

# UNIT INFORMATION

**LHT SERIES**  
2 to 5 ton

Service Literature

100057  
03/2024

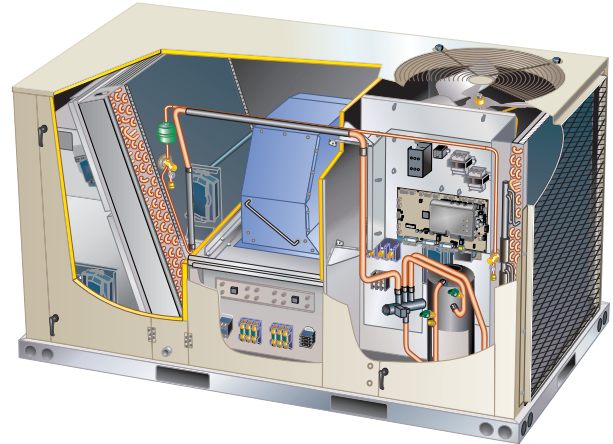
## High Efficiency LHT024 through 060

LHT024, 036, 048, and 060 are high efficiency packaged units equipped with variable speed direct drive blowers, a two-speed compressor, and a variable speed outdoor fan.


Optional electric heat is factory or field installed. Electric heat operates in single stage depending on the kW input size. 5 kW through 22.5 kW heat sections are available for the LHT unit.

Information contained in this manual is intended for use by qualified service technicians only. All specifications are subject to change. Procedures outlined in this manual are presented as a recommendation only and do not supersede or replace local or state codes.

If the unit must be lifted for service, rig unit by attaching four cables to the holes located in the unit base rail (two holes at each corner). Refer to the installation instructions for the proper rigging technique.



**⚠ WARNING**

 Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

**⚠ WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

**⚠ IMPORTANT**

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFC's and HCFC's) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for non-compliance.

**⚠ WARNING**

To prevent serious injury or death:

- 1- Lock-out/tag-out before performing maintenance.
- 2- If system power is required (e.g., smoke detector maintenance), disable power to blower, remove fan belt where applicable, and ensure all controllers and thermostats are set to the "OFF" position before performing maintenance.
- 3- Always keep hands, hair, clothing, jewelry, tools, etc., away from moving parts.

**⚠ CAUTION**

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

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## OPTIONS / ACCESSORIES

Item	Catalog Number	Unit Model Number				
		024	036	048	060	
<b>COOLING SYSTEM</b>						
Condensate Drain Trap	PVC	<b>22H54</b>	X	X	X	X
	Copper	<b>76W27</b>	X	X	X	X
Drain Pan Overflow Switch		<b>21Z07</b>	OX	OX	OX	OX
<b>BLOWER - SUPPLY AIR</b>						
Motors - Standard Static (All voltages)	Direct Drive ECM Blower - 0.50 hp	Factory	O	O		
	1.0 hp	Factory			O	O
Motors - High Static (3 phase only)	DirectPlus™ Direct Drive ECM Blower System MSAV® Multi-Stage Air Volume- 1.5 hp	Factory		O	O	O
<b>CABINET</b>						
Combination Coil/Hail Guards		<b>13T03</b>	OX	OX	OX	OX
Corrosion Protection		Factory	O	O	O	O
<b>CONTROLS</b>						
Blower Proving Switch		<b>21Z10</b>	OX	OX	OX	OX
Commercial Controls	CPC Einstein Integration	Factory	O	O	O	O
	LonTalk® Module	<b>54W27</b>	OX	OX	OX	OX
	Novar® LSE	Factory	O	O	O	O
Dirty Filter Switch		<b>53W66</b>	OX	OX	OX	OX
Fresh Air Tempering		<b>21Z08</b>	OX	OX	OX	OX
Smoke Detector - Supply or Return (Power board and one sensor)		<b>21Z11</b>	OX	OX	OX	OX
Smoke Detector - Supply and Return (Power board and two sensors)		<b>21Z12</b>	OX	OX	OX	OX
<b>ELECTRICAL</b>						
Voltage 60 Hz	208/230V - 1 phase	Factory	O	O	O	O
	208/230V - 3 phase	Factory		O	O	O
	460V - 3 phase	Factory		O	O	O
	575V - 3 phase	Factory		O	O	O
HACR Circuit Breakers		Factory	O	O	O	O
Disconnect Switch (See Electrical Accessories - Disconnects Table for selection)	80 amp	<b>22A23</b>	O	O	O	O
	150 amp	<b>22A24</b>		O	O	O
<sup>1</sup> Short-Circuit Current Rating (SCCR) of 100kA (includes Phase/Voltage Detection)		Factory	O	O	O	O
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V only)	<b>74M70</b>	OX	OX	OX	OX
	15 amp factory-wired and powered (208/230V, 460V)	Factory	O	O	O	O
	<sup>2</sup> 20 amp non-powered, field-wired (208/230V, 460V, 575V)	<b>67E01</b>	X	X	X	X
	<sup>2</sup> 20 amp non-powered, field-wired (575V only)	Factory		O	O	O
Weatherproof Cover for GFI		<b>10C89</b>	X	X	X	X
Phase/Voltage Detection - 3 Phase Models Only		Factory		O	O	O

<sup>1</sup> Disconnect Switch not available with SCCR option.

SCCR option is only available with factory installed electric heat or no electric.

SCCR option is not available if the MOCP of the configured unit is greater than 200A.

<sup>2</sup> Canada requires a minimum 20 amp circuit. Select 20 amp, non-powered, field wired GFI.

NOTE - Catalog numbers shown are for ordering field installed accessories.

OX = Configure To Order (Factory Installed) or Field Installed.

O = Configure To Order (Factory Installed).

X = Field Installed.

## OPTIONS / ACCESSORIES

Item	Catalog Number	Unit Model Number				
		024	036	048	060	
<b>ELECTRIC HEAT</b>						
5 kW	208/240V-1ph	<b>22V76</b>	OX			
7.5 kW	208/240V-1ph	<b>22V73</b>	OX	OX	OX	OX
	208/240V-3ph	<b>21Z26</b>		OX	OX	OX
	460V-3ph	<b>21Z27</b>		OX	OX	OX
	575V-3ph	<b>22U17</b>		OX	OX	OX
10 kW	208/240V-1ph	<b>22V77</b>	OX			
15 kW	208/240V-1ph	<b>22V74</b>		OX	OX	OX
	208/240V-3ph	<b>21Z28</b>		OX	OX	OX
	460V-3ph	<b>21Z29</b>		OX	OX	OX
	575V-3ph	<b>22U18</b>		OX	OX	OX
22.5 kW	208/240V-1ph	<b>22V75</b>				OX
	208/240V-3ph	<b>21Z30</b>				OX
	460V-3ph	<b>21Z31</b>				OX
	575V-3ph	<b>22U19</b>				OX
<b>ECONOMIZER</b>						
<b>High Performance Economizer With Outdoor Air Hood (Sensible Control)</b> <b>(Approved for California Title 24 Building Standards / AMCA Class 1A Certified)</b>						
High Performance Economizer - Includes Barometric Relief Dampers and Combination Hood		<b>20H48</b>	OX	OX	OX	OX
<b>Economizer Accessories</b>						
Horizontal Economizer Conversion Kit		<b>17W45</b>	X	X	X	X
<b>Economizer Controls (Not for Title 24)</b>						
Differential Enthalpy	Order 2	<b>21Z09</b>	OX	OX	OX	OX
Sensible Control	Sensor is Furnished	Factory	O	O	O	O
Outdoor Air CFM Control		<b>13J76</b>	X	X	X	X
Single Enthalpy		<b>21Z09</b>	OX	OX	OX	OX
Global Control	Sensor Field Provided	Factory	O	O	O	O
Building Pressure Control		<b>13J77</b>	X	X	X	X
<b>POWER EXHAUST FAN (DOWNFLOW ONLY)</b>						
Standard Static	208/230V-1 or 3ph	<b>21Z13</b>	OX	OX	OX	OX
<i>NOTE - Factory or Field installed Power Exhaust Fan requires "Barometric Relief Dampers for Power Exhaust Kit" for field installation. See below.</i>	460V-3ph	<b>21Z14</b>		OX	OX	OX
	575V-3ph	<b>21Z15</b>		OX	OX	OX
<b>BAROMETRIC RELIEF</b>						
<sup>1</sup> Barometric Relief Dampers for Power Exhaust Kit		<b>21Z21</b>	X	X	X	X
<sup>2</sup> Horizontal Barometric Relief Dampers With Exhaust Hood		<b>19F01</b>	X	X	X	X
<b>OUTDOOR AIR</b>						
<b>Outdoor Air Dampers With Outdoor Air Hood</b>						
Motorized		<b>15D17</b>	OX	OX	OX	OX
Manual		<b>15D18</b>	X	X	X	X

<sup>1</sup> Required when Economizer is factory installed with factory installed Power Exhaust Fan option.

<sup>2</sup> Required when Economizer is configured for horizontal airflow.

NOTE - Catalog numbers shown are for ordering field installed accessories.

OX = Configure To Order (Factory Installed) or Field Installed.

O = Configure To Order (Factory Installed).

X = Field Installed.

## OPTIONS / ACCESSORIES

Item	Catalog Number	Unit Model Number				
		024	036	048	060	
<b>INDOOR AIR QUALITY</b>						
<b>Air Filters</b>						
Healthy Climate® High Efficiency Air Filters 20 x 20 x 2 in.	MERV 8 (Order 4)	<b>54W21</b>	OX	OX	OX	OX
	MERV 13 (Order 4)	<b>52W39</b>	OX	OX	OX	OX
	MERV 16 (Order 4)	<b>21U40</b>	X	X	X	X
Replaceable Media Filter With Metal Mesh Frame (includes non-pleated filter media)	20 x 20 x 2 in. (Order 4)	<b>44N60</b>	X	X	X	X
<b>Indoor Air Quality (CO<sub>2</sub>) Sensors</b>						
Sensor - Wall-mount, off-white plastic cover with LCD display		<b>77N39</b>	X	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display		<b>23V86</b>	X	X	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting		<b>87N52</b>	X	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting		<b>87N54</b>	X	X	X	X
CO <sub>2</sub> Sensor Duct Mounting Kit - for downflow applications		<b>85L43</b>	X	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO <sub>2</sub> sensors ( <b>77N39</b> )		<b>90N43</b>	X	X	X	X
<b>Needlepoint Bipolar Ionization (NPBI)</b>						
Needlepoint Bipolar Ionization (NPBI) Kit		<b>22U14</b>	X	X	X	X
<b>UVC Germicidal Lamps</b>						
<sup>1</sup> Healthy Climate® UVC Light Kit (110/230V-1ph)		<b>21A92</b>	X	X	X	X
Step-Down Transformers	460V primary, 230V secondary	<b>10H20</b>		X	X	X
	575V primary, 230V secondary	<b>10H21</b>		X	X	X
<b>ROOF CURBS</b>						
<b>Hybrid Roof Curbs, Downflow</b>						
8 in. height		<b>11F50</b>	X	X	X	X
14 in. height		<b>11F51</b>	X	X	X	X
18 in. height		<b>11F52</b>	X	X	X	X
24 in. height		<b>11F53</b>	X	X	X	X
<b>Transition Curb</b>						
Matches Enlight™ 024-060 Units to existing L Series® Curbs		<b>31B05</b>	X	X	X	X
<b>CEILING DIFFUSERS</b>						
Step-Down - Order one	RTD11-95S	<b>13K61</b>	X	X	X	X
Flush - Order one	FD11-95S	<b>13K56</b>	X	X	X	X
Transitions (Supply and Return) - Order one	T1TRAN20N-1	<b>17W54</b>	X	X	X	X

<sup>1</sup> Lamps operate on 110-230V single-phase power supply. Step-down transformer may be ordered separately for 460V and 575V units. Alternately, 110V power supply may be used to directly power the UVC ballast(s).

NOTE - Catalog numbers shown are for ordering field installed accessories.

OX = Configure To Order (Factory Installed) or Field Installed.

O = Configure To Order (Factory Installed).

X = Field Installed.

## SPECIFICATIONS

General Data		Nominal Tonnage Model Number	2 Ton	3 Ton	4 Ton	5 Ton	
			LHT024H4E	LHT036H4E	LHT048H4E	LHT060H4E	
		Efficiency Type Blower Type	High	High	High	High	
			MSAV® ECM Direct Drive	MSAV® ECM Direct Drive	MSAV® ECM Direct Drive	MSAV® ECM Direct Drive	
<b>Cooling Performance</b>	Gross Cooling Capacity (Btuh)		25,000	37,000	46,800	58,000	
	<sup>1</sup> Net Cooling Capacity (Btuh) 3ph		---	35,000	44,500	55,000	
	<sup>1</sup> AHRI Rated Air Flow (cfm-high/low) 3ph		---	1400/935	1400/1100	1800/1300	
	<sup>1</sup> SEER (Btuh/Watt) 3ph		---	16.1	16.1	16.1	
	<sup>1</sup> EER (Btuh/Watt) 3ph		---	12.3	12.8	12.2	
	Total Unit Power (kW) 3ph		---	2.8	3.5	4.5	
	<sup>1</sup> Net Cooling Capacity (Btuh) 1ph		23,600	35,000	44,500	55,000	
	<sup>1</sup> AHRI Rated Air Flow (cfm-high/low) 1ph		1050	1400/935	1400/1100	1800/1300	
	<sup>1</sup> SEER2 (Btuh/Watt) 1ph		15.4	15.2	15.6	15.2	
	<sup>1</sup> EER2 (Btuh/Watt) 1ph		11.4	11.4	12.0	11.4	
	Total Unit Power (kW) 1ph		2.1	3.1	3.7	4.8	
	<b>Heating Performance</b>	<sup>1</sup> Total High Heating Capacity (Btuh)		23,000	35,000	44,000	55,000
		<sup>1</sup> AHRI Rated Air Flow (cfm) 3ph		1050	1400	1400	1900
		<sup>1</sup> HSPF (Region IV) - 3ph		---	8.5	8.5	8.5
COP			---	3.8	3.9	3.7	
Total Unit Power (kW)			1.9	2.9	3.6	4.3	
<sup>1</sup> HSPF2 (Region IV) - 1ph			7.3	7.2	7.2	7.2	
<sup>1</sup> Total Low Heating Capacity (Btuh)			17,000	19,000	26,000	30,000	
COP			---	2.3	2.4	2.3	
Total Unit Power (kW)		2.4	2.6	3.3	3.8		
<sup>2</sup> Sound Rating Number (SRN) (dBA)			75	75	82	82	
<b>Refrigerant</b>	Type		R-410A	R-410A	R-410A	R-410A	
	Charge Furnished		17 lbs. 14 oz.	18 lbs. 12 oz.	14 lbs. 0 oz.	17 lbs. 1 oz.	
<b>Electric Heat Available</b>			5, 7.5, 10 kW	7.5 and 15 kW	7.5 and 15 kW	7.5, 15 and 22.5 kW	
<b>Compressor Type (one per unit)</b>			Two-Stage Scroll	Two-Stage Scroll	Two-Stage Scroll	Two-Stage Scroll	
<b>Outdoor Coil</b>	Net face area (total) - sq. ft.		19.3	19.3	19.3	19.3	
	Tube diameter - in.		3/8	3/8	3/8	3/8	
	Number of rows		2	2	2	3	
	Fins per inch		20	20	20	20	
<b>Outdoor Coil Fans</b>	Motor - (No.) horsepower		(1) 1/3 (ECM)W	(1) 1/3 (ECM)	(1) 1/3 (ECM)	(1) 1/3 (ECM)	
	Motor rpm		730	850/575	850/700	945/725	
	Total Motor watts		130	70-240	140-240	140-310	
	Diameter - (No.) in. and no. of blades		(1) 24	(1) 24	(1) 24	(1) 24	
	Total air volume - cfm		3500	4060/2740	4060/3330	4400/3550	
<b>Indoor Coil</b>	Net face area (total) - sq. ft.		9.7	9.7	9.7	9.7	
	Tube diameter - in.		3/8	3/8	3/8	3/8	
	Number of rows		3	3	3	4	
	Fins per inch		14	14	14	14	
	Drain connection (Number) and size - in.		(1) 1 NPT	(1) 1 NPT	(1) 1 NPT	(1) 1 NPT	
	Expansion device type		Balanced Port Thermostatic Expansion Valve,removable power head				
	<b>Indoor Blower</b>	Standard Static (All Voltages)	Blower Type	Direct Drive ECM			
		Blade Type	Forward Curved				
		Nominal motor HP	0.50	0.50	1	1	
		Blower wheel D x W - in.	(1) 10 X 10	(1) 10 X 10	(1) 11 X 10	(1) 11 X 10	
High Static (3ph Only)		Blower Type	DirectPlus™ Direct Drive ECM				
		Blade Type	Backward Curved				
	Nominal motor HP	---	1.5	1.5	1.5		
	Blower wheel D x W - in.	---	(1) 14 X 5	(1) 14 X 5	(1) 14 X 5		
<b>Filters</b>	Type of filter		MERV 4, Disposable				
	Number and size		(4) 20 x 20 x 2				
<b>Electrical characteristics</b>			208/230V - 60 Hz - 1 phase	208/230V - 60 Hz - 1 phase 208/230V, 460V, or 575V - 60 Hz - 3 phase			

NOTE - Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

<sup>1</sup> AHRI Certified to AHRI Standard 210/240 (2-5 ton):

**Cooling Ratings** - 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air.

**High Temperature Heating Ratings** - 47°F db/43°F wb outdoor air temperature and 70°F entering indoor coil air.

**Low Temperature Heating Ratings** - 17°F db/15°F wb outdoor air temperature and 70°F entering indoor coil air.

<sup>2</sup> 1 hp motor only available in single phase.

**BLOWER DATA**

**0.5 HP | 3 ROW (024, 036)**

**BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.**

FOR ALL UNITS ADD:

- 1 - Any factory installed options air resistance (heat section, economizer, etc.).
- 2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).

See Page 13 for wet coil and options/accessory air resistance data.

**DOWNFLOW**

External Static Press. in. w.g.	Percentage of Total Motor Torque																										
	20%		30%		40%		50%		60%		70%		80%		90%		100%										
	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM									
0	819	47	403	1006	79	463	1192	111	523	1335	152	573	1477	193	622	1580	236	661	1682	279	699	1812	353	753	1876	400	783
0.1	723	48	485	919	82	539	1114	116	593	1264	159	637	1414	202	681	1522	246	715	1629	290	749	1767	365	797	1835	414	824
0.2	636	51	565	840	88	613	1044	124	660	1201	169	699	1357	213	738	1470	258	769	1582	303	799	1726	380	841	1797	429	865
0.3	557	57	641	769	96	683	981	134	725	1144	180	760	1306	226	794	1423	273	821	1540	319	848	1689	397	885	1761	446	906
0.4	485	65	713	704	106	750	923	146	787	1091	194	818	1259	241	848	1380	289	872	1500	336	895	1653	415	929	1725	463	948
0.5	418	73	783	644	116	815	870	158	846	1043	207	873	1215	256	900	1339	305	921	1462	353	942	1618	433	973	1689	481	991
0.6	355	82	849	587	127	876	819	171	903	996	222	927	1173	272	950	1299	321	969	1425	370	987	1582	451	1016	1651	499	1034
0.7	---	---	---	---	---	---	769	184	957	950	236	978	1131	287	998	1259	337	1015	1387	387	1032	1544	468	1058	1610	516	1077
0.8	---	---	---	---	---	---	720	195	1008	904	248	1026	1088	301	1044	1218	352	1060	1347	403	1075	1503	484	1101	1565	531	1121
0.9	---	---	---	---	---	---	670	206	1057	857	260	1073	1043	314	1088	1173	366	1102	1303	417	1116	1458	498	1142	---	---	---
1.0	---	---	---	---	---	---	617	214	1102	806	269	1116	994	324	1130	1125	376	1144	1255	428	1157	1406	510	1184	---	---	---
1.1	---	---	---	---	---	---	561	219	1145	751	276	1157	941	332	1169	1071	384	1183	1200	436	1196	1347	518	1225	---	---	---
1.2	---	---	---	---	---	---	500	221	1185	691	278	1196	881	335	1207	1010	388	1221	1139	441	1234	1280	522	1265	---	---	---
1.3	---	---	---	---	---	---	---	---	---	---	---	---	814	335	1242	942	388	1256	1069	441	1270	---	---	---	---	---	---
1.4	---	---	---	---	---	---	---	---	---	---	---	---	738	330	1276	864	384	1291	989	437	1305	---	---	---	---	---	---

**HORIZONTAL**

External Static Press. in. w.g.	Percentage of Total Motor Torque																										
	20%		30%		40%		50%		60%		70%		80%		90%		100%										
	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM	Cfm	RPM									
0	794	45	388	970	76	454	1146	107	519	1281	149	575	1416	191	630	1522	110	678	1627	293	726	1715	351	768	1802	408	810
0.1	709	44	460	895	78	519	1080	111	577	1223	155	627	1366	199	677	1477	251	721	1588	303	764	1681	362	804	1773	420	843
0.2	630	46	531	855	82	583	1019	117	634	1169	163	679	1318	208	723	1435	262	763	1552	315	803	1648	375	841	1743	434	878
0.3	556	51	602	759	88	646	961	125	690	1117	172	730	1273	219	769	1395	274	805	1516	328	841	1615	388	877	1714	448	912
0.4	486	58	671	696	97	709	906	135	746	1068	184	781	1230	232	815	1356	288	848	1481	343	880	1582	403	914	1683	463	948
0.5	420	66	740	637	107	771	854	147	802	1021	196	831	1188	245	860	1317	301	890	1446	357	919	1549	418	951	1652	478	983
0.6	---	---	---	---	---	---	804	159	856	946	209	881	1147	259	905	1279	316	932	1410	372	958	1514	432	989	1618	492	1019
0.7	---	---	---	---	---	---	756	172	910	932	223	930	1107	273	949	1241	330	973	1374	386	996	1478	446	1026	1582	506	1055
0.8	---	---	---	---	---	---	709	185	962	888	236	978	1066	287	993	1201	344	1014	1336	400	1034	1440	460	1063	1544	519	1091
0.9	---	---	---	---	---	---	663	197	1013	844	249	1025	1025	300	1036	1161	357	1054	1296	413	1072	1399	472	1100	1502	530	1127
1.0	---	---	---	---	---	---	---	---	---	---	---	---	982	313	1078	1118	369	1094	1254	424	1109	1355	482	1136	1456	540	1163
1.1	---	---	---	---	---	---	---	---	---	---	---	---	938	323	1119	1073	379	1133	1208	434	1146	1307	491	1172	1406	548	1198
1.2	---	---	---	---	---	---	---	---	---	---	---	---	892	332	1158	1026	387	1170	1159	441	1182	1255	497	1208	1351	553	1233
1.3	---	---	---	---	---	---	---	---	---	---	---	---	843	340	1197	975	393	1207	1106	446	1216	1198	501	1242	1290	555	1268
1.4	---	---	---	---	---	---	---	---	---	---	---	---	790	344	1234	920	396	1242	1049	448	1250	1137	501	1276	1224	553	1302

**BLOWER DATA**

**1.0 HP | 3 ROW (048)**

**BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.**

FOR ALL UNITS ADD:

- 1 - Any factory installed options air resistance (heat section, economizer, etc.).
- 2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).

See Page 13 for wet coil and options/accessory air resistance data. See Page 13 for minimum air volume with electric heat.

**DOWNFLOW**

External Static Press. in. w.g.	Percentage of Total Motor Torque																										
	20%		30%		40%		50%		60%		70%		80%		90%		100%										
	Cfm	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM							
0	1115	124	488	1344	200	572	1573	276	655	1747	377	724	1920	477	792	2041	581	844	2161	684	896	2304	852	964	2354	936	992
0.1	1012	101	536	1253	181	614	1493	261	691	1677	366	755	1860	471	819	1990	578	868	2119	685	916	2277	860	980	2339	951	1006
0.2	926	88	584	1177	172	656	1427	256	728	1619	365	788	1811	473	848	1949	583	894	2086	693	939	2256	873	999	2328	969	1024
0.3	854	86	634	1113	173	701	1372	260	767	1572	371	823	1772	482	878	1916	595	921	2059	707	963	2240	891	1019	2319	991	1043
0.4	794	91	684	1061	181	746	1328	270	807	1535	383	859	1741	496	910	1890	611	950	2038	725	989	2226	913	1042	2311	1014	1065
0.5	745	104	734	1019	195	791	1292	286	847	1504	401	895	1715	515	942	1868	631	979	2020	747	1016	2214	936	1066	2301	1039	1089
0.6	704	122	785	983	215	837	1262	307	888	1478	423	932	1693	538	976	1849	654	1011	2004	770	1045	2201	960	1092	2288	1063	1114
0.7	671	145	836	954	238	883	1237	331	929	1456	447	969	1674	562	1009	1831	678	1041	1988	794	1073	2185	983	1118	2270	1085	1140
0.8	643	171	886	929	264	928	1215	357	969	1435	472	1006	1655	587	1043	1813	703	1073	1970	818	1103	2164	1005	1145	2246	1104	1168
0.9	619	199	935	907	291	973	1194	383	1010	1415	498	1043	1635	612	1076	1792	726	1104	1948	840	1132	2138	1024	1173	2212	1119	1196
1.0	596	228	983	884	319	1016	1172	410	1049	1392	523	1079	1612	635	1109	1766	747	1135	1920	859	1161	2104	1038	1200	---	---	---
1.1	---	---	---	---	---	---	1148	434	1087	1366	545	1115	1583	655	1142	1734	765	1166	1885	874	1189	2060	1047	1227	---	---	---
1.2	---	---	---	---	---	---	1120	456	1124	1334	564	1149	1548	671	1173	1695	777	1195	1841	883	1217	2004	1050	1254	---	---	---
1.3	---	---	---	---	---	---	1085	474	1159	1295	578	1181	1505	681	1202	1646	784	1223	1786	886	1244	1935	1044	1280	---	---	---
1.4	---	---	---	---	---	---	1043	486	1192	1247	586	1211	1451	685	1230	1585	783	1250	1718	881	1269	1851	1029	1305	---	---	---

**HORIZONTAL**

External Static Press. in. w.g.	Percentage of Total Motor Torque																										
	20%		30%		40%		50%		60%		70%		80%		90%		100%										
	Cfm	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM							
0	1087	111	493	1304	184	579	1520	257	665	1689	368	738	1857	478	810	1972	588	864	2087	698	918	2196	844	975	2283	925	1000
0.1	1021	104	537	1246	180	618	1470	255	699	1646	368	768	1821	480	837	1941	592	888	2061	704	938	2179	852	992	2255	926	1017
0.2	961	102	582	1193	181	658	1425	259	734	1607	373	799	1789	487	864	1914	601	912	2039	714	960	2163	864	1012	2231	932	1034
0.3	906	106	628	1145	186	699	1384	266	769	1572	382	831	1759	498	892	1889	613	938	2018	728	984	2149	879	1033	2209	941	1053
0.4	855	113	674	1101	196	740	1347	278	806	1540	396	864	1732	513	921	1866	629	965	1999	744	1008	2134	896	1054	---	---	---
0.5	808	125	720	1060	209	781	1312	293	842	1509	412	896	1706	530	950	1843	646	992	1980	762	1033	2119	915	1077	---	---	---
0.6	764	139	766	1022	225	823	1279	310	879	1481	430	930	1682	549	980	1821	666	1019	1960	782	1058	2102	935	1101	---	---	---
0.7	722	155	812	985	242	864	1247	328	916	1452	449	964	1657	569	1011	1799	686	1048	1940	803	1084	2084	955	1125	---	---	---
0.8	682	172	858	949	260	906	1216	348	953	1424	469	997	1632	589	1041	1776	706	1076	1919	823	1111	2063	974	1150	---	---	---
0.9	643	191	903	914	279	946	1185	367	989	1396	489	1030	1606	610	1071	1751	727	1104	1895	843	1137	2039	992	1175	---	---	---
1.0	---	---	---	---	---	---	1153	386	1024	1366	508	1062	1579	629	1100	1724	745	1132	1869	861	1163	2011	1008	1201	---	---	---
1.1	---	---	---	---	---	---	1120	404	1059	1334	525	1095	1548	646	1130	1694	761	1160	1839	876	1189	1979	1021	1226	---	---	---
1.2	---	---	---	---	---	---	1085	420	1093	1300	541	1126	1515	661	1158	1660	775	1186	1805	889	1214	1941	1031	1250	---	---	---
1.3	---	---	---	---	---	---	1047	433	1126	1263	553	1156	1478	672	1186	1622	785	1213	1766	898	1239	1897	1037	1275	---	---	---
1.4	---	---	---	---	---	---	1005	442	1158	1221	561	1185	1436	680	1212	1579	792	1238	1721	903	1263	1847	1037	1298	---	---	---





**1.5 HP | 3 ROW (036, 048)**

**BLOWER DATA**  
**BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.**

FOR ALL UNITS ADD:

- 1 - Any factory installed options air resistance (heat section, economizer, etc.).
- 2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).

See Page 13 for wet coil and options/accessory air resistance data. See Page 13 for minimum air volume with electric heat.

