50ES, 50EZ, 50GL, 50GS, 50GX, 50JS, 50JX, 50JZ, 50SD, 50SZ, 50VL, 50VT, 50XP, 50XZ
601A, 602A, 602B, 604A, 604B, 604D, 607C, 701A, 702A, 702B, 704A, 704B, 704D, 707C
PA1P, PA2P, PA3P, PH1P, PH2P, PH3P

SMALL PACKAGED PRODUCTS
Electric Heaters 5–20kW
50 Hz and 60 Hz Product

Installation Instructions

NOTE: Read the entire instruction manual before starting the installation.

SAFETY CONSIDERATIONS

Installation and servicing of this equipment can be hazardous due to mechanical and electrical components. Only trained and qualified personnel should install, repair, or service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning and replacing air filters. All other operations must be performed by trained service personnel. When working on this equipment, observe precautions in the literature, on tags, and on labels attached to or shipped with the unit and other safety precautions that may apply.

Follow all safety codes. Installation must be in compliance with local and national building codes. Wear safety glasses, protective clothing, and work gloves. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit.

Recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words; DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

Follow all safety codes. Wear safety glasses and work gloves. Have a fire extinguisher available.

Before proceeding with heater installation, inspect thoroughly for shipping damage. Notify shipper immediately if any damage is found. Clean all dirt, dust and moisture from heater package. Check for proper clearances of live parts, between phases and to ground. Make sure that all required barriers are in place. Check conductors run in multiple to insure that they are properly wired. Refer to unit installation instructions for complete unit installation details. The maximum duct static for safe electric heater operation is shown in Table 1 or 2.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before performing installation, service or maintenance operations on this system, turn off all main power to system. There may be more than one disconnect switch. Turn off accessory heater power switch if applicable. Lockout and tag switch with a suitable warning label.

⚠ CAUTION

CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing and gloves when handling parts.

DESCRIPTION AND USAGE

This electric heater series is engineered, designed and listed to be installed only in the models shown in Table 3. Before proceeding, verify the heater label for correct voltage and kW requirements.

INSTALLATION

HEATER INSTALLATION

NOTE: Thermostat used must be capable of energizing "G" (indoor fan) on a call for "W" (heating). If "G" is not energized system malfunction will occur.

1. Open all electrical disconnects and install lockout tag before beginning any installation or service work.
2. Check for proper equipment model number from list.
3. Verify that unit ductwork is installed per base unit instructions.
4. Remove unit access panel to access unit (See Fig. 1).
5. Locate and remove the heater access cover plate inside unit access panel (See Fig. 2). Save screws.
6. Remove electric heater from the packaging.
7. Install heater, sliding assembly carefully through access hole. Ensure that mounting holes of heater align with mounting holes on the unit. Secure heater assembly with screws provided.
8. Dress wires with wire ties provided.

ELECTRICAL CONNECTION

1. Open all electrical disconnects and install lockout tag before beginning any installation or service work.
2. All electrical connections, wire sizes and type of conduit shall meet the National Electric Code (NEC) and state and local codes (or International Electric Code) as applicable. Main power supply, minimum wire sizes, circuits, fusing, etc. are shown on schematic wiring diagrams.

NOTE: Use minimum 75°C copper wire only.

3. Refer to base unit instructions for recommended wiring procedures.
4. Connect low voltage wires as shown in unit schematic diagrams. These connections must be made in the 24v barrier section inside the unit panel (See Fig. 2).
5. **Connect field power wiring as shown in heater wiring diagram. All connections should be made inside the unit and comply with the NEC and International Electric Code and state and local codes. Heaters with factory installed fuses may be installed on a branch circuit protected by either a fuse or circuit breaker. For all other heaters, the branch circuit must be protected by a fuse or circuit breaker supplied by others.**
6. Make all high voltage wire splice connections inside the unit control box. Use splice connectors provided. Properly insulate connectors. Separate all wires from incoming power leads.
7. For fused heaters, incoming power leads should be strain relieved. After attaching field power wires to the fuse block lugs, use the pre-mounted wire tie on the inside of the control box cover to secure and strain relieve these wires.

NOTE: The adjacent heater compressor contactor and low voltage wiring are factory strain relieved in a similar manner.

8. Be sure that all electrical terminal connections, clamps, screws, etc. are tight before proceeding.
9. Check wiring diagram supplied with heater for specific connections and information.
10. Check operation as described in Start-Up section.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before performing installation, service or maintenance operations on this system, turn off all main power to system. There may be more than one disconnect switch. Turn off accessory heater power switch if applicable. Lockout and tag switch with a suitable warning label.

START-UP

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before proceeding, verify that all wiring is correct per factory approved schematic. Notify factory immediately of any discrepancies.

1. Refer to base unit installation instructions as required.
2. Check for loose terminal connections.
3. Check that all fuse and circuit breaker short circuit interrupting ratings are adequate.
4. Turn on unit and heater power.
5. Set thermostat to call for heat.
6. Check operation of heater.
7. Check that airflow across the heater is at or above the minimum recommended CFM requirement (See unit installation instructions). Adjust indoor blower heat speed as required. Check that duct system conforms to static pressure limits in Table 1 or 2.

NOTE: See Table 1 for Non-Export units (with -3, -5 or -6 as electrical option-see product data). See Table 2 for Export units (with -9 as electrical option-see product data).

8. Any modifications or repairs to this equipment without written permission from the factory will be done at the installer's own risk and expense.

TROUBLESHOOTING

1. Fuses - Malfunction will interrupt power to the unit. Check for cause of failure, replace fuses.
2. Limit Switch - Malfunction prevents heating element(s) from being energized. Replace switch if malfunction occurs.
3. Contactor - Malfunction will not allow heater to energize. Replace faulty contactor. Do not attempt to replace coil or dress contacts.

PACKAGE CONTENTS

Electric Heater Package Contents

1. Heater assembly
2. UPC heater label
3. Installation instructions
4. Identification label
5. Schematic on lid door for all fused units
6. Schematic on sticker to be placed inside unit panel for non-fused units
7. Wire connectors (3)
8. Wire ties-6-in. (5)
9. Screws #10A (5)

Table 1 – Maximum Duct Static Pressure for Non-Export Units (IN. W.C.) (pa)

UNIT (60 HZ UNITS)	MAXIMUM STATIC PRESSURE UNIT SIZE						
	018	024	030	036	042	048	060
Heat Pump	.30 (75)	.30 (75)	.30* (75)	.30 (75)	.50 (125)	.50 (125)	.50 (125)
Electric Cooling	.30 (75)	.30 (75)	.30 (75)	.30 (75)	.50 (125)	.50 (125)	.50 (125)

*15kW size 030 heat pump must be used with medium speed only. All others can be run at low speed.

Table 2 – Maximum Duct Static Pressure for 50 HZ Export Units (IN. W.C.) (pa)

50 HZ UNITS	MAXIMUM STATIC PRESSURE UNIT SIZE				
	024	030	036	048	060
Max Static (pa)	150	250	250	225	225
Min Airflow (L/s)	354	378	472	708	826

CPHEATER

Table 3 – Electric Heater Usage Chart-Export Units

					50GS (PAC) 50JS (PHP)							50GL (PAC) 50JZ (PHP)						
CPHEATER	Code	kW	V	PH	18	24	30	36	42	48	60	18	24	30	36	42	48	60
071	na	5.2	400	3		x	x	x		x	x							
072	na	6.9	400	3		x	x	x		x	x							
073	na	10.4	400	3			x	x		x	x							
074	na	13.8	400	3						x	x							
076	CE	6.5	400	3									x	x	x		x	
077	CE	8.7	400	3		x							x	x	x		x	
078	CE	13.0	400	3			x	x						x	x		x	
079	CE	17.4	400	3						x	x						x	

Table 3 — Electric Heater Usage Chart—Non-Export Units

						50GS, 701A, PA1P (PAC)							50GX, 702A, PA2P (PAC)							50GL, 702B (PAC)						
CPHEATER	Code	kW	V	PH	Fuse	18	24	30	36	42	48	60	18	24	30	36	42	48	60	18	24	30	36	42	48	60
055	UL	5	230	3	0			x	x	x	x	x			x	x	x	x	x			x	x	x	x	x
056	UL	10	230	3	0			x	x	x	x	x			x	x	x	x	x			x	x	x	x	x
068	UL	10	230	3	6																					
057	UL	15	230	3	0			x	x	x	x	x			x	x	x	x	x			x	x	x	x	x
058	UL	15	230	3	6																					
059	UL	20	230	3	6					x	x	x					x	x	x					x	x	x
060	UL	5	460	3	0				x	x	x	x				x	x	x	x				x	x	x	x
061	UL	10	460	3	0				x	x	x	x				x	x	x	x				x	x	x	x
062	UL	15	460	3	0				x	x	x	x				x	x	x	x				x	x	x	x
063	UL	20	460	3	0					x	x	x					x	x	x					x	x	x

Table 3 — Electric Heater Usage Chart—Non-Export Units Continued

						50JS, 601A, PH1P (PHP)							50JX, 602A, PH2P (PHP)							50JZ, 602B (PHP)						
CPHEATER	Code	kW	V	PH	Fuse	18	24	30	36	42	48	60	18	24	30	36	42	48	60	18	24	30	36	42	48	60
055	UL	5	230	3	0			x	x	x	x	x			x	x	x	x	x			x	x	x	x	x
056	UL	10	230	3	0			x	x	x	x				x	x	x	x				x	x	x	x	
068	UL	10	230	3	6							x							x							x
057	UL	15	230	3	0																					
058	UL	15	230	3	6			x	x	x	x	x			x	x	x	x	x			x	x	x	x	x
059	UL	20	230	3	6					x	x	x					x	x	x					x	x	x
060	UL	5	460	3	0				x	x	x	x				x	x	x	x				x	x	x	x
061	UL	10	460	3	0				x	x	x	x				x	x	x	x				x	x	x	x
062	UL	15	460	3	0				x	x	x	x				x	x	x	x				x	x	x	x
063	UL	20	460	3	0					x	x	x					x	x	x					x	x	x

= base unit not offered

x = Approved combination

Table 3 — Electric Heater Usage Chart—Non-Export Units Continued

						50SD, 704A, PA3P (PAC)							50XP, 704B (PAC)						
CPHEATER	Code	kW	V	PH	Fuse	18	24	30	36	42	48	60	18	24	30	36	42	48	60
052	UL	5	230	1	0		X	X	X	X	X	X		X	X	X	X	X	X
064	UL	5	230	1	4														
069	UL	7.2	230	1	0		X	X	X	X	X	X		X	X	X	X	X	X
070	UL	7.2	230	1	4														
065	UL	10	230	1	0		X	X	X	X	X	X		X	X	X	X	X	
050	UL	10	230	1	4														X
051	UL	15	230	1	4			X	X	X	X	X			X	X	X	X	
066	UL	15	230	1	6														X
053	UL	20	230	1	4					X	X	X					X	X	
054	UL	20	230	1	6														X
055	UL	5	230	3	0			X	X	X	X	X				X	X	X	X
056	UL	10	230	3	0			X	X	X	X	X				X	X	X	X
068	UL	10	230	3	6														
057	UL	15	230	3	0			X	X	X	X	X				X	X	X	X
058	UL	15	230	3	6														
059	UL	20	230	3	6					X	X	X					X	X	X
060	UL	5	460	3	0				X	X	X	X							
061	UL	10	460	3	0				X	X	X	X							
062	UL	15	460	3	0				X	X	X	X							
063	UL	20	460	3	0					X	X	X							

Table 3 — Electric Heater Usage—Non-Export Units Chart Continued

						50SZ, 604A, PH3P (PHP)							50XZ, 604B (PHP)						
CPHEATER	Code	kW	V	PH	Fuse	18	24	30	36	42	48	60	18	24	30	36	42	48	60
052	UL	5	230	1	0		X	X	X	X	X			X	X	X			
064	UL	5	230	1	4							X					X	X	X
069	UL	7.2	230	1	0		X	X						X					
070	UL	7.2	230	1	4				X	X	X	X			X	X	X	X	X
065	UL	10	230	1	0														
050	UL	10	230	1	4		X	X	X	X	X	X		X	X	X	X	X	X
051	UL	15	230	1	4														
066	UL	15	230	1	6			X	X	X	X	X			X	X	X	X	X
053	UL	20	230	1	4														
054	UL	20	230	1	6					X	X	X					X	X	X
055	UL	5	230	3	0			X	X	X	X	X				X	X	X	X
056	UL	10	230	3	0			X	X	X	X					X	X	X	
068	UL	10	230	3	6							X							X
057	UL	15	230	3	0			X											
058	UL	15	230	3	6				X	X	X	X				X	X	X	X
059	UL	20	230	3	6					X	X	X					X	X	X
060	UL	5	460	3	0				X	X	X	X							
061	UL	10	460	3	0				X	X	X	X							
062	UL	15	460	3	0				X	X	X	X							
063	UL	20	460	3	0					X	X	X							

