



50TJ004-014 Single-Package Rooftop Electric Cooling Units 50/60 Hz



Wiring Diagrams

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UNIT	UNIT VOLTAGE-PHASE-Hz	TYPE	NUMBER	FIG. NO.
50TJ004,005	208/230-1-60	Schematic/Component Arrangement	50DK506242	1
	208/230-3-60	Schematic/Component Arrangement	50DK506243	2
	460-3-60	Schematic/Component Arrangement	50DK506288	3
	575-3-60	Schematic/Component Arrangement	50DK506244	4
50TJ006	208/230-1-60	Schematic/Component Arrangement	50DK506985	5
	208/230-3-60	Schematic/Component Arrangement	50DK506982	6
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50TJ007	208/230-3-60	Schematic/Component Arrangement	50DK506289	9
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	230-3-50	Schematic/Component Arrangement	50DK506290	11
	400-3-50	Schematic/Component Arrangement	50DK506291	12
50TJ008-012	208/230-3-60	Schematic/Component Arrangement	50DK506941	13
	460-3-60	Schematic/Component Arrangement	50DK506941	13
	575-3-60	Schematic/Component Arrangement	50DK506944	14
	230-3-50	Schematic/Component Arrangement	50DK506498	15
	400-3-50	Schematic/Component Arrangement	50DK506499	16
50TJ014	208/230-3-60	Schematic/Component Arrangement	50DK506942	17
	460-3-60	Schematic/Component Arrangement	50DK506943	18
	575-3-60	Schematic/Component Arrangement	50DK506945	19
	230-3-50	Schematic/Component Arrangement	50DK506498	15
	400-3-50	Schematic/Component Arrangement	50DK506499	16

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

ELECTRIC HEAT

UNIT (VOLTAGE-PHASE)	UNIT SIZE	ELECTRIC HEATER (kW)	LABEL	FIG. NO.
208/230-1	50TJ004-006	ALL	3-05531	20
208/230-3	50TJ004-007	ALL	3-05607	21
	50TJ008,009	18.6/24.8	3-05626	22
	50TJ008-014	7.8/10.4 12.0/16.0	3-05623	23
		24.0/32.0 31.8/42.4	3-05626	22
		37.5/50.0	3-05626	22
460-3	50TJ004-007	ALL	3-05532	24
	50TJ008,009	13.9	3-05624	25
	50TJ008-014	16.5	3-05624	25
		27.8 33.0 41.7	3-05625	26
		50.0	3-05625	26
	50TJ012,014	50.0	3-05625	26
575-3	50TJ008-014	18.0	3-05624	25
		36.0	3-05625	26
	50TJ012,014	54.0	3-05625	26

ACCESSORIES

UNIT	COMPONENT	FIG. NO.
50TJ004-014	Accusensor™ II Enthalpy Control	27
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50TJ004-007	Motormaster® Device	29
50TJ004-007	Motormaster II Device	30
50TJ008-014		31
50TJ004-007	Time Guard® II Device	32
50TJ008-012		33
50TJ004-014	Remote Control Panel	34
50TJ004-014	Electronic Thermostat	35

OPERATING SEQUENCE

Cooling, Units Without Economizer — When thermostat calls for cooling, terminals G and Y1 are energized. The indoor (evaporator) fan contactor (IFC), and compressor contactor no. 1 (C1) are energized and evaporator-fan motor, compressor no. 1 and condenser fans start. The condenser-fan motor runs continuously while unit is cooling. If the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts (50TJ008-014).

Heating, Units Without Economizer (If Accessory or Optional Heater is Installed) — Upon a call for heating through terminal W1, IFC and heater contactor no. 1 (HC1) are energized. On units equipped for 2 stages of heat, when additional heat is needed, HC2 is energized through W2.

Cooling, Units With Economizer — When the outdoor-air temperature is above the outdoor-air thermostat (OAT) setting and the room thermostat calls for cooling, compressor contactor no. 1 is energized to start compressor no. 1 and the condenser-fan motor. The evaporator-fan motor is energized and the economizer damper moves to the minimum position. Upon a further call for cooling, compressor contactor no. 2 will be energized (50TJ008-014), starting compressor no. 2. After the thermostat is satisfied, the damper moves to the fully closed position.

When the outdoor-air temperature is below the OAT setting and the thermostat calls for cooling, the economizer dampers move to the minimum position. If the supply-air temperature is above 57 F, the damper continues to open until it reaches the fully open position or until the supply-air temperature drops below 57 F.

When the supply-air temperature falls to between 57 F and 52 F, the damper will remain at an intermediate open position. If the supply-air temperature falls below 52 F, the damper will modulate closed until it reaches the minimum position or until the supply-air temperature is above 52 F. When the thermostat is satisfied, the damper will move to the fully closed position.

If the outdoor air alone cannot satisfy the cooling requirements of the conditioned space, economizer cooling is integrated with mechanical cooling, providing second-stage cooling. Compressor no. 1 and the condenser fan will be energized and the position of the economizer damper will be determined by the supply-air temperature. Compressor no. 2 (50TJ008-014) is locked out.

When the second stage of cooling is satisfied, the compressor and condenser-fan motor will be deenergized. The damper position will be determined by the supply-air temperature.

When the first stage of cooling is satisfied, the damper will move to fully closed position.

Heating, Units With Economizer (If Accessory or Optional Heater is Installed) — When the room thermostat calls for heat through terminal W1, the evaporator-fan contactor and heater contactor no. 1 are energized. On units equipped for 2 stages of heat, when additional heat is needed, heater contactor no. 2 is energized through W2. The economizer damper moves to the minimum position during heating. When the thermostat is satisfied, the damper moves to the fully closed position.

LEGEND FOR FIG. 1 TO 19 AND 34

AHA	— Adjustable Heat Anticipator
BRK W/AT	— Breaks With Amp Turns
C	— Contactor, Compressor
CAP	— Capacitor
CB	— Circuit Breaker
CC	— Cooling Compensator
CH	— Crankcase Heater
CLO	— Compressor Lockout
CLS	— Compressor Lockout Switch
COMP	— Compressor Motor
CT	— Current Transformer
D	— Diode
DM	— Damper Motor
DU	— Dummy Terminal
EC	— Enthalpy Control
ECON	— Economizer
EPS	— Emergency Power Supply (9-Volt Battery)
EQUIP	— Equipment
ER	— Economizer Relay
FL	— Fuse Link
FPT	— Freeze Protection Thermostat
FU	— Fuse
GND	— Ground
HC	— Heater Contactor
HPS	— High-Pressure Switch
HTR	— Heater
IFC	— Indoor-Fan Contactor
IFCB	— Indoor-Fan Circuit Breaker
IFM	— Indoor-Fan Motor
IFR	— Indoor-Fan Relay
IP	— Internal Protector
L	— Light
LOR	— Lockout Relay
LPS	— Low-Pressure Switch
LS	— Limit Switch
MAT	— Mixed-Air Thermostat
MTR	— Motor
NC	— Normally Closed
NO	— Normally Open
OAT	— Outdoor-Air Thermostat

OFC	— Outdoor-Fan Contactor
OFM	— Outdoor-Fan Motor
OP	— Overcurrent Protector
P	— Plug
PL	— Plug Assembly
PRI	— Primary
QT	— Quadruple Terminal
R	— Relay
SAT	— Supply Air Thermostat
SEN	— Sensor
SW	— Switch
SW1	— Switch Fully Open
SW2	— Switch Fully Closed
SW3	— Switch Min. Vent Position
SW4	— Switch Max. Vent Position
TB	— Terminal Block
TC	— Thermostat Cooling
TDR	— Time-Delay Relay
TH	— Thermostat Heating
TRAN	— Transformer

 Terminal (Marked)

 Terminal (Unmarked)

 Terminal Block

 Splice

 Splice (Marked)

 Factory Wiring

 Field Control Wiring

 Field Power Wiring

 Accessory Wiring or Optional Wiring

 Accessory

 To indicate common potential only,
not to represent wiring

NOTES FOR FIG. 1 TO 19

1. If any of the original wire furnished must be replaced, it must be replaced with type 90 C wire or its equivalent.
2. Three-phase motors are protected under primary single phasing conditions.
3. Thermostat: HH07AT170,172,174 and PZ72-2783
Subbase: HH93AZ176,178 and PZ72-1882,1883
4. Set heat anticipator at 1 amp.

5. Use copper conductors only
6. Use copper, copper-clad aluminum or aluminum conductors.
7. TRAN is wired for 230 v unit. If unit is to be run with 208 v power supply, disconnect BLK wire from 208 v tap (ORN) and connect to 208 v tap (RED). Insulate end of 230 v tap (208/230 units only)

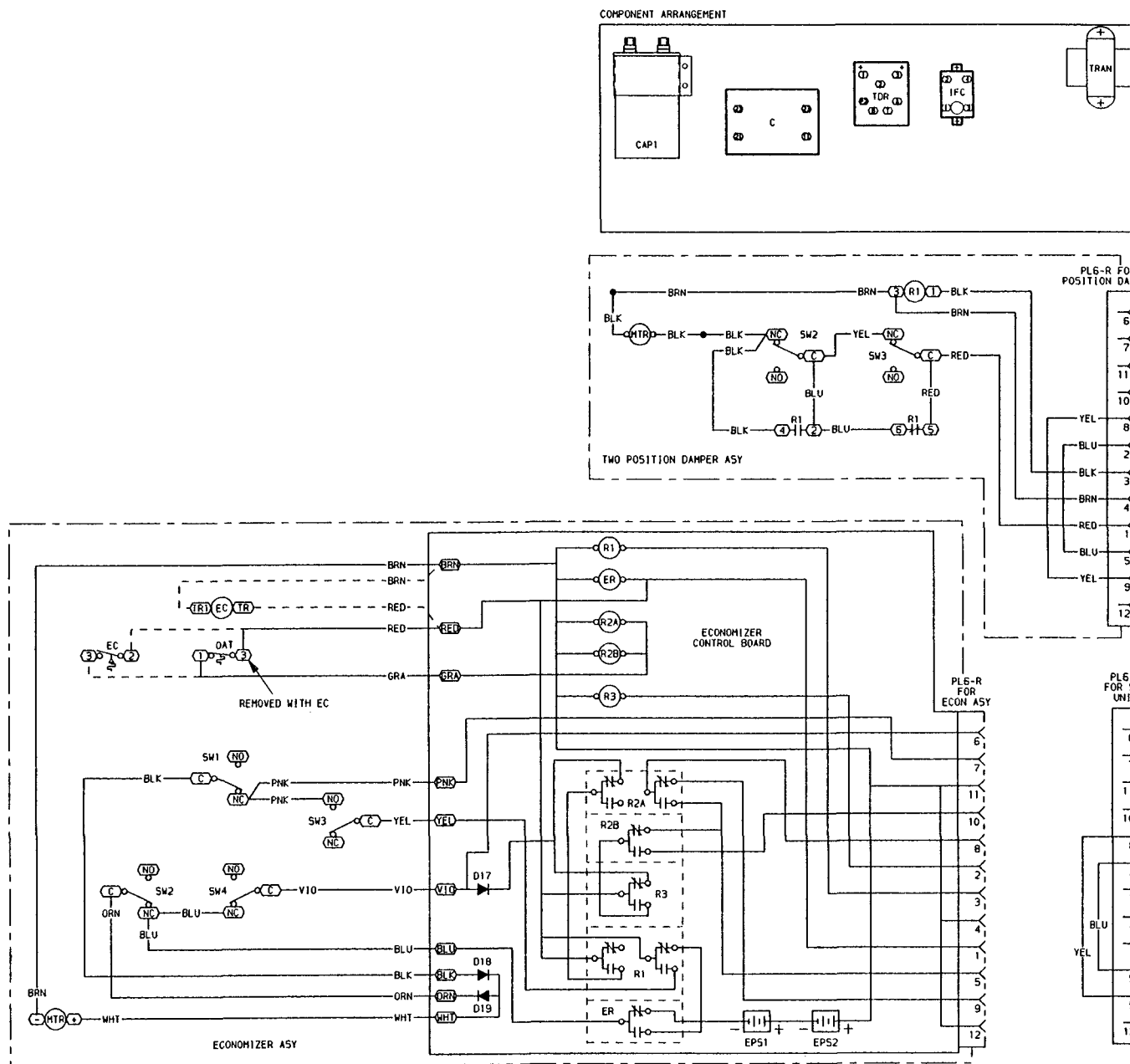
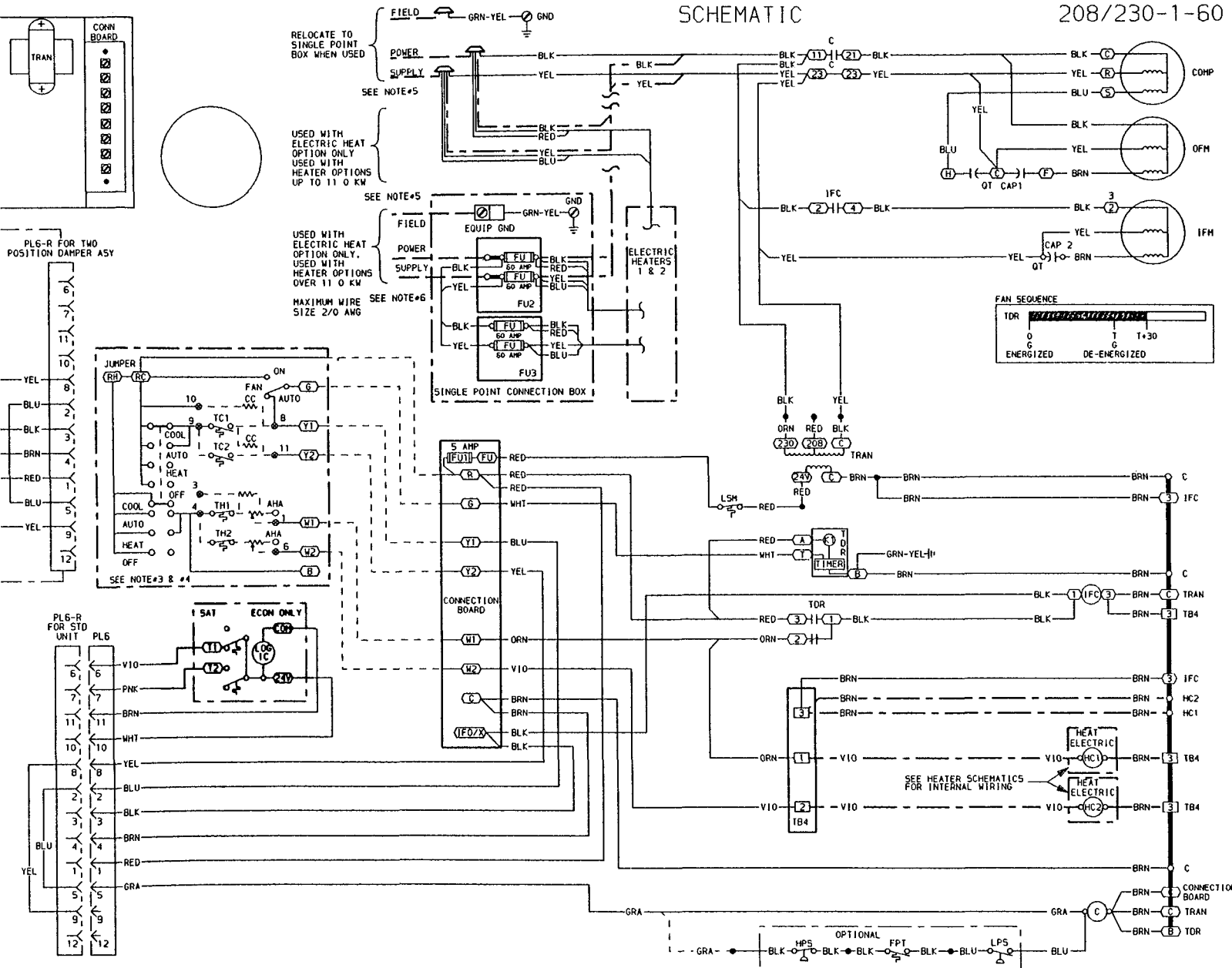


