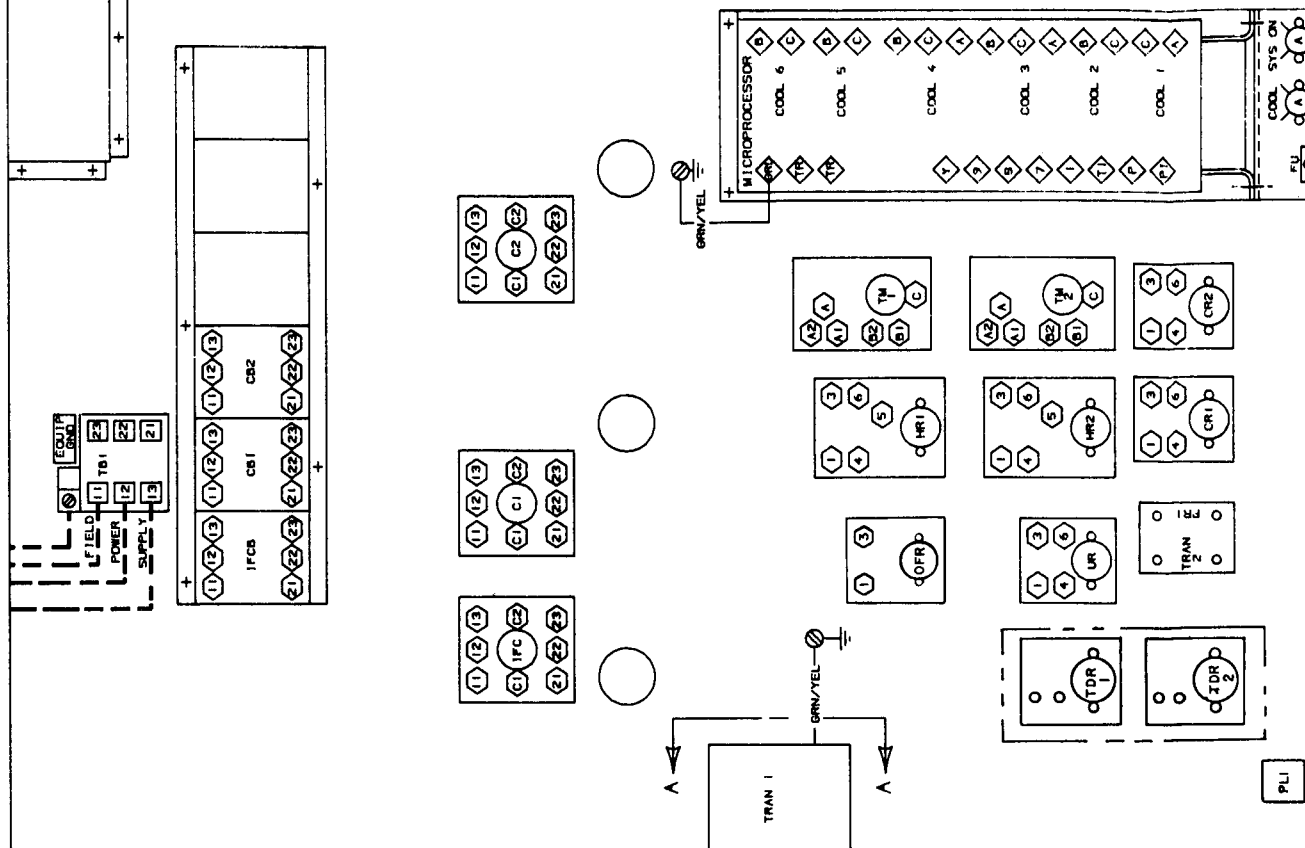
CB1

CB2

SCHEMATIC



COMPONENT ARRANGEMENT



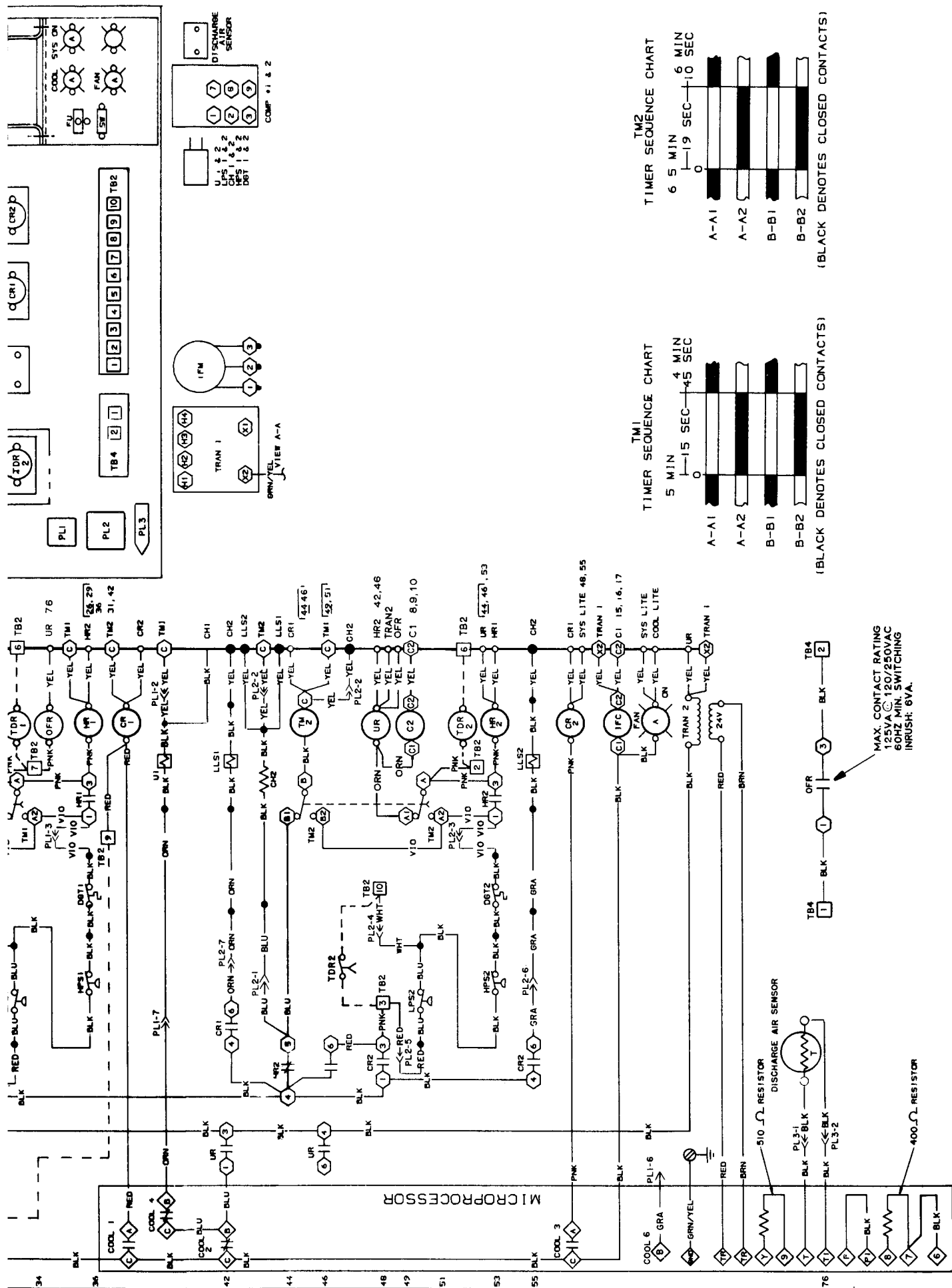


