

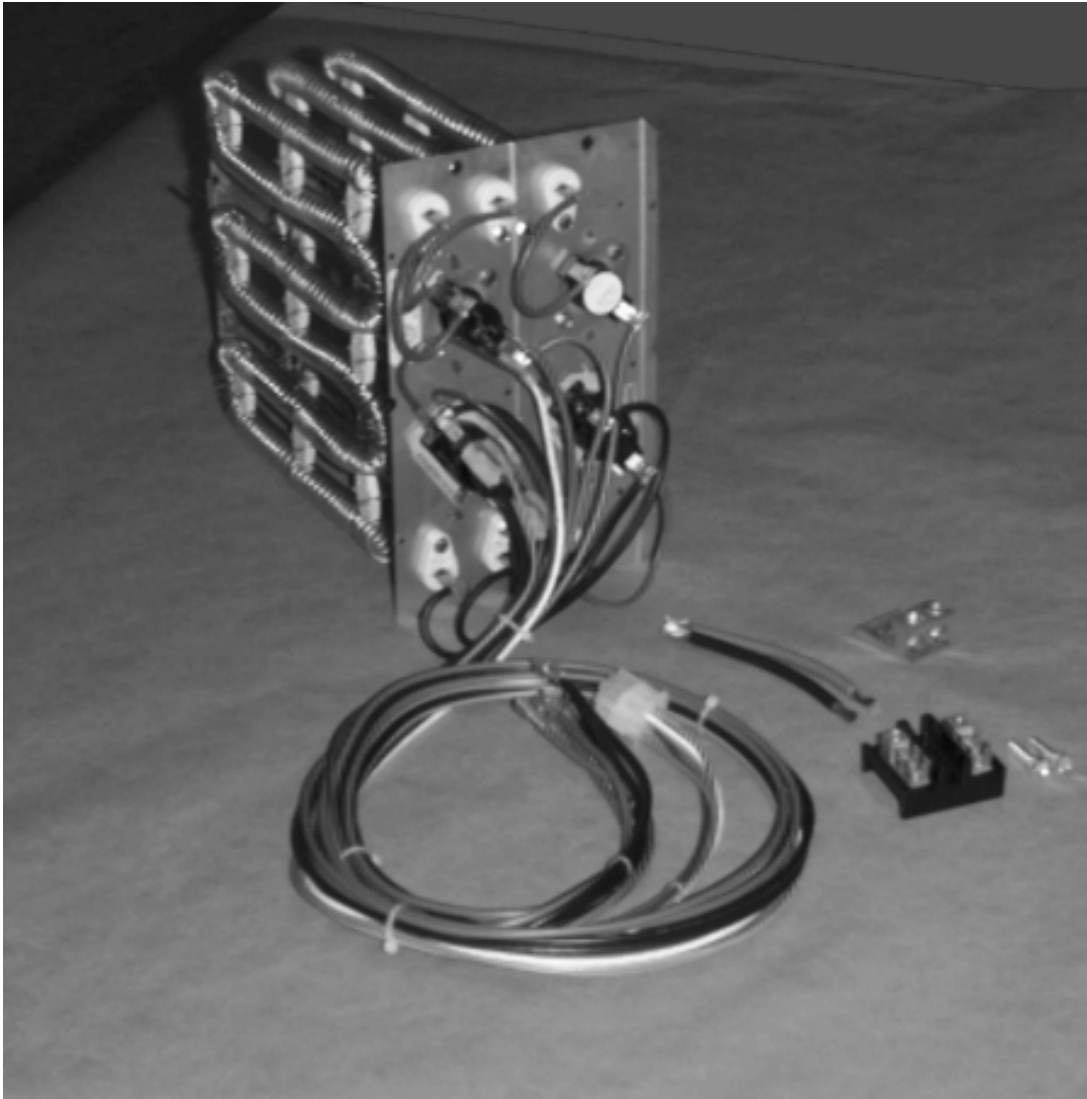
H3HK Series

Installation Instructions

Large Package Electric Heater Kits

Description

Installation of 208/240V H3HK Heater Kits in Packaged Air Conditioners and Packaged Heat Pumps.



These instructions are primarily intended to assist qualified individuals experienced in the proper installation of heating and/or air conditioning appliances. Some local codes require licensed installation/service personnel for this type equipment. All installations must be in accordance with these instructions and with all applicable national and local codes and standards.

Read these instructions thoroughly before starting the installation. Follow all precautions and warnings contained within these instructions and on the unit.

GENERAL INFORMATION

The H3HK Heater Kits are approved for use in the Packaged Air Conditioners and Packaged Heat Pumps when applied and installed according to these instructions. See Table 3 for the approved H3HK air conditioner combinations and the approved H3HK heat pump combinations. Refer to the National Electric Code (ANSI/NFPA 70) or in Canada the Canadian Electric Code Part 1 (CSA C.22.1) and applicable local codes for overcurrent protection and disconnect requirements. Do not use installation instructions inside H3HK kit. They are for smaller packaged units only.

ELECTRICAL SUPPLY

WARNING:

To avoid the risk of electric shock, personal injury, or death, disconnect all electrical power to the unit before performing any maintenance or service. The unit may have more than one power supply.

If the unit was previously installed without electric heat, the existing supply wiring may not be sufficient to handle the increased load. See the unit rating label or Tables 4 and 5 for minimum

Description	Order Number
208/240v Heater Kits	
H3HK-005H-01, 5kw, 1-Stage Heater Kit*	917166
H3HK-008H-01, 8kw, 1-Stage Heater Kit*	917167
H3HK-010H-01, 10kw, 1-Stage Heater Kit*	917168
H3HK-015H-01, 15kw, 1-Stage Heater Kit	917169
H3HK-015H-21, 15kw, 1-Stage Heater Kit*	917172
H3HK-020H-01, 20kw, 1-Stage Heater Kit*	917170
H3HK-020H-21, 20kw, 1-Stage Heater Kit*	917173
H3HK-009H-01, 9kw, 1-Stage Heater Kit**	917171

*Single Phase Models Only

**Three Phase Models Only

Accessories:

4-Pole Single Circuit Adaptor*	913350
6-Pole Single Circuit Adaptor*	913556
Circuit Breaker, Single Phase (2-Pole)	913554
Circuit Breaker, Three Phase (3-Pole)	913740

Table 1. Accessories

circuit ampacities and maximum overcurrent protection ratings. The units with installed electric heat may be supplied by a single circuit or by multiple circuits. Additional accessory kits may be required if single circuit installation and/or circuit breakers are desired. See Table 1 for accessory descriptions and part numbers.

Installation

Remove the control box access panel. Locate the 9 pin heater plug assembly and remove the cap. Discard the jumper cap; it will not be used after installing the heater kits.

Circuit Options — The units with electric heat may be wired for single or multiple circuits and may have circuit breakers or terminal blocks.

Note: Circuit breakers installed in the unit are for short-circuit protection of the internal wiring and to serve as a unit disconnect. The circuit breakers DO NOT provide overcurrent protection of the supply wiring.

Whether or not circuit breakers are used in the units, overcurrent protection must be provided at the branch circuit distribution panel and sized as shown in Tables 4 and 5 or on the unit rating label and according to the National Electric Code, Canadian Electrical Code and applicable local codes. In most cases the overcurrent protection specified on the unit rating label is less than the 60 amp rating of the circuit breakers used in the units. This is because the function of the overcurrent protection required at the distribution panel (field supplied) and the unit mounted breakers is different.

When circuit breakers are used they must be used on all circuits. Refer to Table 3 for the correct number of circuit breakers to install. Use circuit breaker part number 913554 for single phase applications and 913740 for three phase applications.

If the number of circuits as shown in Table 3 is more than one, circuit breakers are required. If single circuit supply wiring is desired, use 4-pole single circuit adaptor kit (P/N 913350) when two 2-pole circuit breakers are used and 6-pole single circuit adaptor kit (P/N 913556) when three 2-pole circuit breakers are used. The single circuit adapter kits are not applicable to three phase units.

If circuit breakers are not being used, proceed to the Terminal Block section.

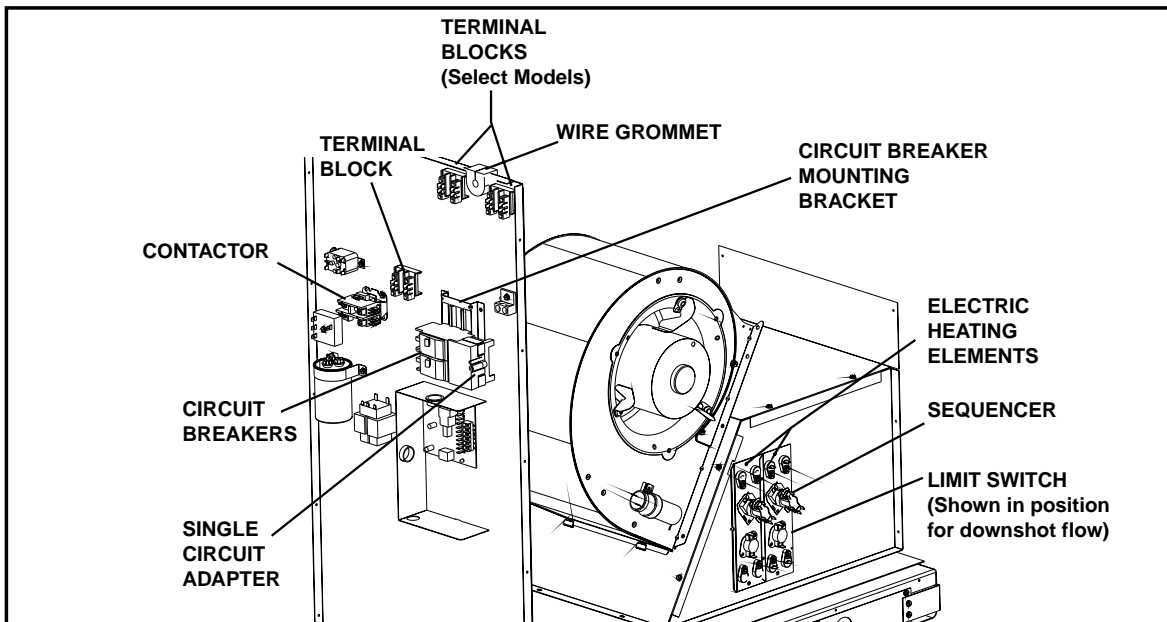


Figure 1. Location of Major Components

Circuit Breakers — If circuit breakers are used for any circuit, they must be used for all circuits. Use one breaker for each circuit as shown in Table 3.