Fig. 1 — Label Diagram, Schematic and

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208/230-1-60



atic and Component Arrangement; 50TJ004,005; 208/230-1-60

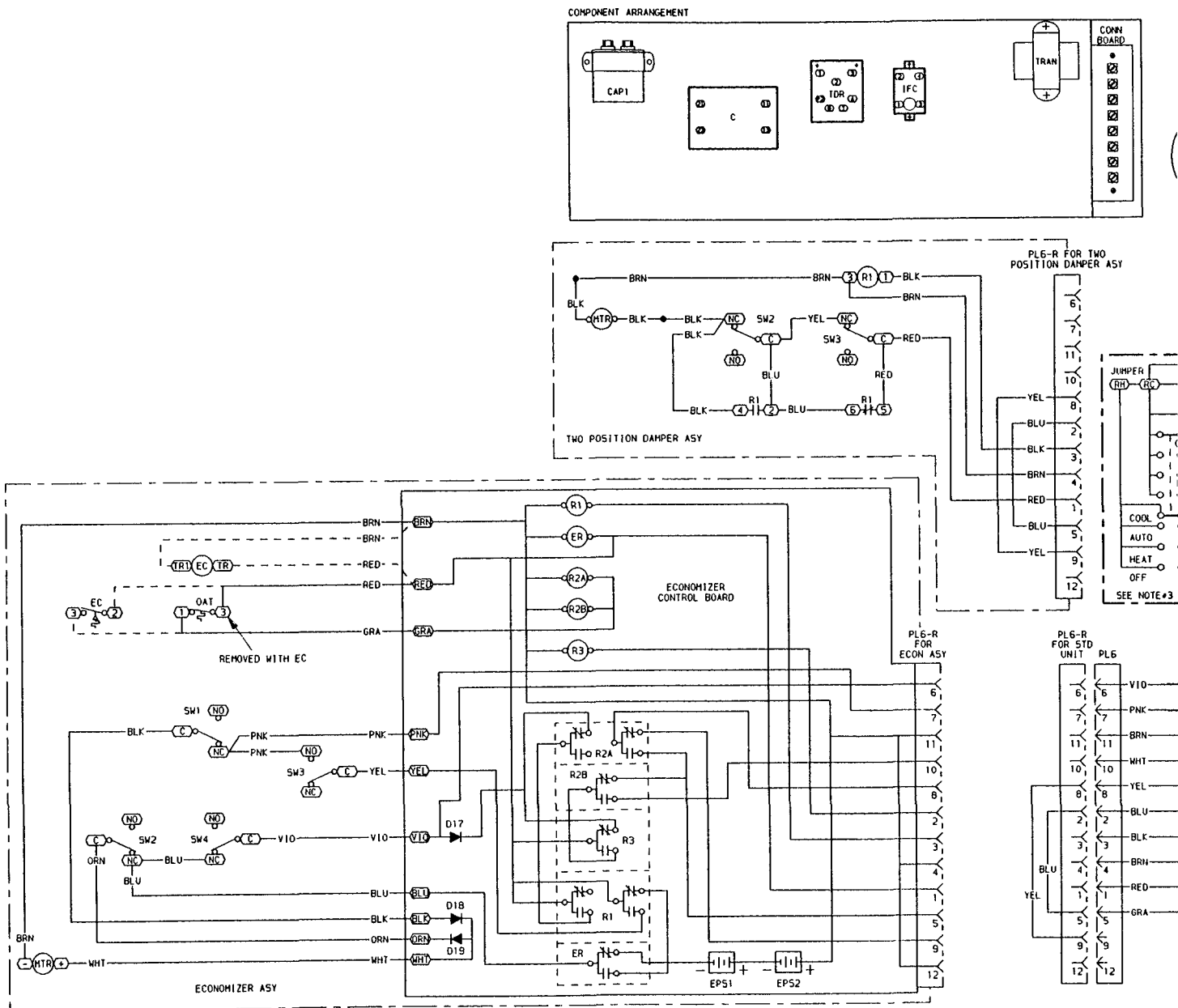
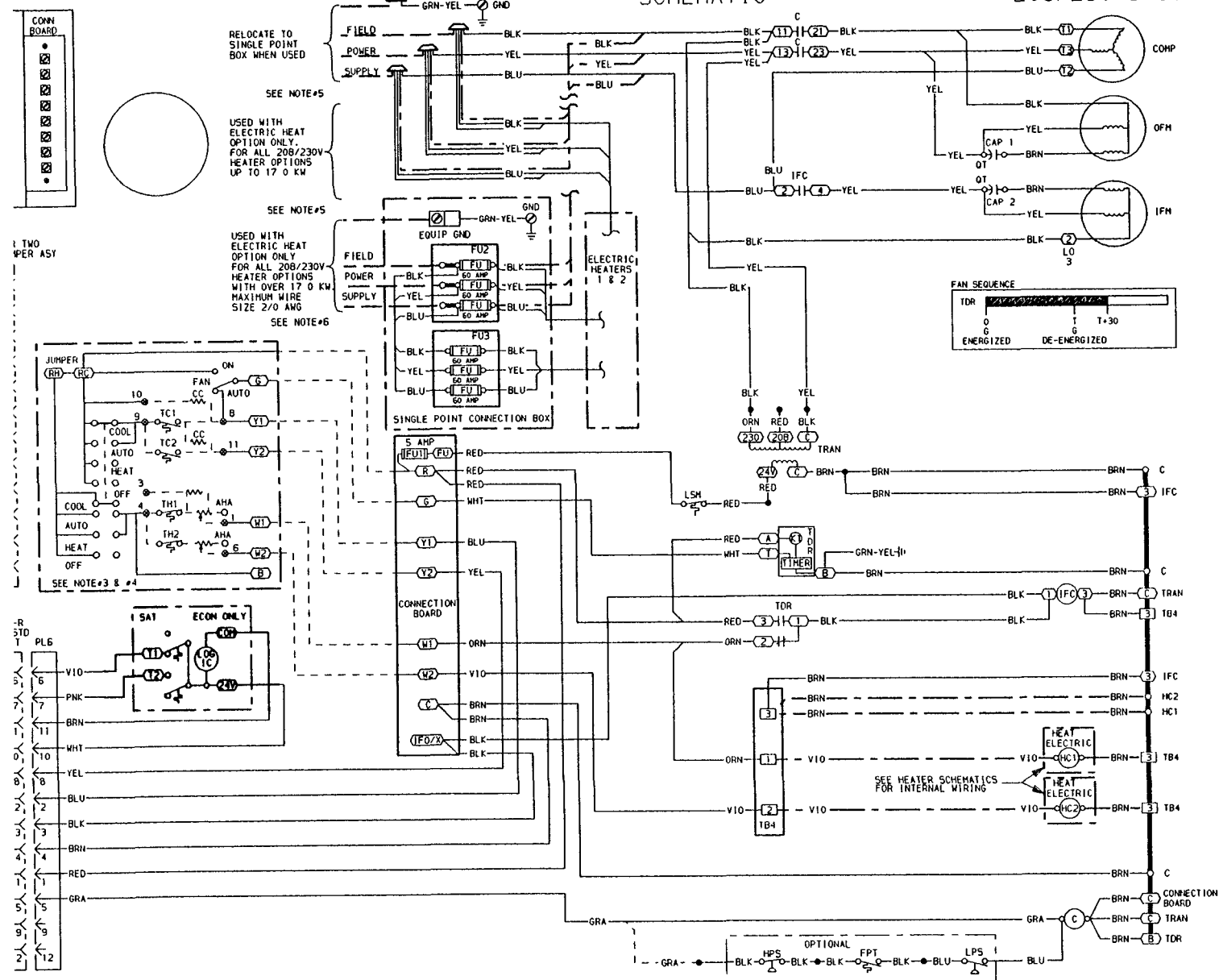


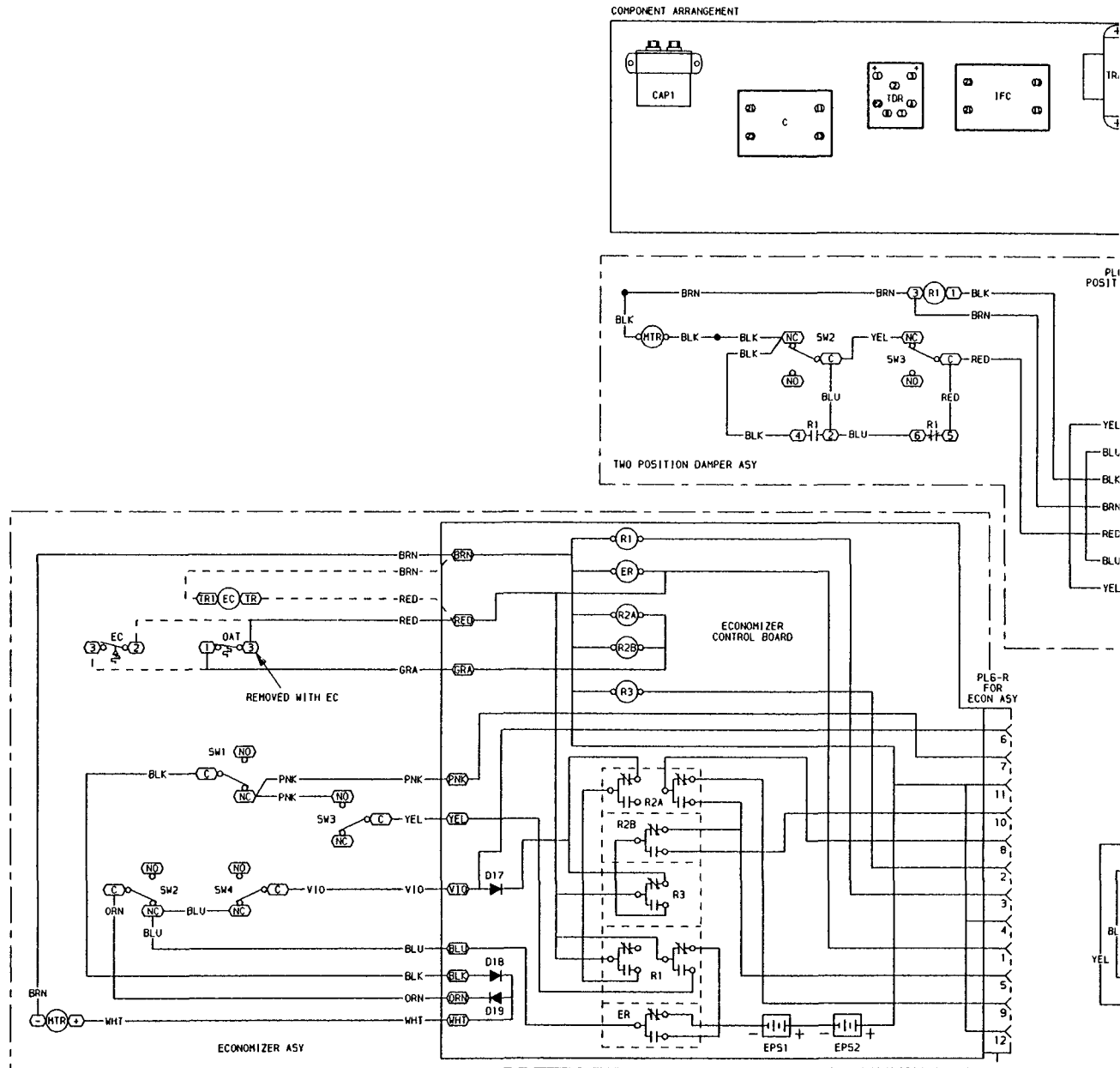
Fig. 2 — Label Diagram, Schematic and Compone

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208/230-3-60



Component Arrangement; 50TJ004,005; 208/230-3-60



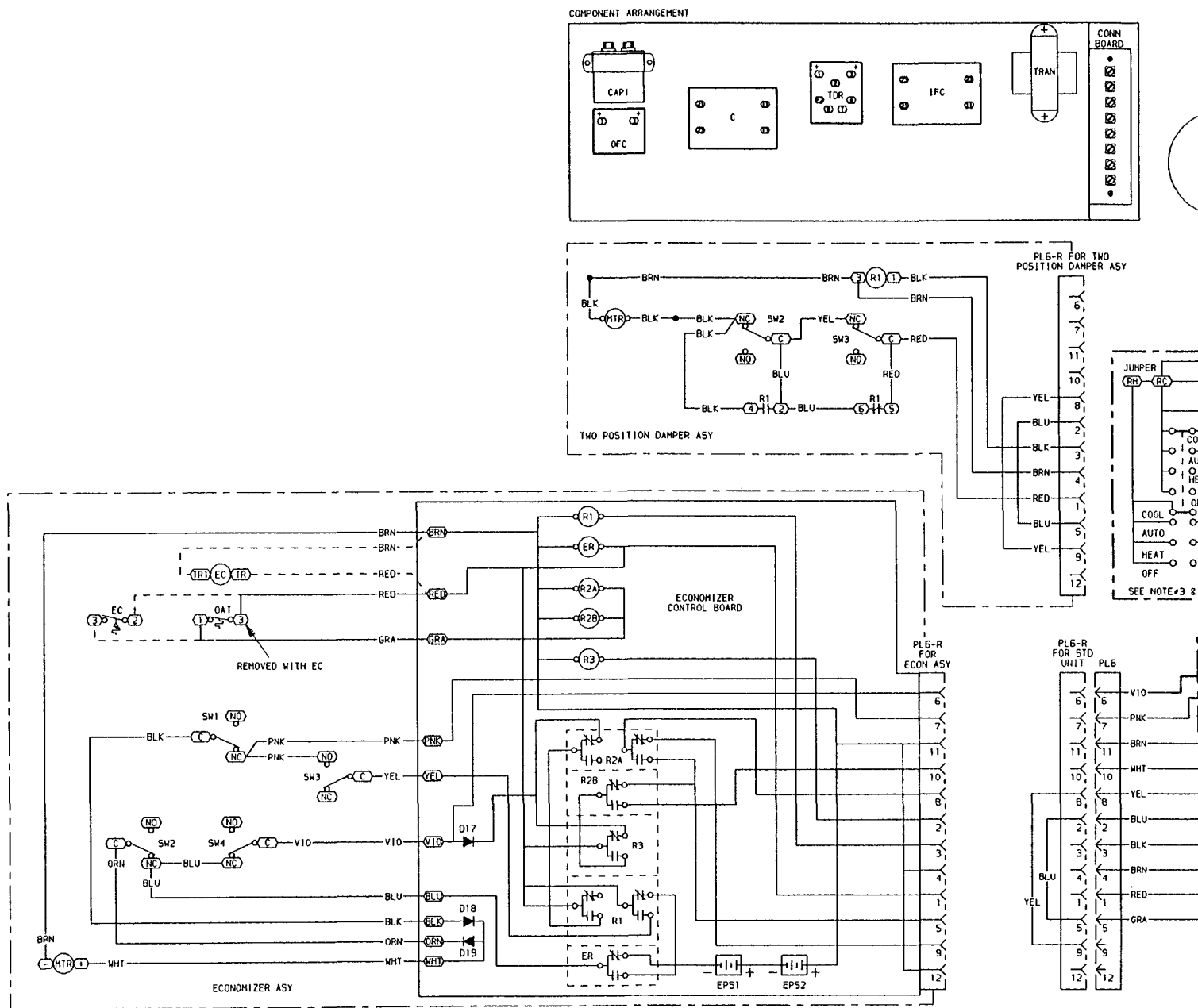
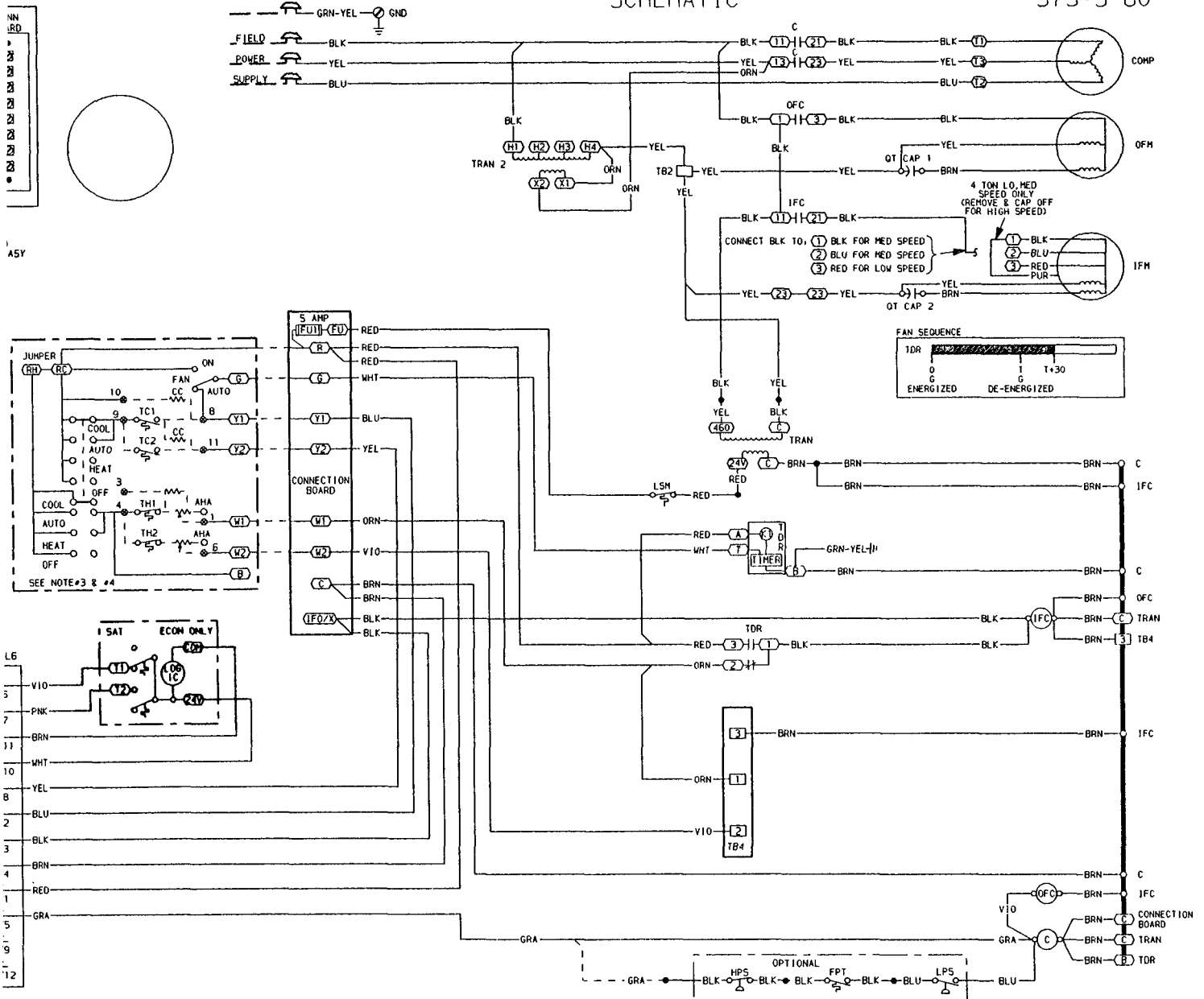