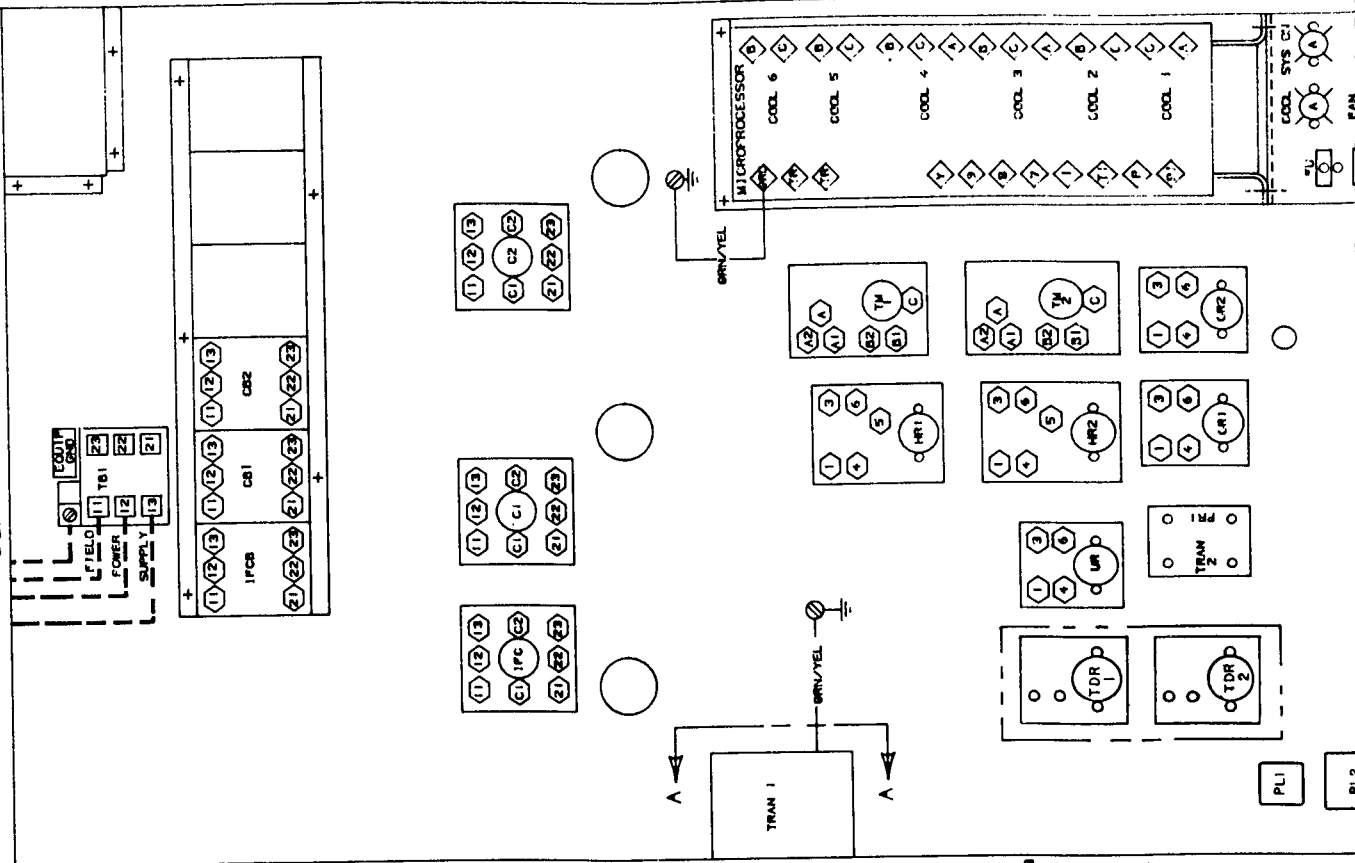
Fig. 7 — Label Diagram, 50BK044; 208/230-3-60

