INSTALLATION INSTRUCTIONS
EHNA Electric Heaters 5–20kW, 1 & 3 Phase For 60 Hz Small Packaged Products
PAD3, PHD3, PAD4, PHD4, PAR5, PHR5, WPA3, WPH3

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

NOTE: Installation Instructions include Single and Dual point connection instructions separately.

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. Consult local building codes, the current editions of the National Electrical Code (NEC) NFPA 70.

In Canada refer to the current editions of the Canadian Electrical Code CSA C22.1.

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.

⚠ 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 2. Before proceeding, verify the heater label for correct voltage and kW requirements.

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)
10. Dual Point Warning Label
11. Dual Point Electrical Rating Label

INSTALLATION

SINGLE POINT 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 electrical access panel (See Figure 1).
5. Locate and remove the heater access cover plate inside unit access panel (See Figure 3). 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. Attach provided heater wiring labels at appropriate locations (see Figure 11 or Figure 12).
9. Dress wires with wire ties provided.

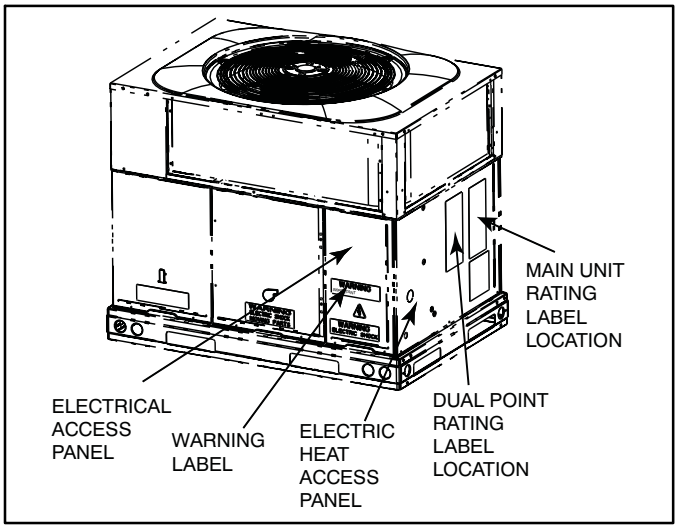

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Figure 1 – Unit Access Panel and Label Location

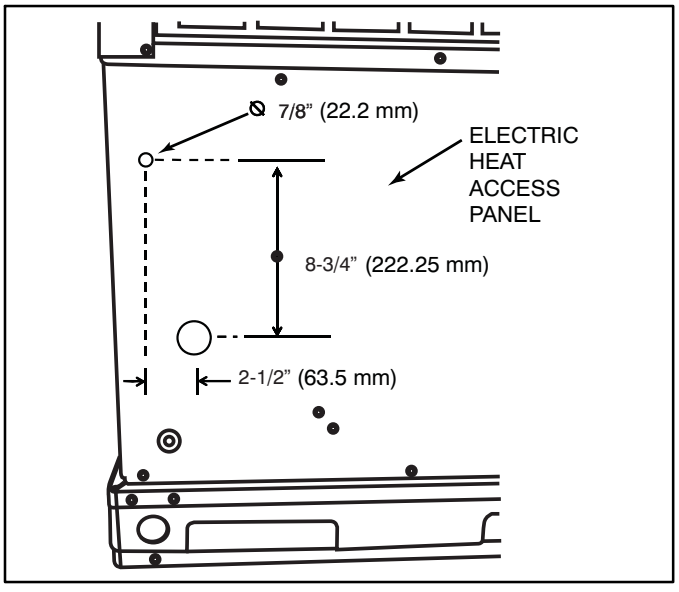

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Figure 2 – Second Power Line Access Hole Location

SINGLE POINT ELECTRICAL CONNECTION

NOTE: 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.

NOTE: Use minimum 75°C copper wire only.

1. Make sure all disconnects are still open and tagged out as required previously.
2. Mark the main unit nameplate with an "X" for the electric heater size being installed. Refer to the electrical data marked with an "X" on the nameplate for wire and maximum over current protection sizing.
3. Connect low voltage wires as shown in unit schematic diagrams found on the base unit installation instructions. These connections must be made in the 24v barrier section inside the unit panel (See Figure 3).

NOTE: If the unit 24V wires do not have a matching receptacle, cut the 24V wires from the electric heater plug, strip the ends, and wire nut together to match the schematic connections. If the electric heater 24V wires do not have a matching plug, cut the 24V wires from the unit receptacle, strip the ends, and wire nut together to match the schematic connections.

4. Insert field power line through the electrical heater access panel hole (see Figure 6 or Figure 7) and connect to electric heater as shown in their respective wiring diagram. Fused electrical heaters field lines will be connected to the fuse block lugs (see Figure 10) and non fused electric heater field lines will be connected to heater leads using wire nuts. Ground electrical equipment in the appropriate locations.

IMPORTANT: 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.

5. Connect stripped wires from heater to compressor contactor leads using supplied wire nuts according to their heater wiring diagram.

NOTE: Dress wires with wire ties provided. For fused heaters, use pre–mounted wire tires inside of fuse box cover to secure and strain relieve wires.

6. Separate all wires from incoming power leads.
7. Close electrical access panel.

DUAL POINT HEATER INSTALLATION

NOTE: Complete single point heater installation procedures before completing the follow steps.

1. Open all electrical disconnects and install lockout tag before beginning any installation or service work.
2. Remove electric access panel (see Figure 1), check to make sure there is clearance on the inside of control box above the existing high voltage knockout. Using a knockout punch and die combination, make a 7/8–in. hole on the Electrical Heat access panel for second power circuit (see Figure 2). A knockout punch and die combination or equivalent tool is required to make this hole. Other types of drill bits or standard hole saws are not acceptable.
3. Attach warning and rating labels in the selected location (see Figure 1).
4. Mark the main unit nameplate with an "X" next to the accessory heater "none". Mark the dual point rating label installed at step 3 with an "X" for the electrical heater size being installed. Refer to the electrical data marked with

an “X” on each nameplate for wire and maximum over current protection sizing.

5. Remove power line connection from heater to unit contactor and compressor (see Figure 4 and Figure 5). These are the stripped end wires black and yellow, with opened ends.

DUAL POINT ELECTRICAL CONNECTION

NOTE: 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.

NOTE: Use a minimum 75°C copper wire only.

1. Make sure all disconnects are still open and tagged out as required previously.
2. Connect low voltage wires as shown in unit schematic diagrams found on base unit installation instructions. These connections must be made in the 24v barrier section inside the unit panel (see Figure 3).

NOTE: If the unit 24V wires do not have a matching receptacle, cut the 24V wires from the electric heater plug, strip the ends, and wire nut together to match the schematic connections. If the electric heater 24V wires do not have a matching plug, cut the 24V wires from the unit receptacle, strip the ends, and wire nut together to match the schematic connections.

3. Insert first field power line through the electrical heater access panel bottom hole (see Figure 8 or Figure 9) and connect to electric heater as shown in their respective wiring diagram found on the heater accessory kit. Fused electrical heaters field lines will be connected to the fuse block lugs (see Figure 10.) and non fused electric heater field lines will be connected to heater leads using wire nuts. Ground electrical equipment in the appropriate locations.

IMPORTANT: Heaters with factory installed fuses may be installed on a 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.

NOTE: Dress wires with wire ties provided. For fused heaters, use pre−mounted wire ties inside of fuse box cover to secure and strain relieve wires.

4. Insert second field power line through the electrical heater access panel top hole (see Figure 8 or Figure 9) and connect to unit contactor black and yellow leads using wire nuts. Ground electrical equipment in the appropriate locations.
5. Separate all wires from incoming power leads.
6. Close electrical access panel.

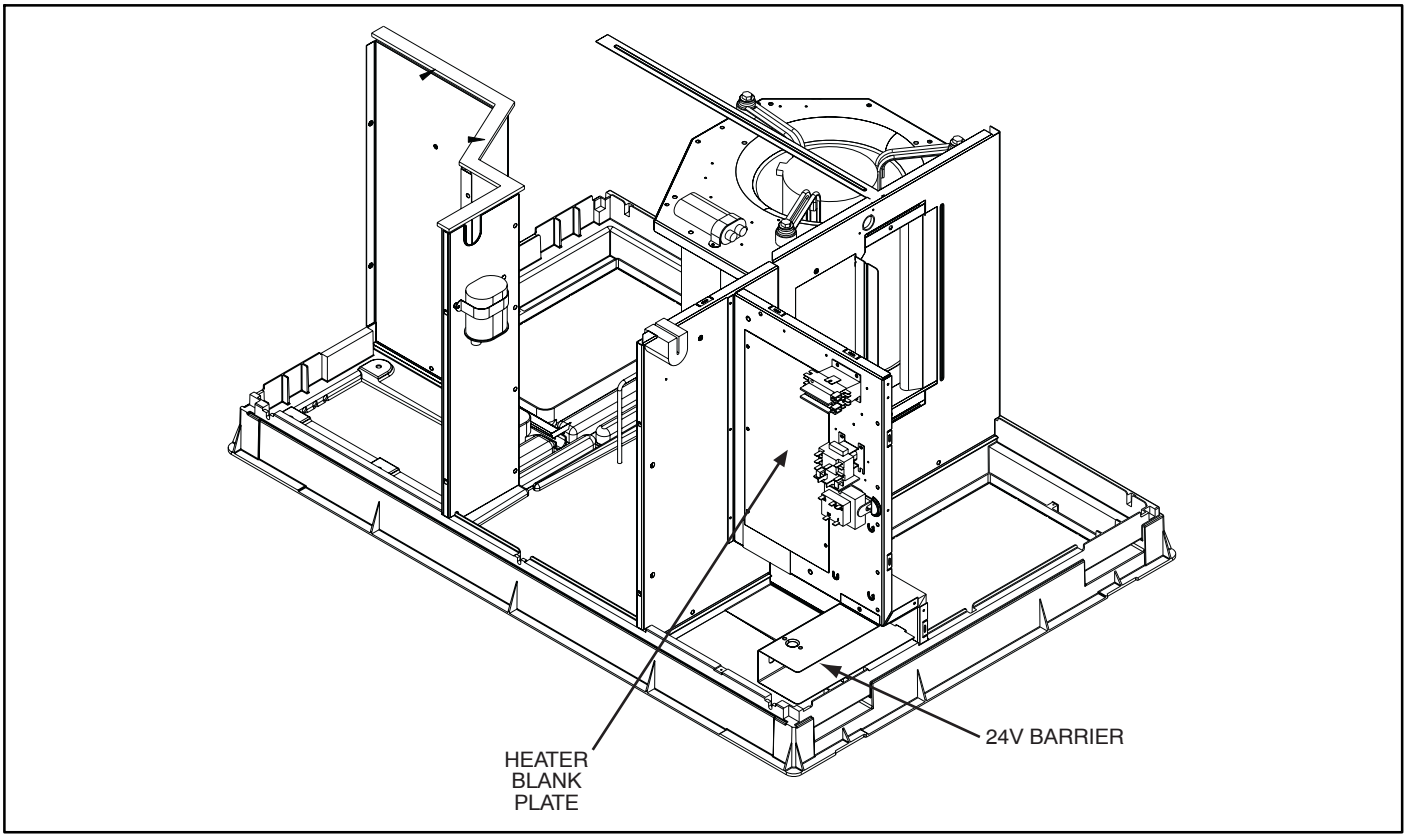

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Figure 3 – Heater Blank Plate Location