Breaker Attachment — Install the circuit breaker mounting rail to the control panel with the 4 blunt tip screws provided.

Attaching to Bracket — Attach the circuit breakers in the unit by hooking the bottom in the base of the circuit breaker onto the left rail of the bracket and rotating to the right. The circuit breaker should snap into place. Install the breakers so that the “ON” position is at the right.

Breaker Removal — Insert a screwdriver into the hole in the release tab and pull out while rotating the breaker out and to the left. The white release tab is located at the base of the breaker under the line side (right) terminals.

Single Circuit Kit (single phase only) — Refer to the instructions included with the single circuit adapter kit for details on how to configure the adapter. Install the adapter as shown in the instructions in the line side (right) of the breakers. Proceed to the Element Installation section.

Terminal Blocks — Approved H3HK heater kits are shipped with a terminal block. The terminal block(s) supplied with the kits will not be used. The electric heater kits will be wired to the existing factory installed terminal block. If the number of circuits indicated in Table 3 is two or three, then the circuit breakers must be used; see the Circuit Breaker section.

Element Installation — Remove the blower access panel. Remove the heater close-off plate(s) in the electric heat panel. When installing single banks of heaters, position them closest to the blower.

Install the heater kit in the opening with the limit control towards the top of the unit if the unit is using the side supply and return duct openings. If the unit is using the downshot supply and return openings, install the heater kit in the opening with the limit towards the bottom of the unit. Make sure that the element support rod is inserted into the support bracket. Refer to Figure 2. Fasten the heater with the same screws used to secure the close-off plates.



WARNING:

Rooftop applications with vertical ducts must have an elbow installed in the supply duct so that the elements are not directly over a supply grille.



WARNING:

The heater will not function properly if the elements are not correctly installed.

ELEMENT POWER WIRING

Route the main power leads (heavy black and red wires) and 9-pin heat plug through the mouse hole at the top of the control panel to the circuit breaker or terminal block. Connect the 9-pin heat kit plug to the receptacle located in the control box. Refer to the detailed wiring diagrams for connections. Make sure that the connections are secure. The 4 & 5 Ton 12 SEER heat pumps have additional terminal blocks installed. The power leads from the heater kit should be attached to these terminal blocks. Wires needed to connect from terminal blocks to circuit breakers should be field supplied. The 6 inch leads are provided with the heater kit to connect the circuit breaker(s) to the compressor contactor.

Mark the appropriate box on the unit rating plate with an "X" to indicate which heater kit has been installed.

! IMPORTANT:

Torque the circuit breaker lugs to 45 in-lbs.

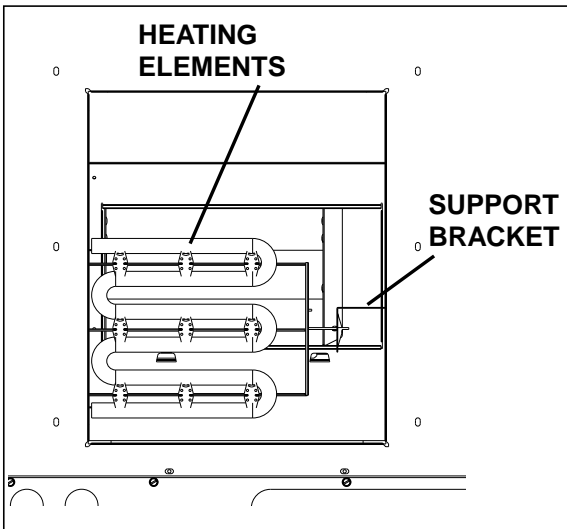


Figure 2. Element Support Bracket

AIRFLOW

The maximum external static pressure (ESP) for the units are listed in Table 2.

The unit is factory shipped with a jumper wire between the heating speed contacts and the cooling speed contacts on the blower relay. If the heating/cooling speed desired is the preset speed, then no modifications are required. If a different heating/cooling speed is desired, remove the blower lead attached to terminal #4 on the relay (leave the jumper wire in place). Cut the wire tie retaining the unused motor speed taps and connect the desired motor tap to terminal #4 on the relay. Refer to Figure 3 for the motor lead color coding.

If a heating speed different from the cooling speed is desired, remove and discard the jumper wire from the blower relay. Cut the wire tie holding the unused speed taps. Connect the desired heating speed tap to pin #6 and the desired cooling speed tap on pin #4 of the blower relay.

! WARNING:

After making any changes to the blower speed setting, be sure to bundle and insulate any unused speed taps so that they will not contact with cabinet or any uninsulated live parts.

CLEARANCE

All units are approved for zero clearance to combustibles when installed according to these instructions and other instructions included with the unit and other approved accessories.

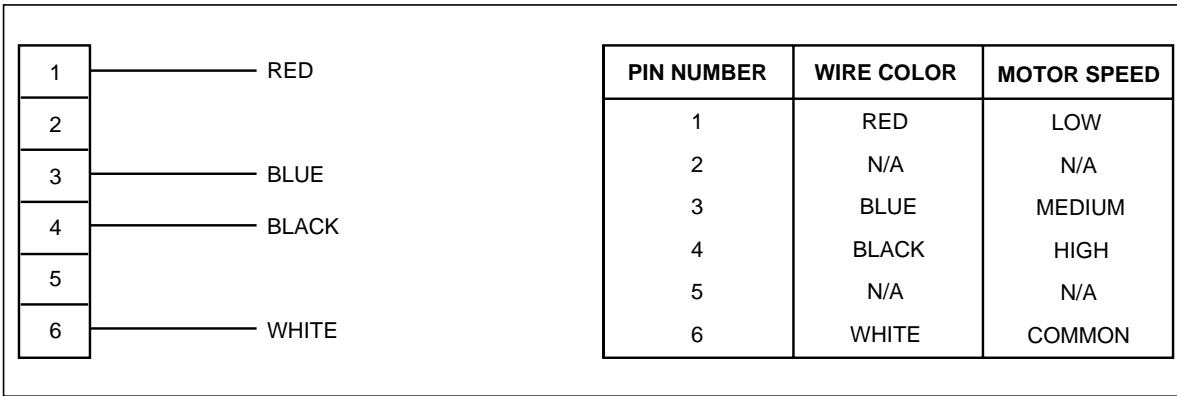


Figure 3. Motor Speed Tap Color Code

Single Phase							Three Phase			
Unit	Blower Speed	5kW	8kW	10kW	15kW	20kW	Unit	Blower Speed	9kW	15kW
3 Ton 10 & 12 SEER	Low	0.3	0.3	0.3	0.3	-	3 Ton 10 SEER	Low	0.3	0.3
	Medium	0.3	0.3	0.3	0.3	-		Medium	0.3	0.3
	High	0.5	0.5	0.5	0.5	-		High	0.5	0.5
4 Ton 10 & 12 SEER	Low	0.3	0.3	0.3	0.3	0.3	4 Ton 10 SEER	Low	0.3	0.3
	Medium	0.3	0.3	0.3	0.3	0.3		Medium	0.3	0.3
	High	0.5	0.5	0.5	0.5	0.5		High	0.5	0.5
5 Ton 10 & 12 SEER	Low	0.3	0.3	0.3	0.3	0.3	5 Ton 10 SEER	Low	0.3	0.3
	Medium	0.3	0.3	0.3	0.3	0.3		Medium	0.3	0.3
	High	0.5	0.5	0.5	0.5	0.5		High	0.5	0.5

Table 2. Maximum External Static Pressure (ESP)