CB2

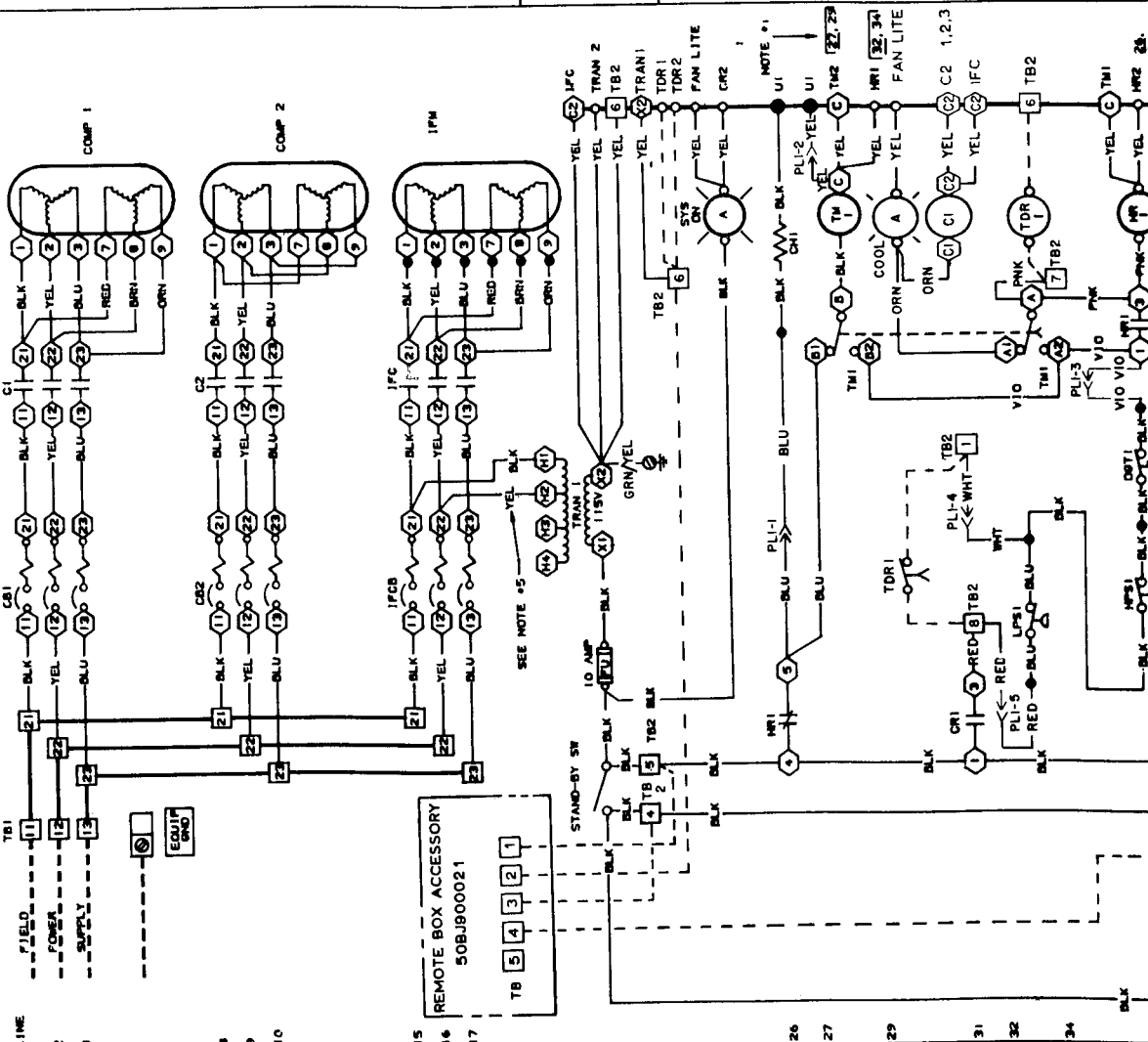
CB1

IFCB

COMPONENT ARRANGEMENT



SCHEMATIC