= base unit not offered

x = Approved combination

Table 3 — Electric Heater Usage Chart—Non-Export Units Continued

						50ES, 704D (PAC)							50VL, 707C (PAC)						
CPHEATER	Code	kW	V	PH	Fuse	18	24	30	36	42	48	60	18	24	30	36	42	48	60
052	UL	5	230	1	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x
064	UL	5	230	1	4														
069	UL	7.2	230	1	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x
070	UL	7.2	230	1	4														
065	UL	10	230	1	0	x	x	x	x	x	x	x	x	x	x	x	x		
050	UL	10	230	1	4													x	x
051	UL	15	230	1	4			x	x	x	x	x			x	x	x		
066	UL	15	230	1	6													x	x
053	UL	20	230	1	4					x	x	x							
054	UL	20	230	1	6												x	x	x
055	UL	5	230	3	0			x	x	x	x	x			x	x	x	x	x
056	UL	10	230	3	0			x	x	x	x	x			x	x	x	x	x
068	UL	10	230	3	6														
057	UL	15	230	3	0			x	x	x	x	x			x	x	x	x	x
058	UL	15	230	3	6														
059	UL	20	230	3	6					x	x	x					x	x	x
060	UL	5	460	3	0				x	x	x	x				x	x	x	x
061	UL	10	460	3	0				x	x	x	x				x	x	x	x
062	UL	15	460	3	0				x	x	x	x				x	x	x	x
063	UL	20	460	3	0					x	x	x					x	x	x

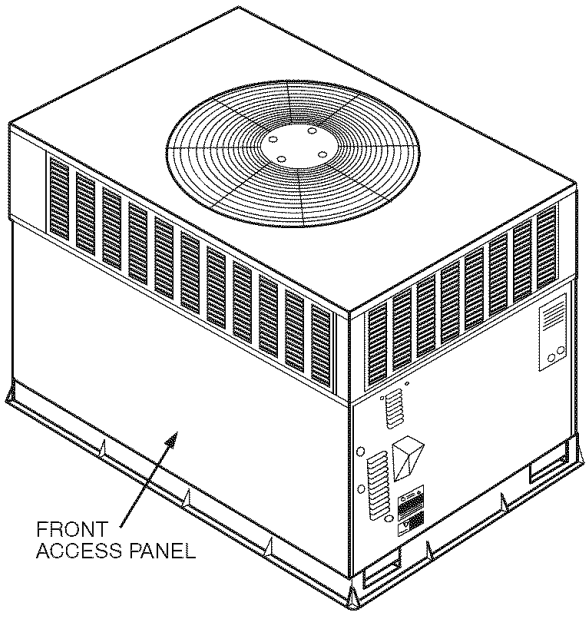
CPHEATER

Table 3 — Electric Heater Usage—Non-Export Units Chart Continued

						50EZ, 604D (PHP) Series 1/B for 230 Volt							50VT, 607C (PHP)						
CPHEATER	Code	kW	V	PH	Fuse	18	24	30	36	42	48	60	18	24	30	36	42	48	60
052	UL	5	230	1	0		x	x	x					x	x	x			
064	UL	5	230	1	4					x	x	x					x	x	x
069	UL	7.2	230	1	0		x												
070	UL	7.2	230	1	4			x	x	x	x	x		x	x	x	x	x	x
065	UL	10	230	1	0														
050	UL	10	230	1	4		x	x	x	x	x	x		x	x	x	x	x	x
051	UL	15	230	1	4														
066	UL	15	230	1	6			x	x	x	x	x			x	x	x	x	x
053	UL	20	230	1	4														
054	UL	20	230	1	6					x	x	x					x	x	x
055	UL	5	230	3	0				x	x	x	x				x	x	x	x
056	UL	10	230	3	0				x	x	x					x	x	x	
068	UL	10	230	3	6							x							x
057	UL	15	230	3	0														
058	UL	15	230	3	6				x	x	x	x				x	x	x	x
059	UL	20	230	3	6					x	x	x					x	x	x
060	UL	5	460	3	0				x	x	x	x				x	x	x	x
061	UL	10	460	3	0				x	x	x	x				x	x	x	x
062	UL	15	460	3	0				x	x	x	x				x	x	x	x
063	UL	20	460	3	0					x	x	x					x	x	x

