

**MULTI-POSITION 28" DEEP MODULAR HEAT PUMP AIR HANDLER
WITH OR WITHOUT ELECTRIC HEAT
MODELS: MMVT Series**

LIST OF SECTIONS

1 – Description, Warranty, and Features	1	5 – Constant Torque Motor Terminal Connections.....	6
2 – Air Handler Specifications and Tables.....	2	6 – Blower Performance Tables	7
3 – Electrical Specifications and Control Box	3	7 – Accessories	11
4 – Thermostat and Low Voltage Wiring and Connections.....	5	8 – Wiring Diagrams	12

LIST OF FIGURES

1 – Air Handler Dimensions	1	8 – Wiring Diagram: 120V Blower Mtr & Transformer Circuit.....	11
2 – Control Box Component Locations.....	4	9 – Wiring Diagram: 5kW Electric Heat Circuit	14
3 – Typ Low Voltage Connections - 1 Stage Heat & Cool	5	10 – Wiring Diagram: 10kW Electric Heat Circuit	16
4 – Typ Low Voltage Connections - 1 Stage Heat & Heat Pump	5	11 – Low Voltage Connections: 1-Stage Heat & 1-Stage Cooling	14
5 – Typ Low Voltage Connections - 2 Stage Heat/1 Stage Cool.....	5	12 – Wiring Diagram: 15kW Electric Heat Circuit.....	17
6 – p Low Voltage Connections – 2 Stage Heat/1 Stage HP.....	5	13 –Wiring Diagram: 20kW Electric Heat Circuit	17
7 – Constant Torque Blower Motor Terminal Connections	6		

LIST OF TABLES

1 – Air Handler Dimensional Data	2	8 – Low Voltage Wire Gauge and Max. Lengths	5
2 – Air Handler Model Specifications	2	9 – Typical Heat / Cool Low Voltage Wire Colors & Connections.....	6
3 – Furnace Model Nomenclature	2	10 – Typical Heat Pump Low Voltage Wire Colors & Connections	6
4 – Clearances to Combustibles.....	2	11 – Constant Torque Motor Terminal Connections.....	6
5 – Electrical Data – 120 Volt Blower Mtr & Transformer Circuit Only..	3	12 – Blower Performance.....	7
6 – Electrical Data – 208/240 Volt Electric Heater Circuit Only.....	3	13 – Accessories.....	8
7 – Electric Heater Heating Capacities.....	4		

SECTION 1: DESCRIPTION , WARRANTY, AND FEATURES

This modular air handler is designed for residential installations. All air handlers are factory assembled wired and run tested to assure dependable and economical operation.

WARRANTY

5- Year limited furnace warranty. 1- Year limited parts warranty.

FEATURES

1. Air handler is rated for 120V at 60Hz (no heat models) or 120V (blower motor) and 208/240 VAC at 60 Hz (electric heater).
2. Air handler size varies by model.
3. Air handler is designed for A/C or heat pump operation.
4. Air handler is designed for upflow, downflow and horizontal applications.
5. Air handler must not be operated with the access panels removed.
6. Air handler is listed by ETL in the United States and Canada.
7. This air handler is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of this air handler by a person responsible for their safety. Children must not be allowed to play with this air handler. by a person responsible for their safety. Children must not be allowed to play with this air handler.