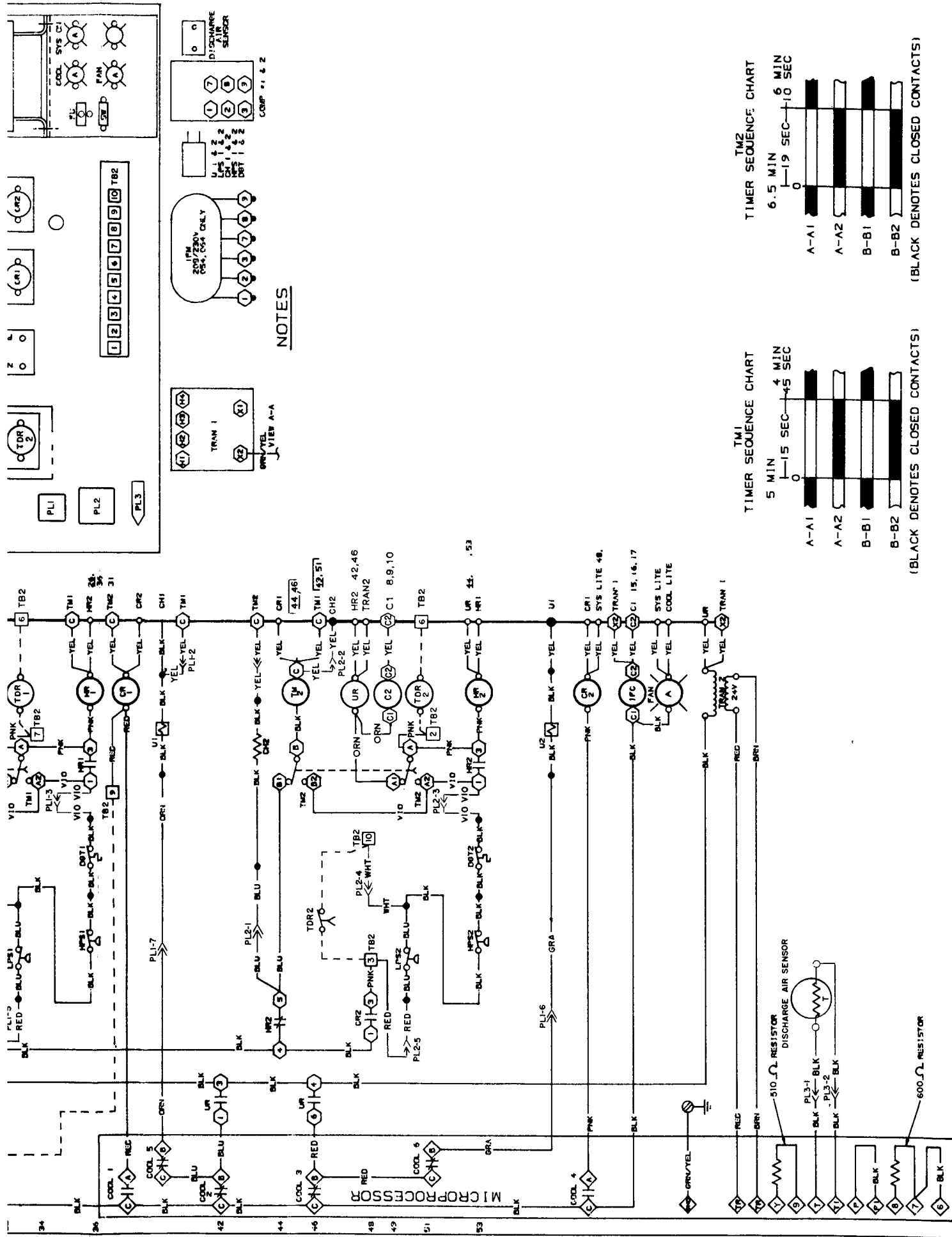


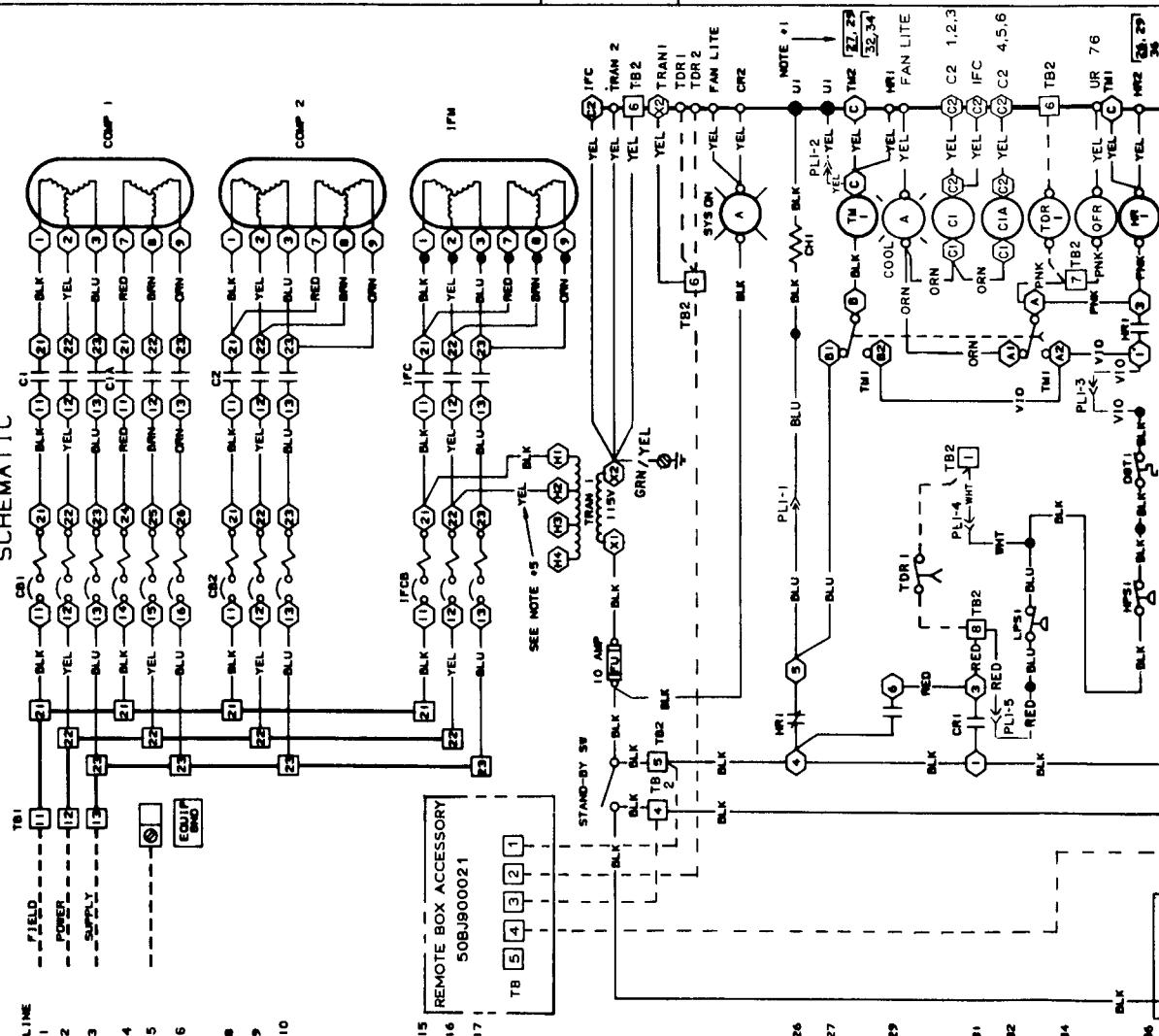
Fig. 8 — Label Diagram, 50BJ054; 208/230-3-60