**DOWNFLOW**

Total Air cfm	Total Static Pressure - in. w.g.																											
	0.1		0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1.0		1.1		1.2		1.3			
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts
400	718	19	803	41	72	1008	92	1080	111	1149	127	1226	129	1307	126	1386	124	1574	197	1630	220	1681	250	1731	279	1779	307	
600	845	50	929	72	1057	101	1138	123	1214	143	1286	160	1362	168	1439	173	1510	181	1630	197	1747	293	1796	324	1844	353	1890	379
800	971	79	1057	101	1138	123	1214	143	1286	160	1362	168	1439	173	1510	181	1630	197	1747	293	1796	324	1844	353	1890	379	405	
1000	1136	113	1215	135	1293	157	1367	177	1438	196	1510	209	1579	222	1642	239	1642	239	1697	263	1747	293	1796	324	1844	353	1890	379
1200	1335	151	1406	172	1476	193	1544	213	1611	232	1675	250	1735	272	1788	299	1788	299	1834	332	1878	368	1923	400	1970	428	2015	454
1400	1560	177	1617	204	1675	231	1732	257	1788	283	1841	310	1891	339	1936	371	1936	371	1978	405	2019	439	2063	469	2108	496	2152	522
1600	1742	245	1792	278	1842	311	1892	344	1940	376	1988	406	2035	434	2080	461	2080	461	2125	486	2169	513	2213	541	2256	570	2297	601
1800	1922	330	1970	363	2017	395	2064	426	2110	457	2155	485	2200	512	2244	539	2244	539	2287	568	2328	600	2369	634	2408	671	2447	708
2000	2112	405	2158	438	2202	471	2246	503	2289	536	2331	568	2373	602	2413	640	2413	640	2452	681	2490	723	2527	766	2564	809	2599	851
2200	2305	493	2347	531	2389	569	2429	608	2469	648	2508	691	2546	737	2582	784	2582	784	2619	832	2654	878	2690	923	2724	965	2758	1007
2400	2499	617	2539	660	2578	704	2615	748	2652	794	2688	841	2722	890	2757	939	2757	939	2791	986	2825	1031	2858	1075	2891	1117	2923	1158
2600	2697	773	2733	818	2769	864	2803	911	2837	957	2871	1005	2903	1052	2936	1099	2936	1099	2968	1143	3000	1186	3031	1228	3062	1270	3092	1311
2800	2896	944	2929	990	2962	1036	2993	1082	3025	1128	3056	1173	3087	1216	3118	1259	3118	1259	3147	1300	3177	1341	3206	1382	1423	1463	1507	1551
3000	3093	1115	3124	1160	3154	1205	3184	1249	3214	1293	3243	1335	3272	1376	3300	1416	3300	1416	3327	1456	3355	1495	3383	1536	1576	1615	1659	1703

**Total Static Pressure - in. w.g.**

Total Air cfm	Total Static Pressure - in. w.g.													
	1.4		1.5		1.6		1.7		1.8		1.9		2.0	
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts
800	1826	333	---	---	---	---	---	---	---	---	---	---	---	
1000	1935	403	1979	424	2021	444	2064	464	2106	485	2149	509	2191	533
1200	2058	476	2100	498	2142	518	2184	541	2226	565	2267	592	2308	619
1400	2194	548	2235	574	2275	601	2316	629	2356	658	2395	689	2433	720
1600	2337	632	2377	665	2415	698	2453	733	2490	768	2527	803	2563	839
1800	2484	746	2521	785	2557	824	2592	863	2627	902	2661	942	2695	981
2000	2634	894	2668	935	2701	977	2735	1018	2768	1058	2802	1099	2834	1139
2200	2790	1049	2823	1090	2855	1130	2887	1170	2919	1210	2952	1250	2984	1289
2400	2954	1200	2986	1240	3017	1280	3048	1320	3080	1360	3111	1399	3142	1437
2600	3123	1351	3153	1391	3184	1431	3215	1470	3245	1509	3276	1548	3306	1586
2800	3294	1502	3323	1542	3352	1580	3382	1619	3412	1658	3442	1696	3472	1734
3000	3464	1653	3492	1691	3520	1729	3549	1767	3578	1805	3608	1844	3638	1882



**BLOWER DATA** **1.5 HP | 4 ROW (060)**

**BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.**

FOR ALL UNITS ADD:

- 1 - Any factory installed options air resistance (heat section, economizer, etc.).
- 2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).

See Page 13 for wet coil and options/accessory air resistance data. See Page 13 for minimum air volume with electric heat.

**DOWNFLOW**

Total Air cfm	Total Static Pressure - in. w.g.																															
	0.1		0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1.0		1.1		1.2		1.3							
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts						
400	720	20	805	41	933	73	1011	93	1083	112	1152	128	1229	130	1310	126	1389	125	1487	130	1443	175	1514	183	1634	222	1684	252	1734	281	1783	309
600	849	51	933	73	1011	93	1083	112	1152	128	1229	130	1310	126	1389	125	1487	130	1443	175	1514	183	1634	222	1684	252	1734	281	1783	309		
800	978	81	1064	103	1145	124	1220	144	1291	162	1367	170	1367	170	1443	175	1514	183	1634	222	1684	252	1734	281	1783	309	1801	327	1849	356	1896	382
1000	1147	116	1225	138	1302	159	1376	179	1446	198	1517	211	1517	211	1586	224	1648	242	1648	242	1703	266	1753	296	1801	327	1849	356	1896	382		
1200	1347	154	1418	175	1487	196	1555	216	1620	235	1684	253	1684	253	1743	275	1795	302	1795	302	1841	336	1884	373	1930	405	1976	433	2021	458		
1400	1571	182	1629	209	1686	236	1742	262	1798	288	1850	315	1850	315	1899	346	1943	380	1943	380	1984	417	2025	453	2068	485	2113	512	2156	537		
1600	1753	252	1803	286	1853	318	1902	351	1951	383	1998	415	1998	415	2043	447	2087	478	2087	478	2130	508	2173	539	2216	568	2259	595	2302	621		
1800	1935	339	1983	371	2030	403	2076	434	2122	465	2167	495	2167	495	2210	524	2253	554	2253	554	2295	586	2337	618	2378	650	2418	682	2458	714		
2000	2127	415	2172	448	2217	481	2260	513	2303	546	2345	579	2345	579	2385	614	2425	653	2425	653	2464	693	2503	734	2541	774	2578	814	2614	855		
2200	2321	507	2363	545	2404	583	2444	623	2484	664	2522	707	2522	707	2560	753	2596	801	2596	801	2632	848	2667	895	2703	939	2737	981	2770	1023		
2400	2516	635	2556	679	2594	723	2631	767	2668	813	2703	861	2703	861	2737	909	2772	958	2772	958	2805	1005	2839	1050	2872	1093	2905	1135	2936	1176		
2600	2715	796	2751	841	2786	887	2820	933	2854	980	2887	1027	2887	1027	2919	1074	2952	1120	2952	1120	2983	1164	3015	1207	3046	1249	3077	1290	3107	1330		
2800	2915	970	2947	1016	2979	1062	3011	1107	3042	1152	3073	1197	3073	1197	3104	1240	3134	1282	3134	1282	3164	1323	3193	1364	3222	1404	3251	1445	3280	1485		
3000	3112	1142	3142	1187	3172	1232	3202	1276	3232	1319	3261	1361	3261	1361	3289	1401	3317	1441	3317	1441	3344	1480	3371	1520	3399	1560	3426	1600	3453	1638		

**Total Static Pressure - in. w.g.**

Total Air cfm	Total Static Pressure - in. w.g.													
	1.4		1.5		1.6		1.7		1.8		1.9		2.0	
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts
800	1830	335	---	---	---	---	---	---	---	---	---	---	---	
1000	1940	405	1983	426	2026	446	2068	466	2111	488	2154	512	2196	536
1200	2064	480	2106	501	2148	522	2190	544	2232	569	2273	595	2314	623
1400	2199	560	2241	584	2282	608	2323	634	2363	664	2402	694	2440	726
1600	2344	647	2384	675	2424	706	2462	740	2498	776	2535	811	2571	848
1800	2497	749	2533	788	2568	829	2602	872	2636	914	2671	953	2705	992
2000	2648	898	2681	941	2714	986	2746	1030	2779	1072	2812	1112	2845	1152
2200	2803	1064	2835	1105	2867	1145	2899	1186	2931	1225	2964	1265	2995	1303
2400	2968	1217	2999	1258	3031	1298	3062	1337	3093	1377	3124	1415	1454	1494
2600	3138	1371	3168	1411	3199	1450	3229	1489	3260	1528	3290	1566	3321	1604
2800	3309	1524	3338	1563	3368	1602	3398	1640	3428	1678	3458	1717	3488	1755
3000	3481	1677	3508	1715	3537	1752	3566	1790	3595	1828	3625	1866	3655	1904



## BLOWER DATA

### FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE - in. w.g.

Air Volume cfm	Wet Indoor Coil		Electric Heat	Economizer	Filters		
	024, 036, 048	060			MERV 8	MERV 13	MERV 16
800	0.01	---	0.01	0.04	0.04	0.05	0.04
1000	0.02	0.02	0.03	0.04	0.04	0.07	0.05
1200	0.03	0.04	0.06	0.04	0.04	0.07	0.05
1400	0.04	0.05	0.09	0.04	0.04	0.07	0.06
1600	0.05	0.07	0.12	0.04	0.04	0.07	0.08
1800	0.06	0.08	0.15	0.05	0.04	0.07	0.09
2000	0.08	0.10	0.18	0.05	0.05	0.08	0.10
2200	---	0.11	0.18	0.05	0.05	0.08	0.11
2400	---	0.13	0.20	0.05	0.05	0.08	0.12

### MINIMUM AIR VOLUME REQUIRED FOR ELECTRIC HEAT

Size	kW Size	Minimum CFM	
		Direct Drive ECM	DirectPlus™ Direct Drive ECM
All Models	5	600	N/A
	7.5	600	1200
	10	600	N/A
	15	1100	1500
	22.5	1600	2000

### CEILING DIFFUSERS AIR RESISTANCE (in. w.g.)

Air Volume - cfm	RTD11-95S Step-Down Diffuser			FD11-95S Flush Diffuser
	2 Ends Open	1 Side & 2 Ends Open	All Ends & Sides Open	
1800	0.13	0.11	0.09	0.09
2000	0.15	0.13	0.11	0.10
2200	0.18	0.15	0.12	0.12
2400	0.21	0.18	0.15	0.14
2600	0.24	0.21	0.18	0.17
2800	0.27	0.24	0.21	0.20
3000	0.32	0.29	0.25	0.25

### CEILING DIFFUSER AIR THROW DATA

Air Volume - cfm	¹ Effective Throw - ft.	
	RTD11-95S	FD11-95S
2600	24 - 29	19 - 24
2800	25 - 30	20 - 28
3000	27 - 33	21 - 29

¹ Effective throw based on terminal velocities of 75 ft. per minute.

**ELECTRICAL/ELECTRIC HEAT DATA**

**2 TON**

Model No.		LHT024H4
<sup>1</sup> Voltage - 60Hz		208/230V - 1 Ph
Compressor (Non-Inverter)	Rated Load Amps	15.3
	Locked Rotor Amps	83
Outdoor Fan Motor	Full Load Amps (1 ECM)	2.8
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4
Service Outlet 115V GFI (amps)		15
Indoor Blower Motor	Horsepower	0.5
	Full Load Amps	4.3
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit Only	40
	With (1) 0.33 HP Power Exhaust	40
<sup>3</sup> Minimum Circuit Ampacity (MCA)	Unit Only	27
	With (1) 0.33 HP Power Exhaust	29

**ELECTRIC HEAT DATA**

Electric Heat Voltage			208V	240V
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	5 kW	<sup>4</sup> 50	60
		7.5 kW	70	70
		10 kW	80	80
<sup>3</sup> Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	49	53
		7.5 kW	61	66
		10 kW	72	79
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	5 kW	60	60
		7.5 kW	70	70
		10 kW	<sup>4</sup> 80	90
<sup>3</sup> Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	5 kW	52	55
		7.5 kW	63	68
		10 kW	74	81

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

<sup>1</sup> Extremes of operating range are plus and minus 10% of line voltage.

<sup>2</sup> HACR type breaker or fuse.

<sup>3</sup> Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

<sup>4</sup> Factory installed circuit breaker not available.

**ELECTRICAL/ELECTRIC HEAT DATA**

**3 TON**

Model No.		LHT036H4							
<sup>1</sup> Voltage - 60Hz		208/230V - 1 Ph	208/230V - 3 Ph			460V - 3 Ph		575V - 3 Ph	
Compressor (Non-Inverter)	Rated Load Amps	15.3	11.6			5.7		4	
	Locked Rotor Amps	83	73			38		25.6	
Outdoor Fan Motor	Full Load Amps (1 ECM)	2.8	2.8			1.4		1.1	
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	2.4			1.3		1	
Service Outlet 115V GFI (amps)		15	15			15		20	
Indoor Blower Motor	Horsepower	0.5	0.5	1.5	0.5	1.5	0.5	1.5	
	Full Load Amps	4.3	4.3	4.4	2.2	2.3	1.7	2.3	
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit Only	40	30	30	15	15	15	15	
	With (1) 0.33 HP Power Exhaust	40	35	35	15	15	15	15	
<sup>3</sup> Minimum Circuit Ampacity MCA)	Unit Only	27	22	22	11	11	8	9	
	With (1) 0.33 HP Power Exhaust	29	24	25	13	13	9	10	

**ELECTRIC HEAT DATA**

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V		600V	
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	<b>7.5 kW</b>	70	70	<sup>4</sup> 45	50	<sup>4</sup> 45	50	25	25	20	20
		<b>15 kW</b>	<sup>4</sup> 100	110	70	70	70	70	35	35	30	30
<sup>3</sup> Minimum Circuit Ampacity MCA)	Unit+ Electric Heat	<b>7.5 kW</b>	61	66	42	45	42	45	23	23	17	18
		<b>15 kW</b>	94	105	61	67	61	67	34	34	26	27
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	<b>7.5 kW</b>	70	70	50	50	50	50	25	25	20	20
		<b>15 kW</b>	<sup>4</sup> 100	110	70	70	70	70	35	35	30	30
<sup>3</sup> Minimum Circuit Ampacity MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	<b>7.5 kW</b>	63	68	44	47	44	47	24	24	18	19
		<b>15 kW</b>	97	107	64	70	64	70	35	35	27	28

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

<sup>1</sup> Extremes of operating range are plus and minus 10% of line voltage.

<sup>2</sup> HACR type breaker or fuse.

<sup>3</sup> Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

<sup>4</sup> Factory installed circuit breaker not available.

**ELECTRICAL/ELECTRIC HEAT DATA**

**4 TON**

Model No.		LHT048H4									
<sup>1</sup> Voltage - 60Hz		208/230V - 1 Ph		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph			
Compressor	Rated Load Amps	21.2		14		6.4		4.6			
	Locked Rotor Amps	104		83.1		41		33			
Outdoor Fan Motor	Full Load Amps (1 ECM)	2.8		2.8		1.4		1.1			
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4		2.4		1.3		1			
Service Outlet 115V GFI (amps)		15		15		15		20			
Indoor Blower Motor	Horsepower	1		1		1.5		1		1.5	
	Full Load Amps	7.4		7.4		4.4		3.7		2.3	
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit Only	50		40		35		15		15	
	With (1) 0.33 HP Power Exhaust	60		40		40		20		15	
<sup>3</sup> Minimum Circuit Ampacity (MCA)	Unit Only	37		28		25		14		12	
	With (1) 0.33 HP Power Exhaust	40		31		28		15		14	

ELECTRIC HEAT DATA													
Electric Heat Voltage				208V	240V	208V	240V	208V	240V	480V		600V	
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	7.5 kW		80	80	<sup>4</sup> 50	60	50	50	25	25	20	20
		15 kW		<sup>4</sup> 110	125	<sup>4</sup> 70	80	70	70	40	35	30	30
<sup>3</sup> Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	7.5 kW		71	76	48	51	45	48	25	23	19	19
		15 kW		105	115	67	73	64	70	36	35	28	28
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW		<sup>4</sup> 80	90	<sup>4</sup> 50	60	50	50	30	25	20	20
		15 kW		<sup>4</sup> 110	125	<sup>4</sup> 70	80	<sup>4</sup> 70	80	40	40	30	30
<sup>3</sup> Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW		73	79	50	53	47	50	26	25	20	20
		15 kW		107	118	70	76	67	73	37	36	29	29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

<sup>1</sup> Extremes of operating range are plus and minus 10% of line voltage.

<sup>2</sup> HACR type breaker or fuse.

<sup>3</sup> Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

<sup>4</sup> Factory installed circuit breaker not available.



**ELECTRICAL/ELECTRIC HEAT DATA**

**5 TON**

Model No.		LHT060H4									
<sup>1</sup> Voltage - 60Hz		208/230V - 1 Ph		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph			
Compressor	Rated Load Amps	23.7		16.7		7.1		5.7			
	Locked Rotor Amps	151		110		54.7		47.8			
Outdoor Fan Motor	Full Load Amps (1 ECM)	2.8		2.8		1.4		1.1			
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4		2.4		1.3		1			
Service Outlet 115V GFI (amps)		15		15		15		20			
Indoor Blower Motor	Horsepower	1		1		1.5		1		1.5	
	Full Load Amps	7.4		7.4		4.4		3.7		2.3	
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit Only	60		45		40		20		15	
	With (1) 0.33 HP Power Exhaust	60		50		45		20		15	
<sup>3</sup> Minimum Circuit Ampacity (MCA)	Unit Only	40		32		29		14		13	
	With (1) 0.33 HP Power Exhaust	43		34		31		16		14	

**ELECTRIC HEAT DATA**

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	600V		
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	7.5 kW	90	90	60	60	60	60	30	25	25	20
		15 kW	<sup>4</sup> 110	125	80	80	<sup>4</sup> 70	80	40	40	30	30
		22.5 kW	<sup>4</sup> 150	175	<sup>4</sup> 90	100	<sup>4</sup> 90	100	50	50	40	40
<sup>3</sup> Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	7.5 kW	74	79	51	54	48	51	26	24	21	20
		15 kW	108	118	71	77	68	74	37	36	30	29
		22.5 kW	142	158	90	99	87	96	48	47	39	38
<sup>2</sup> Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	90	90	60	60	60	60	30	30	25	25
		15 kW	<sup>4</sup> 110	125	80	80	<sup>4</sup> 70	80	40	40	35	30
		22.5 kW	<sup>4</sup> 150	175	<sup>4</sup> 100	110	<sup>4</sup> 90	100	50	50	40	40
<sup>3</sup> Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	77	82	54	57	51	54	27	26	22	21
		15 kW	110	121	73	79	70	76	38	37	31	30
		22.5 kW	144	160	93	102	90	99	50	48	40	39

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

<sup>1</sup> Extremes of operating range are plus and minus 10% of line voltage.

<sup>2</sup> HACR type breaker or fuse.

<sup>3</sup> Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

<sup>4</sup> Factory installed circuit breaker not available.

## ELECTRIC HEAT CAPACITIES

Input Voltage	5 kW			7.5 kW			10 kW		
	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output
208	1	3.8	12,800	1	5.6	19,200	1	7.5	25,600
220	1	4.2	14,300	1	6.3	21,500	1	8.4	28,700
230	1	4.6	15,700	1	6.9	23,500	1	9.2	31,400
240	1	5.0	17,100	1	7.5	25,600	1	10.0	34,200
440	---	---	---	1	6.3	21,500	---	---	---
460	---	---	---	1	6.9	23,500	---	---	---
480	---	---	---	1	7.5	25,600	---	---	---
550	---	---	---	1	6.3	21,500	---	---	---
575	---	---	---	1	6.9	23,500	---	---	---
600	---	---	---	1	7.5	25,600	---	---	---
Input Voltage	15 kW			22.5 kW					
	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output			
208	1	11.2	38,400	1	16.9	57,700			
220	1	12.6	43,000	1	18.9	64,500			
230	1	13.8	47,000	1	20.7	70,700			
240	1	15.0	51,200	1	22.5	76,800			
440	1	12.6	43,000	1	18.9	64,500			
460	1	13.8	47,000	1	20.7	70,700			
480	1	15.0	51,200	1	22.5	76,800			
550	1	12.6	43,000	1	18.9	64,500			
575	1	13.8	47,000	1	20.7	70,700			
600	1	15.0	51,200	1	22.5	76,800			

# PARTS ARRANGEMENT

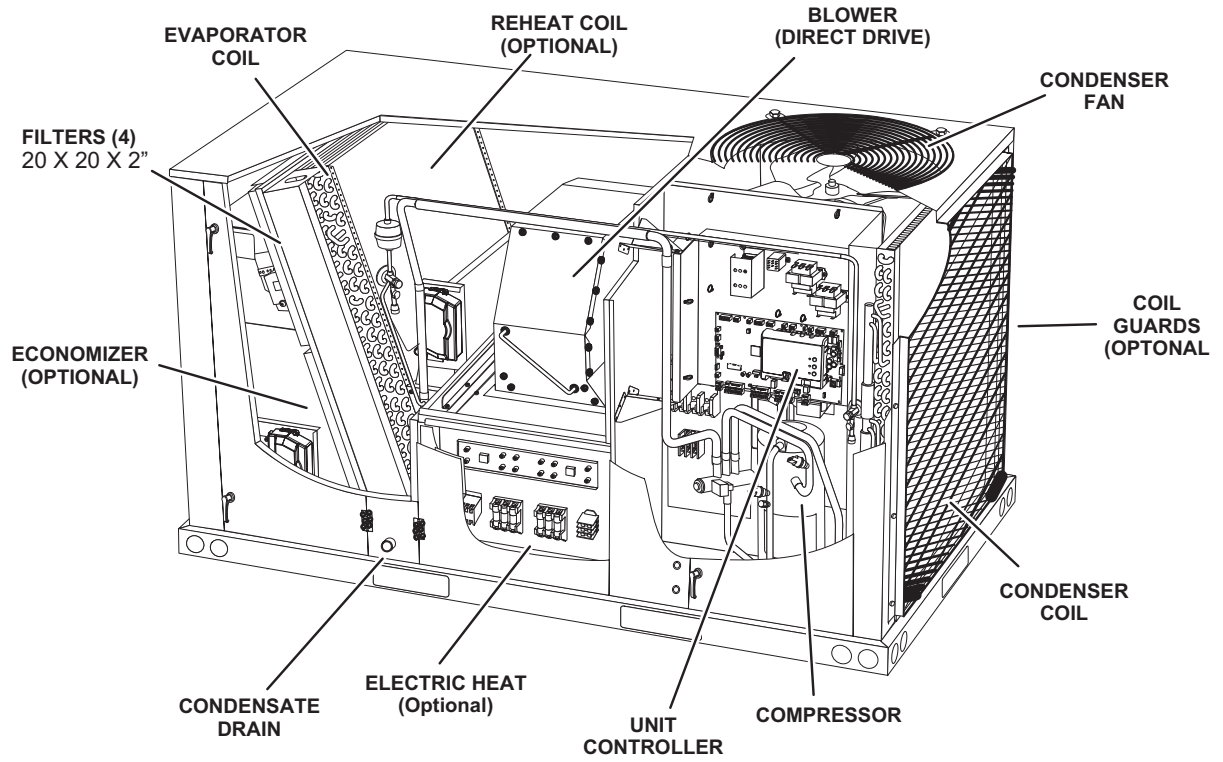


FIGURE 1

# HINGED CONTROL PANEL

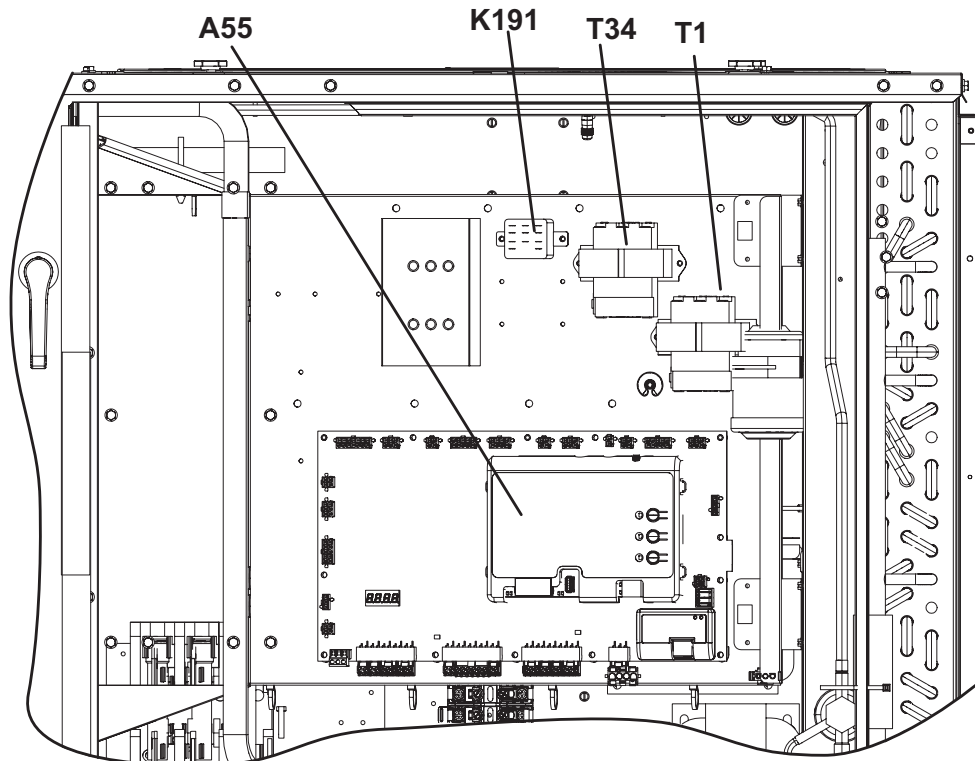


FIGURE 2

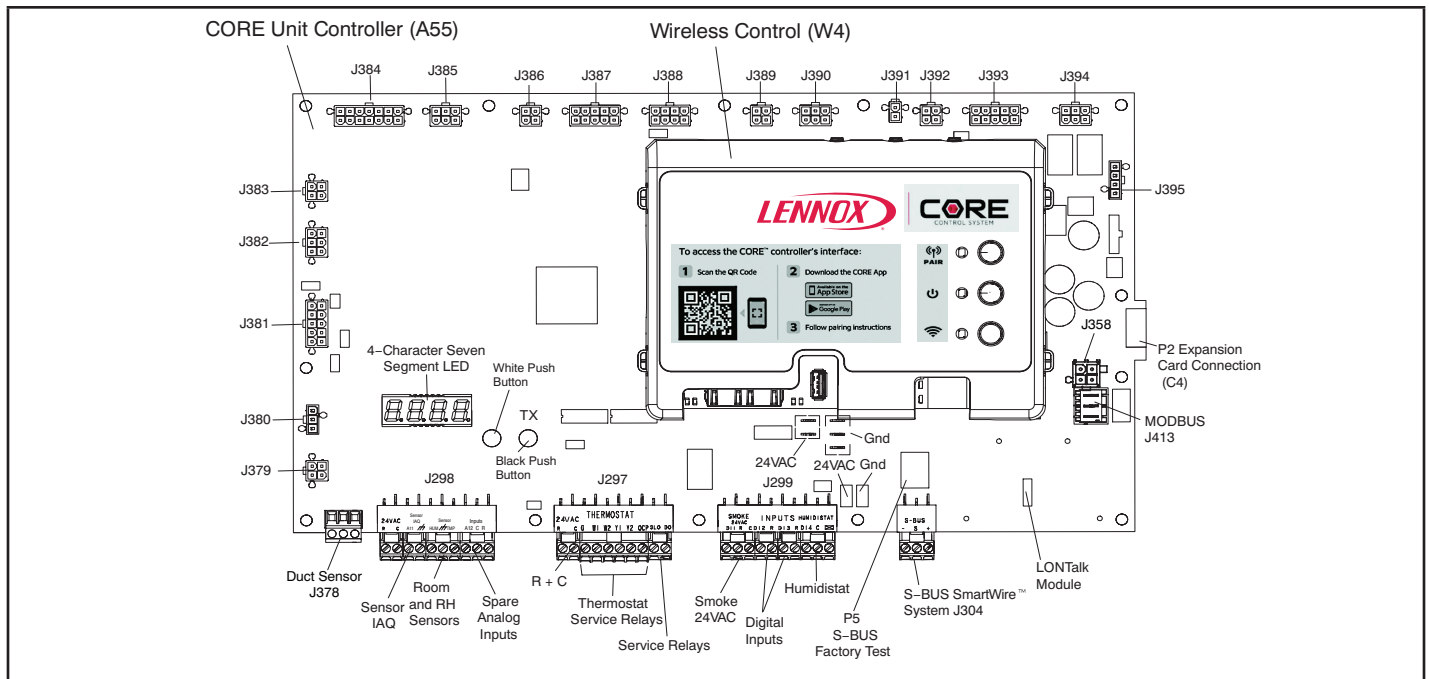


FIGURE 3

## I-UNIT COMPONENTS

### ELECTROSTATIC DISCHARGE (ESD) Precautions and Procedures

⚠ CAUTION

Electrostatic discharge can affect electronic components. Take precautions to neutralize electrostatic charge by touching your hand and tools to metal prior to handling the control.

All 2 through 6 ton (7 through 15.5 kW) units are configured to order units (CTO). The LHT unit components are shown in FIGURE 1. All units come standard with hinged unit panels. All L1, L2, and L3 wiring is color coded; L1 is red, L2 is yellow, and L3 is blue.

#### A-Control Box Components

LHT control box components are shown in FIGURE 2. The control box is located in the upper right portion of the compressor compartment.

#### 1-Control Transformers T1/T43

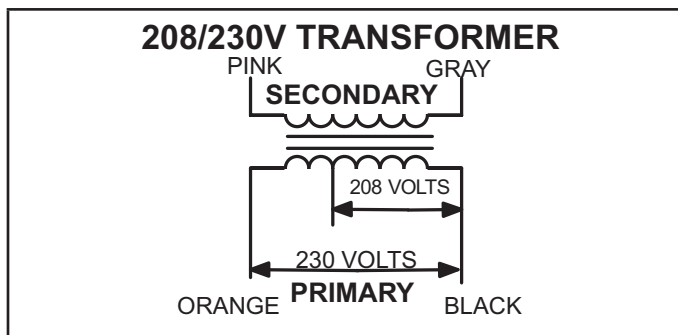


FIGURE 4

All use a single line voltage to 24VAC transformer mounted on the hinged control panel. Transformer supplies power to control circuits in the unit. The transformer is rated at 70VA and is protected by a 3.5 amp circuit (CB8). The 208/230 voltage transformers use two primary voltage taps as shown in FIGURE 4, while the 460 (G) voltage transformer use a single primary voltage tap. T43 is used for units with hot gas reheat for additional 24VAC.

#### 2-Transformer T4 (J voltage)

All J volt units are equipped with a line voltage to 460V 3-phase transformer to power the indoor blower motor. T4 is mounted in the back panel of the compressor section above T5.

#### 3-Transformer T5 (G and J voltage)

All units use transformer T5 mounted in the back panel in the compressor section. T5 is a line voltage to 230V transformer to power the combustion air inducer, outdoor fan motor, and optional UVC light ballast. It is connected to line voltage and is powered at all times.