Fig. 4 – Label Diagram, Schematic and Component

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575-3-60



Component Arrangement; 50TJ004,005; 575-3-60

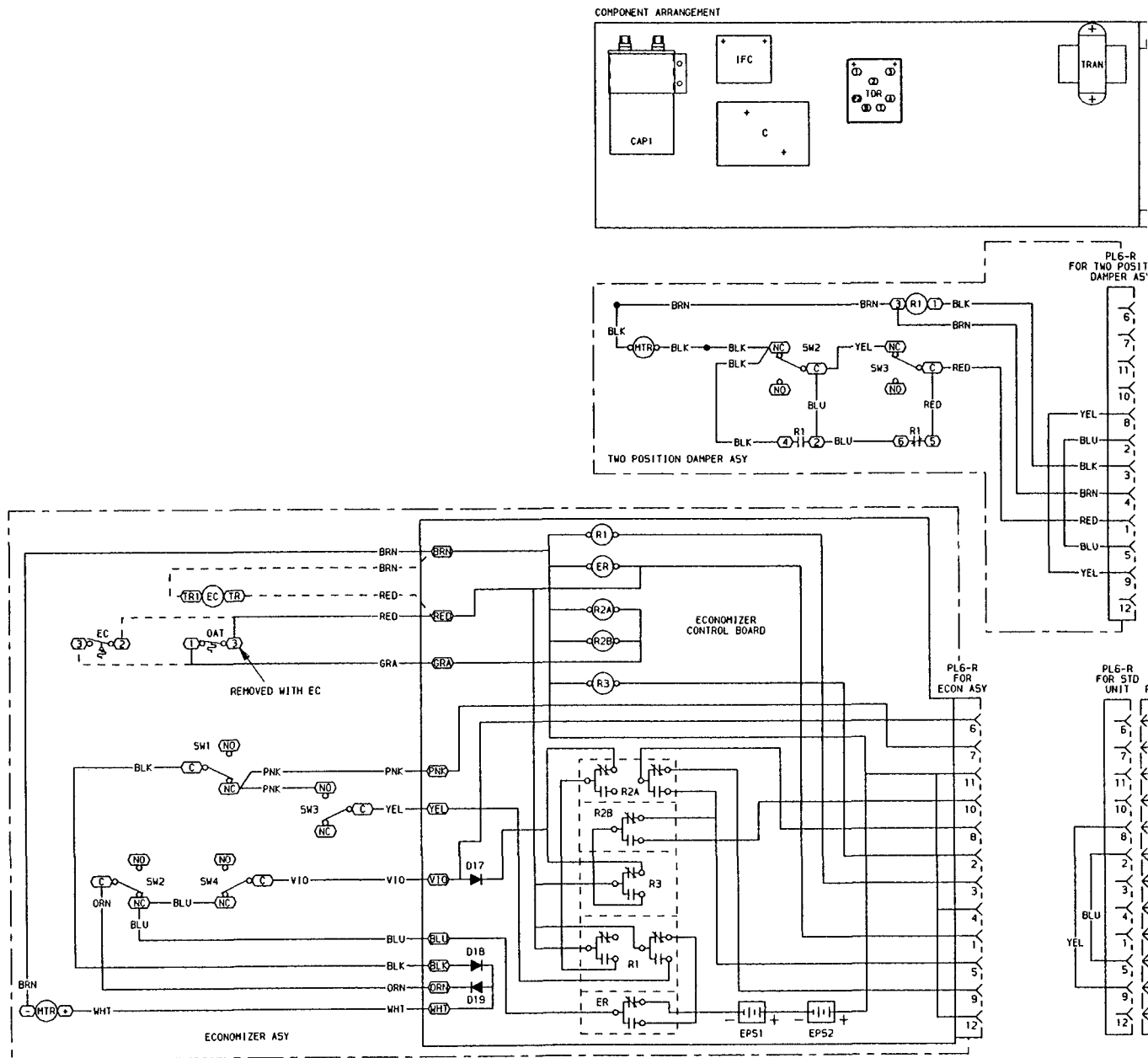


Fig. 5 – Label Diagram, Schematic and

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208/230-1-60

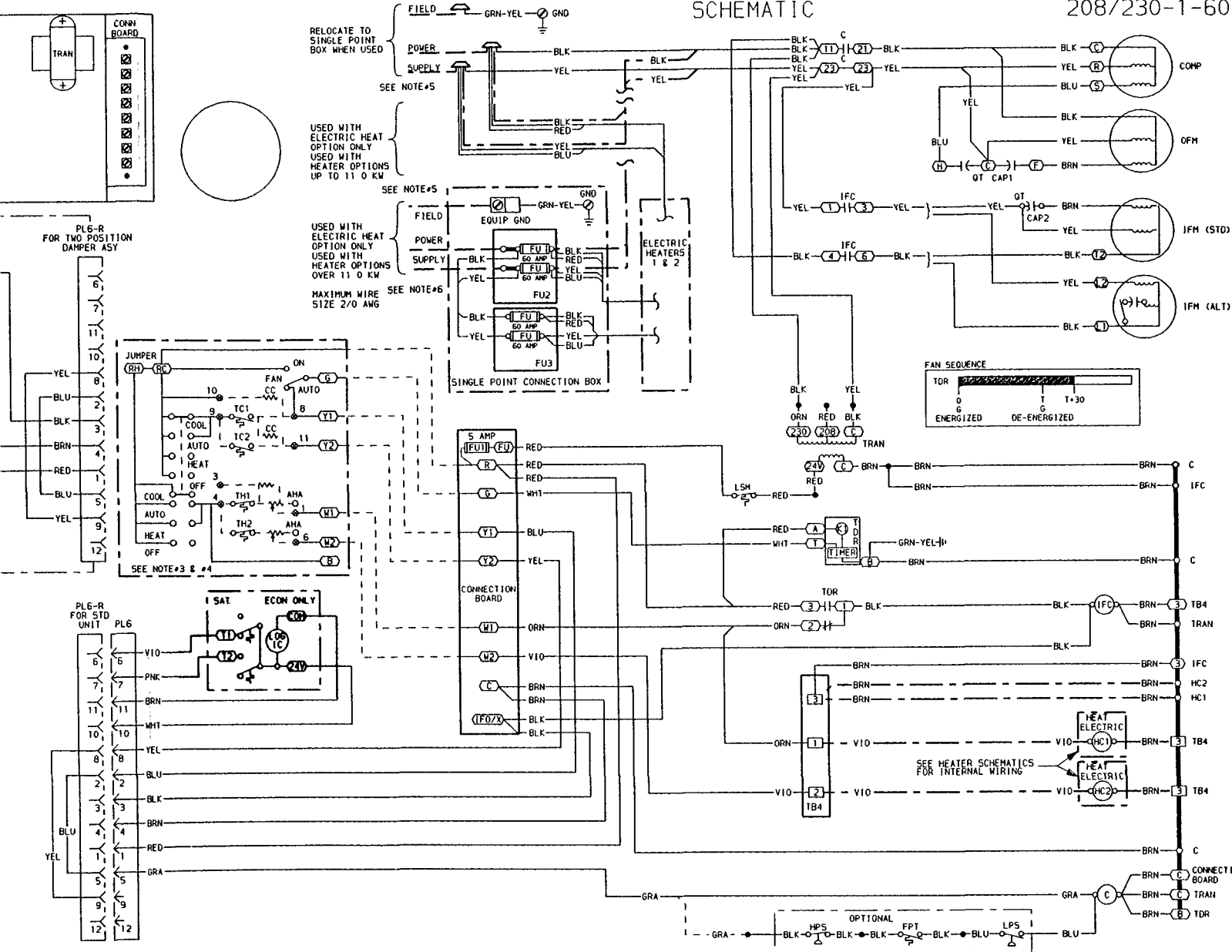


Diagram and Component Arrangement; 50TJ006, 208/230-1-60

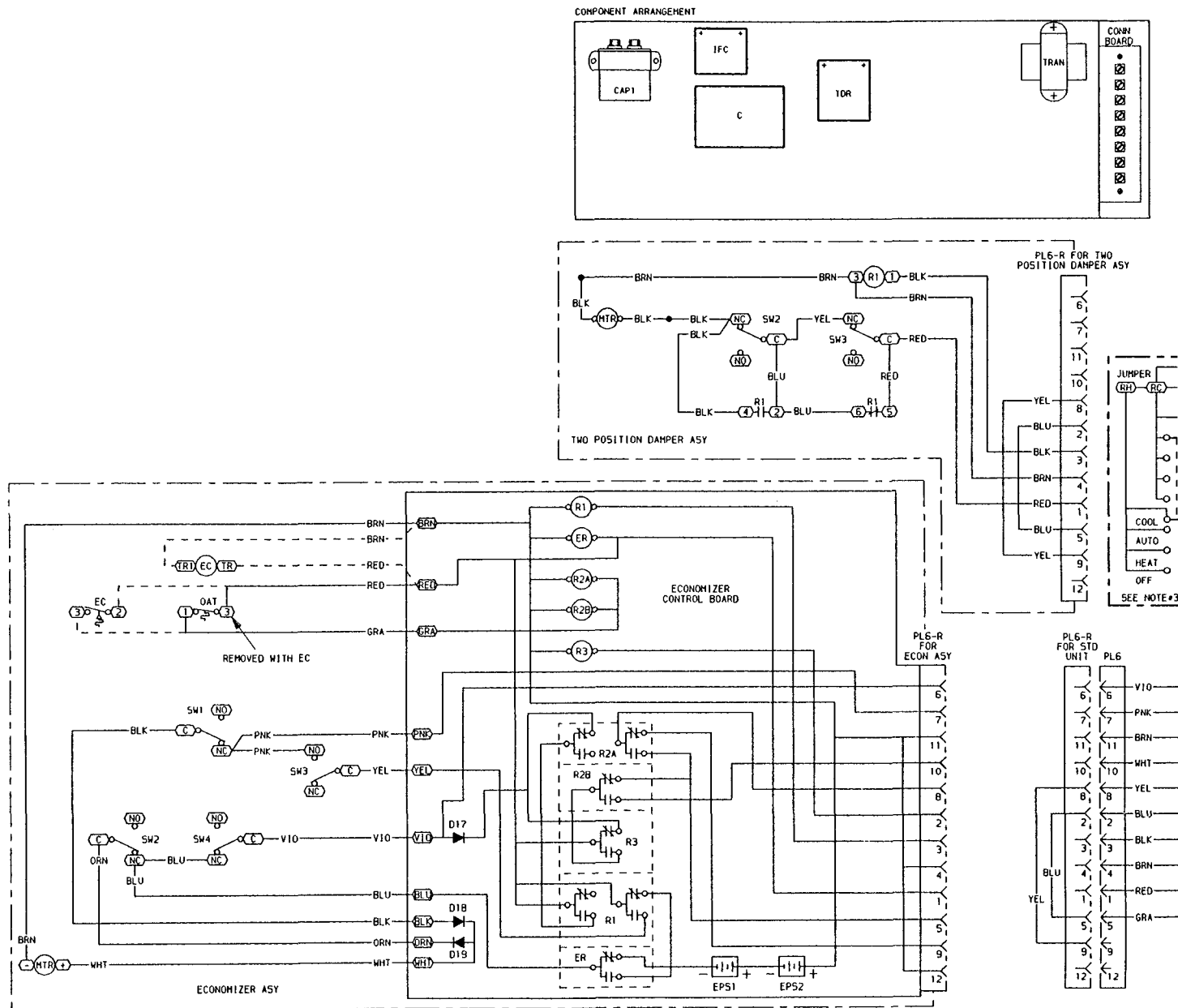
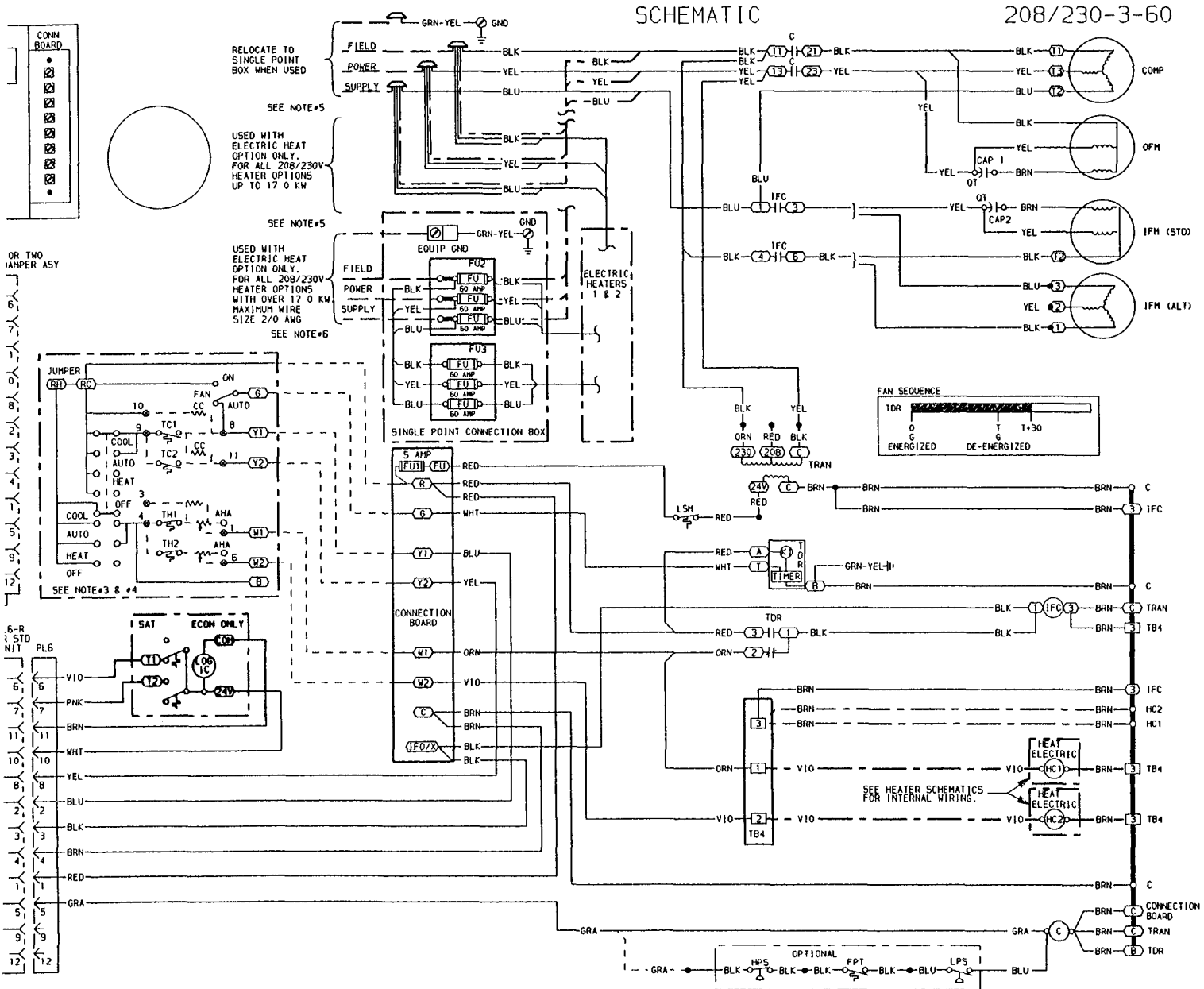