SAVE THIS MANUAL FOR FUTURE REFERENCE

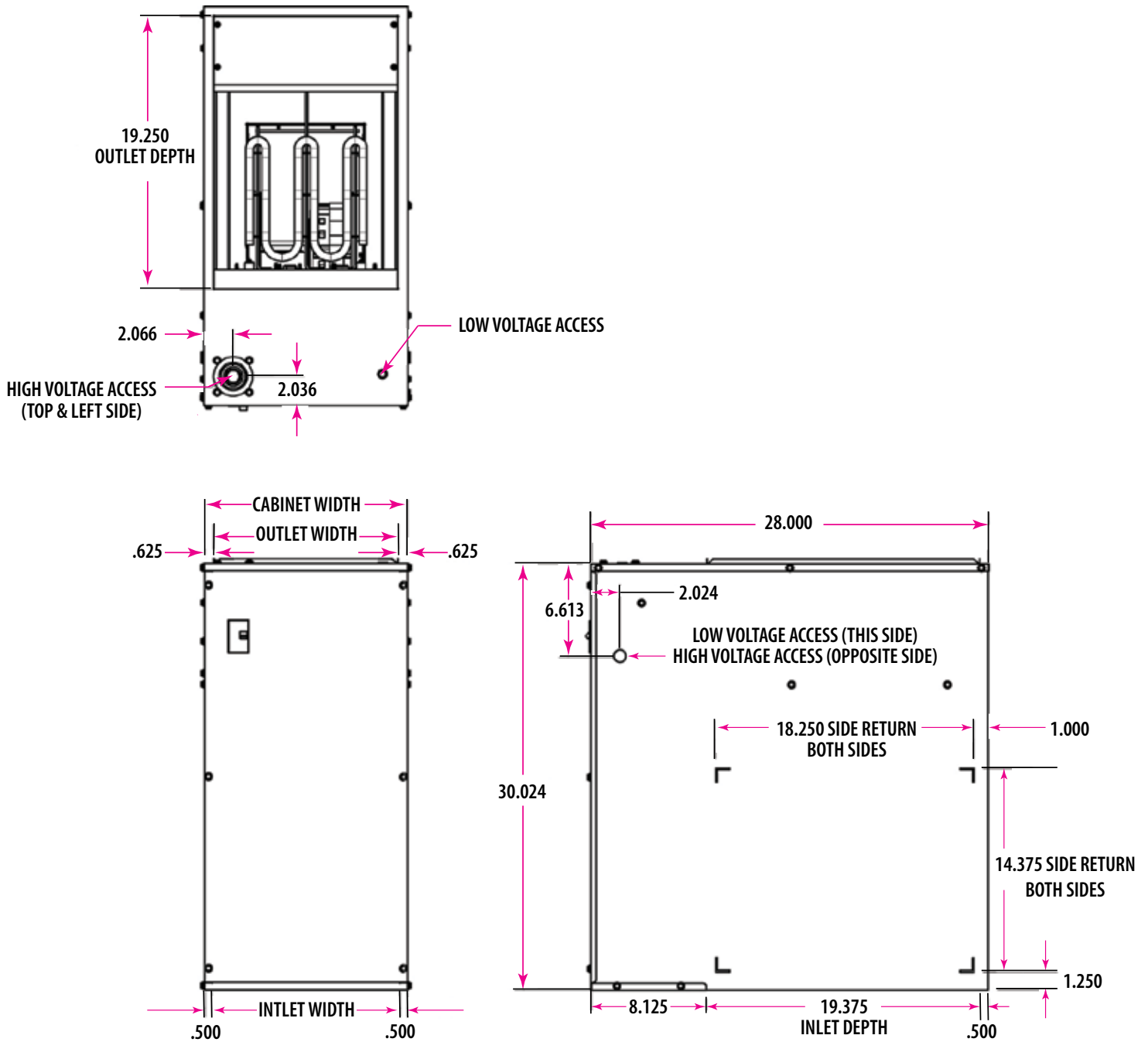


Figure 1: Air Handler Dimensions

Model	CABINET WIDTH	INLET WIDTH	OUTLET WIDTH
MMVT24A, 36A	14.25"	13.25"	13.00"
MMVT36B, 48B	17.50"	16.50"	16.25"
MMVT48C, 60C	21.00"	20.00"	19.75"
MMVT60D	24.50"	23.50"	23.25"

Table 1: Air Handler Dimensional Data for Figure 1

Models	MMVT24A,36A	MMVT36B,48B	MMVT48C,60C, 60D	MMVT60D
Available Electric Heat kW	5,10	5,10,15	5,10,15,20	5,10,15,20
Blower Size (D x W)	10 x 6	10 x 8	12 x 9 T	12 x 9 R
Unit Voltage	120V (Blower Motor Mtr & Transformer Only) or 208/240V (Electric Heaters Only), 60 HZ, 1 PH			
Motor Type	Constant Torque			
Max. External SP (Duct), In. W.C.	0.50			
Thermostat Circuit	24 VAC, 60 Hz, 40VA			

Table 2: Air Handler Model Specifications

UNIT NOMENCLATURE					
MM	VT	36A	00	A	28
I	II	III	IV	V	VI
I	Series MM = Multi-position Modular H/P Air Handler (30" Tall)				
II	Motor Type VT = Constant Torque Motor				
III	Unit Size (Cabinet Size) 24A = (14 1/4" W x 28" D x 30" H) 36A = (14 1/4" W x 28" D x 30" H) 36B = (17 1/2" W x 28" D x 30" H) 48B = (17 1/2" W x 28" D x 30" H) 48C = (21" W x 28" D x 30" H) 60C = (21" W x 28" D x 30" H) 60D = (24 1/2" W x 28" D x 30" H)				
IV	Heating Configuration 00 = Cooling or Heat Pump Only				
V	Motor Voltage Selection A = 120 Volt				
VI	Option Code 28 = (28" Deep Cabinet)				

Table 3: Model Number Nomenclature

MODEL	TOP (in)	BACK (in)	SIDES (in)	FRONT OF FURNACE		DUCT (in)
				ALCOVE (in)	CLOSET (in)	
ELECTRIC	0	0	0	30	6	1

Table 4: Clearances to Combustibles

Air Handler Weights

MSVT24A, 36A	—	80 lbs.
MSVT36B, 48B	—	88 lbs.
MSVT48C, 60C	—	92 lbs.
MSVT60D	—	101 lbs

SECTION 3: ELECTRICAL SPECIFICATIONS AND CONTROL

	MMVT24A, 36A	MMVT36B, 48B	MMVT48C, 60C	MMVT60D
Indoor Blower Motor Type	CONSTANT TORQUE	CONSTANT TORQUE	CONSTANT TORQUE	CONSTANT TORQUE
Indoor Blower Amps @ 120 VAC	4.79	6.12	7.48	7.26
Minimum Circuit Ampacity – 120 VAC Circuit	5.99	7.65	9.35	9.08
Minimum Wire Size (90°C) – 120 VAC Circuit	#18	#18	#18	#18
Ground Wire Size	*	*	*	*
Maximum Overcurrent Production Amps – 120 VAC Circuit	15	15	15	15

Table 5: Electrical Data – 120 Volt Blower Motor and Transformer Circuit Only

Electric Heater Circuit Only	Single Branch Circuit				Dual Branch Circuit			
	N/A				1	2		
Circuit Number	N/A				1	2		
5 kw Heater Amps - 208/240 VAC	18.0/20.8				N/A	N/A		
10 kW Heater Amps - 208/240 VAC	36.1/41.7				N/A	N/A		
15 kW Heater Amps - 208/240 VAC	54.1/62.5				36.1/41.7	18.0/20.8		
20 kW Heater Amps - 208/240 VAC	72.2/83.4				36.1/41.7	36.1/41.7		
Heater - kW	5	10	15	20	15		20	
Circuit Number	N/A	N/A	N/A	N/A	1 (10kW)	2 (5kW)	1 (10kW)	2 (10kW)
Minimum Circuit Ampacity – 208/240 VAC Circuit	26.00	52.13	78.13	104.25	52.13	26.00	52.13	52.13
Minimum Wire Size (90°C)	#12	#6	#4	#3	#6	#12	#6	#6
Minimum Wire Size (75°C)	#10	#6	#4	#2	#6	#10	#6	#6
Minimum Wire Size (60°C)	#10	#4	#3	#1	#4	#10	#4	#4
Ground Wire Size	*	*	*	*	*	*	*	*
Maximum Overcurrent Protection Amps – 208/240 VAC Circuit	30	60	80	110	60	30	60	60

Table 6: Electrical Data: 208/240 Volt Electric Heater Circuit Only

15kW and 20kW models may have a dual or single power supply. Single power supply requires a jumper bar or a jumper wire. + Refer to the National Electrical Code Table 250-95 for Non-Sheathed Conductor Ground Wire.

* Ground conductor must be the same size and temperature rating as the other conductors listed in Table 5.