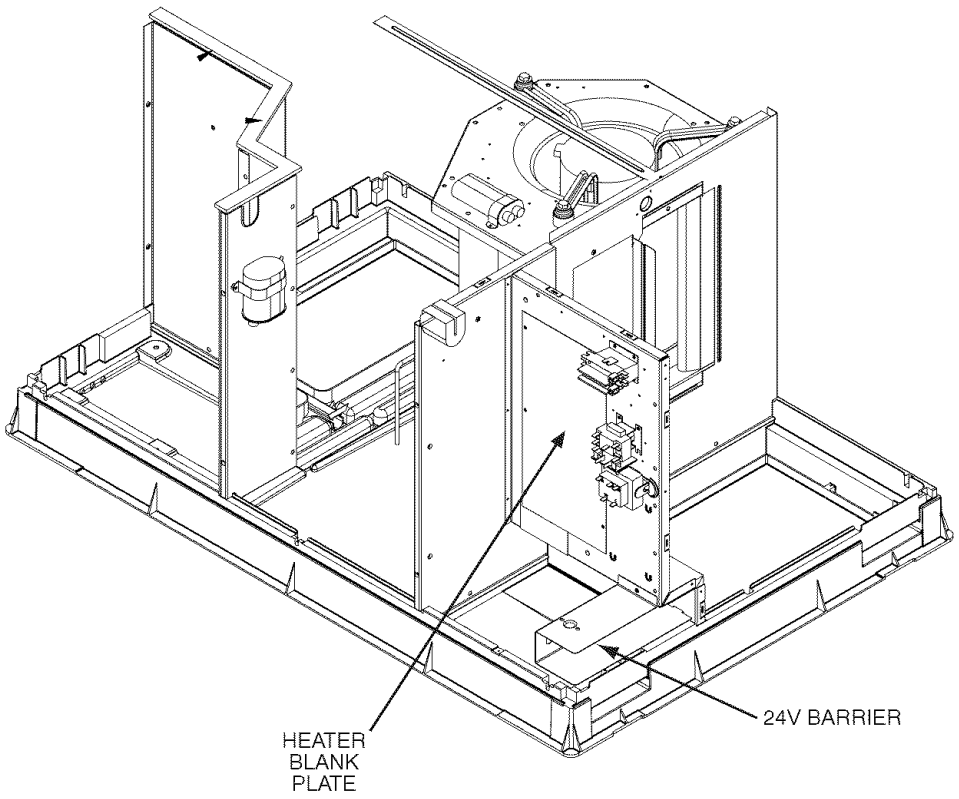
= base unit not offered

x = Approved combination



C99091

Fig. 1 - Unit Control Box Location



A06282

Fig. 2 - Heater Blank Plate Location

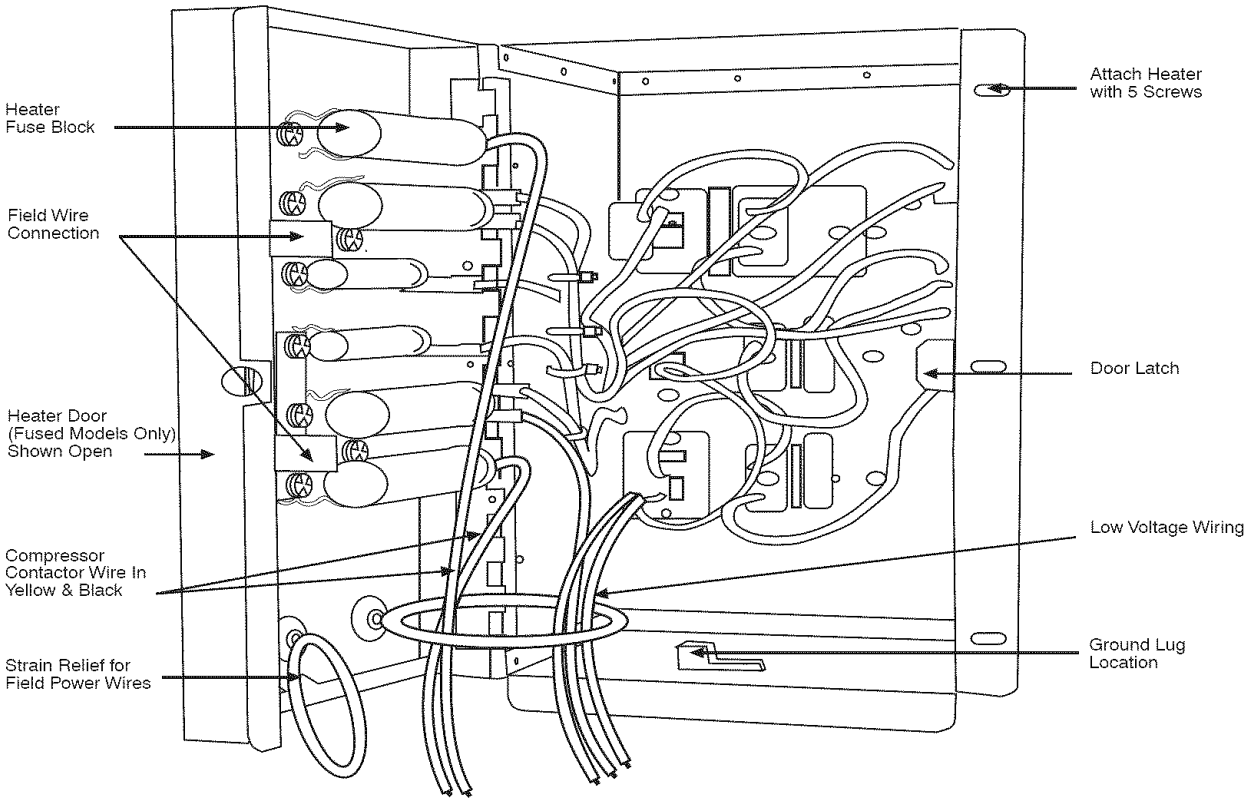


Fig. 3 - Heater Control Box

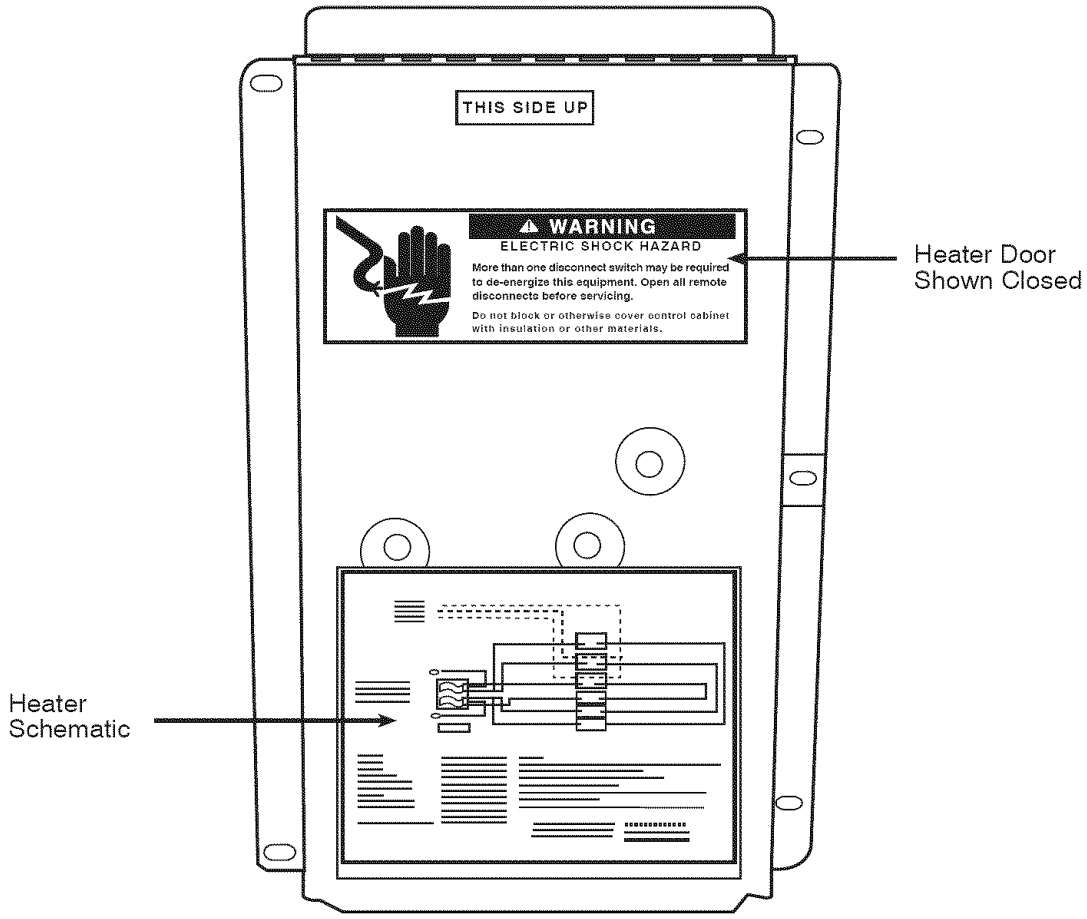
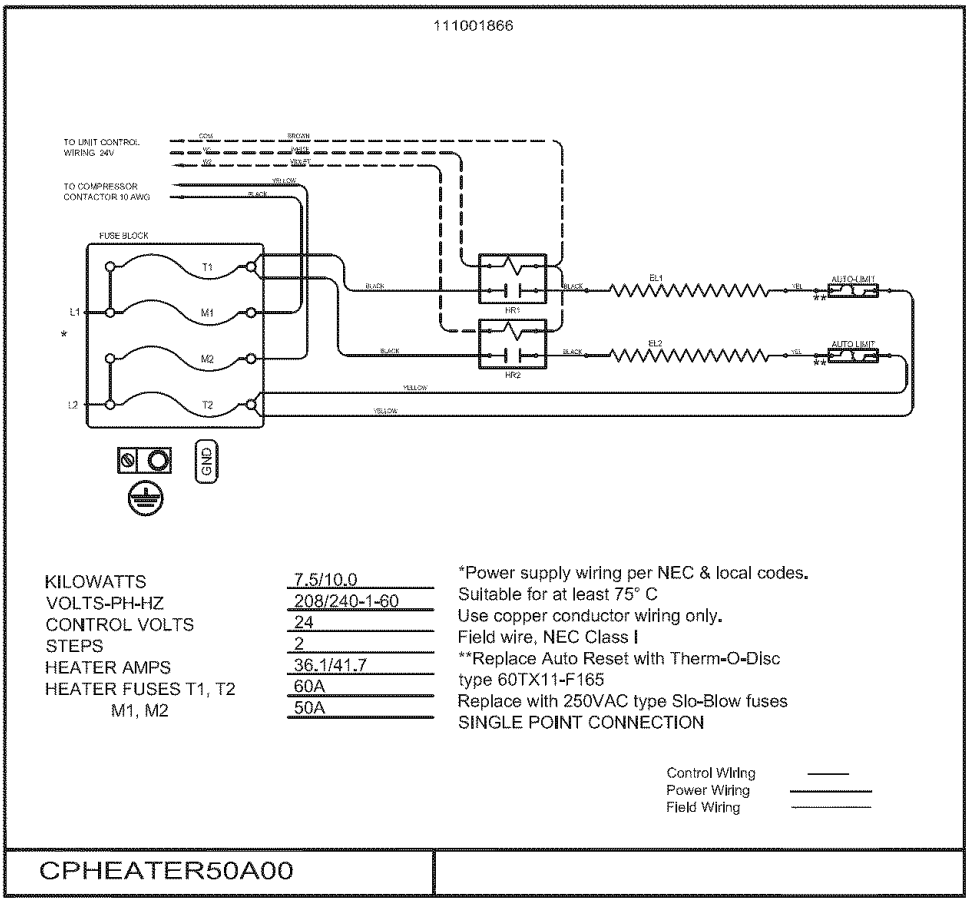
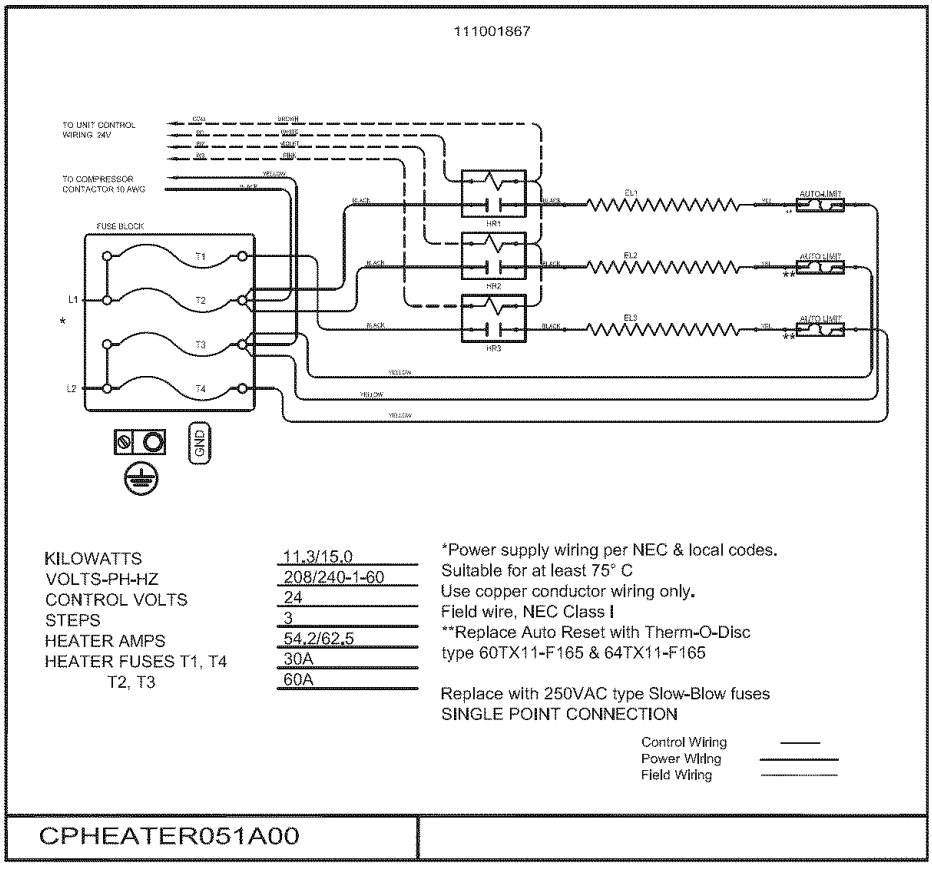