Unit	Nominal KW	Heater Kit Model	Heater Kit Part Number	Circuits	Breakers	Wiring Diagram No.
3 Ton A/C 10 & 12 SEER 1 Phase	5	H3HK-005H-01	917166	1	None	1
	8	H3HK-008H-01	917167	1	None	3
	10	H3HK-010H-01	917168	1	None	3
	15	H3HK-015H-01	917169	2	2	6
4 Ton A/C 10 & 12 SEER 1 Phase	5	H3HK-005H-01	917166	1	None	1
	8	H3HK-008H-01	917167	1	None	3
	10	H3HK-010H-01	917168	1	None	3
	15	H3HK-015H-01	917169	2	2	6
	20	H3HK-020H-01	917170	2	2	9
5 Ton A/C 10 & 12 SEER 1 Phase	5	H3HK-005H-01	917166	1	None	1
	8	H3HK-008H-01	917167	1	None	3
	10	H3HK-010H-01	917168	1	None	3
	15	H3HK-015H-01	917169	2	2	6
	20	H3HK-020H-01	917170	2	2	9
3 Ton H/P 10 & 12 SEER 1 Phase	5	H3HK-005H-01	917166	1	None	1
	8	H3HK-008H-01	917167	1	None	3
	10	H3HK-010H-01	917168	2	2	4
	15	H3HK-015H-01	917169	2	2	7
4 Ton H/P 10 & 12 SEER 1 Phase	5	H3HK-005H-01	917166	2	2	2
	8	H3HK-008H-01	917167	2	2	5
	10	H3HK-010H-01	917168	2	2	5
	15	H3HK-015H-01	917169	3	3	8
	20	H3HK-020H-01	917170	3	3	10
5 Ton H/P 10 & 12 SEER 1 Phase	5	H3HK-005H-01	917166	2	2	2
	8	H3HK-008H-01	917167	2	2	5
	10	H3HK-010H-01	917168	2	2	5
	15	H3HK-015H-01	917169	3	3	8
	20	H3HK-020H-01	917170	3	3	10
3, 4, & 5 Ton A/C 10 SEER 3 Phase	9	H3HK-009H-01	917171	1	None	11
	15	H3HK-015H-01	917169	1	None	11
3 Ton H/P 10 SEER 3 Phase	9	H3HK-009H-01	917171	1	None	11
	15	H3HK-015H-01	917169	1	None	11
4 & 5 Ton H/P 10 SEER 3 Phase	9	H3HK-009H-01	917171	1	None	11
	15	H3HK-015H-01	917169	2	2	12
5 Ton A/C 12 SEER 3 Phase	9	H3HK-009H-01	917171	1	None	11
	15	H3HK-015H-01	917169	1	None	11

Table 3. Applications

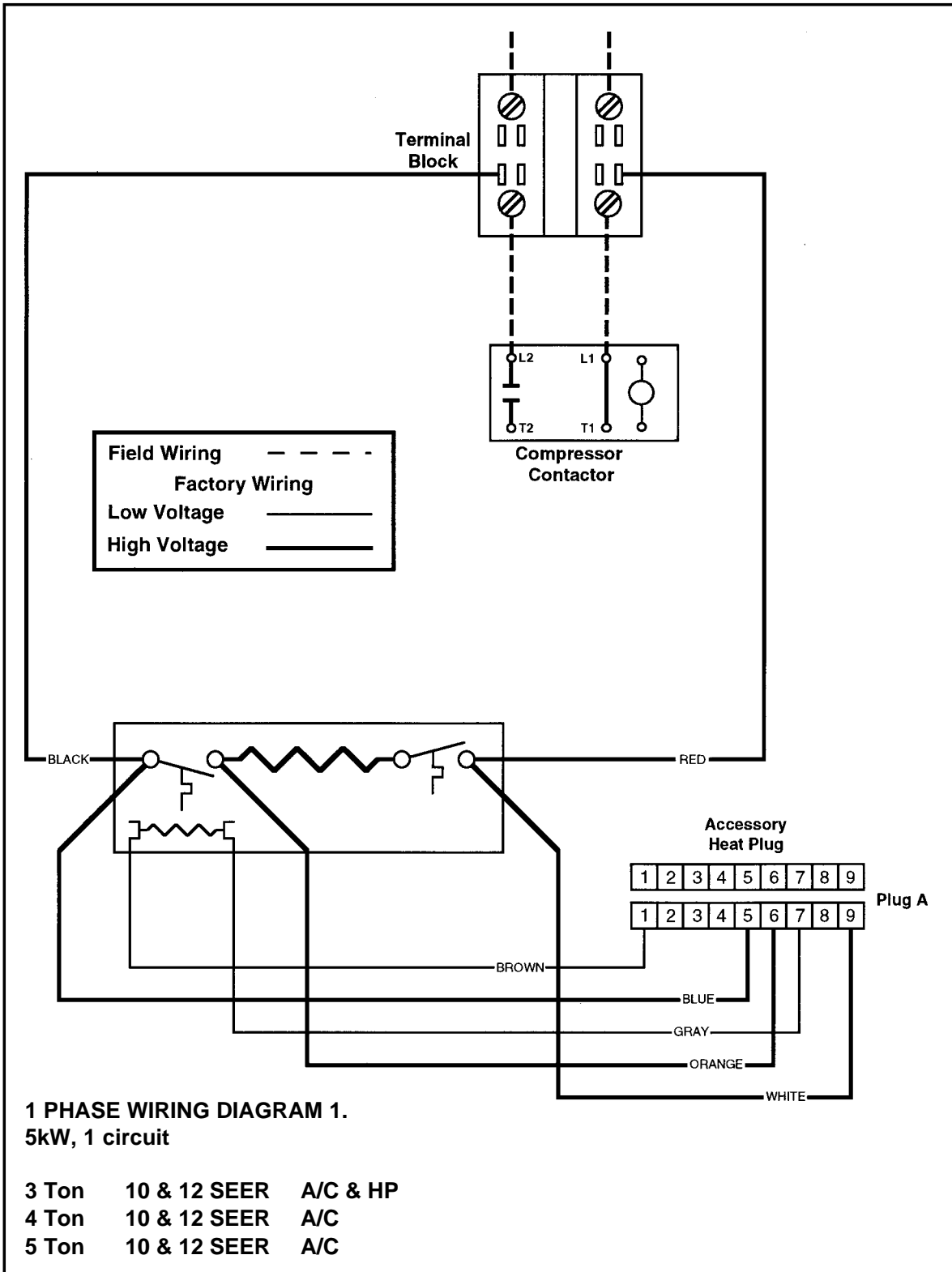
Model Number	Heater KW	Single Circuit				Multiple Circuit												
		Min. Circuit Amp.	Rec Wire Gauge (60°C Cu)	Rec Wire Gauge (75°C Cu)	Maximum Over-current Rating	A				B				C				
						Min. Circuit Amp.	Rec Wire Gauge (60°C Cu)	Rec Wire Gauge (75°C Cu)	Maximum Over-current Rating	Min. Circuit Amp.	Rec Wire Gauge (60°C Cu)	Rec Wire Gauge (75°C Cu)	Maximum Over-current Rating	Min. Circuit Amp.	Rec Wire Gauge (60°C Cu)	Rec Wire Gauge (75°C Cu)	Maximum Over-current Rating	
3 Ton	0	21.1	8	8	35	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	5	46.1	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
1 Phase	8	58.6	4	6	60	39.8	6	8	50	-	-	-	-	-	-	-	-	-
208/230V	10	71.1	3	4	80	46.1	6	8	50	25.0	10	10	25	-	-	-	-	-
	15	96.1	1	3	100	46.1	6	8	50	50.0	6	8	50	-	-	-	-	-
4 Ton	0	31.5	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	5	56.5	4	4	70	28.4	6	8	50	28.9	10	10	30	-	-	-	-	-
1 Phase	8	69.0	3	4	80	28.4	6	8	50	41.4	6	8	45	-	-	-	-	-
208/230V	10	81.5	2	3	90	28.4	6	8	50	53.9	4	6	60	-	-	-	-	-
	15	106.5	1	2	110	28.4	6	8	50	53.9	4	6	60	25.0	10	10	25	-
	20	131.5	000	0	150	28.4	6	8	50	53.9	4	6	60	50.0	6	8	50	-
5 Ton	0	38.4	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	5	63.4	3	4	80	35.3	4	6	60	28.9	10	10	30	-	-	-	-	-
1 Phase	8	75.9	2	3	90	35.3	4	6	60	41.4	6	8	45	-	-	-	-	-
208/230V	10	88.4	1	3	100	35.3	4	6	60	53.9	4	6	60	-	-	-	-	-
	15	113.4	0	1	125	35.3	4	6	60	53.9	4	6	60	25.0	10	10	25	-
	20	138.4	000	0	150	35.3	4	6	60	53.9	4	6	60	50.0	6	8	50	-
3 Ton	0	22.5	8	8	35	-	-	-	-	-	-	-	-	-	-	-	-	-
12 SEER	5	47.5	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
1 Phase	8	60.0	4	6	60	41.3	6	8	50	18.8	12	12	20	-	-	-	-	-
208/230V	10	72.5	3	4	80	47.5	6	8	50	25.0	10	10	25	-	-	-	-	-
	15	97.5	1	3	100	47.5	6	8	50	50.0	6	8	50	-	-	-	-	-
4 Ton	0	33.9	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
12 SEER	5	58.9	4	4	70	30.8	6	8	50	28.9	10	10	30	-	-	-	-	-
1 Phase	8	71.4	3	4	80	30.8	6	8	50	41.4	6	8	45	-	-	-	-	-
208/230V	10	83.9	2	3	90	30.8	6	8	50	53.9	4	6	60	-	-	-	-	-
	15	108.9	1	2	110	30.8	6	8	50	53.9	4	6	60	25.0	10	10	25	-
	20	133.9	000	0	150	30.8	6	8	50	53.9	4	6	60	50.0	6	8	50	-
5 Ton	0	40.6	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
12 SEER	5	65.6	3	4	80	37.5	4	6	60	28.9	10	10	30	-	-	-	-	-
1 Phase	8	78.1	2	3	90	37.5	4	6	60	41.4	6	8	45	-	-	-	-	-
208/230V	10	90.6	1	3	100	37.5	4	6	60	53.9	4	6	60	-	-	-	-	-
	15	115.6	0	1	125	37.5	4	6	60	53.9	4	6	60	25.0	10	10	25	-
	20	140.6	000	0	150	37.5	4	6	60	53.9	4	6	60	50.0	6	8	50	-
3 Ton	0	15.3	10	10	25	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	9	42.4	6	8	45	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Phase	15	58.6	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V	0	20.3	10	10	30	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	9	47.4	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Phase	15	-	-	-	-	17.2	10	10	30	47.2	6	8	50	-	-	-	-	-
208/230V	0	27.8	6	8	45	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	9	54.9	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Phase	15	-	-	-	-	24.7	8	8	40	47.2	6	8	50	-	-	-	-	-
208/230V																		