#### 4-Unit Controller A55 (FIGURE 3)

The Unit Controller provides all unit control functions, unit status information, unit diagnostics, programmable parameters, and USB verification and profile sharing. The unit controller can only be interfaced with via the CORE Service mobile app. Refer to the Unit controller instructions provided for additional details on pairing and app functions

## Attention!

Use this QR code to download the mobile service app. Follow the prompts to pair the app with the unit control system and configure the unit. Refer to the “Download Mobile App” section in this manual and the Setup Guide provided with this unit. The QR code is also available in the unit control area.



The app can be downloaded from the appropriate iOS or Android store. Look for the following



The Unit Controller uses input from a zone/room sensor cooling, a thermostat, or a third-party controller to operate the unit. Zone/room sensor, thermostat, and third-party controller wires are connected to J297 on the Unit Controller.

Many default Unit Controller settings are adjustable. Refer to the unit installation instruction or the Unit Controller manual provided with the unit.

The Unit Controller is configured to identify optional kits and accessories for proper function. Each character in the configuration ID represents a different option. Refer to the unit installation instruction or the Unit Controller manual provided with the unit.

### 5-Compressor Contactor K1

The Unit Controller closes n.o. K1 contacts to provide power to the inverter control board (A192). The contactor does not energize the compressor in the same manner as a traditional cooling system. Three phase units use three pole double break contactors with a 24 volt coil.

### 6-Crankcase Heater Relay K191

All units use relay K191 to control crnkcase heater HR1.

### 7-Power Exhaust Relay K65 (PED units)

Power exhaust relay K65 is a N.O. DPDT relay with a 24VAC coil. K65 is used in all LHT units equipped with the optional power exhaust dampers. K65 is energized by the economizer control panel (A56), after the economizer dampers reach 50% open (adjustable in ECTO). When K65 closes, the exhaust fan B10 is energized.

## B-Cooling Components

All units use a single cooling circuit consisting of a two-speed compressor, all aluminum condenser coil and evaporator coil. See FIGURE 5. All units use one draw-through type condenser fan and a single direct drive blower. The blower draws air across the evaporator during unit operation.

Cooling may be supplemented by a factory- or field-installed economizer. The evaporator coil is slab type and uses a thermostatic expansion valve as the primary refrigerant metering device. The compressor is protected by a high pressure switch (S4) on the discharge line, a high temperature limit switch (S5) on the compressor, and a low pressure switch (S87) on the suction line. See FIGURE 5.

### 1-High Pressure Switch S4

The high pressure switch is an auto-reset SPST N.C. switch which opens on a pressure rise.

S4 is located in the compressor discharge line and wired to the A55 Unit Controller. When discharge pressure rises to  $640 \pm 10$  psig ( $4412 \pm 69$  kPa) (indicating a problem in the system) the switch opens and the compressor inverter is de-energized (the economizer can continue to operate). The switch automatically resets at  $475 + 10$  psig.

### 2-Low Pressure Switch S87

The compressor circuit is protected by a loss of charge switch located on the suction line. Switch opens at  $40$  psig  $\pm 5$  psig ( $276 \pm 34$  kPa) and automatically resets at  $90$  psig  $\pm 5$  psig ( $621$  kPa  $\pm$  kPa).

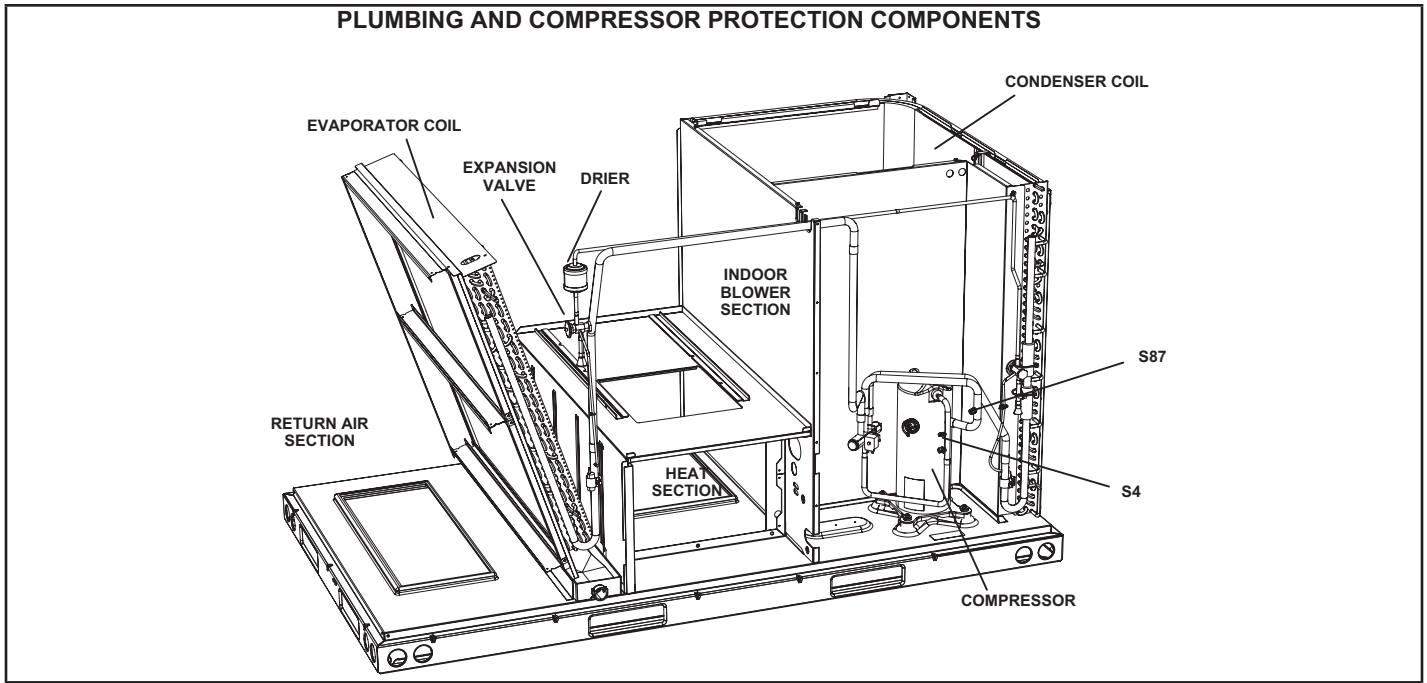
### 3-High Temperature Limit Switch S5

The variable speed compressor is equipped with a compressor-mounted normally closed temperature switch that prevents compressor damage due to overheating caused by internal friction. The switch is located on top of the compressor casing. This switch senses the compressor casing temperature and opens at  $239$ - $257^\circ\text{F}$  to shut-off compressor operation. The auto-reset switch closes when the compressor casing temperature falls to  $151$ - $187^\circ\text{F}$ , and the compressor is re-energized. This switch is a single-pole, single-throw (SPST) bi-metallic switch and is wired to the A55 Unit Controller.

### 4- Reversing Valve

A refrigerant reversing valve with a 24 volt solenoid coil is used to reverse refrigerant flow during unit operation in all LHT units. The reversing valve is connected in the vapor line of the refrigerant circuit. The reversing valve coil is energized during cooling demand and during defrost. Reversing valve L1 is controlled by the A55 Control board in response to cooling demand or by defrost.

**PLUMBING AND COMPRESSOR PROTECTION COMPONENTS**



**FIGURE 5**

**5-Thermistors**

Units are equipped with two factory-installed thermistors (RT46 and RT48) located on different points on the refrigerant circuit.

The thermistors provide the Unit Controller with constant temperature readings of two specific locations on the refrigeration circuit. These temperatures are used as feedback in certain modes of unit operation. In addition, the Unit Controller uses these temperatures to initiate alarms such as loss of condenser or evaporator airflow and loss of charge.

Each thermistor must be specifically placed for proper unit operation and to initiate valid alarms. See TABLE 1 for proper locations.

**A-Freezesat**

Thermistor RT46 monitors the temperature on the return bend of the indoor coil. If the temperature is measured below 32°F ± 3°F (0°C ± 1.7°C) for more than 3 minutes, the M4 control board will display a alarm, and will shut down compressor operation until coil warms sufficiently to melt any accumulated frost. At 58°F ± 4°F (14.4°C ± 2.2°C), the M4 control board will energize compressor. If compressor is frequently turning off due to coil icing, check the airflow, filters, and unit charge before allowing unit back in operation. Make sure to eliminate conditions which promote indoor coil ice buildup.

**TABLE 1**

Unit	Sensor Yellow	Figure
024, 036, 048 Indoor Coil	RT46	6
024, 036 Outdoor Coil	RT48	7
048 Outdoor Coil	RT48	8
060 Indoor Coil	RT46	9
060 Outdoor Coil	RT48	10

**B-Low Ambient Operation**

When Outdoor Air Temperature (OAT) drops below 62°F (16.6°C) while in cooling operation, the Unit will modulate OD fan in order to maintain coil temperature observed on RT48. Once OAT exceeds 65°F (18.3°C), unit will resume normal operation. The intermittent fan operation results in higher evaporating temperature allowing the system to operate without icing the evaporator coil and losing capacity.

**C-Defrost Control**

The defrost control ensures that the heat pump outdoor coil does not ice excessively during the heating mode. The defrost control uses input from the coil and ambient sensor to uses demand defrost cycles from the M4 board. If system fails to do calibration or obtain readings for demand defrost, it will run timed defrost at customer setting. If electric heat is installed, it is energized during defrost cycle.

LHT/LDT024, 036, 048  
INDOOR COIL  
RT46

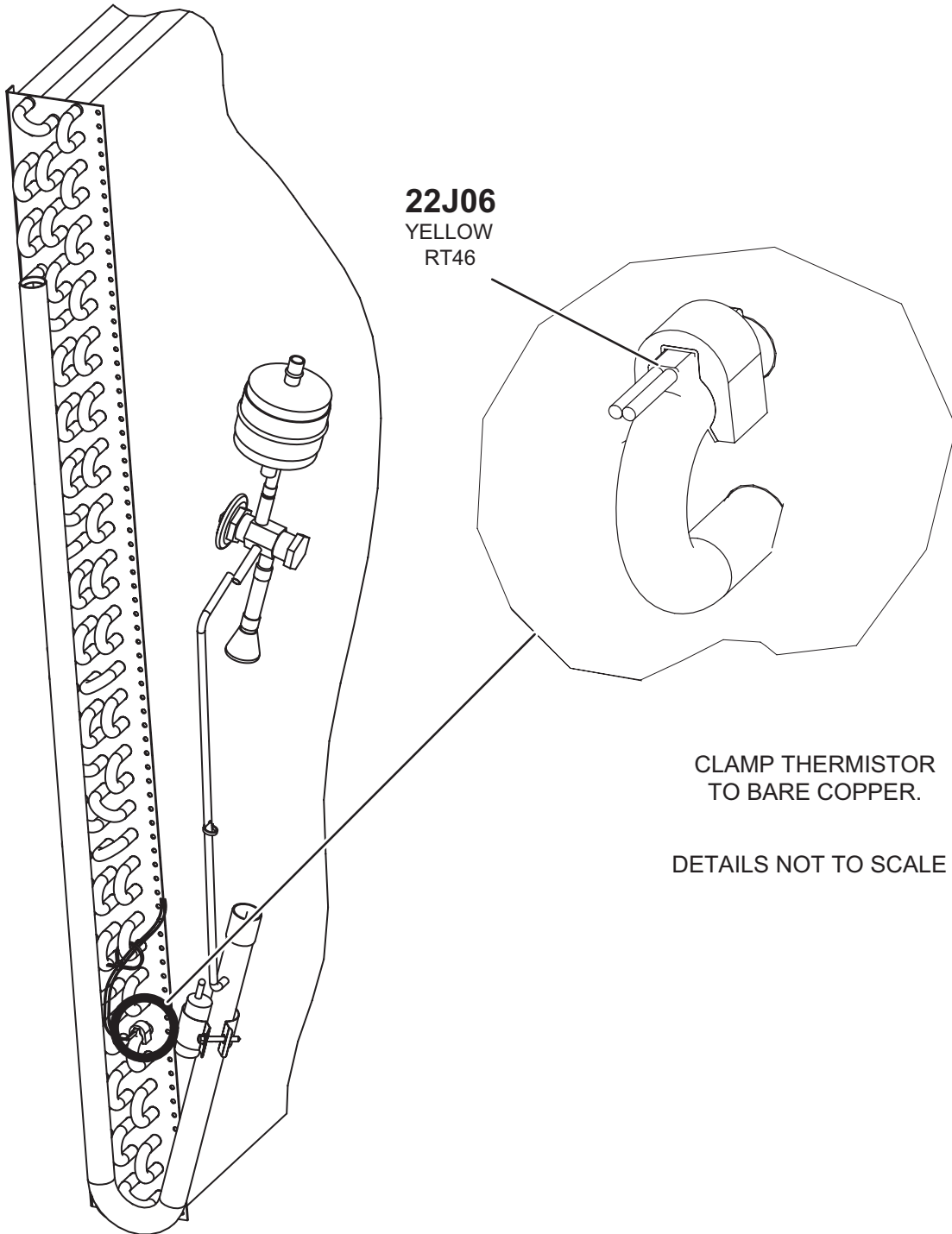


FIGURE 6

LHT/LDT024, 036  
OUTDOOR COIL  
RT48

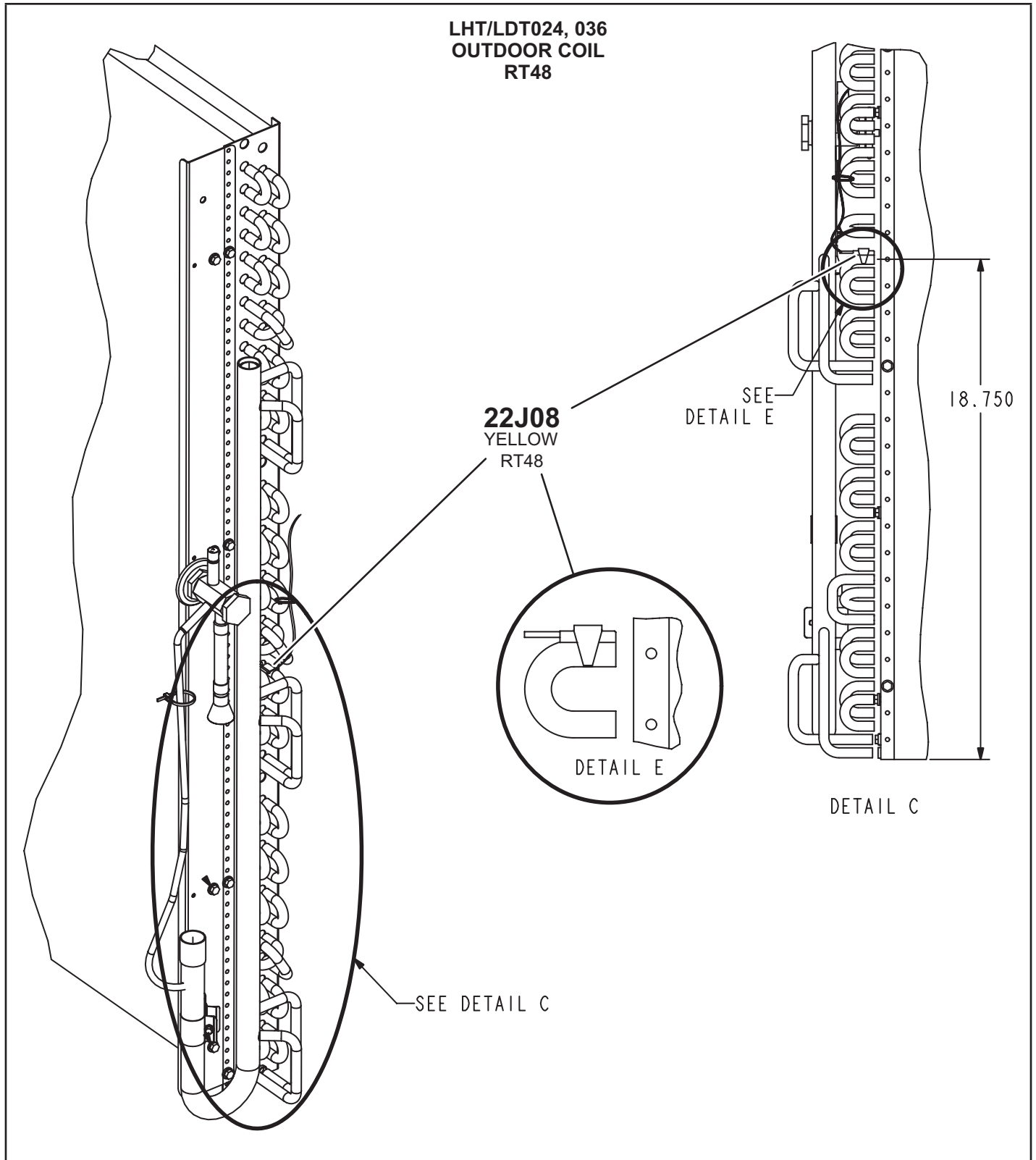


FIGURE 7



LHT/LDT048  
OUTDOOR COIL  
RT48

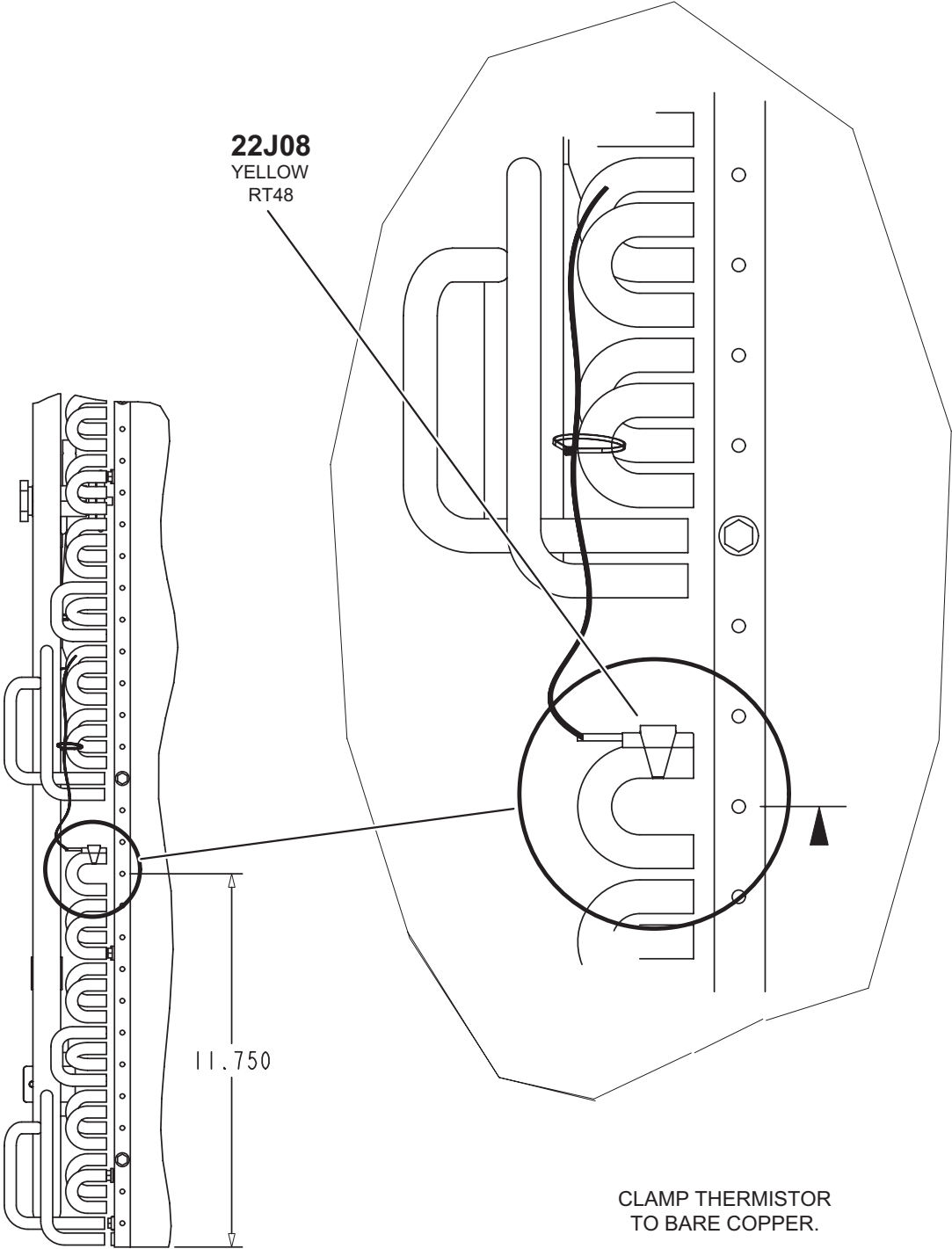


FIGURE 8

LHT/LDT060  
INDOOR COIL  
RT46

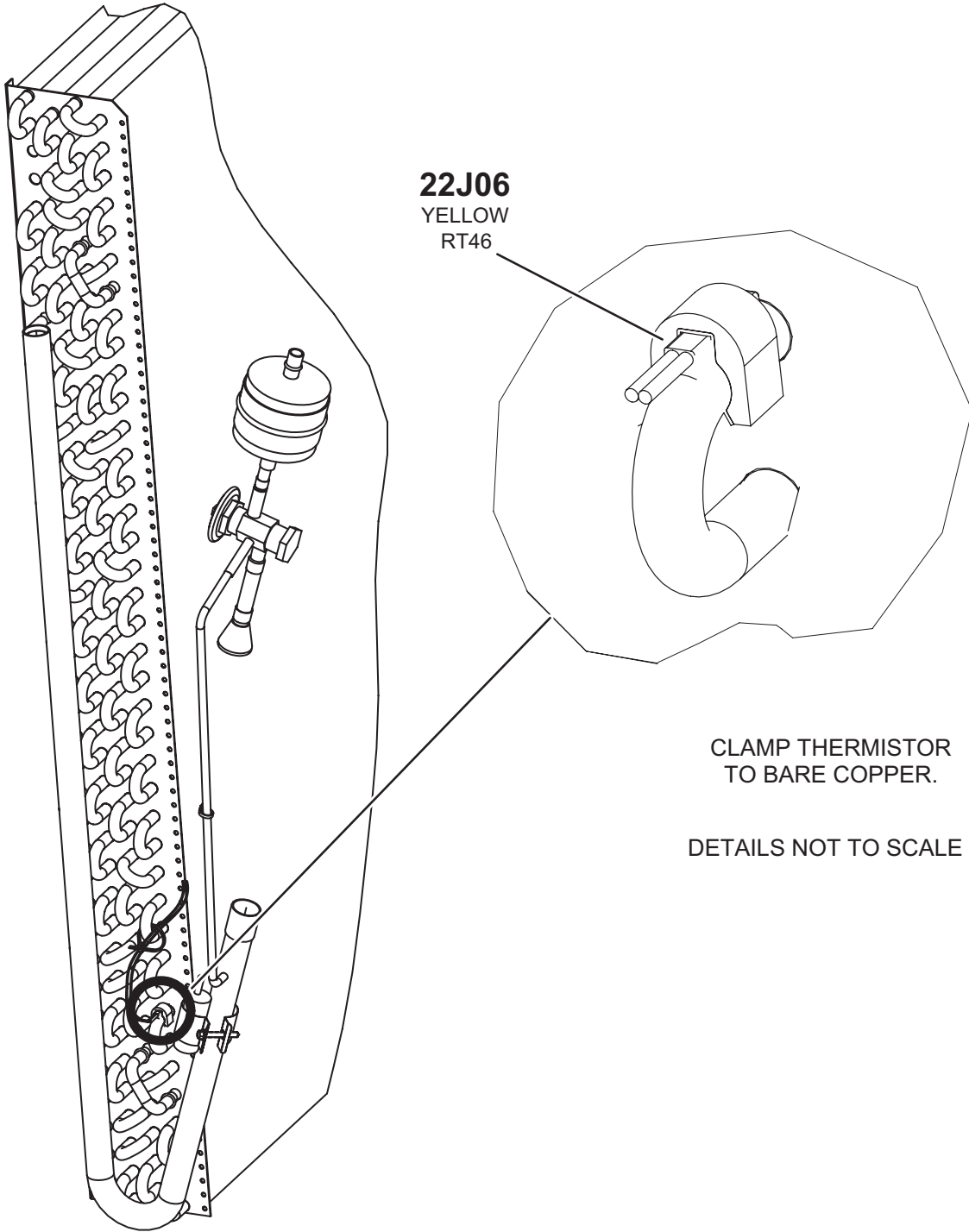


FIGURE 9

LHT/LDT060  
OUTDOOR COIL  
RT48

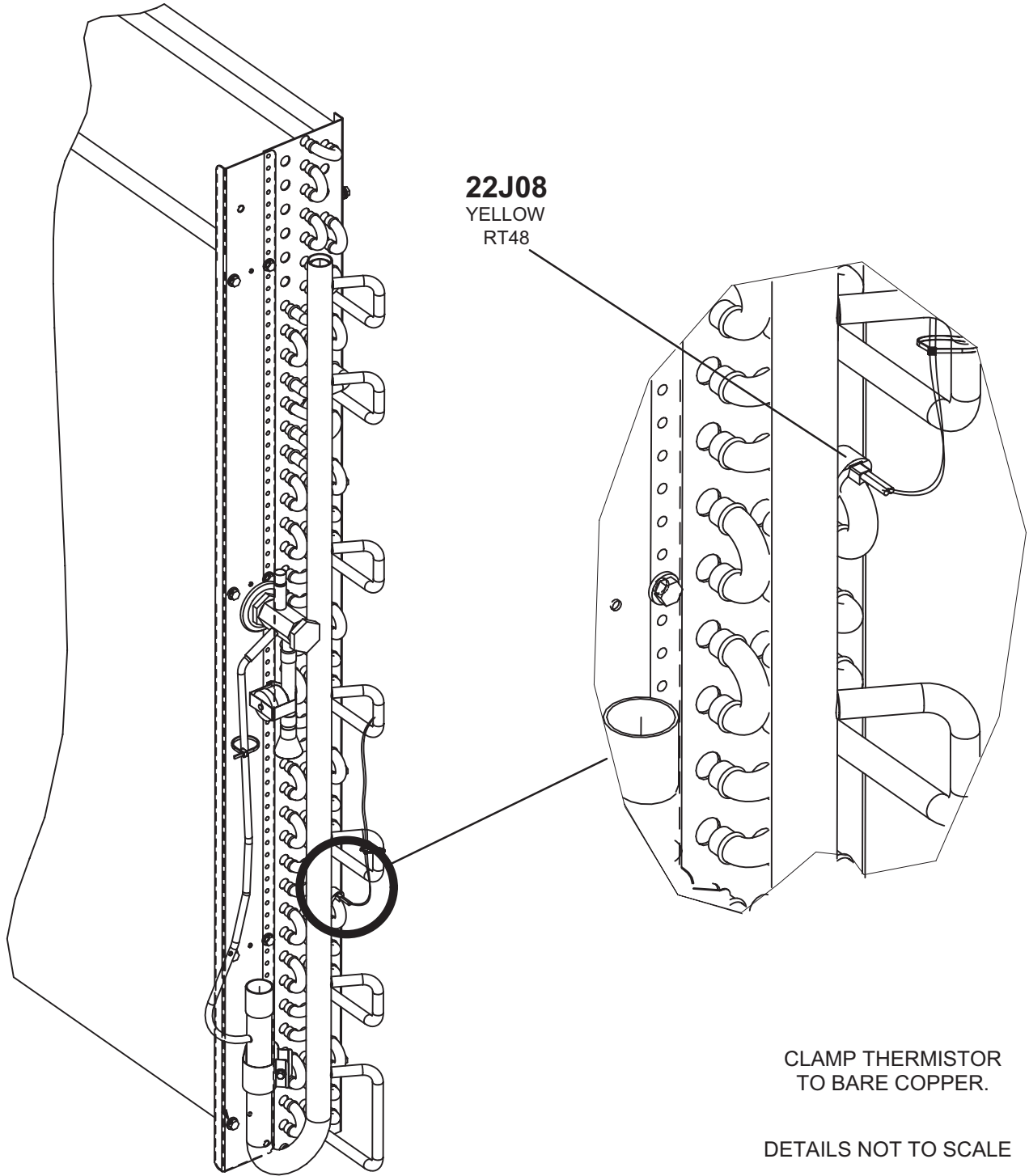


FIGURE 10

## WARNING

Electrical shock hazard. Compressor must be grounded. Do not operate without protective cover over terminals. Disconnect power before removing protective cover. Discharge capacitors before servicing unit. Failure to follow these precautions could cause electrical shock resulting in injury or death.

### 6-Two-Speed Compressor B1

All units use one two-speed scroll compressor. See "SPECIFICATIONS" and "ELECTRICAL DATA" (table of contents) or compressor nameplate for compressor specifications.

### 7-Compressor Crankcase Heater (HR1)

Crankcase heater must be energized at all times to prevent compressor damage due to refrigerant migration. Energize crankcase heater 24 hours before unit start-up by setting thermostat so that there is no cooling demand (to prevent compressor from cycling) and apply power to unit.

### D-BLOWER COMPARTMENT

## IMPORTANT

Three phase scroll compressors must be phased sequentially for correct compressor and blower rotation. Follow "COOLING START-UP" section of installation instructions to ensure proper compressor and blower operation.

Units are equipped with a variable speed, direct drive blower. The installer is able to enter the design-specified supply air CFM into the Unit Controller for optimal efficiency. The Unit Controller calibrates the supply air volume which eliminates the need to manually take duct static measurements.

### Indoor Blower Motor B3

All direct drive blower motors are electronically commutated, brushless, DC motors. CFM adjustments are made by changing Unit Controller parameters via the service app. Motors are equipped with sealed ball bearings. All motor specifications are listed in the SPECIFICATIONS (table of contents) in the front of this manual. Motors come with premounted aluminum impellers.

#### 1-Blower Operation

Refer to the Unit Controller Setup Guide to energize blower. Use the mobile service app menu; see RTU MENU > COMPONENT TEST > BLOWER > START TEST.

#### 2-Determining Unit CFM

- 1 - The following measurements must be made with air filters in place.

## WARNING

- 1-Make sure that unit is installed in accordance with the installation instructions and applicable codes.
- 2-Inspect all electrical wiring, both field- and factory-installed, for loose connections. Tighten as required.
- 3-Check to ensure that refrigerant lines do not rub against the cabinet or against other refrigerant lines.
- 4-Check voltage at disconnect switch. Voltage must be within range listed on nameplate. If not, consult power company and have voltage condition corrected before starting unit.
- 5-Make sure filters are new and in place before start-up.