Fig. 4 - Schematic Location



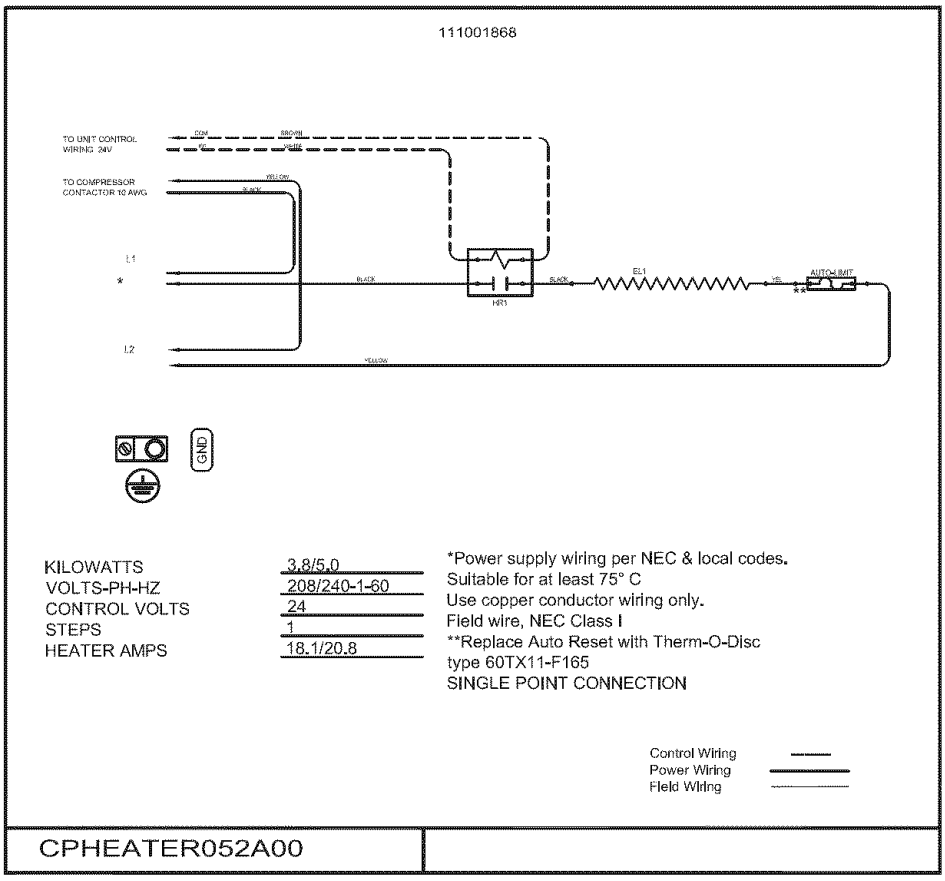
A07287

Fig. 5 - CPHEATER050A00 Wiring Diagram



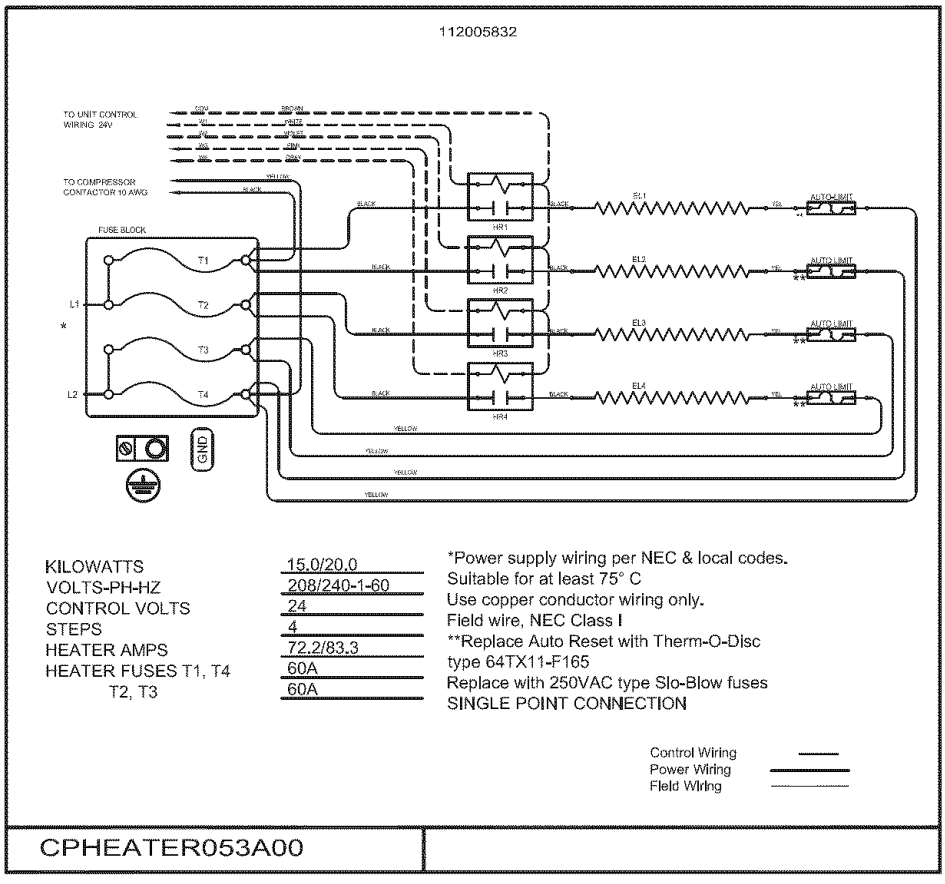
A07288

Fig. 6 - CPHEATER051A00 Wiring Diagram



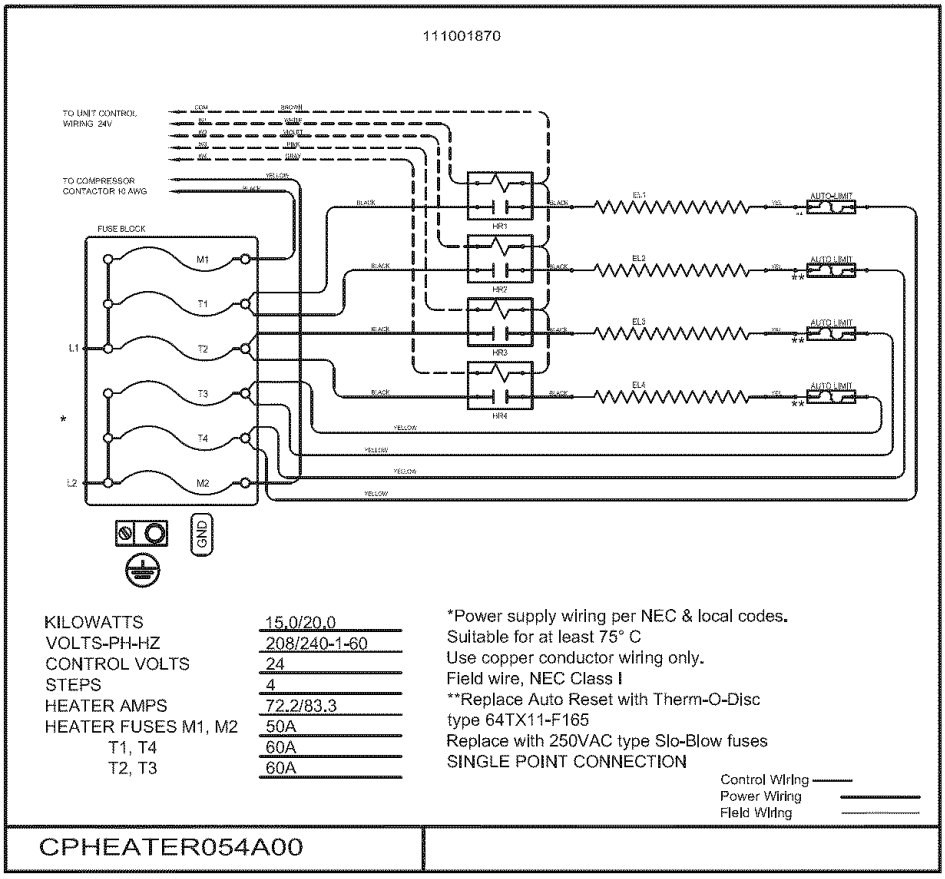
A07289

Fig. 7 - CPHEATER052A00 Wiring Diagram



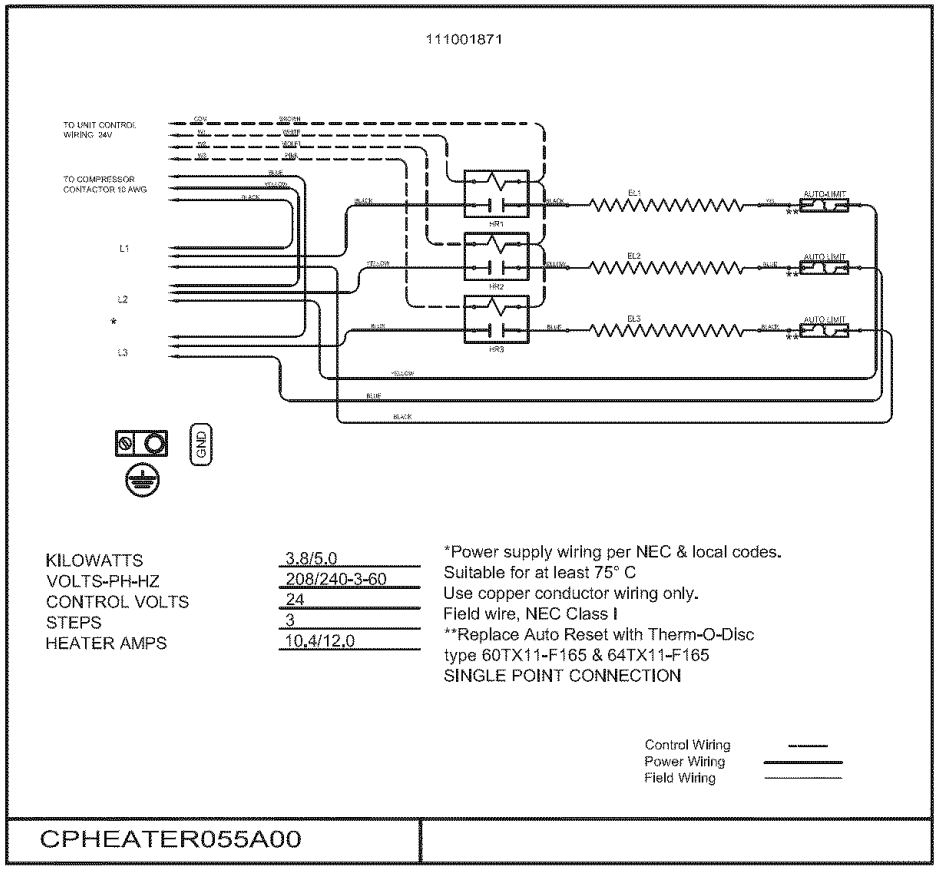
A07290

Fig. 8 - CPHEATER053A00 Wiring Diagram



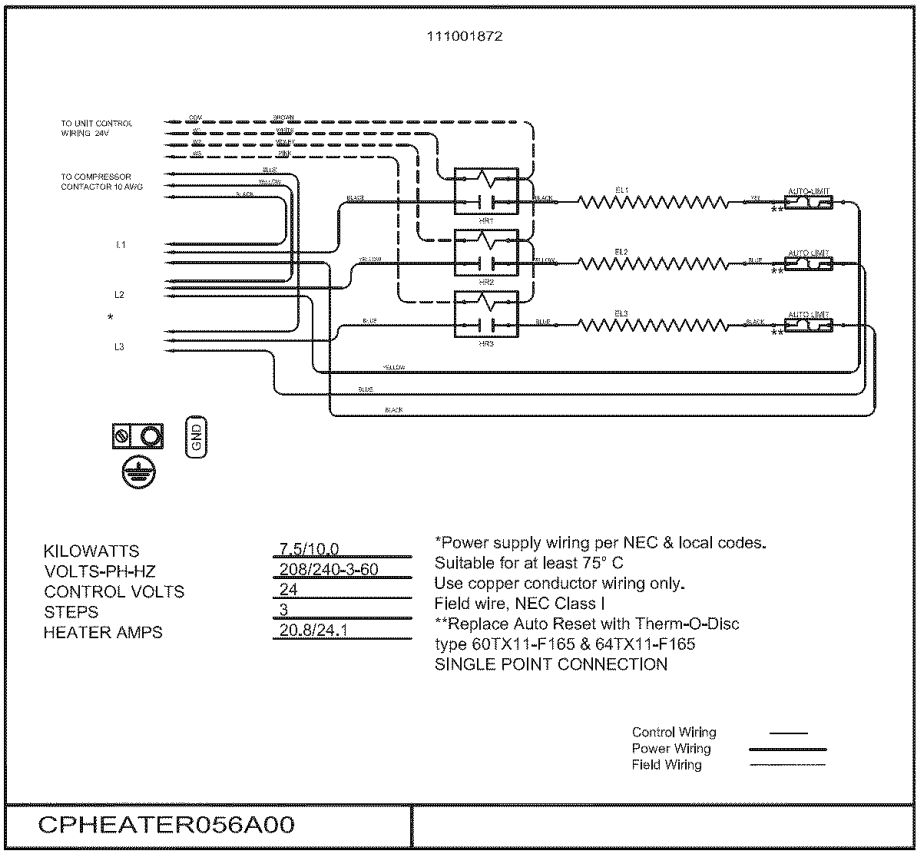
A07291

Fig. 9 - CPHEATER054A00 Wiring Diagram



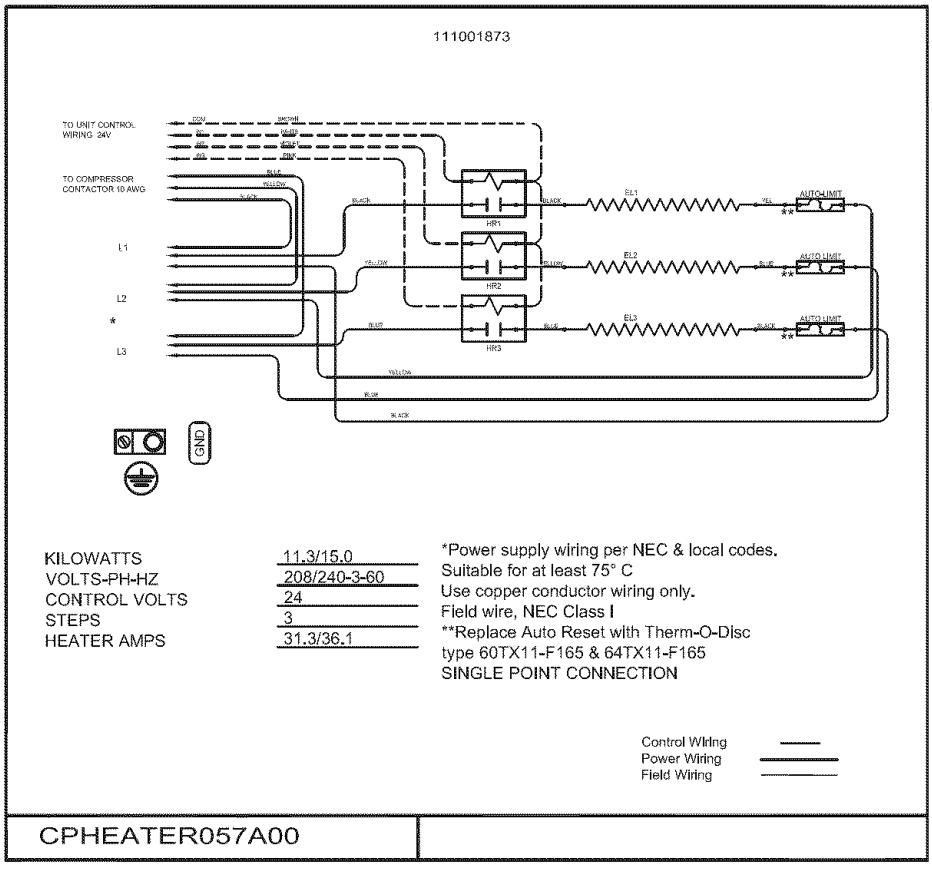
A07292

Fig. 10 - CPHEATER055A00 Wiring Diagram



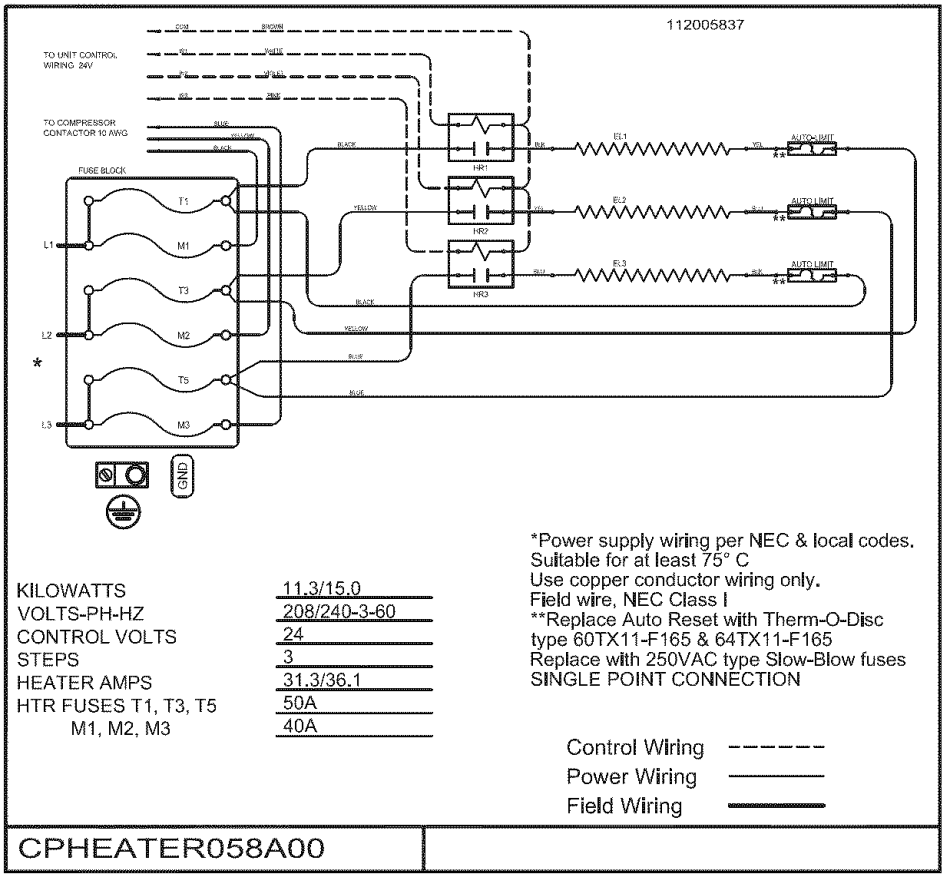
A07293

Fig. 11 - CPHEATER056A00 Wiring Diagram



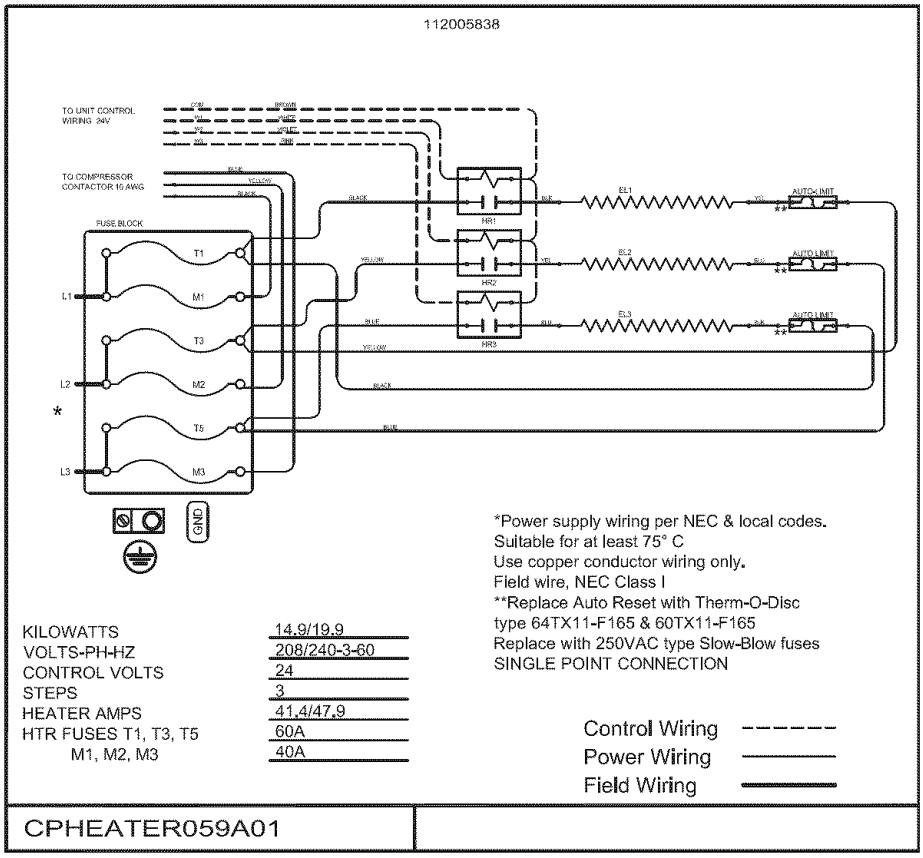
A07294

Fig. 12 - CPHEATER057A00 Wiring Diagram



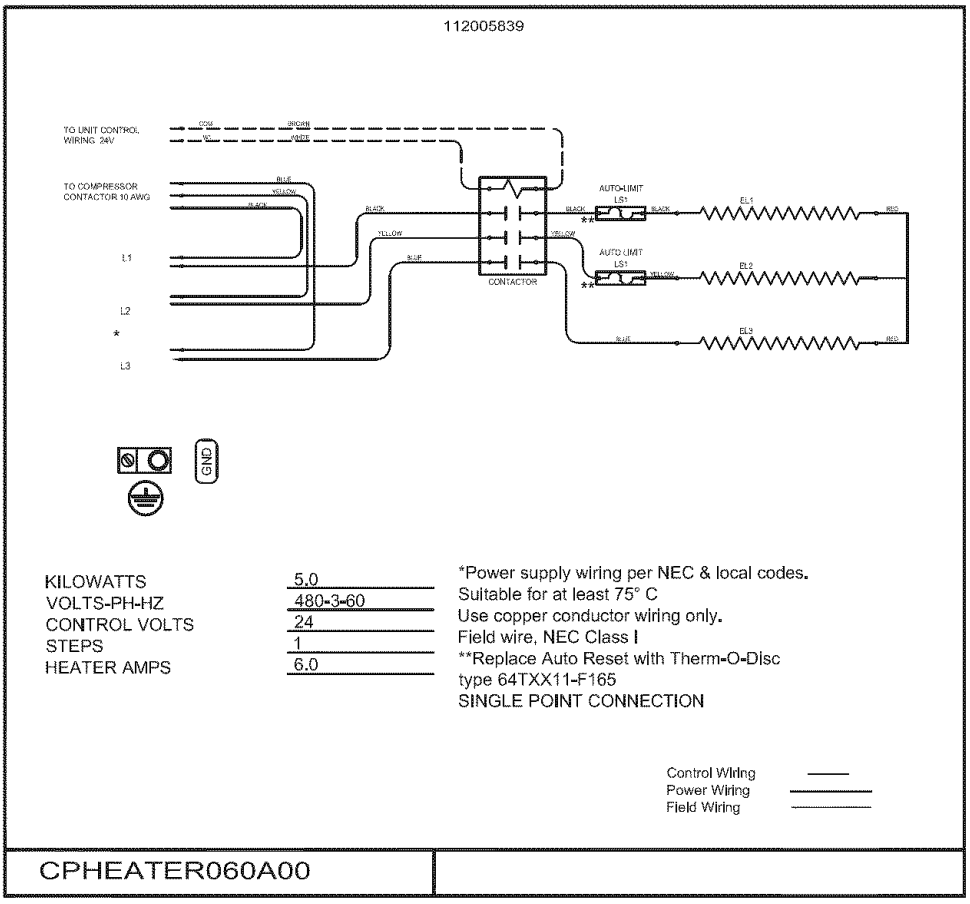
A07295

Fig. 13 - CPHEATER058A00 Wiring Diagram