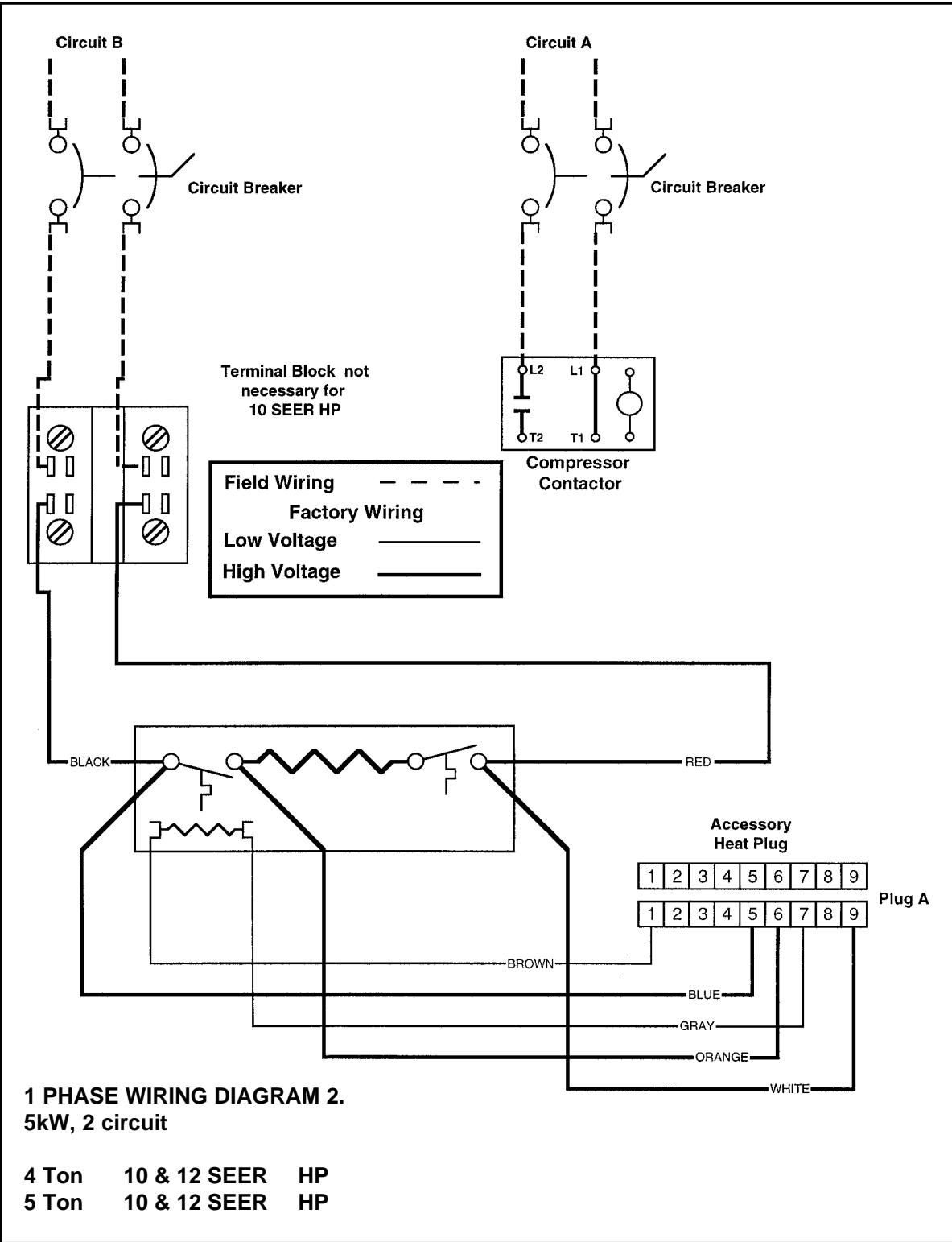
Table 4. Heat Pump Electrical Data

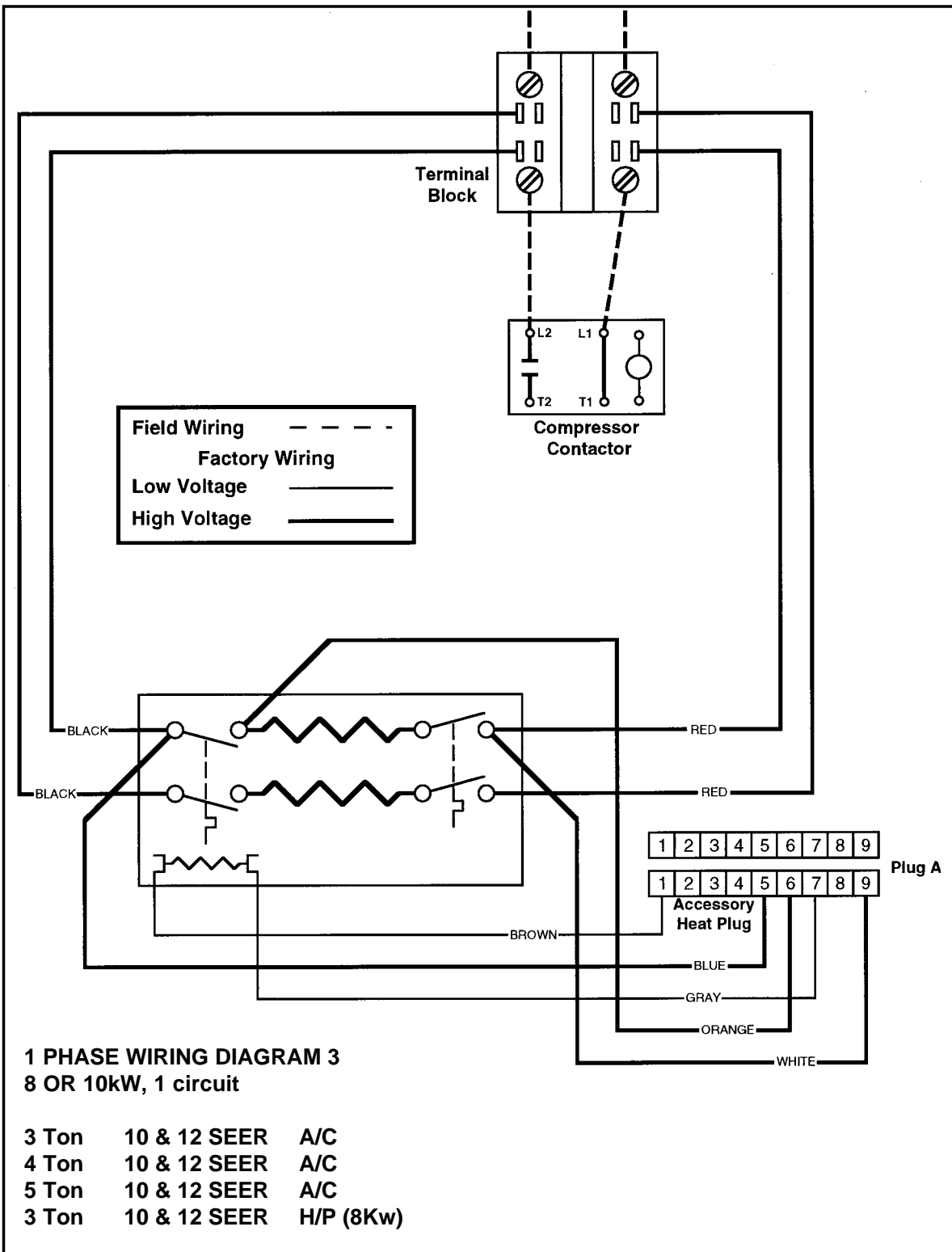
Model Number	Heater KW	Single Circuit				Multiple Circuit												
		Min. Circuit Amp.	Rec Wire Gauge (60°C Cu)	Rec Wire Gauge (75°C Cu)	Maximum Over-current Rating	A				B				C				
						Min. Circuit Amp.	Rec Wire Gauge (60°C Cu)	Rec Wire Gauge (75°C Cu)	Maximum Over-current Rating	Min. Circuit Amp.	Rec Wire Gauge (60°C Cu)	Rec Wire Gauge (75°C Cu)	Maximum Over-current Rating	Min. Circuit Amp.	Rec Wire Gauge (60°C Cu)	Rec Wire Gauge (75°C Cu)	Maximum Over-current Rating	
3 Ton	0	21.1	8	8	35	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	5	26.6	8	8	35	-	-	-	-	-	-	-	-	-	-	-	-	-
1 PHASE	8	39.1	8	8	40	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V	10	51.6	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	76.6	3	4	80	51.6	4	6	60	25.0	10	10	25	-	-	-	-	-
4 Ton	0	31.5	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	5	31.5	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
1 PHASE	8	41.4	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V	10	53.9	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	78.9	3	4	80	53.9	4	6	60	25.0	10	10	25	-	-	-	-	-
	20	103.9	1	2	110	53.9	4	6	60	50.0	6	8	50	-	-	-	-	-
5 Ton	0	38.1	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	5	38.1	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
1 PHASE	8	41.4	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V	10	53.9	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	78.9	3	4	80	53.9	4	6	60	25.0	10	10	25	-	-	-	-	-
	20	103.9	1	2	110	53.9	4	6	60	50.0	6	8	50	25.0	10	10	25	-
3 Ton	0	15.3	10	10	25	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	9	28.7	10	10	30	-	-	-	-	-	-	-	-	-	-	-	-	-
3 PHASE	15	44.9	6	8	45	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V																		
4 Ton	0	20.3	10	10	30	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	9	30.9	8	8	35	-	-	-	-	-	-	-	-	-	-	-	-	-
3 PHASE	15	47.2	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V																		
5 Ton	0	27.5	6	8	45	-	-	-	-	-	-	-	-	-	-	-	-	-
10 SEER	9	30.9	6	8	45	-	-	-	-	-	-	-	-	-	-	-	-	-
3 PHASE	15	47.2	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V																		
3 Ton	0	20.1	10	10	30	-	-	-	-	-	-	-	-	-	-	-	-	-
12 SEER	5	26.6	10	10	30	-	-	-	-	-	-	-	-	-	-	-	-	-
1 PHASE	8	39.1	8	8	40	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V	10	51.6	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	76.6	3	4	80	51.6	4	6	60	25.0	10	10	25	-	-	-	-	-
4 Ton	0	33.9	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
12 SEER	5	33.9	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
1 PHASE	8	41.4	6	8	50	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V	10	53.9	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	78.9	3	4	80	53.9	4	6	60	25.0	10	10	25	-	-	-	-	-
	20	103.9	1	2	110	53.9	4	6	60	50.0	6	8	50	-	-	-	-	-
5 Ton	0	40.3	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
12 SEER	5	40.3	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
1 PHASE	8	41.4	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V	10	53.9	4	6	60	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	78.9	3	4	80	53.9	4	6	60	25.0	10	10	25	-	-	-	-	-
	20	103.9	1	2	110	53.9	4	6	60	50.0	6	8	50	-	-	-	-	-
5 Ton	0	28.4	6	8	45	-	-	-	-	-	-	-	-	-	-	-	-	-
12 SEER	9	30.9	6	8	60	-	-	-	-	-	-	-	-	-	-	-	-	-
3 PHASE	15	47.2	6	8	80	-	-	-	-	-	-	-	-	-	-	-	-	-
208/230V																		