**Direct-drive motor may not immediately stop when power is interrupted to the Unit Controller. Disconnect unit power before opening the blower compartment. The Controller's digital inputs must be used to shut down the blower. See Unit Controller manual for operation sequences.**

- 2 - With all access panels in place, measure static pressure external to unit (from supply to return). Blower performance data is based on static pressure readings taken in locations shown in FIGURE 11.

*Note - Static pressure readings can vary if not taken where shown.*

- 3 - Measure the indoor blower wheel RPM.
- 4 - Referring to the Blower Data tables, use static pressure and RPM readings to determine unit CFM. Use the Accessory Air Resistance tables when installing units with any of the options or accessories listed. Refer to TABLE 2 for minimum airflow when electric heat is installed.
- 5 - From the mobile service app, use TEST & BALANCE > BLOWER menu to modify the following blower parameters:

- HEATING HIGH CFM

This is the percentage of torque for blower heating speed.

- HEATING LOW CFM

This is the percentage of torque for blower heating low speed on single phase gas heating units only.

- COOLING HIGH CFM

This is the percentage of torque for blower cooling high speed. For 024 units, this is the only cooling speed.

- COOLING LOW CFM

This is the percentage of torque for blower cooling low speed (036, 048, and 060 units only) and vent speed for standard static blowers (all units).

- VENTILATION CFM

This is the percentage of torque for high static blower ventilation speed.

**TABLE 2**

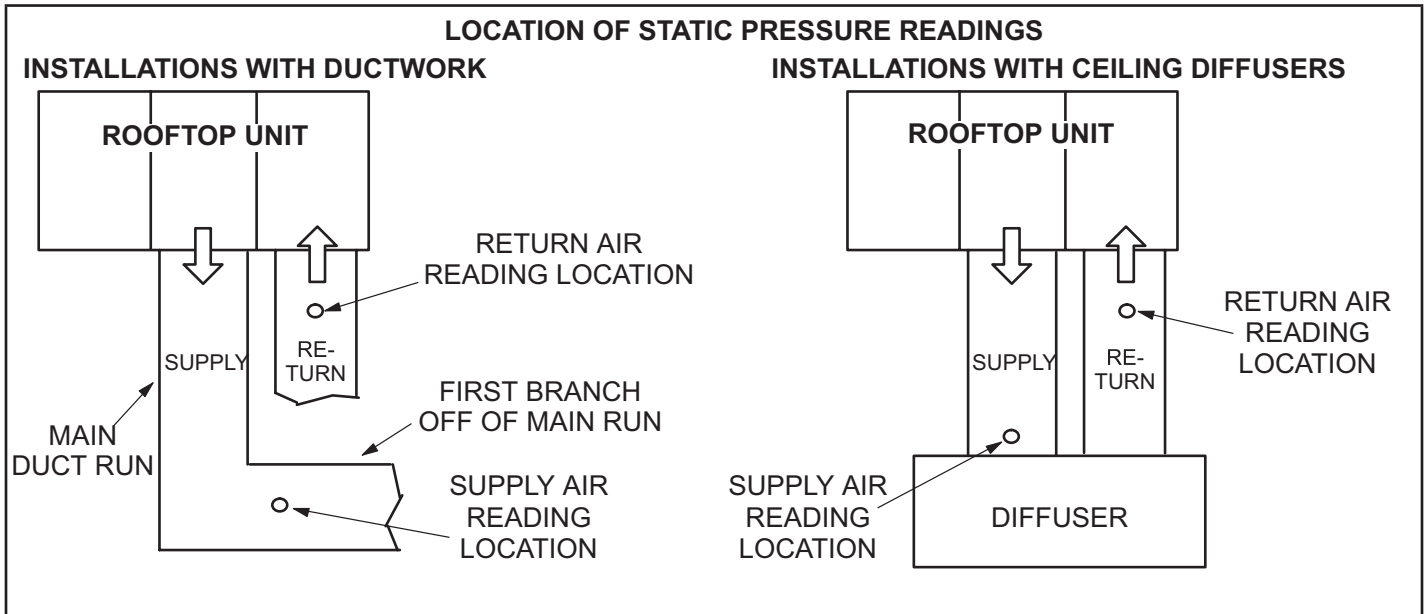
**ELECTRIC HEAT MINIMUM AIRFLOW**

kW	CFM	
	Direct Drive	Direct Drive (Impeller-Style)
5	600	n/a
7.5	600	1200
10	600	n/a
15	1100	1500
22.5	1600	2000

**3-Adjusting Unit CFM**

The supply CFM can be adjusted by changing Unit Controller settings. Refer to TABLE 3 for menu paths and default settings. Record any CFM changes on the parameter settings label located on the inside of the compressor access panel.

**IMPORTANT** - The default value for Cooling Low CFM is lower than a traditional single- or two-speed blower. If operating the unit with a 2- or 3-stage controller (2- or 3-stage thermostat, DDC controller, etc.), it is recommended to increase the Cooling Low CFM default value to a suitable level for part load cooling (typically 60% of full load CFM).



**FIGURE 11**

**TABLE 3  
BLOWER PARAMETER SETTINGS - 581102-01**

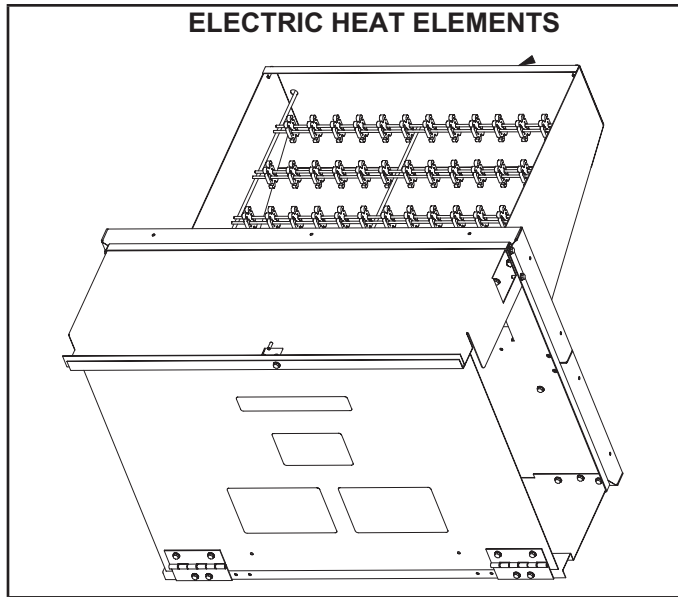
Parameter	Field Setting	Description
<b>Note: Any changes to Smoke CFM setting must be adjusted before the other CFM settings. Use SETTINGS &gt; RTU OPTIONS &gt; EDIT PARAMETERS = 12 for EBM, 6 for ECM</b>		
BLOWER SMOKE CFM	%	Percentage of torque for blower smoke speed.
<b>SETUP &gt; TEST &amp; BALANCE &gt; BLOWER</b>		
BLOWER HEATING HIGH CFM	%	Percentage of torque for blower heating high speed.
BLOWER HEATING LOW CFM	%	Percentage of torque for blower heating low speed (P volt gas heat only).
BLOWER COOLING HIGH CFM	%	Percentage of torque for blower cooling high speed.
BLOWER COOLING LOW CFM	%	Percentage of torque for blower cooling low speed and vent speed for standard static blowers.
BLOWER VENTILATION CFM	%	Percentage of torque for high static blower ventilation speed.
<b>SETUP &gt; TEST &amp; BALANCE &gt; DAMPER</b>		
BLOWER HIGH CFM DAMPER POS %	%	Minimum damper position for high speed blower operation. Default 0%.
BLOWER LOW CFM DAMPER POS %	%	Minimum damper position for low speed blower operation. Default 0%.
POWER EXHAUST DAMPER POS %	%	Minimum damper position for low power exhaust operation. Default 50%.
<b>SETTINGS &gt; RTU OPTIONS &gt; EDIT PARAMETERS = 216</b>		
POWER EXHAUST DEADBAND %	%	Deadband % for power exhaust operation. Default 10%.
<b>SETTINGS &gt; RTU OPTIONS &gt; EDIT PARAMETERS = 10 (Applies to Thermostat Mode ONLY)</b>		
FREE COOLING STAGE-UP DELAY	sec	Number of seconds to hold blower at low speed before switching to blower at high speed. Default 300 seconds.

**Installer:** Record any parameter changes under "Field Setting" column. Settings need to be recorded by installer for use when Unit Controller is replaced or reprogrammed.

## D-ELECTRIC HEAT COMPONENTS

Electric heat match-ups are found in the ELECTRICAL DATA tables. See table of contents.

All electric heat sections consist of electric heating elements exposed directly to the air stream. See FIGURE 12. See FIGURE 13 for vestibule parts arrangement.



**FIGURE 12**

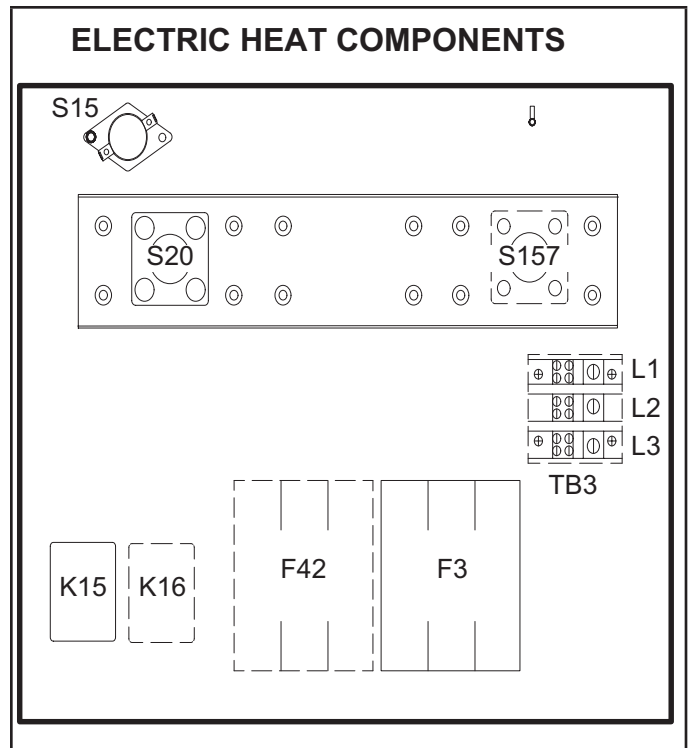
### 1-Contactors K15, K16

All contactors are double break and either single, double or three pole (see diagram) and equipped with a 24VAC coil. The coils in the K15 and K16 contactors are energized by the indoor thermostat. In all units K15 energizes the heating elements, while in the 22.5 kW units, K15 and K16 energize the heating elements simultaneously.

### 2-High Temperature Limits S15 (Primary)

S15 is a SPST N.C. auto-reset thermostat located on the back panel of the electric heat section above the heating elements. S15 is the high temperature limit for the electric heat section. When S15 opens, indicating a problem in the system, contactor K15 is de-energized (including K16 in 22.5 kW units). When K15 is de-energized, all stages of heat are de-energized. See TABLE 4 for S15 set points. Set points are factory set and not adjustable.

TABLE 4		
Unit kW (Voltage)	S15 Opens ° F	S15 Closes ° F
5 kW (P)	170	140
7.5 kW (P, Y, G, J)	160	120
10 kW (P)	170	130
15 kW (P, G, J)	160	120
15 kW (Y)	170	130
22.5 kW (Y)	150	110
22.5 kW (Y, G, J)	160	120



**FIGURE 13**

### 3-High Temperature Limit S20 and S157 (Secondary)

S20 and S157 are SPST N.C. manual-reset thermostats. S20 and S157 are wired in series with the heating elements. See E1EH wiring diagrams. When S20 or S157 open, power is interrupted to the heating elements which are wired in series with the limits. K15/K16 are only de-energized when S15 opens. When the contactors are de-energized, all stages of heat are de-energized. The thermostat is factory set to open at  $220\text{F} \pm 6\text{F}$  ( $104\text{C} \pm 3.3\text{C}$ ) on a temperature rise and can be manually reset when temperature falls below  $160\text{F}$  ( $71.0\text{C}$ ). See figure 10 for location.

### 4-Terminal Strip TB2

Terminal strip TB2 is used for single point power installations only. TB2 distributes power to TB3. Units with multi-point power connections will not use TB2.

### 5-Terminal Strip TB3

P and Y voltage units are equipped with terminal strip TB3. Electric heat line voltage connections are made to TB3, which distributes power to the electric heat components and is located on the vestibule. See FIGURE 13.

## 6-Heating Elements HE1 through HE6

Heating elements are composed of helix wound bare nichrome wire exposed directly to the air stream. Three elements are connected in a three-phase arrangement. The elements in 208/230V units are connected in a "Delta" arrangement. Elements in 460 and 575V units are connected in "Wye" arrangement. Each stage is energized independently by the corresponding contactors located on the electric heat vestibule panel. Once energized, heat transfer is instantaneous. High temperature protection is provided by primary and redundant high temperature limits and overcurrent protection is provided by fuses.

### 7-Fuse F42/F3

Fuse F3/F42 is housed in a fuse block which holds two or three fuses. Each F42/F3 fuse is connected in series with each leg of electric heat. FIGURE 13 and TABLE 5 show the fuses used with each electric heat section.

### 8-Unit Fuse Block & Fuse F4

Three line voltage fuses F4 provide short circuit and ground fault protection to all cooling components in the LCT units with electric heat. The fuses are rated in accordance with the amperage of the cooling components. The F 4 fuse block is located inside a sheet metal enclosure

## II-PLACEMENT AND INSTALLATION

Make sure the unit is installed in accordance with the installation instructions and all applicable codes. See accessories section for conditions requiring use of the optional roof mounting frame (T1CURB-AN or C1CURB-AN).

### III-START UP - OPERATION

#### A-Preliminary and Seasonal Checks

- 1 - Make sure the unit is installed in accordance with the installation instructions and applicable codes.
- 2 - Inspect all electrical wiring, both field and factory installed for loose connections. Tighten as required. Refer to unit diagram located on inside of unit compressor access panel.
- 3 - Check to ensure that refrigerant lines are in good condition and do not rub against the cabinet or other refrigerant lines.
- 4 - Check voltage at the disconnect switch. Voltage must be within the range listed on the nameplate. If not, consult the power company and have the voltage corrected before starting the unit.
- 5 - Recheck voltage and amp draw with unit running. If voltage is not within range listed on unit nameplate, stop unit and consult power company. Refer to unit nameplate for maximum rated load amps.

**TABLE 5**

Unit	Voltage / Phase	Fuse	F42	F3
			Quantity	Quantity
E1EH0050	208/230V-1P	30 A-250V		2
E1H0075	208/230V-1P	40 A-250V		2
	208/230V-3P	25 A-250V		3
	460V-3P	15 A-600V		3
	575V-3P	15 A-600V		3
E1EH0100	208V/230V-1P	30 A-250V	2	2
E1EH150	208/230V-1P	40 A 250V	2	2
	208/230V-3P	50 A 250V	3	3
	460V-3P	25 A-600V		3
	575V-3P	20 A-600V		3
E1EH0225	208V/230V-1P	40 A 250V	3	3
	208/230V-3P	45 A-250V		3
	460V-3P	35 A-600V		3
	575V-3P	30 A-600V		3
E1EH0300	208/230V-3P	60 A250V	3	3
	460V-3P	50 A600V		3
	575V-3P	40 A 600V		3



## B-Cooling Start up

### 1-Operation

- 1 - Initiate full load cooling operation using the following mobile service app menu path:  
RTU>COMPONENT TEST> COOLING>COOLING STAGE 2
- 2 - Units contain one refrigerant circuit or stage.
- 3 - Unit is charged with R-410A refrigerant. See unit rating plate for correct amount of charge.
- 4 - Refer to charging section method to check refrigerant charge.

### C-Electric Heat Start Up

Optional electric heat will stage on and cycle with thermostat demand. See electric heat wiring diagram on unit for sequence of operation.

## IV-CHARGING

### A-Refrigerant Charge and Check - Fin/Tube

**WARNING-Do not exceed nameplate charge under any condition.**

This unit is factory charged and should require no further adjustment. If the system requires additional refrigerant, reclaim the charge, evacuate the system, and add required nameplate charge.

**NOTE - System charging is not recommended below 60F (15C). In temperatures below 60F (15C), the charge must be weighed into the system.**

If weighing facilities are not available, or to check the charge, use the following procedure:

- 1 - Attach gauge manifolds and operate unit in cooling mode on **HIGH SPEED** with economizer disabled until system stabilizes (approximately five minutes). Make sure outdoor air dampers are closed.

**Note -** Use mobile service app menu path RTU MENU > COMPONENT TEST > COOLING > COOLING STAGE 2

- 2 - Use a thermometer to accurately measure the outdoor ambient temperature.
- 3 - Apply the outdoor temperature to TABLE 6 through TABLE 9 to determine normal operating pressures. Pressures are listed for sea level applications at 80°F dry bulb and 67°F wet bulb return air.
- 4 - Compare the normal operating pressures to the pressures obtained from the gauges. Minor variations in these pressures may be expected due to differences in installations. Significant differences could mean that the system is not properly charged or that a problem exists with some component in the system. **Correct any system problems before proceeding.**
- 5 - If discharge pressure is high, remove refrigerant from the system. If discharge pressure is low, add refrigerant to the system.
  - Add or remove charge in increments.
  - Allow the system to stabilize each time refrigerant is added or removed.

- 6 - Use one of the following charge verification methods along with the normal operating pressures to confirm readings.

### Charge Verification - Approach Method - AHRI Testing

- 1 - Using the same thermometer, compare liquid temperature to outdoor ambient temperature.

Approach Temperature = Liquid temperature (at condenser outlet) minus ambient temperature.

- 2 - Approach temperature should be  $3.8^{\circ}\text{F} \pm 1$  ( $2.1^{\circ}\text{C} \pm 0.5$ ). An approach temperature greater than this value indicates an under-charge. An approach temperature less than this value indicates an overcharge.

- 3 - The approach method is not valid for grossly over or undercharged systems. Use TABLE 10 as a guide for typical operating pressures.

TABLE 6

#### 024 NORMAL OPERATING PRESSURES

Outdoor Coil Entering Air Temp°F	Discharge $\pm 10$ psig	Suction $\pm 5$ psig
65	242	145
75	281	145
85	325	148
95	377	149
105	415	150
115	472	151

TABLE 7

#### 036 NORMAL OPERATING PRESSURES

Outdoor Coil Entering Air Temp°F	Discharge $\pm 10$ psig	Suction $\pm 5$ psig
65	259	144
75	301	147
85	347	149
95	390	152
105	448	155
115	511	157

TABLE 8

#### 048 NORMAL OPERATING PRESSURES

Outdoor Coil Entering Air Temp°F	Discharge $\pm 10$ psig	Suction $\pm 5$ psig
65	247	129
75	284	134
85	328	137
95	375	140
105	425	143
115	480	144

**TABLE 9**  
**060 NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp°F	Discharge $\pm 10$ psig	Suction $\pm 5$ psig
65	259	139
75	299	140
85	343	141
95	391	143
105	444	146
115	506	148

**TABLE 10**  
**SUBCOOLING TEMPERATURE**

Unit	Liquid Saturated Temp. Minus Liquid Temperature
024	7.4°F $\pm 1$ (4.1°C $\pm 0.5$ )
036	7.6°F $\pm 1$ (4.2°C $\pm 0.5$ )
048	5.7°F $\pm 1$ (3.2°C $\pm 0.5$ )
060	6.8°F $\pm 1$ (3.8°C $\pm 0.5$ )

## V- SYSTEMS SERVICE CHECKS



### B-Cooling System Service Checks

LHT units are factory charged and require no further adjustment; however, charge should be checked periodically using the approach method. The approach method compares actual liquid temperature with the outdoor ambient temperature. See section IV- CHARGING.

**NOTE-**When unit is properly charged discharge line pressures should approximate those in TABLE 6 through TABLE 9.

### VI-MAINTENANCE

The unit should be inspected once a year by a qualified service technician.

	<b>WARNING</b>
	Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

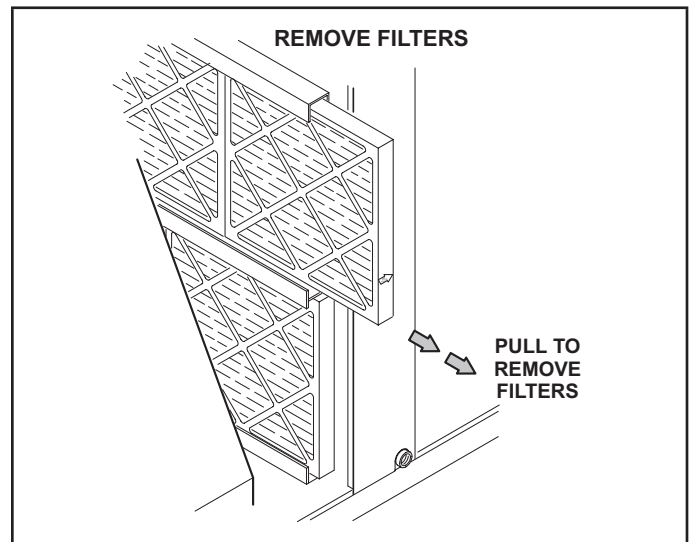
## IMPORTANT

**Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.**

### A-Filters

Units are equipped with temporary filters which must be replaced prior to building occupation. See FIGURE 14. All units have 20 X 20 X 2 in. (508 X 508 X 51mm) filters. Refer to local codes or appropriate jurisdiction for approved filters.

**NOTE-**Filters must be U.L.C. certified or equivalent for use in Canada.



**FIGURE 14**

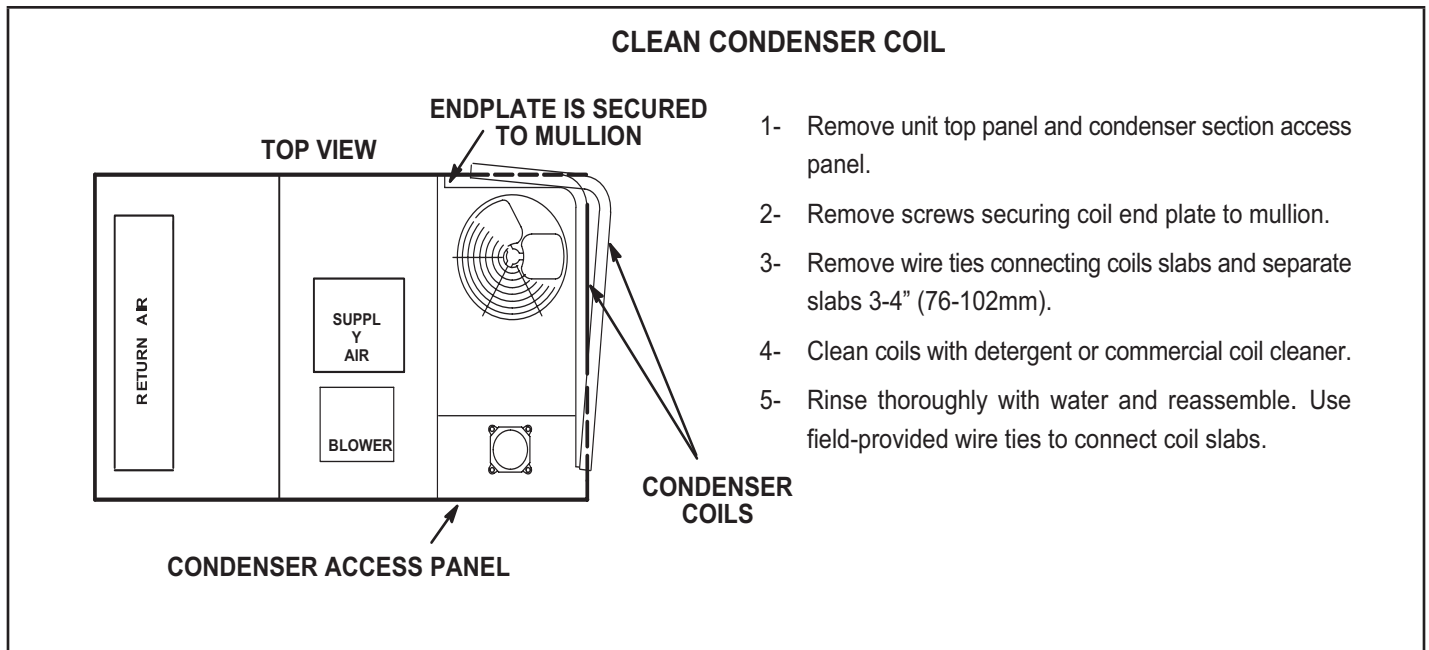
### B-Lubrication

All motors are lubricated at the factory. No further lubrication is required.

### C-Evaporator Coil

Inspect and clean coil at beginning of each cooling season. Clean using mild detergent or commercial coil cleanser.

Flush coil and condensate drain with water taking care not to get insulation, filters and return air ducts wet.



**FIGURE 15**

### **G-Condenser Coil**

Clean condenser coil annually with detergent or commercial coil cleaner and inspect monthly during the cooling season.

Condenser coils are made of single and two formed slabs. On units with two slabs, dirt and debris may become trapped between the slabs. To clean between slabs, carefully separate coil slabs and wash them thoroughly. See FIGURE 15. Flush coils with water following cleaning.

**Note** - Remove all screws and gaskets prior to cleaning procedure and replace upon completion.

### **H-Supply Blower Wheel**

Annually inspect supply air blower wheel for accumulated dirt or dust. Turn off power before attempting to remove access panel or to clean blower wheel.

## **VII-ACCESSORIES**

The accessories section describes the application of most of the optional accessories which can be factory- or field-installed to the LHT units.

### **A-C1/T1CURB**

When installing the LDT units on a combustible surface for downflow discharge applications, the C1/T1CURB 8 inch, 14-inch, 18 inch or 24-inch height roof mounting frame is used. The roof mounting frames are recommended in all other applications but not required. If the LDT units are not mounted on a flat (roof) surface, they **MUST** be supported under all edges and under the middle of the unit to prevent sagging. The units **MUST** be mounted level within 1/16" per linear foot or 5mm per meter in any direction.

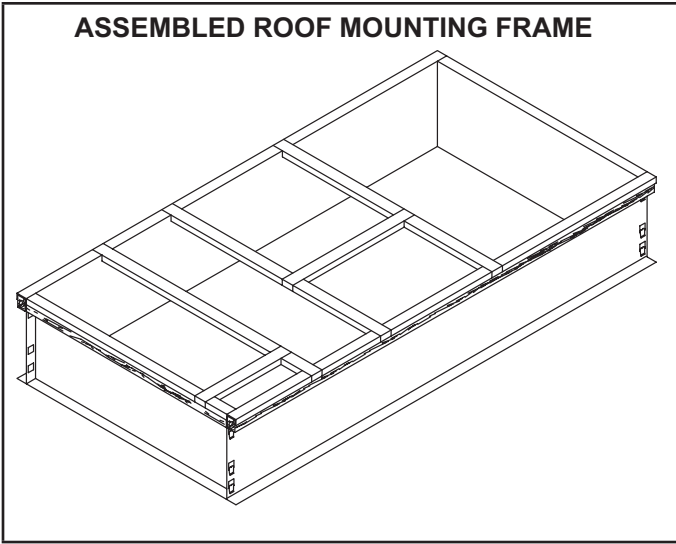
The assembled mounting frame is shown in FIGURE 16. Refer to the roof mounting frame installation instructions for details of proper assembly and mounting. The roof mounting frame **MUST** be squared to the roof and level before mounting. Plenum system **MUST** be installed before the unit is set on the mounting frame. Typical roof curbing and flashing is shown in FIGURE 17. Refer to the roof mounting frame installation instructions for proper plenum construction and attachment.

### **B-Transitions**

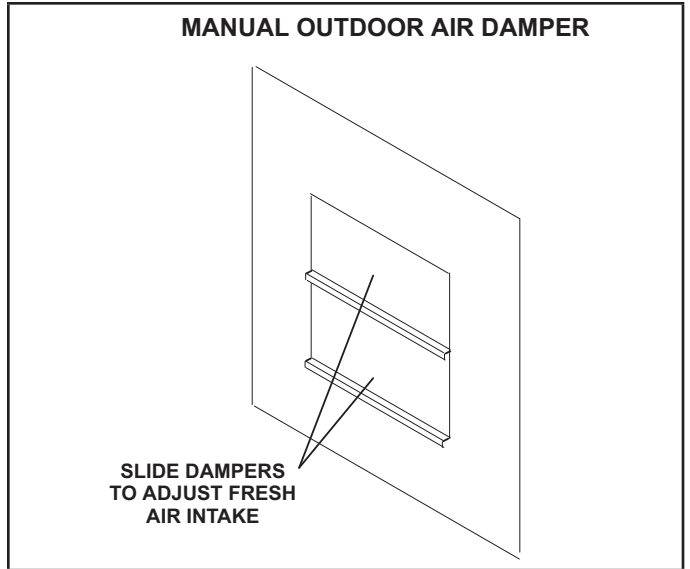
Optional supply/return transitions are available for use with the LDT 2, 3, 4 and 5 ton units (refer to EHB for appropriate transition model). Transition must be installed in the C1/T1CURB mounting frame before mounting the unit to the frame. Refer to the manufacturer's instructions included with the transition for detailed installation procedures.