Fig. 6 — Label Diagram, Schematic and Compo



and Component Arrangement; 50TJ006, 208/230-3-60

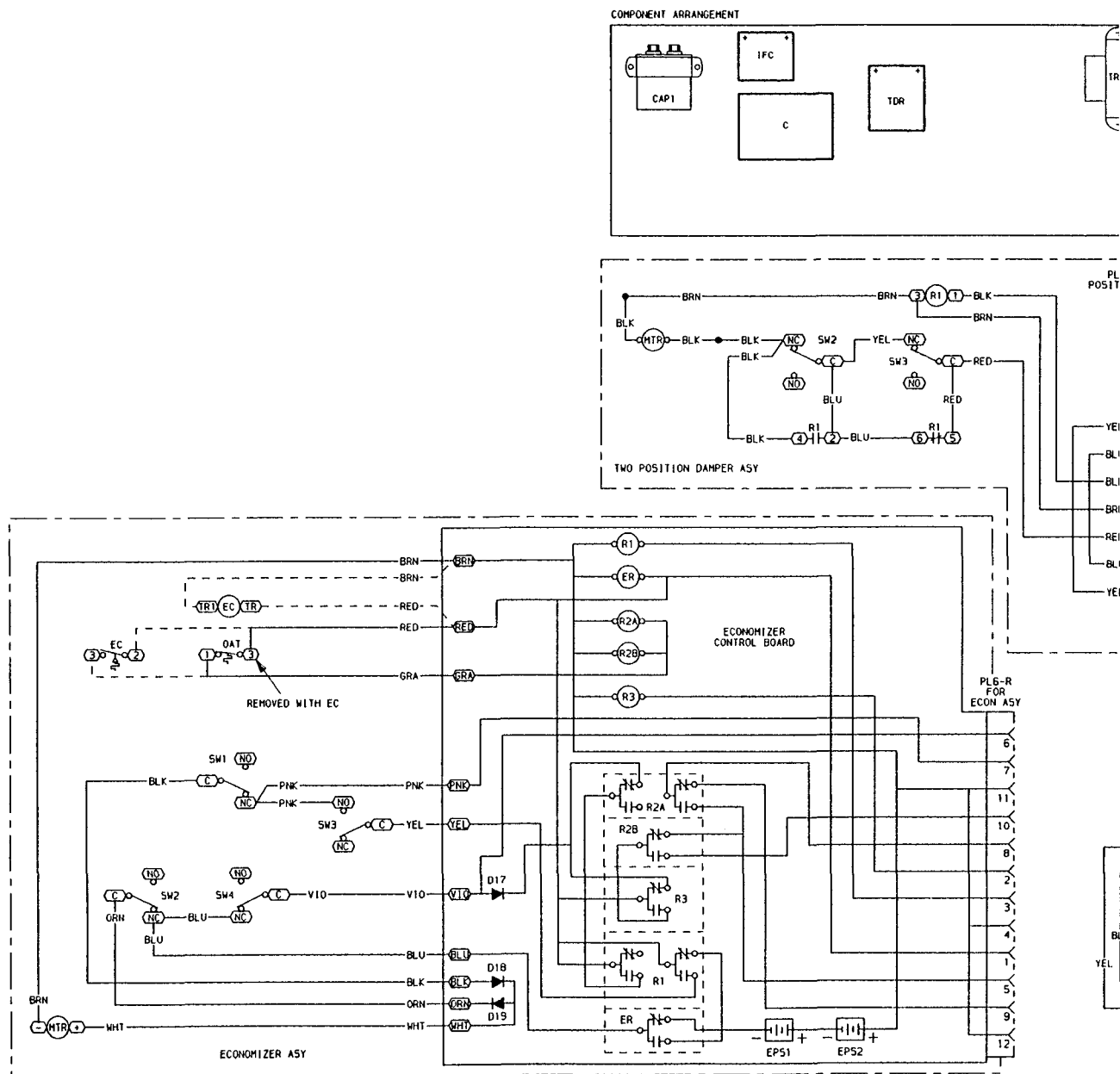


Fig. 7 – Label Diagram, Schematic



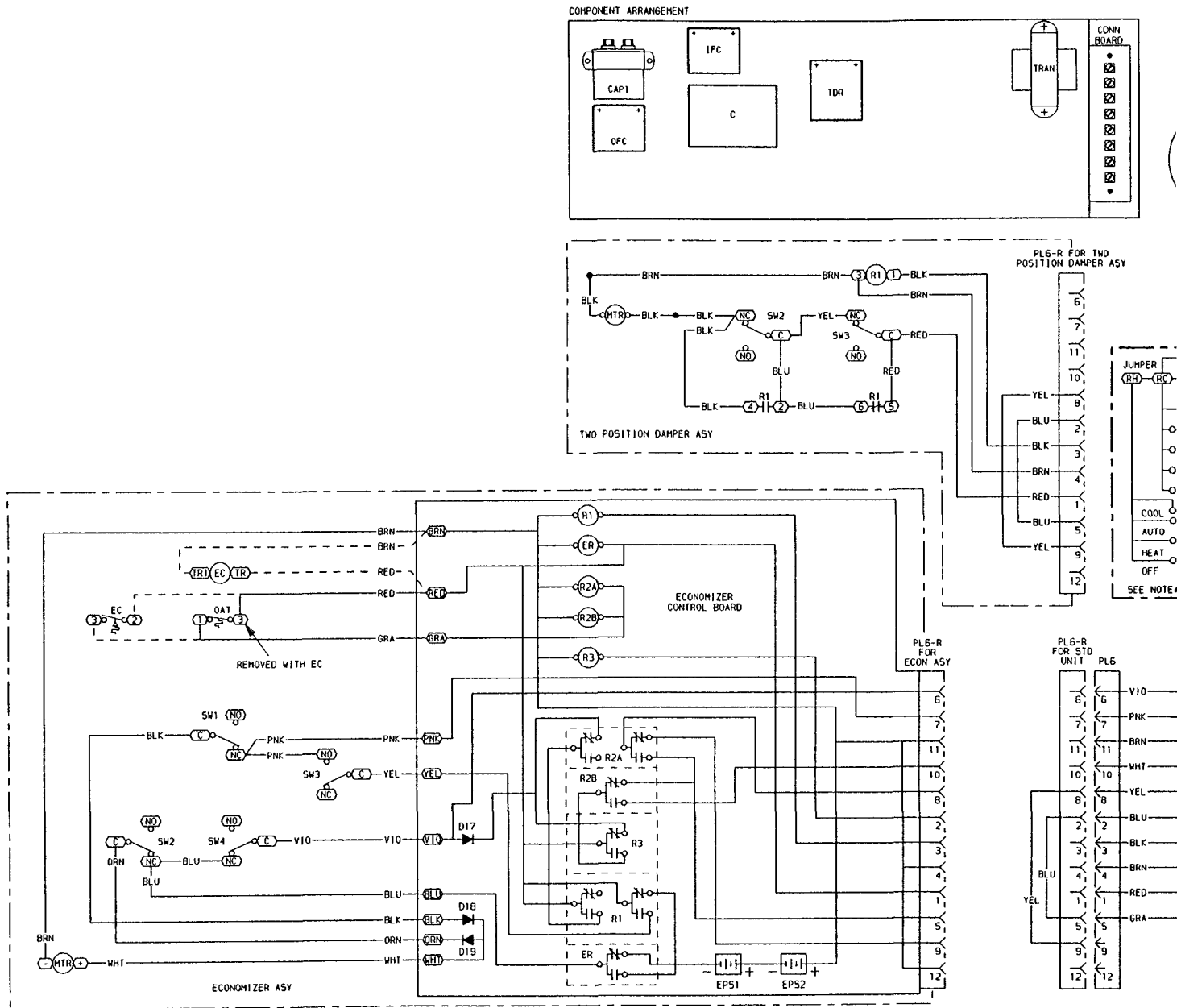


Fig. 8 — Label Diagram, Schematic and Comp

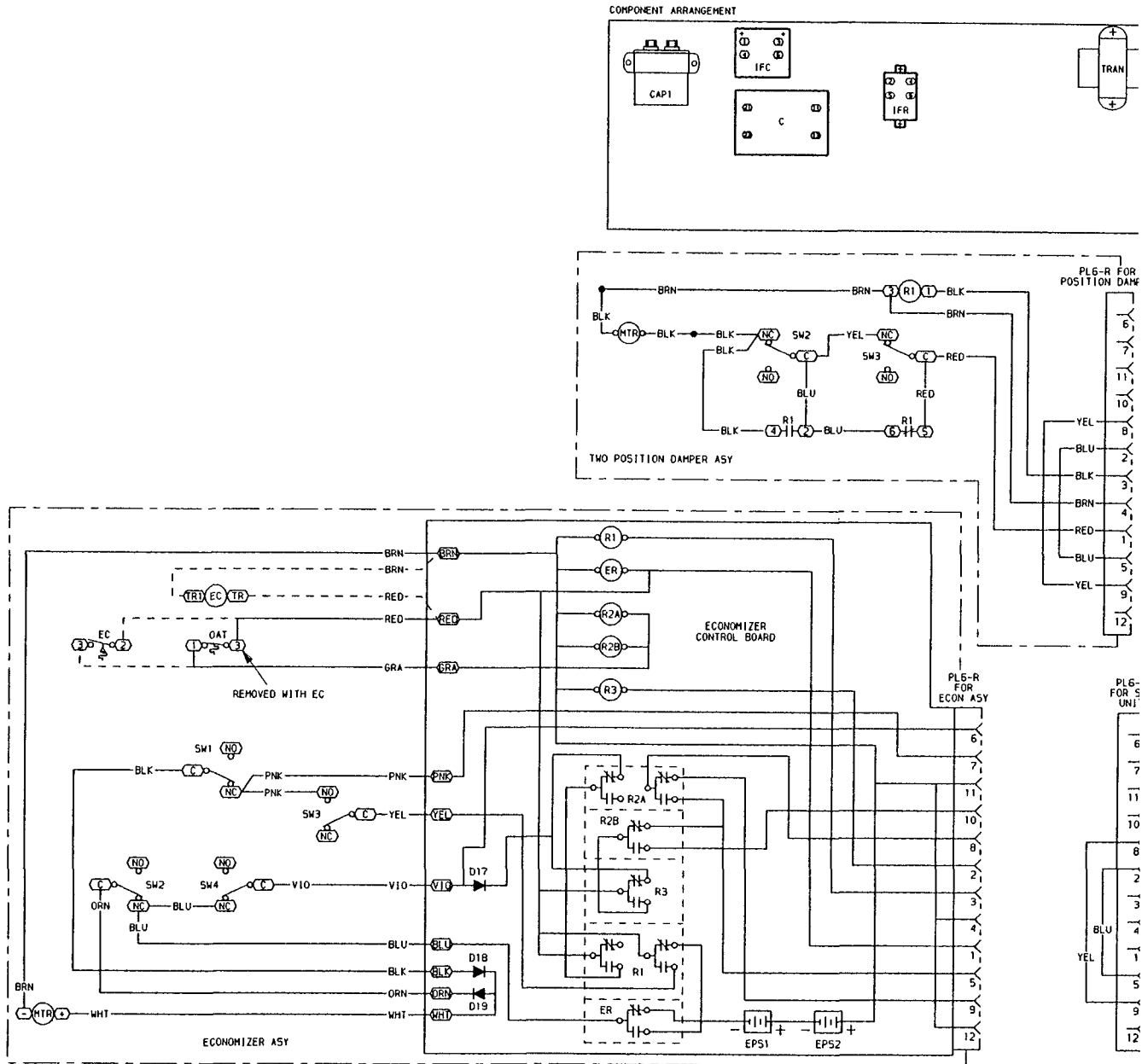
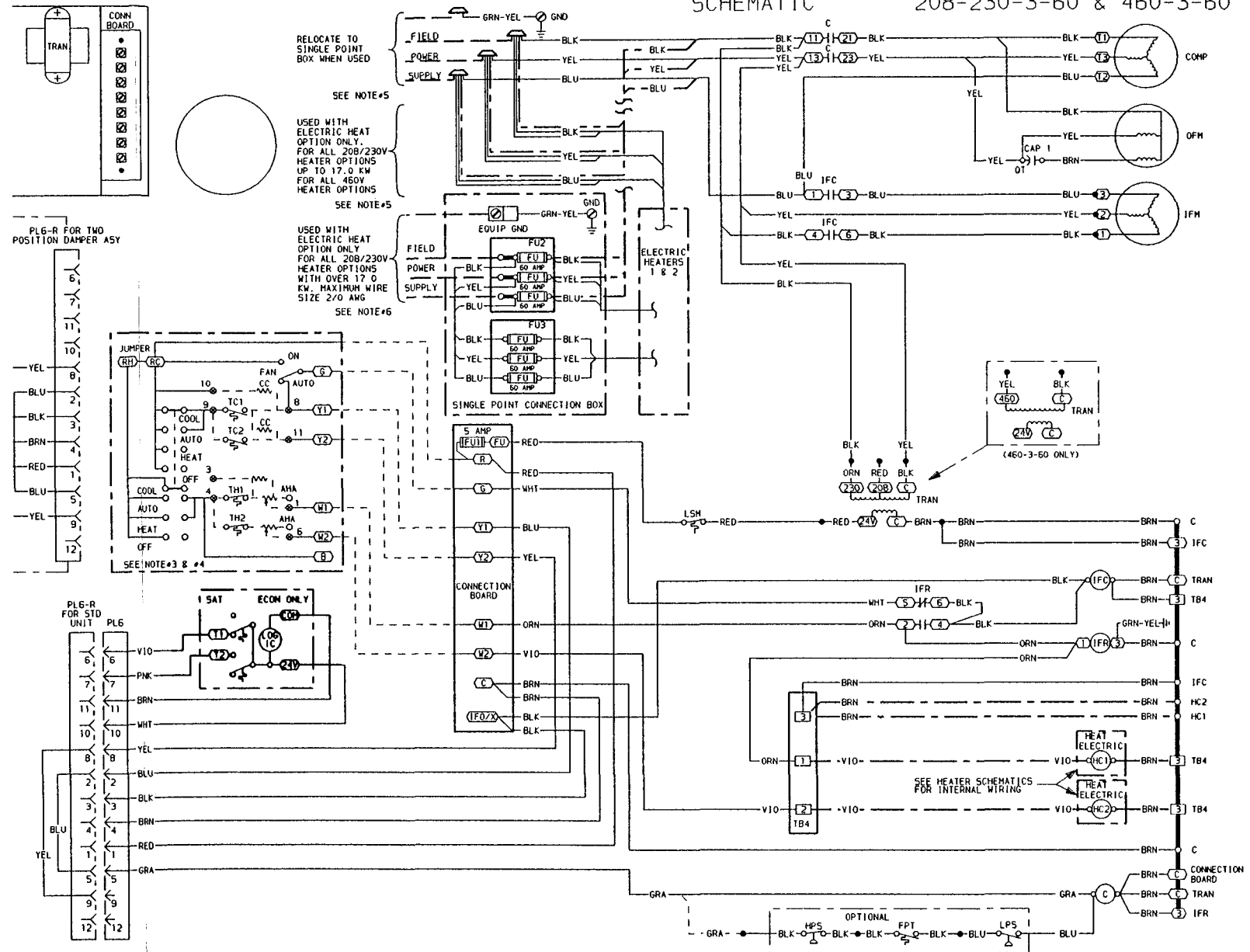