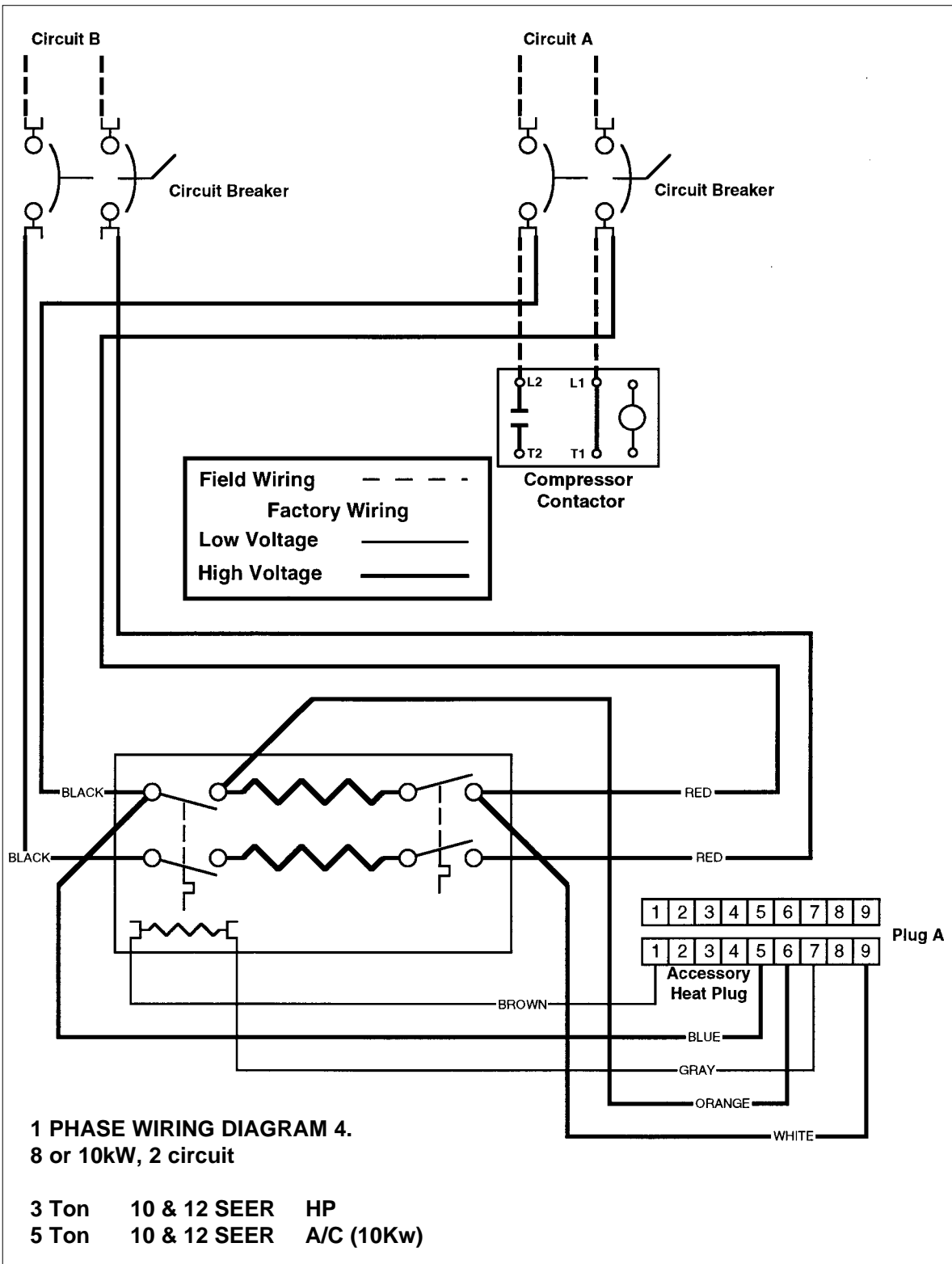
Table 5. Air Conditioner Electrical Data