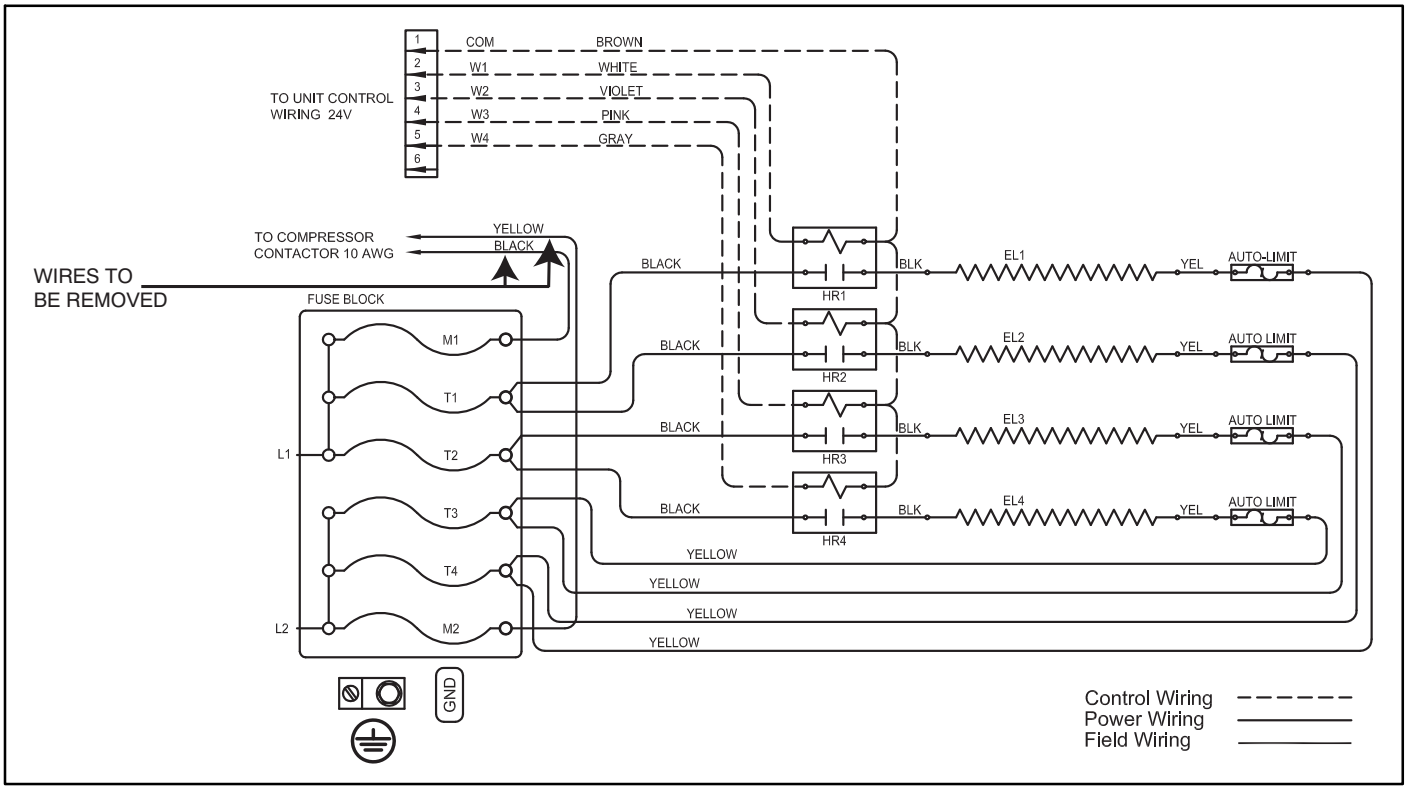

Figure 4 – Wiring Diagram Example for Fused Heater

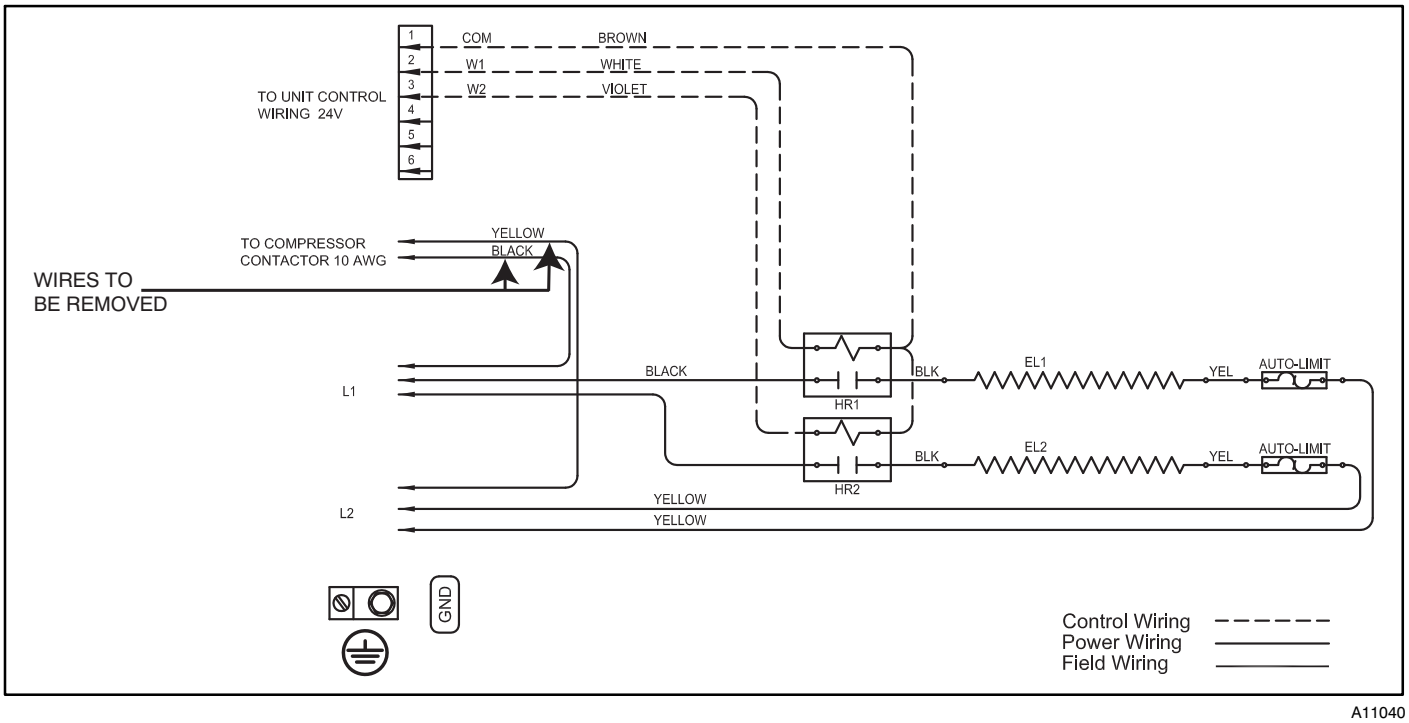

Figure 5 – Wiring Diagram Example for Non–Fused Heater

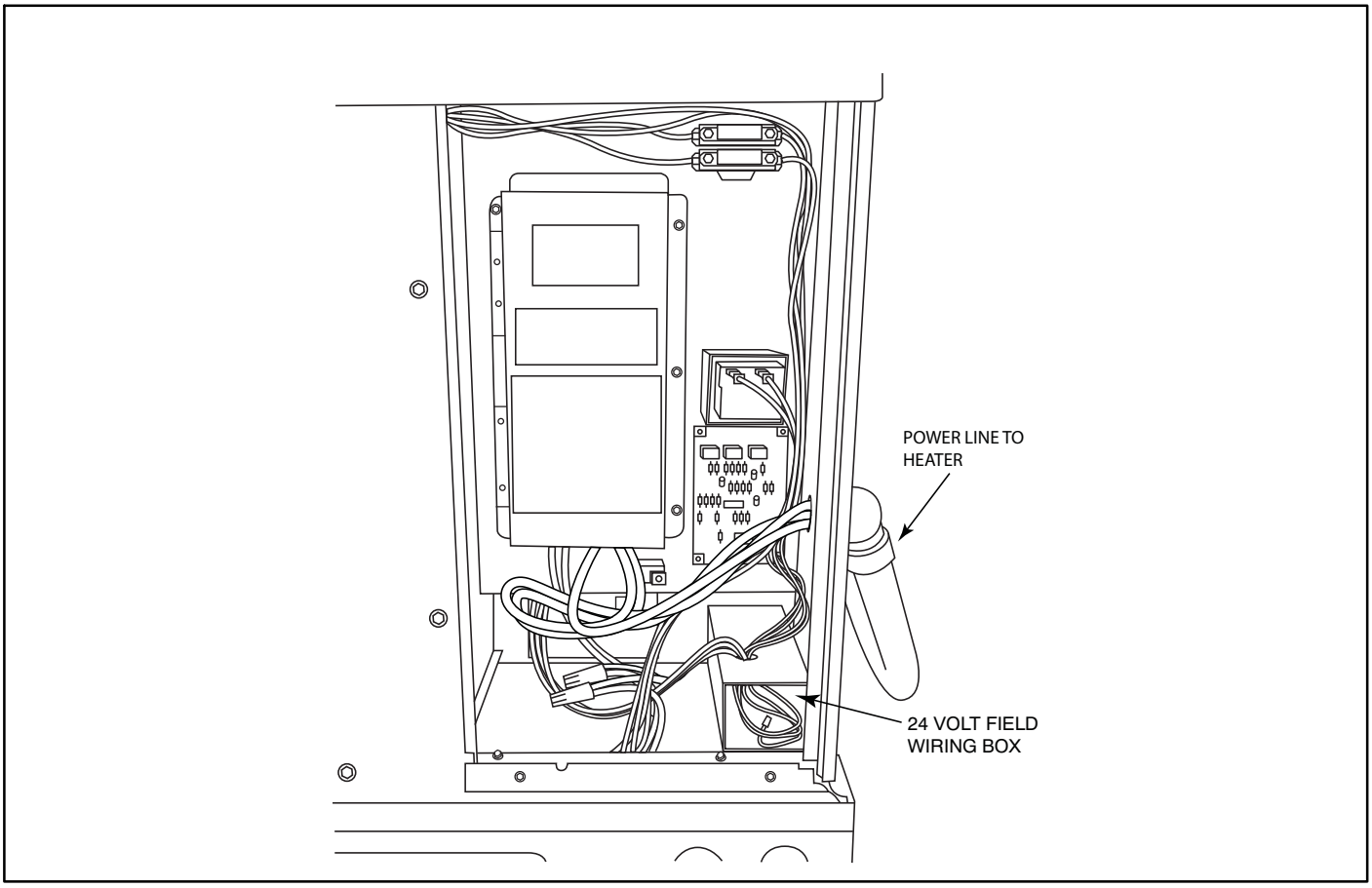

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Figure 6 – Single Point Connections for Fused Heater

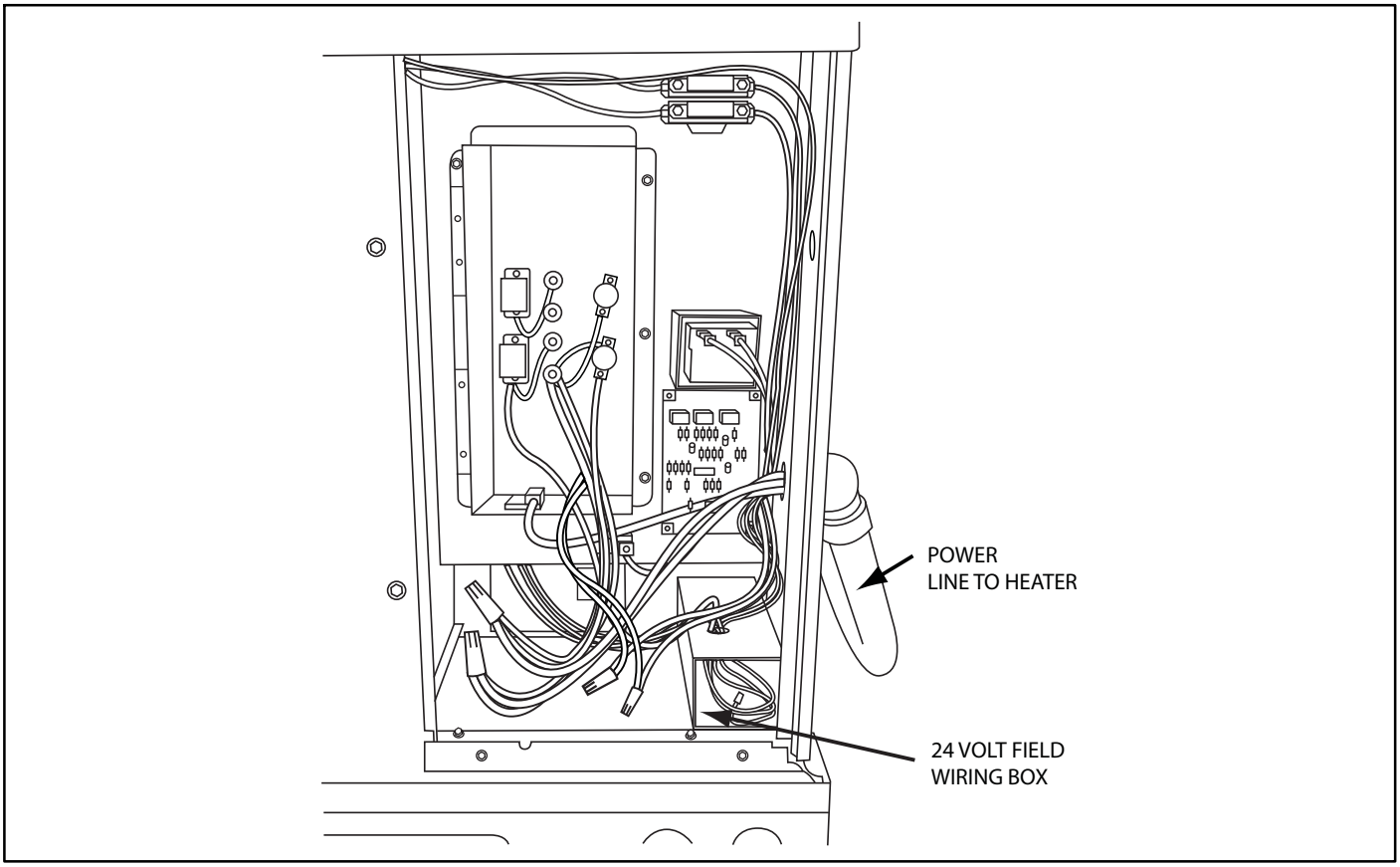

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Figure 7 – Single Point Connections for Non–Fused Heater

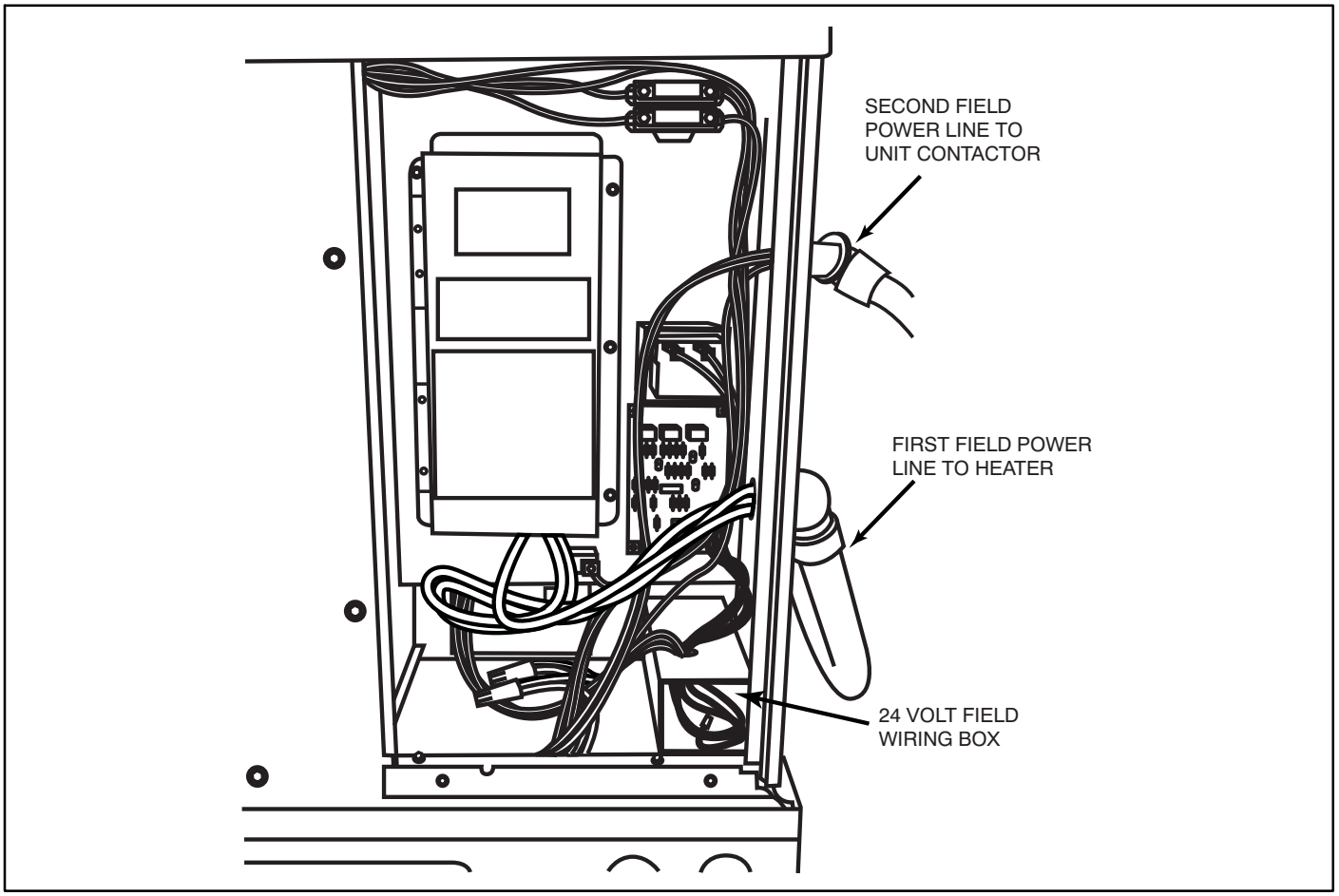

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Figure 8 – Dual Point Connections for Fused Heater