IFCB

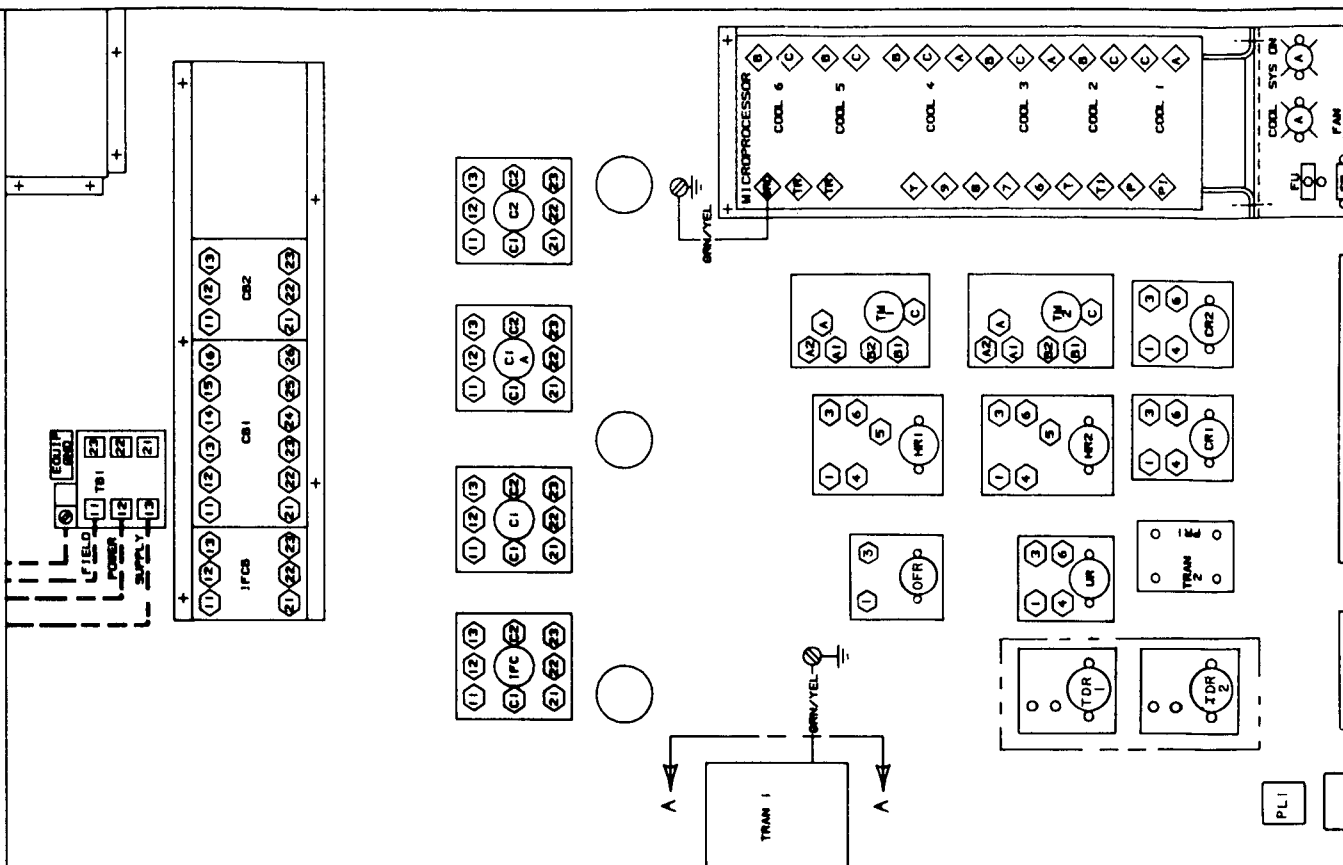
CB1

CB2

SCHEMATIC



COMPONENT ARRANGEMENT



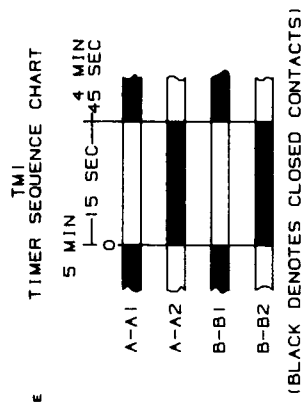


Fig. 9 — Label Diagram, 50BK054; 208/230-3-60