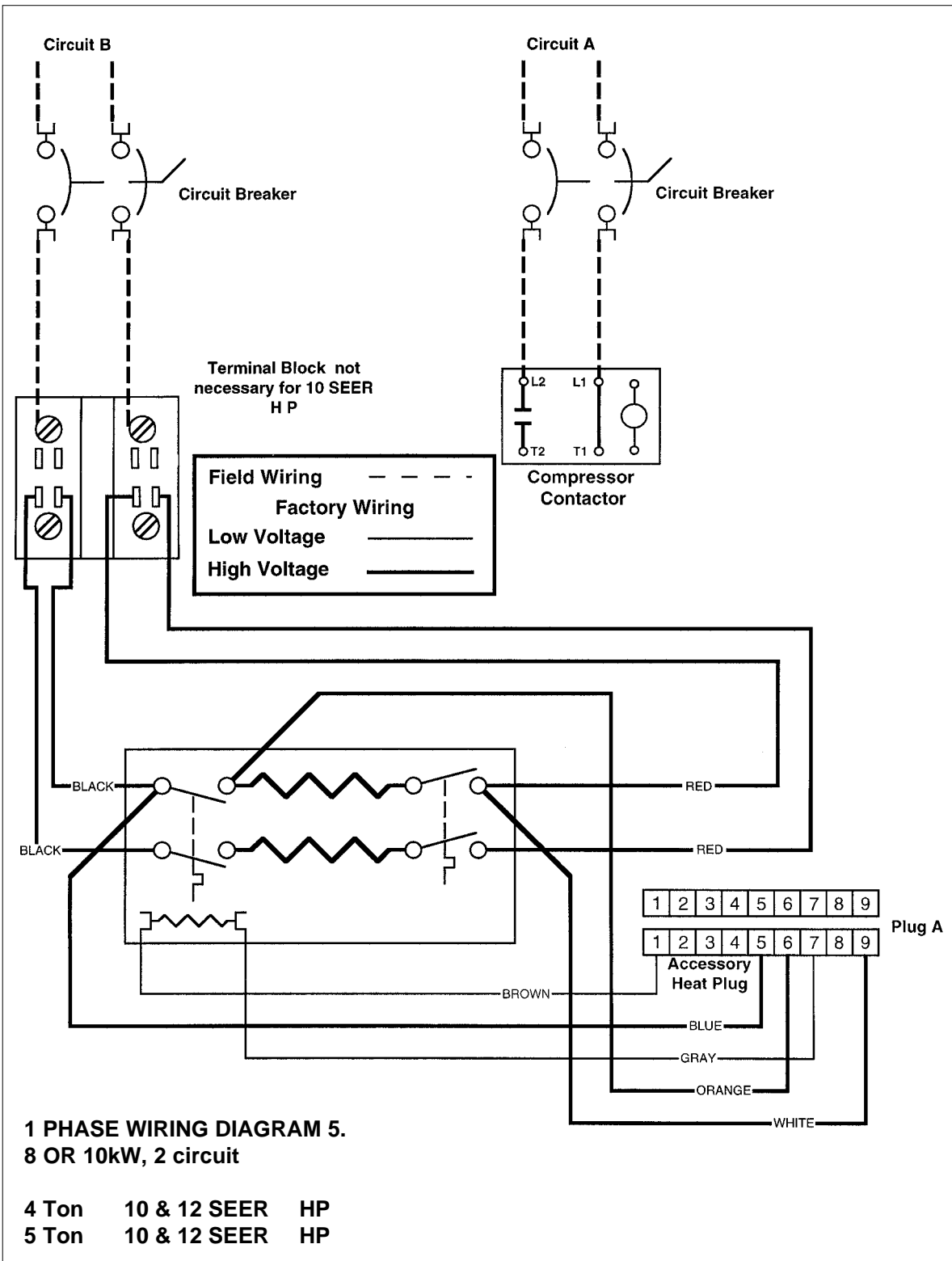
WIRING DIAGRAMS

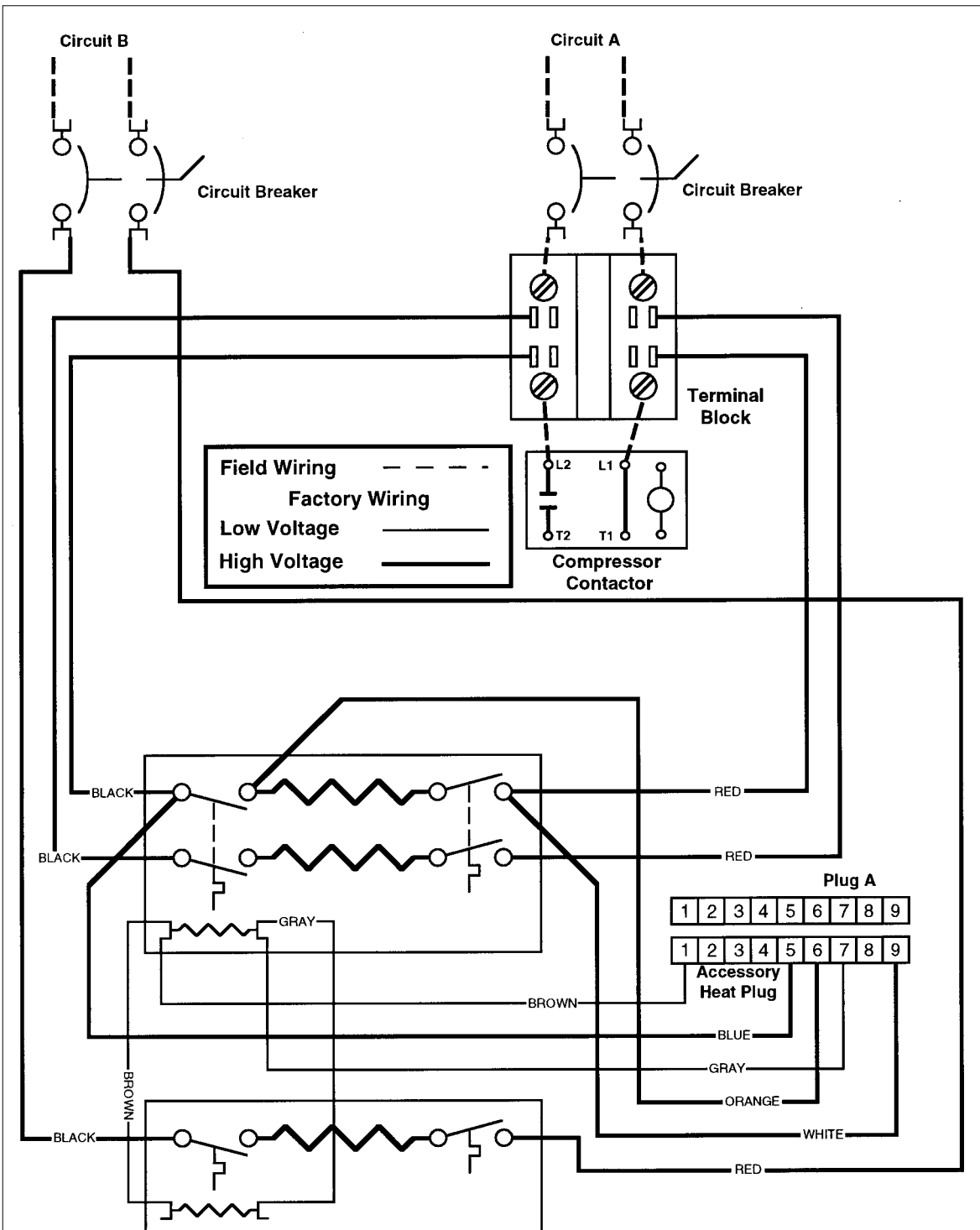






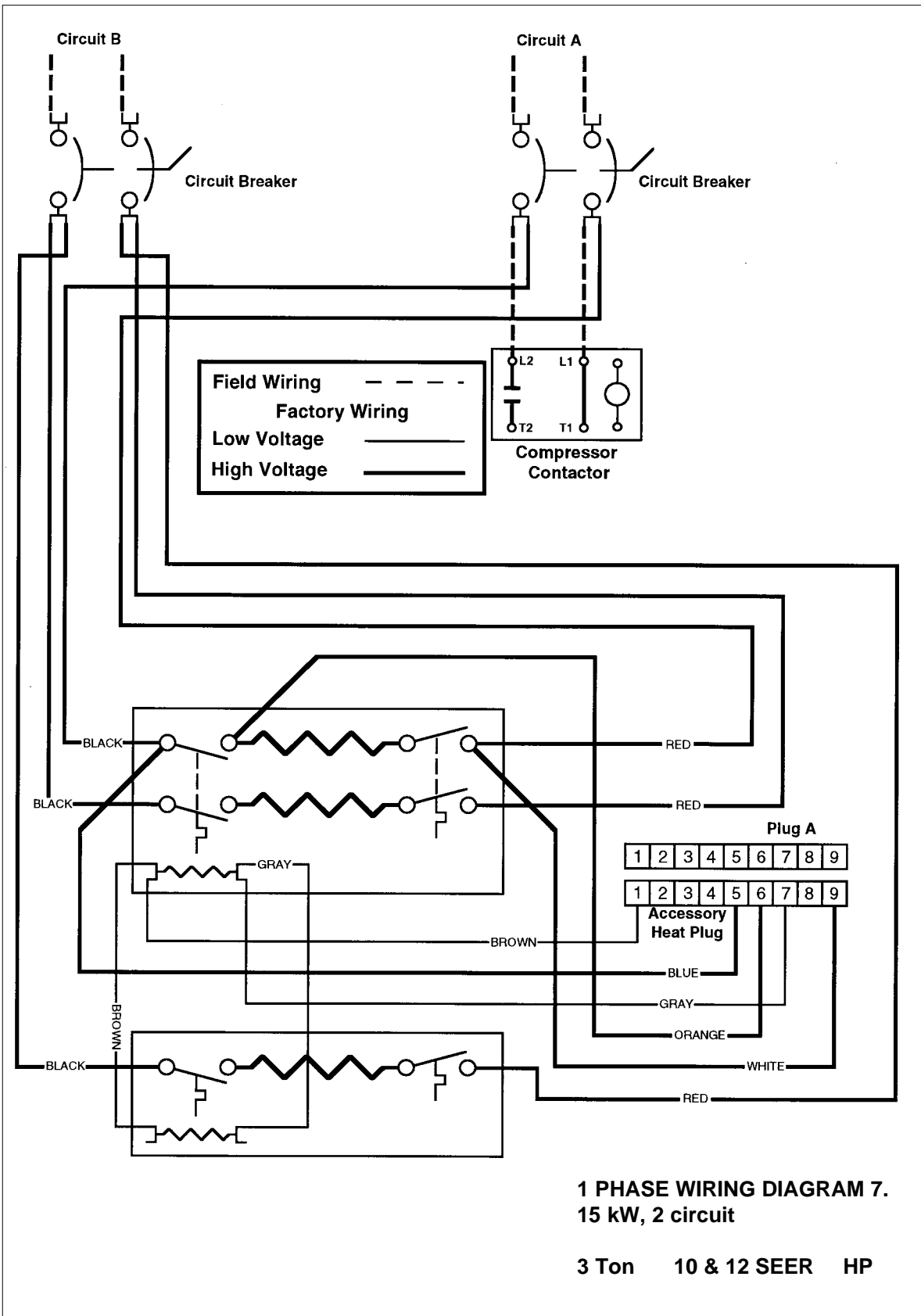