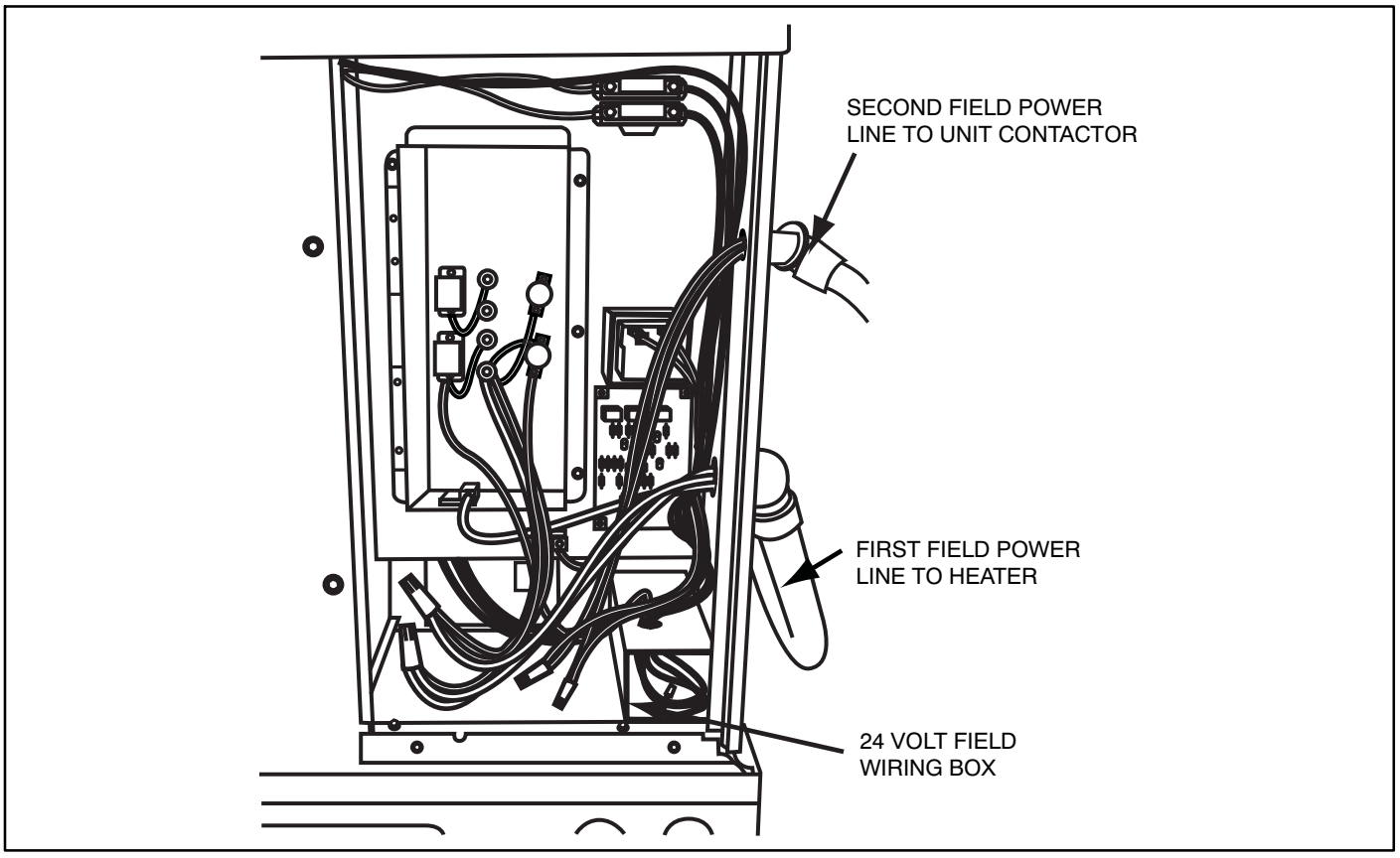

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Figure 9 – Dual Point Connection for Non–Fused Heater

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.

NOTE: Refer to base unit installation instructions as required.

1. Check for loose terminal connections.
2. Check that all fuse and circuit breaker short circuit interrupting ratings are adequate.
3. Turn on unit and heater power.
4. Set thermostat to call for heat.
5. Check operation of heater.
6. 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.

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

7. 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.

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

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

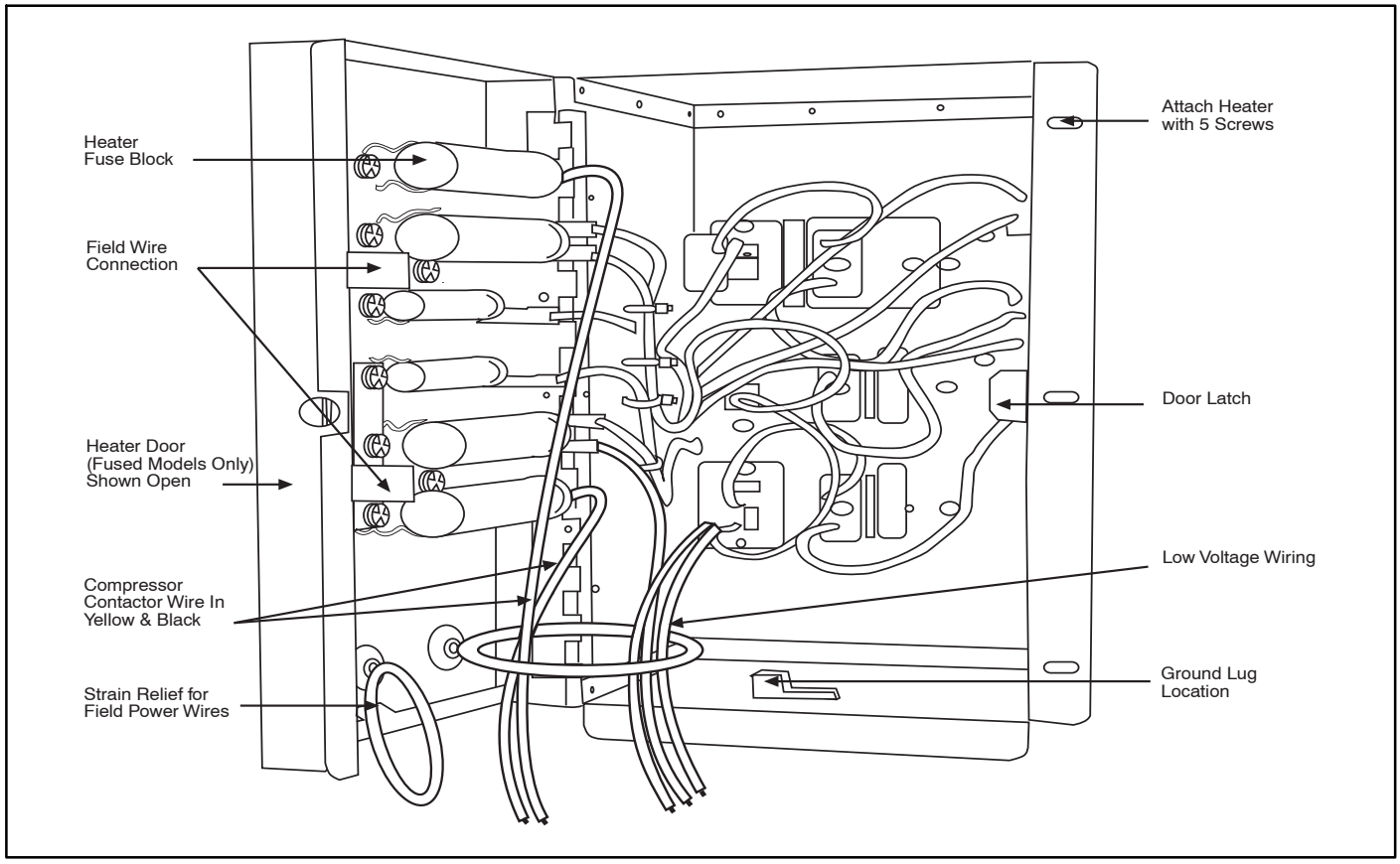

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Figure 10 – Fused Heater Control Box

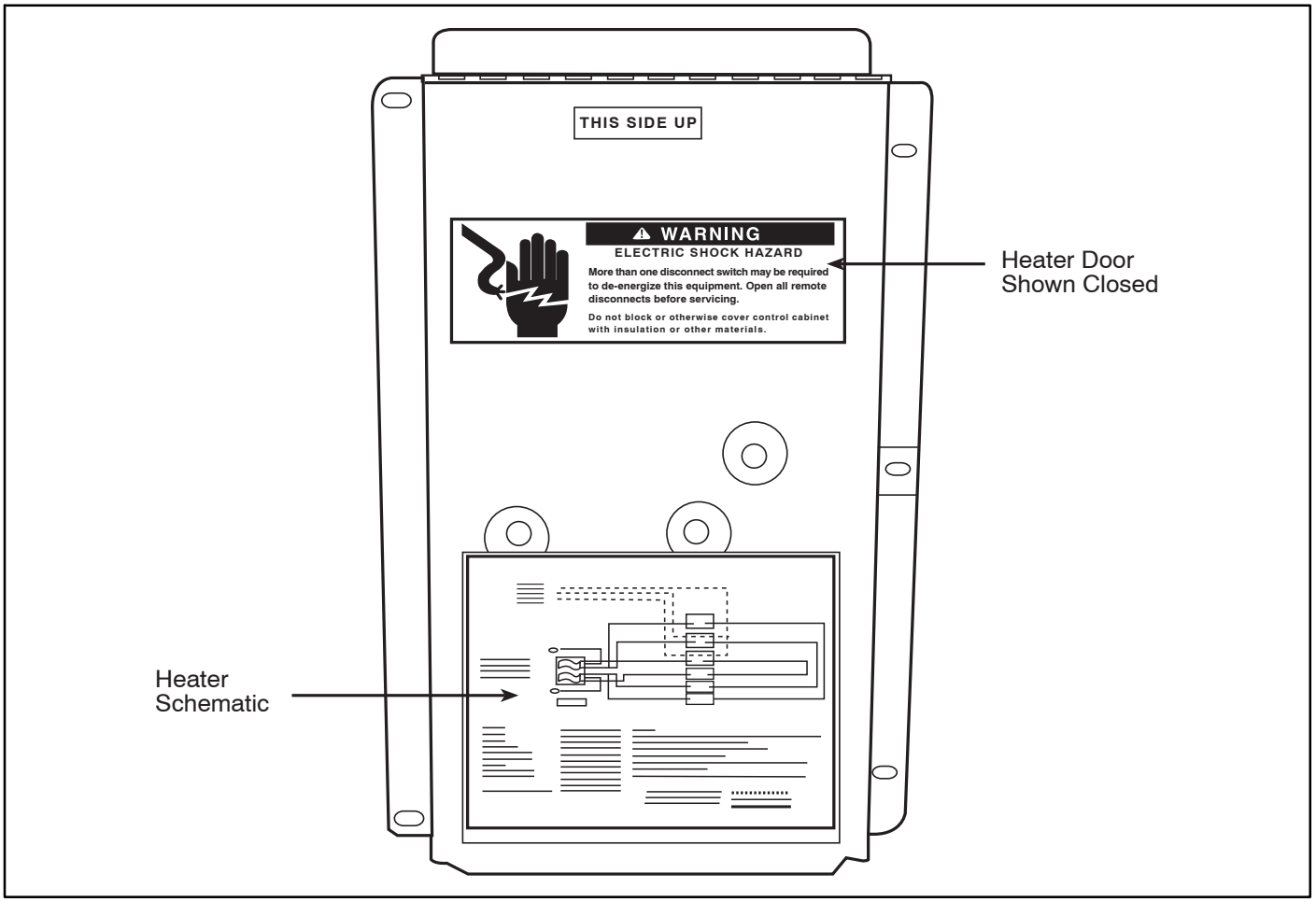

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Figure 11 – Schematic Location for Fused Heaters

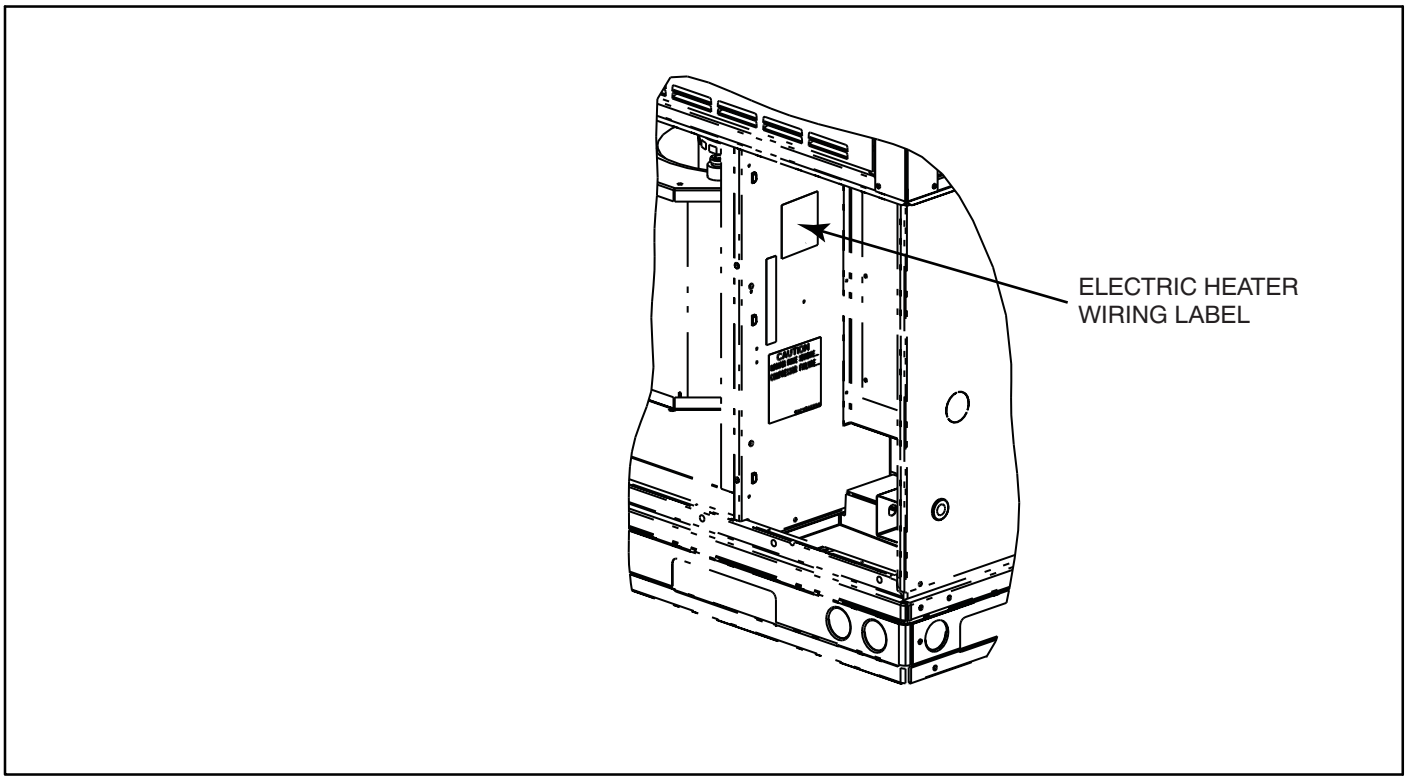

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Figure 12 – Schematic Location for Non–Fused Heater

Table 2 – Electric Heater Usage Chart—Non–Export Units

						PAD3, WPA3 (C Series)						PAD4 (C Series)					
EHNA	**Code**	**kW**	**V**	**PH**	**Fuse**	**24**	**30**	**36**	**42**	**48**	**60**	**24**	**30**	**36**	**42**	**48**	**60**
05K0N	UL	5	230	1	0	x	x	x	x	x	x	x	x	x	x	x	x
05K4F	UL	5	230	1	4	x	x	x	x	x	x	x	x	x	x	x	x
07K0N	UL	7.2	230	1	0	x	x	x	x	x	x	x	x	x	x	x	x
07K4F	UL	7.2	230	1	4	x	x	x	x	x	x	x	x	x	x	x	x
10K0N	UL	10	230	1	0	x	x	x	x			x	x	x	x		
10K4F	UL	10	230	1	4	x	x	x	x	x	x	x	x	x	x	x	x
15K4F	UL	15	230	1	4		x	x	x				x	x	x		
15K6F	UL	15	230	1	6		x	x	x	x	x		x	x	x	x	x
20K4F	UL	20	230	1	4				x						x		
20K6F	UL	20	230	1	6				x	x	x				x	x	x
05H0N	UL	5	230	3	0		x	x	x	x	x		x	x	x	x	x
10H0N	UL	10	230	3	0		x	x	x	x	x		x	x	x	x	x
10H6F	UL	10	230	3	6		x	x	x	x	x		x	x	x	x	x
15H0N	UL	15	230	3	0		x	x	x	x	x		x	x	x	x	x
15H6F	UL	15	230	3	6		x	x	x	x	x		x	x	x	x	x
20H6F	UL	20	230	3	6				x	x	x				x	x	x
10L0N	UL	10	460	3	0			x	x	x	x			x	x	x	x
15L0N	UL	15	460	3	0			x	x	x	x			x	x	x	x
20L0N	UL	20	460	3	0				x	x	x				x	x	x