	ELECTRIC HEATER HEATING CAPACITIES						
	BRANCH CIRCUIT	5 kW	10 kW	15kW		20kW	
		1	1	1	2	1	2
240 VAC	BTU/HR	17,033	34,067	34,067	17,033	34,067	34,067
	kW	4.99	10.00	10.00	4.99	10.00	10.00
230 VAC	BTU/HR	15,876	33,686	33,686	15,876	33,686	33,686
	kW	4.65	9.78	9.78	4.65	9.78	9.78
220 VAC	BTU/HR	14,736	30,222	30,222	14,736	30,222	30,222
	kW	4.32	8.86	8.86	4.32	8.86	8.86
TOTAL HEATING CAPACITY @ 240 VAC	BTU/HR	17,033	34,067	51,149		68,134	
	kW	4.99	10.00	14.99		20.00	

Table 7: Electric Heater Heating Capacities

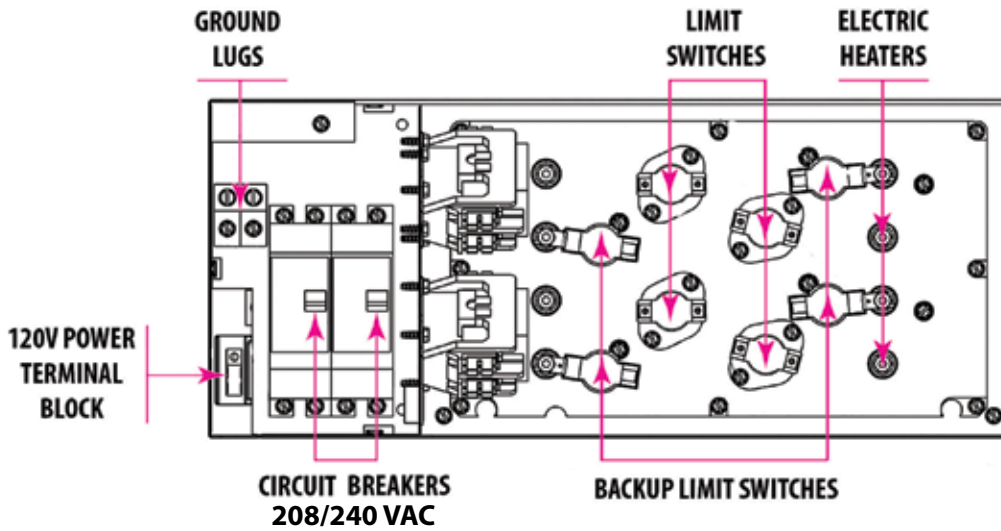


Figure 2: Component Locations – Electric Heat Control Box

SECTION 3: ELECTRICAL SPECIFICATIONS AND CONTROL

Max. Thermostat Wire Length	Thermostat Wire Gauge	Thermostat Wire Maximum Current
0 - 70 Feet	20	3.0 Amps
0 - 112 Feet	18	3.0 amps

Table 8: Low Voltage Wire Gauge and Max Lengths

⚠ CAUTION

When using separate thermostats for heating and cooling, a thermostat interlock must be placed in the thermostat "R" circuit. Simultaneous operation of heating and cooling can result in equipment overheating, equipment damage, and wasted energy.

Do not connect a wire to the thermostat Y terminal unless an outdoor unit is installed.

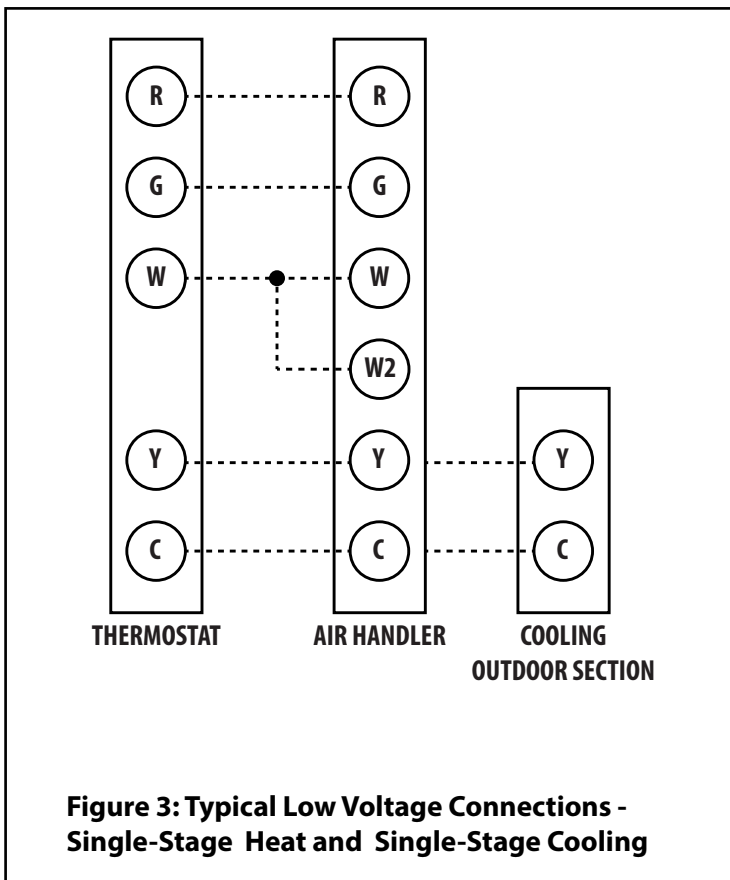


Figure 3: Typical Low Voltage Connections - Single-Stage Heat and Single-Stage Cooling