### **C-Outdoor Air Dampers**

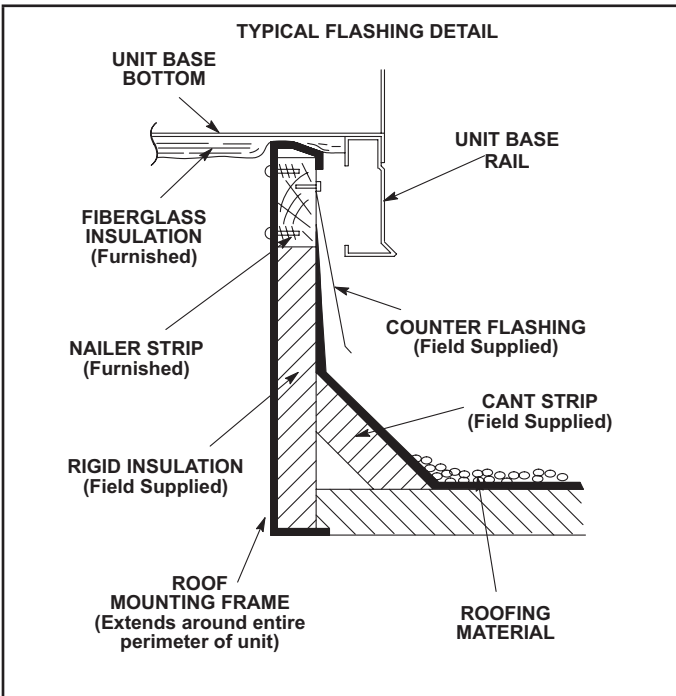
Optional outdoor air dampers are available for use with the LHT 2, 3, 4 and 5 ton units in both manually operated (FIGURE 18) and motorized (FIGURE 19) options (refer to EHB for appropriate transition model). Both sets include the outdoor air hood. The manual damper is set at a fixed point to bring outside air into the building anytime the blower is operating. The motorized damper opens when the blower is operating and the thermostat is sending an occupied signal to the Unit Controller. If the thermostat signal is unoccupied, the motorized damper will not open. Washable filter supplied with the outdoor air dampers can be cleaned with water and a mild detergent. It should be sprayed with Filter Handicoater when dry prior to re-installation. Filter Handicoater is R.P. Products coating no. 418 and is available as Part No. P-8-5069



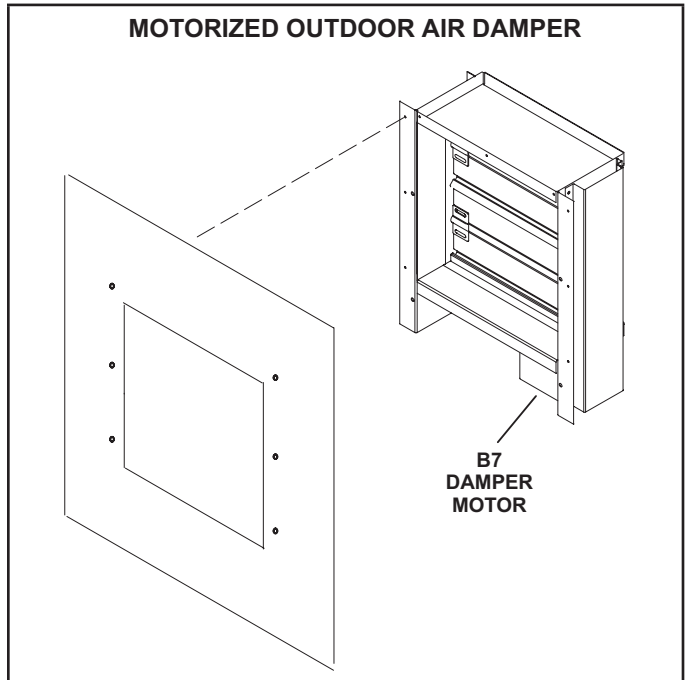
**FIGURE 16**



**FIGURE 18**



**FIGURE 17**



**FIGURE 19**

## D-Supply and Return Diffusers

Optional flush mount diffuser/return FD9-65 and FD11-95 and extended mount diffuser/return RTD9-65 and RTD11-95 are available for use with all LHT units. Refer to manufacturer's instructions included with transition for detailed installation procedures.

## E-Economizer

### (Optional Field- or Factory-Installed)

The economizer uses outdoor air for free cooling when temperature is suitable. See FIGURE 20.

When outdoor air is suitable, the Unit Controller will modulate the economizer dampers to maintain 55°F discharge air (RT6). Refer to unit controller manual for menu paths to adjust economizer setpoints

### Sensors

Units are equipped with the following factory-installed, CEC Title 24 approved sensors:

- RT17 - Outside Air Temperature
- RT16 - Return Air Temperature
- RT6 - Discharge Air Temperature

See FIGURE 21 for sensor location.

Optional field-provided sensors may be used instead of unit sensors to determine whether outdoor air is suitable for free cooling. Refer to TABLE 11 TEMP OFFSET is the default mode.

**Note** - Network OAS signal and California Title 24 Compliance options use either TEMPERATURE OFFSET or TEMPERATURE SETPT mode.

### Minimum Position

The Unit Controller will move the dampers to minimum position during the following:

Ventilation mode (G demand only)

Outdoor air is NOT suitable for free cooling

The damper position will vary linearly with blower speed based on the damper position settings for high and low CFM. Damper calibration must be initiated in the mobile service app to set high and low damper positions.

### GED (Gravity Exhaust / Barometric Relief Dampers) Field-Installed Option

The GED is located in the economizer except in downflow applications or when a PEF (power exhaust fan) is NOT installed. In horizontal airflow applications or when a PEF is installed, the GED is located in the exhaust air hood.

### Horizontal Air Discharge Economizers

The economizer is located in the unit the same as downflow applications but note the position of the return air duct. The duct attaches to a duct transition and duct inlet on the end of the unit. An optional GED is located in the duct transition. See FIGURE 22.

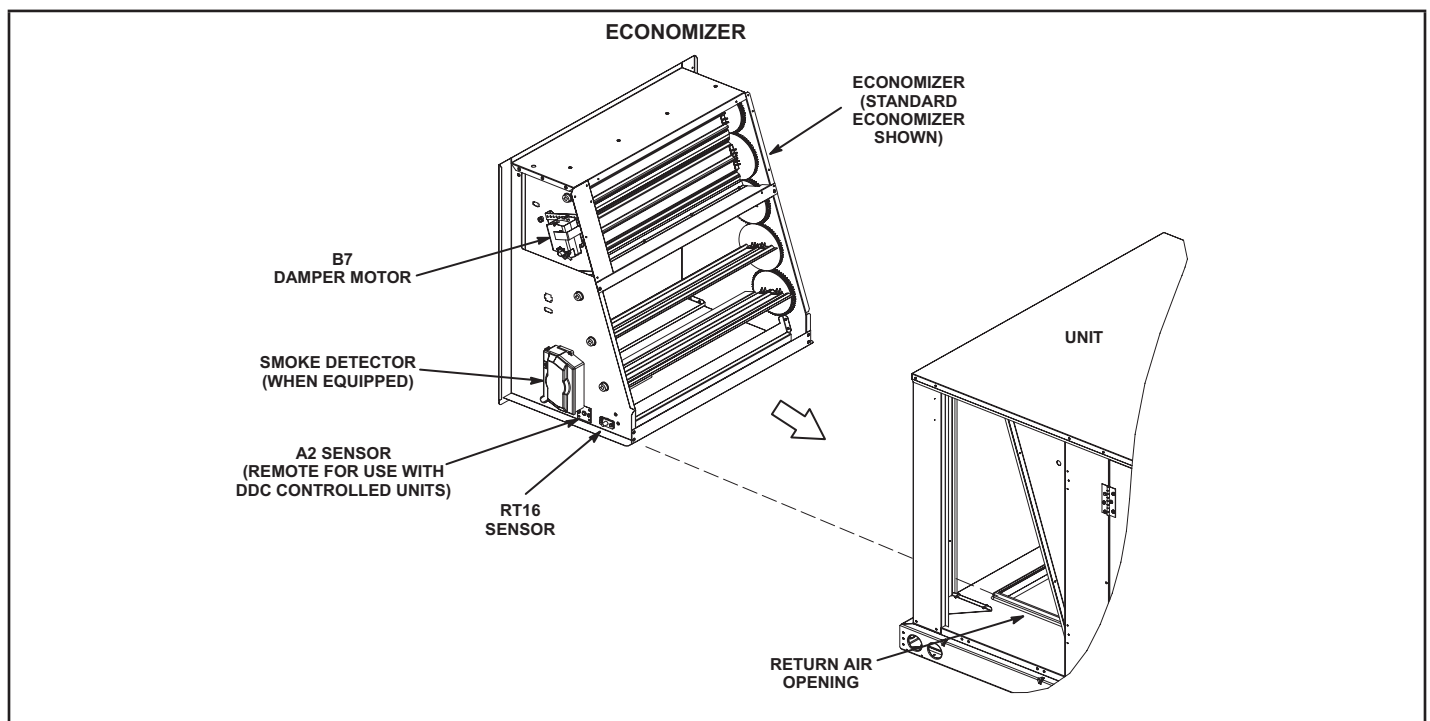


FIGURE 20

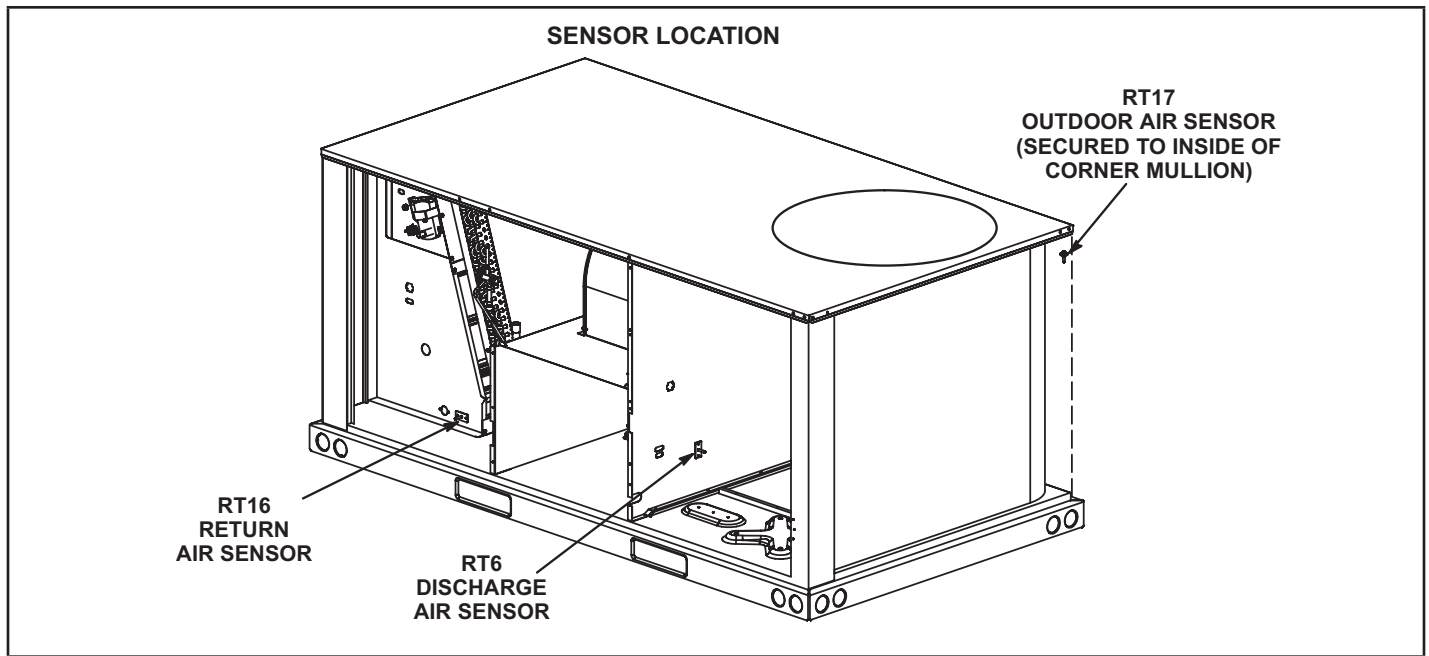


FIGURE 21

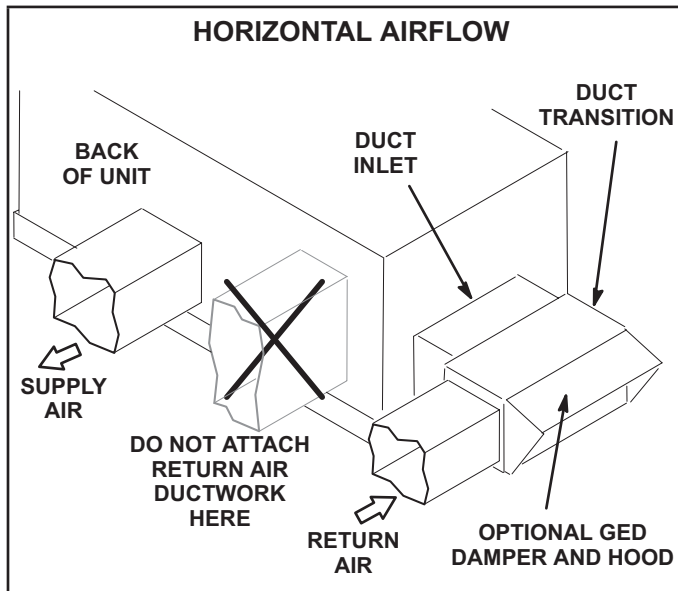


FIGURE 22

**F-Power Exhaust Relay K6 (power exhaust units)**

Power exhaust relay K65 is a DPDT relay with a 24VAC coil. K65 is used in all LHT units equipped with the optional power exhaust dampers. K65 is energized by the Unit Controller after the economizer dampers reach 50% open (adjustable). When K65 closes, exhaust fan B10 is energized.

**G-Power Exhaust Fans**

Optional power exhaust fans are available for use with the LHT 2, 3, 4 and 5 ton units to provide exhaust air pressure relief (refer to EHB for appropriate transition model). See FIGURE 23 and installation instructions for more detail.

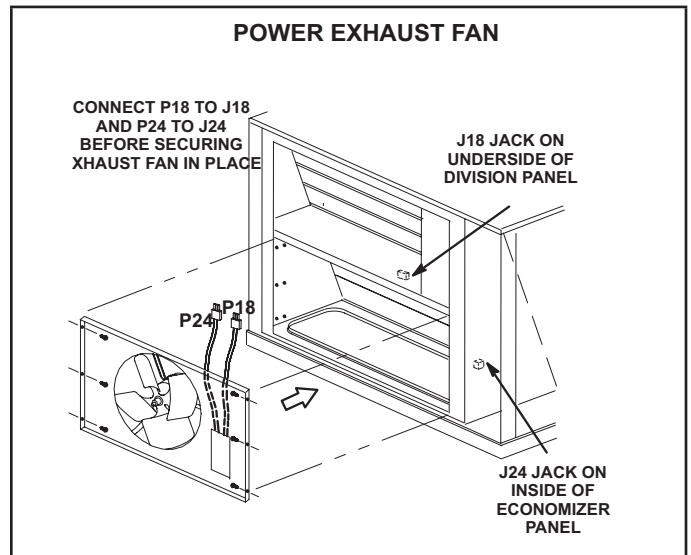


FIGURE 23

**H-Optional UVC Lights**

The germicidal light emits ultraviolet (UVC) energy that has been proven effective in reducing microbial life forms (viruses, bacteria, yeasts, and molds) in the air.

UVC germicidal lamps greatly reduce the growth and proliferation of mold and other bio-aerosols (bacteria and viruses) on illuminated surfaces.

Germicidal lamps are NOT intended to be used for removal of active mold growth. Existing mold growth must be appropriately removed PRIOR to installation of the germicidal lamp.

Refer closely to UVC light installation instruction warnings when servicing units.

**TABLE 11  
ECONOMIZER MODES AND SETPOINT**

Free  Cooling Mode	Free Cooling Setpoint	Field- Provide Sensors	<b>Dampers will modulate to 55°F discharge air (RT6) when outdoor air is suitable:</b>	Permitted Inputs
TEMP	OFFSET	None Needed	Outdoor air temperature (RT17) is less than return air temperature (RT16) by at least the OFFSET value.	0-40°F
TEMP	OAT STPT	None Needed	Outdoor air temperature (RT17) is less than the OAT STPT value.	41-75°F
Remote	Remote	Energy Management System**	Either of the TEMP modes can be used when a network OAS signal is provided by an energy management or building control system, via BACnet, LonTalk, or L Connection. The network can command OAS, NOT OAS, or AUTO. AUTO returns to local control of OAS, which is the selected TEMP mode.	NA
ENTH	DIFF OFFSET	(Two) C7400	Outdoor air enthalpy* (A7) is less than return air enthalpy (A62) by at least the OFFSET value.	0mA-4mA
ENTH	ODE STPT	C7400	Outdoor air enthalpy (A7) is less than free cooling setpoint.	12-19mA
GLOBAL	GLOBAL	24VAC Input Signal	Global input is energized by (P297-9). This setting is also used for outdoor air damper applications. Global input also brings on the blower. (This mode is NOT used when OAS signal is provided via network connection. GLO is only used when a 24VAC signal is used to energize the P297-9 GLO input.)	NA

\*Enthalpy includes effects of both temperature and humidity.

\*\*Energy management systems may require additional field-provided sensors; refer to manufacturer's instructions.

**Outdoor Air Damper and Economizer Operation**

**DIRECT DRIVE DRIVE SYSTEM OPERATION:**

*Note: Direct drive units feature ECM condenser fans that are staged to match the compressor's capacity.*

**Modulating Outdoor Air Damper:**

Damper minimum positions #1 and 2 are adjusted during unit setup to provide minimum fresh air requirements at the indicated supply fan speeds per ASHRAE 62.1.

- Supply fan is off and the outdoor air damper is closed
- Supply fan is on low speed and the outdoor air damper is at minimum position 1
- Supply fan is on high speed and the outdoor air damper is at minimum position 2

**<sup>1</sup>Outdoor Air is Suitable**

*Note: When outdoor air is not suitable during the occupied time period, damper modulates to minimum position. When outdoor air is not suitable during the unoccupied time period, damper modulates closed.*

**1-Economizer With Outdoor Air Suitable**

- Low Cooling Demand -
  - Compressor Off
  - Blower Low
  - Dampers Modulate

High Cooling Demand -

- Compressor Low (036, 048, 060 only)
- Compressor On (024 only)
- Blower High
- Dampers Full Open

**Note - Compressor is energized after damper has been at full open for three minutes.**

**2-No Economizer or Outdoor Air Not Suitable**

- Low Demand -
  - Compressor Low (036,048,060 only)
  - Compressor On (024 only)
  - Blower Low
  - Damper Minimum Position

High Cooling Demand -

- Compressor High (036, 048, 060 only)
- Compressor On (024 only)
- Blower High
- Damper Minimum Position

### J-Needlepoint Bipolar Ionizer (Optional)

The optional, brush-type ionizer produces positive and negative ions to clean air and reduce airborne contaminants. The ionizer was designed to be low maintenance. The device should be checked semi-annually to confirm the brushes are clean for maximum output. The ionizer is located behind on the blower deck to the left of the blower. See FIGURE 25.

- 1 - On the back side of the unit, remove the screw securing the back of the ionizer bracket. See FIGURE 24. Retain the screw to secure the back side of the ionizer bracket.
- 2 - Remove two screws securing the front side of the ionizer bracket and pull out of unit and clean brushes.
- 3 - Replace ionizer in the reverse order it was removed.

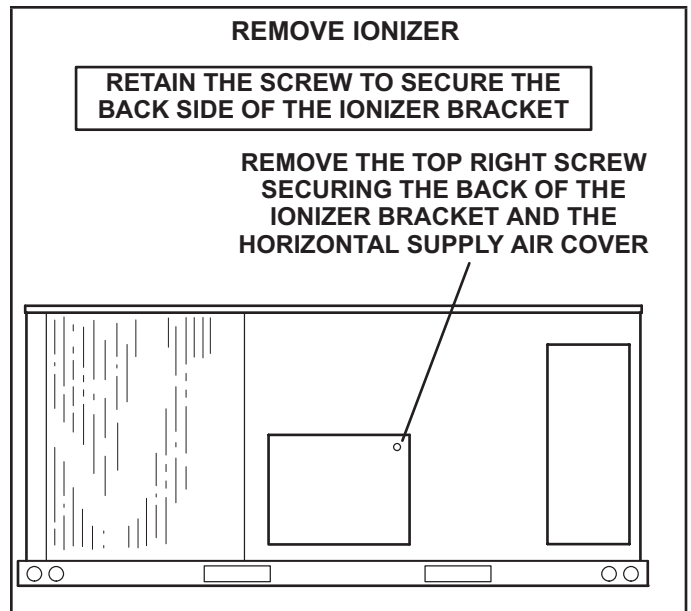


FIGURE 24

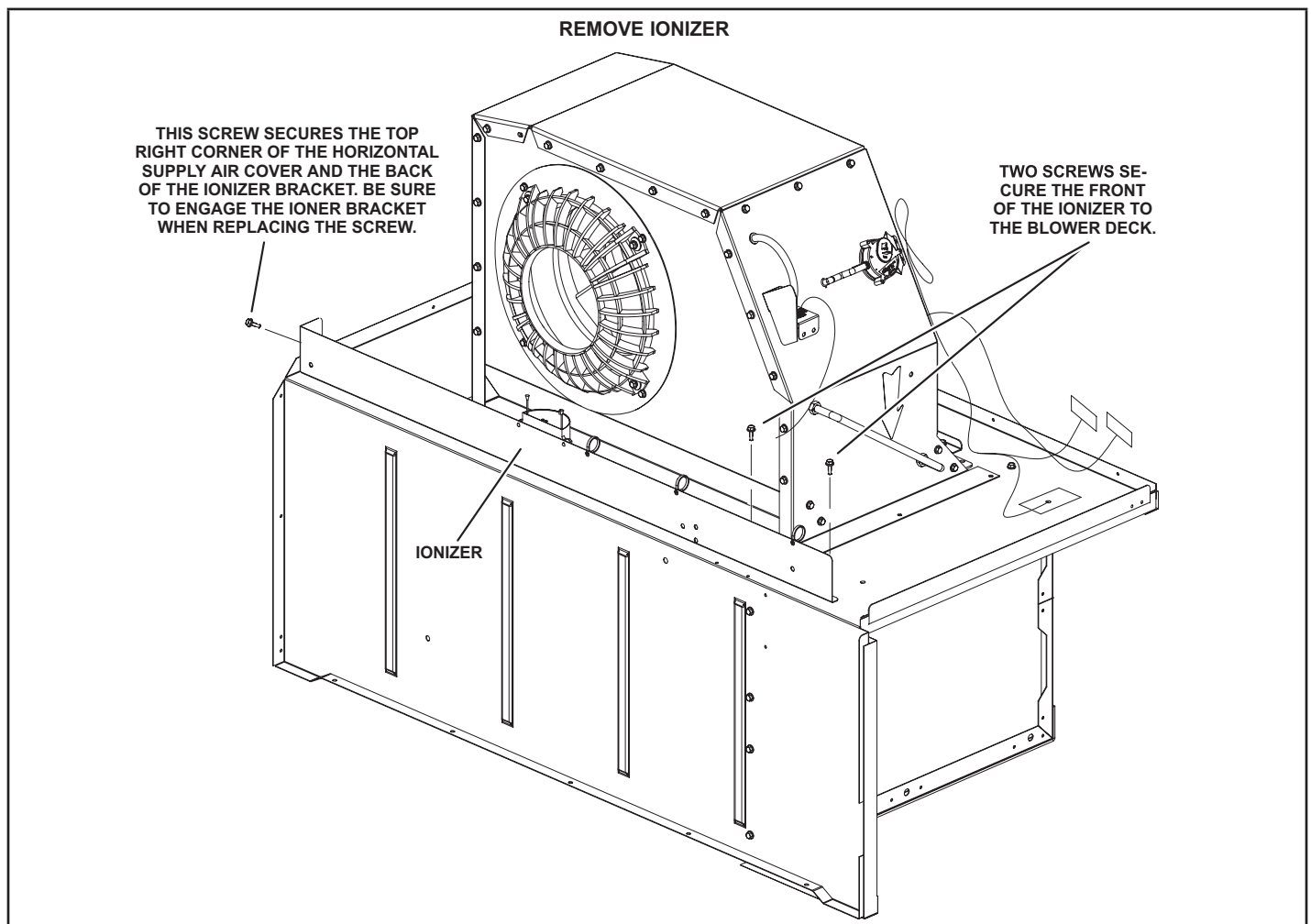
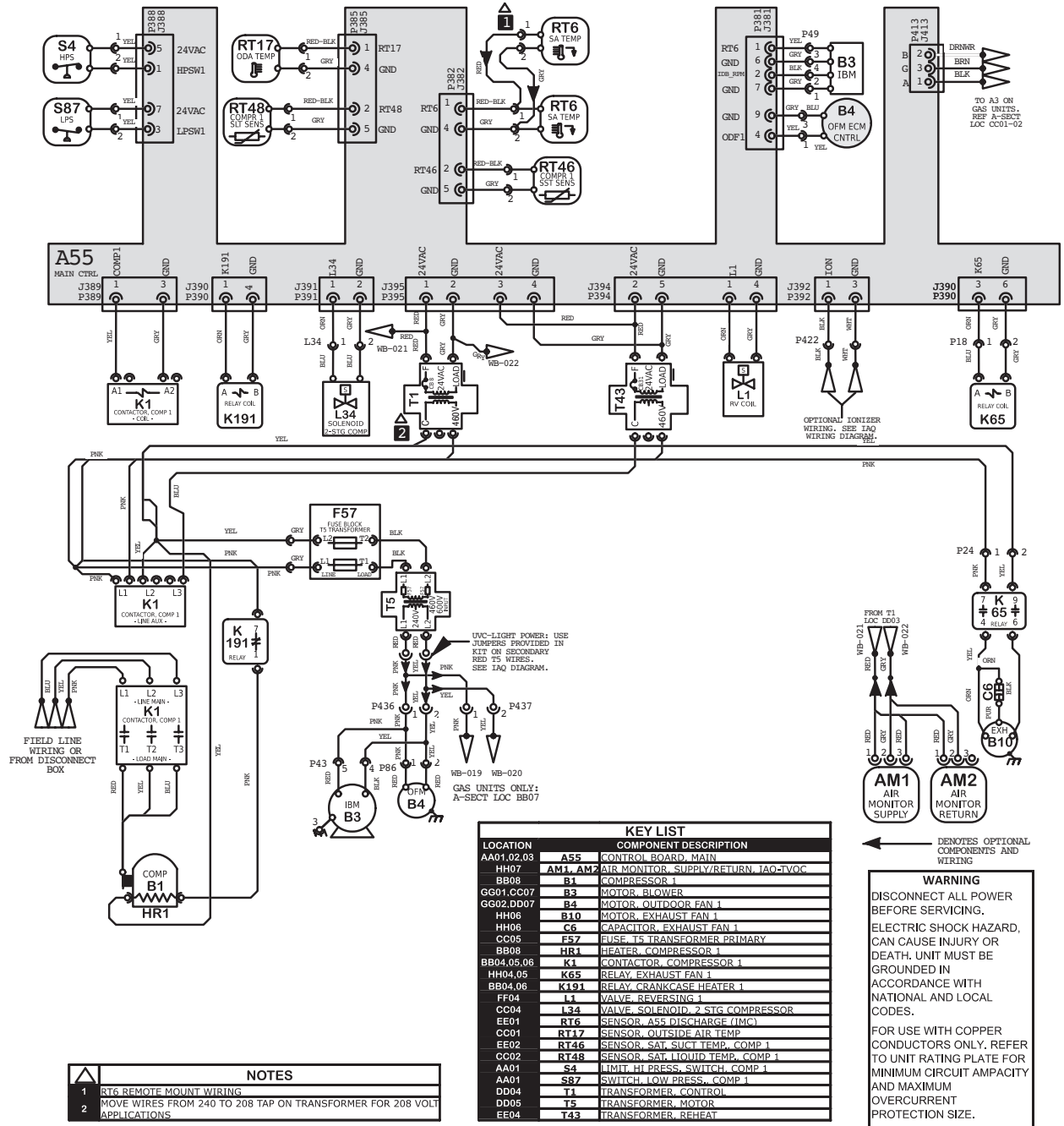


FIGURE 25



# VIII-Wiring Diagrams and Sequence of Operation

## 036H / 060H G, J VOLT ECM MOTOR WITHOUT SCCR



**NOTES**

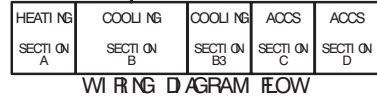
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

LOCATION	COMPONENT DESCRIPTION
AA01.02.03	A55 CONTROL BOARD MAIN
HH07	AM1, AM2 AIR MONITOR SUPPLY/RETURN, IAO-TVOC
BB08	B1 COMPRESSOR 1
GG04.CC07	B3 MOTOR, BLOWER
GG02.D007	B4 MOTOR, OUTDOOR FAN 1
HH06	B10 MOTOR, EXHAUST FAN 1
HH06	C6 CAPACITOR, EXHAUST FAN 1
CC05	F57 FUSE, T5 TRANSFORMER PRIMARY
BB08	HR1 HEATER, COMPRESSOR 1
BB04.05.06	K1 CONTACTOR, COMPRESSOR 1
HH04.05	K65 RELAY, EXHAUST FAN 1
BB04.06	K191 RELAY, CRANKCASE HEATER 1
FF04	L1 VALVE, REVERSING 1
CC04	L34 VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	RT6 SENSOR, ASS DISCHARGE (IMC)
CC01	RT17 SENSOR, OUTSIDE AIR TEMP
EE02	RT46 SENSOR, SAT. SUCT TEMP, COMP 1
CC02	RT48 SENSOR, SAT. LIQUID TEMP, COMP 1
AA01	S4 SWITCH, LOW PRESS, COMP 1
AA01	S87 SWITCH, HIGH PRESS, COMP 1
DD04	T1 TRANSFORMER, CONTROL
DD05	T5 TRANSFORMER, MOTOR
EE04	T43 TRANSFORMER, REHEAT