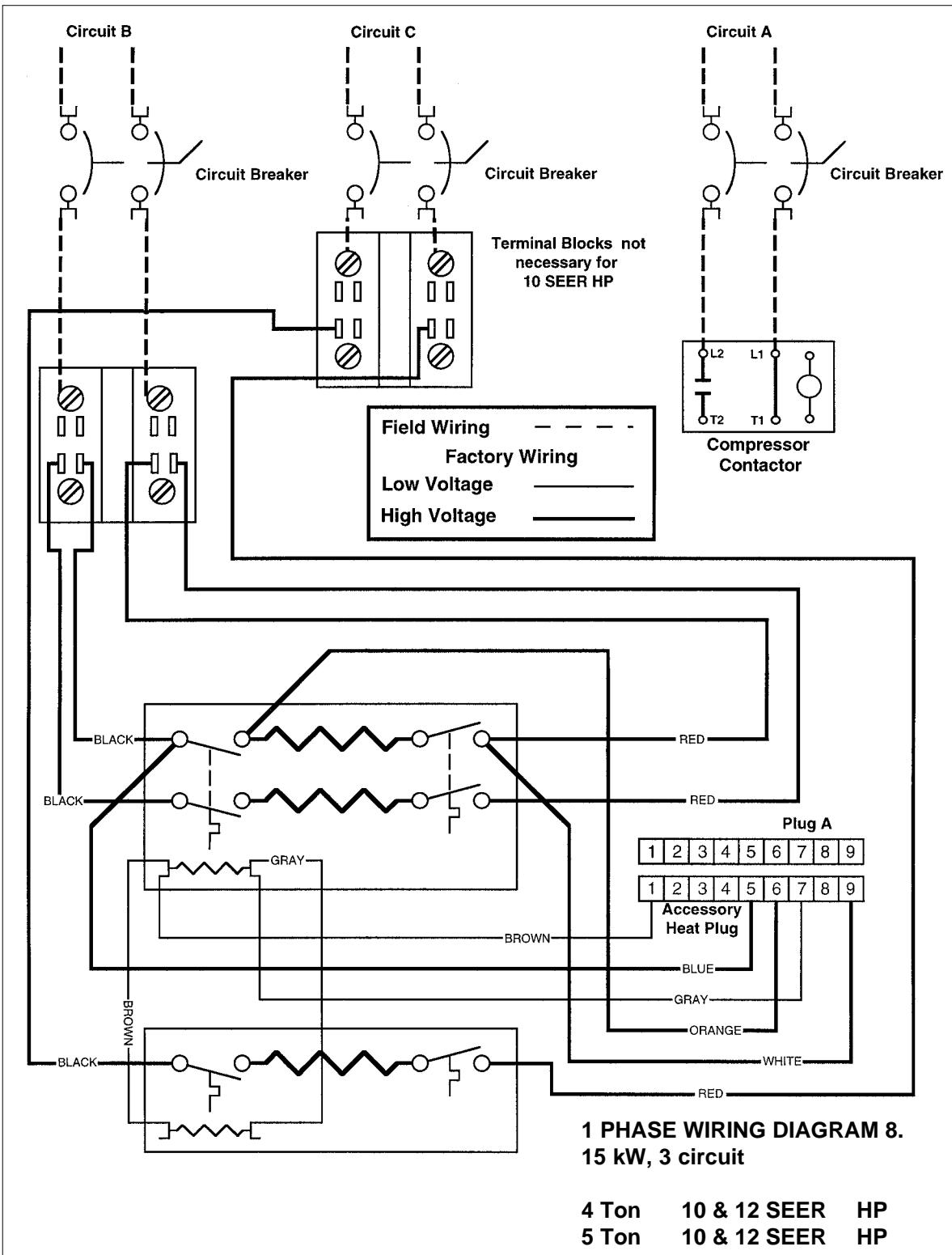


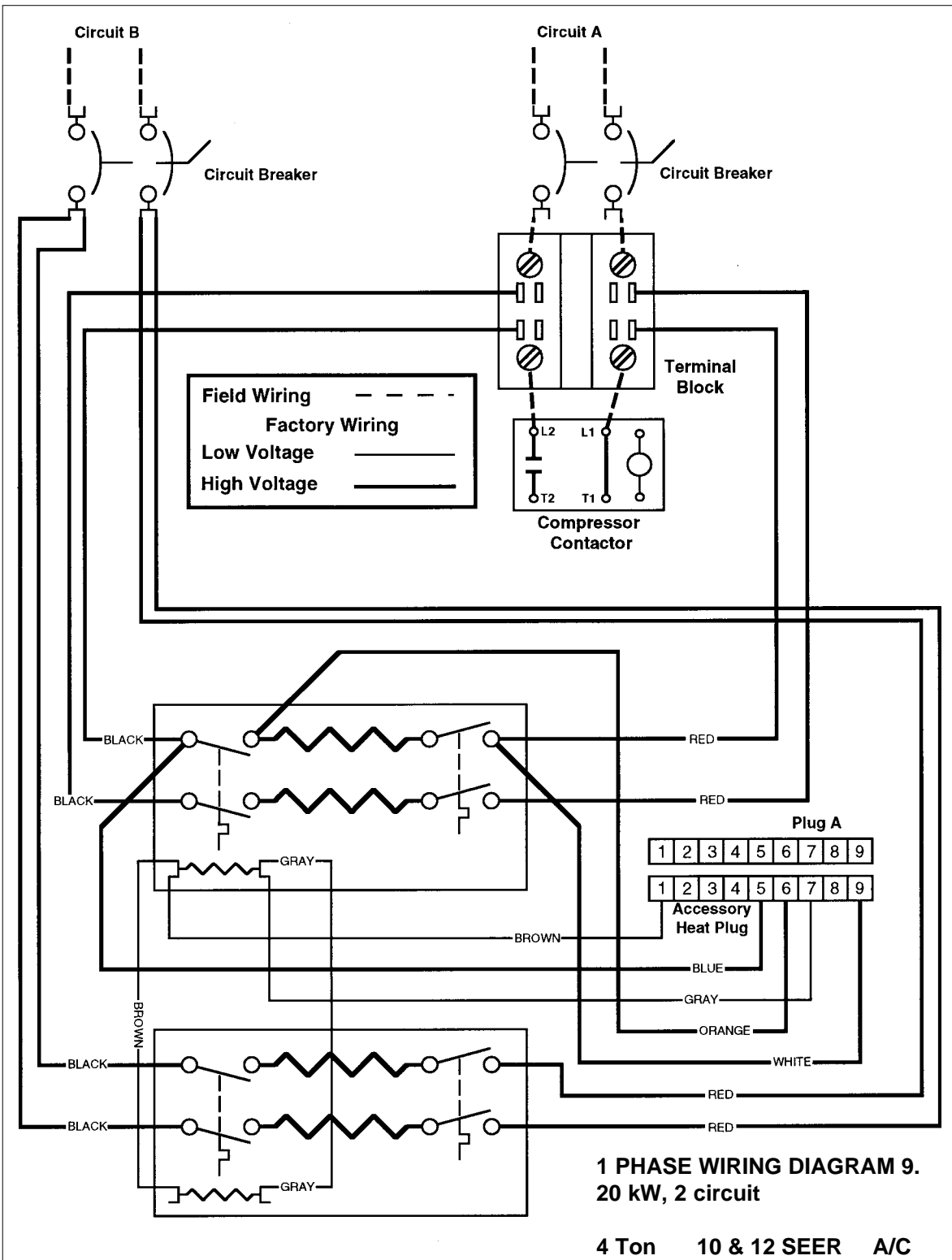


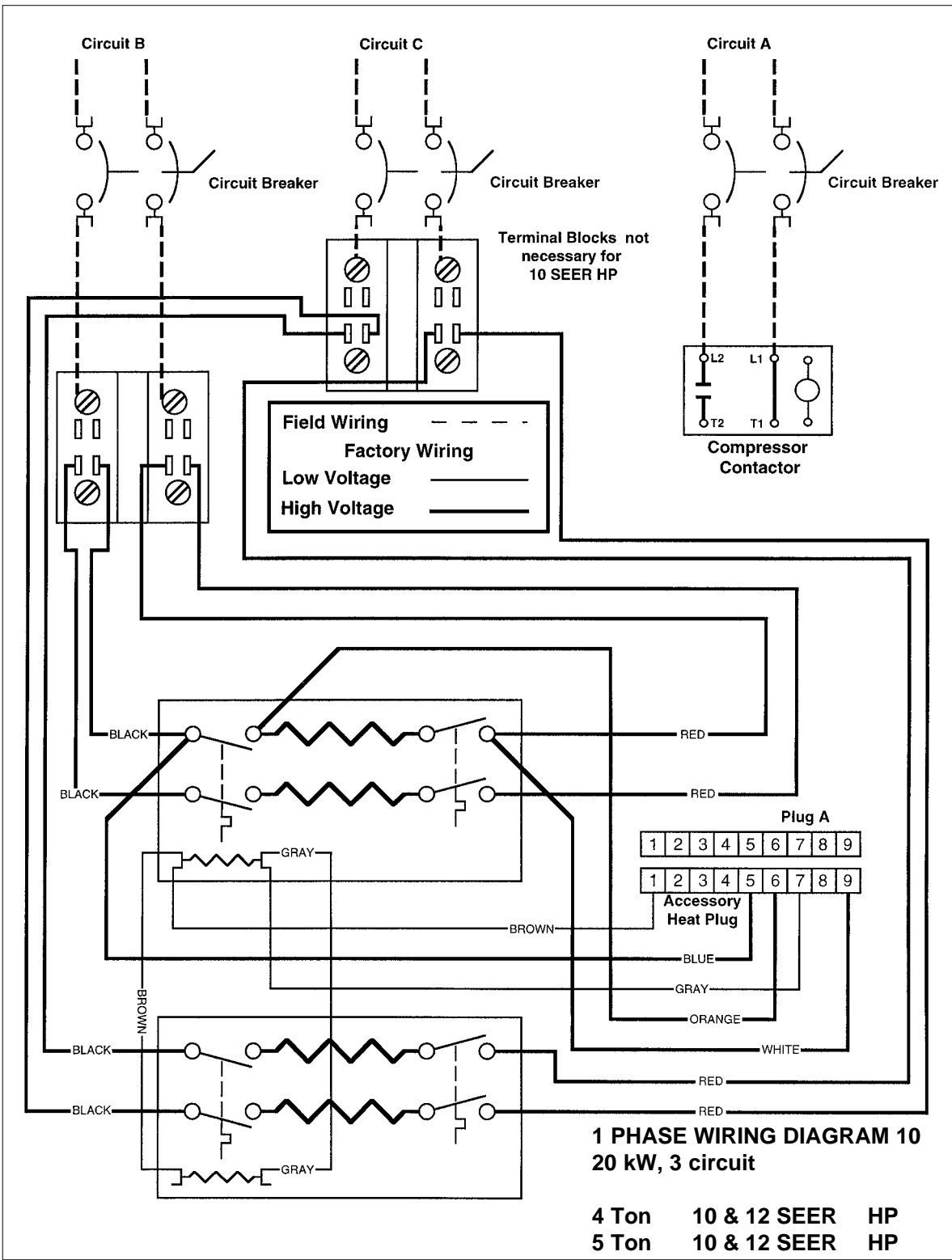
**1 PHASE WIRING DIAGRAM 6.
15 kW, 2 circuit**