= base unit not offered

x = Approved combination

						PAR5					
EHNA	**Code**	**kW**	**V**	**PH**	**Fuse**	**24**	**30**	**36**	**42**	**48**	**60**
05K0N	UL	5	230	1	0	x	x	x	x	x	x
05K4F	UL	5	230	1	4	x	x	x	x	x	x
07K0N	UL	7.2	230	1	0	x	x	x	x	x	x
07K4F	UL	7.2	230	1	4	x	x	x	x	x	x
10K0N	UL	10	230	1	0	x	x	x	x		
10K4F	UL	10	230	1	4	x	x	x	x	x	x
15K4F	UL	15	230	1	4		x	x	x		
15K6F	UL	15	230	1	6		x	x	x	x	x
20K4F	UL	20	230	1	4				x		
20K6F	UL	20	230	1	6				x	x	x
05H0N	UL	5	230	3	0		x	x	x	x	x
10H0N	UL	10	230	3	0		x	x	x	x	x
10H6F	UL	10	230	3	6		x	x	x	x	x
15H0N	UL	15	230	3	0		x	x	x	x	x
15H6F	UL	15	230	3	6		x	x	x	x	x
20H6F	UL	20	230	3	6				x	x	x

= base unit not offered

x = Approved combination

Table 2 — Electric Heater Usage—Non−Export Units Chart Continued

						PHD3, WPH3 (C Series)						PHD4 (C Series)					
EHNA	**Code**	**kW**	**V**	**PH**	**Fuse**	**24**	**30**	**36**	**42**	**48**	**60**	**24**	**30**	**36**	**42**	**48**	**60**
05K0N	UL	5	230	1	0	x	x	x				x	x	x			
05K4F	UL	5	230	1	4	x	x	x	x	x	x	x	x	x	x	x	x
07K0N	UL	7.2	230	1	0												
07K4F	UL	7.2	230	1	4	x	x	x	x	x	x	x	x	x	x	x	x
10K0N	UL	10	230	1	0												
10K4F	UL	10	230	1	4	x	x	x	x	x	x	x	x	x	x	x	x
15K4F	UL	15	230	1	4												
15K6F	UL	15	230	1	6		x	x	x	x	x		x	x	x	x	x
20K4F	UL	20	230	1	4												
20K6F	UL	20	230	1	6				x	x	x				x	x	x
05H0N	UL	5	230	3	0		x	x	x	x	x		x	x	x	x	x
10H0N	UL	10	230	3	0		x	x	x	x			x	x	x		
10H6F	UL	10	230	3	6		x	x	x	x	x		x	x	x	x	x
15H0N	UL	15	230	3	0												
15H6F	UL	15	230	3	6		x	x	x	x	x		x	x	x	x	x
20H6F	UL	20	230	3	6				x	x	x				x	x	x
05L0N	UL	5	460	3	0			x	x	x	x			x	x	x	x
10L0N	UL	10	460	3	0			x	x	x	x			x	x	x	x
15L0N	UL	15	460	3	0			x	x	x	x			x	x	x	x
20L0N	UL	20	460	3	0				x	x	x				x	x	x

= base unit not offered

x = Approved combination

						PHR5					
EHNA	**Code**	**kW**	**V**	**PH**	**Fuse**	**24**	**30**	**36**	**42**	**48**	**60**
05K0N	UL	5	230	1	0	x	x	x			
05K4F	UL	5	230	1	4	x	x	x	x	x	x
07K0N	UL	7.2	230	1	0	x					
07K4F	UL	7.2	230	1	4	x	x	x	x	x	x
10K4F	UL	10	230	1	4	x	x	x	x	x	x
15K6F	UL	15	230	1	6		x	x	x	x	x
20K6F	UL	20	230	1	6				x	x	x
05H0N	UL	5	230	3	0		x	x	x	x	x
10H0N	UL	10	230	3	0		x	x	x	x	
10H6F	UL	10	230	3	6		x	x	x	x	x
15H6F	UL	15	230	3	6		x	x	x	x	x
20H6F	UL	20	230	3	6				x	x	x

= base unit not offered

x = Approved combination

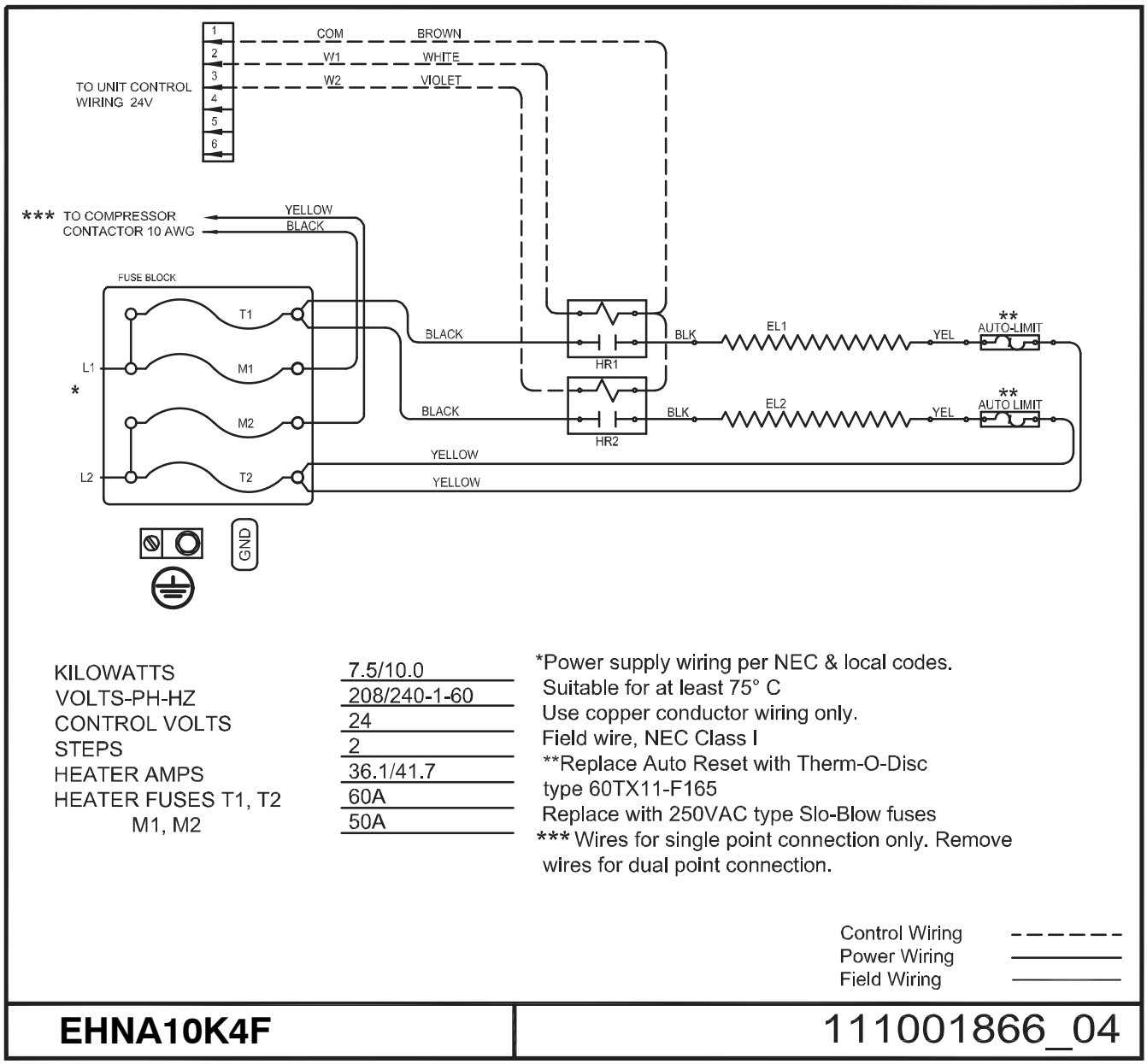

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Figure 13 – EHNA10K4F Wiring Diagram

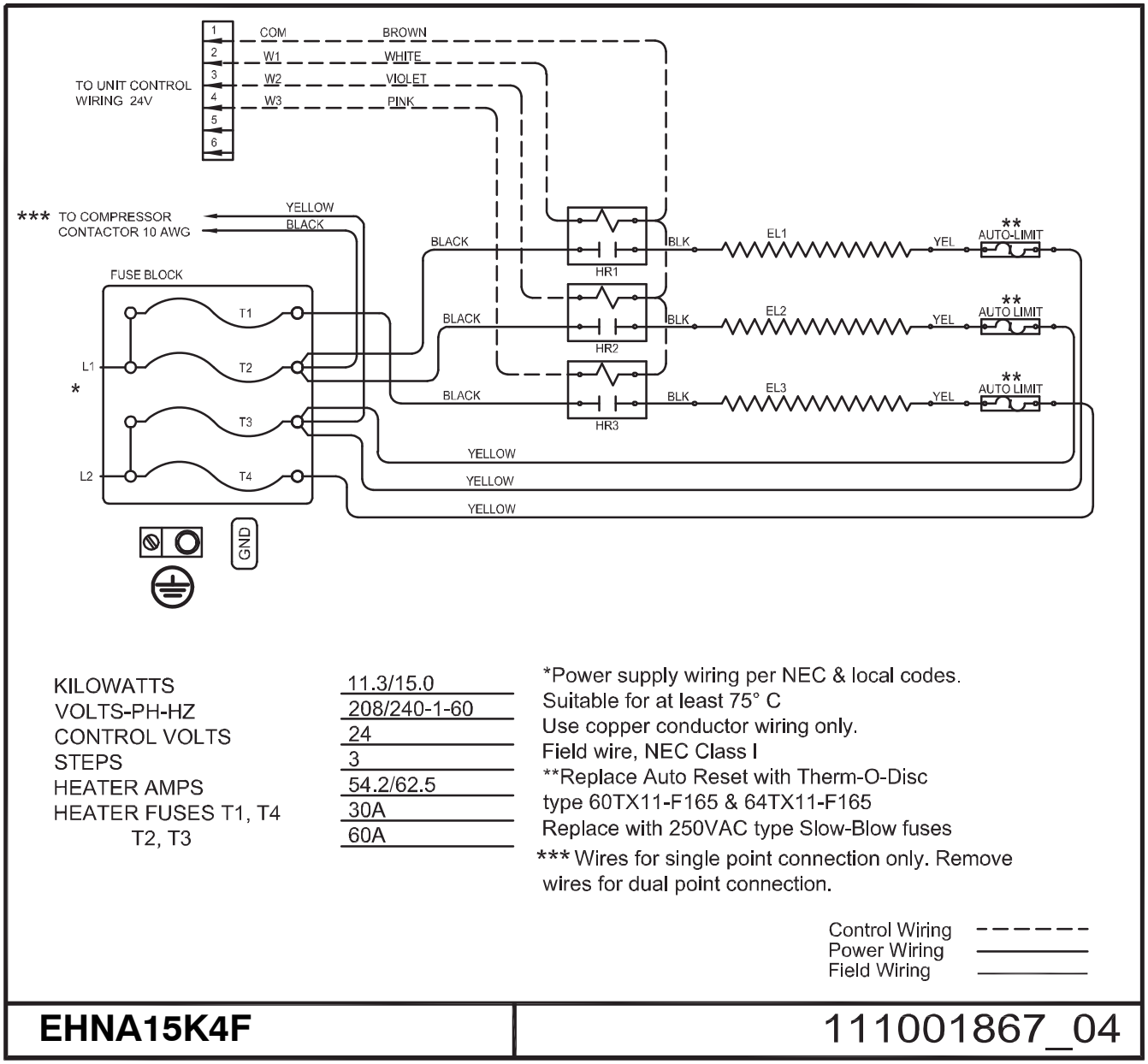

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Figure 14 – EHNA15K4F Wiring Diagram