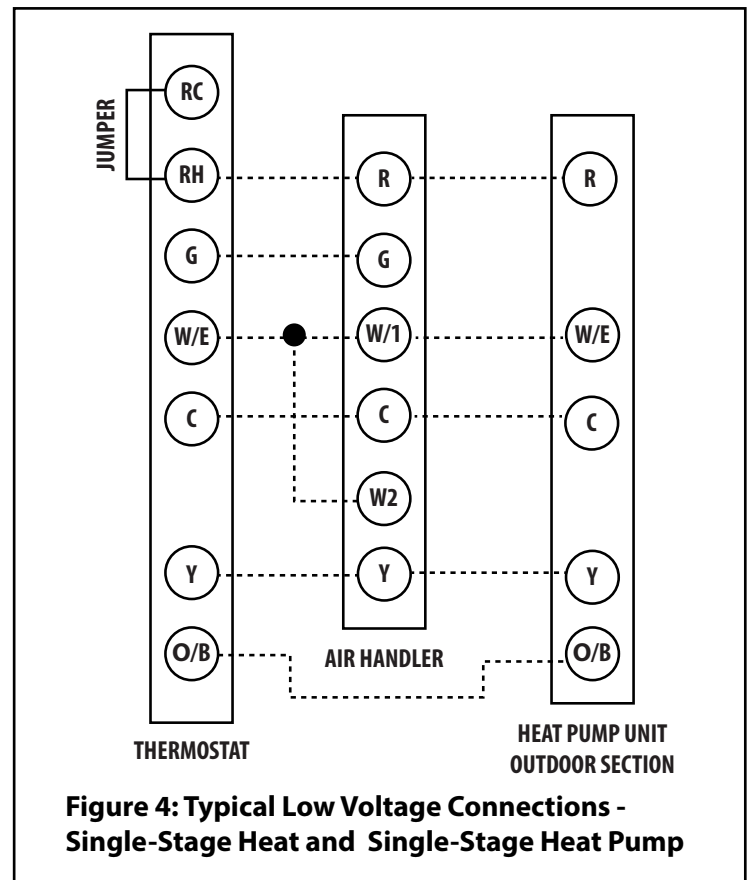
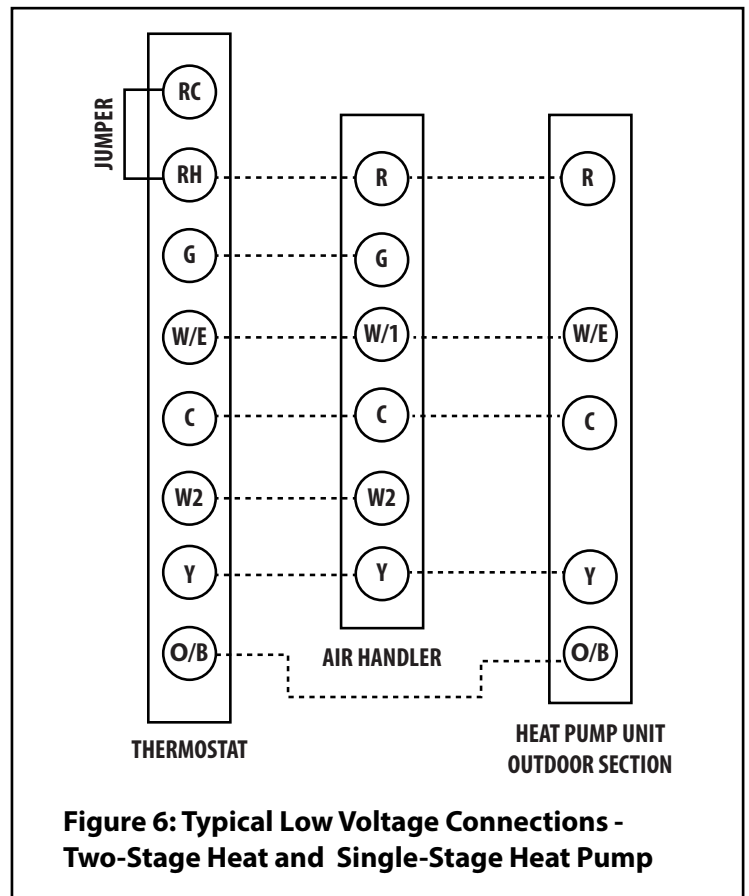
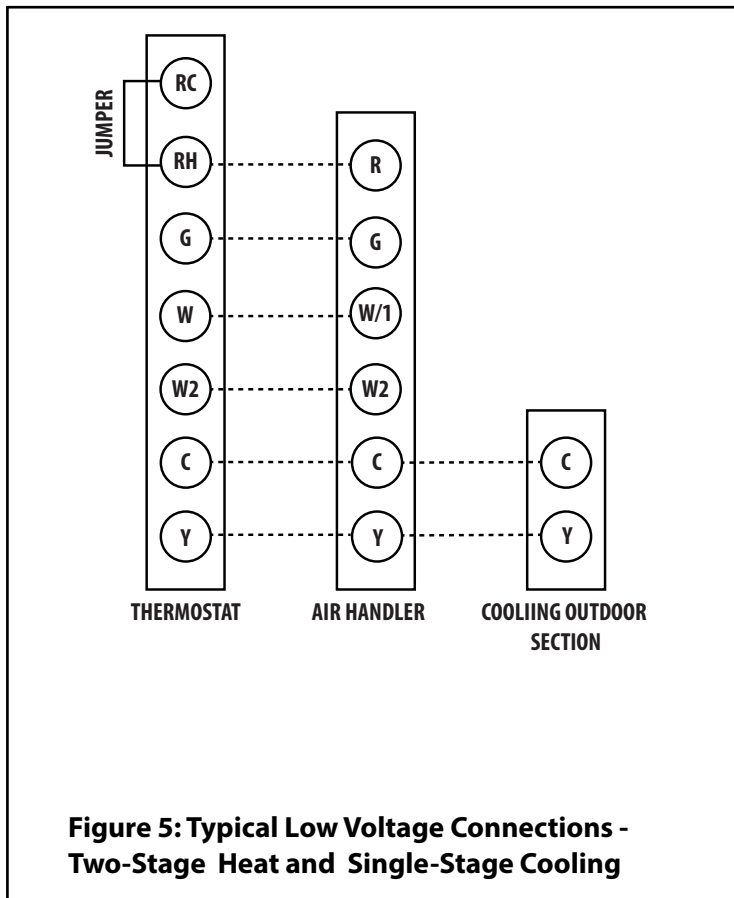


Figure 4: Typical Low Voltage Connections - Single-Stage Heat and Single-Stage Heat Pump



DESCRIPTION	LETTER CODE	THERMOSTAT AND AIR HANDLER TERMINAL BLOCK CONNECTION	OUTDOOR UNIT CONNECTIONS
24 VAC	R	R	N/A
1st Stage Heat	W1	W or W1	N/A
2nd Stage Heat	W2	W2	N/A
Indoor Fan	G	G	N/A
Cooling	Y	Y	Y
24 VAC Common	C	C	C

Table 9: Typical Heat / Cool Thermostat Wire Colors and Low Voltage Connections

Note: If a single-stage heat thermostat is used with an air handler with two-stage heat, install a jumper between W1 and W2 on the low voltage terminal block or connect the W1 and W2 pigtail wires together with the WHITE thermostat wire.

DESCRIPTION	LETTER CODE	THERMOSTAT AND AIR HANDLER TERMINAL BLOCK CONNECTION	OUTDOOR UNIT CONNECTIONS
24 VAC	R	R	R
1st Stage Electric Heat	W1	E (Thermostat) W1 (Air Handler)	See Outdoor Unit Instructions
2nd Stage Electric Heat	W2	W2	N/A
Indoor Fan	G	G	N/A
Cooling	Y	Y/Y1	Y/Y1
Heat Pump Reversing Valve (Most Brands)	O	O	See Outdoor Unit Instructions
Heat Pump Reversing Valve (Some Brands)	B	B	See Outdoor Unit Instructions
24 VAC Common	C	C	C

Table 10: Typical Heat Pump Thermostat Wire Colors and Low Voltage Connections

Terminal	Connection
C	Speed Tap Common - 24 VAC Common
L	Supply Voltage -120VAC
G	Ground Connection
N	Supply Voltage - Neutral
1	Low Speed Tap - 24 VAC Input
2	Medium-Low Speed Tap - 24 VAC Input
3	Medium Speed Tap - 24 VAC Input
4	Medium-High Speed Tap - 24 VAC Input
5	High Speed Tap - 24 VAC Input

Table 11: Constant Torque Motor Terminal Connections

Blower Motor FLA

MMVT24A, 36A – 1/2 HP Motor - 5.10 Amps
MMVT36B, 48B – 1/2 HP Motor – 6.12 Amps
MMVT48C, 60C – 3/4 HP Motor – 7.48 Amps
MMVT60D – 1 HP Motor – 7.26 Amps

Thermostat Heat Anticipator

The heat anticipator should be set to 0.4 for all heating kW's.