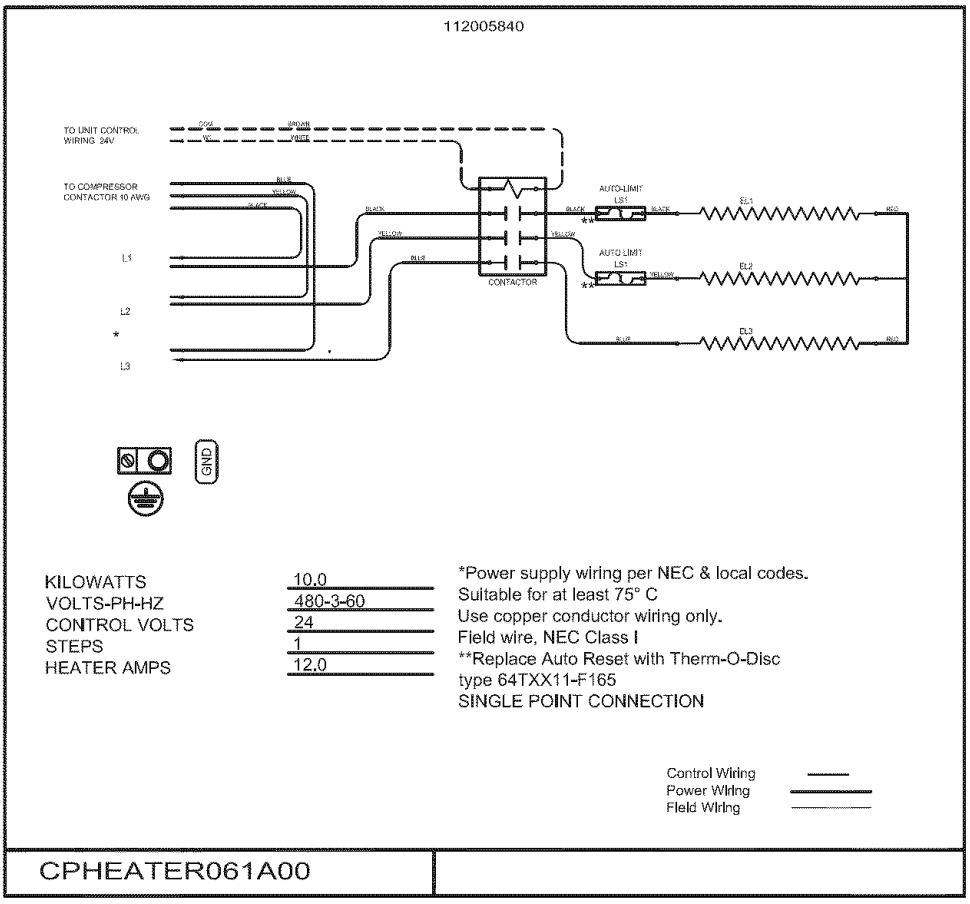
A07296

Fig. 14 - CPHEATER059A01 Wiring Diagram



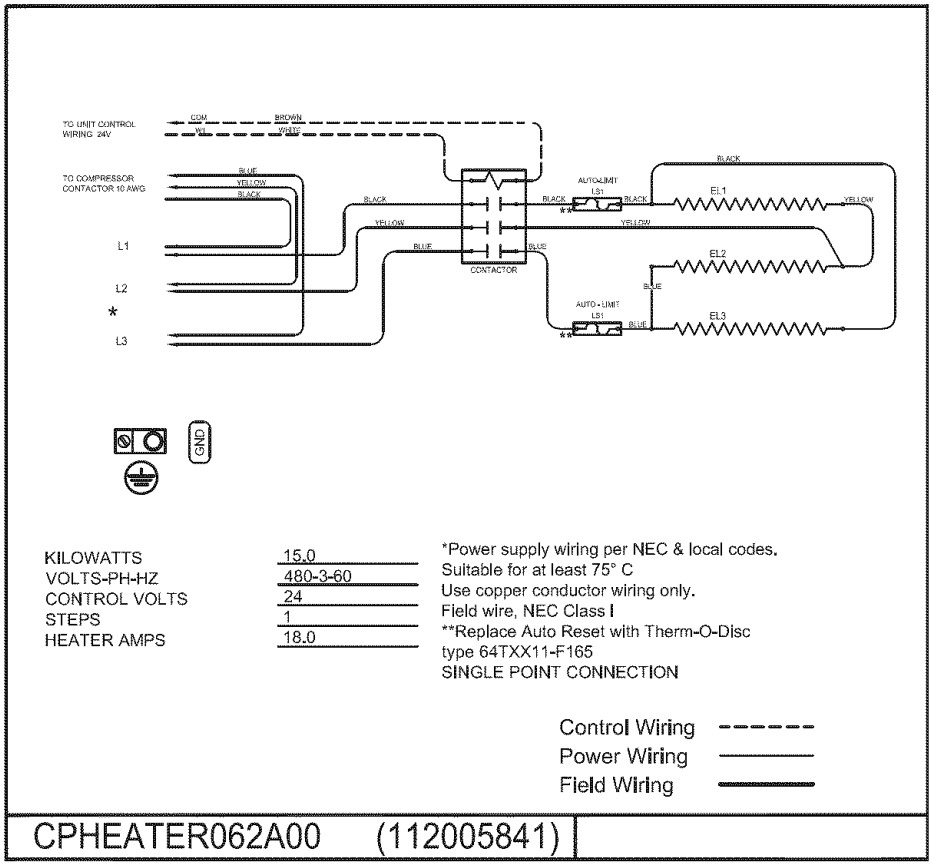
A07297

Fig. 15 - CPHEATER060A00 Wiring Diagram



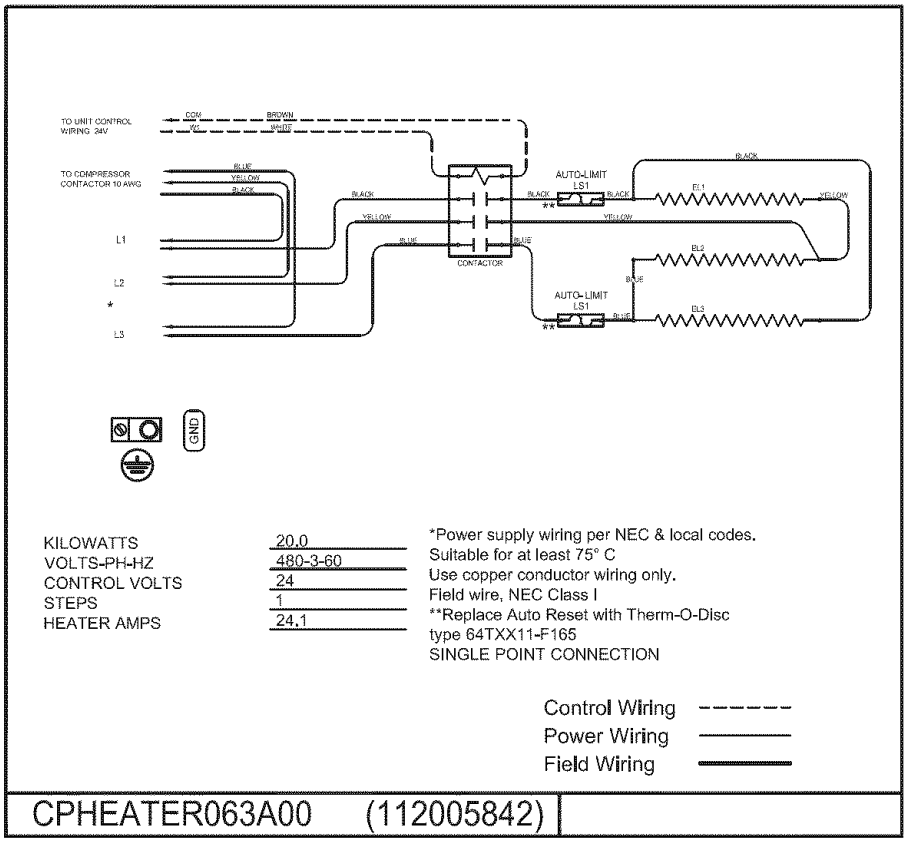
A07298

Fig. 16 - CPHEATER061A00 Wiring Diagram



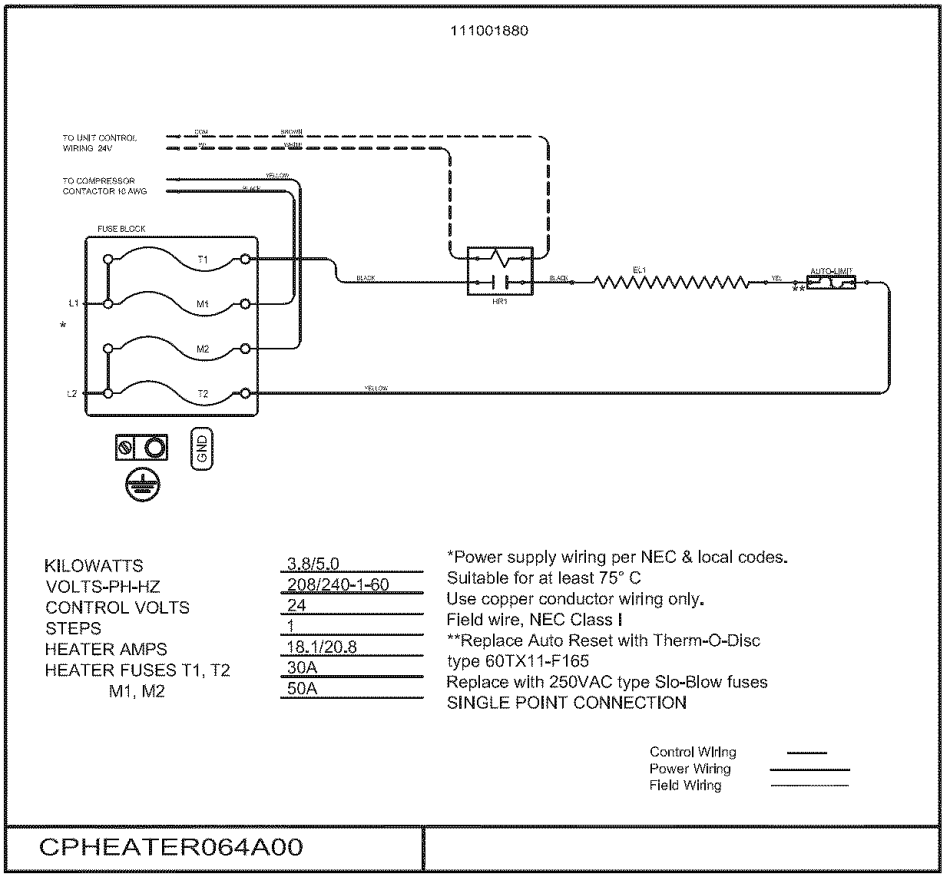
A07299

Fig. 17 - CPHEATER062A00 Wiring Diagram



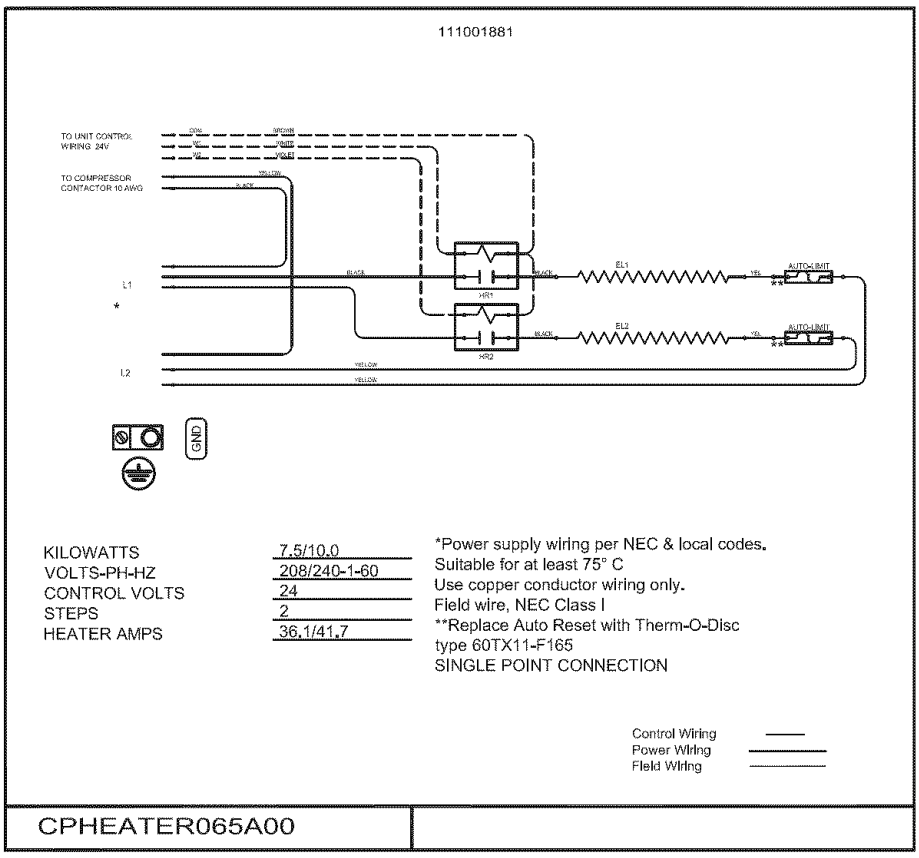
A07300

Fig. 18 - CPHEATER063A00 Wiring Diagram



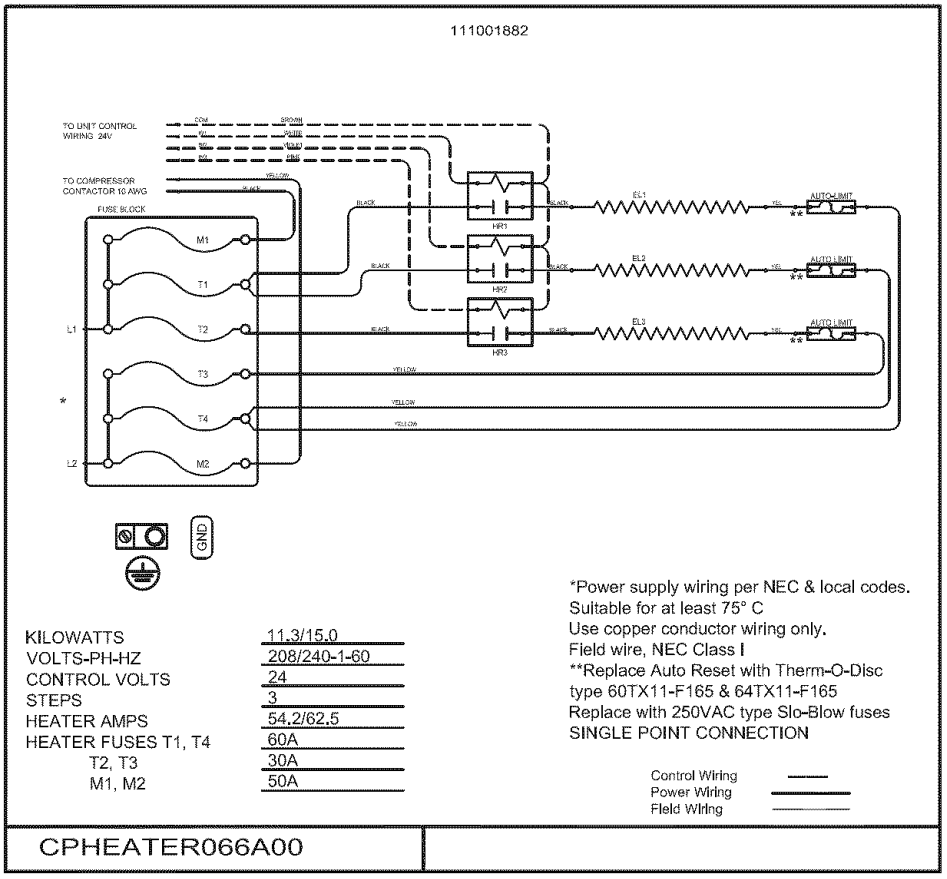
A07301

Fig. 19 - CPHEATER064A00 Wiring Diagram



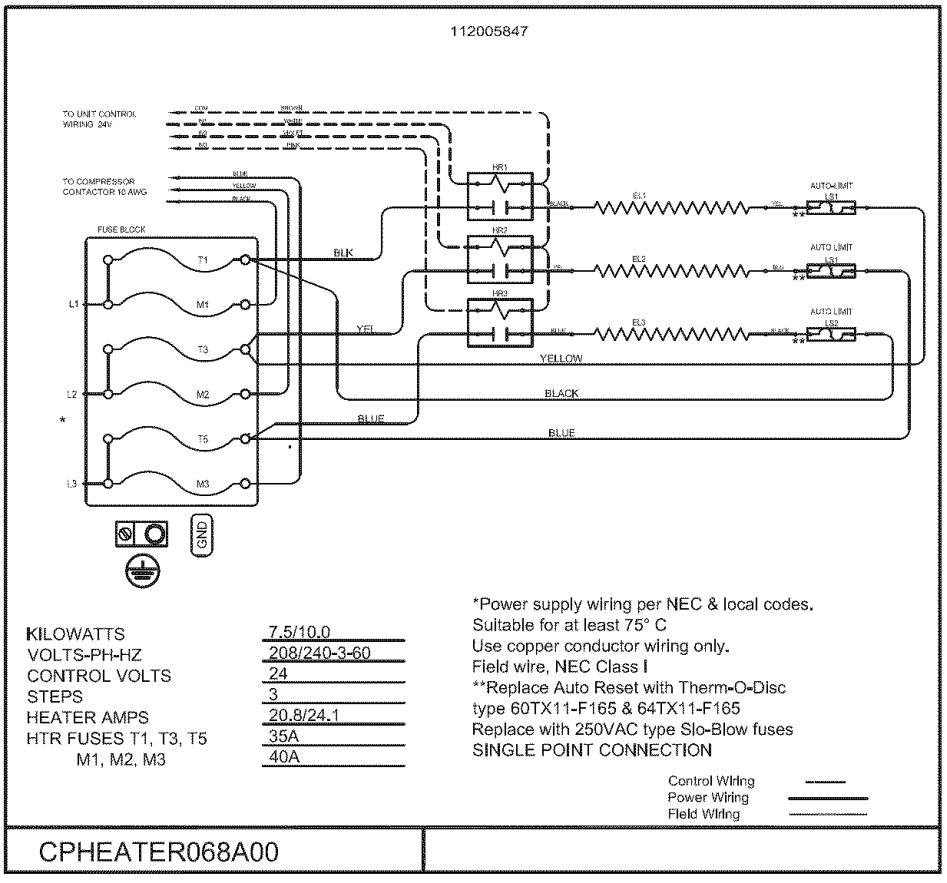
A07302

Fig. 20 - CPHEATER065A00 Wiring Diagram



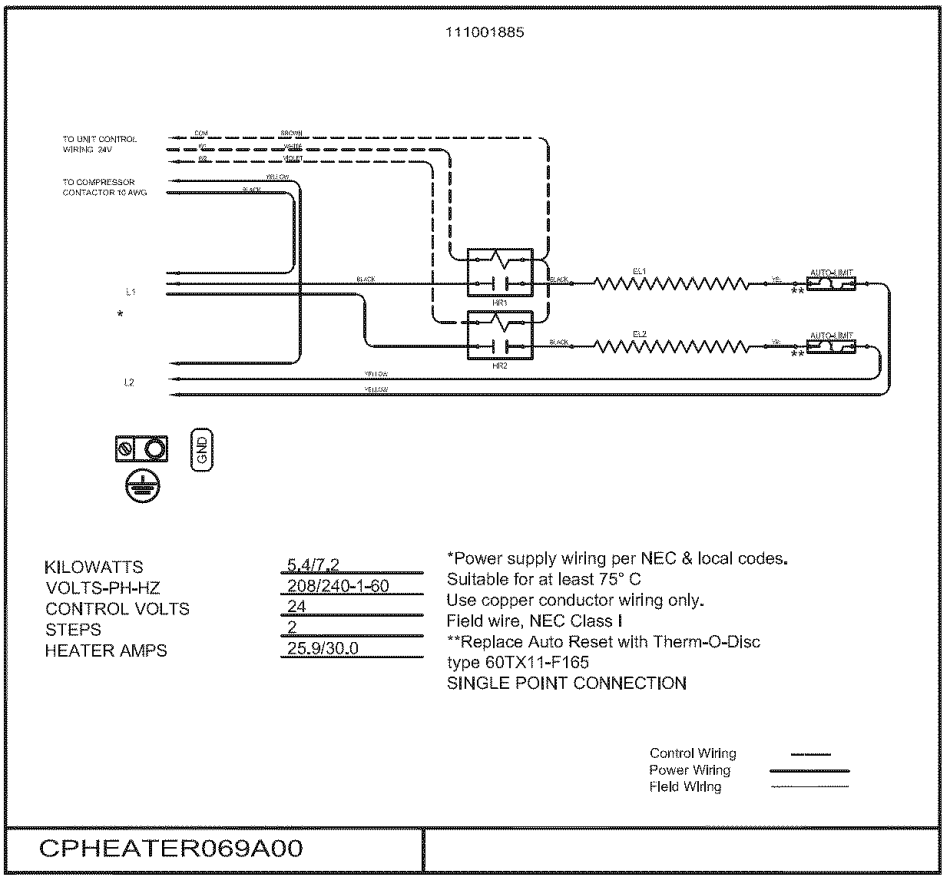
A07303

Fig. 21 - CPHEATER066A00 Wiring Diagram



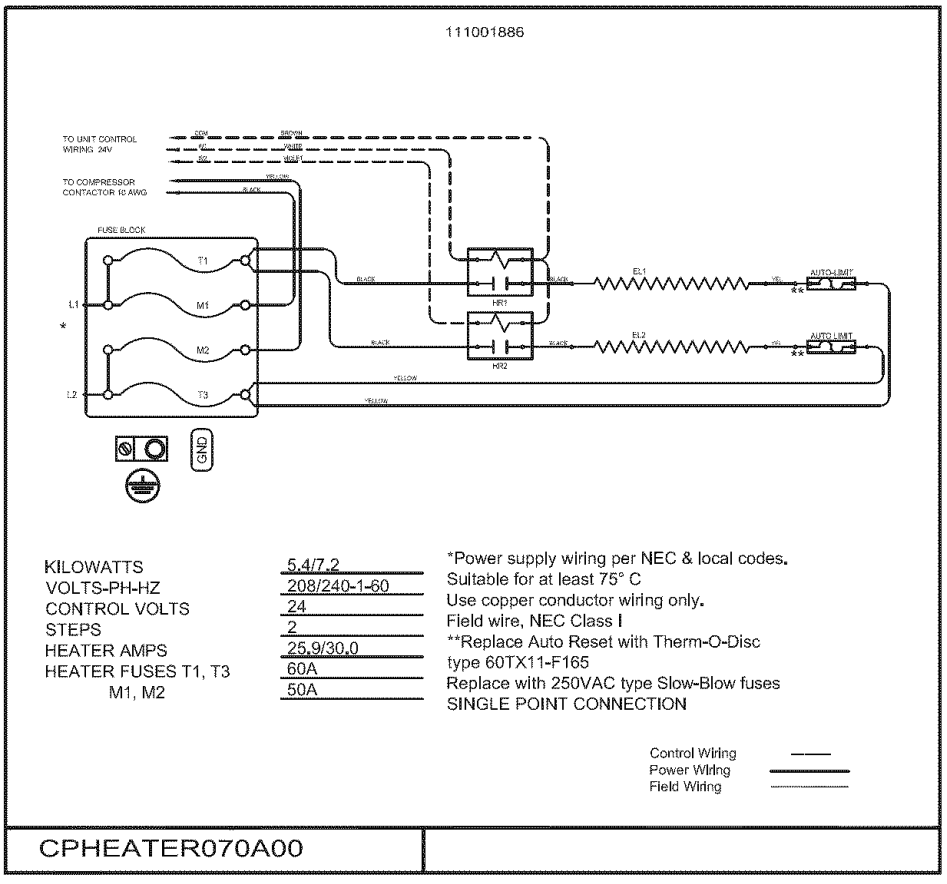
A07304

Fig. 22 - CPHEATER068A00 Wiring Diagram



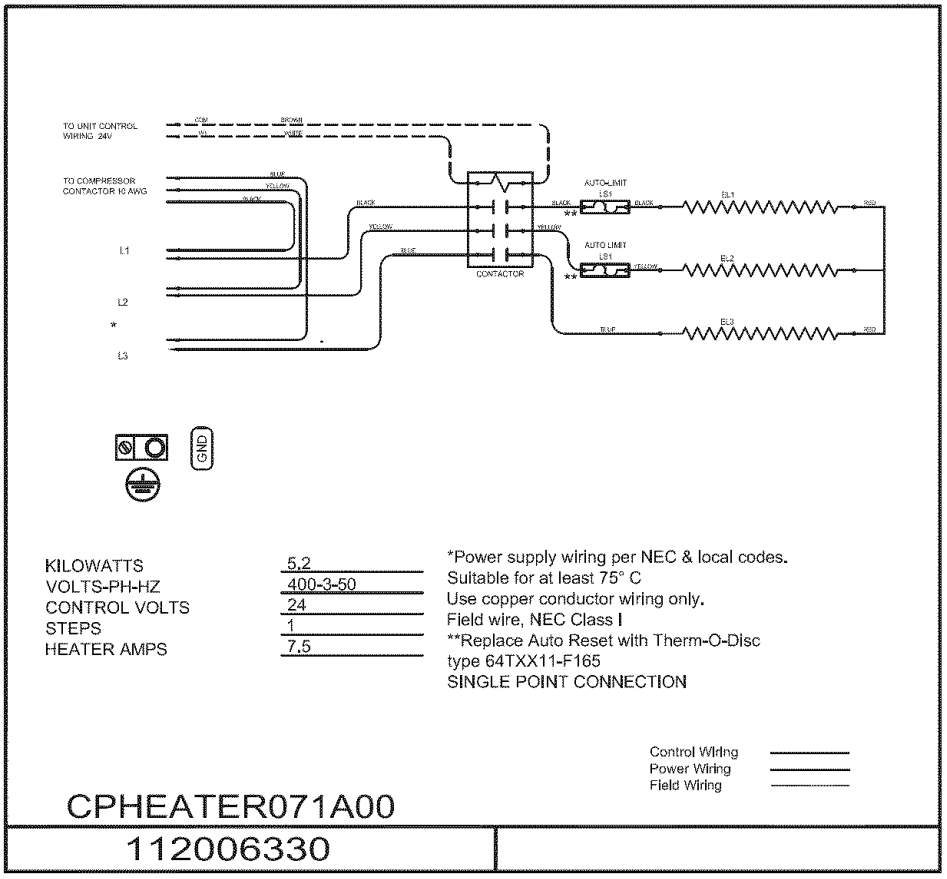