FCB



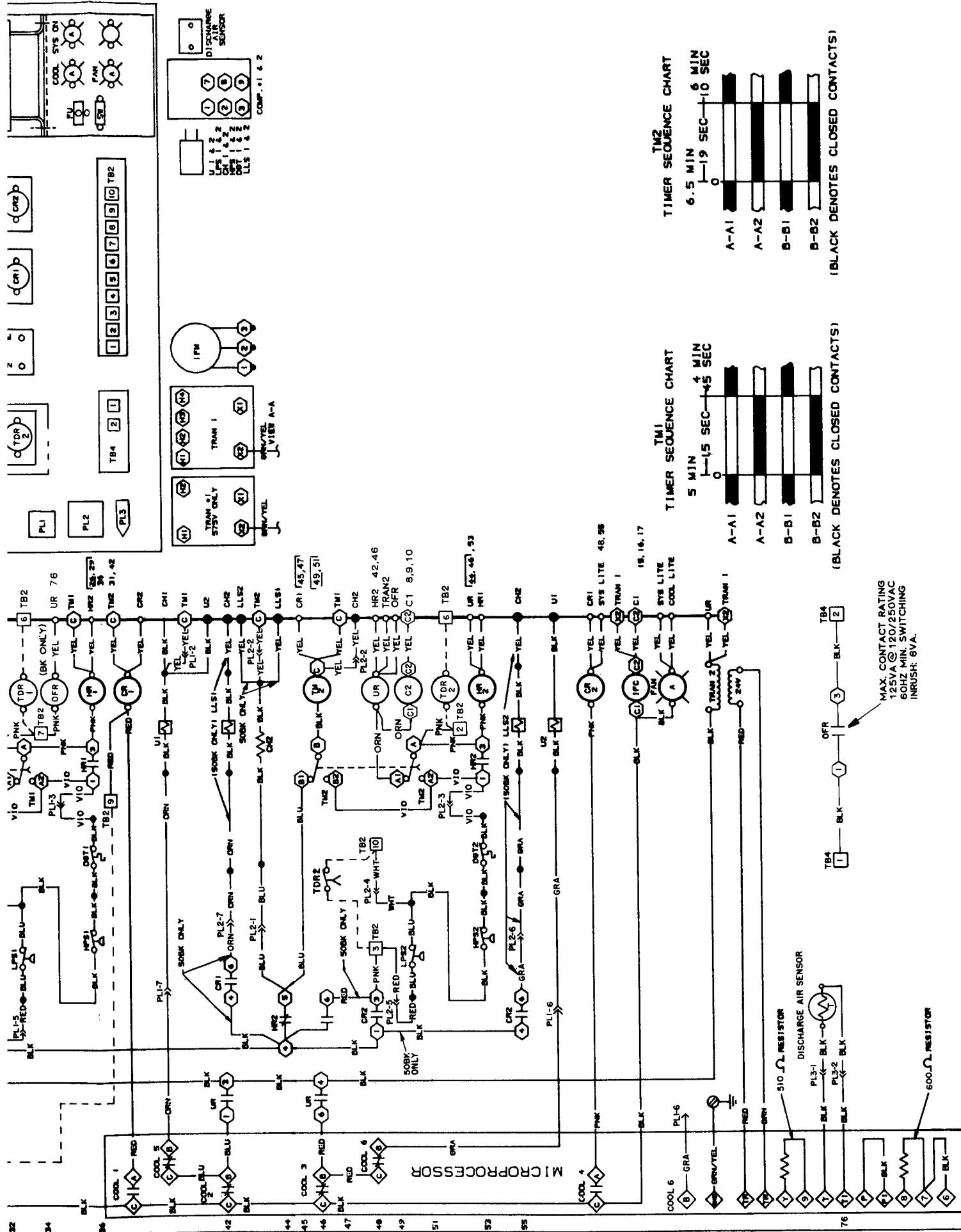


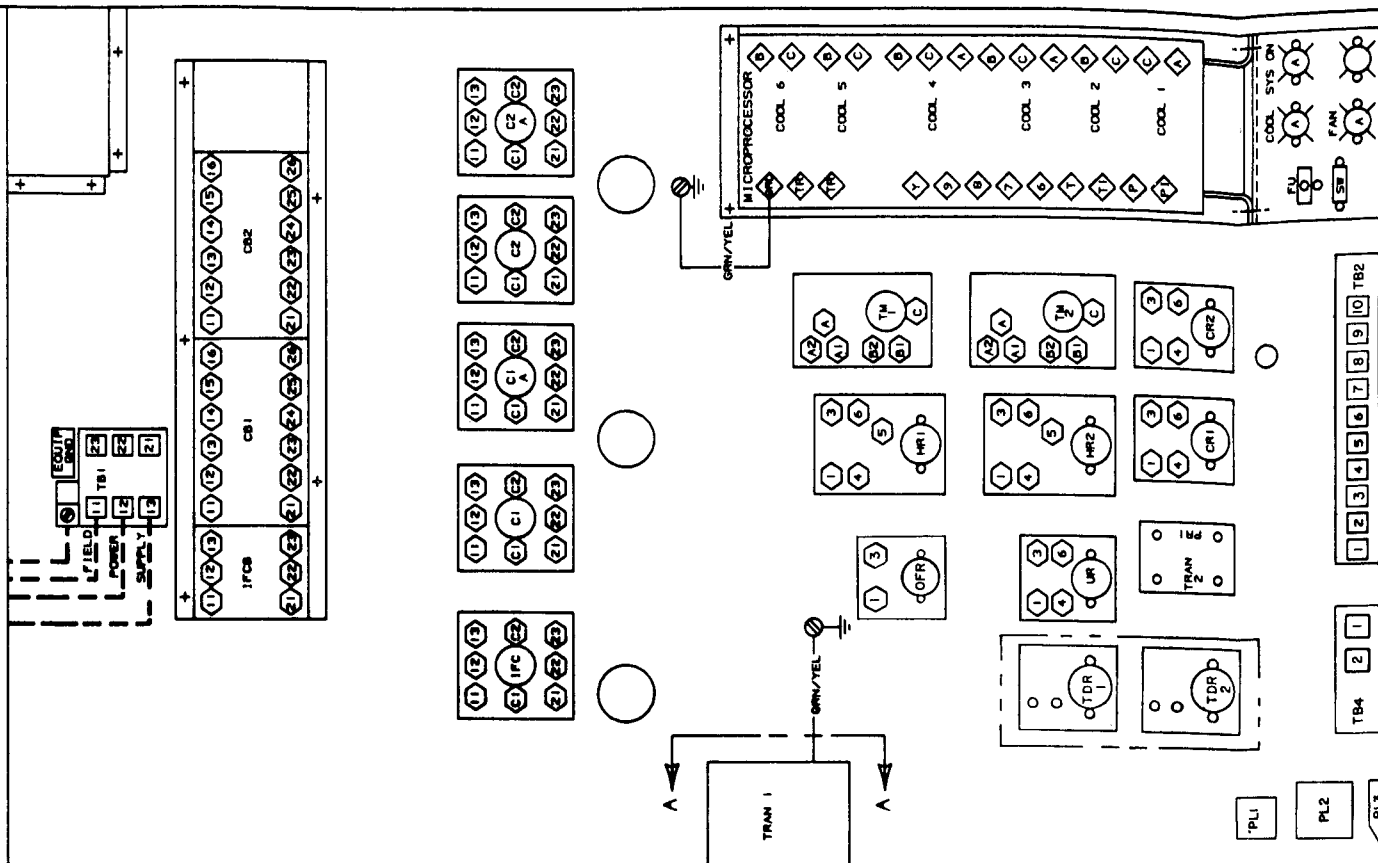
Fig. 10 — Label Diagram, 50BJ, BK054 and 064; 460, 575-3-60