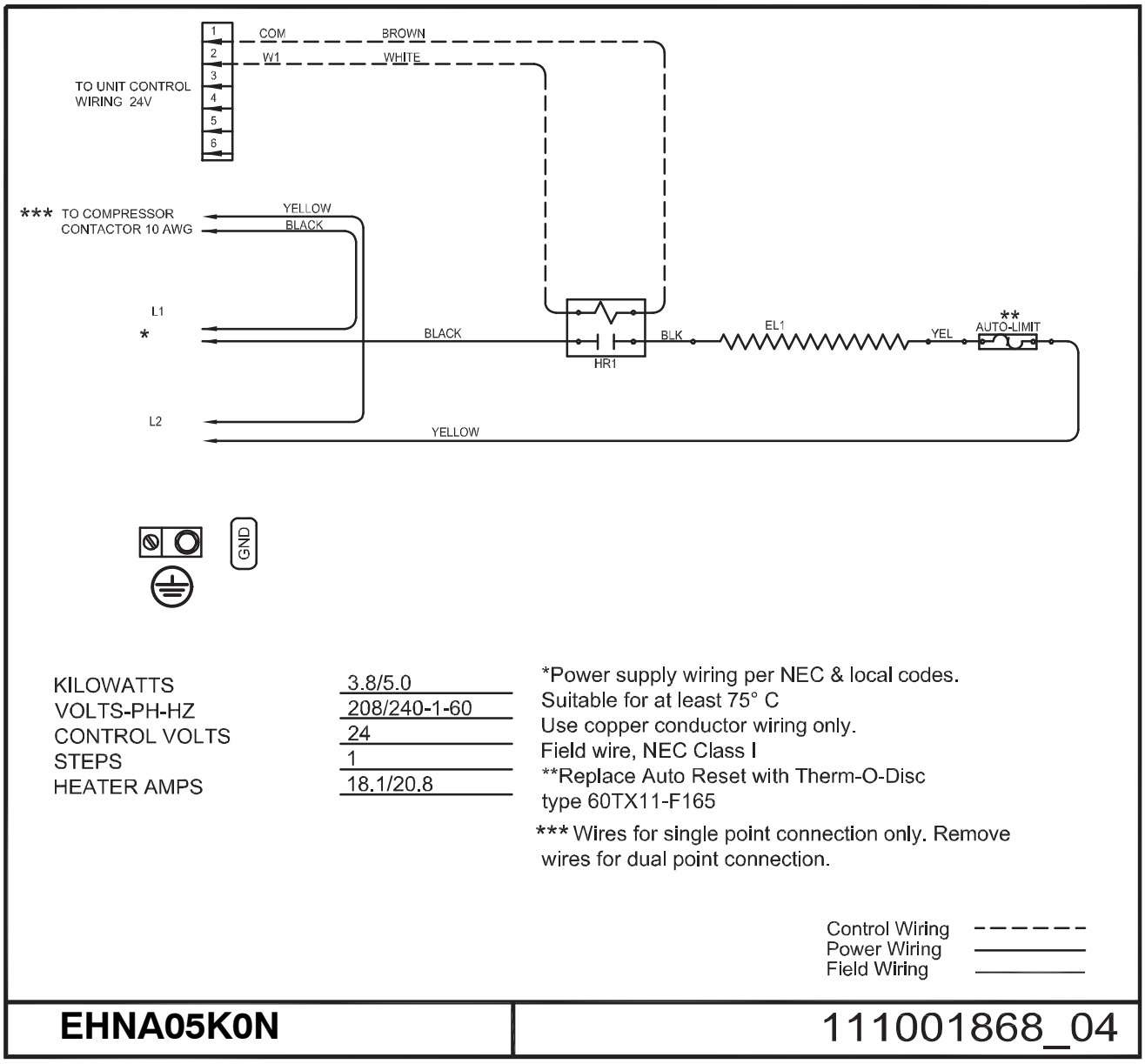

Figure 15 – EHNA05K0N Wiring Diagram

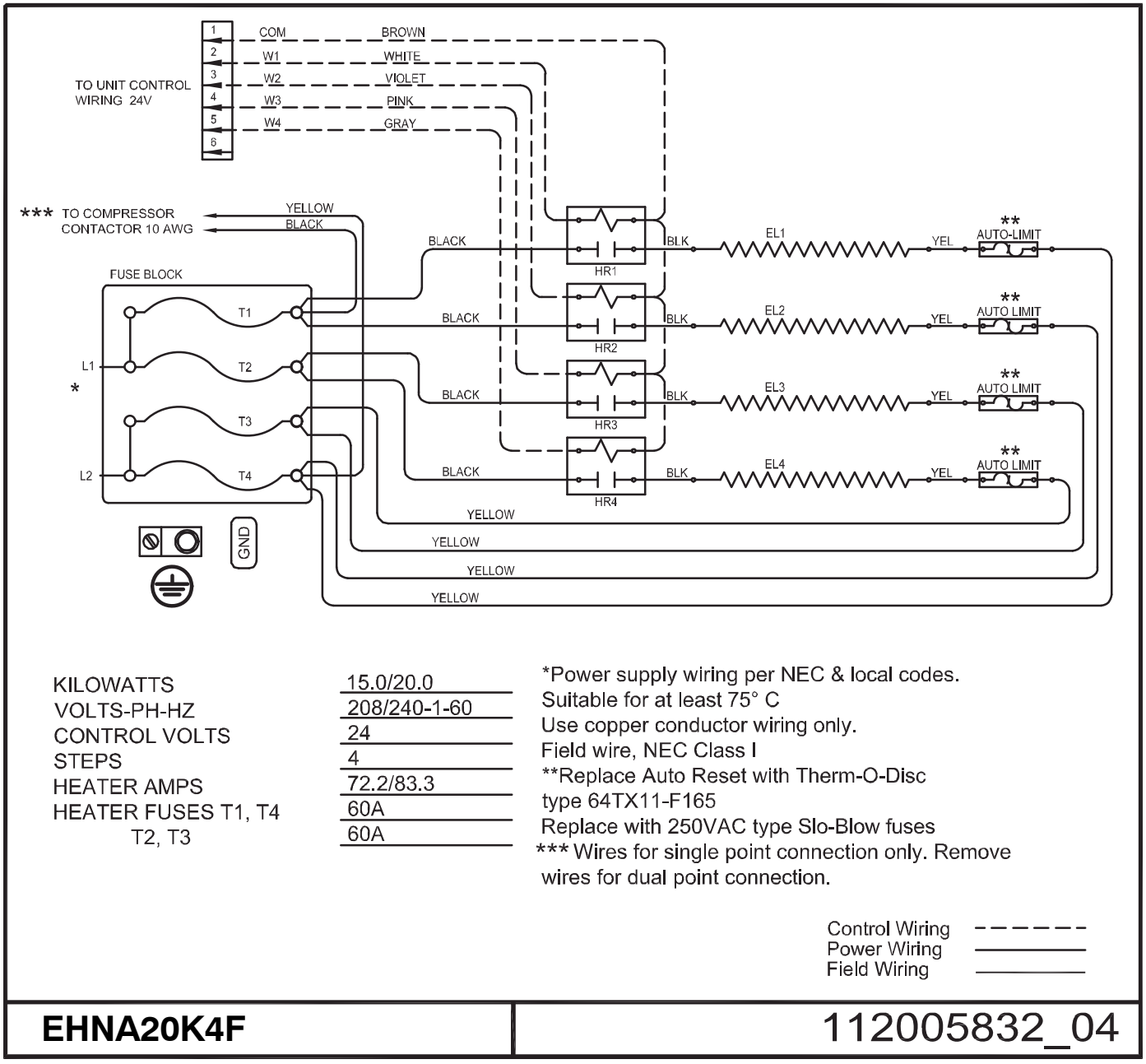

Figure 16 – EHNA20K4F Wiring Diagram

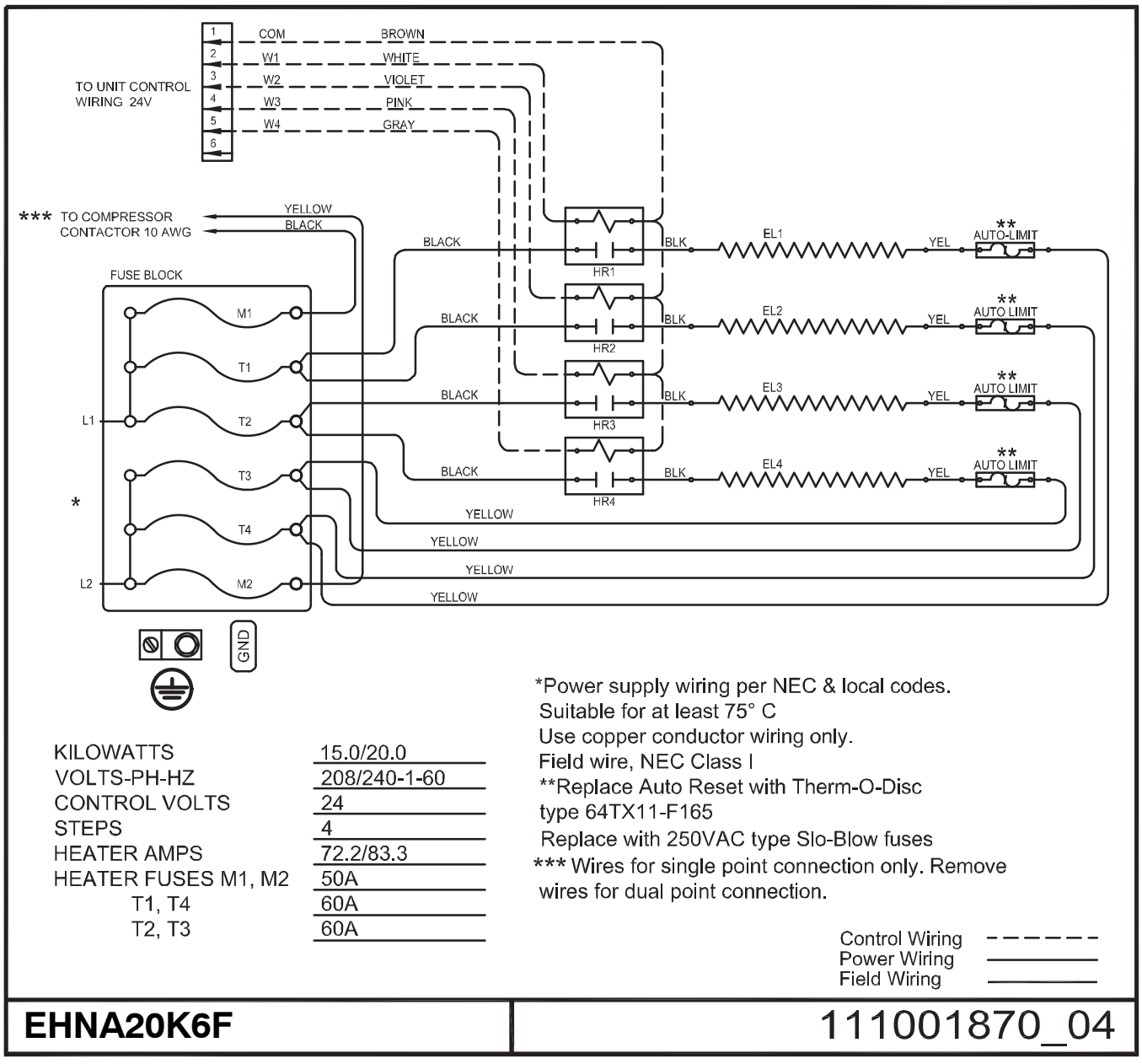

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Figure 17 – EHNA20K6F Wiring Diagram

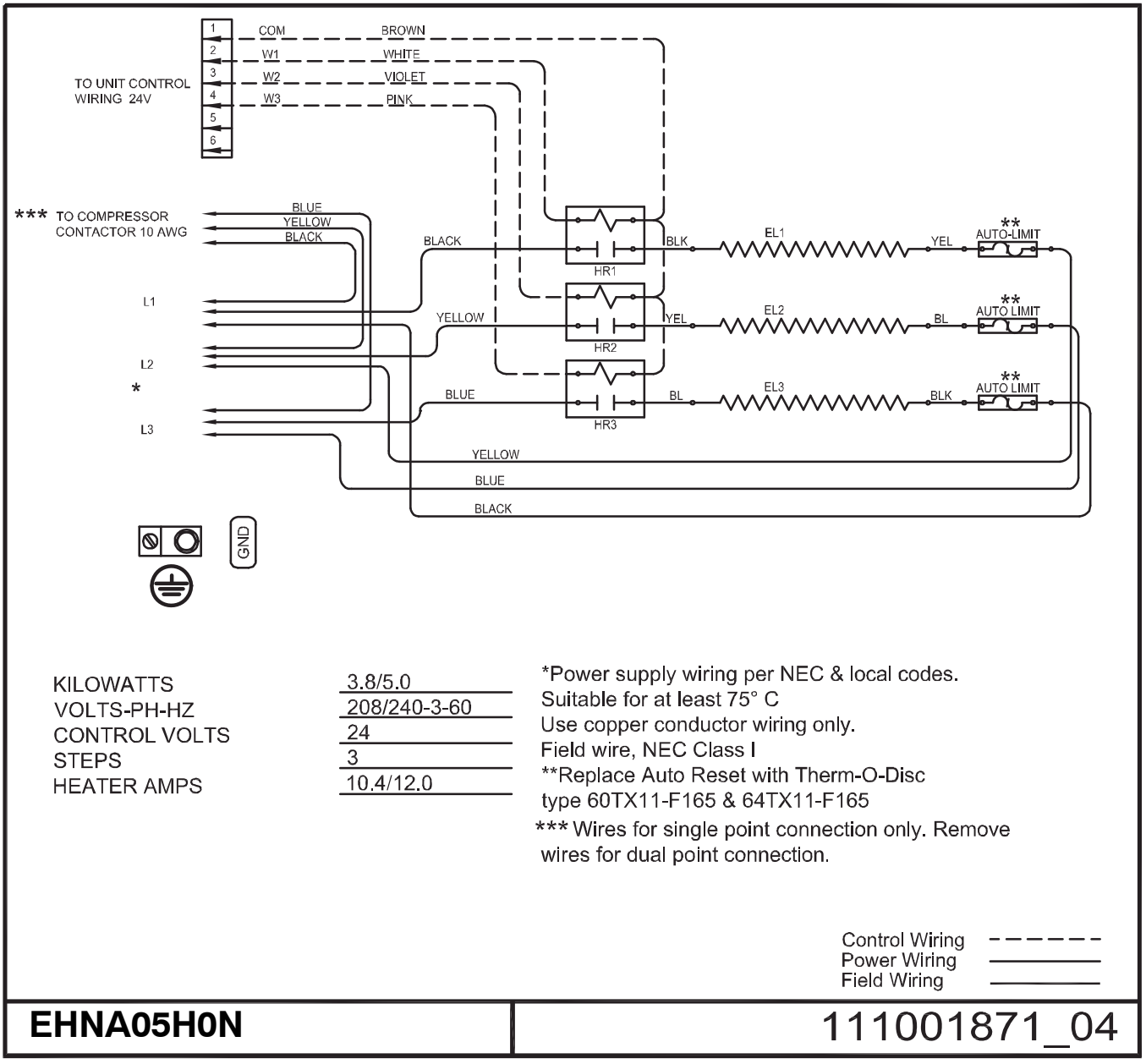

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Figure 18 – EHNA05H0N Wiring Diagram