Fig. 9 – Label Diagram, Schematic and Con

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208-230-3-60 & 460-3-60



and Component Arrangement; 50TJ007; 208/230-3-60, 460-3-60

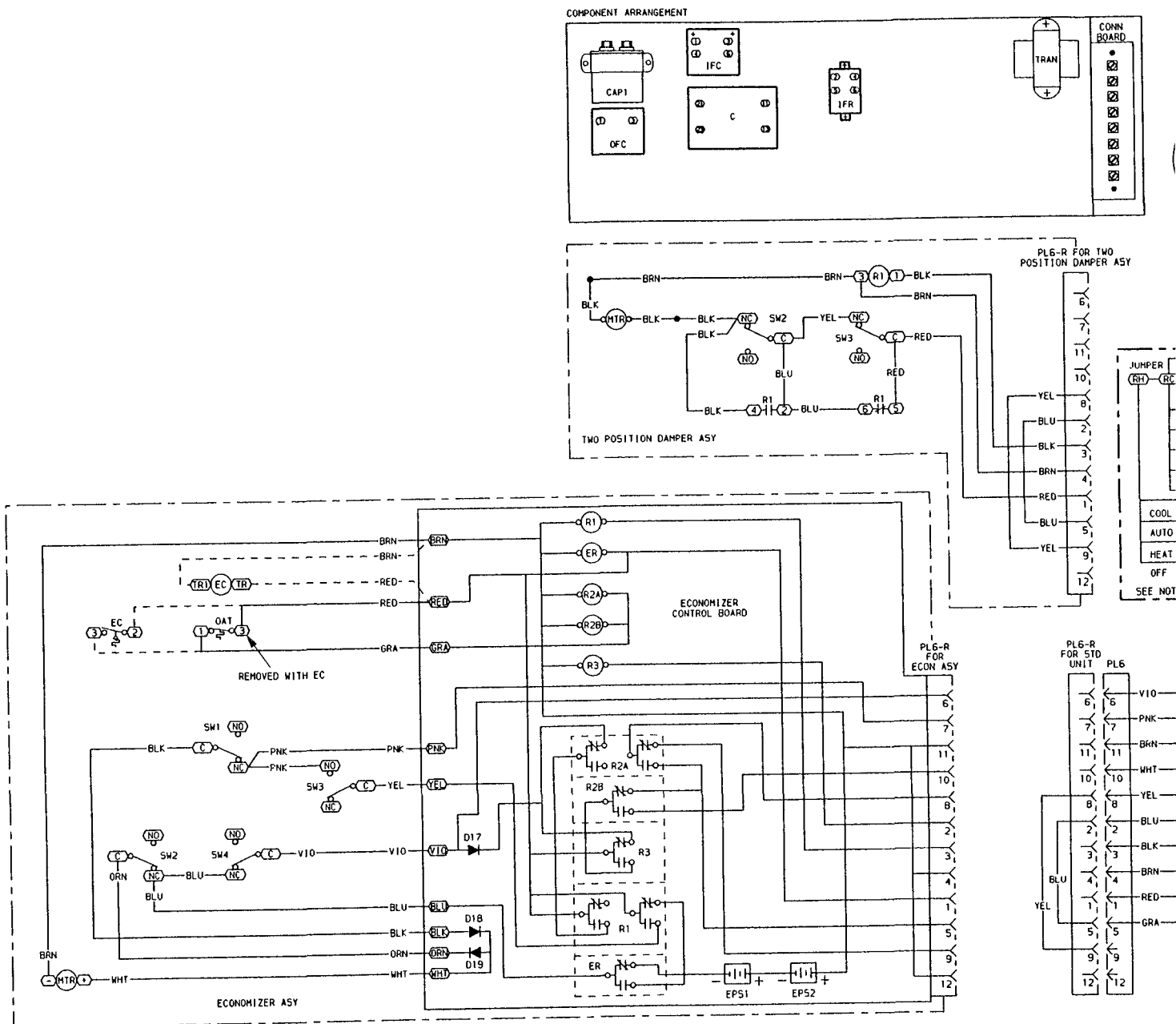


Fig. 10 – Label Diagram, Schematic and Conn





d Component Arrangement; 50TJ007, 230-3-50

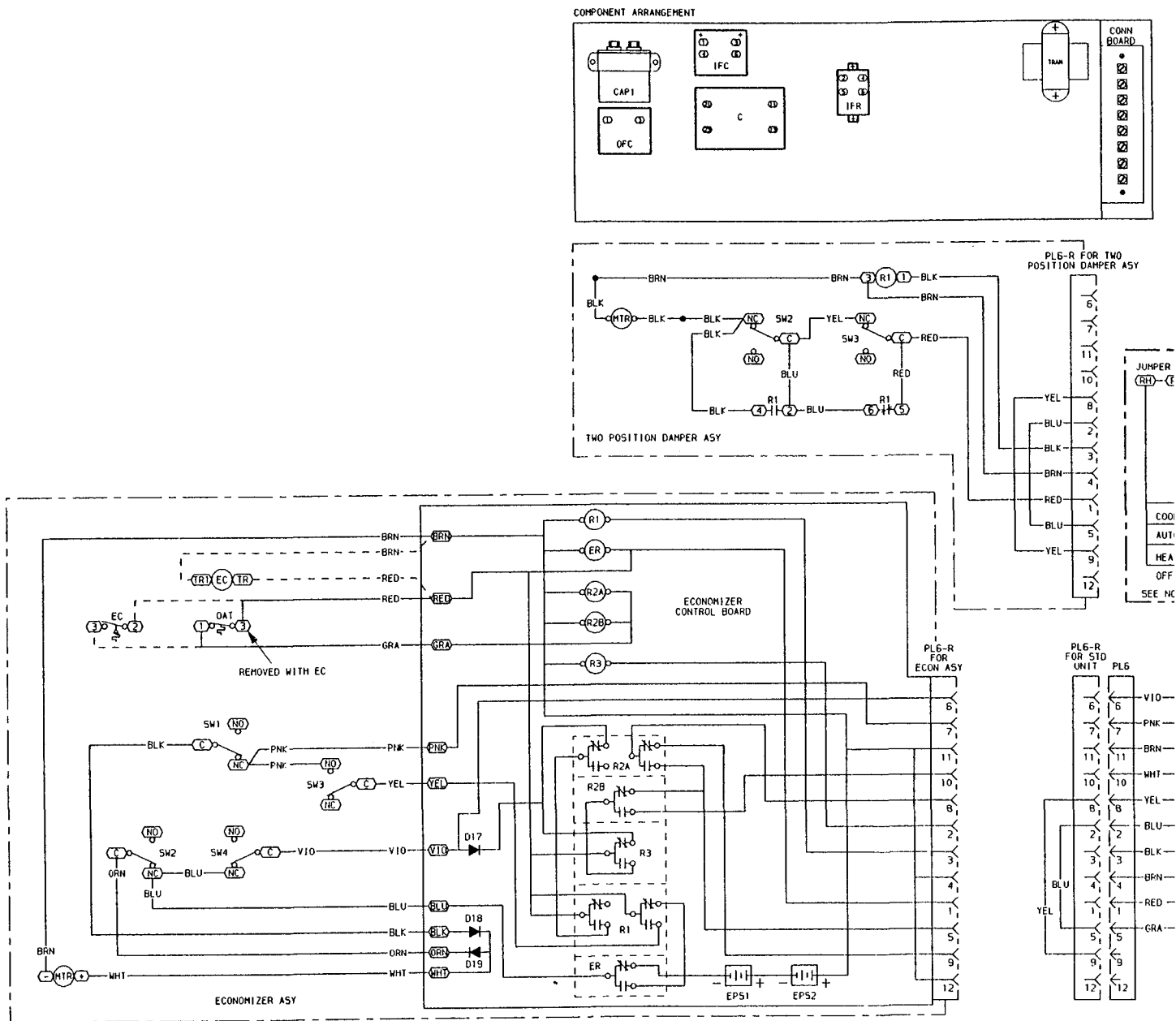


Fig. 12 – Label Diagram, Schematic and Con

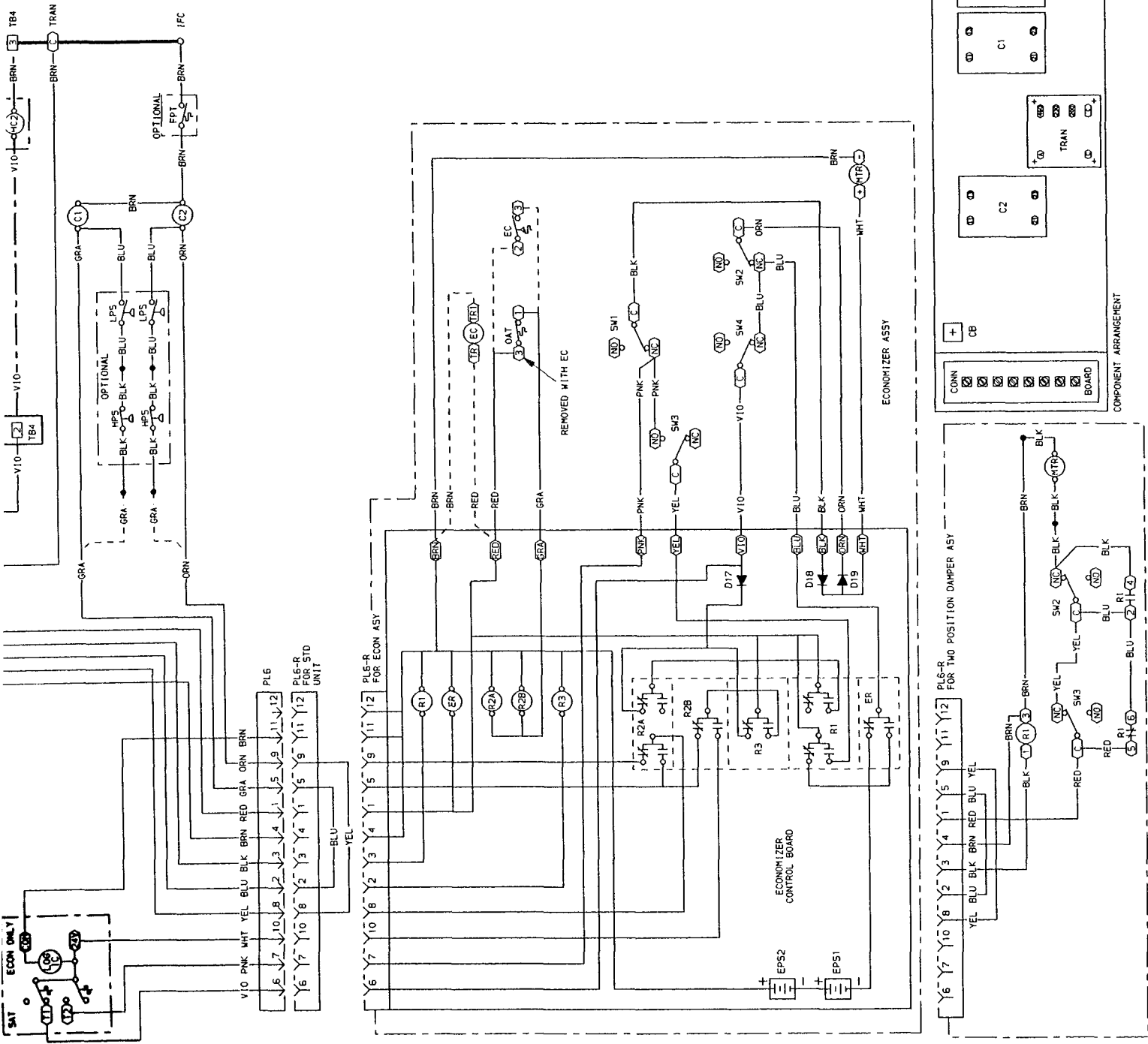
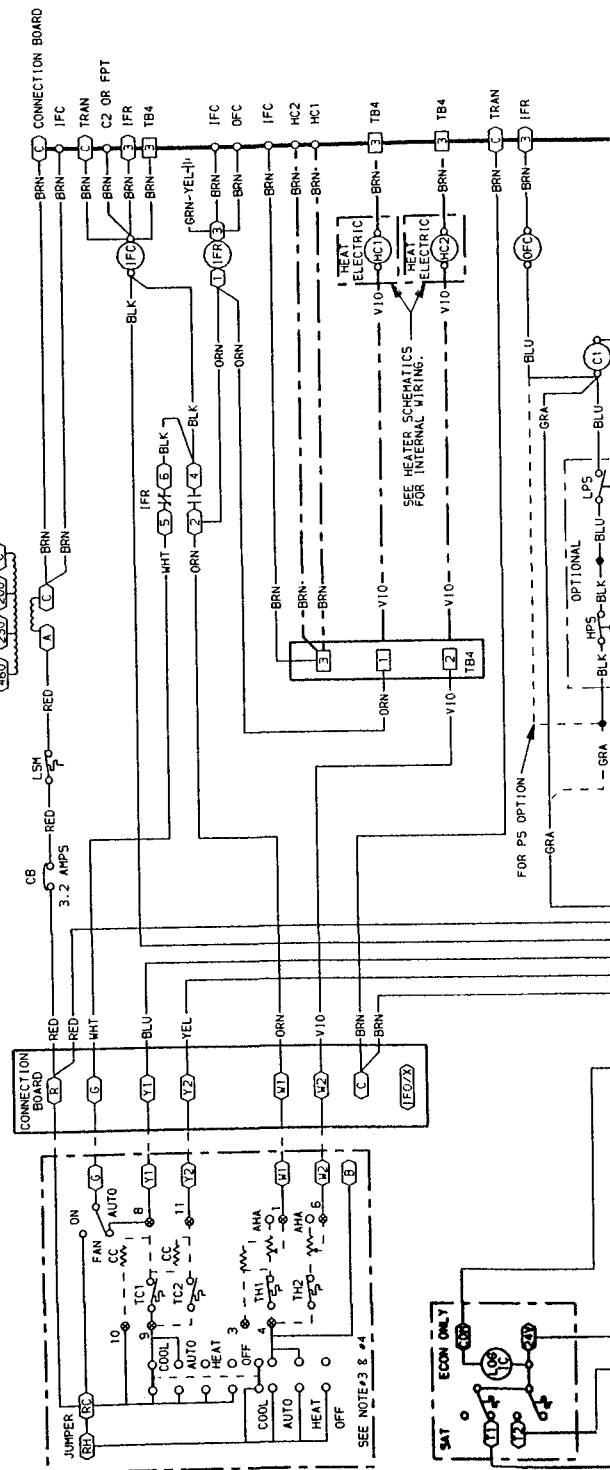


Fig. 13 — Label Diagram, Schematic and Component Arrangement; 50TJ008-012; 208/230-3-60, 460-3-60



CIRCUIT BREAKER	VOLTS	MFG. PT. NO.	MOST TRIP
CB	24V	POTTER & BRUNFIELD 428-1024-3.2	AMPS 3.2
CB1 014	460-3-60	HE INEMMANN AIRPAX CF3-7228-41 219-3-2600-486	8.5



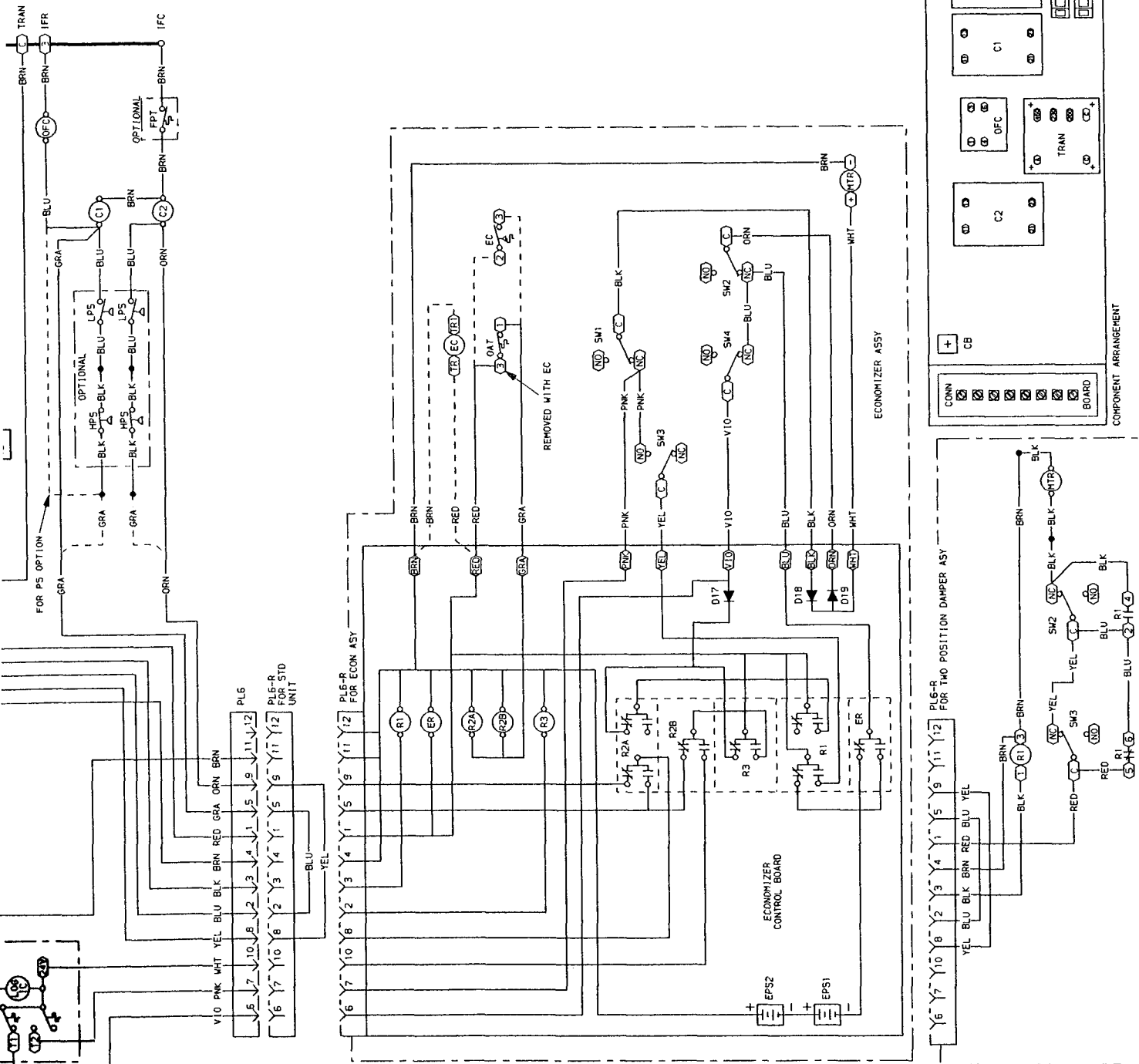
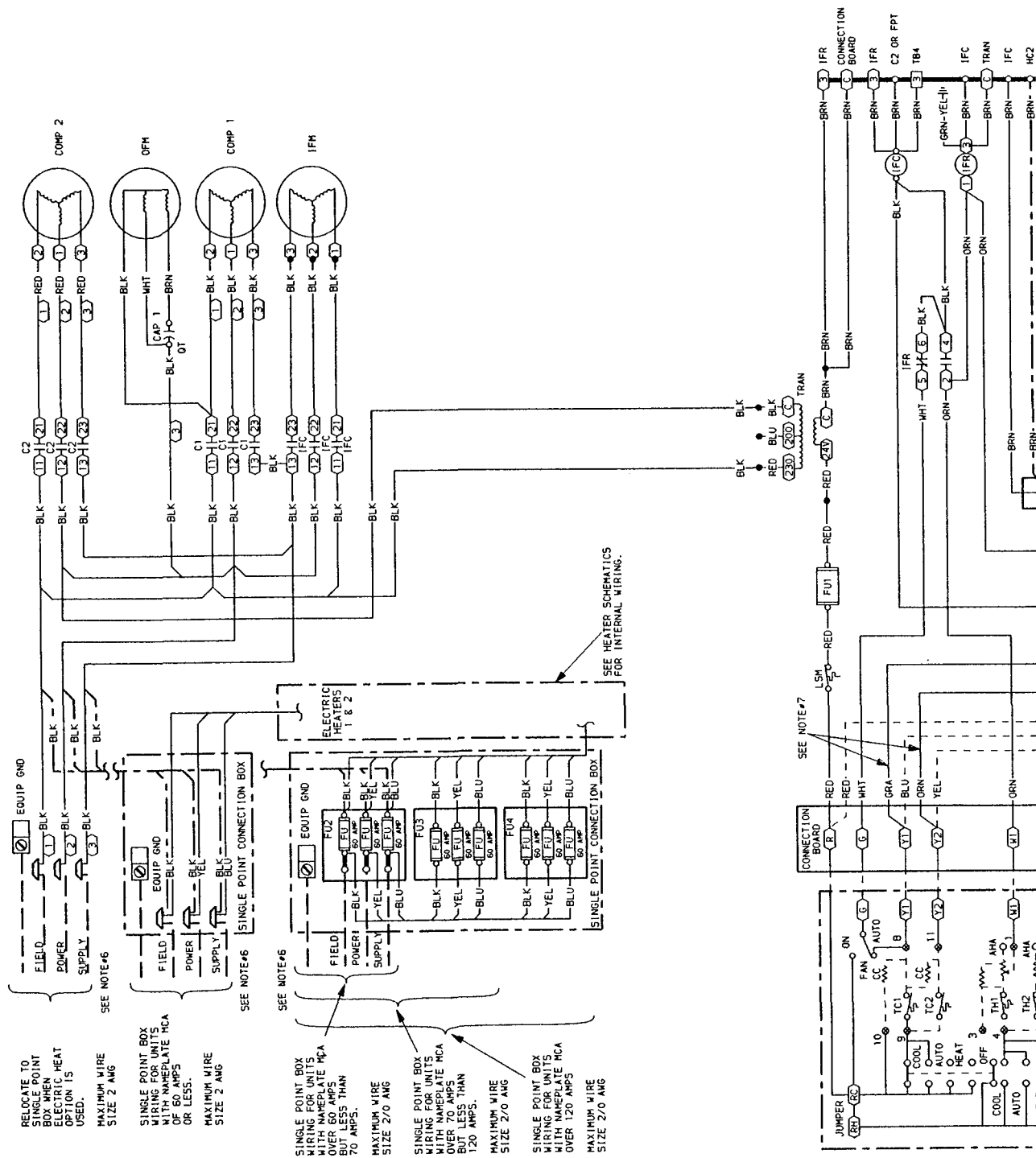
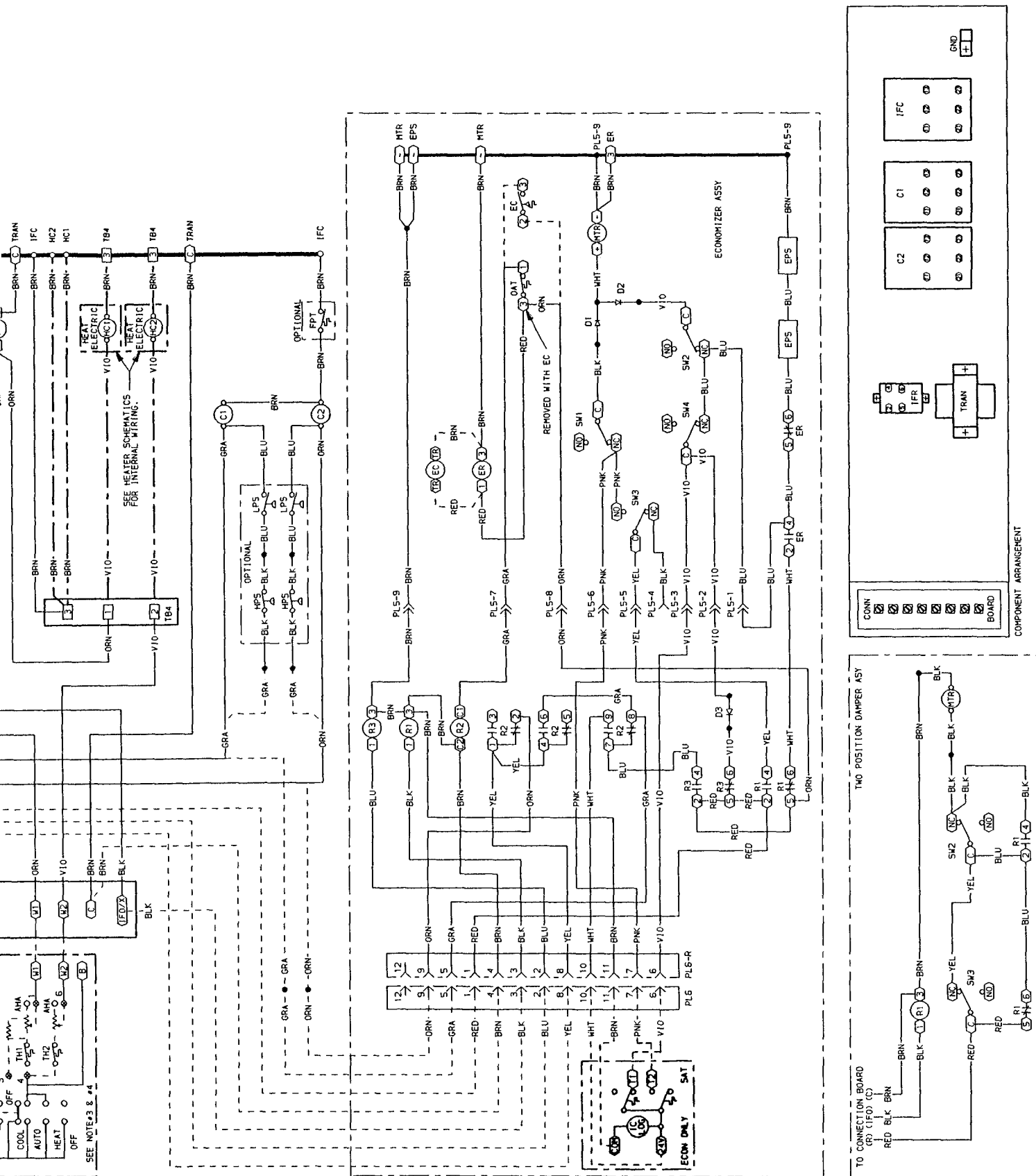