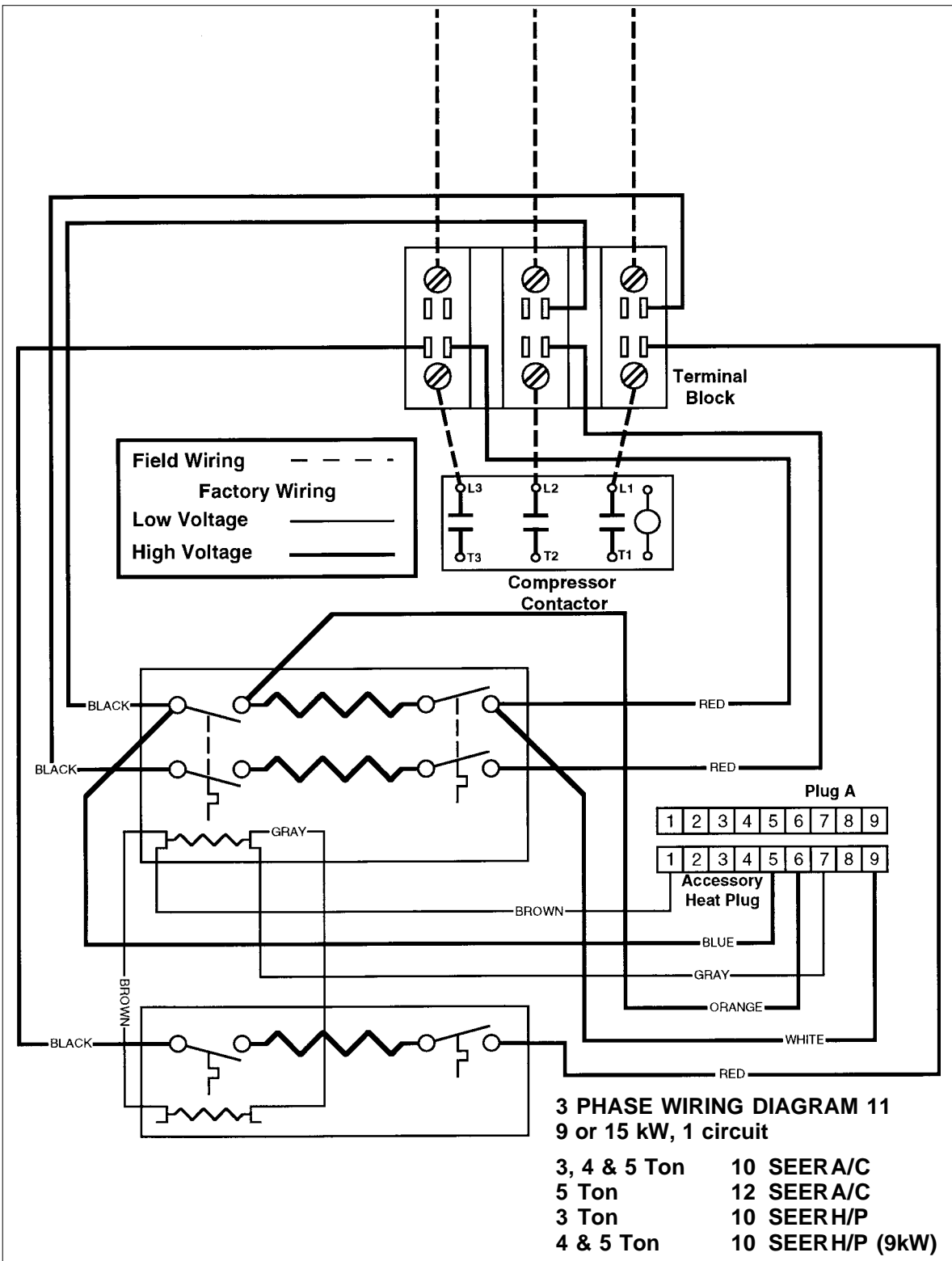
3 Ton	10 & 12 SEER	A/C
4 Ton	10 & 12 SEER	A/C
5 Ton	10 & 12 SEER	A/C

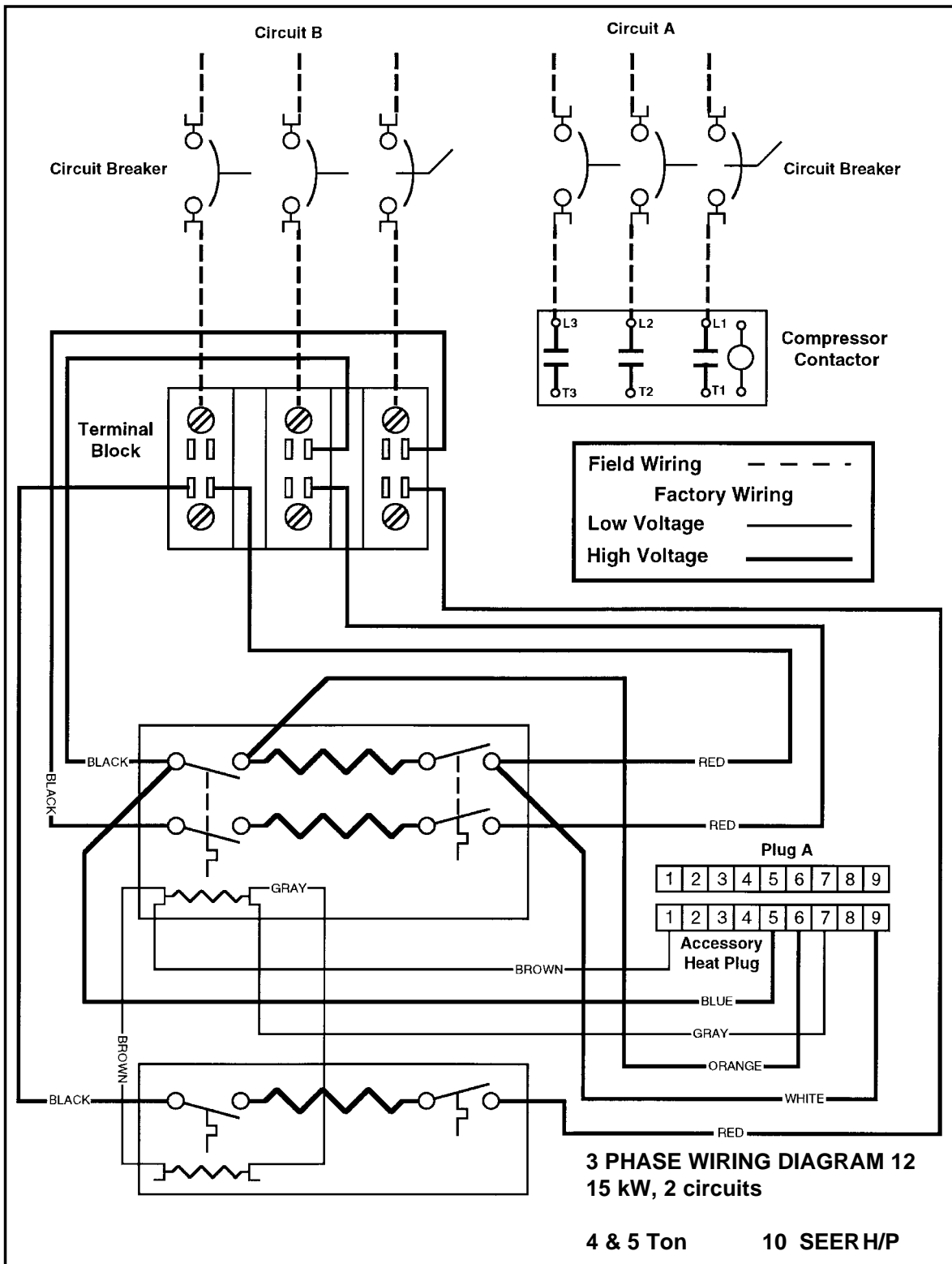












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707794B (Replaces 707794A)

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