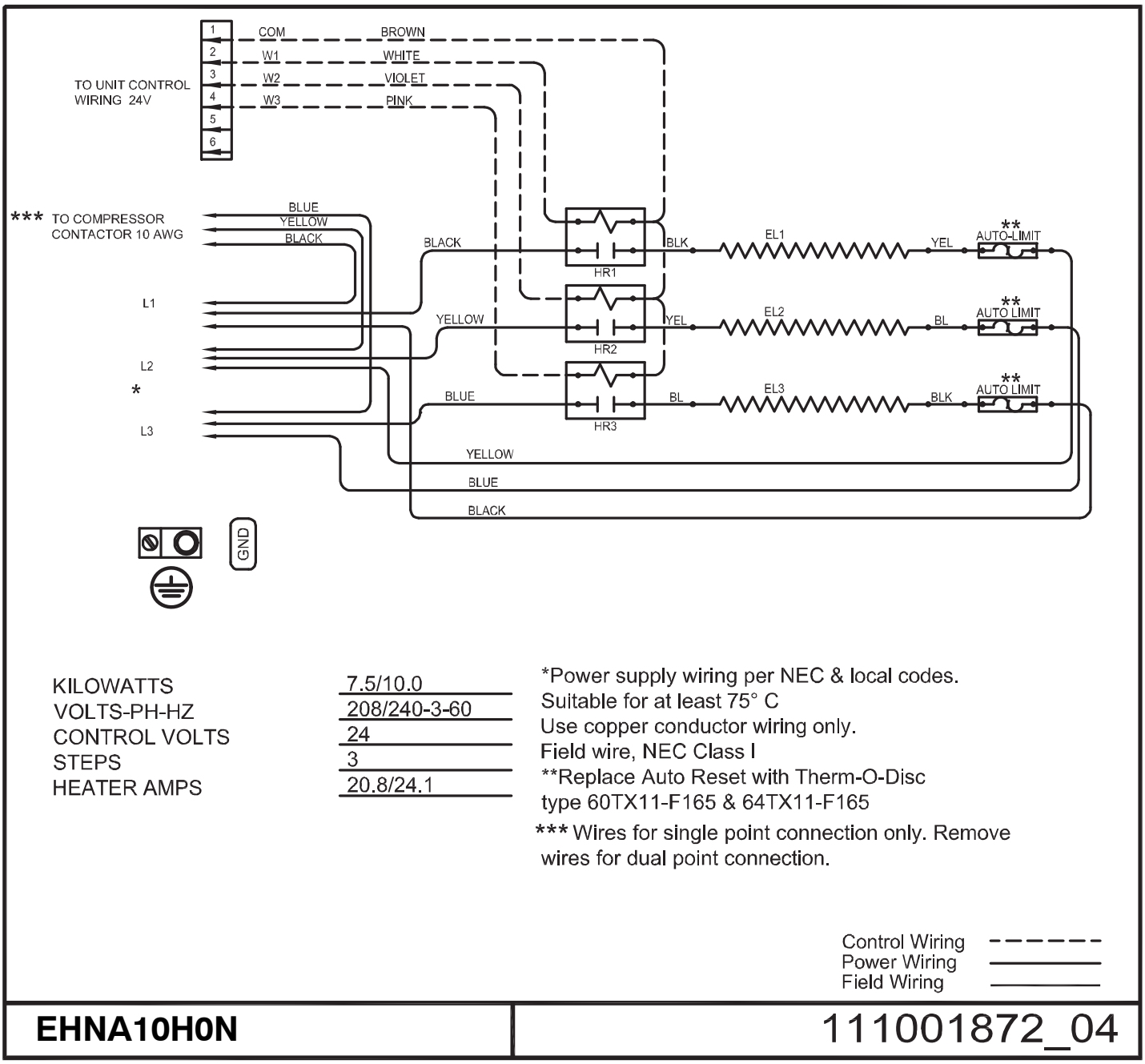

Figure 19 – EHNA10H0N Wiring Diagram

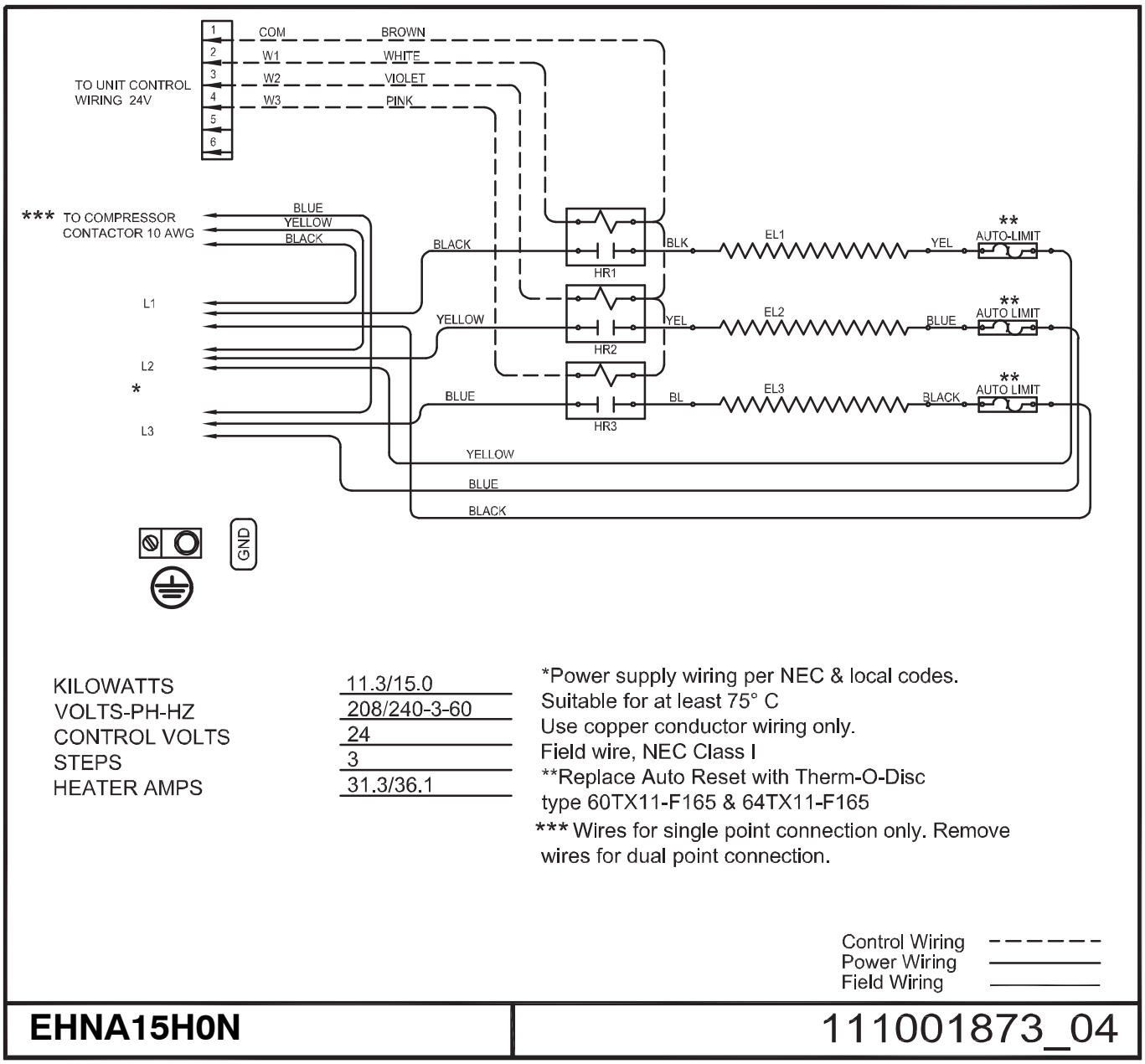

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Figure 20 – EHNA15H0N Wiring Diagram