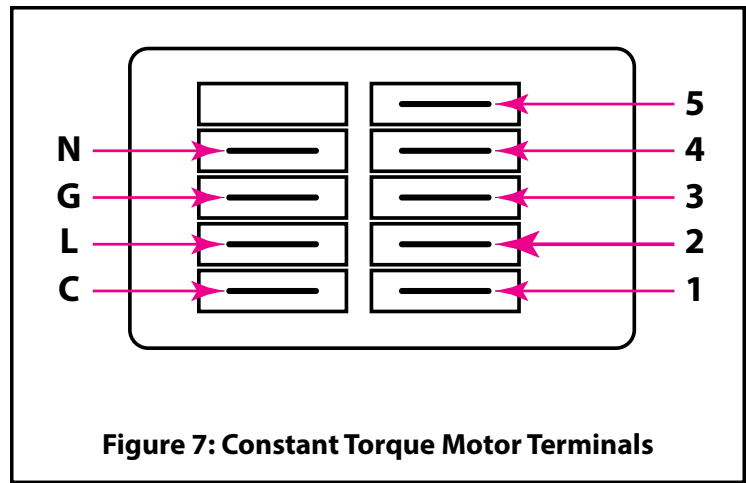


Figure 7: Constant Torque Motor Terminals

SECTION 6: BLOWER PERFORMANCE

Model Number	Nominal Tons	Motor HP	Volts	Motor Code	Blower Size	Speed Tap	CFM @ 0.10" ESP	CFM @ 0.20" ESP	CFM @ 0.30" ESP	CFM @ 0.40" ESP	CFM @ 0.50" ESP	CFM @ 0.60" ESP
MMVT24A MMVT36A	2-3	1/2	120	VL1 or VL2	10 x 6	5	1436	1382	1312	1269	1202	1202
						4	1128	1092	1047	1021	979	948
						3	1015	982	935	902	864	832
						2	951	902	868	821	788	761
						1	--	627	590	545	506	440
MMVT36B MMVT48B	3-4	3/4	120	VM1 or VM2	10 x 8	5	1727	1667	1577	1504	1410	1361
						4	1718	1629	1530	1472	1399	1311
						3	1575	1530	1503	1465	1376	1274
						2	1285	1248	1222	1179	1147	1110
						1	1051	1012	962	927	885	844
MMVT48C MMVT60C	4-5	3/4	120	VN1 or VN2	12 x 9 T	5	2045	2024	1980	1919	1896	1857
						4	1924	1860	1809	1783	1756	1697
						3	1783	1756	1686	1646	1600	1571
						2	1515	1457	1427	1370	1314	1281
						1	1361	1314	1257	1207	1170	1122
MMVT60D	5	3/4	120	VP1 or VP2	12 x 9 R	5	2244	2211	2143	2094	2037	1985
						4	2084	2028	1972	1923	1858	1832
						3	1883	1816	1758	1714	1647	1612
						2	1697	1637	1578	1534	1463	1411
						1	1570	1493	1441	1402	1329	1285

Table 12: Blower Performance Chart - Constant Torque Motor – With Coil - Without Air Filter

Notes: 1) Minimum CFM for Electric Heat: 5 - 10kW = 650 CFM; 15kW = 1000 CFM; 20 kW = 1400 CFM
2) CFM and ESP in the table assumes a typical indoor coil has been installed on the air handler.

SECTION 7: ACCESSORIES

MMVT	
Part Number	Description
BAXHK05C	Extra Small Cabinet (A) 5 kW Heater Kit With Circuit Breakers - MMVT
BAXHK10C	Extra Small Cabinet (A) 10 kW Heater Kit With Circuit Breakers - MMVT
BAXHK15C	Extra Small Cabinet (A) 15 kW Heater Kit With Circuit Breakers - MMVT
BBXHK05C	Small (B) Cabinet 5 kW Heater Kit With Circuit Breakers - MMVT
BBXHK10C	Small (B) Cabinet 10 kW Heater Kit With Circuit Breakers - MMVT
BBXHK15C	Small (B) Cabinet 15 kW Heater Kit With Circuit Breakers - MMVT
BBXHK20C	Small (B) Cabinet 20 kW Heater Kit With Circuit Breakers - MMVT
BCXHK05C	Medium (C) Cabinet 5 kW Heater Kit With Circuit Breakers - MMVT
BCXHK10C	Medium (C) Cabinet 10 kW Heater Kit With Circuit Breakers - MMVT
BCXHK15C	Medium (C) Cabinet 15 kW Heater Kit With Circuit Breakers - MMVT
BCXHK20C	Medium (C) Cabinet 20 kW Heater Kit With Circuit Breakers - MMVT
BDXHK05C	Large Cabinet (D) 5 kW Heater Kit With Circuit Breakers - MMVT
BDXHK10C	Large Cabinet (D)10 kW Heater Kit With Circuit Breakers - MMVT
BDXHK15C	Large Cabinet (D)15 kW Heater Kit With Circuit Breakers - MMVT
BDXHK20C	Large Cabinet (D)20 kW Heater Kit With Circuit Breakers - MMVT
86ET0004	Accessory 14 x 25 x 2 Filter Base Kit
86ET0005	Accessory 16 x 25 x 2 Filter Base Kit
86ET0006	Accessory 20 x 25 x 2 Filter Base Kit
86ET0007	Accessory 24 x 25 x 2 Filter Base Kit