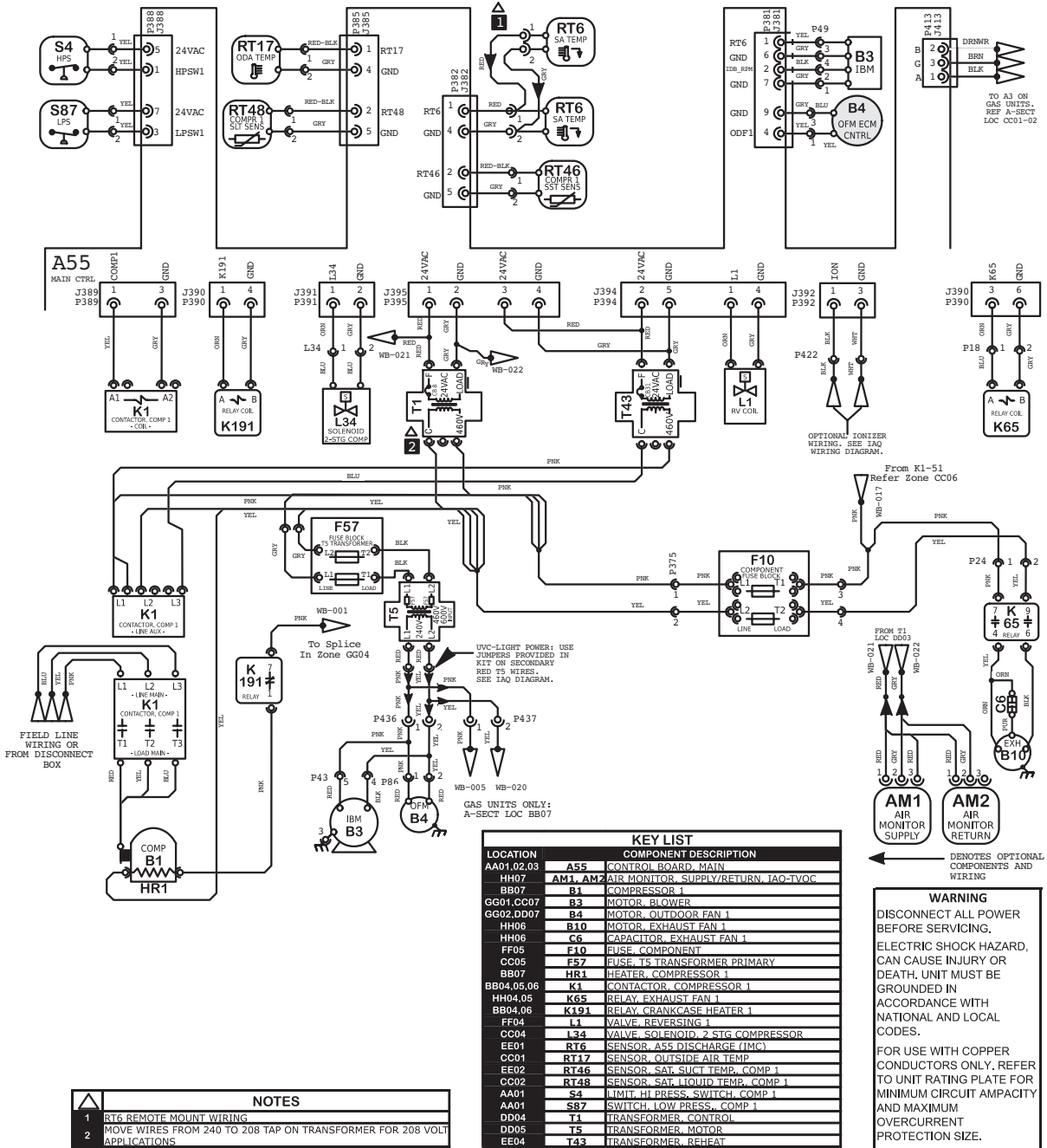
← DENOTES OPTIONAL COMPONENTS AND WIRING

**WARNING**  
DISCONNECT ALL POWER BEFORE SERVICING.  
ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.  
FOR USE WITH COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.  
IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

Model: LDT, LHT 036H - 060H G, J VOLT HEATPUMP - ECM BLOWER WITHOUT HIGHER SCCR  
Voltage: 460V/3~/60Hz (G), 575V/3~/60Hz (J)  
Supersedes N/A Form No. 538196-01 Rev:0



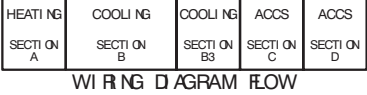
# 036H / 060H G, J VOLT ECM MOTOR WITH SCCR



NOTES	
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

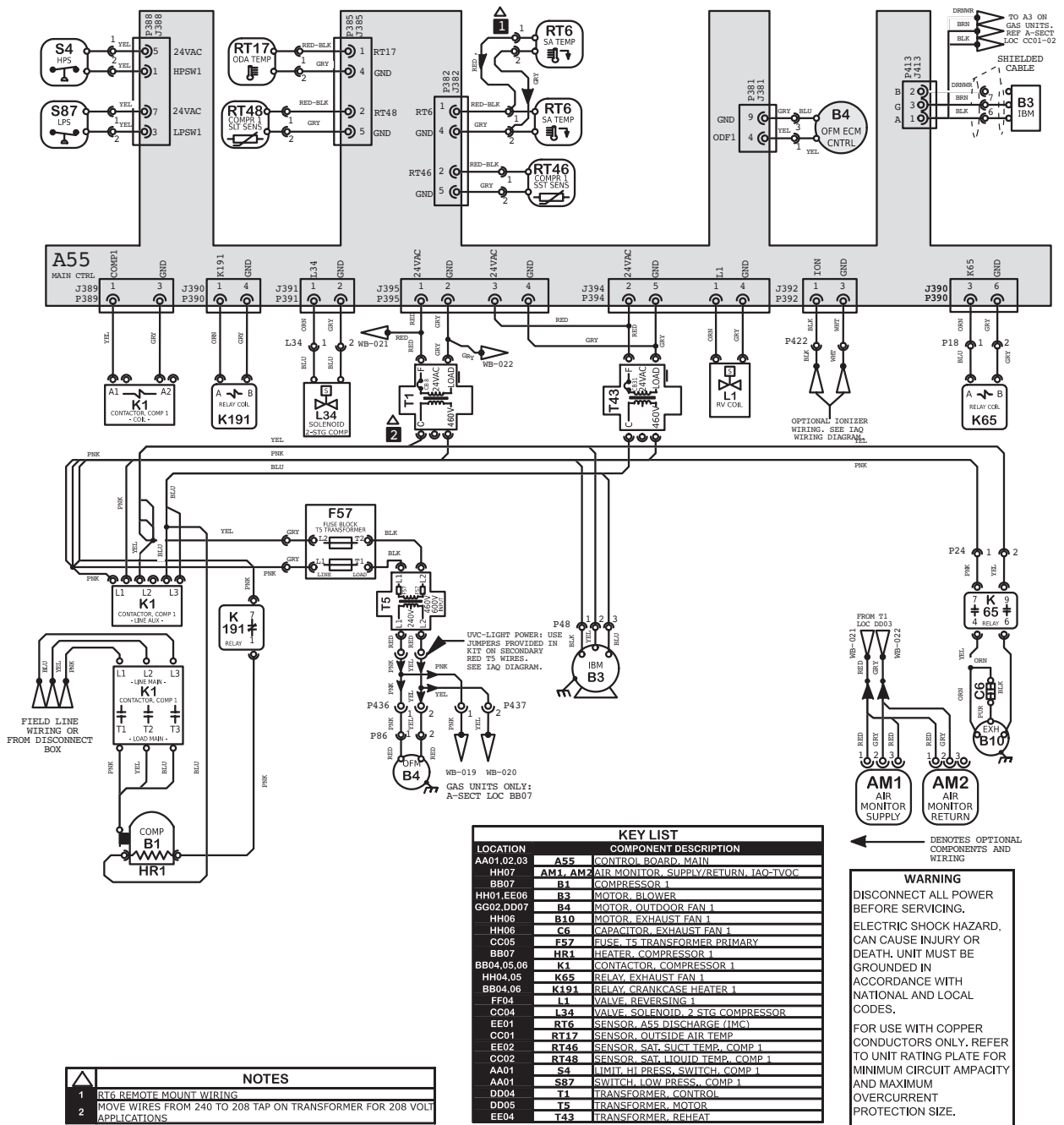
KEY LIST	
LOCATION	COMPONENT DESCRIPTION
AA01.02.03	A55 CONTROL BOARD, MAIN
HH07	AM1, AM2 AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
BB07	B1 COMPRESSOR 1
GG01.CC07	B3 MOTOR, BLOWER
GG02.DD07	B4 MOTOR, OUTDOOR FAN 1
HH06	B10 MOTOR, EXHAUST FAN 1
HH06	C6 CAPACITOR, EXHAUST FAN 1
FF05	F10 FUSE, COMPONENT
CC05	F57 FUSE, T5 TRANSFORMER PRIMARY
BB07	HR1 HEATER, COMPRESSOR 1
BB04.05.06	K1 CONTACTOR, COMPRESSOR 1
HH04.05	K65 RELAY, EXHAUST FAN 1
BB04.06	K191 RELAY, CRANKCASE HEATER 1
FF04	L1 VALVE, REVERSING 1
CC04	L34 VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	RT17 SENSOR, OUTSIDE AIR TEMP
EE02	RT46 SENSOR, SAT. SUCT TEMP, COMP 1
CC02	RT48 SENSOR, SAT. LIQUID TEMP, COMP 1
AA01	S4 LIMIT, HI PRESS, SWITCH, COMP 1
AA01	S87 SWITCH, LOW PRESS, COMP 1
DD04	T1 TRANSFORMER, CONTROL
DD05	T5 TRANSFORMER, MOTOR
EE04	T43 TRANSFORMER, REHEAT

Model: LDT, LHT 036H - 060H G, J VOLT  
 HEATPUMP - ECM BLOWER WITH HIGHER SCCR  
 Voltage: 460V/3-/60Hz (G), 575V/3-/60Hz (J)  
 Supersedes: N/A Form No: 538197-01 Rev: 0



**WARNING**  
 DISCONNECT ALL POWER BEFORE SERVICING.  
 ELECTRIC SHOCK HAZARD. CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.  
 FOR USE WITH COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.  
 IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

048H / 060H G VOLT EBM MOTOR WITHOUT SCCR



**NOTES**

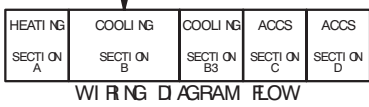
- RT6 REMOTE MOUNT WIRING
- MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

LOCATION	COMPONENT DESCRIPTION
AA01.02.03	A55 CONTROL BOARD, MAIN
HH07	AM1, AM2 AIR MONITOR, SUPPLY/RETURN, IAQ-TVQC
BB07	B1 COMPRESSOR 1
HH01,EE06	B3 MOTOR, BLOWER
GG02,DD07	B4 MOTOR, OUTDOOR FAN 1
HH06	B10 MOTOR, EXHAUST FAN 1
HH06	C6 CAPACITOR, EXHAUST FAN 1
CC05	F57 FUSE, T5 TRANSFORMER PRIMARY
BB07	HR1 HEATER, COMPRESSOR 1
BB04,05,06	K1 CONTACTOR, COMPRESSOR 1
HH04,05	K65 RELAY, EXHAUST FAN 1
BB04,06	K191 RELAY, CRANKCASE HEATER 1
FF04	L1 VALVE, REVERSING 1
CC04	L34 VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	RT6 SENSOR, A55 DISCHARGE (IMC)
CC01	RT17 SENSOR, OUTSIDE AIR TEMP
EE02	RT46 SENSOR, SAT. SUCT TEMP, COMP 1
CC02	RT48 SENSOR, SAT. LIQUID TEMP, COMP 1
AA01	S4 LIMIT, HI PRESS, SWITCH, COMP 1
AA01	S87 SWITCH, LOW PRESS, COMP 1
DD04	T1 TRANSFORMER, CONTROL
DD05	T5 TRANSFORMER, MOTOR
EE04	T43 TRANSFORMER, REHEAT

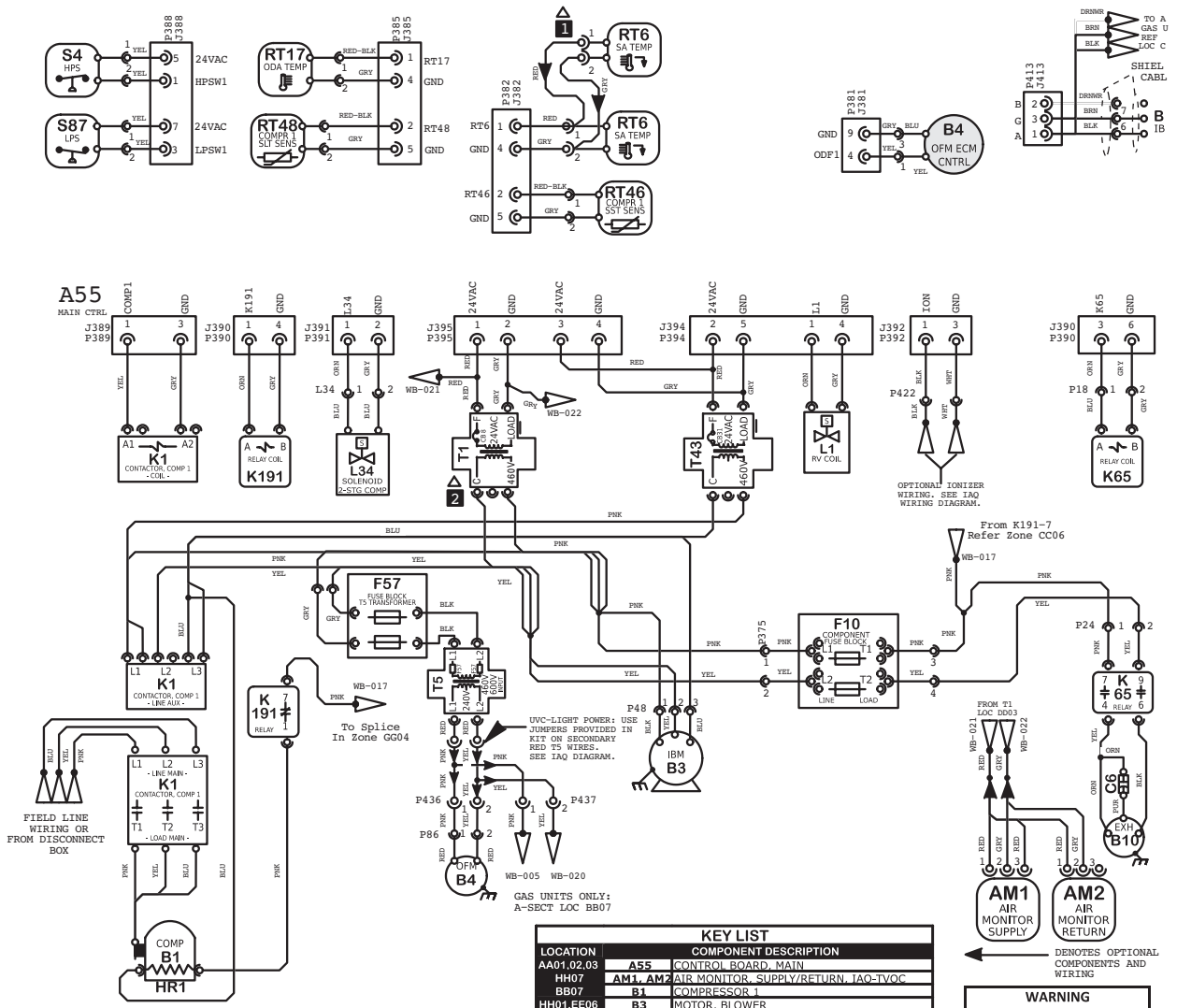
← DENOTES OPTIONAL COMPONENTS AND WIRING

**WARNING**  
DISCONNECT ALL POWER BEFORE SERVICING.  
ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.  
FOR USE WITH COPPER CONDUCTORS ONLY, REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.  
IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

Model: LDT, LHT 048H - 060H G VOLT  
HEATPUMP - EBM BLOWER WITHOUT HIGHER SCCR  
Voltage: 460V/3-/60Hz (G)  
Supersedes:N/A Form No:538200-01 Rev:0



# 048H / 060H G VOLT EBM MOTOR WITH SCCR



NOTES	
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

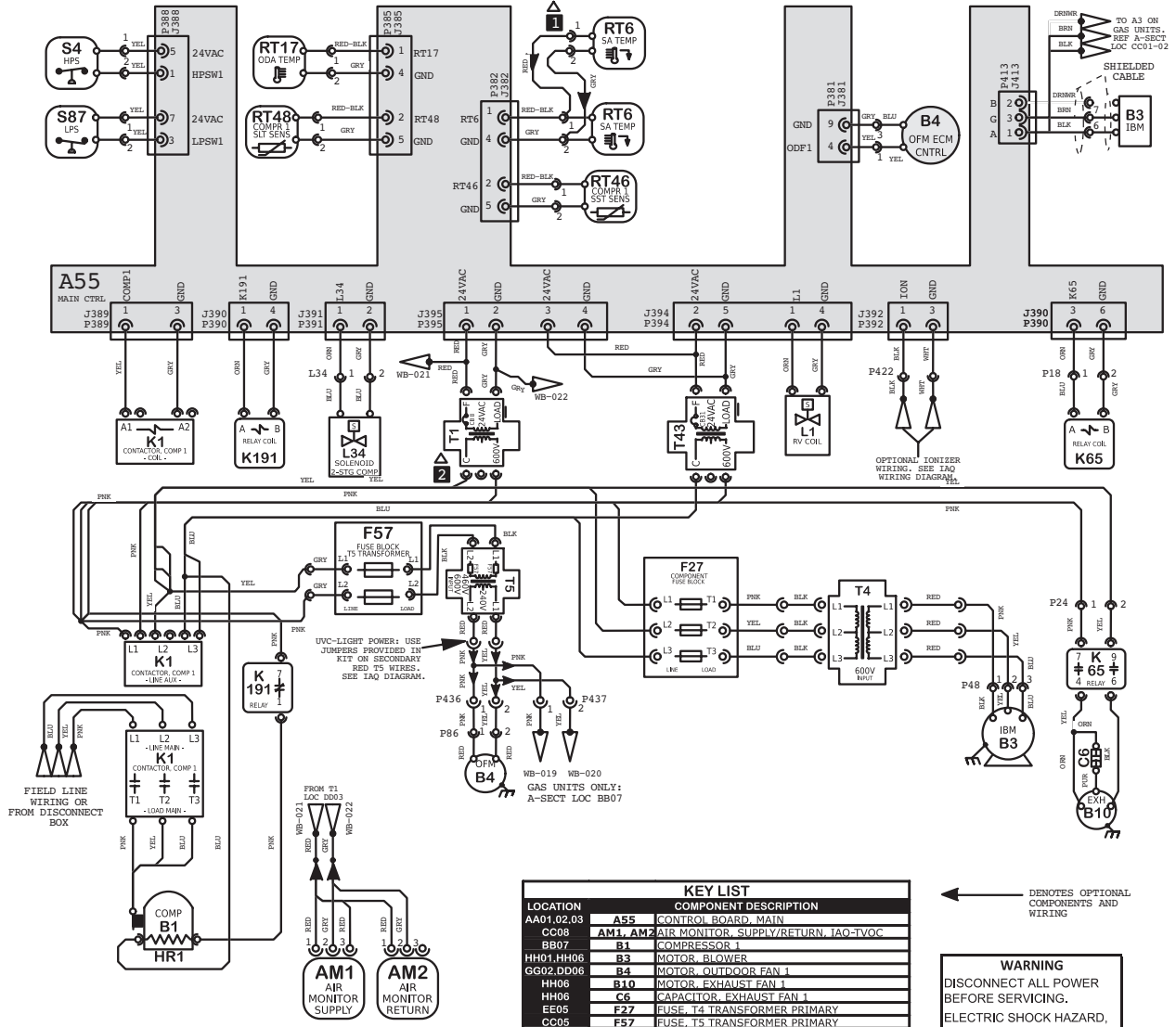
KEY LIST	
LOCATION	COMPONENT DESCRIPTION
AA01,02,03	A55 CONTROL BOARD, MAIN
HH07	AM1, AM2 AIR MONITOR, SUPPLY/RETURN, IAO-IVOC
BB07	B1 COMPRESSOR 1
HH01,EE06	B3 MOTOR, BLOWER
GG02,DD07	B4 MOTOR, OUTDOOR FAN 1
HH06	B10 MOTOR, EXHAUST FAN 1
HH06	C6 CAPACITOR, EXHAUST FAN 1
FF05	F10 FUSE, COMPONENT
CC05	F57 FUSE, T5 TRANSFORMER PRIMARY
BB07	HR1 HEATER, COMPRESSOR 1
BB04,05,06	K1 CONTACTOR, COMPRESSOR 1
HH04,05	K65 RELAY, EXHAUST FAN 1
BB04,06	K191 RELAY, CRANKCASE HEATER 1
FF04	L1 VALVE, REVERSING 1
CC04	L34 VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	RT6 SENSOR, A55 DISCHARGE (IMC)
CC01	RT17 SENSOR, OUTSIDE AIR TEMP
EE02	RT46 SENSOR, SAT. SUCT. TEMP., COMP 1
CC02	RT48 SENSOR, SAT. LIQUID TEMP., COMP 1
AA01	S4 LIMIT, HI PRESS. SWITCH, COMP 1
AA01	S87 SWITCH, LOW PRESS., COMP 1
DD04	T1 TRANSFORMER, CONTROL
DD05	T5 TRANSFORMER, MOTOR
EE04	T43 TRANSFORMER, REHEAT

Model: LDT, LHT 048H - 060H G VOLT  
 HEATPUMP - EBM BLOWER WITH HIGHER SCCR  
 Voltage: 460V/3~60Hz (G)  
 Supersedes: N/A Form No: 538201-01 Rev: 0



**WARNING**  
 DISCONNECT ALL POWER BEFORE SERVICING.  
 ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.  
 FOR USE WITH COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.  
 IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

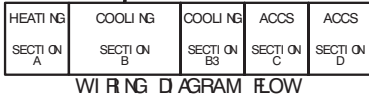
# 048H / 060H J VOLT EBM MOTOR WITHOUT SCCR



LOCATION	COMPONENT DESCRIPTION
AA01.02.03	<b>A55</b> CONTROL BOARD, MAIN
CC08	<b>AM1, AM2</b> AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
BB07	<b>B1</b> COMPRESSOR 1
HH01.HH06	<b>B3</b> MOTOR, BLOWER
GG02.DD06	<b>B4</b> MOTOR, OUTDOOR FAN 1
HH06	<b>B10</b> MOTOR, EXHAUST FAN 1
HH06	<b>C6</b> CAPACITOR, EXHAUST FAN 1
EE05	<b>F27</b> FUSE, T4 TRANSFORMER PRIMARY
CC05	<b>F57</b> FUSE, T5 TRANSFORMER PRIMARY
BB07	<b>HR1</b> HEATER, COMPRESSOR 1
BB04.05.06	<b>K1</b> CONTACTOR, COMPRESSOR 1
HH04.05	<b>K65</b> RELAY, EXHAUST FAN 1
BB04.06	<b>K191</b> RELAY, CRANKCASE HEATER 1
FF04	<b>L1</b> VALVE, REVERSING 1
CC04	<b>L34</b> VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	<b>RT6</b> SENSOR, A55 DISCHARGE (IMC)
CC01	<b>RT17</b> SENSOR, OUTSIDE AIR TEMP
EE02	<b>RT46</b> SENSOR, SAT. SUCT TEMP, COMP 1
CC02	<b>RT48</b> SENSOR, SAT. LIQUID TEMP, COMP 1
AA01	<b>S4</b> LIMIT, HI PRESS, SWITCH, COMP 1
AA01	<b>S87</b> SWITCH, LOW PRESS, COMP 1
DD04	<b>T1</b> TRANSFORMER, CONTROL
GG05	<b>T4</b> TRANSFORMER, BLOWER
DD05	<b>T5</b> TRANSFORMER, OUTDOOR FAN 1
EE04	<b>T43</b> TRANSFORMER, REHEAT

NOTES	
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

Model: LDT, LHT 048H - 060H J VOLT  
 HEATPUMP - EBM BLOWER WITHOUT HIGHER SCCR  
 Voltage: 575V/3-/60Hz (J)  
 Supersedes: N/A Form No: 538202-01 Rev: 0



← DENOTES OPTIONAL COMPONENTS AND WIRING

**WARNING**

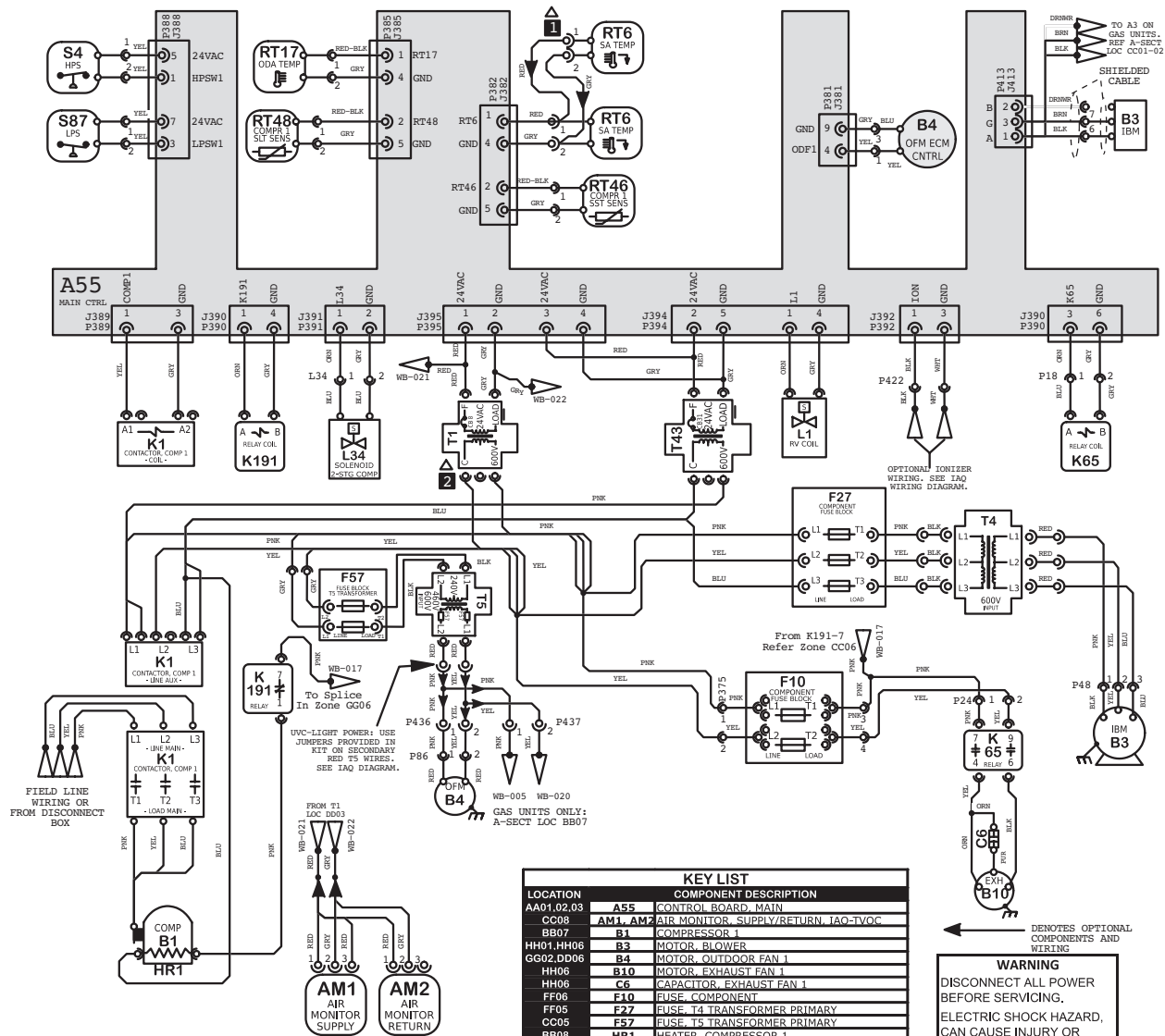
DISCONNECT ALL POWER BEFORE SERVICING.

ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

FOR USE WITH COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.

IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

# 048H / 060H J VOLT EBM MOTOR WITH SCCR



KEY LIST	
LOCATION	COMPONENT DESCRIPTION
AA01,02,03	A55 CONTROL BOARD, MAIN
CC08	AM1, AM2 AIR MONITOR, SUPPLY/RETURN, JAO-TVOC
BB07	B1 COMPRESSOR 1
HH04,HH06	B2 MOTOR, BLOWER
GG02,DD08	B4 MOTOR, OUTDOOR FAN 1
HH08	B10 MOTOR, EXHAUST FAN 1
HH06	C6 CAPACITOR, EXHAUST FAN 1
FF05	F10 FUSE, COMPONENT
CC05	F27 FUSE, T4 TRANSFORMER PRIMARY
BB08	F57 FUSE, T5 TRANSFORMER PRIMARY
BB08	HR1 HEATER, COMPRESSOR 1
BB04,05,06	K1 CONTACTOR, COMPRESSOR 1
HH04,06	K65 RELAY, EXHAUST FAN 1
BB04,06	K191 RELAY, CRANKCASE HEATER 1
FF04	L1 VALVE, REVERSING 1
CC04	L34 VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	RT6 SENSOR, A55 DISCHARGE (IMC)
CC01	RT17 SENSOR, OUTSIDE AIR TEMP
EE02	RT46 SENSOR, SAT. SUCT. TEMP, COMP 1
CC02	RT48 SENSOR, SAT. LIQUID TEMP, COMP 1
AA01	S4 LIMIT, HI PRESS, SWITCH, COMP 1
AA01	S87 SWITCH, LOW PRESS., COMP 1
DD04	T1 TRANSFORMER, CONTROL
HH05	T4 TRANSFORMER, BLOWER
DD05	T5 TRANSFORMER, OUTDOOR FAN 1
EE04	T43 TRANSFORMER, REHEAT

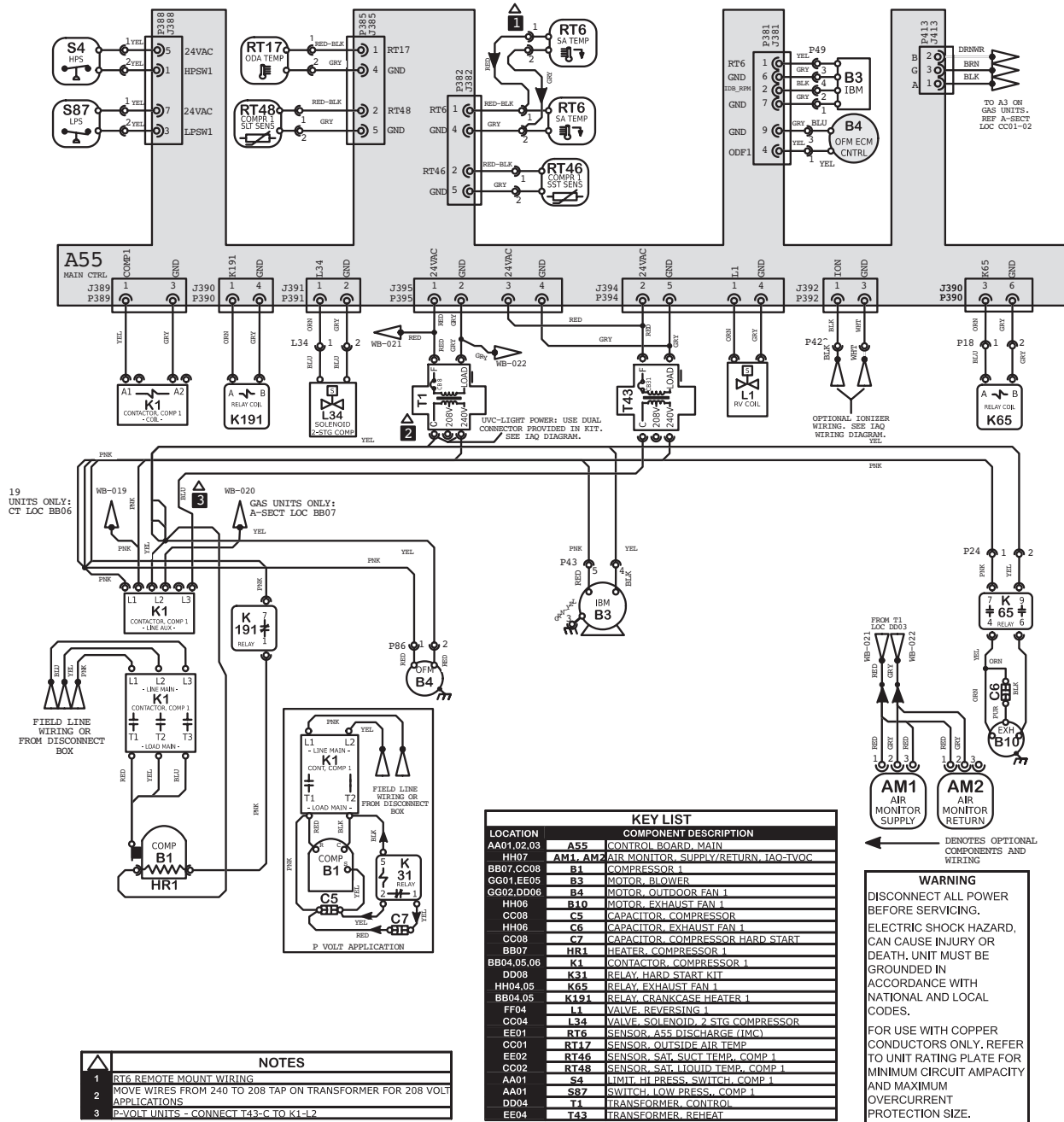
- NOTES**
- RT6 REMOTE MOUNT WIRING
  - MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

Model: LDT, LHT 048H - 060H J VOLT  
 HEATPUMP - EBM BLOWER WITH HIGHER SCCR  
 Voltage: 575V/3~/60Hz (J)  
 Supersedes:N/A Form No:538203-01 Rev:0



**WARNING**  
 DISCONNECT ALL POWER BEFORE SERVICING. ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.  
 FOR USE WITH COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.  
 IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

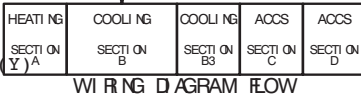
# 036H / 060H P, Y VOLT ECM MOTOR WITHOUT SCCR



- NOTES**
- 1 RT6 REMOTE MOUNT WIRING
  - 2 MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS
  - 3 P-VOLT UNITS - CONNECT T43-C TO K1-L2

LOCATION	COMPONENT DESCRIPTION
AA01,02,03	A55 CONTROL BOARD, MAIN
HH07	AM1, AM2 AIR MONITOR, SUPPLY/RETURN, IAO-TVOC
BB07, CC08	B1 COMPRESSOR 1
GG01, EE05	B3 MOTOR, BLOWER
GG02, DD08	B4 MOTOR, OUTDOOR FAN 1
HH06	B10 MOTOR, EXHAUST FAN 1
CC08	C5 CAPACITOR, COMPRESSOR
HH06	C6 CAPACITOR, EXHAUST FAN 1
CC08	C7 CAPACITOR, COMPRESSOR HARD START
BB07	HR1 HEATER, COMPRESSOR 1
BB04,05,06	K1 CONTACTOR, COMPRESSOR 1
DD08	K31 RELAY, HARD START KIT
HH04,05	K65 RELAY, EXHAUST FAN 1
BB04,05	K191 RELAY, CRANKCASE HEATER 1
FF04	L1 VALVE, REVERSING 1
CC04	L34 VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	RT6 SENSOR, A55 DISCHARGE (IMC)
CC01	RT17 SENSOR, OUTSIDE AIR TEMP
EE02	RT46 SENSOR, SAT. SUCT. TEMP, COMP 1
CC02	RT48 SENSOR, SAT. LIQUID TEMP, COMP 1
AA01	S4 LIMIT, HI PRESS. SWITCH, COMP 1
AA01	S87 SWITCH, LOW PRESS. COMP 1
DD04	T1 TRANSFORMER, CONTROL
EE04	T43 TRANSFORMER, REHEAT

Model: LDT, LHT 024H - 060H P, Y VOLT  
 HEATPUMP - ECM BLOWER WITHOUT HIGHER SCCR  
 Voltage: 208-240V/1~/60Hz(P), 208-240V/3~/60Hz  
 Supersedes N/A Form No: 538194-01 Rev: 0



**WARNING**

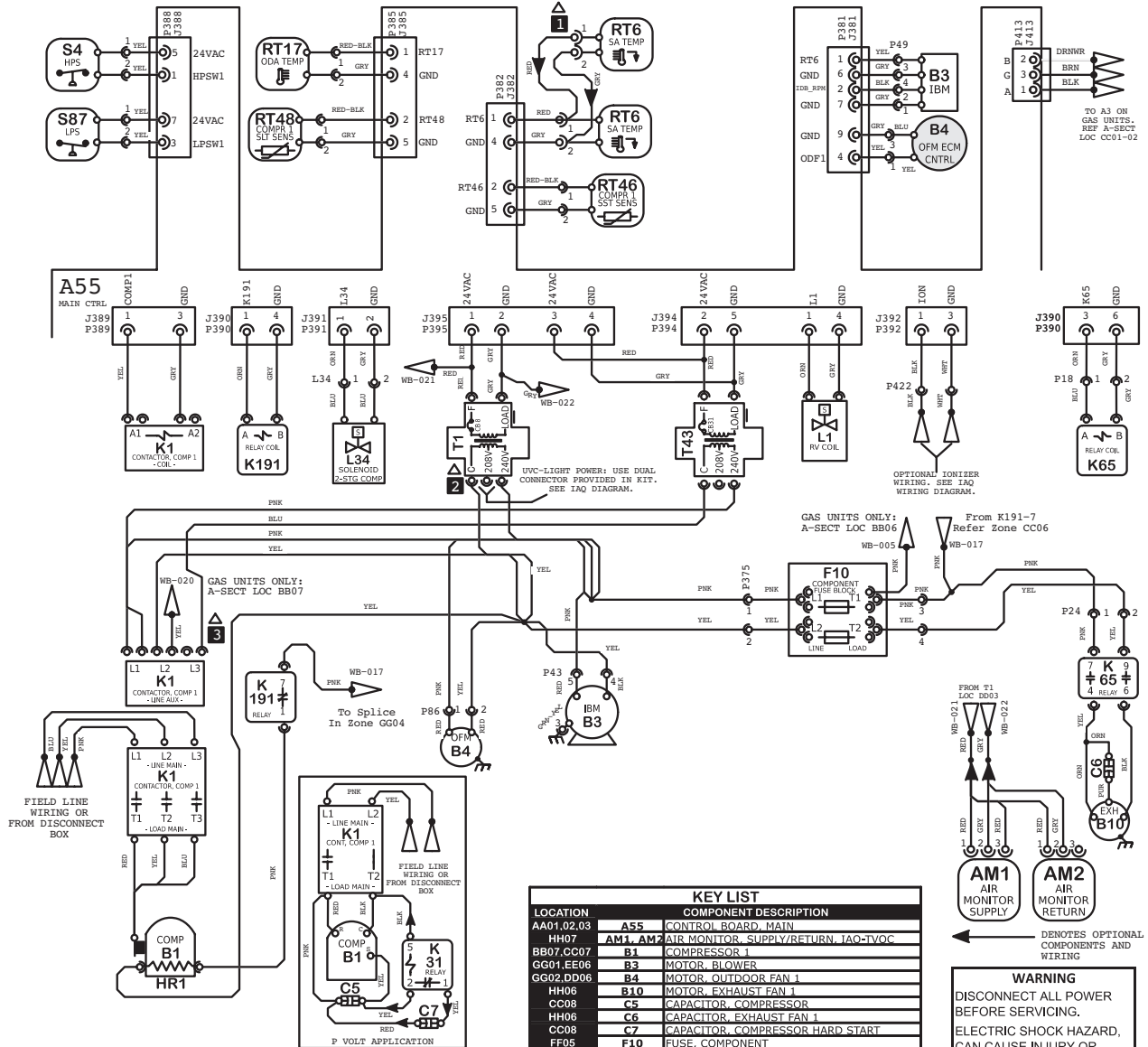
DISCONNECT ALL POWER BEFORE SERVICING.

ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

FOR USE WITH COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.

IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

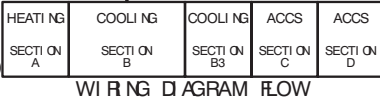
# 036H / 060H P, Y VOLT ECM MOTOR WITH SCCR



NOTES	
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS
3	P-VOLT UNITS - CONNECT T43-C TO K1-L2

KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
AA01.02.03	A55	CONTROL BOARD, MAIN
HH07	AM1, AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
BB07, CC07	B1	COMPRESSOR 1
GG04, EE08	B3	MOTOR, BLOWER
GG02, DD08	B4	MOTOR, OUTDOOR FAN 1
HH06	B10	MOTOR, EXHAUST FAN 1
CC08	C5	CAPACITOR, COMPRESSOR
HH06	C6	CAPACITOR, EXHAUST FAN 1
CC08	C7	CAPACITOR, COMPRESSOR HARD START
FF05	F10	FUSE, COMPONENT
BB07	HR1	HEATER, COMPRESSOR 1
BB04.05.06	K1	CONTACTOR, COMPRESSOR 1
DD08	K31	RELAY, HARD START KIT
HH04.05	K65	RELAY, EXHAUST FAN 1
BB04.06	K191	RELAY, CRANKCASE HEATER 1
FF04	L1	VALVE, REVERSING 1
CC04	L34	VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
EE02	RT46	SENSOR, SAT. SUCT TEMP, COMP 1
CC02	RT48	SENSOR, SAT. LIQUID TEMP, COMP 1
AA01	S4	LIMIT HIT PRESS. SWITCH, COMP 1
AA01	S7	SWITCH, LOW PRESS., COMP 1
DD04	T1	TRANSFORMER, CONTROL
EE04	T43	TRANSFORMER, REHEAT

Model: LDT, LHT 024H - 060H P, Y VOLT  
HEATPUMP - ECM BLOWER WITH HIGHER SCCR  
Voltage: 208-240V/1~/60Hz(P), 208-240V/3~/60Hz(Y)  
Supersedes: N/A Form No: 538195-01 Rev: 0

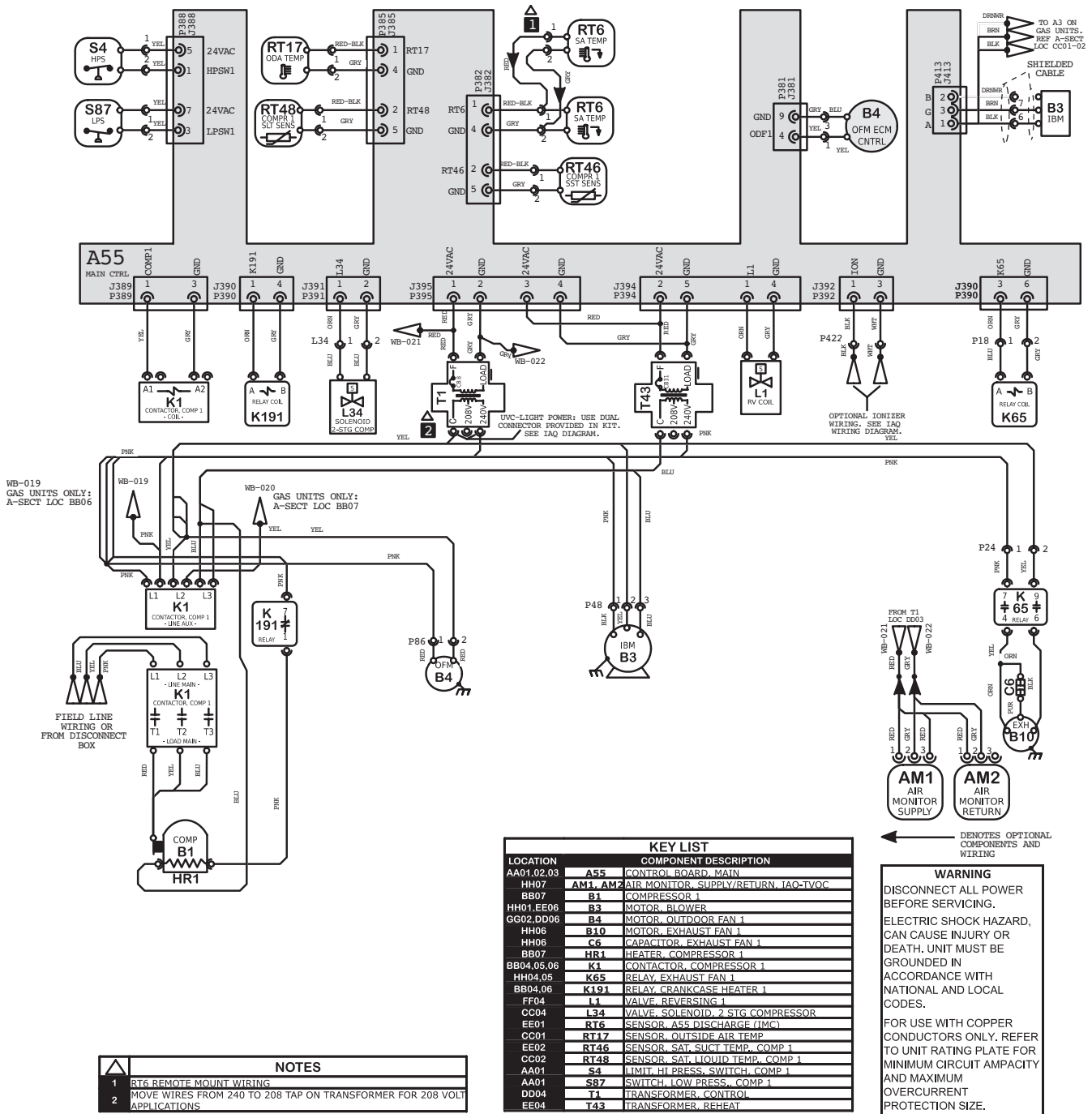


← DENOTES OPTIONAL COMPONENTS AND WIRING

**WARNING**  
DISCONNECT ALL POWER BEFORE SERVICING.  
ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.  
FOR USE WITH COPPER CONDUCTORS ONLY, REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.  
IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.



# 048H / 060H Y VOLT EMB MOTOR WITHOUT SCCR



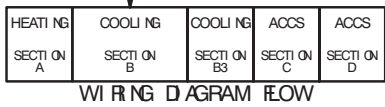
KEY LIST		
LOCATION	COMPONENT	DESCRIPTION
AA01.02.03	A55	CONTROL BOARD, MAIN
HH07	AM1, AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
BB07	B1	COMPRESSOR 1
HH01.EE06	B3	MOTOR, BLOWER
GG02.DD06	B4	MOTOR, OUTDOOR FAN 1
HH06	B10	MOTOR, EXHAUST FAN 1
HH08	C6	CAPACITOR, EXHAUST FAN 1
BB07	HR1	HEATER, COMPRESSOR 1
BB04.05.06	K1	CONTACTOR, COMPRESSOR 1
HH04.05	K65	RELAY, EXHAUST FAN 1
BB04.06	K191	RELAY, CRANKCASE HEATER 1
FF04	L1	VALVE, REVERSING 1
CC04	L34	SOLENOID, 2 STG COMPRESSOR
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
EE02	RT46	SENSOR, SAT. SUCT. TEMP, COMP 1
CC02	RT48	SENSOR, SAT. LIQUID TEMP, COMP 1
AA01	S4	LIMIT HI PRESS. SWITCH, COMP 1
AA01	S87	LIMIT LOW PRESS. COMP 1
DD04	T1	TRANSFORMER, CONTROL
EE04	T43	TRANSFORMER, REHEAT

NOTES	
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

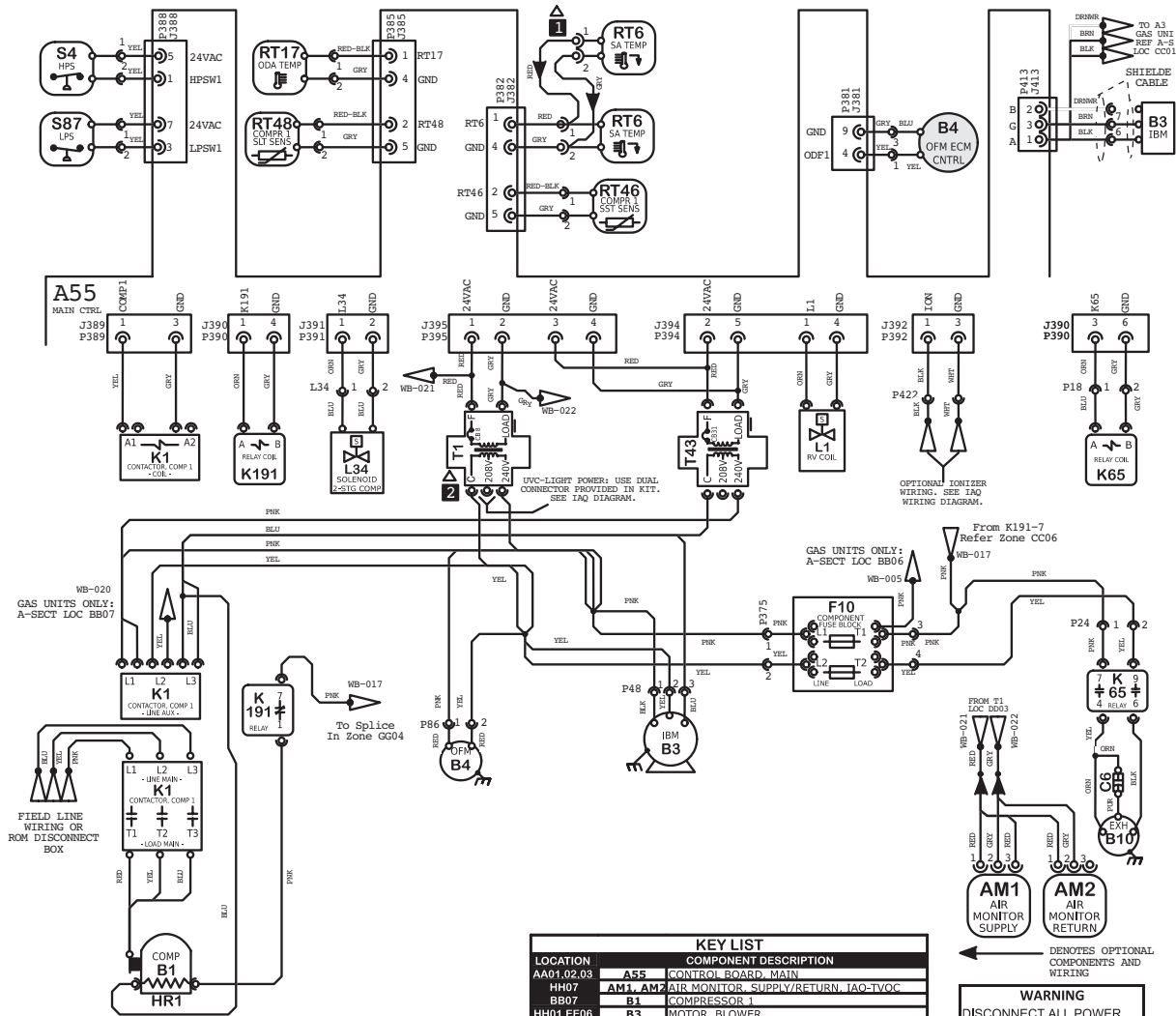
← DENOTES OPTIONAL COMPONENTS AND WIRING

**WARNING**  
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ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.  
FOR USE WITH COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.  
IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

Model: LDT, LHT 048H - 060H Y VOLT  
HEATPUMP - EBM BLOWER WITHOUT HIGHER SCCR  
Voltage: 208-240V/3-/60Hz (Y)  
Supersedes N/A Form No: 538198-01 Rev: 0



# 048H / 060H Y VOLT EBM MOTOR WITH SCCR



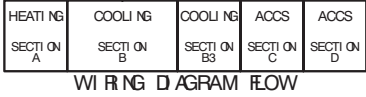
WB-020  
GAS UNITS ONLY:  
A-SECT LOC BB07

FIELD LINE  
WIRING OR  
FROM DISCONNECT  
BOX

NOTES	
1	RTG REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

KEY LIST	
LOCATION	COMPONENT DESCRIPTION
AA01.02.03	A55 CONTROL BOARD MAIN
HH07	AM1, AM2 AIR MONITOR SUPPLY/RETURN, IAO-TVOC
BB07	B1 COMPRESSOR 1
HH01.EE06	B3 MOTOR, BLOWER
GG02.DD06	B4 MOTOR, OUTDOOR FAN 1
HH06	B10 MOTOR, EXHAUST FAN 1
NH06	C6 CAPACITOR, EXHAUST FAN 1
FF05	F10 FUSE, COMPONENT
BB07	HR1 HEATER, COMPRESSOR 1
BB04.05.06	K1 CONTACTOR, COMPRESSOR 1
HH04.05	K65 RELAY, EXHAUST FAN 1
BB04.06	K191 RELAY, CRANKCASE HEATER 1
FF04	L1 VALVE, REVERSING 1
CC04	L34 VALVE, SOLENOID, 2 STG COMPRESSOR
EE01	RT6 SENSOR, SAT, SUCT TEMP, COMP 1
CC01	RT17 SENSOR, OUTSIDE AIR TEMP
EE02	RT46 SENSOR, SAT, LIQUID TEMP, COMP 1
CC02	RT48 SENSOR, SAT, LIQUID TEMP, COMP 1
AA01	S4 LIMIT, HI PRESS, SWITCH, COMP 1
AA01	S87 SWITCH, LOW PRESS, COMP 1
DD04	T1 TRANSFORMER, CONTROL
EE04	T43 TRANSFORMER, REHEAT

Model: LDT, LHT 048H - 060H Y VOLT  
HEATPUMP - EBM BLOWER WITH HIGHER SCCR  
Voltage: 208-240V/3~/60Hz (Y)  
Supersedes N/A Form No: 538199-01 Rev: 0



← DENOTES OPTIONAL COMPONENTS AND WIRING

**WARNING**  
DISCONNECT ALL POWER BEFORE SERVICING.  
ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.  
FOR USE WITH COPPER CONDUCTORS ONLY. REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE.  
IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

## Cooling Sequence of Operation

### Power:

- 1- Line voltage energizes transformer T1. T1 provides 24VAC power to the A55 Unit Controller. A55 provides 24VAC to the unit cooling, heating and blower controls.
- 2- Line voltage provides voltage to compressor crankcase heater relay K191-1 N.C. contacts, compressor contactor K1, blower motor B3, and outdoor fan motor B4 (on G volt units line voltage is supplied to two fuses F27, transformer T4, blower motor B3, and outdoor fan motor B4).

### Blower Operation:

- 3- The A55 Unit Controller receives a demand from thermostat terminal G. A55 energizes blower motor B3 via programmed motor settings. Motor settings are field-adjustable.

### First Stage Cooling

- 4- A55 Unit Controller receives Y1 and G cooling demand.
- 5- After A55 proves n.c. low pressure switch S87, n.c. SST, and n.c. high pressure switch S4, reversing valve (L1), compressor contactor K1 and Blower B3 are energized.
- 6- N.O. contacts K1-1 close energizing the compressor B1 (Low for 036, 048, -060 units and On for -024 units)
- 7- SLT prove below 62°F. A55 energized outdoor fan motor B4 to modulate. If above 65°F, outdoor fan motor B4 will be set to low speed.

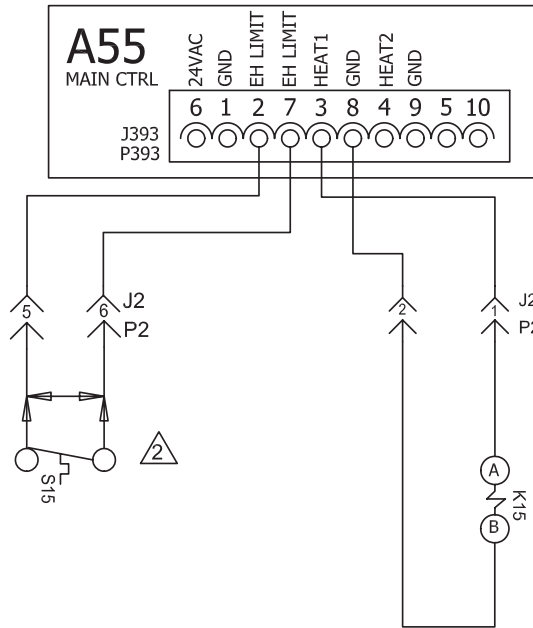
### Second Stage Cooling

- 8- A55 received a Y2 and G cooling demand and energizes blower B3 on high speed.
- 9- A55 Energizes compressor solenoid L34, switching compressor to high speed (036, 048 and 060 units only)

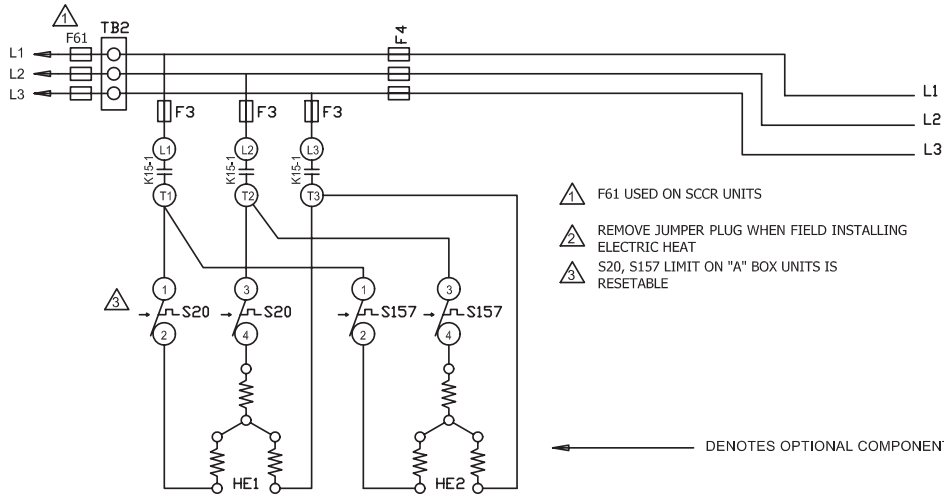
### Power Exhaust Fan Operation

- 10- A55 receives a position feedback signal from the economizer damper motor and energizes exhaust fan relay K65 with 24VAC at 50% outside air damper open (adjustable).
- 11- N.O. contact K65-1 & 2 close, energizing exhaust fan motor B10.