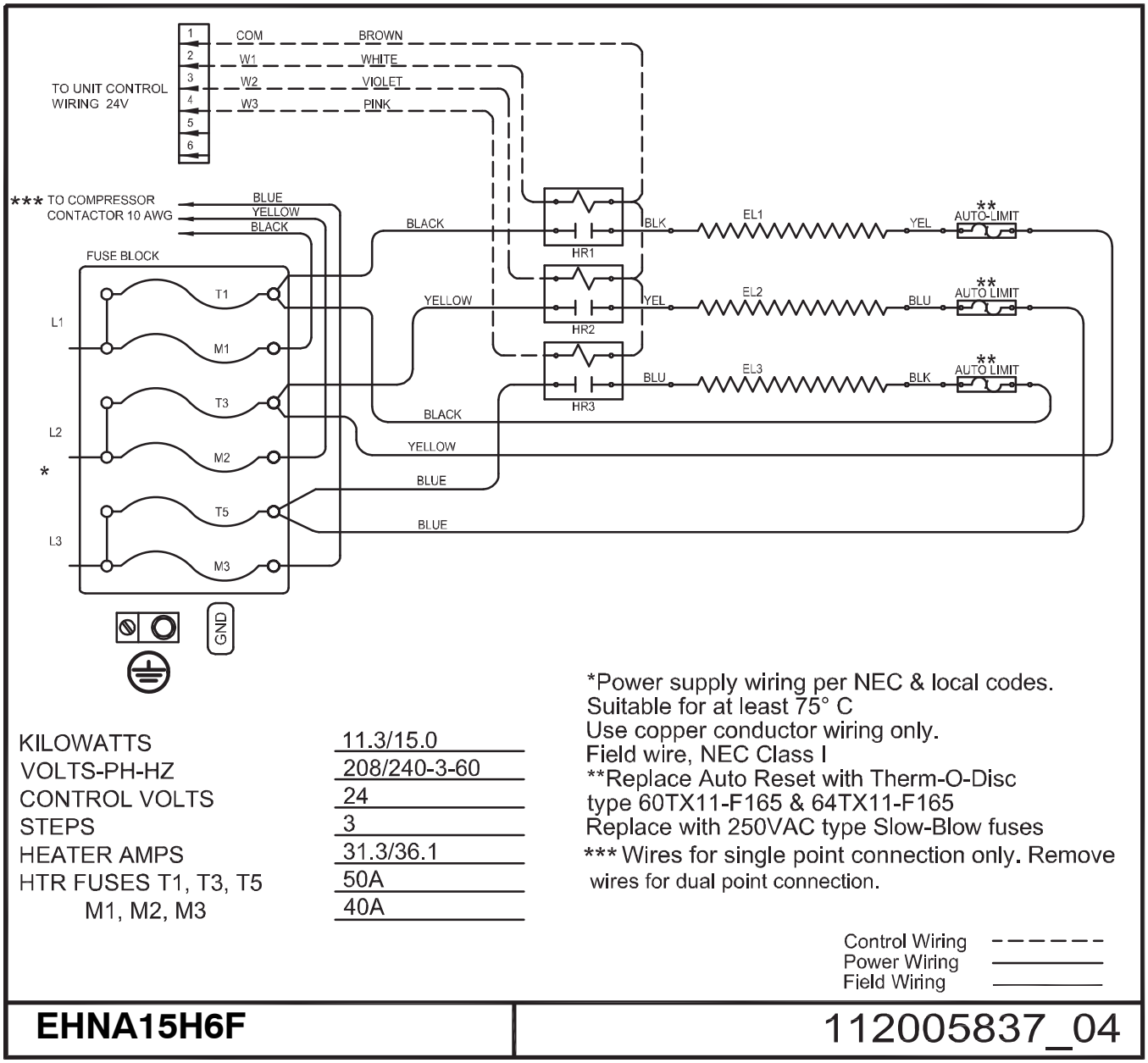

Figure 21 – EHNA15H6F Wiring Diagram

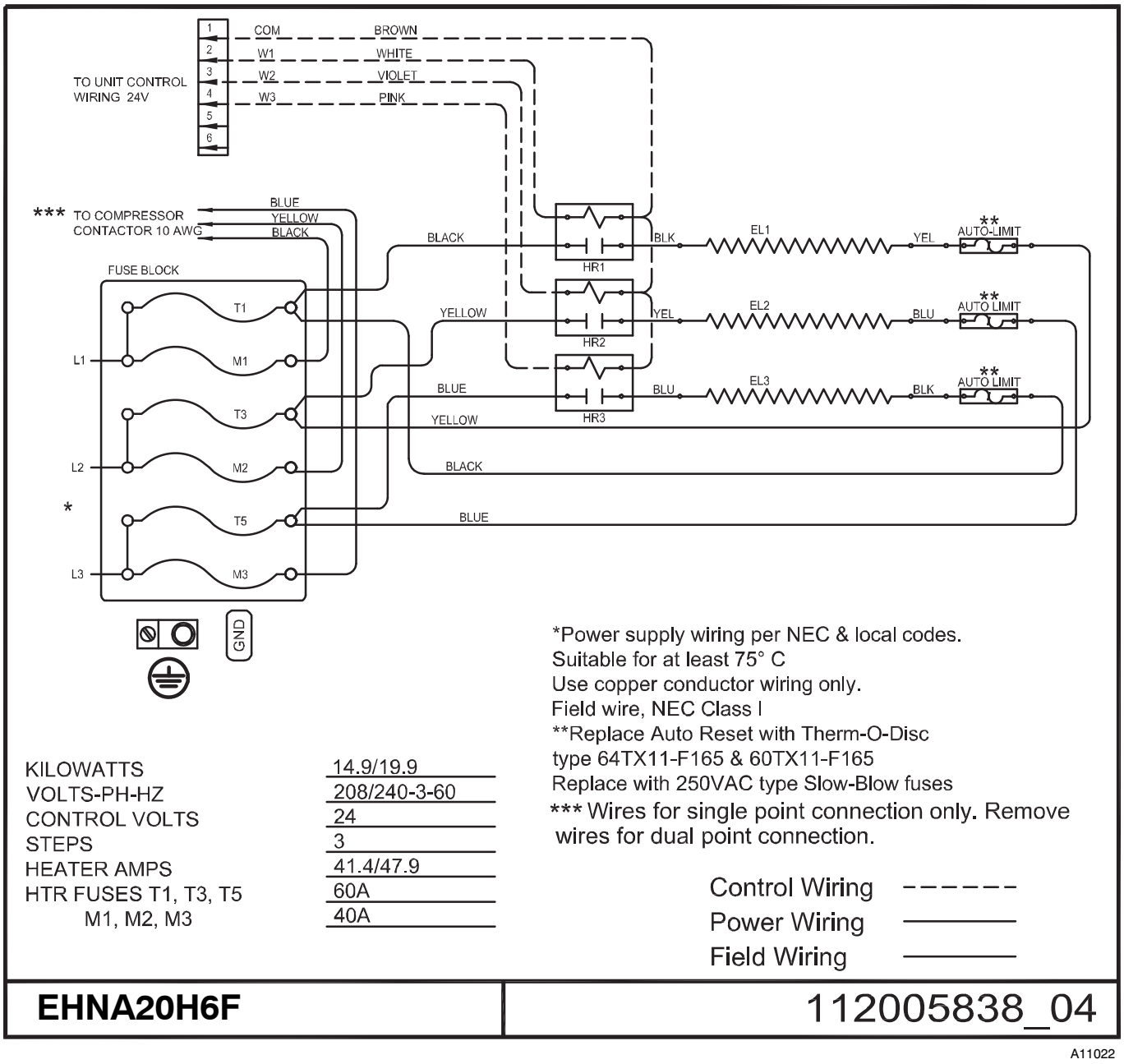

Figure 22 – EHNA20H6F Wiring Diagram

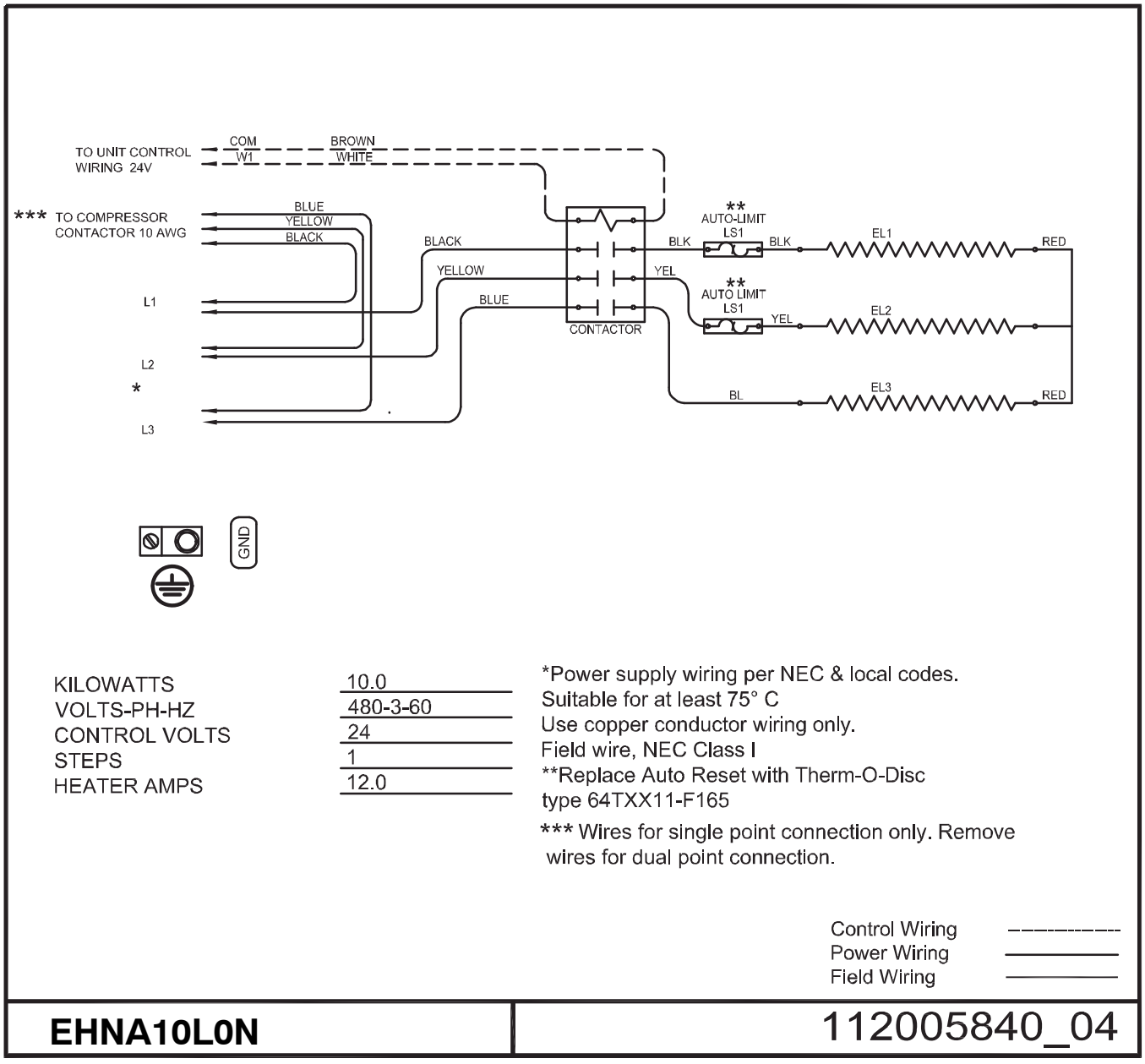

Figure 23 – EHNA10L0N Wiring Diagram

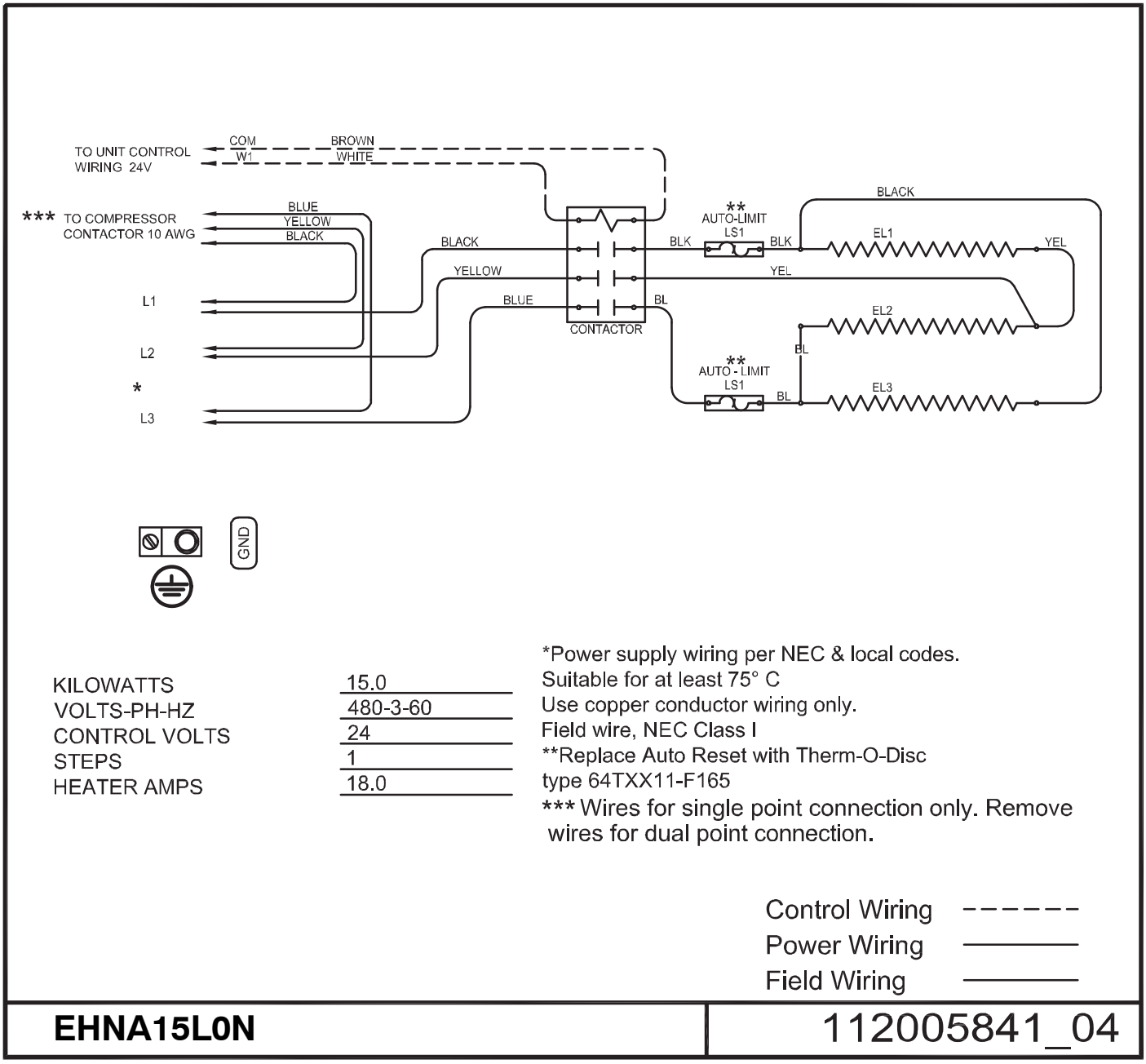

Figure 24 – EHNA15L0N Wiring Diagram

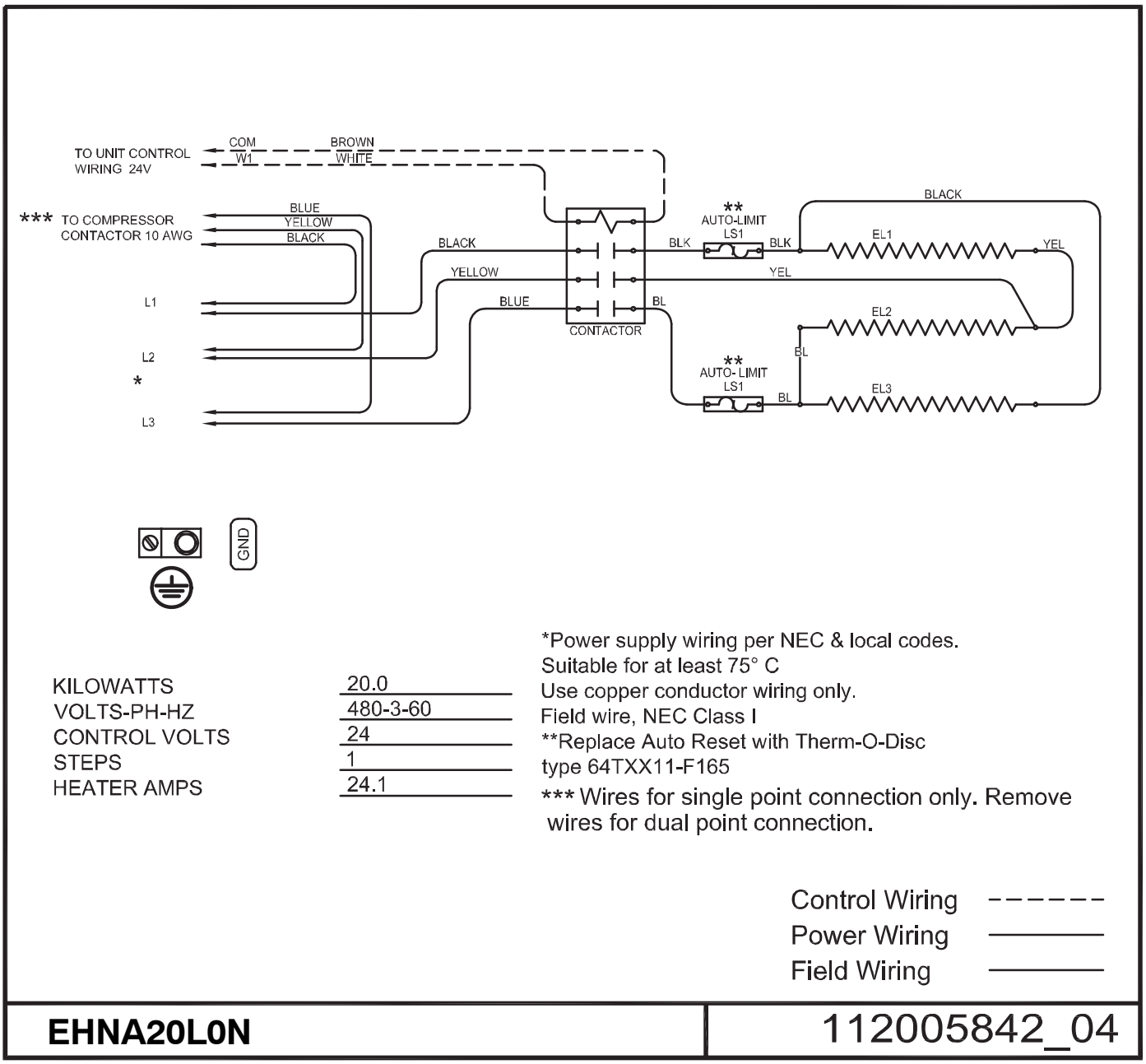

Figure 25 – EHNA20L0N Wiring Diagram

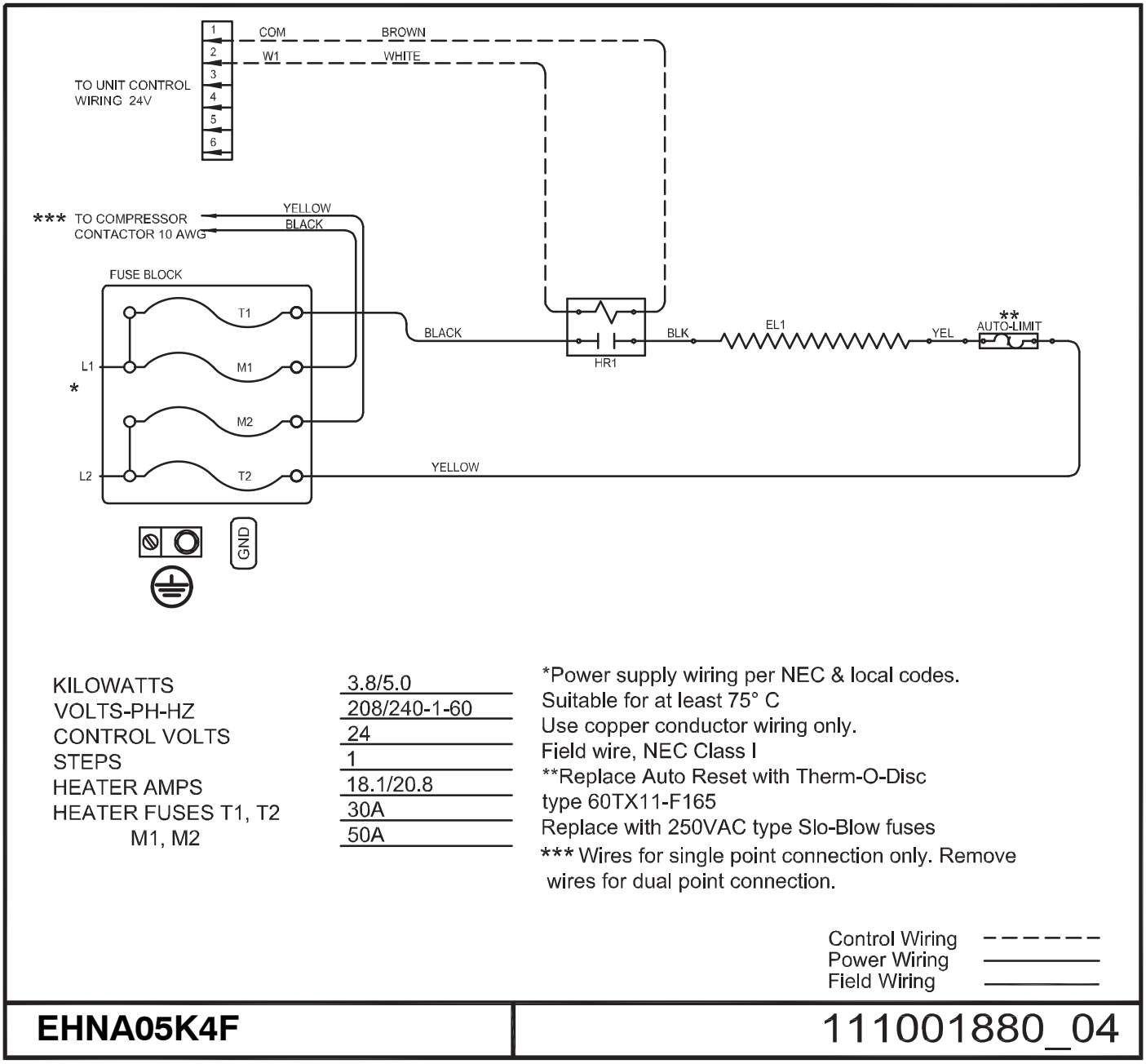

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Figure 26 – EHNA05K4F Wiring Diagram