A07305

Fig. 23 - CPHEATER069A00 Wiring Diagram



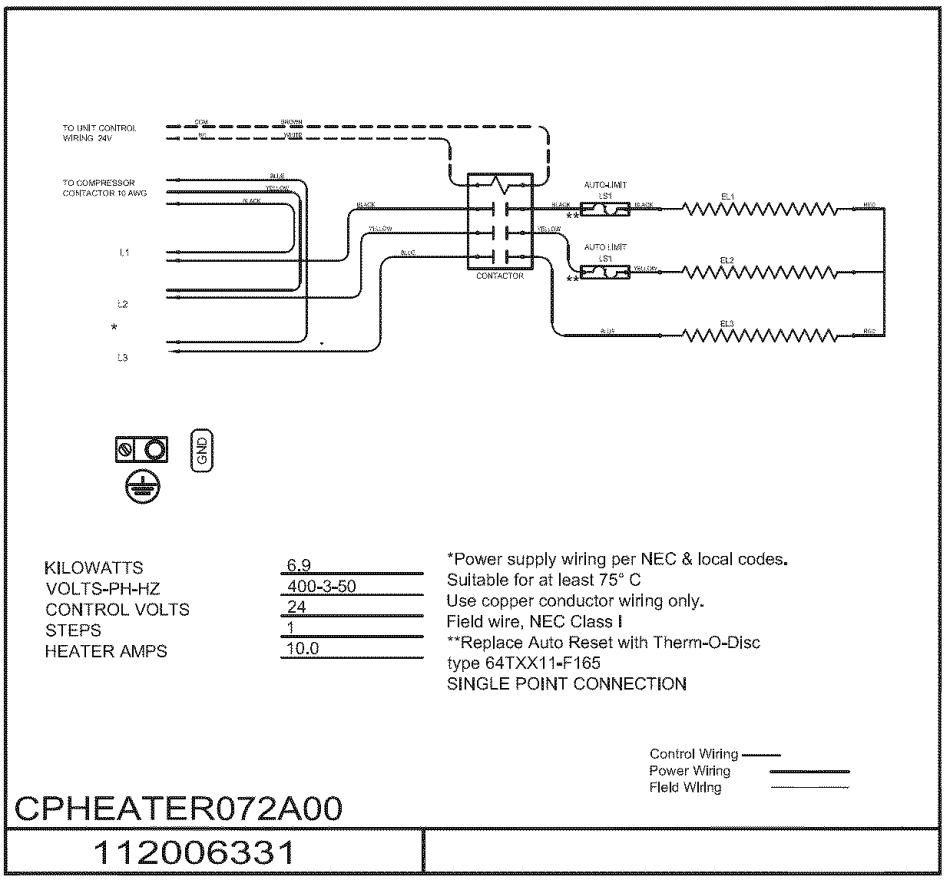
A07306

Fig. 24 - CPHEATER070A00 Wiring Diagram



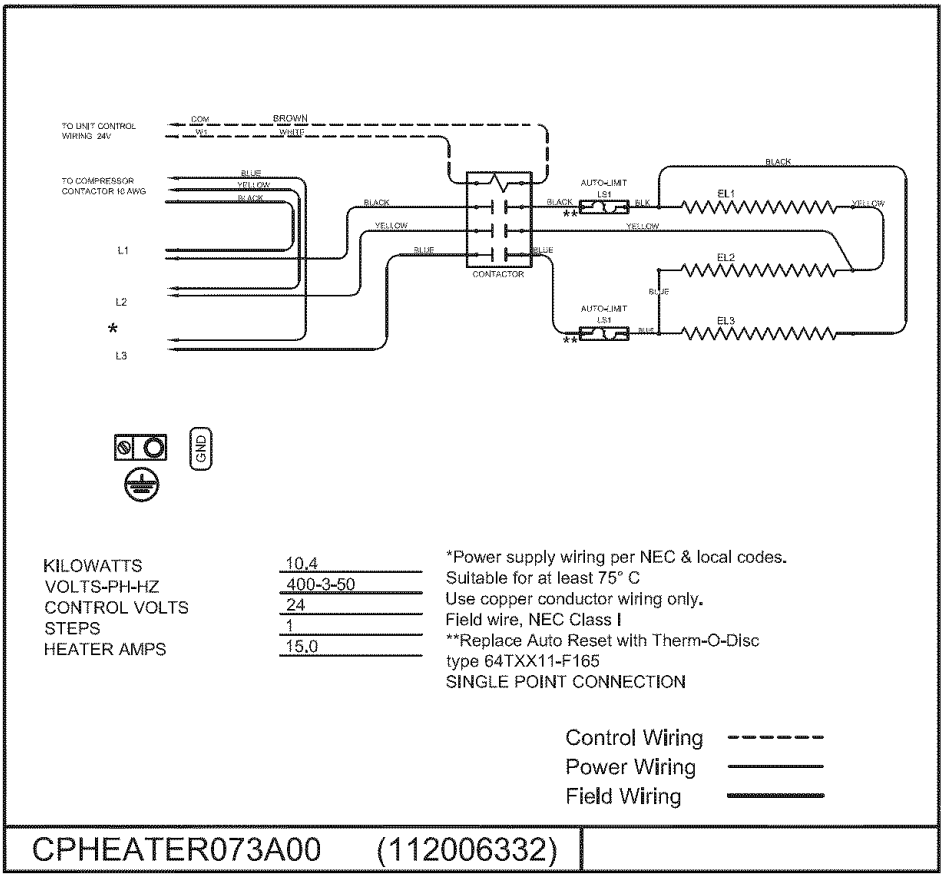
A07307

Fig. 25 - CPHEATER071A00 Wiring Diagram



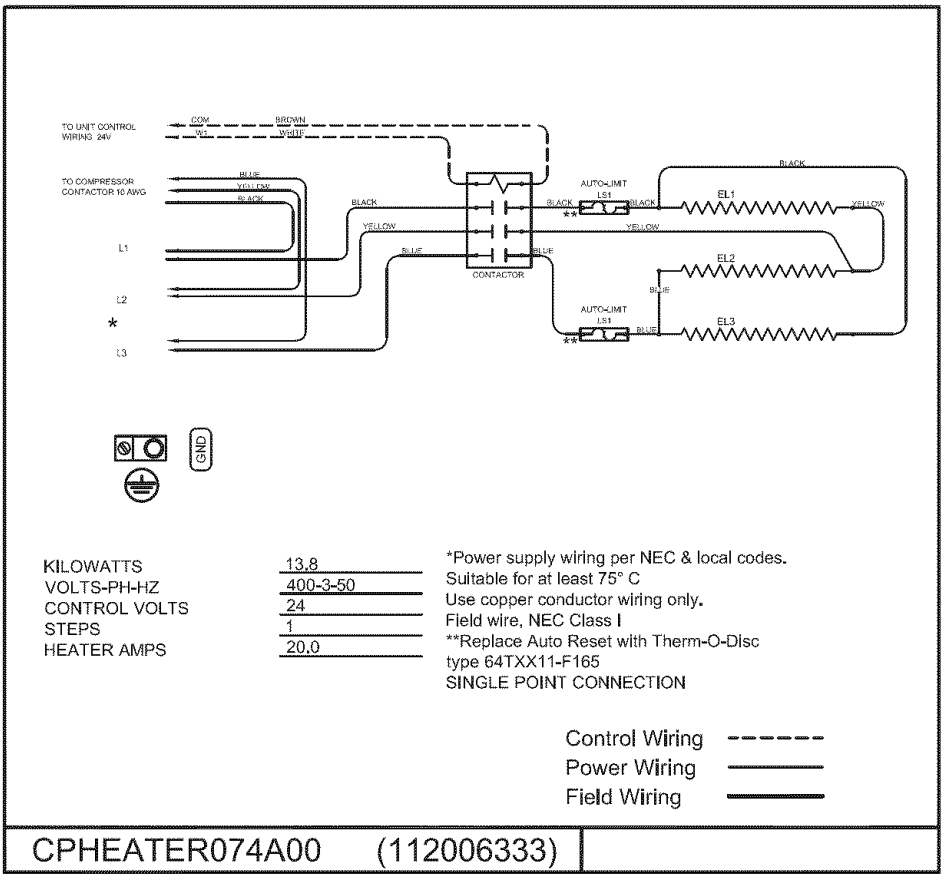
A07308

Fig. 26 - CPHEATER072A00 Wiring Diagram



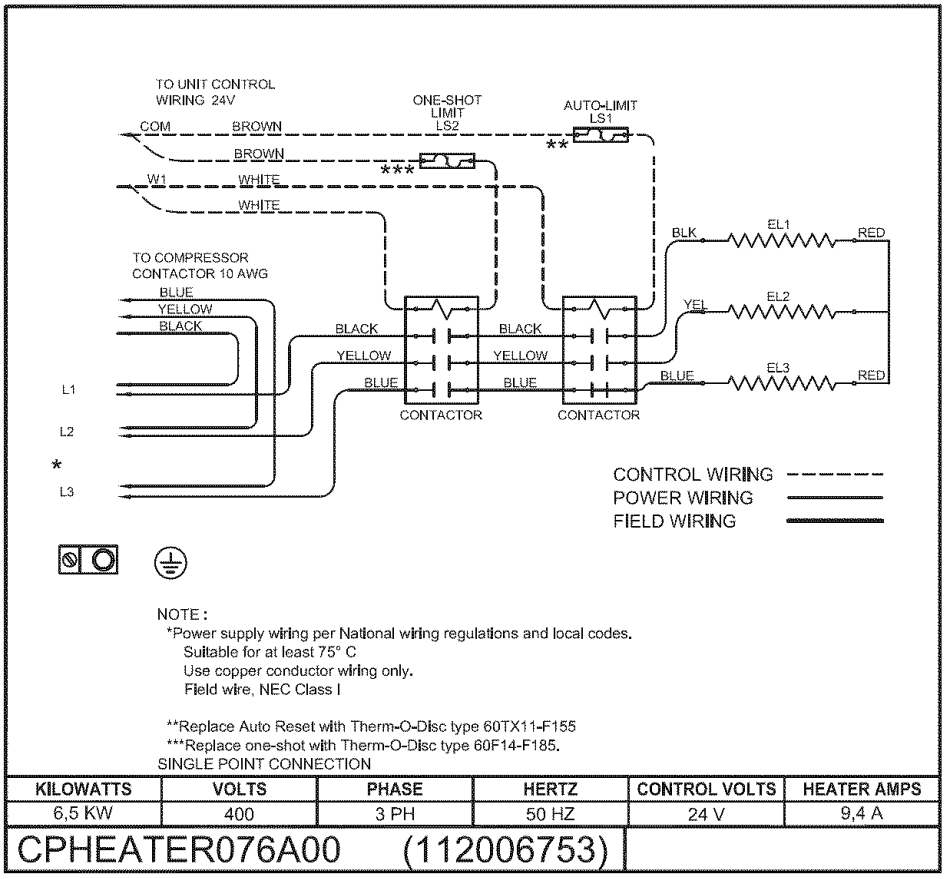
A07309

Fig. 27 - CPHEATER073A00 Wiring Diagram



A07310

Fig. 28 - CPHEATER074A00 Wiring Diagram



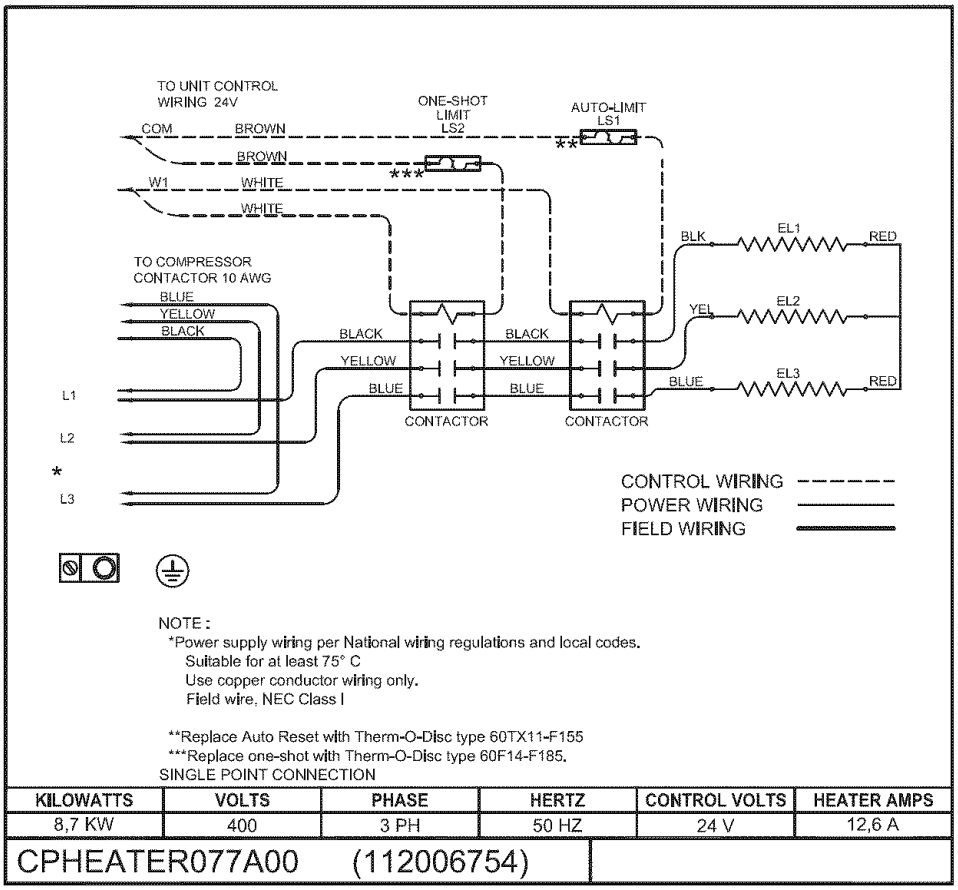
NOTE :
*Power supply wiring per National wiring regulations and local codes.
Suitable for at least 75° C
Use copper conductor wiring only.
Field wire, NEC Class I

**Replace Auto Reset with Therm-O-Disc type 60TX11-F155
***Replace one-shot with Therm-O-Disc type 60F14-F185.
SINGLE POINT CONNECTION

KILOWATTS	VOLTS	PHASE	HERTZ	CONTROL VOLTS	HEATER AMPS