Fig. 14 – Label Diagram, Schematic and Component Arrangement; 50TJ008-012, 575-3-60

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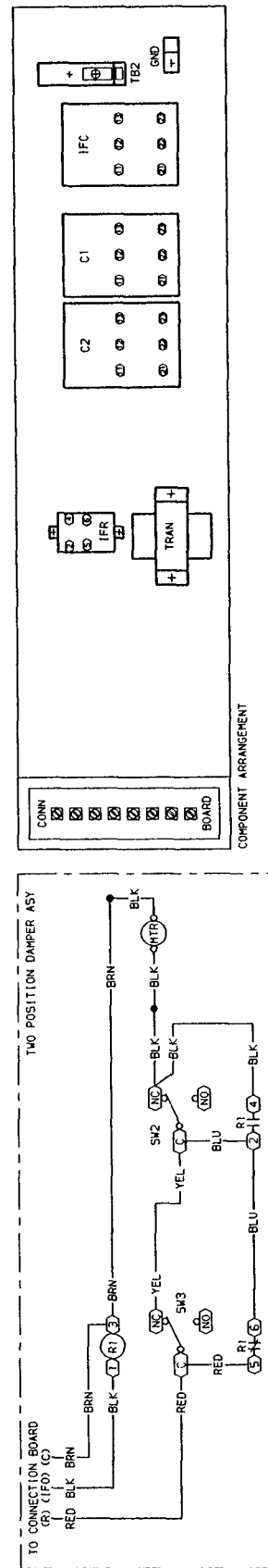
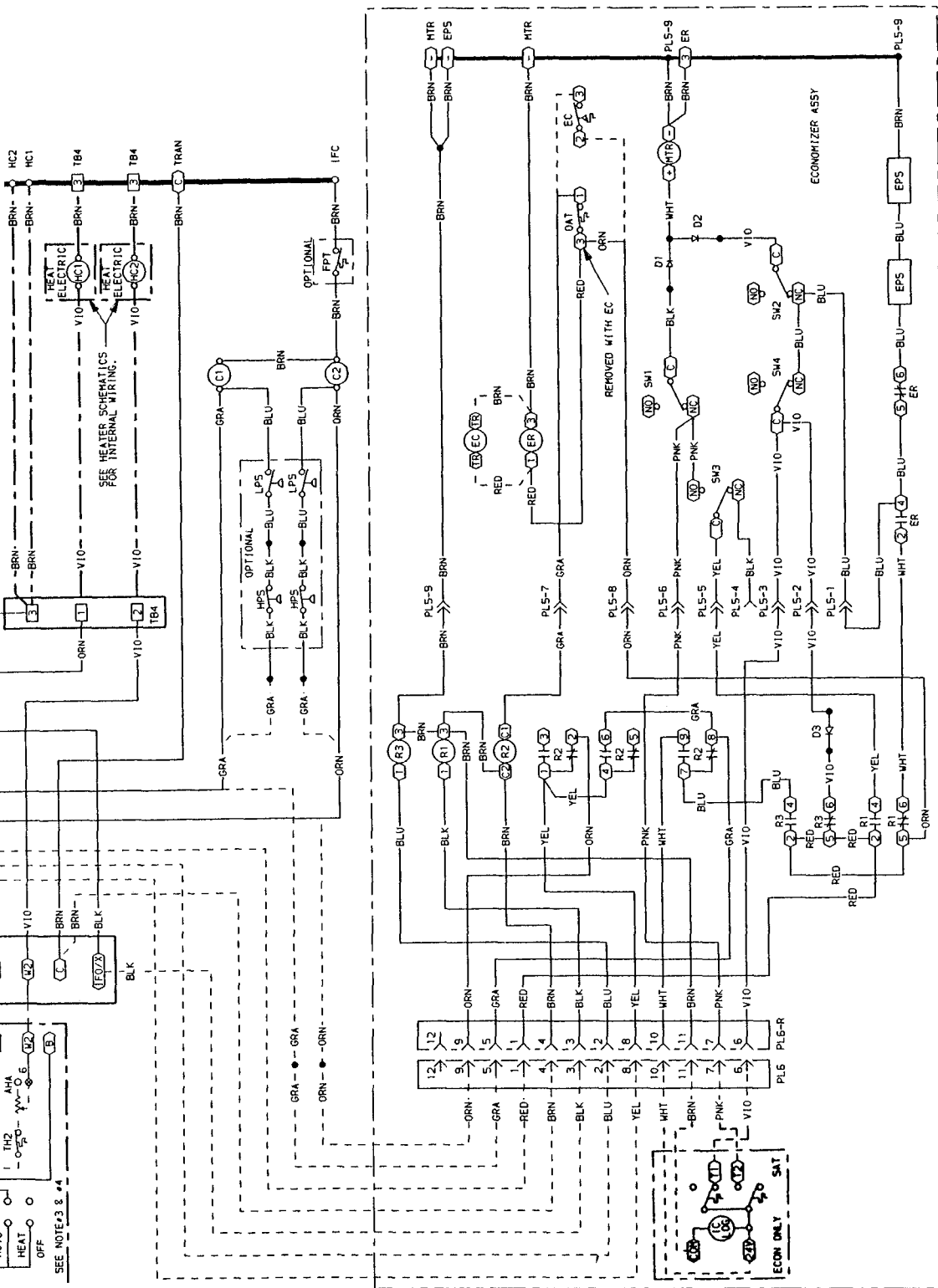
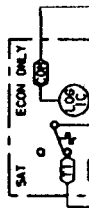
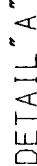
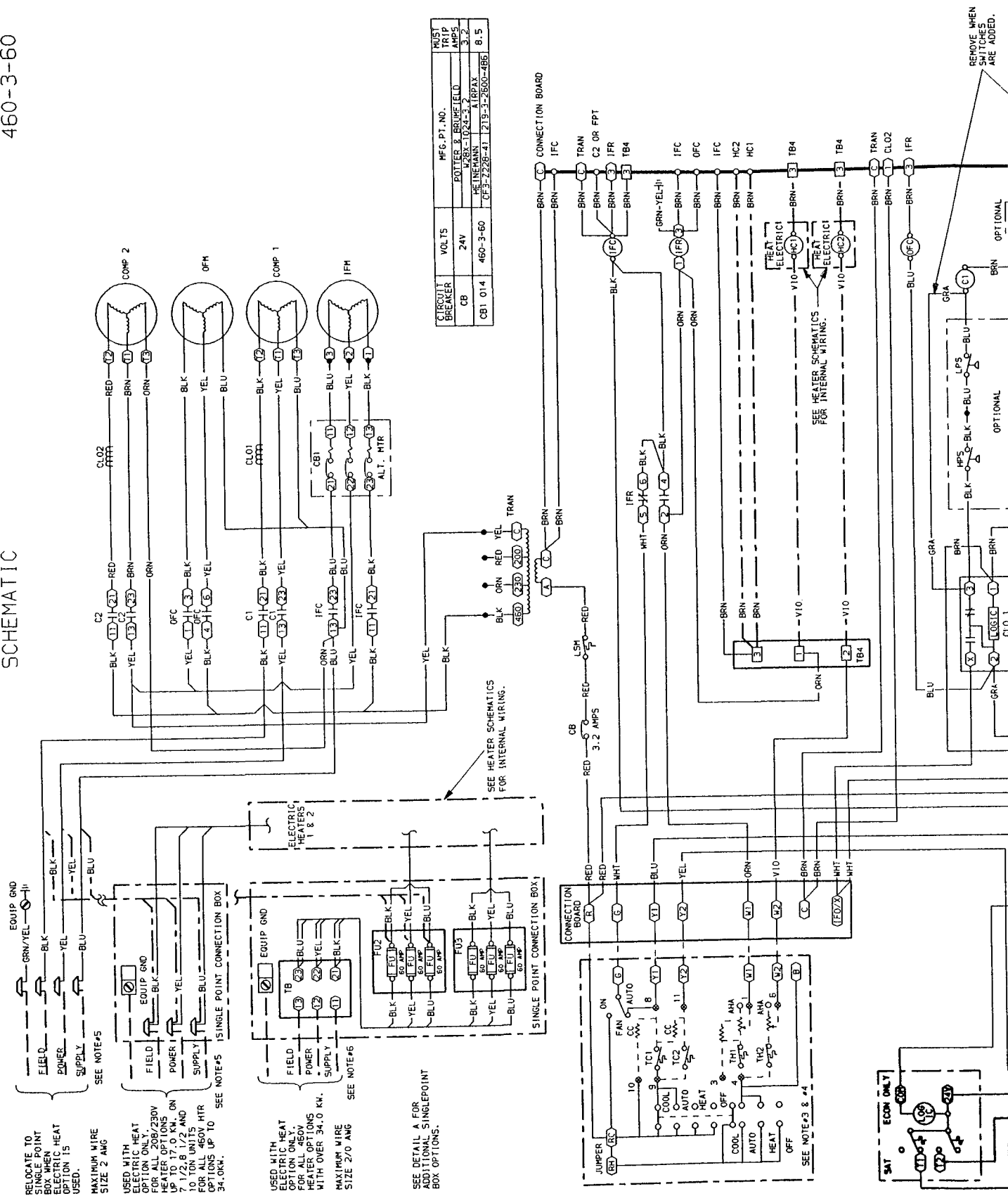


Fig. 16 — Label Diagram, Schematic and Component Arrangement; 50TJ008-014, 400-3-50





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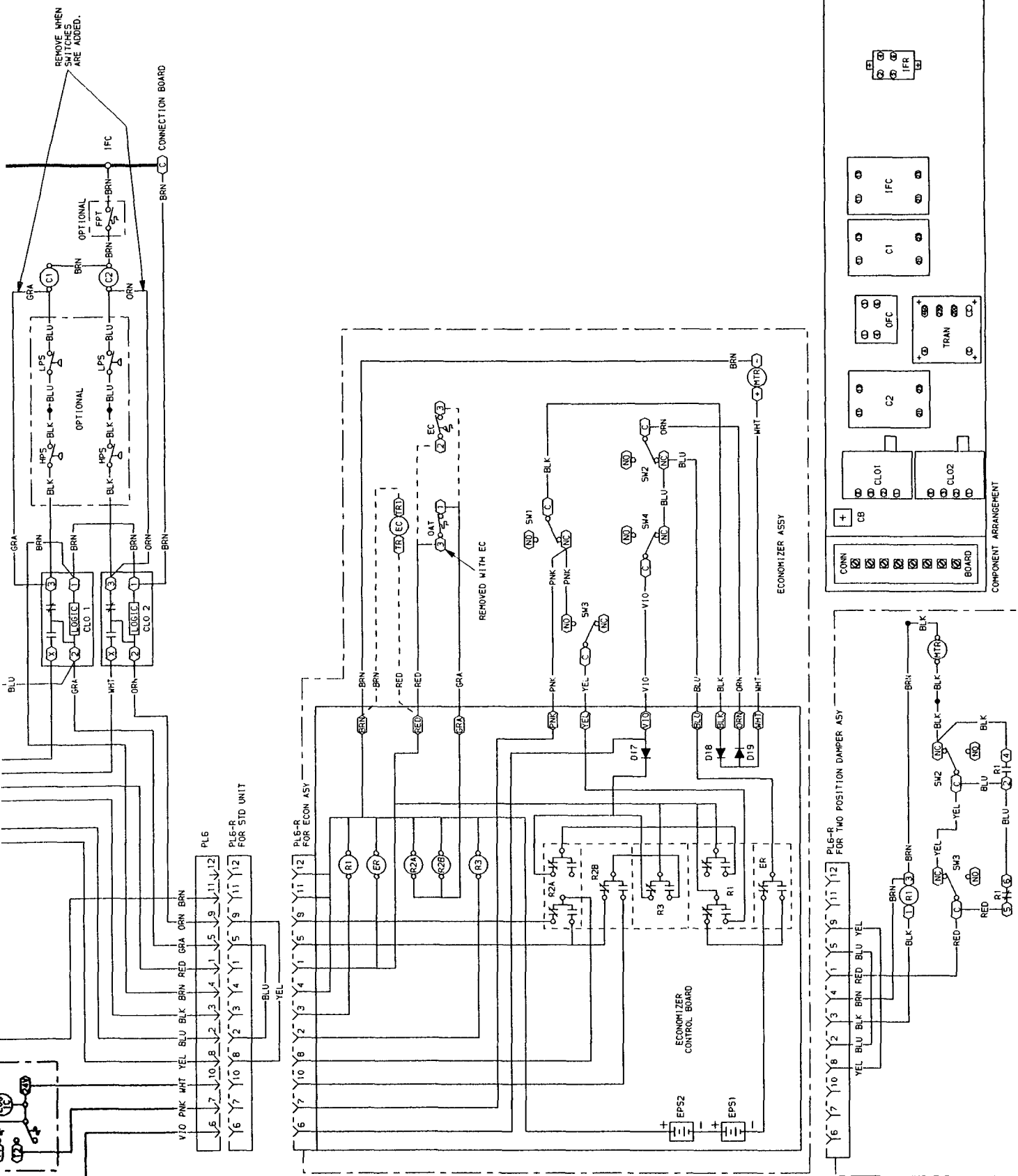
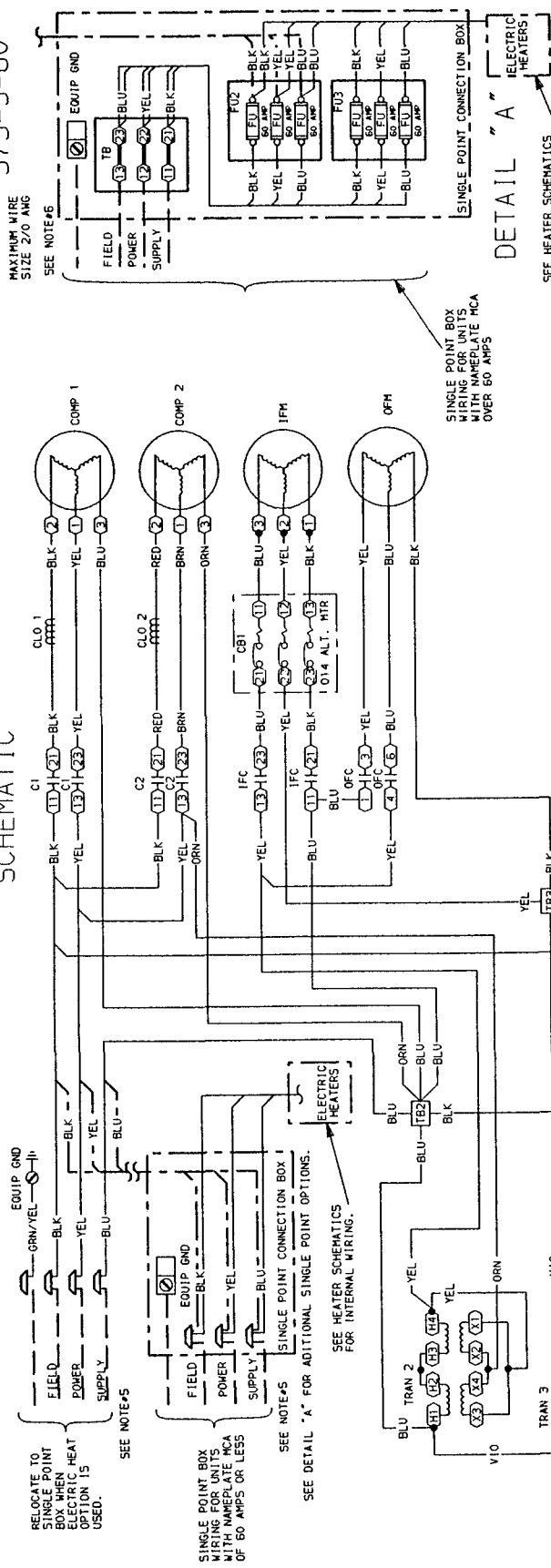


Fig. 18 — Label Diagram, Schematic and Component Arrangement; 50TJ014, 460-3-60

575-3-60

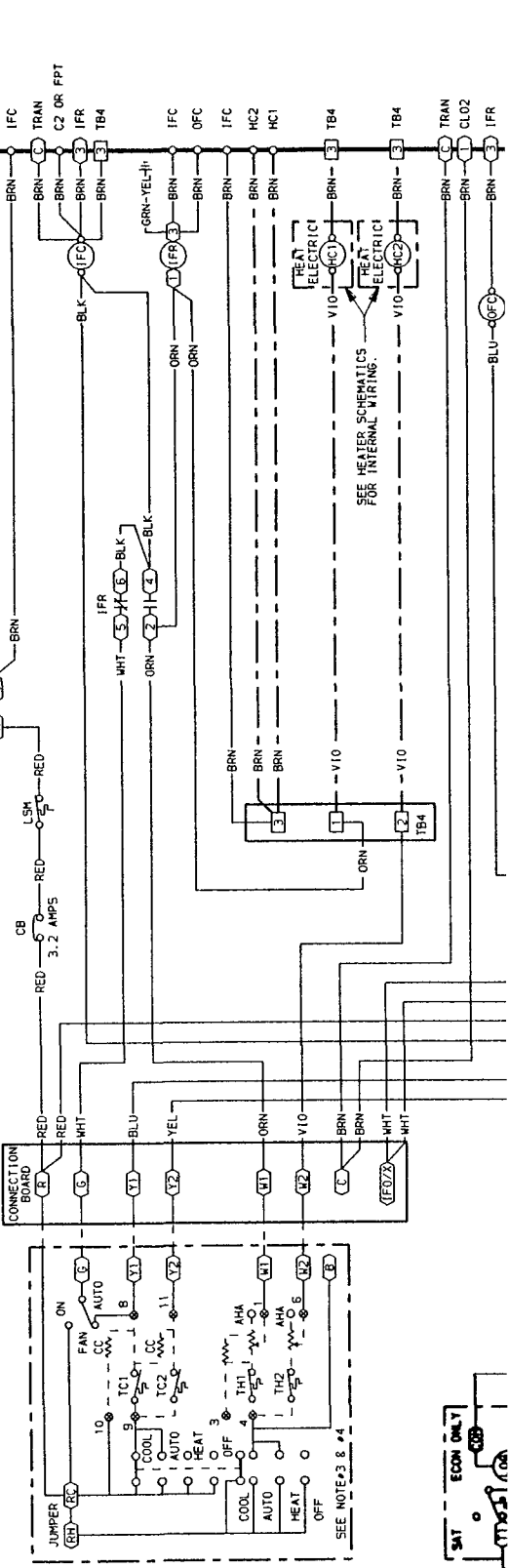
MAXIMUM WIRE
SIZE 2/0 AWG
SEE NOTE#6

SCHEMATIC



STOBYL BREAKER	VOLTS	MFG. PT. NO.	TRIP AMPS
CB	24V	POTTER & BRUMFIELD W28X-1024-3	3.2
CB1 014	460-3-60	HEINEMANN CF3-722E-4T	8.5