# E1EH 7.5, 15, 22.5 - 30 - G, J VOLT



DESCRIPTION	
KEY	DESCRIPTION
A55	PANEL, MAIN
F3	FUSE, ELECTRIC HEAT
F4	FUSE, UNIT
F61	FUSE, UNIT - SCCR
HE -1	ELEMENT, ELECTRIC HEAT 1
J2	JACK, ELECTRIC HEAT
K15-1	CONTACTOR, ELECTRIC HEAT 1
P2	PLUG, ELECTRIC HEAT
P393	PLUG, ELECTRIC HEAT CONTROL
S15	SWITCH, LIMIT PRIMARY ELECTRIC HEAT
S20	SWITCH, LIMIT SECONDARY ELECTRIC HEAT 1
S157	SWITCH, LIMIT SECONDARY ELECTRIC HEAT 2
TB2	TERMINAL STRIP, UNIT

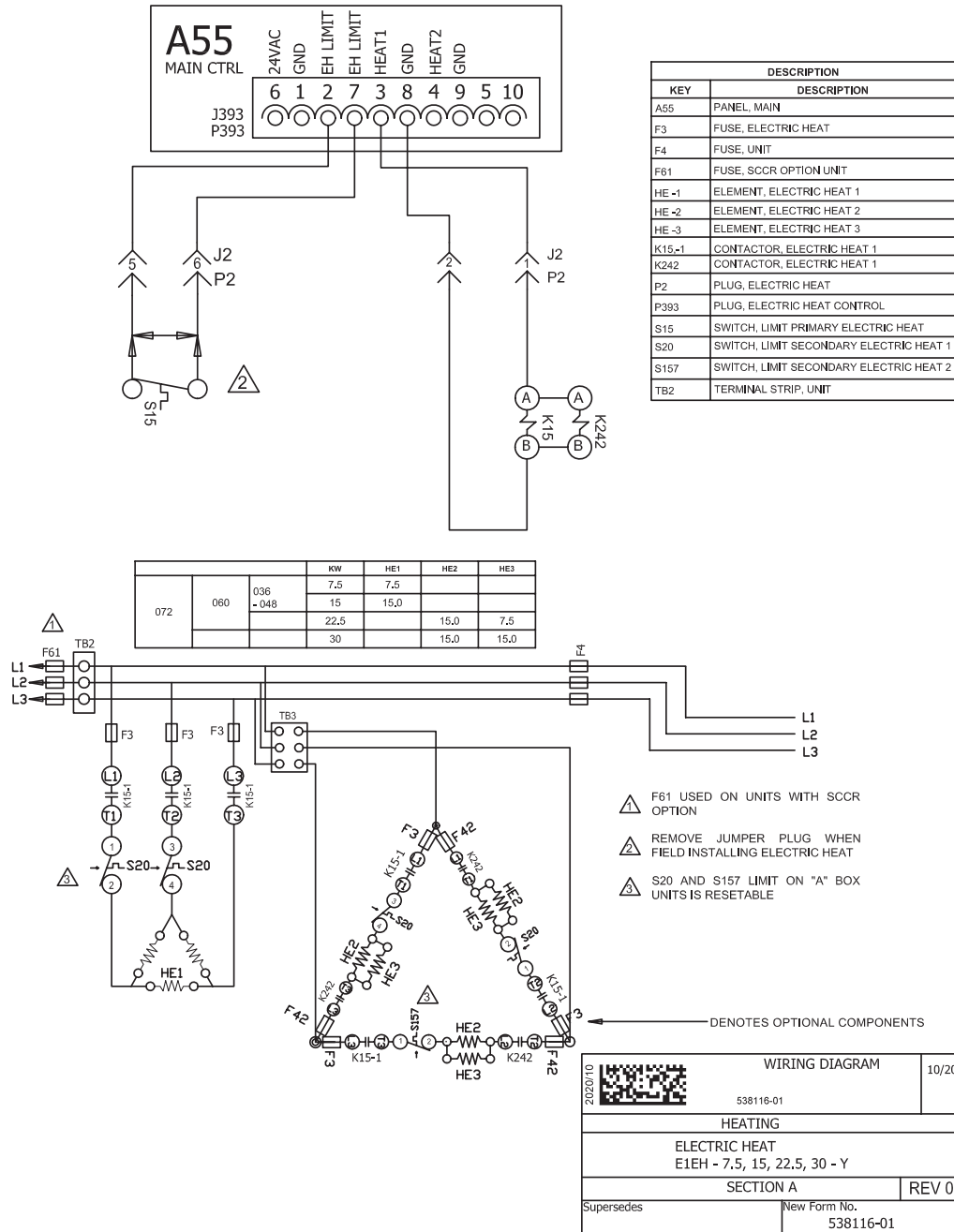


072	060	036 - 048	KW	HE1	HE2
			7.5	7.5	
			15	15	
			22.5	15	7.5
			30	15	15

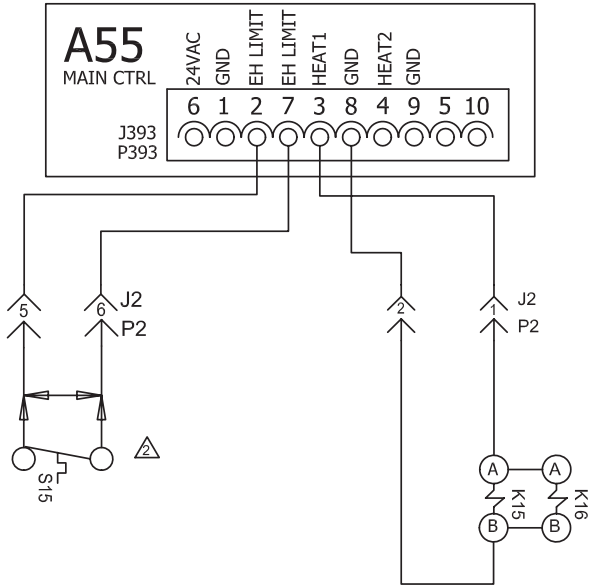
- F61 USED ON SCCR UNITS
  - REMOVE JUMPER PLUG WHEN FIELD INSTALLING ELECTRIC HEAT
  - S20, S157 LIMIT ON "A" BOX UNITS IS RESETTABLE
- ← DENOTES OPTIONAL COMPONENTS

2020/10	WIRING DIAGRAM	10/20
	538117-01	
HEATING		
ELECTRIC HEAT		
E1EH - 7.5, 15, 22.5, 30 - G, J		
SECTION A		REV 0
Supersedes	New Form No. 538117-01	
© 2010	Lennox Commercial	

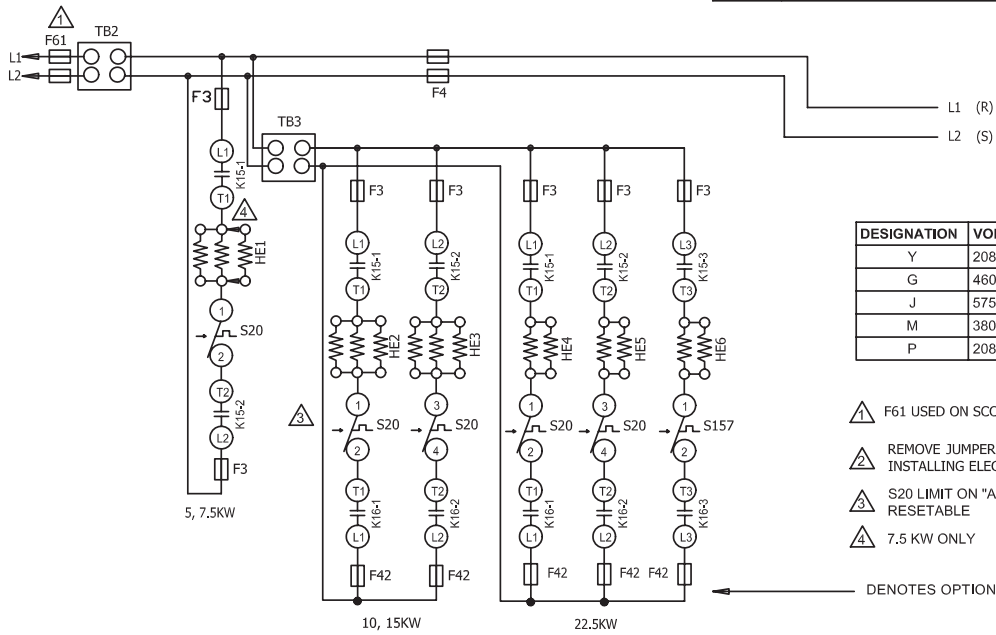
# E1EH 7.5, 15, 22.5 - 30 - Y VOLTAGE



# E1EH 5, 7.5, 10, 15, 22.5 - P VOLTAGE



DESCRIPTION	
KEY	DESCRIPTION
A55	PANEL, MAIN
F3	FUSE, ELECTRIC HEAT
F4	FUSE, UNIT
F61	FUSE, UNIT - SCCR
HE -1	ELEMENT, ELECTRIC HEAT 1
HE -2	ELEMENT, ELECTRIC HEAT 2
HE -3	ELEMENT, ELECTRIC HEAT 3
HE -4	ELEMENT, ELECTRIC HEAT 4
HE -5	ELEMENT, ELECTRIC HEAT 5
HE -6	ELEMENT, ELECTRIC HEAT 6
J2	JACK, ELECTRIC HEAT
J265C	JACK, CONTACTOR RELAY
J266A	JACK, HEATING CONTROL STG 1
J271A,B	JACK, HEATING SENSORS STG 1
K15,-1	CONTACTOR, ELECTRIC HEAT 1
K16,-1	CONTACTOR, ELECTRIC HEAT 2
P2	PLUG, ELECTRIC HEAT
P7	PLUG, ELECTRIC HEAT SUB-BASE KIT
P265	PLUG, CONTACTOR RELAY
P266	PLUG, HEATING CONTROL
P271	PLUG, HEATING SENSORS STG 1
S15	SWITCH, LIMIT PRIMARY ELECTRIC HEAT
S20	SWITCH, LIMIT SECONDARY ELECTRIC HEAT 1
S157	SWITCH, LIMIT SECONDARY ELECTRIC HEAT 2
TB2	TERMINAL STRIP, UNIT



DESIGNATION	VOLTAGE
Y	208-230/60/3
G	460/60/3
J	575/60/3
M	380-420/50/3
P	208-230/60/1

- △ F61 USED ON SCCR UNITS ONLY
  - △ REMOVE JUMPER PLUG WHEN FIELD INSTALLING ELECTRIC HEAT
  - △ S20 LIMIT ON "A" BOX UNITS IS RESETTABLE
  - △ 7.5 KW ONLY
- DENOTES OPTIONAL COMPONENTS

KW	HE1	HE2	HE3	HE4	HE5	HE6
024 - 030	5.0	5.0				
036 - 048	10.0	5.0	5.0			
	7.5	7.5	7.5			
060	15	7.5	7.5	7.5	7.5	7.5

2022/04	WIRING DIAGRAM	04/22
	538246-01	
HEATING		
ELECTRIC HEAT FOR LCT,LHT E1EH - 5, 7.5, 10, 15, 22.5 - P		
SECTION A		REV 0
Supersedes	New Form No. 538246-01	

## Heat Sequence of Operation

### Blower Operation:

1- The A55 Unit Controller receives a demand from thermostat terminal G. A55 energizes blower motor B3 via programmed motor settings. Motor settings are field-adjustable.

### First Stage Heat:

2- A55 Unit Controller receives W1 and G heating demand.

3- After A55 proves n.c. low pressure switch S87, n.c. high pressure switch S4, compressor contactor K1, Blower, and Fan is energized.

**NOTE** - For 024 units in Mechanical Heating, the unit will automatically stage up for outdoor temperatures below 40°F for increased performance and efficiency. No external intervention is required, operation is automatic. At temperatures above 40°F, compressor will stage down to maintain operation efficiency.

### Sequence of Operation -E1EH 5, 7.5, 15, 22.5 - G, J Voltage

### Heating Elements:

1- Terminal Strip TB2 is energized when the unit disconnect closes. TB2 supplies line voltage to electric heat elements HE1 and HE2. Elements are protected by fuse F3.

### Second Stage Heat:

2- A55 Unit Controller receives W2 heating demand.

3- 24VAC is routed to the A55 Unit Controller (A55 routes power to the A38 if equipped) After A55 proves N.C. primary limit S15 the electric heat contactor K15 is energized. A55 energizes the blower and economizer.

4- 5kW, 7.5kW, 10kW, 15kW units - N.O. contacts K15-1 close energizing HE1.-  
22.5kW units N.O. contacts K15-1 open energizing HE1 and HE2.

### End of Second Stage Heat:

5- Heating demand is satisfied. Terminal W2 in the thermostat is de-energized.

6- Electric heat contactor K15 is de-energized.

7- 5kW, 7.5kW, 10kW, 15kW units - N.O. contacts K15-1 open de-energizing HE1..  
22.5kW units N.O. contacts K15-1 open de-energizing HE1 and HE2.

### Sequence of Operation -E1EH 5, 7.5, 15, 22.5 - P, Y Voltage

### Heating Elements:

1- Terminal Strip TB2 is energized when the unit disconnect closes. TB2 supplies line voltage to electric heat elements HE1 and HE2. Elements are protected by fuse F3 and or F42.

### Second Stage Heat:

2- A55 Unit Controller receives W2 heating demand.

3- 24VAC is routed to the A55 Unit Controller (A55 routes power to the A38 if equipped) After A55 proves N.C. primary limit S15 the electric heat contactor K15 is energized. A55 energizes the blower and economizer.

4- 5Kw, 7.5kW, 10kW, 15kW units - N.O. contacts K15-1 close energizing HE1.-  
22.5kW units N.O. contacts K15-1 open energizing HE2 and HE3.

### End of Second Stage Heat:

5- Heating demand is satisfied. Terminal W2 in the thermostat is de-energized.

6- Electric heat contactor K15 is de-energized.

7- 5kW, 7.5kW, 10kW, 15kW units - N.O. contacts K15-1 open de-energizing HE1.  
22.5kW units N.O. contacts K15-1 open de-energizing HE2 and HE3.

**Optional factory-installed SCR (A38) All Voltages Control** A38 will provide small amounts of power to the electric heat elements to efficiently maintain warm duct air temperatures when there is no heating demand. The SCR maintains duct air temperature based on input from a field-provided and installed thermostat (A104) and duct sensor (RT20). SCR is located in the compressor section on the left wall. Use only with a thermostat or specified DDC control system.

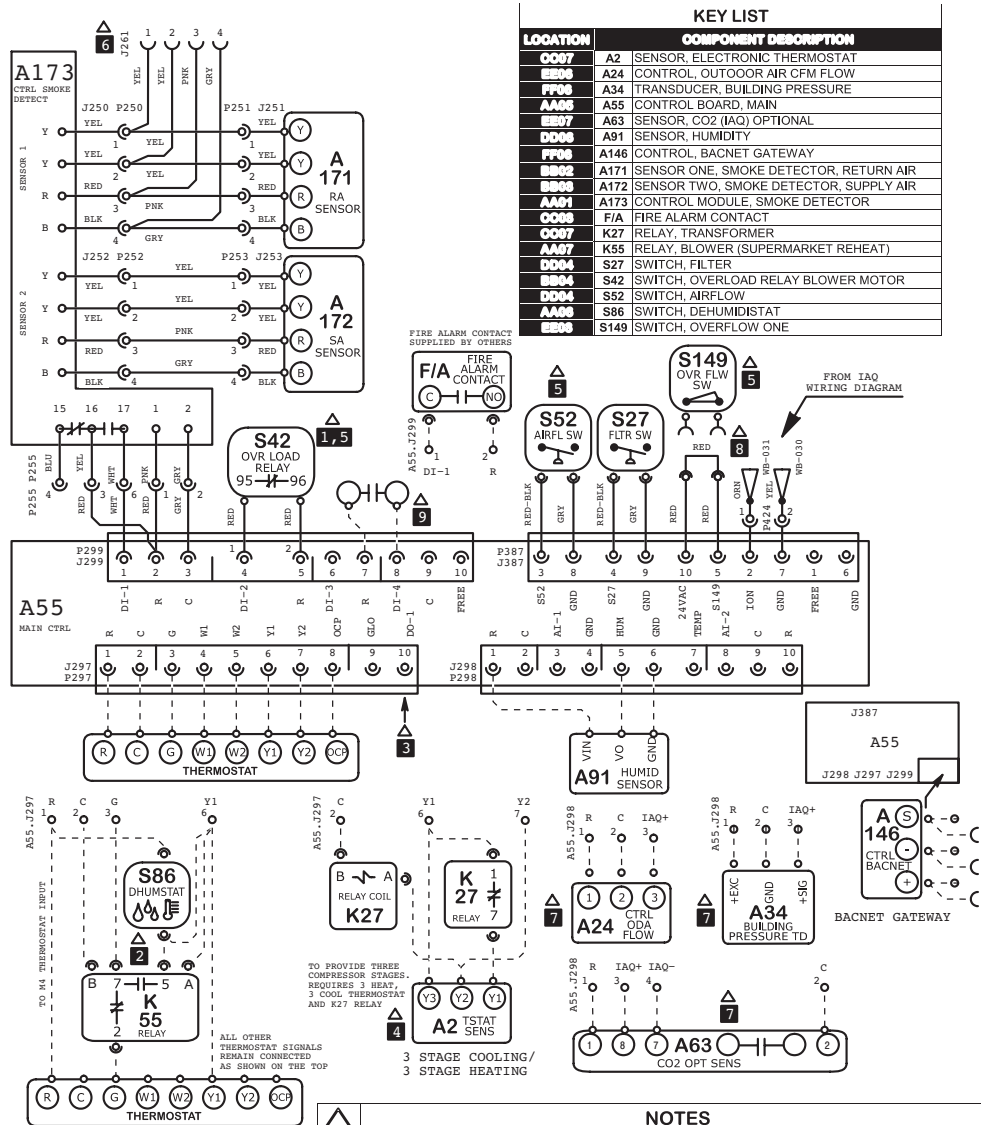
Use the instructions provided with the thermostat to set DIP switches as follows: S1 On, S2 Off, S3 Off. Use the instructions provided with the duct sensor to install sensor away from electric element radiant heat and in a location where discharge air is a mixed average temperature. Once power is supplied to unit, zero SCR as follows:

1- Adjust thermostat (A104) to minimum position.

2- Use a small screwdriver to slowly turn the ZERO potentiometer on the SCR until the LED turns solid red.

3- Very slowly adjust the potentiometer the opposite direction until the LED turns off.

# ELECTRONIC OR ELECTROMECHANICAL THERMOSTAT

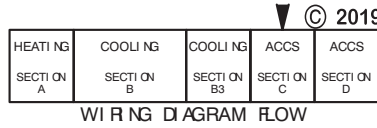


LOCATION	COMPONENT DESCRIPTION
CO07	A2 SENSOR, ELECTRONIC THERMOSTAT
EE06	A24 CONTROL, OUTDOOR AIR CFM FLOW
FP06	A34 TRANSDUCER, BUILDING PRESSURE
AA06	A55 CONTROL BOARD, MAIN
EE07	A63 SENSOR, CO2 (IAQ) OPTIONAL
DD06	A91 SENSOR, HUMIDITY
FP06	A146 CONTROL, BACNET GATEWAY
BB02	A171 SENSOR ONE, SMOKE DETECTOR, RETURN AIR
BB03	A172 SENSOR TWO, SMOKE DETECTOR, SUPPLY AIR
AA01	A173 CONTROL MODULE, SMOKE DETECTOR
CO06	F/A FIRE ALARM CONTACT
CO07	K27 RELAY, TRANSFORMER
AA07	K55 RELAY, BLOWER (SUPERMARKET REHEAT)
DD04	S27 SWITCH, FILTER
BB04	S42 SWITCH, OVERLOAD RELAY BLOWER MOTOR
DD04	S52 SWITCH, AIRFLOW
AA06	S86 SWITCH, DEHUMIDISTAT
EE06	S149 SWITCH, OVERFLOW ONE

- NOTES**
- FOR MOTORS WITH S42 EXTERNAL OVERLOAD LESS INVERTER, SEE INVERTER WITH BY PASS FOR S42 HOOK UP
  - USE S86 DEHUMIDISTAT AND K55 FOR OPTIONAL SUPERMARKET REHEAT SCHEME, PRODIGY PARAMETERS NEED TO BE MODIFIED UNDER THE SETTINGS MENU OR VIA UC SOFTWARE FOR SIMULTANEOUS HEATING AND COOLING
  - P297-10 (SR) IS SERVICE RELAY OUTPUT (24VAC) IF USED CONNECT TO AN INDICATOR LIGHT
  - THERMOSTAT HOOKUP FOR PROGRAMMABLE CONFIGURATION OF THE BOARD (A55)
  - PRODIGY SETTINGS MUST BE MODIFIED WHEN S42, S52, S149 ARE INSTALLED
  - CONNECT P252 OF A172 SENSOR TO J261 ON SUPPLY AIR SMOKE DETECTOR ONLY
  - REMOVE JUMPER TO INSTALL S149
  - EXTERNAL HUMIDITROL CONTACTS

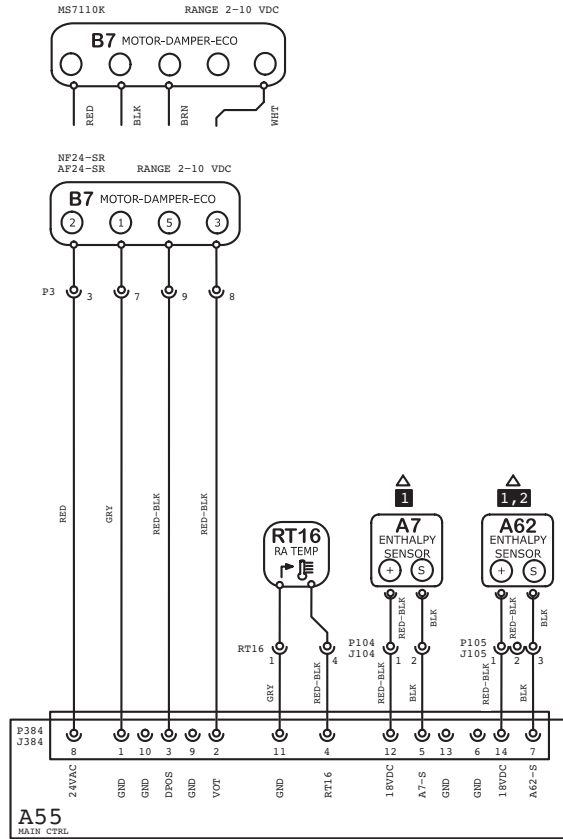
← DENOTES OPTIONAL COMPONENTS AND WIRING  
 - - - - - CLASS 2 FIELD WIRING

Model: LC, LG, LH, LD Series RTU  
 Thermostat  
 Voltage: All Voltages  
 Supersedes: N/A Form No: 538078-01 Rev: 1





# ECONOMIZER



NOTES	
1	A7 AND A62 NOT USED FOR SENSIBLE TEMPERATURE CONTROL
2	FOR UNIT DIFFERENTIAL ENTHALPY CONTROL, ADD A62 RETURN AIR ENTHALPY SENSOR

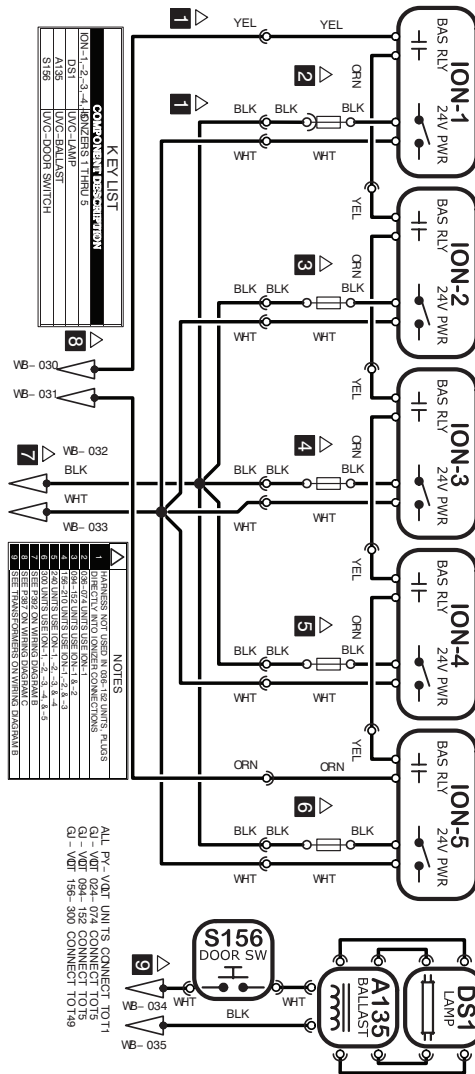
KEY LIST	
LOCATION	COMPONENT DESCRIPTION
CC05	A7 SENSOR, SOLID STATE ENTHALPY
AA05	A55 CONTROL BOARD, MAIN
DD05	A62 SENSOR, ENTHALPY INDOOR
BB02	B7 MOTOR, DAMPER ECONOMIZER
CC05	RT16 SENSOR, RETURN AIR TEMP

Model: LC, LG, LH, LD Series RTU Economizer & Motorized OAD  
 Voltage: All Voltages  
 Supersedes: N/A

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 HTG CLG CLG ACCS ACCS  
 SEC SEC SEC SEC SEC  
 A B B3 C D  
 WIRING DIAGRAM FLOW

Form No: 538072-01 Rev: 1

# IAQ



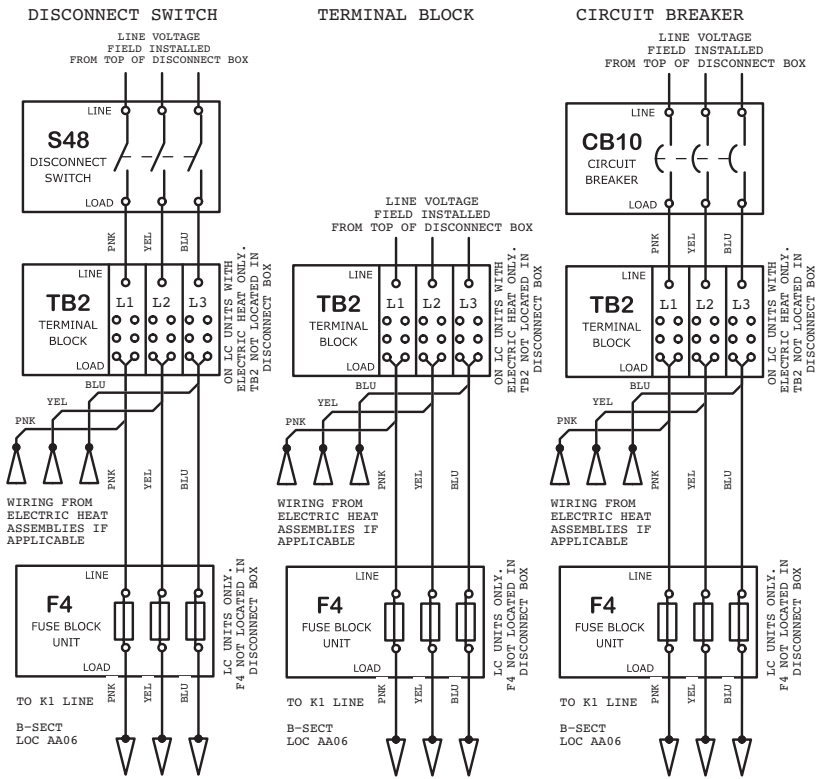
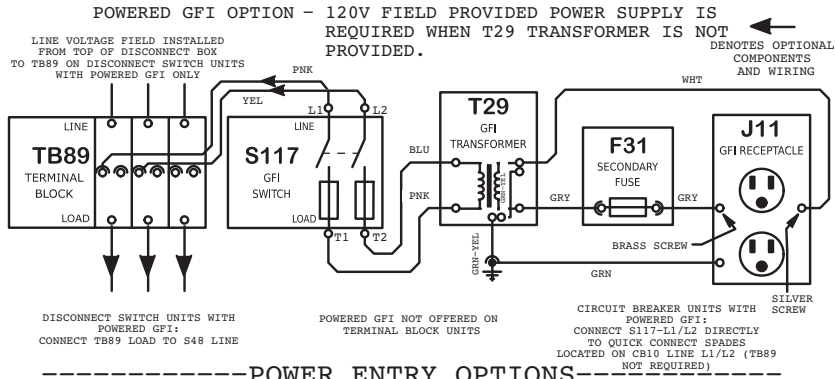
MDL: IAQ WIRING DIAGRAM  
 IONIZERS & UVC

VOLT: Y, G, J VOLT Rev: 0 538151-03  
 SUPSDS: N/A NO: 538151-03



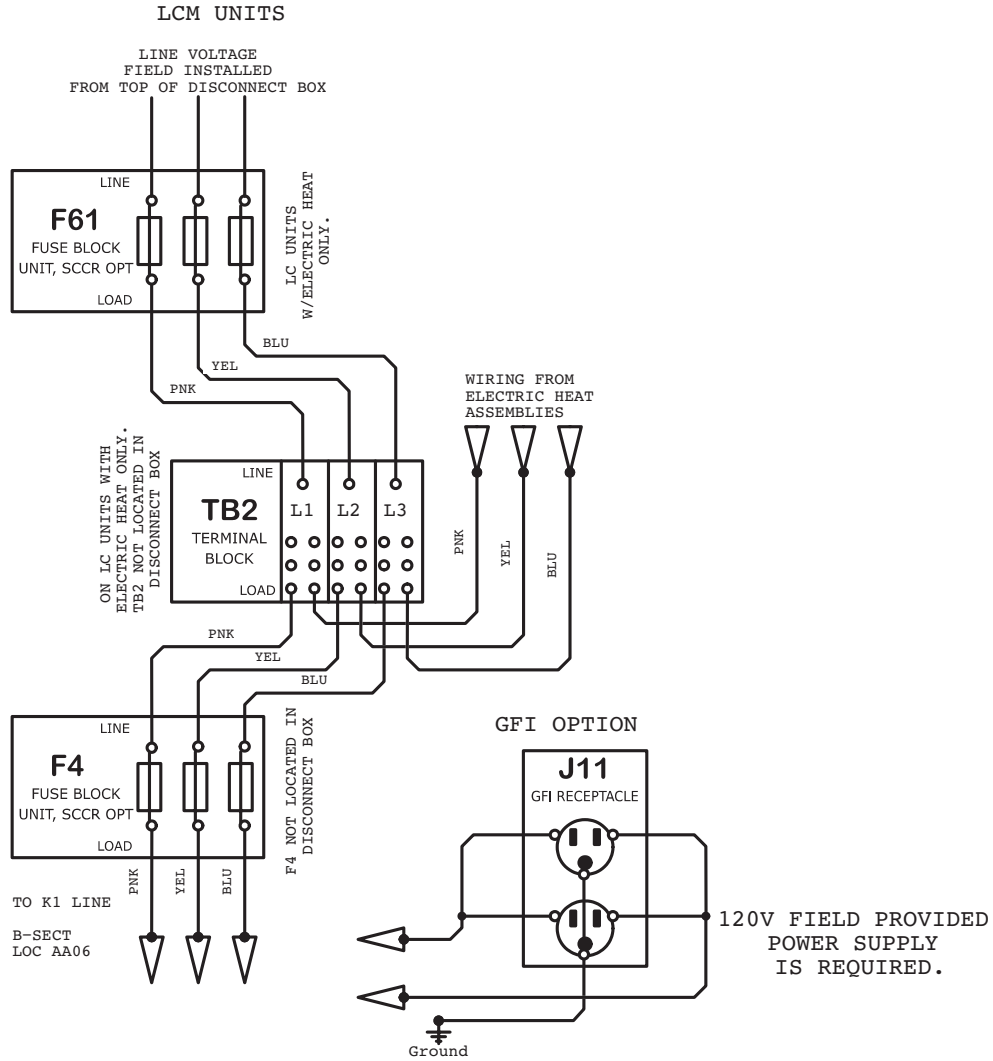
Rev: 0

# POWER ENTRY NON-SCCR



Model: LCT, LGT, LHT, LDT Series RTU  
 Power Entry Options 024-074  
 Voltage: All Voltages  
 Supersedes: XXXXXX-XX Form No: 538234-01 Rev: 0

# POWER ENTRY WITH SCCR



Model: LC, LH Series RTU WITH SCCR  
 Power Entry Options 024 - 074  
 Voltage: All Voltages  
 Supersedes: N/A Form No: 538111-0 Rev: 1