Table 13: Constant Torque Motor Terminal Connections

SECTION 8: WIRING DIAGRAMS

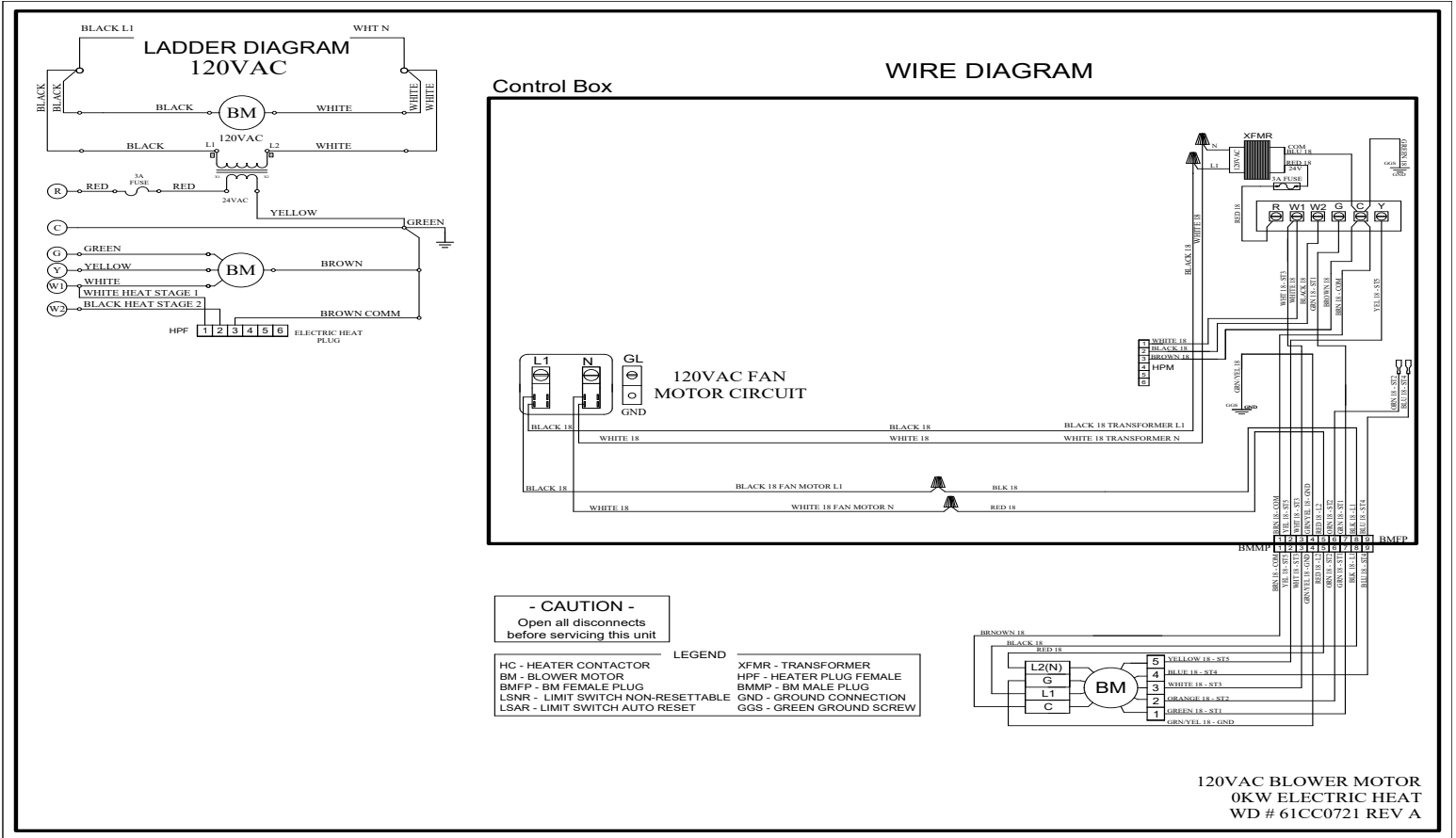


Figure 9: Wiring Diagram – 120 Volt Blower Motor and Transformer Circuit

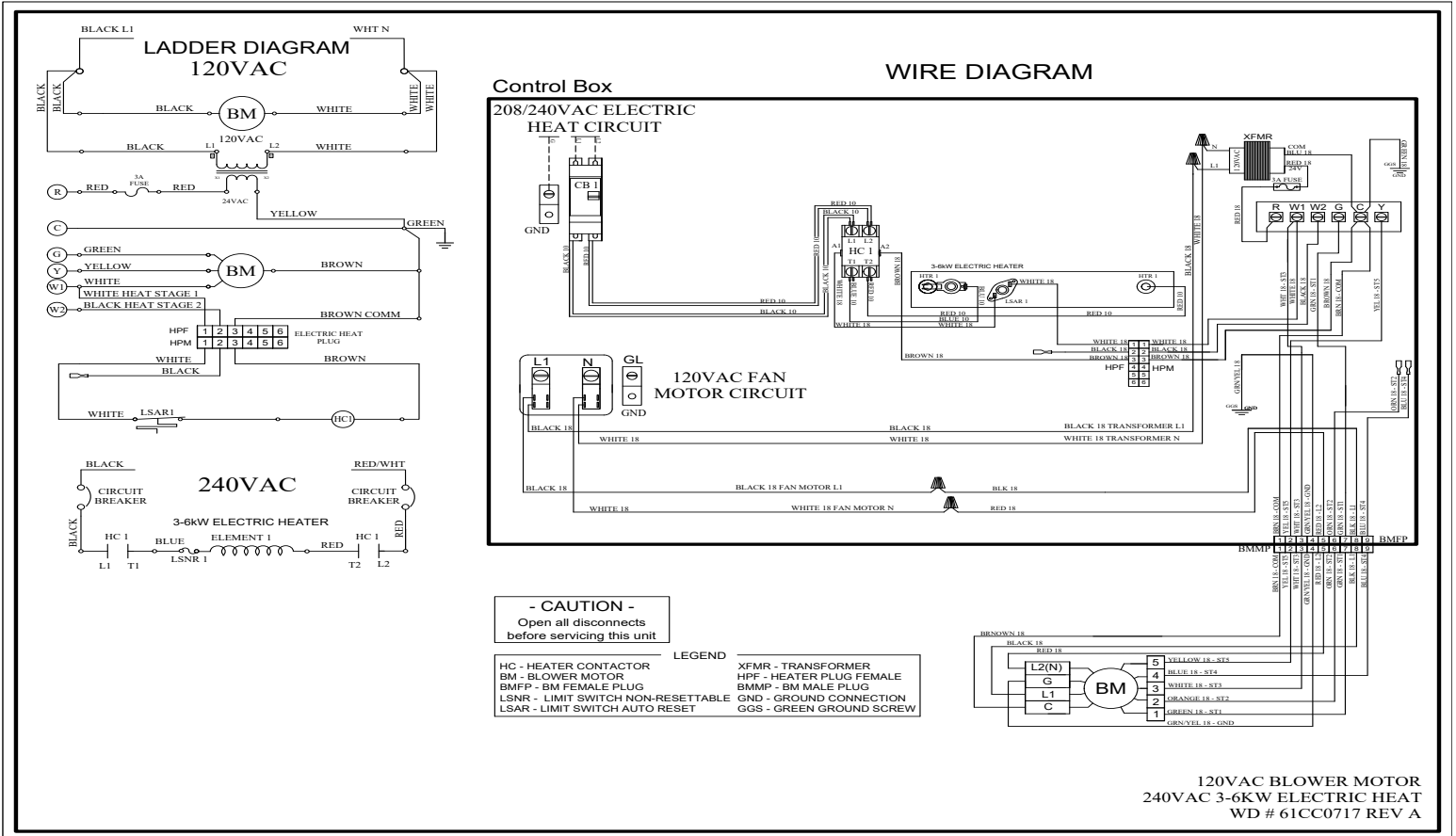