IFCB

CBI

CB2

COMPONENT ARRANGEMENT



SCHEMATIC

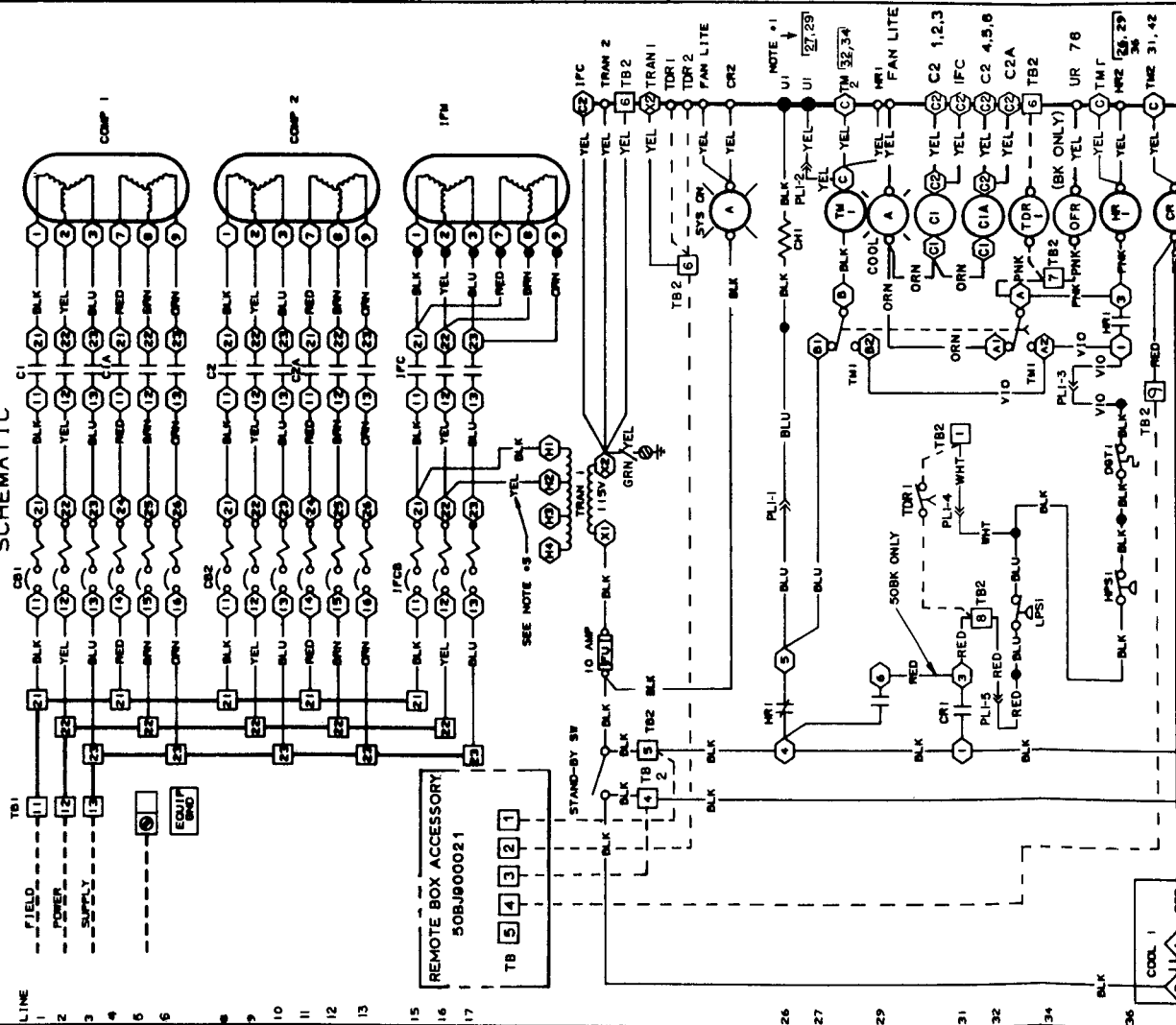
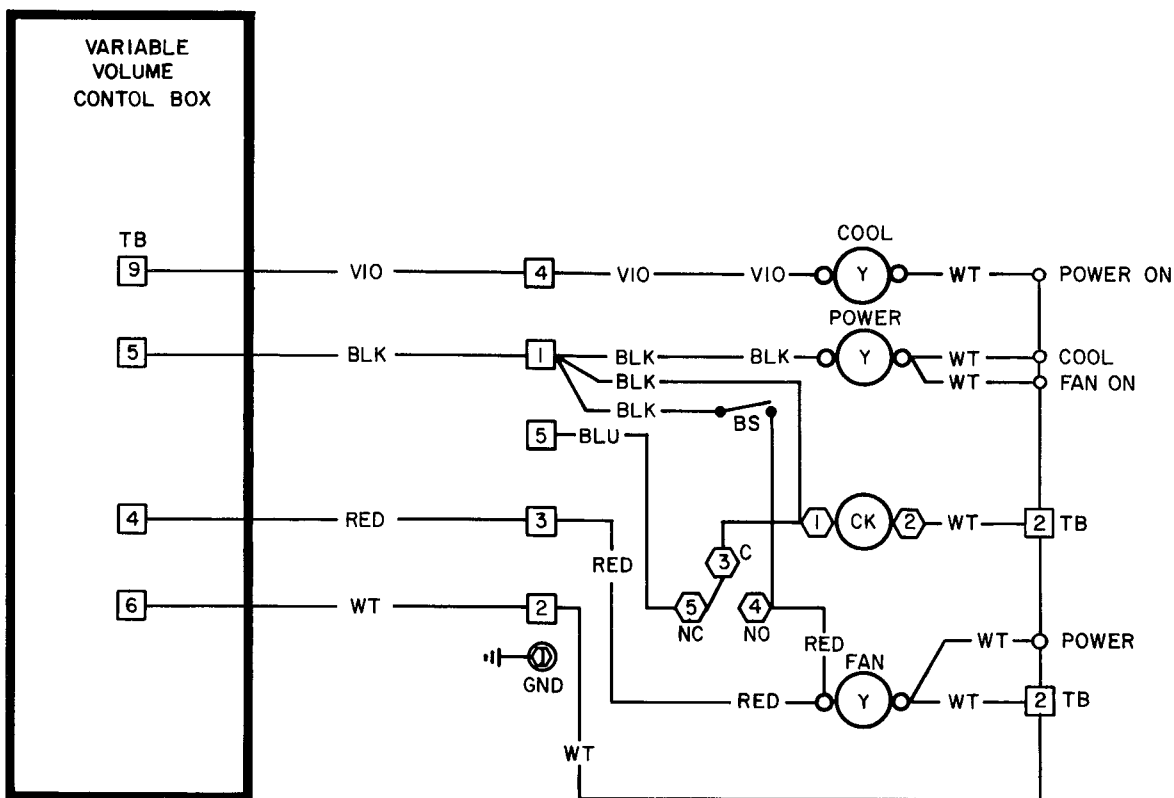