CONNECTION BOARD

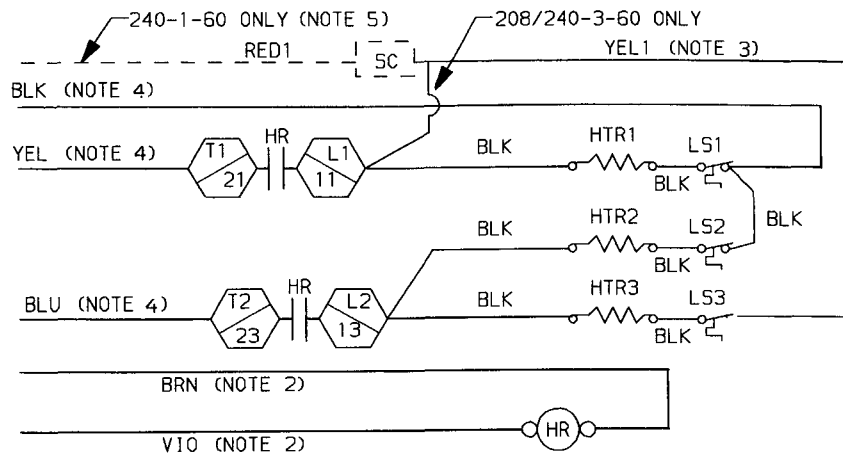


3MT ECON ONLY



Fig. 19 – Label Diagram, Schematic and Component Arrangement; 50TJ014, 575-3-60

COMPONENT ARRANGEMENT

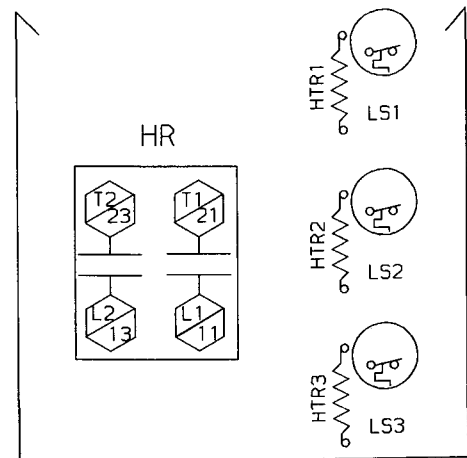


⚠ WARNING

Electric shock hazard — Disconnect all branch circuits before removing this cover

NOTES:

1. To be wired in accordance with NEC and local codes.
2. Brown and violet 24-vac wires are supplied with heater and connected at installation to base unit as shown on base unit wiring diagram.
3. For single phase, disconnect YEL1 wire from terminal L1/11 and connect RED1 wire and splice connector to loose terminal on YEL1 as shown above.
4. Power wires are supplied with heater and connected at installation to base unit field power connection box as shown on base unit wiring diagram. For field installation of electric heaters, field power connection box shown on equipment nameplate must be used.
5. For single phase operation, disconnect YEL1 from L1/11 and splice to RED1 with a splice connector.

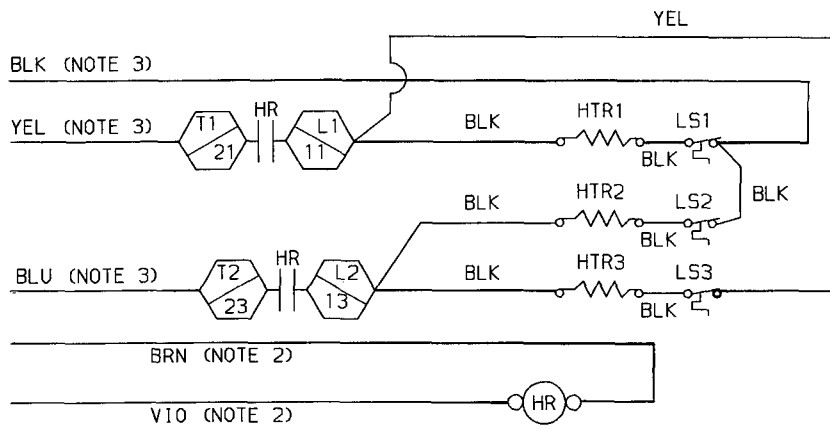


LEGEND

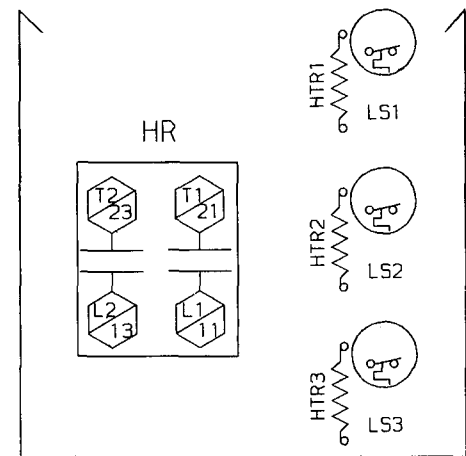
- Sylvania Marked Terminal Elmwood
- Unmarked Terminal
- HTR** — Heater
- HR** — Heater Relay
- LS** — Limit Switch
- NEC** — National Electrical Code
- SC** — Splice Connector

**Fig. 20 — Label Diagram, Accessory Electric Heater;
50TJ004-006, 208/240 V, Single Phase**

SCHEMATIC DIAGRAM



COMPONENT ARRANGEMENT



⚠ WARNING

Electric shock hazard — Disconnect all branch circuits before removing this cover.

NOTES:

- 1 To be wired in accordance with NEC and local codes.
- 2 Brown and violet 24-vac wires are supplied with heater and connected at installation to base unit as shown on base unit wiring diagram
- 3 Power wires are supplied with heater and connected at installation to base unit field power connection box as shown on base unit wiring diagram. For field installation of electric heaters, field power connection box shown on equipment nameplate must be used.

LEGEND



Sylvania
Marked Terminal
Elmwood



Unmarked Terminal

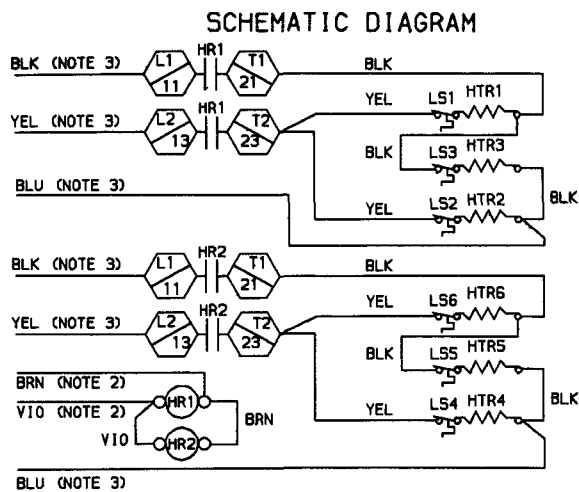
HTR — Heater

HR — Heater Relay

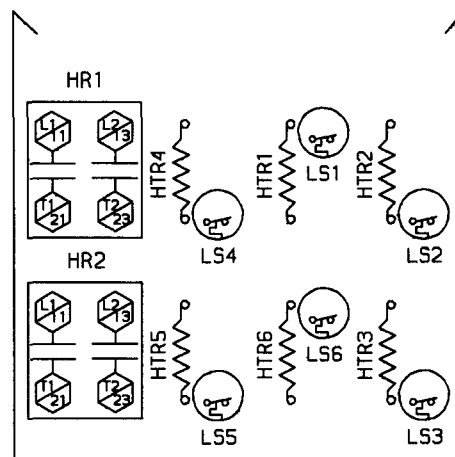
LS — Limit Switch

NEC — National Electrical Code

**Fig. 21 — Label Diagram, Accessory Electric Heater;
50TJ004-007, 208/240 V, 3 Phase**



COMPONENT ARRANGEMENT



⚠ WARNING

Electric shock hazard — Disconnect all branch circuits before removing this cover.

NOTES:

1. To be wired in accordance with NEC and local codes.
2. Brown and violet 24-vac wires are supplied with heater and connected at installation to base unit as shown on base unit wiring diagram.
3. Power wires are supplied with heater and connected at installation to base unit field power connection box as shown on base unit wiring diagram. For field installation of electric heaters, field power connection box shown on equipment nameplate must be used.

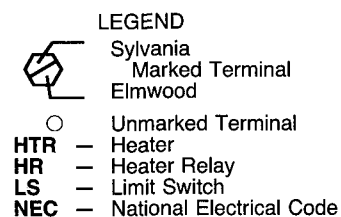
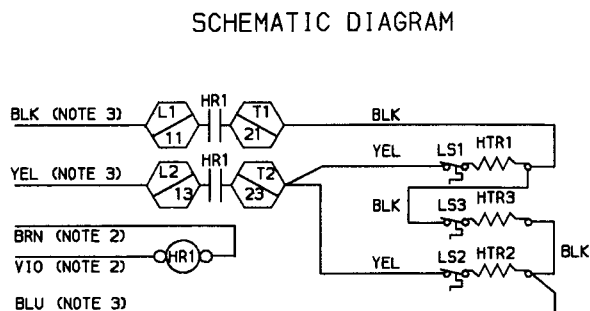
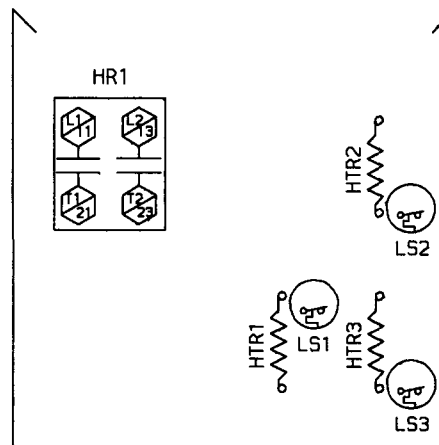


Fig. 22 — Label Diagram, Accessory Electric Heater; 50TJ008-014; 18.6/24.8 kW, 24.0/32.0 kW, 31.8/42.4 kW, and 37.5/50.0 kW; 208/240 V, 3 Phase



COMPONENT ARRANGEMENT



⚠ WARNING

Electric shock hazard — Disconnect all branch circuits before removing this cover

NOTES:

1. To be wired in accordance with NEC and local codes.
2. Brown and violet 24-vac wires are supplied with heater and connected at installation to base unit as shown on base unit wiring diagram.
3. Power wires are supplied with heater and connected at installation to base unit field power connection box as shown on base unit wiring diagram. For field installation of electric heaters, field power connection box shown on equipment nameplate must be used.

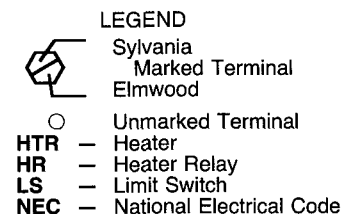
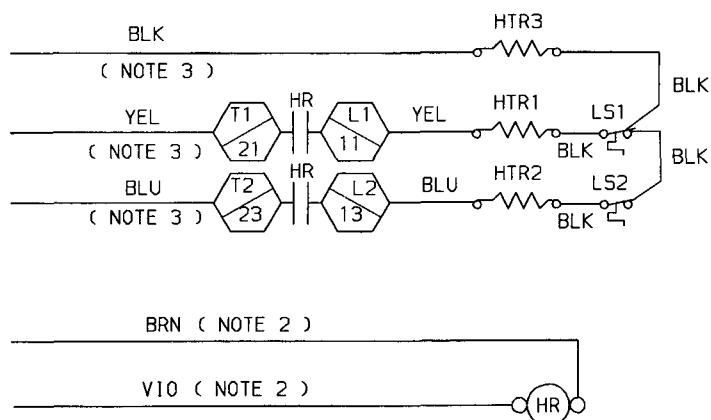
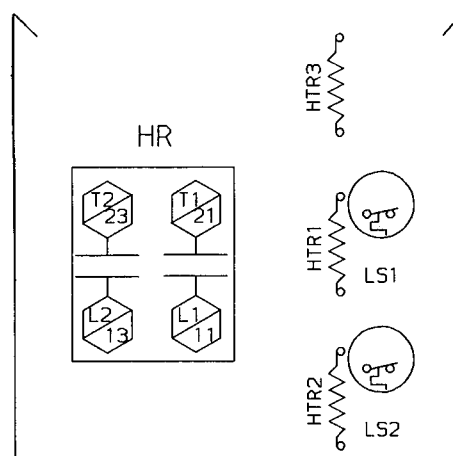


Fig. 23 — Label Diagram, Accessory Electric Heater; 50TJ008-014; 7.8/10.4 kW and 12.0/16.0 kW, 208/240 V, 3 Phase

SCHEMATIC DIAGRAM



COMPONENT ARRANGEMENT



⚠ WARNING

Electric shock hazard — Disconnect all branch circuits before removing this cover.

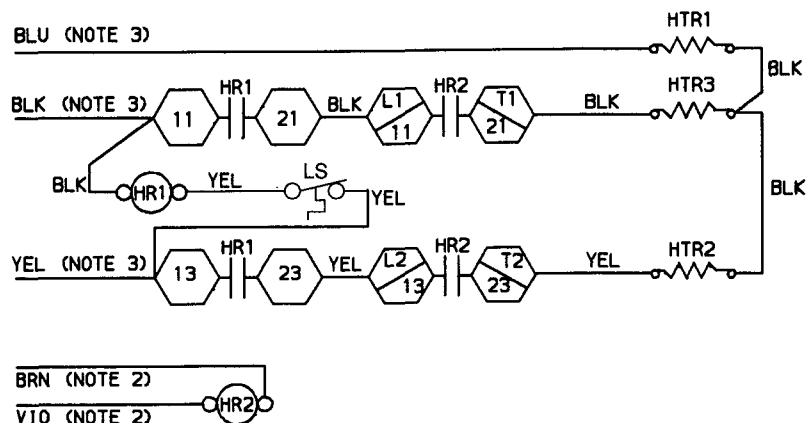
NOTES:

1. To be wired in accordance with NEC and local codes.
2. Brown and violet 24-vac wires are supplied with heater and connected at installation to base unit as shown on base unit wiring diagram.
3. Power wires are supplied with heater and connected at installation to base unit field power connection box as shown on base unit wiring diagram. For field installation of electric heaters, field power connection box shown on equipment nameplate must be used.

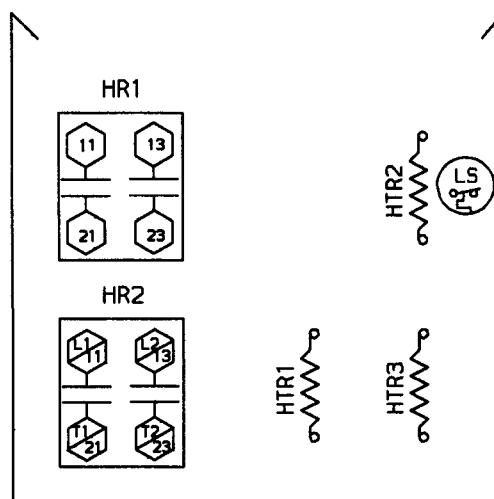
- LEGEND**
- Sylvania Marked Terminal Elmwood
 - Unmarked Terminal
 - HTR** — Heater
 - HR** — Heater Relay
 - LS** — Limit Switch
 - NEC** — National Electrical Code

Fig. 24 — Label Diagram, Accessory Electric Heater; 50TJ004-007; 480 V, 3 Phase

SCHEMATIC DIAGRAM



COMPONENT ARRANGEMENT



⚠ WARNING

Electric shock hazard — Disconnect all branch circuits before removing this cover.

NOTES:

1. To be wired in accordance with NEC and local codes
2. Brown and violet 24-vac wires are supplied with heater and connected at installation to base unit as shown on base unit wiring diagram
3. Power wires are supplied with heater and connected at installation to base unit field power connection box as shown on base unit wiring diagram. For field installation of electric heaters, field power connection box shown on equipment nameplate must be used.