Figure 10: Wiring Diagram - 208/240 Volt Electric Heater Circuit - 5 kW

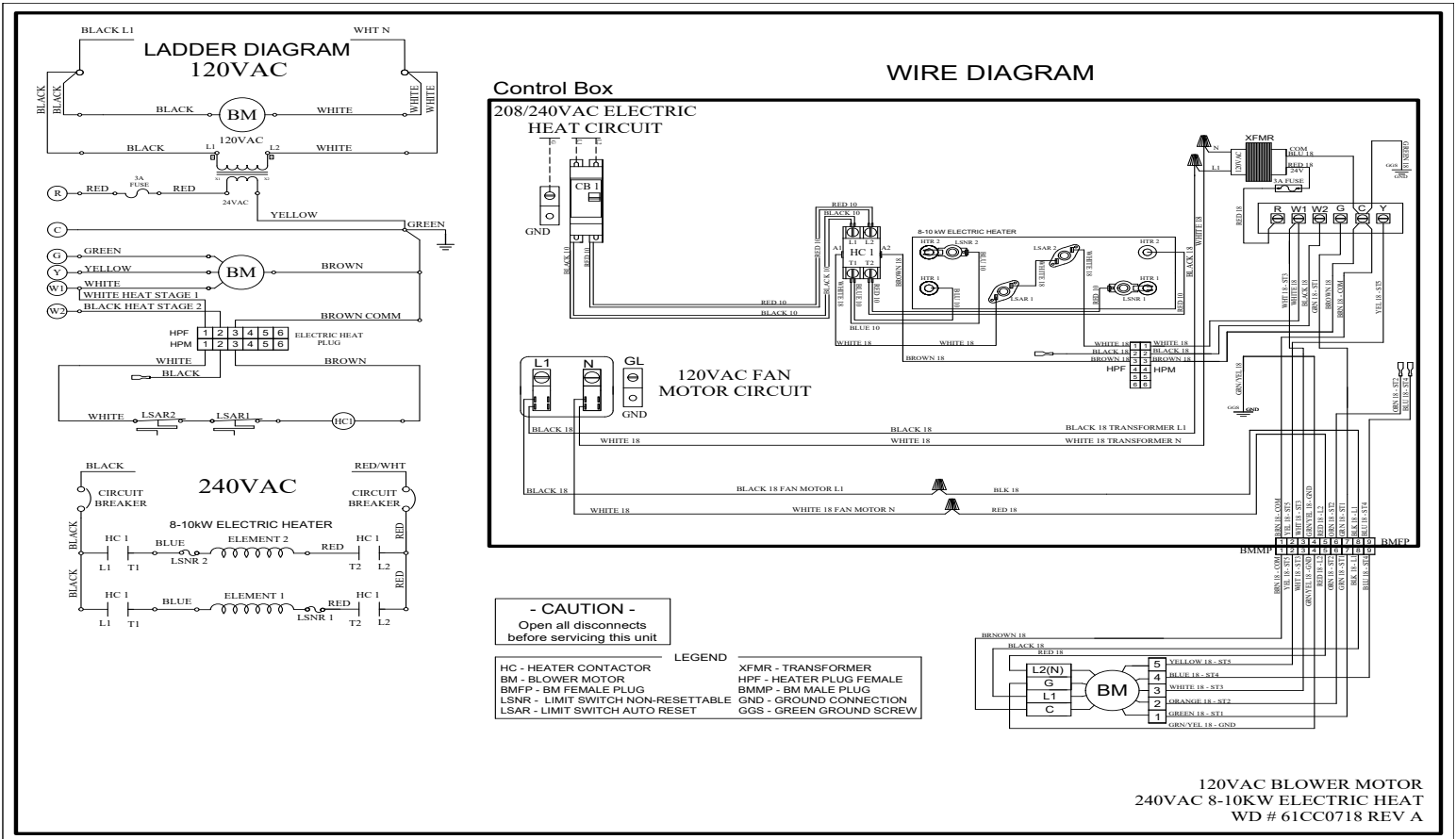


Figure 11: Wiring Diagram -208/240 Volt Electric Heater Circuit - 10 kW