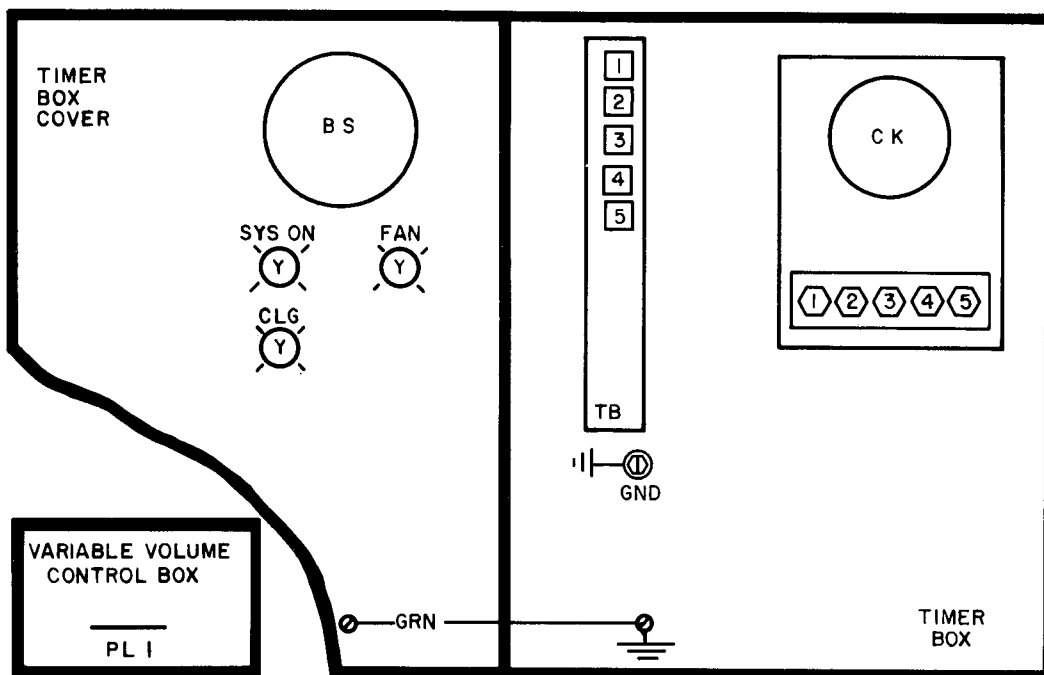


Fig. 11 — Label Diagram, 50BJ, BK064; 208/230-3-60

SCHEMATIC



COMPONENT ARRANGEMENT



→ **Fig. 12 — Label Diagram, Accessory Timer Control Box (60-Hz) —
Units 50BJ, BK044, 054 and 064**

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

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Form 50BJ,BK-2W Supersedes 50BJ,BK-1W

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