- LEGEND**
- Sylvania Marked Terminal HR2 Only Elmwood
 - Unmarked Terminal
 - HTR** — Heater
 - HR** — Heater Relay
 - LS** — Limit Switch
 - NEC** — National Electrical Code

Fig. 25 — Label Diagram, Accessory Electric Heater; 50TJ008-014; 13.9 kW and 16.5 kW, 480 V; 18.0 kW, 575 V

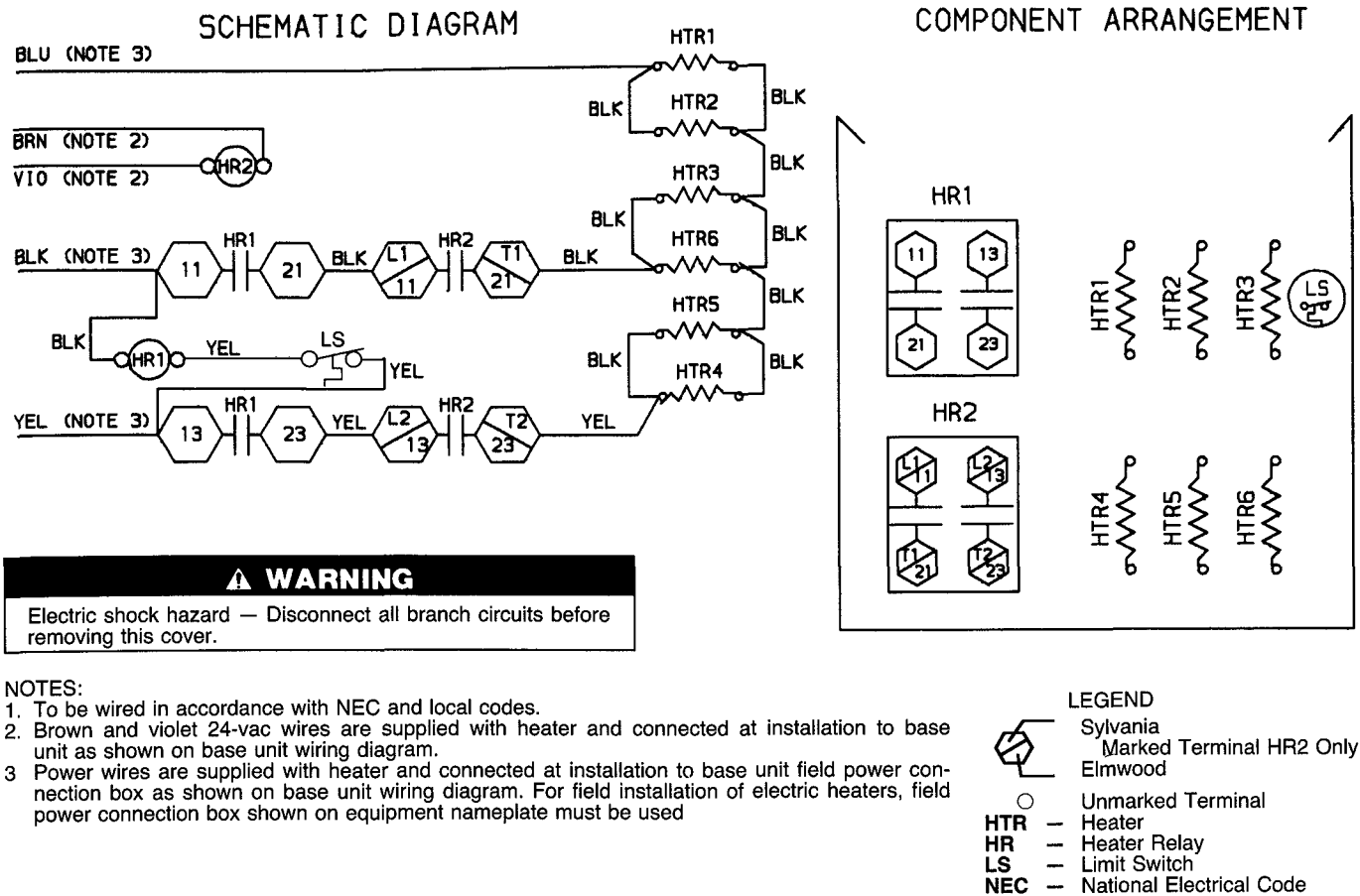
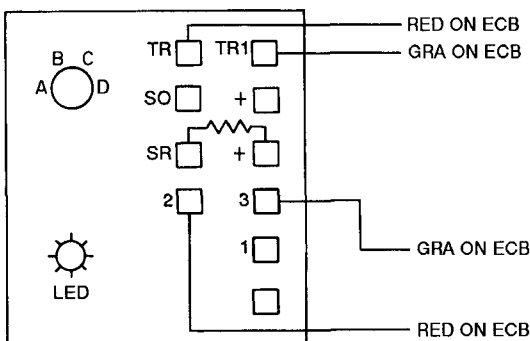


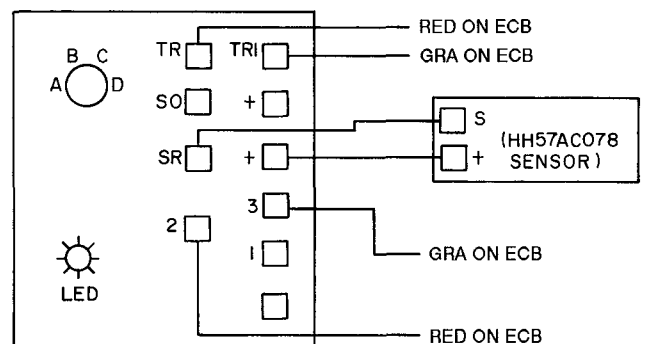
Fig. 26 — Label Diagram, Accessory Electric Heater; 50TJ008-014; 27.8 kW, 33.0 kW, 41.7 kW, and 50.0 kW, 460 V; 36.0 kW and 54.0 kW, 575 V



LEGEND

ECB — Economizer Control Board
LED — Light-Emitting Diode

Fig. 27 — Wiring Connections for Accusensor™ II Enthalpy Control (HH57AC077)



LEGEND

ECB — Economizer Control Board
LED — Light-Emitting Diode

NOTE: Remove factory-installed jumper across SR and + before connecting wires from HH57AC078 sensor.

Fig. 28 — Wiring Connections for Accusensor III Enthalpy Control (HH57AC077 and HH57A078)

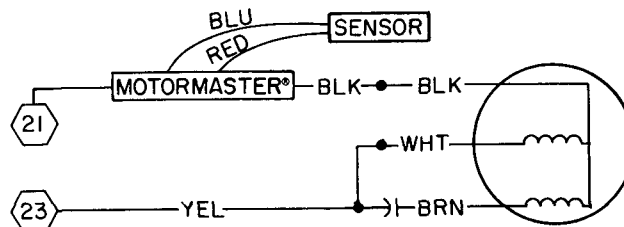
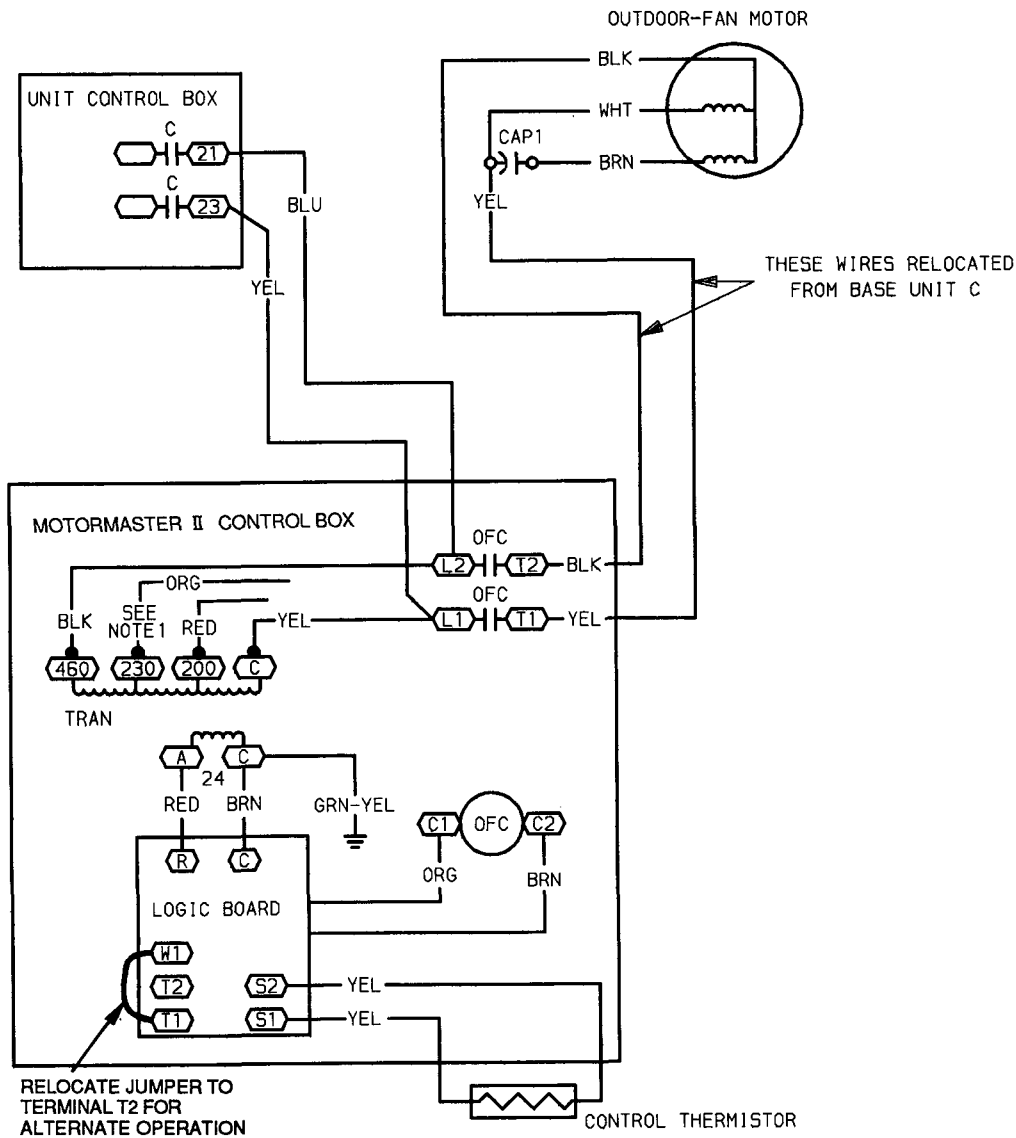


Fig. 29 – Accessory Motormaster® Device Wiring (50TJ004-007)



LEGEND

- C** — Contactor
- OFC** — Outdoor-Fan Contactor
- TRAN** — Transformer

NOTES:

1. Motormaster II transformer is wired for 460-v supply; it must be rewired for 208/230-v application. Be sure to insulate unused tap
2. When alternate mode operation is selected, the controller shifts the fan cycle to raise the average condensing temperature approximately 20° F higher than standard mode.

Fig. 30 – Wiring Schematic, Motormaster II, 50TJ004-007

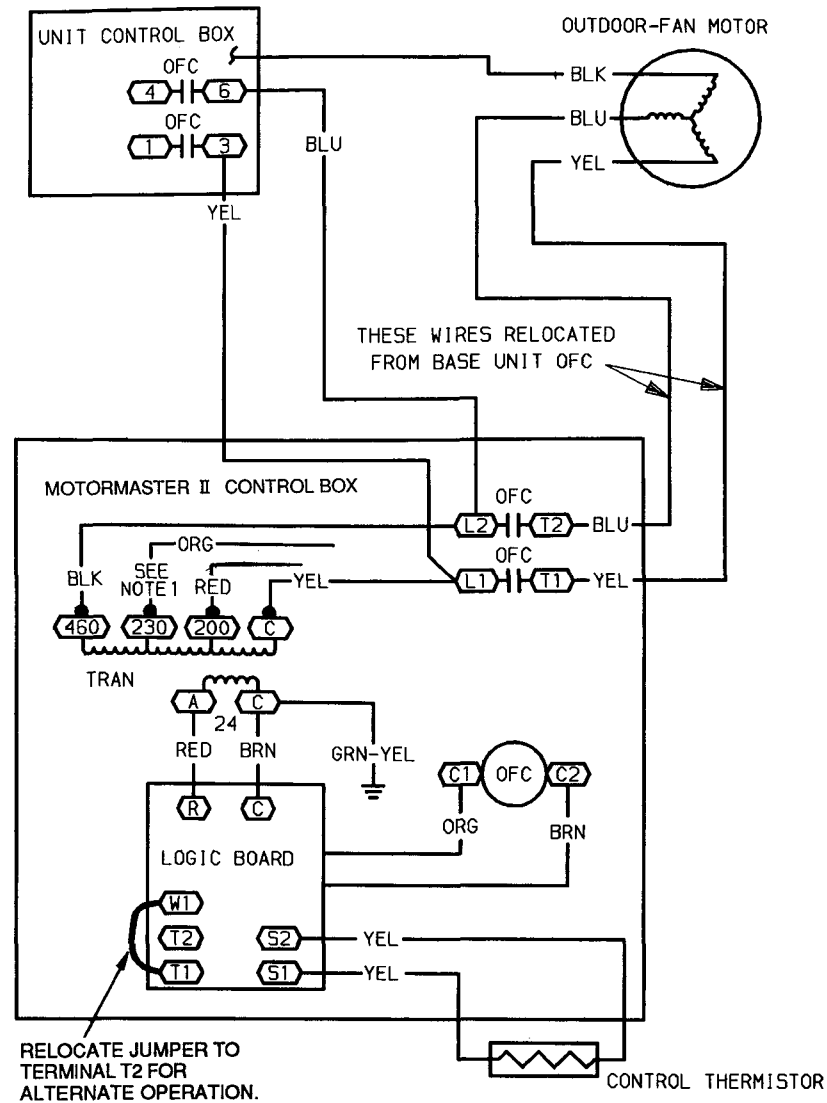


Fig. 31 — Wiring Schematic, Motormaster® II, 50TJ008-014

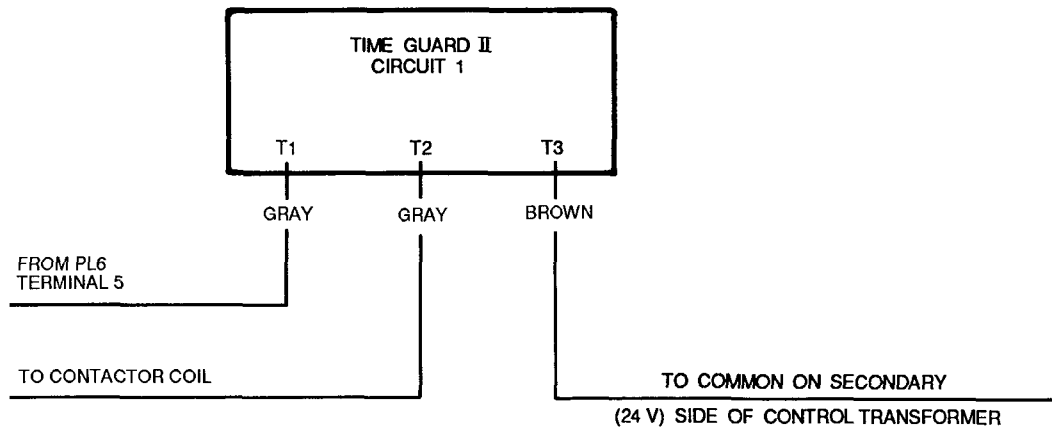


Fig. 32 – Time Guard® II Control Circuit Wiring, 50TJ004-007

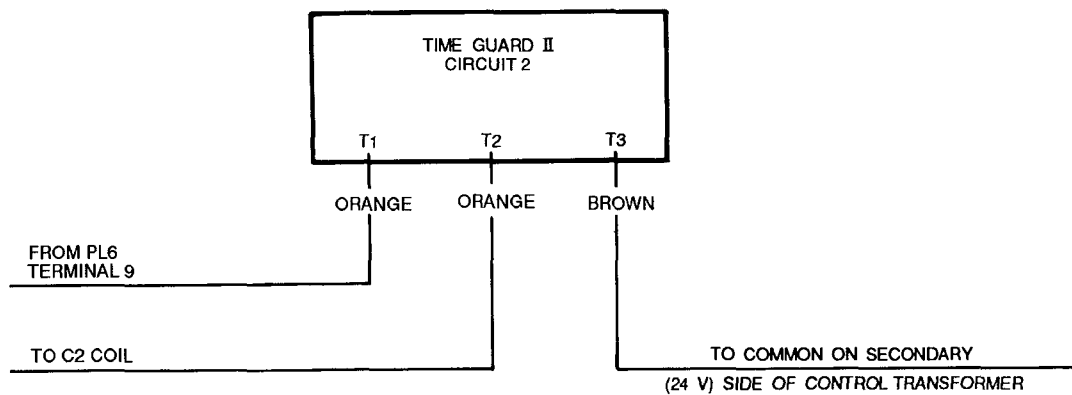
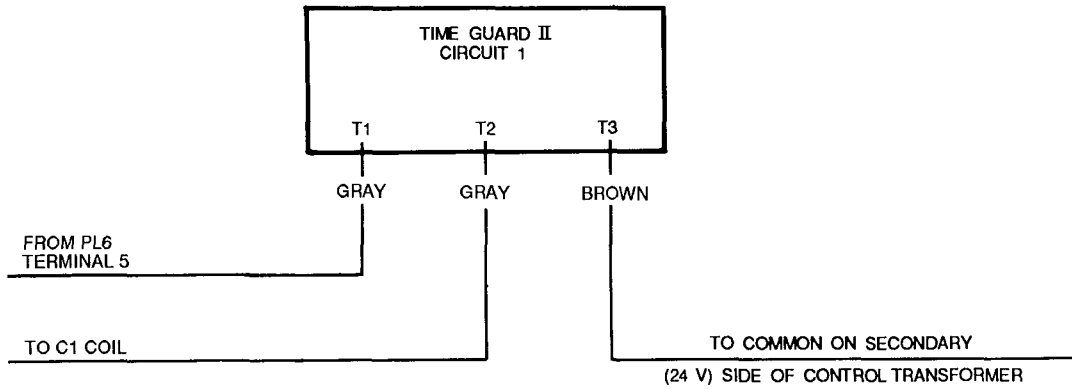


Fig. 33 – Time Guard II Control Circuit Wiring, 50TJ008-012

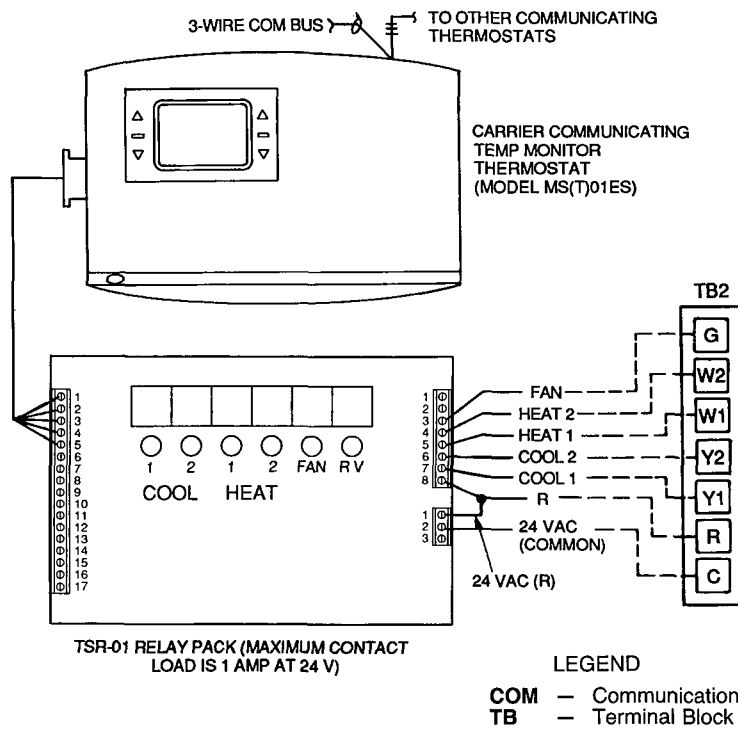


Fig. 35 — Electronic Thermostat