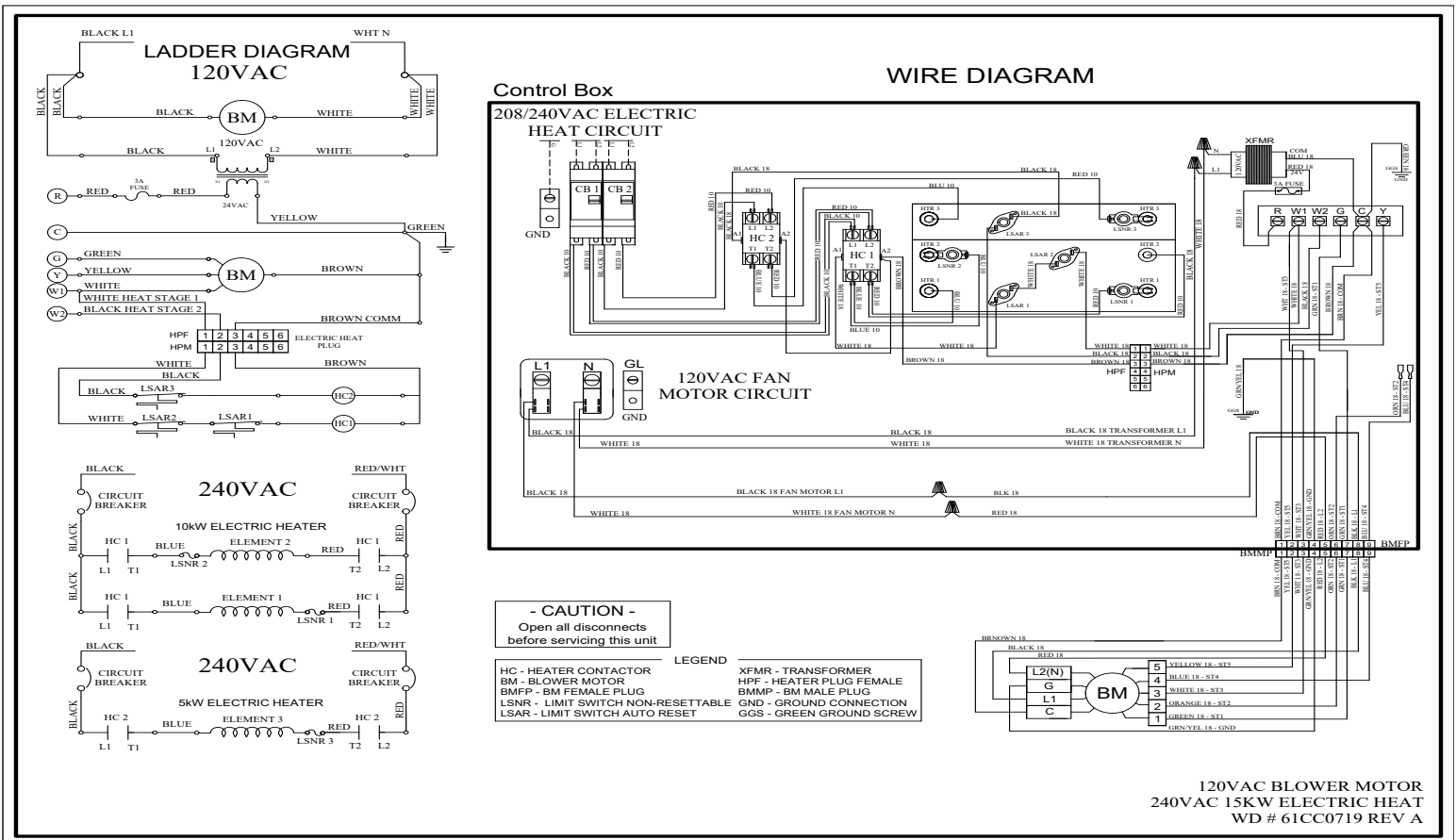


Figure 12: Wiring Diagram - 208/240 Volt Electric Heater Circuit - 15 kW

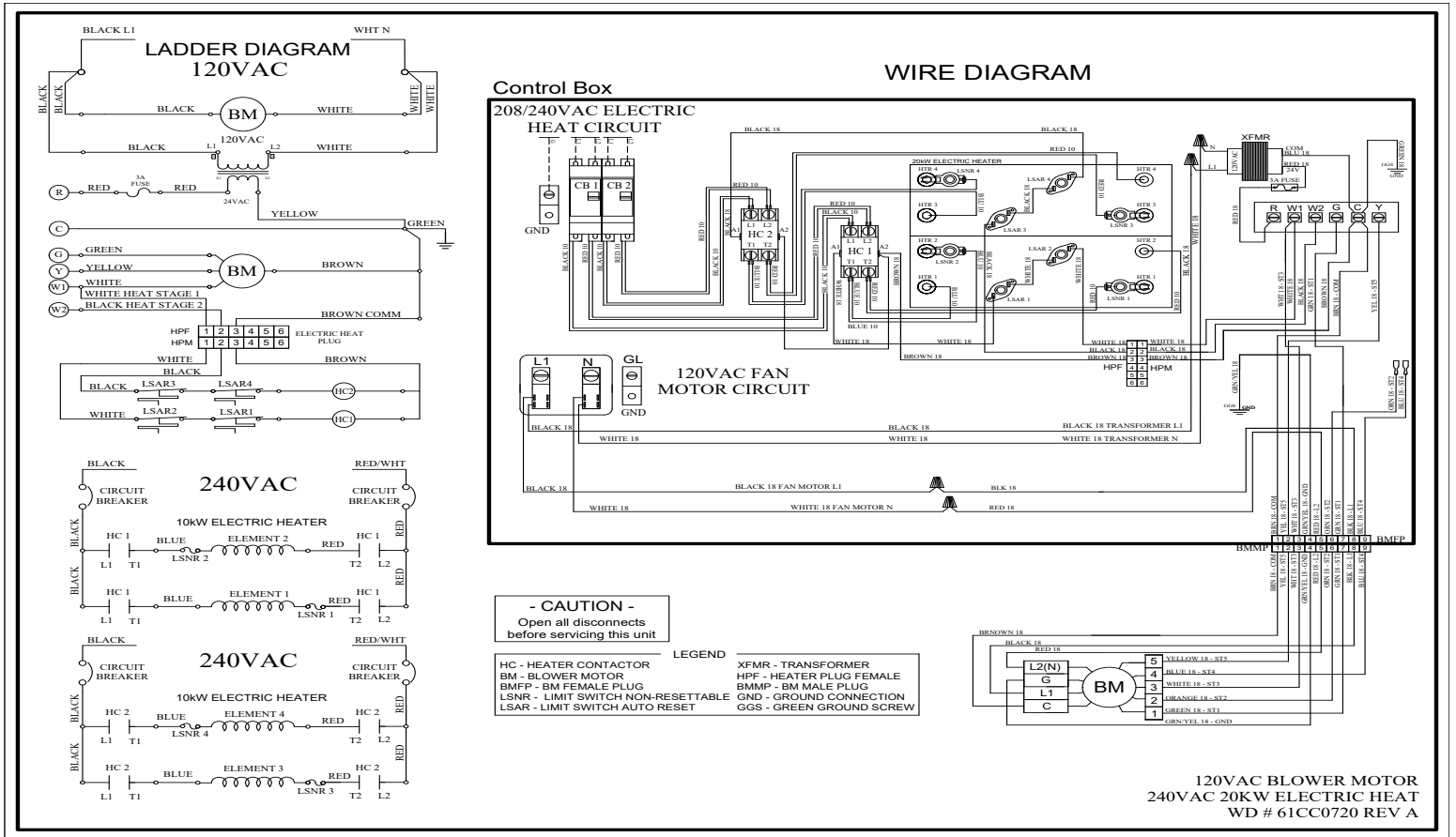


Figure 13: Wiring Diagram - 208/240 Volt Electric Heater Circuit - 20 kW