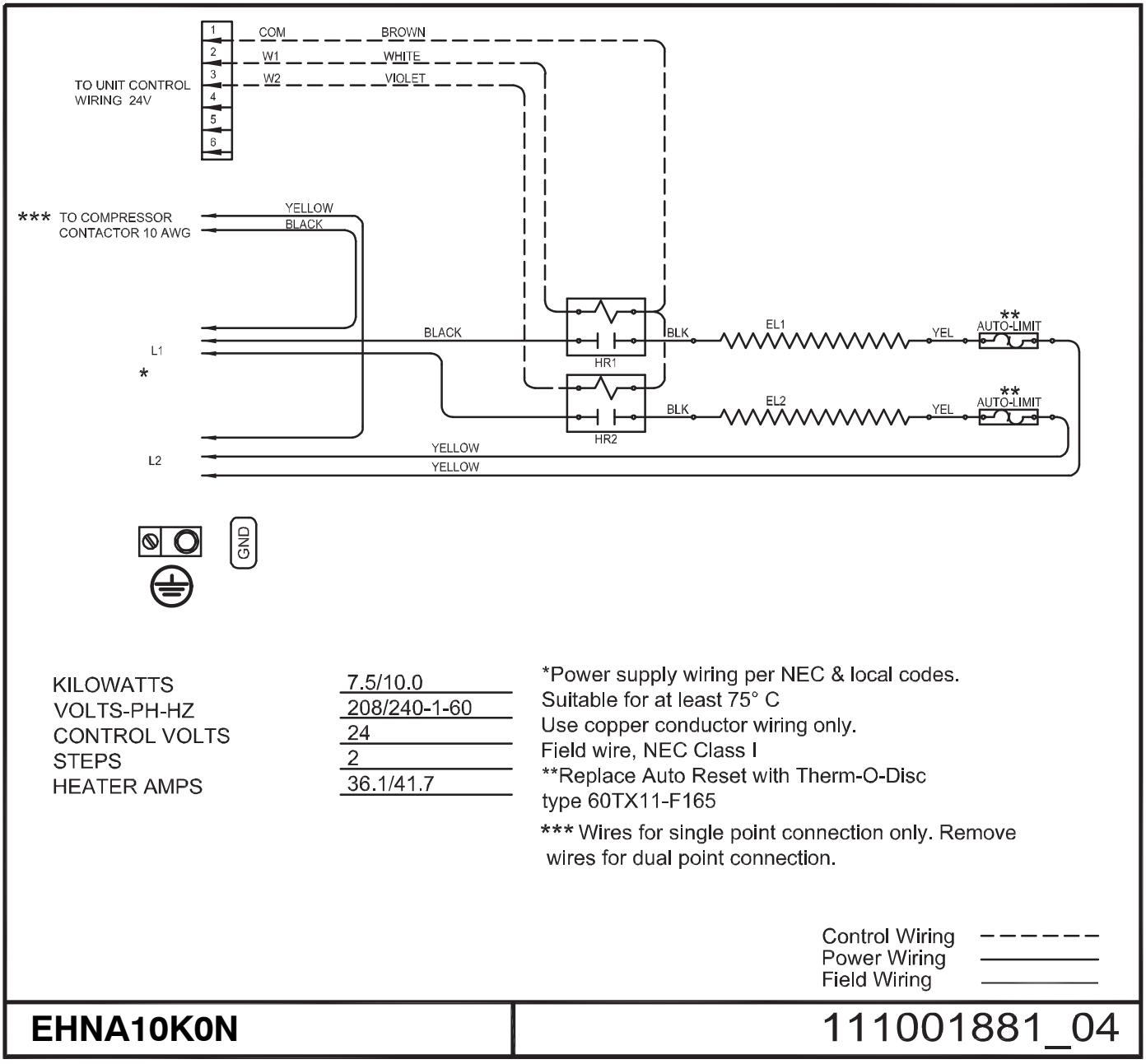

Figure 27 – EHNA10K0N Wiring Diagram

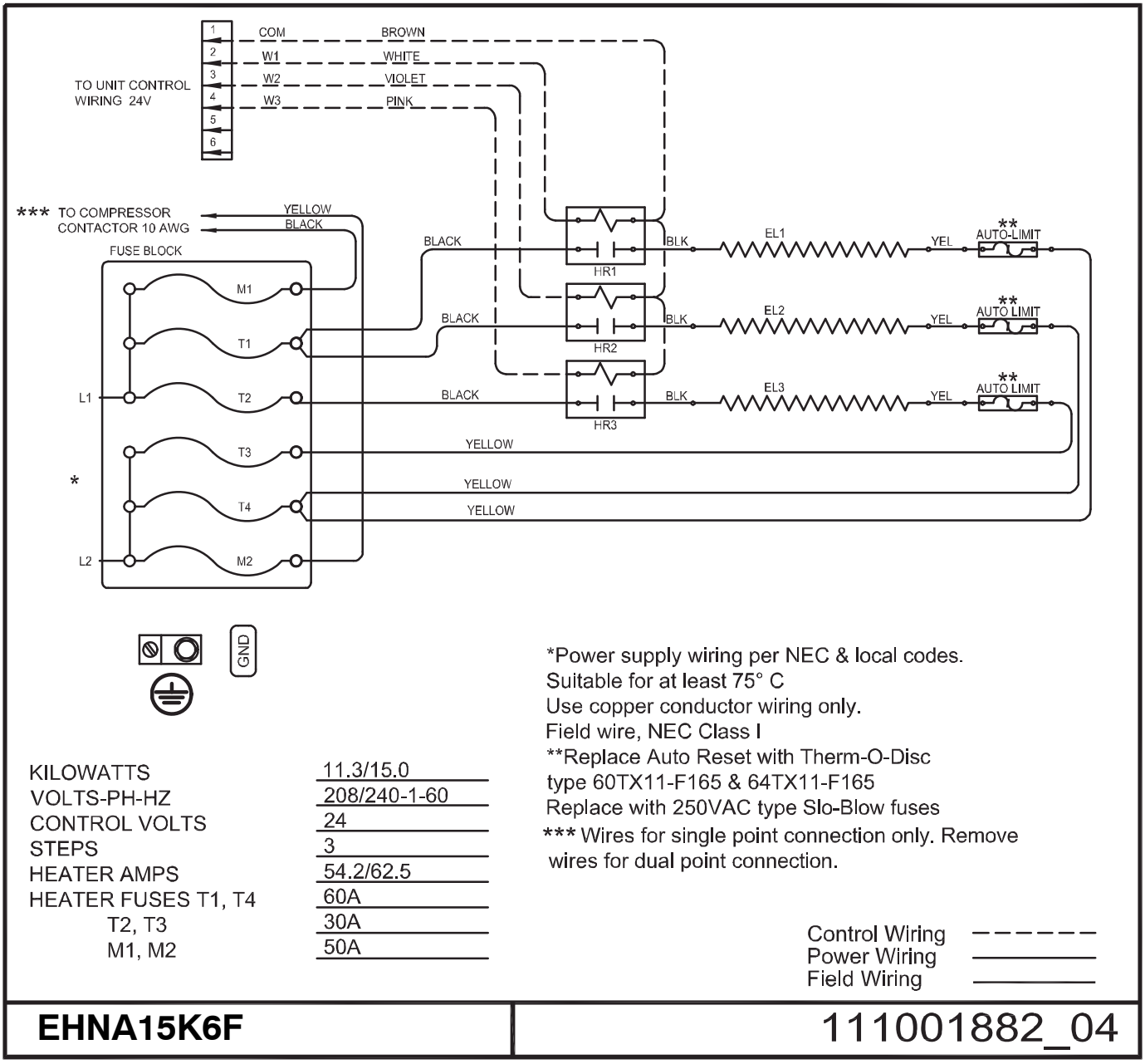

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Figure 28 – EHNA15K6F Wiring Diagram

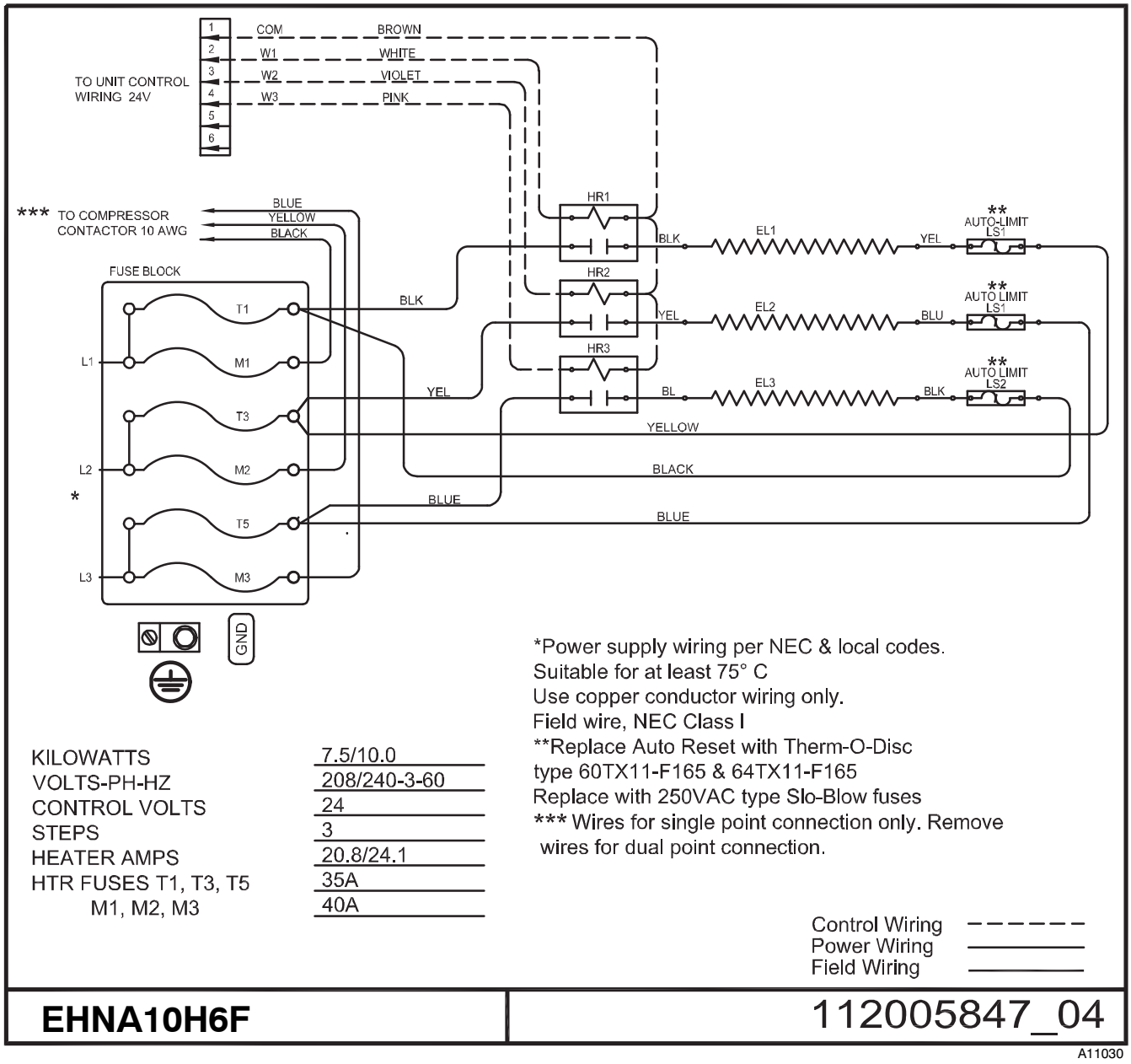

Figure 29 – EHNA10H6F Wiring Diagram

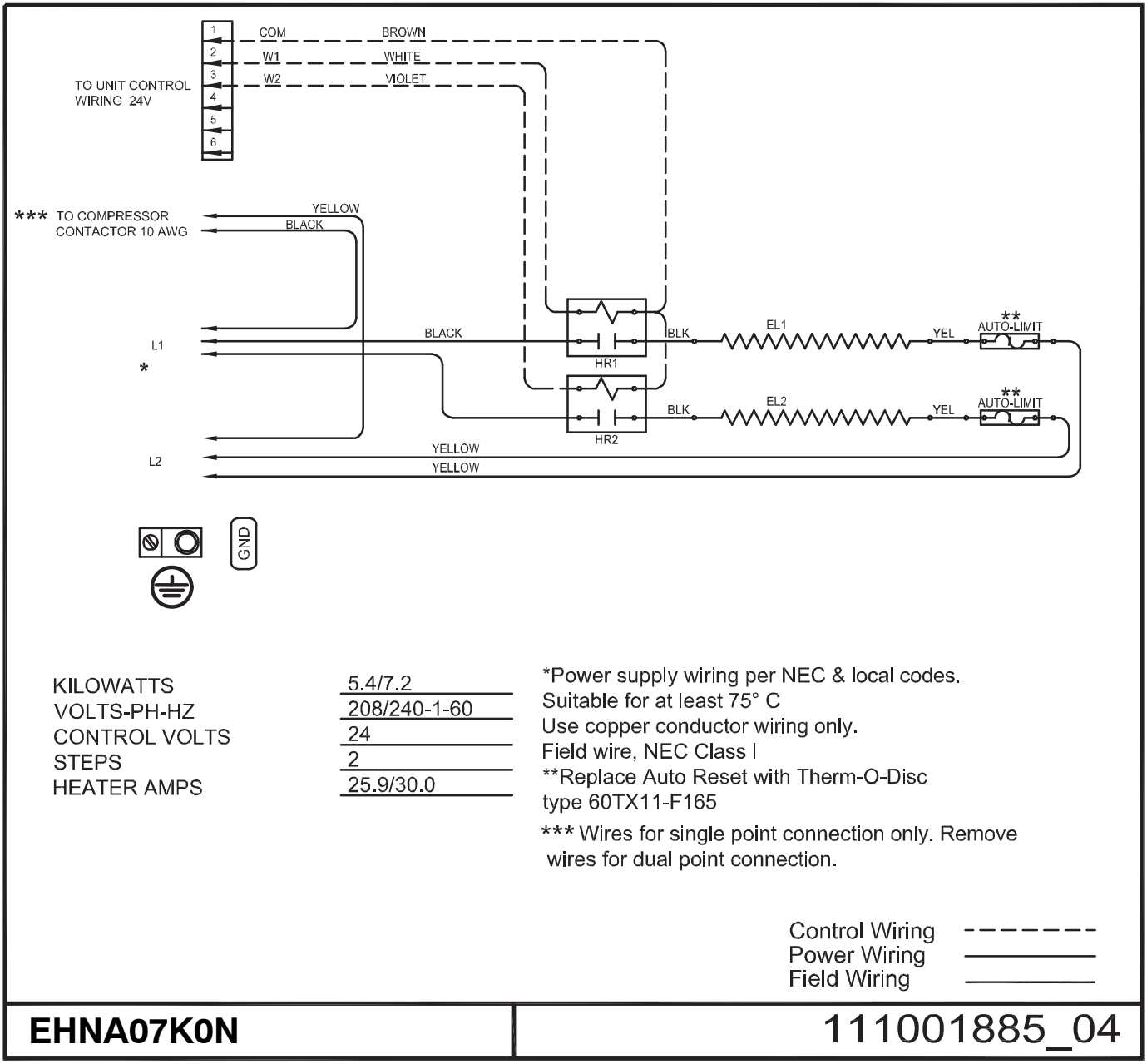

Figure 30 – EHNA07K0N Wiring Diagram

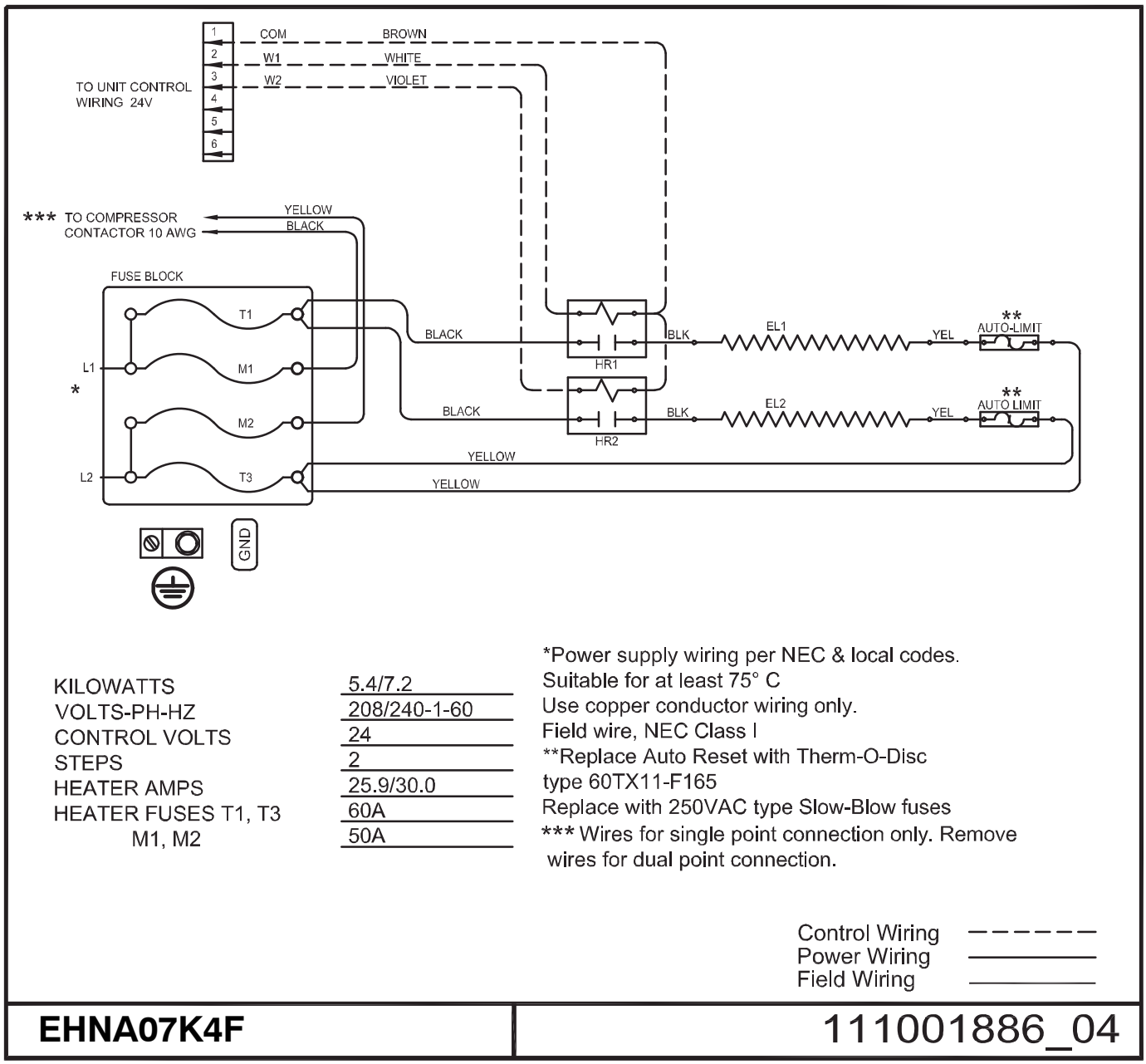

Figure 31 – EHNA07K4F Wiring Diagram