6,5 KW	400	3 PH	50 HZ	24 V	9,4 A
CPHEATER076A00 (112006753)					

A07311

Fig. 29 - CPHEATER076A00 Wiring Diagram



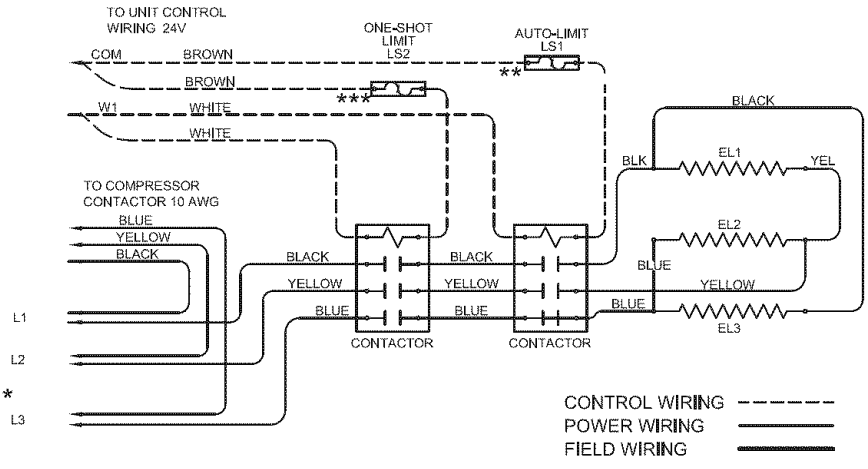
NOTE :
*Power supply wiring per National wiring regulations and local codes.
Suitable for at least 75° C
Use copper conductor wiring only.
Field wire, NEC Class I

**Replace Auto Reset with Therm-O-Disc type 60TX11-F155
***Replace one-shot with Therm-O-Disc type 60F14-F185.
SINGLE POINT CONNECTION

KILOWATTS	VOLTS	PHASE	HERTZ	CONTROL VOLTS	HEATER AMPS
8,7 KW	400	3 PH	50 HZ	24 V	12,6 A
CPHEATER077A00 (112006754)					

A07312

Fig. 30 - CPHEATER077A00 Wiring Diagram



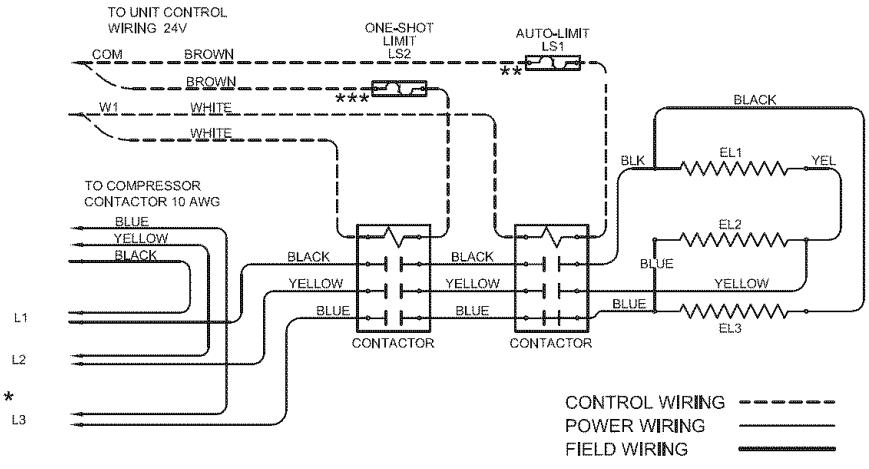
NOTE :
*Power supply wiring per National wiring regulations and local codes.
Suitable for at least 75° C
Use copper conductor wiring only.
Field wire, NEC Class I

**Replace Auto Reset with Therm-O-Disc type 60TX11-F155
***Replace one-shot with Therm-O-Disc type 60F14-F185.
SINGLE POINT CONNECTION

KILOWATTS	VOLTS	PHASE	HERTZ	CONTROL VOLTS	HEATER AMPS
13,0 KW	400	3 PH	50 HZ	24 V	18,8 A
CPHEATER078A00 (112006755)					

A07313

Fig. 31 - CPHEATER078A00 Wiring Diagram



NOTE :
*Power supply wiring per National wiring regulations and local codes.
Suitable for at least 75° C
Use copper conductor wiring only.
Field wire, NEC Class I

**Replace Auto Reset with Therm-O-Disc type 60TX11-F155
***Replace one-shot with Therm-O-Disc type 60F14-F200.
SINGLE POINT CONNECTION

KILOWATTS	VOLTS	PHASE	HERTZ	CONTROL VOLTS	HEATER AMPS
17,4 KW	400	3 PH	50 HZ	24 V	25,1 A
CPHEATER079A00 (112006756)					

A07314

Fig. 32 - CPHEATER079A00 Wiring Diagram

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 Replaces: IIKCPHEATER–08